

**NEC**

AD-25186302  
ISSUE 1

# **NEAX7400 ICS**

**Model 120  
PMS System Manual**

JULY, 1994

NEC Australia, Ltd.

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Model 120  
PMS System Manual**

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**NEAX7400 ICS**  
**Model 120**  
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## CHAPTER 1 INTRODUCTION

### 1. PURPOSE

This manual describes details of the installation and data programming for the Property Management System (PMS) of the NEAX7400 ICS Model 120 (PBX).

### 2. OUTLINE OF THE MANUAL

This manual consists of 6 chapters. The contents of Chapter 2 through 6 are as outlined in the following.

- Chapter 2 (SYSTEM DESCRIPTION):  
This chapter explains the system outline and the system configuration required to provide the PMS.
- Chapter 3 (INSTALLATION):  
This chapter explains the procedure for hardware installation which is required to provide the PMS.
- Chapter 4 (SYSTEM DATA PROGRAMMING):  
This chapter explains the procedure for system data programming which is required to assign the PMS.
- Chapter 5 (SPECIFICATIONS)  
This chapter explains the PMS interface characteristics and the data transmission protocol required for the PMS.
- Chapter 6 (OPERATION)  
This chapter explains the operations associated with each feature message.

### 3. RELATED MANUAL

In addition to this manual reference should be made to the following manuals on an “as required” basis.

- Command Manual
- Office Data Programming Manual
- Circuit Card Manual
- Installation Procedure Manual
- SMDR System Manual
- Hotel System Manual

#### NOTICE

In the USA, the D<sup>term</sup> represents Multiline Terminal.  
In the USA, My Line represents Primary Extension.

## **SYSTEM DESCRIPTION**

### **CHAPTER 2 SYSTEM DESCRIPTION**

#### **1. GENERAL**

This chapter explains the system outline and the system configuration of the PMS.

#### **2. SYSTEM OUTLINE**

The PBX provides a data link interface to the customer supplied Property Management System (PMS) accommodating hotel management features. The PMS can be any computer connected to the PBX via a RS-232C interface. It communicates with the PBX using the protocols specified in this manual.

The data link interface allows the PMS to accommodate both front- and back-office Hotel management features, by providing a means of communication between the PMS and the PBX for features such as Check-In/Check-Out, Message Waiting, Station Message Detail data, and control functions such as Do Not Disturb and Room Cut-off.

The PMS can communicate with the PBX to obtain the following information:

(1) Maid Status

This information can be entered from either a guest room telephone or Front Desk Instrument, and will automatically be transmitted to the PMS for data update.

(2) Message Waiting Lamp Status Change

This information can be entered from the Attendant Console or Front Desk Instrument. It is then automatically transmitted to the PMS for data update. If the automatic MW lamp off feature is activated, MW data is cleared and status is sent to PMS.

(3) Station Message Detail Data

This information is transmitted to the PMS after completion of each local and toll call.

(4) Wake-Up Service

This information can be entered from the Attendant Console, Front Desk Instrument or guest room station, and will be automatically transmitted to the PMS for data update.

(5) Do Not Disturb/Room Cut-Off

This information can be entered from the Attendant Console or Front Desk Instrument, and will be transmitted to the PMS by request from the PMS.

(6) Check-In/Check-Out

This information can be entered from the Attendant Console or Front Desk Instrument, and will be automatically transmitted to the PMS for status update.

(7) Room data image messages indicating requests for data base updates and data base images.

- (8) Room change and room swap for data update.
- (9) Room occupancy change and room data change for data update.
- (10) Routine activity checks between the PMS and the PBX.

The PMS can send the following information to the PBX.

- (1) Maid status
- (2) MW lamp status changes
- (3) Telephone restriction status changes
- (4) Check-in/out messages
- (5) Room data image inquiry
- (6) Wake-up status changes
- (7) Room change and room swap
- (8) Room occupancy and room data change
- (9) Status inquiry for routine activity checks
- (10) Guest Name to be displayed on Front Desk Instrument

The specific operation for each message is discussed in Chapter 6.

### 3. SYSTEM CONFIGURATION

The PMS interface is a half duplex EIA-RS232C asynchronous data link that operates under a specific message protocol and format. The characteristics of the link, the protocol used, and the message text are described in detail in Chapter 5.

The block diagram of the PMS is shown in Figure 2-1. The PMS requires the Application Processor (AP) and the Memory Expansion (EXTMEM) for the AP, and is used with the Station Message Detail Recording (SMDR) System or Hotel Printer.

- (1) AP (PN-AP00-A card):

The AP manages guest or administration room status and stores call information for guest or administration station. The AP also provides the interface ports for a PMS, SMDR and a Hotel Printer.

The AP keeps supervising the status of the PMS, SMDR or Hotel Printer. If the PMS, SMDR or Hotel Printer is not ready for information receiving (Busy Status), the AP temporarily stores the call information into its internal memory. The AP is capable of storing call information of a maximum of 1000 calls.

- (2) EXTMEM (PN-ME00 card):

When expanding the capacity of the call information store memory so that information of over 1000 calls can be stored, this card must be used. When this card is used with SRAM inserted, call information of 12,000 calls can be stored.

## SYSTEM DESCRIPTION

The AP executes, writes/reads call information into/from the EXTMEM card via the Time Division Switch (TDSW).

For a system in which the PMS terminal can receive call information by On-Line basis at all times, use of this card is not required. However, for a system in which the PMS terminal is periodically connected to the system for obtaining call information by a batch processing basis, use of this card is required.

### (3) SMDR:

The SMDR sends the outgoing/incoming C.O./Tie line call information to an external SMDR terminal (personal computer/host computer). The SMDR is usually used for the following purposes. For details of the SMDR, refer to the SMDR System Manual.

- Management of Guest/Admi. station call (The PMS does not manage the Guest/Admi. station call.)
- Backup of Guest/Admi. station call for a PMS failure
- Management of either Guest or Admi. station call (For example, the SMDR manages an Admi. station call, and the PMS manages a Guest station call)

### (4) Hotel Printer

The various system messages and the guest room status can be obtained through a locally-provided Hotel Printer. The following information is automatically printed out as a system message.

- Wake Up attempts, whether successful or not
- Remaining messages for the station which is set to Check Out

If the printout function key is provided on the Front Desk Instrument, the status of the following features are printed out when the feature is set or reset and a Room Status printout is requested.

- Don't Disturb
- Room Cutoff
- Message Waiting
- Automatic Wake Up
- Room Status - individual guest station/all guest stations
- Check In/Check Out



**4. SYSTEM SPECIFICATIONS**

- Maximum Number of Hotel Printers: 2
- PMS Interface
  - Physical Interface: RS-232C
  - Synchronization: Asynchronous
  - Protocol: IMS Procedure
  - Transmission Speed: 1200 bps
  - I/O port: No. 0-2 port of PN-AP00-A card
- SMDR Interface
  - Physical Interface: RS-232C
  - Synchronization: Asynchronous
  - Transmission Speed: 1200 bps
  - I/O port: No. 0-2 port of PN-AP00-A card
- Hotel Printer Interface
  - Physical Interface: RS-232C
  - Synchronization: Asynchronous
  - Transmission Speed: 1200/2400 bps
  - I/O port: No. 0-2 and/or No. 3 port of PN-AP00-A card

## SYSTEM DESCRIPTION

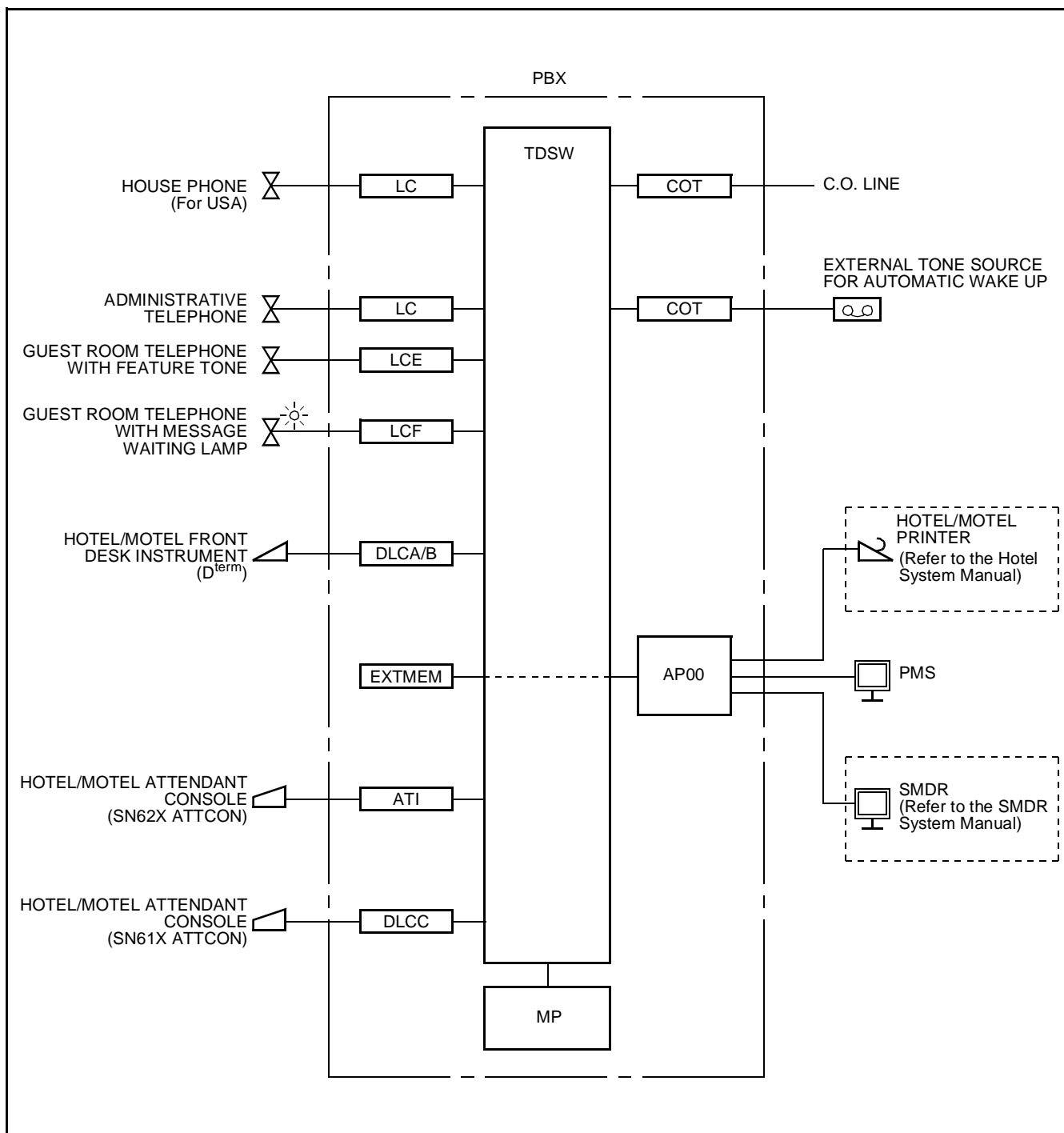


Figure 2-1 PMS Block Diagram

Table 2-1 Description of Symbols in Block Diagram

SYMBOL	DESCRIPTION
AP00	PMS/SMDR/Hotel Application Card
ATI	SN62X ATTCON Interface Card
COT	C.O. Trunk Card
DLCA/B	Digital Line Circuit Card (for D <sup>term</sup> )
DLCC	Digital Line Circuit Card (for SN61X ATTCON)
LC	Line Circuit Card (for Single Line Telephone)
LCE	Line Circuit Card (for Single Line Telephone, with Feature Tone)
LCF	Line Circuit Card (for Single Line Telephone, with MW Lamp)
EXTMEM	Memory Expansion Card
MP	Main Processor Card
PMS	Property Management System
SMDR	Station Message Detail Recording
TDSW	Time Division Switch

**Note:** For details of circuit cards, refer to the *Circuit Card Manual*.

# INSTALLATION

## CHAPTER 3 INSTALLATION

### 1. GENERAL

This chapter explains the work procedure for installing the PMS of the PBX. For the connection of PMS terminal, reference should be made to the appropriate manuals of the terminal.

### 2. PRECAUTION IN HANDLING

The installer must wear a grounded wrist strap to protect the circuit card from static electricity. Also, when handling cards the installer should work on a grounded conductive work surface.

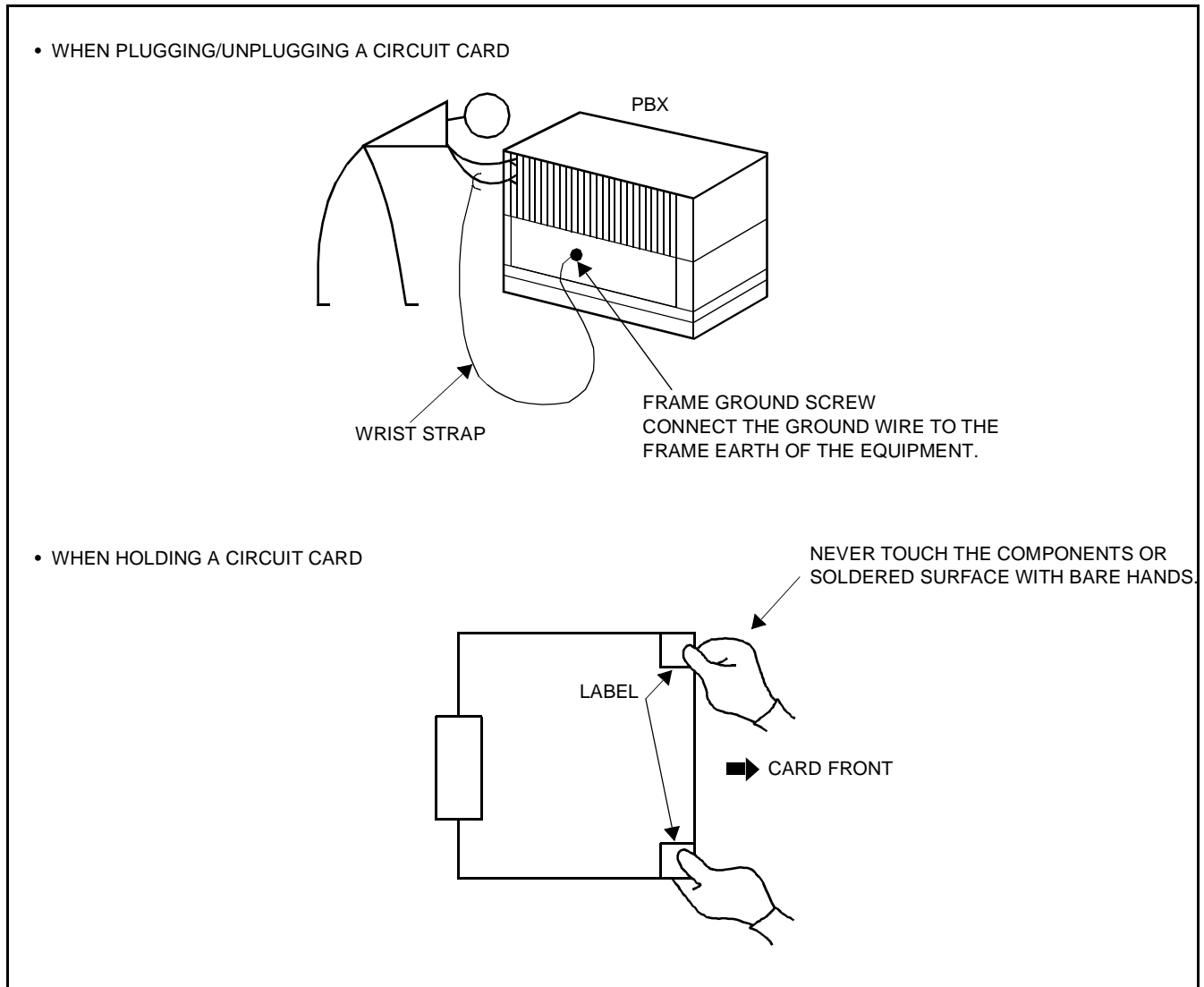
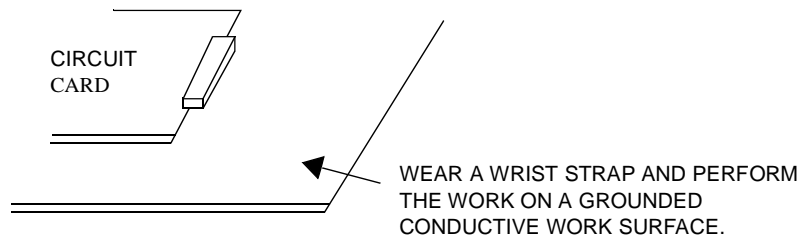
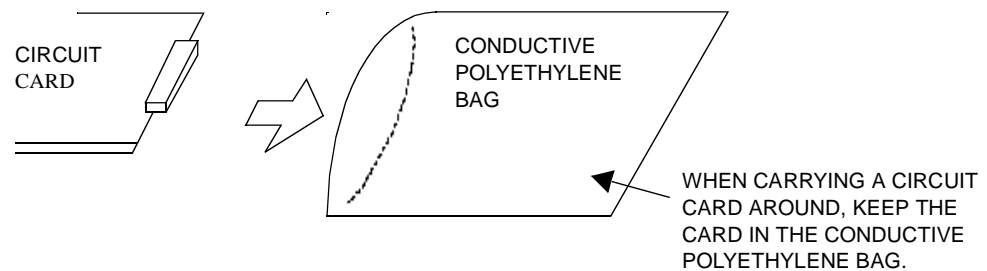


Figure 3-1 Static Electricity Guard

- WHEN SETTING SWITCHES ON A CIRCUIT CARD



- WHEN CARRYING A CIRCUIT CARD



**Figure 3-1 Static Electricity Guard (Continued)**

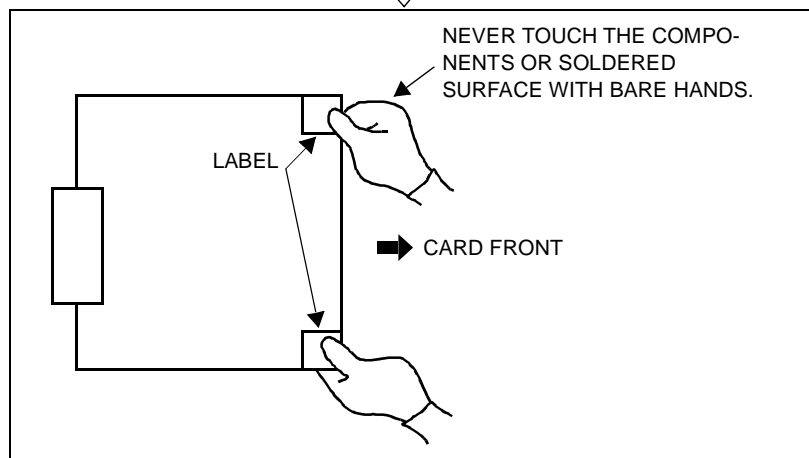
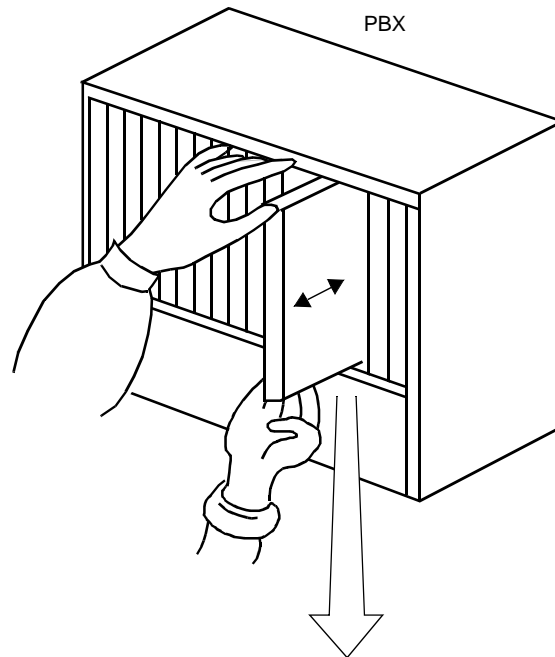
The mark shown below is attached to the sheet for the work in which circuit cards are handled. When engaging in such work, the installer must be careful not to cause damage by static electricity.



