

**NEC**

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**NEAX<sup>®</sup>2000 IVS<sup>2</sup>**  
**INTEGRATED VOICE SERVER**  
**Maintenance Manual**

JANUARY, 2000

NEC America, Inc.

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Maintenance Manual

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# INTRODUCTION

## PURPOSE

This manual explains the maintenance service features provided with the NEAX2000 IVS<sup>2</sup>, and the recommended troubleshooting procedure when a fault has occurred, for maintenance personnel of this system.

## USING THIS MANUAL

This manual contains the following chapters:

### CHAPTER 1 MAINTENANCE SERVICE FEATURES

This chapter describes the general description, service conditions, programming, and operating procedures of the maintenance service features.

### CHAPTER 2 TROUBLESHOOTING

This chapter describes the precautions before troubleshooting and the troubleshooting procedure flowchart.

### CHAPTER 3 MAINTENANCE OPERATION

This chapter explains how to save the office data and how to load and verify the office data.

## REFERENCE MANUALS

Refer to the following manuals during maintenance and troubleshooting:

Command Manual	Describes the Customer Administration Terminal (CAT) operation, command function, and setting data required for programming the PBX system.
MATWorX Studio User's Guide	Provides information to install and use the MATWorX Studio program. Includes highlight about features of the program. This guide is a supplement to the MATWorX Studio online Help system, which provides context-sensitive information and procedures to perform tasks using the MATWorX Studio.
Installation Procedure Manual	Provides the installation procedures for the PBX system.

# CHAPTER 1

## MAINTENANCE SERVICE FEATURES



This chapter describes the general description, service conditions, programming, and operating procedures of the maintenance service features.

## HOW TO READ THIS CHAPTER

In the programming procedure, the meaning of (1), (2), and marking are as follows:

(1): 1st Data

(2): 2nd Data

◀: Initial Data

With the system data clear command (CM00, CM01), the data with this marking is automatically assigned for each command.

# FAULT MESSAGES

## General Description

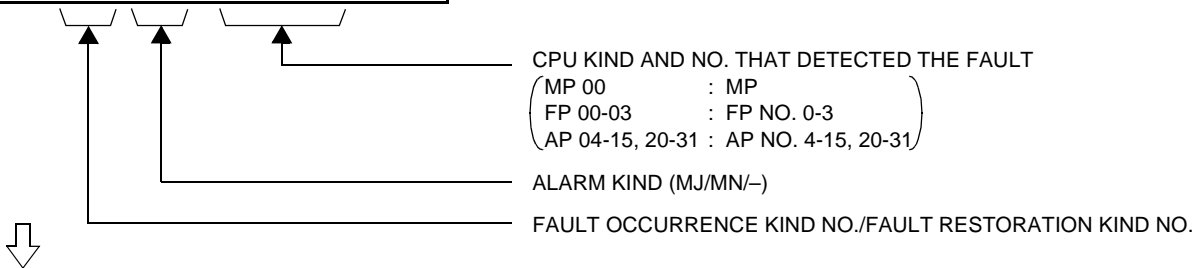
This feature stores fault information into the Fault Store Memory and displays the fault information on the Maintenance Administration Terminal (MAT) or the Customer Administration Terminal (CAT). The display format is shown below:

### (1) Display Format on CAT/MAT by Command Operation

The fault information is separated into four parts and displayed on four screens.

1ST SCREEN

1: 01 MN MP 00



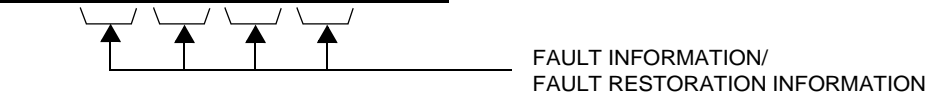
2ND SCREEN

2: 99/10/24 20:31



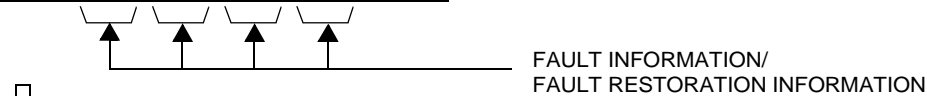
3RD SCREEN

3: X X X X X X X X



4TH SCREEN

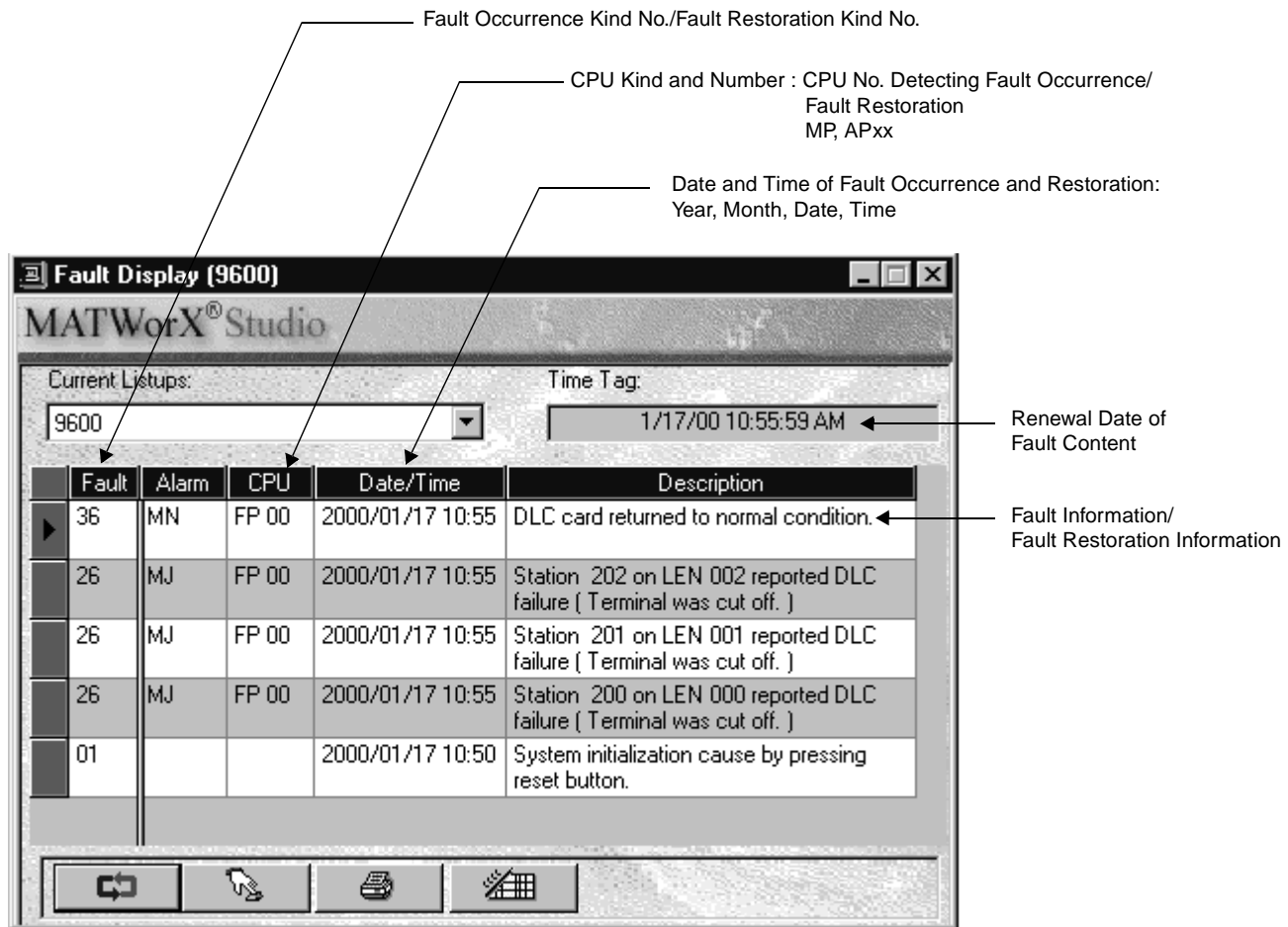
4: X X X X X X X X



TO 1ST SCREEN OF NEXT INFORMATION

(2) Display Format using MATWorX Studio

The fault information displays in the order that faults occur.



**Service Conditions**

- (1) Printout of fault information is possible through the printer connected to the MAT.
- (2) The maximum number of fault information that can be stored is 64. If the stored information exceeds 64, the storing method (either overwriting new data or not storing new data) can be selected by CM08>451.
- (3) To provide external alarm indication, equipment such as an Alarm Display Panel must be installed. External alarm indication is provided using a contact to ground at the main distribution frame. One contact is needed for minor alarms, and one contact is needed for major alarms.
- (4) The alarm kind (Major Alarm, Minor Alarm, or No Alarm Indication) can be programmed by CMEA Y=2 for each fault kind.

## Programming Procedure

START	DESCRIPTION	DATA
CM08	Enable the fault information storage feature.	(1) 450 (2) 1◀ : To be provided
	Specify the processing at the time of fault storage memory overflow.	(1) 451 (2) 0 : No fault information is registered in case of fault memory overflow 1◀ : Fault information is overwritten in case of fault memory overflow
CMEA	Assign which kind of fault information is stored into the fault information memory, and which kind of fault indicates an alarm.	<ul style="list-style-type: none"> <li>• Y=2</li> <li>(1) 01 : System initialization <b>NOTE 1</b></li> <li>04 : MP-FP/AP communication failure</li> <li>08 : FP/AP card down</li> <li>09 : Power failure</li> <li>12 : CS/ZT fault occurred</li> <li>16 : Periodic alarm</li> <li>18 : FP/AP card returned to normal condition</li> <li>19 : Power failure returned to normal condition</li> <li>20 : DTI line failure</li> <li>21 : DCH/BRT/PRT D-channel link connection failure</li> <li>22 : CCH link connection failure</li> <li>24 : Number of faulty trunks was more than predetermined number</li> </ul>
	<p><b>NOTE 1:</b> Even if the external alarm may be set as MN or MJ alarm for system initialized (1st data=01), no alarm is output in the case of Power On, Reset key operated, initialization from the MAT/CAT, and initialization by MP SW3 switch selection.</p> <p><b>NOTE 2:</b> The External Alarm Kind for “Number of faulty trunks was more than predetermined number” is assigned by CM42&gt;06, 07. When CM42&gt;06, 07 is assigned, the 2nd data of CMEA Y=2 simply means the fault information is to be registered into Fault Memory. In this case, Alarm Kind cannot be changed.</p>	<p><b>NOTE 2</b> <b>[Australia Only]</b></p>
A		

A	DESCRIPTION	DATA
CMEA	<p><b>NOTE 3:</b> The External Alarm Kind for “Number of lockout stations was more than predetermined number” is fixed as MN. The 2nd data of CMEA Y=2 simply means the fault information is to be registered into Fault Memory. In this case, Alarm Kind cannot be changed.</p> <p><b>NOTE 4:</b> The External Alarm Kind for “Number of faulty trunks was less than predetermined number” is fixed to No Alarm. The 2nd data of CMEA Y=2 simply means that the fault information is to be registered into Fault Memory. In this case, Alarm kind cannot be changed.</p>	<p>(1) 25 : Number of lockout stations was more than predetermined number</p> <p><b>NOTE 3</b></p> <p>26 : DLC card down</p> <p>27 : Synchronism of DPC missed</p> <p>28 : SMDR output buffer memory overflow</p> <p>2B : CS/ZT fault occurred</p> <p>30 : DTI line returned to normal condition</p> <p>31 : DCH/BRT/PRT D-channel link connection returned to normal condition</p> <p>32 : CCH link connection returned to normal condition</p> <p>34 : Number of faulty trunks was less than predetermined number</p> <p><b>NOTE 4</b>  <b>[Australia Only]</b></p>
B		



B	DESCRIPTION	DATA
CMEA	<p><b>NOTE 5:</b> The External Alarm Kind for “Number of lockout stations was less than predetermined number” is fixed to No Alarm. The 2nd data of CMEA Y=2 simply means that the fault information is to be registered into Fault Memory. In this case, Alarm Kind cannot be changed.</p> <p><b>NOTE 6:</b> CMEA programming can be set using the Fault Storage add-in of MATWorX.</p>	<p>(1) 35 : Number of lockout stations restored to less than predetermined number <b>NOTE 5</b></p> <p>36 : DLC card returned to normal condition</p> <p>37 : Synchronism of DPC returned to normal condition</p> <p>38 : SMDR output buffer memory returned to normal condition</p> <p>3B : CS/ZT returned to normal condition</p> <p>(2) 0 : Fault memory store/No External Alarm output</p> <p>1 : Fault memory store/External Alarm is MN alarm</p> <p>2 : Fault memory store/ External Alarm is MJ alarm</p> <p>3 : Fault memory store/External Alarm Kind is determined by standard data</p> <p>NONE◀ : No fault memory store/No External Alarm output</p>
CM42	Assign the number of stations in line lockout to give MN (minor) alarm.	<p>(1) 01</p> <p>(2) 01-99 : Number of lockout stations</p>
END		

To clear the MJ/MN alarm by external key, perform the following programming.

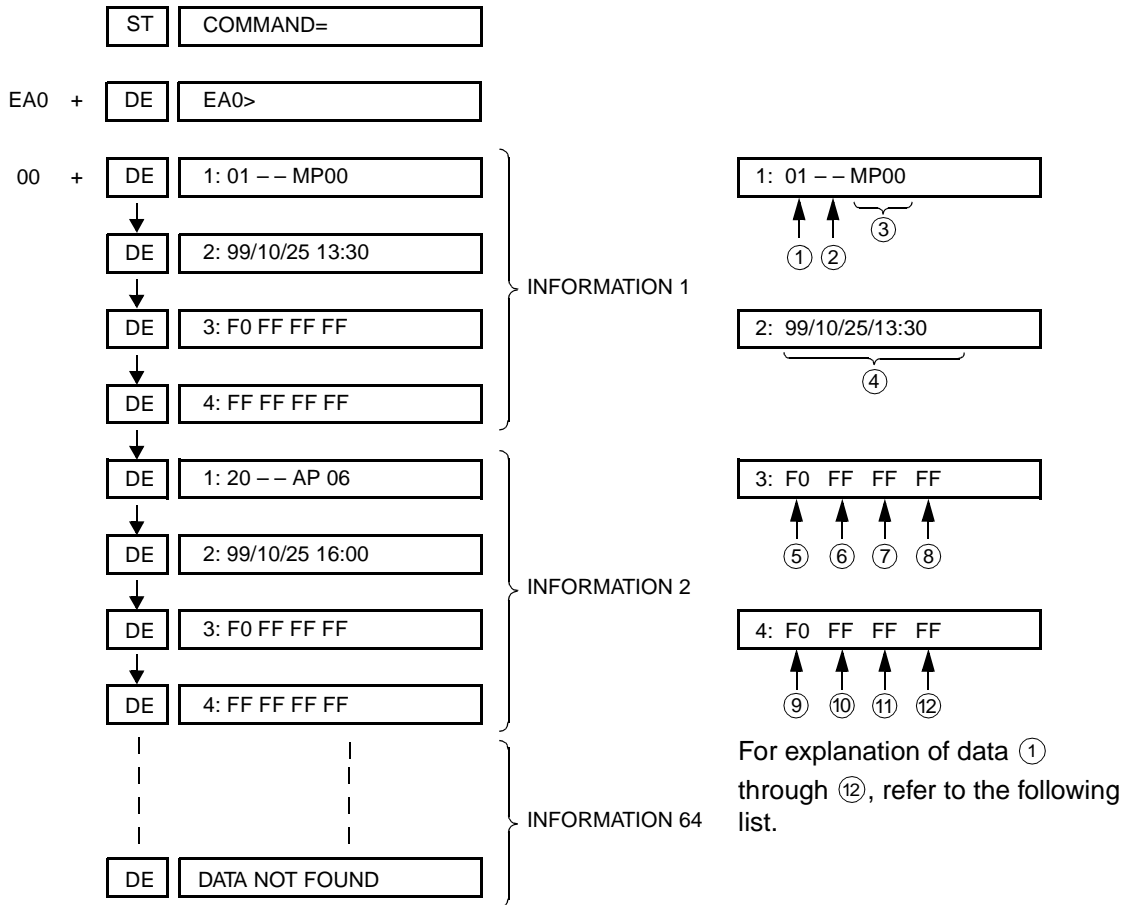
<u>START</u>	<u>DESCRIPTION</u>	<u>DATA</u>
<div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;">CM10</div>	<p>Assign the card number for external key interface (PN-DK00) to the desired LEN.</p> <p><b>NOTE 1:</b> The card number of the external key interface (PN-DK00) must be assigned to the first LEN (LEVEL 0) and third LEN (LEVEL 2) of each card slot.</p> <p><b>NOTE 2:</b> Circuit No. 3 of E963 is used for built-in External Key Interface of MP card by setting CM61.</p>	<p>(1) 000-763: LEN</p> <p>(2) E900-E963:            Card No. of external key interface (PN-DK00)            For PIM0/1: E900-E915            For PIM2/3: E916-E931            For PIM4/5: E932-E947            For PIM6/7: E948-E963</p>
<div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;">CM61</div>	<p>Assign the function of MJ/MN alarm clear key to the external key.</p>	<ul style="list-style-type: none"> <li>• YY=30</li> </ul> <p>(1) XX Z            XX : Card No. of PN-DK00 (00-63)            Z : Circuit No. (0-3)            633 : MP built-in External Key Interface</p> <p>(2) 00: MJ/MN alarm clear key</p>
<u>END</u>		

## Operating Procedure

### (1) To Display Fault Message by CAT

The following flowchart shows the operation procedure for displaying fault messages by entering a command code (CMEA Y=0) from the CAT or by using the MOC Terminal feature or the MAT function in the MATWorX Studio.

Operation:



- ①: Fault Kind Number (See [Table 1-1.](#))
- ②: External Alarm Kind (MJ/MN) (See [Table 1-3.](#))
- ③ CPU Kind and Number that detected the fault  
MP00 : MP  
FP00-03 : FP Number 0-3  
AP04-15, 20-31 : AP Number 4-15, 20-31
- ④: Date and Time of Fault Occurrence and Restoration
- ⑤-⑫: Fault Information/Fault Restoration Information (See [Table 1-5.](#))

①: Fault Kind Number

**Table 1-1 Fault Occurrence Kind Number**

<b>FAULT KIND NUMBER</b>	<b>FAULT CONTENT</b>
01	System initialization
04	MP-FP/AP communication failure
08	FP/AP card down
09	Power failure
12	CS/ZT fault occurred
16	It is a day for periodic maintenance
20	DTI line failure
21	DCH/BRT/PRT D-channel link connection failure
22	CCH link connection failure
24 <b>[Australia Only]</b>	Number of faulty trunks was more than predetermined number
25	Number of lockout stations was more than predetermined number
26	DLC card down
27	Synchronism of DPC missed
28	SMDR output buffer memory overflow
2B	CS/ZT fault occurred

**Table 1-2 Fault Restoration Kind Number**

<b>FAULT KIND NUMBER</b>	<b>FAULT RESTORATION CONTENT</b>
18	FP/AP card returned to normal condition
19	Power failure returned to normal condition
30	DTI line returned to normal condition
31	DCH/BRT/PRT D-channel link connection returned to normal condition
32	CCH link connection returned to normal condition
34 <b>[Australia Only]</b>	Number of faulty trunks was less than predetermined number
35	Number of lockout stations was less than predetermined number
36	DLC card returned to normal condition
37	Synchronism of DPC returned to normal condition
38	SMDR output buffer memory returned to normal condition
3B	CS/ZT returned to normal condition

②: External Alarm Kind (MJ/MN/–)

External Alarm Kind—Minor (MN), Major (MJ), or no alarm (external alarm not provided) is programmed by CMEA Y=2. Table 1-3 shows the standard data set by the 2nd data=3 of CMEA Y=2.

**Table 1-3 Standard Data Set of External Alarm Kind**

<b>FAULT KIND</b>	<b>FAULT CONTENT</b>	<b>ALARM KIND</b>
01	System Initialization	MN ALARM
04	MP-FP/AP communication failure	MN ALARM
08	FP/AP card down	MN ALARM
09	Power failure	MJ ALARM
12	CS/ZT fault occurred	–
16	It is a day for periodic maintenance	–
18	FP/AP card returned to normal condition	–
19	Power failure returned to normal condition	–
20	DTI line failure	MN ALARM
21	DCH/BRT/PRT D-channel link connection failure	MN ALARM
22	CCH link connection failure	MN ALARM
24 [Australia Only]	Number of faulty trunks was more than predetermined number	MJ/MN ALARM
25	Number of lockout stations was more than predetermined number (Refer to CM42>01 in Command Manual.)	MN ALARM (Fixed)
26	DLC card down	–
27	Synchronism of DPC missed	MN ALARM
28	SMDR output buffer memory overflow	MN ALARM
2B	CS/ZT fault occurred	–
30	DTI line returned to normal condition	–
31	DCH/BRT/PRT D-channel link connection returned to normal condition	–
32	CCH link connection returned to normal condition	–

**Table 1-3 Standard Data Set of External Alarm Kind (Continued)**

<b>FAULT KIND</b>	<b>FAULT CONTENT</b>	<b>ALARM KIND</b>
34 [Australia Only]	Number of faulty trunks was less than predetermined number	–
35	Number of lockout stations was less than predetermined number	–
36	DLC card returned to normal condition	–
37	Synchronism of DPC returned to normal	–
38	SMDR output buffer memory returned to normal condition	–
3B	CS/ZT returned to normal condition	–

The alarm lamps in [Table 1-4](#) are indicated according to the alarm kind.

