
SX-50®

**DIGITAL PRIVATE AUTOMATIC BRANCH
EXCHANGE (DPABX)**

**POCKET REFERENCE GUIDE
FOR MS53/54**

PN 9104-091-120-NA

Issue 2, November 1990

© Copyright 1990, MITEL Corporation. All rights reserved.

™ Trademark of MITEL Corporation

® Registered Trademark of MITEL Corporation

NOTICE

The information contained in this document is believed to be accurate in all respects but is not warranted by Mitel Corporation (MITEL). The information is subject to change without notice and should not be construed in any way as a commitment by Mitel or any of its affiliates or subsidiaries. Mitel and its affiliates and subsidiaries assume no responsibility for any errors or omissions in this document. Revisions of this document or new editions of it may be issued to incorporate such changes.

CONTENTS	PAGE
1. NETWORK CONNECTION INFORMATION	1
2. WIRING CHARTS	3
3. WIRING DIAGRAMS	7
4. EQUIPMENT NUMBERS CHARTS	11
5. FEATURE INDEX	13
6. CUSTOMER DATA ENTRY REGISTERS	
Load Default Data	25
Access to Programming	26
COMMAND 100 SYSTEM OPTIONS	29
System Maintenance	29
Attendant Functions	30
Tone and Ringing Control	31
Trunk Connections	33
Station Attributes	34
SUPERSET™ Telephone Attributes	35
Overflow Control	36
Features Selection 1	37
Features Selection 2	38
Timeout Selection	39
Message Waiting	40
Automatic Route Selection (ARS)	41
System Message Detail Recording (SMDR)	42
Account Code Control	43
Printer Control	44
Contact Monitor	45
COMMAND 110 FEATURE ACCESS CODES	46
COMMANDS 121 - 129 CLASSES OF SERVICE 1 - 9	49
COMMANDS 151 - 156 TRUNK GROUPS 1 - 6	58
COMMAND 180 USER PROGRAMMING ACCESS	63
COMMAND 185 ATTENDANT CONSOLE FUNCTION	
KEYS	66
COMMAND 190 SYSTEM SECURITY CODE	69

CONTENTS (CONT'D)	PAGE
COMMAND 191 USER SECURITY CODE PROGRAMMING	70
COMMAND 192 RMATS SECURITY CODE	71
COMMAND 193 DISA ACCESS CODE	72
COMMANDS 301 - 310 EXTENSIONS	73
COMMANDS 321 - 330 BLOCK EXTENSION NUMBERING	74
COMMANDS 341 - 350 BLOCK EXTENSION MEMBERSHIPS	75
COMMANDS 361 - 366 EXTENSION HUNT GROUPS ..	76
COMMAND 381 STATION RING GROUP	77
COMMANDS 401 - 480 SUPERSET TELEPHONE LINES	78
COMMANDS 501 - 580 TRUNKS 01 - 80	80
COMMAND 600 VERIFIED AUTHORIZATION CODES ...	89
COMMAND 700 ARS DIGIT COMPARISON TABLE	90
COMMANDS 701 - 745: ARS TIME-OF-DAY TABLE ..	91
COMMAND 750 ARS ROUTE LIST TABLE	92
COMMAND 751 ARS ROUTE TABLE	93
COMMAND 752 ARS DIGIT MODIFICATION TABLE ...	94
7. PROGRAMMING ERRORS	95
8. ATTENDANT AND MAINTENANCE FUNCTIONS	99
9. TROUBLESHOOTING - ALARM CODES	103
RMATS Parameters	107
10. TROUBLESHOOTING - COMMAND REGISTERS	
COMMAND 900 UNIVERSAL CARD RESET	109
COMMAND 980 - SYSTEM STATUS DISPLAY	110
COMMAND 981 - INTER-DX LINK STATUS DISPLAY ..	113
COMMAND 982 - STATION STATUS DISPLAY	115
COMMAND 983 - SUPERSET STATUS DISPLAY	122
COMMAND 984 - TRUNK STATUS DISPLAY	125

LIST OF TABLES

TABLE	TITLE	PAGE
2-1	Tip and Ring Assignments - Lines	3
2-2	Tip and Ring Assignments - Trunks	4
2-3	Tip and Ring Assignments - Power Fail Transfer Circuits	5
2-4	Tip and Ring Assignments - Universal Card ...	6
4-1	Station Equipment Numbers	11
4-2	SUPERSET/Trunk Equipment Numbers	12
5-1	Feature Index	13
6-1	Control Card Status Switch Functions	25
6-2	Programming Access from the Attendant Console	26
6-3	Programming Access from the Test Line	27
6-4	Test Line Softkey Equivalent Key Sequences ..	28
6-5	E&M Module Switch Functions	84
7-1	Programming Error Codes	96
8-1	Attendant and Maintenance Functions	99
9-1	Troubleshooting - Alarm Codes	103
10-1	Call Processing State Codes	116
10-2	Call Processing Substate Codes	117
10-3	Source Tone Types	119

LIST OF ILLUSTRATIONS

FIGURE	TITLE	PAGE
3-1	Remote Attendant Console Cable Installation ...	7
3-2	Music/Paging Connections	8
3-3	Power Fail Transfer Connections	9
3-4	Night Bell Connections	10
6-1	Programmable Function Keys	68

7. NETWORK CONNECTION INFORMATION

FCC Registration Number	BN285B-16887-MF-E
DOC Approval Number	1731975 A
FCC Ringer Equivalence Number (REN)	1.0B
Load Number (Canada)	73A
USOC Connector - CO Trunks	RJ21X
USOC Connector - 2-wire E&M Trunks	RJ2EX
USOC Connector - 4-wire E&M Trunks	RJ2GX
USOC Connector - DID Trunks	RJ21X
Service Order Code - E&M Trunks (Type 1, 2- and 4-wire)	9.0F
Facility Interface Code - Loop Start CO Trunks	02LS2
Facility Interface Code - Ground Start CO Trunks	02GS2
Facility Interface Code - 2-wire Type I E&M Trunks	TL11M
Facility Interface Code - 4-wire Type I E&M Trunks	TL31M
Facility Interface Code - Direct Inward Dial Trunks	02RV2-T
Facility Interface Code - Off-Premise Extension Lines	0L13B

2. WIRING CHARTS

TABLE 2-1
TIP AND RING ASSIGNMENTS - LINES

Pin	Pair Colour	ONS Line	CDV Line	OPS Line
26	W-BL	Tip 1	Tip 1	Tip 1
1	BL-W	Ring 1	Ring 1	Ring 1
27	W-O	Tip 2	Tip 2	
2	O-W	Ring 2	Ring 2	
28	W-G	Tip 3	Tip 3	Tip 2
3	G-W	Ring 3	Ring 3	Ring 2
29	W-BR	Tip 4	Tip 4	
4	BR-W	Ring 4	Ring 4	
30	W-S	Tip 5	Tip 5	Tip 3
5	S-W	Ring 5	Ring 5	Ring 3
31	R-BL	Tip 6	Tip 6	
6	BL-R	Ring 6	Ring 6	
32	R-O	Tip 7	Tip 7	Tip 4
7	O-R	Ring 7	Ring 7	Ring 4
33	R-G	Tip 8	Tip 8	
8	G-R	Ring 8	Ring 8	
34	R-BR	Tip 9		Tip 6
9	BR-R	Ring 9		Ring 5
35	R-S	Tip 10		
10	S-R	Ring 10		
36	BK-BL	Tip 11		Tip 6
11	BL-BK	Ring 11		Ring 6
37	BK-O	Tip 12		
12	O-BK	Ring 12		
38	BK-G	Tip 13		Tip 7
13	G-BK	Ring 13		Ring 7
39	BK-BR	Tip 14		
14	BR-BK	Ring 14		
40	BK-S	Tip 15		Tip 8
15	S-BK	Ring 15		Ring 8
41	Y-BL	Tip 16		
16	BL-Y	Ring 16		
42	Y-O	Not Used	Not Used	Not Used
17	O-Y	Used	Used	Used
50	V-S	Not Used	Not Used	Not Used
25	S-V	Used	Used	Used

**TABLE 2-2
TIP AND RING ASSIGNMENTS - TRUNKS**

Pin	Pair Colour	LS/GS Trunks	DID Trunks
26	W-BL	Tip 1	Tip 1
1	BL-W	Ring 1	Ring 1
27	W-O	MM1	
2	O-W	M1	
28	W-G	Tip 2	Tip 2
3	G-W	Ring 2	Ring 2
29	W-BR	MM2	
4	BR-W	M2	
30	W-S	Tip 3	Tip 3
5	S-W	Ring 3	Ring 3
31	R-BL	MM3	
6	BL-R	M3	
32	R-O	Tip 4	Tip 4
7	O-R	Ring 4	Ring 4
33	R-G	MM4	
8	G-R	M4	
34	R-BR	Tip 5	Tip 5
9	BR-R	Ring 5	Ring 5
35	R-S	MM5	
10	S-R	M5	
36	BK-BL	Tip 6	Tip 6
11	BL-BK	Ring 6	Ring 6
37	BK-O	MM6	
12	O-BK	M6	
38	BK-G	Tip 7	Tip 7
13	G-BK	Ring 7	Ring 7
39	BK-BR	MM7	
14	BR-BK	M7	
40	BK-S	Tip 8	Tip 8
15	S-BK	Ring 8	Ring 8
41	Y-BL	MM8	
16	BL-Y	M8	
42	Y-O	See	
17	O-Y	Power	
		Fail	
50	V-S	Transfer	
25	S-V	Assignments	

**TABLE 2-3
TIP AND RING ASSIGNMENTS -
POWER FAIL TRANSFER CIRCUITS**

Pin	Pair Colour	Connection (LS/GS Trunk Card)	
26 1	W-BL BL-W	See TIP AND RING ASSIGNMENTS - TRUNKS	
41 16	Y-BL BL-Y		
42 17	Y-O O-Y		Not Used Not Used
43 18 44 19 45 20 46 21 47 22 48 23 49 24 50 25	Y-G G-Y Y-BR BR-Y Y-S S-Y V-BL BL-V V-O O-V V-G G-V V-BR BR-V V-S S-V		STATION T1 STATION R1 ONS LINE CARD T1 ONS LINE CARD R1 TRUNK T1 TRUNK R1 TRUNK CARD T1 TRUNK CARD R1 STATION T2 STATION R2 ONS LINE CARD T2 ONS LINE CARD R2 TRUNK T2 TRUNK R2 TRUNK CARD T2 TRUNK CARD R2

**TABLE 2-4
TIP AND RING ASSIGNMENTS - UNIVERSAL CARD**

Pin	Pair Colour	Module Position	MOH Pager*	E&M Trunk	
26 1	W-BL BL-W	1	Music In A	Tip 1	
27	W-O		Music In B	Ring 1	
2	O-W		Pager Out A	TR1	
28	W-G		Pager Out B	RR1	
3	G-W		Contact A	E1	
29	W-BR		Contact B	M1	
4	BR-W				
30	W-S				
5	S-W	2	Music In A	Tip 2	
31	R-BL		Music In B	Ring 2	
6	BL-R		Pager Out A	TR2	
32	R-O		Pager Out B	RR2	
7	O-R		Contact A	E2	
33	R-G		Contact B	M2	
8	G-R				
34	R-BR				
9	BR-R	3	Music In A	Tip 3	
35	R-S		Music In B	Ring 3	
10	S-R		Pager Out A	TR3	
36	BK-BL		Pager Out B	RR3	
11	BL-BK		Contact A	E3	
37	BK-O		Contact B	M3	
12	O-BK				
38	BK-G				
13	G-BK	4	Music In A	Tip 4	
39	BK-BR		Music In B	Ring 4	
14	BR-BK		Pager Out A	TR4	
40	BK-S		Pager Out B	RR4	
15	S-BK		Contact A	E4	
			Contact B	M4	
41	Y-BL		Not Used	Not Used	
16	BL-Y		Not Used	Not Used	
50	V-S	Not Used	Not Used		
25	S-V	Not Used	Not Used		

* Pin connections do not apply when the Control Card 2 (MCC2) is used. See Figure 3-2.

