# UNIVERGE SV8300

SMDR/MCI/PMS Interface Specifications

**REMARKS**

This manual includes description for the commands related to the following features. However, these features are not available for 8300R1 software.

- Attendant Console Features
- WLAN Features

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# *Chapter 4     PMS OPERATION*

# *INTRODUCTION*

## PURPOSE

This manual describes the interface specifications for Station Message Detail Recording (SMDR), Message Center Interface (MCI) and Property Management System (PMS) Interface and PMS operation on the UNIVERGE SV8300.

# OUTLINE OF THIS MANUAL

This manual consists of four chapters. The following paragraphs summarize Chapters 1 through 4.

CHAPTER 1    SMDR SPECIFICATIONS

This chapter explains the call information, the SMDR terminal interface and the data transmission format.

CHAPTER 2    MCI SPECIFICATIONS

This chapter explains the line control characteristics of the Message Center Interface (MCI) and the data transmission protocol.

CHAPTER 3    PMS INTERFACE SPECIFICATIONS

This chapter explains the line control characteristics of the Property Message System (PMS) interface and the data transmission protocol.

CHAPTER 4    PMS OPERATION

This chapter explains the operations associated with each PMS feature message. The set of feature messages used can 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.

# TERMS IN THIS MANUAL

## PBX System Designation

PBX system is designated as "PBX" or "system" usually.

When we must draw a clear line between the PBX systems, they are designated as follows.

SV8300: UNIVERGE SV8300

# REFERENCE MANUAL

During installation, refer also to the manuals below:

Command Manual:
Contains Customer Administration Terminal (CAT) operation, command functions and data required for programming the system.

System Data Programming Manual:
Contains the Customer Specifications Sheets and System Data Programming Sheets.

Programming Manual:
Contains procedure for programming each business, hotel, ISDN, OAI, WCS and WLAN feature.

System Hardware Manual:
Contains the installation procedure for the PBX system.

# SMDR SPECIFICATIONS

This chapter explains the call information, the SMDR terminal interface and the data transmission format.

**Chapter**

**1**

# CALL INFORMATION

## Kinds of SMDR Output

The PBX provides the following kinds of SMDR (Station Message Detail Recording) interface, output format and output information.

(1)   SMDR Interface
   - SMDR on RS-232C
   - SMDR on IP

(2)   SMDR Output Format
   - Former NEAX 2400 IMS Format
   - Extended NEAX 2400 IMS Format

(3)   SMDR Output Information
   - Call Record for Outgoing Trunk Calls
   - Call Record for Incoming Trunk Calls
   - Call Record for Station to Station Calls **NOTE**

**NOTE:**   *Call record for station to station calls is not available in Centralized Billing-CCIS.*

## Summary of SMDR Output Format

The following call information is provided to the SMDR terminal upon completion of each outgoing trunk call, incoming trunk call or station to station call.

Former/Extended NEAX 2400 IMS Format

×: Provided  −: Not provided

| CALL RECORD DESCRIPTION | OUTGOING TRUNK CALL | INCOMING TRUNK CALL | STATION TO STATION CALL |
|---|---|---|---|
| Type of Record | × | × | × |
| Outgoing Trunk Information | | | |
|     Trunk Number (000-511) | × | − | − |
|     Trunk Route Number (00-63) | × | − | − |
| Incoming Trunk Information | | | |
|     Trunk Number (000-511) | − | × | − |
|     Trunk Route Number (00-63) | − | × | − |
| Calling Party Information | | | |
|     Calling Party Identification | × | − | × |
|     Tenant Number (00-63) | × | − | × |
|     Station Number (Max. 6 digits) | × | − | × |
|     Attendant Number (00-07) | × | − | − |
|     Trunk Route (00-63) + Trunk Number (000-511) | × | − | − |
| Called Party Information | | | |
|     Called Party Identification | − | × | − |
|     Tenant Number (00-63) | − | × | − |
|     Station Number (Max. 6 digits) | − | × | − |
|     Attendant Number (00-07) | − | × | − |
| Time of Start Conversation | × | × | × |
| Time of Call Completion | × | × | × |

×: Provided  −: Not provided

| CALL RECORD DESCRIPTION | OUTGOING TRUNK CALL | INCOMING TRUNK CALL | STATION TO STATION CALL |
|---|---|---|---|
| Account Code | × | × | − |
| Condition Code for Setting Up a Call | × | × | × |
| Route Advance Information | × | × | − |
| Called Tenant Number | − | − | × |
| Called Number (O.G. call: Max. 32 digits, S.S. call: Max. 6 digits) | × | − | × |
| Call Metering | × | × | − |
| Calling Office Number on Tandem Call (Max. 4 digits) | × | × | − |
| Billing Office Number on Tandem Call (Max. 4 digits) | × | × | − |
| ANI Information (Former: Max. 16 digits/ Extended: Max. 32 digits) | − | × | − |
| Authorization Code (Max. 10 digits) | × | − | − |
| Year of Start Conversation | × | × | × |
| Year of Call Completion | × | × | × |
| Condition Code for Advice of Charge (AOC) | × | − | − |
| Advice of Charge (AOC) | × | − | − |

# SMDR TERMINAL INTERFACE

The interface specification of the SMDR terminal is as follows:

- SMDR on RS-232C

| ITEM | SPECIFICATIONS |
|---|---|
| Physical Interface | RS-232C |
| Synchronization | Asynchronous |
| Protocol | Non protocol (Free Wheel) |
| Transmission Speed | 1200/2400/4800/9600/19200 bps |
| Stop Bit | 1/2 bits |
| I/O Port | RS port of CPU blade |
| Terminal Busy Detecting Method | Data Carrier Detect (DCD) signal ON/OFF (terminal ready/busy) |

**NOTE 1:** *Upon confirming that the status of the DCD signal from the SMDR terminal is ON, the system sends out call information to the SMDR terminal.*
*When the status of the DCD signal is OFF, the system does not send out call information but temporarily stores the information until the SMDR terminal becomes ready to receive call information, in other words, until the status of the DCD signal changes to ON. If the status of the DCD signal has changed from ON to OFF while transmission of a specific call information is in progress, the next call information is not sent out but stored into the system temporarily.*
*The same applies to CTS and DSR signals.*

**NOTE 2:** *One message is sent at intervals of one second unidirectionally.*

• SMDR on IP

| ITEM | SPECIFICATIONS |
|---|---|
| Physical Layer | Ethernet |
| Connection Layer | The Ethernet packet format complies with the DIX standard |
| TCP/IP Protocol | ARP, IP, ICMP, UDP, TCP |
| Socket Interface | Complies with 4.3 BSD socket interface |
| Transport Protocol | TCP stream type protocol |
| Application Port Number | 60010 (fixed) |
| Number of Connection | 1 |
| Client/Server | Client : SMDR terminal<br>Server: PBX |
| Transmission Code | 7-bit ASCII code |
| Quasi-normal Restriction Condition | 1. When connection is closed<br>2. Status monitoring text |

**NOTE 1:** *The CPU blade in main unit communicates with the SMDR terminal. Therefore, in the communication settings at SMDR terminal side, set the IP address to connected to the address specified by system data (CM0B YYY=0XX/1XX>00), and application port number shown in the above table.*

**NOTE 2:** *One message is sent each time a request is received from SMDR terminal.*

# DATA TRANSMISSION SEQUENCE FOR ETHERNET INTERFACE

Establishing a connection, outputting billing Information, and releasing a connection are performed between the PBX and the SMDR terminal in the following timings.

(1)  Timing to Establish a Connection
     A connection is established when a connection request is received from the SMDR terminal.

(2)  Timing to Output Billing Information
     Billing information is output when a polling request is received from the SMDR terminal connected to LAN.

(3)  Timing to Release the Connection
     The connection is released when the SMDR terminal does not receive data from the PBX in a predetermined time interval. Also the connection is released when the PBX receives connection release text from the SMDR terminal or does not receive data from the SMDR terminal within a given time interval.

## SMDR Identifier General Information

(1)  SMDR Identifiers

NEC Proprietary message used for communication between the PBX and the SMDR collection equipment (e.g.AimWorx).

| SMDR Header | Direction | Description |
|---|---|---|
| Data Request (Identifier: 1) | Client to Server | Sent by the client when it requests the server to send billing data. |
| Sending Data (Identifier: 2) | Server to Client | Response to a Data Request. This includes the billing data (SMDR Records). |
| Server Response (Identifier: 3) | Server to Client | Response to a Status Monitoring or a Data Request if there is no billing data to send. |
| Client Response (Identifier: 4) | Client to Server | Response to a Sending Data. This is an ACK from the client to indicate it received the billing data. |
| Status Monitoring (Identifier: 5) | Client to Server | Used in monitoring the server status from the client's viewpoint or the client from the server's viewpoint. At the same time, this is used to notify the server of the client status. This is the Heartbeat or Keep Alive message. |
| Connection Disconnect (Identifier: 6) | Client to Server | Sent from the client to the server to disconnect the connection. |

(2)  Device Number

One SMDR collection devices may connect to a single PBX. Device Number is fixed at "00".

(3)  Parity

Either odd, even parity or no parity may be used. Horizontal parity check method is used and default range of odd parity to be calculated will be from the end of SYN to the beginning of Parity.

- Odd Parity: Execute the logic operation XOR per 1 byte in the sequence. On that data, bit reverse is operated.
- Even Parity: Operate the logic operation XOR per 1 byte in the sequence.
- No Parity

**SMDR Identifier 1: Data Request**

## Sample Ethernet frame with Data Request Identifier

| Ethernet Header | IP Header | TCP Header | DATA |
|---|---|---|---|

```
00  00  4C  A4  72  1C  00  10  A4  E1  94  FF  08  00  45  00  00  32  63  09  40  00  80  06
EA  E7  0A  C8  4B  64  0A  C8  4B  E1  04  20  EA  6A  00  55  37  6E  00  0E  3A  6A  50  18
21  44  A7  25  00  00  16  31  30  30  30  30  32  30  30  FC
```
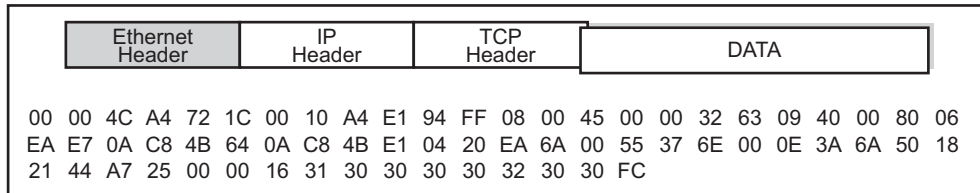
The SMDR equipment (e.g. AimWorx) sends the Data Request Identifier to the PBX when it is requesting that billing data is to be sent.

When the SMDR equipment sends a Data Request to a PBX, the PBX will respond with either a Send Data, which includes the billing data, or a Server Response if there is no billing data to be sent.

When a Data Request has been sent to a PBX, the PBX must respond within 10 seconds (default timer setting, timer value can be set from 1 to 30 seconds). After 10 seconds, the SMDR equipment will send the Data Request again. The Data Request will be re-sent a predetermined number of times (6?) and if there is still no response from the PBX, the socket will be discarded and the IP connection reset.
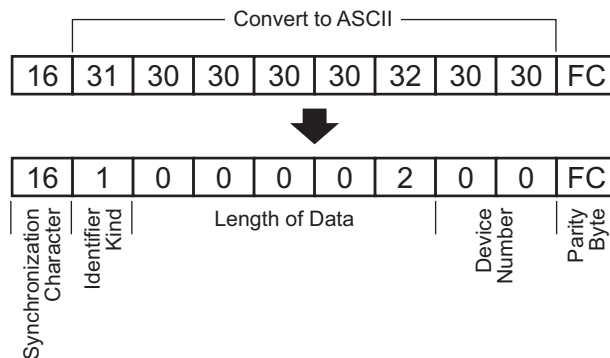
Convert to ASCII

| 16 | 31 | 30 | 30 | 30 | 30 | 32 | 30 | 30 | FC |
|---|---|---|---|---|---|---|---|---|---|

| 16 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | FC |
|---|---|---|---|---|---|---|---|---|---|

Synchronization Character / Identifier Kind / Length of Data / Device Number / Parity Byte

Synchronization Character : Data is fixed at "16". Used to maintain synchronization.
Identifier Kind             : Tells what type of SMDR Identifier is being sent.
Length                      : How many characters of data are to follow in the SMDR Identifier.
Device Number               : Tells which SMDR Device is sending this data. Device Number is fixed at "00".
Parity Byte                 : Used for error detection.

## SMDR Identifier 2: Sending Data

## Sample Ethernet frame with Sending Data Identifier

| Ethernet Header | IP Header | TCP Header | DATA |
|---|---|---|---|

```
00  10  A4  E1  94  FF  00  00  4C  A4  72  1C  08  00  45  00  01  1C  00  4C  00  00  40  06
CC  BB  0A  C8  4B  E1  0A  C8  4B  64  EA  6A  04  20  00  0E  39  76  00  55  37  62  50  18
22  38  3D  95  00  00  16  32  30  30  31  32  36  30  30  31  02  30  21  4B  4B  30  31  31
32  30  30  30  30  31  30  30  30  34  30  30  30  30  32  31  30  32  30  30  31  30  32  30
30  30  39  30  33  30  33  30  30  30  30  36  33  34  32  30  30  32  30  34  30  38  31  30
31  38  30  37  38  36  37  32  30  30  32  30  34  30  38  31  30  31  38  32  30  38  39  32
30  38  30  33  30  30  34  30  39  31  38  30  30  30  30  31  30  30  30  30  30  30  30  30
31  30  30  30  30  31  30  30  34  31  30  30  30  31  33  30  31  30  03  FE
```

The PBX sends the Sending Data Identifier to the SMDR equipment after a Data Request header has been received. One Call Records will be included in this Identifier.



Synchronization Character : Data is fixed at "16". Used to maintain synchronization.
Identifier Kind             : Tells what type of SMDR Identifier is being sent.
Length                      : How many characters of data are to follow in the SMDR Identifier.
Device Number               : Tells which SMDR Device is sending this data. Device Number is fixed at "00".
Sequence Number             : Ranges from 0 to 9. This is used to match acknowledgments to the correct sent messages.
Parity Byte                 : Used for error detection.

**SMDR Identifier 3: Server Response**

### Sample Ethernet frame with Server Response Identifier

| Ethernet Header | IP Header | TCP Header | DATA |
|---|---|---|---|

```
00 10 A4 E1 94 FF 00 00 AC A4 72 1C 08 00 45 00 00 33 00 29 00 00 40 06
CD C7 0A C8 4B E1 0A C8 4B 64 EA 6A 04 1E 00 0C 33 72 00 53 31 72 50 18
22 38 E5 F1 00 00 16 33 30 30 30 30 33 30 30 32 CD
```
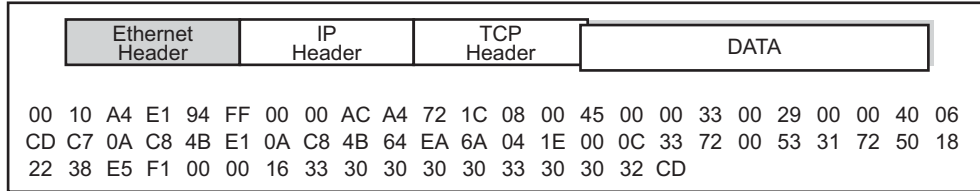
The PBX sends the Server Response Identifier to the SMDR equipment in response to a Data Request Identifier when there are no Call Records to send. This header could also be sent in response to a Status Monitoring Identifier.
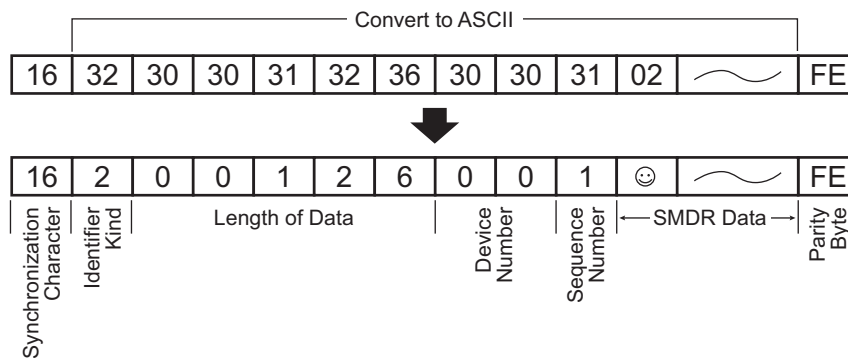


Synchronization Character : Data is fixed at "16". Used to maintain synchronization.
Identifier Kind : Tells what type of SMDR Identifier is being sent.
Length : How many characters of data are to follow in the SMDR Identifier.
Device Number : Tells which SMDR Device is sending this data. Device Number is fixed at "00".
Response Number : Indicates what type of response this message is;
    1 - Sent in response to a Data Request Identifier when no SMDR records are buffered.
    2 - Send in response to a Status Monitoring Identifier.
    3 - Parity error in received text.
    5 - Error in received text (received illegal data).
Parity Byte : Used for error detection.

**SMDR Identifier 4: Client Response**

## Sample Ethernet frame with Client Response Identifier

```
┌──────────┬──────────┬──────────┬──────────────────────────┐
│ Ethernet │   IP     │   TCP    │                          │
│ Header   │ Header   │ Header   │          DATA            │
└──────────┴──────────┴──────────┴──────────────────────────┘

00  00  4C  A4  72  1C  00  10  A4  E1  94  FF  08  00  45  00  00  34  62  09  40  00  80  06
EB  E5  0A  C8  4B  64  0A  C8  4B  E1  04  20  EA  6A  00  55  37  62  00  0E  3A  6A  50  18
21  44  9F  2F  00  00  16  34  30  30  30  30  34  30  30  31  06  C8
```
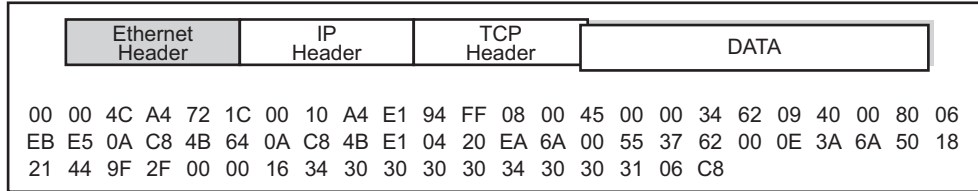
The SMDR equipment sends the Client Response Identifier to the PBX in response to a Sending Data Identifier.

```
                    ┌──────── Convert to ASCII ────────┐
┌────┬────┬────┬────┬────┬────┬────┬────┬────┬────┬────┬────┐
│ 16 │ 34 │ 30 │ 30 │ 30 │ 30 │ 34 │ 30 │ 30 │ 31 │ 06 │ C8 │
└────┴────┴────┴────┴────┴────┴────┴────┴────┴────┴────┴────┘
                            ▼
┌────┬────┬────┬────┬────┬────┬────┬────┬────┬────┬────┬────┐
│ 16 │ 4  │ 0  │ 0  │ 0  │ 0  │ 4  │ 0  │ 0  │ 1  │ 6  │ C8 │
└────┴────┴────┴────┴────┴────┴────┴────┴────┴────┴────┴────┘
 Synchronization  Identifier   Length of Data      Device   Sequence  ACK/NACK  Parity
 Character         Kind                             Number   Number              Byte
```
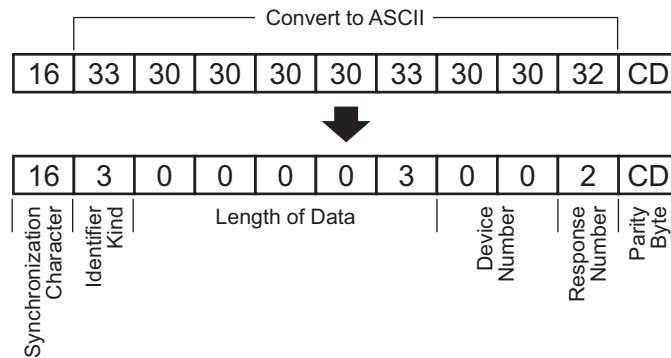
Synchronization Character : Data is fixed at "16". Used to maintain synchronization.
Identifier Kind            : Tells what type of SMDR Identifier is being sent.
Length                     : How many characters of data are to follow in the SMDR Identifier.
Device Number              : Tells which SMDR Device is sending this data. Device Number is fixed at "00".
Sequence Number            : Ranges from 0 to 9. This is used to match acknowledgments to the correct sent messages.
ACK/NACK                   : Acknowledgment/Negative Acknowledgment.
                               06hex - Acknowledgment (Parity check shows no trouble)
                               15hex - Negative Acknowledgment (Parity check shows some error)
Parity Byte                : Used for error detection.

## SMDR Identifier 5: Status Monitoring

### Sample Ethernet frame with Status Monitoring Identifier

| Ethernet Header | IP Header | TCP Header | DATA |
|---|---|---|---|

```
00  00  4C  A4  72  1C  00  10  A4  E1  94  FF  08  00  45  00  00  35  1A  09  40  00  80  06
33  E5  0A  C8  4B  64  0A  C8  4B  E1  04  1E  EA  6A  00  53  31  58  00  0C  33  67  50  18
22  38  88  0E  00  00  16  35  30  30  30  30  35  30  30  30  06  F9
```
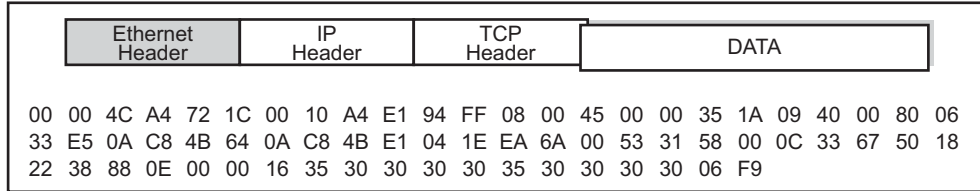
The Status Monitoring Identifier is used to send the PBX status to the SMDR equipment and/or SMDR equipment status to the PBX.

Convert to ASCII

| 16 | 35 | 30 | 30 | 30 | 30 | 35 | 30 | 30 | 30 | 06 | F9 |
|---|---|---|---|---|---|---|---|---|---|---|---|

| 16 | 5 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 6 | F9 |
|---|---|---|---|---|---|---|---|---|---|---|---|

Synchronization Character / Identifier Kind / Length of Data / Device Number / Client Device Information / ACK/NACK / Parity Byte
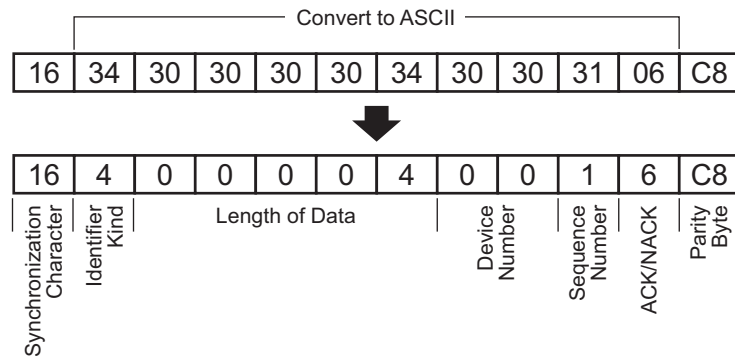
Synchronization Character     : Data is fixed at "16". Used to maintain synchronization.
Identifier Kind               : Tells what type of SMDR Identifier is being sent.
Length                        : How many characters of data are to follow in the SMDR Identifier.
Device Number                 : Tells which SMDR Device is sending this data. Device Number is fixed at "00".
Client Device Information (CDI): CDI is fixed at "00" (Normal).
ACK/NACK                      : Acknowledgment/Negative Acknowledgment.
                                  06hex - Acknowledgment (Parity check shows no trouble)
                                  15hex - Negative Acknowledgment (Parity check shows some error)
Parity Byte                   : Used for error detection.

**SMDR Identifier 6: Connection Disconnect**

## Sample Ethernet frame with Connection Disconnect Identifier

| Ethernet Header | IP Header | TCP Header | DATA |
|---|---|---|---|

```
00  00  4C  A4  72  1C  00  10  A4  E1  94  FF  08  00  45  00  00  33  46  09  40  00  80  06
07  E7  0A  C8  4B  64  0A  C8  4B  E1  04  1E  EA  6A  00  53  32  76  00  0C  34  59  50  18
21  46  B6  21  00  00  16  36  30  30  30  30  33  30  30  06  FC
```
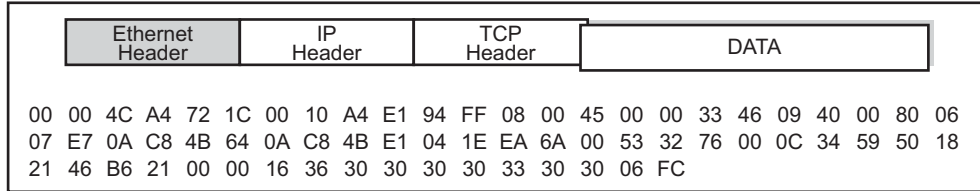
The SMDR equipment sends the Connection Disconnect Identifier to the PBX to disconnect the connection. In response to this Identifier, the PBX promptly performs processing to disconnect this connection.
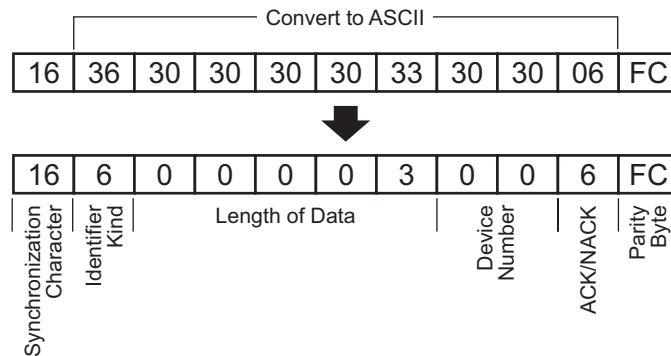
Convert to ASCII

| 16 | 36 | 30 | 30 | 30 | 30 | 33 | 30 | 30 | 06 | FC |
|---|---|---|---|---|---|---|---|---|---|---|

| 16 | 6 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 6 | FC |
|---|---|---|---|---|---|---|---|---|---|---|

Synchronization Character | Identifier Kind | Length of Data | Device Number | ACK/NACK | Parity Byte
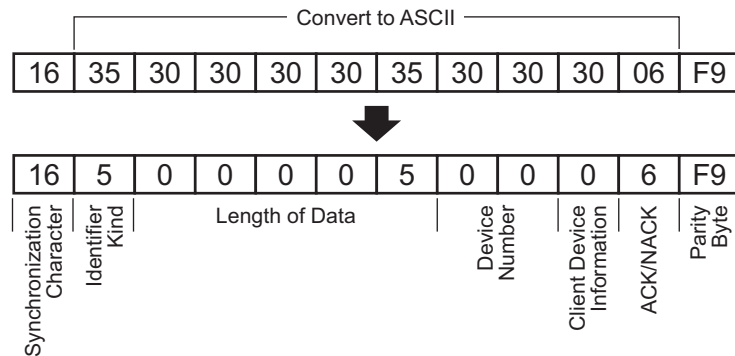
Synchronization Character : Data is fixed at "16". Used to maintain synchronization.
Identifier Kind            : Tells what type of SMDR Identifier is being sent.
Length                     : How many characters of data are to follow in the SMDR Identifier.
Device Number              : Tells which SMDR Device is sending this data. Device Number is fixed at "00".
ACK/NACK                   : Acknowledgment/Negative Acknowledgment.
                             06hex - Acknowledgment (Parity check shows no trouble)
                             15hex - Negative Acknowledgment (Parity check shows some error)
Parity Byte                : Used for error detection.

## Sequence

The following shows sequences for data exchange between the PBX and the SMDR terminal.

(1)    Connection Establishment/Data Reception/Connection Release Sequence (Normal Processing)
       Normal processing sequence to be followed when SMDR terminal requests the PBX to send data.

SMDR terminal (=Client)                                    PBX (=Server)

Connection request (connect) ───────────▶

Connection sequence

◀─────────── Connection accepted (accept)

Data request text ───────────▶

| 1 | Text identifier |

◀─────────── Sending data text

| 2 | Text identifier |
| 1 | Sequence No. |

| 4 | Text identifier |
| 1 | Sequence No. |

Client response text (ACK) ───────────▶

Billing information memory cleared

| 5 | Text identifier |
| 00 | Client device information |

Status monitoring ───────────▶

◀─────────── Server response text

| 3 | Text identifier |
| 1 | Sequence No. |

Data request text ───────────▶

| 1 | Text identifier |

◀─────────── Sending data text

| 2 | Text identifier |
| 2 | Sequence No. |

Continued on next page

SMDR terminal (=Client)                    PBX (=Server)

| 4 | Text identifier |
|---|---|
| 2 | Sequence No. |

Client response text (ACK) →   Billing information memory cleared

| 6 | Text identifier |
|---|---|

Connection disconnect →

(2)  Connection Establishment/Data Reception/Data Re-request (Error Processing)
Error processing sequence to be followed when SMDR terminal requests the PBX to send data and fails to receive data.