**Table 1-4 Alarm Kind and Alarm Lamps**

<b>Alarm Lamp</b> <b>Alarm Kind</b>	<b>External Alarm Indication MJ</b>	<b>External Alarm Indication MN</b>	<b>PZ-PW121 MJ</b>	<b>PZ-PW121 MN</b>
MJ	Steady light	–	Steady light	–
MN	–	Steady light	–	Steady light

⑤-⑫: Fault Information/Fault Restoration Information

**Table 1-5 Fault Information**

FAULT KIND NUMBER	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫
01	Initial Kind, ①,②	System Initialization Information ③						
04	Communication Failure Kind ④	Number of Communication Failures	FP/AP No. ⑤					
08	FP/AP No. ⑥							
09	Power Failure Kind 1 ⑦	Power Failure Kind 2 ⑧	Power Failure Kind 3 ⑨					
12	Fault Kind ⑩	AP No. ⑪	CS/ZT Interface No. ⑫					
16	Inspection Kind ⑬							
20	Fault Detail Kind ⑭							
21	D-ch No. ⑮							
22	CCH No. ⑯							
24								
25								
26	DLC Failure Kind ⑰	LEN ⑱		Station No. ⑲				
27	DPC Failure Kind ⑲	DPC No. ⑳						
28	Memory Kind ㉑	Overflow Kind ㉒						
2B	Fault Kind ㉓	AP No. ㉔	CS/ZT Interface No. ㉕					



**Table 1-6 Fault Restoration Information**

FAULT KIND NUMBER	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫
18	FP/AP No. ⑤							
19	Power Failure Kind 1 ⑥	Power Failure Kind 2 ⑥	Power Failure Kind 3 ⑥					
30	Fault Detail Kind ①							
31	D-ch No. ③							
32	CCH No. ④							
34								
35								
36	DLC Failure Kind ⑦	LEN ⑧		Station No. ⑨				
37	DPC Failure Kind ⑩	DPC No. ⑪						
38	Memory Kind ⑫							
3B	Fault Kind ⑬	AP No. ⑭	CS/ZT Interface No. ⑮					

Ⓐ: Kind of System Initialization information (Upper digit)

- 1: Program address information
- 2: Receive command information
- F: No system initialization information

Ⓑ: Initial Kind (Lower digit)

- 0: Power On Initialize
- 1: Initialize by Reset Button (SW1)
- 2: Serious failure 1
- 3: Serious failure 2
- 4: Not used
- 5: Serious failure 3
- 6: Serious failure 4
- 7: Serious failure 5
- 8: Serious failure 6
- 9: SW3 was changed to 0
- A: Serious failure 7
- B: Initialize by CAT/MAT
- C: Not used
- D: Not used
- E: Not used
- F: Not used

Ⓒ: System Initialization Information

The address of the program which caused system initialization

Ⓓ: Communication Failure Kind

- 00: Overflow of data sending buffer to the FP/AP
- 01: Invalid data received from FP/AP

Ⓔ: FP/AP Number

- 00-03 : FP No. 0-3
- 04-15, 20-31 : AP No. 4-15, 20-31

Ⓣ: Power Failure Kind

- 00: AC input failure
- 01: Fuse break
- 02: PWR alarm

ⓖ: Fault Kind

- 00: Fault notice from CS/ZT
- 01: CS/ZT initial failure
- 02: CS/ZT condition read failure
- 03: CS/ZT condition unmatched
- 04: B channel condition unmatched
- 05: SYS-ID upload failure
- 06: SYS-ID download failure
- 07: CS/ZT make busy failure
- 08: CS/ZT data load failure
- 09: B channel make busy failure
- 0A: CS/ZT operation parameter change failure
- 0B: LCCH sending position failure
- 0C: Carrier selection failure **[North America/Latin America Only]**
- 0D: CS/ZT expansion data read failure
- 0E: CS/ZT expansion data setting failure
- 0F: CS/ZT operation parameter 2 change failure

ⓓ: AP No. of CS/ZT fault occurred 04-15, 20-31

ⓔ: CS/ZT Interface No. of fault occurred 000-255

ⓖ: Inspection Kind

- 00: Battery check

ⓗ: Power Failure Restoration Kind

- 00: AC input failure
- 01: Fuse break
- 02: PWR alarm

①: Fault Detail Kind

00: PCM loss  
01: Frame loss  
02: Multi frame loss  
03: AIS error  
04: Remote alarm  
05: Multi remote alarm  
06: S-bit error  
07: Not used  
08: CRC error  
09: Slip detected  
0A: Main signal all 1 (for BRT)  
0B: INFO 0 (for BRT)  
0C: INFO 2 (for BRT)  
0D: Not used  
0E: Not used  
0F: Not used

②: D-channel Circuit No.

DCH/BRT/PRT: 00-07 =D-channel No. 0-7

③: CCH No.

00-07=CCH No. 0-7

④: DLC Failure Kind

00: Terminal was cut off  
02: Short circuit  
03: Ring wire was grounded  
04: Tip wire was grounded or terminal was unconnected  
05: Terminal failure  
08: Terminal circuit failure

⑤: LEN (000-763)

⑥: Station No. (X-XXXXXXXX)

Ⓡ: DPC Failure Kind

- 00: DPC on the side of partner
- 01: DPC on the side of oneself

Ⓢ: DPC No.

Ⓣ: Memory Kind

- 00: Billing memory block
- 01: Host CPU No. 0 output Buffer memory block
- 02: Host CPU No. 1 output Buffer memory block
- 03: Automatic print Buffer memory block
- 04: Notice of the rest of memory block numbers in the system
- 05: CCIS output Buffer memory block
- 06: CS report traffic data memory block

Ⓤ: Overflow Kind

When setting CMD000>126:0

- 00: Memory accumulation exceeds the value set by CMD001>229 or CMD003>26-30
- 01: Memory overflowed

When setting CMD000>126:1

- 01: Memory accumulation exceeds the value set by CMD001>229 or CMD003>26-30

For memory kind 04, regardless of CMD000>126

- 01: Memory accumulation exceeds the value set by CMD001>229 or CMD003>26-30

Ⓥ: Fault Kind

- 00: CS/ZT connection down
- 01: CS/ZT carrier has no space

Ⓦ: AP No. of CS/ZT fault occurred 04-15, 20-31

Ⓧ: CS/ZT Interface No. of CS/ZT fault occurred 000-255

Ⓜ: Fault Restoration Kind

00: CS/ZT connection returned

01: CS/ZT carrier has space

Ⓩ: AP No. returned to normal condition

Ⓐ: CS/ZT Interface No. returned to normal condition

(2) To Clear MJ/MN Alarm

- To clear both MJ/MN alarms

Operation:

	ST	COMMAND=
EA1 +	DE	EA1>
00 +	DE	EA1>00:00 -
CCC +	EXE	OK

- To clear MJ alarm only

Operation:

	ST	COMMAND=
EA1 +	DE	EA1>
01 +	DE	EA1>01:01 -
CCC +	EXE	OK

- To clear MN alarm only

Operation:

	ST	COMMAND=
EA1 +	DE	EA1>
02 +	DE	EA1>02:02 -
CCC +	EXE	OK

- (3) To Display Fault Messages using MATWorX Studio  
Refer to the MATWorX Studio User's Guide or to the Fault Display online Help in the MATWorX Studio to display fault messages.

[Table 1-5](#) provides an explanation of the 8-byte data that appears in the Description column. [Table 1-7](#) shows examples of fault occurrence messages and [Table 1-8](#) shows examples of fault restoration information that the Fault Display add-in may display.



**Table 1-7 Examples of Fault Occurrence Display Using MATWorX**

Fault	Alarm	Date	CPU	Description
01	-	99/01/08 13:26	MP	System initialization Type : Power On Initialize Data = (F0 FF FF FF FF FF FF FF)
01	-	99/01/08 13:26	MP	System initialization Type : Initialize by Reset Button (SW1) Data = (F1 FF FF FF FF FF FF FF)
01	MJ	99/01/08 13:26	MP	System initialization Type : Serious failure 1 Data = (12 23 45 67 89 FF FF FF)
01	MJ	99/01/08 13:26	MP	System initialization Type : Serious failure 2 Data = (13 34 56 78 9A FF FF FF)
01	MJ	99/01/08 13:26	MP	System initialization Type : Serious failure 3 Data = (F5 FF FF FF FF FF FF FF)
01	MJ	99/01/08 13:26	MP	System initialization Type : Serious failure 4 Data = (16 67 89 AB CD FF FF FF)
01	MJ	99/01/08 13:26	MP	System initialization Type : Serious failure 5 Data = (F7 FF FF FF FF FF FF FF)
01	MJ	99/01/08 13:26	MP	System initialization Type : Serious failure 6 Data = (F8 FF FF FF FF FF FF FF)
01	-	99/01/08 13:26	MP	System initialization Type : SW3 Switch was changed to 0 Data = (F9 FF FF FF FF FF FF FF)
01	MJ	99/01/08 13:26	MP	System initialization Type : Serious failure 7 Data = (2A 11 22 33 44 FF FF FF)
01	-	99/01/08 13:26	MP	System initialization Type : Initialize by CAT or MAT Data = (FB FF FF FF FF FF FF FF)
01	MJ	99/01/08 13:26	MP	System initialization Type : switching Data = (FC FF FF FF FF FF FF FF)
03	MN	99/01/08 13:26	MP	The number of hopper entry was more than the caution level Hopper kind = H-rank Data = (F0 FF FF FF FF FF FF FF)
03	MN	99/01/08 13:26	MP	The number of hopper entry was more than the caution level Hopper kind = L-rank Data = (F1 FF FF FF FF FF FF FF)

**Table 1-7 Examples of Fault Occurrence Display Using MATWorX (Continued)**

Fault	Alarm	Date	CPU	Description
04	MN	99/01/08 13:26	MP	MP-FP/AP communication failure Overflow of data sending buffer to FP/AP. (Count = 10 FP/AP NO. = 04) Data = (F0 0A 04 FF FF FF FF FF)
04	MN	99/01/08 13:26	MP	MP-FP/AP communication failure Invalid data received from FP/AP. (Count = 96 FP/AP NO. = 07) Data = (F1 60 07 FF FF FF FF FF)
04	MN	99/01/08 13:26	MP	MP-FP/AP communication failure Invalid data received from FP/AP. (Count = 100 or more FP/AP NO. = 11) Data = (F1 FF 0B FF FF FF FF FF)
08	MN	99/01/08 13:26	MP	FP/AP card down (FP/AP NO. = 52) Data = (F4 FF FF FF FF FF FF FF)
09	MJ	99/01/08 13:26	MP	Power failure Power Failure Kind : AC input failure Data = (00 01 02 FF FF FF FF FF)
09	MJ	99/01/08 13:26	MP	Power failure Power Failure Kind : Fuse break Data = (01 02 00 FF FF FF FF FF)
09	MJ	99/01/08 13:26	MP	Power failure Power Failure Kind : PWR alarm Data = (02 00 01 FF FF FF FF FF)
12	MN	99/01/08 13:27	MP	CS/ZT fault occurred Fault kind : Fault notice from CS/ZT (CS/ZT No. = 10) Data = (00 04 00 10 31 01 FF FF)
12	MN	99/01/08 13:27	MP	CS/ZT fault occurred Fault kind : CS/ZT initial failure (CS/ZT No. = 10) Data = (01 04 00 10 31 01 FF FF)
12	MN	99/01/08 13:27	MP	CS/ZT fault occurred Fault kind : CS/ZT condition read failure (CS/ZT No. = 10) Data = (02 04 00 10 31 01 FF FF)
12	MN	99/01/08 13:27	MP	CS/ZT fault occurred Fault kind : CS/ZT condition unmatched (CS/ZT No. = 10) Data = (03 04 00 10 31 01 FF FF)
12	MN	99/01/08 13:27	MP	CS/ZT fault occurred Fault kind : Bch condition unmatched (CS/ZT No. = 10) Data = (04 04 00 10 31 01 FF FF)
12	MN	99/01/08 13:27	MP	CS/ZT fault occurred Fault kind : SYS-ID upload failure (CS/ZT No. = 10) Data = (05 04 00 10 31 01 FF FF)
12	MN	99/01/08 13:27	MP	CS/ZT fault occurred Fault kind : SYS-ID download failure (CS/ZT No. = 10) Data = (06 04 00 10 31 01 FF FF)
12	MN	99/01/08 13:27	MP	CS/ZT fault occurred Fault kind : CS/ZT make busy failure (CS/ZT No. = 10) Data = (07 04 00 10 31 FF FF FF)

**Table 1-7 Examples of Fault Occurrence Display Using MATWorX (Continued)**

Fault	Alarm	Date	CPU	Description
12	MN	99/01/08 13:27	MP	CS/ZT fault occurred Fault kind : CS/ZT data load failure (CS/ZT No. = 10) Data = (08 04 00 10 31 FF FF FF)
12	MN	99/01/08 13:27	MP	CS/ZT fault occurred Fault kind : Bch make busy failure (CS/ZT No. = 10) Data = (09 04 00 10 31 FF FF FF)
12	MN	99/01/08 13:27	MP	CS/ZT fault occurred Fault kind : CS/ZT operation parameter change failure (CS/ZT No. = 0) Data = (0A FF FF 10 31 FF FF FF)
12	MN	99/01/08 13:27	MP	CS/ZT fault occurred Fault kind : LCCH sending position failure (CS/ZT No. = 0) Data = (0B FF FF 10 31 FF FF FF)
12	MN	99/01/08 13:27	MP	CS/ZT fault occurred Fault kind : Carrier selection failure (CS/ZT No. = 0) Data = (0C FF FF 10 31 FF FF FF)
12	MN	99/01/08 13:27	MP	CS/ZT fault occurred Fault kind : CS/ZT expansion data read failure (CS/ZT No. = 0) Data = (0D 01 FF 10 31 FF FF FF)
12	MN	99/01/08 13:27	MP	CS/ZT fault occurred Fault kind : CS/ZT expansion data setting failure (CS/ZT No. = 0) Data = (0E FF FF 10 31 FF FF FF)
12	MN	99/01/08 13:27	MP	CS/ZT fault occurred Fault kind : CS/ZT operation parameter 2 change failure (CS/ZT No. = 0) Data = (0F FF FF 10 31 FF FF FF)
12	MN	99/01/08 13:27	MP	CS/ZT fault occurred Fault kind : (CS/ZT No. = 0) Data = (10 FF FF 10 31 FF FF FF)
16	MN	99/01/08 19:30	MP	It is a day for periodic maintenance Battery check (TK = 0) Data = (F8 FF FF FF FF FF FF FF)
20	MJ	99/01/08 13:28	AP 5	DTI line failure PCM loss Data = (F0 FF FF FF FF FF FF FF)
20	MJ	99/01/08 13:28	AP 5	DTI line failure Frame loss Data = (F1 FF FF FF FF FF FF FF)
20	MJ	99/01/08 13:28	AP 5	DTI line failure Multi frame loss Data = (F2 FF FF FF FF FF FF FF)
20	MJ	99/01/08 13:28	AP 5	DTI line failure AIS error Data = (F3 FF FF FF FF FF FF FF)
20	MJ	99/01/08 13:28	AP 5	DTI line failure Remote alarm Data = (F4 FF FF FF FF FF FF FF)

**Table 1-7 Examples of Fault Occurrence Display Using MATWorX (Continued)**

Fault	Alarm	Date	CPU	Description
20	MJ	99/01/08 13:28	AP 5	DTI line failure Multi remote alarm Data = (F5 FF FF FF FF FF FF FF)
20	MJ	99/01/08 13:28	AP 5	DTI line failure S-bit error Data = (F6 FF FF FF FF FF FF FF)
20	MJ	99/01/08 13:28	AP 5	DTI line failure CRC error Data = (F8 FF FF FF FF FF FF FF)
20	MJ	99/01/08 13:28	AP 5	DTI line failure Slip detected Data = (F9 FF FF FF FF FF FF FF)
20	MJ	99/01/08 13:28	AP 5	DTI line failure Main signal all 1 Data = (FA 01 FF FF FF FF FF FF)
20	MJ	99/01/08 13:28	AP 5	DTI line failure INFO 0 Data = (FB FF FF FF FF FF FF FF)
20	MJ	99/01/08 13:28	AP 5	DTI line failure INFO 2 Data = (FC FF FF FF FF FF FF FF)
21	MN	99/01/08 13:28	AP 6	DCH/BRT/PRT D-channel link connection failure (D-ch NO. = 3) Data = (03 FF FF FF FF FF FF FF)
22	MN	99/01/08 13:28	AP 7	CCH link connection failure (CCH NO. = 3) Data = (03 FF FF FF FF FF FF FF)
24	MN	99/01/08 13:26	FP 0	Number of faulty trunks was more than predetermined number Data = (FF FF FF FF FF FF FF FF)
25	MN	99/01/08 13:26	MP	Number of lockout stations was more than predetermined number Data = (FF FF FF FF FF FF FF FF)
26	MN	99/01/08 13:28	FP 1	DLC card down DLC Failure Kind : Terminal was cut off (Station number = 2000) Data = (00 00 80 20 00 FF FF FF)
26	MN	99/01/08 13:28	FP 1	DLC card down DLC Failure Kind : Short circuit (Station number = 2000) Data = (02 00 80 20 00 FF FF FF)
26	MN	99/01/08 13:28	FP 1	DLC card down DLC Failure Kind : Ring wire was grounded (Station number = 2000) Data = (03 00 80 20 00 FF FF FF)
26	MN	99/01/08 13:28	FP 1	DLC card down DLC Failure Kind : Tip wire was grounded or terminal was unconnected (Station number = 2000) Data = (04 00 80 20 00 FF FF FF)

**Table 1-7 Examples of Fault Occurrence Display Using MATWorX (Continued)**

Fault	Alarm	Date	CPU	Description
26	MN	99/01/08 13:28	FP 1	DLC card down DLC Failure Kind : Terminal failure (Station number = 2000) Data = (05 00 80 20 00 FF FF FF)
26	MN	99/01/08 13:28	FP 1	DLC card down DLC Failure Kind : Terminal not connected (Station number = 2000) Data = (06 00 80 20 00 FF FF FF)
26	MN	99/01/08 13:28	FP 1	DLC card down DLC Failure Kind : Terminal circuit failure (Station number = 2000) Data = (08 00 80 20 00 FF FF FF)
27	MN	99/01/08 13:27	FP 0	Synchronism of DPC missed DPC on the side of a partner (DPC Number = 0001FFFF) Data = (00 00 01 FF FF FF FF FF)
27	MN	99/01/08 13:27	FP 0	Synchronism of DPC missed DPC on the side of oneself (DPC Number = 0005FFFF) Data = (01 00 05 FF FF FF FF FF)
28	MN	99/01/08 13:28	AP 10	SMDR output buffer memory overflow (Memory Kind = 00 Overflow kind : External relay turns ON and OFF) Data = (00 00 FF FF FF FF FF FF)
2B	MN	99/01/08 13:27	MP	CS/ZT fault occurred Fault kind : CS/ZT connection down (CS/ZT No. = 10) Data = (00 04 00 10 31 01 FF FF)
2B	MN	99/01/08 13:27	MP	CS/ZT fault occurred Fault kind : CS/ZT carrier has no space (CS/ZT No. = 10) Data = (01 04 00 10 FF FF FF FF)

**Table 1-8 Example of Fault Restoration Display Using MATWorX**

Fault	Alarm	Date	CPU	Description
18	-	99/01/08 13:26	MP	FP/AP card returned to normal condition (FP/AP NO. = 52) Data = (F4 FF FF FF FF FF FF FF)
19	-	99/01/08 13:26	MP	Power failure returned to normal condition Recover Kind : AC input failure Data = (00 01 02 FF FF FF FF FF)
19	-	99/01/08 13:26	MP	Power failure returned to normal condition Recover Kind : fuse break Data = (01 02 00 FF FF FF FF FF)
19	-	99/01/08 13:26	MP	Power failure returned to normal condition Recover Kind : PWR alarm Data = (02 00 01 FF FF FF FF FF)
30	-	99/01/08 13:28	AP 5	DTI line returned to normal condition PCM loss Data = (F0 FF FF FF FF FF FF FF)
30	-	99/01/08 13:28	AP 5	DTI line returned to normal condition Frame loss Data = (F1 FF FF FF FF FF FF FF)
30	-	99/01/08 13:28	AP 5	DTI line returned to normal condition Multi frame loss Data = (F2 FF FF FF FF FF FF FF)
30	-	99/01/08 13:28	AP 5	DTI line returned to normal condition AIS error Data = (F3 FF FF FF FF FF FF FF)
30	-	99/01/08 13:28	AP 5	DTI line returned to normal condition Remote alarm Data = (F4 FF FF FF FF FF FF FF)
30	-	99/01/08 13:28	AP 5	DTI line returned to normal condition Multi Remote alarm Data = (F5 FF FF FF FF FF FF FF)
30	-	99/01/08 13:28	AP 5	DTI line returned to normal condition S-bit error Data = (F6 FF FF FF FF FF FF FF)
30	-	99/01/08 13:28	AP 5	DTI line returned to normal condition CRC error Data = (F8 FF FF FF FF FF FF FF)
30	-	99/01/08 13:28	AP 5	DTI line returned to normal condition Slip detected Data = (F9 FF FF FF FF FF FF FF)
30	-	99/01/08 13:28	AP 5	DTI line returned to normal condition Main signal all 1 Data = (FA 01 FF FF FF FF FF FF)
30	-	99/01/08 13:28	AP 5	DTI line returned to normal condition INFO 0 Data = (FB FF FF FF FF FF FF FF)
30	-	99/01/08 13:28	AP 5	DTI line returned to normal condition INFO 2 Data = (FC FF FF FF FF FF FF FF)

**Table 1-8 Example of Fault Restoration Display Using MATWorX (Continued)**

Fault	Alarm	Date	CPU	Description
31	-	99/01/08 13:28	AP 6	DCH/BRT/PRT D-channel link connection returned to normal condition (D-ch NO. = 3) Data = (03 FF FF FF FF FF FF FF)
32	-	99/01/08 13:28	AP 7	CCH link connection returned to normal condition (CCH NO. = 3) Data = (03 FF FF FF FF FF FF FF)
34	-	99/01/08 13:26	FP 0	Number of faulty trunks was less than predetermined number Data = (FF FF FF FF FF FF FF FF)
35	-	99/01/08 13:26	MP	Number of lockout stations was less than predetermined number Data = (FF FF FF FF FF FF FF FF)
36	-	99/01/08 13:28	FP1	DLC card returned to normal condition Recover Kind No. : 0 (Station number = 200015) Data = (00 00 80 20 00 15 FF FF)
36	-	99/01/08 13:28	FP1	DLC card returned to normal condition Recover Kind No. : 2 (Station number = 200016) Data = (02 00 80 20 00 16 FF FF)
36	-	99/01/08 13:28	FP1	DLC card returned to normal condition Recover Kind No. : 3 (Station number = 200017) Data = (03 00 80 20 00 17 FF FF)
36	-	99/01/08 13:28	FP1	DLC card returned to normal condition Recover Kind No. : 4 (Station number = 200020) Data = (04 00 80 20 00 20 FF FF)
36	-	99/01/08 13:28	FP1	DLC card returned to normal condition Recover Kind No. : 5 (Station number = 200021) Data = (05 00 80 20 00 21 FF FF)
36	-	99/01/08 13:28	FP1	DLC card returned to normal condition Recover Kind No. : 6 (Station number = 200022) Data = (06 00 80 20 00 22 FF FF)
36	-	99/01/08 13:28	FP1	DLC card returned to normal condition Recover Kind No. : 8 (Station number = 200023) Data = (08 00 80 20 00 23 FF FF)
37	-	99/01/08 13:27	FP0	Synchronism of DPC returned to normal condition DPC on the side of a partner (DPC Number = 0001FFFF) Data = (00 00 01 FF FF FF FF FF)
37	-	99/01/08 13:27	FP0	Synchronism of DPC returned to normal condition DPC on the side of oneself (DPC Number = 0005FFFF) Data = (01 00 05 FF FF FF FF FF)
38	-	99/01/08 13:28	AP 10	SMDR output buffer memory returned to normal condition (Memory Kind = 00) Data = (00 FF FF FF FF FF FF FF)
3B	-	99/01/08 13:27	MP	CS/ZT returned to normal condition Fault kind : CS/ZT connection returned (CS/ZT No. = 10) Data = (00 04 00 10 31 01 FF FF)
3B	-	99/01/08 13:27	MP	CS/ZT returned to normal condition Fault kind : CS/ZT carrier has space (CS/ZT No. = 10) Data = (01 04 00 10 FF FF FF FF)

# STATION LINE STATUS DISPLAY

## General Description

This feature displays the line status for a single line telephone or a D<sup>term</sup> using the CAT or the MAT.

