

# SYSTEM/228 TECHNICAL MANUAL





# **ISOETEC<sup>®</sup> Digital System**

## **Technical Manual**

**432 and 228 Port Configurations**

**Part Number 770312B**

**Revised November 1991**





# Table of Contents

## Section 1 – Introduction

Section	Page
1.1 GENERAL .....	1.1
1.2 SYSTEM DESCRIPTION .....	1.1
1.3 TELEPHONE SETS .....	1.1
1.3.1 DIGITAL TELEPHONES .....	1.1
1.3.2 ELECTRONIC TELEPHONES .....	1.2
1.3.3 SINGLE LINE TELEPHONES .....	1.2
1.3.4 INTEGRATED OPERATOR TERMINAL .....	1.2
1.3.5 OPERATOR STATION .....	1.2
1.3.6 DSS CONSOLE .....	1.2
1.3.7 DIGITAL VOICE ANNOUNCER .....	1.2
1.4 TRUNKS .....	1.3
1.5 CABINET AND BACKPLANE .....	1.3
1.6 COMMON CONTROL CARDS .....	1.4
1.6.1 CPU .....	1.4
1.6.2 MEMORY MODULE IV .....	1.5
1.6.3 VOICE/DATA CONTROL MODULE .....	1.6
1.6.4 EXPANDED CPU .....	1.7
1.6.5 EXPANDED VOICE CONTROL MODULE .....	1.8
1.6.6 EXPANDED DATA CONTROL MODULE .....	1.9
1.6.7 FIBER MUX CARD .....	1.10
1.6.8 CONFERENCE PORT CARD .....	1.11
1.7 PORT CARDS .....	1.12
1.7.1 LSI STATION PORT CARD .....	1.12
1.7.2 LOOP/GROUND START TRUNK II PORT CARD .....	1.13
1.7.3 DIRECT INWARD DIAL PORT CARD .....	1.14
1.7.4 DTMF RECEIVER COMBINATION PORT CARD .....	1.15
1.7.5 OPX LSI PORT CARD .....	1.16
1.7.6 E&M TIE LINE COMBINATION PORT CARD .....	1.17
1.8 POWER SUPPLIES .....	1.18
1.9 SYSTEM TONES .....	1.18
1.10 FEATURES DESCRIPTION .....	1.21

## Section 2 – Installation

2.1 FCC REQUIREMENTS .....	2.1
2.1.1 FCC REGULATIONS PART 15 .....	2.1
2.1.2 FCC REGULATIONS PART 68 .....	2.1
2.1.3 SERVICE REQUIREMENTS .....	2.1
2.2 TRUNK ORDERING INFORMATION .....	2.2

Section	Page
2.3	FCC REGISTRATION NUMBERS: ..... 2.3
2.4	SUPPLEMENT FOR CANADIAN EQUIPMENT ..... 2.3
2.5	SITE REQUIREMENTS ..... 2.4
2.6	INSTALLATION PLANNING ..... 2.5
2.7	UNPACKING AND INSPECTION ..... 2.6
2.7.1	ISOETECr SYSTEM/228 CABINET ..... 2.6
2.7.2	STATIONS ..... 2.6
2.7.3	MISCELLANEOUS ITEMS ..... 2.6
2.8	CABINET INSTALLATION ..... 2.6
2.8.1	PREPARATION ..... 2.6
2.8.2	GROUNDING ..... 2.7
2.8.3	GROUNDING REQUIREMENTS FOR SYSTEMS INSTALLED IN CANADA ..... 2.8
2.9	OTHER BACKPLANE CONNECTIONS ..... 2.8
2.10	POWER SUPPLIES ..... 2.9
2.11	CIRCUIT CARD REQUIREMENTS ..... 2.9
2.11.1	CPU ..... 2.9
2.11.2	VCM ..... 2.11
2.11.3	DCM ..... 2.11
2.11.4	LSI DCM ..... 2.12
2.11.5	STATION AND STATION LSI PORT CARDS ..... 2.12
2.11.6	CO LINE PORT CARDS ..... 2.12
2.11.7	LOOP/GROUND START TRUNK PORT CARDS ..... 2.12
2.11.8	DIRECT INWARD DIAL PORT CARDS ..... 2.14
2.11.9	E&M TIE LINE COMBINATION PORT CARDS ..... 2.14
2.11.10	DTMF RECEIVER COMBINATION PORT CARDS ..... 2.14
2.11.11	OPX LSI PORT CARDS ..... 2.14
2.12	POWER APPLICATION ..... 2.17
2.12.1	INPUT POWER SITE REQUIREMENTS ..... 2.17
2.12.2	OTHER POWER REQUIREMENTS ..... 2.17
2.12.3	POWER UP ..... 2.17
2.13	INTEGRATED OPERATOR TERMINAL ASSEMBLY ..... 2.18
2.13.1	PARTS LIST ..... 2.18
2.13.2	ASSEMBLY INSTRUCTIONS ..... 2.20
2.13.3	TERMINAL SETUP RS-422 ..... 2.21
2.13.4	TERMINAL SET-UP RS-232 ..... 2.21
2.13.5	SELF-TEST ..... 2.21
2.13.6	SUMMARY OF OPERATING PARAMETERS ..... 2.22
2.13.7	ISOETEC TERMINAL DEFAULT PROGRAMMING PARAMETERS ..... 2.23
2.13.8	SITE SELECTION ..... 2.24
2.13.9	WIRING TO THE SYSTEM ..... 2.24
2.14	ISOETEC ELECTRONIC PHONE INTERFACE - IEPI ..... 2.24

Section	Page
2.15 WALL MOUNTING DIGITAL TELEPHONES .....	2.25
2.15.1 WALL CONNECTING JACKS .....	2.25
2.15.2 MOUNTING .....	2.25
2.15.3 HOW TO REMOVE THE TELEPHONE .....	2.26
2.15.4 MOUNTING USING SURFACE MOUNT RJ-11 JACKS .....	2.26
2.16 OFF PREMISE EXTENSION INTERFACE – OPXI .....	2.28
2.17 RELAY AND SENSOR INTERFACE .....	2.28
2.18 DIGITAL DATA INTERFACE .....	2.28
2.19 DIGITAL VOICE ANNOUNCER .....	2.28
2.20 DSS CONSOLE .....	2.29
2.21 CONNECTING MUSIC TO THE SYSTEM .....	2.29

### Section 3 – Cabling and Cross Connection

3.1 STATION PORT CONNECTIONS .....	3.1
3.2 TRUNK AND DID CONNECTIONS .....	3.8
3.3 E&M TIE LINE COMBINATION PORT CARD .....	3.10
3.3.1 TRANSPARENT INTERCOM DIALING .....	3.10
3.3.2 WIRING TIE LINES ON SYSTEMS INSTALLED IN CANADA .....	3.11
3.4 OPX PORT CARD .....	3.14
3.5 INPUT/OUTPUT PORTS .....	3.16
3.6 INTEGRATED OPERATOR TERMINAL .....	3.16
3.6.1 WIRING THE OPERATOR TERMINAL RS-422 .....	3.18
3.6.2 TERMINAL SETUP RS-422 .....	3.20
3.6.3 WIRING THE OPERATOR TERMINAL RS-232 .....	3.20
3.6.4 TERMINAL SET-UP RS-232 .....	3.21
3.6.5 WIRING THE OPERATOR TERMINAL – LSI DCM .....	3.22
3.6.6 SYSTEM PROGRAMMING WHEN USING THE LSI DCM .....	3.24
3.7 PROGRAMMING PORT .....	3.26
3.8 STATION MESSAGE DETAIL RECORDING DEVICE .....	3.27
3.9 EXTERNAL PAGE .....	3.28
3.10 OFF PREMISE EXTENSION INTERFACE .....	3.28
3.11 POWER FAILURE TRANSFER .....	3.28
3.12 RELAY AND SENSOR INTERFACE .....	3.30
3.13 DIGITAL DATA INTERFACE .....	3.31
3.14 DIGITAL VOICE ANNOUNCER .....	3.32
3.14.1 INSTALLING THE DIGITAL VOICE ANNOUNCER .....	3.32
3.14.2 RECORDING A MESSAGE .....	3.34
3.14.3 TO REPLAY A MESSAGE .....	3.34
3.14.4 TO CLEAR THE MESSAGE .....	3.34
3.14.5 MAXIMUM LENGTH OF MESSAGE .....	3.34

Section	Page
---------	------

### Section 4 – Operation

4.1	INTRODUCTION .....	4.1
4.2	HOW TO USE THIS SECTION .....	4.1
4.3	THE TELEPHONES .....	4.1
4.4	STATION OPERATION .....	4.2
	ACCOUNT CODES .....	4.3
	ADD ON CONFERENCE .....	4.7
	ANSWERING AN INCOMING INTERNAL CALL .....	4.9
	ANSWERING AN INCOMING TRUNK CALL .....	4.11
	AUTO PICKUP .....	4.13
	AUTO TRANSFER .....	4.14
	BACKGROUND MUSIC .....	4.16
	BACKGROUND MUSIC OVER EXTERNAL PAGE .....	4.17
	BAD LINE KEY .....	4.18
	BARGE IN KEY .....	4.19
	CALL AN EXTENSION .....	4.21
	CALL THE OPERATOR .....	4.23
	CALL VMS FROM A STATION .....	4.25
	CALL BACK .....	4.26
	CALL FORWARD .....	4.29
	CALL FORWARD TO ACD KEY .....	4.34
	CALL FORWARD TO VOICE MESSAGE SYSTEM .....	4.35
	CALL MONITOR .....	4.38
	CALL PICKUP .....	4.39
	CALL TRANSFER TO AN ACD GROUP .....	4.40
	CALL TRANSFER TO AN EXTENSION .....	4.41
	CALL TRANSFER TO A HUNT GROUP .....	4.44
	CALL TRANSFER TO VMS .....	4.45
	CAMP-ON .....	4.47
	CONFERENCE .....	4.49
	DATA FEATURE .....	4.60
	DATA HOT LINE KEY .....	4.67
	DIAL BY NAME .....	4.68
	DIGITAL VOICE ANNOUNCER .....	4.70
	DIRECT STATION SELECT/BUSY LAMP FIELD .....	4.72
	DISA .....	4.74
	DISPLAY TELEPHONE MESSAGES .....	4.78
	DO NOT DISTURB KEY .....	4.85
	DO NOT DISTURB OVERRIDE KEY .....	4.87
	EXCLUSIVE HOLD .....	4.88
	FLASH AN OUTSIDE LINE .....	4.89
	FOLLOW ME CLASS OF SERVICE .....	4.90
	FORCED ACCOUNT CODES .....	4.93
	GROUP PICKUP .....	4.96
	HOLD .....	4.98
	IN/OUT .....	4.100

Section	Page
LAST NUMBER REDIAL .....	4.101
LEAST COST ROUTING .....	4.103
MEET ME PAGE .....	4.107
MESSAGE WAITING .....	4.108
MODE CHANGES .....	4.110
MUTE KEY .....	4.111
NIGHT ANSWER .....	4.112
NIGHT MODE KEY .....	4.114
ORBIT .....	4.115
PAGING .....	4.117
PARK KEY .....	4.118
PATCH KEY .....	4.120
PBX KEY .....	4.121
PICK UP CALLS ON HOLD .....	4.122
PLACING OUTSIDE LINE CALLS .....	4.123
PLACING OUTSIDE LINE CALLS - ALTERNATE DIALING .....	4.127
PRIME LINE .....	4.129
RELEASE KEY .....	4.132
REMOTE SILENT MONITOR .....	4.133
RING TYPE .....	4.134
RINGING GROUP PICKUP .....	4.135
SAVE/REPEAT .....	4.137
SECOND VOICE PATH .....	4.139
SELF-TEST .....	4.142
SERIAL KEY .....	4.143
SILENT MONITOR .....	4.144
SPLIT KEY .....	4.145
STATION SPEED DIAL .....	4.149
STATION SPEED DIAL KEY .....	4.154
SYSTEM SPEED DIAL .....	4.159
TRUNK QUEUEING .....	4.162
UNSUPERVISED CONFERENCE KEY .....	4.166
VERIFIED FORCED ACCOUNT CODES .....	4.167
VMS MAIL KEY .....	4.170
VOLUME CONTROL .....	4.172
4.5 INTEGRATED OPERATOR TERMINAL DESCRIPTION .....	4.173
4.5.1 THE KEYBOARD .....	4.173
4.5.2 THE OPERATOR SCREEN .....	4.177
4.5.3 EXTENSION STATUS SCREEN .....	4.178
4.5.4 STATUS BOXES .....	4.179
4.5.5 CALLS IN PROGRESS .....	4.180
4.5.6 PENDING BOX .....	4.180
4.5.7 OPERATOR ACTIVE CALL BOX .....	4.181
4.5.8 DATE AND TIME .....	4.183

Section	Page
4.6 TERMINAL OPERATION .....	4.183
ANSWERING AN INCOMING CALL .....	4.184
BACKGROUND MUSIC OVER THE EXTERNAL PAGE .....	4.186
CALL BACK .....	4.187
CALL FORWARD .....	4.188
CALL PICKUP .....	4.193
CALL TRANSFER TO AN EXTENSION .....	4.194
CALL TRANSFER TO AN ACD GROUP .....	4.198
CALL TRANSFER TO A HUNT GROUP .....	4.199
CALL TRANSFER TO VMS .....	4.200
CALL TRANSFER TO THE SYSTEM MODEM .....	4.202
CAMP-ON .....	4.203
DIRECTORY PROGRAMMING .....	4.204
DISA .....	4.208
FLASHING AN OUTSIDE LINE .....	4.209
GROUP PICKUP .....	4.210
HOLD .....	4.211
MESSAGE WAITING .....	4.212
NIGHT MODE .....	4.213
ORBIT .....	4.214
PAGING .....	4.216
PARK KEY .....	4.218
PLACING INTERNAL CALLS .....	4.220
PLACING OUTSIDE LINE CALLS .....	4.221
RECALLS .....	4.223
RING TYPE .....	4.224
SECOND VOICE PATH .....	4.225
SYSTEM PROGRAMMING .....	4.227
SYSTEM SPEED DIAL .....	4.228
TAGGING A CALL .....	4.231
VOLUME CONTROL .....	4.232

## Section 5 – Programming Information

5.1 INTRODUCTION .....	5.1
5.2 CONNECTING THE PROGRAMMING TERMINAL .....	5.1
5.3 ACCESSING THE PROGRAMMING SCREENS .....	5.1
5.4 PASSWORD – ACCESS LEVEL PROGRAMMING .....	5.3
5.4.1 WHAT TO PROGRAM .....	5.3
5.4.2 HOW TO PROGRAM .....	5.4
5.5 CHANGING PASSWORDS .....	5.4
5.5.1 INTRODUCTION .....	5.4
5.5.2 DEFAULT PASSWORDS .....	5.4
5.5.3 HOW TO CHANGE PASSWORDS .....	5.5

Section	Page
5.6 PREVIOUS SOFTWARE VERSIONS .....	5.6
5.6.1 PASSWORD ACCESS LEVELS .....	5.6
5.6.2 CHANGING PASSWORDS .....	5.7

### Section 6 – Port Configuration Programming

6.1 INTRODUCTION .....	6.1
6.2 ACCESSING THE SYSTEM CONFIGURATION SCREEN .....	6.1
6.3 WHAT TO PROGRAM .....	6.1
6.3.1 EXTENSION NUMBERS .....	6.1
6.3.2 CONFIGURATION PLANNING .....	6.1
6.4 HOW TO PROGRAM SYSTEM CONFIGURATION .....	6.1
6.5 DELETE PORT ASSIGNMENTS .....	6.2
6.6 RESET PORT .....	6.2
6.7 DEFAULT CONFIGURATION .....	6.2
6.8 ADDING PORT CARDS .....	6.2
6.9 EXCHANGING PORT CARDS .....	6.2

### Section 7 – System Programming

7.1 INTRODUCTION .....	7.1
7.1.1 OPERATOR PROGRAMMING .....	7.1
7.1.2 CO LINE PARAMETERS .....	7.1
7.1.3 EXTERNAL PAGE PROGRAMMING .....	7.1
7.1.4 INPUT/OUTPUT PORT PROGRAMMING .....	7.1
7.1.5 TIME/DATE INFORMATION .....	7.1
7.1.6 MUSIC SOURCE .....	7.1
7.1.7 VARIOUS .....	7.1
7.1.8 SYSTEM RESET .....	7.2
7.2 ACCESSING THE SYSTEM PROGRAMMING SCREEN .....	7.2
7.3 OPERATOR PROGRAMMING .....	7.3
7.3.1 WHAT TO PROGRAM .....	7.3
7.3.2 DEFAULT VALUES .....	7.6
7.3.3 HOW TO PROGRAM .....	7.6
7.4 CO LINE PROGRAMMING .....	7.7
7.4.1 WHAT TO PROGRAM .....	7.7
7.4.2 DEFAULT VALUES .....	7.11
7.4.3 HOW TO PROGRAM .....	7.12
7.5 RING PARAMETERS .....	7.14
7.5.1 HOW TO PROGRAM .....	7.14
7.6 EXTERNAL ZONE PROGRAMMING .....	7.14
7.6.1 WHAT TO PROGRAM .....	7.14
7.6.2 DEFAULT VALUES .....	7.15
7.6.3 HOW TO PROGRAM .....	7.15

Section	Page
7.7 INPUT/OUTPUT PORT PROGRAMMING .....	7.17
7.7.1 WHAT TO PROGRAM .....	7.17
7.7.2 DEFAULT VALUES .....	7.17
7.7.3 HOW TO PROGRAM .....	7.18
7.8 TIME/DATE INFORMATION .....	7.20
7.8.1 HOW TO PROGRAM .....	7.20
7.9 MUSIC SOURCE .....	7.20
7.9.1 WHAT TO PROGRAM .....	7.20
7.9.2 DEFAULT VALUES .....	7.20
7.9.3 HOW TO PROGRAM .....	7.21
7.10 VARIOUS .....	7.21
7.10.1 WHAT TO PROGRAM .....	7.21
7.10.2 DEFAULT VALUE .....	7.22
7.10.3 HOW TO PROGRAM .....	7.22
7.11 SYSTEM RESET TIMER .....	7.23

## Section 8 – Station Programming

8.1 INTRODUCTION .....	8.1
8.2 ACCESSING THE STATION PROGRAMMING SCREEN .....	8.3
8.3 PROGRAMMING STATION RING/ACCESS .....	8.3
8.3.1 WHAT TO PROGRAM .....	8.3
8.3.2 DEFAULT VALUES .....	8.4
8.3.3 HOW TO PROGRAM .....	8.4
8.3.4 COPY FUNCTIONS FOR RING/ACCESS .....	8.4
8.4 KEYS PROGRAMMING .....	8.8
8.4.1 ACCOUNT CODE KEY .....	8.8
8.4.2 ACD HELP KEY .....	8.8
8.4.3 ACD LOG KEY .....	8.8
8.4.4 ACD NIGHT KEY .....	8.9
8.4.5 ACD QUALIFY KEY .....	8.9
8.4.6 ACD QUEUE KEY .....	8.9
8.4.7 ACD SUPERVISOR KEY .....	8.9
8.4.8 ACD UNAVAILABLE KEY .....	8.9
8.4.9 ACD WRAP KEY .....	8.9
8.4.10 ADD ON KEY .....	8.9
8.4.11 BAD LINE KEY .....	8.10
8.4.12 BARGE IN KEY .....	8.10
8.4.13 CALL BACK KEY .....	8.10
8.4.14 CALL COVERAGE KEYS (PILOT KEYS) .....	8.10
8.4.15 CALL FORWARD KEY .....	8.13
8.4.16 DATA HOT LINE KEY .....	8.13
8.4.17 DATA ON/OFF KEY .....	8.13
8.4.18 DIRECT TRUNK APPEARANCE KEY .....	8.13
8.4.19 DIRECT STATION SELECTION (DSS) KEY .....	8.13



Section	Page
8.4.20 DO NOT DISTURB KEY .....	8.13
8.4.21 DO NOT DISTURB OVERRIDE KEY .....	8.13
8.4.22 FORWARD TO ACD KEY .....	8.14
8.4.23 HANDSET BARGE-IN KEY .....	8.14
8.4.24 ICM KEY .....	8.14
8.4.25 IN/OUT KEY .....	8.14
8.4.26 LCR KEY .....	8.14
8.4.27 MESSAGE WAITING KEY .....	8.15
8.4.28 MIC MUTE KEY .....	8.15
8.4.29 NIGHT ANSWER KEY .....	8.15
8.4.30 NIGHT MODE KEY .....	8.15
8.4.31 PAGE KEY .....	8.15
8.4.32 PATCH KEY .....	8.15
8.4.33 PBX FEATURE KEY .....	8.15
8.4.34 PICK UP KEY .....	8.16
8.4.35 RELEASE KEY .....	8.16
8.4.36 RING GROUP PICKUP .....	8.16
8.4.37 SAVE/REPEAT KEY .....	8.16
8.4.38 SERIAL KEY .....	8.16
8.4.39 SILENT MONITOR KEY .....	8.16
8.4.40 SPLIT KEY .....	8.17
8.4.41 STATION SPEED KEY .....	8.17
8.4.42 SYSTEM SPEED KEY .....	8.17
8.4.43 TRUNK GROUP KEY .....	8.17
8.4.44 UNI KEY .....	8.17
8.4.45 UNSUPERVISED CONFERENCE .....	8.18
8.4.46 VMS (VOICE MESSAGE SYSTEM) KEY .....	8.18
8.4.47 DEFAULT KEY VALUES .....	8.18
8.4.48 HOW TO PROGRAM .....	8.20
8.5 TIMERS PROGRAMMING .....	8.21
8.5.1 CAMP-ON TIMER .....	8.21
8.5.2 RECORDER NUMBER .....	8.21
8.5.3 HUNT GROUP .....	8.22
8.5.4 DAY CLASS .....	8.22
8.5.5 NIGHT CLASS .....	8.22
8.5.6 LCR CLASS .....	8.22
8.5.7 PRIME LINE .....	8.23
8.5.8 PAGE ZONE .....	8.23
8.5.9 FORCED ACCOUNT .....	8.23
8.5.10 PICKUP GROUP .....	8.24
8.5.11 PILOT NOANSWER .....	8.24
8.5.12 COST LIMIT .....	8.24
8.5.13 TOTAL TOLL .....	8.24
8.5.14 RING TYPE .....	8.24
8.5.15 HOLD RECALL .....	8.25
8.5.16 TRANSFER RECALL .....	8.25
8.5.17 TAP ON EXTENSION .....	8.25

Table of Contents

Section	Page
8.5.18 HANDSFREE CO .....	8.25
8.5.19 HANDSFREE EXT .....	8.25
8.5.20 HANDSFREE REC .....	8.25
8.5.21 AUTO ANSWER .....	8.26
8.5.22 AUTO SECOND PATH .....	8.26
8.5.23 ALLOW SECOND PATH .....	8.26
8.5.24 GROUP IN .....	8.26
8.5.25 BUSY ON HOLD .....	8.26
8.5.26 BLOCK BARGE IN .....	8.26
8.5.27 BLOCK BARGE TONE .....	8.27
8.5.28 OUT LCR ONLY .....	8.27
8.5.29 SMDR ENABLE .....	8.27
8.5.30 HOOK RELEASE .....	8.27
8.5.31 VMS/ATTEND .....	8.27
8.5.32 BUSY ON DID .....	8.27
8.5.33 HANDS FREE CAMP-ON .....	8.27
8.5.34 ANALOG PHONE .....	8.27
8.5.35 HOW TO PROGRAM .....	8.28
8.6 DSS CONSOLE .....	8.29
8.6.1 HOW TO PROGRAM .....	8.29
8.7 INTEGRATED OPERATOR PROGRAMMING .....	8.31
8.8 TAP ON EXTENSION .....	8.32

**Section 9 – Directory Programming**

9.1 INTRODUCTION .....	9.1
9.2 ACCESSING THE DIRECTORY PROGRAMMING SCREEN .....	9.1
9.3 PROGRAMMING DIRECTORY .....	9.1
9.3.1 WHAT TO PROGRAM .....	9.1
9.3.2 DEFAULT VALUES .....	9.1
9.3.3 HOW TO PROGRAM .....	9.2
9.4 DIAL BY NAME .....	9.3

**Section 10 – Least Cost Routing**

10.1 INTRODUCTION .....	10.1
10.1.1 HARDWARE REQUIREMENTS .....	10.1
10.1.2 SOFTWARE REQUIREMENTS .....	10.1
10.2 DEFINITIONS .....	10.1
10.3 LCR PROGRAMMING .....	10.2
10.4 WHAT TO PROGRAM IN STATION PROGRAMMING .....	10.3
10.5 WHAT TO PROGRAM IN SYSTEM PROGRAMMING .....	10.3

Section	Page
10.6 WHAT TO PROGRAM IN SYSTEM OPTIONS PROGRAMMING .....	10.3
10.6.1 DISABLE AUTO SKIP .....	10.3
10.6.2 DISABLE LCR TONES .....	10.4
10.6.3 LCR HOOK FLASH .....	10.4
10.6.4 LCR CENTREX OPTION .....	10.4
10.7 WHAT TO PROGRAM IN LCR PROGRAMMING .....	10.4
10.7.1 OCC SERVICE (Other Common Carrier Service) .....	10.4
10.7.2 GRP NUM (Group Number) .....	10.4
10.7.3 LD 1+ (Long Distance Leading One) .....	10.4
10.7.4 INTER LATA ACCESS NUMBER .....	10.5
10.7.5 LO 1+ (Local 1) .....	10.5
10.7.6 AC (Area Code) .....	10.5
10.7.7 INTRA LATA ACCESS NUMBER .....	10.6
10.7.8 SECURITY CODE .....	10.6
10.7.9 SEC ALW (Security Code Always) .....	10.6
10.7.10 SEC 1ST (Security Code first) .....	10.6
10.7.11 CO PS (CO Line Pause) .....	10.7
10.7.12 OC PS (Other Common Carrier Pause) .....	10.7
10.7.13 MAX COST .....	10.7
10.7.14 AVERAGE CALL .....	10.7
10.7.15 LD = 11 DIGITS .....	10.7
10.7.16 CALCULATED AVERAGE .....	10.7
10.7.17 AT&T NUMBERS (No Access) .....	10.7
10.7.18 PRIMARY SERVICE .....	10.7
10.7.19 CENTREX CODE .....	10.8
10.7.20 VOLUME DISCOUNT .....	10.8
10.7.21 HUNT PICK .....	10.8
10.7.22 LCR Exceptions .....	10.9
10.8 ACCESSING THE LCR PROGRAMMING SCREEN .....	10.9
10.9 HOW TO PROGRAM LCR .....	10.10
10.10 SOFTWARE DEFINED NETWORK .....	10.12
10.10.1 LCR REQUIREMENTS .....	10.12
10.10.2 SINGLE LINE TELEPHONES .....	10.12

## Section 11 – Toll Restriction

11.1 INTRODUCTION .....	11.1
11.2 DESCRIPTION .....	11.1
11.3 WHAT TO PROGRAM .....	11.2
11.3.1 RESTRICTED AREA .....	11.2
11.3.2 ALLOWED AREA .....	11.2
11.3.3 EQUATES AREA .....	11.3
11.3.4 EXCEPTIONS AREA .....	11.4
11.4 ACCESSING THE STATION PROGRAMMING SCREEN .....	11.4
11.5 DEFAULT VALUES .....	11.4
11.6 HOW TO PROGRAM TOLL RESTRICTION .....	11.4

Section	Page
11.7 TOLL RESTRICTION WITH LEAST COST ROUTING .....	11.6
11.8 HOW TO PROGRAM TOLL RESTRICTION WITH LCR .....	11.6

## Section 12 – System Options

12.1 INTRODUCTION .....	12.1
12.2 TOLL OPTIONS .....	12.1
12.2.1 WHAT TO PROGRAM .....	12.1
12.2.2 DEFAULT VALUES .....	12.3
12.2.3 HOW TO PROGRAM TOLL OPTIONS .....	12.3
12.3 LEAST COST ROUTING .....	12.4
12.3.1 DISABLE AUTO SKIP .....	12.4
12.3.2 DISABLE LCR TONES .....	12.4
12.3.3 LCR HOOK FLASH .....	12.4
12.3.4 LCR CENTREX .....	12.4
12.3.5 SLI SDN ENABLE .....	12.4
12.4 OTHER SYSTEM OPTIONS .....	12.4
12.4.1 AUTO ATTEN MUSIC OPTION .....	12.4
12.4.2 SECOND TRANSFER KEY .....	12.5
12.4.3 DISABLE AUTO FAULT .....	12.5
12.4.4 ENABLE AUTO PICKUP .....	12.6
12.4.5 NIGHT CALL COVERAGE .....	12.6
12.4.6 OPERATOR NIGHT RECALL .....	12.6
12.4.7 NIGHT FORWARD ON .....	12.6
12.4.8 CALL FWD TO A. ATTEN .....	12.6
12.4.9 ENABLE HF MONITOR .....	12.6
12.4.10 OPER. TRANSFER ICM .....	12.6
12.4.11 CONFERENCE GAIN ON .....	12.6
12.4.12 ALTERNATE DIALING .....	12.7
12.4.13 OPERATOR DIGITS 350MS .....	12.7
12.4.14 SLI DIAL OPTION .....	12.7
12.4.15 DISA/TIE GRP DIAL .....	12.7
12.4.16 DEFAULT VALUES .....	12.7
12.4.17 HOW TO PROGRAM OTHER SYSTEM OPTIONS .....	12.8

## Section 13 – Account Codes

13.1 INTRODUCTION .....	13.1
13.2 VERIFIED FORCED ACCOUNT CODES .....	13.1
13.2.1 WHAT TO PROGRAM .....	13.1
13.2.2 HOW TO PROGRAM .....	13.2
13.3 FORCED ACCOUNT CODES NOT VERIFIED .....	13.3
13.3.1 WHAT TO PROGRAM .....	13.3
13.4 OPERATION .....	13.3
13.5 SUMMARY .....	13.4
13.6 STATION OPERATION .....	13.5

Section	Page
---------	------

### Section 14 – PBX Feature Keys

14.1	INTRODUCTION .....	14.1
14.2	WHAT TO PROGRAM .....	14.1
14.3	DEFAULT VALUES .....	14.3
14.4	HOW TO PROGRAM THE PBX FEATURE KEY .....	14.3

### Section 15 – Call Accounting Reports Option

15.1	INTRODUCTION .....	15.1
15.2	INSTALLATION .....	15.1
15.3	PROGRAMMING .....	15.2
15.3.1	WHAT TO PROGRAM IN STATION PROGRAMMING .....	15.2
15.3.2	WHAT TO PROGRAM IN SYSTEM PROGRAMMING .....	15.2
15.3.3	WHAT TO PROGRAM IN CALL ACCOUNTING .....	15.2
15.3.4	HOW TO PROGRAM CALL ACCOUNTING .....	15.2
15.3.5	HOW TO CLEAR THE REPORTS .....	15.3
15.4	REPORT DEFINITIONS .....	15.4
15.5	EXTENSION REPORT .....	15.5
15.6	ACCOUNT REPORT .....	15.6
15.7	SUMMARY OF EXTENSIONS REPORT .....	15.7
15.8	SUMMARY OF ACCOUNTS REPORT .....	15.8
15.9	TROUBLE SHOOTING .....	15.9

### Section 16 – Data Feature

16.1	INTRODUCTION .....	16.1
16.2	INSTALLATION .....	16.1
16.3	DATA STATION OPERATION .....	16.5
16.3.1	CONNECTING TO A DATA PORT .....	16.6
16.3.2	CHANGING COMMUNICATION PARAMETERS .....	16.7
16.3.3	WHEN THE CALLED PORT IS BUSY .....	16.9
16.4	PROGRAMMING .....	16.11
16.4.1	STATION PROGRAMMING .....	16.11
16.4.2	DATA PORT PROGRAMMING .....	16.11
16.5	ACCESSING THE DATA PROGRAMMING SCREEN .....	16.14
16.6	DEFAULT DATA PORT VALUES .....	16.14
16.7	HOW TO PROGRAM THE DATA PROGRAMMING SCREEN .....	16.14
16.8.1	DATA DISA .....	16.15
16.8.1	INSTALLATION .....	16.15
16.8.2	PROGRAMMING .....	16.16
16.8.3	OPERATION .....	16.17
16.8.4	TESTING .....	16.17
16.9	DATA STATUS MONITOR .....	16.18
16.9.1	MAKING DATA CONNECTIONS WITH THE PROGRAMMING TERMINAL .....	16.18

Section	Page
<b>Section 17 - System Management Reports</b>	
17.1 INTRODUCTION .....	17.1
17.2 GENERAL .....	17.1
17.3 HOW TO REACH THE REPORTS .....	17.3
17.4 GROUP UTILIZATION REPORTS .....	17.4
17.4.1 HOW TO ACCESS SCREEN (A) CUMULATIVE .....	17.4
17.4.2 SCREEN DEFINITIONS - CUMULATIVE .....	17.5
17.4.3 HOW TO ACCESS SCREEN (B) DAILY .....	17.6
17.4.4.1 SCREEN DEFINITIONS - DAILY .....	17.7
17.4.5 HOW TO ACCESS SCREEN (C) 60 MINUTES .....	17.8
17.4.6 SCREEN DEFINITIONS - 60 MINUTES .....	17.9
17.4.7 HOW TO ACCESS SCREEN (D) 30 MINUTES .....	17.10
17.4.8 SCREEN DEFINITIONS - 30 MINUTES .....	17.11
17.4.9 HOW TO ACCESS SCREEN (E) 15 MINUTES .....	17.12
17.4.10 SCREEN DEFINITIONS - 15 MINUTES .....	17.13
17.5 LINE UTILIZATION .....	17.14
17.5.1 HOW TO ACCESS SCREEN (F) CUMULATIVE .....	17.14
17.5.2.1 SCREEN DEFINITIONS - CUMULATIVE .....	17.15
17.5.3 HOW TO ACCESS SCREEN (G) DAILY .....	17.16
17.5.4 SCREEN DEFINITIONS - DAILY .....	17.17
17.6 LCR STATISTICS .....	17.18
17.6.1 HOW TO ACCESS SCREEN (H) .....	17.18
17.6.2 SCREEN DEFINITIONS - LCR STATISTICS .....	17.19
17.7 EXTENSION SUMMARY .....	17.20
17.7.1 HOW TO ACCESS SCREEN (I) EXTENSION SUMMARY .....	17.20
17.7.2 SCREEN DEFINITIONS - EXTENSION SUMMARY .....	17.21
17.8 SYSTEM UTILIZATION .....	17.22
17.8.1 HOW TO ACCESS SCREEN (J) SYSTEM STATISTICS .....	17.22
17.8.2 SCREEN DEFINITIONS - SYSTEM STATISTICS .....	17.23
17.8.3 HOW TO ACCESS SCREEN (K) 60 MINUTES .....	17.24
17.8.4 SCREEN DEFINITIONS - 60 MINUTES .....	17.25
17.8.5 HOW TO ACCESS SCREEN (L) 30 MINUTES .....	17.26
17.8.6 SCREEN DEFINITIONS - 30 MINUTES .....	17.27
17.8.7 HOW TO ACCESS SCREEN (M) 15 MINUTES .....	17.28
17.8.8 SCREEN DEFINITIONS - 15 MINUTES .....	17.29
17.9 PRINTING AND CLEARING REPORTS MANUALLY .....	17.30
17.10 PRINTING AND CLEARING REPORTS AUTOMATICALLY .....	17.30
17.10.1 WHAT TO PROGRAM .....	17.31
17.10.2 REPORT PRINT/CLEAR SCHEDULER SCREEN .....	17.32
17.10.3 HOW TO PROGRAM THE REPORT SCHEDULER .....	17.33
17.10.4 EXAMPLE .....	17.34
17.11 WHAT DOES ALL THIS INFORMATION MEAN? .....	17.35

Section	Page
<b>Section 18 – Tie Lines</b>	
18.1 INTRODUCTION .....	18.1
18.1.1 CIRCUIT ORDERING INFORMATION .....	18.1
18.2 INSTALLATION .....	18.2
18.3 PROGRAMMING .....	18.5
18.4 TESTING .....	18.6
18.4.1 INITIAL TESTING .....	18.6
18.4.2 TESTING THE SYSTEM .....	18.7
18.5 TIE LINE OPERATION .....	18.8
<b>Section 19 – Trunk Group Programming</b>	
19.1 INTRODUCTION .....	19.1
19.2 CALL DIVERSION .....	19.1
19.2.1 WHAT TO PROGRAM .....	19.1
19.2.2 HOW TO PROGRAM CALL DIVERSION .....	19.2
19.3 AUTOMATIC NIGHT MODE .....	19.3
19.3.1 WHAT TO PROGRAM .....	19.3
19.3.2 HOW TO PROGRAM AUTOMATIC NIGHT MODE .....	19.3
19.4 ACD GROUP NIGHT MODE .....	19.5
19.4.1 WHAT TO PROGRAM .....	19.5
19.4.2 HOW TO PROGRAM ACD GROUP NIGHT MODE .....	19.5
<b>Section 20 – Direct Inward Dial</b>	
20.1 INTRODUCTION .....	20.1
20.2 REGISTRATION AND CONNECTION .....	20.1
20.3 HARDWARE REQUIREMENTS .....	20.1
20.4 SOFTWARE REQUIREMENTS .....	20.1
20.5 INSTALLATION .....	20.3
20.6 WHAT TO PROGRAM .....	20.4
20.7 ACCESSING THE DIGIT TRANSLATION PROGRAMMING SCREEN .....	20.5
20.8 HOW TO PROGRAM .....	20.5
20.9 OPERATION .....	20.7
20.10 NOTES .....	20.7
20.10.1 CALLED STATION BUSY .....	20.7
20.10.2 CALLED STATION IS FORWARDED .....	20.7
20.10.3 CALLED STATION IS DND .....	20.7
20.10.4 CALLED STATION IS OUT (IN/OUT key is pressed) .....	20.7
20.11 DID AND SMDR .....	20.8
20.12 DID AND THE BUILT-IN AUTO ATTENDANT .....	20.8
20.12.1 SYSTEM PROGRAMMING .....	20.8
20.12.2 DID PROGRAMMING .....	20.8

Section	Page
---------	------

## Section 21 – Flexible Numbering

21.1	INTRODUCTION .....	21.1
21.2	PROGRAMMING THE DIGIT TRANSLATION SCREEN .....	21.2
21.3	INTERCOM DIALING TRANSLATION .....	21.2
21.4	RESETTING THE SYSTEM .....	21.3

## Section 22 – Transparent Intercom Dialing

22.1	DESCRIPTION .....	22.1
22.2	INSTALLATION .....	22.2
22.3	HOW TRANSPARENT INTERCOM DIALING OPERATES .....	22.2
22.4	PROGRAMMING .....	22.2
22.4.1	SYSTEM PROGRAMMING .....	22.3
22.4.2	DIGIT TRANSLATION TABLES .....	22.4
22.4.3	DID PROGRAMMING SCREEN .....	22.4
22.4.4	INTERCOM DIALING PROGRAMMING SCREEN .....	22.5
22.4.5	TRANSPARENT INTERCOM DIALING PROGRAMMING SCREEN .....	22.6
22.4.6	SYSTEM OPTIONS PROGRAMMING SCREEN – SECOND TRANSFER KEY .....	22.7

## Section 23 – Forwarding And VMS Plans

23.1	INTRODUCTION .....	23.1
23.2	CALL FORWARDING FROM A TELEPHONE .....	23.1
23.3	WHAT TO PROGRAM – CALL FORWARD .....	23.2
23.4	HOW TO PROGRAM – CALL FORWARD .....	23.3
23.5	INFOSTART/VX .....	23.6
23.6	WHAT TO PROGRAM .....	23.6
23.6.1	V[M]S .....	23.7
23.6.2	[T] VMS .....	23.9
23.7	ACCESSING THE PROGRAMMING SCREEN .....	23.12
23.8	DEFAULT VALUES .....	23.12
23.9	HOW TO PROGRAM VMS .....	23.13

## Section 24 – Automated Attendant

24.1	DESCRIPTION .....	24.1
24.2	REQUIREMENTS .....	24.1
24.2.1	HARDWARE REQUIREMENTS .....	24.1
24.2.2	SOFTWARE REQUIREMENTS .....	24.2
24.3	AUTOMATED ATTENDANT PROGRAMMING .....	24.2
24.3.1	ACCESS CONTROL .....	24.3
24.3.2	DIGIT TIMEOUT .....	24.4
24.3.3	DAY SELECTIONS .....	24.4
24.3.4	NIGHT SELECTIONS .....	24.4
24.3.5	ATTENDANT DIAL ACCESS SCHEME .....	24.5



Section	Page
24.4 OTHER SYSTEM PROGRAMMING .....	24.6
24.4.1 STATION PROGRAMMING .....	24.6
24.4.2 SYSTEM PROGRAMMING .....	24.6
24.4.3 SYSTEM OPTIONS .....	24.6
24.4.4 TRANSPARENT INTERCOM DIALING .....	24.6
24.5 CALL PROCESS - DAY MODE .....	24.7
24.6 CALL PROCESS - NIGHT MODE .....	24.7
24.7 SETTING UP SUB-MENUS/DIRECTORIES .....	24.9
24.8 SUGGESTED AUTOMATED ATTENDANT GREETINGS .....	24.10
24.8.1 Using Dial Access Scheme 01: .....	24.10
24.8.2 Using Dial Access Scheme 02: .....	24.10
24.8.3 Using Dial Access Scheme 03: .....	24.10
24.8.4 Using Dial Access Scheme 04: .....	24.10
24.9 THE AUTOMATED ATTENDANT PROGRAMMING SCREEN .....	24.10
24.10 DEFAULT VALUES .....	24.10
24.11 HOW TO PROGRAM THE AUTOMATED ATTENDANT .....	24.11
24.12 MAINTENANCE AND TROUBLESHOOTING .....	24.13
24.13 CHECKING THE SYSTEM STATUS MONITOR CODES .....	24.18

### Section 25 - Maintenance

25.1 INTRODUCTION .....	25.1
25.2 CONNECTING THE PROGRAMMING TERMINAL .....	25.1
25.3 ACCESSING THE PROGRAMMING SCREENS .....	25.1
25.4 HOW TO RESET THE SYSTEM .....	25.3
25.5 HOW TO DEFAULT THE SYSTEM .....	25.3
25.6 STATUS MONITOR .....	25.4
25.7 AUTOMATIC TRUNK TESTING .....	25.7
25.8 TRUNK TESTING - DIAGNOSTICS .....	25.7
25.9 BAD LINE KEY AND THE REPORTS .....	25.9
25.10 TESTING LOOP AND GROUND START TRUNKS .....	25.10
25.10.1 TESTING LOOP START LINES - OUTGOING .....	25.10
25.10.2 TESTING LOOP START LINES - INCOMING .....	25.10
25.10.3 TESTING GROUND START LINES - OUTGOING .....	25.11
25.10.4 TESTING GROUND START LINES - INCOMING .....	25.11
25.11 TRUNK - BUSY OUT .....	25.12
25.12 STATION TROUBLES .....	25.13
25.13 USING THE SPEAKERPHONE .....	25.15
25.14 OPERATOR MAINTENANCE .....	25.16
25.14.1 CRT TERMINAL PROBLEMS .....	25.16
25.14.2 RESET THE I/O PORT .....	25.17
25.14.3 AUDIO PROBLEMS .....	25.17
25.15 HOW TO USE THE LCR TESTER .....	25.18
25.16 REMOTE PROGRAMMING .....	25.19

Table of Contents

Section	Page
25.17 BACKUP PROGRAM MEMORY .....	25.19
25.18 ALARMS .....	25.21
25.18.1 DESCRIPTION OF ALARM CODES .....	25.22
25.18.2 THRESHOLDS .....	25.22
25.18.3 PROGRAMMING ALARM CODES .....	25.23
25.18.4 PENDING ALARMS .....	25.24
25.18.5 RESETTING EXPIRED ALARMS .....	25.24
25.19 SYSTEM SELF TEST .....	25.25
25.19.1 SYSTEM COMPONENTS .....	25.25
25.19.2 CIRCUIT BOARDS AND HARDWARE .....	25.25
25.19.3 STATION CARD .....	25.25
25.19.4 CO LINES .....	25.25
25.19.5 RUNNING THE SYSTEM SELF TEST .....	25.26

# List of Figures

Figure	Page
Figure 1-1 Backplane Layout .....	1.3
Figure 1-2 CPU .....	1.4
Figure 1-3 Memory Expansion Module IV .....	1.5
Figure 1-4 Voice/Data Control Module .....	1.6
Figure 1-5 Expanded CPU .....	1.7
Figure 1-6 Expanded Voice Control Module .....	1.8
Figure 1-7 Expanded Data Control Module .....	1.9
Figure 1-8 Fiber Mux Card .....	1.10
Figure 1-9 Conference Port Card .....	1.11
Figure 1-10 LSI Station Port Card .....	1.12
Figure 1-11 Loop/Ground Start II Port Card .....	1.13
Figure 1-12 DID Port Card .....	1.14
Figure 1-13 DTMF Receiver Port Card .....	1.15
Figure 1-14 OPX LSI Port Card .....	1.16
Figure 1-15 E&M Tie Line Combination Port Card .....	1.17
Figure 1-16 System Cabinet With Power Supplies .....	1.18
Figure 1-17 228 Port IDS Block Diagram .....	1.19
Figure 1-18 432 Port IDS Block Diagram .....	1.20
Figure 2-1 Mounting Holes For The Cabinet .....	2.7
Figure 2-2 Grounding For Canadian Installations .....	2.8
Figure 2-3 Mounting The Power Supplies .....	2.9
Figure 2-4 CPU Showing EPROM Placement .....	2.10
Figure 2-5 Memory Module III .....	2.11
Figure 2-6 Loop/Ground Start Trunk Card .....	2.13
Figure 2-7 OPX Port Card Power Connections .....	2.15
Figure 2-8 OPX Port Card Power Connections With Tip Grounded .....	2.16
Figure 2-9 Assembly Of The Integrated Operator Terminal .....	2.19
Figure 2-10 Possible Wall Jacks .....	2.26
Figure 2-11 Wall Mounted Telephone .....	2.27
Figure 2-12 Surface Mount Jack .....	2.27
Figure 2-13 Wall Mounted Handset Hook .....	2.27
Figure 2-14 Backplane Layout For Background Music .....	2.29
Figure 3-1 Port Cable To MDF .....	3.2
Figure 3-2 System/228 MDF .....	3.3
Figure 3-3 MDF Station Connections .....	3.4
Figure 3-4 228 MDF Station Panel Designations .....	3.5
Figure 3-5 Station Wiring .....	3.6
Figure 3-6 Trunk Cabling .....	3.9
Figure 3-7 Tie Line Cross Connection .....	3.10
Figure 3-8 Wiring Tie Lines In Canada .....	3.11
Figure 3-9 228 MDF Designations For An E&M Tie Line .....	3.12
Figure 3-10 MDF Station Panel Designations For The OPXI LSI Card .....	3.15
Figure 3-11 I/O (Service) Cable To MDF .....	3.17
Figure 3-12 RS-422 Connector (p/n 330006) With Modular Cable .....	3.18
Figure 3-13 Wiring An RS-422 Terminal .....	3.19

Figure	Page
Figure 3-14 Wiring An RS-232 Terminal .....	3.21
Figure 3-15 ISOETEC Phone Box .....	3.22
Figure 3-16 RS-232 Cable For Operator Terminal and Phone Box .....	3.23
Figure 3-17 Wiring A Terminal To A Phone Box .....	3.23
Figure 3-18 System Programming Screen .....	3.24
Figure 3-19 Operator Programming Screen .....	3.25
Figure 3-20 Wiring To The Programming Terminal .....	3.26
Figure 3-21 SMDR Cabling .....	3.27
Figure 3-22 OPXI Installation With Power Failure Transfer .....	3.29
Figure 3-23 Relay/Sensor Interface Wiring .....	3.30
Figure 3-24 Digital Data Interface Wiring .....	3.31
Figure 3-25 Battery Strap Location .....	3.32
Figure 3-26 Digital Voice Announcer .....	3.33
Figure 4-1 Operator Keyboard .....	4.175
Figure 4-2 Operator Screen .....	4.177
Figure 5-1 Main Menu .....	5.2
Figure 5-2 Access Level Programming Screen .....	5.3
Figure 5-3 Password Definition Screen .....	5.5
Figure 6-1 System Configuration Programming Screen .....	6.3
Figure 7-1 System Programming Screen .....	7.2
Figure 7-2 Operators Programming Sreen .....	7.3
Figure 7-3 Operators Programming Sreen .....	7.5
Figure 7-4 System Programming Screen .....	7.8
Figure 7-5 System Programming Screen .....	7.11
Figure 7-6 System Programming Screen .....	7.13
Figure 7-7 System Programming Screen .....	7.15
Figure 7-8 System Programming Screen .....	7.16
Figure 7-9 System Programming Screen .....	7.18
Figure 7-10 System Programming Screen .....	7.19
Figure 7-11 System Programming Screen .....	7.21
Figure 7-12 System Programming Screen .....	7.23
Figure 8-1 Station Programming Screen .....	8.3
Figure 8-2 Station Programming Screen .....	8.21
Figure 8-3 Station Programming Screen .....	8.28
Figure 8-4 DSS Stations Assignment .....	8.29
Figure 8-5 DSS Programming Screen .....	8.30
Figure 8-6 Integrated Operator Function Keys Programming .....	8.32
Figure 9-1 Directory Programming Screen .....	9.2
Figure 9-2 Main Menu .....	9.3
Figure 10-1 LCR Programming Screen .....	10.5
Figure 10-2 LCR Programming Screen .....	10.6
Figure 10-3 LCR Volume Discount .....	10.8
Figure 10-4 LCR Exceptions .....	10.9
Figure 10-5 LCR Programming Screen .....	10.10

Figure	Page
Figure 11-1 Toll Restriction Table	11.3
Figure 11-2 Toll Restriction Table	11.5
Figure 11-3 Toll Restriction Table With LCR	11.7
Figure 12-1 CO Toll Options	12.2
Figure 12-2 System Options Programming Screen	12.3
Figure 12-2 Operator Keyboard With Second Transfer Key	12.5
Figure 12-3 System Options Programming Screen	12.8
Figure 13-1 Account Codes Programming Screen	13.2
Figure 14-1 Station Programming Screen	14.2
Figure 14-2 PBX Feature Key Programming Screen	14.3
Figure 15-1 Call Accounting Menu	15.3
Figure 15-2 Extension Report	15.5
Figure 15-3 Account Code Report	15.6
Figure 15-4 Summary Of Extensions Report	15.7
Figure 15-5 Summary Of Account Codes Report	15.8
Figure 16-1 System/228 Data Switching	16.3
Figure 16-2 Typical Terminal To Phone Cable	16.3
Figure 16-3 Typical Computer To Phone Cable	16.4
Figure 16-4 Typical MODEM To DDI Cable	16.5
Figure 16-5 Data Programming Screen	16.13
Figure 16-6 Data Programming Screen	16.15
Figure 16-7 Data DISA Connections	16.16
Figure 16-8 Data Programming Menu	16.17
Figure 16-9 Data Status Screen	16.18
Figure 17-1 Reports Menu	17.3
Figure 17-2 Group Utilization - Cumulative	17.4
Figure 17-3 Group Utilization - Daily	17.6
Figure 17-4 Group Utilization - 60 Minutes	17.8
Figure 17-5 Group Utilization - 30 Minutes	17.10
Figure 17-6 Group Utilization - 15 Minutes	17.12
Figure 17-7 Line Utilization - Cumulative	17.14
Figure 17-8 Line Utilization - Daily	17.16
Figure 17-9 LCR Statistics	17.18
Figure 17-10 Extension Summary	17.20
Figure 17-11 System Statistics	17.22
Figure 17-12 System Utilization - 60 Minutes	17.24
Figure 17-13 System Utilization - 30 Minutes	17.26
Figure 17-14 System Utilization - 15 Minutes	17.28
Figure 17-15 Print/Clear Scheduler	17.30
Figure 17-16 Print/Clear Scheduler	17.33
Figure 17-17 Report Scheduler	17.35
Figure 18-1 Tie Line Cross Connection	18.2
Figure 18-2 System Programming Screen	18.5
Figure 19-1 Trunk Group Programming Screen	19.2
Figure 19-2 Trunk Group Programming Screen	19.4
Figure 19-3 Trunk Group Programming Screen	19.6

Figure	Page
Figure 20-1 DID Port Card Power Connections .....	20.2
Figure 20-2 System Programming Screen .....	20.4
Figure 20-3 Digit Translation Menu .....	20.5
Figure 20-4 DID Programming Screen .....	20.6
Figure 20-5 SMDR Record .....	20.8
Figure 21-1 Digit Translation Table .....	21.2
Figure 22-1 Transparent Intercom Dialing .....	22.1
Figure 22-2 System Programming Screen .....	22.3
Figure 22-3 DID Programming Screen .....	22.4
Figure 22-4 Intercom Dialing Translation .....	22.5
Figure 22-5 Transparent Intercom Dialing Programming Screen .....	22.6
Figure 22-6 Operator Keyboard With Second Transfer Key .....	22.7
Figure 23-1 Forwarding And VMS Plans Programming Screen .....	23.3
Figure 23-2 Forwarding and VMS Plans Programming Screen .....	23.4
Figure 23-3 Forwarding and VMS Plans Programming Screen .....	23.7
Figure 23-4 Forwarding and VMS Plans Programming Screen .....	23.8
Figure 23-5 Forwarding and VMS Plans Programming Screen .....	23.12
Figure 23-6 Forwarding and VMS Plans Programming Screen .....	23.14
Figure 24-1 Automated Attendant Programming Screen .....	24.3
Figure 24-2 Example of Sub-Menus and Sub-Directories .....	24.9
Figure 25-1 Main Menu .....	25.2
Figure 25-2 System Status Monitor .....	25.4
Figure 25-3 Line Test .....	25.7
Figure 25-4 Diagnostics Menu .....	25.8
Figure 25-5 Line Utilization Report .....	25.9
Figure 25-6 Line Maintenance Screen .....	25.12
Figure 25-7 Backup Memory Screen .....	25.20
Figure 25-8 Operator Screen With A Minor Alarm .....	25.21
Figure 25-9 Operator Screen With A Major Alarm .....	25.21
Figure 25-10 Alarms Programming Screen .....	25.23
Figure 25-11 Alarms Programming Screen .....	25.24
Figure 25-12 System Self Test Screen .....	25.26

# Section 1

## Introduction

### 1.1 GENERAL

This manual provides a technical description of the ISOETEC® Digital System and step-by-step procedures for installation, programming, operation, and maintenance. The procedures and methods in this manual have been prepared to assist the installer and technician in the planning and installation of the system.

This fully featured digital telephone switching system is comprised of one or more system cabinets, common control circuit cards, and port cards. The cabinets and cards are arranged in specific configurations to provide the desired number of ports. *This manual describes the 228 port and 432 port configurations.*

### 1.2 SYSTEM DESCRIPTION

The system architecture is based on the 68000 microprocessor, EPROM memory, battery-backed static RAM, and a real time clock. The IDS is a stored program switching system. The operating system is stored in EPROM and configuration information is stored in battery-backed RAM. Both EPROM and RAM are mounted on the system CPU.

The system utilizes time division switching techniques, and  $\mu$ (mu)-law 255 pulse code modulation. The voice bus is divided into time slots. These time slots are used for CPU functions, paging and conferences, and voice connections. Each port is provided a time slot, thus a conversation between two ports uses two time slots. This arrangement of time slots provides a telephone system which is non-blocking between ports. The system also has a user data bus, independent of the voice data bus. This parallel architecture allows for simultaneous voice and user data operation.

Four input/output ports are provided for communications to the system. These ports are used for the operator terminals, programming terminals, and serial printers. Two of these ports are configured for an RS-232-C connection. The remaining two are configured for an RS-422 connection. These connections are made via a single cable connected to the system backplane and then divided on the Main Distribution Frame (MDF). An additional 6 I/O ports can be added to the system with the use of the *Expanded Data Control Module*.

The system is equipped with a built in 300/1200 baud MODEM. This MODEM can be used for remote programming, and remote diagnostics.

### 1.3 TELEPHONE SETS

#### 1.3.1 DIGITAL TELEPHONES

Digital telephone sets are available in the following sizes:

- A digital display telephone with 20 programmable keys, 3 'soft keys' and a 64 character liquid crystal display.
- 28-key digital telephone with 22 programmable keys.
- 17-key digital telephone with 11 programmable keys.
- 6-key digital telephone.

All digital telephone sets have 6 fixed function keys. These keys are the HOLD key, TR/CON (TRansfer/CONFerence) key, VOLUME UP and DOWN keys, PROGRAM key, HF (Hands Free) key on the 28-key and 29-key display telephones, VA (Voice Announce) key on the 17-key telephone, and an OUT key on the 6-key telephone.

The multiple-key stations access CO lines and system features through the use of the programmable feature keys. Light Emitting Diodes (LEDs) indicate the status of all calls and features in use. The 29-key digital display telephone, and the 28-key digital telephone are fully featured, hands free telephone sets. The 17-key digital telephone is a voice announce telephone. The station may be used hands free for internal calls only. The digital single line telephone does not have hands free or voice announce capability.

The stations are connected to station ports by means of industry-standard twisted 2-pair cable. However, it is recommended that 4 pair cable be used to allow for future use. Both pair of wires are required for the telephone to function. One pair transmits digitized voice information and control signals from the system to the telephone. The other pair receives digitized voice information and control signals from the telephone. Each station has two digital channels to the station port card. The primary channel is used for voice communications. The secondary channel is used with Display Phones for either an off-hook second voice path, or for the Data Feature.

### 1.3.2 ELECTRONIC TELEPHONES

EZ-1 electronic 26-key and 14-key telephones may also be used with the system through the use of the Electronic Phone Interface (IEPI).

### 1.3.3 SINGLE LINE TELEPHONES

A standard DTMF dial (2500-type) single line telephone set may also be used with the system with the use of an OPX port card, or with an OPX (Off Premise eXtension) Interface connected to one of the digital station ports. The OPX Interface can provide power failure transfer.

### 1.3.4 INTEGRATED OPERATOR TERMINAL

This a CRT terminal which gives a visual display of office calling activity, an accompanying keyboard used in conjunction with the terminal to give it commands, and a handset. The terminal is connected to one of the input/output ports. The operator station also requires a connection to a station port.

### 1.3.5 OPERATOR STATION

A telephone with up to three DSS Consoles programmed to work with the telephone may be used as an operator station. The telephone and each DSS Console require a connection to a digital station port. In addition to the features available to all telephones, the operator also has the ability to program System Speed Dial numbers, activate Background Music over an external paging system, and program certain other system features.

### 1.3.6 DSS CONSOLE

The DSS Console is the size of the 17-key telephone and has 44 programmable buttons. These buttons can be programmed with any of the key codes used with a 28-key telephone. The DSS is equipped with a speaker for audible tones. Three DSS Consoles can be assigned to one extension. The maximum number of DSS consoles supported by the 228 and 432 port configurations is 40. The 228 port configuration requires software version 5.26, or higher, to support DSS Consoles. All software versions of the 432 port configuration support the DSS Console.

### 1.3.7 DIGITAL VOICE ANNOUNCER

The Digital Voice Announcer is a device that can answer a call and play a pre-recorded message (up to 65 seconds long) to the caller. One digital station port is required for each Digital Voice Announcer. The Digital



Voice Announcer can be used in applications that require a recorder (e.g., ACD Recorders, or Answering devices for Auto Attendant). This device takes the place of a recorder connected through an OPXI to the system. The Digital Voice Announcer is not able to answer a line that is programmed to ring directly to it. Furthermore, a line cannot be transferred to this device.

The recorded message of the Digital Voice Announcer is retained by a battery in the event of a power failure. The battery will retain the message for 24 hours. The 228 port configuration requires software version 4.51, or higher, to support Digital Voice Announcers.

## 1.4 TRUNKS

The system supports either loop start or ground start trunks. These lines may be either DTMF signal or pulse signal. The system can also be used with Direct Inward Dial service. The E&M Tie Line Combination port card allows the connection of 2-wire, E&M type II signal, tie lines to the system.

## 1.5 CABINET AND BACKPLANE

The cabinet-backplane combination is where all circuit boards are installed. The cabinet-backplane (p/n 15200) contains connectors for 24 circuit cards. There are 19 connectors for port cards (station, CO lines, etc.), one for the CPU or ECPU, one for the Voice Control Module or Expanded Voice Control Module, one for a Data Control Module or Expanded Data Control Module, one for a Fiber Mux card, and one position for future use. The card connectors are labeled J1 through J24 and are numbered from left to right. The connectors are offset for the different types of circuit cards to avoid improper installation. The backplane has connections for the input/output ports, background music and music on hold.

Two of these cabinet-backplanes are used to form the maximum 432 port configuration of the system.

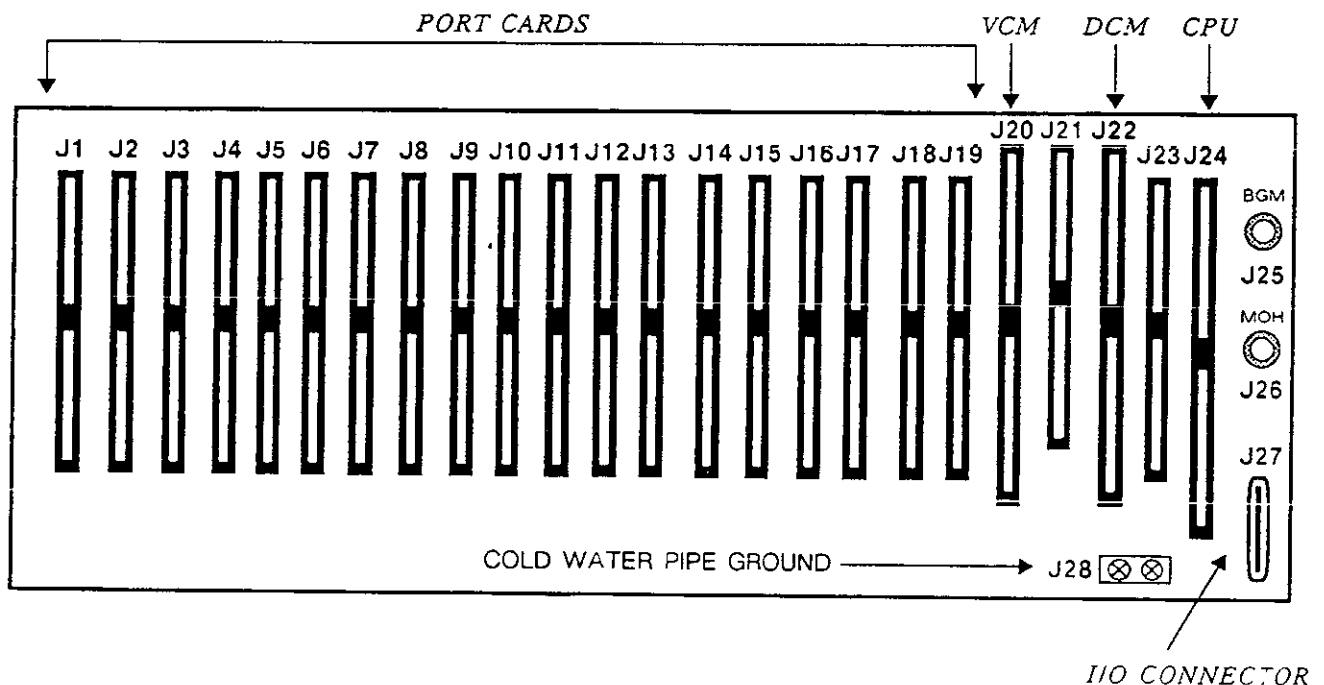


Figure 1-1 Backplane Layout

## 1.6 COMMON CONTROL CARDS

### 1.6.1 CPU

This card is used in the 228 port configuration. The *CPU* (p/n 15300) is responsible for all control functions, execution of all logic operations, and control of system modules. The *CPU* contains a 16 bit microprocessor (the 68000), and is capable of addressing 768 kilobytes of EPROM memory, 64 kilobytes of static RAM, 192 kilobytes of battery backed static RAM, and a real time clock. The circuitry for 4 input/output ports (2 RS-232 and 2 RS-422) is mounted on the *CPU*. The system reset switch is located on the *CPU*. System software, which is provided in EPROM memory, is installed on the *CPU*.

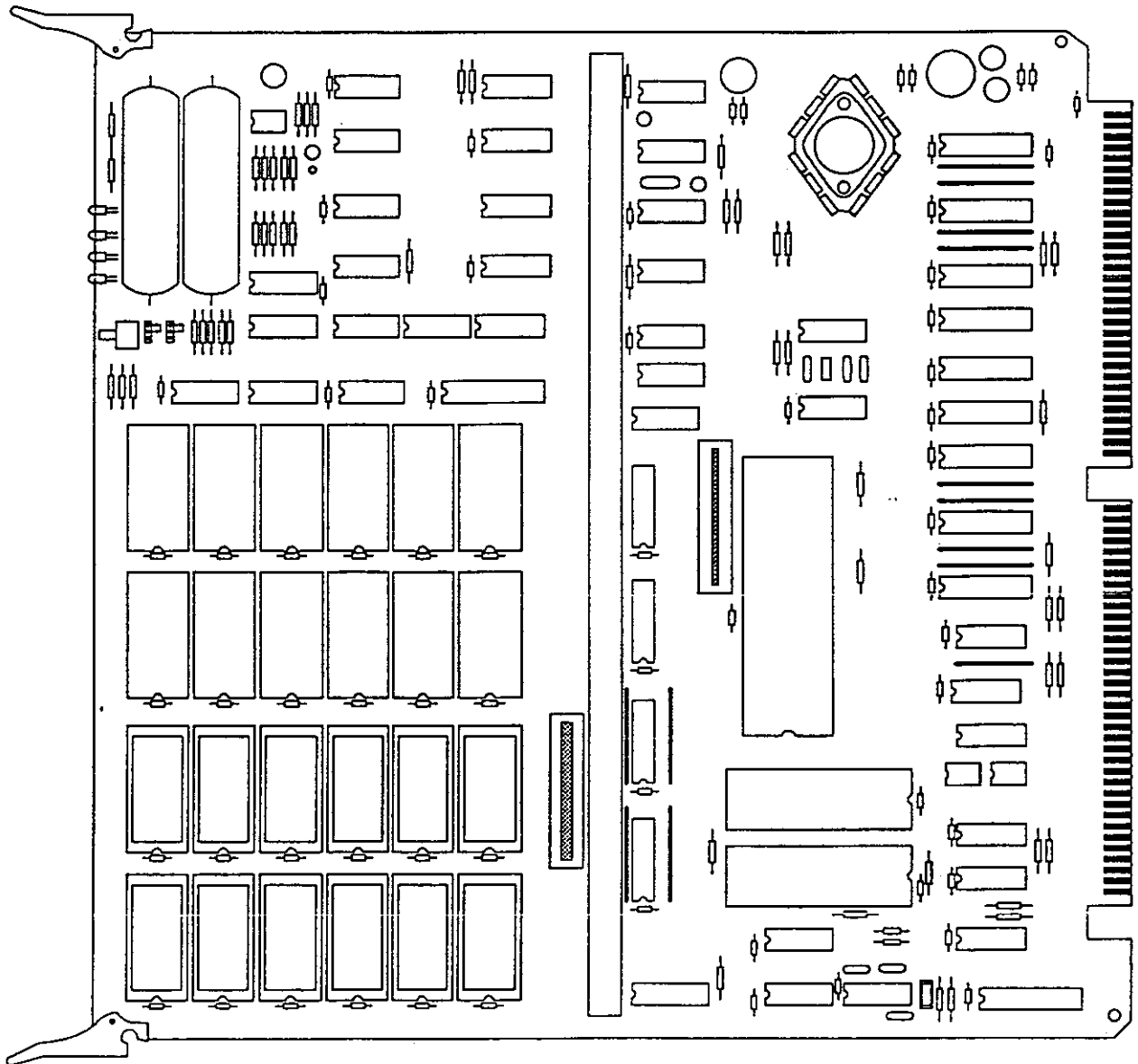


Figure 1-2 CPU

### 1.6.2 MEMORY MODULE IV

The Memory Module IV is used to expand the memory available on the CPU part number 15300. The internal structure of the system software for the 228 port configuration was changed to make room for feature enhancements. The software instructions for features which make use of the Memory Module (for example, Call Accounting Reports Option) have been moved from the EPROMs which reside on the CPU to EPROMs which reside on the Memory Module. The Memory Module IV (p/n 15280) was designed to support this change. This Memory Module is a direct replacement and is backward compatible with the Memory Module III (p/n 15290). The Memory Module IV can be used in any application requiring a Memory Module III when using software version 228-6.54 and below.

Beginning with software version 228-6.73, a Memory Module IV is required if any of the following features are to be installed in the system:

- Call Accounting Reports Option (either package)
- Any package of Automatic Call Distribution (ACD)
- Auto Attendant
- Large Verified Forced Account Codes (LVFAC)

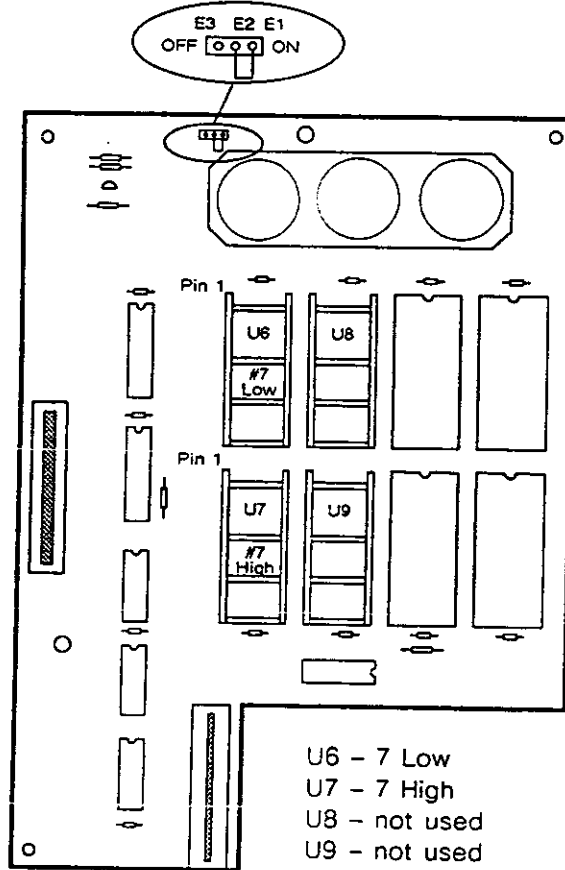


Figure 1-3 Memory Expansion Module IV

### 1.6.3 VOICE/DATA CONTROL MODULE

This card is used in the 228 port configurations. The *Voice/Data Control Module* (p/n 15460) contains the circuitry necessary for voice switching, paging, and conference connections. The VCM/DCM is responsible for all system tones, system timing, and station status control. The VCM/DCM contains the DTMF tone generators, a DTMF tone receiver, the circuitry and connections (two RCA type jacks) for background music and music on hold, and the system MODEM. One *Voice/Data Control Module* is required per system.

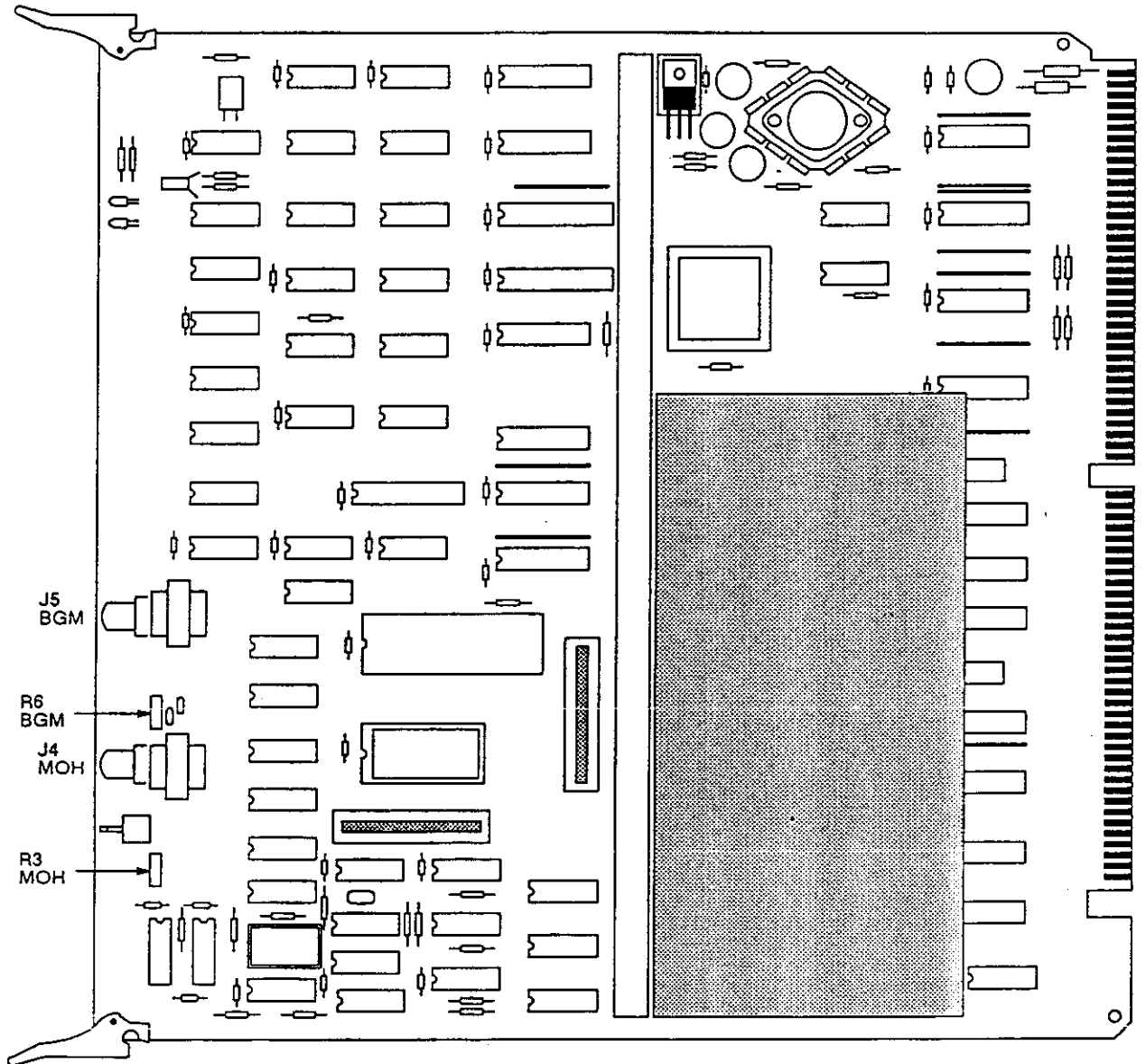


Figure 1-4 Voice/Data Control Module

### 1.6.4 EXPANDED CPU

The Expanded CPU is used in place of the CPU (p/n 15300) when two cabinets (part number 15200) are connected together. The ECPU (p/n 21650) is responsible for all control functions, execution of all logic operations, and control of system modules. The ECPU contains a 16 bit microprocessor (the 68000), and addresses one megabyte of EPROM memory, one megabyte of battery-backed static RAM, and a real time clock. The circuitry for 4 input/output ports (2 RS-232 and 2 RS-422) is mounted on the ECPU. The system reset switch is located on the ECPU. System software, which is provided in EPROM memory, is installed on the ECPU. Two ECPUs are required for the system. The same version software must be installed on both ECPU cards.

**NOTE:** The reset button on the ECPU in Cabinet 1 must be pressed for at least three seconds before the system resets.

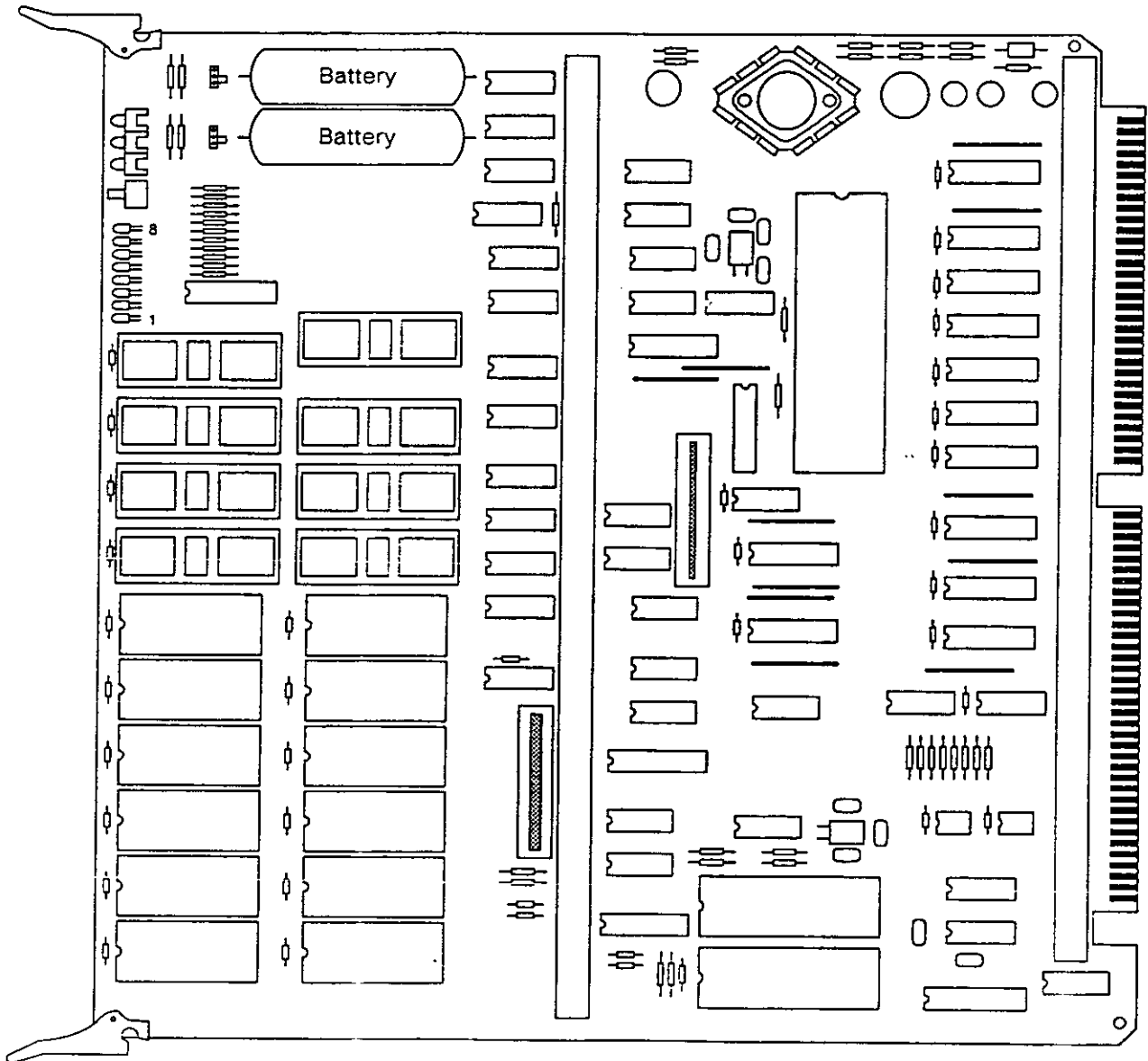


Figure 1-5 Expanded CPU

### 1.6.5 EXPANDED VOICE CONTROL MODULE

The Expanded VCM is used in place of the VCM/DCM (15460) when two cabinets (part number 15200) are connected together. The Expanded Voice Control Module (p/n 21640) contains the circuitry necessary for voice switching, and is responsible for all system tones, system timing, and station status control. The EVCM contains the DTMF tone generators, a DTMF tone receiver, the circuitry and connections for background music and music on hold, and the system MODEM. Two Expanded Voice Control Modules are required per system. A flat ribbon connector is used to connect the EVCM to the FIBER MUX card in each cabinet.

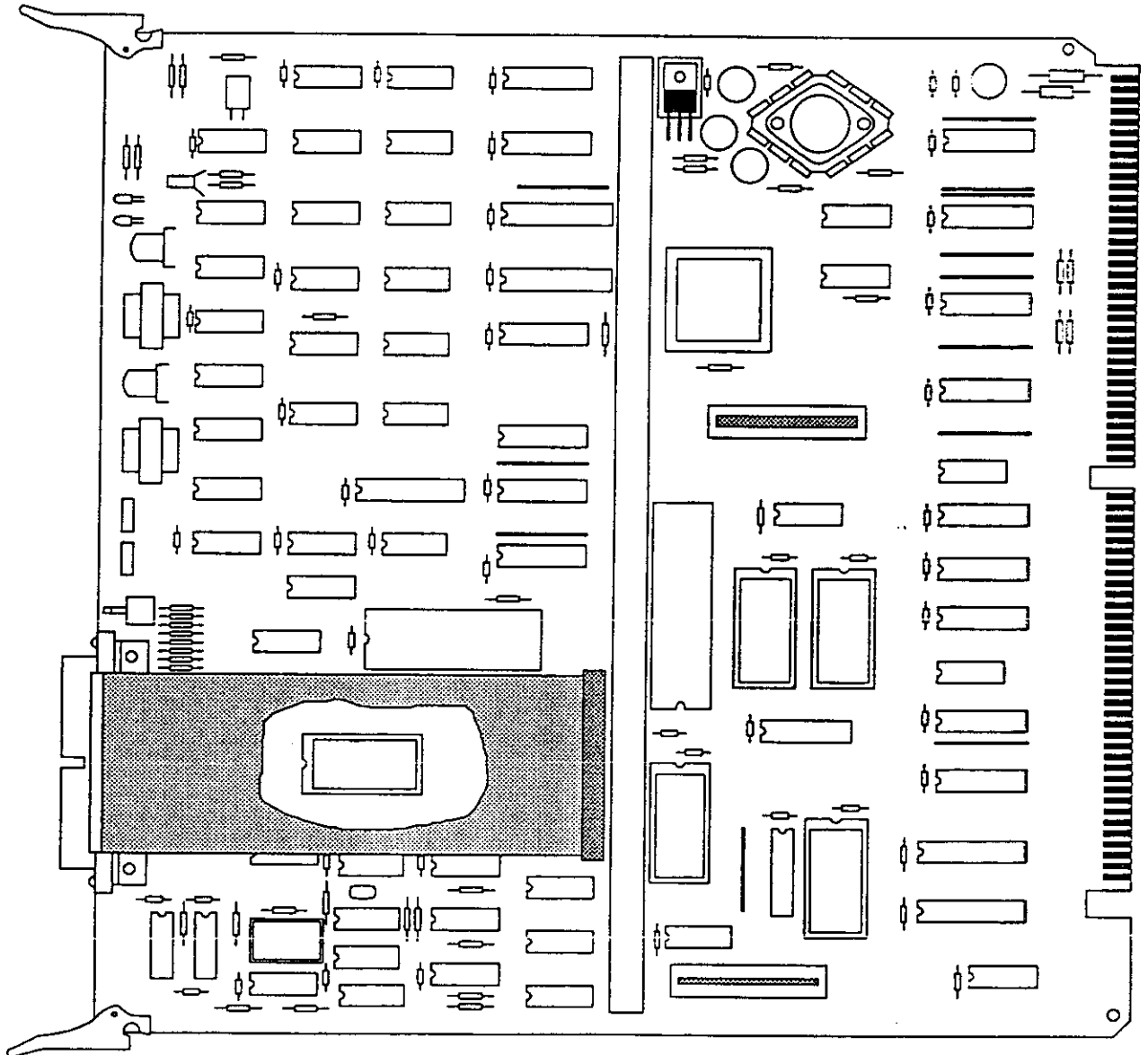


Figure 1-6 Expanded Voice Control Module

### 1.6.6 EXPANDED DATA CONTROL MODULE

The Expanded DCM is used in either the 228 or 432 port configurations. The Expanded Data Control Module (p/n 21660) contains the circuitry necessary to establish user data connections. One Data Control Module is required if user data is to be transmitted through the 228 port configuration. Two Data Control Modules are required if user data is to be transmitted through the 432 port configuration. A flat ribbon connector is used to connect the EDCM to the FIBER MUX card in each cabinet. The EDCM adds six input/output ports to the system. These ports are accessed using the *Data Feature*.

**NOTE:** A station port used to access an Input/Output port on the EDCM (ports 5-10) must be located in Cabinet 1 of a 432 port configuration.

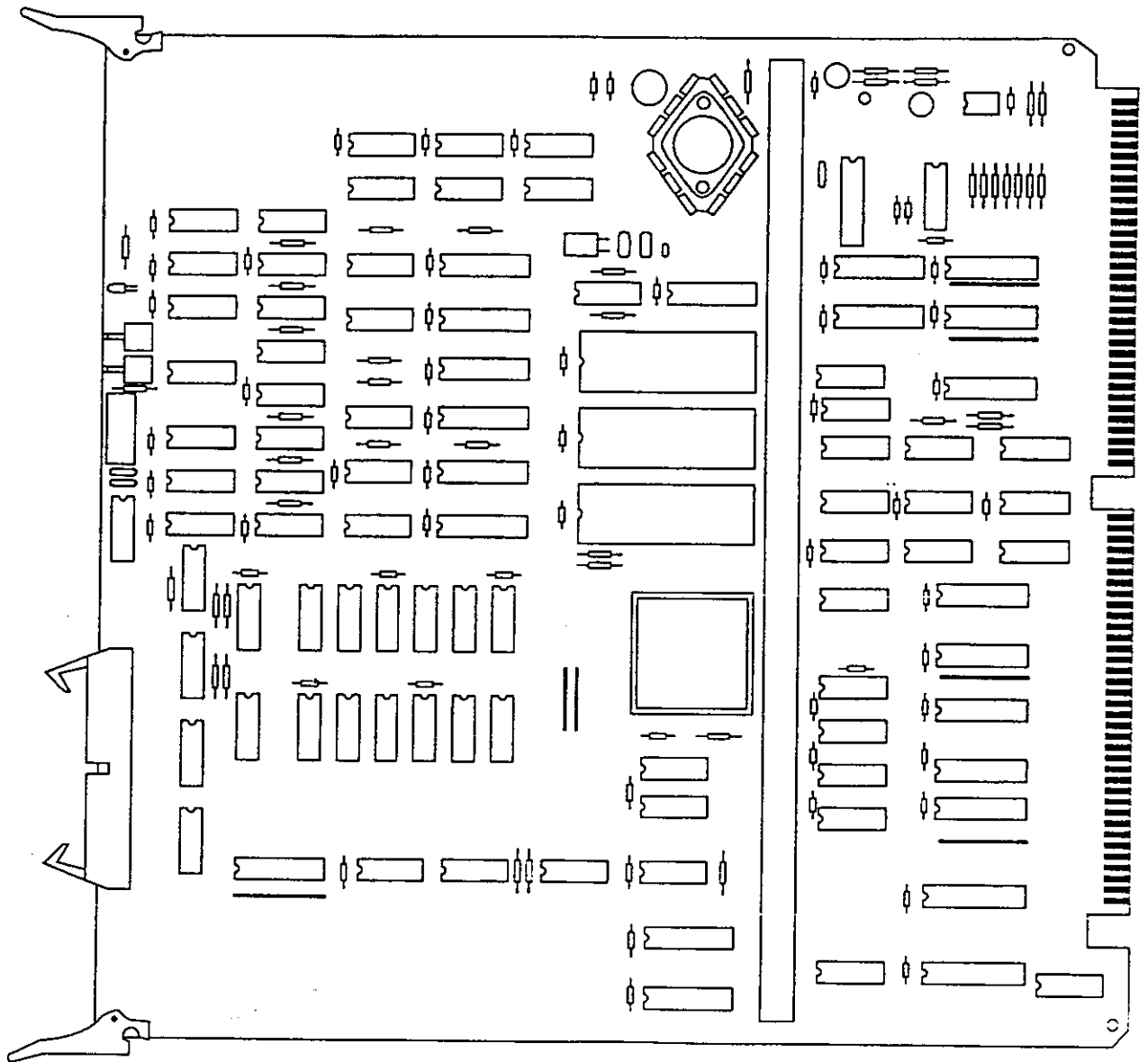


Figure 1-7 Expanded Data Control Module

### 1.6.7 FIBER MUX CARD

This card is used when two cabinets (part number 15200) are connected together to form the 432 port configuration. The Fiber Mux card (p/n 21630) is used to establish the communications link between the two cabinets. A fiber optic cable with two fiber cores is used to pass voice, user data, CPU control, and clock information between the two cabinets. The Fiber Mux card receives this information from the backplane, encodes, serializes, and puts this information on the fiber optic cable. Information received on the fiber optic cable is converted from serial to parallel, split into voice, user data, and CPU communications. The voice is sent along the ribbon cable to the EVCM. The user data is sent along the ribbon cable to the EDCM. The CPU communications are passed via the backplane to the ECPU. A dip switch on the Fiber Mux card is used to identify the cabinet the card is installed in as Cabinet 1 or Cabinet 2. This switch must be set before installing the card in the cabinet. One card is required in each cabinet. The Fiber Mux card supports two transmit and two receive channels. Only the first of each is used with the system.

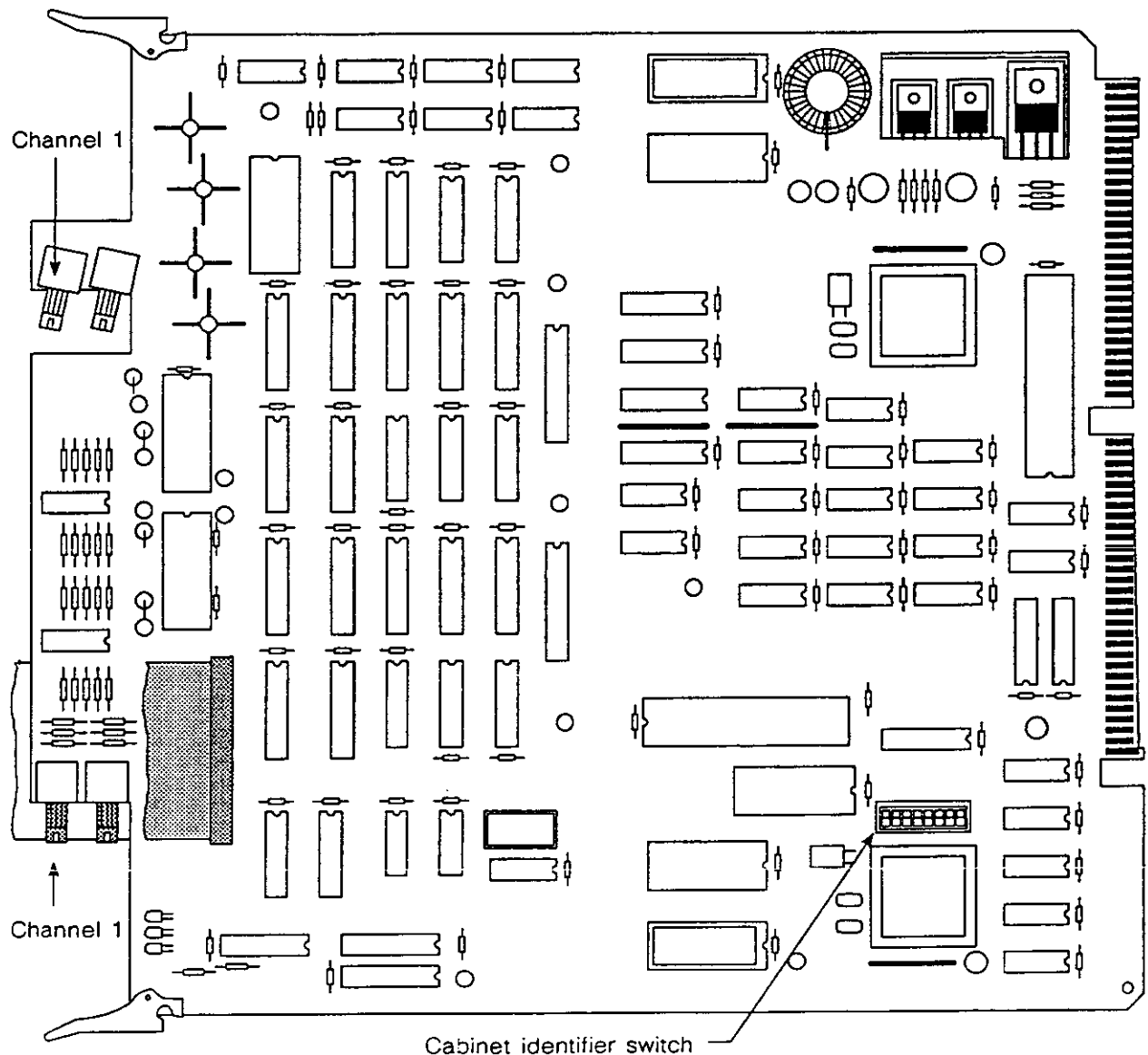


Figure 1-8 Fiber Mux Card



### 1.6.8 CONFERENCE PORT CARD

This card is used when two cabinets (part number 15200) are connected together to form the 432 port configuration. The Conference Port Card (p/n 21600) contains the support circuitry for conference calls and paging. This card is usually installed in the first station slot (J19), but may be installed in any port card slot. At least one card in each cabinet is required for system operation. A Conference port card provides 12 conference/page ports. A conference/page port is used in each cabinet whenever a conference call or page is made. One card in each cabinet is suitable for most applications, but more can be added to the system as needed. Conference port cards are added in pairs.

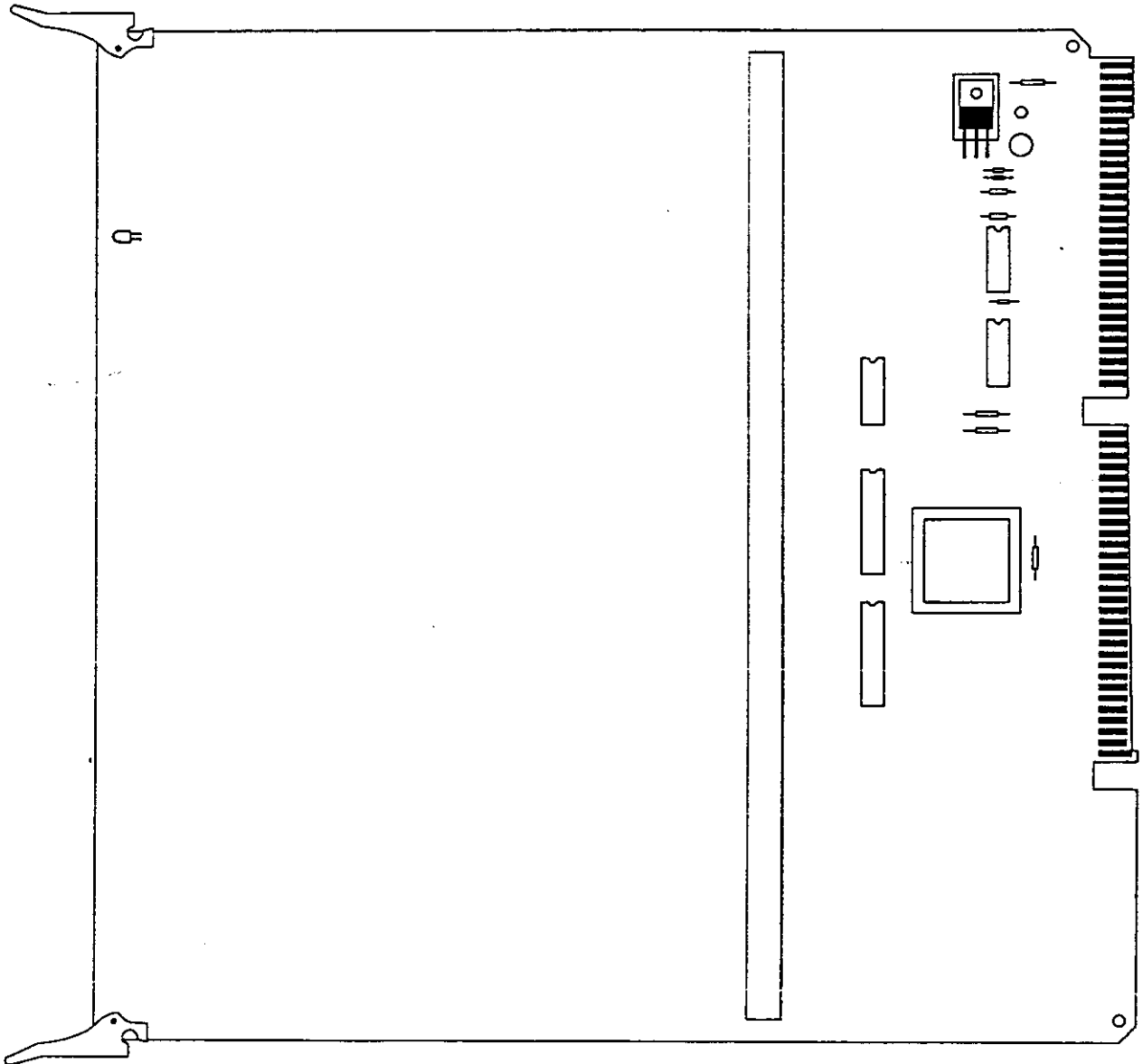


Figure 1-9 Conference Port Card

## 1.7 PORT CARDS

Unless otherwise noted, all port cards can be installed in both the 228 and 432 port configurations of the IDS.

### 1.7.1 LSI STATION PORT CARD

The *LSI Station* port card (p/n 15700) contains the circuitry necessary to connect 12 digital telephones to the system. This card also has the circuitry necessary to support an external page. The external paging system is connected to the station port card via the main distribution frame. The screw connector terminal on the outside edge of the card is not used at this time. There should be no connection made to this terminal. With the use of the LSI Station port card, digital telephones can be placed a maximum of 2000 feet from the cabinet using 24 gauge, industry-standard twisted-pair cable.

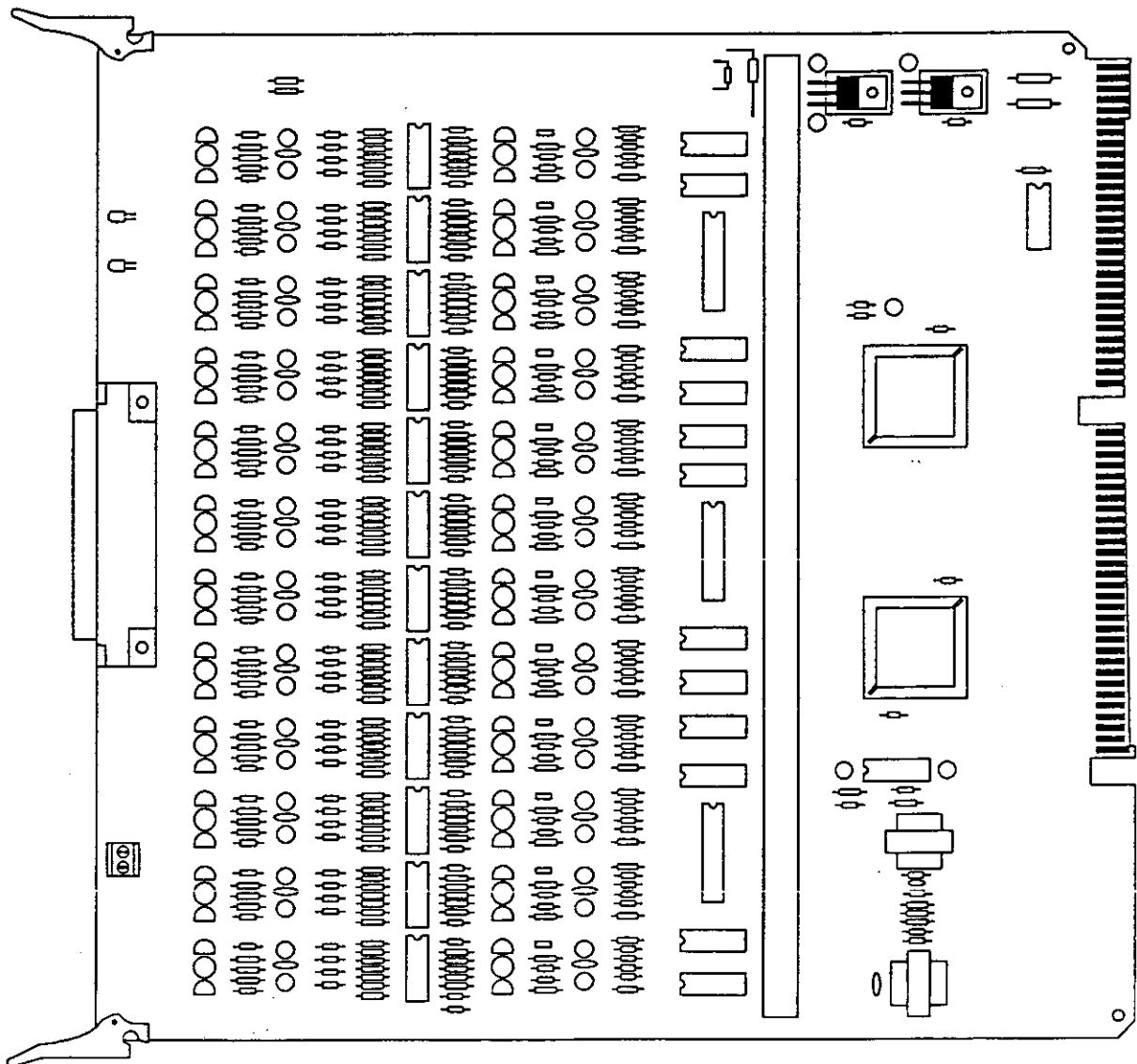


Figure 1-10 LSI Station Port Card

### 1.7.2 LOOP/GROUND START TRUNK II PORT CARD

The *Loop/Ground Start Trunk II* port card (p/n 15590) is an LSI version of the *Loop/Ground Start Trunk* port card which provides connections for 12 loop start or ground start trunks to the system, and contains the circuitry for ring detection, pulse dialing, line seizure, and the analog/digital converters.

Dip switches on the LSI version of the port card select between loop and ground start operation. The switches are located near the outer edge of the board. Set 2 switches per circuit as follows: open for loop start operation and closed for ground start operation.

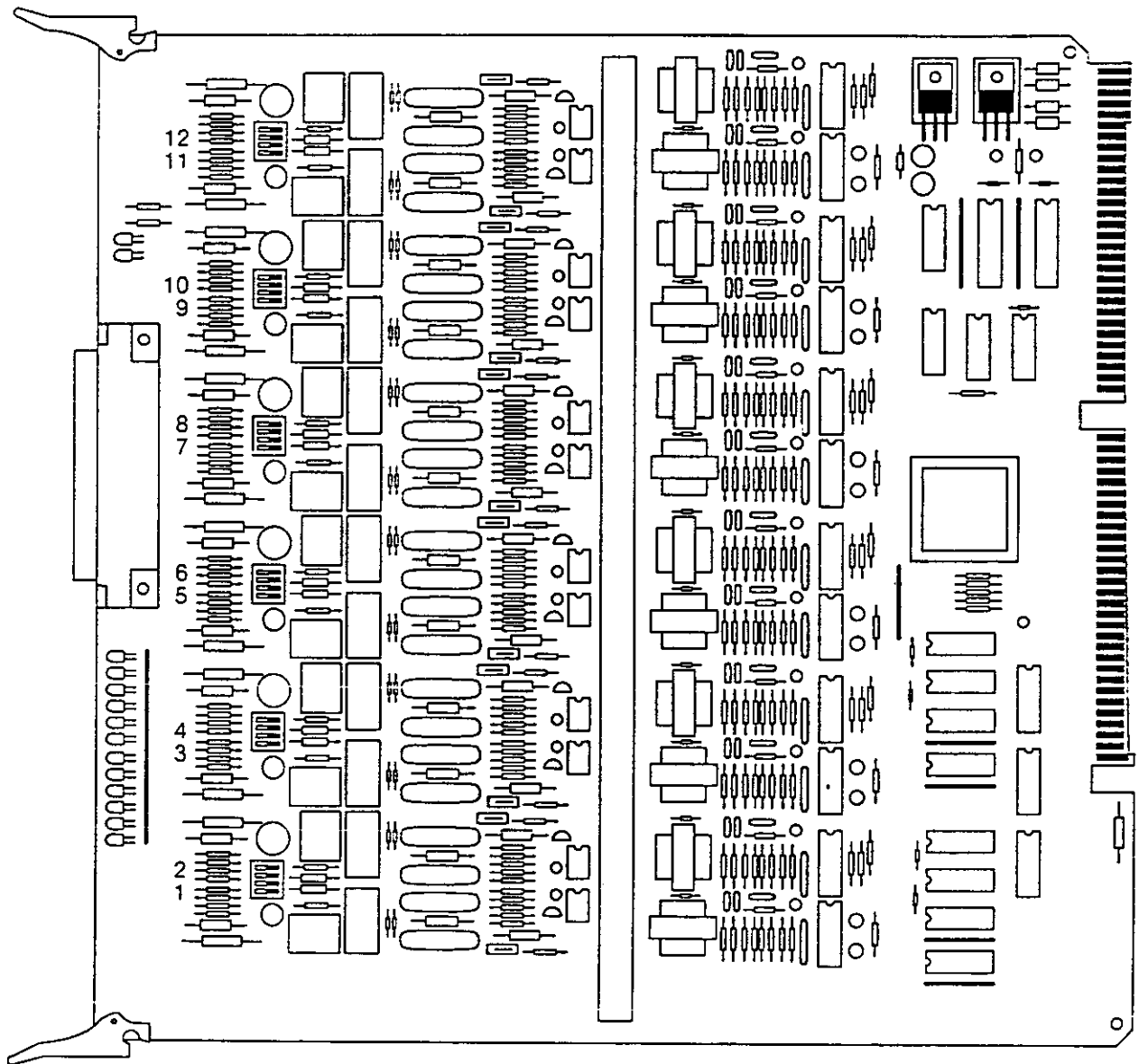


Figure 1-11 Loop/Ground Start II Port Card

### 1.7.3 DIRECT INWARD DIAL PORT CARD

The *Direct Inward Dial* port card (p/n 15610) provides connections for 12 DID lines to the system. The DID port card is used with pulse (rotary) signal, wink start DID lines only. The *Direct Inward Dial* port card requires an externally supplied 48 volts DC. The system can accept from 2 to 7 digits from the Central Office.

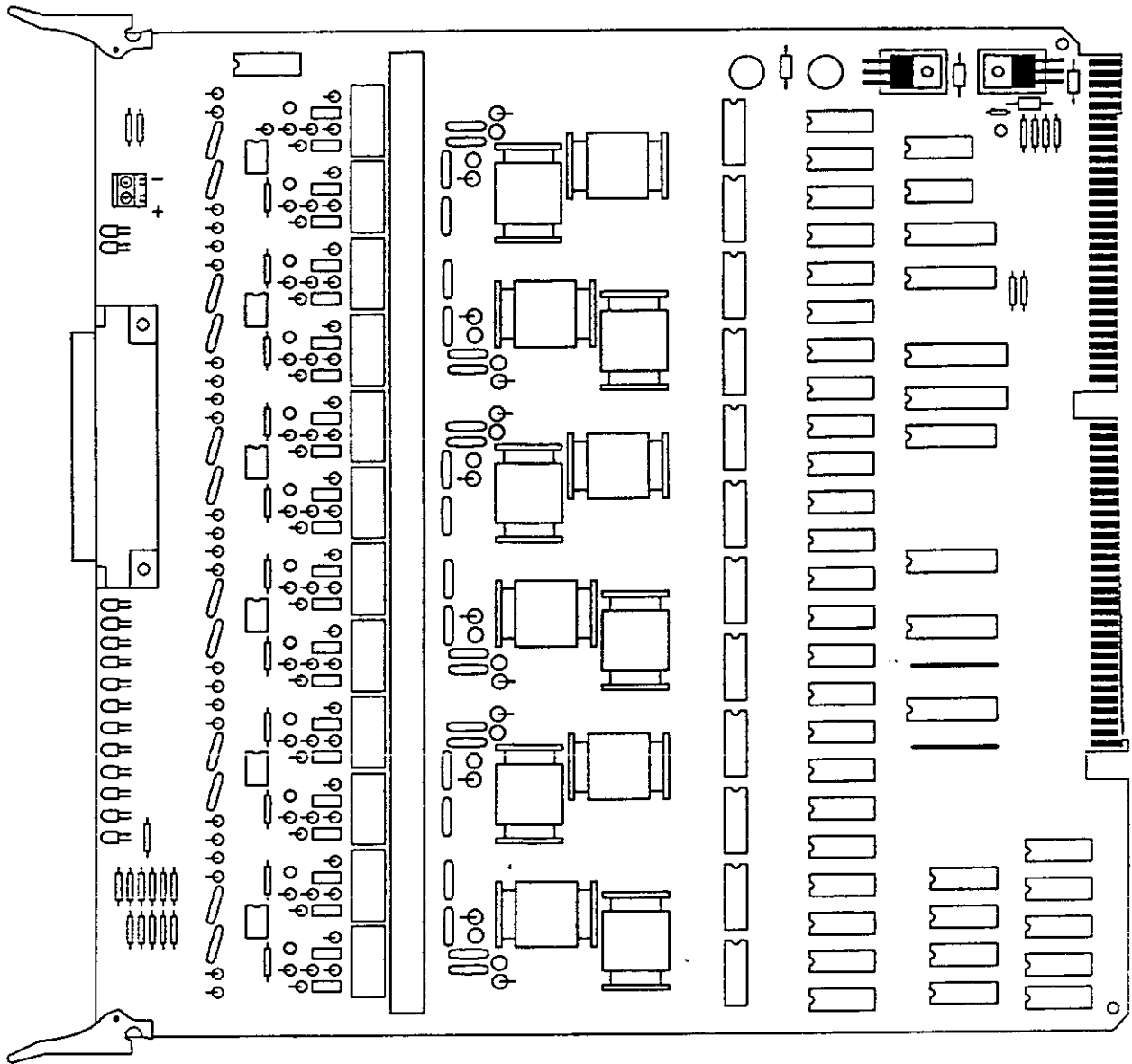


Figure 1-12 DID Port Card

### 1.7.4 DTMF RECEIVER COMBINATION PORT CARD

The *DTMF Receiver Combo* port card (p/n 15650) is used with the system's built-in Automated Attendant feature, with OPX port cards, and can be used with the DISA feature. This card provides six digital station ports, and six DTMF receiver ports. The Data Feature and second voice path are not available for the digital stations connected to this combination card.

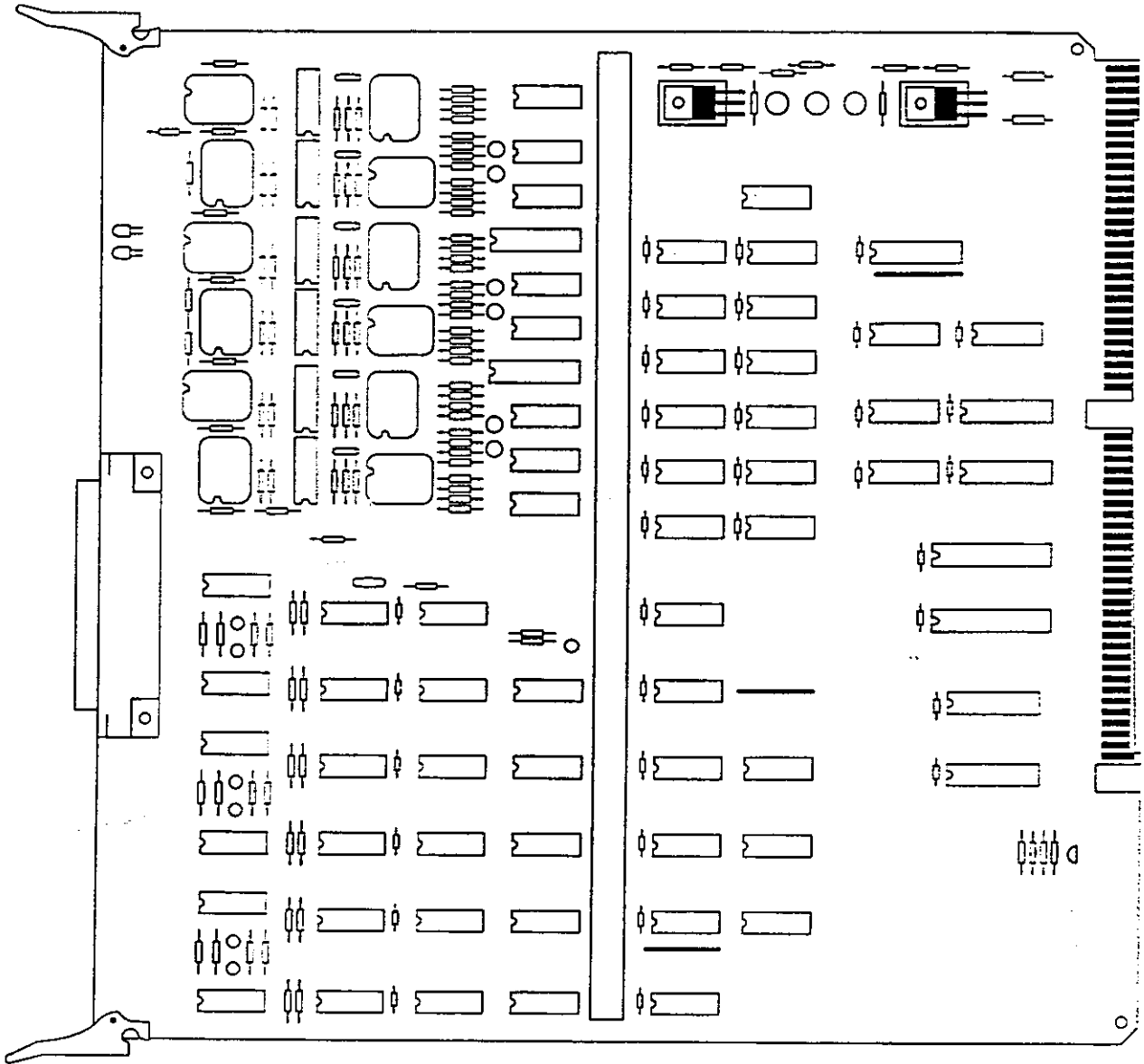


Figure 1-13 DTMF Receiver Port Card

### 1.7.5 OPX LSI PORT CARD

The *OPX LSI* port card (p/n 15660) provides the circuitry necessary to connect 8 conventional tip and ring, DTMF device such as 2500-type telephones, Voice Message System ports, loud ringing bells, or OPXs (Off Premise Extensions). A DTMF Receiver port card must be installed in the system. The *OPX LSI* port card requires an externally supplied 48 volts DC, and ring generator power supply. The *OPX LSI* port card does not support rotary dial telephones. There is no power failure transfer on this card.

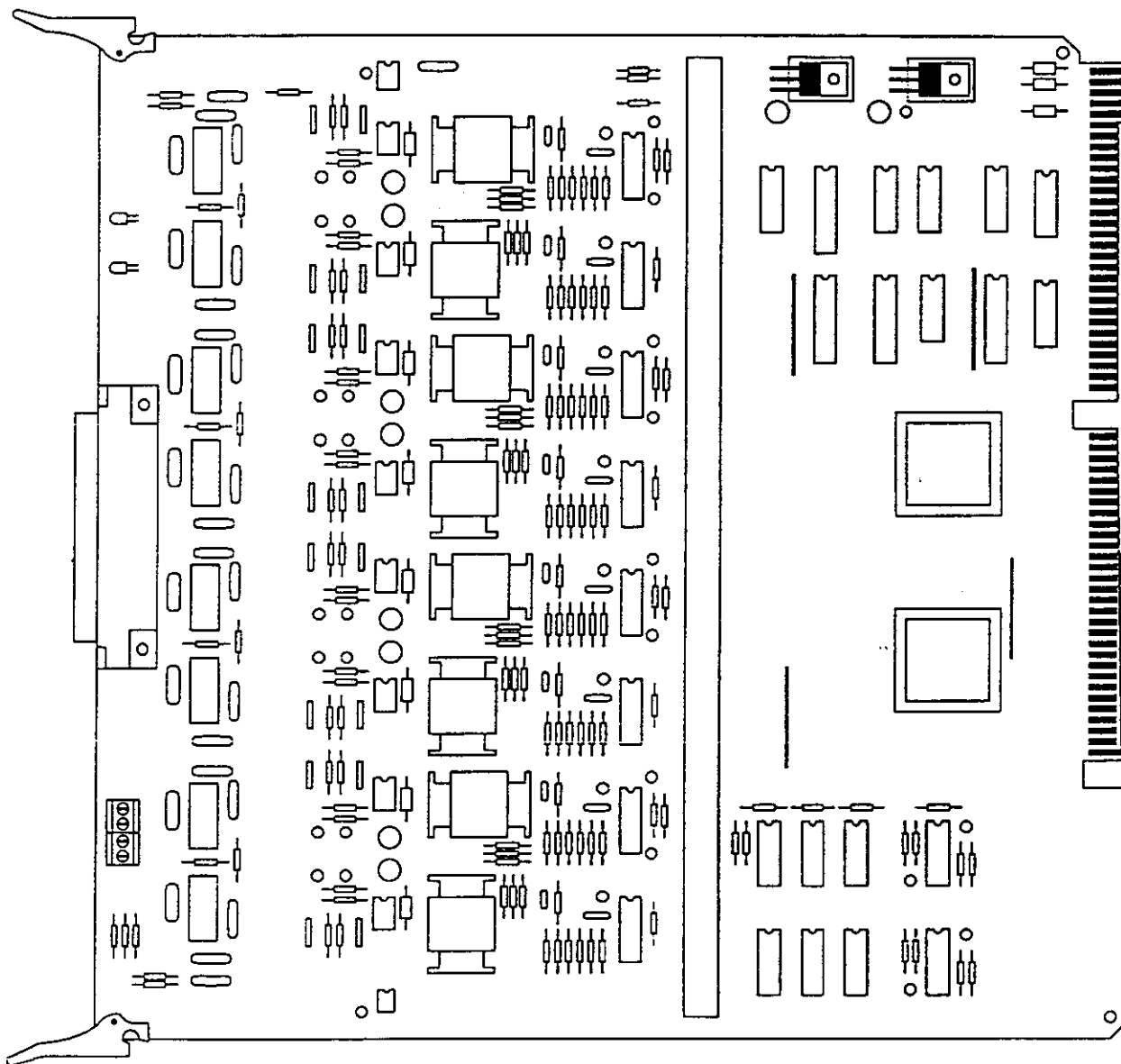


Figure 1-14 OPX LSI Port Card

### 1.7.6 E&M TIE LINE COMBINATION PORT CARD

The *E&M Tie Line Combination* port card (p/n 15680) provides the connection for four 2-wire, E&M type II signal, tie lines. The card supports 6 digital telephones and 4 E&M Tie Lines. The Data Feature and second voice path are not available for the digital stations connected to this combination card.

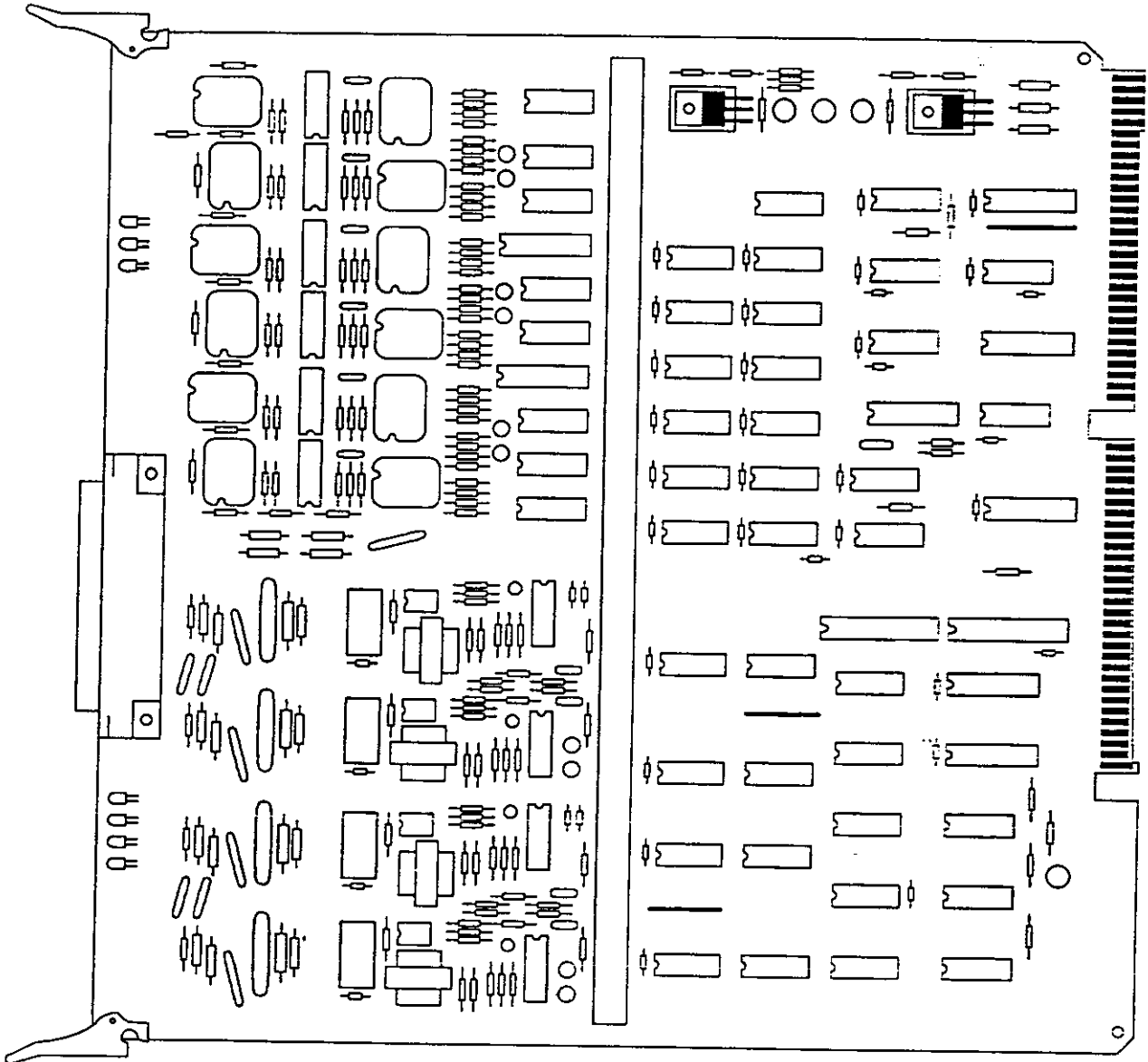


Figure 1-15 E&M Tie Line Combination Port Card

## 1.8 POWER SUPPLIES

The primary power supply is mounted on the right side of the cabinet and supplies the system voltages to the common control cards and the first 9 port cards (installed in slots J11 through J19). Installation of more than 9 port cards will require the addition of a second power supply. This second power supply is mounted on the left side of the cabinet. The same power supply (p/n 15100) is used for mounting on either side of the cabinet.

A 432 port configuration requires 4 power supplies (2 for each cabinet) regardless of the number of port cards installed.

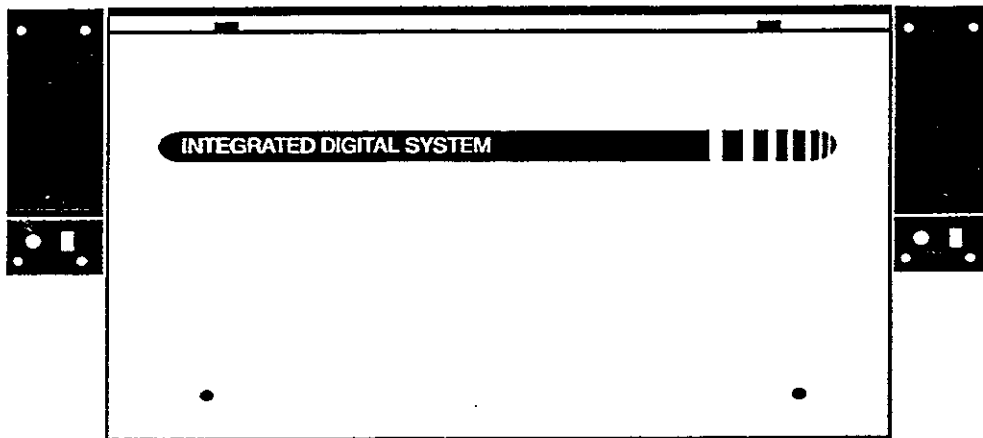


Figure 1-16 System Cabinet With Power Supplies

## 1.9 SYSTEM TONES

LCR Dial Tone	LCR dial tone is a continuous dual frequency tone received when accessing Least Cost Routing. (350 Hz and 440 Hz)
Outside Line Dial Tone	Outside line dial tone is a continuous dual frequency tone received when accessing a Central Office line.
Ring	The audible signal a station makes when it is being signaled.
Ring-back tone	The audible tone received by a caller which indicates that the called station is ringing.
Busy Tone	The tone received by a caller when the called station is busy.
Reorder Tone	A fast busy tone indicating a miss dial, time out, or some other improper operation.
Confirmation Tone	A tone consisting of four short beeps received to indicate the successful completion of a feature.
Camp-on Tone	The tone received by a called station to indicate that a call is waiting.



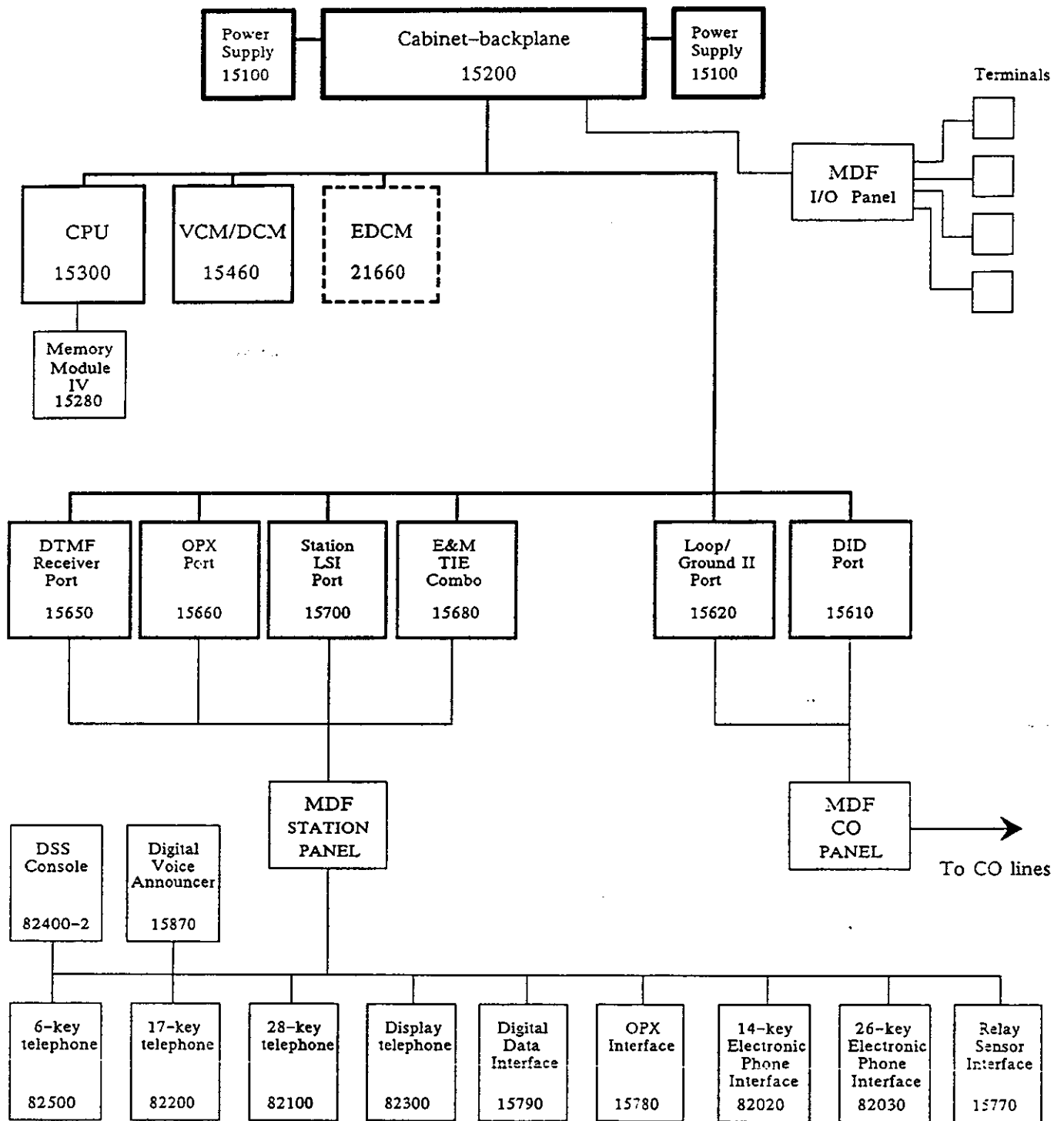


Figure 1-17 228 Port IDS Block Diagram

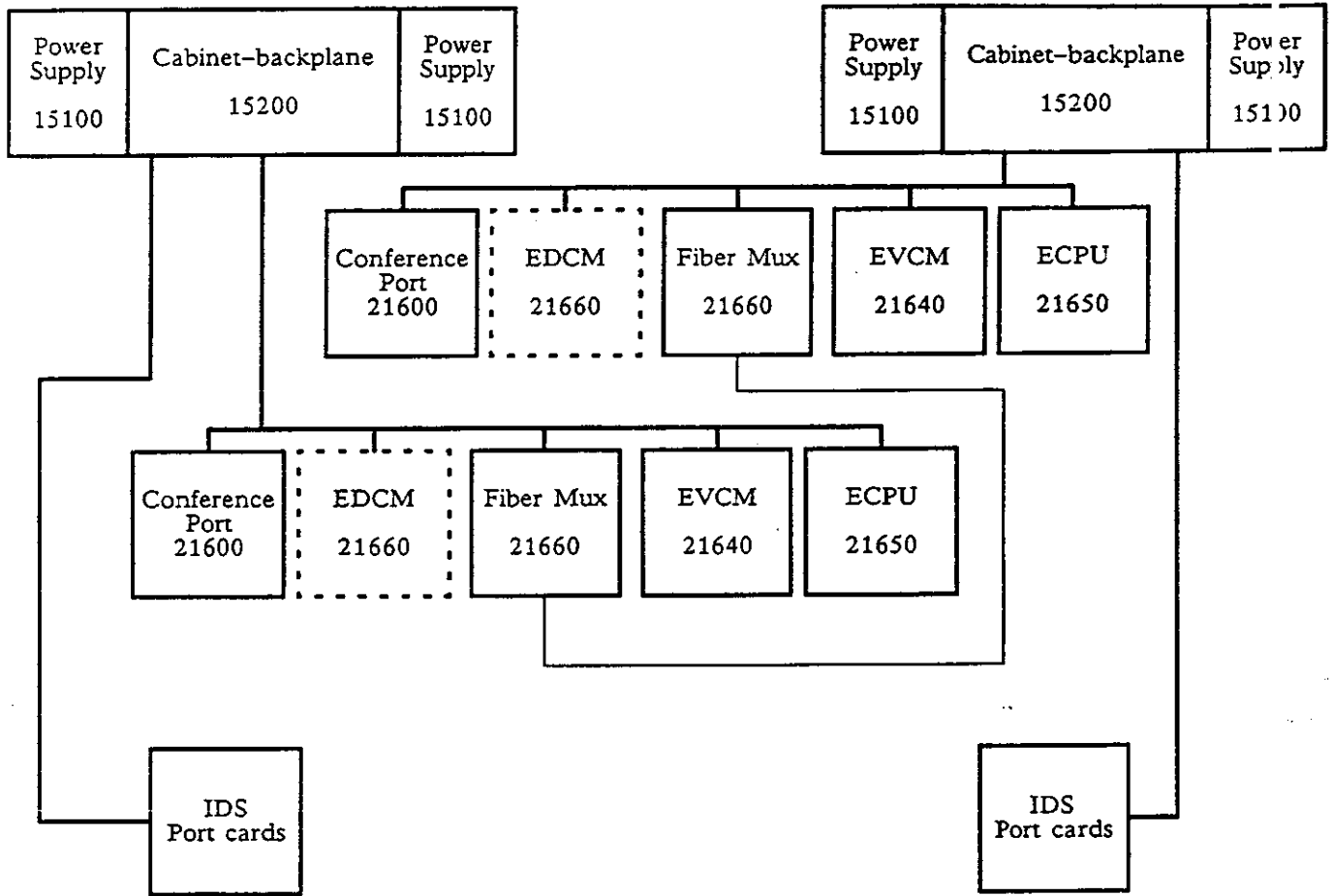


Figure 1-18 432 Port IDS Block Diagram

## 1.10 FEATURES DESCRIPTION

Account Codes	An account (or client) code of up to ten digits can be added to the SMDR call record for both incoming and outgoing calls.
Add On Conference	An Add On conference allows an internal station user to converse with up to 9 other parties on the same call. Two of these other parties may be outside line calls.
Alarms Programming	A new trouble-shooting tool, called the <i>Alarms</i> programming screen, has been added to system diagnostics. The screen is divided into two areas. The first area is used to program the system to count the number of times an error condition is detected, and provide an indication of a Major or Minor Alarm to the Operator Terminals. The second area provides information which can be used to trouble-shoot the cause of the alarm.
Alternate Dialing	Alternate Dialing is an optional feature that permits the station user to dial [8] and [9] to access outgoing trunks.
Auto Answer	A ringing CO line may be answered by lifting the handset without having to press the Outside Line key.
Automated Attendant	The system has an optional built-in Automated Attendant which can answer outside line calls, provide the caller with a greeting message and instructions on how to dial the party they desire. The Auto Attendant can route calls to individual extensions, hunt groups, ACD groups, the voice message system, or the system attendant. The system provides six different answering groups. Each group can be assigned one of four different dialing plans.
Automatic Call Distribution	<p>ACD is an optional feature of the system which allows a large volume of call processing to be handled by a small number of individuals. If someone is not available to answer an incoming call, the system can be directed to answer the call, and provide the caller with a recorded message or music until someone is available to process the call.</p> <p>There are four ACD feature packages available. The Basic package is the ACD call handling system alone. The Dynamic feature package adds two real time system information displays using the programming terminal. The Advanced feature package adds statistical information reports to the Dynamic package. The Custom feature package allows the customer to design statistical reports to their individual requirements.</p>
Auto Pickup	This is a system feature which optionally allows Direct Station Selection keys to be used to answer calls ringing on stations monitored by DSS keys. This feature is enabled on a system wide basis.
Auto Second Path	Second path is a feature of a display telephone which allows internal callers to reach the display phone when it is busy with another call. An extension with auto second path will receive second path calls whenever their extension is busy on the handset. Without auto second path, a caller must dial a code to activate the called station's second path.

## Introduction

<b>Auto Transfer</b>	If a station has a DSS (Direct Station Selection) key programmed for the extension to which a call is to be transferred, and the station has auto transfer active, an incoming call can be transferred by pressing the programmed DSS key.
<b>Background Music</b>	If music is connected to the system, it is available at all stations through the station's hands free speaker.
<b>Bad Line Key</b>	A feature key which is used to identify a bad facility or a bad line within a facility.
<b>Barge In</b>	This feature allows an authorized station user to enter into an existing conversation.
<b>Barge Tone Inhibit</b>	When an existing conversation is entered using the Barge In feature, a tone alerts the persons in the conversation that someone has entered their conversation. This tone can be prevented on a per station basis.
<b>Call Accounting Reports Option</b>	This is an optional feature which stores Station Message Detail Recording information in system memory. This information can then be sorted and summarized by extension or account code.
<b>Call Back (station)</b>	A station user calling a busy extension may use call back to complete the call when the called station becomes free. A queued call remains in the system until both the called party and calling party are available. The system then calls the station which placed the call back using a distinctive ring.
<b>Call Coverage Key</b>	These keys provide a means of answering incoming calls on a station other than the station the call is ringing on. Call Coverage keys can be programmed to ring whenever the primary extension rings, only when it is busy, or to start ringing after an amount of time has lapsed.
<b>Call Diversion</b>	The system can be programmed to answer an incoming call, select an outgoing line and dial the telephone number contained in a system speed dial number. The two lines are then connected together. The system can be programmed to perform this action between certain hours during the week, on Saturday, and on Sunday.
<b>Call Forward</b>	Allows calls to an extension to be automatically routed to another extension.
<b>Call Forward to ACD</b>	An extension can have incoming outside line calls rerouted to an ACD group
<b>Call Forward to VMS</b>	Allows calls to an extension to be automatically routed to the voice message system.
<b>Call Transfer</b>	A call (internal or outside line) can be routed to any extension by any other extension without the assistance of the operator.
<b>Camp-On</b>	When a busy signal is encountered on an internal call or when transferring an outside line call, a tone can be given to the called party to indicate that a call is waiting.

Conference	A conference allows an internal station user to converse with two other parties on the same call. The two parties may be two outside line parties, or one outside line party and one internal party.
Cost Limit	This feature can be used with Least Cost Routing to control the cost of outside line calls made by an extension. This limit can be assigned on a per extension basis.
Data Feature	This is a feature which provides the system with the ability to transmit data from point to point within the system simultaneously with voice transmission. The system is capable of transmitting serial data at Baud rates of up to 38.4 kilobits/sec asynchronously and 56 kilobits/sec synchronously.
Data Hot Line	This key gives the capability to call a data port by pressing a single key, rather than dialing a data port extension number.
Diagnostics	The system is equipped with self-test routines that can be run whenever a technician desires. The tests can be run while the system is still processing calls.
Dial By Name	This feature utilizes the names that are in the <i>Directory</i> programming screen (O screen) to dial intercom calls. This feature must be ordered, and is activated remotely by an authorized Service Center.
Directory	The Directory is used to assign a station user's name to each of the extensions in the system. The extensions can also be grouped together by departments (up to 10 departments). The Operator's station uses this programming to process calls by a person's name as well as extension number.
Directed Call Pickup	A station user may connect to a call ringing at another station if the extension number of the ringing station is known.
Direct Inward Dial	The system can support the use of Direct Inward Dial lines. These lines allow an outside caller to directly dial the telephone number of an extension within the system without the need of the call being handled by the attendant. The system uses rotary dial DID lines, and can accept from 2 to 7 digits from the Central Office.
DISA	Direct Inward System Access - The system can be accessed remotely. This allows a customer to use the system's CO lines from a distant location. The customer can also use DISA to call stations within the system.
Discriminating Ring	A station rings with two short rings when called by another station, and one long ring when an outside line call is ringing.
Display Phone Messages	The Display telephone provides four pre-defined messages which can be programmed by the user. The available messages are: ON VACATION, OUT TO LUNCH, OUT OF TOWN, and IN A MEETING. The user may program only ONE message at a time.
Divert Limit	This is a timer which limits the amount of time two trunks can stay connected together after being connected by the <i>Call Diversion</i> , <i>Call Forward</i> , or <i>ACD Forward To Speed Dial</i> feature.

## Introduction

<b>Do Not Disturb</b>	A station can block all ringing, pages, background music, and barge-in by activating the DND mode.
<b>DSS/BLF Key</b>	Direct Station Selection/Busy Lamp Field Keys – Feature keys may be programmed by the user to enable internal station rapid access. The lamps associated with such keys can be used to provide a visual indication of the status of the extension the key is programmed for.
<b>Exclusive Hold</b>	A call placed on exclusive hold will flash only on the station that placed it on hold, it will light steady on all other stations. Only the station that placed the line on hold can remove the call from hold.
<b>External Page</b>	Each station port card has a page audio path which can be connected to an external paging system. This page path can be used for voice paging, to provide background music, or to provide CO ringing to areas without nearby telephone stations.
<b>Flash Operation</b>	The system can be programmed to imitate the action of flashing the switch-hook (momentary disconnection) on a CO/PBX Line. A flash timer is provided in system programming to adjust the length of the flash.
<b>Flexible Numbering</b>	The extension numbers of the system can begin with any digit 1 through 9. The range of extension numbers is the leading digit plus 001 through 999. Flexible numbering can be used to change the leading digit of any dial access code.
<b>Flexible Ringing</b>	Any outside line can be programmed to ring at any extension. A separate ring assignment may be made per station for day and night mode operation.
<b>Follow Me Class of Service</b>	When using Verified Forced Account codes, the account code can be used to change an extension's toll restriction class of service. Thus, someone with an appropriate account code can use any telephone to place calls regardless of that telephone extension's class of service.
<b>Forced Account Codes</b>	An extension can be programmed to force the entry of an account code (up to 10 digits) before any outside line call is made. The system can also be programmed to verify the entered account code (up to 8 digits) against a table of valid codes.
<b>Ground Start Trunks</b>	The system can support the use of ground start trunks with the Loop/Ground Start Trunk Port card.
<b>Group Pick Up</b>	Stations can be arranged into groups such that a call ringing any station in the group can be answered by any other station using a single key. The advantage of the pickup group is that it is not necessary to know which extension in the group is ringing. There is a total of 36 pickup groups with no limit to the amount of stations assigned to a group. However, a station can only be part of one pickup group.
<b>Hands Free CO</b>	This option can be used to disable the hands free microphone when a station originates an outside line call. The option is assigned on a per station basis.

## Introduction

Hands Free Ext	This option can be used to disable the hands free microphone when a station originates an internal call. The option is assigned on a per station basis.
Hands Free Receive	An option that is used to prevent a station from receiving a call hands free when called internally. The called extension will ring when called.
Handset Barge-In	Handset Barge-In allows the Operator to enter into an existing conversation and announce a waiting call. With Handset Barge-In the outside party does not hear the operator's announcement.
Hunt Group	Stations can be arranged in groups to allow an outside line to be transferred to groups of stations rather than an individual extension. Calls entering the hunt group are routed to the first available station in a circular fashion.
Hunt Pick	Hunt Pick is used in combination with LCR, and is set by the LCR service. The Hunt Pick feature is for those customers that find it advantageous to balance traffic among a group of WATS lines or other lines.
INFOSTAR™/VX	The INFOSTAR™ Voice Exchange is an optional feature which provides the telephone system with an integrated voice message system. Stations can be forwarded such that VX will take messages when the user is away from their extension.
In/Out	This feature key allows a station to indicate to the operator and internal callers that the user is not at the station.
Last Number Re-dial	Each time a number is dialed on an outside line, the telephone number is retained in system memory for that extension until the next outside line call is dialed. The last number that was dialed can then be re-dialed by pressing # digit on the dial pad.
Least Cost Routing	LCR provides the system with a means of routing outside line calls over the least costly route available to the system. The least expensive route for a call is calculated using a programmable average duration of a call. The cost of a call to a given dialed number is calculated for each facility and service a customer has available based on the Average Call Length. In addition, each station can be assigned a class of service for LCR. This class of service determines under what circumstances a more expensive route may be used if all the lines in the least expensive route are busy.
Line Maintenance	Trunks can be removed from service and returned to service through the programming terminal, or the Remote Programming feature.
Meet Me Page	This feature enables a station user to page a person and stay on the line waiting for the paged person to dial the meet me page code from any other station. The two parties will then be connected.
Message Waiting	The message waiting key is used to leave a lamp indication at a called station when an internal caller receives a busy signal or no answer. The called station can use the message waiting key to call back the station that left the indication.

## Introduction

<b>Mute Key</b>	A feature key which allows the microphone and the transmitter in the handset of a station to be attenuated. An outside party will not be able to hear a normal conversation carried out in the room while this feature is active.
<b>Music On Hold</b>	If music is connected to the system, when an outside call is placed on Hold, music is connected to the outside line.
<b>Night Answer</b>	A key can be provided for stations which do not ring when the system is in the night mode, to enable the station to answer incoming outside line calls.
<b>Night Mode</b>	Stations can be programmed for different ring assignments when the system is in the day mode, and when the system is in the night mode. Access to outside lines and toll restriction can also be programmed differently for day mode, and night mode. The system is placed in night mode by the operator, or automatically by system programming.
<b>Off Premise Extension Interface</b>	A system extension can be converted for use with a standard 2500-type telephone set through the use of an Off Premise Extension Interface (OPXI) or OPX Port card.
<b>On-Hook Dialing</b>	Pressing any digit on a telephone's dial pad places the station in the hands free mode. A station can dial another station hands free by dialing the extension number without lifting the handset.
<b>Operator Station</b>	The Operator station is equipped with a CRT terminal which gives a visual display of office calling activity. The accompanying keyboard and handset are used to process calls.
<b>Orbit</b>	An individual outside line call may be transferred to a waiting zone while an attempt is made to locate the called party via the paging system. The called party may retrieve the call in the waiting zone from any extension.
<b>Outside Line Access</b>	Any extension can be prevented from accessing any particular outside line. Outside line access is programmed on a per extension basis.
<b>Paging</b>	All paging is under control of the user. Paging may be for individual zones, all areas, or external page zones. There are 9 individual page zones and a page all zones.
<b>Password Protection</b>	Access to system programming is protected by up to eight levels of passwords. Each level of password progressively allows more access to programming. Thus an operator may be provided with a password to access programming of the directory information, but is prevented from making any changes to system programming.
<b>Patch Key</b>	This feature key is used when a station establishes a two outside line conference, and wishes to leave the conference and keep the two outside lines connected to each other. Without the use of this key, when the station that made the conference disconnects, the two outside lines are disconnected.
<b>Power Failure Transfer</b>	Systems equipped with OPX Interfaces can have the interfaces wired such that if the system loses electrical power, trunk lines are connected to the OPX Interfaces.



## Introduction

<b>Prime Line</b>	An extension may be programmed to automatically access a particular trunk or trunk group as soon as the phone is taken off-hook.
<b>Print Scheduler</b>	The System Reports can be programmed to print (via a printer connected to one of the I/O ports) at predetermined times. The ACD feature has its own separate print scheduler for its statistical reports.
<b>PBX Feature Keys</b>	Up to 40 programmable features can be assigned to the feature keys for single key dialing of PBX features.
<b>Public</b>	Trunk lines can be programmed as <i>public</i> to allow any number of stations to access a trunk at the same time. The trunk line must appear as a direct line if it is to be programmed public.
<b>Release Key</b>	Used in conjunction with headset operation in place of the switch-hook.
<b>Remote Programming and Maintenance</b>	The system is equipped with a built-in 300/1200 Baud MODEM which allows a technician to access the system, and carry out any programming or maintenance that could be accomplished from an on site programming terminal.
<b>Remote Silent Monitor</b>	This optional feature is used with the ACD feature to enable an extension's outside line calls to be monitored by an authorized person located outside of the system. This feature must be added by an authorized ISOETEC Service Center using the remote programming feature.
<b>Reports</b>	The system provides management reports for use in evaluating the call handling performance of the telephone system. There are 15 management reports to help control cost through better utilization of outside lines. The Reports also provide information necessary to make line configuration, Least Cost Routing package, and incoming call handling as efficient as possible. Peak traffic periods and extensive telephone users can also be detected.
<b>Ring Type</b>	This feature allows a station to be programmed for one of 10 different tones for station ringing.
<b>Save/Repeat</b>	A number dialed on an outside line can be saved for later re-dialing.
<b>Second Path</b>	When used with a digital display phone, each station has a secondary channel which can be used for off-hook announcing.
<b>Serial Call</b>	The serial call key is provided so that a station user can press the key prior to transferring a call. When the party the call was transferred to is finished talking, the call will ring back the station that pressed the serial key.
<b>Silent Monitor</b>	This optional feature is used with the ACD feature to enable an extension's outside line calls to be monitored by an authorized person. This feature is similar to the Barge In feature, except that once it is activated that station is monitored until the feature is deactivated. Barge In must be activated for each call to be monitored. This feature must be added by an authorized ISOETEC Service Center using the remote programming feature.

## Introduction

<b>SMDR</b>	Station Message Detail Recording – Provides a record of incoming and/or outgoing outside line calls.
<b>Split Key</b>	The split key allows a station user to place a call on hold, and switch to a waiting call. The user may then switch back and forth between the two calls with the use of one key.
<b>Station Speed Dial</b>	Station speed dial allows a station to dial an outside number (which is stored in memory by the system) by pressing a single key, or dialing a code. A station user can program and store up to 30 speed dial numbers with up to 30 digits each.
<b>Status Monitor</b>	The programming terminal can be used to provide a real time indication of system status including which stations are in use and what trunk or station they are connected to.
<b>System Backup</b>	Through the use of the Remote Programming feature and a microcomputer with some type of disk storage, the system configuration, LCR routing information, ACD programming and report information, and Call Accounting Reports information can be saved and later restored.
<b>System Configure</b>	The telephone system is a ported system. Any port can be assigned any extension number within the range of the system.
<b>System Reset Timer</b>	The system can be programmed to reset at a given time even if there are voice, or data, connections in progress. This feature is in addition to the normal three hour idle time reset.
<b>System Speed Dial</b>	System Speed Dial allows a station to dial an outside number (which is stored in memory by the system) by pressing a single key, or dialing a code. System Speed Dial numbers can be used by any station in the system. System Speed Dial is programmed only by the operator to provide up to 999 speed dial numbers with a maximum of 11 digits each.
<b>Tie Lines</b>	A tie line combination port card is available as an option which provides 6 digital telephone ports and 4 E&M 2-wire, Type II signal tie line ports.
<b>Transparent Intercom Dialing</b>	When several systems are connected together with a tie line network, Transparent Intercom Dialing allows a station user to call, or transfer to, any extension by dialing a 4-digit number. The network can have a maximum of 1000 numbers.
<b>Toll Restriction</b>	The system is capable of providing toll restriction on outgoing outside line calls based on the first 8 digits of the dialed number.
<b>Trunk Access</b>	Any station can be prevented from using any trunk in the system.
<b>Trunk Group</b>	Outside lines can be arranged into groups for access by stations. Trunk group keys are programmed on stations to allow access to the groups.
<b>Trunk Queuing</b>	When all outside lines in a particular Trunk Group are busy, a station user can activate this feature which will ring the station back when a line becomes available.

UNI Key	This feature key can be programmed on an extension to allow incoming calls to reach the extension on lines that do not appear at that extension.
Verified Forced Account Codes	An extension can be programmed to force the entry of an account code (up to 8 digits) before any outside line call is made. The system can also be programmed to verify the entered account code against a table of valid codes.
VMS Key	This key, also called a MAIL key, is used in conjunction with the voice message system to alert a station user that a message has been received in their voice mailbox.
Volume Control	Volume is controlled and stored in memory for each individual function by the Volume Up ▲ and Volume Down ▼ keys on the station.



## Section 2

# Installation

### 2.1 FCC REQUIREMENTS

#### 2.1.1 FCC REGULATIONS PART 15

**WARNING:** This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user, at his own expense, will be required to take whatever measures may be required to correct the interference.

The ISOETEC® System/228, and any additional port cards, are shipped with shielded cables. These cables must be used to install the system, and connected in accordance with the instructions provided in this manual to insure compliance with the Class A limits.

#### 2.1.2 FCC REGULATIONS PART 68

Before starting system installation, there are established FCC rules and regulations which must be observed. These rules permit this system to be directly connected to the telephone network. Standardized jacks are used for these connections. This equipment should not be used on party lines or coin operated lines.

FCC rulings state that the owner of the system to be installed give the local telephone company sufficient advance notice of intention to use privately owned telephone equipment. The owner must also furnish information as to the identification of the particular lines to be connected to the system and the affected telephone numbers. FCC registration information on the model name, FCC-assigned registration number and ringer equivalence information must also be furnished. The ringer equivalence (REN) is used to determine how many devices can be connected to a telephone line. In most areas, the sum of RENs of all devices on one line should not exceed five. If too many devices are attached, they may not ring properly.

Should there be any question that the customer-provided equipment may cause harm to the telephone network, the local operating company is required to notify the customer of an impending temporary interruption of service. The customer must be given the opportunity to correct the existing problem, if possible. The telephone company must also advise the customer of their rights for filing complaints before the FCC.

The telephone company may make changes in its technical operations and procedures. If such changes affect the compatibility or use of this system, the telephone company is required to give adequate notice of the changes.

Under no circumstances is the equipment to be altered or modified without written approval of the manufacturer. Failure to gain permission for any modification will void the warranty. If a system malfunction is suspected, the connectors terminating the equipment to the CO lines should be disconnected.

#### 2.1.3 SERVICE REQUIREMENTS

In the event of equipment malfunction, all repairs should be performed by an ISOETEC authorized agent. It is the responsibility of users requiring service to report the need for service to an ISOETEC authorized agent.

## 2.2 TRUNK ORDERING INFORMATION

### *Public Network:*

Interface Port Card	Facility Interface	Ringer Equivalence	Network Jack
CO Port (p/n 15600)	02LS2	1.9 B	RJ21X
Loop/Ground used Loop (p/n 15620)	02LS2	1.9 B	RJ21X
Loop/Ground used Ground (p/n 15620)	02GS2	1.9 B	RJ21X
Direct Inward Dial (p/n 15610)	02RV2-T	0.0 B	RJ21X

### *Private Leased Lines:*

Interface	Facility Interface	Service Code	Network Jack
E&M Tie Line Combo (p/n 15680)	TL12M	9.0 Y	RJ2FX
OPXI (p/n 15780)	OL13C	9.0 Y	RJ21X or RJ11C
OPX Port (p/n 15660)	OL13B	9.0 Y	RJ21X or RJ11C

## 2.3 FCC REGISTRATION NUMBERS:

The ISOETEC® System/228 is registered with the Federal Communications Commission three ways. The registration number used depends on which features are being provided to the customer.

Key System:	DHF7AS-16455-KF-E
Hybrid System:	DHF7AS-16454-MF-E
PBX System:	DHF7AS-16453-PF-E

In order to be used as a key system and use the registration number DHF7AS-16455-KF-E, the system must not use the following features:

- Group Keys
- Least Cost Routing
- OPX Outgoing trunk access
- Prime line access by group
- Six key telephones
- Automatic Call Distribution

If any of these features are used, the system MUST be used as a Hybrid with registration number DHF7AS-16454-MF-E, or a PBX with registration number DHF7AS-16453-PF-E.

## 2.4 SUPPLEMENT FOR CANADIAN EQUIPMENT

NOTICE: The Canadian Department of Communications label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure, for their own protection, that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

*CAUTION: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.*

The Load Number assigned to each terminal device denotes the percentage of the total load to be connected to a telephone loop which is used by the device, to prevent overloading. The termination on a loop may consist of any combination of devices subject only to the requirement that the total of Load Numbers does not exceed 100. An alphabetic suffix is also specified in the Load Number for the appropriate ringing type (A or B), if applicable. The Load Number for the accompanying equipment is 100. As a consequence, no additional equipment may be connected to any telephone loop to which this equipment is being connected.

CONNECTING ARRANGEMENT CODE: CA11A

*NOTE: In Canada, the ISOETEC System/228 must be wall-mounted such that the top of the cabinet is at least 1.8 meters from the floor.*

This equipment does not exceed the Class A limits for Radio noise emissions from digital apparatus set out in the Radio Interference Regulation of the Canadian Department of Communications.

## 2.5 SITE REQUIREMENTS

Selection of a suitable location is the most basic, yet most critical consideration in the installation of a telephone system. The following factors should be considered when choosing an appropriate location for equipment installation:

1. Ample space must be allowed to remove the cabinet cover, to access assemblies and cards within the cabinet and allow space for the MDF (Main Distribution Frame).
2. Location of CO/PBX line terminations must be considered when selecting a location for the ISOETEC System/228 cabinet. In the case of telephone company lines, RJ-21X FCC approved connectors supplied by the telephone company, should be within 5 feet (1.5 meters) of the main distribution frame.
3. To minimize the length of cable runs between the stations and the system cabinet, the location of the majority of the telephone sets (stations) should be taken into consideration when selecting a location for the cabinet.
4. A well ventilated, and well lighted area having an optimum temperature range of 60 to 80 degrees F and a relative humidity range of 5 to 90% (non-condensing) must be provided.
5. Area lighting should be adequate for installation and maintenance of the system. Hazardous or flammable materials should be removed from the vicinity. The immediate area must not be subject to flooding or excess moisture. The cabinet should be isolated from areas of moving machinery or equipment. It is also recommended that static electricity-producing carpets not be installed in this area.
6. A separately fused, dedicated 117 Volts AC,  $\pm 10\%$ , 15 Amp., 60 Hz, single phase, 3-wire (parallel blade with ground) power outlet should be located within 5 feet (1.5 meters) of the primary power supply.
7. A good earth ground must be provided using 16 AWG or larger insulated copper wire. A cold water pipe (not interrupted by insulated joints) will provide an adequate ground. Any interruptions in the cold water pipe must be bypassed with 14 AWG or larger straps. If a reliable ground cannot be provided, the system may be grounded to the casing of an ISOBLOK surge suppressor (ISOETEC p/n 440129).
8. The ISOETEC System/228 cabinet and main distribution frame should be placed in an electrically noise free environment, isolated and shielded from equipment that causes electro-magnetic interference (EMI) or radio frequency interference (RFI). Examples of electrical noise are rotating electrical machinery and arc welding equipment. Floor coverings that generate static electricity should be avoided.
9. The system cabinet should not be installed close to any equipment which may produce RFI (Radio Frequency Interference) such as a radio frequency transmitter.



10. If the system is to be installed in a location prone to lightning strikes, thought should be given to providing lightning protection on the power line, any station cable runs outside the building, and trunks.

## 2.6 INSTALLATION PLANNING

Prior planning of the installation will aid in a smooth cut-over and a satisfied customer. Select a suitable location for the system using the site requirements listed above as a guide.

Determine the number of telephones of each type, the number of station port cards, and the number of CO line port cards from the sales contract and discussions with the customer.

*NOTE: Only one station set is allowed per extension number. It is not possible to bridge station ports so that an extension number may appear in more than one location.*

Each station port card and CO line port card will support 12 ports. For systems with tie lines to be installed, the Tie Line Combination port card supports 6 digital stations, and 4 tie line ports.

*NOTE: Stations using the data feature, or the second voice path of a digital display telephone MUST be connected to a Station port card. The E&M Tie Line Combination port card does not support the data feature, or the second voice path.*

Programming information should also be gathered from the customer at this time so that the system may be programmed either before, or while the system is being installed.

Determine the location and type of each telephone, and mark floor plans accordingly.

Determine the location for the operator stations, and mark the floor plans.

Arrange for power cabling (if necessary) and station cabling of the site.

Take note of the optional features the customer has ordered, and make certain the proper modules or circuit boards have been ordered. For example, the Call Accounting Reports option requires a Memory Expansion Module.

If the system is to be installed in an area subject to frequent lightning storms, consideration should be given to providing lightning protection on the CO lines.

*NOTE: Installers should be trained and thoroughly familiar with the basic components of the ISOETEC System/228 before attempting installation of this product.*

## 2.7 UNPACKING AND INSPECTION

The following inspection procedures should be performed prior to start of installation. Carefully inspect packages for evidence of external damage indicating possible damage to the contents. Check each package against the shipping list and job order. Report damaged or missing items immediately to your supplier representative.

### 2.7.1 ISOETEC® SYSTEM/228 CABINET

Locate and open the carton containing the cabinet and remove the unit from the carton. Carefully remove covering and check all parts against the enclosed packing list. Check each item for damage and check part numbers of each part against those listed on your order form.

### 2.7.2 STATIONS

Locate packages containing the digital telephone sets and remove individual cartons from the packages. Carefully open cartons and remove the telephones. Check that the total number received agrees with those on the stock list. Place the telephones in locations where they are to be installed.

### 2.7.3 MISCELLANEOUS ITEMS

Open packages containing miscellaneous items and check each item against the packing list. Be sure that the MDF is included in the packages. Report any discrepancies.

## 2.8 CABINET INSTALLATION

### 2.8.1 PREPARATION

Once the area for the telephone equipment has been selected, mount a plywood back board to the wall. The back board size will vary depending upon the size of the MDF. The entire system and frame will be mounted on a 4' x 6' x 3/4" plywood. If mounting the cabinet alone, the minimum back board size is 46" x 24" x 3/4". A fully loaded ISOETEC System/228 cabinet can weigh approximately 130 lbs. Make certain proper mounting procedures are followed.

*NOTE: Check local building and electrical codes before mounting the system. For example, certain areas may require a flame retardant plywood back board.*

Mount the cabinet to the plywood using 3/4" #12 pan head sheet metal screws such that the top of the cabinet is approximately three feet (1 meter) from the ceiling, and bottom is four feet (1.2 meters) from the floor. Make certain before mounting the cabinet that circuit cards slide easily in and out of their respective card slots.

*NOTE: Systems installed in Canada must be mounted such that the top of the cabinet is at least 6 feet (1.8 meters) from the floor.*

Use the mounting template supplied with the cabinet to locate the mounting holes (Figure 2-1). Drill the holes and mount the cabinet.

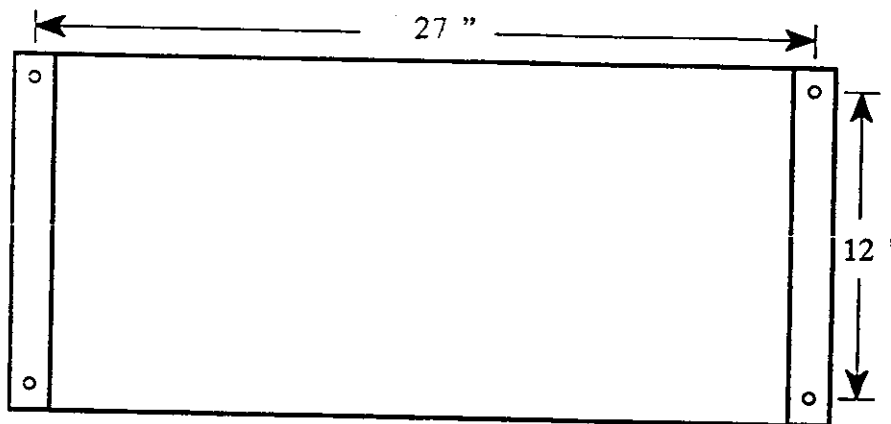


Figure 2-1 Mounting Holes For The Cabinet

### 2.8.2 GROUNDING

Immediately after the system cabinet is mounted, the system must be properly grounded. To ensure proper system operation, a good earth ground must be provided. In most cases, this can be provided by a metallic (unpainted) cold water pipe. The installer should verify that there are no insulated joints such as non-metallic pipe sections which will isolate the earth ground. If the cold water pipe is found to be an inadequate earth ground, or a cold water pipe is not available, the system may be grounded to the casing of an ISOBLOK surge suppressor (ISOETEC p/n 440129).

Earth ground must be provided using 16 AWG or larger insulated wire kept as short as possible.

The earth ground is connected to the backplane on the lower right corner to connector J28. The earth ground should be connected to the backplane prior to installation of any circuit boards.

The AC connection to the power supply requires a parallel blade with a ground receptacle. A three wire to two wire isolation adapter should not be used. The use of an ISOBLOK surge suppressor (ISOETEC p/n 440129) is required.

The ISOETEC System/228 is shipped with a Transient suppressor (p/n 09010) which is to be connected between the system cabinet and the MDF on the Input/Output cable. Locate the suppressor and connect an earth ground (grounded to the same point as the system cabinet) to it at this time. The ground must be connected to the unit before mounting it to the wall.

Any installed lightning protection should be provided with its own earth ground separate from the earth ground provided for the system.

### 2.8.3 GROUNDING REQUIREMENTS FOR SYSTEMS INSTALLED IN CANADA

The cold water ground for systems installed in Canada require a fuse to be placed in line between the system and the ground connection. This fuse is a .5 amp 300V fuse (Kit part number 440006). To install the fuse with holder:

1. Connect the red lead of the fuse holder to the cold water ground connection on the backplane of the system (J28).
2. Connect the black lead of the fuse holder to the wire leading to cold water ground.
3. Connect the wire to a cold water ground.

*NOTE: This procedure must be completed before the system is made operational in order to comply with the requirements of the Canadian Standards Association.*

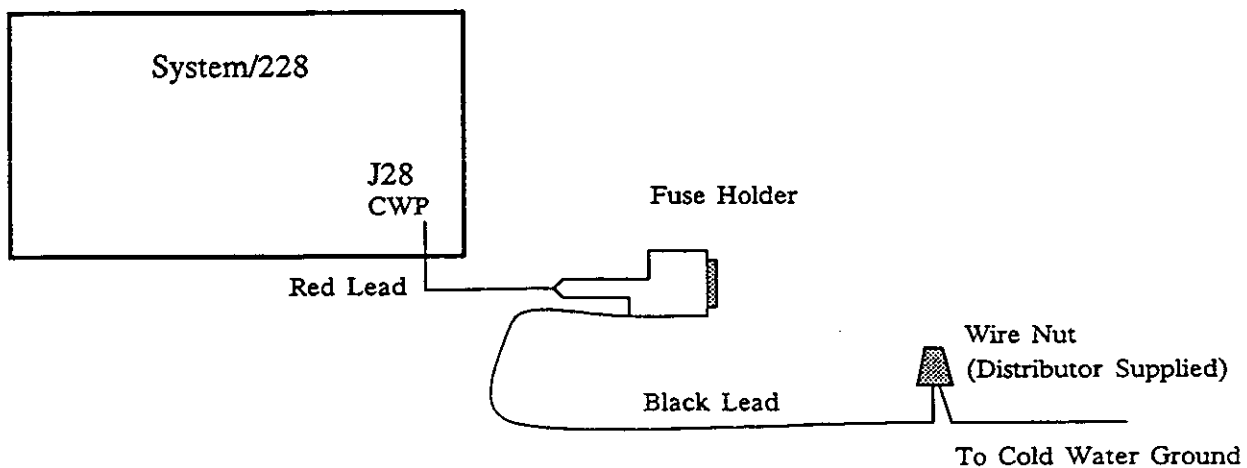


Figure 2-2 Grounding For Canadian Installations

## 2.9 OTHER BACKPLANE CONNECTIONS

Music On Hold (MOH) and Background Music (BGM) are provided to the system through RCA type jacks. J26 on the backplane is for the Music On Hold source (source 1) and J25 on the backplane is for the Background Music source (source 2). BGM and MOH volumes can both be adjusted through potentiometers located on the Voice Control Module (VCM) card. The MOH and BGM connections should be made to the backplane prior to the installation of any circuit cards.

The cable to bring the Input/Output ports to the main distribution frame is also connected to the backplane. Connect the I/O distribution cable to connector J27 in the lower right corner of the backplane.

*NOTE: The use of a radio broadcast, or pre-recorded music for Music On Hold could be perceived as a violation of copyright laws.*

## 2.10 POWER SUPPLIES

The main power supply is mounted on the right side of the cabinet. The flanges of the power supply fit into corresponding slots in the cabinet. Align the connector on the power supply with the plug on the cabinet of the system and press the connector into place. Secure the power supply to the cabinet using a #8-32 machine screw through the lower flange of the power supply into the tapped hole in the cabinet. The power leads connect to the wiring harness of the cabinet as the power supply is lowered into place. The power supply cord plugs into an isolated, dedicated, and dedicated ground 117 Volt AC outlet for power. The main power supply powers the common control cards (CPU, VCM, DCM) and the first 9 port slots (J19 through J11).

The second power supply supports the remaining 10 port slots (J1 through J10) and is mounted on the left side of the cabinet. The second power supply also supports the common control cards in the event the first power supply fails. Align the connector on the power supply with the plug on the cabinet of the system and press the connector into place. Secure the power supply to the cabinet using a #8-32 machine screw through the lower flange of the power supply into the tapped hole in the cabinet. The power supply cord of the second power supply is plugged into the electrical outlet on the right side of the main power supply and NOT into the wall electrical outlet.

**CAUTION: DO NOT CONNECT ANYTHING BUT THE SECOND POWER SUPPLY TO THE OUTLET ON THE RIGHT SIDE OF THE MAIN POWER SUPPLY. DO NOT CONNECT RADIOS, RING GENERATORS, PAGE AMPLIFIERS, ETC. TO THIS OUTLET.**

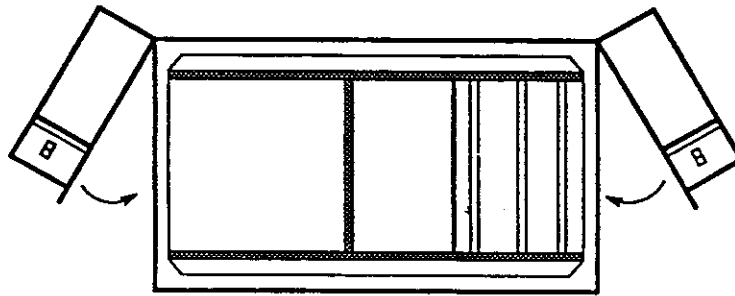


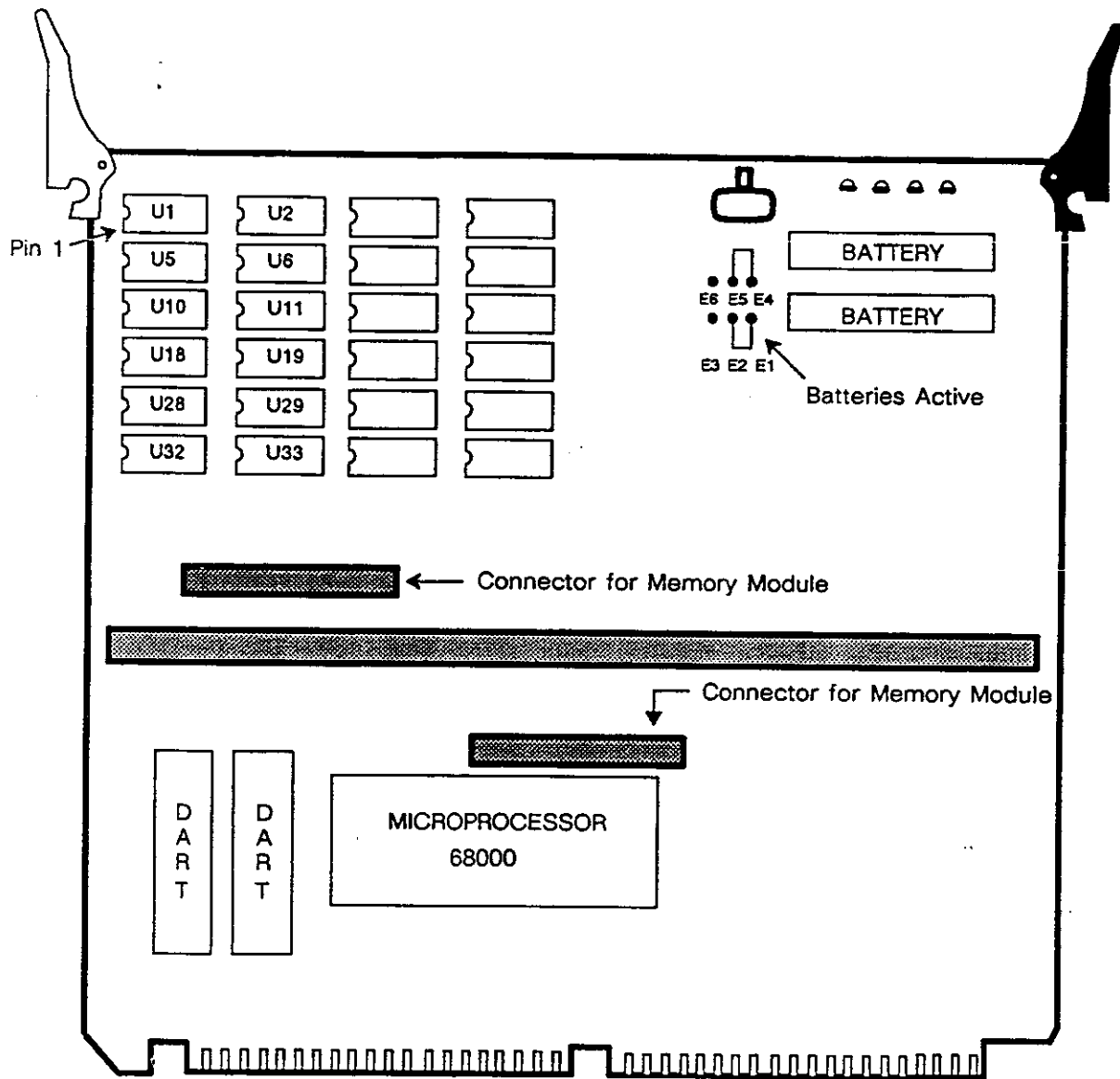
Figure 2-3 Mounting The Power Supplies

## 2.11 CIRCUIT CARD REQUIREMENTS

The number of telephones and lines required determine how many port cards are needed. In addition, a CPU card and VCM card are required. The Data Control Module is required if user data is to be transmitted from port to port through the ISOETEC System/228. The Call Accounting Reports Option, Auto Attendant, and ACD require a Memory Expansion Module III.

### 2.11.1 CPU

The Central Processor Unit (CPU) is installed in the right-most slot of the ISOETEC System/228 backplane in slot J24. Make certain that the connections for the cold water ground, background music, music on hold, and terminal input/output cable have been made before installing the CPU card into its slot. Mount the Memory Expansion Module (if needed) on the CPU before installing the card in its slot. The CPU board is inserted into the slot with components on the card facing the right. This board must NOT be installed with the power on. The edge connector on the CPU is offset to prevent it from being installed in an incorrect slot. Do not force the card into another slot. One CPU is required per system. Activate the battery backup switches on the CPU (see Figure 2-4) and Memory Module III, if used, (see Figure 2-5) at this time.



U1	= #1 High	U2	= #1 Low
U5	= #2 High	U6	= #2 Low
U10	= #3 High	U11	= #3 Low
U18	= #4 High	U19	= #4 Low
U28	= #5 High	U29	= #5 Low
U32	= #6 High	U33	= #6 Low

Figure 2-4 CPU Showing EPROM Placement

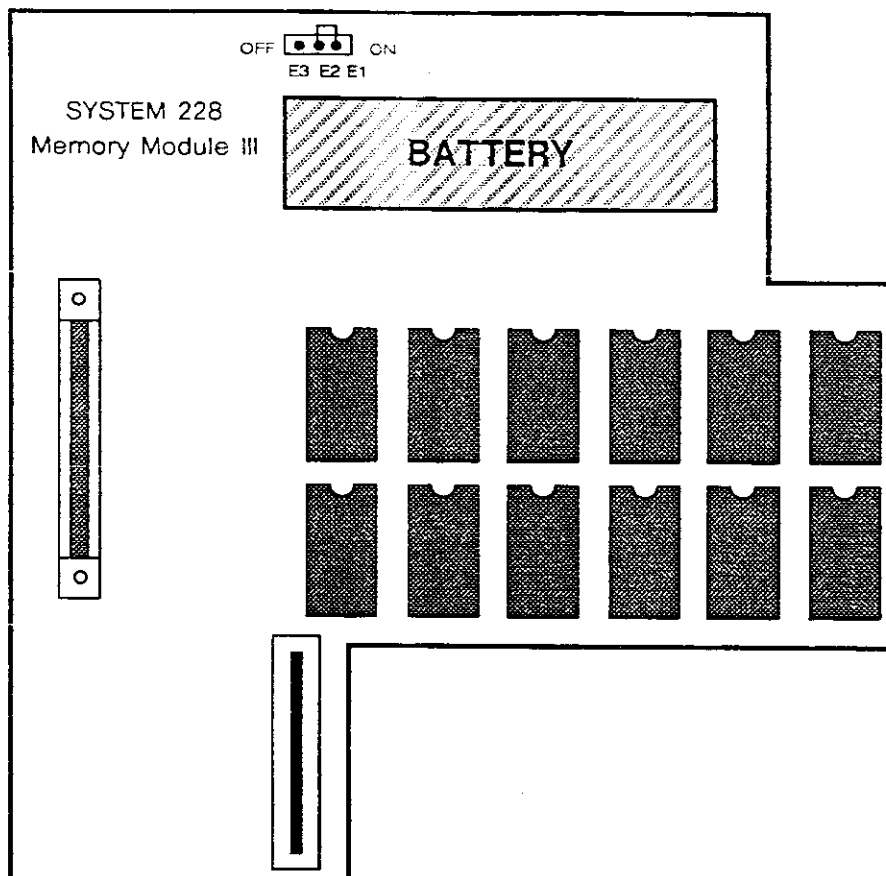


Figure 2-5 Memory Module III

### 2.11.2 VCM

The Voice Control Module (VCM) is installed in slot J20 of the backplane. This board must NOT be installed with the power on. The edge connector on the VCM is offset to prevent it from being installed in an incorrect slot. Do not force the card into another slot. One VCM is required per system.

*NOTE: The option strap located near R7 on the outside edge of the board should be strapped between B and C. Do NOT change the position of this strap. The strap connection A to B will connect the Music On Hold source to both Music On Hold and Background Music.*

### 2.11.3 DCM

The Data Control Module (DCM) is installed in slot J22 of the backplane. This board must NOT be installed with the power on. The edge connector on the DCM is offset to prevent it from being installed in an incorrect slot. Do not force the card into another slot. One DCM is required per system. The Data Control Module is required for the Data Feature.

#### **2.11.4 LSI DCM**

The LSI Data Control Module is installed in slot J22 of the backplane. This board must NOT be installed with the power on. The edge connector on the LSI DCM is offset to prevent it from being installed in an incorrect slot. Do not force the card into another slot. One LSI DCM can be used per system instead of a Data Control Module.

#### **2.11.5 STATION AND STATION LSI PORT CARDS**

The Station and Station LSI port cards can be installed in any slot from J1 through J19. One station port card is required for each 12 stations to be installed. The edge connectors on port cards are offset to prevent them from being inserted into a common control slot. It is recommended that port cards be installed beginning at slot J19 and proceeding to the left. In this manner, a second power supply will not be required until all slots that the main power supply supports are filled.

If a second power supply is to be installed, station port cards and CO port cards should be mixed in both halves of the system. In this manner, some stations and some trunks can still be used in the event of one of the power supplies failing.

This card also has the circuitry necessary to support an external page. The external paging system is connected to the station port card via the main distribution frame. The screw connector terminals on the outside edge of the card are not used at this time. There should be no connection made to this terminal.

#### **2.11.6 CO LINE PORT CARDS**

The CO line port cards can be installed in any slot from J1 through J19. One CO line port card is required for each 12 CO lines to be installed. The edge connectors on port cards are offset to prevent them from being inserted into a common control slot. It is recommended that port cards be installed beginning at slot J19 and proceeding to the left. In this manner, a second power supply will not be required until all slots that the main power supply supports are filled.

If a second power supply is to be installed, station port cards and CO port cards should be mixed in both halves of the system. In this manner, some stations and some trunks can still be used in the event of one of the power supplies failing.

#### **2.11.7 LOOP/GROUND START TRUNK PORT CARDS**

The L/G Start Trunk port cards can be installed in any slot from J1 through J19. One L/G Start Trunk port card is required for each 12 trunks to be installed. The edge connectors on port cards are offset to prevent them from being inserted into a common control slot. It is recommended that port cards be installed beginning at slot J19 and proceeding to the left. In this manner, a second power supply will not be required until all slots that the main power supply supports are filled. If a second power supply is to be installed, station port cards and CO port cards should be mixed in both halves of the system. In this manner, some stations and some trunks can still be used in the event of one of the power supplies failing.

Before installing the card, 2 jumpers per circuit must be installed (for ground start) or removed (for loop start). The jumpers are installed for ground start from the factory. The jumpers are labeled J101 and J102 for circuit 1, J201 and J202 for circuit 2, etc. See Figure 2-6.



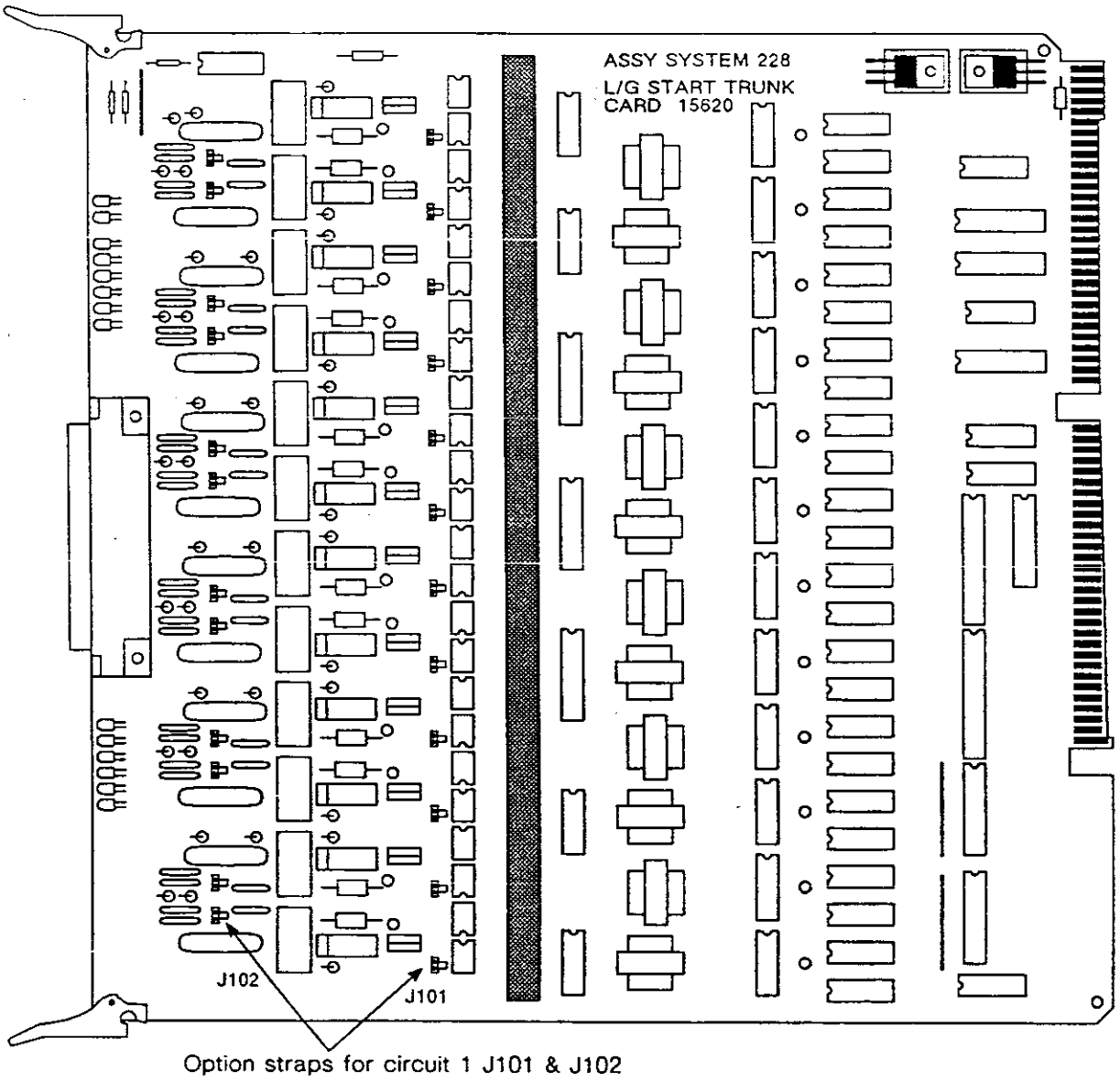


Figure 2-6 Loop/Ground Start Trunk Card

### 2.11.8 DIRECT INWARD DIAL PORT CARDS

The DID port cards can be installed in any slot from J1 through J19. One DID port card is required for each 12 CO lines to be installed. The edge connectors on port cards are offset to prevent them from being inserted into a common control slot. It is recommended that port cards be installed beginning at slot J19 and proceeding to the left. In this manner, a second power supply will not be required until all slots that the main power supply supports are filled. The DID card requires an externally supplied 48 volt DC power supply to be connected to J2 on the outside edge of the card. See Figure 20-1 in the *Direct Inward Dial* section of this manual.

### 2.11.9 E&M TIE LINE COMBINATION PORT CARDS

The E&M Tie Line Combination port cards can be installed in any slot from J1 through J19. One tie line combination port card supports 6 digital stations and 4 E&M two wire, type II interface tie lines. The edge connectors on port cards are offset to prevent them from being inserted into a common control slot. It is recommended that port cards be installed beginning at slot J19 and proceeding to the left. In this manner, a second power supply will not be required until all slots that the main power supply supports are filled.

*NOTE: Stations using the data feature, or the second voice path of a digital display telephone MUST be connected to a Station Port Card. The E&M Tie Line Combo Card does not support the data feature, or the second voice path of a digital display telephone.*

### 2.11.10 DTMF RECEIVER COMBINATION PORT CARDS

The DTMF Receiver Combination port cards can be installed in any slot from J1 through J19. One DTMF Receiver card provides six digital station ports, and six DTMF receivers for use with the system's Auto Attendant feature. The edge connectors on port cards are offset to prevent them from being installed in a common control slot. It is recommended that port cards be installed, beginning at slot J19 and proceeding to the left. In this manner, a second power supply will not be required until all slots that the main power supply supports are filled.

### 2.11.11 OPX LSI PORT CARDS

The OPX LSI port cards can be installed in any slot from J1 through J18. This card provides 8 OPX ports that can be used to support any conventional tip and ring, DTMF device such as 2500-type telephones, voice message system ports, MODEMs, etc. The edge connectors on port cards are offset to prevent them from being installed in a common control slot. It is recommended that port cards be installed, beginning at slot J18 and proceeding to the left. In this manner, a second power supply will not be required until all slots that the main power supply supports are filled.

*NOTE: This card requires the use of software version 5.26, or higher. The card does not support rotary dial devices. There is no power failure transfer on this card.*

The OPX port card requires an externally supplied 48 volts DC and ring generator power supply to be connected to P3 on the card. Each OPX port card draws a maximum of 500 milliamps, and requires at least 2 watts of ring generator. Refer to Figure 2-7 and Figure 2-8 for wiring the power supplies to the card.

When the port card is to be used with OPXs, if the TIP side of the circuit is not grounded, the power supplies can be wired to the card as follows:

- |    |   |                |
|----|---|----------------|
| P3 | 1 | - 48 volts     |
|    | 2 | + 48 volts     |
| P3 | 3 | Ring generator |
|    | 4 | Ring generator |

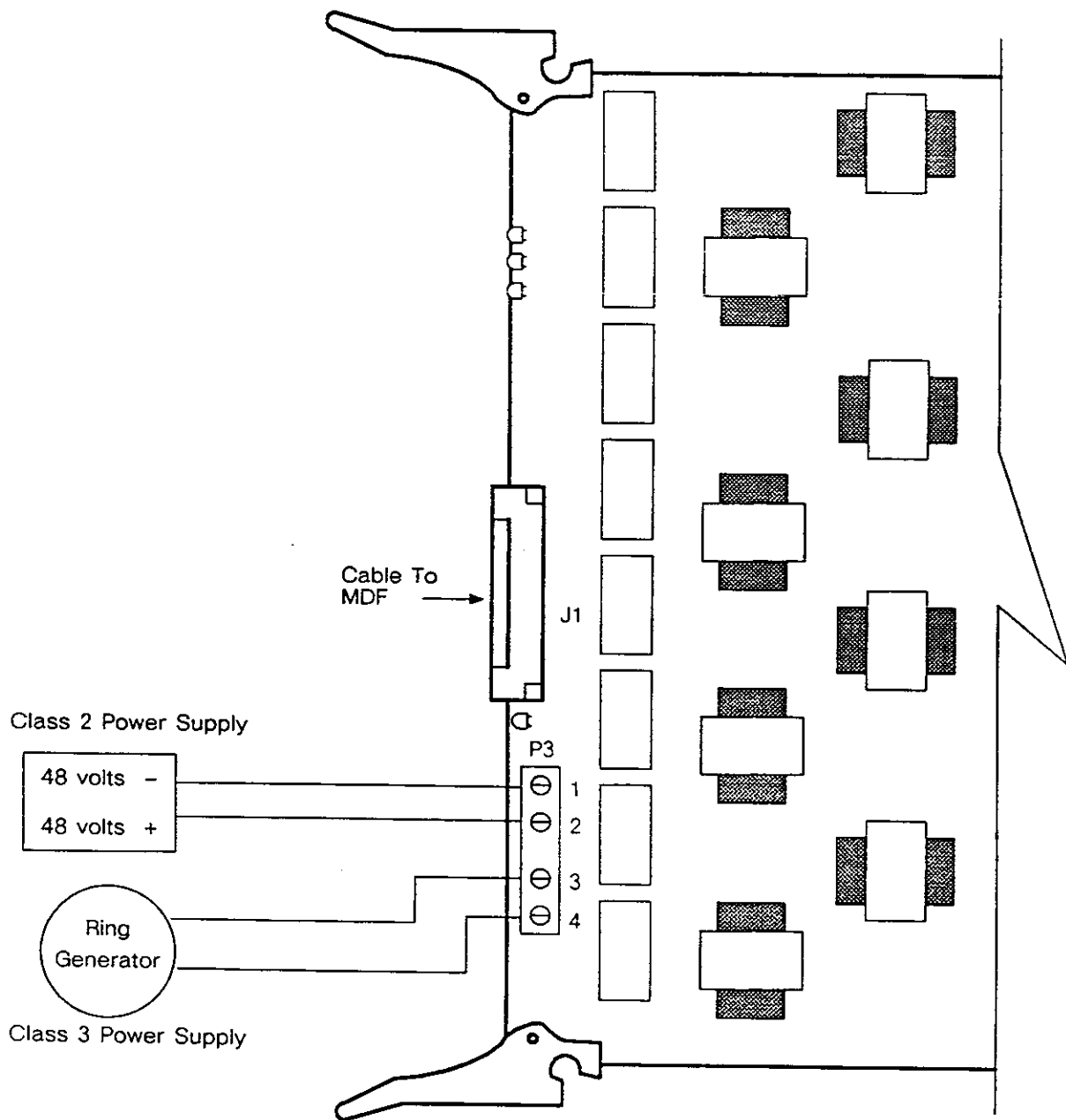


Figure 2-7 OPX Port Card Power Connections

When the port card is to be used with OPXs, if the TIP side of the circuit is grounded, the power supplies can be wired to the card as follows:

- |    |   |   |
|----|---|---|
| P3 | 1 | - 48 volts and one side of the Ring generator |
|    | 2 | Ground  |
| P3 | 3 | Ground  |
|    | 4 | Ring generator                                |

Connect a wire between 2 and 3. Also connect the ground to the same point as the Telco ground. Do not use the Telco ground itself.