## INSTALLATION

### CAUTION

The installer must hold the card name label area, when plugging or unplugging the circuit card. If you touch another area, you may be exposed to hazardous voltages.



### 3. REQUIRED EQUIPMENT AND CABLES

Table 3-1 below shows the equipment and cables to be installed.

**Table 3-1 Required Equipment and Cables**

EQUIPMENT/ CABLE	DESCRIPTION	Q'TY	REMARKS
• PN-AP00-A card	PMS Terminal Interface Card	1	Cable length : 15 m (49.2 ft.) max.  Cable length : 4 m (13.1 ft.) max.
• PN-ME00 card	Memory Expansion Card	1 (As required)	
• SRAM card	Expansion RAM Card for PN-ME00	1 (As required)	
* Computer	Computer for PMS	1	
• RS RVS-15 CA-A	PMS Terminal Connection Cable (Terminal side)	1	
• RS NORM-4 CA-A	PMS Terminal Connection Cable (Terminal side)	1	
* MODEM		Max. 2	

**Note 1:** *This equipment (marked by “\*”) is locally provided.*

**Note 2:** *When the cable length between PMS terminal and PBX is more than 15 m (49.2 ft.), the MODEMs are required.*

# INSTALLATION

## 4. INSTALLATION PROCEDURE

Install the PMS according to the following procedure.

**STEP 1:** On the PN-AP00-A card, set the switches as shown in Figure 3-2. For details on switch settings, refer to the Circuit Card Manual.

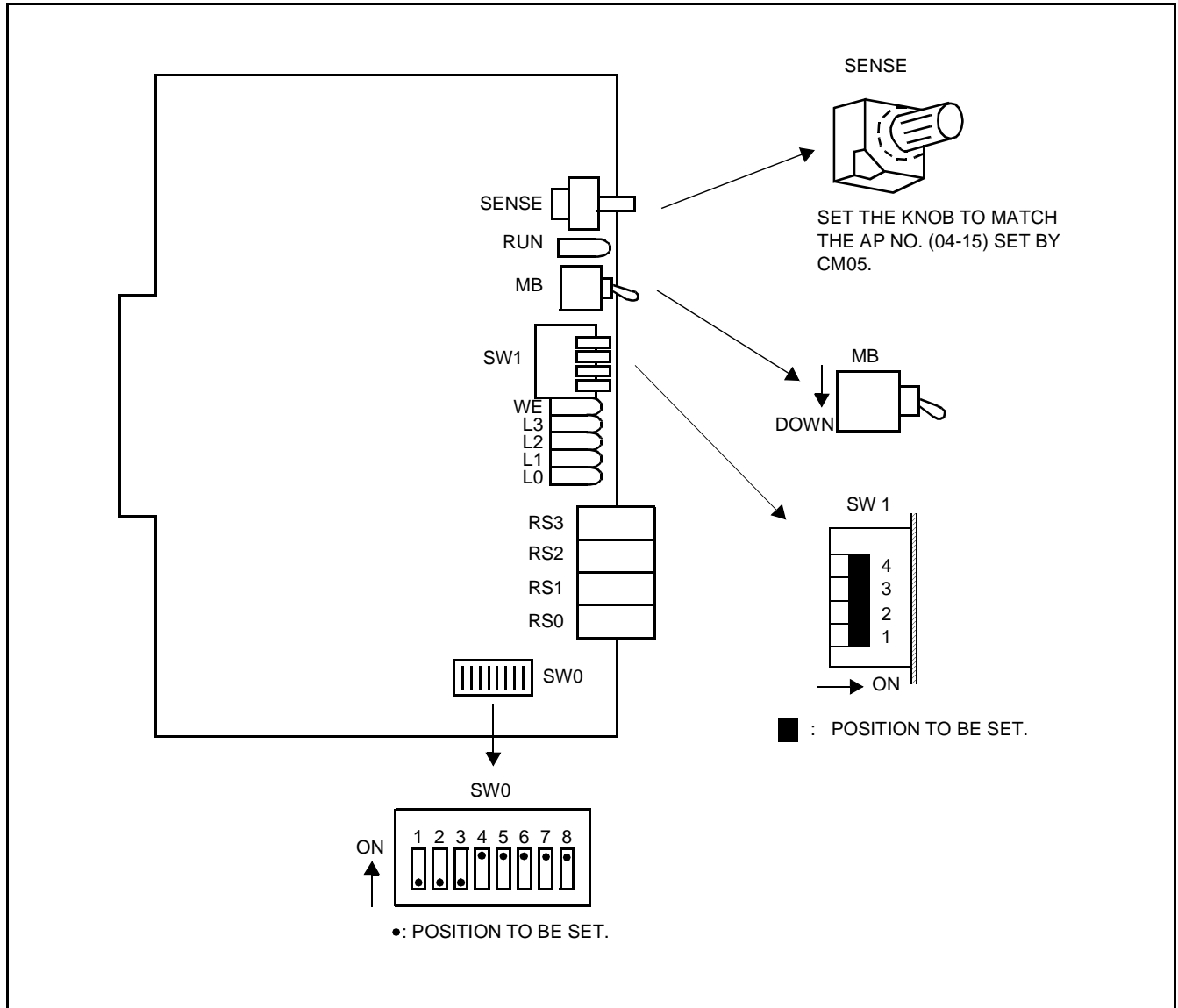
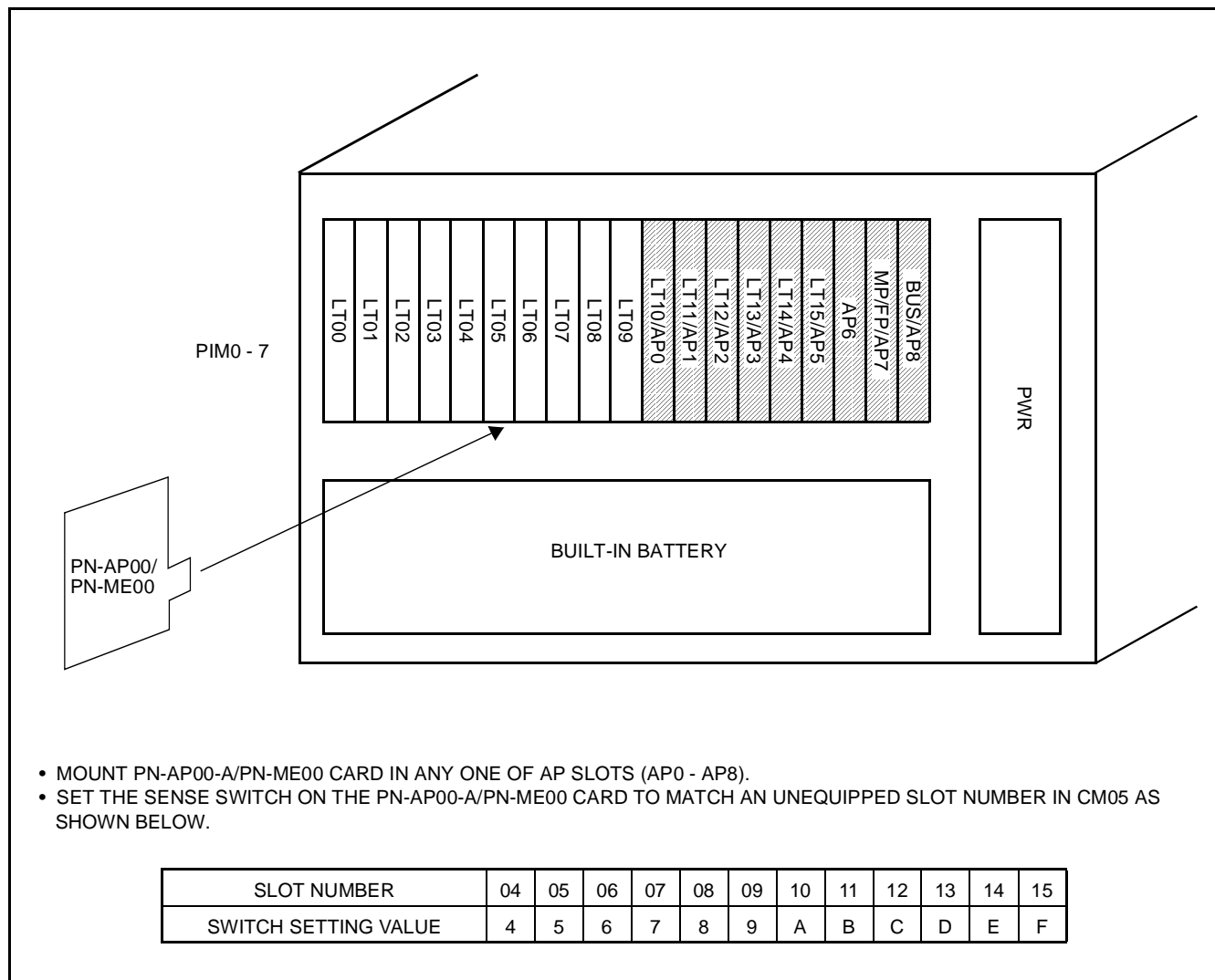


Figure 3-2 Switch Setting on the PN-AP00-A Card



**STEP 2:** Mount the PN-AP00-A card in any one of the AP slots of PIM0-PIM7.

After mounting the card, set the SENSE switch to match an unequipped slot number in CM05. For details on mounting location, refer to the Circuit Card Manual.

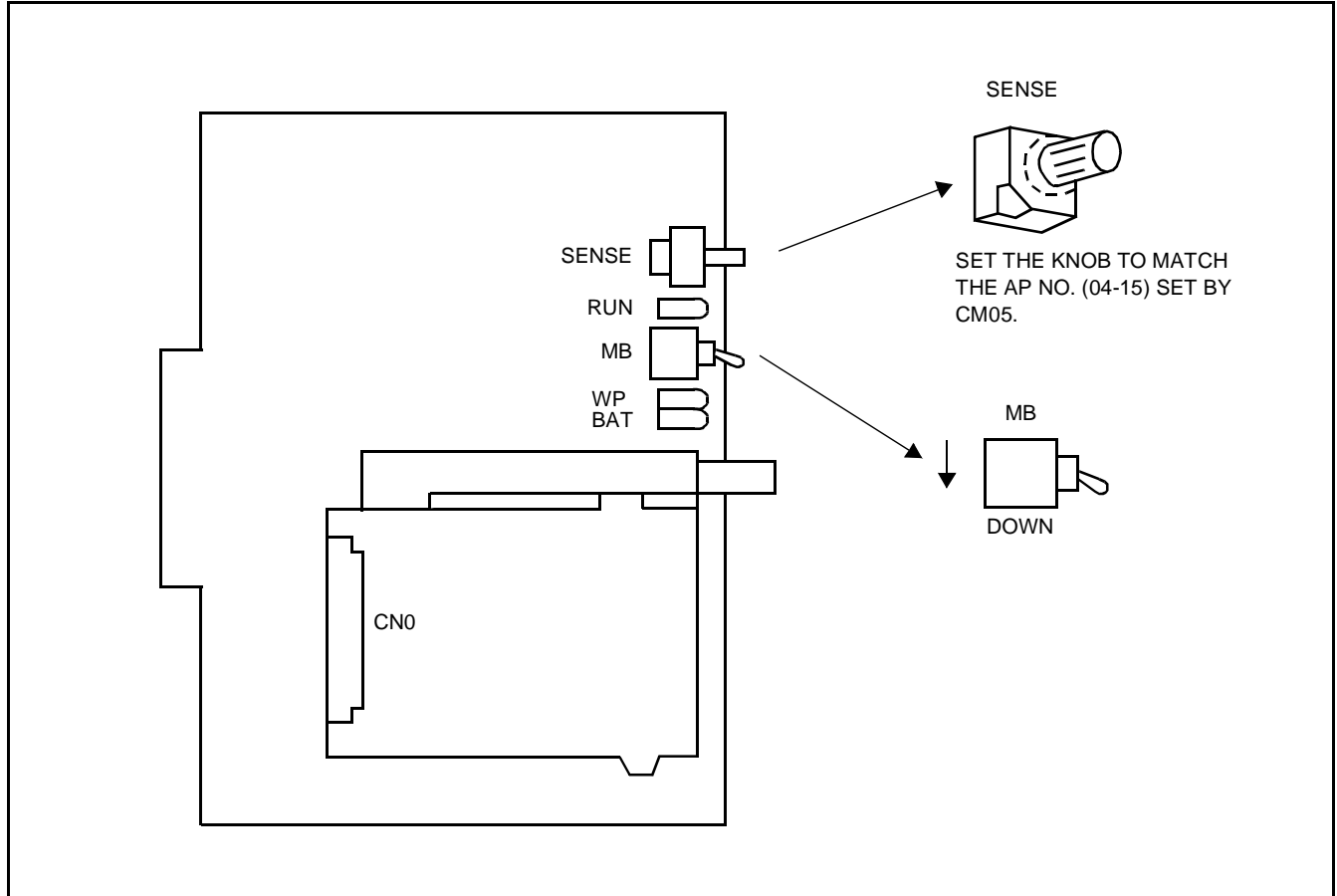


**Figure 3-3 Mounting Location of the PN-AP00-A/PN-ME00 Card**

## INSTALLATION

**STEP 3:** Mount the PN-ME00 card in any one of the AP slots of PIM0 - PIM7, if required.

After mounting the card, set the SENSE switch to match an unequipped slot number in CM05 as shown in Figure 3-4. For details on how to handle the SRAM card, refer to the Circuit Card Manual.

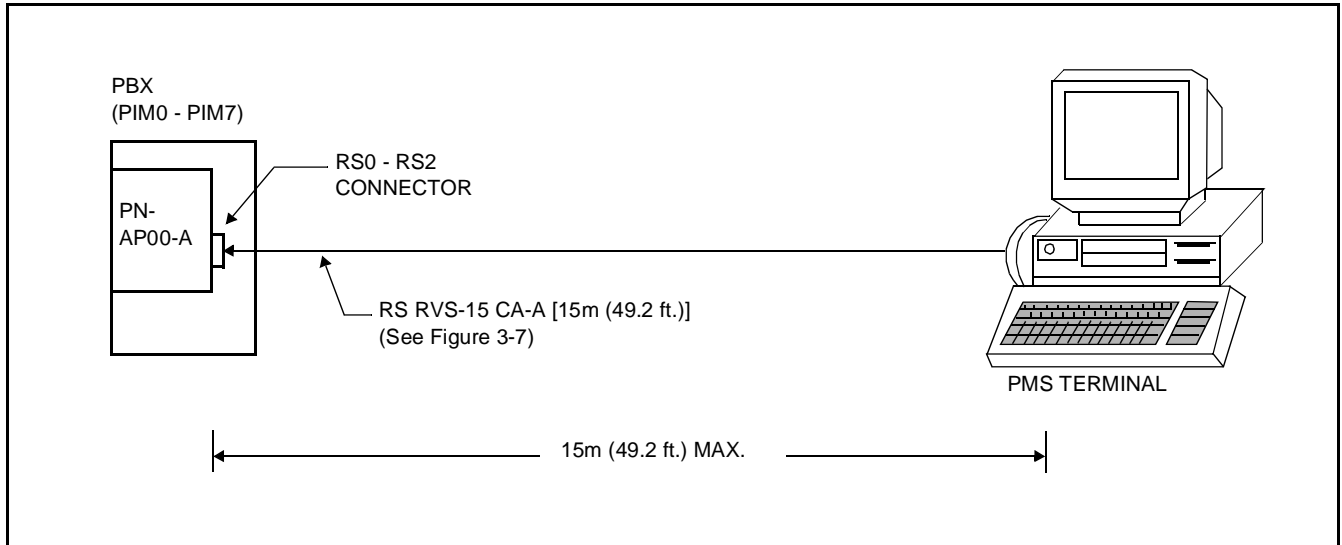


**Figure 3-4 Switch Setting on the PN-ME00 Card**

**STEP 4:** Connect the cable as shown below.

- (1) When connecting a PMS terminal directly:

Connect PMS terminal to the PN-AP00-A using RS RVS-15 CA-A cable as shown in Figure 3-5.

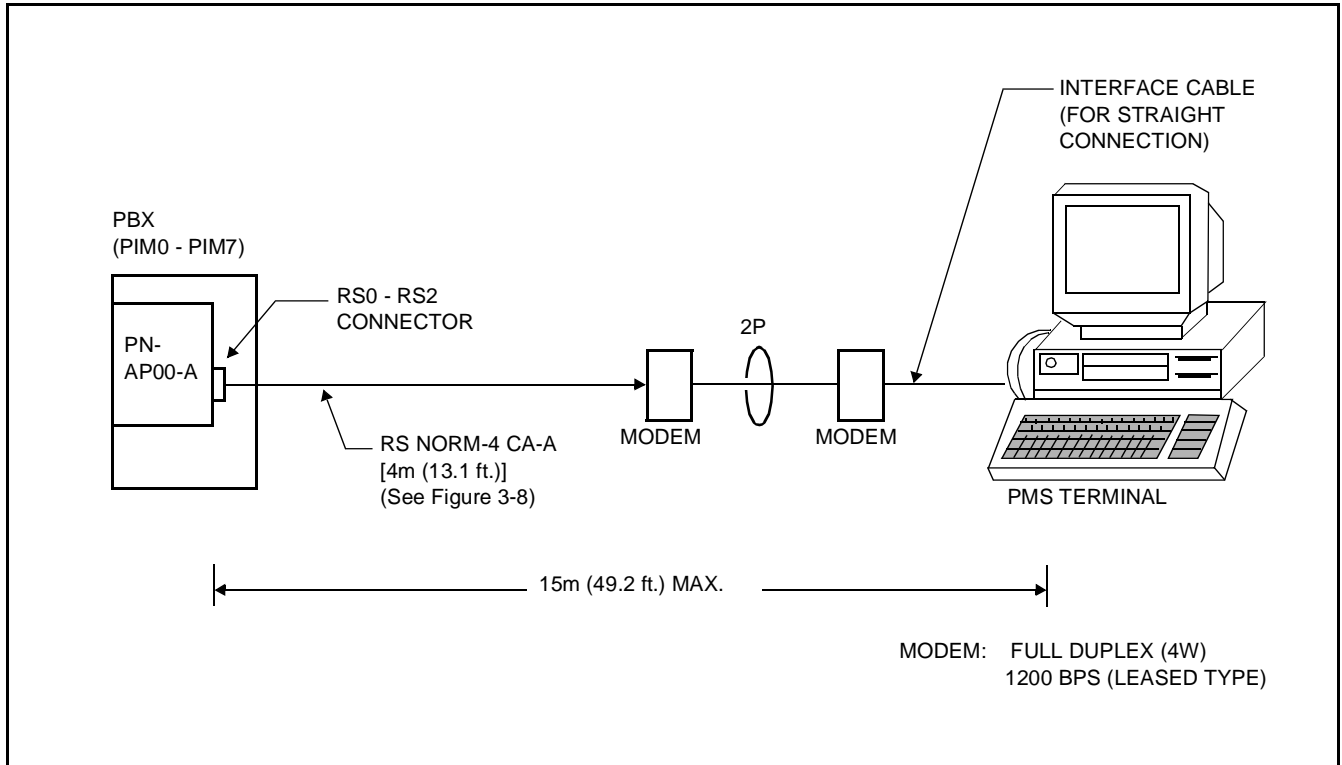


**Figure 3-5 RS RVS-15 CA-A Installation**

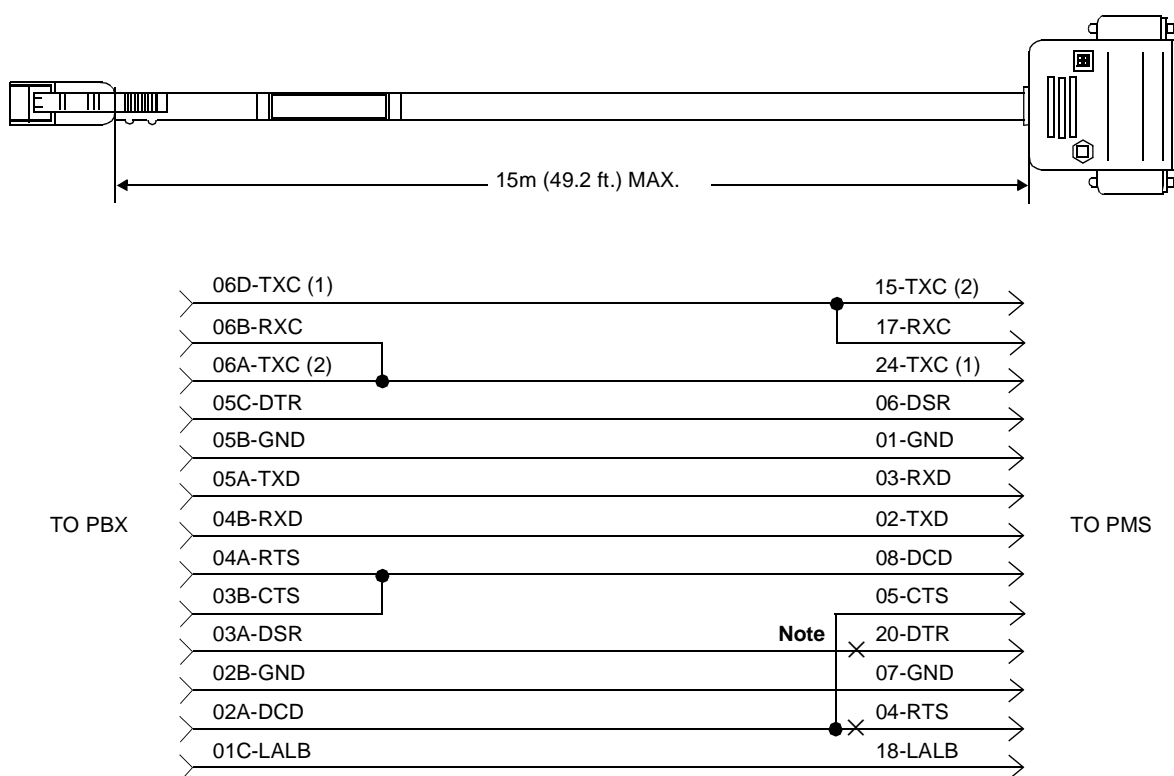
## INSTALLATION

- (2) When connecting a PMS terminal using MODEMs:  
(When the cable length between the PMS terminal and PBX is more than 15 m (49.2 ft.), the MODEMs are required.)