## Service Conditions

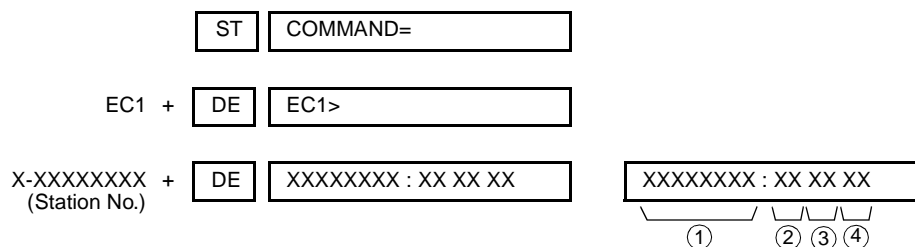
- (1) This feature is not available when the system is off-line.
- (2) When performing this feature for a single line telephone, this feature may affect the status of the other telephone in the same line circuit card. Therefore, use this feature only when a line fault has occurred (do not use under a normal state).

## Programming Procedure

No programming is required.

## Operating Procedure

Operation:



Explanation of Screen Information:

- ① Station Number: X-XXXXXXXX (1-8 digits)



② Analog Line/Digital Line

00: LC (Single Line Telephone)

10: DLC (D<sup>term</sup>)

③ Hardware Test

See [Table 1-9](#).

**Table 1-9 Status of Single Line Telephone and D<sup>term</sup>**

INDICATION	STATUS OF SINGLE LINE TELEPHONE	STATUS OF D <sup>term</sup>	REMARKS
00	Terminal is not connected.	Terminal is not connected, or Tip wire is grounded.	
01	Terminal is connected.	Terminal is connected.	
02	Loop (Short circuit is made on the line.)	Short circuit is made on the line.	
03	Ring wire is grounded	Ring wire is grounded.	
04	LC card is not mounted.	DLC card is not mounted.	
05	Test busy	Terminal Failure	
06	–	DLC card down	
07	–	–	
08	–	Line failure detected	

④ Software Test

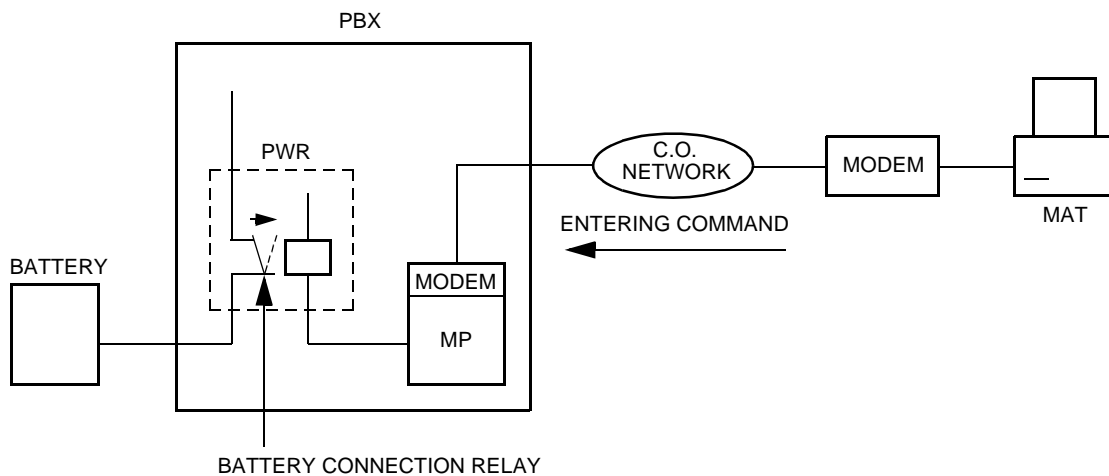
01 - FF: See [Table 1-10](#). (This data is the same as the status code of CMF5.)

# BATTERY RELEASE CONTROL

## General Description

When the AC power is to be cut off intentionally (such as maintenance for the building), this feature can disconnect the batteries from the PBX, using the MAT or the CAT, and prevent an excessive discharge of the battery.

**Figure 1-1 System Diagram of Battery Release Control**



## Service Conditions

The battery disconnection is canceled if the system is initialized (Power off/on or Reset).

## Programming Procedure

No programming is required.

## Operating Procedure

### (1) To disconnect the battery

	<input type="text" value="ST"/>	<input <="" td="" type="text" value="COMMAND="/> <td></td>	
EC0 +	<input type="text" value="DE"/>	<input text"="" type="text" value="DE"/>	<input 2"="" type="text" value="EC0&gt;00:1 -&lt;/td&gt;&lt;td rowspan="/> [ The current status displays after entering first data 00 (1: Battery connection) ]
0 +	<input type="text" value="EXE"/>	<input 2"="" type="text" value="EC0&gt;00:1 - 0&lt;/td&gt;&lt;td rowspan="/> [ The status changes to battery disconnection after entering second data 0. ]	
		<input type="text" value="OK"/>	

### (2) To cancel the battery disconnection

	<input type="text" value="ST"/>	<input <="" td="" type="text" value="COMMAND="/> <td></td>	
EC0 +	<input type="text" value="DE"/>	<input text"="" type="text" value="DE"/>	<input 2"="" type="text" value="EC0&gt;00:0 -&lt;/td&gt;&lt;td rowspan="/> [ The current status displays after entering first data 00 (0: Battery disconnection) ]
1 +	<input type="text" value="EXE"/>	<input 2"="" type="text" value="EC0&gt;00:0 - 1&lt;/td&gt;&lt;td rowspan="/> [ The status changes to battery connection after entering second data 1. ]	
		<input type="text" value="OK"/>	

## STATION/TRUNK STATUS DISPLAY

### General Description

This feature allows station/trunk connection status to be displayed on the MAT. If the status is abnormal, this feature can forcibly release the connection using the MOC Terminal feature of MAT-WorX or the CAT.

### Service Conditions

- (1) Printout of connection status or execution report of forced release is available through the printer connected to the MAT.
- (2) This feature is available for the following items:
  - Trunk number (analog trunks)
  - Station number
  - Virtual station number (Except for Intercom/Attendant position loop line.)
- (3) The MAT continues to scan and update the latest connection status on the screen on a real-time basis.

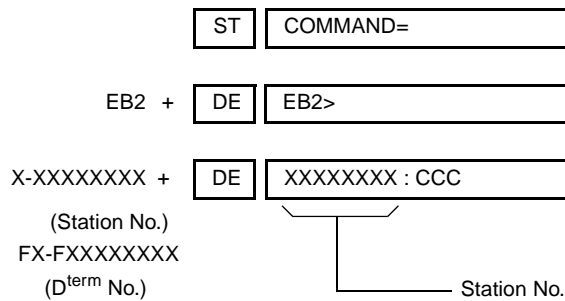
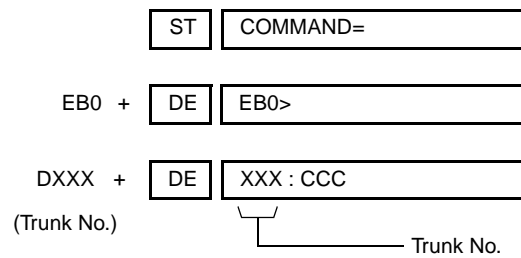
## Programming Procedure

No programming is required.

## Operating Procedure

- (1) To display Station/Trunk Status:  
Refer to the MATWorX Studio User's Guide.
- (2) To forcibly release the station/trunk connection:

Operation:



## DIAGNOSTICS

### General Description

To assist maintenance personnel, this feature provides diagnostic capabilities such as fault code generation, device status information and alarm information recording, which can be accessed from the MAT or the CAT.

### Service Conditions

(1) The following station status information can be displayed on the MAT or the CAT by direct command:

- Idle
- Line Lockout
- Dialing
- Tone Trunk Connection (reorder tone, busy tone, service set tone, etc.)
- Types of Connection (station-to-station, three-way calling, voice calling, holding, etc.)
- Destination number (trunk number, register number)
- Short circuit on line

(2) The following trunk status information can be displayed on the MAT or the CAT by direct command:

- Idle
- Ringing in
- Incoming queue to Attendant Console
- Holding
- In a tandem connection
- Incoming queue to UCD
- Dialing
- Receiving dialed digits

- (3) The following information is stored and can be displayed on the MAT or the CAT using a memory dump command in hexadecimal format:
- Program address where an endless loop has occurred
  - Last initialization time for main program
  - Last initialization time for firmware program
  - The reason for initialization (power-on, **RESET** key, endless loop, rotary switch, command from MAT or CAT)
- (4) The PBX has a built-in patrol program that monitors the status of all connected devices. Additionally, when no response or an invalid response from a device is received, this program stores in memory the slot number of that device. From the MAT or the CAT, a maintenance person can read the slot number of any device that does not respond to the main processor or provides an illegal status to the main processor.

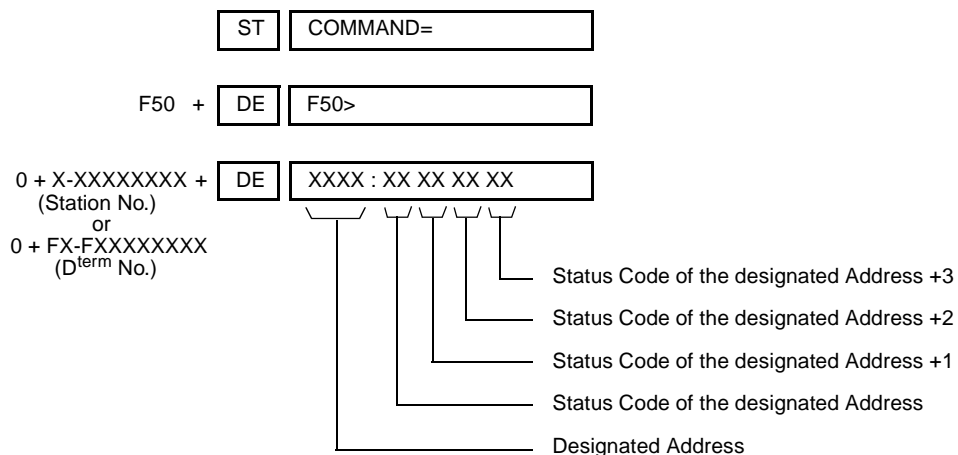
## Programming Procedure

No programming is required.

## Operating Procedure

### (1) Station Status Information

Operation:



For the meaning of status code, see [Table 1-10](#).

**Table 1-10 Station Status Information**

<b>STATUS CODE</b>	<b>DESCRIPTION</b>	<b>REMARKS</b>
01	Idle	
02	In Line Lockout mode	
10	Dialing to an ORT	
11	Dialing to a trunk	
12	Dialing to an ORT (After consultation hold a station)	
13	Dialing to an ORT (After consultation hold a trunk)	
14	Dialing to a trunk (After consultation hold a station)	
15	Dialing to a trunk (After consultation hold a trunk)	
1F	Dialing to an ORT (After consultation hold 3 party Conference Trunk)	
20	In Reorder Tone connection	
21	In Reorder Tone connection (While consultation hold a Station)	
22	In Reorder Tone connection (While consultation hold a trunk)	
23	In Reorder Tone connection (While consultation hold 3 party Conference Trunk)	
2C	In Howler Tone connection	
30	In Service Set tone connection	
32	In Service Set tone connection (While consultation hold a trunk)	
40	In Ringback Tone Connection	
41	In Ringback Tone Connection for the second call (After consultation hold a station)	
42	In Ringback Tone connection for the second call (After consultation hold a trunk)	
44	In Ringback Tone connection for the operator call	
45	In Ringback Tone connection for operator call (After consultation hold a station)	



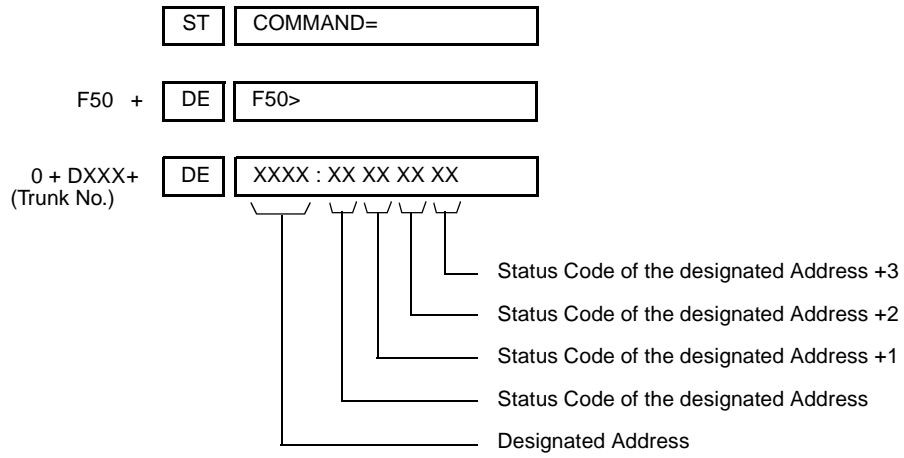
**Table 1-10 Station Status Information (Continued)**

<b>STATUS CODE</b>	<b>DESCRIPTION</b>	<b>REMARKS</b>
46	In Ringback Tone connection for operator call (After consultation hold a trunk)	
50	Ringing (Call from a station)	
51	Ringing (Call from an outside party)	
55	Ringing (Automatic Wake Up Call)	
60	In Station to Station connection	
62	In 3 Way Calling	
65	Holding	
66	Voice Call to a D <sup>term</sup>	
67	Voice Call from a Station	
71	In Station to Trunk connection	
72	Three-way calling with a station and a trunk	
C4	In a CAT mode (For D <sup>term</sup> )	
C8	In a UCD Queue	
C9	In a UCD Queue after holding a station	
CA	In a UCD Queue after holding a trunk	

**NOTE:** The status codes not described in this table mean busy conditions.

(2) Trunk Status Information

Operation:



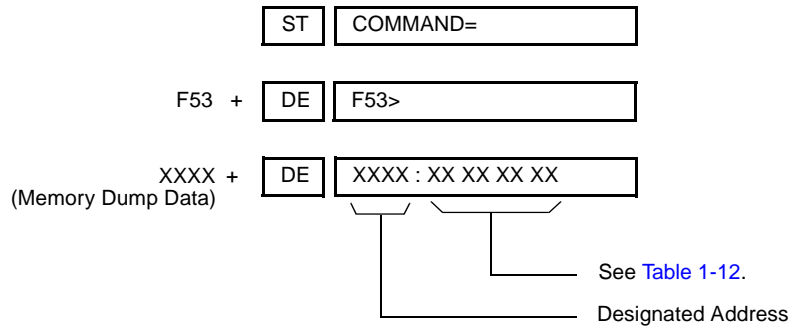
For the meaning of status code, see [Table 1-11](#).

**Table 1-11 Trunk Status Information**

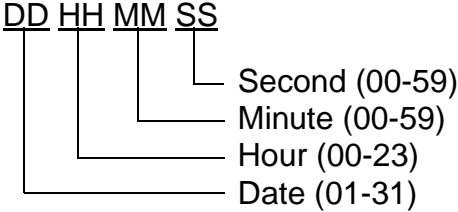
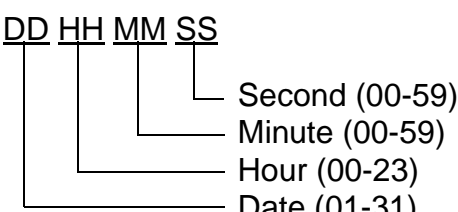
<b>STATUS CODE</b>	<b>DESCRIPTION</b>	<b>REMARKS</b>
01	Incoming queue to Attendant Console	
03	Attendant Camp On	
04	In a trunk to station connection	
05	Dialing In (Tie Line)	
06	In a tandem connection	
08	Hold by Exclusive/Nonexclusive Hold	
09	TAS in progress	
0A	Incoming queue to UCD	
0B	Threeway Calling with a station and two trunks	
0D	In Ringback Tone/Busy Tone connection (Tie Line)	
0E	Waiting for release signal from distant office	
10	Sending dialed digits (Outgoing Trunk of a tandem connection)	
11	Threeway calling with two stations	
14	Dialing In (Incoming Trunk of a trunk to trunk connection)	
19	Ringling In (Trunk Direct Appearance on D <sup>term</sup> )	
1A	Ringling In (Direct In Termination-DIT)	
1B	Ringling In (Trunk Direct Appearance and DIT)	
20	Holding by Call Hold	
21	Holding by Call Park	
2A	Incoming Queue to UCD (While sending message)	
2B	Incoming Queue to UCD (After sending message)	
FF	Idle	

### (3) Alarm Information

Operation:



**Table 1-12 Alarm Information**

MEMORY DUMP DATA	ALARM INFORMATION	REMARKS
0000	Last Initialization Time for Main Processor (MP) DD HH MM SS 	
0001	Reason for System Initialization 00: Power on 01: SW1 on MP card 02: Endless Loop in H-Rank 03: Endless Loop in L-Rank 05: Stack Trouble 06: Address Trouble 07: COP Alarm 08: Abort 09: SW3 on MP card 0B: Command from MAT/CAT	No fault System fault No fault
0004	Last Initialization Time for Firmware Processor (FP0-FP3) DD HH MM SS   <b>NOTE:</b> Press the <input type="button" value="S"/> key to display the next FP data.	

## BATTERY REPLACEMENT

The interval of battery replacement depends on the ambient temperature.

The following caution label, which is attached to the reverse side of the Front Cover for PIM and BATTM, shows battery replacement intervals.

When you set up the battery for the first time, record the installation date. Refer to the BATTERY REPLACEMENT TABLE for the recommended periods to replace the battery.

<b>BATTERY REPLACEMENT TABLE</b>			
<b>INSTALLATION DATE:</b>			
AMBIENT TEMPERATURE	5 ~ 35°C (AVERAGE 25°C)	0 ~ 50°C (AVERAGE 25°C)	0 ~ 50°C (AVERAGE 40°C)
REPLACEMENT INTERVAL	3 YEARS	2 YEARS	1 YEAR

o ELECTROLYTE LEAKAGE OR OTHER HAZARDS MAY RESULT IF THE BATTERY IS NOT REPLACED IN ACCORDANCE WITH THE SPECIFIED INTERVALS.

**CAUTION** TO PREVENT INJURY AND SKIN BURN, PAY ATTENTION TO THE FOLLOWING.

- o DO NOT STRIKE A MATCH OR CAUSE A SPARK IN VICINITY OF BATTERY.
- o PLACE THE EQUIPMENT IN WELL VENTILATED AREA.
- o DO NOT SHORT.
- o REPLACE BATTERY ONLY AFTER BATTERY GASES HAVE BEEN DISPERSED.