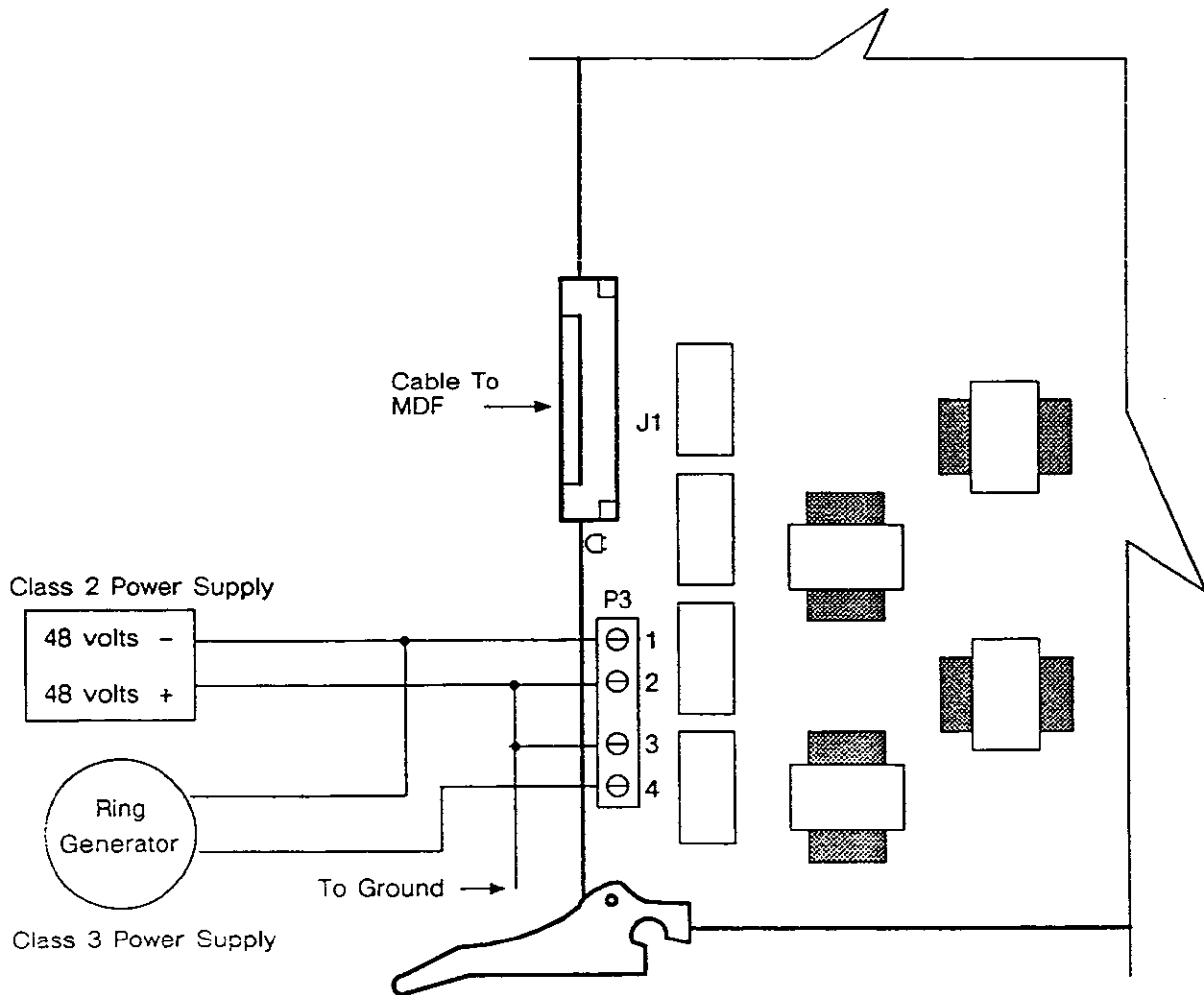


Figure 2-8 OPX Port Card Power Connections With Tip Grounded

## 2.12 POWER APPLICATION

### 2.12.1 INPUT POWER SITE REQUIREMENTS

A separately fused, dedicated 117 Volts AC,  $\pm 10\%$ , 60 Hz, single phase, three wire (parallel blade with ground) power outlet should be located within 5 feet (1.5 meters) of the primary power supply.

*CAUTION: The primary power line must be dedicated and isolated to prevent the inadvertent turning off of the system at night when lights or wall circuits are turned off.*

The use of an ISOBLOK surge suppressor (ISOETEC p/n 440129) is required for system installation, and is **STRONGLY** recommended for any terminals or printers connected to the system.

Outlet wiring requirements should follow standard National Electric Code wiring practices for a 3 wire outlet.

*CAUTION: Do NOT use 3 blade to 2 blade adapters. A properly grounded outlet is mandatory for proper system operation. Do NOT cut the ground blade from the system electrical plug.*

### 2.12.2 OTHER POWER REQUIREMENTS

The DID port card requires an externally supplied 48 volt DC power supply. The OPX port card requires an externally supplied 48 volts DC and ring generator power supply to be connected to the card. The OPX Interface requires the use of an external 48 volt DC power supply. Consult the National Electric Code requirements for wiring Class 2 and Class 3 voltages before wiring these devices.

The use of the UL Listed ISOETEC Tri-output power supply (p/n 550005) is strongly recommended for providing these external voltages.

### 2.12.3 POWER UP

After all circuit cards are installed, make certain that they are seated firmly in their connectors.

If the system is equipped with 2 power supplies, switch **ON** the red power switch on the secondary power supply. There is no electrical power to this power supply until the primary power supply is switched on (the secondary power supply plugs into the primary supply).

Turn **ON** the primary power supply with the red switch located on the power supply housing.

Refer to the *Cabling and Cross Connection* section to connect the ISOETEC System/228 to the trunk lines and stations.

## 2.13 INTEGRATED OPERATOR TERMINAL ASSEMBLY

The ISOETEC Integrated Operator Terminal consolidates a telephone set, and CRT terminal into one package.

Before installing the terminal, inspect the shipping carton for any signs of damage. Have the delivery person note any damage found on the shipping document.

### 2.13.1 PARTS LIST

The ISOETEC Integrated Operator Terminal consists of 2 packages containing the following pieces:

1. CRT terminal (p/n 440017):

- 1 ISOETEC CRT Display Module
- 1 Integrated Keyboard (keyboard is labeled for use as an Operator)
- 1 AC Power Cord
- 1 Operator Guide

2. Integration kit (p/n 09004):

- 1 ISOETEC Phone Box
- 1 6 foot - 6 conductor modular to modular line cord
- 1 1 foot (extended) coiled - 4 conductor gray jumper cord
- 1 6 foot (extended) coiled - 8 conductor black "Y" cable
- 1 Handset
- 1 Coiled handset cord
- 1 Handset cradle kit that contains the following:
  - 1 Black metal bracket with two handset rests.
  - 1 Handset cord jack holder
  - 1 1 Allen Key
  - 2 Machine screws
  - 1 Instruction Sheet

The DB-25 to modular plug (p/n 330006) is ordered separately. A modular line cord of suitable length is also required. A 7 foot cord is available using part number 80261-1.

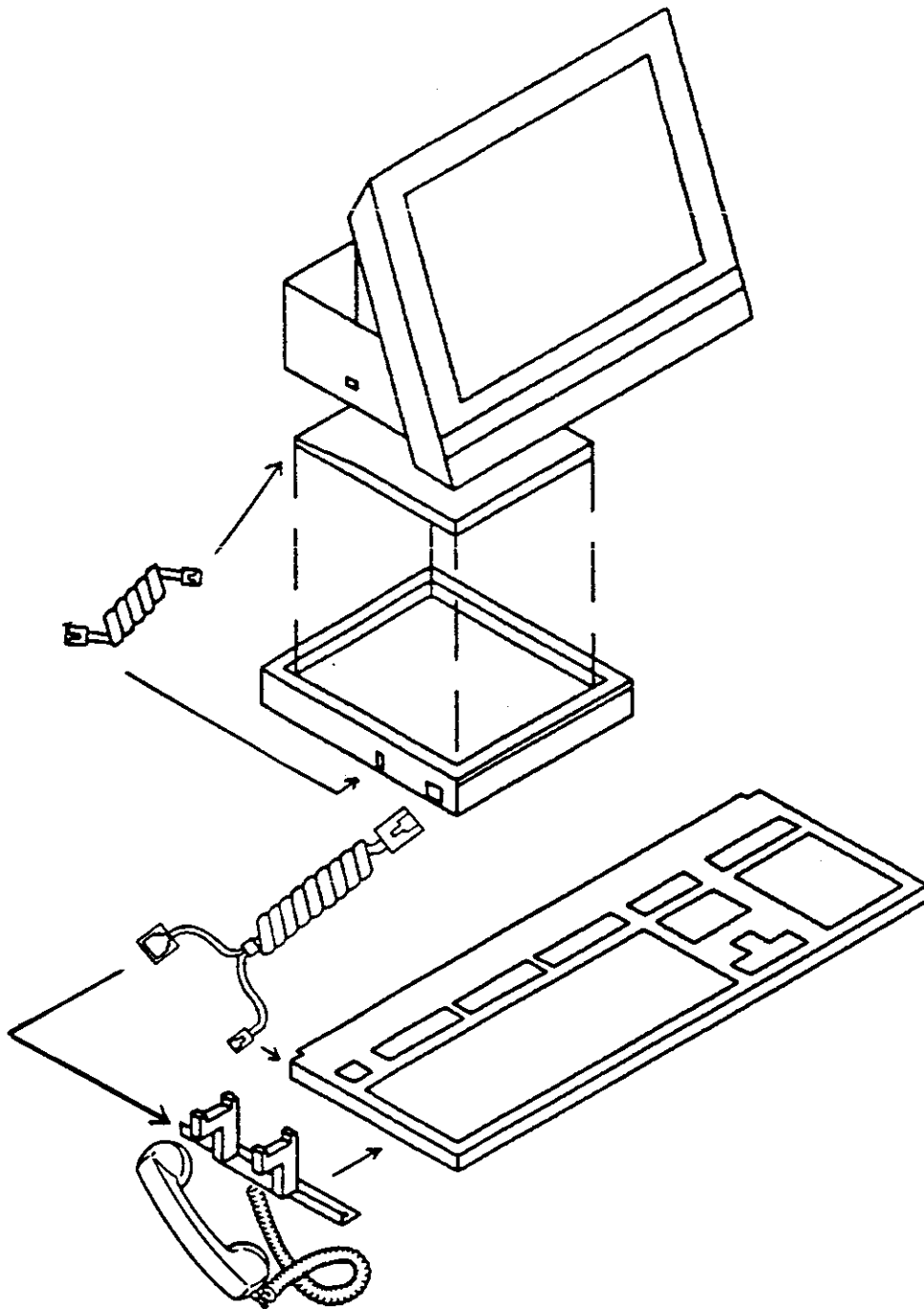


Figure 2-9 Assembly Of The Integrated Operator Terminal

## 2.13.2 ASSEMBLY INSTRUCTIONS

Be sure to check each package to insure that you have received all the parts. Once you have located and identified all the parts provided in the ISOETEC Integrated Operator Terminal Kit, you can proceed with the following instructions to assemble the terminal. See Figure 2-9.

1. Place the phone box at the location chosen for the operator position with the 6 conductor jack facing toward the back and the indent of the box on top. The ISOETEC logo should be facing front.
2. Place the CRT terminal on top of the box in the indent with the CRT screen facing front.
3. Plug the 1 foot - 4 conductor gray jumper wire into the modular jack located on the left side of the terminal.
4. Connect the other side of the 1 foot gray jumper cable to the 4 conductor modular jack located on the left side of the ISOETEC Phone box.
5. Turn the Integrated keyboard upside-down positioned such that the modular jack in on the left.
6. Remove the two screws located on the left side of the keyboard.
7. Place the handset cradle onto the left side of the keyboard.
8. Secure the bracket to the keyboard using the 2 machine screws provided with the cradle.
9. Plug the 8 conductor male modular end of the black "Y" cable into the 8 conductor jack located on the left side of the ISOETEC Phone box.
10. Plug the 4 conductor male modular end of the "Y" cable into the 4 conductor modular jack on the keyboard.
11. Place the 4 conductor handset cord jack into the "U" shaped holder on the cradle. The cord should be placed in from the back side of the connector so the cable lies next to the keyboard. Tighten the Allen screw with the Allen key provided in the kit.
12. Plug one end of the handset cord into the jack just installed on the handset cradle.
13. Place the other end of the handset cord into the handset.
14. Turn the keyboard key side up.
15. Place the handset onto the cradle.
16. Plug the AC line cord into the back of the CRT terminal, and into a dedicated AC outlet provided for the ISOETEC Integrated Operator Terminal. An ISOBLOK surge suppressor should be installed at this point.



### 2.13.3 TERMINAL SETUP RS-422

The terminal, in default mode, is programmed to operate RS-422 at 9600 baud. To insure that proper default settings are on the terminal, follow the procedures listed below.

1. Press the CONTROL and SETUP (ICM) keys simultaneously. This places the terminal in the setup mode.
2. Press the RIGHT arrow key  $\blacktriangleright$  until the highlighted box is over DEFAULT ALL.
3. Press the key labeled F10. The highlighted box appears over EXIT.
4. Press the key labeled F10 again.

The terminal is now ready for operation as the Integrated Operator.

### 2.13.4 TERMINAL SET-UP RS-232

The programming of the terminal setup must be changed to convert it from RS-422 to RS-232. To convert, follow the instructions provided below.

1. Press the CONTROL and SETUP (ICM) keys simultaneously. The terminal enters the setup mode.
2. Press the key labeled F2. PERSONALITY=OPT'S TERM is highlighted.
3. Press the DOWN arrow key twice. DATA/PRINTER=MODEM/AUX is highlighted.
4. Press the space bar. DATA/PRINTER=AUX/MODEM is highlighted.
5. Press F10 key. The terminal setup menu appears with EXIT highlighted.
6. Press the RIGHT arrow  $\blacktriangleright$  key twice. SAVE ALL is highlighted.
7. Press the F10 key.

The terminal is now ready to be connected to one of the RS-232 ports of the system.

*NOTE: It is very important to place the RS-232 cable into the AUX jack located on the back of the operator's terminal. If it is accidentally placed into the MODEM port, the terminal may appear to function, however, the terminal does not transmit proper characters.*

### 2.13.5 SELF-TEST

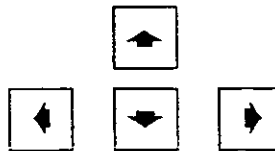
After site selection and installation are complete, you are ready to set up the terminal's operational parameters. Once the terminal is turned on, it goes through a self diagnostic routine. If the terminal is functioning normally, a blinking cursor appears after several seconds.

### 2.13.6 SUMMARY OF OPERATING PARAMETERS

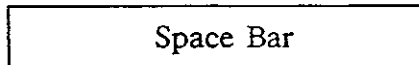
The basic operating parameters of the ISOETEC Terminal are preprogrammed in the terminal's default memory. The terminal should not require any further programming. However, if the installer has a problem, he may be asked to check the terminal's setup parameters. This section should provide the installer with most of the information necessary to accomplish this.

1. Press the CONTROL and SETUP (ICM) keys simultaneously.
2. A setup line appears as the last line on the display. There are 9 setup screens for the ISOETEC Terminal. To scroll between screens, use the function keys F1 to F9.

To scroll between parameter, use



To scroll between selections, use



3. To save any changes after they are made, press F10 and using the arrow keys move the highlight bar to the SAVE ALL selection, then press F10 again.
4. To return the terminal to its standard default program, choose the DEFAULT ALL selection, then exit.
5. To return the terminal to its last set of SETUP parameters, choose the RESTORE ALL selection, then exit.

## 2.13.7 ISOETEC TERMINAL DEFAULT PROGRAMMING PARAMETERS

SCREEN #1 F1 DISP

COLUMNS = 80	STATUS = OFF	BACKGROUND = DARK
LINES = 24	SCRL SPEED = JUMP	SCRN SAVER = ON
PAGE LENGTH = 1 * LINES	CURSOR = BLINK LINE	DISPLAY CURSOR = ON
ATTRIBUTE = LINE	ANSWERBACK MODE = OFF	ANSWERBACK CONCEAL = OFF

.....  
SCREEN #2 F2 GENERL

PERSONALITY = OPT'S TERM	ENHANCE = OFF	FONT LOAD = ON
COMM MODE = FULL DUPLEX	END OF LINE WRAP = OFF	SEND ACK = OFF
DATA/PRINTER = MODEM/AUX	AUTO SCRL = ON	INIT TABS = OFF
RCVD CR = CR	MONITOR = OFF	WIDTH CHANGE CLEAR = OFF

.....  
SCREEN #3 F3 KEYBRD

KEYCLICK = OFF	KEYLOCK = CAPS	KEY REPEAT = ON
RETURN = CR	ENTER = CR	CORNER KEY = FUNCT
XMT LIMIT = NONE	FKEY XMT LIMIT = NONE	BREAK = 250MS
WYSEWORD = OFF	LANGUAGE = US	MARGIN BELL = OFF

.....  
SCREEN #4 F4 COMM

BAUD RATE = 9600	DATA/STOP BITS = 8/1	PARITY = NONE
RCV HNDSHAKE = NONE	XMIT HNDSHAKE = NONE	
AUX BAUD RATE = 9600	AUX DATA/STOP BITS = 8/1	AUX PARITY = NONE
AUX RCV HNDSHAKE = DSR	AUX XMT HNDSHAKE = NONE	

.....  
SCREEN #5 F5 MISC

BLOCK END = US/CR	LABELS = OFF	WPRT INTENSITY = NORMAL
AUTC PAGE = OFF	SAVE LABELS = OFF	WPRT REVERSE = OFF
TVI955 ATTRIBUTE =	PAGE EDIT = OFF	WPRT UNDERLINE = OFF
NO SPACE		
VP60 BLK END = NONE		TEST = OFF

.....  
SCREEN #6 F6 TABS

TABS = DO NOT MAKE ANY CHANGES IN THIS SCREEN

.....  
SCREEN #7 F7 A/BACK

ANSWER BACK = DO NOT MAKE ANY CHANGES IN THIS SCREEN

.....  
SCREEN #8 F8 F/KEYS

UNSHIFTED DIRECTION = REMOTE                      SHIFTED DIRECTION = REMOTE

.....  
SCREEN #9 F9 LABELS

LABEL F1 = DO NOT MAKE ANY CHANGES  
 LABEL sF1 = DO NOT MAKE ANY CHANGES

.....  
SCREEN #10 F10 EXIT

THIS SCREEN IS USED TO EXIT SETUP, SAVE SETUP PARAMETERS AND DEFAULTING  
 THE PARAMETERS BACK TO THE FACTORY SETTINGS

### 2.13.8 SITE SELECTION

Select a suitable site for the operator terminal. This site MUST not be any further than 1000 feet (when using the RS-422 ports, or 50 feet when using the RS-232 ports) from the CPU. Place the terminal in a well lit area, on a stable platform (desk, etc.), and at a comfortable height that will minimize fatigue on the operator. The terminal should also be placed in an area with good air circulation.

### 2.13.9 WIRING TO THE SYSTEM

The Integrated Operator Terminal is now assembled and ready to be connected to the system. Follow the instructions found in the *Cabling and Cross Connection* section of this manual.

## 2.14 ISOETEC ELECTRONIC PHONE INTERFACE - IEPI

The IEPI is an add-on board built into the base cover of ISOETEC Electronic Phone which allows the use of the phone on the digital ISOETEC System/228. Both the 26-key and the 14-key Electronic Phone can be used with the IEPI. The Electronic Display Phone cannot be used with the SYSTEM/228.

26-key IEPI is p/n 82030

14-key IEPI is p/n 82020

The following instructions detail how to convert an ISOETEC Electronic Phone for use on the SYSTEM/228, and can be used for converting both a 14-key and 26-key telephone.

1. Turn the ISOETEC Electronic Phone upside-down.
2. Remove the four screws located in the corners of the base.
3. Lift the base cover.
4. Carefully disconnect the modular connector from the clip holding it to the base cover.
5. Remove the base cover. The cover is no longer used.
6. Connect the modular plug of the IEPI to the modular connector of the telephone.
7. Place the IEPI over the Electronic Telephone, and reinstall the four screws in the corners of the new base.
8. Turn the IEPI telephone over, and connect to the station cable jack.

## 2.15 WALL MOUNTING DIGITAL TELEPHONES

The telephones used with the ISOETEC System/228 can also be wall-mounted with the use of wall mounting kits. These kits include a wall mounting bracket, and a new plastic base for the telephone.

Use the following list to order the correct kit for the type of telephone to be wall-mounted.

### 28-KEY DIGITAL TELEPHONE

Kit (includes bracket and base) p/n 82144

Bracket Number p/n 82180

Base Number p/n 82181

### 17-KEY DIGITAL TELEPHONE

Kit (includes bracket and base) p/n 82244

Bracket Number p/n 82561

Base Number p/n 82260

### 6-KEY DIGITAL TELEPHONE

Kit (includes bracket and base) p/n 82544

Bracket Number p/n 82561

Base Number p/n 82560

### 2.15.1 WALL CONNECTING JACKS

Almost any type of 6 wire wall jack can be used in conjunction with the wall mounting kits. Flush mounts, standard wall phone plates, and standard RJ-11 jacks can be used.

*Note: If standard RJ-11 type jacks are used, they should be mounted approximately 2.5 inches below the wall mounting bracket.*

### 2.15.2 MOUNTING

1. Choose a suitable mounting location for the wall phone.
2. Install the wall connecting jack (wall plate) vertically using normal installation procedures.
3. Mount the Wall Bracket over the wall plate using 4 screws. Note that the bracket TOP is labeled. Make sure the modular connector of the jack lines up with the square hole in the center of the Wall Bracket.
4. Remove the existing telephone base (4 screws), and install the new Wall Mount Base.
5. Route the line cord from the wall jack thru the hole provided at the bottom of the wall bracket. Plug the free end into the connector at the bottom of the telephone.
6. Tilt the telephone forward and line up the hooks at the bottom of the bracket so that they engage with the slots cut in the bottom of the telephone base. Tilt the phone back and lock the telephone into the hooks at the top of the bracket.
7. Push any spare line cord back into the bottom of the wall bracket.
8. Loosen the screw securing the handset hanger hook and turn it around to the wall mount position. See Figure 2-13.

### 2.15.3 HOW TO REMOVE THE TELEPHONE

1. Lift the top hooks by inserting your index fingers in the slots provided under the top hooks (see Figure 2-11) and tilt the top of the phone out away from the bracket.
2. Lift the telephone to disengage it from the bottom hooks.

### 2.15.4 MOUNTING USING SURFACE MOUNT RJ-11 JACKS

1. Choose a suitable mounting location for the wall phone.
2. Install the connecting jack vertically using normal installation procedures.
3. Mount the Wall Bracket approximately 2.5 inches above the RJ-11 jack using 4 screws. Note that the bracket TOP is labeled. See Figure 2-12.
4. To continue, follow instructions 4 through 8 in the mounting procedure.

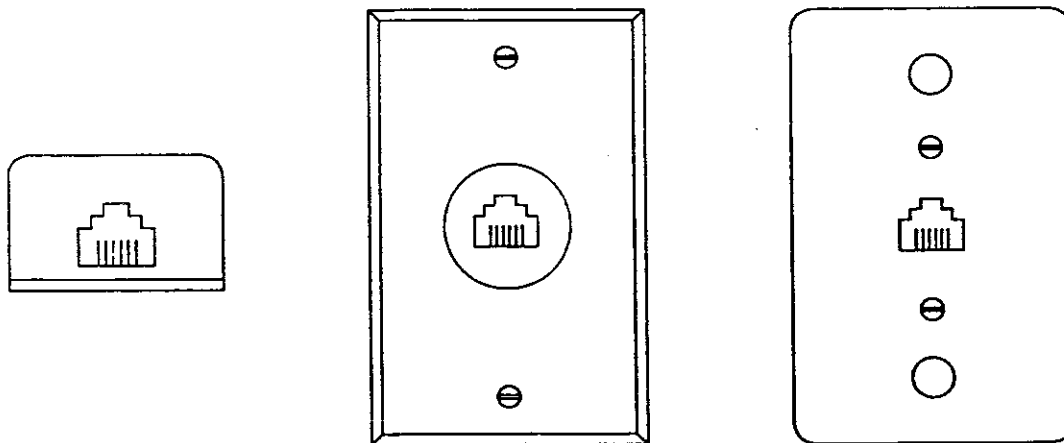


Figure 2-10 Possible Wall Jacks

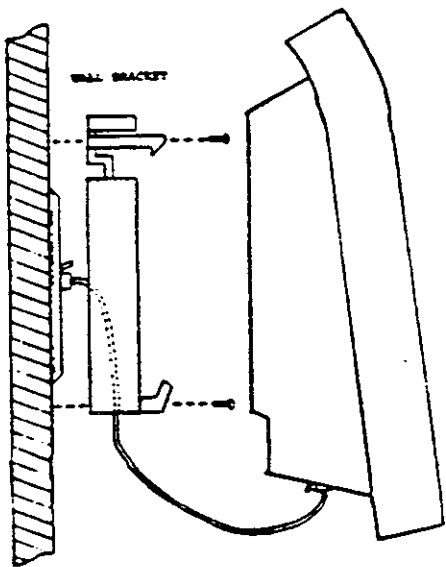


Figure 2-11 Wall Mounted Telephone

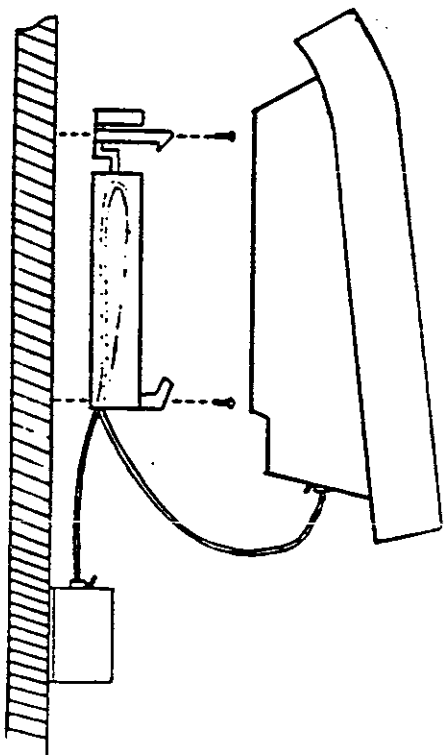


Figure 2-12 Surface Mount Jack

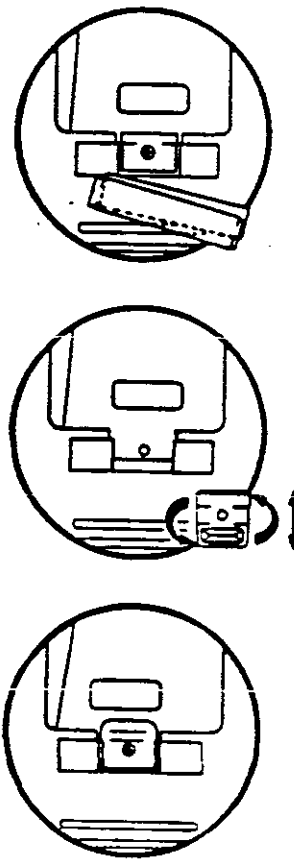


Figure 2-13

## 2.16 OFF PREMISE EXTENSION INTERFACE – OPXI

The system can be used with standard, tone dial, 2500 type telephones with the use of the Off Premise Extension Interface (OPXI) part number 15780. This interface is also used to connect devices such as answering machines, MODEMS, ACD Answering/Announcement devices, and voice message system ports to the ISOETEC System/228.

The OPXI is considered a telephone by the system. One OPXI requires one station port. The OPXI is wired to the system in the same manner as a digital telephone (see the *Cabling and Cross Connection* section of this manual). The OPXI requires the use of an external 48 volt DC power supply. Each OPXI requires approximately 100 milliamps of current from the power supply.

## 2.17 RELAY AND SENSOR INTERFACE

The Relay/Sensor Interface (RSI), part number 15770, is used with the Automatic Call Distribution feature to indicate the number of calls waiting to be answered. The relay contacts are programmed to open and close at three different rates. These rates indicate the number of calls waiting to be answered. The relay contacts can be wired as a switch in a series circuit to a lamp, or other alerting device.

The RSI is wired to the system in the same manner as a digital telephone (see the *Cabling and Cross Connection* section of this manual).

Each Relay/Sensor Interface provides three separate, single pole, normally open, relay contacts. The relay contacts are rated for 24 volts DC and 1 Amp of current. The RSI is also equipped with three sensors to detect external contact closures, but these are not used with the present system configuration.

## 2.18 DIGITAL DATA INTERFACE

The Digital Data Interface (DDI), part number 15790, is used with the *Data Feature* in connections which do not require the use of the Digital Display Telephone. One DDI requires one station port.

The Digital Data Interface is considered a station by the system. The DDI is wired to the system in the same manner as a digital telephone (see the *Cabling and Cross Connection* section of this manual).

## 2.19 DIGITAL VOICE ANNOUNCER

The *Digital Voice Announcer* (p/n 15870) is a device that can answer a call and play a pre-recorded message to the caller. One digital station port is required for each *Digital Voice Announcer*. The *Digital Voice Announcer* can be used in applications that require a *recorder* (e.g., ACD Recorders, or Answering devices for Auto Attendant) on the system. The DVA requires software version 4.51, or higher, to operate.

The *Digital Voice Announcer* is considered a station by the system, and is wired to the system in the same manner as a digital telephone (see the *Cabling and Cross Connection* section of this manual).



## 2.20 DSS CONSOLE

The DSS Console (p/n 82400-2) is the size of the 17-key telephone and has 44 programmable buttons. These buttons can be programmed as any feature keys. The DSS is equipped with a speaker for audible tones. A maximum of 40 DSS consoles can be installed on the System/228. Three DSS consoles can be assigned to one extension. The DSS Console requires software version 5.26, or higher, to operate.

The DSS Console is wired to any station port in the same manner as a digital telephone (see the *Cabling and Cross Connection* section of this manual). Once installed, the DSS is assigned to that station port on the *Station Programming* screen.

## 2.21 CONNECTING MUSIC TO THE SYSTEM

The source for Music On Hold (MOH) and Background Music (BGM) is connected to the system through RCA type connectors labeled J26 and J25 on the backplane. See Figure 2-14 for the location of J25 and J26. Background Music and Music on Hold volumes can both be adjusted through potentiometers located on the outside edge of the VCM. The potentiometer labeled R4 is for the Background Music volume. The potentiometer labeled R7 is for the Music On Hold volume. To adjust the Music On Hold volume, place a call to one of the system's CO lines. Answer the call and place it on hold. Listen to the volume of the MOH in the originating telephone and adjust R7 to a comfortable listening level. To adjust Background Music, press the digit [\*] on the dial pad of a near by station. Adjust the speaker volume of the telephone set to maximum with the [VOLUME ▲] key. Adjust R4 on the VCM to a comfortable listening level.

*NOTE: The use of a radio broadcast, or pre-recorded music for Music On Hold could be perceived as a violation of copyright laws.*

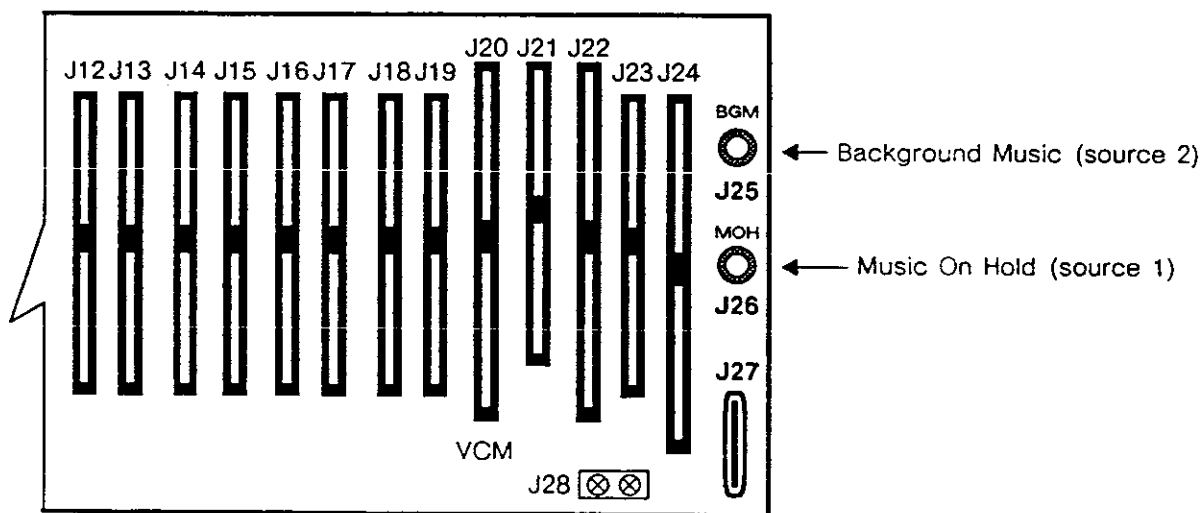


Figure 2-14 Backplane Layout

*NOTE: The option strap located near R7 on the outside edge of the VCM board should be strapped between B and C. Do NOT change the position of this strap. The strap connection A to B will connect the Music On Hold source to both Music On Hold and Background Music.*



## Section 3

# Cabling and Cross Connection

### 3.1 STATION PORT CONNECTIONS

Telephones are connected to the system via industry-standard twisted, 2-pair, 22 or 24 gauge wire. The station cable run from the main distribution frame to the station wall jack should not exceed 1200 feet for 24 gauge wire (1500 feet with 22 gauge wire). It is recommended that the station cable contain 4 pairs of wires.

*NOTE: The use of the Station LSI port card (p/n 15700) allows station cables lengths of up to 2000 feet for 24 gauge wire, and 2500 feet for 22 gauge wire.*

Only one station may be connected to a port. It is not possible to bridge station ports.

The system communicates with each phone using 4 wires. Two of the wires are used to send digital information (voice and control signals) from the system to the telephone, and two wires are used by the telephone to send digital information to the system. All 4 wires are necessary for the telephone to function.

Each telephone connected to a station port has two digital channels. The primary channel is used for voice communications only. The secondary channel is used with digital display phones to provide either a secondary talk path for off-hook announcing, or for serial data communications.

The Off Premise Extension Interface (OPXI), ISOETEC Electronic Phone Interface (IEPI), Relay/Sensor Interface (RSI), DSS Console, Digital Voice Announcer, and the Digital Data Interface (DDI) are all considered to be telephones by the System/228. These interfaces are all wired to the system the same as a digital telephone.

Telephones are wired to the Main Distribution Frame (MDF) which is connected to the station port cards. Twelve stations can be connected to each Station port card.

Each port card is shipped with the 25 pair cable that connects it to the Main Distribution Frame. This cable has an exposed shield at one end, and must be used when installing the system to comply with FCC Part 15 regulations.

The station to MDF cable (p/n 01023) is installed with the exposed shield closest to the cabinet. A cable tie or similar device is used to secure the exposed braid to the bottom plate of the cabinet (see Figure 3-1 for more detail). The paint is removed from a section of the bottom plate to allow a ground connection between the exposed braid of the cable and the cabinet. The cable is then dressed out the back of the cabinet, and connected to the MDF. Once the cable is connected to the system, a standard 25 pair cable may be used, if necessary, to reach the MDF.

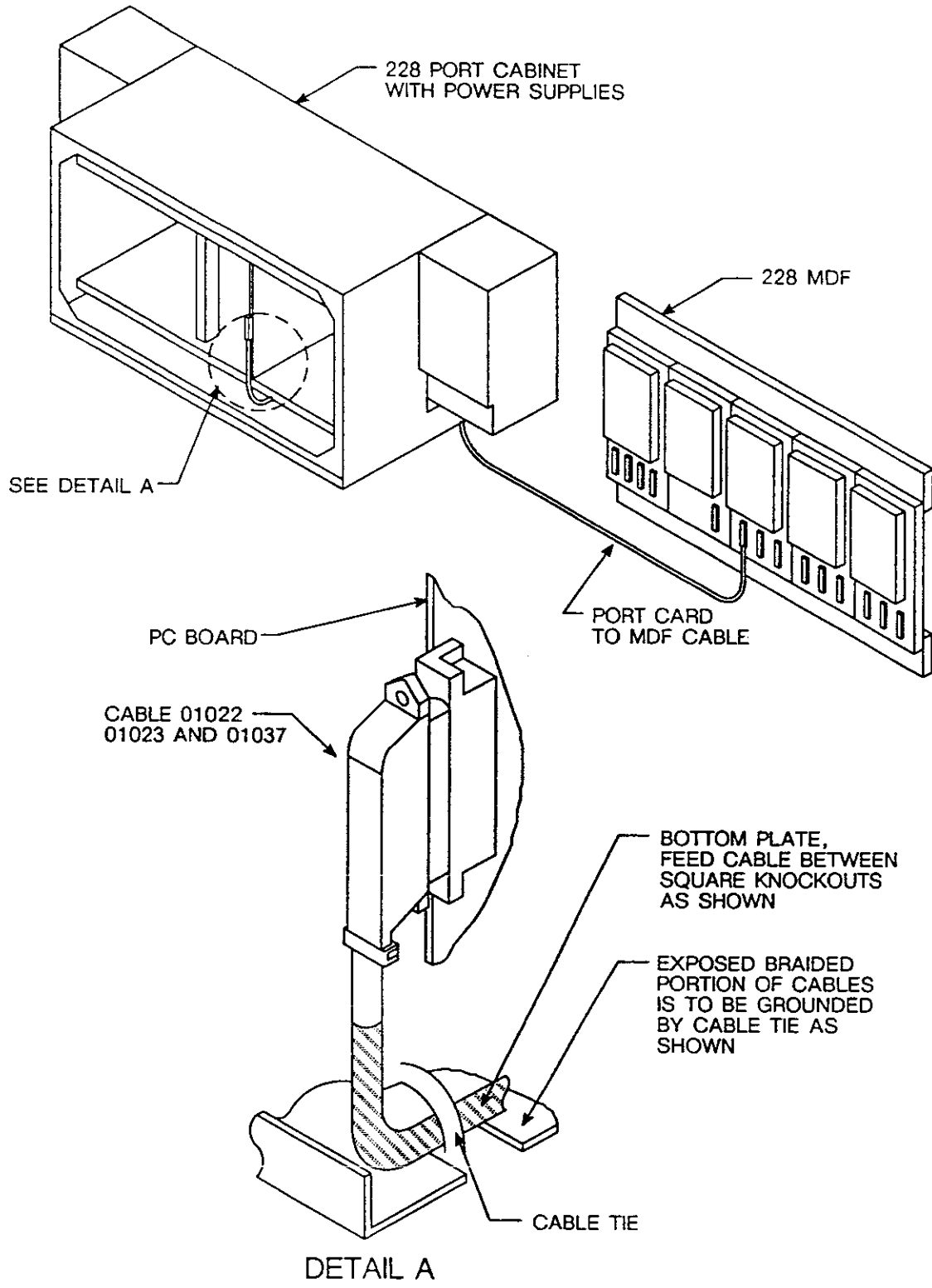


Figure 3-1 Port Cable To MDF

*Cabling and Cross Connection*

The ISOETEC Main Distribution Frames are designed to simplify and speed the installation time of ISOETEC Telephone Systems.

The 228 MDF is designed with three basic panels: a trunk panel, an I/O panel, and station panels. The 228 MDF is equipped with 3 station panels. Additional station and trunk panels can be added as the system grows.

- 228 MDF - part number 220110
- 228 Trunk Panel - part number 220111
- 228 I/O Panel - part number 220112
- 228 Station Panel - part number 220113

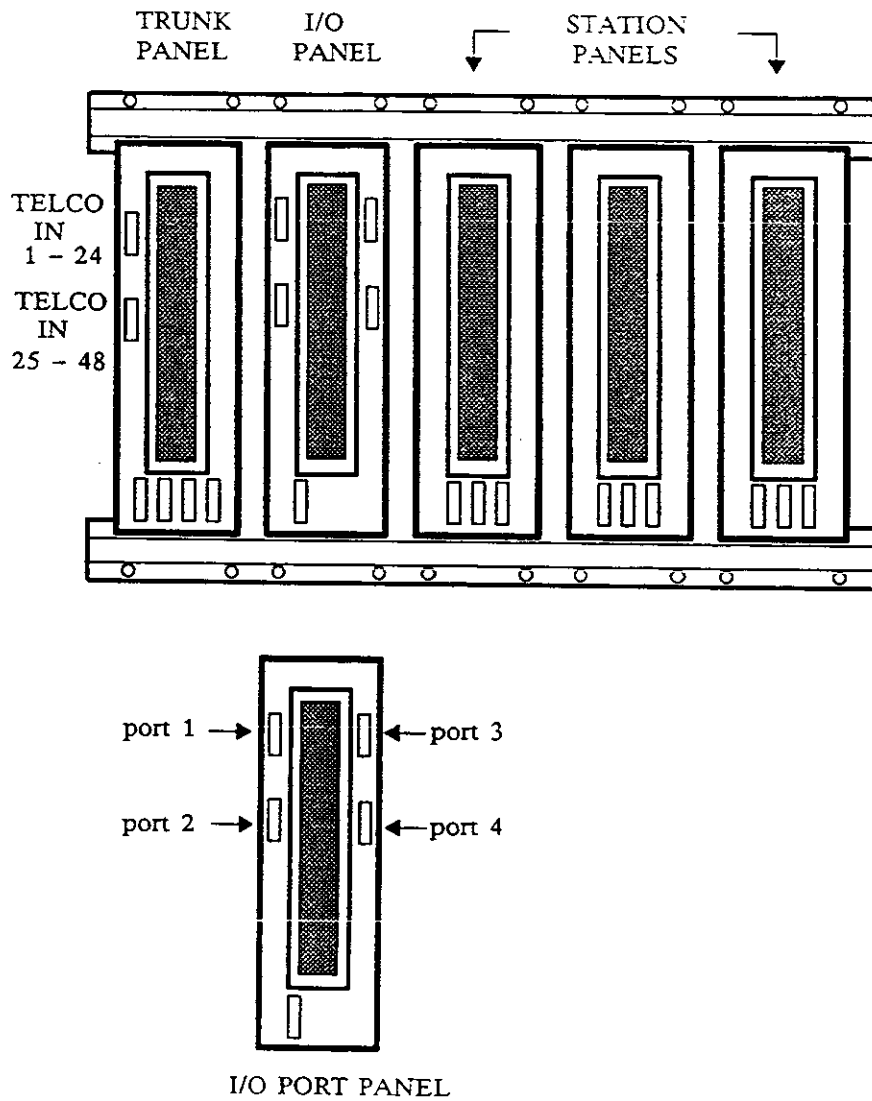


Figure 3-2 System/228 MDF

The Station Panel is a specially designed 66B6 connecting block with provisions for two 25 pair cable connections. These connectors are used to connect with the system port cards.

On each station panel there are six columns of connecting pins labeled A (left most column) through F (right most column). Connections between the 25 pair cables and station cables are achieved by bridging pairs of columns together. Columns B, D and E are wired to the 25 pair connectors, and thus to the station ports. The cables to the individual stations are wired to the connecting pins in columns A, C, and F. Bridging clips are used to connect columns A and B, columns C and D, and columns E and F.

Each station connection consists of 2 columns, and 6 rows of connecting pins. The first 4 rows of pins are connected to the 25 pair cable connected to the system. The remaining 2 rows of pins are not used at this time with the ISOETEC System/228.

Station cable is connected to the MDF at one end, and a modular connecting block at the other end. The modular line cord of the telephone is then plugged into the connecting block.

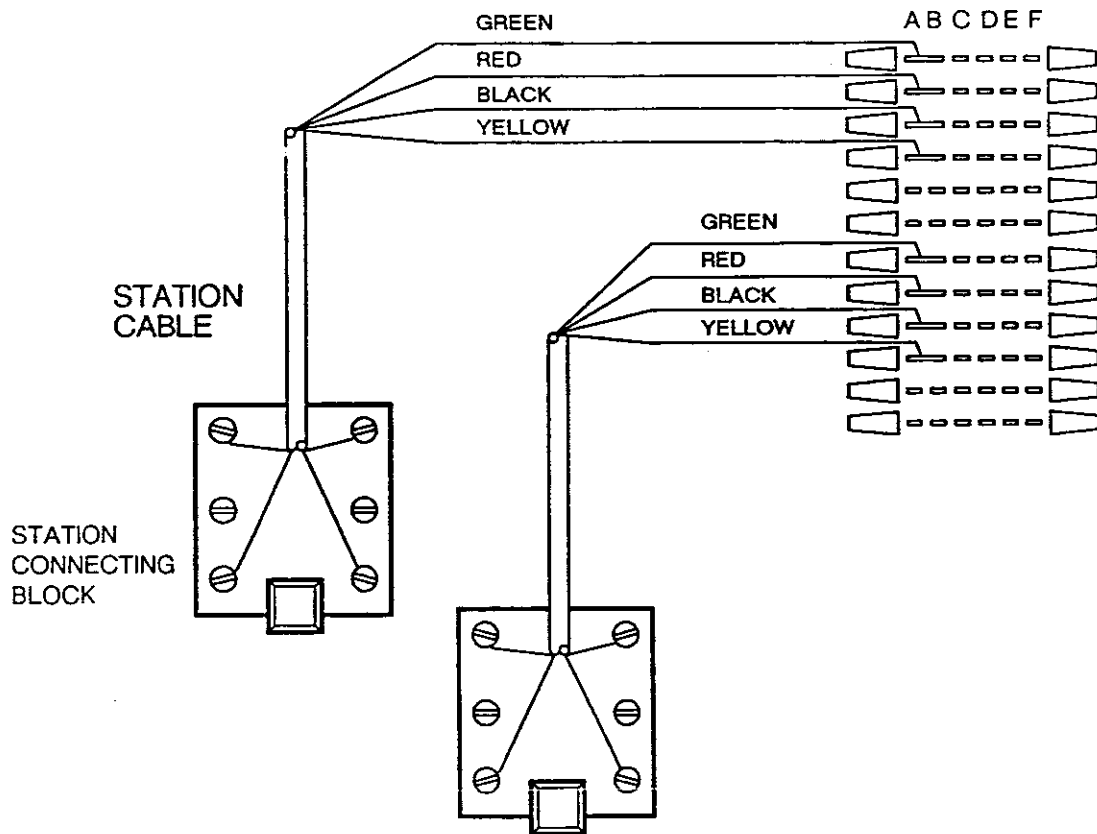


Figure 3-3 MDF Station Connections

A		B		C		D		E		F	
01	TT	09	TT	TT	17						
--	TR	--	TR	TR	--						
--	RT	--	RT	RT	--						
--	RR	--	RR	RR	--						
--	--	--	--	--	--						
--	--	--	--	--	--						
02	TT	10	TT	TT	18						
--	TR	--	TR	TR	--						
--	RT	--	RT	RT	--						
--	RR	--	RR	RR	--						
--	--	--	--	--	--						
--	--	--	--	--	--						
03	TT	11	TT	TT	19						
--	TR	--	TR	TR	--						
--	RT	--	RT	RT	--						
--	RR	--	RR	RR	--						
--	--	--	--	--	--						
--	--	--	--	--	--						
04	TT	12	TT	TT	20						
--	TR	--	TR	TR	--						
--	RT	--	RT	RT	--						
--	RR	--	RR	RR	--						
--	--	--	--	--	--						
--	--	--	--	--	--						
05	TT	13	TT	TT	21						
--	TR	--	TR	TR	--						
--	RT	--	RT	RT	--						
--	RR	--	RR	RR	--						
--	--	--	--	--	--						
--	--	--	--	--	--						
06	TT	14	TT	TT	22						
--	TR	--	TR	TR	--						
--	RT	--	RT	RT	--						
--	RR	--	RR	RR	--						
--	--	--	--	--	--						
--	--	--	--	--	--						
07	TT	15	TT	TT	23						
--	TR	--	TR	TR	--						
--	RT	--	RT	RT	--						
--	RR	--	RR	RR	--						
--	--	--	--	--	--						
--	--	--	--	--	--						
08	TT	16	TT	TT	24						
--	TR	--	TR	TR	--						
--	RT	--	RT	RT	--						
--	RR	--	RR	RR	--						
--	--	--	--	--	--						
--	--	--	--	--	--						
--	EXT	--	EXT	--	--						
--	PAGE	--	PAGE	--	--						

Figure 3-4 228 MDF Station Panel Designations

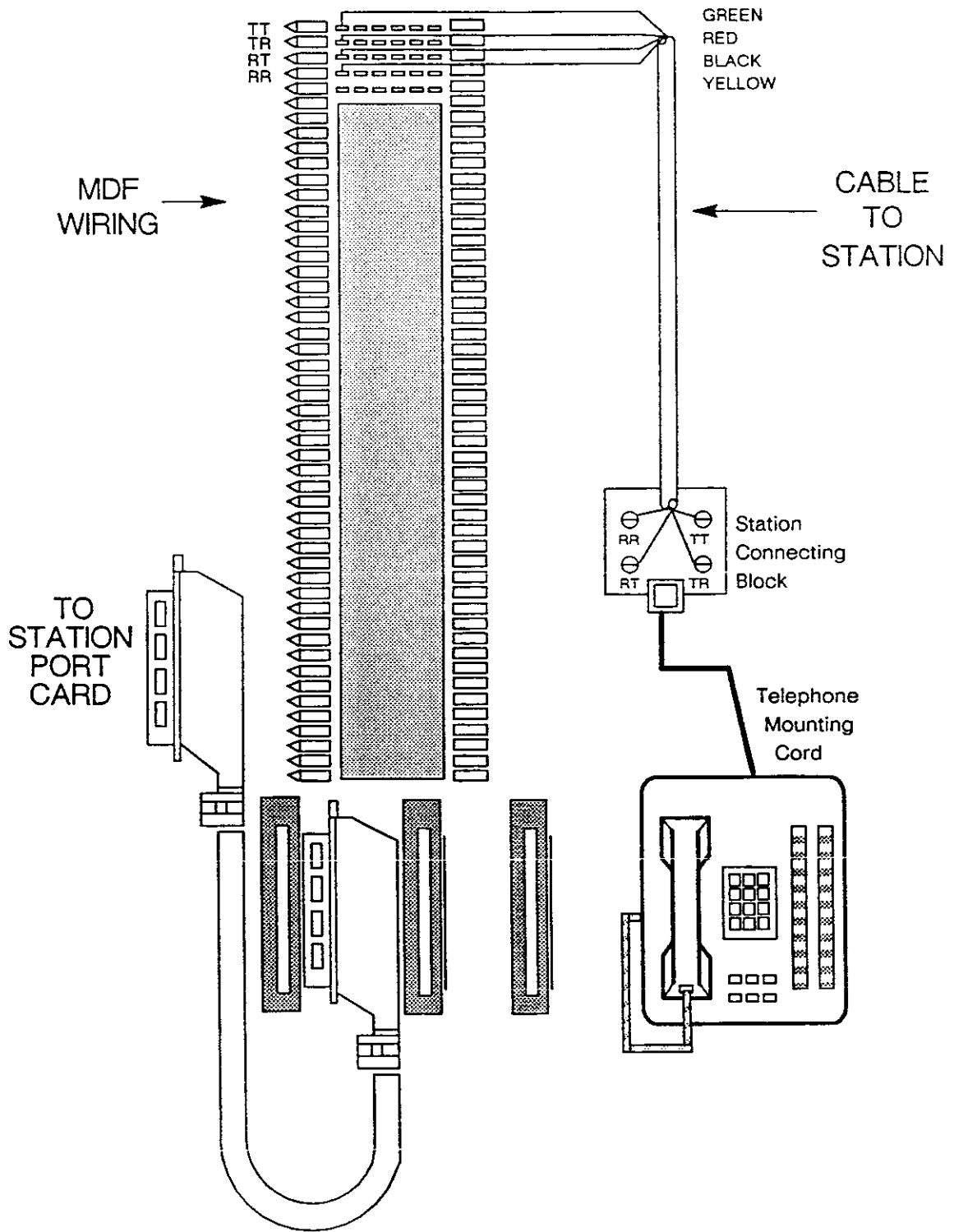


Figure 3-5 Station Wiring



For those who prefer to design their own main distribution frame, the following table lists the port configuration of the cable connected to a station port card.

Table 3-1 Station Port Configuration

CABLE PIN AND COLOR	PORT	LEAD DESIGNATION	CONNECTING BLOCK COLOR
26 wht/blu	001	Transmit Tip	green
1 blu/wht		Transmit Ring	red
27 wht/org	002	Receive Tip	black
2 org/wht		Receive Ring	yellow
28 wht/grn	003	Transmit Tip	green
3 grn/wht		Transmit Ring	red
29 wht/brn	004	Receive Tip	black
4 brn/wht		Receive Ring	yellow
30 wht/slt	005	Transmit Tip	green
5 slt/wht		Transmit Ring	red
31 red/blu	006	Receive Tip	black
6 blu/red		Receive Ring	yellow
32 red/org	007	Transmit Tip	green
7 org/red		Transmit Ring	red
33 red/grn	008	Receive Tip	black
8 grn/red		Receive Ring	yellow
34 red/brn	009	Transmit Tip	green
9 brn/red		Transmit Ring	red
35 red/slt	010	Receive Tip	black
10 slt/red		Receive Ring	yellow
36 blk/blu	011	Transmit Tip	green
11 blu/blk		Transmit Ring	red
37 blk/org	012	Receive Tip	black
12 org/blk		Receive Ring	yellow
38 blk/grn	EXT.	Transmit Tip	green
13 grn/blk		Transmit Ring	red
39 blk/brn	PAGE	Receive Tip	black
14 brn/blk		Receive Ring	yellow
40 blk/slt	008	Transmit Tip	green
15 slt/blk		Transmit Ring	red
41 yel/blu	009	Receive Tip	black
16 blu/yel		Receive Ring	yellow
42 yel/org	010	Transmit Tip	green
17 org/yel		Transmit Ring	red
43 yel/grn	011	Receive Tip	black
18 grn/yel		Receive Ring	yellow
44 yel/brn	012	Transmit Tip	green
19 brn/yel		Transmit Ring	red
45 yel/slt	011	Receive Tip	black
20 slt/yel		Receive Ring	yellow
46 vio/blu	011	Transmit Tip	green
21 blu/vio		Transmit Ring	red
47 vio/org	012	Receive Tip	black
22 org/vio		Receive Ring	yellow
48 vio/grn	012	Transmit Tip	green
23 grn/vio		Transmit Ring	red
49 vio/brn	012	Receive Tip	black
24 brn/vio		Receive Ring	yellow
50 vio/slt	EXT.	Tip	
25 slt/vio	PAGE	Ring	

### 3.2 TRUNK AND DID CONNECTIONS

The local telephone operating company usually provides CO lines on an RJ-21X connector. These lines are in turn connected to the TELCO IN jack on the 228 MDF. A 25 pair cable connects the TELCO OUT lines to the cable connector on each CO port card. Each cable connects 12 CO lines to the CO port cards. The connector on the CO port card is a female connector. Active lines are then connected by the use of bridging clips. The DID port card is wired the same as a CO port card. However, the Loop/Ground Start Trunk port card is wired inverted with respect to tip and ring.

The trunk line to MDF cable (p/n 01022) is installed with the exposed shield closest to the cabinet. A cable tie or similar device is used to secure the exposed braid to the bottom plate of the cabinet (see Figure 3-1 for more detail). The paint is removed from a section of the bottom plate to allow a ground connection between the exposed braid of the cable and the cabinet. The cable is then dressed out the back of the cabinet, and connected to the MDF. Once the cable is connected to the system, a standard 25 pair cable may be used, if necessary, to reach the MDF.

TABLE 3-2 CO Port Wiring Configuration

CABLE PIN AND COLOR	PORT	CO and DID LEAD DESIGNATION	LOOP/GROUND START LEAD DESIGNATION	
26	wht/blu	001	Tip	Ring
1	blu/wht		Ring	Tip
27	wht/org	002	Tip	Ring
2	org/wht		Ring	Tip
28	wht/grn	003	Tip	Ring
3	grn/wht		Ring	Tip
29	wht/brn	004	Tip	Ring
4	brn/wht		Ring	Tip
30	wht/slt	005	Tip	Ring
5	slt/wht		Ring	Tip
31	red/blu	006	Tip	Ring
6	blu/red		Ring	Tip
32	red/org	007	Tip	Ring
7	org/red		Ring	Tip
33	red/grn	008	Tip	Ring
8	grn/red		Ring	Tip
34	red/brn	009	Tip	Ring
9	brn/red		Ring	Tip
35	red/slt	010	Tip	Ring
10	slt/red		Ring	Tip
36	blk/blu	011	Tip	Ring
11	blu/blk		Ring	Tip
37	blk/org	012	Tip	Ring
12	org/blk		Ring	Tip

The remainder of the cable is not used.

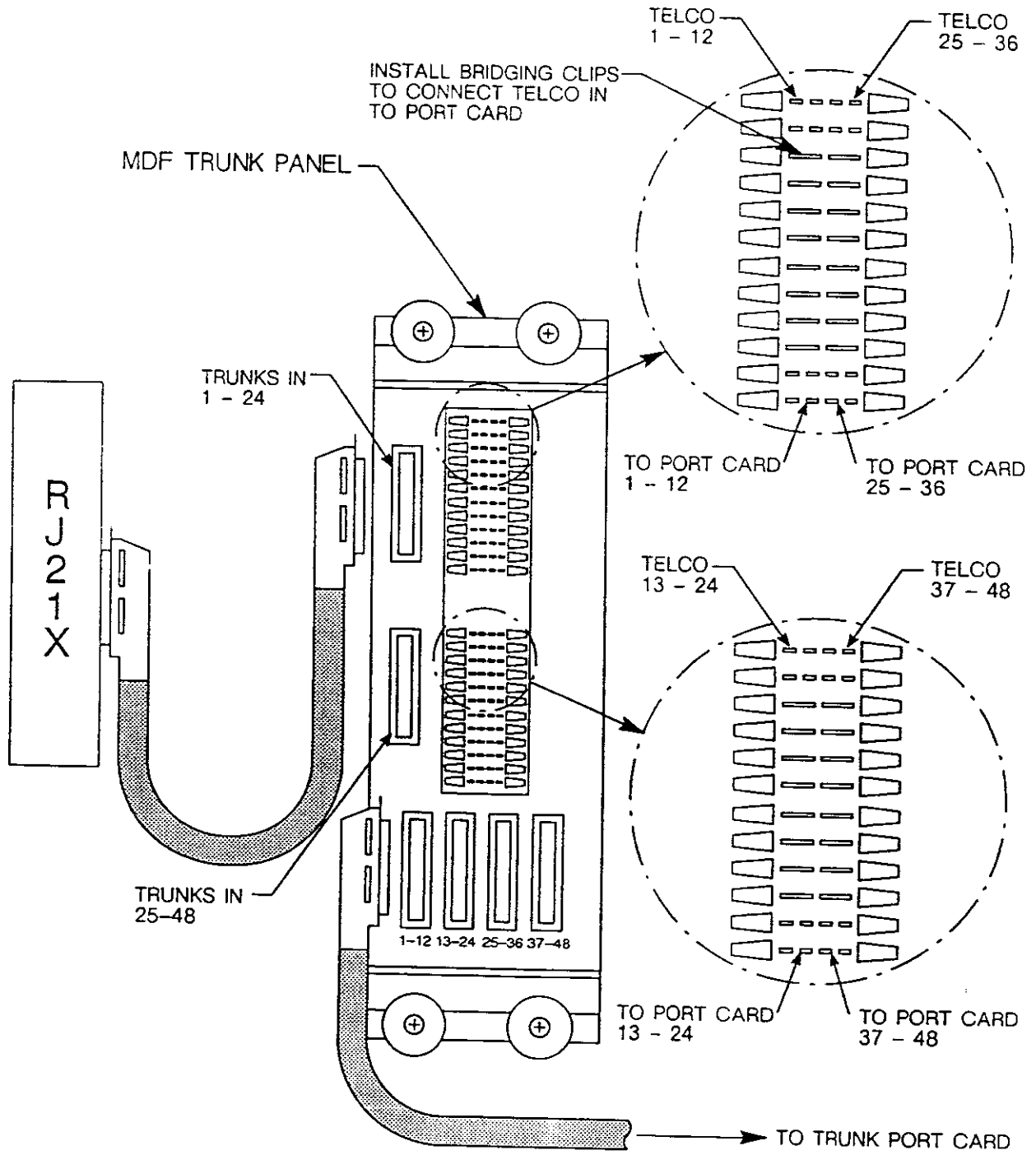


Figure 3-6 Trunk Cabling

### 3.3 E&M TIE LINE COMBINATION PORT CARD

The E&M Tie Line Combination port card provides 6 station ports and 4 tie line ports. The 6 station ports provide for all of the features of the digital telephone except there is only the primary digital channel. Therefore, these ports cannot be used to support display phones which utilize the second voice path, or the data feature.

The E&M tie line combination port card is connected to the main distribution frame in the same manner as the other port cards, via a 25 pair cable. Stations are wired to the E&M tie line combination port card the same as a station port card.

The local telephone operating company provides tie lines in a number of configurations. The ISOETEC System/228 uses an E&M, 2-wire, type II signal tie line which is terminated on an RJ-2FX connector. Active tie lines are then cross connected from the TELCO demark to the main distribution frame. Table 3-3 shows wire color and termination points for the E&M Tie Line Combination card.

The E&M Combo port to MDF cable (p/n 01023) is installed with the exposed shield closest to the cabinet. A cable tie or similar device is used to secure the exposed braid to the bottom plate of the cabinet (see Figure 3-1 for more detail). The paint is removed from a section of the bottom plate to allow a ground connection between the exposed braid of the cable and the cabinet. The cable is then dressed out the back of the cabinet, and connected to the MDF. Once the cable is connected to the system, a standard 25 pair cable may be used, if necessary, to reach the MDF.

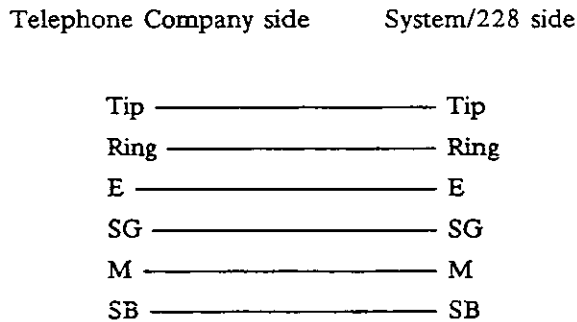


Figure 3-7 Tie Line Cross Connection

#### 3.3.1 TRANSPARENT INTERCOM DIALING

When several systems are connected together with a tie line network, *Transparent Intercom Dialing* allows a station user to call, or transfer to, any extension in the network using a 4-digit extension number. The station user does not need to know tie line access codes, or anything else about the network. The network can have a maximum of 1000 extension numbers.

The number of tie lines required between each system (within the Transparent Intercom Dialing scheme) is dependent upon the amount of traffic between the systems. Tie Lines are installed following standard System/228 practices. See the *Tie Line* and *Transparent Intercom Dialing* sections of this manual.

### 3.3.2 WIRING TIE LINES ON SYSTEMS INSTALLED IN CANADA

The following procedures must be followed when wiring E&M Tie Lines to a system installed in Canada.

*NOTE: This installation procedure must be followed in order to comply with the requirements of the Canadian Standards Association.*

1. Connect one end of a .5 amp 125V Pico Fuse (Fuse kit part number 440005) to each of the following signal lead connections on either a BIC MDF or an ISOETEC MDF:

E  
SG  
M  
SB

2. Splice the remaining end of the Pico fuse with the corresponding cross connect leads for E, SG, M, and SB coming from the registered interface jack CA2FA.

*NOTE: The fuse is not needed for the Tip and Ring leads.*

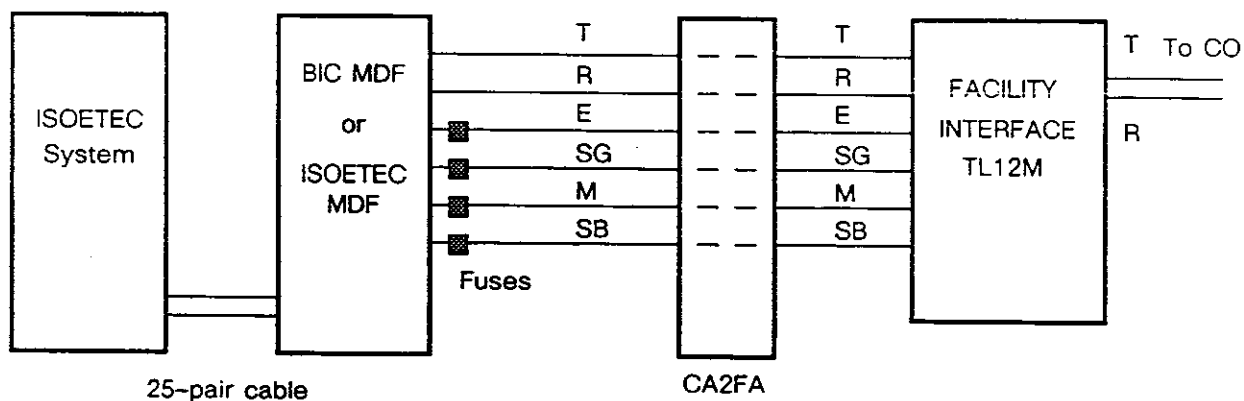


Figure 3-8 Wiring Tie Lines In Canada

A	B	C	D	E	F
01 -- -- -- -- --	TT TR RT RR -- --	TL 2 -- -- -- -- --	E SG M SB -- --	TT TR RT RR -- --	05 -- -- -- -- --
02 -- -- -- -- --	TT TR RT RR -- --	TL 3 -- -- -- -- --	TIP RING E SG -- --	TT TR RT RR -- --	06 -- -- -- -- --
03 -- -- -- -- --	TT TR RT RR -- --	-- -- TL 4 -- -- --	M SB TIP RING -- --	TIP RING E SG -- --	TL 1 -- -- -- -- --
04 -- -- -- -- --	TT TR RT RR -- --	-- -- -- -- -- --	E SG M SB -- --	M SB TIP RING -- --	TL 2 -- -- -- -- --
05 -- -- -- -- --	TT TR RT RR -- --	01 -- -- -- -- --	TT TR RT RR -- --	E SG M SB -- --	-- -- -- -- --
06 -- -- -- -- --	TT TR RT RR -- --	02 -- -- -- -- --	TT TR RT RR -- --	TIP RING E SG -- --	TL 3 -- -- -- -- --
TL 1 -- -- -- -- --	TIP RING E SG -- --	03 -- -- -- -- --	TT TR RT RR -- --	M SB TIP RING -- --	TL 4 -- -- -- -- --
-- -- TL 2 -- -- -- --	M SB TIP RING -- --	04 -- -- -- -- --	TT TR RT RR -- --	E SG M SB -- --	-- -- -- -- -- --

Figure 3-9 228 MDF Designations For An E&M Tie Line

For those who prefer to design their own main distribution frame, the following table lists the port configuration of the cable connected to an E&M Tie Line port card.

Table 3-3 E&amp;M Tie Line Port Configuration

CABLE PIN AND COLOR	PORT	LEAD DESIGNATION	CONNECTING BLOCK COLOR
26 wht/blu	001	Transmit Tip	green
1 blu/wht		Transmit Ring	red
27 wht/org	002	Receive Tip	black
2 org/wht		Receive Ring	yellow
28 wht/grn	003	Transmit Tip	green
3 grn/wht		Transmit Ring	red
29 wht/brn	004	Receive Tip	black
4 brn/wht		Receive Ring	yellow
30 wht/slt	005	Transmit Tip	green
5 slt/wht		Transmit Ring	red
31 red/blu	006	Receive Tip	black
6 blu/red		Receive Ring	yellow
32 red/org	007	Transmit Tip	green
7 org/red		Transmit Ring	red
33 red/grn	008	Receive Tip	black
8 grn/red		Receive Ring	yellow
34 red/brn	009	Transmit Tip	green
9 brn/red		Transmit Ring	red
35 red/slt	010	Receive Tip	black
10 slt/red		Receive Ring	yellow
36 blk/blu	001	Transmit Tip	green
11 blu/blk		Transmit Ring	red
37 blk/org	002	Receive Tip	black
12 org/blk		Receive Ring	yellow
38 blk/grn	003	Tip	
13 grn/blk		Ring	
39 blk/brn	004	E	
14 brn/blk		SG	
40 blk/slt	005	M	
15 slt/blk		SB	
41 yel/blu	006	Tip	
16 blu/yel		Ring	
42 yel/org	007	E	
17 org/yel		SG	
43 yel/grn	008	M	
18 grn/yel		SB	
44 yel/brn	009	Tip	
19 brn/yel		Ring	
45 yel/slt	010	E	
20 slt/yel		SG	
46 vio/blu	001	M	
21 blu/vio		SB	
47 vio/org	002	Tip	
22 org/vio		Ring	
48 vio/grn	003	E	
23 grn/vio		SG	
49 vio/brn	004	M	
24 brn/vio		SB	
50 vio/slt	005		
25 slt/vio			

### 3.4 OPX PORT CARD

The OPX port card provides 8 OPX ports which can be used to support any conventional tip and ring, DTMF device such as 2500-type telephones, Voice Message System ports, loud ringing bells, or OPXs (Off-Premise Extensions). The OPX port card requires software version 5.26 or higher to operate. When used with off-premise stations, the facility interface code is OL13B, and the service code is 9.0 Y. The loop limit is 9000 feet.

*NOTE: The OPX port card will not work with rotary dial devices. There is no power failure transfer on this card.*

The OPX port to MDF cable (p/n 01037) is installed with the exposed shield closest to the cabinet. A cable tie or similar device is used to secure the exposed braid to the bottom plate of the cabinet (see Figure 3-1 for more detail). The paint is removed from a section of the bottom plate to allow a ground connection between the exposed braid of the cable and the cabinet. The cable is then dressed out the back of the cabinet, and connected to the MDF. Once the cable is connected to the system, a standard 25 pair cable may be used, if necessary, to reach the MDF.

For those that prefer to design their own MDF, the following table lists the OPX port card cable configuration:

**Table 3-4 OPX LSI Port Configuration**

CABLE PIN AND COLOR	PORT	LEAD DESIGNATION	CONNECTING BLOCK COLOR
26 wht/blu	001	Tip	green
1 blu/wht		Ring	red
27 wht/org	002	Tip	green
2 org/wht		Ring	red
28 wht/grn	003	Tip	green
3 grn/wht		Ring	red
29 wht/brn	004	Tip	green
4 brn/wht		Ring	red
30 wht/slt	005	Tip	green
5 slt/wht		Ring	red
31 red/blu	006	Tip	green
6 blu/red		Ring	red
32 red/org	007	Tip	green
7 org/red		Ring	red
33 red/grn	008	Tip	green
8 grn/red		Ring	red
34 red/brn	008	Tip	green
9 brn/red		Ring	red
35 red/slt	008	Tip	green
10 slt/red		Ring	red
36 blk/blu	008	Tip	green
11 blu/blk		Ring	red
37 blk/org	008	Tip	green
12 org/blk		Ring	red
38 blk/grn	008	Tip	green
13 grn/blk		Ring	red
39 blk/brn	008	Tip	green
14 brn/blk		Ring	red
40 blk/slt	008	Tip	green
15 slt/blk		Ring	red



The 228 MDF connections to the OPX port card are shown in the following diagram:

		A	B	C	D	E	F
01	T	--	--			TT	17
--	R	--	--			TR	--
--	--	--	--			RT	--
--	--	--	--			RR	--
--	--	--	--			--	--
--	--	--	--			--	--
02	T	--	--			TT	18
--	R	--	--			TR	--
--	--	--	--			RT	--
--	--	--	--			RR	--
--	--	--	--			--	--
--	--	--	--			--	--
03	T	--	--			TT	19
--	R	--	--			TR	--
--	--	--	--			RT	--
--	--	--	--			RR	--
--	--	--	--			--	--
--	--	--	--			--	--
04	T	--	--			TT	20
--	R	--	--			TR	--
--	--	--	--			RT	--
--	--	--	--			RR	--
--	--	--	--			--	--
--	--	--	--			--	--
05	T		13	TT		TT	21
--	R		--	TR		TR	--
--	--		--	RT		RT	--
--	--		--	RR		RR	--
--	--		--	--		--	--
--	--		--	--		--	--
06	T		14	TT		TT	22
--	R		--	TR		TR	--
--	--		--	RT		RT	--
--	--		--	RR		RR	--
--	--		--	--		--	--
--	--		--	--		--	--
07	T		15	TT		TT	23
--	R		--	TR		TR	--
--	--		--	RT		RT	--
--	--		--	RR		RR	--
--	--		--	--		--	--
--	--		--	--		--	--
08	T		16	TT		TT	24
--	R		--	TR		TR	--
--	--		--	RT		RT	--
--	--		--	RR		RR	--
--	--		--	--		--	--
--	--		--	--		--	--
--	--		--	EXT		--	--
--	--		--	PAGE		--	--

Figure 3-10 MDF Station Panel Designations For The OPX LSI Card

### 3.5 INPUT/OUTPUT PORTS

The circuitry for the I/O ports resides on the CPU, and is brought to the main distribution frame via an 18 pair cable with a 36 pin connector. The cable is connected to the system backplane connector J27.

*NOTE: The LSI DCM (p/n 15340) can be used to add six additional serial I/O ports to the system. These I/O ports are accessed using the Data Feature of the system. The connection between the I/O port and the data port is made using the System Programming screen. See the System Programming section of this manual.*

The backplane to MDF cable (p/n 01021) is installed with the exposed shield closest to the cabinet. A cable tie or similar device is used to secure the exposed braid to the bottom plate of the system cabinet (see Figure 3-11). The paint is removed from a section of the bottom plate to allow a ground connection between the exposed braid of the cable and the cabinet. The cable is dressed out the back of the cabinet, and terminated to the ISOETEC Transient Surge Suppressor (p/n 09010). An 18 pair cable is then connected from the ISOETEC Transient Surge Suppressor to the 228 MDF where access to the individual input/output ports is provided. The RS-232 ports are labeled ports 1 and 2. The RS-422 ports are ports 3 and 4.

*NOTE: The installation of the ISOETEC Transient Suppressor is required on all system installations.*

After running all station cables, tone out all cables to insure that there are no shorts on any of the station cable runs before connecting the Transient Surge Suppressor. If a short exists, correct the short before connecting the Suppressor to the system. Connecting the Transient Surge Suppressor with shorts in the station cables can cause improper grounding to the station port card.

*NOTE: This improper grounding can cause damage to the Station port card.*

An ISOBLOK surge suppressor (ISOETEC p/n 440129) should be used with any terminal, or printer connected to the system.

### 3.6 INTEGRATED OPERATOR TERMINAL

The ISOETEC Integrated Operator terminal is a serial data terminal operating at a baud rate of 9600 bps. Installation of the operator terminal requires an I/O port connection, and a connection to one of the station ports (usually the port that supports extension 3001). The terminal is usually connected to one of the two RS-422 input/output ports, but may be set up to be connected to one of the RS-232 ports.

*NOTE: The additional I/O ports provided by the LSI DCM (p/n 15340) can also be used to connect the Integrated Operator terminal.*

Two separate 4-pair cables should be run between the main distribution frame, and the location chosen for the operator terminal.

Terminate the station cable on the MDF station port selected for the operator terminal using the wiring chart for a digital station.

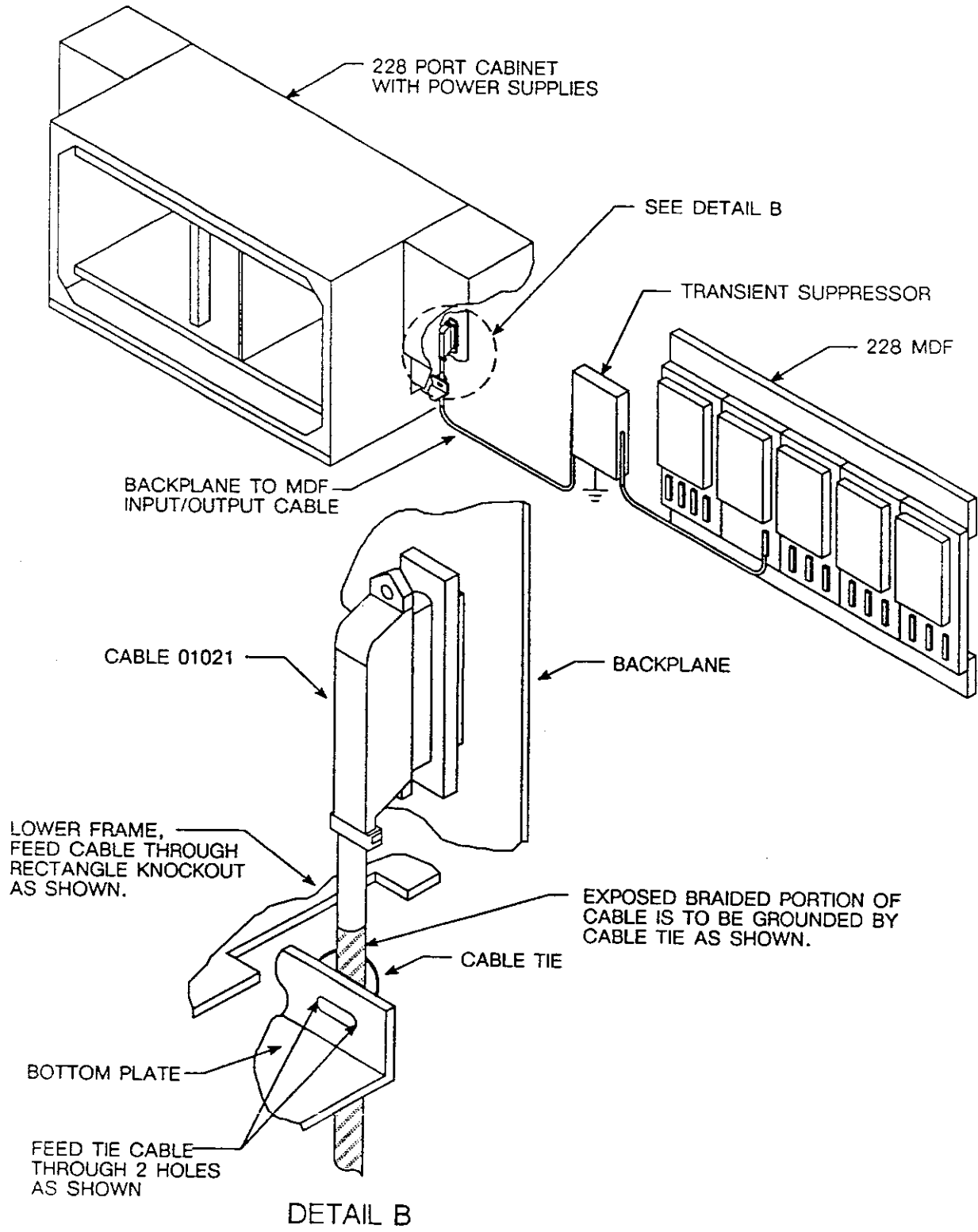


Figure 3-11 I/O (Service) Cable To MDF

### 3.6.1 WIRING THE OPERATOR TERMINAL RS-422

The following describes the connection of an Operator terminal to an RS-422 port:

The ISOETEC<sup>®</sup> Terminal (p/n 440017) can be connected to one of the system's I/O ports to provide an Integrated Operator terminal. The system provides 4 I/O ports on the main distribution frame (MDF). Ports 3 and 4 are configured for an RS-422 type connection. Terminals connected to either of these ports may be located up to 1000 feet from the MDF. Ports 3 and 4 default to 9600 baud.

1. Terminate the cable for the RS-422 connection to the main distribution frame on I/O port 3 or port 4 using the chart below. See also Figure 3-13.

From the MDF (port 3 or 4)      To the Operator Wall Jack

pin 1	—————	Green
pin 2	—————	Red
pin 3	—————	Black
pin 4	—————	Yellow
pin 5	—————	White

2. Plug one end of a modular cord into the station jack wired to one of the RS-422 ports.

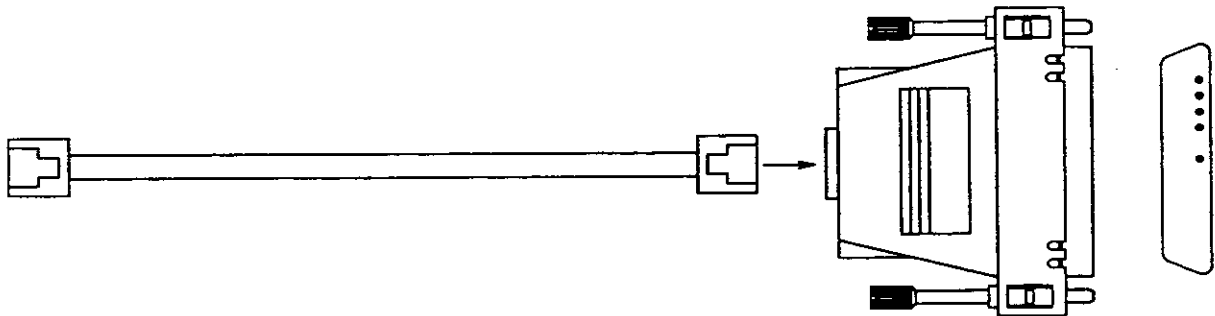


Figure 3-12 RS-422 Connector (p/n 330006) With Modular Cable

3. Connect the other end of the cord into the modular end the RS-422 plug (p/n 330006).
4. Connect the other end of the RS-422 plug (the DB-25 connector) into the connector labeled MO-DEM on the ISOETEC terminal.
5. Plug one end of a line cord into the 6 conductor jack on the back of the ISOETEC phone box, and the other end into the station jack wired to one of the extension ports.

The ISOETEC Terminal is now wired, and ready to be turned on.

Turn the power switch located on the right side of the terminal to the on position.

The screen of the terminal should first appear reverse video with all stars, and then appear blank with a cursor in the upper left corner of the screen.

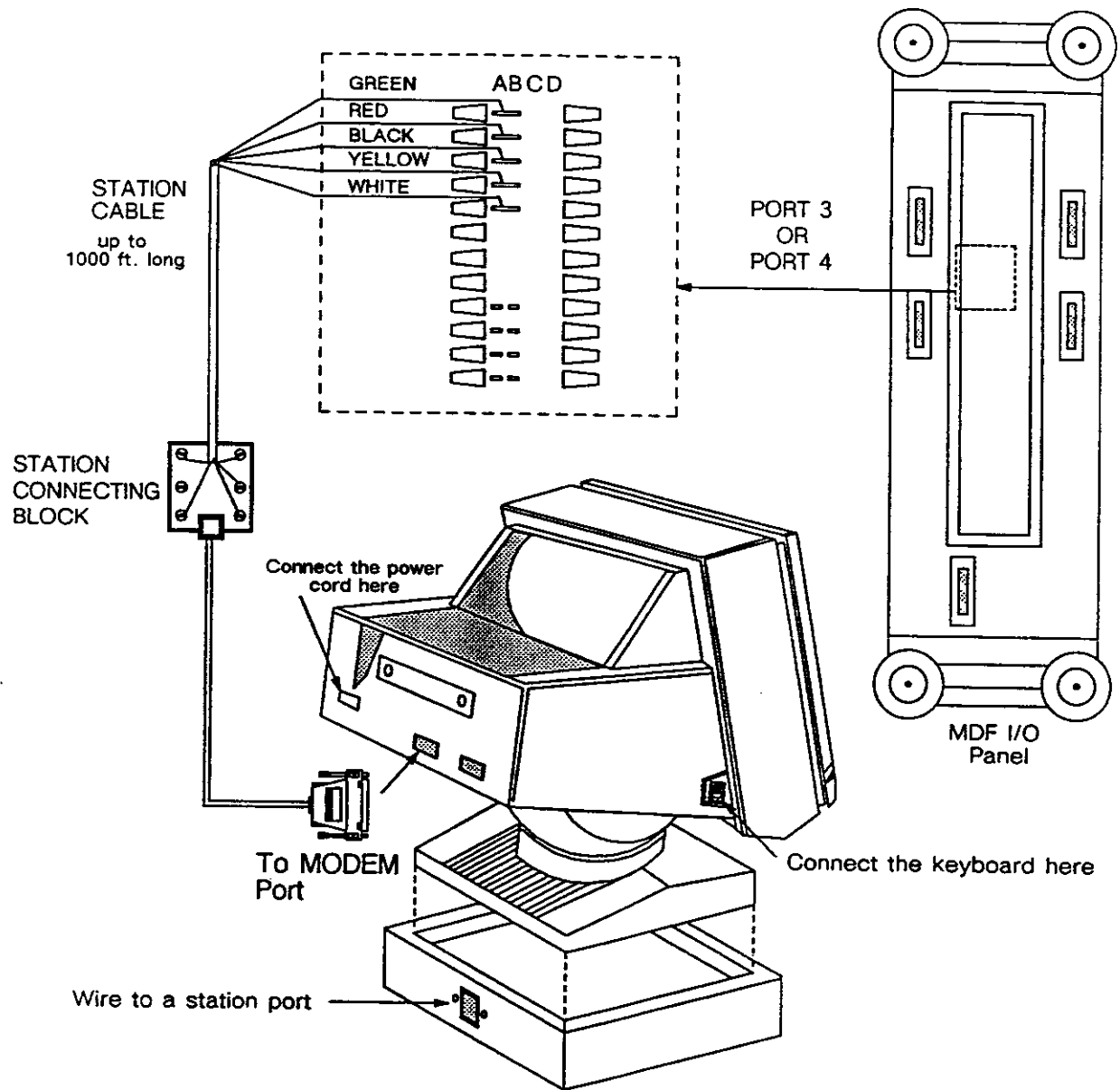


Figure 3-13 Wiring An RS-422 Terminal

### 3.6.2 TERMINAL SETUP RS-422

The terminal, in default mode, is programmed to operate RS-422 at 9600 baud. To insure that proper default settings are on the terminal, follow the procedures listed below.

1. Press the CONTROL and SETUP (ICM) keys simultaneously. This places the terminal in the setup mode.
2. Press the RIGHT arrow key  $\blacktriangleright$  until the highlighted box is over DEFAULT ALL.
3. Press the key labeled F10. The highlighted box appears over EXIT.
4. Press the key labeled F10 again.

The terminal is now ready for operation.

### 3.6.3 WIRING THE OPERATOR TERMINAL RS-232

The ISOETEC® Terminal (p/n 40017) can be connected to one of the system's I/O ports to provide an Integrated Operator terminal. The system provides 4 I/O ports on the main distribution frame (MDF). Ports 1 and 2 are configured for an RS-232 type connection. Serial devices connected to either of these ports may be located up to 50 feet from the MDF. Ports 1 and 2 default to 9600 baud.

This section details the connection of the ISOETEC® Terminal to either port 1 or 2:

1. The RS-232 ports can be accessed on the main distribution frame using one of two different methods of connection. Either a DB-25 type connector can be connected directly to the MDF, or a cable can be connected to the pins of the "66 B" type block. As the type of cabling and connections can vary with this type of operation, the pin to pin connections are listed in the following table. It is left to the discretion of the installer what type of connections to make.

From the MDF pins (port 1 or 2)	From the MDF connector (DB-25 type)	To CRT Terminal Connector
pin 1 —————	pin 2 —————	pin 3
pin 2 —————	pin 3 —————	pin 2
pin 3 —————	pin 5 —————	no connection
pin 4 —————	pin 6 —————	no connection
pin 5 —————	pin 7 —————	pin 7
pin 6 —————	pin 20 —————	pin 6

2. Make the connection between the MDF using either connection outlined above, and the AUX connector on the back of the terminal.
3. Plug one end of the 6 foot line cord into the 6 conductor jack on the back of the ISOETEC phone box, and the other end into the station jack wired to one of the extension ports.

The ISOETEC® Terminal is now wired, and ready to be turned on.

Turn the power switch located on the right side of the terminal to the on position.

The screen of the terminal should first appear reverse video with all stars, and then appear blank with a cursor in the upper left corner of the screen.

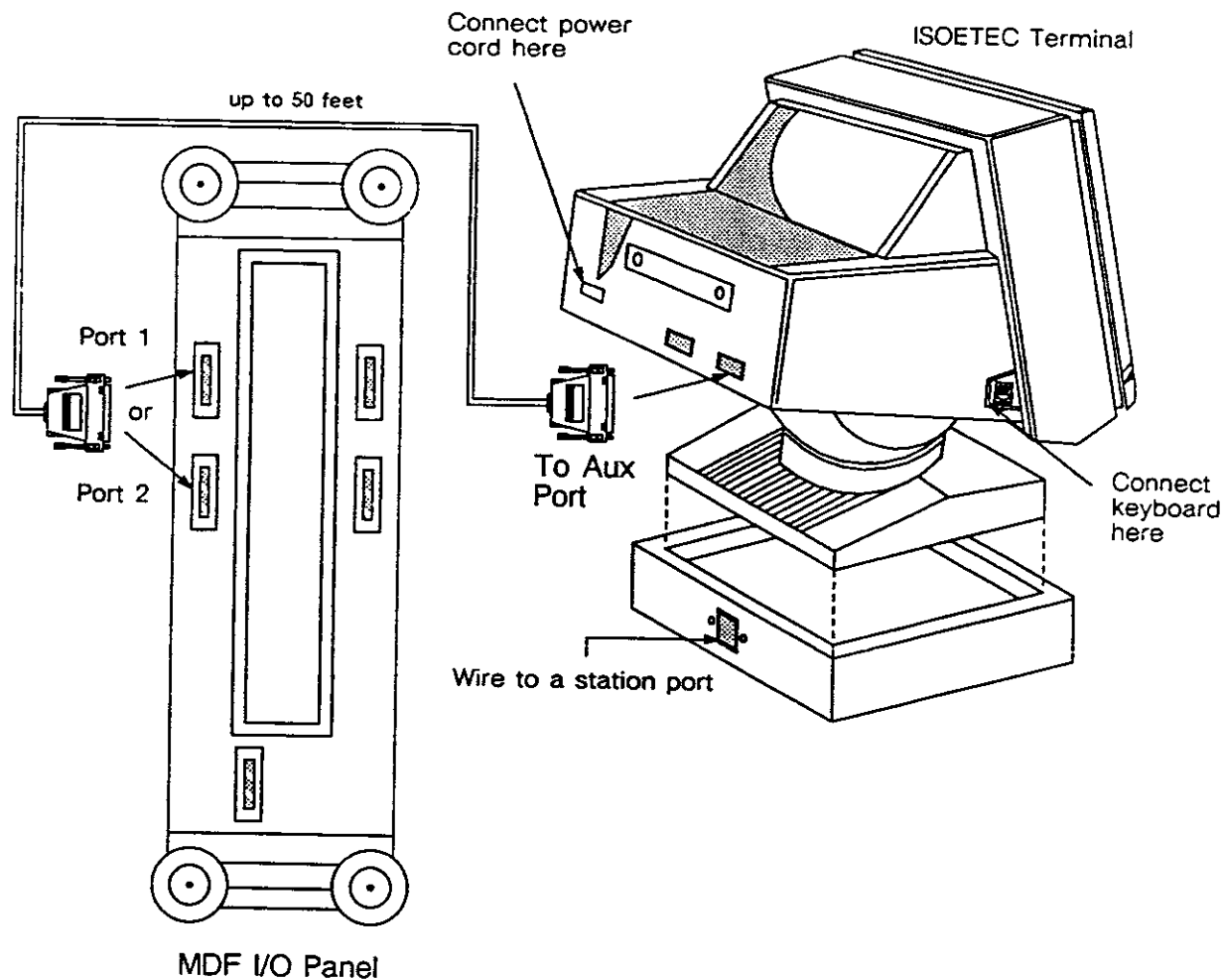


Figure 3-14 Wiring An RS-232 Terminal

### 3.6.4 TERMINAL SET-UP RS-232

The programming of the terminal setup must be changed to convert it from RS-422 to RS-232. To convert, follow the instructions provided below.

1. Press the CONTROL and SETUP (ICM) keys simultaneously. The terminal enters the setup mode.
2. Press the key labeled F2. PERSONALITY=OPT'S TERM is highlighted.
3. Press DOWN arrow key twice. DATA/PRINTER=MODEM/AUX is highlighted.
4. Press the space bar. DATA/PRINTER=AUX/MODEM is highlighted.
5. Press F10 key. The terminal setup menu appears with EXIT highlighted.
6. Press the RIGHT arrow key twice. SAVE ALL is highlighted.

7. Press the F10 key.

The terminal is now ready to be connected to one of the RS-232 ports of the system.

*NOTE: It is very important to place the RS-232 cable into the AUX jack located on the back of the operator's terminal. If it is accidentally placed into the MODEM port, the terminal may appear to function, however, the terminal does not transmit proper characters.*

### 3.6.5 WIRING THE OPERATOR TERMINAL - LSI DCM

In addition to the I/O ports provided on the MDF, the use of the LSI Data Control Module (p/n 15340) adds six asynchronous serial I/O ports to the system. These additional ports are accessed using the Data Feature of the System/228. The first four of these additional I/O ports can be used to connect the Integrated Operator terminal.

Software version 4.51 on the System/228 is the lowest software level that will support the use of the LSI DCM card.

The ISOETEC Phone Box used with the Integration kit (p/n 09004) for the Operator Terminal has been enhanced to include the circuitry necessary for a data connection. This new phone interface can be recognized by the DB-25 connector located on the left side of the box.

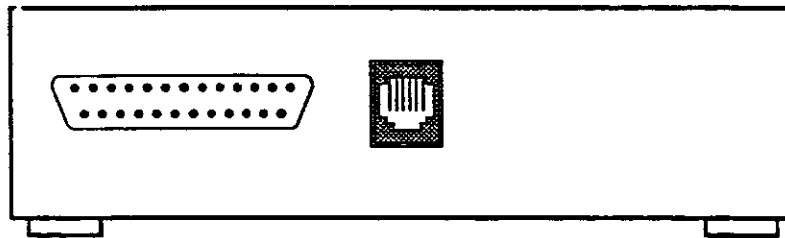


Figure 3-15 ISOETEC Phone Box

The use of this new *Phone Box* along with the LSI DCM allows the Operator Terminal to be connected to the system with one station connection. The one connection provides both the audio signals and data to the CRT terminal.

To install an Integrated Operator Terminal using the LSI DCM:

1. Wire a station port to the *Phone Box* using the procedures outlined for a digital station.
2. Connect an RS-232 cable between the DB-25 connector on the *Phone Box*, and the AUX port on the back of the terminal. Both the connector on the *Phone Box* and the AUX connector on the terminal are configured as DCE. Therefore, use an RS-232 cable with pins 2 and 3 reversed and pin 7 straight through.
3. Configure the terminal for RS-232. See *Terminal Set-up RS-232* in section 3.6.4.

When using this configuration, it is recommended to program the terminal and the system for XON/XOFF flow control.



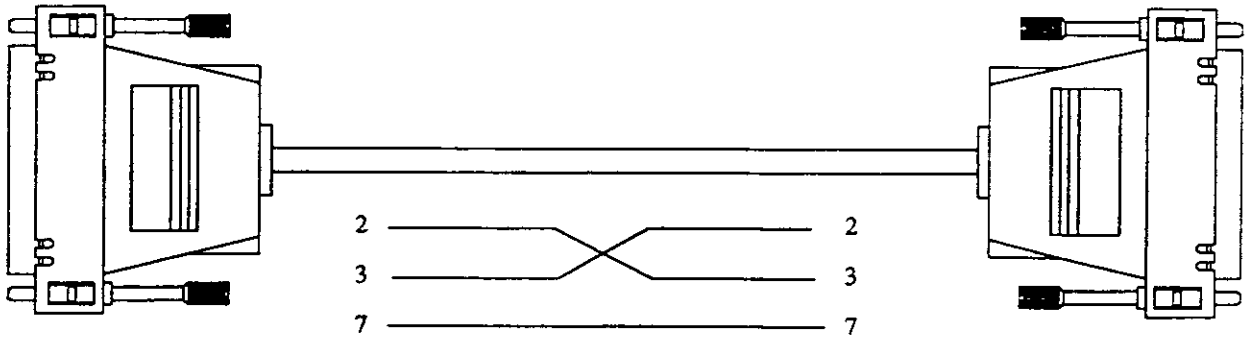


Figure 3-16 RS-232 Cable For Operator Terminal and Phone Box

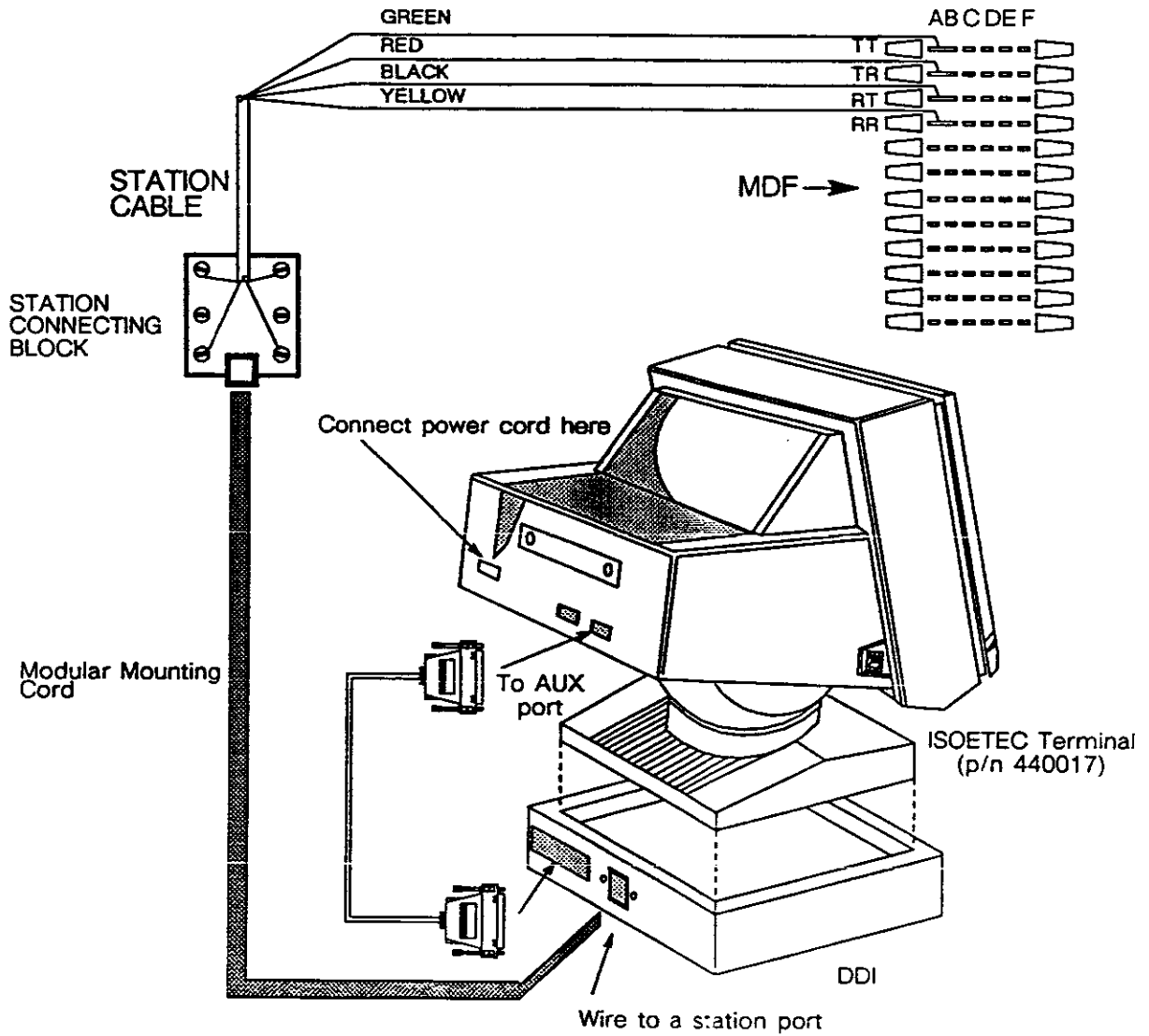


Figure 3-17 Wiring A Terminal To A Phone Box

### 3.6.6 SYSTEM PROGRAMMING WHEN USING THE LSI DCM

The *System Programming* screen (B screen) is used to connect *Data ports* to the 6 I/O ports provided by the LSI DCM. This programming is done in the *Port* area of the *System Programming* screen, and not with the *Data Menu* (T screen). See Figure 3-18.

*NOTE: When programming the ports provided by the LSI DCM it is important to enter all the parameters for the I/O port, such as BAUD RATE, PARITY, and PRINTER information PRIOR to entering the data port number.*

To program a data port to access one of the I/O ports as the Operator Terminal:

1. Press the letter B from the main menu to enter the *System Programming* screen.
2. Press the letter P to enter into the *Port* area of the *System Programming* screen.

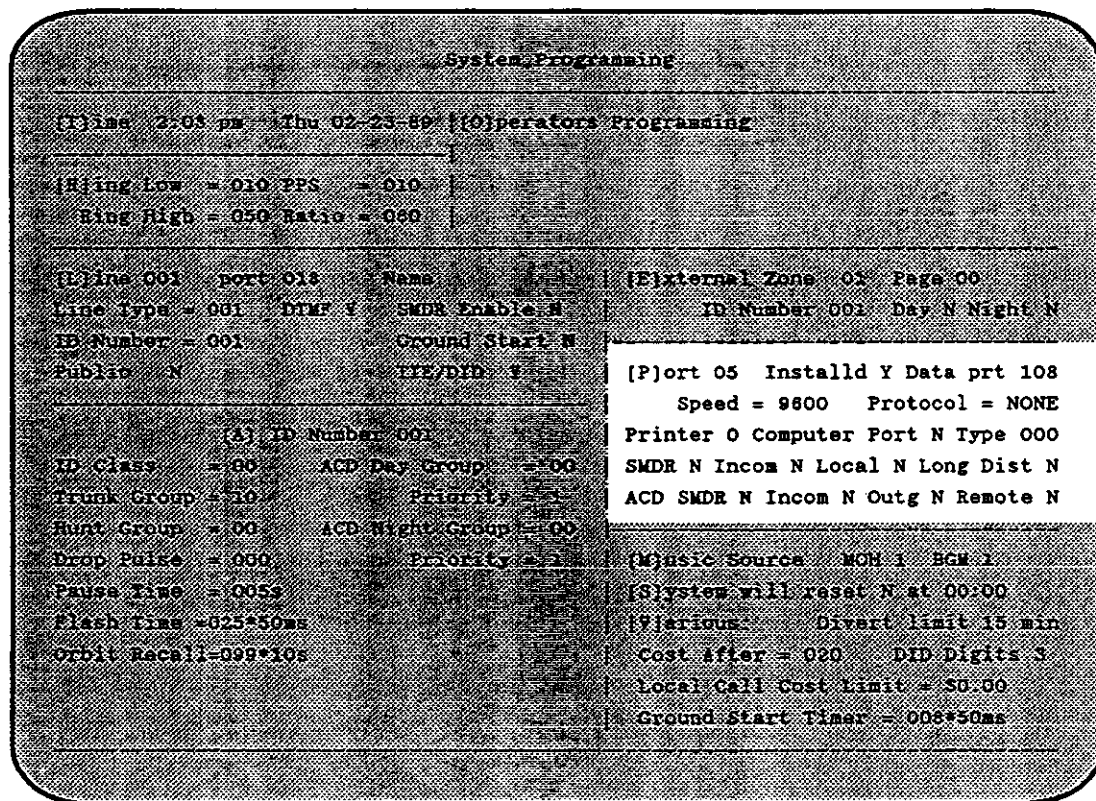


Figure 3-18 System Programming Screen

3. Press the letter I to increment to one of the I/O port numbers 5 to 8. I/O port numbers 5 - 10 are the ports which are supported by the LSI DCM. Ports 5-8 may be used to connect an Integrated Operator terminal.
4. Press the RETURN key to reach *Speed*.
5. Press the I key until the desired baud rate appears.
6. Press the TAB key to move the cursor to *Protocol*.

7. Press the I key until the XON protocol appears.
8. Press P.
9. Press the RETURN key until the cursor reaches *Data Prt*\_\_\_.
10. Enter the three digit data port number (001 to 228) of the *Phone Box*. Once the data port number is entered, the "N" next to installed will change to a "Y" for Yes installed. The data port is the hardware port the *Phone Box* is connected to. The port number can be determined from the *System Configuration* programming screen.
11. Press the O key to reach *Operator Programming*.
12. Enter the extension number to serve as the Operator, and press the RETURN key.
13. Press the RETURN key again. The cursor moves to *Port*.
13. Enter the number of the I/O port programmed in the previous steps.

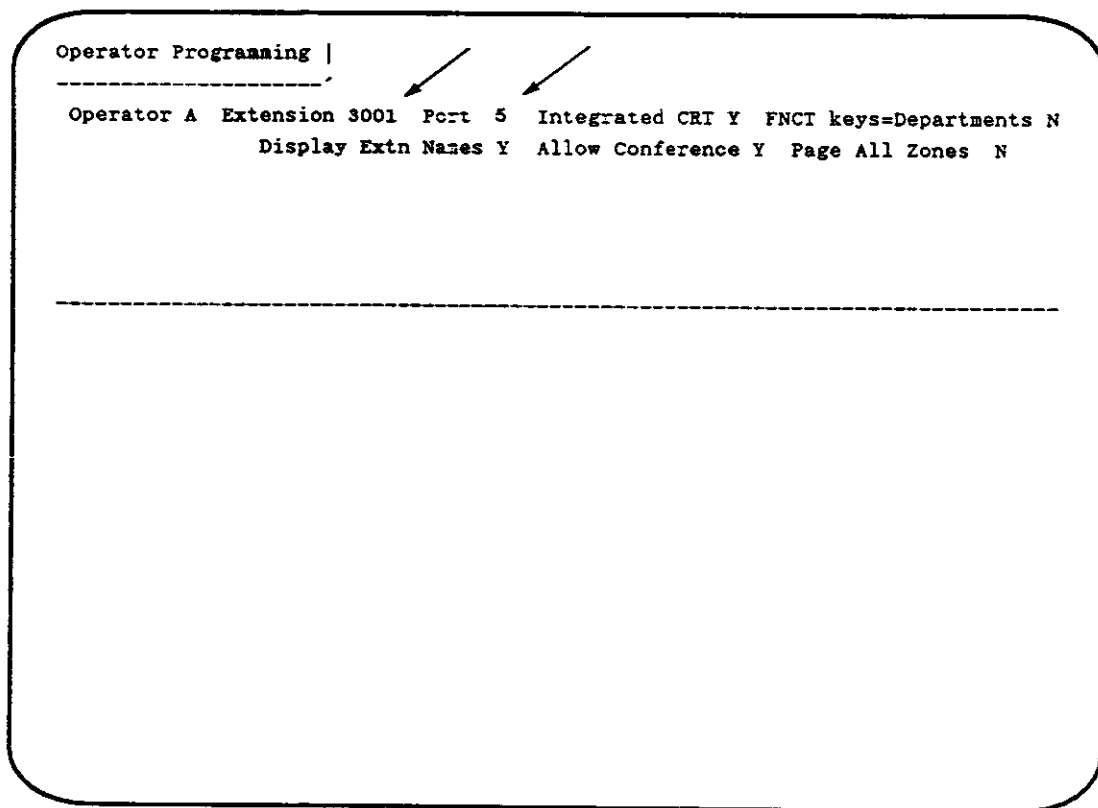


Figure 3-19 Operator Programming Screen

### 3.7 PROGRAMMING PORT

A serial RS-232-C programming terminal can be connected to either I/O port 1 or port 2. The baud rate for the terminal is software selectable in system programming. Figure 3-20 below shows the wiring for the programming port. Ports 1 and 2 are configured as DCE.

MDF connector

- Pin 2 ----- Receive from terminal
- Pin 3 ----- Transmit to terminal
- Pin 5 ----- No connection
- Pin 6 ----- No connection
- Pin 7 ----- Ground
- Pin 20 ----- DTR

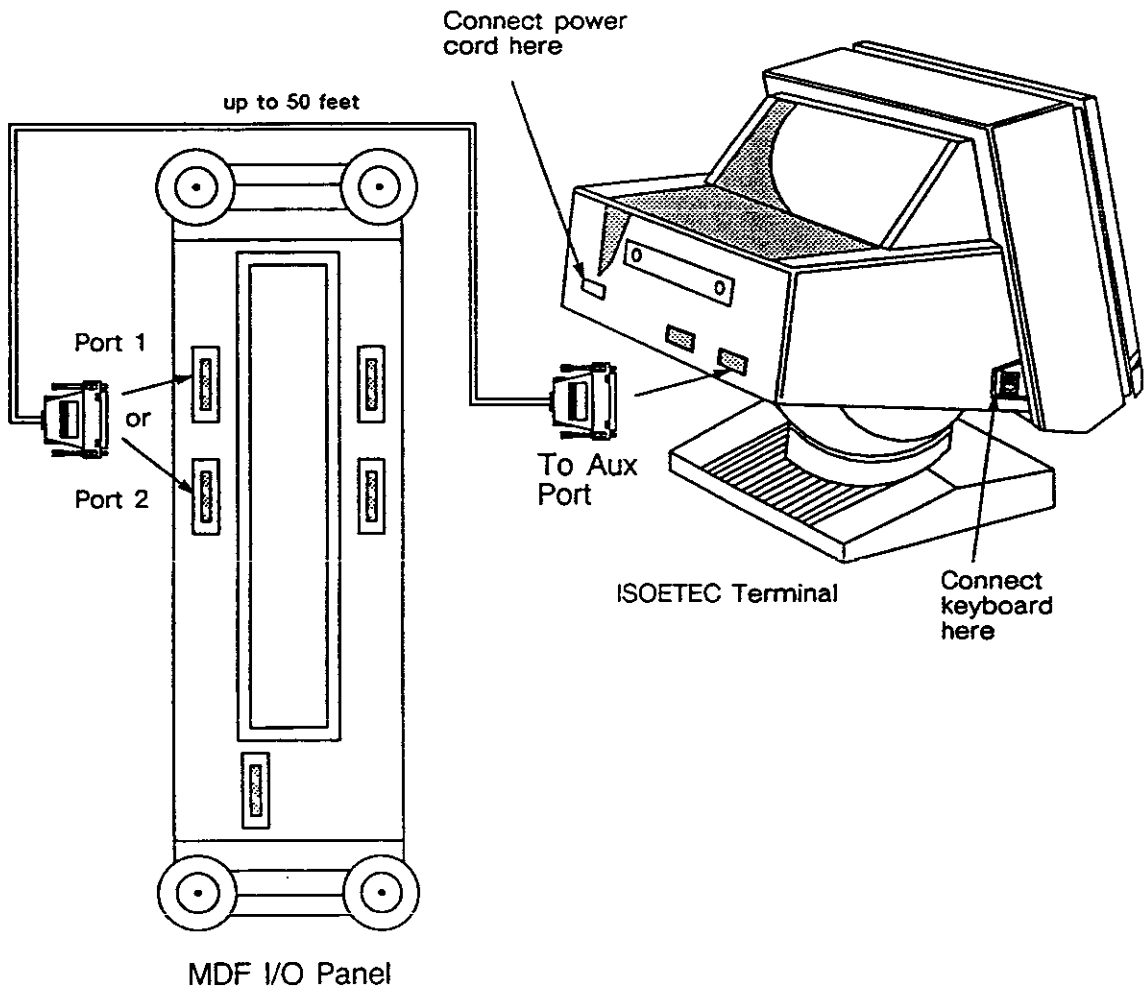


Figure 3-20 Wiring To The Programming Terminal

### 3.8 STATION MESSAGE DETAIL RECORDING DEVICE

A serial RS-252-C terminal/printer can be connected to either I/O port 1 or port 2. The baud rate for the terminal/printer and protocol is software selectable in system programming (see the *System Programming* section for more information). Figure 3-21 below shows the wiring for the SMDR port. Ports 1 and 2 are configured as DCE.

MDF connector

Pin 2 ——— Receive from terminal

Pin 3 ——— Transmit to terminal

Pin 5 ——— CTS \*

Pin 6 ——— DSR \* These 2 pins are available if a particular printer requires them.

Pin 7 ——— Ground

Pin 20 ——— DTR

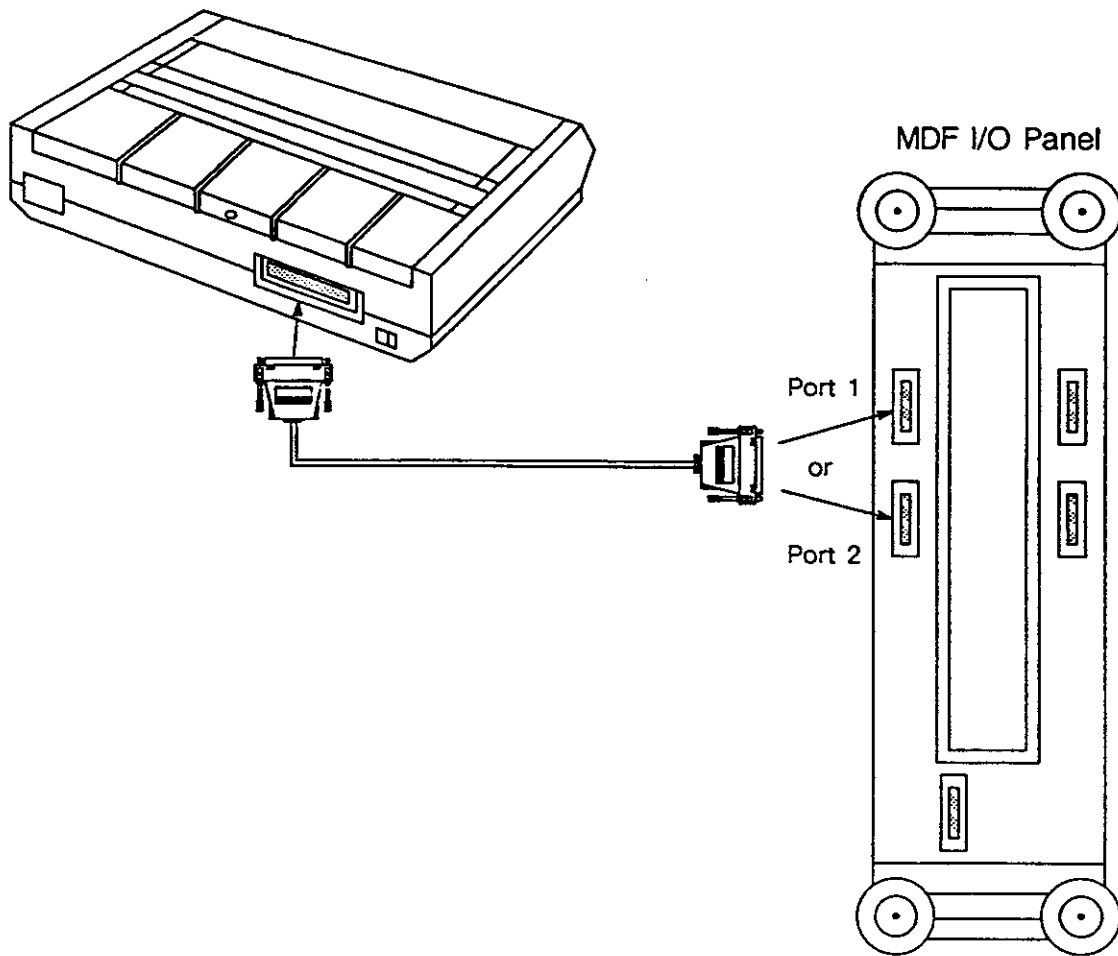


Figure 3-21 SMDR Cabling

### **3.9 EXTERNAL PAGE**

An audio path exists on the last cable pair of each station port card that can be connected to an external paging system. Cross connect from the violet/slate pair of the station port cable to the input of the external page system.

### **3.10 OFF PREMISE EXTENSION INTERFACE**

The Off Premise Extension Interface (OPXI) is wired to the System/228 like a digital telephone, and requires one station port. The OPXI requires an external 48 volt power supply capable of providing 100 milliamps of current per OPXI.

All connections are made on the back panel of the OPXI. The back panel has two modular jacks and a two wire cable. The two wire cable is used to connect the power supply to the OPXI. One modular jack, labeled KSU, is used to connect the OPXI to a station port of the system. The second modular jack, labeled OPX, is used to connect the OPXI to the 2500-type telephone or device.

Connect the black wire of the two wire power cord to the (-) negative side of the 48 volt power supply, and connect the red wire to the (+) positive side of a 48 volt power supply. The (+) positive side of the power supply should be referenced to ground.

Connect the modular connector labeled KSU to an extension port on the system.

Connect the modular connector to the external device, i.e. the 2500 type telephone, the VMS port, ACD recorder, etc.

If the OPXI has been wired correctly, the LED on the back panel lights when the telephone is taken off-hook.

### **3.11 POWER FAILURE TRANSFER**

The OPXI can be used to wire a trunk to a single line telephone for use in a power failure.

The BLACK and YELLOW conductors of the OPX modular connector on the OPXI can be wired to TIP and RING of a trunk. When there is a power failure, the OPXI connects the BLACK and YELLOW conductors to the GREEN and RED conductors (BLACK to GREEN and RED to YELLOW) of the OPX modular connector.

*NOTE: The use of ground start trunks for power failure transfer requires a ground start button and special wiring for the telephone.*

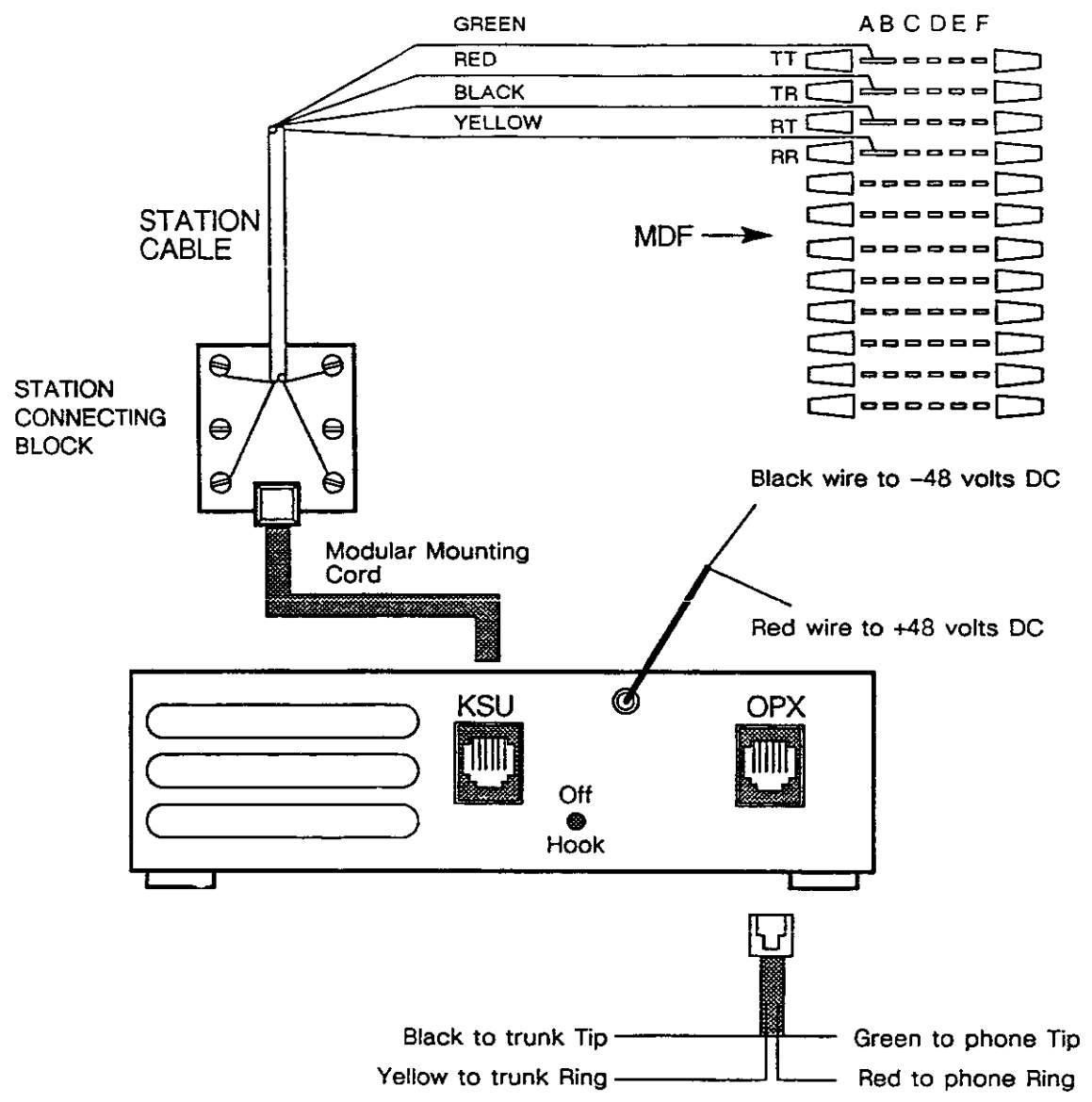


Figure 3-22 OPXI Installation With Power Failure Transfer

### 3.12 RELAY AND SENSOR INTERFACE

The Relay and Sensor Interface (RSI) is wired to the System/228 like a digital telephone, and requires one station port.

All connections to the RSI are made on the back panel. The back panel has a modular jack and two sets of six terminals. The modular jack, labeled KSU, is used to connect the RSI to the station port of the system. Six of the terminals are the relay contact connections and the remaining six are the sensor connections. The relay contact terminals are located to the left of the modular connection. The first pair of push type terminals on the left is relay contact one. The next pair is relay contact two, and the third pair is relay contact three.

The RSI is used with the ACD feature to provide a means of lighting a lamp, or activating some other type of alerting device when the ACD queue manager indicates there are calls waiting to be answered. The sensors of the RSI are not used at this time.

The relay contacts are rated for 1 Amp. and 24 volts DC only.

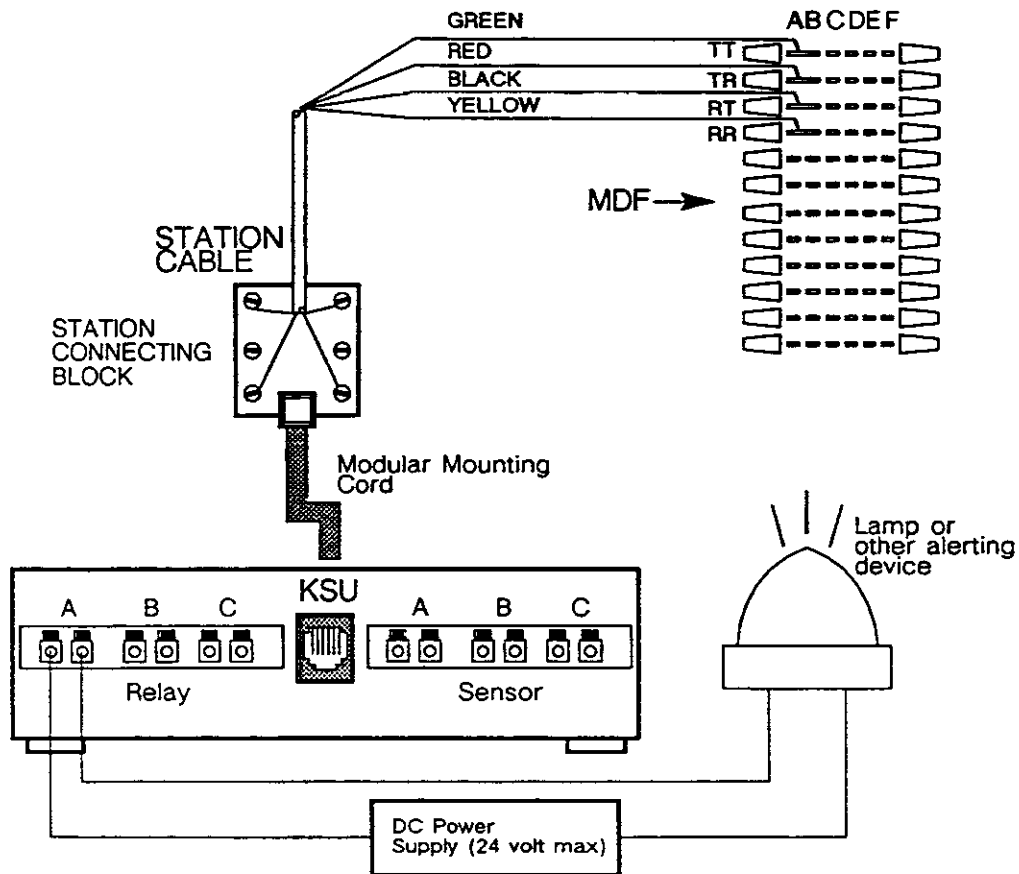


Figure 3-23 Relay/Sensor Interface Wiring



### 3.13 DIGITAL DATA INTERFACE

The Digital Data Interface (DDI) is wired to the System/228 like a digital telephone, and requires one station port.

All connections to the DDI are made on the back panel. The back panel has a modular jack and a DB-25 type connector. The modular jack, labeled KSU, is used to connect the DDI to the station port of the system. The DB-25 connector supports an RS-232 connection and is used to connect the data device to the system. Refer to the *Data Feature* section of this manual for more information on connecting the data device to the DDI.

A green LED lights to indicate the DDI is properly wired to the system.

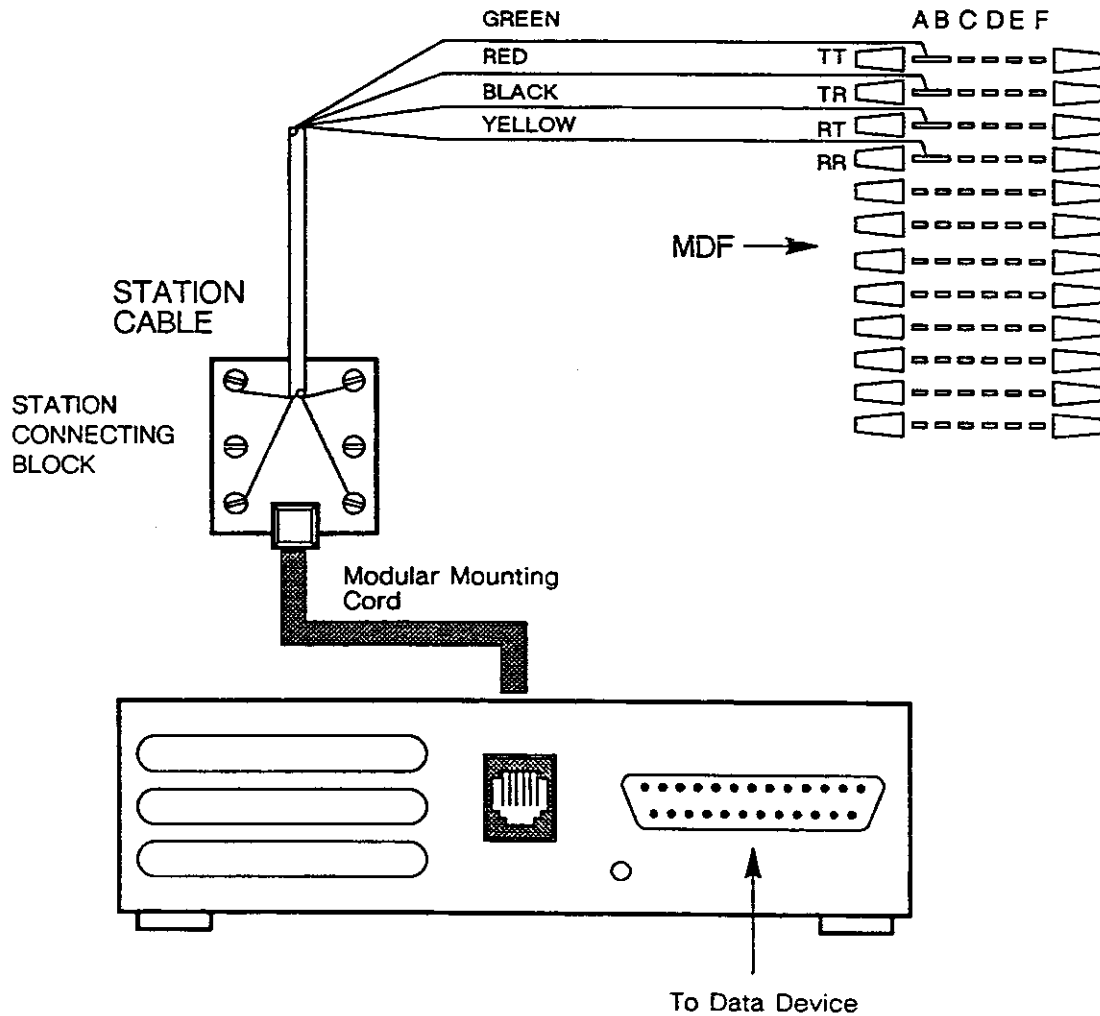


Figure 3-24 Digital Data Interface Wiring

### 3.14 DIGITAL VOICE ANNOUNCER

#### 3.14.1 INSTALLING THE DIGITAL VOICE ANNOUNCER

The *Digital Voice Announcer* is connected to the system in the same manner as a digital telephone. One digital station port is required for each Digital Voice Announcer.

The *Digital Voice Announcer* is wired to a digital station port on either a Station port card (p/n 15640), a Station LSI port card (p/n 15700), an E&M Tie Line Combo card (p/n 15680), or a DTMF Receiver card (p/n 15650).

Software version 4.25 is the lowest software level that supports the use of the *Digital Voice Announcer*.

The recorded message of the *Digital Voice Announcer* is retained by a battery in the event of a power failure. The battery will retain the messages for 24 hours.

*NOTE: Prior to installation, the battery backup must be activated.*

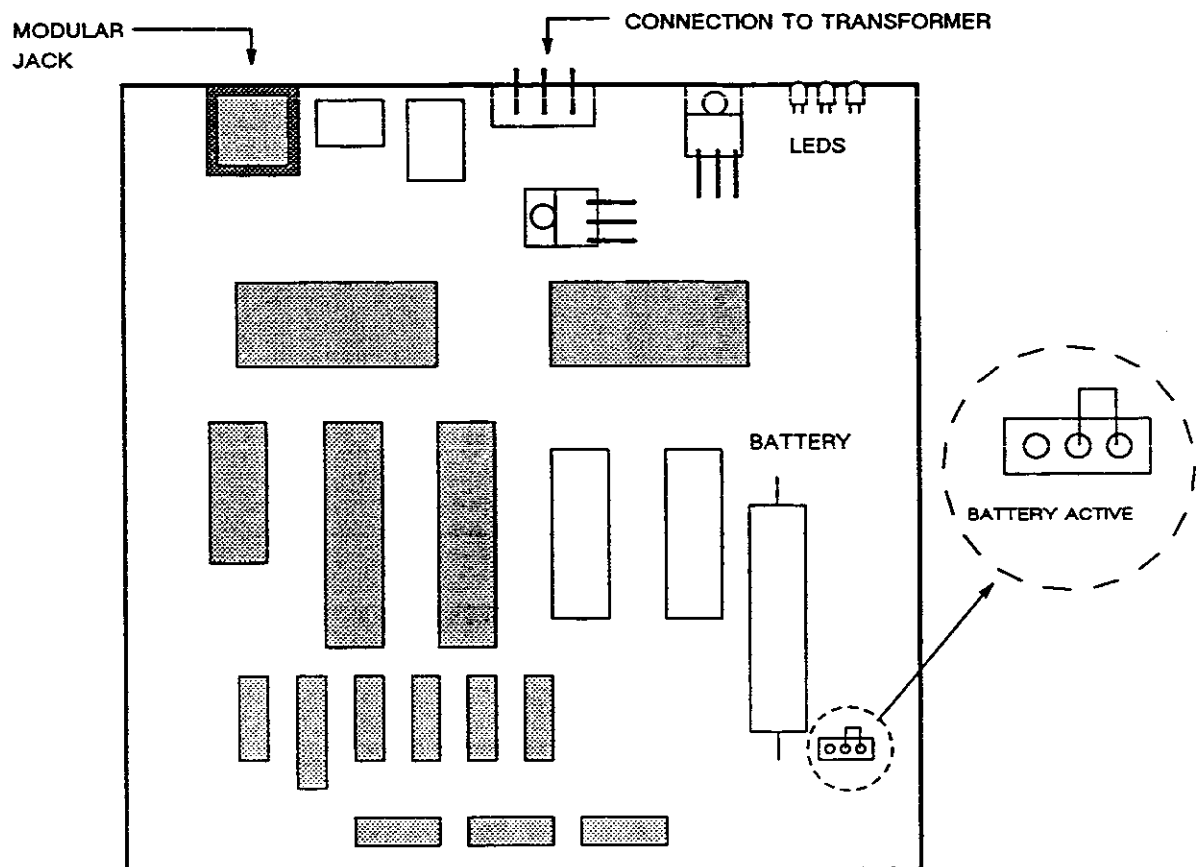


Figure 3-25 Battery Strap Location

Remove the four screws and lift the cover from the base of the unit. Move the strap such that it connects the two terminals on the right (looking at it from the front). See Figure 3-25.

Plug a standard 4 conductor modular cord into the RJ-11 receptacle on the back of the Digital Voice Announcer. Connect the other end to a RJ-11 type mounting block that has a digital port wired to it from the MDF. Wire the mounting block to the MDF in the same manner as a digital station. See Figure 3-26.

Plug the tail of the transformer on to the three pins on the back of the Digital Voice Announcer and then into an AC power outlet.

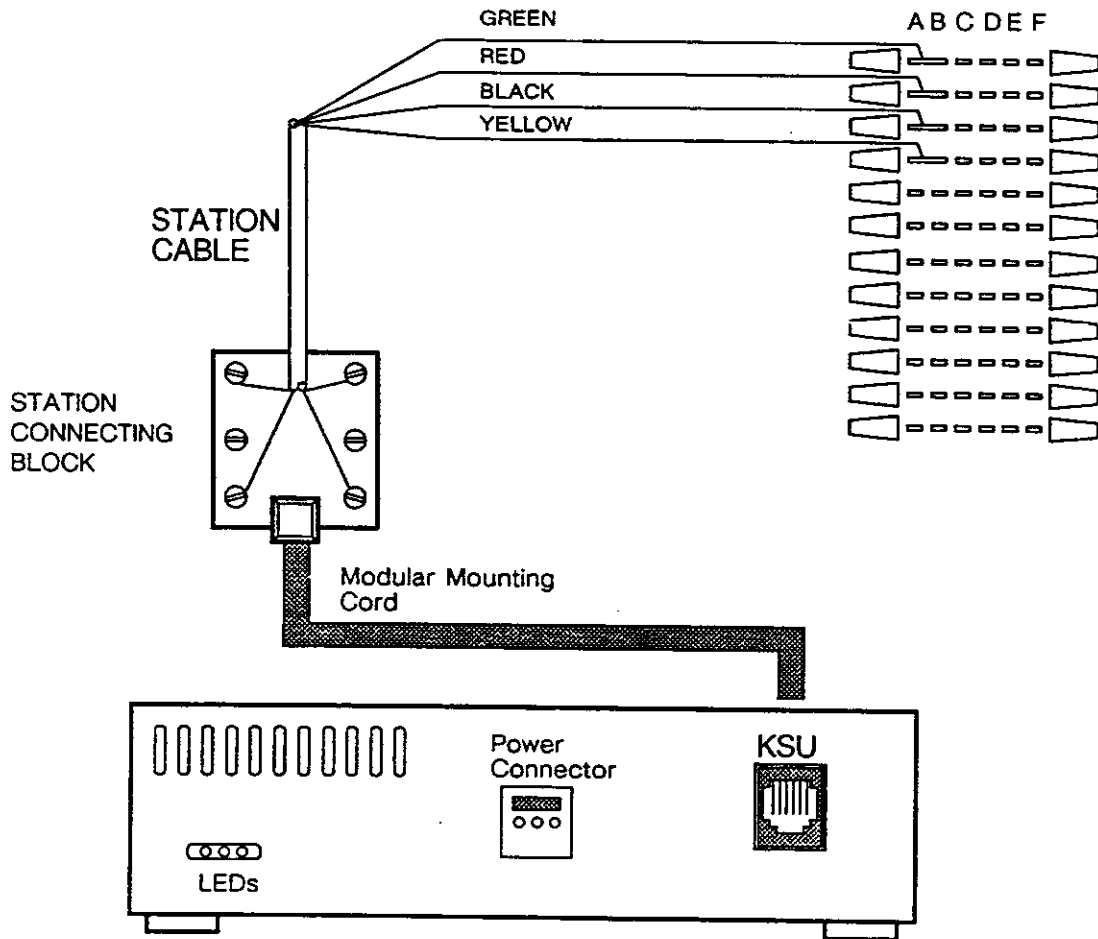


Figure 3-26 Digital Voice Announcer

### 3.14.2 RECORDING A MESSAGE

Dial the extension number of the recorder.

Dial  (this is the command to clear the message).

Dial  (this is the command to record).

Dial  . After the tone, start to record the message.

When finished recording, dial  to terminate the recording mode.

### 3.14.3 TO REPLAY A MESSAGE

Dial the extension number of the recorder.

Dial   (this is the command playback).

Dial  .

### 3.14.4 TO CLEAR THE MESSAGE

Dial the extension number of the recorder.

Dial  (this is the command to clear the message).

### 3.14.5 MAXIMUM LENGTH OF MESSAGE

The maximum message length of the Digital Voice Announcer is 65 seconds.

### LED Indicators

There are 3 LEDs on the back of the recorder indicating the following:

**Idle Mode** the RED IDLE LED is flashing.

**Recording Mode** the YELLOW LED is on.

**Play back Mode** the GREEN LED is on.

# Section 4

## Operation

### 4.1 INTRODUCTION

This section contains information regarding the station operation of the system. The information presented is an expanded version of the *Station User Guide* with information that may be of interest to the system programmer. This section also includes information on features not listed in the *Station User Guide*. This section has been prepared in conjunction with software version 5.52.

The dial access codes listed in this section are for the standard numbering plan. With the introduction of *Flexible Numbering* for extensions, it must be noted that the leading digit for the dial codes on your system, especially extension numbers, may be different than the ones used in this section.

### 4.2 HOW TO USE THIS SECTION

The features described in this section are arranged in alphabetical order. Each description consists of:

<b>TITLE</b>	The name of the feature to be described.
<b>DESCRIPTION</b>	A brief outline of the feature.
<b>TELEPHONE</b>	Which telephones the feature can be used with.
<b>PROGRAMMING</b>	Lists any system programming required to make the feature work. Also listed is any other programming that may effect the operation of the feature.
<b>HOW TO</b>	Describes how to make the feature operate. The operation of the feature is broken down into <b>ACTION</b> , <b>RESULTS</b> , and <b>COMMENTS</b> .

### 4.3 THE TELEPHONES

The ISOETEC<sup>®</sup> System/228 can be used with either a 6-key telephone, 17-key telephone, a 28-key telephone, or a 29-key Display telephone. A Single Line (2500-type) telephone may also be used when connected to an OPXI or OPX port card.

The display telephone has 20 programmable feature keys and the standard six "fixed" keys as well as three "soft" keys whose use is flexible, dependent upon what feature or function is being used.

The 28-key telephone has 22 programmable feature keys, and six "fixed" keys.

The 17-key telephone has 11 programmable feature keys, and six "fixed" keys.

The 6-key telephone has six "fixed" keys.

Programmable keys may be changed to suit the user's feature requirements, while "fixed" keys always remain as their assigned function. The feature keys can be programmed to suit your specific business needs.

A description of the "fixed" keys, whose function may *not* be changed, follows:

- HOLD** Places your current call on Hold.
- TR/CON** Places your current call on Hold while it awaits Transfer, Orbit, or Conferencing functions.
- PROG** Used in a specified sequence in order to enable programming of different features. The [PROG] key LED will time out after approximately six seconds.
- NOTE:** If the [PROG] key LED goes out before you have entered the necessary information, you have waited too long, and the programming period has timed out. Programming will have to be initiated again.
- VOLUME UP/  
DOWN** Adjusts the volume to comfortable levels. The volume adjustments apply to the function to which you are currently connected. To increase speaker volume press **VOLUME ▲** key. To decrease speaker volume press **VOLUME ▼** key. The volume can be set, and placed in memory, for the following seven functions:
1. Handset on Outside call.
  2. Handset on Internal call.
  3. Hands Free on Outside call.
  4. Hands Free on an Internal call.
  5. Page volume.
  6. Ringing volume of internal calls.
  7. Ringing volume of outside line calls.
  8. Background Music volume.

The 28-key telephone, and the display telephone have the following additional key:

- HF** Hands Free – Allows you to converse with another party on *Internal and External* calls without having to lift the handset.

The 17-key telephone has the following additional key:

- VA** Voice Announce – Allows you to converse with another party on *Internal* calls without having to lift the handset. Hands Free conversations with Outside parties are not possible with this telephone set.

The 6-key telephone has the following additional key:

- OUT** Outside line – This key is used to select a line for outside line calls.

## 4.4 STATION OPERATION

The following pages describe the operation of features available to the station users.

## ACCOUNT CODES

---

**DESCRIPTION:** Account Codes are used in conjunction with Station Message Detail Recording (SMDR) to provide a means of entering a number (that is meaningful to the user) from 1 to 10 digits long to an individual call record. Account Codes can also be used if the *Call Accounting Reports Option* is being used.

Account Codes can be used with *Toll Restriction* to force station users to enter an account code when dialing particular telephone numbers, e.g., long distance numbers (see *Forced Account Codes*). When forcing a station user to enter an account code, the system can be programmed to check the account code (up to 8 digits long) against a table of valid account codes before the call is allowed to be placed. Or, if desired, the system can be programmed such that an account code (up to 10 digits) must be entered, but not a particular account code. It is important to note that a Single Line telephone can only enter an account code on an outgoing trunk call before dialing the phone number.

An [ACCOUNT CODE] key is used to enter an account number into SMDR call records. Account numbers help the System Supervisor keep track of the purpose of individual telephone calls in order to minimize costs. Up to TEN digits may be entered as an account code, and it may be entered at any time during the conversation.

Only one account code is reported per outside line call. The last account code entered is reported on the SMDR and *Call Accounting* reports.

**Feature Can Be Used With: All Phones.**

### PROGRAMMING

**Required:** An [ACCOUNT CODE] key (key code 813) is required on a 17-key and 28-key telephone. DO NOT program an [ACCOUNT CODE] key on a display telephone. An [ACCOUNT CODE] key is not required on a 6-key telephone or Single Line telephone.

Station Day/Night Class and Forced Account on the *Station Programming screen*, *Account Codes* programming screen, and Toll Restriction all must be programmed when using *Forced Account Codes*.

**Affected by:** See *Placing Outside Line Calls*. When the *Alternate Dialing* option on the *System Options* programming screen is programmed Y (yes), Single Line telephones cannot enter *Account Codes*.

*(Continued on the next page.)*

## ACCOUNT CODES

### How To: Use Account Codes With The 17-key And 28-key Telephones.

ACTION	RESULT	COMMENT
1. While an External call is in progress, press the [ACCOUNT CODE] key.	The [ACCOUNT CODE] key LED will light.	The account code may be entered at any time after dialing. However, it must be entered before disconnecting from the call.
2. Enter the ACCOUNT CODE (up to 10 digits).		
3. Press the [ACCOUNT CODE] key.	The [ACCOUNT CODE] key LED will go out.	If the account code is the maximum 10 digits, the LED will automatically go out, and the code will be entered.

### How To: Use Account Codes With A 6-key Telephone.

ACTION	RESULT	COMMENT
1. While a call is in progress, press the [PROG] key.	The [PROG] key will light.	The account code may be entered at any time after dialing, but must be entered before disconnecting from the call.
2. Press the [#] key.		
3. Enter the ACCOUNT CODE (up to 10 digits).		
4. Press the [PROG] key.	The [PROG] key LED will go out.	If the account code is the maximum 10 digits, the LED will automatically go out, and code will be entered.

*(Continued on the next page.)*



## ACCOUNT CODES

### How To: Use Account Codes With A Display Phone.

ACTION	DISPLAY	RESULT/COMMENT
1. While an external call is in progress, press the [acct] "soft" key.	<div style="border: 1px solid black; padding: 5px; width: fit-content;">           Tue May 10 12:03            #6556500            ACC#:            timer cost acct         </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> </div> <div style="text-align: center; margin-top: 5px;">▲</div>	The account code may be entered at any time after dialing, but must be entered before disconnecting from the call.
2. Enter the ACCOUNT CODE (up to 10 digits).	<div style="border: 1px solid black; padding: 5px; width: fit-content;">           Tue May 10 12:04            #6552671            ACC#123456789            timer cost acct         </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> </div>	If the maximum of 10 digits is entered, the account code is entered automatically. Skip the next step.
3. Press the [acct] "soft" key.	<div style="border: 1px solid black; padding: 5px; width: fit-content;">           Tue May 10 12:05            #6552671            00:56            timer cost acct         </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> </div> <div style="text-align: center; margin-top: 5px;">▲</div>	The account code is entered.

(Continued on the next page.)

## ACCOUNT CODES

---

### How To: Use Account Codes With A Single Line Telephone.

---

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	
2. Dial the desired outside line access code [9][1] through [9][0] or [9][*] for LCR.	A second dial tone is heard.	
3. Before dialing the telephone number, dial [*].		
4. Dial the ACCOUNT CODE number up to ten digits.		
5. When the account code has been entered, dial another [*].	The account code is entered.	
6. Continue dialing the desired telephone number.		

NOTE: All account codes must be entered BEFORE dialing the outside number on Single Line phones.

# ADD ON CONFERENCE

---

**DESCRIPTION:** The Add On Conference feature provides the station user with the ability to converse with up to seven other parties on the same call. Two of these parties may be outside line calls. The station that creates the conference, controls the outside line calls. The Add On Conference feature is available on the ISOETEC System/228 digital 17-key telephone, 28-key telephone, and display telephone. For the first call, the user has the option of making an intercom or outside line call.

**Feature Can Be Used With:** 17-key, 28-key, and Display Phones.

## PROGRAMMING

**Required:** An [ADD ON] key (key code 806) is required on the desired stations.

**Affected by:** *Conference Gain On* on the *System Options* programming screen. See also *Placing Outside Line Calls*.

## How To: Use The [ADD ON] Key.

ACTION	RESULT	COMMENT
1. Place the first call.	Call is connected.	The first call may be either an internal or outside line call. A maximum of two outside line calls can be made part of the conference. The user notifies the other party of the conference.
2. Press the [ADD ON] key.	Add On Conference is activated. Internal dial tone is heard.	
3. Place your next call.	Call is connected.	
4. Press the [ADD ON] key again.	The call is added to the conference.	The parties involved in the conference cannot speak to each other yet.
5. Continue from step 4 until all desired parties have been added to the conference.		
6. Press the [ADD ON] key again to add yourself.	The conference is established.	

## ADD ON CONFERENCE

---

How To: Add Another Party To The Conference After The Conference Is Established.

---

ACTION	RESULT	COMMENT
From the extension that initiated the ADD ON conference:		
1. Press the [ADD ON] key.	Internal dial tone is heard.	The extension is removed from the conference.
2. Dial the desired other party.	Call is connected.	The user notifies the other party of the conference.
3. Press the [ADD ON] key.		
4. Continue from step 2 until all desired parties have been added to the conference.		
5. Press the [ADD ON] key again to add yourself.		

## ANSWERING AN INCOMING INTERNAL CALL

---

**DESCRIPTION:** When one station calls another, one of two things can happen depending on how the called station is programmed. The *Hands Free Receive* option on the *Station Programming* screen determines what happens at the called station.

The called station can ring when called, or *Voice Announce* can be used. When the *Hands Free Receive* option is programmed Y (yes), internal calls to the extension are *Voice Announced*. When the *Hands Free Receive* option is programmed N (no), internal calls ring the extension.

The 28-key, 17-key, and Display telephones can be used with *Voice Announce*. The 6-key and Single Line telephones ring when called regardless of the programming of *Hands Free Receive*.

If an extension is programmed to receive internal calls via *Voice Announce*, the calling station can force the extension to ring by dialing a  before the extension number.

**Feature Can Be Used With:** All Phones.

### PROGRAMMING

**Required:** None.

**Optional:** An [ICM] key (key code 818) can be programmed which gives an LED indication of an internal call. The key can also be used when placing internal calls on hold, or transferring internal calls.

### How To: Answer An Internal Call Ringing Your Extension.

ACTION	RESULT	COMMENT
1. Upon hearing the phone ring, lift the handset.	The call is connected.	The call can also be answered Hands Free with the 28-key, 17-key, and Display telephones. Press the [HF] key ([V/A] key on 17-key telephones) to answer the call.

When an outside call is announced (or screened), you must hang up before the call will be transferred and ring at your extension.

(Continued on the next page.)

## ANSWERING AN INCOMING INTERNAL CALL

---

How To: Answer A Voice Announced Call.

---

ACTION	RESULT	COMMENT
With a 17-key, 28-key, or Display telephone:		
1. When double tone is heard, speak into the Hands Free microphone, or lift the handset.	When the station is called, the [HF] key ([V/A] key on 17-key phone) LED blinks, and the speaker and microphone are activated.	The two extensions are connected.

## ANSWERING AN INCOMING TRUNK CALL

---

**DESCRIPTION:** Incoming calls can be routed to a station in a number of ways. Outside lines can be programmed to ring directly to an extension, outside line calls can be transferred to the extension by the operator, or another extension. calls can be transferred to a hunt group of which the station is a member, or the call can be transferred by the *Automated Attendant* feature. Incoming calls from DID lines ring the extension directly. Incoming calls via tie lines ring the extension directly.

With the exception of Single Line telephones, these outside lines are accessed by stations using the programmed feature keys.

When the system routes an incoming call to an extension, the system first looks for a [DIRECT APPEARANCE] key of the ringing line. If a direct appearance is not found, the system looks to place the call on a [CALL COVERAGE], [TRUNK GROUP] key, or a [UNI] key in that order. An [LCR] key is considered a [TRUNK GROUP] key for incoming calls. If a direct appearance is not found, an incoming call will appear on the first physically available [TRUNK GROUP] key beginning at the top left key. The call will ring on that key regardless of which trunk group the feature key is programmed for.

The system can be made to route calls to the [TRUNK GROUP] key which is programmed for the trunk group the incoming line is in with the use of the *Group In* feature. Extensions which are programmed for *Group In* Y (yes) must have a [TRUNK GROUP] key for each trunk group that the station will receive calls from.

The *Auto Answer* feature eliminates the need to press the feature key the call is ringing on. If the telephone is ringing, when the handset is lifted, the call is answered.

If the station is busy when the system routes an incoming call to the extension, the station user will hear a camp-on tone.

**Feature Can Be Used With: All Phones.**

### PROGRAMMING

**Required:** At least one [OUTSIDE LINE] key (a trunk group, direct appearance for the desired line, UNI, or LCR key) must be programmed on extensions which are to receive outside line calls. Extensions which are connected to Single Line telephones or 6-key telephones MUST have *Auto Answer* programmed Y (yes). The extension used with the Integrated Operator's Terminal MUST also have *Auto Answer* programmed Y (yes).

**Affected By:** *Day and Night Ring, Group In, Camp-on Timer, Auto Answer, and Busy on DID* on the *Station Programming* screen.

(Continued on the next page.)

## ANSWERING AN INCOMING TRUNK CALL

**How To:** Answer An Incoming Call With *Auto Answer YES*.

ACTION	RESULT	COMMENT
1. When the phone rings, lift the handset.	The call is connected. The [OUTSIDE LINE] key LED lights.	If the telephone is a 28-key, or Display telephone, the call can also be answered Hands Free. When the phone rings, press the [HF] key.

**How To:** Answer An Incoming Call With *Auto Answer NO*.

ACTION	RESULT	COMMENT
1. When the phone rings, lift the handset.	Internal dial tone is heard.	
2. Press the [OUTSIDE LINE] key whose LED is blinking.	The call is connected. The [OUTSIDE LINE] key LED lights.	If the telephone is a 28-key, or Display telephone, the call can also be answered Hands Free. When the phone rings, press the [OUTSIDE LINE] key.

Note: If the system programmer has programmed the extension for Direct Appearance of outside lines, the LED next to an [OUTSIDE LINE] key will blink anytime that line rings the system. The call may be picked up on such a key even if the extension is not programmed to ring, by pressing the key.

**How To:** Answer A Camped-on Call.

ACTION	RESULT	COMMENT
1. While on a call, after hearing the camp-on tone, press the [HOLD] key.	The LED of key the call is on blinks rapidly.	
2. Press and hold down the switch-hook.	The camped-on call rings.	
3. Release the switch-hook.	The call is connected.	If <i>Auto Answer</i> is programmed No, press the key the new call is ringing on. See also <i>SPLIT KEY</i> .

When an outside call is announced (or screened), you must hang up before the call will be transferred and ring at your extension.



# AUTO PICKUP

---

**DESCRIPTION:** *Auto Pickup* is a system feature that effects the use of the [DSS] keys. With this feature active, [DSS] keys can be used to pickup a call on a ringing extension by pressing the [DSS] key, rather than dialing 

ABC
2

 plus the extension number. This feature is enabled on a system wide basis.

**Feature Can Be Used With:** 17-key, 28-key, and Display Telephones.

## PROGRAMMING

**Required:** The *Enable Auto Pickup* option on the *System Options* menu must be programmed Y (yes). A [DSS] key for the ringing station is also required.

At least one [OUTSIDE LINE] key (a trunk group, direct appearance for the desired line, UNI, or LCR key) must be programmed on the extensions.

## How To: Use Auto Pickup.

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	
2. Press the [DSS] key for the ringing extension.	The call is connected.	

## AUTO TRANSFER

---

**DESCRIPTION:** *Auto Transfer* is a call processing feature. If an extension which is placed in the *Auto Transfer* mode has a [DSS] (Direct Station Select) key programmed for the extension to which a call is to be transferred, an outside call can be transferred by pressing the assigned [DSS] key. There is no need to press the [TR/CON] key to transfer the call.

**Feature Can Be Used With:** 17-key, 28-key, and Display Phones.

### PROGRAMMING

**Required:** A [DSS] key for each desired extension must be programmed. The key code for a [DSS] key is the extension number of the desired station with a sub-code of zero.

**Affected By:** *Transfer Recall Timer* in the *Timers* area of the *Station Programming* screen.

### How To: Activate Auto Transfer.

ACTION	RESULT	COMMENT
1. Without lifting the handset, press the [TR/CON] key.	The [TR/CON] key LED lights.	<i>Auto Transfer</i> is activated.

### How To: Deactivate Auto Transfer.

ACTION	RESULT	COMMENT
1. With <i>Auto Transfer</i> active, without lifting the handset, press the [TR/CON] key.	The [TR/CON] key LED goes out.	<i>Auto Transfer</i> is deactivated.

*(Continued on the next page.)*

## AUTO TRANSFER

---

### How To: Use Auto Transfer.

---

ACTION	RESULT	COMMENT
<i>After Auto Transfer has been activated,</i>		
1. While on an outside line call, press the desired [DSS] key.	The outside line call is placed on hold, and the desired extension is called.	Inform the called party of the outside line call. If the called party does not wish to accept the call, skip the next step, and press the [OUTSIDE LINE] key the waiting call is on to return to the caller.
2. Hang up the phone.	The call is transferred.	

If the called extension is busy, the call is camped-on automatically. If the camped-on call is not answered by the called party within the *TRANSFER RECALL* timer, the call recalls to the extension that originated the transfer.

## BACKGROUND MUSIC

---

**DESCRIPTION:** If music is connected to the system, it is available at the ISOETEC 6-key, 17-key, 28-key, and Display telephones. Any extension user can listen to music through the built-in speaker. The music is turned off temporarily when the extension rings, a paged message is broadcast, the user lifts the handset, or activates the Hands Free mode. The music resumes automatically when the extension becomes idle. Dialing **\*** on the dial pad turns the music on or off.

A music source must be connected to the system for this feature to work.

**Feature Can Be Used With:** 6-key, 17-key, 28-key, And Display Telephones.

### PROGRAMMING

**Required:** *BGM Music Source* on the *System Programming* screen must be programmed for the music source.

**Affected By:** Pages, Incoming Calls, DND, and In/Out.

#### How To: Activate Background Music.

ACTION	RESULT	COMMENT
1. Without lifting the handset, press <b>*</b> on the dial pad.	Background music is activated.	Music is heard from the Hands Free speaker.
2. Adjust the volume to a comfortable level by pressing the Volume <b>▲</b> and <b>▼</b> keys.		Music will be interrupted if the user lifts the handset, or if a paged message is broadcast.

#### How To: Deactivate Background Music.

ACTION	RESULT	COMMENT
1. Without lifting the handset, and while Background music is activated, press <b>*</b> on the dial pad.	Background music is deactivated.	Background music is deactivated.

## BACKGROUND MUSIC OVER EXTERNAL PAGE

---

**DESCRIPTION:** Should a System Manager choose to have Background music continually heard throughout his office, a radio, tuner, or tape player may be connected to the main control unit. Music will be heard through External speakers, and interrupted briefly for pages or incoming phone calls.

**Feature Can Be Used By:** The Operator only.

### PROGRAMMING

**Required:** *BGM Music Source* on the *System Programming* screen must be programmed for the music source.

**Affected By:** Pages, and Ringing over the External Page.

### How To: Activate Background Music Over The External Page.

ACTION	RESULT	COMMENT
1. At the Operator station, lift the handset, and press the [RLS] key.	Internal dial tone is heard.	
2. Dial [8][3] + desired external zone [0][1] thru [1][6] on the dial pad.	Music is activated over external page.	The zone number depends on your particular system, and can range from 01 through 16.

### How To: Deactivate Background Music Over The External Page.

ACTION	RESULT	COMMENT
1. At the Operator Station, while music is activated, lift the handset, and press the [RLS] key.	Internal dial tone is heard.	
2. Dial [8][3] + desired external zone [0][1] thru [1][6] on the dial pad.	Music over external page is deactivated.	

## BAD LINE KEY

---

**DESCRIPTION:** The ISOETEC Systems have a number of built-in tools to aid in trouble-shooting problems that may arise. A method available to the technician is the [BAD LINE] key. The [BAD LINE] key is a useful method that can determine a bad trunk. Any extension can be programmed with the [BAD LINE] key. The user can be instructed to press the key whenever a problem (such as a noisy line) is detected. Each time this key is pressed, it increments a counter for each line. This counter can be seen on the *F.G. and H reports*. These reports are found in the *Reports Menu*.

The column the technician must be sensitive to is labeled *B. CALS*, which indicates the number of times the [BAD LINE] key has been pressed for each trunk. Once identified, the trunk can then be tested, and appropriate corrective action can be taken.

In the *LCR Report*, the technician is not looking for the number of times the [BAD LINE] key has been pressed for each trunk, but is looking at the *B. CALS* column for information on each *Service*.

**Feature Can Be Used With:** 17-Key, 28-Key, and Display Telephones.

### PROGRAMMING

**Required:** A [BAD LINE] key (key code 819) must be programmed for each desired extension.

**Affected By:** None.

### How To: Use The [BAD LINE] Key.

ACTION	RESULT	COMMENT
1. If a problem is encountered while on an outside line (such as a noisy line), press the [BAD LINE] key.	The B. CALS column of the F, G, and H reports is incremented by one for the line.	The total number of bad line calls will be reflected in the B. CALS column of the reports (F,G, and H) listed above.

## BARGE IN KEY

---

**DESCRIPTION:** This feature allows an authorized station user to enter into an existing conversation of one of the system's extensions.

The *Barge In* feature has a related feature called *Barge Tone*. The short tone alerts the persons conversing that someone has "barged" into their conversation. This tone can be prevented on a per station basis.

The *Block Barge In* option on the *Station Programming* screen can be used to prevent an extension from being barged into.

**NOTE:** *The use of this feature may be prohibited in some states. Check state and local laws before using this feature.*

In order to barge into a station, the calling extension must receive a busy signal before using the barge in feature. If any feature is active on the called station to prevent receiving a busy signal, the station cannot be barged into. For example, if a station has *Call Forward All Calls* active for internal calls, that station cannot be barged into. If the called station is in *Do Not Disturb* mode, that station's calls cannot be barged into. If the called station is a Display phone with *Auto 2nd Path* active, the station cannot be barged into.

**Feature Can Be Used With:** 17-key, 28-key and Display Telephones.

### PROGRAMMING

**Required:** A [BARGE IN] key (key code 816) is required on the authorized station.

**Affected By:** *Block Barge In* and *Block Barge Tone* on the *Station Programming* screen effect the station you are barging into, not the station you are barging from.

**How To:** Use The [BARGE IN] Key On The 17-key And 28-key Telephones.

ACTION	RESULT	COMMENT
1. Lift the handset.		
2. Dial the desired extension number.	A busy signal is heard.	
3. After obtaining a busy signal, press the [BARGE IN] key.	The station user will hear a warning tone that barge in has been activated.	

*(Continued on the next page.)*

## BARGE IN KEY

How To: Use The [BARGE IN] Key On The Display Telephone.

ACTION	DISPLAY	RESULT/COMMENT
1. Lift the handset.	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">Mon Jan 09 12:35</div> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	
2. Dial the desired extension number.	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">Mon Jan 09 12:35 068 JOHN busy CO call* camp voice cb.</div> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	A busy signal is heard.
3. After obtaining a busy signal, press the [BARGE IN] key.	<div style="border: 1px solid black; padding: 10px; margin-bottom: 5px; text-align: center;">BARGE-IN</div> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	The station user will hear a warning tone that barge in has been activated.



## CALL AN EXTENSION

---

**DESCRIPTION:** Any extension in the system can be called by another extension. The system can be programmed such that when a 17-key, 28-key, or Display phone is called the call is voice announced. That is, the hands free speaker and microphone on the called extension are activated and the called party can respond without lifting the handset. This option is called *HF Receive* and is programmed on a per station basis.

Any telephone in the system can be programmed to ring when called rather than using the voice announce. The 6-key and Single Line telephones always ring when called regardless of the *HF Receive* option.

If an extension is programmed to receive internal calls via *Voice Announce*, the calling station can force the extension to ring by dialing a  before the extension number.

When several systems are connected together with a tie line network, *Transparent Intercom Dialing* allows a station user to call, or transfer to, any extension in the network using a 4-digit extension number. The station user does not need to know tie line access codes, or anything else about the network. With *Transparent Intercom Dialing*, the same procedure is used to call an extension as in a single system.

Stations can also be called if the *Directory* name of the desired person is known. This feature is called *Dial By Name*.

**Feature Can Be Used With: All Phones.**

### PROGRAMMING

**Required:** None.

**Optional:** An [ICM] key (key code 818) can be programmed which gives an LED indication of an internal call. The key can also be used when placing internal calls on hold, or transferring internal calls.

**Affected By:** The *HF Receive* option on the called extension.

## CALL AN EXTENSION

---

### How To: Make An Internal Call (Voice Announce).

---

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	The 17-key, 28-key, and Display telephones can also place internal calls hands free. Press the [HF] key or [V/A] key on the 17-key.
2. Dial the desired extension number.	A double tone is heard by you and the other extension.	A double tone is heard if the called extension is programmed to receive Voice Announced calls. Otherwise the called extension will ring.

### How To: Make An Internal Call (Ring The Called Extension).

---

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	The 17-key, 28-key, and Display telephones can also place internal calls hands free. Press the [HF] key or [V/A] key on the 17-key.
2. Dial [1] plus the desired extension number.	The called extension will ring. Ring back tone is heard.	

## CALL THE OPERATOR

---

**DESCRIPTION:** Should the station user wish to call the system Operator from his extension, or any other extension in the system, he can do so using two methods. The method used depends on convenience and how the system is programmed. The system can also have more than one position designated as the operator.

**Feature Can Be Used With:** All Phones.

### PROGRAMMING

**Required:** None.

**Affected By:** The *Intercom Dialing* programming screen in the *Digit Translation Table*. The number of operators in the system.

### How To: Call The Operator From Another Extension In The System.

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	
2. Dial [0] on the dial pad.	The station user is connected to the Operator station.	

### How To: Call The Operator When There Is More Than One Operator.

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	
2. Dial [0] + number of desired Operator station, [1] thru [4].	The station user is connected to the desired operator station.	[0] + [1] = Operator 1 [0] + [2] = Operator 2 [0] + [3] = Operator 3 [0] + [4] = Operator 4

*(Continued on the next page.)*

## CALL THE OPERATOR

---

How To: Call The Operator Using An Extension Number.

---

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	
2. Dial the Operator's extension number.	The user is connected to the Operator station.	When the system is new, the Operator station defaults to 3001. It may be programmed to be any desired extension in the system.

## CALL VMS FROM A STATION

---

**DESCRIPTION:** If you are away from your extension, you may still call the VMS and check your messages.

**Feature Can Be Used With:** All Phones.

### PROGRAMMING

**Required:** None.

**Affected By:** The *Forwarding and VMS Plans* programming screen, and the *Intercom Dialing* programming screen on the *Digit Translation Tables* menu.

### How To: Call VMS.

---

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal Dial tone is heard.	
2. Dial [4] + the VMS hunt group number, usually [3] [6].	The VMS system answers, and prompts you for your mailbox number.	The VMS hunt group is usually 36, but can be any hunt group from 1 through 36.
3. Follow the VMS voice prompts to check your messages.		

## CALL BACK

---

**DESCRIPTION:** When a user places a call to a busy extension, the *Call Back* feature can be used to provide an audio (ringing) and visual (blinking LED indication) when the called extension is idle.

**Feature Can Be Used With:** All Phones

### PROGRAMMING

**Required:** A [CALL BACK] key (key code 807) is needed on the 17-key and 28-key telephone. Do not program a [CALL BACK] key on a Display phone. A key is not needed on a 6-key or Single Line telephone.

**Affected By:** See Placing Calls.

### How To: Use Call Back With The 17-key and 28-key Telephones.

---

ACTION	RESULT	COMMENT
1. Upon reaching a busy extension, press the [CALL BACK] key.	The [CALL BACK] key LED flickers momentarily.	Press while busy tone is heard.
2. Replace the handset, or press the [HF] key.		Press the [HF] key to deactivate speakerphone if applicable.  Wait for Call Back.
When the other party is idle, [CALL BACK] key LED will blink, and the phone will ring.		
3. Lift the handset, or press the [HF] key.	Internal dial tone is heard.	
4. Press the blinking [CALL BACK] key.	Extension on which the CALL BACK was left rings.	Before pressing, LED should be flashing. Call Back is completed.

If the user wishes to cancel a Call Back, he can press the [CALL BACK] key without lifting the handset (or without pressing Hands Free) while the phone is ringing. A Call Back will automatically be canceled if the extension does not respond to the ring back in 30 seconds.

*(Continued on the next page.)*

# CALL BACK

## How To: Use Call Back With The Display Phone.

ACTION	DISPLAY	RESULT/COMMENT
1. Upon reaching a busy extension, press the [cb.] "soft" key.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">                         Thu May 05 12:18                          004 JONES                          *busy ICM call*                          camp voice cb.                     </div> <div style="margin-top: 10px; text-align: center;"> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> </div>	Press while busy tone is heard.
2. Replace the handset, or press the [HF] key.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">                         Call back on *                          004 JONES                          *busy ICM call*                          camp voice cb.                     </div> <div style="margin-top: 10px; text-align: center;"> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> </div>	Press the [HF] key to deactivate the speakerphone if applicable.
3. Wait for call.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">                         Callback-&gt;ext 004                          JONES                     </div> <div style="margin-top: 10px; text-align: center;"> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> </div>	When other party is idle, phone will ring.
4. Lift the handset, or press [HF] key.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">                         Callback-&gt;ext 004                          004 JONES                          *intercom ring*                     </div> <div style="margin-top: 10px; text-align: center;"> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> </div>	Extension on which the Call Back was left begins to ring. Call Back is completed.

(Continued on the next page.)

## CALL BACK

---

How To: Use Call Back With A 6-key And A Single Line Telephone.

---

ACTION	RESULT	COMMENT
1. Lift the handset and dial the desired extension.	A busy signal is heard.	
2. Dial [4] while the busy signal is present.		
3. Replace the handset.	When the called extension becomes idle, your phone will ring.	
4. Lift the handset.	The called extension begins to ring.	



## CALL FORWARD

---

**DESCRIPTION:** The *Call Forward* feature provides the user with the ability to forward (re-route) all Incoming calls to another extension. If a user is to spend time at another desk or office, all calls may be forwarded to another telephone extension.

A phone can be forwarded to different destinations for Forward on Busy, Forward No Answer, and Forward All Calls.

A phone can have separate Call Forward Plans for when the system is in the DAY mode and for when the system is in the NIGHT mode.

Different destinations can be programmed based on whether the call being forwarded is an internal or outside line call.

An intercom call can be forwarded to a hunt group as well as another extension or Voice Message System.

An outside line call can be forwarded to a hunt group, an ACD group, a system speed dial number, an extension, or Voice Message System.

In order to accomplish these features, the *Forwarding and VMS Plans* programming screen has been created. This screen provides the programming for Call Forward as well as retaining the programming for VMS. See the *Forwarding and VMS Plans* section of this manual for programming information.

The station user can activate *Call Forward All Calls*, and change the destination of *Call Forward All Calls*. The destinations for *Call Forward No Answer* and *Call Forward Busy* are programmed on the *Forwarding and VMS Plans* programming screen, and are not under the user's control.

If an extension has *Call Forward No Answer* active when the [DND] key (or [IN/OUT] key) is pressed, the *DND (or In/Out) feature* takes precedence. Calls will not forward.

If an extension has *Call Forward All Calls* or *Call Forward Busy* active when the [DND] key (or [IN/OUT] key) is pressed, the *Call Forward feature* takes precedence. Calls will forward.

**Feature Can Be Used With: All Phones.**

### PROGRAMMING

**Required:** Either the *Forwarding and VMS Plans* programming screen must be programmed, or the extension must have a [CALL FORWARD] key on the 17-key, 28-key, and Display Phone.

**Optional:** A [CALL FORWARD] key on the 17-key, 28-key, and Display Phone.

**Affected By:** The *Forwarding and VMS Plans* programming screen. The *Night Forward On* option on the *System Options* programming screen. If an extension is using Call Forward to a System Speed Dial number, the maximum length of the conversation is governed by *Divert Limit* on the *System Programming* screen.

Call Forward is also affected by DND, and In/Out.

(Continued on the next page.)

## CALL FORWARD

---

### How To: Use The [CALL FORWARD] Key.

---

ACTION	RESULT	COMMENT
1. Press the [CALL FORWARD] key.	Confirmation tone is heard. The LED next to the [CALL FORWARD] key will blink. Call forwarding is completed.	When your extension is forwarded <i>All Calls</i> , the only extension in your System which may call your phone, is the one to which your phone is forwarded.

### How To: Cancel Call Forward.

---

ACTION	RESULT	COMMENT
1. Press the [CALL FORWARD] key.	Call forwarding is canceled.	

### How To: Change The Extension That Receives The Calls – DAY Mode.

---

ACTION	RESULT	COMMENT
1. Lift the handset, or press the [HF] key.	Dial tone is heard in handset or speaker. If the [HF] key is used, the [HF] key LED will light.	
2. Press the [CALL FORWARD] key.		
3. Dial the extension number to which you wish to forward your calls.	Confirmation tone is heard. The LED next to the [CALL FORWARD] key will blink.	Notify the party to which you have forwarded your calls to.
4. Replace the handset, or press the [HF] key.	Call forwarding completed.	When your extension is forwarded <i>All Calls</i> , the only extension in your System which may call your phone, is the one to which your phone is forwarded.

*(Continued on the next page.)*

## CALL FORWARD

### How To: Change The Extension That Receives The Calls - NIGHT Mode.

ACTION	RESULT	COMMENT
1. Lift the handset, or press the [HF] key.	Dial tone is heard in the handset, or speaker. If the [HF] key is used, the [HF] key LED will light.	
2. Press the [CALL FORWARD] key.		
3. Dial [5] plus the extension number to which you wish to forward your calls.	Confirmation tone is heard. The LED next to the [CALL FORWARD] key will blink.	Notify the party to which you have forwarded your calls.
4. Replace the handset, or press the [HF] key.	Call forwarding completed.	When your extension is forwarded <i>All Calls</i> , the only extension in your System which may call your phone, is the one to which your phone is forwarded.

### How To: Call Forward On The 6-key And Single Line Telephone - DAY mode.

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	
2. Dial [7] + [#] + [1] + the extension number to which you want to forward your phone.	Confirmation tone is heard. Your extension is forwarded and will ring at the desired location.	
3. Replace the handset.		

*(Continued on the next page.)*

## CALL FORWARD

How To: Activate Call Forward To A Preprogrammed Extension With A Dial Code - DAY Mode.

ACTION	RESULT	COMMENT
1. Lift the handset, or press the [HF] key.	Dial tone is heard in handset or speaker. If the [HF] key is used, the [HF] key LED will light.	
2. Dial [7] + [*] + [7].	Confirmation tone is heard. Call forwarding completed.	When your extension is forwarded <i>All Calls</i> , the only extension in your System which may call your phone, is the one to which your phone is forwarded.

How To: Activate Call Forward To A Preprogrammed Extension With A Dial Code - NIGHT Mode.

ACTION	RESULT	COMMENT
1. Lift the handset, or press the [HF] key.	Dial tone is heard in handset or speaker. If the [HF] key is used, the [HF] key LED will light.	
2. Dial [7] + [*] + [8].	Confirmation tone is heard. Call forwarding completed.	When your extension is forwarded <i>All Calls</i> , the only extension in your System which may call your phone, is the one to which your phone is forwarded.

*(Continued on the next page.)*

## CALL FORWARD

---

### How To: Deactivate Call Forward With A Dial Code – DAY Mode.

---

ACTION	RESULT	COMMENT
1. Lift the handset, or press the [HF] key.	Dial tone is heard in handset or speaker. If the [HF] key is used, the [HF] key LED will light.	
2. Dial [7] + [*] + [*].	Call forwarding is canceled.	

### How To: Deactivate Call Forward With A Dial Code – NIGHT Mode.

---

ACTION	RESULT	COMMENT
1. Lift the handset, or press the [HF] key.	Dial tone is heard in handset or speaker. If the [HF] key is used, the [HF] key LED will light.	
2. Dial [7] + [*] + [9].	Call forwarding is canceled.	

## CALL FORWARD TO ACD KEY

---

**DESCRIPTION:** The Call Forwarding feature provides the user the ability to forward (re-route) a station to an ACD group. Any outside line ringing, or transferred to a station, can be directed to an ACD group with the use of this key. The specific ACD group (01-15) is designated with the sub-code of the key.

**Feature Can Be Used With:** 17-key, 28-key, and Display telephones.

### PROGRAMMING

**Required:** A [CALL FORWARD TO ACD] key (key code 835) is required for each desired station. The specific ACD group (1-15) is designated with the sub-code of the key. At least one [OUTSIDE LINE] key (a trunk group, direct appearance for the desired line, UNI, or LCR key) must be programmed on the desired extensions.

**Affected By:** See Call Forward.

### How To: Call Forward To ACD.

ACTION	RESULT	COMMENT
1. Press the [CALL FORWARD TO ACD] key.	The [CALL FORWARD TO ACD] key LED blinks. The extensions outside line calls will be forwarded to the designated ACD group.	

### How To: Cancel Call Forward To ACD.

ACTION	RESULT	COMMENT
1. Press the [CALL FORWARD TO ACD] key.	The [CALL FORWARD TO ACD] key LED goes out. Call Forward to ACD is turned off.	

## CALL FORWARD TO VOICE MESSAGE SYSTEM

---

**DESCRIPTION:** The user can forward his phone to the Voice Message System (INFOSTAR™/VX) so that callers may leave a message when he is not available to answer his calls.

A phone can have separate *Call Forward Plans* for when the system is in the DAY mode and for when the system is in the NIGHT mode.

Both intercom calls and outside line calls can be forwarded to VMS.

In order to accomplish these features, the *Forwarding and VMS Plans* programming screen has been created. This screen provides the programming for Call Forward to VMS. See the *Forwarding and VMS Plans* section of this manual for programming information.

The station user can activate *Call Forward All Calls to VMS*, *Call Forward No Answer* and *Call Forward Busy to VMS* are programmed on the *Forwarding and VMS Plans* programming screen, and are not under the user's control.

If an extension has *Call Forward No Answer* active when the [DND] key (or [IN/OUT] key) is pressed, the *DND (or In/Out) feature* takes precedence. Calls will not forward.

If an extension has *Call Forward All Calls* and *Call Forward Busy* active when the [DND] key (or [IN/OUT] key) is pressed, the *Call Forward feature* takes precedence. Calls will forward.

**Feature Can Be Used With: All Phones.**

### PROGRAMMING

**Required:** None.

**Optional:** A [CALL FORWARD] key (key code 809) can be programmed on the 17-key, 28-key, and Display phones. If the *Forwarding and VMS Plans* programming screen has been programmed to *Call Forward All Calls to VMS*, the extension can be forwarded by pressing the [CALL FORWARD] key.

**Affected By:** The *Forwarding and VMS Plans* programming screen. The *Night Forward On* option on the *System Options* programming screen.

*Call Forward to VMS* is also affected by DND, and In/Out. The Call Forward Busy timer is ignored, and a call forwards immediately if an extension is in DND or OUT.

(Continued on the next page.)

## CALL FORWARD TO VMS

---

How To: Call Forward To VMS - DAY mode.

---

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	
2. Dial [7] + [*] + [3]	Four short beeps are heard to confirm the entry of forwarding code.	

The [MAIL] key on the user's phone will light when the first message is left in VMS. The [MAIL] key LED will go out when the last message is heard from VMS.

How To: Call Forward To VMS - NIGHT mode.

---

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	
2. Dial [7] + [*] + [5]	Four short beeps are heard to confirm the entry of forwarding code.	

The [MAIL] key on the user's phone will light when the first message is left in VMS. The [MAIL] key LED will go out when the last message is heard from VMS.

*(Continued on the next page.)*



## CALL FORWARD TO VMS

---

How To: Cancel The Call Forward To VMS – DAY mode.

---

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	
2. Dial [7] + [*] + [*]	Call forwarding is canceled. If provided, the [CALL FORWARD] key LED will go out.	

How To: Cancel The Call Forward To VMS – NIGHT mode.

---

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	
2. Dial [7] + [*] + [9]	Call forwarding is canceled. If provided, the [CALL FORWARD] key LED will go out.	

## CALL MONITOR

---

**DESCRIPTION:** The Call Monitor feature allows a station user's conversation to be heard by other individuals in the same room (while on an internal or external call using the handset.)

**Feature Can Be Used With:** 17-key, 28-key, and Display Telephones.

### PROGRAMMING

**Required:** The *Enable HF Monitor* option on the *System Options* programming screen must be programmed to Y (yes). This enables the use of this feature for the entire system.

### How To: Use Call Monitor.

ACTION	RESULT	COMMENT
1. While on an internal or external call using the handset, press the [HF] key (the [V/A] key on the 17-key phone).	After a brief delay, your current conversation can be heard through the hands free speaker. The [HF] key LED lights ([V/A] key for 17-key phone.) Individuals near your extension can hear you and the party with whom you are speaking.	Remain on the handset. Volume control adjustments made while the Call Monitor feature is activated affect both the handset receiver and the speaker.

### How To: Turn Off Call Monitor.

ACTION	RESULT	COMMENT
1. With the Call Monitor Feature activated, press the [HF] key ([V/A] key on the 17-key phone).	Your call can no longer be heard through the hands free speaker.	

## CALL PICKUP

---

**DESCRIPTION:** This feature allows a station user to answer calls which are ringing at another extension in the system.

**Feature Can Be Used With:** All Phones.

### PROGRAMMING

**Required:** At least one [OUTSIDE LINE] key (a trunk group, direct appearance for the desired line, UNI, or LCR key) must be programmed on the desired extensions to answer outside line calls.

### How To: Answer A Call Ringing At Another Station.

---

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	
2. Dial [2] plus the 4-digit extension number of the ringing phone.	The call is connected.	The call is taken off hold, and has been answered at your extension.

## CALL TRANSFER TO AN ACD GROUP

---

**DESCRIPTION:** If a system is equipped with Automatic Call Distribution, any station user can transfer an outside line call to any one of the ACD groups (01-15).

**Feature Can Be Used With:** All Phones.

### PROGRAMMING

**Required:** At least one [OUTSIDE LINE] key (a trunk group, direct appearance for the desired line, UNI, or LCR key) must be programmed on the desired extensions.

### How To: Transfer To ACD.

ACTION	RESULT	COMMENT
1. While on an outside line call, press the [TR/CON] key.	The [OUTSIDE LINE] key LED blinks slowly for external call. Call is put on hold automatically.	
2. Dial [4][7] plus the desired ACD Group number (01-15).	Confirmation tone (4 short beeps) is heard. The call is transferred to the ACD group.	

### How To: Transfer A Call To ACD With A Single Line Telephone.

ACTION	RESULT	COMMENT
1. While on current call, flash (momentarily press and release) the switch-hook.	Internal dial tone is heard.	
2. Dial #.		
3. Dial [4][7] plus the desired ACD group number (01-15).	The call is transferred to the ACD group.	

## CALL TRANSFER TO AN EXTENSION

---

**DESCRIPTION:** This feature allows an Internal or External call to be answered at one extension, and then transferred to another extension user. The [SERIAL] key can be used if the calling party is to be transferred to more than one party.

If a call is transferred to a busy extension, the call is automatically camped-on as soon as the extension transferring the call hangs up.

The *Dial By Name* feature can be used to transfer a call to an extension.

*Note: A Single Line telephone cannot transfer an Internal call.*

**Feature Can Be Used With: All Phones.**

### PROGRAMMING

**Required:** At least one [OUTSIDE LINE] key (a trunk group, direct appearance for the desired line, UNI, or LCR key) must be programmed on the extensions.

**Optional:** *Auto Transfer* can be activated by the station.

**Affected By:** DND, In/Out, HF Receive, and Call Forward at the called extension.

### How To: Transfer A Call To Another Extension On A 17-key And 28-key Telephone.

---

ACTION	RESULT	COMMENT
1. While on current call, press the [TR/CON] key.	The [OUTSIDE LINE] key LED blinks slowly for External calls.	Call is put on hold automatically.
2. Dial the desired extension number.	Both the transferring and receiving extension will hear a double tone, and are connected to each other.	
3. Call may be announced, or, if busy, or no answer, you may reconnect to External call by pressing [OUTSIDE LINE] key, or to the Internal call by pressing [TR/CON].		If it is not desired to inform called extension of call, (screen the call), replace the handset after dialing the receiving extension number.
4. Replace the handset.	Call transfer is completed.	If transferred call is not answered in set Transfer Recall Time, Outside call returns to transferring extension.

*(Continued on the next page.)*

## CALL TRANSFER TO AN EXTENSION

How To: Transfer A Call To Another Extension On A Display Telephone.

ACTION	DISPLAY	RESULT/COMMENT
1. While on current call, press the [TR/CON] key.	<div style="border: 1px solid black; padding: 5px; text-align: center;">Thu May 05 10:44</div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	The [OUTSIDE LINE] key blinks slowly for External calls. The call is put on hold automatically.
2. Dial the desired extension number.	<div style="border: 1px solid black; padding: 5px; text-align: center;">004 MILDRED *voice announce*</div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	Both the transferring, and receiving extension will hear a double tone, and are connected to each other.
3. Call may be announced, or, if busy, or no answer, you may reconnect to External call by pressing the [OUTSIDE LINE] key, or to the Internal call by pressing [TR/CON].	<div style="border: 1px solid black; padding: 5px; text-align: center;">Thu May 05 10:45</div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	If it is not desired to inform called extension of call, (screen the call), replace the handset after dialing the receiving extension number.
4. Replace the handset.	<div style="border: 1px solid black; padding: 5px; text-align: center;">Thu May 05 10:45</div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	Call transfer is completed. If transferred call is not answered in set Transfer Recall Time, Outside call returns to transferring extension.

*(Continued on the next page.)*

## CALL TRANSFER TO AN EXTENSION

---

### How To: Transfer A Call To Another Extension On A 6-key Telephone.

---

ACTION	RESULT	COMMENT
1. While on current call, press [TR/CON] key.	The [OUT] key LED goes out with Outside line call.	
2. Dial the desired extension number.	Both the transferring, and receiving extension will hear a double tone, and are connected to each other.	
3. Call may be announced, or, if busy, or no answer, you may reconnect to External call by pressing the [TR/CON] key.		
4. Replace the handset.	Call transfer is completed.	If transferred call is not answered in set Transfer Recall Time, Outside call returns to transferring extension.

### How To: Transfer A Call To Another Extension On A Single Line Telephone.

---

ACTION	RESULT	COMMENT
1. While on current call, flash (momentarily press and release) the switch-hook.	Internal dial tone is heard.	
2. Dial [#] plus the desired extension number.	Both the transferring, and receiving extension will hear a double tone, and are connected to each other.	
3. Call may be announced, or, if busy, or no answer, you may reconnect to External call by dialing [2] plus the extension number.		
4. Replace the handset.	Call transfer is completed.	If transferred call is not answered in set Transfer Recall Time, Outside call returns to transferring extension.

## CALL TRANSFER TO A HUNT GROUP

---

**DESCRIPTION:** Internal or External calls answered at one extension may be transferred to the Hunt Group within the system.

*Note: A Single Line telephone cannot transfer an internal call.*

**Feature Can Be Used With: All Phones.**

### PROGRAMMING

**Required:** At least one [OUTSIDE LINE] key (a trunk group, direct appearance for the desired line, UNI, or LCR key) must be programmed on the desired extensions.

### How To: Transfer To A Hunt Group.

ACTION	RESULT	COMMENT
1. While on current call, press the [TR/CON] key.	The [OUTSIDE LINE] key LED blinks slowly for external call. Call is put on hold automatically.	
2. Dial [4] plus desired Hunt Group number (01-36).	Confirmation tone (4 short beeps) is heard.	Call is transferred to a Hunt Group.

### How To: Transfer A Call To A Hunt Group With A Single Line Telephone.

ACTION	RESULT	COMMENT
1. While on current call, flash (momentarily press and release) the switch-hook.	Internal dial tone is heard.	
2. Dial #.		
3. Dial [4] plus desired Hunt Group number (01-36).	The call is transferred to the Hunt Group.	



## CALL TRANSFER TO VMS

---

**DESCRIPTION:** VMS is an optional feature which provides the telephone system with an integrated voice message system. A station user can transfer an outside line call to the Voice Message System, and allow the caller to follow VMS's voice prompts to check their messages or leave messages for other users. An outside line call can also be transferred directly to a VMS mailbox.

**Feature Can Be Used With:** All Phones.

### PROGRAMMING

**Required:** At least one [OUTSIDE LINE] key (a trunk group, direct appearance for the desired line, UNI, or LCR key) must be programmed on the desired extensions.

### How To: Transfer An Outside Call To VMS.

ACTION	RESULT	COMMENT
1. (While connected to a call), press the [TR/CON] key.	Internal dial tone is heard.	
2. Dial [4] + the VMS hunt group number, usually [3][6].	Confirmation tone is heard (4 short beeps).	VMS is usually hunt group 36, but can be any group 1 through 36.

### How To: Transfer An Outside Call To VMS With A Single Line Telephone.

ACTION	RESULT	COMMENT
1. While on current call, flash (momentarily press and release) the switch-hook.	Internal dial tone is heard.	
2. Dial [#].		
3. Dial [4] + the VMS hunt group number, usually [3][6].	Confirmation tone is heard (4 short beeps).	VMS is usually hunt group 36, but can be any group 1 through 36.

*(Continued on the next page.)*

## CALL TRANSFER TO VMS

### How To: Transfer A Call To A VMS Mailbox Using Extension Number.

ACTION	RESULT	COMMENT
1. (While on an outside call), press the [TR/CON] key.	Internal Dial tone is heard.	
2. Dial [7][6] + the telephone extension number of the person the message is to be taken for.	Confirmation tone is heard (4 short beeps).	The outside caller hears the voice announcement of the person the message is being taken for.

### How To: Transfer A Call To A VMS Mailbox Using Mailbox Number.

ACTION	RESULT	COMMENT
1. (While on an outside call), press the [TR/CON] key.	Internal Dial tone is heard.	
2. Dial [7][7] + the mailbox number of the person the message is to be taken for.	Confirmation tone is heard (4 short beeps).	The outside caller hears the voice announcement of the person the message is being taken for.

### How To: Transfer A Call To A VMS Mailbox With A Single Line Telephone.

ACTION	RESULT	COMMENT
1. While on current call, flash (momentarily press and release) the switch-hook.	Internal dial tone is heard.	
2. Dial [#].		
3. Dial [7][6] + the telephone extension number of the person the message is to be taken for.	Confirmation tone is heard (4 short beeps).	The outside caller hears the voice announcement of the person the message is being taken for.
or		
Dial [7][7] + the mailbox number of the person the message is to be taken for.		

## CAMP-ON

---

**DESCRIPTION:** When a called extension is busy, the calling station can alert the busy station that a call is waiting. This alert is a brief tone (camp-on tone) heard in the handset, or over the speaker if hands free is being used.

A display telephone has an additional feature called *Hands Free Camp-on*. When this option is set to Y (yes) on the *Station Programming* screen, the system signals that a call is waiting with a camp-on tone using the second voice path, if available. That is, if the handset of the station is being used, the camp-on tone is heard via the hands free speaker.

**Feature Can Be Used With: All Phones.**

### PROGRAMMING

Required: None.

Affected By: Hands Free Camp-on, DND, In/Out, and Call Forward Busy at the called extension.

**How To: Use Camp-on With The 6-key, 17-key, 28-key, And Single Line Telephones.**

ACTION	RESULT	COMMENT
1. Lift the handset, and dial the desired extension number.	Busy tone is heard.	
2. Dial [2].	Two brief tones are heard by both the calling party, and the busy station.	
3. Wait for the busy extension to answer the call. Do not hang up.		If the called party does not answer, the camp-on can be canceled by hanging up.

*(Continued on the next page.)*

# CAMP-ON

## How To: Use Camp-on With Display Telephone.

ACTION	DISPLAY	RESULT/COMMENT
1. Lift the handset, and dial the desired extension number.	<div style="border: 1px solid black; padding: 5px;">                     Fri Feb 17 10:32                      018 JULIE                      *busy CO call*                      camp voice cb.                 </div> <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <span style="border: 1px solid black; width: 30px; height: 15px;"></span> <span style="border: 1px solid black; width: 30px; height: 15px;"></span> <span style="border: 1px solid black; width: 30px; height: 15px;"></span> </div>	Busy tone is heard.
2. Press the [camp] soft key.	<div style="border: 1px solid black; padding: 5px;">                     Fri Feb 17 10:32                      018 JULIE                      *busy CO call*                      camp voice cb.                 </div> <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <span style="border: 1px solid black; width: 30px; height: 15px;"></span> <span style="border: 1px solid black; width: 30px; height: 15px;"></span> <span style="border: 1px solid black; width: 30px; height: 15px;"></span> </div> <div style="text-align: center; margin-top: 5px;">▲</div>	Two brief tones are heard by both the calling party, and the busy station.
3. Wait for the busy extension to answer the call. Do not hang up.	<div style="border: 1px solid black; padding: 5px;">                     *Camped*                      018 JULIE                      *busy CO call*                      camp voice cb.                 </div> <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <span style="border: 1px solid black; width: 30px; height: 15px;"></span> <span style="border: 1px solid black; width: 30px; height: 15px;"></span> <span style="border: 1px solid black; width: 30px; height: 15px;"></span> </div>	If the called party does not answer, the camp-on can be canceled by hanging up.

## CONFERENCE

---

**DESCRIPTION:** The Three-way Conference feature enables a station user to hold a conference with two other parties simultaneously. The conference may be made up of the station and two external parties, or the station, one internal, and one external party. A conference can be established whether the external calls are incoming or outgoing. With a two external party conference, when the party who established the conference hangs up, the other two parties will be disconnected. If one internal party of a two internal party conference hangs up, the remaining party is still connected to the outside call. To hold a conference with more than two parties, the 17-key, 28-key and Display telephones can use the *Add-on Conference* feature.

**NOTE:** By default, the Operator cannot make a conference call. If the user would like the Operator to be able to make conference calls, there is an option on the System Options programming screen to enable operator conferencing.