SMDR terminal                                                          PBX

Connection request (connect)

Connection sequence

Connection accepted (accept)

Data request text

| 1 | Text identifier |
|---|---|

Sending data text

(Data A)

| 2 | Text identifier |
|---|---|
| 1 | Sequence No. |

| 4 | Text identifier |
|---|---|
| 1 | Sequence No. |

Client response text (ACK)  ×

ACK data bit received
[Text not received]

Data request text

| 1 | Text identifier |
|---|---|

Identical data → Data discarded
**NOTE**

Sending data text (Data retransmit)

(Data A)

| 2 | Text identifier |
|---|---|
| 2 | Sequence No. |

| 4 | Text identifier |
|---|---|
| 2 | Sequence No. |

Client response text (ACK)

Billing information memory cleared

**NOTE:**  *To prevent double reception of the same data, SMDR terminal checks the received data whether it is the same data to the preceding one (Doubly received data is discarded).*

(3)  Reconnection Sequence

Processing sequence to be followed when the SMDR terminal and the PBX fail to communicate.
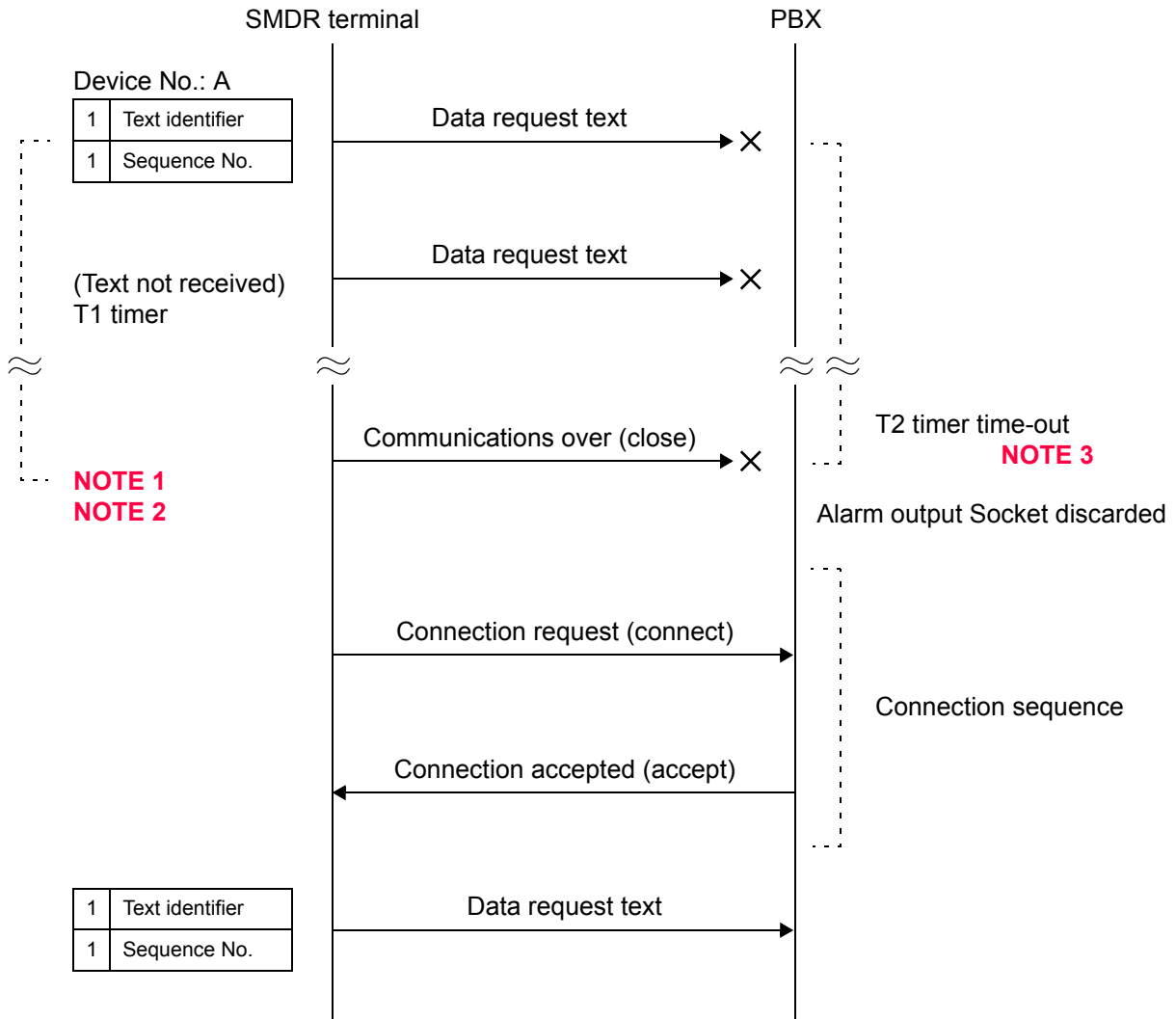


**NOTE 1:** *If the sequence is repeated in a predetermined time, and there is still no response from the PBX, the socket will be discarded or (communications over) processing will be performed.*

**NOTE 2:** *T1 timer value until the next processing is as follows.*
*Default value: 10 sec.*
*Data range   : 1 sec. to 30 sec.*

**NOTE 3:** *The T2 timer mentioned above will be cleared when either a "status monitoring text" or "data request text" is received.*
*T2 timer value until the next processing is 120 sec. to 180 sec. (Fixed).*

When SMDR terminal performs reconnect processing and the PBX retains the previous socket:



**NOTE 1:** *If the sequence is repeated in a predetermined time, and there is still no response from the PBX, the socket will be discarded or (communications over) processing will be performed.*

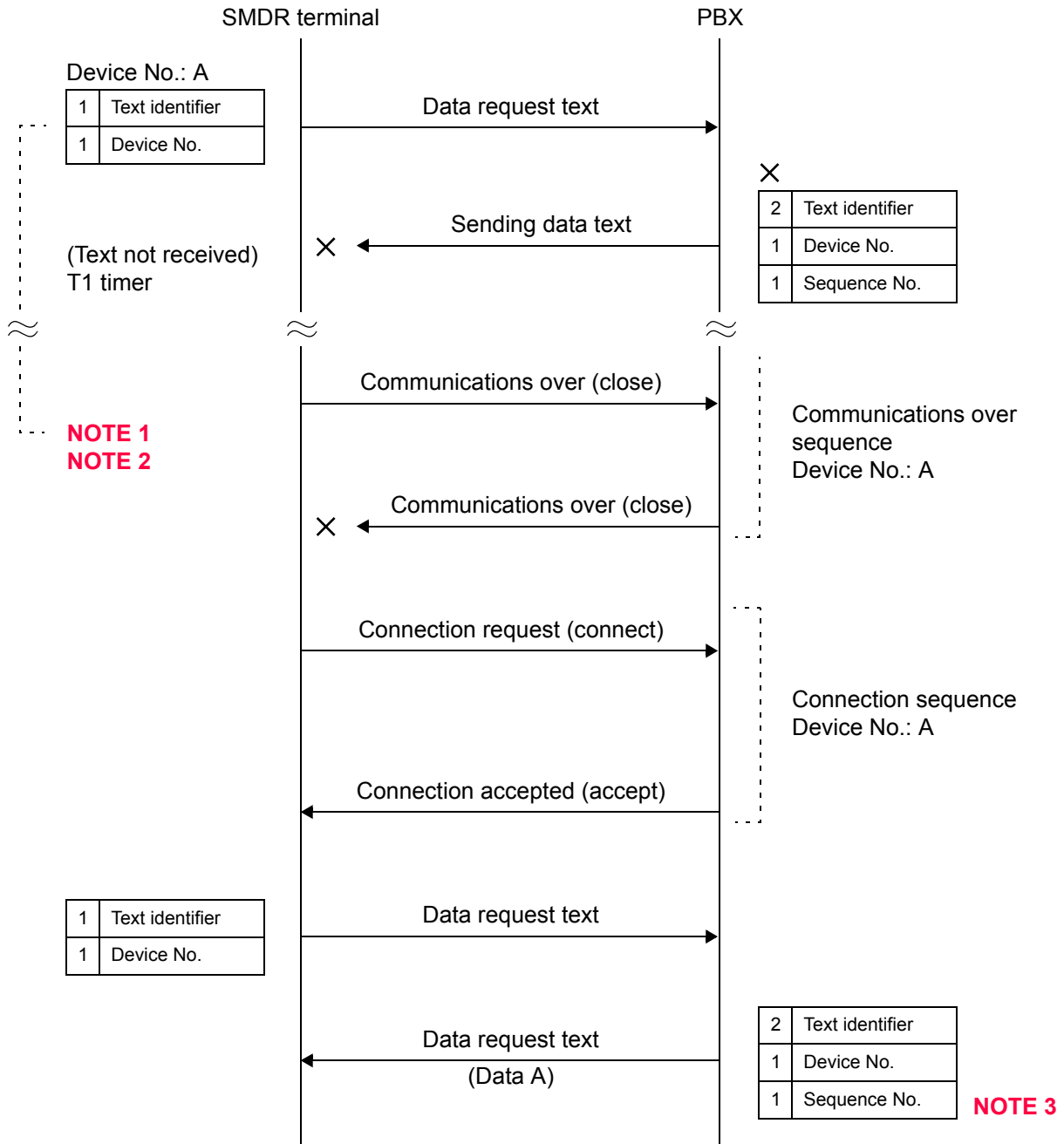**NOTE 2:** *T1 timer value until the next processing is as follows.*

   *Default value: 10 sec.*

   *Data range    : 1 sec. to 30 sec.*

**NOTE 3:** *The socket connected to the same device No. must not exist.*

(4)    Sequence Number Error Sequence
Error processing sequence to be followed when SMDR terminal returns an error sequence number
for the data it has received from the PBX.

SMDR terminal                                    PBX

| 1 | Text identifier |

Data request text

Sending data text

| 2 | Text identifier |
| 1 | Sequence No. |

| 4 | Text identifier |
| 1 | Sequence No. |

Client response text (ACK)
(Error sequence No.)

[Sequence No. error]

| 1 | Text identifier |

Data request text

Same data → Data discarded
**NOTE**

Sending data text (Data retransmit)
(Data A)

| 2 | Text identifier |
| 2 | Sequence No. |

Client response text (ACK)

| 4 | Text identifier |
| 2 | Sequence No. |

Client response text (ACK)

**NOTE:**    *In the above sequence, SMDR terminal will receive the same data twice.*
*To prevent double reception of the same data, SMDR terminal checks the received data whether*
*it is the same data to the preceding one (Doubly received data is discarded).*

(5)    Server Sent Data Error (Data not Received by Client) Sequence
Processing sequence to be followed when the data sent by PBX to reach SMDR terminal.
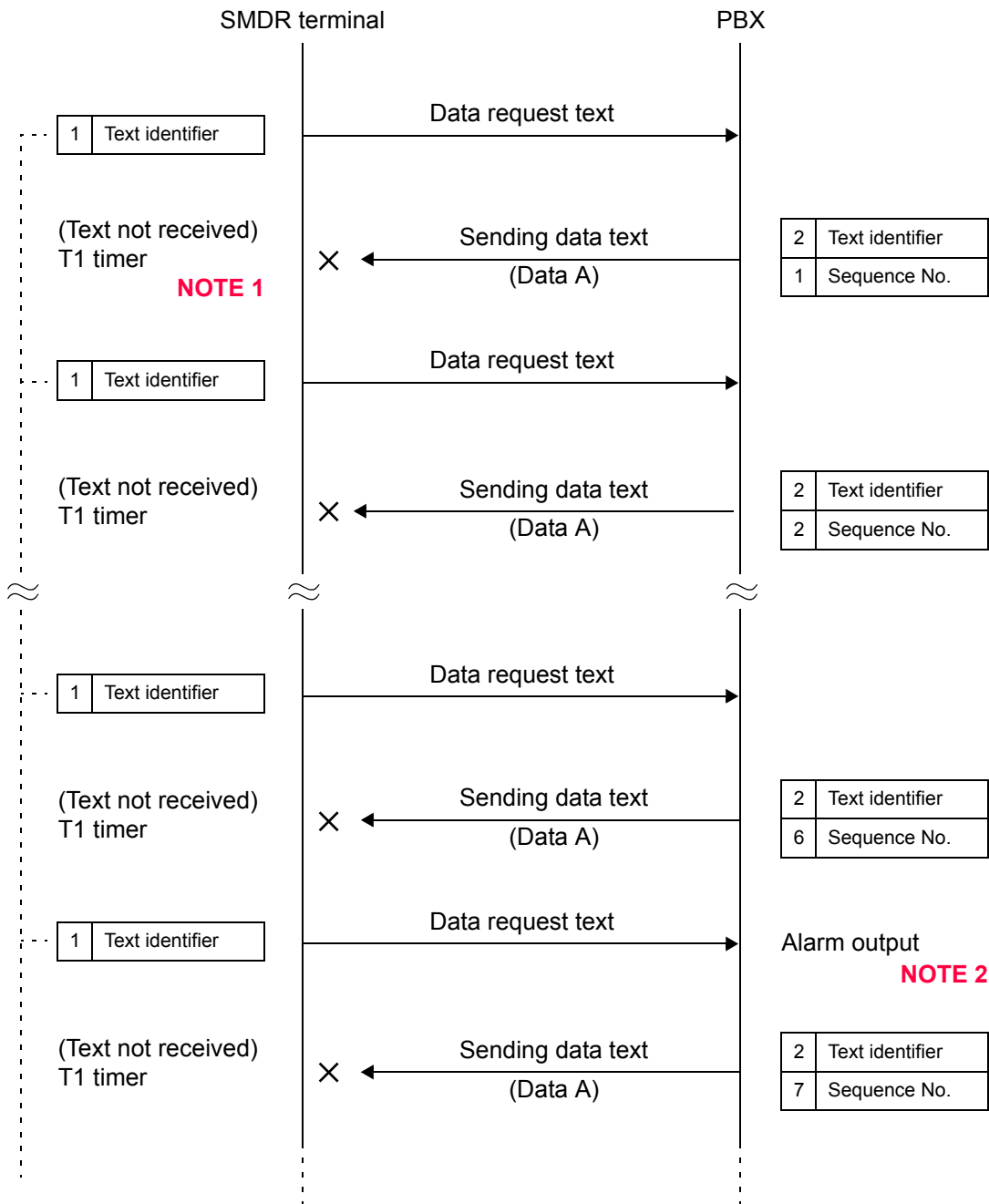


Above-mentioned processing sequence repeated

**NOTE 1:** *T1 timer value to the next processing is as follows.*

  *Default value: 10 sec.*

  *Data range   : 1 sec. to 30 sec.*

**NOTE 2:** *When the PBX repeats the processing sequence in a predetermined time consecutively, it will output an alarm.*

(6)    Status Monitoring Sequence (Normal Processing)
Processing sequence to be followed when SMDR terminal does not send a "data request text" to the PBX.
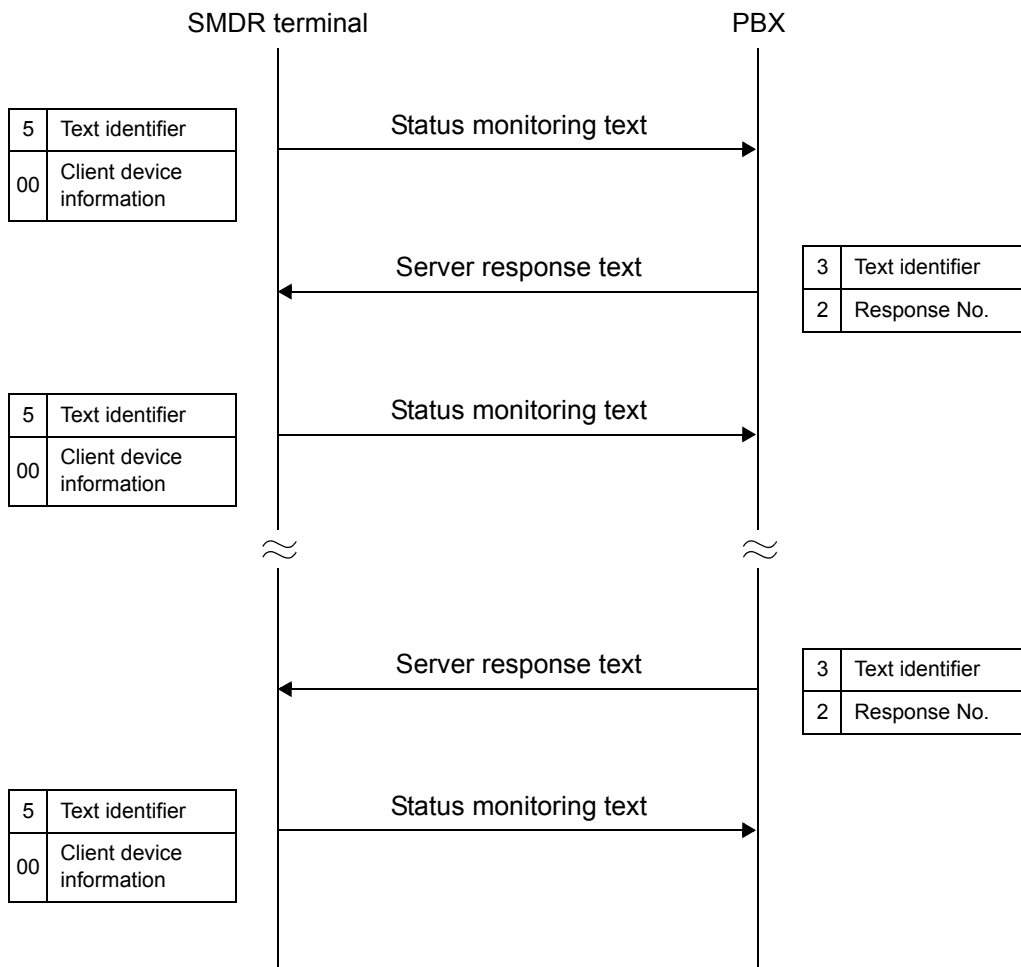
(7)    Status Monitoring Sequence (When Client Error is detected)
Processing sequence to be followed when the server detects SMDR terminal error during status monitoring.
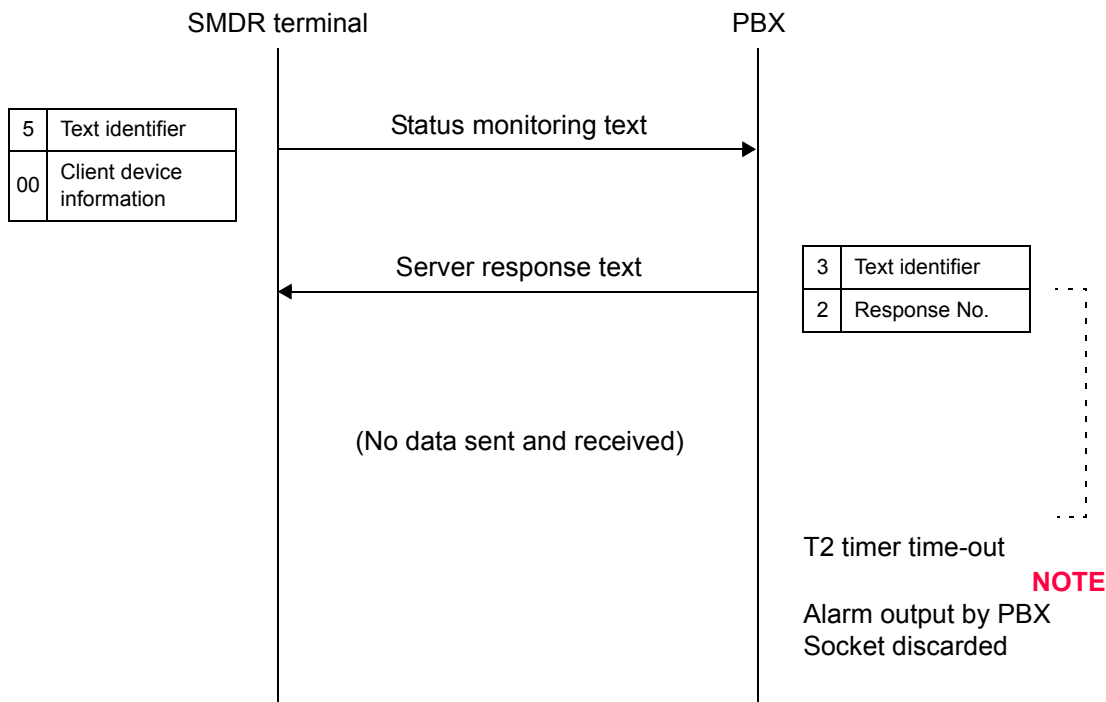


**NOTE:**    *The T2 timer described above will be cleared when either a "status monitoring text" or "data request text" is received.*

(8)　Status Monitoring Sequence (When Server Error is detected)
Processing sequence to be followed when PBX error is detected by the SMDR terminal during status monitoring (when there is no response from the PBX at all).

| SMDR terminal | PBX |
|---|---|

| 5 | Text identifier |
|---|---|
| 00 | Client device information |

→ Status monitoring text →

← Server response text ←

| 3 | Text identifier |
|---|---|
| 2 | Response No. |

| 5 | Text identifier |
|---|---|
| 00 | Client device information |

→ Status monitoring text →

T3 timer
**NOTE 1**

| 5 | Text identifier |
|---|---|
| 00 | Client device information |

→ Status monitoring text →

≈　≈　≈

| 5 | Text identifier |
|---|---|
| 00 | Client device information |

→ Status monitoring text →

The SMDR terminal outputs an alarm. Thereafter, it builds a new socket and starts connection processing.
**NOTE 2**

**NOTE 1:** *T3 timer value until the next processing is as follows.*
*Default value: 10 sec.*
*Data range   : 1 sec. to 30 sec.*

**NOTE 2:** *When SMDR terminal repeats the processing sequence a predetermined number of times without any response from the PBX, it will discard the existing socket and build a new socket and start connection processing.*
*Default value: 6 times*
*Data range   : 1 to 15 times*

(9)    Parity Error Sequence (Client Side)
Processing sequence to be followed when a parity error occurs in the data SMDR terminal has received from the PBX.

SMDR terminal                                                    PBX

| 1 | Text identifier |

(Parity error occurs.)
**NOTE**

Sending data text
(Data A)

| 2 | Text identifier |
| 1 | Sequence No. |

Data request text

| 1 | Text identifier |

Sending data text
(Data A)

| 2 | Text identifier |
| 2 | Sequence No. |
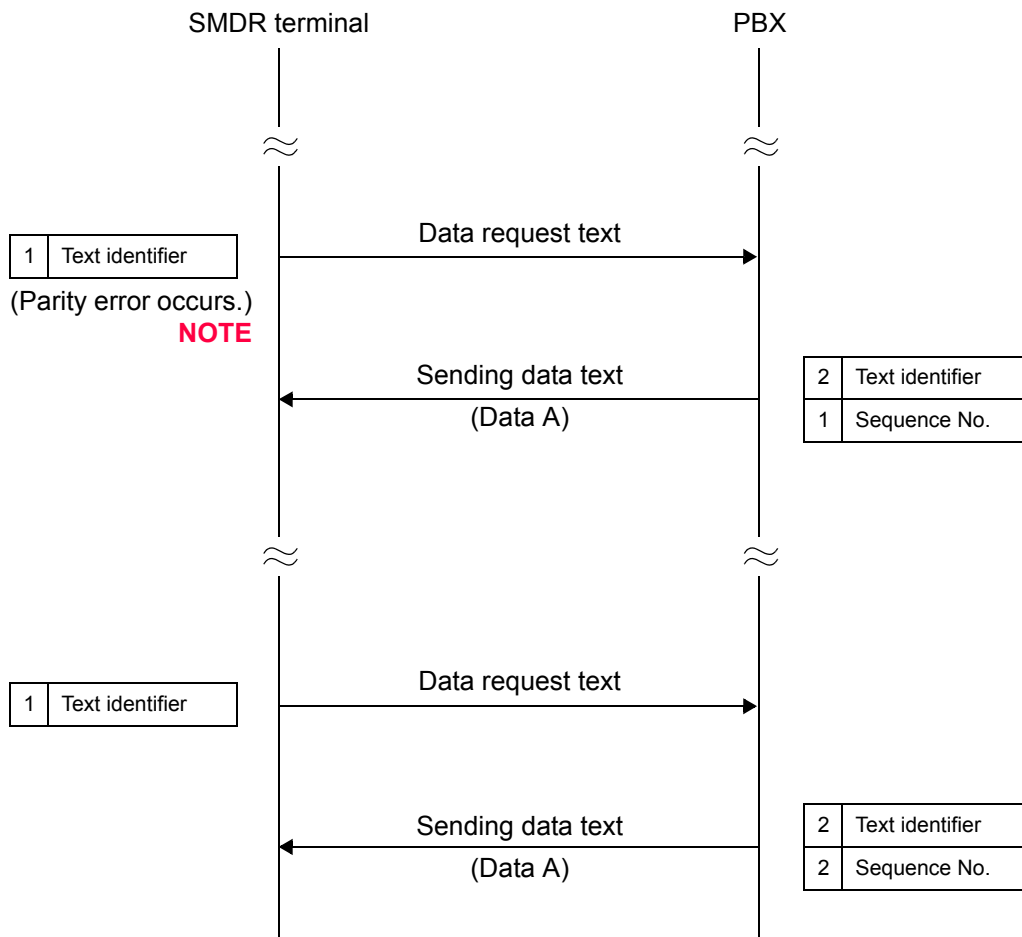
**NOTE:**    *When a parity error occurs a predetermined number of times, the SMDR terminal will output an alarm, discard the existing socket, build a new socket and start connection processing.*
*Default value: 6 times*
*Data range   : 1 to 15 times*

(10)  Parity Error Sequence (Client Side)

Processing sequence to be followed when a parity error occurs in the data SMDR terminal has received from the PBX.

SMDR terminal                                          PBX

| 1 | Text identifier |

(Parity error occurs.)
**NOTE**

| 2 | Text identifier |
| 1 | Sequence No. |

Data request text →

Sending data text
(Data A) ←

| 1 | Text identifier |

Data request text →

Sending data text
(Data A) ←

| 2 | Text identifier |
| 2 | Sequence No. |
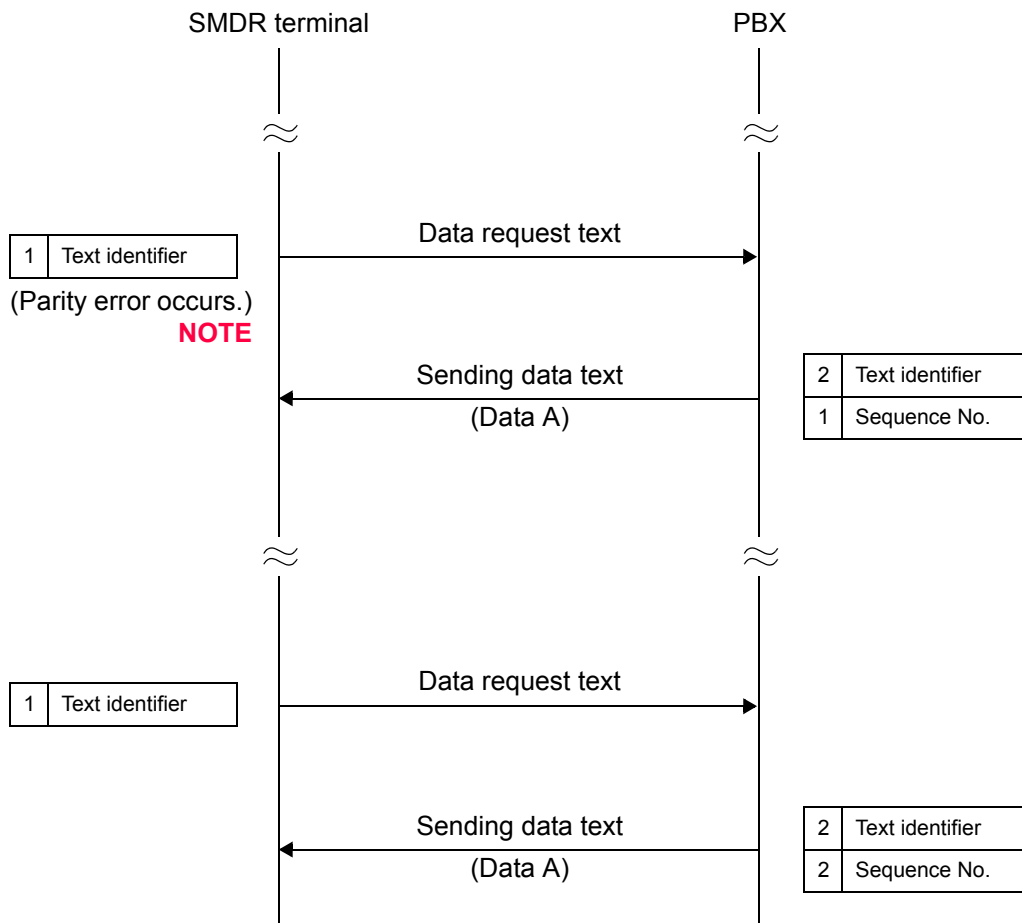
**NOTE:**  *When a parity error occurs a predetermined number of times, the SMDR terminal will output an alarm, discard the existing socket and build a new socket and start connection processing.*
*Default value: 6 times*
*Data range   : 1 to 15 times*

(11)  Parity Error Sequence (Server Side)

Processing sequence to be followed when a parity error occurs in the data PBX has received from the SMDR terminal.
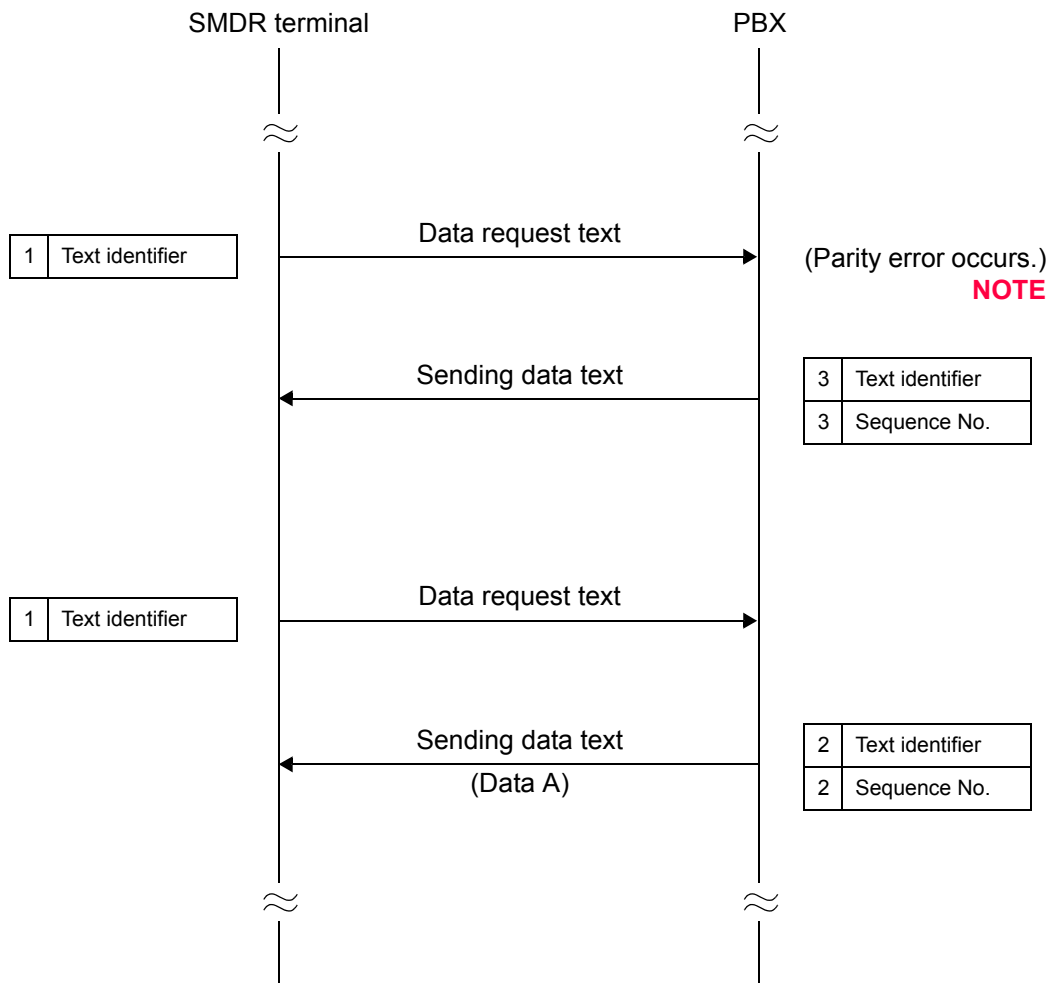


**NOTE:**  *When a parity error occurs a predetermined number of times consecutively, the SMDR terminal will output an alarm and will have a new socket ready.*

*After a connection has been established with the new socket, the client will discard the old socket. When a parity error occurs at the PBX side, the SMDR terminal will retransmit the last sent data.*

# DATA TRANSMISSION FORMAT

This section describes the format for billing information data exchange between the PBX and the SMDR terminal.

## Former NEAX 2400 IMS Format

### Former NEAX 2400 IMS Format



STX : START OF TEXT
SA : STATION ADDRESS (0)
UA : UNIT ADDRESS (!)
O.G. : OUTGOING TRUNK CALL
I.C. : INCOMING TRUNK CALL
S.S. : STATION-TO-STATION CALL
Δ : SPACE (No Information)
ETX : END OF TEXT

CALL RECORD DESCRIPTION FOR OUTGOING TRUNK CALLS

The elements of a call record for outgoing trunk calls output on a former NEAX 2400 IMS Format are illustrated and described in the following.

| Character | | |
|---|---|---|
| | STX | START OF TEXT: Indication of start of text. |
| | SA | STATION ADDRESS (0) |
| | UA | UNIT ADDRESS (!) |
| 001 | ENTRY INDEX "K" | ENTRY INDEX: "K" indicates that SMDR call record will follow. |
| 002 | TYPE OF RECORD "A" | TYPE OF RECORD: "A" indicates that the call record is an outgoing call record output on a former NEAX 2400 IMS Format. |
| 003 | ROUTE No.-HUNDREDS | |
| 004 | ROUTE No.-TENS | |
| 005 | ROUTE No.-UNITS | |
| 006 | TRUNK No.-HUNDREDS | |
| 007 | TRUNK No.-TENS | |
| 008 | TRUNK No.-UNITS | |
| 009 | CALLING PARTY I.D. | |
| 010 | TENANT No.-TENS | |
| 011 | TENANT No.-UNITS | |
| 012 | CALLING No.-1 | |
| 013 | CALLING No.-2 | |
| 014 | CALLING No.-3 | |
| 015 | CALLING No.-4 | |
| 016 | CALLING No.-5 | |
| 017 | CALLING No.-6 | |

OUTGOING TRUNK INFORMATION:

The Outgoing Trunk Information indicates the actual trunk seized on an outgoing call as a route number and trunk number.