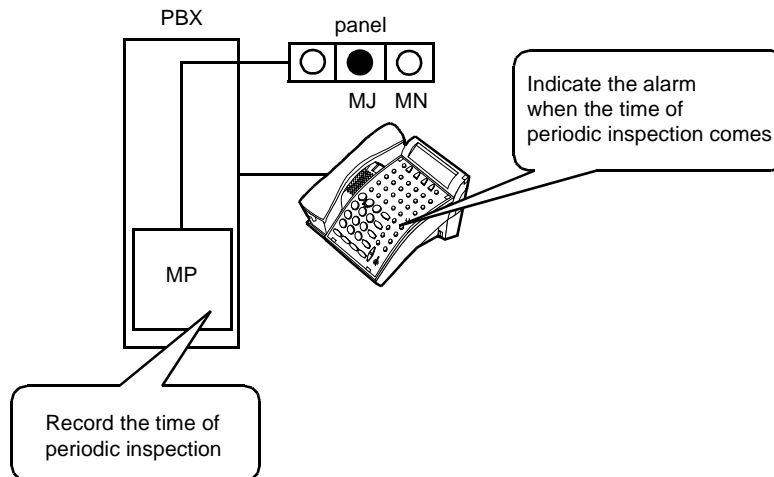
## PERIODIC ALARM

### General Description

This feature can indicate the alarm on the  $D^{\text{term}}$  function key or external alarm display panel for periodic inspection.

The PBX controls the time of periodic inspection, and when the time (assigned by CM43 Y=2) comes, indicates the alarm.

**Figure 1-2 Periodic Alarm Indications**



### Service Conditions

- (1) Use CM43 Y=2 to assign the time (year, month, date, time) of periodic inspection; for example, battery exchange.
- (2) When the time of periodic inspection comes, the  $D^{\text{term}}$  alarm function key lights when the setting is the MJ alarm, or flashes with 60 IPM when the setting is the MN alarm. At the same time, the alarm display panel can indicate the alarm.
- (3) Up to two  $D^{\text{term}}$ s in a system can indicate the periodic alarm.
- (4) The alarm indication can be cleared by assigning CMEA Y=1 from CAT/MAT.

## Programming Procedure

START	DESCRIPTION	DATA
<div style="border: 1px solid black; padding: 2px; width: fit-content; margin-bottom: 10px;">CM43</div>	Assign the date and time setting for periodic alarm.	<ul style="list-style-type: none"> <li>• Y=2</li> <li>(1) 00</li> <li>(2) YYYY MM DD HH</li> <li style="padding-left: 20px;">YYYY :1999-2050 (Year)</li> <li style="padding-left: 20px;">MM :01-12 (Month)</li> <li style="padding-left: 20px;">DD :01-31 (Date)</li> <li style="padding-left: 20px;">HH :00-23 (Hour)</li> </ul>
	Assign the battery exchange to inspection kind.	<ul style="list-style-type: none"> <li>• Y=3</li> <li>(1) 00</li> <li>(2) 0 : Battery exchange alarm</li> <li style="padding-left: 20px;">NONE◀ :No Data</li> </ul>
<div style="border: 1px solid black; padding: 2px; width: fit-content; margin-bottom: 10px;">CM51</div>	Specify the D <sup>term</sup> for alarm display.	<ul style="list-style-type: none"> <li>• Y=16</li> <li>(1) 01: D<sup>term</sup> 1</li> <li style="padding-left: 20px;">02: D<sup>term</sup> 2</li> <li>(2) X-XXXXXXXX (My line number of D<sup>term</sup>)</li> <li style="padding-left: 20px;">NONE◀ :No Data</li> </ul>
<div style="border: 1px solid black; padding: 2px; width: fit-content; margin-bottom: 10px;">CM90</div>	Assign the alarm indication key to D <sup>term</sup> function key.	<ul style="list-style-type: none"> <li>• Y=00</li> <li>(1) My line number + <span style="border: 1px solid black; padding: 0 2px;"> </span> +Key number (01-24)</li> <li>(2) F5020: Alarm display</li> </ul>
<div style="border: 1px solid black; padding: 2px; width: fit-content; margin-bottom: 10px;">CMEA</div>	Set the External Alarm Kind to MJ/ MN alarm.	<ul style="list-style-type: none"> <li>• Y=2</li> <li>(1) 16</li> <li>(2) 1: MN alarm</li> <li style="padding-left: 20px;">2: MJ alarm</li> </ul>
<div style="border: 1px solid black; padding: 2px; width: fit-content; margin-bottom: 10px;">END</div>		



- To clear the alarm display

<u>START</u>	<b>DESCRIPTION</b>	<b>DATA</b>
<div style="border: 1px solid black; padding: 2px; display: inline-block;">CMEA</div>	Clear the alarm display.	<ul style="list-style-type: none"><li>• Y=1 00: Clear both MJ/MN alarm 01: Clear MJ alarm 02: Clear MN alarm</li></ul>
<u>END</u>		

This page is for your notes.

# CHAPTER 2

## TROUBLESHOOTING

---

This chapter describes the precautions and the troubleshooting procedures.

# PRECAUTIONS

## Procedure for Unplugging/Plugging Circuit Cards

When removing a circuit card from the PIM or when mounting a circuit card in the PIM, follow the procedure in [Table 2-1](#).

**Table 2-1 Procedure for Unplugging/Plugging Circuit Cards**

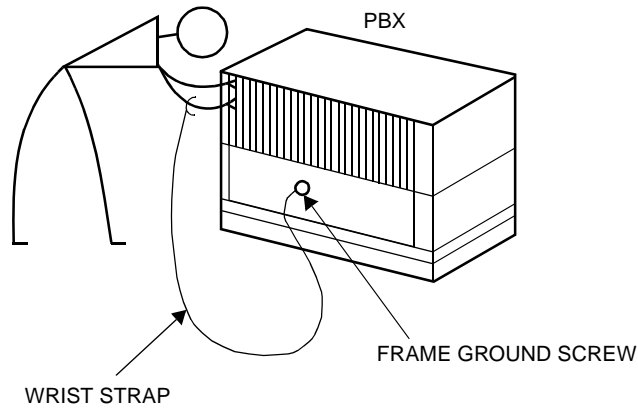
CIRCUIT CARD	PROCEDURE		CONDITION
	PLUG	UNPLUG	
<ul style="list-style-type: none"> <li>• PN-CP14 (MP)</li> <li>• PZ-PW121 (AC/DC PWR)</li> <li>• PZ-PW122 (DC/DC PWR)</li> <li>• PZ-M537 (EXPMEM)</li> </ul>	(1) Power off  (2) Plug in  (3) Power on	(1) Power off  (2) Unplug  (3) Power on	These circuit cards must be plugged in or unplugged only with power off to prevent damage to the card or other system circuitry.
<ul style="list-style-type: none"> <li>• PN-AP00-A (DBM)</li> <li>• PN-AP00-B (AP00)</li> <li>• PN-AP01 (AP01)</li> <li>• PN-BRTA (BRT)</li> <li>• PN-2BRTC (BRT)</li> <li>• PN-CP15 (FP)</li> <li>• PN-24DTA-C (DTI)</li> <li>• PN-30DTC-A (DTI)</li> <li>• PN-24PRTA (PRT)</li> <li>• PN-PW00 (EXTPWR)</li> <li>• PN-4RSTB (MFR)</li> <li>• PN-4RSTC (CIR)</li> <li>• PN-SC00 (CCH)</li> <li>• PN-SC01 (DCH)</li> <li>• PN-SC03 (ICH)</li> <li>• PN-SC03-A (CSH)</li> </ul>	(1) Power off or MB switch on  (2) Plug in  (3) Power on or MB switch off	(1) Power off or MB switch on  (2) Unplug  (3) Power on	These circuit cards must be plugged in or unplugged under Make Busy condition or power off to prevent damage to the card or other system circuitry.

## Static Electricity Guard

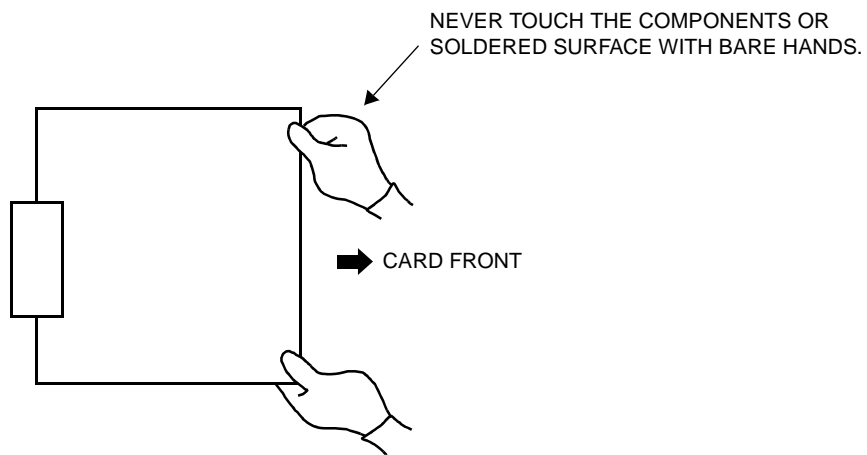
You must wear a grounded wrist strap to protect circuit cards from static electricity.

**Figure 2-1 Static Electricity Guard (1 of 2)**

- WHEN PLUGGING/UNPLUGGING A CIRCUIT CARD

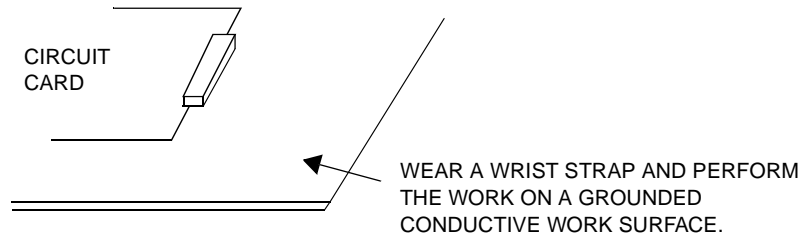


- WHEN HOLDING A CIRCUIT CARD

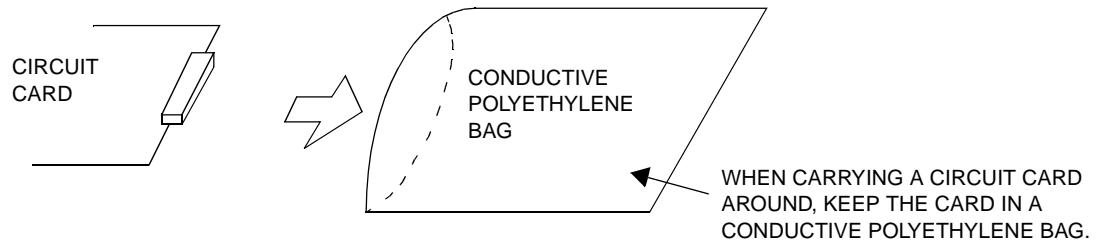


### Figure 2-1 Static Electricity Guard (2 of 2)

- WHEN MAKING A SWITCH SETTING ON A CIRCUIT CARD

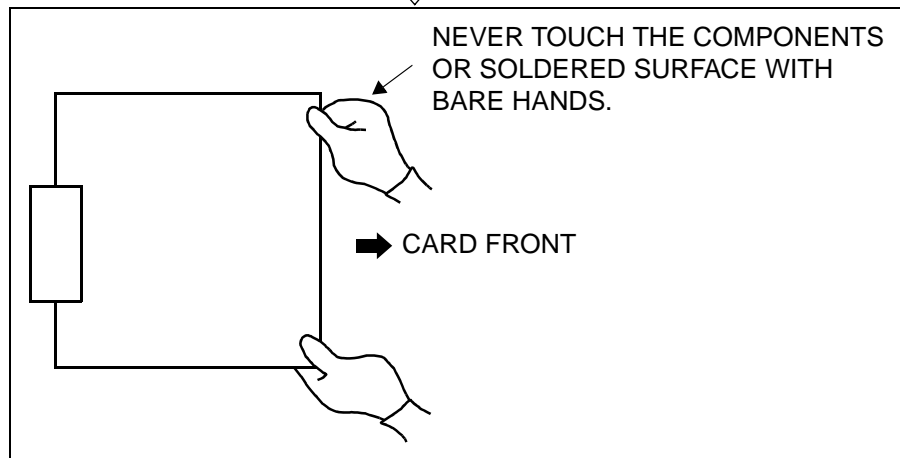
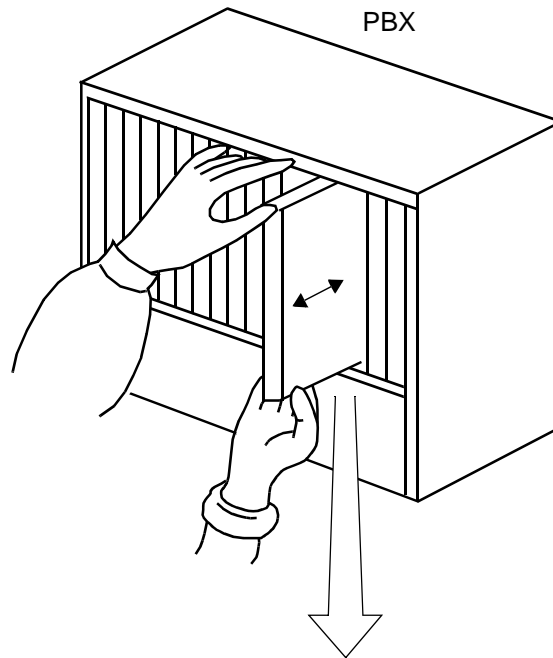


- WHEN CARRYING A CIRCUIT CARD



### CAUTION

You must hold the edge of a circuit card when plugging or unplugging the circuit card. If you touch another area, you may be exposed to hazardous voltages.

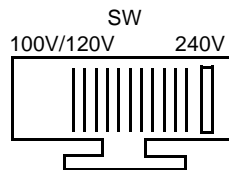


## Turning Power ON

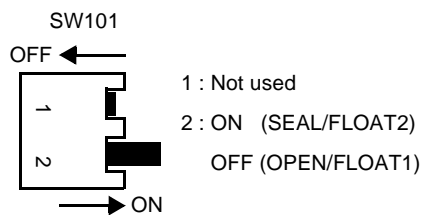
### CAUTION

1. When the operating power is being supplied to the PZ-PW121 card, do not plug/unplug this circuit card into/from its mounting slot.
2. When the system is configured with two or more PIMs, the BUS cable provides gang control for the PZ-PW121 card of PIM0 and other PIMs. Therefore, if the power of PIM0 is off, no power is supplied to the whole system even when the power switch(es) of other PIMs are left on. Note, however, that the battery continues to charge even under these circumstances.
3. Do not turn off the PZ-PW121 card on PIM1 to PIM7 when the system is operating.

- (1) Check the switch position of each PZ-PW121 card before turning power on.
  - Make sure that the AC120V/240V selector switch is positioned to appropriate voltage for each country (AC120V or AC240V).



- Make sure that the battery mode selector switch is positioned as shown below to meet the kind of battery:



- (2) Turn the SW1 switches of all the PZ-PW121 cards to ON. First, turn ON PIM1 to PIM7. Then, turn ON PIM0 last of all.



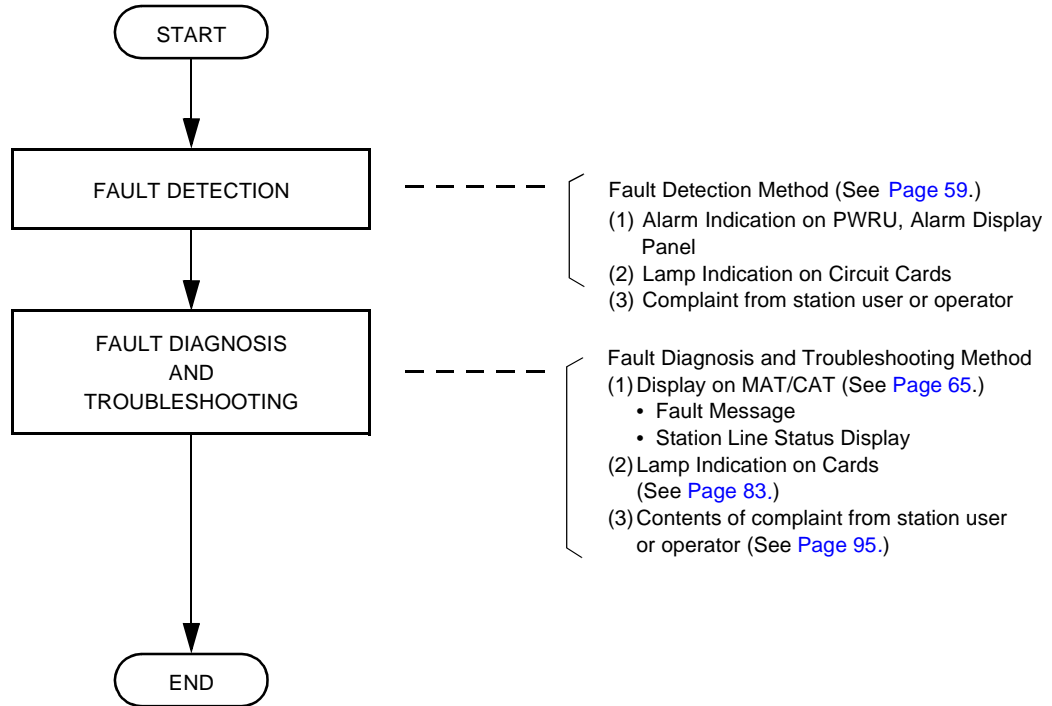
## Turning Power OFF

- (1) Before turning power off, make sure that all line/trunk cards are not operating by no busy lamps indication.
- (2) Turn the SW1 switches of all the PZ-PW121 cards to OFF. First, turn OFF PIM0. Then, turn OFF PIM1 to PIM7.

# OUTLINE OF TROUBLESHOOTING

Figure 2-2 shows an outline of the recommended troubleshooting procedure.

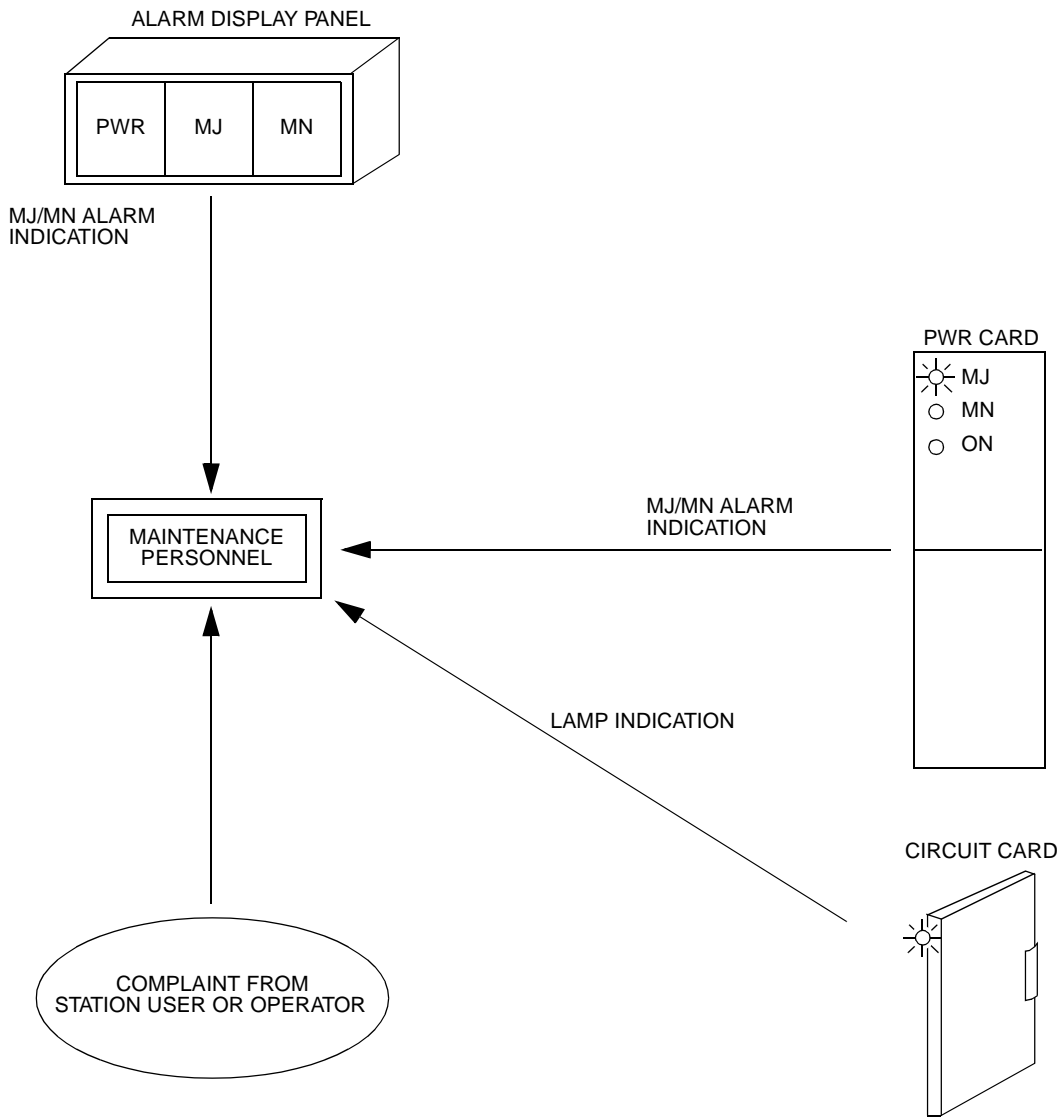
**Figure 2-2 Troubleshooting Outline**



# FAULT DETECTION

This section describes the way in which alarm indications are given. If a fault occurs in the system, you can detect the fault via the routes shown in [Figure 2-3](#).