3. WIRING DIAGRAMS

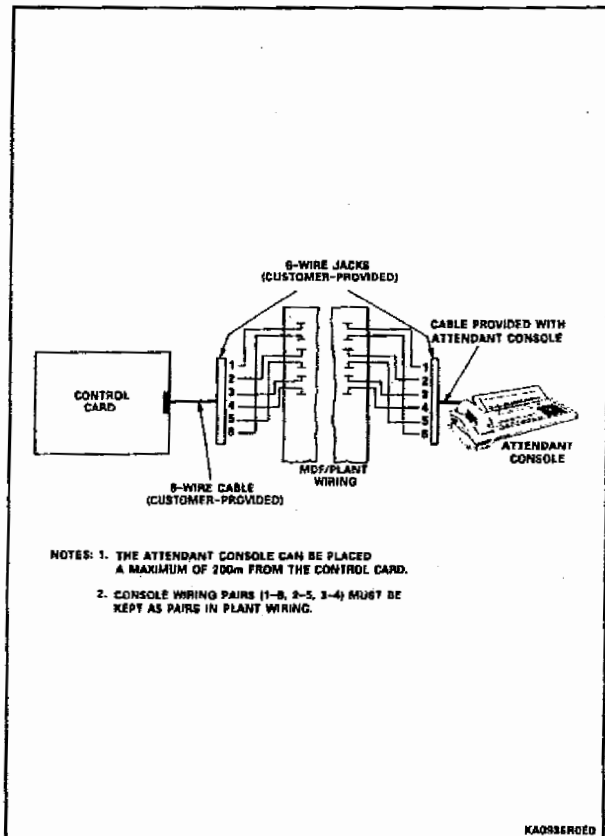


Figure 3-1 Remote Attendant Console Cable Installation

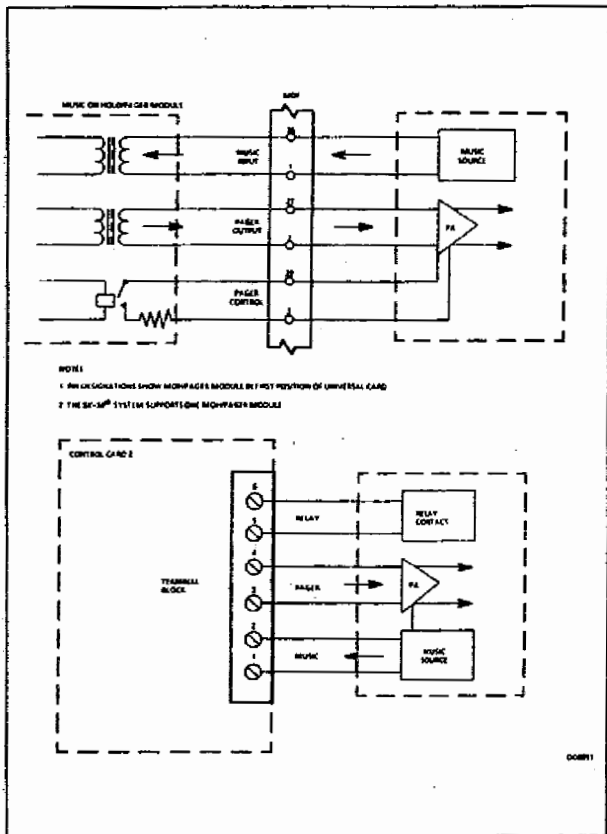


Figure 3-2 Music/Paging Connections

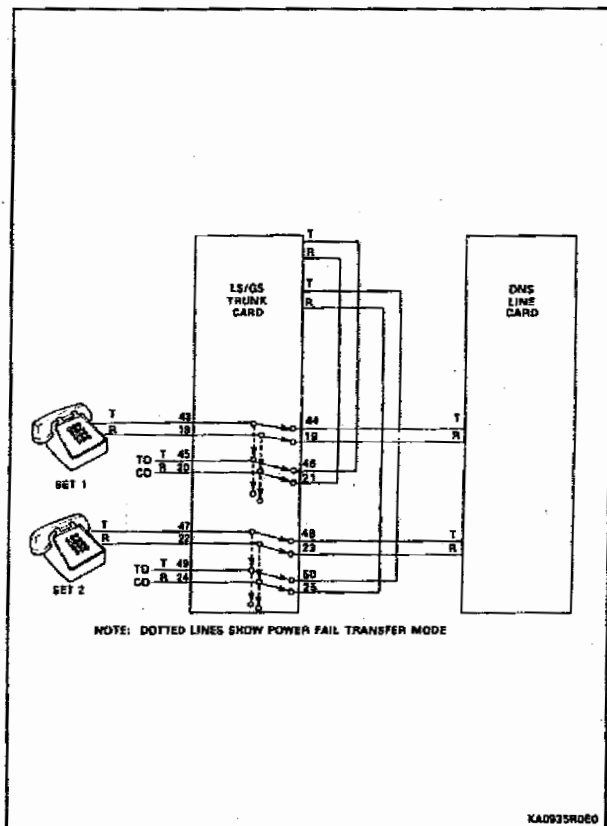


Figure 3-3 Power Fail Transfer Connections

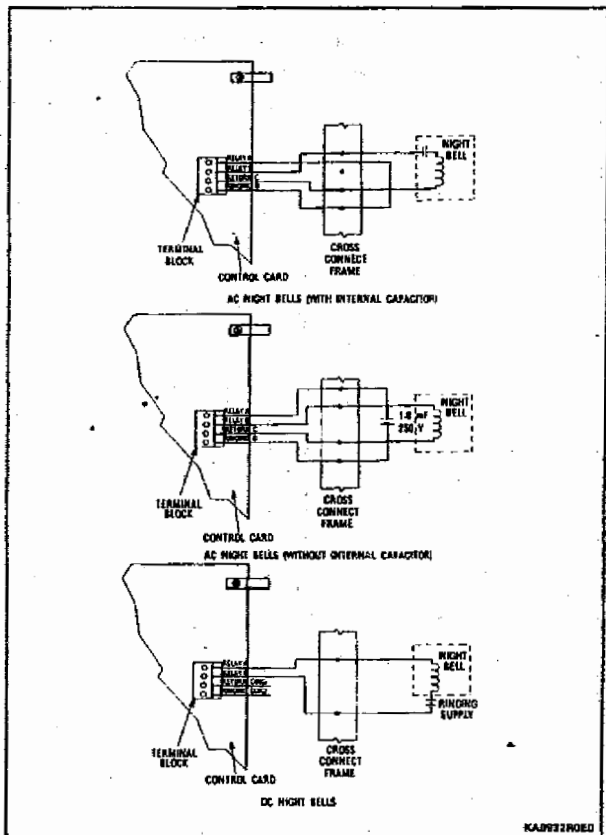


Figure 3-4 Night Bell Connections

4. EQUIPMENT NUMBERS CHARTS

TABLE 4-1
STATION EQUIPMENT NUMBERS

Cct	Slot									
	1	2	3	4	5	6	7	8	9	10
01	001	017	033	049	065	081	097	113	129	145
02	002	018	034	050	066	082	098	114	130	146
03	003	019	035	051	067	083	099	115	131	147
04	004	020	036	052	068	084	100	116	132	148
05	005	021	037	053	069	085	101	117	133	149
06	006	022	038	054	070	086	102	118	134	150
07	007	023	039	055	071	087	103	119	135	151
08	008	024	040	056	072	088	104	120	136	152
09	009	025	041	057	073	089	105	121	137	153
10	010	026	042	058	074	090	106	122	138	154
11	011	027	043	059	075	091	107	123	139	155
12	012	028	044	060	076	092	108	124	140	156
13	013	029	045	061	077	093	109	125	141	157
14	014	030	046	062	078	094	110	126	142	158
15	015	031	047	063	079	095	111	127	143	159
16	016	032	048	064	080	096	112	128	144	160

TABLE 4-2
SUPERSET™/TRUNK EQUIPMENT
NUMBERS

Cct	Slot									
	1	2	3	4	5	6	7	8	9	10
01	01	09	17	25	33	41	49	57	65	73
02	02	10	18	26	34	42	50	58	66	74
03	03	11	19	27	35	43	51	59	67	75
04	04	12	20	28	36	44	52	60	68	76
05	05	13	21	29	37	45	53	61	69	77
06	06	14	22	30	38	46	54	62	70	78
07	07	15	23	31	39	47	55	63	71	79
08	08	16	24	32	40	48	56	64	72	80

Note: E&M Trunks use ODD Equipment Numbers only.

5. FEATURE INDEX

Feature Index, Table 5-1, lists the programmable features of the SX-50[®] system and their corresponding Customer Data Entry fields.

TABLE 5-1
FEATURE INDEX

Feature Name	Command	Register	Field
Abbreviated Dial	100	09	c,h
		13	j
	110	07	c - f
	121 - 129	5	b - j
Account Codes (Note: must also enable SMDR.)	100	15	c,d
	110	28	c - f
	121 - 129	3	h
	751	7	c h
Associated Modem Line	121 - 129	4	l
Attendant Access	110	01	c - f
Attendant Functions	110	14	c - f
Attendant-Switchable COS	301 - 310		e
Attendant Tone Signaling	185	01 - 14	c,d
Auto-Answer	100	07	c
Auto-Hold	100	07	d
Auto-Line Disconnect	100	03	h - j
	121 - 129	3	k
Automatic Callback	100	03	g
	110	32	c - f
	121 - 129	3	b,j
Automatic Diagnostics	100	01	c

TABLE 5-1 (CONT'D)
FEATURE INDEX

Feature Name	Command	Register	Field
Automatic Ringdown Circuit	121 - 129	2	d
	301 - 210	01 - 16	c
Automatic Night Service	100	08	c,e
Automatic Route Selection and Toll Control	100	13	c - j
	301 - 310	01 - 16	g
	341 - 350	01 - 16	g
	501 - 580	1	h
	700	001 - 800	d,e,g - i
	701 - 745	01 - 06	b - n
	750	001 - 200	d - o
	751	001 - 100	d - g
752	001 - 100	d,e,g - i	
Automatic Wake-Up	100	10	c,d
	110	41	c - f
	121 - 129	4	j
	185	01 - 14	c,d
Auxiliary Attendant	121 - 129	7	d
	301 - 310	1	d
	401 - 480		c - e
Background Music	100	09	g
Behind PABX Operation	151 - 156	1	f,g,h,i
		2	f
		4	c,d
Block Programming	321 - 330		a - h
	341 - 350		a - g
Break/Make Ratio	501 - 580	2	b
Calibrated Flash	100	06	c
Call Block	121 - 129	3	f
	185	01 - 14	c,d

**TABLE 5-1 (CONT'D)
FEATURE INDEX**

Feature Name	Command	Register	Field
Call Direction	121 - 129	2	c
Call Forwarding - Busy	110	11	c - f
	121 - 129	4	c
Call Forwarding - Busy/No Answer	100	11	d
	110	12	c - f
	121 - 129	4	e
Call Forwarding - External	100	09	c
	121 - 129	4	b - f
		5	b - j
	501 - 580	2	c
Call Forwarding - Follow Me	110	08	c - f
	121 - 129	4	b
Call Forwarding - No Answer	100	11	d
	110	10	c - f
	121 - 129	4	d
Call Hold (Attendant)	100	9	f
		11	f
	110	16 - 18	c - f
Call Hold (Extension)	100	09	f
		11	e
	110	03	c - f
	121 - 129	3	e
Call Hold Retrieve	110	04,05	c - f
Call Park	100	11	f
	110	16,17,18	c - f
Call Pickup	110	06	c - f
		30	c - f
	121 - 129	7	e,f
	185	1 - 14	c,d
	301 - 310	01 - 16	f

**TABLE 5-1 (CONT'D)
FEATURE INDEX**

Feature Name	Command	Register	Field
Call Selection	501 - 580	4	d
		5	b
Call Transfer	100	11	c,d
	121 - 129	2	b
		8	c
Camp-On	100	11	c
	121 - 129	8	b - e
Clear All Features	110	15	c - f
Conference	100	11	c,d
	121 - 129	2	b
		8	b - e
Conflict Dialing	100	09	e
Consoleless Operation	100	02	d
		08	c,d,f - i
	110	9	c - f
		121 - 129	3
	8		b - e
	501 - 580		4
5		b - e	
Contact Monitor	100	17	c - e
	301 - 310	01 - 16	c

TABLE 5-1 (CONT'D)
FEATURE INDEX

Feature Name	Command	Register	Field
Data Demultiplexer	100	16	c
Data Dump/Load	100	16	d - h
Data Line Security	121 - 129	3	d
Dictation Trunk	151 - 156	2	g
	501 - 580	4	b
Direct-In Lines	121 - 129	8	b - e
	501 - 580	4	d - g
Direct Inward Dial Trunks	100	05	g - i
	110	35 - 37	c - f
	121 - 129	8	d, e
	185	01 - 14	c, d
	501 - 580	1	e, j
		4	d - k
		5	b - f
Direct Inward System Access (DISA)	121 - 129	2	e
	193	01	b, c, d
	501 - 580	1	e, f, h, j
		4	h - k
Direct Line Select	401 - 480		c
Direct Trunk Select	401 - 480		c
Discriminating Ringing	100	03	f
Distinctive Callback Ringing	100	03	g