Connect the PMS terminal through the MODEMs as shown in Figure 3-6. In this case, the RS NORM-4CA-A cable should be used for DCE-DCE connection.



**Figure 3-6 Connection of PMS Terminal with MODEMs**



	D	C	B	A
06	TXC (1)	×	RXC	TXC (2)
05	×	DTR	GND	TXD
04	(RT)	×	RXD	RTS
03	×	(ST)	CTS	DSR
02	----	×	GND	DCD
01	×	LALB	×	G

G: GROUND

13	----	25	----
12	----	24	TXC (1)
11	----	23	----
10	----	22	----
09	----	21	----
08	DCD	20	DTR
07	GND	19	----
06	DSR	18	LALB
05	CTS	17	RXC
04	RTS	16	----
03	RXD	15	TXC (2)
02	TXD	14	----
01	GND		

**Note:** If the PMS terminal does not send DTR or RTS signal, cut the signal lead marked by X in the D-Sub connector (PMS terminal side) as shown above.

Figure 3-7 RS RVS-15 CA-A

INSTALLATION

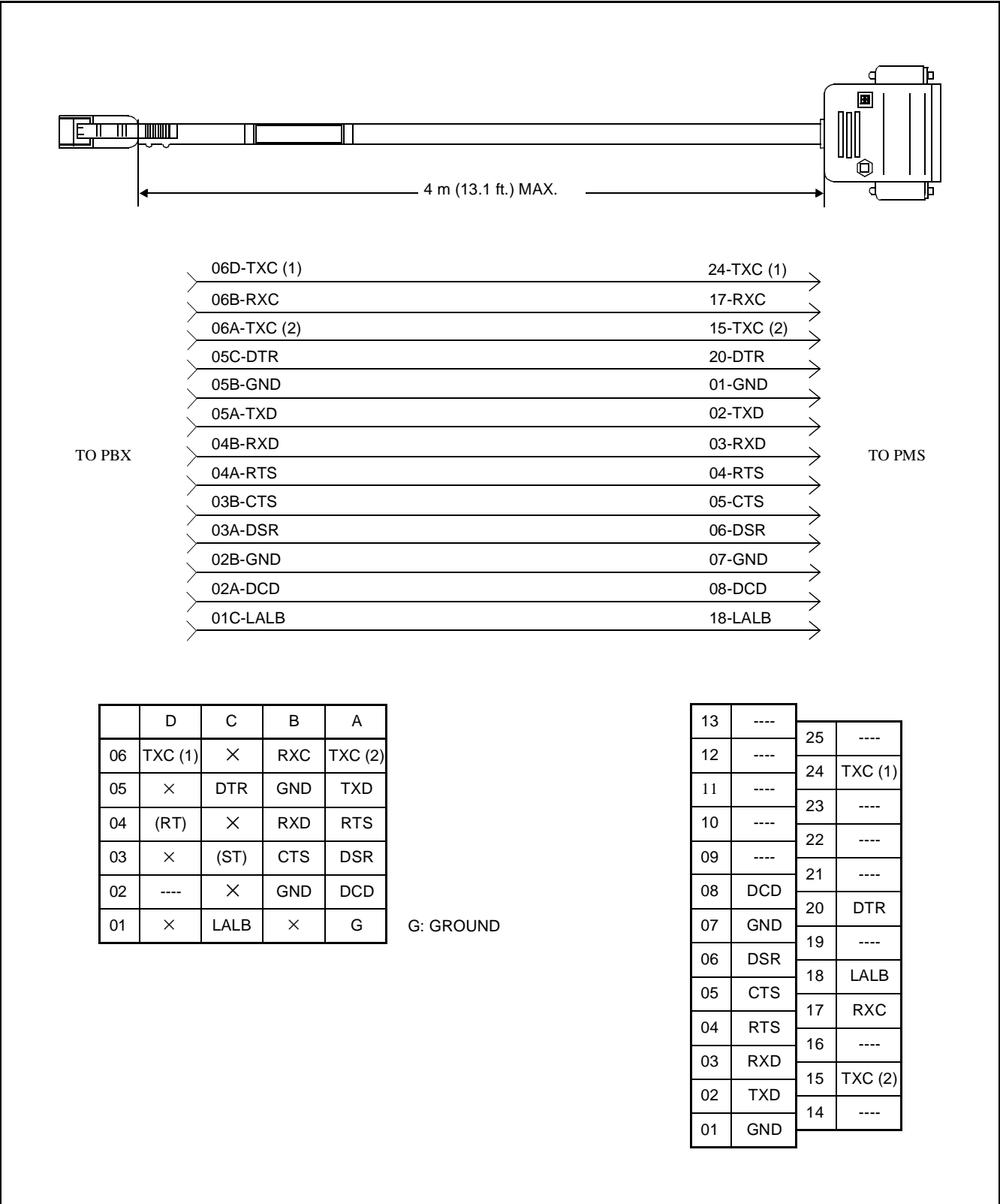


Figure 3-8 RS NORM-4 CA-A

Table 3-2 RS-232C Connector Layout

PIN NO.	SIGNAL-NAME				SIGNAL DIRECTION	MEANING
	RS-232C	JIS C6361	CCITT V.24	ANOTHER		
1	AA	(FG)	101	GND		Frame Ground
2	BA	SD	103	TXD	DTE→	Send Data
3	BB	RD	104	RXD	←DCE	Receive Data
4	CA	RS	105	RTS	DTE→	Request to Send
5	CB	CS	106	CTS	←DCE	Clear to Send
6	CC	DR	107	DSR	←DCE	Data Set Ready
7	AB	SG	102	GND		Signal Ground
8	CF	CD	109	DCD	←DCE	Data Channel Receive Carrier Detect
9						Not Used
10						Not Used
11		PB				Peripheral Busy
12	SCF	BCD	122		←DCE	Backward Channel Receive Carrier Detect
13	SCB	BCS	121		←DCE	Backward Channel Send (OK)
14	SBA	BSD	118		DTE→	Backward Channel Send Data
15	DB	ST2	114	TXC (2)	←DCE	Send Signal Element Timing
16	SBB	BRD	119		←DCE	Backward Channel Receive Data
17	DD	RT	115	RXC	←DCE	Receive Signal Element Timing
18						Not Used
19	SCA	BRS	120		DTE→	Backward Channel Send Detect
20	CD	ER	108/2	DTR	DTE→	Data Terminal Ready
21	CG	SQD	110		←DCE	Data Signal Quality Detect
22	CE	CI	125	RI	←DCE	Call Indication
23	CI, CH	SRS	112, 111		← – →	Data Signal Speed Choice
24	DA	ST1	113	TXC (1)	←DCE	Send Signal Element Timing
25						Not Used

# SYSTEM DATA PROGRAMMING

## CHAPTER 4 SYSTEM DATA PROGRAMMING

### 1. GENERAL

This chapter explains the procedure for system data programming, necessary for setting various functions of the PMS and explains the details of the commands to be used.

### 2. INFORMATION OF SYSTEM DATA PROGRAMMING

#### 2.1 Initialization

When programming the system data pertaining to the PMS, it is first required to initialize the AP by CM D101. As a result of this initial processing, the initial data is set as the system data. This processing is mandatory for deleting the initial data unnecessary for the PMS. After this process has been completed, start programming the necessary data.

#### 2.2 Preparation for Programming

Before programming the system data pertaining to the PMS, confirm that the system is under the following status.

- The system is under On-Line mode. (“RUN” lamp is flashing on the MP card.)
- The PN-AP00-A card is mounted in the correct location.
- SW1-4 on the PN-AP00-A card is set to “ON” (Write Enable) position.
- All the system data pertaining to the station, trunks, and service features are already programmed.

#### 2.3 Station Number Data Loading

When station numbers are added, deleted or changed by CM10, station number data must be reloaded to the AP, using the following procedure:

- (1) Set the SW1 on the PN-AP00-A card to ON.
- (2) Set the Make Busy switch on the PN-AP00-A card UP and then DOWN.

#### 2.4 Charging Method

The PMS can support the following charging methods on outgoing C.O. Call (Local/Toll STD Call and International Call).

- Metering Pulse  
The system counts up the metering pulse from Central Office, and calculates call charge on each call with charging rate per pulse programmed.
- No Metering Pulse  
The system analyzes the area code to identify the destination of the call, and calculates call charge on each call according to the charging method of the network. (H-Method/K-Method/Flat Rate)



H-Method: Time per pulse is fixed. Charging Rate per pulse varies depending on the destination (Area).

K-Method: Charging Rate per pulse is fixed. Time per pulse varies depending on the distance to the destination.

Flat Rate: Fixed charge per call regardless of call duration.

In addition, special charges such as Surcharge and Reduction charge can be provided with charging methods mentioned above as required.

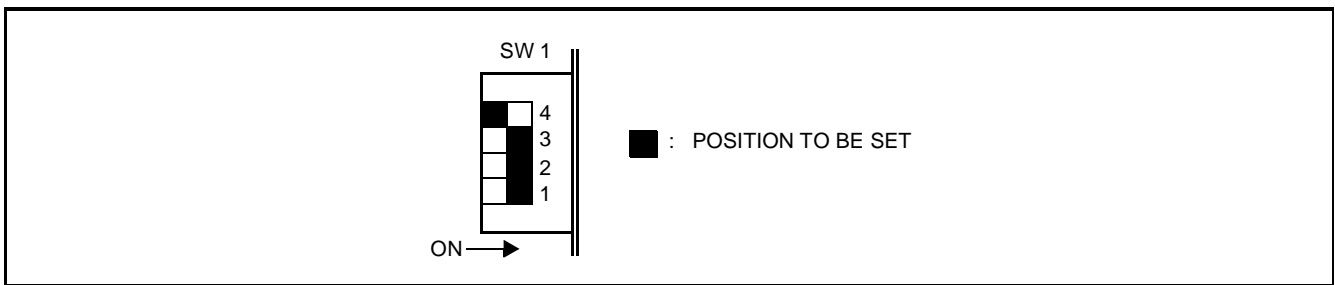
**Note:** *Surcharge can not be provided with the Flat Rate method.*

## 3. PROGRAMMING PROCEDURE

Do the programming for PMS in accordance with the programming summary described in Section 3.1.

For details on each command, refer to the Command Manual.

After all the system data are assigned, set the SW1 switch of PN-AP00-A as shown below to protect the data.



In the programming procedures described, the following symbolic conventions are used:

(1) : 1st Data

(2) : 2nd Data



: Initial Data

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

INITIAL

: System Initialization

After entering the data, a system reset is required (Depress SW1 on the MP card).

AP INITIAL

After entering the data, AP initialization is required. (Toggle the Make Busy switch on the AP card UP and then DOWN)

## SYSTEM DATA PROGRAMMING

### 3.1 Programming Summary for PMS

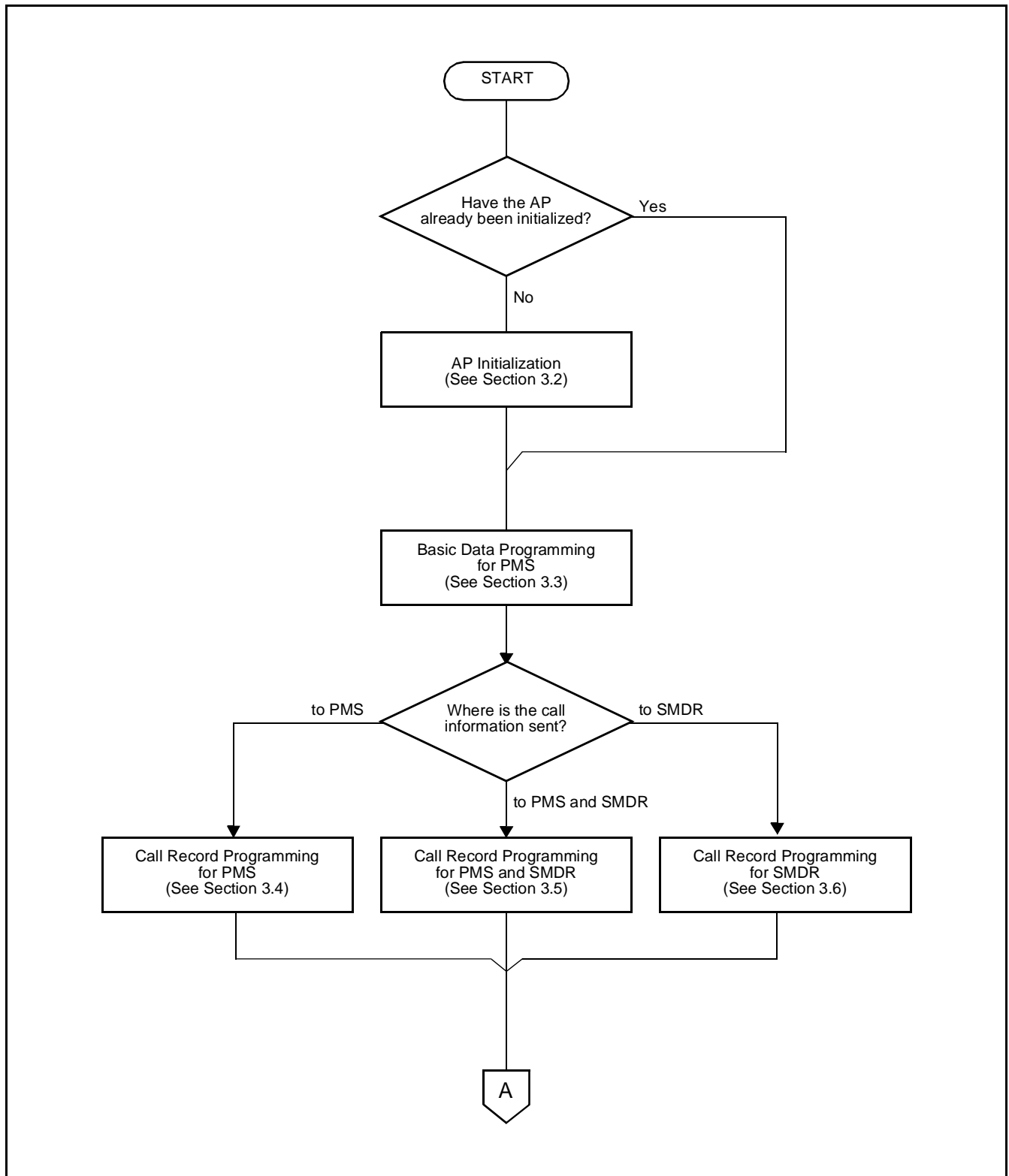
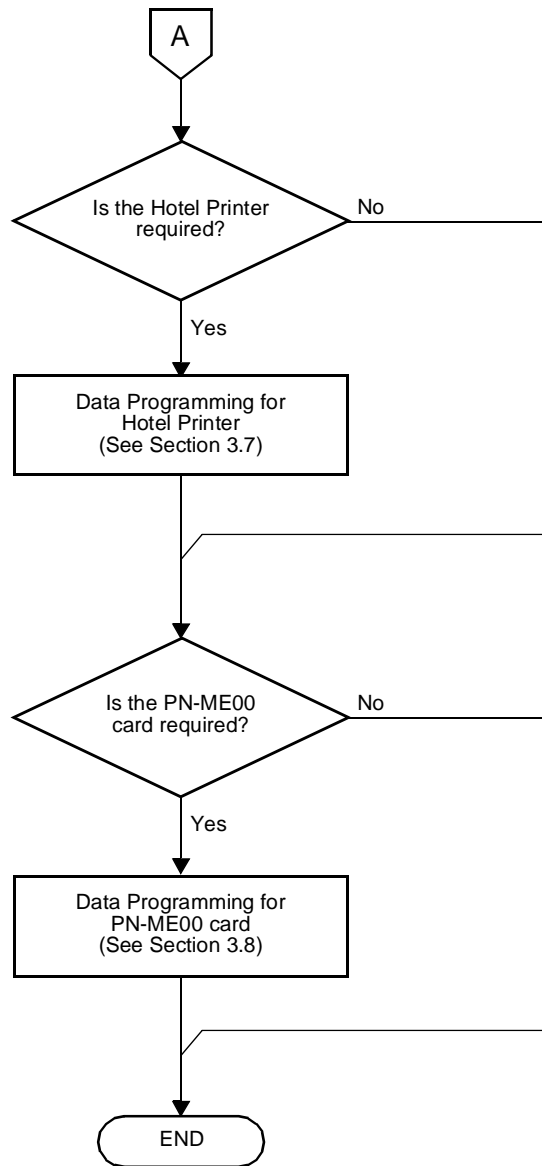


Figure 4-1 Programming Summary for PMS

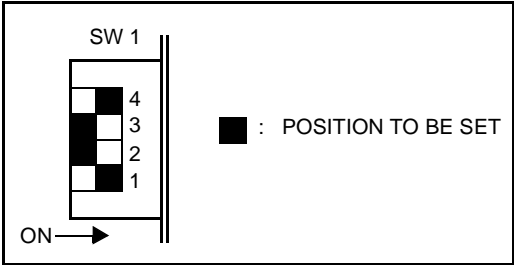
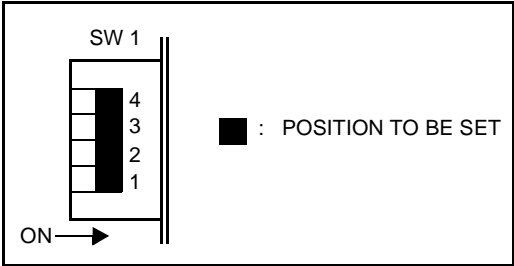