**Figure 2-3 Alarm Indication Routes**



(1) Fault Detection by Alarm Indication

When a fault occurs in the system, you can detect the fault by a Major (MJ) alarm or Minor (MN) alarm indicated on the AC/DC PWR card or by the external Alarm Display Panel.

(2) Fault Detection by Lamp Indication on Circuit Cards

When a fault occurs in the system, you can detect the fault by lamp indication on circuit cards, such as a Major (MJ) or Minor (MN) alarm indicated on the MP card. [Table 2-2](#) identifies the alarm indication lamps on each circuit card. For details of lamp indication on circuit cards, refer to the Installation Procedure Manual.

(3) Fault Detection by Complaint from Station User or Operator

When you receive a complaint about a problem from a station user or an operator, collect as much information on the problem as possible, and then troubleshoot the problem according to the procedure in ["Troubleshooting by Contents of Complaint" on Page 95](#).

**Table 2-2 Lamp Indications on Circuit Cards**

KIND OF CIRCUIT CARD	CARD NAME	LAMP NAME	COLOR	INDICATIONS	
				NORMAL	ABNORMAL
Control Cards	PN-CP14 (MP)	RUN	Green	120 IPM Flash	Steady ON or OFF
	PN-CP15 (FP)	RUN	Green	120 IPM Flash	Steady ON or OFF
	PN-PW00 (EXTPWR)	RUN	Green	Steady ON	OFF
	PZ-PW121 (AC/DC PWR)	ON	Green	Steady ON	OFF
	PZ-PW122 (DC/DC PWR)	ON	Green	Steady ON	OFF
Application Processor Cards	PN-AP00-A (DBM)	RUN	Green	120 IPM Flash	Steady ON or OFF
	PN-AP00-B (AP00)	RUN	Green	120 IPM Flash	Steady ON or OFF
	PN-AP01 (AP01)	RUN	Green	120 IPM Flash	Steady ON or OFF
	PN-BRTA (BRT)	RUN	Green	120 IPM Flash	Steady ON or OFF
		ALM	Red	OFF	Steady ON
	PN-2BRTC (BRT)	RUN	Green	120 IPM Flash	Steady ON or OFF
		ALM0	Red	OFF	Steady ON
		ALM1	Red	OFF	Steady ON
	PN-CC01 (ETHER)	RUN	Green	60 IPM Flash	Steady ON or OFF
	PN-24DTA-C (DTI)	RUN	Green	120 IPM Flash	Steady ON or OFF
		AIS	Red	OFF	Steady ON
		RMT	Red	OFF	Steady ON
		FRM	Red	OFF	Steady ON
		PCM	Red	OFF	Steady ON
		CRC	Red	OFF	Steady ON

**Table 2-2 Lamp Indications on Circuit Cards (Continued)**

KIND OF CIRCUIT CARD	CARD NAME	LAMP NAME	COLOR	INDICATIONS	
				NORMAL	ABNORMAL
Application Processor Cards	PN-30DTC-A (DTI)	RUN	Green	120 IPM Flash	Steady ON or OFF
		AIS	Red	OFF	Steady ON
		MRMT	Red	OFF	Steady ON
		RMT	Red	OFF	Steady ON
		MFRM	Red	OFF	Steady ON
		FRM	Red	OFF	Steady ON
		PCM	Red	OFF	Steady ON
	PN-24PRT (PRT)	RUN	Green	120 IPM Flash	Steady ON or OFF
		LC	Green	Steady ON	OFF
		AIS	Red	OFF	Steady ON
		RMT	Red	OFF	Steady ON
		FRM	Red	OFF	Steady ON
		PCM	Red	OFF	Steady ON
		CRC	Red	OFF	Steady ON
	PN-4RSTB (MFR)	RUN	Green	120 IPM Flash	Steady ON or OFF
	PN-4RSTC (CIR)	RUN	Green	120 IPM Flash	Steady ON or OFF
	PN-SC00 (CCH)	RUN	Green	120 IPM Flash	Steady ON or OFF
		LC	Green	Steady ON	OFF
	PN-SC01 (DCH)	RUN	Green	120 IPM Flash	Steady ON or OFF
		LC	Green	Steady ON	OFF
	PN-SC03 (ICH)	RUN	Green	120 IPM Flash	Steady ON or OFF
		DOPE0	Green	Steady ON	OFF
		DOPE1	Green	Steady ON	OFF
		DOPE2	Green	Steady ON	OFF
		DOPE3	Green	Steady ON	OFF
		DOPE4	Green	Steady ON	OFF
		DOPE5	Green	Steady ON	OFF
		DOPE6	Green	Steady ON	OFF
		DOPE7	Green	Steady ON	OFF

**Table 2-2 Lamp Indications on Circuit Cards (Continued)**

KIND OF CIRCUIT CARD	CARD NAME	LAMP NAME	COLOR	INDICATIONS	
				NORMAL	ABNORMAL
Application Processor Cards	PN-SC03-A (CSH)	RUN	Green	120 IPM Flash	Steady ON or OFF
		DOPE0	Green	Steady ON	OFF
		DOPE1	Green	Steady ON	OFF
		DOPE2	Green	Steady ON	OFF
		DOPE3	Green	Steady ON	OFF
		DOPE4	Green	Steady ON	OFF
		DOPE5	Green	Steady ON	OFF
		DOPE6	Green	Steady ON	OFF
		DOPE7	Green	Steady ON	OFF
Line /Trunk Cards	PN-2COTD (COT) <b>[For Australia/ Others]</b>	LF0	Red	OFF	Steady ON
		LF1	Red	OFF	Steady ON
	PN-4COTE (COT) <b>[For Australia]</b>	LF0	Red	OFF	Steady ON
		LF1	Red	OFF	Steady ON
		LF2	Red	OFF	Steady ON
		LF3	Red	OFF	Steady ON
	PN-6COTJ (COT) <b>[For Australia]</b>	LF0	Red	OFF	Steady ON
		LF1	Red	OFF	Steady ON
		LF2	Red	OFF	Steady ON
		LF3	Red	OFF	Steady ON
		LF4	Red	OFF	Steady ON
		LF5	Red	OFF	Steady ON

**Table 2-2 Lamp Indications on Circuit Cards (Continued)**

KIND OF CIRCUIT CARD	CARD NAME	LAMP NAME	COLOR	INDICATIONS	
				NORMAL	ABNORMAL
Line/Trunk Cards	PN-8COTT (COT) [For Australia]	LF0	Red	OFF	Steady ON
		LF1	Red	OFF	Steady ON
		LF2	Red	OFF	Steady ON
		LF3	Red	OFF	Steady ON
		LF4	Red	OFF	Steady ON
		LF5	Red	OFF	Steady ON
		LF6	Red	OFF	Steady ON
		LF7	Red	OFF	Steady ON
	PN-2CSIA (CSI) [For North America/ Latin America]	OPE	Green	Steady ON	OFF
		B12	Red	ON/OFF	60 IPM Flash
		B11	Red	ON/OFF	60 IPM Flash
		B10	Red	ON/OFF	60 IPM Flash
		B02	Red	ON/OFF	60 IPM Flash
		B01	Red	ON/OFF	60 IPM Flash
		B00	Red	ON/OFF	60 IPM Flash
	PN-2CSIA-A (CSI) [For Australia/ Others]	OPE	Green	Steady ON	OFF
		B12	Red	ON/OFF	60 IPM Flash
		B11	Red	ON/OFF	60 IPM Flash
		B10	Red	ON/OFF	60 IPM Flash
		B02	Red	ON/OFF	60 IPM Flash
		B01	Red	ON/OFF	60 IPM Flash
		B00	Red	ON/OFF	60 IPM Flash
	PN-M03(M03)	OPE	Green	Steady ON	OFF
	PN-M10(M10)	CK0	Green	Steady ON	OFF
		CK1	Green	Steady ON	OFF
		TALM	Red	OFF	Steady ON
		RALM	Red	OFF	Steady ON



# FAULT DIAGNOSIS AND TROUBLESHOOTING

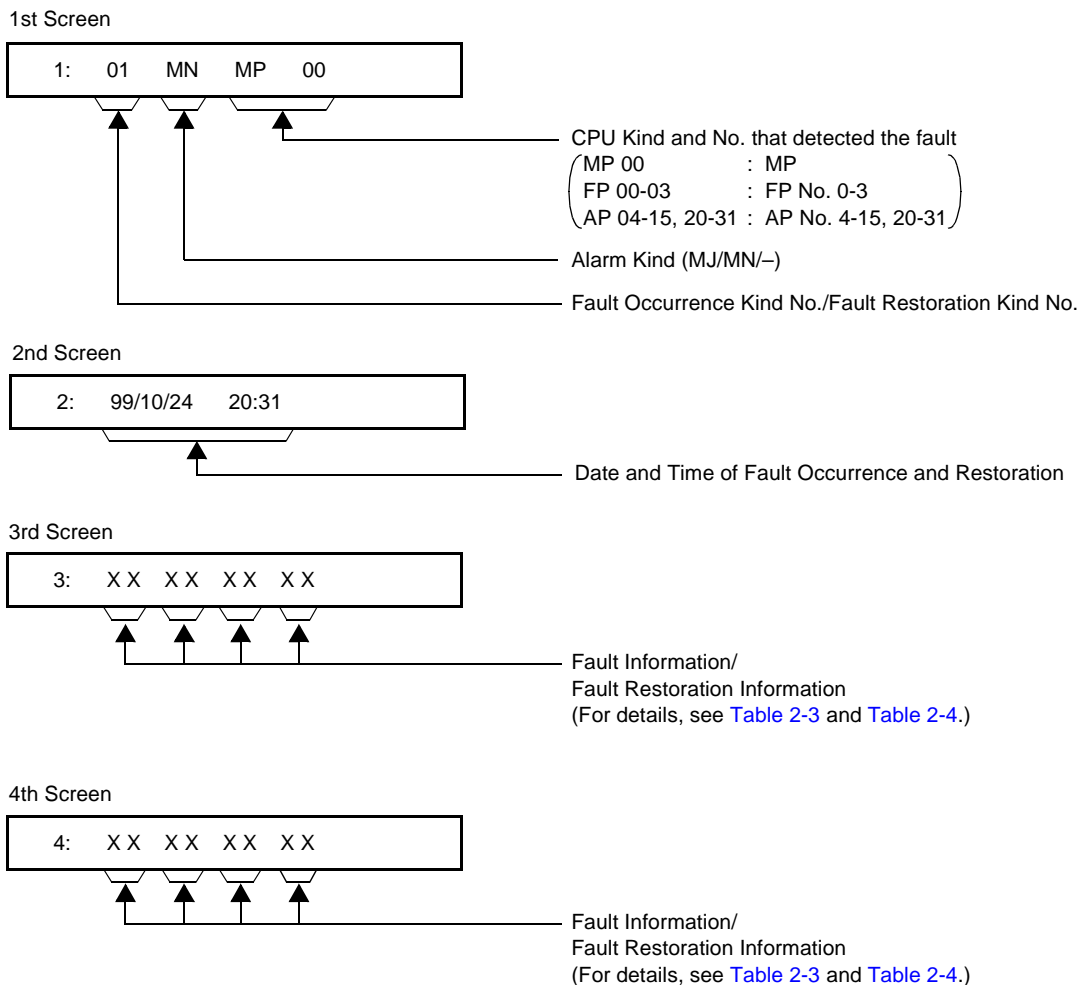
## Display on MAT/CAT

When the MJ/MN alarm is on, you can diagnose the contents of the fault by the Fault Message and the Station Line Status Display features, which are displayed on the MAT or the CAT, and restore the fault.

## FAULT MESSAGE

Item (1) shows the display format for the Fault Message feature, and item (2) shows the fault diagnosis and troubleshooting method. For details of the Fault Message feature, see "[Fault Messages](#)" on Page 5.

### (1) Display Format



(2) Fault Diagnosis and Troubleshooting

[Table 2-3](#) shows the fault information and the remedial action on each fault kind. [Table 2-4](#) shows the fault restoration information on each fault restoration kind. Diagnose contents of the fault and perform the remedial action listed in [Table 2-3](#).

If the corresponding fault restoration kind number shown in [Table 2-4](#) also displays, no specific action is required.

**Table 2-3 Remedial Action on Each Fault Kind**

FAULT KIND NUMBER	FAULT CONTENT	FAULT INFORMATION	REMEDIAL ACTION
01	System initialized	3: <u>XX XX XX XX</u> ①②      ③ 4: <u>XX</u> XX XX XX ③ ① Kind of System Initialization related information 1: Program address information 2: Receive command information F: No system initialization related information ② Initial Kind (See below.) ③ The address of the program which caused system initialization	
		Initial Kind 0: Power On Initialize	No specific action is required.
		Initial Kind 1: Initialize by Reset Button (SW1)	
		Initial Kind 2: Serious failure 1	Replace the MP card.
		Initial Kind 3: Serious failure 2	Replace the MP card.
		Initial Kind 5: Serious failure 3	Replace the MP card.
		Initial Kind 6: Serious failure 4	Replace the MP card.
		Initial Kind 7: Serious failure 5	Replace the MP card.
		Initial Kind 8: Serious failure 6	Replace the MP card.
		Initial Kind 9: SW3 was changed to 0	No specific action is required.
		Initial Kind A: Serious failure 7	Replace the MP card.
		Initial Kind B: Initialize by CAT/MAT	No specific action is required.

**Table 2-3 Remedial Action on Each Fault Kind (Continued)**

FAULT KIND NUMBER	FAULT CONTENT	FAULT INFORMATION	REMEDIAL ACTION
04	MP-FP/AP communication failure	3: <u>XX</u> <u>XX</u> <u>XX</u> <u>XX</u> ① ② ③ ① Communication Failure Kind 00: Overflow of data sending buffer to the FP/AP 01: Invalid data received from FP/AP ② Number of communication failures ③ FP/AP Number 00-03: FP No. 0-3 04-15: AP No. 4-15, 20-31	Replace the corresponding FP or AP card indicated in the FP/AP Number.
08	FP/AP card down	3: <u>XX</u> <u>XX</u> <u>XX</u> <u>XX</u> └─ FP/AP Number 00-03 :FP No. 0-3 04-15, 20-31 :AP No. 4-15, 20-31	Replace the corresponding FP or AP card indicated in the FP/AP Number.
09	Power failure	3: <u>XX</u> <u>XX</u> <u>XX</u> <u>XX</u> └─┬─┬─┬─┬─ Power Failure Kind └─┬─┬─┬─┬─ (See below.)	
		Power Failure Kind 00: AC input failure	Check to see if the AC power source is cut off or the plug is disconnected.
		Power Failure Kind 01: Fuse break	Check for a break in the battery fuse.
		Power Failure Kind 02: PWR alarm	① Check the output voltage of the PWR card. ② Replace the PWR card.

**Table 2-3 Remedial Action on Each Fault Kind (Continued)**

FAULT KIND NUMBER	FAULT CONTENT	FAULT INFORMATION	REMEDIAL ACTION
12	CS/ZT Fault	3. <u>XX XX XXXX</u> ① ② ③ ① Fault Kind (See below.) ② AP No. of CS/ZT fault occurrence 04-15, 20-31 ③ CS/ZT Interface No. of CS/ZT fault occurrence 000-255	
		Fault Kind 00: Fault notice from CS/ZT	No specific action is required.
		Fault Kind 01: CS/ZT initial failure	① Make the CS/ZT Make busy or Make idle condition by CME5 Y=3. ② Turn ON • OFF the CS/ZT power switch.
		Fault Kind 02: CS/ZT condition read failure	① Make the CS/ZT Make busy or Make idle condition by CME5 Y=3. ② Turn ON • OFF the CS/ZT power switch.
		Fault Kind 03: CS/ZT condition unmatched	No specific action is required.
Fault Kind 04: B channel condition unmatched	No specific action is required.		

**Table 2-3 Remedial Action on Each Fault Kind (Continued)**

FAULT KIND NUMBER	FAULT CONTENT	FAULT INFORMATION	REMEDIAL ACTION
12	CS/ZT Fault	Fault Kind 05: SYS-ID upload failure	① Check the LEN No. of the CS/ZT with SYS-ID is correct by CMAE Y=00>02 ② Make the CS/ZT Make busy or Make idle condition by CME5 Y=3. ③ Turn ON • OFF the CS/ZT power switch.
		Fault Kind 06: SYS-ID download failure	① When input the SYS-ID from MAT, check if the number is correct. ② Check the CS/ZT is CS/ZT without SYS-ID ③ Make the CS/ZT Make busy or Make idle condition by CME5 Y=3. ④ Turn ON • OFF the CS/ZT power switch.

**Table 2-3 Remedial Action on Each Fault Kind (Continued)**

FAULT KIND NUMBER	FAULT CONTENT	FAULT INFORMATION	REMEDIAL ACTION
12	CS/ZT Fault	Fault Kind 07: CS/ZT make busy failure	Make the CS/ZT Make busy or Make idle condition by CME5 Y=3.
		Fault Kind 08: CS/ZT data load failure	① Make the CS/ZT Make busy or Make idle condition by CME5 Y=3. ② Turn ON • OFF the CS/ZT power switch.
		Fault Kind 09: B channel make busy failure	① Make the CS/ZT Make busy or Make idle condition by CME5 Y=3. ② Turn ON • OFF the CS/ZT power switch.
		Fault Kind 0A: CS/ZT operation parameter change failure	① Make the CS/ZT Make busy or Make idle condition by CME5 Y=3. ② Turn ON • OFF the CS/ZT power switch.

**Table 2-3 Remedial Action on Each Fault Kind (Continued)**

FAULT KIND NUMBER	FAULT CONTENT	FAULT INFORMATION	REMEDIAL ACTION
12	CS/ZT Fault	Fault Kind 0B: LCCH sending position failure	① Make the CS/ZT Make busy or Make idle condition by CME5 Y=3. ② Turn ON • OFF the CS/ZT power switch.
		Fault Kind 0C: Carrier selection failure [North America/ Latin America Only]	No specific action is required.
		Fault Kind 0D: CS/ZT expansion data read failure	① Make the CS/ZT Make busy or Make idle condition by CME5 Y=3. ② Turn ON • OFF the CS/ZT power switch.
		Fault Kind 0E: CS/ZT expansion data setting failure	① Make the CS/ZT Make busy or Make idle condition by CME5 Y=3. ② Turn ON • OFF the CS/ZT power switch.
		Fault Kind 0F: CS/ZT operation parameter 2 changing failure	① Make the CS/ZT Make busy or Make idle condition by CME5 Y=3. ② Turn ON • OFF the CS/ZT power switch.



**Table 2-3 Remedial Action on Each Fault Kind (Continued)**

<b>FAULT KIND NUMBER</b>	<b>FAULT CONTENT</b>	<b>FAULT INFORMATION</b>	<b>REMEDIAL ACTION</b>
16	Periodic maintenance	Inspection kind 00: Battery check	Exchange the battery.
20	DTI line failure	3: <u>XX</u> XX XX XX └ Fault Details Kind (See below.)	
		Fault Detail Kind 00: PCM Loss	Check the DTI cable connection.
		Fault Detail Kind 01: Frame Loss	
		Fault Detail Kind 02: Multi frame Loss	
		Fault Detail Kind 03: AIS error	
		Fault Detail Kind 04: Remote alarm	Replace the DTI card.
		Fault Detail Kind 05: Multi remote alarm	
		Fault Detail Kind 06: S-bit error	Check the DTI cable connection.
		Fault Detail Kind 08: CRC error	
		Fault Detail Kind 09: Slip detected	
		Fault Detail Kind 0A: Main signal all 1 (for BRT)	
		Fault Detail Kind 0B: INFO 0 (for BRT)	
Fault Detail Kind 0C: INFO 2 (for BRT)			
21	DCH/BRT/PRT link connection failure	3: <u>XX</u> XX XX XX └ D-channel circuit No. In case of DCH/BRT/PRT 00: Channel No. 0	Check the status of the local-office side line or the public network side line.
22	CCH link connection failure	3: <u>XX</u> XX XX XX └ CCH No. [00-07: CCH No. 0-7]	Check the status of the local-office side line or the remote-office side line.

**Table 2-3 Remedial Action on Each Fault Kind (Continued)**

FAULT KIND NUMBER	FAULT CONTENT	FAULT INFORMATION	REMEDIAL ACTION
24 [Australia Only]	Number of faulty trunks was more than predetermined number		① Search for a line fault trunk by CMB0 Y=1 or CMF5 Y=0. ② Check to see if the trunk line is faulty.
25	Number of line lockout stations was more than predetermined number		① Search for stations in line lockout by the configuration report on the MAT. ② Place the handset of any station in line lockout back onto the hookswitch. ③ If the station remains in the line lockout state, check the line state (the line between the station and the PBX may be shorted).