**TABLE 5-1 (CONT'D)
FEATURE INDEX**

Feature Name	Command	Register	Field
Do Not Disturb	110 121 - 129 185	33 2 01 - 14	c - f k c,d
E&M Trunks	151 - 156 501 - 580	1 1 2 3 4 5	f - i b,d,e,j c b - f d b
Executive Busy Override (Console)	100 185	02 01 - 14	c c,d
Executive Busy Override	121 - 129	4	g
Executive Busy Override Security	121 - 129	4	h
Flash Disable	121 - 129	2	b
Flash for Attendant	121 - 129	2	b
Flash is Release	100	06	c
Flexible Night Service	501 - 580	5	b - e
Flexible Numbering Plan	110 151 - 156 301 - 310	01 - 41 1 01 - 16	c - f f - i i - l
Hotline	121 - 129 301 - 310	2 01 - 16	d c

**TABLE 5-1 (CONT'D)
FEATURE INDEX**

Feature Name	Command	Register	Field
Hunt Groups (Extensions) (See also Log-in Hunt Groups)	110 361 - 366	19 - 24 01 02 - 09	c - f b,c b - e
Hunt Groups (Trunks)	151 - 156	1	c
Identified Trunk Group	151 - 156 501 - 580	1 2 2	e - i b,d,e c
Incoming Call Identification	501 - 580	4 5	d b
Internal Calls to Console Night Answer Point	100	08	g,h,i
Last Number Redial	100 121 - 129 151 - 156	09 5 2	d k j
Line Appearances	100 401 - 480	7	e d
Lockout Alarm	121 - 129	7	h
Log-in Hunt Groups	110 121 - 129	34 7	c - f g
Manual Line	121 - 129 301 - 310	2 01 - 16	d c
Message Register Audit (Printer required; refer to PRINTER).	100	10	e

**TABLE 5-1 (CONT'D)
FEATURE INDEX**

Feature Name	Command	Register	Field
Message Registration	100	10	g
	121 - 129	2	f
	151 - 156	2	e
		3	b - h
185	01 - 14	c,d	
Message Waiting	100	12	c - f
	110	38,39	c - f
	121 - 129	2	g
Messages - Advisory	121 - 129	7	b
Messages - Call Me Back	401 - 480		c
Music on Hold	100	09	f
Night/Day Switching	185	01 - 14	c,d
Off-Premises Extensions	301 - 310	01 - 16	h
Originate-Only Extensions	121 - 129	2	c
Overflow	100	08	c - i
Paging Access	110	02	c - f
	121 - 129	3	c
	501 - 580	2	c
Partial Flash Inhibit	100	06	e
Personal Outgoing Line	401 - 480		c
Pickup Groups	110	06	c - f
	301 - 310	01 - 16	f

**TABLE 5-1 (CONT'D)
FEATURE INDEX**

Feature Name	Command	Register	Field
Printer	100	16	c - h
Remote Maintenance Administration and Test System (RMATS)	100	1	d
	110	26	c - f
	192	1,2	b - f
	501 - 580	4 5	d - g b - e
Restrictive Station Control	121 - 129	2	f
Reversal Meaning	501 - 580	2	d,e
Ring Group	110	25	c - f
	381	01 - 09	b - e
	501 - 580	4	e,f,g
		5	c - e
Room Status	100	10	i
	110	31	c - f
	121 - 129	3	i
	185	01 - 14	c,d
	301 - 310	01 - 16	g
Selectable Ringing Cadence Cycle Time	100	03	e
Special DISA (See also Traveling COS)	121 - 129	2	e
	501 - 580	1	e
SMDR Credit Card Calls	151 - 156	4	e
Station Message Detail Recording (SMDR)	100	14	c - j
	121 - 129	3	h
	151 - 156	2	i

**TABLE 5-1 (CONT'D)
FEATURE INDEX**

Feature Name	Command	Register	Field
Station Switchhook - Flash Timing	100	06	c
SUPERSET Telephones	100 301 - 310 401 - 480	07 01 - 16 01 - 15	c - e d - l c - l
SUPERSET 4 Headset Operation	121 - 129	2	j
System Security Code Programming	190	01	b - e
Test Line	100	01 08 11	e,f,g f f
Transfer Dial Tone	100	03	d
Traveling COS	100 110 180 185 600	14 15 40 2 01 - 14	k e c - f h c,d a - n
Trunk Alarm Control	501 - 580	1	c
Trunk Answer from Any Station (TAFAS)	100 110 121 - 129 185	08 09 3 01 - 14	c - f c - f g c,d
Trunk Group Overflow	121 - 129 151 - 156	1 1	h d

**TABLE 5-1 (CONT'D)
FEATURE INDEX**

Feature Name	Command	Register	Field	
Trunk Groups	121 - 129	1	b - g	
		151 - 156	1	b - i
		2	b - k	
		3	b - h	
	501 - 580	4	b - e	
		1	b	
		2	b - i	
		3	b - f	
		4	b - c	
Trunk Intercepts	501 - 580	4	d - k	
		5	b - f	
Trunk Signaling - DTMF/Rotary Outpulsing	100	2	f	
	151 - 156	2	g	
Trunk-to-Trunk Plus Station Conferencing	100	05	c - i	
	121 - 129	1	j	
	501 - 580	1	d	
		2	c	
Unlimited Wait For Dial Tone	151 - 156	2	b	
User Security Code Programming	180	1,2,3	b - h	
	191	01	b - e	
Voice Mail Port	100	8	g - i	
		12	c	
	110	19 - 24	c - f	
		38,39	c - f	
	121 - 129	2	g,k	
		3	d,k	
		4	g,h	
		5	k	

TABLE 5-1 (CONT'D)
FEATURE INDEX

Feature Name	Command	Register	Field
Voice Mail Port (Cont'd)	121 - 129	7	d,f
	301 - 310	01 - 16	d,f
	361 - 366	2 - 9	b - e
	401 - 480	15	c - e
Wait For Dial Tone	151 - 156	2	b

6. CUSTOMER DATA ENTRY REGISTERS**Load Default Data**

6.01 Defaults are listed for each register. On a new installation, the default data must be loaded as follows.

1. Ensure Power Supply is OFF.
2. Set all Control Card Switches OPEN.
3. Switch Power Supply ON. Wait for Control Card LED to show ?. (The Console displays **LOAD DEFAULT DATA?**).
4. Within 10 seconds, toggle Status Switch 1 to the CLOSED position and then back to OPEN. Wait for the Control Card LED to display A. (The Console displays **DEFAULT DATA LOADED**).
5. Set Control Card Status Switches as required. Refer to Table 6-1.

**TABLE 6-1
CONTROL CARD STATUS SWITCH FUNCTIONS**

Switch	Function
1	Programming: OPEN - Security Code Required CLOSED - No Security Code Required
2	OPEN - Test Line Disabled CLOSED - Test Line Enabled
3	NOT USED
4	NOT USED - MUST BE SET TO OPEN

Access to Programming

TABLE 6-2
PROGRAMMING ACCESS FROM THE ATTENDANT CONSOLE
TO ACCESS CDE FROM THE ATTENDANT CONSOLE:

Note: For read-only access, omit the steps involving the STATUS key.

- Press and hold down the STATUS key.
- The Attendant Console LCD displays the software identifier and maintenance release number.

SX-50 MS54-MR0

- Enter a security code (System Security Code default is 7772 and User Security Code default is 1234).*
- The Attendant Console LCD flashes the word SX-50 if the security code is correct.
- Release the STATUS key.
- Press # or dial 70.
- The Console LCD displays the first register.

COMMAND 100?
ENTER EXIT

The system is now in Programming Mode.

EXIT PROGRAMMING MODE

- Press the RELEASE key or the EXIT softkey.

* The User Security Code allows access only to the Command Registers enabled in Command 180.

TABLE 6-3
PROGRAMMING ACCESS FROM THE TEST LINE

ENTER PROGRAMMING MODE FROM THE TEST LINE

1. Status Switch 2 on the Control Card must be CLOSED for Test Line operation.
 2. It is recommended that a SUPERSET 4[®] telephone be used as a Test Line as it has an LCD display.
 3. Command 100 Register 1 fields e, f, g must be programmed with the Equipment Number of the Test Line set. Default is 001.
- Press # or dial 70. The SUPERSET 4 telephone LCD displays **ENTER CODE** and the EXIT and READ softkeys. For read-only access, press the READ softkey instead of entering a security code.
 - Dial a security code (System Security Code default is 7772 and User Security Code default is 1234).*
 - If the code is correct, the LCD displays **COMMAND 100?** with the EXIT and YES softkeys.
- The system is now in Programming Mode.

EXIT PROGRAMMING MODE

- Press the EXIT softkey or flash the switchhook.

* If the User Security Code is entered, the system will allow access only to the Command Registers enabled in Command 180, User Programming Access.

TABLE 6-4
TEST LINE SOFTKEY EQUIVALENT KEY SEQUENCES

Console Softkey	Test Line Softkey	Test Line Key Sequence
ENTER	YES	*1
NEXT	FWD	*2
-	-	*3
VIEW		*4
DELETE		*5
WFDT		*6
PAUSE		*7
EXIT	EXIT	*0
SAVE	SAVE	**
QUIT	CANCEL	*#

Note: The VIEW, DELETE, WFDT and PAUSE softkeys are used in programming ARS. Refer to Section MITL9104-091-220-NA, Automatic Route Selection, for more information.

COMMAND 100 SYSTEM OPTIONS

System Maintenance

a	b	c	d	e	f	g	h
0	1	1	1	0	0	1	0

0 = Disable, 1 = Enable
unless indicated otherwise

c: Automatic Diagnostics

d: RMATS Protocol Selection

0 = CCITT
1 = North American

e,f,g: Test Line Equipment Number

001 - 160

h: Software Alarm 90

COMMAND 100 SYSTEM OPTIONS (CONT'D)**Attendant Functions**

a	b	c	d	e	f
0	2	0	0	0	0

0 = Disable, 1 = Enable
unless indicated otherwise

c: Executive Busy Override (Console)

0 = Disable
1 = Enable except on I/C Trunks
2 = Enable on all Calls

d: Console Inhibit

e,f: RESERVED

COMMAND 100 SYSTEM OPTIONS (CONT'D)

Tone and Ringing Control

a	b	c	d	e	f	g	h	i	j
0	3	0	1	4	1	1	2	0	0

0 = Disable, 1 = Enable
unless indicated otherwise

c: Tone Plan Variants

- 0 = North American
- 1 = Hong Kong
- 2 = Taiwan

d: Transfer Dial Tone

e: Ringing Cadence Cycle Time

- 3 = 3 secs
- 4 = 4 secs
- 5 = 5 secs

f: Discriminating Ringing

g: Distinctive Callback Ringing

h: Disconnect Tone

- 0 = Disable
- 1 = Send selected DTMF Tone to Dictation Port
- 2 = Connect selected Call Progress Tone to Dictation Port

i,j: DTMF/Call Progress Tones Selected

If field H = 1:

00 - 09 = DTMF Digits 0 - 9

10 = DTMF * sign

11 = DTMF # sign

If field H = 2:

00 = Dial Tone

01 = Busy Tone

02 = Reorder Tone

a	b	c	d
0	4	0	0

These field values should not be changed.