**Figure 4-1 Programming Summary for PMS (Continued)**

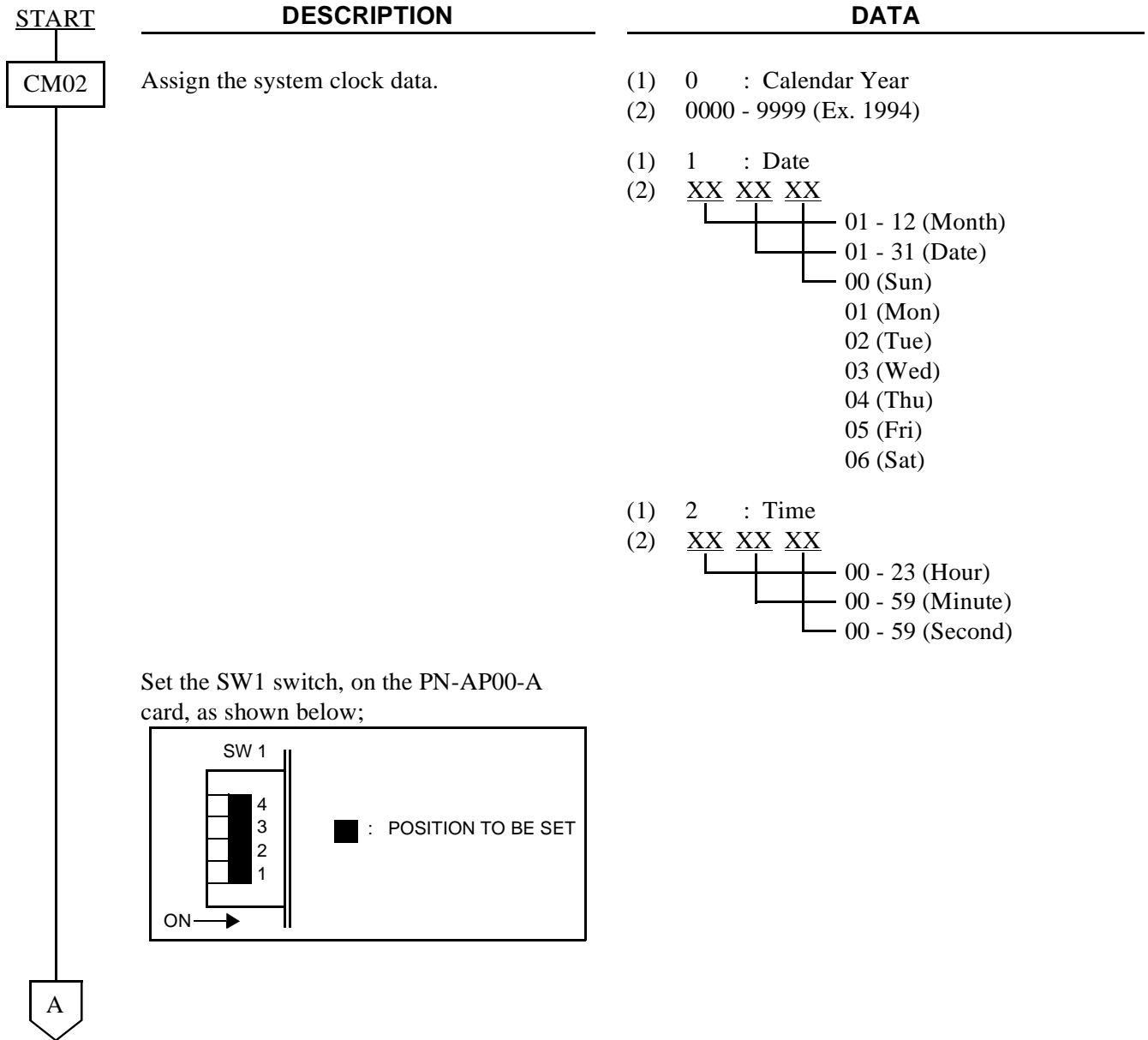
SYSTEM DATA PROGRAMMING

3.2 AP Initialization

When first setting up the PMS system, do the following AP initialization.

START	DESCRIPTION	DATA
CM05	Assign a Slot Number to the PN-AP00-A card. The slot number to be assigned must coincide with the value set by the SENSE switch on the PN-AP00-A card.	(1) Slot No. (04-15) (2) 04 : PN-AP00-A card
	On the PN-AP00-A card, set the SW1 switch as shown below.	INITIAL
CMD101		
	Load the initial data into the PN-AP00-A.	(1) 0000 (2) CCC
	On the PN-AP00-A card, set the SW1 switch as shown below: <b>Note</b>	
		
END	<b>Note:</b> After changing the SW1 switch as shown above, MP reset is required.	

## 3.3 Basic Data Programming for PMS



A

CMD001

## DESCRIPTION

Assign the attribute data, depending on the port (Port 0 - 2) connected to PMS. (For the details of commands, refer to the Command Manual.)

## DATA

(1) } See the following table.  
(2) }

AP INITIAL

FIRST DATA (1)			MEANING	SECOND DATA (2)	MEANING
PORT 0	PORT 1	PORT 2			
20	24	28	Data Speed	2	1200 bps
21	25	29	Stop Bit	0	1 bit
22	26	30	Data Length	0	7 bit
23	27	31	Parity	1	Even Parity
80	100	120	Function	4	PMS
81	101	121	Priority for Data Processing	0	1st Priority
82	102	122	Message Format	6	PMS Format (IMS Format)
84	104	124	Protocol	6	IMS Procedure
85	105	125	Station Address (SA)	49	1
86	106	126	Unit Address (UA)	33	!
87	107	127	Timer for detecting the terminal	8	1 sec.
89	109	129	Timer for detecting the end of block	70	35 sec.
90	110	130	Timer for detecting non data communication	70	35 sec.
91	111	131	Number of times for sending the Selecting Sequence when NAK is returned in Phase 2	3	3 times
92	112	132	Number of times to resend the Selecting Sequence when no answer in Phase 2	15	15 times
93	113	133	Number of times to resend the Selecting Sequence when NAK is returned in Phase 3	3	3 times
94	114	134	Number of times to resend the Selecting Sequence when no answer in Phase 3	32	15 times
95	115	135	Delay before resending the Selecting Sequence when NAK is returned	24	3 sec.
96	116	136	Delay before resending the text when WABT is returned	24	3 sec.

B

	DESCRIPTION	DATA
B	CM08	
	Specify the sending Wake Up message to PMS when setting the Wake Up feature from a station	(1) 200 (2) 0/1◀: Available/Not Available
	CMD000	(1) 201 (2) 0/1◀: Available/Not Available
	Specify the changing of Guest Name by the room change message from PMS.	(1) 69 (2) 0◀/1: Not Available /Available
	Specify the PMS service for tandem calls.	(1) 77 (2) 0◀/1: Not Available/Available
	Assign the function of the PMS interface.	(1) { 87 (Check Out Message ON/OFF Report) (2) { 1 : To be sent
		(1) { 88 (Check Out C.O. Line Outgoing Call Report) (2) { 1 : To be sent
	CMD015	(1) { 140 (Violation Message) (2) { 1 : To be sent
	CMD016	<ul style="list-style-type: none"> <li>CMD015           <ul style="list-style-type: none"> <li>(1) Guest/Admi. Station No.</li> <li>(2) Service Class No. (0◀ - 15)</li> </ul> </li> <li>CMD016           <ul style="list-style-type: none"> <li>(1) <u>XX</u> 05 (Room Status Code sending to PMS)               <ul style="list-style-type: none"> <li>Service Class No. assigned by CMD015</li> </ul> </li> <li>(2) 1 : To be sent</li> </ul> </li> </ul>
C		

## SYSTEM DATA PROGRAMMING

C CMD000	DESCRIPTION	DATA
END	Specify the sending Controlled Restriction message to PMS when setting the Don't Disturb feature.	(1) 114 (2) 1 : To be sent
	Specify the sending Controlled Restriction message to PMS when setting the Room Cut off feature.	(1) 115 (2) 1 : To be sent
	Specify the sending Message Waiting message to PMS when setting the Message Waiting feature.	(1) 116 (2) 1 : To be sent
	Specify the Maid Status message to PMS when setting the Maid Status by guest room telephones or the front desk instrument.	(1) 119 (2) 0◀ : To be sent
	Specify the Wake-up message to PMS when setting the Wake-up feature.	(1) 134 (2) 1 : To be sent
	Specify the Result of Wake-up message when performing the Wake-up Call feature.	(1) 135 (2) 1 : To be sent



### 3.4 Call Record Programming for PMS

#### 3.4.1 Programming Procedure for Sending a Call Information

When sending a call information to the PMS, do the following programming.

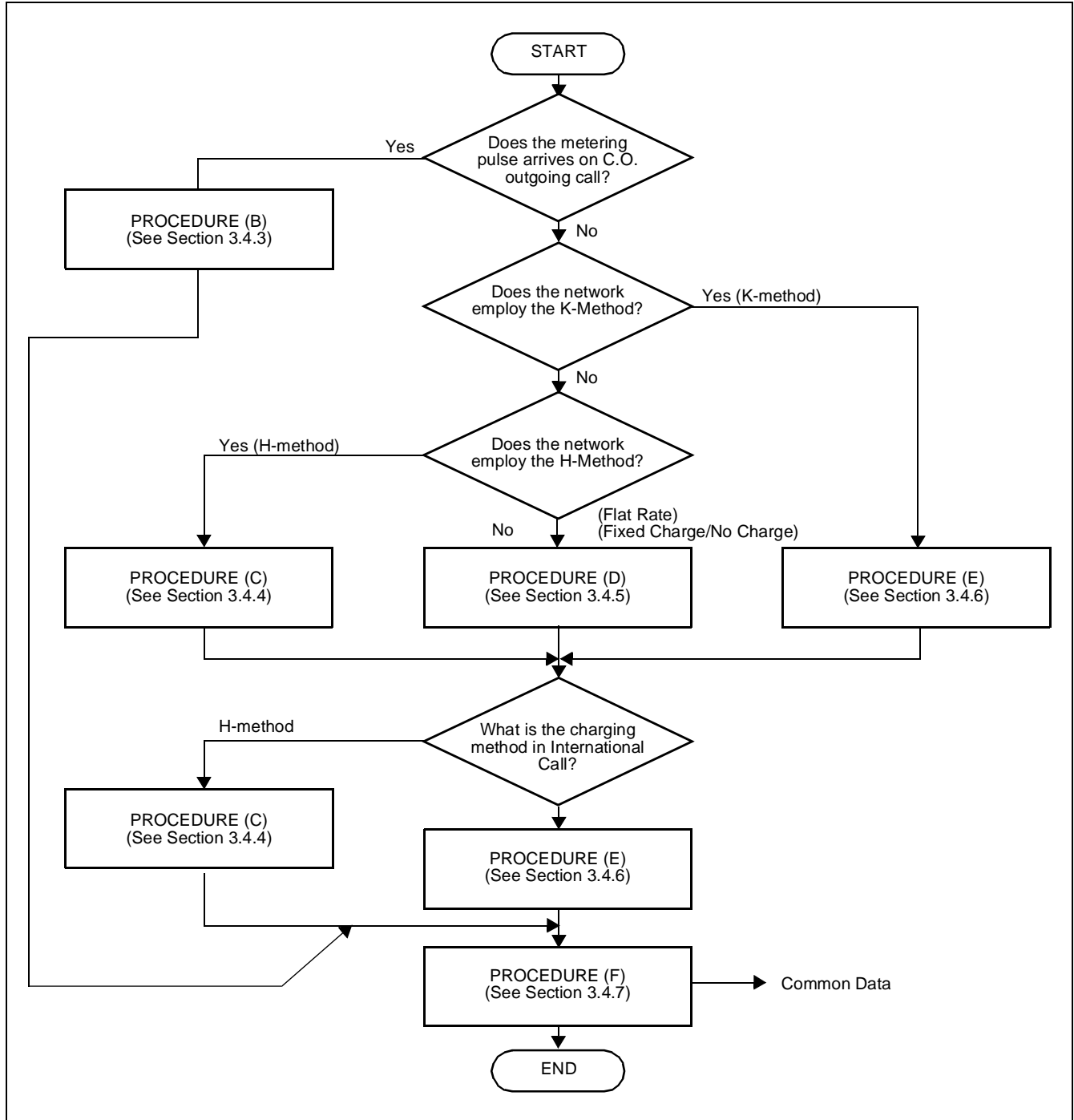
START	DESCRIPTION	DATA
CMD001	Annual the function of SMDR.	(1) 100 (Function) (2) 0 : No Function
CMD015	Assign the data for sending the detail information of outgoing calls to the PMS.	• CMD015 (1) Guest/Admi. Station No. (2) Service Class No. (0◀ - 15)
CMD016		• CMD016 (1) <u>XX</u> 16 └─ Service Class No. assigned by CMD015 (2) 1 : To be sent out
		(1) <u>XX</u> 17 └─ Service Class No. assigned by CMD015 (2) 0◀ : Not to be sent out
END		

## SYSTEM DATA PROGRAMMING

### 3.4.2 Programming Procedure for Call Charging

When sending a call charge information to the PMS, do the following programming in addition to the programming of Section 3.4.2.

**Note:** *This programming is only for Aust./Others.*



**Figure 4-2 Programming Summary for Call Record**

## 3.4.3 Programming Procedure (B)

When arriving a metering pulse from C.O. on C.O. outgoing call (Local Call, Toll Call or International Call), do the following programming.

START	DESCRIPTION	DATA
CM35	Assign the Metering function to the required trunk routes.	<ul style="list-style-type: none"> <li>YY = 42</li> </ul> (1) Trunk Route No. (00 - 63) (2) 0
CMD000	Specify the charging method.	(1) 176 0 : Call charge by PN-AP00-A (2) 1◀ : Call charge by Advice of Charge (AOC) from ISDN network
CMD025	Assign the charging rate per metering pulse.	(1) 0 X 000 (2)    └─ Break Point (0 - 2) 0◀ - 9999 (Charging Rate)
CMD026	Assign the charging method development table number to outgoing trunk route.	(1) Trunk Route No. (0 - 63) (2) Development Table No. (0◀ - 255)
CMD027	Assign the call information sending function to each dialed number.	(1) XXX X └─ Dialed Digit [0 - 9, A(*), B(#)] └─ Development Table No. (0 - 255) assigned by CMD026 (2) 100008 : Charging by metering pulse
END		

# SYSTEM DATA PROGRAMMING

## 3.4.4 Programming Procedure (C)

When arriving the battery reversal signal as an answer signal or no answer signal on C.O. outgoing call, and in the case of taking the H-Method, do the following programming.

START	DESCRIPTION	DATA
CMD001	Assign the break point for surcharge by H-Method, if required.	(1) 190 - 221 (2) 0◀ : No break point 1 : Break point Setting position 255 : (Counting No.)
CMD003	Assign the Time Block for Local Call, Toll Call or International Call to the H-Method Number 0 - 15.	(1) H-Method No. 0 - 15 (0 - 15) (2) 0◀ - 65535
CMD004	Assign the commission to the H-Method Number 0 - 15, if required.	(1) H-Method No. 0 - 15 (76 - 91) (2) Charging Rate (0◀ - 9999)
CMD022	Assign the Time ID No. of Day/Night/Midnight for Local Call, Toll Call or International Call.	(1) XX X XX Time (00 - 23) Time Table No. (0 - 7) H-Method No. (0 - 15) (2) 0 - 2 (Time ID No.)
CMD025	Assign the charging rate for Local Call, Toll Call or International Call (H-Method).	(1) XX X X XX Charging Rank (00 - 15) Classification Code (0 - 7) Break Point (0 - 2) H-Method No. (0 - 15) (2) 0◀ - 9999 (Charging Rate)
CMD026	Assign the charging method development table number to outgoing trunk route.	(1) Trunk Route (0 - 63) (2) Development Table No. (0◀ - 255)
CMD027	Assign the charging method to each dialed digit.	(1) XXX X Dialed Digit [0 - 9, A(*), B(#)] Development Table No. (0 - 255) (2) XXXXX X Attribute Data Various Data
END		

## 3.4.5 Programming Procedure (D)

When arriving the battery reversal signal as an answer signal or no answer signal, and in the case of charging the C.O. outgoing call with the flat rate, do the following programming.

START	DESCRIPTION	DATA
CMD004	Assign the charging rate (Flat Rate) for Local Call, Toll Call to the Flat Rate Number 0 - 9.	(1) Flat Rate No. 0 - 9 (40 - 49) (2) Charging Rate (0 - 9999) <b>Note:</b> <i>In case of no charge (Free of Charge), no data assignment is required.</i>
CMD026	Assign the charging method development table number to outgoing trunk route.	(1) Trunk Route No. (00 - 63) (2) Development Table No. (0 - 255)
CMD027	Assign the charging method to each dialed digit.	(1) <u>XXX</u> <u>X</u> └─ Dialed Digit [0 - 9, A(*), B(#)] └─ Development Table No. (0 - 255) (2) <u>X</u> 6 └─ Flat Rate No. (0 - 9) assigned by Command D004
END		

# SYSTEM DATA PROGRAMMING

## 3.4.6 Programming Procedure (E)

When arriving the battery reversal signal as an answer signal or no answer signal on C.O. outgoing call, and in the case of taking the K-Method, do the following programming.