**Table 2-3 Remedial Action on Each Fault Kind (Continued)**

FAULT KIND NUMBER	FAULT CONTENT	FAULT INFORMATION	REMEDIAL ACTION
26	DLC card down	3: <u>XX XX XX XX</u> ①   ②   ③ 4: <u>XX XX XX XX</u> ③ ① DLC Failure Kind (See below.) ② LEN (000-763) ③ Station No. (X - XXXXXXXX)	
		DLC Failure Kind 00: Terminal was cut off	① Check the cable connection between the terminal and the PBX. ② Check to see if the cable is cut off. ③ Check to see if the Tip wire of the cable is grounded.
		DLC Failure Kind 02: Short circuit was made on the line	Check to see if a short circuit exists on the line.
		DLC Failure Kind 03: Ring wire was grounded	Check to see if the Ring wire of the cable is grounded.
		DLC Failure Kind 04: Tip wire was grounded or terminal was unconnected	① Check the cable connection between the terminal and the PBX. ② Check to see if the cable is cut off. ③ Check to see if the Tip wire of the cable is grounded.

**Table 2-3 Remedial Action on Each Fault Kind (Continued)**

FAULT KIND NUMBER	FAULT CONTENT	FAULT INFORMATION	REMEDIAL ACTION
26	DLC card down	DLC Failure Kind 05: Terminal failure	Replace the terminal with a known good one and check to see if the same failure occurs.
		DLC Failure Kind 08: Terminal circuit failure	Replace the terminal with a known good one and check to see if the same failure occurs.
27	Synchronism of DPC missed	3: <u>XX XX XX</u> XX ① ② ① DPC Failure Kind ② DPC Number	
		DPC Failure Kind 00: DPC on the side of partner	① Check the switch setting of DPC on the side of partner. ② If the fault cannot be cleared, replace the card.
		DPC Failure Kind 01: DPC on the side of oneself	① Check the switch setting of DPC. ② If the fault cannot be cleared, replace the card.
28	SMDR output buffer memory overflow	3: <u>XX XX</u> XX XX ① ② ① Memory Kind ② Overflow Kind (See <a href="#">Page 21.</a> )	
		Memory kind 00: Billing memory block	
		Memory kind 01: Host CPU No. 1 output Buffer memory block	

**Table 2-3 Remedial Action on Each Fault Kind (Continued)**

FAULT KIND NUMBER	FAULT CONTENT	FAULT INFORMATION	REMEDIAL ACTION
28	SMDR output buffer memory overflow	Memory kind 02: Automatic print Buffer memory block	
		Memory kind 03: Automatic print Buffer memory block	Confirm if the printer power is on or printer is out of paper.
		Memory kind 04: Notice of the rest of memory block numbers in the system	
		Memory kind 05: CCIS output Buffer memory block	
		Memory kind 06: CS report traffic data memory block	
2B	CS/ZT Fault occurred	3: <u>XX XX XXXX</u> ① ② ③ ① Fault Kind (See below) ② AP No. of CS/ZT fault occurrence 4-15, 20-31 ③ CS/ZT Interface No. of CS/ZT fault occurrence 000-255	
		Fault Kind 00: CS/ZT connection down	Check the connection of CS/ZT and PBX from CS/ZT Interface No.
		Fault Kind 01: CS/ZT carrier has no space	No specific action is required.

**Table 2-4 Fault Restoration Information**

FAULT RESTORATION KIND NUMBER	FAULT RESTORATION CONTENT	FAULT RESTORATION INFORMATION
18	AP card returned to normal condition	3: <u>XX</u> XX XX XX └ FP/AP Number 00-03 : FP No. 0-3 04-15, 20-31: AP No. 4-15, 20-31
19	Power failure returned to normal condition	3: <u>XX</u> <u>XX</u> <u>XX</u> XX └ Power Failure Restoration Kind 00: AC input failure 01: Fuse break 02: PWR alarm
30	DTI line returned to normal condition	3: <u>XX</u> XX XX XX └ Fault Detail Kind 00: PCM Loss 01: Frame Loss 02: Multi frame Loss 03: AIS error 04: Remote Alarm 05: Multi remote alarm 06: S-bit Error 08: CRC Error 09: Slip Detected 0A: Main signal all 1 (for BRT) 0B: INFO 0 (for BRT) 0C: INFO 2 (for BRT)
31	DCH/BRT/PRT link connection returned to the normal condition	3: <u>XX</u> XX XX XX └ D-channel circuit No. In case of DCH/BRT/PRT 00: Channel No. 0
32	CCH link connection returned to normal condition	3: <u>XX</u> XX XX XX └ CCH No. [00-07: CCH No. 0-7]
34 [Australia Only]	Number of faulty trunks was less than predetermined number	

**Table 2-4 Fault Restoration Information (Continued)**

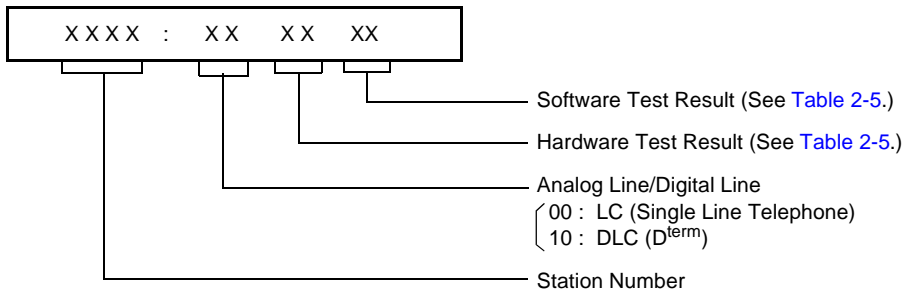
FAULT RESTORATION KIND NUMBER	FAULT RESTORATION CONTENT	FAULT RESTORATION INFORMATION
35	Number of lockout stations was less than predetermined number	
36	DLC returned to normal condition	3: <u>XX XX XX XX</u> ①   ②   ③ 4: <u>XX XX XX XX</u> ③ ① DLC Failure Kind 00: Terminal was cut off 02: Short circuit was made on the line 03: Ring wire was grounded 04: Tip wire was grounded or terminal was unconnected 05: Terminal failure 08: Terminal circuit failure ② LEN (000-763) ③ Station No. (X-XXXXXXXX)
37	Synchronism of DPC returned to normal condition	3: <u>XX XX XX XX</u> └───┬───┬───┬─── DPC Number DPC Failure Kind
38	SMDR output buffer memory returned to normal condition	3: <u>XX XX XX XX</u> └───┬─── Memory kind
3B	CS/ZT returned to normal condition	3. <u>XX XX XXXX</u> ①   ②   ③ ① Fault Restoration Kind 00: CS/ZT connection returned 01: CS/ZT carrier has space ② AP No. returned to normal condition 04-15, 20-31 ③ CS/ZT Interface No. CS/ZT returned to normal condition 000-255

## STATION LINE STATUS DISPLAY

Item (1) shows the display format for the Station Line Status Display feature, and item (2) shows the fault diagnosis and troubleshooting method.

For details of the Station Line Status Display feature, see "[Station Line Status Display](#)" on [Page 32](#).

### (1) Display Format



### (2) Fault Diagnosis and Troubleshooting

[Table 2-5](#) shows the line status and the remedial action on each indicated data. Diagnose the contents of the fault and perform the remedial action by referring to [Table 2-5](#).



**Table 2-5 Line Status and Remedial Action**

INDICATED DATA	SINGLE LINE TELEPHONE		D <sup>term</sup>	
	LINE STATUS	REMEDIAL ACTION	LINE STATUS	REMEDIAL ACTION
Hardware Test				
00	Terminal is not connected	<ul style="list-style-type: none"> <li>① Check the cable connection between the terminal and the PBX.</li> <li>② Check to see if the cable is cut off.</li> </ul>	Terminal is not connected or Tip wire is grounded	<ul style="list-style-type: none"> <li>① Check the cable connection between the terminal and the PBX.</li> <li>② Check to see if the cable is cut off.</li> <li>③ Check to see if the Tip wire of the cable is grounded.</li> </ul>
01	Terminal is connected	No action is required.	Terminal is connected	No action is required.
02	Loop (Short circuit is made on the line)	Check to see if a short circuit exists on the line.	Short circuit is made on the line	Check to see if a short circuit exists on the line.
03	Ring wire is grounded	Check to see if the Ring wire of the cable is grounded.	Ring wire is grounded	Check to see if the Ring wire of the cable is grounded.
04	LC card is not mounted	Check to see if the LC card is properly mounted.	LC card is not mounted	Check to see if the LC card is properly mounted.
05	Test busy	No action is required.	Terminal failure	Replace the terminal with a known good one and check to see if the same failure occurs.
06			DLC card down	Replace the card with a known good one and check to see if the same failure occurs.
08			Line failure detect	Replace the terminal with a known good one and check to see if the same failure occurs.

**Table 2-5 Line Status and Remedial Action (Continued)**

INDICATED DATA	SINGLE LINE TELEPHONE		D <sup>term</sup>	
	LINE STATUS	REMEDIAL ACTION	LINE STATUS	REMEDIAL ACTION
Software Test				
01	Idle	No action is required.	Idle	No action is required.
02	Line Lockout	Place the handset of the station in line lockout back onto the hookswitch.	Line Lockout	Place the handset of the station in line lockout back onto the hookswitch.
Other than 01, 02	Busy	No action is required.	Busy	No action is required.

## Lamp Indication on Cards

This section describes the method for fault diagnosis and troubleshooting when you detect the fault occurrence by lamp indication on circuit cards.

Table 2-6 shows the contents of the fault and the remedial action on each lamp status.

**Table 2-6 Remedial Action on Each Lamp Status**

CARD NAME	LAMP STATUS	FAULT CONTENT	REMEDIAL ACTION
PN-CP14 (MP)	RUN lamp is not flashing	Abnormal operation of MP card	① Check the setting of SW2. SW2-1 : ON (in case of A-law) : OFF (in case of $\mu$ -law) SW2-4 : OFF ② Check to see if the SW3 switch is set to "0" (On Line). ③ If the fault cannot be cleared, replace the card.
PN-CP15 (FP)	RUN lamp is not flashing	Abnormal operation of FP card	① Confirm the mounting slot of the FP card. (PIM2, 4, 6: Slot 12/ PIM0: Slot 11) ② Check the setting of SENSE. <u>Location of FP</u> <u>SENSE</u> PIM0                      0 PIM2                      1 PIM4                      2 PIM6                      3 ③ Reset the MB switch. (Down→Up→Down) ④ Check to see if the BUS cable between each PIM is properly connected. ⑤ If the fault cannot be cleared, replace the card.

**Table 2-6 Remedial Action on Each Lamp Status (Continued)**

CARD NAME	LAMP STATUS	FAULT CONTENT	REMEDIAL ACTION
PN-PW00 (EXTPWR)	RUN lamp is not on	-48V power is not being supplied	① Confirm the lamp indication of PZ-PW121 all lamps. ② If the fault cannot be cleared, replace the PN-PW00 card. ③ If PZ-PW121 lamp has abnormal condition, replace the PZ-PW121 card.
PZ-PW121 (AC/DC PWR)	ON lamp is not on	Operation power is not being supplied	① Confirm the connection of PZ-PW121 and PZ-PW122. ② Turn PZ-PW122 SW switch on. ③ Confirm the lamp indication of PZ-PW121 all lamps. ④ If the fault cannot be cleared, replace the PZ-PW122 card. ⑤ If PZ-PW121 lamp has abnormal condition, replace the PZ-PW121 card.
PZ-PW122 (DC/DC PWR)			
PN-AP00-A (DBM)	RUN lamp is not flashing	Abnormal operation of DBM card	① Confirm the programming data: CM05. ② Check to see if the SENSE switch is set as per the AP Number (04-15) assigned by CM05. ③ Reset the MB switch. (Down→Up→Down) ④ Check the setting of SW1. SW1-1: ON SW1-2: ON SW1-3: ON SW1-4: OFF ⑤ If the fault cannot be cleared, replace the card.

**Table 2-6 Remedial Action on Each Lamp Status (Continued)**

CARD NAME	LAMP STATUS	FAULT CONTENT	REMEDIAL ACTION
PN-AP00-B (AP00)	RUN lamp is not flashing	Abnormal operation of AP00 card	<ol style="list-style-type: none"> <li>① Confirm the programming data: CM05.</li> <li>② Check to see if the SENSE switch is set as per the AP Number (04-15, 20-31) assigned by CM05.</li> <li>③ Reset the MB switch. (Down→Up→Down)</li> <li>④ Check the setting of SW1. SW1-1: ON SW1-2: ON SW1-3: ON</li> <li>⑤ If the fault cannot be cleared, replace the card.</li> </ol>
PN-AP01 (AP01)	RUN lamp is not flashing	Abnormal operation of AP01 card	<ol style="list-style-type: none"> <li>① Confirm the programming data: CM05.</li> <li>② Check to see if the SENSE switch is set as per the AP Number (04-15) assigned by CM05.</li> <li>③ Reset the MB switch. (Down→Up→Down)</li> <li>④ If the fault cannot be cleared, replace the card.</li> </ol>
PN-BRTA (BRT)	RUN lamp is not flashing	Abnormal operation of BRT card	<ol style="list-style-type: none"> <li>① Confirm the programming data: CM05, CM07 Y=02.</li> <li>② Check to see if the SENS switch is set as per the AP Number (04-15) assigned by CM05.</li> <li>③ Reset the MB switch. (Down→Up→Down)</li> <li>④ If the fault cannot be cleared, replace the card.</li> </ol>
	ALM lamp is on	Transmission line fault	<ol style="list-style-type: none"> <li>① Confirm circuit line status.</li> <li>② Confirm PSTN line status.</li> </ol>

**Table 2-6 Remedial Action on Each Lamp Status (Continued)**

CARD NAME	LAMP STATUS	FAULT CONTENT	REMEDIAL ACTION
PN-2BRTC (BRT)	RUN lamp is not flashing	Abnormal operation of BRT card	① Confirm the programming data: CM05. ② Check to see if the SENSE switch is set as per the AP Number (04-15, 20-31) assigned by CM05, CM07 Y=2. ③ Reset the MB switch. (Down→Up→Down) ④ If the fault cannot be cleared, replace the card.
	ALM0 lamp is on	No.0 circuit transmission line fault	① Confirm No.0 circuit line status. ② Confirm PSTN line status.
	ALM1 lamp is on	No.1 circuit transmission line fault	① Confirm No.1 circuit line status. ② Confirm PSTN line status.
PN-CC01 (ETHER)	RUN lamp is not flashing	Abnormal operation of ETHER card	Replace the ETHER card.

**Table 2-6 Remedial Action on Each Lamp Status (Continued)**

CARD NAME	LAMP STATUS	FAULT CONTENT	REMEDIAL ACTION
PN-24DTA-C (DTI)	RUN lamp is not flashing	Abnormal operation of DTI card	<ul style="list-style-type: none"> <li>① Confirm the programming data: CM05, CM07 Y=01.</li> <li>② Check to see if the SENS switch is set as per the AP Number (04-15, 20-31) assigned by CM05.</li> <li>③ Reset the MB switch. (Down→Up→Down)</li> <li>④ If the fault cannot be cleared, replace the card.</li> </ul>
	CRC lamp is on	Bit Error Rate exceeds the predetermined value	<ul style="list-style-type: none"> <li>① Check the receive line and external equipment.</li> <li>② Replace the remote DTI card.</li> </ul>
	PCM lamp is on	No PCM signals arrive from the distant office	<ul style="list-style-type: none"> <li>① Check to see if the DTI cable is correctly connected.</li> <li>② Plug and unplug the DTI card. Repeat this step two or three times.</li> </ul>
	FRM lamp is on	Frame Alignment signals from the distant office cannot be received	<ul style="list-style-type: none"> <li>① Check the receive line and external equipment.</li> <li>② Replace the remote DTI card.</li> </ul>
	RMT lamp is on	Frame Alignment signals cannot be sent to the remote PBX	<ul style="list-style-type: none"> <li>① Check the transmission line and external equipment.</li> <li>② Replace the DTI card.</li> </ul>
	AIS lamp is on	Remote PBX is in the loop-back test	Check the switch settings of the remote DTI card.

**Table 2-6 Remedial Action on Each Lamp Status (Continued)**

CARD NAME	LAMP STATUS	FAULT CONTENT	REMEDIAL ACTION
PN-30DTC-A (DTI)	RUN lamp is not flashing	Abnormal operation of DTI card	① Confirm the programming data: CM05, CM07 Y=01. ② Check to see if the SENS switch is set as per the AP Number (04-15, 20-31) assigned by CM05. ③ Reset the MB switch. (Down→Up→Down) ④ If the fault cannot be cleared, replace the card.
	PCM lamp is on	No PCM signals arrive from the distant office	① Check to see if the DTI cable is correctly connected. ② Plug and unplug the DTI card. Repeat this step two or three times.
	FRM lamp is on	Frame Alignment signals from the distant office cannot be received	① Check the receive line and external equipment. ② Replace the DTI card.
	MFRM lamp is on	Multi Frame Alignment signals from the distant office cannot be received	① Check the receive line and external equipment. ② Replace the DTI card.
	RMT lamp is on	Frame Alignment signals cannot be sent to the remote PBX	① Check the transmission line and external equipment. ② Replace the DTI card.
	MRMT lamp is on	Frame Alignment signals from the distant office cannot be received	① Confirm the switch setting on the DTI board indicating an alarm. ② Replace the DTI card not indicating an alarm, with a spare.
	AIS lamp is on	Remote PBX is in the loop-back test	Check the switch settings of the remote DTI card.



**Table 2-6 Remedial Action on Each Lamp Status (Continued)**

<b>CARD NAME</b>	<b>LAMP STATUS</b>	<b>FAULT CONTENT</b>	<b>REMEDIAL ACTION</b>
PN-24PRT (PRT)	RUN lamp is not flashing	Abnormal operation of PRT card	<ul style="list-style-type: none"> <li>① Confirm the programming data: CM05, CM07 Y=01.</li> <li>② Check to see if the SENS switch is set as per the AP Number (04-15, 20-31) assigned by CM05.</li> <li>③ Reset the MB switch. (Down→Up→Down)</li> <li>④ If the fault cannot be cleared, replace the card.</li> </ul>
	LC lamp is not on	ISDN primary rate D-channel data link connection failure	Check the status of the local-office side line or the public network side line.
	CRC lamp is on	Bit Error Rate exceeds the predetermined value	<ul style="list-style-type: none"> <li>① Check the receive line and external equipment.</li> <li>② Replace the remote PRT card.</li> </ul>
	PCM lamp is on	No PCM signals arrive from the distant office	<ul style="list-style-type: none"> <li>① Check to see if the PRT cable is correctly connected.</li> <li>② Plug and unplug the PRT card. Repeat this step two or three times.</li> </ul>
	FRM lamp is on	Frame Alignment signals from the distant office cannot be received	<ul style="list-style-type: none"> <li>① Check the receive line and external equipment.</li> <li>② Replace the remote PRT card.</li> </ul>
	RMT lamp is on	Frame Alignment signals cannot be sent to the remote PBX	<ul style="list-style-type: none"> <li>① Check the transmission line and external equipment.</li> <li>② Replace the PRT card.</li> </ul>
	AIS lamp is on	Remote PBX is in the loop-back test	Check the switch settings of the remote PRT card.

**Table 2-6 Remedial Action on Each Lamp Status (Continued)**

<b>CARD NAME</b>	<b>LAMP STATUS</b>	<b>FAULT CONTENT</b>	<b>REMEDIAL ACTION</b>
PN-4RSTB (MFR)	RUN lamp is not flashing	Abnormal operation of MFR card	① Confirm the programming data: CM05. ② Check to see if the SENSE switch is set as per the AP Number (04-15, 20-31) assigned by CM05. ③ Reset the MB switch. (Down→Up→Down) ④ If the fault cannot be cleared, replace the card.
PN-4RSTC (CIR)	RUN lamp is not flashing	Abnormal operation of CIR card	① Confirm the programming data: CM05. ② Check to see if the SENSE switch is set as per the AP Number (04-15) assigned by CM05. ③ Reset the MB switch. (Down→Up→Down) ④ If the fault cannot be cleared, replace the card.
PN-SC00 (CCH)	RUN lamp is not flashing	Abnormal operation of CCH card	① Confirm the programming data: CM05. ② Check to see if the SENS switch is set as per the AP Number (04-15, 20-31) assigned by CM05. ③ Reset the MB switch. (Down→Up→Down) ④ If the fault cannot be cleared, replace the card.
	LC lamp is not on	CCH link connection failure	Check the status of the local-office side line or the remote-office side line.