**Feature Can Be Used With:** All Phones.

### PROGRAMMING

**Required:** At least two [OUTSIDE LINE] keys (trunk group, direct appearance for the desired line, UNI, or LCR keys) must be programmed on the desired extensions.

**Affected By:** See *Placing Outside Line Calls*.

### How To: Make A Conference With Two External Parties Using The 17-key And 28-key Telephones.

---

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	If the user is already on a call, and wishes to initiate conferencing, ignore steps 1 thru 3 and begin with step 4.
2. Press an available [OUTSIDE LINE] key.	The [OUTSIDE LINE] key LED blinks slowly. Dial tone is heard.	Before pressing an [OUTSIDE LINE] key, make certain that the LED next to that line is not lit.

*(Continued on the next page.)*

## CONFERENCE

---

**How To: Make A Conference With Two External Parties Using The 17-key And 28-key Telephones (continued).**

---

ACTION	RESULT	COMMENT
3. Dial the first external number.	Dialing pulses, or tones, are heard in handset.	Wait until the call is answered before proceeding.
4. Press the [TR/CON] key.	The [OUTSIDE LINE] key LED blinks slowly.	The first call is placed on Hold waiting for the conference to be completed.
5. Press another available [OUTSIDE LINE] key.	The [OUTSIDE LINE] key LED blinks slowly. Dial tone is heard.	
6. Dial the second external number.	Dialing pulses, or tones, are heard in handset.	Wait until the call is answered before pressing the [TR/CON] key.
7. Press the [TR/CON] key.	The [TR/CON] key LED blinks. Both [OUTSIDE LINE] key LEDs are lit.	Conference is established.

**How To: Drop One Call From A Two External Party Conference Using The 17-key And 28-key Telephones.**

---

ACTION	RESULT	COMMENT
1. Press the [HOLD] key.	The [OUTSIDE LINE] key LEDs will blink.	Both external calls are placed on Hold. Both [OUTSIDE LINE] key LEDs will blink rapidly.
2. Press the [OUTSIDE LINE] key for the line you wish to drop.	The [OUTSIDE LINE] key LED will blink slowly.	Line has been seized.
3. Press the [OUTSIDE LINE] key for remaining call.	Connection made to remaining party. First call is dropped.	The [OUTSIDE LINE] key LED for remaining call blinks slowly. LED for dropped call goes out.

*(Continued on the next page.)*

## CONFERENCE

---

How To: Establish A Conference With One External And One Internal Party Using The 17-key And 28-key Telephones.

---

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	With Hands Free operation, ignore step 1, and begin with step 2.
2. Press an available [OUTSIDE LINE] key.	The [OUTSIDE LINE] key LED blinks slowly. Dial tone is heard.	With Hands Free operation, [HF] key LED will light.
3. Dial external number.	Dialing pulses, or tones, are heard in the handset or speaker.	Wait until the call is answered before pressing the [TR/CON] key.
4. Press the [TR/CON] key.	The [OUTSIDE LINE] key LED begins blinking. External call is automatically put on hold. Internal dial tone is heard.	
5. Dial [1] + extension number to make the called extension ring.	The extension rings.	Wait until call is answered before pressing [TR/CON] key. The called extension must use the handset.
6. Press the [TR/CON] key.	The [TR/CON] key LED blinks. The [OUTSIDE LINE] key LED lights.	Conference is established.

*(Continued on the next page.)*

## CONFERENCE

### How To: Make A Conference With Two External Parties With The 6-key Telephone.

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	If the user is already on a call, and wishes to initiate conferencing, ignore steps 1 thru 3, and begin with step 4.
2. Press the [OUT] key.	The [OUT] key LED will light. External dial tone is heard.	
3. Dial first external number.		Wait until call is answered before proceeding.
4. Press the [TR/CON] key.	The [OUT] key LED will go out.	
5. Press the [OUT] key.	The [OUT] key LED will light. External dial tone is heard.	
6. Dial the second external number.		Wait until call is answered before press the [TR/CON] key.
7. Press the [TR/CON] key.	The [TR/CON] key LED blinks.	Conference is established.

### How To: Drop One Call From A Two External Party Conference With The 6-key Telephone.

ACTION	RESULT	COMMENT
1. Press the [HOLD] key.	Internal dial tone is heard.	Both external calls are placed on Hold.
2. Dial [*].	The [OUT] key LED will blink slowly. The line has been seized.	Make certain this is the party to be dropped. If not, place the call on hold, and connect to the party to be dropped.
3. Press and hold down the switch-hook.	The call is dropped.	
4. Release the switch-hook.	Internal dial tone is heard.	
5. Dial [*].	Connection made to remaining party. First call is dropped.	The [OUT] key LED blinks slowly.

*(Continued on the next page.)*



## CONFERENCE

---

**How To:** Establish A Conference With One External Party And One Internal Party With The 6-key Telephone.

---

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	If the user is already on an external call, and wishes to initiate conferencing, ignore steps 1 thru 3, and begin with step 4.
2. Press the [OUT] key.	External dial tone is heard.	
3. Dial the desired external number.		Wait until call is answered before pressing the [TR/CON] key.
4. Press the [TR/CON] key.		
5. Dial [1] + desired extension number in order to make called extension ring.		Wait until call is answered before pressing [TR/CON] key.
6. Press the [TR/CON] key.	Conference is established.	

**How To:** Make A Conference With Two External Parties With A Single Line Telephone.

---

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	If the user is already on a call, and wishes to initiate conferencing, ignore steps 1 thru 3, and begin with step 4.
2. Select an outside line.	Dial tone is heard.	
3. Dial first external number.		Wait until call is answered before proceeding.

*(Continued on the next page.)*

## CONFERENCE

**How To: Make A Conference With Two External Parties With A Single Line Telephone.**

ACTION	RESULT	COMMENT
4. Flash (momentarily press and release) the switch-hook.	The first call is placed on hold.	
5. Select another outside line.	Dial tone is heard.	
6. Dial the second external number.		Wait until call is answered before proceeding.
7. Flash (momentarily press and release) the switch-hook.	The second call is placed on hold.	
8. Dial [#] twice.	The conference is established.	

**How To: Drop One Call From A Two External Party Conference With A Single Line Telephone.**

ACTION	RESULT	COMMENT
1. Flash (momentarily press and release) the switch-hook.	Internal dial tone is heard.	Both external calls are placed on Hold.
2. Dial [*].	The line has been seized.	Make certain this is the party to be dropped. If not, place the call on hold, and connect to the party to be dropped.
3. Press and hold down the switch-hook.	The call is dropped.	
4. Release the switch-hook.	Internal dial tone is heard.	
5. Dial [*].	Connection made to remaining party. First call is dropped.	

*(Continued on the next page.)*

## CONFERENCE

---

How To: Establish A Conference With One External Party And One Internal Party With A Single Line Telephone.

---

ACTION	RESULT	COMMENT
1. Lift the handset.	internal dial tone is heard.	if the user is already on a call, and wishes to initiate conferencing, ignore steps 1 thru 3, and begin with step 4.
2. Select an outside line.	Dial tone is heard.	
3. Dial the desired external number.		Wait until call is answered before proceeding.
4. Flash (momentarily press and release) the switch-hook.	The first call is placed on hold.	
5. Dial [1] + desired extension number in order to make called extension ring.		Wait until the call is answered before proceeding.
7. Flash (momentarily press and release) the switch-hook.	The second call is placed on hold.	
8. Dial [#] twice.	The conference is established.	

## CONFERENCE

How To: Make A Conference With Two External Parties Using The Display Telephone.

ACTION	DISPLAY	RESULT/COMMENT
1. Lift the handset.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin-bottom: 5px;">Tue May 10 12:36</div> <div style="display: flex; justify-content: space-around; width: 100px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	Internal dial tone is heard. In order to conference Hands Free, [HF], ignore step 1, and begin with step 2.
2. Press an available [OUTSIDE LINE] key.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin-bottom: 5px;">                     (OUT)-&gt;020                      555-2220                      00:03                      timer cost acct                 </div> <div style="display: flex; justify-content: space-around; width: 100px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	The [OUTSIDE LINE] key LED blinks slowly. Dial tone is heard.
3. Dial the first external number.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin-bottom: 5px;">                     Tue May 10 12:38                      #6553344                      00:03                      timer cost acct                 </div> <div style="display: flex; justify-content: space-around; width: 100px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	Dialing pulses, or tones, are heard in the handset. Wait until call is answered before proceeding.
4. Press the [TR/CON] key.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin-bottom: 5px;">Tue May 10 12:42</div> <div style="display: flex; justify-content: space-around; width: 100px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	The [OUTSIDE LINE] key LED blinks, and call is automatically placed on hold.
5. Press another available [OUTSIDE LINE] key.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin-bottom: 5px;">                     (OUT)-&gt;023                      555-2223                      00:06                      timer cost acct                 </div> <div style="display: flex; justify-content: space-around; width: 100px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	The [OUTSIDE LINE] key LED blinks slowly. External dial tone is heard.

(Continued on the next page.)

## CONFERENCE

How To: Make A Conference With Two External Parties Using The Display Telephone.

ACTION	DISPLAY	RESULT/COMMENT
6. Dial the second external number.	<div style="border: 1px solid black; padding: 5px;">                     Tue May 10 12:44                      #6551234                      00:59                      timer cost acct    <input type="text"/> <input type="text"/> <input type="text"/> </div>	Wait until the call is answered before pressing the [TR/CON] key.
7. Press the [TR/CON] key.	<div style="border: 1px solid black; padding: 5px;">                     (Conf)-&gt;020/023                      ISOETEC                      01:12                      timer cost acct    <input type="text"/> <input type="text"/> <input type="text"/> </div>	Both [OUTSIDE LINE] key LEDs are lit. Conference is established.

How To: Drop One Call From A Two External Party Conference Using The Display Telephone.

ACTION	DISPLAY	RESULT/COMMENT
1. Press the [HOLD] key.	<div style="border: 1px solid black; padding: 5px;">                     Tue May 10 12:56    <input type="text"/> <input type="text"/> <input type="text"/> </div>	Both [OUTSIDE LINE] key LEDs will blink rapidly.
2. Press the [OUTSIDE LINE] key for the line you wish to drop.	<div style="border: 1px solid black; padding: 5px;">                     Tue May 10 1:06                      555-2220                      00:51                      timer cost acct    <input type="text"/> <input type="text"/> <input type="text"/> </div>	The [OUTSIDE LINE] LED will blink slowly. Line has been seized.

(Continued on the next page.)

## CONFERENCE

**How To:** Drop One Call From A Two External Party Conference Using The Display Telephone.

ACTION	DISPLAY	RESULT/COMMENT
3. Press the [OUTSIDE LINE] key for remaining call.	<div style="border: 1px solid black; padding: 5px; width: fit-content;">                     Tue May 10 1:07                      555-2223                      00:59                      timer cost acct                 </div> <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	Connection is made to remaining party. [OUTSIDE LINE] LED for remaining call blinks slowly. LED for dropped call goes out.

**How To:** Establish A Conference With One External Party And One Internal Party Using The Display Telephone.

ACTION	DISPLAY	RESULT/COMMENT
1. Lift the handset.	<div style="border: 1px solid black; padding: 5px; width: fit-content;">                     Tue May 10 12:56                 </div> <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	Internal dial tone is heard. With Hands Free operation, ignore step 1, and begin with step 2.
2. Press available [OUTSIDE LINE] key.	<div style="border: 1px solid black; padding: 5px; width: fit-content;">                     (OUT)--&gt;010                      555-2210                      00:01                      timer cost acct                 </div> <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	[OUTSIDE LINE] key LED blinks slowly. Dial tone is heard.
3. Dial desired external number.	<div style="border: 1px solid black; padding: 5px; width: fit-content;">                     Tue May 10 2:50                      #2555164                      00:03                      timer cost acct                 </div> <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	Dialing pulses, or tones, are heard in handset or speaker. Wait until call is answered before pressing the [TR/CON] key.

*(Continued on the next page.)*

## CONFERENCE

How To: Establish A Conference With One External Party And One Internal Party Using The Display Telephone.

ACTION	DISPLAY	RESULT/COMMENT
4. Press the [TR/CON] key.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">Tue May 10 2:50</div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> </div>	The [OUTSIDE LINE] key LED begins blinking. External call is automatically put on hold.
5. Dial [1] + desired extension number in order to make called extension ring.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">Tue May 10 2:57 004 KEVIN * intercom ring*</div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> </div>	Wait until call is answered before pressing [TR/CON] key. Called internal extension must use the handset.
6. Press the [TR/CON] key.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">(Conf)--&gt;010/004  01:12 timer cost acct</div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> </div>	[TR/CON] key LED blinks. [OUTSIDE LINE] key LED lights. Conference is established.

## DATA FEATURE

---

**DESCRIPTION:** The Data Feature offers the ability to transmit digital information between any two data ports. The digital display telephone enables a user to establish a data connection to any idle data port, and communicate with computers, terminals, printers, plotters, MODEMs, etc. This connection can only be made to equipment on premise. The digital display telephone must have a [DATA ON] key which is programmed on one of the feature keys by the system programmer.

The display telephone uses menu-prompt "soft" keys, and preprogrammed feature keys to establish a data, or voice, call. When used during a data call, the three "soft" keys located under the display of the telephone are used to change the serial communications parameters and to establish the data connection. The bottom line of the display labels the use of each "soft" key.

The Data Control Module must be installed to use the *Data Feature*.

### Feature Can Be Used With: Display Telephones.

### PROGRAMMING

**Required:** A [DATA ON] key (key code 829) is needed on each desired display telephone.

**Optional:** A [DATA HL] key (key code 828) can be used. The sub-code of the key (001-228) is the data port to be called.

**Affected By:** *Data Class of Service* and *Fixed* on the *Data Programming* screen.

### How To: Connect To A Data Port.



ACTION	DISPLAY	RESULT/COMMENT
1. Press the DATA ON key.	<div style="border: 1px solid black; padding: 5px; text-align: center;">                     -Data Call- #069                       Dial Port Number   <input type="text"/> <input type="text"/> <input type="text"/> </div>	The [DATA ON] key LED flashes. The data port of the station shows on the display.
2. Dial destination port number.	<div style="border: 1px solid black; padding: 5px; text-align: center;">                     &gt;013                      Baud Rate= 300                      Data= 8, Stop= 1                      Item Chge Conn   <input type="text"/> <input type="text"/> <input type="text"/> </div>	Change parameters, if desired, otherwise go to step 3.

(Continued on the next page.)


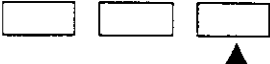


## DATA FEATURE

### How To: Connect To A Data Port, continued.

ACTION	DISPLAY	RESULT/COMMENT
3. Press the 'soft' key, under the display labeled Conn.	<pre> &gt;013 Baud Rate= 300 Data= 8, Stop= 1 Item  Chge  Conn </pre> 	The Conn (connect) key is the 'soft' key located below the word Conn on the display.
	<pre> -Data Port- Connected To 013 </pre> 	To DISCONNECT from a data call, press the [DATA ON] key.

### How To: Make A Data Connection Using The [DATA HL] key.

ACTION	DISPLAY	RESULT/COMMENT
1. Press the [DATA HL] key.	<pre> &gt;018 Baud Rate= 9600 Data= 8, Stop= 1 Item  Chge  Conn </pre> 	The [DATA ON] key LED flashes. Change parameters if desired. Otherwise, go to step 2.
2. Press the 'soft' key, under the display labeled Conn.	<pre> &gt;018 Baud Rate= 9600 Data= 8, Stop= 1 Item  Chge  Conn </pre> 	The Conn (connect) key is the 'soft' key located below the word Conn on the display.

To DISCONNECT from a data call, press the [DATA ON] key.

(Continued on the next page.)

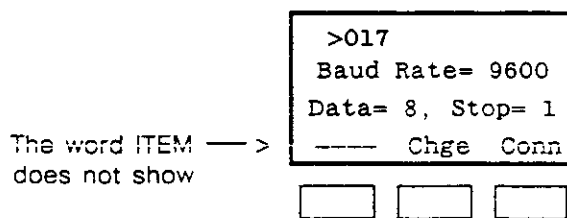
## DATA FEATURE

---

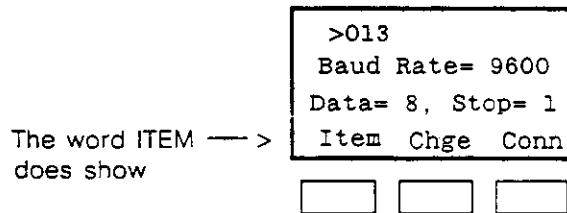
### Changing Communication Parameters

**DESCRIPTION:** A digital display phone may be permitted to change the baud rate, number of data bits (plus a parity bit), and the number of stop bits of the data port being called.

After the data port number is dialed (or [DATA HL] key is pressed), if the display appears as below, the communications parameters **CANNOT** be changed by the station.



However, if the display shows as below, the communications parameters **CAN** be changed by the station user.



(Continued on the next page.)

## DATA FEATURE

How To: Change the baud rate, number of bits, and number of stop bits.

ACTION	DISPLAY	RESULT/COMMENT
<p>1. Press the 'soft' key under the word <b>Item</b> on the display.</p>	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p>013 Baud Rate=&gt; 300 Data= 8, Stop= 1 Item Chge Conn</p> </div> <div style="display: flex; justify-content: center; gap: 20px; margin-top: 5px;"> <div style="border: 1px solid black; width: 30px; height: 20px;"></div> <div style="border: 1px solid black; width: 30px; height: 20px;"></div> <div style="border: 1px solid black; width: 30px; height: 20px;"></div> </div> <div style="text-align: center; margin-top: 5px;">▲</div>	<p>Note the arrow &gt; next to Baud Rate. The <b>Item</b> 'soft' key moves this arrow to the different parameters.</p>
<p>2. If the baud rate is to be changed, press the <b>Chge</b> 'soft' key.</p>	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p>013 Baud Rate=&gt;1200 Data= 8, Stop= 1 Item Chge Conn</p> </div> <div style="display: flex; justify-content: center; gap: 20px; margin-top: 5px;"> <div style="border: 1px solid black; width: 30px; height: 20px;"></div> <div style="border: 1px solid black; width: 30px; height: 20px;"></div> <div style="border: 1px solid black; width: 30px; height: 20px;"></div> </div> <div style="text-align: center; margin-top: 5px;">▲</div>	<p>The Baud Rate increments each time the <b>Change</b> 'soft' key is pressed. When the desired Baud Rate appears, move on to the next parameter.</p>
<p>3. The number of bits (8 or 9) is changed using the same method. Press the <b>Item</b> 'soft' key to move the arrow to the parameter to be changed.</p>	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p>013 Baud Rate= 1200 Data=&gt;8, Stop= 1 Item Chge Conn</p> </div> <div style="display: flex; justify-content: center; gap: 20px; margin-top: 5px;"> <div style="border: 1px solid black; width: 30px; height: 20px;"></div> <div style="border: 1px solid black; width: 30px; height: 20px;"></div> <div style="border: 1px solid black; width: 30px; height: 20px;"></div> </div> <div style="text-align: center; margin-top: 5px;">▲</div>	
<p>4. Press the <b>Chge</b> 'soft' key to increment the values of the parameter.</p>	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p>013 Baud Rate= 1200 Data=&gt;9, Stop= 1 Item Chge Conn</p> </div> <div style="display: flex; justify-content: center; gap: 20px; margin-top: 5px;"> <div style="border: 1px solid black; width: 30px; height: 20px;"></div> <div style="border: 1px solid black; width: 30px; height: 20px;"></div> <div style="border: 1px solid black; width: 30px; height: 20px;"></div> </div> <div style="text-align: center; margin-top: 5px;">▲</div>	<p>The number of stop bits (1 or 2) is also changed using this method.</p>

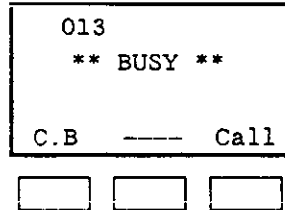
(Continued on the next page.)

## DATA FEATURE

---

### When The Called Port Is Busy

**DESCRIPTION:** When the called data port is in use, the Call Back feature can be used to alert the station user that the data port is free, or a different data port can be called. Of course, the [DATA ON] key can be pressed to cancel the call, and the call can be tried again at a later time.



### How To: Use Call Back To A Data Port.

ACTION	DISPLAY	RESULT/COMMENT
1. Press the 'soft' key located under the C.B on the display.	<pre> *Call back on* ** BUSY **  C.B ---- Call     </pre>	
2. Press the [DATA ON] key.	<pre> Wed May 18 3:49  *idle*     </pre>	The [DATA ON] key LED goes out.
3.	<pre> &gt;Data Call Back&lt; 013     </pre>	The phone rings to indicate the data port is now available.

(Continued on the next page.)

## DATA FEATURE

How To: Use Call Back To A Data Port, continued.

ACTION	DISPLAY	RESULT/COMMENT
4. Press the [DATA ON] key.	<pre> &gt;013 Baud Rate= 9600 Data= 8, Stop= 1 Item Chge Conn           </pre> <div style="display: flex; justify-content: space-around; width: 100%;"> <input type="text"/> <input type="text"/> <input type="text"/> </div>	
5. Press the 'soft' key, under the display labeled Conn.	<pre> -Data Port- Connected To   013           </pre> <div style="display: flex; justify-content: space-around; width: 100%;"> <input type="text"/> <input type="text"/> <input type="text"/> </div>	The connection is established.

How To: Call Another Data Port (when selected port is busy).

ACTION	DISPLAY	RESULT/COMMENT
1. Press the 'soft' key located below CALL.	<pre> 013 ** BUSY **  C.B  ----  Call           </pre> <div style="display: flex; justify-content: space-around; width: 100%;"> <input type="text"/> <input type="text"/> <input type="text"/> </div> <div style="text-align: center; margin-top: 5px;">▲</div>	
	<pre> -Data Call- #069  Dial Port Number           </pre> <div style="display: flex; justify-content: space-around; width: 100%;"> <input type="text"/> <input type="text"/> <input type="text"/> </div>	

(Continued on the next page.)

## DATA FEATURE

---

How To: Call Another Data Port when selected port is busy, continued.

---

ACTION	DISPLAY	RESULT/COMMENT
2. Dial another data port number.	<pre>&gt;062 Baud Rate= 300 Data= 8, Stop= 1 Item  Chge  Conn [ ] [ ] [ ]</pre>	
3. Press the 'soft' key, under the display labeled Conn.	<pre>&gt;062 Baud Rate= 300 Data= 8, Stop= 1 Item  Chge  Conn [ ] [ ] [ ] ▲</pre> <pre>-Data Port- Connected To 062 [ ] [ ] [ ]</pre>	The connection is established.

If the data port being used to call another port is not allowed access to that port, the display indicates that the port is restricted.

```
071
Is Restricted
---- Call ----
[ ] [ ] [ ]
```

## DATA HOT LINE KEY

---

**DESCRIPTION:** The [DATA HOT LINE] key is similar in function to the ISS key. The [DATA HOT LINE] key allows one key access to a data port. The [DATA HOT LINE] key also allows the station user to monitor the status of the port that has been programmed on the key.

**Feature Can Be Used With: Display Telephones.**

### Programming

**Required:** A [DATA HL] key (key code 828) is required for each desired data port. The sub-code is used to define which port number the key is to call.

**Affected By:** *Data Class of Service* of the called port.

**How To: Make A Data Connection Using The [DATA HL] Key.**

ACTION	DISPLAY	RESULT/COMMENT
1. Press the [DATA HL] key.	<div style="border: 1px solid black; padding: 5px; width: fit-content;">                     &gt;18                      Baud Rate= 9600                      Data= 8, Stop= 1                      Item Chge Conn                 </div> <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	The [DATA ON] key LED flashes. Change parameters if desired. Otherwise, go to step 2.
2. Press the 'soft' key, under the display labeled Conn.	<div style="border: 1px solid black; padding: 5px; width: fit-content;">                     &gt;18                      Baud Rate= 9600                      Data= 8, Stop= 1                      Item Chge Conn                 </div> <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div> <div style="text-align: center; margin-top: 5px;">▲</div>	The Conn (connect) key is the 'soft' key located below the word Conn on the display.  The [DATA HL] key LED is lit steadily.
	<div style="border: 1px solid black; padding: 5px; width: fit-content;">                     -Data Port-                      Connected To                      18                 </div> <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	

## DIAL BY NAME

---

**DESCRIPTION:** The system has an optional feature called *Dial By Name*. This feature must be ordered, and is activated remotely by an authorized ISOETEC Service Center. The part number for *Dialing By Name* is 112003. This feature utilizes the names exactly as they appear in the *Directory* programming screen. When *Dialing By Name* has been added to the system, *DirDl* appears in the installed *Options* area of the *Main Menu*. When entering the names in the *Directory* programming screen, use only letters A through Z and the space bar. Do not use numbers or special characters.

It is important to make certain that no TWO names are identical.


**NOTE:** Dial By Name and Alternate Dialing cannot be used in the same system. The Operator cannot use Dial By Name. Dial by Name cannot be used across the network when using Transparent Intercom Dialing. ACD Agents cannot be dialed by Agent number when using Dial By Name.

**Feature Can Be Used With: All Telephones.**

### Programming


**Required:** Each station user's name must be programmed in the *Directory* programming screen. The *Dial By Name* feature must be added to the system by an authorized ISOETEC Service Center.






### How To: Use Dial By Name.

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	Dial By Name can also be used hands free. If hands free is to be used, skip step 1.
2. Dial  .		
3. Dial the name of the individual.		

Dial the name starting with the first character of their name (as programmed in the Directory) and continuing until the system finds a unique match in the directory, and rings the desired station.

The characters Q and Z and a space are dialed by using the  on the dial pad.

For example, to dial Mary's extension by name, go off-hook and dial  + M + A + R + Y. That is, dial

 +    .

(Continued on the next page.)




## DIAL BY NAME


---


### How To: Transfer A Call Using Dial By Name.

---

ACTION	RESULT	COMMENT
1. While connected to a call, press the TR/CON key.	Internal dial tone is heard.	
2. Dial  .		
3. Dial the name of the individual.		

Dial the name starting with the first character of their name (as programmed in the Directory) and continuing until the system finds a unique match in the directory, and rings the desired station.

The characters Q and Z and a space are dialed by using the  on the dial pad.

For example, to dial Mary's extension by name, go off-hook and dial  + M + A + R + Y. That is, dial

 +    .

## DIGITAL VOICE ANNOUNCER

---

**DESCRIPTION:** The *Digital Voice Announcer* (p/n 15870) is a device that can answer a call and play a pre-recorded message to the caller. The *Digital Voice Announcer* can be used in applications that require a *recorder* (e.g., ACD Recorders, or answering devices for Auto Attendant).

The announcement message for the digital voice announcer can be recorded from any telephone.

The maximum message length of the Digital Voice Announcer = 65 seconds.

There are 3 LEDs on the back of the recorder indicating the following:

**Idle Mode** the RED IDLE LED is flashing.

**Recording Mode** the YELLOW LED is on.

**Play back Mode** the GREEN LED is on.

**Feature Can Be Used With: All Telephones.**

### Programming

**Required:** The extension to which the *Digital Voice Announcer* is connected must be programmed as a **recorder** on the *Station Programming* screen.

Several [LCR] keys must be programmed on the extensions to which *Digital Voice Announcers* are connected.

### How To: Record A Message.

ACTION	RESULT	COMMENT
1. Dial the extension number of the recorder.		
2. Dial <input type="text" value="*"/> .		This is the command to clear the message.
3. Dial <input type="text" value="1"/> .		This is the command to record.
4. Dial <input type="text" value="0"/> <input type="text" value="1"/> .		After the tone, start to record the message.

When finished recording, dial  to terminate the recording mode.

(Continued on the next page.)

## DIGITAL VOICE ANNOUNCER

---

### How To: Replay A Message.

---

ACTION	RESULT	COMMENT		
1. Dial the extension number of the recorder.				
2. Dial <table border="1"><tr><td>ABC</td></tr><tr><td>2</td></tr></table> .	ABC	2		This is the command playback.
ABC				
2				
3. Dial <table border="1"><tr><td>0</td></tr></table> <table border="1"><tr><td>1</td></tr></table> .	0	1		The message begins to playback.
0				
1				

### How To: Clear The Message.

---

ACTION	RESULT	COMMENT	
1. Dial the extension number of the recorder.			
2. Dial <table border="1"><tr><td>*</td></tr></table> .	*		This is the command to clear the message.
*			

## DIRECT STATION SELECT/BUSY LAMP FIELD

---

**DESCRIPTION:** The DSS (Direct Station Select) feature allows a user to call a specific internal extension by pressing one key dedicated to that extension number. Beside each [DSS] key is a light (LED) which serves as a Busy Lamp Field for monitoring the busy/idle status of another extension.

**Feature Can Be Used With:** 17-key, 28-key, And Display Telephones.

### PROGRAMMING

**Required:** A [DSS] key must be programmed on each desired station. The station user can then program the key to the desired extension number.

**Affected By:** *Enable Auto Pickup* on the *System Options* programming screen. See also *Placing Internal Calls*.

**How To: Program The [DSS] Key On The 17-key, 28-key, And Display Telephones.**

ACTION	RESULT	COMMENT
1. Without lifting the handset, press [PROG] key.	The [PROG] key LED is lit steadily.	
2. Press the [DSS] key to be programmed.		
3. Enter desired extension number.	The [PROG] key LED goes out.	

The [PROG] key LED will time out if no digits are entered within a six second time period, and when the maximum amount of digits has been entered. Programming will end.

**How To: Program The [DSS] Key On The DSS Console.**

ACTION	RESULT	COMMENT
1. Without lifting the handset, press [PROG] key on the telephone.	The [PROG] key LED is lit steadily.	
2. Press the [DSS] key on the DSS Console to be programmed.		
3. Enter desired extension number.	The [PROG] key LED goes out.	

The [PROG] key LED will time out if no digits are entered within a six second time period, and when the maximum amount of digits has been entered. Programming will end.

*(Continued on the next page.)*

## DIRECT STATION SELECT/BUSY LAMP FIELD

### How To: Use The [DSS] Key On The 17-key, 28-key Telephones.

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	
2. Press the [DSS] key.	The [DSS] key LED lights.	Double tone at called extension indicates HF mode is activated.

#### LED STATUS:

- If the LED (light) next to the [DSS] key on your phone is SOLIDLY LIT, the extension is busy, or the Do Not Disturb or In/Out feature is active.
- If FLASHING, the extension is ringing.
- If NOT LIT, the extension is idle.

### How To: Use The [DSS] Key On The Display Telephone.

ACTION	DISPLAY	RESULT/COMMENT
1. Lift the handset.	<div style="border: 1px solid black; padding: 5px; text-align: center;">Tue Jan 26 3:45</div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> </div>	Internal dial tone is heard.
2. Press the [DSS] key.	<div style="border: 1px solid black; padding: 5px; text-align: center;">Tue Jan 26 3:50 048 JANET *intercom ring*</div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> </div>	

#### LED STATUS:

- If the LED (light) next to the [DSS] key on your phone is SOLIDLY LIT, the extension is busy, or the Do Not Disturb or In Out feature is active.
- If FLASHING, the extension is ringing.
- If NOT LIT, the extension is idle.

## DISA

---

**DESCRIPTION:** DISA (Direct Inward System Access) allows an authorized individual outside the telephone system to place a call to the system, have the system answer the call, and provide the caller with system dial tone. The caller can then dial an extension number, or select an outside line. A tone dial telephone must be used to access the System through the DISA line.

The DISA feature uses the one built-in DTMF receiver. Only one incoming DISA call can be answered at a time. The DTMF receiver is used by DISA only during the dialing portion of the call.

If a DTMF Receiver port card (p/n 15650) is installed in the system, DISA will make use of these receivers instead of the built-in DTMF receiver. The number of incoming calls which DISA can answer simultaneously depends on the number of available DTMF receiver ports.

*NOTE: Disconnect supervision from the local telephone operating company must be provided for lines programmed for DISA.*

*NOTE: After 30 minutes of continuous use, the system will disconnect the DISA line.*

There are two types of DISA available:

- Supervised – Supervised DISA requires a four-digit access code. The DISA authorization code is any four digit number (0000-9999), and is entered by the Operator.
- Unsupervised – Unsupervised DISA does not require a code.

**Feature Can Be Used With: Any Tone Dial Telephone Outside Of The System.**

### PROGRAMMING

**Required:** The *Line Type* for the trunks to be designated as DISA trunks must be set to one of the following:

- 100- Supervised DISA – On all the time.
- 101- Supervised DISA – Night Mode Only.
- 200- Unsupervised DISA – On all the time.
- 201- Unsupervised DISA – Night Mode Only.

**Affected By:** *Drop Pulse* on the *System Programming* screen. The *Toll Options*, and the *DISA TIE GRP DIAL* option on the *System Options* programming screen.

*(Continued on the next page.)*

## DISA

### How To: Enter The Four Digit Authorization Code.

ACTION	RESULT	COMMENT
From the Operator's station,		
1. Lift the handset.		
2. Press the [RLS] key.	Internal dial tone is heard.	
3. Dial [#] plus the desired four digit code.	The authorization code is entered.	
4. Press the [RLS] key.		

### How To: Call A Station Using Supervised DISA.

ACTION	RESULT	COMMENT
1. From a telephone outside the System, dial the telephone number of the DISA line.	The System answers the call, and internal dial tone is heard.	
2. Dial the preprogrammed, four digit DISA authorization code.	Internal dial tone is heard again.	If dial tone is not heard, you have dialed an incorrect authorization code.
3. Dial the extension number of the desired station.	Ring back tone is heard.	The station rings.
4. When the call is complete, hang up your telephone.		

(Continued on the next page.)

## DISA

### How To: Call Another Station Using Supervised DISA.

ACTION	RESULT	COMMENT
1. If after dialing the first extension a busy signal is heard, or there is no answer, dial [#][#].	Internal dial tone is heard.	
2. Dial another extension.		
3. When the call is complete, hang up your telephone.		

### How To: Select An Outside Line Using Supervised DISA.

ACTION	RESULT	COMMENT
1. From a telephone outside the System, dial the telephone number of the DISA line.	The System answers the call, and internal dial tone is heard.	
2. Dial the preprogrammed, four digit DISA authorization code.	Internal dial tone is heard again.	If dial tone is not heard, you have dialed an incorrect authorization code.
3. Dial the access number of the desired line ([9] + the desired line number 001-228).	Outside line dial tone is heard.	If the DISA/TIE GRP DIAL option on the <i>System Options</i> programming screen is programmed yes, outside lines are accessed by group. Dial [8][1] through [8][0] for trunk groups 1 through 10.
4. Dial the desired telephone number.		
5. When the call is complete, hang up your telephone.		

(Continued on the next page.)



## DISA

### How To: Call A Station Using Unsupervised DISA.

ACTION	RESULT	COMMENT
1. From a telephone outside the System, dial the telephone number of the DISA line.	The System answers the call, and internal dial tone is heard.	
2. Dial the extension number of the desired station.	Ring back tone is heard.	The station rings.
3. When the call is complete, hang up your telephone.		

### How To: Select An Outside Line Using Unsupervised DISA.

ACTION	RESULT	COMMENT
1. From a telephone outside the System, dial the telephone number of the DISA line.	The System answers the call, and internal dial tone is heard.	
2. Dial the access number of the desired line ([9] + the desired line number 001-228).	Outside line dial tone is heard.	
3. Dial the desired telephone number.		
4. When the call is complete, hang up your telephone.		

## DISPLAY TELEPHONE MESSAGES

---

**DESCRIPTION:** The Display telephone provides the user with four Messages. The Display Phone messages are pre-defined messages which can be programmed by the user at their discretion. The available messages are: ON VACATION, OUT TO LUNCH, OUT OF TOWN, and IN A MEETING. The messages are pre-set and are user-adaptable, allowing the user to customize messages to their individual business needs. The user may program only ONE message at a time.

The Display telephone has three "soft" keys located below the LCD display representing a specific function. The left key is called the NEXT key, and allows the user to scroll through the various messages. The center key is called the CLEAR key, and allows the user to erase messages. After the message has been erased, the user returns to the "idle" mode. The right key is the SEL key, and acts like a RETURN key on a computer keyboard. The SEL key allows the user to select the date (or time) of return, and telephone number where they can be reached.

If a display phone user calls another display phone user, the programmed message will be seen by the calling party. If a regular telephone user calls a display phone, the calling party will not receive any programmed message.

**Feature Can Be Used With:** Display Telephones.

### PROGRAMMING

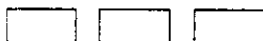
Required: None.

**How To:** Program The Display Phone Message ON VACATION.

ACTION	DISPLAY	RESULT/COMMENT
--------	---------	----------------

Fri Jul 15 11:45

\*idle\*



1. (While the phone is idle and on-hook), press one of the three 'soft' keys.

MESSAGE MODE

NO MESSAGES ARE

ACTIVATED

Next CLR Sel



Any one of the three 'soft' keys may be pressed to reach the message mode.

(Continued on next page)

## DISPLAY TELEPHONE MESSAGES

How To: Program The Display Phone Message ON VACATION, continued.

ACTION	DISPLAY	RESULT/COMMENT
2. Press the NEXT key once.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p style="text-align: center;">ON VACATION BACK-* TEL- Next CLR Sel</p> </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <input style="width: 30px; height: 15px;" type="text"/> <input style="width: 30px; height: 15px;" type="text"/> <input style="width: 30px; height: 15px;" type="text"/> </div>	The message appears on the display.
3. Using the dial pad, enter a four digit entry for the RETURN date.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p style="text-align: center;">ON VACATION BACK-*08/16 TEL- Next CLR Sel</p> </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <input style="width: 30px; height: 15px;" type="text"/> <input style="width: 30px; height: 15px;" type="text"/> <input style="width: 30px; height: 15px;" type="text"/> </div>	The first two digits entered reflect the month, and the last two digits reflect the day.
4. Press the SEL key.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p style="text-align: center;">ON VACATION BACK- 08/16 TEL* Next CLR Sel</p> </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <input style="width: 30px; height: 15px;" type="text"/> <input style="width: 30px; height: 15px;" type="text"/> <input style="width: 30px; height: 15px;" type="text"/> </div>	The date appears, and the * moves to the line for the telephone number.
5. Using the dial pad, enter the desired telephone number.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p style="text-align: center;">ON VACATION BACK- 08/16 TEL-*2035551212 Next CLR Sel</p> </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <input style="width: 30px; height: 15px;" type="text"/> <input style="width: 30px; height: 15px;" type="text"/> <input style="width: 30px; height: 15px;" type="text"/> </div>	Up to 11 characters may be used to program the telephone number.
6. Lift the handset momentarily, then replace it.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p style="text-align: center;">ON VACATION BACK- 08/16 TEL- 2035551212 date- 07-15-88</p> </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <input style="width: 30px; height: 15px;" type="text"/> <input style="width: 30px; height: 15px;" type="text"/> <input style="width: 30px; height: 15px;" type="text"/> </div>	<p>The message is now programmed.</p> <p>If the user continues to another message, the NEXT key will automatically delete the previous message.</p>

## DISPLAY TELEPHONE MESSAGES

**How To:** Program The Display Phone Message OUT FOR LUNCH.

ACTION	DISPLAY	RESULT/COMMENT
1. (While the phone is idle and on-hook), press one of the three 'soft' keys.	<div style="border: 1px solid black; padding: 5px; text-align: center;">                     MESSAGE MODE                      NO MESSAGES ARE                      ACTIVATED                      Next CLR Sel                 </div> <div style="display: flex; justify-content: center; gap: 20px; margin-top: 5px;"> <input type="text"/> <input type="text"/> <input type="text"/> </div>	Any one of the three 'soft' keys may be pressed to reach the message mode.
2. Press the NEXT key twice.	<div style="border: 1px solid black; padding: 5px; text-align: center;">                     OUT FOR LUNCH                      BACK-*                      TEL-                      Next CLR Sel                 </div> <div style="display: flex; justify-content: center; gap: 20px; margin-top: 5px;"> <input type="text"/> <input type="text"/> <input type="text"/> </div>	The message appears on the display.
3. Using the dial pad, enter a four digit entry for the RETURN time.	<div style="border: 1px solid black; padding: 5px; text-align: center;">                     OUT FOR LUNCH                      BACK-*02:15                      TEL-                      Next CLR Sel                 </div> <div style="display: flex; justify-content: center; gap: 20px; margin-top: 5px;"> <input type="text"/> <input type="text"/> <input type="text"/> </div>	The first two digits entered reflect the hour, and the last two digits reflect the minutes.
4. Press the SEL key.	<div style="border: 1px solid black; padding: 5px; text-align: center;">                     OUT FOR LUNCH                      BACK- 02:15                      TEL*                      Next CLR Sel                 </div> <div style="display: flex; justify-content: center; gap: 20px; margin-top: 5px;"> <input type="text"/> <input type="text"/> <input type="text"/> </div>	The time appears, and the * moves to the line for the telephone number.
5. Using the dial pad, enter the desired telephone number.	<div style="border: 1px solid black; padding: 5px; text-align: center;">                     OUT FOR LUNCH                      BACK- 02:15                      TEL-*2035551212                      Next CLR Sel                 </div> <div style="display: flex; justify-content: center; gap: 20px; margin-top: 5px;"> <input type="text"/> <input type="text"/> <input type="text"/> </div>	Up to 11 characters may be used to program the telephone number.

(Continued on next page)

## DISPLAY TELEPHONE MESSAGES

How To: Program The Display Phone Message OUT FOR LUNCH, continued.

ACTION	DISPLAY	RESULT/COMMENT
6. Lift the handset momentarily, then replace it.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">                     OUT FOR LUNCH                      BACK- 02:15                      TEL- 203555122                      date- 07-15-8                 </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <input type="text"/> <input type="text"/> <input type="text"/> </div>	<p>The message is now programmed.</p> <p>If the user continues to another message, the NEXT key will automatically delete the previous message.</p>

How TO: Program The Display Phone Message OUT OF TOWN.

ACTION	DISPLAY	RESULT/COMMENT
1. (While the phone is idle and on-hook), press one of the three 'soft' keys.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">                     MESSAGE MODE                      NO MESSAGES ARE                      ACTIVATED                      Next CLR Sel                 </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <input type="text"/> <input type="text"/> <input type="text"/> </div>	Any one of the three 'soft' keys may be pressed to reach the message mode.
2. Press the NEXT key three times.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">                     OUT OF TOWN                      BACK-*                      TEL-                      Next CLR Sel                 </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <input type="text"/> <input type="text"/> <input type="text"/> </div>	The message appears on the display.
3. Using the dial pad, enter a four digit entry for the RETURN date.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">                     OUT OF TOWN                      BACK-*08/16                      TEL-                      Next CLR Sel                 </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <input type="text"/> <input type="text"/> <input type="text"/> </div>	The first two digits entered reflect the month, and the last two digits reflect the day.

(Continued on next page)

## DISPLAY TELEPHONE MESSAGES

How TO: Program The Display Phone Message OUT OF TOWN, continued.

ACTION	DISPLAY	RESULT/COMMENT
4. Press the SEL key.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">                     OUT OF TOWN                      BACK- 08/16                      TEL*                      Next CLR Sel                 </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <input type="text"/> <input type="text"/> <input type="text"/> </div>	The date appears, and the * moves to the line for the telephone number.
5. Using the dial pad, enter the desired telephone number.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">                     OUT OF TOWN                      BACK- 08/16                      TEL-*2035551212                      Next CLR Sel                 </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <input type="text"/> <input type="text"/> <input type="text"/> </div>	Up to 11 characters may be used to program the telephone number.
6. Lift the handset momentarily, then replace it.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">                     OUT OF TOWN                      BACK- 08/16                      TEL- 2035551212                      date- 07-15-88                 </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <input type="text"/> <input type="text"/> <input type="text"/> </div>	The message is now programmed.  If the user continues to another message, the NEXT key will automatically delete the previous message.

How To: Program The Display Phone Message IN A MEETING.

ACTION	DISPLAY	RESULT/COMMENT
1. (While the phone is idle and on-hook), press one of the three 'soft' keys.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">                     MESSAGE MODE                      NO MESSAGES ARE                      ACTIVATED                      Next CLR Sel                 </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <input type="text"/> <input type="text"/> <input type="text"/> </div>	Any one of the three 'soft' keys may be pressed to reach the message mode.
2. Press the NEXT key four times.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">                     IN A MEETING                      BACK-*                      TEL-                      Next CLR Sel                 </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <input type="text"/> <input type="text"/> <input type="text"/> </div>	The message appears on the display.

(Continued on next page)

## DISPLAY TELEPHONE MESSAGES

How To: Program The Display Phone Message IN A MEETING, continued.

ACTION	DISPLAY	RESULT/COMMENT
3. Using the dial pad, enter a four digit entry for the RETURN time.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p style="text-align: center;">IN A MEETING BACK-*02:15 TEL- Next CLR Sel</p> </div> <div style="display: flex; justify-content: center; gap: 20px; margin-top: 5px;"> <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> </div>	The first two digits entered reflect the hour, and the last two digits reflect the minutes.
4. Press the SEL key.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p style="text-align: center;">IN A MEETING BACK- 02:15 TEL* Next CLR Sel</p> </div> <div style="display: flex; justify-content: center; gap: 20px; margin-top: 5px;"> <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> </div>	The time appears, and the * moves to the line for the telephone number.
5. Using the dial pad, enter the desired telephone number.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p style="text-align: center;">IN A MEETING BACK- 02:15 TEL-*3014 Next CLR Sel</p> </div> <div style="display: flex; justify-content: center; gap: 20px; margin-top: 5px;"> <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> </div>	Up to 11 characters may be used to program the telephone number.
6. Lift the handset momentarily, then replace it.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p style="text-align: center;">IN A MEETING BACK- 02:15 TEL- 3014 date- 07-15-88</p> </div> <div style="display: flex; justify-content: center; gap: 20px; margin-top: 5px;"> <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> </div>	<p>The message is now programmed.</p> <p>If the user continues to another message, the NEXT key will automatically delete the previous message.</p>

## DISPLAY TELEPHONE MESSAGES

---

How To: Clear The Display Phone Message.

---

ACTION	DISPLAY	RESULT/COMMENT
1. (While the phone is idle and on-hook), press one of the three 'soft' keys.	<div style="border: 1px solid black; padding: 5px; text-align: center;">                     IN A MEETING                      BACK- 02:15                      TEL- 3014                      date- 07-15-88                 </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <input type="text"/> <input type="text"/> <input type="text"/> </div>	Any one of the three 'soft' keys may be pressed to reach the message mode.
2. Press the CLEAR key.	<div style="border: 1px solid black; padding: 5px; text-align: center;">                     IN A MEETING                      BACK- 02:15                      TEL-*3014                      Next CLR Sel                 </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <input type="text"/> <input type="text"/> <input type="text"/> </div>	The phone returns to the idle state.
	<div style="border: 1px solid black; padding: 5px; text-align: center;">                     Fri Jul 15 02:20                       *idle*                 </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <input type="text"/> <input type="text"/> <input type="text"/> </div>	

NOTE: If the user is in the message mode, and has not programmed any of the pre-defined messages and someone calls their extension, the caller will get a fast busy tone.



## DO NOT DISTURB KEY

---

**DESCRIPTION:** The DND feature when activated, will block all incoming calls and pages. It is important to note that the DND key does not prevent the user from making calls, paging and using all other features.

If an extension has *Call Forward No Answer* active when the [DND] key is pressed, the DND feature takes precedence. Calls will not forward.

If an extension has *Call Forward All Calls*, or *Call Forward Busy*, active when the [DND] key is pressed, the Call Forward feature takes precedence. Calls will forward.

*Note: The Busy Timer on the Forward and VMS Plans screen is ignored if a station is in DND or OUT.*

Since the extension cannot be called, a Message Waiting indicator cannot be left.

**Feature Can Be Used With:** 17-key, 28-key, and Display Telephone.

### PROGRAMMING

Required: A [DND] key (key code 803) is needed.

Affected by: None.

**How To:** Use The [DND] Key On The 17-key And 28-key Telephones.

ACTION	RESULT	COMMENT
1. Press the [DND] key once.	The [DND] key LED is lit steadily.	System paging is blocked at your extension. You may initiate paging from your extension while in this mode.
2. Press the [DND] key a second time.	The [DND] key LED blinks.	Paging, all incoming calls (internal and outside line), and background music are blocked.

**How To:** Deactivate DND.

ACTION	RESULT	COMMENT
1. Press the [DND] key a third time.	The [DND] key LED goes out.	[DND] is deactivated.

*(Continued on the next page.)*

## DO NOT DISTURB KEY

### How To: Use The DND Key On The Display Telephone.

ACTION	DISPLAY	RESULT/COMMENT
1. Press the [DND] key once.	<div style="border: 1px solid black; padding: 5px; text-align: center;">                     Thu May 05 2:44                       *idle*                 </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	The [DND] key LED is lit steadily. System paging is blocked at your extension.
2. Press the [DND] key a second time.	<div style="border: 1px solid black; padding: 5px; text-align: center;">                     Thu May 05 2:44                       *dnd*                 </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	The [DND] key LED blinks. Paging, incoming calls, and background music are blocked.

### How To: Deactivate DND.

ACTION	DISPLAY	RESULT/COMMENT
1. Press the [DND] key a third time.	<div style="border: 1px solid black; padding: 5px; text-align: center;">                     Thu May 05 2:44                       *idle*                 </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	The [DND] key LED goes out and [DND] is deactivated.

## DO NOT DISTURB OVERRIDE KEY

---

DESCRIPTION: The DND Override key is used to call a station which is in DND mode.

Feature Can Be Used With: 17-key, 28-key, and Display Telephone.

### PROGRAMMING

Required: A [DND OVERRIDE] key (key code 837) is needed.

Affected by: None.

### How To: Use The [DND OVERRIDE] Key.

---

ACTION	RESULT	COMMENT
1. Dial the desired extension.	If the extension is in the DND mode, a fast busy tone is heard.	
2. During the fast busy tone, press the [DND OVERRIDE] key.	The called extension rings.	

## EXCLUSIVE HOLD

---

**DESCRIPTION:** Any call can be placed on *Hold* at an extension. If an outside line call is placed on *Hold*, anyone with access to that outside line can remove the call from *Hold*.

If an outside line call is placed on *Exclusive Hold*, the call can only be removed from *Hold* by the extension that placed the call on *Hold*.

*NOTE: Only outside line calls can be placed on Exclusive Hold. A Single Line Telephone cannot place a call on Exclusive Hold.*

**Feature Can Be Used With:** 6-key, 17-key, 28-key, And Display Telephones.

### PROGRAMMING

**Required:** At least one [OUTSIDE LINE] key (a trunk group, direct appearance for the desired line, UNI, or LCR key) must be programmed on the desired extensions.

**How To:** Place A Call On Exclusive Hold.

ACTION	RESULT	COMMENT
1. While a call is in progress, press the [HOLD] key twice.	The [OUTSIDE LINE] key LED blinks slowly.	The LEDs corresponding to the outside line on other telephones will light steadily. Other users are NOT able to answer the call on Exclusive Hold.

**How To:** Retrieve An Outside Line Call On Exclusive Hold.

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	
2. Press the [OUTSIDE LINE] key that the call is holding on.	The [OUTSIDE LINE] key LED stops blinking. The call is retrieved.	

## FLASH AN OUTSIDE LINE

---

**DESCRIPTION:** There may be times when it is necessary to *flash* an outside line. This operation is also called *switch-hook flash*. A *flash* is a momentary disconnection of the line. This flash may be needed to activate certain features on the outside line. The switch-hook of the key telephones is not used for this operation.

*Note: A Single Line telephone cannot flash an outside line in software versions prior to 5.52.*

An outgoing tie line cannot be flashed.

**Feature Can Be Used With:** All Telephones.

### PROGRAMMING

**Required:** At least one [OUTSIDE LINE] key (a trunk group, direct appearance for the desired line, UNI, or LCR key) must be programmed on the desired extensions.

**Affected By:** The *Flash timer* on the *System Programming* screen.

### How To: Flash An Outside Line.

ACTION	RESULT	COMMENT
1. While on an outside line call, momentarily press and release the [OUTSIDE LINE] key.		

### How To: Flash An Outside Line With A Single Line Telephone.

ACTION	RESULT	COMMENT
1. While on an outside line call, momentarily press and release the switch-hook.		Do not hold down the switch-hook for more than half a second.
2. Dial [#] and [9].	The system opens the outside line for the programmed amount of time.	

## FOLLOW ME CLASS OF SERVICE

---

**DESCRIPTION:** The *Follow Me Class of Service* feature is part of the Account Code feature family. When using *Verified Forced Account codes*, the account code can be used to change an extension's toll restriction class of service.

**Feature Can Be Used With:** All Phones.

### PROGRAMMING

**Required:** An [ACCOUNT CODE] key (key code 813) is required on a 17-key and 28-key telephone. DO NOT program an [ACCOUNT CODE] key on a display telephone. An [ACCOUNT CODE] key is not required on a 6-key telephone or Single Line telephone.

*Station Day/Night Class* and *Forced Account* on the *Station Programming screen*, *Account Codes* programming screen, and *Toll Restriction* must be programmed.

When the *Alternate Dialing* option is programmed Y (yes), Single Line telephones cannot enter *Account Codes*.

**Affected by:** See *Placing Outside Line Calls*.

### How To: Use Follow Me Class Of Service On The 17-key And 28-key Telephone.

---

ACTION	RESULT	COMMENT
1. Press an [OUTSIDE LINE] key.	Dial tone is heard.	
2. Press the [ACCOUNT CODE] key.	The [ACCOUNT CODE] key LED will light.	The Account Code must be entered before dialing.
3. Enter Account Code (1-8 digits).		
4. Press the [ACCOUNT CODE] key.	The [ACCOUNT CODE] key LED will go out.	If the Account Code is the maximum 10 digits, the LED will automatically go out, and code will be entered.
5. Dial the desired telephone number.		

(Continued on the next page.)

## FOLLOW ME CLASS OF SERVICE

How To: Use The Follow Me Class Of Service Feature On The 6-key Telephone.

ACTION	RESULT	COMMENT
1. Press the [OUT] key.	Dial tone is heard.	
2. Press the [PROG] key.	The [PROG] key LED will light.	The Account Code must be entered before dialing.
3. Press the [#] key.		
4. Enter Account Code (1-8 digits).		
5. Press the [PROG] key.	The [PROG] key LED will go out.	
6. Dial the desired telephone number.		

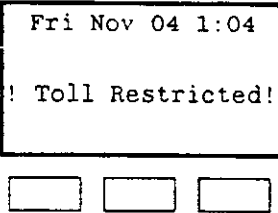
How To: Use The Follow Me Class Of Service Key On The Display Telephone.

ACTION	DISPLAY	RESULT/COMMENT
1. Press an [OUTSIDE LINE] key.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p>&lt; OUT&gt; -&gt; 024</p> <p>00:00</p> <p>timer cost acct</p> </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	The account code must be entered before dialing.
2. Press [acct] 'soft' key.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p>Fri Nov 04 1:04</p> <p>ACC#:</p> <p>timer cost acct</p> </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div> <div style="text-align: center; margin-top: 5px;">▲</div>	

(Continued on the next page.)

## FOLLOW ME CLASS OF SERVICE

How To: Use The Follow Me Class Of Service Key On The Display Telephone.

ACTION	DISPLAY	RESULT/COMMENT
3. After the station user enters his account code, he can dial the desired telephone number.		<p>If the station user has entered the wrong account code, a dialing error will occur.</p> <p>The user must go back and enter the correct account code.</p>

How To: Use The Follow Me Class Of Service Feature On A Single Line Telephone.

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	
2. Dial the desired outside line access code [9][1] through [9][0] or [9][*] for LCR.	A second dial tone is heard.	
3. Before dialing the telephone number, dial [*].		
4. Dial the account code number up to ten digits.		
5. When the account code has been entered, dial another [*].	The account code is entered.	
6. Continue dialing the desired telephone number.		



## FORCED ACCOUNT CODES

---

**DESCRIPTION:** The *Forced Account Code* feature allows the system to be programmed in such a way, that a station user must enter an account code in order to place an outside line call to certain telephone numbers (for example, long distance calls.) This ensures that call records contain an appropriate indication of the nature of the call. As assigned account number (from 1 to 10 digits) must be entered after an outside line is selected, but before dialing the desired telephone number.

**Feature Can Be Used With:** All Phones.

### PROGRAMMING

**Required:** An [ACCOUNT CODE] key (key code 813) is required on a 17-key and 28-key telephone. DO NOT program an [ACCOUNT CODE] key on a display telephone. An [ACCOUNT CODE] key is not required on a 6-key telephone or Single Line telephone.

*Station Day/Night Class and Forced Account on the Station Programming screen, Account Codes programming screen, and Toll Restriction must be programmed.*

*When the Alternate Dialing option is programmed Y (yes), Single Line telephones cannot enter Account Codes.*

**Affected by:** See Placing Outside Line Calls.

### How To: Enter A Forced Account Code On The 17-key And 28-key Telephone.

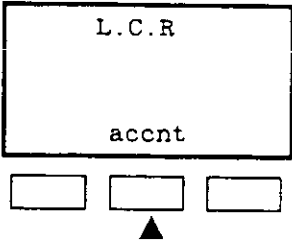
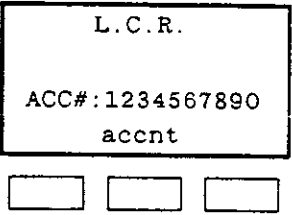
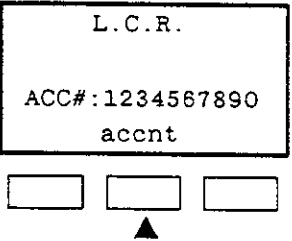
---

ACTION	RESULT	COMMENT
1. After selecting an outside line, press the [ACCOUNT CODE] key.	The [ACCOUNT CODE] key LED will light.	The Account Code must be entered before dialing the telephone number.
2. Enter the Account Code (1-10) digits.		If 10 digits are entered, the LED will automatically go out, and the account code is entered. Skip the next step.
3. Press the [ACCOUNT CODE] key.	The [ACCOUNT CODE] key LED will go out.	
4. Dial desired telephone number.		

*(Continued on the next page.)*

## FORCED ACCOUNT CODES

How To: Enter Forced Account Codes On The Display Telephone.

ACTION	DISPLAY	RESULT/COMMENT
1. After selecting an outside line, press [acct] soft key.	 <p>The display shows "L.C.R." at the top and "acct" below it. Underneath are three empty rectangular boxes. A small black triangle points upwards at the center of the middle box.</p>	The Account Code must be entered before dialing the telephone number.
2. Enter the Account Code (1-10) digits.	 <p>The display shows "L.C.R." at the top, "ACC#:1234567890" in the middle, and "acct" at the bottom. Underneath are three empty rectangular boxes.</p>	Entered account code appears on display.
3. Press the [acct] soft key.	 <p>The display shows "L.C.R." at the top, "ACC#:1234567890" in the middle, and "acct" at the bottom. Underneath are three empty rectangular boxes. A small black triangle points upwards at the center of the middle box.</p>	If 10 digits are entered, the LED will automatically go out, and the account code is entered.
4. Dial desired telephone number.		

*(Continued on the next page.)*

## FORCED ACCOUNT CODES

### How To: Enter A Forced Account Code On The 6-key Telephone.

ACTION	RESULT	COMMENT
1. After selecting an outside line, press [PROG] key.	[PROG] key LED will light.	The Account Code must be entered before dialing.
2. Enter the Account Code (1-10) digits.		
3. Press the [PROG] key.	[PROG] key LED will go out.	If 10 digits are entered, the LED will automatically go out, and the account code is entered.
4. Dial desired telephone number.		

### How To: Enter An Account Code On A Single Line Telephone.

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	
2. Dial the desired outside line access code [9][1] through [9][0] or [9][*] for LCR.	Dial tone is heard.	
3. Before dialing the telephone number, dial [*].		
4. Dial the account code number up to ten digits. When the account code has been entered, dial another [*].		
5. Continue dialing the desired telephone number.		All account codes must be entered BEFORE dialing the outside number on Single Line telephones.

## GROUP PICKUP

---

**DESCRIPTION:** Group Pickup is a valuable method that provides quick, efficient answering of calls to your department. If your phone system is programmed for Group pickup, the need for dialing [2] plus the desired extension number can be eliminated. Extensions are arranged in groups by the System Manager.

An extension can have several [GROUP PICKUP] keys which can be used to access phones ringing in any particular pickup group. An extension need not be in that pickup group in order to answer, as long as it has a [GROUP PICKUP] key. The [GROUP PICKUP] key LED will light when a call in a pickup group is ringing.

**Feature Can Be Used With: All Telephones.**

### PROGRAMMING

**Required:** A [GROUP PICKUP] key (code 808) is required. The sub-code of the key (1-36) indicates the pickup group the key is for.

At least one [OUTSIDE LINE] key (LCR, trunk group, UNI, or direct appearance key) is needed to pickup outside line calls.

[RINGING GROUP PICKUP] keys should not be placed on telephones with [GROUP PICKUP] keys.

### How To: Use The [GROUP PICKUP] Key On The 17-key And 28-key Telephones.

ACTION	RESULT	COMMENT
1. Upon noticing the [GROUP PICKUP] key LED blink, lift the handset.	Internal dial tone is heard.	[GROUP PICKUP] key LED will be blinking to indicate an In-coming call.
2. Press [GROUP PICKUP] key associated with the blinking LED.	The [GROUP PICKUP] key LED will go out.	Call has been answered, and may be processed as desired.

*(Continued on the next page.)*

## GROUP PICKUP

How To: Use The Group Pick Up Key On The Display Telephone.

ACTION	DISPLAY	RESULT/COMMENT
1. Upon noticing the [GROUP PICKUP] key LED blink, lift the handset.	<div style="border: 1px solid black; padding: 5px; text-align: center;">Wed May 11 10:43</div>	The [GROUP PICKUP] key LED will be blinking to indicate an Incoming call.
	<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	
2. Press the [GROUP PICKUP] key associated with the blinking LED.	<div style="border: 1px solid black; padding: 5px; text-align: center;">                     Wed May 11 10:43                      655-2104                      00:01                      timer cost acct                 </div>	The [GROUP PICKUP] key LED will go out. Call has been answered, and may be processed as desired.
	<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	

How To: Use Group Pickup On The 6-key And Single Line Telephones.

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	
2. Dial [7] + [2] + the desired pick up group number (01-36).	The call is answered.	

## HOLD

---

**DESCRIPTION:** Any call can be placed on *Hold* at an extension. If an outside line call is placed on Hold, anyone with access to that outside line can remove the call from Hold.

If an outside line call is placed on *Exclusive Hold*, the call can only be removed from Hold by the extension that placed the call on Hold.

**Feature Can Be Used With: All Phones.**

## PROGRAMMING

**Required:** At least one [OUTSIDE LINE] key (a trunk group, direct appearance for the desired line, UNI, or LCR key) must be programmed on the desired extensions.

**How To: Place A Call On Hold.**

ACTION	RESULT	COMMENT
1. While a call is in progress, press the [HOLD] key.	If the call is an outside line call, the [OUTSIDE LINE] key LED blinks rapidly.	Press the [HOLD] key only once. The LEDs corresponding to the outside line on other telephones will blink slowly. Other users are able to answer the call on Hold.

**How To: Retrieve An Outside Line Call On Hold.**

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	
2. Press the [OUTSIDE LINE] key that the call is holding on.	The [OUTSIDE LINE] key LED stops blinking. The call is retrieved.	

*(Continued on the next page.)*

## HOLD

### How To: Retrieve An Internal Call On Hold.

ACTION	RESULT	COMMENT
1. Press the [HOLD] key.	The call is retrieved.	

### How To: Place A Call On Hold With A Single Line Telephone.

ACTION	RESULT	COMMENT
1. While a call is in progress, flash (momentarily press and release) the switch-hook.	The call is placed on HOLD. Internal dial tone is heard.	

### How To: Retrieve An Outside Line Call On Hold With A Single Line Telephone.

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	
2. Dial [*].	The call is retrieved.	

## IN/OUT

---

**DESCRIPTION:** The IN/OUT feature provides the user with the ability to disable all functions of the telephone, and automatically leave an indication on the Operator Terminal screen that the user is out. When the IN/OUT feature is active the station cannot receive calls.

If an extension has *Call Forward No Answer* active when the [IN/OUT] key is pressed, the IN/OUT feature takes precedence. Calls will not forward.

If an extension has *Call Forward All Calls* or *Call Forward Busy* active when the [IN/OUT] key is pressed, the **Call Forward** feature takes precedence. Calls will forward.

*Note: The Busy Timer on the Forward and VMS Plans screen is ignored if a station is in DND or OUT.*

Since the extension cannot be called, a Message Waiting indicator cannot be left.

**Feature Can Be Used With: 6-key, 17-key, 28-key, And Display Telephones.**

### PROGRAMMING

Required: An [IN/OUT] key (key code 821) is needed.

#### How To: Use The [IN/OUT] Key.

ACTION	RESULT	COMMENT
1. Without lifting the handset, press the [IN/OUT] key.	The LED next to the [IN/OUT] key blinks. IN/OUT is activated.	An indication on Operator screen shows that the station user is out. The user's extension is disabled. Any extension which calls will hear a fast busy tone.
2. Without lifting the handset, press the [IN/OUT] key a second time.	IN/OUT is deactivated.	

#### How To: Use The IN/OUT With The 6-Key Telephone.

ACTION	RESULT	COMMENT
1. Without lifting the handset, press the [TR/CON] key.	The LED next to the [ITR/CON] key blinks. IN/OUT is activated.	Press the key a second time to deactivate In/Out.



## LAST NUMBER REDIAL

---

**DESCRIPTION:** The Last Number Redial feature enables the user to redial the last number dialed on an Outside Line after the termination of that call. The Last Number Redial feature will not store a telephone number overnight.

**Feature Can Be Used With: All Phones.**

### PROGRAMMING

**Required:** At least one [OUTSIDE LINE] key (a trunk group, direct appearance for the desired line, UNI, or LCR key) must be programmed on the desired extensions.

**Affected By:** See Placing Outside Line Calls. When the *Alternate Dialing* option is programmed Y (yes), Single Line telephones cannot use *Last Number Redial*.

### How To: Use Last Number Redial On The 17-key and 28-key Telephones.

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	If the phone is to be used Hands Free, ignore step 1, and begin with step 2.
2. Press an available [OUTSIDE LINE] key.	The [OUTSIDE LINE] key LED blinks slowly. External dial tone is heard.	With hands free use, the [HF] key LED will light.
3. Dial [#] on dial pad.	Redialing of digits is heard in handset.	

### How To: Use Last Number Redial On The 6-key Telephone.

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	
2. Press the [OUT] key.	Dial tone is heard.	
3. Dial [#] on dial pad.	Dialing of digits for the last number dialed is heard in the handset.	

(Continued on the next page.)

## LAST NUMBER REDIAL

### How To: Use Last Number Redial On The Display Telephone.

ACTION	DISPLAY	RESULT/COMMENT
1. Lift the handset.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">                     Wed May 04 4:01                 </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	Internal dial tone is heard. With hands free use, ignore step 1, and begin with step 2.
2. Press an available [OUT-SIDE LINE] key.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">                     (OUT)-&gt;006                      555-2116                      00:10                      timer cost acct                 </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	The [OUTSIDE LINE] key LED blinks slowly. Dial tone is heard. With hands free use, the [HF] key LED will light.
3. Dial [#] on the dial pad.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">                     Wed May 04 4:01                      #555-1100                      00:10                      timer cost acct                 </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	Redialing of digits is heard in handset.

### How To: Use Last Number Redial On The Single Line Telephone.

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	
2. Dial [9][#] on dial pad.	Redialing of digits is heard in handset.	

## LEAST COST ROUTING

---

**DESCRIPTION:** *Least Cost Routing* (LCR) is an optional feature which provides the system with a means of routing outside line calls over the least costly route available to the system. The least expensive route for a call is calculated using a programmable average duration of a call. The cost of a call to a given dialed number is calculated for each facility and service a customer has available based on the *Average Call Length*. In addition, each station can be assigned a *class of service* for LCR. This class of service determines under what circumstances a more expensive route may be used if all the lines in the least expensive route are busy.

The *Least Cost Routing* feature is also used to support connection of the system to a *Software Defined Network*. Support for an SDN begins in software version 5.52.

**Feature Can Be Used With: All Phones.**

### PROGRAMMING

**Required:** At least one LCR key (key code 300, sub-code 20) must be programmed for each desired station on the *Station Programming* screen. A *Call Coverage (Pilot)* key can also be used.

*Systems Options* screen and the *LCR Programming* screen must also be programmed (see the *Least Cost Routing* section).

Each station should also be assigned an LCR class of service. This class of service determines whether or not a station may use lines in a more costly route if all lines in the least costly route are busy. There are three LCR classes of service:

**LCR COS 0** – Automatic override – The call is routed over the least costly route available. If all lines in the least costly route are in use, the call is routed over the next less expensive route.

**LCR COS 1** – Manual override – The call is routed over the least costly route available. If all lines in the least costly route are in use, the call is not routed and a busy signal is heard. The call can be manually routed to the next less expensive route by dialing a [\*] on the dial pad.

**LCR COS 2** – No override – The call is routed over the least costly route available. If all lines in the least costly route are in use, the call is not routed. The call can be tried again at a later time, or *Call Back (Trunk Queuing)* can be used to obtain a line in the least costly route when one becomes available.

**Affected By:** *LCR Out Only* on the *Station Programming* screen. The *SLI SDN ENABLE* option on the *System Options* programming screen. See also *Placing Outside Line Calls*.

When the *Alternate Dialing* option is programmed Y (yes), Single Line telephones cannot use *Least Cost Routing*.

## LEAST COST ROUTING

**How To: Use The [LCR] Key On The 17-key And 28-key Telephones.**

ACTION	RESULT	COMMENT
1. Lift the handset.		
2. Press the [LCR] key.	LCR dial tone is heard after pressing the key.	
3. Dial the desired telephone number.	LCR will pick the most cost effective route at that time.	The call is dialed out by LCR.

**How To: Use The [LCR] Key On The 29-key Display Telephone.**

ACTION	RESULT	COMMENT
1. Lift the handset.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">                     Wed. Oct.19 3:12                 </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> </div>	
2. Press the [LCR] key.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">                     L.C.R.  acct                 </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> </div>	LCR dial tone is heard after pressing the [LCR] key.
3. Dial the desired number.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">                     Service-DDD(018) #12036556500 00:04 timer cost acct                 </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> </div>	LCR will pick the long distance route which will be the most cost effective at that time.

If the station program is set to LCR OUT ONLY, the user can only dial out with an LCR key. Trunk Group keys are for incoming calls, and visual appearance only.

*(Continued on the next page.)*

## LEAST COST ROUTING

---

### How To: Use LCR On The 6-key Telephone.

---

ACTION	RESULT	COMMENT
1. Lift the handset.		
2. Press the [OUT] key.	LCR dial tone is heard.	
3. Dial the desired telephone number.	LCR will pick the most cost effective route at that time.	The call is dialed out by LCR.

### How To: Use LCR With A Single Line Telephone.

---

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	
2. Dial [9]+[*].	Least Cost Routing dial tone is heard.	
3. Dial the outside telephone number.	A few moments after the user stops dialing, the system selects a line in the selected trunk group and dials the outside number.	If the system does not select a line, but gives a busy signal, the Call Back feature may be used.

*(Continued on the next page.)*

## LEAST COST ROUTING

---

### How To: Dial An SDN Call.

ACTION	RESULT	COMMENT
1. Lift the handset.		
2. Press the [LCR] key (or the [OUT] key on a 6-key telephone).	LCR dial tone is heard after pressing the key.	
3. Dial [*].		The [*] is used to tell LCR to use the SDN routing tables.
3. Dial the desired telephone number.	LCR will pick the most cost effective route at that time.	The call is dialed out by LCR.

### How To: Dial An SDN Call With A Single Line Telephone.

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	
2. Dial [9]+[0].	Least Cost Routing dial tone is heard.	The [9][0] is used to tell LCR to use the SDN routing tables. The <i>SLI SDN ENABLE</i> option must be yes for Single Line Telephones to use SDN.
3. Dial the outside telephone number.		

## MEET ME PAGE

---

**DESCRIPTION:** The *Meet Me Page* feature enables an extension user to page someone and stay on the page until the paged party dials a code. The paged party is automatically connected to the person who placed the page.

**Feature Can Be Used With:** All Phones.

### PROGRAMMING

**Required:** None.

**Affected By:** *Page Zone* on the *Station Programming* screen.

### How To: Use Meet Me Page.

ACTION	RESULT	COMMENT																								
1. Lift the handset.	Internal dial tone is heard from the handset.																									
2. Dial the desired page zone [6][0] thru [6][9], or press the desired [PAGE] key.	Tone is heard from handset.	Announce page and ask party to dial the following codes:																								
		<table border="1"> <thead> <tr> <th>CODE</th> <th>If you dialed:</th> </tr> </thead> <tbody> <tr><td>75</td><td>[6][0] ALL PAGE</td></tr> <tr><td>710</td><td>[6][0] ALL PAGE</td></tr> <tr><td>711</td><td>[6][1] 1</td></tr> <tr><td>712</td><td>[6][2] 2</td></tr> <tr><td>713</td><td>[6][3] 3</td></tr> <tr><td>714</td><td>[6][4] 4</td></tr> <tr><td>715</td><td>[6][5] 5</td></tr> <tr><td>716</td><td>[6][6] 6</td></tr> <tr><td>717</td><td>[6][7] 7</td></tr> <tr><td>718</td><td>[6][8] 8</td></tr> <tr><td>719</td><td>[6][9] 9</td></tr> </tbody> </table>	CODE	If you dialed:	75	[6][0] ALL PAGE	710	[6][0] ALL PAGE	711	[6][1] 1	712	[6][2] 2	713	[6][3] 3	714	[6][4] 4	715	[6][5] 5	716	[6][6] 6	717	[6][7] 7	718	[6][8] 8	719	[6][9] 9
CODE	If you dialed:																									
75	[6][0] ALL PAGE																									
710	[6][0] ALL PAGE																									
711	[6][1] 1																									
712	[6][2] 2																									
713	[6][3] 3																									
714	[6][4] 4																									
715	[6][5] 5																									
716	[6][6] 6																									
717	[6][7] 7																									
718	[6][8] 8																									
719	[6][9] 9																									
3. Wait for an answer.	When a paged party dials the code, a tone is heard by both parties. Both parties are connected.	Both parties can talk and page system returns to idle state.																								

## MESSAGE WAITING

---

**DESCRIPTION:** The [MESSAGE WAITING] key is used when the user calls an internal extension and receives a busy signal, or there is no answer. The called extension is informed visually by means of a blinking [MESSAGE WAITING] key LED that a message has been left.

*Note: In software versions prior to 5.52, if no [MESSAGE WAITING] key has been dedicated to the called extension, the LED above the [HOLD] key at the extension to which the message has been sent will blink after a message has been left.*

If more than one message has been left for you, the [MESSAGE WAITING] key LED will continue to blink until all the messages have been answered.

**Feature Can Be Used With:** 6-key, 17-key, 28-key, And Display Phones.

### PROGRAMMING

**Required:** A [MESSAGE WAITING] key (key code 804) is needed on the 17-key, 28-key, and Display phones. A 6-key telephone does not require a key to be programmed.

**How To:** Leave A Message With The 17-key And 28-key Telephones.

ACTION	RESULT	COMMENT
1. When calling an busy extension and receiving a busy tone, or no answer, press the [MESSAGE WAITING] key.	A tone is heard which confirms a message has been left.	The LED corresponding to called extension's [MESSAGE WAITING] key will blink. Any number of stations may leave a message at an extension. The messages will wait in queue until answered.

**How To:** Leave A Message With The Display Telephone.

ACTION	DISPLAY	RESULT/COMMENT
1. When calling a busy extension, and receiving a busy tone, or no answer, press the [MESSAGE WAITING] key.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">                     Tue May 10 3:15                      006 SALLY                      *busy ICM call*                      camp voice cb.                 </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	A tone is heard which confirms a message has been left. Message is now left. LED corresponding to called extension's [MSG] key will blink. Any number of stations may leave a message at an extension. The messages will wait in queue until answered.

*(Continued on the next page.)*



## MESSAGE WAITING

---

### How To: Answer A Message When An Indicator Is Left At Your Extension.

---

ACTION	RESULT	COMMENT
1. Lift the handset, or press the [HF] key.	Internal dial tone is heard.	
2. Press the blinking [MESSAGE WAITING] key.	The extension that left you the message rings.	If the party that left the message is not available, the message is canceled. You may press your [MESSAGE WAITING] key to leave that party a message indicator.

To cancel a Message Indicator, press the blinking [MESSAGE WAITING] key without lifting the handset.

### How To: Leave A Message With The 6-key Telephone.

---

ACTION	RESULT	COMMENT
1. After dialing an extension (either busy or unattended), press the [PROG] key.	The [MESSAGE WAITING] key LED at the called extension will blink to indicate a message has been left.	
2. Replace the handset.	Message indicator has been left at called extension.	

### How To: Answer A Message With The 6-key Telephone.

---

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	
2. Press the blinking [PROG] key.	The extension that left you the message rings.	If the party that left the message is not available, the message is canceled. You may press your [PROG] key to leave that party a message indicator.

To cancel a Message Indicator, press the blinking [PROG] key without lifting the handset.

## MODE CHANGES

---

**DESCRIPTION:** At any time during a call, you may change from speaking through the handset, to hands free, or vice versa.

**Feature Can Be Used With:** 28-key and Display Telephones.

### PROGRAMMING

**Required:** None.

**Affected By:** *Call Monitor* and the *Enable HF Monitor* option on the *System Options* programming screen.

**How To:** Change From Hands Free To The Handset.

ACTION	RESULT	COMMENT
1. While on a call, lift the handset.	The hands free speaker and microphone are turned off.	

**How To:** Change From The Handset To Hands Free.

ACTION	RESULT	COMMENT
1. While on a call, press the [HF] key.	The hands free speaker and microphone are turned on.	
2. Replace the handset.		

## MUTE KEY

---

**DESCRIPTION:** The [MUTE] key, when pressed, attenuates the Hands Free microphone, as well as the transmitter of the handset. For purposes of privacy, the user can hear the external caller, but the user's voice is not heard by the other party until the [MUTE] key is pressed again. The microphone is attenuated for normal levels of speech, although very loud speech may be heard by the Outside party.

**Feature Can Be Used With:** 17-key, 28-key, And Display Telephones.

## PROGRAMMING

**Required:** A [MUTE] key (key code 801) is required.

### How To: Use The [MUTE] Key.

ACTION	RESULT	COMMENT
1. While on a call, press the [MUTE] key.	The transmitter in the handset and the microphone in the speakerphone is attenuated. The [MUTE] key LED blinks.	Mute is activated.

### How To: Deactivate The [MUTE] Key.

ACTION	RESULT	COMMENT
1. Press the blinking [MUTE] key.	The transmitter in the handset and microphone in the speakerphone is active. MUTE key LED goes out.	Mute is turned off (normal operation).

## NIGHT ANSWER

---

**DESCRIPTION:** The *Night Answer* feature is used to answer Incoming calls on Outside lines which do not ring at an extension. This feature can only be used when the system has been placed in the NIGHT Mode. The 17-key, 28-key, and Display telephones can answer incoming calls at night with a programmed feature key. All telephones can answer incoming calls at night with a dial code.

**Feature Can Be Used With: All Phones.**

### PROGRAMMING:

**Required:** At least one [OUTSIDE LINE] key (a trunk group, direct appearance for the ringing line, UNI, or LCR key) must be programmed on the desired extensions.

**Optional:** A [NIGHT ANSWER] key (code 802) may be programmed on the 17-key, 28-key, and Display Telephones.

### How To: Use The [NIGHT ANSWER] Key On The 17-key, And 28-key Telephones.

ACTION	RESULT	COMMENT
1. Lift the handset, or press the [HF] key.	Internal dial tone is heard.	The [NIGHT ANSWER] key LED will blink on Incoming call.
2. Press the [NIGHT ANSWER] key.	The incoming call is connected. The [NIGHT ANSWER] key LED goes out, and appropriate [OUTSIDE LINE] key LED blinks slowly.	

### How To: Use The [NIGHT ANSWER] Key On The Display Telephone.

ACTION	DISPLAY	RESULT/COMMENT
1. Lift the handset, or press the [HF] key.	<div style="border: 1px solid black; padding: 5px; text-align: center;">Tue May 10 10:58</div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> </div>	Internal dial tone is heard. The [NIGHT ANSWER] key LED will blink on incoming outside call.

*(Continued on the next page.)*

## NIGHT ANSWER

How To: Use The [NIGHT ANSWER] Key On The Display Telephone.

ACTION	DISPLAY	RESULT/COMMENT
2. Press the [NIGHT ANSWER] key.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">                     (IN)-&gt;001                      555-2100                      00:10                      timer cost acct                 </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> </div>	Incoming call is connected. The [NIGHT ANSWER] key LED goes out, and the appropriate [OUTSIDE LINE] key LED blinks slowly.

How To: Answer A Night Ring Using A Dial Code On All Phones.

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	
2. Dial [7][9] on the dial pad.	Incoming call is connected. [OUTSIDE LINE] key LED will blink.	The [OUT] key LED will light on the 6-key telephone.

## NIGHT MODE KEY

---

**DESCRIPTION:** The Operator activates NIGHT mode from the Operator Station, which allows Incoming calls to ring at all assigned extensions throughout the office instead of at just the Operator Station. The Operator activates Night ringing by pressing the pre-programmed [NIGHT] key. Each extension can also be programmed for a different toll restriction plan in the NIGHT mode.

**Feature Can Be Used With:** The Operator's Station.

### PROGRAMMING

**Required:** When using a telephone as the operator, a [NIGHT] key (key code 800) must be programmed. The Integrated Operator's Terminal does not require a programmed [NIGHT] key.

**Affected By:** *Night Recall* in the *System Options* programming screen.

**How To:** Activate Night Mode.

ACTION	RESULT	COMMENT
1. Press the [NIGHT] key.	The word "NIGHT" appears on the Operator Terminal on the right side of the screen.	System is in the NIGHT mode.

**How To:** Deactivate Night Mode.

ACTION	RESULT	COMMENT
1. Press the [NIGHT] key.	The word "NIGHT" disappears on the Operator Terminal on the right side of the screen.	System is out of the NIGHT mode.

**NOTE:** If the user does not have an Integrated Operator Terminal, the [NIGHT] key can still be activated. The [NIGHT] key must be programmed on the extension serving as the operator. With multiple operators, the system can be placed in, or taken out of, the Night Mode from any operator position.

## ORBIT

---

**DESCRIPTION:** Orbit lines are waiting zones, where an Outside call can be placed and held for a pre-programmed amount of time. During this time period, the person for whom the call is directed may be paged, and asked to dial the assigned Orbit number [5][0]-[5][9] from any nearby extension. The waiting call will be accessed immediately upon dialing the assigned Orbit number. Internal calls cannot be placed in *ORBIT*.

**Feature Can Be Used With:** All Phones.

### PROGRAMMING

**Required:** At least one [OUTSIDE LINE] key (a trunk group, direct appearance for the ringing line, UNI, or LCR key) must be programmed on the desired extensions.

**Affected By:** The *Orbit Recall Timer* on the *System Programming* screen.

### How To: Place A Call In Orbit (Using A Digital Phone).

---

ACTION	RESULT	COMMENT
1. While an Outside call is in progress, press the [TR/CON] key.	Internal dial tone is heard.	
2. Dial the desired Orbit zone [5][0] through [5][9].	Confirmation tone is heard. Call is placed in orbit.	Should a confirmation tone (3 short beeps) not be heard after dialing an Orbit zone, it means that the selected Orbit Zone is busy, and another must be dialed. Just dial the next zone number. There is no need to reconnect to the call, or press the [TR/CON] key again.
3. Dial desired PAGE Zone [6][0]-[6][9].		Announce the call, the name of the individual for whom the call is parked, and the assigned Orbit Zone [5][0] through [5][9].
4. Replace handset.		If a call placed in Orbit remains unanswered, it will recall the extension from which it originated after pre-programmed amount of time.

*(Continued on the next page.)*

## ORBIT

### How To: Place A Call In Orbit With A Single Line Telephone.

ACTION	RESULT	COMMENT
1. While an Outside call is in progress, momentarily press and release (flash) the switch-hook.	Internal dial tone is heard.	
2. Dial [#].		
3. Dial the desired Orbit zone [5][0] through [5][9].	Confirmation tone is heard. Call is placed in orbit.	Should a confirmation tone (3 short beeps) not be heard after dialing an Orbit zone, it means that the selected Orbit Zone is busy, and another must be dialed. Just dial the next zone number. There is no need to reconnect to the call.
4. Dial desired PAGE Zone [6][0]–[6][9].		Announce the call, the name of the individual for whom the call is parked, and the assigned Orbit Zone [5][0] through [5][9].
5. Replace handset.		



## PAGING

---

**DESCRIPTION:** The paging feature enables an extension user to broadcast a message to any one of nine page zones (61–69) or to all nine zones simultaneously. Internal pages are heard through the speaker of the telephones. External paging is also available with the use of an external amplifier and speakers.

**Feature Can Be Used With:** All Phones.

## PROGRAMMING

**Optional:** A [PAGE] key (key code 810) may be programmed on a 17-key, 28-key, or display telephone. The sub-code (60 through 69) determines which zone is paged when the key is pressed.

**Affected By:** *Page Zone* in the *Timers* area of the *Station Programming* screen assigns an extension to a page zone.

### How To: Use The Page.

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	
2. Dial [6] plus the desired page zone 1 through 9, or [6][0] for ALL PAGE.	A brief tone is heard in the handset. Wait to begin announcement until after tone is heard.	ALL PAGE allows the user to page in all nine zones simultaneously.

### How To: Use The Page Key On 17-key, 28-key, And Display Telephone.

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard in the handset.	
2. Press the [PAGE] key.	Tone is heard in handset. The [PAGE] key LED will light.	The [PAGE] key may be programmed for ALL PAGE, or any selected page zone by the System Manager. ALL PAGE allows the user to Page in all 9 zones at once.

## PARK KEY

---

**DESCRIPTION:** The PARK key is used in applications where the 10 zones of the *Orbit* feature are not enough to meet the customers needs. The PARK key enables each trunk to be placed in its own park zone. When the PARK key is pressed, the call goes to a park zone that is equal to the trunk number. For example, line 53 would be sent to park zone 53. Although the feature can be used with 17-key, 28-key, and display telephones, it is only useful with display telephones. The park zone number (trunk number) must be known to retrieve the call.

If a call placed in *Park* remains unanswered, it will recall the extension from which it originated after the amount of time programmed for the *Orbit Recall* timer.

**Feature Can Be Used With: Display Telephones.**

### PROGRAMMING

**Required:** A [PARK] key (key code 834) is required.

At least one [OUTSIDE LINE] key (a trunk group, direct appearance for the ringing line, UNI, or LCR key) must be programmed on the desired extensions.

**Affected By:** The *Orbit Recall Timer* on the *System Programming* screen.

**How To: Use The [PARK] Key.**

ACTION	DISPLAY	RESULT/COMMENT
1. While on an outside line call, press the [PARK] key.	<div style="border: 1px solid black; padding: 5px; text-align: center;">                     Fri Jun 30 1:42                       PARKED-053                 </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <input type="text"/> <input type="text"/> <input type="text"/> </div>	The call is placed in a park zone with the same number as the 3-digit outside line number.

*(Continued on the next page.)*

# PARK KEY

## How To: Retrieve A Parked Call.

ACTION	DISPLAY	RESULT/COMMENT
1. Lift the handset, or press the [HF] key.	<div style="border: 1px solid black; padding: 5px; width: fit-content;">                     Fri Jun 30 1:42                 </div> <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	internal dial tone is heard.
2. Press the [PARK] key.	<div style="border: 1px solid black; padding: 5px; width: fit-content;">                     Fri Jun 30 1:42                 </div> <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	
3. Dial the 3-digit park zone number, e.g. [0][5][3].	<div style="border: 1px solid black; padding: 5px; width: fit-content;">                     (ORBIT)--&gt;053                       01:17                      timer cost acct                 </div> <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	The call is connected.

## PATCH KEY

---

**DESCRIPTION:** The [PATCH] key is used when an extension user who originated a Two External Party Conference call, wishes to leave the conference. This allows the two Outside parties to continue their conversation after the extension user has left. The telephone is then free to use.

**Feature Can Be Used With:** 17-key, 28-key, and Display Telephones.

## PROGRAMMING

**Required:** A [PATCH] key (key code 812) is required for stations authorized to make unsupervised conferences.

**Affected By:** See Placing Outside Line Calls.

## How To: Use The [PATCH] Key.

---

ACTION	RESULT	COMMENT
1. While a two external conference is in progress, press the [PATCH] key.		
2. Replace the handset.	Internal party has left the conference. The LEDs next to the two [OUTSIDE LINE] keys remain lit on the extension until the two external parties end their conversation.	
3. Should the user desire to re-enter the conference, press either of the [OUTSIDE LINE] keys on which the external parties are still speaking.		

## PBX KEY

---

**DESCRIPTION:** The PBX feature key (Private Branch Exchange) is used on lines which are connected to a PBX, instead of an Outside line, or to a Centrex line. The [PBX] key enables the user to emulate various dial accessible features of the PBX to which the telephone system is connected. There are 40 such sequences possible in the system. A feature key is programmed as a [PBX] key, and coded to follow one of the programmed sequences.

The System Manager can assist the user if the telephone system is programmed for this feature.

**Feature Can Be Used With:** 17-key, 28-key, and Display Telephones.

### PROGRAMMING

**Required:** The key code for a PBX feature key is (815). This key is also assigned a sub-code to indicate which of the 40 possible command lines the key is to use.

**Affected By:** The *PBX Key* programming screen.

**How To: Use The [PBX] Key On The 17-key And 28-key Telephones.**

ACTION	RESULT	COMMENT
1. While a call is in progress, press the [PBX] key.	The system performs the actions programmed for the particular PBX key. Depending on the programming of the key, the user may need to dial digits.	

**How To: Use The [PBX] Key On The Display Telephone.**

ACTION	DISPLAY	RESULT/COMMENT
While a call is in progress, press the [PBX] key.	<div style="border: 1px solid black; padding: 5px; display: inline-block;">                     Thu May 19 3:15                      555-2100                      01:30                      timer cost acct                 </div> <input type="text"/> <input type="text"/> <input type="text"/>	The system performs the actions programmed for the particular PBX key. Depending on the programming of the key, the user may need to dial digits.

## PICK UP CALLS ON HOLD

---

**DESCRIPTION:** This feature allows a station user to retrieve outside line calls which have been placed on Hold at another extension in the system.

An internal call placed on hold cannot be picked up at another extension. Calls placed on Exclusive Hold cannot be picked up.

**Feature Can Be Used With: All Phones.**

### PROGRAMMING

**Required:** At least one [OUTSIDE LINE] key (a trunk group, direct appearance for the desired line, UNI, or LCR key) must be programmed on the desired extensions.

#### How To: Pick Up An Outside Line On Hold When The Line Number Is Known.

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	
2. Dial [7][8] plus the 3-digit number (001-228) of the outside line which is on Hold.	The call is connected.	

#### How To: Retrieve A Call On Hold At Another Extension.

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	
2. Dia. [7][4] plus the extension number where the call is on Hold.	The call is taken off hold, and has been answered at your extension.	

## PLACING OUTSIDE LINE CALLS

---

**DESCRIPTION:** Outside line calls can be made by any extension in the system. An outside line call is any call made using a CO line, trunk, or a tie line. With the exception of Single Line telephones, these outside lines are accessed by stations using the programmed feature keys. The feature keys can be programmed to access a particular line, a group of lines, or *Least Cost Routing*.

The Single Line telephones can place outside line calls by dialing an access code which selects a line from a group of lines, or *Least Cost Routing* can be used. A Single Line telephone cannot access outside lines individually. The digital telephones can select an outside line (or group) by dialing an access code.

The 28-key and Display telephones have a built-in speaker and microphone, in addition to the handset, which permits hands free conversation on outside line calls. When using a 17-key telephone, the call may be dialed hands free, but the handset must be used for the conversation.

A phone with *In/Out* active cannot place calls.

**Feature Can Be Used With: All Phones.**

### PROGRAMMING

**Required:** At least one [OUTSIDE LINE] key (a trunk group, direct appearance for the desired line, UNI, or LCR key) must be programmed on extensions which are to place outside line calls. At least one [LCR] key MUST be programmed on extensions connected to Single Line telephones and 6-key telephones.

**Affected By:** *Day and Night Access, Toll Restriction (Day and Night Class), Forced Account Codes, Cost Limit and Total Toll, LCR Class, Prime Line, Hands Free Co, and Out LCR only on the Station Programming screen. When the Alternate Dialing option is programmed Y (yes), stations cannot dial access trunks except for those allowed by Alternate Dialing. The SLI DIAL option on the System Options programming screen.*

### How To: Place Outside Line Calls Using The 17-key And 28-key Telephones.

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	To place the call hands free, skip this step and begin with step 2.
2. Press an idle [OUTSIDE LINE] key.	The [OUTSIDE LINE] key LED will light. Dial tone is heard.	Before pressing an [OUTSIDE LINE] key, be sure the OUTSIDE LINE is idle, i.e., the [OUTSIDE LINE] key LED is not lit.
3. Dial the desired telephone number.	Dialing pulses/tones are heard in handset.	

*(Continued on the next page.)*

# PLACING OUTSIDE LINE CALLS

## How To: Place An Outside Call On The Display Telephone.

ACTION	DISPLAY	RESULT/COMMENT
1. Lift the handset.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">                     Tue Jan 26 4:00                 </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	Internal dial tone is heard.
To place the call hands free, skip this step and begin with step 2. The Display telephone can be used hands free to converse with the outside party.		
2. Press an idle [OUTSIDE LINE] key.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">                     (OUT)-&gt; 022                      655-2222                      00:05                      timer cost acct                 </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	The [OUTSIDE LINE] key LED will light. Dial tone is heard in handset.
3. Dial the desired telephone number.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">                     Tue Jan 26 4:01                      #12035551234                      00:07                      timer cost acct                 </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	Dialing pulses/tones are heard.

(Continued on the next page.)



## PLACING OUTSIDE LINE CALLS

### How To: Place An Outside Call Using A 6-key Telephone.

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	
To place the call hands free, skip this step and begin with step 2. The 6-key telephone can dial a call hands free, but the handset must be used for the conversation.		
2. Press the [OUT] key.	Dial tone is heard.	
3. Dial the desired telephone number.	The system selects a line and dials the telephone number.	If the system does not select a line, but gives a busy signal, the <i>Trunk Queuing</i> feature may be used.

The [OUT] key on the 6-key telephone does not select a line directly, but uses the system's LCR feature. If there is no LCR data base loaded, the system selects an idle line in Trunk Group 1.

### How To: Place An Outside Call On A Single Line Telephone.

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	
2. Dial [9] + the desired outside line trunk group [1] through [9] or [0] for trunk group 10. Dial [9][*] for LCR.	Dial tone is heard.	
3. Dial the outside telephone number.	A few moments after you stop dialing, the system selects a line in the desired trunk group and dials the outside number.	If the system does not select a line, but gives a busy signal, the <i>Trunk Queuing</i> feature may be used. If the <i>SLI DIAL</i> option is used, the system selects the line immediately, and the call is dialed by the station user directly on the outside line.

(Continued on the next page.)

## PLACING OUTSIDE LINE CALLS

---

### How To: Place Outside Line Calls By Dial Accessing A Line.

---

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	
2. Dial [9] + the 3 digit line number (001-228) of the desired line.	Dial tone is heard.	If the system does not select a line, but gives a busy signal, the <i>Trunk Queueing</i> feature may be used.
3. Dial the desired telephone number.		

### How To: Place Outside Line Calls By Dial Accessing A Trunk Group.

---

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	
2. Dial [9][3] + the 2 digit trunk group number (01-10) of the desired trunk group.	Dial tone is heard.	If the system does not select a line, but gives a busy signal, the <i>Trunk Queueing</i> feature may be used.
3. Dial the desired telephone number.		

## PLACING OUTSIDE LINE CALLS – ALTERNATE DIALING

---

**DESCRIPTION:** *Alternate Dialing* is a system option which permits Trunk Groups to be dial accessed using the single digit dial codes [8] and [9].

When *Alternate Dialing* is set to Yes, dialing a [9] accesses a trunk in group 1, and dialing an 8 accesses a trunk in group 8. This option prevents the station user from accessing any other trunk groups with a dial access code. Trunks groups can still be accessed using programmed feature keys.

It is important to note that *Alternate Dialing* imposes the following limitations:

The station user cannot dial access any trunk groups by dialing [9][3][0][1] through [9][3][1][0] for group 1 through 10.

The station user cannot dial access trunks by dialing [9][0][0][1] through [9][2][2][8].

ACD Agents cannot be called, or have calls transferred to them, by dialing [8] plus the agent number.

The operator cannot activate Background Music over the External Page.

The Single Line station user cannot access trunk groups by dialing [9][1] through [9][0].

The Single Line station user cannot access LCR by dialing [9][\*].

The Single Line station user cannot enter an account code.

The Single Line station user cannot use last number redial.

The System cannot use *Dial By Name*.

**Feature Can Be Used With: All Phones.**

### PROGRAMMING

**Required:** *Alternate Dialing* on the *System Options* programming screen must be programmed Y (yes).

At least one [OUTSIDE LINE] key (a trunk group, direct appearance for the desired line, UNI, or LCR key) must be programmed on extensions which are to place outside line calls. At least one [LCR] key MUST be programmed on extensions connected to Single Line telephones and 6-key telephones.

**Affected By:** See *Placing Outside Line Calls*.

*(Continued on the next page.)*

## PLACING OUTSIDE LINE CALLS – ALTERNATE DIALING

---

How To: Place An Outside Call Using Alternate Dialing.

---

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	
2. Dial [9] for a line in Trunk Group 1, or [8] for a line in Trunk Group 8.	Dial tone is heard.	
3. Dial the outside telephone number.		If the system does not select a line, but gives a busy signal, the <i>Trunk Queuing</i> feature may be used.

## PRIME LINE

---

**DESCRIPTION:** If a user intends to make mostly outside line calls, the phone can be programmed to seize an outside line each time the handset is lifted, or the [HF] key is pressed. The Prime Line feature must be enabled in *Station Programming*. If the user intends to make mostly Internal calls, the phone can be programmed to seize internal dial tone each time the handset is lifted, or the [HF] key is pressed.

**Feature Can Be Used With:** All Phones.

### PROGRAMMING

**Required:** The line or trunk group to be seized must be programmed at *Prime Line* in the *Timer's* area of *Station Programming*. An extension can also be programmed to access *Least Cost Routing*.

At least one [OUTSIDE LINE] key (a trunk group, direct appearance for the desired line, UNI, or LCR key) must be programmed on the desired extensions.

**Optional:** An ICM key (key code 818 with a sub-code of 000) may be placed on the 17-key, 28-key, and Display telephones.

**Affected By:** See *Placing Outside Line Calls*.

### How To: Use Prime Line On The 17-key, 28-key And Display Telephones.

---

ACTION	RESULT	COMMENT
1. Lift the handset, or press the [HF] key (the [VA] key on the 17-key phone).	External dial tone is heard in handset or speaker. The [HF] key LED will light if [HF] key is pressed.	
2. Dial desired telephone number on dial pad, or press the preprogrammed [SPEED DIAL] key.		

*(Continued on the next page.)*

## PRIME LINE

### How To: Place An Internal Call While Prime Line Is Activated Using The [ICM] key.

ACTION	RESULT	COMMENT
1. Without lifting the handset, or pressing the [HF] or [VA] key, press the [ICM] key.		
2. Lift the handset, or press the [HF] key (the VA key on the 17-key phone).	Internal dial tone is heard in handset or speaker. [HF] (or VA) key LED will light if [HF] keys are pressed.	
3. Dial desired extension number.		The user may also dial page access code, call pick-up or dial any other code for other features.

### How To: Place An Internal Call While Prime Line Is Activated Without An [ICM] Key.

ACTION	RESULT	COMMENT
1. Without lifting handset, dial desired extension number, page zone, or any internal function desired.		

### How To: Use Prime Line On The 6-key Telephone.

ACTION	RESULT	COMMENT
1. Lift the handset.	External dial tone is heard in handset.	
2. Dial desired telephone number on the dial pad.		

*(Continued on the next page.)*

## PRIME LINE

### How To: Place An Internal Call On The 6-key Telephone (with Prime Line ON).

ACTION	RESULT	COMMENT
1. Without lifting handset, dial desired extension number, page zone, or any internal function desired.		

### How To: Place An Internal Call On The 6-key Telephone (alternate method).

ACTION	RESULT	COMMENT
1. Without lifting handset, dial [#].		
2. Lift the handset.	Internal dial tone is heard.	
3. Dial the desired extension number, page zone, or any internal function desired.		

### How To: Use Prime Line On A Single Line Telephone.

ACTION	RESULT	COMMENT
1. Lift the handset.	External dial tone is heard in handset.	
2. Dial desired telephone number on dial pad.		

*Note: A Single Line telephone cannot place an intercom call with Prime Line active.*

## RELEASE KEY

---

**DESCRIPTION:** A [RELEASE] key is placed on a station that is using a headset rather than the handset. The [RELEASE] key is used in place of the switch-hook on all phones except the 6-key and Single Line telephone. The *operation* of the switch-hook is changed for 6-key and Single Line telephones when using a headset.

**Feature Can Be Used With: All Phones.**

### Programming

**Required:** For each 17-key, 28-key, and Display phone requiring a [RELEASE] key, enter the key code for a [RELEASE] key (key code 811) in a key position on the *Station Programming* screen. Only one [RELEASE] key is to be programmed per station.

For the 6-key and Single Line telephone, the *Hook Release* option in the *Timers* area of the *Station Programming* screen must be programmed Y (yes).

**Affected By:** See *Answering An Incoming Trunk Call*.

### How To: Answer An Incoming Call With The [RELEASE] Key.

ACTION	RESULT	COMMENT
1. Upon hearing ring, or camp-on tone, press the [RELEASE] key.	Call is connected.	
2. Press the [RELEASE] key a second time.	The call is disconnected.	

### How To: Answer An Incoming Call With The 6-key And Single Line Telephones.

ACTION	RESULT	COMMENT
1. Upon hearing ring, or camp-on, press the switch-hook.	Call is connected.	The switch-hook will act in the same manner as a [RELEASE] key.
2. Press the switch-hook.	The call is disconnected.	



## REMOTE SILENT MONITOR

---

**DESCRIPTION:** The Remote Silent Monitor feature allows an outside party to call into the System/228 and be transferred via a station to another station. The user who initiates the transfer **MUST** have a [SILENT MONITOR] key. The outside party can then monitor all outside line calls that a station places or receives, but cannot monitor intercom calls.

*NOTE: The use of this feature may be prohibited or limited in some areas. Check state and local laws before using this feature.*

**Feature Can Be Used With:** 17-key, 28-key, and Display Telephones.

### PROGRAMMING

**Required:** A [SILENT MONITOR] key (key code 833) is required. The *Silent Monitor* feature must be added remotely by an authorized ISOETEC Service Center.

**Affected By:** *Block Barge* and *Block Barge Tone* in the *Timers* area of the *Station Programming* screen. An extension in *Do Not Disturb* cannot be monitored.

### How To: Use The Remote Silent Monitor Feature.

---

ACTION	RESULT	COMMENT
A user wanting to use the Remote Silent Monitor feature answers the outside caller.		
1. (While on the Outside Line call), press the [TR/CON] key.	Dial tone is heard.	
2. Press the [SILENT MONITOR] key.		
3. Dial the desired extension number.	The called extension's outside line calls can now be monitored.	
4. When desired, the handset can be replaced.	The Outside caller will remain connected.	

As long as the outside party stays off-hook, he will monitor any CO calls that the monitored station receives. The [OUTSIDE LINE] key LED on the station that performed the transfer will remain lit as long as the outside party continues to monitor.

## RING TYPE

---

**DESCRIPTION:** The *Ring type* feature allows a station to be programmed for one of eleven different tones for station ringing. The *Ring type* may be programmed on the *Station Programming* screen, or can be changed at the station by dialing an access code.

**Feature Can Be Used With:** 6-Key, 17-Key, 28-Key, and Display Phones.

### PROGRAMMING

Required: None.

Optional: The *Ring type* may be programmed on the *Station Programming* screen.

### How To: Change The Ring Type.

ACTION	RESULT	COMMENT
1. Lift the handset, or press the [HF] key.	Internal dial tone is heard.	
2. Dial [7][0] on the dial pad.	Dial tone stops.	
3. Dial a digit [1] through [0] and [*] on the dial pad. (each digit represents a different ring tone.)	The telephone generates a steady tone.	The steady tone represents the tone you have chosen to ring at your extension when you get a call.
4. Continue pressing the digits on the dial pad until the desired tone is heard.		
5. Dial [#] on the dial pad.	The system uses this tone to ring the station user's telephone.	

## RINGING GROUP PICKUP

---

**DESCRIPTION:** *Ring Group Pickup* is a valuable method that provides quick, efficient answering of calls to your department. Stations can be arranged into groups such that a call ringing any station in the group can be answered by any other station using a single key. The advantage of pickup groups is that it is not necessary to know which extension in the group is ringing. There is a total of 36 pickup groups with no limit to the amount of stations assigned to a group. However, a station can only be part of one pickup group. Extensions are arranged in groups by the System Manager.

An extension can have several [RINGING GROUP PICKUP] keys which can be used to access phones ringing in any particular pickup group. An extension need not be in that pickup group in order to answer, as long as it has a [RINGING GROUP PICKUP] key. The [RINGING GROUP PICKUP] key LED will light when a call in a pickup group is ringing.

The [RINGING GROUP PICKUP] key differs from the [GROUP PICKUP] key in that the telephone programmed with the [RINGING GROUP PICKUP] key begins to ring after a call has been ringing in a pickup group for a programmed amount of time.

**Feature Can Be Used With:** 17-key, 28-key, And Display Telephones.

### PROGRAMMING

**Required:** A [RINGING GROUP PICKUP] key is required. The key code is 9 + the 2-digit pickup group number (01-36). The sub-code of the key (1-200) is the amount of time (in 10 second increments) before the telephone begins to ring. A sub-code of 0 is used if the telephone is to ring immediately. A sub-code of 201 is used if the telephone is not to ring. [RINGING GROUP PICKUP] keys should not be placed on telephones with [GROUP PICKUP] keys.

At least one [OUTSIDE LINE] key (LCR, trunk group, UNI, or direct appearance key) is needed to pickup outside line calls.

**Affected By:** *Auto Answer* on the *Station Programming* screen. See also *Answering An Incoming Trunk Call*.

*(Continued on the next page.)*

## RINGING GROUP PICKUP

---

How To: Use The [RINGING GROUP PICKUP] Key Before The Telephone Starts To Ring.

ACTION	RESULT	COMMENT
1. Upon noticing the [RINGING GROUP PICKUP] key LED blink, lift the handset.	Internal dial tone is heard.	[RINGING GROUP PICKUP] key LED will be blinking to indicate an incoming call.
2. Press the [RINGING GROUP PICKUP] key associated with the blinking LED.	The [RINGING GROUP PICKUP] key LED will go out.	Call has been answered, and may be processed as desired.

How To: Use The [RINGING GROUP PICKUP] Key After The Telephone Begins To Ring.

ACTION	RESULT	COMMENT
1. When the telephone rings, lift the handset.	If <i>Auto Answer</i> is programmed yes for the extension, the call is connected. Otherwise, continue with step 2.	
2. Press the [RINGING GROUP PICKUP] key associated with the blinking LED.	The call has been answered, and may be processed as desired.	The [RINGING GROUP PICKUP] key LED will go out.

## SAVE/REPEAT

---

**DESCRIPTION:** The Save/Repeat feature allows a user to dial an External number and save it (store in memory) in order to enable redialing that number at a later time with a single key. The number can be saved any time after the number is dialed, but before disconnecting. The number can be redialed repeatedly until another number is saved.

**Feature Can Be Used With:** 17-key, 28-key And Display Telephone.

### PROGRAMMING

**Required:** A [SAVE/REPEAT] key (key code 814) is needed.

**Affected By:** See Placing Outside Line Calls.

**How To: Save A Dialed Telephone Number On The 17-key And 28-key Telephone.**

ACTION	RESULT	COMMENT
1. While on a call which the user has dialed, press the [SAVE/REPEAT] key.	Dialed number is saved in memory.	

**How To: Dial A Saved Telephone Number.**

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	With Hands Free operation, ignore step 1, and begin with step 2.
2. Press available [OUTSIDE LINE] key.	Dial tone is heard in handset.	With Hands Free operation, the [HF] key LED will light.
3. Press the [SAVE/REPEAT] key.	Saved number is redialed.	

*(Continued on the next page.)*

## SAVE/REPEAT

How To: Save A Dialed Telephone Number On The Display Telephone.

ACTION	DISPLAY	RESULT/COMMENT
1. While on a call which the user has dialed, press the [SAVE/REPEAT] key.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p>(OUT)-&gt;006</p> <p>00:16</p> <p>timer cost acct</p> </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> </div>	Dialed number is saved in memory.

How To: Dial A Saved Telephone Number.

ACTION	DISPLAY	RESULT/COMMENT
1. Lift the handset.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p>Wed May 10 4:41</p> </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> </div>	Internal dial tone is heard.
2. Press available [OUTSIDE LINE] key.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p>(OUT)-&gt;006</p> <p>00:00</p> <p>timer cost acct</p> </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> </div>	With Hands Free operation, ignore step 1, and begin with step 2.
3. Press the [SAVE/REPEAT] key.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p>Wed May 04 4:44</p> <p>#5551234</p> <p>00:05</p> <p>timer cost acct</p> </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> </div>	Outside dial tone is heard in handset.
		With Hands Free operation, the [HF] key LED will light.
		Saved number is redialed.

## SECOND VOICE PATH

---

**DESCRIPTION:** If the called station is equipped with digital display telephone, there is a feature which allows the user to call a display phone even if the phone is busy. The display phone user must be using the handset on a call in order to utilize this feature. If the display phone is being used hands free, it can not be called using the second voice path feature.

*NOTE: The display telephone must be connected to a Station port card, and not an E&M Tie Line or DTMF Receiver port card, in order to be called via the Second Voice Path.*

**Feature Can Be Used With: Display Phones.**

### PROGRAMMING

**Required:** The called extension **MUST** have *Second path* in the *Timer's* area of *Station Programming* screen programmed to Y (yes).

**Optional:** The Auto Second Path may also be programmed to Y (yes).

### How To: Use Second Voice Path From The Operator When Transferring A Call.

---

ACTION	RESULT	COMMENT
1. After transferring a call, and while busy tone is heard, press [3] on the dial pad.	The second voice path on the display phone is activated.	The call can be announced and the display phone user can answer back without discontinuing the current call. If a busy signal is heard, the display phone user is not using the handset but is using the hands free feature. The second path feature will not function.
2. Press the [RLS] key.	The call is transferred.	

*(Continued on the next page.)*

## SECOND VOICE PATH

---

### How To: Call A Busy Display Phone From The Operator.

---

ACTION	RESULT	COMMENT
1. Press the [RLS] key on the keyboard.	Internal dial tone is heard.	
2. Dial the four digit extension number of the busy extension on the dial pad.	Busy tone is heard.	Do not use the [ICM] key for this feature.
3. Dial [3] on the dial pad.	The second path is activated.	The user may converse with the display phone user. If a busy signal is heard, the user is not using the handset, but is conversing using the hands free feature. The second path feature will not function.

### How To: Use Second Voice Path From The 17-key, And 28-key Telephones.

---

ACTION	RESULT	COMMENT
1. Lift the handset, or press the [HF] (VA on the 17-key telephone) key.	Internal dial tone is heard.	
2. Dial the desired extension number on the dial pad.	Busy tone is heard.	
3. Dial [3] on the dial pad.	The second path is activated.	The user may converse with the display phone user. If a busy signal is heard, the user is not using the handset, but is conversing using the hands free feature. The second path feature will not function.

*(Continued on the next page.)*

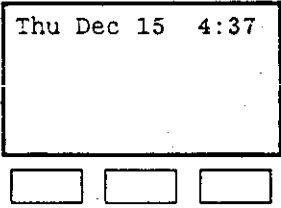
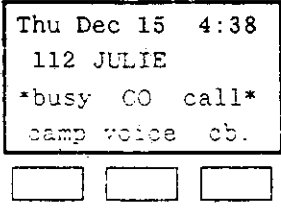
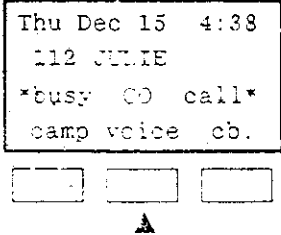


## SECOND VOICE PATH

### How To: Use Second Voice Path From The 6-key, And Single Line Telephones.

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	
2. Dial the desired extension number on the dial pad.	Busy tone is heard.	
3. Dial [3] on the dial pad.	The second path is activated.	The user may converse with the display phone user. If a busy signal is heard, the user is not using the handset, but is conversing using the hands free feature. The second path feature will not function.

### How To: Use Second Voice Path From The Display Telephone.

ACTION	DISPLAY	RESULT/COMMENT
1. Lift the handset.		Internal dial tone is heard.
2. Dial the desired extension number on the dial pad.		Busy tone is heard.
3. Press the [voice] soft key.		The second path is activated. The user may converse with the display phone user. If a busy signal is heard, the user is not using the handset, but is conversing using the hands free feature. The second path feature will not function.

## SELF-TEST

---

**DESCRIPTION:** The self-test makes it possible to check the LEDs (lights) beside each key on your telephone, in order to make certain that each is functioning properly.

**Feature Can Be Used With:** 17-key, 28-key, and Display Telephones.

### PROGRAMMING

**Required:** None.

**How To:** Use The Self-test.

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	This operation must be performed with the handset lifted. The hands free mode cannot be used.
2. Dial [7][#].	The extension is placed in the test mode.	
3. Press each of the programmable feature keys.	The LED beside each key should light when the key is pressed.	
4. Press each digit on the dial pad.	An LED next to one of the programmable keys will light corresponding to the dial pad key pressed.	
5. Press each of the fixed function keys under the dial pad.	The LED above each key should light when the key is pressed.	The [VOLUME ▲] key will light the LED above the [PROG] key. The [VOLUME ▼] key will light the LED above the [HOLD] key.

## SERIAL KEY

---

**DESCRIPTION:** The [SERIAL] key is used when a caller on an outside line wishes to speak to more than one individual in the system. When the [SERIAL] key is used, this feature allows an outside caller to speak with one party. When that conversation has been completed, the call is automatically sent back to the extension where the [SERIAL] key was activated. The call may then be transferred to another party.

**Feature Can Be Used With:** 17-key, 28-key, and Display Telephones.

### PROGRAMMING

**Required:** A [SERIAL] key (key code 820) is required on the desired extensions.

**Affected By:** See *Call Transfer*.

### How To: Use The [SERIAL] Key.

ACTION	RESULT	COMMENT
1. While on an outside line call, press the [SERIAL] key.	The [OUTSIDE LINE] key LED blinks slowly.	
2. Press the [TR/CON] key, and dial the desired extension number.		If the call is to be screened or announced, wait until the party answers before continuing.
3. Replace the handset.	The call is transferred.	If transferred call is not answered in set <i>transfer recall</i> time, the outside call returns to the extension which transferred the call.
4. When the call rings back, lift the handset.		When a call is completed at transferred extension, it will ring back to transferring extension.

The call may be transferred to the next extension in same manner by beginning with step 1.

## SILENT MONITOR

---

**DESCRIPTION:** The Silent Monitor feature allows an authorized station user to monitor the outside line calls of another station. Intercom calls cannot be monitored.

**NOTE:** *The use of this feature may be prohibited or limited in some areas. Check state and local laws before using this feature.*

**Feature Can Be Used With:** 17-key, 28-key, and Display Telephones.

### PROGRAMMING

**Required:** A [SILENT MONITOR] key (key code 833) is required. The *Silent Monitor* feature must be added remotely by an authorized ISOETEC Service Center.

**Affected By:** *Block Barge* and *Block Barge Tone* in the *Timers* area of the *Station Programming* screen. An extension in *Do Not Disturb* cannot be monitored.

### How To: Use The Silent Monitor Feature.

ACTION	RESULT	COMMENT
1. Lift the handset, or press the [HF] key.	Internal dial tone is heard.	
2. Press the [SILENT MONITOR] key.		
3. Dial the desired extension number.	The called extension's outside line calls can now be monitored.	
4. When desired, the handset can be replaced, or press the [HF] key.		

## SPLIT KEY

---

**DESCRIPTION:** The [SPLIT] key allows the user to place one call on Hold and answer an incoming, or camped-on, call by pressing one key. The user can use the [SPLIT] key to toggle back and forth between the two calls.

**Feature Can Be Used With:** 17-key, 28-key, and Display Telephone.

### PROGRAMMING

**Required:** A [SPLIT] key (key code 805) is required.

### How To: Use The [SPLIT] Key On The 17-key And 28-key Telephone.

---

ACTION	RESULT	COMMENT
While on a first call, a double tone is heard indicating that an Incoming call is waiting to be answered.		
1. Press the blinking [SPLIT] key.	The first call is put on Hold automatically, and second call is connected.	The [SPLIT] key LED will blink.
2. Press the blinking [SPLIT] key.	Second call is put on Hold, and first call is re-connected.	

To drop one call and go back to the desired call, press the [OUTSIDE LINE] key which is on Hold. After ending one call, do not use the [SPLIT] key to go back to remaining call. The [SPLIT] key is used for going back and forth between calls.

*(Continued on the next page.)*

## SPLIT KEY

How To: Use The [SPLIT] Key On The Display Telephone.

ACTION	DISPLAY	RESULT/COMMENT
1. Press the blinking [SPLIT] key.	<div style="border: 1px solid black; padding: 5px; width: fit-content;">                     Fri Nov 11 4:16                      555-2100                      00:30                      timer cost acct    <div style="display: flex; justify-content: space-around;"> <span style="border: 1px solid black; width: 30px; height: 15px;"></span> <span style="border: 1px solid black; width: 30px; height: 15px;"></span> <span style="border: 1px solid black; width: 30px; height: 15px;"></span> </div> </div>	The first call is put on Hold automatically, and second call is connected.
2. Press the blinking [SPLIT] key.	<div style="border: 1px solid black; padding: 5px; width: fit-content;">                     Fri Nov 11 4:16                      555-2101                      00:30                      timer cost acct    <div style="display: flex; justify-content: space-around;"> <span style="border: 1px solid black; width: 30px; height: 15px;"></span> <span style="border: 1px solid black; width: 30px; height: 15px;"></span> <span style="border: 1px solid black; width: 30px; height: 15px;"></span> </div> </div>	Second call is put on Hold, and first call is reconnected.

To drop one call and go back to the desired call, press the [OUTSIDE LINE] key which is on Hold. After ending one call, do not use the [SPLIT] key to go back to remaining call. The [SPLIT] key is used for going back and forth between calls.

*(Continued on the next page.)*

## SPLIT KEY

### How To: Split On A 6-key Telephone.

ACTION	RESULT	COMMENT
1. While on the first call, press the [HOLD] key.	Internal dial tone is heard.	
2. Place or receive the second call.		
3. To place the second call on hold, press the [HOLD] key.	Internal dial tone is heard.	
4. Dial [*].	The first call is reconnected.	
5. Place first call on hold, press the [HOLD] key.	The second call is connected.	
6. Dial [*]		
7. Continue in this manner back and forth for as long as desired.		
8. To disconnect from a party, connect to the party to be released.		
9. Replace handset.		
10. Lift the handset.		
11. Dial [*] to connect to the remaining party.		

*(Continued on the next page.)*

## SPLIT KEY

### How To: Split On A Single Line Telephone.

ACTION	RESULT	COMMENT
1. Place the first call on hold (momentarily press the switch-hook).	Internal dial tone is heard.	
2. Place or receive the second call.		
3. Place the second call on hold (momentarily press the switch-hook).	Internal dial tone is heard.	
4. Dial [*]	The first call is reconnected.	
5. Place the first call on hold (momentarily press the switch-hook).	Internal dial tone is heard.	
6. Dial [*].	The second call is connected.	
7. Continue in this manner back and forth for as long as desired.		
8. To disconnect from a party, connect to the party to be released.		
9. Replace handset.		
10. Lift the handset.	Internal dial tone is heard.	
11. Dial [*] to connect to remaining party.		



## STATION SPEED DIAL

---

**DESCRIPTION:** For convenience, a station user may program frequently used external numbers (e.g., business contacts, private numbers, etc.) into system memory. This enables the user to dial the programmed numbers with the press of a key, or by dialing a short code. An extension can store up to 30 *station speed dial* numbers and a speed dial number can contain up to 30 digits. Each speed dial number is stored in a memory location called a *bin*. A *station speed dial* number can be programmed and accessed using either of two methods:

A 2-digit bin number for dialing the code manually.

A dedicated feature key programmed as a [STATION SPEED DIAL] key by the System Manager.

The user may use either method separately, or a combination of both methods up to a maximum of 30 Station Speed Dial numbers.

A *station speed dial* number may also be chained (joined) to another *station speed dial* number, or to a *system speed dial* number.

*Station Speed Dial* numbers are subject to toll restriction.

This section describes the programming and use of *station speed dial* bins.

**Feature Can Be Used With:** 6-key, 17-key, 28-key, and Display Telephones.

### PROGRAMMING

**Required:** At least one [OUTSIDE LINE] key (a trunk group, direct appearance for the desired line, UNI, or LCR key) must be programmed on the desired extensions.

**Optional:** A [STATION SPEED] key (code 600) may be programmed on the 17-key, 28-key, and Display Phone. The sub-code indicates the speed dial bin number.

**Affected By:** The *Pause Timer* on the *System Programming* screen. See also *Placing Outside Line Calls*.

*(Continued on the next page.)*

## STATION SPEED DIAL

### How To: *Program A Station Speed Dial Bin Number.*

ACTION	RESULT	COMMENT
1. Without lifting the handset, press the [PROG] key.	The [PROG] key LED is lights steadily.	
2. Dial the desired bin number (01-30).	The [PROG] key LED will begin to blink.	When entering the bin number, if the [PROG] key LED goes out, the bin number entered is already dedicated to a [STATION SPEED DIAL] key. The user may use the dedicated key or initiate the procedure again using another bin number.
3. Dial the telephone number.		Up to 30 digits may be entered.
4. Press the [PROG] key.	The [PROG] key LED goes out.	Programming ends. The telephone number is stored in memory.

Pauses between digits may be entered by dialing [\*][1]. This enters a manual pause of fixed duration. The length of the pause is determined from the *Pause Timer* on the *System Programming* screen.

An automatic pause, which waits for dial tone, can be entered by dialing [\*][4].

To enter a [\*] into the actual dialed number, press [\*] twice, although it still counts as one digit.

If the [PROG] key LED goes out before you have finished entering the necessary information, you have waited too long, and the programming mode has timed out. Begin the process over again.

(Continued on the next page.)

## STATION SPEED DIAL

---

### How To: Chain A Station Speed Dial Number To Another.

---

ACTION	RESULT	COMMENT
1. Without lifting the handset, press the [PROG] key.	The [PROG] key LED is lights steadily.	
2. Dial the desired bin number (01-30).	The [PROG] key LED will begin to blink.	When entering the bin number, if the [PROG] key LED goes out, the bin number entered is already dedicated to a [STATION SPEED DIAL] key. The user may use the dedicated key or initiate the procedure again using another bin number.
3. Dial the telephone number.		Up to 30 digits may be entered. When this bin is used to dial out, the system dials this number first, then the number contained in the second bin.
4. Dial [*][2].		This is the command to chain to another <i>station speed dial</i> number.
5. Dial the two digit number (01-30) of the bin to chain to.		
6. Press the [PROG] key.	The [PROG] key LED goes out.	Programming ends. The telephone number is stored in memory.

Continue the chaining process by programming the bin that has been chained to. Program this bin the same as any other station speed dial number. This bin can also be chained to another.

(Continued on the next page.)

## STATION SPEED DIAL

---

### How To: Chain A Station Speed Dial Number To A System Speed Dial Number.

---

ACTION	RESULT	COMMENT
1. Without lifting the handset, press the [PROG] key.	The [PROG] key LED is lights steadily.	
2. Dial the desired bin number (01-30).	The [PROG] key LED will begin to blink.	When entering the bin number, if the [PROG] key LED goes out, the bin number entered is already dedicated to a [STATION SPEED DIAL] key. The user may use the dedicated key or initiate the procedure again using another bin number.
3. Dial the telephone number.		Up to 30 digits may be entered. When this bin is used to dial out, the system dials this number first, then the number contained in the <i>system speed dial</i> bin.
4. Dial [*][3].		This is the command to chain to a <i>system speed dial</i> number.
5. Dial the three digit number (001-200) of the bin to chain to.		
6. Press the [PROG] key.	The [PROG] key LED goes out.	Programming ends. The telephone number is stored in memory.

*(Continued on the next page.)*

## STATION SPEED DIAL

How To: Use Station Speed Dial On The 17-key, 28-key And Display Telephones.

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	With hands free use, ignore step 1, and begin with step 2.
2. Press an available [CJT-SIDE LINE] key.	The [OUTSIDE LINE] key LED blinks slowly. External dial tone is heard.	With hands free operation, the [HF] key LED will light.
3. Press [PROG] key.	The [PROG] key LED will light.	
4. Dial desired bin number 01 through 30.	Speed dialing digits is heard in handset. [PROG] key LED goes out.	

How To: Use Station Speed Dial On The 6-key Telephone.

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	
2. Press the [OUT] key.	The [OUT] key LED will light. External dial tone is heard.	
3. Press [PROG] key.	The [PROG] LED will light.	
4. Dial desired bin number 01 through 30.	Speed dialing digits is heard in handset. [PROG] key LED goes out.	

## STATION SPEED DIAL KEY

---

**DESCRIPTION:** For convenience, a station user may program frequently used external numbers (e.g., business contacts, private numbers, etc.) into system memory. This enables the user to dial the programmed numbers with the press of a key, or by dialing a short code. An extension can store up to 30 *station speed dial* numbers and a speed dial number can contain up to 30 digits. Each speed dial number is stored in a memory location called a *bin*. A *station speed dial* number can be programmed and accessed using either of two methods:

A dedicated feature key programmed as a [STATION SPEED DIAL] key by the System Manager

A 2-digit bin number for dialing the code manually.

The user may use either method separately, or a combination of both methods up to a maximum of 30 Station Speed Dial numbers.

A *station speed dial* number may also be chained (joined) to another *station speed dial* number, or to a *system speed dial* number.

*Station Speed Dial* numbers are subject to toll restriction.

This section describes the programming and use of a dedicated [STATION SPEED DIAL] key.

**Feature Can Be Used With:** 17-key, 28-key, and Display Telephones.

### PROGRAMMING

**Required:** A [STATION SPEED DIAL] key must be programmed on each desired station for each desired Station Speed Dial bin. The key code for a [STATION SPEED DIAL] key is 600. To program the key to access a particular station speed dial number, enter the bin number (01-30) in the sub-code area of the key.

At least one [OUTSIDE LINE] key (a trunk group, direct appearance for the desired line, UNI, or LCR key) must be programmed on the desired extensions.

**Affected By:** The *Pause Timer* on the *System Programming* screen. See also *Placing Outside Line Calls*.

(Continued on the next page.)

## STATION SPEED DIAL KEY

---

How To: *Program A* [STATION SPEED DIAL] Key.

---

ACTION	RESULT	COMMENT
1. Without lifting the handset, press the [PROG] key.	The [PROG] key LED is lights steadily.	
2. Press the [STATION SPEED DIAL] key to be programmed.	The [PROG] key LED will begin to blink.	
3. Dial the telephone number.		Up to 30 digits may be entered. A pause counts as one digit.
4. Press the [PROG] key.	The [PROG] key LED goes out.	Programming ends. The telephone number is stored in memory.

Pauses between digits may be entered by dialing [\*][1]. This enters a manual pause of fixed duration. The length of the pause is determined from the *Pause Timer* on the *System Programming* screen.

An automatic pause, which waits for dial tone, can be entered by dialing [\*][4].

To enter a [\*] into the actual dialed number, press [\*] twice, although it still counts as one digit.

If the [PROG] key LED goes out before you have finished entering the necessary information, you have waited too long, and the programming mode has timed out. Begin the process over again.

*(Continued on the next page.)*

## STATION SPEED DIAL KEY

How To: Chain A Station Speed Dial Number To Another.

ACTION	RESULT	COMMENT
1. Without lifting the handset, press the [PROG] key.	The [PROG] key LED is lights steadily.	
2. Press the [STATION SPEED DIAL] key to be programmed.	The [PROG] key LED will begin to blink.	
3. Dial the telephone number.		Up to 30 digits may be entered.
4. Dial [*][2].		This is the command to chain to another <i>station speed dial</i> number.
5. Dial the two digit number (01-30) of the bin to chain to.		
6. Press the [PROG] key.	The [PROG] key LED goes out.	Programming ends. The telephone number is stored in memory.

Continue the chaining process by programming the bin that has been chained to. Program this bin the same as any other station speed dial number. This bin can also be chained to another.

*(Continued on the next page.)*



## STATION SPEED DIAL KEY

---

How To: Chain A Station Speed Dial Number To A System Speed Dial Number.

---

ACTION	RESULT	COMMENT
1. Without lifting the handset, press the [PROG] key.	The [PROG] key LED is lights steadily.	
2. Press the [STATION SPEED DIAL] key to be programmed.	The [PROG] key LED will begin to blink.	
3. Dial the telephone number.		Up to 30 digits may be entered. When this bin is used to dial cut, the system dials this number first, then the number contained in the <i>system speed dial</i> bin.
4. Dial [*][3].		This is the command to chain to a <i>system speed dial</i> number.
5. Dial the three digit number (001-200) of the bin to chain to.		
6. Press the [PROG] key.	The [PROG] key LED goes out.	Programming ends. The telephone number is stored in memory.

*(Continued on the next page.)*

## STATION SPEED DIAL KEY

---

How To: Use A [STATION SPEED DIAL] Key.

---

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	With hands free use, ignore step 1, and begin with step 2.
<p>Note: In the system is equipped with a software version prior to 5.52, press an available [OUTSIDE LINE] key before the next step.</p>		
2. Press the desired [STATION SPEED DIAL] key.	The system dials the stored number on the outside line selected.	

## SYSTEM SPEED DIAL

---

**DESCRIPTION:** The System is capable of storing 999 System Speed Dial numbers with a maximum of 11 digits for each number. These System Speed Dial numbers must be programmed from an Operator's extension. Any telephone number which is frequently dialed by all extensions users in the system, can be programmed by the Operator to provide System Speed Dial as a time saving feature for all extension users.

*System Speed Dial* numbers are not subject to a station's toll restriction. Therefore, dialing *System Speed Dial Numbers* cannot be prevented by using any of the *Forced Account Code* features.

**Feature Can Be Used With:** 6-key, 17-key, 28-key, and Display Telephones.

### PROGRAMMING

**Required:** At least one [OUTSIDE LINE] key (a trunk group, direct appearance for the desired line, UNI, or LCR key) must be programmed on the desired extensions.

**Optional:** A [SYSTEM SPEED] key (key code 7001 through 7999) may be programmed on the 17-key, 28-key, and Display Phone.

The key code for a [SYSTEM SPEED] key found in software versions prior to 4.51 are also valid for the first 200 speed dial numbers. This previous key code was 700 where the sub-code indicates the speed dial bin number.

**Affected By:** See Placing Outside Line Calls.

### How To: Program System Speed Dial Numbers On The Operator Terminal.

ACTION	RESULT	COMMENT
1. Without lifting the handset, or pressing the [RLS] key, press the [PGM] key at the Operator Station.		
2. Press [*] plus desired bin number (001-999) on dial pad.		
3. Dial desired telephone number up to 11 digits (pauses count as one digit).		Number to be stored can have a maximum of 11 digits. To enter a pause between digits, press [*][1]. Automatic pauses which wait for dial tone are set by pressing [*][4].
4. Press [PGM] key.		Programming ends. Repeat for as many bins as desired.

*(Continued on the next page.)*

## SYSTEM SPEED DIAL

How To: Use System Speed Dial On The 17-key, 28-key And Display Telephones.

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	With hands free use, ignore step 1, and begin with step 2.
2. Press an available [OUTSIDE LINE] key.	The [OUTSIDE LINE] key LED blinks slowly. External dial tone is heard.	With hands free operation, the [HF] key LED will light.
3. Press [PROG] key.	The [PROG] key LED will light.	
4. Dial [*:] on the dial pad.		Command for System Speed Dial.
5. Dial desired bin number 001-999.	Speed dialing of digits is heard in handset. [PROG] key LED goes out.	

How To: Use A SYSTEM SPEED DIAL Key.

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	With hands free use, ignore step 1, and begin with step 2.

Note: In the system is equipped with a software version prior to 5.52, press an available [OUTSIDE LINE] key before the next step.

2. Press the desired [SYSTEM SPEED DIAL] key.	Speed dialing of digits is heard.	
---	-----------------------------------	--

*(Continued on the next page.)*

## SYSTEM SPEED DIAL

---

How To: Use System Speed Dial On The 6-key Telephone.

---

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	
2. Press the [OUT] key.	The [OUT] key LED will light. External dial tone is heard.	
3. Press [PROG] key.	The [PROG] LED will light.	
4. Dial [*] on the dial pad.		This is the command for System Speed Dial.
5. Dial the desired bin number 001-999.	Speed dialing of digits is heard. [PROG] key LED goes out.	

## TRUNK QUEUEING

---

**DESCRIPTION:** If a desired outside line (or trunk group) is busy, this feature will notify the user when a line is idle (free) by means of audio (ringing) and visual (blinking) LED indication.

**Feature Can Be Used With: All Phones.**

### PROGRAMMING

**Required:** A [CALL BACK] Key (key code 807) is needed on the 17-key and 28-key telephone. Do not program a [CALL BACK] key on a Display phone. A key is not needed on a 6-key or Single Line telephone.

**Affected By:** *Auto Answer* on the *Station Programming* screen. See also *Placing Outside Line Calls*. When the *Alternate Dialing* option is programmed Y (yes), stations cannot dial access trunks except for those allowed by *Alternate Dialing*.

### How To: Use Trunk Queueing On The 17-key And 28-key Telephone.

---

ACTION	RESULT	COMMENT
1. After selecting an [OUTSIDE LINE] and encountering a busy tone, press the [CALL BACK] key.	The [CALL BACK] key LED flickers momentarily.	This feature may be used in conjunction with the LCR option.
2. Replace handset, or press [HF].		Press the [HF] key if the speaker phone was used.
3. Wait for an idle line.		When a line becomes free, the phone will ring, an [OUTSIDE LINE] and the [CALL BACK] key LEDs will blink.
4. Lift the handset, or press the [HF] key.		If Auto Answer is programmed for "no", the user must press the [OUTSIDE LINE] key to seize the line.
5. Dial desired number.		

*Note: If LCR is used, the outside telephone number will automatically be dialed when the outside line is seized.*

*(Continued on the next page.)*

## TRUNK QUEUEING

---

### How To: Use Trunk Queueing On The 6-key Telephone.

---

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	This feature may be used in conjunction with the LCR option.
2. Press the [OUT] key.	Busy signal is heard.	
3. Dial [4] while busy tone is heard.		
4. Replace the handset.		
5. Wait for the idle line.	When a line is idle, the phone will ring.	
6. Lift the handset.	Dial tone is heard.	
7. Dial desired number.		

*(Continued on the next page.)*

## TRUNK QUEUEING

---

### How To: Use Trunk Queueing On A Single Line Telephone.

---

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	This feature may be used in conjunction with the LCR option.
2. Dial [9] + the desired trunk group (1-9 and 0 or * for LCR).	Busy signal is heard.	
3. Dial [4] while busy tone is heard.		
4. Replace the handset.		
5. Wait for the idle line.	When a line is idle, the phone will ring.	
6. Lift the handset.	Dial tone is heard.	
7. Dial desired number.		

*Note: If LCR is used, the outside telephone number will automatically be dialed when the outside line is seized.*

*(Continued on the next page.)*



## TRUNK QUEUEING

### How To: Use Trunk Queueing On The Display Telephone.

ACTION	DISPLAY	RESULT/COMMENT
1. After pressing the [OUT-SIDE LINE] and encountering a busy tone, press the [cb] "soft key".	<div style="border: 1px solid black; padding: 5px; text-align: center;">                         *call back on*                          &gt;&gt;Line Busy&lt;&lt;                          -cb-                     </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div> <div style="text-align: center; margin-top: 5px;">▲</div>	This feature may be used in conjunction with the LCR (Least Cost Routing) option.
2. Replace the handset or press [HF].	<div style="border: 1px solid black; padding: 5px; text-align: center;">                         Wed May 11 10:27                          *idle*                     </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	Press the [HF] key to deactivate speaker phone (if applicable).
3. Wait for idle line.	<div style="border: 1px solid black; padding: 5px; text-align: center;">                         Callback---001                          655-2116                     </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	When a line is idle, the phone will ring. [OUTSIDE LINE] LED blinks.
4. Lift the handset or press the [HF] key.	<div style="border: 1px solid black; padding: 5px; text-align: center;">                         (OUT)-&gt;016                          655-2116                          00:05                          timer cost acct                     </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	If Auto Answer is programmed for "no", the user must press the [OUTSIDE LINE] key to seize the line.

*Note: If LCR is used, the outside telephone number will automatically be dialed when the outside line is seized.*

## UNSUPERVISED CONFERENCE KEY

---

**DESCRIPTION:** An Unsupervised Conference is established when an extension user who originated a Two External Party Conference call, leaves the conference, and wants to free his extension of the conference call. This allows the two Outside parties to continue their conversation after the extension user has left the conference, however, the extension user cannot re-enter the conference. The telephone is then free to use.

**Feature Can Be Used With:** 17-key, 28-key, and Display Telephones.

### PROGRAMMING

**Required:** A [UNSUPERVISED CONFERENCE] key (key code 838) is required for stations authorized to make unsupervised conferences.

**Affected By:** See Placing Outside Line Calls.

### How To: Use The [UNSUPERVISED CONFERENCE] Key.

---

ACTION	RESULT	COMMENT
1. While a two external conference is in progress, press the [UNSUPERVISED CONFERENCE] key.	Internal party has left the conference. The LEDs next to the two [OUTSIDE LINE] keys remain lit for two seconds and then go out.	Once the LEDs on the [OUTSIDE LINE] keys go out the conference cannot be re-entered.
3. Should the user desire to re-enter the conference, press either of the [OUTSIDE LINE] keys on which the external parties are still speaking within 2 seconds of pressing the [UNSUPERVISED CONFERENCE] key.		

## VERIFIED FORCED ACCOUNT CODES

---

**DESCRIPTION:** This feature is part of the Account Code feature family. When using *Verified Forced Account codes*, the account code can be used to change an extension's toll restriction class of service.

The *Verified Forced Account Code* feature allows the system to be programmed in such a way, that a station user must enter a valid account code in order to place an outside line call to certain telephone numbers (for example, long distance calls.) This ensures that call records contain an appropriate indication of the nature of the call. An assigned account number (from 1 to 8 digits) must be entered after an outside line is selected, but before dialing the desired telephone number.

**Feature Can Be Used With: All Phones.**

### PROGRAMMING

**Required:** An [ACCOUNT CODE] key (key code 813) is required on a 17-key and 28-key telephone. DO NOT program an [ACCOUNT CODE] key on a display telephone. An [ACCOUNT CODE] key is not required on a 6-key telephone or Single Line telephone.

*Station Day/Night Class and Forced Account on the Station Programming screen, Account Codes programming screen, and Toll Restriction must be programmed.*

**Affected by:** See *Placing Outside Line Calls*. When the *Alternate Dialing* option is programmed Y (yes), Single Line telephones cannot enter *Account Codes*.

### How To: Use Verified Account Codes On The 17-key And 28-key Telephone.

---

ACTION	RESULT	COMMENT
1. Press an [OUTSIDE LINE] key.	Dial tone is heard.	
2. Press the [ACCOUNT CODE] key.	The [ACCOUNT CODE] key LED will light.	The Account Code must be entered before dialing.
3. Enter Account Code (1-8 digits).		
4. Press the [ACCOUNT CODE] key.	The [ACCOUNT CODE] key LED will go out.	If the Account Code is the maximum 10 digits, the LED will automatically go out, and code will be entered.
5. Dial the desired telephone number.		

*(Continued on the next page.)*

## VERIFIED FORCED ACCOUNT CODES

### How To: Use Verified Account Codes On The 6-key Telephone.

ACTION	RESULT	COMMENT
1. Press the [OUT] key.	Dial tone is heard.	
2. Press the [PROG] key.	The [PROG] key LED will light.	The Account Code must be entered before dialing.
3. Press the [#] key.		
4. Enter Account Code (1-8 digits).		
5. Press the [PROG] key.	The [PROG] key LED will go out.	
6. Dial the desired telephone number.		

### How To: Use Verified Account Codes On The Display Telephone.

ACTION	DISPLAY	RESULT/COMMENT
1. Press an [OUTSIDE LINE] key.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p>(OUT)-&gt; 024</p> <p>00:00</p> <p>timer cost acct</p> <p style="text-align: center;"> <input type="text"/> <input type="text"/> <input type="text"/> </p> </div>	The account code must be entered before dialing.
2. Press [acct] 'soft' key.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p>Fri Nov 04 1:04</p> <p>ACC#:</p> <p>timer cost acct</p> <p style="text-align: center;"> <input type="text"/> <input type="text"/> <input type="text"/> </p> <p style="text-align: center;">▲</p> </div>	

(Continued on the next page.)

## VERIFIED FORCED ACCOUNT CODES

### How To: Use Verified Account Codes On The Display Telephone.

ACTION	DISPLAY	RESULT/COMMENT
3. After the station user enters his account code, he can dial the desired telephone number.	<div style="border: 1px solid black; padding: 5px; text-align: center;">                     Fri Nov 04 1:04                       ! Toll Restricted!                 </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 10px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	<p>If the station user has entered the wrong account code, a dialing error will occur.</p> <p>The user must go back and enter the correct account code.</p>

### How To: Use Verified Account Codes On A Single Line Telephone.

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	
2. Dial the desired outside line access code [9][1] through [9][0] or [9][*] for LCR.	A second dial tone is heard.	
3. Before dialing the telephone number, dial [*].		
4. Dial the account code number up to ten digits.		
5. When the account code has been entered, dial another [*].	The account code is entered.	
6. Continue dialing the desired telephone number.		

## VMS MAIL KEY

---

**DESCRIPTION:** When the [MAIL] key is flashing on your phone, it means that someone has left a message for you in VMS. VMS is an optional feature which provides the telephone system with an integrated voice message system. A station can be forwarded such that VMS takes messages for you when you are unable to answer the call. Outside callers can be transferred to the VMS system to leave messages. Outside callers can be transferred directly to a VMS user's mailbox.

Each VMS user is assigned their own message space called a "mailbox" which is protected by a user determined password. Privacy is insured, as you are the only one that can review the messages left in your mailbox.

If your telephone has programmable feature keys, one of them is designated as your VMS key (or [MAIL] key). The LED beside this key flashes to indicate a message is waiting for you in your VMS mailbox. The [MAIL] key can also be used to call your VMS mail box even if there is no message waiting.

If your telephone is a 6 key telephone (with no programmable keys), the PROG (program) key LED flashes to indicate a message waiting.

**Feature Can Be Used With: 6-key, 17-key, 28-key And Display Telephones.**

### PROGRAMMING

**Required:** A [VMS] key (key code 830) is required on the 17-key, 28-key, and Display telephones. A 6-key telephone does not require a [VMS] key.

### How To: Use The [MAIL] Key.

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal Dial tone is heard.	
2. Press the [MAIL] key on your phone.	Ring back tone is heard. The telephone system is ringing the VMS system. When VMS answers, it prompts you for your password.	
3. (When VMS answers), enter your password. Follow the VMS system voice prompts.		

*(Continued on the next page.)*

## VMS MAIL KEY

---

How To: Retrieve Your Message With The 6-key Telephone.

---

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal Dial tone is heard.	
2. Press the [PROG] key on your phone.	Ring back tone is heard. The telephone system is ringing the extension that left the message.	If the VMS system has left the message, your name prompt is heard. When VMS answers, it prompts you for your password.
3. (When VMS answers), enter your password. Follow the VMS system voice prompts to retrieve your messages.		

## VOLUME CONTROL

---

**DESCRIPTION:** Volume is controlled and stored in memory for each individual function by the Volume Up ▲ and Volume Down ▼ keys on the station. The volume adjustments apply to the function to which you are currently connected. The volume can be adjusted on the following functions:

1. Handset on CO calls.
2. Handset on internal calls.
3. Hands Free on CO calls.
4. Hands Free on internal calls.
5. Page volume.
6. CO line ringing volume.
7. Internal ringing volume.
8. Background music volume.

**Feature Can Be Used With:** 6-key, 17-key, 28-key and Display Telephones.

### PROGRAMMING

Required:      None.

#### How To: Use The Volume ▲ Key.

ACTION	RESULT	COMMENT
1. With the phone using the desired function, press the Volume ▲ key.	The volume of the desired function increases.	By continually pressing the volume ▲ key, this feature allows the user degrees of volume to choose from MIN to MAX.

#### How To: Use The Volume ▼ Key.

ACTION	RESULT	COMMENT
1. With the phone using the desired function, press the Volume ▼ key.	The volume of the desired function decreases.	By continually pressing the volume ▼ key, this feature allows the user degrees of volume to choose from MIN to MAX.



## 4.5 INTEGRATED OPERATOR TERMINAL DESCRIPTION

The Integrated Operator Terminal is equipped with a CRT which gives you a visual display of office calling activity, an accompanying keyboard used in conjunction with the terminal to give it commands, and a handset. Please note that although the handset rests in a cradle attached to the keyboard, this cradle is merely a place to rest the handset when it is not in use. It does not act as a switch-hook mechanism. The Operator also has the ability to program System Speed Dial numbers into the system, activate Background Music, and program other system features.

With the innovative Integrated Operator Terminal, you are able to visually supervise each call and direct it to the desired extension or individual. The system tells you for whom a call is waiting, if it's a Recall, a call from Hold, an Internal call, or a New Call, so you can now answer calls with more efficiency and accuracy. As a new call is processed, the system automatically "tags" it with the extension and the name of the person to whom it is going, and shows its position in the system. Extensions on Do Not Disturb, busy, ringing or forwarded to another destination are clearly displayed.

The Integrated Operator Terminal is easy to use. All it takes is learning how a few clearly marked keys on your Operator keyboard and dial pad act to accomplish the function you desire.

There are several options in system programming which effect the manner in which the Operator Terminal is used. These options effect how extension numbers are displayed on the screen, the use of the function keys located along the top of the keyboard, and the use of the *Second Transfer* key. Each of these options are discussed with the features they effect.

### 4.5.1 THE KEYBOARD

**Description:** The keyboard controls call processing for the Integrated Operator Terminal. The feature and function keys work together with the Alphanumeric keyboard and dial pad in order to send commands to the Operator Terminal.

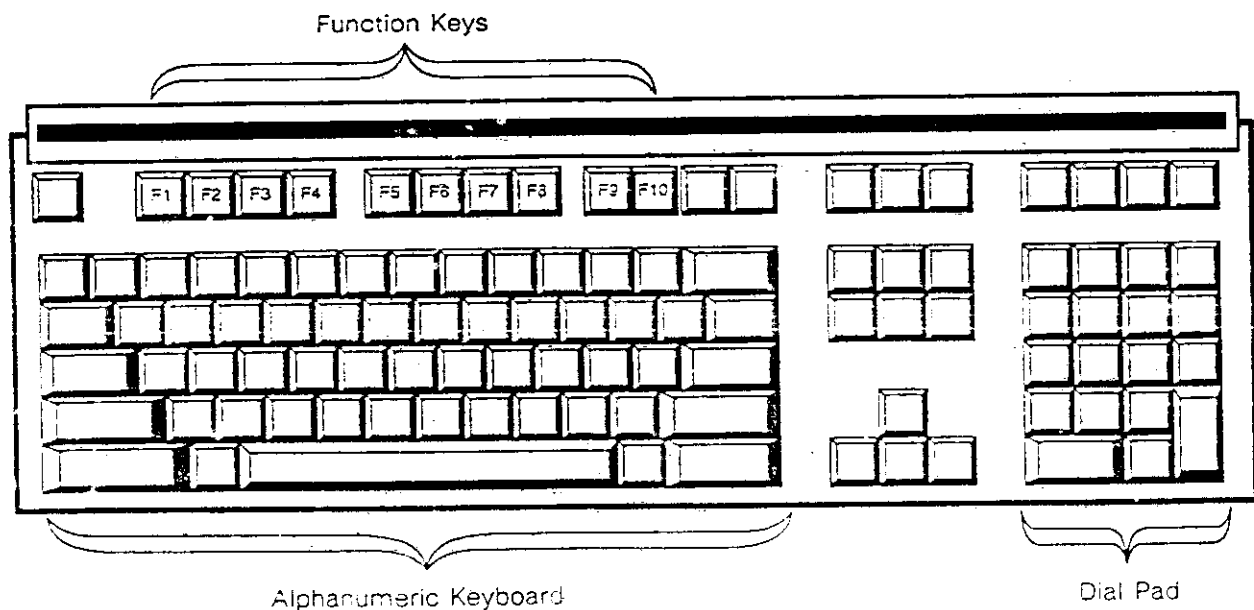


Figure 4-1 Operator Keyboard

## Terminal Operation

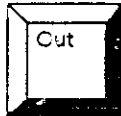
The following keys are used to activate features and for call processing:



The **Call Back** key allows you to leave a "call back" message on a busy extension, so that you are notified when the called extension becomes available.



The **FWD** key allows you to forward (re-route) all Incoming calls from the Operator Station to another extension.



The **Out** key is used by the Operator to place outside line calls.



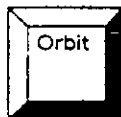
The **LCR Out** key is used by the Operator in order to access an Outside Line using Least Cost Routing.



The **ICM** key is used to call another Internal extension in the system by pressing the [ICM] key plus the 3-digit extension desired.



The **Page** key allows an announcement to be broadcast through each phone in your System and, if programmed, over the External Page.



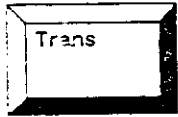
The **Orbit** key, when pressed, seizes one of the 10 available Orbit Zones ([5][0] through [5][9]), and places the current call in Orbit awaiting Paging or pick-up.



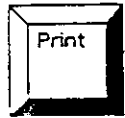
The **Release (RLS)** key acts as a substitute for lifting and replacing a handset on a telephone, e.g. disconnects or connects to the current call. After completing each function, press the **RLS** key in order to end that function, and begin the next. Please note that although the handset rests in a cradle attached to the keyboard, this cradle is merely a place to rest the handset when it is not in use. It does not act as a switch-hook mechanism.



Press the **Hold** key in order to place your current call on Hold.



While connected to a current call, press the Trans key and dial the 3-digit number of the extension to which you wish to transfer the call. Pressing the Trans key when no other call is currently connected to the Operator station, will retrieve the call most recently transferred.



The Print key is not used on the Operator Terminal.



The PGM key is used in a specified sequence in order to enable programming of different features and functions.



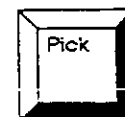
Activating the Night key at the Operator Station activates NIGHT mode for the system. This activates the NIGHT programming of certain features, e.g. NIGHT ring, CALL FORWARD, and TOLL RESTRICTION.



When calling a busy extension, press the Camp-On key. The busy extension will hear a tone indicating that a call is waiting.



The Message (MSG) key provides a way to leave a LED indication that a message is waiting, at another extension which is either busy or unattended.



When you wish to retrieve a call from the Calls In Progress box you may use the Pick key plus the last 3 digits of the extension number assigned to the call you wish to retrieve.



The Delete key is used to erase information which has been previously entered into the Directory.



Pressing the Help key will display information on how to use features and functions of your Operator Terminal.



The key labeled IVIE is the Second Transfer key. This key is used to transfer calls to hunt groups, ACD groups, VMS, and the system MODEM.



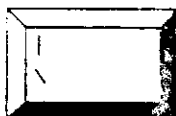
The four ARROW keys on your keyboard move the cursor in the assigned direction for features and functions such as The Directory.

The UP and DOWN arrow keys are also used to adjust the volume of the terminal

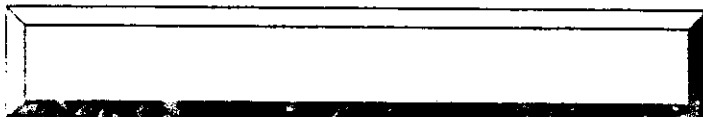
## Terminal Operation



Pressing the ] key on the Operator keyboard **flashes** (momentarily disconnects) a line which is currently in use.

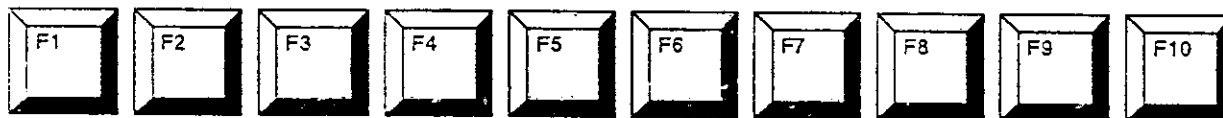


This is the PARK key.



This is the SPACE bar. It is used when transferring calls using the *Directory*.

In addition to the feature keys, there are 10 function keys located at the top of your keyboard. These keys are numbered F1 through F10. Depending upon system programming these keys have one of two uses. The keys can be used in conjunction with your *Directory* to transfer calls to individuals in your office by department. The key labeled F1 is for department 1, F2 is for department 2, etc. See the section titled *Programming the Directory* for more information on department numbers.



Instead of department keys, these keys can be programmed as certain feature keys. The use of these keys as feature keys requires software version 5.26, or higher. However, there are some *conflicts* when using certain feature keys on the *Integrated Operator Terminal*.

Below is a list of features that cannot be used with the function keys on the *Integrated Operator's Terminal*.

- Remote Silent Monitor
- Night Key
- In/Out Key
- Data Key
- ACD Log On Key
- Station Speed Dial Key
- Direct Appearances for a Tie Line.

The function keys on the Operator Terminal are not equipped with LEDs like the feature keys of a telephone. The features that would normally light an LED on a telephone (for example MUTE), will *not* give a visual indication on the Operator Terminal.

### 4.5.2 THE OPERATOR SCREEN

Description: The Operator Screen consists of a series of boxes, or Call Processing Displays. Each of these Call Processing Displays indicates the status of the call(s) you are processing, and gives you a general "overview" of office call activity.

The upper section of your Integrated Operator Terminal, the *Extension Status Screen*, lists the installed extensions in your telephone system, and shows each extension's status - Idle, Busy, Ringing, Do Not Disturb, or Forwarded. Depending upon system programming, the *Extension Status Screen* can appear in one of two ways. The screen can display the status of the first 160 extensions in the system, or the screen can display the first 60 extensions in the system, along with the names programmed in the *Directory* for those extension numbers.

The boxes which appear beneath the *Extension Status Screen* are: **Calls In Progress**, **Pending**, **Directory**, **Active Call Box**, and five smaller boxes which illustrate **Group** activity, how many calls are **Ringing**, **Busy**, being conducted Internally [ICM], and how many **Extensions** are in use at any given time. Only five calls will actually show in the **Pending** box, but when a call is processed another will scroll into its place on the display if more calls are pending.

As each call is processed into the *Calls In Progress* box, the *directory* name of the party to whom the call is assigned, the extension number, and an indication of whether the call has been Transferred, placed in Orbit, or placed on Hold is shown.

001	011	021	031	041	051	061	071	081	091	101	111	121	131	141	151				
002	012	022	032	042	052	062	072	082	092	102	112	122	132	142	152				
003	013	023	033	043	053	063	073	083	093	103	113	123	133	143	153				
004	014	024	034	044	054	064	074	084	094	104	114	124	134	144	154				
005	015	025	035	045	055	065	075	085	095	105	115	125	135	145	155				
006	016	026	036	046	056	066	076	086	096	106	116	126	136	146	156				
007	017	027	037	047	057	067	077	087	097	107	117	127	137	147	157				
008	018	028	038	048	058	068	078	088	098	108	118	128	138	148	158				
009	019	029	039	049	059	069	079	089	099	109	119	129	139	149	159				
010	020	030	040	050	060	070	080	090	100	110	120	130	140	150	160				
1	2	3	4	5	6	7	8	9	0	Ring 000	Busy 000	Icm 000	Ext 004						
Calls In Progress										Pending 00					Directory				
Idle:																			
Tue 03-21-89 3:27 pm																			

Figure 4-2 Operator Screen

Terminal Operation

001 ADAMS	011 CRAIG	021 LEE K	031
002 STEELE	012 BENSON	022 BAKEY	032
003 JONES	013 RODGERS	023 WILLIAMS	033
004 SMITH A	014 O MALEY	024 DAVIS	034
005 KELLY	015 NELSON	025	035
006 SMITH M	016 CLARK	026	036
007 JAMES	017 LEE D	027	
008 ANTHONY	018 MAIL RM	028	
009 COOPER	019 MCDONALD	029	
010 CMPT RM	020 SCOTTO	030	

1 2 3 4 5 6 7 8 9 0	Ring 000	Busy 00C	Icm 000	Ext 004
Calls In Progress	Pending 00			Directory
	idle:			
				Tue 03-21-89 3:27 pm

Figure 4-3 Operator Screen Displaying Directory Names

### 4.5.3 EXTENSION STATUS SCREEN

Description: The status (Idle, Busy, Ringing, Do Not Disturb, or Forwarded) of extensions in your system is visible on the Operator screen. This allows you to supervise office and individual calling activity at a glance.

The status of an extension is indicated by the activity of the 3-digit extension number listed on the Extension Status Screen which appears in the upper half of the Operator Screen.

How To: Determine The Status Of An Extension From The Operator Screen.

APPEARANCE	DISPLAY	INDICATION
1. -Extension number appears dim.	048	Extension is not active.
2. -Extension number is blinking	\   / 048 /   \	The extension is ringing.

How To: Determine The Status Of An Extension From The Operator Screen, cont.

APPEARANCE	DISPLAY	INDICATION
3. -Extension number appears in a solid block.	<b>048</b>	The extension is busy.
4. -Extension number appears as a solid block blinking.	<b>048</b>	Extension is in Do Not Disturb.
5. -Extension number appears in bold type.	<b>*048</b>	The [IN/OUT] key at the extension has been activated.
6. -A bold "f" appears in front of the extension number.	<b>f048</b>	Extension has been forwarded to another extension, or ACD.
7. -Extension is bold and underlined.	<b><u>048</u></b>	The extension has been forwarded to the Voice Message System.

4.5.4 STATUS BOXES

Five status boxes appear in a horizontal line below the Extension Status Screen.

(A)	(B)	(C)	(D)	(E)	
1 2 3 4 5 6 7 8 9 0	Ring 000	Busy 000	Icm 000	Ext 004	
Calls In Progress	Pending 00			Directory	

- A If there is at least one active call in a specific Group, that Group number will appear highlighted.
- B The number of calls RINGing appears in the second box.
- C The number of BUSY Outside Line calls currently active in the system are displayed in the third box.
- D The number of Internal ICM (Intercom) calls currently active in the system are displayed in the fourth box.
- E The number of total BUSY EXTENSIONS currently active in the system is displayed in the fifth box.

### 4.5.5 CALLS IN PROGRESS

Calls which have been Transferred, placed in Orbit, or placed on Hold appear in this box while waiting to be answered.

1 2 3 4 5 6 7 8 9 0	Ring 000	Busy 000	Icm 000	Ext 004	
Calls In Progress 05	Pending 00			Directory	
1.Hold 555-2103					
2.Tran 004 JIM					
3.Orbit 50 KEVIN					
4.Tran 007 MIKE					
5.Tran 021 SALLY					
Idle:					
				Tue 03-21-89 3:27 pm	

### 4.5.6 PENDING BOX

Calls waiting to be answered by the Operator, (Incoming New Calls, or calls which have Recalled or been Transferred to the Operator station), appear in this box.

1 2 3 4 5 6 7 8 9 0	Ring 000	Busy 000	Icm 000	Ext 004	
Calls In Progress	Pending 03			Directory	
	4006 New Call 555-2102				
	4003 Rfd 3048 MEREDITH				
	4002 Rcl 51 BRUCE				
Idle:					
				Tue 03-21-89 5:27 pm	



### 4.5.7 OPERATOR ACTIVE CALL BOX

The Operator *Active Call Box* appears in the box at the bottom of your screen. The box provides a message indicating the status of the current call, (i.e. the call currently connected to the Operator extension).

When no activity is current at the Operator station, the word *Idle* appears in the *Active Call Box*.

1 2 3 4 5 6 7 8 9 0	Ring 000	Busy 000	Icm 000	Ext 004
Calls In Progress	Pending 00		Directory	
Idle:				
Tue 03-21-89 3:27 pm				

A predetermined amount of Outside lines have been assigned to your system. These lines appear on the Operator Terminal screen in the *Active Call Box* at the bottom of your Operator screen whenever a call being processed becomes active. The Line number (4 plus the 3-digit line number) appears attached to a New Call or Recall which is in either the *Pending Box* or the *Active Call Box*.

When a New Call comes into your system, it appears in the Pending Box accompanied by a ringing tone, the Incoming line number and a clock which times the Incoming Call while it waits to be answered. When the Operator answers the call by pressing the [RLS] key, the New Call enters the *Active Call Box* with the line number and clock. The New Call is now current, and connected to the Operator station.

1 2 3 4 5 6 7 8 9 0	Ring 000	Busy 000	Icm 000	Ext 004
Calls In Progress	Pending 00		Directory	
4001 New Call 555-0100 00:15 *->Off Hook*				
Tue 03-21-89 3:27 pm				

Terminal Operation

When a call which has been Transferred, placed in Orbit, or placed on Hold times out (when it is unanswered), it will Recall the Operator station.

1 2 3 4 5 6 7 8 9 0	Ring 000	Busy 000	Ice 000	Ext 000	
Calls In Progress	Pending 01			Directory	
	4001 Rcl 51 BRUCE 00:10				
	Idle: *>ringing<*				
Tue 03-21-89 3:27 pm					

The Recall will appear in the Pending box, accompanied by a ring, and the name of the party for whom the call was intended.

When the space bar is pressed, The Directory is activated. The symbol Dir: will appear in the Active Call Box.

1 2 3 4 5 6 7 8 9 0	Ring 000	Busy 000	Ice 000	Ext 004	
Calls In Progress	Pending 00			Directory	
	Dir:				
Tue 03-21-89 3:27 pm					

A call is transferred to another extension by pressing the [TRANS] key on your keyboard, followed by the last 3 digits of the extension number. You may then either announce the call, or press [RLS] on the keyboard, and allow the called extension to ring. If the extension to which you are transferring the call is busy, you may either Camp the call on to that extension, or take a message.

1 2 3 4 5 6 7 8 9 0	Ring 000	Busy 000	lcm 000	Ext 004	
Calls In Progress	Pending 00			Directory	
4001 Transfer to *>Off Hook<*				00:18	
					Tue 03-21-89 3:27 pm

#### 4.5.8 DATE AND TIME

The day, month, year and a clock which automatically appear on the CRT screen, makes taking messages and keeping track of office routines quicker and easier.

1 2 3 4 5 6 7 8 9 0	Ring 000	Busy 000	lcm 000	Ext 004	
Calls In Progress	Pending 00			Directory	
Idle:					
					Tue 03-21-89 3:27 pm

#### 4.6 TERMINAL OPERATION

The following pages describe the operation of the Integrated Operator Terminal. The features are presented in alphabetical order.

## ANSWERING AN INCOMING CALL

---

**DESCRIPTION:** Both trunk and internal incoming calls are indicated at the Integrated Operator Terminal in two ways:

1. An audible ring if the terminal is idle, or a camp-on tone if you are already connected to a call.
2. The word **Ringing** flashes in the *Active Call Box*. If it is a trunk that is ringing, the trunk number appears in the *Pending Calls Box*. The trunk number is indicated by 4 + the 3-digit line number.

Each incoming call is automatically connected to the Operator when the [RLS] key is pressed. If a call is ringing while you are on a call, pressing the [RLS] key ends the first call, and automatically connects the next call.

### PROGRAMMING

**Required:** At least one [LCR] key must be programmed to receive outside line calls. Several [LCR] keys are recommended. The number of [LCR] keys programmed on the extension determines the number of incoming trunk calls that can be active (connected, on hold, etc.) on the terminal. *Auto Answer* MUST be programmed Y (yes). *Outside Line to be answered* MUST be programmed to ring on the operator's extension.

**Affected By:** *Day and Night Ring, Group In, Camp-on Timer, and Busy on DID* on the *Station Programming* screen.

### How To: Answer An Incoming Call.

ACTION	ACTIVE CALL BOX	COMMENT
1. When the terminal rings, lift the handset.	<pre>4001 New Call 555-2100 00:10 Idle:       *&gt;Ringing&lt;*</pre>	
2. Press the [RLS] key.	<pre>4001 New Call 555-2100 00:10       *&gt;Off Hook&lt;*</pre>	The call is connected.

(Continued on the next page.)

## ANSWERING AN INCOMING CALL

## How To: Disconnect From A Call.

ACTION	ACTIVE CALL BOX	COMMENT
1. When the call is complete, press the [RLS] key.	<div style="border: 1px solid black; padding: 5px;"> <p style="margin: 0;">Idle:</p> </div>	If another call is ringing, the call is automatically connected. Otherwise, the terminal returns to the idle state.

## How To: Answer A Camped-on Call.

ACTION	ACTIVE CALL BOX	COMMENT
1. While on an outside call, after hearing the camp-on tone, press the [HOLD] key.	<div style="border: 1px solid black; padding: 5px;"> <p style="margin: 0;">4002 New Call 555-2101 00:15</p> <hr style="border: 0; border-top: 1px solid black; margin: 2px 0;"/> <p style="margin: 0;">4001 New Call</p> </div>	The call is placed on hold, and appears in the <i>Calls In Progress</i> box.
2. Press the [RLS] key.	<div style="border: 1px solid black; padding: 5px;"> <p style="margin: 0;">4002 New Call 555-2101 00:20</p> <p style="margin: 0; text-align: center;">*&gt;Off Hook*&lt;</p> </div>	The next call is connected.

## BACKGROUND MUSIC OVER THE EXTERNAL PAGE

**DESCRIPTION:** Should your System Manager choose to have Background Music heard throughout your office, a radio, tuner, or tape player may be connected to the main control unit. Music will be heard through External speakers, and may be interrupted briefly for pages or incoming phone calls. An external page system can be connected to the external page path of a station card in card slots J4-J19.

The Operator uses a dial code to activate, and deactivate, the music over the external page system.

### PROGRAMMING

Required: The *Music Source* must be programmed on the *System Programming* screen.

#### How To: Activate Music Over An External Page.

ACTION	ACTIVE CALL BOX	COMMENT
1. Lift the handset, and press the [RLS] key.	Dial: *->Off Hook<*	
2. Dial [6][3] + the 2-digit page zone number (01-16).	Dial:8301 *->Off Hook<*	Confirmation tone is heard. Music is activated over the desired external page zone.

#### How To: Deactivate Music Over An External Page.

ACTION	ACTIVE CALL BOX	COMMENT
1. Lift the handset, and press the [RLS] key.	Dial: *->Off Hook<*	
2. Dial [3][3] + the 2-digit page zone number (01-16).	Dial:8301 *->Off Hook<*	Dial tone is heard. Music is deactivated over the desired external page zone.

## CALL BACK

---

DESCRIPTION: The Call Back feature automatically alerts you when a busy extension becomes free.

### PROGRAMMING

Required: None.

### How To: Use Call Back.

---

ACTION	ACTIVE CALL BOX	COMMENT
1. Upon receipt of a busy signal at the called extension, press the [CALL BACK] key.	<pre>Dial: 3007       *&gt;Off Hook&lt;*</pre>	
2. Press the [RLS] key.	<pre>Idle:</pre>	When both the called extension and the operator's extension become available, the operator's extension will ring.
	<pre>Idle: Call Back Station 3007       *&gt;Ringing&lt;*</pre>	A Call Back message appears in the <i>Active Call</i> box.
A Call Back will ring for 30 seconds before it is canceled by the system.		
3. When the terminal rings with the Call Back, press the [RLS] key.	<pre>Dial:       *&gt;Off Hook&lt;*</pre>	The called station rings. Ring-back tone is heard.
	<pre>3007 Intercom       *&gt;Off Hook&lt;*</pre>	When the called station answers, the call is connected.

## CALL FORWARD

---

**DESCRIPTION:** The *Call Forward* feature provides the ability to forward (re-route) incoming calls to another extension. If the operator is to spend time at another desk or office, all calls may be forwarded to another telephone extension.

The operator's station can be forwarded to different destinations for Forward on Busy, Forward on No Answer, and Forward All Calls.

The operator's station can have separate Call Forward Plans for when the system is in the DAY mode and for when the system is in the NIGHT mode.

Different destinations can be programmed based on whether the call being forwarded is an internal or outside line call.

An intercom call can be forwarded to a hunt group as well as another extension or VMS.

An outside line call can be forwarded to a hunt group, an ACD group, a System Speed Dial number, an extension, or VMS.

In order to accomplish these features, the *Forwarding and VMS Plans* programming screen has been created. This screen provides the programming for Call Forward as well as retaining the programming for VMS. See the *Forwarding and VMS Plans* section of this manual for programming information.

The operator can activate *Call Forward All Calls*, and change the destination of *Call Forward All Calls*. The destinations for *Call Forward No Answer* and *Call Forward Busy* are programmed on the *Forwarding and VMS Plans* programming screen, and are NOT under the operator's control.

### PROGRAMMING

**Required:** Either the *Forwarding and VMS Plans* programming screen must be programmed. The operator's extension must have a [CALL FORWARD] key (key code 809) programmed in order for the [FWD] key on the keyboard to function.

**Affected By:** The *Forwarding and VMS Plans* programming screen. The *Night Forward On* option on the *System Options* programming screen.

### How To: Call Forward The Operator Station.

---

ACTION	ACTIVE CALL BOX	COMMENT
1. Press the [FWD] key.	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <p style="margin: 0;">Idle:</p> </div>	<p>Call forwarding is completed. FWD will show to the left of the <i>Active Call</i> box. When your extension is forwarded <i>All Calls</i>, the only extension in your System which may call your phone, is the one to which you are forwarded.</p>

(Continued on the next page.)



## CALL FORWARD

### How To: Cancel Call Forward.

ACTION	ACTIVE CALL BOX	COMMENT
1. Press the [FWD] key.	<div style="border: 1px solid black; padding: 5px;">           Idle:         </div>	Call forwarding is canceled.

### How To: Change The Extension That Receives The Calls - DAY Mode.

ACTION	ACTIVE CALL BOX	COMMENT
1. Lift the handset, and press the [RLS] key.	<div style="border: 1px solid black; padding: 5px;">           Dial:            *-&gt;Off Hook&lt;*         </div>	Dial tone is heard.
2. Press the [FWD] key.	<div style="border: 1px solid black; padding: 5px;">           Dial: 3005            *-&gt;Off Hook&lt;*         </div>	
3. Dial the 4-digit extension number to which you wish to forward your calls.	<div style="border: 1px solid black; padding: 5px;"> <div style="display: flex; align-items: center;"> <div style="background-color: black; color: white; padding: 2px 5px; margin-right: 5px;"><b>FWD</b></div> <div style="border: 1px solid black; padding: 2px;">           Dial:           *-&gt;off Ho         </div> </div> </div>	Confirmation tone is heard. FWD will show to the left of the <i>Active Call</i> box. Notify the party to which you have forwarded your calls to.
4. Press the [RLS] key.	<div style="border: 1px solid black; padding: 5px;">           Idle:         </div>	Call forwarding completed. When your extension is forwarded <i>All Calls</i> , the only extension in your System which may call your phone, is the one to which your phone is forwarded.

(Continued on the next page.)

## CALL FORWARD

### How To: Change The Extension That Receives The Calls – NIGHT Mode.

ACTION	ACTIVE CALL BOX	COMMENT
1. Lift the handset, and press the [RLS] key.	<div style="border: 1px solid black; padding: 5px;">                     Dial:                      *&gt;Off Hook&lt;*                 </div>	Dial tone is heard.
2. Press the [FWD] key.	<div style="border: 1px solid black; padding: 5px;">                     Dial: 3005                      *&gt;Off Hook&lt;*                 </div>	
3. Dial [5] plus the 4-digit extension number to which you wish to forward your calls.	<div style="display: flex; align-items: center;"> <div style="background-color: black; color: white; padding: 2px 5px; margin-right: 10px;">FWD</div> <div style="border: 1px solid black; padding: 5px;">                     Dial: *&gt;Off Ho                 </div> </div>	Confirmation tone is heard. If the system is in the NIGHT mode, FWD will show to the left of the <i>Active Call</i> box. Notify the party to which you have forwarded your calls to.
4. Press the [RLS] key.	<div style="border: 1px solid black; padding: 5px;">                     Idle:                 </div>	Call forwarding completed. When your extension is forwarded <i>All Calls</i> , the only extension in your System which may call your phone, is the one to which your phone is forwarded.

### How To: Activate Call Forward With A Dial Code – DAY Mode.

ACTION	ACTIVE CALL BOX	COMMENT
1. Lift the handset, and press the [RLS] key.	<div style="border: 1px solid black; padding: 5px;">                     Dial:                      *&gt;Off Hook&lt;*                 </div>	Dial tone is heard.

(Continued on the next page.)

## CALL FORWARD

### How To: Activate Call Forward With A Dial Code – DAY Mode, continued.

ACTION	ACTIVE CALL BOX	COMMENT
2. Dial [7] + [*] + [7].	<div style="display: flex; align-items: center;"> <div style="background-color: black; color: white; padding: 2px 5px; margin-right: 10px;">FWD</div> <div style="border: 1px solid black; padding: 5px;">           Dial:                   *-&gt;off Ho         </div> </div>	Confirmation tone is heard. Call forwarding completed. FWD will show to the left of the <i>Active Call</i> box. Notify the party to which you have forwarded your calls to.
3. Press the [RLS] key.	<div style="border: 1px solid black; padding: 5px;">           Idle:         </div>	Call forwarding completed.

### How To: Activate Call Forward With A Dial Code – NIGHT Mode.

ACTION	ACTIVE CALL BOX	COMMENT
1. Lift the handset, and press the [RLS] key.	<div style="border: 1px solid black; padding: 5px;">           Dial:                   *-&gt;Off Hook&lt;*&lt;br/&gt;↻         </div>	Dial tone is heard.
2. Dial [7] + [*] + [8].	<div style="display: flex; align-items: center;"> <div style="background-color: black; color: white; padding: 2px 5px; margin-right: 10px;">FWD</div> <div style="border: 1px solid black; padding: 5px;">           Dial:                   *-&gt;off Ho         </div> </div>	Confirmation tone is heard. Call forwarding completed. FWD will show to the left of the <i>Active Call</i> box. Notify the party to which you have forwarded your calls to.
3. Press the [RLS] key.	<div style="border: 1px solid black; padding: 5px;">           Idle:         </div>	Call forwarding completed.

(Continued on the next page.)

## CALL FORWARD

### How To: Deactivate Call Forward With A Dial Code – DAY Mode.

ACTION	ACTIVE CALL BOX	COMMENT
1. Lift the handset, and press the [RLS] key.	<div style="border: 1px solid black; padding: 5px;">                     Dial:  <p style="text-align: center;">*&gt;Off Hook&lt;*</p> </div>	Dial tone is heard.
2. Dial [7] + [*] + [*].	<div style="border: 1px solid black; padding: 5px;">                     Dial:  <p style="text-align: center;">*&gt;Off Ho</p> </div>	Confirmation tone is heard.
3. Press the [RLS] key.	<div style="border: 1px solid black; padding: 5px;">                     Idle:                 </div>	Call forwarding is canceled.

### How To: Deactivate Call Forward With A Dial Code – NIGHT Mode.

ACTION	ACTIVE CALL BOX	COMMENT
1. Lift the handset, and press the [RLS] key.	<div style="border: 1px solid black; padding: 5px;">                     Dial:  <p style="text-align: center;">*&gt;Off Hook&lt;*</p> </div>	Dial tone is heard.
2. Dial [7] + [*] + [9].	<div style="border: 1px solid black; padding: 5px;">                     Dial:  <p style="text-align: center;">*&gt;Off Ho</p> </div>	Confirmation tone is heard.
3. Press the [RLS] key.	<div style="border: 1px solid black; padding: 5px;">                     Idle:                 </div>	Call forwarding is canceled.

## CALL PICKUP

---

**DESCRIPTION:** Any extension which is ringing in the system can be answered by the operator using the [PICK] key.

A ringing station is displayed on the *Extension Status Screen* of the Operator's terminal as the extension number blinking.

### PROGRAMMING

Required:     None.

### How To: Answer A Call With The [PICK] Key

---

ACTION	ACTIVE CALL BOX	COMMENT
1. Lift the handset, and press the [RLS] key.	<div style="border: 1px solid black; padding: 5px;">           Dial:                      *&gt;Off Hook&lt;*         </div>	Dial tone is heard.
2. Press the [PICK] key.	<div style="border: 1px solid black; padding: 5px;">           Pick:                      *&gt;Off Hook&lt;*         </div>	
3. Dial the last 3 digits of the ringing extension.	<div style="border: 1px solid black; padding: 5px;">           3008 Intercom                      *&gt;Off Hook&lt;*         </div>	The call is connected to the operator, and may be processed like an other call.

## CALL TRANSFER TO AN EXTENSION

**DESCRIPTION:** There are several methods which can be used to transfer a call from the Operator Terminal. A call can be transferred to another extension by either using The Directory to locate the extension number of the called party, or, by using the last three digits of the extension number if it is already known. You may then either announce the call, or press the Release key [RLS] on the keyboard, and allow the called extension to ring. If the extension to which you are transferring the call is busy, you may either camp the call on to that extension, or take a message. The function keys located along the top of the keyboard may be used to transfer calls by department.

### PROGRAMMING

**Required:** The *Second Transfer Key* option on the *System Programming* screen must be set to Y (yes) if the extension numbering plan is not the default plan, i.e., if the leading digit is not 3, or the last 3 digits of the extension numbers exceed 228.

**Optional:** If the Directory is to be used to transfer calls, the *Directory* programming screen must be programmed with the extension users' names.

If the Function keys are to be used to access the directory by department, *FNCT keys=Departments* in the *Operator Programming* area of the *System Programming* screen must be programmed Y (yes). The names in the *Directory* must be programmed with department numbers.

### How To: Transfer A Call Using An Extension Number.

ACTION	ACTIVE CALL BOX	COMMENT
1. After answering the call with the [RLS] key, press the [TRANS] key.	<div style="border: 1px solid black; padding: 5px;"> <p>4002 Transfer to                      00:20</p> <p style="text-align: center;">*&gt;Off Hook*&lt;</p> </div>	The call is placed on hold waiting to be transferred.
2. On the dial pad, dial the last 3 digits of the extension number the call is to be transferred to. For example, [0][0][3].	<div style="border: 1px solid black; padding: 5px;"> <p>3003 Intercom</p> <p style="text-align: center;">*&gt;Off Hook*&lt;</p> </div>	Double tone (or ring) is heard. Announce the call if desired. If the called party does not wish to receive the call, press the [TRANS] key to reconnect to the outside call. The call transferred will automatically be "tagged" with the name assigned to that extension.

(Continued on the next page.)

## CALL TRANSFER TO AN EXTENSION

How To: Transfer A Call Using An Extension Number, continued.

ACTION	ACTIVE CALL BOX	COMMENT
3. Press the [RLS] key.	<pre>4001 New Call 555-2100 00:10 Idle: *&gt;Ringing&lt;*</pre>	The call is transferred, and appears in the <i>Calls in Progress</i> box until it is answered or recalls. If another call is ringing the operator, it is automatically answered.

Should the extension to which you wish to transfer a call be busy, the call will be automatically Camped-On to that extension until it becomes available or until it times out and recalls.

How To: Transfer An Incoming Call Using The Directory.

ACTION	ACTIVE CALL BOX	COMMENT
1. After answering the call with the [RLS] key, press the first letter, letters, or complete name of party to whom you wish to Transfer the call.	<pre>4002 New Call 00:20 *&gt;Off Hook*&lt;</pre>	Typed letters or name appear in <i>Active Call Box</i> .
2. Press the [SPACE BAR] on the keyboard.	<pre> 4002 New Call JU *&gt;Off Hook*&lt;</pre>	The Directory is activated, and appears with an alphabetical listing beginning with the letter or name requested. A cursor appears beside the name at the top of the Directory.

If just an initial or partial name is used, The Directory will appear alphabetized, and you must move the cursor [>] to the desired name. Press [0] on dial pad to move the cursor down. Press [1] on the dial pad to move the cursor up.

(Continued on the next page.)

## CALL TRANSFER TO AN EXTENSION

How To: Transfer An Incoming Call Using The Directory, continued.

ACTION	ACTIVE CALL BOX	COMMENT
3. With the cursor to the left of the desired extension, press the [TRANS] key.	<pre> 3003 Intercom JULIE       *&gt;Off Hook*&lt;           </pre>	Double tone (or ring) is heard. Announce the call if desired. If the called party does not wish to receive the call, press the [TRANS] key to reconnect to the outside call. The call transferred will automatically be "tagged" with the name assigned to that extension.
4. Press the [RLS] key.	<pre> 4001 New Call 555-2100 00:10 Idle:       *&gt;Ringing&lt;*           </pre>	The call is transferred, and appears in the <i>Calls In Progress</i> box until it is answered or recalls. If another call is ringing the operator, it is automatically answered.

Should the extension to which you wish to transfer a call be busy, the call will be automatically Camped-On to that extension until it becomes available or until it times out and recalls.

How To: Reconnect To A Transferred Call.

ACTION	ACTIVE CALL BOX	COMMENT
1. Press the [TRANS] key.	<pre> 4002 Tran 007 JULIE       *&gt;Off Hook*&lt;           </pre>	The call is connected to the operator. The call can then be processed as appropriate.

(Continued on the next page.)



## CALL TRANSFER TO AN EXTENSION

**How To:** Transfer An Incoming Call Using The Department Keys.

ACTION	ACTIVE CALL BOX	COMMENT
1. After answering the call with the [RLS] key, press the desired department Function key.	<pre> 4002 New Call           00:20       *&gt;Off Hook*&lt;           </pre>	The Directory is activated, and appears with a listing of names in the requested department. A cursor appears beside the name at the top of the Directory.
You may move the cursor to the desired name. Press [0] on dial pad to move the cursor down. Press [1] on the dial pad to move the cursor up.		
2. With the cursor to the left of the desired extension, press the [TRANS] key.	<pre> 3025 Intercom LARRY       *&gt;Off Hook*&lt;           </pre>	Double tone (or ring) is heard. Announce the call if desired. If the called party does not wish to receive the call, press the [TRANS] key to reconnect to the outside call. The call transferred will automatically be "tagged" with the name assigned to that extension.
3. Press the [RLS] key.	<pre> 4001 New Call 555-2100 00:10 Idle:       *&gt;Ringing&lt;*           </pre>	The call is transferred, and appears in the <i>Calls In Progress</i> box until it is answered or recalls. If another call is ringing it is automatically answered.

Should the extension to which you wish to transfer a call be busy, the call will be automatically Camped-On to that extension until it becomes available or until it times out and recalls.



## CALL TRANSFER TO A HUNT GROUP

---

**DESCRIPTION:** Stations can be arranged into groups so that calls can be directed to a group of extensions, rather than an individual. Calls answered by the operator may be transferred to the Hunt group.

### PROGRAMMING

**Required:** The *Second Transfer Key* option on the *System Programming* screen must be set to Y (yes) if the extension numbering plan is not the default plan, i.e., if the leading digit is not 3, or the last 3 digits of the extension numbers exceed 228.

**Affected By:** *Orbit Recall Timer* on the *System Programming* screen. If all members of a Hunt group are busy, and a call transferred to the Hunt group is not answered in the *Orbit Recall* time, the call will recall the operator.

### How To: Transfer To A Hunt Group.

---

ACTION	ACTIVE CALL BOX	COMMENT
1. After answering the call with the [RLS] key, press the [IVIE] key.	<div style="border: 1px solid black; padding: 5px;"> <p>4002 Transfer to 00:20 *&gt;Off Hook*&lt;</p> </div>	The call is placed on hold waiting to be transferred. The IVIE key is the second transfer key used to transfer to a Hunt group.
2. Dial [4] plus the desired Hunt group number (01-36).	<div style="border: 1px solid black; padding: 5px;"> <p>4002 Transfer to 00:20 *&gt;Off Hook*&lt;</p> </div>	The call is transferred to the Hunt group and appears in the <i>Calls In Progress</i> box until answered. If all members of a Hunt group are busy, and a call is not answered in the <i>Orbit Recall</i> time, the call will recall the operator.
3. Press the [RLS] key.	<div style="border: 1px solid black; padding: 5px;"> <p>4001 New Call 555-2100 00:10 Idle: *&gt;Ringing*&lt;</p> </div>	If another call is ringing the operator, it is automatically answered.

## CALL TRANSFER TO VMS

---

**DESCRIPTION:** VMS is an optional feature which provides the telephone system with an integrated voice message system. A station user can transfer an outside line call to the Voice Message System, and allow the caller to follow VMS's voice prompts to check their messages or leave messages for other users. An outside line call can also be transferred directly to a station user's VMS mailbox.

### PROGRAMMING

**Required:** The *Second Transfer Key* option on the *System Programming* screen must be set to Y (yes) if the extension numbering plan is not the default plan, i.e., if the leading digit is not 3, or the last 3 digits of the extension numbers exceed 228.

The extensions connecting the VMS system to the the telephone system must be programmed (on the *Station Programming* screen) for the hunt group assigned to VMS on the *Forwarding and VMS Plans* programming screen.

The mailbox numbers of the station users must be programmed on the *Forwarding and VMS Plans* programming screen.

### How To: Transfer An Outside Call To The VMS System.

ACTION	ACTIVE CALL BOX	COMMENT
1. After answering the call with the [RLS] key, press the [IVIE] key.	<pre> 4002 Transfer to      00:20       *&gt;Off Hook*&lt;           </pre>	The call is placed on hold waiting to be transferred. The IVIE key is the second transfer key used to transfer to a Hunt group.
2. Dial [4] + the VMS hunt group number, usually [3] [6].	<pre> 4002 Transfer to      00:20       *&gt;Off Hook*&lt;           </pre>	VMS is usually hunt group 36, but can be any group 1 through 36. The call is transferred to the Hunt group and appears in the <i>Calls In Progress</i> box until answered.
3. Press the [RLS] key.	<pre> 4001 New Call 555-2100 00:10 Idle:       *&gt;Ringing*&lt;           </pre>	If another call is ringing the operator, it is automatically answered.

(Continued on the next page.)

## CALL TRANSFER TO VMS

---

How To: Transfer A Call To A VMS Mailbox Using Extension Number.

---

ACTION	ACTIVE CALL BOX	COMMENT
1. After answering the call with the [RLS] key, press the [IVIE] key.	<pre> 4002 Transfer to      00:20       *&gt;Off Hook*&lt;           </pre>	The call is placed on hold waiting to be transferred. The IVIE is the second transfer key used to transfer to VMS.
2. Dial [5] + the last 3 digits of the extension number of the person the message is to be taken for.	<pre> 4002 Transfer to      00:20       *&gt;Off Hook*&lt;           </pre>	The outside caller hears the voice announcement of the person the message is being taken for.
3. Press the [RLS] key.	<pre> 4001 New Call 555-2100 00:10 Idle:       *&gt;Ringing*&lt;           </pre>	If another call is ringing the operator, it is automatically answered.

©

## CALL TRANSFER TO THE SYSTEM MODEM

**DESCRIPTION:** From time to time your telephone system distributor, or *ISOETEC*® service personnel may request to be transferred to the system MODEM. The MODEM provides service personnel a means of programming your system remotely.

### PROGRAMMING

**Required:** The *Second Transfer Key* option on the *System Programming* screen must be set to Y (yes) if the extension numbering plan is not the default plan, i.e., if the leading digit is not 3, or the last 3 digits of the extension numbers exceed 228.

### How To: Transfer A Call To The System MODEM.

ACTION	ACTIVE CALL BOX	COMMENT
1. After answering the call with the [RLS] key, press the [IVIE] key.	<pre> 4002 Transfer to      00:20       *&gt;Off Hook*&lt; </pre>	The call is placed on hold waiting to be transferred. The IVIE is the second transfer key used to transfer to VMS.
2. Dial [9] [#].	<pre> 4002 Transfer to      00:20       *&gt;Off Hook*&lt; </pre>	The call is transferred to the MODEM.
3. Press the [RLS] key.	<pre> 4001 New Call 555-2100 00:10 Idle:       *&gt;Ringing*&lt; </pre>	If another call is ringing the operator, it is automatically answered.

## CAMP-ON

---

**DESCRIPTION:** The Camp-On feature allows the operator to call a busy extension and wait until that busy extension becomes available. It also allows you to transfer an Outside call to a busy extension where the call can wait until it is answered, or until it recalls the transferring extension.

An audible double tone notifies the busy party that a call is waiting.

### PROGRAMMING

Required: None.

#### How To: Camp On To A Busy Extension.

---

ACTION	ACTIVE CALL BOX	COMMENT
1. Upon receipt of a busy signal at the called extension, press the [CAMP ON] key.	<div style="border: 1px solid black; padding: 5px; text-align: center;">           Dial: 3007            *&gt;Off Hook&lt;*         </div>	The busy extension hears a Camp-on tone. Stay on the line until the call is answered.
	<div style="border: 1px solid black; padding: 5px; text-align: center;">           3007 Intercom            *&gt;Off Hook&lt;*         </div>	When the called station answers, the call is connected.

If an outside line call is transferred to a busy extension, it is camped-on automatically. Use the camp-on feature to screen an outside call to a busy extension.

## DIRECTORY PROGRAMMING

**DESCRIPTION:** Your Operator Terminal displays the status of the extension numbers installed in your telephone system. The extensions appear at the top of the Operator screen as 3-digit numbers. These extension numbers will not appear as the complete 4-digit numbers on the Operator screen, as the leading digit is common to all extension numbers, and is dropped for added efficiency and speed while using the Operator Terminal for processing calls. For example, extension 3001 appears on the Operator Terminal as 001. Up to 160 (or 60 if directory names are being used) extension numbers will appear in numerical order on the Extension Status Screen on your Operator Terminal.

The *Directory* programming screen is used to assign the names of the extension users to each extension number. Each extension listed in the *Directory* programming screen may be programmed with a department number as well as an assigned name. There are 10 available department numbers. In addition, another number may be entered which indicates the order in which the *Directory* names will appear on the Operator Terminal when the Directory is requested while processing calls. These "order" numbers range from 0 through 10. If order numbers are not assigned, names within a department will alphabetize in the normal manner. Should order numbers be assigned, names and extensions will appear in the order indicated by the number assigned. An extension assigned with the order number 0 will appear first, while one assigned 10 will appear last.

## PROGRAMMING

**Required:** None. The operator can always access the *Directory* programming screen.

Del -> clear name		Directory	Page 1 of 4	
		-----	'e' -> page #	
3001		3020		3039
3002		3021		3040
3003		3022		3041
3004		3023		3042
3005		3024		3043
3006		3025		3044
3007		3026		3045
3008		3027		3046
3009		3028		3047
3010		3029		3048
3011		3030		3049
3012		3031		3050
3013		3032		3051
3014		3033		3052
3015		3034		3053
3016		3035		3054
3017		3036		3055
3018		3037		3056
3019		3038		3057

(Continued on the next page.)