START	DESCRIPTION	DATA
CMD001	Assign the break point for surcharge by K-method, if required.	(1) 40 - 71 (2) $\left\{ \begin{array}{l} 0 \blacktriangleleft : \text{No break point} \\ 1 \\ \vdots \\ 255 \end{array} \right\} : \text{Break point Setting position (Counting No.)}$
CMD004	Assign the charging rate to the K-Method Number 0 - 15.	(1) K-Method No. 0 - 15 (0 - 15) (2) Charging Rate (0◀ - 9999)
	Assign the commission to the K-Method Number 0 - 15, if required.	(1) K-Method No. 0 - 15 (0 - 15) (2) Charging Rate (0◀ - 9999)
CMD024	Assign the Time Block for Local Call, Toll Call or International Call (K-Method).	(1) $\begin{array}{c} \text{XX} \text{ X } \text{X} \text{ XX} \\ \text{K-Method No. (0 - 15)} \\ \text{Charging Rank (00 - 15)} \\ \text{Time ID No. (0 - 2)} \\ \text{Break Point (0 - 2)} \end{array}$ (2) 0 - 65535
CMD023	Assign the Time ID (Day/Night/Midnight) number of Local Call, Toll Call or International Call (K-Method).	(1) $\begin{array}{c} \text{XX} \text{ X } \text{XX} \\ \text{K-Method No. (0 - 15)} \\ \text{Time Table No. (0 - 7)} \\ \text{Time (00 - 23)} \end{array}$ (2) 0 - 2 (Time ID No.)
CMD004	Assign the charging rate for Local Call, Toll Call or International Call (K-Method).	(1) K-Method No. (0 - 15) (2) 0 - 9999
CMD026	Assign the Charging Method Development Table number to outgoing trunk route.	(1) Trunk Route (0 - 63) (2) Development Table No. (0◀ - 255)
CMD027	Assign the charging method to each dialed digit.	(1) $\begin{array}{c} \text{XXX} \text{ X} \\ \text{Development Table No. (0 - 255)} \\ \text{Dialed Digit [0 - 9, A(*), B(#)]} \end{array}$ (2) $\begin{array}{c} \text{XXXXXX} \text{ X} \\ \text{Various Data} \\ \text{Attribute Data} \end{array}$
END		

## 3.4.7 Programming Procedure (F)

START	DESCRIPTION	DATA									
CM08	Assign the Pseudo-Answer signal function when the answer signal (Battery Reversal) has not been detected within the time assigned by CM41 Y = 0, Function No. 03 after making an outgoing C.O. call.	(1) 123 (2) 0/1◀ : Not to be sent out/To be sent out									
CM13	Specify the Call Record Function to the required stations.	<ul style="list-style-type: none"> <li>YY = 06 (Call Record for outgoing call)</li> </ul> (1) X - XXXX (Station No.) (2) 0/1◀ : Not to be provided/To be provided									
CM35	Specify the type of answer signal from distant office in outgoing connection for each trunk route.	<ul style="list-style-type: none"> <li>YY = 04</li> </ul> (1) Trunk Route No. (00 - 63) <ul style="list-style-type: none"> <li>0 : Answer signal arrives (12 kHz, 50 Hz Metering Signal) from C.O. line</li> <li>1 : Answer signal arrives (Battery Reversal) from C.O. line</li> </ul> (2) <ul style="list-style-type: none"> <li>2 : Answer signal arrives from Tie Line/ISDN</li> <li>7◀ : Answer signal does not arrive from C.O./Tie line</li> </ul>									
	Specify the Call Record Function to the required trunk routes.	<ul style="list-style-type: none"> <li>YY = 14</li> </ul> (1) Trunk Route No. (00 - 63) (2) 0/1◀ : To be provided/Not to be provided									
CMD033	Assign a Call Development Table Number to each outgoing trunk route.  <b>Note:</b> <i>This data assignment is required only when specifying the type of call (C.O. or Tie Line call) to each dialed number.</i>	(1) Trunk Route Number (00 - 63) (2) Call Development Table Number (0◀ - 127)									
CMD034	Assign Type of Call for each dialed digit (0 - 9, A, B) on each Call Development Table Number assigned by CMD033.  <b>Note:</b> <i>This data assignment is required only when specifying the type of call (C.O. or Tie Line call) to each dialed number.</i>	(1) <table border="0"> <tr> <td>XXX</td> <td>X</td> <td></td> </tr> <tr> <td></td> <td></td> <td>└─ Dialed Digit [0 - 9, A(*), B(#)]</td> </tr> <tr> <td></td> <td></td> <td>└─ Call Development Table Number (000 - 127) assigned by CMD033</td> </tr> </table> (2) <ul style="list-style-type: none"> <li>11 : Local call</li> <li>21 : Toll call</li> <li>31 : International (ISD) call</li> <li>9 : Tie Line call</li> </ul>	XXX	X				└─ Dialed Digit [0 - 9, A(*), B(#)]			└─ Call Development Table Number (000 - 127) assigned by CMD033
XXX	X										
		└─ Dialed Digit [0 - 9, A(*), B(#)]									
		└─ Call Development Table Number (000 - 127) assigned by CMD033									
END											

## SYSTEM DATA PROGRAMMING

### 3.5 Call Record Programming for PMS and SMDR

When sending a call information to PMS and SMDR, do the following programming in addition to the programming of Section 3.4. For the programming of SMDR, refer to the SMDR System Manual.

START	DESCRIPTION	DATA
<div><div>CMD015</div><div>CMD016</div></div>	Assign the data for sending the detail information of outgoing calls to the PMS and SMDR.	<ul style="list-style-type: none"><li>CMD015<ul style="list-style-type: none"><li>(1) Guest/Admi. Station No.</li><li>(2) Service Class No. (0◀ - 15)</li></ul></li><li>CMD016<ul style="list-style-type: none"><li>(1) <u>XX</u> 16 └─ Service Class No. assigned by CMD015</li><li>(2) 1 : To be sent out</li><li>(1) <u>XX</u> 17 └─ Service Class No. assigned by CMD015</li><li>(2) 1 : To be sent out</li></ul></li></ul>
END		



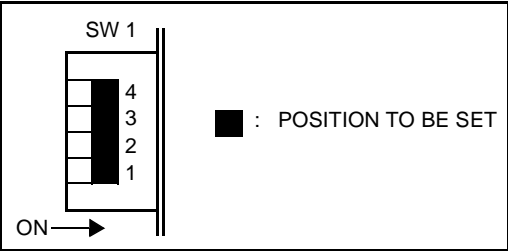
### 3.6 Call Record Programming for SMDR

When sending a call information to SMDR, do the following programming. For the programming of SMDR, refer to the SMDR System Manual.

START	DESCRIPTION	DATA
<div style="border: 1px solid black; padding: 2px; display: inline-block;">CMD015</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">CMD016</div>	Assign the data for sending the detail information of outgoing calls to the SMDR.	<ul style="list-style-type: none"> <li>CMD015               <ul style="list-style-type: none"> <li>(1) Guest/Admi. Station No.</li> <li>(2) Service Class No. (0◀ - 15)</li> </ul> </li> <li>CMD016               <ul style="list-style-type: none"> <li>(1) <u>XX</u> 16                      └─ Service Class No. assigned by CMD015</li> <li>(2) 0◀ : Not to be sent out</li> <li>(1) <u>XX</u> 17                      └─ Service Class No. assigned by CMD015</li> <li>(2) 1 : To be sent out</li> </ul> </li> </ul>
END		

SYSTEM DATA PROGRAMMING

3.7 Data Programming for Hotel Printer

START	DESCRIPTION	DATA
<div>CMD000</div>	<div>Set the SW1 switch on the PN-AP00-A as shown below.</div> <div></div> <div>Designate the language of message printed out.</div> <div>Specify the Printer Line Feed.</div>	<div></div> <div>(1) 2 (Language of message printed out)</div> <div>(2) 1◀ : English</div> <div>(1) 103</div> <div>(2) { 0◀ : CR</div> <div>1 : CR and LF</div>
<div>A</div>		

A

CMD001

## DESCRIPTION

## DATA

Assign the attribute data, depending on the port (Port 0 - 2) connected to Printer terminal. (For details of commands, refer to the Command Manual.)

(1) } See the following table.  
(2) }

AP INITIAL

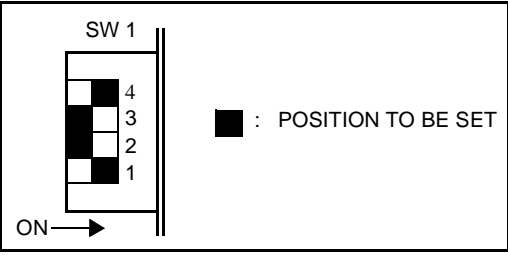
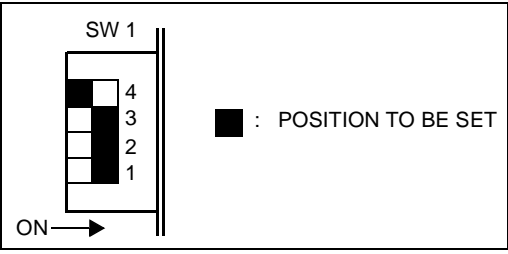
FIRST DATA (1)			MEANING	SECOND DATA (2)	MEANING
PORT 0	PORT 1	PORT 2			
20	24	28	Data Speed	2	1200 bps
21	25	29	Stop bit length	2	2 bit
22	26	30	Data Length	0	7 bit
23	27	31	Parity	1	Even Parity
80	100	120	Function	16/17	Hotel Printer 0/ Hotel Printer 1
81	101	121	Priority for Data Processing	1	2nd
82	102	122	Number of characters per line to be printed out	2	80 characters
83	103	123	Number of lines per page	0 - 88	} See the description of commands
84	104	124	Number of lines per page to be printed out	0 - 88	
85	105	125	Station Address (SA)	—	Not used
86	106	126	Unit Address (UA)	—	Not used
87	107	127	Timer for detecting the terminal/no answer	—	Not used
89	109	129	Timer for detecting the end of block	—	Not used
90	110	130	Timer for detecting non data communication	—	Not used
91	111	131	Number of times to resend the Selecting Sequence when NAK is returned in Phase 2	—	Not used
92	112	132	Number of times to resend the Selecting Sequence when no answer in Phase 2	—	Not used
93	113	133	Number of times to resend the Selecting Sequence when NAK is returned in Phase 3	—	Not used
94	114	134	Number of times to resend the Selecting Sequence when no answer in Phase 3	—	Not used
95	115	135	Delay before resending the Selecting Sequence when NAK is returned	—	Not used
96	116	136	Delay before resending the text when WABT is returned	—	Not used

B

## SYSTEM DATA PROGRAMMING

	DESCRIPTION	DATA
<div>B</div> <div>CMD035</div>	<p>Assign the Hotel/Motel Printer to each Front Desk Instrument.</p> <p>System Initialization (Depress the SW1 on the MP card) Station Number information is transferred from the MP to the AP. When the transfer is completed, message "SORT COMPLETE" is printed out on the Hotel/Motel printer.</p> <p>( "SORT COMPLETE" printout takes ) about 4 minutes.</p>	<p>(1) X - XXXX (My Line Number of Front Desk Instrument)</p> <p>(2) { 0◀ : H/M Printer 0 1 : H/M Printer 1</p>
END		

## 3.8 Data Programming for PN-ME00 Card

START	DESCRIPTION	DATA
CM05	Assign a slot number to the PN-ME00 card. The slot number to be assigned must coincide with the value set by the SENSE switch on the PN-ME00 card.	(1) 04 - 15 (Slot Number) (2) 19 (PN-ME00 card)
		INITIAL
CMD000	Provide the system with PN-ME00 card.	(1) 56 (2) 1 : To be provided
CMD001	Provide the system with SRAM card.  On the PN-AP00-A card, set the SW1 switch as shown below.	(1) 39 (2) 1 : To be provided
		
CMD102	Initialize the SRAM card.  On the PN-AP00-A card, set the SW1 switch as shown below.	(1) 0000 (2) CCC
		
END		

## SPECIFICATIONS

### CHAPTER 5 SPECIFICATIONS

#### 1. GENERAL

This chapter explains the PMS interface characteristics and the data transmission protocol.

#### 2. LINE CONTROL CHARACTERISTICS

The data link hardware consists of a RS-232C serial interface to the PBX.

**Table 5-1 Line Control Characteristics**

ITEM	DESCRIPTION
Data Rate:	300, 1200 bps, asynchronous, software selectable.
Operating Mode:	Half duplex.
Electrical Interface Characteristic:	EIA RS-232C electrical standard interface.
Signal Form:	EIA RS-404
Interface Distance:	Max. 15 m (49.2 ft.) between PBX and PMS (without modem). <b>Note:</b> <i>When modems are used, full duplex asynchronous type modems are required.</i>
Word Framing:	10 bits (1 start, 7 data, 1 parity, 1 stop) or 11 bits (1 start, 7 data, 1 parity, 2 stop).
Parity* VRC:	No parity, even parity, odd parity; selected by PBX system data.
Parity** LRC:	Exclusive OR of message text.
Frame Contents:	US ASCII 7-bit codes.
Control:	Contention.
Priority Sequence:	Primary station: PBX Secondary station: PMS.

\*VRC : Vertical Redundancy Check

\*\*LRC : Longitudinal Redundancy Check

### 3. DATA TRANSMISSION PROTOCOL

This section discusses the protocol for data exchange between the PBX and the PMS. The following control codes are used for data exchange:

**Table 5-2 Data Transmission Protocol**

CODE	DESCRIPTION
SA	System Address: ASCII code 31 <sub>16</sub> (digit “1”).
UA	Unit Address: ASCII code 21 <sub>16</sub> (exclamation point “!”).
STX	Indication of the start of message text.
ETX	Indication of the end of message text.
ACK	Positive acknowledgement of message text or selecting sequence.
NAK	Negative acknowledgement of message text or selecting sequence.
ENQ	Request for acknowledgement of message text, or last byte of selecting sequence.
EOT	Indication of end of transmission or release of the data link by the sender.
DLE “<”	Indication of interruption for the receiver to ask the sender for permission to send.
DLE “ ”	Indication of interruption for the receiver to ask the sender to stop transmission.

**Note:** A chart listing the ASCII codes for these characters is given in Appendix B.

#### 3.1 General Message Format

The message will have the following general format:

<b>S T X</b>	<b>Message text</b>	<b>E T X</b>	<b>B C C</b>
----------------------	---------------------	----------------------	----------------------

Each message has a different length depending on its function. BCC is the block check code (longitudinal redundancy checksum).

#### 3.2 Exchange Protocol and Message Responses

In this exchange protocol, the following communication phases are included:

- Phase 1 Initiation of the data link
- Phase 2 Data transmission
- Phase 3 Release of the data link

Figures 5-1, 5-2 and 5-3 show the operation of the protocol. The text on the following pages describes the three phases in detail.

# SPECIFICATIONS

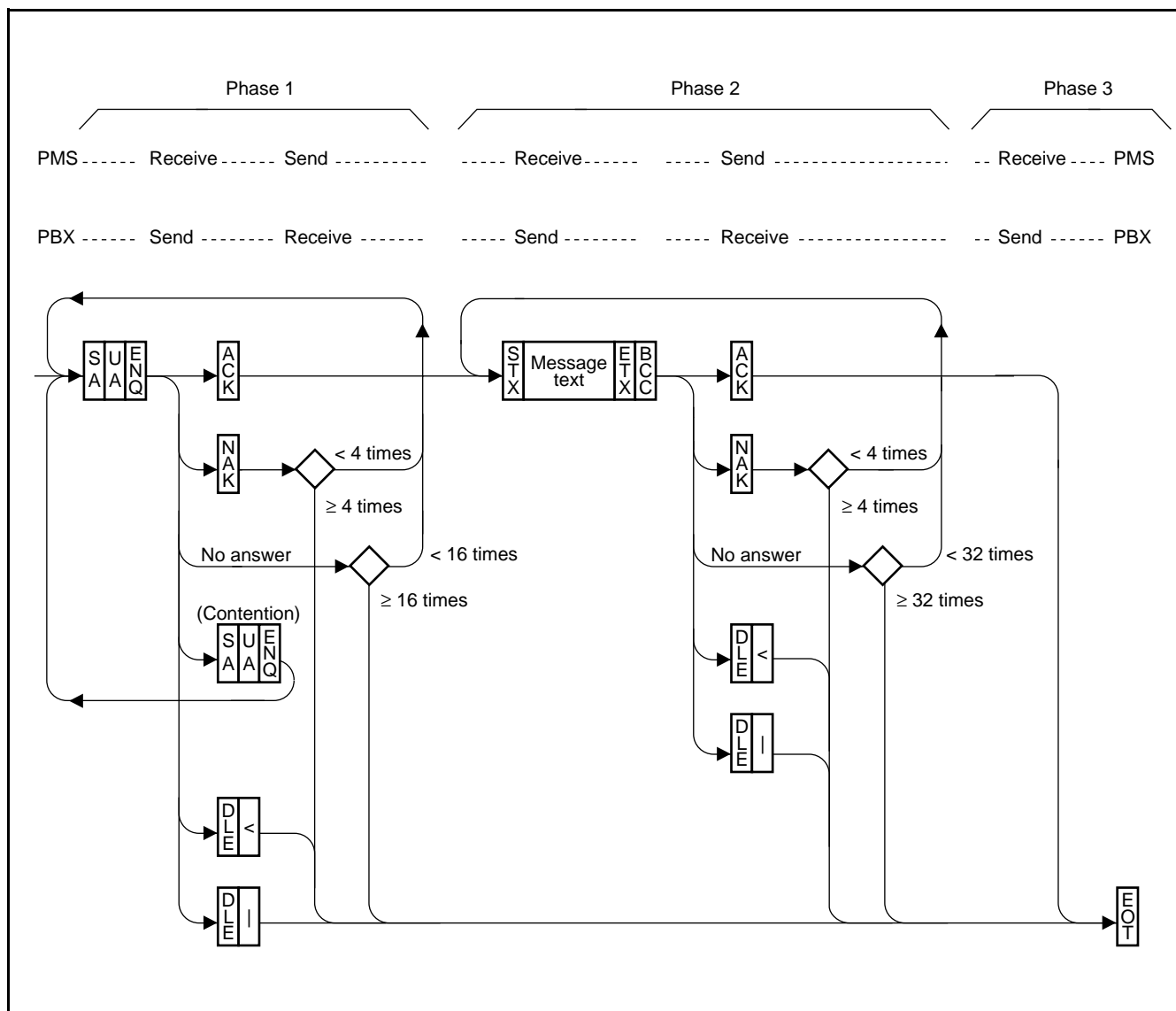
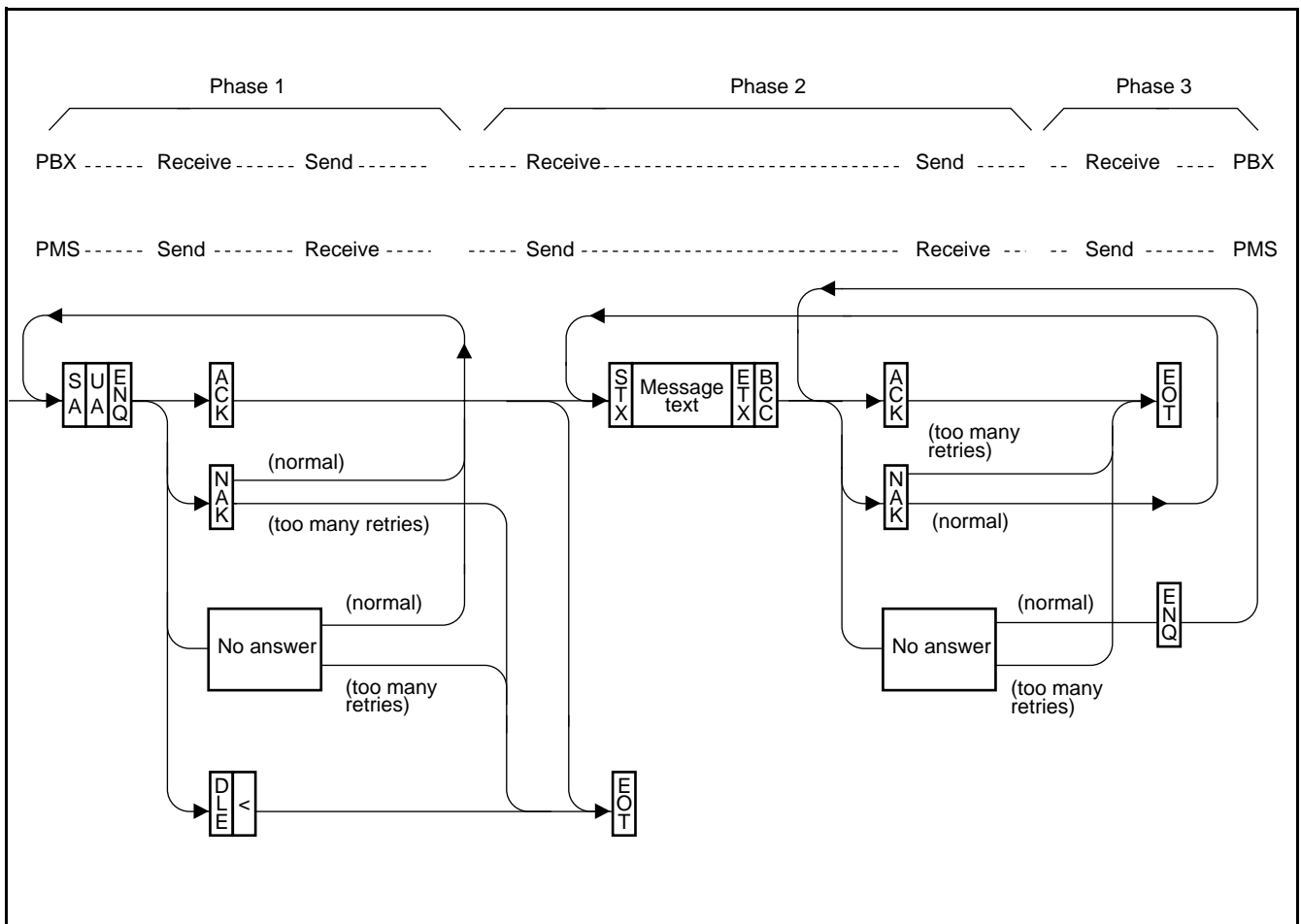