**Table 2-6 Remedial Action on Each Lamp Status (Continued)**

CARD NAME	LAMP STATUS	FAULT CONTENT	REMEDIAL ACTION
PN-SC01 (DCH)	RUN lamp is not flashing	Abnormal operation of DCH card	<ol style="list-style-type: none"> <li>① Confirm the programming data: CM05.</li> <li>② Check to see if the SENS switch is set as per the AP Number (04-15, 20-31) assigned by CM05.</li> <li>③ Reset the MB switch. (Down→Up→Down)</li> <li>④ If the fault cannot be cleared, replace the card.</li> </ol>
	LC lamp is not on	DCH D-channel link connection failure	Check the status of the local-office side line or the public network side line.
PN-SC03 (ICH)	RUN lamp is not flashing	Abnormal operation of ICH card	<ol style="list-style-type: none"> <li>① Confirm the programming data: CM05.</li> <li>② After confirmation of CM05, reset the system (Push the SW1 of MP).</li> <li>③ Check to see if the SENS switch is set as per the AP Number (04-15, 20-31) assigned by CM05.</li> <li>④ Reset the MB switch. (Down→Up→Down)</li> <li>⑤ If the fault cannot be cleared, replace the card.</li> </ol>
	DOPE lamp is not on	D channel link is not connected between ICH and ILC	<ol style="list-style-type: none"> <li>① Confirm the programming data: CM06.</li> <li>② Confirm if the corresponding ILC card is removed.</li> <li>③ If the fault cannot be cleared, replace the card.</li> </ol>

**Table 2-6 Remedial Action on Each Lamp Status (Continued)**

CARD NAME	LAMP STATUS	FAULT CONTENT	REMEDIAL ACTION
PN-SC03-A (CSH)	RUN lamp is not flashing	Abnormal operation of CSH card	① Confirm the programming data: CM05. ② After confirmation of CM05, reset the system (Push the SW1 of MP). ③ Check to see if the SENS switch is set as per the AP Number (04-15, 20-31) assigned by CM05. ④ Reset the MB switch. (Down→Up→Down) ⑤ If the fault cannot be cleared, replace the card.
	DOPE lamp is not on	D channel link is not connected between CSH and CSI	① Confirm the programming data: CM06 Y=10 ② Confirm if the corresponding CSI card is removed. ③ If the fault cannot be cleared, replace the card.
PN-2COTD (COT) [For Australia/ Others]	LF lamp is on	Transmission line fault	① Search for a line fault by CMB0 Y=1 or CMF5 Y=0. ② Check to see if the trunk line is faulty.
PN-4COTE (COT) [For Australia]	LF lamp is on	Transmission line fault	① Search for a line fault by CMB0 Y=1 or CMF5 Y=0. ② Check to see if the trunk line is faulty.
PN-6COTJ (COT) [For Australia]	LF lamp is on	Transmission line fault	① Search for a line fault by CMB0 Y=1 or CMF5 Y=0. ② Check to see if the trunk line is faulty.
PN-8COTT (COT) [For Australia]	LF lamp is on	Transmission line fault	① Search for a line fault by CMB0 Y=1 or CMF5 Y=0. ② Check to see if the trunk line is faulty.

**Table 2-6 Remedial Action on Each Lamp Status (Continued)**

CARD NAME	LAMP STATUS	FAULT CONTENT	REMEDIAL ACTION
PN-2CSIA (CSI) [For North America/ Latin America]	OPE lamp is not on	D channel link is not connected between CSH and CSI	<ul style="list-style-type: none"> <li>① Confirm the programming data: CM06 Y=10.</li> <li>② Confirm if the corresponding CSH card is removed.</li> <li>③ If the fault cannot be cleared, replace the card.</li> </ul>
	B00-B12 lamp is flashing	ZT is not connected to the corresponding circuit No.	<ul style="list-style-type: none"> <li>① Confirm the programming data: CM06, CM10, CMAD.</li> <li>② Confirm cable connection and the power switch of the corresponding ZT.</li> <li>③ Confirm if the corresponding ZT is in make-busy status</li> </ul>
PN-2CSIA-A (CSI) [For Australia/ Others]	OPE lamp is not on	D channel link is not connected between CSH and CSI	<ul style="list-style-type: none"> <li>① Confirm the programming data: CM06 Y=10.</li> <li>② Confirm if the corresponding CSH card is removed.</li> <li>③ If the fault cannot be cleared, replace the card.</li> </ul>
	B00-B12 lamp is flashing	CS is not connected to the corresponding circuit No.	<ul style="list-style-type: none"> <li>① Confirm the programming data: CM06, CM10, CMAD.</li> <li>② Confirm cable connection and the power switch of the corresponding CS.</li> <li>③ Confirm if the corresponding CS is in make-busy status</li> </ul>
PN-M03(M03)	OPE lamp is not on	Abnormal connection with the DPC	<ul style="list-style-type: none"> <li>① Confirm the connection with DPC card.</li> <li>② If the fault cannot be cleared, replace the card.</li> </ul>

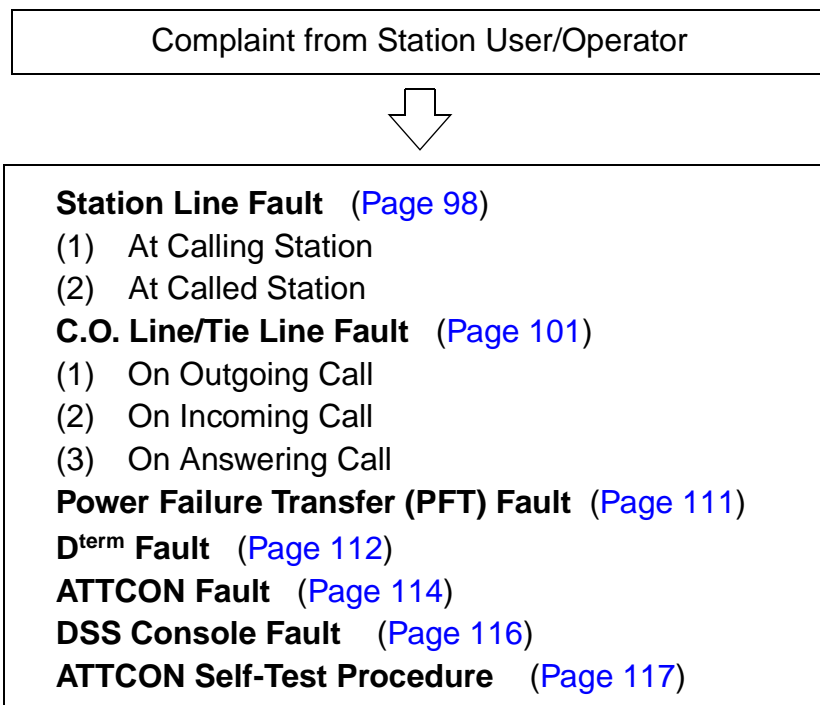
**Table 2-6 Remedial Action on Each Lamp Status (Continued)**

CARD NAME	LAMP STATUS	FAULT CONTENT	REMEDIAL ACTION
PN-M10 (M10)	CK0 lamp is not on	Cable connection failure between Digital Trunk Interface and No. 0 circuit of M10	① Check to see if the cable between Digital Trunk Interface and M10 is correctly connected. ② Check the switch setting of M10. ③ If the fault cannot be cleared, replace the card.
	CK1 lamp is not on	Cable connection failure between Digital Trunk Interface and No. 1 circuit of M10	① Check to see if the cable between Digital Trunk Interface and M10 is correctly connected. ② Check the switch setting of M10. ③ If the fault cannot be cleared, replace the card.
	TALM lamp is on	Optical output line fault	① Check to see if the cable between Digital Trunk Interface and M10 is correctly connected. ② Check the switch setting of M10. ③ If the fault cannot be cleared, replace the card.
	RALM lamp is on	Optical input line fault	① Check to see if the optical cable between the own side M10 and the remote side M10 is correctly connected. ② Check the switch setting of own side M10 and remote side M10. ③ If the fault cannot be cleared, replace the card.

## Troubleshooting by Contents of Complaint

This section describes the troubleshooting method when you receive a complaint of a problem from a station user or an operator. Select the appropriate section corresponding to the problem in [Figure 2-4](#) and perform the troubleshooting.

**Figure 2-4 Sections for Troubleshooting Procedure**



## EXPLANATION OF SYMBOLS IN TROUBLESHOOTING PROCEDURE

The following markings explain the instruction marks used in the troubleshooting procedures.

**CHECK** : With respect to the item indicated on the right side of this mark, perform a check or the required work. If an abnormality is found, take the required remedial action, such as repair, replacement, etc.

**REPLACE** : Replace the equipment or device (considered to be the fault) indicated on the right side of the mark with a spare and confirm the recovery of the fault.

## HOW TO FOLLOW THE “TREE”

The troubleshooting procedure is explained in the form of a “Tree”. Troubleshooting can be performed accurately, as well as efficiently, by following the related “Tree” path according to the information available on the fault. In the following information gives a step-by-step explanation about how to use the “Tree.”

Step 1: The maintenance personnel gathers information concerning the fault and selects the tree to use from [Figure 2-4](#).

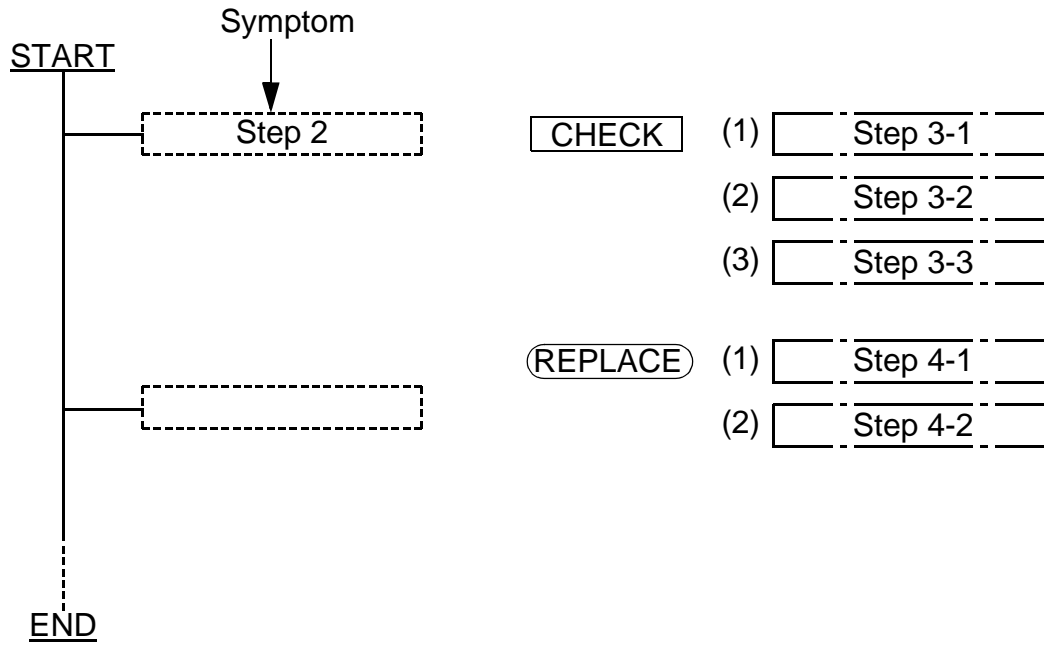
Step 2: In the selected tree, search the item concerned by checking the symptom one by one following the tree downward from the “START” point. If the related item has not been found, gather more detailed information concerning the fault.

Step 3: The items indicated by the **CHECK** mark on the right side of the items concerned suggest elements that are possibly responsible for the fault. Check each of these items. If an abnormality is found, perform the necessary remedial action such as repair, replacement, etc.

Step 4: If the fault is not recovered after a check was made on the items indicated by the **CHECK** mark and necessary actions were taken, replace the circuit card(s) and other hardware indicated by the **REPLACE** mark with spare(s). In this case, every time hardware is replaced with a spare, check whether the fault is recovered.



**Figure 2-5 How to Follow the “Tree”**



## STATION LINE FAULT

### (1) At Calling Station

#### START

Side Tone cannot be heard.

- CHECK**
- (1) On the MDF, connect a test telephone set to the faulty station line.
  - (2) If Side Tone is heard, check for trouble with the cabling and telephone set.
  - (3) If no Side Tone is heard, check for trouble with wiring on the MDF and LC card.

- REPLACE**
- (1) LC card
  - (2) Telephone set

Dial Tone is not returned.

The station telephone set is DTMF type.

- CHECK**
- (1) System Data Programming for DTMF Receiver: CM10, CM45 Y=0  
**NOTE:** Addition of an RST requires a system reset.
  - (2) System Data Programming for the station: CM10, CM12 Y=00

System does not receive any digits dialed by the station.

- CHECK**
- (1) MB switch on the FP card is set downward.
  - (2) RUN lamp on the FP or MP card is flashing.
- REPLACE**
- (1) FP card
  - (2) MP card



A

After dialing the first digit, Dial  
Tone is not disconnected.

At DTMF telephone set

**CHECK** (1) System Data Programming for the  
station: CM12 Y=00

**REPLACE** (1) PBR card (DTMF Receiver)

(2) LC card

(3) Telephone set

At any type of  
telephone set

**CHECK** (1) System Data Programming for the  
station: CM12 Y=00

**REPLACE** (1) LC card

(2) Telephone set

END

(2) At Called Station

START

At the called station, the telephone does not ring.

- CHECK** (1) ON lamp on the PWR card is on.  
(2) Volume Control of the telephone set.

- REPLACE** (1) LC card  
(2) Telephone set  
(3) PWR card (In case all stations fail within same PIM.)

The call is routed to a station other than the dialed number.

- CHECK** (1) System Data Programming for destination station Number: CM10  
(2) Call Forwarding-All Calls feature is activated at the destination station.

Ringing Signal is not disconnected after going off-hook.

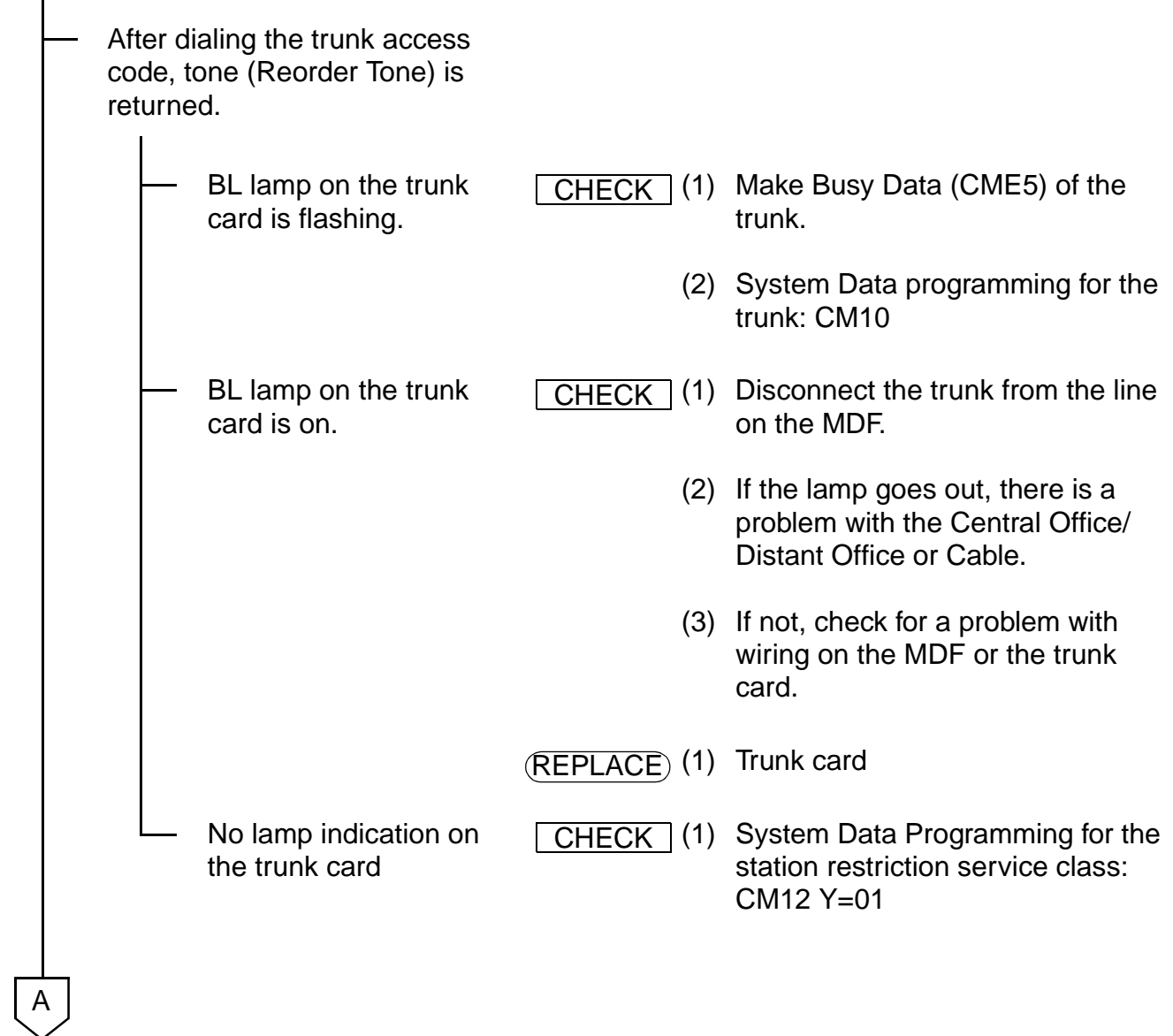
- REPLACE** (1) LC card  
(2) FP card  
(3) MP card  
(4) Telephone set

END

## C.O. LINE/TIE LINE FAULT

### (1) On Outgoing Call

START

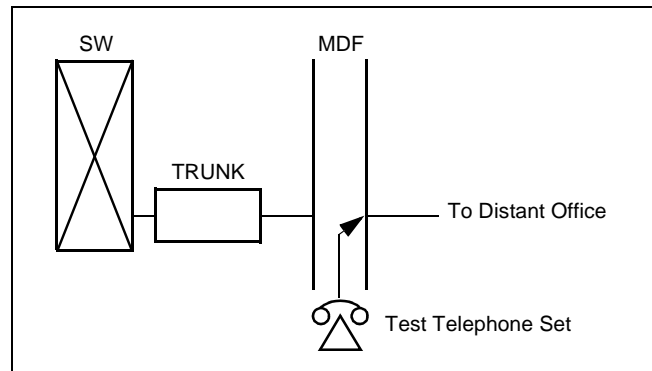


A

Dial Tone is not returned from distant office.

In case of COT card

- CHECK** (1) Disconnect the trunk from the line on the MDF.
- (2) Connect a test telephone set to the C.O. line (distant office side) on the MDF.



- (3) If Dial Tone is returned by going off-hook on the test telephone set, check for trouble with wiring on the MDF and the trunk card.
- (4) If not, there is a problem with the distant office or the C.O. line.

**REPLACE** (1) Trunk card

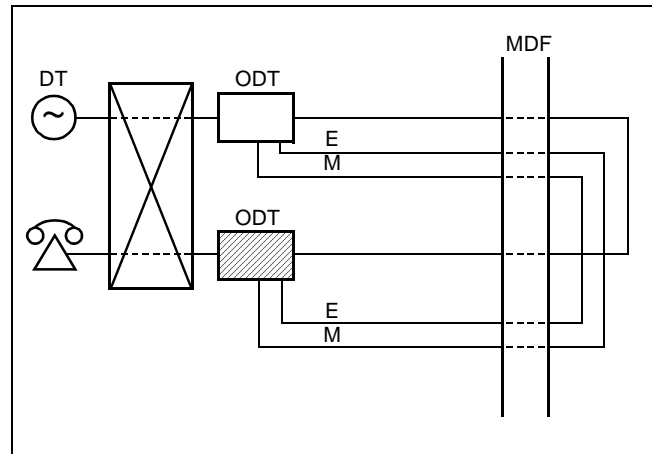
In case of ODT card

- CHECK** (1) Disconnect the trunk from the line on the MDF.
- (2) To perform a Loop-Back Test, make a back to back connection of the trunk card and another trunk within the system at the MDF.

**NOTE:** This test only works when the trunks are assigned for type V operation.

B

B



Any dialed digit is not transmitted to the distant office.

**CHECK**

- (3) If Dial Tone is returned after seizing the original trunk, there is a problem with the distant office, the Carrier Equipment, or the line.
- (4) If not, check for trouble with wiring on the MDF and the trunk card.
- (1) System Data Programming for the trunk route: CM35 Y=01, 08, 20
- (2) When the Sender Start condition is set to Wink or Delay Dial by CM35 Y=20, check if answer signal is returned from the distant office.

**REPLACE**

- (1) Trunk card
- (2) FP card
- (3) MP card

C



After dialing the first digit, Dial Tone from the distant office is not disconnected.

- CHECK**
- (1) Appropriate signal (DP/DTMF) to distant office is transmitted.
    - System Data Programming for DP signal: CM35 Y=01, 13, 23, 25, 45
    - System Data Programming for DTMF signal: CM35 Y=01, 13, 24, 26, 46
  - (2) System Data Programming for Numbering Plan: CM20>A100-A163, CM20>A200-A231, CM22, CM23, CM26

- REPLACE**
- (1) Trunk card
  - (2) FP card
  - (3) MP card

END



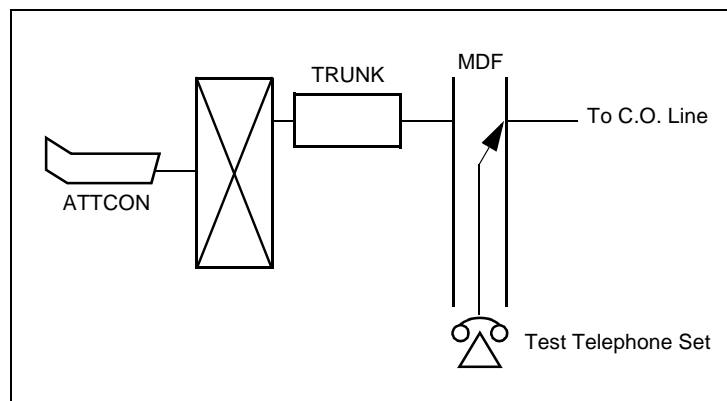
(2) On Incoming Call

**START**

C.O. Incoming Call is not terminated to ATTCON Station, DIT or TAS Buzzer.

BL lamp on the trunk card is not turned on.

- CHECK** (1) Disconnect the trunk from the line on the MDF.
- (2) Connect a test telephone set to the line on the MDF.



- (3) If the telephone rings, check for trouble with wiring on the MDF and the trunk card.
- (4) If not, there is a problem with the distant office or the line.

- REPLACE** (1) Trunk card

BL lamp is turned on.