## DIRECTORY PROGRAMMING

### How To: Access And Insert Names In The Directory.

ACTION	RESULT	COMMENT
1. Press the [CONTROL] and [D] keys at the same time.	The <i>Directory</i> programming screen appears, and the operator screen disappears.  The cursor is located in the top right corner of the screen.	The operator terminal cannot be used to process calls when in the <i>Directory</i> programming screen. There are screens, or "pages" to accommodate all possible extensions.
2. Press the [RETURN] key in order to move the cursor to the top of the name field.		The arrow keys can be used to move the cursor to the desired extension number.
3. Using the keyboard, type the desired name into the space provided. A maximum of 10 characters may be used for each name.	The typed characters appear next to the extension number.	If a mistake is made, press the [DELETE] key, and begin again.
4. Press the [RETURN] key to enter the name. Press the [RETURN] key a second time to move the cursor to the next extension number.		The arrow keys can be used to move the cursor to the desired extension number.

Del -> clear name		Directory	Page 1 of 4	
		-----	'@' -> page #	
3001	MARY	3020	3039	
3002	KEVIN	3021	3040	
3003	AL	3022	3041	
3004	VINCE	3023	3042	
3005	FRED	3024	3043	
3006	WILLIAM	3025	3044	
3007	BARNEY	3026	3045	

(Continued on the next page.)

## DIRECTORY PROGRAMMING

---

How To: "Turn" pages In The Directory.

---

ACTION	RESULT	COMMENT
1. If the cursor is not at the top right corner, press [SHIFT] and [ @ ] at the same time.		
2. Enter the desired page number, and press the [RETURN] key.	The screen displays the desired group of extension numbers.	The [I] and [D] keys may also be used to increment and decrement the page number as long as the cursor is located in the <i>page number</i> area.
3. Press the [RETURN] key to move the cursor to the <i>names</i> area.		

How To: Exit The Directory Programming Screen.

---

ACTION	RESULT	COMMENT
1. When programming is complete, press the [CONTROL] and [D] keys at the same time.	The terminal returns to the call processing mode.	

*(Continued on the next page.)*

## DIRECTORY PROGRAMMING

---

### How To: Assign Department And Order Numbers.

---

ACTION	RESULT	COMMENT
1. Using the arrow keys, move the cursor to the desired name.		
2. Press the [TAB] key.	The cursor moves to the department column.	
3. Enter the desired department number (1-10), and press the [RETURN] key.	The department and order numbers appear.	The department numbers are used when the function keys on the top of the keyboard are used to access the directory by department. The department number corresponds to the function key number.
4. Press the [TAB] key.	The cursor moves to the order column.	
5. Enter the desired order number (1-10), and press the [RETURN] key.		A name with an order number of 0 appears in the Directory box first. A name assigned 10 as an order number appears last.

### How To: Delete A Name From The Directory.

---

ACTION	RESULT	COMMENT
1. Using the arrow keys, move the cursor to the desired name.		
2. Press the [DELETE] key.	The name is removed from the Directory.	

## DISA

---

**DESCRIPTION:** There are two types of DISA available: Supervised and Unsupervised. Supervised DISA requires a 4-digit access code. This access code is programmed at the Operator station. Unsupervised DISA does not require a code.

The DISA authorization code is any four digit number (0000 through 9999), and is entered by the Operator. The operator does not activate, or deactivate, the DISA line.

*NOTE: Disconnect supervision from the local telephone operating company must be provided for lines programmed for DISA.*

*NOTE: After 30 minutes of continuous use, the system will disconnect the DISA line.*

## PROGRAMMING

**Required:** The *Line Type* for the trunks to be designated as DISA trunks must be set to one of the following:

- 100- Supervised DISA - On all the time.
- 101- Supervised DISA - Night Mode Only.
- 200- Unsupervised DISA - On all the time.
- 201- Unsupervised DISA - Night Mode Only.

**Affected By:** *Drop Pulse* on the *System Programming* screen. The *Toll Options* on the *System Options* programming screen.

## How To: Enter The Confidential DISA Code.

ACTION	ACTIVE CALL BOX	COMMENT
1. Lift the handset, and press the [RLS] key.	Dial: *>Off Hook<*	
2. Dial [#] + the desired 4-digit authorization code, e.g. [7][5][6][1].	Dial: #7561 *>Off Hook<*	

## FLASHING AN OUTSIDE LINE

---

**DESCRIPTION:** There may be times when it is necessary to *flash* an outside line. This operation is also called *switch-hook flash*. A *flash* is a momentary disconnection of the line. This flash may be needed to activate certain features on the outside line.

### PROGRAMMING

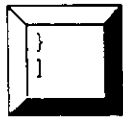
Required: None.

Affected By: The *Flash timer* on the *System Programming* screen.

### How To: Flash An Outside Line.

---

ACTION	ACTIVE CALL BOX	COMMENT
1. While on an outside line call, press the ] key located just above the [RETURN] key.	<div style="border: 1px solid black; padding: 5px; text-align: center;">           4002 Outgoing            *&gt;Off Hook*&lt;         </div>	The outside line is flashed for the length of the <i>Flash Timer</i> .



Pressing the ] key on the Operator keyboard **flashes** (momentarily disconnects) a line which is currently in use.

⊙

## GROUP PICKUP

---

**DESCRIPTION:** Extensions can be arranged into groups, so that a call ringing an extension in a group can be answered by any other extension using a dial access code. The operator can also use group pickup to answer calls if the pickup group number is known.

### PROGRAMMING

**Required:** The stations in the pickup group must be programmed on the *Station Programming* screen.

### How To: Use Group Pickup

ACTION	ACTIVE CALL BOX	COMMENT
1. When you wish to answer a call ringing in a pickup group, lift the handset, and press the [RLS] key.	<div style="border: 1px solid black; padding: 5px;"> <p style="margin: 0;">Dial:</p> <p style="margin: 0; text-align: center;">*&gt;Off Hook&lt;*</p> </div>	Internal dial tone is heard.
2. Dial [7][2] + the 2-digit pickup group number (01-36).	<div style="border: 1px solid black; padding: 5px;"> <p style="margin: 0;">Dial:7203</p> <p style="margin: 0; text-align: center;">*&gt;Off Hook&lt;*</p> </div>	The call is connected.
↻	<div style="border: 1px solid black; padding: 5px;"> <p style="margin: 0;">3008 Intercom KELLY</p> <p style="margin: 0; text-align: center;">*&gt;Off Hook&lt;*</p> </div>	

## HOLD

---

**DESCRIPTION:** Any outside call can be placed on Hold to await further processing. Calls on hold appear in the *Calls In Progress* box.

### PROGRAMMING

Required: None.

#### How To: Place A Call On Hold.

---

ACTION	ACTIVE CALL BOX	COMMENT
1. While on a call, press the [HOLD] key.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">           4002 Outgoing            *&gt;Off Hook*&lt;         </div>	The call is placed on Hold, and appears in the <i>Calls In Progress</i> box.
2. Press the [RLS] key.		

#### How To: Retrieve A Call On Hold.

---

ACTION	ACTIVE CALL BOX	COMMENT
1. Lift the handset, and press the [RLS] key.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">           Dial:            *&gt;Off Hook*&lt;         </div>	Internal dial tone is heard.
2. Press the [HOLD] key.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">           4002 HOLD            *&gt;Off Hook*&lt;         </div>	The call is taken off Hold, and is connected to the operator. Calls on hold are retrieved on a first in, first out basis.

## MESSAGE WAITING

---

**DESCRIPTION:** The Message Waiting feature allows you to light a Message Waiting indicator at an extension which is unattended or busy.

### PROGRAMMING

Required: None.

### How To: Light A Message Waiting Indication.

ACTION	ACTIVE CALL BOX	COMMENT
1. Press the [ICM] key, and dial the last 3 digits of the desired extension number.	<div style="border: 1px solid black; padding: 5px; text-align: center;">                     3008 Intercom KELLY                      *&gt;Off Hook&lt;*                 </div>	
2. Press the [MSG] key.	<div style="border: 1px solid black; padding: 5px; text-align: center;">                     3008 Intercom KELLY                      *&gt;Off Hook&lt;*                 </div>	The [MESSAGE WAITING] key lights on the called extension. If the called extension does not have a [MESSAGE WAITING] key, the LED above the [HOLD] key lights.
3. Press the [RLS] key.		



## NIGHT MODE

---

**DESCRIPTION:** The operator activates the Night mode for the system. A number of system features have different programming when the system is in the Night mode. Some of these features are Call Forward, Station Ringing and Access, and Toll Restriction.

### PROGRAMMING

**Required:** None.

**Affected By:** The *Trunk Programming* screen can also be used to automatically place the system in Night mode.

#### How To: Activate Night Mode.

ACTION	SCREEN	COMMENT				
1. Press the [NIGHT] key.	<table border="1"> <tr> <td>Ext 004</td> <td><b>NIGHT</b></td> </tr> <tr> <td colspan="2">Directory</td> </tr> </table>	Ext 004	<b>NIGHT</b>	Directory		The system is in Night mode. The word "NIGHT" appears on the right side of the screen.
Ext 004	<b>NIGHT</b>					
Directory						

#### How To: Deactivate Night Mode.

ACTION	SCREEN	COMMENT				
1. Press the [NIGHT] key.	<table border="1"> <tr> <td>Ext 004</td> <td></td> </tr> <tr> <td colspan="2">Directory</td> </tr> </table>	Ext 004		Directory		The system is in Day mode. The word "NIGHT" disappears from the screen.
Ext 004						
Directory						

## ORBIT

---

**DESCRIPTION:** There are 10 orbit zones available to place outside line calls waiting to be picked up. These orbit zones are used when an individual is away from their telephone, and must be paged to pickup the call. Once an outside line call has been transferred to an orbit zone, the call may be picked up from any extension in the system by dialing the 2-digit orbit zone number.

Calls placed in orbit by the operator are transferred to the first available orbit zone automatically. The number of the zone the call is placed in appears in the *Calls In Progress* box. The orbit zones are numbered 50-59.

### PROGRAMMING

Required: None.

Affected By: The *Orbit Recall* timer on the *System Programming* screen.

### How To: Place A Call In Orbit.

ACTION	ACTIVE CALL BOX	COMMENT
1. After answering the call with the [RLS] key, press the [ORBIT] key.	<pre> 4002 Orbit 50       *&gt;Off Hook*&lt;           </pre>	The call is placed in orbit waiting to be picked up. The call appears in the <i>Calls In Progress</i> box.
2. Press the [PAGE] key. Wait for the tone, and then page the individual the call is for, and announce the orbit zone the call is waiting in.	<pre> Page:       *&gt;Off Hook*&lt;           </pre>	The call can be "tagged" with a name by typing a name or initials on the keyboard. The "tag" appears next to the call in the <i>Calls In Progress</i> box. See <i>Tagging Calls</i> .
3. Press the [RLS] key.	<pre> Idle:       *&gt;Off Hook*&lt;           </pre>	If the call is not picked up by the individual, it recalls the operator after the <i>Orbit Recall</i> amount of time.

(Continued on the next page.)

## ORBIT

## How To: Retrieve A Call From Orbit.

ACTION	ACTIVE CALL BOX	COMMENT
1. Lift the handset, and press the [RLS] key.	<div style="border: 1px solid black; padding: 5px;">           Dial:            *&gt;Off Hook&lt;*         </div>	Internal dial tone is heard.
2. Press the [ORBIT] key.	<div style="border: 1px solid black; padding: 5px;">           Orbit:            *&gt;Off Hook*&lt;         </div>	Look in the <i>Calls In Progress</i> box for the orbit zone number of the desired call.
3. Dial the last digit of the desired orbit zone. For example, if the call is in 50, dial 0.	<div style="border: 1px solid black; padding: 5px;">           4002 Orbit 50            *&gt;Off Hook*&lt;         </div>	The call is connected to the operator.

## PAGING

---

**DESCRIPTION:** The *Page* feature can be used to broadcast an announcement to all extensions in the system. The page is heard through the speakers in the telephones, and/or, through an external paging system. The system has nine separate page zones, and a "page all zones".

The operator's position can be programmed to use the page in one of two ways. The [PAGE] key can be used as a "page all zones" key, or it can be used with the dial pad to select the page zone for the announcement.

## PROGRAMMING

Required: None.

Affected By: *Page All Zones* in the *Operator Programming* area of the *System Programming* screen.

**How To:** Page (*Page All Zones* is no).

ACTION	ACTIVE CALL BOX	COMMENT
1. Lift the handset, and press the [RLS] key.	<div style="border: 1px solid black; padding: 5px;">           Dial:                      *&gt;Off Hook&lt;*&amp;         </div>	Internal dial tone is heard.
2. Press the [PAGE] key.	<div style="border: 1px solid black; padding: 5px;">           Dial:                      *&gt;Off Hook&lt;*&amp;         </div>	Wait for the tone, and then make the desired announcement.
3. Press the [RLS] key.	<div style="border: 1px solid black; padding: 5px;">           Idle:                      *&gt;Off Hook*&amp;         </div>	

*(Continued on the next page.)*

## PAGING

---

How To: Page (*Page All Zones* is yes).

---

ACTION	ACTIVE CALL BOX	COMMENT
1. Lift the handset, and press the [RLS] key.	<div style="border: 1px solid black; padding: 5px;">           Dial:                  *&gt;Off Hook&lt;*         </div>	Internal dial tone is heard.
2. Press the [PAGE] key.	<div style="border: 1px solid black; padding: 5px;">           Dial:                  *&gt;Off Hook&lt;*         </div>	
3. Dial the last digit of the desired page zone.	<div style="border: 1px solid black; padding: 5px;">           Dial:1                  *&gt;Off Hook&lt;*         </div>	Wait for the tone, and then make the desired announcement.
4. Press the [RLS] key.	<div style="border: 1px solid black; padding: 5px;">           Idle:                  *&gt;Off Hook* &lt;         </div>	

## PARK KEY

**DESCRIPTION:** The PARK key is used in applications where the 10 zones of the *Orbit* feature are not enough to meet the customers needs. The PARK key enables each trunk to be placed in its own park zone. When the PARK key is pressed, the call goes to a park zone that is equal to the trunk number. For example, line 12 would be sent to park zone 12. The park zone number (trunk number) must be known to retrieve the call.

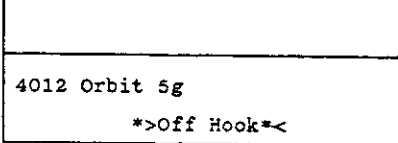
If a call placed in *Park* remains unanswered, it will recall the extension from which it originated after the amount of time programmed for the *Orbit Recall* timer.

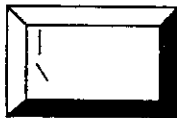
### PROGRAMMING

Required: None.

Affected By: The *Orbit Recall Timer* on the *System Programming* screen.

### How To: Use The [PARK] Key.

ACTION	ACTIVE CALL BOX	COMMENT
1. While on an outside line call, press the [PARK] key. This is the [PARK] key.		The call is placed in a park zone with the same number as the 3-digit outside line number. The call appears in the <i>Calls In Progress</i> box until the call is answered, or it recalls.



o

(Continued on the next page.)

## PARK KEY

---

### How To: Retrieve A Parked Call.

---

ACTION	ACTIVE CALL BOX	COMMENT
1. Lift the handset, and press the [RLS] key.	<div style="border: 1px solid black; padding: 5px;">           Dial:            *&gt;Off Hook&lt;*         </div>	Internal dial tone is heard.
2. Press the [PARK] key.	<div style="border: 1px solid black; padding: 5px;">           Dial:            *&gt;Off Hook&lt;*         </div>	
3. Dial the 3-digit park zone number, e.g. [0][1][2].	<div style="border: 1px solid black; padding: 5px;">           Dial: 012            *&gt;Off Hook&lt;*         </div>	The call is connected.

## PLACING INTERNAL CALLS

**DESCRIPTION:** The operator can call any extension in the system.

### PROGRAMMING

**Required:** None.

**Affected By:** The *Hands Free Receive* option at the called extension.

### How To: Call An Extension.

ACTION	ACTIVE CALL BOX	COMMENT
1. Lift the handset, and press the [RLS] key.	<div style="border: 1px solid black; padding: 5px;">           Dial:            *&gt;Off Hook&lt;*         </div>	Internal dial tone is heard.
2. Dial the 4-digit extension number.	<div style="border: 1px solid black; padding: 5px;">           3008 Intercom JULIE            *&gt;Off Hook&lt;*         </div>	The call can be voice announced, or the extension begins to ring, depending on how the extension is programmed.

if the extension is busy, the *Camp-on*, *Call Back* or *Message Waiting* feature may be used.

### How To: Call An Extension Using The ICM Key.

ACTION	ACTIVE CALL BOX	COMMENT
1. Lift the handset, and press the [RLS] key.	<div style="border: 1px solid black; padding: 5px;">           Dial:            *&gt;Off Hook&lt;*         </div>	Internal dial tone is heard.
2. Press the [ICM] key.	<div style="border: 1px solid black; padding: 5px;">           Dial:            *&gt;Off Hook&lt;*         </div>	
3. Dial the last 3 digits of the extension number.	<div style="border: 1px solid black; padding: 5px;">           3008 Intercom JULIE            *&gt;Off Hook&lt;*         </div>	The call can be voice announced, or the extension begins to ring, depending on how the extension is programmed.



## PLACING OUTSIDE LINE CALLS

---

**DESCRIPTION:** The operator can place outside line calls.

### PROGRAMMING

**Required:** At least one [LCR] key must be programmed to receive outside line calls. Several [LCR] keys are recommended. The number of [LCR] keys programmed on the extension determines the number of incoming trunk calls that can be active (connected, on hold, etc.) on the terminal.

**Optional:** The *Function* keys on the keyboard can be programmed to access trunk groups. *FNCT keys=Departments* in the *Operator Programming* area of the *System Programming* screen must be programmed N (no). The desired trunk group key must be programmed for the operator's extension on the *Station Programming* screen. The use of these keys requires software version 5.26, or higher.

**Affected By:** *Day and Night Access, Toll Restriction (Day and Night Class), Forced Account Codes, Cost Limit and Total Toll, LCR Class, Prime Line, Hands Free Co, and Out LCR only* on the *Station Programming* screen. When the *Alternate Dialing* option is programmed Y (yes), stations cannot dial access trunks except for those allowed by *Alternate Dialing*.

### How To: Place An Outside Line Call.

---

ACTION	ACTIVE CALL BOX	COMMENT
1. Lift the handset, and press the [RLS] key.	<div style="border: 1px solid black; padding: 5px;">           Dial:     ↻                      *&gt;Off Hook&lt;*         </div>	Dial tone is heard.
2. Press the [OUT] key.	<div style="border: 1px solid black; padding: 5px;">           4024 Outgoing 555-2223                      *&gt;Off Hook&lt;*         </div>	Dial tone is heard. The system selects an idle line in trunk group 1.
3. Dial the desired number.	<div style="border: 1px solid black; padding: 5px;">           4024 Outgoing 5557879                      *&gt;Off Hook&lt;*         </div>	

(Continued on the next page.)

## PLACING OUTSIDE LINE CALLS

### How To: Place An Outside Line Call Using LCR.

ACTION	ACTIVE CALL BOX	COMMENT
1. Lift the handset, and press the [LCR OUT] key.	<pre>LCR Outgoing *&gt;Off Hook&lt;*</pre>	Dial tone is heard.
2. Dial the desired number.	<pre>4015 Outgoing WATS1 *&gt;Off Hook&lt;*</pre>	The system selects an idle line in the least costly trunk group and dials the call.

### How To: Place An Outside Line Call Using The Function Keys.

ACTION	ACTIVE CALL BOX	COMMENT
1. Lift the handset, and press the desired Function key (F1-F10).	<pre>4036 Outgoing GROUP 2 *&gt;Off Hook&lt;*</pre>	Dial tone is heard. The Function keys must be programmed to access outside lines.
2. Dial the desired number.	<pre>4036 Outgoing 5554565 *&gt;Off Hook&lt;*</pre>	

## RECALLS

---

**DESCRIPTION:** Call transferred, placed in orbit, or placed on Hold (by the operator or any other extension) which remain unanswered for a programmed amount of time, automatically recall to the operator.

When a call recalls to the operator, the *Pending* and *Active Call* boxes indicate that the call is a recall and where it is recalling from. The numbers after "Rcl" in the *Pending* box indicate where the call is recalling from. A 3-digit number indicates the last 3 digits of the extension the call is recalling from. A 2-digit number beginning with a 5 (using the default numbering plan) indicates an Orbit recall.

If the system is equipped with more than one operator, recall goes to the operator that transferred the call.

If a station transfers a call to another station, the recall goes to the *Main Operator* (the extension programmed as Operator A on the *System Programming* screen).

## PROGRAMMING

Required: None.

Affected By: The *Hold* and *Transfer Recall* timers on the *Station Programming* screen. The *Orbit Recall* timer on the *System Programming* screen.

### How To: Answer A Recall.

ACTION	ACTIVE CALL BOX	COMMENT				
1. When the terminal rings, lift the handset.	<table border="1"> <tr> <td>4002 Rcl 007</td> <td>00:12</td> </tr> <tr> <td colspan="2">           Idle:            *&gt;Ringing&lt;*&amp;         </td> </tr> </table>	4002 Rcl 007	00:12	Idle: *>Ringing<*&		
4002 Rcl 007	00:12					
Idle: *>Ringing<*&						
2. Press the [FLS] key.	<table border="1"> <tr> <td colspan="2">           4002 Rcl 007                      00:13            *&gt;Off Hook&lt;*&amp;         </td> </tr> </table>	4002 Rcl 007                      00:13 *>Off Hook<*&		The call is connected. Process the call in the desired manner.		
4002 Rcl 007                      00:13 *>Off Hook<*&						

## RING TYPE

---

**DESCRIPTION:** The *Ring type* feature allows the operator's position to be programmed for one of eleven different tones for station ringing. The *Ring type* may be programmed on the *Station Programming* screen, or can be changed at the operator's position by dialing an access code.

### PROGRAMMING

Required: None.

Optional: The *Ring type* may be programmed on the *Station Programming* screen.

### How To: Change The Ring Type.

ACTION	RESULT	COMMENT
1. Lift the handset and press the [RLS] key.	Internal dial tone is heard.	
2. Dial [7][0] on the dial pad.	Dial tone stops.	
3. Dial a digit [1] through [0] and [*] on the dial pad. (each digit represents a different ring tone.)	A steady tone is heard in the handset.	The steady tone represents the tone you have chosen to ring at your extension when you get a call.
4. Continue pressing the digits on the dial pad until the desired tone is heard.		
5. Dial [#] on the dial pad.	The system uses this tone to ring the operator position.	

## SECOND VOICE PATH

---

**DESCRIPTION:** If the system is equipped with 29-key display telephones, there is a feature which allows you to call a display phone when the telephone is busy. This feature is called *Second Voice Path*. The display telephone user must be using the handset in order to use this feature. If the display telephone is being used hands free, it cannot be called using the second voice path. If the display telephone is using the *Data* feature, it cannot be called using the second voice path.

### PROGRAMMING

**Required:** The called station must be programmed to allow second path calls on the *Station Programming* screen.

**Affected By:** *Auto 2nd Path* on the *Station Programming* screen.

### How To: Announce A Call Using Second Voice Path.

---

ACTION	ACTIVE CALL BOX	COMMENT
1. If a busy signal is reached when transferring a call to a display telephone, dial [3].	<div style="border: 1px solid black; padding: 5px;"> <p>4002 Transfer</p> <p style="text-align: center;">*&gt;Off Hook&lt;*</p> </div>	Announce the call. The display phone user can answer back. If a busy signal is still heard, the telephone is being used hands free, and cannot be called with the second voice path.
2. Press the [RLS] key.	<div style="border: 1px solid black; padding: 5px;"> <p>Idle:</p> </div>	The call is transferred.

*(Continued on the next page.)*

## SECOND VOICE PATH

---

### How To: Call An Extension Using Second Voice Path.

---

ACTION	ACTIVE CALL BOX	COMMENT
1. Lift the handset, and press the [RLS] key.	<div style="border: 1px solid black; padding: 5px;">           Dial:            *&gt;Off Hook&lt;*         </div>	Internal dial tone is heard.
2. Dial the 4-digit extension number of the busy extension.	<div style="border: 1px solid black; padding: 5px;">           Dial:3007            *&gt;Off Hook&lt;*         </div>	Busy tone is heard. Do not use the [ICM] key for this feature.
3. Dial [3].	<div style="border: 1px solid black; padding: 5px;">           Dial:30073            *&gt;Off Hook&lt;*         </div>	Talk to the station user. If a busy signal is still heard, the telephone is being used hands free, and cannot be called with the second voice path.

## SYSTEM PROGRAMMING

---

DESCRIPTION: The operator's terminal can be used to access system programming.

### PROGRAMMING

Required: None.

Affected By: The *Access Level* programming screen.

#### How To: Enter System Programming.

ACTION	RESULT	COMMENT
1. While the operator's position is idle, press [CONTROL] and [P] at the same time.	The operator screen disappears, and the system prompts for a password.	Access to system programming is protected by eight levels of password.
2. Enter the designated password, and press the [RETURN] key.	The Main Menu appears.	Program the system as required.

#### How To: Exit System Programming.

ACTION	RESULT	COMMENT
1. After all desired programming is completed, press the [E] key.	The operator screen appears.	⊙

## SYSTEM SPEED DIAL

---

**DESCRIPTION:** The system is capable of storing 999 System Speed Dial numbers with a maximum of 11 digits for each number. These System Speed Dial numbers must be programmed from an Operator's extension. Any telephone number which is frequently dialed by all extensions users in the system, can be programmed by the Operator to provide System Speed Dial as a time saving feature for all extension users.

*System Speed Dial* numbers are not subject to a station's toll restriction. Therefore, dialing *System Speed Dial Numbers* cannot be prevented by using any of the *Forced Account Code* features.

### PROGRAMMING

**Required:** At least one [LCR] key must be programmed to receive outside line calls. Several [LCR] keys are recommended. The number of [LCR] keys programmed on the extension determines the number of incoming trunk calls that can be active (connected, on hold, etc.) on the terminal.

**Optional:** A [SYSTEM SPEED] key may be programmed on the Functions keys. The use of these keys requires software version 5.26, or higher. *FNCT keys=Departments* in the *Operator Programming* area of the *System Programming* screen must be programmed N (no). The desired [SYSTEM SPEED] key (key code 700) with a sub-code 1 through 200 must be programmed for the operator's extension on the *Station Programming* screen. Key codes 7000-7999 cannot be used.

**Affected By:** See Placing Outside Line Calls.

### How To: Program System Speed Dial Numbers.

ACTION	ACTIVE CALL BOX	COMMENT
1. Without lifting the handset, or pressing the [RLS] key, press the [PGM] key.	<div style="border: 1px solid black; padding: 5px;">                     Prog:                 </div>	
2. Press [*] plus desired bin number (001-999) on dial pad.	<div style="border: 1px solid black; padding: 5px;">                     Prog:*001                 </div>	

(Continued on the next page.)



## SYSTEM SPEED DIAL

### How To: Program System Speed Dial Numbers, continued.

ACTION	ACTIVE CALL BOX	COMMENT
3. Dial desired telephone number up to 11 digits (pauses count as one digit).	<pre>Prog: *00112125552342</pre>	Number to be stored can have a maximum of 11 digits. To enter a pause between digits, press [*][1]. Automatic pauses which wait for dial tone are set by pressing [*][4].
4. Press [PGM] key.	<pre>Idle:</pre>	Programming ends. Repeat for as many bins as desired.

### How To: Use System Speed Dial.

ACTION	ACTIVE CALL BOX	COMMENT
1. Lift the handset, and press the [OUT] key.	<pre>4024 Outgoing 555-2223 *&gt;Off Hook&lt;*</pre>	Dial tone is heard. The system selects an idle line in trunk group 1.
2. Press [PROG] key.	<pre>4024 Outgoing 555-2223 *&gt;Off Hook&lt;*</pre>	
3. Dial [*] on the dial pad.	<pre>4024 Outgoing * *&gt;Off Hook&lt;*</pre>	This is the command for System Speed Dial.
4. Dial assigned bin number 001-999.	<pre>4024 Outgoing *001 *&gt;Off Hook&lt;*</pre>	The system dials the number stored.

(Continued on the next page.)

## SYSTEM SPEED DIAL

---

How To: *Use A Function Key Programmed As A SYSTEM SPEED DIAL Key.*

---

ACTION	RESULT	COMMENT
1. Lift the handset, and press the [OUT] key.	<div style="border: 1px solid black; padding: 5px; text-align: center;">           4024 Outgoing 555-2223            *&gt;Off Hook&lt;*         </div>	Dial tone is heard. The system selects an idle line in trunk group 1.
2. Press the desired Function key (F1-F10).	<div style="border: 1px solid black; padding: 5px; text-align: center;">           4024 Outgoing 555-2223            *&gt;Off Hook&lt;*         </div>	The system dials the number stored.

## TAGGING A CALL

---

**DESCRIPTION:** Any incoming call which is transferred to an extension is automatically "tagged" with the name assigned to that extension in the *Directory*. The call will remain tagged with that name as it moves through the system unless it is re-tagged.

A call may be re-tagged by manually typing in a name on the operator's keyboard while the call is in the *Active Call* box. This feature is applicable when the operator places the call on Hold, or places the call in orbit. A transferred call is always tagged with the name in the *Directory* of the extension. This permits the operator to keep track of the calling party's name while the person the call is for is located.

### PROGRAMMING

Required: None.

### How To: Tag A Call.

ACTION	ACTIVE CALL BOX	COMMENT
1. While a call is in the <i>Active Call</i> box, type the name up to 10 characters.	<pre> 4001 New Call ADAMS    00:15       *&gt;Off Hook&lt;*</pre>	
2. Press the [HCLD] key, or the [ORBIT] key as needed.	<pre> 4001 New Call ADAMS    00:15       *&gt;Off Hook&lt;*</pre>	The call appears in the <i>Calls In Progress</i> box with the desired "tag".

## VOLUME CONTROL

---

DESCRIPTION: The volume can be adjusted on the following functions:

1. CO calls.
2. Internal calls.
3. Page volume.
4. CO line ringing volume.
5. Internal ringing volume.
6. Background music volume.

## PROGRAMMING

Required: None.

How To: Use The Volume ↑ Key.

ACTION	RESULT	COMMENT
1. With the phone using the desired function, press the Volume ↑ key.	The volume of the desired function increases.	By continually pressing the volume ↑ key, this feature allows the user degrees of volume to choose from MIN to MAX.

How To: Use The Volume ↓ Key.

ACTION	RESULT	COMMENT
1. With the phone using the desired function, press the Volume ↓ key.		

# Section 5

## Programming Information

### 5.1 INTRODUCTION

The ISOETEC® System/228 Telephone System is a stored program switching system. The operating system is stored in EPROM and configuration information is stored in battery backed RAM.

The CPU controlled system is designed to provide on-site, or remote, programming capability for system features. The menu-driven program allows each system to be customized for individual customer requirements through an external CRT and keyboard. The CRT/keyboard programming package should be ordered from ISOETEC to maintain system compatibility. The system is also equipped with a built-in MODEM to provide off-site programming and maintenance capabilities. Any function that can be accomplished by the on-site programming terminals can be accomplished remotely through the MODEM.

### 5.2 CONNECTING THE PROGRAMMING TERMINAL

System programming can be accomplished from any one of the input/output ports, including the port used as the operator position. Programming is accomplished by means of programming screens and screen graphics. Four types of terminals are supported. These are:

1. ISOETEC (The ISOETEC terminal and the ISOETEC Integrated terminal are supported with this terminal type).
2. QUME (109)
3. IBM/compatible
4. Wyse (WYSE 50, NOT the ISOETEC Integrated terminal).

Connect the terminal to one of the input/output ports using the wiring instructions found in Section 3 of this manual. The default baud rate for the ports is 9600 baud.

### 5.3 ACCESSING THE PROGRAMMING SCREENS

Once the programming terminal has been connected, the programming screens may be accessed. Begin by:

1. Press the ESCAPE key.

The system will prompt for a password. Access to the programming screens is protected by eight levels of passwords. Each level of password progressively allows more access to programming. Thus, an operator may be provided with a password to level one to access programming of the directory information, but prevented from making any changes to system programming. Level EIGHT allows the most access, and is used for all programming and maintenance functions.

2. Enter the password of the level to be accessed.
3. Press the RETURN key. If the correct password has been entered, the main menu will appear.
4. Enter the letter corresponding to the screen for the function to be performed. For example, to move to the station programming screen, press the A key.

To return to the main menu from any programming screen, press the ESCAPE key.

```

Welcome to the System 228 (C) 1986 ISOETEC Communications Inc.
Version: V5.52      10/23/89
Options: DCM3 LCR DirDl Mod Att
System is IDLE Thu 03-30-89  1:10 pm
Access Level = 08  Port = 02
Select one of the following:      <Esc> ... Display this menu

A .. Station Programming | J .. PBX Key Progr. | S .. LCR Tester
B .. System Programming | K .. Change Password | T .. Data Menu
C .. System Status Monitor | L .. LCR Programming | U .. Data Status
D .. BACKUP Program Memory | M .. System Options | V .. Call Accounting
E .. Exit Main Menu | N .. Trunk Group Progr. | W .. Toll Restriction
F .. System Configuration | O .. Directory | X .. Access Levels
G .. Forwarding, VMS Plans | P .. Account Codes | Y .. Digit Translation
H .. | Q .. ACD Programming | Z .. Auto Attendant
I .. Line Maintenance | R .. Reports |

USE THE FOLLOWING SELECTIONS WITH CARE!:
Control-A ... Select Terminal Type |
Control-C ... Diagnostics |

Control-F ... Default & RESET
Control-G ... RESET

Enter Letter or Control character >
    
```

Figure 5-1 Main Menu

The upper right corner of the *main menu* lists which options are installed in the system. The following abbreviations are used to indicate the installed options:

- DCM0 - The standard Data Control Module is installed.
- DCM1 - The standard Data Control Module is installed.
- DCM3 - The LSI version of the Data Control Module is installed.
- LCR - Least Cost Routing is installed.
- Mod - Memory Module III is installed.
- CA1 - Call Accounting Reports Option I is installed.
- CA2 - Call Accounting Reports Option II is installed (cannot be installed with ACD).
- ACD0 - Basic ACD is installed.
- ACD1 - Dynamic ACD is installed.
- ACD2 - Advanced ACD is installed.
- ACD3 - Custom ACD is installed.
- Att - Automated Attendant is installed.
- Dir - Dial By Name
- Sil - Silent Monitor
- VMS - Voice Message System integration

## 5.4 PASSWORD – ACCESS LEVEL PROGRAMMING

Access to the various programming screens of the ISOETEC System/228 is controlled by 8 programmable passwords. Software versions 2.00 and above have an enhancement that allows the programmer to define which passwords allow access to the different programming screens. This definition is accomplished on the *Access Levels – X* programming screen. The *Access Levels* programming screen itself can only be programmed from access level 8. The password protection scheme is arranged such that any screen that can be accessed by a particular level password can also be accessed by passwords accessing higher levels. For example, if the *Station Programming* screen is only to be accessed by a programmer using access level 6, it can also be accessed by a programmer using access levels 7 or 8.

### 5.4.1 WHAT TO PROGRAM

The *Access Levels* programming and default access levels are listed below. The screen is divided into 4 major areas:

1. Access programming for the *System* menus
2. Access programming for the *Reports* menus
3. Access programming for *Call Accounting Reports Option* menus
4. Access programming for the *ACD* menus.

Each major area lists the screens associated with it and the access level required to reach it. The access level for each screen can be changed to suit the requirements of the individual installation.

Access Levels Programming						
-----						
System						
Menu Level	Menu Level	Menu Level	Menu Level	Menu Level	Menu Level	Menu Level
A 5	B 5	C 0	D 8	F 8	G 6	
H 0	I 5	J 5	L 6	M 6	N 5	
O 1	P 7	Q 3	R 1	S 0	T 7	
U 5	V 3	W 7	Y 7	Z 0		
CTR/A 0	CTR/C 5	CTR/F 8	CTR/G 8			
-----						
Reports			Call Accounting			
Print 1	Clear 7		Select 7	Print 1	Clear 7	
-----						
ACD	Menu Level	Menu Level	Menu Level	Menu Level	Menu Level	Menu Level
	A 7	B 7	C 5	D 5	E 3	F 3
	G 3	H 3	I 3	J 3	K 3	L 7
	M 7	N 5	O 7	P 3		
	CTR/F 8					
-----						
Reports						
	Print 1	Define 7				
-----						

Figure 5-2 Access Level Programming Screen

## 5.4.2 HOW TO PROGRAM

The *Access Levels - X* programming screen can only be reached when using the password assigned to access level 8 (the manager's password).

If not already on the *Access Levels* programming screen, from the main programming menu, press the X key on the keyboard. The *Access Levels* programming screen appears with the cursor at the access level for the *A - Station Programming* screen.

1. Enter the number of the access level desired for the "A" programming screen.
2. Press the RETURN key.
3. Press the RETURN key a second time to move the cursor to the next entry position.
4. Continue entering the access levels for the different programming screens pressing the RETURN key after each entry.

The RETURN key is used to advance the cursor to the next entry to be made. The directional arrow keys (up, down, left, and right) can also be used to move the cursor to the desired Menu letter.

*NOTE: When upgrading an ISOETEC System/228 that was programmed with a previously released software version, the Access Levels programming screen may contain random information. This random information must be cleared before attempting access to the different programming screens. To clear the information, just enter an appropriate access level for every programming screen.*

If the system is defaulted, the *Access Levels* programming screen assumes the levels described previously.

## 5.5 CHANGING PASSWORDS

### 5.5.1 INTRODUCTION

Access to the various programming screens of the ISOETEC System/228 is controlled by eight programmable passwords. In previous software versions, each password could only be changed from within its own access level. Software versions 2.00 and above change this scheme such that all passwords must be changed at access level 8. The password to access level 8 must be known to change passwords.

### 5.5.2 DEFAULT PASSWORDS

The default passwords for each level of system access are:

	Password
Access level 1	LEVEL1
Access level 2	LEVEL2
Access level 3	LEVEL3
Access level 4	LEVEL4
Access level 5	LEVEL5
Access level 6	LEVEL6
Access level 7	LEVEL7
Access level 8	LEVEL8



### 5.5.3 HOW TO CHANGE PASSWORDS

Enter system programming by typing the level 8 password at the "ENTER PASSWORD >" prompt and press the RETURN key. The programming main menu appears.

1. Press the K key on the keyboard. The system prompts for the manager's password. The manager's password is the password to access level 8.
2. Enter the level 8 password, and press the RETURN key. The "Password Definition" screen appears.
3. Using the RETURN key, or the UP and DOWN arrow keys, move the cursor to the password to be changed.
4. Enter the new password. The screen will not echo the characters typed.

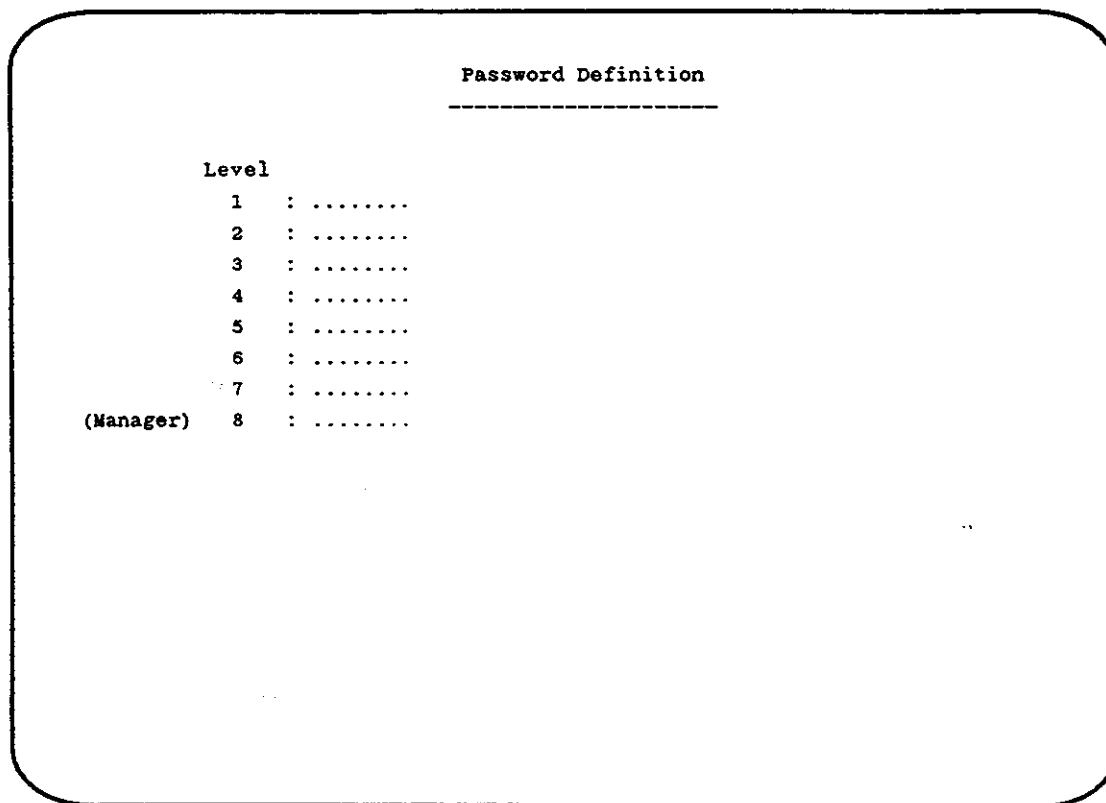


Figure 5-3 Password Definition Screen

5. Press the RETURN key. The system prompts for the password again for verification.
6. Enter the new password again exactly as before.
7. Press the RETURN key. If the two entries agree, the screen displays "Password was changed." If the two entries do not agree, the screen displays "Password was NOT changed."
8. Press the ESCAPE key to leave the programming screen and return to the main menu.

## 5.6 PREVIOUS SOFTWARE VERSIONS

Software versions 2.00 and above enhanced the password protection scheme found in previous software versions. The two major changes were to the password access levels, and the method used to change passwords.

### 5.6.1 PASSWORD ACCESS LEVELS

In software versions prior to version 2.00, the screens which could be accessed by the different passwords were fixed. The following table (Table 5-1) describes which password access level could reach the programming screens.

Table 5-1 Previous Password Access Levels

A 'Y' indicates that the programming screen is allowed to be accessed.		PROGRAM ACCESS LEVEL							
		1	2	3	4	5	6	7	8
A	STATION PROGRAMMING						Y	Y	Y
B	SYSTEM PROGRAMMING							Y	Y
C	STATUS MONITOR	Y	Y	Y	Y	Y	Y	Y	Y
D	BACKUP MEMORY						Y	Y	Y
F	CONIFGURATION							Y	Y
G	VMS					Y	Y	Y	Y
H									
I	LINE MAINTENANCE	Y	Y	Y	Y	Y	Y	Y	Y
J	PBX KEYS						Y	Y	Y
K	PASSWORD	Y	Y	Y	Y	Y	Y	Y	Y
L	LCR						Y	Y	Y
M	OPTIONS							Y	Y
N	TRUNK PROGRAMMING								Y
O	DIRECTORY	Y	Y	Y	Y	Y	Y	Y	Y
P	ACCOUNT CODES	Y	Y	Y	Y	Y	Y	Y	Y
Q	ACD								Y
R	REPORTS	Y	Y	Y	Y	Y	Y	Y	Y
S	LCR TESTER	Y	Y	Y	Y	Y	Y	Y	Y
T	DATA MENU	Y	Y	Y	Y	Y	Y	Y	Y
U	DATA STATUS MENU	Y	Y	Y	Y	Y	Y	Y	Y
V	CALL ACCOUNTING								Y
W	TOLL RESTRICTION						Y	Y	Y
X									
Y	DID PROGRAMMING								Y
Z									
CTL C	DIAGNOSTICS								Y
CTL G	RESET								Y
CTL F	DEFAULT								Y

## 5.6.2 CHANGING PASSWORDS

In software versions prior to version 2.00, each level of programming had its own password. Each password was changed while in that level of programming. To change a password:

1. Enter the level of programming for the password to be changed using the directions in ACCESSING PROGRAMMING (the previous section).
2. From the main menu, press K on the keyboard. The password change menu will appear.
3. Enter the present password.
4. Press the RETURN key.
5. Enter the NEW password.
6. Press the RETURN key.
7. If the new password is entered correctly, press the Y key at the prompt for OK (Y/N)?
8. Press the RETURN key. The password is now changed.

Repeat the above procedure for all levels of programming which are to have the password changed.

Proceed with programming the system configuration.



# Section 6

## Port Configuration Programming

### 6.1 INTRODUCTION

The first step in programming the system is to assign extension numbers for stations and line numbers for CO lines to the ports. When the system is defaulted, any port cards that are installed in the system are recognized and assigned extension numbers in the case of station port cards or line numbers in the case of CO line port cards.

The *System Configuration* programming screen (F screen) is used to assign extension and line numbers to the system's ports. The valid extension numbers in the system are 3001-3999. The leading digit can also be changed using the *Intercom Dialing Translation* programming screen.

### 6.2 ACCESSING THE SYSTEM CONFIGURATION SCREEN

The *System Configuration* programming screen (the F screen) is accessed by pressing F on the keyboard from the main menu. The ESCAPE key may be pressed while in any other programming screen to reach the main menu. If there is any problem reaching the main menu, or the F screen, refer to the section titled *ACCESSING THE PROGRAMMING SCREENS* in Section 5 - *Programming Introduction*.

### 6.3 WHAT TO PROGRAM

#### 6.3.1 EXTENSION NUMBERS

Stations are given 4 digit extension numbers beginning with the leading digit programmed on the *Intercom Dialing* programming screen plus 001 through 999. Any port may be assigned any extension number within this range. CO lines are assigned line numbers in the same manner beginning with line 1 and proceeding for as many lines as the system is equipped for up to 228.

#### 6.3.2 CONFIGURATION PLANNING

Before attempting to program the system configuration, it is advisable to plan which extension numbers are to be assigned to which ports. However, it is easier to allow the system to configure the ports by using the default assignments. Enter the extension number assigned to each port in the space provided for station ports on the *System Configuration* programming screen. Enter the line number for CO lines in the space provided on the *System Configuration* programming screen.

### 6.4 HOW TO PROGRAM SYSTEM CONFIGURATION

From the main programming menu:

1. Press F on the keyboard. The *System Configuration* screen will appear.
2. Enter the first extension number (or line number) for the first port.
3. Press the RETURN key.
4. Press RETURN key to advance to the next port. (The arrow keys can also be used to move around the screen.)

5. Continue entering extension numbers (or line numbers) in each port.
6. Press the RETURN key after each entry.
7. Continue programming each port.

The arrow keys may also be used to move around the programming screen.

*NOTE: An extension number cannot appear more than once in the system configuration screen. If the extension number (or line number) to be programmed already appears on the screen, it must be deleted from the old port before being programmed to the new port.*

## **6.5 DELETE PORT ASSIGNMENTS**

To delete an existing port assignment from the configuration screen, move the cursor to the extension number/line number to be removed using the RETURN and TAB keys. Press the C key on the keyboard.

*NOTE: Deleting a port assignment will reset the extension/line. Do not delete a port assignment while the extension/line is in use unless it is intended that the call be cut-off.*

## **6.6 RESET PORT**

When R is entered, this will reset the port that the cursor is on without clearing the port.

## **6.7 DEFAULT CONFIGURATION**

Default Configuration is a two key procedure which will default only the system configuration (not the entire system). Press the F key, the cursor will jump to the Default Configuration question mark. To default, the user must press the Y key for Yes. If any other character is pressed, the default will be aborted. The default configuration scans and re-assigns station & CO numbers (to what has been plugged in) as if the system was defaulted.

## **6.8 ADDING PORT CARDS**

Port cards may be added to the system at any time. After the card is installed, the ports on the card may be installed in one of two ways. Each individual extension/line number may be entered, or the A key on the keyboard may be pressed. The A key will automatically configure the ports on the card with the first available extension/line numbers. Ports already configured will not be affected.

Proceed with programming the remainder of the system.

## **6.9 EXCHANGING PORT CARDS**

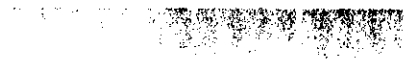
When a port card is installed in the system, the system retains the type of card it is in memory. This information (card type) is retained even if the card is removed. Another type of card **MUST NOT** be installed in this slot until the type of card information is cleared from memory. To accomplish this, delete each port assignment on the card from the *System Configuration* programming screen **BEFORE** removing the card. A different type of card may then be safely installed.

System Configuration   A = Auto Config. C = Clear Port F = Default Config.														
R = Reset Port														
card	port	+	01	02	03	04	05	06	07	08	09	10	11	12
01	Stn	001	3001	3002	3003	3004	3005	3006	3007	3008	3009	3010	3011	3012
02	Stn	013	3013	3014	3015	3016	3017	3018	3019	3020	3021	3022	3023	3024
03	Rec	025	3025	3026	3027	3028	3029	3030	DTMF	DTMF	DTMF	DTMF	DTMF	DTMF
04	CO	037	1	2	3	4	5	6	7	8	9	10	11	12
05	GS	049	13	14	15	16	17	18	19	20	21	22	23	24
06	CO	061	25	26	27	28	29	30	31	32	33	34	35	36
07	DID	073	37	38	39	40	41	42	43	44	45	46	47	48
08	Tie	085	3031	3032	3033	3034	3035	3036	49	50	51	52		
09	---	097												
10	---	109												
11	---	121												
12	---	133												
13	---	145												
14	---	157												
15	---	169												
16	---	181												
17	---	193												
18	---	205												
19	---	217												

Figure 6-1 System Configuration Programming Screen

- Card Type:
- Stn - Station port
  - CO - CO port
  - Tie - Tie Line port
  - GS - Loop/Ground Start port
  - Rec - DTMF Receiver port
  - DID - Direct Inward Dial port

FA(D) -





# Section 7

## System Programming

### 7.1 INTRODUCTION

The *System Programming* screen is used to program the following areas into the system configuration:

#### 7.1.1 OPERATOR PROGRAMMING

Operator programming consists of which station ports are being used as operator stations and which input/output ports are being used to connect the operator terminals to the system. This information is programmed in the area labeled *Operators Programming*.

The system can support Integrated and non-Integrated Operator Terminals at the same time. The options on the *System Options* programming screen that effected the Operator have been moved to the *Operator Programming* area on the *System Programming* screen. These options are: *Integrated CRT*, *Allow Conference*, and *Page All Zones*. Options which effect the function keys and Extension Status Display (described in this section) are also located in the *Operator Programming* area of the *System Programming* screen.

#### 7.1.2 CO LINE PARAMETERS

Information regarding the CO lines' parameters (signaling type, recall timers, etc.) is programmed in the areas labeled *Ring*, *Lines*, and *ID Number*.

#### 7.1.3 EXTERNAL PAGE PROGRAMMING

Each external page path is programmed with a corresponding dial access code. Day and Night line ringing assignments for the external page are programmed in this area. This information is programmed in the area labeled *External Zone*.

#### 7.1.4 INPUT/OUTPUT PORT PROGRAMMING

The Input/Output ports' parameters are programmed in this area. The use of the port (programming, operator, or SMDR), baud rate, and handshaking protocol are configured in the area labeled *Port*.

#### 7.1.5 TIME/DATE INFORMATION

The current time and date for the system is programmed in the area labeled *Time*.

#### 7.1.6 MUSIC SOURCE

The backplane has two connections for the input of music. These are labeled BGM for the background music source (source 2), and MOH for the music on hold source (source 1). However, one source may be used for both background music and music on hold. This is accomplished with the *Music* area of the *System Programming* screen. The source port for either the background music and/or music on hold can be changed through programming.

*NOTE: The use of a radio broadcast, or pre-recorded music, for Music On Hold could be perceived as a violation of copyright laws.*

#### 7.1.7 VARIOUS

This programming area contains miscellaneous system parameters. There are 2 parameters that effect SMDR, a parameter for DID programming, a timer used with ground start trunks, and a timer used to limit the amount of time two trunks are patched together.

### 7.1.8 SYSTEM RESET

The system normally performs a reset after three continuous hours of idle time. A timer has been added on the *System Programming* screen to force the system to reset at a given hour in addition to the three hour idle time reset.

Each area of programming is discussed separately. Please read each section discussing what should be programmed in each area and fill out the configuration sheets before attempting to program the system.

## 7.2 ACCESSING THE SYSTEM PROGRAMMING SCREEN

The *System Programming* screen (the B screen) is accessed by pressing B on the keyboard from the main menu. The ESCAPE key may be pressed while in any other programming screen to reach the main menu. If there is any problem reaching the main menu, or the B screen, refer to the section titled *ACCESSING THE PROGRAMMING SCREENS* in Section 5 – *Programming Introduction*.

```

                                System Programming
-----
[T]ime 12:32 pm  Fri 09-08-89 |[O]perators Programming
-----
[R]ing Low  = 010 PPS  = 010 |
    Ring High = 050 Ratio = 060 |
-----
[L]ine 001  port 013  Name | [E]xternal Zone 01 Page 00
Line Type = 000  DTMF Y  SMDR Enable Y | ID Number 001 Day N Night N
ID Number = 001 | Ground Start N
Public N | TIE/DID N MOH N | [P]ort 01* Installd Y
-----
[A] ID Number 001 | Speed = 9600 Protocol = X_ON
ID Class = 00 ACD Day Group = 01 | Printer 0 Computer Port N Type 000
Trunk Group = 01 Priority = 1 | SMDR N Incom Y Local Y Long Dist Y
Hunt Group = 00 ACD Night Group = 00 | ACD SMDR N Incom N Outg N Remote N
Drop Pulse = 014 Priority = 1 |
Pause Time = 005s | [M]usic Source MOH 1 BGM 1
Flash Time = 025*50ms | [S]ystem will reset N at 00:00
Orbit Recall=006*10s | [V]arious: Divert limit 15 min
| Cost After = 001 DID Digits 3
| Local Call Cost Limit = $0.00
| Ground Start Timer = 008*50ms
-----

```

Figure 7-1 System Programming Screen

## 7.3 OPERATOR PROGRAMMING

The System/228 can be equipped with up to four Operator (Attendant) positions. Each of the operator positions can be equipped with a telephone, a telephone and a CRT terminal (non-Integrated), or an Integrated Operator Terminal. The system can support both Integrated and non-Integrated Operator Terminals at the same time.

After reviewing this section, and discussion with the customer, determine how each Operator position is to be equipped, and fill in the Operator section of the System Programming Configuration sheet for each of the Operator positions.

```

Operator Programming |
-----
Operator A Extension 3001 Port 3 Integrated CRT Y FNCT keys=Departments N
                Display Extn Names Y Allow Conference Y Page All Zones N
-----

```

Figure 7-2 Operators Programming Sreen

### 7.3.1 WHAT TO PROGRAM

The *Operator Programming* screen is used to program which of the system's extensions are serving as operator positions, and several options which effect the operation of these positions.

- |                  |  |
|------------------|--|
| <b>Operator</b>  | This field indicates which of the four positions is being programmed. The positions are labeled A through D. Operator A is the main operator.  |
| <b>Extension</b> | The extension number of this operator position is entered here.  |
| <b>Port</b>      | If the operator position is to use a CRT, the <i>Input/Output Port</i> the terminal is connected to is entered. There are four I/O ports the terminal can be connected to on the MDF (ports 1-4). The use of the LSI Data Control Module in place of the DCM adds six additional I/O ports to the system. Ports 5 through 8 can be used to support an Operator terminal. |

Integrated CRT

If an Integrated Operator terminal is used with this Operator position, this must be programmed Y (yes). If the Operator position is equipped with a telephone, or a telephone and a CRT terminal (non-Integrated), this must be programmed N (no).

FNCT keys=  
Departments

There are 10 function keys located at the top of keyboard of an Integrated Operator terminal. These keys are labeled F1 through F10. Depending upon the programming of *FNCT keys=Departments* these keys have one of two uses. The keys can be used in conjunction with the *Directory* to transfer calls to individuals by department. The key labeled F1 is for department 1, F2 is for department 2, etc. See the section titled *Directory* for more information on department numbers. To use the 10 function keys for departments, program *FNCT keys=Departments* Y (yes).

Instead of department keys, these keys can be programmed as certain feature keys. The use of these keys as feature keys requires software version 5.26, or higher. To use the 10 function keys for feature keys, program *FNCT keys=Departments* N (no). However, there are certain feature keys which cannot be used on the function keys of the Integrated Operator Terminal. These feature keys are listed below:

Silent Monitor (and Remote Silent Monitor)  
Night Key  
In/Out Key  
Data Key  
ACD Log On Key  
Station Speed Dial Key  
Direct Appearances for a Tie Line

When the function keys are used as feature keys, they are programmed via the *Station Programming* screen using the same key codes that the stations use. Below are the keys that require programming for the corresponding function keys:

Key 13 is Function Key 1  
Key 14 is Function Key 2  
Key 15 is Function Key 3  
Key 16 is Function Key 4  
Key 17 is Function Key 5  
Key 18 is Function Key 6  
Key 19 is Function Key 7  
Key 20 is Function Key 8  
Key 21 is Function Key 9  
Key 22 is Function Key 10

*NOTE: It is important to zero out the unused keys that correspond to function keys. If they were accidentally pressed during operation, it may effect call processing.*

*The function keys on the Operator Terminal are not equipped with LEDs like the feature keys of a telephone. The features that would normally light an LED on a telephone (for example MUTE), will not give a visual indication on the Operator Terminal.*

**Display Extension Names**

The upper section of the Integrated Operator Terminal, the *Extension Status Screen*, lists the installed extensions in the telephone system, and shows each extension's status - Idle, Busy, Ringing, Do Not Disturb, or Forwarded. Depending upon the programming of *Display Extension Names*, the *Extension Status Screen* can appear in one of two ways. The screen can display the status of the first 160 extensions in the system, or the screen can display the first 60 extensions in the system, along with the names programmed in the *Directory* for those extension numbers.

To display the first 160 extension numbers, program *Display Extension Names N* (no). To display the first 60 extension numbers with the associated names, program *Display Extension Names Y* (yes).

**Allow Conference**

The operator is normally prevented from establishing a conference call. To enable the operator to establish a conference call, set this option to Y (yes).

**Page All Zones**

The PAGE key on the Integrated Operator Terminal can function in one of two ways. The PAGE key can either be used as a one key access to PAGE ALL ZONES when the option is set to N (no). Or, the key can be used with the addition of a single digit on the dial pad to page any one of the 10 zones when the option is set to Y (yes).

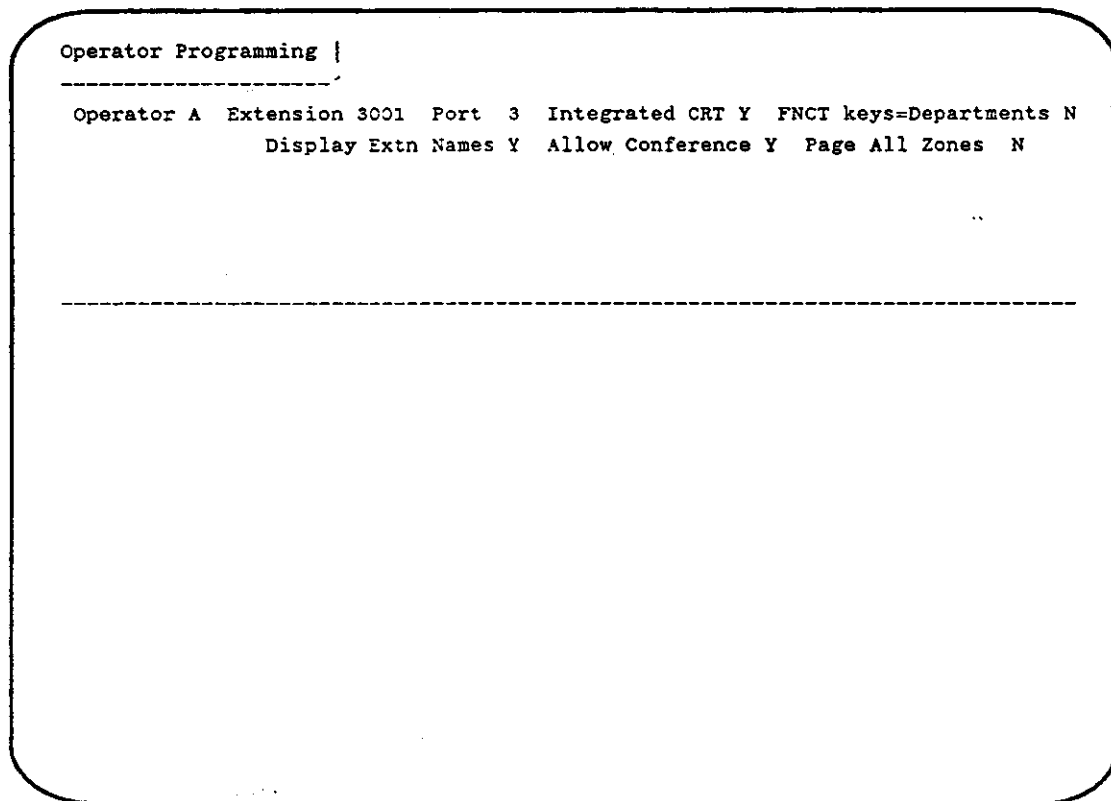


Figure 7-3 Operators Programming Screen

### 7.3.2 DEFAULT VALUES

The Operator Programming screen defaults to the following values:

Operator	A	Operator	B, C, and D
Extension	3001	Extension	****
Port	3	Port	*
Integrated CRT	N	Integrated CRT	N
FNCT keys=Departments	N	FNCT keys=Departments	N
Display Extn Names	N	Display Extn Names	N
Allow Conference	N	Allow Conference	N
Page All Zones	Y	Page All Zones	Y

### 7.3.3 HOW TO PROGRAM

If not already in the *System Programming* screen, from the *Main Menu*, press the B key.

1. Press the O key. The cursor moves to the *Operator Programming* area.
2. Enter the extension number of Operator A, and press the RETURN key.
3. Press the RETURN key again. The cursor moves to *Port*.
4. Enter the I/O port number of Operator A, and press the RETURN key.
5. Press the RETURN key again. The cursor moves to *Integrated CRT*.
6. If Operator A is an Integrated Operator terminal, press Y. Otherwise, leave *Integrated CRT* programmed N (no).
7. Press the RETURN key. Program the remaining options, Y (yes) or N (no), as desired using the RETURN key to move to each option.

The remaining operator positions are programmed in a similar manner. The I and D keys are used to increment and decrement the Operator A through D.

To remove the extension number programming for a particular operator, move the cursor to the extension number, and press the N key. Both the *Extension number* and *Port* programming will be removed.

## 7.4 CO LINE PROGRAMMING

### 7.4.1 WHAT TO PROGRAM

CO lines have several different parameters that must be programmed. Each line in the system can be assigned a name to aid in identification. This name will appear on the operator terminal and display telephones whenever the line is used. The name is programmed in the *Line* area.

The first thing to program for CO lines is the line type.

- 000 Standard CO lines such as FX, WATS, and DDD lines, etc.
- 012 This line type is used when the line is connected to a PBX extension (or Centrex). This line type prevents the transmitter of the telephone from being muted when the line is flashed.
- 020 Lines that are allowed to be accessed when the *LCR OUT ONLY* option is set.
- 100 Supervised DISA lines.
- 101 Supervised DISA lines only when the system is in the NIGHT mode.
- 200 Unsupervised DISA lines.
- 201 Unsupervised DISA lines only when the system is in the NIGHT mode.
- 250 Used to dedicate a trunk for the system MODEM.
- 251 Access to the MODEM only when the system is in NIGHT mode.

The following line types are used for tie lines:

- 001 Wink start, return supervision on answer.  
*Note: A line type of 001 is used for tie lines that are part of the Transparent Intercom Dialing scheme.*
- 002 Wink start, return supervision on ring.
- 003 Return supervision on answer.
- 004 Return supervision on ring.

The next thing to be considered is the dial signaling. CO lines can be provided with either pulse signaling, also called rotary, and DTMF signaling, also called tone dialing. If a line is to use DTMF signaling, the DTMF parameter should be programmed for Y (yes).

If SMDR (Station Message Detail Recording) information is to be collected for this line, the SMDR parameter should be programmed to Y (yes).

If the trunk line being programmed is a ground start trunk, the GROUND START parameter must be set to Y (yes), otherwise it is left programmed N (no). Ground start trunks require the use of the Loop/ Ground Trunk port card (p/n 15620) and not the COI port card (p/n 15600).

*NOTE: If ground start trunks are being used in the system, the FULL DROP parameter on the System Options programming screen must be programmed Y (yes).*

## System Programming

The PUBLIC parameter allows trunk lines programmed as direct appearance keys on stations to be accessed even if there is a call in progress on these lines. This feature is provided to allow multiple stations access to the same line in a style similar to 1A2 key systems. To allow access to a busy trunk, set the PUBLIC parameter to Y (yes), otherwise this parameter should be left programmed to N (no). This feature has no meaning for trunk lines accessed by group keys.

*NOTE: Lines programmed for PUBLIC should not be accessible by trunk group keys.*

System Programming

---

[T]ime 12:32 pm    Fri 08-08-88    [O]perators Programming

---

[R]ing Low = 010 PPS    = 010  
 Ring High = 050 Ratio = 080

---

<p>[L]ine 001    port 013    Name</p> <p>Line Type = 000    DTMF Y    SMDR Enable Y</p> <p>ID Number = 001                    Ground Start N</p> <p>Public    N                            TIE/DID N MOH N</p> <hr style="border-top: 1px dashed black;"/> <p style="text-align: center;">[A] ID Number 001</p> <p>ID Class    = 00            ACD Day Group    = 01</p> <p>Trunk Group = 01                    Priority    = 1</p> <p>Hunt Group   = 00            ACD Night Group = 00</p> <p>Drop Pulse   = 014                    Priority    = 1</p> <p>Pause Time   = 005s</p> <p>Flash Time   = 025*50ms</p> <p>Orbit Recall = 006*10s</p>	<p>[E]xternal Zone    01    Page 00</p> <p style="text-align: center;">ID Number 001    Day N Night N</p> <hr/> <p>[P]ort 01*    Installd Y</p> <p style="text-align: center;">Speed = 9600    Protocol = X ON</p> <p>Printer 0 Computer Port N Type 000</p> <p>SMDR N Incom Y Local Y Long Dist Y</p> <p>ACD SMDR N Incom N Outg N Remote N</p> <hr/> <p>[M]usic Source    MOH 1    BGM 1</p> <p>[S]ystem will reset N at 00:00</p> <p>[V]arious:            Divert limit 15 min</p> <p style="text-align: center;">Cost After = 001    DID Digits 3</p> <p style="text-align: center;">Local Call Cost Limit = 30.00</p> <p style="text-align: center;">Ground Start Timer = 008*50ms</p>
---	---

Figure 7-4 System Programming Screen

The TIE/DID parameter allows incoming dialed calls on tie lines to follow the DID translation table. This parameter affects only tie lines. It has no meaning for DID trunks.

The MOH (MUSIC ON HOLD) By CO feature is used when individual lines need different Music On Hold sources. Only customers who have access to two music sources should operate this feature. This option defaults to No. If *MOH* in the *Line* area is set to Y (yes), lines placed on hold are connected to the music source designated as BGM in the *Music Source* area of the screen. If *MOH* in the *Line* area is set to N (no), lines placed on hold are connected to the music source designated as MOH.

*NOTE: It is important to note that the use of this feature must have two existing music sources when both Music On Hold (MOH) and Background Music (BGM) are being used. These music sources must physically exist in the System/228 for proper system operation.*



The remainder of the parameters, including the ringing assignments for stations, are programmed according to line ID number, rather than by line. There are 128 available line ID numbers. Any line can be made a member of any line ID, however, a line may be a member of only one line ID. For systems with 128 lines or less, each line should have its own line ID to simplify ringing assignment programming. This is not mandatory, it just makes programming easier. For systems with more than 128 lines, consideration must be given as to which lines will have the same parameters and station ringing scheme. These lines will then be programmed with the same line ID.

Once the lines have been assigned a line ID, it is time to program the parameters for each line ID.

- ID Class**                    The *ID Class* is used with toll restriction. If toll restriction is to be used with the system, planning for *ID Class* should be done after reading the *Toll Restriction* section of this manual.
- Trunk Group**                Trunks are arranged into groups for access by the group keys on stations, and by Least Cost Routing. There are ten possible *trunk groups* in the system. Typically, lines that are connected to the same type of service are arranged into the same groups. For example, all DDD lines may be placed in one group, all Band 5 WATS may be placed in another group, all FX lines to the same location may be placed in another group. Planning for *trunk groups* should be done carefully, with the following taken into consideration: the type of facilities the customer is to use (WATS lines, FX lines, direct dial lines, IDDD lines, etc.), what stations will be allowed to access what lines, toll restriction, and least cost routing. This is not an exclusive list of things to think about before planning the trunk group.
- Hunt Group**                 Stations can be arranged in groups to allow an outside line to be transferred to groups of stations rather than an individual extension. Calls entering the *Hunt Group* will be routed to the first available station in a circular fashion. CO lines can be programmed to ring directly into a *Hunt Group* by programming the line ID with the same hunt group number as the station hunt group. Lines programmed to ring a hunt group in this fashion should not be given ringing assignments on any stations. There are 36 *Hunt Groups* available. However, one *Hunt Group* is reserved for use with VMS (voice message system). If a line is to ring into a station hunt, enter the number of the *Hunt Group* on the System Programming Configuration sheets.
- Hunt Group* is also used with the built-in Automated Attendant feature. Lines which are to ring directly to the built-in Automated Attendant are programmed with a hunt group of 37 through 42. Hunt group 37 routes calls to Auto Attendant 1. Hunt group 38 routes calls to Auto Attendant 2, etc. Hunt group 42 routes calls to Auto Attendant 6.
- Drop Pulse**                The *Drop Pulse* value is the amount of time the trunk may be open before the system will consider the line to be disconnected. This value should not be changed from its default value unless problems with disconnections (either being disconnected or not being disconnected) are experienced. The value entered is in 50 millisecond increments. A value of zero is used if the system is to ignore all line breaks from the Central Office. If, for some reason, this value is to be permanently changed, enter the value on the System Programming Configuration sheet.

## System Programming

- Pause Time** The *Pause Time* is used with speed dial numbers when a manual pause is entered as part of the dialed number. A *Pause Time* of 5 seconds is usually sufficient. If the value is to be changed from the default value, enter the time, in seconds, for the pause in the System Programming Configuration sheet. The value may be any number between 0 and 255.
- Flash Time** The *Flash Time* is used to send a preprogrammed flash (or open line) on a CO line. Each incremental setting represents 50 milliseconds. If the timer is set for 000, when the line is manually flashed, the flash duration will be for as long as the CO line key is held down (there is no programmed period of time). When the line key is flashed, the flash duration will be for the *Flash Timer* value, or the amount of time the key is held down, whichever is longer. If the *Flash Timer* for a line is to be changed from the default value, determine the length of the flash time (a typical flash time is 1/2 second or 500 milliseconds). Divide the time in milliseconds by 50 and enter this value on the System Programming Configuration sheets for each line ID to be changed. Thus the entry for 500 msec. would be 10.
- Orbit Recall** The amount of time a call remains in *Orbit* (parked) is programmable on a per line ID basis. This amount is the time, in increments of 10 seconds, before a call placed in orbit will recall to the party that placed the call in orbit. Determine the amount of time (0 – 255 \* 10 seconds) for recall of orbit calls (determined from the planning meeting with the customer), and enter the time for each line ID on the System Programming Configuration sheet.
- Note: The Orbit Recall Timer on the System Programming screen effects Hunt Group Recall when all members of a hunt group are busy. Enter the recall time for the particular line in a hunt group. Each value is equal to 10 seconds.*
- ACD Day/Night Group** If a trunk is to be part of the *Automatic Call Distribution* feature, the ACD group the trunk is to be directed to is entered here. A trunk can be sent to a different *ACD Group* when the system is in the NIGHT mode.
- Priority** Trunks in ACD are directed to answering positions on a first in, first handled basis. *Priority* can be used to have certain trunks (e.g. customer lines) answered before other lines (even though the other lines may have to wait longer to be answered). *Priority* is for trunks ringing directly into an ACD group. It has no effect on calls transferred into an ACD group which always have the highest priority.
- Note: A priority of 1 gives the line ID the highest priority, meaning it will be answered before any lines programmed with a priority of 2, 3 and 4. Entering a 4 gives that line ID the lowest line priority.*

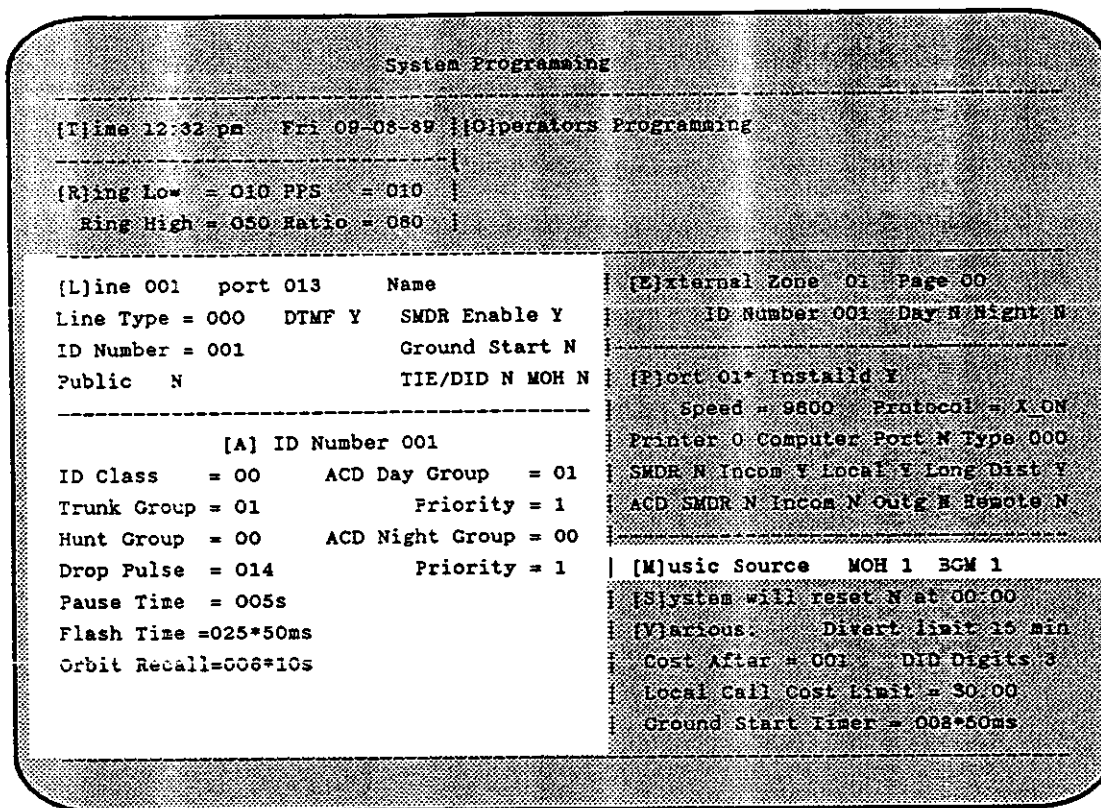


Figure 7-5 System Programming Screen

### 7.4.2 DEFAULT VALUES

The default line type for all lines is 000.

All lines are DTMF N (no), SMDR Enable is N (no).

Each Line from 1 through 128 is assigned a corresponding line ID, i.e. line 1 is line ID 1, line 2 is line ID 2, etc.

ID Class	0	
Trunk Group	1	
Hunt Group	0	
Drop Pulse	014*50 milliseconds	(700 milliseconds)
Pause Time	5	seconds
Flash Time	025*50 milliseconds	(1.25 secs.)
Orbit Recall	006*10 seconds	(60 secs.)
ACD Day Group	00	may differ if the MEMORY MODULE III is
Priority	1	not installed.
ACD Night Group	00	
Priority	1	

### 7.4.3 HOW TO PROGRAM

Name, Line Type, DTMF, SMDR Enable, ID number, Ground Start, Public, and TIE/DID.

If not already in the *System Programming* screen, from the main menu press the B key.

*Note: If a parameter is to be the same for all lines, the copy function may be used. After entering the parameter, press the C key to copy the parameter to all lines.*

1. Press the L key.
2. Enter the line number of the line to be programmed, and press the RETURN key. Or, the I and D keys can be used to increment and decrement the line number.
3. Press the RETURN key. The cursor moves to the *Name* area.
4. Enter some identifying information (up to 10 characters) for this line, such as the telephone number, or company name.
5. Press the RETURN key.
6. Press the RETURN key a second time. The cursor moves to line type.
7. Enter the line type for the line from the System Programming Configuration sheets.
8. Press the RETURN key.
9. Enter Y (yes) for the line if DTMF signaling is to be used. Enter N (no) for the line if pulse signaling is to be used.
10. Press the RETURN key.
11. Enter Y (yes) for the line if SMDR information is to be recorded. Enter N (no) for the line if SMDR information is NOT to be recorded.
12. Press the RETURN key. The cursor moves to *ID number*.
13. Enter the ID number for the line if it is to be different from the default value, and press the RETURN key.
14. If Ground Start is to be changed, enter Y (yes) if the line is Ground Start, and press the RETURN key.
15. If Public is to be changed, enter Y (yes) if the line is to be accessed even though it may be in use, and press the RETURN key.
16. If the line being programmed is a tie line, and the DID translation table is to be used for dialed extensions, enter a Y (yes), and press the RETURN key.
17. If lines placed on hold are to be connected to the music source designated as MOH in the *Music Source* area of the screen, program MOH in the *Line* area N (no). If lines placed on hold are to be connected to the music source designated as BGM in the *Music Source* area of the screen, program MOH in the *Line* area Y (yes).
17. Continue programming all remaining lines using the System Programming Configuration sheet as reference.

ID Number parameters

Note: If a parameter is to be the same for all lines, the copy function may be used. After entering the parameter, press the C key to copy the parameter to all lines.

1. Press the A key.
2. Enter the ID number to be programmed. Or, the I and D keys can be used to increment and decrement the line number.
3. Press the RETURN key.
4. Program the members of the ID Number area as necessary using the information on the System Programming Configuration sheet.
5. Use the TAB key to move the cursor left/right. Use the RETURN key to move the cursor down.
6. Press the RETURN key after each value is entered.

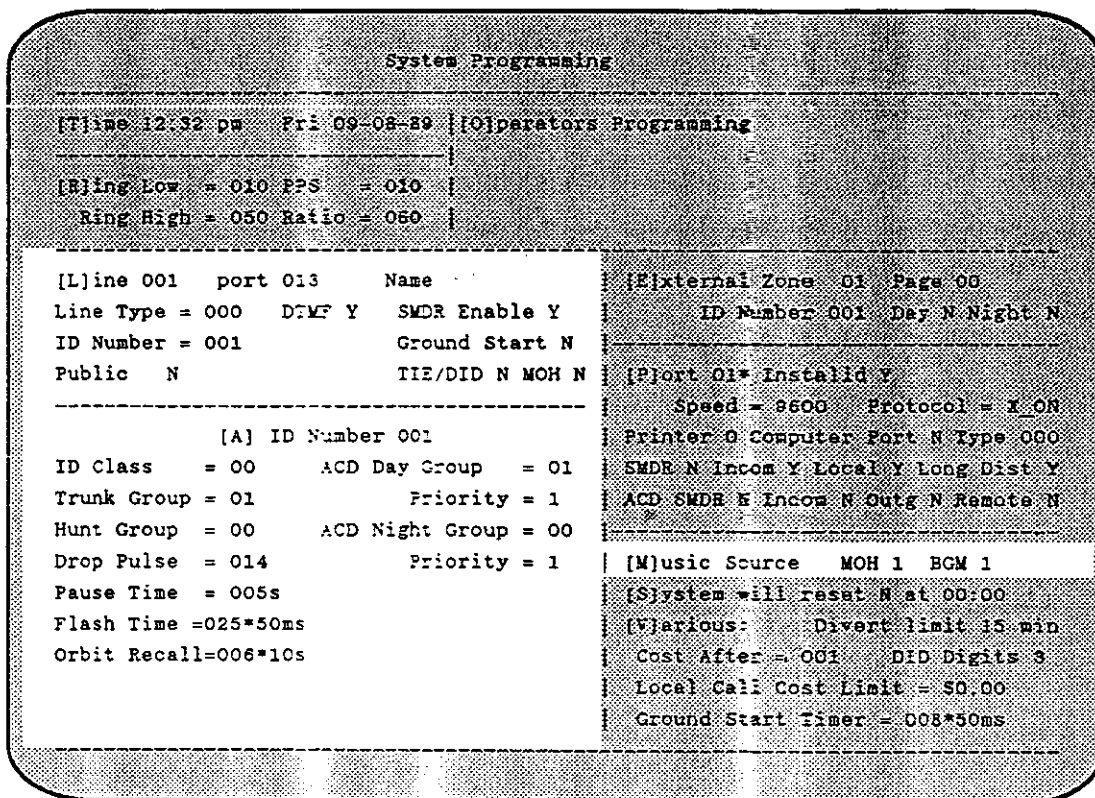


Figure 7-6 System Programming Screen

## 7.5 RING PARAMETERS

The *Ring Parameters* section is used to adjust the sensitivity of the frequency for CO line ring detection. These values are not normally adjusted from the default value. **Ring Low** is the lowest frequency that will be detected. **Ring High** is the highest frequency that will be detected. These parameters affect all lines in the system.

This area may also be used to adjust the dialing rate, and the *make to break* ratio for pulse dialing.

### 7.5.1 HOW TO PROGRAM

#### Ring Low, Ring High

If these values do need to be altered for some special application,

1. Press the R key to reach the *Ring* area.
2. Enter the new Ring Low value.
3. Press the RETURN key.
4. Press the RETURN key a second time.
5. Enter the new Ring High value.

#### PPS, Ratio

1. Press the R key to reach the *Ring* area.
2. Press the TAB key.
3. Enter the new PPS (choices are either 010 for 10 pps or 020 for 20 pps).
4. Press the RETURN key.
5. Press the RETURN key a second time.
6. Enter the new Ratio.
7. Press the RETURN key.

## 7.6 EXTERNAL ZONE PROGRAMMING

### 7.6.1 WHAT TO PROGRAM

Each Station port card (p/n 15640) and Station LSI port card (p/n15700) is equipped with an audio path that may be connected to an external paging system. The audio path may be used for voice announcements, CO line ringing indication (day and/or night ring), and to provide background music. The *External Zone* on the *System Programming* screen refers to the slot the Station port card is installed in, not the paging zone. Do not use slots J1 through J4 for external paging. *Page* refers to the page zone for the external path. This page zone is the dial access code used to reach the external path. *ID Number* and *Day* and *Night* are used to assign CO line ringing to the external path.

If external paging is to be used, assign an access code (61 through 69, or 60 for all page) to the external page path. Enter the zone and page access code on the System Programming Configuration sheet.

If the external page is to be used for CO line ringing, determine which line ID numbers are to ring and whether the line is to ring during the day, night, or both. Enter this information for each external page path on the System Programming Configuration sheet.

The background music is turned on and off from the operator station and does not need any programming.

### 7.6.2 DEFAULT VALUES

All external page zones default to no page access zone, and no ringing assignments.

### 7.6.3 HOW TO PROGRAM

If not already in the *System Programming* screen, from the main menu press the B key.

#### Page Zone Access Codes

1. Press the E key. The cursor moves to the External Zone programming area.
2. Enter the slot number of the external page path to be programmed from the System Programming Configuration sheet.
3. Press the RETURN key.
4. Press the TAB key. The cursor moves to *Page*.
5. Enter the access code to be used for this path (61 through 69, or 60 for all page). A code of zero is used if the path is not to be used for voice announcements.
6. Press the RETURN key.

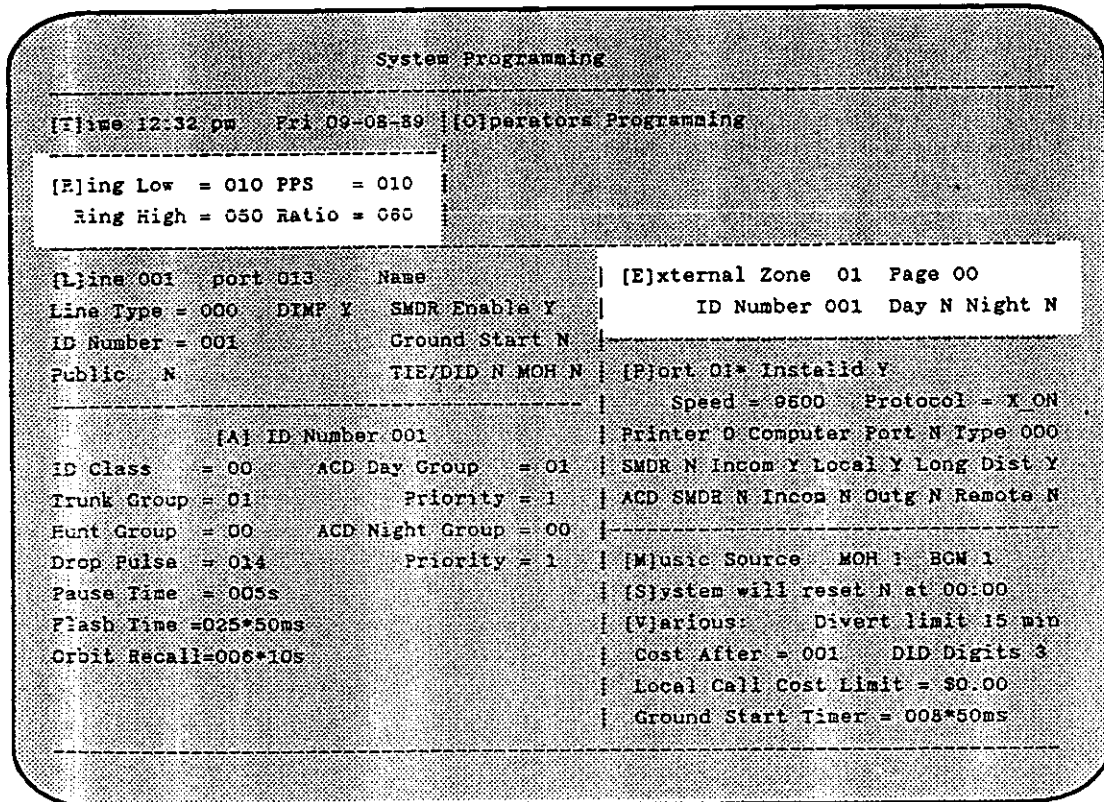


Figure 7-7 System Programming Screen

- Continue to program the remaining page paths. Press the TAB key to move the cursor back to *External Zone*. The I key on the keyboard can be used to increment the *External Zone number*. The D key on the keyboard can be used to decrement the *External Zone number*.

Line Ringing Assignments

- Press the RETURN key to move the cursor back and forth between the *External Zone* line and the *ID Number* line.
- Enter the ID number of the line ID to be programmed to ring over the external page path.
- Press the RETURN key. The cursor will move to *Day*.
- Enter a Y (yes) if the line ID number is to ring the External page during the DAY. An N (no) is entered if the line ID is not to ring during the DAY.
- Press the RETURN key to move the cursor to *Night*. Enter a Y (yes) if the line ID number is to ring the External page during NIGHT mode operation. An N is entered if the line ID is not to ring during NIGHT mode.
- The TAB key may be pressed while on the *ID number* line to increment the line ID number. Press the RETURN key to move back and forth along the *ID number* line.
- Continue programming the remaining line ID numbers, and External Zones using the System Programming Configuration sheets as a guide.

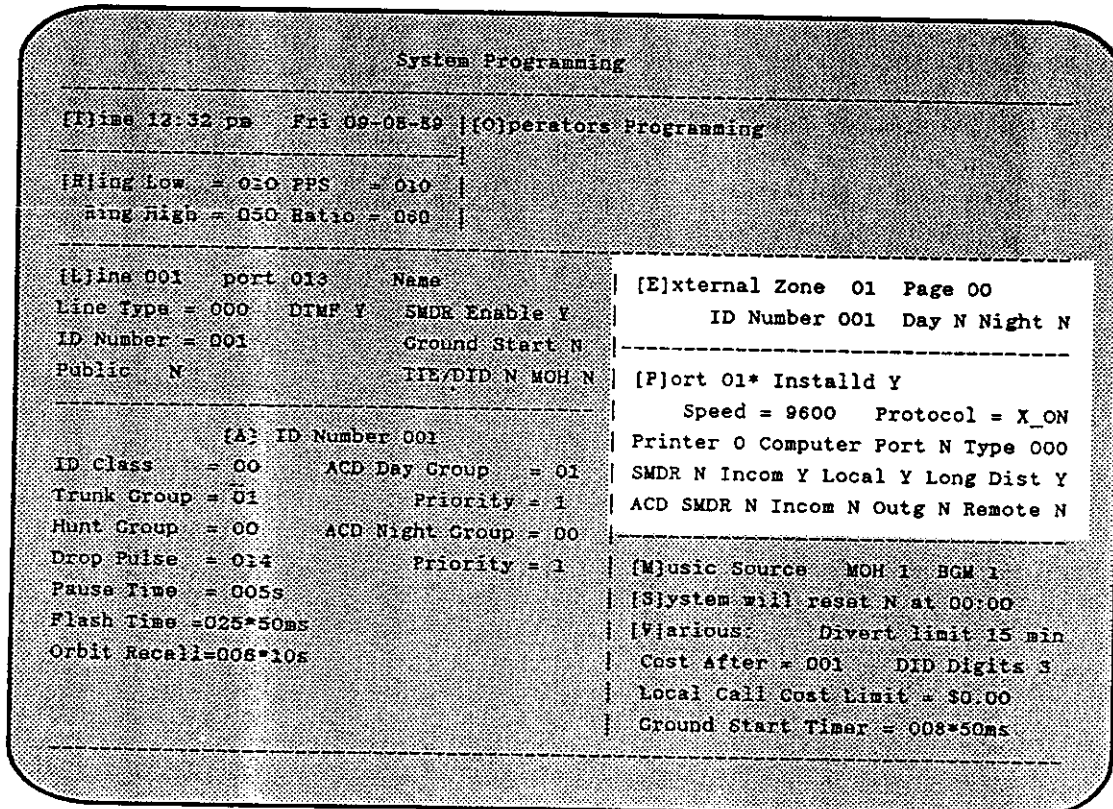


Figure 7-8 System Programming Screen



## 7.7 INPUT/OUTPUT PORT PROGRAMMING

### 7.7.1 WHAT TO PROGRAM

The standard system is equipped with four asynchronous serial Input/Output ports which are accessed via the main distribution frame. If the system is equipped with the optional LSI DCM (p/n 15340), there are six additional asynchronous serial Input/Output ports which are accessed using the *Data* feature. However, these 6 I/O ports are programmed using the *System Programming* screen and not the *Data* programming screen.

The Input/Output ports can be used for system programming, system management, SMDR, or the Integrated Operator Terminals. Ports 1 and 2 are configured for RS-232 and are intended for use as SMDR or RS-232 terminals. Ports 3 and 4 are configured for RS-422 and are intended to be used with the Integrated Operator Terminal. Ports 5 through 10 are accessed via display telephones (or digital data interfaces) and are RS-232 ports. Ports 5 through 8 can be used to connect an Operator terminal. Ports 9 and 10 cannot be used for an Operator terminal.

The *Input/Output Ports* are programmed for baud rate, and handshaking protocol. The port that is used as the SMDR port is further programmed for the types of SMDR information to be printed. The port can also be assigned a printer number (0-4). This number corresponds to the printer number used when printing REPORTS, or ACD REPORTS.

The LSI DCM ports are also programmed with the hardware port number of the display telephone (or digital data interface) that the terminal (or printer) is connected to.

*NOTE: When programming the ports provided by the LSI DCM, enter all information for the port, such as baud rate, parity, and printer information, BEFORE entering the hardware port number.*

The port used for the operator terminal should be programmed for 9600 baud.

The baud rate for the programming terminal should be programmed to match the baud rate of the terminal being used. For the ISOETEC terminal, the baud rate should be 9600.

The baud rate and protocol for the SMDR device should be programmed to match the device being used. In addition, the SMDR device must be programmed for the type of calls to be programmed. The types are *Incoming, Local, and Long Distance*.

Possible baud rates are:

300  
1200  
2400  
4800  
9600

Possible handshakes are:

None  
DTR  
X\_ON

### 7.7.2 DEFAULT VALUES

Port = 1,2,3, and 4 Installed Y  
Speed = 9600 Protocol = NONE  
Printer 0 Computer Port N Type 000  
SMDR N Incom N Local N Long Dist N  
ACD SMDR N Incom N Outgoing N

Port = 5-10 Installd N Data Prt 000  
Speed = 9600 Protocol = NONE  
Printer 0 Computer Port N Type 000  
SMDR N Incom N Local N Long Dist N  
ACD SMDR N Incom N Outgoing N

### 7.7.3 HOW TO PROGRAM

If not already in the *System Programming* screen, from the main menu press the B key.

*NOTE: When programming the ports provided by the LSI DCM (ports 5-10), enter all information for the port, such as baud rate, parity, and printer information, BEFORE entering the hardware port number.*

Programming and Operator terminals for ports 1-4

1. Press the P key on the keyboard. The cursor moves to *Port*.
2. Enter the port number to be programmed.
3. Press the RETURN key. The cursor moves to *Installed*.
4. If the port is not to be used, press the N key, otherwise, press Y.
5. Press the RETURN key. The cursor moves to *Speed*.
6. Press the I key until the desired baud rate is shown.

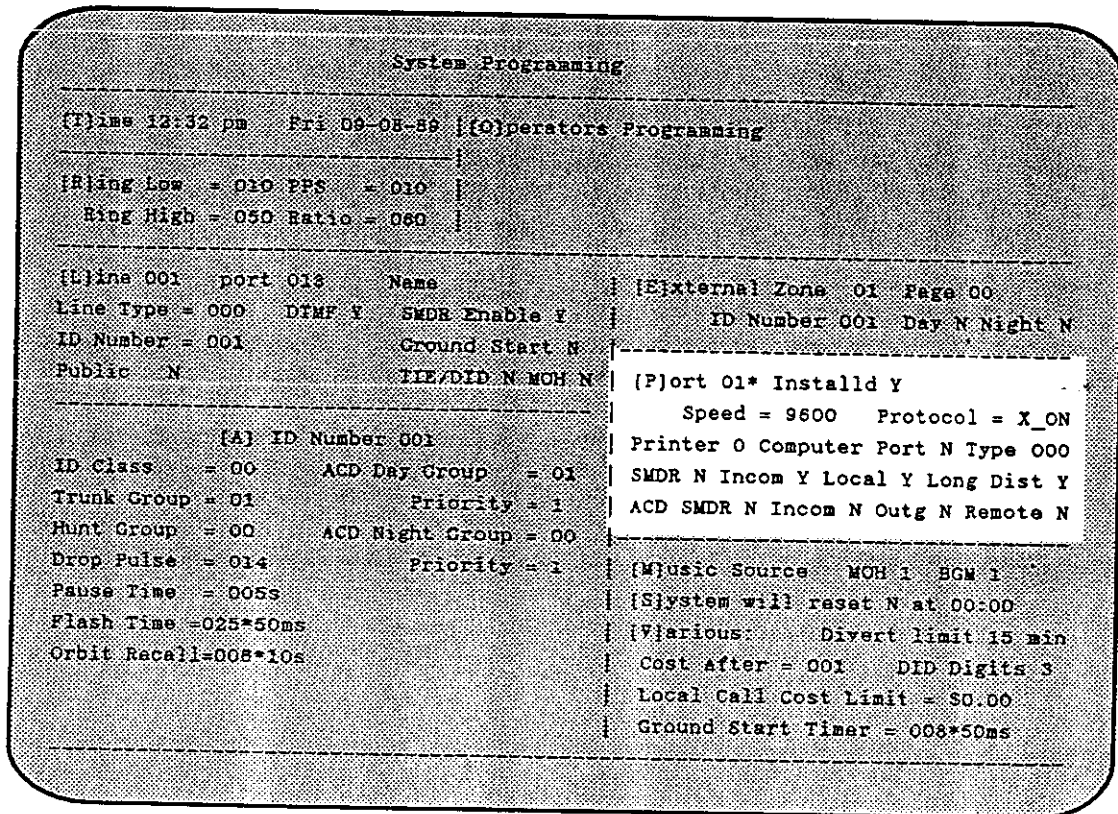


Figure 7-9 System Programming Screen

7. Press the TAB key. The cursor moves to *Protocol*.
8. Press the I key until the desired protocol is shown.
9. Press the RETURN key.

10. Press the P key to return the cursor to *Port*. Enter the new port to be programmed, and press the RETURN key. The I key on the keyboard can be used to increment the *Port number*. The D key on the keyboard can be used to decrement the *Port number*. Continue to program the remaining ports.

For ports 5-10

1. Press the P key. The cursor moves to *Port*.
2. Enter the port number to be programmed.
3. Press the RETURN key twice. The cursor moves to *Speed*. The data port is programmed last.
4. Press the I key until the desired baud rate is shown.
5. Press the TAB key. The cursor moves to *Protocol*.
6. Press the I key until the desired protocol is shown.
7. Press the RETURN key.
8. Press the P key to return the cursor to *Port*, and press the RETURN key. The cursor moves to *Data Prt*.
9. Enter the hardware port number of the display telephone, or DDI, that the terminal, or printer, is connected to, and press the RETURN key.
10. Press the P key to return the cursor to *Port*. Enter the new port to be programmed, and press the RETURN key. The I key on the keyboard can be used to increment the *Port number*. The D key on the keyboard can be used to decrement the *Port number*. Continue to program the remaining ports.

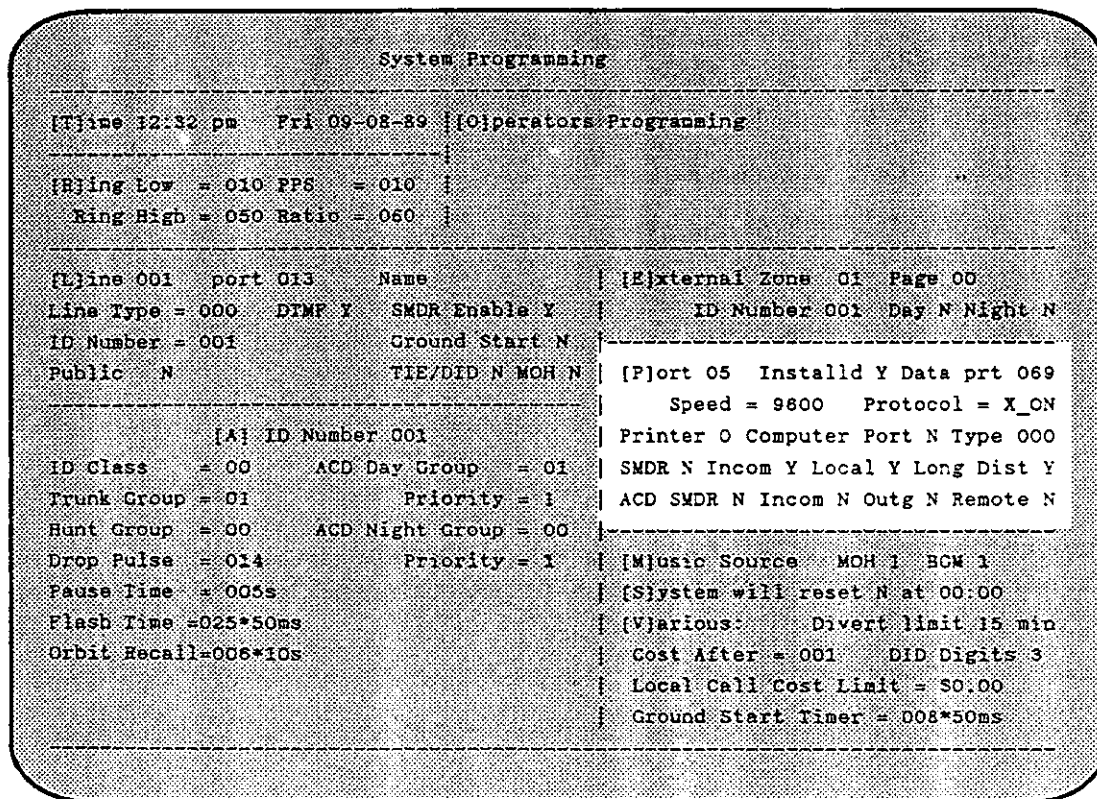


Figure 7-10 System Programming Screen

### Printer Number

1. Press the RETURN key until the cursor is beside *Printer*.
2. Enter the desired printer number 1 through 4.
3. Press the RETURN key.

### SMDR device

1. Program the baud rate and protocol using the directions for the programming terminal.
2. Press the RETURN key until the cursor is beside *SMDR*.
3. Enter a Y (yes) to make the port an SMDR port.
4. Press the TAB key to move the cursor to right/left.
5. Enter a Y (yes) for each type of call to be recorded by the SMDR port.

## 7.8 TIME/DATE INFORMATION

### 7.8.1 HOW TO PROGRAM

If not already in the *System Programming* screen, from the main menu press the B key.

1. Press the T key.
2. Enter the time in 24-hour clock format.
3. Press the RETURN key.
4. Press the RETURN key a second time.
5. Enter the date in month-day-year format.
6. Press the RETURN key.

## 7.9 MUSIC SOURCE

### 7.9.1 WHAT TO PROGRAM

The backplane has two connections for the input of music. These are labeled *BGM* for the background music source, and *MOH* for the music on hold source. However, one source may be used for both background music and music on hold. This is accomplished with the *Music Area* of the *System Programming* screen. The source port for either the background music and/or music on hold can be changed through programming.

The music on hold source connector is source 1; the background music connector is source 2.

*NOTE: The use of a radio broadcast, or pre-recorded music for Music On Hold could be perceived as a violation of copyright laws.*

### 7.9.2 DEFAULT VALUES

The MOH and BGM default to connector 1; the music on hold source.

### 7.9.3 HOW TO PROGRAM

If not already in the *System Programming* screen, from the main menu press the B key.

1. Press the M key.
2. Enter the source for the music on hold.
3. Press the RETURN key.
4. Enter the source for the background music.

*NOTE: BGM and MOH may have the same source.*

## 7.10 VARIOUS

### 7.10.1 WHAT TO PROGRAM

The *Cost After* parameter is used with SMDR (Station Message Detail Recording) or the Call Accounting Reports Option to determine how long after a call has been dialed, the costing process should begin.

The *Local Call Cost Limit* is used by SMDR in conjunction with *Least Cost Routing* to define for the system what calls can be considered local by price rather than by dialed number.

*DID Digits* define for the system how many digits the local telephone operating company is expected to transmit to the system on a DID call.

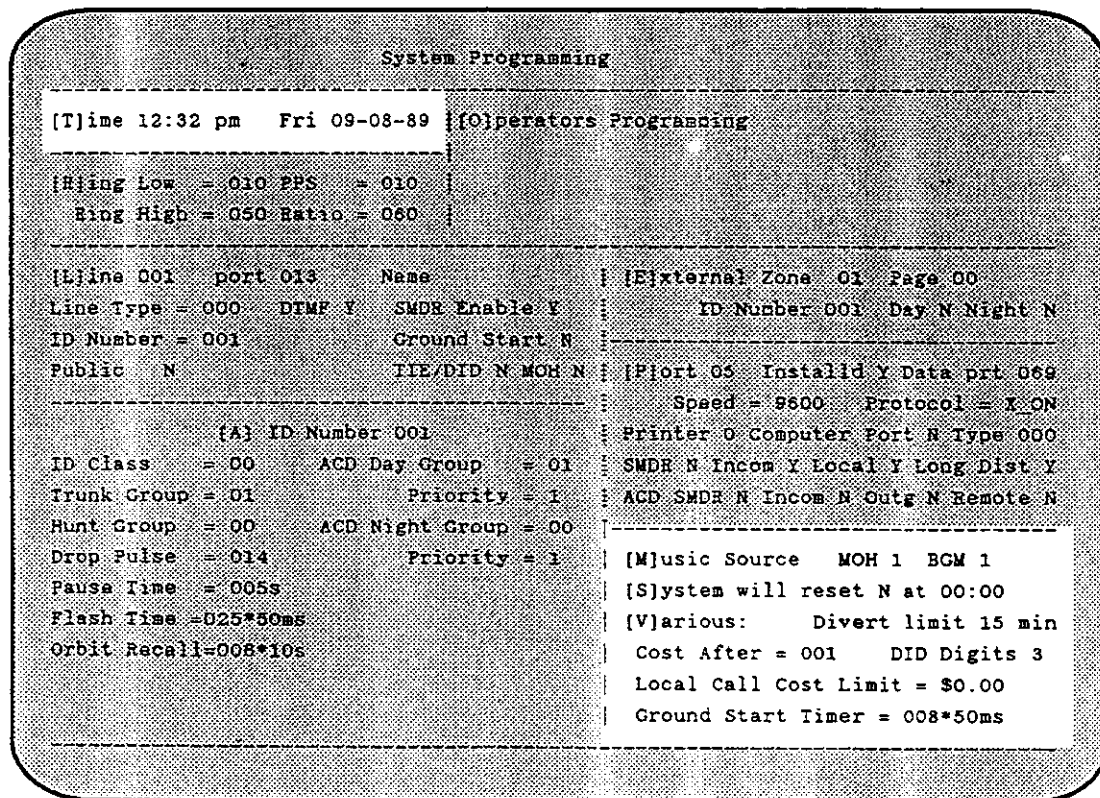


Figure 7-11 System Programming Screen

The *Ground Start Timer* is the amount of time the system places a ground on the ring side of a trunk to request service. This value should not be changed unless problems are experienced starting ground start trunks. Audio is not turned on while ground is applied to the line.

*Divert Limit* is a timer set in minutes that will determine the duration of a call under a divert condition. A *divert condition* can occur either in the *Trunk Group Programming* (N screen) or the *Forwarding, VMS* (G screen).

When a trunk group is set for call diversion, any incoming call in that trunk group will be connected to an outgoing trunk in a selected group, and the designated *System Speed Dial* number will be dialed.

When a station is forwarded to a *System Speed Dial* number, any incoming call to that station will be connected to an outgoing trunk which will dial the designated *System Speed Dial* number.

Valid entry's are 00 to 99. The entry 00 indicates that there is no *Divert Limit*. The entry 99 is equivalent to 99 minutes, and is the maximum *Divert Limit*.

### 7.10.2 DEFAULT VALUE

The default value for *Cost After* is 20 seconds. The default value for *Local Cost Limit* is \$0.00. The default value for *DID Digits* is 3. The *Ground Start Timer* is 008\*50ms (.4 seconds). The default *Divert Limit* is 15 minutes.

### 7.10.3 HOW TO PROGRAM

If not already in the *System Programming* screen, from the main menu press the B key.

1. Press the V key.
2. Enter the time in seconds.
3. Press the RETURN key.
4. If DID digits are to be programmed, enter the new value, and press the RETURN key.
5. Press the RETURN key a second time to move to *Local Cost Limit*.
6. Enter the *Local Cost Limit*, and press the RETURN key.
7. Press the RETURN key to move the cursor to the *Ground Start Timer*.
8. Enter the new value, and press the RETURN key.
9. Press the RETURN key again. The cursor moves to *Divert Limit*.
10. Enter the new value, and press the RETURN key.

## 7.11 SYSTEM RESET TIMER

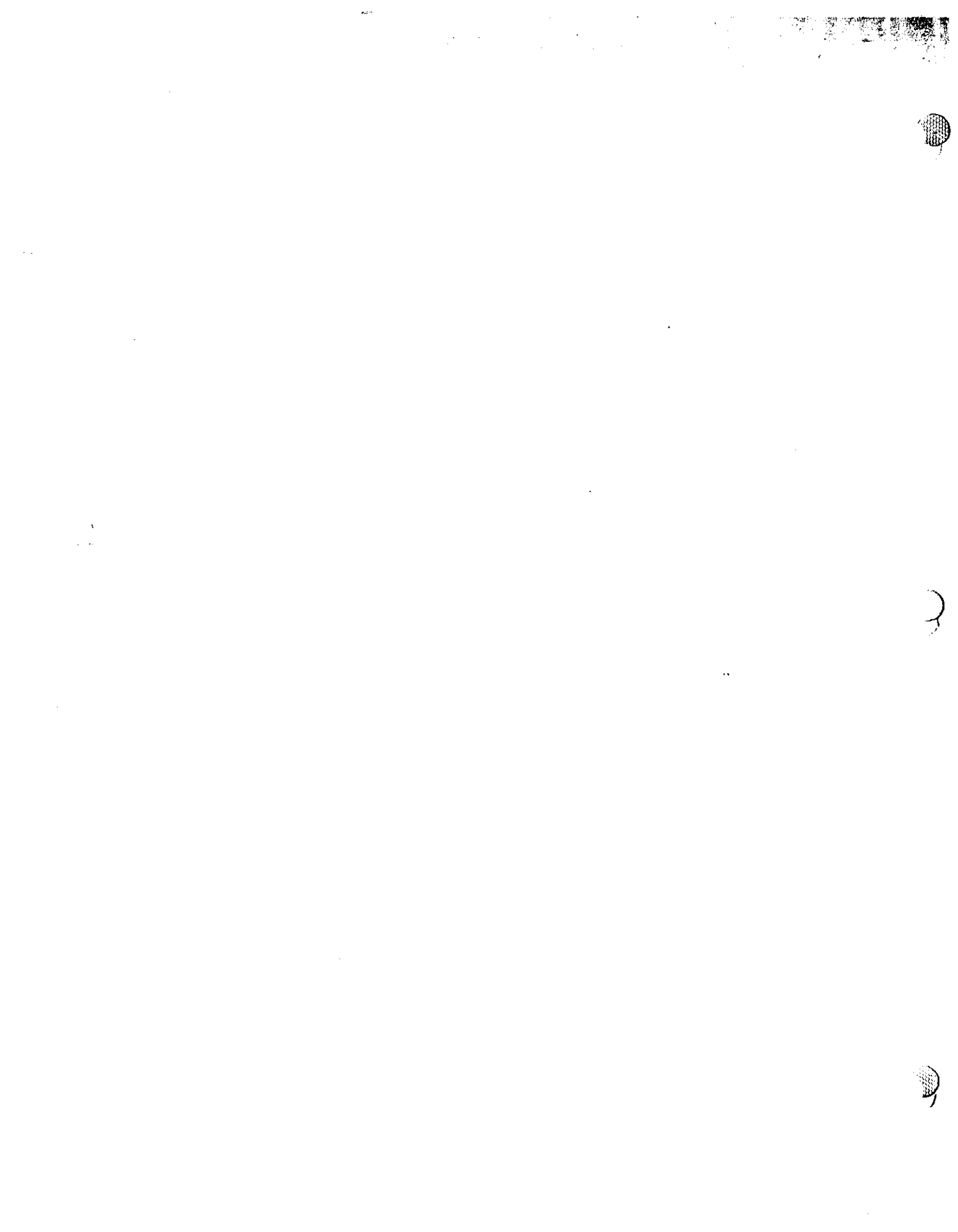
The *System Reset Timer* consists of a *Yes* or *No* entry and a timer. The default setting is *N* (no). If the setting is left at *N* (no), the system will reset only after **three consecutive hours** of idle time. If the option is set to *Y* (yes), the system will reset at the indicated time even if there are voice and data connections in progress in addition to the normal *three hour idle time reset*.

To program the System Reset Timer, access the *System Programming* screen from the main menu.

1. Press *S*. The cursor moves to *System will reset*.
2. Press *Y* (yes).
3. Press the RETURN key. The cursor moves to *at*.
4. Enter the desired reset time in 24-hour clock format.

System Programming			
[T]ime 3:18 pm Fri 02-17-88 [O]perators Programming			
[R]ing Low = 010 PPS = 010			
Ring High = 050 Ratio = 080			
[L]ine 001 port 013 Name	[E]xternal Zone 01	Page 00	
Line Type = 000 DTWP Y SMDR Enable Y	ID Number 001	Day N Night N	
ID Number = 001	Ground Start N		
Public N	TIE/DID N	[P]ort 01 Installed I	
	[A] ID Number 001	Speed = 9600 Protocol = NONE	
ID Class = 00	ACD Day Group = 00	Printer 0 Computer Port N Type 000	
Trunk Group = 01	Priority = 1	SMDR N Incom N Local N Long Dist N	
Hunt Group = 00	ACD Night Group = 00	ACD SMDR N Incom N Outgoing N	
Drop Pulse = 014	Priority = 1	[M]usic Source MOH 1 ECM 1	
Pause Time = 005s		[S]ystem will reset N at 00:00	
Flash Time = 025*50ms		[V]arious: Divert limit 15 min	
Orbit Recall = 006*10s		Cost After = 001 DID Digits 3	
		Local Call Cost Limit = \$0.00	
		Ground Start Timer = 008*50ms	

Figure 7-12 System Programming Screen





# Section 8

## Station Programming

### 8.1 INTRODUCTION

The digital multiline telephone station is a very easy-to-use, and versatile telephone. Each multiline telephone has a number of fully programmable feature keys. Most of the features incorporated into the system require the use of one of these programmable keys. The digital telephones are available in the following sizes:

- 29-key display telephone with 20 programmable keys and 3 'soft keys',
- 28-key telephone with 22 programmable keys,
- 17-key telephone with 11 programmable keys,
- 6-key telephone.

A standard, tone dial, single line (2500-type) telephone set may also be used with the system with the use of the OPX Interface connected to one of the station ports, or the OPX port card. It may be necessary to program certain key positions, in station programming, for the 6-key and single line telephones, even though the telephones do not physically have feature keys.

Each extension number is also programmed for a variety of parameters, and may be programmed for ringing and access to outside lines.

*NOTE: The programming of a station follows the extension number, and not the port number. Thus, when moving an extension to an existing telephone, only the extension number of the port needs to be changed. The programming of that extension number will remain.*

In order to ensure an easy job of programming, and for ease of operation, it is extremely important to discuss with the customer the features that will be used with the system, and the layout of the keys on the stations. To provide uniformity, it is recommended, where possible, to place like keys in the same positions on each station.

The following sections describe each feature as it relates to programming a station. A description of how to program each area of station programming will be found at the end of the area description, rather than after each individual feature. The extension numbers used in this section are the extension numbers provided when the system is using the default programming. The *Flexible Numbering* feature permits the leading digit of extension numbers to be changed to any digit.

Determine which stations are to ring (day mode and/or night mode), and which stations are to have outgoing access to which outside lines (day mode and/or night mode). This information will be programmed in the *Ring/Access* area for each station to be programmed.

Determine which stations are to use features which require programmed feature keys. The *Keys programming* section describes the function of each key.

## Station Programming

The following is a list of features which require one or more key positions on a station. Other feature keys are available which simplify the operation of some features:

ACCOUNT CODE	MIC MUTE
ADD ON	NIGHT MODE
ACD	NIGHT ANSWER
BAD LINE	PATCH
BARGE IN	PBX FEATURE
CALL BACK	PICK UP
CALL COVERAGE	RELEASE
CALL FORWARD	SAVE/REPEAT
DATA FEATURE	SERIAL
DSS/BLF APPEARANCE	SILENT MONITOR
DIRECT TRUNK APPEARANCE	SPLIT
DO NOT DISTURB	TRUNK GROUP
IN/OUT	UNI KEY
LEAST COST ROUTING	UNSUPERVISED CONFERENCE
MESSAGE WAITING	VOICE MESSAGE SYSTEM

Determine from the following list and the descriptions found later in this section which parameters must be programmed for each station.

These parameters are programmed in the *Timers* area of the *Station Programming* screen.

Camp on Timer	Hands free ICM
Recording Number	Hands free Receive
Hunt group	Auto Answer
Day class	Auto 2nd Path
Night class	Allow 2nd Path
LCR class	Group in
Prime line	Busy on Hold
Page zone	Block Barge in
Forced account	Block Barge Tone
Pickup group	Out LCR Only
Pilot NoAnswr	Total Toll
Cost limit in dollars	SMDR Enable
Ring type	Hook Release
Hold Recall	VMS/Attend
Transfer Recall	Busy On DID
Tap On Extension	Hands Free Camp-on
Hands free CO	Analog Phone

## 8.2 ACCESSING THE STATION PROGRAMMING SCREEN

The *Station Programming* screen (the A screen) is accessed by pressing the A key while in the *Main Menu*. The ESCAPE key may be pressed while in any other programming screen to reach the *Main Menu*. If there is any problem reaching the *Main Menu*, or the A screen, refer to the section titled *ACCESSING THE PROGRAMMING SCREENS* in Section 5 - *Programming Introduction*.

```
[E]xt 3001 port 001 name                type                time 3:00 p Mon 09-11-89
-----
[L]ine ID Number - 001    c=ext->exts | [T]imers
  day ring:  Y          x=col->ext  | Camp on timer =003*10s Hands free co  Y
  night ring: Y          v=col->exts | Recording Num = 000  Hands free ICM Y
  day access: Y          z=row->ext  | Hunt group    = 000  Hands free Rec Y
  night access: Y        w=row->exts | Day class     = 000  Auto Answer   Y
-----
                                | Night class   = 000  Auto 2nd Path N
                                | LCR class    = 000  Allow 2nd Path N
[K]eys  [H]                | Prime line   = 000  Group in      N
01 [ 0300 ] 0020 02 [ 0300 ] 0020 | Page zone   = 060  Busy On Hold  N
03 [ 0300 ] 0020 04 [ 0300 ] 0020 | Forced account= 000  Blk Barge In  N
05 [ 0818 ] 0000 06 [ 0818 ] 0000 | Pickup group = 000  Blk Barge Tone Y
07 [ 3001 ] 0000 08 [ 3002 ] 0000 | Pilot NoAnswr = 000s  Out LCR Only  N
09 [ 3003 ] 0000 10 [ 3004 ] 0000 | Cost limit   = $0.00  Total Toll    N
11 [ 3005 ] 0000 12 [ 3006 ] 0000 | Ring type    = 01    SMDR Enable   Y
13 [ 0813 ] 0000 14 [ 0600 ] 0002 | Hold Recall  = 006*10s  Hook Release  N
15 [ 0600 ] 0003 16 [ 0600 ] 0004 | Trans Recall = 006*10s  VMS/Attend.  N
17 [ 0700 ] 0001 18 [ 0700 ] 0002 | Tap-on extn. = 0000    Analog Phone  N
19 [ 0810 ] 0060 20 [ 0802 ] 0000 |                                Busy on DID   N
21 [ 0803 ] 0000 22 [ 0809 ] 0000 |                                Hands free Camp N
                                [G] DSS Assignment
[c] all lines to all extns or timer to all extns,[x] line to all lines in extn
[v] line to all extns,[z] ring to all lines,[w] ring to all extns
```

Figure 8-1 Station Programming Screen

## 8.3 PROGRAMMING STATION RING/ACCESS

### 8.3.1 WHAT TO PROGRAM

Each station can be programmed on a per Line ID basis to have outside lines ring the station. *CO Line Programming* in the *System Programming* section describes what a Line ID is. The station is programmed with a separate ring assignment for when the system is in the day mode, and for when the system is in the night mode. Determine from the customer which outside lines are to ring on which stations, and whether they are to ring in the day mode, night mode or both. Determine the outside lines' corresponding line IDs. Enter this information for each station on the Station Programming Configuration sheets.

Each station can be programmed on a per Line ID basis to have outgoing access to outside lines. The station is programmed with a separate access for when the system is in the day mode, and for when the system is in the night mode. Determine from the customer which stations are to have outgoing access to which outside lines, and whether they are to have access in the day mode, night mode or both. Determine the outside lines' corresponding line IDs. Enter this information for each station on the Station Programming Configuration sheets.

### 8.3.2 DEFAULT VALUES

Extensions 3001 through 3006

Day Ring	Y
Night Ring	Y
Day Access	Y
Night Access	Y

Extensions 3007 through 3228

Day Ring	N
Night Ring	N
Day Access	Y
Night Access	Y

### 8.3.3 HOW TO PROGRAM

If not already in the *Station Programming* screen, from the *Main Menu* press the A key. The *Day Ring*, *Night Ring*, *Day Access*, and *Night Access* for each station are programmed by Line ID number. Refer to Figure 8-1 for an example of the *Station Programming* screen.

1. When the *Station Programming* screen is entered, the cursor is at the *Extension number* position. The extension number of the station to be programmed can be entered. The I and D keys can be used to Increment and Decrement the extension number.
2. If the extension number was entered, press the RETURN key.
3. Press L on the keyboard. The cursor moves to the *Ring/Access* area.
4. Enter the Line ID number to be programmed. Press the RETURN key. The I and D keys can be used to Increment and Decrement the Line ID number.
5. Once the cursor is in the *Ring/Access* area, the LEFT ARROW key can be used to decrement the Line ID number. The RIGHT ARROW key can be used to increment the Line ID number.
6. Working from the *Station Programming Configuration* sheets, enter the information for each Line ID number.
7. Press the RETURN key after each entry to advance the cursor to the next entry. Press the L key at any time to bring the cursor back to select the Line ID number.

Programming aids have been included in this programming area. These programming aids are the copy functions and are outlined in the following section.

### 8.3.4 COPY FUNCTIONS FOR RING/ACCESS

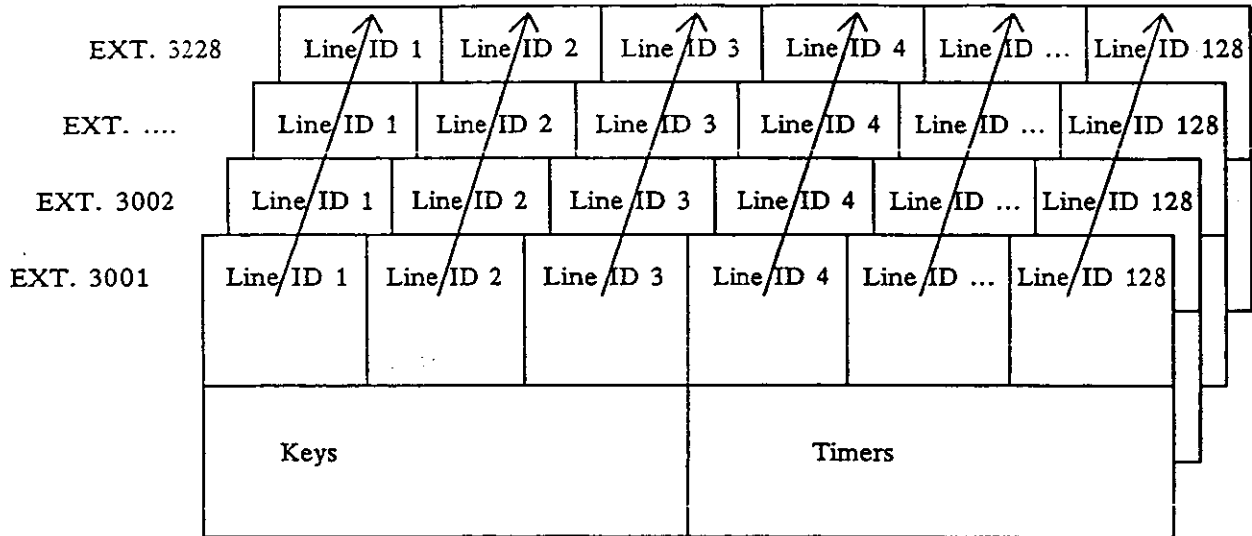
#### Copy function C:

Copy function C copies every Line ID to every station. To copy every Line ID to every station, the cursor must be on the line with Line ID Number.

Line ID on station programming =

Day Ring	Y or N
Night Ring	Y or N
Day Access	Y or N
Night Access	Y or N

Copy function C is also used to copy individual *Timer* values to all extensions, or a particular *Key code* to all extensions.

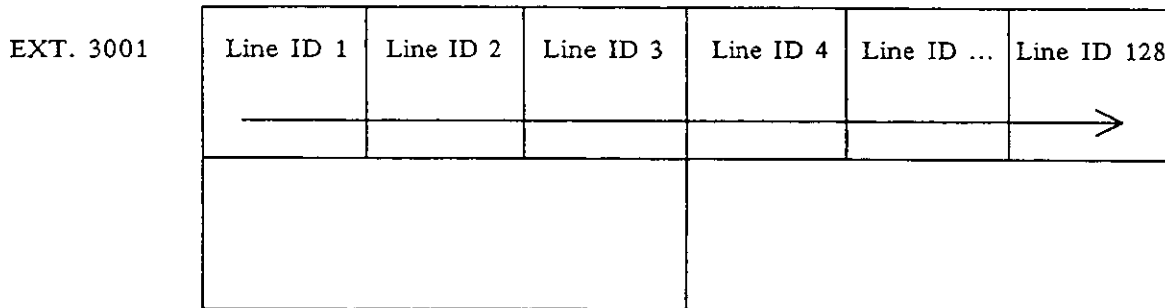


**Copy function X:**

Copy function X copies one Line ID to all Line IDs for one extension. This will copy all four parameters to every Line ID. It will not copy Line IDs to other extensions. To copy one Line ID to every other Line ID, the cursor must be on the line with Line ID Number.

Line ID on station programming =

- Day Ring        Y or N
- Night Ring     Y or N
- Day Access     Y or N
- Night Access   Y or N

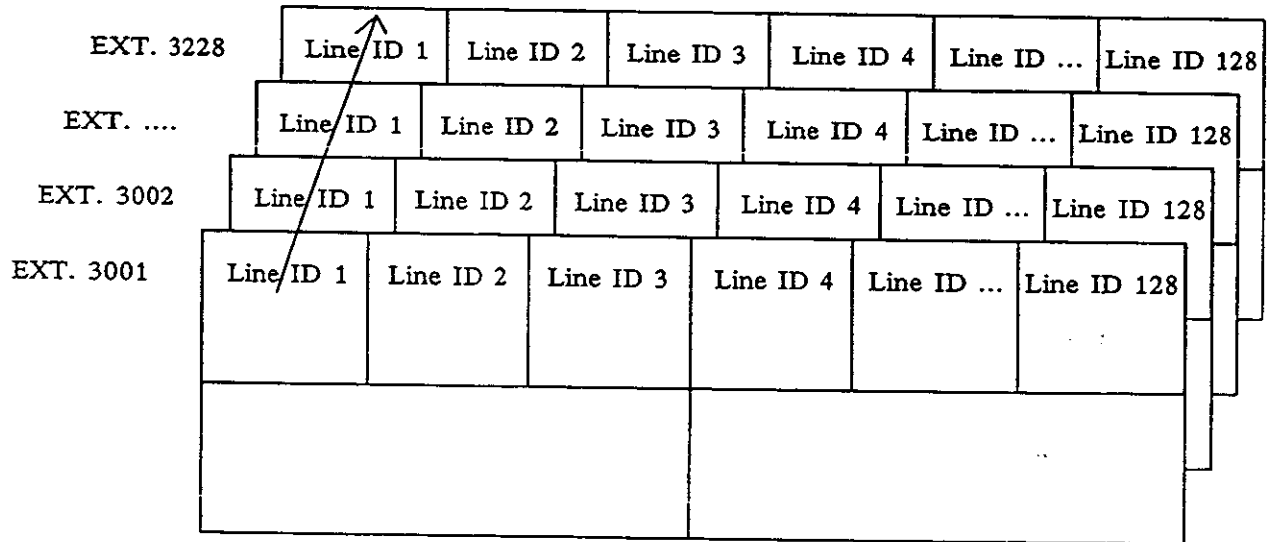


Copy function V:

Copy function V copies one particular Line ID to every extension. This will copy all four parameters of the Line ID to every extension. To copy one Line ID to every extension, the cursor must be on the line with Line ID Number.

Line ID on station programming =

- Day Ring Y or N
- Night Ring Y or N
- Day Access Y or N
- Night Access Y or N



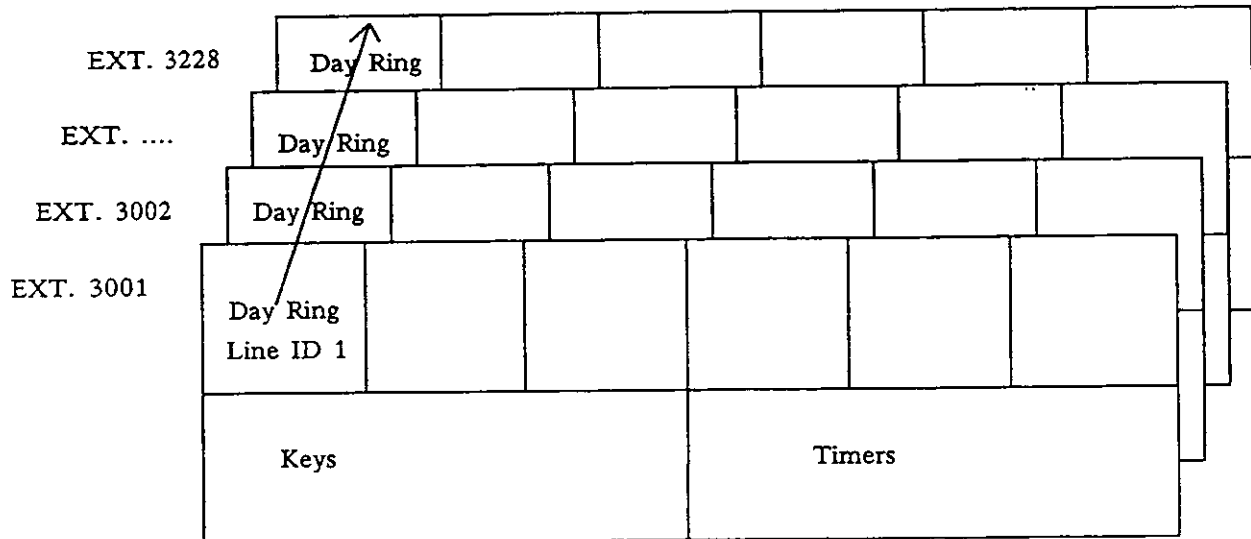
**Copy function Z:**

Copy function Z copies *one parameter* of the Line ID, e.g. Day Ring to all other Line IDs. The other parameters will not be copied. To copy one parameter to all other Line IDs, the cursor must be positioned on the line with the parameter. For example, to copy Day Ring to all Line IDs, position the cursor next to Day Ring and press Z.

EXT. 3001	Day Ring Line ID 1	Day Ring Line ID 2	Day Ring Line ID 3	Day Ring Line ID 4	Day Ring Line ID ...	Day Ring Line ID 128
						→

**Copy function W:**

Copy function W copies *one parameter* of one Line ID to every extension. The other parameters will not be copied. To copy one parameter to all other extensions, the cursor must be positioned on the line with the parameter. For example, to copy one line ID's Day Ring to all other extensions, position the cursor next to Day Ring and press W.



## 8.4 KEYS PROGRAMMING

The next step in programming a station, and the one most visible to a user, is the programming of the *feature keys* (buttons) on the telephone. Most of the features available to a station user require (or are made easier by) a key programmed for that feature. The keys that can be programmed on a station, along with a description of what the key is used for, is provided in the following sections. Discuss with the customer what keys are needed on which stations. At the end of the descriptions is a section covering how to program keys on a station.

Each key is programmed on a station by using a key code. The key code for each feature key is listed with the description of the key. Table 8-1 summarizes these key codes. Certain feature keys also require additional information to be programmed. This information is added with the use of the sub-code. The feature key description lists which keys need a sub-code, and what the available sub-codes mean.

### 8.4.1 ACCOUNT CODE KEY

The ACCOUNT CODE key is used to enter up to ten digits (eight digits for Verified Forced Account Codes) into the SMDR call record for both incoming and outgoing calls. If the customer is to make use of this feature to track call records according to use, determine which stations are to be equipped with ACCOUNT CODE keys and their position on each station. Enter the key code for the ACCOUNT CODE key (key code 813) in the proper key position for each station on the Station Programming Configuration sheets. Only one ACCOUNT CODE key is needed per station.

*NOTE: Do not program an ACCOUNT CODE key on a display phone. The ACCOUNT CODE key appears on one of the soft keys when it is needed.*

The Forced Account Code feature makes use of the ACCOUNT CODE key. If the customer intends to use Forced Account Codes, provide a key for each station selected by the customer.

### 8.4.2 ACD HELP KEY

This key is used with the Automatic Call Distribution feature to allow an agent to request help from a supervisor. When this key is used, a visual indication is given to the ACD supervisor via the supervisor terminal. Enter the key code for the HELP key (key code 827) in a key position for each desired station. Only one HELP key is required per station.

*NOTE: The use of the ACD HELP key is not available in the Basic ACD feature package.*

### 8.4.3 ACD LOG KEY

The ACD LOG key is used to notify the telephone system that an ACD agent has logged onto the system, and which extension the agent is using. This key is necessary on any telephone that is to be used with the Automatic Call Distribution feature. Enter the key code for the ACD LOG key (key code 822) in a key position for each station used with the ACD feature on the Station Programming Configuration sheets. Only one ACD LOG key is needed per station.

*NOTE: This key can also be programmed with a sub-code which indicates an ACD agent number to shorten the log in sequence. See the ACD Manager Guide for more detailed information.*



#### 8.4.4 ACD NIGHT KEY

The ACD NIGHT key is used to place an individual ACD group into the NIGHT mode. While in the ACD night mode, calls to the ACD group follow the NIGHT program sequence for that group. The ACD NIGHT key does not place the system into the night mode, only the ACD group. The ACD NIGHT key does not affect trunks being directed to ACD when the system is in the NIGHT mode. Enter the key code for the ACD NIGHT key (key code 832) in a key position for each authorized station. This key also uses a sub-code which indicates which ACD group is to be placed in the NIGHT mode. One ACD NIGHT key can be used for each ACD group.

#### 8.4.5 ACD QUALIFY KEY

This key is used with the Automatic Call Distribution feature. A 3 digit number can be entered at the end of each call which describes the purpose or type of call. The ACD QUALIFY key is needed to enter this 3 digit number. Enter the key code for the ACD QUALIFY key (key code 825) in a key position for each desired station on the Station Programming Configuration sheets. Only one ACD QUALIFY key is needed per station.

#### 8.4.6 ACD QUEUE KEY

The LED of the ACD QUEUE key is used to give a visual indication of the number of calls waiting in queue to be answered. Three different flash rates can be programmed for the QUEUE key LED which indicate one, two, or more calls waiting in queue. There is an ACD QUEUE key for each of the ACD groups. The ACD group the key is used with is specified in the sub-code (01-15). Enter the key code for the QUEUE key (key code 831) in a key position for each desired station.

#### 8.4.7 ACD SUPERVISOR KEY

This key code (824) has been provided for future use, and has no meaning in the present software versions.

#### 8.4.8 ACD UNAVAILABLE KEY

This key is used with the Automatic Call Distribution feature. An ACD agent uses this key to advise the system to not send calls to the ACD agent. Enter the key code for the ACD UNAVAILABLE key (key code 826) in a key position for each station on the Station Programming Configuration sheets. Only one ACD UNAVAILABLE key is needed per station.

#### 8.4.9 ACD WRAP KEY

As an agent completes a call, there is a certain amount of time allotted to complete any work associated with the call. The WRAP UP key LED lights to indicate when an agent is in this wrap up time. If the agent does not require the full amount of time to complete this work, the WRAP key can be used to make the agent available for another call. Enter the key code for the WRAP key (key code 823) in a key position for each desired station. Only one WRAP key is needed per station.

#### 8.4.10 ADD ON KEY

The ADD ON key is used in a manner similar to the TR/CON key to establish a conference call. The difference is the ADD ON key is used when more than two parties are to be involved in the conference. For stations that are to make such conferences, determine the key position, and enter the key code for an ADD ON key (key code 806) to the appropriate position on the Station Programming Configuration sheets. Only one ADD ON key is needed per station.

#### 8.4.11 BAD LINE KEY

The BAD LINE key is used in conjunction with Least Cost Routing to help identify bad lines within a facility or Other Common Carrier Service. The use of the BAD LINE key increments a counter in the Line Utilization screen of the Reports Menu. If a station is authorized to make such a report, enter the key code for the BAD LINE key (key code 819) into a key position on the *Station Programming Configuration* sheets. Only one BAD LINE key is used per station.

#### 8.4.12 BARGE IN KEY

The BARGE IN key is provided to allow an authorized party to enter into an existing conversation. The stations which are being entered into must be programmed to allow such entry (see *Block Barge In*). If a station is to be permitted to enter a conversation in this manner, enter the key code of a BARGE IN key (key code 816) into a key position for that station on the Station Programming Configuration sheets. Only one BARGE IN key is used per station.

*NOTE: The use of this feature may be prohibited in some areas. Consult state and local laws before using this feature.*

#### 8.4.13 CALL BACK KEY

The CALL BACK key can be used by a station user calling a busy extension to complete the call when the called station becomes free. A queued call remains in the system until both the called party and calling party are available. The CALL BACK key may also be used for line queuing. When all outside lines in a particular Trunk Group are busy, a station user can activate this feature which will ring the station back when a line becomes available. If a station is to use the Call Back feature, enter the key code for a CALL BACK key (key code 807) on the Station Programming Configuration sheets for that station. Only one CALL BACK key is used per station.

*NOTE: Do not program a CALL BACK key on a display phone. The CALL BACK key appears on one of the soft keys when it is needed.*

#### 8.4.14 CALL COVERAGE KEYS (PILOT KEYS)

A set of key codes exists in the system which provide the ability to have an extension ring when another extension in the system is ringing with a trunk call. These keys are used in place of LEAST COST ROUTING keys or TRUNK GROUP keys to make/receive trunk calls. Each key behaves like an LCR key for outgoing calls, and like a DIRECT APPEARANCE key for incoming calls. The keys give the ability for a station to provide call coverage on trunk calls to other stations. It is the keys that are being covered, not the stations themselves. Thus, if a call is made/received on a key other than the PILOT keys, it is not covered. Intercom calls are not covered.

*NOTE: Call Coverage keys must not be used on ACD agents' telephones.*

Each extension that is to be covered is assigned PILOT keys corresponding to its extension number. This same key is then assigned to another extension (the extension which is to provide the coverage). Calls made or received on this key may be handled by either extension. The code for this key is the extension number to be covered. For example, if the extension numbers in the system begin with a 3, and if extension 3012 is to be covered by a secretary, assign key code 3012 to a key position on extension 3012, and to a key position on the secretary's extension.

Each key is then assigned a sub-code which describes the way the PILOT key functions on the extension it appears on. The same key may be programmed to function one way on one extension, and a different way on another extension. If a sub-code of zero is entered, the key becomes a DSS key and not a PILOT key. The following describes how the key may be programmed:

A key with a sub-code of:

101 – the LED flashes on an incoming call.

111 – the LED flashes on an incoming call and the phone rings.

121 – the LED flashes on an incoming call and the phone has a delayed ring. An extension with a PILOT key programmed with this sub-key code starts to ring after the covered station has been ringing a pre-programmed amount of time. The programmed time is taken from the covered extension's station programming. This is found on the *Station Programming* screen in the *Timers* area, and is called *Pilot NoAnswr*. This timer is in increments of seconds.

131 – the LED flashes on an incoming call and the phone rings only if covered station is busy.

141 – the LED flashes on an incoming call and the phone has delayed ring, or rings if the covered station is busy.

*NOTE: If total coverage is desired, do not program trunk group keys, or direct appearance trunk keys on the covered extensions.*

### Example 1:

A company has two managers whose telephones are covered by a single secretary. The first manager is extension 3012. The second manager is extension 3045. The secretary is extension 3033. It is desired that only the secretary's telephone rings whenever there is a call for the first manager. It is desired that when there is a call for the second manager, the secretary's station rings only if the second manager's extension is busy.

The following is programmed:

Extension 3012 (first manager) is assigned key code 3012 sub-code 101. (This extension does not ring for an incoming call on this key).

Extension 3045 (second manager) is assigned key code 3045 sub-code 111.

Extension 3033 (secretary) is assigned two keys. Key code 3012 sub-code 111 (for the first manager), and key code 3045 sub-coded 131 (for the second manager).

### Example 2:

ABC Company's president, Mr. Daniel, wishes his secretary to answer his extension, but only if it has rung for 30 seconds. Mr. Daniel's extension is 3005, and his secretary is extension 3006. The following is to be programmed:

Extension 3005 is assigned a key code 3005 sub-code 111.

Extension 3006 is assigned a key code 3006 sub-code 121.

The 30 second timer is programmed for extension 3005 (the covered extension) in station programming. Set the *Pilot NoAnswr* parameter in the *Timers* area to 30 (for 30 seconds).

Since these PILOT keys take the place of LCR keys or TRUNK GROUP keys, it is often desired to have more than one key assigned per phone. In this case the sub-code for the PILOT keys changes slightly. The first digit in the sub-code is always 1. The second digit denotes the use of the key (see table above).

## Station Programming

The third digit denotes the number of the key (1-8). Only 8 keys with the same key code are permitted per extension. Therefore, if the second PILOT key LED is to flash and the phone is not to ring, the sub-code is 102. Note the third digit is a 2, denoting the second key of the same key code on the station.

A second key with a sub-code of:

- 1 0 2 – the LED flashes on an incoming call only
- 1 1 2 – the LED flashes on an incoming call and phone rings
- 1 2 2 – the LED flashes on an incoming call and phone has a delayed ring
- 1 3 2 – the LED flashes on an incoming call and phone rings only if covered station is busy
- 1 4 2 – the LED flashes on an incoming call and phone has delayed ring, or rings if the covered station is busy.

A third key with a sub-code of:

- 1 0 3 – the LED flashes on an incoming call only
- 1 1 3 – the LED flashes on an incoming call and phone rings
- 1 2 3 – the LED flashes on an incoming call and phone has a delayed ring
- 1 3 3 – the LED flashes on an incoming call and phone rings only if covered station is busy
- 1 4 3 – the LED flashes on an incoming call and phone has delayed ring, or rings if the covered station is busy.

And so on for the 4th to 8th key of the same key code.

When there is more than one key of the same key code on the extensions, the keys with the same last digit in the sub-code work together.

The PILOT keys have the highest priority (over TRUNK GROUP keys, UNI keys, etc.) for receiving calls on the station.

*NOTE: Direct appearance keys cannot be covered, and should not be programmed on extensions which are to be covered.*

### Night Operation

The CALL COVERAGE keys do NOT operate when the system is in the NIGHT mode unless an option is set on the *System Options* programming screen. If it is desired that the CALL COVERAGE keys are not to operate at night, provide a trunk group key or an LCR key on extensions with CALL COVERAGE keys.

If CALL COVERAGE keys must work during NIGHT mode, set the NIGHT CALL COVERAGE option to Y (yes) on the *System Options* programming screen.

Enter the key code for the CALL COVERAGE key in a position for each desired station.

*NOTE: In software versions prior to 4.25, the key code for a CALL COVERAGE key was 4 + the last three digits of the extension number to be covered. For example: if extension 3012 is to be covered by a secretary, key code 4012 was assigned to a key position on extension 3012, and to a key position on the secretary's extension. The sub-codes were assigned in the same manner as the present software version.*

#### 8.4.15 CALL FORWARD KEY

The CALL FORWARD key allows calls to an extension to be automatically routed to another extension. This can be done for all internal calls and all outside line calls. The destination for the forward, Call Forward Busy and Call Forward No Answer are programmed on the *Forward and VMS* programming screen. If a CALL FORWARD key is to be programmed, enter the key code for a CALL FORWARD key (key code 809) on the Station Programming Configuration sheets. Only one CALL FORWARD key is used per station.

#### 8.4.16 DATA HOT LINE KEY

The DATA HOT LINE key is used with the Data Feature for one key access to call a data port. Enter the key code for a DATA HOT LINE key (key code 828) on the Station Programming Configuration sheets for each station required. The particular data port (001-228) to be accessed by the key is programmed as the sub-code for the key. Enter the sub-code for each key to be programmed on the Station Programming Configuration sheets. A station may be programmed with as many DATA HOT LINE keys as will fit on the station.

#### 8.4.17 DATA ON/OFF KEY

The DATA ON/OFF key is required to use the data switching capability of the system. The DATA ON/OFF key enables a user to establish a connection to any idle data port, and communicate to any serial device connected to the system. For all stations that are to use the data feature, enter the key code for a DATA ON/OFF key (key code 829) in a key position on the Station Programming Configuration sheets. Only one DATA ON/OFF key is needed per station.

#### 8.4.18 DIRECT TRUNK APPEARANCE KEY

Any trunk connected to the system may appear as an individual trunk on any station. Enter the line number for the particular trunk (001-228) to be programmed in a key position on the Station Programming Configuration sheets. A station may have as many direct trunk appearances as will fit on the station.

#### 8.4.19 DIRECT STATION SELECTION (DSS) KEY

The Direct Station Selection/Busy Lamp Field key may be programmed to enable rapid access to an internal station. The lamps associated with these keys can be used to provide a visual indication of the status of the extension the key is programmed for. Instead of having to dial 4 digits to call a station, the DSS key can be pressed to call preprogrammed extensions. Enter the 4 digit extension number for each DSS key to be programmed with a sub-code of zero in a key position on the Station Programming Configuration sheets. If a sub-code other than zero is entered, the DSS key becomes a PILOT key. A station may have as many DSS keys as will fit in the station.

*NOTE: To change a PILOT key to a DSS key for the same extension, the entire key code must be re-entered, not just the sub-code.*

An option on the *System Options* programming screen allows DSS keys to be used for *Call Pickup*.

#### 8.4.20 DO NOT DISTURB KEY

A station can block all ringing, pages, background music, and barge-in by activating the DND mode. Enter the key code for a DND key (key code 803) in one of the key positions for each station to use the feature on the Station Programming Configuration sheets. A station uses only one DND key.

#### 8.4.21 DO NOT DISTURB OVERRIDE KEY

The DND OVERRIDE key is used to call a station which is in the DND mode. Enter the key code for a DND OVERRIDE key (key code 837) in one of the key positions for each station authorized to use the feature on the Station Programming Configuration sheets. A station uses only one DND OVERRIDE key.

#### 8.4.22 FORWARD TO ACD KEY

A key code has been designed to forward a station to an ACD group. Any outside line call ringing, or transferred, to a station can be directed to an ACD group with the use of this key. The specific ACD group (01-15) is designated with the sub-code of the key. Enter the key code for the FORWARD TO ACD key (key code 835) in a key position for each desired station.

*NOTE: Internal calls to an extension are not forwarded to the ACD Group.*

#### 8.4.23 HANDSET BARGE-IN KEY

This feature key allows the Operator to enter into an existing conversation of a station, and announce a waiting call. The announcement can only be heard by the inside extension. The other party cannot hear the Operator. However, the inside party's responses to the Operator can be heard. Once the Operator hangs up, the original conversation is re-established. The Operator cannot announce calls with Handset Barge-In to extensions engaged in a Conference call. Enter the key code for a HANDSET BARGE-IN key (key code 836) in a key position on each operator station to use this feature on the Station Programming Configuration sheets. Only one key per operator station is needed.

*NOTE: This feature requires the function keys on the Integrated Operator Terminal to be programmed as feature keys. See Operator Programming in the System Programming section of this manual.*

The Handset Barge-In feature is affected by the *Block Barge-In* and *Block Barge Tone* station parameters. These parameters are located in the *Timers* area of the *Station Programming* screen.

*NOTE: The use of this feature may be prohibited in some areas. Consult state and local areas before using this feature.*

#### 8.4.24 ICM KEY

The ICM key has two functions. It is used when a station is programmed for Prime Line use to access internal dial tone. The ICM key is pressed before taking the station off-hook to receive internal dial tone. The ICM key can also be used if stations wish an LED indication of internal calls on hold, or transferred internal calls. Enter the key code for an ICM key (key code 818, sub-code 000) in a key position on the Station Programming Configuration sheets.

#### 8.4.25 IN/OUT KEY

This feature key allows an extension to indicate to the operator and internal callers that the user is not at the station. Enter the key code for an IN/OUT key (key code 821) in a key position on each station to use this feature on the Station Programming Configuration sheets. Only one key per station is needed.

#### 8.4.26 LCR KEY

An LCR key is a TRUNK GROUP key used to access the Least Cost Routing feature. If a station is to have a Least Cost Routing key, enter a key code of 300 with a sub-code of 20 into a key position on the Station Programming Configuration sheet. A station may be programmed for as many LCR keys as will fit on the station.

*NOTE: It is recommended that a station have at least two LCR or TRUNK GROUP keys to allow for receiving a second call, or to make a conference call.*

#### 8.4.27 MESSAGE WAITING KEY

A lamp indication may be left at a called station when a caller receives no answer or a busy signal through the use of a MESSAGE WAITING key. A station will require a MESSAGE WAITING key if it intends to activate the MESSAGE WAITING lamp at another station. Enter the key code for a MESSAGE WAITING key (key code 804) in a key position on the Station Programming Configuration sheets. Only one MESSAGE WAITING key is needed per station.

#### 8.4.28 MIC MUTE KEY

This feature key allows the microphone and the transmitter in the handset of a station to be attenuated. An outside party will not be able to hear a normal conversation carried out in the room while this feature is active. Enter the key code for a MIC MUTE key (key code 801) in a key position on the Station Programming Configuration sheets. Only one key is to be programmed per station.

#### 8.4.29 NIGHT ANSWER KEY

A key can be provided for stations which do not ring when the system is in the night mode, to enable the station to answer incoming outside line calls. This is the NIGHT ANSWER key. For all stations which are to have a NIGHT ANSWER key, enter the key code for a NIGHT ANSWER key (key code 802) in a key position on the Station Programming Configuration sheets. Only one NIGHT ANSWER key is used per station.

#### 8.4.30 NIGHT MODE KEY

The NIGHT MODE key is programmed on the operator station to enter the system into the night mode. On the operator's Station Programming Configuration sheet, enter the key code for a NIGHT MODE key (key code 800) in a key position. Only one NIGHT MODE key is to be programmed per operator station.

*NOTE: A NIGHT MODE key is not necessary when using the Integrated Operator Terminal.*

#### 8.4.31 PAGE KEY

The PAGE key is used for single key access to one of the nine page zones or to page all zones. Enter the key code for a PAGE key (key code 810) in a key position on the Station Programming Configuration sheets. Enter the zone that the key is to access (61-69, or 60 for all zone page) in the sub-code area for each PAGE key. A station may have as many page keys as needed.

#### 8.4.32 PATCH KEY

The PATCH key is used when a station originates a conference call with two outside parties and wishes to leave the conference, but have the two outside parties remain connected together. Enter the key code for a PATCH key (key code 812) in a key position on the Station Programming Configuration sheets for each station authorized to use this feature. Only one PATCH key is to be programmed per station.

#### 8.4.33 PBX FEATURE KEY

Up to 40 programmable PBX feature keys can be assigned for single key dialing of PBX features. The PBX feature keys can be programmed to flash a line, wait for a time or for dial tone, or dial a feature sequence, or any combination of these. For each PBX feature key to be programmed on a station, enter the key code for a PBX feature key (key code 815) in a key position on the Station Programming Configuration sheets. The particular sequence to be used is programmed on the *PBX Feature Key* programming screen. There are 40 possible PBX feature key sequences. To program the PBX key for a particular sequence, enter the sequence number (1-40) into the sub-code area for the PBX feature key. Any number of PBX feature keys may be programmed as will fit on the station.

#### 8.4.34 PICK UP KEY

Stations can be arranged into groups such that a call ringing any station in the group can be answered by any other station, using a single key. The advantage of the pickup group is that it is not necessary to know which extension in the group is ringing. There are 36 pickup groups with no limit to the number of stations assigned to a group. However, a station can only be part of one pickup group. A station does not have to be part of the pickup group that he or she is trying to answer. For each station to make use of this feature, enter the key code for a PICK UP key (key code 808) in a key position on the Station Programming Configuration sheets. Enter the particular group (1-36) into the sub-code area for each key. A station may have as many PICK UP keys as needed.

#### 8.4.35 RELEASE KEY

A RELEASE key is placed on a station that is using a headset rather than the handset. The RELEASE key is used in place of the switch-hook. For each station needing a RELEASE key, enter the key code for a RELEASE key (key code 811) in a key position on the Station Programming Configuration sheets. Only one RELEASE key is to be programmed per station.

#### 8.4.36 RING GROUP PICKUP

The RINGING GROUP PICKUP key allows a call ringing in a pickup group to ring any phone programmed with a RINGING GROUP PICKUP key. PICK UP keys (key code 808) only flash to indicate an incoming call. The key can be programmed to light only, to begin ringing immediately and light, or to begin ringing after a delay time and light immediately.

The key code for a RINGING GROUP PICKUP key is 9 + the group number 01 through 36. The key is also programmed with a sub-code:

000	= immediate ring
001 - 200	= this number is multiplied by 10 seconds to give the delay time.
201	= the phone does not ring. The LED lights immediately.

*NOTE: PICK UP keys and RINGING GROUP PICKUP keys should not be programmed at the same time on an extension.*

#### 8.4.37 SAVE/REPEAT KEY

A number dialed on an outside line can be saved for later re-dialing through the use of this feature key. Enter the key code for a SAVE/REPEAT key (key code 814) in a key position on the Station Programming Configuration sheets for each station to use this feature. Only one SAVE/REPEAT key is to be programmed per station.

#### 8.4.38 SERIAL KEY

A station user can cause a transferred call to automatically recall their station upon completion for re-routing to another party. When the SERIAL key is used with the TR/CON (TRansfer CONference) key, the call that is transferred recalls the station when the transferred station disconnects from the call. The serial key is used prior to transferring an outside line call. Enter the key code for a SERIAL key (key code 820) in a key position on the Station Programming Configuration sheets for each station to use this feature. Only one SERIAL key is to be programmed per station.



### 8.4.39 SILENT MONITOR KEY

The SILENT MONITOR key is used in Automatic Call Distribution applications where it is necessary to monitor the conversation on outside line calls of a particular station. This feature is similar to the BARGE IN feature, but does not need to be activated for each call made by the monitored station. Enter the key code for the SILENT MONITOR key (key code 833) in a key position for each authorized station. Only one key is required per station. The *Remote Silent Monitor* feature also uses the SILENT MONITOR key.

*NOTE: The use of this feature may be prohibited in some areas. Consult state and local laws before using this feature.*

*NOTE: Silent Monitor must be added remotely by an authorized ISOETEC Service Center.*

### 8.4.40 SPLIT KEY

The SPLIT key allows a station user to place a call on hold, and switch to a waiting call. The user may then switch back and forth between the two calls with the use of one key. Enter the key code for a SPLIT key (key code 805) in a key position on the Station Programming Configuration sheets for each desired station.

### 8.4.41 STATION SPEED KEY

A STATION SPEED key allows a station to dial an outside number which is stored in station memory by pressing a single key. A station can store up to 30 speed dial numbers with up to 30 digits each. A key can be programmed to access any one of the 30 speed dial numbers. Enter the key code for a STATION SPEED key (key code 600) in a key position on the Station Programming Configuration sheets. To program the key to access the particular station speed number, enter the number (1-30) of the particular station speed number in the sub-code area for each key. A station may have as many STATION SPEED keys as will fit on the station.

### 8.4.42 SYSTEM SPEED KEY

A station may have a key programmed that will dial one of the outside numbers stored in system memory. The system can store up to 999 outside numbers with *eleven* digits in each number. Enter the key code for a SYSTEM SPEED key (key code 7+ the memory location of the stored number 001 through 999) in a key position on the Station Programming Configuration sheets. A station may have as many SYSTEM SPEED keys as will fit on the station.

*NOTE: In software versions prior to 4.51, the system had a limit of 200 system speed dial numbers. The SYSTEM SPEED key was programmed with a key code of 700, and the sub-code (001-200) determined which system speed dial memory location the key was to access.*

### 8.4.43 TRUNK GROUP KEY

Stations access outgoing outside lines and answer incoming outside line calls by use of the TRUNK GROUP key. The CO lines are arranged into groups in system programming. Stations are then given the means to access a line in these groups through the use of the TRUNK GROUP key. Enter a TRUNK GROUP key for each Trunk Group that the station is permitted to use on the Station Programming Configuration sheets. The sub-code area of each key position is used to indicate the number of the Trunk Group that the key is to access. The key code for a TRUNK GROUP key is 300. The sub-codes range from 1 through 10 for the 10 trunk groups. Sub-code 20 is used when the TRUNK GROUP key is used to access the *Least Cost Routing* feature. For example, if a station is to access trunk group 2, enter on the

Station Programming Configuration sheet key code 300 with a sub-code of 2 into a key position. If a station is to have a LEAST COST ROUTING key, enter a key code of 300 with a sub-code of 20 on the Station Programming Configuration sheet into a key position. A station may be programmed for as many TRUNK GROUP keys as will fit on the station.

*NOTE: It is recommended that a station have at least two TRUNK GROUP keys to allow for receiving a second call, or to make a conference.*

#### 8.4.44 UNI KEY

The UNI key can be programmed on a station to allow incoming calls, on a line that does not appear on a station, to reach the station. For each station to use the UNI key, enter the key code for a UNI key (key code 400, sub-code 011) in a key position on the Station Programming Configuration sheets. A station usually only needs one UNI key, but any number may be programmed on a station.

#### 8.4.45 UNSUPERVISED CONFERENCE

The UNSUPERVISED CONFERENCE key is used when a station originates a conference call with two outside parties and wishes to leave the conference, but have the two outside parties remain connected together. The UNSUPERVISED CONFERENCE key is similar to the PATCH key, however, when the UNSUPERVISED CONFERENCE key is used, the trunks are no longer connected to the station, and the conference cannot be reentered. The LEDs for the OUTSIDE LINE keys go out, and the keys are available for other calls. Enter the key code for a UNSUPERVISED CONFERENCE key (key code 838) in a key position on the Station Programming Configuration sheets for each station authorized to use this feature. Only one UNSUPERVISED CONFERENCE key is to be programmed per station.

#### 8.4.46 VMS (VOICE MESSAGE SYSTEM) KEY

The VMS key is used in conjunction with the VMS (*Voice Message System*). This key's LED will light to indicate that a message has been received for that station in the voice message system. The key can also be used to call a station user's mailbox. Enter the key code for a VMS key (also called a MAIL key) (key code 830) in a key position on the Station Programming Configuration sheets. Only one VMS key may be programmed on a station.

#### 8.4.47 DEFAULT KEY VALUES

Key 1	300	(0020)	LCR	Key 2	300	(0020)	LCR
Key 3	300	(0020)	LCR	Key 4	300	(0020)	LCR
Key 5	818	(0000)	ICM	Key 6	818	(0000)	ICM
Key 7	3001	(0000)	DSS key	Key 8	3002	(0000)	DSS key
Key 9	3003	(0000)	DSS key	Key 10	3004	(0000)	DSS key
Key 11	3005	(0000)	DSS key	Key 12	3006	(0000)	DSS key
Key 13	600	(0001)	Station Speed 1	Key 14	600	(0002)	Station Speed 2
Key 15	600	(0003)	Station Speed 3	Key 16	600	(0004)	Station Speed 4
Key 17	700	(0001)	System Speed 1	Key 18	700	(0002)	System Speed 2
Key 19	810	(0060)	Page All Zones	Key 20	802	(0000)	Night Answer
Key 21	803	(0000)	DND	Key 22	809	(0000)	Call Forward

Table 8-1 Key Code Summary

Key Codes	Sub-key Codes	Description
0001 - 0228	-	DIRECT TRUNK APPEARANCE
0300	1-10	TRUNK GROUP
0300	20	LCR
400	11	UNI
600	1-30	STATION SPEED
700	1-200	SYSTEM SPEED
800	-	NIGHT MODE
801	-	MIC MUTE
802	-	NIGHT ANSWER
803	-	DO NOT DISTURB
804	-	MESSAGE WAITING
805	-	SPLIT
806	-	ADD ON
807	-	CALL BACK
808	1-36	PICK UP
809	1-228	CALL FORWARD
810	60-69	PAGE
811	-	RELEASE
812	-	PATCH
813	-	ACCOUNT
814	-	SAVE/REPEAT
815	1-40	PBX
816	-	BARGE IN
817	-	not used
818	-	ICM
819	-	BAD LINE
820	-	SERIAL
821	-	IN/OUT
822	1-201	ACD LOG
823	-	ACD WRAP UP
824	-	ACD SUPERVISOR (future use)
825	1-200	ACD QUALIFY
826	-	ACD UNAVAILABLE
827	-	ACD HELP
828	1-228	DATA HOT LINE
829	-	DATA ON/OFF
830	-	VMS
831	1-15	ACD QUEUE
832	1-15	ACD NIGHT
833	-	SILENT MONITOR
834	-	PARK
835	1-15	FORWARD TO ACD
836	-	HANDSET BARGE IN
837	-	DND OVERRIDE
838	-	UNSUPERVISED CONFERENCE
901-936	1-201	RINGING GROUP PICK UP
3001 - 3999 *	0000	DIRECT STATION SELECTION *
3001 - 3999 *	101-148	CALL COVERAGE (PILOT) *
7001 - 7999		SYSTEM SPEED

\* Where 3 is the leading digit for extension numbers. The leading digit for the key code is the same as the leading digit for the extension numbers.

## 8.4.48 HOW TO PROGRAM

If not already on the *Station Programming* screen, from the Main Menu press the A key.

1. When the *Station Programming* screen is entered, the cursor is at the extension number position. The extension number of the station to be programmed can be entered. The I and D keys can be used to Increment and Decrement the extension number.
2. Enter the extension number of the station to be programmed.
3. Press the RETURN key.
4. Press the K key. The cursor moves to the *Keys* area.
5. Begin by entering the key code for key one.
6. Press the RETURN key.
7. If the key requires a sub code, press the S key. The cursor moves to the sub-code section of the key.
8. Enter the sub-code for the key.
9. Press the RETURN key to advance to the next key.
10. Enter the key code for the next key.
11. Press the RETURN key.

*NOTE: If a key position is to have the same value on all stations, the copy function may be used. Press the C key after entering the value of a key before moving on to the next key.*

Continue programming the remaining keys. Remember to enter the sub-codes for the keys that require them.

*NOTE: Program only those keys that appear on the station to be programmed, enter a key code of zero for the remainder. That is, for a 17-key phone, program 17 keys. For the digital display phone, program 20 keys, etc.*

The RETURN key will move the cursor from key to key. The TAB key is used to move the cursor between the two columns. The UP and DOWN arrow keys may also be used to move the cursor.

Press the E key to change the extension number (the I and D keys may also be used). The cursor will move to the top left corner of the screen. Enter the new extension number to be programmed. Press the RETURN key.

```

Ext 300: port 001 name A type Dsp time 3:19 p Fri 02-17-89
-----
[L]line ID Number - 001 c-ext->exts [T]imers
  day ring: Y x-col->ext Camp on timer =003*10s Hands free CO Y
  night ring: Y r-col->exts Recording Num = 000 Hands free ICM Y
  day access: Y z-row->ext Hunt group = 000 Hands free Rec Y
  night access: Y w-row->exts Day class = 000 Auto Answer Y
  Right class = 000 Auto 2nd Path N
  ICR class = 000 allow 2nd Path N
  Prime line = 000 Group in N
  Page zone = 000 Busy On Hold N
  Forced account= 000 Bk Barge In N
  Pickup group = 000 Bk Barge Tone Y
  Pilot NoAnswr = 000s Out ICR Only N
  Cost limit = $0.00 Total Toll N
  Ring type = 01 SMDR Enable Y
  Hold Recall = 000*10s Hook Release N
  Trans Recall = 000*10s VMS/attend N
  Tap-on extn = 3011 Analog Phone
  Busy on DID N
  [G] DSS Assignment Hands free Camp N
  (c) all lines to all extns or timer to all extns, (x) line to all lines in extn
  (v) line to all extns, (z) ring to all lines, (w) ring to all extns

```

Figure 8-2 Station Programming Screen

## 8.5 TIMERS PROGRAMMING

The *Timers* area is used to program a station with various parameters (i.e. recall timers, classes of service, etc.). The following paragraphs describe each parameter and its effects on a station.

### 8.5.1 CAMP-ON TIMER

When an outside line call is transferred to a busy station, a tone is heard by the busy station indicating that a call is waiting to be answered. The tone is repeated at intervals, until the call is answered. The amount of time between the repeated tones is controlled by the *Camp-on timer*. The value entered for the *Camp-on timer* is multiplied by ten by the system to determine the interval, in seconds, between camp-on tones, for example, an entry of 003 is a 30 second interval. Enter the camp on timer for each station on the Station Programming Configuration sheets.

### 8.5.2 RECORDER NUMBER

*Recorder Number* is used with the ACD (Automatic Call Distribution) and built-in Automated Attendant features to define which extension numbers are connected to recorders or announcing devices. This number is then used when programming the ACD Group sequences or Auto Attendant.

### 8.5.3 HUNT GROUP

Stations can be arranged in groups to allow an outside line to ring, or to be transferred to groups of stations rather than an individual extension. Calls entering the *Hunt Group* will be routed to the first available station in a circular fashion. Stations in the same *Hunt Group* are given the same hunt group number. The *Hunt Group* number should be the same *Hunt Group* number that was given to the outside lines which are to ring those stations. The *Hunt Group* number for the lines was assigned in *System Programming*. Determine which stations are members of which hunt groups, and enter this *Hunt Group* number on the Station Programming Configuration sheets.

### 8.5.4 DAY CLASS

A station's *Day Class* is the class of service used with system Toll Restriction. The class of service determines what area codes, and exchanges within its home area code, a station is permitted to dial. The station class of service is used in conjunction with the line class (of service), and with the toll restriction tables. Before determining a station's *Day Class*, read the entire section *Toll Restriction* found later in this manual. The *Day Class* is the class of service of the station when the system is in the day mode. There are 16 possible Day Classes other than zero. The meaning of the class number is determined in *Toll Restriction* programming. A station with a Day Class of 0 does not use the toll restriction feature. After the station's *Day Class* has been determined, enter the number on the Station Programming Configuration sheets for each station.

### 8.5.5 NIGHT CLASS

A station's *Night Class* is used by the system in the same manner as the Day Class when the system is in the night mode. Refer to the section *Toll Restriction* before determining a station's *Night Class*. Enter the *Night Class* number on Station Programming Configuration sheets for each station.

### 8.5.6 LCR CLASS

A station's *LCR Class* is used with the system's optional feature, *Least Cost Routing*. *Least Cost Routing* automatically determines from the outside number dialed by a station user, the least costly facility that is available to the system for the call to be dialed on. The station's LCR Class determines whether a station may use a more expensive route if all lines in the least costly route are busy, or if the station must wait for an available line in the least costly route. There are three LCR classes: LCR class 0, 1, and 2.

- 0 - The call is routed over the least costly route available. If all lines in that route are busy, the call is automatically dialed on a more costly route.
- 1 - If all lines in the the least costly route are busy, you can manually override to the next available service by pressing the \* key.
- 2 - If all lines in the the least costly route are busy, you must wait until a line becomes available before placing the call. Or, use the call back feature, so when a line in the selected service becomes available it will call you back. When the call back is answered, the system will automatically re-dial the number for you.

### 8.5.7 PRIME LINE

An extension may be programmed to automatically access a particular CO line or Trunk Group as soon as the phone is taken off-hook. The actual line to be used (or trunk group) is programmed as the *Prime Line*. Determine the outside line or outside line group to be used by the station, and enter this number on the Station Programming Configuration sheets. Individual outside lines are entered by their actual line number. Trunk groups are entered as "23" plus the trunk group number (1 through 9) or "240" for group 10. For example, if a station is making outside line calls using trunk group 2, enter "232" for the Prime Line on the Station Programming Configuration sheets. LCR dial tone may also be accessed by entering "250".

### 8.5.8 PAGE ZONE

A station may be made a member of a *Page Zone*. The station will then receive pages only when that particular zone is dialed, or when page all zones is used. There are nine possible page zones numbered from 61 through 69. If a station user wishes to receive only pages from page all zones, enter the page zone number as 60. If the station user does not wish to receive any pages, a page zone number of 0 may be entered. After determining the page zone, enter this information on the Station Programming Configuration sheets.

*Note: A station may be a member of only one page zone.*

### 8.5.9 FORCED ACCOUNT

An extension can be programmed to force the entry of an account code before each outside line call is made. A station's *Forced Account* also determines whether or not the account code that is entered is verified against a table of authorized account codes.

The station's day and night class of service are used to restrict a user from dialing a particular type of call (long distance, local, etc.). The Day/Night class of the station is changed (for the one call) when an account code is entered.

#### Forced Account USED FOR

- |            |  |
|------------|--|
| 00         | Forced account codes are not in effect. Station cannot over-ride any toll restriction caused by Day/Night class of service.  |
| 01 thru 16 | An account code must be entered if the station user is dialing an outside line call. The account code entered is NOT checked against the Account Code Table for validation. The station's Day/ Night class of service changes to the number entered as the FORCED ACCOUNT.   |
| 17         | Forced entry of account code when used in conjunction with a station's Day or Night class of service. The entered account number is checked against the validation table ( <i>Account Codes</i> programming screen). The station's Day/Night class is changed to the COS assigned to the account code number. Account codes can still be added to SMDR record. |

### 8.5.10 PICKUP GROUP

Stations can be arranged into groups such that a call ringing any station in that group can be answered by any station using a single key. The advantage of the *Pickup Group* is that it is not necessary to know which extension in the group is ringing. There are 36 pickup groups with no limit to the number of stations assigned to one group. A station may be a member of only one *Pickup Group*. *Pickup Group* is used to place a station into a particular *Pickup Group*. Determine the pickup group number, and enter it on the Station Programming Configuration sheets. If a station is not to be a member of a *Pickup Group*, enter a 0.

### 8.5.11 PILOT NOANSWER

This timer is used with stations equipped with CALL COVERAGE (Pilot) keys. Stations programmed with delay ring, or busy/delay ring CALL COVERAGE keys begin to ring after the primary extension has rung for the *Pilot NoAnswer* amount of time. This timer is programmed in seconds.

### 8.5.12 COST LIMIT

*Cost Limit* is used with *Least Cost Routing*, and the *Total Toll* parameter to control the cost of outside line calls made by an extension. This limit is assigned on a per station basis. A dollar value from \$0.00 to \$9.99 can be entered. When a station user places an outside line call, the dollar value can be used in one of two ways depending on how the parameter *Total Toll* is set. Review this parameter before making a selection for *Cost Limit*. Determine the *Cost Limit* and enter the information on the Station Programming Configuration sheets.

### 8.5.13 TOTAL TOLL

*Total Toll* is used in conjunction with *Least Cost Routing*, and *Cost Limit* to control the cost of an outside line call made by a station user. This parameter can be set in one of two ways.

If set Y (yes), when a station places an outside line call, a running total of the cost of the call is kept. When this cost exceeds the amount set for the station in *Cost Limit* a warning tone is given. Thirty seconds after the warning tone, the system will terminate the call.

If set N(no), the outside number dialed by the station user is priced before the call is allowed to proceed. If the cost for the first minute of the call exceeds the amount set in *Cost Limit* for the station, the call cannot be placed. The station receives reorder tone.

Determine the *Total Toll* for each station, and enter the information on the Station Programming Configuration sheets.

### 8.5.14 RING TYPE

The sound of the ring tone a station user hears when his station is ringing can be adjusted with *Ring Type*. The *Ring Type* is normally adjusted from the station, but can also be programmed using the *Station Programming* screen. There are 10 possible ring types. This parameter is usually programmed after the system is in service. Enter this information on the Station Programming Configuration sheets.

*NOTE: The Ring Type for an extension connected to an OPXI has a different meaning. When programmed for Ring Type 01, the extension rings with two short rings. When programmed for Ring Type 02, the extension rings with one long ring.*



### 8.5.15 HOLD RECALL

The amount of time a call remains on hold before recalling the station is programmed with the *Hold Recall*. The value entered is multiplied by ten by the system to give the hold recall time in seconds, and is programmed on a per station basis. Determine the *Hold Recall* time for each station, and enter the number on the Station Programming Configuration sheets.

### 8.5.16 TRANSFER RECALL

A call which is transferred to a station will recall to the station that transferred it if it is not answered within a programmed amount of time. This amount of time is the *Transfer Recall* time, and is programmed on a per station basis. The value entered is multiplied by ten by the system to give the transfer recall time in seconds. For example, if station A transfers a call to station B (transfer recall timer = 20 secs.), and station B does not answer the call, after 20 seconds the call will re-ring at station A. Determine the *Transfer Recall* time for each station, and enter the number on the Station Programming Configuration sheets.

### 8.5.17 TAP ON EXTENSION

*Tap On Extension* enables simple interfacing with recording devices that typically are used by public agencies. This feature allows the assignment of a single line (OPX) port to be part of an automatic conference with a multiline telephone for all outside line conversations.

When an extension answers or places an outside line call, a two-way audio path is automatically established between the extension and the single line (OPX) serving as the *Tap On Extension*. Typically, a recording device would be connected to the single line (OPX) extension. Each telephone requires its own unique Tap On Extension.

*NOTE: Since the Tap On Extension feature makes use of the Recording Num value, the use of this feature requires that ACD or Automated Attendant be installed in the system.*

**The following parameters are programmed for Yes or No only:**

### 8.5.18 HANDSFREE CO

Each station may be programmed to prevent the use of the hands free feature on outside line calls. When this parameter is programmed for N (no), the hands free microphone of the station will not be active for outside line calls. Determine the setting for each station, and enter it on the Station Programming Configuration sheets.

### 8.5.19 HANDSFREE EXT

Each station may be programmed to prevent the use of the hands free feature on internal calls. When this parameter is programmed for N (no), the hands free microphone of the station will not be active for internal calls. Determine the setting for each station, and enter it on the Station Programming Configuration sheets.

### 8.5.20 HANDSFREE REC

Each station may be programmed to prevent voice announced calls. With this parameter set for N (no), all calls to the station will cause the station to ring. Determine the setting for each station, and enter it on the Station Programming Configuration sheets.

### 8.5.21 AUTO ANSWER

Each station may be programmed to answer any outside line call ringing the extension by lifting the handset (or pressing the HANDS FREE key). Otherwise, if an outside line call is ringing the extension (not a transferred call), the flashing outside line key must be pressed. To enable *Auto Answer* for a station, enter a Y (yes) on the Station Programming Configuration sheets. To disable the feature, enter an N (no) on the Station Programming Configuration sheets.

### 8.5.22 AUTO SECOND PATH

*Auto Second Path* is used only when programming a digital display phone. When a digital display phone is using the handset during a call, the station may still be called via a second path. The second path uses the *hands free speaker*, therefore second path can *NOT* work if the station is using the hands free feature. *Auto Second Path* determines whether another station user must dial a code, after receiving a busy signal, to voice announce to the busy station, or if the voice announce call is to activate the 2nd path automatically. To enable the display telephone to receive 2nd path calls automatically, enter a Y (yes) on the Station Programming Configuration sheets. To force another station user to intentionally use the second path when calling the display phone, enter an N (no) on the Station Programming Configuration sheets.

### 8.5.23 ALLOW SECOND PATH

A digital display telephone is designed with a second voice path which may be used to announce a waiting call when the station is already busy with another call. The station must be using the handset in order to receive a second voice path call. Determine if the feature is desired for the digital display telephones to be installed, and enter a Y (yes) on the Station Programming Configuration sheet for each desired extension. An N (no) means that the digital display telephone *CANNOT* receive a second voice path call.

### 8.5.24 GROUP IN

Each station can be programmed for how incoming outside line calls ring on the station. Normally, *Group In* programmed N (no), a call will ring on the first available TRUNK GROUP key on the station beginning at the top left key. It will ring on that group key regardless of what trunk group the key is programmed for. To force a call ringing a station from a trunk group to ring a key programmed for that trunk group, *Group In* should be programmed Y (yes). Stations which are programmed Y (yes) for Group In must have a TRUNK GROUP key for each trunk group that the station will receive calls from. Determine the setting for this parameter for all stations and enter the information on the Station Programming Configuration sheets.

### 8.5.25 BUSY ON HOLD

This feature is not used in present software versions.

### 8.5.26 BLOCK BARGE IN

Certain stations may be authorized to enter an existing conversation between two other parties. To enable a station to barge into another station, the *Block Barge In* parameter must be set to N (no). If *Block Barge In* is set to Y (yes) for any station, that station's conversations may not be broken into. Determine the *Block Barge In* for all stations and enter the information on the Station Programming Configuration sheets.

### 8.5.27 BLOCK BARGE TONE

This parameter is used in conjunction with the Barge In feature. When a station's conversation is barged into, there is a warning tone that precedes the entry. To disable this tone for a station, the *Block Barge Tone* is set to Y (yes). Determine the *Block Barge Tone* for all stations and enter the information on the Station Programming Configuration sheets.

### 8.5.28 OUT LCR ONLY

The *Out LCR Only* parameter is used in conjunction with Least Cost Routing feature to prevent station users from circumventing the LCR feature by using TRUNK GROUP keys that may appear on the station. A station with *Out LCR Only* programmed Y for Yes can only make outside line calls using an LCR key (TRUNK GROUP key programmed for Least Cost Routing). Determine which stations are to be programmed for Out LCR Only, and enter this information on the Station Programming Configuration sheets.

### 8.5.29 SMDR ENABLE

A detail record of each outside line call made by a station can be made by the system. Each station can be enabled to have call record information provided by the system at the end of each call. To enable *Station Message Detail Recording* for a station, enter a Y (yes) on the Station Programming Configuration sheets.

### 8.5.30 HOOK RELEASE

*Hook Release* is used with 6-key telephones which are using a headset instead of the handset. When *Hook Release* is programmed Y (yes), the switch-hook on the 6-key telephone works like the RELEASE key. When *Hook Release* is programmed as N (no), the switch-hook works normally.

### 8.5.31 VMS/ATTEND

If the extension is to be connected to a VMS port or an Automatic Attendant port, this value should be programmed Y (yes). Extensions which are connected to telephones should be programmed N (no).

### 8.5.32 BUSY ON DID

When set to Y (yes), an incoming DID call to a busy station will receive busy tone. When set to N (no), an incoming DID call to a busy station will camp-on, or follow whatever Call Forward scheme maybe in effect for that station. The default for *Busy On DID* is N (no).

This feature also works in conjunction with Tie Lines. When *Busy On DID* is programmed N (no), a tie line call to a busy station is camped-on, and the caller hears ring-back tone. When *Busy On DID* is programmed to Y (yes), a Tie Line call to a busy station is connected to busy tone, and the call is NOT camped-on.

### 8.5.33 HANDS FREE CAMP-ON

*Hands Free Camp-On* is a display phone feature that, when set to Y (yes), sends the camp-on tone through the speaker of a display phone instead of the handset. *Hands Free Camp-On* is programmable per station, and will only operate only on a display telephone.

### 8.5.34 ANALOG PHONE

If the extension is to be connected to an IEPI (ISOETEC Electronic Phone Interface), this option should be programmed Y (yes).

### 8.5.35 HOW TO PROGRAM

If not already on the *Station Programming* screen, from the *Main Menu* press the A key.

1. When the *Station Programming* screen is entered, the cursor is at the extension number position. The extension number of the station to be programmed can be entered. The I and D keys can be used to Increment and Decrement the extension number.
2. Enter the extension number of the station to be programmed.
3. Press the RETURN key.
4. Press T on the keyboard. The cursor moves to the *Timers* area.

The *Timers* area is programmed by moving the cursor to the appropriate parameter, and entering the information from the Station Programming Configuration sheets. Begin by entering the *Camp-on timer* for the station. Press the RETURN key after each entry. The RETURN key is pressed a second time to move down the screen. The TAB key is used to move the cursor between the two columns. The UP, DOWN, LEFT and RIGHT arrow keys may also be used to move the cursor.

Press the E key to change extension numbers. The cursor will move to the top left corner of the screen. Enter the new extension number and press the RETURN key.

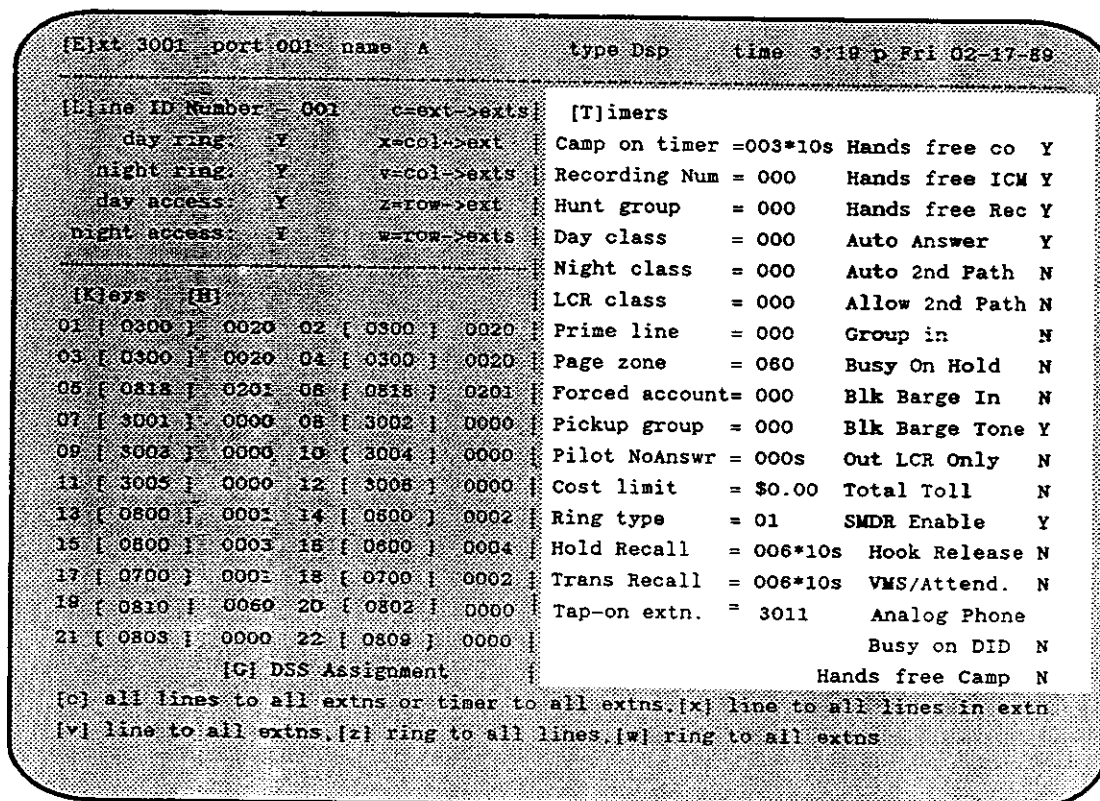


Figure 8-3 Station Programming Screen

## 8.6 DSS CONSOLE

The *DSS Console* (p/n 82400-2) is the size of the 17-key telephone and has 44 programmable buttons. These buttons can be programmed as any feature keys. The *DSS Console* is equipped with a speaker for audible tones. A maximum of 40 DSS consoles can be installed on the system. Three DSS consoles can be assigned to one extension. The *DSS Console* requires software version 5.26 or higher to operate.

### 8.6.1 HOW TO PROGRAM

DSS programming is performed on the *Station Programming* screen.

The following steps are necessary to program the System/228 DSS Console:

1. From the Main Menu, press A to access the *Station Programming* screen.
2. Press G. The *DSS Assignment* screen will appear. See Figure 8-4. The *DSS Assignment* screen defaults to no extensions entered as DSS Consoles.

*Note: The DSS Assignment screen can be reached from any extension number.*

3. Enter each extension number (taken from the *System Configuration* programming screen) you have a DSS installed on. This entry will identify these extensions as DSS stations and provide the *DSS Programming* screen when that extension number is selected.
4. Press the ESCAPE key. This will bring you back to the *Station Programming* screen.
5. Enter the extension number of the DSS you wish to program.

[G] DSS Assignment			
DSS Stations Assignment			
-----			
DSS - Extn	DSS - Extn	DSS - Extn	DSS - Extn
01 3003	11 0000	21 0000	31 0000
02 0000	12 0000	22 0000	32 0000
03 0000	13 0000	23 0000	33 0000
04 0000	14 0000	24 0000	34 0000
05 0000	15 0000	25 0000	35 0000
06 0000	16 0000	26 0000	36 0000
07 0000	17 0000	27 0000	37 0000
08 0000	18 0000	28 0000	38 0000
09 0000	19 0000	29 0000	39 0000
10 0000	20 0000	30 0000	40 0000

12:09 p Tue 12-20-88

Figure 8-4 DSS Stations Assignment

6. A *DSS Programming* screen will appear. See Figure 8-5. The *DSS Programming* screen defaults to the same feature key codes as any extension.
7. Press A. This brings you into the *DSS Assignment* area of the screen. Enter the extension number of the station to use this *DSS Console*.
8. Press K. This brings you to the *Keys* area of the *DSS Programming* screen. Program the 44 available keys with the desired key codes. The keys appear on the *DSS Console* in the same manner as they appear on the *DSS Programming* screen.

The DSS programming is completed.

```

[E]xt 3003 port 003 name          type DSS      time 12:12 p Tue 12-20-88
-----
DSS number 01 [A]ttached to extension 3027
-----
[K]eys  [H]  Unknown Key number
01 [ 3001 ] 0000 02 [ 3002 ] 0000 23 [ 3023 ] 0000 24 [ 3024 ] 0000
03 [ 3003 ] 0000 04 [ 3004 ] 0000 25 [ 3025 ] 0000 28 [ 3028 ] 0000
05 [ 3005 ] 0000 08 [ 3008 ] 0000 27 [ 0000 ] 0000 28 [ 0000 ] 0000
07 [ 3007 ] 0000 08 [ 3008 ] 0000 29 [ 0000 ] 0000 30 [ 0000 ] 0000
09 [ 3009 ] 0000 10 [ 3010 ] 0000 31 [ 0000 ] 0000 32 [ 0000 ] 0000
11 [ 3011 ] 0000 12 [ 3012 ] 0000 33 [ 0000 ] 0000 34 [ 0000 ] 0000
13 [ 3013 ] 0000 14 [ 3014 ] 0000 35 [ 0000 ] 0000 36 [ 0000 ] 0000
15 [ 3015 ] 0000 16 [ 3016 ] 0000 37 [ 0000 ] 0000 38 [ 0000 ] 0000
17 [ 3017 ] 0000 18 [ 3018 ] 0000 39 [ 0000 ] 0000 40 [ 0000 ] 0000
19 [ 3019 ] 0000 20 [ 3020 ] 0000 41 [ 0000 ] 0000 42 [ 0000 ] 0000
21 [ 3021 ] 0000 22 [ 3022 ] 0000 43 [ 0000 ] 0000 44 [ 0000 ] 0000
    
```

Figure 8-5 DSS Programming Screen

## 8.7 INTEGRATED OPERATOR PROGRAMMING

The Integrated Operator Terminal is programmed with the same station parameters as any other station. In addition, if the terminal is programmed to use the function keys as feature keys (see *Operator Programming* in the *System Programming* section of this manual), the key codes for these keys are programmed on the *Station Programming* screen.

The 10 function keys located at the top of keyboard of an Integrated Operator terminal are labeled F1 through F10. However, there are certain feature keys which cannot be used on the function keys of the Integrated Operator Terminal. These feature keys are listed below:

- Silent Monitor (and Remote Silent Monitor)
- Night Key
- In/Out Key
- Data Key
- ACD Log On Key
- Station Speed Dial Key
- Direct Appearances for a Tie Line

When the function keys are used as feature keys, they are programmed via the *Station Programming* screen using the same key codes that the stations use. Below are the keys that require programming for the corresponding function keys:

- Key 13 is Function Key 1
- Key 14 is Function Key 2
- Key 15 is Function Key 3
- Key 16 is Function Key 4
- Key 17 is Function Key 5
- Key 18 is Function Key 6
- Key 19 is Function Key 7
- Key 20 is Function Key 8
- Key 21 is Function Key 9
- Key 22 is Function Key 10

*NOTE: It is important to zero out the unused keys that correspond to function keys. If they were accidentally pressed during operation, it may effect call processing.*

*The function keys on the Operator Terminal are not equipped with LEDs like the feature keys of a telephone. The features that would normally light an LED on a telephone (for example MUTE), will not give a visual indication on the Operator Terminal.*

```

[E]xt 3001 port 001 name A          type Dsp      time 3:19 p Fri 02-17-89

[L]ine ID Number - 001      c-ext->exts | [T]imers
  day ring:      Y          x-col->ext  | Camp on timer -003*10s Hands free co Y
  night ring:    Y          v-col->exts | Recording Num = 000   Hands free ICM Y
  day access:    Y          z-row->ext  | Hunt group     = 000   Hands free Rec Y
  night access:  Y          w-row->exts | Day class     = 000   Auto Answer    Y
                                          | Night class   = 000   Auto 2nd Path  N
                                          | LCR class    = 000   Allow 2nd Path N
01 [ 0800 ] 0020 02 [ 0300 ] 0020 | Prime line    = 000   Group in       N
03 [ 0300 ] 0020 04 [ 0300 ] 0020 | Page zone    = 060   Busy On Hold   N
05 [ 0818 ] 0201 06 [ 0818 ] 0201 | Forced account= 000   Blk Barge In  N
07 [ 3001 ] 0000 08 [ 3002 ] 0000 | Pickup group = 000   Blk Barge Tone Y
09 [ 3003 ] 0000 10 [ 3004 ] 0000 | Pilot NoAnswr= 000s  Out LCR Only  N
11 [ 3005 ] 0000 12 [ 3006 ] 0000 | Cost limit   = $0.60 Total Toll   N
13 [ 0800 ] 0001 14 [ 0600 ] 0002 | Ring type    = 01    SMDR Enable   Y
15 [ 0800 ] 0003 16 [ 0600 ] 0004 | Hold Recall  = 008*10s Hook Release N
17 [ 0700 ] 0001 18 [ 0700 ] 0002 | Trans Recall = 008*10s VMS/Attend. N
19 [ 0810 ] 0060 20 [ 0802 ] 0000 | Tap-on exta. = 3011   Analog Phone
21 [ 0803 ] 0000 22 [ 0809 ] 0000 |                                     Busy on DID   N
                                          |                                     Hands free Camp N

[G] OSS Assignment |
(c) all lines to all extns or timer to all extns. (x) line to all lines in extn
(v) line to all extns. (z) ring to all lines. (w) ring to all extns
  
```

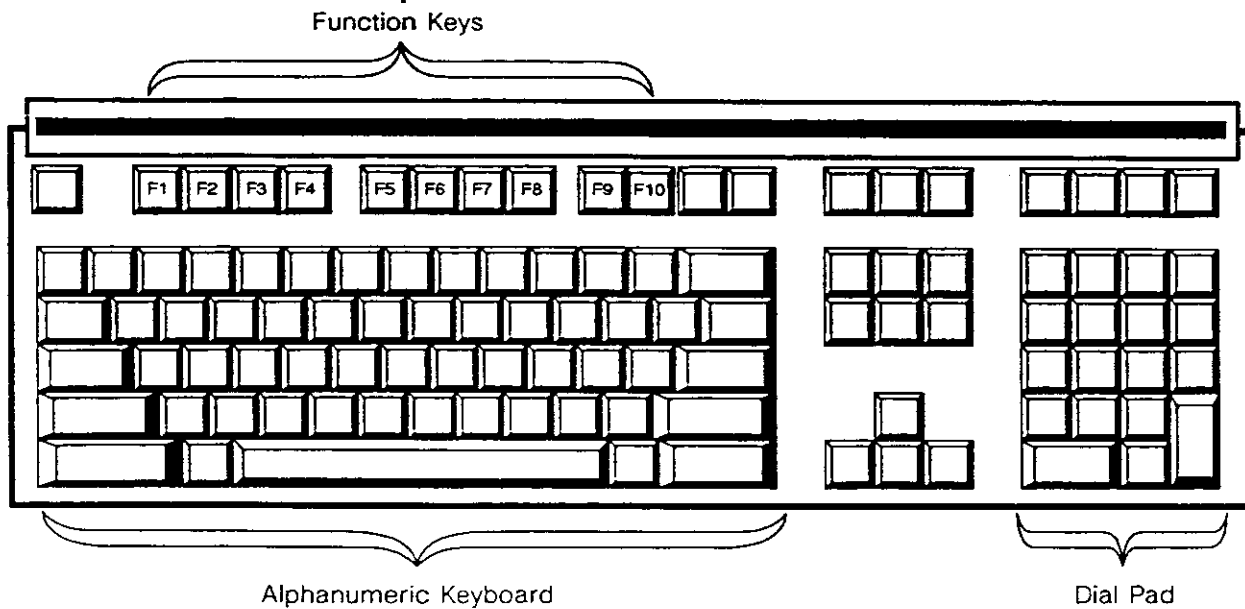


Figure 8-6 Integrated Operator Function Keys Programming



## 8.8 TAP ON EXTENSION

This feature enables simple interfacing with recording devices that typically are used by public safety agencies. The *Tap On Extension* feature allows the assignment of a single line (OPX) port to be part of an automatic conference with a multiline telephone for all outside line conversations.