All fields would be filled with characters, even if the number of digits of the route number/trunk number is smaller than that of the fields to be filled.
(Route number 01 is expressed as 001)

CALLING PARTY INFORMATION:

The Calling Party Information consists of a maximum of nine characters, indicating the calling party information as follows.

• Calling Party Identification (Character 009)
0=PBX/Centrex Station
1=Attendant (Operator)
2=Trunk Route Number + Trunk Number

• Tenant Number 00-63 (Character 010-011)
Tenant Number set by CM12 Y=04, if Calling Party Identification is 0
Tenant Number 01, if Calling Party Identification is 1
Tenant Number set by CM30 Y=01, if Calling Party Identification is 2

• Calling Number (Character 012-017)
Station Number, if Calling Party Identification is 0
Attendant Number, if Calling Party Identification is 1
Outgoing Trunk Route Number and Trunk Number on Tandem Switching, if Calling Party Identification is 2

The spaces will follow the Station Number and Attendant Number. When Station Number is 7 digits or more, last 6 digits are output. For Trunk Route Number and Trunk Number, all fields would be filled with characters even if the number of digits is smaller than that of the fields to be filled.
(Route number 01 is expressed as 001)

Character

| 018 | MONTH | -TENS |
| 019 | MONTH | -UNITS |
| 020 | DAY | -TENS |
| 021 | DAY | -UNITS |
| 022 | HOUR | -TENS |
| 023 | HOUR | -UNITS |
| 024 | MINUTE | -TENS |
| 025 | MINUTE | -UNITS |
| 026 | SECOND | -TENS |
| 027 | SECOND | -UNITS |
| 028 | MONTH | -TENS |
| 029 | MONTH | -UNITS |
| 030 | DAY | -TENS |
| 031 | DAY | -UNITS |
| 032 | HOUR | -TENS |
| 033 | HOUR | -UNITS |
| 034 | MINUTE | -TENS |
| 035 | MINUTE | -UNITS |
| 036 | SECOND | -TENS |
| 037 | SECOND | -UNITS |

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NEXT PAGE

TIME OF START CONVERSATION:
 The Time of Start Conversation indicates when the called party answered a call in terms of months, days, hours, minutes and seconds.

 Called party answered time is actually entered 18-24 seconds after the last digit is dialed, assuming no answer signal is given from the Central Office.

TIME OF CALL COMPLETION:
 The Time of Call Completion indicates when the trunk is disconnected or a call is transferred in terms of months, days, hours, minutes and seconds.

| Character | | |
|---|---|---|
| 038 | ACCOUNT CODE-1 | |
| 039 | ACCOUNT CODE-2 | |
| 040 | ACCOUNT CODE-3 | |
| 041 | ACCOUNT CODE-4 | |
| 042 | ACCOUNT CODE-5 | |
| 043 | ACCOUNT CODE-6 | |
| 044 | ACCOUNT CODE-7 | |
| 045 | ACCOUNT CODE-8 | |
| 046 | ACCOUNT CODE-9 | |
| 047 | ACCOUNT CODE-10 | |
| 048 | TENANT No. -HUNDREDS/SPACE | |
| 049 | TENANT No. -TENS/SPACE | |
| 050 | TENANT No. -UNITS/SPACE | |
| 051 | CONDITION CODE-1 | |
| 052 | CONDITION CODE-2 | |
| 053 | CONDITION CODE-3 | |
| 054 | ROUTE NUMBER 1 | |
| 055 | ROUTE NUMBER 1 | |
| 056 | ROUTE NUMBER 1 | |
| 057 | ROUTE NUMBER 2 | |
| 058 | ROUTE NUMBER 2 | |
| 059 | ROUTE NUMBER 2 | |

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NEXT PAGE

ACCOUNT CODE:
In case the Account Code provided (Condition Code=020), the Account Code entered by a calling station is shown. Account Code consists of a maximum of ten characters.
The space will follow the Account Code.

TENANT NUMBER:
Tenant number 000-063 is indicated.
These will be identical with the characters 010 and 011.

CONDITION CODE:
The Condition Code consists of three characters, indicating the type of methods used for setting up a call. Individual characters indicate the following information.

- Condition Code-1 (Character 051)
  0=Ordinarily originated call
  1=Transferred call

- Condition Code-2 (Character 052)
  0=A call without Account Code
  2=Account Code has been entered

- Condition Code-3 (Character 053)
  0=Station originated call
  1=Attendant assisted call

ROUTE ADVANCE INFORMATION:
The route number l and 2 fields record the route number actually selected. These will be identical with the route number in the characters 003 through 005 in the outgoing trunk route information characters fields.

| Character | | |
|---|---|---|
| 060 | CALLED NUMBER-1 | |
| 061 | CALLED NUMBER-2 | |
| 062 | CALLED NUMBER-3 | |
| : | : | |
| : | : | |
| 090 | CALLED NUMBER-31 | |
| 091 | CALLED NUMBER-32 | |
| 092 | CALL METERING-1 | |
| 093 | CALL METERING-2 | |
| 094 | CALL METERING-3 | |
| 095 | CALL METERING-4 | |
| 096 | CALLING OFFICE No.-1 | |
| 097 | CALLING OFFICE No.-2 | |
| 098 | CALLING OFFICE No.-3 | |
| 099 | CALLING OFFICE No.-4 | |
| 100 | BILLING OFFICE No.-1 | |
| 101 | BILLING OFFICE No.-2 | |
| 102 | BILLING OFFICE No.-3 | |
| 103 | BILLING OFFICE No.-4 | |
| 104 | AUTHORIZATION CODE-1 | |
| 105 | AUTHORIZATION CODE-2 | |
| 106 | AUTHORIZATION CODE-3 | |
| 107 | AUTHORIZATION CODE-4 | |
| 108 | AUTHORIZATION CODE-5 | |
| 109 | AUTHORIZATION CODE-6 | |
| 110 | AUTHORIZATION CODE-7 | |
| 111 | AUTHORIZATION CODE-8 | |
| 112 | AUTHORIZATION CODE-9 | |
| 113 | AUTHORIZATION CODE-10 | |

CALLED NUMBER:
    The Called Number Information consists of a maximum of 32 characters. The spaces will follow the number.

CALL METERING:
    Metering pulse is counted if the metering pulse are provided from the public exchange.
    All fields would be filled with characters, even if the number of digits of the Call Metering is smaller than that of the fields to be filled (such as 001).

CALLING OFFICE NUMBER ON TANDEM CALL:
    Calling office number on tandem call consists of a maximum of 4 characters.
    The space will follow the number.

BILLING OFFICE NUMBER ON TANDEM CALL:
    Billing office number on tandem call consists of a maximum of 4 characters.
    The space will follow the number.

AUTHORIZATION CODE:
    Authorization Code consists of a maximum of ten characters.
    The spaces will follow the Authorization Code.

| Character | | |
|---|---|---|
| 114 | YEAR | -TENS |
| 115 | YEAR | -UNITS |
| 116 | YEAR | -TENS |
| 117 | YEAR | -UNITS |
| 118 | CONDITION CODE | |
| 119 | A.O.C | |
| : | : | |
| 124 | A.O.C | |
| 125 | SPACE | |
| : | : | |
| 128 | SPACE | |
| | ETX | |

YEAR OF START CONVERSATION

YEAR OF CALL COMPLETION

CONDITION CODE FOR ADVICE OF CHARGE:
The Condition Code indicates the following charging information of the Advice of Charge.
0: No charging (CM08>404: 0)
2: Charge by 1 cent
1: Charge by 0.1 cent
?: Excessive charging

ADVICE OF CHARGE:
The Advice of Charge consists of six characters, indicating the Advice of Charge from the public exchange.

- When Condition Code is 2:
  $\Delta\Delta\Delta$00-999999=\$0.000-\$999.999

- When Condition Code is 1:
  100000-999999=\$1000.00-\$9999.99

- When Condition Code is ?:
  999999=More than \$999.999.99

END OF TEXT: Indication of end of text

CALL RECORD DESCRIPTION FOR INCOMING TRUNK CALLS

The elements of a call record for incoming trunk calls output on a former NEAX 2400 IMS Format are illustrated and described in the following.

| Character | | |
|---|---|---|
| | STX | |
| | SA | |
| | UA | |
| 001 | ENTRY INDEX "K" | |
| 002 | TYPE OF RECORD "E" | |
| 003 | ROUTE No.-HUNDREDS | |
| 004 | ROUTE No.-TENS | |
| 005 | ROUTE No.-UNITS | |
| 006 | TRUNK No.-HUNDREDS | |
| 007 | TRUNK No.-TENS | |
| 008 | TRUNK No.-UNITS | |
| 009 | CALLED PARTY I.D. | |
| 010 | TENANT No.-TENS | |
| 011 | TENANT No.-UNITS | |
| 012 | CALLED No.-1 | |
| 013 | CALLED No.-2 | |
| 014 | CALLED No.-3 | |
| 015 | CALLED No.-4 | |
| 016 | CALLED No.-5 | |
| 017 | CALLED No.-6 | |

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NEXT PAGE

START OF TEXT: Indication of start of text

STATION ADDRESS (0)

UNIT ADDRESS (!)

ENTRY INDEX: "K" indicates that SMDR call record will follow.

TYPE OF RECORD: "E" indicates that the call record is an incoming call record output on a former NEAX 2400 IMS Format.

INCOMING TRUNK INFORMATION:
The Incoming Trunk Information indicates the actual trunk seized on an incoming call as a route number and trunk number.

All fields would be filled with characters, even if the number of digits of the route number/trunk number is smaller than that of the fields to be filled.
(Route number 01 is expressed as 001)

CALLED PARTY INFORMATION:
The Called Party Information consists of a maximum of nine characters, indicating the call destination information as follows.

- Called Party Identification (Character 009)
  0=PBX/Centrex Station
  1=Attendant (Operator)

- Tenant Number 00-63 (Character 010-011)
  Tenant Number set by CM12 Y=04, if Calling Party Identification is 0
  Tenant Number 01, if Calling Party Identification is 1

- Called Number (Character 012-017)
  Station Number, if Called Party Identification is 0
  Attendant Number, if Called Party Identification is 1

  The spaces will follow the Station Number and Attendant Number. When Station Number is 7 digits or more, last 6 digits are output.

| Character | | |
|---|---|---|
| 018 | MONTH | -TENS |
| 019 | MONTH | -UNITS |
| 020 | DAY | -TENS |
| 021 | DAY | -UNITS |
| 022 | HOUR | -TENS |
| 023 | HOUR | -UNITS |
| 024 | MINUTE | -TENS |
| 025 | MINUTE | -UNITS |
| 026 | SECOND | -TENS |
| 027 | SECOND | -UNITS |
| 028 | MONTH | -TENS |
| 029 | MONTH | -UNITS |
| 030 | DAY | -TENS |
| 031 | DAY | -UNITS |
| 032 | HOUR | -TENS |
| 033 | HOUR | -UNITS |
| 034 | MINUTE | -TENS |
| 035 | MINUTE | -UNITS |
| 036 | SECOND | -TENS |
| 037 | SECOND | -UNITS |

CONTINUED ON
NEXT PAGE

TIME OF START CONVERSATION:

The Time of Start Conversation indicates when the called party answered a call in terms of months, days, hours, minutes and seconds.

Called party answered time is actually entered 18-24 seconds after the last digit is dialed, assuming no answer signal is given from the Central Office.

TIME OF CALL COMPLETION:

The Time of Call Completion indicates when the trunk is disconnected or a call is transferred in terms of months, days, hours, minutes and seconds.

| Character | |
|---|---|
| 038 | ACCOUNT CODE-1 |
| 039 | ACCOUNT CODE-2 |
| 040 | ACCOUNT CODE-3 |
| 041 | ACCOUNT CODE-4 |
| 042 | ACCOUNT CODE-5 |
| 043 | ACCOUNT CODE-6 |
| 044 | ACCOUNT CODE-7 |
| 045 | ACCOUNT CODE-8 |
| 046 | ACCOUNT CODE-9 |
| 047 | ACCOUNT CODE-10 |
| 048 | SPACE |
| 049 | : |
| 050 | SPACE |
| 051 | CONDITION CODE-1 |
| 052 | CONDITION CODE-2 |
| 053 | CONDITION CODE-3 |
| 054 | ROUTE NUMBER 1 |
| 055 | ROUTE NUMBER 1 |
| 056 | ROUTE NUMBER 1 |
| 057 | SPACE |
| 058 | : |
| 059 | SPACE |

CONTINUED ON
NEXT PAGE

**ACCOUNT CODE:**

In case the Account Code provided (Condition Code=020), the Account Code entered by a calling station is shown. Account Code consists of a maximum of ten characters.

**NO INFORMATION**

**CONDITION CODE:**

The Condition Code consists of three characters, indicating the type of methods used for setting up a call. Individual characters indicate the following information.

- Condition Code-1 (Character 051)
  0=Ordinarily originated call
  1=Transferred call

- Condition Code-2 (Character 052)
  0=A call without Account Code
  2=Account Code has been entered

- Condition Code-3 (Character 053)
  0=Station originated call
  1=Attendant assisted call

**ROUTE ADVANCE INFORAMTION:**

The route number 1 fields record the route number actually selected. These will be identical with the route number in the characters 003 through 005 in the incoming trunk route information characters fields.

The route number 2 fields are no information.

• When ANI Information is not provided

| Character | | |
|---|---|---|
| 060 | SPACE | |
| : | : | NO INFORMATION |
| : | : | |
| : | : | |
| : | : | |
| : | : | |
| : | : | |
| 091 | SPACE | |
| 092 | CALL METERING-1 | CALL METERING: |
| 093 | CALL METERING-2 | Metering pulse is counted if the metering pulse are provided from the public exchange. |
| 094 | CALL METERING-3 | All fields would be filled with characters, even if the number of digits of the Call Metering is smaller than that of the fields to be filled (such as 001). |
| 095 | CALL METERING-4 | |
| 096 | CALL OFFICE No.-1 | |
| 097 | CALL OFFICE No.-2 | CALLING OFFICE NUMBER |
| 098 | CALL OFFICE No.-3 | |
| 099 | CALL OFFICE No.-4 | |
| 100 | BILLING OFFICE No.-1 | |
| 101 | BILLING OFFICE No.-2 | BILLING OFFICE NUMBER |
| 102 | BILLING OFFICE No.-3 | |
| 103 | BILLING OFFICE No.-4 | |
| 104 | SPACE | |
| 105 | : | |
| 106 | : | |
| 107 | : | |
| 108 | : | |
| 109 | : | NO INFORMATION |
| 110 | : | |
| 111 | : | |
| 112 | : | |
| 113 | SPACE | |
| 114 | YEAR  -TENS | YEAR OF START CONVERSATION |
| 115 | YEAR  -UNITS | |
| 116 | YEAR  -TENS | YEAR OF CALL COMPLETION |
| 117 | YEAR  -UNITS | |
| 118 | SPACE | |
| : | : | NO INFORMATION |
| : | : | |
| 127 | : | |
| 128 | SPACE | |
| | ETX | END OF TEXT: Indication of end of text |

• When ANI Information is provided

| Character | | |
|---|---|---|
| 060 | SPACE | |
| : | : | NO INFORMATION |
| 091 | SPACE | |
| 092 | CALL METERING-1 | |
| 093 | CALL METERING-2 | CALL METERING: |
| 094 | CALL METERING-3 | Metering pulse is counted if the metering pulse are provided from the public exchange. |
| 095 | CALL METERING-4 | All fields would be filled with characters, even if the number of digits of the Call Metering is smaller than that of the fields to be filled (such as 001). |
| 096 | ANI INFORMATION-1 | |
| 097 | ANI INFORMATION-2 | |
| 098 | ANI INFORMATION-3 | |
| 099 | ANI INFORMATION-4 | |
| 100 | ANI INFORMATION-5 | |
| 101 | ANI INFORMATION-6 | |
| 102 | ANI INFORMATION-7 | |
| 103 | ANI INFORMATION-8 | ANI INFORMATION: |
| 104 | ANI INFORMATION-9 | ANI Information consists of a maximum of 16 characters. |
| 105 | ANI INFORMATION-10 | The spaces will follow the ANI Information. |
| 106 | ANI INFORMATION-11 | |
| 107 | ANI INFORMATION-12 | |
| 108 | ANI INFORMATION-13 | |
| 109 | ANI INFORMATION-14 | |
| 110 | ANI INFORMATION-15 | |
| 111 | ANI INFORMATION-16 | |
| 112 | SPACE | NO INFORMATION |
| 113 | SPACE | |
| 114 | YEAR -TENS | YEAR OF START CONVERSATION |
| 115 | YEAR -UNITS | |
| 116 | YEAR -TENS | YEAR OF CALL COMPLETION |
| 117 | YEAR -UNITS | |
| 118 | SPACE | |
| : | : | NO INFORMATION |
| 127 | : | |
| 128 | SPACE | |
| | ETX | END OF TEXT: Indication of end of text |

EXAMPLE OF VARIOUS RECORD IN CALLING PARTY INFORMATION

- Station Number Recording in Calling Party Information

| Character | |
|---|---|
| 009 | 0 |
| 010 | 1 |
| 011 | 1 |
| 012 | 4 |
| 013 | 5 |
| 014 | 6 |
| 015 | 5 |
| 016 | Δ |
| 017 | Δ |

Δ: SPACE

EXAMPLE:
   Calling Party Identification 0=Station
   Tenant Number: 11
   Station Number: 4565

This information is generated by the following calls.
   Outgoing/Incoming Call from/to a station
   Outgoing/Incoming Call from/to a station with an attendant assistance
   Transferred Call

- Attendant Number Recording in Calling Party Information

| Character | |
|---|---|
| 009 | 1 |
| 010 | 0 |
| 011 | 1 |
| 012 | 1 |
| 013 | 1 |
| 014 | Δ |
| 015 | Δ |
| 016 | Δ |
| 017 | Δ |

Δ: SPACE

EXAMPLE:
   Calling Party Identification 1=Attendant
   Tenant Number: 01 (fixed)
   Attendant Number: 11

This information is generated by Outgoing/Incoming Call from/to an attendant.

- Trunk Route and Trunk Number Recording in Calling Party Information

| Character | |
|---|---|
| 009 | 2 |
| 010 | 0 |
| 011 | 0 |
| 012 | 0 |
| 013 | 0 |
| 014 | 7 |
| 015 | 0 |
| 016 | 0 |
| 017 | 4 |

EXAMPLE:
   Calling Party Identification 2=Trunk Route + Trunk
   Tenant Number: 00
   Trunk Route Number: 007
   Trunk Number: 004

This information is generated by the following calls.
   Direct Tandem Call
   Tandem Call with attendant assistance
   Trunk to Trunk Connection Call with station assistance

CALL RECORD DESCRIPTION FOR STATION-TO-STATION CALLS

The elements of a call record for station-to-station calls output on a former NEAX 2400 IMS Format are illustrated and described in the following.

| Character | | |
|---|---|---|
| | STX | START OF TEXT: Indication of start of text. |
| | SA | STATION ADDRESS (0) |
| | UA | UNIT ADDRESS (!) |
| 001 | ENTRY INDEX "K" | ENTRY INDEX: "K" indicates that SMDR call record will follow. |
| 002 | TYPE OF RECORD "B" | TYPE OF RECORD: "B" indicates that the call record is an station-to-station call record output on a former NEAX 2400 IMS Format. |
| 003 | SPACE | |
| 004 | : | |
| 005 | : | NO INFORMATION |
| 006 | : | |
| 007 | : | |
| 008 | SPACE | |
| 009 | CALLING PARTY I.D. | |
| 010 | TENANT No.-TENS | |
| 011 | TENANT No.-UNITS | |
| 012 | CALLING No.-1 | |
| 013 | CALLING No.-2 | CALLING PARTY INFORMATION: |
| 014 | CALLING No.-3 | |
| 015 | CALLING No.-4 | |
| 016 | CALLING No.-5 | |
| 017 | CALLING No.-6 | |

CALLING PARTY INFORMATION:
The Calling Party Information consists of a maximum of nine characters, indicating the calling party information as follows.

- Calling Party Identification (Character 009)
  0=Station
  This indication is fixed to "0".

- Tenant Number 00-63 (Character 010-011)
  Tenant Number set by CM12 Y=04

- Calling Number (Character 012-017)
  Station Number

  The spaces will follow the Station Number. When Station Number is 7 digits or more, last 6 digits are output.

CONTINUED ON
NEXT PAGE

| Character | | |
|-----|-----|-----|
| 018 | MONTH | -TENS |
| 019 | MONTH | -UNITS |
| 020 | DAY | -TENS |
| 021 | DAY | -UNITS |
| 022 | HOUR | -TENS |
| 023 | HOUR | -UNITS |
| 024 | MINUTE | -TENS |
| 025 | MINUTE | -UNITS |
| 026 | SECOND | -TENS |
| 027 | SECOND | -UNITS |
| 028 | MONTH | -TENS |
| 029 | MONTH | -UNITS |
| 030 | DAY | -TENS |
| 031 | DAY | -UNITS |
| 032 | HOUR | -TENS |
| 033 | HOUR | -UNITS |
| 034 | MINUTE | -TENS |
| 035 | MINUTE | -UNITS |
| 036 | SECOND | -TENS |
| 037 | SECOND | -UNITS |
| 038 | SPACE | |
| : | : | |
| 047 | SPACE | |
| 048 | TENANT No.-HUNDREDS | |
| 049 | TENANT No.-TENS | |
| 050 | TENANT No.-UNITS | |

**TIME OF START CONVERSATION:**

The Time of Start Conversation indicates when the called party answered a call in terms of months, days, hours, minutes and seconds.

Called party answered time is actually entered 18-24 seconds after the last digit is dialed, assuming no answer signal is given from the Central Office.

**TIME OF CALL COMPLETION:**

The Time of Call Completion indicates when the station is disconnected or a call is transferred in terms of months, days, hours, minutes and seconds.

**NO INFORMATION**

**TENANT NUMBER:**

Tenant number set similar to Character No. 010-011.
Tenant number of hundreds indication is fixed to "0".

| Character | | |
|---|---|---|
| 051 | CONDITION CODE-1 | |
| 052 | CONDITION CODE-2 | |
| 053 | CONDITION CODE-3 | |
| 054 | SPACE | |
| : | : | * |
| 059 | SPACE | |
| 060 | CALLED TENANT No.-TENS | |
| 061 | CALLED TENANT No.-UNITS | |
| 062 | CALLED NUMBER 1 | |
| 063 | CALLED NUMBER 2 | |
| 064 | CALLED NUMBER 3 | |
| 065 | CALLED NUMBER 4 | |
| 066 | CALLED NUMBER 5 | |
| 067 | CALLED NUMBER 6 | |
| 068 | CALLED TENANT No.-HUNDREDS | |
| 069 | CALLED TENANT No.-TENS | |
| 070 | CALLED TENANT No.-UNITS | |
| 071 | SPACE | |
| : | : | * |
| 091 | SPACE | |
| 092 | 0 | |
| : | : | |
| 095 | 0 | |
| 096 | SPACE | |
| : | : | * |
| 113 | SPACE | |
| 114 | YEAR  -TENS | |
| 115 | YEAR  -UNITS | |
| 116 | YEAR  -TENS | |
| 117 | YEAR  -UNITS | |
| 118 | SPACE | |
| : | : | * |
| 128 | SPACE | |
| | ETX | |

CONDITION CODE:
The Condition Code consists of three characters, indicating the type of methods used for setting up a call. Individual characters indicate the following information.

- Condition Code-1 (Character 051)
  0=Call has not been transferred
  1=Call has been transferred

- Condition Code-2 (Character 052)
  This indication is fixed to "0".

- Condition Code-3 (Character 053)
  This indication is fixed to "0".

CALLED TENANT NUMBER:
Tenant Number 00-63
Tenant Number set by CM12 Y=04

CALLED NUMBER:
Station Number

The spaces will follow the Station Number. When Station Number is 7 digits or more, last 6 digits are input.

CALLED TENANT NUMBER:
Tenant number set similar to Character No. 060-061.
Tenant number of hundreds indication is fixed to "0".

0: This indication is fixed to "0".
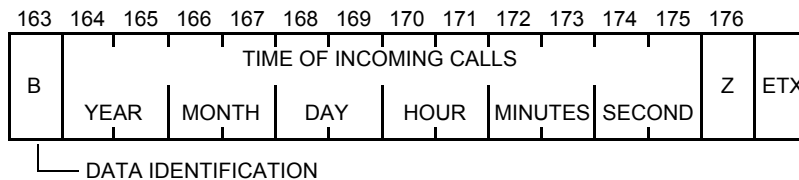
YEAR OF START CONVERSATION

YEAR OF CALL COMPLETION

END OF TEXT: Indication of end of text

*: NO INFORMATION

# Extended NEAX 2400 IMS Format

## Extended NEAX 2400 IMS Format



| 001 | 002 | 003 004 005 | 006 007 008 | 009 | 010 011 | 012 013 014 015 016 017 |
|---|---|---|---|---|---|---|
| STX | SA | UA | K | H/I/J | TRUNK ROUTE No. 000-063 (O.G./I.C.) | TRUNK No. 000-511 (O.G./I.C.) | I.D. | TENANT No. 00-63 | CALLING (O.G./S.S.)/ CALLED (I.C.) No. |
| | | | | | Δ ~ (S.S.) Δ | | | | |

- OUTGOING/INCOMING TRUNK INFORMATION
- TYPE OF RECORD "H/I/J"
- ENTRY INDEX "K"
- CALLING/CALLED PARTY IDENTIFICATION
- CALLING/CALLED PARTY INFORMATION

| 018 019 020 021 022 023 024 025 026 027 028 029 030 031 032 033 034 035 036 037 | 038 047 |
|---|---|
| TIME OF START CONVERSATION | TIME OF CALL COMPLETION | ACCOUNT CODE (O.G./I.C.) |
| MONTH | DAY | HOUR | MINUTE | SECOND | MONTH | DAY | HOUR | MINUTE | SECOND | Δ ~ (S.S.) Δ |

| 048 049 050 | 051 052 053 | 054 055 056 | 057 058 059 | 060 061 062 063 064 065 066 067 068 069 070 |
|---|---|---|---|---|
| TENANT No. 000-063 (O.G./S.S.) | CONDITION CODE | ROUTE No. 1 (O.G./I.C.) | ROUTE No. 2 (O.G.) | CALLED NUMBER (O.G.) |
| Δ ~ (I.C.) Δ | | Δ ~ (S.S.) Δ | Δ ~ (I.C./S.S.) Δ | Δ ~ (I.C.) ~ Δ |
| | | | | CALLED NUMBER (S.S.) |

- ROUTE ADVANCE INFORMATION
- TENANT No. 00~63 (S.S.)
- TENANT No. 000~063 (S.S.)

| 071 091 | 092 093 094 095 | 096 097 098 099 | 100 101 102 103 | 104 111 | 112 113 114 115 | 116 117 |
|---|---|---|---|---|---|---|
| CALLED NUMBER (O.G.) | CALL METERING (O.G./I.C.) | CALLING OFFICE No. (O.G./I.C.) | BILLING OFFICE No. (O.G./I.C.) | AUTHORIZATION CODE (O.G.) | CALL START YEAR | CALL END YEAR |
| Δ ~ (I.C./S.S.) Δ | 0 ~ (S.S.) 0 | Δ ~ (S.S.) Δ | | Δ ~ (I.C./S.S.) Δ | | |

| 118 119 124 125 128 | 129 | 130 | 131 162 | 163 | |
|---|---|---|---|---|---|
| ADVICE OF CHARGE (O.G.) Δ ~ Δ | A | 0/1 | Δ ~ Δ (O.G./S.S.) | Z | ETX |
| Δ ~(I.C./S.S.) Δ | | | ANI (I.C.) | | |

**NOTE 1**

- CONDITION CODE FOR ADVICE OF CHARGE
- DATA IDENTIFICATION
- ANI INFORMATION OUTPUT IDENTIFICATION

STX : START OF TEXT
SA : STATION ADDRESS (0)
UA : UNIT ADDRESS (!)
O.G. : OUTGOING TRUNK CALL
I.C. : INCOMING TRUNK CALL
S.S. : STATION-TO-STATION CALL
Δ : SPACE (No Information)
Z : END OF BILLING INFORMATION
ETX : END OF TEXT

**NOTE:** *When the Time of Incoming Calls is indicated, the output format is as follows.*

| 163 | 164 165 166 167 168 169 170 171 172 173 174 175 | 176 | |
|---|---|---|---|
| B | TIME OF INCOMING CALLS | Z | ETX |
| | YEAR | MONTH | DAY | HOUR | MINUTES | SECOND | | |

- DATA IDENTIFICATION

CALL RECORD DESCRIPTION FOR OUTGOING TRUNK CALLS

The elements of a call record for outgoing trunk calls output on an extended NEAX 2400 IMS Format are illustrated and described in the following.

| Character | | |
|---|---|---|
| | STX | START OF TEXT: Indication of start of text. |
| | SA | STATION ADDRESS (0) |
| | UA | UNIT ADDRESS (!) |
| 001 | ENTRY INDEX "K" | ENTRY INDEX: "K" indicates that SMDR call record will follow. |
| 002 | TYPE OF RECORD "H" | TYPE OF RECORD: "H" indicates that the call record is an outgoing call record output on an extended NEAX 2400 IMS Format. |
| 003 | ROUTE No.-HUNDREDS | |
| 004 | ROUTE No.-TENS | |
| 005 | ROUTE No.-UNITS | |
| 006 | TRUNK No.-HUNDREDS | |
| 007 | TRUNK No.-TENS | |
| 008 | TRUNK No.-UNITS | |
| 009 | CALLING PARTY I.D. | |
| 010 | TENANT No.-TENS | |
| 011 | TENANT No.-UNITS | |
| 012 | CALLING No.-1 | |
| 013 | CALLING No.-2 | |
| 014 | CALLING No.-3 | |
| 015 | CALLING No.-4 | |
| 016 | CALLING No.-5 | |
| 017 | CALLING No.-6 | |

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NEXT PAGE

OUTGOING TRUNK INFORMATION:

The Outgoing Trunk Information indicates the actual trunk seized on an outgoing call as a route number and trunk number.

All fields would be filled with characters, even if the number of digits of the route number/trunk number is smaller than that of the fields to be filled.
(Route number 01 is expressed as 001)

CALLING PARTY INFORMATION:

The Calling Party Information consists of a maximum of nine characters, indicating the calling party information as follows.

- Calling Party Identification (Character 009)
  0=PBX/Centrex Station
  1=Attendant (Operator)
  2=Trunk Route Number + Trunk Number

- Tenant Number 00-63 (Character 010-011)
  Tenant Number set by CM12 Y=04, if Calling Party Identification is 0
  Tenant Number 01, if Calling Party Identification is 1
  Tenant Number set by CM30 Y=01, if Calling Party Identification is 2

- Calling Number (Character 012-017)
  Station Number, if Calling Party Identification is 0
  Attendant Number, if Calling Party Identification is 1
  Outgoing Trunk Route Number and Trunk Number on Tandem Switching, if Calling Party Identification is 2

The spaces will follow the Station Number and Attendant Number. When Station Number is 7 digits or more, last 6 digits are output. For Trunk Route Number and Trunk Number, all fields would be filled with characters even if the number of digits is smaller than that of the fields to be filled.
(Route number 01 is expressed as 001)

| Character | | |
|-----------|-----------|---------|
| 018 | MONTH | -TENS |
| 019 | MONTH | -UNITS |
| 020 | DAY | -TENS |
| 021 | DAY | -UNITS |
| 022 | HOUR | -TENS |
| 023 | HOUR | -UNITS |
| 024 | MINUTE | -TENS |
| 025 | MINUTE | -UNITS |
| 026 | SECOND | -TENS |
| 027 | SECOND | -UNITS |
| 028 | MONTH | -TENS |
| 029 | MONTH | -UNITS |
| 030 | DAY | -TENS |
| 031 | DAY | -UNITS |
| 032 | HOUR | -TENS |
| 033 | HOUR | -UNITS |
| 034 | MINUTE | -TENS |
| 035 | MINUTE | -UNITS |
| 036 | SECOND | -TENS |
| 037 | SECOND | -UNITS |

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NEXT PAGE

TIME OF START CONVERSATION:

The Time of Start Conversation indicates when the called party answered a call in terms of months, days, hours, minutes and seconds.

