Meridian 1 X 11

Hospitality Features
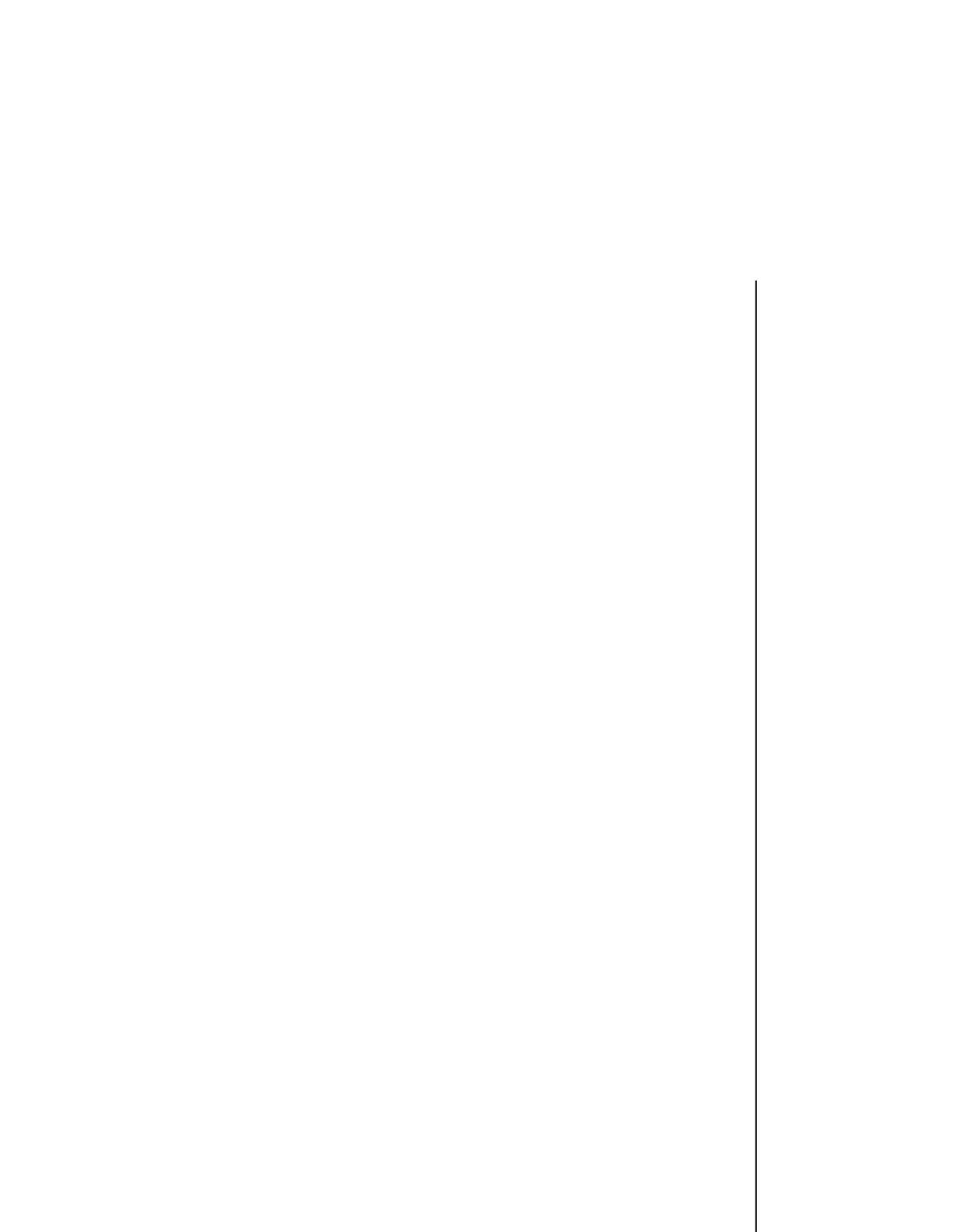
S L - 1

Background Terminal Facility

Description

ii

Revision history

December **20, 1990**

This document was issued to include changes and updates for Xl 1 release 16. Updates were indicated by revision bars in the margins.

December **1, 1991**

This document was issued to include changes and updates for Xl 1 release 17. Because of the extent of changes, revision bars were omitted.

December **31, 1992**

This document was reissued to technical updates. Because of the extent of changes, revision bars were omitted.

October **31, 1993**

This document is reissued to include new technical information. Changes are noted with revision bars in the margins.

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List of tables

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General information

Hospitality and health care personnel use Background Terminal (BGD) to enter, retrieve, and modify data associated with the following features:

— Automatic Wake-Up (AWU)

— Room Status (RMS)

— Message Registration (MR)

   Call Party Name Display (CPND)

BGD helps monitor system operations by providing a visual display of information changes, hard copy backup, and traffic statistics.

The BGD package (package 99) must be equipped on the system load. Package 99 requires that the Controlled Class of Service (CCOS) package (package 81) and one or more of the following packages be equipped. Your application may require some additional feature packages. Refer to XI I *features and services* (553-3001-305) for complete package requirements.

— AWU (package 102)

— RMS (package 100)

— MR (package 101)

— Property Management Systems Interface (PMSI) (package 103)

— Maid ID (package 210)

— Hospitality Screen Enhancement (HSE) (package 208)

You can use the Background Terminal (BGD) to

— Display message queue size. In response to customer requests, the system displays messages that reflect event changes for rooms associated with Automatic Wake Up, Message Registration, or Room Status. The queue size ranges from 20 to 255 messages and is defined in the system Configuration Record (LD17). The default value is 20 messages. The message length is six words.

  The messages are collected for customers who have Display Terminals. The actual messages are output only to the BGD that has been defined as a Display Terminal.

— Define name strings associated with room Directory Numbers (DNs), and to print these names for specified rooms.

— Provide Call Number Information Messages (CNIMs) that provide calling and called DN information to BGD ports. This facilitates the automatic display of guest names or other DN-related information.

— Generate traffic reports. Wake-Up and display message statistics are accumulated daily starting at midnight and stored in the system for a maximum of two days. When a Print Traffic command is issued, the report for the day is printed.

Terminal setup and configuration

A Background Terminal (BGD) is connected to the system through a Serial
Data Interface (SDI) port. Any ASCII serial terminal conforming to RS232-C
or CCITT V. 24 standards can be used as a terminal device.

A maximum of 16 SDI ports can be configured for system option N, NT, RT,
XN, XT, 51, 61, 71, and 81. A maximum of eight SDI ports for system option
S, ST, STE, MS, 21, and 21E.

SDI ports configured for the following features cannot be used as BGDs:

— Automatic Call Distribution Package C (ACD-C) Load
Management/Report Printer Terminal

— Auxiliary Processor Link-Integrated Messaging System/Intergrated
Voice Messaging System (APL-IMS/IVMS) Link

— CDR Tape Link

— Automatic Call Distribution Package D (ACD-D) Link

— Command Status Link (CSL)

— Property Management System Interface (PMSI)

The terminal type used as a Background Terminal (BGD) may be an ASCII
serial terminal conforming to EIA standard RS-232-C or CCITT specification
V.24.

To configure the BGD terminals, enter the following parameters in LD17.
Also, refer to the excerpt of LD17 in Table on page 5.

A BGD can interact only with the rooms associated with a specified customer.
Therefore, when configuring a BGD, you must specify which customer is
associated with each BGD. If you define a physical SDI port with a
two-character alphanumeric identifier, the tasks performed by the BGD will
be assigned to it. If none are defined, the BGD can perform all functions
associated with Automatic Wake Up, Message Registration, Room Status,
and Call Party Name Display.

Background display message queue size The number of entries in the queue can be set from 20 to 255. The default is 20 entries. Enter YES to the prompt PARM and the number of entries to the prompt NDIS. Queue size changes will take effect only after the next initialization.

Device type and address A teletype (TTY) or video display terminal (VDT) device is defined for Background Terminal (BGD) input/o utput. Each device is assigned a physical device address (SDI port) ranging from 0 to 15. Enter TTY xx to the prompt ADAN, where xx is the device address. The number of devices supported depends on the system type (16 for NT, XT, 51, 61, 71, 81 systems, and 8 for ST, STE, RT, 21, 21E systems).

Output use To define a TTY device as a Background Terminal, reply BGD to the prompt USER. In response to the prompt CUST, provide the customer (O-99) to whom the BGD will be assigned. Terminals may also be allowed access to the overlay mode. However, the Background and overlay features will interact at terminals designated to operate in this dual mode by displaying each other's messages. In addition, the BGD can only be used for data input or retrieval in the mode for which it is accessed.

Tables 1 and 2 contain excerpts from LD17. Refer to *X11 input/output guide* (553-3001-400) for complete details.

Note: Table 1 shows LD17 for X11 release 17 and earlier. Table 2 shows LD17 for X11 release 18 and later.

Table 1
Background Terminal (BGD) configuration (LD17) (X11 release 17 and earlier)

Prompt	Response	Comment
REQ	CHG	Modify existing data
TYPE	CFN	Configuration data block
PWD2	xxxx	Level 2 password
PARM	YES	Change the system parameters
NDIS	xxx	0, (20)-255 = Number of display messages in queue for the BGD. *This prompt appears ONLY IF the system has BGD facilities enabled.*
IOTB	YES, (NO)	Changes are (not) to be made to logical units.
ADAN	aaa TTY xx	Action, device, and port number aaa = NEW, CHG, OUT xx = port number (O-l 5)
CDNO	xx	SDI card number (O-1 5)
DENS	SDEN, DDEN, 4DEN	Single, double, or quad ports on SDI card
USER	BGD	Use this port for the BGD. BGD terminals cannot be shared with ACD, APL, CDL, CMC, CSL, HSL, or LSL.
	XBGD	Remove Background Terminal
CUST	xx	Customer number where BGD is assigned O-31 for ST, and 21 systems, and O-99 for NT, RT, XT and 51, 61, and 71 systems. There is no default.

Table 2
Background Terminal (BGD) configuration (LD17) (X11 release 18 and later)

Prompt	Response	Comment
REQ	CHG	Modify existing data
TYPE	CFN	Configuration data block
ADAN	NEW/CHG/MOV/OUT TTY/PRT O-I 5	Add, change, move, or remove an I/O device, type aaa, port x
CTYP	aaaa	Card type
	DCHI	Asynch port (even) on DCHI card
	MSPS	Misc/SDI/Peripheral Signaling card
	SDI	Single port SDI card
	SDI2	Dual port SDI card
	SDI4	Four port SDI card
	XSDI	SDI paddle board
GRP	o-4	Network group number for option 81 systems
DNUM	o-1 5	Device number (same as ADAN number)
USER	BGD	Background Terminal interface
CUST	o-99	Customer number
ADAN	<cr>, ****	Go to next prompt or exit overlay

Maintenance

LD37 is used to diagnose faults with disk units, tape units, teletype (TTY) or Serial Data Interface (SDI) cards. It provides enable, disable, status, and test functions on these devices. Problems are indicated in Input/Output Diagnostic (IOD) messages.

Use the following commands from LD37 to test and maintain BGDs. Refer to *X11 input/output guide* (553-3001-400) for complete details.

Table 3
Maintenance commands (LD37)

Command	Purpose
TTY x	Test TTY x. This sends a string of characters (ABC) followed by "READY FOR INPUT" to the terminal. Anything entered on the keyboard will be echoed until END is entered.
STAT TTY x	Provides the status of TTY x (port nn).
ENL TTY x	Enables TTY x (port nn).
DIS TTY x	Disables TTY x (port nn).

After configuring the BGDs for the customer, define the terminal function.

— Control
   These terminals enter, change, and retrieve data for the Automatic Wake Up (AWU), Message Registration (MR), Call Party Name Display (CPND), and Room Status (RMS) databases. They can also change options and control settings.

— Read Only
   These terminals display information only. They cannot enter or change any parameters for the associated features.

— Print
   These terminals are usually printers, for automatic printing of AWU, MR, and RMS reports at a specified time.

— Display
   These terminals are usually input/output devices that record changes to AWU, MR, and RMS on an ongoing basis.

8   General information

Using the Background Terminal

The Background Terminal (BGD) helps you manage your Meridian 1 system by carrying out orders you type in from a terminal keyboard. The BGD also provides you with information to help you figure out how to operate your system to best meet your needs.

Various system and individual options are available through the Background Terminal (BGD) .

System options

— Assigning BGD terminal options like read only, read/write, and print only

Assign unique identification codes to terminals

— Restrict terminal access to features

— Direct printouts to specific terminals

— Assign automatic daily routines

— Allow or deny range entry for room DNs

— Allow or deny the substitution of X in a room DN

Provide a confirmation message each time data is manually changed by entering a terminal command

— Provide Automatic Wake Up traffic statistics, and display messages

— Assign unique two-letter language identifiers for use with Multi-Language Automatic Wake Up

Individual feature options

Automatic Wake Up

- Set automatic display of particular types of wake-up events as they happen

- Set the activation time for secondary wake-up announcement

Message Registration

- Set a unit cost figure to generate total call charges for metered calls

- Set the automatic display option for particular **DNs** on for some, off for others

Room Status

- Set the ready for sale print criteria

- Set the language ID for Automatic Wake Up messages

- Set the time for automatic update of room cleaning status

- Define automatic room status applied with check-in command

- Set automatic display of room status changes from particular sources as they happen

- Assign guest rooms to categories

Call Party Name Display

- Set CPND name assignments for eligible **DNs**

Accessing the Background Terminal

The BGD mode is automatically accessed, and no **login** procedures are necessary. Use the LOG1 password sequence for service change administration access, if configured.

After logging out of the service change administration mode, the terminal reverts to its previous parameter settings in the Background mode. The Background command set is recognized once again.

> Note: After service change, the BGD terminal is ready for use. It has unrestricted access to the BGD features.

Commands

The BGD is command oriented. In order to accomplish any task in a Background Terminal, a command must be entered. Command keywords define the action and the feature to which the action is to be directed. Only the first two characters of any command keyword need to be typed on a command line.

- Commands are terminated by pressing the return key **<CR>.**

- Time is entered and retrieved using the 24-hour clock.

- Entering * * * * stops the current activity.

Items shown in bold upper-case characters (SE, for example) are actual commands expected by the system, except for values in parenthesis. Items in parenthesis are default or optional values and need not be entered.

Items shown in non-bold lower-case characters represent variables. They indicate the form that information should take and are not typed in as they appear. For example, the range of directory numbers for a set of rooms is represented by "dnl dn2."

Directory number expansion

With X11 release 13 and later, Directory Number Expansion (DNXP) is introduced to allow an internal DN to have up to seven digits. If this package is equipped, any BGD command, response, or display containing a DN field is expanded to accommodate up to seven digits.

User modifications

After service change, the BGD is ready for use with unrestricted access to Background features. The customer or user may want to change certain system criteria or impose certain system and/or terminal restrictions by changing the BGD option settings. This, in effect, customizes the BGD arrangement to suit the needs of the customer.

Configure port and identification codes

All BGD **TTYs** are assigned Physical **SDI** Device Numbers associated with their assigned ports. The ports or terminals in your system each have a number to identify them. They can also be assigned a two-letter port ID; to print something at a terminal other than the one at which you are typing, that terminal must have a port ID. The port ID can be two letters or a letter and a number. It cannot be completely numeric.

The following combinations of letters cannot be used because they are used in commands:

AU, FI, IS, LO, ME, OP, PO, PR, SE, ST, TR, WA

To assign a two-letter port ID to a terminal:

SEt OPtion IDentifier nn id **<CR>**
where:
nn = port number
id = two-letter ID

To change the port ID of a terminal:

SEt OPtion ID oldname newname **<CR>**

Print port

To print port information, use the following print commands:

(PRint) POrt
This command prints the current setting for all terminals.

(PRint) Options
This command prints the current option setting for all terminals.

Configure terminals

This section describes how to set which terminals will be allowed to perform which functions. There are two basic types of restrictions you can make.

— Restrict terminal to a feature or features. A terminal can be allowed to set Automatic Wake Up, Message Registration, Room Status, or Call Party Name Display only, or any combination of these features.

— Restrict access to data. A terminal can be allowed to either change values or just read information. A terminal can be assigned to print reports or to display messages. For just printing or display, you can use a printer that does not have a keyboard.

Restrict terminal from setting features

— To allow a particular terminal to set system features:

SEt OPtion POrt portID item(s) (ON) <CR>

— To deny a particular terminal to set system features:

SEt OPtion POrt portID item(s) **OFf** <CR>

To see what all the terminals in your system are currently set to (see"Print terminal setting" on page 21 for a sample listing):

(PRint) **POrt <CR>**

Operating   parameters

The choices you can use as items in the commands listed above are listed below.

- **MEter**

- **OPtion**

- **STatus**

- **WAke**

- Call Party Name Display

An **OPtion** terminal is one that can change the configuration and the options for the whole system. You must retain at least one terminal as the **OPtion** terminal.

Any combination of features is possible. For example, a terminal that can be used for both Room Status and Automatic Wake Up, but not for Message Registration, would be set to **STatus WAke.**

Restrict terminal access to data

- To allow access to data:

    SEt OPtion POrt portID item(s) (ON) <CR>

- To restrict access to data:

    SEt OPtion POrt portID item(s) **OFf** <CR>

- To allow a terminal to read data but not change it:

    SEt OPtion POrt portID **REad** (ON) <CR>

- To designate a terminal as a printer:

    SEt OPtion POrt portID **PRint** (ON) <CR>

- To prevent a terminal from being able to change data:

    SEt OPtion POrt portID **SEt OFf <CR>**

Operating parameters

The choices you can use as items in the commands listed above are listed below.

— **SEt**   can change data

— **REad**   read only, cannot change data

— **DIsplay** displays messages

— **PRint**   prints reports requested at another terminal

Any combination of these is possible.

You can combine feature restriction and access restriction. When typing the command the feature comes first, the access second. For example

SEt OPtion POrt portID **WAke DIsplay** (ON) **<CR>**

would assign to this terminal the job of displaying wake-up messages.

SEt OPtion POrt portID **MEter PRint** (ON) <CR>

would assign this terminal to be the printer for the Message Registration feature.

Note *1:* You must have one OPtion terminal that can reset system options if you need to in the future.

Note 2:   Only one terminal can have its restrictions changed in one command line. You may use either its number or its two-letter port ID to identify it.

Note 3:   *You* cannot turn options ON and OFf in the same command. The word ON, or OFf, always comes at the end.

Note 4:   To set everything OFf for a particular terminal, type
SEt OPtion POrt portID **OFf** <CR>

Table 4
Set command to restrict or access to features examples

Input	Comments
SEt OPtion POrt portID **WAke** (ON) **<CR>**	Allow this terminal to access Automatic Wake Up
SEt OPtion POrt portID **STatus OFf <CR>**	Restrict this terminal from accessing Room Status

Managing terminal restrictions

Follow these steps to manage terminal restrictions more easily.

1   Decide what you want each terminal to do, on paper.

2   Decide which terminal will be the OPtion terminal, retaining control over what the others can do.

3   Using this terminal, turn OFf everything on each of the others (see Note 4 above).

4   Turn ON what you want.

Define options for the Set command

The four options you can define for the Set command are listed below.

— A L L

— X substitution

— RANGE

— CONFIRM

You may choose to disallow the setting of all DNs to some value.

— To disallow the setting of all DNs to some value:

SEt OPtion AL1 **OFf** <CR>

— To disallow the use of X to represent all possible values O-9 of a digit in a DN, so that groups of DNs which have some pattern may all be SET to some value:

SEt OPtion X **OFf <CR>**

For example:

A certain class of rooms ends with 6.
12X6 will set 1206, 1216, 1226, 1236, and so on.

All rooms on the 14th floor have DNs which start with 14.
14XX will set 1400-1499 to some value.

— To disallow a sequential range of DNs to be set to a value by giving the first and last numbers in the range:

SEt OPtion RAnge OFf <CR>

If the RANGE option is set off, ALL is also set off.

— To disallow your input to be echoed or repeated on the line underneath for confirmation:

SEt OPtion COnfirm OFf <CR>

  — To turn all options off:

      SEt OPtion OFf \<CR\>

  — To turn all options on:

      SEt OPtion ON **\<CR\>**

Operating parameters

More than one option can be entered on each command line. For example,

      SEt OPtion X **COnfirm OFf** \<CR\>

will turn off both X substitution and the confirmation echo.

The word OFf always comes at the end. If an option is turned off, and someone attempts to type a command using it, the message COMMAND OFF will appear.

To turn these options back on, simply use the word ON in place of the word OFf. For example, to turn the ALL option and the RANGE option back on:

      SEt OPtion ALl RAnge ON **\<CR\>**

To find out which options are set on and which are set off:

      (PRint) OPtion \<CR\>

In the chart that is printed as a response, look for the words ALL, RANGE, CONFIRM, and X RANGE.

Print system settings

You can use your terminal to print out the current BGD settings with this command:

(PRint) OPtion <CR>

The options are:

- Set options-ALL, CONFIRM, RANGE, X RANGE
- Guest room category names
- For sale definition
- Check-in/check-out definition
- Unit cost amount for metered calls
- Display control
- Time selection and cleaning status update methods
- Terminal IDs and functions
- MLWU language ID

Operating   parameters

When your Meridian 1 system first comes into service, some options are set ON, and others OFf.

Enter the Print command to find out how the options are set.

Table 5
System options printout example

ALL	ON				
CONFIRM	OFF				
RANGE	ON				
X RANGE	ON				
CATEGORY	1: 1BED	2: 2BED	3: KTCH	4:	5:
	6:	7:	8:	9:	10:
	11:	12:	13:	14:	15:
CHECK	CO DN	MW RE	TL WA LA	VI	
DISPLAY	M E ST:	DE CC	DI R M	WA:AN RE	
SALE	PA VA				
TIME	DETECT	OFF			
	DIAL	ON			
	RAN2	OFF			
	REQUEST	OFF			
LANG	0: EN	1: SP	2: GR	3: FR	4: JP	5: CH
00 PORT 0	WA: SE	** DI	ME:SE ** **	OP: SE ** **	ST SE

Print terminal setting

You can print a list showing the number, name, and setting for each terminal.

- To find out the ID and current setting of all terminals in your system:

    (PRint) POrt <CR>

Example printout:

04 PORT HC WA: SE ** ** ME: ** ** ** OP: ** ** ** ST: ** ** **

Terminal 4, also called HC, is a SEt terminal for wake-up. Asterisks (*) mean that other functions are turned OFf for this terminal

Within each feature, the order of functions is:
SEt or REad, PRint, DIsplay.

- To find out the terminal number and the port ID of the terminal you are currently using:

    * <CR>

A reply example follows.

TTY 01 SCH MTC TRF BUG BGD CUST 03 AC 1236

On the left the first item specifies the kind of device you are using (in this case, TTY for teletype). The number next to it is your terminal number (in this case, 01).

At the far right the last number is the time (12:36 in this case). Next to it is your port ID, if you have assigned one (in this case, AC).

Print at other terminals

You can ask to have a report printed at a terminal other than the one where you type the command. Simply replace the word PRint in any print command with the two-letter port ID (can be a default port number in the ID field) where you want the printout. When you do this, the command is placed on your Automatic List for the few moments until printing occurs, and then removed. This temporary command would appear as TEMP if you printed your list.

Table 6
Printing at another terminal command examples

ZZ MEter ALI <CR>
Print all meter values, now, at terminal ZZ.

Automatic 2130 **ZZ MEter ALI <CR>**
Print all meter values automatically at   9:30 each evening, at terminal ZZ.

Background Terminal displays

A terminal can display messages showing each change to the information stored as that change happens. For example, every time a wake-up call is answered, or every time a room status changes, it can be displayed. If your terminal is attached to a printer, it provides a traceable record of events.

You can choose to print some or all display messages for one, two, or all three features. Do the following for each feature:

- Assign a terminal to show the display messages.