When an extension answers or places an outside line call, a two way audio path is established between the extension and the single line (OPX) serving as the *Tap On Extension*. Typically, a recording device would be connected to the single line (OPX) extension.

Each telephone requires its own unique *Tap On* single line extension.

*NOTE: Since the Tap On Extension feature makes use of the Recording Num value, the use of this feature requires that ACD or Automated Attendant be installed in the system.*

*NOTE: The Tap On feature is disabled during conference calls.*

### 8.8.1 HOW TO PROGRAM

To program, from the main menu, press A. The *Station Programming* screen appears.

1. Press E for extensions.
2. Enter the extension number of the multiline telephone that is to be used with a *Tap On Extension*.
3. Press the RETURN key.
4. Press T for the *Timers* area.
5. Press the DOWN arrow key to move the cursor to the *Tap-On Extension* entry. The default value for *Tap On Extension* = 0000.
6. Enter the extension number of the single line that is to serve as the *Tap On Extension*.
7. Repeat the above steps for each extension that requires a "*Tap-On extn.*"
8. Press E for extensions.
9. Enter the extension number of the single line (OPX) that is to be used as a *Tap On Extension*.
10. Press the RETURN key.
11. Press T for the *Timers* area.
12. Press the DOWN arrow key to move the cursor to the *Recording Num* entry. The default value for is 000.
13. Enter the number for a recorder (1-36) for the single line (OPX) that is to serve as the *Tap On Extension*.



# Section 9

## Directory Programming

### 9.1 INTRODUCTION

The *Directory* is used to assign the names of the station users to their particular extension numbers. The directory is used mainly by the *System Operator* during normal operation to transfer outside line calls. Each extension number can also be assigned a department number, and a number to indicate the order in which the names are listed on the operator's terminal within the department. This is provided to override the alphabetizing of the directory names within the department listing. There are ten department numbers.

### 9.2 ACCESSING THE DIRECTORY PROGRAMMING SCREEN

The *Directory Programming* screen (the O screen) is accessed by pressing O on the keyboard from the main menu. The ESCAPE key may be pressed while in any programming screen to reach the main menu. If there is any problem reaching the main menu, or the O screen, refer to the section titled *ACCESSING THE PROGRAMMING SCREENS* in Section 5 – *Programming Introduction*. The *Directory Programming* screen can be reached with any one of the eight password levels. See Figure 9-1.

### 9.3 PROGRAMMING DIRECTORY

#### 9.3.1 WHAT TO PROGRAM

Each extension number is programmed with the name of the person to whom the extension number has been assigned. The name then appears in the directory portion of the operator's terminal. Up to 10 characters can be entered for each extension number. The operator terminal accesses the names in the directory, alphabetically. Therefore, it may be advisable to enter the station user's last name in the directory, followed by their first name, or first initial.

Each extension number can be programmed with one of the ten department numbers. Along with the department number, a number can be entered which indicates the order in which the directory names appear on the operator terminal. The order numbers range from 0 through 10. Extension numbers with 0 will appear first and extension numbers with 10 will appear last. Extension numbers may have the same order number, in which case they will appear alphabetically within the same order number.

The first column on the *Directory Programming* screen is for the station user's name. The second column is for the department number. The third column is for the order number.

#### 9.3.2 DEFAULT VALUES

The directory's default programming is blank.

### 9.3.3 HOW TO PROGRAM

If not already in the *Directory Programming* screen, from the *Main Menu* press the O key.

The cursor appears in the upper right corner of the *Directory Programming* screen.

1. Enter the page number to be programmed. The I and D keys can be used to increment and decrement the page number.
2. Press the RETURN key.
3. Enter the first name.
4. Press the RETURN key.
5. Press the TAB key.
6. Enter the department number.
7. Press the RETURN key.
8. Press the TAB key.
9. Enter the order number.
10. Press the RETURN key.

Use the RETURN key to move down each column.

Del -> clear name		Directory		Page 1 of 4	
		-----		'e' -> page #	
3001	MARY	3020		3039	
3002	KEVIN	3021		3040	
3003	AL	3022		3041	
3004	VINCE	3023		3042	
3005	FRED	3024		3043	
3006	WILLIAM	3025		3044	
3007	BARNEY	3026		3045	
3008	KENT	3027		3046	
3009	SUSAN	3028		3047	
3010	KIM	3029		3048	
3011	LINDA	3030		3049	
3012		3031		3050	
3013		3032		3051	
3014		3033		3052	
3015		3034		3053	
3016		3035		3054	
3017		3036		3055	
3018		3037		3056	
3019		3038		3057	

Figure 9-1 Directory Programming Screen

The arrow keys can be used to move the cursor around the screen.

Press the "@" key (Shift + @ ) to move the cursor back to the upper right corner of the programming screen.

Enter the page number of the next screen to be programmed.

Continue until all extension numbers in use are programmed.

## 9.4 DIAL BY NAME

Station users can call extensions, or transfer calls, by dialing a person's name on the dial pad, rather than an extension number. *Dial By Name* must be activated remotely by an authorized ISOETEC Service Center. The part number for *Dial By Name* is 112003. This feature utilizes the names that are in the *Directory Programming* screen (O screen).

*Note: Dial By Name and Alternate Dialing cannot be used in the same system.*

*Dial By Name* cannot be used across the network when using *Transparent Intercom Dialing*. When *Dial By Name* has been added to the system, *DirDI* appears in the *Options* area of the *Main Menu*. Provided below is what the *Options* area of the *Main Menu* will look like when *Dial By Name* has been added to the system.

```

Welcome to the System 228 (C) 1986 ISOETEC Communications Inc.
Options: DCM3 LCR DirDI Mod Att
Version: V5.25 03/23/89 System is IDLE Thu 03-30-89 1:10 pm
Access Level = 08 Port = 02
Select one of the following. <Esc> ... Display this menu

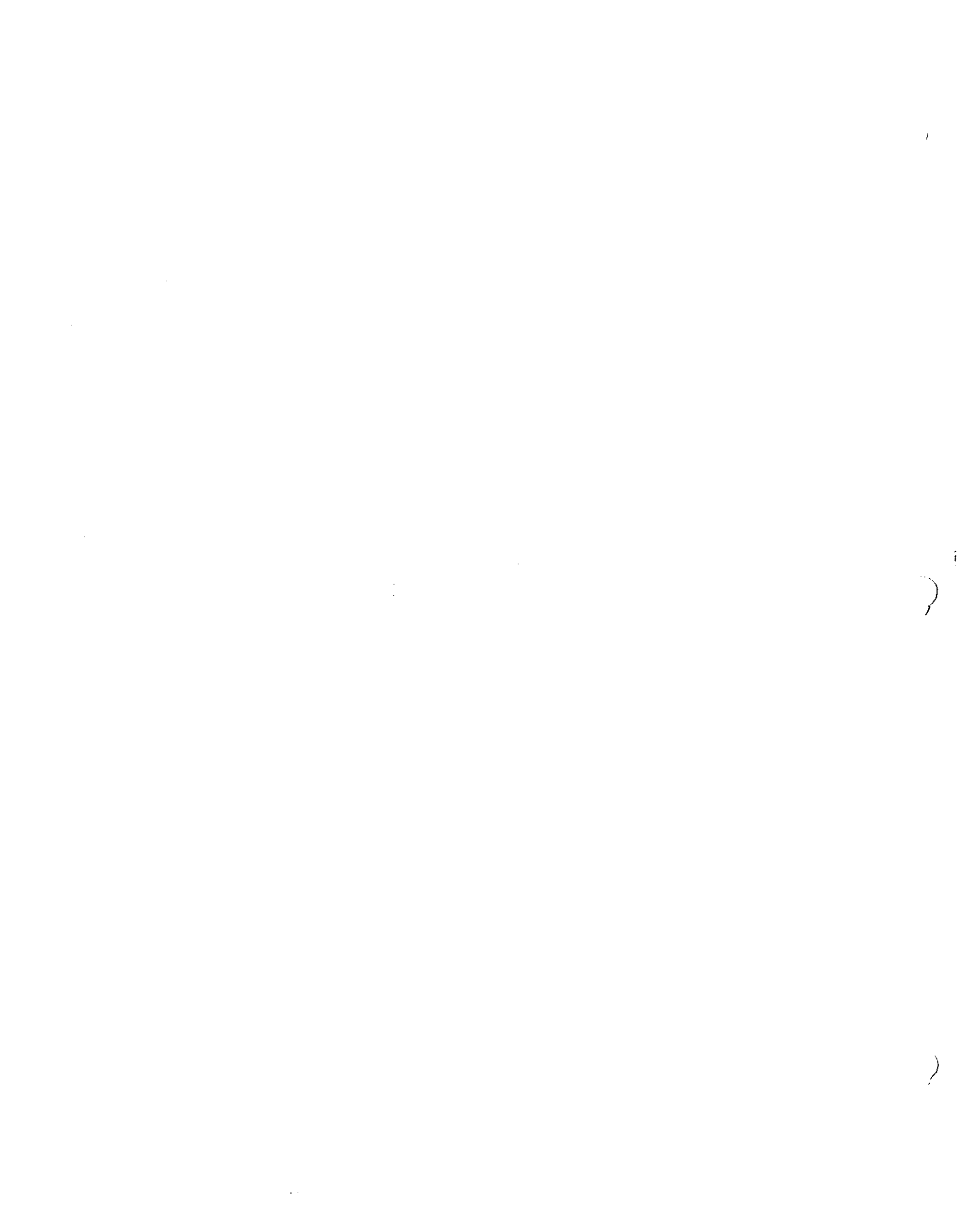
A .. Station Programming | J .. PBX Key Progr. | S .. LCR Tester
B .. System Programming | K .. Change Password | T .. Data Menu
C .. System Status Monitor | L .. LCR Programming | U .. Data Status
D .. BACKUP Program Memory | M .. System Options | V .. Call Accounting
E .. Exit Main Menu | N .. Trunk Group Progr. | W .. Toll Restriction
F .. System Configuration | O .. Directory | X .. Access Levels
G .. Forwarding, VMS Plans | P .. Account Codes | Y .. Digit Translation
H .. | Q .. ACD Programming | Z .. Auto Attendant
I .. Line Maintenance | R .. Reports |

USE THE FOLLOWING SELECTIONS WITH CARE!:
Control-A ... Select Terminal Type |
Control-C ... Diagnostics |

Control-F ... Default & RESET
Control-G ... RESET

Enter Letter or Control character >
    
```

Figure 9-2 Main Menu



# Section 10

## Least Cost Routing

### 10.1 INTRODUCTION

Least Cost Routing (LCR) is an optional feature of the system which automatically selects the least expensive available route for an outside line call. The least expensive route for a call is calculated using a programmable *average duration* of a call. The cost of a call to a given dialed number is calculated for each facility and service a customer has available based on the *Average Call Length*. While an individual call may cost more because of this averaging of call length, the average phone bill is significantly reduced. The system also is constantly calculating the average length of a call. This value is found on the *LCR Programming* screen. The *calculated call average* can then be entered into LCR Average Call programming to obtain a more accurate average call length. In addition, each station can be assigned a class of service for LCR. This class of service determines under what circumstances a more expensive route may be used if all the lines in the least expensive route are busy.

#### 10.1.1 HARDWARE REQUIREMENTS

The hardware necessary for Least Cost Routing is included with the standard system.

#### 10.1.2 SOFTWARE REQUIREMENTS

A Customized Data Base. This is generated by ISOETEC from information provided by the customer. This information includes number and types of facilities and services used, and the customer's area code and exchange. This data base is loaded into the system using the *Backup Program Memory* feature.

### 10.2 DEFINITIONS

The following definitions will help in understanding all of the possibilities that arise from LCR:

#### LATA (Local Access Transport Area)

This is the area served by your local operating company. All calls to numbers in this region are billed by the local operating company.

Depending on the size of the state, there can be more than one LATA. A LATA can have more than one area code, and an area code can be in more than one LATA.

*Example: New York State has more than one LATA, and one of the area codes within one of its LATA's is 203 which is also in Connecticut's LATA.*

#### OCC (Other Common Carrier)

This is a long distance network other than AT&T. For example, MCI.

#### Equal Access

The ability to use a desired long distance network other than AT&T, for example, Sprint, MCI, etc., as your primary service without having to manually dial their local access number, and then your security code. This has been described as *1+ dialing*. When you dial a long distance number (outside your LATA) it will automatically be routed, by the local operating company, via your primary service without dialing additional numbers.

**Primary Carrier**

The long distance network that you choose to handle all of your long distance calls (out of LATA).

**Secondary Carrier**

A carrier that you manually choose as a second choice when placing a long distance call. When you want to use a secondary carrier, you must dial the carrier's 1-0-xxx number (see Table 10-1) and then proceed dialing the long distance number.

Table 10-1 A Sample Of Carriers and Their Equal Access Code Numbers

VENDOR	CODE NUMBERS
AT&T	1-0-288
US SPRINT	1-0-333
MCI	1-0-222
ALLNET	1-0-444
WESTERN UNION	1-0-220
ITT	1-0-488
U.S. TELECOM	1-0-333
SBS SKYLINE	1-0-888
TDX	1-0-223

Your local operating company will handle all calls within your local designated LATA. All calls being placed outside of your LATA will be handled by your primary or secondary carrier depending on what you dial.

*NOTE: If you wish to use other than your local operating company to place a call within your LATA, you can do so, by dialing the local access number and security code of that particular carrier. (You cannot use the 1-0-xxx number to get a secondary carrier number within your designated LATA. You must direct dial the service). This is subject to your local operating company regulations.*

### 10.3 LCR PROGRAMMING

Least Cost Routing needs to be programmed on 4 different programming screens. Stations must be given LCR keys (Trunk Group keys that access LCR), and an LCR class of service. CO Lines must be arranged into groups for outgoing access. There are options on the *System Options* programming screen that can effect the operation of LCR. Finally, the *LCR Programming* screen must be programmed.



## 10.4 WHAT TO PROGRAM IN STATION PROGRAMMING

Each station that is to use *Least Cost Routing* must be provided with at least one and preferably more LCR keys. An LCR key is a TRUNK GROUP key with a special sub-code of 20. Enter the key code for a TRUNK GROUP key (key code 300) and sub-code of 20 in a key position or positions on the Station Programming Configuration sheets for each station.

Each station should also be assigned an LCR class of service. This class of service determines whether or not a station may use lines in a more costly route if all lines in the least costly route are busy. There are three LCR classes of service:

- LCR COS 0 – Automatic override** – The call is routed over the least costly route available. If all lines in the least costly route are in use, the call is routed over the next more expensive route.
- LCR COS 1 – Manual override** – The call is routed over the least costly route available. If all lines in the least costly route are in use, the call is not routed and a busy signal is heard. The call can be manually routed to the next less expensive route by dialing a \* on the dial pad.
- LCR COS 2 – No override** – The call is routed over the least costly route available. If all lines in the least costly route are in use, the call is not routed. The call can be tried again at a later time, or Call Back (Trunk Queuing) can be used to obtain a line in the least costly route when one becomes available.

Determine the LCR class of service for each station, and enter it on the *Station Programming Configuration* sheets. Follow the instructions found in the *Station Programming* section to enter the information on the *Station Programming Configuration* sheets into the system.

## 10.5 WHAT TO PROGRAM IN SYSTEM PROGRAMMING

The only thing to program for LCR on the *System Programming* screen is the CO line's TRUNK GROUP. The TRUNK GROUP number is used to arrange lines in the same facility into groups for outgoing access. Beginning with group 1, arrange the CO lines into groups according to their use. For example, all DDD lines can be placed in group 1, all band 5 WATS lines can be placed in group 2, all band 3 WATS lines can be placed in group 3, etc. Determine the trunk group for all lines following the directions found in the *System Programming* section to enter the information into the system program.

## 10.6 WHAT TO PROGRAM IN SYSTEM OPTIONS PROGRAMMING

The *System Options* programming screen contains options that can effect the operation of Least Cost Routing: DISABLE AUTO SKIP, DISABLE LCR TONES, LCR HOOK FLASH, and LCR CENTREX OPTION.

### 10.6.1 DISABLE AUTO SKIP

*Auto Skip* is a feature of LCR which is used with dial up services. If LCR attempts to dial a service and does not receive dial tone from the carrier, e.g. a busy signal is reached, the line will be dropped, and the phone number will be dialed on the next more expensive route. The service will then be presumed busy for 2 minutes, and calls will bypass this route. If disabled, LCR will keep trying to use the service. Enter a Y (yes) if auto skip is to be disabled. Enter an N (no) if auto skip is to be used.

## 10.6.2 DISABLE LCR TONES

When a station user dials a number using Least Cost Routing, the tones the system is dialing are heard. To disable hearing the dialing of digits, enter a Y (yes).

## 10.6.3 LCR HOOK FLASH

The *LCR Hook Flash* option allows the station user to flash (momentarily disconnect) the outside line when using LCR. A typical application for this feature is flashing an outside line that is connected to a PBX or Centrex.

## 10.6.4 LCR CENTREX OPTION

This option will allow a number less than 7 digits to be dialed out on LCR via trunk group 1. If this option is Y (yes), it will also strip the *Centrex code* that is assigned in the *LCR Programming* screen. A typical application of this feature is to allow calling of Centrex stations via an LCR key.

Determine each option and enter the information into the system following the directions in the *System Options* programming section.

## 10.7 WHAT TO PROGRAM IN LCR PROGRAMMING

The following paragraphs provide a brief description of the *LCR Programming* screen. After reading through each section, determine the entries that are to be made to the screen, and enter the information on the LCR Programming configuration sheet.

### 10.7.1 OCC SERVICE (Other Common Carrier Service)

The carriers will automatically appear when the LCR Menu is accessed. This is part of the LCR Database that is determined from the customer's information.

### 10.7.2 GRP NUM (Group Number)

The group number is the number of the trunk group that is programmed for the lines in the particular facility. The facilities trunk group number is programmed in the *System Programming* screen. A group number from 1 to 10 must be entered. Dial up services usually use the same trunk group number as the DDD lines. Do not put different type lines in the same group.

Example: DDD lines = Group 1, FX Lines = Group 2, Band 1 WATS = Group 3, etc.

### 10.7.3 LD 1+ (Long Distance Leading One)

Does the carrier need a leading one before dialing a long distance 10 digit number? Enter Y (yes) if the service requires a one before the long distance 10 digit number. If N (no) is entered, only the 10 digit long distance number will be dialed.

*NOTE: The 1 preceding a long distance 7 digit number does not have to be programmed. When a 7 digit number is dialed, it will reference the LCR database, and the database will determine whether or not the 1 is needed.*

### 10.7.4 INTER LATA ACCESS NUMBER

When this category is first entered, dots (...) will appear, indicating there is no information stored in memory. Enter in the dial up number, (or access number if using equal access).

*NOTE: To clear an entry in this field, press the N key, and stars (\*\*) will appear.*

*NOTE: Your primary service inter-LATA access number should be left null.*

### 10.7.5 LO 1+ (Local 1)

This category is set in conjunction with AC. When AC is set to Yes, do you want a 1 to precede the Area Code? If Y (yes) is entered, a 1 will precede the Area Code. If N (no) is entered, a 1 will not be dialed before the area code.

*NOTE: If AC is set to N (no), LO 1+ will have no effect on the system operation. The number will be dialed without an area code and will reference the LCR database to determine if a preceding 1 should be dialed before a seven digit number.*

### 10.7.6 AC (Area Code)

Do you want the area code to be dialed before the 7 or 8 digit number? If Y (yes) is entered, the local area code will precede the access number that is dialed. If N (no) is entered, the local area code will not be dialed.

Least Cost Routing Menu for Area Code 203 ,Office Exchange 655. page 1 of 3

---

OCC	GRP	LD	INTER LATA	LO	INTRA LATA	SECURITY	SEC	SEC	CO	OC	MAX	
SERVICE	NUM	1+	ACCESS NUM	1+	AC	ACCESS NUM	CODE	ALW	1ST	PS	PS	COST
PR1	01	Y	.....	N	N	.....	.....	N	N	A	A	\$0.00
MP1	**	Y	.....	N	N	.....	.....	N	N	A	A	\$0.00
FX 203387	**	Y	.....	N	N	.....	.....	N	N	A	A	\$0.13
FX 203371	**	Y	.....	N	N	.....	.....	N	N	A	A	\$0.13
IWT 1	**	Y	.....	N	N	.....	.....	N	N	A	A	\$0.00
MPI	**	Y	.....	N	N	.....	.....	N	N	A	A	\$0.00

---

Average Call = 133 Sec |L.D=11 DIGITS Y |Calc Average = 017 Sec |

---

AT&T Numbers (No Access): 000 000 000 000 000 000 000 000 000 000

---

Primary Service: CO: 001 Service Number 00

Figure 10-1 LCR Programming Screen

### 10.7.7 INTRA LATA ACCESS NUMBER

When this category is first entered, dots (...) will appear. This indicates that there is no information stored in memory. Simply enter in the dial up number.

### 10.7.8 SECURITY CODE

This category will come up with dots (...) to indicate that there is no security code in memory. Once the desired security code has been entered, and the field has been left, upon re-entry, the category will then appear blank. However, your security code is still in memory.

### 10.7.9 SEC ALW (Security Code Always)

If set to Y (yes), a Security Code will always be dialed, regardless of whether the access number has been dialed or not. If set to N (no), a Security Code will be dialed when needed.

### 10.7.10 SEC 1ST (Security Code first)

Determines whether the security code is dialed before the telephone number, or after. This depends on the OCC. If the security code is to be dialed before the telephone number, this parameter is programmed to Y (yes). If the security code is to follow the dialed number, the parameter is set to N (no).

Least Cost Routing Menu for Area Code 203 .Office Exchange 655. page 1 of 3

---

OCC	GRP	LD	INTER LATA	LO	INTRA LATA	SECURITY	SEC	SEC	CO	OC	MAX	
SERVICE	NUM	I+	ACCESS NUM	I+	AC	ACCESS NUM	CODE	ALW	1ST	PS	PS	COST
PR1	01	Y	.....	N	N	.....	.....	N	N	A	A	\$0.00
MP1	**	Y	.....	N	N	.....	.....	N	N	A	A	\$0.00
FX 203387	**	Y	.....	N	N	.....	.....	N	N	A	A	\$0.13
FX 203371	**	Y	.....	N	N	.....	.....	N	N	A	A	\$0.13
IWT 1	**	Y	.....	N	N	.....	.....	N	N	A	A	\$0.00
MPI	**	Y	.....	N	N	.....	.....	N	N	A	A	\$0.00

---

Average Call = 133 Sec |L.D=11 DIGITS Y |Calc Average = 017 Sec |

---

AT&T Numbers (No Access): 000 000 000 000 000 000 000 000 000 000

---

Primary Service: CO: 001 Service Number 00

Figure 10-2 LCR Programming Screen

### 10.7.11 CO PS (CO Line Pause)

Enter in the number of seconds the system is to wait for CO dial tone. An A for Auto pause will wait for CO dial tone to be detected, then proceed with the digits to be dialed. To enter an auto pause, enter 0 not A.

### 10.7.12 OC PS (Other Common Carrier Pause)

Enter in the number of seconds the system is to wait for Other Common Carrier dial tone. An A for Auto pause will wait for Carrier dial tone to be detected then proceed with the digits to be dialed. To enter an auto pause, enter 0 not A. In an "equal access" area, make sure to put 01 as the OC PS for DDD service if DDD is not the primary service.

### 10.7.13 MAX COST

This is maximum cost per minute (usually used for FX lines). If the cost of the call for 1 minute exceeds the maximum cost per minute column, the call will not be permitted to be dialed out on that service.

### 10.7.14 AVERAGE CALL

This is the time the system uses to calculate the least expensive route. This should be updated with the calculated average time and set to the nearest half minute.

### 10.7.15 LD = 11 DIGITS

Yes means a long distance number. Inter LATA consists of 10 or 11 digits. Leave set to Y (yes).

### 10.7.16 CALCULATED AVERAGE

The *Calculated Average* call time should be used to update the average call. This time can be set back to zero by clearing the *System Statistics Report (J report)* found on the *Reports Menu*.

*NOTE: SMDR print on the System Programming screen must be set to Y (yes) for the Calculated Average time to appear.*

### 10.7.17 AT&T NUMBERS (No Access)

This is used when a carrier service other than AT&T is the primary service to force routing of calls to the AT&T network. For example, some 800 numbers are not supported by OCCs. Enter these area codes in AT&T numbers.

### 10.7.18 PRIMARY SERVICE

This category is used when different CO lines are using different primary services. A code number will be entered under the line number to indicate the primary service of that line. The code number is the order in which the service appears in the LCR menu.

Example: DDD = 1, SBS = 2, TNX = 3.

### 10.7.19 CENTREX CODE

When using LCR with Centrex lines, some complications arise. A Centrex line requires an access code to dial an outside line through the Centrex system. This access code will be required when dialing out through the Centrex. The second page of the *LCR Programming* screen takes care of this situation. Determine the access code needed to dial out of the Centrex system, and enter this information on the second page of the *LCR Programming* screen.

### 10.7.20 VOLUME DISCOUNT

Certain OCC services, or facilities offered by AT&T, may offer volume discounts which affect the pricing of a call when the route determination is made. The *volume discount* is used to adjust the rate tables contained in the LCR data base to take advantage of these discounts.

### 10.7.21 HUNT PICK

*Hunt Pick* is set by the LCR service. The Hunt Pick feature is used to balance traffic among lines in a trunk group.

When set to Y (yes), this feature references the *Cumulative Line Utilization Report*. When an outgoing call is placed using the LCR key, the system selects the LCR service, and then selects the trunk in that group that has the least amount of outgoing time and places the call.

It is recommended that the *Cumulative Line Utilization Report* be cleared to coincide with the billing period from the carrier that the customer is using.

Least Cost Routing Menu page 2 of 3

OCC SERVICE	CENTREX CODE	VOLUME DISCOUNT	HUNT PICK
DDD	.....	000%	N
SPT	.....	000%	Y
SPR	.....	000%	Y
FX 714831	.....	000%	Y
IDS	.....	000%	Y
WAT 5	.....	000%	Y
MCI	.....	000%	Y
IWT 3	.....	000%	N
IWT 4	.....	000%	Y
RNT	.....	000%	Y

Figure 10-3 LCR Volume Discount

### 10.7.22 LCR Exceptions

*LCR Exceptions* is a table that is used to bypass the normal decision-making process of the Least Cost Routing program. Calls to area codes and/or exchanges entered into this table are routed via the service indicated in the table instead of the least costly service arrived at by the program. The number dialed must match exactly an entry in the table in order for the system to use the exception.

LCR EXCEPTIONS					page 3 of 3
NUMBER - SRV	NUMBER - SRV	NUMBER - SRV	NUMBER - SRV	NUMBER - SRV	
1288	1	.....	.....	.....	.....
845	1	.....	.....	.....	.....
.....		.....	.....	.....	.....
519	6	.....	.....	.....	.....
416	6	.....	.....	.....	.....
613	6	.....	.....	.....	.....
506	6	.....	.....	.....	.....
902	6	.....	.....	.....	.....
416	6	.....	.....	.....	.....
819	6	.....	.....	.....	.....
709	6	.....	.....	.....	.....
705	6	.....	.....	.....	.....
807	6	.....	.....	.....	.....
204	6	.....	.....	.....	.....
306	6	.....	.....	.....	.....
403	6	.....	.....	.....	.....
604	6	.....	.....	.....	.....
.....		.....	.....	.....	.....
.....		.....	.....	.....	.....
.....		.....	.....	.....	.....

Figure 10-4 LCR Exceptions

## 10.8 ACCESSING THE LCR PROGRAMMING SCREEN

The *LCR Programming* screen (the L screen) is accessed by pressing L on the keyboard from the main menu. The ESCAPE key may be pressed while in any other programming screen to reach the main menu. If there is any problem reaching the main menu, or the B screen, refer to the section titled *ACCESSING THE PROGRAMMING SCREENS* in Section 5 - *Programming Introduction*.

## 10.9 HOW TO PROGRAM LCR

If not already on the *LCR Programming* screen, from the main menu, press **L** on the keyboard. The *LCR Programming* screen consists of 3 pages.

1. When the *LCR Programming* screen is entered, the cursor will be positioned at the first OCC service GRP NUM. The OCC Service names will appear on the screen based on the information contained in the customer's LCR data base.
2. Working from the LCR Programming configuration sheets, enter the information required.
3. Enter the trunk group number for the first OCC service. Press the RETURN key.
4. Press the TAB key to move the cursor to the right.
5. Enter a Y (yes) or N (no) for LD 1+. (Do NOT press the RETURN key)
6. Press the TAB key.
7. Enter the INTER LATA ACCESS NUM (if used). Press the RETURN key.
8. Press the TAB key.
9. Enter Y (yes) or N (no) for LO 1+. Press the TAB key.

Least Cost Routing Menu for Area Code 203 ,Office Exchange 655. page 1 of 3

---

OCC SERVICE	GRP NUM	LD 1+	INTER LATA ACCESS NUM	LO 1+	INTRA LATA ACCESS NUM	SECURITY CODE	SEC ALW	SEC 1ST	CO PS	OC PS	MAX COST
PR1	01	Y	.....	N	N	.....	N	N	A	A	\$0.00
MP1	**	Y	.....	N	N	.....	N	N	A	A	\$0.00
FX 203387	**	Y	.....	N	N	.....	N	N	A	A	\$0.13
FX 203371	**	Y	.....	N	N	.....	N	N	A	A	\$0.13
IWT 1	**	Y	.....	N	N	.....	N	N	A	A	\$0.00
MPI	**	Y	.....	N	N	.....	N	N	A	A	\$0.00

---

Average Call = 133 Sec |L.D=11 DIGITS Y |Calc Average = 017 Sec |

---

AT&T Numbers (No Access): 000 000 000 000 000 000 000 000 000 000

---

Primary Service: CO: 001 Service Number 00

Figure 10-5 LCR Programming Screen



11. Enter the INTRA LATA ACCESS NUM (if used). Press the RETURN key.
12. Press the TAB key.
13. Enter the SECURITY CODE (if used). Press the TAB key.
14. Enter Y (yes) or N (no) for SEC ALW. Press the TAB key.
15. Enter Y (yes) or N (no) for SEC 1ST. Press the TAB key.
16. Enter the CO PS. Press the RETURN key.
17. Press the TAB key.
18. Enter the OC PS. Press the RETURN key.
19. Press the TAB key.
20. Enter the MAX COST (if used). Press the RETURN key.
21. Press the RETURN key. Continue programming the remaining OCC Services.

After all services have been entered, Press the RETURN key until the cursor reaches *Average Call*. Enter the length of the *Average Call*, and press the RETURN key.

The remaining parameters are programmed as needed. Use the RETURN key to move down the screen, and the TAB key to move to the right. The arrow keys do not function on this screen.

For the Primary Service, enter the CO line number to be entered. The I key can be used to increment the CO line number, and the D key to decrement the CO line number. Press the TAB key to enter the service number. Press the TAB key again to enter a new CO line number.

To reach the second page of the *LCR Programming* screen, press I on the keyboard.

Enter the information for the second page, using the TAB and RETURN keys. Press the RETURN key after each entry. The D key may be used to return to the first page of the *LCR Programming* screen.

To reach the third page of the *LCR Programming* screen (LCR EXCEPTIONS), press I on the keyboard.

1. Enter the area code or exchange desired.
2. Press the RETURN key after each entry.
3. Enter the service to route the call over.
4. Press the RETURN key after each entry.

The I and D keys may be pressed to increment and decrement to the next/previous programming screen.

## 10.10 SOFTWARE DEFINED NETWORK

The *Least Cost Routing* feature supports the use of a Software Defined Network. A *Software Defined Network* (SDN) is a service that provides large multilocation businesses a method to connect their locations through a shared switched network. This network appears to the business as a private dedicated network. This configuration allows a caller (calling within the SDN network) to dial to different locations using a seven digit number. SDN eliminates the caller from having to dial 11 digits to reach a destination located within another area code.

The network is defined by software in the carrier's switching system, rather than being comprised of tie lines for each location to the others.

The location to which a call is directed is identified by the first three digits of the seven digit number. The last four digits (or DID's) determine the extension number of the party being called in that particular location.

To process an SDN number through LCR, the caller must press an LCR key and dial [\*] plus the 7-digit SDN number. The identifier, [\*], is used by the system to distinguish the SDN number from a local 7-digit number.

### 10.10.1 LCR REQUIREMENTS

*Software Defined Network* is available with a specially ordered LCR package. *The Least Cost Routing* Department requires a minimum of 45 days prior notification to generate the necessary database. A list of networking numbers must be provided before to the LCR Department. If additional networking numbers are desired, the subscriber must notify the LCR department.

### 10.10.2 SINGLE LINE TELEPHONES

An option has been provided on the *System Options* programming screen which allows Single Line telephones to use the SDN capabilities of the system. However, the Single Line Telephone loses access to trunk group ten if this option is enabled. The option is called *SLI SDN Dial*. A Single Line telephone dials [9] [0] to access the Software Defined Network.

# Section 11

## Toll Restriction

### 11.1 INTRODUCTION

Toll Restriction is a feature which is used to prevent a station user from dialing particular area codes and/or exchanges on an outside line call. The system analyzes the telephone number as it is dialed and, based on station, system, and toll restriction table programming decides whether or not to permit the call to be placed.

Programming toll restriction in the ISOETEC System/228 is accomplished using three separate programming screens. Stations are assigned a *Day/Night class* which is used by the system to apply a particular toll plan to a call. The station class is programmed on the *Station Programming* screen.

CO lines are also assigned a class of service. The class of service of the CO line a station user is placing a call on is compared to the class of service of the station making the call. The CO lines must also be arranged into trunk groups. These are programmed on the *System Programming* screen.

The *Toll Restriction* programming screen is used to program particular information about which area codes and/or exchanges are to be restricted from which stations using which CO lines. Up to the first 8 digits of a telephone number can be compared to the tables and restricted. A maximum of 26 patterns can be restricted for each station class of service. A maximum of 20 ALLOWED patterns can be programmed to override the RESTRICTED patterns.

There are 16 toll tables which reference a station's *Day/Night class*.

### 11.2 DESCRIPTION

Each time a station user accesses an outside line, the system checks its class of service (the Day Class if the system is in DAY MODE, the NIGHT class if the system is in the night mode). If the station class is greater than zero, the station class is compared to the class of the CO line the station is attempting to dial the call on. If the station class is greater than the line class (line ID class), the system will check the number being dialed against the toll tables. Otherwise, the call will be allowed. If the system is checking the dialed number against the toll tables, the toll table with the same number as the station class of service will be referenced.

The digits are checked one by one against the patterns found in the RESTRICTED area of the programming screen. If a match is found in the patterns of the RESTRICTED area of the programming screen, the ALLOWED area of the programming screen is checked for a match. If a match is found in the ALLOWED area, the next digit dialed is examined. If a match is not found in the ALLOWED area, the call is restricted. Each RESTRICTED and ALLOWED pattern can be applied to each trunk group.

The patterns that are checked can be from 1 to 8 characters. The characters can be digits, or letters (A through J) which are used to indicate a range of digits. For example, the letter A can be used to represent any digit between 2 and 9. Up to ten such ranges of digits can be defined. The letter X is reserved to represent any digit 0 through 9. These ranges of digits are programmed in the EQUATES area of the programming screen.

The last area of the programming screen is the EXCEPTIONS area. If the first portion of a dialed number is included in the EXCEPTIONS area, those digits are ignored by the toll table, and the digits following the included portion are subject to toll restriction. This is useful to toll restrict calls that are using "equal access" dial codes, such as 10288.

## 11.3 WHAT TO PROGRAM

Determine from the customer what type of toll plan is expected. This information includes what stations are to be restricted, and what area codes (and/or exchanges) these stations are to be restricted from. Determine if there are to be exceptions to these restrictions, for example, stations which are not to make any long distance calls, except on the WATS lines. The WATS lines would then be placed in a separate trunk group, and no patterns would be programmed for that trunk group.

There are 16 different tables that can be used to accomplish the restrictions. The toll table with the same number as the station class of service is the table that the system will reference when a station dials an outside line call. A station, however, can be programmed for only one of these tables.

Within each toll table are 4 main areas: the RESTRICTED area, the ALLOWED area, the EXCEPTIONS area, and the EQUATES area.

### 11.3.1 RESTRICTED AREA

The RESTRICTED area contains two columns: the GROUP column, and the NUMBER column. Up to 26 entries may be made in these columns. These entries determine the patterns that a dialed number is checked against. The GROUP column is numbered from 1 to 0 (trunk groups 1 through 10) across the top of the column. These numbers represent the ten different trunk groups the CO lines can be programmed into.

If a particular pattern is to apply to a trunk group, a Y (yes) is programmed under the trunk group number. Enter an N (no) if the pattern is not to be applied to a trunk group. Therefore, a particular pattern can be used for one trunk group, but not another. The NUMBER column is where patterns are entered. These are the patterns that the dialed number is checked against as it is dialed. If a match is found in this column, and the trunk group being used has a Y (yes) in the GROUP column for the matched pattern, the system proceeds to check the number in the ALLOWED area of the programming screen. If a match is not found in the NUMBER column of the RESTRICTED area, the call is allowed to proceed.

The patterns described in the preceding paragraph are made up of digits and/or letters which represent ranges of digits. For example, if the letter A stands for any digit between 2 and 9, and the letter B stands for any digit either 0 or 1, and the letter X stands for any digit, then the pattern 'ABX' represents any number from 200 through 919 which has a 0 or 1 as a middle digit. If this pattern were entered in the NUMBER column of the RESTRICTED area, and there were no entries in the NUMBER column in the ALLOWED area, all stations with a class of service the same as the toll table number (class) would be restricted from making all area code calls. A pattern could also contain up to 8 digits of a telephone number. If a pattern were entered as '9762323', that one telephone number could be restricted. If a pattern '976' were entered, all telephone numbers that begin with '976' could be restricted. If a pattern 'ABX976' were entered, telephone numbers that begin with '976' in all area codes could be restricted, and so on.

Enter the patterns for each toll plan in the RESTRICTED area of each toll plan on the Toll Restriction Configuration sheets.

### 11.3.2 ALLOWED AREA

The ALLOWED area also contains a GROUP column and a NUMBER column. These columns contain the same type of information as the RESTRICTED area. Patterns found in the ALLOWED area are used to override the patterns in the RESTRICTED area. For example, if a restrict pattern is ABX (all area code like numbers), telephone numbers beginning with 800 could be allowed by placing '800XXXXX' in the NUMBER column, of the ALLOWED area. Note that all eight spaces must be filled in the ALLOWED



### 11.3.4 EXCEPTIONS AREA

If the first portion of a dialed number is included in the EXCEPTIONS area, those digits are ignored by the toll table, and the digits following the included portion are subject to toll restriction. This is useful to toll restrict calls that are using *equal access* dial codes, such as 10288. This area could also be used when dialing out on Centrex or PBX lines where the leading 9 is to be absorbed.

Enter any exceptions that are to be used in the EXCEPTIONS area of each toll plan on the Toll Restriction Configuration sheets.

## 11.4 ACCESSING THE STATION PROGRAMMING SCREEN

The *Toll Restriction* programming screen (the W screen) is accessed by pressing W on the keyboard from the main menu. The ESCAPE key may be pressed while in any other programming screen to reach the main menu. If there is any problem reaching the main menu, or the W screen, refer to the section titled *ACCESSING THE PROGRAMMING SCREENS* in Section 5 – *Programming Introduction*.

## 11.5 DEFAULT VALUES

Toll Class (table) 1.

RESTRICTED PATTERNS FOR ALL TRUNK GROUPS

1ABX  
1AAX  
0

ALLOWED PATTERNS FOR ALL TRUNK GROUPS

1800XXXX  
1A11

Toll Class (table) 2 through 16 have no pattern entries.

## 11.6 HOW TO PROGRAM TOLL RESTRICTION

Follow the instructions found in the *Station Programming* section to enter the station class of service for each station to be toll restricted.

Follow the directions found in the *System Programming* section to enter the line ID class of service, and the trunk group for the CO lines being used with toll restriction.

Proceed with programming the Toll Restriction tables.

If not already on the *Toll Restriction* programming screen, from the main menu, press the W key. There are 16 toll restriction tables, and 2 pages to each toll table. The second page is used to program Toll Restriction with Least Cost Routing.

1. When the *Toll Restriction* programming screen is first entered, the cursor is in the GROUP column of the RESTRICTED area of Toll Table 1.
2. Working from the Toll Restriction Configuration sheets, enter the trunk group information for the first restrict pattern. Enter a Y (yes) for all trunk groups which are to use this pattern. Note the default pattern assigned to the first 3 patterns in toll table 1.
3. Press the RETURN key. The cursor moves to the NUMBER column.



16. When all information on the first toll table has been programmed, press the T key to change the number of the toll table to be programmed.
17. Enter the number of the toll table to be programmed.
18. Press the RETURN key.
19. Press the RETURN key a second time.
20. Press the U key to move the cursor to the RESTRICTED area. Continue programming the remaining toll tables.

The DELETE key can be used to backspace an incorrect entry.

The up and down arrow keys can be used to increment and decrement the toll table number, NOT to move around the screen.

## **11.7 TOLL RESTRICTION WITH LEAST COST ROUTING**

When toll restriction is used with Least Cost Routing, programming toll restriction is very similar to programming the system for toll restriction when no LCR is used. The only difference occurs in programming the toll restriction tables. Instead of programming a pattern to be used on a trunk group, the pattern is programmed to be used on an LCR service.

## **11.8 HOW TO PROGRAM TOLL RESTRICTION WITH LCR**

If not already on the *Toll Restriction* programming screen, from the main menu, press the W key. There are 16 toll restriction tables, and 2 pages to each toll table. When using LCR, program the second toll restriction screen, and NOT the first. The column headings are SERVICE and NUMBER, rather than, GROUP and NUMBER.

1. When the *Toll Restriction* programming screen is first entered, the cursor is in the GROUP column of the RESTRICTED area of Toll Table 1.
2. Press the S key. The screen shows the second programming screen. The GROUP column has changed to the SERVICE column.
3. Working from the Toll Restriction Configuration sheets, enter the service information for the first restrict pattern. Enter a Y (yes) for all services which are to use this pattern. Note the default pattern assigned to the first 3 patterns in toll table 1.
4. Press the RETURN key. The cursor moves to the NUMBER column.
5. Enter a pattern. For example, 1ABX, 1212, etc.
6. Press the RETURN key.
7. Press the RETURN key again. The cursor moves to the next line in the SERVICE column.
8. Continue programming the RESTRICTED area.
9. When all restricted patterns are programmed, press the V key to move the cursor to the ALLOWED area.
10. Enter the SERVICE and NUMBER (pattern) information as in the RESTRICTED area.
11. When all the ALLOWED information has been entered, press the W key.







# Section 12

## System Options

### 12.1 INTRODUCTION

The *System Options* programming screen is used to customize certain features in the system. These features and what part of system performance they effect are described in the following paragraphs.

In earlier versions of software, the *Integrated CRT*, *Allow Conference*, and *Page All Zones* options were located in the *System Options* menu (M screen). These features are now listed in the *Operator Programming* area of the *System Programming* screen.

### 12.2 TOLL OPTIONS

The system monitors the loop current of a trunk to detect breaks in the current which may indicate a disconnect signal from the Central Office. This is especially useful with *Toll Restriction* as certain local operating companies may return the line to the dial state after one party has disconnected. If the system does nothing with these signals, it may be possible to dial on this new dial state without selecting a trunk. Thus, the *Toll Restriction* feature can be circumvented. The system provides six options to define what action the system takes when it receives these breaks in current.

#### 12.2.1 WHAT TO PROGRAM

The TOLL OPTIONS are located on the *System Options* programming screen. There are two types of breaks in loop current that are of interest to the system. A FULL break is an open in loop current lasting for at least as long as the *Drop Pulse* time (programmed on the *System Programming* screen) for the particular trunk on which the break occurs. A PARTIAL break is an open in current lasting anywhere from 50 milliseconds up to the drop pulse time.

When the system detects a break in the loop current of a trunk, it waits 50 milliseconds. If, after 50 milliseconds, there is still a break in the current, the system checks the appropriate option on the *System Options* menu. If the trunk is connected to a station, it is in the "talk" state. The option for a partial break in the talk mode is checked. If the option is Y (yes), the trunk is released by the system. If the trunk is on hold, or in orbit, or ringing a station, it is in the "non-talk" state. The option for a partial break in the non-talk mode is checked. If the option is Y (yes), the trunk is released.

If the option is N (no), the system continues monitoring the line until the drop pulse time is reached. If the line is still open, the system checks the options for a FULL line break. If the option is Y (yes), the line is released.

If the line is not released by either the FULL or PARTIAL options, the *Disable Dial Pad* is checked. If this option is Y (yes), the dial pad on the station the trunk is connected to is turned off to prevent further dialing of digits. If this option is N (no), no action is taken by the system.

*NOTE: If Ground Start Trunks are used on a system using a Voice Message System, the Talk Full toll option must be programmed Y (yes).*

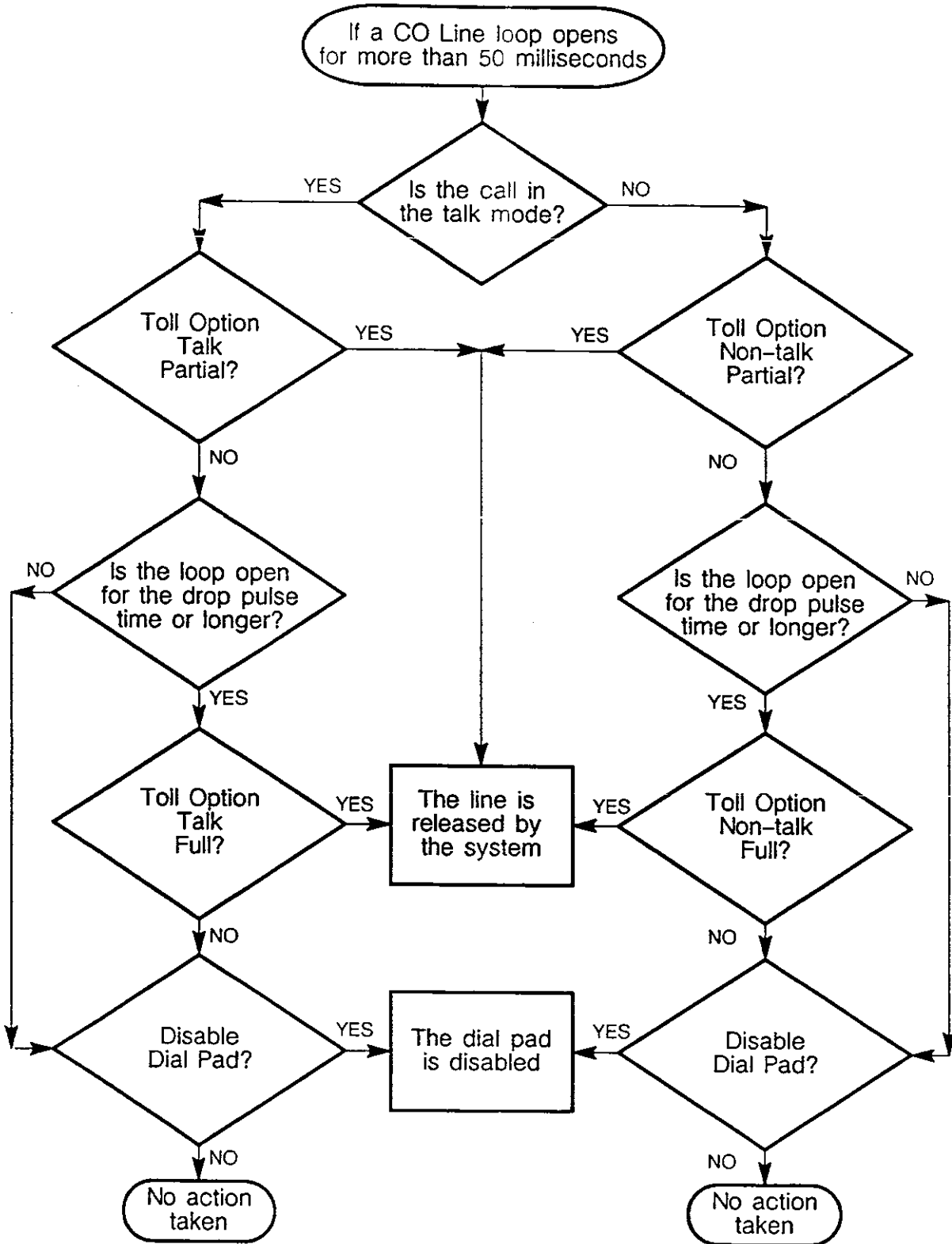


Figure 12-1 CO Toll Options

### 12.2.2 DEFAULT VALUES

	FULL	PARTIAL
Talk Mode	N	N
Non-talk Mode	Y	N
Disable Dial Pad	Y	N (if not dropped)

### 12.2.3 HOW TO PROGRAM TOLL OPTIONS

If not already on the *System Options* programming screen, from the main menu, press M.

1. Press the T key. The cursor moves the *Toll Options* area.
2. Enter either Y (yes) or N (no) for each Toll Option. The RETURN key can be used to skip to the next option.
3. Press the RETURN key. The cursor moves to the next Toll Option. Continue programming the remaining options.

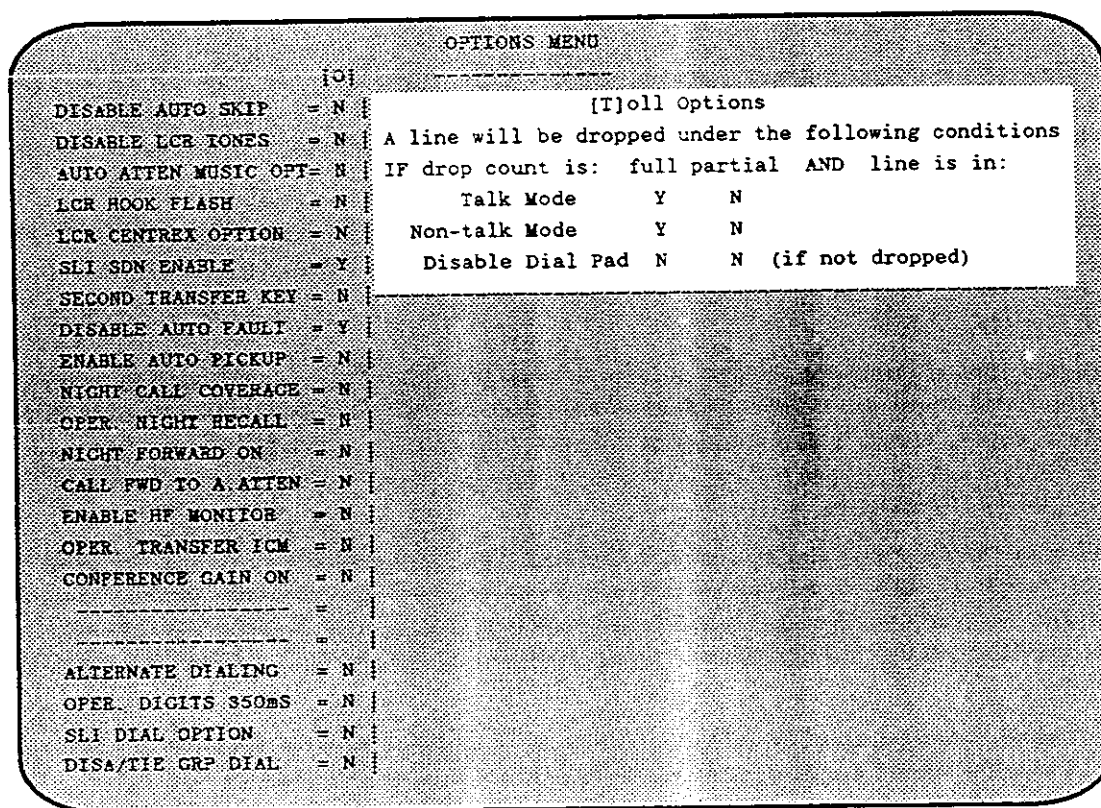


Figure 12-2 System Options Programming Screen

## 12.3 LEAST COST ROUTING

The following options concern the *Least Cost Routing* feature of the system:

### 12.3.1 DISABLE AUTO SKIP

*Auto Skip* is a feature of LCR which is used with dial-up Other Common Carrier services. If LCR attempts to dial a service and does not receive dial tone from the carrier (e.g. a busy signal is reached) the line is released, and the telephone number is dialed on the next less expensive service. The skipped service will then be presumed busy for two minutes. The system performs in this manner if *Disable Auto Skip* is programmed N (no).

If *Disable Auto Skip* is programmed Y (yes), LCR will keep trying to use the least expensive service.

### 12.3.2 DISABLE LCR TONES

When a station user dials a number using *Least Cost Routing*, the DTMF tones the system is dialing can be heard by the user. To disable hearing the dialed digits, enter Y (yes).

### 12.3.3 LCR HOOK FLASH

The *LCR Hook Flash* option allows the station user to flash (momentarily disconnect) the outside line when using LCR. Normally, if the LCR key is pressed during a call, the call is disconnected and a new LCR dial tone is connected to the station. If it is desired to flash an outside line when using LCR keys, set this option to Y (yes).

A typical application for this feature is flashing an outside line that is connected to a PBX or Centrex to place the call on hold or make use of other features of the system the line is connected to.

### 12.3.4 LCR CENTREX

This option will allow a number less than 7 digits to be dialed out on LCR via trunk group 1. If this option is Y (yes), it will also strip the Centrex code that is assigned in the *LCR Programming* screen. A typical application of this feature is to allow calling of Centrex stations via an LCR key.

### 12.3.5 SLI SDN ENABLE

A Least Cost Routing package can be added to the system which supports the use of a *Software Define Network* (SDN). If Single Line telephones are to be used to access the Software Defined Network, this option must be programmed Y (yes). When this option is programmed Y (yes), the dial code [9][0] is used to access the Software Defined Network, and the Single Line telephone cannot access trunk group 10.

When this option is programmed N (no), the dial code [9][0] is used to access trunk group 10. The Software Defined Network cannot be accessed by the Single Line telephone.

## 12.4 OTHER SYSTEM OPTIONS

### 12.4.1 AUTO ATTEN MUSIC OPTION

This option is used in conjunction with the built-in Automated Attendant to define what a caller hears if a valid dialed number is not detected by the Auto Attendant. When the Auto Attendant does not recognize a dialed number as valid, the call is routed to all telephones programmed with a ring assignment for the line the call is on. When the call is routed in this fashion, if the *Auto Attendant Music* option is programmed N (no), the calling party is connected to ring-back tone until the call is answered.

If this option is programmed Y (yes), the call is connected to the music source programmed for the line the call is on until the call is answered.

A call will ring one of the ringing assignments under the following conditions: when the caller has a rotary phone, when the caller dials an invalid Auto Attendant scheme, or the caller does not dial anything.

### 12.4.2 SECOND TRANSFER KEY

The *Second Transfer* key option must be set to Y (yes) when the last three digits of the extension numbers used on the system EXCEED 228.

The Integrated Operator Terminal can be used to transfer an outside line call to an extension, to a hunt group, to an ACD group, to VMS, to the system's MODEM, or over a tie line to another system. When the system extension dialing plan includes numbers greater than 3228, or begins with a number other than three, the SECOND TRANSFER key must be used to transfer outside line calls to any destination, other than an extension number. The TRANS key is still used to transfer to extensions. The *Second Transfer* is labeled IVIE.

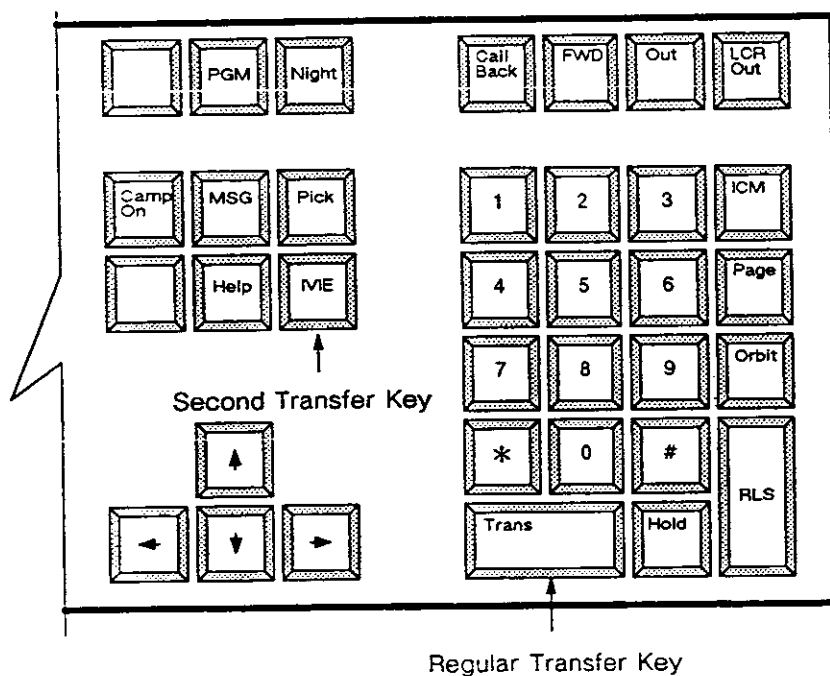


Figure 12-2 Operator Keyboard With Second Transfer Key

### 12.4.3 DISABLE AUTO FAULT

The system tests the trunk lines every time they are used. If a call is not dialed on a trunk four times, the system takes the line out of service for three minutes. If this happens three consecutive times, the system takes the line out of service for one hour. An option on the *System Options* programming screen disables this feature. The option is called *Disable Auto Fault*. Set this option to Y (yes) to disable the feature.

#### 12.4.4 ENABLE AUTO PICKUP

This option is used in conjunction with the DIRECT STATION SELECTION (DSS) keys. DSS keys can be used to answer a ringing extension if this option is set to Y (yes).

#### 12.4.5 NIGHT CALL COVERAGE

This option is used in conjunction with CALL COVERAGE keys (pilot keys). CALL COVERAGE keys normally do not function when the system is in the NIGHT mode. To enable them to work in the NIGHT mode, set this option to Y (yes).

#### 12.4.6 OPERATOR NIGHT RECALL

This option determines where unanswered calls recall to when the system is in the NIGHT mode. If this option is set to Y (yes), unanswered calls recall the extension programmed as operator. If this option is programmed to N (no), unanswered calls recall to extensions following the outside line's night ringing assignment.

#### 12.4.7 NIGHT FORWARD ON

Call Forward is deliberately prevented when the system is in the NIGHT mode. If stations must forward when the system is in the NIGHT mode, set this option to Y (yes).

#### 12.4.8 CALL FWD TO A. ATTEN

The *Forward and VMS Plans* programming screen can be used to forward outside line calls from a station to the built-in Auto Attendant. To accomplish this, the *Forward and VMS Plans* programming screen uses the codes for hunt groups 21 through 26 to route the call to the Auto Attendant. When the *Call Fwd To A. Atten* option is programmed Y (yes), H21 through H26 on the *Forward and VMS Plans* programming screen routes calls to Auto Attendants 1 through 6, respectively.

When the *Call Fwd To A. Atten* option is programmed N (no), H21 through H26 on the *Forward and VMS Plans* programming screen routes calls to Station Hunt Groups 21 through 26, respectively.

#### 12.4.9 ENABLE HF MONITOR

This option is used to enable the monitor feature on stations. The monitor feature allows the hands free speaker to be activated while the handset is lifted. This allows persons in the same room to hear both sides of a telephone conversation. To activate this feature, set the option to Y (yes).

#### 12.4.10 OPER. TRANSFER ICM

The operator is normally prevented from transferring internal calls, or placing them on hold. If it is desired to allow the operator to transfer internal calls, or place them on hold, program this option Y (yes).

#### 12.4.11 CONFERENCE GAIN ON

*Conference Gain On* is used to increase the level of audio on all conference calls. This option, when set to Y (yes), increases the level of audio by 4dB. When this option is set to N (no), there is no increase in the level of volume.



#### 12.4.12 ALTERNATE DIALING

*Alternate Dialing* is a feature that permits the station user to dial [8] and [9] to access outgoing trunks. When *Alternate Dialing* is set to Y (yes), dialing a [9] accesses a trunk in group 1 and dialing an 8 accesses a trunk in group 8. This option prevents the user from directly accessing CO lines or any other trunk groups.

The station user cannot dial access any trunk groups by dialing [9][3][0][1] through [9][3][1][0] for group 1 through 10.

The station user cannot dial access trunks by dialing [9][0][0][1] through [9][2][2][8].

ACD Agents cannot be called, or have calls transferred to them, by dialing [8] plus the agent number.

The operator cannot activate background Music over the External Page.

A Single Line station user cannot access any groups by dialing [9][1] through [9][0] for group 1 through 10.

A Single Line station user cannot access LCR by dialing [9] [\*].

A Single Line station user cannot enter an account code.

A Single Line station user cannot use *Last Number Redial*.

*NOTE: When the Alternate Dialing option on the System Options programming screen is set to Y (yes), station users cannot transfer an outside line call to the system MODEM. The call can only be transferred to the MODEM from an Integrated Operator Terminal using the Second Transfer key.*

#### 12.4.13 OPERATOR DIGITS 350MS

This option, when programmed Y (yes), extends the duration of dialed DTMF tones on trunks from the Integrated Operator dial pad to 350 milliseconds.

#### 12.4.14 SLI DIAL OPTION

This feature is used when a peripheral device (such as a Voice Message System) is connected to a System/228 via an OPX and where direct access to an outside line is desired without the assertion or extraction of digits. When the *SLI Dial Option* is programmed N (no), a Single Line telephone which accesses an outside line receives dial tone from the system. After the telephone number is dialed, the system selects a line in the desired group and dials the telephone number.

When the *SLI Dial Option* is programmed Y (yes), a Single Line telephone which accesses an outside line is connected directly to the outside line and the station user (or peripheral device) dials the call.

#### 12.4.15 DISA/TIE GRP DIAL

This option, when programmed Y (yes), allows an incoming tie line call to access LCR by dialing [9] and the desired telephone number. In addition, this feature allows DISA or tie line calls to access a CO trunk by dialing [8][1] through [8][0] for trunk groups 1 through 10.

### 12.4.16 DEFAULT VALUES

DISABLE AUTO SKIP	= N	OPER NIGHT RECALL	= N
DISABLE LCR TONES	= N	NIGHT FORWARD ON	= N
AUTO ATTEN MUSIC OPT	= N	CALL FWD TO A. ATTEN	= N
LCR HOOK FLASH	= N	ENABLE HF MONITOR	= N
LCR CENTREX OPTION	= N	OPER. TRANSFER ICM	= N
SLI SDN ENABLE	= N	CONFERENCE GAIN ON	= N
SECOND TRANSFER KEY	= N	ALTERNATE DIALING	= N
DISABLE AUTO FAULT	= N	OPER DIGITS 350mS	= N
ENABLE AUTO PICKUP	= N	SLI DIAL OPTION	= N
NIGHT CALL COVERAGE	= N	DISA/TIE GRP DIAL	= N

### 12.4.17 HOW TO PROGRAM OTHER SYSTEM OPTIONS

If not already on the *System Options* programming screen, from the main menu press M. If you are on the *System Options* programming screen, press the O key.

1. Enter either Y (yes), or N (no) for each Option. The RETURN key can be used to skip to the next option.
2. Press the RETURN key. The cursor moves to the next *Option*. Continue programming the remaining options.

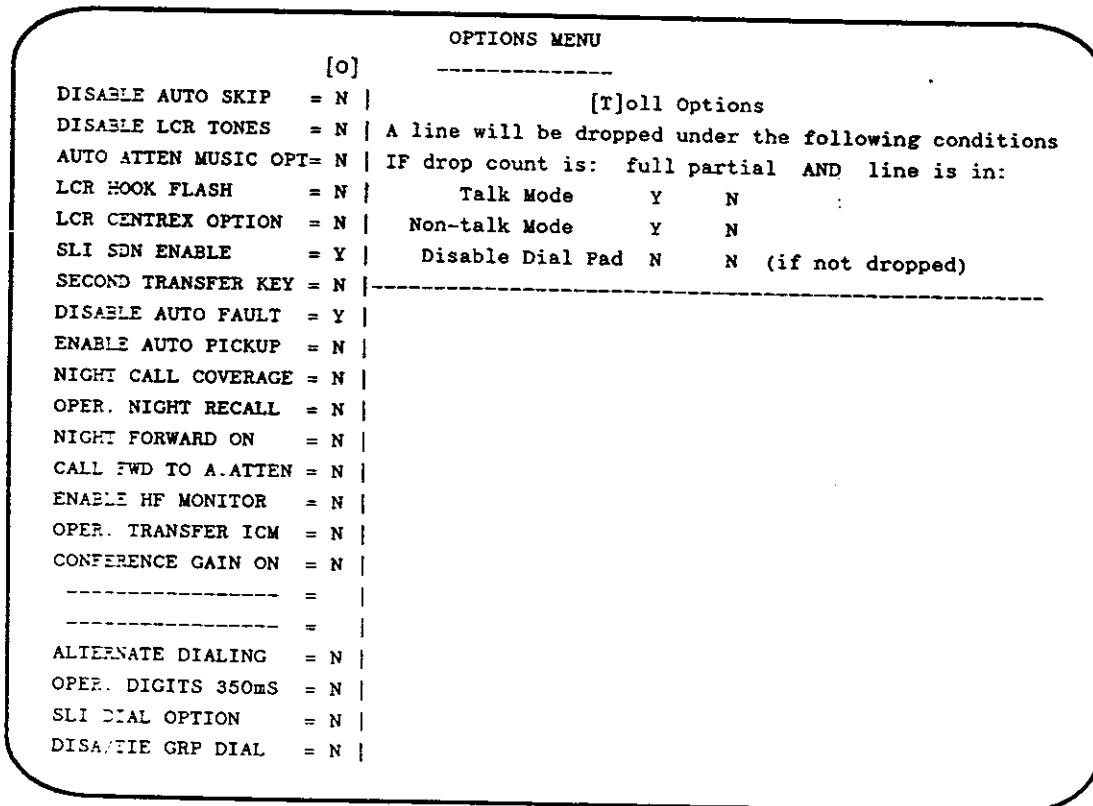


Figure 12-3 System Options Programming Screen

# Section 13

## Account Codes

### 13.1 INTRODUCTION

Account Codes are used in conjunction with Station Message Detail Recording (SMDR) to provide the user with a means of entering a number (that is meaningful to the user) from 1 to 10 digits long to an individual call record. Account codes can also be used with the Call Accounting Reports Option.

The account codes can be used with toll restriction to force station users to enter an account code when dialing particular telephone numbers (e.g., long distance numbers). When forcing a station user to enter an account code, the system can be programmed to check the account code against a table of valid account codes (from 1 to 8 digits long) before the call is allowed to be placed. Or, if desired, the system can be programmed such that an account code (from 1 to 10 digits) must be entered, but not a particular account code.

An ACCOUNT CODE key must be programmed on a 17-key, or 28-key telephone in order to use this feature. Neither digital display telephones, nor 6-key telephones require an account code key. The account code key appears as one of the soft keys on a display telephone. The 6-key telephone uses a dialed code to enter an account code number.

### 13.2 VERIFIED FORCED ACCOUNT CODES

A station user may be forced to enter an account code by using toll restriction to prevent a call being made to a certain number. The entered account code number is used to over-ride the toll restriction. This ensures that an account code number is entered for calls to particular numbers. The account code table can contain up to 532 account code numbers, and an account code number can be from 1 to 8 digits long.

#### 13.2.1 WHAT TO PROGRAM

The use of *Verified Forced Account Codes* (VFAC) requires programming on 3 different programming screens: *Station Programming*, *Account Codes*, and *Toll Restriction*.

The first step in programming VFAC is to decide which extensions are to be forced to enter an account code number, and for what dialed numbers these codes are to be entered. These stations are then toll restricted from dialing those numbers. For example, a user may wish an account code to be entered by every station for any long distance call (area code call) made.

A toll restriction table is then constructed for the numbers that are not to be dialed without account codes. Refer to the *Toll Restriction* section for more details on constructing the toll table.

The number of the constructed toll table is then entered into the station's *Day/Night Class* using the *Station Programming* screen. The station then cannot dial any number restricted in the toll table.

The station's *Forced account* parameter is programmed to 17.

Valid numbers used as account codes are then entered into the *Account Codes* programming screen. These numbers are then assigned a class representing which toll table to check the dialed number against when the account code number is entered. This class, however, is generally left as 0 to permit unrestricted dialing when the account code number is entered.

## 13.2.2 HOW TO PROGRAM

Day/Night Class - is entered on the *Station Programming* screen, *Timers* area.

Forced Account - is also entered on the *Station Programming* screen, *Timers* area. Set the Forced Account parameter to 17.

Toll Restriction - patterns are entered on the *Toll Restriction* programming screen.

### Account Codes -

From the main menu, press P on the keyboard to reach the *Account Code* programming screens.

1. The cursor is located in the upper right corner of the programming screen. Enter the page number (1-7) to be programmed.
2. Press the RETURN key. The cursor moves to the first line of the page.
3. Enter an account code that is to be considered valid.
4. Press the RETURN key.
5. If the entry is correct, press the RETURN key a second time to advance the cursor to the next line.
6. Or, the TAB key can be pressed to move to the *CLS* column.

Account Codes									Page 1 of 7		
NUM	ACCOUNT	CLS	NUM	ACCOUNT	CLS	NUM	ACCOUNT	CLS	NUM	ACCOUNT	CLS
001	12345	000	020		000	039		000	058		000
002	1	000	021		000	040		000	059		000
003	12	000	022		000	041		000	060		000
004	123	000	023		000	042		000	061		000
005	1234	000	024		000	043		000	062		000
006		000	025		000	044		000	063		000
007		000	026		000	045		000	064		000
008		000	027		000	046		000	065		000
009		000	028		000	047		000	066		000
010		000	029		000	048		000	067		000
011		000	030		000	049		000	068		000
012		000	031		000	050		000	069		000
013		000	032		000	051		000	070		000
014		000	033		000	052		000	071		000
015		000	034		000	053		000	072		000
016		000	035		000	054		000	073		000
017		000	036		000	055		000	074		000
018		000	037		000	056		000	075		000
019		000	038		000	057		000	076		000

Figure 13-1 Account Codes Programming Screen

7. Enter the class for the account code.
8. Press the RETURN key.
9. If the entry is correct, press the RETURN key a second time to advance the cursor to the next line.
10. Continue programming until all desired account codes are entered.

To return the cursor to the upper right corner of the screen, press the SHIFT key (it may be labeled as an up arrow), and the "@" key.

## 13.3 FORCED ACCOUNT CODES NOT VERIFIED

A station user may be forced to enter an account code by using toll restriction to prevent a call being made to a certain number. This ensures that an account code number is entered for calls to particular numbers. An account code number can be from 1 to 10 digits long. However, the system does not check the entered account code, only the fact that an account code is entered.

### 13.3.1 WHAT TO PROGRAM

The use of Forced Account Codes (FAC) requires programming on 2 different programming screens: *Station Programming*, and *Toll Restriction*.

The first step in programming FAC is to decide which extensions are to be forced to enter an account code number, and for what dialed numbers these codes are to be entered. These stations are then toll restricted from dialing those numbers. For example, a user may wish an account code to be entered by every station for any long distance call (area code call) made.

A toll restriction table is then constructed for the numbers that are not to be dialed without account codes entered. Refer to the *Toll Restriction* section for more details on constructing the toll table.

The number of the constructed toll table is then entered into the stations' Day/Night class using the *Station Programming*. The station then cannot dial any number restricted in the toll table.

A second toll restriction table is constructed for what the station is allowed to dial after an account code is entered. The number of the second table is then entered as the *Forced account* parameter in *Station Programming*.

## 13.4 OPERATION

When a station user selects a line to make an outside line call, and does not enter an account code before dialing the telephone number, the extension's Day/Night class is checked. If the Day/Night Class is greater than zero, the digits dialed are checked against the toll restriction table with the same number as the Day/Night Class. The call is then allowed or prevented based on the toll restriction table.

When a station selects a line to make an outside line call, and enters an account code number before dialing the telephone number, the system checks the *Forced account* parameter of the extension. If this parameter is 0, the system ignores any account code entered, and checks the Day/Night Class and proceeds with any toll restriction. If the *Forced account* parameter is a number between 1 and 16, the station uses that number in place of the day/night class, and uses the toll restriction table with the same number as the *Forced account* parameter to determine whether or not the call is allowed to be placed.

When a station selects a line to make an outside line call, and enters an account code number before dialing the telephone number, the system checks the *Forced account* parameter of the extension. If this parameter is 17, the system first checks the *Account Codes* table for the entered account code number. If

the entered account code number is found, the system uses the toll restriction table with the same number as found in the *CLS* column of the *Account Codes* screen, in place of the Day/Night Class, to determine whether or not the call is allowed to be placed.

If the number is not found, it is treated as if no account code were entered, and uses the toll restriction table identified by the Day/Night Class.

### 13.5 SUMMARY

An extension can be programmed to force the entry of an account code before any outside line call is made. A station's Forced Account Code class also determines whether or not the account code that is entered is verified against a table of authorized account codes.

The station's day and night class are used to restrict a user from dialing a particular type of call (long distance, local, etc.). The class of the station is changed (for the one call) when an account code is entered.

FAC CLASS	USED FOR
-----------	----------

00	Forced account codes not in effect. Station cannot over-ride any toll restriction caused by Day/Night class.
01 thru 16	An account code must be entered if the station user is dialing any outside line call. The account code entered is NOT checked against the Account Code Table for validation. The station's Day/ Night class changes to the number entered as the "Forced Account = ."
17	Forced entry of account code when used in conjunction with a station's day or night class. The entered account number is checked against the validation table (P - <i>Account Codes</i> programming screen). The station's Day/Night class is changed to the class assigned to the account code number. Account codes can still be added to SMDR record.

## 13.6 STATION OPERATION

**Description:** A telephone may be programmed so that you must enter an account code in order to place an outside line call to certain telephone numbers (for example, long distance calls). This ensures that call records contain an appropriate indication of the nature of the call. An assigned account number (from 1 to 10 digits) must be entered after an outside line is selected, but before dialing the desired telephone number.

The digital display telephone uses a soft key to enter account codes. This soft key is located under the display and is the center key.

### How To: Use Account Codes With The 17-key And 28-key Telephones.

ACTION	RESULT	COMMENT
1. While an External call is in progress, press the [ACCOUNT CODE] key.	The [ACCOUNT CODE] key LED will light.	The account code may be entered at any time after dialing. However, it must be entered before disconnecting from the call.
2. Enter the ACCOUNT CODE (up to 10 digits).		A maximum of 8 digits may be entered with Verified Forced Account Codes.
3. Press the [ACCOUNT CODE] key.	The [ACCOUNT CODE] key LED will go out.	If the account code is the maximum 10 digits, the LED will automatically go out, and the code will be entered.

### How To: Use Account Codes With A 6-key Telephone.

ACTION	RESULT	COMMENT
1. While a call is in progress, press the [PROG] key.	The [PROG] key will light.	The account code may be entered at any time after dialing, but must be entered before disconnecting from the call.
2. Press the [#] key.		
3. Enter the ACCOUNT CODE (up to 10 digits).		A maximum of 8 digits may be entered with Verified Forced Account Codes.
4. Press the [PROG] key.	The [PROG] key LED will go out.	If the account code is the maximum 10 digits, the LED will automatically go out, and code will be entered.

How To: Use Account Codes With A Display Phone.

ACTION	DISPLAY	RESULT/COMMENT
<p>1. While an external call is in progress, press the [acct] "soft" key.</p>	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin-bottom: 5px;"> <p>Tue May 10 12:03 #6556500 ACC#: timer cost acct</p> </div> <div style="display: flex; justify-content: center; gap: 10px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div> <div style="text-align: center; margin-top: 5px;">▲</div>	<p>The account code may be entered at any time after dialing, but must be entered before disconnecting from the call.</p>
<p>2. Enter the ACCOUNT CODE (up to 10 digits).</p>	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin-bottom: 5px;"> <p>Tue May 10 12:04 #6552671 ACC#123456789 timer cost acct</p> </div> <div style="display: flex; justify-content: center; gap: 10px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div>	<p>If the maximum of 10 digits is entered, the account code is entered automatically. Skip the next step.</p>
<p>3. Press the [acct] "soft" key.</p>	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin-bottom: 5px;"> <p>Tue May 10 12:05 #6552671 00:56 timer cost acct</p> </div> <div style="display: flex; justify-content: center; gap: 10px;"> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> <div style="border: 1px solid black; width: 30px; height: 15px;"></div> </div> <div style="text-align: center; margin-top: 5px;">▲</div>	<p>The account code is entered.</p>



## How To: Use Account Codes With A Single Line Telephone.

ACTION	RESULT	COMMENT
1. Lift the handset.	Internal dial tone is heard.	
2. Dial the desired outside line access code [9][1] through [9][0] or [9][*] for LCR.	A second dial tone is heard.	
3. Before dialing the telephone number, dial [*].		
4. Dial the ACCOUNT CODE number up to ten digits.		
5. When the account code has been entered, dial another [*].	The account code is entered.	
6. Continue dialing the desired telephone number.		

NOTE: All account codes must be entered BEFORE dialing the outside number on Single Line phones.



# Section 14

## PBX Feature Keys

### 14.1 INTRODUCTION

The ISOETEC System/228 can be connected to a larger PBX (or Centrex). Stations from the PBX are connected to the ISOETEC System/228's CO port card. Thus, an extension on the PBX is a CO line on the System/228. Many larger PBXs use complex dialing sequences to activate their features. PBX feature keys have been provided to simplify using those PBX features that are of interest to the System/228 user. The dialing sequence required by the PBX can be programmed on a single key of a System/228 telephone. There are 40 such sequences possible in the system. A feature key is programmed as a PBX key, and coded to follow one of the desired dialing sequences.

### 14.2 WHAT TO PROGRAM

The sequence to perform a particular feature of the larger PBX is programmed on the *PBX Feature Key* programming screen. Selecting the feature key position, and which sequence to follow is programmed on the *Station Programming* screen.

Determine which PBX features are of interest to System/228 station users. Determine how these features are executed on the PBX (or Centrex). There are a number of PBXs, and each has their own particular sequence for performing a feature. For example, to transfer a call between extensions, a PBX station may have to flash (momentarily depress) the switch-hook, dial a #, and the extension number to receive the call. Another PBX may use a different sequence.

There are 40 sequences that can be programmed on the *PBX Feature Key* programming screen. Each sequence is comprised of a combination of commands. Up to 10 commands may be assigned to one PBX key. These commands are listed below:

- F Flash the PBX line. This is the equivalent of a PBX station momentarily depressing the switch-hook.
- A Wait for dial tone from the PBX before continuing.
- P Pause n (n=number of seconds) before continuing.
- W Wait n (n=number of digits to wait) for the System/228 station user to dial n number of digits before continuing.
- D Dial the digits stored from the Wait command.

Dial digits 1-9, \*, and # may also be entered on the command. The system dials these digits as they are found in the command line.

For example, to transfer a call in a particular PBX, a station user must: flash the switch-hook, wait for dial tone, then dial 73 and the extension number (3 digits).

A System/228 user can be told: to transfer a PBX line to a station within the PBX, press the PBX feature key on their telephone and dial the desired extension number.

PBX Feature Keys

The PBX key assigned to their station would be programmed on the PBX Feature Key Programming Screen:

W 3 F A 7 3 D

When the station user presses the PBX key, the system waits for the user to dial the 3 digit extension number. The System then flashes the PBX line, waits for PBX dial tone, dials 7, 3, and the 3 digit extension number.

The PBX feature key is then assigned a position on each station. The key code for a PBX FEATURE key is 815. This key is also assigned a sub-code to indicate which of the 40 possible command lines the key is to use.

EXT	port	name	TYPE	type	Time
EXT 3025	port 037	name	JULIE		Time 11:14 a Thu 05-12-82
Line ID Number	001	C-ext-extern	[X] ext		
day ring	N	x-col-extern	Camp on timer = 003*10s	Hands free co	Y
R-EXT RING	N	Y-col-extern	Recording Num = 000	Hands free ICM	Y
day access	Y	z-row-extern	Hunt group = 000	Hands free Rec	Y
night access	Y	w-row-extern	Day class = 000	Auto Answer	Y
			Night class = 000	Auto 2nd Path	N
			LCR class = 000	Allow 2nd Path	N
			Prime line = 000	Group in	N
			Page Tone = 000	Busy On Hold	N
			Forced Account = 000	Blk Barge in	N
			Pickup group = 000	Blk Barge Tone	Y
			Pilot Answer = 000s	Out LCR Only	N
			Cost Limit = \$0.00	Total Toll	N
			Ring type = 01	SMDR Enable	N
			Hold Recall = 006*10s	Hook Release	N
			Trans Recall = 006*10s	FMS/attend	N
			System Forward = 0000	Analog Phone	N
			Sys Fwd Timer = 003*10s		

Keys	[H]	815 PBX Key
01 [ 0300 ]	0020	02 [ 0815 ] 0001
03 [ 0500 ]	0020	04 [ 0300 ] 0020
05 [ 0815 ]	0201	06 [ 0815 ] 0201
07 [ 3001 ]	0000	08 [ 3002 ] 0000
09 [ 3003 ]	0000	10 [ 3004 ] 0000
11 [ 3005 ]	0000	12 [ 3008 ] 0000
13 [ 0600 ]	0001	14 [ 0600 ] 0002
15 [ 0800 ]	0003	16 [ 0600 ] 0004
17 [ 0700 ]	0001	18 [ 0700 ] 0002
19 [ 0810 ]	0080	20 [ 0802 ] 0000
21 [ 0803 ]	0000	22 [ 0809 ] 0000

(c) all lines to all extns or timer to all extns. (x) line to all lines in extn  
 (w) line to all extns. (z) ring to all lines. (y) ring to all extns

Figure 14-1 Station Programming Screen

PBX Keys Programming										Page 1 of 4
Command	1	2	3	4	5	6	7	8	9	10
PBX Key										
01	Wait	3	Flash	Pause	1	7	#	Dial		
02	Wait	3	Flash	Auto	7	3	Dial			
03										
04										
05										
06										
07										
08										
09										
10										

Enter 1 letter commands (digits take up a command location)

A .. Wait for dial tone                      C .. Clear command at present cursor line  
D .. Dial    F .. Flash  
P .. Pause n (n=number of seconds)    W .. Wait n (n=number of digits to wait)

'@' .. Page #

Figure 14-2 PBX Feature Key Programming Screen

### 14.3 DEFAULT VALUES

There is no default program for PBX feature keys. All command lines are blank.

### 14.4 HOW TO PROGRAM THE PBX FEATURE KEY

If not already on the *PBX Feature Key* programming screen, from the main menu, press the J key. The cursor appears on the first PBX key command line.

1. Enter the letter for the desired command (A, D, P, F, W, or a dialed digit).
2. Press the RETURN key. The cursor moves to the next entry.
3. When finished programming a PBX key, press the RETURN key until the cursor reaches the next command line.

The C key can be used to clear the command line for a PBX feature key.

The "@" (Shift + @) key can be used to move the cursor to the upper right corner to reach the remaining program pages.



# Section 15

## Call Accounting Reports Option

### 15.1 INTRODUCTION

The *Call Accounting Reports Option* is a feature of the system which allows outside line call information to be stored in system memory. These call records can then be processed, and printed to the SMDR printer. The call records may be sorted by extension (detail of records), or by account code (detail of records). A summary of extension, or account code, activity can also be provided. The call records contain information concerning the date and time a call was placed (or received), the telephone number dialed, the duration of the call, and the cost of the call.

The ISOETEC System/228 has two *Call Accounting* packages available:

Call Accounting Reports Option I – ORDER PART NUMBER 11007. This package can store up to 9,000 call records depending upon the length of the call record (e.g., long distance calls take more space than local calls, and local takes more space than incoming). This package can also be used with any one of the ACD feature packages.

Call Accounting Reports Option II – ORDER PART NUMBER 11047. This package can store up to 30,000 call records depending upon the length of the call record (e.g., long distance calls take more space than local calls, and local takes more space than incoming). This package CANNOT be used with any of the ACD feature packages.

Storage capacity will vary with the types of calls stored. Calls that are tagged with account codes occupy more storage space.

When the *used storage space* reaches approximately 75%, "Account" lights on the operator's screen. When the *used storage space* reaches approximately 99.9%, the system stops recording calls.

These packages are added to the system software by an authorized ISOETEC Service Center using the remote programming feature.

### 15.2 INSTALLATION

Hardware Requirements – Memory Module III (p/n 15290).

Software Requirements – Software version 1.11 and above. This feature is added to system memory via the remote programming feature. A *Least Cost Routing Data Base* is also required for operation of this feature.

The installation of the *Call Accounting Reports Option* is accomplished in three steps.

1. The Memory Module III is installed on the system's CPU card. Don't forget to activate the battery strap. Move the jumper on the Memory Module to connect E1 to E2.
2. An authorized ISOETEC Service Center installs the appropriate option package.
3. A customized *Least Cost Routing Data Base* is loaded into the system.

*NOTE: After the Call Accounting package has been added, all reports should be cleared to update the Period Covered.*

## 15.3 PROGRAMMING

There are several programming steps which are needed for the proper operation of the Call Accounting Reports Option. Programming is necessary on the *Station*, *System*, and *Call Accounting* programming screens.

### 15.3.1 WHAT TO PROGRAM IN STATION PROGRAMMING

*SMDR Enable*, found in the *Timers* area, must be programmed to Y (yes) for each extension number for which call records are to be stored. Refer to the *Station Programming* section of this manual for instructions on how to program the *Station Programming* screen.

### 15.3.2 WHAT TO PROGRAM IN SYSTEM PROGRAMMING

*SMDR Enable*, found in the *Lines* area, must be programmed to Y (yes) for each trunk for which call records are to be stored.

*SMDR* must be enabled on one of the input/output ports in the *Ports* area.

The *Cost After* parameter is used with *SMDR* (Station Message Detail Recording, or the *Call Accounting Reports Option*) to determine how long after a call has been dialed, the costing process should begin.

The *Local Call Cost Limit* is also used in conjunction with Least Cost Routing to define for the system what calls can be considered local by price rather than by dialed number.

Refer to the *System Programming* section of this manual for instructions on how to program the *System Programming* screen.

### 15.3.3 WHAT TO PROGRAM IN CALL ACCOUNTING

The only thing to be programmed in the *Call Accounting* programming screen is what type of call records to store. The choices are: none, incoming, local, and toll calls, or any combination of the last three.

*NOTE: Depending on the type(s) of calls (Incoming, Toll Calls, Local Calls and None) selected for Call Accounting Record, the display Call Type will be displayed as indicated in the table below:*

Type of Calls Selected	Call Type Displayed
None	None
Incoming	Incoming
Toll Calls	Toll Only
Local Calls	Local Only
Incoming and Toll Calls	In & Toll
Incoming and Local Calls	In & Local
Toll and Local Calls	Outgoing
Incoming, Toll, and Local Calls	In & Out

The above describes the type(s) of calls which can be RECORDED. It must not be interpreted as the types of calls which can be viewed. For example, if "Incoming, Toll Calls and Local Calls" was selected, it is not possible to view only "Incoming" calls. This is not a function to sort the type of calls to be viewed.

### 15.3.4 HOW TO PROGRAM CALL ACCOUNTING

From the main menu, press V on the keyboard. The *Call Accounting* menu appears.



1. Press E while in the *Call Accounting* Menu. "Which one?" prompt appears on the screen.
2. Enter one of the following: I, T, L, A or N.
  - I = Incoming,
  - T = Toll,
  - L = Local,
  - A = All (Incoming, Toll, and Local),
  - N = None.
3. Repeat steps 1 & 2 to add another type.
4. Press ESCAPE to return to system main menu.

### 15.3.5 HOW TO CLEAR THE REPORTS

The system continues to store call records until the reports are cleared, or until the storage area is full. After the reports are cleared, the system begins to store new records. When the reports are cleared ALL reports are erased.

1. From the Call Accounting menu, press F on the keyboard. A warning message "All the data will be lost! Proceed (N)?" is displayed.
2. Press Y (yes) to clear the reports. Press any other key if you have changed your mind about clearing the reports.

```

                                CALL ACCOUNTING MENU
                                -----

START LOG DATE : Thu 07-07-88  10:49   TYPE OF CALLS : IN & OUT
NUM OF CALLS IN MEMORY =  100         USED STORAGE SPACE =   .94%

SELECT ONE OF THE FOLLOWING:

A. EXTENSION REPORT.
B. ACCOUNT REPORT.
C. SUMMARY OF EXTENSIONS REPORT.
D. SUMMARY OF ACCOUNTS REPORT.
E. SELECT [I]ncoming/[T]oll Calls/[L]ocal Calls/[N]one
F. CLEAR ALL THE REPORTS.

ENTER SELECTION>
  
```

Figure 15-1 Call Accounting Menu

## 15.4 REPORT DEFINITIONS

The following are definitions of the column headings used in the reports.

PERIOD COVERED	The beginning and ending dates for which the calls are recorded. The beginning date is equal to when the report was last cleared. The ending date is when the report is viewed, or printed.
DATE	The date of the incoming, or outgoing call.
TIME	The time of day which the call was placed, or answered, in 24-hour clock format.
NUMBER DIALED	For outgoing calls, this is the telephone number dialed. A "?" shows in this column if a system speed dialing number containing a pause is dialed.
TYPE	Indicates whether the call was incoming (IN), or outgoing (OUT or \$OUT). For calls placed via LCR, this column shows \$OUT.
DURATION	The amount of time spent on the incoming, or outgoing call (hours:minutes:seconds).
RING	This applies only to incoming calls. It indicates the amount of time the incoming call rang before it was answered (minutes:seconds).
SERV	This applies to outgoing calls only. This is the carrier service used for the call. For example, DDD is Direct Distance Dial.
COST	The cost of the outgoing call is calculated using the <i>Least Cost Routing Data Base</i> .
ACCOUNT	The account code entered by the station user for incoming, or outgoing calls.
CALLS	The sum of incoming and outgoing calls.
INCOMING	The number of incoming calls answered.
OUTGOING	The number of outgoing calls.

*NOTE: Due to differences in timing calls, the cost totals for extensions on the Summary of Extension report may differ from those found on the System Management Extension Summary (I) Report.*

## 15.5 EXTENSION REPORT

- ACTION** From the *Call Accounting* menu, press A. The prompt "WHICH ONE?(A for all)" appears.
- Enter the desired extension number, and press the RETURN key. Or, press A to list all recorded extensions.
- Press the ESCAPE key to return to the *Call Accounting* menu. Another extension number may be entered, or press the ESCAPE key a second time to make another report selection.
- COMMANDS** The UP and DOWN arrow keys are used to scroll the report. The screen displays 12 calls at a time.
- PRINT** To print the report to the SMDR printer, press Y (yes) when the "Print Now" prompt appears on the bottom of the screen. The entire selected report prints, not just the page displayed.
- TOTALS** The totals at the bottom of each screen are the totals for that screen, and all previous screens. The report totals are listed on the last page of the report.

EXTENSION 3003 SMITH, J								
Period Covered: Tue 02-03-87 12:30 Through Tue 03-31-87 16:57								
DATE	TIME	NUMBER DIALED	TYPE	DURATION	RING	SERV	COST	ACCOUNT
02/03/87	15:01	6557705	OUT	17:24		DDD	\$00.20	
02/10/87	15:46	14198666050	\$ OUT	00:20		GTE	\$00.27	
02/10/87	15:49	14198666050	\$ OUT	00:20		GTE	\$00.27	
02/10/87	16:16	14198666050	\$ OUT	15:00		GTE	\$03.13	
02/10/87	17:39	60	OUT	00:40			\$00.00	
02/12/87	10:13	3001	OUT	00:50			\$00.00	
02/12/87	12:41	3004	OUT	01:12			\$00.00	
02/12/87	16:30	19149673669	OUT	00:10		DDD	\$00.43	
02/12/87	16:30	19149673669	OUT	09:00		DDD	\$02.35	
02/12/87	17:21	3129389200	\$ OUT	00:30		GTE	\$00.27	
02/12/87	17:22	13129389200	OUT	13:12		DDD	\$03.29	
02/12/87	17:50	6124736550	\$ OUT	01:12		GTE	\$00.49	
Totals - CALLS INCOMING OUTGOING  DURATION  COST								
		00012		00012	001:00:30		\$ 10.79	
Print Now _ [Use the arrow keys to scroll...]								

Figure 15-2 Extension Report

## 15.6 ACCOUNT REPORT

**ACTION** From the *Call Accounting* menu, press B. The prompt "WHICH ONE?(A for all)" appears.

Enter the desired *account code*, and press the RETURN key. Or, press A to list all recorded account codes.

Press the ESCAPE key to return to the *Call Accounting* menu. Another *account code* may be entered, or press the ESCAPE key a second time to make another report selection.

**COMMANDS** The UP and DOWN arrow keys are used to scroll the report. The screen displays 12 calls at a time.

**PRINT** To print the report to the SMDR printer, press Y (yes) when the "Print Now" prompt appears on the bottom of the screen. The entire selected report prints, not just the page displayed.

**TOTALS** The totals at the bottom of each screen are the totals for that screen, and all previous screens. The report totals are listed on the last page of the report.

ACCOUNT 1234									
-----									
Period Covered: Thu 07-07-88 10:49 Through Fri 07-15-88 17:37									
EXT	DATE	TIME	NUMBER DIALED	TYPE	DURATION	RING	SERV	COST	
-----									
3007	07/13/88	11:08	914	OUT	:10		DDD	\$	.00
3007	07/13/88	11:08	9*9	OUT	:09		DDD	\$	.00
3007	07/13/88	11:10	914	OUT	:11		DDD	\$	.00
3007	07/13/88	11:10	9*9146281532#	OUT	:14		DDD	\$	.00
3003	07/15/88	12:27	96547	OUT	:17		DDD	\$	.00
3003	07/15/88	17:32	12127590555	OUT	1:00		DDD	\$	.00
3003	07/15/88	17:33	12127590555	OUT	:40		DDD	\$	.00
3005	07/15/88	17:33	18035554646	OUT	:35		DDD	\$	.00
3007	07/15/88	17:33	13125554978	OUT	:30		DDD	\$	.00
3009	07/15/88	17:33	6569532	OUT	:25		DDD	\$	.00
3003	07/15/88	17:36		IN	:45	:02			
Totals - CALLS   INCOMING   OUTGOING   DURATION   COST									
11   1   10   4:57   \$ .00									
Print Now _ [Use the arrow keys to scroll..]									

Figure 15-3 Account Code Report





## 15.9 TROUBLE SHOOTING

### SYMPTOM

### POSSIBLE CAUSES

---

Calls are not recording.

1. Station Programming:

SMDR parameter must be Y (yes) for desired station.

2. System Programming:

SMDR parameter must be Y (yes) for line the call is made on.

3. System Programming:

Lines must be in a trunk group; must not be programmed for trunk group zero.

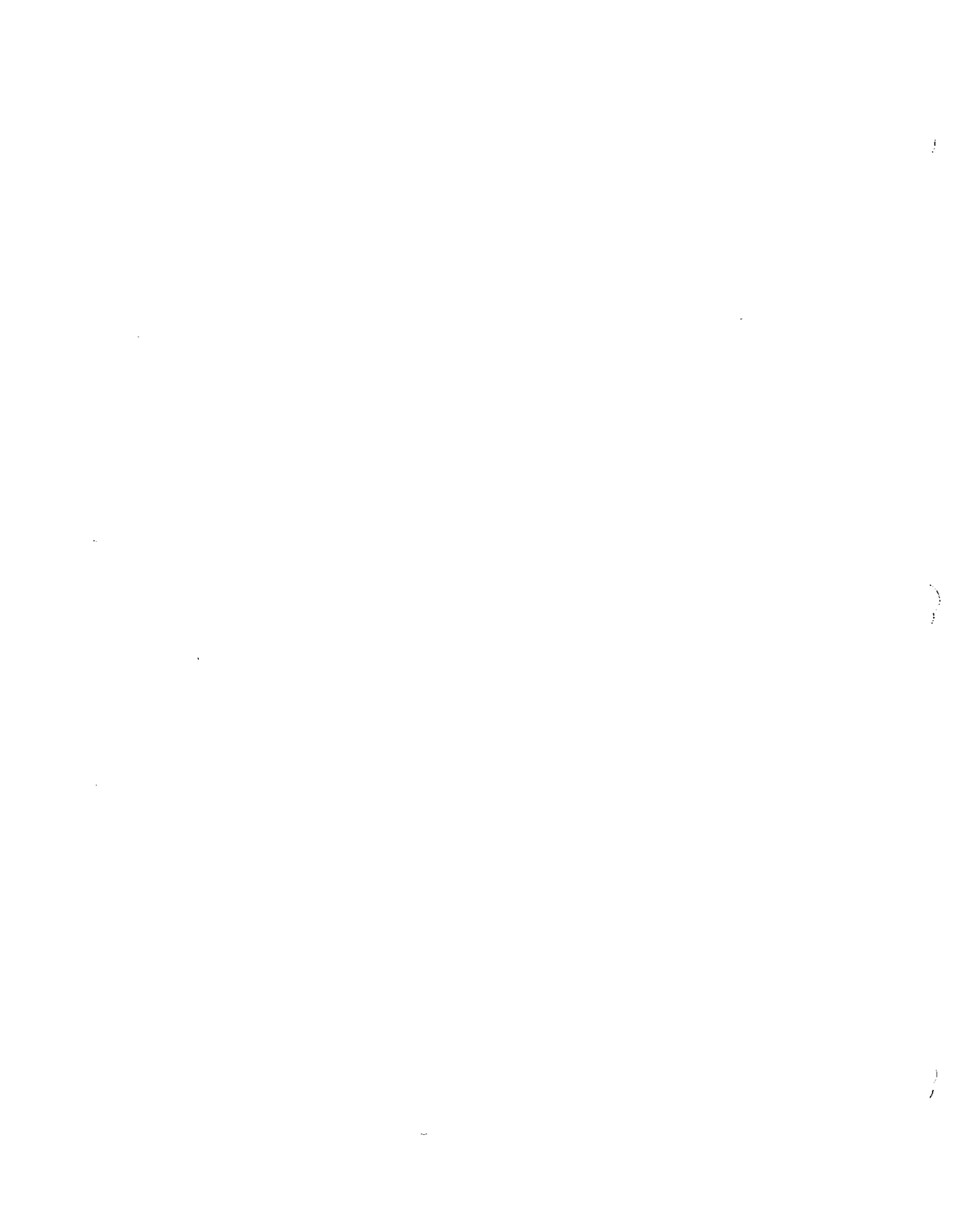
4. Call Accounting Programming:

Must be programmed for call type, either incoming, toll, local, or some combination.

Call log date shows \*\* \*\*

Reports should be cleared (choice F on menu) before beginning use.

When "Account" appears in the operator's screen, the Call Accounting Package is approximately 75% filled, and should be printed (if desired), and then cleared.





# Section 16

## Data Feature

### 16.1 INTRODUCTION

The Data Feature is a time division switched, point-to-point data transmission capability which permits simultaneous voice and data communications. The Data Feature offers the ability to transmit data information between personal computers, printers, MODEMs, CRT terminals, main frame computer ports, etc.

The hardware consists of a Data Control Module card which is installed in the ISOETEC System/228 cabinet, and a digital display phone, or stand-alone Digital Data Interface (DDI) connected to each data communications device. The ISOETEC System/228 supports a total of 228 ports. These ports can be *either* voice ports, (digital telephones, CO lines, tie lines, etc.), voice/data ports (digital display telephones), *or* data ports (DDI).

The system is designed with a separate data bus independent of the voice bus. This parallel architecture allows for simultaneous voice and data operation. Both the voice and data ports are non-blocking. Any data port can be connected to another data port regardless of other connections in the system.

The digital display phone, and DDI allow any serial data communications device (which conforms to RS-232-C) to be connected to the ISOETEC System/228. Data information can be switched through the system at speeds from 300 to 38.4K baud asynchronous, and at 56K baud synchronous. The system is transparent to the devices being connected. There is no protocol, or data speed conversion done by the system. Any serial data communications devices that can communicate with each other using cable, can communicate with each other through the ISOETEC System/228.

The data switching is accomplished using the same wiring the telephone station uses for voice switching. The Data Feature can be added at any time without expensive rewiring.

Installation is accomplished by installing the Data Control Module in the cabinet of the ISOETEC System/228, and installing a digital display telephone, or DDI at each location that is to use the Data Feature.

Data ports can be arranged into *hunt groups* to aid in sharing resources. For example, MODEMs connected to data ports can be arranged into hunt groups. A station user would only need to know the lead port number for the MODEMs and, when dialed, the system would connect the user to an available MODEM.

Data ports can also be *restricted* from calling other data ports. For example, station users can be prevented from accessing certain data ports connected to printers used for special projects (the printers are not available for general use).

### 16.2 INSTALLATION

Installation of the Data Feature is quick and simple. Installation consists of installing the Data Control Module (p/n 15330) in the ISOETEC System/228 cabinet, and standard installation of digital display telephone sets. The DCM is installed in slot J22 of the cabinet.

*NOTE: Stations using the data feature of a digital display telephone, and DDIs, MUST be connected to a Station port card. The E&M Tie Line Combination port card and DTMF Receiver port card do not support the data feature.*

Connection of the individual data communication devices requires that the installer be familiar with data communications terms, and has access to the appropriate information for connecting the variety of data communications devices that may be encountered. This information consists of, but is not limited to:

1. Is the device configured as data terminal equipment (DTE), or data communications equipment (DCE)?
2. What pin on the RS-232 type connector performs what function?
3. What signal leads are required to make the device operate?

When planning the installation of the data feature, use a digital display phone at any location that is to originate a data connection. A DDI can only be called; it cannot originate a connection. A digital display phone would typically be connected to a CRT terminal, or personal computer. A DDI would typically be connected to a printer, or a MODEM.

The station wiring for a digital display phone and a DDI is identical to a standard 28 key digital telephone. Follow the installation instructions in the *Installation*, and *Cabling and Cross Connection* sections of this manual.

The data connector of the digital display telephone, and the DDI is a 25 pin, type D connector which is configured as Data Communications Equipment with the following pin configurations:

Pin	Use	Direction
2	Receive Data	into telephone (or DDI)
3	Transmit Data	out of telephone (or DDI)
4	Request To Send	into telephone (or DDI)
5	Clear To Send	out of telephone (or DDI)
6	Data Set Ready	out of telephone (or DDI)
7	Signal Ground	
8	Data Carrier Detect	out of telephone (or DDI)
11	unassigned	into telephone (or DDI)
12	Secondary DCD	out of telephone (or DDI)
15	Transmit Clock	out of telephone (or DDI)
17	Receive Clock	out of telephone (or DDI)
19	Secondary RTS	into telephone (or DDI)
20	Data Terminal Ready	into telephone (or DDI)
22	Ring Indicator	out of telephone (or DDI)

The following diagram will aid in the design of cables to connect the many different configurations of data communications devices.

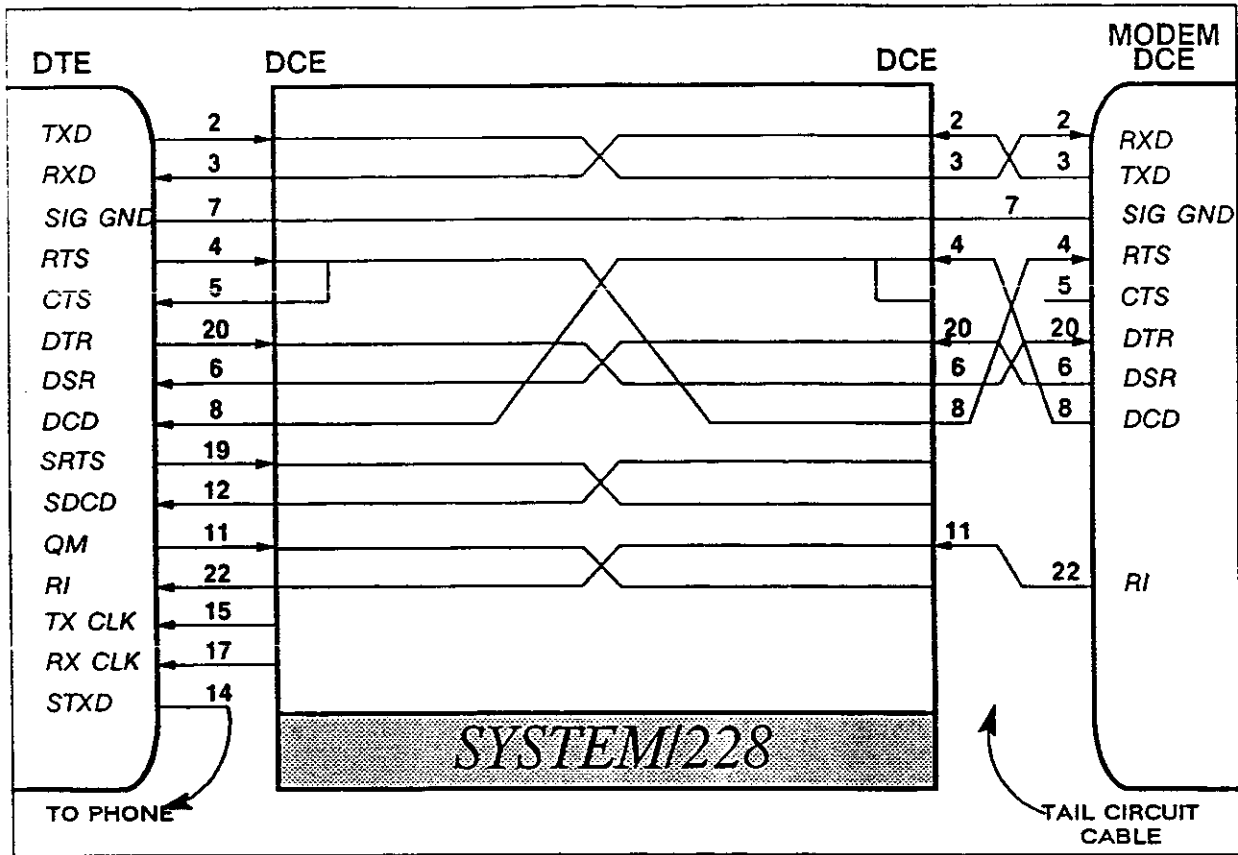


Figure 16-1 System/228 Data Switching

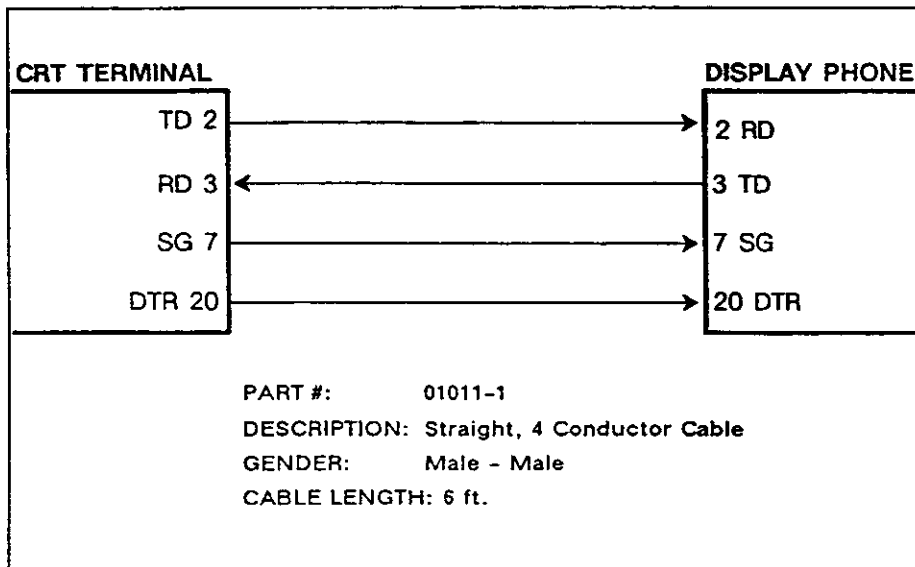


Figure 16-2 Typical Terminal To Phone Cable

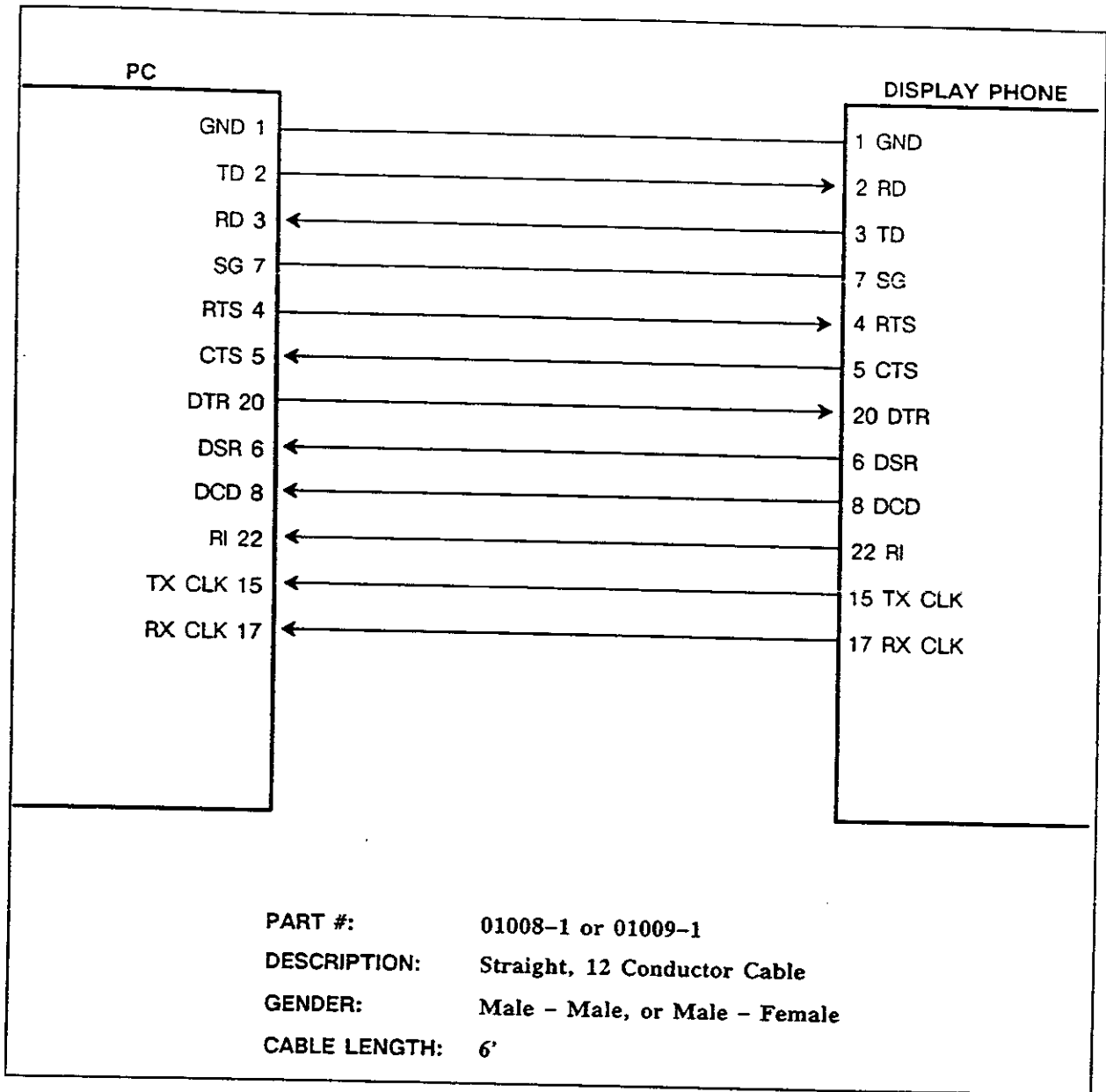


Figure 16-3 Typical Computer To Phone Cable

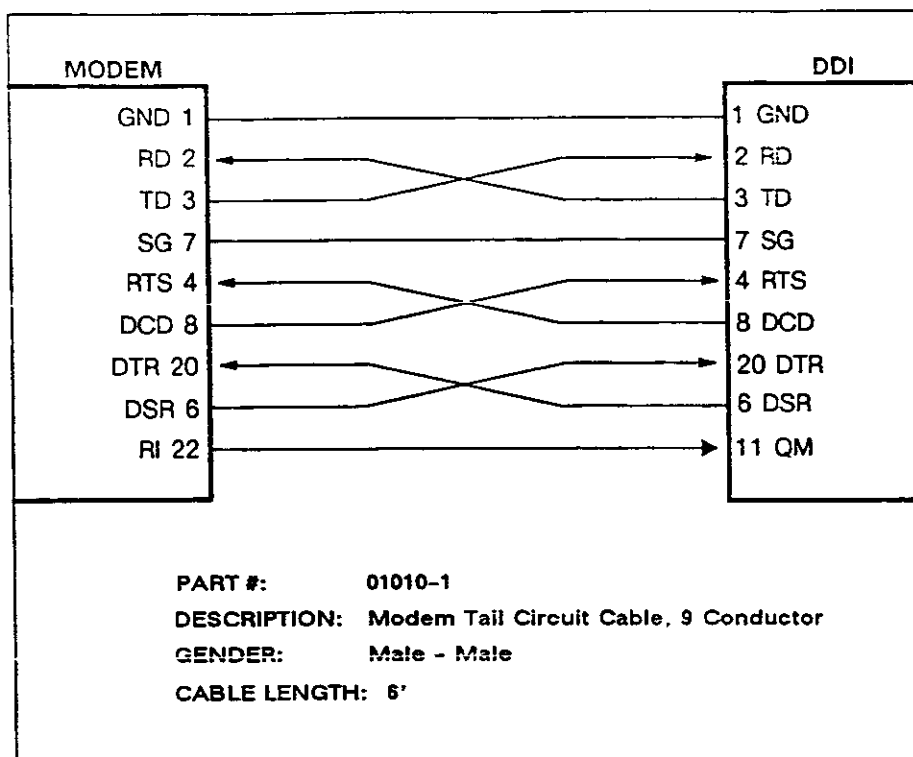


Figure 16-4 Typical MODEM To DDI Cable

### 16.3 DATA STATION OPERATION

The digital display telephone enables a user to establish a data connection to any idle data port, and communicate with computers, terminals, printers, plotters, MODEMs, etc. This connection can only be made to equipment on premises. The digital display telephone can be used to connect terminals to main-frame terminal ports, printers, plotters, minicomputers, MODEMs or another CRT terminal.

The digital display telephone must have a DATA ON key (programmed by system programmer).

The DATA HL (data hot line) key is a useful key if a particular data port is called frequently. This key permits a station user to access a preprogrammed data port without having to dial the port number. A digital display telephone may have more than one DATA HL key.

Data ports have a class of service which is used to restrict data ports from each other. The class of service of the originating data port must be equal to, or higher than the data port being called.

Easy operation was a prime concern in the design of the system. Therefore, the display phone uses menu-prompted 'soft' keys, and preprogrammed feature keys to establish a data, or voice call.

When used during a data call, the three 'soft' keys located under the display of the telephone are used to change the serial communications parameters and to establish the data connection. The bottom line of the display labels the use of each 'soft' key.

### 16.3.1 CONNECTING TO A DATA PORT



**Description:** A digital display phone can connect to a data port by either using the DATA ON key and dialing the port number, or by using a DATA HL key.

**How To:** Make A Data Connection.

ACTION	RESULT	COMMENT
1. Press the DATA ON key.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p>-Data Call- #069</p> <p>Dial Port Number</p> </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> </div>	The DATA ON key LED flashes. The data port of the station shows on the display.
2. Dial destination port number (001-228).	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p>&gt;134</p> <p>Baud Rate= 300</p> <p>Data= 8, Stop= 1</p> <p>Item Chge Conn</p> </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> </div>	Change parameters, if desired, otherwise go to step 3.
3. Press the 'soft' key, under the display labeled Conn.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p>-Data Port-</p> <p>Connected To</p> <p>134</p> </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 5px;"> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> <div style="border: 1px solid black; width: 20px; height: 15px;"></div> </div>	The Conn (connect) key is the 'soft' key located below the word Conn on the display.

To DISCONNECT from a data call, press the DATA ON key.

## How To: Make A Data Connection Using The DATA HL Key.

ACTION	RESULT	COMMENT
1. Press the DATA HL key.	<pre> &gt;189 Baud Rate= 9600 Data= 8, Stop= 1 Item Chge Conn </pre> 	The DATA ON key LED flashes. Change parameters if desired. Otherwise, go to step 2.
2. Press the 'soft' key, under the display labeled Conn.	<pre> -Data Port- Connected To 189 </pre> 	The Conn (connect) key is the 'soft' key located below the word Conn on the display.

## 16.3.2 CHANGING COMMUNICATION PARAMETERS

**Description:** A digital display phone may be permitted to change the baud rate, number of data bits (plus a parity bit), and the number of stop bits of the data port being called.


After the data port number is dialed (or DATA HL key is pressed), if the display appears as below, the communications parameters CANNOT be changed by the station.

The word ITEM —> does not show

```

>178
Baud Rate= 9600
Data= 8, Stop= 1
---- Chge Conn

```



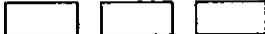
However, if the display shows as below, the communications parameters CAN be changed by the station user.

The word ITEM —> does show

```

>134
Baud Rate= 9600
Data= 8, Stop= 1
Item Chge Conn

```



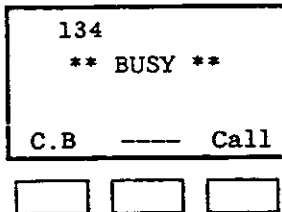
How To: Change the baud rate, number of bits, and number of stop bits.

ACTION	RESULT	COMMENT
<p>1. Press the 'soft' key under the word <b>Item</b> on the display.</p>	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p style="text-align: center;">134</p> <p>Baud Rate=&gt; 300</p> <p>Data= 8, Stop= 1</p> <p>Item Chge Conn</p> </div> <div style="display: flex; justify-content: center; gap: 20px; margin-top: 5px;"> <input type="text"/> <input type="text"/> <input type="text"/> </div>	<p>Note the arrow &gt; next to Baud Rate. The <b>Item 'soft'</b> key moves this arrow to the different parameters.</p>
<p>2. If the baud rate is to be changed, press the <b>Chge 'soft'</b> key.</p>	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p style="text-align: center;">134</p> <p>Baud Rate=&gt;1200</p> <p>Data= 8, Stop= 1</p> <p>Item Chge Conn</p> </div> <div style="display: flex; justify-content: center; gap: 20px; margin-top: 5px;"> <input type="text"/> <input type="text"/> <input type="text"/> </div>	<p>The Baud Rate increments each time the <b>Change 'soft'</b> key is pressed. When the desired Baud Rate appears, move on to the next parameter.</p>
<p>3. The number of bits (8 or 9) is changed using the same method. Press the <b>Item 'soft'</b> key to move the arrow to the parameter to be changed.</p>	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p style="text-align: center;">134</p> <p>Baud Rate= 1200</p> <p>Data=&gt;8, Stop= 1</p> <p>Item Chge Conn</p> </div> <div style="display: flex; justify-content: center; gap: 20px; margin-top: 5px;"> <input type="text"/> <input type="text"/> <input type="text"/> </div>	
<p>4. Press the <b>Chge 'soft'</b> key to increment the values of the parameter.</p>	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p style="text-align: center;">134</p> <p>Baud Rate= 9600</p> <p>Data=&gt;9, Stop= 1</p> <p>Item Chge Conn</p> </div> <div style="display: flex; justify-content: center; gap: 20px; margin-top: 5px;"> <input type="text"/> <input type="text"/> <input type="text"/> </div>	<p>The number of stop bits (1 or 2) is also changed using this method.</p>



### 16.3.3 WHEN THE CALLED PORT IS BUSY

Description: When the called data port is in use, the Call Back feature can be used to alert the station user that the data port is free, or a different data port can be called. Of course, the DATA ON key can be pressed to cancel the call, and the call can be tried again at a later time.



How To: Use Call Back To A Data Port.

ACTION	RESULT	COMMENT
1. Press the 'soft' key located under the C.B on the display.	<pre> *Call back on* ** BUSY ** C.B --- Call </pre>	
2. Press the DATA ON key.	<pre> Wed May 18 3:49 *idle* </pre>	The DATA ON key LED goes out.
3.	<pre> &gt;Data Call Back&lt; 134 </pre>	The phone rings to indicate the data port is now available.

After pressing the DATA ON key, wait for the port to be available. When the port calls back, the display appears as shown in step 3.

(continued)

How To: Use Call Back To A Data Port, continued.

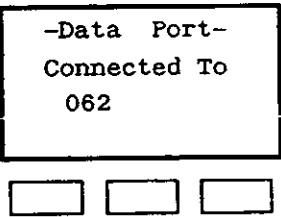
ACTION	RESULT	COMMENT
4. Press the DATA ON key.	<div style="border: 1px solid black; padding: 5px; width: fit-content;">                     &gt;134                      Baud Rate= 9600                      Data= 8, Stop= 1                      Item Chge Conn    <input type="text"/> <input type="text"/> <input type="text"/> </div>	
5. Press the 'soft' key, under the display labeled Conn.	<div style="border: 1px solid black; padding: 5px; width: fit-content;">                     -Data Port-                      Connected To                      134    <input type="text"/> <input type="text"/> <input type="text"/> </div>	The connection is established.

How To: Call Another Data Port.

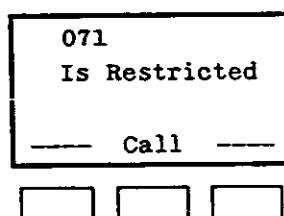
ACTION	RESULT	COMMENT
1. Press the 'soft' key located below CALL.	<div style="border: 1px solid black; padding: 5px; width: fit-content;">                     -Data Call- #069                        Dial Port Number    <input type="text"/> <input type="text"/> <input type="text"/> </div>	
2. Dial another data port number (001-228).	<div style="border: 1px solid black; padding: 5px; width: fit-content;">                     &gt;062                      Baud Rate= 300                      Data= 8, Stop= 1                      Item Chge Conn    <input type="text"/> <input type="text"/> <input type="text"/> </div>	

(continued)

## How To: Call Another Data Port (continued).

ACTION	RESULT	COMMENT
3. Press the 'soft' key, under the display labeled Conn.		The connection is established.

If the data port being used to call another port is not allowed access to that port, the display indicates that the port is restricted.



## 16.4 PROGRAMMING

Programming for the Data Feature is accomplished using 2 programming screens. A DATA ON key, and optional DATA HL keys are programmed in the KEYS area of the *Station Programming* screen. The data ports are programmed using the *Data Programming* screen.

### 16.4.1 STATION PROGRAMMING

Select the key position for the DATA ON key on the digital display phone, and enter the key code for the DATA ON key (key code 829) in a key position on the Station Programming Configuration sheets.

DATA HL keys provide one button access to a particular data port. Determine which data port the key is to access. Select a position for the DATA HL key on the display phone, and enter the key code for a DATA HL key (key code 828) in a key position on the Station Programming Configuration sheets. Enter the port number of the data port this key is to access in the sub-code area for the key. A display phone may have more than one DATA HL key.

Follow the instructions in the *Station Programming* section of this manual to enter the DATA ON key, and DATA HL key information into the system.

### 16.4.2 DATA PORT PROGRAMMING

The *Data Programming* screen is used to assign baud rate, number of stop bits, hunt group number, class of service, and a name to the data ports. There are 4 pages to the programming screen to accommodate all 228 possible data ports.

*NOTE: The parameters (EXT, SPD, BT, etc.) of a port can be changed only when the port is IDLE.*

The following paragraphs will define the function of each column on the *Data Programming* screen.

- PRT - Abbreviation for port. The port numbers (001-228) displayed in these columns cannot be changed.
- EXT - Abbreviation for extension. The extension number of the display phone appears in this column whenever a display phone is installed. The ISOETEC System/228 automatically identifies a digital display phone, and enters the extension number (less the leading 3, e.g., ext 3012 is listed as 012) in this column.
- SPD - Abbreviation for Speed. Speed refers to the data transmission speed which the display phone, or DDI is to communicate at. Data transmission speed is also known as baud rate, and is expressed in bits/sec. Available baud rates for asynchronous transmission are: 300, 1200, 2400, 4800, 9600, 19.2K, and 38.4K. There is only one baud rate for synchronous transmission: 56K. The baud rate setting defaults to 300. Determine the baud rate for each data port and enter the information on the Data Programming Configuration sheets.
- BT - Abbreviation for Bits. The term "bits" used in this context refers to the sum of the data bits and a parity bit. Determine the number of data and parity bits (8 or 9) for the data port, and enter the information on the Data Programming Configuration sheets.

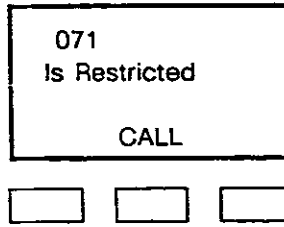
Example: 7 Data Bits + 1 Parity Bit = 8 Bits  
          8 Data Bits + 1 Parity Bit = 9 Bits

The Bit selections available are "8" and "9"

- ST - Abbreviation for Stop Bits. The stop bit selections available are "1" and "2". Determine the number of stop bits to be used for each data port, and enter the information on the Data Programming Configuration sheets.
- FX - Abbreviation for Fix. This option is used to prevent station users from changing a ports communications parameters (SPD, BT, ST). Determine if station users are to be permitted to change the parameters of each data port and enter the information on the Data Programming Configuration sheets.
- HT - Abbreviation for Hunt Group. Hunt Group allows any number of data ports to be arranged into a group, so that if the called port is busy, another idle port within that group will be accessed. If the data port is to be a member of a hunt group, determine the number of the hunt group, and enter the information on the Data Programming Configuration sheets.  
  
There are a total of 36 Hunt Groups numbered 01 through 36.
- CL - Abbreviation for class of service. Any data port can be programmed so that it can only be accessed from specific data ports, (e.g., can only be accessed from certain terminals). The class of service codes are 00 through 99. A data port is restricted from any data port which has a higher class of service. Determine the class of service of each data port, and enter the information on the Data Programming Configuration sheets.  
  
EXAMPLE: A data port having CL = 00 is restricted from data ports having CL = 01, 02, 03...99. A data port having CL = 00 can only call ports which have CL = 00.  
  
EXAMPLE: A data port having CL = 99 is not restricted from any ports, (i.e., a data port having CL = 99 can call ports with CL = 00, 01, 02...99).

EXAMPLE: A data port having CL = 50 cannot call data ports having CL=51, 52, 53, 54...99. A Data port having CL = 50 can only call data ports having CL = 00, 01, 02...50.

NOTE: If a user calls a restricted port, the following will be displayed on the phone:



NAME - To identify the port, type the name of the device or the user (e.g., Computer, Printer, Plotter, etc.). List the name of each port on the Data Programming Configuration sheets.

Data Menu														page # 1			
PRI	EXT	SPD	BT	ST	FX	HT	CL	NAME	PRI	EXT	SPD	BT	ST	FX	HT	CL	NAME
001	001	300	8	1	N	00	00		020	020	4800	8	1	N	00	00	
002	002	1200	8	1	N	00	00		021	021	9800	8	1	N	00	00	
003			8	1	N	00	00		022			8	1	N	00	00	
004			8	1	N	00	00		023			8	1	N	00	00	
005			8	1	N	00	00		024			8	1	N	00	00	
006			8	1	N	00	00		025			8	1	N	00	00	
007			8	1	N	00	00		026			8	1	N	00	00	
008			8	1	N	00	00		027			8	1	N	00	00	
009			8	1	N	00	00		028			8	1	N	00	00	
010			8	1	N	00	00		029			8	1	N	00	00	
011			8	1	N	00	00		030			8	1	N	00	00	
012			8	1	N	00	00		031			8	1	N	00	00	
013			8	1	N	00	00		032			8	1	N	00	00	
014			8	1	N	00	00		033			8	1	N	00	00	
015			8	1	N	00	00		034			8	1	N	00	00	
016			8	1	N	00	00		035			8	1	N	00	00	
017			8	1	N	00	00		036			8	1	N	00	00	
018			8	1	N	00	00		037			8	1	N	00	00	
019			8	1	N	00	00		038			8	1	N	00	00	

Figure 16-5 Data Programming Screen

## 16.5 ACCESSING THE DATA PROGRAMMING SCREEN

The *Data Programming* screen (T screen) is accessed by pressing the T key. The ESCAPE key may be pressed while in any other programming screen to reach the main menu. If there is any problem reaching the main menu, or the T screen, refer to *ACCESSING THE PROGRAMMING SCREENS* in the *Programming Introduction* section of this manual.

## 16.6 DEFAULT DATA PORT VALUES

All data ports default to :

SPEED = none  
BITS = 8  
STOP = 1  
FIX = N  
HUNT = 0  
CLASS = 0

## 16.7 HOW TO PROGRAM THE DATA PROGRAMMING SCREEN

If not already on the *Data Programming* screen, from the main menu, press the T key. There are 4 pages to the programming screen.

1. When the *Data Programming* screen is first entered, the cursor is located in the SPD column of the first data port.
2. Working from the Data Configuration sheets, set the baud rate for the first data port.
3. The baud rate is set by pressing the I key to increment the baud rate, or the D key to decrement. The baud rate cannot be entered directly from the keyboard.
4. Press the TAB key to move the cursor to the BT column.
5. The bits is set by pressing the I key to increment from 8 to 9, or the D key to decrement.
6. Press the TAB key to move the cursor to the ST column.
7. The stop bits is set by pressing the I key to increment from 1 to 2, or the D key to decrement.
8. Press the TAB key to move the cursor to the FX column.
9. Enter a Y (yes) if station users are not permitted to change the parameters of this data port. Enter an N (no) if parameters can be changed by station users.
10. Press the TAB key to move the cursor to the HT column.
11. If this data port is a member of a hunt group, enter the hunt group number (01-36), and press the RETURN key.
12. Press the TAB key to move the cursor to the CL column.
13. If this data port is to have a class of service, enter the class of service (00-99), and press the RETURN key.
14. Press the TAB key to move the cursor to the NAME column.
15. Enter a descriptive name for the port, up to 8 characters.

16. Press the RETURN key to enter the name.
17. Press the TAB key to return to the SPD column.
18. Press the RETURN key to reach the next data port to be programmed. Continue pressing the RETURN key slowly until the line to be programmed is reached.
19. Continue programming the remaining data ports.

The current page being programmed is listed in the upper right corner of the programming screen. Press the "@" key (Shift + @) to move the cursor to the page position. Press the I key to increment the page number; press the D key to decrement the page number.

Data Menu													page # 1				
PRT	EXT	SPD	BT	ST	FX	HT	CL	NAME	PRT	EXT	SPD	BT	ST	FX	HT	CL	NAME
001	001	300	8	1	N	00	00		020	020	4800	8	1	N	00	00	
002	002	1200	8	1	N	00	00		021	021	9600	8	1	N	00	00	
003			8	1	N	00	00		022			8	1	N	00	00	
004			8	1	N	00	00		023			8	1	N	00	00	
005			8	1	N	00	00		024			8	1	N	00	00	
006			8	1	N	00	00		025			8	1	N	00	00	
007			8	1	N	00	00		026			8	1	N	00	00	
008			8	1	N	00	00		027			8	1	N	00	00	
009			8	1	N	00	00		028			8	1	N	00	00	
010			8	1	N	00	00		029			8	1	N	00	00	
011			8	1	N	00	00		030			8	1	N	00	00	
012			8	1	N	00	00		031			8	1	N	00	00	
013			8	1	N	00	00		032			8	1	N	00	00	
014			8	1	N	00	00		033			8	1	N	00	00	
015			8	1	N	00	00		034			8	1	N	00	00	
016			8	1	N	00	00		035			8	1	N	00	00	
017			8	1	N	00	00		036			8	1	N	00	00	
018			8	1	N	00	00		037			8	1	N	00	00	
019			8	1	N	00	00		038			8	1	N	00	00	

Figure 16-6 Data Programming Screen

## 16.81 DATA DISA

The DISA feature of the ISOETEC System/228 can be used to make a data connection through the system. This is useful when a MODEM is connected to one of the data ports. The system can be programmed to make a data connection between the MODEM and another preselected data port whenever the MODEM's extension number is called through DISA.

### 16.8.1 INSTALLATION

Installing this feature requires a MODEM, a Digital Data Interface, and an OPX Interface. The OPXI is wired to any one of the station ports. Connect the telephone side of the OPXI to the line position of the MODEM.

The DDI is wired to another station port. The MODEM is then connected to the DDI using an RS-232 type cable. Refer to the *Installation and Cabling* sections for more information on installing the DDIs and OPXIs.

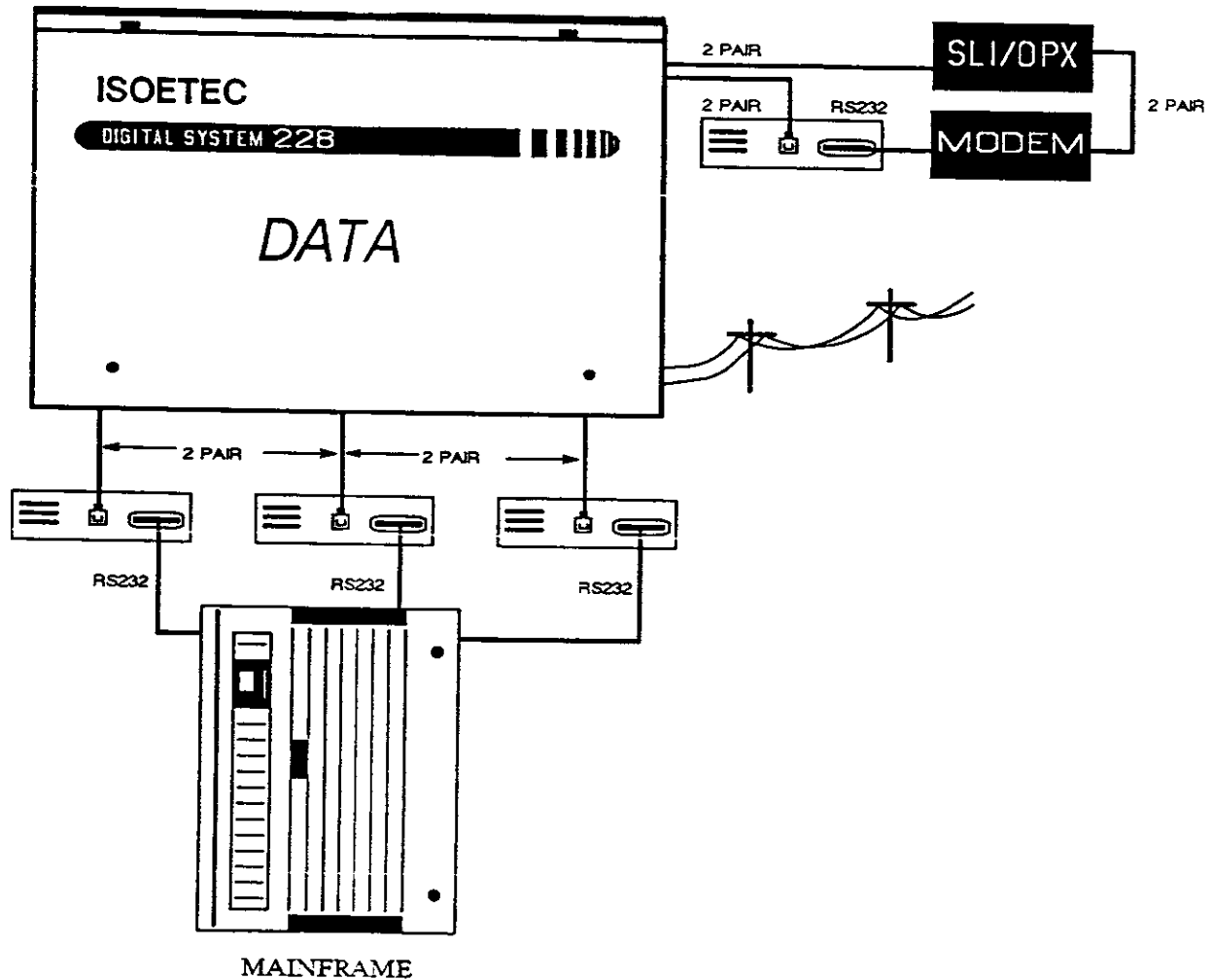


Figure 16-7 Data DISA Connections

### 16.8.2 PROGRAMMING

Data DISA is programmed using the Data Programming screen, and the System Programming screen.

#### SYSTEM PROGRAMMING

Select the line or lines that are to be used for the DISA feature. Assign the selected lines a DISA line type (100, 101, 200, 201). Refer to the *System Programming* section for more information on programming line types.

#### DATA PROGRAMMING SCREEN

The DATA menu is used to arrange the connection of the MODEM's DDI to another preselected data port. Enter the last 3 digits of the OPXI's extension number in the EXT column of the MODEM's DDI port. Enter the same last 3 digits into the EXT column of the data port the MODEM is to connect to when DISA is used.



Program the baud rate, and number of data bits for both data ports.

Data Menu														page # 1					
PRT	EXT	SPD	BT	ST	FX	HT	CL	NAME		PRT	EXT	SPD	BT	ST	FX	HT	CL	NAME	
001	001	300	8	1	N	00	00			020	020	4800	8	1	N	00	00		
002	002	1200	8	1	N	00	00			021	021	9600	8	1	N	00	00		
003			8	1	N	00	00			022			8	1	N	00	00		
004			8	1	N	00	00			023			8	1	N	00	00		
005			8	1	N	00	00			024			8	1	N	00	00		
006			8	1	N	00	00			025			8	1	N	00	00		
007			8	1	N	00	00			026			8	1	N	00	00		
008	040	1200	8	1	N	00	00	MODEM		027			8	1	N	00	00		
009			8	1	N	00	00			028			8	1	N	00	00		
010			8	1	N	00	00			029			8	1	N	00	00		
011			8	1	N	00	00			030			8	1	N	00	00		
012	040	1200	8	1	N	00	00	PC1		031			8	1	N	00	00		
013			8	1	N	00	00			032			8	1	N	00	00		
014			8	1	N	00	00			033			8	1	N	00	00		
015			8	1	N	00	00			034			8	1	N	00	00		
016			8	1	N	00	00			035			8	1	N	00	00		
017			8	1	N	00	00			036			8	1	N	00	00		
018			8	1	N	00	00			037			8	1	N	00	00		
019			8	1	N	00	00			038			8	1	N	00	00		

Figure 16-8 Data Programming Menu

### 16.8.3 OPERATION

When the DISA line is called, the extension number of the OPXI the MODEM is connected to is dialed. When the MODEM answers, the system makes a data connection between the MODEM's DDI and the preselected data port.

### 16.8.4 TESTING

1. Dial the DISA line's telephone number. System dial tone should be heard when the line is answered.
2. Enter the DISA authorization code if used.
3. Dial the OPXI's extension number (that the MODEM is connected to). When the MODEM answers, a connection should be made between the MODEM's data port and the desired data port. The Data Status Monitor should display this connection.
4. Disconnect from the DISA line. The system should drop the data connection.

## 16.9 DATA STATUS MONITOR

The Data feature also incorporates a real time monitor of data connections. The *Data Status Monitor* (U-screen) displays active data connections. The *Data Status Monitor* can also be used to connect data ports together.

### 16.9.1 MAKING DATA CONNECTIONS WITH THE PROGRAMMING TERMINAL

From the main menu, press the U key. The *Data Status Monitor* appears.

The *Data Status Monitor* can be used to connect data ports to each other.

1. Access the *Data Status Monitor*. (Press the U key while on the main menu). The cursor appears in the CONNECT area.
2. Enter the first port number.
3. Press the RETURN key.
4. Press the RETURN key again. The cursor moves to the next port.
5. Enter the port to be connected to.
6. Press the RETURN key.
7. Press the RETURN key again. The two ports are then connected to each other.

*NOTE: If the cursor is not in the CONNECT area, press the C key. The cursor will move to the CONNECT area.*

Data Status Monitor

---

PRT	STAT	PRT	PRT	STAT	PRT	PRT	STAT	PRT	PRT	STAT	PRT	PRT	STAT	PRT
001	busy	003												

CONNECT

---

Port: \_\_\_ to Port: \_\_\_

DISCONNECT

---

Port: \_\_\_ from Port: \_\_\_

Figure 16-9 Data Status Screen

To DISCONNECT two previously connected ports:

1. Access the *Data Status Monitor*. (Press the U key while on the main menu). The cursor appears in the CONNECT area.
2. Press the D key. The cursor moves to the DISCONNECT area.
3. Enter the port number of either port in the connection to be broken.
4. Press the RETURN key.
5. Press the RETURN key again. The ports are disconnected.

*NOTE: The Data Status Monitor can only be used to disconnect ports that were connected using the MONITOR. It cannot be used to break connections that were established at a display telephone.*



# Section 17

## System Management Reports

### 17.1 INTRODUCTION

The system provides management reports for use in evaluating the call handling performance of the telephone system. This information is available through the use of the *Reports* menu in system programming.

The 13 management Reports will help the customer control costs through better utilization of trunks. These reports provide information necessary to make the trunk configuration (how many, and what type of lines), Least Cost Routing package, and other features of the phone system as cost effective as possible. With the system reports, the customer will be able to track the volume of incoming calls handled by the system, judge how timely incoming calls are being answered, detect peak periods of telephone traffic, and determine their most costly extension users.

The *Reports Menu* is accessed through system programming, and can be reached using either the Operator's CRT terminal, or a separate programming terminal. The reports can also be read using the remote programming feature of the system.

### 17.2 GENERAL

The system provides 13 Management Reports covering extension activity, and line utilization. The reports are in a format which is easy-to-use, and will help effectively manage the telephone system. Each report may be printed to keep for further analysis.

#### GROUP UTILIZATION REPORTS (SCREENS A,B,C,D, and E)

Five reports offer you daily, hourly, and cumulative information on call activity per trunk group, including how many incoming or outgoing calls are received per hour. These reports record the number of lines in the trunk group, and total time in use for incoming and outgoing calls. These reports are especially useful for determining how many times all the trunks in a particular group are busy.

#### LINE UTILIZATION REPORTS (SCREENS F and G)

These reports make it possible to measure individual line (trunk) usage for a daily and cumulative period.

#### LCR STATISTICS REPORT (SCREEN H)

The use of this report requires that the system be equipped with the optional *Least Cost Routing* package. This package is a database, developed by ISOETEC specifically for each system, which contains pricing information for each type of telephone line in the system. With this package installed, the system automatically selects the least expensive route for an outside line call.

This report provides *Least Cost Routing* statistics on a cumulative basis. The report indicates the name of the long distance service being used, the number of calls using that service, call overflow on a particular service, the number of times the system took a route out of service, bad line calls, and the total cost of calls per service.

#### EXTENSION SUMMARY REPORT (SCREEN I)

The *Extension Summary Report* provides a list of each extension installed in the system, the name assigned to that extension in the system directory, a count of the incoming and outgoing calls for each extension, and the total number of calls. This report also provides the amount of time (in hours and minutes) spent on both incoming and outgoing calls, and a total of this time. If the system is equipped with the Least Cost Routing feature, a total cost of outgoing calls per extension is also provided.

#### SYSTEM UTILIZATION REPORTS (SCREENS J,K,L, and M)

The *System Utilization Reports* give information on how many calls are received and answered by the system. A report is available for a 60 minute, 30 minute, and 15 minute time period. The total amount of Internal (Icm) calls, incoming calls, and unanswered calls is also reported. If the system is equipped with Least Cost Routing, the number of calls made through LCR, and the total cost of outgoing calls made is provided.

#### PRINT AND CLEAR (SCREEN N)

Any of the 13 system reports may be **PRINTED** and/or **CLEARED**. The *Print Scheduler* allows you to program the system to print and/or clear any specific report automatically, on a daily, weekly or monthly basis.

It is also possible to print and/or clear any or all reports manually whenever desired.

## 17.3 HOW TO REACH THE REPORTS

The *Reports* are accessed through system programming. You may use either the Operator's CRT Terminal, or a system programming terminal in order to reach the reports. The following pages describe how to enter system programming, and how to display each of the reports. Following the description of each screen is a section on the report schedule.

**ACTION** From the main menu, press R. The *Reports Menu* appears (see Figure 17-1).

**COMMENTS** You are now ready to access the individual Report screens. In order to exit a report screen and return to the *Reports Menu*, press the ESCAPE key.

```

                                REPORTS MENU
                                -----
Group Utilization                System Utilization
  A - Cumulative                 J - System Statistics
  B - Daily                      K - 60 Minutes
  C - 60 Minutes.               L - 30 Minutes
  D - 30 Minutes.              M - 15 Minutes
  E - 15 Minutes.

Line Utilization                Print and Clear
  F - Cumulative                N - Scheduler
  G - Daily

LCR Statistics
  H - Cumulative

Extension Summary
  I - Cumulative

SELECT ONE OF THE ABOVE >

```

Figure 17-1 Reports Menu

## 17.4 GROUP UTILIZATION REPORTS

### 17.4.1 HOW TO ACCESS SCREEN (A) CUMULATIVE

- ACTION** From the *Reports menu*, press A.
- COMMENTS** Provides information concerning the activity of the assigned lines within each of the 10 trunk groups.
- COMMANDS** In order to exit this screen, and return to the *Reports Menu*, press ESCAPE on the keyboard.

*NOTE: Although this screen offers CUMULATIVE information, it may be cleared at any interval desired through the use of the Print and Clear scheduler.*

LINE GROUP UTILIZATION (A)									
-----									
Period Covered: Mon 01-04-88 08:11 Through Wed 01-06-88 11:29									
Grp	Num of Calls		----- Hour:Min -----			Min:Sec			
Num	In...	Out...	In...	Out...	Total	All	Times	Avg All	CO
	Bound	Bound	Usage	Usage	Usage	Busy	AllBsy	Busy	Lines
01	2335	1164	139:48	37:10	176:57	:00	1	:03	22
02									
03		379		12:45	12:45	2:50	172	:59	2
04	16	107	2:20	3:29	5:49	:11	19	:36	2
05	2	243	:03	6:50	6:54	7:04	247	1:42	1
06		1288		70:40	70:40	:00	1	:02	12
07									
08									
09	1	7	:08	:08	:13				4
10									
Tot	2355	3189	142:17	131:04	273:22	10:05	440	1:22	43
Print Now _ Clear Now _									

Figure 17-2 Group Utilization - Cumulative



## 17.4.2 SCREEN DEFINITIONS - CUMULATIVE

<b>Period Covered</b>	This line indicates the period from the last time the statistics were cleared until the current time that it is viewed (or printed).
<b>Grp Num</b>	A number representing each of the 10 trunk groups is listed in this column.
<b>In Bound</b>	The number of incoming calls received on trunks in each group.
<b>Out Bound</b>	The number of outgoing calls initiated on trunks assigned to each group.
<b>In Usage</b>	The time, in hours and minutes, for which the trunks assigned to a specific group were in use with incoming calls.
<b>Out Usage</b>	The time, in hours and minutes, for which the trunks assigned to a specific group were in use with outgoing calls.
<b>Total Usage</b>	The total amount of time, in hours and minutes, for which trunks assigned to a specific group were in use. This time is a total of the <i>In Usage</i> and <i>Out Usage</i> columns.
<b>All Busy</b>	The total time, in hours and minutes, for which all the trunks assigned to a specific group were busy.
<b>Times AllBsy</b>	The number of times all the trunks in a specific group were busy.
<b>Avg All Busy</b>	This is the <i>Times All Busy</i> divided by the number <i>All Busy</i> to obtain the average time in minutes and seconds for which all trunks assigned to a specific group were busy.
<b>CO Lines</b>	The number of trunks assigned to a specific group.

### 17.4.3 HOW TO ACCESS SCREEN (B) DAILY

- ACTION** From the *Reports menu*, press B.
- COMMENTS** Provides information concerning the activity of the assigned lines within each of the 10 trunk groups on a daily basis.
- COMMANDS** In order to exit this screen, and return to the *Reports Menu*, press ESCAPE on the keyboard.

*NOTE: Although this screen offers DAILY information, it may be cleared at any interval desired through the use of the Print and Clear scheduler.*

DAILY LINE GROUP UTILIZATION (B)									
-----									
Period Covered: Tue 01-05-88 00:12 Through Tue 01-05-88 18:30									
-----									
Num of Calls   ----- Hour:Min -----    Min:Sec									
Grp	In...	Out..	In...	Out...	Total	All	Times	Avg All	CO
Num	Bound	Bound	Usage	Usage	Usage	Busy	AllBsy	Busy	Lines
-----									
01	1170	583	70:06	18:31	88:37	:00	1	:03	22
02									
03		190		12:45	12:45	2:50	172	:59	2
04	16	107	2:20	3:29	5:49	:11	19	:36	2
05	2	243	:03	6:50	6:53	7:04	247	1:42	1
06		1290		70:45	70:45	:00	1	:02	12
07									
08									
09	1	7	:06	:06	:12				4
10									
Tot	1189	2413	72:35	112:26	185:01	10:05	440	1:22	43
-----									
Print Now _ Clear Now _									

Figure 17-3 Group Utilization - Daily

#### 17.4.41 SCREEN DEFINITIONS - DAILY

<b>Period Covered</b>	This line indicates the period from the last time the statistics were cleared until the current time that it is viewed (or printed).
<b>Grp Num</b>	A number representing each of the 10 trunk groups is listed in this column.
<b>In Bound</b>	The number of incoming calls received by trunks in each group.
<b>Out Bound</b>	The number of outgoing calls initiated on trunks assigned to each group.
<b>In Usage</b>	The time, in hours and minutes, within a 24 hour period for which the trunks assigned to a specific group were in use with incoming calls.
<b>Out Usage</b>	The time, in hours and minutes, within a 24 hour period for which the trunks assigned to a specific group were in use with outgoing calls.
<b>Total Usage</b>	The total amount of time, in hours and minutes, within a 24 hour period for which trunks assigned to a specific group were in use both incoming and outgoing.
<b>All Busy</b>	The total time, in hours and minutes, within a 24 hour period for which all the trunks in a specific group were busy.
<b>Times AllBsy</b>	The number of times all the trunks assigned to a specific group were busy.
<b>Avg All Busy</b>	This is the <i>Times All Busy</i> divided by the number <i>All Busy</i> to obtain the average time in minutes and seconds for which all the trunks assigned to a specific group were busy.
<b>CO Lines</b>	The number of trunks assigned to a specific group.

### 17.4.5 HOW TO ACCESS SCREEN (C) 60 MINUTES

**ACTION** From the *Reports menu*, press C.

**COMMENTS** Provides an hourly summary of the activity of each of the trunk groups. The Trunk Group displayed on the screen is indicated in the upper left corner.

**COMMANDS** To move from one trunk group displayed to another, use I to increment, and D to decrement.

The UP and DOWN arrow keys can be used to scroll the screen to view the remaining hours.

To exit this screen and return to the *Reports Menu*, press ESCAPE on the keyboard.

*NOTE: Although this screen offers CUMULATIVE information, it may be cleared at any interval desired through the use of the Print and Clear scheduler.*

```

Line Group:01,          (C) HOURLY LINE GROUP UTILIZATION
-----
Period Covered: Mon 01-04-88 06:12 Through Wed 01-06-88 11:30
|----- Hour:Min -----| |Min:Sec
From| To |In...|Out..|Abndn|In...|Out...|Total |All  | # All|Avg All
|   |   |Bound|Bound|Calls|Usage|Usage |Usage |Busy | Busy| Busy
-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----
08:00|07:00|  1|   |   |   :00|   :00|   |   |   |   |
07:00|08:00| 14| 10|  4|  :14|  :08|  :22|   |   |   |   |
08:00|09:00|120| 34|  5| 5:03|  :45| 5:49|   |   |   |   |
09:00|10:00|266|108|  3|14:45| 3:28|18:13|   |   |   |   |
10:00|11:00|306|174|  3|20:03| 5:58|26:01|   |   |   |   |
11:00|12:00|277|148|  2|18:20| 4:19|22:40|   |   |   |   |
12:00|13:00|208| 95|  3|12:43| 3:38|16:22|   |   |   |   |
13:00|14:00|226|109|  4|12:08| 2:48|14:57|   |   |   |   |
14:00|15:00|226|113|  7|13:41| 3:08|16:50|   |   |   |   |
15:00|16:00|252|110|  2|14:09| 3:34|17:44|   |   |   |   |
16:00|17:00|260|110|  3|14:47| 4:47|19:35| :00|  1| :03
17:00|18:00|113| 80|  2| 9:06| 2:24|11:30|   |   |   |   |

Totals -      2341|1166|  44|140:21| 37:12|177:33| :00|  1| :03

Print Now _   Clear Now _           [ Use the arrow keys to scroll.. ]
    
```

Figure 17-4 Group Utilization - 60 Minutes

## 17.4.6 SCREEN DEFINITIONS – 60 MINUTES

<b>Period Covered</b>	This line indicates the period from the last time the statistics were cleared until the current time that it is viewed (or printed).
<b>From/To</b>	This is the hourly period on which the system is reporting.
<b>In Bound</b>	The number of incoming calls received on trunks in each group on an hourly basis.
<b>Out Bound</b>	The number of outgoing calls initiated on trunks assigned to each group on an hourly basis.
<b>Abndn Calls</b>	The number of incoming calls which were not answered.
<b>In Usage</b>	The time, in hours and minutes, within a 60 minute period, for which the trunks assigned to a specific group were in use with incoming calls.
<b>Out Usage</b>	The time, in hours and minutes, within a 60 minute period, for which the trunks assigned to a specific group were in use with outgoing calls.
<b>Total Usage</b>	The total amount of time, in hours and minutes, within a 60 minute period, for which trunks assigned to a specific group were in use both incoming and outgoing.
<b>All Busy</b>	The total time, in hours and minutes, within a 60 minute period, for which all the trunks assigned to a specific group were busy.
<b># All Busy</b>	The number of times all trunks in a specific group were busy within a 60 minute time period.
<b>Avg All Busy</b>	This is the <i>Times All Busy</i> divided by the number <i>All Busy</i> to obtain the average time in minutes and seconds for which all trunks assigned to a specific group were busy.

### 17.4.7 HOW TO ACCESS SCREEN (D) 30 MINUTES

**ACTION** From the *Reports menu*, press D.

**COMMENTS** Provides the same information as the Hourly report in 30 minute increments. The trunk group being displayed is indicated in the upper left corner.

**COMMANDS** To move from one line group displayed to another, use I to increment, and D to decrement.

The UP and DOWN arrow keys can be used to scroll the screen to view the remaining half hours.

To exit this screen and return to the *Reports menu*, press ESCAPE on the keyboard.

*NOTE: Although this screen offers CUMULATIVE information, it may be cleared at any interval desired through the use of the Print and Clear scheduler.*

```

Line Group:01,          (D) HOURLY LINE GROUP UTILIZATION
-----
Period Covered: Mon 01-04-88 06:12 Through Wed 01-06-88 1:31
                | ----- Hour:Min ----- |      |Min:Sec
From| To  |In...|Out..|Abndn|In... |Out...|Total |All  | # All|Avg All
  |   | |Bound|Bound|Calls|Usage |Usage |Usage |Busy | Busy| Busy
-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
06:00|06:30|    |    |    |    |    |    |    |    |    |
06:30|07:00|  1|    |    | :00|    | :00|    |    |    |
07:00|07:30|  5|  6|    | :04| :05| :10|    |    |    |
07:30|08:00|  9|  4|  4| :09| :02| :12|    |    |    |
08:00|08:30| 41|  8|  4| 1:42| :12| 1:55|    |    |    |
08:30|09:00| 79| 26|  1| 3:20| :33| 3:54|    |    |    |
09:00|09:30|130| 49|  2| 7:41| 1:53| 9:35|    |    |    |
09:30|10:00|136| 59|  1| 7:03| 1:34| 8:38|    |    |    |
10:00|10:30|155| 85|  2| 9:59| 2:13|12:12|    |    |    |
10:30|11:00|151| 89|  1|10:03| 3:44|13:48|    |    |    |
11:00|11:30|179| 89|  1|11:47| 2:20|14:08|    |    |    |
11:30|12:00| 98| 60|  1| 6:33| 1:59| 8:32|    |    |    |

Totals -      2341| 1167|  44|140:21| 37:13|177:34|  :00|  1|  :03

Print Now _   Clear Now _           [ Use the arrow keys to scroll.. ]
    
```

Figure 17-5 Group Utilization - 30 Minutes

## 17.4.8 SCREEN DEFINITIONS - 30 MINUTES

<b>Period Covered</b>	This line indicates the period from the last time the statistics were cleared until the current time that it is viewed (or printed).
<b>From/To</b>	This is the 30 minute period on which the system is reporting.
<b>In Bound</b>	The number of incoming calls received by trunks in each group on a 30 minute basis.
<b>Out Bound</b>	The number of outgoing calls initiated on trunks assigned to each group on a 30 minute basis.
<b>Abndn Calls</b>	Calls which were not answered in a 30 minute period.
<b>In Usage</b>	The time, in minutes and seconds, within a 30 minute period, for which the trunks assigned to a specific group were in use with incoming calls.
<b>Out Usage</b>	The time, in minutes and seconds, within a 30 minute period, for which the trunks assigned to a specific group were in use with outgoing calls.
<b>Total Usage</b>	The total amount of time, in minutes and seconds, within a 30 minute period, for which trunks assigned to a specific group were in use with both incoming and outgoing calls.
<b>All Busy</b>	The time, in minutes and seconds, within a 30 minute period, for which all trunks assigned to a specific group were busy.
<b># All Busy</b>	The total number of instances all trunks in a specific group were busy within a 30 minute time period.
<b>Avg All Busy</b>	This is the <i>Times All Busy</i> divided by the number <i>All Busy</i> to obtain the average time, in minutes and seconds, for which all the CO Lines assigned to a specific group were busy.

### 17.4.9 HOW TO ACCESS SCREEN (E) 15 MINUTES

- ACTION** From the *Reports menu*, press E.
- COMMENTS** Provides the same information as the Hourly report in 15 minute increments. The trunk group being displayed is indicated in the upper left corner.
- COMMANDS** To move from one line group displayed to another, use I to increment, and D to decrement.

The UP and DOWN arrow keys can be used to scroll the screen to view the remaining hours.

To exit this screen and return to the *Reports Menu*, press ESCAPE on the keyboard.

*NOTE: Although this screen offers CUMULATIVE information, it may be cleared at any interval desired through the use of the Print and Clear scheduler.*

```

Line Group:01,          (E) HOURLY LINE GROUP UTILIZATION
-----
Period Covered: Mon 01-04-88 06:12 Through Wed 01-06-88 11:31
                | ----- Hour:Min ----- | |Min:Sec
From| To  |In...|Out..|Abndn|In... |Out...|Total |All  |# All|Avg All
    |    |Bound|Bound|Calls|Usage |Usage |Usage |Busy | Busy| Busy
-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----
06:00|06:15|    |    |    |    |    |    |    |    |    |
06:15|06:30|    |    |    |    |    |    |    |    |    |
06:30|06:45|  1|    |    | :00|    | :00|    |    |    |
06:45|07:00|    |    |    |    |    |    |    |    |    |
07:00|07:15|  4|  3|    | :04| :03| :07|    |    |    |
07:15|07:30|  1|  3|    | :00| :02| :02|    |    |    |
07:30|07:45|  2|  4|    | :02| :02| :04|    |    |    |
07:45|08:00|  7|    |  4| :07|    | :07|    |    |    |
08:00|08:15| 19|  2|  2| :34| :07| :41|    |    |    |
08:15|08:30| 22|  6|  2| 1:07| :05| 1:13|    |    |    |
08:30|08:45| 30| 15|  1| :58| :17| 1:16|    |    |    |
08:45|09:00| 49| 11|    | 2:22| :15| 2:37|    |    |    |

Totals -      2342| 1167|  44|140:28| 37:13|177:41| :00|  1| :03

Print Now _   Clear Now _           [ Use the arrow keys to scroll... ]
    
```

Figure 17-6 Group Utilization - 15 Minutes



## 17.4.10 SCREEN DEFINITIONS - 15 MINUTES

<b>Period Covered</b>	This line indicates the period from the last time the statistics were cleared until the current time that it is viewed (or printed).
<b>From/To</b>	This is the 15 minute period on which the system is reporting.
<b>In Bound</b>	The number of incoming calls received by trunks assigned to each group on a 15 minute basis.
<b>Out Bound</b>	The number of outgoing calls initiated on trunks assigned to each group on a 15 minute basis.
<b>Abndn Calls</b>	Calls which were not answered in a 15 minute period.
<b>In Usage</b>	The time, in minutes and seconds, within a 15 minute period, for which trunks in a specific group were in use with incoming calls.
<b>Out Usage</b>	The time, in minutes and seconds, within a 15 minute period, for which trunks assigned to a specific group were in use with outgoing calls.
<b>Total Usage</b>	The total amount of time, in minutes and seconds, within a 15 minute period, for which trunks assigned to a specific group were in use. This is a total of the <i>In Usage</i> and the <i>Out Usage</i> columns.
<b>All Busy</b>	The time, in minutes and seconds, within a 15 minute period, for which all the trunks in a specific group were busy.
<b># All Busy</b>	The number of times all trunks assigned to a specific group were busy within a 15 minute time period.
<b>Avg All Busy</b>	This is the <i>Times All Busy</i> divided by the number <i>All Busy</i> to obtain the average time, in minutes and seconds, for which all trunks assigned to a specific group were busy.

## 17.5 LINE UTILIZATION

### 17.5.1 HOW TO ACCESS SCREEN (F) CUMULATIVE

**ACTION** From the *Reports menu*, press F.

**COMMENTS** The *Line Utilization* report makes it possible to measure individual line usage on a cumulative basis. It obtains information about line usage on both incoming and outgoing calls, abandoned calls on each line, bad calls, and indicates the group to which these lines are programmed.

**COMMANDS** To exit this screen and return to the *Reports menu*, press ESCAPE on the keyboard.

The UP and DOWN arrow keys are used to scroll the screen to view the remaining installed lines. The screen displays the statistics for twelve lines at a time.

*NOTE: Although this screen offers CUMULATIVE information, it may be cleared at any interval desired through the use of the Print and Clear scheduler.*

LINE UTILIZATION (F)								
-----								
Period Covered: Mon 01-04-88 06:12 Through Wed 01-06-88 11:32								
Line	Line Name	Incom.	In Usg	Outgo.	OutUsg	Abndnd	B.Cals	Group
-----								
001	555-2200	374	20:57			16		01
002	555-2201	306	19:14			7		01
003	555-2202	298	17:42			6		01
004	555-2203	239	16:08			2		01
005	555-2204	235	13:05			2		01
006	555-2205	222	11:46			1		01
007	555-2206	190	10:11			2		01
008	555-2207	141	8:46			3		01
009	555-2208	115	6:54					01
010	555-2209	75	5:50			1		01
011	555-2210	62	4:07			1		01
012	555-2211	39	2:33	1	:00	1		01
Tot:		2363	143:01	3198	131:27	44		

Print Now \_ Clear Now \_ [ Use the arrow keys to scroll.. ]

Figure 17-7 Line Utilization - Cumulative

### 17.5.21 SCREEN DEFINITIONS - CUMULATIVE

Period Covered	: This line indicates the period from the last time the statistics were cleared until the current time that it is viewed (or printed).
Line	This 3-digit number indicates the specific trunk number for which statistics are being accumulated.
Line Name	The telephone number or name assigned to a specific line in system programming.
Incom.	The number of incoming calls received on a specific line during the cumulative time period.
In Usg	The amount of time, in hours and minutes, that a specific line was in use with incoming calls.
Outgo.	The number of outgoing calls made on a specific line during the cumulative time period.
OutUsg	The amount of time, in hours and minutes, that a specific line was in use with outgoing calls.
Abndnd	This column indicates how many calls were abandoned by Outside callers after receiving no answer on a specific trunk.
B.Cals	This column indicates how many bad calls, or calls which were received by the system on a line which was not functioning properly, were reported through a programmed Bad Line key at an extension.
Group	The trunk group to which a specific line is assigned.

### 17.5.3 HOW TO ACCESS SCREEN (G) DAILY

**ACTION** From the *Reports menu*, press G.

**COMMENTS** This *Line Utilization* report makes it possible to measure line usage on a daily (24-hour) basis. It obtains information about line usage on both incoming and outgoing calls, abandoned calls on each line, bad call volume, dropped calls, and indicates the group to which these calls were directed.

**COMMANDS** To exit this screen and return to the *Reports Menu*, press ESCAPE on the keyboard.

The UP and DOWN arrow keys are used to scroll the screen to view the remaining installed lines. The screen displays the statistics for twelve lines at a time.

*NOTE: Although this screen offers DAILY information, it may be cleared at any interval desired through the use of the Print and Clear scheduler.*

DAILY LINE UTILIZATION (G)										
-----										
Period Covered: Wed 01-05-88 00:02 Through Wed 01-06-88 11:33										
Line	Line Name	Incom.	In Usg	Outgo.	OutUsg	Abndnd	B.Cals	SysDrp	OutSrv	Group
-----										
001	555-2200	58	2:43			2				01
002	555-2201	24	2:16			1				01
003	555-2202	43	2:09							01
004	555-2203	29	2:55							01
005	555-2204	21	2:25					1		01
006	555-2205	25	2:39							01
007	555-2206	23	2:18							01
008	555-2207	15	2:21							01
009	555-2208	16	2:44							01
010	555-2209	8	2:29							01
011	555-2210	8	2:20			1				01
012	555-2211	5	2:29							01
Tot:		285	17:36	385	14:37	4		2		

Print Now \_ Clear Now \_ [ Use the arrow keys to scroll... ]

Figure 17-8 Line Utilization - Daily

## 17.5.4 SCREEN DEFINITIONS - DAILY

<b>Period Covered</b>	This line indicates the period from the last time the statistics were cleared until the current time that it is viewed (or printed).
<b>Line</b>	This 3-digit number indicates the specific trunk number for which statistics are being accumulated.
<b>Line Name</b>	The telephone number or name assigned in system programming to a specific line.
<b>Incom.</b>	The number of incoming calls made to a specific line during a 24 hour time period.
<b>In Usg</b>	The amount of time, in hours and minutes, within the 24 hour time period, that a specific trunk was in use with incoming calls.
<b>Outgo.</b>	The number of outgoing calls made on a specific trunk during the 24 hour time period.
<b>OutUsg</b>	The amount of time, in hours and minutes, within the 24 hour time period, when a specific trunk was in use with outgoing calls.
<b>Abndnd</b>	This column indicates how many calls were abandoned by Outside callers after receiving no answer on a specific line.
<b>B.Cals</b>	This column indicates how many bad calls, or calls which were received by the system on a line which was not functioning properly, were reported through a programmed Bad Line key at an extension.
<b>SysDrp</b>	The number of calls released from the system, in a 24 hour time period, due to a drop signal from the Central Office.
<b>OutSrv</b>	The number of times within a 24 hour period which a specific line was taken out of service by the system.
<b>Group</b>	The trunk group to which a specific line is assigned.

## 17.6 LCR STATISTICS

### 17.6.1 HOW TO ACCESS SCREEN (H)

**ACTION** From the *Reports menu*, press H

**COMMENTS** This screen offers information on Least Cost Routing (LCR) statistics, including the name of the long distance carrier, the number of calls made on that service, call overflows, the number of times the system took a specific long distance carrier out of service, number of bad calls, and a cumulative cost for calls made through each specific service.

**COMMANDS** To exit this screen and return to the Reports Menu, press ESCAPE on the keyboard.

*NOTE: Although this screen offers CUMULATIVE information, it may be cleared at any interval desired through the use of the Print and Clear scheduler.*

LCR STATISTICS (H)						
-----						
Period Covered: Fri 01-01-88 08:02 Through Wed 01-06-88 11:33						
Service Name	Num of Calls	Total Usage	Calls Ovflo	Out of Serv	Bad Calls	Total Cost
-----						
DDD	1220	38:31	1			\$ 121.41
SPR						\$ .00
FX 203777	113	3:37	3			\$ 6.60
FX 203384	251	7:01	110			\$ 31.48
IWT 1	391	13:46	109			\$ 150.17
SPN	1297	70:57				\$ 812.21
						\$ .00
						\$ .00
						\$ .00
						\$ .00
Totals:	3273	133:56	223			\$ 1121.88
Print Now _ Clear Now _						

Figure 17-9 LCR Statistics

## 17.6.2 SCREEN DEFINITIONS - LCR STATISTICS

<b>Period Covered</b>	This line indicates the period from the last time the statistics were cleared until the current time that it is viewed (or printed).
<b>Service Name</b>	The name of the Long Distance service (MCI, Sprint, etc.) being used with the system.
<b>Num of Calls</b>	The number of calls made during the cumulative period using each service.
<b>Total Usage</b>	The amount of time, in hours and minutes, calls were made using each service during the cumulative time period.
<b>Calls Overflow</b>	The number of calls attempting to use a particular Long Distance service which had to be diverted to the <i>next</i> least expensive carrier because the lines assigned to the desired service were all in use.
<b>Out of Serv</b>	The number of times a particular Long Distance carrier is taken out of service during the cumulative time period.  The system can be programmed to take a long distance carrier choice out of service for several minutes if dial tone is not received from the carrier.
<b>Bad Calls</b>	The number of Bad calls on lines associated with each Long Distance service used with the system. These bad line calls are entered into the system by use of a Bad Line key programmed at the individual stations.
<b>Total Cost</b>	The total cost accumulated by each Long Distance service during the cumulative time period.

## 17.7 EXTENSION SUMMARY

### 17.7.1 HOW TO ACCESS SCREEN (I) EXTENSION SUMMARY

**ACTION** From the *Reports menu*, press I.

**COMMENTS** The *Extension Summary* presents information on each extension installed in the system. The name of the individual assigned to each extension, and a report on the total number of incoming and outgoing calls, the cost of these calls, and the duration of each call is summarized.

**COMMANDS** To exit this screen and return to the *Reports Menu*, press ESCAPE on the keyboard.

Use the UP and DOWN arrow keys to scroll the screen in order to view the statistic of the remaining extensions. The screen displays twelve extensions at a time.

*NOTE: Although this screen offers CUMULATIVE information, it may be cleared at any interval desired through the use of the Print and Clear scheduler.*

EXTENSION SUMMARY (I)							
-----							
Period Covered: Wed 01-06-88 08:04 Through Wed 01-06-88 11:34							
Ext	Name	Tot Calls	Tot Cost	Incoming	In Time	Outgoing	Out Time
061	CHARLIE		\$ .00				
062	FRED		\$ .00				
063	BETTY	21	\$ 3.36	4	:26	17	:33
064	JIM	15	\$ 8.01	3	:14	12	:31
065	TOM	19	\$ 7.11	3	:22	16	:28
066	DAWN	2	\$ .93			2	:01
067	MILLIE	6	\$ .00	6	:10		
068	EDWARD	17	\$ 4.18	8	:33	9	:07
069	PAT	1	\$ .00	1	:03		
070	SUSAN	13	\$ 3.59	7	:27	6	:19
071	KIM	6	\$ .85	4	:11	2	:03
072	LINDA	7	\$ 1.83	1	:32	6	:43
TOTALS:		677	\$ 130.40	287	14:23	390	14:09

Print Now \_ \_ Clear Now \_ \_ [ Use the arrow keys to scroll.. ]

Figure 17-10 Extension Summary



## 17.7.2 SCREEN DEFINITIONS - EXTENSION SUMMARY

Period Covered	This line indicates the period from the last time the statistics were cleared until the current time that it is viewed (or printed).
Ext	The number of the extension the summary is for.
Name	The name assigned to the extension in the system directory.
Tot Calls	The total number of incoming and outgoing calls made or received by an extension.
Tot Cost	The total cost of outgoing calls made or received by an extension. A Least Cost Routing data base is needed for call costing.
Incoming	The number of incoming calls (ringing directly or transferred) to a specific extension.
In Time	The amount of time spent by each particular extension on incoming calls.
Outgoing	The number of outgoing calls made by a specific extension.
Out Time	The amount of time spent by each particular extension on outgoing calls.

*NOTE: Due to differences in timing calls, the totals for extensions on the Extension Summary report may differ from those found on SMDR and Call Accounting Reports.*

## 17.8 SYSTEM UTILIZATION

### 17.8.1 HOW TO ACCESS SCREEN (J) SYSTEM STATISTICS

**ACTION** From the *Reports menu*, press J.

**COMMENTS** This report gives statistics on the system's call history. This report includes the total number of calls, the cost of outgoing calls, and a break down of incoming, unanswered, Internal (Icm) calls, and unanswered calls. The report also offers information on call wait time, and percentages of how many calls waited to be answered for different periods of time, thus making analysis of system and line utilization accurate and informative.

**COMMANDS** To exit this screen and return to the *Reports Menu*, press ESCAPE on the keyboard.

*NOTE: This screen may be cleared at any interval desired through the use of the Print and Clear scheduler.*

SYSTEM CALL HISTORY (J)							
-----							
Period Covered: Wed 01-06-88 08:04 Through Wed 01-06-88 11:35							
Tot Calls	LCR Calls	Reg Calls	Icm Calls	Incoming	Unanswr		
868	382	11	185	290	3		
Tot Cost   LCR Cost   Reg Cost							
\$ 130.57	\$ 124.29	\$ 6.28					
Call wait time:							
5 Sec	10 Sec	20 Sec	30 Sec	45 Sec	60 Sec	90 Sec	Over
143	189	251	281	289	290		
% 49.31	% 65.17	% 86.55	% 96.89	% 99.65	% 100.00		
Print Now _ Clear Now _							

Figure 17-11 System Statistics

### 17.8.2 SCREEN DEFINITIONS - SYSTEM STATISTICS

Period Covered	This line indicates the period from the last time the statistics were cleared until the current time that it is viewed (or printed).
Tot Calls	The total number of incoming and outgoing calls made or received through the system within the cumulative time period.
LCR Calls	Total number of outgoing calls which originated from the system using Least Cost Routing lines during the cumulative time period.
Reg Calls	The total number of regular outgoing (non LCR) calls which originated from the system during the cumulative time period.
lcm Calls	The total number of Intercom (Internal) calls made during the cumulative time period.
Incoming	The number of incoming calls which were made to the system during the cumulative time period.
Unanswrtd	The total number of unanswered calls which were registered by the system during the cumulative time period. These are calls which the system detects as ringing but were not answered.
Tot Cost	The total cost of all outgoing calls made from the system, including those made through Least Cost Routing (LCR) and regular CO lines.
LCR Cost	The total cost of outgoing calls which were made using Least Cost Routing (LCR).
Reg Cost	The total cost of outgoing calls which were made using regular CO lines.
Call wait time	The Call wait time columns in this report break down the number of calls which waited 5, 10, 20, 30, 45, 60, 90, or over 90 seconds to be answered during the cumulative time period. Each column also offers information on the percentage of calls which waited for each time period.

### 17.8.3 HOW TO ACCESS SCREEN (K) 60 MINUTES

**ACTION :** From the *Reports menu*, press K.

**COMMENTS** This report includes information on system statistics on an hourly (60 minute) basis. Areas covered include time periods covered, the number of incoming and outgoing calls, abandoned calls, the total hours and minutes that the system is in use with incoming calls, outgoing calls, and a total of both, the minutes and seconds and number of instances that the system lines are all busy, and an average time for which the system is all busy.

**COMMANDS** To exit this screen, and return to the *Reports Menu*, press ESCAPE on the keyboard.  
The UP and DOWN arrow keys can be used to scroll the screen to view the remaining hours. The screen displays twelve 1 hour periods at a time.

*NOTE: This screen may be cleared at any interval desired through the use of the Print and Clear scheduler.*

(K) HOURLY SYSTEM UTILIZATION										
-----										
Period Covered: Wed 01-06-88 08:04 Through Wed 01-06-88 11:35										
----- Hour:Min -----										
From	To	In...	Out...	Abndn	In...	Out...	Total	All	# All	Min:Sec
		Bound	Bound	Calls	Usage	Usage	Usage	Busy	Busy	Busy
-----										
06:00	07:00									
07:00	08:00									
08:00	09:00	28	39		1:30	1:14	2:44	:09	5	1:56
09:00	10:00	88	104	1	5:15	4:50	10:05	:10	10	1:01
10:00	11:00	99	129	2	6:51	5:31	12:22	:28	23	1:13
11:00	12:00	78	121		4:43	3:15	7:58	:15	8	1:54
12:00	13:00									
13:00	14:00									
14:00	15:00									
15:00	16:00									
16:00	17:00									
17:00	18:00									
Totals -		295	393	3	18:20	14:51	33:11	1:03	46	1:22
Print Now _		Clear Now _		[ Use the arrow keys to scroll... ]						

Figure 17-12 System Utilization - 60 Minutes

#### 17.8.4 SCREEN DEFINITIONS - 60 MINUTES

<b>Period Covered</b>	This line indicates the period from the last time the statistics were cleared until the current time that it is viewed (or printed).
<b>From/To</b>	This is the hourly period on which the system is reporting.
<b>In Bound</b>	The number of incoming calls made to the system in the indicated time period.
<b>Out Bound</b>	The number of outgoing calls made from the system in the indicated time period.
<b>Abndn Calls</b>	The number of calls which were unanswered by the system.
<b>In Usage</b>	The amount of time, in hours and minutes, that the system was in use with incoming calls during the indicated time period.
<b>Out Usage</b>	The amount of time, in hours and minutes, that the system was in use with outgoing calls during the indicated time period.
<b>Total Usage</b>	The amount of time, in hours and minutes, that the system was in use with incoming and outgoing calls during the indicated time period.
<b>All Busy</b>	The amount of time, in hours and minutes, that all lines in the system were busy during the indicated time period.
<b># All Busy</b>	The number of times that all the trunks in the system were busy during the indicated time period.
<b>Avg All Busy</b>	This is the <i>Times All Busy</i> divided by the number <i>All Busy</i> to obtain the average time, in minutes and seconds, for which all trunks assigned to a specific group were busy.

17.8.5 HOW TO ACCESS SCREEN (L) 30 MINUTES

**ACTION** From the *Reports menu*, press L.

**COMMENTS** This report provides the same information as the Hourly report in 30 minute increments.

**COMMANDS** To exit this screen, and return to the *Reports Menu*, press ESCAPE on the keyboard.  
 The UP and DOWN arrow keys can be used to scroll the screen to view the remaining hours. The screen displays twelve 30 minute periods at a time.

*NOTE: This screen may be cleared at any interval desired through the use of the Print and Clear scheduler.*

(L) HOURLY SYSTEM UTILIZATION										
-----										
Period Covered: Wed 01-08-88 08:04 Through Wed 01-08-88 11:38										
----- Hour:Min -----     Min:Sec										
From	To	In...	Out...	Abndn	In...	Out...	Total	All	# All	Avg All
		Bound	Bound	Calls	Usage	Usage	Usage	Busy	Busy	Busy
-----										
06:00	06:30									
06:30	07:00									
07:00	07:30									
07:30	08:00									
08:00	08:30	7	9		:36	:20	:56	:07	2	3:35
08:30	09:00	21	30		:53	:54	1:47	:02	3	:50
09:00	09:30	42	47		2:52	2:21	5:13	:05	5	1:05
09:30	10:00	46	57	1	2:23	2:29	4:52	:04	5	:58
10:00	10:30	50	57	1	3:41	1:44	5:25	:06	6	1:08
10:30	11:00	49	72	1	3:10	3:47	6:57	:21	17	1:15
11:00	11:30	68	106		4:23	3:01	7:25	:13	7	1:56
11:30	12:00	11	15		:23	:13	:36	:01	1	1:43
Totals -		294	393	3	18:24	14:51	33:16	1:03	46	1:22
Print Now _ Clear Now _ [ Use the arrow keys to scroll.. ]										

Figure 17-13 System Utilization - 30 Minutes

### 17.8.6 SCREEN DEFINITIONS - 30 MINUTES

<b>Period Covered</b>	This line indicates the period from the last time the statistics were cleared until the current time that it is viewed (or printed).
<b>From/To</b>	This is the 30 minute period on which the system is reporting.
<b>In Bound</b>	The number of incoming calls made to the system in a 30 minute time period.
<b>Out Bound</b>	The number of outgoing calls made from the system in a 30 minute time period.
<b>Abndn Calls</b>	The number of calls which were unanswered in a 30 minute time period.
<b>In Usage</b>	The amount of time, in hours and minutes, that the system was in use with incoming calls during a 30 minute time period.
<b>Out Usage</b>	The amount of time, in hours and minutes, that the system was in use with outgoing calls during a 30 minute time period.
<b>Total Usage</b>	The amount of time, in hours and minutes, that the system was in use with incoming and outgoing calls during a 30 minute time period.
<b>All Busy</b>	The amount of time, in hours and minutes, that all trunks in the system were busy during a 30 minute time period.
<b># All Busy</b>	The number of times that all the lines in the system were busy during a 30 minute time period.
<b>Avg All Busy</b>	This is the Times All Busy divided by the number All Busy to obtain the average time, in minutes and seconds, for which all trunks assigned to a specific group were busy.

### 17.8.7 HOW TO ACCESS SCREEN (M) 15 MINUTES

**ACTION** From the *Reports menu*, press M.

**COMMENTS** This report provides the same information as the Hourly report in 15 minute increments.

**COMMANDS** To exit this screen, and return to the *Reports Menu*, press ESCAPE on the keyboard.  
 The UP and DOWN arrow keys can be used to scroll the screen to view the remaining hours. The screen displays twelve 15 minute periods at a time.

*NOTE: This screen may be cleared at any interval desired through the use of the Print and Clear scheduler.*

(M) HOURLY SYSTEM UTILIZATION										
-----										
Period Covered: Wed 01-06-88 08:04 Through Wed 01-06-88 11:36										
----- Hour:Min -----    Min:Sec										
From	To	In...	Out..	Abndn	In...	Out...	Total	All	# All	Avg All
		Bound	Bound	Calls	Usage	Usage	Usage	Busy	Busy	Busy
-----										
09:00	09:15	19	24		1:06	1:16	2:23	:04	4	1:11
09:15	09:30	23	23		1:45	1:04	2:50	:00	1	:41
09:30	09:45	23	31		1:29	1:11	2:41	:04	5	:58
09:45	10:00	23	26	1	:53	1:17	2:11			
10:00	10:15	17	26		1:01	:28	1:29	:00	2	:28
10:15	10:30	33	31	1	2:40	1:15	3:55	:05	4	1:29
10:30	10:45	28	22		1:47	1:17	3:04	:11	7	1:36
10:45	11:00	21	50	1	1:22	2:29	3:52	:10	10	1:00
11:00	11:15	32	49		1:45	1:21	3:07	:06	3	2:08
11:15	11:30	36	57		2:38	1:39	4:17	:07	4	1:47
11:30	11:45	12	16		:24	:15	:39	:01	1	1:43
11:45	12:00									
Totals -		295	394	3	18:25	14:53	33:18	1:03	45	1:22
Print Now _ Clear Now _ [ Use the arrow keys to scroll.. ]										

Figure 17-14 System Utilization - 15 Minutes



### 17.8.8 SCREEN DEFINITIONS - 15 MINUTES

<b>Period Covered</b>	This line indicates the period from the last time the statistics were cleared until the current time that it is viewed (or printed).
<b>From/To</b>	This is the 15 minute period on which the system is reporting.
<b>In Bound</b>	The number of incoming calls made to the system in a 15 minute time period.
<b>Out Bound</b>	The number of outgoing calls made from the system in a 15 minute time period.
<b>Abndn Calls</b>	The number of calls which were unanswered in a 15 minute time period.
<b>In Usage</b>	The amount of time, in hours and minutes, that the system was in use with incoming calls during a 15 minute time period.
<b>Out Usage</b>	The amount of time, in hours and minutes, that the system was in use with outgoing calls during a 15 minute time period.
<b>Total Usage</b>	The amount of time, in hours and minutes, that the system was in use with incoming and outgoing calls during a 15 minute time period.
<b>All Busy</b>	The amount of time, in hours and minutes, that all trunks in the system were busy during a 15 minute time period.
<b># All Busy</b>	The number of times that all the trunks in the system were busy during a 15 minute time period.
<b>Avg All Busy</b>	This is the Times All Busy divided by the number All Busy to obtain the average time, in minutes and seconds, for which all trunks assigned to a specific group were busy.

## 17.9 PRINTING AND CLEARING REPORTS MANUALLY

Each report may be printed and/or cleared manually. When an individual report screen is selected, the cursor is positioned in the lower left corner of the screen, next to *Print Now*. In order to PRINT a specific report, press Y (yes) on the keyboard. The system prints the report as soon as the Y (yes) key is pressed.

The report prints to the printer listed in the *Report Scheduler*. If no printer is specified, the report prints to the printer designated as the SMDR printer.

In order to CLEAR that report, press the RETURN key, which moves the cursor to *Clear Now*. Press the Y (yes) key. The system clears the report as soon as the Y (yes) key is pressed. Refer to the section titled "NOTES ON CLEARING REPORTS" before attempting to clear any of the reports.

## 17.10 PRINTING AND CLEARING REPORTS AUTOMATICALLY

Each of the management reports can be programmed to automatically print and/or clear on a daily basis, or on a particular day of the week, or on a particular day of the month. The time of day when the report prints is also be programmed. A report programmed to print and/or clear on a daily basis can also be programmed to print and/or clear at regular intervals during the day. Three of the reports, the *Hourly*, *30 Minute*, and *15 Minute Group Utilization Reports (C, D, & E)*, are actually ten reports (one for each trunk group) each.

This programming is accomplished using the *Report Print/Clear Scheduler*.

REPORT SCHEDULER														
-----Weekly-----				-----Monthly-----				-----Daily-----						
Report	GRP	DOW	Time	Clr	Prt	DOM	Time	Clr	Prt	Prd	Strt	Clr	Prt	Printer
A			, 00	, N	, N		, 00	, N	, N		, 00	, Y	, N	
B			, 00	, N	, N		, 00	, N	, N		, 00	, Y	, N	
C	01		, 00	, N	, N		, 00	, N	, N		, 00	, Y	, N	
D	01		, 00	, N	, N		, 00	, N	, N		, 00	, Y	, N	
E	01		, 00	, N	, N		, 00	, N	, N		, 00	, Y	, N	
F			, 00	, N	, N		, 00	, N	, N		, 00	, Y	, N	
G			, 00	, N	, N		, 00	, N	, N		, 00	, Y	, N	
H			, 00	, N	, N		, 00	, N	, N		, 00	, Y	, N	
I			, 00	, N	, N		, 00	, N	, N		, 00	, Y	, N	
J			, 00	, N	, N		, 00	, N	, N		, 00	, Y	, N	
K			, 00	, N	, N		, 00	, N	, N		, 00	, Y	, N	
L			, 00	, N	, N		, 00	, N	, N		, 00	, Y	, N	
M			, 00	, N	, N		, 00	, N	, N		, 00	, Y	, N	

ENTER THE LETTER X TO CLEAR THE AUTO PRINTOUT

Figure 17-15 Print/Clear Scheduler

When the system is turned on for the first time, a basic program configuration exists that allows the system to operate before any programming is done. The basic configuration is called the "default program" or just the "default". The default program for the Print Scheduler is all reports are cleared daily at midnight (entered as 00 for the time) and are not printed. This includes the reports designated as CUMULATIVE. They are cleared every day until programmed otherwise with the *Report Print/Clear Scheduler*.

Some of the system reports share common information which is held in system memory. Clearing any one of these reports erases the common statistical information from memory, and the system begins collecting new information. There are two such groups of reports: the *Group Utilization* reports for 60 minutes, 30 minutes, and 15 minutes (reports C,D, and E), and the *System Utilization* reports for 60 minutes, 30 minutes, and 15 minutes (reports K,L, and M). Therefore, if report D is cleared, reports C and E are also cleared. If report M is cleared, reports K and L are also cleared.

Do NOT clear any of the reports (manually or automatically) in these two groups until all of the desired information contained in each of the reports has been examined (or printed). This is especially important when programming the *Print/Clear Scheduler* (i.e. *Report Scheduler*). The system processes the requests to print and clear a report in the order in which they appear on the *Report Scheduler*. Therefore, to print report E, report C and D must not be cleared by the *Report Scheduler*. To print report M, report K and L must not be cleared by the *Report Scheduler*. When the M report is cleared, reports K and L will also be cleared.

Clearing the *System Statistics (J)* report also clears the *Calculated Average Call* on the *Least Cost Routing* programming screen.

If a report is programmed to print and clear, the report does not clear until it is printed.

### 17.10.1 WHAT TO PROGRAM

Review with the customer each of the reports and their use, and decide which reports the customer wishes to print on a regular basis. For each report, discuss when the customer would like the report to print. After deciding which reports to print and when, decide when these reports are to be cleared and restarted.

In order to accumulate statistics in a report for a week, change the "clr" (clear) in the daily column, and monthly column, for that report to N (no), and the "clr" (clear) in the weekly column to Y (yes).

In order to accumulate statistics in a report for a month, change the "clr" (clear) in the daily column, and weekly column, for that report to N (no), and the "clr" (clear) in the monthly column to Y (yes).

Reports C,D, and E each contain 10 reports, one for each of the 10 trunk groups in the system. Each one of the trunk group reports can be programmed to print/clear individually. Thus you can print a *Report By Hour* for trunk group 1 daily without printing the remaining trunk groups. Remember NOT to clear the report until all the information desired for ALL the trunk groups on reports C,D, and E has been obtained.

When programming a report to print monthly, do not choose days 29-31. The system prints the report on the specified day. If the month never reaches that day, the report will not print.

All reports default to the printer programmed as the SMDR printer.