COMMAND 100 SYSTEM OPTIONS (CONT'D)

Trunk Connections

a	b	c	d	e	f	g	h	i
0	5	0	0	0	0	0	0	0

0 = Disable, 1 = Enable
unless indicated otherwise

c: CO To CO Connection

d: E&M To E&M Connection

e: CO To E&M Connection

0 = Disable

1 = Enable for Incoming CO trunks only

2 = Enable for Outgoing CO trunks only

3 = Enable for Incoming and Outgoing CO trunks

f: Conference Warning Tone

0 = Disable

1 = Enabled if a CO is a conferee

2 = Enable on all conferences

g: DID To CO Connection

h: DID To E&M Connection

i: DID To DID Connection

COMMAND 100 SYSTEM OPTIONS (CONT'D)**Station Attributes**

a	b	c	d	e	f	g
0	6	0	1	0	0	0

c: Station Switchhook Flash Timing

- 0 = 150-750 ms
- 1 = 150-1500 ms
- 2 = Flash Is Release
- 3 = 90 ms Calibrated Flash

d: Station Digit Collection

- 1 = 10 pps
- 2 = 20 pps

e: Partial Flash Inhibit

- 0 = Disable, 1 = Enable

f,g: RESERVED

COMMAND 100 SYSTEM OPTIONS (CONT'D)

SUPERSET Telephone Attributes

a	b	c	d	e
0	7	0	0	1

0 = Disable, 1 = Enable
unless indicated otherwise

c: Auto-Answer System Enable

d: SUPERSET Auto-hold

e: Delayed Ringing Key Timeout

1 = 10 seconds

2 = 20 seconds

3 = 30 seconds

COMMAND 100 SYSTEM OPTIONS (CONT'D)

Overflow Control

a	b	c	d	e	f	g	h	i
0	8	2	1	3	2	0	0	0

c: Overflow Mode In Day Service

- 0 = Disable
- 1 = Immediate Switching to Overflow
- 2 = Automatic Switching to Overflow after Timeout
- 3 = Automatic Switching to Night Service

d: Night Bell Mode In Night Service

- 0 = Disable
- 1 = Immediate Switching to Overflow
- 2 = Automatic Switching to Overflow after Timeout

e: Automatic Switch To Overflow Timeout

(1 - 7) X 10 seconds

f: Internal Calls To Console Routed to Overflow

- 0 = Disable
- 1 = Enable During Day Service
- 2 = Enable During Night Service
- 3 = Enable During Both Day and Night Service

g,h,i: Overflow Point

- 000 = Night Bell
- 001 - 160 = Station Equipment Number
- 161 - 166 = Hunt Group
- 167 = Ring Group

COMMAND 100 SYSTEM OPTIONS (CONT'D)

Features Selection 1

a	b	c	d	e	f	g	h	i
0	9	1	0	0	0	0	0	0

0 = Disable, 1 = Enable
unless indicated otherwise

c: Abbreviated Dial Enable

d: Last Number Redial # Key Access

e: Conflict Dialing Timer

0 = Disabled
1 = 3 seconds
2 = 5 seconds
3 = 7 seconds

f: Music On Hold

g: Background Music

h: Abbreviated Dial Access

0 = 2-digit index number
(90 entries maximum)
1 = 3-digit index number
(900 entries maximum)

Note: When the value of this field is changed, all previous Abbreviated Dial entries are erased.

i: RESERVED

COMMAND 100 SYSTEM OPTIONS (CONT'D)

Features Selection 2

a	b	c	d	e	f	g	h	i
1	0	1	0	0	0	0	0	0

0 = Disable, 1 = Enable
unless indicated otherwise

c: Automatic Wake-Up

0 = Disable
1 = Enable with Wake-Up tone
2 = Enable with Music
3 = Enable with Intercept to RAD

d: Automatic Wake-Up Printout

e: Message Register Audit

0 = Disable
1 = Enable
2 = Enable with clearing of
Message Registers

f: Use Of Hash (#) For Trunks

0 = Enable Tone-to-Pulse Override on
Trunks
1 = Enable End-of-Dial

g: Proportional Call Charging

0 = Charge to Originating Extension Only
1 = Charge to All Parties involved in the
Call

h: RESERVED

i: Room Status Printout

COMMAND 100 SYSTEM OPTIONS (CONT'D)

Timeout Selection

a	b	c	d	e	f	g	h
1	1	3	3	3	3	1	1

c: Timed Recall - Camp-On (Trunks)

1 - 7 X 10 seconds

d: Timed Recall - No Answer

1 - 7 X 10 seconds

e: Timed Recall - Call Hold (Extension)

1 - 4 X 1 minute

f: Timed Recall - Call Hold (Attendant)

1 - 7 X 10 seconds

g: Call Forward No Answer Timeout

1 - 7 X 10 seconds

h: Drop Unanswered Trunks After 5 Minutes

0 = Disable, 1 = Enable

COMMAND 100 SYSTEM OPTIONS (CONT'D)**Message Waiting**

a	b	c	d	e	f
1	2	2	1	3	1

c: Message Waiting System Enable

0 = Disable

1 = Enable with Lamps

2 = Enable with Bells

3 = Enable with 30-second Manual Line

d: Message Waiting Indication

0 = Always

1 = During Day Service Only

e: Message Waiting Indication Interval

(1 - 4) X 5 minutes

f: Message Waiting Automatic Cancel

0 = Disable, 1 = Enable

COMMAND 100 SYSTEM OPTIONS (CONT'D)

Automatic Route Selection (ARS)

a	b	c	d	e	f	g	h	i	j
1	3	0	0	0	0	0	0	1	0

0 = Disable, 1 = Enable
unless indicated otherwise

c: ARS Enable

d: ARS Attendant Bypass

e: ARS Alarms

f: ARS Return Dial Tone

g: Expensive Route Warning Tone

h: Attendant ARS Routing Class of Service (RCS)

0 = ARS Does Not Apply
1 = RCS 1
2 = RCS 2
3 = RCS 3

i: ARS Interdigit Timeout

0 = 5 seconds
1 = 10 seconds

j: Abbreviated Dial ARS Bypass

COMMAND 100 SYSTEM OPTIONS (CONT'D)**System Message Detail Recording (SMDR)**

a	b	c	d	e	f	g	h	i	j	k
1	4	0	0	0	0	0	0	0	0	0

0 = Disable, 1 = Enable
unless indicated otherwise

c: SMDR System Enable

0 = Disable
1 = Enable Incoming Trunks Calls Only
2 = Enable Outgoing Trunks Calls Only
3 = Enable Both Incoming and Outgoing
Trunk Calls

d: Record Meter Pulses**e: Long Call Indicator****f: Incoming Calls Record Only COs****g: Drop Calls Of Less Than 8 Digits****h: Drop Incomplete Outgoing Calls****i: Overwrite Queued Printer Buffer****j: SMDR X Digits Dialed - 1 - 7**

0 = Disable

Note: This field applies to outgoing calls only.

k: VAC Overwrite Account Code

0 = Priority to Verified Authorization Code
(VAC) printing
1 = Priority to Account Code printing

COMMAND 100 SYSTEM OPTIONS (CONT'D)

Account Code Control

a	b	c	d	e
1	5	0	0	0

c: Number of Digits (maximum if Variable Length enabled)

1 - 8

0 = Disable Account Codes

d: Variable Length Account Codes

0 = Disable, 1 = Enable

e: Verified Authorization Codes

1 - 8 Digits

0 = Disable

COMMAND 100 SYSTEM OPTIONS (CONT'D)**Printer Control**

a	b	c	d	e	f	g	h
1	6	0	4	0	8	1	0

0 = Disable, 1 = Enable
unless indicated otherwise

c: Data Demultiplexer Enable

d: Printer Baud Rate

0 = 110 5 = 1800
1 = 150 6 = 2400
2 = 300 7 = 4800
3 = 600 8 = 9600
4 = 1200

e: Printer Parity

0 = None
1 = Odd
2 = Even

f: Number of Tx Bits 5 - 8

g: Number of Stop Bits 1 or 2

h: Slow Carriage Return Option

0 = Disable
1 = Output Six Nulls at End-of-Line

COMMAND 100 SYSTEM OPTIONS (CONT'D)

Contact Monitor

a	b	c	d	e
1	7	0	0	0

c,d,e: Contact Monitor Night Answer Point

(During Attendant Inhibit or Night Service)

000 = Console

001 - 160 = Station Equipment Number

161 = Night Bell

COMMAND 110 FEATURE ACCESS CODES

a	b	c	d	e	f	
0	1	0				DIAL ACCESS TO ATTENDANT
0	2	5	0			PAGING ACCESS
0	3	5	1			CALL HOLD
0	4	5	2			CALL HOLD RETRIEVE - LOCAL
0	5	5	3			CALL HOLD RETRIEVE - REMOTE
0	6	5	4			DIAL CALL PICKUP
0	7	5	5			SYSTEM ABBREVIATED DIAL ACCESS
0	8	5	6			CALL FORWARD - FOLLOW ME
0	9	5	7			TAFAS PICKUP
1	0	5	8			CALL FORWARD - NO ANSWER
1	1	5	9			CALL FORWARD - BUSY
1	2	6	0			CALL FWD - BUSY/NO ANSWER
1	3	7	0			PROGRAMMING ACCESS

c - f: Access Code

COMMAND 110 FEATURE ACCESS CODES (CONT'D)

a	b	c	d	e	f	
1	4	7	1			ATTENDANT FUNCTIONS
1	5	4	4	4		CLEAR ALL FEATURES
1	8	4	5	1		CALL PARK (ATTENDANT) 1
1	7	4	5	2		CALL PARK (ATTENDANT) 2
1	8	4	5	3		CALL PARK (ATTENDANT) 3
1	9	4	9	1		HUNT GROUP 1 ACCESS
2	0	4	9	2		HUNT GROUP 2 ACCESS
2	1	4	9	3		HUNT GROUP 3 ACCESS
2	2	4	9	4		HUNT GROUP 4 ACCESS
2	3	4	9	5		HUNT GROUP 5 ACCESS
2	4	4	9	6		HUNT GROUP 6 ACCESS
2	5	4	9	7		RING GROUP ACCESS
2	6	4	9	8		RMATS MODEM ACCESS

c - f: Access Code

COMMAND 110 FEATURE ACCESS CODES (CONT'D)

a	b	c	d	e	f	
2	7					RESERVED
2	8	7	5			ACCOUNT CODE ENTRY
2	9	7	6			RESERVED
3	0	6	1			DIRECTED/ATT CALL PICKUP
3	1	7	4	7		MAID IN ROOM
3	2	6	2			CALLBACK SETUP
3	3	6	3			DO NOT DISTURB
3	4	6	4			HUNT GROUP LOGIN/LOGOUT
3	5					DID LDN 1 ACCESS
3	6					DID LDN 2 ACCESS
3	7					DID LDN 3 ACCESS
3	8	6	5			ONS MESSAGE WTG CALLBACK
3	9	6	6			ONS CANCEL MESSAGE WAITING
4	0	6	7			VAC ACCESS
4	1	6	9			WAKEUP FROM EXTENSION
		7	2			<i>Message Send.</i>

c - f: Access Code

COMMANDS 121 - 129 CLASSES OF SERVICE 1 - 9

Register 1

a	b	c	d	e	f	g	h	i	j
1	1	1	1	1	1	1	0	0	1

0 = Disable, 1 = Enable
 unless indicated otherwise

- b: Trunk Group 1 Access
- c: Trunk Group 2 Access
- d: Trunk Group 3 Access
- e: Trunk Group 4 Access
- f: Trunk Group 5 Access
- g: Trunk Group 6 Access
- h: Trunk Group Overflow Access
- i: RESERVED
- j: Authorized Trunk to Trunk Connection

**COMMANDS 121 - 129 CLASSES OF SERVICE 1 - 9
(CONT'D)**
Register 2

a	b	c	d	e	f	g	h	i	j	k
2	1	1	0	0	0	1	0	0	0	0

0 = Disable, 1 = Enable
unless indicated otherwise

b: Switchhook/Ground Button Flash

0 = Disable
1 = Flash For Consultation Hold
2 = Flash For Test Line/Attendant

c: Call Direction

0 = Originate only
1 = Bothway calling
2 = Receive Only

d: Automatic Ringdown Circuit
e: DISA Access Code Required

0 = Disable
1 = Enable
2 = Special DISA / Verified
Authorization Code Required

f: Message Registration / Restrictive Station Control

0 = Disable both
1 = Enable restrictive station control only
2 = Enable message registration only
3 = Enable both

g: Message Waiting
h: Rotary Only (DISA E&M trunks only)

i: RESERVED

j: SUPERSET 4 Headset Operation

k: Do Not Disturb

**COMMANDS 121 - 129 CLASSES OF SERVICE 1 - 9
(CONT'D)**
Register 3

a	b	c	d	e	f	g	h	i	j	k
3	1	1	0	1	0	1	0	0	1	0

0 = Disable, 1 = Enable
unless indicated otherwise

b: Automatic Callback Busy/No Answer

c: Paging Access

d: Data Line Security

e: Call Hold

f: Call Block

g: TAFAS Access

0 = Disable

1 = Enable Pickup From Night Bells

2 = Enable Pickup From Night
Bells/Attendant

h: COS SMDR

i: Room Status

j: ONS Callback No Answer Activation During
Ringback

k: Voice Mail Port

0 = Disable

1 = Message Optimization Control *

2 = Send Disconnect Tone

* Not available with MS53.