Called party answered time is actually entered 18-24 seconds after the last digit is dialed, assuming no answer signal is given from the Central Office.

TIME OF CALL COMPLETION:

The Time of Call Completion indicates when the trunk is disconnected or a call is transferred in terms of months, days, hours, minutes and seconds.

| Character | |
|---|---|
| 038 | ACCOUNT CODE-1 |
| 039 | ACCOUNT CODE-2 |
| 040 | ACCOUNT CODE-3 |
| 041 | ACCOUNT CODE-4 |
| 042 | ACCOUNT CODE-5 |
| 043 | ACCOUNT CODE-6 |
| 044 | ACCOUNT CODE-7 |
| 045 | ACCOUNT CODE-8 |
| 046 | ACCOUNT CODE-9 |
| 047 | ACCOUNT CODE-10 |
| 048 | TENANT No. -HUNDREDS |
| 049 | TENANT No. -TENS |
| 050 | TENANT No. -UNITS |
| 051 | CONDITION CODE-1 |
| 052 | CONDITION CODE-2 |
| 053 | CONDITION CODE-3 |
| 054 | ROUTE NUMBER 1 |
| 055 | ROUTE NUMBER 1 |
| 056 | ROUTE NUMBER 1 |
| 057 | ROUTE NUMBER 2 |
| 058 | ROUTE NUMBER 2 |
| 059 | ROUTE NUMBER 2 |

CONTINUED ON
NEXT PAGE

ACCOUNT CODE:
In case the Account Code provided (Condition Code=020), the Account Code entered by a calling station is shown. Account code consists of a maximum of ten characters.
The space will follow the Account Code.

TENANT NUMBER:
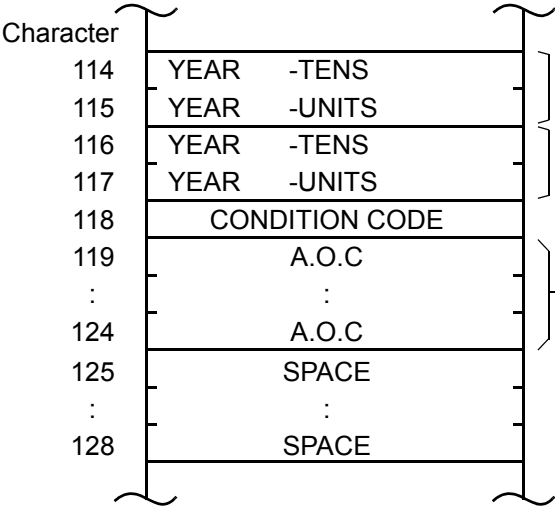Tenant number 000-063 is indicated. These will be identical with the characters 010 and 011.

CONDITION CODE:
The Condition Code consists of three characters, indicating the type of methods used for setting up a call. Individual characters indicate the following information.

- Condition Code-1 (Character 051)
  0=Ordinarily originated call
  1=Transferred call

- Condition Code-2 (Character 052)
  0=A call without Account Code
  2=Account Code has been entered

- Condition Code-3 (Character 053)
  0=Station originated call
  1=Attendant assisted call

ROUTE ADVANCE INFORMATION:
The route number l and 2 fields record the route number actually selected. These will be identical with the route number in the characters 003 through 005 in the outgoing trunk route information characters fields.

| Character | | |
|---|---|---|
| 060 | CALLED NUMBER-1 | |
| 061 | CALLED NUMBER-2 | |
| 062 | CALLED NUMBER-3 | |
| : | : | |
| : | : | |
| 090 | CALLED NUMBER-31 | |
| 091 | CALLED NUMBER-32 | |
| 092 | CALL METERING-1 | |
| 093 | CALL METERING-2 | |
| 094 | CALL METERING-3 | |
| 095 | CALL METERING-4 | |
| 096 | CALLING OFFICE No.-1 | |
| 097 | CALLING OFFICE No.-2 | |
| 098 | CALLING OFFICE No.-3 | |
| 099 | CALLING OFFICE No.-4 | |
| 100 | BILLING OFFICE No.-1 | |
| 101 | BILLING OFFICE No.-2 | |
| 102 | BILLING OFFICE No.-3 | |
| 103 | BILLING OFFICE No.-4 | |
| 104 | AUTHORIZATION CODE-1 | |
| 105 | AUTHORIZATION CODE-2 | |
| 106 | AUTHORIZATION CODE-3 | |
| 107 | AUTHORIZATION CODE-4 | |
| 108 | AUTHORIZATION CODE-5 | |
| 109 | AUTHORIZATION CODE-6 | |
| 110 | AUTHORIZATION CODE-7 | |
| 111 | AUTHORIZATION CODE-8 | |
| 112 | AUTHORIZATION CODE-9 | |
| 113 | AUTHORIZATION CODE-10 | |

CALLED NUMBER:
   The Called Number Information consists of a maximum of 32 characters. The spaces will follow the number.

CALL METERING:
   Metering pulse is counted if the metering pulse are provided from the public exchange.
   All fields would be filled with characters, even if the number of digits of the Call Metering is smaller than that of the fields to be filled (such as 001).

CALLING OFFICE NUMBER ON TANDEM CALL:
   Calling office number on tandem call consists of a maximum of 4 characters.
   The space will follow the number.

BILLING OFFICE NUMBER ON TANDEM CALL:
   Billing office number on tandem call consists of a maximum of 4 characters.
   The space will follow the number.

AUTHORIZATION CODE:
   Authorization Code consists of a maximum of ten characters.
   The spaces will follow the Authorization Code.

CONTINUED ON
NEXT PAGE

| Character | | |
|---|---|---|
| 114 | YEAR | -TENS |
| 115 | YEAR | -UNITS |
| 116 | YEAR | -TENS |
| 117 | YEAR | -UNITS |
| 118 | CONDITION CODE | |
| 119 | A.O.C | |
| : | : | |
| 124 | A.O.C | |
| 125 | SPACE | |
| : | : | |
| 128 | SPACE | |

YEAR OF START CONVERSATION

YEAR OF CALL COMPLETION

CONDITION CODE FOR ADVICE OF CHARGE:
The Condition Code indicates the following charging information of the Advice of Charge.
0: No charging (CM08>404: 0)
2: Charge by 1 cent
1: Charge by 0.1 cent
?: Excessive charging

ADVICE OF CHARGE:
The Advice of Charge consists of six characters, indicating the Advice of Charge from the public exchange.

- When Condition Code is 2:
  $\Delta\Delta\Delta\Delta$00-999999=$0.000-$999.999

- When Condition Code is 1:
  100000-999999=$1000.00-$9999.99

- When Condition Code is ?:
  999999=More than $999.999.99

CONTINUED ON
NEXT PAGE

| Character | | |
|---|---|---|
| 129 | A | |
| 130 | 0 | |
| 131 | SPACE | |
| 132 | : | |
| 133 | : | |
| : | : | |
| : | : | |
| 161 | : | |
| 162 | SPACE | |
| 163 | Z | |
| | ETX | |

DATA IDENTIFICATION:
Indication of data identification
This indication is fixed to "A".

ANI INFORMATION OUTPUT IDENTIFICATION:
Indication of ANI information output identification
0=No ANI information is output
(ANI information field are all space)
This indication is fixed to "0".

NO INFORMATION

END OF BILLING INFORMATION:
Indication of end of billing information

END OF TEXT: Indication of end of text

CALL RECORD DESCRIPTION FOR INCOMING TRUNK CALLS

The elements of a call record for incoming trunk calls output on an extended NEAX 2400 IMS Format are illustrated and described in the following.

| Character | | |
|---|---|---|
| | STX | START OF TEXT: Indication of start of text |
| | SA | STATION ADDRESS (0) |
| | UA | UNIT ADDRESS (!) |
| 001 | ENTRY INDEX "K" | ENTRY INDEX: "K" indicates that SMDR call record will follow. |
| 002 | TYPE OF RECORD "I" | TYPE OF RECORD: "I" indicates that the call record is an incoming call record output on an extended NEAX 2400 IMS Format. |
| 003 | ROUTE No.-HUNDREDS | |
| 004 | ROUTE No.-TENS | |
| 005 | ROUTE No.-UNITS | |
| 006 | TRUNK No.-HUNDREDS | |
| 007 | TRUNK No.-TENS | |
| 008 | TRUNK No.-UNITS | |
| 009 | CALLED PARTY I.D. | |
| 010 | TENANT No.-TENS | |
| 011 | TENANT No.-UNITS | |
| 012 | CALLED No.-1 | |
| 013 | CALLED No.-2 | |
| 014 | CALLED No.-3 | |
| 015 | CALLED No.-4 | |
| 016 | CALLED No.-5 | |
| 017 | CALLED No.-6 | |

INCOMING TRUNK INFORMATION:

The Incoming Trunk Information indicates the actual trunk seized on an incoming call as a route number and trunk number.

All fields would be filled with characters, even if the number of digits of the route number/trunk number is smaller than that of the fields to be filled.
(Route number 01 is expressed as 001)

CALLED PARTY INFORMATION:

The Called Party Information consists of a maximum of nine characters, indicating the call destination information as follows.

- Called Party Identification (Character 009)
  0=PBX/Centrex Station
  1=Attendant (Operator)

- Tenant Number 00-63 (Character 010-011)
  Tenant Number set by CM12 Y=04, if Calling Party Identification is 0
  Tenant Number 01, if Calling Party Identification is 1

- Called Number (Character 012-017)
  Station Number, if Called Party Identification is 0
  Attendant Number, if Called Party Identification is 1

  The spaces will follow the Station Number and Attendant Number. When Station Number is 7 digits or more, last 6 digits are output.

| Character | | |
|-----------|-----------------|----------|
| 018 | MONTH | -TENS |
| 019 | MONTH | -UNITS |
| 020 | DAY | -TENS |
| 021 | DAY | -UNITS |
| 022 | HOUR | -TENS |
| 023 | HOUR | -UNITS |
| 024 | MINUTE | -TENS |
| 025 | MINUTE | -UNITS |
| 026 | SECOND | -TENS |
| 027 | SECOND | -UNITS |
| 028 | MONTH | -TENS |
| 029 | MONTH | -UNITS |
| 030 | DAY | -TENS |
| 031 | DAY | -UNITS |
| 032 | HOUR | -TENS |
| 033 | HOUR | -UNITS |
| 034 | MINUTE | -TENS |
| 035 | MINUTE | -UNITS |
| 036 | SECOND | -TENS |
| 037 | SECOND | -UNITS |

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NEXT PAGE

TIME OF START CONVERSATION:

The Time of Start Conversation indicates when the called party answered a call in terms of months, days, hours, minutes and seconds.

Called party answered time is actually entered 18-24 seconds after the last digit is dialed, assuming no answer signal is given from the Central Office.

The Time of Start Conversation indicates spaces if the incoming call is abandoned.

TIME OF CALL COMPLETION:

The Time of Call Completion indicates when the trunk is disconnected or a call is transferred in terms of months, days, hours, minutes and seconds.

The Time of Call Completion indicates when the trunk is released if the incoming call is abandoned.

| Character | | |
|---|---|---|
| 038 | ACCOUNT CODE-1 | |
| 039 | ACCOUNT CODE-2 | |
| 040 | ACCOUNT CODE-3 | |
| 041 | ACCOUNT CODE-4 | |
| 042 | ACCOUNT CODE-5 | |
| 043 | ACCOUNT CODE-6 | |
| 044 | ACCOUNT CODE-7 | |
| 045 | ACCOUNT CODE-8 | |
| 046 | ACCOUNT CODE-9 | |
| 047 | ACCOUNT CODE-10 | |
| 048 | SPACE | |
| 049 | : | |
| 050 | SPACE | |
| 051 | CONDITION CODE-1 | |
| 052 | CONDITION CODE-2 | |
| 053 | CONDITION CODE-3 | |
| 054 | ROUTE NUMBER 1 | |
| 055 | ROUTE NUMBER 1 | |
| 056 | ROUTE NUMBER 1 | |
| 057 | SPACE | |
| 058 | : | |
| 059 | SPACE | |

CONTINUED ON
NEXT PAGE

ACCOUNT CODE:
    In case the Account Code provided (Condition Code=020), the Account Code entered by a calling station is shown. Account code consists of a maximum of ten characters.

NO INFORMATION

CONDITION CODE:
    The Condition Code consists of three characters, indicating the type of methods used for setting up a call. Individual characters indicate the following information.

- Condition Code-1 (Character 051)
    0=Ordinarily originated call
    1=Transferred call
    2=Abandoned call

- Condition Code-2 (Character 052)
    0=A call without Account Code
    2=Account Code has been entered

- Condition Code-3 (Character 053)
    0=Station originated call
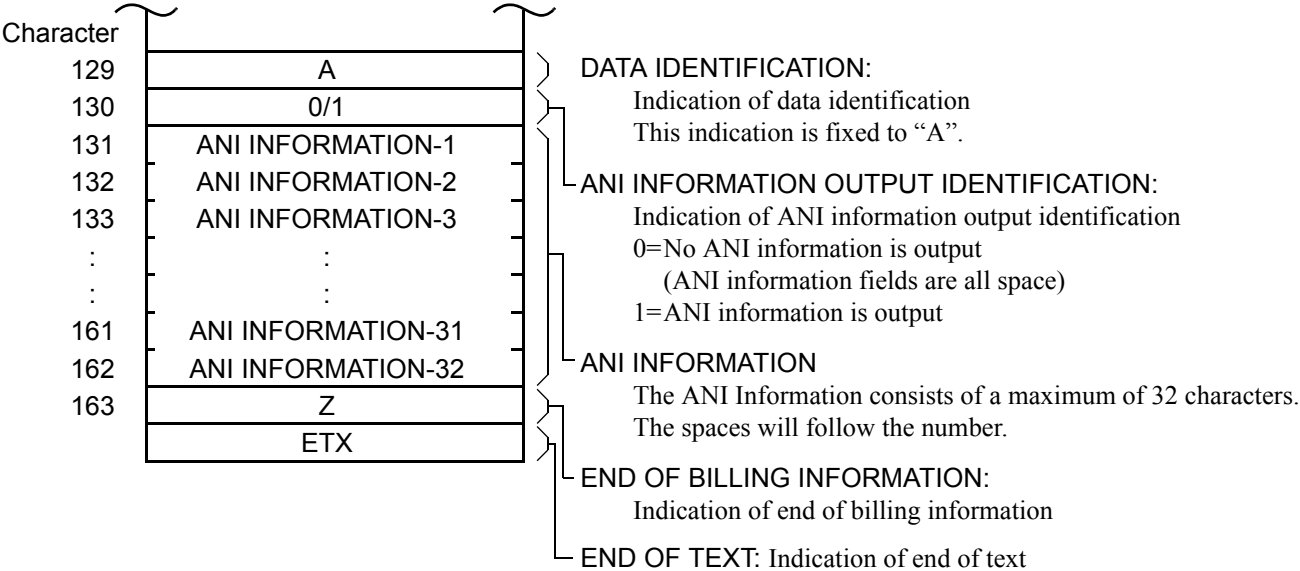    1=Attendant assisted call

ROUTE ADVANCE INFORAMTION:
    The route number 1 fields record the route number actually selected. These will be identical with the route number in the characters 003 through 005 in the incoming trunk route information characters fields.

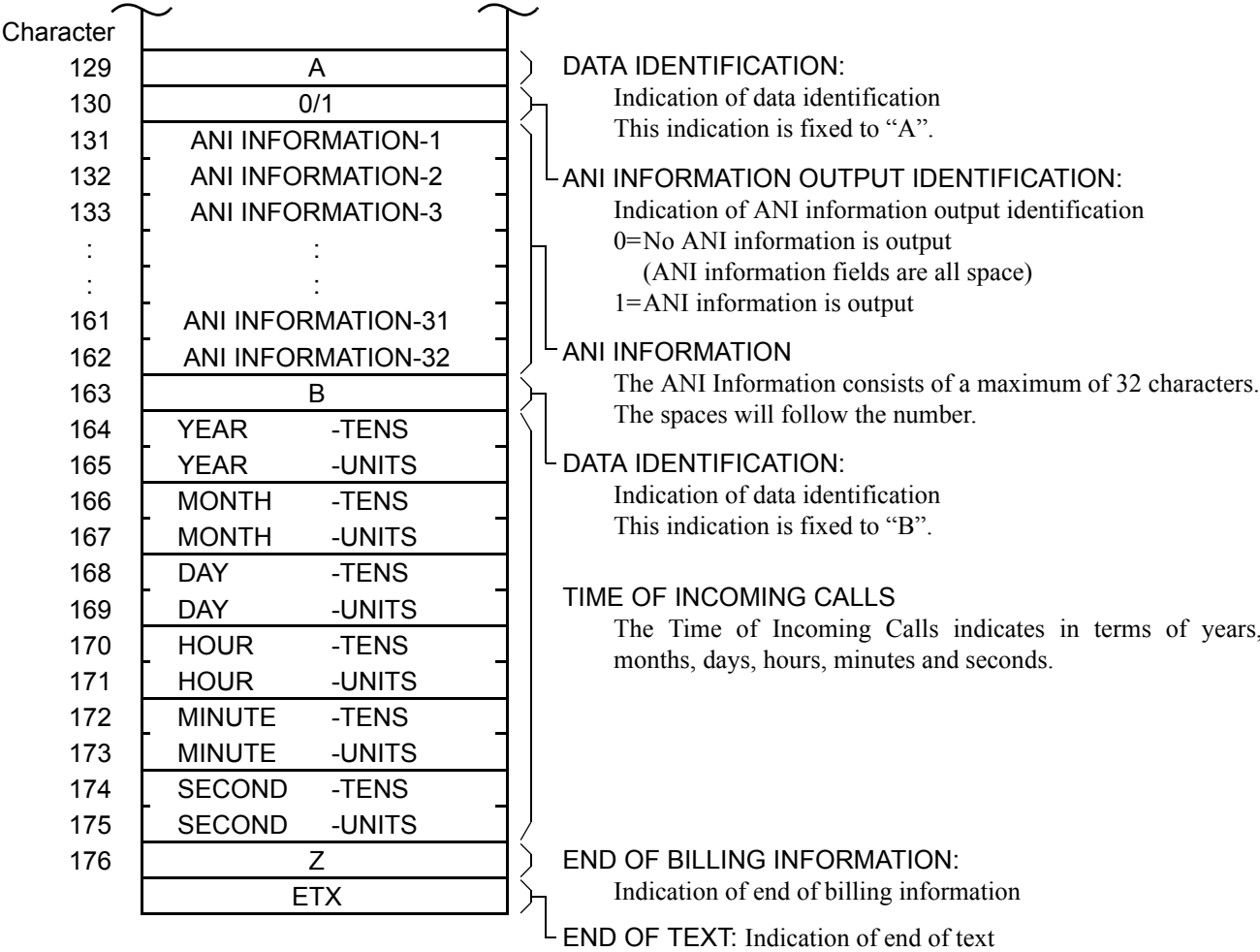    The route number 2 fields are no information.

| Character | | |
|---|---|---|
| 060 | SPACE | |
| : | : | NO INFORMATION |
| : | : | |
| : | : | |
| : | : | |
| : | : | |
| : | : | |
| 091 | SPACE | |
| 092 | CALL METERING-1 | CALL METERING: |
| 093 | CALL METERING-2 | Metering pulse is counted if the metering pulse are provided from the public exchange. |
| 094 | CALL METERING-3 | All fields would be filled with characters, even if the number of |
| 095 | CALL METERING-4 | digits of the Call Metering is smaller than that of the fields to be |
| 096 | CALLING OFFICE No.-1 | filled (such as 001). |
| 097 | CALLING OFFICE No.-2 | CALLING OFFICE NUMBER |
| 098 | CALLING OFFICE No.-3 | |
| 099 | CALLING OFFICE No.-4 | |
| 100 | BILLING OFFICE No.-1 | |
| 101 | BILLING OFFICE No.-2 | BILLING OFFICE NUMBER |
| 102 | BILLING OFFICE No.-3 | |
| 103 | BILLING OFFICE No.-4 | |
| 104 | SPACE | |
| 105 | : | |
| 106 | : | |
| 107 | : | |
| 108 | : | NO INFORMATION |
| 109 | : | |
| 110 | : | |
| 111 | : | |
| 112 | : | |
| 113 | SPACE | YEAR OF START CONVERSATION |
| 114 | YEAR  -TENS | The Year of Start Conversation indicates spaces if the incoming call is abandoned. |
| 115 | YEAR  -UNITS | |
| 116 | YEAR  -TENS | YEAR OF CALL COMPLETION |
| 117 | YEAR  -UNITS | |
| 118 | SPACE | |
| : | : | NO INFORMATION |
| : | : | |
| 127 | : | |
| 128 | SPACE | |

CONTINUED ON
NEXT PAGE

• When the Time of Incoming Calls is not indicated

| Character | | |
|---|---|---|
| 129 | A | |
| 130 | 0/1 | |
| 131 | ANI INFORMATION-1 | |
| 132 | ANI INFORMATION-2 | |
| 133 | ANI INFORMATION-3 | |
| : | : | |
| : | : | |
| 161 | ANI INFORMATION-31 | |
| 162 | ANI INFORMATION-32 | |
| 163 | Z | |
| | ETX | |

DATA IDENTIFICATION:
 Indication of data identification
 This indication is fixed to "A".

ANI INFORMATION OUTPUT IDENTIFICATION:
 Indication of ANI information output identification
 0=No ANI information is output
  (ANI information fields are all space)
 1=ANI information is output

ANI INFORMATION
 The ANI Information consists of a maximum of 32 characters.
 The spaces will follow the number.

END OF BILLING INFORMATION:
 Indication of end of billing information

END OF TEXT: Indication of end of text

• When the Time of Incoming Calls is indicated

| Character | | |
|---|---|---|
| 129 | A | |
| 130 | 0/1 | |
| 131 | ANI INFORMATION-1 | |
| 132 | ANI INFORMATION-2 | |
| 133 | ANI INFORMATION-3 | |
| ⋮ | ⋮ | |
| ⋮ | ⋮ | |
| 161 | ANI INFORMATION-31 | |
| 162 | ANI INFORMATION-32 | |
| 163 | B | |
| 164 | YEAR | -TENS |
| 165 | YEAR | -UNITS |
| 166 | MONTH | -TENS |
| 167 | MONTH | -UNITS |
| 168 | DAY | -TENS |
| 169 | DAY | -UNITS |
| 170 | HOUR | -TENS |
| 171 | HOUR | -UNITS |
| 172 | MINUTE | -TENS |
| 173 | MINUTE | -UNITS |
| 174 | SECOND | -TENS |
| 175 | SECOND | -UNITS |
| 176 | Z | |
| | ETX | |

DATA IDENTIFICATION:
  Indication of data identification
  This indication is fixed to "A".

ANI INFORMATION OUTPUT IDENTIFICATION:
  Indication of ANI information output identification
  0=No ANI information is output
    (ANI information fields are all space)
  1=ANI information is output

ANI INFORMATION
  The ANI Information consists of a maximum of 32 characters.
  The spaces will follow the number.

DATA IDENTIFICATION:
  Indication of data identification
  This indication is fixed to "B".

TIME OF INCOMING CALLS
  The Time of Incoming Calls indicates in terms of years, months, days, hours, minutes and seconds.

END OF BILLING INFORMATION:
  Indication of end of billing information

END OF TEXT: Indication of end of text

## EXAMPLE OF VARIOUS RECORD IN CALLING PARTY INFORMATION

- Station Number Recording in Calling Party Information

| Character | |
|---|---|
| 009 | 0 |
| 010 | 1 |
| 011 | 1 |
| 012 | 4 |
| 013 | 5 |
| 014 | 6 |
| 015 | 5 |
| 016 | Δ |
| 017 | Δ |

Δ: SPACE

EXAMPLE:
Calling Party Identification 0=Station
Tenant Number: 11
Station Number: 4565

This information is generated by the following calls.
Outgoing/Incoming Call from/to a station
Outgoing/Incoming Call from/to a station with an attendant assistance
Transferred Call

- Attendant Number Recording in Calling Party Information

| Character | |
|---|---|
| 009 | 1 |
| 010 | 0 |
| 011 | 1 |
| 012 | 1 |
| 013 | 1 |
| 014 | Δ |
| 015 | Δ |
| 016 | Δ |
| 017 | Δ |

Δ: SPACE

EXAMPLE:
Calling Party Identification 1=Attendant
Tenant Number: 01 (fixed)
Attendant Number: 11

This information is generated by Outgoing/Incoming Call from/to an attendant.

- Trunk Route and Trunk Number Recording in Calling Party Information

| Character | |
|---|---|
| 009 | 2 |
| 010 | 0 |
| 011 | 0 |
| 012 | 0 |
| 013 | 0 |
| 014 | 7 |
| 015 | 0 |
| 016 | 0 |
| 017 | 4 |

EXAMPLE:
Calling Party Identification 2=Trunk Route + Trunk
Tenant Number: 00
Trunk Route Number: 007
Trunk Number: 004

This information is generated by the following calls.
Direct Tandem Call
Tandem Call with attendant assistance
Trunk to Trunk Connection Call with station assistance

## CALL RECORD DESCRIPTION FOR STATION-TO-STATION CALLS

The elements of a call record for station-to-station calls output on an extended NEAX 2400 IMS Format are illustrated and described in the following.

| Character | | Description |
|---|---|---|
| | STX | **START OF TEXT:** Indication of start of text. |
| | SA | **STATION ADDRESS (0)** |
| | UA | **UNIT ADDRESS (!)** |
| 001 | ENTRY INDEX "K" | **ENTRY INDEX:** "K" indicates that SMDR call record will follow. |
| 002 | TYPE OF RECORD "J" | **TYPE OF RECORD:** "J" indicates that the call record is an station-to-station call record output on an extended NEAX 2400 IMS Format. |
| 003 | SPACE | |
| 004 | : | |
| 005 | : | |
| 006 | : | NO INFORMATION |
| 007 | : | |
| 008 | SPACE | |
| 009 | CALLING PARTY I.D. | |
| 010 | TENANT No.-TENS | |
| 011 | TENANT No.-UNITS | |
| 012 | CALLING No.-1 | |
| 013 | CALLING No.-2 | **CALLING PARTY INFORMATION:** |
| 014 | CALLING No.-3 | The Calling Party Information consists of a maximum of nine characters, indicating the calling party information as follows. |
| 015 | CALLING No.-4 | |
| 016 | CALLING No.-5 | |
| 017 | CALLING No.-6 | |

CONTINUED ON
NEXT PAGE

**CALLING PARTY INFORMATION:**
The Calling Party Information consists of a maximum of nine characters, indicating the calling party information as follows.

- Calling Party Identification (Character 009)
  0=Station
  This indication is fixed to "0".

- Tenant Number 00-63 (Character 010-011)
  Tenant Number set by CM12 Y=04

- Calling Number (Character 012-017)
  Station Number

  The spaces will follow the Station Number. When Station Number is 7 digits or more, last 6 digits are output.

| Character | | |
|---|---|---|
| 018 | MONTH | -TENS |
| 019 | MONTH | -UNITS |
| 020 | DAY | -TENS |
| 021 | DAY | -UNITS |
| 022 | HOUR | -TENS |
| 023 | HOUR | -UNITS |
| 024 | MINUTE | -TENS |
| 025 | MINUTE | -UNITS |
| 026 | SECOND | -TENS |
| 027 | SECOND | -UNITS |
| 028 | MONTH | -TENS |
| 029 | MONTH | -UNITS |
| 030 | DAY | -TENS |
| 031 | DAY | -UNITS |
| 032 | HOUR | -TENS |
| 033 | HOUR | -UNITS |
| 034 | MINUTE | -TENS |
| 035 | MINUTE | -UNITS |
| 036 | SECOND | -TENS |
| 037 | SECOND | -UNITS |
| 038 | SPACE | |
| : | : | |
| 047 | SPACE | |
| 048 | TENANT No.-HUNDREDS | |
| 049 | TENANT No.-TENS | |
| 050 | TENANT No.-UNITS | |

TIME OF START CONVERSATION:
The Time of Start Conversation indicates when the called party answered a call in terms of months, days, hours, minutes and seconds.

Called party answered time is actually entered 18-24 seconds after the last digit is dialed, assuming no answer signal is given from the Central Office.

TIME OF CALL COMPLETION:
The Time of Call Completion indicates when the station is disconnected or a call is transferred in terms of months, days, hours, minutes and seconds.

NO INFORMATION

TENANT NUMBER:
Tenant number set similar to Character No. 010-011.
Tenant number of hundreds indication is fixed to "0".

CONTINUED ON
NEXT PAGE

| Character | | |
|---|---|---|
| 051 | CONDITION CODE-1 | |
| 052 | CONDITION CODE-2 | |
| 053 | CONDITION CODE-3 | |
| 054 | SPACE | |
| : | : | * |
| 059 | SPACE | |
| 060 | CALLED TENANT No.-TENS | |
| 061 | CALLED TENANT No.-UNITS | |
| 062 | CALLED NUMBER 1 | |
| 063 | CALLED NUMBER 2 | |
| 064 | CALLED NUMBER 3 | |
| 065 | CALLED NUMBER 4 | |
| 066 | CALLED NUMBER 5 | |
| 067 | CALLED NUMBER 6 | |
| 068 | CALLED TENANT No.-HUNDREDS | |
| 069 | CALLED TENANT No.-TENS | |
| 070 | CALLED TENANT No.-UNITS | |
| 071 | SPACE | |
| : | : | * |
| 091 | SPACE | |
| 092 | 0 | |
| : | : | |
| 095 | 0 | |
| 096 | SPACE | |
| : | : | * |
| 113 | SPACE | |
| 114 | YEAR -TENS | |
| 115 | YEAR -UNITS | |
| 116 | YEAR -TENS | |
| 117 | YEAR -UNITS | |
| 118 | SPACE | |
| : | : | * |
| 128 | SPACE | |

CONTINUED ON
NEXT PAGE

CONDITION CODE:
The Condition Code consists of three characters, indicating the type of methods used for setting up a call. Individual characters indicate the following information.

- Condition Code-1 (Character 051)
  0=Call has not been transferred
  1=Call has been transferred

- Condition Code-2 (Character 052)
  This indication is fixed to "0"

- Condition Code-3 (Character 053)
  This indication is fixed to "0"

CALLED TENANT NUMBER:
Tenant Number 00-63
Tenant Number set by CM12 Y=04

CALLED NUMBER:
Station Number

The spaces will follow the Station Number. When Station Number is 7 digits or more, last 6 digits are input.

CALLED TENANT NUMBER:
Tenant number set similar to Character No. 060-061.
Tenant number of hundreds indication is fixed to "0".

0: This indication is fixed to "0".

YEAR OF START CONVERSATION
The Year of Start Conversation indicates spaces if the incoming call is abandoned.

YEAR OF CALL COMPLETION

*: NO INFORMATION

| Character | | |
|---|---|---|
| 129 | A | |
| 130 | 0 | |
| 131 | SPACE | |
| 132 | : | |
| 133 | : | |
| : | : | |
| : | : | |
| 161 | : | |
| 162 | SPACE | |
| 163 | Z | |
| | ETX | |

DATA IDENTIFICATION:
Indication of data identification
This indication is fixed to "A".

ANI INFORMATION OUTPUT IDENTIFICATION:
Indication of ANI information output identification
0=No ANI information is output
(ANI information field are all space)
This indication is fixed to "0".