## 17.10.2 REPORT PRINT/CLEAR SCHEDULER SCREEN

The *Report Print/Clear Scheduler* programming screen is divided into five major areas:

<b>REPORT AND GROUP</b>	These columns define the report being programmed. The Group column refers to the trunk group for the report.
<b>WEEKLY</b>	The columns in this area define the schedule for printing and/or clearing a report on a weekly basis. <ul style="list-style-type: none"> <li><b>DOW</b> The day of the week on which you wish to print and/or clear a report. The range is from Sun. to Sat.</li> <li><b>Time</b> The hour at which you wish to print and/or clear a report. Enter the time in a 24 hour clock, for example enter 13 for 1 p.m.</li> <li><b>Clr</b> Enter Y (yes) if you want to clear a report, or N (no) if you do not want to clear a report on a desired day and time.</li> <li><b>Prt</b> Enter Y (yes) if you want to print a report, or N (no) if you do not want to print a report.</li> </ul>
<b>MONTHLY</b>	The columns in this area define the schedule for printing and/or clearing a report on a monthly basis. <ul style="list-style-type: none"> <li><b>DOM</b> The day of the month on which you wish to print and/or clear a report. The range is from 1 to 31.</li> <li><b>Time</b> The hour at which you wish to print and/or clear a report. Enter the time in a 24 hour clock, for example enter 13 for 1 p.m.</li> <li><b>Clr</b> Enter Y (yes) if you want to clear a report, or N (no) if you do not want to clear a report.</li> <li><b>Prt</b> Enter Y (yes) if you want to print a report, or N (no) if you do not want to print a report.</li> </ul>
<b>DAILY</b>	The columns in this area define the schedule for printing and/or clearing a report on a daily basis. <ul style="list-style-type: none"> <li><b>Prd</b> The hourly period for which you wish to print and/or clear a report, in hourly increments from 01 through 23.</li> <li><b>Strt</b> The hour at which you wish the report to print and or clear. The report begins at this time and continues to print after every interval period (the time entered in the Prd column).</li> <li><b>Clr</b> Enter Y (yes) if you want to clear a report, or N (no) if you do not want to clear a report after this interval.</li> <li><b>Prt</b> Enter Y (yes) if you want to print a report, or N (no) if you do not want to print a report.</li> </ul>
<b>PRINTER</b>	This column defines which printer port (1-4) the report is sent to. The printer number is assigned on the System Programming screen. If there is no printer listed, or the printer is listed as 0, the report is sent to the port designated for the SMDR printer.

### 17.10.3 HOW TO PROGRAM THE REPORT SCHEDULER

From the *Reports menu*, press N. *Report Scheduler* appears. To exit the *Report Scheduler* and return to the *Reports Menu*, press ESCAPE on keyboard. The following keys are used to move around the *Report Scheduler* programming screen:

- RETURN KEY            Moves the cursor down the screen.
- TAB KEY               Moves the cursor across the screen.
- UP ARROW KEY        Increments the DOW (Day Of Week) and DOM (Day Of Month).
- DOWN ARROW KEY     Decrements the DOW (Day Of Week) and DOM (Day Of Month).
- I and D KEY         Increments and decrements the group numbers while in any column.

REPORT SCHEDULER						
	-----Weekly-----		-----Monthly-----		-----Daily-----	
Report	CRP	DOW,Time,Clr,Prt	DOM,Time,Clr,Prt	Prd,Strt,Clr,Prt	Printer	
A		, 00 , N , N	, 00 , N , N	, 00 , Y , N		
B		, 00 , N , N	, 00 , N , N	, 00 , Y , N		
C	01	, 00 , N , N	, 00 , N , N	, 00 , Y , N		
D	01	, 00 , N , N	, 00 , N , N	, 00 , Y , N		
E	01	, 00 , N , N	, 00 , N , N	, 00 , Y , N		
F		, 00 , N , N	, 00 , N , N	, 00 , Y , N		
G		, 00 , N , N	, 00 , N , N	, 00 , Y , N		
H		, 00 , N , N	, 00 , N , N	, 00 , Y , N		
I		, 00 , N , N	, 00 , N , N	, 00 , Y , N		
J		, 00 , N , N	, 00 , N , N	, 00 , Y , N		
K		, 00 , N , N	, 00 , N , N	, 00 , Y , N		
L		, 00 , N , N	, 00 , N , N	, 00 , Y , N		
M		, 00 , N , N	, 00 , N , N	, 00 , Y , N		

ENTER THE LETTER X TO CLEAR THE AUTO PRINTOUT

Figure 17-16 Print/Clear Scheduler

#### 17.10.4 EXAMPLE

Use the screen shown in Figure 17-17 for reference while looking at screen N on your programming terminal.

In the example, you will be entering information to print and clear the 30 minute *Group Utilization Report* for trunk group 5. This is report D. In the example, the report is to be printed and cleared on a weekly (Tuesday at 6 pm), monthly (at 1 am on the 1st), and printed at 6 hour intervals daily.

When the scheduler screen is first displayed, the cursor is located in the **GRP** column of Report A.

Press the **RETURN** key until the cursor reaches the **D** report.

Use the **I** (increment) and/or **D** (decrement) key to reach 05.

*Weekly:*

Use the **TAB** key to move the cursor right to the **DOW** column.

Use the **UP** or **DOWN** arrow key to increment or decrement to **Tue**, which is the day used in the example that you would like to print and/or clear report **D** on a weekly basis.

Use the **TAB** key to move the cursor to the **Time** column. Enter 18 for 6 pm.

Use the **TAB** key to move the cursor to the **Clr** column. Type **Y** (yes).

Use the **TAB** key to move the cursor to the **Prt** column. Type **Y** (yes).

*Monthly:*

Use the **TAB** key to move the cursor right to the **DOM** column.

Use the **UP** or **DOWN** arrow key to increment or decrement to 01, which is the day used in the example that you would like to print and clear report **D** on a monthly basis.

Use the **TAB** key to move the cursor to the **Time** column. Enter 1 for 1 am.

Use the **TAB** key to move the cursor to the **Clr** column. Type in **Y** (yes).

Use the **TAB** key to move the cursor to the **Prt** column. Type **Y** (yes).

*Daily:*

Use the **TAB** key to move the cursor to the **Prd** column. This is the time period, in hours, at which time you want to print and/or clear report **D**. Type in 6.

Use the **TAB** key to move the cursor to the **Strt** column, and enter the hour at which time you want report **D** to begin to print.

Use the **TAB** key to move the cursor to the **Clr** column. Type in **N** (no).

Use the **TAB** key to move the cursor to the **Prt** column. Type **Y** (yes).

*Printer:*

Use the **TAB** key to move the cursor to the **Printer** column. Enter the number of the printer, 1 through 4 to which you want report **D** sent to be printed. This printer number must be assigned through System Programming, which is accessed by pressing **B** from the System Main Menu.

REPORT SCHEDULER						
	-----Weekly-----		-----Monthly-----		-----Daily-----	
Report	GRP	DOW,Time,Clr,Prt	DOM,Time,Clr,Prt	Prd,Strt,Clr,Prt	Printer	
A						
B						
C						
D	05	Tue, 18:00, Y Y	Mon, 23:00, Y Y	01, 23, N, Y	2	
E						
F						
G						
H						
I						
J						
K						
L						
M						

ENTER THE LETTER X TO CLEAR THE AUTO PRINTOUT

Figure 17-17 Report Scheduler

### 17.11 WHAT DOES ALL THIS INFORMATION MEAN?

Do you have enough trunks to handle your outside line traffic?

Are you paying for trunks that are never (hardly ever) used?

How long is a customer (client) waiting before the phone is answered?

Are customers hanging up before being answered?

Do you need more answering positions? If so, do they need to be attended at all times, or are there peak periods of incoming traffic?

Are the majority of phone calls (in dollars) being made by the right people?

Are your long distance services being utilized?

One or more of the reports provided by the system can be used to help you answer these questions. The answers also depend on the individual business and your individual requirements.

One of the more useful pieces of information about your systems trunk traffic is a measure of how many times all the trunks in a particular group are busy. This information is found on the GROUP UTILIZATION reports, and can be accumulated for any period desired (CUMULATIVE REPORT), and analyzed for each trunk group for intervals of an hour (Report C), 30 minutes (report D), and 15 minutes (report E). If the information indicates that all trunks in a group are busy too many times (this depends on the individual business), it may be time to order more trunks for that group.

## *System Management Reports*

If there are no all busy indications, then perhaps there are too many trunks in a group. A look at Reports F and G (LINE UTILIZATION) will show how many times each individual line is used (incoming and outgoing). Trunks with very low usage may not be needed.

The SYSTEM CALL HISTORY contains information regarding the total number of calls handled by the system, how many calls are unanswered, and how long a time between the system detecting an incoming call and the call being answered by someone in the system.

The CALL WAIT TIME lists how many calls were answered within 5 seconds, how many were answered within 10 seconds, and so on at 20, 30, 45, 60, and 90 second intervals. Use this information along with the hourly reports to judge if more answering positions are needed.

Some of the reports contain information regarding the cost of trunk calls. The Least Cost Routing feature (optional) is needed to acquire the pricing information needed to cost calls. If the LCR feature is not installed in your system these columns will show a cost of \$0.

If Least Cost Routing is installed, its performance can be displayed using Report H (LCR Statistics). The Calls Overflowed column gives an indication of calls that were routed to a second (or further) choice because the primary choice is all busy. This number may indicate the need for more trunks for a particular service.

The EXTENSION SUMMARY report gives a listing by extension of the telephone activity of a particular extension. This gives an indication of the number of calls handled by individuals, and gives a break down of incoming and outgoing calls. If the system is equipped with LCR a total cost for outgoing calls is also recorded.

The reports can also be of use for trouble shooting and maintaining the system. The LINE UTILIZATION reports contain information concerning abandoned calls (calls which the outside caller hangs up before someone in the system answered), bad lines (indicated by a station user pressing a "Bad Line" key on the telephone), calls which the system drops, and an indication of how many times the system has taken a particular line out of service.



# Section 18

## Tie Lines

### 18.1 INTRODUCTION

The system can accommodate 2-wire tie lines with the use of the *E&M Tie Line Combination* port card (part number 15680). Each E&M Tie Line Combination port card supports the use of four tie lines, and six digital stations (these ports do NOT support data or a second voice path). Also, the port card does not have an external page path. The tie line card can be installed in any port card slot of the system.

When several ISOETEC digital systems are connected together with a tie line network, *Transparent Intercom Dialing* allows a station user to call, or transfer to any extension in the network using a 4-digit extension number. The station user does not need to know tie line access codes, or anything else about the network. The network can have a maximum of 1000 numbers. See the *Transparent Intercom Dialing* section of this manual.

#### 18.1.1 CIRCUIT ORDERING INFORMATION

Facility Interface Code - TL12M  
Service Code - 9.0 Y  
Network Termination - RJ-2FX

The Facility Interface Code (FIC) for the tie lines supported by the system is TL12M. Provided below is a description of what TL12M means:

- T - The type of private line service being provided. T stands for Tie Line.
- L - The transmission parameters provided by the service ordered. L stands for lossless Interface.
- 1 - The number of wires used for transmission. 1 stands for 1 pair (2 wires).
- 2 - The type of signaling being used. 2 stands for type II signaling interface. This means it uses contact closure signaling with 4 wires for signaling purposes (E,SG,M and SB).
- M - The type of outgoing signaling. M stands for battery required on M lead to originate call.

It is recommended to have the tie lines terminated by the local telephone operating company in an RJ-2FX connecting arrangement.

#### TL12M Tie Line

##### Terminated on an RJ-2FX Connector

T - Tip  
R - Ring  
E - Incoming service request  
SG - Signal Ground  
M - Outgoing Service request  
SB - Signal Battery

Having the local telephone operating company terminate the tie lines on an RJ-2FX connector allows for easy identification of tie line wires and easy termination to the system Tie Line Card.

## 18.2 INSTALLATION

The E&M Tie Line Combination port card provides 6 station ports and 4 tie line ports. The 6 station ports provide for all of the features of the digital telephone except there is only the primary digital channel. Therefore, these ports cannot be used to support display phones which utilize the second voice path, or the data feature.

The E&M Tie Line Combination port card is connected to the main distribution frame in the same manner as the other port cards, via a 25 pair cable. Stations are wired to the E&M tie line combination port card the same as a Station port card.

The local telephone operating company provides tie lines in a number of configurations. The system uses an E&M type II signal tie line terminated on an RJ-2FX connector. Active tie lines are then cross connected from the TELCO demark to the main distribution frame. Table 18-1 shows wire termination points for the tie lines. Table 18-2 shows wire configuration when using an ISOETEC Main Distribution Frame.

The E&M Combo port to MDF cable (p/n 01023) is installed with the exposed shield closest to the KSU. A cable tie or similar device is used to secure the exposed braid to the bottom plate of the KSU cabinet (see Figure 3-1 for more detail). The paint is removed from a section of the bottom plate to allow a ground connection between the exposed braid of the cable and the cabinet. The cable is then dressed out the back of the cabinet, and connected to the MDF. Once the cable is connected to the system, a standard 25 pair cable may be used if necessary to reach the MDF.

Telephone Company side	System/228 side
Tip	Tip
Ring	Ring
E	E
SG	SG
M	M
SB	SB

Figure 18-1 Tie Line Cross Connection

TABLE 18-1 E&amp;M Combination Port Cable Configuration

CABLE PIN AND COLOR		PORT	LEAD DESIGNATION	CONNECTING BLOCK COLOR
26	wht/blu	001	Transmit Tip	green
1	blu/wht		Transmit Ring	red
27	wht/org	002	Receive Tip	black
2	org/wht		Receive Ring	yellow
28	wht/grn	003	Transmit Tip	green
3	grn/wht		Transmit Ring	red
29	wht/brn	004	Receive Tip	black
4	brn/wht		Receive Ring	yellow
30	wht/slt	005	Transmit Tip	green
5	slt/wht		Transmit Ring	red
31	red/blu	006	Receive Tip	black
6	blu/red		Receive Ring	yellow
32	red/org	007	Transmit Tip	green
7	org/red		Transmit Ring	red
33	red/grn	008	Receive Tip	black
8	grn/red		Receive Ring	yellow
34	red/brn	009	Transmit Tip	green
9	brn/red		Transmit Ring	red
35	red/slt	010	Receive Tip	black
10	slt/red		Receive Ring	yellow
36	blk/blu	006	Transmit Tip	green
11	blu/blk		Transmit Ring	red
37	blk/org	007	Receive Tip	black
12	org/blk		Receive Ring	yellow
38	blk/grn	007	Tip	
13	grn/blk		Ring	
39	blk/brn	008	E	
14	brn/blk		SG	
40	blk/slt	009	M	
15	slt/blk		SB	
41	yel/blu	008	Tip	
16	blu/yel		Ring	
42	yel/org	009	E	
17	org/yel		SG	
43	yel/grn	009	M	
18	grn/yel		SB	
44	yel/brn	009	Tip	
19	brn/yel		Ring	
45	yel/slt	010	E	
20	slt/yel		SG	
46	vio/blu	010	<del>M</del>	
21	blu/vio		SB	
47	vio/org	010	Tip	
22	org/vio		Ring	
48	vio/grn	010	E	
23	grn/vio		SG	
49	vio/brn	010	M	
24	brn/vio		SB	
50	vio/slt	010		
25	slt/vio			

Tie Lines

TABLE 18-2 E&M Tie Line Connections On An ISOETEC MDF

A	B	C	D	E	F
01 -- -- -- -- --	TT TR RT RR -- --	TL 2 -- -- -- -- --	E SG M SB -- --	TT TR RT RR -- --	05 -- -- -- -- --
02 -- -- -- -- --	TT TR RT RR -- --	TL 3 -- -- -- -- --	TIP RING E SG -- --	TT TR RT RR -- --	06 -- -- -- -- --
03 -- -- -- -- --	TT TR RT RR -- --	-- -- TL 4 -- -- --	M SB TIP RING -- --	TIP RING E SG -- --	TL 1 -- -- -- -- --
04 -- -- -- -- --	TT TR RT RR -- --	-- -- -- -- -- --	E SG M SB -- --	M SB TIP RING -- --	-- -- TL 2 -- --
05 -- -- -- -- --	TT TR RT RR -- --	01 -- -- -- -- --	TT TR RT RR -- --	E SG M SB -- --	-- -- -- -- -- --
06 -- -- -- -- --	TT TR RT RR -- --	02 -- -- -- -- --	TT TR RT RR -- --	TIP RING E SG -- --	TL 3 -- -- -- -- --
TL 1 -- -- -- -- --	TIP RING E SG -- --	03 -- -- -- -- --	TT TR RT RR -- --	M SB TIP RING -- --	-- -- TL 4 -- --
-- -- TL 2 -- -- -- --	M SB TIP RING -- --	04 -- -- -- -- --	TT TR RT RR -- --	E SG M SB -- --	-- -- -- -- -- --

## 18.3 PROGRAMMING

All tie line programming is accomplished using the *System Programming* screen, choice B on the *Main Menu*. A tie line is considered a trunk by the system, and is programmed in the *Lines* area of the *System Programming* screen. Refer to the *System Programming* section for instructions on programming this screen.

Tie lines can use either rotary or DTMF signaling. Both ends of the tie line must use the same signalling. Set DTMF Y (yes) for DTMF lines. Set DTMF N (no) for rotary lines.

Line type is used to program the actions of the signal leads under different conditions.

Line Type 0 immediate return signaling  
 1 wink start, return supervision on answer  
 2 wink start, return supervision on ring  
 3 return supervision on answer  
 4 return supervision on ring

Set TIE/DID to N (no) if incoming calls on the tie line dial extensions numbers. Set TIE/DID to Y (yes) if the tie line is to use the *DID Translation Table* for extension numbers. TIE/DID is set to Y (yes) for tie lines which are part of a *Transparent Intercom Dialing* network.

Trunk access dial codes on incoming tie line calls are affected by the *DISA/TIE GRP DIAL* option on the *System Options* programming screen.

Tie lines are also affected by the *Drop Pulse* timer. In software version prior to 5.52, tie lines were also affected by the *CO Toll Options* on the *System Options* programming screen.

System Programming	
[T]ime 12:32 pm Fri 09-08-89 [O]perators Programming	
[R]ing Low = 010 PPS = 010	[R]ing High = 050 Ratio = 080
[L]ine 001 port 013 Name	[E]xternal Zone 01 Page 00
Line Type = 000 DTMF Y SMDR Enable Y	ID Number 001 Day N Night N
ID Number = 001	Ground Start N
Public N	TIE/DID N MOH N
[A] ID Number 001	[P]ort 01* Installed Y
ID Class = 00 ACD Day Group = 01	Speed = 9600 Protocol = X_ON
Trunk Group = 01 Priority = 1	Printer 0 Computer Port N Type 000
Hunt Group = 00 ACD Night Group = 00	SMDR N Incom Y Local Y Long Dist Y
Drop Pulse = 014 Priority = 1	ACD SMDR N Incom N Outg N Remote N
Pause Time = 005s	[M]usic Source MOH 1 BGM 1
Flash Time = 025*50ms	[S]ystem will reset N at 00:00
Orbit-Recall = 006*10s	[V]arious. Divert limit 15 min
	Cost After = 001 DID Digits 3
	Local Call Cost Limit = \$0.00
	Ground Start Timer = 008*50ms

Figure 18-2 System Programming Screen

## 18.4 TESTING

When installing a tie line from one location to another it is very important to have a knowledgeable technician on both the near end and far end location (Near End - The location where your tie lines are terminated at, Far End - The location that your tie lines are terminated to). Both technicians should be equipped with a butt set (telephone test set), an ohm-meter, and a regular screw driver. An inspection of the equipment should then take place to make sure that both the near end and the far end have been provided with the proper equipment.

The following inspection should take place for each ISOETEC system.

1. Locate the local telephone operating company terminating block. This will be referred to as the demark point.
2. There should be 6 wires terminated for each TL12M tie line circuit. If there are more than 6 wires, or less than 6 wires, then the tie line circuit that was delivered is not a TL12M.
3. The next step is to identify each wire and its designation. The identity of each wire should be indicated by a tag left by your local telephone operating company.
4. The leads required by an system are as follows:

T  
R  
E  
SG  
M  
SB

5. A voltage measurement between SB and ground on the local telephone operating company side of the demark should be taken to insure -48 volts DC is present.

### 18.4.1 INITIAL TESTING

Once an inspection has been made and it has been determined that all proper equipment has been delivered, the following test can be performed between the Near End and the Far End local telephone operating company interfaces.

#### NEAR END TECHNICIAN

(Person working with the System/228 in this case)

On the local telephone operating company side of the demark:

1. Place your butt set on T and R of the first tie line circuit.
2. Place your ohm meter between E and SG of the first tie line circuit.
3. Take a metal screwdriver and short your M lead to your SB lead. By doing this you are requesting dial tone from the distant end.

If the circuit is connected to the telephone system at the distant end, the following can be performed:

4. Depending on the type of supervision (see supervision below) the tie line is set up for at the distant end, you will then receive a ZERO ohm indication on your meter. This indicates that the other end has acknowledged your request and is responding with the appropriate supervision.

## SUPERVISION -

A tie line can be set up for different supervisions. Supervision on the tie line is used to determine when a party hangs up by monitoring the E and M leads. Below is a list of the supervisions the system offers.

**Immediate Supervision** - When a short is placed between the E and SG leads, the system places an immediate short across the M and SB leads.

**Ring Supervision (with Wink)** - When a short is placed between the E and SG leads, the system gives a momentary closure on the M and SB leads. After the called extension begins to ring, the M lead is then shorted to the SB lead until the call is terminated.

**Off-hook Supervision (with Wink)** - When a short is placed between the E and SG leads, the system provides a momentary closure on the M and SB leads. Once the called extension is taken off-hook, the M lead is then shorted to the SB lead and remains closed for the duration of the call.

**Ring Supervision (no Wink)** - After the called extension begins to ring, the M lead is then shorted to the SB lead until the call is terminated.

**Off-hook Supervision (no Wink)** - Once the called extension is taken off-hook, the M lead is then shorted to the SB lead and remains closed for the duration of the call.

The Far End technician should then perform a similar test to insure that he is able to receive dial tone when calling into the Near End, and also to insure proper supervision on his end (remember to connect the system to the tie line circuit before this test).

### 18.4.2 TESTING THE SYSTEM

After both the Near End and Far End local telephone operating company equipment has been determined to be in proper working order, an individual test of the system should be performed on each tie line circuit that is to be connected to the local telephone operating company interface. The test that should be performed is as follows:

1. Place a butt set on monitor across the T and R leads on the system side of the block. A high pitched tone may be heard while the tie line is in idle mode.
2. Take a metal screw driver and short the E lead to the SG lead. This should give you system dial tone on your butt set. If the supervision is set up for immediate, a click from the closure of the M lead to the SB lead will be heard. If you do not hear the click, you can monitor the closure of the M lead to the SB lead by placing an ohm meter across the M and SB leads and checking for a zero ohm indication.

If you are using an ISOETEC MDF, remember to skip the TWO spare leads after every 4 wires you punch-down.

After all the circuits have been tested, place your bridging clips on each tie line circuit.

## 18.5 TIE LINE OPERATION

The following is a description of what a tie line can and cannot do. Every attempt will be made to discuss the important features, however, if a feature is not mentioned, it does not mean that it will work in conjunction with the tie lines.

The following features are NOT available on Tie Lines calling into a System/228:

### *Direct Ringing into a Hunt Group -*

A tie line *cannot* be assigned to ring directly into a hunt group. If you would like to obtain access to a specific hunt group via a tie line, you must dial 4 plus the hunt group (1-36) number you would like to obtain access to.

### *Direct Ringing into an ACD Group -*

A tie line *cannot* be assigned to ring directly into an ACD group. If you would like to obtain access to a specific ACD group, you must dial 47 plus the ACD group number you would like to obtain access to.

### *Camp-On -*

A station *cannot* camp-on to a busy tie line.

### *Account Code Entry -*

A tie line calling into the system *cannot* enter any kind of account code, forced, verified or voluntary.

### *Toll Restriction -*

An incoming tie line *cannot* be toll restricted on an outgoing trunk.

### *Speed Dial -*

An tie line calling into the system *cannot* access the Station or System speed dial numbers.

The following features ARE available on Tie Lines calling into a System/228:

### *Call an Extension -*

A tie line calling into the system can access an extension by dialing the appropriate 4 digit number. If the extension is busy the caller either camps-on, or hears busy tone (depending on the *Busy on DID* option for the extension).

### *Trunk Access -*

A tie line calling into the system can access a CO line by dialing 9 plus the three digit line number (001 - 228). However, trunk access dial codes are affected by the *DISA/TIE GRP DIAL* option on the *System Options* programming screen.

*NOTE: Trunk access cannot be denied to a person calling into the system via a tie line, nor can the call be toll restricted.*

### *Paging -*

A tie line calling into the system *can* access the page.



*Page Pickup -*

A tie line calling into the system can dial 75 to pick up a page.

*Orbit Pickup -*

A tie line calling into the system can pick up a line that has been placed into an orbit zone.

*LCR Access -*

A tie line calling into the system can obtain access to LCR by dialing [9][\*] plus the number they wish to call. However, trunk access dial codes are affected by the *DISA/TIE GRP DIAL* option on the *System Options* programming screen.

*NOTE: Items such as LCR class of service, Cost Limit, and Out LCR only will not pertain to a tie line calling into the system and accessing LCR.*

*SMDR/Call Accounting Reports -*

A tie line calling into the system can be recorded on SMDR. The tie line and all associated lines and/or extensions you wish to have recorded on SMDR must have SMDR Enable set to Y. Also, the tie line will appear as extension 000 when it accesses a CO line to dial a number and is recorded on SMDR.

*Hunt Group Access -*

A tie line calling into the system can access a hunt group by dialing 4 plus the hunt group number (01 - 36).

*ACD Group Access -*

A tie line calling into the system can access an ACD group by dialing 47 plus the ACD group number (01 - 15).

*Line Group Access -*

A tie line calling into the system can access a line group by dialing 93 plus the line group number (01 - 10). However, trunk access dial codes are affected by the *DISA/TIE GRP DIAL* option on the *System Options* programming screen.

*Operator Access -*

A tie line calling into the system can access the main operator by dialing 0. To access secondary operators, you must dial their extension numbers.

*Ringling Assignment -*

A tie line calling into the system can be assigned to ring on several stations. To access the ringling assignment of the tie line, the caller must press the star key after receiving tie line dial tone.

*NOTE: The ringling assignment of a tie line calling into the system can also be accessed by not dialing anything upon receiving tie line dial tone from the system. After 10 seconds, the tie line rings the ringling assignment.*

*Establishing a Conference -*

A tie line entering the System 228 can be conferenced with a CO line or station.

*NOTE: A tie line should not be conferenced with another tie line.*

*Transferring a Tie Line Call -*

A tie line call entering a System/228 can be transferred in the same manner you transfer a regular CO call (to another extension, to an orbit zone, to an ACD group, to a hunt group, etc.).

*Placing a Tie Line Call On Hold -*

A tie line call entering the System/228 can be placed on hold the same way a regular CO call is placed on hold (exclusive hold will also work).

*Directed Call Pickup -*

A tie line call entering into a System/228 that is ringing an extension can be picked up by another extension by dialing 2 plus the extension number the tie line is ringing.

*Station Forwarding -*

A tie line entering into a System/228 will follow the station forwarding plan for CO calls.

*Tie/DID Dialing Plan -*

A tie line entering into a System/228 can be programmed so it will reference the same dialing scheme as the DID lines.

The following features ARE available on Tie Lines calls out of the System/228:

*Dial Select -*

A tie line leaving the System/228 can be accessed by dialing 9 plus the tie line number (001 - 228).

*Group Select -*

A tie line can be accessed by dialing 93 plus the group number (01 to 10).

*Key Assignment -*

A tie line can be assigned to a programmable key using either a direct appearance line number, or trunk group access. Once the key is pressed, you will obtain access to the tie line.

*Group keys -*

Tie lines can be assigned to group keys. When the group key is pressed, you will receive an available tie line.

*Prime Line (by line or group)-*

A tie line can be assigned to prime line of a station, so when the station goes off hook, they will obtain the outgoing tie line.

*Call Back -*

If an outgoing tie line is busy, you can place a call back to that tie line. Once the outgoing tie line becomes available, it will ring on your extension.

*Restrict Access -*

Access can be restricted on an outgoing tie line on a per station basis.

*Toll Restriction -*

A outgoing tie line can be toll restricted.

*Forced Account Codes -*

An outgoing tie line can require forced account codes (on a per station basis).

*Voluntary Account Codes -*

An outgoing tie line can have voluntary account codes.

*SMDR and Call Accounting -*

An outgoing tie line can be recorded on SMDR and/or Call Accounting.

*Conferencing -*

An outgoing tie line can be added to a CO or station conference.

*NOTE: Two outgoing tie lines should not be conferenced together.*

*DISA -*

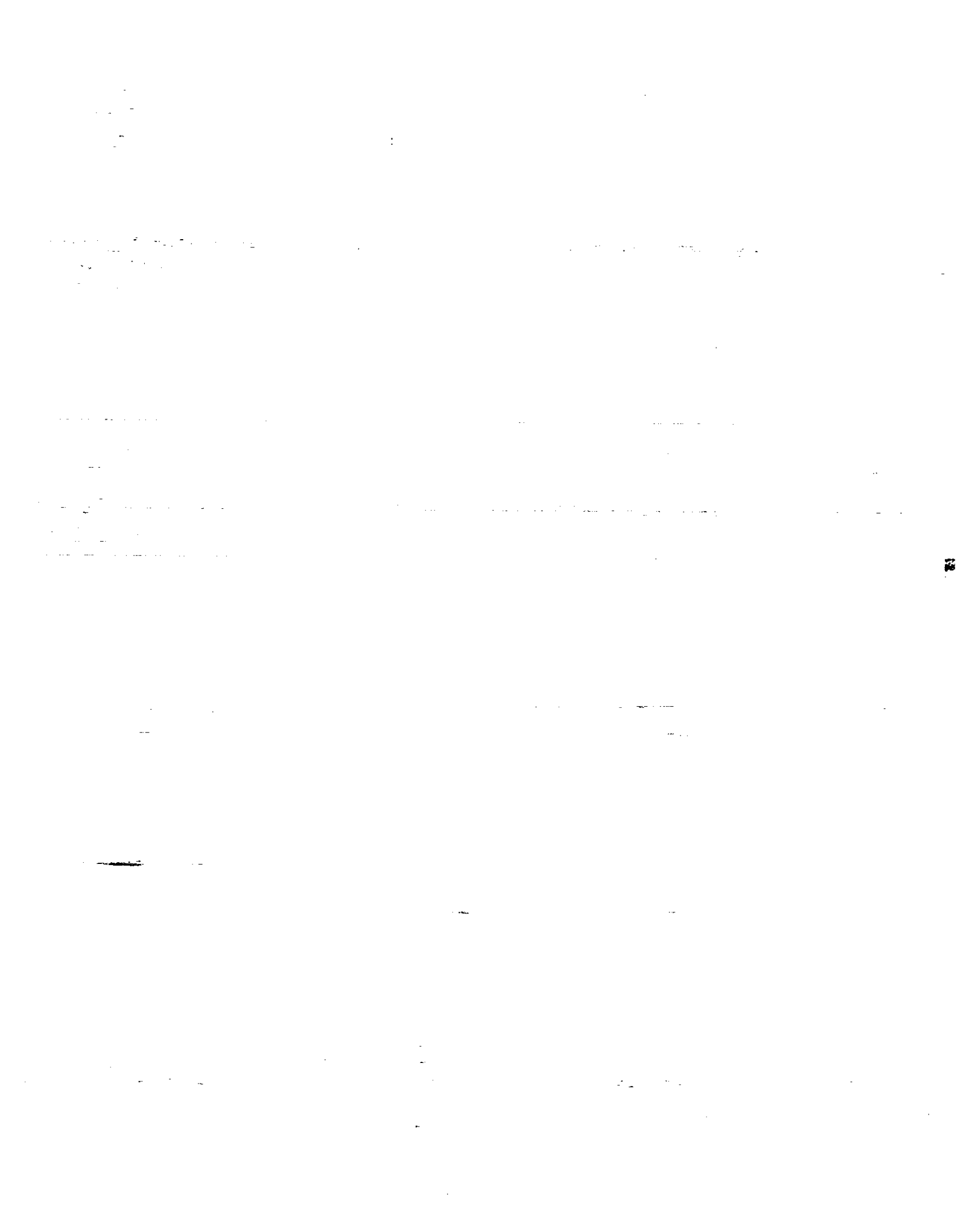
An outgoing tie line can be accessed via DISA by dialing [9] + 3 digit line number. However, DISA dial codes are affected by the *DISA/TIE GRP DIAL* option on the *System Options* programming screen.

*Speed Dial -*

A system and/or station speed dial can be used on an outgoing tie line.

*Last Number Redial -*

A last number re-dial can be used on an outgoing tie line.



# Section 19

## Trunk Group Programming

### 19.1 INTRODUCTION

The *Trunk Group Programming* screen has 3 separate uses. Incoming calls can be diverted to another outside telephone number. The system can be placed in the NIGHT mode automatically based on the time of day, and the day of the week. ACD GROUP SEQUENCES can be placed in the NIGHT mode, automatically, based on the time of day and the day of the week.

### 19.2 CALL DIVERSION

The *Trunk Group Programming* screen uses the SYSTEM SPEED DIAL feature to route incoming calls to another outside number. Calls can be diverted based on the time of day, and day of the week. Each of the system's 10 TRUNK GROUPS can be programmed separately for call diversion.

When a TRUNK GROUP is set for call diversion, any incoming call in that trunk group will be connected to an outgoing trunk in a selected group, and the designated SYSTEM SPEED DIAL number will be dialed.

Programming a trunk group for CALL DIVERSION consists of selecting which trunk group the outgoing call is to be placed on, which SYSTEM SPEED DIAL NUMBER is to be dialed, and when CALL DIVERSION is to be *active*. The TRUNK GROUP can also be assigned a name with up to 10 characters. This name appears on any of the *Management Reports* which reference the trunk group.

CALL DIVERSION can be activated and deactivated on a weekday, on Saturday, or on Sunday, beginning at any time, and ending at any time.

#### 19.2.1 WHAT TO PROGRAM

Determine which TRUNK GROUP'S incoming calls are to be diverted.

Determine which TRUNK GROUP is to be selected for the outgoing call.

Determine the outside telephone number these calls are to be diverted to. Enter this telephone number into a SYSTEM SPEED DIAL BIN (001-200) using the operator's position.

*NOTE: System Speed Dial numbers 201-999 are not available for use with Call Diversion.*

Determine when CALL DIVERSION is to start, and when it is to stop. CALL DIVERSION can begin and end at any time on a weekday, on Saturday, and on Sunday.

*Divert Limit* is a timer set in minutes that determines the duration of a diverted call. If a call has been diverted for the *Divert Limit* amount of time the call is disconnected. The *Divert Limit* is found on the *System Programming* screen.

### 19.2.2 HOW TO PROGRAM CALL DIVERSION

If not already on the *Trunk Group Programming* screen, from the *Main Menu*, press the N key. If the cursor is in another portion of the *Trunk Group Programming* screen, press SHIFT and "@" simultaneously.

1. Press the RETURN key to move the cursor to the TRUNK GROUP to be programmed.
2. Enter the name of the TRUNK GROUP, if desired, up to 10 characters, and press the RETURN key.
3. Press the TAB key. The cursor moves to the OUT GRP column.
4. Enter the number of the TRUNK GROUP to be used for the outgoing call, and press the RETURN key.
5. Press the TAB key. The cursor moves to the SPEED DIAL BIN column.
6. Enter the bin number (001-200) of the SYSTEM SPEED DIAL number to be used, and press the RETURN key.
7. Press the TAB key. The cursor moves to the WEEKDAY ENABLE column.
8. If CALL DIVERSION is to be active at any time on a weekday, press Y. Otherwise, this should be N.
9. Press the TAB key. The cursor moves to the START column.

Trunk Group Programming										@ --> 1st group								
Grp #	Name	Call Diversion		Weekdays		Saturday		Sunday										
		Out grp	System Speed Dial BIN (1-200)	Enable	start	stop	Enable	start	stop		Enable	start	stop					
1	ABC	01	002	Y	18:30	08:00	Y	16:00	10:00	Y	16:00	10:00						
2		00		N	00:00	00:00	N	00:00	00:00	N	00:00	00:00						
3		00		N	00:00	00:00	N	00:00	00:00	N	00:00	00:00						
4		00		N	00:00	00:00	N	00:00	00:00	N	00:00	00:00						
5		00		N	00:00	00:00	N	00:00	00:00	N	00:00	00:00						
6		00		N	00:00	00:00	N	00:00	00:00	N	00:00	00:00						
7		00		N	00:00	00:00	N	00:00	00:00	N	00:00	00:00						
8		00		N	00:00	00:00	N	00:00	00:00	N	00:00	00:00						
9		00		N	00:00	00:00	N	00:00	00:00	N	00:00	00:00						
10				N	00:00	00:00	N	00:00	00:00	N	00:00	00:00						
The system will automatically switch to Night Mode [\$] Y at										Y	17:58	11:00	Y	00:00	00:00	Y	00:00	00:00

Figure 19-1 Trunk Group Programming Screen

10. Enter the time CALL DIVERSION is to start in 24-hour clock format.
11. Press the TAB key. The cursor moves to the STOP column.
12. Enter the time CALL DIVERSION is to stop in 24-hour clock format.
13. Press the TAB key. The cursor moves to the SATURDAY ENABLE column.
14. If CALL DIVERSION is to be active at any time on Saturday, press Y. Otherwise, this should be N.
15. Press the TAB key. The cursor moves to the START column.
16. Enter the time CALL DIVERSION is to start in 24-hour clock format.
17. Press the TAB key. The cursor moves to the STOP column.
18. Enter the time CALL DIVERSION is to stop in 24-hour clock format.
19. Press the TAB key. The cursor moves to the SUNDAY ENABLE column.
20. If CALL DIVERSION is to be active at any time on Sunday, press Y. Otherwise, this should be N.
21. Press the TAB key. The cursor moves to the START column.
22. Enter the time CALL DIVERSION is to start in 24-hour clock format.
23. Press the TAB key. The cursor moves to the STOP column.
24. Enter the time CALL DIVERSION is to stop in 24-hour clock format.
25. Press the RETURN key. The cursor moves back to the NAME column of the next TRUNK GROUP. Continue programming the remaining TRUNK GROUPS to be diverted.

When CALL DIVERSION is active in a particular TRUNK GROUP, Dvrt appears in the CALL DIVERSION column of the TRUNK GROUP.

Make certain the system clock is properly set on the *System Programming* screen.

The TRUNK GROUP will begin to divert calls the next time the system clock reaches the time indicated in a START column.

## 19.3 AUTOMATIC NIGHT MODE

The system can be placed into the NIGHT mode using the *Trunk Programming* screen. NIGHT mode can be activated and deactivated on a weekday, on Saturday, or on Sunday, beginning at any time, and ending at any time.

### 19.3.1 WHAT TO PROGRAM

Determine at what time the System is to enter the NIGHT mode, and at what time the System is to leave the NIGHT mode.

### 19.3.2 HOW TO PROGRAM AUTOMATIC NIGHT MODE

If not already on the *Trunk Group Programming* screen, from the *Main Menu*, press the N key. If the cursor is in another portion of the *Trunk Group Programming* screen, press SHIFT and "S" simultaneously.

1. If the *Trunk Group Programming* screen is to be used to place the system in the NIGHT mode, press the Y key.

## Trunk Group Programming

2. Press the TAB key.
3. If NIGHT mode is to be activated automatically at any time on a weekday, press Y. Otherwise, this should be N.
4. Press the TAB key. The cursor moves to the START column.
5. Enter the time NIGHT mode is to start in 24-hour clock format.
6. Press the TAB key. The cursor moves to the STOP column.
7. Enter the time NIGHT mode is to stop in 24-hour clock format.
8. Press the TAB key. The cursor moves to the SATURDAY ENABLE column.
8. Press the TAB key. The cursor moves to the SATURDAY ENABLE column.
9. If NIGHT mode is to be active at any time on Saturday, press Y. Otherwise, this should be N.
10. Press the TAB key. The cursor moves to the START column.
11. Enter the time NIGHT mode is to start in 24-hour clock format.
12. Press the TAB key. The cursor moves to the STOP column.
13. Enter the time NIGHT mode is to stop in 24-hour clock format.

Trunk Group Programming												
										*# --> 1st group		
Grp	Call Diversion		Weekdays		Saturday		Sunday					
#	Name	Out	System Speed	Enable	start	stop	Enable	start	stop	Enable		
		grp	Dial BIN (1-200)									
1	ABC	01	002	Y	11:40	12:00	N	00:00	00:00	N	00:00	00:00
2		00		N	00:00	00:00	N	00:00	00:00	N	00:00	00:00
3		00		N	00:00	00:00	N	00:00	00:00	N	00:00	00:00
4		00		N	00:00	00:00	N	00:00	00:00	N	00:00	00:00
5		00		N	00:00	00:00	N	00:00	00:00	N	00:00	00:00
6		00		N	00:00	00:00	N	00:00	00:00	N	00:00	00:00
7		00		N	00:00	00:00	N	00:00	00:00	N	00:00	00:00
8		00		N	00:00	00:00	N	00:00	00:00	N	00:00	00:00
9		00		N	00:00	00:00	N	00:00	00:00	N	00:00	00:00
10				N	00:00	00:00	N	00:00	00:00	N	00:00	00:00
The system will automatically												
switch to Night Mode [S] Y at				Y	17:58	11:00	Y	00:00	00:00	Y	00:00	00:00
ACD Groups will automatically												
switch to Night Mode [%] Y at												
ACD Group 01				N	00:00	00:00	N	00:00	00:00	N	00:00	00:00

Figure 19-2 Trunk Group Programming Screen



14. Press the TAB key. The cursor moves to the SUNDAY ENABLE column.
15. If NIGHT mode is to be active at any time on Sunday, press Y. Otherwise, this should be N.
16. Press the TAB key. The cursor moves to the START column.
17. Enter the time NIGHT mode is to start in 24-hour clock format.
18. Press the TAB key. The cursor moves to the STOP column.
19. Enter the time NIGHT mode is to stop in 24-hour clock format.

Make certain the System clock is properly set on the *System Programming* screen.

The SYSTEM will enter the NIGHT mode the next time the system clock reaches the time indicated in a START column.

## 19.4 ACD GROUP NIGHT MODE

Each of the 15 ACD GROUP SEQUENCES can be placed in the NIGHT SEQUENCE automatically using the *Trunk Group Programming* screen. NIGHT mode can be activated and deactivated on a weekday, on Saturday, or on Sunday, beginning at any time, and ending at any time.

### 19.4.1 WHAT TO PROGRAM

Determine at what time each of the 15 ACD GROUPS are to enter the NIGHT mode, and at what time each of the 15 ACD GROUPS are to leave the NIGHT mode.

### 19.4.2 HOW TO PROGRAM ACD GROUP NIGHT MODE

If not already on the *Trunk Group Programming* screen, from the *Main Menu*, press the N key. If the cursor is in another portion of the TRUNK GROUP PROGRAMMING screen, press SHIFT and "%" simultaneously.

1. If the *Trunk Group Programming* screen is to be used to place any of the ACD GROUPS in the NIGHT mode, press the Y key.
2. Press the RETURN key.
3. Enter the number of the ACD GROUP to be programmed, and press the RETURN key.
4. Press the TAB key.
5. If NIGHT mode is to be activated automatically at any time on a weekday, press Y. Otherwise, this should be N.
6. Press the TAB key. The cursor moves to the START column.
7. Enter the time NIGHT mode is to start in 24-hour clock format.
8. Press the TAB key. The cursor moves to the STOP column.
9. Enter the time NIGHT mode is to stop in 24-hour clock format.
10. Press the TAB key. The cursor moves to the SATURDAY ENABLE column.
11. If NIGHT mode is to be active at any time on Saturday, press Y. Otherwise, this should be N.
12. Press the TAB key. The cursor moves to the START column.

13. Enter the time NIGHT mode is to start in 24-hour clock format.
14. Press the TAB key. The cursor moves to the STOP column.
15. Enter the time NIGHT mode is to stop in 24-hour clock format.
16. Press the TAB key. The cursor moves to the SUNDAY ENABLE column.
17. If NIGHT mode is to be active at any time on Sunday, press Y. Otherwise, this should be N.
18. Press the TAB key. The cursor moves to the START column.
19. Enter the time NIGHT mode is to start in 24-hour clock format.
20. Press the TAB key. The cursor moves to the STOP column.
21. Enter the time NIGHT mode is to stop in 24-hour clock format.
22. Press the RETURN key. Continue programming the remaining ACD GROUPS.

Make certain the System clock is properly set on the *System Programming* screen.

The ACD GROUP will begin to divert calls the next time the system clock reaches the time indicated in a START column.

Trunk Group Programming												
e --> 1st group												
Grp #	Name	Call Diversion		Weekdays		Saturday		Sunday				
		Out	System Speed	Enable		Enable		Enable				
		grp	Dial BIN (1-200)	start	stop	start	stop	start	stop			
1	ABC	01	002	Y	11:40	12:00	N	00:00	00:00	N	00:00	00:00
2		00		N	00:00	00:00	N	00:00	00:00	N	00:00	00:00
3		00		N	00:00	00:00	N	00:00	00:00	N	00:00	00:00
4		00		N	00:00	00:00	N	00:00	00:00	N	00:00	00:00
5		00		N	00:00	00:00	N	00:00	00:00	N	00:00	00:00
6		00		N	00:00	00:00	N	00:00	00:00	N	00:00	00:00
7		00		N	00:00	00:00	N	00:00	00:00	N	00:00	00:00
8		00		N	00:00	00:00	N	00:00	00:00	N	00:00	00:00
9		00		N	00:00	00:00	N	00:00	00:00	N	00:00	00:00
10				N	00:00	00:00	N	00:00	00:00	N	00:00	00:00
The system will automatically												
switch to Night Mode [S] Y at												
				Y	17:58	11:00	Y	00:00	00:00	Y	00:00	00:00
ACD Groups will automatically												
switch to Night Mode [%] Y at												
		ACD Group	01	N	00:00	00:00	N	00:00	00:00	N	00:00	00:00

Figure 19-3 Trunk Group Programming Screen

# Section 20

## Direct Inward Dial

### 20.1 INTRODUCTION

Direct Inward Dialing (DID) trunks allow an outside caller to directly dial an extension within the system, without the need of the call being handled by the attendant answering position. All DID calls originate in the Central Office of the local telephone operating company and terminate at the system. DID trunks are used for incoming calls only. Separate trunks must be provided for outgoing service.

The telephone network transmits extension number information to the system. Usually 3 or 4 digits (the last 3 or 4 digits of a telephone number) are transmitted to the telephone system, however the system can accept the transmission of from 2 to 7 digits. The DID trunks are terminated to the DID port card (part number 15610). Each DID port card can terminate 12 DID trunks. At present, the system accepts only PULSE (rotary) signaling on the DID lines, and gives a WINK start to the Central Office.

DID Tagging is another feature which allows each DID number to be assigned a name up to 10 characters on the DID programming screen. The name is then displayed on the operator's screen, in the Call Pending Box, and on the LCD display of a display phone whenever connected to a DID call. When a DID call is re-routed or transferred, the call keeps its programmed tag.

### 20.2 REGISTRATION AND CONNECTION

Part 68 Registration Numbers:

Hybrid        DHF-7AS-16454-MFE  
PBX            DHF-7AS-16453-PFE

Facility Interface Code    02RV2-T  
Ringer Equivalence        0.0B  
Network Connection        RJ21-X

### 20.3 HARDWARE REQUIREMENTS

DID port card (part number 15610)  
48 volt DC power supply

The DID card revision B requires an external 48 volt power supply. The power supply is connected to the port card by screw terminals located on the top outer edge of the card. Each card draws a maximum of 600 milliamps of current when all circuits are in use. The size power supply depends on the number of DID cards installed. Previous versions of this card (revision A) do NOT require the external power supply, but are powered by the system (36 volts). However, only 2 such DID port cards can be installed per system power supply.

### 20.4 SOFTWARE REQUIREMENTS

Software version 1.15 through 5.52 supports DID. The DID feature does NOT have to be loaded remotely in these software versions.

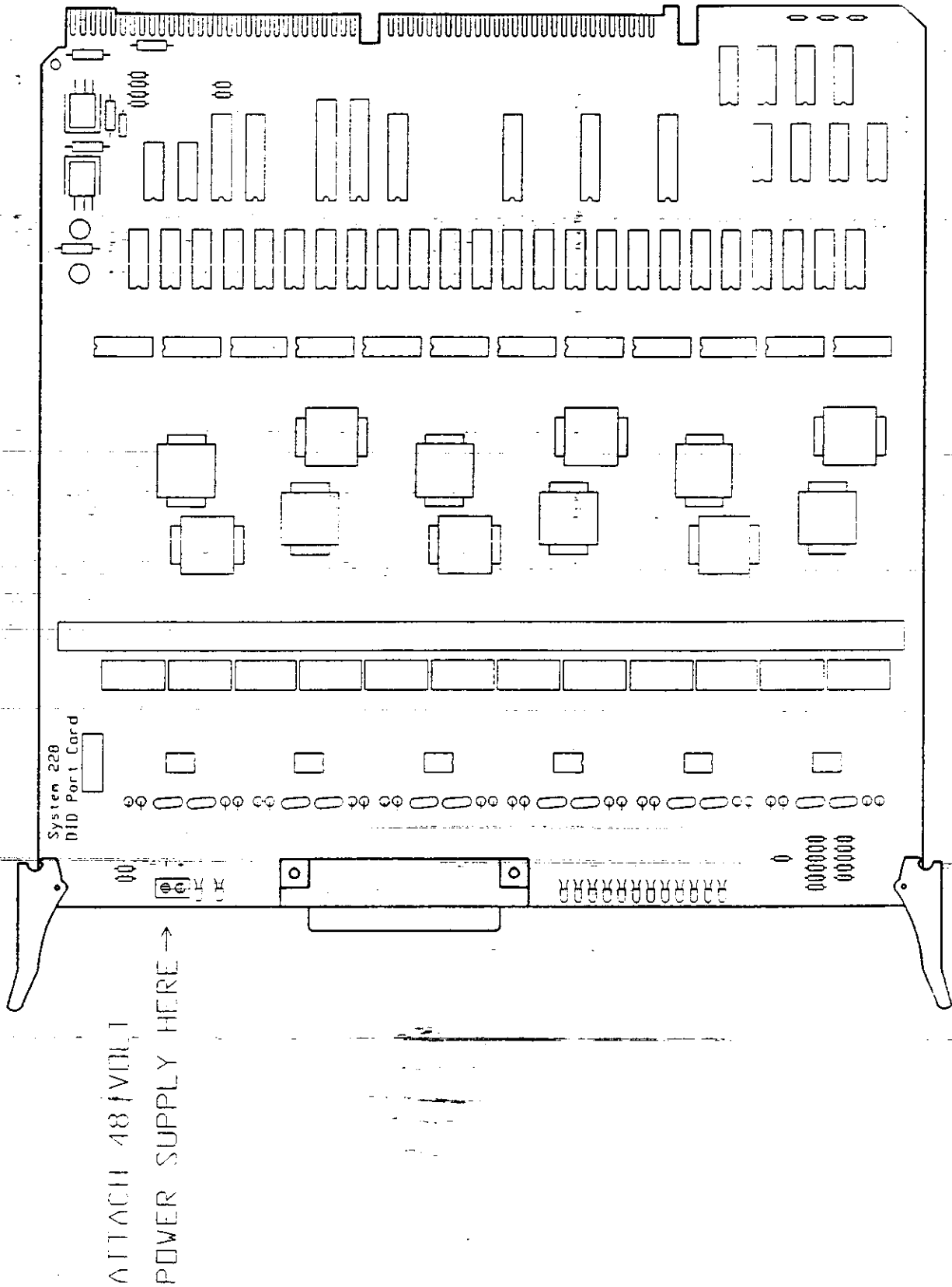


Figure 20-1 DID Port Card Power Connections

## 20.5 INSTALLATION

The DID port card can be installed in any one of the 19 port card slots of the system. Connect the 48 volt power supply to the screw terminals located on the outer edge of the board. The screw terminals are labeled for polarity.

The local telephone operating company usually provides DID lines on an RJ-21X connector. These are connected to the TELCO IN jack on the Main Distribution Frame. A 25 pair cable connects the TELCO OUT jack to the cable connector on each DID port card. Each cable connects 12 DID lines to the DID port cards. The connector on the DID port card is a female connector. Active lines are then connected by the use of bridging clips. Table 20-1 shows wire color and termination points for the incoming lines.

*CAUTION: Once the DID circuits are connected and in use, DO NOT disconnect the circuits from the system without advising the local telephone operating company. The Central Office may test a circuit before each telephone call. If the CO does not detect the system connected to the circuit, it will take the circuit out of service until a repair call is made. If the cable connecting the DID port card to MDF is disconnected, all twelve circuits will be taken out of service.*

Table 20-1 DID Port Wiring Configuration

CABLE PIN AND COLOR	PORT	LEAD DESIGNATION
26 wht/blu	001	Tip
1 blu/wht		Ring
27 wht/org	002	Tip
2 org/wht		Ring
28 wht/grn	003	Tip
3 grn/wht		Ring
29 wht/brn	004	Tip
4 brn/wht		Ring
30 wht/slt	005	Tip
5 slt/wht		Ring
31 red/blu	006	Tip
6 blu/red		Ring
32 red/org	007	Tip
7 org/red		Ring
33 red/grn	008	Tip
8 grn/red		Ring
34 red/brn	009	Tip
9 brn/red		Ring
35 red/slt	010	Tip
10 slt/red		Ring
36 blk/blu	011	Tip
11 blu/blk		Ring
37 blk/org	012	Tip
12 org/blk		Ring

## 20.6 WHAT TO PROGRAM

Each DID port is assigned a CO line number. When the DID port card is installed in the system, the system automatically configures the ports for the next 12 CO lines. If different line numbers are desired, follow the instructions for changing port assignments found in the *Port Programming* section of this manual.

The number of digits being sent from the Central Office to the system must be programmed on the *System Programming* screen. This is programmed in the *DID Digits* area of the screen (see Figure 20-2).

System Programming			
[Time 12:32 pm Fri 09-08-89] [O]perators Programming			
[R]ing Low = 010 PPS = 010			
Ring High = 050 Ratio = 080			
[L]ine 001 port 013 Name	[E]xternal Zone 01 Page 00	ID Number 001 Day N Night N	
Line Type = 000 DTR Y SMDR Enable Y	Ground Start N		
ID Number = 001	TIE/DID N MOH N		
Public N	[P]ort 01* Install Y		
[A] ID Number 001		Speed = 9600 Protocol = X_ON	
ID Class = 00	ACD Day Group = 01	Printer 0 Computer Port N Type 000	
Trunk Group = 01	Priority = 1	SMDR N Incom Y Local Y Long Dist Y	
Hunt Group = 00	ACD Night Group = 00	ACD SMDR N Incom N Outg N Remote N	
Drop Pulse = 014	Priority = 1	[M]usic Source MOH 1 BGM 1	
Pause Time = 005s	[S]ystem will reset N at 00:00		
Flash Time = 025*50ms	[V]arious: Divert limit 15 min		
Orbit Recal] = 008*10s	Cost After = 001 DID Digits 3		Local Call Cost Limit = \$0.00
Ground Start Timer = 008*50ms			

Figure 20-2 System Programming Screen

The address information transmitted from the network must be translated into extension numbers (or line IDs). This is accomplished through the use of the *DID Programming* screen. This programming screen is not listed on the main menu, but can be reached through the *Digit Translation* programming screen.

The *DID Programming* screen contains translation for 228 DID numbers. The DID number (the address information transmitted by the telephone network) can be from 2 to 7 digits. This information is entered in the "DID Num" column. The system extension number to which the DID number is to be translated is entered in the column "Ext/Id".

The system MODEM can be called via the DID lines by assigning one of the DID telephone numbers to "ID" 129 on the DID programming screen.

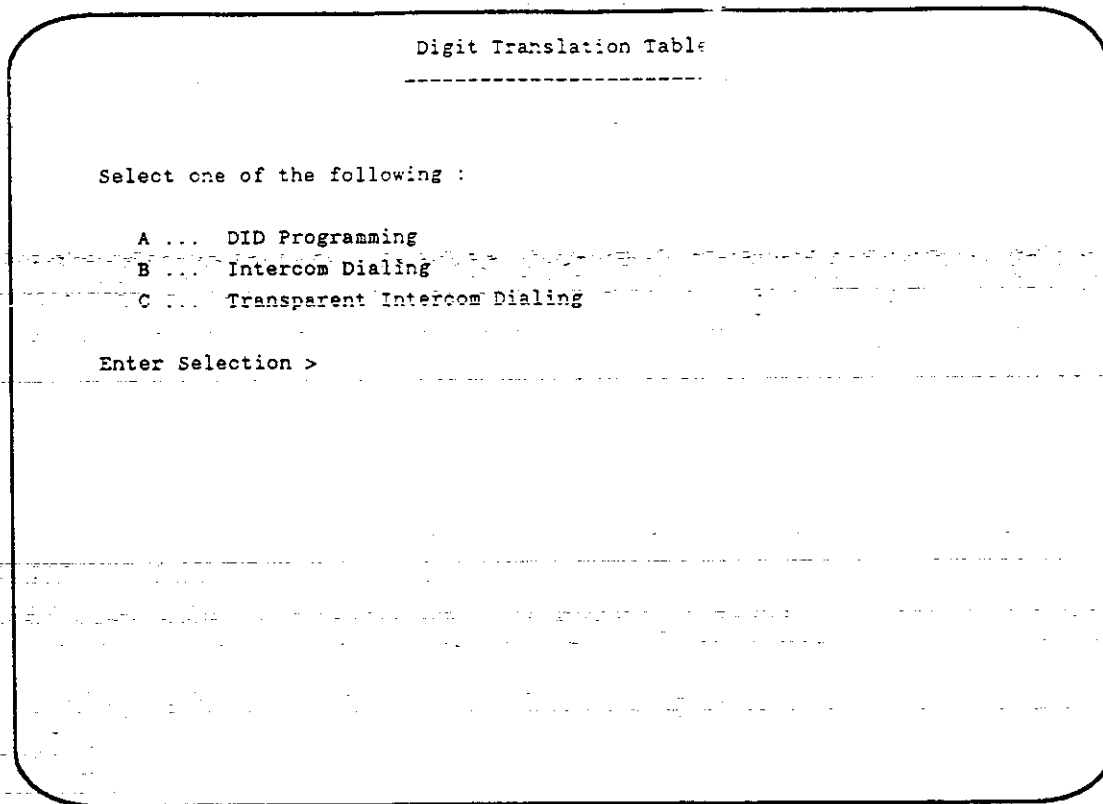


Figure 20-3 Digit Translation Menu

## 20.7 ACCESSING THE DIGIT TRANSLATION PROGRAMMING SCREEN

The *Digit Translation* programming screen (the Y screen) is accessed by pressing Y on the keyboard from the *Main Menu*. The ESCAPE key may be pressed while in any other programming screen to reach the *Main Menu*. Programmable passwords are available to limit access to the programming screens. The default access to the *DID programming* is by password levels 7 and 8 only.

## 20.8 HOW TO PROGRAM

If not already in the *Digit Translation* programming screen (see Figure 20-3), from the *Main Menu*, press the Y key. Then press A to reach *DID programming*.

1. The cursor is located in the upper right corner of the programming screen. Enter the page number to be programmed.
2. Press the RETURN key. The cursor moves to the first position of the "DID Dgts" column.
3. Enter the DID number to be translated.
4. Press the RETURN key.
5. Press the RETURN key a second time to move the cursor to the "Ext/Id" column.
6. Enter the extension number that the DID number translates into.
7. Press the RETURN key.

8. Press the RETURN key again. The cursor moves to the "Use" column.
9. Enter a Y if DID tagging is to be used.
10. If all the DID numbers are to be tagged, press C to copy Y to all the numbers.
11. Press the RETURN key.
12. Enter the desired name that is to be associated with that specific DID number. Press the RETURN key.
13. Continue entering information and pressing the RETURN key until all numbers to be translated and tagged are entered.

There are two copy function keys associated with this screen:

Pressing the C key while in either the *DID Dgts* column, or the *Ext/Id* column copies that item of information to all lines.

Pressing the F key while in the *DID Dgts* column increments that line of information for the next 99 lines.

Pressing the F key while in the *Ext/Id* column increments that line of information from the present line till the end.

To move the cursor back to the *page* position, press the SHIFT key and the "@" key on the keyboard at the same time.

DID Programming | C = Copy F = Fill Del = Delete | Page 1 of 6

Ind	DID Dgts	Ext/ID	Use	Name	Ind	DID Dgts	Ext/ID	Use	Name
001	001	- 5001	N		020	020	- 5020	N	
002	002	- 5002	N		021	021	- 5021	N	
003	003	- 5003	N		022	022	- 5022	N	
004	004	- 5004	N		023	023	- 5023	N	
005	005	- 5005	N		024	024	- 5024	N	
006	006	- 5006	N		025	025	- 5025	N	
007	007	- 5007	N		026	026	- 5026	N	
008	008	- 5008	N		027	027	- 5027	N	
009	009	- 5009	N		028	028	- 5028	N	
010	010	- 5010	N		029	029	- 5029	N	
011	011	- 5011	N		030	030	- 5030	N	
012	012	- 5012	N		031	031	- 5031	N	
013	013	- 5013	N		032	032	- 5032	N	
014	014	- 5014	N		033	033	- 5033	N	
015	015	- 5015	N		034	034	- 5034	N	
016	016	- 5016	N		035	035	- 5035	N	
017	017	- 5017	N		036	036	- 5036	N	
018	018	- 5018	N		037	037	- 5037	N	
019	019	- 5019	N		038	038	- 5038	N	

Figure 20-4 DID Programming Screen



## 20.9 OPERATION

An outside caller dials the telephone number of one of the DID numbers assigned to a particular installation. The call is routed through the public switched network to the Central Office serving the installation. The Central Office switch determines which subscriber the call is to be routed to. An idle DID trunk is selected. The CO may test the trunk before continuing. The CO then seizes the idle DID trunk by going from a high resistance state to a low resistance state (it goes off-hook on the line). The system responds by reversing the polarity of tip and ring for a brief moment and then returns to the original polarity (this is the "wink").

When the CO detects the reverse battery "wink", it begins sending dial pulse information to the system (it dials rotary). This dial pulse information is usually the last 3 or 4 digits of the telephone number. After the system has collected all the dial information, it uses the *DID Programming* table to translate this information into the extension number. The call is then routed to the extension, ring back tone (if the called extension is idle) is connected to the outside caller, and the extension begins to ring.

When the called station answers, the polarity of tip and ring is again reversed and held in this state for the duration of the call. The outside caller is then connected to the extension.

If the outside caller disconnects, the CO opens the loop and returns the trunk to the idle state. The system then releases the line (depending on the programming of the *Toll Options*).

If the extension called hangs up the phone, the system returns the polarity on tip and ring to normal. The Central Office detects this, disconnects the call, and returns the line to the idle state.

## 20.10 NOTES

### 20.10.1 CALLED STATION BUSY

If the extension being called is busy with another call, the outside caller is connected to ring back tone, and the call is camped-on to the busy extension. Each extension has an option on the *Station Programming* screen called *Busy on DID* which permits the outside caller to be connected to a busy tone. The call then is not camped-on.

### 20.10.2 CALLED STATION IS FORWARDED

If the called extension is forwarded either *All Calls* or *Busy* to another extension, the DID call follows the forward. If the called extension is forwarded *No Answer* to another extension, the DID call does not follow the forward.

### 20.10.3 CALLED STATION IS DND

If the called station is in DND mode, the outside caller is connected to ring back tone, the LED on the called extension blinks, but no ring tone is heard. If *Call Forward Busy* is active at the called station, the *Call Forward Busy timer* is ignored, and the call is forwarded immediately.

### 20.10.4 CALLED STATION IS OUT (IN/OUT key is pressed)

If the called station is in the OUT mode, the outside caller is connected to ring back tone, the LED on the called extension blinks, but no ring tone is heard. If *Call Forward Busy* is active at the called station, the *Call Forward Busy timer* is ignored, and the call is forwarded immediately.

## 20.11 DID AND SMDR

The *SMDR* feature prints the DID digits received from the Central Office on the *SMDR* reports under the *Account Code* column.

If a user chooses to enter an account code for a specific call, the account code that has been manually entered is printed on the *SMDR* report in place of the DID digits. An example of the *SMDR* report is provided below.

*NOTE: SMDR.Enable must be programmed to Y (Yes) on both the DID trunk and station in order to report on the SMDR.*

System 228 ISOETEC Communications Inc. (C) 09-08-89 12:58

TIME	TYPE	EXT	LINE	DUR	ACCOUNT#	NUMBER DIALED	ANS	R.DUR	SRV	COST
12:58	IN	004	049	00:04	38		004	00:08		
12:58	IN	002	051	00:40	3002		002	00:11		
12:58	IN	005	050	01:12	3005		005	00:09		

Manually entered account code

Dialed DID digits

Figure 20-5 SMDR Record

## 20.12 DID AND THE BUILT-IN AUTO ATTENDANT

An incoming DID call can be routed to the built-in Automated Attendant by translating the incoming DID digits to Line ID which is programmed to route calls to the Automated Attendant. Determine which DID telephone numbers are to be routed to the Automated Attendant.

### 20.12.1 SYSTEM PROGRAMMING

Select an unused Line ID number (see the *System Programming* section for information on Line IDs). It is recommended to start with the highest unused Line ID number and work downward. In the *Line ID* area of the *System Programming* screen, program the *Hunt Group* value of the selected (unused) Line ID with the number of the desired Automated Attendant (3-42).

### 20.12.2 DID PROGRAMMING

Locate the *DID Digits* which are to be routed to the Automated Attendant on the *DID Programming* screen. Instead of translating the *DID Digits* to an extension number, enter the Line ID which was selected in the previous paragraph in the *Ext/ID* column.

# Section 21

## Flexible Numbering

### 21.1 INTRODUCTION

Flexible Numbering allows the leading digit of the dialing scheme in the system to be CUSTOMIZED to any other leading digit (1-0). The leading digit of system extension numbers defaults to 3. The range of extension numbers starts at 3001 and ends at 3999. The leading digit of feature access codes can also be changed.

When using Flexible Numbering, the customer should be made aware that when customizing, or changing the leading digits, it effects the ENTIRE dialing scheme as ALL digits are used for access codes, or features as listed below:

---

Default Digit	Feature Access
1	Ring for Intercom calls
2	Camp-on, Pickup ringing extension
3	Extension numbers
4	Hunt Groups
5	Orbits
6	Paging Access
7	Feature Codes
8	ACD Agents
9	CO Access
0	Operator

---

*NOTE: When using the Second Transfer Key on the Integrated Operator Terminal to transfer calls to hunt groups, ACD groups, etc., the default numbering plan is used. Do not dial the flexible number assignment. For example, if digits 3 and 4 are interchanged, a station transferring a call to hunt group 1 would dial 301, however, the Integrated Operator Terminal would dial 401 after pressing the second transfer key.*

## 21.2 PROGRAMMING THE DIGIT TRANSLATION SCREEN

1. From the Main Menu, press the Y key. The *Digit Translation* menu appears.

Digit Translation Tables

---

Select one of the following :

A ... DID Programming

B ... Intercom Dialing

C ... Transparent Intercom Dialing

Enter Selection >

Figure 21-1 Digit Translation Table

2. From the *Digit Translation* menu, press the B key to enter the *Intercom Dialing* programming screen.

## 21.3 INTERCOM DIALING TRANSLATION

First Digit Dialed:	1	2	3	4	5	6	7	8	9	0
Translated:	1	2	3	4	5	6	7	8	9	0

The upper row of digits is the Default Set of Digits and cannot be changed. The lower row of digits is the Translation Set of Digits.

To change an access code digit, press the RETURN key until the cursor is on the digit you wish to change. Enter the new digit, and press the RETURN key.

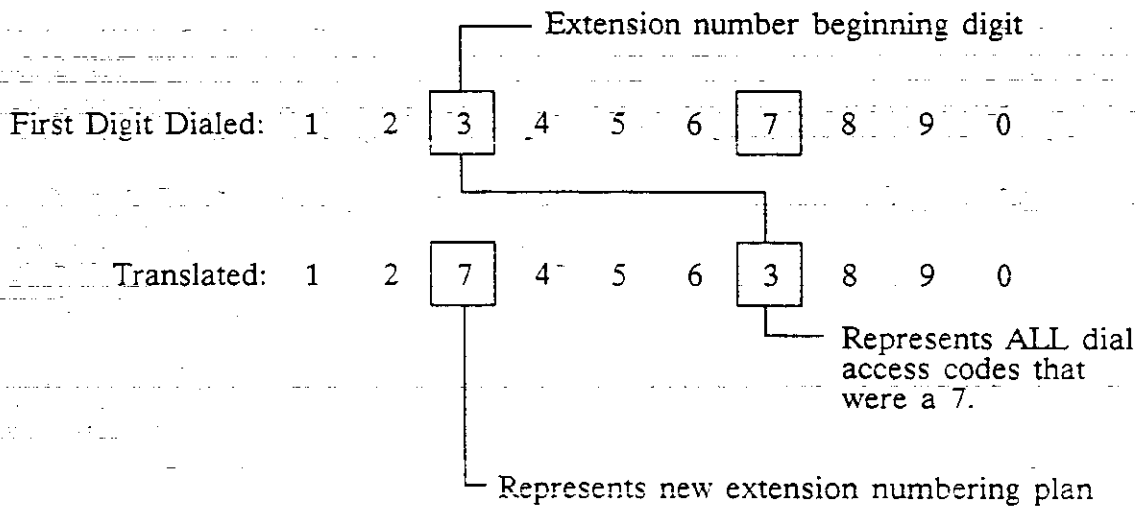
**Example:**

First Digit Dialed:	1	2	3	4	5	6	7	8	9	0
Translated:	1	2	7	4	5	6	3	8	9	0

The above example represents the swapping of digits. Numbers 3 and 7 have been changed.

*NOTE: All extension numbers in the system begin with the same leading digit.*

**Intercom Dialing Translation Table**



The *Intercom Dialing Translation* programming screen is used to change the LEADING DIGIT of the extension numbering plan (or other leading digit) only. However, the range of extension numbers is the LEADING DIGIT + 001 through 999.

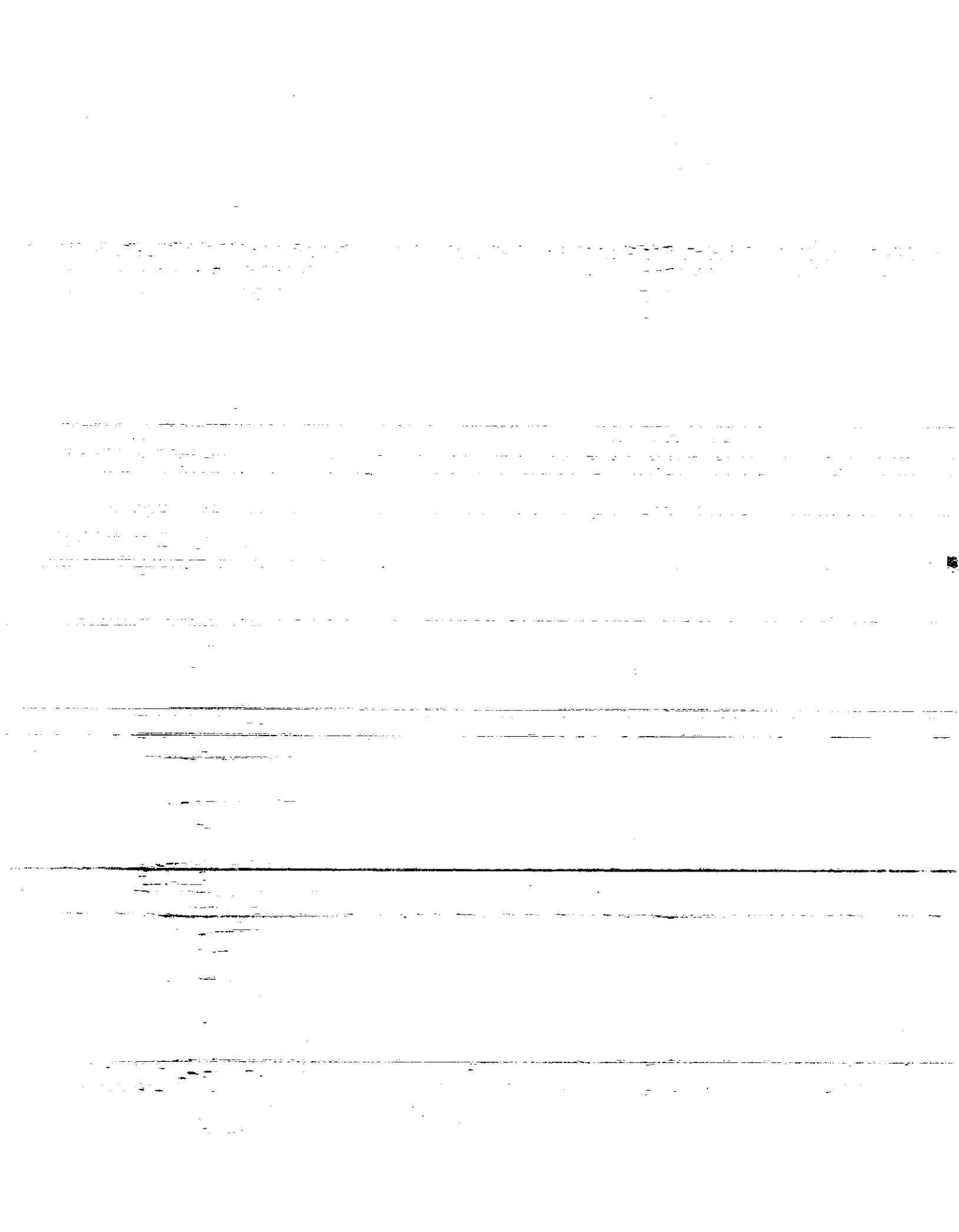
After the *Intercom Dialing Translation* programming screen has been programmed, the *System Configuration* programming screen (F screen) is used to define the actual extension numbers.

After programming the *Intercom Dialing Translation*, the system must be RESET before the number plan changes take effect.

**21.4 RESETTING THE SYSTEM**

To reset the system from the programming terminal, the following steps must be taken:

1. Press CONTROL and G to reset the system. The system asks for confirmation, "Type 'OK' and RETURN twice to EXECUTE."
2. Type O and K, and press the RETURN key twice. The system resets. Enter the appropriate password and continue programming.



## Section 22

# Transparent Intercom Dialing

### 22.1 DESCRIPTION

When several systems are connected together with a tie line network, *Transparent Intercom Dialing* allows a station user to call, or transfer to, any extension in the network using a 4-digit extension number. The station user does not need to know tie line access codes, or anything else about the network. The network can have a maximum of 1000 extension numbers.

For example: System A for location A has extension numbers 5001 to 5228, System B for location B has extension numbers 5229 to 5456, and System C for location C has extension numbers 5457 to 5685.

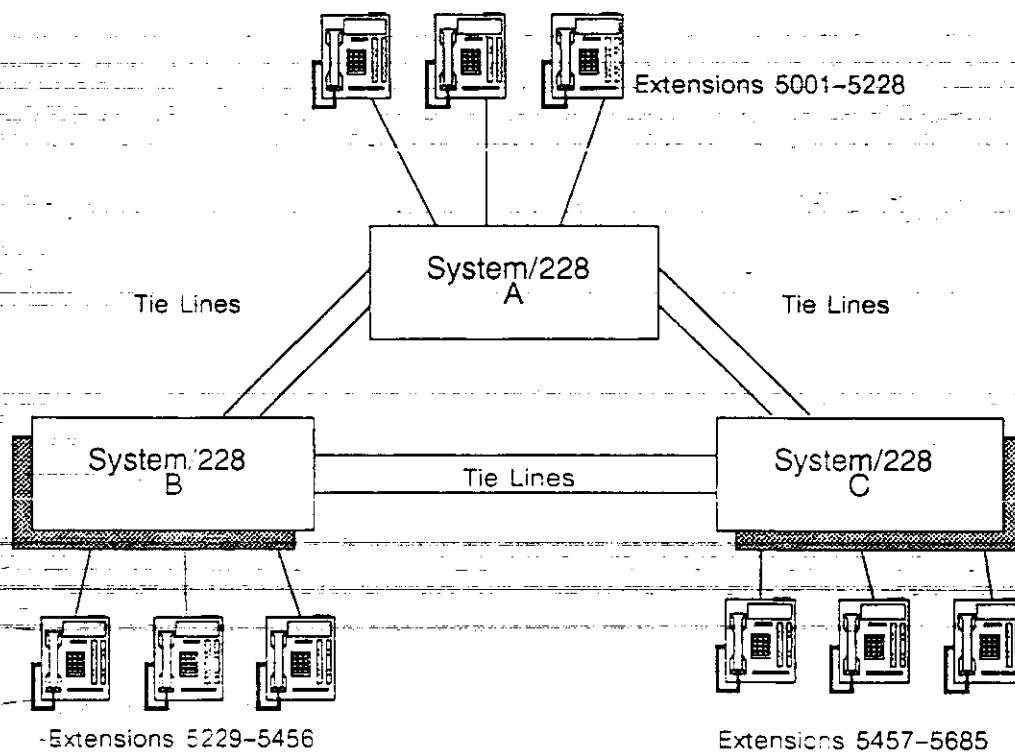


Figure 22-1 Transparent Intercom Dialing

The number of tie lines required between each system (within the transparent intercom dialing scheme) is dependent upon the amount of traffic between the systems.

When setting up *Transparent Intercom Dialing* within remote systems, it is recommended to choose a sequence of numbers for each remote location before programming any one system. Remember to allow for future expansion in each system. There can be NO duplicate extension numbers in the network.

*NOTE: The first digit of the extension sequence can be changed to any digit from 0 to 9. However, all systems within the Transparent Intercom Dialing sequence must have the SAME LEADING DIGIT.*

When using the *Transparent Intercom Dialing* feature, there are limitations with features between systems. The technician should be aware of these limitations prior to installing a Transparent Intercom Dialing system. These limitations exist because there are no digital signals between the systems.

*NOTE: In software versions prior to 5.52, the Automated Attendant could not be used to route call via the Transparent Intercom Dialing feature.*

The following features and keys will not work between systems:

Paging through the telephones	Message Waiting
Meet Me Page	Auto Transfer
Call Back	Call Pickup
Call Forward	Camp On
Pilot Keys	Dial By Name
The BLF portion of DSS/BLF keys (however, the DSS Key does work)	Group Pickup

*Transparent Intercom Dialing* only effects the method stations use to call each other, or transfer outside line calls. The systems are still separate systems. For example, the operator terminal screen displays the extension numbers in that system, NOT the extension numbers in the network.

## 22.2 INSTALLATION

*Transparent Intercom Dialing* is a software feature that requires no installation, however, software version 5.26 or higher is required. Tie lines are installed following standard System/228 installation practices. See the *Installation, Cabling, and Tie Line* sections of the this manual. If systems in the network are to provide *Music On Hold*, each system in the network should have the same music source.

## 22.3 HOW TRANSPARENT INTERCOM DIALING OPERATES

### Outgoing Call

When a station places an intercom call, the last three digits of the dialed extension will reference the *Transparent Intercom Dialing* table which tells the system where the extension is located. If the extension is not resident in the system, the table tells the system which group of tie lines to pick. Once the tie line group is chosen, the system selects an idle tie line, and the last three digits will be dialed over the tie line into the remote system.

### Incoming Call

The remote system receives the three digits and looks them up on the *DID Programming* screen. The call is then routed to the translated extension number.

## 22.4 PROGRAMMING

To program *Transparent Intercom Dialing* the following screens must be programmed in each system using the *Transparent Intercom Dialing* scheme:

System Programming (B screen) - *Line, ID, and Various* areas

Digit Translation (Y menu) - *DID Programming, Intercom Dialing, and Transparent Intercom Dialing* programming screens.

System Options (M screen) - *Second Trans Key* option



### 22.4.1 SYSTEM PROGRAMMING

The following values must be programmed on the *System Programming* - B screen:

**Line Type**            A *line type* of 001 must be entered for each tie line in each system that is being used for the *Transparent Intercom Dialing* scheme. This 001 *line type* will make the tie line a wink start line.

*NOTE: Although not mandatory, it is recommended to have all tie lines in the Transparent Intercom Dialing scheme set for DTMF.*

**Tie/DID**              *TIE/DID* must be set to Y (yes) for all tie lines to be used in the *Transparent Intercom Dialing* scheme.

It is important to note that when using both *Transparent Intercom Dialing* and *DIDs*, only three digit *DIDs* can be used. *DID* numbers must match the *last three digits of your extension number*. The reason for requiring three digits is that the *DID* translation table is used for intercom dialing. The same table is used for both features.

**Trunk Group**        Each group of tie lines going to each system in the *Transparent Intercom Dialing* scheme **MUST BE ASSIGNED TO A SEPARATE TRUNK GROUP**. This trunk group is then assigned in the *Transparent Intercom Dialing* programming screen.

**DID Digits**            *DID Digits* in the *Various* area, **MUST BE SET TO 3**.

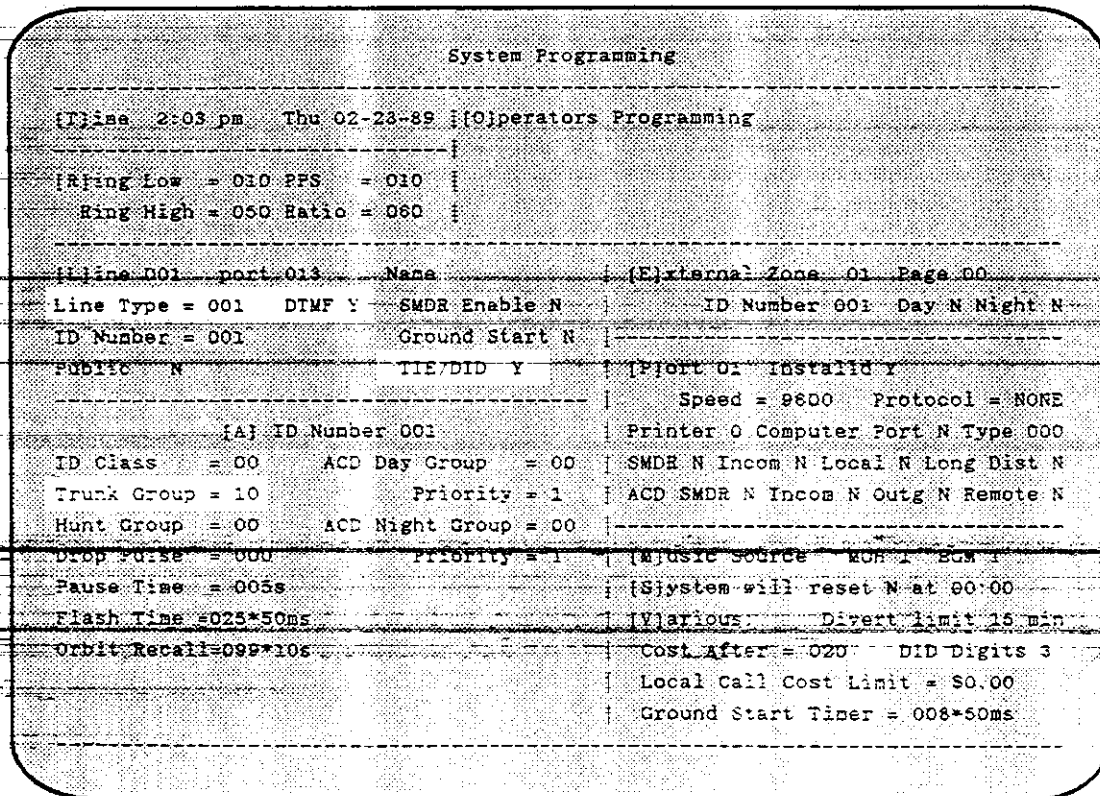


Figure 22-2 System Programming Screen

## 22.4.2 DIGIT TRANSLATION TABLES

Each screen accessed from the *Digit Translation Table* has to be programmed for each system that is part of the *Transparent Intercom Dialing* scheme. The purpose of these screens is to convert the three digit extension number received on the *Transparent Intercom Dialing* tie line, to a valid four digit extension number that is resident on the system.

## 22.4.3 DID PROGRAMMING SCREEN

**DID Digits Column** Enter the three digit numbers (000 to 999) under the *DID digits column*. If the numbers are consecutive, enter the first number and press the F key. This will fill the column with the next 99 consecutive numbers.

**Ext/ID Column** Enter a four digit extension number in the *Ext/DID column*. This is the extension number that will ring when the corresponding three digit numbers in the DID digit column are dialed.

*NOTE: The first digit for all systems in the Transparent Intercom Dialing scheme must be the same.*

DID Programming		C = Copy F = Fill Del = Delete		Page 1 of 6	
Ind	DID Dgts - Ext/ID Use Name	Ind	DID Dgts - Ext/ID Use Name		
001	001 - 5001 N	020	020 - 5020 N		
002	002 - 5002 N	021	021 - 5021 N		
003	003 - 5003 N	022	022 - 5022 N		
004	004 - 5004 N	023	023 - 5023 N		
005	005 - 5005 N	024	024 - 5024 N		
006	006 - 5006 N	025	025 - 5025 N		
007	007 - 5007 N	026	026 - 5026 N		
008	008 - 5008 N	027	027 - 5027 N		
009	009 - 5009 N	028	028 - 5028 N		
010	010 - 5010 N	029	029 - 5029 N		
011	011 - 5011 N	030	030 - 5030 N		
012	012 - 5012 N	031	031 - 5031 N		
013	013 - 5013 N	032	032 - 5032 N		
014	014 - 5014 N	033	033 - 5033 N		
015	015 - 5015 N	034	034 - 5034 N		
016	016 - 5016 N	035	035 - 5035 N		
017	017 - 5017 N	036	036 - 5036 N		
018	018 - 5018 N	037	037 - 5037 N		
019	019 - 5019 N	038	038 - 5038 N		

Figure 22-3 DID Programming Screen

### 22.4.4 INTERCOM DIALING PROGRAMMING SCREEN

This screen will only have to be changed if the technician is going to change the leading digit of extension numbers from three to another number. If the leading digit is to be changed, *all systems in the Transparent Intercom Dialing scheme must have the SAME leading digit.*

To program *Intercom Dialing Translation*:

1. Press the RETURN key until the cursor is under the digit 3.
2. Enter the number you would like all extension numbers to begin with.
3. Go to the number you just entered, and make that number a 3.

Make certain that each number does not appear twice.

After all changes have been programmed, the system must be reset. The new numbering scheme will now be followed.

The previous steps can be verified by checking the *System Configuration* programming screen. This screen should show extension numbers with the new leading digit just entered on the *Intercom Dialing Translation* screen.

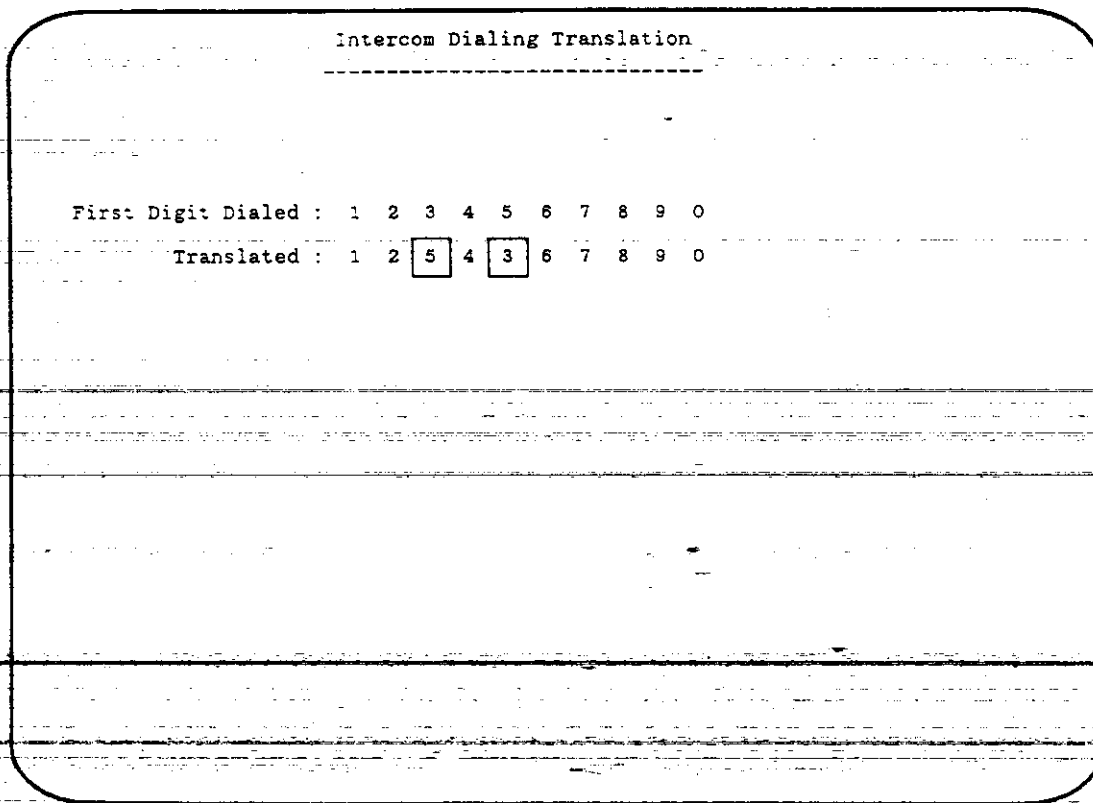


Figure 22-4 Intercom Dialing Translation

## 22.4.5 TRANSPARENT INTERCOM DIALING PROGRAMMING SCREEN

This screen must be programmed on each system that is part of the *Transparent Intercom Dialing* scheme. The screen has 10 pages.

Transparent fcm Map   F = Fill = [N] Map Enabled Y					Pg 01 of 10
Extn.	Line Grp.	Extn.	Line Grp.	Extn.	Line Grp.
001	- 10	021	- 10	041	- 10
002	- 10	022	- 10	042	- 10
003	- 10	023	- 10	043	- 10
004	- 10	024	- 10	044	- 10
005	- 10	025	- 10	045	- 10
006	- 10	026	- 10	046	- 10
007	- 10	027	- 10	047	- 10
008	- 10	028	- 10	048	- 10
009	- 10	029	- 10	049	- 10
010	- 10	030	- 10	050	- 10
011	- 10	031	- 10	051	- 10
012	- 10	032	- 10	052	- 10
013	- 10	033	- 10	053	- 10
014	- 10	034	- 10	054	- 10
015	- 10	035	- 10	055	- 10
016	- 10	036	- 10	056	- 10
017	- 10	037	- 10	057	- 10
018	- 10	038	- 10	058	- 10
019	- 10	039	- 10	059	- 10
020	- 10	040	- 10	060	- 10
				061	- 10
				062	- 10
				063	- 10
				064	- 10
				065	- 10
				066	- 10
				067	- 10
				068	- 10
				069	- 10
				070	- 10
				071	- 10
				072	- 10
				073	- 10
				074	- 10
				075	- 10
				076	- 10
				077	- 10
				078	- 10
				079	- 10
				080	- 10
				081	- 10
				082	- 10
				083	- 10
				084	- 10
				085	- 10
				086	- 10
				087	- 10
				088	- 10
				089	- 10
				090	- 10
				091	- 10
				092	- 10
				093	- 10
				094	- 10
				095	- 10
				096	- 10
				097	- 10
				098	- 10
				099	- 10
				100	- 10

Figure 22-5 Transparent Intercom Dialing Programming Screen

**Map Enabled**

Located on the top of the screen is [N] *Map Enabled*. To activate *Transparent Intercom Dialing*, *Map Enabled* must be set to Y (yes).

To program the *Map Enabled*, press the N key. This will move the cursor to the *Map Enabled* section of the screen. Enter a Y (yes). All intercom dialing will now reference this screen.

**Page**

In the upper right corner of the screen the technician will see Pg 01 of 10. This is the *page section* of the *Transparent Intercom Dialing* screen.

To access the *page section* of the screen, press the SHIFT key and "@" key simultaneously.

A digit can be entered from 1 to 10. The I and D keys can be used to increment and decrement through the pages.

**Extension**

The *Ext column* indicates the extension number that is dialed, minus the common first digit. This column is pre-programmed with numbers 000 to 999. These numbers cannot be changed.

**Line Group**

The *Line Group* column indicates the trunk group of the tie lines which are connected to the system that has that particular extension in it. The *Line Group* column is programmable. The valid entries are from 00 to 10. A detailed explanation of how valid entries operate is provided below.

- 00 Indicates the station is residing in that cabinet. No tie line is necessary for the intercom call to be processed.
- 01 to 10 Indicates the tie line trunk group that the system must access in order to place the intercom call.

*NOTE: The F key can be pressed, after entering a group number, to copy that group number to the next 228 extension numbers.*

**22.4.6 SYSTEM OPTIONS PROGRAMMING SCREEN - SECOND TRANSFER KEY**

The *Second Transfer Key* option must be set to Y (yes) when the last three digits of the extension numbers used on the System/228 EXCEED 228.

The Integrated Operator's Terminal can be used to transfer an outside line call to an extension, to a hunt group, to an ACD group, to IVIE, to the system's MODEM, or over a tie line to another system. When the system extension dialing plan includes numbers greater than 3228, or begins with a number other than three, the SECOND TRANSFER key is used to transfer outside line calls to any destination, other than an extension. The TRANS key is still used to transfer all outside line calls to extensions. The SECOND TRANSFER key is labeled IVIE on the Integrated Operator's Terminal.

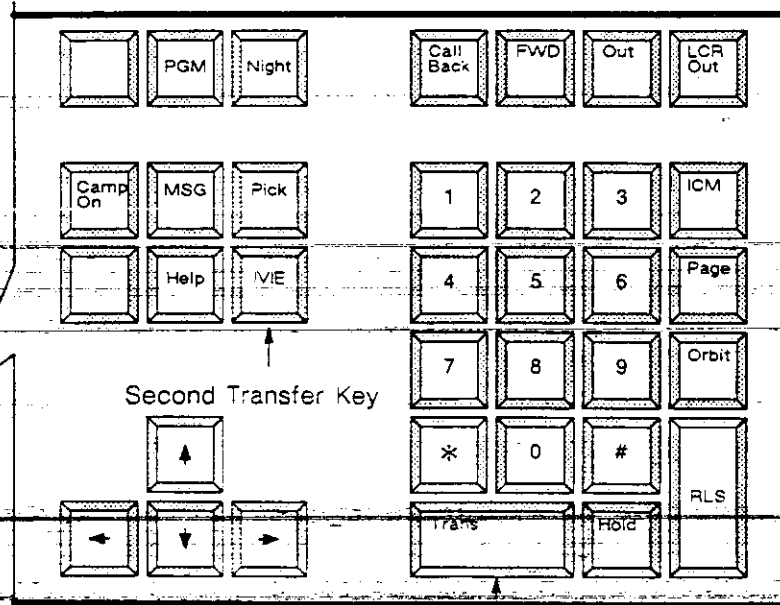
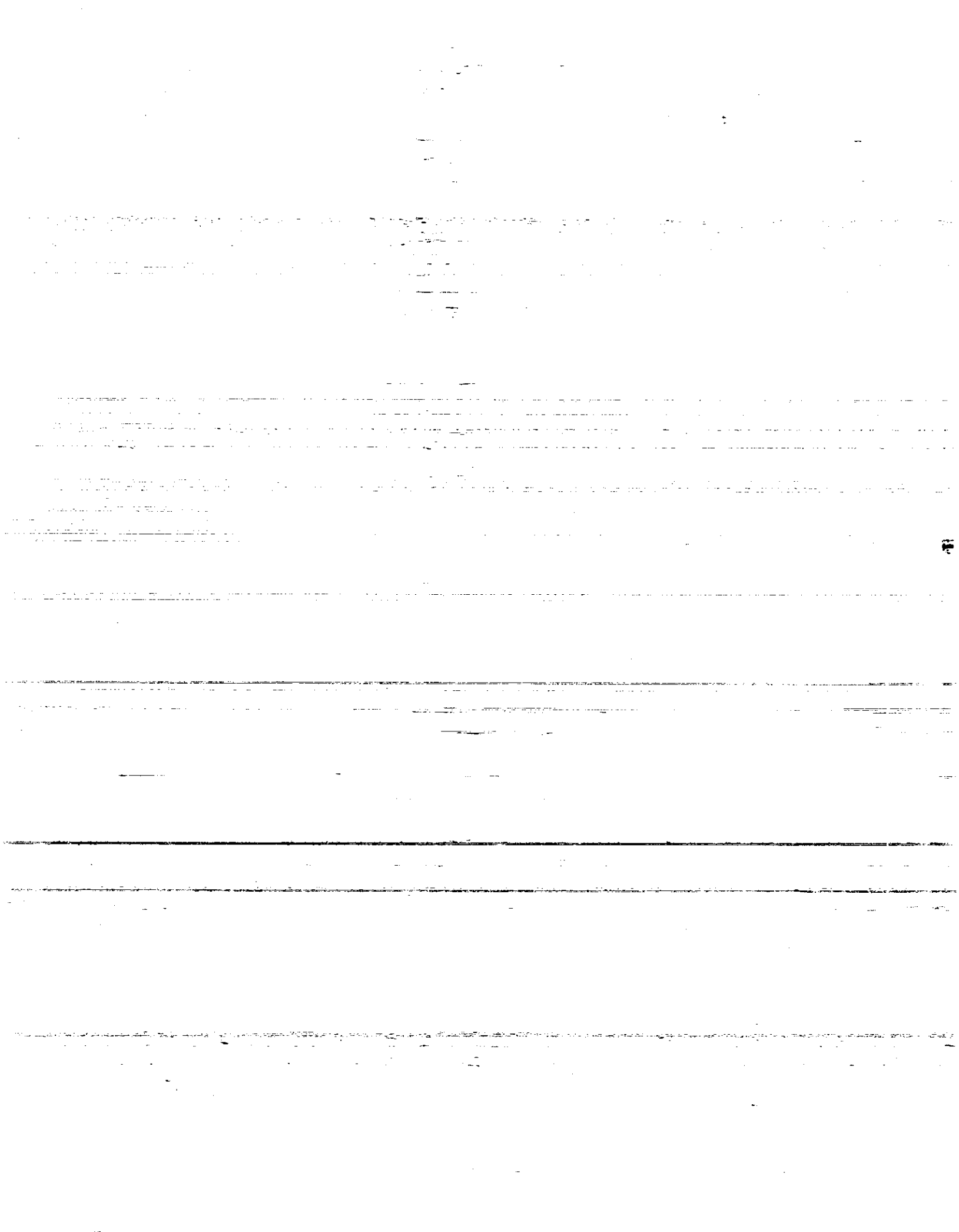


Figure 22-6 Operator Keyboard With Second Transfer Key



# Section 23

## Forwarding And VMS Plans

### 23.1 INTRODUCTION

The Call Forward feature and Call Forward to the Voice Message System (VMS) are programmed on the *Forwarding and VMS Plans* programming screen.

A phone can be forwarded to different destinations for Forward on Busy, Forward No Answer, and Forward All Calls.

Different destinations can be programmed based on whether the call being forwarded is an internal or outside line call.

An intercom call can be forwarded to a hunt group as well as another extension or VMS.

An outside line call can be forwarded to a hunt group, the built-in Automated Attendant, an ACD group, a system speed dial number, an extension, or VMS.

A phone can have separate Call Forward Plans for when the system is in the DAY mode, and for when the system is in the NIGHT mode.

This screen is also used to program the information necessary to interface the INFOSTAR™/VX.

A station user can program the destination extension for Call Forward All Calls, and activate Call Forward All Calls to VMS. The remainder of the Call Forward schemes are programmed on the *Forwarding and VMS Plans* programming screen.

### 23.2 CALL FORWARDING FROM A TELEPHONE

The following is a list of all the valid phone dial codes for forwarding from a telephone.

DIAL                      TO

PRS 7 \* DEF 3

Forward all intercom and CO calls to VMS in the DAY mode.

PRS 7 \* JKL 5

Forward all intercom and CO calls to VMS in the NIGHT mode.

PRS 7 \* PRS 7

Forward all intercom and CO calls to the extension that is indicated in the ALL columns of intercom and CO calls on the Forwarding and VMS Plans screen in the DAY mode.

PRS 7 \* TUV 8

Forward all intercom and CO calls to the extension that is indicated in the ALL columns of intercom and CO calls on the Forwarding and VMS Plans screen in the NIGHT mode.

PRS 7 \* \*

Turn off Call Forward All Calls that is indicated in the ALL columns of intercom and CO calls on the Forwarding and VMS Plans screen in the DAY mode. This includes Call Forward All Calls to VMS.

PRS 7 \* WXY 9

Turn off Call Forward All Calls that is indicated in the ALL columns of intercom and CO calls on the Forwarding and VMS Plans screen in the NIGHT mode. This includes Call Forward All Calls to VMS.

The CALL FORWARD key can be used to activate Call Forward All Calls. In addition, the key can be used to change the destination extension.

- FORWARD key + extension number      Enters the forwarding destination extension number in both the intercom and CO ALL columns of the *Forwarding and VMS Plans* programming screen (Day), and forwards the phone.
- FORWARD key + 5 + extension number      Enters the forwarding destination extension number in both the intercom and CO ALL columns of the *Forwarding and VMS Plans* programming screen (Night), and forwards the phone.
- FORWARD key      Pressing the FORWARD key activates forwarding of that extension to the destination that is indicated in the intercom and CO ALL columns of the *Forwarding and VMS Plans* programming screen.

### 23.3 WHAT TO PROGRAM – CALL FORWARD

The *Forwarding and VMS Plans* programming screen is used to program the Call Forward schemes for each extension in both the DAY and NIGHT modes, and to program information needed for the Voice Message System. The following information concerns only the Call Forwarding feature of this screen. Information regarding programming for INFOSTAR™/VX is presented in a separate section.

For each extension, entries are made in the Intercom (ICM) and CO Calls columns of the programming screen. Both of these columns are further divided into separate entries for:

- Call Forward on Busy      - Busy
- Call Forward on No Answer      - No Ans
- Call Forward All Calls      - All

Each entry in these columns consists of the *destination* for the forward, plus a Y (yes) or N (no) to activate the Call Forward for each condition. The entries made for the Call Forward on Busy and Call Forward on No Answer are fixed on the programming screen, i.e., the station user cannot change these entries from the telephone. However, the entries made in the Call Forward All columns can be changed from a telephone.

For each extension, determine the Call Forward destination of intercom calls for each of the three conditions (Busy, No Answer, and All Calls) in both the DAY and NIGHT modes. Possible destinations are: another extension number, VMS, or a hunt group.

*NOTE: An intercom call cannot be forwarded to a system speed dial number, or an ACD group.*

For each extension, determine the Call Forward destination of outside line (CO) calls for each of the three conditions (Busy, No Answer, and All Calls) in both the DAY and NIGHT modes. Possible destinations are: another extension number, VMS, a hunt group, the built-in Automated Attendant, or a system speed dial number.

There are *two timers* which must be determined. The BUSY timer is used with the Call Forward on Busy feature to forward outside line (CO) calls. When an extension is busy, a CO call to that extension waits the BUSY timer multiplied by 10 seconds before forwarding to the indicated destination. During this time, the CO call is camped-on to the extension. The BUSY timer is NOT used when forwarding intercom calls. These calls are forwarded immediately.

*NOTE: If an extension is in the DND mode, or OUT mode, an incoming outside line call ignores the BUSY timer, and forwards immediately. In software versions prior to 5.52, the call would wait the BUSY timer before forwarding.*



The NO ANSWER (NoAns) timer is used with the Call Forward on No Answer feature to forward both intercom calls and outside line (CO) calls. After a call (intercom or CO) rings at an extension for the NO ANSWER timer multiplied by 10 seconds, it is forwarded to the indicated destination.

Only intercom calls that actually ring the extension are forwarded, i.e., if a phone is called with Voice Announce, the call does not forward.

The column labeled VMS and the box on the right side of the screen also labeled VMS are used with the Voice Message System.

Forwarding and VMS Plans   Exxx=extn,V=VMS,Hxx=hunt,Axxx=ACD,*=spd Pg 01 of 12																		
----- G=D-N [S] Day Mode [F]ill Mailboxes -----																		
[T]	VMS	ICM Calls			CO Calls			Timers *10		V[M]S								
Ext	Box#	pf	Busy	No Ans	All	Busy	No Ans	All	Busy	NoAns	Disconn code							
3001	3001	#	N	N	N	N	N	N	00s	00s								
3002	3002	#	N	N	N	N	N	N	00s	00s	Auto Att N							
3003	3003	#	N	N	N	N	N	N	00s	00s	Prefix							
3004	3004	#	Y	3005	Y	3005	N	VMS	Y	3005	Y	3005	N	VMS	02s	01s	Atten Grp	36
3005	3005	#	N	N	N	N	N	N	00s	00s	VMS Grp	36						
3008	3008	#	N	N	N	N	N	N	00s	00s	Trnsfr							
3007	3007	#	N	N	N	N	N	N	00s	00s	VMS delay	16						
3008	3008	#	N	N	N	N	N	N	00s	00s	Answer	05						
3009	3009	#	N	N	N	N	N	N	00s	00s								
3010	3010	#	N	N	N	N	N	N	00s	00s								
3011	3011	#	N	N	N	N	N	N	00s	00s								
3012	3012	#	N	N	N	N	N	N	00s	00s								
3013	3013	#	N	N	N	N	N	N	00s	00s								
3014	3014	#	N	N	N	N	N	N	00s	00s								
3015	3015	#	N	N	N	N	N	N	00s	00s								
3016	3016	#	N	N	N	N	N	N	00s	00s								
3017	3017	#	N	N	N	N	N	N	00s	00s								
3018	3018	#	N	N	N	N	N	N	00s	00s								
3019	3019	#	N	N	N	N	N	N	00s	00s								

Figure 23-1 Forwarding And VMS Plans Programming Screen

### 23.4 HOW TO PROGRAM - CALL FORWARD

The following is an explanation on how to program the *Forwarding and VMS Plans* (G screen).

From the main menu, press G. The *Forwarding and VMS Plan* appears.

Across the top of the screen are CAPITAL letters indicating the valid entries for the destination columns of the screen. This can be seen in the Figure 23-2. The screen has a total of 12 pages. These pages are accessed by entering the *Page* section on the right side of the screen.

This section of the screen can be accessed by pressing the SHIFT and "@" keys simultaneously. Once you are in this portion of the screen, you can enter the desired page number, or press the I and D keys to increment and decrement through the pages.

The screen also allows the user to have different forwarding parameters for DAY and NIGHT modes. To switch from the DAY to NIGHT screen, or the NIGHT to DAY screen, press the S key. The screen being programmed is indicated by the word Day or Night at the top center of the screen.

Forwarding and VMS Plans											Exxx=extn, V=VMS, Hxx=hunt, Axxx=ACD, *=spd		Pg 01 of 12					
G-D-N [S] Day Mode [P] Mailboxes																		
(F)	VMS	ICM Calls			CO Calls			Times *10		VMS								
Ext	Box#	pf	Busy	No Ans	All	Busy	No Ans	All	Busy	NoAns	Disconn	code						
3001	3001	#	[N]	[N]	[N]	[N]	[N]	[N]	00s	00s								
3002	3002	#	[N]	[N]	[N]	[N]	[N]	[N]	00s	00s	Agto Att	N						
3003	3003	#	[N]	[N]	[N]	[N]	[N]	[N]	00s	00s	Prefix							
3004	3004	#	[Y]	3005	[Y]	3005	[N]	VMS	[Y]	3005	[Y]	3005	[N]	VMS	02s	01s	Attn Grp	35
3005	3005	#	[N]	[N]	[N]	[N]	[N]	[N]	00s	00s	VMS Grp	35						
3006	3006	#	[N]	[N]	[N]	[N]	[N]	[N]	00s	00s	Transit							
3007	3007	#	[N]	[N]	[N]	[N]	[N]	[N]	00s	00s	VMS delay	16						
3008	3008	#	[N]	[N]	[N]	[N]	[N]	[N]	00s	00s	Answer	05						
3009	3009	#	[N]	[N]	[N]	[N]	[N]	[N]	00s	00s								
3010	3010	#	[N]	[N]	[N]	[N]	[N]	[N]	00s	00s								
3011	3011	#	[N]	[N]	[N]	[N]	[N]	[N]	00s	00s								
3012	3012	#	[N]	[N]	[N]	[N]	[N]	[N]	00s	00s								
3013	3013	#	[N]	[N]	[N]	[N]	[N]	[N]	00s	00s								
3014	3014	#	[N]	[N]	[N]	[N]	[N]	[N]	00s	00s								
3015	3015	#	[N]	[N]	[N]	[N]	[N]	[N]	00s	00s								
3016	3016	#	[N]	[N]	[N]	[N]	[N]	[N]	00s	00s								
3017	3017	#	[N]	[N]	[N]	[N]	[N]	[N]	00s	00s								
3018	3018	#	[N]	[N]	[N]	[N]	[N]	[N]	00s	00s								
3019	3019	#	[N]	[N]	[N]	[N]	[N]	[N]	00s	00s								

Figure 23-2 Forwarding and VMS Plans Programming Screen

The DAY forwarding scheme is referenced when the system is in the DAY mode, and the NIGHT forwarding scheme is referenced when the system is entered into the NIGHT mode.

*NOTE: To use the NIGHT forwarding sequence, the "Night Forward On" option in the System Options programming screen (M screen) must be set to Y (yes), otherwise calls will not be forwarded when the system is in the NIGHT mode.*

Once the desired page and mode (DAY or NIGHT) has been selected, the individual extension forwarding schemes may be programmed.

A DAY/NIGHT copy function is also available. This copy function will copy the DAY forwarding entries for an extension to the NIGHT screen, or the NIGHT forwarding entries to the DAY screen. To copy an extensions DAY forwarding entries to NIGHT or vice versa, press the letter G when the cursor is on one of the forwarding parameters for that extension.

1. Press the T key. The cursor moves to the first extension in the VMS column. This column only needs to be programmed if VMS is being used.
2. Using the UP and DOWN arrow keys, move the cursor to the desired extension.
3. Press the RETURN key, or use the LEFT and RIGHT arrow keys to move the cursor to the desired column.

4. If Call Forward for this condition is to be active, press the Y (yes) key. If all extensions are to have this value, press the C key to copy to all extensions.
5. Press the RETURN key.
6. Enter the destination for Call Forward under this condition. The destination is entered by pressing the appropriate LETTER followed by the destination. Choose the appropriate letter from the following list of valid destinations.

**Exxx**      **Extension Number** – This entry indicates the extension number you wish to forward calls to. This entry can be used in the intercom calls and/or CO calls columns of the screen. To enter the extension number, press E plus the last three digits of the extension you wish to forward calls to (000 to 999). Press the RETURN key to enter selection. The appropriate leading digit of the extension you wish to forward to will be derived from the system translation table and displayed.

**V**            **VMS** – This entry, when entered in the intercom calls and CO calls section of the screen will direct the calls to VMS. Press the RETURN key to enter selection.

**Hxx**        **Hunt Group** – This entry is used to forward intercom calls and CO calls to a hunt group. To enter a hunt group, press H plus the two digit hunt group number (01 to 36). Press the RETURN key to enter.

The meaning of hunt group destinations H21 through H26 depends on how the *Call Fwd to A. Atten* option is programmed on the *System Options* programming screen. When the *Call Fwd To A. Atten* option is programmed N (no), H21 through H26 routes calls to Hunt Groups 21 through 26, respectively. When the *Call Fwd To A. Atten* option is programmed Y (yes), H21 through H26 routes calls to Auto Attendants 1 through 6, respectively.

**Axxx**        **ACD** – Indicates the ACD group that outside line calls are to be directed to. Only outside line calls can be directed to an ACD group. To enter an ACD group, press A plus the 3-digit ACD group number (001-015). Then press the RETURN key.

**\***            **System Speed Dial number** – Indicates the System Speed Dial Number you wish to forward CO calls to (001 to 200). This parameter will only work with CO calls. Enter \* plus the three digit system speed dial number you wish to divert your call to. Press the RETURN key.

*NOTE: System Speed Dial numbers 201 through 999 are not available for use on the Forwarding and VMS Plans screen.*

7. If all extensions are to have this destination, press the C key to copy to all extensions.
8. Using the RETURN key, move the cursor to the next column for that extension to be programmed.
9. When all desired destinations for the extension have been programmed, move the cursor to the TIMERS column.
10. Enter the BUSY timer, and press the RETURN key. If all extensions are to have this value, press the C key to copy to all extensions.
11. Press the RETURN key again.
11. Enter the NO ANSWER timer, and press the RETURN key. If all extensions are to have this value, press the C key to copy to all extensions.
12. Continue programming the remaining extensions.

## 23.5 INFOSTAR™/VX

The INFOSTAR™/VX is an optional feature of the system which provides the user with an integrated Voice Message System. Stations can be forwarded such that the Voice Message System takes messages when the station user is unable to answer the call.

*NOTE: Voice Message System integration must be added to the system using the Remote Programming feature. The part number for VMS integration is 440252.*

The INFOSTAR™/VX system allows users located away from their own extension to call VMS and check their messages. A VMS user calling from an outside line can be transferred to the VMS system, allowing them to follow voice prompts to check their messages, or leave messages for other users. Outside callers can be transferred directly to a station user's VMS mailbox, even if a station is not forwarded.

Each person using VMS is assigned their own message space called a "mailbox" which is protected by a user-defined password. Thus, the user is the only one who can review messages left in their mailbox.

All commands to VMS are issued through the dial pad on the user's telephone. Upon entering VMS, the mailbox system provides voice prompts which take the user, step-by-step, through VMS features. Two important programmable feature keys used in VMS are the VMS (Voice Message System) key and the CALL FORWARD key. These keys are available on the 17-key, 28-key, and the display telephones only.

The VMS key allows one button access to the user's mailbox. Pressing the VMS key on the user's telephone prompts the system to dial a series of codes which brings the user directly to the Password level of VMS. On the 6-key telephone, which provides no programmable feature keys, the user dials each of the codes to proceed, step-by-step, through the various VMS levels in order to reach their mailbox.

The VMS key also acts as a message waiting indicator by lighting on the the user's telephone when new messages have been left in VMS. The VMS key will remain lit until the user has listened to all new messages.

When the PROGRAM key on the 6-key telephone is lit, it serves as both a mail key and a message key. The lit PROGRAM key provides no Call Forwarding indication, but indicates to the user that a message has been either left in VMS, or may have been left by another phone. Pressing the lit PROGRAM key brings the user directly to the Voice Message System without the user having to dial each of the VMS codes.

The CALL FORWARD key allows the user to see the Call Forward status on their telephone. The CALL FORWARD key will light on the user's telephone when their extension is forwarded to VMS or to another extension.

*NOTE: If Ground Start Trunks are used on a system using a Voice Message System, the Talk Full toll option on the System Options programming screen must be programmed Y (yes).*

Programming for VMS is done on the *Forwarding and VMS Plans* programming screen.

## 23.6 WHAT TO PROGRAM

Programming is done on the *Forwarding and VMS Plans* programming screen (the G screen). This screen is used for both VMS programming and Call Forward programming.

The screen is divided into two areas. The box on the right side of the screen is used to program specifics about the VMS system being used and the hunt group number of the extensions connected to VMS. The remainder of the screen is used to program Call Forward information for each extension. The following paragraphs provide a brief description of the screen. After reading through each section, determine the entries that are to be made, and enter the information.

### 23.6.1 V[M]S

On the right hand side of the screen under the V[M]S heading are six fields to be considered. They are explained as follows:

#### DIS (DISCONNECT CODE)

The system automatically transmits this code to VMS upon termination of a call to VMS. This code is used to prevent VMS ports from being tied up when a user, on an internal call to VMS, hangs up without manually dialing the necessary disconnect code (### or \*\*\*, for example).

This field can be up to 8 digits long and will transmit any DTMF signal (i.e. 0 - 9, #, \*).

#### AUTO ATT (AUTOMATED ATTENDANT)

The *Automated Attendant* field should be programmed Y (yes) if the system's VMS ports are to be used as both VMS ports AND Automated Attendant ports. The Automated Attendant, when programmed Y (yes), interacts with the "Prefix" (explained below) and "pf" fields. Depending on the specific Voice Message System being used, when the VMS key on the user's telephone is pressed, the system adds the necessary prefix and suffix digits to the MAILBOX numbers, providing the required dialing sequence for direct access to VMS. See example below in Prefix section.

*NOTE: The Auto Attendant is only used for VMS's Auto Attendant and is not considered if the built-in Auto Attendant is being used.*

```

Forwarding and VMS Plans| Exxx=extn,V=VMS,Hxx=hunt,Axxx=ACD,*=spd Pg 01 of 12
-----G=D-N [S] Day Mode [F]ill Mailboxes -----
 [T] VMS |----- ICM Calls -----|----- CO Calls -----|Timers *10| V[M]S
Ext |Box# pf| Busy |No Ans| All | Busy |No Ars| All |Busy NoAns| Disconn code
3001|3001 # |N |N |N |N |N |N | 00s 00s |
3002|3002 # |N |N |N |N |N |N | 00s 00s | Auto Att N
3003|3003 # |N |N |N |N |N |N | 00s 00s | Prefix
3004|3004 # |Y 3005|Y 3005|N VMS |Y 3005|Y 3005|N VMS | 02s 01s | Atten Grp 36
3005|3005 # |N |N |N |N |N |N | 00s 00s | VMS Grp 36
3008|3008 # |N |N |N |N |N |N | 00s 00s | Transfr
3007|3007 # |N |N |N |N |N |N | 00s 00s | VMS delay 18
3008|3008 # |N |N |N |N |N |N | 00s 00s | Answer 05
3009|3009 # |N |N |N |N |N |N | 00s 00s |
3010|3010 # |N |N |N |N |N |N | 00s 00s |
3011|3011 # |N |N |N |N |N |N | 00s 00s |
3012|3012 # |N |N |N |N |N |N | 00s 00s |
3013|3013 # |N |N |N |N |N |N | 00s 00s |
3014|3014 # |N |N |N |N |N |N | 00s 00s |
3015|3015 # |N |N |N |N |N |N | 00s 00s |
3016|3016 # |N |N |N |N |N |N | 00s 00s |
3017|3017 # |N |N |N |N |N |N | 00s 00s |
3018|3018 # |N |N |N |N |N |N | 00s 00s |
3019|3019 # |N |N |N |N |N |N | 00s 00s |
    
```

Figure 23-3 Forwarding and VMS Plans Programming Screen

**PREFIX**

The *Prefix* is programmed only if the Automated Attendant field is programmed Y (yes). It is used only when a particular Voice Message System requires a prefix digit to enter their system. This field will transmit any DTMF signal (0-9, #, \*), and will be added as the prefix digit to the MAILBOX NUMBER when the VMS key on the telephone is pressed.

Example: Auto Att = Y, Prefix = 9, pf = 0

If a user presses the VMS key on their telephone, the following sequence occurs:

1. An VMS port rings.
2. VMS answers at the Automated Attendant level.
3. The system then dials the Prefix digit, in this case 9. This brings the user to the "Enter Mailbox Number" level in the VMS system.
4. The system then dials the MAILBOX number.
5. The system dials the "pf" number next (in this case, 0), and the user arrives at the "Please Enter Your Password" level.

Thus, when the VMS key on the user's telephone is pressed, the total digit stream sent to the VMS port is: 9 + MAILBOX NUMBER + 0.

```

Forwarding and VMS Plans | Exxx=extn,V=VMS,Fxx=hunt,Axxx=ACD,*=spd   Pg 01 of 12
-----G=D-N [S] Day   Mode [F]ill Mailboxes -----
[T]  VMS |----- ICM Calls -----|----- CO Calls -----|Timers *10|  V[M]S
Ext |Box# pf| Busy |No Ans| All | Busy |No Ans| All |Busy NoAns| Disconn code
3001|3001 #| N   |N     |N   | N   |N     |N   | 00s 00s |
3002|3002 #| N   |N     |N   | N   |N     |N   | 00s 00s | Auto Att N
3003|3003 #| N   |N     |N   | N   |N     |N   | 00s 00s | Prefix
3004|3004 #| Y 3005|Y 3005|N VMS | Y 3005|Y 3005|N VMS | 02s 01s | Atten Grp 36
3005|3005 #| N   |N     |N   | N   |N     |N   | 00s 00s | VMS Grp 36
3006|3006 #| N   |N     |N   | N   |N     |N   | 00s 00s | Trnsfr
3007|3007 #| N   |N     |N   | N   |N     |N   | 00s 00s | VMS delay 16
3008|3008 #| N   |N     |N   | N   |N     |N   | 00s 00s | Answer 05
3009|3009 #| N   |N     |N   | N   |N     |N   | 00s 00s |
3010|3010 #| N   |N     |N   | N   |N     |N   | 00s 00s |
3011|3011 #| N   |N     |N   | N   |N     |N   | 00s 00s |
3012|3012 #| N   |N     |N   | N   |N     |N   | 00s 00s |
3013|3013 #| N   |N     |N   | N   |N     |N   | 00s 00s |
3014|3014 #| N   |N     |N   | N   |N     |N   | 00s 00s |
3015|3015 #| N   |N     |N   | N   |N     |N   | 00s 00s |
3016|3016 #| N   |N     |N   | N   |N     |N   | 00s 00s |
3017|3017 #| N   |N     |N   | N   |N     |N   | 00s 00s |
3018|3018 #| N   |N     |N   | N   |N     |N   | 00s 00s |
3019|3019 #| N   |N     |N   | N   |N     |N   | 00s 00s |
    
```

Figure 23-4 Forwarding and VMS Plans Programming Screen

## ATTEN GRP (ATTENDANT GROUP)

This field references the extension Hunt group that has Automated Attendant ports connected to them. Enter the Hunt group number.

## VMS GRP (VMS GROUP)

This field references the extension Hunt group that has VMS ports connected to them. This is the Hunt group that will be referenced by the system when the VMS key is pressed, when a call is transferred to VMS, or when a call is forwarded to VMS. Enter the Hunt group number, usually 36.

*Note: In most applications of VMS, the Attendant Group and the VMS Group should be the same Hunt group.*

## TRNSFR

Some Voice Message Systems allow the use of forwarding codes which are used to direct forwarded calls to a user's personal greeting more directly. This programmed code is forwarded to the Voice Message System if a call is being forwarded to VMS under any of the following conditions: 1) Busy, 2) Ring No Answer, 3) All calls, or 4) Busy and Ring No Answer.

*NOTE: If Auto Attendant is programmed for Y (yes), this code will never be transmitted. See Tables 23-1 and 23-2 for a list of codes sent by the system during VMS operations.*

## VMS DELAY

*VMS Delay* is an entry which determines the delay time between the Voice Message System answering the call, and the system sending the mailbox number to the VMS.

## ANSWER

The *Answer* timer prevents conflicts on the VMS ports between calls to the VMS port and VMS system calling to light a message waiting indicator. The system reroutes the call to another port if the VMS port goes off-hook within the *Answer* amount of time. The *Answer* value is entered in 50 millisecond increments. *Answer* has a default value of 05 (250 milliseconds). Valid entries are from 00-99. If the entry of 00 is used, there will be no delay.

*Note: The VMS Attendant option on the Station Programming screen must be set to Y (yes) on the VMS ports. The Ring Type for VMS ports should be programmed 01.*

## 23.6.2 [T] VMS

This section of the screen is used to enter parameters that are used to call forward an extension under a number of circumstances. The VMS section includes the following fields:

### BOX#

This field associates the "Mailbox" numbers with the listed extension numbers (0000 through 9999). For simplicity in an installation, it is recommended that these "mailbox" numbers be programmed to be the same as their associated extension numbers. If a particular application of VMS does not make this possible, then "mailbox" numbers other than the extension number may be programmed. If other numbers are used, however, a predictable number pattern should be maintained.

## Forwarding And VMS Plans

This "mailbox" number is part of the digit stream that will be sent to the VMS port when the VMS key on the user's telephone is pressed, or if a call is transferred or forwarded to VMS.

*NOTE: The same "Mailbox" number will be used in both the Day and Night Programming screens.*

### PF (PREFIX/SUFFIX)

This field is used as a prefix whenever an Automated Attendant is NOT being used as part of VMS. An entry in this field is necessary only if the particular VMS system being installed requires a prefix or suffix to allow access to the VMS system. The pf digit is a code used by the system to identify a caller calling into VMS as a valid mailbox user. A typical application using pf would be to enter a prefix that would allow the user to enter VMS at their password level. The entry can be up to two digits and transmits any DTMF signal (0-9, #, and \*).

*NOTE: As with the MAILBOX number, the pf parameter will be identical for both the DAY and NIGHT Programming modes.*

If the Automated Attendant (Auto Att) field located under the V[M]S section of the screen is programmed N (no), then whatever digit(s) programmed in the pf field will be the prefix digit(s) transmitted to the VMS port when the VMS key on the telephone is pressed. This field transmits any DTMF signal (0-9, #, \*).

Example: For Auto Attendant = N (No)

pf = prefix = #

If a user presses the VMS key on their telephone, the following sequence occurs:

1. An VMS port rings.
2. VMS answers at the "ENTER MAILBOX NUMBER" level.
3. The system then dials the "pf" digit (in this case, #)
4. Finally, the system dials the MAILBOX number.

Thus, when the VMS key on the telephone is pressed, the total digit stream sent to the VMS port is: # + MAILBOX NUMBER.

If the Auto Att field on the Forwarding and VMS Plans Programming screen is programmed Y (yes), then pf becomes the suffix digit which is transmitted to the VMS port when the VMS key on the telephone is pressed. (See definition of Auto Att field). It allows the user to skip over the Automated Attendant and go directly into VMS. This suffix is used whenever an Automated Attendant is being used as part of VMS.



Table 23-1

INFOSTAR/VX DIALING SEQUENCES

ACTION	Dialing Sequence for AUTO ATT = N	Dialing Sequence for AUTO ATT = Y
Press the VMS key.	Pr + Mailbox number	Prfx + Mailbox number +pr
Operator transfer to VMS.	Forward code + mailbox number	Prfx + Mailbox number
Extension transfer to VMS.	Forward code + mailbox number	Prfx + Mailbox number
Extension forward to VMS.	Forward code + mailbox number	Prfx + Mailbox number
Internal extension disconnect.	Disconnect code	Disconnect code

Table 23-2

INFOSTAR/VX DIALING PARAMETERS

ACTION	DIALING PARAMETERS
Light the Message Waiting Indicator.	76 + Mailbox number
Extinguish the Message Waiting Indicator.	77 + Mailbox number
Transfer an extension.	Flash + # + Extension number
Reconnect to a transfer.	Flash + *
Outgoing call code.	9 + * + Outgoing telephone number

## 23.7 ACCESSING THE PROGRAMMING SCREEN

The *Forwarding and VMS Plans* programming screen (the G screen) is accessed by pressing the G key from the main menu. The ESCAPE key may be pressed while in any other programming screen to reach the main menu. If there is any problem reaching the main menu, or the *Forwarding and VMS Plans* programming screen, refer to the section titled "ACCESSING THE PROGRAMMING SCREENS" in Section 5 - *Programming Introduction*.

## 23.8 DEFAULT VALUES

Box#	blank
pf	blank
Disconn	blank
Auto Att	N
Prefix	blank
Atten Grp	36
VMS Grp	36
Busy	N
No Answer	N
All	N
Busy time	00
No Answer time	00
Trnsfr	blank

```

Forwarding and VMS Plans| Exxx=extn,V=VMS,Hxx=hunt,Axxx=ACD,*=spd Pg 01 of 12
----- G=D-N [S] Day Mode [F]ill Mailboxes -----
[T] VMS |----- ICM Calls ----|----- CO Calls ----|Timers *10| V{M}S
Ext |Box# pf| Busy |No Ans| All | Busy |No Ans| All |Busy NoAns| Disconn code
3001|3001 # |N |N |N |N |N |N | 00s 00s |
3002|3002 # |N |N |N |N |N |N | 00s 00s | Auto Att N
3003|3003 # |N |N |N |N |N |N | 00s 00s | Prefix
3004|3004 # |Y 3005|Y 3005|N VMS |Y 3005|Y 3005|N VMS | 02s 01s | Atten Grp 36
3005|3005 # |N |N |N |N |N |N | 00s 00s | VMS Grp 36
3006|3006 # |N |N |N |N |N |N | 00s 00s | Trnsfr
3007|3007 # |N |N |N |N |N |N | 00s 00s | VMS delay 16
3008|3008 # |N |N |N |N |N |N | 00s 00s | Answer 05
3009|3009 # |N |N |N |N |N |N | 00s 00s |
3010|3010 # |N |N |N |N |N |N | 00s 00s |
3011|3011 # |N |N |N |N |N |N | 00s 00s |
3012|3012 # |N |N |N |N |N |N | 00s 00s |
3013|3013 # |N |N |N |N |N |N | 00s 00s |
3014|3014 # |N |N |N |N |N |N | 00s 00s |
3015|3015 # |N |N |N |N |N |N | 00s 00s |
3016|3016 # |N |N |N |N |N |N | 00s 00s |
3017|3017 # |N |N |N |N |N |N | 00s 00s |
3018|3018 # |N |N |N |N |N |N | 00s 00s |
3019|3019 # |N |N |N |N |N |N | 00s 00s |
    
```

Figure 23-5 Forwarding and VMS Plans Programming Screen

## 23.9 HOW TO PROGRAM VMS

If not already on the *Forwarding and VMS Plans* programming screen, from the main menu, press the G key. To switch from the DAY screen to the NIGHT screen (or NIGHT screen back to DAY screen), press the S key. The screen being programmed will be indicated by the word "Day" or "Night" appearing at the top center of the screen.

*NOTE: Voice Message System integration must be added to the system using the Remote Programing feature. The part number for VMS integration is 440252.*

The NIGHT programming screen is programmed using the same procedure as the DAY programming screen. A Day/Night COPY function is available. This COPY function will copy the Day forwarding entries for an extension to the Night screen, or the Night forwarding entries to the Day screen. To copy an extension's Day forwarding entries to night (or vice versa), press the G key when the cursor is in one of the forwarding parameters for that extension.

The cursor appears in the upper right corner of the programming screen.

1. Enter the page number to be programmed. The I and D keys can be used to increment and decrement the page number.
2. Press the RETURN key.
3. Press the RETURN key again. The cursor moves to the Box# column. The T key may also be pressed to move the cursor to the Box# column.
4. Enter the "Mailbox" number of the extension to be programmed (0000 to 9999), and press the RETURN key. The F key may be pressed at this point in programming the Box# column to increment through a sequence of mailbox numbers for all extensions.

*Example: If 001 is entered in the mailbox section and the F key is pressed, extensions 2 through 228 will be assigned mailbox numbers 002 through 228, respectively.*

5. If "Mailbox" numbers are entered individually, press the RETURN key after each "Mailbox" number is entered.
6. Press the TAB key. The cursor moves to the pf column.
7. Enter the pf (prefix/suffix) digit as the particular application requires.
8. Press the RETURN key.
9. Press the RETURN key.
10. Press the M key. The cursor moves to the Disconn (Disconnect code) parameter of the V[M]S column.
11. Enter the Disconnect code, and press the RETURN key.
12. Press the RETURN key again, and the cursor moves to the Auto Att parameter. (The ARROW keys may also be used to move around the screen.)
13. Enter Y (yes) if all of the VMS ports are to be used as both Automated Attendant and VMS ports. Otherwise, this parameter should be programmed N (no).
14. Press the RETURN key, and the cursor moves to the Prefix parameter.
15. Enter the Prefix digit, if applicable, and press the RETURN key.

*Forwarding And VMS Plans*

16. Press the RETURN key again, and the cursor moves to the Atten Grp parameter.
17. Enter the Atten Grp number, and press the RETURN key.
18. Press the RETURN key again, and the cursor moves to the VMS Grp parameter.
19. Enter the VMS Grp number, recalling that, in most applications of VMS, the VMS Grp number and the Atten Grp number should be the same.
20. Press the RETURN key.
21. Continue programming the remaining extension's following the same programming procedure for all extensions.

*NOTE: The COPY function may be used for the ICM Calls, and CO Calls sections of the screen to program a parameter identically for all extensions. Press the C key after an entry has been made, and that entry will be copied down the column for all remaining extensions.*

Forwarding and VMS Plans   Exxx=extn, V=VMS, Hxx=hunt, Axxx=ACD, *=spd												Pg 01 of 12	
----- G=D-N [S] Day Mode [F]ill Mailboxes -----													
[T]	VMS	ICM Calls			CO Calls			Timers *10		V[M]S			
Ext	Box# pf	Busy	No Ans	All	Busy	No Ans	All	Busy	NoAns	Disconn code			
3001	3001 #	N	N	N	N	N	N		00s 00s				
3002	3002 #	N	N	N	N	N	N		00s 00s	Auto Att N			
3003	3003 #	N	N	N	N	N	N		00s 00s	Prefix			
3004	3004 #	Y 3005	Y 3005	N VMS	Y 3005	Y 3005	N VMS		02s 01s	Atten Grp 36			
3005	3005 #	N	N	N	N	N	N		00s 00s	VMS Grp 36			
3006	3006 #	N	N	N	N	N	N		00s 00s	Trnsfr			
3007	3007 #	N	N	N	N	N	N		00s 00s	VMS_delay 16			
3008	3008 #	N	N	N	N	N	N		00s 00s	Answer 05			
3009	3009 #	N	N	N	N	N	N		00s 00s				
3010	3010 #	N	N	N	N	N	N		00s 00s				
3011	3011 #	N	N	N	N	N	N		00s 00s				
3012	3012 #	N	N	N	N	N	N		00s 00s				
3013	3013 #	N	N	N	N	N	N		00s 00s				
3014	3014 #	N	N	N	N	N	N		00s 00s				
3015	3015 #	N	N	N	N	N	N		00s 00s				
3016	3016 #	N	N	N	N	N	N		00s 00s				
3017	3017 #	N	N	N	N	N	N		00s 00s				
3018	3018 #	N	N	N	N	N	N		00s 00s				
3019	3019 #	N	N	N	N	N	N		00s 00s				

Figure 23-6 Forwarding and VMS Plans Programming Screen

# Section 24

## Automated Attendant

### 24.1 DESCRIPTION

The built-in *Automated Attendant* feature (p/n 111077) incorporates six internal, software-driven Automated Attendants which can be programmed to inform callers about what to dial to arrive at the desired destination. The information provided by the Automated Attendants is delivered to the caller via pre-recorded greetings which may offer extension numbers, Hunt group numbers, ACD Group numbers, Voice Mail, or information on how to reach the Operator for further assistance. Each attendant position requires an announcing device to provide the attendant greeting. This is the greeting that the calling party will hear when the attendant answers an incoming call. These pre-recorded greetings may be programmed to deliver different information to the caller, depending on whether the system is in the DAY mode or the NIGHT mode. The attendants will each answer pre-defined CO Hunt Groups, numbered 37 through 42.

The caller can dial a code for the Auto Attendant to repeat the initial greeting. The *Automated Attendant* can be programmed to route calls that reach a busy extension to a *Busy Recorder*. The *Automated Attendant* can be programmed to route calls that are not answered to a *No Answer Recorder*. Only calls to extension numbers can be sent to *Busy* or *No Answer Recorder*. Calls to Hunt groups and ACD groups do not recall to the Auto Attendant.

Extensions and groups may be programmed to be excluded from access by incoming callers. The system also offers a Night feature which allows the attendants to disconnect incoming calls after the Greeting is delivered, or divert incoming calls to another number.

Four different dial access schemes are supported by the Automated Attendant feature. Depending on which of the four dialing schemes is selected, the caller dials either one, two, or three digits to access groups or sub-attendants.

### 24.2 REQUIREMENTS

#### 24.2.1 HARDWARE REQUIREMENTS

The following is a list of hardware requirements for installation of the Automated Attendant feature:

- 1 DTMF/Station Port Card (p/n 15650) (6 DTMF Receivers/6 Station Ports) One Card supports six incoming lines, simultaneously.
- 1 Memory Module III (p/n 15290) provides the added memory necessary for the Automated Attendant feature.
- 1 Announcement Device. This device can be either the ISOETEC Digital Voice Announcer (p/n 15870) or the AEC Model 212+ Digital Voice Announcer (p/n 440125) which provides up to two Attendant Greetings, simultaneously. If the AEC Model 212+ is chosen, an OPX Interface (p/n 15780) or a port on the OPX port card (p/n 15660) is also required. One OPX port is needed for each Digital Voice Announcer Message. A Tri Output Power Supply (p/n 550005) is also needed. One Power Supply will power 10 OPX Interfaces. See the *Installation* and *Cabling* sections of this manual for installation information on any of these items.

The hardware necessary to implement the Automated Attendant feature is dependent upon the amount of calls the attendant will be responsible for answering. One DTMF/Station Port Card is required for each of the six lines that will be answered simultaneously. One announcing device is required for each attendant greeting. The AEC Model 212+ provides two separate greetings.

*NOTE: The use of the ISOETEC Digital Voice Announcer is not supported in software version prior to 4.51.*

### CALL PROCESSING CAPABILITY HARDWARE RECOMMENDATIONS

	DTMF Combo Cards	Primary Recordings
100-1000 calls/day	1	1
1000-1500 calls/day	1	2
1500-2000 calls/day	1-2	2
2000-3000 calls/day	2	3
3000+ calls/day**	2+	3+

\*\* Discretion of the installer. A rule of thumb would indicate approximately 1 DTMF Combo card and one announcement device for each 1500 calls answered per day. This takes into account periods of peak usage vs. off peak hours over a nine hour period.

## 24.2.2 SOFTWARE REQUIREMENTS

Software version 2.30, or higher is required for the built-in Automated Attendant. This feature is added to the system software by an authorized ISOETEC Service Center using the remote programming feature. Before installing the Automated Attendant feature, an authorized Customer Service Representative from ISOETEC must be contacted in advance so that arrangements can be made for remote programming.

*NOTE: The Call Accounting Reports Option II (p/n 11047) cannot be installed in systems using the Automated Attendant.*

## 24.3 AUTOMATED ATTENDANT PROGRAMMING

The built-in Automated Attendant is programmed on the *Automated Attendant* programming screen. The following paragraphs provide a brief description of each parameter on the screen. After reading through each section, determine the entries that are to be made, and enter the information into the system.

### ATTN

These columns define the parameters for each of the six Automated Attendants. Each Attn answers a particular Trunk Hunt Group, numbered 37 through 42:

- Attn 1 will answer any CO Line in Hunt Group 37.
- Attn 2 will answer any CO Line in Hunt Group 38.
- Attn 3 will answer any CO Line in Hunt Group 39.
- Attn 4 will answer any CO Line in Hunt Group 40.
- Attn 5 will answer any CO Line in Hunt Group 41.
- Attn 6 will answer any CO Line in Hunt Group 42.

## 24.3.1 ACCESS CONTROL

## EXT

This field allows the programmer to exclude certain extension numbers from being accessed through the Automated Attendant feature. Enter the extension number you wish to exclude, or scroll through the numbers by pressing the I or D key. Enter N (no) in this column if this extension is not to be reached via that Automated Attendant.

## ACD

This field allows the programmer to exclude certain ACD Groups from being accessed through the Automated Attendant feature. Enter the ACD Group Number you wish to exclude, or scroll through the numbers by pressing the I or D key. Enter N (no) in this column if this ACD Group is not to be reached via that Automated Attendant.

## HUNT

This field allows the programmer to exclude certain Hunt Group numbers from being accessed through the Automated Attendant feature. Enter the Hunt Group number you wish to exclude, or scroll through the numbers by pressing the I or D key. Enter N (no) in this column if this Hunt Group is not to be reached via that Automated Attendant.

AUTOMATED ATTENDANT							
Function		Attn 1	Attn 2	Attn 3	Attn 4	Attn 5	Attn 6
[E]xt	3001	Y	Y	Y	Y	Y	Y
ACD	01	Y	Y	Y	Y	Y	Y
Hunt	01	Y	Y	Y	Y	Y	Y
VMS		Y	Y	Y	Y	Y	Y
Main Menu		0	0	0	0	0	0
-----							
[A] Day Selections				[G] Digit Timeout 15			
-----							
Greeting	Rec	01	00	00	00	00	00
Busy	Rec	00	00	00	00	00	00
No Answ	Rec	00	00	00	00	00	00
-----							
[B] Night Selections							
-----							
Greeting	Rec	00	00	00	00	00	00
Divert		N	N	N	N	N	N
Release		N	N	N	N	N	N
-----							
[F] Attendant 1 Scheme 02 - [Ext->E001-228,ATN->11-16,Hnt->41-76,ACD->81-95]							

Figure 24-1 Automated Attendant Programming Screen

## VMS

This field allows the programmer to exclude access to VMS through the Automated Attendant feature. This will prevent a caller from dialing 2, or direct dialing the VMS Hunt group. Enter N (no) in this column if VMS is not to be reached via that Automated Attendant.

## MAIN MENU

This is not used at this time.

### 24.3.2 DIGIT TIMEOUT

The *Digit Timeout* value is the amount of time, in seconds, the system waits for dialed digits, after the announcement device goes on-hook after delivering the greeting, before routing the call to the assigned ringing assignments. The default value is 15 seconds. Valid entries are from 0 to 99 seconds. A value of 0 gives no timeout.

*NOTE: This timer is not present in software versions prior to 4.51.*

### 24.3.3 DAY SELECTIONS

#### GREETING REC

This defines the recorder number containing the greeting that the caller will hear when this Automated Attendant answers the incoming line while the system is in DAY mode. Enter the recorder number that contains the appropriate greeting for the incoming line Hunt group for each of the six Attendants. See the *Station Programming* section of this manual for information on recorder numbers.

#### BUSY REC

This defines the recorder number containing the greeting that the caller will hear when a call is routed to a busy extension. Enter the recorder number that contains the appropriate message for each of the six Attendants.

#### NO ANSW REC

This defines the recorder number containing the greeting that the caller will hear when a call is unanswered after a programmed time. Enter the recorder number that contains the appropriate message for each of the six Attendants.

### 24.3.4 NIGHT SELECTIONS

#### GREETING REC

This defines the recorder number containing the greeting that the caller will hear when this Automated Attendant answers the incoming line while the system is in NIGHT mode. Enter the recorder number that contains the appropriate greeting for the incoming line Hunt group for each of the six Attendants.

#### DIVERT

Enter Y (yes) in this column if an incoming call received by this Attendant should be diverted by the system to another telephone number. The caller will hear ringing but no greeting. The diversion parameters are setup on the *Trunk Group Programming* screen.

#### RELEASE

Enter Y (yes) in this column if an incoming call received by this Attendant should be released from the line after the night greeting has been delivered and the recorder goes on-hook.



### 24.3.5 ATTENDANT DIAL ACCESS SCHEME

This sets up the various Dial Access Schemes for each Auto Attendant. Type in the Attendant number and, using the RIGHT and LEFT arrow keys, scroll through the various dial access schemes.

*NOTE: With the addition of Flexible numbering in software version 4.25, the leading digits of the dialing plan may be different than those used here.*

For each dial access scheme, the caller may replay the initial greeting by dialing a  or a . If the caller reaches a *Busy* or a *No Answer Recorder* the caller can be instructed to dial another extension number, or to dial  to continue to hold for the dialed extension number, or to dial  to leave a message in the called party's voice mailbox (if the system is equipped with a Voice Message System).

#### Scheme 01

--- Ext E001-E228, Hunt->401-436 , ACD->801-815

When a caller is answered by an Auto Attendant using scheme 01, the caller may dial:

- 4 digit Extension numbers
- 3 digit Hunt group numbers - 401 to 436
- 3 digit ACD group numbers - 801 to 815
- Dialing the digit 2 brings the caller to VMS.
- Dial # or \* to replay the greeting

#### Scheme 02

--- Ext E001-E228, ATN->11-16, Hunt->41-76, ACD->81-95

When a caller is answered by an Auto Attendant using scheme 02, the caller may dial:

- 4 digit Extension numbers
- 2 digit Auto Attendant scheme - 11 to 16
- 2 digit Hunt group numbers - 41 to 76
- 2 digit ACD group numbers - 81 to 95
- Dialing the digit 2 brings the caller to VMS.
- Dial # or \* to replay the greeting

#### Scheme 03

--- ACD->1 through 0, Hunt 1 through 9

When a caller is answered by an Auto Attendant using scheme 03, the caller may dial:

- 1 digit Hunt group numbers
- 1 digit ACD group numbers
- Dial # or \* to replay the greeting

Scheme 03 allows the programmer to partition the digits 1 through 9 into ACD groups or Hunt groups. By default, ACD groups are shown as selections 1 through 0. This means there are no ACD groups programmed to be accessible by single digit dialing. The Hunt groups are shown as 1 through 9, which allows the caller single digit access to nine hunt groups.

To allow single digit access to ACD groups, enter a number as a substitute to 0 in the "ACD 1 through \_\_\_" field. If, for example, the digit entered was 3, then, if a caller dialed a 1, 2 or 3, they would be transferred to ACD group 1, 2 or 3. Dialing a 4 would transfer a caller to the first Hunt group in the Hunt group sequence, 4 through 9.

## Scheme 04

--- ATTENDANTS--> 1 through 6

When a caller is answered by an Auto Attendant using scheme 04, the caller may dial one digit, which brings the caller to another Auto Attendant greeting. This Attendant can then have its own greetings and dial access scheme. This scheme is useful when setting up sub-directories and sub-menus. Dialing a # or \* replays the greeting.

## 24.4 OTHER SYSTEM PROGRAMMING

### 24.4.1 STATION PROGRAMMING

The extension number, on the *Station Programming* screen, to which announcement devices are connected must be programmed with the appropriate *recorder number*.

### 24.4.2 SYSTEM PROGRAMMING

The *Orbit Recall* timer, on the *System Programming* screen, defines how long the Automated Attendant waits before routing a call to a busy station to the *Busy Recorder*, and how long the Automated Attendant waits before routing an unanswered call to the *No Answer Recorder*.

The *Orbit Recall* timer also effects how long a call remains in a hunt group, with all group members busy, before recalling the man operator.

### 24.4.3 SYSTEM OPTIONS

#### AUTO ATTEN MUSIC OPTION

This option is used in conjunction with the built-in Automated Attendant to define what a caller hears if a valid dialed number is not detected by the Auto Attendant. When the Auto Attendant does not recognize a dialed number as valid, the call is routed to all telephones programmed with a ring assignment for the line the call is on. When the call is routed in this fashion, if the *Auto Attendant Music* option is programmed N (no), the calling party is connected to ring-back tone until the call is answered.

If this option is programmed Y (yes), the call is connected to the music source programmed for the line the call is on until the call is answered.

A call will ring one of the ringing assignments under the following conditions: when the caller has a rotary phone, when the caller dials an invalid Auto Attendant scheme, or the caller does not dial anything.

#### CALL FWD TO A. ATTEN

The *Forward and VMS Plans* programming screen can be used to forward outside line calls from a station to the built-in Auto Attendant. To accomplish this, the *Forward and VMS Plans* programming screen uses the codes for hunt groups 21 through 26 to route the call to the Auto Attendant. When the *Call Fwd To A. Atten* option is programmed Y (yes), H21 through H26 on the *Forward and VMS Plans* programming screen routes calls to Auto Attendants 1 through 6, respectively.

When the *Call Fwd To A. Atten* option is programmed N (no), H21 through H26 on the *Forward and VMS Plans* programming screen routes calls to Station Hunt Groups 21 through 26, respectively.

### 24.4.4 TRANSPARENT INTERCOM DIALING

The introduction of software version 5.52 permits the *Automated Attendant* to route calls using the *Transparent Intercom Dialing* feature.

## 24.5 CALL PROCESS – DAY MODE

When a call rings on a line which has been programmed to be in one of the Auto Attendant Hunt groups:

1. The system rings the announcement device which has been assigned to that Attendant.
2. The device answers, and starts to deliver its greeting. At any time during the greeting, the caller can begin dialing.
3. The system waits the *Digit Timeout* amount of time after the recorder goes on-hook, before presuming that the caller has a rotary telephone or needs assistance. In this case, the system then checks the ring assignment for the line the call rang in on, and rings all the telephones which are programmed to ring on that line in DAY mode.
4. If the caller has dialed a valid extension or group number, the caller will be transferred to that extension or group.
  - a. If the EXTENSION is busy or there is no answer, the calling party will hear ring-back tone. If the destination party is busy, they will hear a camp-on tone. The system waits the *Orbit Recall* amount of time for the line the call is on for the call to be answered, and then routes the call to either the *Busy*, or the *No Answer Recorder*. If there is no *Busy*, or the *No Answer Recorder* programmed, the call is routed to the main operator.
  - b. If the HUNT GROUP is busy or there is no answer, the calling party will hear the music source programmed for the line the call is on. If all members of the HUNT GROUP are busy, the system waits the *Orbit Recall* amount of time for the line the call is on for the call to be answered, and then routes the call to the operator.
  - c. If the call is transferred to an ACD group, the call will follow the ACD queue until an agent becomes available or the ACD queue re-routes the call.
5. If the caller dials an INVALID NUMBER or dials ZERO, the system will ring all of the telephones that have been programmed to ring on that line. The outside caller is connected to either the music source programmed for the line the call is on, or ring-back tone (depending on the *Auto Attend Music Option*) until the call is answered.

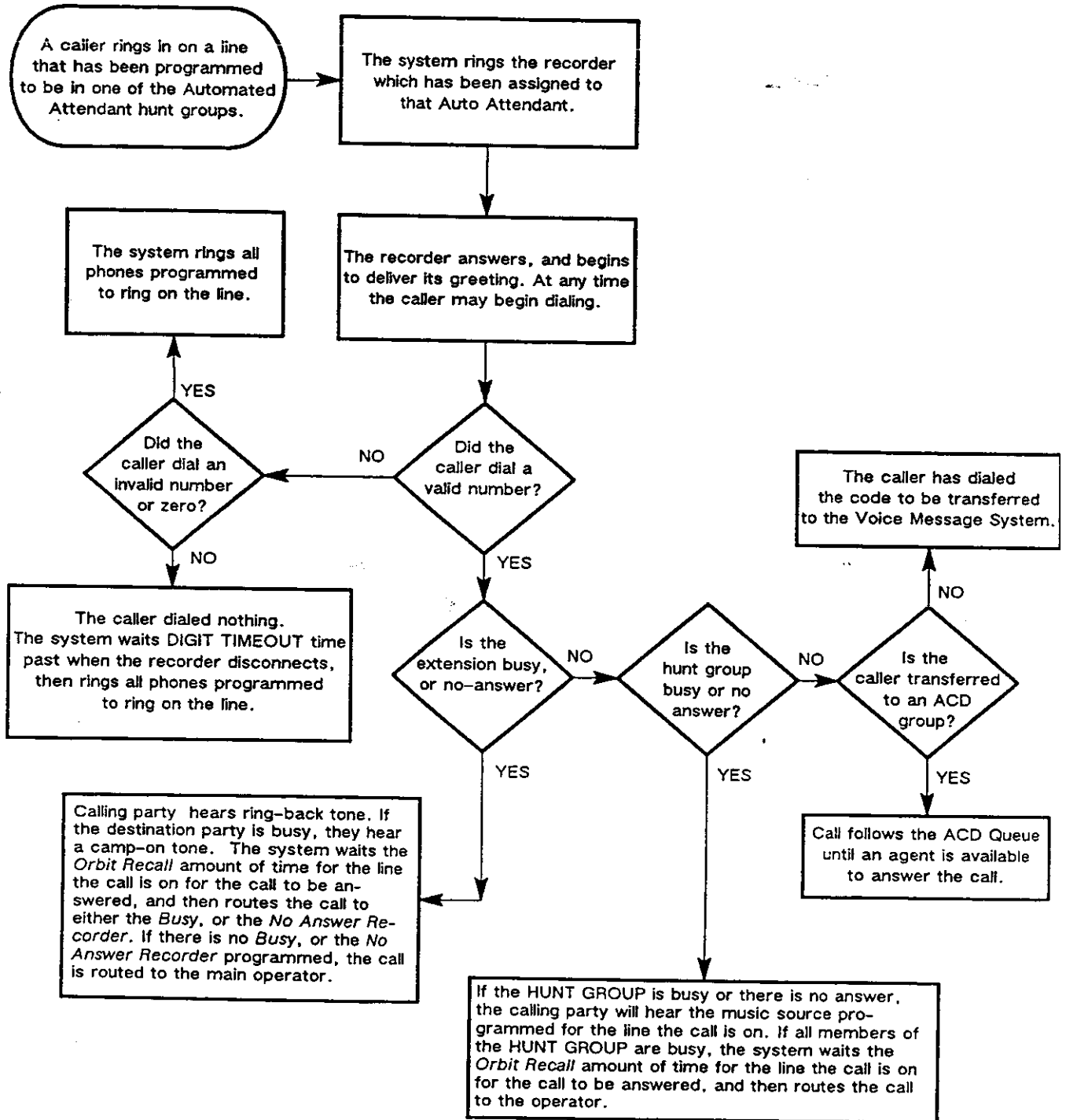
## 24.6 CALL PROCESS – NIGHT MODE

Normal night call process is the same as for DAY mode with the exception that the callers will be greeted with the recording specified as the Night Recorder, and recalls will follow the ring assignments set up for NIGHT mode.

In the NIGHT mode, the Automated Attendant may also be programmed to either divert or release incoming calls:

- Diversion -** If the Automated Attendant has been programmed to divert incoming calls, they will not go to the Night Greeting. The caller will immediately be diverted off premises following the *Trunk Group Programming* set up in the "N" screen.
- Release -** If the Automated Attendant has been programmed to release calls, the calling party will be greeted with the recording specified as the NIGHT Recorder. When the recorder goes on-hook, the line will be released. The calling party cannot dial extension or group numbers.

**AUTOMATED ATTENDANT  
CALL PROCESS - DAY MODE**



## 24.7 SETTING UP SUB-MENUS/DIRECTORIES

The Automated Attendant feature may be used to set up sub-menus which direct callers to specific groups or extensions. This is accomplished by using either Dial Access Scheme 02, or 04.

For example, callers can be greeted with a recording that allows them to reach Sales, Service or Order Administration by dialing just one digit. After dialing the department they wish to contact, the caller may be instructed to dial another selection for specific information within the desired department. This is achieved by further directing their call to other attendants in the system. The caller will then use the dial access codes for the new attendant, which will direct the caller to specific extensions or groups. A typical example is shown in Figure 24-2.

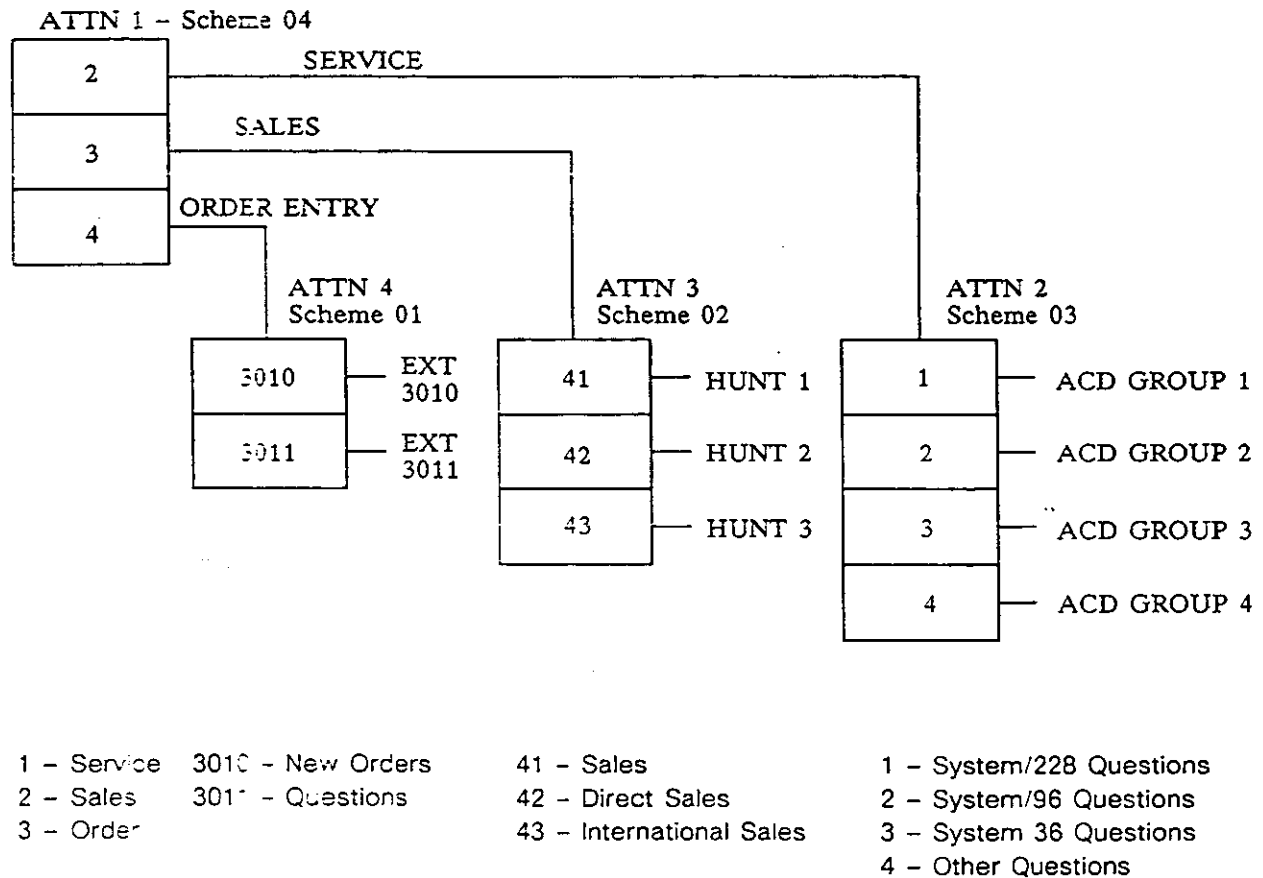


Figure 24-2 Example of Sub-Menus and Sub-Directories

## 24.8 SUGGESTED AUTOMATED ATTENDANT GREETINGS

The following are suggestions for Greeting recordings for the Automated Attendants. The type of dial access scheme selected will determine what kind of information the caller will need in order to reach a desired extension or group number. The following examples may be referred to when recording a Greeting on the Digital Voice Announcer to ensure that the caller will be given sufficient information on how to reach their destination.

*NOTE: In order to minimize the chance of misdials, when recording the greeting, pause for a second or two before beginning, and after each instruction given to the caller.*

### 24.8.1 Using Dial Access Scheme 01:

Thank you for calling the "XYZ Company". If you know the Extension number of the person you would like to reach, please dial it now. Dial 401 for Sales, 402 for Marketing, 801 for Service, 802 for Order Entry. To reach the main operator, dial 0. To reach VMS, dial 2. If you have a rotary telephone, please stay on the line for further assistance.

### 24.8.2 Using Dial Access Scheme 02:

Thank you for calling the "XYZ Company". If you know the Extension number of the person you would like to reach, please dial it now. Dial 41 for Sales, 42 for Marketing, 81 for Service, 82 for Order Entry. To reach the main operator, dial 0. To reach VMS, dial 2. If you have a rotary telephone, please stay on the line for further assistance.

### 24.8.3 Using Dial Access Scheme 03:

Thank you for calling the "XYZ Company". Please dial 1 for Sales, 2 for Marketing, 3 for Service, 4 for Order Entry. To reach the main operator, dial 0. If you have a rotary telephone, please stay on the line for further assistance.

### 24.8.4 Using Dial Access Scheme 04:

Any combination of the above three greetings can be used to set up a greeting for Scheme 04.

## 24.9 THE AUTOMATED ATTENDANT PROGRAMMING SCREEN

The *Auto Attendant* programming screen is accessed by pressing Z on the keyboard from the main menu. The ESCAPE key may be pressed while in any other programming screen to reach the main menu. If there is any problem reaching the main menu, or the *Auto Attendant* programming screen, refer to the section titled *ACCESSING THE PROGRAMMING SCREENS* in Section 5 - *Programming Introduction*.

### 24.10 DEFAULT VALUES

Ext (Attn 1 through Attn 6)	Y	Greeting Rec (Day Selection)	0
ACD (Attn 1 through Attn 6)	Y	Busy Rec	0
Hunt (Attn 1 through Attn 6)	Y	No Answ Rec	0
VMS	Y	Greeting Rec (Night Selection)	0
Main menu	0	Divert	N
Digit Timeout	15	Release	N

## 24.11 HOW TO PROGRAM THE AUTOMATED ATTENDANT

If not already in the *Auto Attendant* programming screen, from the main menu, press the Z key. The *Auto Attendant* programming screen consists of one page, and is divided into seven programming sections. The programming procedure is as follows:

### To Include Or Exclude Extensions -

1. When the *Auto Attendant* programming screen is entered, the cursor is at the extension number position. The I and D keys can be used to increment and decrement the extension number.
2. Enter the extension number to be programmed.
3. Press the RETURN key.
4. Press the TAB key. The cursor will move to the Attn 1 column in the extension number row.
5. Enter Y (yes) if the programmed extension is to be accessed through Auto Attendant 1. An N (no) is entered if the extension is not to be accessed through Auto Attendant 1.

### To Include Or Exclude ACD Groups -

6. Press the RETURN key. The cursor will move down the Attn 1 column to the ACD group number row. The I and D keys on the keyboard may be used to increment or decrement ACD group numbers, or the desired ACD group number can be typed in directly.
7. Enter Y (yes) in the Attn 1 column if the programmed ACD group is to be accessed through Auto Attendant 1. An N (no) is entered if the ACD group is not to be accessed by Auto Attendant 1.

### To Include Or Exclude Hunt Groups -

8. Press the RETURN key. The cursor will move down the Attn 1 column to the Hunt group number row. Use the I and D keys on the keyboard to increment or decrement Hunt group numbers, or type in the desired Hunt Group number directly.
9. Enter Y (yes) in the Attn 1 column if the programmed Hunt group is to be accessed through Auto Attendant 1. An N (no) is entered if the Hunt group is not to be accessed by the Auto Attendant.

*NOTE: If no ACD groups or Hunt groups exist, an N (no) must be entered in the Attn columns for these parameters. Otherwise, the system will still attempt to transfer callers to these non-existent groups.*

### To Allow Or Restrict Access To VMS -

10. Press the RETURN key. The cursor will move down the Attn 1 column to the VMS row.
11. Enter Y (yes) if VMS is to be accessed through Auto Attendant 1. An N (no) is entered if VMS is not to be accessed through Auto Attendant 1.
12. Press the RETURN key.

### To Select The Greeting Recorder Number -

13. Press the A key on the keyboard. The cursor moves to the Greeting Rec position for Attn 1 in Day Selections.
14. Enter the Recorder number which contains the appropriate greeting for the programmed incoming Hunt group, while the system is in DAY mode. Press the RETURN key.

15. Press the RETURN key again. The cursor moves to *Busy Rec.*
16. Enter the number of the recorder containing the *Busy* message, and press the RETURN key.
17. Press the RETURN key again. The cursor moves to *No Answer Rec.*
18. Enter the number of the recorder containing the *No Answer* message, and press the RETURN key.

To Select Night Options -

19. Press the B key on the keyboard. The cursor moves to the Greeting Rec position for Attn 1 in Night Selections.
20. Enter the Greeting Rec number which contains the appropriate greeting for the programmed incoming line Hunt group, while the system is in NIGHT mode.
21. Press the RETURN key.
22. Press the RETURN key a second time. The cursor moves to the Divert position.
23. Enter a Y (yes) if an incoming call received by this Attn should be diverted by the system to another telephone number.
24. Press the RETURN key. The cursor moves to the Release position.
25. Enter a Y (yes) if an incoming call received by this Attn should be released from the line after the night recording is delivered and the recorder goes on-hook.

To Select Dial Access Schemes -

26. Press the F key. The cursor moves to the Attendant-Scheme position. The I and D keys may be used to increment or decrement Attendants 1 through 6.
27. Using the RIGHT and LEFT arrow keys, select the desired Dial Access Scheme for the programmed Attn.
28. Press the RETURN key. Continue to program the remaining Attendants (2 through 6) for this extension in the same manner, until all the extensions are programmed.

To Enter The Digit Timeout

29. Press the G key. The cursor moves to *Digit Timeout.*
30. Enter the desired *Digit Timeout*, and press the RETURN key.



## 24.12 MAINTENANCE AND TROUBLESHOOTING

The following section provides descriptions of various problems which may arise during operation of the Automated Attendant feature, and guides the technician systematically through locating the source of the problem. The technician can trace and diagnose a problem, and simply change the status of an extension or group number, or exchange a faulty item with a replacement.

Troubleshooting flow charts outline a specific procedure to follow, and offer the technician a simple step-by-step approach to diagnosing and resolving a problem with the System.

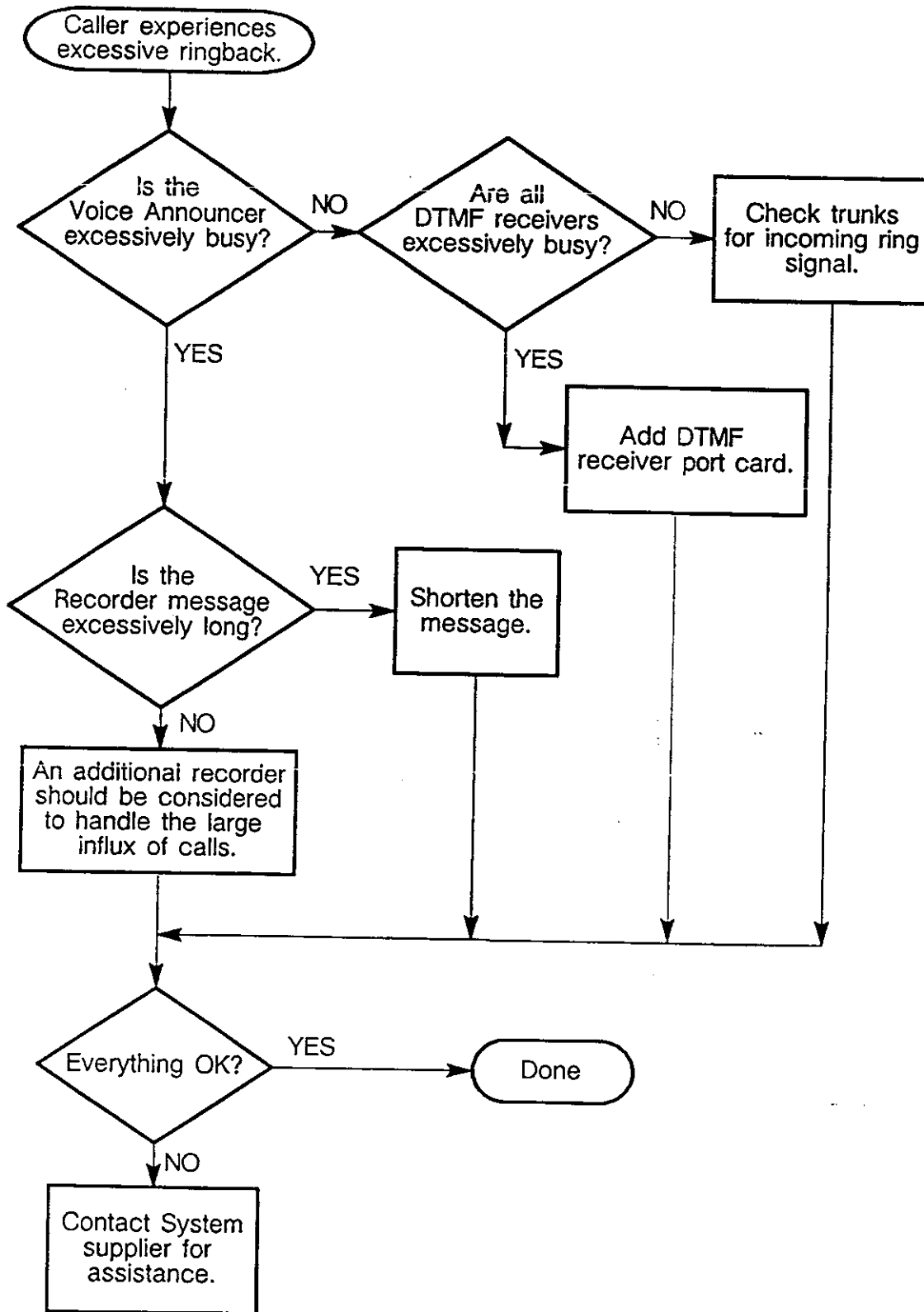
The Operational Symptoms Index is arranged in three columns: Symptom, Description, and Flow Chart/Page Number. Refer to the Symptoms column to locate the problem the Automated Attendant is experiencing. The Description column defines the symptom in greater detail. The troubleshooting flow chart associated with the symptom is listed adjacent to the description, in the Flow Chart/Page Number column.

Turn to the indicated flow chart and follow the appropriate steps to diagnose and resolve the problem.

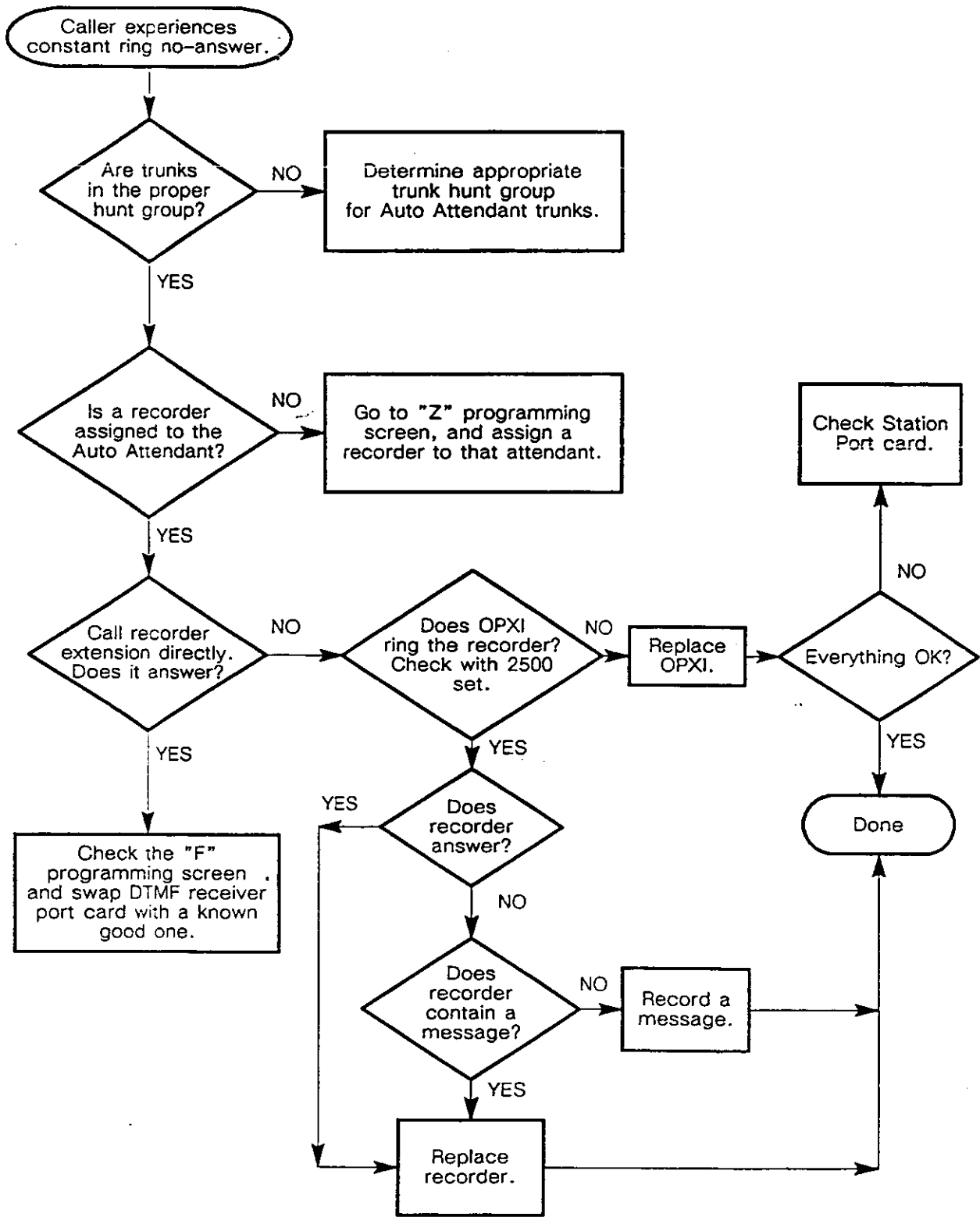
### OPERATIONAL SYMPTOMS INDEX

<i>SYMPTOM</i>	<i>DESCRIPTION</i>	<i>FLOW CHART PAGE NO.</i>
Excessive Ringback	System rings a long time before it eventually answers.	24.14
Ring-No-Answer	Caller hears ring, but System will not answer.	24.15
Will Not Process Calls	The System will not perform call placement after Recorder delivers its Greeting.	24.16
Talk Off	Characterized by a recorded message being cut off, or by having the System respond as if it were given a DTMF command.	24.17
System Disconnect	System disconnects caller after Recorder delivers its Greeting.	24.17

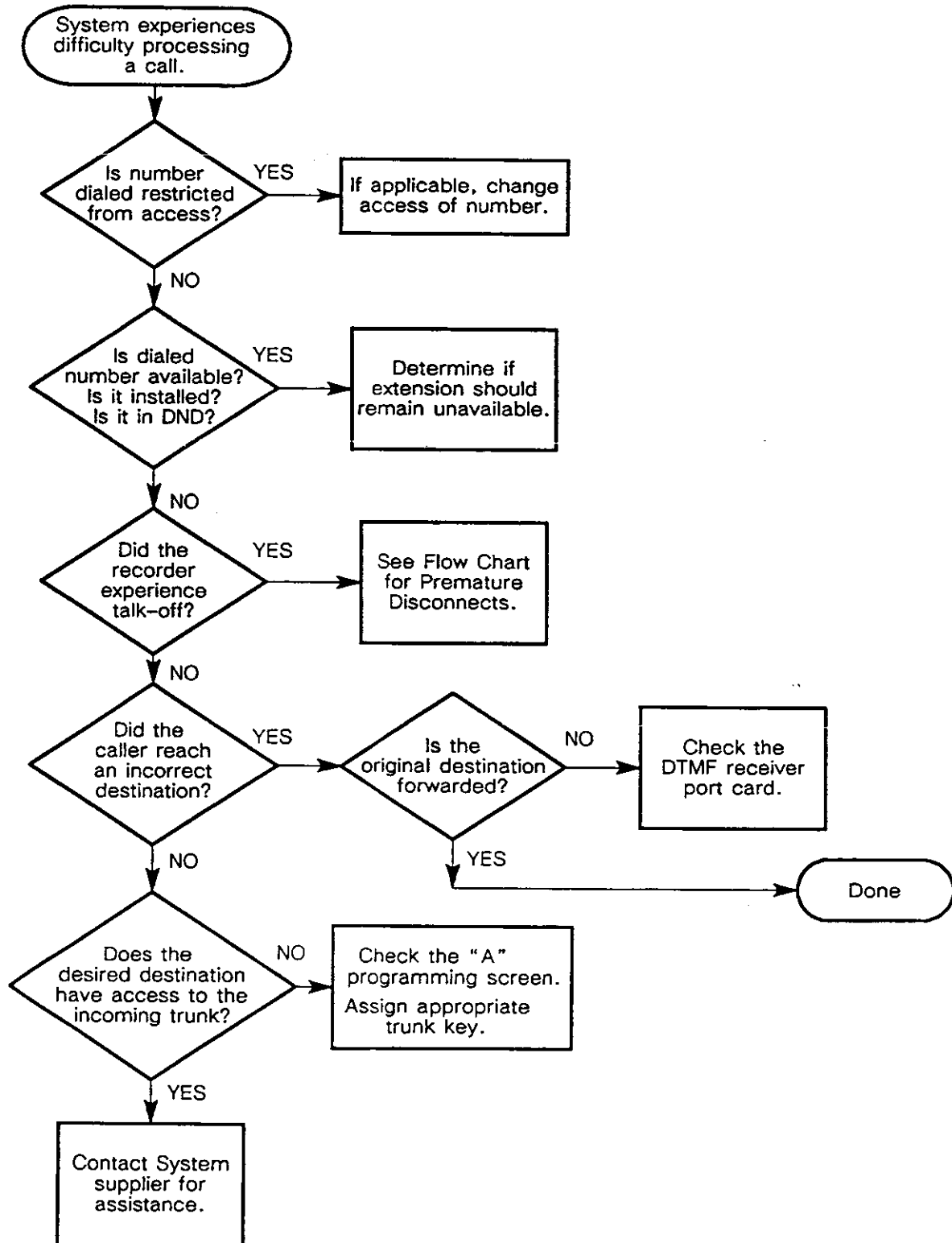
EXCESSIVE RINGBACK



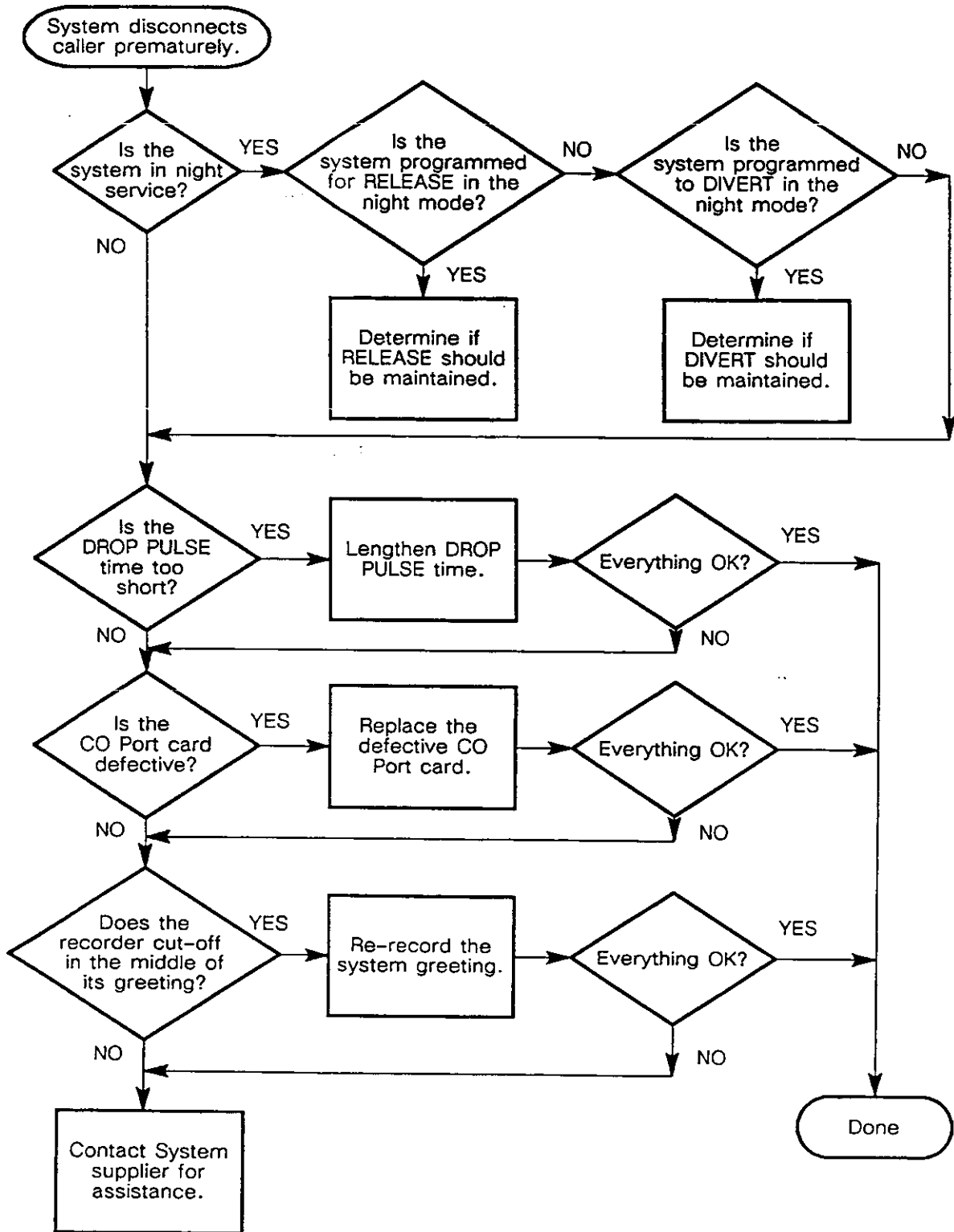
CONSTANT RING NO-ANSWER



PROBLEMS PROCESSING A CALL



PREMATURE DISCONNECTS



## 24.13 CHECKING THE SYSTEM STATUS MONITOR CODES

The *System Status Monitor* indicates the current operating status of the Auto Attendant. The following is a list of the status codes which appear on the *System Status Monitor* Screen (the C Screen), and their definitions. When attempting to diagnose a problem which occurs during operation of the Auto Attendant feature, these definitions will assist the user in identifying the status of the announcement device.

ATTW - Caller is waiting for Attendant Recorder to come off hook and deliver its Greeting.

ATTR - Caller is in the process of listening to the Recorder Greeting.

ATTD - Attendant Recorder has disconnected and has gone on-hook.

RING<- Caller has been sent to the ring assignment for that line.

# Section 25

## Maintenance

### 25.1 INTRODUCTION

The system has a number of built-in tools to aid in trouble-shooting problems that may arise. These tools are software utilities that can be selected from the programming terminal. The system's remote programming capability enables these routines to also be run from a remote service center. It is possible to identify a number of problems before dispatching a service technician to the site. Some types of problems can even be corrected remotely.

The system is equipped with a real-time system STATUS MONITOR. This screen can be used to monitor the connections between stations, and between trunks and stations. The DIAGNOSTICS menu can be used to select a trunk line test. In addition to the trunk test, the system checks each trunk every time it is used, and can remove a problem trunk from service.

The programming terminal can also be used to reset the system, or to erase all programming and return the system to its default program.

The CPU controlled system is designed to provide on-site or remote programming capability for system features. The menu-driven program allows each system to be customized for individual customer requirements through an external CRT and keyboard. The system is also equipped with a built-in modem to provide off-site programming and maintenance capabilities. Any function that can be accomplished by the on-site programming terminals can be accomplished remotely through the modem.

### 25.2 CONNECTING THE PROGRAMMING TERMINAL

System programming can be accomplished from any one of the input/output ports, including the port(s) used as the operator position. Programming is accomplished by means of programming screens and screen graphics. Four types of terminals are supported. These are:

1. ISOETEC (The ISOETEC terminal and the ISOETEC Integrated terminal are supported with this terminal type).
2. QUME (109)
3. IBM/compatible
4. Wyse (WYSE 50, NOT the ISOETEC Integrated terminal).

Connect the terminal to one of the input/output ports using the wiring instructions found in the *Cabling and Cross Connection* section of this manual. The default baud rate for the ports is 9600 baud.

### 25.3 ACCESSING THE PROGRAMMING SCREENS

Once the programming terminal has been connected, the programming screens may be accessed.

1. Press the ESCAPE key. The system will prompt for a password.
2. Enter the ACCESS LEVEL 8 password. The LEVEL 8 password should be used for all maintenance functions.
3. Press the RETURN key. If the correct password has been entered, the main menu will appear.

4. Enter the letter corresponding to the screen for the function to be performed. For example, to move to the station programming screen, press the A key.

To return to the main menu from any programming screen press the ESCAPE key.

```

Welcome to the System 228 (C) 1986 ISOETEC Communications Inc.
Options: DCM3 LCR DirDl Mod Att
Version: V5.52    10/23/89    System is IDLE Thu 03-30-89  1:10 pm
Access Level = 08  Port = 02
Select one of the following:  <Esc> ... Display this menu

A .. Station Programming | J .. PBX Key Progr.   | S .. LCR Tester
B .. System Programming | K .. Change Password | T .. Data Menu
C .. System Status Monitor | L .. LCR Programming | U .. Data Status
D .. BACKUP Program Memory | M .. System Options  | V .. Call Accounting
E .. Exit Main Menu      | N .. Trunk Group Progr. | W .. Toll Restriction
F .. System Configuration | O .. Directory        | X .. Access Levels
G .. Forwarding, VMS Plans | P .. Account Codes    | Y .. Digit Translation
H ..                      | Q .. ACD Programming  | Z .. Auto Attendant
I .. Line Maintenance    | R .. Reports          |

USE THE FOLLOWING SELECTIONS WITH CARE!:
Control-A ... Select Terminal Type |
Control-C ... Diagnostics          |

Control-F ... Default & RESET
Control-G ... RESET

Enter Letter or Control character >
    
```

Figure 25-1 Main Menu

The upper right corner of the *main menu* lists which options are installed in the system. The following abbreviations are used to indicate the installed options:

- DCM0 – The standard Data Control Module is installed.
- DCM1 – The standard Data Control Module is installed.
- DCM3 – The LSI version of the Data Control Module is installed.
- LCR – Least Cost Routing is installed.
- Mod – Memory Module III is installed.
- CA1 – Call Accounting Reports Option I is installed.
- CA2 – Call Accounting Reports Option II is installed (cannot be installed with ACD).
- ACD0 – Basic ACD is installed.
- ACD1 – Dynamic ACD is installed.
- ACD2 – Advanced ACD is installed.
- ACD3 – Custom ACD is installed.
- Att – Automated Attendant is installed.
- Dir – Dial By Name
- Sil – Silent Monitor
- VMS – Voice Message System integration



## 25.4 HOW TO RESET THE SYSTEM

In addition to the reset switch located on the CPU, the system can be reset through the use of the programming terminal.

*CAUTION: RESETTING the system terminates all active connections between stations and between stations and trunks.*

From the main menu:

1. Press the CONTROL and G keys simultaneously.

The terminal screen displays the following message:

You have selected RESET.

Type 'OK' and RETURN twice to EXECUTE or  
ANY OTHER KEY TO ABORT

2. Press the O key and the K key. (If you have changed your mind about resetting the system, it is not too late. Just press any other key on the keyboard and the main menu will return.)
3. Press the RETURN key twice.

The system RESETS. The terminal displays a message to enter your password.

## 25.5 HOW TO DEFAULT THE SYSTEM

The system programming can be erased, and returned to the factory programming, from the programming terminal.

*CAUTION: DEFAULTING erases all previous program information. Select this with caution. The system is also reset when defaulted. The system terminates all active connections between stations and between stations and trunks.*

From the main menu:

1. Press the CONTROL and F keys simultaneously.

The terminal screen displays the following message:

You have selected DEFAULT and RESET.

Type 'OK' and RETURN twice to EXECUTE or  
ANY OTHER KEY TO ABORT

2. Press the O key and the K key. (If you have changed your mind about defaulting the system, it is not too late. Just press any other key on the keyboard and the main menu will return.)
3. Press the RETURN key twice.

The system DEFAULTS and RESETS. Several seconds later, the terminal displays a message to enter your password.

## 25.6 STATUS MONITOR

The SYSTEM STATUS MONITOR is a real-time display which indicates which stations are connected together, and which trunks are connected to stations. The screen is divided into 5 areas. The top line indicates which extensions are programmed as operator extensions and the stations' status (idle, off-hook, and ringing). The top line also indicates the current time and date programmed in the system.

There are 4 columns which indicate trunk to station connections. Each column displays the trunk number (CO), the status of the trunk (STAT), and the station (EXT) the trunk is connected to if the line is in the talk mode.

The box in the upper right corner of the screen indicates station to station connections.

The box in the lower right corner indicates which stations are ringing.

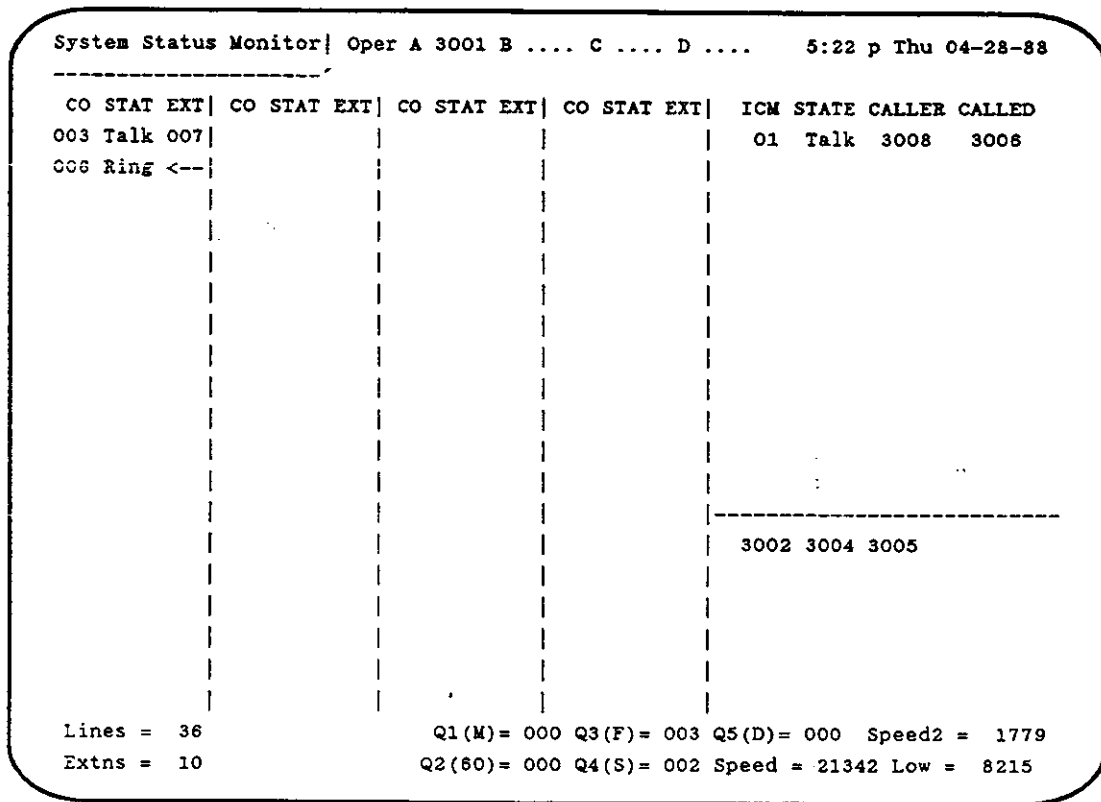


Figure 25-2 System Status Monitor

The following is a list of the codes that can appear in the STAT (status) column:

Agnt	The trunk is ringing an ACD agent.
AQue	Indicates that a CO line is in an ACD queue.
AttD	Attendant Recorder has disconnected, and gone on-hook.
AttR	A caller is in the process of listening to Attendant Recorder greeting.
AttW	A caller is waiting for the Attendant Recorder to come off-hook, and deliver its greeting.
AtWr	Indicates that all Automated Attendants are busy and the line is waiting for an Attendant Recorder.
A2Sz	The trunk is programmed for PUBLIC and has been seized outgoing. This is similar to DIAL.
CBck	When the Call Back feature has been used on a busy CO line, this indicates that the trunk is now available and is ringing the station.
COrb	Indicates the trunk has been placed in orbit. The two digits following COrb indicate the orbit zone.
CnCO	A conference has been established between a station and two trunks.
CnSt	A conference has been established between two stations and one trunk.
COWt	The system is waiting for loop current from the Central Office. This is usually seen briefly just after a station selects a line, and just after the station disconnects.
CPbx	Station user has activated their PBX feature key.
DaCO	A CO line accessed through DISA.
DaWt	DISA is waiting for DTMF receiver.
Ddgt	The DID trunk is seized by the CO and is either waiting for the CO to deliver dialed digits, or is in the process of receiving dialed digits from the CO.
Dial	The trunk has been selected by a station for an outgoing call, and the station is still dialing digits.
Disa	A CO line which has been programmed for DISA (Direct Inward System Access) is in use.
Drng	A valid DID number has been dialed and is ringing a station.
DsaR	A DISA call waiting for a DTMF Receiver.
Dsrc	DID digits searching for a match in the DID programming screen.
Dtne	An incoming DID calling a busy station. The call is connected to busy tone.
Dvrt	Indicates that a CO line has been diverted through System programming.
DWnk	The system is winking to the CO, indicating that it is ready to receive dialed DID digits.
EHld	A trunk call has been put on Exclusive Hold.
Flsh	This appears briefly when a trunk is flashed.