**COMMANDS 121 - 129 CLASSES OF SERVICE 1 - 9
(CONT'D)**

Register 4

a	b	c	d	e	f	g	h	i	j
4	1	1	1	1	0	0	0	0	0

For fields b - e:

- 0 = Disable all Call Forwarding
- 1 = Allow forwarding of trunks or extensions to internal numbers only
- 2 = Allow forwarding of extensions only to internal or external numbers
- 3 = Allow forwarding of trunks or extensions to internal or external numbers

b: Call Forward - Follow Me

c: Call Forward - Busy

d: Call Forward - No Answer

e: Call Forward - Busy/No Answer

For fields f - i: 0 = Disable, 1 = Enable unless indicated otherwise

f: Proceed To Be Call Forwarded Externally

g: Executive Busy Override

- 0 = Disable
- 1 = Enable Except on I/C trunks
- 2 = Enable On All Calls

h: Executive Busy Override Security

i: Associated Modem Line

j: Wake Up From Extensions

**COMMANDS 121 - 129 CLASSES OF SERVICE 1 - 9
(CONT'D)**
Register 5

a	b	c	d	e	f	g	h	i	j	k
5	1	1	1	1	1	1	1	1	1	0

0 = Disable, 1 = Enable
unless indicated otherwise

b: Abbreviated Dial Numbers 10 - 19 or
100 - 199

c: Abbreviated Dial Numbers 20 - 29 or
200 - 299

d: Abbreviated Dial Numbers 30 - 39 or
300 - 399

e: Abbreviated Dial Numbers 40 - 49 or
400 - 499

f: Abbreviated Dial Numbers 50 - 59 or
500 - 599

g: Abbreviated Dial Numbers 60 - 69 or
600 - 699

h: Abbreviated Dial Numbers 70 - 79 or
700 - 799

i: Abbreviated Dial Numbers 80 - 89 or
800 - 899

j: Abbreviated Dial Numbers 90 - 99 or
900 - 999

k: Last Number Redial

**COMMANDS 121 - 129 CLASSES OF SERVICE 1 - 9
(CONT'D)**

Register 6

a	b	c	d
5	0	1	1

0 = Disable, 1 = Enable
unless indicated otherwise

b: NOT USED

c: Outgoing Access To E&M Tie Trunks

d: Outgoing Access To CO Trunks

**COMMANDS 121 - 129 CLASSES OF SERVICE 1 - 9
(CONT'D)****Register 7**

a	b	c	d	e	f	g	h
7	1	0	0	0	0	0	0

0 = Disable, 1 = Enable
unless indicated otherwise

b: SUPERSET 4 Message Programming

c: Account Code Entry

0 = Not allowed

1 = Optional

2 = Required for Toll Calls Only

3 = Required for All Calls (Toll &
Non-Toll)

d: Auxiliary Attendant Position

e: Directed Call Pickup

f: Directed Call Pickup Security

g: Hunt Group Login

h: Lock-out Alarm

**COMMANDS 121 - 129 CLASSES OF SERVICE 1 - 9
(CONT'D)****Register 8**

a	b	c	d	e
8	1	1	1	0

0 = Disable, 1 = Enable
unless indicated otherwise

- b: Extension Camp-on
- c: CO Trunk Camp-on
- d: Inward Dial Trunk Camp-on
- e: DID Restriction

COMMANDS 151 - 156 TRUNK GROUPS 1 - 6**Register 1**

a	b	c	d	e	f	g	h	i
1	0	0	0	0	-	-	-	-

b: Trunk Select (0 = Automatic)

c: Type of Hunting

0 = Circular, 1 = Terminal

d: Overflow Trunk Group 1 - 6

0 = Disable

e: Identified Trunk Group

0 = Disable, 1 = Enable

f - i: Trunk Group Access Code

Defaults:

Cmd 151 = 9, Cmd 152 = 8,

Cmd 153 = 78, Cmd 154 = 79

Cmd 155 = blank, Cmd 156 = blank

**COMMANDS 151 - 156 TRUNK GROUPS 1 - 6
(CONT'D)**

Register 2

a	b	c	d	e	f	g	h	i	j	k
2	0	0	2	0	0	0	0	0	0	0

0 = Disable, 1 = Enable
unless indicated otherwise

b: Wait For Dial Tone

- 0 = No wait, outpulse after delay
- 1 = Wait up to 5 seconds, then outpulse anyway
- 2 = Check for dial tone every 5 seconds
- 3 = Unlimited wait with detection by user

c: Dial Tone Detection Timing

0 = 120 ms required, 1 = 40 ms required

d: Delay Before Outpulsing 1 - 5 seconds

Note: Wait for Dial Tone must be set to 0.

e: Answer Supervision

- 0 = No Answer Supervision
- 1 = Supervision is Meter Pulse or Reversal
- 2 = Ignore Supervision except for Toll Restriction
- 3 = Supervision is Meter Pulse, Ignore Reversals

f: Restrict On External Calls On Reversals

g: DTMF or Rotary Outpulsing

0 = DTMF, 1 = Rotary

2 = Rotary, Disable Outgoing Audio Until Answer

3 = Rotary, Inhibit DTMF Until Answer

h: Simulate CO Dial Tone

i: Trunk Group SMDR Enable

j: Trunk Group Last Number Redial

k: Trunk Group Manual E&M Trunk

**COMMANDS 151 - 156 TRUNK GROUPS 1 - 6
(CONT'D)**

Register 3

a	b	c	d	e	f	g	h
3	0	0	0	0	0	1	3

b: Message Registration

0 = Disable, 1 = Enable

c: Count Additional Message Units

0 = Disable, 1 = Enable

2 = Enable, Insert Pseudo Message Unit every 6 Seconds

3 = Enable, Insert Pseudo Message Unit every 60 Seconds

d,e: Initial Message Unit Charge

00 - 99 Units

f,g: Additional Message Unit Charge

00 - 99 Units

h: Pseudo Answer Timer 1 - 7 X 10 seconds

**COMMANDS 151 - 156 TRUNK GROUPS 1 - 6
(CONT'D)****Register 4**

a	b	c	d	e
4	0	0	0	0

b: Sending Answer On Incoming Dial Trunks

- 0 = Send Answer When Answer Received
(Supervision is Answer Only)
- 1 = Send Answer After End of Dialing
(Time-out)
- 2 = Send Answer Upon Accessing Outgoing Trunk

c: Behind PABX Operation

- 0 = Disable
- 1 = Enable, Flash is Loop Disconnect
- 2 = Enable, Flash is Ring Ground

d: Behind PBX Recall Signal Duration

- 0 = 500 ms, 1 = 750 ms

e: Credit Card Calling Operation

- 0 = Disable, 1 = Enable

COMMAND 180 USER PROGRAMMING ACCESS

Register 1

a	b	c	d	e	f	g
1	0	0	0	0	0	0

0 = Disable, 1 = Enable
unless indicated otherwise

b: Command 100, System Options

c: Commands 121 - 129, COS Programming

d: Command 110, Feature access Codes

e: Commands 301 - 310, Extension Programming

f: Commands 321 - 330, Block Programming -
Extension Numbering

g: Commands 341 - 350, Block Programming -
Extension Memberships

**COMMAND 180 USER PROGRAMMING ACCESS
(CONT'D)****Register 2**

a	b	c	d	e	f	g	h
2	0	0	0	0	0	0	0

0 = Disable, 1 = Enable
unless indicated otherwise

- b: Commands 361 - 366, Extension Hunting
- c: Command 381, Ring Group Programming
- d: Commands 401 - 480, SUPERSET Telephone Programming
- e: Commands 501 - 580, Trunk Programming
- f: Commands 151 - 156, Trunk Group Programming
- g: Commands 700 - 752, ARS Data Table Programming
- h: Command 600, Verified Authorization Codes Programming

**COMMAND 180 USER PROGRAMMING ACCESS
(CONT'D)**

Register 3

a	b	c	d	e	f
3	0	0	0	0	0

**0 = Disable, 1 = Enable
unless indicated otherwise**

b: Command 185, Function Key Programming

c: Command 190, System Security Programming

d: Command 191, User Security Code Programming

e: Command 193, DISA Access Code Programming

f: Command 192, RMATS Security Code Programming

Note: Fields **c** and **f** should be always disabled.

COMMAND 185 ATTENDANT CONSOLE FUNCTION KEYS

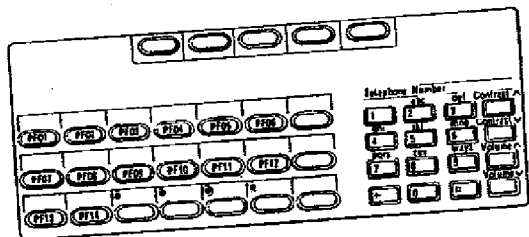
a	b	c	d	
0	1	1	0	FUNCTION key
0	2	1	4	STATUS key
0	3	0	7	TRUNK key
0	4	0	4	CALL BLOCK key
0	5	0	5	OVERFLOW key
0	6	0	3	PAGE key
0	7	0	6	WAKE-UP key
0	8	0	1	MSG REG key
0	9	0	2	OVERRIDE key
1	0	0	9	MESSAGE key
1	1	1	5	<u>BOTH</u> key
1	2	1	3	SWAP key
1	3	1	1	BELL key
1	4	1	2	NIGHT key

**COMMAND 185 ATTENDANT CONSOLE FUNCTION
KEYS (CONT'D)**

a,b: Key Number (1-14)

c,d: Key Function:

- 00 = Unassigned
- 01 = Message Registration /Restrictive
Station Control
- 02 = Override
- 03 = Page
- 04 = Call Block
- 05 = TAFAS Overflow
- 06 = Automatic Wake-up
- 07 = Trunk Status
- 08 = Account Code Entry
- 09 = Message Waiting
- 10 = Function
- 11 = Bell Mute
- 12 = Night
- 13 = Swap/Split
- 14 = Status
- 15 = Both
- 16 = Room Status
- 17 = Do Not Disturb
- 18 = Attendant Tone Signaling
- 19 = Restrict DID
- 20 = Verified Authorization Code
- 21 = Attendant Call Pickup



KA0931R0E0

Figure 6-1 Programmable Function Keys

COMMAND 180 SYSTEM SECURITY CODE

Register 1

a	b	c	d	e
1	7	7	7	2

b: System Security Code 1st Digit

c: System Security Code 2nd Digit

d: System Security Code 3rd Digit

e: System Security Code 4th Digit

0 - 9

**COMMAND 191 USER SECURITY CODE
PROGRAMMING****Register 1**

a	b	c	d	e
1	1	2	3	4

b: User Security Code 1st Digit

c: User Security Code 2nd Digit

d: User Security Code 3rd Digit

e: User Security Code 4th Digit

0 - 9

COMMAND 192 RMATS SECURITY CODE

Register 1

a	b	c	d	e	f
1	0	2	4	6	8

b: RMATS Security Code 1st Digit

c: RMATS Security Code 2nd Digit

d: RMATS Security Code 3rd Digit

e: RMATS Security Code 4th Digit

f: RMATS Security Code 5th Digit

0 - 9

Register 2

a	b	c	d	e	f
2	1	3	5	7	9

b: RMATS Security Code 6th Digit

c: RMATS Security Code 7th Digit

d: RMATS Security Code 8th Digit

e: RMATS Security Code 9th Digit

f: RMATS Security Code 10th Digit

0 - 9

COMMAND 193 DISA ACCESS CODE**Register 1**

a	b	c	d
1	0	0	0

b: DISA Access Code 1st Digit

c: DISA Access Code 2nd Digit

d: DISA Access Code 3rd Digit

0 - 9

Note: Callers on a DISA Trunk with DISA Access Code Required enabled in its Class of Service must enter the Access Code. By default, the DISA Access Code is not required and callers have immediate access to SX-50 system features.