Figure 5-1 Data Transmission from the PBX to the PMS





### Figure 5-2 Data Transmission from the PMS to the PBX

## SPECIFICATIONS

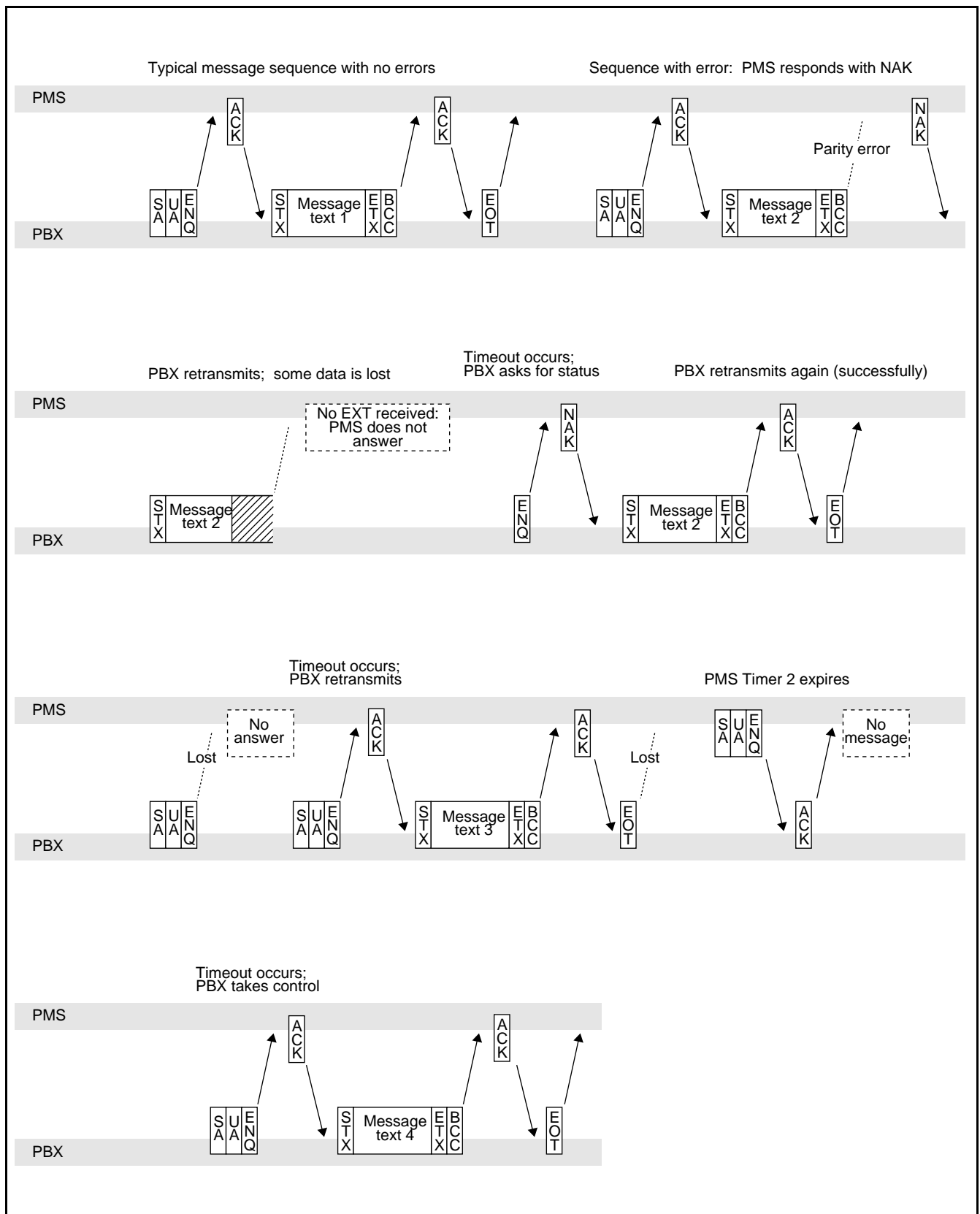


Figure 5-3 Examples of Data Link Protocol

(1) Phase 1: Initiation of the Data Link

For initiating the data link, the following control codes are used.

(a) Transmission of the selecting sequence codes

The sender will transmit selecting sequence codes (SA-UA-ENQ) before the message text to make sure that the receiver is available.

(b) Answer for the selecting sequence codes

- **Positive acknowledgement (ACK).** If the receiver is ready to receive the message text, it will transmit the ACK code. When the sender receives the ACK code, it enters Phase 2 to send the message text.
- **Negative acknowledgement (NAK).** If the receiver is not ready or detects a VRC error, it will transmit the NAK code. If the sender has received the NAK code 4 times, it enters Phase 3 to release the data link.
- **Interruption for permission to send (DLE “<”).** If the receiver has information for the sender, it will transmit the DLE “<” code to ask for permission to send. When the sender receives the DLE “<” code, it enters Phase 3 to release the data link.
- **Selecting sequence codes (SA-UA-ENQ).** If both systems try to initiate the data link at the same time, the PBX has priority. The PMS should return to an idle state and wait for the PBX to send the codes again.
- **No answer.** If the sender does not receive ACK, NAK, or DLE during the Timer 1 interval, it will retransmit the selecting sequence code up to 16 times. If no answer is received after 16 retries, the sender enters Phase 3 to release the data link.

(2) Phase 2: Data Transmission

In Phase 2, the following codes are used.

(a) Transmission of the message text

The sender transmits the message text, starting with the STX code, and ending with the ETX code followed by the BCC.

(b) Answer for the message text

- **Positive acknowledgement (ACK).** When the message text is received correctly, the receiver transmits the ACK code. When the ACK code is received, the sender enters Phase 3 to release the data link. If the sender has several messages to send, it can send them successively without entering Phase 3 after each transmission.
- **Negative acknowledgement (NAK).** If the receiver does not receive the message correctly due to VRC or LRC error, or receives a message text with an undefined code, etc., the receiver will transmit the NAK code. When the NAK is received, the sender retransmits the same message text up to 4 times.

## SPECIFICATIONS

After 4 attempts, the sender enters Phase 3 to release the data link.

- **Interruption to stop transmission (DLE “|”).** If the receiver is not ready to receive the message text because its buffer is full, it will transmit the DLE “|” code to ask the sender to stop the transmission. When the sender receives the DLE “|” code, it enters Phase 3 to release the data link. In this case, the sender should recognize that its last message was not received correctly.
- **Interruption for permission to send (DLE “<”).** If the receiver has information for the sender, it will transmit the DLE “<” code to ask for permission to send. When the sender receives the DLE “<” code, it enters Phase 3 to release the data link.
- **No answer.** If the sender does not receive ACK, NAK, DLE “<”, or DLE “|” during the Timer 1 interval, it will send the ENQ code to request an answer for the previous message. It will send the ENQ code up to 32 times. If no answer is received after 32 attempts, the sender enters Phase 3 to release the data link.

### (3) Phase 3: Release of the Data Link

The sender sends the EOT code to release the data link, and then goes to Phase 1 when necessary to send another message. If the receiver does not receive the EOT code during the Timer 2 interval, it can begin sending messages.

#### Timing Considerations

The PBX has a 128-byte buffer for receiving messages from the PMS. It checks for incoming messages every 128 msec. If the PMS sends data faster than the PBX can process it, some data may be lost, resulting in retransmission of messages and a decrease in total message throughput.

Two software timers must be used to maintain data transmission. Timer 1 is maintained by the sender. Timer 2 is maintained by the receiver.

#### Timer 1

This timer begins counting upon sending a selecting sequence code (SA, UA, ENQ), message text (STX ... BCC), or inquiry code (ENQ), and stops counting upon receiving a valid answer (ACK, NAK, DLE “|”, or DLE “<”). The timer interval is one (1) second. If timeout occurs after transmission of the selecting sequence codes, the codes will be retransmitted up to 16 times. If timeout occurs after transmission of message text or inquiry codes, the inquiry code to request an answer is retransmitted up to 32 times.

#### Timer 2

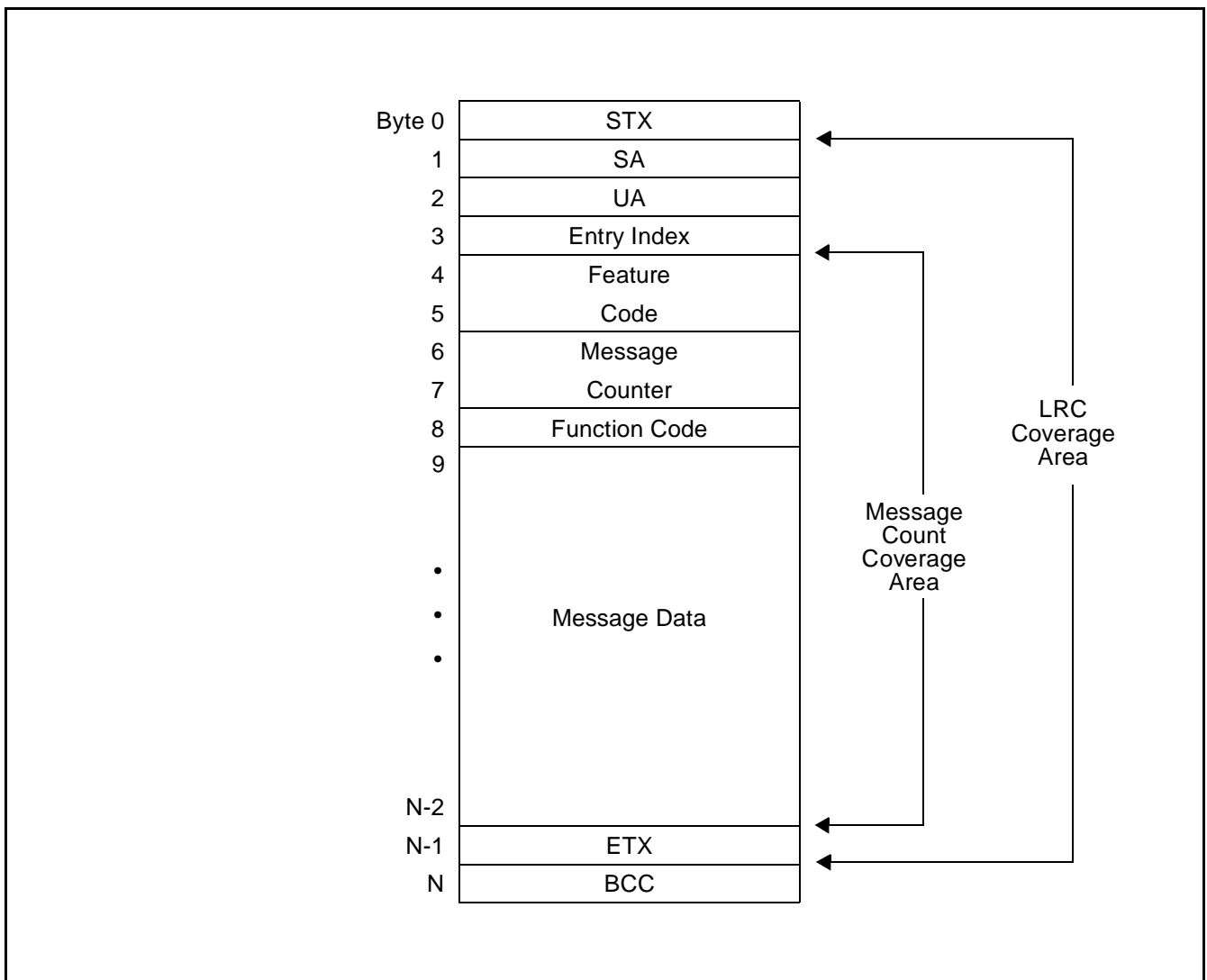
This timer begins counting upon transmission of a positive acknowledgement code (ACK) for the selecting sequence code or message text, and stops counting upon receiving a message text or valid end code (EOT). The timer interval is 35 seconds. If timeout occurs, the receiver may enter Phase 1 to become the sender.

### 3.3 Message Text Format

As noted previously, the general format for a message is:

<b>S</b>	<b>Message text</b>	<b>E</b>	<b>B</b>
<b>T</b>		<b>T</b>	<b>C</b>
<b>X</b>		<b>X</b>	<b>C</b>

The message text consists of 7-bit ASCII codes plus 1 parity bit. The first 8 characters immediately following the STX are fixed in format, and indicate the format and length of the remaining bytes, which may vary depending on the message type. The general message format is as shown in Figure 5-4:



**Figure 5-4 General Message Format**

## SPECIFICATIONS

### (1) Entry Index

This character specifies which of the transmitted messages the PBX supplies. In the case of the PMS interface, the ASCII code “L” is always used.

### (2) Feature Code and Violation Code

The Feature Code consists of two digits that specify possible feature messages, such as “13” for message waiting, or “16” for check-in/out functions.

When message data from the PMS specifies a station number that does not exist in the PBX, the PBX sends the message data back to the PMS with a Violation Code replacing the Feature Code frames. Also, a Violation Code will be sent by the PBX in the following cases:

- Upon receipt of unused feature codes and function codes.
- Upon receipt of unused restriction level.
- When the message counter does not match the number of characters received.

The following Feature Codes and Violation Codes are used:

FEATURE CODE	VIOLATION CODE	FEATURE
11	91	Maid Status (from guest room telephone)
12	92	Maid Status (from preassigned telephone)
13	93	Message Waiting
14	94	Station Message Detail
15	95	Controlled Restriction
16	96	Check-in/out
17	97	Room Data Image
19	99	Wake-up
20	A0	Room Change/Room Swap
21	A1	Room Occupancy/Room Data Change
70	—	Status Inquiry

### (3) Message Counter

The Message Counter specifies the number of bytes in the message from the Feature Code through the last data character, inclusive. This counter is checked by the receiver, and if the value does not match the number of bytes received, the receiver will discard the data and send the Violation Code that corresponds to the received Feature Code.

**(4) Function Code**

The Function Code specifies the action or process for a feature message.

**(5) Message Data**

The contents of the Message Data vary depending on the feature and function. The types of data that may be present are described below. Note that all numeric data is expressed using the ASCII digits “0” through “9” (codes 30<sub>16</sub> through 39<sub>16</sub>).

- **Room Station Number (RSN)**

The PBX Room Station Number consists of four (4) digits, indicating the room number related to the Feature Code and Function Code. If the Room Station Number is less than four (4) digits, unused bytes must be filled with trailing spaces. For example, if the Room Station Number is 432, the first digit “4” is placed in the first byte of the field, followed by “3”, “2”, and a space.

- **Maid Identification Number**

This number consists of two (2) digits. The numbers in the bytes range from “10” to “99”.

- **Route Number and Trunk Number**

These numbers each consist of three (3) digits. The Route Number ranges from “000” to “063”, and the Trunk Number ranges from “000” to “255”. If the Route or Trunk Number consists of one or two digits, 0 must be placed in the high digit positions.

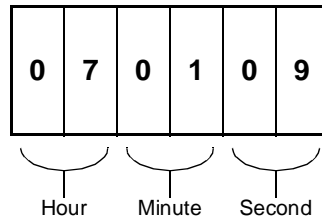
- **Called Subscriber Number**

This number consists of 16 characters, including the C.O. access code. If the number is less than 16 digits, unused bytes are filled with trailing spaces as for the Room Station Number.

## SPECIFICATIONS

- Call Start Time

This item consists of six (6) characters indicating the hour, minute, and second as follows:



(24-hour form)

**Typical Call Start Time: 7:01:09 A.M. (7 hours, 1 minute, 9 seconds)**

- Call Duration Time

This item consists of five (5) characters, specifying the duration in seconds. If the duration is less than 5 digits, unused bytes are filled with ASCII "0" codes. For example, if the duration is 999 seconds, the frame arrangement is "00999."

- Restriction Level

This item consists of one (1) digit, indicating the restriction status of the room station number:

RESTRICTION LEVEL	MEANING
0	Preassigned restriction
1	Set Room Cut-off
2 - 4	Not used
5	Set Do Not Disturb
6	Set Room Cut-off and Do Not Disturb



- Language

This item consists of one (1) digit indicating one of the following languages:

<b>CODE</b>	<b>MEANING</b>
1	Japanese
2	English
3	German
4	French
5	Spanish
6	Chinese
7	Russian

- Room Occupancy

This item consists of one (1) digit whose value indicates two separate status items, as listed below:

<b>CODE</b>	<b>VIP</b>	<b>ROOM KEY</b>
1	No	In room
2	Yes	In room
3	No	At front desk
4	Yes	At front desk

- Guest Name

This item consists of 15 characters. As in the Room Station Number, if the guest name is less than 15 characters, unused bytes must be filled with trailing spaces.

- Vacant/Occupied Status

This item consists of one (1) digit: “0” for Vacant, and “1” for Occupied.

- Message Waiting Lamps Status

This item consists of one (1) digit: “0” for Off, and “1” for On.

- Reservation

This item consists of one (1) digit: “0” for Not Reserved, and “1” for Reserved.

- Maid Status

This item consists of one (1) digit, ranging in value from 1 to 8, the room status. The exact meanings of these codes are determined by the PBX system manager. A sample set of values is listed below:

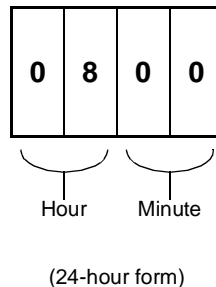
## SPECIFICATIONS

CODE	MEANING
1	Cleaning is necessary for the specified room.
2	The specified room is cleaned.
3	The specified room is ready for reservation.
4	The specified room is out of service.
5	The specified room needs repair.
6	The specified room is repaired.

**Note:** See the description of the Maid Status message in Chapter 5 for details on the use of this code.

- Wake-up Time

This item consists of four (4) digits indicating the wake-up hour and minute as shown below:



**Typical Wake-up time: 8:00 A.M.**

- Wake-up Result

This item consists of one (1) digit indicating the following conditions:

CODE	MEANING
1	Answer
2	Busy
3	No answer
4	Blocked

- Admin/Guest Status

This item consists of one (1) digit: “0” for Administration, or “1” for Guest.

- Wake-up Set

This item consists of one (1) digit, indicating who set the wake-up call. (See Section 2.7 of Chapter 6, Text Format 1.)

<b>CODE</b>	<b>MEANING</b>
1	Guest
2	Operator
3	Administration
4	PMS

## OPERATION

# CHAPTER 6 OPERATION

## 1. GENERAL

This chapter discusses the operations associated with each feature message. The set of feature messages used may vary from one PMS to another, depending on system applications. For each feature message, general operations and PBX and/or PMS function will be discussed, and function codes and their uses will be defined.

The feature codes available are summarized in the following Table 6-1:

**Table 6-1 Feature Codes Summary**

FEATURE	CODE	TYPE OF INFORMATION
Maid Status	11	Main status set up by guest room telephones.
	12	Maid status set up by the front desk terminal.
Message Waiting	13	MW lamp status changes.
Station Message Detail	14	Local/toll call details on completion of calls.
Controlled Restriction	15	Changes in telephone calling restrictions placed on room station numbers.
Check-in/out	16	Room check-in/check-out status.
Room Data Image	17	Complete status information for a room.
Wake-up	19	Wake-up status.
Room Change/Room Swap	20	Room change/room swap status.
Room Occupancy Change/ Room Data Change	21	Room occupancy/room data changes.
Status Inquiry	70	Data link maintenance.

## 2. OPERATION OF TEXT

### 2.1 Maid Status (Feature code 11 or 12)

The maid status is transmitted to the PMS when an appropriate access code is dialed. Feature code 11 is used when dialed by guest room telephones. Feature code 12 is used when dialed by the front desk terminal.