- CHECK** (1) System Data Programming for the trunk
- In case of Termination to DIT station: CM30 Y=02, 03, 04, 05, 13, 14, 17, CM35 Y=09
  - In case of Termination to TAS Buzzer: CM30 Y=02, 03

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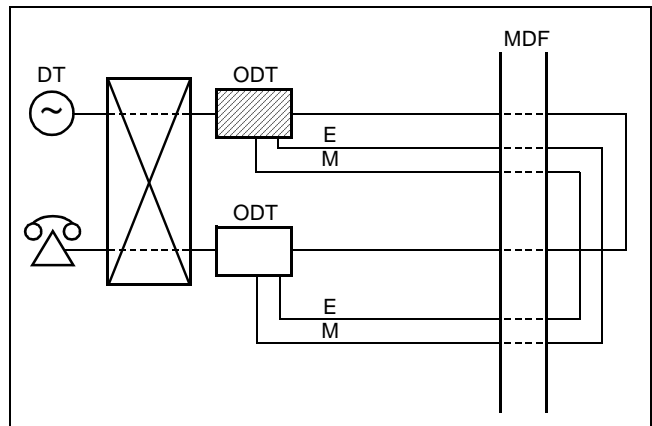
A

No Dial Tone Connection on Tie Line Incoming Call (only for the 2nd dial tone system)

In case of ODT card

**CHECK** (1) In case all Tie Line Trunks fail, check if DTMF Receivers for Tie Line Incoming Call are installed (only when the signal kind of the trunk is DTMF).

- CHECK** (1) System Data Programming for the trunk: CM35 Y=00, 09, 10.
- (2) Disconnect trunk from the line on the MDF.
- (3) To perform a Loop-Back Test, make a back to back connect of the trunk and another trunk within the system at the MDF.



- (4) If Dial Tone is returned when the call is terminated to the original trunk, there is a problem with the distant office, the Carrier Equipment, or the line.
- (5) If not, check for trouble with wiring on the MDF and the trunk card.

**REPLACE** (1) Trunk card

B

B

The Tie Line Incoming Call/DID Call is routed to a different station other than the dialed station, or to Reorder Tone.

**CHECK** (1) System Data Programming for the trunk: CM35 Y=01, 17, 61-68

**REPLACE** (1) Trunk card

(2) FP card

(3) MP card

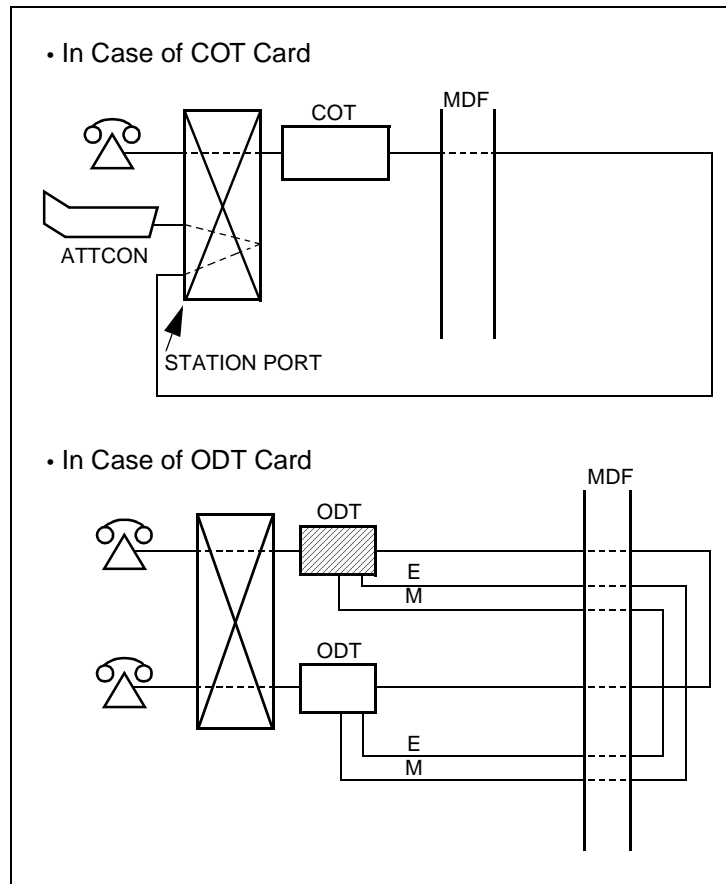
END

(3) On Answering the Call

START

Speech Path Trouble:  
No connection/One way  
connection

- CHECK** (1) Disconnect the trunk from the line on the MDF.
- (2) To perform the Speech Path Test internally, make the following connection on the MDF according to type of card.



A

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(3) If the trouble remains, replace the trunk card.

(4) If not, there is a problem with the distant office.

**REPLACE** (1) Trunk card

(2) FP card

(3) MP card

Call is dropped (This condition excludes the Line Fault detected within a system).

When the station user flashes the switch-hook

**CHECK** (1) System Data Programming for the trunk: CM35 Y=16

When the failure occurs suddenly

**CHECK** (1) Disconnect the trunk from the line on the MDF.

(2) Connect a test telephone set to the line on the MDF, and check if the failure reoccurs.

(3) If the failure recurs, there is a problem with the distant office.

(4) If not, replace the trunk card.

**REPLACE** (1) Trunk card

(2) FP card

(3) MP card

B

B

Transmission quality is not acceptable.

Noise/Distortion

**CHECK** (1) Cabling between the PBX and the MDF or between the MDF and the lines is properly run to avoid induction from an AC power cable, motor or power supply equipment.

**REPLACE** (1) Trunk card  
(2) FP card  
(3) MP card  
(4) PWR card

Low Voice Level

**CHECK** (1) Loose connection of cables on the MDF

**REPLACE** (1) Trunk card  
(2) FP card  
(3) MP card

Cross Talk

**CHECK** (1) Proper wiring on the MDF

**REPLACE** (1) Trunk card  
(2) FP card  
(3) MP card  
(4) PWR card

END

## POWER FAILURE TRANSFER (PFT) FAULT

START

Preassigned stations are not connected to the C.O. line when system alarm or power failure has occurred.

- CHECK** (1) Cross connection on the MDF is properly made.  
(2) Proper connection between the AUC card and the COT card

**REPLACE** (1) AUC card

PFT operates without Power Failure or Emergency Alarm.

- REPLACE** (1) AUC card  
(2) MP card

END

## D<sup>term</sup> FAULT

This troubleshooting procedure covers faults with the D<sup>term</sup> function only. For other faults, see ["Station Line Fault" on Page 98](#).

### START

All Keys on the D<sup>term</sup> are ineffective.

- CHECK**
- (1) Wiring on Modular Box (Rosette)
  - (2) DLC card is properly mounted.
  - (3) System Data Programming for the D<sup>term</sup> station: CM10, CM11, CM12, CM13, CM90, CM93
  - (4) RUN lamp on the FP card and MP card is flashing.

- REPLACE**
- (1) D<sup>term</sup>
  - (2) DLC card
  - (3) FP card
  - (4) MP card

Speech Path Trouble:  
No Connection/One Way  
Connection

- REPLACE**
- (1) D<sup>term</sup>
  - (2) DLC card

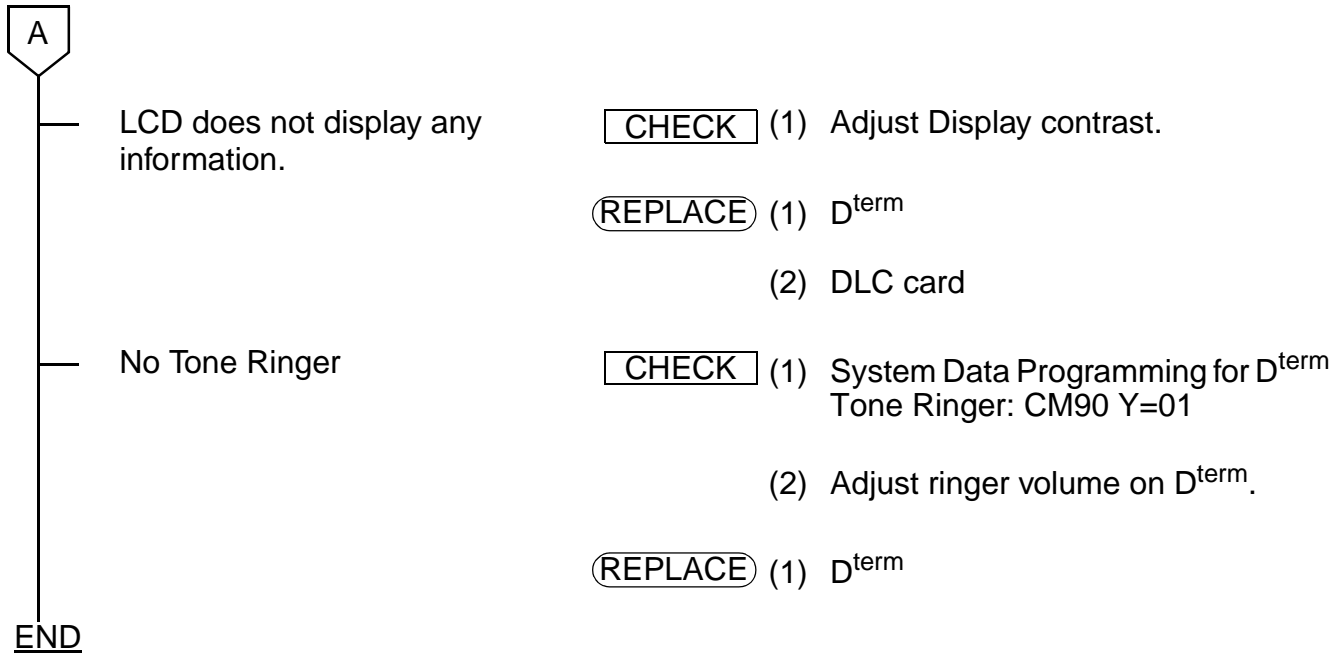
Hands Free Operation is not available.

- CHECK**
- (1) MIC lamp is on.
  - (2) Adjust speaker volume.
  - (3) Built-in Hands Free Unit is properly mounted.

- REPLACE**
- (1) Hands Free Unit within D<sup>term</sup>
  - (2) D<sup>term</sup>







## ATTCON FAULT

ATTCON means SN610 ATTCON (4-wire type ATTCON) and SN708/709/712 ATTCON (2-wire type ATTCON) and SN716 DESKCON.

### START

All keys on the ATTCON are ineffective.

- CHECK**
- (1) ATTCON Lock-out has been set via the function key.
  - (2) Perform the ATTCON Self-Test. See ["ATTCON Self-Test Procedure" on Page 117.](#)
  - (3) Wiring on Modular Box (Rosette)
  - (4) DLC card is properly mounted.
  - (5) System Data Programming for the console: CM10, CM90
  - (6) RUN lamp on the FP card and MP card is flashing.

- REPLACE**
- (1) ATTCON
  - (2) DLC card
  - (3) FP card
  - (4) MP card

Speech Path Trouble  
(No Connection/One-Way Connection)

- CHECK**
- (1) Headset or Handset on the console.
  - (2) ATTCON
  - (3) DLC card

A

A

LCD does not display any information.

- CHECK** (1) Adjust Display contrast.  
(2) To test the LCD, perform the ATTCON Self-Test. See "[ATTCON Self-Test Procedure](#)" on Page 117.

- REPLACE** (1) ATTCON  
(2) DLC card

No Tone Ringer

- CHECK** (1) System Data Programming for the console tone ringer: CM60 Y=16, 27  
(2) Adjust ringer volume on the console.  
(3) To test tone ringer, perform the ATTCON Self-Test. See "[ATTCON Self-Test Procedure](#)" on Page 117.

- REPLACE** (1) ATTCON

END

## DSS CONSOLE FAULT

START

Keys on the DSS Console are ineffective.

- CHECK**
- (1) DLC card is properly mounted.
  - (2) System Data Programming for DSS Console: CM10, CM96, CM97.

- REPLACE**
- (1) DSS Console
  - (2) DLC card
  - (3) FP card
  - (4) MP card

END

## ATTCON SELF-TEST PROCEDURE

ATTCON means SN610 ATTCON (4-wire type ATTCON) and SN708/709/712 ATTCON (2-wire type ATTCON). SN716 DESKCON has no self-test function.

The ATTCON has a self-test function (shown below) that performs on an off-line basis.

START	OPERATION	LCD DISPLAY
	(1) Remove the modular cord.	
	(2) Reconnect the modular cord while pressing Digit Key 0.	** DIAL 0 ** ATT SELF TEST MODE
	(3) Press Function Key 01. • The green lamp comes on.	** FUNC 01 ** ATT SELF TEST MODE
	(4) Press Function Key 01 again. • The green lamp turns red.	
	(5) Press Function Key 01 again. • The red lamp goes off.	
	(6) Repeat Steps (3)-(5) for other Function Keys 02-12.	** FUNC XX ** ATT SELF TEST MODE  XX shows 02-12
	(7) Press Function Key 13. • The red lamp comes on. • The ringer sounds. (To stop the ringer, press any key other than Function Keys 13-18, 90, 91.)	** FUNC 13 ** ATT SELF TEST MODE
	(8) Press Function Key again. • The red lamp goes off. • The ringer will sound.	
	(9) Repeat Steps (7) and (8) for other Function Keys 14-16.	** FUNC XX ** ATT SELF TEST MODE  XX shows 14-16
<div style="border: 1px solid black; width: 20px; height: 20px; margin: 0 auto; display: flex; align-items: center; justify-content: center;">A</div>		

A

**OPERATION**

**LCD DISPLAY**

- (10) Press Function Key 17.
  - The green lamp comes on.
  - The ringer sounds.
- (11) Press Function Key 17 again.
  - The green lamp turns red.
- (12) Press Function Key 17 again.
  - The red lamp goes off.
- (13) Repeat Steps (10)-(12) for other Function Keys 18, 90, 91.
- (14) Press Function Key 92.
  - The red lamp comes on.
  - The ringer stops.
- (15) Press Function Key 92.
  - The red lamp goes off.
- (16) Press Function Key 93.
  - The red lamp comes on.
- (17) Press Function Key 93 again.
  - The red lamp goes off.
- (18) Press Function Key 94.
  - The red lamp comes on.
- (19) Press Function Key 94 again.
  - The red lamp goes off.
- (20) Press Function Key 95. All lamps turn green, red, and then each goes off at an interval of 1 second.

\*\* FUNC 17 \*\*  
 ATT SELF TEST MODE

\*\* FUNC XX \*\*  
 ATT SELF TEST MODE

XX shows 18, 90, 91

012345 .....	XYZ	■	■	■	■
012345 .....	XYZ	■	■	■	■
012345 .....	XYZ	■	■	■	■
012345 .....	XYZ	■	■	■	■

■ ■	.....	■ ■ ■
■ ■	.....	■ ■ ■
■ ■	.....	■ ■ ■
■ ■	.....	■ ■ ■

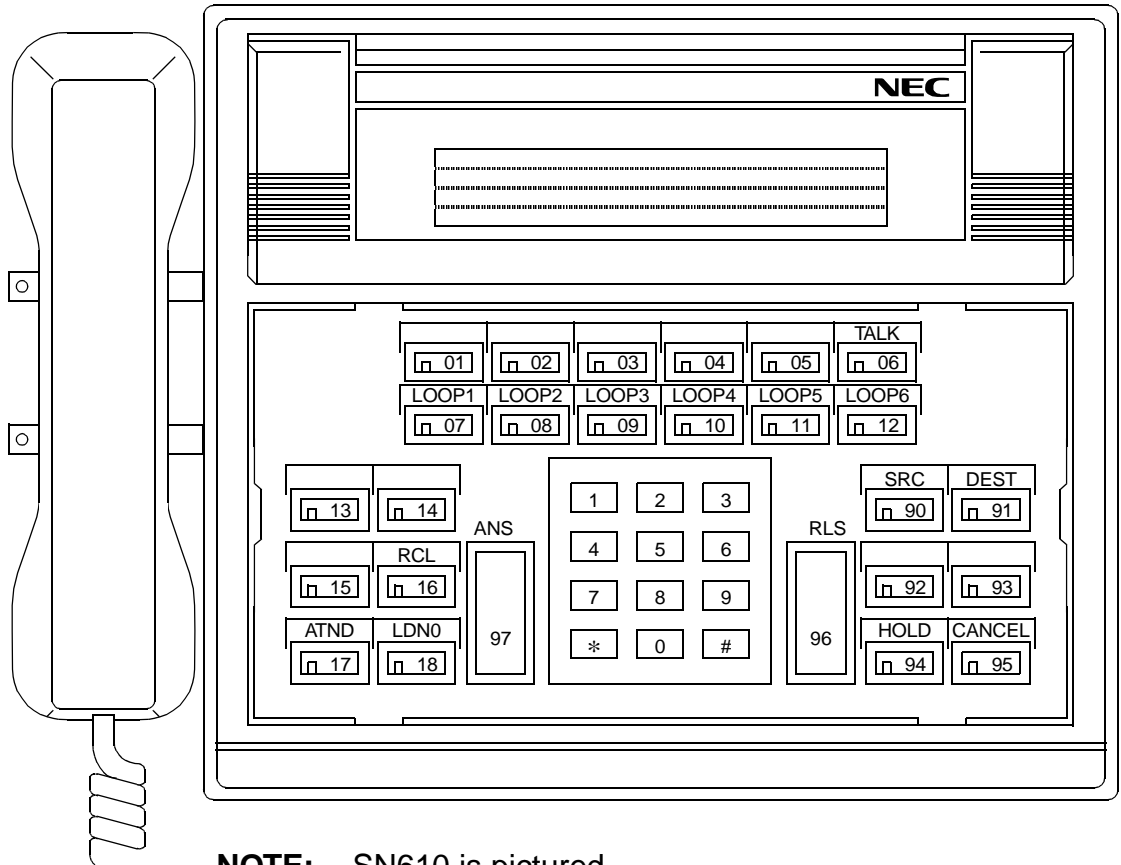
\*\* FUNC 95 \*\*  
 ATT SELF TEST MODE

B

B	OPERATION	LCD DISPLAY
	(21) Press Function Key 97. • The red lamp comes on.	<pre>** FUNC 97 ** ATT SELF TEST MODE</pre>
	(22) Press Function Key 97 again. • The red lamp goes off.	
	(23) Press Function Key 96. • The red lamp comes on.	<pre>** FUNC 96 ** ATT SELF TEST MODE</pre>
	(24) Press Function Key 96 again. • The red lamp goes off.	
	(25) Press Digit Key *.	<pre>** DIAL * ** ATT SELF TEST MODE</pre>
	(26) Press Digit Key #.	<pre>** DIAL # ** ATT SELF TEST MODE</pre>
	(27) Press Digit Keys 0 through 9.	<pre>** DIAL X ** ATT SELF TEST MODE</pre>
		X shows 0-9
	<b>NOTE 1:</b> To terminate the self-test mode, press Digit Keys # and * simultaneously.	
	<b>NOTE 2:</b> To test the lamps, LCD, and Tone Ringer, press Function Keys 92, 95, and 13 through 18 respectively.	
C		

C

**Figure 2-6 SN610/SN708/SN709/SN712 ATTCON Key Number**




**NOTE:** SN610 is pictured.

END



# CHAPTER 3

## MAINTENANCE OPERATION



This chapter explains how to save the office data and how to load and verify the office data.

## DATA SAVING

This section explains how to save the office data of the PBX. For hardware connection of the MAT and PBX and for installation of the MATWorX software, refer to the MATWorX Studio User's Guide.

**NOTE:** The following procedure is an overview. Refer to the online Help in MATWorX Studio for the detailed procedure and explanation of the buttons, dialogs, and terminology used in MATWorX.

**STEP 1:** In MATWorX, connect to the PBX you want to backup. Then, launch the Backups add-in.

**STEP 2:** Click the Save item in the listbar. The Save panel displays.

**STEP 3:** Select the type of area you want to backup. This step includes selecting the MP or AP Package, area name, area number, and office name.

**STEP 4:** Save the file to a location on your hard drive by selecting a drive and directory where you want to save the file and entering a file name.

**STEP 5:** Click the Save button. If the file name already exists, you will be prompted to replace the file. Click Yes to keep the file name, or click No and repeat this step after entering a different file name.

**STEP 6:** Click the Save/Load/Verify button. The PBX data is saved to the specified location on your PC.

## DATA LOADING

This section explains how to load and verify the office data of the PBX. For hardware connection of the MAT and PBX and for installation of the MATWorX software, refer to the MATWorX Studio User's Guide.

**NOTE:** The following procedure is an overview. Refer to the online Help in MATWorX Studio for the detailed procedure and explanation of the buttons, dialogs, and terminology used in MATWorX.

**STEP 1:** In MATWorX, connect to the PBX you want to backup. Then, launch the Backups add-in.

**STEP 2:** Click the Load item in the listbar. The Load panel displays.

**STEP 3:** Locate the drive and directory where the file is stored. Then, select the backup file and click the Open button.

**STEP 4:** Click the Save/Load/Verify button. The data is sent to the PBX.

## DATA VERIFICATION

This section explains how to load and verify the office data of the PBX. For hardware connection of the MAT and PBX and for installation of the MATWorX software, refer to the MATWorX Studio User's Guide.

**NOTE:** The following procedure is an overview. Refer to the online Help in MATWorX Studio for the detailed procedure and explanation of the buttons, dialogs, and terminology used in MATWorX.

**STEP 1:** In MATWorX, connect to the PBX you want to backup. Then, launch the Backups add-in.

**STEP 2:** Click the Verify item in the listbar. The Verify panel displays.

**STEP 3:** Locate the drive and directory where the file is stored. Then, select the backup file and click the Open button.

**STEP 4:** Click the Save/Load/Verify button. MATWorX compares the two files. A message box displays stating if the verify was successful or unsuccessful. A return message of unsuccessful indicates differences exist between the two files.