COMMANDS 301 - 310 EXTENSIONS

a	b	c	d	e	f	g	h	i	j	k	l
.	.	0	1	0	1	0	0	-	-	-	-

a,b: Circuit number
01 - 16 (01 - 08 for COV Card)

Note: Even circuit numbers are invalid for the OPS Line Card.

c: Extension Type
0 = Extension
1 = Contact Monitor
2 - 9 = Hotline Groups 2 - 9

d: Class of Service 1 - 9
0 = No Class of Service

e: Allow Attendant to Change Extension COS
0 = Not Allowed, 1 = Allowed

f: Pickup Group 1 - 7
0 = No Pickup Group

g: ARS Routing Class of Service (RCS)
0 = ARS Does not Apply
1 = RCS 1
2 = RCS 2
3 = RCS 3
4 = Attendant Selectable RCS

h: OPS Loop Length (no effect on ONS circuits)
0 = Short (under 2 km)
1 = Long (over 2 km)

l - l: Extension Number 1 - 9999

**COMMANDS 321 - 330 BLOCK EXTENSION
NUMBERING**

a	b	c	d	e	f	g	h
0	1	0	1	-	-	-	-

a,b: Circuit number of First Extension in Block
01 - 16

c,d: Circuit number of Last Extension in Block
01 - 16

e - h: Extension Number of First Circuit in Block

COMMANDS 341 - 350 BLOCK EXTENSION MEMBERSHIPS

a	b	c	d	e	f	g	h
0	1	0	1	1	1	0	0

a,b: Circuit number of First Extension in Block
01 - 16

c,d: Circuit number of Last Extension in Block
01 - 16

e: Class of Service 1 - 9
0 = No Class of Service

f: Pickup Group 1 - 7
0 = No Pickup Group

g: ARS Routing Class of Service
0 = ARS Does not Apply
1 = RCS 1
2 = RCS 2
3 = RCS 3
4 = Attendant Selectable RCS

h: OPS Loop Length
0 = Short (under 2 km)
1 = Long (over 2 km)

COMMANDS 361 - 366 EXTENSION HUNT GROUPS

a	b	c
1	0	0

b: Hunt Type

- 0 = Circular
- 1 = Terminal

c: Hunt Group Linking

- 0 = Unlinked
- 1 - 6 = Link to Hunt Group 1 - 6

a	b	c	d	e

a: Hunt Group Member Number 2 - 9

b - e: Hunt Group Member Extension Number

COMMAND 381 EXTENSION RING GROUP

a	b	c	d	e

a: Ring Group Member Number 1 - 9

b - e: Extension Number 1 - 9999

COMMANDS 401 - 480 SUPERSET TELEPHONE LINES

a	b	c	d	e	f	g	h	i
.	.	*	1	1	-	-	-	-

*1 for Key Number 01,
0 for keys numbered 02 - 15

a,b: SUPERSET Telephone Key Number

c: Line Appearance Type

- 0 = Speed Dial Key
- 1 = Prime Line
- 2 = Key Line,
- 3 = Multiple Call Line
- 4 = Direct Trunk Select
- 5 = Direct Line Select
- 6 = Private Line
- 7 = Personal Outgoing line
- 8 = Attendant Function Key (Auxiliary Attendant only)
- 9 = Message Waiting Key (Programmable on Key 03 only and valid on SUPERSET 3 Sets only)

d: Ringing Type

(Line Appearance Type ≠ 0 or 8)

- 0 = No Ring
- 1 = Immediate Ring
- 2 = Delay Ring

e: Call Direction

(Line Appearance Type ≠ 0 or 8)

- 0 = Originate Only
- 1 = Bothway Calling
- 2 = Receive Only

**d.e: Attendant Function Key
(Line Appearance Type = 8 only)**

- 01 = DIAL 0
- 02 = DO NOT DISTURB
- 03 = RECALL
- 04 = HOLD 1
- 05 = HOLD 2
- 06 = HOLD 3
- 07 = LDN 1
- 08 = LDN 2
- 09 = LDN 3
- 10 = MESSAGE WAITING
- 11 = MSG REGISTER
- 12 = NIGHT SERVICE
- 13 = OVERFLOW

Note: A maximum of five appearances of each Auxiliary Attendant function key can be programmed on the SX-50 DPABX.

f - i: Extension Or Trunk Number

**Extension Number for line Types 1, 2, 3 & 7
Trunk Number for Line Types 4, 5 & 6**

COMMANDS 501 - 580 TRUNKS 01 - 80

Register 1

a	b	c	d	e	f	g	h	i	j	
1	1	1	1	1	0	1	0	1	0	CO
1	2	1	3	1	0	1	0	2	1	E&M
1	0	1	6	1	0	1	0	3	2	DID

0 = Disable, 1 = Enable
unless indicated otherwise

b: Trunk Group Membership 1 - 6
(0 = Incoming Calls Only)

c: Trunk Alarm Control

d: Trunk Hardware Type

- 0 = Short Analog CO Trunk
- 1 = Long Analog CO Trunk
- 2 = Analog Toll Office
- 3 = Analog Tie Trunk
- 4 = Satellite Tie Trunk
- 5 = Short Analog DID Trunk
- 6 = Long Analog DID Trunk

e: Trunk Class of Service 1 - 9

f: Inward Dial Delay Before Answer (8 sec)

Note: This applies to all trunk types.

g: Connect to Outgoing Trunk without
Third Party

h: Inward Dial ARS Routing Class Of Service

1 - 3

0 = ARS Does Not Apply

I: Trunk Use

- 0 = Disabled
- 1 = Used as a CO
- 2 = Used as an E&M Trunk
- 3 = Used as a DID Trunk

J: Trunk Dialing Type

- 0 = DIL, 1 = DISA, 2 = DID

COMMANDS 501 - 580 TRUNKS 01 - 80 (CONT'D)**Register 2**

a	b	c	d	e	f	g	h	i
2	0	0	0	0	1	0	0	1

b: Trunk Outpulsing Make/break Ratio

0 = 60/40, 1 = 65/35, 2 = 30/20, 3 = 35/15

c: Disconnect Supervision Guaranteed?

0 = No, 1 = Yes

d: Disappearance of Reversal

0 = Is Ignored, 1 = means Disconnect

e: Reversal Meaning On Call Origination

0 = Not Incoming Call, 1 = Incoming Call

f: Disconnect Timing

0 = 60 msec 3 = 4.0 sec

1 = 500 msec 4 = 10.0 sec

2 = 1.5 sec 5 = Disconnect Ignored

g: Start Type (CO Trunks)

0 = Loop Start, 1 = Ground Start

h,i: Trunk Hang-up Delay (Guard) Timer

01 - 16 seconds

COMMANDS 501 - 580 TRUNKS 01 - 80 (CONT'D)

Register 3

a	b	c	d	e	f	g
3	1	2	0	0	0	2

0 = Disable, 1 = Enable
unless indicated otherwise

b: Tie Line Disconnect Timer

0 = 150 ms
1 = 300 ms

c: E&M Lead Inversion	Type 1	Type 5
	0 = M-Lead	None
	1 = Both	E-Lead
	2 = None	M-Lead
	3 = E-Lead	Both

d: E&M Delay Dial Outgoing

e: E&M Wink Start Incoming

f: E&M Wink Start Outgoing

g: RESERVED

**TABLE 6-5
E&M MODULE SWITCH FUNCTIONS**

Switch	Function
1	OPEN - PBX to Line = +3 dB CLOSED - PBX to Line = -13 dB
2	OPEN - Line to PBX = -4 dB CLOSED - Line to PBX = -11 dB
3	OPEN - Complex Balance Enabled CLOSED - 600 Ohm Balance Enabled
4	OPEN - 600 Ohm Balance Enabled CLOSED - Complex Balance Enabled
5	OPEN - 4-Wire Operation CLOSED - 2-Wire Operation
6	OPEN - Type 5 Signaling CLOSED - Type 1 Signaling
7	NOT USED
8	NOT USED

Note: The settings of Switch 3 and Switch 4 must agree. It is not possible to have both 600 Ohm Balance and Complex Balance enabled simultaneously.

COMMANDS 501 - 580 TRUNKS 01 - 80 (CONT'D)

Register 4

a	b	c	d	e	f	g	h	i	j	k
4	0	5	1	0	0	1	0	0	0	#

#: 0 for CO and DID, 1 for E&M

0 = Disable, 1 = Enable
unless indicated otherwise

b: Dictation Trunk (for LS/GS Trunks)

c: Inter-ringing Delay (for LS/GS Trunks)
3 - 9 seconds

d: Day Answer Mode

or

Day Illegal Number Intercept (DID/DISA)

0 = Direct-In Line

1 = LDN 1

2 = LDN 2

3 = LDN 3

e,f,g: Day Answer Point (Day Answer Mode = 0)

or

Day Inward Dial Trunk Intercept Answer
Point (DID/DISA)

000 = Night Bell

001 - 160 = Station Number

161 - 166 = Hunt Group Number

167 = Ring Group

168 = RMATS

h: Busy Intercept

i: Do Not Disturb Intercept

j: No Answer Intercept

k: Illegal/Vacant Number Intercept

COMMANDS 501 - 580 TRUNKS 01 - 80 (CONT'D)

Register 5

a	b	c	d	e	f
5	0	0	0	0	0

0 = Disable, 1 = Enable
unless indicated otherwise

b: Night Answer Mode

or

Night Inward Dial Trunk Intercept (DID/DISA)

0 = Flexible Night Service

1 = LDN 1, 2 = LDN 2, 3 = LDN 3

c,d,e: Night Answer Point

(Night Answer Mode = 0)

or

Night Inward Dial Trunk Intercept Answer
Point (DID/DISA)

000 = Night Bell

001 - 160 = Station Number

161 - 166 = Hunt Group Number

167 = Ring Group

168 = RMATS

f: DID Night Answer Point

COMMANDS 501 - 580 TRUNKS 01 - 80 (CONT'D)

a	b	c	d	e	f	g	h	i	j
6	1	1	0	4	1				

0 = Disable, 1 = Enable
unless indicated otherwise

b: DID Start Type

0 = Immediate Start
1 = Wink Start
2 = Delay Dial

c: RESERVED

d: Incoming Address Signaling

0 = Loop-Dial Pulsing
1 = Battery-and-Ground Pulsing
2 = DTMF

e: N : Number Of Digits Expected (1 - 9)

f: M : Number Of Digits To Be Absorbed (0 - 8)

g - j: X : Digits To Be Inserted

COMMANDS 501 - 580 TRUNKS 01 - 80 (CONT'D)

Register 7

a	b	c	d	e	f	g	h	i
7	0	2	4	3	3	0	2	0

b,c: Incoming Seizure Debounce Timer

(01 - 15) x 10 ms

d: Wink Timer (3 - 6) x 50 ms

e: Permanent-Signal Partial-Dial Timer

(1 - 6) x 5 sec

f: DID Disconnect Timer (3 - 6) x 50 ms

g - i: Release Acknowledge Timer 002 - 120 sec

COMMAND 800 VERIFIED AUTHORIZATION CODES (VAC) PROGRAMMING

a	b	c	d	e	f	g	h	i	j	k	l	m	n
-	-	-	0	0	0	-	-	-	-	-	-	-	-

a,b,c: Register Number

001 - 999

d: VAC Activation

0 = Disable, 1 = Enable

e: COS for Authorization Code

1 - 9 = COS (for VAC)

0 = Disable

f: ARS Routing Number

1 - 3 = ARS RCS (for VAC)

0 = Disable

blank = Original RCS Number of Calling Device

g - n: Authorization Code (1 to 8 digits)

COMMAND 700 ARS DIGIT COMPARISON TABLE

a	b	c	d	e	f	g → l	m
.	[]

a,b,c: Entry Number 001 - 800

d,e: Time-of-Day Table Number 01 - 45

g - l: Dialed Digits String
(field scrolls to show up to 32 digits)

COMMANDS 701 - 745: ARS TIME-OF-DAY TABLE

a	b	c	d	e	f	g	h	i	j	k	l	m	n
.	-	-	-	-	0	0	0	0	0	0	0	0	0

a: Period Number 1 - 6

b,c: Start Hour 00 - 23

d,e: Start Minute 00 - 59

f,g,h: RCS 1 Route List | 001 - 200

i,j,k: RCS 2 Route List | 000 = access

l,m,n: RCS 3 Route List | restricted

COMMAND 750 ARS ROUTE LIST TABLE

a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
.	.	.	-	-	-	-	-	-	-	-	-	-	-	-

a,b,c: Route List Number 001 - 200

d,e,f: 1st Choice Route Number

g,h,i: 2nd Choice Route Number

j,k,l: 3rd Choice Route Number

m,n,o: 4th Choice Route Number

COMMAND 751 ARS ROUTE TABLE

a	b	c	d	e	f	g	h
.	.	.	0	0	0	0	0

a,b,c: Route Number 001 - 100

d: Trunk Group Number 1 - 6

e,f,g: Digit Modification Entry Number
001 - 100

h: Toll Calls (Req'd for Account Code Bypass)

0 = Non-Toll

1 = Toll

COMMAND 752 ARS DIGIT MODIFICATION TABLE

a	b	c	d	e	f	g - l	m
.	[- -]

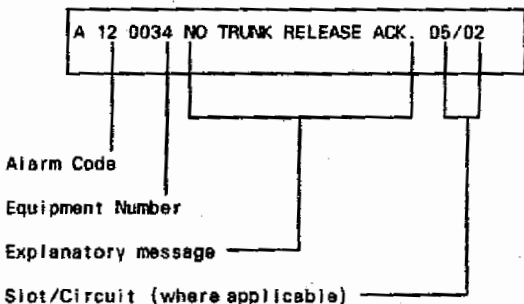
a,b,c: Digit Modification Number 001 - 100

d,e: Number of Digits to be Deleted 00 - 32

g - l: Digits to Insert (maximum of 32 digits)

7. PROGRAMMING ERRORS

Alarm Messages have the following format:



The 7-segment Status Display LED is located at the right edge of the Control Card, under the cover. A flashing digit shows the number of alarms in the alarm queue. 0 is displayed if there are no alarms. After a power-up or reset the display can show a steadily lit digit. This is an alarm code. Only codes 3, 4 or 5 indicate a fatal alarm which prevents the system from functioning. (See Table 9-1, Troubleshooting - Alarm Codes).