- Decide what is to be displayed, and turn these displays on.

To see which displays are turned ON or OFf, type

(PRint) OPtion <CR>

In the chart that prints, look at the line beginning with DISPLAY. An example of the chart is shown in "System options printout example" on page 20.

Display format

Tables 7, 8, and 9 show the display format, and the column parameters. Table 7 shows the format with Maid ID, Multi-Language Wake-Up, and VIP Wake-Up packages equipped.

> Note: X11 release 16 introduces Multi-Language Wake-Up. Maid ID and VIP Wake-Up are available with X11 release 17 and later.

The first line shows the source of the change, the DN and the status immediately prior to the change. The second line shows the new status. At the end of the second line is the time the change took place.

After sysload, blocks of * characters may be printed in the occupancy and cleaning fields (columns 1 and 2) to show they have not been assigned occupancy or cleaning status. If this happens, enter the missing information.

The second line of a display message may be replaced by a warning, as described below. These warnings will also appear in a confirm message (see "Define options for the Set command" on page 17) in the same circumstances.

— ERR: NO LAMP An attempt was made to turn Message Waiting or Do Not Disturb condition on or off, and the room telephone has no lamp.

— ERR: BAD LAMP The lamp is not functioning properly.

— ERR: NO SALE Operations such as check-in were attempted on a room that is not for sale.

— ERR: NOT VAC A check-in was attempted for a room already occupied.

— ERR: NOT OCC A check-out was attempted for a room not occupied.

Xl 1 release notes

With X11 release 15 and earlier, the display includes up to column 7 and the time (AT hh:mm) (up to 62 characters).

X11 release 16 and Multi-Language Wake Up (MLWU) adds column 8 to the display. The time (AT hh:mm) follows at the end (up to 72 characters total). If MLWU is not equipped, the display remains the same as it appears with X11 release 15.

Xl 1 release 17 introduces Maid ID and VIP Wake Up. This adds Maid ID information just before column 1, and column 9 to the display. Column 9 appears whether or not MLWU and VIP Wake Up are equipped. If Maid ID is equipped, the ID number appears on the second line. If it is not equipped, or the ID not defined, blanks fill the spaces.

Table 7
Display format (with Maid ID, Multi-Language Wake Up, and VIP Wake Up equipped)

ST source	54 02	co L1	co L2	co L3	co L4	co L5	co L6	co L7	co L8	COL9
	xxx x	co L1	co L2	co L3	co L4	co L5	co L6	co L7	co L8	COL9 AT hh:mm

ST source = how the room status was changed (what method)

5402 = Room DN (with DN Expansion equipped this number can be up to 7 digits long)

xxxx = Maid ID (one to four characters, left justified with the DN, any unused portion is left blank)
If Maid ID is not equipped, this is left blank. Output begins with Column 1.

Column 1 = vacant or occupied

Column 2 = cleaning status

Column 3 = telephone Class of Service

Column 4 = message waiting lamp

Column 5 = do not disturb on

Column 6 = if ready for sale

Column 7 = category

Column 8 = language (if Multi-Language wake up is equipped)

Column 9 = VIP Wake-Up (if equipped)

AT hh:mm = time the change occurred

Table 8
Display values (Part 1 of 2)

Item	Value
ST source	ST-COS (Check-in/check-out from a Class of Service key on a telephone) ST-DET (Off-hook detection of a room telephone) ST-DIAL (Dial access code from a room telephone) ST-RMK (RMK key on an SL-1 or digital telephone) ST-TERM (Terminal)
5402	Room DN (up to 7 digits with DN Expansion, up to 4 digits without DNXP)
KXXX	Maid ID number (I-4 digits)
Column 1	OCC (Occupied) VAC (Vacant) *** (no status yet)
Column 2	REQD (cleaning requested) PROG (cleaning in progress) CLND (cleaned) PASS (cleaning passed) FAIL (cleaning failed) SKIP (cleaning skipped) NSAL (not for sale) **** (no status yet)
Column 3	UNR (unrestricted) CUN (conditionally unrestricted) CTD (conditionally toll restricted) TLD (toll denied) SRE (semi-restricted) FRE (fully restricted) FR1 (fully restricted 1) FR2 (fully restricted 2) COS (controlled class of service) EC1 (enhanced controlled class of service 1) EC2 (enhanced controlled class of service 2)
Column 4	MWL indicates the message waiting lamp is on (blank if lamp is not on)
Column 5	DND if do not disturb is on (blank if not on)
Column 6	SALE if room is for sale (blank if not)

Table 8
Display values (Part 2 of 2)

Item	Value
Column 7	CAT: 1 CAT 2 CAT 3 CAT 14 CAT 15 Blank if no category is assigned
Column 8	LANG: 0 or two-character mnemonic LANG: 1 or two-character mnemonic LANG: 5 or two-character mnemonic Blank if default language (0) is assigned, or Multi-Language Wake-Up is unequipped
Column 9	VIP if VIP Auto Wake Up is assigned (blank if not equipped or assigned)
AT hh:mm	Time of day the change occurred.

Table 9
Display format parameters (Part 1 of 2)

Item	Length	Start position
ST source	up to 7 characters + one space (if fewer than 6 characters, the spaces fill before adding the space)	0
5402	Up to 7 digits (left justified) with DNXP with NO following space (If fewer than 7 digits, the spaces fill before adding the space)	8
	Without DNXP, up to 4 digits + 3 spaces (If less than 4 digits, the spaces are filled)	8
xxxx	l-4 digits (left justified) + 3-6 leading spaces into column 1 (1 digit has 6 spaces, 2 digits have 5 spaces, etc.)	
	15 spaces if Maid ID is not equipped, or there is no Maid ID.	8
Column 1	3 characters + one space	15
Column 2	4 characters + one space	19
Column 3	3 characters + one space for padding + one space to line up	24
Column 4	3 characters + one space (or 4 spaces)	29
Column 5	3 characters + one space (or 4 spaces)	33
Column 6	4 characters + one space (or 5 spaces)	37
Column 7	Up to 9 characters total	
	One-digit categories have 4 characters + one space + one space to line up with two digit category, + 2 digit + two spaces	
	Two-digit categories have 4 characters + one space + two digits + two spaces	
	If no category is assigned, 9 blank spaces are used	

Table 9
Display format parameters (Part 2 of 2)

Item	Length	Start position
Column 8	Up to 10 characters total (including the leading space) One leading space appears before the keyword LANG: begins Column 51 is where the leading space appears, column 52 is where the LANG actually begins Two-character language mnemonic format is one space to line up the column + 5 characters (LANG:) + one space + 2 character mnemonic + one space to line up with column 9 One-digit language identifier format is one space to line up the column + 5 characters (LANG:) + 1 digit language identifier + one space for padding + one space to line up with column 9. If Multi-Language is not equipped, 10 blank spaces. See Note.	51
Column 9	3 characters + one space 4 spaces if VIP is not equipped or not enabled.	61
AT	4 characters 2 leading spaces appear before keyword AT appears. 2 leading spaces + 2 characters Actually begins at column 67 due to leading spaces	65
hh:mm	Total of 7 characters including leading spaces 2-digit hour time (12:55) has 2 leading spaces + 2 digits (hh) + one character (:) + two digits (mm)	71 (2-digit hour)
	1 -digit hour time (1 :15) has 3 leading spaces + digit (h) + one character(:) + two digits (mm)	72 (1 -digit hour)

Display wake-up events

— To assign a terminal for wake-up display:

SEt OPtion POrt portID **WAke DIsplay** (ON) **<CR>**

Wake-up events that can be displayed as they happen are listed here.

ENTRY   The attendant (or guest) enters or cancels the wake-up request.

ANSWER   The wake-up call is made, and answered by the guest.

RETURN   The call is returned to the attendant.

To display wake-up events, the basic command structure is

SEt OPtion DIsplay event(s) (ON) **<CR>**

— For example, to have a message displayed whenever a call is returned to the attendant:

SEt OPtion DIsplay REturn (ON) <CR>

— You can choose more than one of these events in the same command. For example, to display calls entered and calls answered but not calls returned to the attendant:

SEt OPtion DIsplay ENtry ANswer (ON) <CR>

— To display all three types of events:

SEt OPtion DIsplay WAke (ON) **<CR>**

— To stop the display of wake-up calls being answered:

SEt OPtion DIsplay ANswer OFf <CR>

You can turn off more than one display at the same time. For example, to turn off the display of calls answered and calls being returned to the attendant:

SEt OPtion DIsplay ANswer REturn OFf <CR>

Note: The word OFf always comes at the end. Also, you cannot turn displays ON and OFf in the same command.

A typical display message would look like this:

WAKEUP 5006 NONE ATTN ENTR TO 6:45 AT 16:00

Words that may appear are shown in the following list:

ATTN ENTR	attendant entry
SET ENTR	guest entry
ATTN RETN	call returned to the attendant
TERM CHG	terminal change
CALL ANS	call answered by the guest
SYST BLKD	system blocking caused the attendant return
EQPD FAIL	a hardware failure caused the return
ATTN DEL	the attendant canceled a call
SET DEL	guest canceled a call
CHK DEL	a room status check-out command cancelled a wake-up call
LNG(#) FAIL	recording for language number (#) failed or cannot be accessed
NONE	used instead of a time when there is no wake-up time scheduled
VAWU ANS	VIP wake-up call answered by guest
VAWU NOAN	VIP wake-up call not answered by guest
VAWU CANC	VIP wake-up call canceled by attendant

Display message registration events

Follow these steps to have meter changes displayed.

1   To assign a terminal for meter display:

SEt OPtion POrt portID   **MEter DIsplay** (ON) <CR>

2   The system DISPLAY option must be turned on to have any meter changes displayed. To turn on the system meter display:

SEt OPtion DIsplay MEter (ON) <CR>

To turn it off again, just replace ON with OFf.

3   The meter for an individual DN must have its own display turned on as well if you wish to display changes to it. This gives you the choice of turning all meter displays on, or only those you require. To turn the display of a particular meter or groups of meters on or off, refer to "Turn meters on and off" on page 81.

A typical display message would look like this.

ROOM METER 1235 DISP 40 TO DISP 42 AT 16:00

The value of the meter for DN 1235 was changed from 40 to 42 at 4:00 pm.

Display room status events

—   To assign a terminal for room status display:

SEt OPtion POrt portID **STtatus DIsplay** (ON) **<CR>**

—   To turn on the display of room status changes:

SEt OPtion DIsplay STatus (ON) **<CR>**

—   To turn it off:

SEt OPtion DIsplay STatus OFf <CR>

Particular sources of input can be displayed or not displayed as required. Command format is the same, using one or more of the following items in place of STatus. The choices are listed below.

CCos   CONTROL COS key on an SL-1, or digital telephone, or attendant console

DEtect   off-hook detection of room telephone

DIal   dial access using room telephone

RMk   Room Status key on an SL-1 or digital telephone

TErminal changes entered by typing at a terminal

Refer to "Set automatic control of room cleaning status" on page 63 and "Set check-in, check-out parameters" on page 66 for additional information.

To turn on one of the STATUS options:

SEt OPtion DIsplay item(s) (ON) **<CR>**

To turn any of these off, use OFf in place of ON.

Note: The word ON or OFf always comes at the end, and items cannot be turned ON and OFf in the same line.

Automatic daily routines

You can store up to 12 commands on the Automatic job list for execution at a predesignated time. If you use the Automatic **"CLeaning REquested"** option (to change the cleaning status of all occupied rooms to **REquest** cleaning [RE] at a specified time), it occupies auto list entry number 12, so only 11 commands can be stored. Commands are put into the Automatic job list by specifying any valid command with the following syntax where **"hhmm"** is the 24-hour clock time when the command executes, and "command" is the job to be executed at hhmm.

Automatic hhmm command **<CR>**

Note: The list entry number is assigned by the system.

For example, at 11:00 p.m. create a printout of all Message Registration meters having non-zero values. Enter the following:

AU 2300 (PR) ME AL

Note: The data specified in this example is printed at the Meter print port if one has been assigned or at the terminal entering the information. If you want the data to print to another terminal, enter a Port ID in the command field (for example, AU 2300 Port id ME AL).

If the list is full (that is, contains 12 entries), you must delete one of the stored entries before another command can be added to the list. To delete an entry in the Automatic job list, use the following command. Note that "nn" is one of the entries in the Automatic list.

SE AU nn OF

To print the contents of the Automatic Job list, enter:

(PRint) Automatic

Output may look like this, where "AB" and "CD" are porIDs.

01 AUTO A T 9:00 A B PR W A 0 9999
02 AUTO A T 9:00 CD PR W A 0 9999

If two jobs are scheduled for the same time, the job with the lower entry number is processed first. If the first job is finished within the same hour, the second job starts immediately after the first one is done. If it is already the next hour when the first job is finished, the second job will not be executed at all.

To print all the wake up calls at 10:00 p.m., enter the following command where "H1" and "H2" are the port IDs:

Automatic 2200 **H1** H2 **WAke ALl**

—   To print the contents of the automatic list:

(PRint) Automatic **<CR>**

You will receive a copy of the contents of your Automatic job list. Each command in the list has a number in the range 1-12.

—   To remove a command from the Automatic list:

Print the list, as described above, to find the number of the command you wish to remove, then use the following command to remove it:

SEt Automatic **nn OFf <CR>**

where "**nn**" is the number of the item you wish to remove from the list.

Table **10**
Generating automatic daily routines

Automatic 900 (PRint) **STatus ALl <CR>**

Add a command to the list. This command tells the system to print the status of all guest rooms at 9:00 each morning.

Automatic 1730 (PRint) **MEter** 4201 4225 **<CR>**

Add a command to the list. This command tells the system to print all non-zero telephone meters from DN4201 to 4225 at   5:30 each afternoon.

SEt Automatic 1 **OFf <CR>**

Remove item 1 from the list.

(PRint) Automatic **<CR>**

Print the contents of the Automatic list. If it contained the two items above, it would look similar to this.

| 01 | AUTO | AT | 9:oo | AB | PR | ST | 0 | 9999 |
| 02 | AUTO | AT | 17:30 | CD | PR | ME | 4201 | 4225 |

* O-9999 represents ALL.

Full Automatic list

If your list becomes full because of a temporary command, you will get a message TRY AGAIN. Simply wait a few minutes and type in your command again.

If your list already has 12 entries and you try to add another item (number **13),** you will get a message LIST FULL. You must remove an item before you can add a new one. An automatic cleaning requested procedure (see "Set automatic control of room cleaning status" on page 63) always uses list entry 12 and will not be shown as a list member. If so, your list is full with 11 entries.

Traffic data

The traffic printout shows system activity for a 24-hour period. It gives wake-up call statistics and display message statistics.

— To request the traffic printout:

(PRint) TRaffic <CR>

To have it printed at another terminal, replace the word **PRint** with the port ID where you want it printed.

To have it printed at the same time every day, add this command to the
automatic list (see "Generate Automatic Daily Routines"). The format for a
traffic printout is shown in Table 11.

Table 11
Traffic printout format (Part 1 of 2)

System	**DD(a)**	TIME	**0:00(b)**			
WAKEUP	dd(a)	0000(c)	0000(d)	0000(e)	0000(9	**0000(g)**
0000(h)	**00.0(i)**	**00.0(j)**	0000(k)	**0000(l)**		
DISP	TOT		0000(m)	0000(n)		
	PORT*(o)		0000(p)	0000(q)		

Legend:

a   =   date

b   =   time

c   =   total number of wake-up calls (includes
          successful and failed calls)

d   =   total number of calls answered after one
          attempt

e   =   total number of calls answered after two
          attempts

f   =   total number of calls answered after three
          attempts

g   =   total number of calls returned to the
          attendant (unanswered or blocked)

Table 11
Traffic printout format (Part 2 of 2)

h	=	number of times a full time interval caused an attendant entry failure
i	=	average call answer time in seconds
j	=	average call holding time in seconds
k	=	number of times the default AWU RAN routes are used due to language RAN route failure.
l	=	number of VAWU attempts that do not find an idle attendant. Maximum of 3 attempts per VAWU request.
m	=	total number of display messages
n	=	total number of display messages that failed on all ports. The display message handled on any BGD that failed on others is not included.
o	=	port ID or a terminal number
p	=	total number of display messages on the port
q	=	total number of display messages on the port that failed

Display option

A message can be printed to record each change made to Hotel/Motel feature data as it occurs. These optional display messages provide a traceable record of events. One or more terminals must be assigned to print these messages.

— Following is the command structure to set display options.

SE OP DI items **ON/OFf**

Choices for items to be displayed are as follows.

Automatic Wake Up items

AN calls answered
EN calls entered/deleted
RE calls returned to attendant
WA wake, which includes all three event types

Message Registration To enable the display of meters in general, use ME for "item" in the command above. Individual meter display can then be turned on or off as required.

    SEME dn   DI (ON), OFf
              dnl dn2
              dnx
              AL1

The last two words, DI ON/OFf, can be added to the end of a command that sets meter values.

Room Status Display choices can be changed in several ways.

    CC   CCOS key on a telephone
    DE   off-hook detection of room
    DI   dial access using a room phone
    RM Room Status key (RMK) on an SL-1 or digital telephone
    TE   a terminal
    ST   status, which includes all five of these input sources

Display queue size If the volume of display messages required is large, queue wrap-around may cause the loss of some messages. On the Traffic printout the number of display messages lost is shown. Increasing the display queue size (default is 20 messages) is a service change operation in LD17.

Call Number Information Messages

Call Number Information Messages are available in X11 release 12 and later. If the terminating telephone has Call Number Information Allowed (CNIA) Class of Service, the system sends Call Initiation and Call Termination messages for calling and called DNs on a real-time basis to the BGD port.

Message formats sent to the BGD port are shown below:

– ST-CI xxx...x yyy...y

– ST-CT xxx...x yyy...y

  Legend:

  xxx...x = Calling DN
  yyy...y = Called DN

Call Initiated (CI) A Call Initiated message is sent when the terminating telephone has Call Number Information Allowed (CNIA) Class of Service (COS) and one of the following conditions occurs:

– The telephone handset is lifted and a number dialed.

– The call is reestablished from on-hold status.

– The telephone is the third party in a call transfer.

– The telephone terminates a forwarded call.

– The call is picked up by a station.

– The call waiting key on a CNIA telephone is pressed.

– The call is extended by an attendant.

Call Terminated (CT) A Call Terminated message is sent when the
terminating telephone has Call Number Information Allowed (CNIA) Class
of Service (COS) and one of the following conditions occurs:

- Call termination to a non-CNIA telephone

- Call Forward No Answer (CFNA)

- Call Park

- Call Transfer from originating or terminating telephones

- Call Pickup received by the telephone

- Conference call

- Call On Hold

No messages are sent in the following cases:

- Dial Intercom calls

- Overridden calls

- Attendant calls

- CNIA-originated calls

- Automatic Wake Up calls

- Trunk calls

Operating parameters

Class of Service for CNIA is limited to 60 telephones and is assigned in LD10
and LD11. LD20, LD81, and LD83 modify printing and counting based on
CNIA/CNID COS. Refer to *X11* features and services (553-3001-305) and
X11 input/output guide (553-3001-400).

A telephone that is assigned Virtual ACD Agent (VMA) Class of Service
cannot be assigned CNIA Class of Service.

Collocated telephone and TTY equipment is needed to fully implement this
feature.

Automatic Wake-Up

Automatic Wake-Up enables the Meridian 1 to place wake-up calls automatically. An attendant may enter the wake-up information specified by the guest, or the guest enters the wake-up information from their room telephone. At the appointed time, the system places the wake-up call. Upon answering, the guest hears a recorded wake-up announcement, or a personal wake-up message.

If the call is unanswered after one to three attempts, or if it is blocked by heavy traffic or system malfunction, it is either returned to the attendant or disconnected, depending on the option selected in the software (LD15).

You can use your BGD to enter a wake-up call request (see "Set wake-up call times" on page 45) and you can use it to retrieve wake-up call information (see "Find wake-up call times" on page 49). You can find out the wake-up times that have been set for a guest's telephone or for a group of telephones.

A map or hour-by-hour (shown in five-minute increments) summary of a day's wake-up calls is also available (see "Print wake-up call map" on page 52). You can also get a continuous printout or display of any or all wake-up events as they occur.

For a complete description of Automatic Wake Up, refer to *Xl I features and services* (553-3001-305).

Guest Entry of Auto Wake Up (GEWU)

A wake-up request can be entered by the attendant or craftsperson on the BGD, or by a guest on the room telephone (see Guest Automatic Wake-Up in *X11 features and services* (553-3001-305)).

When the guest programs or cancels the wake-up call via the Wake-Up Key (WUK) or a Flexible Feature Code (FFC), a display message is sent to the Background Terminal. If the Display option for AWU is set, a display message is directed to the terminal designated for wake-up display when a guest programs or cancels a wake-up request. X11 release 17 adds a display wake-up message to room telephones that are equipped with a display.

Multi-Language Wake Up (MLWU)

A customer-definable language can be assigned to a room telephone at any time through the BGD, or service change (LD10 or LD11). The language remains unchanged until the next language assignment; however, the customer may opt to clear the language at check-in and check-out times. The language assigned to a room DN is only stored with the primary appearances of the room DN.

If Automatic Wake-Up is enabled, up to six language-specific Recorded Announcement (RAN) route pairs (both am and pm for each language) can be configured. The languages correspond to the RAN routes   RAN1/RAN2, LA11/LA12, ... LA51/LA52 in LD15. The only requirement is that Language 0, the default language routes RAN1 and RAN2, must be defined.

VIP Automatic Wake Up

VIP Automatic Wake Up (VAWU) is an X11 release 17 enhancement to the AWU feature. VAWU allows rooms to be designated as VIP so that guests can be awakened by a personal telephone call from the attendant rather than the RAN wake-up. At the requested time, the attendant is notified of the VIP wake-up call.

A VIP room is one whose DN is assigned VIP designation.

Set wake-up call times

You can use your BGD to set wake-up call times for a single DN or a group of DNs.

- To set a wake-up call time for one DN:

  SEt WAke dn **TIme** hhmm <CR>

  To set a wake-up call time for a consecutive group of DNs:

  SEt WAke dnl dn2 **(TIme)** hhmm <CR>

- To enter the next wake-up call, simply enter the DN and the time.

- To delete a wake-up call:

  SEt WAke dn **TIme OFf <CR>**

- To change the time of a wake-up call, simply type the command with the new time.

Operating   parameters

You must use **TIme** in the command for one DN. For a group of DNs, **TIme** is optional.

Use a 24-hour clock to give the time (hhmm). For example, type in 7:15 am as 715 and 2:30 pm as 1430.

You cannot make a wake-up call entry for the current five-minute period or for a time more than 23.5 hours in advance. If the time you type is not allowed, a message AWU TIME? giving the allowed time range will appear.

Each five-minute interval of the day has room for 100 (or 500, depending on your system) wake-up calls. If the interval containing the time you typed is full, you will receive a message like the following, indicating the five-minute interval 7:00–7:04 is full.

WAKE UP 7:00 FULL 6:55 100 **7:05** 85 STOP ON 2314

6:55 100 **7:05** 85 shows the amount of room remaining in the intervals five minutes before and after 7:O0. At **6:55,** in this case, there are 100 spaces remaining and at **7:05** there are 85. You can choose one of these intervals.

STOP ON 2314 indicates the DN the system did not accept because of lack of space. If you entered a group of DNs, DN 2314 is the first of those that are still not recorded in the system.