The function code can range in value from 1 to 8, and indicates the room status that was dialed. The exact meanings of these codes are determined by the property manager. A sample set of values is listed below:

FUNCTION CODE	MESSAGE DIRECTION	INDICATION
1	To PMS	Cleaning is necessary for the specified room.
2	To PMS	The specified room is cleaned.
3	To PMS	The specified room is ready for reservation.
4	To PMS	The specified room is out of service.
5	To PMS	The specified room needs repair.
6	To PMS	The specified room is repaired.

In addition to these six indications, the Maid Status message may be sent by the PBX to signal a check-in or check-out. In this case, the PMS must be programmed to respond to those function codes.

The maid status message will be sent to the PMS in accordance with the PBX installation parameter setting for the maid status feature. (The feature must be active in the PBX).

The following items should also be considered:

- When room change (20.1) is activated, a (12.1) message is sent for the room specified by the old station number.
- If a (16.2) or (20.1) message is activated by the PMS terminal, the Maid Status message will not be sent to the PMS from the PBX.
- When the maid identification code is not used, all bytes for the maid identification code will contain the ASCII space code.
- The PBX will not check whether or not the dialed maid identification code is valid.

## OPERATION

### Message Data Format

Byte No. 0	STX	
1	SA	
2	UA	
3	"L"	Entry index for PMS interface
4	Feature code	High digit: "1" for normal or "9" for violation
5		Low digit: "1" for station, "2" for front desk
6	"1"	Message counter high digit
7	"7"	Message counter low digit
8	Function code	
9	Station number	
10		
11		
12		
13	Unused	Contains ASCII spaces
14		
15	Maid ID	High digit
16		Low digit
17	Unused	
18		Contains ASCII spaces
19		
20		
21	ETX	
22	BCC	LRC parity check byte

## 2.2 Message Waiting (Feature code 13)

The Message Waiting feature turns the MW lamp on and off at guest and administrative telephones. It operates on commands entered via the attendant consoles or front desk terminal, with notification to the PMS; or upon receipt of messages from the PMS. Four function codes are defined.

<b>FUNCTION CODE</b>	<b>MESSAGE DIRECTION</b>	<b>MEANING</b>
1	From PMS	Turn on MW lamp for the specified station.
2	From PMS	Turn off MW lamp for the specified station.
3	To PMS	The lamp for the specified station has been turned on via attendant console or front desk terminal.
4	To PMS	The lamp for the specified station has been turned off via attendant console or front desk terminal.

The Message Waiting feature messages will be sent and/or received based on the PBX installation parameter setting for the Message Waiting communication feature. The possibilities are:

- The feature is active in the PBX with no communication with the PMS.
- The feature is active in the PBX and communication with the PMS is in effect.

With the feature active, the operational considerations are:

- Entry (activate/deactivate) and status display via any assigned attendant console or front desk terminal will be fully operational at all times.
- The Message Waiting status of each station will be stored in PBX memory.
- When a change in Message Waiting status for a station is entered via the attendant console or front desk terminal, the lamp will be turned on (13.3) or off (13.4), and a message will be sent to the PMS with the station number indicated.
- Upon receipt by the PBX of a “turn lamp on” (13.1) or “turn lamp off” (13.2) message, the appropriate lamp status change will be performed by the PBX.
- When a room check-out message is received from the PMS, a (16.6) check-out complete message will be sent to the PMS if the room telephone’s lamp is on. The lamp will then be reset to the Off state. If the room telephone did not have its lamp on, a (16.5) check-out complete message will be sent.

## OPERATION

### Message Data Format

Byte No. 0	STX	
1	SA	
2	UA	
3	"L"	Entry index for PMS interface
4	"1" or "9"	Feature code high digit (normal or violation)
5	"3"	Feature code low digit
6	"1"	Message counter high digit
7	"1"	Message counter low digit
8	Function code	
9	Station number	
10		
11		
12		
13	Unused	Must contain ASCII spaces
14		
15	ETX	
16	BCC	LRC parity check byte

### 2.3 Station Message Detail (Feature code 14)

This feature allows the PBX to send to the PMS detail of local, toll and international calls. The information is sent at the completion of each call. Only one function code is used with this feature:

FUNCTION CODE	MESSAGE DIRECTION	TYPE OF INFORMATION
2	To PMS	Details of station message

This feature is controlled by the PBX installation parameter setting for the Station Message Detail feature. The feature must be active in the PBX.

When the data link is faulty, the station message details can be automatically printed out on the PBX printer after the completion of each call.



Message Data Format

Byte No.0	STX	
1	SA	
2	UA	
3	"L"	Entry index for PMS interface
4	"1" or "9"	Feature code high digit (normal or violation)
5	"4"	Feature code low digit
6	"5"	Message counter high digit
7	"0"	Message counter low digit
8	Function code	
9	Station number	
10		
11		
12		
13	Unused	Contains ASCII spaces
14		
15	Route number	
16		
17		
18	Trunk number	
19		
20		
21	Called subscribe	
22	number	
23		
24		
25		
26		
27		
28		
29		
30		
31		
32		
33		
34		
35		
36		

(Continued on next page)

## OPERATION

(Continued from previous page)

Byte No. 37	Call start time	Hours
38		
39		Minutes
40		
41		Seconds
42		
43	Call duration	Seconds (5 digits)
44		
45		
46		
47		
48	Unused	Contains ASCII spaces
49		
50		
51		
52		
53		
54	ETX	
55	BCC	LRC parity check byte

### 2.4 Controlled Restriction (Feature code 15)

This feature allows a guest telephone line to be restricted via an entry from the attendant console or front desk terminal, or upon receipt of feature code 15 from the PMS. This restriction is accomplished using selected origination and/or termination capabilities. Two function codes are available (see the following Table.):

FUNCTION CODE	MESSAGE DIRECTION	MEANING
1	From PMS	Set indicated restriction for specified room station.
2	To PMS	Restriction has been set for the specified room station number by the attendant console or front desk terminal.

Communication of the Controlled Restriction message between the PBX and the PMS is dependent on PBX installation parameters. The possibilities are:

The feature is active in the PBX, but communication with the PMS is not in effect.

The feature is active in the PBX and communication with the PMS is in effect. In this configuration, the change can be initiated either through the attendant console or front desk terminal, with notification to the PMS; or from the PMS via a request to the PBX to impose the specified restriction level.

When the Controlled Restriction feature is active, and a change in controlled restriction for a room telephone is entered via the attendant console or front desk terminal, a (15.2) message containing the specified room station number and new restriction level is sent to the PMS.

When a (15.1) message is received from the PMS, the specified restriction change is implemented on the specified room telephone, overriding any previous restriction.

## Message Data Format

Byte No. 0	STX	
1	SA	
2	UA	
3	"L"	Entry index for PMS interface
4	"1" or "9"	Feature code high digit (normal or violation)
5	"5"	Feature code low digit
6	"1"	Message counter high digit
7	"4"	Message counter low digit
8	Function code	
9	Station number	
10		
11		
12		
13	Unused	Must contain ASCII spaces
14		
15	Restriction level	
16	Unused	Must contain ASCII spaces
17		
18	ETX	
19	BCC	LRC parity check byte

The controlled restriction level codes and corresponding actions are:

LEVEL	ACTION
0	No restriction.
1	Outward restriction: denies all local and toll calling from the room telephone (Room Cut-off).
5	Termination restriction: denies all incoming calls to the room telephone (Do Not Disturb).
6	Both outgoing and incoming restriction.

When a restriction is in effect, a denied call will receive reorder tone, or will be forwarded to the attendant console or a preassigned station, according to system programming.

## OPERATION

### 2.5 Check-in/out (Feature code 16)

This message does not represent a unique feature, but rather a convenient device for activating a sequence of functions commonly performed when a guest checks in or out of a room. The PBX requires check-in/out notification from the PMS in order to perform the appropriate internal status changes required for guest rooms: message waiting lamp status, wake-up request, controlled restriction level, etc. The available function codes are:

<b>FUNCTION CODE</b>	<b>TEXT FORMAT</b>	<b>MESSAGE DIRECTION</b>	<b>MEANING</b>
1	1	From PMS	The PBX is to perform the functions associated with check-in for the specified room station number (RSN).
2	1	From PMS	The PBX is to perform the functions associated with check-out for the specified RSN.
5	1	To PMS	Check-out functions have been completed for the specified RSN, and the message waiting lamp is off.
6	1	To PMS	Check-out functions have been completed for the specified RSN, and the message waiting lamp is on.
A	2	From PMS	The PBX is to perform the functions associated with check-in for the indicated RSN, including storing Language and Room Occupancy.
B	3	From PMS	The PBX is to perform the functions associated with check-in for the indicated RSN, including storing Language, Room Occupancy, and Guest Name.

The PBX will maintain the Vacant or Occupied status for each RSN. This status will be activated upon receipt of a check-in or check-out message from the PMS. Under normal operation, check-in and check-out will not be performed via the front desk terminal, but only via PMS terminals. The PMS is required to send each check-in/out to the PBX immediately in order to support the PMS data link and associated PBX operations.

## Message Data Format

### Text Format 1

Byte No. 0	STX	
1	SA	
2	UA	
3	"L"	Entry index for PMS interface
4	"1" or "9"	Feature code high digit (normal or violation)
5	"6"	Feature code low digit
6	"1"	Message counter high digit
7	"1"	Message counter low digit
8	Function code	
9	Station number	
10		
11		
12		
13	Unused	Must contain ASCII spaces
14		
15	ETX	
16	BCC	LRC parity check byte

### Text Format 2

Byte No. 0	STX	
1	SA	
2	UA	
3	"L"	Entry index for PMS interface
4	"1" or "9"	Feature code high digit (normal or violation)
5	"6"	Feature code low digit
6	"1"	Message counter high digit
7	"3"	Message counter low digit
8	Function code	
9	Station number	
10		
11		
12		
13	Unused	Must contain ASCII spaces
14		
15	Language	
16	Room Occupancy	
17	ETX	
18	BCC	LRC parity check byte

## OPERATION

### Text Format 3

Byte No. 0	STX		
1	SA		
2	UA		
3	“L”		Entry index for PMS interface
4	“1” or “9”		Feature code high digit (normal or violation)
5	“6”		Feature code low digit
6	“3”		Message counter high digit
7	“4”		Message counter low digit
8	Function code		
9	Station number		
10			
11			
12			
13	Unused		Must contain ASCII spaces
14			
15			
16			
17			
18			
19			
20			
21	Language		
22	Room occupancy		
23	Guest name		
36			
37			
38	ETX		
39	BCC		LRC parity check byte

**(1) Check-in**

When the PBX receives a room check-in message (16.1, 16.A, or 16.B), it sets the status of the room to Checked-In. It also takes the following actions:

- Deactivates controlled outward restriction.
- Sets Occupied and Cleaned Up, and clears the Reservation.
- Clears the wake-up time data, if set, and prints out the wake-up time on the PBX printer.
- Stores Language and Room Occupancy information (16.A or 16.B only).
- Stores Guest Name information (16.B only).

**(2) Check-out**

When the PBX receives a room check-out (16.2) message, it sets the status of the room to Checked-out. It also takes the following actions:

- Turns the message waiting lamp off.
- Clears Reservation.
- Cancels any current incoming restriction (Do Not Disturb), and activates Controlled Outward Restriction (Room Cut-off).
- Sets Vacant and To Be Cleaned.
- Prints out the room status data.
- Sets Language to “0” and Room Occupancy to “3”.
- Clears any existing wake-up entry.
- Finally, the PBX sends a Check-out Complete message (16.5 or 16.6) to the PMS within 3 seconds after completing the above tasks. It sends the (16.6) message if the message waiting lamp for the RSN was on before the check-out was done, or the (16.5) message if the lamp was off.

**(3) Data Link Failure**

When loss of communication with the PMS occurs due to failure of the data link, the PBX still allows check-in/out functions to be completed via the front desk terminal. Check-in and check-out via the front desk terminal will cause the system to perform the functions listed above.

During the recovery process, a room’s occupancy status specified by the PMS in the Room Image Data message (17.3, 17.7, or 17.B) may differ from the PBX status for the room. This indicates that a check-in or check-out was performed for that room in the PBX.

## OPERATION

### 2.6 Room Data Image (Feature code 17)

This message type is used to transfer a set of status items for a specific RSN between the PBX and PMS. Six of the function codes are provided for information exchange regarding the status of the other system, and do not necessarily mean that status changes are to be performed. Six other function codes are provided for the data base exchange recovery procedure, and can indicate status changes in either or both systems. The function codes for this message are listed below:

FUNCTION CODE	TEXT FORMAT	MESSAGE DIRECTION	MEANING
1	1	From PMS	Request to send the data image for the specified room for informational purposes only.
2	1	To PMS	Response to function code 1 message.
3	1	From PMS	Data base status update and/or request for PBX status.
4	1	To PMS	Response to function code 3 message.
5	2	From PMS	Request to send the data image for the specified room for informational purposes only.
6	2	To PMS	Response to function code 5 message.
7	2	From PMS	Data base status update and/or request for PBX status.
8	2	To PMS	Response to function code 7 message.
9	3	From PMS	Request to send the data image for the specified room for informational purposes only.
A	3	To PMS	Response to function code 9 message.
B	3	From PMS	Data base status update and/or request for PBX status.
C	3	To PMS	Response to function code B message.
F	4	To PMS	Response to (70.8) message, or indication that the data for the specified room has been changed.

Function codes 1, 5, and 9 are used in the information exchange mode. The PMS requests status from the PBX by sending a (17.1), (17.5), or (17.9) message; the PBX responds with the data in a (17.2), (17.6) or (17.A) message. The (17.1), (17.5), or (17.9) does not indicate any status change to the PBX.

Function codes 3, 4, 7, 8, B and C are reserved for the data base exchange procedure. This procedure is done in the interval between transmission of the (70.3) Start Data Base Exchange message, and the (70.4) End Data Base Exchange message. (Both these messages are transmitted by the PMS.)

The (70.3) message signals the start of data base synchronization. Then, for each room, the PMS sends a (17.3), (17.7), or (17.B) message carrying current PMS status data and/or requesting status data. The PBX processes this message and returns a (17.4), (17.8), or (17.C) message containing any requested PBX status. When either system receives status from the other, that system will update its status to match the other system. Thus the exchange synchronizes the two systems' data bases for a specific room. After the exchange is complete for all rooms, the PMS sends the (70.4) message signalling the end of the data base synchronization procedures.



Function code F operates differently from the other message types. It is used to exchange Room Class and Admin/Guest status, which generally do not change as often as the other status items. When the PBX receives a (70.8) message, it will transmit status data for all rooms to the PMS, in random order, with a series of (17.F) messages. The PBX will not transmit an “end” message after the last room image.

The Room Image feature message uses the following item fields:

ITEM	USED WITH TEXT FORMATS:
Vacant/occupied	1, 2, 3
Message waiting lamp	1, 2, 3
Restriction level	1, 2, 3
Room occupancy	2, 3
Reservation	2, 3
Language	2, 3
Maid status	2, 3
Wake-up result	2, 3
Wake-up time	2, 3
Admin/guest	4
Room class	4

For all Room Image messages, each status item may either contain data or be null. A null item in a (17.1), (17.3), (17.5), (17.7), (17.9), or (17.B) message indicates a request for the status data for that item from the other system. A null item in the returned (17.2), (17.4), (17.6), (17.8), (17.A), or (17.C) message means that either the status update was done, or that no valid status data is available.

Note that a field is reserved in the Room Image message for each status item possible in a data link configuration, even though all feature messages may not be activated. The receiving system should ignore any request for status or indicated change for any field for which normal status changes are not communicated. For instance, if the Controlled Restriction feature message (15.x) is not defined in a particular data link configuration, the controlled restriction field in the Room Image message will likewise be inactive.

## OPERATION

### Message data Format

#### Text Format 1

Byte No.0	STX	
1	SA	
2	UA	
3	"L"	Entry index for PMS interface
4	"1" or "9"	Feature code high digit (normal or violation)
5	"7"	Feature code low digit
6	"2"	Message counter high digit
7	"8"	Message counter low digit
8	Function code	
9	Station number	
10		
11		
12		
13	Unused	Must contain ASCII spaces
14		
15	Vacant/Occupied	
16	MW lamp status	
17	Restriction	
18	Unused	Must contain 0
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
32	ETX	LRC parity check byte
33	BCC	

**Text Format 2**

Byte No.0	STX	
1	SA	
2	UA	
3	"L"	Entry index for PMS interface
4	"1" or "9"	Feature code high digit (normal or violation)
5	"7"	Feature code low digit
6	"2"	Message counter high digit
7	"3"	Message counter low digit
8	Function code	
9	Station number	
10		
11		
12		
13	Unused	Must contain ASCII spaces
14		
15	Vacant/Occupied	
16	MW lamp status	
17	Restriction	
18	Room occupancy	
19	Reservation	
20	Language	
21	Maid status	
22	Wake-up result	
23	Wake-up time	
24		
25		
26		
27	ETX	LRC parity check byte
28	BCC	

# OPERATION

## Text Format

Byte No.0	STX	
1	SA	
2	UA	
3	"L"	Entry index for PMS interface
4	"1" or "9"	Feature code high digit (normal or violation)
5	"7"	Feature code low digit
6	"3"	Message counter high digit
7	"8"	Message counter low digit
8	Function code	
9	Station number	
10		
11		
12		
13	Unused	Must contain ASCII spaces
14		
15	Vacant/Occupied	
16	MW lamp status	
17	Restriction	
18	Room occupancy	
19	Reservation	
20	Language	
21	Maid status	
22	Wake-up result	
23	Wake-up time	
24		
25		
26		
27	Unused	Must contain 0
28		
⋮		
42	ETX	
43	BCC	LRC parity check byte

**Text Format**

Byte No.0	STX	
1	SA	
2	UA	
3	"L"	Entry index for PMS interface
4	"1" or "9"	Feature code high digit (normal or violation)
5	"7"	Feature code low digit
6	"1"	Message counter high digit
7	"3"	Message counter low digit
8	Function code	
9	Station number	
10		
11		
12		
13	Unused	Contain ASCII spaces
14		
15	Admin/Guest	
16	Room class	
17	ETX	LRC parity check byte
18	BCC	

## 2.7 Wake-up (Feature code 19)

This feature allows a station to be rung at a desired time. The feature can be activated from the station telephone, from a attendant console or front desk terminal, or from the PMS via feature code 19. The following function codes are available:

FUNCTION CODE	TEXT FORMAT	MESSAGE DIRECTION	MEANING
1	1	To PMS	Set wake-up for specific telephone set.
2	2	To PMS	Cancel wake-up for specific telephone set.
3	3	To PMS	Result of wake-up for specific telephone set.
4	1	From PMS	Set wake-up for specific telephone set.
5	2	From PMS	Cancel wake-up for specific telephone set.

The wake-up feature messages will be sent and/or received based upon the PBX installation parameter setting for the wake-up communication feature. The possibilities are:

- The feature is active in the PBX but communication with the PMS is not in effect.
- The feature is active in the PBX, and communication with the PMS is in effect.

## OPERATION

With the wake-up feature active, the operational considerations are:

- Entry (activated) will be varied to the station in an occupied state. Entry (deactivate) will be fully operational at all times.
- Entry can be made via the attendant console or front desk terminal, or via stations. Status display is available at the attendant console or front desk terminal.
- When the PBX receives a (19.4) or (19.5) message, it will make the appropriate wake-up setting.
- The result of a wake-up will be sent to the PMS with a (19.3) message and printed out on the PBX printer.
- No communication will be made on administrative stations.
- Time is set to an accuracy of 1 minute.
- Each guest room station can have only one (1) wake-up in effect. A new setting will replace any previous setting. Once the wake-up has been performed, the setting will automatically be erased.
- A wake-up call to a busy station will be re-executed up to 3 times at 1-minute intervals. (The number of retries is based on a PBX installation parameter.)
- No more than 32 stations can be set for a wake-up at one time. If an attempt is made to exceed this number, the system automatically sets the time 5 minutes earlier. The number of times this process is repeated is assigned with system data.