**TABLE 7-1
PROGRAMMING ERROR CODES**

Error Code	Description
E01	Illegal Command Identity
E02	Digit keyed while Access Mode Error displayed.
E03	Directory Number already exists.
E04	Data out of range
E05	Illegal Directory Number length
E06	Directory Number range insufficient
E07	Too many digits keyed
E08	Illegal Device range
E09	Write protected command
E10	Insufficient software package level
E11	Write protected data
E12	Data field incomplete
E13	RESERVED
E14	Maximum Limit Exceeded
E15	Hunt Groups linked into a loop; e.g, linked Group 1 to Group 6 then linked Group 6 to Group 1.
E16	Duplicate assignment of Programmable Function Key
E17	Attempt to program non-idle key.
E18	SUPERSET Telephone Prime Line Programming Error
E20	Invalid double-digit command
E21	Directory number already in Ring Group

**TABLE 7-1 (CONT'D)
PROGRAMMING ERROR CODES**

Error Code	Description
E22	Device must be an extension.
E23	ARS Busy - Calls In progress
E24	Digit String already programmed
E25	Digit String register overflow
E26	No Digit String entered
E27	Digit area is full.
E28	The start time entered for this time period is earlier than or equal to the start time of the preceding period. Time periods must be entered in ascending order.
E29	The start time entered for this time period is later than the start time of the next period. Time periods must be entered in ascending order.
E30	RESERVED
E31	Attempt to program a DTS, DLS or Private Line in SUPERSET Telephone Programming when the trunk is not assigned to a Trunk Group. Refer to Commands 501 - 580, Trunk Programming.
E32	SUPERSET 4 Telephone key type conflict
E33	Attempt to display System Security Code.
E34	Attempt to display User Security Code.
E35	Attempt to display DISA Access Code.
E36	RESERVED
E37	Specified card type not found in slot position.
E38	Attempt to overflow current Trunk Group.
E39	Invalid Trunk Number keyed

**TABLE 7-1 (CONT'D)
PROGRAMMING ERROR CODES**

Error Code	Description
E40	Invalid Auxiliary Attendant Equipment (must be a SUPERSET 4 Telephone).
E41	Auxiliary Attendant not Idle
E42	Auxiliary Attendant programming conflict
E43	Invalid base Directory Number (Occurs when programming Commands 301 - 310).
E44	Invalid Directory Number (Occurs when programming Commands 321 - 330).
E45	Contact monitor conflict. Attempted to assign as an answer point an ONS circuit programmed as a contact monitor.
E46	VAC Length Conflict. Attempted to change length of VAC before deleting all existing VACs.

8. ATTENDANT AND MAINTENANCE FUNCTIONS

TABLE B-1
ATTENDANT AND MAINTENANCE FUNCTIONS

Function	Code
Night Service - ON	*11
Night Service - OFF	*12
Identify Alarm and Clear	*13
Set 12-Hour Clock	*14 + 2-digit hrs, 2-digit minutes
Set 24-Hour Clock	*15 + 2-digit hrs, 2-digit minutes
Lamp Test	*16
Music ON	*17
Music OFF	*18
Access Trunk	*19 + Trunk Eqpt. No.
Trunk Emergency Release	*20 + Trunk Eqpt. No.
Night Answer Point	*21 + Trunk Eqpt No. + Answer Pt. Ext. No.
Message Registration	*22 + Extension Number
Call Block - ON	*23
Call Block - OFF	*24
Change COS	*25
Restore COS	*26
Trunk Meter	*27
Cancel All Message Waiting	*29
Alarm Clear	*31

**TABLE 8-1 (CONT'D)
ATTENDANT AND MAINTENANCE FUNCTIONS**

Function	Code
Cancel All Alarms, Alarm Indicators and Busy-Outs	*32
Busy Out Trunk	*41 + Trunk Eqpt. No.
Busy Out DTMF Generator	*42
Busy Out DTMF Receiver	*43 + DTMF Receiver Number
Busy Out Dial Tone Detector	*44 + Detector No.
Change Verified Authorization Code	*45
Unbusy Trunk	*51 + Trunk Eqpt. No.
Unbusy DTMF Generator	*52
Unbusy DTMF Receiver	*53 + DTMF Receiver Number
Unbusy Dial Tone Detector	*54 + Detector No.
View Abbreviated Dialing Numbers	*60 + index number
Program Abbreviated Dialing Numbers	*65 + Index number
Automatic Wake-Up	*71 + Ext. Number
View Automatic Wake-Up	*72 + Ext. Number
Message Register Audit	*73
Printer - Suspend	*75 + *
Printer - Purge and Suspend	*75 + 0
Printer - Resume	*75 + #

**TABLE B-1 (CONT'D)
ATTENDANT AND MAINTENANCE FUNCTIONS**

Function	Code
Set System Date	*80 + DD-MM-YY
Room Status	*81
Room Status Printout	*82
Do Not Disturb	*85
Alarm Print - Automatic	*90 + 1
Alarm Print - Disable	*90 + 0
Alarm Print - Print Alarm Queue	*90 + #
English Messaging	*91
French Messaging	*92
Data Dump	*97 + System Security Code
Data Load	*98 + System Security Code
System Status Display	#980
Inter-DX Link Display	#981
Station Status Display	#982
<i>SUPERSET</i> Status Display	#983
Trunk Status Display	#984
Install Default Database	#998
Software Identity Display	#999

9. TROUBLESHOOTING - ALARM CODES

TABLE 9-1
TROUBLESHOOTING - ALARM CODES

Code	Cause	Procedure
01	Failed non-volatile RAM test.	Reset system. If alarm persists, replace Generic Module.
02	Checksum error in non-volatile RAM test.	Reload default data, reprogram. If alarm persists, replace Generic Module.
03	Failure in read/write test of non-volatile RAM.	Clear alarm. If alarm persists, replace Generic Module.
04	Checksum error in Peripheral Processor PROM.	Clear alarm. If problem persists, replace Generic Module.
05	Signal Processor failure.	Replace Control Card.
10	Trunk circuit open. Slow Central Office. Incorrect programming of loop/ground start. Trunk card malfunction.	Check trunk by direct access from Attendant console. Check programming. Try another trunk card.
11	Same as above.	Same as above.
12	Central Office interface problem. Trunk card problem.	Check programming. Try another trunk card. If fault persists, contact the telephone company.
13	Extension Ring ground fault.	Check wiring.
20	DX Channel Error on Inter-DX Link.	Reset system. If error recurs, change Control Card.

**TABLE 9-1 (CONT'D)
TROUBLESHOOTING - ALARM CODES**

Code	Cause	Procedure
21	Dial tone detector failed test and has been busied-out.	Follow Peripheral Equipment Troubleshooting Procedure, in Section MITL9104-091-350-NA.
22	Station has failed a loopback test.	Reset system. If error recurs, replace Line Card.
23	Three-party conference circuit failed test.	Reset system. If error recurs, change Control Card.
24	DTMF Receiver failed test and has been busied-out.	Follow Peripheral Equipment Troubleshooting Procedure, in Section MITL9104-091-350-NA.
25	Early Line Split hardware failure.	Follow Peripheral Equipment Troubleshooting Procedure, in Section MITL9104-091-350-NA.
26	DTMF Generator failed and was busied out.	As above.
27	Trunk failed loopback test and is busied out.	Reset system. If error recurs, replace Trunk Card.
28	Console has failed a loopback test.	Check console wiring. Replace console. If problem persists, replace Control Card.

**TABLE 9-1 (CONT'D)
TROUBLESHOOTING - ALARM CODES**

Code	Cause	Procedure
29	Device is not being scheduled correctly.	Report occurrence in Trouble Log. Include details of device, time and operations when alarm occurred.
30	Attempt to enter CDE data value outside of allowed range.	Refer to Section MITL9104-091-210-NA (CDE) for valid data range. Correct entry.
40	Console dead due to hardware failure.	Reset system. Try another console. Replace Control Card.
41	Card is invalid or exceeds system limit for card type.	Check card type limits.
42	Universal Card has failed.	Reset system. Try another Universal Card.
60	An error has occurred during data load.	Retry data load.
61	Communication with printer not possible.	Check connections, data transmission parameters. Ensure printer is ready. Try another printer.
62	Printer queue is full.	Use Alarm Print (*90#) command at console.
63	Automatic Wake-up call has not been answered for the third time.	Ensure extension bell works.
80	ARS Time-of-Day table not programmed.	Program Time-of-Day table.

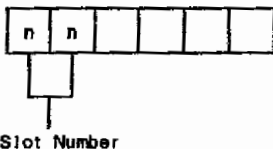
**TABLE 9-1 (CONT'D)
TROUBLESHOOTING - ALARM CODES**

Code	Cause	Procedure
81	ARS Route Priority table not programmed.	Program Route Priority table.
82	ARS Route List not programmed.	Program Route List.
83	ARS Digit Modification Table not programmed.	Program Digit Modification Table.
84	(ARS) Selected trunk group programmed for manual dial tone verification.	Change Trunk Group programming.
85	Set is locked out.	Clear alarms (*32). Replace the set's handset.
86	Recorded Announcement Device has not disconnected after 5 minutes.	Clear alarms (*32). If problem persists, replace RAD.
90	A software error has occurred.	Report in Trouble Log. Include details of time and operations at time of alarm.
93	3 incorrect entries for RMATS security code	Check security code.

RMATS Parameters

9.01 The modem used to access RMATS must have the following characteristics:

- Bell Standard 103 or equivalent
- 300 Baud
- Even parity
- 7 data bits, 2 Stop Bits
- Full Duplex
- Originate mode.

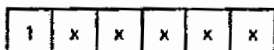
10. TROUBLESHOOTING - COMMAND REGISTERS**COMMAND 900 UNIVERSAL CARD RESET**

When the 'RESET' softkey is pressed, the Universal Card in the slot indicated is reset. This command has no effect on other card types.

Note: Key sequence '*4' is equivalent to 'RESET'.

COMMAND 980 - SYSTEM STATUS DISPLAY

System Status Display shows the status of Dial tone detectors, the Tone Generator, DTMF Receivers and diagnostic tests.

Register 1

Register Number

Status of DTMF Receivers 1-5

0 = idle

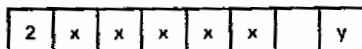
1 = busy

2 = busied-out

- = receiver not equipped

**COMMAND 980 - SYSTEM STATUS DISPLAY
(CONT'D)**

Register 2



Register Number

Status of Dial Tone Detectors 1-4

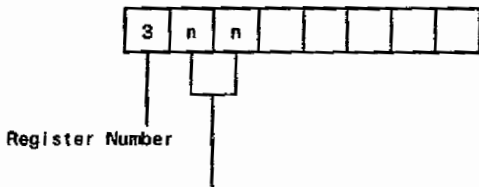
- 0 = idle
- 1 = busy
- 2 = busied-out

Status of Tone Generator

- 0 = idle
- 1 = busy
- 2 = busied-out

**COMMAND 980 - SYSTEM STATUS DISPLAY
(CONT'D)**

Register 3



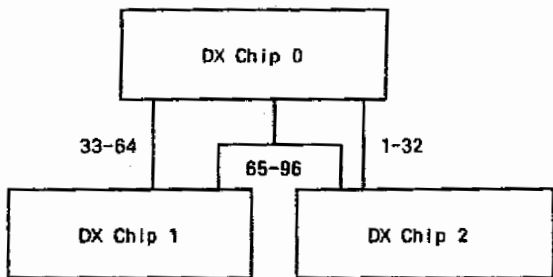
Current Diagnostic Test:

- 0: No test is running
- 1: PROM checksums
- 2: Volatile RAM test
- 3: Non-volatile RAM checksums
- 4: Scheduling diagnostics
- 5: DX diagnostics
- 6: Tone detector diagnostics
- 7: Tone generator diagnostics
- 8: DTMF receiver diagnostics
- 9: Tone detector diagnostics
- 10: Conference diagnostics
- 11: Tone detector diagnostics
- 12: Console diagnostics
- 13: Tone detector diagnostics
- 14: Line/trunk diagnostics
- 15: Inter-DX Lockup Diagnostics

COMMAND 981 - INTER-DX LINK STATUS DISPLAY

This command provides status information on the Inter-DX chip connection links.

Background:



Links 1-32 connect chips 0 and 2.

Links 33-64 connect chips 0 and 1.