NO INFORMATION

END OF BILLING INFORMATION:
Indication of end of billing information

END OF TEXT: Indication of end of text

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# *MCI SPECIFICATIONS*

**Chapter**

**2**

This chapter explains the line control characteristics of the Message Center Interface (MCI) and the data transmission protocol.

# LINE CONTROL CHARACTERISTICS

For MCI (Message Center Interface) with CPU on RS-232C, the data link hardware consists of an RS-232C serial interface to the PBX.

### Line Control Characteristics

| ITEM | DESCRIPTION |
|---|---|
| Data Rate | 1200, 2400, 4800, 9600 bps asynchronous, software selectable |
| Operating Mode | Full 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 VMS (without modem)<br>**NOTE:** *When modems are used, full duplex asynchronous type modems are required.* |
| Word Framing | 10 bit (1 start, 7 data, 2 stop) |
| Parity VRC* | No parity |
| Frame Contents | US ASCII 7-bit codes |
| Protocol | Free Wheel |
| Error control | None |
| Control | Contention |
| Priority Sequence | Primary station: PBX<br>Secondary station: VMS |

*: Vertical Redundancy Check

# DATA TRANSMISSION PROTOCOL

The table below shows the transmission control codes used for the data exchange between the PBX and the VMS.

**MCI Data Transmission Protocol**

| CODE | HEXADECIMAL VALUE | DESCRIPTION |
|------|-------------------|-------------|
| SA | 31 | System Address: ASCII code $31_{16}$ (digit "1") |
| UA | 21 | Unit Address: ASCII code $21_{16}$ (exclamation point "!") |
| STX | 02 | Indication of the start of message text |
| ETX | 03 | Indication of the end of message text |
| EI | 4A | Entry Index. Describes the type of message sent |

## General Message Format

The figure below shows the MCI general message format.

**MCI General Message Format**

| STX | SA | UA | EI | Message text | ETX |
|-----|-----|-----|-----|-----|-----|

Key: STX  Start of Text
     SA    System Address
     UA    Unit Address
     EI    Entry Index
     ETX  End of Text

# Connecting Pattern Message Format (PBX to VMS)

This message format is used to identify the connecting pattern for Message Waiting control.

The data is sent to a VMS when terminating a call to the VMS.

The following figures show the maximum six-digit station number of message format (CM08>708: 0) and the maximum eight-digit station number of message format (CM08>708: 1).

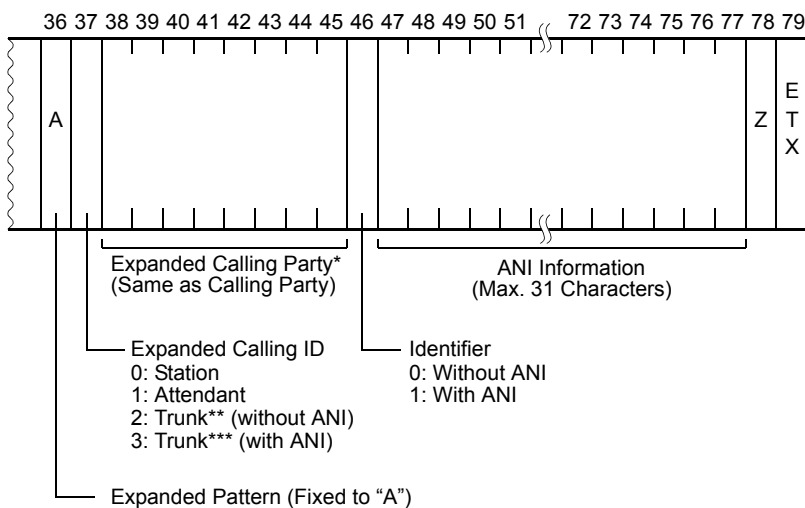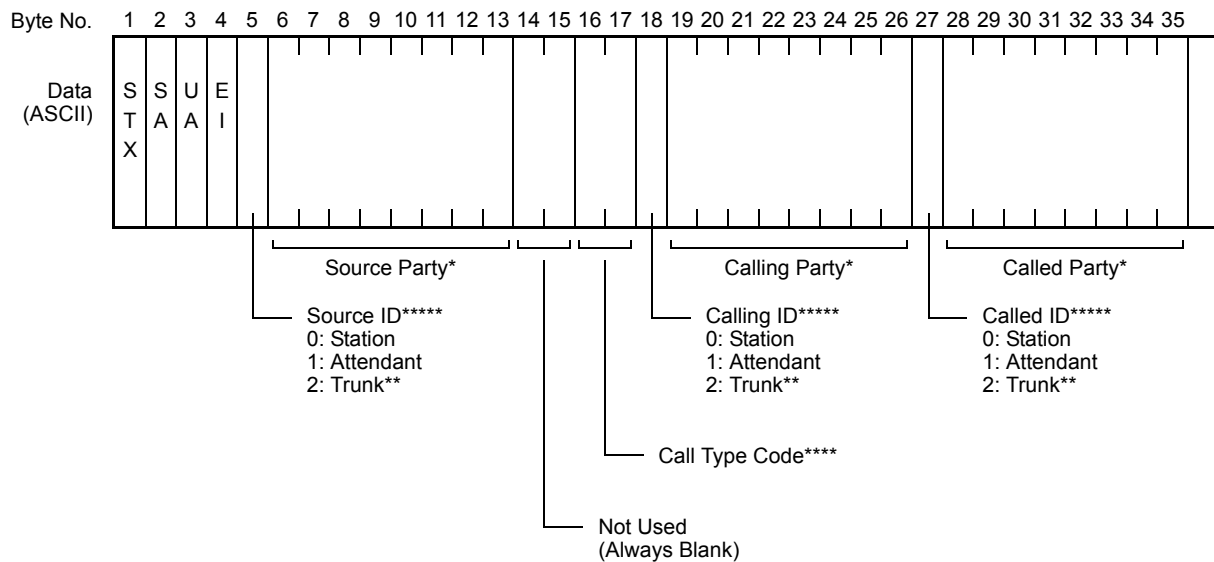## Connecting Pattern Message Format (PBX to VMS) For Six-Digit Number
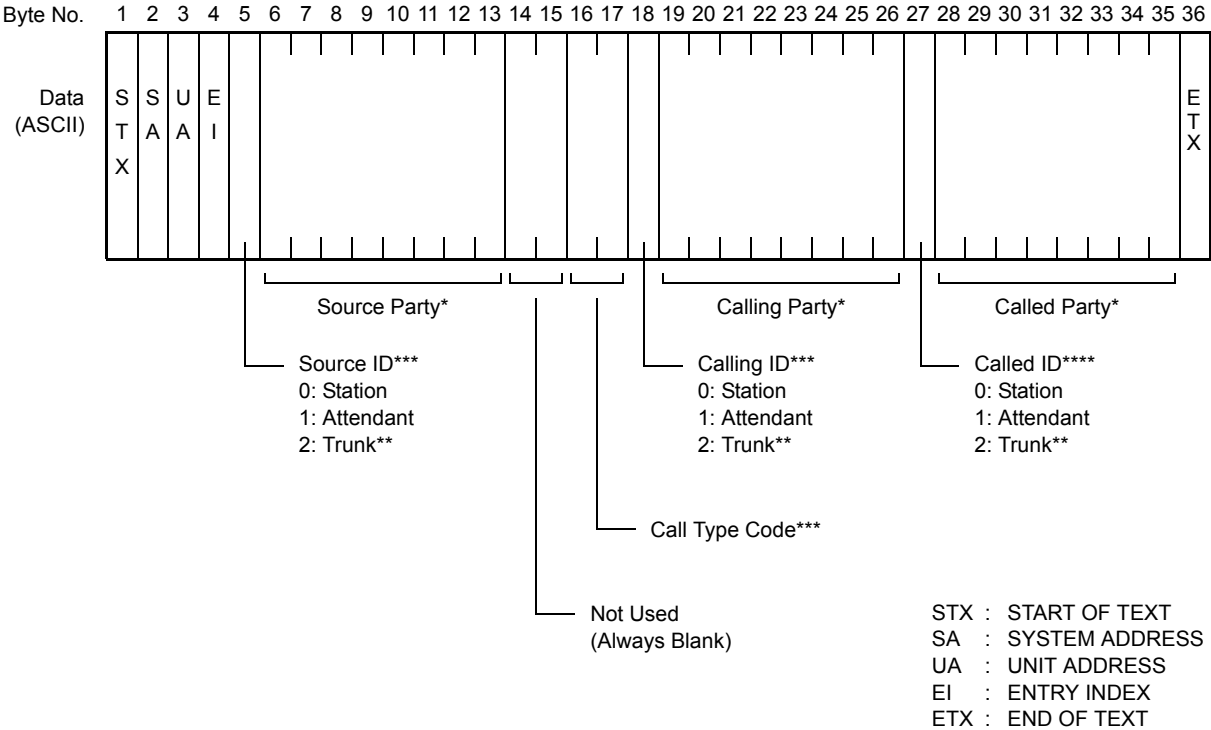
- Format without ANI



* This contains the station number, trunk number, or attendant number. The information in this field is left-justified.
** Trunk can be COT, DIOP.
*** See "Call Type Code".
**** See "Example of Source ID/Calling ID/Called ID/Expanded Calling ID For Six-Digit Number".

## Connecting Pattern Message Format (PBX to VMS) For Six-Digit Number

- Format with ANI



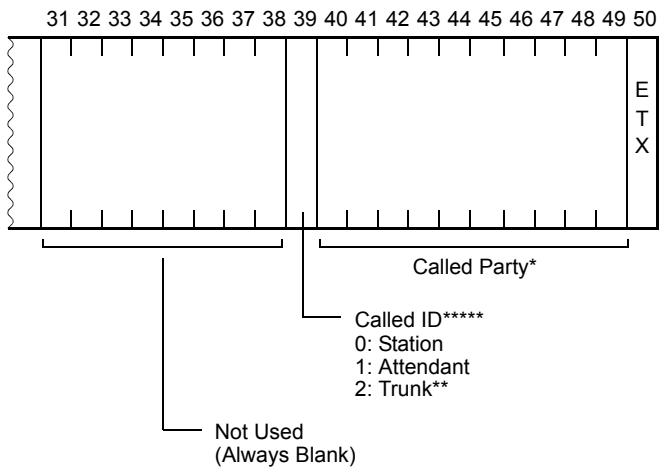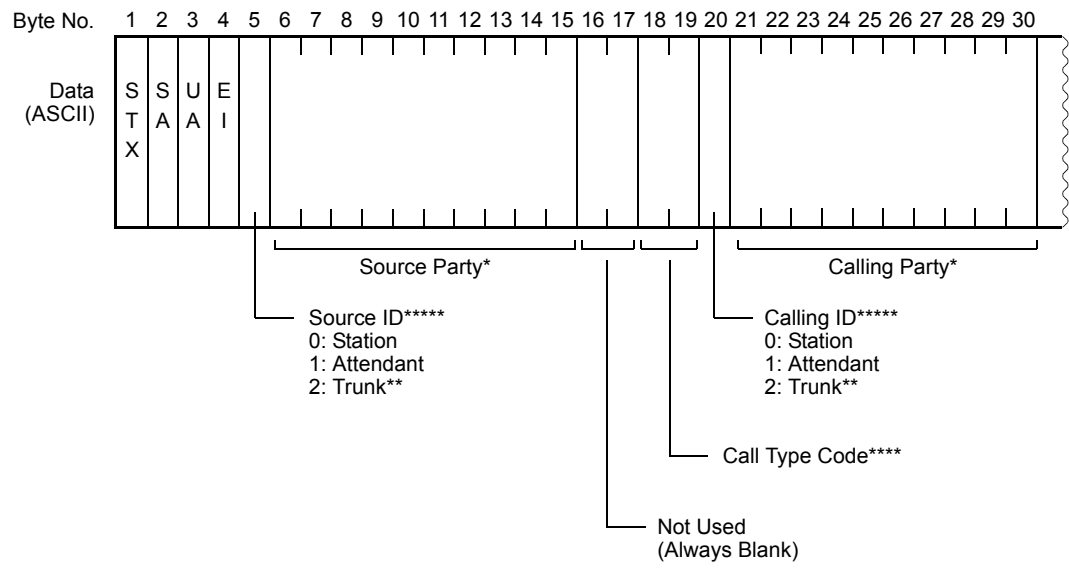*       This contains the station number, trunk number, or attendant number. The information in this field is left-justified.
**      Trunk can be COT, DIOP.
***     Trunk can be ISDN, MFC, Caller ID.
****    See "Call Type Code".  ☞ See *Page 2-8*
*****   See "Example of Source ID/Calling ID/Called ID/Expanded Calling ID For Six-Digit Number".  ☞ *Page 2-9*

Continued on next page

## Connecting Pattern Message Format (PBX to VMS) For Eight-Digit Number

• Format without ANI

Byte No.   1  2  3  4  5  6  7  8  9  10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

Data (ASCII)

| S T X | S A | U A | E I | | | | | | | | | | | | | | | | | | | | | | | | | | |

Source Party*

Calling Party*

Source ID*****
0: Station
1: Attendant
2: Trunk**

Calling ID*****
0: Station
1: Attendant
2: Trunk**

Call Type Code****

Not Used
(Always Blank)

31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

| | | | | | | | | | | | | | | | | | | E T X |

Called Party*

Called ID*****
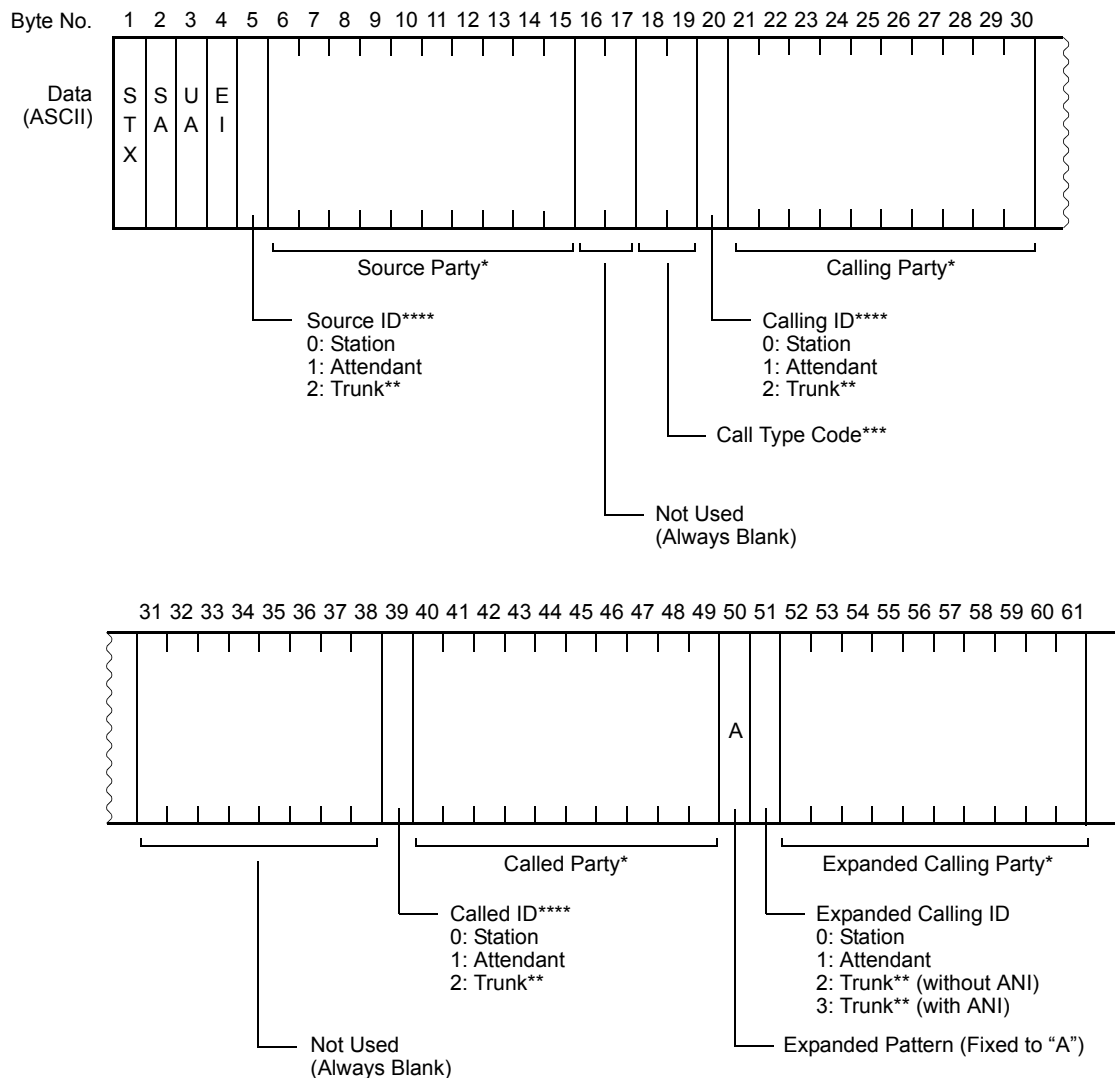0: Station
1: Attendant
2: Trunk**

Not Used
(Always Blank)

STX : START OF TEXT
SA : SYSTEM ADDRESS
UA : UNIT ADDRESS
EI : ENTRY INDEX
ETX : END OF TEXT

*     This contains the station number, trunk number, or attendant number. The information in this field is left-justified.
**    Trunk can be COT, DIOP.
***   See "Call Type Code".  ☞ *Page 2-8*
****  See "Example of Source ID/Calling ID/Called ID/Expanded Calling ID For Eight-Digit Number".  ☞ *Page 2-10*

Continued on next page

## Connecting Pattern Message Format (PBX to VMS) For Eight-Digit Number

- Format with ANI



```
Byte No.   1  2  3  4  5  6  7  8  9  10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

Data      S  S  U  E
(ASCII)   T  A  A  I
          X
```

Source Party*

Source ID****
0: Station
1: Attendant
2: Trunk**

Call Type Code***

Not Used
(Always Blank)

Calling Party*

Calling ID****
0: Station
1: Attendant
2: Trunk**

```
           31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61

                                                                   A
```

Called Party*

Called ID****
0: Station
1: Attendant
2: Trunk**

Not Used
(Always Blank)

Expanded Calling Party*

Expanded Calling ID
0: Station
1: Attendant
2: Trunk** (without ANI)
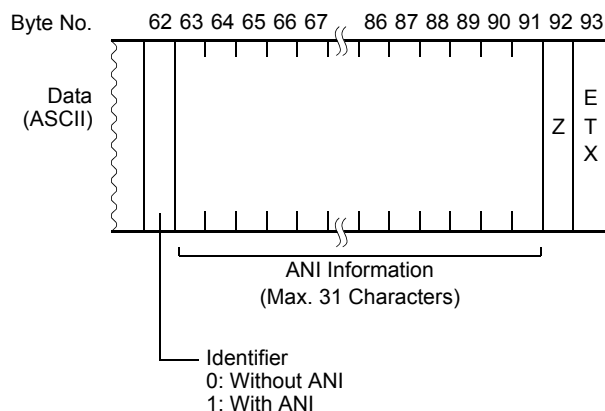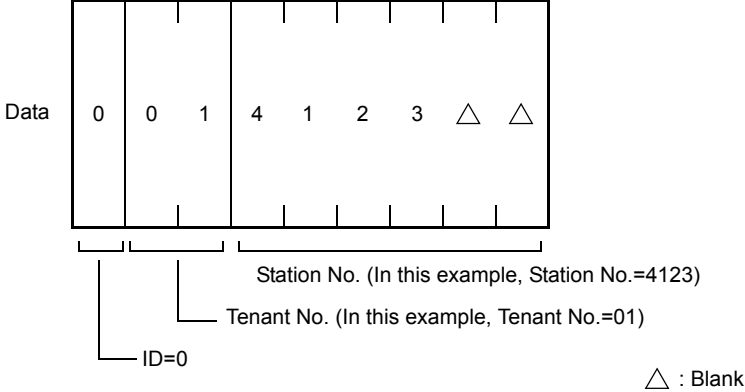3: Trunk** (with ANI)

Expanded Pattern (Fixed to "A")

STX : START OF TEXT
SA  : SYSTEM ADDRESS
UA  : UNIT ADDRESS
EI  : ENTRY INDEX

\*    This contains the station number, trunk number, or attendant number. The information in this field is left-justified.

\*\*   Trunk can be COT, DIOP.

\*\*\*  See "Call Type Code".  ☞ *Page 2-8*

\*\*\*\* See "Example of Source ID/Calling ID/Called ID/Expanded Calling ID For Eight-Digit Number".  ☞ *Page 2-10*

## Connecting Pattern Message Format (PBX to VMS) For Eight-Digit Number

• Format with ANI



Z    : END OF BILLING INFORMATION
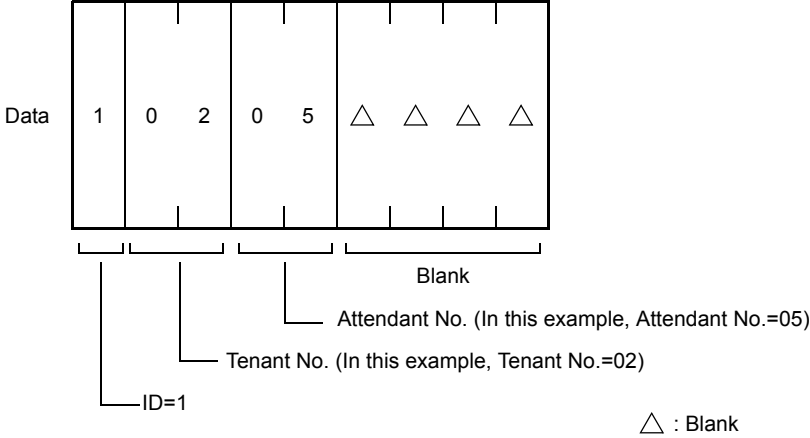ETX :  END OF TEXT

## Call Type Code

| CALL TYPE CODE | CALL TYPE | SOURCE PARTY | CALLING PARTY | CALLED PARTY |
|---|---|---|---|---|
| 39 | Stop Message Waiting Data Sending | — | — | — |
| 40 | Call Forwarding-Don't Answer (No Answer) | Station | Station/Trunk | Station |
| 41 | Call Forwarding-Busy Line | Station | Station/Trunk | Station |
| 42 | Call Forwarding-All Calls | Station | Station/Trunk | Station |
| 43 | Station/Trunk | Station | Station/Trunk | UCD Pilot |
| 44 | Station/Trunk via Attendant | Station | Station/Trunk | Attendant |
| 45 | Station/Trunk transferred to UCD Pilot Station | Station | Station/Trunk | Station |
| 66 | Start Message Waiting Data Sending | — | — | — |

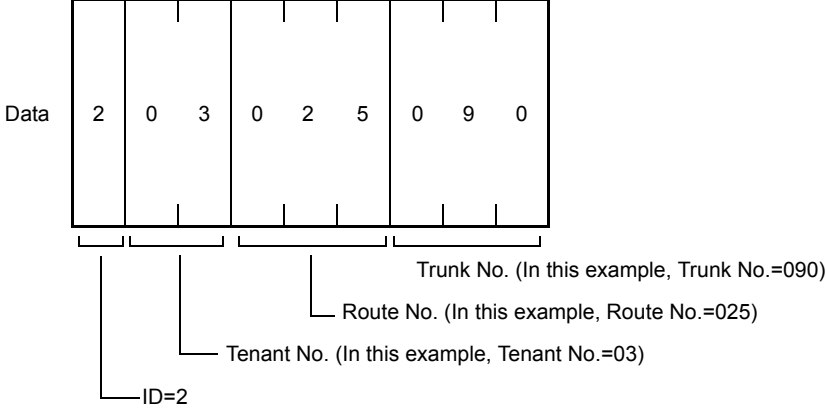## Example of Source ID/Calling ID/Called ID/Expanded Calling ID
## For Six-Digit Number

• Source ID/Calling ID/Called ID/Expanded Calling ID: Station

Data | 0 | 0 | 1 | 4 | 1 | 2 | 3 | △ | △

Station No. (In this example, Station No.=4123)

Tenant No. (In this example, Tenant No.=01)

ID=0

△ : Blank

• Source ID/Calling ID/Called ID/Expanded Calling ID: Attendant

Data | 1 | 0 | 2 | 0 | 5 | △ | △ | △ | △

Blank

Attendant No. (In this example, Attendant No.=05)

Tenant No. (In this example, Tenant No.=02)

ID=1

△ : Blank

• Source ID/Calling ID/Called ID/Expanded Calling ID: Trunk

Data | 2 | 0 | 3 | 0 | 2 | 5 | 0 | 9 | 0

Trunk No. (In this example, Trunk No.=090)

Route No. (In this example, Route No.=025)

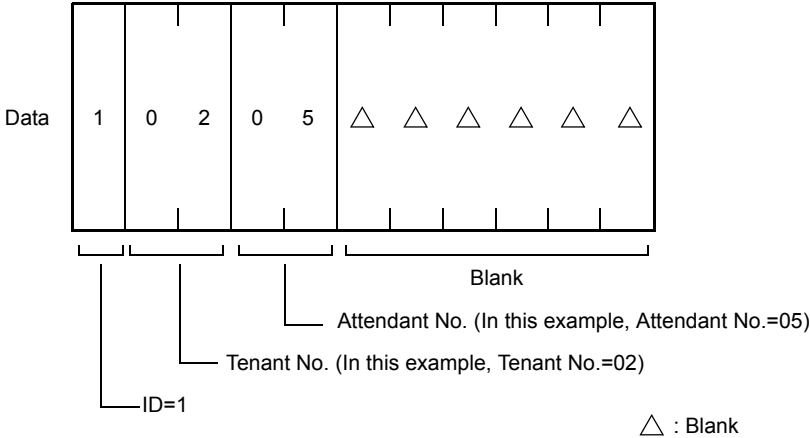Tenant No. (In this example, Tenant No.=03)

ID=2

# Example of Source ID/Calling ID/Called ID/Expanded Calling ID
## For Eight-Digit Number

- Source ID/Calling ID/Called ID/Expanded Calling ID: Station

Data | 0 | 0 | 1 | 4 | 1 | 2 | 3 | △ | △ | △ | △

Station No. (In this example, Station No.=4123)
Tenant No. (In this example, Tenant No.=01)
ID=0

△ : Blank

- Source ID/Calling ID/Called ID/Expanded Calling ID: Attendant

Data | 1 | 0 | 2 | 0 | 5 | △ | △ | △ | △ | △ | △

Blank
Attendant No. (In this example, Attendant No.=05)
Tenant No. (In this example, Tenant No.=02)
ID=1

△ : Blank

- Source ID/Calling ID/Called ID/Expanded Calling ID: Trunk

Data | 2 | 0 | 3 | 0 | 2 | 5 | 0 | 9 | 0 | △ | △

Trunk No. (In this example, Trunk No.=090)
Route No. (In this example, Route No.=025)
Tenant No. (In this example, Tenant No.=03)
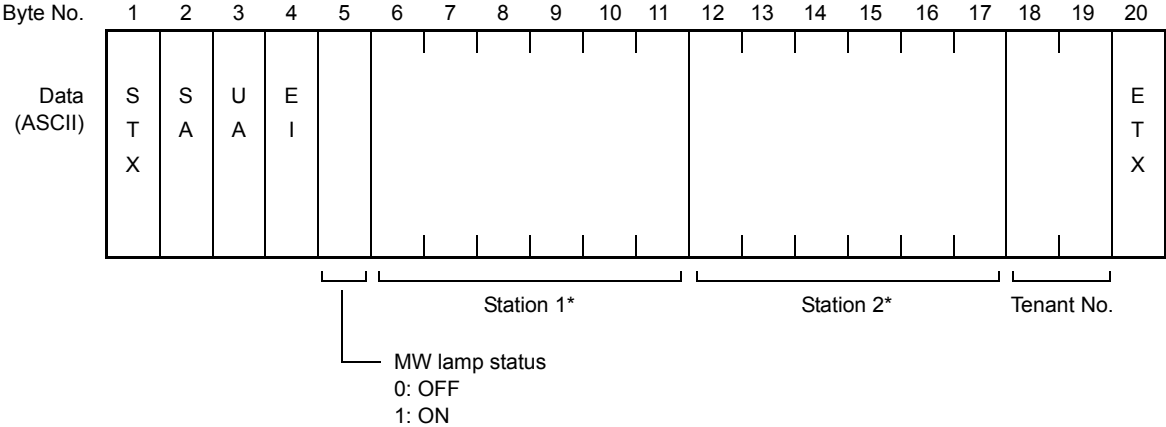ID=2
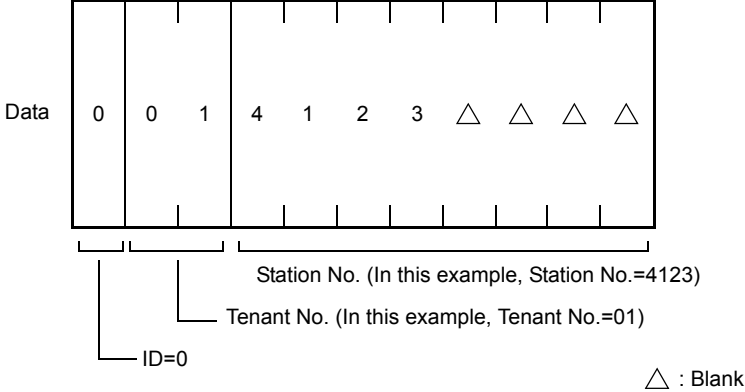
△ : Blank
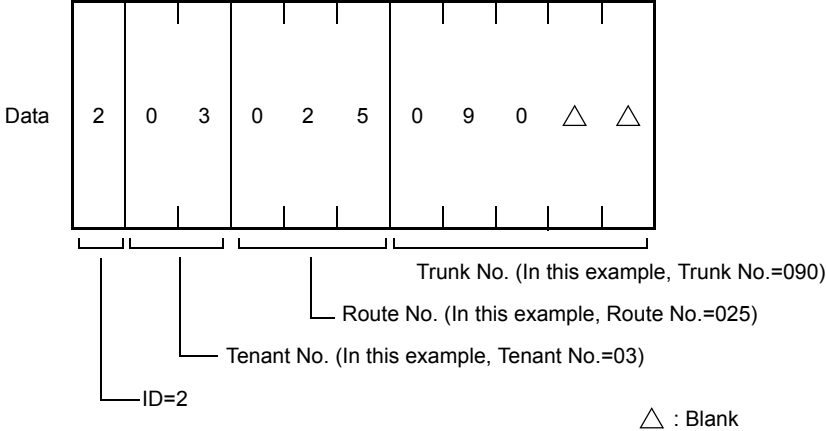
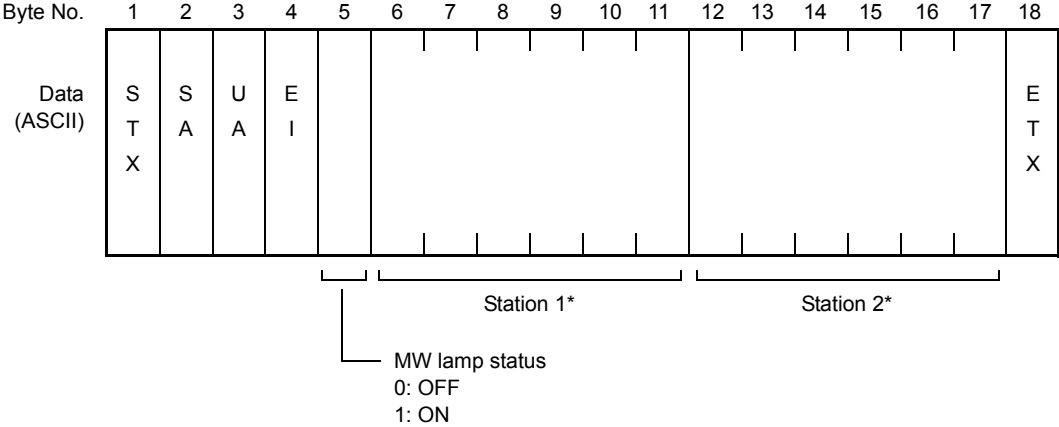## Message Waiting Control Message Format (VMS to PBX)

This message format is used to control Message Waiting lamp on a called station from a VMS.
The data is sent to the PBX from VMS in the format shown below.