Hing	A trunk has rung into a Hunt group and all stations in that Hunt group are busy.
Hold	The station has placed the trunk on Hold.
HRcl	The trunk has timed out from either a transfer or hold and is recalling the station.
HRng	A trunk is ringing a station in a Hunt group.
MntC	This is a silent monitor call with a station that initiated the silent monitor.
Mntr	A station has activated silent monitor.
Modm	The trunk is connected to the system modem.
NCCB	CO network call back.
NTCB	Tie Line network call back.
NTDL	Network dial.
NWsz	An outgoing tie line is connected.
Orng	Operator ring when <i>Oper ICM</i> = Y.
OutS	The trunk has been removed from service by the LINE MAINTENANCE programming screen.
Park	Indicates that an ACD agent has parked a call.
PrDv	A line programmed to divert has no available lines to which it may divert.
PrTn	This stands for pre-transfer. The station has pressed the TR/CON key, but the trunk is not yet transferred.
Ptch	A station has initiated an unsupervised conference.
Recd	CO is connected to an ACD recorder.
Ring <--	An incoming ring signal has been detected for this trunk. The system should be ringing the stations programmed to ring on this trunk.
Talk	The trunk is connected to the station, and is in the talk mode.
Test	The system is testing the line via the <i>Diagnostics</i> programming screen, accessed from the main menu.
TiDt	The station has accessed a tie line, and has dial tone. The system is waiting for digits to be dialed.
TiPg	Tie Line using the page.
TiRg	An incoming tie line call is ringing a station after dialing a valid extension number, access code, or Hunt group number.
TiTr	A trunk has been transferred to a tie line.
TiWt	The station has disconnected, and the system is in the process of releasing the tie line.
TmpO	The trunk has been temporarily removed from service by the system. See AUTOMATIC TRUNK TESTING.
Xfrd	This represents Transfer. The trunk has been transferred to another station.

## 25.7 AUTOMATIC TRUNK TESTING

The system tests each trunk every time it is selected for an outgoing call. If a number is not dialed on an outgoing trunk 4 times, the system considers the line in trouble and takes the trunk out of service for three minutes. If the system removes the trunk from service 3 consecutive times, the system takes the line out of service for an hour. If desired, an option on the *System Options* programming screen disables this feature.

## 25.8 TRUNK TESTING – DIAGNOSTICS

The system contains a built-in trunk testing routine. This routine may be used to test a single trunk, or all trunks. The routine tests for loop current, and dial tone from the Central Office. If dial tone is received, the system dials a digit to break dial tone, and then listens for noise on the line.

If loop current is detected, the test records a V in the LP column. Otherwise, an X is recorded.

If dial tone is detected, the test records a V in the DT column. Otherwise, an X is recorded.

If noise is not detected, the test records a V in the NS column. Otherwise, an X is recorded.

```

LINE TEST: (Enter line number to test or A for all ___)
LINE LP DT NS|LINE LP DT NS|LINE LP DT NS|LINE LP DT NS|LINE LP DT NS|
001 V V V V|022 X | |043 X | |
002 V V V V|023 X | |044 X | |
003 V V V V|024 X | |045 X | |
004 V V V V|025 X | |046 Testing | |
005 V V V V|026 X | |
006 V V V V|027 X | |
007 V V V V|028 X | |
008 V V V V|029 X | |
009 V V V V|030 X | |
010 V V V V|031 X | |
011 V V V V|032 X | |
012 X | |033 X | |
013 X | |034 X | |
014 X | |035 X | |
015 X | |036 X | |
016 X | |037 X | |
017 X | |038 X | |
018 X | |039 X | |
019 X | |040 X | |
020 X | |041 X | |
021 X | |042 X | |

```

Figure 25-3 Line Test

The line test may be run while the system is in operation. If a line to be tested is busy, the test skips over the trunk and tests the remaining trunks. When all idle trunks are tested, the system waits until the busy trunks are idle, and then performs the test. The test can be stopped at any time from the programming terminal.

The line test may be run while the system is in operation. If a line to be tested is busy, the test skips over the trunk and tests the remaining trunks. When all idle trunks are tested, the system waits until the busy trunks are idle, and then performs the test. The test can be stopped at any time from the programming terminal.

To run the line test:

From the main menu, press the CONTROL and C keys simultaneously. The *Diagnostics Menu* appears.

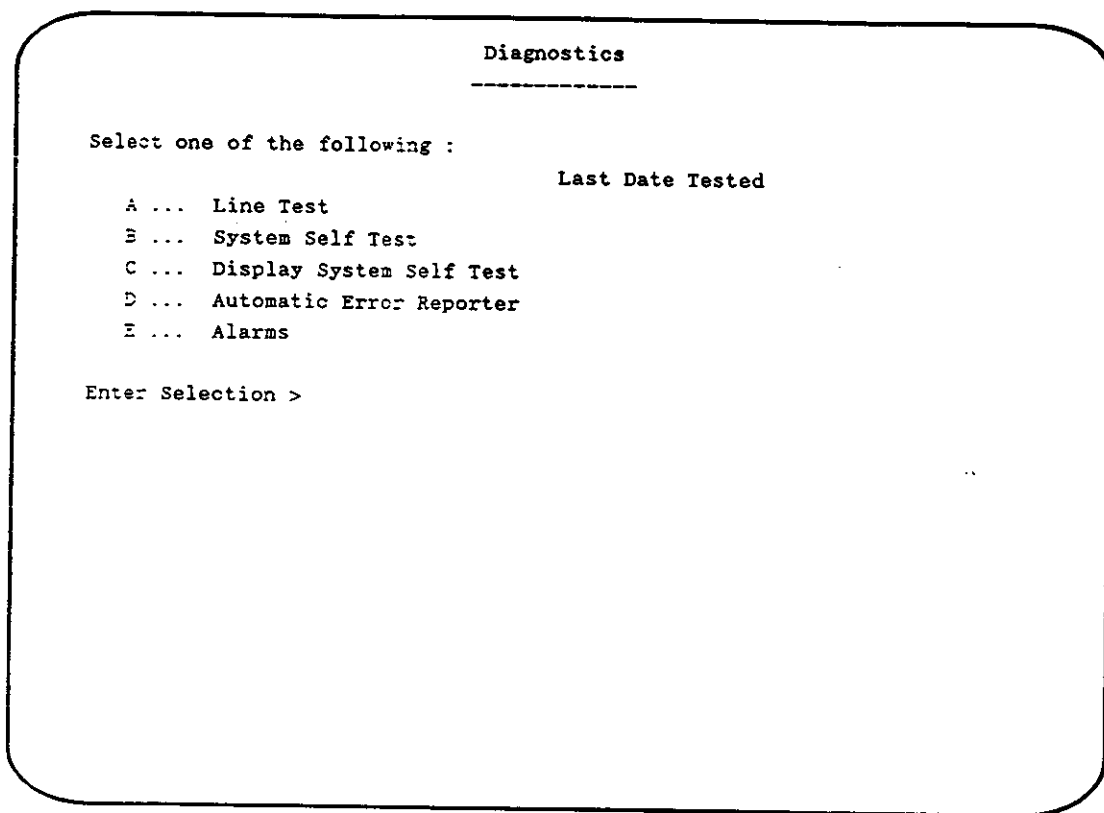


Figure 25-4 Diagnostics Menu

1. Press the A key. The *Line Test* screen appears.
2. Enter the line number to be tested. To test all lines, press the A key (the test begins immediately).
3. Press the RETURN key. The test begins.
4. To stop the test, press the ESCAPE key. Press the ESCAPE a second time to return to the *Diagnostics Menu*.

## 25.9 BAD LINE KEY AND THE REPORTS

Another useful method of determining a bad trunk is the use of the BAD LINE key. Any extension can be programmed with the BAD LINE key. The customer can be instructed to press the key whenever a problem (such as a noisy line) is detected. Each time this key is pressed, it increments a counter for each line. This counter can be seen on the LINE UTILIZATION REPORT - F. This report is found in the *Report Menu* (choice R on the main menu).

The column labeled B.CALS indicates the number of times the BAD LINE key has been pressed for each trunk. Once identified, the trunk can then be tested, and appropriate corrective action can be taken.

LINE UTILIZATION (F)								
-----								
Period Covered: Mon 01-04-88 06:12 Through Wed 01-06-88 11:32								
Line	Line Name	Incom.	In Usg	Outgo.	OutUsg	Abndnd	B.Cals	Group
-----								
001	555-2200	374	20:57			16		01
002	555-2201	306	19:14			7		01
003	555-2202	298	17:42			6		01
004	555-2203	239	16:08			2		01
005	555-2204	235	13:05			2		01
006	555-2205	222	11:46			1		01
007	555-2206	190	10:11			2		01
008	555-2207	141	8:46			3		02
009	555-2208	115	6:54					01
010	555-2209	75	5:50			1		01
011	555-2210	62	4:07			1		01
012	555-2211	39	2:33	1	:00	1		01
Tot:		2363	143:01	3198	131:27	44		

Print Now \_ Clear Now \_ [ Use the arrow keys to scroll.. ]

Figure 25-5 Line Utilization Report

## 25.10 TESTING LOOP AND GROUND START TRUNKS

When checking trunks at the demark (the point where the trunks are connected to the local telephone operating company), it is important to first determine whether the trunks are loop or ground start, or a combination of the two. The two types of trunks require slightly different testing techniques.

### 25.10.1 TESTING LOOP START LINES - OUTGOING

1. Remove the bridging clips connecting the system to the RJ21X for the line to be tested.

*WARNING: Ring voltage may be present across TIP and RING signaling an incoming call.*

2. On the TELCO side of the demark, place a telephone test set (butt in set) in MONITOR mode across TIP and RING of the line under test, and determine if a conversation is in progress.
3. If no conversation is heard, place the test set in TALK mode. Dial tone should be heard.
4. Dial a known local number. The call should complete.
5. Install the bridging clips for the line.

If the line does not have dial tone, or the call does not complete (i.e. ring back or busy tone is heard), report the line to the local telephone operating company.

*NOTE: Incoming ONLY lines (e.g. 800 numbers) may not have dial tone. This is normal.*

### 25.10.2 TESTING LOOP START LINES - INCOMING

1. Remove the bridging clips connecting the system to the RJ21X for the line to be tested.

*WARNING: Ring voltage may be present across TIP and RING signaling an incoming call.*

2. On the TELCO side of the demark, place a telephone test set (butt in set) in MONITOR mode across the TIP and RING of the line under test, and determine if a conversation is in progress.
3. From another telephone, dial the telephone number of the line under test. Ring generator should be heard. (A volt meter could also be used to detect ring voltage.)
4. Place the test set in the TALK mode. The call should be answered. .



### 25.10.3 TESTING GROUND START LINES – OUTGOING

1. Remove the bridging clips connecting the system to the RJ21X for the line to be tested.

*WARNING: Ring voltage may be present across TIP and RING signaling an incoming call.*

2. On the TELCO side of the demark, place a telephone test set (butt in set) in MONITOR mode across the TIP and RING of the line under test, and determine if a conversation is in progress.
3. If no conversation is heard, place a ground on the RING side of the trunk. Dial tone should be heard. If no dial tone is heard, presume the wires are reversed, and place the ground on the TIP side of the line.
4. Place the test set in TALK mode. Dial tone should still be heard. Remove the ground from the RING side of the line.
5. Dial a known local number. The call should complete.
6. Install the bridging clips for the line.

If the line does not have dial tone, or the call does not complete (i.e. ring back or busy tone is heard), report the line to the local telephone operating company.

*NOTE: Incoming ONLY lines (e.g. 800 numbers) may not have dial tone. This is normal.*

*NOTE: Ground start trunks must be connected to the System/228 with the proper polarity. Refer to the Cabling and Cross Connection section for more information.*

### 25.10.4 TESTING GROUND START LINES – INCOMING

1. Remove the bridging clips connecting the system to the RJ21X for the line to be tested.

*WARNING: Ring voltage may be present across TIP and RING signaling an incoming call.*

2. On the TELCO side of the demark, place a telephone test set (butt in set) in MONITOR mode across the TIP and RING of the line under test, and determine if a conversation is in progress.
3. From another telephone, dial the telephone number of the line under test. Ring generator should be heard. (A volt meter could also be used to detect ring voltage.)
4. Place the test set in the TALK mode. The call should be answered.

## 25.11 TRUNK – BUSY OUT

Once a bad trunk has been identified, it may be removed from service, without disturbing system programming, by using the *Line Maintenance* programming screen.

### TO BUSY OUT A TRUNK:

From the main menu, press the I key. The *Line Maintenance* screen appears.

1. Press the RETURN key to move the cursor to the line number to be made busy. The ARROW keys may also be used to move the cursor around the screen.
2. Press the O key to make the trunk busy outgoing. Or, the B key may be pressed. The B key makes the trunk busy outgoing, and seizes the line (the line appears off-hook).

### TO REMOVE THE BUSY:

3. Press the R key to remove the busy out.

LINE MAINTENANCE											
(b=BUSY I/O , o =BUSY OUTGOING ONLY)											
001	002	003	004	005	006	007	008	009	010	011	012
013	014	015	016	017	018	019	020	021	022	023	024
025	026	027	028	029	030	031	032	033	034	035	036
037	038	039	040	041	042	043	044	045	046	047	048
049	050	051	052	053	054	055	056	057	058	059	060
061	062	063	064	065	066	067	068	069	070	071	072
073	074	075	076	077	078	079	080	081	082	083	084
085	086	087	088	089	090	091	092	093	094	095	096
097	098	099	100	101	102	103	104	105	106	107	108
109	110	111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130	131	132
133	134	135	136	137	138	139	140	141	142	143	144
145	146	147	148	149	150	151	152	153	154	155	156
157	158	159	160	161	162	163	164	165	166	167	168
169	170	171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190	191	192
193	194	195	196	197	198	199	200	201	202	203	204
205	206	207	208	209	210	211	212	213	214	215	216
217	218	219	220	221	222	223	224	225	226	227	228

Figure 25-6 Line Maintenance Screen

## 25.12 STATION TROUBLES

Symptom	Possible Causes
Station totally inoperative.	<ol style="list-style-type: none"> <li>1. Station not connected.</li> <li>2. Defective telephone.</li> <li>3. Bad line cord.</li> <li>4. Defective station jack.</li> <li>5. Cabling shorted or open.</li> <li>6. Station port card bad.</li> <li>7. Station is too far from system.</li> </ol>
Station handset does not work but handsfree works.	<ol style="list-style-type: none"> <li>1. Broken hook switch.</li> <li>2. Defective handset.</li> <li>3. Defective handset cord.</li> <li>4. Defective telephone.</li> </ol>
Station Handsfree does not work (or clips) but handset is O.K.	<ol style="list-style-type: none"> <li>1. Defective telephone.</li> </ol>
Station cannot access a CO line.	<ol style="list-style-type: none"> <li>1. CO line defective.</li> <li>2. CO line has no key appearance on telephone.</li> <li>3. CO line access programmed N (No).</li> </ol>
LED's flash intermittently.	<ol style="list-style-type: none"> <li>1. Defective wiring.</li> <li>2. Loose connections.</li> <li>3. Defective line cord.</li> <li>4. Defective telephone.</li> </ol>
Station does not ring on CO calls.	<ol style="list-style-type: none"> <li>1. CO line programmed not to ring.</li> <li>2. CO line problem.</li> <li>3. Defective telephone.</li> <li>4. Station is in Do Not Disturb or In/Out.</li> <li>5. Extension is forwarded.</li> </ol>
Station does not ring on internal calls.	<ol style="list-style-type: none"> <li>1. Defective telephone.</li> <li>2. Station is disconnected.</li> <li>3. Station is in Do Not Disturb or In/Out.</li> <li>4. Extension is forwarded.</li> </ol>
No internal dial tone either on handset or handsfree.	<ol style="list-style-type: none"> <li>1. Defective handset.</li> <li>2. Defective telephone.</li> <li>3. Extension is programmed for <i>Prime Line Up</i> to non-existent CO line.</li> </ol>

## Maintenance

Symptom	Possible Causes
Extension cannot be called.	<ol style="list-style-type: none"><li>1. Station is in Do Not Disturb or In/Out.</li><li>2. Defective telephone.</li><li>3. Station not connected.</li><li>4. Station programmed for no handsfree receive.</li><li>5. Wrong extension number.</li></ol>
Low volume.	<ol style="list-style-type: none"><li>1. Volume turned down.</li><li>2. Defective handset.</li><li>3. Defective telephone, or telephone not adjusted properly.</li></ol>
Static.	<ol style="list-style-type: none"><li>1. Defective handset.</li><li>2. Defective handset cord.</li><li>3. Loose connections in cabling.</li><li>4. Noisy CO line.</li></ol>
Station constantly resets.	<ol style="list-style-type: none"><li>1. Defective line cord.</li><li>2. Loose connections in cabling.</li><li>3. Defective telephone.</li><li>4. Bad station port card.</li></ol>
Station cannot transmit.	<ol style="list-style-type: none"><li>1. Station has mute key on.</li><li>2. Defective handset.</li><li>3. Defective handset cord.</li><li>4. Defective telephone.</li><li>5. Using handsfree, and <i>HandsFree Originate</i> is programmed N (No).</li></ol>
Station cannot hear.	<ol style="list-style-type: none"><li>1. Volume adjust too low.</li><li>2. Defective handset.</li><li>3. Defective handset cord.</li><li>4. Defective telephone.</li></ol>
Programmed features inoperative.	<ol style="list-style-type: none"><li>1. Check feature keys programming.</li></ol>
Station does not receive pages.	<ol style="list-style-type: none"><li>1. Station in wrong page zone.</li><li>2. Station in No Page zone.</li><li>3. Station is in Do Not Disturb/Out.</li></ol>

## 25.13 USING THE SPEAKERPHONE

The *sensitivity* of the speakerphone unit is controlled to a great extent by the *volume control*. If noisy conditions are affecting the quality of handsfree conversation, then adjust the volume a couple of steps. This sensitivity control should allow the flexibility to maintain quality handsfree conversations.

### SPEAKERPHONE RANGE

The speakerphone's working range under optimum conditions is ten feet from the telephone set in any direction. If positioned within about 2 to 3 feet from the telephone, speak in a normal voice level. If the user speaks too loudly at this range, their voice may sound hollow to the person to whom they are speaking. Portions of the conversation may also be missed.

### NOISY LINES

If the speakerphone is being used on a noisy CO line, lower the volume a few steps. This will reduce the clipping and improve the transmission quality.

### NOISY ENVIRONMENTS

Rooms constructed with bare hard walls and floors tend to reflect sound. These reflections of sound cause the speakerphone to sound hollow and unnatural. A solution to this problem is to place sound absorbing material on the walls, carpets on the floors, and drapes covering the windows.

### CLIPPING PROBLEMS

Clipping may be caused by several sources:

CLIPPING SOURCE	SOLUTION
Excessive background noise in immediate vicinity.	Raise the volume control a few steps.
Excessive noise on the CO line.	Lower the volume control a few steps.
Both parties trying to speak simultaneously.	Wait until the other party stops speaking before starting to speak.

## 25.14 OPERATOR MAINTENANCE

### 25.14.1 CRT TERMINAL PROBLEMS

Before attempting to trouble-shoot problems with Operator Terminals, a few primary set-up procedures should be verified before continuing with the remaining trouble-shooting procedures. First, determine if the cable coming into the back of the terminal is connected properly:

*Part Number 440017*

RS 422 connected to MODEM  
RS 232 connected to AUX

*Part Number 440015*

RS 422 connected to EIA  
RS 232 connected to EIA

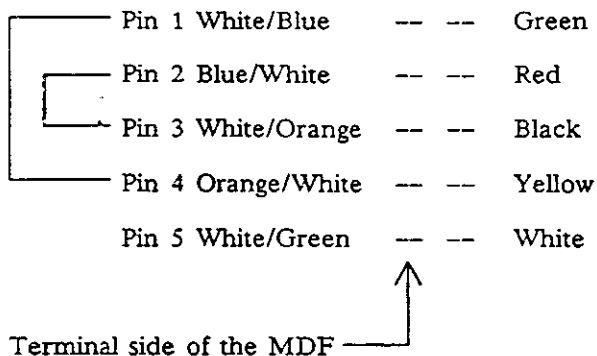
Next, ensure that the terminal SET-UP is correct. Refer to the *Installation* section of this manual for the proper terminal set-up.

When trouble-shooting problems with the Operator Terminals, it is important to know whether, or not, the terminal is receiving and transmitting data. If the user is pressing keys on the keyboard of the terminal and nothing is happening, then two possible problems exist:

1. The data is not being transmitted from the terminal to the KSU, or
2. The data is being transmitted from the terminal, but the KSU is not confirming the data back to the Operator terminal.

The following procedure should be performed to determine whether the Operator terminal problem is a transmit or receive problem:

1. A simple loop-back adapter can be made using an ordinary modular station jack (AA-625-4 or equivalent). Wire the jack by connecting the RED lead to the BLACK lead, and the GREEN lead to the YELLOW lead.
2. Plug the RS-422 cable from the terminal into the loop-back adapter.
3. Type some characters on the terminal keyboard. Any characters that are typed from the keyboard should be repeated on the screen. This test will determine if the terminal is transmitting and receiving data, or if the short cable coming from the terminal is defective.
4. If the typed characters are appearing on the screen exactly as typed, then a loop-back test should be performed at the MDF.
5. At the MDF, remove the bridging clips on the terminal side.
6. On the terminal side of the block:
  - Loop pin 1 (W/B) to pin 4 (O/W)
  - Loop pin 2 (B/W) to pin 3 (W/O)



- At the Operator terminal, type some characters and determine if the typed characters appear on the screen. If the typed characters do not repeat on the screen, check the jack and the cable run from the KSU. If the characters do echo to the screen, then check the KSU, or the I/O (service) cable.

### 25.14.2 RESET THE I/O PORT

### 25.14.3 AUDIO PROBLEMS

If the terminal appears to be working properly, but calls are still unable to be processed, check the ISOETEC Phone Box.

The following replaceable items should be checked if the Operator is experiencing any of the following audio problems:

Symptom	Possible causes
Low audio, static, excessive noise.	<ol style="list-style-type: none"> <li>Defective headset.</li> <li>Defective handset cord.</li> <li>Problems with ISOETEC Phone Box.</li> <li>Defective 4 conductor gray jumper cord leading from ISOETEC Phone Box to the Station port.</li> <li>Defective 8 conductor black "Y" cable leading from keyboard to ISOETEC Phone Box.</li> <li>Defective 6 conductor modular line cord.</li> <li>Operator Terminal problems.</li> <li>Problems with the CPU.</li> </ol>

## 25.15 HOW TO USE THE LCR TESTER

When the system experiences difficulty in processing certain numbers, refer to the LCR TESTER (the S screen). When a call is not processed, or is intercepted by either a recorded announcement or the Operator, the LCR TESTER provides information on which service the dialed number should have gone out on, the cost of the call, and what number was actually dialed. Identifying these variables then allows the technician to manually access the service chosen by the system to determine the cause for the processing problem.

The LCR Tester is entered from the main menu by pressing the S key:

1. When the LCR Tester is entered, the cursor is positioned at the *Number* line. Enter the number attempting to be dialed.
2. Press the RETURN key.
3. If the entered number is typed correctly, press the RETURN key again.
4. The cursor moves to *Date*. Enter the date, if it is incorrect.
5. Press the RETURN key.
6. The cursor moves to *Time*. Enter the time, if it is incorrect.
7. Press the RETURN key.
8. The cursor moves to the *Duration* parameter. Enter the length of the call desired.
9. Press the RETURN key. The system then displays the cost of the call, the number that the system dialed, and a list of the services the call should go out on, starting with the least expensive, and on up to the most costly route.

L.C.R. Tester Program for Area Code 203 ,Office Exchange 655.

---

Number \_\_\_\_\_ DATE 07-27-87 TIME 12:35 Duration 03:00 Print[Y/N]?

---

Service	Cost	Number Dialed
<hr/>		



## 25.16 REMOTE PROGRAMMING

The ISOETEC System/228 is equipped with a built-in 300/1200 baud MODEM which permits a technician to access the system from a remote location. The remote location requires only a terminal (one that is supported by system screen graphics) and a MODEM. The technician can then carry out any programming or maintenance that can be accomplished from an on-site programming terminal.

This feature could also be of use to a company communications manager to access a System/228 from another location. A personal computer, with suitable terminal emulation software, can be used in place of a terminal. The system's BACKUP and RESTORE feature can then be utilized.

Access to the MODEM is gained by either programming a trunk to be answered by the MODEM, or by transferring to the MODEM.

A trunk can be programmed to be answered by the MODEM by assigning the trunk a MODEM line type (250 or 251). The line type is programmed on the *System Programming* screen. A trunk with a line type of 250 is answered by the MODEM at all times. A trunk with a line type of 251 is answered by the MODEM whenever the system is in the NIGHT mode.

A trunk can be transferred to the MODEM by transferring the call to extension 99 or 9# (not 3099 or 309#).

When the built-in MODEM answers, carrier tone is heard. The remote MODEM can then be turned on.

Press the ESCAPE key. The system prompts for a password. Enter your password.

## 25.17 BACKUP PROGRAM MEMORY

The ISOETEC System/228 has a utility which permits the system configuration to be saved on a storage device. The saved configuration can then be reloaded at a later time. This storage device is usually a personal computer.

ACD programming is saved independent of the system configuration.

There are too many possible combinations of personal computers and MODEMS to give detailed instructions on saving/restoring the system configuration. Instructions are given on how to tell the system to transmit the information to the personal computer.

Using a personal computer with suitable communications software, and a MODEM, call the System/228, and connect with the system MODEM. The system's MODEM supports either 300 or 1200 baud. The system uses XMODEM protocol to send/receive system configuration. The call can be transferred to the MODEM from a System/228 station by:

1. Press the TRAN/CON key. Internal dial tone is heard.
2. Dial 99, and replace the handset. The call is transferred to the MODEM.

Once the connection is established, press the ESCAPE key. The system prompts for a password. Enter the appropriate password. The main menu appears.

1. Press the D key. The *Backup* screen appears.

## Maintenance

There are 5 choices, S - Save PROGRAM memory, A - Save ACD memory, L - Save LCR memory, V - Save Call Accounting memory, and Restore.

2. Press the letter corresponding to the portion of memory to be saved. (If a file is being sent to the system press R for RESTORE).
3. The system is ready to begin transmitting (or receiving) the desired configuration.
4. Issue the appropriate command to the personal computer to save (or send) the file.

```
                BACKUP
                -----

CAUTION !!!   YOU MAY DESTROY ENTIRE SYSTEM PROGRAMMING IN THIS MODE !!!

This utility will SAVE or RESTORE the LCR or PROGRAM MEMORY using the
serial (RS_232) port.

    S = Save PROGRAM memory.           A = Save ACD memory.
    L = Save LCR memory.               V = Save Call Accounting memory.
    R = Restore.
ANY OTHER CHARACTER = Exit.
```

Figure 25-7 Backup Memory Screen

**SPECIAL NOTE:** This note concerns all versions of the ISOETEC System/228. When the system programming is restored after defaulting, using the "Backup System Programming", the system MUST be reset immediately after the restore is complete. Otherwise, the system continues to use the configuration (port numbers to station/CO numbers) that was present before the restore operation. This can cause a great deal of confusion within the system.

## 25.18 ALARMS

A trouble-shooting tool has been added to the system *Diagnostic* menu starting with software version 5.26. This tool is the *Alarms* programming screen. The screen is divided into two areas. The *first area* is used to program the system to count the number of times an error condition is detected, and provide an indication of a *Major* or *Minor Alarm* to the Operator Terminals. The *second area* provides information which can be used to trouble-shoot the cause of an alarm.

The *Description* area of the *Alarms* programming screen is used to determine what constitutes *Major* alarm and what constitutes *Minor* alarm. There are six possible conditions the system can detect to generate an alarm. When the system detects a condition, a counter is incremented for that *Alarm code*. If the counter reaches the value programmed in the *Minor* column within the amount of time programmed in the *Period* column for that *Alarm code*, Alarm flashes in the *Pending* area of the Operator's Terminal (see Figure 25-8). If the counter reaches the value programmed in the *Major* column within the amount of time programmed in the *Period* column for that Alarm code, **ALARM** appears highlighted and steady in the *Pending* area of the Operator's Terminal (see Figure 25-9).

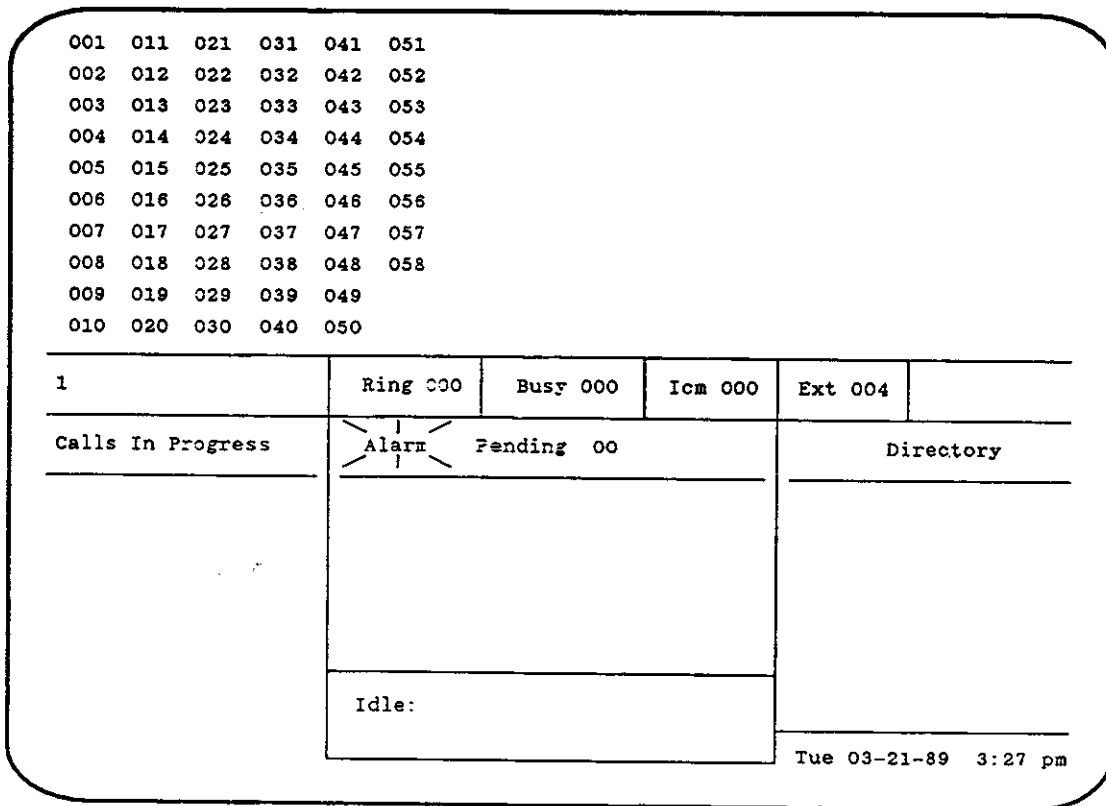


Figure 25-8 Operator Screen With A Minor Alarm

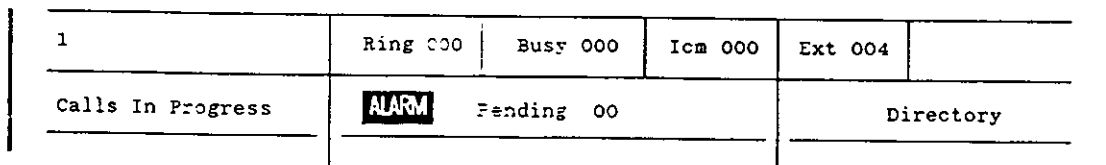


Figure 25-9 Operator Screen With A Major Alarm

## 25.18.1 DESCRIPTION OF ALARM CODES

A detailed description of the six functions that can trigger an alarm are provided below. All six functions can be programmed to register an alarm, and the amount of time for each threshold. After discussion with the customer and defining what constitutes the thresholds of a major and minor alarm, the thresholds can be programmed.

### Extensions Out Of Service

The system senses a break in the communications to a telephone, OPXI, IEPI (ISOETEC Electronic Phone Interface), DDIs, Relay/Sensor Interfaces, or Integrated Operator terminals. Each time the system detects a break in communications, the error counter is incremented by one.

*NOTE: Extensions connected to the OPX port card do not register in Extension Out Of Service in the Alarms programming screen.*

### No Dial Tone On CO Lines

The ISOETEC System/228 tests the trunk lines every time they are used. If a call is not dialed on a trunk four times, the system considers the line in trouble, and takes it out of service for three minutes. Each time the system takes a line out of service, the error counter is incremented by one. This *Alarm code* is affected by the *DISABLE AUTO FAULT* option on the *System Options* programming screen. If the option is set to yes, the system does not take trunks out of service, and no alarm is generated.

### Bad Calls On CO Line

The BAD LINE key (key code 819) can be used to trigger the Alarm. When the number of BAD LINE reports reaches a programmed value (see Thresholds), the Alarm is activated. The number of BAD LINE reports is taken from the *Line Utilization Report*. Each time a BAD LINE report is made, the error counter is incremented by one.

### Abandoned Calls

An abandoned call is an incoming outside line call that the system recognizes, and rings the programmed destination (such as the Operator, a telephone, ACD, etc.), but the caller hangs up before the call is answered. Each time a call is abandoned, the error counter is incremented by one.

### Card Activity

The error counter is incremented each time a port card is plugged in or unplugged.

### SMDR Device Off-line

The error counter is incremented each time that the printer has run out of paper, paper is jammed, or the RS-232 cable was unplugged. The system and printer must use DTR protocol to use this.

## 25.18.2 THRESHOLDS

### Alarm Column

Program Y (yes) or N (no) in the Alarm column. If set to No, the alarm will not be generated for that condition.

### Period - Minor - Major

If the error counter for an *Alarm Code* reaches the number programmed in the *Minor* column within the time (in minutes) entered in the *Period* column, the system reports a **Minor Alarm**.

If the error counter for an *Alarm Code* reaches the number programmed in the *Major* column within the time (in minutes) entered in the *Period* column, the system reports a **Major Alarm**.

Minor and Major thresholds are a levels of error which must be defined for the particular system. The number of errors for each *Alarm code* should be decided after discussion with the customer. The customer should classify the alarm as a minor alarm, major alarm, or not an alarm.

As each alarm condition is detected, it is recorded in the *Pending Alarms* area of the *Alarms* programming screen.

Alarm Code	[D]escription:	Alarm	Period (minutes)	Thresholds	
				Minor	Major
1.	= Extensions out of service	Y	99	01	04
2.	= No dial tone on C.O. line	Y	99	01	05
3.	= Bad calls on C.O. line	Y	00	01	02
4.	= Abandoned calls	Y	05	01	05
5.	= Card activity	Y	99	01	09
6.	= SMDR device(s) off-line	Y	99	01	05

---

Tue 03-21-89 4:47 p

[P]ending Alarms:                      [R]eset alarm

1. 5007 5003 5004 5005  
 3. C.C. Line 12 13  
 2. C.C. Line 7  
 4. Abandoned Calls 3  
 5. Card # 9 9 1 1 1  
 6. SMDR port 5

[ Use the arrow keys to scroll.. ]

Figure 25-10 Alarms Programming Screen

### 25.18.3 PROGRAMMING ALARM CODES

From the *Main Menu*, press CNTRL and C for *Diagnostics*. The *Diagnostics Menu* appears. Then press E. The *Alarm* programming screen appears.

*Note: Only ONE programming terminal can use Diagnostics at a time.*

If the cursor is not already in the *Description* area, press the D key. The cursor is in the Alarm column.

1. Enter Y (yes) if this alarm code is to be used. Enter N if this alarm code is not to be used.
2. Press the RETURN key. The cursor moves to *Period*.
3. Enter the *Period* in minutes, and press the RETURN key.
4. Press the RETURN key. The cursor moves to the Minor column.

5. Enter the number of errors which generate a Minor alarm, and press the RETURN key.
6. Press the RETURN key again. The cursor moves to the Major column.
7. Enter the number of errors which generate a Major alarm, and press the RETURN key.
8. Press the RETURN key. Continue to program the remaining Alarm codes.

### 25.18.4 PENDING ALARMS

*Pending Alarms* list errors as they occur. After an error condition is detected, the *Alarm code* for the error, and the trunk, station, card, or port that caused the error is listed as a *Pending Alarm*. If an error for the particular *Alarm code* is already on the screen, the subsequent errors are added to the existing *Alarm code* line. The maximum number of items listed for each *Alarm code* in the *Pending Alarm* area is the lesser of 08 or the number in the Major column.

The *Alarm code* line contains information to help in trouble-shooting the cause of the error. Once the cause has been identified and corrected, the alarm can then be cleared .

Alarm Code	[D]escription:	Alarm	Period (minutes)	Thresholds	
				Minor	Major
1.	= Extensions out of service	Y	99	01	04
2.	= No dial tone on C.O. line	Y	99	01	05
3.	= Bad calls on C.O. line	Y	00	01	02
4.	= Abandoned calls	Y	05	01	05
5.	= Card activity	Y	99	01	09
6.	= SMDR device(s) off-line	Y	99	01	05


---

Tue 03-21-89 4:47 p

[P]ending Alarms:                      [R]eset alarm

1. 5007 5003 5004 5005  
 3. C.O. Line 12 13  
 2. C.O. Line 7  
 4. Abandoned Calls 3  
 5. Card # 9 9 1 1 1  
 6. SMDR port 5

[ Use the arrow keys to scroll.. ]

Figure 25-11 Alarms Programming Screen

### 25.18.5 RESETTING EXPIRED ALARMS

To clear any of the pending alarms, press P. The cursor moves to the *Pending Alarms* area.

1. Using the UP and DOWN arrows keys, position the cursor on the alarm that you wish to clear.
2. Press the R key, to reset. The alarm has been cleared.

## 25.19 SYSTEM SELF TEST

The *System Self Test* is a built-in diagnostic routine that can aid in trouble-shooting problems that may arise. This tool is a software utility that can be selected from the programming terminal on-site, or remotely. The *System Self Test* allows the technician to monitor and status the operation of the tested components on the System Self test screen. The *System Self Test* screen lists the status of the tested components by indicating "Pass" or "Fail".

The *System Self Test* is a low priority task that will not interfere with overall system function. *The System Self Test* will operate under normal traffic conditions, the only affect to the *System Self Test* is that it will operate at a slower speed.

*NOTE: DID cards will automatically fail. The technician should ignore the "Failure" indication.*

### 25.19.1 SYSTEM COMPONENTS

**EPROM** - The *System Self Test* tests the system firmware (EPROMs) to see if the data is readable and reliable.

**RAM** - The *System Self Test* checks to see that information can be read from, and written to, the RAM.

**BBRAM** - The *System Self Test* checks to see that information can be read from, and written to, the RAM.

**REAL TIME CLOCK** - The *System Self Test* checks the RTC and confirms that the real time clock is functioning properly.

### 25.19.2 CIRCUIT BOARDS AND HARDWARE

This diagnostic routine provides communications between the KSU and stations. The *System Self Test* can detect a failure on the Station card as well as the extension number of the failed station port.

**VCM** - The VCM is not tested in present software versions.

### 25.19.3 STATION CARD

The *System Self Test* checks the communication between each station port and telephone. If a failure is detected, the entire station card is listed as **FAILED**, and the extension number of the failed station port is listed.

Possible reasons for failure on the Station Card are:

1. Card is not installed.
2. Cable or wire is not installed properly.
3. Card has malfunctioned.

### 25.19.4 CO LINES

The System Self Test checks for Co lines drawing dial tone, and will highlight the number of ports that have failed.

### 25.19.5 RUNNING THE SYSTEM SELF TEST

From the Main Menu under *Diagnostics*, press CONTROL and C.

The System Self Test appears.

The word EPROM is highlighted.

Highlighted next to the word EPROM is the word TESTING.

The word TESTING will remain highlighted for approximately 2 minutes before moving on to RAM.

The System Self Test will run independently for several minutes checking the status of all tested components by giving a visual indication of *PASS* or *FAIL*.

Press the ESCAPE key to stop testing. Below the screen will appear **SYSTEM SELF TEST ABORTED, ENTER ESC TO EXIT**. Press the ESCAPE key again. The Main Menu appears.

System Self Test														
CPU		EPROM : pass												
VCM		pass												
Stn		pass												
CO		FAIL								9	10	11	12	
GS		FAIL	13	14	15	16	17	18	19	20	21	22	23	24
CO		FAIL	25	26	27	28	29	30	31	32	33	34	35	36
DID		FAIL	37	38	39	40	41	42	43	44	45	46	47	48
Sli		-----												
Tie		FAIL	3021	3022	3023	3024	3025	3026	49	50	51	52		
Tie		FAIL	3027	3028	3029	3030	3031	3032	53	54	55	56		
Rec		-----												
Stn		FAIL	3039	3040	3041	3042	3043	3044	3045	3046	3047	3048	3049	3050
---		FAIL												
---		FAIL												
---		FAIL												
---		FAIL												
---		FAIL												
---		FAIL												
---		FAIL												
Stn		FAIL	3051	3052	3053	3054	3055	3056	3057	3058	3059	3060	3061	3062
Stn		FAIL	3063	3064	3065	3066	3067	3068	3069	3070	3071	3072	3073	3074
SYSTEM SELF TEST COMPLETED . Enter Esc to exit .														

Figure 25-12 System Self Test Screen



# ISOETEC® System/228

## Technical Specifications

### TECHNOLOGY

Fully featured digital telephone system with 228 ports. Distributed, stored program, microprocessor (68000) controlled. The system utilizes time division switching techniques, and pulse code modulation. System memory consists of 768K EPROM, 128K Static RAM, and 586K of battery-backed RAM (384K of which is located on the optional Memory Module III).

Dual bus architecture. Separate data bus for voice transmission and data transmission. 256 time slots for each bus. The system is non-blocking between ports.

Data communications between phones and common equipment is accomplished through time division.

Data and power are provided to the key phones through two pair, random twisted cable.

### CAPACITY

Ports	228 (Ports may be either stations or trunks). Stations and trunks occupy the ports in increments of 12.
Operator Terminals	Up to 4 (There are 2 RS-232 connections and 2 RS-422 connections, any of which may be programmed for the operator terminal).
ACD Agents	200
ACD Groups	15
Hunt Groups	36
SMDR Port	Any of the 4 ports may be used for SMDR.
Station Card	Each Station port card supports 12 digital stations. Each station card provides one audio path for an external page.
Trunk Card	Each COI and Loop/Ground Start port card supports 12 trunks.
DID card	Each DID card connects 12 DID lines. DID lines require dial pulse (rotary) signalling through loop pulses (dry contacts).
Tie Lines	Each E&M Tie Line Combination card supports four 2-wire, E&M Type II signal tie lines, and six digital stations.

## Technical Specifications

DTMF Receiver	Each DTMF Receiver combination card contains six DTMF receivers, and six digital stations.
Page Zones	Nine, plus all zone.
External Page Zones	One per station port card to a maximum of nine.

### LOOP LIMITS

Digital Key Phone	Maximum length of station loop is 1500 feet (4 wire, 22 AWG, inside wiring, random twisted cable) (1200 feet with 24 AWG).  When using the LSI version of the Station port card, the maximum length of station loop is 2500 feet (4 wire, 22 AWG, inside wiring, random twisted cable) (2000 feet with 24 AWG).
Operator Terminal (RS-422)	Maximum loop length 1000 feet.
OPXI	1000 Ohms nominal, not including telephone.
CO	2.2K Ohms maximum (with 48 volt battery).

### POWER AND ENVIRONMENTAL

Input power requirements	117 VAC $\pm$ 10%, 60 Hz single phase.
Operating Temperature	32° to 104° F (0° TO 40° C)
Storage Temperature	-40° to 140° F (-40° to 60° C)
Relative Humidity	5% to 90% non condensing at maximum temperature.
Power Consumption	360 Watts per power supply (2 power supplies maximum).
BTU	1200 per power supply.

### PHYSICAL

Cabinet	16" high by 28 1/2" long by 15 1/2" deep  Weight: 42 lbs.
Power supply	14 1/2" high by 8" long by 6" deep  Weight: 19.5 lbs.
Total	16" high by 42" long (including both power supplies) by 15 1/2" deep  Weight: approximately 127 lbs. fully loaded

**TRUNK ORDERING INFORMATION**

*Public Network:*

Interface Port Card	Facility	Ringer Interface	Network Equivalence	Jack
CO Port (p/n 15600)		02LS2	1.9 B	RJ21X
Loop/Ground used Loop (p/n 15620)		02LS2	1.9 B	RJ21X
Loop/Ground used Ground (p/n 15620)		02GS2	1.9 B	RJ21X
Direct Inward Dial (p/n 15610)		02RV2-T	0.0 B	RJ21X

*Private Leased Lines:*

Interface	Facility Interface	Service Code	Network Jack
E&M Tie Line Combo (p/n 15680)	TL12M	9.0 Y	RJ2FX
OPXI (p/n 15780)	OL13C	9.0 Y	RJ11C
OPX Port card (p/n 15660)	OL13B	9.0 Y	RJ21X or RJ11C

**FCC REGISTRATION NUMBERS**

KEY System: DHF7AS-16455-KF-E  
 Hybrid System: DHF7AS-16454-MF-E  
 PBX System: DHF7AS-16453-PF-E

**ELECTRICAL**

COI Specifications

CO Line AC Impedance 600 Ohms nominal  
 CO Line DC Resistance 225 Ohms @ 20mA  
 85 Ohms @ 100mA

Insertion Loss

OPX to Trunk 0db + 1db, 300Hz to 3,400Hz.  
 Digital Phones Acoustically tested (Station to CO).  
 TOLR: -50db Typical  
 ROLR: 38db Typical  
 SOLR: -3db Typical

## Technical Specifications

Loss Deviation	
OPX to Trunk Digital Phones	+1db. 300Hz to 3,400Hz. +2db -3db
Return Loss	Better than 16db from 300Hz to 600Hz. Better than 20db from 600Hz to 3,300Hz.
Out-of-Bound Signal Power	Better than 60db from 4KHz to 1MHz.
Group Delay	600ms @ 800Hz. Digital Phone to CO: Total
Group Delay Distortion	As per CCITT recommendation G.712.
Longitudinal Balance	Greater than 65db from 200Hz to 3300Hz. Greater than 75db from 20Hz to 200Hz.
Idle Channel Noise	Less than 18dbmco for all connections.
Cross Talk Attenuation	Greater than 75dbm Station to CO Line and Station to Station.
Single Frequency Distortion (300Hz - 3400Hz)	Station to CO Line and Station to Station: better than 2.0% or 34db. Output level -30dbm to 0dbm.
Ringling Sensitivity	16Hz to 30Hz at 40VRMS minimum. 30Hz to 67Hz at 50VRMS minimum.
Ringer Equivalence	1.9B
CO Line Signaling	
DTMF	Frequency pair at -5dbm + 1.0dbm. Frequency tolerance + 1.5%.
Dial pulse	10pps and 20pps programmable.
Input Level Range	+10db maximum.
<b>MISCELLANEOUS</b>	
Music Input (MOH and BGM)	Can be driven by any receiver or tapeplayer with output impedance of 2K ohms or less.
System Tones	Multi-frequency or single frequency tones. Ten user selectable ringing tones. All other signaling tones are non-selectable.
Modem Baud Rate	300/1200 Baud full duplex, conforms to Bell 212 standards.

Information subject to change without notice as process in engineering or manufacturing methods may warrant.

# Station Configuration Sheet

[Ext] \_\_\_\_\_ Port \_\_\_\_\_ Name \_\_\_\_\_ Date \_\_\_ / \_\_\_ / \_\_\_

House Pair \_\_\_\_\_

Station Cable \_\_\_\_\_

Enter Y (yes) or N (no) for each Line ID

Line ID #	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	3	3	3	
	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2
Day Ring																																
Night Ring																																
Day Access																																
Night Access																																

Line ID #	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	5	5	6	6	6	6	6
	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4
Day Ring																																
Night Ring																																
Day Access																																
Night Access																																

Line ID #	6	6	6	6	6	7	7	7	7	7	7	7	7	7	8	8	8	8	8	8	8	8	8	8	8	8	9	9	9	9	9	9
	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6
Day Ring																																
Night Ring																																
Day Access																																
Night Access																																

Line ID #				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	9	9	9	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2
Day Ring																																
Night Ring																																
Day Access																																
Night Access																																

# Station Configuration Sheet

[Ext] \_\_\_\_\_

Date \_\_\_ / \_\_\_ / \_\_\_

[K]eys								Key Code Summary		
Key	Code	Sub	Label	Key	Code	Sub	Label	Codes	Sub Codes	Description
01	[ ]	___	___	02	[ ]	___	___	001-228	-	Direct Trunk Appearance
03	[ ]	___	___	04	[ ]	___	___	300	1-10	Trunk Group
05	[ ]	___	___	06	[ ]	___	___	300	20	LCR
07	[ ]	___	___	08	[ ]	___	___	400	11	UNI
09	[ ]	___	___	10	[ ]	___	___	600	1-30	Station Speed
11	[ ]	___	___	12	[ ]	___	___	700	1-200	System Speed
13	[ ]	___	___	14	[ ]	___	___	800	-	Night Mode
15	[ ]	___	___	16	[ ]	___	___	801	-	Mic Mute
17	[ ]	___	___	18	[ ]	___	___	802	-	Night Answer
19	[ ]	___	___	20	[ ]	___	___	803	-	Do Not Disturb
21	[ ]	___	___	22	[ ]	___	___	804	-	Message Waiting
								805	-	Split
								806	-	Add On
								807	-	Call Back
								808	1-36	Pick Up
								809	1-228	Call Forward
								810	60-69	Page
								811	-	Release
								812	-	Patch
								813	-	Account
								814	-	Save/Repeat
								815	1-40	PBX
								816	-	Barge In
								818	-	lcm
								819	-	Bad Line
								820	-	Serial
								821	-	In/Out
								822	1-201	ACD Log
								823	-	ACD Wrap Up
								825	1-200	ACD Qualify
								826	-	ACD Unavailable
								827	-	ACD Help
								828	1-228	Data Hot Line
								829	-	Data On/Off
								830	-	VMS
								831	1-15	ACD Queue
								832	1-15	ACD Night
								833	-	Silent Monitor
								834	-	Park
								835	1-15	Forward To ACD
								836	-	Handset Barge In
								837	-	Dnd Override
								838	-	Unsupervised Conference
								901-936	1-201	Ringin Group Pick Up
								3001-3999 *	0000	Direct Station Selection *
								3001-3999 *101-148		Call Coverage (Pilot) *
								7001 - 7999		System Speed

[T]imers	Y(yes) or N (no)
Camp on timer = ___*10s (0-255)	Hands free co ___
Recording Num = ___ (0-36)	Hands free ext ___
Hunt group = ___ (0-36)	Hands free Rec ___
Day class = ___ (0-16)	Auto Answer ___
Night class = ___ (0-16)	Auto 2nd Path ___
LCR class = ___ (0-2)	Allow 2nd Path ___
Prime line = ___ (0-250)	Group in ___
Page zone = ___ (60-69)	Busy on Hold ___
Forced account= ___ (0-17)	Blk Barge in ___
Pickup group = ___ (0-36)	Blk Barge Tone ___
Pilot NoAnswr = ___ (0-255)	Out LCR Only ___
Cost limit = \$___ (0-9.99)	Total Toll ___
Ring type = ___ (1-11)	SMDR Enable ___
Hold Recall = ___*10s (0-255)	Hook Release ___
Trans Recall = ___*10s (0-255)	VMS/Attend ___
Tap-on extrn. = ___	Analog Phone ___
	Busy on DID ___
	Hands free Camp ___

\* Where 3 is the leading digit for extension numbers. The leading digit for the key code is the same as the leading digit for the extension numbers.

# System Programming Configuration Sheet

Date \_\_\_ / \_\_\_ / \_\_\_

<b>Operator Programming</b>	
Operator A Extension _____ Port _____ Integrated CRT (Y/N) _____ Page All Zones (Y/N) _____ FNCT keys=Departments (Y/N) _____ Display Extn Names (Y/N) _____ Allow Conference (Y/N) _____	
Operator B Extension _____ Port _____ Integrated CRT (Y/N) _____ Page All Zones (Y/N) _____ FNCT keys=Departments (Y/N) _____ Display Extn Names (Y/N) _____ Allow Conference (Y/N) _____	
Operator C Extension _____ Port _____ Integrated CRT (Y/N) _____ Page All Zones (Y/N) _____ FNCT keys=Departments (Y/N) _____ Display Extn Names (Y/N) _____ Allow Conference (Y/N) _____	
Operator D Extension _____ Port _____ Integrated CRT (Y/N) _____ Page All Zones (Y/N) _____ FNCT keys=Departments (Y/N) _____ Display Extn Names (Y/N) _____ Allow Conference (Y/N) _____	
<b>I/O port Programming</b>	
[P]ort = 1    Installed _____ Speed = _____ Protocol = _____ Printer _____ Computer Port _____ Type _____ SMDR _____ Incoming _____ Local _____ Long Dist _____	[P]ort = 2    Installed _____ Speed = _____ Protocol = _____ Printer _____ Computer Port _____ Type _____ SMDR _____ Incoming _____ Local _____ Long Dist _____
[P]ort = 3    Installed _____ Speed = _____ Protocol = _____ Printer _____ Computer Port _____ Type _____ SMDR _____ Incoming _____ Local _____ Long Dist _____	[P]ort = 4    Installed _____ Speed = _____ Protocol = _____ Printer _____ Computer Port _____ Type _____ SMDR _____ Incoming _____ Local _____ Long Dist _____
[P]ort = 5    Installed _____ Data prt _____ Speed = _____ Protocol = _____ Printer _____ Computer Port _____ Type _____ SMDR _____ Incoming _____ Local _____ Long Dist _____	[P]ort = 6    Installed _____ Data prt _____ Speed = _____ Protocol = _____ Printer _____ Computer Port _____ Type _____ SMDR _____ Incoming _____ Local _____ Long Dist _____
[P]ort = 7    Installed _____ Data prt _____ Speed = _____ Protocol = _____ Printer _____ Computer Port _____ Type _____ SMDR _____ Incoming _____ Local _____ Long Dist _____	[P]ort = 8    Installed _____ Data prt _____ Speed = _____ Protocol = _____ Printer _____ Computer Port _____ Type _____ SMDR _____ Incoming _____ Local _____ Long Dist _____
[P]ort = 9    Installed _____ Data prt _____ Speed = _____ Protocol = _____ Printer _____ Computer Port _____ Type _____ SMDR _____ Incoming _____ Local _____ Long Dist _____	[P]ort = 10    Installed _____ Data prt _____ Speed = _____ Protocol = _____ Printer _____ Computer Port _____ Type _____ SMDR _____ Incoming _____ Local _____ Long Dist _____

# System Programming Configuration Sheet

Date \_\_\_ / \_\_\_ / \_\_\_

<p>[L]line ___ port ___ Name _____            Line Type = ___ DTMF _ SMDR Enable _            ID Number = ___ Ground Start _            Public _ TIE/DID _</p> <p>[A] ID Number ___</p> <p>ID Class = _____ (00)            Trunk Group = _____ (01)            Hunt Group = _____ (00)            Drop Pulse = _____*50 millisecs. (014)            Pause Time = _____ secs. (005)            Flash Time = _____*50 millisecs. (025)            Orbit Recall = _____*10 secs. (006)</p> <p>ACD Day Group = ___            Priority = _            ACD Night Group = ___            Priority = _</p>	<p>[L]line ___ port ___ Name _____            Line Type = ___ DTMF _ SMDR Enable _            ID Number = ___ Ground Start _            Public _ TIE/DID _</p> <p>[A] ID Number ___</p> <p>ID Class = _____ (00)            Trunk Group = _____ (01)            Hunt Group = _____ (00)            Drop Pulse = _____*50 millisecs. (014)            Pause Time = _____ secs. (005)            Flash Time = _____*50 millisecs. (025)            Orbit Recall = _____*10 secs. (006)</p> <p>ACD Day Group = ___            Priority = _            ACD Night Group = ___            Priority = _</p>
<p>[L]line ___ port ___ Name _____            Line Type = ___ DTMF _ SMDR Enable _            ID Number = ___ Ground Start _            Public _ TIE/DID _</p> <p>[A] ID Number ___</p> <p>ID Class = _____ (00)            Trunk Group = _____ (01)            Hunt Group = _____ (00)            Drop Pulse = _____*50 millisecs. (014)            Pause Time = _____ secs. (005)            Flash Time = _____*50 millisecs. (025)            Orbit Recall = _____*10 secs. (006)</p> <p>ACD Day Group = ___            Priority = _            ACD Night Group = ___            Priority = _</p>	<p>[L]line ___ port ___ Name _____            Line Type = ___ DTMF _ SMDR Enable _            ID Number = ___ Ground Start _            Public _ TIE/DID _</p> <p>[A] ID Number ___</p> <p>ID Class = _____ (00)            Trunk Group = _____ (01)            Hunt Group = _____ (00)            Drop Pulse = _____*50 millisecs. (014)            Pause Time = _____ secs. (005)            Flash Time = _____*50 millisecs. (025)            Orbit Recall = _____*10 secs. (006)</p> <p>ACD Day Group = ___            Priority = _            ACD Night Group = ___            Priority = _</p>



# System Programming Configuration Sheet

Date \_\_\_ / \_\_\_ / \_\_\_

[R]ing Low = ___ (010) PPS = ___ (010) Ring High = ___ (050) Ratio = ___ (060)	[M]usic MOH BGM Source _ (1) _ (1)
[V]arious Divert limit ___ (15) min. Cost After = ___ (020) DID Digits _ (3) Local Cost Cost Limit = \$___ (\$0.00) Ground Start Timer = ___ (008)	[S]ystem will reset ___ (Y/N) at ___
[E]xternal Zone ___ Page ___ ID Number ___ Day _ Night _	[E]xternal Zone ___ Page ___ ID Number ___ Day _ Night _
[E]xternal Zone ___ Page ___ ID Number ___ Day _ Night _	[E]xternal Zone ___ Page ___ ID Number ___ Day _ Night _
[E]xternal Zone ___ Page ___ ID Number ___ Day _ Night _	[E]xternal Zone ___ Page ___ ID Number ___ Day _ Night _
[E]xternal Zone ___ Page ___ ID Number ___ Day _ Night _	[E]xternal Zone ___ Page ___ ID Number ___ Day _ Night _
[E]xternal Zone ___ Page ___ ID Number ___ Day _ Night _	[E]xternal Zone ___ Page ___ ID Number ___ Day _ Night _











# DID Programming Configuration

Date \_\_\_ / \_\_\_ / \_\_\_

Ind	DID Dgts	Ext/ID	Use (Y/N)	Name	Ind	DID Dgts	Ext/ID	Use (Y/N)	Name
001					020				
002					021				
003					022				
004					023				
005					024				
006					025				
007					026				
008					027				
009					028				
010					029				
011					030				
012					031				
013					032				
014					033				
015					034				
016					035				
017					036				
018					037				
019					038				

# DID Programming Configuration

Date \_\_\_ / \_\_\_ / \_\_\_

Ind	DID Dgts	Ext/ID	Use	Name	Ind	DID Dgts	Ext/ID	Use	Name
039					058				
040					059				
041					060				
042					061				
043					062				
044					063				
045					064				
046					065				
047					066				
048					067				
049					068				
050					069				
051					070				
052					071				
053					072				
054					073				
055					074				
056					075				
057					076				



# DID Programming Configuration

Date \_\_\_ / \_\_\_ / \_\_\_

Ind	DID Dgts	Ext/ID	Use	Name	Ind	DID Dgts	Ext/ID	Use	Name
077					096				
078					097				
079					098				
080					099				
081					100				
082					101				
083					102				
084					103				
085					104				
086					105				
087					106				
088					107				
089					108				
090					109				
091					110				
092					111				
093					112				
094					113				
095					114				

# DID Programming Configuration

Date \_\_\_ / \_\_\_ / \_\_\_

Ind	DID Dgts	Ext/ID	Use	Name	Ind	DID Dgts	Ext/ID	Use	Name
115					134				
116					135				
117					136				
118					137				
119					138				
120					139				
121					140				
122					141				
123					142				
124					143				
125					144				
126					145				
127					146				
128					147				
129					148				
130					149				
131					150				
132					151				
133					152				

# DID Programming Configuration

Date \_\_\_ / \_\_\_ / \_\_\_

Ind	DID Dgts	Ext/ID	Use	Name	Ind	DID Dgts	Ext/ID	Use	Name
153					172				
154					173				
155					174				
156					175				
157					176				
158					177				
159					178				
160					179				
161					180				
162					181				
163					182				
164					183				
165					184				
166					185				
167					186				
168					187				
169					188				
170					189				
171					190				

# DID Programming Configuration

Date \_\_\_ / \_\_\_ / \_\_\_

Ind	DID Dgts	Ext/ID	Use	Name	Ind	DID Dgts	Ext/ID	Use	Name
191					210				
192					211				
193					212				
194					213				
195					214				
196					215				
197					216				
198					217				
199					218				
200					219				
201					220				
202					221				
203					222				
204					223				
205					224				
206					225				
207					226				
208					227				
209					228				

# Transparent Intercom Dialing

Date \_\_\_ / \_\_\_ / \_\_\_

Extn	Line Group	Extn	Line Group	Extn	Line Group	Extn	Line Group	Extn	Line Group
001		021		041		061		081	
002		022		042		062		082	
003		023		043		063		083	
004		024		044		064		084	
005		025		045		065		085	
006		026		046		066		086	
007		027		047		067		087	
008		028		048		068		088	
009		029		049		069		089	
010		030		050		070		090	
011		031		051		071		091	
012		032		052		072		092	
013		033		053		073		093	
014		034		054		074		094	
015		035		055		075		095	
016		036		056		076		096	
017		037		057		077		097	
018		038		058		078		098	
019		039		059		079		099	
020		040		060		080		100	

# Transparent Intercom Dialing

Date \_\_\_ / \_\_\_ / \_\_\_

Extn	Line Group	Extn	Line Group	Extn	Line Group	Extn	Line Group	Extn	Line Group
101		121		141		161		181	
102		122		142		162		182	
103		123		143		163		183	
104		124		144		164		184	
105		125		145		165		185	
106		126		146		166		186	
107		127		147		167		187	
108		128		148		168		188	
109		129		149		169		189	
110		130		150		170		190	
111		131		151		171		191	
112		132		152		172		192	
113		133		153		173		193	
114		134		154		174		194	
115		135		155		175		195	
116		136		156		176		196	
117		137		157		177		197	
118		138		158		178		198	
119		139		159		179		199	
120		140		160		180		200	

# Transparent Intercom Dialing

Date \_\_\_ / \_\_\_ / \_\_\_

Extn	Line Group	Extn	Line Group	Extn	Line Group	Extn	Line Group	Extn	Line Group
201		221		241		261		281	
202		222		242		262		282	
203		223		243		263		283	
204		224		244		264		284	
205		225		245		265		285	
206		226		246		266		286	
207		227		247		267		287	
208		228		248		268		288	
209		229		249		269		289	
210		230		250		270		290	
211		231		251		271		291	
212		232		252		272		292	
213		233		253		273		293	
214		234		254		274		294	
215		235		255		275		295	
216		236		256		276		296	
217		237		256		277		297	
218		238		258		278		298	
219		239		259		279		299	
220		240		260		280		300	

# Transparent Intercom Dialing

Date \_\_\_ / \_\_\_ / \_\_\_

Extn	Line Group	Extn	Line Group	Extn	Line Group	Extn	Line Group	Extn	Line Group
301		321		341		361		381	
302		322		342		362		382	
303		323		343		363		383	
304		324		344		364		384	
305		325		345		365		385	
306		326		346		366		386	
307		327		347		367		387	
308		328		348		368		388	
309		329		349		369		389	
310		330		350		370		390	
311		331		351		371		391	
312		332		352		372		392	
313		333		353		373		393	
314		334		354		374		394	
315		335		355		375		395	
316		336		356		376		396	
317		337		357		377		397	
318		338		358		378		398	
319		339		359		379		399	
320		340		360		380		400	



# Transparent Intercom Dialing

Date \_\_\_ / \_\_\_ / \_\_\_

Extn	Line Group	Extn	Line Group	Extn	Line Group	Extn	Line Group	Extn	Line Group
401		421		441		461		481	
402		422		442		462		482	
403		423		443		463		483	
404		424		444		464		484	
405		425		445		465		485	
406		426		446		466		486	
407		427		447		467		487	
408		428		448		468		488	
409		429		449		469		489	
410		430		450		470		490	
411		431		451		471		491	
412		432		452		472		492	
413		433		453		473		493	
414		434		454		474		494	
415		435		455		475		495	
416		436		456		476		496	
417		437		457		477		497	
418		438		458		478		498	
419		439		459		479		499	
420		440		460		480		500	

# Transparent Intercom Dialing

Date \_\_\_ / \_\_\_ / \_\_\_

Extn	Line Group	Extn	Line Group	Extn	Line Group	Extn	Line Group	Extn	Line Group
501		521		541		561		581	
502		522		542		562		582	
503		523		543		563		583	
504		524		544		564		584	
505		525		545		565		585	
506		526		546		566		586	
507		527		547		567		587	
508		528		548		568		588	
509		529		549		569		589	
510		530		550		570		590	
511		531		551		571		591	
512		532		552		572		592	
513		533		553		573		593	
514		534		554		574		594	
515		535		555		575		595	
516		536		556		576		596	
517		537		557		577		597	
518		538		558		578		598	
519		539		559		579		599	
520		540		560		580		600	

# Transparent Intercom Dialing

Date \_\_\_ / \_\_\_ / \_\_\_

Extn	Line Group	Extn	Line Group	Extn	Line Group	Extn	Line Group	Extn	Line Group
601		621		641		661		681	
602		622		642		662		682	
603		623		643		663		683	
604		624		644		664		684	
605		625		645		665		685	
606		626		646		666		686	
607		627		647		667		687	
608		628		648		668		688	
609		629		649		669		689	
610		630		650		670		690	
611		631		651		671		691	
612		632		652		672		692	
613		633		653		673		693	
614		634		654		674		694	
615		635		655		675		695	
616		636		656		676		696	
617		637		657		677		697	
618		638		658		678		698	
619		639		659		679		699	
620		640		660		680		700	

# Transparent Intercom Dialing

Date \_\_\_ / \_\_\_ / \_\_\_

Extn	Line Group	Extn	Line Group	Extn	Line Group	Extn	Line Group	Extn	Line Group
701		721		741		761		781	
702		722		742		762		782	
703		723		743		763		783	
704		724		744		764		784	
705		725		745		765		785	
706		726		746		766		786	
707		727		747		767		787	
708		728		748		768		788	
709		729		749		769		789	
710		730		750		770		790	
711		731		751		771		791	
712		732		752		772		792	
713		733		753		773		793	
714		734		754		774		794	
715		735		755		775		795	
716		736		756		776		796	
717		737		757		777		797	
718		738		758		778		798	
719		739		759		779		799	
720		740		760		780		800	

# Transparent Intercom Dialing

Date \_\_\_ / \_\_\_ / \_\_\_

Extn	Line Group	Extn	Line Group	Extn	Line Group	Extn	Line Group	Extn	Line Group
801		821		841		861		881	
802		822		842		862		882	
803		823		843		863		883	
804		824		844		864		884	
805		825		845		865		885	
806		826		846		866		886	
807		827		847		867		887	
808		828		848		868		888	
809		829		849		869		889	
810		830		850		870		890	
811		831		851		871		891	
812		832		852		872		892	
813		833		853		873		893	
814		834		854		874		894	
815		835		855		875		895	
816		836		856		876		896	
817		837		857		877		897	
818		838		858		878		898	
819		839		859		879		899	
820		840		860		880		900	

## Transparent Intercom Dialing

Date \_\_\_ / \_\_\_ / \_\_\_

Extn	Line Group	Extn	Line Group	Extn	Line Group	Extn	Line Group	Extn	Line Group
901		921		941		961		981	
902		922		942		962		982	
903		923		943		963		983	
904		924		944		964		984	
905		925		945		965		985	
906		926		946		966		986	
907		927		947		967		987	
908		928		948		968		988	
909		929		949		969		989	
910		930		950		970		990	
911		931		951		971		991	
912		932		952		972		992	
913		933		953		973		993	
914		934		954		974		994	
915		935		955		975		995	
916		936		956		976		996	
917		937		957		977		997	
918		938		958		978		998	
919		939		959		979		999	
920		940		960		980		000	

## Record of Changes

This Record of Changes page is used to keep you up-to-date with changes and variations in equipment. As Technical Facts pertaining to this Technical Manual are issued, list them on this Record of Changes page and follow the instructions given in the particular Technical Facts.

The combination of Technical Facts and Record of Changes will provide you with a chronological record of all changes made to this system.

To insure that you are using the most current information, check the Record of Changes page and review all pertinent Technical Facts.

### LEGEND:

- <sup>1</sup> Information previously released in this Technical Facts has been integrated into the manual. Therefore this Technical Facts is not contained in the Technical Facts section of the Manual.
- <sup>2</sup> The entire Technical Facts has been included in the Technical Facts section of the Manual.

TECH FACT #	DATE	TITLE/DESCRIPTION
<sup>2</sup> TF 1661	6/7/89	ISOBLOK Transient Suppressor
<sup>2</sup> TF 1662	6/7/89	Voltage Regulators/Conditioners
<sup>2</sup> TF 1670	8/8/89	Return Procedure For Digital Telephones
<sup>1</sup> TF 1685	3/7/90	System/228 DISA and LCR
<sup>2</sup> TF 1686	3/16/90	Loop/Ground Start Trunk II Port Card
<sup>2</sup> TF 1688	5/1/90	IDS/228 Software Version 6.50
<sup>1</sup> TF 1691	5/7/90	Potential Misdials With The Built-in Auto Attendant
<sup>2</sup> TF 1697	7/31/90	T1 Interface Port Card (located behind T1 tab)
<sup>2</sup> TF 1698	8/13/90	IDS 432 Port Configuration (located behind 432 tab)
<sup>2</sup> TF 1711	1/05/90	IDS 432 Software Version 1.02 (located behind 432 tab)
<sup>2</sup> TF 1736	3/29/91	IDS Software Version 228-6.73





# Technical Facts

— EXECUTONE —

GENERAL INFORMATION

No. 1662  
June 7, 1989  
For All Distributors

## VOLTAGE REGULATORS/CONDITIONERS

Part Numbers 550021, 550022, and 550000

The AC voltage regulators have proven to be highly effective against sags, over-voltage conditions and transients. With a regulator the system will operate with an input voltage as low as 70 VAC.

It is recommended that they be used to protect as much equipment as possible.

The regulators come in three sizes: 150VA (part number 550021), 500VA (part number 550022), and 750VA (part number 550000).

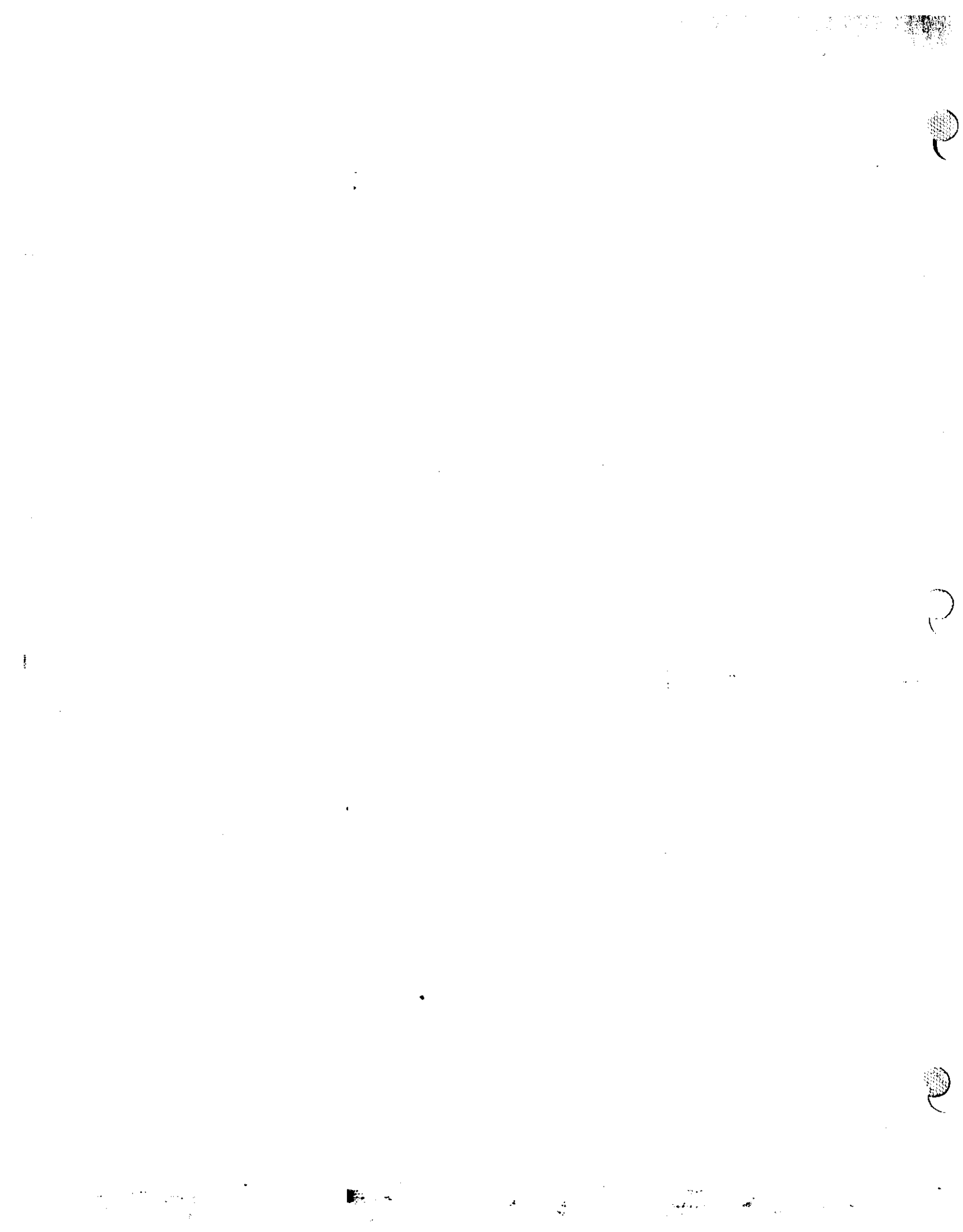
The 150 VA unit can support the System/18, 24 and 36 KSU. The 500 VA unit can support the System/66, 96 and 108 KSU (the System/96 with the 120 option requires two). The 750VA unit can support the System/228 and System/96 with the 120 option.

These voltage regulators are also recommended for the EXECUTONE® ECX 512, 408/816, 18/32 and 36/72 systems. The 150 VA unit can support the ECX 512, and 408/818. The 500 VA unit can support the 18/32. The 750VA unit can support the 36/72.

If the load(s) need to be grounded, use the ground lug on the housing of the regulator instead of cold water pipe so that a ground loop is not generated.

File a copy of this Technical Facts in your Master Technical Facts File and copy it as necessary for your Technical Manuals.

Ken Liu  
Product Manager



Affidavit for the Connection of  
Customer Premises Equipment to 1.544 Mbps and/or  
Subrate Digital Services

For work to be performed in the certified territory of \_\_\_\_\_  
(Telco's Name)

State of \_\_\_\_\_

County of \_\_\_\_\_

I, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_  
(Name) (Business Address) (Phone Number)

representing \_\_\_\_\_, a customer located at \_\_\_\_\_  
(Name of Customer) (Phone Number)

being duly sworn, state:

I have responsibility for the operation and maintenance of the terminal equipment to be connected to \_\_\_\_\_ 1.544 Mbps and/or \_\_\_\_\_ Subrate digital services. The terminal equipment connected complies with Part 68 of the Commissions rules except for the encoded analog content and billing protection specifications. With respect to encoded analog content and billing protection:

I attest that all operations associated with the establishment, maintenance and adjustment of the digital CPE with respect to encoded analog content and encoded billing information continuously complies with Part 68 of FCC's Rules and Regulations.

The digital CPE does not transmit digital signals containing encoded analog content or billing information which is intended to be decoded within the telecommunications network.

The encoded analog and billing protection is factory set and is not under the control of the customer.

I attest that the operator(s)/ maintainer(s) of the digital CPE responsible for the establishment, maintenance and adjustment of the encoded analog content and billing information has (have) been trained to perform these functions by successfully completing one of the following: (Check appropriate one(s))

\_\_\_\_\_ a. A training course provided by the manufacturer/grantee of the equipment used to encode analog signals; or

\_\_\_\_\_ b. A training course provided by the customer or authorized representative, using training materials and instructions provided by the manufacturer/grantee of the equipment used to encode analog signals; or

\_\_\_\_\_ c. An independent training course (e.g., trade school or technical institution) recognized by the manufacturer/grantee of the equipment used to encode analog signals; or

\_\_\_\_\_ d. In lieu of the proceeding training requirements, the operator(s)/maintainer(s) is (are) under the control of a supervisor trained in accordance with \_\_\_\_\_ above.

(Circle one)

I agree to provide \_\_\_\_\_ with proper documentation to demonstrate compliance  
(Telco's name)  
with the information as provided in the preceding paragraph, if so requested.

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Title)

\_\_\_\_\_  
(Date)

Subscribed and Sworn to before me  
this \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_

\_\_\_\_\_  
NOTARY PUBLIC

My commision expires: \_\_\_\_\_

# Technical Facts

— EXECUTONE —

GENERAL INFORMATION

No. 1661  
June 7, 1989  
For All Distributors

## ISOBLOK TRANSIENT SUPPRESSOR

Part Number 40129

The ISOBLOK transient suppressors, used on the ISOETEC® equipment, has proved to be highly effective. It is recommended that the transient suppressor be used for all KSUs, power supplies and peripherals (e.g., ISOETEC System/18, 24, 36, 66, 96, 108, 228, ring generators, 48 volt DC power supplies, fax machines, voice mail, auto-attendants, CRTs, etc.). The ISOBLOK is also recommended for the EXECUTONE® ECX 512, 408/816, 18/32 and 36/72/112 systems.

If the load(s) need to be grounded, use the ground lug on the housing of the ISOBLOK instead of cold water pipe so that a ground loop is not generated.

In cases where voltage regulators/line conditioners or battery backup systems are used, transient protection has been built into them. However the ISOBLOKs can still be used for extra protection.

The ISOBLOK unit is rated at 15 Amps and provides two receptacles for the load(s).

File a copy of this Technical Facts in your Master Technical Facts File and copy it as necessary for your Technical Manuals.

Ken Liu  
Product Manager

2

2

2

# Technical Facts

**EXECUTONE**  
ISOETEC® DIGITAL TELEPHONES

No. 1670  
August 8, 1989  
For ISOETEC Distributors

## RETURN PROCEDURE FOR DIGITAL TELEPHONES 6-KEY, 17-KEY, 28-KEY, & DSS CONSOLE

This copy of Technical Facts is being issued to outline the existing Repair and Return Procedures for ISOETEC DIGITAL TELEPHONES. Only the printed circuit boards of the 6-key, 17-key, 28-key, and DSS Consoles are to be returned for repair, not the entire telephone. The entire 29-key display telephone is returned for repair. Do not disassemble the 29-key display telephone. A packing kit is available for the return of the telephone printed circuit boards.

Packaging kit part number: 881020

- 1 Anti Static Tray
- 1 Outer Sleeve
- 1 Moisture Absorbing Silica Bag

Master Carton (holds 5 PC board boxes) part number: 881040

This packaging is designed to be reusable. DO NOT DISCARD THIS PACKAGING.

### DISASSEMBLY

1. Disassemble the base of the telephone (or DSS) by removing the 4 screws from the bottom of the phone.
2. Slide the microphone from its holder in the front corner of the base (Fig 1).
3. Remove the line cord jack from the rear of the telephone (or DSS) base by tilting the jack and releasing the hook that secures it in place (Fig 2).
4. Disconnect the speaker cable (Fig 3).
5. Remove the screws that hold the PC board to the top cover (Fig 4). On the DSS Console PC board, a small circuit board must be disconnected to access the screws beneath it. Remount the board before shipment.
6. Place the telephone's PC board into the Anti Static Tray.
7. Fold the Tray as shown and secure it (Fig 5).
8. Slide the Outer Sleeve over the Tray.

(Continued)

File a copy of this Technical Facts in your  
Master Technical Facts File.

Pat Hardy  
Technical Publications Manager

9. Tape the openings and ship to:

EXECUTONE Information Systems  
12250 Kirkham Road  
Poway, CA 92064

10. If necessary, place the PC board boxes into the master carton and ship to the above address.
11. Note: Be sure to fill out and include an FR form before shipping any equipment back for repair.

## RE-ASSEMBLING THE TELEPHONE

1. Screw the PC board into the telephone cover (Fig 4).
2. Re-attach the speaker cable.
3. Slide the microphone into its holder (Fig 2). Make certain the microphone is fully seated, or low volume may result. If necessary lubricate the microphone with a soapy solution.
4. Connect the line cord jack into its holder.
5. NOTE THE IRS LEVEL ON THE REPLACEMENT PC BOARD AND MARK IT ON THE IRS LABEL ON THE TELEPHONE'S BASE. THIS IS ABSOLUTELY NECESSARY. IF THIS IS NOT DONE, THEN THE SERVICE TECH WILL BE REQUIRED TO DISASSEMBLE THE TELEPHONE TO CHECK THE IRS LEVEL.
6. Re-attach the base. Install the upper screws first, then install the lower screws.

### How To Obtain Additional Copies Of This Facts

This Technical Facts is intended to be copied for any additional quantity required; therefore, the Technical Facts is not available through the EXECUTONE Inside Sales/Customer Service Department.

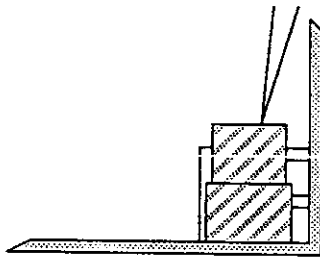


Figure 1

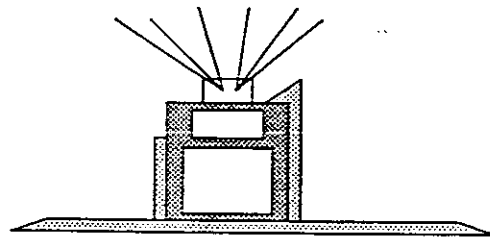


Figure 2

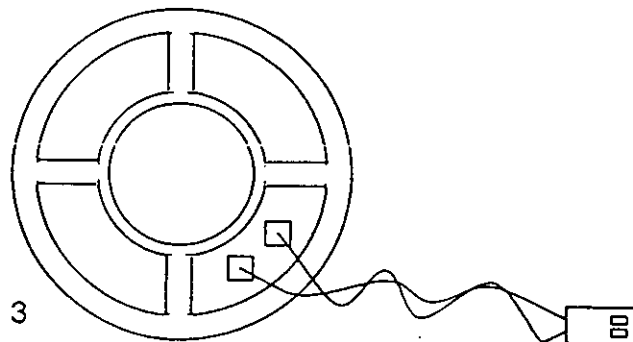
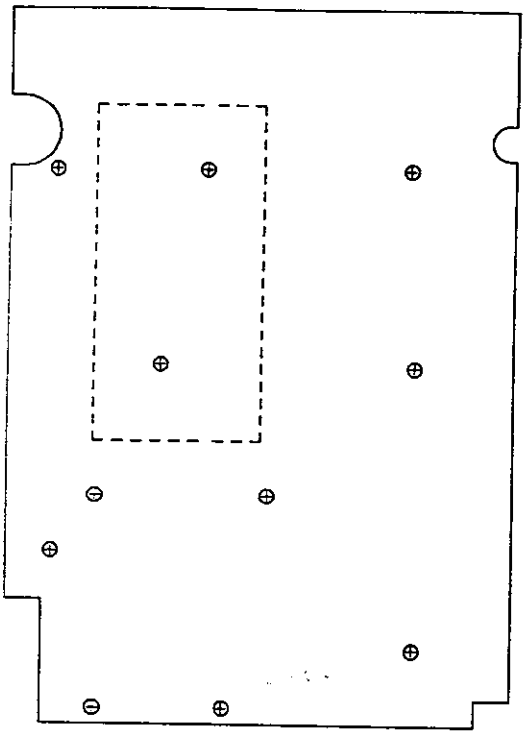
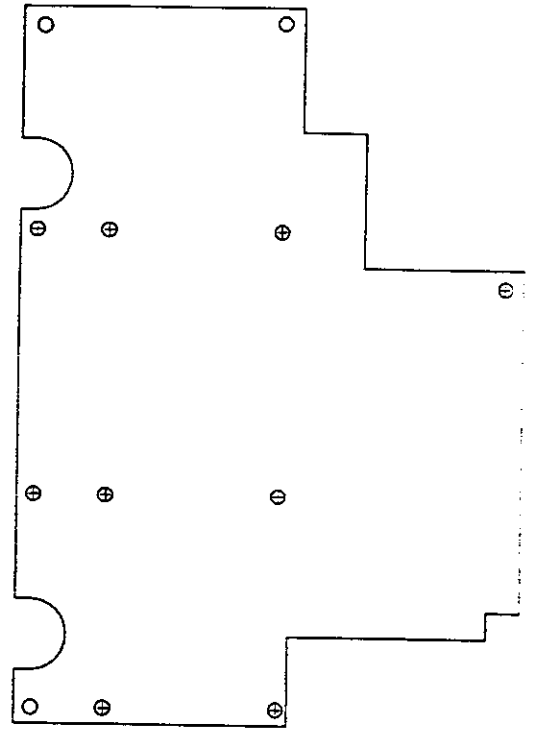


Figure 3

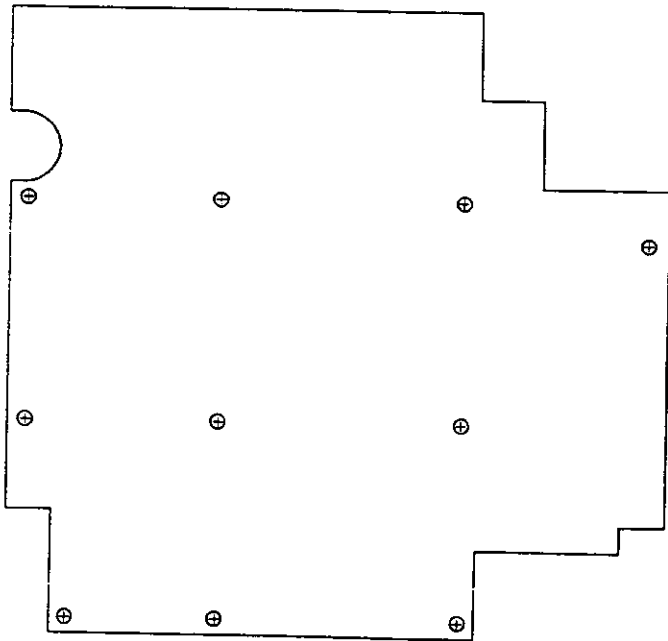




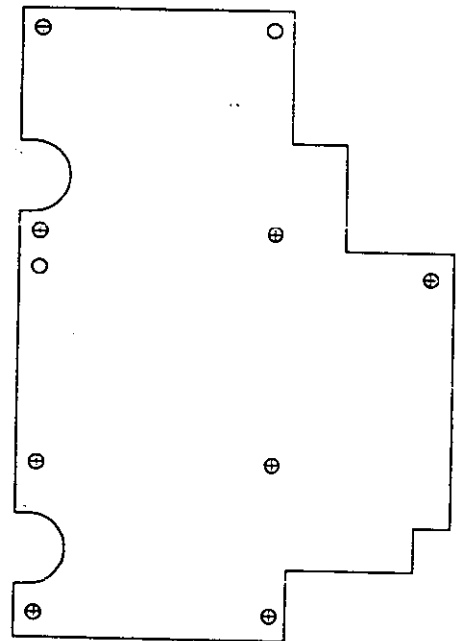
DSS Console PC



17-key telephone PC



28-key telephone PC



6-key telephone PC

Figure 4

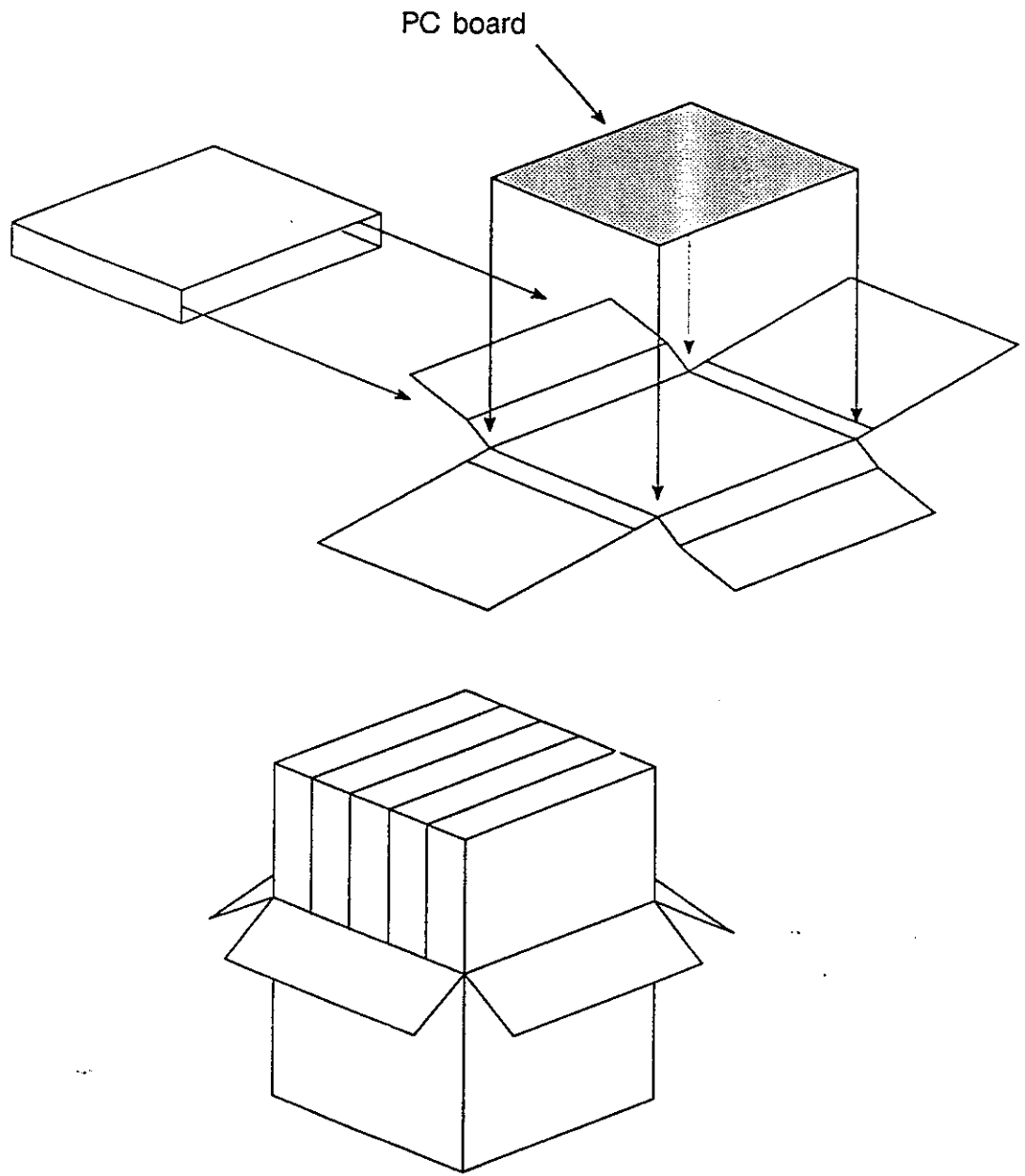


Figure 5

# Technical Facts

EXECUTONE

ISOETEC® DIGITAL SYSTEM

No. 1686

March 16, 1990

For ISOETEC Distributors

## LOOP/GROUND START TRUNK II PORT CARD

Part Number 15590

The Loop/Ground Start Trunk II port card (p/n 15590) is an LSI (Large Scale Integration) version of the existing Loop/Ground Start port card (p/n 15620). The specifications for the LSI version of the port card are the same as those of the Loop/Ground Start port card. The port card can be installed in any configuration of the ISOETEC Digital System.

The Loop/Ground Start Trunk LSI port card is functionally interchangeable with the Loop/Ground Start Trunk port card and may be shipped as stock levels permit in place of the Loop/Ground Start Trunk port card.

**NOTE: In existing installations, when replacing a L/G Start Trunk card with an L/G Start Trunk II card, the Tip and Ring inputs must be reversed. Refer to Table 1 for wiring information. The Loop/Ground Start Trunk II port card is wired with tip and ring inverted compared to the L/G Start Trunk port card.**

The port card can be installed in any card slot in the cabinet with the power on. The option straps on the port card have been replaced with dip switches on the LSI version of the port card. The switches are located near the outer edge of the board (see Figure 1). Set 2 switches per circuit as follows: open for loop start operation and closed for ground start operation.

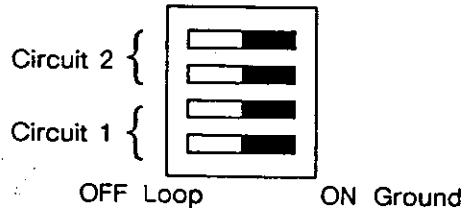
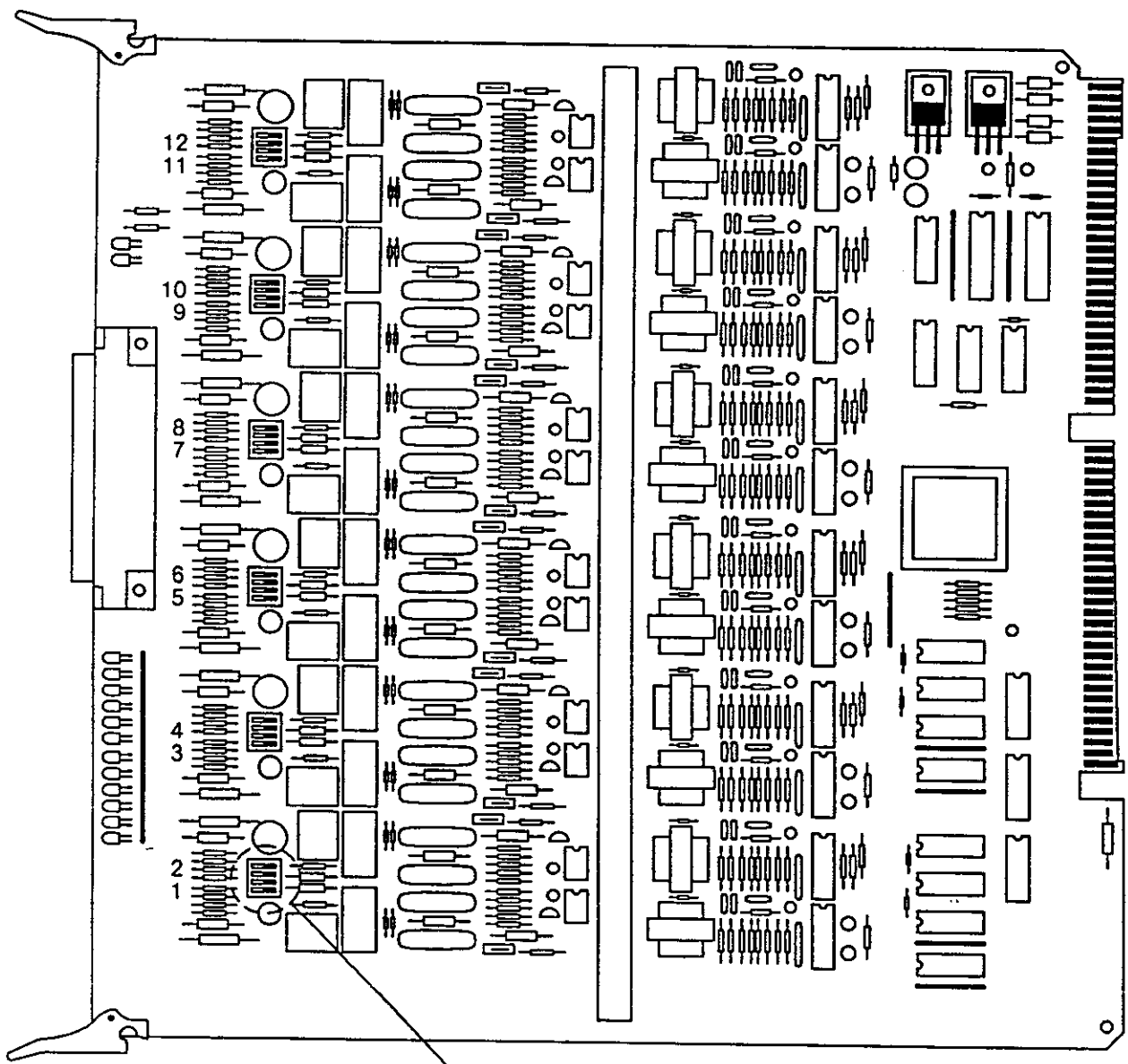
### How To Obtain Additional Copies Of This Facts

This Technical Facts is intended to be copied for any additional quantity required; therefore, the Technical Facts is not available through the EXECUTONE Inside Sales/Customer Service Department.

File a copy of this Technical Facts in your Master Technical Facts File and in your ISOETEC Digital System Technical Manual part number 770312B.

Also list is on the Record of Changes page.

Pat Hardy  
Technical Publications



Open 2 switches per circuit for loop start operation

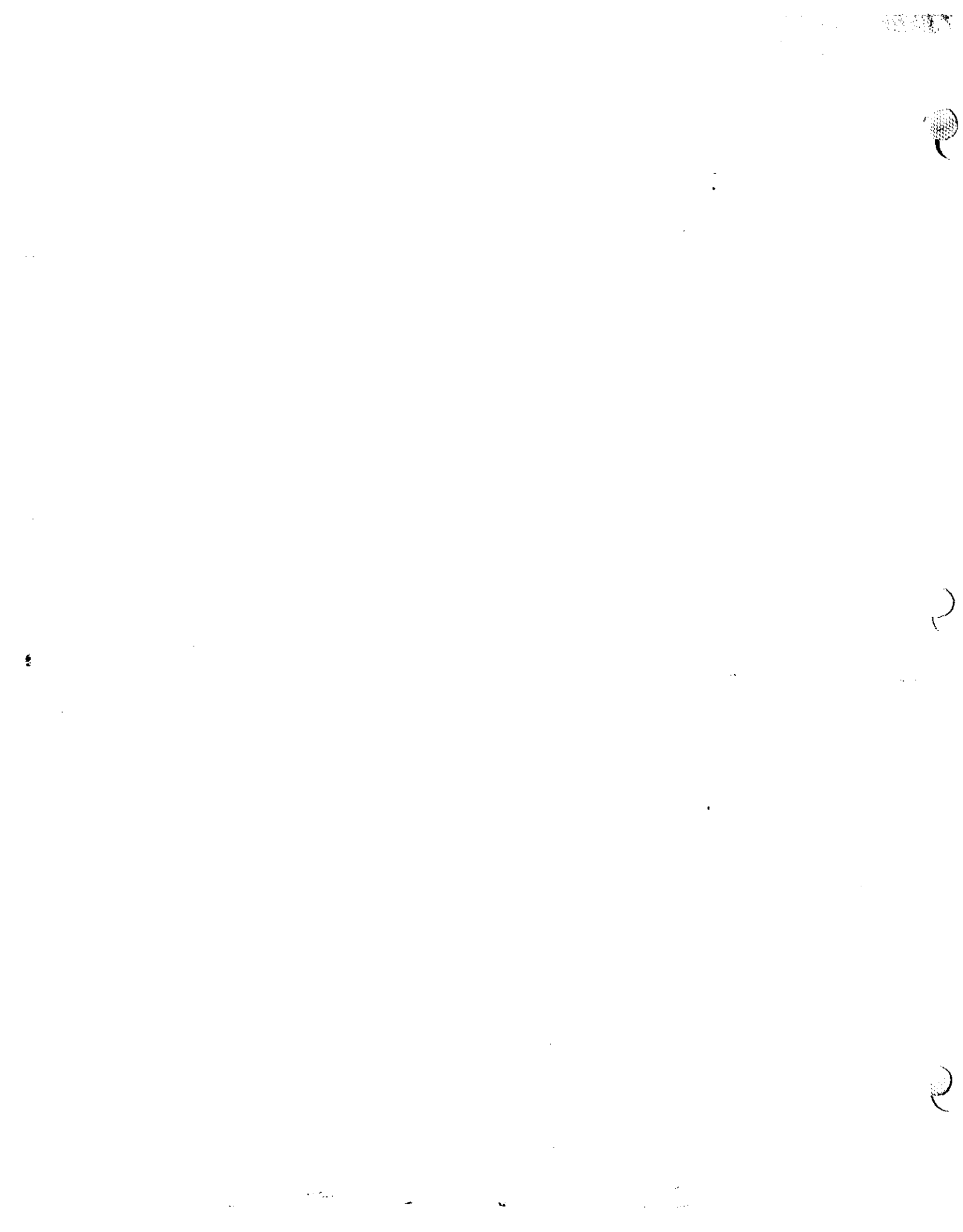
Close 2 switches per circuit for ground start operation

Figure 1 Loop/Ground Start Trunk II Port Card

TABLE 1 Loop/Ground Start Port Wiring Configuration

CABLE PIN AND COLOR	PORT	L/G Trunk II LEAD DESIGNATION	L/G Trunk LEAD DESIGNATION
26 wht/blu	001	Tip	Ring
1 blu/wht		Ring	Tip
27 wht/org	002	Tip	Ring
2 org/wht		Ring	Tip
28 wht/grn	003	Tip	Ring
3 grn/wht		Ring	Tip
29 wht/brn	004	Tip	Ring
4 brn/wht		Ring	Tip
30 wht/slt	005	Tip	Ring
5 slt/wht		Ring	Tip
31 red/blu	006	Tip	Ring
6 blu/red		Ring	Tip
32 red/org	007	Tip	Ring
7 org/red		Ring	Tip
33 red/grn	008	Tip	Ring
8 grn/red		Ring	Tip
34 red/brn	009	Tip	Ring
9 brn/red		Ring	Tip
35 red/slt	010	Tip	Ring
10 slt/red		Ring	Tip
36 blk/blu	011	Tip	Ring
11 blu/blk		Ring	Tip
37 blk/org	012	Tip	Ring
12 org/blk		Ring	Tip

The remainder of the cable is not used.



# Technical Facts

EXECUTONE

ISOETEC® DIGITAL SYSTEM

No. 1688

May 1, 1990

For ISOETEC Distributors

## SOFTWARE VERSION 6.50

A new version software, 6.50 is now available for the 228 port configuration of the ISOETEC® Digital System. This replaces software version 5.52.

The release of this software version enhances the Call Forward, Automated Attendant, Verified Force Account Codes, and LCR features. This software version supports the following new port cards when they become available: T1 Interface port card, and 4-wire E&M Tie Line port card. This software version will support a new optional feature called *Custom Plus ACD* when it becomes available. In addition, an option in this software allows the *Data* feature to be used when a 228 port CPU is installed in a 108 port cabinet. This option is added to the software with the remote programming feature. The following paragraphs give a brief description of these new or enhanced features. Add this Tech Facts to the back of the ISOETEC Digital System Technical Manual, part number 770312B.

### Software Enhancements

**Call Forward to Station Speed Dial Key** – This feature key gives each station user the ability to forward outside line calls to a single station speed dial number. The calls can be forwarded when the system is in the Day mode, when the system is in the Night mode, or both. While activated, when an outside line call is routed to the station, the system selects a line in Trunk Group 1 and dials the telephone number contained in that station's speed dial bin 30. The key code for this key is 839. The telephone number must have been previously programmed in speed dial bin 30, and a pause (entered as \*4) must appear at the beginning of the telephone number. This Call Forward overrides any toll restriction imposed on the station. The Call Forward remains in effect after a system reset.

Press the key once to activate forwarding in the DAY mode. The key's LED lights.

Press the key twice to activate forwarding in the NIGHT mode. The key's LED flashes rapidly.

Press the key three times to activate forwarding in the both the DAY and NIGHT modes. The key's LED flashes slowly.

*NOTE: If standard Call Forward is active when the Call Forward to Station Speed Dial key is activated, the Call Forward to Station Speed overrides the standard Call Forward. The Forward and VMS Plans screen does not indicate a station forwarded to a Station Speed Dial. This key cannot be assigned to an Integrated Operator Terminal.*

(Continued)

File a copy of this Technical Facts in your Master Technical Facts File and in your ISOETEC Digital System Technical Manual part number 770312B. Also list it on your Record of Changes Page.

Don Sawicki  
Product Management

**Enhancements to the Forward and VMS Programming Screen** – Two new values, **Digit Duration** and **Volume**, have been added to the *Forward and VMS Programming* screen. **Digit Duration** is used to extend the length of the DTMF tones sent to the Voice Message System. The duration of each tone is the number entered as **Digit Duration** times 60 milliseconds. **Volume** adjusts the volume of the DTMF digits sent to VMS. Valid entries range from 0 to 15. The value 0 is equivalent to -32 dB and 15 is equivalent to +6 dB.

**Call Forward and DIDs** – Two additional values, **DID On** and **DID Digits**, have been added to the *Forward and VMS Programming* screen. These values are used when DID calls are to be routed to individual Voice Message System (VMS) "mailboxes." If **DID On** is programmed Y (yes), when a DID call is forwarded to VMS, the incoming dialed DID number is used to form the mailbox number. The system uses the last (number programmed for **DID Digits**) digits of the dialed DID number as the mailbox number. For example, if **DID Digits** is 4, the last 4 dialed digits of the DID number is the mailbox number sent to VMS. These values are only for DID calls, they do not effect regular trunk calls forwarded to VMS. **DID On** defaults to N (no). When **DID On** is changed to Y (yes), **DID Digits** appears on the screen with a value of zero.

**Verified Forced Account Codes** – An option has been added to this software version which increases the number of verifiable account codes to 2052. This option is called **LVFAC** or **Large Verified Forced Account Codes**. This feature requires a Memory Module III (p/n 15290). This option must be activated by an authorized service center using the remote programming feature. This feature must be ordered using part number 111006. The system must be reset after the feature has been added in order to make the change. Any existing account codes will be lost after this reset. The **Verified Forced Account Code** feature operates the same as previous software versions.

**New Line Types in System Programming** – New line types can be entered in the *Lines* area of the *System Programming* screen. **Line Type 80** is used on a tie line to provide an immediate ring circuit. When an incoming service request is received (a short between E and SG), the tie line immediately rings the assigned extensions. This line type provides return supervision on answer. **Line Type 90** is used when a ring-down line is terminated on a CO port. A call placed on a line with this line type increments the appropriate reports in the *Management Reports* even though the line remains in the *Dial* state.

**Least Cost Routing** – A column has been added to the second page of the *Least Cost Routing* programming screen. **Local ILATA** is used for special Intra LATA calls and should be left programmed N (no).

**Data and the 108 Port Cabinet** – This software version contains an option which allows the *Data* feature to be used when the 228 port CPU is installed in the 108 port cabinet. This option must be activated by an authorized service center using the remote programming feature. Order part number 112008.

**DIDs and Call Accounting Reports Option** – The dialed DID digits received from the Central Office are recorded as account codes in the *Call Accounting Reports* option. If an account code is entered for the call, the account code that is entered takes the place of the DID digits. *SMDR Enable* must be programmed to Y (yes) for both the DID trunk and station.

**Automated Attendant Dialing Scheme** – A dialing scheme has been added to the Automated Attendant which allows 4-digit dialing to extensions, and 1-digit dialing to hunt groups and ACD groups. This effectively adds 4-digit extension numbers to Scheme 3. Scheme 5 is labeled : [EXT->E001-999, ACD--> 1 THRU 0, Hunt 1 THRU 9]. This scheme cannot use 0 to reach the operator. The leading digit for extension numbers cannot be used to reach an ACD or Hunt group. This scheme cannot use 2 to reach VMS.

**Automated Attendant and ACD** – The interaction between ACD and the Automated Attendant has been enhanced. New *hunt group* numbers (137-142 for Auto Attendant 1 through 6) can be used in a *ACD Call Sequence* instruction boxes for FORWARD TO HUNT GROUP \_\_\_\_\_. When these *hunt group* numbers are used, a call reaching this instruction is routed to the Automated Attendant, but its place in the ACD queue is kept until the caller dials a new destination. If the caller does not dial a new destination in the Auto Attendant, the call remains in the ACD Queue.



**Station Programming VMS/ATT** – Extensions which have the *VMS/ATT* option on the *Station Programming* screen set to Y (yes), must now have a time programmed for *Hold* and *Transfer Recall*. This allows for screened transfers from the Voice Message System or an external Automated Attendant.

**Integrated Operator Terminal Extension Status** – The extensions which are NOT to be displayed on the *Extension Status* field of the Integrated Operator terminal can now be selected using the *Directory* programming screen. Move the cursor to the extension to be excluded, and press the CTRL and O keys at the same time. An \* appears next to the extension number to indicate it does not appear on the *Extension Status* field. To add an extension number back to the *Extension Status* field, move the cursor to the desired extension number and press the CTRL and O keys at the same time. The \* disappears.

**Integrated Operator Terminal Displays in Pending Box** – The message in the pending box for calls forwarded to the operator is now the same for all modes of call forward. The same message " " shows for Call Forward All, Call Forward Busy, and Call Forward No Answer.

**Account Codes and System/Station Speed Dial Keys** – System and Station Speed Dial keys can be used to enter Account Codes.

Select an OUTSIDE LINE.

Press the ACCOUNT CODE key.

Press the SYSTEM/STATION SPEED DIAL key which contains the desired account code.

Press the ACCOUNT CODE key.

Dial the telephone number.

**Changes to the Display Telephone** – The message displayed on a transfer recall has been changed. The display now shows the extension number and name of the extension the call is recalling from, rather than the line number the call is on. When a PBX feature key is used, the digits dialed after pressing the key are now shown on the display.

**440 Hertz Tone for Single Line Telephones** – The extensions serving Single Line Telephones can be programmed to generate 440 Hertz tone whenever the extension is off-hook and not connected to a station or a trunk. This is used to send dial tone to external devices (such as Voice Message Systems and Automated Attendants) to detect when the outside party has disconnected. To program a Single Line Extension to generate the tone, program the *Day Class* in the *Timers* area of the *Station Programming* screen to 16 for the desired extension number. This programs the extension for both the Day and Night mode.

## New System Options

The following new options can be found on the *System Options* programming screen.

**System Speed Dial Override Toll Restriction** – System speed dial numbers no longer automatically override a station's toll restriction plan. If this option is programmed N (no), System Speed Dial Numbers override a station's toll restriction. If this option is programmed Y (yes), System Speed Dial Numbers do not override a station's toll restriction.

**LCR Key Out Only** – When this option is programmed Y (yes), incoming calls are not directed to LCR keys. A Trunk Group, or UNI key must be provided on stations to receive incoming calls. *Group In* on the *Station Programming* screen must also be set to Y (yes) for an extension to use this feature. Pilot keys do receive incoming calls with both *LCR Key Out Only*, and *Group In* programmed Y (yes).

**Busy DID Hunt Gp** – This option is used when a DID number is translated to a Line ID number, and the ID number is programmed to go to a hunt group. When this option is programmed Y (yes), when all members of the hunt group are busy, the caller receives a busy tone. If a member becomes available before the caller disconnects, the call is routed to the member. This is especially useful for the hunt group for VMS.

## T1 Interface Port Card

This software version is used to support the T1 Interface port card (p/n 15510). (The T1 port card has not been released as of this writing.) This port card is designed to interface any mix of up to 24 voice channels (64 kilobit time slots) of a digital T1 trunk. Support for data channels is planned for the future. The T1 Interface card supports **standard D-4 framing format, with robbed bit signaling**. The system can support E&M, loop start, ground start, and DID signaling. Although the T1 card fits into one card slot, it takes up two card slots worth of time slots.

T1 can be used to connect 24 "lines" (24 channels per T1 circuit) from a Central Office to the system. These lines can be any mix of inbound WATS lines, outbound WATS, standard DDD lines, etc. This is especially useful in applications using Automatic Call Distribution (ACD) which may require a large number of incoming lines.

**RBT** - An option has been added to the *System Programming* screen to support T1 channels which require ring-back tone to be transmitted to the caller while a call is ringing. This option is **RBT** located in the *Line* area of the screen. Some carriers require the system to generate ring-back tone, while other carriers do not. Set this option to Y (yes), per channel, if ring-back tone is required.

**DT** - An option has been added to the *System Programming* screen to support T1 channels which do not supply dial tone. This option is **DT** located in the *Line* area of the screen. Some carriers require the system to generate dial tone to its users, while other carriers do not. Set this option to Y (yes), per channel, to provide dial tone for outbound calls.

**GS** - The name for the **Ground Start** option in the *Line* area of the *System Programming* screen has been shortened to **GS**.

The T1 Interface port card will be described in detail in a separate Technical Facts.

## 4-wire E&M Tie Line Port Card

This software version is used to support the 4-wire E&M Tie Line port card. (The 4-wire E&M Tie Line port card has not been released as of this writing.) The part number for this port card is 15690 and is designed to connect twelve 4-wire, E&M type II signal, tie lines to the system. There are no digital stations on this port card. The card provides connection for a pair of wires for transmit audio and a pair for receive audio in addition to the signal leads for each port.

The 4-wire E&M Tie Line port card will be described in detail in a separate Technical Facts.

## Custom Plus ACD

This software version supports **Custom Plus ACD**. Custom Plus ACD includes the existing features of ACD and adds *Historical Reports*, support for color terminals, and support for a marquee display to indicate the status of queues. (Custom Plus ACD has not been released as of this writing.)

## How To Obtain Additional Copies Of This Facts

This Technical Facts is intended to be copied for any additional quantity required; therefore, the Technical Facts is not available through the EXECUTONE Inside Sales/Customer Service Department.

# Technical Facts



ISOETEC® DIGITAL SYSTEM

No. 1736

March 29, 1991

For ISOETEC Product Distributors

## ISOETEC® DIGITAL SYSTEM SOFTWARE VERSION 6.73

A new version software, 6.73 is now available for the ISOETEC® Digital System. This version is an upgrade from version 6.54.

The release of software version 6.73 supports the new Memory Module IV (p/n 15280) which is a direct replacement for the Memory Module III. The Memory Module IV can support up to 4 meg of additional EPROM programming. A Memory Module IV is required if any of the following features are installed in the system:

- Tenant Night Groups
- Call Accounting Reports Option (either package)
- Any package of Automatic Call Distribution (ACD)
- Auto Attendant
- Large Verified Forced Account Codes (LVFAC)
- Group Monitor

Memory Module Matrix		
	S/W 6.54 Module III or IV	S/W 6.73 Module IV Only
Any ACD Package	Yes	Yes
Auto Attendant	Yes	Yes
Any Call Accounting Package	Yes	Yes
Large Verified Account Codes	Yes	Yes
Tap On Extension	Yes	Yes
Group Monitor	N/A	Yes
Tenant Night Groups	N/A	Yes

File a copy of this Technical Facts in your Master Technical Facts File and in your ISOETEC Digital System Technical Manual part number 770312B. Also list it on the Record of Changes Page.

Product Management

The Memory Module IV is installed on the 228 port configuration CPU (p/n 15300) in the same location as the Memory Module III. There is room for four 1MB EPROMS on the module, and the system addresses 512K of static RAM located on the module. The static RAM on the Memory Module IV has its own battery backup. Remember to activate the battery before installing the module on the CPU. Move the jumper to the position connecting E2 to E1. See Figure 1.

Software version 6.73 will be shipped with 14 EPROMs. The first 12 are still installed on the CPU. The last 2 are installed on the Memory Module IV. The EPROM labeled "#7 Low" is installed in U6. The EPROM labeled "#7 High" is installed in U7. Positions U8 and U9 are not used at this time. If a system is not using any of the features listed, the last 2 EPROMs and the Memory Module IV are **not** required for system operation.

*NOTE: When using the Memory Module IV with software version 6.54 and below, NO EPROMs are installed on the Memory Module IV.*

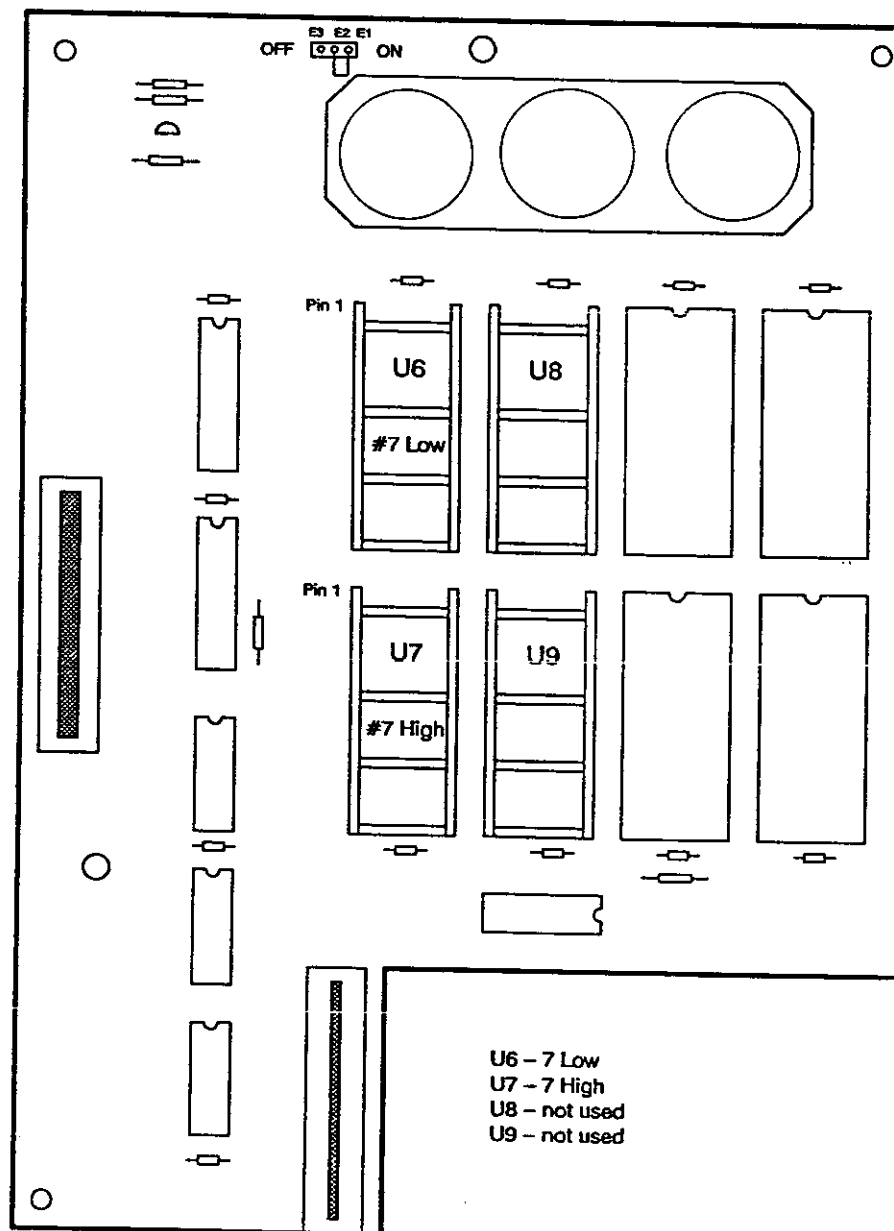


Figure 1 Memory Module IV

This software version adds several new enhancements to System Options, Call Forwarding, and ACD. New additions to this software are Meet Me Public Lines, Display Phone Messages, Major/Minor Alarms Relays to the system, OPX Station and Group Monitor, and new line types to CO line programming. New optional features include French Display, Call Fwd To ACD, Head Set Announce, Cost Display Restr, Night Mode Verify, and Att Recall Timer. A major addition to this software version is Tenant Night Groups. The following paragraphs give a brief description of new and enhanced features. Add this Tech Facts to the back of the ISOETEC Digital System Technical Manual (p/n 770312B).

*NOTE: It is important to note that Tenant Night Groups and OPX Station and DISA Monitor require the Memory Module IV.*

## NEW SOFTWARE ENHANCEMENTS

**Tenant Night Groups**— There are nine new night groups available with software version 6.73 and they are called *Tenant Night Groups*. Extensions may be assigned to one of the tenant night groups by using the recorder number field of the Station programming screen (A screen). The user must program a three digit recorder number 101–109 for tenant group's 01–09. Any number of extensions may be a tenant group. An extension in each tenant group should be programmed with a tenant night key (key code 800) subbed with a group number 01–09. When a tenant group is placed in the night mode, all extensions assigned to that group will follow the extension night ringing and forwarding assignments. The use of this feature will cause changes in the way the night message was previously displayed on the operator's terminal. Placing a tenant group in night will display groups 01–09 in the night message field. For example: The night field can display N123. N123 = reflects that Tenant groups 1, 2, and 3 are in the night mode.

*NOTE: Tenant Night Groups will require a Memory Module IV (p/n 15280) and activation of either Auto Attendant or ACD to use recorder numbers. All recorder numbers are stored on the module.*

**Updating Time/Date Fields**— The system operator can now update the system time/date fields from the integrated terminal without entering programming. Pressing the CNTRL and C keys from the operator menu will place the cursor in the Time field of the screen. Enter the new system time, then press the RETURN key. The RETURN key moves the cursor to the Date field. Press the CNTRL and C keys again to exit these fields.

**Intercom Calls**— The system operator may now transfer intercom calls directly to a mailbox number in the system. To use this feature, the system option OPER. TRANSFER ICM must be programmed to a Y (Yes) to allow the transfer of ICM calls. Press the IVIE + 5 + mailbox number.

**Line Type 05**— Line type 05 is used with tie line interface cards or a T1 interface card. The 05 type will be used when the need for a wink on incoming calls, and a wink on outgoing calls is required.

**Line Type 06**— Tie Line Type 06 supports tie line and T1 interface cards for immediate incoming calls, and will wink on outgoing calls.

**Line type 125**— CO Line Type 125 will function the same as DISA type 100 supervised DISA. With this release, when the Silent Monitor feature is activated, a DISA caller after entering the DISA authorization code, may now dial the digit 7 + the last 3 digits of any extension number to silent monitor that extension. The DISA silent monitor functions the same as the system silent monitor; a one way connection remains until the DISA caller disconnects.

**Line Type 50**— This line type is for DID or Tie Lines. When programmed, these lines refer to the Translation Tables for routing assignment by programming the TIE/DID option to Yes. When programmed for line type 50, any digits received will bypass the translation table and follow the line ID ringing assignment. A carrier may then send up to 10 digits on the line and ring the line ID number. The digits received will be stored until the call is terminated. The digits will then be sent to the SMDR port, as printed in the number dialed field of that call record.

*NOTE: This feature can also be applied with ANI applications.*

Timer Mlt- The *Call Forwarding, VMS Plans* screen (G screen) has added a new timer called Timer Mlt. This is a multiplier for the Busy and NoAns timers of the G screen. The timer can be programmed for a multiplier increments of 1-10 seconds. With the addition of this timer, extensions may now be programmed to forward intervals less than 10 seconds. For example: Station NoAns timer to 07 to forward in fourteen seconds, and Busy timer to 12 for twenty-four seconds.

VX2 VMS- New greetings labeled NA DGT, BUSY DGT, and OUT DGT will be used in future software versions.

```

Forwarding and VMS Plans | Exxx=extn,V=VMS,Hxx=hunt,Axxx=ACD,*=spd   Pg 01 of 12
-----
G=D-N [S] Day   Mode [F]ill Mailboxes
-----
[T]  VMS |----- ICM Calls -----|----- CO Calls -----|Time X Mlt|  V[M]S
Ext |Box# pf| Busy |No Ans| All  | Busy |No Ans| All  |Busy NoAns| Disconn code
3001|3001 # |N    |N     |N    |N     |N     |N     | 01s 01s | 1111****
3002|3002 # |N    |N     |N 3004|Y VMS |Y VMS |N 3004| 00s 01s | Auto Att Y
3003|3003 # |N    |N     |N     |Y VMS |Y VMS |N     | 03s 01s | Prefix
3004|3004 # |N    |N     |N     |N     |N     |N     | 01s 01s | Atten Grp 36
3005|3005 # |N    |N     |N     |N     |N     |N     | 01s 01s | VMS Grp 36
3006|3006 # |N    |N     |N     |N     |N     |N     | 01s 01s | Trnsfr
3007|3007 # |N    |N     |N     |N     |N     |N     | 01s 01s | VMS delay 18
3009|      |N    |N     |N     |N     |N     |N     | 01s 01s | Answer 05
3010|      |N    |N     |N     |N     |N     |N     | 01s 01s | Digit(*60ms)
3011|3011 # |N    |N     |N     |N     |N     |N     | 01s 01s | duration 1
3012|3012 # |N    |N     |N     |N     |N     |N     | 01s 01s | Volume 13
3013|3013 # |N    |N     |N     |N     |N     |N     | 01s 01s | Timer Mlt 2
3014|3014 # |N    |N     |N     |N     |N     |N     | 01s 01s | Mbox Dgts 4
3015|3015 # |N    |N     |N     |N     |N     |N     | 01s 01s | NA DGT
3016|3016 # |N    |N     |N     |N     |N     |N     | 01s 01s | BSY DGT
3017|3017 # |N    |N     |N     |N     |N     |N     | 01s 01s | OUT DGT
3018|3018 # |N    |N     |N     |N     |N     |N     | 01s 01s | Did On Y
3019|3019 # |N    |N     |N     |N     |N     |N     | 01s 01s | Did Digit 3
3020|3020 # |N    |N     |N     |N     |N     |N     | 01s 01s |
  
```

Figure 2 Forwarding, VMS Plans Programming Screen

ACD- This software version will now support up to 25 ACD groups. Reports for groups 1-15 will be generated as previous software versions. No reports will be supplied for ACD groups 16-25 in this software version.

*NOTE: The operation of new ACD groups will require the programmer to program the agent within timer and assumed busy timer for these ACD groups. The default value is 000 in this software release.*

*NOTE: If the new ACD groups are used with Auto Attendant applications, the programmer is allowed access to these groups in the Auto Attendant menu (Z screen) when groups 16-25 default value is programmed to No.*

Mbox Dgts- This feature is for station users who wish to transfer calls directly to mail box numbers other than those assigned in the systems *Forwarding, VMS Plans* screen (G screen). The user may program this feature for mailbox numbers up to a maximum of 7 digits. To transfer to a mailbox number not listed, the operator must press the IVIE key + 7 + mailbox digits of up to 7. The digits dialed after the IVIE + 7 will be the mailbox digits sent to the VMS port. Any phone in the system may transfer calls directly to a mailbox number of this type by pressing the TR/CON key + 77 + the mailbox number.

Silent Monitor/Auto Second Path- This version will support both Silent Monitor and Auto Second Path, for the T-1 interface card.

**System Speed Dialing** – The station user can now skip the PROG and \* key when using system speed dial bin numbers. Program the system speed dial key ( keycode 700 subbed 000). This key code becomes a substitute for the PROG and \* key. A station user may now press the 700 sub 000 key, then dial the selected bin number to speed dial that bin.

**Meet Me Public Lines**– To activate this feature, the public line option must be programmed to Y (Yes) in the System Programming (B screen) . Once an extension has either received or placed a call on a public line, that call can now have another extension meet on the public line. The user who wishes to meet on the public line, can now dial the digits 45 + the extension number using the public line.

*NOTE: No direct termination of the line is required.*

**Display Phone Messages**– Three additional phone messages have been added to the display phone, making a total of seven messages that are now available. The new messages are: AWAY FROM DESK, PAGE, TAKE A MESSAGE.

**Auto Att**– An enhancement has been made to the system Automated Attendant. The Auto Attendant will now check the status of the station if it finds the station in either the In/Out mode or DND mode. After the status of the station has been found, the Auto Attendant will ring follow the ring assignment for the line ID.

*NOTE: Auto Attendant transfers will differ from station transfers with the In/Out or DND activated features. A station transfer will check the station Busy Forward parameter, and forward the call immediately if programmed to do so on the Busy timer in the Forwarding, VMS Plans (G screen). Auto Attendant transfers to these stations will only ring the line.*

**Inter Digit Timer**– This software version adds a new feature to the system programmable inter-digit timer. This feature is programmed per station, and uses the LCR CLASS OF SERVICE field of the *Station Programing* screen (A screen) . Inter Digit timing will be effected by the LCR centrex option. To program this timer, the first digit of the LCR Class of Service will be used as listed below:

**LCR CENTREX=N**

1. LCR Class 000 – 6 seconds
2. LCR Class 100 – 12 seconds
- 3 LCR Class 200 – 18 seconds

**LCR CENTREX=Y**

- 3 seconds
- 6 seconds
- 9 seconds

*NOTE: Inter-digit timing is the time allowed between dialing digits.*

**External Major/Minor Alarms**– The system *Relay/Sensor Interface* (p/n15770) will be required to use this feature. This alarm will use two relays in the Relay/Sensor Interface. Relay 1 is used as a minor alarm and Relay 2 is used as a major alarm. ONLY one relay can be active at a time. The external major and minor alarm relays can be set up to provide a steady on/off, or a flashing on/off rate. The alarms will be activated by those alarms set in the system alarms menu as major and minor. Contact Terry Atwood, Director Marketing, General Products for further information on this feature.

**Group Monitor**– This software version adds a Group Monitor and a designated OPX station. This feature enables a station or Group line to monitor a designated OPX station, listen ONLY. Any number of stations or DISA lines may monitor a given OPX station at the same time. The number of designated monitor OPX stations are limited to the number of conference circuits (32), since a station monitoring an OPX uses conference circuits. An OPX is designated as a monitor station by programming the station recorder number field for a recorder number of 200. The system can monitor the OPX station by dialing 46+ the extension number of the OPX monitor station. This feature requires a Memory Module IV (p/n 15280). All recorder numbers are stored on the Module. The Group Monitor requires the activation of either Auto Attendant or ACD.

*NOTE: This feature requires the activation of either the Auto Attendant or ACD.*

**System Programming (B screen)**– This software release adds a change to the T1 type option in the System Programming screen (B screen). The T1 type option will be reduced in intensity (DIM) when not on a T1 CO. The T1 type option will return to normal intensity when a T1 CO is not in operation.

**T-1 Monitoring Diagnostics**– The *Systems Diagnostics T-1 Monitoring* menu has been enhanced to provide a volume adjustment field per interface card. Press the V key to reach the volume adjust field. Enter 03--13. Minimum volume adjust 03 = -22db. Maximum volume adjust 13 = 0db.

*NOTE: The default value is 07, which is a -9db transmit level.*

**T1 Slot Assignment**– This feature will now allow the system (using a T-1 interface card), to assign ONLY 1 card slot if less than 12 channels are needed. Press the A key. The cursor highlights the *Assign 2 slots* entry field. Press the N key to assign the T-1 card slot.

*NOTE: It is important to note that this software version supports Silent Monitor and Auto Second Path for the T-1 Interface card.*

**System Configuration**– New changes have been made to the system configuration to provide additional information, and to insert padding for CO, DID, E&M Tie card, and OPX interface cards. The padding may or may not be required for this software for older hardware versions of these cards. The padding is added or removed by the Y(Yes) or N(No) option next to the card. Press the D key to move the cursor to the option. This option defaults to a N(No padding). Press the Y key for 4db padding to transmit levels.

With this release, additional information will be provided on the T-1 interface card(s). The slot will display the T-1 plus the first and second channels; F=first 12 channels, or s= second 12 channels of a T-1 card. The information will also provide the slot number of the first and second 12 channels of an interface card. The padding option when programmed to Y(Yes), will be required with the following revision cards:

1. Loop Start; CO Interface Cards (p/n 15600); all
2. LSI Loop/Ground Start CO Interface Cards (p/n 15590); C and below
3. E&M Tie Line Interface Combo Cards (p/n 15680); B and below
4. LSI DID Interface Cards (p/n 15610); IRS AAX2A and below
5. LSI OPX interface cards (p/n 15660); IRS E and below
6. Loop/Ground Start Interface Cards (p/n 15620); all
7. Non-LSI DID Interface Card (p/n 15610); all



System Configuration		A = Auto Config.	C = Clear Port	F = Default Config?	R = Reset Port											
card	PA[D]	POR[T]	+	01	02	03	04	05	06	07	08	09	10	11	12	
C1	Stn		001	3001	3002	3003	3004	3005	3006	Data	3208	3229	3010	3011	3012	
02	GS	N	013	1	2	3	4	5	6	7	8	9	10	11	12	
03	DID	N	025	13	14	15	16	17	18	19	20	21	22	23	24	
04	Stn		037	3013	3014	3015	3016	3017	3018	3019	3020	3021	3022	3023	3024	
05	Tie	N	049	3025	3026	3027	3028	3029	3030	25	26	27	28			
06	T1f	7	061	29	30	31	32	33	34	35	36	37	38	39	40	
07	T1s	6	073	41	42	43	44	45	46	47	48	49	50	51	52	
08	Sli	N	085	3031	3032	3033	3034	3035	3036	3037	3038					
09	T1f	10	097	53	54	55	56	57	58	59	60	61	62	63	64	
10	T1s	9	109	65	66	67	68	69	70	71	72	73	74	75	76	
11	Rec		121	3039	3040	3041	3042	3043	3044	DTMF	DTMF	DTMF	DTMF	DTMF	DTMF	
12	TIE		133	77	78	79	80	81	82	83	84	85	86	87	88	
13	---		145	89	90	91	92	93	94	95	96	97	98	99	100	
14	---		157													
15	---		169													
16	---		181													
17	---		193													
18	---		205													
19	---		217	3999	3888	3777										

Figure 3 System Configuration Screen

### NEW SYSTEM OPTIONS

4 Digit Speed Dial- Software version 6.73 introduces an enhancement called *4 Digit Speed Dial*. When programmed to Y (Yes), this feature changes the accessing and programming of system speed dial bins to 4 digits. System speed dial numbers must now be entered by using the following procedure:

PGM \* bin number 0001 to 0999

PGM \* bin number 2001 to 2999

PGM \* bin number 3001 to 3999

PGM \* bin number 4001 to 4999

PGM \* bin number 5001 to 5999

The station user may now have system speed dial keys programmed on the phone for a wider range of bin numbers. This is done by programming a speed dial key, with a 4 digit key code from 7001-7999. Entering in that key sub menu will allow the leading digit of the selected bin number to be dialed. This can be done in the following example:

EXTENSION 3002

KEY 2 = 7001 subbed 0001 dial number entered in bin 0001

KEY 4 = 7001 subbed 0002 dial number entered in bin 2001

KEY 6 = 7001 subbed 0003 dial number entered in bin 3001

KEY 8 = 7001 subbed 0004 dial number entered in bin 4001

KEY 10 = 7001 subbed 0005 dial number entered in bin 5001

*NOTE: 4 Digit Speed Dial in no way changes the TOTAL number of available speed dial bins. The maximum is still 999 bins. This feature does however allows the customer to program the 999 bins, and match the bin numbers with a maximum of 4000 account numbers.*

**Head Set Announce**— When this option is programmed to Y (Yes), extensions using head sets can now be voice announced. The Hands Free key will switch the call to the headset. When this option is programmed N (No), the headset extensions will ring as before.

**DSS Console**— This software version adds the ability of the DSS (p/n 82400) to ring only when the covered extension number is busy. Contact Terry Atwood, Director Marketing, Voice & Base for further information on this feature.

**In/Out Visual Key Only**— When this system option is programmed to Y (Yes), dialing an extension number that is in the IN/OUT mode will provide the caller with a ring back or busy tone so the caller can leave a message. If this system option is programmed to N (No), the caller dials the extension and hears a reorder tone.

*NOTE: When this feature is programmed to Yes, it effects both station and Auto Attendant calls transferred to that extension. In addition, when In/Out Key Only Visual is programmed to Y (Yes), this feature allows the user to use the phone.*

```

                                [O]
                                -----
                                OPTIONS MENU
                                -----
                                [T]oll Options
DISABLE AUTO SKIP      = Y | A line will be dropped under the following conditions
DISABLE LCR TONES      = N | IF drop count is: full partial AND line is in:
AUTO ATTEN MUSIC OPT= Y | Talk Mode          Y   N
LCR HOOK FLASH        = Y | Non-talk Mode      Y   N
LCR CENTREX OPTION    = N | Disable Dial Pad  Y   N (if not dropped)
SLI SDN ENABLE        = N | -----
SECOND TRANSFER KEY   = Y | SYSTEM SPD OVERRIDE TOLL = N
DISABLE AUTO FAULT    = Y | LCR KEY OUT ONLY         = N
ENABLE AUTO PICKUP    = N | BUSY DID TO HUNT GROUP   = N
NIGHT CALL COVERAGE  = N | 4 DIGIT SPEED DIAL       = N
OPER. NIGHT RECALL    = N | IN/OUT KEY ONLY VISUAL   = N
NIGHT FORWARD ON     = Y | FRENCH DISPLAY           = N
CALL FWD TO A.ATTEN  = N | CALL FWD TO ACD 16-25    = Y
ENABLE HF MONITOR     = Y | RLS KEY NO AUTO ANS      = N
OPER. TRANSFER ICM    = Y | HEAD SET ANNOUNCE        = N
CONFERENCE GAIN ON    = N | COST DISPLAY RESTR       = N
ATT RECALL TIMER      = Y | NIGHT MODE VERIFY        = Y
3 DIGIT ICM CALL      = N | NO DID DIGITS IN SMDR    = N
ALTERNATE DIALING     = N |
OPER. DIGITS 350ms    = N |
SLI DIAL OPTION       = N |
DISA/TIE GRP DIAL     = N |

```

Figure 4 System Options Menu

**Cost Display Restr**—When this system option is programmed to Y (Yes), it will restrict a display phone from displaying the cost of the call.

**Night Mode Verify**– This feature introduces a two step method for the existing day/night or night/day modes. In day mode operation, press the operator terminal night key. The operator screen will display NITE ON Y/N in the night message display. Press the Y (Yes) key to enter the night mode. Press N (No) to cancel or exit. While in the night mode, press the night key. This will display NITE OFF Y/N in the night field. Press the Y (Yes) key again to exit the night mode. Press N to cancel. If the Y/N option is not answered, this feature will time out in approximately 12 seconds. Programming this feature to Y (Yes) will have NO effect on other methods of entering the night mode.

*NOTE: This feature is to be used to prevent an operator from accidentally placing a system in night mode. The Reset, Control-R, and Night keys will send the same code to the system.*

**Att Recall Timer**– When this option is programmed to Y (Yes), the automated attendant will now use the extension trans recall timer for all auto attendant transferred calls. If this option is programmed to N (No), the system will use the line Orbit Timer for auto attendant transferred calls.

**3 Digit ICM Call**– When this option is programmed to Y (Yes), the system will allow the user to dial only 3 digits for intercom calls and transferred calls. This is done by skipping or omitting the second digit of the extension number. This is to be used for small systems with less than 100 extensions. This option will ONLY work with extension numbers that have a second digit of zero.

**No DID Digits In SMDR**– When programmed to a Y (Yes), this option will disable the automatic generation of an Account Code from the DID digits. When this option is programmed to N (No), it generates an Account Code from the programmed digits.

**French Display**– When this system option is programmed to Y (Yes), the operator display and display phones are in the French language.

**Call Forward To ACD**– This option when programmed to Y (Yes), will allow the system to forward between ACD groups 01–15 and ACD groups 16–25.

**RLS Key NO AUTO ANS**– When this option is programmed to Y (Yes), and station auto answer is programmed N (No), this feature will allow the user (if on a call with another one camped on), to press a release key without answering the camped on call. When both options are programmed to N (No), the user must now press a line or a group key to answer calls.

*NOTE: This option has no effect on the operator.*

## ADDITIONAL FEATURES

**Computer Port Interface (CPI)**–Computer Port Interface allows an Executone ISOETEC Digital System customer to control the phone system from a host computer. CPI provides information to the host computer about the status of telephones within the system. CPI is NOT a hardware product, but a software product based upon a set of control codes which are provided to the user for control of the IDS. Only one version of CPI is available at this time and it is called *Advanced*. CPI allows the user to program one of the system's RS-232 I/O ports for computer control port. The host computer via the I/O port will send a list of pre-defined commands to the system. CPI is a downloadable option, and is only available on the 228 CPU (p/n15300). Two part numbers are available for this option: one part number for use with the 108 ported cabinet (p/n112088) and one for use with the 228 ported cabinet (p/n111088). Contact Bart Stanco, Director, Marketing, Computer Access Applications for further information on this software product.

*NOTE: It is important to note that Computer Port Interface (CPI) does NOT require the use of a Memory Module.*

### How To Obtain Additional Copies Of This Facts

This Technical Facts is intended to be copied for any additional quantity required; therefore, the Technical Facts is not available through the EXECUTONE Inside Sales/Customer Service Department.



# Technical Facts



## GENERAL INFORMATION

No. 1747

June 3, 1991

For All ISOETEC Product Distributors

### OKIDATA PRINTER - MODEL 182 TURBO

The OKIDATA® printer model 172S is being replaced with Model 182 Turbo beginning 6/3/91. The model 182 Turbo has an improved paper feeder which dramatically reduces paper jams. The Executone part number for the model 182 Turbo printer is 40137. This printer has both a parallel and a serial interface. It is configured at the factory for a serial interface.

**NOTE:** To use the parallel interface, the Super Speed Serial Board must be removed from the printer.

The 182 Turbo has three dip switches which must be set correctly for proper operation. One switch is on the *Control Circuit Board* (mother board) and the other two are on the *Super Speed Serial Board*. The following tables list the use of these switches. An asterisk (\*) next to a switch setting indicates the factory setting.

Control Circuit Board (main board)				
Switches 1 - 2 - 3	International characters			
	Language	Switch 1	Switch 2	Switch 3
	Slashed 0	OFF	OFF	OFF
	Unslashed 0*	ON*	OFF*	OFF*
	British	OFF	ON	OFF
	German	ON	ON	OFF
	French	OFF	OFF	ON
	Unslashed 0	ON	OFF	ON
	French Canadian	OFF	ON	ON
	Spanish	ON	ON	ON

### Please Distribute to...

- Distributor/District Manager
- Sales Personnel
- Operations Personnel
- Technical Personnel

### Please File in ...

- Your Master Technical Facts File

Control Circuit Board (main board)			
Switches 4 - 5	Form Length:		
	Length	Switch 4	Switch 5
	5.5 inches	OFF	OFF
	8.5 inches	ON	OFF
	11 inches *	OFF*	ON*
	14 inches	ON	ON
Switch 6	Auto line feed: ON: Auto line feed on OFF: Auto line feed off *		
Switch 7	Data bits: ON: 8 bits * OFF: 7 bits		
Switch 8	Front panel: ON: Disable OFF: Enable *		

Super Speed Serial Board - Switch Bank 1			
Switch 1-1	Parity: ON: Odd * OFF: Even		
Switch 1-2	Parity ON: Without * OFF: With		
Switch 1-3	Data bits: ON: 8 * OFF: 7		
Switch 1-4	Protocol ON: Ready/Busy * OFF: XON/XOFF		
Switch 1-5	Test Select ON: Circuit * OFF: Monitor		
Switch 1-6	Mode select: ON: Print * OFF: Testing		
Switch 1-7 & 1-8	Busy line selection:		
	Busy line selection:	Switch 1-7	Switch 1-8
	DTR- Pin 20	ON	ON
	RTS- Pin 4	ON	OFF
	SSD- Pin 11 *	OFF *	ON *
	SSD+ Pin 11	OFF	OFF

Super Speed Serial Board - Switch Bank 2				
Switch 2-1 2-2 and 2-3	<b>Baud rate:</b>			
	<b>Rate</b>	<b>Switch 2-1</b>	<b>Switch 2-2</b>	<b>Switch 2-3</b>
	19200	ON	ON	ON
	9600 *	OFF *	ON *	ON *
	4800	ON	OFF	ON
	2400	OFF	OFF	ON
	1200	ON	ON	OFF
	600	OFF	ON	OFF
	300	ON	OFF	OFF
110	OFF	OFF	OFF	
Switch 2-4	DSR input signal ON: Active * OFF: Inactive			
Switch 2-5	Buffer threshold: ON: 32 bytes * OFF: 256 bytes			
Switch 2-6	Busy signal timing: ON: 200 ms (min.) * OFF: 1 second (min.)			
Switch 2-7	DTR signal: ON: Space after power on * OFF: Space when printer selected			
Switch 2-8	not used			

## OKIDATA 182T SET-UP FOR SERIAL INTERFACE

1. Remove the access cover and the platen knob. Remove the screws that hold down the front cover.
2. Lift the cover until it comes free of the machine. Remove the cover and put it aside.
3. Locate the switches on the serial interface (BANK 1 and BANK 2), and on the main board.
4. Make certain the switch settings match those in Table 1. With a small screwdriver, gently change the switches to the needed settings. This will configure the printer for use with the EXECUTONE IDS. Switches 1-4, 1-7 and 1-8 on the serial board configure the printer's protocol for DTR on pin 20. If a different protocol is desired see page 2. The factory setting for the baud rate is 9600. If a different baud rate is desired, the first three switches of BANK 2 are used. Refer to Table 2.

Table 1								
Switch settings								
Switch #	1	2	3	4	5	6	7	8
BANK 1	on	on	on	on	on	on	on	on
BANK 2	see Table 2	see Table 2	see Table 2	off	on	off	off	off
MAIN BOARD	off	off	off	off	on	off	on	off

Table 2			
BAUD RATE SELECTIONS BANK 2 - SWITCHES 1, 2, & 3			
Baud Rate	Switch 2-1	Switch 2-2	Switch 2-3
19,200	on	on	on
*9,600	off	on	on
4,800	on	off	on
2,400	off	off	on
1,200	on	on	off
600	off	on	off
300	on	off	off
110	off	off	off

5. Reassemble the printer, and connect the power cord.

The printer is now ready to be installed.



## OKIDATA 182T SET-UP FOR PARALLEL INTERFACE

1. Remove the access cover and the platen knob. Remove the screws that hold down the front cover.
2. Lift the cover until it comes free of the machine. Remove the cover and put it aside.
3. Locate the switch on the main board.
4. With a small screwdriver, gently change the switches to the needed settings.

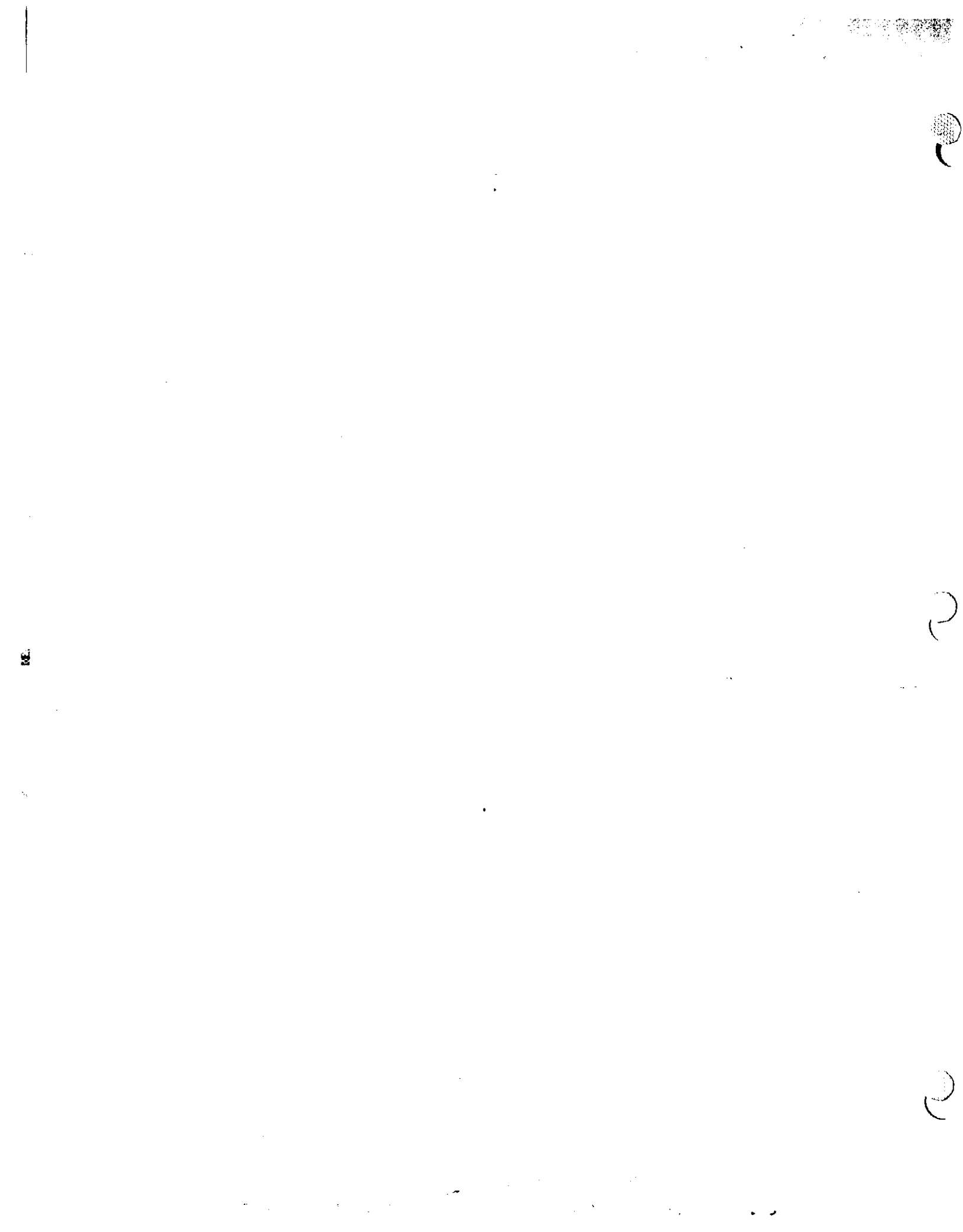
Table 3								
Switch settings								
Switch #	1	2	3	4	5	6	7	8
MAIN BOARD	off	off	off	off	on	off	on	off

5. Reassemble the printer, and connect the power cord.

The printer is now ready to be installed.

### How To Obtain Additional Copies Of This Technical Facts

This Technical Facts is intended to be copied for any additional quantity required; therefore, the Technical Facts is not available through the EXECUTONE Inside Sales/Customer Service Department.





EXECUTONE® IDS

No. 1763

September 9, 1991

For EXECUTONE IDS Product Distributors

## FCC COMPLIANCE ON 432 PORT CONFIGURATION

In order to comply with FCC regulations for Part 15, all cables exiting the cabinets of the 432 port configuration of the IDS must pass through a Fair Rite ferrite core as they exit the system. This includes the cables to the CSU for T1 port cards. The part number for a four position Fair Rite ferrite core is 23-03-05151.

Each port card is shipped with the 25-pair cable that connects it to the MDF (port card-to-MDF cable). This cable has an exposed shield at one end, and must be used when installing the system to comply with FCC Part 15 regulations. Run the cable over the bottom plate of the cabinet and through the ferrite core.

The port card-to-MDF cable is installed with the exposed shield closest to the cabinet. A cable tie or similar device is used to secure the exposed braid to the bottom plate of the cabinet. The paint is removed from a section of the bottom plate to allow a ground connection between the exposed braid of the cable and the cabinet. The cable is then dressed out the back of the cabinet, and connected to the MDF (see Figure 2). If necessary, a standard 25-pair cable may be added to reach the MDF.

When you order an IDS 432 for installation, please be certain to order the appropriate number of ferrite cores (one split ferrite core for every four cables that exit the cabinet).

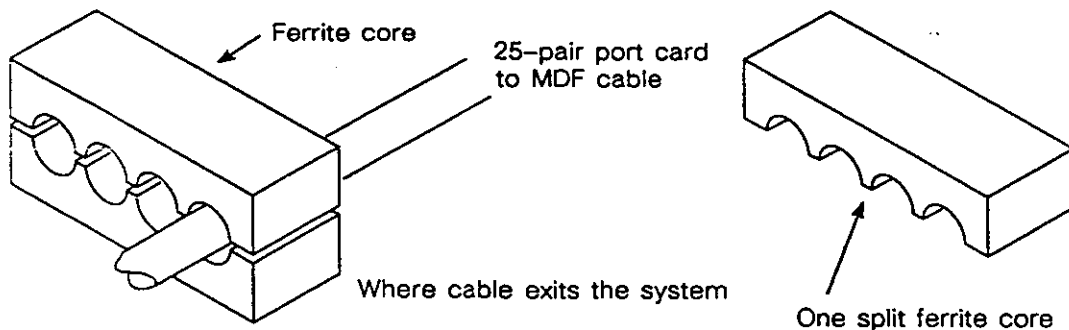


Figure 1 Fair Rite Ferrite Core

### Please Distribute to...

- Distributor/District Manager
- Sales Personnel
- Operations Personnel
- Technical Personnel

### Please File in ...

- Your Master Technical Facts File
- Your IDS Technical Manual 770312B

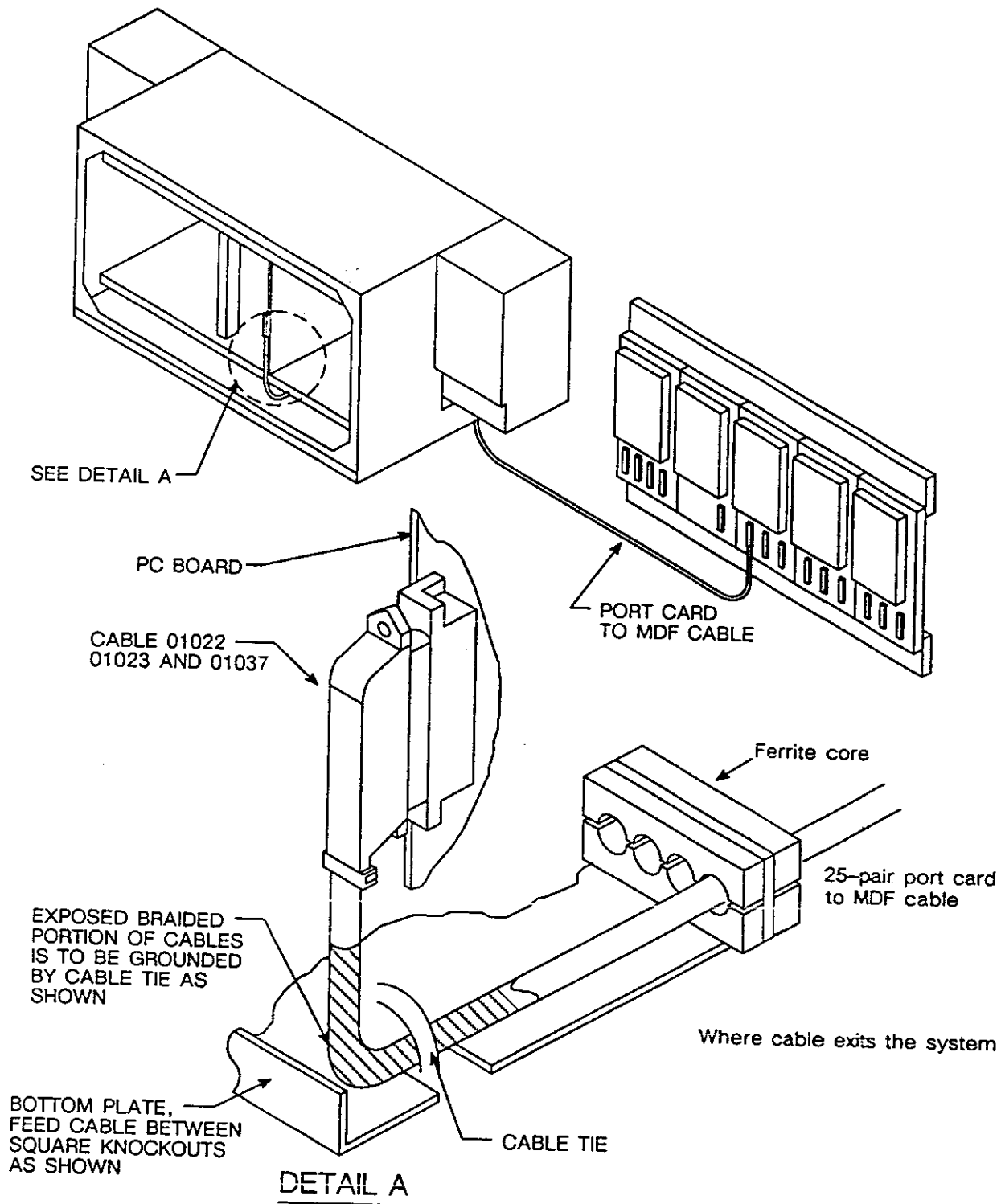


Figure 2 Port Card-To-MDF Cable Installation

**How To Obtain Additional Copies Of This Facts**

This Technical Facts is intended to be copied for any additional quantity required; therefore, the Technical Facts is not available through the EXECUTONE Inside Sales/Customer Service Department.



EXECUTONE® IDS

No. 1771

January 21, 1992

For EXECUTONE IDS Product Distributors

## INTEGRATED OPERATOR TERMINAL ASSEMBLY

The Integrated Operator Terminal consolidates a telephone set, and CRT terminal into one package. The Integrated Operator kit has been changed and contains a new cable (p/n 01049) to replace the Y cable. The Y cable carried both data for the keyboard, and audio for the handset on one cable. The new cable carries ONLY the audio. Data is carried on the keyboard cable that is packed with the terminal. This arrangement now increases the quality of the audio for the operator. The new cable (p/n 01049) is the ONLY cable that is currently available, and should be used for all service and MAC purposes. The old Y cable (p/n 01018) is no longer available.

Before installing the terminal, inspect the shipping carton for any signs of damage. Have the delivery person note any damage found on the shipping document.

## PARTS LIST

The Integrated Operator Terminal consists of 2 packages containing the following pieces:

1. CRT terminal (p/n 440017):

- 1 CRT Display Module
- 1 Integrated Keyboard (keyboard is labeled for use as an Operator)
- 1 AC Power Cord
- 1 Operator Guide

2. Integration Kit (p/n 09004):

- 1 Phone Box
- 1 6 foot- 6 conductor modular to modular line cord
- 1 6 foot (extended) coiled - 8 conductor black cable
- 1 Handset
- 1 Coiled handset cord
- 1 Handset cradle kit that contains the following:
  - 1 Black metal bracket with two handset rests
  - 1 Handset cord jack holder
  - 1 1 Allen Key
  - 2 Machine screws
  - 1 Instruction sheet

### Please Distribute to...

- Distributor/District Manager
- Sales Personnel
- Operations Personnel
- Technical Personnel

### Please File in ...

- Your Master Technical Facts File
- Your IDS Technical Manual 770312B

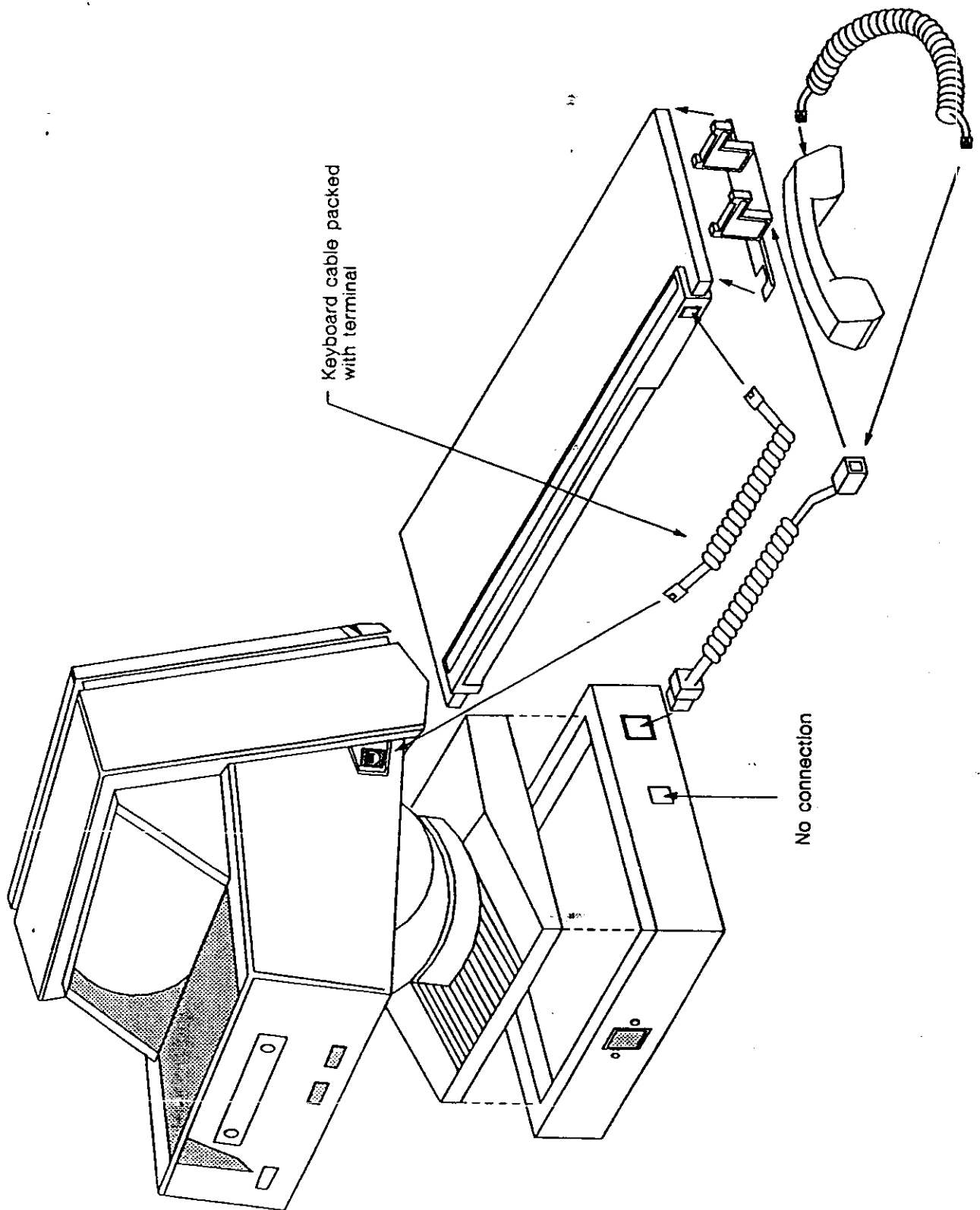


Figure 1 Assembly Of The Integrated Operator Terminal

The DB-25 to modular plug is ordered separately. A modular line cord of suitable length is also required.

## ASSEMBLY INSTRUCTIONS

Be sure to check each package to insure that you have received all the parts. Once you have located and identified all the parts provided in the Integrated Operator Terminal Kit, you can proceed with the following instructions to assemble the terminal. See Figure 1.

1. Place the phone box at the location chosen for the operator position with the 6 conductor jack facing toward the back and the indent of the box on top. The logo should be facing front.
2. Place the CRT terminal on top of the box in the indent with the CRT screen facing front.
3. Plug the gray keyboard cable into the modular jack located on the left side of the terminal.
4. Connect the other side of the keyboard cable into the connector located on the keyboard.
5. Turn the Integrated keyboard upside-down positioned such that the modular jack is on the left.
6. Remove the two screws located on the left side of the keyboard.
7. Place the handset cradle onto the left side of the keyboard.
8. Secure the bracket to the keyboard using the 2 machine screws provided with the cradle.
9. Plug the 8 conductor male modular end of the black cable in to the 8 conductor jack located on the left side of the Phone box.
10. Place the handset cord jack of the black cable into the "U" shaped holder on the cradle. The cord should be placed in from the back side of the connector so the cable lies next to the keyboard. Tighten the Allen screw with the Allen key provided in the kit.
11. Plug one end of the handset cord into the jack installed on the handset cradle.
12. Place the other end of the handset cord into the handset.
13. Turn the keyboard key side up.
14. Place the handset onto the cradle.
15. Plug the AC line cord into the back of the CRT terminal, and into a dedicated AC outlet provided for the Integrated operator Terminal. An ISOBLOCK surge suppressor should be installed at this point.

### How To Obtain Additional Copies Of This Facts

This Technical Facts is intended to be copied for any additional quantity required; therefore, the Technical Facts is not available through the EXECUTONE Inside Sales/Customer Service Department.





# Technical Facts

EXECUTONE

EXECUTONE® IDS

No. 1774

February 12, 1992

For EXECUTONE IDS Product Distributors

## SOFTWARE VERSION 228-7.0

A new software version, 228-7.0 is now available for the 228 port configuration of the EXECUTONE IDS. This replaces software version 228-6.73, and is shipped with all new orders beginning February 24, 1992.

This software version adds several features and programming options to the system. The following paragraphs give a brief description of new and enhanced features. Add this Tech Facts to the back of the IDS Technical Manual (p/n 770312B).

### New Features

- Expanded Intercom Dialing** – Expanded Intercom Dialing (EID) is an enhancement of the *Transparent Intercom Dialing* feature. EID permits the system to route calls to up to 10,000 extension numbers in a network. This is accomplished by changing the extension numbering plan to 5-digits. Expanded Intercom Dialing is an optional feature (part number 111008 for the 228 port configuration, part number 112014 for the 108 port configuration using CPU p/n 15300) which is added to the system using the remote programming feature. When EID is active in a system, the *Transparent Intercom Dialing* feature is deactivated. See the attached *Expanded Intercom Dialing* document for a detailed description of this feature.
- VMS RS-232 Integration** – An additional Voice Mail System Integration has been added which utilizes one of the system's RS-232 Input/Output ports rather than in-band integration. This optional feature (part number 111092 for the 228 port configuration, part number 112092 for the 108 port configuration using CPU p/n 15300) is designed to be used with an INFOSTAR™/VX2 equipped with software version 3.0 (not released as of this date). Once this feature is added to the system, VMI appears in the options list on the *Main Menu*. This integration allows the IDS to send commands to the VX2 for forwarding and transfer functions, and allows the VX2 to light message waiting indicators via the RS-232 I/O port. Use either port 1 or 2 (the RS-232 ports) for the integration port. If the Data feature is installed, ports 5-10 may also be used (along with the appropriate hardware). After the option has been added to the IDS, program the selected port's *Computer Port* parameter on the *System Programming* screen to Y (yes) and program the computer port *Type* for 099. Program the baud rate of the I/O port to 4800. See the software documentation for the INFOSTAR/VX2 release 3.0 and the *IDS RS-232 Integration Note 6* for additional information.

### Please Distribute to...

- Distributor/District Manager
- Sales Personnel
- Operations Personnel
- Technical Personnel

### Please File in ...

- Your Master Technical Facts File
- Your IDS Technical Manual 770312B

- VMS Networking (end node only)** – This software version permits a 228 port IDS which is in a tie line network with a 432 port IDS (minimum software version 432-2.0) to receive VMS message waiting indications from a voice mail system connected to the 432 port IDS. This is an optional feature which is added to the system using the remote programming feature. The part number for this feature is 111014 for the 228 port configuration, or 112016 for the 108 port configuration using CPU p/n 15300. Once this feature is added to the system, VMN appears in the options list on the *Main Menu*.

**NOTE:** The IDS systems must be connected using the Transparent Intercom Dialing (TID) feature, and the 432 port IDS must be using the VMS Networking feature. The 228 port IDS can only receive incoming message waiting indications. The 228 port IDS cannot transmit message waiting indications (across the TID tie lines) from a voice mail system connected to it.

**NOTE:** If both the Expanded Intercom Dialing feature and VMS Networking are to be used, the *Map Enabled* parameter of the *Transparent Intercom Map* (Y & C from the Main Menu) must be programmed Y (yes) even though this screen is not used with Expanded Intercom Dialing.

- Multiple Recordings On The Digital Voice Announcer** – This software version permits up to 99 short messages to be recorded and played back on a Digital Voice Announcer (p/n 15780). The total message time on the DVA is 65 seconds. Therefore, messages must be of short duration. Long messages reduce the number of messages available. Messages are recorded by dialing the recorder extension number, pressing 1 for record, and then entering the 2-digit message number (01-99). To play back a message, press 2 and then enter the 2-digit message number (01-99). To erase all messages, press \*. These multiple recordings can be accessed by both the ACD and Automated Attendant features. See the *Feature Enhancement* section of this document.

**NOTE:** The Auto Attendant feature supports the use of messages 01 to 10 only. ACD supports the use of messages 01 to 99.

**NOTE:** If the message number is programmed 0 in either the ACD Sequence or the Auto Attendant programming screens, the system plays message 1.

- ACD Queue Alert Using A DVA And Paging** – A feature has been added that allows a message recorded in a Digital Voice Announcer to be played over a specified page zone whenever a specified number of calls are waiting in queue for an ACD group. The programming for this feature is accomplished on the *ACD Group Setup* programming screen in an area labeled *Page*. A *Call Sequence* does not need to be programmed for an ACD group in order for this feature to work. The *Page* area contains a number of fields:

- ZONE – This field is programmed with the page zone (60-69) to be used.
- REC – This is the recorder number to use.
- NM – This is the message number in the recorder being used.
- PRD – This is the time interval between message announcements. The value entered is multiplied by ten to give the interval in seconds.
- CALLS – This is the number of calls permitted to be waiting in queue before paging. When the number of calls in queue exceeds this number, the recording is played over the page. If this field is programmed 000, as soon as a call enters the queue, the message will be played over the page zone.

EXAMPLE:

PAGE	ZONE	REC	NM	PRD	CALLS
	60	03	02	005	000
SUPERVISOR					

In this example, calls entering the queue cause message number 2 contained in recorder 3 to be played over page zone 60. The message is played over the page every 50 seconds (PRD = 005 x 10 seconds) until the call is answered, or otherwise leaves the queue.

- Dial Code To Answer ACD Calls** – A user does not have to be logged into an ACD group to answer ACD calls. An ACD call in queue can be answered by dialing 47 plus the 2-digit ACD group number.
- Using ACD Queue Key To Answer Calls** – The existing ACD Queue key (key code 831) can be used to answer ACD calls by changing the sub-code of the key to 1 plus the 2-digit ACD group number to be answered (e.g., a key programmed 831 sub-code 102 can be used to answer calls in ACD group 2). The Queue key lights when calls are in that queue (according to the *Queue Menu*). Pressing the Queue key will answer the call that has been in the queue the longest.
- ANI And DNIS On The Same DID Or Tie Line** – A remotely programmed optional feature is available which allows the system to support both ANI and DNIS on the same DID or tie line. This option is part number 111090 for the 228 port configuration and 112090 for the 108 port configuration using CPU p/n 15300, and is used in conjunction with new line types 60 through 66. Once this option is active in the system, ANI appears in the options list on the *Main Menu*. After a line is seized (and the system winks for the appropriate line type), the system expects to receive a DTMF \*, followed by the ANI number, another DTMF \*, the DNIS number, and then a final DTMF \*. The system then returns the programmed supervision. The digits sent as the ANI number are displayed on the 29-key display phone and reported in the *Number Dialed* field of the SMDR record of that call. The digits received as the DNIS number are saved until the call is terminated and then reported in the *Account Code* field of the SMDR record of that call. The following *line types* are available:
  - 60 No wink on incoming, immediate return supervision.
  - 61 Wink start on incoming, return supervision on answer.
  - 62 Wink start on incoming, return supervision on ring.
  - 63 No wink on incoming, return supervision on answer.
  - 64 No wink on incoming, return supervision on ring.
  - 65 Wink start on incoming, and wink on outgoing
  - 66 Immediate start on incoming, and wink on outgoing.
- ANI/DNIS and CPI** – The ANI and DNIS option can be used in conjunction with the CPI (Computer Port Interface) feature. The CPI option must be active (p/n 111088 for the 228 port configuration, or p/n 112088 for the 108 port configuration using CPU p/n 15300). The designated CPI port is programmed with *Computer Port = Y*, *Type = 007* and *Speed = 4800*. With both options active, the designated RS-232 port transmits the following data stream to the host device: S XXXY,NAME,ANI,DNIS,CR where:
  - S = Status
  - XXX = extension number
  - Y = R for ring, B for busy, or I for idle state of the phone
  - NAME = the name programmed on the *DID Programming* screen (Y & A from the main menu)
  - ANI = up to 10 digit ANI number received from the carrier
  - DNIS = the DNIS number received from the carrier
  - CR = carriage return.

## New System Options

- Tenant Groups On** – This system option provides the *Intercom Blocking* feature. The Tenant Group On option enhances the operation of the **Tenant Night Groups** feature made available in software version 228-6.73. When this option is programmed Y (yes), the tenant night groups become **Tenant Groups**. Extensions which are assigned to tenant night groups can only call extensions (and transfer calls to extensions) within their own tenant night group, or extensions which have no tenant group number. The night group operation is not effected by this option. When this option is programmed N (no), only the **Tenant Night Groups** feature operates.

The **Tenant Night Groups** feature permits extensions to be grouped together and placed in the night mode without placing the entire system in night mode. When a tenant group is placed in the night mode, all extensions assigned to that group will follow their respective night mode programming (e.g., night ringing assignments, night mode call forwarding, night class of service, etc.). There are nine *Tenant Night Groups* available

in the system. Any number of extensions may be in a tenant night group. Extensions are assigned to one of the tenant night groups by using the *recording number* field of the *Station Programming* screen. Enter a 3-digit recording number 101-109 for tenant groups 1-9. At least one extension in each tenant night group should be programmed with a tenant night key (key code 800) with a sub-code the same as the group number (01-09) to be placed in the night mode.

**NOTE: The use of Tenant Night Groups/Tenant Groups requires either Auto Attendant or ACD be installed in the system in order to use recording numbers.**

**NOTE: Once an extension is assigned to a tenant night group, the extension ignores the system day/night mode and follows only the mode the tenant night group is in.**

- CA100 Option** – This system option modifies the SMDR output for use with the INFOSTAR™/CA100. If a CA100 is connected to the IDS, program this option to Y (yes). Otherwise, this option should be left programmed to N (no).

**NOTE: If the CA100 option is Y (yes), if the dialed number is less than 7 digits, the system pads the number with 9's to make 7 digits. For example, if the dialed number is 7685, the system reports 7685999. The duration is given as HMM.M where H is hours and MM.M is minutes and tenths of minutes.**

- Tele. Service Factor Option** – This option effects the *ACD Group Summary (J)* and the *ACD System Summary (K)* reports. When this option is programmed N (no), the information contained in the *Call Wait Spectrum* at the bottom of the reports remains as in previous software versions. When this option is programmed Y (yes), the information contained in the *Call Wait Spectrum* at the bottom of the reports is changed to include abandoned calls. The title of this area (*Call Wait Time*) is changed to reflect the additional information – *Telephone Service Factor*. The calls displayed for each time period will be those handled and abandoned for the group being reported on. The percentage calculation is:

$$\frac{(\text{Handled} + \text{Abandoned in xx seconds})}{(\text{Total Handled} + \text{Total Abandoned for the group})}$$

## New Line Types

Several new line types are available for use on the *System Programming* screen.

- Line type 13** – This line type is the same as line type 12, however, the # on the dial pad is not used for last number redial. The # key sends a DTMF #. This line type is used when a line is connected to a PBX (or Centrex) to prevent the transmitter of the telephone from being muted when the line is flash-hooked.
- Line types 60 through 66** – These line types are used in conjunction with DID or Tie Lines which receive ANI and DNIS information. See the paragraphs titled *ANI And DNIS On The Same DID Or Tie Line* for a description of these line types.
- Line type 130** – This line type is used with DISA to make use of the Account Code table to validate an incoming DISA call. An 8-digit account code is used with this line type to enable a caller to access an outside line, the system modem, or a station programmed in hunt group 1. The CLS column is used to enter the allowed destination for a particular account code. Enter a class of service (CLS) of:
- 000 – to allow a caller to only access an outgoing line.
  - 001 – to allow a caller to only reach the system modem.
  - 002 – to allow a caller to only reach a station programmed in hunt group 1.

When the system answers a call on a line with this type, the system provides dial tone and waits for the caller to dial an authorized 8-digit account code. The system then waits for the caller to dial at least 7 more digits. The call is then routed to the desired destination (based on the CLS). Therefore, even if the caller wishes to reach the system modem or station hunt group 1, the system still waits for at least 7 digits to be dialed (any 7 digits will do).

SMDR and the Call Accounting Reports Option have been enhanced to provide additional information when this line type is used. The *Answer* column will report **NOA** for a no answer, **MDM** for a call to the system modem, **HNT** for a call to station hunt group 1, and **PSW** for an unauthorized password entered for that call.

- Line type 140** – This line type is used in conjunction with voice mail system integration. A call on a line with this type follows the normal ringing assignments when the system is in the **DAY** mode. However, when the system is in the **NIGHT** mode, any incoming call on a line with this type is routed to the voice mail system. When the voice mail system answers, the system dials 4 plus the 3-digit number of the line the call is on (e.g., 4 plus 005 for line 5) into the voice mail system, and then connects the call.

### Feature Enhancements

- Pilot Keys and Call Forward No Answer** – A change has been made in the manner in which calls forward from an extension which has Pilot (Call Coverage) keys. Prior to this software version, if an extension has Pilot keys with a sub-code of 101, 102, 103, etc., the extension never rings when outside line calls are sent to the extension. Consequently, calls never forward because of a no answer. Beginning with this software version, the Pilot key LED is monitored for Call Forward instead of the ring. Therefore, calls will forward because of a no answer.
- DVA Multiple Recording Numbers And Automated Attendant** – The Automated Attendant feature has been enhanced to make use of the multiple recordings capabilities now available with the Digital Voice Announcer (p/n 15780). One DVA can be used to record several different greetings for the Auto Attendant, however, only one of the greetings can be played at a time. The *Day Greeting*, *Busy*, *No Answ*, and *Night Greeting* fields have been expanded to include both the recorder number (Rc), and the message number (Mg) to be played. See Figure 1. The first 10 messages of the DVA can be used with the Automated Attendant. If the message number is left programmed 00, the system automatically plays message 1.

AUTOMATED ATTENDANT							
Function		Attn 1	Attn 2	Attn 3	Attn 4	Attn 5	Attn 6
[E]xt	3001	Y	Y	Y	Y	Y	Y
ACD	01	Y	Y	Y	Y	Y	Y
Hunt	01	Y	Y	Y	Y	Y	Y
VMS		Y	Y	Y	Y	Y	Y
Main Menu		0	0	0	0	0	0
[A] Day Selections		[G] Digit Timeout 15					
Greeting Rc,Mg		00,00	00,00	00,00	00,00	00,00	00,00
Busy Rc,Mg		00,00	00,00	00,00	00,00	00,00	00,00
No Answ Rc,Mg		00,00	00,00	00,00	00,00	00,00	00,00
[B] Night Selections							
Greeting Rc,Mg		00,00	00,00	00,00	00,00	00,00	00,00
Divert		N	N	N	N	N	N
Release		N	N	N	N	N	N
[F] Attendant 1 Scheme 02 - [Ext->E001-228,Attn->11-16,Hnt->41-76,ACD->81-95]							

Figure 1 – Automated Attendant Programming Screen

- DVA Multiple Recording Numbers And ACD** – The ACD feature has been enhanced to make use of the multiple recordings capabilities now available with the Digital Voice Announcer (p/n 15780). One DVA can be used to record several different messages for ACD, however, only one of the greetings can be played at a time. The *Recording* command in the *ACD Sequence* programming screen has been enhanced to include message number. See Figure 2.

```

(A) ACD Group 01 Name SERVICE (DAY)
-----
Supervisor | | | | |
-----
| If an agent does not |
| answer within 030 sec |
| ,then agnt is assumed |
| busy for 060 seconds. |
-----

CALL SEQUENCE
(Unless an agent is available, the call will go thru the following sequence)

| 1 | | 2 | | 3 | | 4 | | 5 |
|---| |---| |---| |---| |---|
| DELAY | | RECORDING | | MUSIC | | RECORDING | | FWD TO ACD |
| 002 Sec | | 001,Mg 001 | | 045 Sec | | 002,Mg 001 | | 002 BX 001 |
|---| |---| |---| |---| |---|

| 10 | | 9 | | 8 | | 7 | | 6 |
|---| |---| |---| |---| |---|
| | | | | | | | |
|---| |---| |---| |---| |---|

COMMANDS: G - Group, S - Sequence, R - Recording, A - Agent
I - Increment, D - Decrement, F - Flip Day/Night

```

Figure 2 – ACD Sequence Programming Screen

- Toll Restriction Expanded** – The *Toll Restriction* tables (classes) can be chained together to increase the number of RESTRICTED and ALLOWED patterns. The *Toll Restriction* table as a command (L) CONTINUE ON \_\_\_\_\_. After filling up one class, press L, and enter the class of the table on which programming is to continue. The class selected must be higher than the class being continued from. The system searches the toll tables in one direction only from lowest number class to highest. The toll tables do not look back to previous tables.

```

[T] CLASS 01 [L] CONTINUE ON 05
[U] RESTRICTED [V] ALLOWED
-----
GROUP | NUMBER | GROUP | NUMBER | GROUP | NUMBER | GROUP | NUMBER
1234567890 | | 1234567890 | | 1234567890 | | 1234567890 |
-----
YYYYYYYYYY|1ABX | | | | YYYYYYYYYY|1800XX | | |
YYYYYYYYYY|1AAX | | | | YYYYYYYYYY|1A11 | | |
YYYYYYYYYY|0 | | | | YYYYYYYYYY| | | |
YYYYYYYYYY|ABX | | | | | | | |

```

Figure 3 – Toll Restriction Programming Screen

- Automated Attendant Dialing Scheme 6** – This optional dialing scheme allows the built-in automated attendant feature to transfer calls to an ACD group based on the caller dialing an area code into the automated attendant. This dialing scheme must be activated using the remote programming feature. Order part number 111089 for the 228 port configuration, or 112089 for the 108 port configuration using CPU p/n 15300, to have this dialing scheme activated. This dialing scheme makes use of the *Account Codes* table (select P on the *Main Menu*). Once this dialing scheme is activated, the last 160 entries in the table are used to display area codes 201 through 919. The *CLS* column of the *Account Codes* table is used to route the call to the desired ACD group. For example, if entry 201 has 03 programmed in the *CLS* column, when a caller enters 201 at the automated attendant's prompt, the call is transferred to ACD group 3. This dialing scheme reduces the number of available account codes in the table by 160. Make certain to record a message for the automated attendant indicating the caller is to dial an area code.
- Number Of Simultaneous Silent Monitor Calls** – This section is provided to clarify the number of silent monitor calls that can be in progress at one time. If there is one, or more, T1 port cards installed in the system there can be up to 5 simultaneous Silent Monitor calls. If there are no T1 port cards installed in the system there can be up to 11 simultaneous Silent Monitor calls.
- Group Monitor Key** – The Group Monitor of a designated OPX feature has been enhanced for single step operation. A new key code is available – 848 with a sub-code of the recorder number (from 201 through 232) of the designated OPX to be monitored.
- 15390 Modem Support** – This software version supports the use of the 300/1200 baud modem part number 15390, which is installed on the VCM/DCM and the EVCM.
- Changes To The Station Programming Screen** –
  - The *Keys* programming area of the *Station Programming* screen has been moved to its own screen. This screen is accessed in the same manner as the original *Keys* area, by pressing the K key. The screen displays only the keys available for the telephone type selected. If a telephone is connected to the extension, the screen automatically displays the telephone type. The *Programmable Phone Type* and the *X copy* function are not supported in this software and should not be used.
  - **SLI disconnect** is a station option which is not used at this time.
  - **MW dial tone** is a station option which is not used at this time.
- Changes To The System Programming Screen** – An option has been added to the *Operator* programming area of the *System Programming* screen for use with systems utilizing the ANI feature. When the *ANI OPTION* is programmed Y (yes), ANI information is displayed on the Operator's screen for ANI lines programmed to ring the operator's extension.

## Programming Enhancement

In addition to the standard method of programming (i.e., filling in programming screens), the 228 port configuration has an additional programming method. Using this method, groups of stations and/or lines can be programmed for certain features. Stations and/or lines with common programming can be listed.

This method of programming uses a command line, rather than a programming screen. The syntax of the command line is: <command key word> <feature> <# or group #>. The <command key word> and <feature> can be abbreviated using the symbols found in the parenthesis.

### LIST

The following <command key words> can be used:

- |               |   |
|---------------|---|
| LIST (L)      | Lists all the extensions with the desired feature programming. The syntax of the command line is: LIST <feature> <# or group #>. The following <feature> key words can be used: |
| HUNT (H)      | Lists all the members of a particular <i>Hunt</i> <group #>.  |
| RECORDERS (R) | Lists all the extensions programmed with a particular <i>Recorder</i> <#>.  |
| PICK (P)      | Lists all the members of a particular pickup <group #>.   |

- |                   |  |
|-------------------|--|
| DAY CLASS (DC)    | Lists all the extensions programmed with a particular <i>Day Class</i> <#>.  |
| NIGHT CLASS (NC)  | Lists all the extensions programmed with a particular <i>Night Class</i> <#>.  |
| LCR CLASS (LC)    | Lists all the extensions programmed with a particular <i>LCR Class</i> <#>.  |
| PRIME LINE (PL)   | Lists all the extensions programmed with a particular <i>Prime Line</i> <#>.   |
| PAGE ZONE (PZ)    | Lists all the extensions programmed with a particular <i>Page Zone</i> <#>.  |
| DAY ACCESS (DA)   | Lists all the extensions programmed with a particular <i>Day Access</i> <#>.   |
| NIGHT ACCESS (NA) | Lists all the extensions programmed with a particular <i>Night Access</i> <#>.   |
| DAY RING (DR)     | Lists all the extensions programmed to <i>ring</i> when the system is in the <i>Day</i> mode on a particular <i>Line ID</i> <#>.   |
| NIGHT RING (NR)   | Lists all the extensions programmed to <i>ring</i> when the system is in the <i>Night</i> mode on a particular <i>Line ID</i> <#>. |
| KEYS (K)          | Lists all the extensions programmed with a particular <i>Key Code</i> <#>.   |
| PHONE TYPE (PT)   | Lists all the extensions with a particular <i>Phone Type</i> .   |
| EXTENSIONS (X)    | Lists all the extensions in the system.  |
- LISTCO (LC) Lists all the CO Lines with the desired feature programming. The syntax of the command line is: LISTCO <feature> <#>. The following <feature> key words can be used:
- |                   |   |
|-------------------|---|
| LINE TYPE(LT)     | Lists all lines with a particular <i>Line Type</i> <#>.         |
| ID NUMBER(ID)     | Lists all lines with a particular <i>Line ID</i> <#>.           |
| DTMF              | Lists all lines with <i>DTMF</i> programmed <Y> or <N>.         |
| SMDR              | Lists all lines with <i>SMDR</i> programmed <Y> or <N>.         |
| GROUND START(GND) | Lists all lines with <i>Ground Start</i> programmed <Y> or <N>. |
| PUBLIC(PUB)       | Lists all lines with <i>Public</i> programmed <Y> or <N>.       |
| TIE_DID(TIE)      | Lists all lines with <i>TIE_DID</i> programmed <Y> or <N>.      |
| MOH               | Lists all lines with a particular <i>MOH</i> <#>.               |
| CO                | Lists all CO lines in the system.                               |
- LISTID (LD) Lists all the Line IDs with the desired feature programming. The syntax of the command line is: LISTID <feature> <#>. The following <feature> key words can be used:
- |              |   |
|--------------|---|
| TRUNK (T)    | Lists all line ID with a particular <i>Trunk Group</i> <#>. |
| HUNT (H)     | Lists all line ID with a particular <i>Hunt Group</i> <#>.  |
| ID CLASS(ID) | Lists all line ID with a particular <i>ID Class</i> <#>.    |

For example, the command line "LIST DAY CLASS 1" (or L DC 1) will list all extension numbers in the system with a Day Class of 1. "LIST PICK 10" (or L P 10) will list all extension numbers in Pickup group 10.

"LISTCO LINE TYPE 2" will list all CO lines which are programmed with Line Type = 2.

"LISTID TRUNK 4" will list all line IDs which are programmed in Trunk group 4.

## SET

This same method can be used to program a list and/or range of extensions, lines, or line IDs with a common feature. The syntax of the command line is: <command key word> <feature> <list and/or range of extension numbers, line, or line IDs>. The <command key word> can be abbreviated using the symbols found in the parenthesis.

The following <command key words> can be used:

- |         |  |
|---------|--|
| SET (S) | Set the <feature> for the specified extensions. Syntax and features are the same as for the L command. |
|---------|--|



SETCO (SC) Set the <feature> for the specified lines. Syntax and features are the same as for the LISTCO command.

SETID (SD) Set the <feature> for the specified lines. Syntax and features are the same as for the LISTID command. Day/Night Ring and Day/Night Access require Y or N after the ID number.

Extensions, lines and ID numbers can be specified as a list and/or range.

For example, the command "SET HUNT 1 3001,3004,3700-3705" programs extensions 3001, 3004 and 3700 through 3705 inclusive to Hunt group 1.

The command "SETCO ID NUMBER 3 1,4,210-435" programs lines 1, 4, and 210 through 435 inclusive to line ID 3.

The command "SETID TRUNK 2 1,4,10-35" programs lines 1, 4, and 10 through 35 inclusive to Trunk group 2.