Table 12
Using the Set command for Automatic Wake-Up

Input (what you type) Response (what the terminal displays)	Comments (what happens)
SEt WAke 1402 TIme 715	
WAKE UP 1402 NONE TO 7:15	Wake-up call for one DN, DN 1402, will be called at 7:15 am. NONE shows there was no previous entry.
SEt WAke 3405 3409 **(TIme)** 800	Wake-up call for a group of DNs
WAKE UP 3405 NONE TO 8:00	DNs 3405 to 3409 will be called at 8:00 am. Note that DN 3406 had a previous entry for 7:30, which has been changed to 8:O0. The others had no previous entry (NONE).
WAKE UP 3406 7:30 TO 8:00	
WAKE UP 3407 NONE TO 8:00	
SEt WAke 23105 TIme 715	Wake-up calls for a list of DNs
17804 700 12642 30441 11018 645	DN 23105 will be called at 7:1 5. DN 17804 will be called at 7:O0. Since the next two entries are also for 7:00, you can leave the time out. DN 11018 will be called at 6:45. Note that this example shows only the input you type, as if the "confirm" option is turned off (see "Define options for the Set command" on page 17).

Set time for a secondary wake-up announcement

You may set the time at which a second recorded wake-up announcement is activated.

—   **SEt OPtion TIme** RAn2 time1 time2 <CR>
    If you do not put in any value for time2, then 00:00 (midnight) will be assumed.

—   If the second time is earlier than the first, for example:

    SEt OPtion TIme RAn2 2200 400 <CR>

    then the time of the second recorded announcement will run through midnight to the next morning.

—   To turn this time range off:

    SEt OPtion TIme RAn2 **OFf** <CR>

Set language identifiers for wake-up announcements

You may assign a two-letter identifier to each of the six possible recorded languages used to make wake-up calls. The two-letter code is used to identify each language used to record the wake-up announcement. When setting a room's language status, use the language number (O-5) or the two-letter identifier. Language numbers do not change because they refer to the tape recorders that play the announcements.

— To set the language identifier for a language number:

SEt OPtion LAnguage (language number) (id) **<CR>**

where:

(language number) O-5

(id)   any two-character code that does NOT correspond to a command (first character MUST be a letter)

— To change the language identifier, repeat step 1 or:

SEt OPtion LAnguage (old id) (new id) **<CR>**

— To clear the language identifier:

SEt OPtion LAnguage (language number or identifier) **OFf <CR>**

Table 13
Example of the Set command for the language option

Input	Comments
SEt OPtion LAnguage 3 EN **<CR>**	Language number 3 set to EN for ENglish.
SEt OPtion LAnguage EN FR **<CR>**	Whichever language number that was set to EN is changed to FR for FRench.
SEt OPtion LAnguage 0 **OFf <CR>**	Language number 0 no longer has an identifier.

Find wake-up call times

You can use your terminal to find DNs that have wake-up call times set. The FInd command allows you to retrieve the wake-up call request for the lowest-numbered DN within the specified DN range with a wake-up call time set. To get the next one in the range, type the word FInd again.

To find one DN wake-up call time:

FInd WAke dn **<CR>**

— To find the first DN wake-up call time in a group of consecutive DNs:

FInd WAke dnl dn2 **<CR>**

— To find the first DN wake-up call time in the whole system:

FInd WAke ALl <CR>

To find the next wake-up call time:

FInd <CR>

Operating parameters

If only one DN is entered, the FInd command will look for a DN with a
wake-up call, starting with the DN requested and ending with the largest DN
in the system. It will print the first one it finds.

If there are no wake-up calls set in the group requested, the message NO
DATA FOUND is printed.

For a group of DNs, the second DN entered must be a higher number than the
first.

A command containing the word FInd all by itself is valid only immediately
following another FInd command which produced non-zero results (any
result other than NO DATA FOUND).

Table 14
Examples of the Find command for Automatic Wake-Up

Input Response		Comments
Find WAke 3040		One DN
WAKE UP	3040 7:oo	
Find WAke 9001 9200		A group of consecutive DNs, 9014 is the first DN in
WAKE UP	9 0 1 4 6:40	the group which has requested a wake-up call.
FInd WAke ALI		All DNs, DN 1030 is the first DN with a wake-up call
WAKE UP	1 0 3 0 7:15	time set.
FInd		DN 2019 is the next one.
WAKE UP	2 0 1 9 6:45	
FInd		
NO DATA FOUND		There are no more DNs with wake-up call times set.

Print wake-up call times

You can use your terminal to print the wake-up call time currently set for one or more guest rooms.

- To print the setting for one DN:

    (PRint) **WAke** dn **<CR>**

- To print the settings for a group of consecutive DNs:

    (PRint) **WAke** dnl dn2 <CR>

- To print the settings for all DNs:

    (PRint) **WAke** AL1 **<CR>**

Operating parameters

When retrieving the wake-up call times for a group of consecutive DNs, or for all DNs, only the DNs within the group that have requested a wake-up call will be included. If there were no DNs with wake-up calls in the range specified, the terminal prints NO DATA FOUND.

When specifying a group of DNs, the second DN entered must be a higher number than the first.

You can use X substitution in the DN. For example, (PRint) **WAke** 12XX prints DNs in the range 1200-1299 with wake-up call times set.

Typing * * * * will stop a job currently in progress at your own terminal (for example, a long printout you realize you don't need).

Table 15
Examples of the Print command for Automatic Wake-Up

Input Response			Comments
(PRint) WAke 1279			One DN
WAKE UP	1279	7:oo	DN 1279 has a wake-up call set for 7:00 am
(PRint) WAke 3700 3720			A group of consecutive DNs
WAKE UP	3702	6:30	
WAKE UP	3709	7:oo	
WAKE UP	3714	7:15	
WAKE UP	3718	6:30	
(PRint) WAke ALl			All DNs
WAKE UP	1003	7:oo	
WAKE UP	1229	6:45	
WAKE UP	2005	6:30	
WAKE UP	4137	6:15	

Print wake-up call map

A chart showing a count of all wake-up calls in each five-minute interval for every hour throughout the day is known as a wake-up map.

—   To print the wake-up call map:

(PRint) WAke MAp <CR>

To print the map at another terminal, put the two-character port ID of the terminal where you would like it printed: **portID WAke MAp <CR>**

Operating   parameters

To automatically print this map every day at the same time, put this command in the automatic list. The map in Table 16 shows a 24-hour day beginning at midnight. Each line is one hour in five-minute intervals. The number of calls in each five-minute period is shown. Date (23) and time printed are at the top.

Table 16
Wake-Up   call   map   example

(PRint) WAke MAp <CR>											
WAKE UP 23 T I M E 0:11											
0:00	000	000	000	000	000	000	000	000	000	000	000	000
1:00	000	000	000	000	000	000	000	000	000	000	000	000
2:oo	000	000	000	000	000	000	000	000	000	000	000	000
3:oo	000	000	000	000	000	000	000	000	000	000	000	000
4:oo	000	000	000	000	000	000	000	000	000	000	000	000
5:oo	000	000	000	000	000	000	000	000	000	000	000	000
6:00	002	000	000	001	000	000	001	000	000	000	000	000
7:oo	004	001	001	000	000	000	001	000	000	001	000	000
8:00	000	000	000	000	000	000	000	000	000	000	000	000
9:oo	000	000	000	000	000	000	000	000	000	000	000	000
10:00	000	000	000	000	000	000	000	000	000	000	000	000
11:00	000	000	000	000	000	000	000	000	000	000	000	000
12:00	001	000	000	000	000	000	000	000	000	000	000	000
13:00	000	000	000	000	000	000	000	000	000	000	000	000
14:00	000	000	000	000	000	000	000	000	000	000	000	000
15:00	001	000	000	000	000	000	000	000	000	000	000	000
16:00	000	000	000	000	000	000	000	000	000	000	000	000
17:00	000	000	000	000	000	000	000	000	000	000	000	000
18:OO	001	000	000	000	000	000	000	000	000	000	000	000
19:00	000	000	000	000	000	000	000	000	000	000	000	000
20:oo	000	000	000	000	000	000	000	000	000	000	000	000
21:oo	001	000	000	000	000	000	000	000	000	000	000	000
22:oo	000	000	000	000	000	000	000	000	000	000	000	000
23:00	000	000	000	000	000	000	000	000	000	000	000	000

Room Status

Room Status (RMS) sets conditions on rooms, such as whether or not a room requires cleaning, or whether a room is occupied or vacant. Room Status is managed through the BGD.

All room phones are required to have Controlled Class of Service Allowed (CCSA).

> *Note:* SL- 1 or digital telephones equipped with a Room Status key (RMK) and Digit Display can read and update the cleaning status of any guest room. This is not an option that needs to be set by terminal command. If such phones exist, they have access.

Xl 1 release 16 adds Multi-Language Wake Up to the Room Status feature. MLWU allows up to six languages to be programmed on various RAN routes, to be played at a wake-up call request.

Xl 1 release 17 adds two features that are implemented through RMS: VIP Automatic Wake Up (VAWU), and Maid ID. VAWU makes it possible to designate rooms as VIP so that guests can be awakened by a personal telephone call from an attendant rather than the RAN wake-up. Maid ID makes it easier to keep track of which maids clean which rooms.

> *Note:* Refer to the Automatic Wake Up section in this document, and *X11 features and services* (553-3001-305) for more details concerning the above features.

All occupied rooms can be automatically set to cleaning requested at the same time each day. Off hook detection of cleaning status can also be set for all occupied rooms for the same time each day.

Rooms can be classified by category (l-1.5) to identify locations, price range, size, facilities, and so on. Each room can be in only one category.

Table 17
Room status examples

Guest Registration and Occupancy	CH (IN)	check-in
	CH OU	check-out
	o c	occupied
	VA	vacant
Cleaning Status (includes Maid ID)	R E	cleaning requested
	P R	cleaning in progress
	C L	cleaned
	P A	cleaning passed inspection
	F A	cleaning failed inspection
	S K	cleaning skipped
Sale Status	SA	ready for sale
	N S	not for sale
Other Status Information	c o	Controlled Class of Service (CCOS)
	CO OF	System Class of Service (SCOS)
	EI	Enhanced Controlled Class of Service 1
	E 2	Enhanced Controlled Class of Service 2
	MW	Message Waiting Lamp
	DN	Do Not Disturb
	CA	category (see Assign Guest Room Categories)
	L A	language for Automatic Wake Up
	VI	VIP status for Automatic Wake Up
	TL	telephone check

Set room status

You can use your terminal to change the status of guest room **DNs** to checked-in. This can be done for a single DN, a group of consecutive **DNs** or all **DNs.** Use the abbreviations listed in Table 17 on page 56 in place of the word "status" in these commands.

— To set the room status of one DN:

SEt STatus dn status **<CR>**

— To set room status of a group of consecutive **DNs:**

SEt STatus dnl dn2 status **<CR>**

— To set room status of all **DNs:**

SEt STatus AL1 status **<CR>**

— To set a second nonconsecutive DN to the same status, simply type the DN and **<CR>.** If you have a list of nonconsecutive **DNs,** you can repeat many times.

— To set the language of one DN:

SEt STatus dn **LAnguage** number or ID <CR>

Operating   parameters

When checking-in a group of consecutive   **DNs,** the second DN entered must be a higher number than the first.

After setting the status of one or more guest room **DNs,** a confirmation message may be displayed or printed. If the "confirm" option is off, the updated status is not automatically displayed or printed (see "Define options for the Set command" on page 17).

You may not be able to use the SET command with all **DNs,** or with a group of consecutive **DNs,** or with X substitution, if any of these options is turned off (see "Define options for the Set command" on page 17).

Languages are numbered from O-5. Two-letter identifiers may be set using the **SEt OPtion** command (see "Set language identifiers for wake-up announcements" on page 48).

Set VIP status to ensure that an important guest receives a personal wake-up greeting from the attendant.

Guest registration and occupancy parameters

Rooms must meet sale criteria to be able to be checked-in; that is, they must have the status VAcant and   **PAssed** inspection.

The occupancy status of a room is automatically changed to Occupied when you set the status to   **CHecked-IN,** or to VAcant when you set the status to **CHecked-OUt.** Manually setting any other room status of a DN does not affect the current settings of other aspects of room status such as guest room telephone class of service or cleaning status.

The **CHeck-IN** and **OUt** commands can also be set to perform other tasks automatically (see "Set check-in, check-out parameters" on page 66). If this is not desirable, you can enter any of this information manually.

The **CHecked-IN** status is not indicated in a status printout. Checked-in status is inferred from the Occupied status.

The **CHecked-OUt** status is not indicated in a status printout. Checked-out status is inferred from the VAcant status.

Cleaning status parameters

If automatic cleaning hours are set, the status of any occupied guest room will be changed to cleaning **REquested** at the specified time (see "Set automatic control of room cleaning status" on page 63).

If automatic detection hours are set, the status of any occupied guest room will be automatically updated to cleaning in **PRogress,** then **CLeaned** by the cleaning staff using the room telephone in the appropriate manner (see "Set automatic control of room cleaning status" on page 63).

If you use Maid **IDs,** you can append the Maid ID to a room's cleaning status from the BGD, or the maid can send it from the guest room telephone when the cleaning status is changed.

The Maid ID is a one- to four-digit number that should be unique for each member of the cleaning staff. The Maid ID appears only on Room Status Display messages, so you must have display messages for room status turned on at one of your terminals to keep a record of the Maid ID.

To include the Maid ID in a room status Set command:

> **SEt STatus** dn status MI xxxx **<CR>**

where xxxx is the one- to four-digit Maid ID number.

> Note: The Maid ID can only be included with a **SEt** command that changes a room's cleaning status.

Class of Service

By changing a telephone's Class of Service, you can restrict guests from making certain types of calls. There are four levels of restrictions available.

- SCOS (CO OF) (Specified as CO OF in commands.)

- CCOS (Specified as CO in commands.)

- El

- E2

System Class of Service (SCOS) is the basic default level and usually has the fewest restrictions.

Controlled Class of Service (CCOS) is used to restrict the type of calls a guest can make from the telephone.

Enhanced Controlled Class of Service (El and E2) simply adds two more levels of restrictions to increase the flexibility of your system.

For example, a telephone with SCOS is allowed to make toll and Central Office calls as well as room-to-room calls, while a telephone placed in CCOS can only make room-to-room calls. Toll and Central Office calls are not allowed.

Your Class of Service restrictions may vary from this example. Check with your System Administrator if your are not sure of your Class of Service restrictions.

Table 18
Using the Set command for Room Status

input	Comments
SEt STatus 1203 CHeck(IN) <CR> SEt STatus 0904 CHeck OUt <CR> SEt STatus 1427 Occupied <CR> SEt STatus 2218 VAcant <CR> SEt STatus 4442 REquested <CR> SEt STatus 4443 CLeaned MI 14 <CR> SEt STatus 1243 SAle <CR> SEt STatus 2234 Control <CR> SEt STatus 2236 Control OFf <CR> SEt STatus 1208 LAnguage 2 <CR> SEt STatus 1209 LAnguage SP <CR> SEt STatus 1405 VIp <CR>	One DN checked-in checked-out occupied vacant cleaning requested cleaned by maid with ID number 14 ready for sale Controlled Class of Service System Class of Service language number 2 language Spanish VIP (personal wake-up call)
SEt STatus 3322 CHeck OUt <CR> 3328 <CR> 3342 <CR> 3563 <CR> 4788 <CR>	A groups of nonconsecutive DNs all checked out.
SEt STatus 4402 4408 Control <CR>	A group of consecutive DNs using inclusive DN range.
SEt STatus 22XX SKipped <CR>	A group of consecutive DNs using X substitution (2200 to 2299).
SEt STatus ALl PRogress <CR>	All DNs cleaning in progress.

Set ready-for-sale criteria

A Room Status SEt command using the word SAle will always change the
status of the room(s) you specify to VAcant and PAssed. But you may wish
to make the PRint and FInd commands less strict, so that more rooms are
printed out as being available for sale.

All the possible criteria you can add are listed here.

REquested
PRogress
CLeaned
FAiled
SKipped
Occupied

— To set ready-for-sale criteria:

> **SEt OPtion SAle** state(s) (ON) **<CR>**

— To turn off, use the word OFf instead of ON. You can use any states you
require in the command. The word ON or OFf must come at the end, and
you cannot turn items on and off in the same line.

Nob: If you do not include any states in the command, all six items will
be turned on or off. For example, **SEt OPtion SAle** ON <CR> will set
all six items in the list on. (The word ON is not optional in this case.)

— To see what ready for sale criteria are currently set (look for the word
SALE in the reply):

> (PRint) **OPtion <CR>**

For example, you wish to include rooms with cleaning in PRogress or
CLeaned status in the rooms for sale printout:

SEt OPtion SAle PRogress **CLeaned** (ON) **<CR>**

Then when you use the command PRint **STatus ALl SAle <CR>**
the reply will include all rooms that have status PRogress and CLeaned, as
well as VAcant and PAssed. The command **SEt STatus** 1205 **SAle** will still
change the status of that room to VAcant and   PAssed.

Set automatic control of room cleaning status

Room cleaning status can be updated in two ways: automatically or by code entry from the room telephone. The status of all occupied rooms can be automatically changed to cleaning REquested every day at a particular time. Between the hours that you specify, cleaning staff can use the room telephone to signal that the room is being cleaned. When the room telephone handset is picked up and left off hook, the cleaning status will be changed to cleaning in PRogress. When the handset is replaced, the room's status will be changed to CLeaned (no Maid ID is sent). See "Set cleaning status from room telephone" on page 64 for other methods the cleaning staff can use to change a room's cleaning status.

— To set the off hook detection period, and the automatic change of status to cleaning REquested:

> **SEt OPtion TIme DEtect** hour1 hour2 <CR>

At hour1 all occupied rooms will be set to cleaning REquested. Between hour1 and hour2 cleaning status changes are detected from room telephones.

> *Note:* Use a 24-hour clock. Hour2 must be greater than hourl. If no hour2 is typed, midnight will be assumed.

— To set the automatic change of occupied rooms to cleaning REquested:

> **SEt OPtion TIme REquest** hour1 **<CR>**

To cancel off hook detection:

> **SEt OPtion TIme DEtect OFf <CR>**

> *Note:* This cancels off hook detection only. It does not affect the automatic change of cleaning status to cleaning REquested at the hour1 that was originally entered.

— To turn off the automatic change of cleaning status of all occupied rooms to cleaning REquested:

> **SEt OPtion TIme REquest OFf <CR>**

To find out which times, if any, are currently set (look for TIME DETECT and REQUEST in the reply):

> **(PRint) OPtion <CR>**

Set cleaning status from room telephone

In addition to off hook detection, there are two ways the cleaning status of a room can be changed by the cleaning staff.

Dial access

Cleaning staff can update the status of a room by dialing a SPRE code from the room telephone. The SPRE (Special Prefix) code is a one- or two-digit code that your system administrator can provide for you. To allow this, type:

SEt OPtion TIme DIal (ON) <CR>

To disallow, use OFf in place of ON.

To change a room's cleaning status from the room telephone, use the following procedure:

1   Lift the handset and dial SPRE + 86, or Flexible Feature Code (FFC RMST).

2   Using the dial pad, enter the one-digit cleaning code as follows:

1 = cleaning requested
2 = cleaning in progress
3 = room cleaned
4 = passed inspection
5 = failed inspection
6 = cleaning skipped
7 = not for sale

If you hear a regular dial tone, you are finished. If you hear a special tone, the system is asking for the Maid ID. To enter the Maid ID:

3   Dial * followed by the one- to four-digit Maid ID number. If you make a mistake, press * and reenter the Maid ID.

4   Dial #.

5   Hang up when the room is cleaned.

Note I: The Maid ID is recorded only in Room Status display messages. If no Maid ID is entered, the BGD has no record of the maid.

Note 2: A room telephone can change only its own status. To change the status of other rooms, you must use a Room Status key on the telephone.

Key access

Your system may have telephones equipped with a Room Status key (RMK). These can update the cleaning status of other rooms. You cannot turn this option on and off, but you can choose whether or not to have such changes displayed (see "Display room status events" on page 31).

1   Press the RMK and dial the Directory Number of the room to be changed.

2   Using the dial pad, enter the one-digit cleaning code as follows:

   1 = cleaning requested
   2 = cleaning in progress
   3 = room cleaned
   4 = passed inspection
   5 = failed inspection
   6 = cleaning skipped
   7 = not for sale

   To enter the Maid ID (if required):

3   Dial * followed by the one- to four-digit maid ID number. If you make a mistake, press * and reenter the maid ID.

4   Press the RMK key to end the procedure.

   Note: The maid ID is recorded only in Room Status display messages. If no maid ID is entered, the BGD has no record of the maid.

Set check-in, check-out parameters

Options you can set allow the check-in and check-out commands to perform a number of operations automatically.

The following options are associated with the Room Status feature.

Control	System Class of Service upon check-in, Controlled Class of Service upon check-out
E1/E2	Enhanced Controlled Class of Service (1 or 2) upon check-in, Controlled Class of Service Restriction level upon check-out
DNd	Automatic cancellation of Do-Not-Disturb upon check-out
LAnguage	Reset language to zero (0) upon check-out
MWl	Message Waiting lamp turned off upon check-out
REquest	Automatic cleaning request upon check-out
SL1	Allow use of SL-1 or digital telephone Controlled Class of Service (CCOS) key for check-in and -out
TL	Verify set is connected (BAD LAMP message is printed if a set checked with the TL command is disconnected)
WAke	Cancellation of Automatic Wake Up calls upon check-out
VIp	Remove VIP status upon check-out

Use the abbreviations listed above in place of "item" in the commands listed below.

To set check-in, check-out parameters:

>   **SEt OPtion** CHeck item (ON) **<CR>**

To set more than one option at the same time:

>   **SEt OPtion** CHeck item item (ON) **<CR>**

To remove a check-in/check-out status option:

>   **SEt OPtion** CHeck item **OFf <CR>**

Operating parameters

Items cannot be set on and off in the same command, and the word ON or **OFf** always comes at the end.

Once you have activated automatic Class of Service control, the telephone Class of Service of a guest room DN is automatically set to SCOS when the guest is checked in with the CH command. Guest check-out automatically sets the Class of Service back to CCOS. If this is not desirable, guest room DN Class of Service can be set manually from the terminal.

Assign guest room categories

Guest rooms can be classified by category to identify location, price range, facilities, and so on. A room can be assigned only one category. Each category is given a number in the range 1-15 (0 = no category) and can also be given a four-letter name. The name or number can then be used in requesting printouts of rooms with particular features. For example, **(PRint) STatus** AL1 **VAcant** KTCH <CR> could be used to provide a list of all vacant rooms with kitchen facilities.

— To set a room to a particular category number:

SEt STatus dn CAtegory **n <CR>**

where **n** is a number in the range 1-15.

— To set a group of rooms to a category number (consecutive group):

SEt STatus dn1 dn2 CAtegory **n <CR>**

— To set a group of rooms to a category number (X substitution):

SEt STatus dnx CAtegory **n <CR>**

— To give a category a four-letter name:

SEt OPtion CAtegory **n** name <CR>

where **n** is the category number, and name is the category name (1 to 4 letters).

— To change the name:

SEt OPtion CAtegory oldname newname **<CR>**

— To remove a category name without replacing it with a new name, use zero as the new name:

SEt OPtion CAtegory name 0 <CR>

Find current room status

You can use your terminal to find the current status of guest rooms. The FIND command allows you to retrieve one DN at a time. If you include a particular status in your command, you can search for **DNs** with the status you have named. After you have retrieved one DN by typing the full command, you can find the next one simply by typing **FInd.**

— To find the status of one DN:

FInd STatus dn **<CR>**

— To find the status of the first DN in a group of consecutive **DNs:**

FInd STatus dnl dn2 **<CR>**

— To find the status of the first DN in the whole system:

Find **STatus ALl** <CR>

— You may add a status condition at the end of any of the commands above. For a group of consecutive **DNs,** the command would be **FInd STatus** dnl dn2 status. Then only **DNs** with the status you name will be retrieved.

To find the next one, type word **FInd** and <CR>.

Operating parameters

If you enter a **FInd** command with only one DN in it and you do not name any status condition, that **DN's** status will be printed.