### Message Waiting Lamp Control Message Format (VMS to PBX)
### For Six-Digit Number

• When using Tenant No.:

| Byte No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Data (ASCII) | STX | SA | UA | EI | | | | | | | | | | | | | | | | ETX |

Station 1* (bytes 6–11)    Station 2* (bytes 12–17)    Tenant No. (bytes 18–19)

MW lamp status (byte 5)
0: OFF
1: ON

• When not using Tenant No.:

| Byte No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Data (ASCII) | STX | SA | UA | EI | | | | | | | | | | | | | | ETX |

Station 1* (bytes 6–11)    Station 2* (bytes 12–17)

MW lamp status (byte 5)
0: OFF
1: ON

\* For details on Station 1 and Station 2, see "Message Waiting Lamp Control Information".

## Message Waiting Lamp Control Message Format (VMS to PBX)
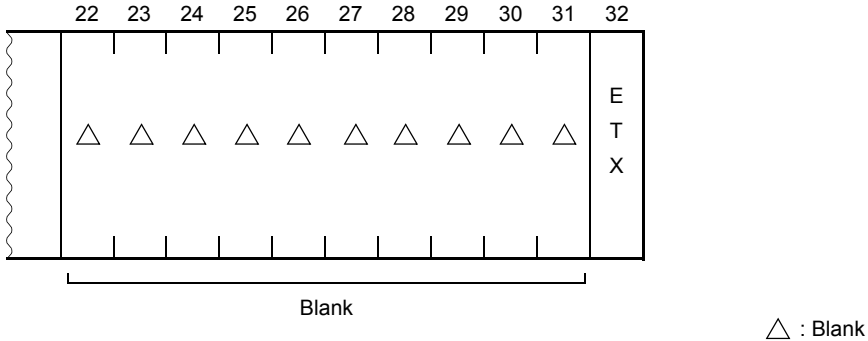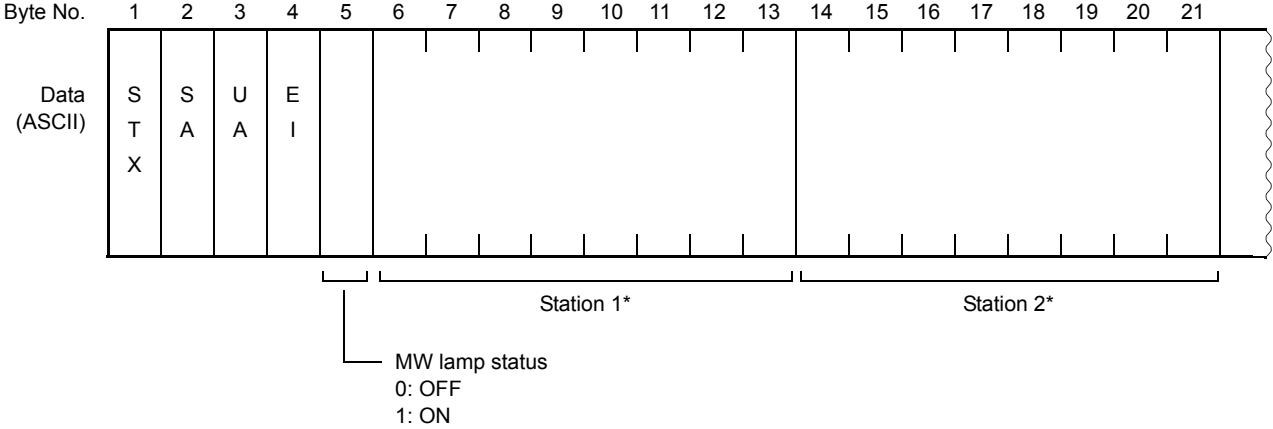## For Eight-Digit Number

• When using Tenant No.:
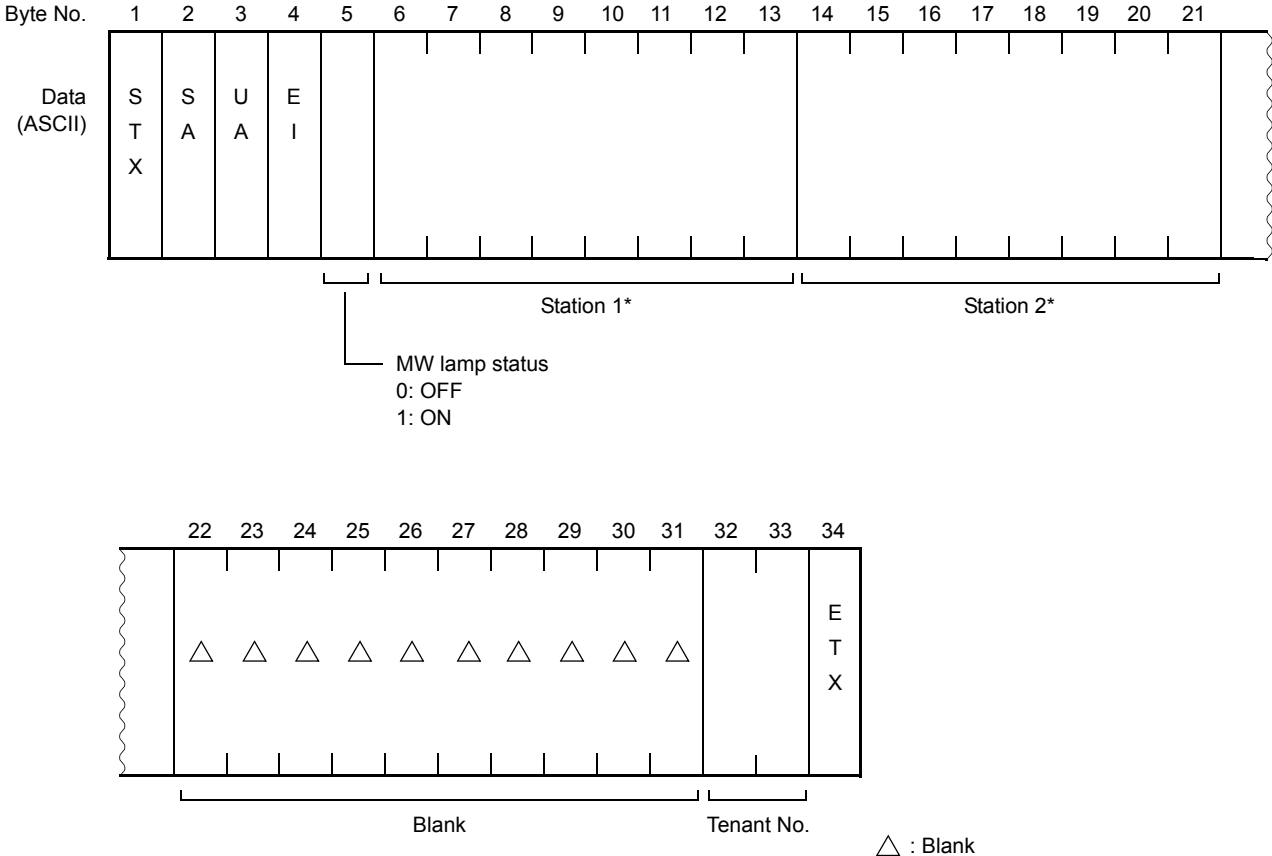


* For details on Station 1 and Station 2, see "Message Waiting Lamp Control Information".
 *Page 2-14*

Continued on next page

## Message Waiting Lamp Control Message Format (VMS to PBX)
## For Eight-Digit Number

• When not using Tenant No.:



MW lamp status
0: OFF
1: ON

Station 1*  Station 2*

△ : Blank

Blank

\* For details on Station 1 and Station 2, see "Message Waiting Lamp Control Information".
 *Page 2-14*

## Message Waiting Lamp Control Information

| CONDITION | STATION 1 DATA | STATION 2 DATA | DESCRIPTION |
|---|---|---|---|
| 1 | Station No. | Blank | Station/MW On/Off |
| 2 | Station No. | Station No. | No control |
| 3 | Blank | Blank | All stations MW On/Off |

## MCI Stop Message Format (PBX to VMS)

This message format is used to stop receiving a Message Waiting lamp control data from a VMS temporarily.

The data is sent to the VMS in the format shown below when Message Waiting lamp is set or cancelled for all stations in the system.

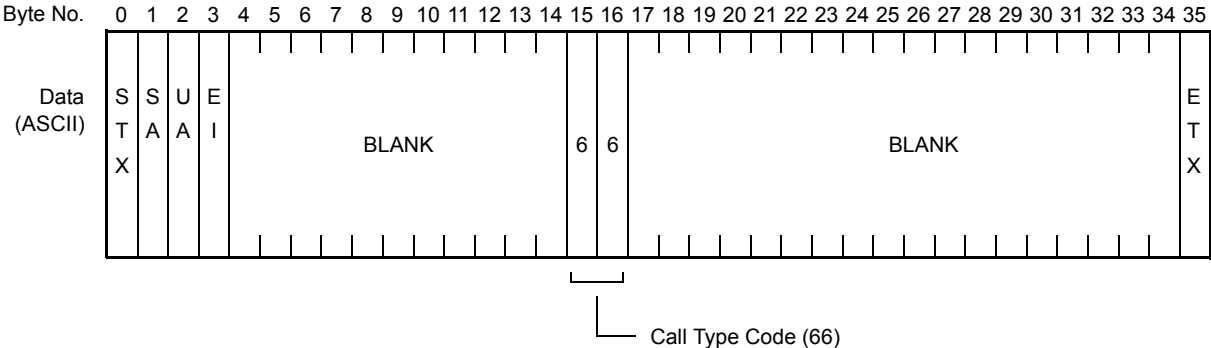### MCI Stop Message Format (PBX to VMS) For Six/Eight-Digit Number



Call Type Code (39)
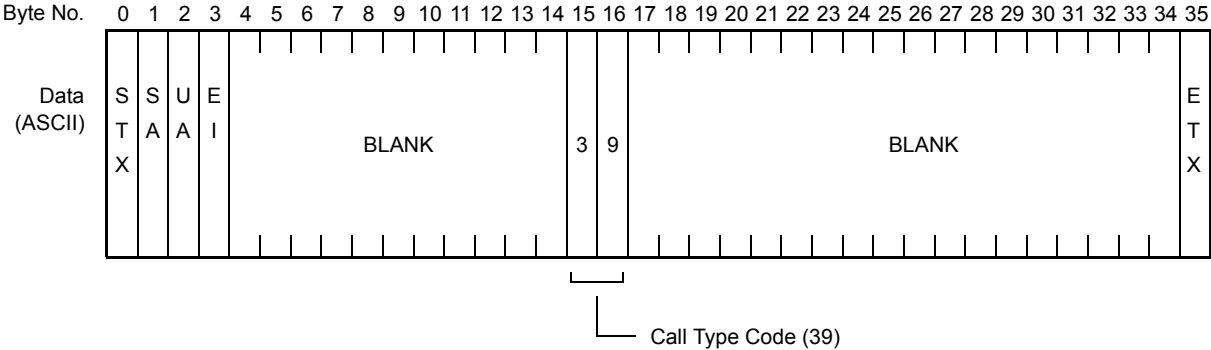
STX : START OF TEXT
SA  : SYSTEM ADDRESS
UA  : UNIT ADDRESS
EI  : ENTRY INDEX
ETX : END OF TEXT

# MCI Restart Message Format (PBX to VMS)

This message format is used to restart receiving a Message Waiting lamp control data from a VMS.
The data is sent to the VMS in the format shown below when the system is initialized or when Message Waiting lamp is set or cancelled for all stations in the system.

## MCI Restart Message Format (PBX to VMS) For Six/Eight-Digit Number

Byte No.  0  1  2  3  4  5  6  7  8  9  10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35

Data (ASCII): | S T X | S A | U A | E I | BLANK | 6 | 6 | BLANK | E T X |

Call Type Code (66)

STX : START OF TEXT
SA  : SYSTEM ADDRESS
UA  : UNIT ADDRESS
EI  : ENTRY INDEX
ETX : END OF TEXT

# *PMS INTERFACE SPECIFICATIONS*

**Chapter**

**3**

This chapter explains the line control characteristics of the Property Message System (PMS) interface and the data transmission protocol.

# LINE CONTROL CHARACTERISTICS

For Built-in PMS on IP, the data link hardware consists of an Ethernet interface to the PBX.

## Line Control Characteristics

| ITEM | DESCRIPTION |
|------|-------------|
| Physical layer | Ethernet |
| Connection layer | The Ethernet packet format complies with the DIX standard |
| TCP/IP core protocol | ARP, IP, ICMP, UDP, and TCP |
| Socket interface | Complies with the 4.3BSD socket interface |
| Transport Protocol | TCP stream-type protocol |
| Application Port No. | 60050 (fixed) |
| Number of Connections | 1 connection |
| Client/Server | Server: PBX <br> Client : PMS |
| Frame Contents | US ASCII 7-bit codes |
| Pseudo Normal Restriction Condition | 1. At connection release <br> 2. Status monitoring text |

# 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:

(1)  Transmission control codes

## Transmission Control Codes

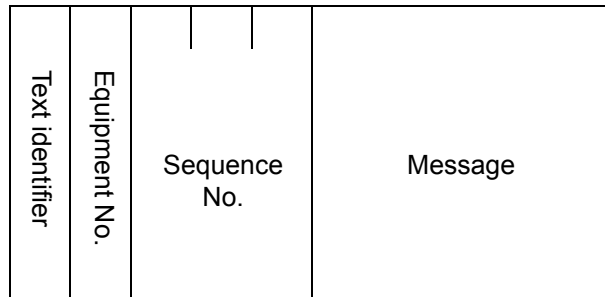| CONTROL CODE | VALUE IN HEX. | FUNCTION |
|---|---|---|
| STX | 02 | Indicates start of text block. |
| ETX | 03 | Indicates end of text block. |

(2)  Restriction conditions

(a)  PMS operates as a client.

(b)  When initializing or switching the PBX, note the following:
- When the PBX is initialized, the connection is cleared. Therefore, PMS performs periodical status monitoring and if there is a connection abnormality, the automatic connection establishment request from PMS is required.
- When the active/standby system of PBX is switched, the established connection is cleared.
- To re-establish the connection, the ARP cache in PMS must be cleared. PBX has two MAC address for each ACT/SBY system in an IP address, therefore without clearing the ARP cache in PMS the connection establishment to the new ACT system is impossible (because PMS will establish the connection to the old ACT system if the cache is not cleared).

(c)  ACK/NAK control is not available.
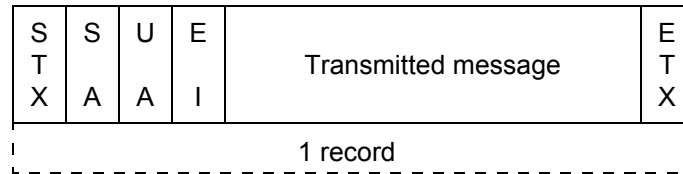
(3)   Message format
The data between PBX and PMS is transmitted/received by the message unit. The message consists
of the text identifier, equipment number and message as shown below:

<1>   Message Header

| Text identifier | Equipment No. | Sequence No. | Message |
|---|---|---|---|

<2>   Message

| S T X | S A | U A | E I | Transmitted message | E T X |
|---|---|---|---|---|---|

1 record

(4)   Basic message composition

**Basic Message Composition**

| ITEM | DATA RANGE NOTE 1 | DEFINITION |
|---|---|---|
| Text identifier | 0 to 9 | Identifies the data to be sent/received.<br>0: Not used<br>1: PBX received message (PMS→PBX)<br>   On receiving this data, PBX sends the result of received data check by "PBX reply message" to PMS within the set time.<br>2: PBX sent message (PBX→PMS)<br>   On receiving this data, PMS sends the result of received data check by "PMS reply message" to PBX within the set time.<br>3: PBX reply message (PBX→PMS)<br>   This data is sent to PMS if PBX receive message or status monitoring message was received at PBX.<br>4: PMS reply message (PMS→PBX)<br>   This data is sent to PBX if PBX sent message was received at PMS.<br>5: Status monitoring message (PMS→PBX)<br>   In case both PMS and PBX do not send process request message, this message is sent from PMS within a minute. On receiving this message PBX performs status monitoring on PMS.<br>6: Connection release message (PMS←→PBX)<br>   This message is sent from PMS/PBX to request connection release. On receiving this message, the received side releases the connection.<br>7 to 9: Not used |
| Equipment No. | 0 to 9<br>or<br>00 to 99<br>(Default) | The equipment number of PMS connected to PBX.<br>Normally fixed to "0". |
| Sequence No.<br>**NOTE 2** | 00 to 99<br>(Default)<br>or<br>000 to 199 | Serial number of the sent data. This number is used to confirm the clearance of the transfer data. Each of PBX and PMS manages individual numbers. |

Continued on next page

## Basic Message Composition

| ITEM | DATA RANGE NOTE 1 | DEFINITION |
|---|---|---|
| Reply No. | 0 to 9 | Performs reply acknowledgement of the data sent and received.<br>0: Normal<br>1: Que registration error<br>2: Received text error (received invalid text)<br>3 to 9: Not used |
| Message | | The messages used in the hotel system. A message is sent in parts, each part equivalent to one record. For details on the messages, refer to Chapter 4.  *Page 4-1* |

**NOTE 1:** *Data range is expressed as a numeric value in ASCII code.*

**NOTE 2:** *Number of digits for sequence number is selectable by system data (CM08>825), and number of digits for equipment number is determined by the sequence number as follows.*

*When the 2nd data of CM08>825 is 0 (3 digits):*

| Text identifier | Equipment No. (0-9) | Sequence No. (000-199) | Message |
|---|---|---|---|

*When the 2nd data of CM08>825 is 1 (2 digits):*

| Text identifier | Equipment No. (00-99) | Sequence No. (00-99) | Message |
|---|---|---|---|

(a)  PBX received message

The message sent to request control from PMS:

| Text identifier (1) | Equipment No. | Sequence No. | Part of message equivalent to 1 record |
|---|---|---|---|

(b)  PBX sent information message

The information message sent to PMS from PBX:

| Text identifier (2) | Equipment No. | Sequence No. | Part of message equivalent to 1 record |
|---|---|---|---|

(c)  PBX reply message

This message notifies to PMS whether or not the received data was normal at PBX on receiving the text identifier (1) or (5).

| Text identifier (3) | Equipment No. | Sequence No. | Reply No. |
|---|---|---|---|

(d)  PMS reply message

This message notifies to PBX whether or not the received data was normal at PMS on receiving the text identifier (2).

| Text identifier (4) | Equipment No. | Sequence No. | Reply No. |
|---|---|---|---|

(e)  Status monitoring message

This message requests the status monitoring of PBX from PMS and vice versa. The status monitoring notification of PMS is performed at the same time. On receiving this message, PBX side sends the "PBX reply message (3)" to the client.

| Text identifier (5) | Equipment No. | Sequence No. | Not used |
|---|---|---|---|

(f)  Connection release message

This message requests connection release from PMS side to PBX side and vice versa. On receiving this message, the received party promptly performs connection release processing.

| Text identifier (6) | Equipment No. | Sequence No. | Not used |
|---|---|---|---|

(5)    Data transmission sequence

(a)   Connection establishment sequence
The sequence of connection establishment request from PMS to PBX is shown below:

PMS                                              PBX

Connection request → Equipment implementation OK

Connection permission ←
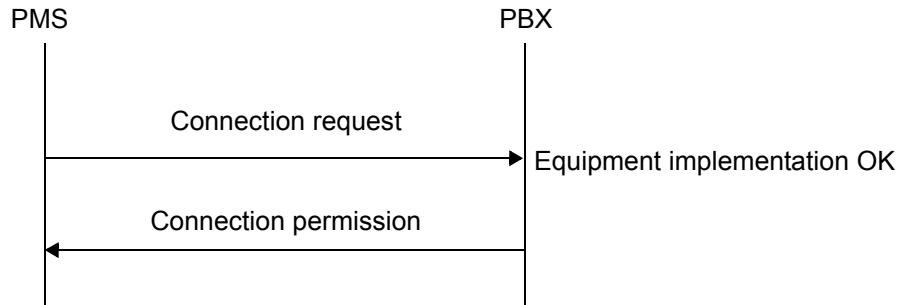
(b)   Normal process sequence for information sending/receiving
The normal sequence in case PBX sends information to PMS is shown below:

PMS                        PBX

← Information

| (2) Text identifier | Equipment No. | Sequence No. | Message |
|---|---|---|---|
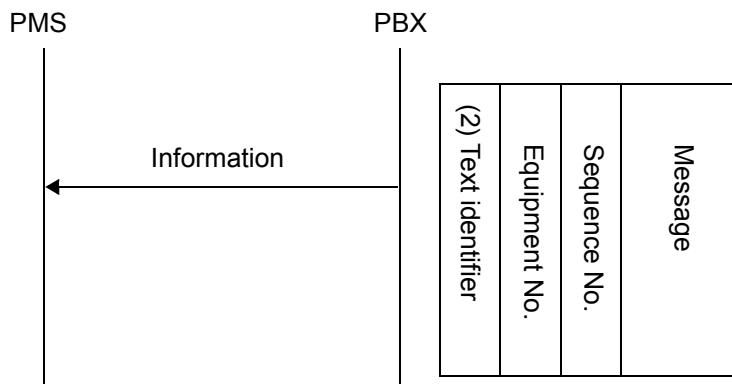
The normal sequence in case PMS sends information to PBX is shown below:

PMS                        PBX

| (1) Text identifier | Equipment No. | Sequence No. | Message |
|---|---|---|---|

Information →
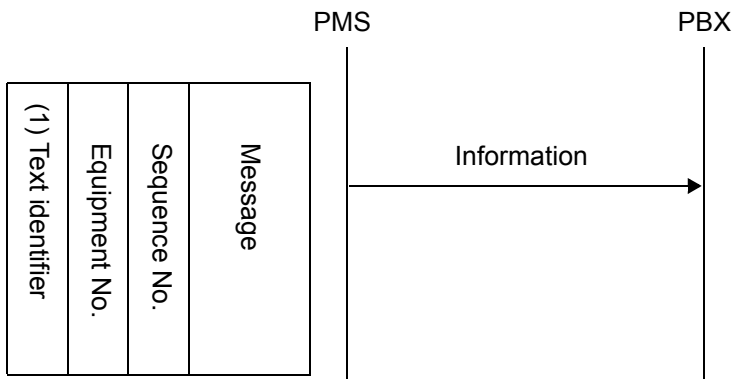
(c)  Sequence concerning connection release
The connection release sequence on request from PMS side is shown below:

PMS                                    PBX

Connection release request

(3) Text identifier | Equipment No. | Sequence No.
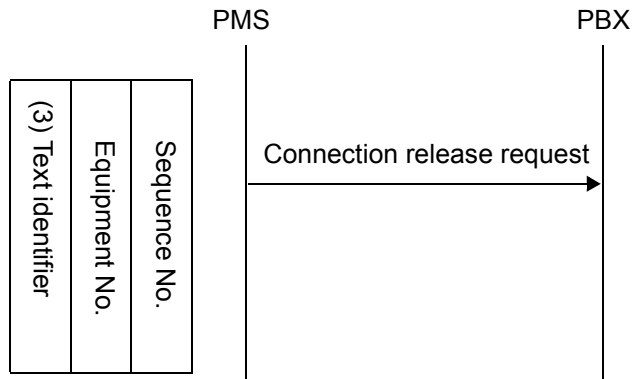
(d)  Connection sequence when PBX system is switched

The connection sequence on request from PMS side is shown below:
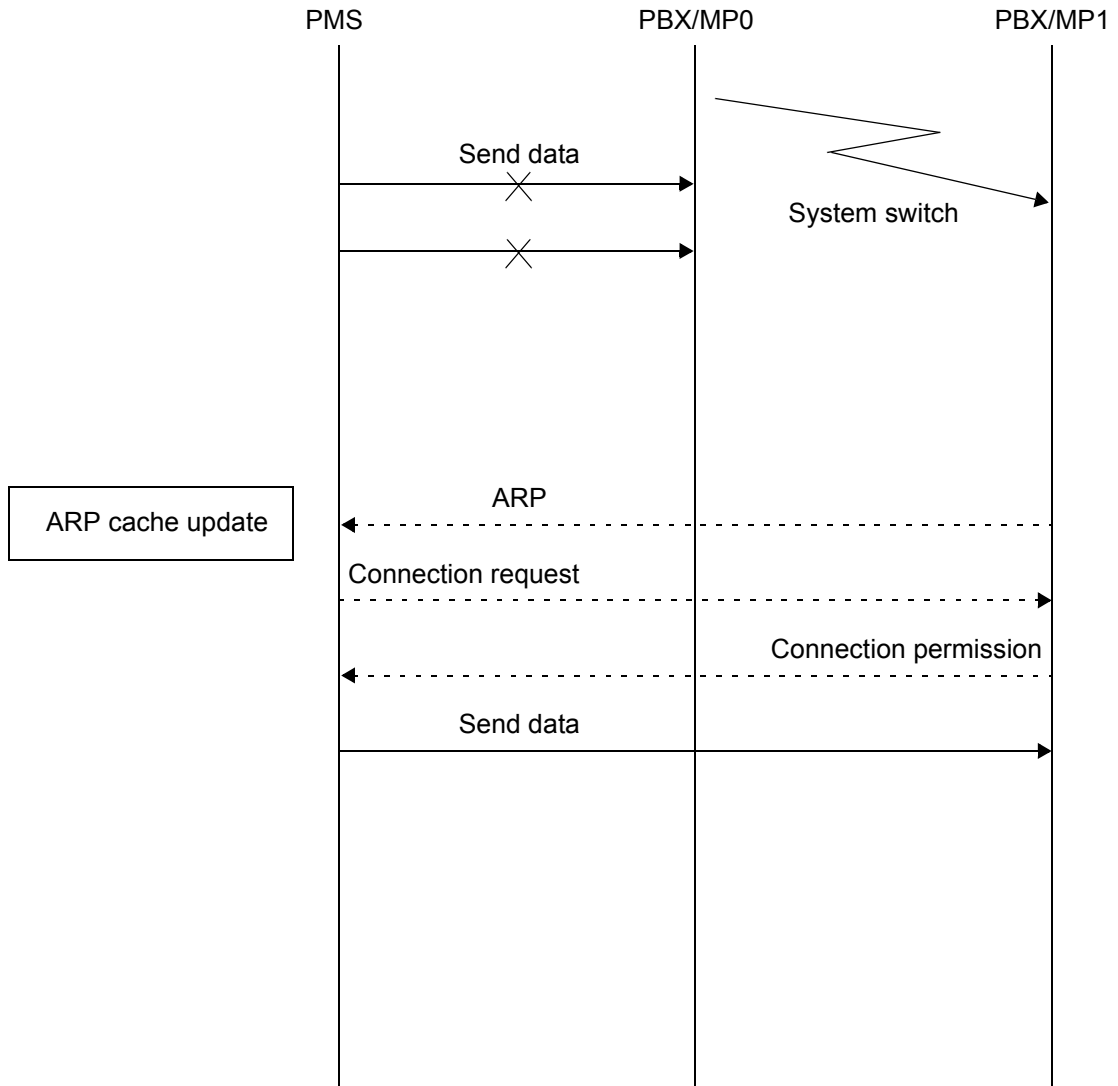
(e)   Sequence when PBX system is reset

PMS                    PBX

reset

| (1)Text identifier | Equipment No. | Sequence No. | NOP test |
|---|---|---|---|

**NOTE**

Send data ──────────▶ ✕

| (1)Text identifier | Equipment No. | Sequence No. | NOP test |
|---|---|---|---|

**NOTE**

Send data ──────────▶ ✕

| (1)Text identifier | Equipment No. | Sequence No. | NOP test |
|---|---|---|---|

**NOTE**

Send data ──────────▶ ✕

Discard ARP cache

Connection request ─ ─ ─ ─ ─▶

Equipment implementation OK

Connection permission ◀─ ─ ─ ─ ─
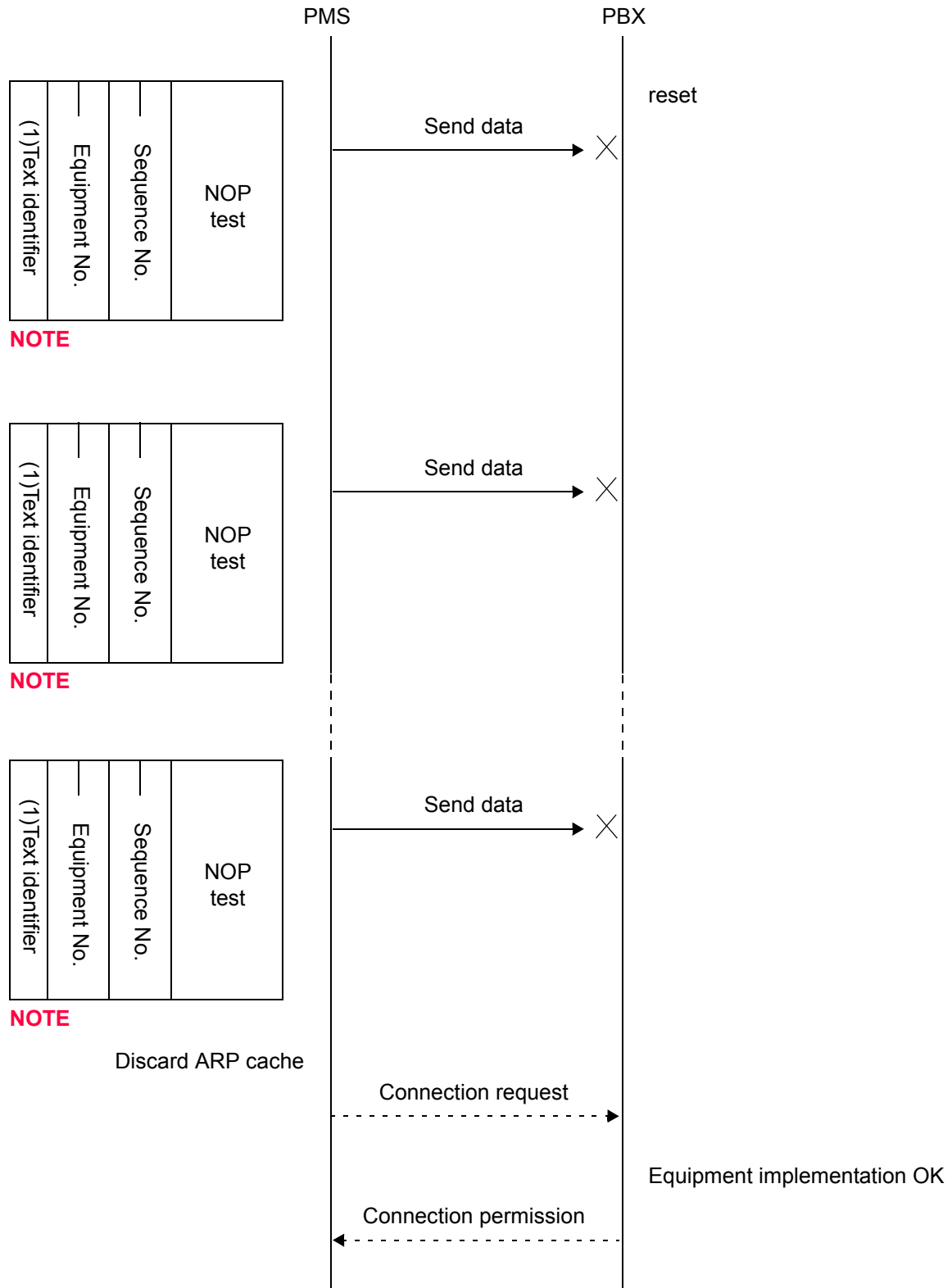
**NOTE:**   *NOP test is a hotel service to monitor the line status.*

## Message Text Format

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

| S T X | Message text | E T X | B C C |
|---|---|---|---|

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 message text format is as shown below.