#### HOW TO PROGRAM

From the *Main Menu*, press the H key. The screen displays the following prompt:

Enter cmd>

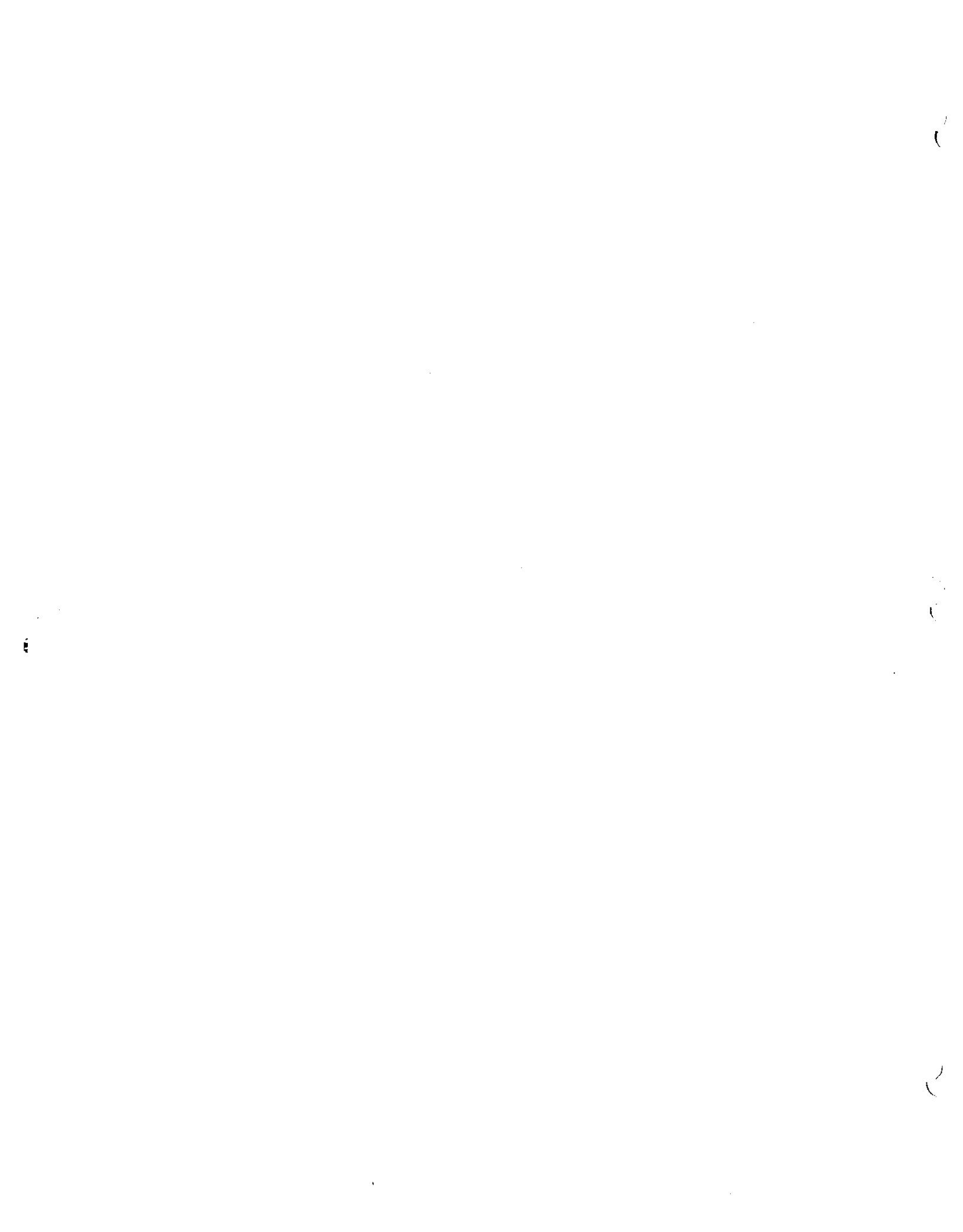
Enter the desired command line in the following syntax <command key word> <feature> <# or group #>, using the commands and features listed above.

For example, at the "Enter cmd>" prompt enter LIST PAGE ZONE 61 to get a list of all extensions programmed for page zone 61.

When you are finished programming, press the ESCAPE key to return to the *Main Menu*.

#### How To Obtain Additional Copies Of This Facts

This Technical Facts is intended to be copied for any additional quantity required. This Technical Facts is also available through the EXECUTONE Inside Sales/Customer Service Department until August 31, 1992.



# Expanded Intercom Dialing

## INTRODUCTION

Expanded Intercom Dialing (EID) is an optional feature which allows a station user to call (or transfer outside line calls to) any extension in a network of EXECUTONE Integrated Digital Systems by dialing a 5-digit extension number. The routing capabilities of EID permit the systems to be connected together by tie lines, public switched network lines, or both. EID is an enhancement of the *Transparent Intercom Dialing* feature. The station user does not need to know tie line access codes, or anything else about the network.

- Up to 10,000 extension numbers can be programmed with EID. This is accomplished by changing the IDS extension numbering plan from 4 digits to 5 digits.
- Up to 9 routes can be programmed and each extension number can be programmed for a primary route and a secondary route (if all lines in the primary route are busy).

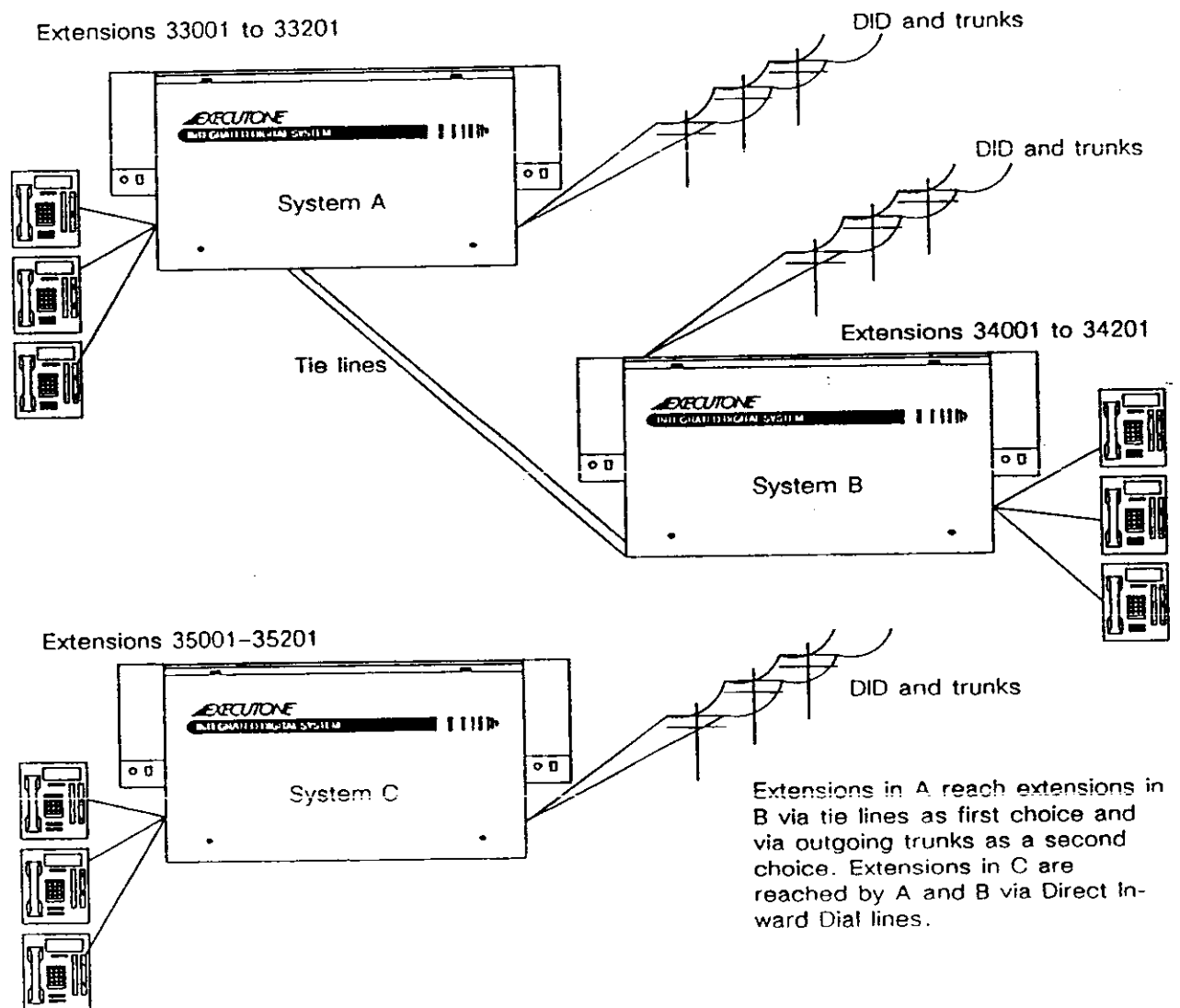


Figure 1 Sample EID Network

## HOW EXPANDED INTERCOM DIALING OPERATES

### OUTGOING CALL

When a station places an intercom call, the last 4 digits of the dialed extension will reference the *5 Digit Networking Map* which tells the system where the extension is located. If the extension is not resident in the system, the map tells the system the number of the route for the call. The *Network Routing Table* tells the system which group of lines are to be used to route the call. Once the group is chosen, the system selects an idle line, and dials the programmed sequence of numbers over the line to the remote system.

### INCOMING CALL

The remote system receives the digits and looks them up on the *DID Programming* screen. The call is then routed to the translated extension number.

## INSTALLATION REQUIREMENTS

Expanded Intercom Dialing is an optional feature (part number 111008 for the 228 port configuration, or part number 112014 for the 108 port configuration using CPU p/n 15300) which is added to the system using the remote programming feature. Once this feature is activated, EID appears in the options list of the system *Main Menu*. When EID is active in a system, the *Transparent Intercom Dialing* feature is deactivated.

EID can be installed in a 108 or 228 port IDS using CPU part number 15300. In order to provide a uniform 5-digit numbering plan throughout the network, all systems in the network must be 108 or 228 port IDSs using EID.

---

**NOTE:** Once EID is installed in a system a 5-digit extension number must be dialed for ALL intercom and transferred calls.

---

## HARDWARE REQUIREMENTS

This feature requires a Memory Module IV (part number 15280) installed on the CPU (p/n 15300).

## SOFTWARE REQUIREMENTS

This feature requires software version 228-7.0. This feature must also be added using the remote programming feature. Order part number 111008. The Memory Module IV must be installed before the feature is added remotely.

---

**NOTE:** Once this feature is added to the system, EID appears on the options list of the Main Menu. See Figure 2.

---

## NETWORK PLANNING

When setting up EID within remote systems, it is recommended to choose a sequence of numbers for each remote location before programming any one system. Remember to allow for future expansion in each system. There can be NO duplicate extension numbers in the network.

```

Welcome to the System 228 (C) 1984 ISOETEC Communications Inc.
Options: LCR Dir VMS Vmn TMC EID
Version:
System is IDLE Thu 10-24-91 1:50 pm
Access Level = 08 Port = 01

Select one of the following: <Esc> ... Display this menu

A .. Station Programming | J .. PBX Key Progr. | S .. LCR Tester
B .. System Programming | K .. Change Password | T .. Data Menu
C .. System Status Monitor | L .. LCR Programming | U .. Data Status
D .. BACKUP Program Memory | M .. System Options | V .. Call Accounting
E .. Exit Main Menu | N .. Trunk Group Progr. | W .. Toll Restriction
F .. System Configuration | O .. Directory | X .. Access Levels
G .. Forwarding, VMS Plans | P .. Account Codes | Y .. Digit Translation
H .. List and Set Commands | Q .. ACD Programming | Z .. Auto Attendant
I .. Line Maintenance | R .. Reports |

USE THE FOLLOWING SELECTIONS WITH CARE!:
Control-A ... Select Terminal Type |
Control-C ... Diagnostics |

Control-F ... Default & RESET
Control-G ... RESET

Enter Letter or Control character >

```

Figure 2 Main Menu

When using the EID feature, there are limitations with features between systems. The technician should be aware of these limitations prior to installing a system. These limitations exist because there are no digital signals between the systems.

The following features and keys will not work between systems:

- |                                  |                 |
|----------------------------------|-----------------|
| Paging through the telephones    | Message Waiting |
| Meet Me Page                     | Auto Transfer   |
| Call Back                        | Call Pickup     |
| Call Forward                     | Camp On         |
| Pilot Keys                       | Dial By Name    |
| The BLF portion of DSS/BLF keys  | Group Pickup    |
| (however, the DSS Key does work) |                 |

EID only effects the method stations use to call each other, or transfer outside line calls. The systems are still separate systems. For example, the operator terminal screen displays the extension numbers in that system, NOT the extension numbers in the network.

Tie lines and Central Office lines are installed following standard IDS installation practices. See the *Installation, Cabling, Tie Line, and DID* sections of the *IDS Technical Manual* (p/n 770312). If systems in the network are to provide *Music On Hold*, each system in the network should have the same music source.

## PROGRAMMING EXPANDED INTERCOM DIALING

Once *Expanded Intercom Dialing* has been activated, the *Transparent Intercom Dialing Map* is deactivated. The *Transparent Intercom Dialing Map* is included in the *5 Digit Networking Dialing Map*.

---

NOTE: If both the *Expanded Intercom Dialing* feature and *VMS Networking* (option VMN) are to be used, the *Map Enabled* parameter of the *Transparent Intercom Map* (Y & C from the Main Menu) must be programmed Y (yes) even though this screen is not used with *Expanded Intercom Dialing*.

---

To program *Expanded Intercom Dialing* the following screens must be programmed in each system using EID:

*System Programming* (B screen) - *Line, ID, and Various* areas

*System Options* (M screen) - *Second Trans Key* option

*Digit Translation* (Y menu) - *DID Programming, Intercom Dialing, 5 Digit Networking Map, and Network Routing* programming screens.

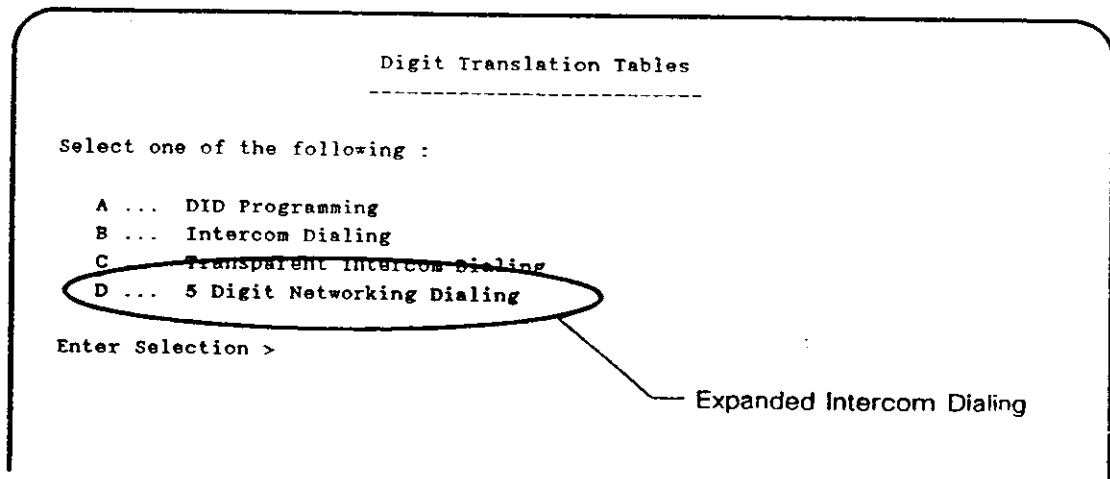


Figure 3 Digit Translation Tables Menu

## SYSTEM PROGRAMMING

The following values must be programmed on the *System Programming - B* screen:

**Line Type**            A *line type* of 001 must be entered for each tie line in each system that is being used for the EID feature. This 001 *line type* will make the tie line a wink start line.

NOTE: Although not mandatory, it is recommended to have all tie lines set for DTMF signaling.

**Tie/DID**            *TIE/DID* must be set to Y (yes) for all tie lines to be used in the *Expanded Intercom Dialing* scheme.

When using both *Expanded Intercom Dialing* and *DIDs*, only 4-digit *DIDs* can be used. *DID* numbers must match the *last 4 digits of the extension number*. The reason for requiring 4 digits is that the *DID* translation table is also used for intercom dialing. The same table is used for both features.

**Trunk Group**        Each group of tie lines going to each system **MUST BE ASSIGNED TO A SEPARATE TRUNK GROUP**. This trunk group is then assigned in the *Network Routing Table*.

**DID Digits**        *DID Digits* in the *Various* area, **MUST BE SET TO 4**.

```

                                System Programming
-----
[T]ime 1:51 pm Thu 10-24-91 |[O]perators Programming
-----|
[R]ing Low = 010 PPS = 010 |
    Ring High = 050 Ratio = 060 |
-----|
[L]ine 001 port 043 Name | [E]xternal Zone 01 Page 00
Line Type = 001 DTMF Y SMDR Enable Y | ID Number 001 Day N Night N
ID Number = 001 GS N DT N RBT N |
Public N T1 type = DA_ TIE/DID Y MOH N | [P]ort 01* Installed Y
-----|
[A] ID Number 001 | Speed = 9600 Protocol = X_ON
ID Class = 00 ACD Day Group = 55 | Printer 0 Computer Port N Type 000
Trunk Group = 01 Priority = 6 | SMDR N Incom N Local N Long Dist N
Hunt Group = 00 ACD Night Group = 55 | ACD SMDR N Incom N Outg N Remote N
Drop Pulse = 014 Priority = 6 | -----|
Pause Time = 005s | [M]usic Source MOH 1 BCM 1
Flash Time = 025*50ms | [S]ystem will reset N at 00:00
Orbit Recall=008*10s | [V]arious: Divert limit 15 min
| Cost After = 020 DID Digits 4
| Local Call Cost Limit = 50.00
| Ground Start Timer = 008*50ms
-----

```

Figure 4 System Programming Screen

## 5 DIGIT NETWORKING MAP

The *5 Digit Networking Map* (select D from the *Digit Translation Tables (Y)* menu) provides 10,000 4-digit extension numbers which can be routed. The map is divided into 100 pages. Each page contains one hundred 4-digit numbers. Each extension number is programmed with a 2-digit routing number. The 2-digit routing number is used to provide the system with a selection of primary and secondary routes for calls to an extension. This 2-digit routing number is divided into two separate 1-digit route numbers. The first digit of a routing number is used to assign a primary route to an extension number. The second digit is an alternate route for calls if all lines in the primary route is busy. If the second digit is a 0, there is no alternate route. The fill command can be used to fill a block of 1000 numbers with the same 2-digit route number.

**NOTE:** After the 5 Digit Networking Map is enabled, it **MUST** be cleared before any programming begins. Enter 00 as a route for the first extension number, and press F for Fill. DO this for each block of 1000 numbers.

For example: Select page 031. Place the cursor at extension 3001's routing number. After entering the desired route number, press the F key to fill the next 1,000 numbers.

Networking Map		F = Fill		Pg 031 of 100					
Extn	Routing	Extn	Routing	Extn	Routing	Extn	Routing	Extn	Routing
3001	91	3021	00	3041	00	3061	00	3081	00
3002	00	3022	00	3042	50	3062	00	3082	00
3003	00	3023	00	3043	00	3063	00	3083	00
3004	00	3024	00	3044	00	3064	00	3084	00
3005	00	3025	00	3045	00	3065	00	3085	00
3006	00	3026	00	3046	00	3066	00	3086	00
3007	00	3027	00	3047	00	3067	00	3087	00
3008	00	3028	00	3048	00	3068	00	3088	00
3009	00	3029	00	3049	00	3069	00	3089	00
3010	00	3030	00	3050	00	3070	00	3090	00
3011	00	3031	00	3051	00	3071	00	3091	00
3012	00	3032	60	3052	00	3072	00	3092	00
3013	00	3033	00	3053	00	3073	00	3093	00
3014	00	3034	00	3054	00	3074	00	3094	00
3015	00	3035	00	3055	00	3075	00	3095	00
3016	00	3036	00	3056	00	3076	00	3096	00
3017	00	3037	00	3057	00	3077	00	3097	00
3018	00	3038	00	3058	00	3078	00	3098	00
3019	00	3039	00	3059	00	3079	00	3099	00
3020	00	3040	00	3060	00	3080	20	3100	00

[R]oute Assignment

00 is extension is resident in this system

2 is the primary route  
0 is no secondary route

Figure 5 Networking Map

## ROUTE ASSIGNMENT

While in the *5 Digit Networking Map*, press the R key for *Route Assignment*. The *Networking Routing Table* appears. This table provides programming for 9 different routes. Each route includes a *Group* column, *Number* column, *Last* column, and *Pause* column.



## NETWORK ROUTING TABLE

The *Networking Routing Table* provides programming for 9 different routes. Each route includes a *Group*, *Number*, *Last*, and *Pause* column.

The *Group* column is a 2 digit entry to select the line the call is to be routed on. Enter either 00 for LCR (all LCR features including LCR Class apply) or 01-10 for trunk groups 1-10.

The *Number* column can be used to enter up to an 11-digit phone number the system is to dial for that particular route.

The *Last* column is used to tell the system how many digits are to be taken from an extension number for that route. Enter in a digit 0-4.

The *Pause* column sets the CO pause for a route. This field can set for either a manual pause in seconds (1-9) or for an Auto Pause by entering 0 (an A is displayed in the column the next time the screen is displayed as shown in Figure 6).

Network Routing				
Route	Group	Number	Last	Pause
1.	00	212759.....	4	A
2.	01	1602998.....	4	A
3.	00	.....	0	A
4.	00	.....	0	A
5.	05	.....	4	A
6.	10	.....	4	3
7.	00	.....	4	A
8.	00	.....	0	A
9.	10	.....	3	A

Figure 6 Network Routing Table

### EXAMPLE

In Figure 5, extension 3001 has a primary route of 9 and a secondary route of 1. An extension in the system dials 33001. In Figure 6, route 9 will select a tie line in group 10. In this example, the system will strip the 2 leading digits (33), and send the the last 3 digits of the extension number across the tie line. In an "all tie lines busy condition," the secondary route will be used. Route 1 is through LCR. The system will dial the digits from the *Number* column, and the last 4 digits of the extension number. LCR will insert a 1 (if needed) and dial 1+212759+3001 (i.e., 1-212-759-3001).

## EXAMPLE 2

Extension 33042 has a route number of 50 in Figure 5. In Figure 6, a call to extension 33042 will be routed to a line in trunk group 5 (a tie line from another system), and the last 4 digits of the extension number will be dialed. There is no secondary route.

## EXAMPLE 3

Extension 33080 has a route number of 20 in Figure 5. In Figure 6, a call to extension 33080 will be routed to a line in trunk group 1, and 1602998+the last 4 digits of the extension number will be dialed (i.e., 1-602-998-3080). There is no secondary route.

## INTERCOM DIALING PROGRAMMING SCREEN

This screen will only have to be changed if the leading digit of extension numbers is to be changed from 3 to another digit. When EID is in use, this is the leading digit of the 5-digit extension number.

---

**NOTE:** When using the *5 Digit Networking Map* and *Intercom Dialing Translation (Y and B screens)* menu's at the same time, transposing the digit 3 with another digit will change the leading digit of the 5-digit extension numbering plan. When EID is added to the system, a new field appears on the *Intercom Dialing Translation* screen called *EID Local Second Digit*. This field is used to change the 2nd digit in the 5-digit numbering plan within the local system. ALL local system extension numbers change to the new leading digit in the *System Configuration* screen.

---

To program *Intercom Dialing Translation*:

1. Press the RETURN key until the cursor is under the digit 3.
2. Enter the number you would like all extension numbers to begin with.
3. Go to the number you just entered, and make that number a 3. Make certain that each number does not appear twice.
4. Move the cursor to *EID Local Second Digit*, and enter the number you would like the 2nd digit of the local extension numbers to begin with.

After all changes have been programmed, the system must be reset. The new numbering scheme will now be followed.

The previous steps can be verified by checking the *System Configuration* programming screen. This screen should show extension numbers with the new leading digit just entered as the *EID Local Second Digit*.

```
Intercom Dialing Translation
-----
First Digit Dialed : 1 2 3 4 5 6 7 8 9 0
Translated : 1 2 3 4 5 6 7 8 9 0
EID Local Second Digit: 7
```

Change this field to change the lead digit of the EID 5-digit extension number.

Figure 7 Intercom Dialing Translation Programming Screen

## DID PROGRAMMING SCREEN

The *DID Programming* screen is used to translate the numbers received on an incoming call (either from a tie line or DID line) to the appropriate extension number.

**DID Digits Column** Enter the 3 or 4-digit numbers under the *DID digits column*. If the numbers are consecutive, enter the first number and press the F key. This will fill the column with the next 99 consecutive numbers.

**Ext/ID Column** Enter a 4-digit extension number (or 10+ a line ID number) in the *Ext/ID column*. This is the extension number that will ring when the corresponding numbers in the DID digit column are dialed.

DID Programming| C = Copy F = Fill Del = Delete Page 1 of 6

---

Ind	DID Dgts -	Ext/ID Use Name	Ind	DID Dgts -	Ext/ID Use Name
001	001 -	3001 N	020	020 -	3020 N
002	002 -	3002 N	021	021 -	3021 N
003	003 -	3003 N	022	022 -	3022 N
004	004 -	3004 N	023	023 -	3023 N
005	005 -	3005 N	024	024 -	3024 N
006	006 -	3006 N	025	025 -	3025 N
007	007 -	3007 N	026	026 -	3026 N
008	008 -	3008 N	027	027 -	3027 N
009	009 -	3009 N	028	028 -	3028 N
010	010 -	3010 N	029	029 -	3029 N
011	011 -	3011 N	030	030 -	3030 N
012	012 -	3012 N	031	031 -	3031 N
013	013 -	3013 N	032	032 -	3032 N
014	014 -	3014 N	033	033 -	3033 N
015	015 -	3015 N	034	034 -	3034 N
016	016 -	3016 N	035	035 -	3035 N
017	017 -	3017 N	036	036 -	3036 N
018	018 -	3018 N	037	037 -	3037 N
019	019 -	3019 N	038	038 -	3038 N

Figure 8 DID Programming Screen

## NOTES

- ▶ If the system is equipped with an integrated Voice Mail System, the extension number scheme of the VMS must be programmed to 5 digits.
- ▶ When using Expanded Intercom Dialing, all intercom dialing and ALL outside line call transfers require 5 digits. Call Pickup and Call Pickup from Hold also require a 5-digit extension number to be dialed. Other system dialing features such as paging, orbit, and CO line access are not effected by this feature.
- ▶ EID also effects the operation of the Integrated Operator Terminal. The operator must now dial 4 digits when transferring calls.
- ▶ When using DIDs, 4 digits should received from the Central Office.
- ▶ When using DIDs, 4 digits are entered for extension numbers in the *Ext/Id* column. However, it is necessary to enter 5 digits for Line ID numbers. Enter 10 + the line ID number. For example, to translate a DID number to Line ID 127, 10127 must be entered. After the RETURN key is pressed, only the Line ID number is displayed.
- ▶ When using the built-in Auto Attendant or DISA, 5 digits must be dialed.
- ▶ If LCR or a trunk group with Central Office lines is programmed in a route, the system uses the *Call Diversion* feature for these calls. Make certain to program the *Divert Limit* to a suitable value.

# Technical Facts

EXECUTONE

EXECUTONE® IDS

No. 1778

March 6, 1992

For EXECUTONE IDS Product Distributors

## SOFTWARE VERSION 432-2.0

A new software version, 432-2.0 is now available for the 432 port configuration of the EXECUTONE IDS. This replaces software version 432-1.02, and is shipped with all new orders beginning 3/6/92.

This version adds several features and programming options to the system. The following paragraphs give a brief description of the new and enhanced features. Add this Tech Facts to the 432 section of the IDS Technical Manual (p/n 770312B).

### New Features

- Tenant Night Groups** – This feature permits extensions to be grouped together and placed in the night mode without placing the entire system in night mode. When a tenant group is placed in the night mode, all extensions assigned to that group will follow their respective night mode programming (e.g., night ringing assignments, night mode call forwarding, night class of service, etc.). There are nine *Tenant Night Groups* available in the system. Any number of extensions may be in a tenant night group. Extensions are assigned to one of the tenant night groups by using the *recording number* field of the *Station Programming* screen. Enter a 3-digit recording number 101-109 for tenant groups 1-9. At least one extension in each tenant night group should be programmed with a tenant night key (key code 800) with a sub-code the same as the group number (01-09) to be placed in the night mode.

The night mode field on the **Integrated Operator Terminal** has changed to include the **Tenant Night Groups**. If no tenant night groups are in the night mode and the system is placed in the night mode, the display appears as before: **NIGHT**. If at least one tenant group is in the night mode, the night field displays the number of the group in the night mode. For example: The night field can display **N123456789**. Where N indicates the system in night mode, 1 indicates tenant night group 1 is in the night mode, 2 indicates tenant night group 2 is in the night mode, etc.

**NOTE:** The use of Tenant Night Groups requires either Auto Attendant or ACD be installed in the system in order to use recording numbers.

### Please Distribute to...

- Distributor/District Manager
- Sales Personnel
- Operations Personnel
- Technical Personnel

### Please File in ...

- Your Master Technical Facts File
- Your IDS Technical Manual 770312B

**NOTE:** Once an extension is assigned to a tenant night group, the extension ignores the system day/night mode and follows only the mode the tenant night group is in.

**NOTE:** The Tenant Night Groups feature can be enhanced to prevent extensions within a Tenant Night Group from calling extensions outside of their group. See the description for system option *Tenant Groups On* located on page 9.

- Multiple Recordings On The Digital Voice Announcer** – This software version permits up to 99 short messages to be recorded and played back on a Digital Voice Announcer (p/n 15780). The total message time on the DVA is 65 seconds. Therefore, messages must be of short duration. Long messages reduce the number of messages available. Messages are recorded by dialing the recorder extension number, pressing 1 for record, and then entering the 2-digit message number (01–99). To play back a message, press 2 and then enter the 2-digit message number (01–99). To erase all messages, press \*. These multiple recordings can be accessed by both the ACD and Automated Attendant features. See the *Feature Enhancement* section of this document.

**NOTE:** The Auto Attendant feature supports the use of messages 01 to 10 only. ACD supports the use of messages 01 to 99.

**NOTE:** If the message number is programmed 0 in either the ACD Sequence or the Auto Attendant programming screens, the system plays message 1.

- ACD Queue Alert Using A DVA And Paging** – A feature has been added that allows a message recorded in a Digital Voice Announcer to be played over a specified page zone whenever a specified number of calls are waiting in queue for an ACD group. The programming for this feature is accomplished on the *ACD Group Setup* programming screen in an area labeled *Page*. A *Call Sequence* does not need to be programmed for an ACD group in order for this feature to work. The *Page* area contains a number of fields:
  - **ZONE** – This field is programmed with the page zone (60–69) to be used.
  - **REC** – This is the recorder number to use.
  - **NM** – This is the message number in the recorder being used.
  - **PRD** – This is the time interval between message announcements. The value entered is multiplied by ten to give the interval in seconds.
  - **CALLS** – This is the number of calls permitted to be waiting in queue before paging. When the number of calls in queue exceeds this number, the recording is played over the page. If this field is programmed 000, as soon as a call enters the queue, the message will be played over the page zone.

**EXAMPLE:**

PAGE	ZONE	REC	NM	PRD	CALLS
	60	03	02	005	000
SUPERVISOR					

In this example, calls entering the queue cause message number 2 contained in recorder 3 to be played over page zone 60. The message is played over the page every 50 seconds (PRD = 005 x10 seconds) until the call is answered, or otherwise leaves the queue.

- Dial Code To Answer ACD Calls** – A user does not have to be logged into an ACD group to answer ACD calls. An ACD call in queue can be answered by dialing 47 plus the 2-digit ACD group number.
- Using ACD Queue Key To Answer Calls** – The existing ACD Queue key (key code 831) can be used to answer ACD calls by changing the sub-code of the key to 1 plus the 2-digit ACD group number to be answered (e.g., a key programmed 831 sub-code 102 can be used to answer calls in ACD group 2). The Queue key lights when calls are in that queue (according to the *Queue Menu*). Pressing the Queue key will answer the call that has been in the queue the longest.

- Computer Port Interface (CPI)** – This software version supports the *Computer Port Interface* feature which allows an Executone IDS customer to control the telephone system from a host computer. CPI provides information to the host computer about the status of telephones within the system. CPI is NOT a hardware product, but a software product based upon a set of control codes which are provided to the user for control of the IDS. CPI allows one of the system's RS-232 I/O ports to be programmed for use as a computer control port. The host computer via the I/O port will send a list of pre-defined commands to the system. CPI is a remotely programmed option (order part number 115087), and is available on the 432 port CPU (p/n 21650). Contact Terry Atwood, Director, Marketing and Product Management – General Products for further information on this software product.
- Large Verified Forced Account Codes** – The number of codes that can be entered in the Account Code Table (selection P from the main menu) can be expanded from 532 to 2052 with the optional LVFAC feature. This is a remotely programmed optional feature ordered with part number 115009.
- Skip Toll Restrict Key For Operator Stations** – This key (key code 847) allows an operator to give LCR dial tone to a toll restricted station. The toll restricted station can then place a call which by-passes the toll restriction tables. When a restricted extension calls the operator with a request to place a call, the operator presses the 847 key. The restricted extension must be programmed with LCR keys to receive LCR dial tone.

**NOTE: The LCR feature must be installed to use this key. If this key is to be placed on an Integrated Operator Terminal, the function keys must be programmed for use as feature keys and not department keys.**

### Feature Enhancements

- Single Cabinet System** – This software version permits the system to operate without the Fiber Mux card (p/n 21630) or the Conference port card (p/n 21600) installed. Without these cards, there are 19 slots available for port cards. However, system software still indicates all 432 ports on the different programming screens (including the *System Configuration* screen which still indicates 2 cabinets).
- Pilot Intercom** – This is an optional enhancement to the CALL COVERAGE (Pilot) key feature which is added to the system using remote programming. Pilot Intercom allows Call Coverage keys to be used to receive both outside line and INTERCOM calls. The part number for Pilot Intercom is 115015. This feature may only be installed in systems with vacant port card slots. After the Pilot Intercom feature is installed, a CO port card or Loop/Ground Start Trunk II port card must be installed in a vacant port card slot until it is recognized by the system. Program the line numbers on this card for line number 400 and up. The card may then be removed. The number of CO line numbers to be used for intercom links is determined by the system intercom traffic. Each intercom call routed to a CALL COVERAGE key requires 2 intercom CO's. Pilot Intercom adds 2 new codes to the *System Status Monitor*. They are 400 ICMZ 3003, where extension 3003 has seized a CO intercom link (line 400), and 401 CICM 3005, where a call is being placed to extension 3005.

**NOTE: Once this option is activated, ALL intercom calls are treated as CO calls. Therefore, the maximum number of simultaneous intercom calls is limited to the number of CO intercom links available.**

**NOTE: An enhancement has been made to the programming and operation of DSS keys for use with Pilot Intercom. When DSS keys are programmed on an extension, the key sub-code is normally zero. DSS keys programmed in this manner use the CO Intercom links for calls between extensions. If the DSS key sub-code is programmed to a number other than zero or the sub-codes used with CALL COVERAGE keys, the normal system intercom paths are used for calls between extensions.**

- LCR Inter-digit Timer Using The LCR Class On The Station Programming Screen** – The *LCR Class* field on the *Station Programming* screen can be used to adjust the inter-digit timer used for LCR calls. The inter-digit time is the time the system waits between dialed digits before assuming you have finished dialing. The first digit of the 3-digit field is used to set this timer. The third digit in the field performs the same function as in previous software versions (determining under what circumstances a station's call can be dialed on a more expensive route). The second digit in the field performs the same function as in previous software versions (0

for a tone at the beginning and end of dialing, or a 1 for no tones). This timer is programmed on a per station basis. The system option *LCR Centrex* on the *System Options* programming screen also effects this timer. To program this timer, the first digit of the LCR Class is programmed as listed below:

LCR Class	LCR CENTREX = N	LCR CENTREX = Y
0xx	6 seconds	3 seconds
1xx	12 seconds	6 seconds
2xx	18 seconds	9 seconds

EXAMPLE: If an extension has an LCR Class of 101, that extension has an inter-digit timer of 12 seconds (with LCR Centrex= N) and if the least expensive route for a call is busy, the user can manually override to the next more expensive route (original LCR Class 001).

- Changes To ACD Call Handling** – Beginning with this software version, a call to an ACD group remains in queue even while it is ringing an agent's extension. This was done to maintain the look back capability for cases when the agent does not answer.
- DVA Multiple Recording Numbers And Automated Attendant** – The Automated Attendant feature has been enhanced to make use of the multiple recordings capabilities now available with the Digital Voice Announcer (p/n 15780). One DVA can be used to record several different greetings for the Auto Attendant, however, only one of the greetings can be played at a time. The *Day Greeting*, *Busy*, *No Answ*, and *Night Greeting* fields have been expanded to include both the recorder number (Rc), and the message number (Mg) to be played. See Figure 1. **The first 10 messages of the DVA can be used with the Automated Attendant.** If the message number is left programmed 00, the system automatically plays message 1.

AUTOMATED ATTENDANT								
Function		Attn 1	Attn 2	Attn 3	Attn 4	Attn 5	Attn 6	
[E]xt	3001	Y	Y	Y	Y	Y	Y	
ACD	01	Y	Y	Y	Y	Y	Y	
Hunt	01	Y	Y	Y	Y	Y	Y	
VMS		Y	Y	Y	Y	Y	Y	
Main Menu		0	0	0	0	0	0	
[A] Day Selections		[C] Digit Timeout 15						
Greeting	Rc,Mg	00,00	00,00	00,00	00,00	00,00	00,00	
Busy	Rc,Mg	00,00	00,00	00,00	00,00	00,00	00,00	
No Answ	Rc,Mg	00,00	00,00	00,00	00,00	00,00	00,00	
[B] Night Selections								
Greeting	Rc,Mg	00,00	00,00	00,00	00,00	00,00	00,00	
Divert		N	N	N	N	N	N	
Release		N	N	N	N	N	N	
[F] Attendant 1 Scheme 02 - [Ext->E001-228,ATN->11-16,Hnt->41-76,ACD->81-95]								

Figure 1 – Automated Attendant Programming Screen



- DVA Multiple Recording Numbers And ACD** - The ACD feature has been enhanced to make use of the multiple recordings capabilities now available with the Digital Voice Announcer (p/n 15780). One DVA can be used to record several different messages for ACD, however, only one of the greetings can be played at a time. The *Recording* command in the *ACD Sequence* programming screen has been enhanced to include a message number. See Figure 2.

```

(A) ACD Group 01 Name SERVICE (DAY)
-----
Supervisor |                                     | If an agent does not |
           |                                     | answer within 030 sec|
           |                                     | then agnt is assumed|
           |                                     | busy for 060 seconds.|
-----

CALL SEQUENCE
(Unless an agent is available, the call will go thru the following sequence)

  1         2         3         4         5
-----
| DELAY | | RECORING | | MUSIC | | RECORING | | FWD TO ACD |
| 002 Sec | | 001.Mg 001 | | 045 Sec | | 002.Mg 001 | | 002 BX 001 |
-----

 10         9         8         7         6
-----
|          | |          | |          | |          | |          |
|          | |          | |          | |          | |          |
|          | |          | |          | |          | |          |
|          | |          | |          | |          | |          |
-----

COMMANDS: G - Group, S - Sequence, R - Recording, A - Agent
          I - Increment, D - Decrement, F - Flip Day/Night
  
```

Figure 2 - ACD Sequence Programming Screen

- Toll Restriction Expanded** - The *Toll Restriction* tables (classes) can be chained together to increase the number of RESTRICTED and ALLOWED patterns. The *Toll Restriction* table as a command (L) CONTINUE ON \_\_\_. After filling up one class, press L, and enter the class of the table on which programming is to continue. The class selected must be higher than the class being continued from. The system searches the toll tables in one direction only from lowest number class to highest. The toll tables do not look back to previous tables.

```

[I] CLASS 01 [L] CONTINUE ON 05
          [U] RESTRICTED          [V] ALLOWED
-----
GROUP | NUMBER | GROUP | NUMBER | GROUP | NUMBER | GROUP | NUMBER
1234567890 |      | 1234567890 |      | 1234567890 |      | 1234567890 |
-----
YYYYYYYYYY|1ABX |      |      | YYYYYYYYYY|1800XX |      |      |
YYYYYYYYYY|1AAX |      |      | YYYYYYYYYY|1A11 |      |      |
YYYYYYYYYY|0   |      |      | YYYYYYYYYY|      |      |      |
YYYYYYYYYY|ABX |      |      |      |      |      |      |
-----
  
```

Figure 3 - Toll Restriction Programming Screen

- Changes To Keys Programming On The Station Programming Screen** – The *Keys* programming area of the *Station Programming* screen has been moved to its own screen. This screen is accessed in the same manner as the original *Keys* area, by pressing the K key. The screen displays only the keys available for the telephone type selected. If a telephone is connected to the extension, the screen automatically displays the telephone type. The *Programmable Phone Type* and the *X copy* function are not supported in this software and should not be used.
- VMS Networking** – The VMS Integration feature has been enhanced in the 432 port configuration for systems connected together (IDS 432 connected to another IDS 432 only) using *Transparent Intercom Dialing*. This allows the voice mail system to be connected to one of the IDS 432s and light message waiting indicators in both systems. This is accomplished using the *Transparent Intercom Dialing* map (select Y & C from the main menu) to determine the location of the targeted extension. If the extension is in the distant system (from the system with the voice mail system), a tie line is seized and the MWI code plus the last 3 digits of the extension number are dialed on the tie line. If all tie lines are busy when the MWI code is to be sent, the message is queued until a tie line becomes available. This is a remotely programmed optional feature which can be ordered using part number 115014. When this feature is installed, VMN appears in the options area of the *Main Menu*.

**NOTE: This feature networks the message waiting indication feature only. Calls will not forward across tie lines via Transparent Intercom Dialing to a voice mail system connected to a distant system.**

- Add On Conference For 6-Key And Single Line Telephones** – This software version allows 6-key and single line telephones to make Add On Conference calls. The operation is the same for both phones:
  - Make a call, and place it on hold (Hold key for 6-key phone, switch-hook flash for single line).
  - Dial 1 #.
  - Make the next call and place it on hold.
  - Dial 1 #.
  - Continue making calls, placing them on hold and dialing 1 # until all desired parties are in the conference.
  - Dial 1 # and then 1 # to add yourself.
- Changes To Auto Attendant In The Night Mode** – If the built-in Auto Attendant is to answer calls when the system is in the night mode, a recording number must be programmed for *Night Selections – Greetings*. If a recording is not programmed, a call will ring the extensions programmed with a ring assignment for the line the call is on. When *Diverting* calls on the *Auto Attendant* programming screen, a recording number must be programmed for *Night Selections – Greetings*.

**Additions To Forward & VMS Screen**

Several fields have been added to the *Forward & VMS Programming* screen:

- **DID On & DID Digit** – Two additional values, **DID On** and **DID Digits**, have been added to the *Forward and VMS Programming* screen. These values are used when DID calls are to be routed to individual Voice Message System (VMS) "mailboxes." If **DID On** is programmed Y (yes), when a DID call is forwarded to VMS, the incoming dialed DID number is used to form the mailbox number. The system uses the last (number programmed for **DID Digits**) digits of the dialed DID number as the mailbox number. For example, if **DID Digits** is 4, the last 4 dialed digits of the DID number is the mailbox number sent to VMS. These values are only for DID calls, they do not effect regular trunk calls forwarded to VMS. **DID On** defaults to N (no). When **DID On** is changed to Y (yes), **DID Digits** appears on the screen with a value of zero.
- **Mbox Dgts** – Any telephone in the system may transfer calls directly to a voice mailbox (even mailboxes for extensions not listed on the *Forwarding, VMS Plans* screen) by pressing the TR/CON key, and dialing 77 + the mailbox number. The Integrated Operator Terminal may also be used to transfer calls directly to a voice mailbox by pressing the IVIE key, and dialing 7 + the mailbox number. The **Mbox Dgts** is used to the IDS the number of digits in a mailbox number of the voice mail system. This field is programmed a single digit from 4 to 7. Enter the number of digits in a mailbox number. The field defaults to 4.

- **Timer Mit** – This field is a multiplier for the Busy and NoAns timers. The field is programmed for a multiplier in increments of 1–10 seconds. With the addition of this field, extensions may now be programmed to forward in intervals less than 10 seconds. For example: If *Timer Mit* is set to 2 and a station's NoAns timer to 07, a call forwards on a no answer after 14 seconds, and if the Busy timer is set to 12 a call forwards on busy after 24 seconds.
  - **NA DGT** – If a call is forwarded to VMS on no answer, the 2–digit contents of this field are dialed before the mailbox number into the voice mail system. This field can contain any two DTMF digits including \* and #.
  - **BUSY DGT** – If a call is forwarded to VMS on busy, the 2–digit contents of this field are dialed before the mailbox number into the voice mail system. This field can contain any two DTMF digits including \* and #.
  - **OUT DGT** – If a call is forwarded to VMS on busy, and if the In/Out key is active at the station (the station user is out), the 2–digit contents of this field are dialed before the mailbox number into the voice mail system. This field can contain any two DTMF digits including \* and #.
- T-1 Monitoring Diagnostics** – The *Diagnostics T-1 Monitoring* screen has been enhanced to provide a volume adjustment field per interface card. Press the V key to reach the volume adjust field. Enter 03–13. Minimum volume 03 = –22db. Maximum volume 13 = 0db.

**NOTE: The default value is 07, which is a –9db transmit level.**

- T1 Slot Assignment** – This feature allows the system (using a T1 interface card), to assign ONLY 1 card slot if 12 channels, or less, of a T1 port card are needed. Normally, a T1 port card is automatically assigned two card slots on the *System Configuration* screen. On the *T-1 Monitoring* screen, press the A key. The cursor highlights the *Assign 2 slots* entry field. Press the N key to assign the T-1 card a single card slot.
- Updating Time/Date Fields**– The system operator can now update the system time/date fields from the integrated terminal without entering programming. Pressing the CONTROL (CTRL) and C keys from the operator screen will place the cursor in the Time field. Enter the new system time in 24–hour clock format (e.g., enter 14:00 for 2:00 pm), then press the RETURN key. The RETURN key moves the cursor to the Date field. Press the CONTROL (CTRL) and C keys again to exit these fields.
- Display Phone Messages** – A message has been added to the Display Phone Messages feature. The new message is ALARM CLOCK. This message can be programmed with a time (using 24–hour clock, e.g., 1300 for 1 pm). If the display phone is idle when this time is reached, the telephone will ring 10 times. If the telephone is in use when the selected time is reached, a camp–on tone is heard. The ALARM CLOCK message is displayed on the phone. To cancel the ALARM, press one of the soft keys and then press the CLR soft key.
- Display Phone Messages And ACD Agents** – With this software version, ACD agents are no longer able to activate the Display Phone Message feature while they are AVAILABLE for ACD calls. To use this feature the agent must become UNAVAILABLE or LOG OUT.
- Display Phone Backspace Erase** – This is a display phone feature which is used to correct dialing errors without having to redial the entire number. When using LCR to dial out on a display phone, the right–most soft key is assigned the delete function. While dialing out, the delete soft key can be used to backspace through the dialed number (which appears on the display). Each time the key is pressed the last digit displayed is erased. After erasing the desired number of digits, enter the correct digits. The dial soft key can be used to dial the displayed number (or LCR will automatically begin to dial the number when it determines you have completed dialing). The account soft key retains its previous function.
- System Configuration Screen Enhancements** – Changes have been made to the *System Configuration* programming screen to provide additional information for T1 port cards, and to insert a pad for transmit levels for CO, DID, E&M Tie card, and OPX interface cards.

Additional information is provided for T-1 interface port cards (see Figure 4). The screen displays the slot the T1 card is actual plugged into. This is indicated by an "f" (the first 12 channels). The same line on the screen indicates which slot the T1 card is using for the next 12 channels. This is indicated by a number (the slot number) next to the card identifier in the left column. An "s" next to the T1 card identifier indicates this slot is being used as the second 12 channels of a T-1 card. The card slot number next to it refers to the slot the T1

card is actually installed in. This is useful for systems with multiple T1 port cards to keep track of which card slots are associated with which T1 port card.

System Configuration			A = Auto Config.	C = Clear Port	F = Default Config?												
			R = Reset Port														
card	PA[D]	POR[T]	+	01	02	03	04	05	06	07	08	09	10	11	12		
01	Stn		001	3001	3002	3003	3004	3005	3008	Data	3208	3229	3010	3011	3012		
02	GS	N	013	1	2	3	4	5	6	7	8	9	10	11	12		
03	DID	N	025	13	14	15	16	17	18	19	20	21	22	23	24		
04	Stn		037	3013	3014	3015	3016	3017	3018	3019	3020	3021	3022	3023	3024		
05	Tie	N	049	3025	3026	3027	3028	3029	3030	25	26	27	28				
06	T1f	7	061	29	30	31	32	33	34	35	36	37	38	39	40		
07	T1s	6	073	41	42	43	44	45	46	47	48	49	50	51	52		
08	T1f	N	085	3031	3032	3033	3034	3035	3036	3037	3038						
09	T1f	10	097	53	54	55	56	57	58	59	60	61	62	63	64		
10	T1s	9	109	65	66	67	68	69	70	71	72	73	74	75	76		
11	Res		121	3039	3040	3041	3042	3043	3044	DIMF	DIMF	DIMF	DIMF	DIMF	DIMF		
12	TIE		133	77	78	79	80	81	82	83	84	85	86	87	88		
13	---		145	89	90	91	92	93	94	95	96	97	98	99	100		
14	---		157														
15	---		169														
16	---		181														
17	---		193														
18	---		205														
19	---		217	3999	3838	3777											

Figure 4 – System Configuration Screen

The transmit padding may or may not be required for older hardware versions of these cards when using this software version. The padding is added or removed by the Y (yes) or N (no) option next to the card. Press the D key to move the cursor to the option. This option defaults to a N (no padding). Press the Y key for 4db padding to transmit levels. The padding option is required to be programmed Y (yes) with the following revision levels of the port cards:

- Loop Start CO Interface Cards (p/n 15600); all revisions
  - Loop/Ground Start Trunk II Cards (p/n 15590); revision C and below
  - E&M Tie Line Combination Cards (p/n 15680); revision B and below
  - LSI DID Interface Cards (p/n 15610); revision AAX2A and below
  - LSI OPX port cards (p/n 15660); revision E and below
  - Loop/Ground Start Trunk Cards (p/n 15620); all revisions
  - Non-LSI DID Interface Card (p/n 15610); all revisions
- 15390 Modem Support – This software version supports the use of the 300/1200 baud modem part number 15390, which is installed on the EVCM.

## New System Options

The following options have been added to the *System Options* programming screen.

- No DID Digits In SMDR** – When programmed to a Y (yes), this option disables the automatic generation of an Account Code from the DID digits. When this option is programmed to N (no), it generates an Account Code using DID digits.
- SLI PBX Option** – This option controls how single line telephones transfer a call and how a screened transferred call is received. When this option is programmed N (no), to transfer a call from a single line telephone, the user must flash the switch-hook, dial a #, and then dial the extension number. When a call is screen transferred to a single line telephone with this option programmed N (no), the single line telephone user must hang up after the announcement call to allow the call to ring through.

When this option is programmed Y (yes), to transfer a call from a single line telephone, the user must flash the switch-hook, and then dial the extension number (the # is eliminated). When a call is screen transferred to a single line telephone with this option programmed Y (yes), the screened call is connected to the single line telephone as soon as the extension making the announcement hangs-up. The switch-hook does not have to be cycled to receive the call.

**NOTE: When this option is programmed Y (yes), a call placed on hold is actually in a pre-transfer state. The recall timer in the pre-transfer state is fixed at 2 minutes. The station's Hold Recall timer does not apply to this state.**

- Night Mode Verify** – This feature introduces a two step method for placing the system into the night mode (or into the day mode if the system is already in night). This feature is only for use on the integrated Operator Terminal. NIGHT mode keys on telephones still function as in previous software versions. In day mode operation, press the operator terminal NIGHT key. The operator screen will display NITE ON Y/N in the night message field. Press the Y (yes) key to enter the night mode. Press N (no) to cancel or exit. While in the night mode, press the NIGHT key. This will display NITE OFF Y/N in the night field. Press the Y (yes) key again to exit the night mode. Press N to cancel. If the Y/N option is not answered, this feature will time out in approximately 12 seconds. Programming the *Night Mode Verify* option to Y (yes) has NO effect on other methods of entering the night mode.

**NOTE: This feature is to be used to prevent an operator from accidentally placing a system in night mode. The Reset, Control-R, and Night keys on the Integrated Terminal all send the same code to the system.**

- Fwd Transfer On Busy** – When a call is screen transferred to a busy extension, the calling extension receives a busy signal and does not follow the called extensions Call Forward on Busy assignment. When this option is programmed Y (yes), the calling extension will follow the called extension's Call Forward on Busy assignment.
- Tenant Groups On** – This system option provides the *Intercom Blocking* feature. The Tenant Group On option enhances the operation of the **Tenant Night Groups** feature described on page 1. When this option is programmed Y (yes), the tenant night groups become **Tenant Groups**. Extensions which are assigned to tenant night groups can only call extensions (and transfer calls to extensions) within their own tenant night group, or extensions which have no tenant group number. They are restricted from calling extensions outside of their tenant group. The night group operation is not effected by this option. When this option is programmed N (no), only the **Tenant Night Groups** feature operates.
- CA100 Option** – This system option modifies the SMDR output for use with the INFOSTAR™/CA100. If a CA100 is connected to the IDS, program this option to Y (yes). Otherwise, this option should be left programmed to N (no).

**NOTE: If the CA100 option is Y (yes), if the dialed number is less than 7 digits, the system pads the number with 9's to make 7 digits. For example, if the dialed number is 7685, the system reports 7685999. The duration is given as HMM.M where H is hours and MM.M is minutes and tenths of minutes.**

- Block Multiple Page** – When this system option is programmed Y (yes), the system prevents a *Page All Zones* (dial access code 60) from overriding other page zones while they are in use. If one of the other page zones (61–69) is in use when a caller dials 60, the caller receives a busy tone.

### New Line Types

Several new Line types are available for use on the *System Programming* screen.

- Line type 5** – This line type is used with tie lines or T1. This line type is used when the need for a wink on incoming calls, and a wink on outgoing calls is required.
- Line type 6** – This line type is used with tie lines or T1. This line type is used when the need for an immediate signal on incoming calls, and a wink on outgoing calls is required.
- Line type 13** – This line type is the same as line type 12, however, the # on the dial pad is not used for last number redial. The # key sends a DTMF #. This line type is used when a line is connected to a PBX (or Centrex) to prevent the transmitter of the telephone from being muted when the line is flash-hooked.
- Line type 125** – DISA Silent Monitor – Line Type 125 will function the same as Line type 100 – supervised DISA. If the Silent Monitor feature is activated in the system, a DISA caller after entering the DISA authorization code, may dial 7 + the last 3 digits of any extension number to silent monitor that extension. The DISA silent monitor functions the same as the system silent monitor; a one way connection remains until the DISA caller disconnects.
- Line Types 50 through 54** – These line types are for use with DID lines and tie lines. If a line is programmed with the TIE/DID option set to Y (yes), these line types can be used to have any digits received bypass the translation table and follow the line ID ringing assignment. Any digits sent by the carrier (up to 10) are stored until the call is terminated. The digits are then sent to the SMDR port and printed in the number dialed field of that call record. The different line types indicate the various supervisions available:
- 50 Immediate start, immediate return supervision.
  - 51 Wink start, return supervision on answer.
  - 52 Wink start, return supervision on ring.
  - 53 Return supervision on answer.
  - 54 Return supervision on ring.

### How To Obtain Additional Copies Of This Facts

This Technical Facts is intended to be copied for any additional quantity required. This Technical Facts is available through the EXECUTONE Inside Sales/Customer Service Department until July 31, 1992.

# Technical Facts



ISOETEC® DIGITAL SYSTEM

No. 1698  
13 August 1990  
For ISOETEC Distributors

## 432 PORT CONFIGURATION

### DESCRIPTION

The ISOETEC Digital System can be expanded to 432 ports. This configuration uses two of the 228 port cabinets. These ports can be either voice ports, (telephones, CO lines, tie lines, etc.), voice/data ports (digital display telephones), or data ports (digital data interfaces). Standard 2500-type telephones can also be connected to the system with the use of an OPX port card or an OPX Interface. A combination card provides connection to E&M type II tie lines and digital stations.

### SYSTEM DESCRIPTION

The system architecture is based on the 68000 microprocessor, and addresses one megabyte of EPROM memory, one megabyte of battery-backed static RAM, and a real time clock. System software is provided in EPROM memory which is installed on the ECPU circuit board.

The system utilizes time division switching techniques, and  $\mu$ (mu)-law 255 pulse code modulation. The voice bus is divided into 512 time slots: 432 are available for voice connections, and the remainder are used for CPU functions, paging, and conferences. This arrangement of time slots provides a telephone system which is non-blocking between ports. Each port is provided a time slot, thus a conversation between two ports uses two time slots.

The system also has a separate user data bus, independent of the voice data bus, with 432 usable time slots. This parallel architecture allows for simultaneous voice and user data operation.

Four input/output ports are provided for communications to the system. These four ports are used for the operator terminals, programming terminals, and serial printers. Two of these ports are configured for an RS-232-C connection. The remaining two are configured for an RS-422 connection. These connections are made via a single cable connected to the system backplane and then divided on the Main Distribution Frame (MDF). An additional six input/output ports can be added to the system using the Expanded DCM. These input/output ports are accessed using the *Data Feature*.

The system is equipped with a built in 300/1200 baud MODEM. This MODEM can be used for remote programming, and remote diagnostics.

The system is configured using two 228 port cabinets with the common control cards connected together with a fiber optic cable. The common control cards used with the 432 port configuration are different than those used

File a copy of this Technical Facts in your Master Technical Facts File and in your ISOETEC Digital System Technical Manual part number 770312B. Also list it on the Record of Changes page.

Pat Hardy  
Technical Publications

attachment

with the 228 port configuration. The system also has two additional cards: the Fiber Mux card, and the Conference port card.

## TELEPHONE SETS

The ISOETEC Digital System may be used with a variety of telephone sets. ISOETEC digital telephone sets are provided in the following sizes:

- A digital display telephone with 20 programmable keys and 3 "soft keys" and a 64 character liquid crystal display

- 28-key digital telephone with 22 programmable keys

- 17-key digital telephone with 11 programmable keys

- 6-key digital telephone

- 44-key DSS Console

All digital telephone sets have 6 fixed function keys. These keys are the HOLD key, TR/CON (TRansfer/CONference) key, VOLUME UP and DOWN keys, PROGRAM key, HF (Hands Free) key on the 28-key and 29-key display telephones, VA (Voice Announce) key on the 17-key telephone, and an OUT key on the 6-key telephone.

The multiple-key stations access CO lines and system features through the use of the programmable feature keys. Light Emitting Diodes (LEDs) indicate the status of calls and features in use. The 29-key digital display telephone, and the 28-key digital telephone are fully featured, hands free telephone sets. The 17-key digital telephone is a voice announce telephone. The station may be used hands free for internal calls only. The digital 6-key telephone does not have hands free or voice announce capability.

ISOETEC's EZ-1 electronic 26-key and 14-key telephones may also be used with the system through the use of the ISOETEC Electronic Phone Interface (IEPI).

A standard DTMF dial, single line telephone set may also be connected with the use of an OPX (off premise extension) Interface connected to one of the digital station ports, or with the use of the OPX Port card.

The digital stations are connected to station ports by means of industry-standard twisted, 2-pair cable. Both pair are required for the telephone to function. One pair transmits digitized voice information and control signals from the system to the telephone. The other pair receives digitized voice information and control signals from the telephone. It is strongly recommended that 4-pair cable be used to allow extra pairs for future use. Each station has two digital channels to the station port card. The primary channel is used for voice communications. The secondary channel is used with display telephones for either an off-hook second voice path, or for user data communications.

## OPERATOR STATION

The operator station is a CRT terminal which is connected to one of the four input/output ports, or to one of the first four input/output ports supported by the Expanded DCM. The operator station also requires a connection to a digital station port.

## DIGITAL VOICE ANNOUNCER

The Digital Voice Announcer (p/n 15870) is a device that can answer a call and play a pre-recorded message (up to 65 seconds) to the caller. The Digital Voice Announcer (DVA) is connected to the system in the same manner as a digital telephone. One digital station port is required for each DVA. The DVA can be used in applications which require a recorder (e.g., ACD recorders, or answering devices for Auto Attendant). This device takes the place of a recorder connected through an OPXI to the system. The Digital Voice Announcer is not able to answer a line that is programmed to ring directly to it. Furthermore, a call cannot be transferred to this device.

The recorded message of the Digital Voice Announcer is retained by a battery in the event of a power failure. The battery will retain the message for 24 hours.



## DSS CONSOLE

The DSS Console is the size of a 17-key telephone and has 44 programmable buttons. These buttons can be programmed in the same manner as the programmable buttons on the 28-key telephone. The DSS is equipped with a speaker for audible tones. There can be a maximum of 40 DSS Consoles connected to this configuration of the ISOETEC Digital System. Three DSS Consoles can be assigned to one telephone. Each DSS Console requires a digital station port.

## TRUNKS

The ISOETEC Digital System uses either loop start or ground start trunks. These lines may be either DTMF signal or pulse signal. The system can also be used with rotary dial Direct Inward Dial service. The E&M Tie Line Combination port card allows the connection of 2-wire, E&M type II signal, tie lines to the system.

## T1

The T1 Interface port card can be used with this configuration of the system. The T1 Interface card (p/n 15510) is a port card designed to interface any mix of up to 24 voice channels (64 kilobit time slots) of a digital T1 trunk. Support for data channels is planned for the future. The T1 Interface card supports **standard D-4 framing format, with robbed bit signaling**. The system can support E&M, loop start, ground start, and DID signaling. Although the T1 card fits into one card slot, it takes up two card slots worth of time slots.

**NOTE: The ISOETEC Digital System does not support rotary dialing on a T1 circuit at this time.**

The input and output of the card is designed to connect to an external Channel Service Unit (CSU). The CSU is an unintelligent device which supplies conditioning for the T1 line signals and all required FCC part 68 functions of surge protection and keep alive. These functions were deliberately left external to the card to ease in installation and system servicing. One T1 Interface port card and one CSU are required for each T1 circuit.

The T1 port card is also available in a *T1 Digital Trunk Card* kit (p/n 15510K) which contains the T1 port card, the three cables necessary for installation, a CSU, and a power supply for the CSU.

The T1 card also provides a *receive clock recovery* output which is intended to be connected to the system EVCM card (p/n 21640). The EVCM contains circuitry which, when connected to the T1 card, will synchronize the PCM timing of the system with that of the Central Office. The EVCM (p/n 21640) required for use with the T1 port card is the same EVCM used with the 432 port configuration.

A T1 Interface card can be installed in any port card slot in the first cabinet **only** of the 432 port configuration. However, the T1 port card requires 24 time slots, and therefore uses two card slots. After a T1 card is installed, do not plug another port card into the slot immediately to the left of the T1 card. This reduces the number of port cards of any type that can be installed in system. Multiple T1 cards may be installed in a system with the only limitation being the number of time slots available. This corresponds to 9 port cards in the first cabinet (however, the first cabinet then contains nothing but T1 port cards). The installation of T1 port cards is the same as the 228 port configuration. Specific information can be found in the *Technical Facts* describing the T1 Interface Port Card, TF 1697.

# CIRCUIT CARD DESCRIPTION

The 432 port configuration of the ISOETEC Digital System contains the following circuit cards:

## BACKPLANE

The backplane is the mounting card into which all the other circuit boards are installed. The backplane contains connectors for 24 circuit cards. There are 19 connectors for port cards (station or CO lines), one for the ECPU, one for the Expanded Voice Control Module, one for the Expanded Data Control Module, one position for the Fiber Mux card, and one spare slot. The connectors are labeled J1 through J24 and are numbered from left to right. The connectors are offset for the different types of circuit cards to avoid improper installation. The backplane has connections for the input/output ports (J27), background music (J25) and music on hold (J26). The backplane is mounted inside the system cabinet. Two cabinets are required for the 432 port configuration.

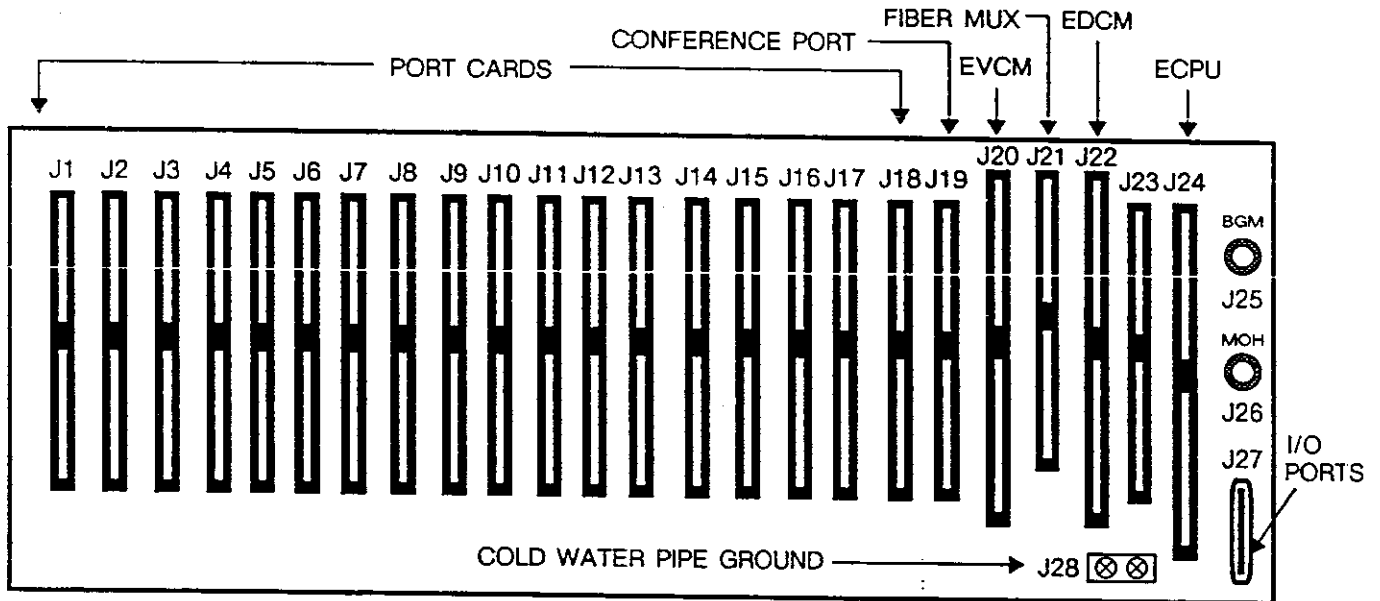


Figure 1 Backplane Layout

## EXPANDED CPU

The ECPU (p/n 21650) is responsible for all control functions, execution of all logic operations, and control of system modules. The ECPU contains a 16 bit microprocessor (the 68000), and addresses one megabyte of EPROM memory, one megabyte of battery-backed static RAM, and a real time clock. The circuitry for the input/output ports is mounted on the ECPU. The system reset switch is located on the ECPU. System software, which is provided in EPROM memory, is installed on the ECPU. The ECPU is installed in slot J24, which is the right-most slot on the backplane in both cabinets. Two ECPUs are required for the system. The same version software must be installed on both ECPU cards.

**NOTE: The reset button on the ECPU in Cabinet 1 must be pressed for at least three seconds before the system resets.**

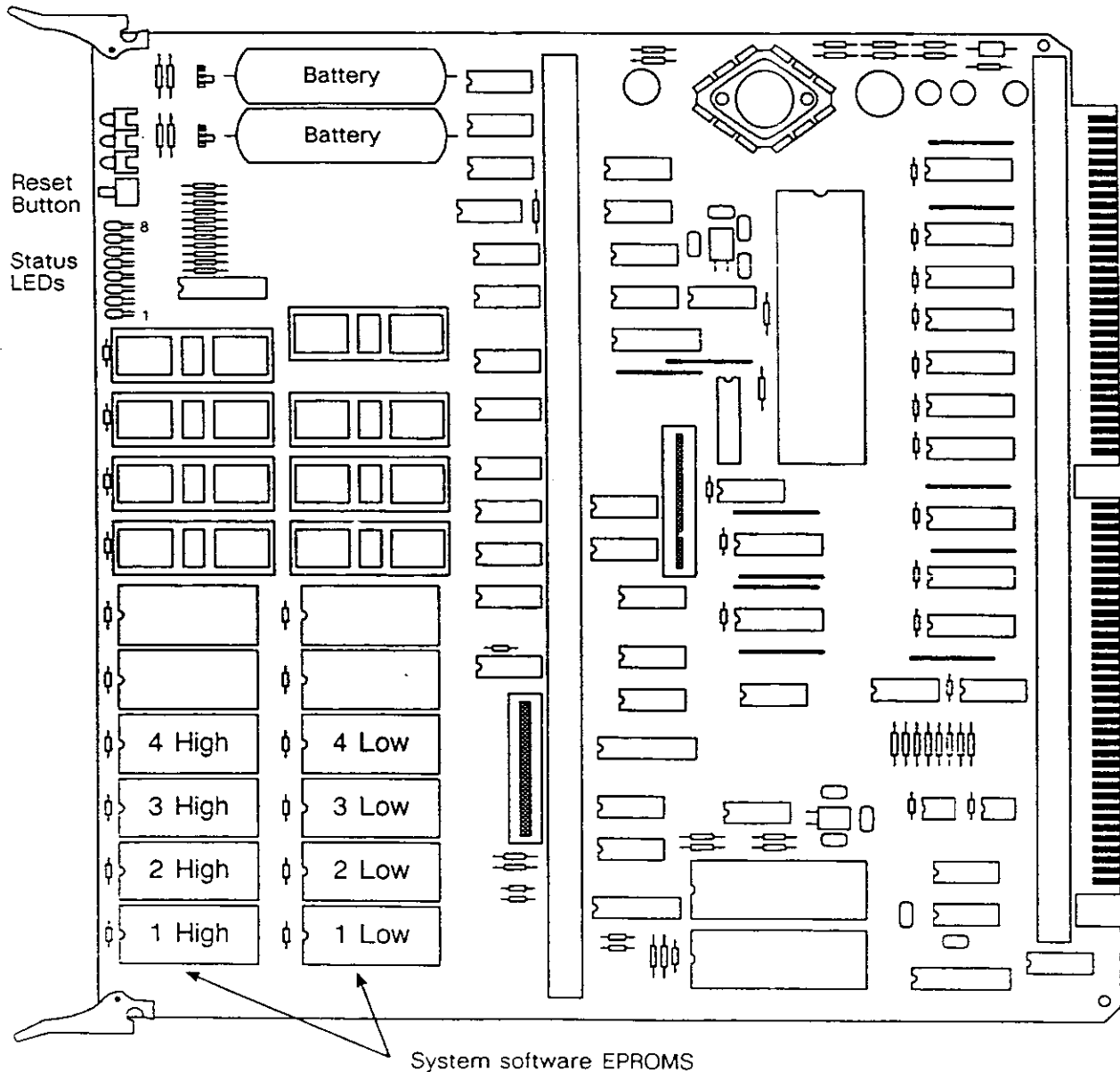


Figure 2 Expanded CPU

### EXPANDED VOICE CONTROL MODULE

The Expanded Voice Control Module (p/n 21640) contains the circuitry necessary for voice switching, and is responsible for all system tones, system timing, and station status control. The EVCM contains the DTMF tone generators, a DTMF tone receiver, the circuitry and connections for background music and music on hold, and the system MODEM. Two Expanded Voice Control Modules are required per system. The EVCM is installed in slot J20 on the backplane of both cabinets. A flat ribbon connector is used to connect the EVCM to the FIBER MUX card in each cabinet.

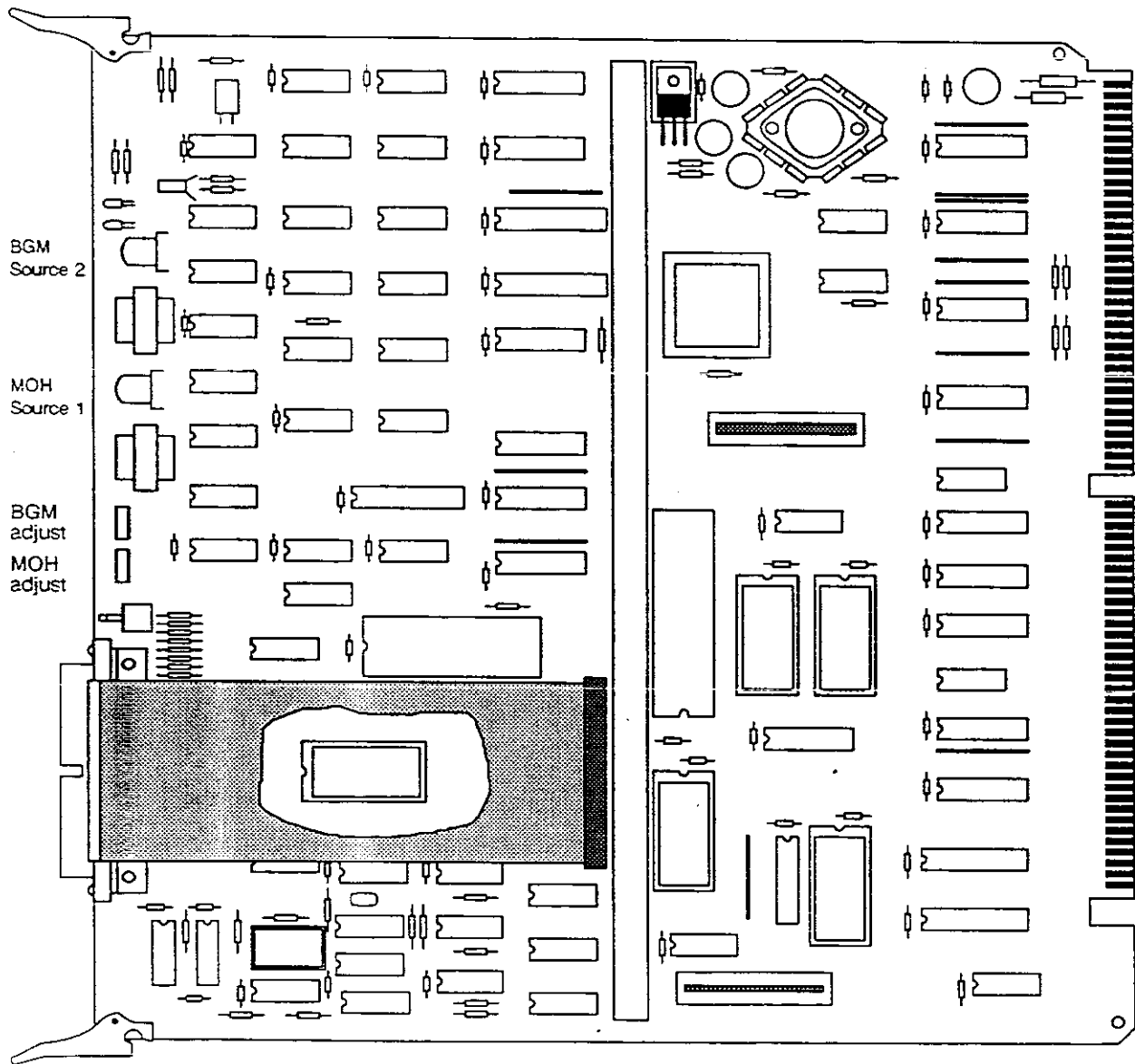


Figure 3 Expanded Voice Control Module

## EXPANDED DATA CONTROL MODULE

The Expanded Data Control Module (p/n 21660) contains the circuitry necessary to establish data connections. Two Data Control Modules are required if user data is to be transmitted through the system. A flat ribbon connector is used to connect the EDCM to the FIBER MUX card in each cabinet. The EDCM adds six additional input/output ports to the system. These ports are accessed using the *Data Feature*.

**NOTE:** A station port used to access an Input/Output port on the EDCM (ports 5-10) must be located in Cabinet 1.

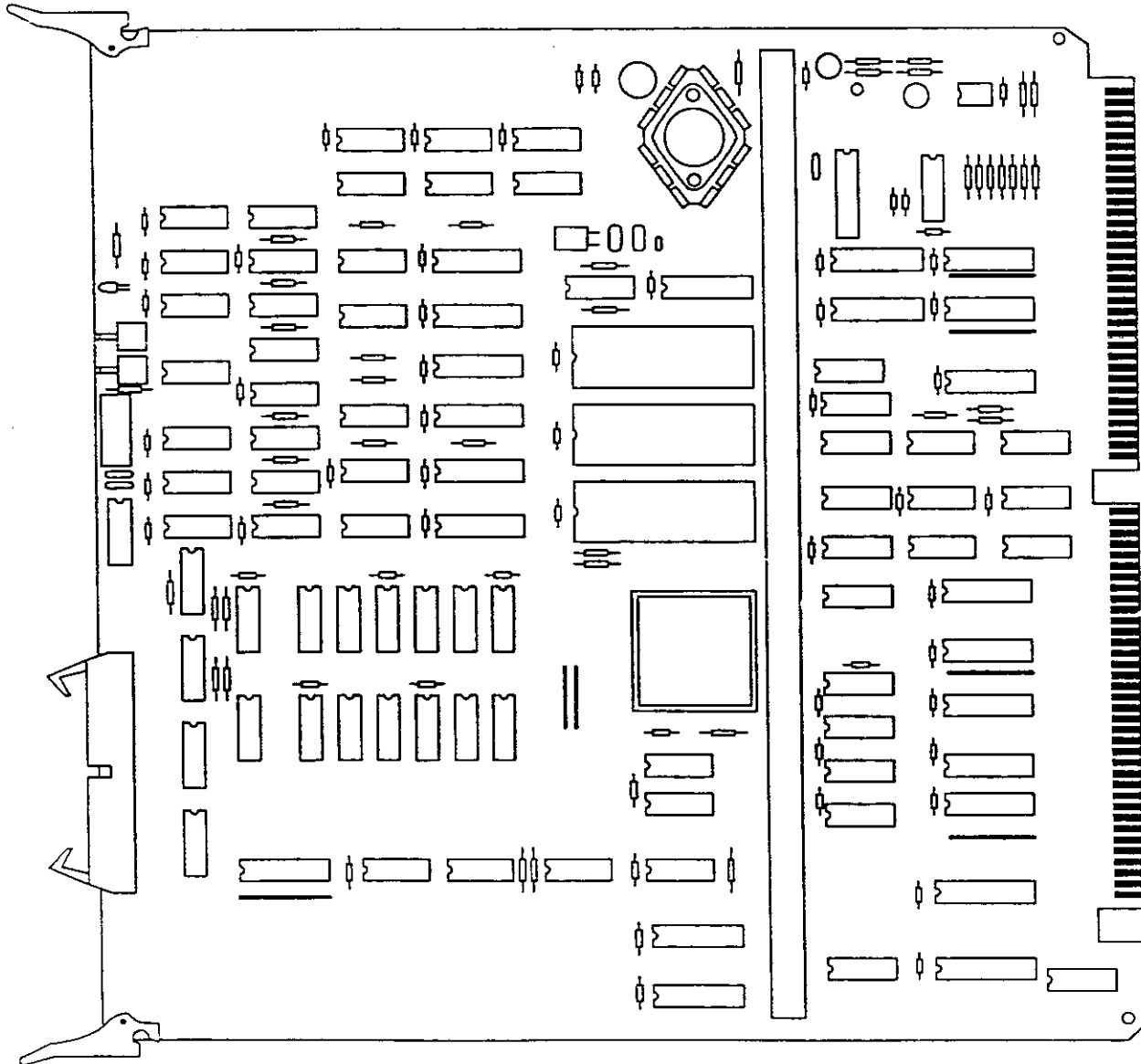


Figure 4 Expanded Data Control Module

## FIBER MUX CARD

The Fiber Mux card (p/n 21630) is used to establish the communications link between the two cabinets. A fiber optic cable with two fiber cores is used to pass voice, user data, CPU control, and clock information between the two cabinets. The Fiber Mux card receives this information from the backplane, encodes, serializes, and puts this information on the fiber optic cable. Information received on the fiber optic cable is converted from serial to parallel, split into voice, user data, and CPU communications. The voice is sent along the ribbon cable to the EVCM. The user data is sent along the ribbon cable to the EDCM. The CPU communications are passed via the backplane to the ECPU. A dip switch on the Fiber Mux card is used to identify the cabinet the card is installed in as Cabinet 1 or Cabinet 2. This switch must be set before installing the card in the cabinet. One card is required in each cabinet.

The Fiber Mux card supports two transmit and two receive channels. Only the first of each are used with the system.

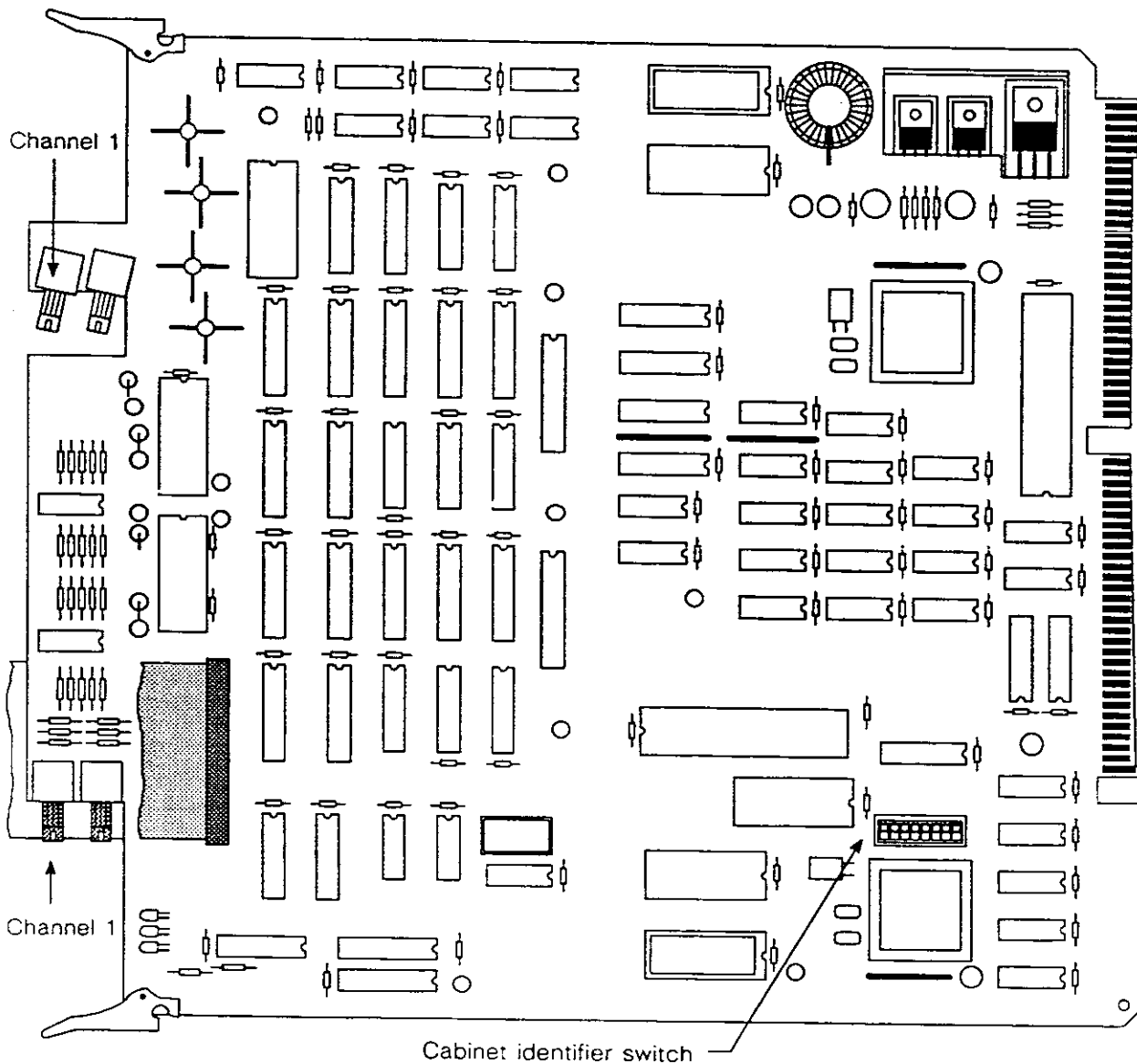


Figure 5 Fiber Mux Card

## FIBER OPTIC CABLE

The fiber optic duplex cable (p/n 01039-01) is 10 meters (approx. 33 feet) long and contains both the transmit and receive fiber optic cables.

## CONFERENCE PORT CARD

The Conference Port Card (p/n 21600) contains the support circuitry for conference calls and paging. This card is usually installed in the first station slot (J19), but may be installed in any port card slot. At least one card in each cabinet is required for system operation. A Conference port card provides 12 conference/page ports. A conference/page port is used in each cabinet whenever a conference call or page is made. One card in each cabinet is suitable for most applications, but more can be added to the system as needed. Conference port cards are added in pairs.

## INSTALLATION

The system is installed using two 228 port cabinets connected by a fiber optic cable to form one system. Any of the ISOETEC Digital System port cards (Station, CO, DID, E&M Tie Line, etc.) can be used in the system. These port cards function fully regardless of the configuration of the system. Following the site selection practices for the 228 port configuration, choose a site for the system large enough for the two cabinets and associated main distribution frames, wiring, and ancillary equipment.

### CABINET INSTALLATION

The two cabinets should be mounted within 20 feet of each other. The fiber optic cable is approximately 33 feet long. The cabinets should be mounted side-by-side to provide proper air circulation. Avoid placing the cabinets one on top of the other. A minimum of 24 inches should be left between the cabinets to allow installation of the power supplies.

### GROUNDING

Each cabinet should be grounded separately. A 16 AWG wire or larger should be run from J28 of each cabinet's backplane to the same earth ground. Also the *Transient Surge Suppressor* should be grounded to this same point.

### OTHER BACKPLANE CONNECTIONS

Music On Hold (MOH) and Background Music (BGM) are provided to the system through RCA type jacks. J26 on the backplane is for the Music On Hold source (source 1) and J25 on the backplane is for the Background Music source (source 2). Music On Hold (MOH) and Background Music (BGM) can also be connected to the system via RCA type jacks mounted on the EVCM. See Figure 3.

BGM and MOH volumes can both be adjusted through potentiometers located on the Expanded Voice Control Module (EVCM) card. See Figure 3. The MOH and BGM connections should be made to the backplane prior to the installation of any circuit cards. The MOH and BGM connections must be made to both cabinets.

The cable to bring the Input/Output ports to the main distribution frame is connected to the backplane of CABINET 1. Connect the I/O distribution cable to connector J27 in the lower right corner of the backplane.

## POWER SUPPLIES

The system requires that all four power supplies (two on each cabinet) be installed. This is due to the additional power required by the common control cards. After the cabinets are mounted, the power supplies are connected.

The power supplies are mounted on the sides of each cabinet. The top flanges of the power supplies fit into corresponding slots in the cabinet. Align the connector on each power supply with the plug on the cabinet and press the connector into place. The power leads connect to the wiring harness of the cabinet as the power

supplies are lowered into place. Secure the power supply to the cabinet using a #8-32 machine screw through the lower flange of the power supply into the tapped hole in the cabinet. The power supply cords of the right side power supplies plug into an isolated, dedicated, and dedicated ground 117 Volt AC outlet for power.

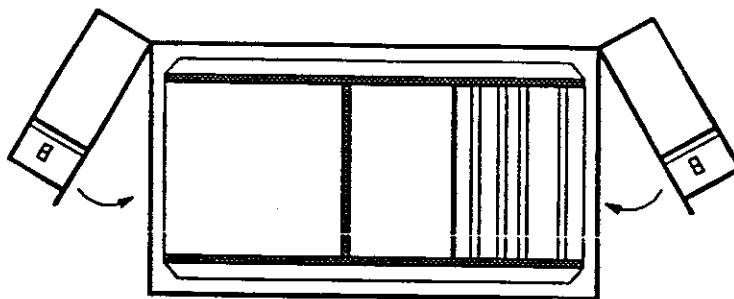


Figure 6 Mounting The Power Supplies

The power supply cords of the power supplies on the left side on the cabinets are plugged into the electrical outlet on the power supplies on the right side of the cabinets, and NOT into the wall electrical outlet.

<b>Caution!</b>
DO NOT CONNECT ANYTHING BUT THE LEFT SIDE POWER SUPPLY TO THE OUTLET ON THE RIGHT SIDE POWER SUPPLY. DO NOT CONNECT RADIOS, RING GENERATORS, PAGE AMPLIFIERS, ETC. TO THIS OUTLET.



Each power supply supports the common control cards in its respective cabinet. The power supply mounted on the right side of the cabinet provides power to port card slots J11-J19. The power supply mounted on the left side of the cabinet supports port cards plugged into slots J1-J10. The port cards should be installed such that the power load is spread among the 4 power supplies.

The use of an ISOBLOK surge suppressor (ISOETEC part number 440129) is required for the system, and is strongly recommended for any ancillary equipment (terminals, printers, etc.). One ISOBLOK should be used for each cabinet.

## CIRCUIT CARD REQUIREMENTS

The number of telephones and lines required determine how many port cards are needed. In addition, two ECPU cards, two EVCM cards, two EDCM cards (only if the optional *Data Feature* is installed), two Fiber Mux cards, and at least two Conference Port cards are required.

### ECPU

The Expanded Central Processor Unit (ECPU), part number 21650, is installed in the right most slot of the backplane in slot J24 of both cabinets. Make certain that the connections for the cold water ground, background music, music on hold, and terminal input/output cable have been made before installing the ECPU card into its slot. Activate the battery backup switches on the ECPU. This board must NOT be installed with the power on. The edge connector on the ECPU is offset to prevent it from being installed in an incorrect slot. Do not force the card into another slot. Two ECPUs are required per system, one for each cabinet.

All system options are supported by the ECPU. A memory module is not required.

### EVCM

The Expanded Voice Control Module (EVCM), part number 21640, is installed in slot J20 of the backplane of both cabinets. This board must NOT be installed with the power on. The edge connector on the EVCM is offset to prevent it from being installed in an incorrect slot. Do not force the card into another slot. Two EVCMs are required per system.



## EDCM

The optional Expanded Data Control Module (EDCM), part number 21660, is installed in slot J22 of the backplane of both cabinets. This board must NOT be installed with the power on. The edge connector on the EDCM is offset to prevent it from being installed in an incorrect slot. Do not force the card into another slot. Two EDCMs are required per system if user data is to be switched through the system, or if the six additional I/O ports are needed.

## FIBER MUX

The Fiber Mux card, part number 21630, is installed in slot J21, of the backplane in both cabinets. Set the cabinet identifier switch SW1 on each Fiber Mux card before installing the card in the cabinet. The edge connector on the Fiber Mux is offset to prevent it from being installed in an incorrect slot. Do not force the card into another slot. Two Fiber Muxs are required per system.

There is an eight position dip switch located in the lower right corner (with the edge connector facing to the right) of the Fiber Mux card. This dip switch is used to set the LAN address of the cabinet. Set all the dip switches to open on one Fiber Mux card. The cabinet with this Fiber Mux card is designated CABINET 1. Close dip switch number 1 on the remaining Fiber Mux card. The cabinet with this Fiber Mux card is designated CABINET 2. See Figure 7.

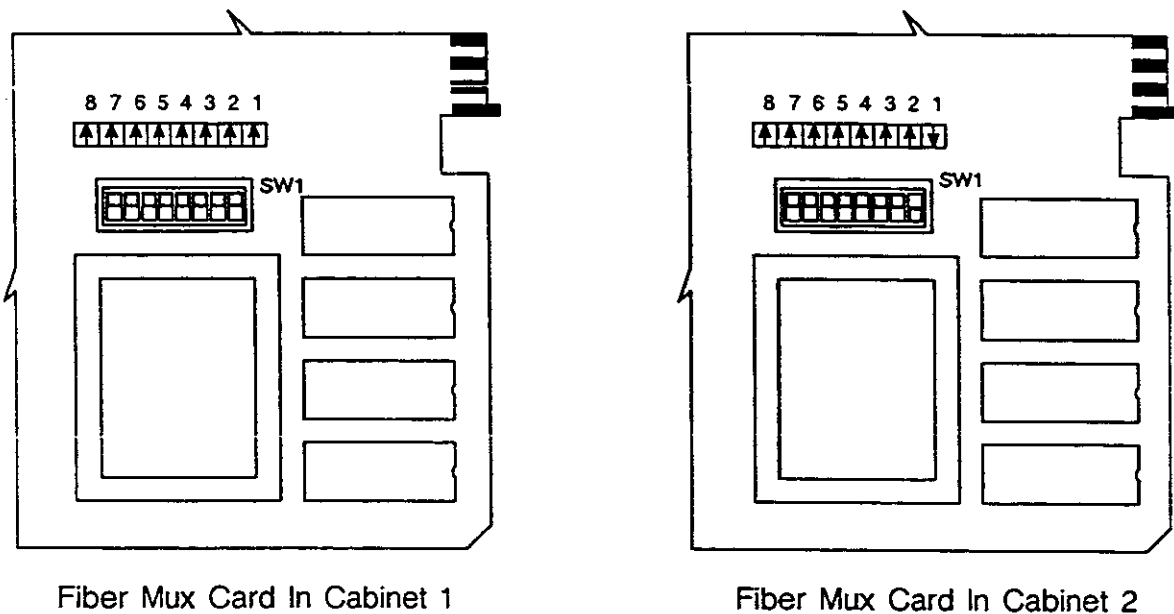


Figure 7 Setting The Cabinet Identifier

## PORT CARDS

All other port cards are installed in slots J1–J19 of either cabinet. At least one port card slot in each cabinet is needed for the Conference port card. Since the power supplies support specific port cards slots (J1–10 and J11–19), it is suggested that Station and CO port cards be mixed when installed in the cabinets. **Avoid having one power supply, or one cabinet, support all the station cards or all the CO cards.** In this manner, some stations and some trunks can still be used should a power supply, or cabinet, ever fail.

## CONFERENCE PORT CARD

A Conference port card, part number 21600, should be installed in slot J19 on new system installations, but may be installed in any port card slot on the backplane of both systems. This board may be installed or removed with the power on. The edge connector on the card is offset to prevent it from being installed in a common control slot. At least two Conference port cards are required per system.

## DTMF RECEIVER COMBINATION PORT CARDS

A DTMF Receiver port cannot be accessed across the fiber-optic connection. If any of the port cards, or features, installed in the system requires a DTMF Receiver Combination port card (e.g. an OPX LSI port card, T1 port card using DTMF E&M channels, DISA, Auto Attendant, etc.), a DTMF Receiver Combination port card must be installed in the same cabinet as the port card, or feature, requiring the DTMF Receiver. For example, if you are using Automated Attendant, and all the CO lines using the Auto Attendant are in Cabinet 1, then the DTMF Receiver port card must be in Cabinet 1. If CO lines from both cabinets are using Auto Attendant, then a DTMF Receiver is needed in both Cabinets.

**NOTE:** The DISA feature requires a DTMF Receiver port card in the 432 port configuration.

## T1 INTERFACE PORT CARD

The T1 interface port card can be installed in any slot of Cabinet 1 only. Follow the installation procedures found in *Technical Facts No. 1697 - T1 Interface Port Card*.

## CONNECT THE CABINETS

After the common control cards have been installed, the fiber optic cable connections between the cabinets must be made. See Figure 8.

Install the flat ribbon cable on the left side of the Fiber Mux card (looking at the card installed in the cabinet) to the ribbon cable connector on the EVCM.

Install the flat ribbon cable on the right side of the Fiber Mux card to the ribbon cable connector on the EDCM.

The Fiber Mux card has two sets of two connectors on the outside edge of the board. The fiber optic cable is connected to these. The top two connectors are the transmit connectors for channels one and two. The bottom two connectors are the receive connectors for channels one and two. Channel one is closest to the outside edge of the board (ignore any markings on the card).

### Warning!

The light being sent down the fiber optic cable must not be viewed under any circumstances, it can cause permanent eye damage. The cable is made of glass and should be handled properly.



The connectors on the fiber cable and on the Fiber Mux card are keyed to provide proper alignment. Line up the key on the fiber cable connector with the slot on the connector on the Fiber Mux card before pushing the connectors together. DO NOT force these connectors together.

Connect one end of the fiber optic cable to the top outside connector (channel one transmit) on the Fiber Mux card in CABINET 1. Connect the other corresponding end of the fiber optic cable to the bottom outside connector (channel one receive) on the Fiber Mux card in CABINET 2.

Connect one end of the fiber optic cable to the bottom outside connector (channel one receive) on the Fiber Mux card in CABINET 1. Connect the other corresponding end of the fiber optic cable to the top outside connector (channel one transmit) on the Fiber Mux card in CABINET 2.

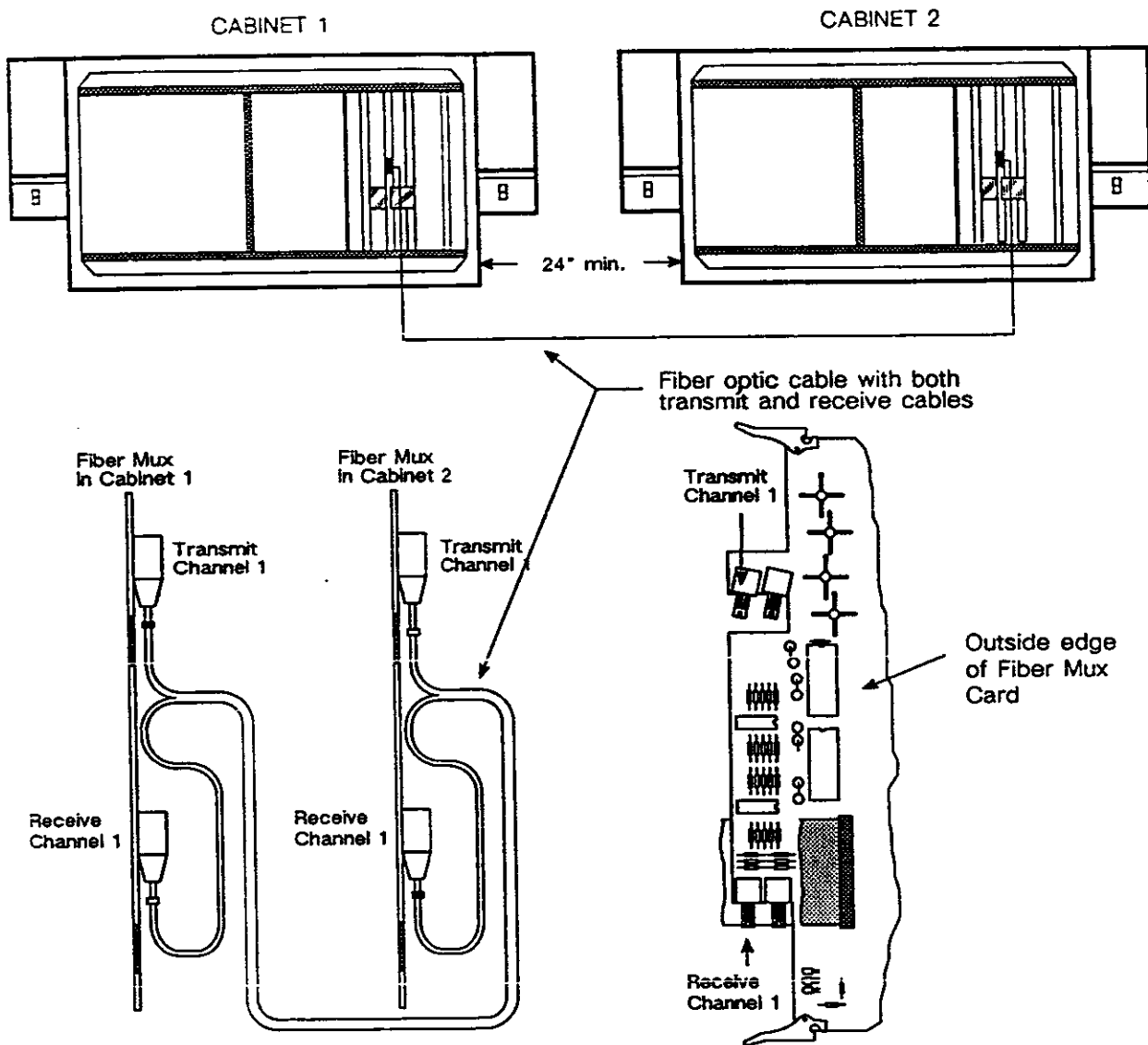


Figure 8 Connection To The Fiber Mux Card

**POWER ON**

Once the cabinets have been wired together, make certain that all circuit cards are seated firmly in their connectors.

Switch ON the red power switch on the left side power supplies. There is no electrical power to these until the right side power supplies are switched on (each left side power supply plugs into each right side supply).

Turn ON the right side power supplies with the red switch located on the power supply housing. If it is not possible to turn both power switches at the same time, turn on Cabinet 1 and then Cabinet 2.

After the system has powered up for the first time, use the programming terminal to access the *System Status Monitor* (choice C on the *Main Menu*). After the screen appears, press the **CONTROL** and **E** keys at the same time. Do this twice. This only needs to be done the first time the system is powered up.

## PROGRAMMING

The programming is identical to that of the 228 port configuration. Certain programming screens have been modified to account for the two cabinets. This section describes the differences in the modified programming screens. Refer to the ISOETEC Digital System Technical Manual for any detailed information required about the individual programming screens.

**NOTE: If any of the down-loadable system options are to be used (e.g., Voice Mail, Auto Attendant, LCR, etc.), the system must be running and both cabinets communicating BEFORE activating the features. If the features are activated before the cabinets are communicating, the feature will only work in the one cabinet.**

The present software version (432-1.0) of the system is similar to the released software version 6.50 for the 228 port configuration. See the attached comparison for details on feature availability.

All programming is accomplished from a programming terminal connected to CABINET 1. The Input/Output ports of CABINET 2 are not active. The system can also be programmed remotely via the built-in 300/1200 baud MODEM. All calls to the system's built-in MODEM must be on trunks located in CABINET 1.

**NOTE: Make certain that Cabinet 1 contains at least one incoming CO line to permit connection to the system MODEM.**

**NOTE: Programming changes are a lower priority for CPU time than system operation. Therefore, it may take several seconds for programming changes to be transmitted from one cabinet to the other.**

## STATION PROGRAMMING

The first change made to the *Station Programming* screen is the port identifier located at the top left of the screen next to the extension number. The identifier shows the port of the extension 001 to 432. Ports 1 to 228 are located in Cabinet 1 and ports 229 to 432 are located in Cabinet 2.

The following key codes have been changed or enhanced:

Key code 300 with a sub-code of 0 is a direct appearance key for line number 300. Key code 300 with a sub-code of 1 through 10 or 20 remains a trunk group access key.

Key code 400 with a sub-code of 0 is a direct appearance key for line number 400. Key code 400 with a sub-code of 11 remains a UNI key. When programming a UNI key, the sub-code of 11 must be entered. It no longer appears automatically.

The code to access *Prime Line* by group has been changed to 46 + the group number (1-9) and 470 for trunk group 10. *Prime Line* access to *Least Cost Routing* is 480.

### Recorders

The programming of the *Recording Num* does not default when ACD programming is defaulted.

### Direct Trunk Appearance Key Ringing

Since the system can have many more trunks connected to it than there are *Line IDs* to program ringing, a sub-code has been added to the key code for a DIRECT APPEARANCE TRUNK key. Use the following sub-codes to program a direct appearance of a trunk to ring:

1000 - Day mode

2000 - Night mode

3000 - Both day and night mode

The *Line ID* ringing assignments still function, so make certain the *Day Ring and Night Ring* assignments for the *Line ID* for the *direct appearance trunk* are programmed N (no). It is recommended that all *direct appearance trunks* be placed in the same *Line ID* (usually the highest unused *Line ID*) to simplify programming.

#### SYSTEM PROGRAMMING

The port identifier, located in the *Line* area, shows the port of the line 001 to 432. Ports 1 to 228 are located in Cabinet 1 and ports 229 to 432 are located in Cabinet 2.

An option can be found in the *Operator Programming* area called **Unscreened Transfer**. When this option is programmed Y (yes), the system does not wait for the operator to press the RLS key after transferring a call to an extension. The call is transferred after the operator has dialed the last digit. When programmed Y (yes) an operator cannot screen (announce) a transferred call. The call must be placed on hold, the inside party called, and the call then transferred.

The *Operator Programming* area is now used to program up to 8 operators. The number of I/O ports in the system remains 10. Remember the I/O ports are in Cabinet 1.

#### SYSTEM STATUS MONITOR

The *System Status Monitor* displays the activity in both cabinets. In the upper left corner, the designation for CAB 01 or CAB 02 refers to the lines of information at the bottom of the screen and not the information on the *System Status Monitor*. This information is used by software engineering, and is not intended for field use.

#### SYSTEM CONFIGURATION

The *System Configuration* programming screen now has two pages, one for each cabinet. To turn the pages, press SHIFT and "@" at the same time. The cursor moves to *Cabinet x of 2*. Enter the desired page and press the RETURN key. The I and D keys can also be used while the cursor is located at *Cabinet x of 2*. The card slots and ports are numbered consecutively. The slots are numbered from 1 to 19 for Cabinet 1 and 20 to 38 for Cabinet 2. The ports are numbered 1 to 228 for Cabinet 1 and 229 to 432 for Cabinet 2.

#### FORWARDING AND VMS PLANS

The *Forwarding and VMS Plans* screen has been expanded to 24 pages. This represents 456 possible extension numbers even though the system can be equipped with a maximum of 432 stations.

#### LINE MAINTENANCE

The *Line Maintenance* programming screen has been expanded to two pages. To turn the pages, press the I or D key.

#### DIRECTORY

The *Directory* programming screen has been enlarged to include all possible 432 extensions. The screen now has eight pages.

#### DATA MENU

The *Data Menu* has been expanded to include all available ports.

#### DID PROGRAMMING

The *DID Programming* screen has been expanded to 25 pages. This represents 1000 DID numbers.

#### REPORTS

The individual reports (System and Call Accounting) have been expanded to reflect the additional station and trunk capacity.

## PROGRAMMING ENHANCEMENT

In addition to the standard method of programming (i.e., filling in programming screens), the 432 port configuration has an additional programming method. Using this method, groups of stations and/or lines can be programmed for certain features. Stations and/or lines with common programming can be listed.

This method of programming uses a command line, rather than a programming screen. The syntax of the command line is: <command key word> <feature> <# or group#>. The <command key word> and <feature> can be abbreviated using the symbols found in the parenthesis.

### LIST

The following <command key words> can be used:

- LIST (L) Lists all the extensions with the desired feature programming. The syntax of the command line is: LIST <feature> <# or group#>. The following <feature> key words can be used:
- |                   |  |
|-------------------|--|
| HUNT (H)          | Lists all the members of a particular <i>Hunt</i> <group #>.   |
| RECORDERS (R)     | Lists all the extensions programmed with a particular <i>Recorder</i> <#>.   |
| PICK (P)          | Lists all the members of a particular pickup <group #>.  |
| DAY CLASS (DC)    | Lists all the extensions programmed with a particular <i>Day Class</i> <#>.  |
| NIGHT CLASS (NC)  | Lists all the extensions programmed with a particular <i>Night Class</i> <#>.  |
| LCR CLASS (LC)    | Lists all the extensions programmed with a particular <i>LCR Class</i> <#>.  |
| PRIME LINE (PL)   | Lists all the extensions programmed with a particular <i>Prime Line</i> <#>.   |
| PAGE ZONE (PZ)    | Lists all the extensions programmed with a particular <i>Page Zone</i> <#>.  |
| DAY ACCESS (DA)   | Lists all the extensions programmed with a particular <i>Day Access</i> <#>.   |
| NIGHT ACCESS (NA) | Lists all the extensions programmed with a particular <i>Night Access</i> <#>.   |
| DAY RING (DR)     | Lists all the extensions programmed to <i>ring</i> when the system is in the <i>Day</i> mode on a particular <i>Line ID</i> <#>.   |
| NIGHT RING (NR)   | Lists all the extensions programmed to <i>ring</i> when the system is in the <i>Night</i> mode on a particular <i>Line ID</i> <#>. |
| KEYS (K)          | Lists all the extensions programmed with a particular <i>Key Code</i> <#>.   |
| PHONE TYPE (PT)   | Lists all the extensions with a particular <i>Phone Type</i> .   |
| EXTENSIONS (X)    | Lists all the extensions in the system.  |
- LISTCO (LC) Lists all the CO Lines with the desired feature programming. The syntax of the command line is: LISTCO <feature> <#>. The following <feature> key words can be used:
- |                   |   |
|-------------------|---|
| LINE TYPE(LT)     | Lists all lines with a particular <i>Line Type</i> <#>.         |
| ID NUMBER(ID)     | Lists all lines with a particular <i>Line ID</i> <#>.           |
| DTMF              | Lists all lines with <i>DTMF</i> programmed <Y> or <N>.         |
| SMDR              | Lists all lines with <i>SMDR</i> programmed <Y> or <N>.         |
| GROUND START(GND) | Lists all lines with <i>Ground Start</i> programmed <Y> or <N>. |
| PUBLIC(PUB)       | Lists all lines with <i>Public</i> programmed <Y> or <N>.       |
| TIE_DID(TIE)      | Lists all lines with <i>TIE_DID</i> programmed <Y> or <N>.      |
| MOH               | Lists all lines with a particular <i>MOH</i> <#>.               |
| CO                | Lists all CO lines in the system.                               |

LISTID (LD) Lists all the Line IDs with the desired feature programming. The syntax of the command line is: LISTID <feature> <#>. The following <feature> key words can be used:

TRUNK (T)	Lists all line ID with a particular <i>Trunk Group</i> <#>.
HUNT (H)	Lists all line ID with a particular <i>Hunt Group</i> <#>.
ID CLASS(ID)	Lists all line ID with a particular <i>ID Class</i> <#>.

For example, the command line "LIST DAY CLASS 1" (or L DC 1) will list all extension numbers in the system with a Day Class of 1. "LIST PICK 10" (or L P 10) will list all extension numbers in Pickup group 10.

"LISTCO LINE TYPE 2" will list all CO lines which are programmed with Line Type = 2.

"LISTID TRUNK 4" will list all line IDs which are programmed in Trunk group 4.

## SET

This same method can be used to program a list and/or range of extensions, lines, or line IDs with a common feature. The syntax of the command line is: <command key word> <feature> <list and/or range of extension numbers, line, or line IDs>. The <command key word> can be abbreviated using the symbols found in the parenthesis.

The following <command key words> can be used:

SET (S) Set the <feature> for the specified extensions. Syntax and features are the same as for the LIST command.

SETCO (SC) Set the <feature> for the specified lines. Syntax and features are the same as for the LISTCO command.

SETID (SD) Set the <feature> for the specified lines. Syntax and features are the same as for the LISTID command. Day/Night Ring and Day/Night Access require Y or N after the ID number.

Extensions, lines and ID numbers can be specified as a list and/or range.

For example, the command "SET HUNT 1 3001,3004,3700-3705" programs extensions 3001, 3004 and 3700 through 3705 inclusive to Hunt group 1.

The command "SETCO ID NUMBER 3 1,4,210-435" programs lines 1, 4, and 210 through 435 inclusive to line ID 3.

The command "SETID TRUNK 2 1,4,10-35" programs lines 1, 4, and 10 through 35 inclusive to Trunk group 2.

## HOW TO PROGRAM

From the *Main Menu*, press the H key. The screen displays the following prompt:

Enter cmd>

Enter the desired command line in the following syntax <command key word> <feature> <# or group#>, using the commands and features listed above.

For example, at the "Enter cmd>" prompt enter LIST PAGE ZONE 61 to get a list of all extensions programmed for page zone 61.

When you are finished programming, press the ESCAPE key to return to the *Main Menu*.

## FEATURE ENHANCEMENTS

### OPERATOR POSITIONS

The system can support up to 8 operator positions using the I/O ports 1 through 8. Ports 9 and 10 cannot be used as operator positions.

### TRANSPARENT INTERCOM DIALING

When an ISOETEC Digital System configured for 432 ports is used as a hub in a Transparent Intercom Dialing installation, the system can serve as a tandem switch. An incoming Transparent Intercom Dialing call can be routed out of the system based on the programming of the *Transparent Intercom Dialing* programming screen. The system checks this screen to see if the called extension resides within the system. If the extension does not reside in the system, the call is routed out of the system via the trunk group specified on the programming screen. See the *ISOETEC Digital System Technical Manual* for a detailed description of *Transparent Intercom Dialing*.

**NOTE: Both the Transparent Intercom Dialing feature and the ability to function as a switching hub are optional features and must be added to the system using the remote programming feature.**

### DID NUMBERS

The system DID capacity has been expanded to 1000 DID numbers.

## FEATURE DIFFERENCES

There are some minor differences in the features and operation of the 432 port configuration from the 228 port configuration.

### DISA

The DISA feature requires the installation of a DTMF Receiver port card (p/n 15650).

### DIALING ON LCR

When dialing out via LCR, the DTMF tones the system generates are not heard by the station user. When the system starts and finishes dialing, a brief tone (2 beeps) is heard at the station.

### SYSTEM SPEED DIAL ON DISPLAY TELEPHONES

The dialed digits of a System Speed Dial number are not shown on a display telephone as the system dials the number. A row of stars (\*\*\*\*\*\*) is displayed instead.

### SYSTEM MODEM

All calls to the system's built-in MODEM must be on trunks located in Cabinet 1.

### MUSIC ON HOLD BY CO LINE

The MOH (MUSIC ON HOLD) By CO feature is programmed differently in the 432 port configuration than the description in the *IDS Technical Manual*. The following description is correct for the 432 port configuration.

The MOH (MUSIC ON HOLD) By CO feature is used when individual lines need different Music On Hold sources. Only customers who have access to two music sources should operate this feature. This option defaults to No. If *MOH* in the *Line* area is set to N (no), lines placed on hold are connected to the music source designated as BGM in the *Music Source* area of the screen. If *MOH* in the *Line* area is set to Y (yes), lines placed on hold are connected to the music source designated as MOH.



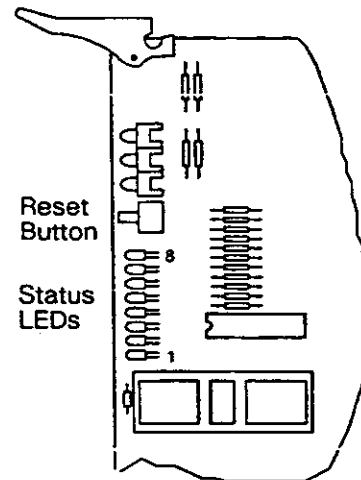
## MAINTENANCE ENHANCEMENTS

Several enhancements have been made to help maintain the system.

### LEDs On The ECPU

The LEDs on the ECPU can be used to determine which cabinet the ECPU is resident in, and whether or not the two ECPUs are communicating. The LEDs are numbered 1 to 8 from the bottom to top.

LED 8	Flashes when the ECPU is running
LED 7	ON            ECPU communications is OK
LED 6	Not used
LED 5	Not used
LED 4	ON            ECPU is in Cabinet 1 OFF           ECPU is in Cabinet 2 FLASHING   ECPUs are NOT locked
LED 3	Not used
LED 2	ON            ECPU is in Cabinet 2
LED 1	ON            ECPU is in Cabinet 1



### Busy Out All Lines

On the *System Status Monitor (C)*, press the **CONTROL** and **X** keys at the same time. Do this twice, and system makes all lines busy. Press **CONTROL** and **X** at the same time twice to restore the lines to service.

### Page Link

If a page link between cabinets gets stuck, on the *Status Monitor (C)*, press **CONTROL** and **P** at the same time.

### Ring Queue

If a station gets stuck in a ring queue, on the *System Configuration (F)* screen, move the cursor to the desired extension number and press **Q**.

## ADDITIONAL DIAGNOSTIC SCREENS

There are some additional screens added to the *Diagnostics Menu (Control C from the Main Menu)*. These are as follows:

- I     LAN Diagnostics
- J     Multi Window Screen – only accessible for Software Engineering use
- K     Tasks Queues – only accessible for Software Engineering use
- L     Timer Queues – only accessible for Software Engineering use

### LAN Diagnostics Screen

The *LAN Diagnostics* screen (also called the *Network Statistics* screen) is designed to be used by field personnel to aid in the trouble-shooting of the fiber-optic link between the two cabinets. This screen will record the messages that occur between the 68000 processor on the ECPU and 64180 processor on the Fiber Mux card.

To reach the *LAN Diagnostics* screen:

1. From the *Main Menu*, press the **CONTROL (Ctrl)** and **C** keys at the same time. The *Diagnostics* menu appears.

2. Press the I key. The *Network Statistics* screen appears.

The screen is divided into 3 columns TRANSMIT, RECEIVE and IMPORTANT EVENTS. The following is an explanation of each entry on this screen.

TRANSMIT		RECEIVE		IMPORTANT EVENTS
DPR TX	- 2	DPR RX	- 0	LAN STARTUP-1612 080790
TOTAL MSG'S	- 2322	TOTAL MSG'S	- 1885	LAN RESET -
TOTAL 01	-	TOTAL 01	-	LAN DOWN -1612 080790
TOTAL 02	- 2322	TOTAL 02	- 1885	LAN TX PROB-1612 080790
ERROR CTR	- 02	ERROR CTR	- 00	LAN RX PROB-
BUF OVERFLOW	- 33	BUF OVERRUN	-	LAN INT -1612 080790
TX TAG 01	- 00	RX TAG 1	- 55	LAN PARSER -
TX TAG 02	- 27	RX TAG 2	- 88	
CAB 1 STATUS	- 00	DPR INT	- 1862	
CAB 2 STATUS	- 00	10MS INT	- 23	
		PARSER	- 1885	

Figure 9 LAN Diagnostic - Network Statistics Screen

### TRANSMIT COLUMN

**DPR TX - Dual Port Ram Transmit**

This field should be a 2, if not there is a communication problem.

**TOTAL MSG'S**

Total number of messages transmitted.

**TOTAL 01**

Number of messages transmitted to Cabinet 1.

**TOTAL 02**

Number of messages transmitted to Cabinet 2.

**ERROR CTR**

Number of errors on transmit (0-9 is an acceptable range).

**BUF OVERRUN**

This is the number of times that messages did not go from the ECPU to the Fiber Mux card. The traffic was too high to be handled. This is the same entry that is in the *System Status Monitor* at the "LNOVF" entry.

**TX TAG 01**

This entry increments every time a message is sent from ECPU to the Fiber Mux card of Cabinet 1.

**TX TAG 02**

This entry increments every time a message is sent from ECPU to the Fiber Mux card of Cabinet 2.

**CAB 1 STATUS**

Not used at this time.

**CAB 2 STATUS**

Not used at this time.

**RECEIVE COLUMN**

**DPR TX - DUAL PORT RAM TRANSMIT**

This field should be a 0, if not there is a communication problem.

**TOTAL MSG'S**

Total number of messages received.

**TOTAL 01**

Number of messages received from Cabinet1.

**TOTAL 02**

Number of messages received from Cabinet 2.

**ERROR CTR**

Number of errors on receive (0-9 is an acceptable range).

**BUF OVERRUN**

This is the number of times that messages did not go from the ECPU to the Fiber Mux card. The traffic was too high to be handled.

**RX TAG 1**

This entry increments every time a message is sent from ECPU to the Fiber Mux card of Cabinet1. This should correlate to the TX TAG 01 field.

**RX TAG 2**

This entry increments every time a message is sent from ECPU to the Fiber Mux card of Cabinet 2. This should correlate to the TX TAG 02 field.

**DPR INT**

This number should constantly increment. If not, there is a defective Fiber Mux card.

**10MS INT**

Number of messages received from Dual Port Ram via the 10 ms intercept.

**PARSER**

Number of messages processed, this should equal the TOTAL MSG'S field above under the RECEIVE Column.

## IMPORTANT EVENTS

### LAN STARTUP

Time and Date that the ECPUs re-initiated communication to the Fiber Mux card. This will occur on either a power up or a reset. If this occurs at other times contact the Technical Operations Group.

### LAN RESET

Time and Date that the LAN reset. If this occurs contact the Technical Operations Group.

### LAN DOWN

Time and Date that the LAN went down. This will occur on either a power up or a reset. If this occurs at other times contact the Technical Operations Group.

### LAN TX PROB

Time and Date of the last transmit problem to the Fiber Mux card. Reflects the last time there was an entry in the Error CTR entry under the TRANSMIT column. This will occur on either a power up or a reset.

### LAN RX PROB

Time and Date of the last receive problem from the Fiber Mux card. Reflects the last time there was an entry in the Error CTR entry under the RECEIVE column.

### LAN INT

Time and Date of problem receiving message from the Fiber Mux card. This will occur on either a power up or a reset.

### LAN PARSER

Time and Date of problem interrupting message from Fiber Mux card. If this occurs contact the Technical Operations Group.

## MAINTENANCE COMMANDS SUMMARY

The following is a summary of the additional commands which are available to assist in managing the system.

Via the *System Status Monitor* (C screen)

### Control E (twice)

This transfers the backup memory from the ECPU in Cabinet 1 to the ECPU in Cabinet 2. Do not do this on a system with traffic.

### Control L (twice)

Re-initializes the LAN. This command can also be performed from the *LAN Diagnostic* screen.

### Control N (twice)

Transfers the backup memory speed dials from the ECPU in Cabinet 1 to the ECPU in Cabinet 2.

### Control P (twice)

This will release any links that are stuck to the page.

### Control T (twice)

If the system is running extremely slow, this will enter information into a buffer in memory for later analysis.

### Control X (twice)

Takes all lines out of service (similar to using the Line Maintenance screen and entering a B for each individual line).

Via the *System Configuration* (F screen)

If a station gets stuck in the ring mode you can stop the ring queue by moving the cursor to the extension number and pressing Q.

## CPU REPLACEMENT

The system data base resides in both ECPUs and the information in backup memory is identical. The following procedure can be used if an ECPU requires replacement.

### Changing the Cabinet 1 ECPU

1. Power down both cabinets.
2. Remove the ECPU from Cabinet 1.
3. Move the ECPU in Cabinet 2 to Cabinet 1. Make certain the software version in the new ECPU is the same level as the ECPU that is being replaced. If necessary you can use the EPROMS from the ECPU that is being replaced.
4. Install the new ECPU into Cabinet 2.
5. Power up both systems.
6. From the *System Status Monitor*, press the Control and E keys twice.
7. Monitor the "LAN =" field. When this number settles down, the information has been transferred (approximately 2-3 minutes).
8. From the *System Status Monitor*, press the Control and N keys twice.

### Changing the Cabinet 2 ECPU

1. Power down both cabinets.
2. Remove the ECPU from Cabinet 2.
3. Install the new ECPU into Cabinet 2. Make certain the software version in the new ECPU is the same level as the ECPU that is being replaced. If necessary you can use the EPROMS from the ECPU that is being replaced.
4. Power up both systems.
5. From the *System Status Monitor*, press the Control and E keys twice.
6. Monitor the "LAN =" field. When this number settles down the information has been transferred (approximately 2-3 minutes).
7. From the *System Status Monitor*, press the Control and N keys twice.

## UPGRADING FROM A 228 PORT CONFIGURATION

An ISOETEC Digital System is easily upgraded to a 432 port system by changing the common control hardware and performing the necessary installation steps. The new system can then be programmed. However, if a 432 port system is to be installed in place of more than one 228 port system which has been connected using the *Transparent Intercom Dialing* feature, there are several programming concerns to be aware of:

- The location of feature keys on the telephones
- The numbering of hunt groups in the two systems
- The numbering of pickup groups in the two systems
- The numbering of ringing pickup groups in the two systems
- The numbering of recorders in the two systems
- The numbering of trunk groups in the two systems
- The numbering of Automated Attendants in the two systems
- The numbering of ACD splits in the two systems

There can be no duplicates in the 432 port configuration. For example, if both cabinets of a 228 port system with *Transparent Intercom Dialing* had Hunt Group 1 programmed, the hunt group number of one of the hunt groups must be changed to another number when programming the 432 port system.

## SINGLE CABINET 432 PORT CONFIGURATION

If the features available in the 432 port configuration software are needed, but the additional ports provided by the second cabinet are not needed, a single cabinet may be installed. However, a single set of all common control cards is needed. The following hardware is needed to use the 432 port ECPU:

- One ECPU p/n 21650
- One EVCM p/n 21640
- One EDCM p/n 21660 (optional, only if the Data feature or the additional I/O ports are needed)
- One Fiber Mux card p/n 21630
- One Conference port card p/n 21600 (optional, only needed if Add-on conference is to be used)

### How To Obtain Additional Copies Of This Technical Facts

This Technical Facts is intended to be copied for any additional quantity required; therefore, the Technical Facts is not available through the EXECUTONE Inside Sales/Customer Service Department.

# Technical Facts

— EXECUTONE —

ISOETEC® DIGITAL SYSTEM

No. 1711

November 5, 1990  
For ISOETEC Distributors

## SOFTWARE VERSION 432-1.02

A new software version, 432-1.02 is now available for the 432 port configuration of the ISOETEC Digital System. This replaces software version 432-1.00, and is shipped with all new orders beginning November 1, 1990.

This version adds several features and programming options to the system. These additions are described below and summarized on the attached *IDS Feature Comparison*.

**T1 Support** – This software version permits T1 port cards to be installed in the second cabinet. However, at least one T1 port card must be installed in the first cabinet. **Do not connect a receive clock recovery cable to a T1 port card in the second cabinet.** *Silent Monitor*, and *Auto Second Path* can now be used with T1 in a 432 port configuration.

**LCR Classes** – When a call is dialed out using LCR, the station user hears a tone as the system begins dialing, and another when the system has completed dialing. Three LCR Classes have been created to inhibit these tones: 10 – Same as LCR Class 0, 11 – Same as LCR Class 1, 12 – Same as LCR Class 2.

**Call Forward to Station Speed Dial Key** – This feature key gives each station user the ability to forward outside line calls to a single station speed dial number. The calls can be forwarded when the system is in the Day mode, Night mode, or both. While activated, when an outside line call is routed to the station, the system selects a line in Trunk Group 1 and dials the telephone number contained in that station's speed dial bin 30. The key code for this key is 839. The telephone number must have been previously programmed in speed dial bin 30, and a pause (entered as \*4) must appear at the beginning of the telephone number. This Call Forward overrides any toll restriction imposed on the station, and will remain in effect after a system reset.

Press the key once to activate forwarding in the DAY mode. The key's LED lights.

Press the key twice to activate forwarding in the NIGHT mode. The key's LED flashes rapidly.

Press the key three times to activate forwarding in the both the DAY and NIGHT modes. The key's LED flashes slowly.

*NOTE: If standard Call Forward is active when the Call Forward to Station Speed Dial key is activated, the Call Forward to Station Speed overrides the standard Call Forward. The Forward and VMS Plans screen does not indicate a station forwarded to a Station Speed Dial. This key cannot be assigned to an Integrated Operator Terminal.*

**Unsupervised Conference Key** – The UNSUPERVISED CONFERENCE key is used when a station originates a conference call with two outside parties and wishes to leave the conference, but have the two outside parties remain connected together. The UNSUPERVISED CONFERENCE key is similar to the PATCH key, however, when

File a copy of this Technical Facts in your Master Technical Facts File and in your ISOETEC Digital System Technical Manual part number 770312B. Also list it on your Record of Changes Page.

Kevin Ronald  
Product Management

the UNSUPERVISED CONFERENCE key is used, the trunks are no longer connected to the station, and the conference cannot be reentered. The LEDs for the OUTSIDE LINE keys go out, and the keys are available for other calls. The key code for a UNSUPERVISED CONFERENCE key is 838. Only one UNSUPERVISED CONFERENCE key is to be programmed per station.

**Hands Free Camp-on** – When using the handset, a camp-on tone is normally heard in the handset when a call is waiting. *Hands Free Camp-on* permits a display phone to receive the camp-on tone over the hands free speaker, rather than the handset. This feature uses the second path to the display telephone, and therefore cannot be used at the same time as a data feature call, or second path call.

**440 Hertz Tone for Single Line Telephones** – The extensions serving Single Line Telephones can be programmed to generate 440 Hertz tone whenever the extension is off-hook and not connected to a station or a trunk. This is used to send dial tone to external devices (such as Voice Message Systems and Automated Attendants) to detect when the outside party has disconnected. To program a Single Line Extension to generate the tone, program the *Day Class* in the *Timers* area of the *Station Programming* screen to 16 for the desired extension number. This programs the extension for both the Day and Night mode.

**System Speed Dial Override Toll Restriction** – System speed dial numbers no longer automatically override a station's toll restriction plan. If this option is programmed N (no), System Speed Dial Numbers override a station's toll restriction. If this option is programmed Y (yes), System Speed Dial Numbers do not override a station's toll restriction.

**SLI DIAL Option** – This feature is used when a peripheral device (such as a Voice Message System) is connected to a system via an OPX and where direct access to an outside line is desired. When the *SLI Dial Option* is programmed N (no), a Single Line telephone which accesses an outside line receives dial tone from the system. After the telephone number is dialed, the system selects a line in the desired group and dials the telephone number. When the *SLI Dial Option* is programmed Y (yes), a Single Line telephone which accesses an outside line is connected directly to the outside line and the station user (or peripheral device) dials the call.

**Auto Attendant Music Option** – This option is used in conjunction with the built-in Automated Attendant to define what a caller hears if a valid dialed number is not detected by the Auto Attendant. When the Auto Attendant does not recognize a dialed number as valid, the call is routed to all telephones programmed with a ring assignment for the line the call is on. When the call is routed in this fashion, if the *Auto Attendant Music* option is programmed N (no), the calling party is connected to ring-back tone until the call is answered. If this option is programmed Y (yes), the call is connected to the music source programmed for the line the call is on until the call is answered. A call will ring one of the ringing assignments under the following conditions: when the caller has a rotary phone, when the caller dials an invalid Auto Attendant scheme, or the caller does not dial anything.

**Automated Attendant Dialing Scheme** – A dialing scheme has been added to the Automated Attendant which allows 4-digit dialing to extensions, and 1-digit dialing to hunt groups and ACD groups. This effectively adds 4-digit extension numbers to Scheme 3. Scheme 5 is labeled : [EXT->E001-999, ACD--> 1 THRU 0, Hunt 1 THRU 9]. This scheme cannot use 0 to reach the operator. The leading digit for extension numbers cannot be used to reach an ACD or Hunt group. This scheme cannot use 2 to reach VMS.

**Enhancements to the Forward and VMS Programming Screen** – Two new values, **Digit Duration** and **Volume**, have been added to the *Forward and VMS Programming* screen. **Digit Duration** is used to extend the length of the DTMF tones sent to the Voice Message System. The duration of each tone is the number entered as **Digit Duration** times 60 milliseconds. **Volume** adjusts the volume of the DTMF digits sent to VMS. Valid entries range from 3 to 15. The value 3 is equivalent to -20 dB and 15 is equivalent to +6 dB.

## How To Obtain Additional Copies Of This Technical Facts

This Technical Facts is intended to be copied for any additional quantity required; therefore, the Technical Facts is not available through the EXECUTONE Inside Sales/Customer Service Department.



# ISOETEC® Digital System Feature Comparison

Software Level Where Feature First Appeared:

FEATURE	15300 CPU 228 ports				19300 CPU 108 ports			21650 ECPU 432 ports		
	4.25	4.51	5.26	5.52	6.50	1.03	2.11	3.04*	432-1.0	432-1.02
Account Codes and Speed Dial Keys					x				n/a	
ACD Simultaneous Forward				x					n/a	
Alarm			x						x	
Alternate Dialing		x							x	
Answer (G Screen)		x					x		x	
Auto Attendant and ACD (137-142)					x				x	
Auto Attendant Digit Timeout		x						x	x	
Auto Attendant Enhancements			x	x					x	
Auto Attendant Music Option				x					n/a	x
Auto Attendant Scheme 5					x				n/a	x
Busy on DID	x						x		x	
Busy on DID Hunt Group					x				x	
Busy on Tie Lines		x							x	
Call Forward Busy Timer				x			x		x	
Call Forward to an Auto Attendant				x					x	
Call Forward to Station Speed Dial					x				n/a	x
Conference Gain On-System Option		x							n/a	
Data Feature in the 108 port cabinet					x				n/a	
Dialing by Name			x						x	
Digital Voice Announcer support		x					x		x	
DID and Call Accounting Reports Option					x				x	
DID On & DID Digits (Fwd&VMS)					x				n/a	
DID Tagging	x								x	
Direct Speed Dial									x	
DISA/Tie Line Groups Dial Option									x	

FEATURE	15300 CPU 228 ports						19300 CPU 108 ports				21650 ECPU 432 ports	
	4.25	4.51	5.26	5.52	6.50	1.03	2.11	3.04*	432-1.0	432-1.02		
Disable LCR Tones Option-Sys Option	x					x			n/a			
Display Extension Names			x					x	x			
Display Telephone Changes				x					x			
Display Telephone Messages	x					x			x			
Divert Limit (B Screen)		x							x			
DND Override				x					x			
DNIS Option (with T1 or DID)				x					x			
DSS Console support			x					x	x			
Extension Numbers over 228	x					x			x			
Expanded Operator Programming			x						x			
Flexible Numbering	x					x			x			
G Screen Updated	x					x			x			
Hands Free Camp On		x							n/a	x		
Handset Barge-In			x						x			
Hunt Group Busy Recall Timer				x			x		x			
Hunt Pick (LCR)			x						n/a			
ILATA					x		x		x			
Integrated Operator Remove Extensions					x			x	x			
LCR Key Out Only					x				x			
LVFAC					x				n/a			
Message Waiting Key				x		x			x			
MOH by CO				x					x			
Multiple DISA Calls		x							x			
Operator Digits 350 ms-Sys Option			x				x		n/a			
Operator Second Transfer Key	x					x			x			
Operator Transfer Icm Calls	x					x			x			
OPX Flash				x			x		n/a			
OPX Port Card support			x				x		x			

FEATURE	15300 CPU 228 ports						19300 CPU 108 ports			21650 ECPU 432 ports	
	4.25	4.51	5.26	5.52	6.50	1.03	2.11	3.04*	432-1.0	432-1.02	
Remote Silent Monitor	x								x		
Ringing Group Pickup	x					x			x		
Screened Transfer for VMS & Auto Att.					x				n/a		
SLI Dial Option				x			x		n/a	x	
SLI SDN Enable Option				x					x		
SLT Automatic ACD Logon				x					x		
SLT Conference		x				x			x		
SMDR Prints Calls over 59:59	x					x			x		
Software Defined Network				x				x	x		
System Reset Timer		x							x		
System Speed Dial Numbers to 999		x							x		
System Speed Dial Override Toll Restriction					x				n/a	x	
Tandem Transparent Intercom Dialing									x		
Tap On Extension							x		x		
T1 Support									x		
Transparent Intercom Dialing							x		x		
Unsupervised Conference Key									n/a	x	
VMS Delay (G Screen)		x						x	x		
VMS Integration Downloadable								x	x		
Volume and Digit Duration (Fwd & VMS)									x	n/a	
1000 DID Numbers									x		
440Hz Tone for Single Line Telephones									x	n/a	
6 Key Phones with ACD									x		
6 Key Phones In/Out Feature									x		
8 Operator Positions									x		

\* Software version 3.04 does not support the Data feature.





ISOETEC® DIGITAL SYSTEM

No. 1697

July 31, 1990

For ISOETEC Distributors

## T1 INTERFACE PORT CARD

### INTRODUCTION

The T1 interface card (p/n 15510) is a port card designed to interface any mix of up to 24 voice channels (64 kilobit time slots) of a digital T1 trunk. Support for data channels is planned for the future. The T1 Interface card supports **standard D-4 framing format, with robbed bit signaling**. The system can support E&M, loop start, ground start, and DID signaling. Although the T1 card fits into one card slot, it takes up two card slots worth of time slots.

**NOTE: The ISOETEC Digital System does not support rotary dialing on a T1 circuit at this time.**

The input and output of the card is designed to connect to an external Channel Service Unit (CSU). The CSU is an unintelligent device which supplies conditioning for the T1 line signals and all required FCC part 68 functions of surge protection and keep alive. These functions were deliberately left external to the card to ease in installation and system servicing. One T1 Interface port card and one CSU are required for each T1 circuit.

The T1 port card is also available in a *T1 Digital Trunk Card* kit (p/n 15510K) which contains the T1 port card, the three cables necessary for installation, a CSU, and a power supply for the CSU.

The T1 card also provides a *receive clock recovery* output which is intended to be connected to the system EVCN card (p/n 21640). The EVCN contains circuitry which, when connected to the T1 card, will synchronize the PCM timing of the system with that of the Central Office.

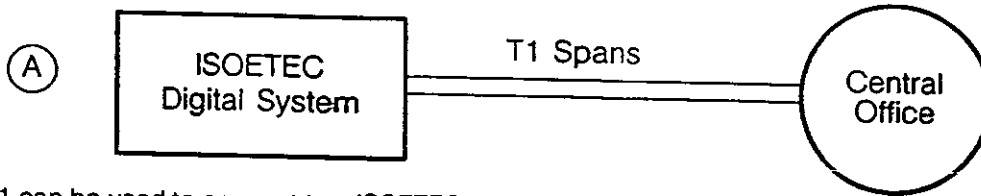
A T1 interface card can be installed in any port card slot in either the 108 or 228 port cabinet. However, the T1 port card requires 24 time slots, and therefore uses two card slots. After a T1 card is installed, do not plug another port card into the slot immediately to the left of the T1 card. This reduces the number of port cards of any type that can be installed in system. Multiple T1 cards may be installed in a system with the only limitation being the number of time slots available. A 228 port cabinet supports 228 time slots. This corresponds to 9 port cards (however, the system then contains nothing but T1 port cards). A 108 port cabinet supports 108 time slots. This corresponds to 4 port cards (this leaves room for one more port card). At the time of this writing, the 432 port configuration of the IDS has not been released. Information regarding T1 support in the 432 port configuration will be in the *Technical Facts* describing the 432 port configuration, and will supercede any T1 information about the 432 port configuration presented in this Technical Facts.

File a copy of this Technical Facts in your Master Technical Facts File and in your ISOETEC Digital System Technical Manual part number 770312B. Also list it on the Record of Changes page.

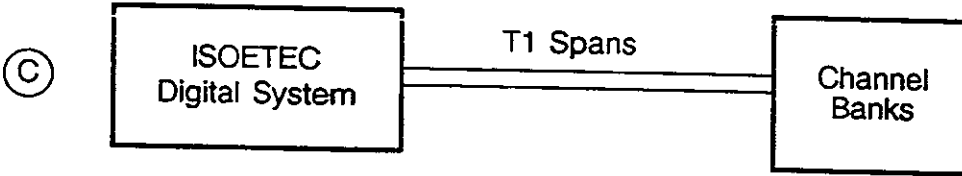
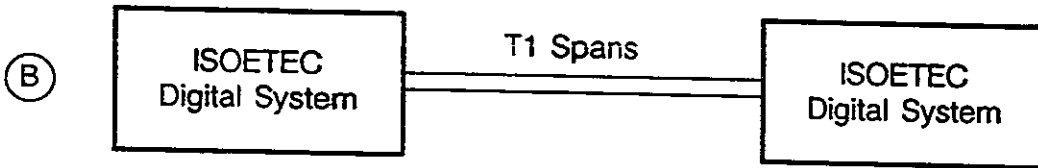
Pat Hardy  
Technical Publications

# APPLICATIONS

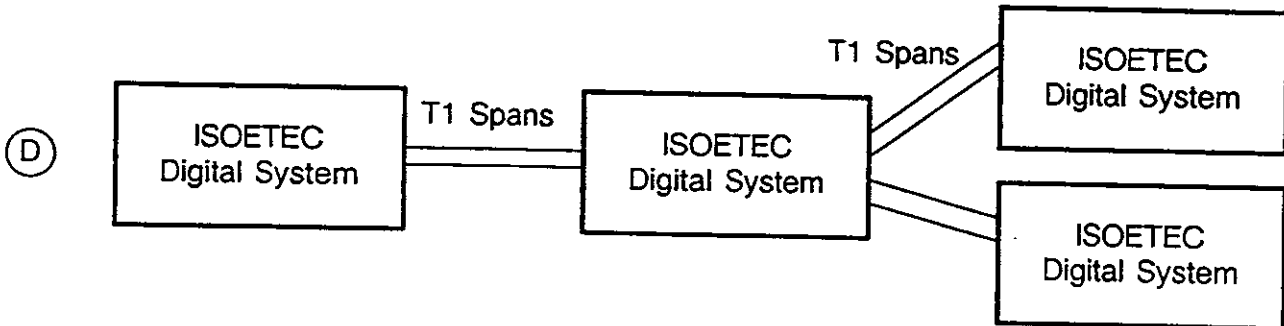
T1 can be used to connect 24 "lines" (24 channels per T1 circuit) from a Central Office to the system. These lines can be any mix of inbound WATS lines, outbound WATS, standard DDD lines, etc. This is especially useful in applications using Automatic Call Distribution (ACD) which may require a large number of incoming lines.



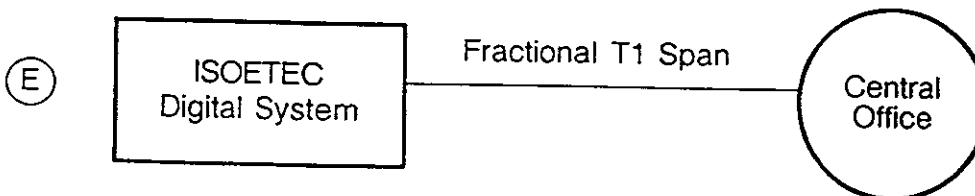
T1 can be used to connect two ISOETEC Digital systems together providing 24 "tie lines." T1 can also be used to connect an ISOETEC Digital System to another PBX, however the other PBX may need a channel bank to make this connection.



T1 can be used to connect multiple ISOETEC Digital Systems together providing a private network. However, tandem dialing can only be supported by the 432 port configuration (which has not been released at the time of this writing).



The T1 Interface card can also be used in fractional T1 applications where only part of 24 available channels are used by the customer.



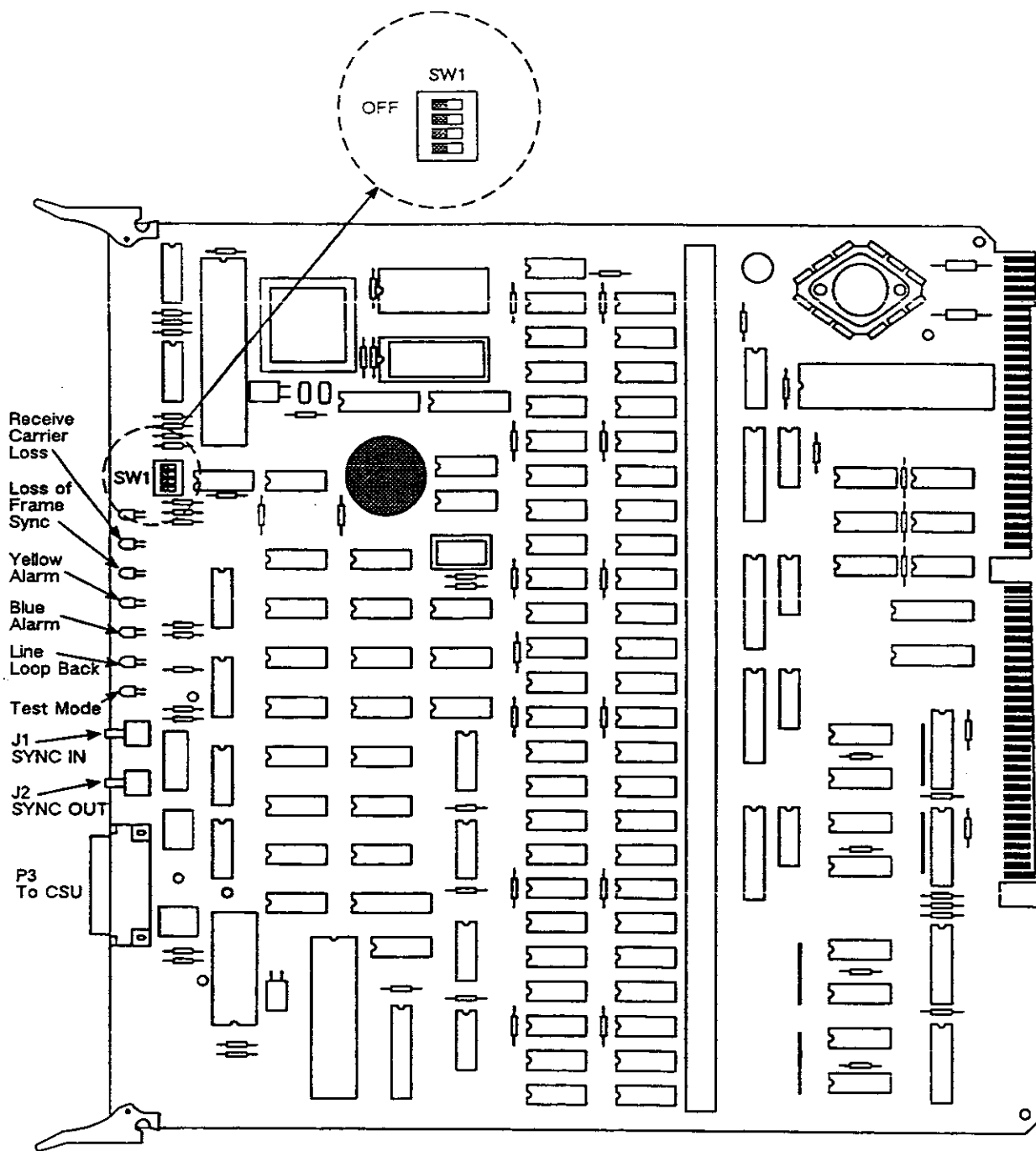


Figure 1 T1 Interface Port Card

## SOFTWARE REQUIREMENTS

The 228 port configuration requires software version 6.51, or higher, to support the T1 interface card. Software version 6.51 will be available after August 15, 1990, and will be shipped with all CPUs (p/n15300).

**NOTE:** For installed systems, or CPUs with a lower software version, 6.51 may be ordered through the EXECUTONE Inside Sales/Customer Service Department.

The 108 port configuration must use the 228 port configuration CPU (p/n 15300) with software level 6.51, or higher, to support the use of the T1 port cards.

## HARDWARE REQUIREMENTS

- One Expanded VCM card (p/n 21640) is required per system regardless of which system cabinet is used.
- One T1 Interface card (p/n 15510) is required per T1 circuit.
- One receive clock recovery cable (p/n 02027-1) is required per T1 circuit.
- One CSU to T1 port card cable (p/n 01035-1) is required per T1 circuit.
- One RJ-48X to CSU cable (p/n 01041-1) is required per T1 circuit.
- One CSU is required per T1 circuit. A KENTROX CSU (p/n 30-27-00001) is supplied with the T1 Digital Trunk card kit (p/n 15510K).
- One KENTROX CSU power supply (p/n 28-02-48100) is required per KENTROX CSU.
- At least one DTMF Receiver port card (p/n 15650) is required if the system is to receive incoming inband DTMF signals on any of the channels. For example, channels that are to be used as DTMF Tie Lines, or DTMF DID channels.

## FEATURE RESTRICTIONS

When using a T1 port card in an ISOETEC Digital System, the *Auto 2nd Path* and *Silent Monitor* features cannot be used.

## CIRCUIT ORDER INFORMATION

The T1 circuit should NOT be ordered with line power. Ask for the T1 span to be terminated on an RJ-48X jack. The jack should be installed within 10 feet of the CSU. The CSU to RJ-48X cable is 10 feet long. When ordering a circuit to access the public switched network, confirm the signaling type (E&M, DID, etc.) to be used on each channel with the local exchange company.

**NOTE:** When ordering a circuit for a private network, do not include signaling information in the order for the circuit. The signaling type for each channel of the circuit must be agreed upon by the system programmers at the two ends of the circuit.

Be sure to ask the provider of the T1 circuit for the distance (or the loss in dB) between the last repeater and the RJ-48X. This distance must be known to properly set the line build-out on the CSU. The line build-out is used to compensate for the loss between the last repeater and the CSU.

**NOTE:** If a smart jack is installed in place of an RJ-48X, the smart jack regenerates the T1 signal toward the network. This affects the proper setting of the line build-out switches. If a smart jack is installed, set the line build-out to -15dB. If it is not installed, set the line build-out according to the distance to the last repeater.

## FACILITY INTERFACE CODE

04DU9-B for a 1.544 Mbps D4 framing format circuit

## FCC REGISTRATION

The T1 port card is designed to be used with an external CSU. This CSU provides all required part 68 functions for safety and keep alive. Use the FCC registration number of the particular CSU you are using. The FCC number for the KENTROX CSU is F8I4HV-17152-DE-N.



## INSTALLATION

Before attempting to install a T1 circuit and the T1 port card:

- Installers should be trained and thoroughly familiar with the basic components of the ISOETEC Digital System.
- Read through the entire installation procedure before beginning the installation.
- Check the the following items:
  - The system CPU contains software version 6.51, or higher. Check the programming *Main Menu* for the software version.
  - All the parts listed under hardware requirements are on site.
  - The T1 circuit has been installed and tested by the local exchange carrier, the connecting jack is in the desired location, and the required line build-out (or distance to the last repeater) is known.
  - The *T1 Type* (signaling type) for each channel is known.
  - If the installation is to an existing system, make certain there are two card slots available for each T1 port card to be installed.

**NOTE: Once a T1 circuit is installed, do not disconnect the circuit without informing the carrier FIRST. If the system is scheduled to be powered down, inform the carrier as soon as possible BEFORE the power is turned off.**

The installation of a T1 circuit can be broken down into the following main phases: installation of the port card in the IDS, programming the channels (lines) of the circuit in the *System Programming* screen of the IDS, mounting the CSU and connecting it to the port card, and connecting the T1 circuit to the CSU.

1. Set all switches on the edge of the T1 card to OFF. This selects D-4 framing and AMI line coding. These switches are intended for future use to select the desired framing and format type and must be set to the OFF position. See Figure 1.
2. Install the T1 port card (p/n 15510) in one of the port card slots. Do not install a port card in the slot to the immediate left of the T1 port card. If a port card is already installed to the left of the intended slot for the T1 card, the T1 card may be installed as long as there are enough time slots available in the system. The T1 port card may be inserted into the cabinet with the power on.
3. Read all of this step before determining whether or not to connect the *receive clock recovery cable*. See Figure 2.
  - a. If the T1 circuit is connected to a Central Office, connect the thin coax *receive clock recovery cable* (p/n 02027-1) between the SMB coax connector J2 on the T1 card and J6 on the EVCM. If more than one T1 card is to be installed, the receive clock recovery cables are chained between the cards and then to the EVCM. Connect J2 *T1 clock out* of the T1 card furthest from the EVCM to J1 *T1 card clock in* of the next T1 card, and so on until a connection is made to the EVCM. See Figure 2. When the T1 port card is installed in a system with the power on, the red *Test Mode* LED flashes at a 1/10th second rate. After a few seconds, the Receive Carrier Loss LED lights and stays on until the T1 span is connected and working.
  - b. If the T1 circuit is between two ISOETEC systems, the receive clock recovery cable is not connected at one of the systems. The system without the receive clock recovery cable is the source of the T1 timing.
  - c. If the T1 circuit is between an ISOETEC system and another telephone system, determine which system is to be the source for the T1 timing. The ISOETEC system uses a "stratum 3" clock. If the other system uses a more accurate clock source (i.e., a stratum 2 or stratum1), the more accurate source should be used. If the other system is the timing source, connect the receive clock recovery cable. If the ISOETEC system is to be the source, do not connect the cable.

4. Program each of the channels using the information found in the PROGRAMMING section, before connecting the T1 circuit to the system. Mount the CSU using the instructions in the next section.

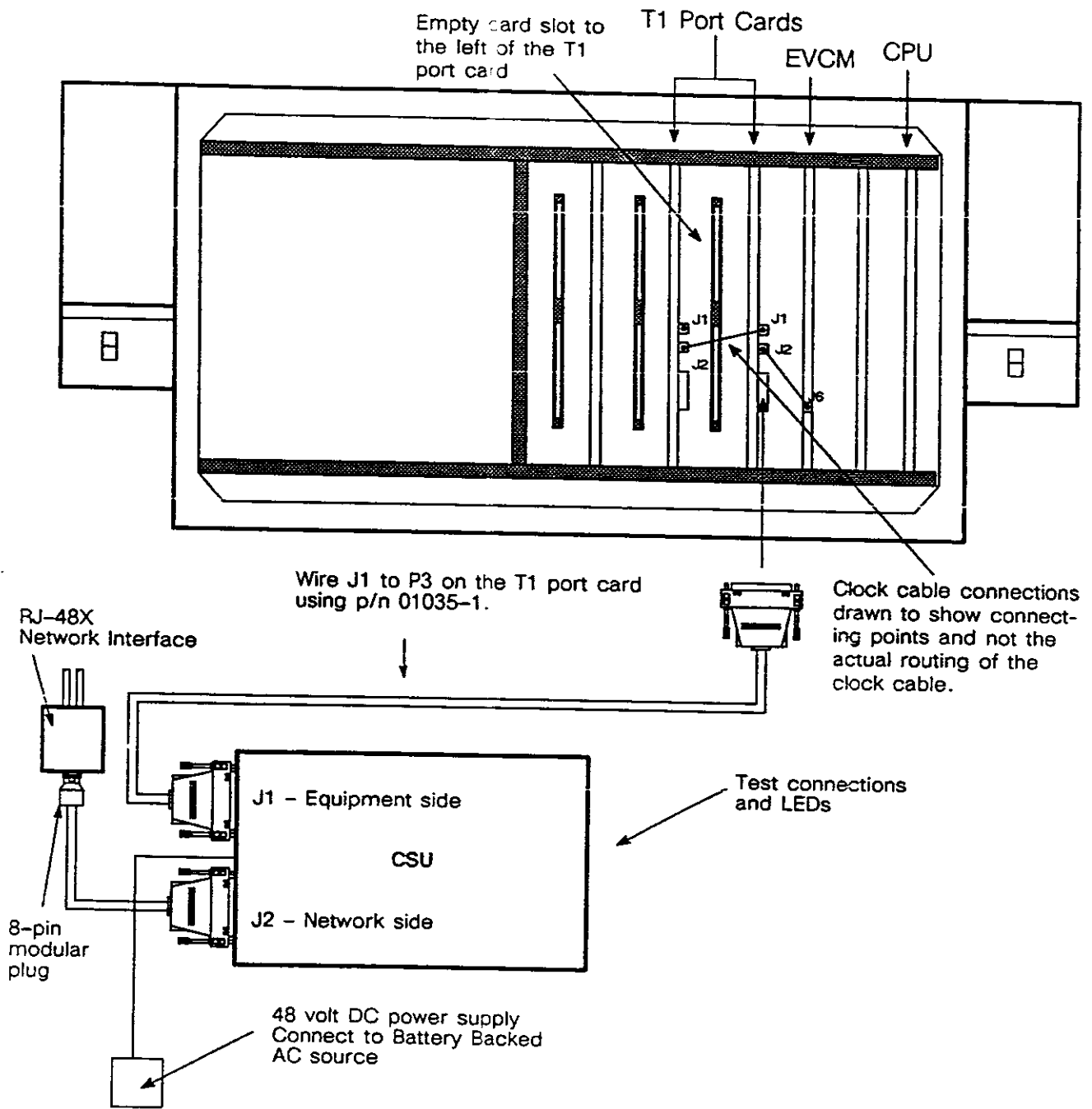


Figure 2 Installation Overview

## INSTALLING THE KENTROX INDUSTRIES CSU

A CSU must be installed and connected between the system and the T1 circuit. The T1 circuit should be terminated on an RJ-48X jack.

### CSU Local Power

If the T1 span is not line powered, the CSU requires DC power to operate. The *T1 Digital Trunk Card* kit (15510K) contains a transformer power supply for the CSU. This transformer requires AC power. The output of this power supply is 48 volts DC, and is connected to the CSU on pins V+, V-, and GND of the terminal strip. However, wire for the connections between the power supply and the CSU is not provided. Each CSU requires 100 mA at 48 volts DC. Use a minimum of 24 AWG stranded wire for each of the three connections. Consult the National Electrical Code requirements for wiring a Class 2 voltage before wiring the transformer to the CSU. See Figure 3. If the telephone system is connected to a battery backed AC source, it is strongly recommended that the transformer for the CSU be connected to the same battery backed source. Do NOT connect the transformer to AC power yet. Set the PWR switch on the rear of the unit to LOCAL.

### CSU Line Power

The LINE position of the PWR switch is used when the T1 span is supplying power to the CSU. After installation is completed, the PWR indicator may not light because the carrier has not yet powered up your line. Notify the carrier that the CSU is connected. The carrier will power the line and perform some initial tests of the CSU and the line.

## WARNING

**DANGER: If the T1 span is powered from the Central Office, HAZARDOUS DC voltages (+130v and -130v) are present on the TELCO side of the CSU.**

### Optioning The CSU

There is an option switch which must be set prior to using the CSU. The option switches are located inside the CSU. Gently pry off the front cover (the end with the LEDs). Located on the left side are two dip switches. The switch we are interested in is S741 which is closest to the outside of the unit. Place switch 1 of S741 in the ON position. Leave all other switches in the factory setting (2-OFF, 3-ON, 4-OFF and S740 #1-ON). Place the cover back on the unit.

**NOTE: Set the Line Build-out (LBO) switches, located on the rear panel, to the value specified by the local exchange carrier of the T1 span.**

Line Build-out is used to compensate for loss between the last repeater and the CSU. There are 4 possible settings: 0.0dB, -7.5dB, -15.0dB, and -22.5dB. If the last repeater is at the maximum distance, set the LBO switch to 0.0dB. If the last repeater is at the minimum distance, set the LBO switch to -15.0dB. If the distance is not known and not specified, set the LBO switches for -7.5dB.

Using the mounting brackets supplied with the CSU, mount the CSU to the wall such that the LEDs and test jacks are visible and accessible. Mount the CSU within 5 feet of the system cabinet.

Make certain the switch on the front face of the CSU is in the OFF position. Plug the CSU power supply transformer into the AC source.

**NOTE: Program each channel's T1 type and Line type in system programming before continuing with the installation.**

## CONNECTING THE CSU TO THE T1 CIRCUIT

After the *T1 type* and *Line type* have been programmed for each T1 channel and the CSU has been mounted, it is time to connect the system to the T1 circuit.

**NOTE:** The RJ-48X jack contains shorting bars which act to keep the T1 circuit alive. When the 8-pin modular plug is inserted, these shorting bars are opened. Therefore, the last connection to be made is the insertion of the 8-pin modular jack into the RJ-48X. All other connections to the T1 port card must be made before connection to the RJ-48X.

1. Plug the connector end of the CSU to T1 port card cable (p/n 01035-1) into P3 on the T1 card. The CSU to T1 port cable is installed with the exposed shield closest to the cabinet. A cable tie or similar device is used to secure the exposed braid to the bottom plate of the cabinet. The paint is removed from a section of the bottom plate to allow a ground connection between the exposed braid of the cable and the cabinet. The cable is then dressed out of the back of the cabinet, and connected to the CSU. Connect the other end of the cable to the EQUIPMENT side (J1) of the CSU. See Figure 3.
2. The CSU is connected to the T1 line using the RJ-48X to CSU cable (p/n 01041-1). Connect the 15-pin connector into the NETWORK (Telco) jack P2 on the CSU.
3. Plug the 8-pin modular plug into the RJ-48X jack.

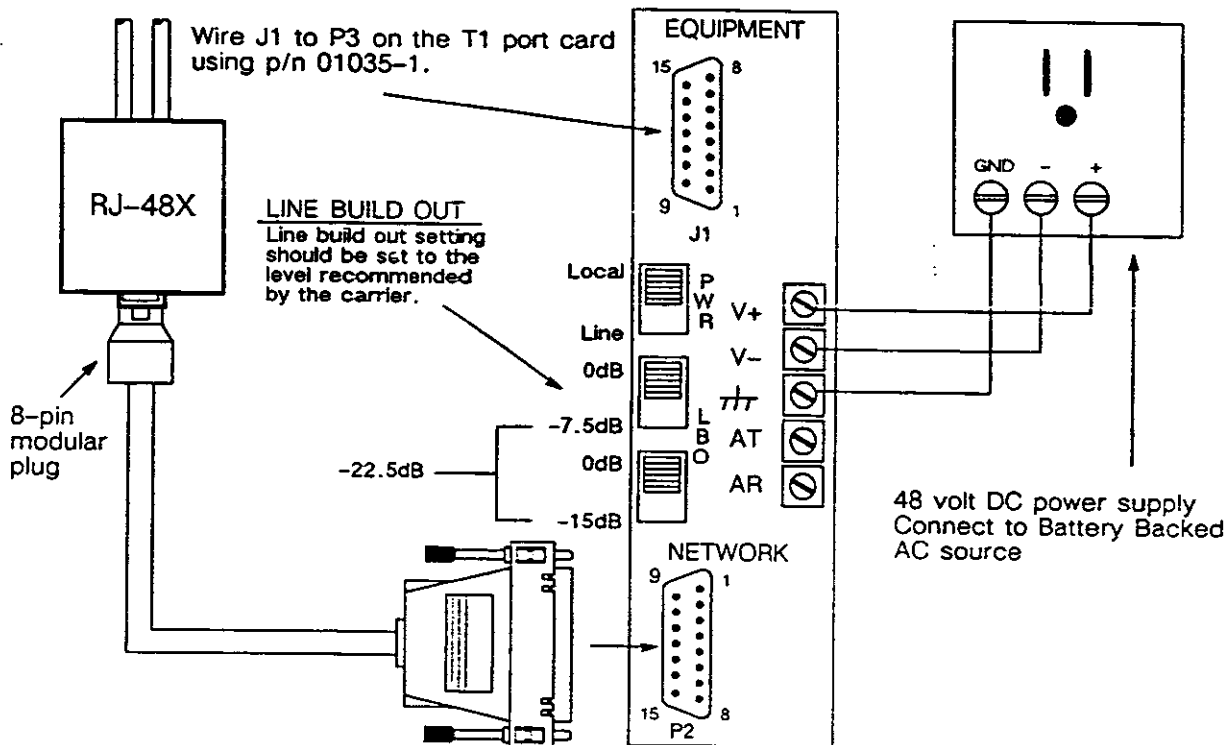


Figure 3 CSU Installation

If all connections have been made, and the T1 trunk is active, the *Receive Carrier Loss* LED (DS2) should not be lighted, and the *Test Mode* LED should flash at a one second rate.

## PROGRAMMING

When the T1 port card is installed, 24 CO lines are installed on the *System Configuration* programming screen. These lines appear in the slot the T1 card is installed in and normally, the next consecutive card slot. If a port card is installed in the slot to the left of the T1 port card, and was installed before the T1 port card, the system assigns the remaining 12 channels to the next empty card slot.

System Configuration		A = Auto Config. C = Clear Port F = Default Config? R = Reset Port												
card	port +	01	02	03	04	05	06	07	08	09	10	11	12	
01	CO	001	1	2	3	4	5	6	7	8	9	10	11	12
02	Rec	013	3001	3002	3003	3004	3005	3006	DTMF	DTMF	DTMF	DTMF	DTMF	DTMF
03	CO	025	13	14	15	16	17	18	19	20	21	22	23	24
04	CO	037	25	26	27	28	29	30	31	32	33	34	35	36
05	CO	049	37	38	39	40	41	42	43	44	45	46	47	48
06	T1	061	49	50	51	52	53	54	55	56	57	58	59	60
07	T1	073	61	62	63	64	65	66	67	68	69	70	71	72
08	CO	085	73	74	75	76	77	78	79	80	81	82	83	84
09	CO	097	85	86	87	88	89	90	91	92	93	94	95	96
10	Tie	109	3007	3008	3009	3010	3011	3012	97	98	99	100		
11	Tie	121	3013	3014	3015	3016	3017	3018	101	102	103	104		
12	Sta	133	3019	3020	3021	3022	3023	3024	3025	3026	3027	3028	3029	3030
13	---	145												
14	---	157												
15	---	169												
16	---	181												
17	---	193												
18	---	205												
19	---	217												

Figure 4 System Configuration Screen

Each T1 channel is programmed in the *Line* area of the *System Programming* screen. The signaling used for each T1 channel is entered next to *T1 type*. See Figure 5. The channels of the T1 circuit can have any mix of *T1 Types*. When the T1 circuit is connected to a Central Office, both ends must agree on the signaling scheme. However, in applications where a channel bank is being replaced, the *T1 type* can be programmed to use the same signaling scheme as the channel bank if it is desired to not change the programming of the circuit at the Central Office.

The following choices are available for *T1 type*:

- TIE Use this type when the channel is used between two systems on a private network. This type provides E&M signaling protocol. When this *T1 Type* is used, the *Line Type* must also be programmed. See the *System Programming* section of the ISOETEC Digital System Technical Manual for more information on *Line Type*.
- DID Use this type when the channel is used for incoming Direct Inward Dial signaling. This type provides a wink in response to an incoming off-hook.
- DA\_1 Use this type to connect the system to a Central Office. This type does not provide a wink in response to an incoming signal (off-hook), and does not expect dialed digits. On outbound calls a wink from the Central Office is expected before dialed digits are sent. This type can also be used for a ring-down tie line. When using this *T1 type*, program the *Line Type* for this

channel to 12. The transmit audio on an outgoing call is normally muted until a digit is dialed. Using *Line type* 12 turns on the transmit audio as soon as the channel is seized.

DA\_2 This type does provide a wink in response to an incoming signal (off-hook), and does not expect dialed digits. On outbound calls a wink from the Central Office is expected before dialed digits are sent. This type can also be used for a ring-down tie line. When using this *T1 type*, program the *Line Type* for this channel to 12. The transmit audio on an outgoing call is normally muted until a digit is dialed. Using *Line type* 12 turns on the transmit audio as soon as the channel is seized.

**NOTE: T1 Types TIE, DID, DA\_1, and DA\_2 use E&M signaling protocol.**

- LS Loop start FXS signaling. Use this type when removing a channel bank with a loop start trunk interface on the channel. **DO NOT use loop start signaling if the channel is to be answered by a recorder.**
- GS Ground start FXS signaling. Use this type when removing a channel bank with a ground start trunk interface on the channel. The programming of the line parameter *Ground Start* is ignored.
- LSO Loop start FXO signaling. Use this type when removing a channel bank with a loop start station interface on the channel. Use this type when the distant end is connected to a channel bank with loop start FXS signaling.
- GSO Ground start FXO signaling. Use this type when removing a channel bank with a ground start station interface on the channel. Use this type when the distant end is connected to a channel bank with ground start FXS signaling.
- DATA not available at this time

System Programming

---

[T]ime 12:34 pm Tue 12-12-89 |[O]perators Programming

---

[R]ing Low = 010 PPS = 010 |  
 Ring High = 050 Ratio = 030 |

---

<p>[L]ine 025 port 037 Name</p> <p>Line Type = 000 DTMF Y SMDR Enable Y</p> <p>ID Number = 025 GS N DT Y RBT N</p> <p>Public N T1 type = TIE TIE/DID N MOH N</p> <hr/> <p>[A] ID Number 025</p> <p>ID Class = 00 ACD Day Group = 01</p> <p>Trunk Group = 08 Priority = 1</p> <p>Hunt Group = 00 ACD Night Group = 00</p> <p>Drop Pulse = 000 Priority = 1</p> <p>Pause Time = 005s</p> <p>Flash Time = 012*50ms</p> <p>Orbit Recall = 001*10s</p>	<p>[E]xternal Zone 01 Page 00</p> <p>ID Number 001 Day N Night N</p> <hr/> <p>[P]ort 01* Installd Y</p> <p>Speed = 9600 Protocol = X_ON</p> <p>Printer 0 Computer Port N Type 000</p> <p>SMDR N Incom N Local N Long Dist N</p> <p>ACD SMDR N Incom N Outg N Remote N</p> <hr/> <p>[M]usic Source MOH 1 BCM 1</p> <p>[S]ystem will reset N at 00:00</p> <p>[V]arious: Divert limit 15 min</p> <p>Cost After = 020 DID Digits 3</p> <p>Local Call Cost Limit = \$0.00</p> <p>Ground Start Timer = 008*50ms</p>
---	---

---

T1 Type

Figure 5 System Programming Screen

Enter the desired signaling for each T1 channel.

**NOTE:** The T1 channels to be used must also be programmed in the same manner as regular trunks. They must be programmed for Line type, signal type (DTMF or rotary), SMDR, Trunk Group, Hunt Group, etc.

An option has been added to the *System Programming* screen to support T1 channels which require ring-back tone to be transmitted to the caller while a call is ringing. This option is RBT located in the *Line* area of the screen. Some carriers require the system to generate the ring-back tone, while other carriers do not. Set this option to Y (yes) if ring-back tone is required per channel.

**NOTE:** If the channel is to be used for DISA, set RBT to N (no). Otherwise, the caller will receive ring-back tone rather than dial tone.

An option has been added to the *System Programming* screen to support T1 channels which do not supply dial tone. This option is DT located in the *Line* area of the screen. Some carriers require the system to generate dial tone to its users, while other carriers do not. Set this option to Y (yes), per channel, to provide dial tone for outbound calls.

The name of the *Ground Start* option on the *System Programming* screen has been shortened to GS.

## MAINTENANCE

The T1 interface port card and the system software provide tools to help detect and isolate problems which may occur with the T1 circuit. There are six LEDs mounted on the outside edge of the T1 Interface card which either light or flash to indicate a variety of conditions on the T1 circuit. System software provides the *T1 Alarm* screen and the *T1 Statistics* screen. The *T1 Alarm* screen is similar to the standard *Diagnostics Alarm* screen. The *T1 Alarm* screen can be programmed to record events detected by the CPU on the T1 card and cause an alarm message to appear on the Integrated Operator Terminal. The *T1 Statistics* screen keeps track of these same events and reports the number of times the event happened, the total duration, and when the last event happened.

A central office maintenance center can send a command to place the CSU into line loop back mode. If there is no CSU, the T1 port card will respond to the line loop back command.

There are several terms used to describe conditions and signals which indicate a problem on a T1 circuit. All T1 line conditions are monitored by circuitry on the T1 port card.

A **RECEIVE CARRIER LOSS (RCL)** condition is declared when no bits have been received by the T1 port card for 150 ms. It will cause an Out Of Frame (OOF) condition, and 2.5 seconds later a RED Carrier Failure Alarm (CFA) state. During the time the RCL and RED alarm are declared, incoming and outgoing signal bits are frozen. Outgoing calls cannot be made. The red DS2 LED lights.

A **RECEIVE OUT OF FRAME SYNC (OOF)** condition is declared when any two out of four consecutive terminal framing bits are received in error. The red DS3 LED lights. This condition will initiate a receiver auto resync. The auto resync action may be triggered by either a continuous loss of framing or by an intermittent out of frame condition. On detection of an OOF condition, a rise slope type integration process starts that declares a RED Carrier Failure Alarm (CFA) after 2 to 3 seconds of continuous OOF. If the OOF is intermittent, the integration process shall decay at a slope of 1/5 of the rise slope during the period when the slope is normal. The RED CFA is cleared when no OOF conditions occur in 10 to 20 contiguous seconds of operation.

A **RED CARRIER FAILURE ALARM (CFA)** signal is declared by the T1 port card when a loss of signal is detected, or an Alarm Indication Signal is received. When a RED CFA is declared, a procedure known as *trunk processing* is performed. Trunk processing consists of the following in the system. The CPU on the T1 port card will:

1. Disable the frame sync to the EVCM
2. Transmit a YELLOW CFA to the network

3. Flash the red LED labeled DS7 at a 1/10th second rate
4. Ignore receive signaling bits and set all transmit signaling bits to zero (indicates on-hook)
5. Transmit idle code on all channels
6. Inform the system CPU of the alarm condition and make all trunks appear idle inbound.

When the system CPU sees a Carrier Failure Alarm (either RED or YELLOW), all T1 channels are made unavailable outbound. At the end of the RED CFA state, the CPU on the T1 port card recenters the receive buffer, exits the trunk processing state, and is ready for normal operation.

A **YELLOW ALARM** is recognized when the T1 port card detects a **YELLOW Carrier Failure Alarm (CFA)** signal from the distant end for a minimum 335 ms (for D-4 framing). The yellow DS4 LED lights. The **YELLOW** alarm signal is transmitted by the remote system because of a **RED** alarm condition there. During a **YELLOW** alarm state items 3 through 6 under *trunk processing* are performed. The **YELLOW** alarm is cleared when the signal is no longer detected for 20 to 1000 ms. At the end of the **YELLOW CFA** state, the CPU on the T1 port card recenters the receive buffer, exits the trunk processing state, and is ready for normal operation.

The **ALARM INDICATION SIGNAL** or **BLUE CARRIER FAILURE ALARM** signal is an unframed all ones signal. It is transmitted by a remote device (usually a CSU) and when received, indicates a transmission failure upstream of that device toward the local end. Reception of the AIS signal will cause an OOF condition and a **RED** alarm state. The red DS5 LED lights. The AIS alarm signal is also known as the "keep alive" signal. In that sense it prevents the T1 circuit repeaters from malfunctioning when transmission from the remote end is lost.

**EXCESSIVE BIPOLAR VIOLATIONS (BPV)** are declared when the T1 port card detects a BPV rate in excess of  $1 \times 10^{-6}$  errors in 1000 seconds.

When a **FRAME SLIP** or change in frame alignment is detected, the T1 port card freezes all incoming signaling states and realigns the receive buffer. If all alarm conditions are clear, then signaling states are released and normal operation is resumed.

## ALARM LEDES

There are LEDs on the edge of the card which report alarm conditions.

LED	COLOR	FUNCTION
DS1	Green	+5 volt DC indication
DS2	Red	Receive Carrier Loss
DS3	Red	Receive Out of Frame Sync
DS4	Yellow	Receive YELLOW CFA
DS5	Red	Receive AIS or BLUE CFA
DS6	Green	Card in any Line Loop Back mode
DS7	Red	T1 port card status:
		On steady = Test mode indicator (trunks are out of service)
		Flashing 1 sec. = Normal operation
		Flashing 1/10 sec. = Trunk processing state



# T1 ALARMS SCREEN

The *T1 Alarms* screen is divided into two areas. The *first area* is used to program the system to count the number of times an error condition is detected, and provide an indication of a *Major* or *Minor Alarm* to the Integrated Operator Terminals. The *second area* provides information which can be used to trouble-shoot the cause of an alarm.

The *Description* area of the *Alarms* programming screen is used to determine what constitutes *Major* alarm and what constitutes *Minor* alarm for **excessive bipolar violations** and **frame slips**. Any Carrier Failure related alarm is considered a *Major* alarm immediately. When the system detects a bipolar violations or a frame slip, a counter is incremented for that *Alarm code*. If the counter reaches the value programmed in the *Minor* column within the amount of time programmed in the *Period* column for that *Alarm code*, Alarm flashes in the *Pending* area of the Operator's Terminal (see Figure 6). If the counter reaches the value programmed in the *Major* column within the amount of time programmed in the *Period* column for that Alarm code, ALARM appears highlighted and steady in the *Pending* area of the Operator's Terminal (see Figure 7).

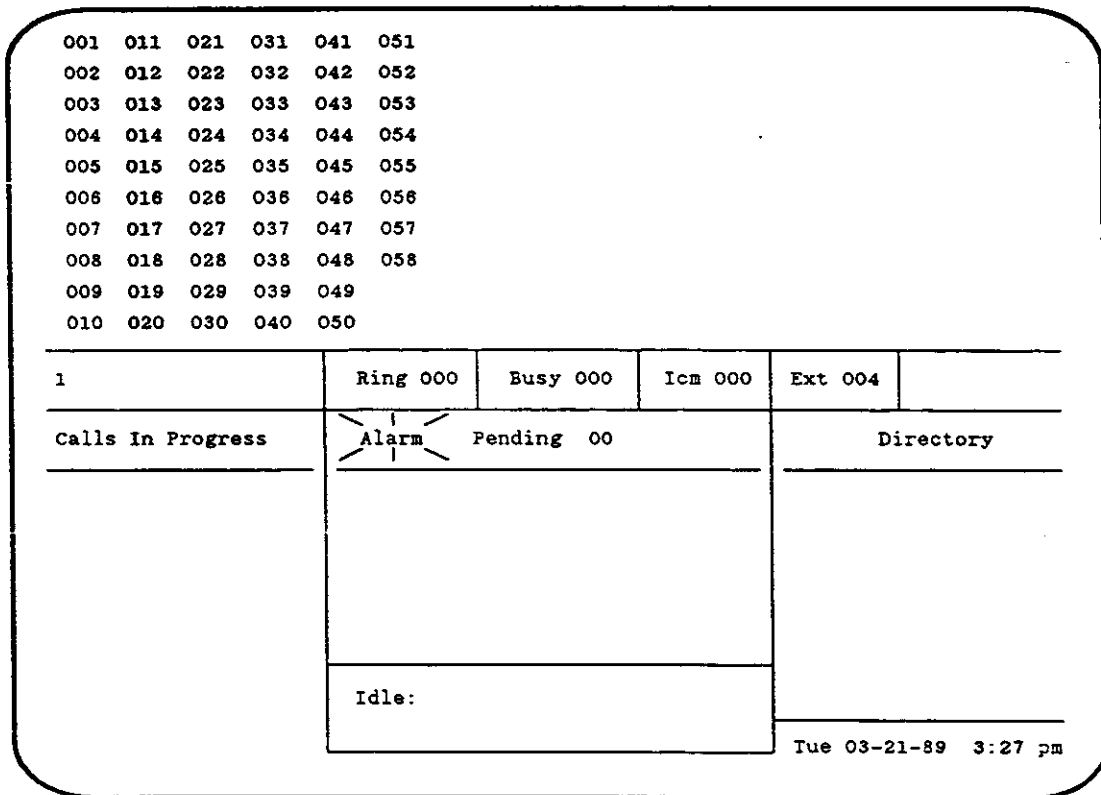


Figure 6 Operator Screen With A Minor Alarm

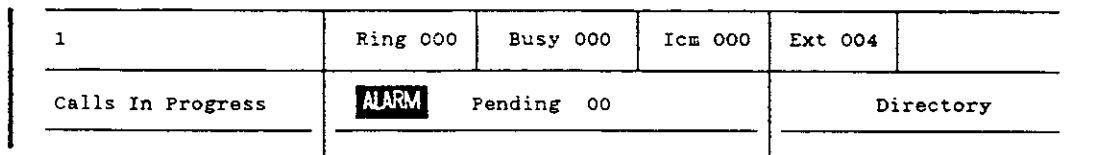


Figure 7 Operator Screen With A Major Alarm

## DESCRIPTION OF ALARM CODES

A description of the six functions that can trigger an alarm are provided below. All six functions can be programmed to register an alarm. After discussion with the customer and defining what constitutes the thresholds of a major and minor alarm, the thresholds for Excessive BPV and Slip can be programmed.

**CARRIER LOSS ALARM** is declared when no bits have been received by the T1 port card for 150 ms. It will cause an Out Of Frame (OOF) condition and a RED Carrier Failure Alarm (CFA) state.

**RED ALARM** is declared by the T1 port card when a loss of signal is detected, or an Alarm Indication Signal is received. A RED alarm can be caused by a loss of carrier signal, a receive out of frame sync condition, or an alarm indication signal.

**YELLOW ALARM** is recorded when the T1 port card detects a YELLOW Carrier Failure Alarm (CFA) signal from the distant end for a minimum 335 ms (for D-4 framing). The YELLOW alarm signal is transmitted by the remote system because of a RED alarm condition there.

**BLUE ALARM** signal is an unframed all ones signal. It is transmitted by a remote device (usually a CSU) and when received, indicates a transmission failure upstream of that device toward the local end. The AIS alarm signal is also known as the "keep alive" signal. In that sense it prevents the T1 circuit repeaters from malfunctioning when transmit from the remote end is lost.

**EXCESSIVE BIPOLAR VIOLATIONS (BPV)** are declared when the T1 port card detects a BPV rate in excess of  $1 \times 10^{-6}$  errors in 1000 seconds.

**SLIP** is a change in frame alignment.

## THRESHOLDS

### Alarm Column

Program Y (yes) or N (no) in the Alarm column. If set to No, the alarm will not be generated for that condition.

### Period - Minor - Major

If the error counter for an *Alarm Code* reaches the number programmed in the *Minor* column within the time (in minutes) entered in the *Period* column, the system reports a **Minor Alarm**.

If the error counter for an *Alarm Code* reaches the number programmed in the *Major* column within the time (in minutes) entered in the *Period* column, the system reports a **Major Alarm**.

Minor and Major thresholds are levels of error which must be defined for the particular system. The number of errors for each *Alarm code* should be decided after discussion with the customer. The customer should classify the alarm as a minor alarm, major alarm, or not an alarm.

The recommended values for *Excessive BPV* are Period = 1 minute, Minor = 10 and Major = 99.

As each alarm condition is detected, it is recorded in the *Pending Alarms* area of the *Alarms* programming screen.

Alarm Code	[D]escription:	Alarm	Period (minutes)	Thresholds	
				Minor	Major
1.	= Carrier Loss Alarm	Y			
2.	= Red Alarm	Y			
3.	= Blue Alarm	Y			
4.	= Yellow Alarm	Y			
5.	= Excessive B.P.V.	Y	01	10	99
6.	= Slip	Y	01	01	02

---

Tue 12-12-89 12:36 p

[P]ending Alarms:                      [R]eset alarm

1. Carrier Loss - Card #	3	1	1	1	1	3	3	3
5. BPV - Card #	3							
6. Slip - Card #	1	18						
4. Yellow Alarm - Card #	3	1	3	3	1	1	1	1
3. Blue Alarm - Card #	6							
2. Red Alarm - Card #	7	5	5	5	5	5	5	3

[ Use the arrow keys to scroll.. ]

Figure 8 T1 Alarm Screen

## PROGRAMMING ALARM CODES

From the *Main Menu*, press CNTRL and C for *Diagnostics*. The *Diagnostics Menu* appears. Then press F. The *T1 Alarm* programming screen appears.

**Note: Only ONE programming terminal can use Diagnostics at a time.**

If the cursor is not already in the *Description* area, press the D key. The cursor is in the Alarm column.

1. Enter Y (yes) if this alarm code is to be used. Enter N if this alarm code is not to be used.
2. Press the RETURN key. Continue from step 1 for the next 4 alarm conditions.
3. Enter the *Period* in minutes, and press the RETURN key. When the system detects a bipolar violations or a frame slip, a counter is incremented for that *Alarm code*. If the counter reaches the value programmed in the *Minor* column within the amount of time programmed in the *Period* column for that *Alarm code*, a minor alarm is indicated at the Operator's Terminal. If the counter reaches the value programmed in the *Major* column within the amount of time programmed in the *Period* column for that Alarm code, a major alarm is indicated at the Operator's Terminal.
4. Press the RETURN key. The cursor moves to the *Minor* column.
5. Enter the number of errors which generate a Minor alarm, and press the RETURN key.
6. Press the RETURN key again. The cursor moves to the *Major* column.
7. Enter the number of errors which generate a Major alarm, and press the RETURN key.
8. Press the RETURN key. Continue to program the remaining Alarm code.

## PENDING ALARMS

*Pending Alarms* list errors as they occur. After an error condition is detected, the *Alarm code* for the error, and the trunk, station, card, or port that caused the error is listed as a *Pending Alarm*. If an error for the particular *Alarm code* is already on the screen, the subsequent errors are added to the existing *Alarm code* line. The maximum number of items listed for each *Alarm code* in the *Pending Alarm* area is the lesser of eight or the number in the **Major** column.

The *Alarm code* line contains information to help in trouble-shooting the cause of the error. Once the cause has been identified and corrected, the alarm can then be cleared.

## RESETTING EXPIRED ALARMS

To clear any of the pending alarms, press P. The cursor moves to the *Pending Alarms* area.

1. Using the UP and DOWN arrows keys, position the cursor on the alarm that you wish to clear.
2. Press the R key, to reset. The alarm has been cleared.

Alarm Code	[D]escription:	Alarm	Period (minutes)	Thresholds Minor Major	
1.	= Carrier Loss Alarm	Y			
2.	= Red Alarm	Y			
3.	= Blue Alarm	Y			
4.	= Yellow Alarm	Y			
5.	= Excessive B.P.V.	Y	00	01	01
6.	= Slip	Y	01	01	02

---

[P]ending Alarms: [R]eset alarm Tue 12-12-89 12:36 p

1. Carrier Loss - Card #	3	1	1	1	1	3	3	3
5. BPV - Card #	3							
6. Slip - Card #	1	18						
4. Yellow Alarm - Card #	3	1	3	3	1	1	1	1
3. Blue Alarm - Card #	6							
2. Red Alarm - Card #	7	5	5	5	5	5	5	3

[ Use the arrow keys to scroll.. ]

Figure 9 T1 Alarm Screen

## T1 STATISTICS SCREEN

The *T1 Statistics* screen keeps track of alarm events and reports the number of times the event happened, the total duration, and when the last event happened. In addition to the conditions which cause alarms, the *T1 Statistics* screen reports statistics on loop back, and trunk processing events. There is a *T1 Statistics* screen for each of the installed T1 port cards. See Figure 10.

The information for this screen is stored in RAM on the T1 card separate from the system memory. This RAM can only be cleared from the *T1 Statistics* screen. This information is not erased when the system is defaulted. The screen is not a dynamic screen. To refresh the information on the screen, return to the *Diagnostics* menu and press G again.

From the *Main Menu*, press CNTRL and C for *Diagnostics*. The *Diagnostics Menu* appears. Then press G. The *T1 Statistics* programming screen appears.

The screen displays the statistics of a specific T1 card. To select the card to view, press E. Enter the card slot number (taken from the *System Configuration* programming screen) where the desired T1 port card is installed, and press the RETURN key. The statistics screen for the desired T1 port card appears. To view the cards in sequential order, press the RETURN key repeatedly.

If the entry under the "Most Recent Date and Time" column is highlighted, the alarm is still in progress.

To clear the *T1 Statistics* screen for the port card press the C key. The cursor moves to *Clear Now*. Enter Y.

T1 STATISTICS				
-----				
Period Covered: Thu 12-07-89 6:45 p Through Tue 12-12-89 12:36 p				
Event Code	Description:	Num of Events	Total Duration	Most Recent Date and Time
1.	= Carrier Loss Alarm	11	10:24	Tue 12-12-89 12:29 p
2.	= Red Alarm	1	1:38	Tue 12-12-89 12:30 p
3.	= Blue Alarm	2	:12	Thu 12-07-89 6:45 p
4.	= Yellow Alarm	1	:03	Thu 12-07-89 6:45 p
5.	= Excessive B.P.V.	5	:56	Tue 12-12-89 12:30 p
6.	= Slip			
7.	= Loop Back			
8.	= Trunk Processing Events	12	11:43	Tue 12-12-89 12:30 p

-----

[E]nter card number to monitor [ CR==first card ][ 06 ] [C]lear Now \_

Figure 10 T1 Statistics Screen

## T1 MONITOR SCREEN

The *T1 Monitor* screen is used to monitor the status of each of the T1 channels. Although this is not a dynamic screen, it can be useful in trouble-shooting problems which may arise on a T1 channel.

From the *Main Menu*, press CNTRL and C for *Diagnostics*. The *Diagnostics Menu* appears. Then press H. The *T1 Monitor* screen appears.

The following are explanations for the T1 monitor screen:

**Revision** Indicates the software revision on the T1 board.

**Alarm status** This number is a code which indicates the type of alarm that the T1 card is experiencing:

- 04 Trunk processing due to carrier loss
- 05 YELLOW alarm
- 07 BLUE alarm
- 08 RED alarm
- 14 Normal, no problems

**BPV status** Not used at this time.

**RX** These are the AB signaling bits that are received from the network.

**TX** These are the AB signaling bits that are transmitted from the ISOETEC T1 card to the network.

```

                                T1 CARD MONITORING
REVISION:      D4.105          DATE:      Wed 03-28-90      4:05 p
ALARM STATUS:  14
BPV           STATUS: 00
MISC. INFO    MSG_in:   771      MSG_out:   746      Board Reset(s): 3
-----
Channel # 01      02  00  00      Channel # 13      02  00  00
Channel # 02      02  00  00      Channel # 14      02  00  00
Channel # 03      02  00  00      Channel # 15      02  00  00
Channel # 04      02  00  00      Channel # 16      02  00  00
Channel # 05      02  00  00      Channel # 17      02  00  00
Channel # 06      02  00  00      Channel # 18      02  00  00
Channel # 07      02  00  00      Channel # 19      02  00  00
Channel # 08      02  00  00      Channel # 20      02  00  00
Channel # 09      02  00  00      Channel # 21      02  00  00
Channel # 10      02  00  00      Channel # 22      02  00  00
Channel # 11      02  00  00      Channel # 23      02  00  00
Channel # 12      02  00  00      Channel # 24      02  00  00
                                RX  TX                                RX  TX
[E]nter card number to monitor [ CR = next card ][ 02 ]
```

Figure 11 T1 Monitor Screen

#### How to select the T1 board to monitor

1. While on the *T1 Monitor* screen, press E.
2. Type in the card slot number that the T1 card is installed in.
3. Press the RETURN key.
4. This screen is not dynamic. To refresh the screen, press the space bar. In the future, this will be dynamic.

or

1. Press the RETURN key repeatedly to scroll to each card in consecutive order. Again, this screen is not dynamic. To refresh the screen, press the SPACE BAR.

#### How to reset a channel

1. While on the *T1 Monitor* screen, Press R, Reset T1 board? appears.
2. Type in the two digit channel number.
3. Press the RETURN key.

#### How to reset the T1 board

1. While on the *T1 Monitor* screen, press R, Reset T1 board? appears.
2. Type 33
3. Press the RETURN key.

The following table lists the status codes for each channel:

Value	Status	Value	Status
01	not installed	44	GSO, ring on
02	idle	45	GSO, ring off
07	outpulsing, break	46	GSO, talking incoming
08	outpulsing, make	47	GSO, talking outgoing
09	outpulsing, interdigit	50	trunk processing, not installed
11	dial, talking outbound	51	trunk processing, in service
12	T1 wait	55	E&M, busy
21	dial, DID, ringing	59	LS, ringing
24	dial pulse receive, break	60	LS, busy
25	dial pulse receive, make	65	GS, ringing
26	dial pulse receive, interdigit	66	GS, busy
27	dial, DID, talking incoming	70	data, busy
40	LSO, ring on		
41	LSO, ring off		
42	LSO, talking incoming		
43	LSO, talking outgoing		

## TROUBLE-SHOOTING

The following tables may be used as a guide in trouble-shooting problems with a T1 circuit.

KENTROX CSU STATUS	T1 CARD STATUS	DIAGNOSTICS MENU	SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
AIS	Blue alarm and trunk processing.	Blue alarm and trunk processing.	No incoming calls, buzzing sound when line is seized. All calls disconnected.	Failure at the far end CPE (upstream CSU).	In a point-to-point connection, contact technical support at the far end. In a point-to-network connection, contact the T1 provider.
KA	Carrier loss and trunk processing.	Carrier loss and trunk processing.	No incoming calls, buzzing sound when line is seized. All calls disconnected.	Cable from CSU to T1 card not connected.	1. Check cable. 2. Set the test switch on the CSU to the "LOC LOOP" mode and wait 15 seconds. The alarms on the T1 card should clear. If alarms are still there, replace the T1 card. Set the test switch on the CSU back to OFF.
LOS	Carrier loss and trunk processing.	Carrier loss and trunk processing.	No incoming calls, buzzing sound when line is seized. All calls disconnected.	Failure at the far end CSU or repeater failure on the network.	Contact the T1 provider.
LOS & BPV	Carrier loss and trunk processing.	Carrier loss and trunk processing and excessive BPV.	No incoming calls, buzzing sound when line is seized. If the CSU is disconnected from the RJ48X block, the alarms on the carrier side clear.	If the T1 is being cut-over, the TX and RX pairs may be reversed.	Set the CSU in the LOC LOOP mode. If the alarms on the T1 card and diagnostic menus clear, then check the wiring at the RJ48X block.
BPV	Loss of frame sync and trunk processing.	Red alarm and trunk processing.	Silence when line is seized.	RX pair is open at RJ48X.	Check connection at RJ48X.