If you enter only one DN and you name a status, the **FInd** command will begin looking for a DN with that status, starting at the DN entered and ending with the largest DN in the system. It will print the first one it finds.

For a group of **DNs,** the second DN entered must be a higher number than the first.

If there is no DN in the range you specify with the status you name, the message NO DATA FOUND is printed.

The word **FInd** all by itself is valid only immediately after a **FInd** command which produced non-zero results (any result other than NO DATA FOUND).

Table 19
Using the Find command for Room Status (Part 1 of 2)

FInd **STatus** 1143 **<CR>**							
STATUS	1143	o c c	REQD	UNR		CAT 5	LANG: 0
One DN							
FInd **STatus** 2401 2403 **<CR>**							
STATUS	2401	o c c	REQD	UNR	MWL	CAT:	LANG: 0
A range of DNs.							
FInd **<CR>**							
STATUS	2402	VAC	PASS	c o s	MWL	CAT	LANG: 0
FInd **<CR>**							
STATUS	2403	VAC	CLND	c o s	MWL SALE	CAT:	LANG: 0
FInd **STatus** 3200 3205 **VAcant <CR>**							
STATUS	3200	VAC	REQD	c o s		CAT:	LANG: 0

Table 19
Using the Find command for Room Status (Part 2 of 2)

```
A group of consecutive DNs-find vacant rooms. 3200 is the first vacant room in the group.

FInd <CR>

STATUS    3201    VAC    PASS    cos         SALE    CAT    LANG: 0    VIP

3201 is the next vacant room. It is also a VIP room.

FInd <CR>

STATUS    3204    VAC    CLND    cos         SALE    CAT    LANG: 0

3204 is the next vacant room.

FInd <CR>

NO DATA FOUND

There are no other vacant rooms in this group.
```

Print current room status

You can use your terminal to print the status of a guest room DN. This can be done for a single DN, a group of consecutive DNs or all DNs. If you include a particular status in your command, the output shows only those rooms with the status requested. If you do not include any status in your command, the status of all requested rooms is printed.

— For one DN:

   (PRint) **STatus** dn **<CR>**

— For a group of consecutive DNs:

   (PRint) **STatus** dnl dn2 status **<CR>**

— For all DNs:

   (PRint) **STatus ALl** status **<CR>**

Operating parameters

You can specify any of the following status indications:.

S A	ready for sale
NS	not for sale
o c	occupied
V A	vacant
RE	cleaning requested
PR	cleaning in progress
CL	cleaned
P A	passed inspection
F A	failed inspection
SK	cleaning skipped
c o	Controlled Class of Service
CO OF	System Class of Service
E1	Enhanced Controlled Class of Service 1
E2	Enhanced Controlled Class of Service 2
DN	Do Not Disturb
DN OF	Do Not Disturb off
M W	Message Waiting Lamp on
MW OF	Message Waiting Lamp off
CA n	category (either number or name)
LA n	language number
LA id	language identifier
VIP	VIP (personal wake-up call)
TL	telephone check

You can use X substitution. For example 120X refers to DN 1200 to 1209.

When you set a DN to SAle, it is always set to VAcant and PAssed. However, when you print rooms with SAle status, you may get rooms in other conditions as well, because the criteria for printing rooms available for sale can be altered.

Typing * * * * will stop a job currently in progress at your own terminal (for example, a long printout you realize you don't need).

After some system problems, blocks of * characters may be printed in the occupancy and cleaning fields to show they are no longer valid. If this happens, enter the missing status information.

Table 20
Using the Print command for Room Status

PRint) STatus 1206 <CR>							
STATUS 1206 VAC CLND COS	SALE CAT: LANG: 0 VIP AT 12:00						
One DN-the current status of DN 1206 is printed.							
(PRint) STatus 1200 1233 SA <CR>							
STATUS 1202 VAC PASS COS	SALE CAT: LANG: 0 AT 2:30						
STATUS 1207 VAC CLND COS	SALE CAT LANG: 0 AT 10:06						
STATUS 1214 VAC PASS COS	SALE CAT: LANG: 0 AT 1:45						
4 group of consecutive DNs with SALE status-all those with SALE status are printed.							
(PRint) STatus 8000 8004 <CR>							
STATUS 8000 VAC NSAL COS	CAT LANG: 0 AT 12:00						
STATUS 8001 OCC CLND UNR MWL	CAT: LANG: 0 AT 12:02						
STATUS 8002 OCC SKIP FRE DND	CAT LANG: 0 AT 4:10						
STATUS 8003 OCC REQD UNR MWL	CAT LANG: 0 AT 2:20						
STATUS 8004 VAC PROG COS	CAT: LANG: 0 AT 12:09						
A group of consecutive DNs-the current status of all DNs in the group is printed.							
(PRint) STatus ALl VA <CR>							
STATUS 1106 VAC PASS COS	SALE CAT: LANG: 0 AT 5:36						
STATUS 2214 VAC NSAL COS	CAT LANG: 0 AT 1:08						
All DNs-all DNs with VACANT status are printed.							
(PRint) STatus ALl <CR>							
STATUS 1001 VAC PASS COS	SALE CAT: LANG: 0 AT 2:50						
STATUS 1002 OCC REQD UNR MWL	CAT: LANG: 0 AT 11:01						
All DNs are printed.							

Message   Registration

Message Registration allows hotel management to monitor all completed local calls made from the hotel telephone system. Each DN and trunk in your system can have a meter assigned, which stores a pulse count for calls made. You can access these meters using your terminal.

Outgoing calls from guest room telephones are usually monitored for billing and other administrative purposes. Meters can also be assigned to any administration telephones and trunks the hotel management wishes to monitor.

Any pulses the system cannot assign to a particular DN or trunk meter are accumulated in the Customer meter. This meter can be accessed using your terminal just as the others can, but it cannot be turned off.

The commands you need to retrieve, alter, or print the contents of the meters in your system are explained in this section. Any reply to your Message Registration commands will identify the type of meter concerned: administration (ADMN) or guest room (ROOM) telephone, attendant console (ATTN), trunk (TRK), or the Customer meter (CUST).

You can turn meters on and off as required (see "Turn meters on and off" on page 81). You can also get a continuous printout or display of Message Registration changes as they occur.

Refer to *X11 features and services* (553-3001-305) for more information regarding Message Registration.

Set meters to a given value

You can use your terminal to set meters in your Meridian 1 system to any given value. You can use meter values to figure total call charges for metered calls. You can set meter values for a single DN, a group of consecutive DNs, or all DNs.

— To set the meter for one DN:

> **SEt** MEter dn VAlue n **<CR>**

— To set the meters for a group of consecutive DNs:

> **SEt** MEter dnl dn2 (VAlue) n **<CR>**

— To set the meters for all DNs:

> **SEt** MEter AL1 (VAlue) n **<CR>**

— To enter the next meter change you want to make, you can type in the DN and the value you want. Just enter dn n   **<CR>**

— To change the value of the Customer meter:

> **SEt** MEter Customer (VAlue) n **<CR>**

Operating parameters

When setting the meters for a group of consecutive DNs, the second DN entered must be a higher number than the first and can be in the range O-32766.

You can use X substitution (see "Define options for the Set command" on page 17). For example, **SEt MEter** 32X **VAlue 1** will set all the meters 320–329 to the value 1.

The response shown in the examples appears only if the "confirm" option is on (see "Define options for the Set command" on page 17).

You may not be able to SEt all DNs at once if the "all" option is not on (see "Define options for the Set command" on page 17).

You may not be able to SEt a group of consecutive DNs if the "range" option is not on (see "Define options for the Set command" on page 17).

Using DN and value only to enter a list of meter changes, as in Step 3, is valid only immediately following a SEt MEter command.

The word VAlue is required for one DN, but is optional in other cases.

Table 21
Using the Set command for Message Registration (Part 1 of 2)

Input Response	Comments
SEt MEter 1535 VAlue 1	Meter for one DN
ROOM METER 1535 7 TO 1	DN 1535 was set to 7 but is now set to one.
SEt MEter 1500 1504 **(VAlue)** 1	Meters for a group of consecutive **DNs**
ROOM METER 1500 DISP ZERO TO DISP 1	
ROOM METER 1501 DISP 1 TO DISP 1	DN 1501 was set to one and is unchanged.
ROOM METER 1502 DISP ZERO TO DISP 1	
ROOM METER 1503 DISP ZERO TO DISP 1	
ROOM METER 1504 DISP 6 TO DISP 1	DN 1504 was set to 6 but is now set to one.
SEt MEter **ALI (VAlue)** 1	Meters for all **DNs**

Note: Meters for a list of DNs-DN 1308 is going to be set to three, and DN 1596 to two. Since DN 1823 and DN 1906 have no value typed beside them, the last value input, two, will be used. If the meter value you want for the next line is the same, you can leave it out. So DN 1823 and 1906 will also be set to two. Since the meter value desired for DN 1972 is different, it must be entered. When entering values in a list like this, use 0 rather than **ZEro** (see last line). Note that this example shows only the input you type, as if the confirm option is turned off (see "Define options for the Set command").

Table 21
Using the Set command for Message Registration (Part 2 of 2)

ROOM METER 1000 ZERO TO 1		
ROOM METER 1001 2 TO 1		
ROOM METER 1002 ZERO TO 1		
SEt MEter 1206 **VAlue** 2		See Note
1308	3	
1596	2	
1823		
1906		
1972	1	
1986	0	

Note: Meters for a list of DNs—DN 1308 is going to be set to three, and DN 1596 to two. Since DN 1823 and DN 1906 have no value typed beside them, the last value input, two, will be used. If the meter value you want for the next line is the same, you can leave it out. So DN 1823 and 1906 will also be set to two. Since the meter value desired for DN 1972 is different, it must be entered. When entering values in a list like this, use 0 rather than ZEro (see last line). Note that this example shows only the input you type, as if the confirm option is turned off (see "Define options for the Set command").

Erase meters (set to zero)

You can use your terminal to set meters in your system to zero. You can do this for a single DN, a group of consecutive DNs, or all DNs.

- To set the meter for one DN to zero:

    SEt MEter dn **ZEro <CR>**

- To set the meters for a group of consecutive DNs to zero:

    SEt MEter dnl dn2 **ZEro** <CR>

- To set the meters for all DNs to zero:

    SEt MEter AL1 **ZEro <CR>**

- To set the Customer meter to zero:

    SEt MEter Customer **ZEro <CR>**

- To add the Customer meter to the end of a command, which sets other meters to zero:

    SEt MEter 1206 **ZEro** Customer **ZEro <CR>**

Operating parameters

You can use X substitution (see "Define options for the Set command" on page 17).

You may not be able to SEt all DNs at once if the all option is not on (see "Define options for the Set command" on page 17).

You may not be able to SEt a group of consecutive DNs if the range option is not on (see "Define options for the Set command" on page 17).

All meters specified in the command are printed out, even if they were already set at zero.

When erasing the meters for a group of DNs, the second DN entered must be a higher number than the first.

The response shown in the examples appears only if the "confirm" option is on (see "Define options for the Set command" on page 17).

VAlue 0 can be used instead of ZEro if you wish.

Table 22
Using the Set command to erase meters

Input Response	Comments
SEt MEter 1432 **ZEro <CR>**	Meter for one DN
ROOM METER 1432 DISP 3 TO DISP ZERO	DN 1432 was set to 3 but is now set to zero.
SEt MEter 1400 1410 **ZEro <CR>**	
ROOM METER 1400 DISP 2 TO DISP ZERO	DN 1401 was set to 2 but is now set to zero. The others were set to 1
ROOM METER 1401 DISP 1 TO DISP ZERO	but are now set to zero.
ROOM METER 1402 DISP 1 TO DISP ZERO	
.	
.	
ROOM METER 1410 1 TO ZERO	
SEt MEter **ALl ZEro <CR>**	Meter for all DNs
ATTN METER 1000 ZERO TO ZERO	DN 1000 was set to 0 and is unchanged.
ROOM METER 1002 1 TO ZERO	DN 1001 was set to 1 but is now set to zero.
.	
.	
ROOM METER 1005 3 TO ZERO	DN 1005 was set to 3 but is now set to zero.
ROOM METER 1006 10 TO ZERO	DN 1006 was set to 10 but is now set to zero.

Turn meters on and off

You can use your terminal to turn a meter or a group of meters on or off.

- To turn the meter for one DN off:

    SEt MEter dn **OFf <CR>**

- For a group of consecutive **DNs:**

    SEt MEter dnl dn2 **OFf <CR>**

- To turn off meters for all **DNs:**

    SEt MEter AL1 **OFf <CR>**

- To turn a meter back on:

    SEt MEter dn ON **<CR>**

Operating parameters

When turning the meters for a group of consecutive **DNs** on or off, the second DN entered must be a higher number than the first.

You can use X substitution if it is allowed (see "Define options for the Set command" on page 17). For example, **SEt** MEter **2X1 OFf** turns off 201, **211, 221, 231,** and so on.

The response shown in the first example appears only if the "confirm" option is on (see "Define options for the Set command" on page 17).

You may not be able to **SEt** all **DNs** at once if the "all" option is not on (see "Define options for the Set command" on page 17).

You may not be able to **SEt** a group of consecutive **DNs** if the "range" option is not on (see "Define options for the Set command"on page 17).

The **CUstomer** meter cannot be turned off.

Table 23
Using the Set command to turn meters on or off

Input Response	Comments
SEt MEter 10579 **OFf** **<CR>** ROOM METER 1059 **DISP** 14T0 OFF	Meter for one DN DN 1059 will now be turned off.
SEt MEter 4706 ON **<CR>**	DN 4706 will now be turned on.
SEt MEter 3001 3501 **OFf** **<CR>**	Meters for a group of consecutive **DNs** DN 3001 to 3501 will now have their meters turned off.
SEt MEter **ALl OFf** **<CR>**	Meters for all **DNs** All **DNs** will now have their meters turned off.

Turn individual meter display on and off

Individual meters can have their display turned on or off, so it is possible to have the meter value for a particular DN displayed whenever a change occurs, and later turn display off for that DN if no longer required.

Note that in order to display any meter changes at all, the system display option must be on.

— To turn on the display for one DN:

  SEt MEter dn **DIsplay** (ON) **<CR>**

— To turn on the display for a group of consecutive   **DNs:**

  SEt MEter dnl dn2 **DIsplay** (ON) **<CR>**

— To turn on meter display for all **DNs:**

  SEt MEter **ALl DIsplay** (ON) **<CR>**

— To turn on display for the Customer meter:

  SEt MEter Customer **DIsplay** (ON) **<CR>**

— To turn off display of meter changes, simply use **OFf** instead of ON.

Operating   parameters

For a group of consecutive DNs, the second DN entered must be a higher number than the first.

You may not be able to SEt all DNs at once if the "all" option is not on (see "Define options for the Set command" on page 17).

You may not be able to SEt a group of consecutive DNs if the "range" option is not on (see "Define options for the Set command" on page 17).

You can use X substitution if it is allowed (see "Define options for the Set command" on page 17). For example, SEt MEter X01 DIsplay OFf will turn off meter display for DN 1001, 2001, 3001, 4001, . . . 9001.

You can combine this command with setting a meter value by putting DIsplay ON, or OFf, at the end. For example, SEt MEter 1023 VAlue 10 DIsplay OFf will set the value of DN 1023's meter to 10 and turn off the display of meter changes for DN 1023. Do not combine it with turning a meter on or off.

Table 24
Using the Set command to turn display of meters on or off

SEt MEter 2703 DIsplay (ON) <CR>	Meter for one DN-display turned on for DN 2703.
SEt MEter 5001 5035 DIsplay OFf <CR>	Meters for a group of consecutive DNs-display turned off for DN 5001 to 5035.
SEt MEter ALl DIsplay (ON) <CR>	Meters for all DNs-display turned on for all DNs.

Find non-zero meters

You can use your terminal to search for meters in your system that have a reading greater than zero. Only the first non-zero meter encountered in the range you specify is printed out. To get the next one, you simply type FInd again.

- To find the meter value for one DN:

    FInd MEter dn **<CR>**

- To find the first non-zero meter value for a group of consecutive DNs:

    FInd MEter dnl dn2 **<CR>**

- To find the first non-zero meter value for all DNs:

    FInd MEter **ALl** <CR>

- To find the next non-zero meter:

    FInd <CR>

Operating   parameters

If only one meter is requested, and its value is zero, the first higher numbered DN with a non-zero meter will be printed.

When searching a group of meters, the second DN entered must be higher than the first.

If there are no non-zero meters in the group, the terminal prints NO DATA FOUND.

A command containing FInd all by itself is valid only immediately following another FInd command that resulted in a non-zero meter (any result other than NO DATA FOUND).

Table 25
Using the Find command to find non-zero meters

input Response				Comments
FInd MEter	3004 <CR>			Meter for one DN
ADMN METER	3004	DISP	8	DN 3004 has a non-zero meter.
FInd MEter	9001	9025 <CR>		Meters for a group of consecutive DNs
ROOM METER	9015		23	DN 9015 is the first DN in the group with a non-zero meter.
FInd MEter ALI <CR>				Meters for all DNs
ROOM METER 1003		DISP	13	DN 1003 is the first DN with a non-zero meter.
FInd <CR>				
ROOM METER 4035			6	DN 4035 is the next DN with a non-zero meter.
FInd <CR>				
NO DATA FOUND				There are no more non-zero meters.

Print meter values

You can use your terminal to print the contents of meters in your system. This can be done for a single DN, a group of consecutive DNs, or all DNs.

— To print the meter contents for one DN:

(PRint) MEter dn **<CR>**

— To print the meter contents for a group of consecutive DNs:

(PRint) MEter dnl dn2 **<CR>**

— To read the meters for all DNs:

(PRint) MEter **ALl <CR>**

— To print the Customer meter value:

(PRint) MEter **CUstomer <CR>**

— The word Customer can also be added at the end of a command to print other meters, for example:

(PRint) MEter AL1 Customer **<CR>**
(PRint) MEter 73017350 Customer **<CR>**

Operating parameters

When reading the meters for a group of consecutive DNs, the second DN entered must be a higher number than the first.

Any DN in the group that has not been assigned a meter, or has a meter reading of zero, will not be printed. But if you asked for only one meter, and it was turned off or had a value of zero, it will be printed.

You can use X substitution (see "Define options for the Set command" on page 17). For example

(PRint) MEter 73XX <CR>

will print meters 7300-7399.

Typing **** will stop a job currently in progress at your terminal (for example, a long printout you realize you don't need).

You can specify a condition at the end of the PRINT command. Only meters in the condition you name will be printed. The conditions are listed below.

OFf	meters that are turned off
ZEro	meters with a reading of zero
ALl	meters in all conditions, including zero value, and turned off (normally these are not printed)
DIsplay ON	meters with their display turned on
DIsplay OFf	meters with their display turned off

For one meter:

(PRint) MEter dn condition **<CR>**

For a consecutive group of meters:

(PRint) MEter dnl dn2 condition **<CR>**

For all meters:

(PRint) MEter AL1 condition **<CR>**

Table 26
Using the Print command for Message Registration (Part 1 of 2)

Input Response	Comments
(PRint) MEter 9036 **<CR>**	Meter for one DN
ROOM METER 9036 3	The current meter value of DN 9036 is 3.
(PRint) MEter 1400 1420 **<CR>**	Meters for a group of consecutive DNs
ROOM METER 1402 DISP 1	The current meter value of DN 1402 is 1.
ROOM METER 1408 DISP 3	The current meter value of DN 1408 is 3.
ROOM METER 1412 DISP 6	The current meter value of DN 1412 is 6.
ROOM METER 1418 DISP 2	The current meter value of DN 1418 is 2.

Table 26
Using the Print command for Message Registration (Part 2 of 2)

Input Response				Comments
(PRint) MEter ALI <CR>				Meters for all DNs
ADMN METER	1006	DISP	3	The current meter value of DN 1006 is 3.
				DN 1006 is an administration (ADMN) telephone. The rest are guest room (ROOM) telephones.
ROOM METER	1018		10	The current meter value of DN 1018 is 10.
ROOM METER	1021	DISP	2	The current meter value of DN 1021 is 2.
ROOM METER	1026		1	The current meter value of DN 1026 is 1.
(PRint) MEter 383 <CR>				A trunk meter
TRK METER	383		17	383 is a trunk (TRK). Its current meter value 17.
(PRint) MEter ALI OFf <CR>				All meters that are turned off.
ROOM METER	1206	OFF		
ROOM METER	1343	OFF		
ADMN METER	8946	OFF		
(PRint) MEter Customer <CR>				The Customer meter. The current value is 4832.
CUST METER		DISP	4832	Display is on.

90   Message Registration

Call Party Name Display

Call Party Name Display (CPND) gives internal telephone users a visual aid when making and receiving calls. CPND provides information (usually a name) in addition to the DN or route/member number usually displayed. CPND applies only to M23 17, M3000 telephones, Meridian Modular Telephones with display, and M1250/M2250 attendant consoles.

Call Party Name Display (CPND) information for telephones in guest rooms is constantly changing. In order to simplify changing this information, the associated guest identification (name and station category) may be added at check-in through the BGD.

You can also get a printout of the Call Party Name Display information for one or more rooms.

Refer to *X11 features and services* (553-3001-305) for complete details regarding CPND .

Set room for Call Party Name Display information

— To enter a Call Party Name Display name for a DN:

SEt CPnd dn "cpnd-name" (xpln) **LAnguage** lang **CHeck** (IN) **VIp** <CR>

where:
dn is the DN for a station set
"cpnd-name" is the new CPND name, up to 27 characters
(xpln) is the expected name length (optional)
lang is the language number or two-letter identifier
VIP identifies the guest as receiving a personal wake-up call

The information you enter overrides any other existing information associated with the defined DN. For example:

SEt CPnd 1241 "Ms. R.C. Brown" **LAnguage** EN **VIp <CR>**

Operating   parameters

If the confirm option is on, the following confirmation message prints.
CPND dn cpnd-name xpln

The keywords SEt, CPnd, and LAnguage can be shortened to the first t w o
letters.

The keywords CHeck (IN) / OUt, LAnguage (and its identifier) and VIp are
optional.

If the names entered have more characters than the maximum allowed, an
error message is printed and you must reenter the name with fewer characters.

If you do not specify the DN or if the DN is the wrong type, the command will
be rejected with an error message BAD DN.

Print Call Party Name Display information

You can use your terminal to print the name associated with a particular DN
or names associated with a group of DNs.

—   To print the name associated with a particular DN or names associated
with a group of DNs:

PRint CPnd dn <CR>

where dn is the DN of a station telephone set or a range of   DNs, such as
dnl, dn2, dn3, and so on, or 2xx9, or AL1 for all defined DNs.

Operating   parameters

If the "confirm option" is on, the following confirmation message prints.

CPND dn "cpnd-name" xpln

The keywords can be shortened to the first two letters. For example:

PR CP 1241 <CR>

Command summary

Automatic Wake-Up

Command	Action
(PRint) **WAke** dn	Print wake-up call time for one DN.
(PRint) **WAke** dnl dn2	Print wake-up call times for a consecutive group of DNs.
(PRint) **WAke ALl**	Print wake-up call times for all DNs.
FInd **WAke** dnl dn2	Find the first DN in a consecutive group with a call time set.
FI	Find the next one. (Follows the previous command.)
SEt WAke dn TIme hhmm	Set wake-up call time for one DN.
SEt WAke dnl dn2 (TIme) hhmm	Set wake-up call times for a consecutive group of DNs.
SEt WAke dn TIme **OFf**	Cancel one wake-up call.