## PMS Message Text Format

| Byte | | |
|---|---|---|
| 0 | STX | |
| 1 | SA | |
| 2 | UA | |
| 3 | Entry Index | |
| 4 | Feature | |
| 5 | Code | |
| 6 | Message | |
| 7 | Counter | |
| 8 | Function Code | |
| 9 | Message Data | |
| N-2 | | |
| N-1 | ETX | |
| N | BCC | |

LRC Coverage Area

Message Count Coverage Area
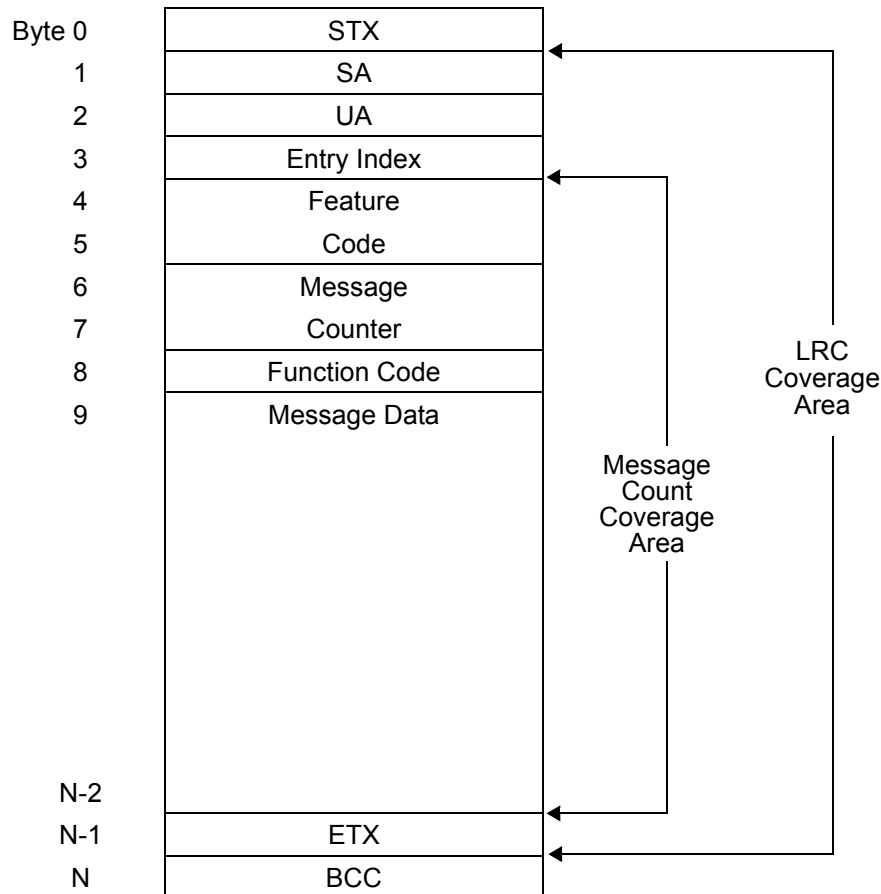
• Entry Index
This character specifies which of the transmitted messages the PBX supplies. For the PMS interface, the ASCII code "L" is always used.

• 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 is 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 Feature Codes and Violation Codes on next page are used:

## Feature Code and Violation Code

| 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 | Restriction Control |
| 16 | 96 | Check In/Out |
| 17 | 97 | Room Data Image |
| 19 | 99 | Wake Up |
| 20 | A0 | Room Change/Room Swap/Room Copy |
| 50 | D0 | Data Connection Maintenance |
| 53 | D3 | Message Waiting |
| 54 | D4 | Station Message Detail |
| 56 | D6 | Check In/Check Out/Room Change |
| 57 | D7 | Room Recovery |
| 59 | D9 | Direct Data Entry |
| 61 | E1 | Room Data Change |
| 62 | E2 | Hotel/Motel DID Number Allocation to Guest Station |
| 65 | E5 | Option |
| 70 | F0 | Status Inquiry |

- 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 discards the data and sends the Violation Code corresponding to the received Feature Code.

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

- 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 $30_H$ through $39_H$).

The available message data is as follows.

## Message Data

| MESSAGE DATA |
|---|
| Room Station Number (RSN) |
| Maid Identification Number |
| Message Waiting Status |
| Route Number and Trunk Number |
| Called Subscriber Number |
| Call Start Time and Call End Time |
| Account Code |
| Condition B0, B1, and B2 |
| Number of Call Metering Pulse/Bill (Call Metering) |
| Restriction Level |
| Language |
| Guest Name |
| Room Status and Cleaning Status |
| VIP Category |

## Message Data

| MESSAGE DATA |
| --- |
| Optional Data A and B |
| Wake Up Result |
| Wake Up Time |
| Administration/Guest Status |
| Wake Up Set |
| Numeric Input |
| Name Information |

- Room Station Number (RSN)
  This data consists of six digits for the Built-in PMS on IP, indicating the room number related to the Feature Code and Function Code. If the Room Station Number is less than six digits, spaces are entered in the remaining fields. For example of the PMS on IP, 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 three spaces.

- Maid Identification Number
  Maid Identification Number is used to identify the calling party in the Maid Status service, and also when PMS manages the start and end of cleaning.
  This number consists of two digits. The numbers in the bytes range from "00" to "99".

- Message Waiting Status
  This data consists of one digit: "0" for Off, and "1" to "F" for On.

- Route Number and Trunk Number
  These data each consist of three 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 data consists of 32 digits for the Built-in PMS on IP, including the C.O. access code. If the number is less than 32 digits, spaces are entered in the remaining fields just like the Room Station Number.

- Call Start-Time and Call End-Time
  This data consists of ten characters indicating the month, day, hour, minute and second as follows:

(Example)

| 1 | 2 | 3 | 1 | 0 | 7 | 0 | 1 | 0 | 9 |
|---|---|---|---|---|---|---|---|---|---|

Month | Day | Hour | Minute | Second
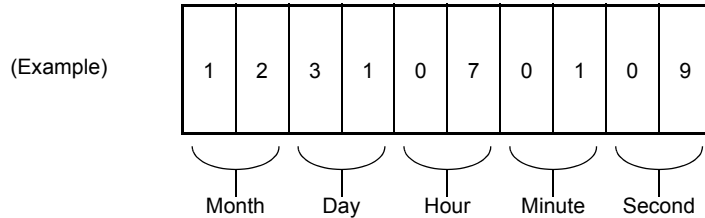
(24-hour format)

Call Start Time: December 31, 7:01:09 A.M. (7 hours, 1 minute, 9 seconds)

- Account Code
  This data consists of ten digits. This data is used for a cost accounting or client billing.

- Condition B0, B1, and B2
  This data consists of one character indicating the following dialed call connection status:

| CODE | | MEANING |
|---|---|---|
| Condition B0 | 0 | Ordinally originated call |
| | 1 | Transferred call |
| Condition B1 | 0 | A call without Account Code |
| | 2 | Accounted code has been entered |
| Condition B2 | 0 | Station originated call |
| | 1 | Attendant assisted call |

- Number of Call Metering Pulse/Bill (Call Metering)
  The number of call metering pulses consists of 8 digits. Normally, "0" is set in this field. When the number of call metering pulses is less than 8 digits, set "0" in the higher level digit. For example, when the number of call metering pulses is 83, set as "00000083":

- Restriction Level

This data consists of one digit, indicating the restriction status of the room station number:

| RESTRICTION LEVEL | MEANING |
| --- | --- |
| 0 | Cancel Room Cut Off and Do Not Disturb |
| 1 | Set Room Cut Off and cancel Do Not Disturb |
| 2-4 | Not used |
| 5 | Cancel Room Cut Off and set Do Not Disturb |
| 6 | Set Room Cut Off and Do Not Disturb |

- Language

This data consists of one digit indicating one of the following languages:

This data is used for distinguishing between guests from host country and foreign countries, in Guest Room Information Service.

| CODE | MEANING |
| --- | --- |
| 0 | Not specified |
| 1 | Japanese |
| 2 | English |
| 3 | German |
| 4 | French |
| 5 | Spanish |
| 6 | Chinese |
| 7 | Russian |

- Guest Name

This data consists of 16 characters for Built-in PMS on IP. As in the Room Station Number, if the guest name is less than 16 characters, spaces are entered in the remaining fields.

- Room Status and Cleaning Status
The room status is expressed by a following combination of the Room Status and Cleaning Status.

| ROOM STATUS | CLEANING STATUS | MEANING |
|---|---|---|
| 0 | 3 | Vacant (ready to be sold) |
| 1 | 0 | Stay (occupied) |
| 1 | 1 | Stay, cleaning in progress |
| 2 | 0 | Stay, departure day |
| 2 | 1 | Stay, departure day, cleaning in progress |
| 0 | 0 | Out (status after check out) |
| 0 | 1 | Out, cleaning in progress |
| 0 | 2 | Out, cleaning end |
| 0 | 4 | Out of order (not ready to be sold, due to repairs in progress) |

- VIP category
This data consists of one digit indicating whether the guest is a VIP or not.

| CODE | MEANING |
|---|---|
| 0 | The guest is not a VIP |
| 1 | The guest is a VIP |

- Optional Data A and B
Optional Data A and B consist of three characters and five characters respectively. These data are used for information such as VIP rank, language, nationality, complementary code, package code, etc. Each hotel can decide the kinds of data. These data can be displayed on the character displays of Multiline Terminal and the attendant console. For details, refer to Guest Name.

- Wake Up Result

This data consists of one digit indicating the following conditions:

| CODE | MEANING |
|------|---------|
| 1 | Answer |
| 2 | Busy |
| 3 | No answer |
| 4 | Blocked |

- Wake Up Time

This data consists of four digits indicating the Wake Up hour and minute as shown below:

(Example)

| 0 | 8 | 0 | 0 |
|---|---|---|---|

Wake Up time: 8:00 a.m.

Hour    Minute
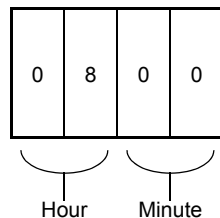
(24-hour format)

- Administration/Guest Status

This data consists of one digit: "0" for Administration, or "1" for Guest.

- Wake Up Set

This data consists of one digit, indicating who set the Wake Up call. (See "PMS OPERATION, Wake Up (Feature code 19)". )

| CODE | MEANING |
|------|---------|
| 1 | Guest |
| 2 | Operator |
| 3 | Administration |
| 4 | PMS |

- Numeric Input

  In Direct Data Entry, this data represents numeric input to indicate the codes and quantities of the goods requested from a guest room station to the PMS. If the number is less than 8 digits, spaces are assigned to the remaining digit positions.

# Conditions of LCD Display on Administrative Station

(1)   Guest Room Information
When an administrative station is called from a guest room station and answered or an administrative station calls a guest room station, the guest room information can be displayed on the LCD of the administrative station. The guest room information displayed on LCD is as follows.

-       Administrative station; 16-digit LCD display

| (A) | (B) | (C) |
|-----|-----|-----|
| (D) | | |

-       Administrative station; 24-digit LCD display

| (A) | (B) | (C) |
|-----|-----|-----|
| (D) | | |
| | | |

(A)  PMS information A/VIP display
• PMS information A/VIP display is selectable by system data (CM08>548). This information is displayed with 3 characters in the left side on the upper line of LCD.
• When PMS information A display is selected (CM08>548:0), the language information of the guest received from the PMS at check-in is displayed.
• When VIP display is selected (CM08>548:1), the VIP category; VIP or General, received from the PMS at check-in is displayed.
→ When it is VIP, display "VIP"
→ When it is the general, display "ΔΔΔ" (BLANK)

(B)  PMS information B/Language type display
• PMS information B/Language type display is selectable by system data (CM08>548). This information is displayed with maximum 5 characters in the right-side of the (A) display on the upper line of LCD.
• When PMS information B display is selected (CM08>548:0), the rank information of the guest received from the PMS at check-in is displayed.
• When language type display is selected (CM08>548:1), the type of language that the guest speaks, received from the PMS at check-in is displayed with abbreviation.

→ Table below shows the type of language and its abbreviation.

## Language Display List

Δ: BLANK

| TYPE No. | TYPE OF LANGUAGE | ABBREVIATION DISPLAY ON LCD (MAX. 5digits) |
|---|---|---|
| 0 | Not specified | ΔΔΔΔΔ |
| 1 | Japanese | ΔJPNΔ |
| 2 | English | ΔENGΔ |
| 3 | German | ΔGERΔ |
| 4 | French | ΔFRΔΔ |
| 5 | Spanish | ΔSPΔΔ |
| 6 | Chinese | ΔCHIΔ |
| 7 | Russian | ΔRUSΔ |

→ The characters displayed on LCD are fixed to the abbreviation in table above, regardless of the system data setting (CM04 Y=00>00) for the type of language displayed and the type of terminals (16-digit display/24-digit display).

**NOTE 1:** *When CM08>548: 1 is set, if the VIP information="General"/Language information="Not specified", no information is displayed (BLANK). (Even if the PMS information A and B are received, no information will be displayed.)*

**NOTE 2:** *When CM08>548: 0 is set, if there is nothing in the PMS information A and B, no information is displayed (BLANK). In addition, if either of the PMS information A or B is received, only the information is displayed. (Even if the VIP information/language information is received, no information will be displayed.)*

(C) Station number of guest room
- This information is displayed in the right side of upper line of LCD (Max. 8 digits).
- The conditions of display are same to that of the conventional Guest Room Station Number

(D) Guest name
- This information is displayed in the right side of middle line of LCD (Max. 16 digits).
- This guest name information (ASCII code) received from the PMS is displayed at check-in.
- The conditions of display are same to that of the conventional Guest Name Display.

(2)   Display Image

(a)   VIP/Language display
The LCD display image under the following conditions is shown below.
- CM08>548: 1 (VIP/Language display)
- Guest room station number: 2000
- Guest name: ABCDEFGHIJKLMNOP (VIP; English)
- Station number: 3000 (PMS information display: CM13 Y=52: 0)
- Attendant Console (PMS information display: CM08>549:0)

(i)   When a call is originated from the guest room station (2000) to the station (3000)
▢ indicates flashing.

Station 3000; 16-digit LCD display

```
V I P   E N G         2 0 0 0
A B C D E F G H I J K L M N O P
```

Station 3000; 24-digit LCD display

```
V I P   E N G                 2 0 0 0
                A B C D E F G H I J K L M N O P
P I C K
```

Station 3000 answers.

Station 3000; 16-digit LCD display

```
V I P   E N G         2 0 0 0
A B C D E F G H I J K L M N O P
```

Station 3000; 24-digit LCD display

```
V I P   E N G                 2 0 0 0
                A B C D E F G H I J K L M N O P
M I C   S Y S .
```

(ii)  When a call is originated from the guest room station (2000) to the Attendant Console
No information is displayed on LCD (upper line/middle line) at call termination.

Attendant Console answers.

Display on Attendant Console

```
VIP ENG        2000 |    | 10:00  PM  TUE  3
ABCDEFGHIJKLMNOP    |
MODE PROG
```

(b)  PMS information A, B display

The LCD display image under following conditions is shown below.

- CM08>548: 0 (PMS information A, B display)
- Guest room station number: 2000
- Guest name: ABCDEFGHIJKLMNOP
- PMS information A: "VIP", PMS information B: "NEC"
- Station number: 3000 (PMS information display: CM13 Y=52:0)
- Attendant Console (PMS information display: CM08>549:0)

(i)  When a call is originated from the guest room station (2000) to the administrative station (3000)

░░░  indicates flashing.

Station 3000; 16-digit LCD display

```
V I P  N E C      2 0 0 0
A B C D E F G H I J K L M N O P
```

Station 3000; 24-digit LCD display

```
V I P  N E C              2 0 0 0
            A B C D E F G H I J K L M N O P
P I C K
```

Station 3000 answers.

Station 3000; 16-digit LCD display

```
V I P  N E C      2 0 0 0
A B C D E F G H I J K L M N O P
```

Station 3000; 24-digit LCD display

```
V I P  N E C              2 0 0 0
            A B C D E F G H I J K L M N O P
M I C  S Y S .
```

(ii)  When a call is originated from the guest room station (2000) to the Attendant Console
No information is displayed on LCD (upper line/middle line) at call termination.

Attendant Console answers.

Display on Attendant Console

```
VIP NEC      2000 |    |10:00  PM  TUE  3
ABCDEFGHIJKLMNOP |
MODE PROG
```

(3)    Other Conditions

(a)  When calling between administrative station and administrative station, the (A) and (B)
      information is not displayed. (The (C) and (D) information can be displayed.)

(b)  When calling between guest room station and guest room station, the (A) and (B) information is
      not displayed. (The (C) and (D) information can be displayed.)

(c)  When a call is terminated to an administrative station by the function such as call forwarding and
      answered, the intermediate station information (intermediated station number/intermediate guest
      name) and the message information cannot be displayed.
      The intermediate station information/"MSG" information is displayed in the right side of LCD,
      and the position is same to that of VIP/language information display by this feature. Accordingly,
      either of display has priority.
      <Order of priority to display>
      • CM13 Y=52: 0 Multiline Terminal, CM08>549: 0 Attendant Console
        High priority; VIP + language display
        (Even if VIP + language is not displayed, "MSG" display and intermediate station display are
        not available.)
      • CM13 Y=52: 1 Multiline Terminal, CM08>549: 1 Attendant Console
        High priority; "MSG" display > Intermediate station display
        (If "MSG" is not displayed, the intermediate station can be displayed.)

(d)  The duration to display (C) guest name can be selected by following system data.
      • Display for 6 seconds; CM08>120: 1 (6s display), CM08>121: 1 (No continuous display)
      • Display for 10 seconds; CM08>120: 0 (10s display), CM08>121: 1 (No continuous display)
      • Display continuously till the end of the call; CM08>121: 0 (Continuous display)

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# *PMS OPERATION*

**Chapter**

**4**

This chapter explains the operations associated with each PMS feature message. The set of feature messages used can 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.

# FEATURE CODE SUMMARY

The PMS feature codes available are summarized below.

**Feature Code Summary**

| FEATURE | FEATURE CODE | TYPE OF INFORMATION |
|---------|--------------|---------------------|
| Maid Status | 11 | Maid status set up by guest room telephones |
|  | 12 | Maid status set up by the Front Desk Terminal |
| Message Waiting | 13 | Message waiting lamp status changes |
| Restriction Control | 15 | Changes in telephone calling restrictions placed on room station numbers |
| Check In/Check 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/ Room Copy | 20 | Room change/room swap status |
| Data Connection Maintenance | 50 | Batch processing status |
| Message Waiting | 53 | Controlling message waiting lamps |
| Station Message Detail | 54 | Station message detail information for each call |
| Check In/Check Out/ Room Change | 56 | Setting check in/check out and room change |
| Room Recovery | 57 | Room information at system recovery |
| Direct Data Entry | 59 | Data entered from a guest room station |
| Room Data Change | 61 | Room data change information |
| Hotel/Motel DID Number Allocation to Guest Station | 62 | Hotel/Motel DID Number Allocation status to Guest Station |
| Administrative Station Name | 65 | Setting administrative station name |
| Status Inquiry | 70 | Data link maintenance |

# OPERATION OF TEXT

## 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 codes are listed below.

| FUNCTION CODE | MESSAGE DIRECTION | TEXT FORMAT | MEANING |
|---|---|---|---|
| 1 | To PMS | – | Maid Status - Cleaning Start set |
| 2 | To PMS | – | Maid Status - Cleaning End set |
| 3 | To PMS | – | Maid Status - Inspection End set |

In addition to these three indications, the Maid Status message may be sent by the PBX to signal a Check In or Check Out from the Front Desk Terminal. In this case, the PMS must be programmed to respond to those function codes.

The maid status message is 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 20.1/56.6 is activated, a 12.1 message is sent for the room specified by the old station number.
- If a 16.2/56.2 or 20.1/56.6 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.

## Message Data Format

| Byte No. | | Description |
|---|---|---|
| 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 | "1/2/3" | Function code |
| 9 | | |
| 10 | | |
| 11 | Station number | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | | |
| 16 | | |
| 17 | Maid ID | |
| 18 | | |
| 19 | | |
| 20 | | |
| 21 | ETX | |

## Message Waiting (Feature code 13, 53)

The Message Waiting feature turns the MW lamp on and off at guest and administration telephones. It operates on commands entered on 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.

### Feature code 13

| FUNCTION CODE | MESSAGE DIRECTION | TEXT FORMAT | MEANING |
|---|---|---|---|
| 3 | To PMS | 1 | The lamp for the specified station has been turned on via Attendant Console |
| 4 | To PMS | 1 | The lamp for the specified station has been turned off via Attendant Console |

### Feature code 53

| FUNCTION CODE | MESSAGE DIRECTION | TEXT FORMAT | MEANING |
|---|---|---|---|
| 1 | From PMS | 2 | MW lamp for specified room has been turned on/off via PMS control entry |
| 2 | To PMS | 3 | MW lamp for specified room has been turned on via an administrative station or Front Desk Terminal control entry |
| 3 | To PMS | 3 | MW lamp for specified room has been turned off via an administrative station or Front Desk Terminal control entry |

The Message Waiting feature messages are 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 is fully operational at all times.
- The Message Waiting status of each station is stored in PBX memory.
- When a change in Message Waiting status for a station is entered via the Attendant Console, the lamp will be turned on (13.3) or off (13.4), and a message with the station number indicated is sent to the PMS.
- When a change in Message Waiting status for a station is entered via the Front Desk Terminal, the lamp will be turned on (53.2) or off (53.3), and a message with the station number indicated is sent to the PMS.
- Upon receipt by the PBX of a "turn lamp on" (13.1), "turn lamp off" (13.2) or "turn lamp on/off" (53.1) message, the appropriate lamp status is changed by the PBX.
- When a room Check Out message is received from the PMS, a 16.6 Check Out complete message is sent to the PMS if the room telephone's lamp is on. The lamp is then reset to the off state. If the room telephone did not have its lamp on, a 16.5 Check Out complete message is sent.

## Message Data Format

### Text Format 1

| Byte No. | | Description |
|---|---|---|
| 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 | "3/4" | Function code |
| 9 | | |
| 10 | | |
| 11 | Station number | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | ETX | |

### Text Format 2

| Byte No. | | Description |
|---|---|---|
| 0 | STX | |
| 1 | SA | |
| 2 | UA | |
| 3 | "L" | Entry index for PMS interface |
| 4 | "5" or "D" | Feature code high digit (normal or violation) |
| 5 | "3" | Feature code low digit |
| 6 | "1" | Message counter high digit |
| 7 | "5" | Message counter low digit |
| 8 | "1" | Function code |
| 9 | | |
| 10 | | |
| 11 | Station number | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | Message waiting status | |
| 16 | | Must contain ASCII spaces |
| 17 | **Unused** | |
| 18 | | |
| 19 | ETX | |

**Text Format 3**

| Byte No. | | |
|---|---|---|
| 0 | STX | |
| 1 | SA | |
| 2 | UA | |
| 3 | "L" | Entry index for PMS interface |
| 4 | "5" or "D" | 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 | "2/3" | Function code |
| 9 | | |
| 10 | | |
| 11 | Station number | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | ETX | |

## Restriction Control (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:

| FUNCTION CODE | MESSAGE DIRECTION | TEXT FORMAT | 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 Restriction Control 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 Restriction Control feature is active, and a change in restriction control 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.
- Do Not Disturb can be set with disregarding the room status. Do Not Disturb is automatically cancelled by PBX when the room status is changed to "Vacant" or "Out of Order".

**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 | "1/2" | Function code |
| 9–14 | Station number | |
| 15 | Restriction level | |
| 16–17 | **Unused** | Must contain ASCII spaces |
| 18 | ETX | |

The restriction level codes and corresponding actions are:

| LEVEL | ACTION |
|---|---|
| 0 | No restriction<br>(Cancel Room Cut Off and Do Not Disturb) |
| 1 | Outward restriction: denies all local and toll calling from the room telephone<br>(Set Room Cut Off and cancel Do Not Disturb) |
| 5 | Termination restriction: denies all incoming calls to the room telephone<br>(Cancel Room Cut Off and set Do Not Disturb) |
| 6 | Both outgoing and incoming restriction<br>(Set Room Cut Off and Do Not Disturb) |

When a restriction is in effect, a denied call receives the reorder tone, or is forwarded to the Attendant Console or a preassigned station, according to system programming.

## Check In/Out (Feature code 16, 56)

While this message does not represent a unique feature, it is a rather 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, restriction control level, etc. The available function codes are:

### Feature code 16

| FUNCTION CODE | MESSAGE DIRECTION | TEXT FORMAT | MEANING |
|---|---|---|---|
| C | To PMS | 1 | A Check-Out guest room is engaged in a C.O. outgoing call |

### Feature code 56

| FUNCTION CODE | MESSAGE DIRECTION | TEXT FORMAT | SUPPORT INTERFACE | MEANING |
|---|---|---|---|---|
| 1 | From PMS | 2 | IP | Perform Check In functions for the specified room |
| 2 | From PMS | 3 | IP | Perform Check Out functions for the specified room |
| 4 | From PMS | 4 | IP | Cancel Check In functions for the specified room |
| 5 | From PMS | 5 | IP | Cancel Check Out functions for the specified room |

The PBX maintains the Vacant or Occupied status for each RSN. This status is activated upon receipt of a Check In or Check Out message from the PMS. Under normal operation, Check In and Check Out is not performed through the Front Desk Terminal, but through the PMS terminals only. 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. | | Description |
|---|---|---|
| 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 | "C" | Function code |
| 9 | | |
| 10 | | |
| 11 | Station number | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | ETX | |

## Text Format 2

| Byte No. | | |
|---|---|---|
| 0 | STX | |
| 1 | SA | |
| 2 | UA | |
| 3 | "L" | Entry index for PMS interface |
| 4 | "5" or "D" | Feature code high digit (normal or violation) |
| 5 | "6" | Feature code low digit |
| 6 | "4" | Message counter high digit |
| 7 | "6" | Message counter low digit |
| 8 | "1" | Function code |
| 9 | | |
| 10 | | |
| 11 | Station number | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | | Must contain ASCII spaces |
| 16 | | |
| 17 | Unused | |
| 18 | | |
| 19 | | |
| 20 | | |
| 21 | Room status | |
| 22 | Cleaning status | |
| 23 | Unused | Must contain ASCII space |
| 24 | VIP category | |
| 25 | Language | |
| 26 | Guest name | ASCII 16 characters |
| 27 | | |
| 40 | | |
| 41 | | |
| 42 | | |
| 43 | Optional data A | |
| 44 | | |
| 45 | | |
| 46 | | |
| 47 | Optional data B | |
| 48 | | |
| 49 | | |
| 50 | ETX | |

**Text Format 3**

| Byte No. 0 | STX | |
|---|---|---|
| 1 | SA | |
| 2 | UA | |
| 3 | "L" | Entry index for PMS interface |
| 4 | "5" or "D" | Feature code high digit (normal or violation) |
| 5 | "6" | Feature code low digit |
| 6 | "1" | Message counter high digit |
| 7 | "4" | Message counter low digit |
| 8 | "2" | Function code |
| 9 | | |
| 10 | | |
| 11 | Station number | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | Room status | |
| 16 | Cleaning status | |
| 17 | **Unused** | Must contain ASCII space |
| 18 | ETX | |

**Text Format 4**

| Byte No. 0 | STX | |
|---|---|---|
| 1 | SA | |
| 2 | UA | |
| 3 | "L" | Entry index for PMS interface |
| 4 | "5" or "D" | 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 | "4" | Function code |
| 9 | | |
| 10 | | |
| 11 | Station number | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | ETX | |

## Text Format 5

| Byte No. | | |
|---|---|---|
| 0 | STX | |
| 1 | SA | |
| 2 | UA | |
| 3 | "L" | Entry index for PMS interface |
| 4 | "5" or "D" | Feature code high digit (normal or violation) |
| 5 | "6" | Feature code low digit |
| 6 | "2" | Message counter high digit |
| 7 | "0" | Message counter low digit |
| 8 | "5" | Function code |
| 9 | | |
| 10 | | |
| 11 | Station number | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | | Must contain ASCII spaces |
| 16 | | |
| 17 | **Unused** | |
| 18 | | |
| 19 | | |
| 20 | | |
| 21 | Room status | |
| 22 | Cleaning status | |
| 23 | **Unused** | Must contain ASCII space |
| 24 | ETX | |

• Check In
   When the PBX receives a room Check In message (16.1, 16.A, or 16.B/56.1), 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/56.1 only).
   -   Stores Guest Name information (16.B/56.1 only).

• Check In Cancellation
   56.4 message is used for cancellation operation when the wrong room was registered as Check In. This processing changes the room status to "Vacant", and all the room data is cleared.

• Check Out
   When the PBX receives a room Check Out (16.2/56.2) 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.

• Check Out Cancellation
   56.5 message is used for cancellation operation when a wrong room was registered as Check Out. Check In operation is required again because this message cannot return the room to Check In status when "Vacant" or "Out of Order" was already selected at Check Out.

• 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 causes 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.

# 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. Function codes are provided for the database exchange recovery procedure, and can indicate status changes in either or both systems. The function codes for this message are listed below:

| FUNCTION CODE | MESSAGE DIRECTION | TEXT FORMAT | MEANING |
|:---:|:---:|:---:|:---|
| E | To PMS | 1 | Deletion of specified stations |
| F | To PMS | 2 | Response to 70.8 message, or indication that the data for the specified room has been changed |

Function code E is used when stations have been deleted at the PBX. Function code F is used to exchange Room Class and Administration/Guest status, which generally do not change as often as the other status items. When the PBX receives a 70.8 message, it transmits status data for all rooms to the PMS, in random order, with a series of 17.F messages. The PBX does 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 |
| Administration/Guest | 4, 6 |
| Room class | 4 |

For all Room Image messages, each status item either contains data or is 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 ignores any request for status or indicated change for any field for which normal status changes are not communicated. For instance, if the Restriction Control feature message (15.x) is not defined in a particular data link configuration, the restriction control field in the Room Image message is likewise inactive.

## 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 | "1" | Message counter high digit |
| 7 | "3" | Message counter low digit |
| 8 | "E" | Function code |
| 9 | | |
| 10 | | |
| 11 | Station number | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | **Unused** | Must contain ASCII spaces |
| 16 | | |
| 17 | ETX | |

### 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 | "1" | Message counter high digit |
| 7 | "3" | Message counter low digit |
| 8 | "F" | Function code |
| 9 | | |
| 10 | | |
| 11 | Station number | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | Administration/Guest | |
| 16 | **Unused** | Must contain ASCII space |
| 17 | ETX | |

## 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 an Attendant Console or Front Desk Terminal, or from the PMS with feature code 19. The following function codes are available:

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

The Wake Up feature messages are 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.

With the Wake Up feature active, the operational considerations are:

- Entry (activated) is varied to the station in an occupied state. Entry (deactivated?) is fully operational at all times.
- Entry can be made via the Attendant Console or Front Desk Terminal, or through 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 makes the appropriate Wake Up setting.
- The result of a Wake Up is sent to the PMS with a 19.3 message and printed out on the PBX printer.
- No communication is made on administrative stations.
- Time is set to an accuracy of 1 minute.
- Each guest room station can have only one Wake Up in effect. A new setting will replace any previous setting. Once the Wake Up is performed, the setting is automatically erased.
- A Wake Up call to a busy station is re-executed up to three 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.

- There is no limit to the number of stations that can be set to the same time in military format for Automatic Wake-Up calling.