Links 65-96 connect chips 0 and 1 or 0 and 2.

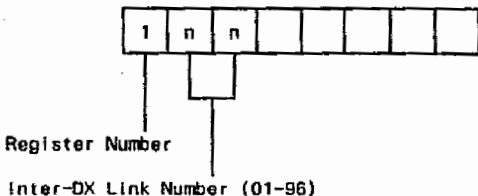
Devices in slots 1 and 2 use DX 0.

Devices in slots 3,4,5 and 6 use DX 1.

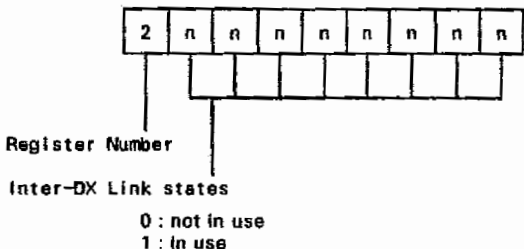
Devices in slots 7,8,9 and 10 use DX 2.

**COMMAND 981 - INTER-DX LINK STATUS DISPLAY
(CONT'D)**

Register 1



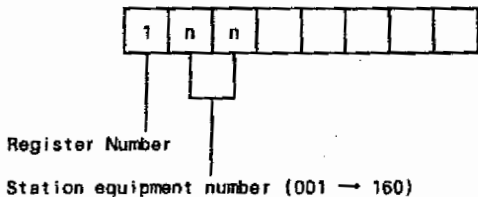
Register 2



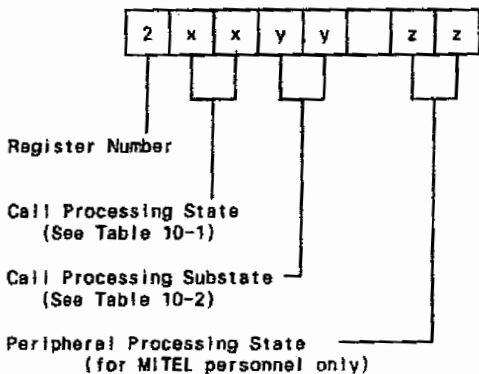
Inter-DX Link states are stored in bytes, so the display shows eight links at a time. The state of the Inter-DX Link actually requested identifies itself by flashing.

COMMAND 982 - STATION STATUS DISPLAY

Register 1



Register 2



**TABLE 10-1
CALL PROCESSING STATE CODES**

Code	State
01	Idle
02	Waiting for a Receiver
03	Signaling
04	Busy
05	Reorder
06	Camped on
07	Held
08	Waiting for Answer
09	Talk
0A	Message Waiting
0B	Calling Back
0C	Trunk Signaling
0D	Automatic Wake-up
0E	Announcement
0F	Message Register Audit
10	Special Set Hard Hold
11	SMDR
12	Wake up Printer Queue

**TABLE 10-2
CALL PROCESSING SUBSTATE CODES**

Code	Substate
14	Wait for line Select (SUPERSET Telephone)
15	Busy Override
16	Swap/call Forward
19	System Administration
1A	Console Functions
1B	Direct Trunk Select
1C	Hold W Voice Indication
1D	Call Hold Pickup
1E	Super Functions
1F	Waiting for DISA Access Code
20	Behind PBX Special Substate
21	Speed Call Set Up
22	Manual Digits Into Speed Call Number
23	Select Trunk Substate
24	Add Held Trunk Signaling
25	Wait For Dial Tone Detector
26	Wait For Dial Tone
27	Wait For Manual Dial Tone Indication
28	Get Receiver
29	Trunk Dialing
2A	Delay Dialing
2B	Wait for trunk Release
2C	Wait for connection
2D	Connected
2E	Auto-Answer

COMMAND 982 - STATION STATUS DISPLAY (CONT'D)

Register 3

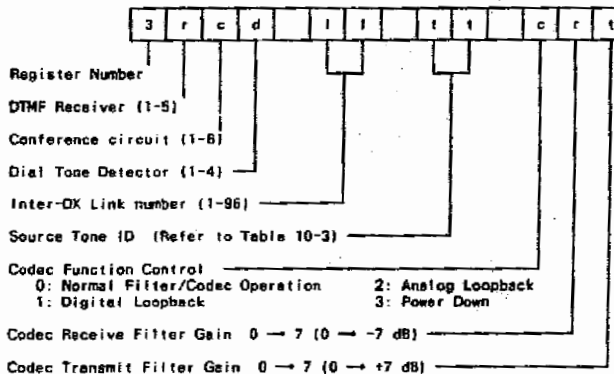
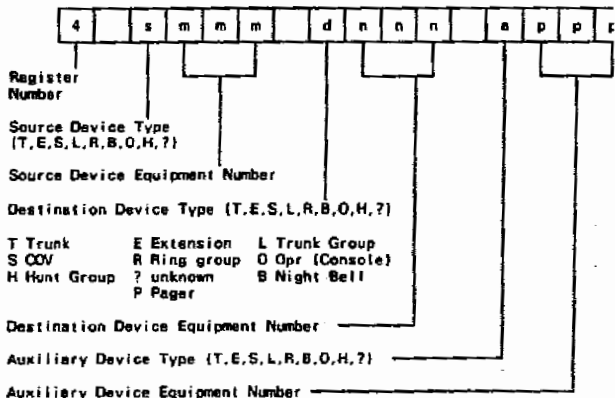


TABLE 10-3
SOURCE TONE TYPES

ID	Tone Type
00	QUIET
01	BUSY
02	RING BACK
03	DIAL TONE
04	REORDER
05	TRANSFER DIAL TONE
06	STATION CAMP-ON
07	TRUNK CAMP-ON
08	DISCONNECT (not used)
09	CAMPED-ON BUSY
10	CALL FORWARD FOLLOW ME DIAL TONE
11	EXECUTIVE BUSY OVERRIDE SIGNAL
12	DIAL TONE PROMPT
13	BEHIND PBX DIAL TONE
14	AUTOMATIC WAKE-UP TONE

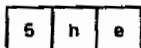
**COMMAND 982 - STATION STATUS DISPLAY
(CONT'D)**

Register 4



**COMMAND 982 - STATION STATUS DISPLAY
(CONT'D)**

Register 5



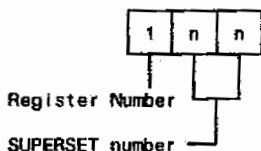
Register Number

Station Condition

- 0 = on-hook
- 1 = off-hook

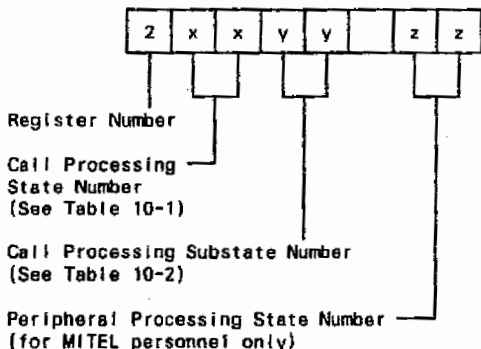
European Ground Button

- 0 = down
- 1 = up

COMMAND 983 - SUPERSET STATUS DISPLAY**Register 1**

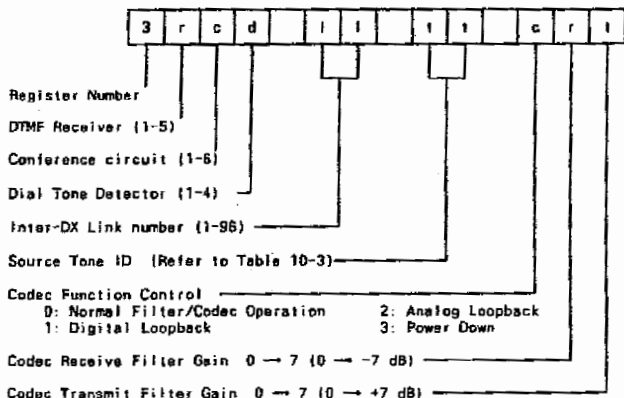
00: no SUPERSET telephones in system
 01-80: SUPERSET equipment number

When this command is initially entered, it displays the lowest SUPERSET 4[®] equipment number currently programmed.

Register 2

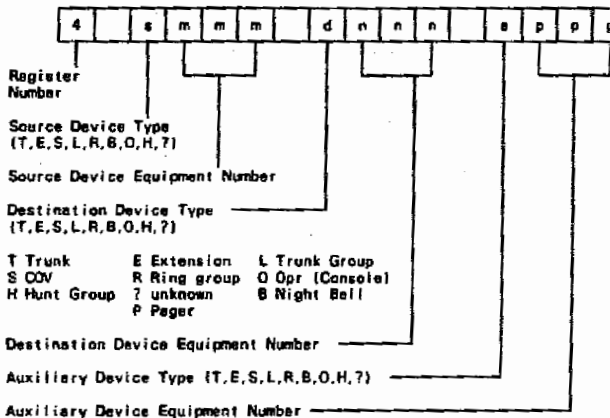
**COMMAND 983 - SUPERSET STATUS DISPLAY
(CONT'D)**

Register 3



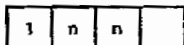
**COMMAND 983 - SUPERSET STATUS DISPLAY
(CONT'D)**

Register 4



COMMAND 984 - TRUNK STATUS DISPLAY

Register 1



Register Number

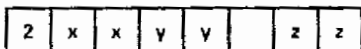
Trunk equipment number

00 = no trunks in system

01-80 = trunk equipment number

When this command is initially entered, the lowest installed trunk equipment number is displayed.

Register 2



Register Number

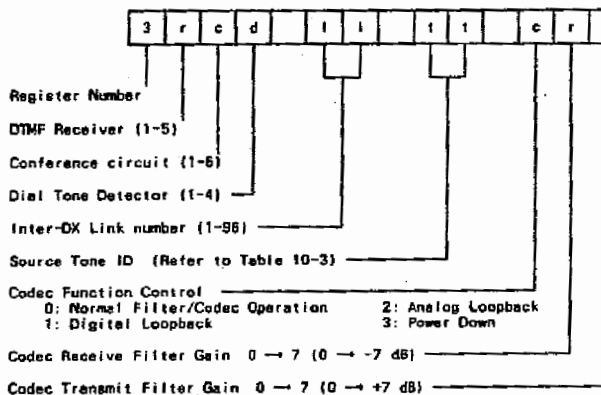
Call Processing
State Number
(See Table 10-1)

Call Processing Substate Number
(See Table 10-2)

Peripheral Processing State Number
(for MITEL personnel only)

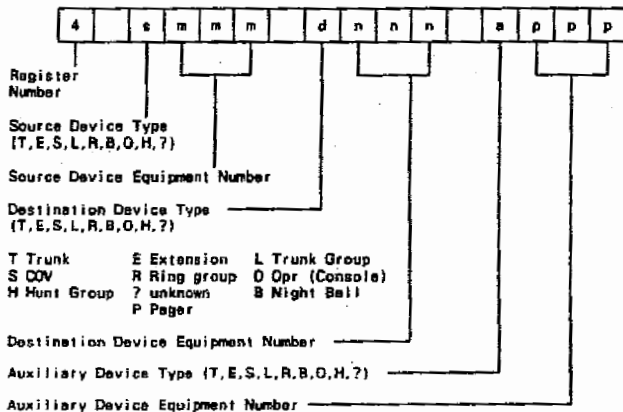
COMMAND 984 - TRUNK STATUS DISPLAY (CONT'D)

Register 3



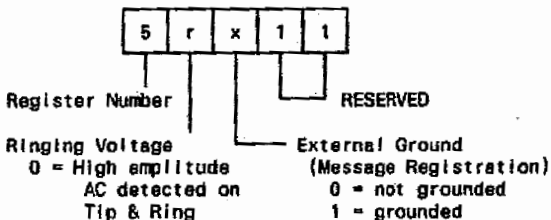
COMMAND 984 - TRUNK STATUS DISPLAY (CONT'D)

Register 4

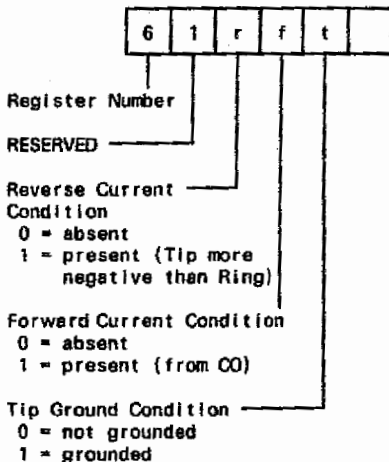


COMMAND 984 - TRUNK STATUS DISPLAY (CONT'D)

Register 5



Register 6



PN 9104-091-120-NA

NOTES

NOTES