Message Registration

Command	Action
(PRint) MEter dn	Print meter value for one DN.
(PRint) MEter dnl dn2	Print meter values for a consecutive group of DNs.
(PRint) MEter ALI	Print meter values for all DNs.
(PRint) MEter ALI condition	Print meter values for ail DNs in the given condition, for example ZEro.
(PRint) MEter dnl dn2 CUstomer	Print meter values for a consecutive group of DNs and the Customer meter.
FInd MEter ALI	Find the first DN in the whole system with a non-zero meter.
FI	Find the next one. (Follows the previous command.)
SEt MEter dn ZEro	Set one meter to zero.
SEt MEter ALI ZEro	Set all meters to zero.
SEt MEter Customer ZEro	Set the Customer meter to zero.
SEt MEter dn VAlue n	Set one meter to the value given.
SEt MEter dnl dn2 VAlue n DIsplay ON/OFf	Set a consecutive group of meters to value given (with display on or display off).
SEt MEter dn ON/OFf	Turn a meter for one DN on or off.
SEt MEter ALI ON/OFf	Turn all meters on or off.

Room Status (Part 1 of4)

Command	Action
(PRint) **STatus** dn	Print the current status of one DN.
(PRint) **STatus** dnl dn2	Print the current status of a consecutive group of DNs.
(PRint) **STatus** dnl dn2 status	Print all the DNs in the group that are in the specified status.
(PRint) **STatus ALl**	Print the current status of all DNs.
(PRint) **STatus ALl** status	Print all DNs that are in the specified status.
FInd **STatus** dn1 dn2 status	Find the first DN in a consecutive group with the given status.
FI	Find the next one. (Follows the previous command.)
SEt STatus dn CHeck (IN)	Check in one DN.
SEt STatus dnl dn2 CHeck (IN)	Check in a consecutive group of DNs.
SEt STatus ALl CHeck (IN)	Check in all DNs.
SEt STatus dn CHeck **OUt**	Check out one DN.
SEt STatus dn MI **nnnnCHeck (IN)/OUt**	Check in/out one DN by Maid ID number nnnn
SEt STatus dnl dn2 CHeck **OUt**	Check out a consecutive group of DNs.
SEt STatus ALl CHeck **OUt**	Check out all DNs.
SEt STatus dn Occupied	Set one DN to occupied.
SEt STatus dnl dn2 Occupied	Set a consecutive group of DNs to occupied.
SEt STatus ALl Occupied	Set all DNs to occupied.
SEt STatus dn VAcant	Set one DN to vacant.
SEt STatus dnl dn2 VAcant	Set a consecutive group of DNs to vacant.
SEt STatus ALl VAcant	Set all DNs to vacant.
SEt STatus dn **SAle**	Set one DN to ready for sale.

Room Status (Part 2 of 4)

Command	Action
SEt STatus dnl dn2 SAle	Set a consecutive group of DNs to ready for sale.
SEt STatus ALl SAle	Set all DNs to ready for sale.
SEt STatus dn NS	Set one DN to not for sale.
SEt STatus dn1 dn2 NS	Set a consecutive group of DNs to not for sale.
SEt STatus ALl NS	Set all DNs to not for sale.
*SEt STatus dn REquested	Set one DN to cleaning requested.
*SEt STatus dn REquested MI nnnn	Set one DN to cleaning requested by Maid ID nnnn
*SEt STatus dnl dn2 REquested	Set a consecutive group of DNs to cleaning requested.
*SEt STatus ALl REquested	Set all DNs to cleaning requested.
*SEt STatus dn PRogress	Set one DN to cleaning in progress.
*SEt STatus dn1 dn2 PRogress	Set a consecutive group of DNs to cleaning in progress.
*SEt STatus ALl PRogress	Set all DNs to cleaning in progress.
*SEt STatus dn CLeaned	Set one DN to cleaned.
*SEt STatus dn1 dn2 CLeaned	Set a consecutive group of DNs to cleaned.
*SEt STatus ALl CLeaned	Set all DNs to cleaned.
*SEt STatus dn PAssed	Set one DN to passed inspection.
*SEt STatus dn1 dn2 PAssed	Set a consecutive group of DNs to passed inspection.
*SEt STatus ALl PAssed	Set all DNs to passed inspection.
*SEt STatus dn FAiled	Set one DN to failed inspection.
*SEt STatus dnl dn2 FAiled	Set a consecutive group of DNs to failed inspection.

Room Status (Part 3 **of 4)**

Command	Action
*SEt STatus ALl FAiled	Set all DNs to failed inspection.
*SEt STatus dn SKipped	Set one DN to cleaning skipped.
*SEt STatus dnl dn2 SKipped	Set a consecutive group of DNs to cleaning skipped.
*SEt STatus ALl SKipped	Set all DNs to cleaning skipped.
SEt STatus dn **COntrolled**	Set one DN to Controlled Class of Service.
SEt STatus dnl dn2 **COntrolled**	Set a consecutive group of DNs to Controlled Class of Service.
SEt STatus ALl COntrolled	Set all DNs to Controlled Class of Service.
SEt STatus dn **COntrolled OFf**	Set one DN to System Class of Service.
SEt STatus dnl dn2 **COntrolled OFf**	Set a consecutive group of DNs to System Class of Service.
SEt STatus ALl COntrolled OFf	Set all DNs to System Class of Service.
SEt STatus dn El	Set one DN to Enhanced Controlled Class of Service level 1.
SEt STatus dnl dn2 El	Set a consecutive group of DNs to Enhanced Controlled Class of Service level 1.
SEt STatus ALl El	Set all DNs to Enhanced Controlled Class of Service level 1.
SEt STatus dn El **OFf**	Set one DN to System Class of Service.
SEt STatus dnl dn2 El **OFf**	Set a consecutive group of DNs to System Class of Service.
SEt STatus ALl El **OFf**	Set all DNs to System Class of Service.
SEt STatus dn E2	Set one DN to Enhanced Controlled Class of Service level 2.
SEt STatus dnl dn2 E2	Set a consecutive group of DNs to Enhanced Controlled Class of Service level 2.

Room Status (Part 4 of 4)

Command	Action
SEt STatus ALl E2	Set all DNs to Enhanced Controlled Class of Service level 2.
SEt STatus dn E2 **OFf**	Set one DN to System Class of Service.
SEt STatus dnl dn2 E2 **OFf**	Set a consecutive group of DNs to System Class of Service.
SEt STatus ALl E2 **OFf**	Set all DNs to System Class of Service.
SEt STatus dn LAnguage (no. or ID)	Set one DN to the language number or ID.
SEt STatus dn1 dn2 LAnguage (no. or ID)	Set a consecutive group of DNs to the language number or ID.
SEt STatus ALl LAnguage (no. or ID)	Set all DNs to the language number or ID.
SEt STatus dn VIp **<CR>**	Set one DN to VIP status.
SEt STatus dnl dn2 VIp **<CR>**	Set a consecutive group of DNs to VIP status.
SEt STatus ALl VIp **<CR>**	Set all DNs to VIP status (not recommended)

Note: * Maid ID can be appended to these commands. Use the keyword MI followed by the one- to four-digit Maid ID number. For example: **SEt STatus** 1205 **CLeaned** MI 14 **<CR>** changes the cleaning status of room with DN 1205 to cleaned, by maid with ID number 14.

Caller's Name Display

Command	Action
SEt CPnd dn 'name' LA (no. or ID) CH (IN)	Set Room for Caller's Name Display (including the language number or ID) at check-in.
SEt CPnd dn CH OU	Set Room to remove Caller's Name Display at check-out.
(PRint) CPnd dn	Print out the CPnd name for one or more rooms.

Administration

Command	Action
(PRint) **POrt**	Print current settings of terminals.
(PRint) **OPtion**	Print current option settings.
(PRint) **TRaffic**	Print the contents of the traffic file.
(PRint) **WAke MAp**	Print the wake-up call map.
SEt OPtion ID aa bb	Change terminal name from port number or old port ID aa to new portID bb.
SEt OPtion LAnguage (language no.) (id)	Set two-letter language ID for each language number (O-5)
SEt OPtion UNit cccc **ATtendant** (ON)	Set a unit cost figure to give total call charges, and have them displayed at Attendant Console.

Automatic List

Command	Action
Automatic hhmm command	Place the command in the Automatic List and have it executed at time hhmm each day.
(PRint) Automatic	Print the contents of the Automatic List.
SEt Automatic n **OFf**	Delete command n from the Automatic List (where n is a list entry number from 1 to 12).

Options for the Set command

Command	Action
SEt OPtion Confirm (ON)/OFf	Allow/disallow confirm messages for SET command.
SEt OPtion X (ON)/OFf	Allow/disallow X substitution for SET command.
SEt OPtion RAnge (ON)/OFf	Allow/disallow range entries (dnl dn2) for SET command.
SEt OPtion ALl (ON)/OFf	Allow/disallow all DNs to be used in the SET command.

Terminal functions

Command	Action
SEt OPtion POrt portID feature(s) (ON)/OFf	Set which of the four features this terminal will be used for (WAke, MEter, STatus, Option).
SEt OPtion POrt portID function(s) (ON)/OFf	Set which functions this terminal will be able to perform (SEt, REad, DIsplay, PRint).
SEt OPtion POrt feature(s) function(s) (ON)/OFF	Set the feature and function for this terminal (WAke DIsplay, MEter PRint).

Turning Display Messages on or off

Command	Action
SEt OPtion Display item(s) (ON)/OFf	Set which features you want to have display messages printed for. Choices are: WAke or ANswer, ENtry, REturn; MEter; STatus or CCos key, RMk, DIal, DEtect, TErminal.
SEt OPtion TIme DEtect t1 t2	Set off hook detection time and also time occupied rooms are set to cleaning requested.
SEt OPtion TIme DEtect OFf	Turn off off hook detection, only.
SEt OPtion TIme **REquest** tl	Set time occupied rooms are set to cleaning requested.
SEt OPtion TIme **REquest OFf**	Turn off automatic setting of occupied rooms to cleaning requested.
SEt OPtion TIme DIal (ON)/OFf	Allow/disallow dial access to cleaning status.

Recorded Announcement

Command	Action
SEt OPtion TIme RAn2 t1 t2	Set time of secondary recorded announcement.
SEt OPtion TIme RAn2 OFf	Turn off use of secondary recorded announcement.

Check-in, Check-out criteria

Command	Action
SEt OPtion CHeck items **(ON)/OFf**	Turn the automatic setting of any of the following items on or off: **COntrolled** change telephone Class of Service on check-in/out El Enhanced Controlled Class of Service level 1 on check-in/out E2 Enhanced Controlled Class of Service level 2 on check-in/out **REquest** change room to cleaning requested on check-out MWI cancel Message Waiting Lamp on check-in/out **DNd** cancel Do Not Disturb on check-in/out **WAke** cancel wake-up call on check-in/out **LAnguage** set language to 0 at check-in/out SL1 check-in or out using a CONTROL COS key on an SL-1 telephone TL check if the set is disconnected on check-in/out.

For Sale Print criteria

Command	Action
SEt OPtion SAle items (ON)/OFf	Set the criteria for a 'rooms ready for sale' printout. In addition to VAcant and PAssed, which are always included, you can add any of the following: REquested PRogress CLeaned FAiled SKipped Occupied.

Guest Room category

Command	Action
SEt STatus dn CAtegory n	Set one DN to be in a particular category (range 1-1 5).
SEt STatus dnx CAtegory n	Set a group of DNs to be in a particular category, using X substitution.
SEt OPtion CAtegory n name	Give a category a name (up to 4 letters).

SL-1
Background Terminal Facility
Description

northern
telecom

SL-1

Message Center
Description and operation

Revision history

December **20, 1989**

Standard, release 1 .O. Reissued for compliance with Northern Telecom
Standard 164.0 and to include updates for Xl 1 release 15.

June **1, 1990**

Standard, release 2.0 Reissued for additional Xl 1 release 15 changes.

December **20, 1990**

Standard, release 3.0. Reissued to include updates for Xl 1 release 16.

December **1, 1991**

This document is reissued to include technical content updates. Due to the
extent of changes revision bars are omitted.

August **1, 1993**

Standard, release 5.0. Reissued to include changes for Xl 1 release 19.

Contents

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List of figures

Description

Message Center allows an incoming trunk or internal call to be automatically routed to a Message Center if it is not answered at the original destination. The main functions of the Message Center are as follows:

— receive and take messages for calls forwarded to the Message Center

— convey messages to called telephones or consoles on request

— activate and deactivate message waiting indication at users' telephones

Automatic and manual diagnostics are provided to clear all active messages waiting indications when required. Three types of Message Center operations are offered.

— SL-1 and Meridian digital telephone

— attendant

— Automatic Call Distribution (ACD)

Depending on the packages equipped, you can have any Message Center option or combination of Message Center.

Reference documentation

Please refer to the following Northern Telecom Publication for more information:

— *X11 input/output guide* (553-3001-400)

Incoming calls to the Message Center

Calls coming in to a Message Center can be direct or indirect.

Direct message calls

The Message Center can be accessed by a direct message call which can take any of the following forms.

- an attendant extends a call to the message center

- a 500/2500 telephone dials the Message Center DN

- an SL-1 or Meridian digital telephone accesses the Message Center

Indirect message calls

A call can be routed to the message center if it is not answered at the original terminating telephone. This indirect call can take any of the following forms.

- A non-DID call encounters a no-answer condition so that Call Forward No Answer (CFNA) is invoked, routing it to the message center.

- A DID call encounters CFNA or Call Forward Busy (CFB), and is routed to the message center.

- The Message Center Directory Number (DN) can be specified as a Hunt or Call Forward DN for any telephone.

Operation

A Message Center can be organized in one of three ways:

Automatic Call Distribution (ACD)

- SL-1 and Meridian digital telephone

- attendant

Automatic Call Distribution (ACD) Message Center

A special aspect of ACD is defined for optional use with Message Center. Each telephone assigned to the ACD type Message Center is equipped with an ACD In-calls key/lamp pair. One Message Indication and one Message Cancellation key/lamp pair must also be equipped if message waiting indication and control are required. Calls redirected to the Message Center are queued in order of arrival, and distributed to answering positions in the same way ACD calls are distributed.

If all assigned positions are in the make busy mode, redirected calls and message retrieval calls are forwarded to the night number specified for the Message Center ACD DN. This DN can be the attendant, another Message Center, or an outside number. Up to 240 Message Center ACD DNs can be assigned per customer.

ACD Agent Position Increase, XI 1 release 12 and later software   Increases the number of ACD agent positions to 1200 for SL-1 NT and XT machines.

X11 release 15 and greater supports up to 1200 positions on the system options 51, 61, and 71.

Prior to X11 release 12, up to 240 agent positions are supported on the SL-1 VLE, XL, XN, XT machines.

Prior to X11 release 12 the SL-1 N, NT, LE machines, support 120 agent positions.

As many as 70 agent positions are supported on the SL-1 M, S, MS, ST machines, and the system option 21.

If the appropriate ACD packages are equipped, an ACD Message Center can support a full complement of ACD features. See *Automatic Call Distribution basic features description* (553-2671-100).

When an indirect message call is presented to a Message Center operator's telephone, the MSG IN-CALLS key flashes, and both the calling DN and called DN are displayed. If the call originated from a trunk, the route and member number of the trunk display instead of the calling DN.

To answer the call, press the MSG IN-CALLS key. You can now take a message, or release as required.

If the caller wants to leave a message, take down the required information, then pass it on to the called party. Press the MSG INDIC key to notify the called party that they have a message waiting.

Press the RLS key to release the call. You rejoin the ACD queue when the Message Center call is released.

When a Message Center call comes in, and the called DN displays, the MSG INDIC lamp at the operator's telephone reflects the status of the called telephone's message waiting lamp as follows. If Audible Message Waiting (AMW) is equipped in place of the lamp, interrupted dial tone indicates the called party's status.

— Steadily Lit: If the operator's MSG INDIC lamp is steadily lit, the message waiting indication at the called telephone is inactive.

   Fast flashing (60 ipm): If the operator's MSG INDIC lamp is fast flashing, then the message waiting indication at the called telephone is active.

— Slow flashing (30 ipm): If the operator's MSG INDIC lamp is slow flashing, the message waiting lamp at the called telephone is disabled or not equipped. This state does not occur if message waiting indication is by interrupted dial tone.

Telephone Message Center

The telephone's Message Center has one or more display telephones sharing a DN designated the Message Center DN. An incoming call to the message center is presented to all message center telephones at once. The first operator to press the flashing MC DN key is connected to the call. If all operators are busy, incoming message calls get the treatment is specified.

When you press the flashing MC DN key, you are immediately connected to the caller. The display shows the originating DN (or trunk route and member number) and terminating DN. If CPND is equipped, the names are displayed.

When a Message Center call comes in, and the called DN displays, the MSG INDIC lamp at the operator's telephone reflects the status of the called telephone's message waiting lamp as follows. If Audible Message Waiting (AMW) is equipped in place of the lamp, interrupted dial tone indicates the called party's status.

- Steadily Lit: If the operator's MSG INDIC lamp is steadily lit, the message waiting indication at the called telephone is inactive.

- Fast flashing (60 ipm): If the operator's MSG INDIC lamp is fast flashing, then the message waiting indication at the called telephone is active.

- Slow flashing (30 ipm): If the operator's MSG INDIC lamp is slow flashing, the message waiting lamp at the called telephone is disabled or not equipped. This state does not occur if message waiting indication is by interrupted dial tone.

When an indirect message call is presented to a Message Center operator's telephone, the MSG IN-CALLS key flashes, and both the calling DN and called DN are displayed. If the call originated from a trunk, the route and member number of the trunk display instead of the calling DN.

To answer the call, press the MSG IN-CALLS key. You can now take a message, or release as required.

If the caller wants to leave a message, take down the required information, then pass it on to the called party. Press the MSG INDIC key to notify the called party that they have a message waiting.

Press the RLS key to release the call. You return to normal telephone operations until the next Message Center call appears.

All telephones have message waiting capability, and any SL-1 or Meridian digital telephone (except the M3000) can function as a Message Center. The DN used for message taking should be the prime DN if message waiting lamp indication and cancellation are desired. Calls are redirected to the telephone type Message Center using message forwarding. Since this is a normal DN, calls are not queued.

A telephone with Message Waiting may be equipped with a key/lamp pair that notifies you when a message is waiting. When this key is pressed, you are connected with the Message Center.

500/2500 telephones with message waiting allowed CLS may be equipped with a neon lamp for visual indication. These telephones must dial access the Message Center.

A telephone without a message waiting lamp, except the M2317, can be informed that a message is waiting by Audible Message Waiting (AMW) (Prime DNs and single appearance DNs only). A special message waiting tone is heard each time you go off hook until the message waiting indication is cancelled by the Message Center operator. Calls can be originated and received with the tone activated.

Each telephone with a message waiting allowed CLS is assigned to a specific Message Center. Unanswered calls are automatically routed to that Message Center. There is no upper limit to the number of telephones that can be assigned to any Message Center.

Attendant Message Center

An attendant Message Center has up to 1.5 attendant consoles in a system handling messages in addition to their normal functions as attendants. Incoming message calls can access an attendant Message Center in one of two ways: a phantom Message Center DN, or normal attendant access.

Phantom Message Center DN This method requires the presence of the ACD package in the system. The ACD DN for this feature has no agents assigned to it. Any message calls coming into it are automatically transferred to the attendant and appear on a MSG CENTER Incoming Call Indicator (ICI) key. The Message Center DN established in this way is thus a phantom Message Center DN.

When a message call appears at an attendant console through a Message Center DN, the MSG CENTER ICI lamp flashes, and the display shows the originating DN (or trunk route and member number) and terminating DN. If Call Party Name Display (CPND) is equipped, the names are shown instead of the DNs.

When a Message Center call comes in, and the called DN displays, the MSG INDIC lamp at the operator's telephone reflects the status of the called telephone's message waiting lamp as follows. If Audible Message Waiting (AMW) is equipped in place of the lamp, interrupted dial tone indicates the called party's status.

— Steadily Lit: If the operator's MSG INDIC lamp is steadily lit, the message waiting indication at the called telephone is inactive.

— Fast flashing (60 ipm): If the operator's MSG INDIC lamp is fast flashing, then the message waiting indication at the called telephone is active.

— Slow flashing (30 ipm): If the operator's MSG INDIC lamp is slow flashing, the message waiting lamp at the called telephone is disabled or not equipped. This state does not occur if message waiting indication is by interrupted dial tone.

When you press a free LPK key or the flashing MSG CENTER ICI key, you automatically connect to the incoming call. If the caller wants to leave a message, take down the required information, then pass it on to the called party. Press the MSG INDIC key to notify the called party that they have a message waiting.

Press the RLS key to release the call. You return to normal telephone operations until the next Message Center call appears.

Normal Attendant Access If a phantom Message Center DN has not been established on an attendant console ICI key, the attendant must determine verbally that this is a message call. In this case the MSG INDIC lamp does not show the state of the called party's message waiting indication. After the call is released, the attendant can provide message waiting indication by directly accessing the called party's telephone.

Message retrieval calls

All telephones have message waiting capability, and any SL-1 or Meridian digital telephone (except the M3000) can function as a Message Center. The DN used for message taking should be the prime DN if message waiting lamp indication and cancellation are desired. Calls are redirected to the telephone type Message Center using message forwarding. Since this is a normal DN, calls are not queued.

A telephone with Message Waiting may be equipped with a key/lamp pair that notifies you when a message is waiting. When this key is pressed, you are connected with the Message Center.

500/2500 telephones with message waiting allowed CLS may be equipped with a neon lamp for visual indication. These telephones must dial access the Message Center.

A telephone without a message waiting lamp, except the M2317, can be informed that a message is waiting by Audible Message Waiting (AMW) (Prime DNs and single appearance DNs only). A special message waiting tone is heard each time you go off hook until the message waiting indication is cancelled by the Message Center operator. Calls can be originated and received with the tone activated.

Message indication at a called telephone can take the following forms.

SL-1 and Meridian digital telephones with a key/lamp pair The lamp associated with the MSG WAITING key indicates that a message is waiting at the message center.

500/2500 telephones with a message waiting lamp A message waiting lamp on the telephone indicates that a message is waiting at the message center.

Telephones Without a Message Waiting Lamp As an option in X11
release 2, message-waiting indication can be provided by AMW (a 120 ipm
interrupted dial tone) instead of a message waiting lamp, or key/lamp pair
when the user goes off-hook at the telephone. A faulty message waiting lamp
does not result in message waiting indication by interrupted dial tone; in this
case, it is up to the user to call the message center to see if there is a message.
Telephones equipped with neither message waiting lamps nor AMW have no
visual indication that a message is waiting. It is up to the user to call the
message center to see if a message is waiting.

Regardless of whether message indication is by lamp or AMW, the user can
still make calls and operate features normally. The message indication
remains active until cancelled by a Message Center operator or by the system
during a night routine.

Placing a Message Retrieval Call

SL-1 Sets The user goes off-hook and presses the MESSAGE WAITING
key. The digit display shows the Message Center DN. The message center
answers and gives the user the message, then extinguishes the user's message
indication lamp. The user then goes on-hook. The user can also access the
message center by going off-hook and pressing the MESSAGE WAITING
key even if the associated lamp is not flashing.

If message indication is by AMW, the user goes off-hook and dials the
Message Center DN. The Message Center operator cancels the AMW in the
same way as a message waiting lamp.

500/2500 Telephones Whether or not a message indication lamp is provided
with the telephone, the user goes off-hook and dials the Message Center DN.
The message center answers and gives the user the message, then
extinguishes the user's message indication lamp. If message indication was
provided by interrupted dial tone, this is cancelled by the Message Center
operator in the same way as a message waiting lamp. The user then goes on-
hook.

Answering a Message Retrieval Call

ACD Message Center

The message retrieval call is presented on the MSG IN-CALLS key of a Message Center SL-1 telephone, and the digit display shows the DN of the calling telephone. The MSG CANC lamp reflects the state of the caller's message waiting indication as follows:

- Steadily Lit: The message waiting indication at the calling telephone is inactive.

- Fast flashing (60 ipm): The message waiting indication at the calling telephone is active.