# Message Data Format

## Text Format

Byte No.0	STX	
1	SA	
2	UA	
3	"L"	Entry index for PMS interface
4	"1" or "9"	Feature code high digit (normal or violation)
5	"9"	Feature code low digit
6	"1"	Message counter high digit
7	"6"	Message counter low digit
8	Function code	
9	Station number	
10		
11		
12		
13	Unused	Must contain ASCII spaces
14		
15	Wake-up time	
16		
17		
18		
19	Wake-up set	
20	ETX	
21	BCC	LRC parity check byte

## OPERATION

### Text Format

Byte No.0	STX	
1	SA	
2	UA	
3	"L"	Entry index for PMS interface
4	"1" or "9"	Feature code high digit (normal or violation)
5	"9"	Feature code low digit
6	"1"	Message counter high digit
7	"6"	Message counter low digit
8	Function code	
9	Station number	
10		
11		
12		
13	Unused	Must contain ASCII spaces
14		
15	Unused	Must contain 0
16		
17		
18		
19	Wake-up set	
20	ETX	
21	BCC	LRC parity check byte



**Text Format**

Byte No.0	STX	
1	SA	
2	UA	
3	"L"	Entry index for PMS interface
4	"1" or "9"	Feature code high digit (normal or violation)
5	"9"	Feature code low digit
6	"1"	Message counter high digit
7	"6"	Message counter low digit
8	Function code	
9	Station number	
10		
11		
12		
13	Unused	Must contain ASCII spaces
14		
15	Wake-up time	
16		
17		
18		
19	Wake-up result	
20	ETX	
21	BCC	LRC parity check byte

## OPERATION

### 2.8 Room Change/Room Swap (Feature code 20)

This feature provides a convenient service for instant operation of a room status change which does not involve a guest check-out. Three function codes are available:

FUNCTION CODE	MESSAGE DIRECTION	MEANING
1	From PMS	Set room change.
2	From PMS	Set room swap.
5	From PMS	Set room copy.

#### (1) Room Change

Upon receipt of a Room Change message (20.1), the PBX will perform the following status changes:

SERVICES	OLD ROOM	NEW ROOM	REMARKS
Vacant/occupied	Vacant	Occupied	
Maid Status	“1”	(No change)	
Room Cut-off	Set	Reset	
Do Not Disturb	Reset	Copied from old room	
Message Waiting	Reset	Copied from old room	
Wake up	Cancelled	Copied from old room	
Language	“0”	Copied from old room	
Room Occupancy	“3”	Copied from old room	
Guest Name	Cleared	Copied from old room	
Reservation	Reset	Copied from old room	

#### (2) Room Swap

Upon receipt of a Room Swap message (20.2), the PBX will exchange all status data between the two specified rooms.

#### (3) Room Copy

Upon receipt of a Room Copy message (20.5), the PBX will copy the status data of the specified old room to the specified new room. The status of the old room is not changed.

# Message Data Format

Byte No.0	STX	
1	SA	
2	UA	
3	"L"	Entry index for PMS interface
4	"2" or "A"	Feature code high digit (normal or violation)
5	"0"	Feature code low digit
6	"1"	Message counter high digit
7	"7"	Message counter low digit
8	Function code	
9	Old station number	
10		
11		
12		
13	Unused	Must contain ASCII spaces
14		
15	New station number	
16		
17		
18		
19	Unused	Must contain ASCII spaces
20		
21	ETX	
22	BCC	LRC parity check byte

## OPERATION

### 2.9 Room Occupancy/Room Data Change (Feature code 21)

This feature provides a convenient way for the PMS to change room status data in the PBX. The following function codes are available:

FUNCTION CODE	TEXT FORMAT	MESSAGE DIRECTION	MEANING
1	1	From PMS	Change VIP, room key, or language status for the specified room.
4	2	From PMS	Set reservation status for the specified room.
5	2	From PMS	Reset reservation status for the specified room.
6	3	From PMS	Change the guest name data.

#### Message Data Format

##### Text Format

Byte No.0	STX	
1	SA	
2	UA	
3	"L"	Entry index for PMS interface
4	"2" or "A"	Feature code high digit (normal or violation)
5	"1"	Feature code low digit
6	"1"	Message counter high digit
7	"3"	Message counter low digit
8	Function code	
9	Station number	
10		
11		
12		
13	Unused	Must contain ASCII spaces
14		
15	Language	
16	Room occupancy	
17	ETX	
18	BCC	LRC parity check byte

**Text Format**

Byte No.0	STX	
1	SA	
2	UA	
3	"L"	Entry index for PMS interface
4	"2" or "A"	Feature code high digit (normal or violation)
5	"1"	Feature code low digit
6	"1"	Message counter high digit
7	"1"	Message counter low digit
8	Function code	
9	Station number	
10		
11		
12		
13	Unused	Must contain ASCII spaces
14		
15	ETX	
16	BCC	LRC parity check byte

OPERATION

Text Format

Byte No.0	STX	
1	SA	
2	UA	
3	"L"	Entry index for PMS interface
4	"2" or "A"	Feature code high digit (normal or violation)
5	"1"	Feature code low digit
6	"2"	Message counter high digit
7	"6"	Message counter low digit
8	Function code	
9	Station number	
10		
11		
12		
13	Unused	Must contain ASCII spaces
14		
15	Guest name	
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30	ETX	
31	BCC	LRC parity check byte

## 2.10 Status Inquiry and Failure Management (Feature code 70)

This feature provides data link maintenance services. The supported functions allow the two systems to maintain a dialogue on the state of the data link. No station number or other data is needed. The following function codes are available:

CODE	MESSAGE DIRECTION	MEANING
F	From PMS	Status Inquiry (“are you there”) message. <b>Note:</b> <i>The PMS must send this message repeatedly at intervals of 500 ms to 60 seconds, except during a data base exchange.</i>
0	To PMS	Response to Status Inquiry message. Indicates that the PBX has had no changes that were not communicated to the PMS, and has not re-initialized.
2	To PMS	Response to Status Inquiry message. Indicates that the PBX has failed and re-initialized; the PMS should request a data base exchange.
3	From PMS	Start of data base exchange. The PMS will be sending a Room Image message for each room requiring status synchronization.
4	From PMS	End of data base exchange.
5	From PMS	Request to release the data link for maintenance activity.
6	To PMS	Confirm release of the data link.
8	From PMS	Request all existing data on station number, Admin/Guest and room class.

These messages allow both systems to determine if the data link is functioning correctly. Either system can recognize a failure (as described below), and can request PBX or initiate (PMS) a data base exchange to synchronize both systems’ room data. The PMS decides which rooms will be included in the exchange, and which status items for each room will be updated on the PBX.

## OPERATION

### Message Data Format

Byte No.0	STX	
1	SA	
2	UA	
3	"L"	Entry index for PMS interface
4	"7"	Feature code high digit (normal or violation)
5	"0"	Feature code low digit
6	"0"	Message counter high digit
7	"7"	Message counter low digit
8	Function code	
9	Not used	Must contain ASCII spaces
10		
11	ETX	
12	BCC	LRC parity check byte

#### (1) Recognition of Data Link Failure

Either system may recognize loss of communication by one or more of the following conditions:

- Lack of data for more than 60 seconds. The use of the Status Inquiry message and the corresponding response message ensures that each system should receive one of these messages at least once every 60 seconds.
- Excessive protocol errors. Large numbers of events such as NAK message response instead of ACK, or no response to an ENQ, may indicate data link failure.
- Hardware-controlled signal. Whenever the PBX considers the data link to be "down," either for maintenance or because of errors, it will put the Data Set Ready signal (interface pin 6) into the Off state.
- Requested release of the data link for maintenance (70.5) message.
- Other conditions, such as lack of memory to hold incoming messages, may cause a data link failure that can not be explicitly communicated to the other system.

#### (2) Operation during Data Link Failure

When a failure occurs, each system may be able to hold its outgoing messages for transmission after the data link is restored. In this case, a data base exchange may not be required.

If the data link or PMS becomes unavailable, the PBX will continue to support basic telecommunications functions.

#### (3) Recovery from Data Link Failure

If the PMS has remained operational during a data link failure, it should continue sending (70.F) messages. When it receives a response from the PBX, it can begin recovery. If the PMS has failed and restarted, it must not resume sending (70.F) messages until recovery and data base exchange is completed.



If the PBX responds to a Status Inquiry with function code 0, it has made no change in room status during the data link failure. If it responds with function code 2, it has failed; the PMS should perform a data base exchange for all rooms.

(4) Data Base Exchange Procedure

If the PBX has recognized that the data link is restored, and has responded to a Status Inquiry with a (70.2) message, it requires a full data base exchange with the PMS. In this case, the PBX will not process any messages, except Status Inquiry, until the PMS initiates a data base exchange.

The PMS starts the exchange by sending a (70.3) message to the PBX. This also informs the PBX that transmission of normal status changes can resume. Next, the PMS transmits a Room Image message (17.3, 17.7, or 17.B) for each room for which synchronization is required. Note that a time delay may be required after each Room Image message, to ensure that the maximum message rate is not exceeded, and to provide time for normal status change messages.

The PBX will process each Room Image message and send the corresponding response message (17.4, 17.8, or 17.C). The PMS should update its own status with data from active fields in these responses. Note that the PBX may be sending new status changes to the PMS during the data base exchange. The PMS should send only the most current data to the PBX.

When the PMS has sent the data for all rooms, and processed the responses, it should send a (70.4) message to the PBX. The recovery is not considered to be complete until the PBX receives this message, since failure to receive it may indicate continuing problems with the data link. The PBX counts the number of data base exchanges that are started by (70.3) but not ended by (70.4). If this occurs too many times, the PBX causes a data link failure by turning off the Data Set Ready signal (interface pin 6) and stopping all communication with the PMS.

## OPERATION

Figure 6-1 illustrates the data base exchange process.

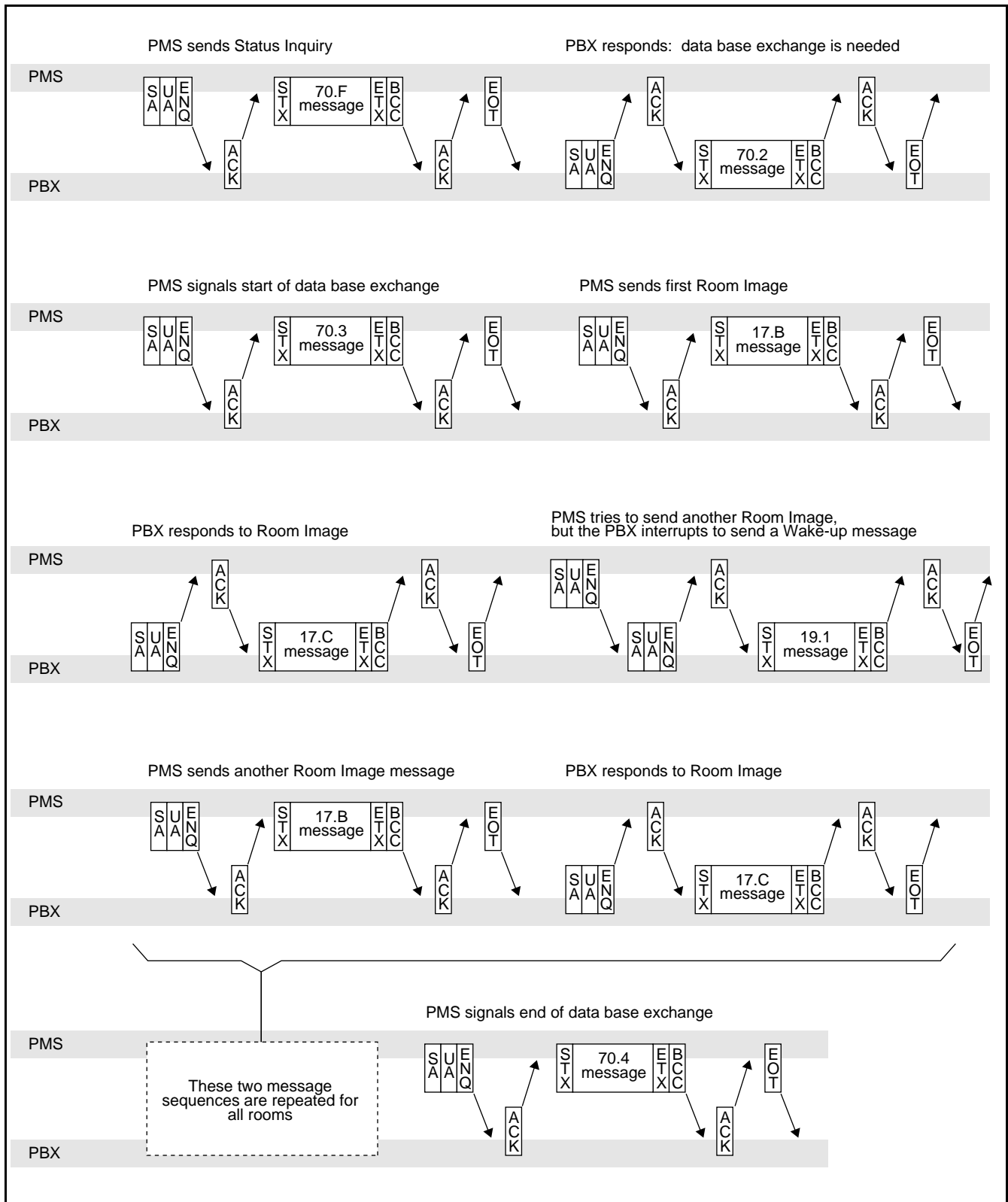


Figure 6-1 Example of Data Link Recovery

## APPENDIX A.MESSAGE FUNCTIONS

The following table provides a summary of all the messages sent between the PMS and the PBX. The feature codes, function codes, and direction of transmission are given for each message.

FEATURE	CODE	FUNCTION CODE	TEXT FORMAT	MESSAGE DIRECTION	MEANING
Maid status	11 or 12	1		To PMS	The specified room needs cleaning.
		2		To PMS	The specified room is cleaned.
		3		To PMS	The specified room is ready for reservation.
		4		To PMS	The specified room is out of service.
		5		To PMS	The specified room needs repairs.
		6		From PMS	The specified room is repaired.
Message waiting	13	1		From PMS	Turn on MW lamp for specified room.
		2		From PMS	Turn off MW lamp for specified room.
		3		To PMS	MW lamp for specified room has been turned on via PBX control entry.
		4		To PMS	MW lamp for specified room has been turned off via PBX control entry.
Station message detail	14	2		To PMS	Time and duration of outgoing local or toll call from room.
Controlled restriction	15	1		From PMS	Set restriction for the specified room.
		2		To PMS	Restriction has been set for the specified room by the attendant console or front desk terminal.
Check-in/out	16	1	1	From PMS	Perform check-in functions for the specified room.
		2	1	From PMS	Perform check-out functions for the specified room.
		5	1	To PMS	Check-out functions have been completed for the specified RSN, and the MW lamp was off.
		6	1	To PMS	Check-out functions have been completed for the specified RSN, and the MW lamp was on.
		A	2	From PMS	Perform check-in functions for the specified RSN.
		B	3	From PMS	Perform check-in functions for the specified RSN.

## APPENDIX

FEATURE	CODE	FUNCTION CODE	TEXT FORMAT	MESSAGE DIRECTION	MEANING
Room data image	17	1	1	From PMS	Request to send the data image for the specified room for informational purposes only.
		2		To PMS	Response to function code 1 message.
		3		From PMS	Data base update status informed and/or request for PBX status.
		4		To PMS	Data base update status response to function code 3 message.
		5	2	From PMS	Request to send the data image for the specified room for informational purposes only.
		6		To PMS	Response to function code 5 message.
		7		From PMS	Data base update status informed and/or request for PBX status.
		8		To PMS	Data base update status response to function code 7 message.
		9	3	From PMS	Request to send the data image for the specified room for informational purposes only.
		A		To PMS	Response to function code 9 message.
		B		From PMS	Data base update status informed and/or request for PBX status.
		C		To PMS	Data base update status response to function code B message.
		F	4	To PMS	Response to (70.8) message.
Wake-up	19	1	1	To PMS	Wake-up for specific telephone set.
		2	2	To PMS	Cancel wake-up for specific telephone set.
		3	3	To PMS	Result of wake-up for specific telephone set.
		4	1	From PMS	Set wake-up for specific telephone.
		5	2	From PMS	Cancel wake-up for the specified RSN.
Room change	20	1		From PMS	Set room change.
Room swap		2		From PMS	Set room swap.
Room copy		5		From PMS	Set room copy.
Room occupancy Room data change	21	1	1	From PMS	Change the data for VIP, room key, or language for specified room.
		4	2	From PMS	Set reservation status for specified room.
		5	2	From PMS	Clear reservation status for specified room.
		6	3	From PMS	Change the guest name for the specified room.

FEATURE	CODE	FUNCTION CODE	TEXT FORMAT	MESSAGE DIRECTION	MEANING
Status Inquiry Failure management	70	F		From PMS	"Are you there" message; must be issued by PMS at least every 60 sec., and at most every 500 msec.
		0		To PMS	Acknowledgement of "are you there" message; indicates that the PBX has had no status changes that were not sent to the PMS, and has not initialized.
		2		To PMS	Acknowledgement of "are you there" message; indicates that the PBX has failed and the status memory has been initialized. The PMS should initiate a data base exchange.
		3		From PMS	Start of data base exchange; the PMS will be sending a Room Data Image message for each room requiring status synchronization.
		4		From PMS	End of data base exchange.
		5		From PMS	Request for the data link to be released for maintenance activity.
		6		To PMS	Confirmation that the data link is released.
		8		From PMS	Request for all existing data on station number, Admin/guest and room class.

## APPENDIX

### APPENDIX B.ASCII CODE

DECIMAL	HEX	CHARACTER
0	00	NUL (null)
1	01	SOH
2	02	STX
3	03	ETX
4	04	EOT
5	05	ENQ
6	06	ACK
7	07	BEL
8	08	BS
9	09	TAB
10	0A	NEW LINE
11	0B	VT
12	0C	FF
13	0D	RETURN
14	0E	SO
15	0F	SI
16	10	DLE
17	11	DC1
18	12	DC2
19	13	DC3
20	14	DC4
21	15	NAK
22	16	SYN
23	17	ETB
24	18	CAN
25	19	EM
26	1A	SUB
27	1B	ESC
28	1C	FS
29	1D	GS
30	1E	RS
31	1F	US
32	20	SP (space)
33	21	!
34	22	“
35	23	#
36	24	\$
37	25	%
38	26	&
39	27	'
40	28	(
41	29	)
42	2A	*

DECIMAL	HEX	CHARACTER
43	2B	+
44	2C	,
45	2D	-
46	2E	.
47	2F	/
48	30	0
49	31	1
50	32	2
51	33	3
52	34	4
53	35	5
54	36	6
55	37	7
56	38	8
57	39	9
58	3A	:
59	3B	;
60	3C	<
61	3D	=
62	3E	>
63	3F	?
64	40	@
65	41	A
66	42	B
67	43	C
68	44	D
69	45	E
70	46	F
71	47	G
72	48	H
73	49	I
74	4A	J
75	4B	K
76	4C	L
77	4D	M
78	4E	N
79	4F	O
80	50	P
81	51	Q
82	52	R
83	53	S
84	54	T
85	55	U

DECIMAL	HEX	CHARACTER
86	56	V
87	57	W
88	58	X
89	59	Y
90	5A	Z
91	5B	[
92	5C	\
93	5D	]
94	5E	^
95	5F	_
96	60	`
97	61	a
98	62	b
99	63	c
100	64	d
101	65	e
102	66	f
103	67	g
104	68	h
105	69	i
106	6A	j
107	6B	k
108	6C	l
109	6D	m
110	6E	n
111	6F	o
112	70	p
113	71	q
114	72	r
115	73	s
116	74	t
117	75	u
118	76	v
119	77	w
120	78	x
121	79	y
122	7A	z
123	7B	{
124	7C	
125	7D	}
126	7E	“
127	7F	DEL (delete)





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