## 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 | "9" | Feature code low digit |
| 6 | "1" | Message counter high digit |
| 7 | "6" | Message counter low digit |
| 8 | "1/4" | Function code |
| 9 | | |
| 10 | | |
| 11 | Station number | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | Wake Up time | |
| 16 | (Hour) | |
| 17 | (Minute) | |
| 18 | | |
| 19 | Wake Up set | |
| 20 | ETX | |

## 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 | "9" | Feature code low digit |
| 6 | "1" | Message counter high digit |
| 7 | "6" | Message counter low digit |
| 8 | "2/5" | Function code |
| 9 | | |
| 10 | | |
| 11 | Station number | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | | Must contain ASCII spaces |
| 16 | | |
| 17 | **Unused** | |
| 18 | | |
| 19 | Wake Up canceled | |
| 20 | ETX | |

**Text Format 3**

| Byte No. | | Description |
|---|---|---|
| 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 | "3" | Function code |
| 9 | | |
| 10 | | |
| 11 | Station number | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | Wake Up time (Hour) | |
| 16 | | |
| 17 | (Minute) | |
| 18 | | |
| 19 | Wake Up result | |
| 20 | ETX | |

## Room Change/Room Swap/Room Copy (Feature code 20, 56)

This feature provides a convenient service for instant operation of a room status change that does not involve a guest Check Out. Three function codes are available:

### Feature code 20

| FUNCTION CODE | MESSAGE DIRECTION | TEXT FORMAT | MEANING |
|:---:|:---:|:---:|:---|
| 2 | From PMS | 1 | Set room swap |
| 5 | From PMS | 1 | Set room copy |

### Feature code 56

| FUNCTION CODE | MESSAGE DIRECTION | TEXT FORMAT | MEANING |
|:---:|:---:|:---:|:---|
| 6 | From PMS | 2 | Set room change |

• Room Change

Upon receipt of a Room Change message (20.1/56.6), the PBX performs status changes on next page:

| SERVICES | OLD ROOM | NEW ROOM |
|---|---|---|
| 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 | Canceled | 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 |

• Room Swap

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

• Room Copy

Upon receipt of a Room Copy message (20.5), the PBX copies 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

**Text Format 1**

| 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 | "2/5" | Function code |
| 9 | | |
| 10 | | |
| 11 | Swap A/Copy S station number | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | | |
| 16 | | |
| 17 | Swap B/Copy D station number | |
| 18 | | |
| 19 | | |
| 20 | | |
| 21 | ETX | |

**Text Format 2**

| Byte No. | | |
|---|---|---|
| 0 | STX | |
| 1 | SA | |
| 2 | UA | |
| 3 | "L" | Entry index for PMS interface |
| 4 | "5" or "D" | Feature code high digit (normal or violation) |
| 5 | "6" | Feature code low digit |
| 6 | "2" | Message counter high digit |
| 7 | "3" | Message counter low digit |
| 8 | "6" | Function code |
| 9 | | |
| 10 | | |
| 11 | Old Station number | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | Room status | |
| 16 | Cleaning status | |
| 17 | **Unused** | Must contain ASCII space |
| 18 | | |
| 19 | | |
| 20 | New station number | |
| 21 | | |
| 22 | | |
| 23 | | |
| 24 | Room status | |
| 25 | Cleaning status | |
| 26 | Room key status | |
| 27 | ETX | |

# Data Connection Maintenance (Feature code 50)

This feature allows a PMS to report the batch process start and the batch process end to the PBX.
The available function codes are:

| FUNCTION CODE | MESSAGE DIRECTION | TEXT FORMAT | MEANING |
|:---:|:---:|:---:|:---|
| 1 | From PMS | – | PMS reports batch process start to PBX |
| 2 | From PMS | – | PMS reports batch process end to PBX |

**Message Data Format**

| Byte No. | | |
|:---:|:---:|:---|
| 0 | STX | |
| 1 | SA | |
| 2 | UA | |
| 3 | "L" | Entry index for PMS interface |
| 4 | "5" or "D" | 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 | "1/2" | Function code |
| 9 | **Unused** | Must contain ASCII spaces |
| 10 | | |
| 11 | ETX | |

## Station Message Detail (Feature code 54)

This feature allows the PBX to send the PMS the 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:

### Feature code 54

| FUNCTION CODE | MESSAGE DIRECTION | TEXT FORMAT | MEANING |
|---|---|---|---|
| 1 | To PMS | – | Details of station message |

This feature is controlled by the PBX installation parameter setting for the Station Message Detail Recording 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 | "5" or "D" | Feature code high digit (normal or violation) |
| 5 | "4" | Feature code low digit |
| 6 | "9" | Message counter high digit |
| 7 | "0" | Message counter low digit |
| 8 | "1" | Function code |
| 9–14 | Station number | |
| 15–17 | Route number | |
| 18–20 | Trunk number | |
| 21–22 | Call start time (Month) | |
| 23–24 | (Day) | |
| 25–26 | (Hour) | |
| 27–28 | (Minute) | |
| 29–30 | (Second) | |
| 31–32 | Call end time (Month) | |
| 33–34 | (Day) | |
| 35–36 | (Hour) | |
| 37–38 | (Minute) | |
| 39–40 | (Second) | |

Continued on next page

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| Byte No. | | |
|---|---|---|
| 41 | | |
| 42 | | |
| 43 | | |
| 44 | | |
| 45 | Account code | |
| 46 | | |
| 47 | | |
| 48 | | |
| 49 | | |
| 50 | | |
| 51 | Condition B2 | |
| 52 | Condition B1 | |
| 53 | Condition B0 | |
| 54 | Called subscriber | 32 digits |
| 55 | number | |
| 84 | | |
| 85 | | |
| 86 | | Advice of Charge |
| 87 | | • Dollar/Euro charge (CM08>841: 0, CM08>404: 1, CM42>69, 70) |
| 88 | | 86-91 byte: Dollars/Euro |
| 89 | Call metering | 92-93 byte: Cents/Euro cents |
| 90 | | • Call Unit (CM08>841: 1, CM08>404: 1) |
| 91 | | 86-88 byte: Fixed to "0" |
| 92 | | 89-93 byte: Call Unit |
| 93 | | |
| 94 | ETX | |
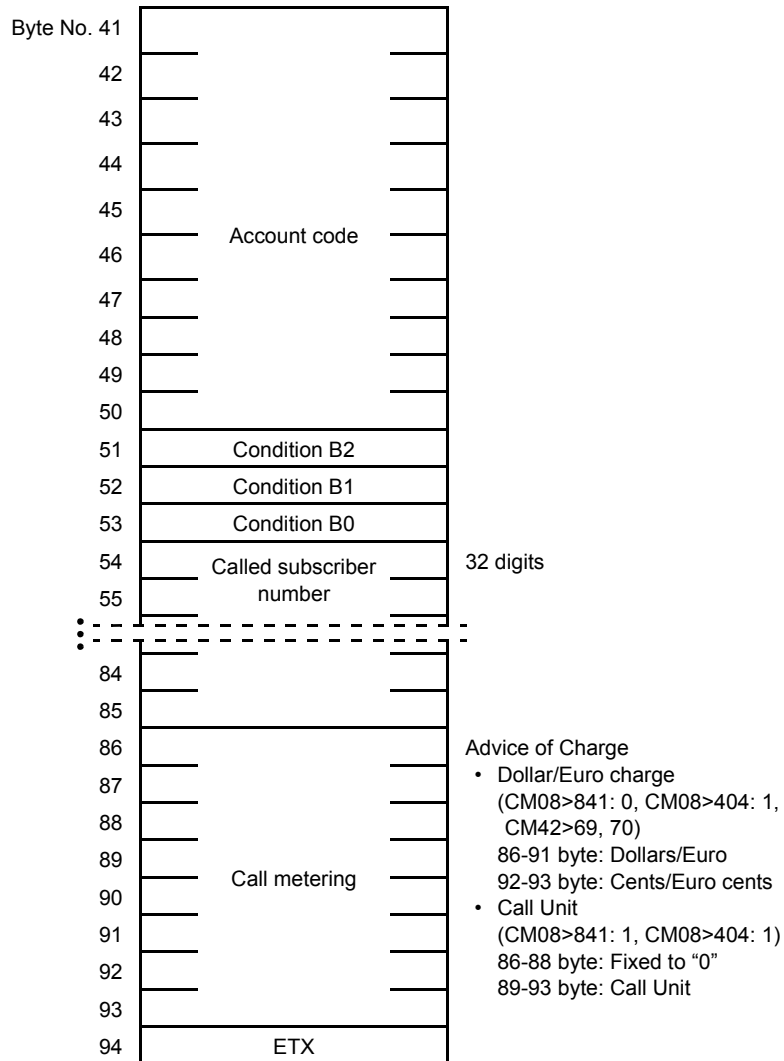
# Room Recovery (Feature code 57)

This feature allows a PMS to report the data for each room to the PBX during recovery process when recovery has been requested from the PBX by means of 70.2 message or when the PMS activates recovery. The available function codes are:

| FUNCTION CODE | MESSAGE DIRECTION | TEXT FORMAT | MEANING |
|---|---|---|---|
| 1 | From PMS | 1 | Send data for all the rooms in recovery processing requested by 70.2 message |
| 5 | From PMS | 2 | Send data for message status information in recovery processing |

Data for all the rooms is reported to the PBX by means of 57.1 message. Room status, cleaning status, and other data are set as per the status of Check In and Check Out and are reported.

In recovery processing, the message status information at the PMS is reported to the PBX by means of this message. For details, refer to 53.1 message.

## Message Data Format

**Text Format 1**

| Byte No. | Field | Description |
|---|---|---|
| 0 | STX | |
| 1 | SA | |
| 2 | UA | |
| 3 | "L" | Entry index for PMS interface |
| 4 | "5" or "D" | Feature code high digit (normal or violation) |
| 5 | "7" | Feature code low digit |
| 6 | "4" | Message counter high digit |
| 7 | "6" | Message counter low digit |
| 8 | "1" | Function code |
| 9–14 | Station number | |
| 15–20 | Group number | |
| 21 | Room status | |
| 22 | Cleaning status | |
| 23 | **Unused** | Must contain ASCII space |
| 24 | VIP category | |
| 25 | Language | |
| 26–27 | Guest name | ASCII 16 characters |
| 40–46 | Optional data A | |
| 47–49 | Optional data B | |
| 50 | ETX | |

**Text Format 2**

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

## Direct Data Entry (Feature code 59)

This feature allows the text to be reported from the PBX to the PMS by dialing a special number from a guest room station to input data to the PMS.

The text is used to indicate the codes and quantities of the goods requested from a guest room.

The following function codes are used with this feature.

| FUNCTION CODE | MESSAGE DIRECTION | TEXT FORMAT | MEANING |
|:---:|:---:|:---:|:---|
| 1 | To PMS | 1 | Direct Data Entry (Station Number, Numeric Input) |
| 8 | From PMS | 2 | Direct Data Entry-Negative Answer (Station Number) |
| 9 | From PMS | 2 | Direct Data Entry-Positive Answer (Station Number) |

After a guest room station dials a special number, the "Direct Data Entry" text (59.1) will be reported from the PBX to the PMS.

The PBX will wait for an answer from the PMS. If there is no answer from the PMS within 30 seconds after the text has been sent, the guest room station will hear a reorder tone.

If the PBX receives a report of the "Direct Data Entry-Negative Answer" (59.8) from the PMS, the PBX will recognize it as data entry error to the PMS or data failure, and the reorder tone connection will be made. When the PBX receives a report of the "Direct Data Entry-Positive Answer" (59.9) from the PMS, the PBX will recognize that the data has been entered normally to the PMS, and the service set tone connection will be made.

## Message Data Format

### Text Format 1

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

Continued from previous page

| Byte No. | | |
|---|---|---|
| 37 | Numeric Input | |
| 38 | | |
| 39 | | |
| 40 | | |
| 41 | | |
| 42 | | |
| 43 | | |
| 44 | | |
| 45 | **Unused** | Must contain ASCII spaces |
| 46 | | |
| 47 | | |
| 48 | | |
| 49 | | |
| 50 | | |
| 51 | ETX | |

## Text Format 2

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

## Room Occupancy/Room Data Change (Feature code 61)

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

### Feature code 61

| FUNCTION CODE | MESSAGE DIRECTION | TEXT FORMAT | MEANING |
|---|---|---|---|
| 1 | From PMS | 1 | Change the data for room status, cleaning status, room key status, VIP, or language for specified room |
| 3 | From PMS | 2 | Change the data for cleaning status for specified room |
| 4 | From PMS | 3 | Change the data for room key status for specified room |

## Message Data Format

**Text Format 1**

| Byte No. | Field | Description |
|---|---|---|
| 0 | STX | |
| 1 | SA | |
| 2 | UA | |
| 3 | "L" | Entry index for PMS interface |
| 4 | "6" or "E | Feature code high digit (normal or violation) |
| 5 | "1" | Feature code low digit |
| 6 | "4" | Message counter high digit |
| 7 | "6" | Message counter low digit |
| 8 | "1" | Function code |
| 9–14 | Station number | |
| 15–20 | Unused | Must contain ASCII spaces |
| 21 | Room status | |
| 22 | Cleaning status | |
| 23 | Unused | Must contain ASCII space |
| 24 | VIP category | |
| 25 | Language | |
| 26–27 | Guest name | ASCII 16 characters |
| 40–46 | Optional data A | |
| 47–49 | Optional data B | |
| 50 | ETX | |

**Text Format 2**

| Byte No. | | Description |
|---|---|---|
| 0 | STX | |
| 1 | SA | |
| 2 | UA | |
| 3 | "L" | Entry index for PMS interface |
| 4 | "6" | 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 | "3" | Function code |
| 9 | | |
| 10 | | |
| 11 | Station number | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | Room status | |
| 16 | Cleaning status | |
| 17 | ETX | |

## Text Format 3

| Byte No. | | |
|---|---|---|
| 0 | STX | |
| 1 | SA | |
| 2 | UA | |
| 3 | "L" | Entry index for PMS interface |
| 4 | "6" | Feature code high digit (normal or violation) |
| 5 | "1" | Feature code low digit |
| 6 | "1" | Message counter high digit |
| 7 | "2" | Message counter low digit |
| 8 | "4" | Function code |
| 9 | | |
| 10 | | |
| 11 | Station number | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | Room key status | |
| 16 | ETX | |

## Hotel/Motel DID Number Allocation to Guest Station (Feature code 62)

This feature allows the PBX to set a destination station of a specific DID number to Direct-In Termination for an individual guest room via a request from a PMS.

The available function codes are:

| FUNCTION CODE | MESSAGE DIRECTION | TEXT FORMAT | MEANING |
|---|---|---|---|
| 7 | From PMS | 1 | Request for DID number allocation to a guest station |
| 8 | From PMS | 2 | Request for deletion of the assigned DID number to the guest station |
| 9 | To PMS | 3 | Notification of DID number allocation to the guest station |
| A | To PMS | 4 | Notification of deletion of the assigned DID number to the guest station |

The following items should also be considered:

- Management of the DID number to be assigned to a guest room shall be performed with PMS.
- DID number to be assigned to each station is one.When assigning another station for the station for which the connection is established, new settings will be effective. Also when assigning a DID number which is in use, new settings will be effective, and destination settings for old station will be disabled.
- When registering a DID number with this feature, development table 0 or 1 must be assigned by system data. Note that the number of digits to be assigned for development table 0 is a maximum of four digits and development table 1 is a maximum of eight digits.
- For the DID number which is not assigned a destination station, settings assigned by CM76 Y=01/02/03/04 are effective.
- There is no Day/Night/A/B mode distinction of tenant for the destination station with these data settings.
- A call is not terminated for the room for which Do Not Disturb is set.

## Message Data Format

### Text Format 1

| Byte No. | | |
|---|---|---|
| 0 | STX | |
| 1 | SA | |
| 2 | UA | |
| 3 | "L" | Entry index for PMS interface |
| 4 | "6" | Feature code high digit |
| 5 | "2" | Feature code low digit |
| 6 | "2" | Message counter high digit |
| 7 | "1" | Message counter low digit |
| 8 | "7" | Function code |
| 9 | Station number | |
| 10 | | |
| 11 | | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | DID number | |
| 16 | | |
| 17 | | |
| 18 | | |
| 19 | | |
| 20 | | |
| 21 | | |
| 22 | | |
| 23 | "4" | Fix to "4" |
| 24 | **Unused** | Must contain ASCII spaces |
| 25 | ETX | |

**Text Format 2**

| Byte No. | | |
|---|---|---|
| 0 | STX | |
| 1 | SA | |
| 2 | UA | |
| 3 | "L" | Entry index for PMS interface |
| 4 | "6" | Feature code high digit |
| 5 | "2" | Feature code low digit |
| 6 | "1" | Message counter high digit |
| 7 | "3" | Message counter low digit |
| 8 | "8" | Function code |
| 9 | Station number | |
| 10 | | |
| 11 | | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | "4" | Fix to "4" |
| 16 | Unused | Must contain ASCII spaces |
| 17 | ETX | |

**Text Format 3**

| Byte No. | | |
|---|---|---|
| 0 | STX | |
| 1 | SA | |
| 2 | UA | |
| 3 | "L" | Entry index for PMS interface |
| 4 | "6" | Feature code high digit |
| 5 | "2" | Feature code low digit |
| 6 | "2" | Message counter high digit |
| 7 | "1" | Message counter low digit |
| 8 | "9" | Function code |
| 9 | Station number | |
| 10 | | |
| 11 | | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | DID number | |
| 16 | | |
| 17 | | |
| 18 | | |
| 19 | | |
| 20 | | |
| 21 | | |
| 22 | | |
| 23 | "4" | Fix to "4" |
| 24 | Response Code | Response Code 0: Service is set (normal response) |
| 25 | ETX | 1: Input error |

Response Code 0: Service is set (normal response)
1: Input error
2: No DID number exist
3: No register area
4: No station number exist
9: Other errors

**Text Format 4**

| Byte No. | | |
|---|---|---|
| 0 | STX | |
| 1 | SA | |
| 2 | UA | |
| 3 | "L" | Entry index for PMS interface |
| 4 | "6" | Feature code high digit |
| 5 | "2" | Feature code low digit |
| 6 | "1" | Message counter high digit |
| 7 | "3" | Message counter low digit |
| 8 | "A" | Function code |
| 9 | Station number | |
| 10 | | |
| 11 | | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | "4" | Fix to "4" |
| 16 | Response Code | Response Code 0: Service is set (normal response) |
| 17 | ETX | 1: Input error |
| | | 2: No DID number exist |
| | | 4: No station number exist |
| | | 9: Other errors |

# Option (Feature code 65)

This feature allows a PMS to set name information of an administrative station.
The available function code is:

| FUNCTION CODE | MESSAGE DIRECTION | TEXT FORMAT | MEANING |
|:---:|:---:|:---:|:---|
| 8 | From PMS | – | Set name information of an administrative station |

## Message Data Format

| Byte No. | | |
|---|---|---|
| 0 | STX | |
| 1 | SA | |
| 2 | UA | |
| 3 | "L" | Entry index for PMS interface |
| 4 | "6" or "E" | Feature code high digit (normal or violation) |
| 5 | "5" | Feature code low digit |
| 6 | "3" | Message counter high digit |
| 7 | "1" | Message counter low digit |
| 8 | "8" | Function code |
| 9 | | |
| 10 | | |
| 11 | Emergency call | |
| 12 | telephone number | |
| 13 | | |
| 14 | | |
| 15 | Name information | ASCII 20 characters |
| 16 | | **NOTE 1:** *When canceling name in formation, specify all spaces.* |
| 17 | | **NOTE 2:** *NULL character is not allowed.* |
| 18 | | |
| 19 | | |
| 20 | | |
| 21 | | |
| 22 | | |
| 23 | | |
| 24 | | |
| 25 | | |
| 26 | | |
| 27 | | |
| 28 | | |
| 29 | | |
| 30 | | |
| 31 | | |
| 32 | | |
| 33 | | |
| 34 | | |
| 35 | ETX | |

## 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 dialog on the state of the data link. No station number or other data is needed. The following function codes are available:

| FUNCTION CODE | MESSAGE DIRECTION | TEXT FORMAT | MEANING |
|---|---|---|---|
| 0 | To PMS | 1 | Response to Status Inquiry message Indicates that the PBX has had no changes that were not communicated to the PMS, and has not been reset |
| 2 | To PMS | 1 | Response to Status Inquiry message Indicates the PBX has been failed and reset; the PMS requests a database exchange |
| 8 | From PMS | 1 | Request all existing data on station number, Administration/Guest and room class |
| A | From PMS | 1 | Request to report the time |
| B | To PMS | 2 | Response to function code A message |
| F | From PMS | 1 | Status Inquiry ("are you there") message **NOTE:** *The PMS must send this message repeatedly at intervals of 500 ms to 60 seconds, except during a database exchange.* |

These messages allow both systems to determine if the data link is functioning correctly. Either system can recognize a failure (as described on *Page 4-56* ), and can request PBX or initiate (PMS) a database 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.

## Message Data Format

**Text Format 1**

| Byte No. | | Description |
|---|---|---|
| 0 | STX | |
| 1 | SA | |
| 2 | UA | |
| 3 | "L" | Entry index for PMS interface |
| 4 | "7" or "F" | 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 | "0/2/3/4/5/6/8/A/F" | Function code |
| 9 | Unused | Must contain ASCII spaces |
| 10 | | |
| 11 | ETX | |
| 12 | BCC | LRC parity check byte |

## Text Format 2

| Byte No. 0 | STX | |
|---|---|---|
| 1 | SA | |
| 2 | UA | |
| 3 | "L" | Entry index for PMS interface |
| 4 | "7" or "F" | 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 | "B" | Function code |
| 9 | | |
| 10 | Year | |
| 11 | | |
| 12 | | |
| 13 | Month | |
| 14 | | |
| 15 | Day | |
| 16 | | |
| 17 | Hour | |
| 18 | | |
| 19 | Minute | |
| 20 | | |
| 21 | Second | |
| 22 | | |
| 23 | ETX | |

- 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 receives 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, can 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 puts 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, can cause a data link failure that cannot be explicitly communicated to the other system.

- Operation during Data Link Failure

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

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

- Recovery from Data Link Failure

  If the PMS remains operational during a data link failure, it continues 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 database exchange are 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 performs a database exchange for all rooms.

• Database Exchange Procedure

If the PBX recognizes that the data link is restored, and responds to a Status Inquiry with a 70.2 message, it requires a full database exchange with the PMS. In this case, the PBX does not process any messages, except Status Inquiry, until the PMS initiates a database exchange.
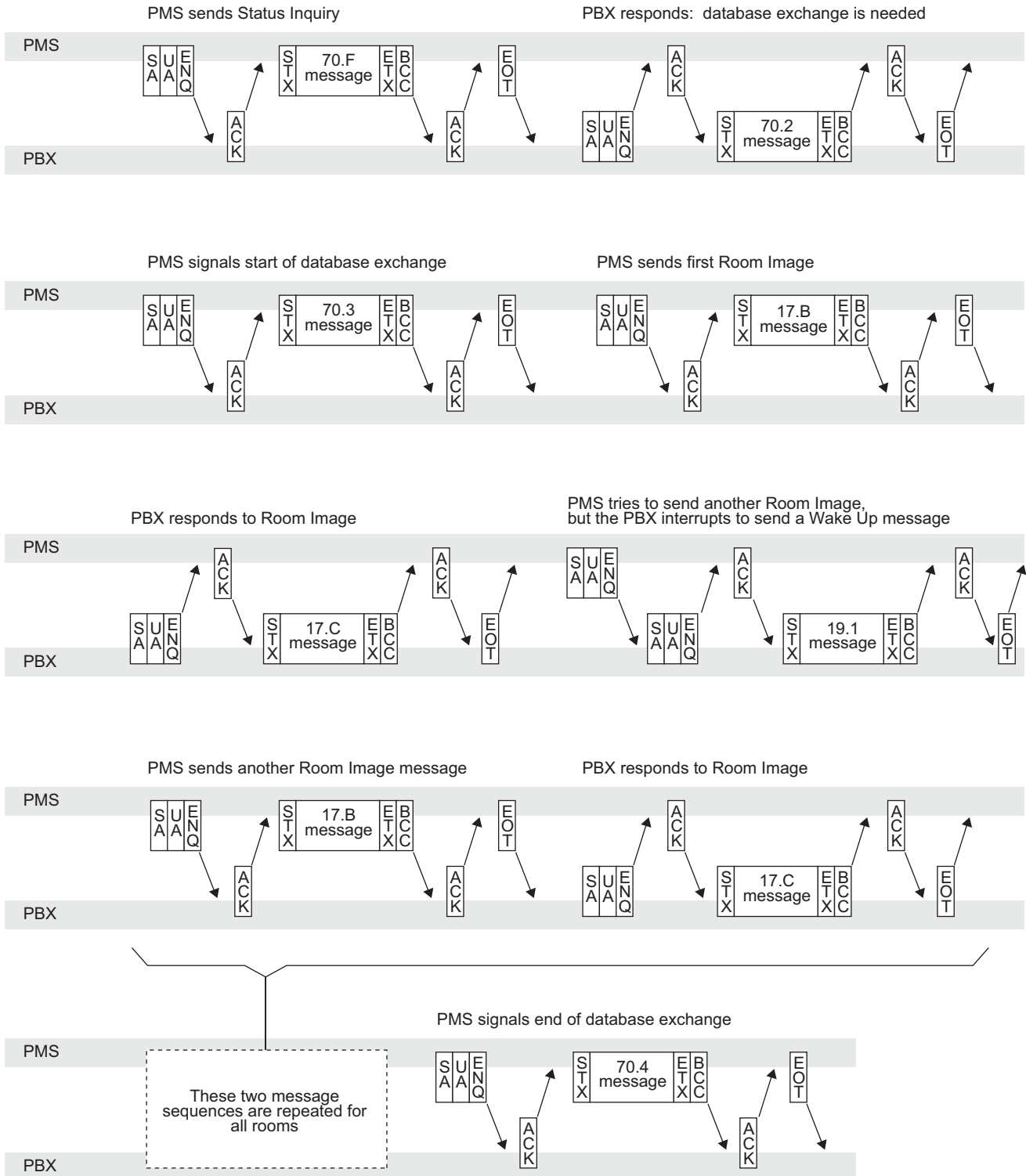
The PMS starts the exchange by sending a 70.3 message to the PBX. This also informs the PBX that transmission of normal status changes can resume. Next, the PMS transmits a Room Image message (17.3, 17.7, or 17.B) for each room for which synchronization is required. Note that a time delay can be required after each Room Image message to ensure the maximum message rate is not exceeded and to provide time for normal status change messages.

The PBX processes each Room Image message and sends the corresponding response message (17.4, 17.8, or 17.C). The PMS updates its own status with data from active fields in these responses. Note that the PBX can send new status changes to the PMS during the database exchange. The PMS sends only the most current data to the PBX.

When the PMS has sent the data for all rooms and processed the responses, it sends a 70.4 message to the PBX. The recovery is not considered to be complete until the PBX receives this message, since the failure to receive it may indicate continuing problems with the data link. The PBX counts the number of database exchanges 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.

The figure below illustrates the example of the database exchange process.

## Example of Data Link Recovery

PMS sends Status Inquiry                                    PBX responds:  database exchange is needed



PMS signals start of database exchange                     PMS sends first Room Image



PBX responds to Room Image                                 PMS tries to send another Room Image,
                                                           but the PBX interrupts to send a Wake Up message



PMS sends another Room Image message                       PBX responds to Room Image



These two message sequences are repeated for all rooms

PMS signals end of database exchange

# PMS MESSAGE SUMMARY

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

## Message Summary

| FEATURE | FEATURE CODE | FUNCTION CODE | TEXT FORMAT | MESSAGE DIRECTION | MEANING |
|---|---|---|---|---|---|
| Maid Status | 11 or 12 | 1 | − | To PMS | Maid Status - Cleaning Start is set from guest room telephones/Front Desk Terminal. |
|  |  | 2 |  | To PMS | Maid Status - Cleaning End is set from guest room telephones/Front Desk Terminal. |
|  |  | 3 |  | To PMS | Maid Status - Inspection End is set from guest room telephones/Front Desk Terminal. |
| Message Waiting | 13 | 3 | 1 | 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. |
| Restriction Control | 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 Out | 16 | C | 1 | To PMS | A Check-Out guest room is engaged in a C.O. outgoing call. |
| Room Data Image | 17 | E | 1 | To PMS | A specified station is deleted. |
|  |  | F | 2 | To PMS | Existing data on station number, administration/guest and room class response to 70.8 message. |
| Wake Up | 19 | 1 | 1 | To PMS | Wake Up for specified telephone set. |
|  |  | 2 | 2 | To PMS | Cancel Wake Up for specified telephone set. |
|  |  | 3 | 3 | To PMS | Result of Wake Up for specified telephone set. |
|  |  | 4 | 1 | From PMS | Set Wake Up for specified telephone. |
|  |  | 5 | 2 | From PMS | Cancel Wake Up for the specified RSN. |
| Room Swap Room Copy | 20 | 2 | 1 | From PMS | Set room swap. |
|  |  | 5 |  | From PMS | Set room copy. |
| Data Connection Maintenance | 50 | 1 | − | From PMS | Batch processing is started. |
|  |  | 2 |  | From PMS | Batch processing is ended. |

# Message Summary

| FEATURE | FEATURE CODE | FUNCTION CODE | TEXT FORMAT | MESSAGE DIRECTION | MEANING |
|---------|------|------|------|------|---------|
| Message Waiting | 53 | 1 | 2 | From PMS | MW lamp for specified room has been turned on/off via PMS control entry. |
| | | 2 | 3 | To PMS | MW lamp for specified room has been turned on via an administrative station or a Front Desk Terminal control entry. |
| | | 3 | | To PMS | MW lamp for specified room has been turned off via an administrative station or a Front Desk Terminal control entry. |
| Station Message Detail | 54 | 1 | – | To PMS | Time and duration of outgoing local or toll call from the room. |
| Check In/ Check Out | 56 | 1 | 2 | From PMS | Perform Check In functions for the specified room. |
| | | 2 | 3 | From PMS | Perform Check Out functions for the specified room. |
| | | 4 | 4 | From PMS | Cancel Check In functions for the specified room. |
| | | 5 | 5 | From PMS | Cancel Check Out functions for the specified room. |
| Room Recovery | 57 | 1 | 1 | From PMS | Send data for all the rooms in recovery processing requested by 70.2 message. |
| | | 5 | 2 | From PMS | Send data for message status information in recovery processing. |
| Direct Data Entry | 59 | 1 | 1 | To PMS | Direct Data Entry from the guest room station. |
| | | 8 | 2 | From PMS | The data from the guest room station has been found abnormal. |
| | | 9 | | From PMS | The data from the guest room station has been found normal. |
| Room Data Change | 61 | 1 | 1 | From PMS | Change the data for room status, cleaning status, room key status, VIP, or language for specified room. |
| | | 3 | 2 | From PMS | Change the data for cleaning status for specified room. |
| | | 4 | 3 | From PMS | Change the data for room key status for specified room. |

# Message Summary

| FEATURE | FEATURE CODE | FUNCTION CODE | TEXT FORMAT | MESSAGE DIRECTION | MEANING |
|---------|--------------|---------------|-------------|-------------------|---------|
| Hotel/Motel DID Number Allocation to Guest Station | 62 | 7 | 1 | From PMS | Request for DID number allocation to a guest station. |
| | | 8 | 2 | From PMS | Request for deletion of the assigned DID number to the guest station. |
| | | 9 | 3 | To PMS | Notification of DID number allocation to the guest station. |
| | | A | 4 | To PMS | Notification of deletion of the assigned DID number to the guest station. |
| Option | 65 | 8 | – | From PMS | Set name information of an administrative station. |
| Status Inquiry and Failure Management | 70 | 0 | 1 | To PMS | Acknowledgment of "are you there" message; indicates the PBX has had no status changes that were not sent to the PMS, and has not been reset. |
| | | 2 | | To PMS | Acknowledgment of "are you there" message; indicates that the PBX has been failed and the status memory has been reset. The PMS initiates a database exchange. |
| | | 8 | | From PMS | Request for all existing data on station number, administration/guest and room class. |
| | | A | | From PMS | Request to report the time. |
| | | B | 2 | To PMS | Response to function code A message. |
| | | F | 1 | From PMS | "Are you there" message; must be issued by PMS at least every 60 sec., and at most every 500 msec. |

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