- Slow flashing (30 ipm): The message waiting lamp at the calling telephone is either disabled or not equipped. This state does not occur if message waiting indication is by interrupted dial tone.

To answer the call, the Message Center operator presses the MSG IN-CALLS key. If the message center is equipped with Call Forcing, the call is answered automatically. The operator gives the caller the message. If the MSG CANC lamp is flashing, the operator presses the MSG CANC key to deactivate the caller's message waiting indication. The operator then presses the RLS key to release the call.

DN Message Center

The message retrieval call is presented on the MC DN key of a Message Center SL-1 telephone. The Message Center operator answers the call by pressing the MC DN key. The digit display shows the calling DN and the MSG CANC lamp indicates the state of the calling telephone's message waiting indication in the same way as for an ACD type message center. The procedures for deactivating message waiting indication are the same as for an ACD message center.

Attendant Message Center

The presentation of a direct message call to an attendant console depends on whether a phantom Message Center DN has been assigned to an ICI key (Phantom Message Center DN), or the user must dial the attendant as in a normal attendant call (Normal Attendant Access).

The Phantom Message Center ACD DN is assigned to overflow to the MSG CENTER ICI key on the attendant console. When a direct message center call comes into the console, the MSG CENTER ICI key flashes. To answer the call, the Message Center operator presses the MSG CENTER ICI key or a free LPK key. The procedures for deactivating a message waiting indicator are the same as for an ACD type message center.

With Normal Attendant Access, the attendant must determine verbally that this is a message retrieval call. During the call, the MSG CANC key does not show the state of the user's message waiting lamp. After the call is released, the attendant must deactivate message waiting indication directly.

Direct message waiting lamp control

The Message Center operator must directly access a telephone to activate or deactivate message waiting indication in the following events:

— the telephone is calling an Attendant Message Center by direct access

the telephone is not currently in contact with the message center

The Message Center operator must first release or place on hold all calls; in an ACD type Message Center, the NOT READY key must be activated. The operator then decides whether the telephone's message waiting indication is to be activated or canceled.

Query and/or Activate

The operator presses the MSG INDIC key, and the associated lamp lights. The operator then dials the DN: No ringback is heard, but the state of the MSG INDIC lamp reflects the state of the user's message waiting lamp (or interrupted dial tone) as follows:

— Steadily Lit: The user's message waiting indication is inactive.

— Fast flashing (60 ipm): The user's message waiting indication is active.

— Slow Flashing (30 ipm): The user's message waiting lamp is either disabled or not equipped. This state does not occur if message waiting indication is by interrupted dial tone

Here, the operator can change the state of the user's message waiting indication from inactive to active with the MSG INDIC key. The connection is released when the Message Center operator uses the RLS key.

Query and/or Deactivate

The operator presses the MSG CANC key, and the associated lamp lights. The operator then dials the DN. No ringback is heard but the state of the MSG CANC lamp reflects the state of the user's message waiting indication in the same way as the MSG INDIC lamp above.

At this point, the operator can change the state of the user's message waiting indication from active to inactive by pressing the MSG CANC key, or the indication can be left as it is. The connection is released when the Message Center operator presses the RLS key.

Network Message Service (NMS)

With X1 1 release 15 and later, centralized Message Centers are now provided for all switches in ISDN PRA or ISL networks. Network Message Service (NMS) functions allow access to Message Centers (MC) across a network while remaining transparent to the user. The application is referred to as the Network Message Service-Message Center (NMS-MC).

Three types of Message Centers are supported:

— ACD type message centers

— DN type message centers

— Attendant console Message Centers

Feature requirements

The Network Message Service (NMS) package (175) requires the Message Center package (46) in support.

NMS requires all the packages necessary to support the Integrated Services Digital Network (ISDN), with package 148 as a minimum.

Network Message Services in the Meridian Mail environment require the following packages:

- Originating switch

  ⎯ End-to-End Signaling (EES) (10)

- Terminating switch

  ⎯ Integrated Messaging System (IMS) (35)

  ⎯ End-to-End Signaling (EES) (10)

  ⎯ Command Status Link (CSL) (77)

Message Centers in the ACD environment require the ACD packaged options:

- Basic ACD (40)

- ACD package A (45)

  ACD package B (41)

- ACD package C (421)

The user network must be equipped with either the Uniform Dialing Plan (UDP) or the Coordinated Dialing Plan (CDP).

NMS does not support Public Numbering Plans, or Multiple Message Center interworking.

Implementation

For a complete description of the steps to operate and implement Network Message Services, refer to *ISDN Primary Rate Interface description and administration* (553-2901-100). Also refer to the *X11 input/output guide* (553-3001-400) for a complete description of the prompts and responses available.

Message Waiting Indication (MWI) Interworking

With X11 release 19, centralized Message services are now provided for a corporate network consisting of Meridian 1 and **Centrex** (DMS-100) systems. This means that a user on a Meridian 1 system can directly access the voice message system on a DMS-100 and vice versa. MWI Interworking allows either one of the two configurations listed below:

— The Meridian 1 system hosts the Message Center and serves both Meridian 1 and DMS-100 users in the same customer group or corporate network.

This configuration enables DMS-100 private or public network callers to leave messages for subscribers on the Message Center connected to the Meridian 1 system. The Meridian Message Center then initiates a Facility message to turn on the message waiting indicator at the subscriber's station, located either on a Meridian 1 system or on a **DMS-100** system within the same customer group. The subscriber can then retrieve the messages and the message waiting indicators will automatically turn off (accomplished via a Facility message initiated from the host switch to the remote switch where the subscriber resides) when retrieval is complete.

— The DMS-100 system hosts the Message Center and serves both Meridian and DMS-100 users in the same customer group.

This configuration enables Meridian private or public network callers to leave messages for subscribers on the Message Center connected to the DMS-100 system. This configuration then functions in the same way as the Meridian 1 system host configuration.

Note: These configurations enable one or more Meridian and one or more DMS-100 customer locations to be connected directly or in tandem through Meridian 1 or DMS-100 systems to the Meridian 1 or DMS-100 directly supporting the Message Center. The connections between the switches must be ISDN.

Feature Requirements

MWI Interworking requires the following for each node:

- Originating node (the node which has Message Center users)

    - NMS package 175

    - ISDN Signaling package 145

    - ISDN Primary Rate Access package 146 or ISDN Signaling Link package147

    - ISDN Network Service package 148

    - MWC package 46

    - EES package 10

    - MWI package 219 (if connected to a DMS-100, SL-100, or DMS-250 switch)

    Note: DMS-100 and SL-100 must run with BCS 36 or above loaded.

- Host Node (the node which hosts the Message Center)

    - NMS package 175

    - IMS package 35

    - ISDN/AP package 77

    - BACD package 40

    - ACDA package 45

    - ISDN Signaling package 145

    - ISDN Primary Rate Access package 146 or ISDN Signaling Link package147

    - ISDN Network Service package 148

    - MWC package 46

    - EES package 10

    - MWI package 219 (if connected to a DMS-100, SL-100, or DMS-250 switch)

    - Release 19 software

— Tandem node(s) (the node(s) which do not have Message Center users)

· ISDN Signaling package 145

· ISDN Primary Rate Access package 146 or ISDN Signaling Link package147

· ISDN Network Services package 148

• MWI package 219 (if connected to a DMS-100, SL-100, or DMS-250 switch)

Note: The Meridian Message Center supports a private network and must be equipped with either the Uniform Dialing Plan (UDP) or the Coordinated Dialing Plan (CDP). The DMS-100 supports both a public and private message center and can be equipped with a third party message center vendor, such as OCTEL.

For detailed information on this feature, refer to *ISDN Primary Rate Interface description and administration* (553-2901-100).

Equipment requirements

User telephones

— A Message Center operator can activate a message waiting indication at any of the following telephones.

SL- 1 telephone with MESSAGE WAITING key/lamp pair assigned

— 500 telephone (equipped with message waiting lamp)

— 2500 telephone (equipped with message waiting lamp)

— Standard SL- 1,500, or 2500 telephone with AMW

SL-1 telephones with message waiting key/lamp pair

Message waiting indication is provided by a MESSAGE WAITING key lamp on the SL- 1 telephone. The telephone can be non-digit display or digit display telephone.

500 telephones

The 500 telephone is similar to the standard 500 dial telephone, except that the YR version has a neon lamp above and to the left of the dial. This light comes on during ringing in any type of call, but the Message Center operator can cause the neon lamp to flash to indicate that a message is waiting.

2500 telephones

The 2500 telephone is similar to the standard 2500 key pad telephone, except that the YQA version has a neon lamp above and to the left of the key pad. This lamp functions in the same way as that of a 500 telephone.

Standard **500/2500** and SL-1 telephones

Message waiting indication cannot be provided visually at these telephones. The user must call the message center by dialing the Message Center DN and check to see if there are any messages.

If the system is equipped with Xl 1 release 2 or later, AMW can be provided when the user goes off- hook in the form of an interrupted dial tone (120 ipm). The user can then dial the Message Center DN and collect the message. In the case of the 500/2500 telephones, the interrupted dial tone form of message indication reduces the hardware requirements of the system. In the case of the SL-1 telephone, it makes an extra feature key available for other uses.

Message waiting lamp requirements

Should the neon bulb of an 500 or 2500 telephone require replacement, customers should order replacements from Northern Telecom. The bulbs may be ordered using number A0250554. To avoid potential problems, bulbs must meet the following criteria:

— Ignition Voltage The bulb must light when a voltage of 90 ± 2 V dc is applied.

— Extinguishing Voltage The bulb must extinguish when the applied voltage is reduced to 60 ± 2 V dc.

Power Consumption When a resistance of $30K\Omega$ is placed in series with the bulb, the power consumption of the bulb must be no more or less than 0.25 W when operated at 90 ± 2 V dc.

If the bulbs installed in an 500 or 2500 telephone do not meet the criteria listed above (for example, if resistance is higher than recommended), the system may see the bulb as being faulty and give a misleading indication to the Message Center operator, and/or disable the feature.

Message Center telephones

The following types of apparatus are suitable for use in a message center:

- 16-digit display SL-1 telephones

    16-digit display attendant consoles

SL-1 telephones

ACD Message Center 16-digit display SL-1 telephones are recommended for use in an ACD type message center. The ACD telephone is similar to the standard 16-digit display SL-1 telephone, but has provision for plugging one or two headsets into the telephone in place of a handset. The telephones should be equipped with MSG IN-CALLS, MSG INDIC, MSG CANC and NOT READY keys, in addition to other keys as required.

A plug-in 24 V transformer or QUT1 centralized power supply is required to power the digit display and/or any add-on modules. *See SL-1 telephones and add-on modules description* (553-2001-110) for more information.

Other ACD features are described in *Automatic Call Distribution basic features description* (553-2671-100).

DN Message Center The same SL-1 and ACD telephones used for an ACD Message Center can also be used for a DN-type Message Center. In this type of installation, the telephone should be equipped with an MC DN key instead of a MSG IN-CALLS key. The MSG INDIC, MSG CANC, and NOT READY keys are also required.

Attendant consoles

The 16-digit display console is recommended for message center use, since with the 8-digit console, some truncation of digit display information can occur. The console(s) can be equipped with a MSG CENTER ICI key to facilitate the control of a message indication at user telephones (although this is not required, since message waiting indication can be performed by direct access), as well as the MSG INDIC and MSG CANC keys.

Network Message Services

Network Message Services supports the following telephone types.

- 50012500 telephones

- SL-1 telephones

- Digital telephones

  - M2009

  - M2012

  - M2018

  - M2112

  - M2317

  - M3000

  Meridian Modular telephones

  - M2006

  - M2008

  - M2016

  - M2216

  - M2616 (only as a message center)

- all attendant consoles

MWI Interworking

MWI Interworking requires the following equipment:

— Message Center for Meridian 1 system

· Meridian Mail (requires release 7 software)

— Centrex switches

· DMS-100 (requires BCS 36 for interworking)

· DMS-250

ı SL-100 (requires BCS 36)

— Local or remote switch

· End-to-End in-band Signaling

— Call Forward All Calls, Call Forward No Answer, Call Forward Busy, and Hunting connections from Message Center subscriber to Message Center on another switch

· Primary Rate Interface/ ISDN Signaling Link (PRI/ISL) or Common Channel Signaling System (CCS) #7

System requirements

Message Center is available with Generics X05, X09, and Xl 1, and X37. The feature is available with all issues of the above generics. The interrupted dial tone form of message indication is available with Xl 1 release 2.

QSY22 power supply

Power to operate the message waiting lamps for 500 and 2500 telephones is supplied by the QSY22 message waiting power supply unit. (SL- 1 telephones do not require this power supply.) This unit replaces the earlier QSY 19 power unit.

The power supply can be mounted in the following cabinets: QCA23 (SL-1LE), QCA28 (SL-IA), QCA37 (SL-1M), and QCA8. The power supply is capable of providing power to the message waiting line cards of two full PE cabinets (QCA7 and QCA8).

Description

The QSY22 (Figure 1) is a -48 to -150 V dc converter with 1.0 A output
capacity. The input (TB1-1) is fused at a 6.25 A (slow blow) and
accommodates the standard 48 V dc power from the system. The power
ground to the system is connected through TB1-2. The logic ground to the
system logic ground bus bar is connected through TB1-3. The outputs consist
of:

— seven separately fused -150 V dc feeds at connector J14 with a common
  alarm bar, and seven separately fused -1.50 V dc feeds at connector J15
  with a common alarm bar. This provides -150 V dc power to the cabinet
  in which the QSY22 is mounted. The fuses are rated at 0.25 A each and
  are numbered 1 to 7 (from connector J14, and 10 to 16 (from connector
  J15). In the event of a fuse failure, a front panel Light Emitting Diode
  (LED) lights, indicating that failure has occurred. There is no system
  alarm to detect loss of output

  an additional -150 V dc output (TB1-4) fused at 1.33 A (fuse No. 8 on
  the front panel fuse block) which provides power to the QBL16 power
  distribution unit on an adjacent PE cabinet

Mounting

The unit mounts between the uprights where the terminal block (TBC) is on
a normal cabinet. To accommodate the power supply, the TBC terminal block
is moved up if necessary to facilitate the installation of the QSY22 unit
(Figure 1). The power supply is then installed below the terminal block.

Figure 1
QSY22 power supply connections

Fuse No.	Amps	QCODE	Color
F1-F7 F10-F16	0.18	QFF1F	Yellow
Dummy fuse	-	QFF3A	-
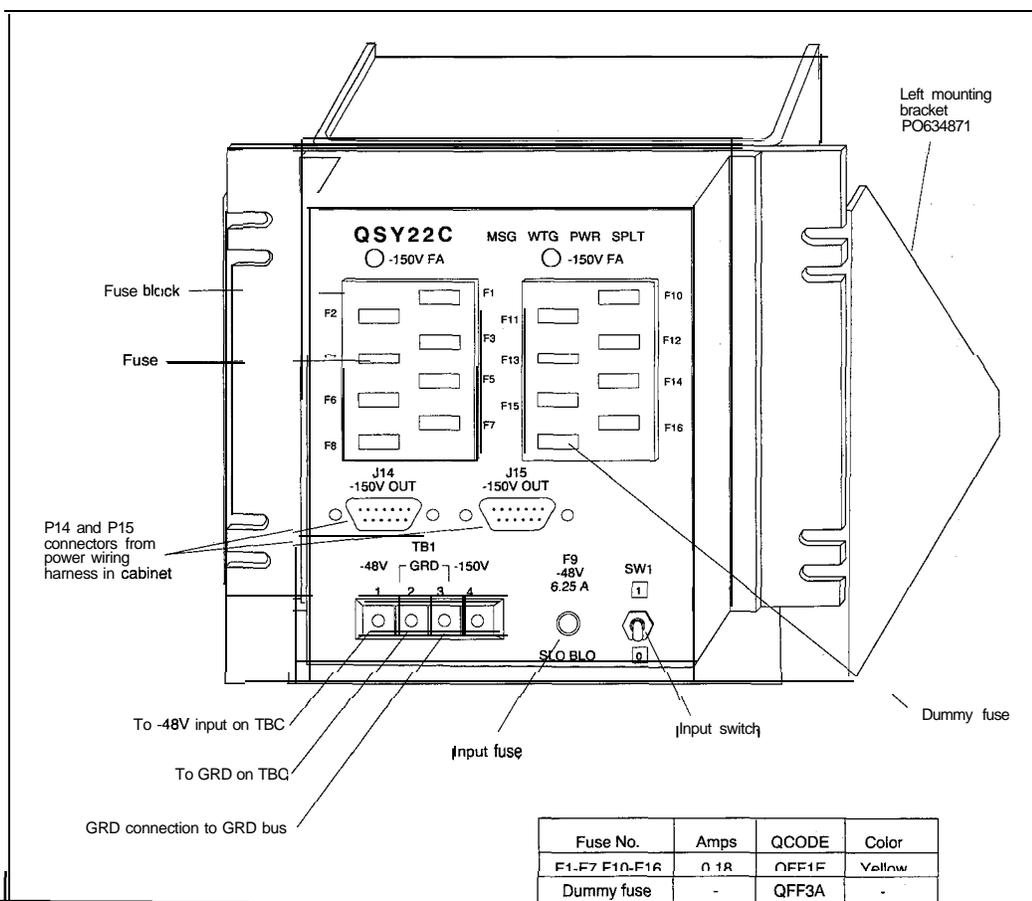
Figure 2
QSY22 power supply circuit diagram
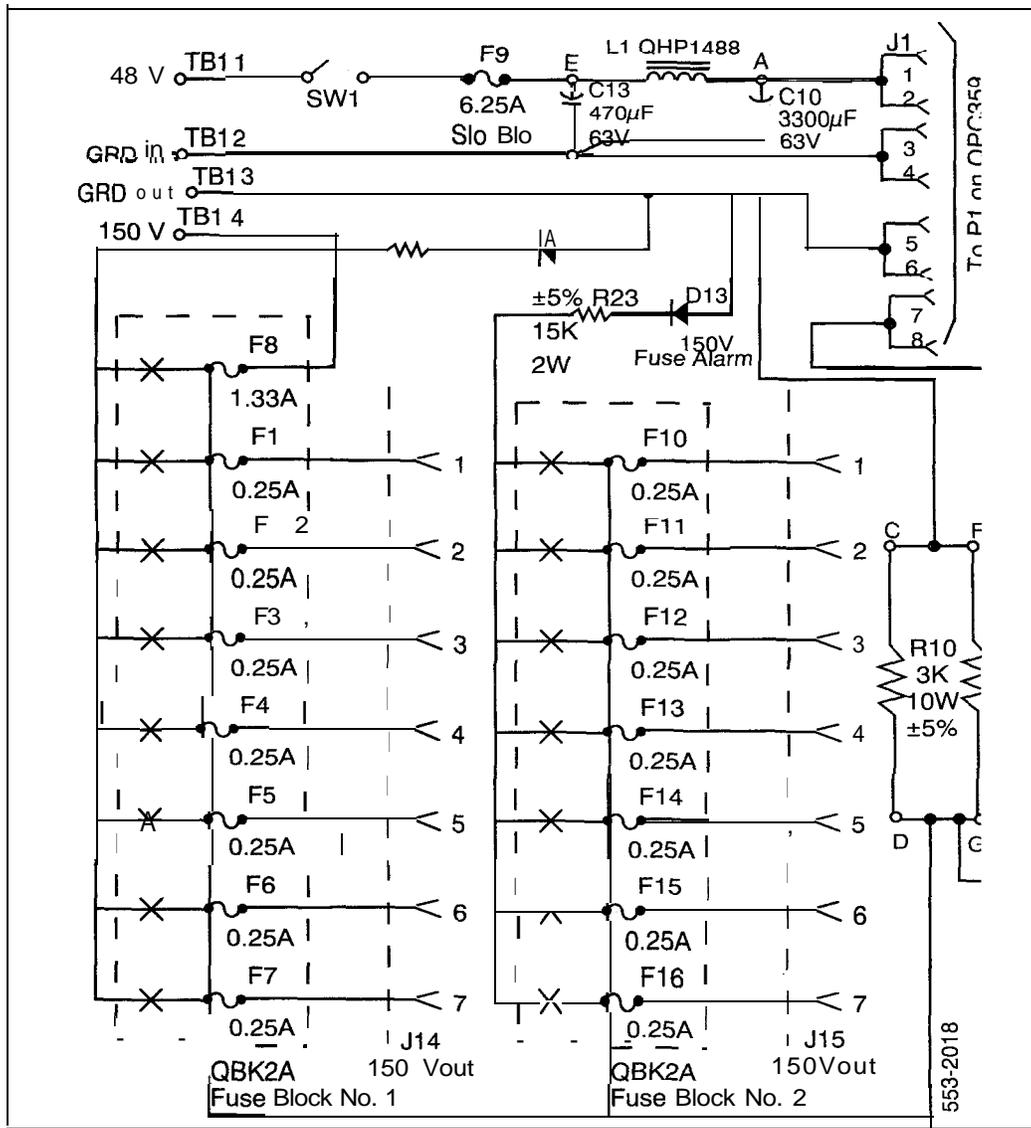
QSY19 power supply

The QSY19 power supply, which is no longer available (Figure 3), is any early version power supply used to power the message waiting lamps. It can be mounted in the QCA8, QCA23, and QCA28, and QCA37 cabinets in the same way as the QSY22. The inputs and outputs are fused in the same way as the QSY22, however there is no alarm LED on the front panel.

The -48 V dc from the system (Figure 4) is connected to the TB-1 terminal of the QSY19. The power ground connection to the system is made using pins 8-15 of P14. The -150 V dc output for the QBL16 on the QCA7 cabinet is taken from TB1-3. A load strap is connected from TB1-2 to TB1-3.

The installer must insure that the load strap (Figure 3) is installed before connecting -48 V dc power to the QSY19 power supply, otherwise the power supply could be damaged. If a field installation of the load strap is required, 16 AWG red stranded wire is recommended.

QBL16 power distribution unit

Power distribution in the associated PE cabinet is done by the QBL16 Power Distribution Unit (Figure 5). The -150 V dc input for the QBL16 comes from the QSY22/QSY19 through a QCAD2 10 AWG power cable which connects to the TB1 terminal of the QBL16 (Figure 6). The power is divided into one lead for each shelf, each protected by one fuse (0.18 A) in the QBL16. This power goes out to the shelves through the P14 connector into which plugs the cable from the cabinet wiring harness.

Mounting

The QBL16 is mounted between the center uprights in the bottom of the QCA7 cabinet in the same relative location as the power unit.

Figure 3
**QSY19** power supply connections (This unit is no longer available.)
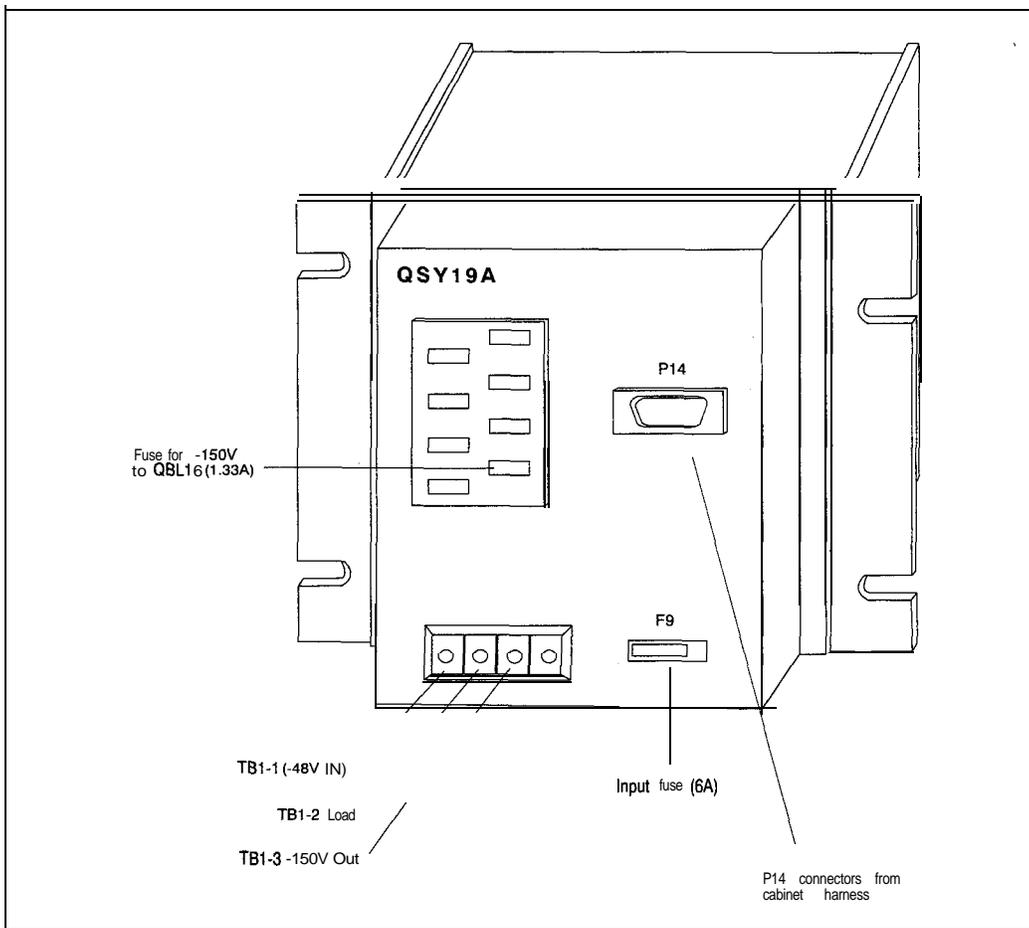
Figure 4
QSY19 power supply circuit diagram
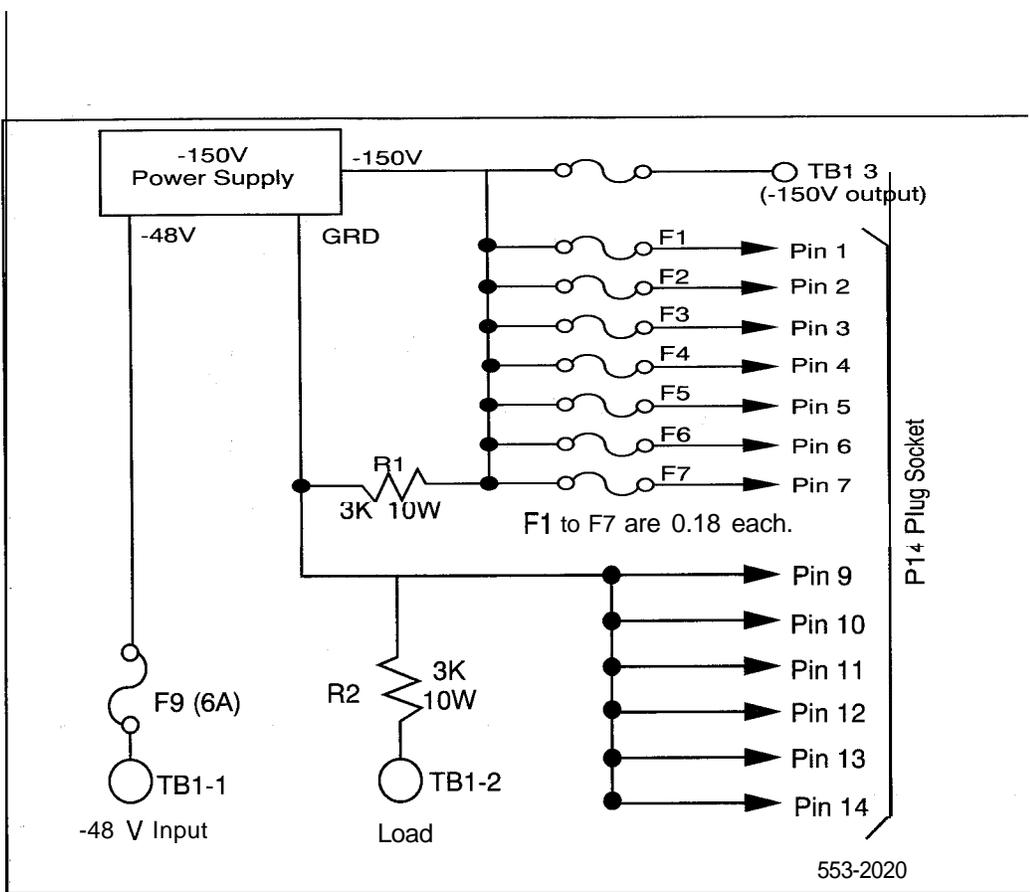
Figure 5
QBL16 power distribution unit connections
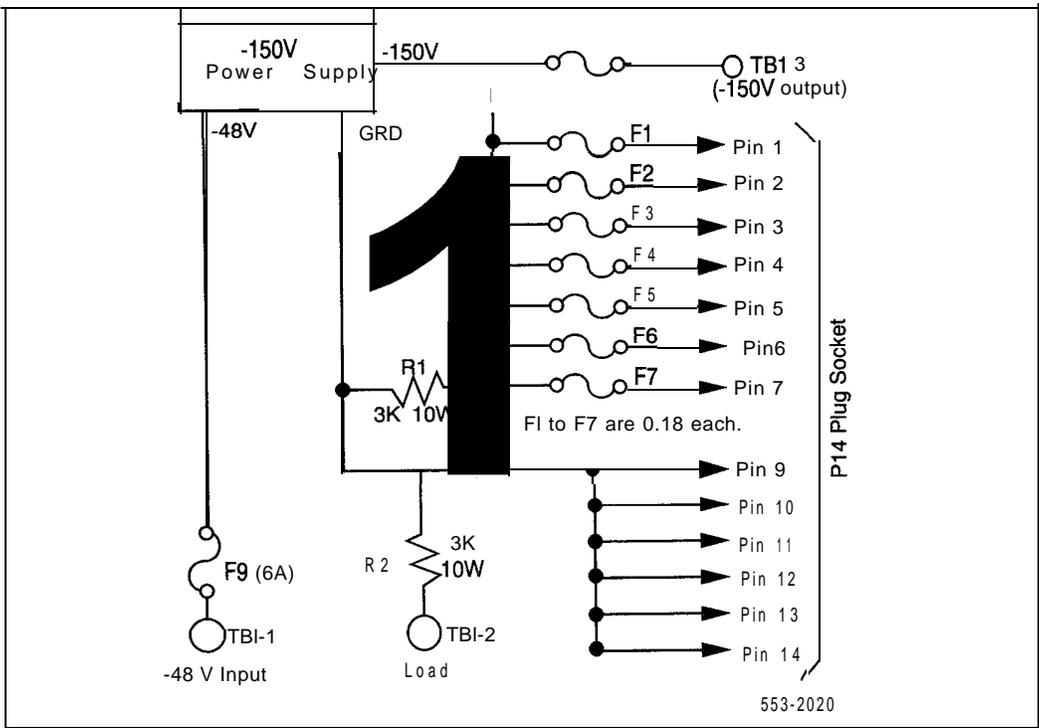
Figure 6
QBL16 power distribution unit circuit diagram
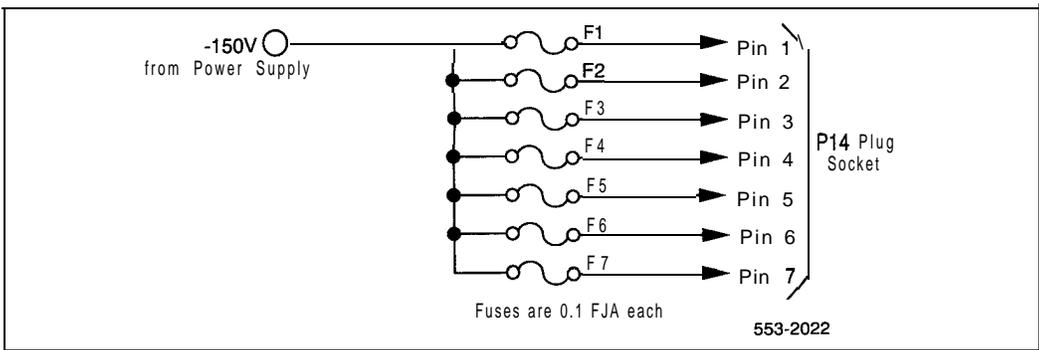
PE cabinets and shelves

The power unit and QBL16 distribution unit can be used with PE cabinets of the following vintages:

- **QCA8:** vintage E or subsequent

- QCA7: vintage D or subsequent

- **QCA23,** QCA28, **QCA37:** all **vintages**

These cabinets are equipped with wiring harnesses that incorporate a cable and P14 connector. The connector plugs into the P14 socket of the power unit or distribution unit, and the wiring harness provides -150 V dc power distribution to the PE shelves in the cabinet.

The cabinets used with the power unit or power distribution unit must contain shelves of the following vintages:

- **QSD3,** QSD7: vintage B or subsequent

- all other PE shelves: all vintages

Line circuit cards

The circuit cards used for the 500/2500-type telephones depend on the companding law used with a given system. In general, μ-Law companding is used in North America and A-Law companding in parts of Europe and Asia. These cards are based on the standard 500/2500 Line packs but include -150 V lamp control circuitry for the neon lamps on the 500/2500 message waiting telephones.

The circuit cards are available in single-density (four circuits per card) and double-density (eight circuits per card) configurations. Single-density cards can be used with all systems but are superseded by double-density cards that can be used only with systems designed for double-density equipment.

The following are the available single-density 500/2500 Message Waiting Line cards:

- QPC267 (μ-Law)

- QPC286 (A-Law)

Maintenance

Maintenance diagnostic programs are provided by the software to control and test the Message Center services. Message Waiting lamps and set indicators on Meridian products can be tested on a system basis. For a complete description of the overlay programs involved, and their operation, please refer to the *XI 1 input/output guide* (553-3001-400).

LD32—Network/Peripheral Equipment Replacement Diagnostic

This diagnostic can be used to test the neon message waiting lamp on 500 and 2500 telephones. It can also be used to print out a list of any defective lamps. The telephones with message waiting key/lamp pairs are not included in this test.

LD61—Message Waiting Lamp Reset (MWL)

This program can be set to run automatically as part of the Midnight Routines (MIDS), or run manually from a peripheral input device. LD61 is used to reset the lamp and status for all telephones within the system. When run manually, the command G starts the program.

The program does not reset lamp status unless all Message Center telephones are out of service, as under Night Service conditions.

Power supply installation

QSY22

The Message Waiting power supply is installed according to the steps defined in Procedure 1. The QSY22 Message Waiting power supply supersedes the QSY 19 and can be mounted in any of the following cabinets:

— QCA8

— QCA23

— QCA28

— QCA37

The unit is mounted between the uprights immediately below the TBC (Figure 1). To facilitate the installation of the Message Waiting power supply, the TBC may have to be moved up. If re-location of the TBC is required, this should be done before the procedures of Procedure 1 are started.

> Note: The QSY22 includes the cables required for the –48 and -150 V power leads. The cabinet wiring harness may or may not contain a P14 plug, depending on whether or not PE is provided in the cabinet.

Procedure 1
Installing the **QSY22** message waiting power supply

1   Set the input switch on the QSY22 power unit to OFF.

2   Remove the two fiat-head screws securing the plastic shield over   TB1 of the QSY22 unit.

3   Disconnect the lead assembly supplied with the   QSY22 unit.

4   Position the QSY22 unit in the cabinet and secure it with four mounting screws (Figure 1).

5   Connect the BLACK lead (with two   lugs) between TB1 terminal 3 of the QSY22 unit, and the ground bus in the'center of the cabinet.

6   Connect the other BLACK lead (lug end) to   TB1 terminal 2 of the QSY22 unit, and to the ground terminal (1) of the TBC.

7   If the Message Waiting shelves and harness are provided in this cabinet, connect the   P14 connector of the cabinet harness to connector P14 of the QSY22 unit.

8   Connect the RED lead (lug end) to   TB1 terminal 1 of the QSY22 unit, and the other end to the -48 V terminal (3) of the TBC.

CAUTION
Electrical Hazard
This is a LIVE connection. Be careful when making this connection.
Also, a short to ground could cause a complete loss of power to this cabinet.

---

9   Set the INPUT switch of the QSY22 to ON.

10   Test for -150 V at TB1 terminal 4.

11   If a QBL16 distribution box is to be provided in a companion QCA7 cabinet, perform the steps of Procedure 2, then return to Step 12 of this chart.

12   Secure the plastic shield in place over   TB1 with two flat-head screws.

QBL16

The QBL16 Message Waiting Power Distribution Box is installed following the steps in Procedure 2. This unit is mounted in the QCA7 companion cabinet next to the cabinet containing a QSY22 or QSY19, and in the same relative location within the cabinet as the QSY22/QSY19.

Procedure 2
Installing the **QBL16** message waiting distribution box

1   Position the QBL16 unit in the QCA7 cabinet and secure it with four mounting screws.

2   Remove the -150 V dc output fuse from the QSY22/QSY19 power supply (F8, 1.33 A).

3   Run the QCAD2 power cable between the QSY22 (or QSY1 9) power supply and the QBL16 distribution box.

4   Connect one end of the QCAD2 cable to the terminal on the QBL16 (Figure 5).

5   Connect the other end to the terminal TB1-4 of the QSY22 power supply (Figure 1). In the case of the QSY19 power supply, connect it to terminal TBl-3 (Figure 3).

6   Connect the P14 plug from the QCA7 wiring harness to the P14 socket on the QBL16.

7   On the QSY22/QSY19 power unit, replace the -150 V dc output fuse.

8   Test for -150 V dc at TB1 of the QBL16 power distribution box.

36 Power supply installation

Feature interaction

ACD Message Center

The operation of ACD Message Center telephones is basically the same as an ACD system with incoming call queues and available agent queues. The ACD Message Center cannot operate in combination with an Attendant Message Center. However, if all telephones are in the Make Busy mode (not logged in), Message Center calls can be routed to the attendants who can then function as the message center. Queue overflow features are allowed for a Message Center ACD DN in the same way as for any other ACD system with the properly equipped package. Other ACD features such as RAN, music, etc. operate as for a normal ACD system with the appropriate packages.

A Message Center operator cannot originate calls on the MSG IN-CALLS key; therefore originating features are not applicable on this key. Separate DN keys must be provided for these functions.

DN Message Center

The Message Center DN must be the prime DN, otherwise all normal features can be assigned to this DN.

Attendant Message Center

Once a call is extended to an ACD Message Center by an attendant, it is released completely from attendant operation, recall, camp-on, etc., cannot be activated. For calls extended to a DN Message Center, normal attendant functions, such as recall and camp-on, can be used. Other attendant functions operate normally.

Call Forward (All Calls)

Call Forward should be denied at telephones serving as the message center. On a telephone basis, Call Forward takes precedence over the message center. If a call is forwarded to another telephone, activation of message waiting depends on whether or not the second telephone has message waiting allowed.

If the system is equipped with X11 release 19 or later, Call Forward Message Waiting **dialtone** can be provided to **500/2500** type telephones as an indication that Call Forward All Calls is active and a message is waiting at the message center.

Call Forward (Internal Calls)

The Message Center treats Internal CFW in the same way as Call Forward All Calls (CFAC).

If the system is equipped with X11 release 19 or later, Call Forward Message Waiting **dialtone** can be provided to **500/2500** type telephones as an indication that Call Forward, Internal Calls is active and a message is waiting at the message center.

Call Forward Busy (CFB)

CFB should be denied at telephones serving as the message center. An option is provided to allow DID calls to a busy telephone to be routed to the message center. If this option is selected by the customer, message waiting takes precedence over the customer-defined path for CFB.

Call Forward No Answer (CFNA)

CFNA should be denied at telephones serving as the message center. On a telephone user basis, message waiting takes precedence over the customer defined path of CFNA.

The capability to light and extinguish message waiting lamps can be used in conjunction with CFNA to simulate a multiple message center. Any telephone equipped with message lamps, but without message waiting allowed class of service, can CFNA to specified **DNs** on the telephones equipped with MSG INDIC and MSG CANC key/lamp pairs.

These telephones have the capability to light or extinguish message waiting lamps by manually entering the DN of the telephone for which a message was taken. Call processing is the normal call processing for CFNA, not the message center call processing. When a call is forwarded, the MSG INDIC lamp does not light since this is not true message center operation.

Call Transfer/Conference from **500/2500** telephone

Message waiting interrupted dial tone is not provided when the user flashes the switchback to activate Call Transfer or Conference. The normal dial tone for this purpose is provided.

Flexible CFNA to any DN

Flexible CFNA to any DN forwards unanswered calls to a pre-designated CFNA DN. All telephones with message waiting allowed have the CFNA DN assigned to the message center regardless of whether Flexible CFNA has been selected by the customer or whether CFNA is allowed or denied for the telephone.

Hunting

Hunting should be denied at telephones serving as the message center. On a user basis, hunting takes precedence over message waiting. However, message waiting can be activated after hunting provided the hunted telephone is message waiting allowed and does not answer the call. If desired, the MC DN can be specified as the hunt number.

Listed Directory Number

A message center can be assigned to a Listed Directory Number (LDN) and behaves in a similar manner to an attendant message center. The calls come in on an LDN ICI instead of the MSG CENTER ICI, and direct message calls do not activate the MSG CANC key. The operator must access the user telephone directly to cancel that telephone's message indication.

Ring Again for **500/2500** telephones

Message waiting interrupted dial tone is not provided when the user flashes the switch back to activate Ring Again. The normal dial tone for this purpose is provided.

User Selectable Call Redirection (USCR)

USCR allows the user to perform two tasks:

- To assign the four redirection DNs from the telephone. These DNs include the CFNA DN and the external CFNA DN (if it exists).

· To change the way the number of ringing cycles are defined for Flexible Call Forward No Answer (CFNA). One of three options can now be selected from the telephone.

This feature does not support Basic Rate Interface (BRI) telephones.

Message Center packaging

If an ACD Message Center is not required, the customer must order only the Message Center package. However, if an ACD Message Center is required, the appropriate ACD package should be ordered in addition to Message Center. An option for the ACD Message Center is the Integrated Messaging System (IMS).

Note that an ACD package is required if an Attendant Message Center is accessed by a MSG CENTER ICI key. This is required for the Phantom ACD DN associated with the MSG CENTER ICI key. Refer to *Automatic Cull Distribution basic features description* (553-2671-100).

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Message Center

Description and operation

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SL-1

Message Registration

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Revision history

August 10, 1990

Standard, release 1.0. Reissued for compliance with Northern Telecom standard 164.0.

December 1, 1991

Standard, issue 2.0. This document reissued to include technical content updates. Due to the extent of the changes, revision bars are omitted.

Contents

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Description

Message Registration (MR) is an optional software package that meters local calls over designated Central Office (CO) trunks. The Message Registration (MR) feature counts Reverse Battery (RVB) pulses from outgoing loopstart or groundstart CO trunks. Pulses received are stored in software meters. Each meter is assigned to a Directory Number (DN) or Trunk Access Code that requires metering.

The Message Registration (MR) feature allows each customer within the system to keep an accurate record of CO calls for billing and administration purposes.

— Each DN of 3 or more digits, including the attendant DN, can be assigned a software meter. For multiple appearance DNs, only one meter is assigned to meter all calls to the Prime DN (PDN). Stations with multiple DN keys have a meter allocated for each DN key.

— Meters can also be assigned to Tie trunk routes. A Tie route meter can be assigned to the route access code of each Tie route in the customer group. An access code for a metered route must be at least 3 digits long.

— The system automatically assigns one customer meter for each customer within the system. This customer meter is used to store pulses that cannot be added to particular DN or trunk meters assigned in the customer group.

Software meters are assigned in LDs 10 and 11. Each meter number corresponds to the DN or trunk access code to which it is assigned. Meters can be either ON or OFF. When a meter is turned off, pulses received are not stored. The customer meter is always ON and cannot be turned OFF. Meters can also be turned on or off individually or in groups, using a Background Terminal (BGD).

Each software meter can store up to 32766 pulse counts before automatically resetting to 0. When a meter is reset, a message is printed on the system Maintenance Terminal (MTC) and/or Background Terminal (BGD) indicating that reset has occurred. Ovefflow messages display information on meter contents for any DN or trunk access code requested:

- Station or Trunk TN

- Station DN or the trunk access code

- Trunk TN (outgoing CO trunk used for the call)

- Customer Number for their station or trunk

- Meter count before reset (32766)

Message for customer meter overflow:

    CUST MTR xx OVF 32766

When equipped with the MR feature, the system is capable of the following provisions:

- Attendants are able to meter outgoing local calls over CO routes.

- Meter contents are accessible from SL-1 and digital telephones equipped with Digit Display and a Message Registration (RMK) key/lamp pair.

- Meter contents are also accessible from Background Terminals.

The system uses Class Of Service (COS) to distinguish between room phones and administrative phones. Room phones have Controlled COS allowed (CCSA), while administrative phones have Controlled COS denied (CCSD). Call charges and meter data provided to the attendants via Background Terminal (BGD) are classified into five (5) categories and displayed on the BGD.

— ROOM   Guest room DN (CCSA)

— ADMN   Administrative phones (CCSD)

— ATTN   Attendant Consoles

— TRK   Outgoing CO Trunks

— CUST   Customer DNs

Feature interactions

Multiple Appearance Directory Numbers

Multiple appearance DNs are charged on the meter assigned to the Prime DN (PDN). Data calls are charged to the originating telephone.
Maintenance tests on metered trunks do not affect the metered values.

Call Transfer

Only the party originating the Call Transfer is metered.

Call Forward

On calls where the Call Forward feature is used, the last party to forward the call is metered. This applies to cases where a CO call is originated via Call Forward stations, and to cases where an established CO call is transferred to a station which is forwarded to another internal station.

Conference

Only the party originating the Conference Call is metered.

Trunk-to-Trunk Calls

Metering of Trunk-to-Trunk calls using an outgoing CO trunk is not supported if the trunk access code is a one or two digit access code. Otherwise, a meter corresponding to the trunk access code of the metered trunk route is incremented. Only three (3) and four (4) digit codes are supported for DNs or trunk access codes.

Attendants

For attendant originated calls to CO trunks, the attendant meter is incremented. When the call is extended, the attendant is metered until a telephone within the Meridian 1 is added to the conference. When the Attendant uses a loop key, the call is metered to the room DN connected through that key; otherwise, the Attendant meter is incremented.

Operating parameters

The MR package must be supported by a Background Terminal (BGD) with Controlled Class of Service Allowed (CCSA). The feature is not supported by Attendant Administration.

Message Registration is mutually exclusive with AUTOVON, Coordinated Dialing Plans (CDP), and Centralized Attendant Service (CAS).

One or two digit DNs or access codes cannot be metered.

Feature administration

Each CO route must be declared as metered or non-metered in LD16, Trunk Route Data Block. Calls should not be allowed to overflow from metered to non-metered routes.

A software meter must be assigned to each DN or trunk access code for which metering is desired, in the Customer Numbering Plan.

Hardware description

Message Registration is supported on the following machine types:

— MS, S, XN, N

— ST, NT, RT, XT

   System options 21, 51, 61, 71

Trunk circuit packs

One of the following trunk circuit packs must be used for trunks where metering is required. The choice of pack depends on two factors: whether the trunks involved are loop or ground start, and whether system operation is A-law or m-law.

Trunk cards QPC219, QPC330, or QPC450 must be used for the CO Trunk routes receiving Reverse Battery (RVB) signals. The QPC330 card must have its signaling set up like the QPC219. Note that QPC330 has an internal counter to accumulate pulses and lessen the number of CPU interrupts, but the QPC219 does not.

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Figure 1
QPC330 and QPC331 trunk option switch settings

Application	Switch settings											
	Unit 0 E35 switch						Unit 1 E5 switch					
	1	2	3	4	5	6	1	2	3	4	5	6
Loop start (accumulated pulsing)												
Third wire battery on M	off	off	off	off	on	off	off	off	off	off	on	off
Third wire ground on M	off	off	off	off	off	on	off	off	oil	off	oft	on
Second pair (M & MM)	off	off	off	off	off	off	off	off	off	off	off	off
Ground start (accumulated pulsing)												
Third wire battery on M	on	off	on	off	on	off	on	off	on	oft	on	off
Third wire ground on M	on	off	on	off	off	on	on	off	on	off	off	on
Second pair (M & MM)	on	off	on	off	off	on	on	off	on	off	off	on
Regular CO trunk operation (same as QPC21 9/QPC295)	off	on	off	on	off	off	off	on	off	on	oft	off

Figure 2
QPC219, QPC295 **CO/FX/WATS** Trunk Cards

Application	Unit 0 E35 switch								Unit 1 E5 switch							
Switch settings	1	2	3	4	5	6	7	6	1	2	3	4	5	6	7	8
Loop start (accumulated pulsing)																
Third wire battery on M	off	off	off	off	on	off			off	off	off	off	on	off		
Third wire ground on M	off	off	off	off	off	on			off	off	off	off	off	on		
Second pair (M & MM)	off	off	off	off	off	off			off	off	off	off	off	off		
Automatic guard detection	off	off	on						off	off	on					
Ground start (accumulated pulsing)																
Third wire battery on M	on	off	on	off	on	off			on	off	on	off	on	off		
Third wire ground on M	on	off	on	off	off	on			on	off	on	off	off	on		
Second pair (M & MM)	on	off	on	off	off	of			on	off	on	off	off	of		
900Ω termination							on	on							on	on
6008 termination							off	off							off	off

Note: 900 and 600Q termination is for QPC219 and later vintages.

Figure 3
Trunk connections


```
                    PE shelf                          Cross-connect
                                                          block
   CO/FX/WATS trunk
                         Pack                             1
                        connector

         36A  T0.9           26            (W-BL)            T0
   Unit  37A  T0.9           1             (BL-W)   900      R0         Tip and Ring
    1    38A  T1.6           27            (W-O)             T0         connected to
         39A  T1.6           2             (O-W)             R0         60052 or 900Ω
         29A  M.1            28            (W-G)   600       M
         30A  MM.1           3             (G-W)             MM


          2A  T1.9           30            (W-S)             T1
          3A  T1.9           5             (S-W)   900       R1
   Unit   4A  T1.6           31            (R-BL)            T1
    0     5A  T1.6           6             (BL-R)            R1
          9A  M.I            32            (R-O)    600       M
         10A  MM.I           7             (O-R)             MM


   Part of shelf wiring harness                  Part of 25-pair cable
                              Shelf connector
```

Note: M & MM leads are found on the QPC219/295/330 and 331 trunks only.

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Reverse Battery operation

When the CO trunk returns a Reverse Battery (RVB) signal, only one pulse
is received for each outgoing call. This pulse is passed to the software meter
for storage. The meter is incremented once for each metered local call
regardless of duration. Reversals received within two (2) seconds of digit
outpulsing completion are ignored.

Operation

Metering is applied on a route basis. When provisioning a customer for the feature, CO routes that are to be metered should only have access to routes that are metered. Calls should not be allowed to overflow to a nonmetered route. The BGD and the SL-1 or Meridian digital telephones can show the accumulated number of calls for each DN meter assigned.

BGD command summary

Four Message Registration (MR) options can be set from a BGD. For a complete and detailed description of all the BGD commands refer to the (553-2311-316).

AL1   Value set for all Room DNs in the Customer Data Block.

X   The X represents all possible values for a digit in a DN, so non-sequential DN groups may all be set to the same value.

RAnge   Sequential range of DNs can be set by entering the first and last DNs for the group.

Confirm Response to the SEt command for verification.

The general command format for the BGD is shown here:

    SEt OPtion <opt> ON
    SEt OPtion <opt> OFf

    <opt> = any combination of AL1, X, RA, CO.

All of the commands for the BGD/MR can be turned ON or OFF with these commands.

    SEt OPtion ON
    SEt OPtion OFF

Setting room meters

When setting room meters for a group of consecutive DNs, the second DN entered must be greater than the first DN entered. The value set for each meter must be between 0 and 32766. The "CONFIRM" option must be set to get a response for input commands.

Message Registration commands are described in Table 1. The following examples demonstrate some MR operations.

Selection of single DN

Set meter 1246 to value 9.

· SE ME 1246 VA 9

· If the global Confirm command is switched on, the response (if the meter had previously been switched off) would be:

· ME 1246 OFF TO 9

— Set meter 1246 to value 0 (either "ZEro" or "VAlue 0").

· SE ME 1246 ZE or SE ME 1246 VA 0

— Switch meter 1246 off.

· SE ME 1246 OF

— Once a meter has been set, a series of command lines consisting of only DN and meter values may be entered:

COMMAND LINE	TYPICAL RESPONSE
SE ME 1246 VA 10	METER 1246 OFF TO 10
1248	METER 1248 OFF TO 10
1257 20	METER 1257 9 TO 20
1259 0	METER 1259 64 TO ZERO

· This mode will stay in effect until a non-numeric entry is typed.

Note: In a list, the number "0" is used, instead of "ZE".

— The customer meter can be accessed using similar commands, but it cannot be turned off, as other meters can. Customer can be added at the end of a command accessing other meters.

SEMECUVA9

(PR) ME CU

(PR) ME 1200 1205 CU

Selection of multiple DN

— Set meters 1240 to 1249 to the value 9.

(1) the inclusive range (dnl dn2) method:

· SE ME 1240 1249 VA 9

(2) the "X substitution" method:

· SE ME 124X VA 9

— Set all meters to a value of 9.

· SEMEALVA9

Table 1
Message Registration set commands

Command Line:					
(AU hhmm)	(PR)	MEter	dn	VAlue	nnnnn (SEt command only)
	FInd		dnl dn2	ZEro	
	SEt		dnX	ON	
	"pot-l ID"		ALl	OFf	
			Customer		
				DIsplay	(ON)
					OFf
				ALl	(see Note)
Note: In all conditions including zero; not after SEt command.					

Access to meters

Meters are accessed from a standard data terminal (TTY) or an SL-1 Display telephone equipped with an MRK key/lamp pair. The TTY must be defined in the configuration record as a BGD. The BGD may either be used exclusively for meter access for background features (AWU and RMS), or it can be shared with other functions.

— Erase the pulse count units stored on a meter

— Change the pulse count units stored on a meter

— Search for nonzero meters (TTY only)

— Read the pulse count units stored on a meter

— Print the pulse count units stored on meters (TTY only).

Note: Access to the customer's meter is allowed from the BGD only.

SL-1
Message Registration
Description and operation

northern telecom

SL-1
Buffer Interface/Protocol Converter
Description

Revision history

December 20, 1989

Standard, release 1.0. Reissued for compliance with Northern Telecom standard 164.0 and to include updates for XI 1 release 15.

December 1, 1991

This document is reissued to include technical content updates. Due to the extent of changes revision bars are omitted.

Contents

General information

This document contains descriptions, installation and operating procedures, ordering information, and specifications for the Buffer Interface/Protocol Converter (BIPC).

Before starting the BIPC installation, coordination with LODGISTIX or your In House System (IHS) is necessary. The IBM series 1 hardware and software must be modified as per specifications from LODGISTIX or IHS for PBX Interface. Operating without the correct modifications may cause the BIPC to fail, or damage the hardware.

The BIPC provides the necessary interface and communication protocol for connecting a customer-provided Property Management System (PMS) through a Serial Data Interface port to the switch. The PMS could consist of a LODGISTIX or IHS computer.

When installed (Figure 1), the BIPC provides:

— two bidirectional, RS-232-C ports for connecting to an SDI port on one side, and the PMS data port on the other side

— data buffering at both ports for the transfer of serial message data between the Meridian 1 and the PMS

— the communication protocol required to automate communication between the Meridian 1 and PMS

Note: For the purposes of this document, Meridian 1 refers to SL-1 systems as well as the Meridian 1 system options available with X11 release 15 and later.

The BIPC can be used with all Meridian 1 systems. A typical application is for Room and Maid Status control on system equipped with the hospitality features.

Figure 1
Simplified **BIPC** installation diagram
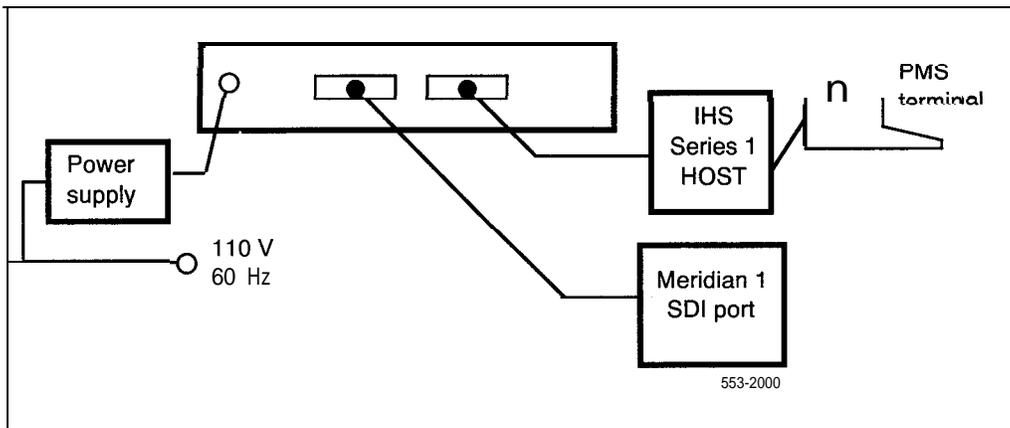
Test equipment

The following test equipment is recommended for installation and troubleshooting.

— 1 **Async** datascope

— 1 ASCII terminal or TN

References

The following publications contain details concerning hospitality features

Background Terminalfacility (553-2311-316)

X11 features and services description (553-3001-305)

X11 inputloutput guide (553-3001-400)

For details of the standards and specifications referred to in this practice, the following documents should be consulted, as required.

EIA Standard RS-232-C Interface between Data Terminal Equipment (DTE) and Data Communication Equipment (DCE) employing serial binary data interchange

— CCITT Recommendation V.24 List of definitions for interchange circuits between Data Terminal Equipment (DTE) and Data Circuit Terminating Equipment

— IS0 Standard 2110-1980 Data Communication, 25-pin DTE/DCE interface connector and pin assignments

Note: EIA RS-232-C and CCITT V.24 are equivalent standards.

Description

The BIPC is a single unit in a metal housing with an external power supply. Overall dimensions of the unit are approximately 14 x 2.5 x 7 inches (356x 64x 178 mm).

The front panel of the BIPC has the following characteristics.

- two LEDs labeled PORT A and PORT B, to indicate when data is being received into the applicable interface port of the **BIPC**

- one LED to indicate when power is applied to the BIPC

- a RESET pushbutton switch, for initializing the BIPC operation

Two 25-pin female connectors are mounted on the back panel and labeled A and B. These are the RS-232-C interface connectors for the Meridian 1 and PMS connections

The top cover of the unit is secured with four screws, and can be removed for access to the option switches and jumpers, and other components mounted within the unit. Figure 2 shows the layout of the components.

Power for the BIPC is connected from an external power supply. The 5-wire cable from the power supply is connected to the power connector at the back right corner of the BIPC, to provide + 5, + 12, -12 V dc, ground and chassis ground connections.

The power supply dimensions are 4.75 x 2.75 x 2.25 inches
(121 x 70 x 57 mm). See Figure 3. The unit is equipped with two power
cables.

— a 3-wire, input power cord approximately 6 feet (1.8 m) long, with a
  standard, **UL/CSA** approved plug for connection to a standard 3-pin,
  110 V, 60 Hz, ac power outlet

— a 5-wire output power cable, approximately 7 feet (2.1 m) long, with
  strain relief and a connector for connection between the power supply
  and the BIPC.

  Note: RS-232-C cables to interface to and from the BIPC are not
  included and must be locally supplied.

The BIPC is used as the interface between a Meridian 1 and a PMS. It may
operate at different data rates, use different data handling characteristics, or
have similarly incompatible serial data interface circuits. The BIPC is
factory set for 9600 baud.

Figure 2
BIPC component layout diagram
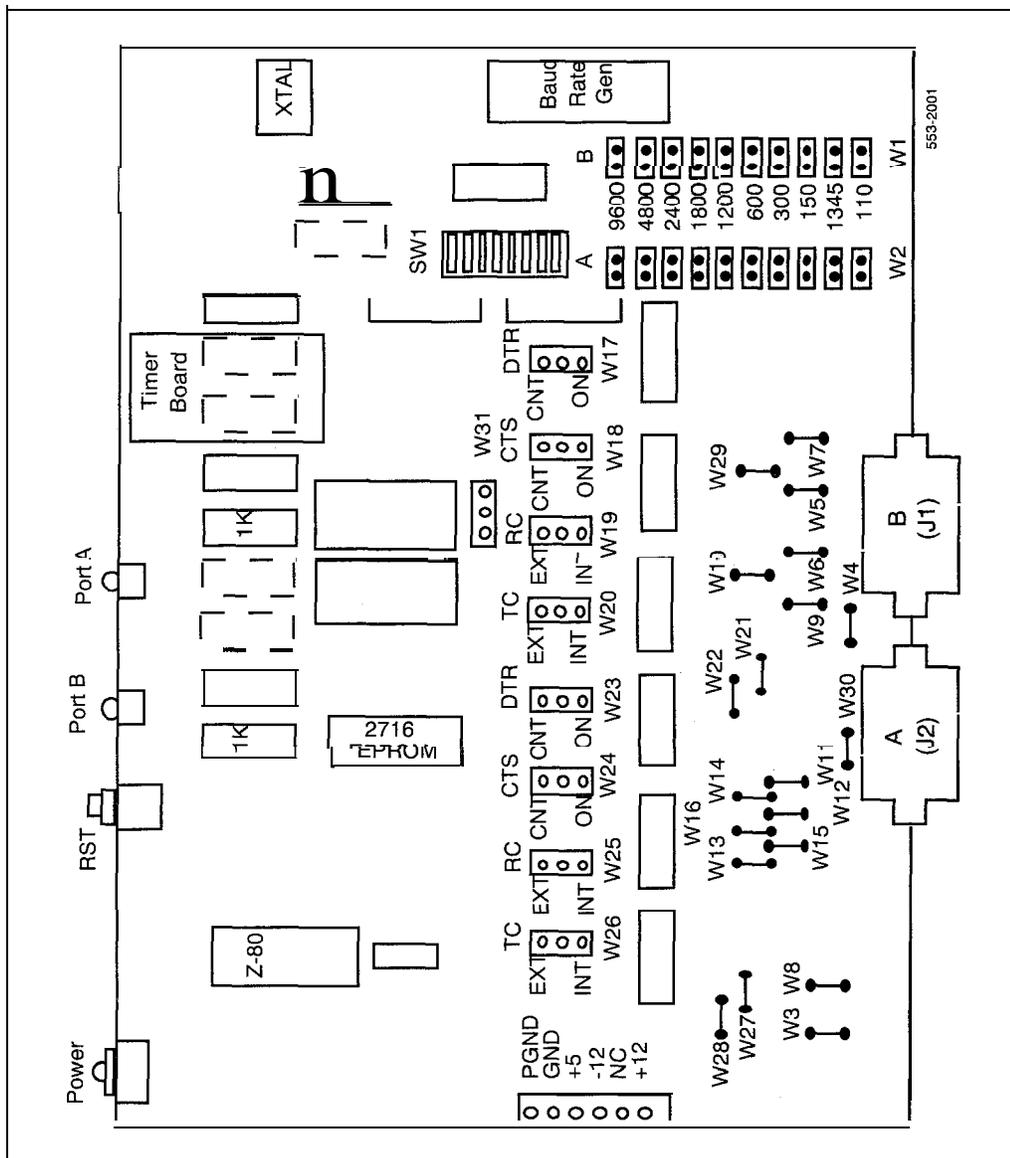
Figure 3
Power supply (A0297998)

Power output cord
7 ft. (2.1 m)

Power input cord
6 ft. (1 .8 m)

Top view

4.75 in.
(121 mm)

6-pin
Series 2139
Molex Connector

To 110 V
60 Hz

End view

2.25 in
(57 mm)

2.75 in.
(70 mm)

553-2002
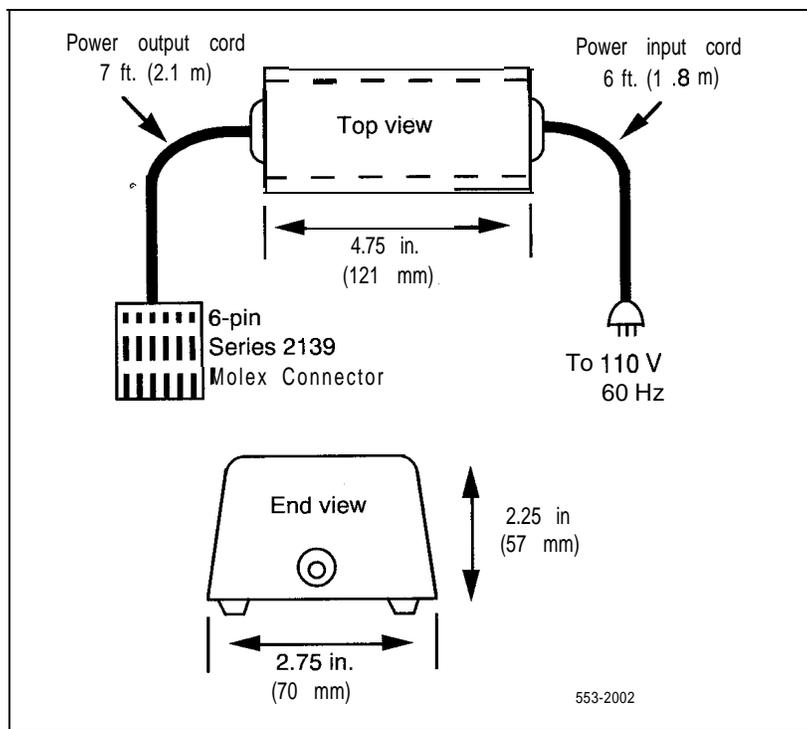
Figure 4
BIPC interface connectors and interchange circuits
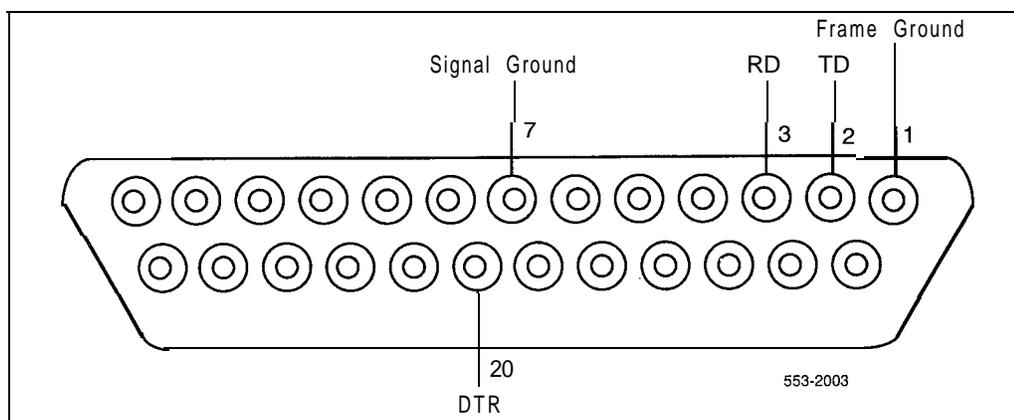
The RS-232-C interfaces between the circuits and the buffering needed for the interchange of serial data between the two data terminals. The functions and protocols are needed to automate the transfer of messages across the BIPC interfaces and the data links between the data terminals.

All BIPC functions are controlled by a Z80 microprocessor. Operating system storage is provided by an EPROM device (Figure 2). BIPC initialization occurs when power is applied to the unit, or when the RESET switch on the front panel is pressed.

The two 25-pin female connectors (DB25S), labeled A and B, are compatible with IS0 Standard 2110-1980 for pin configuration and numbering. They provide the physical (electrical/mechanical) interface ports for the data links to the Meridian 1 and PMS. The connectors, and the RS-232-C circuits provided on them, are illustrated in Figure 4. The two ports can be operated at independent data rates up to 9600 baud. However, 9600 baud on the Meridian 1 port and 1200 baud on the PMS port are used in this application. The word format (code structure and buffer control) of the PMS port is selectable, but the port is hardwired for 8-bit data, one stop bit and no parity. Data buffering to facilitate transfer of data between the independently operated ports, is provided by a 2K RAM (Figure 2).

Both BIPC ports are wired to represent DTE. For normal connections to the DCE at the Meridian 1 and the PMS, RS-232-C cables fitted with 25-pin

connectors are required. The cables must include straight-through
connections between pins 1, 2, 3, 7, and 20 on the two connectors to provide
RS-232-C interchange circuits AA, AB, BA, BB, and CD between the BIPC
and the DCE (Figure 5).

The BIPC provides the necessary conversions between the different
protocols used by the two data ports to control the flow of serial data across
the data links. In addition to logic for independent control of the physical
links between the BIPC and the two data terminals, the BIPC also provides
message handling protocol between the PMS and the BIPC. Since the link
from the SDI port does not use message handling protocol as such, the
BIPC adds the required protocol characters to messages originating from the
Meridian 1, and conversely strips the control protocol from PMS originated
messages before transferring message body to the Meridian 1.

The BIPC also provides error control functions as part of the message
handling. Since the SDI ports do not use parity checks, the BIPC adds parity
bits to the serial data sent to the PMS if parity is enabled on the option
switch (SW1). It also detects parity bits in the data stream from the PMS,
performs Block Character Checks (BCC) for error detection and then
removes the parity bits before sending the message body to the Meridian 1.
If errors are detected, the BIPC initiates error recovery procedures.

Interface circuits and protocols

BIPC protocol requirements

The BIPC provides the following capabilities.

- transmit messages originated by either the Meridian 1 or the PMS across the BIPC interface

- override PMS originated messages by Meridian 1 originated messages, if the messages are originated simultaneously. Messages are interrupt driven on the Meridian 1 side and protocol driven on the PMS side

- no reformatting of message body

- asynchronous, RS-232-C data handling at up to 9600 baud

- add one parity bit to each Meridian 1 generated 8-bit data byte

- strip parity bits from the PMS generated data stream

- use message control (message envelope) characters at the BIPC/PMS as defined in Table 1

- interchange protocol, message envelope, and responses at the BIPC/PMS interface as described below

The protocols used between the two data terminals can be classed as follows.

- Link Control to handle the establishment, take down and maintenance of the data links, and the flow of serial data across the links

- Message Control to handle the exchange of actual message body across the BIPC interfaces between the two terminals

BIPC initialization

The BIPC is initialized when power is applied, or when the RESET button is pressed. The BIPC then sends a carriage return (CR) to the Meridian 1 and waits until it responds with the period (.) prompt character (hex 2E). Characters received before the prompt are dumped by the BIPC. When the prompt character is received, a flag is set in the BIPC indicating that the Meridian 1 is active. When an ENQ is received from the PMS, the flag is checked. If the flag is set, the BIPC responds to the PMS with ACK. If the flag is not set, the BIPC responds with NAK.

Link control

The data interchange between the BIPC and the two data ports (Meridian 1 and PMS) is on data links using RS-232-C link control functions (Figure 5).

Figure 5
BIPC interface connections and functions
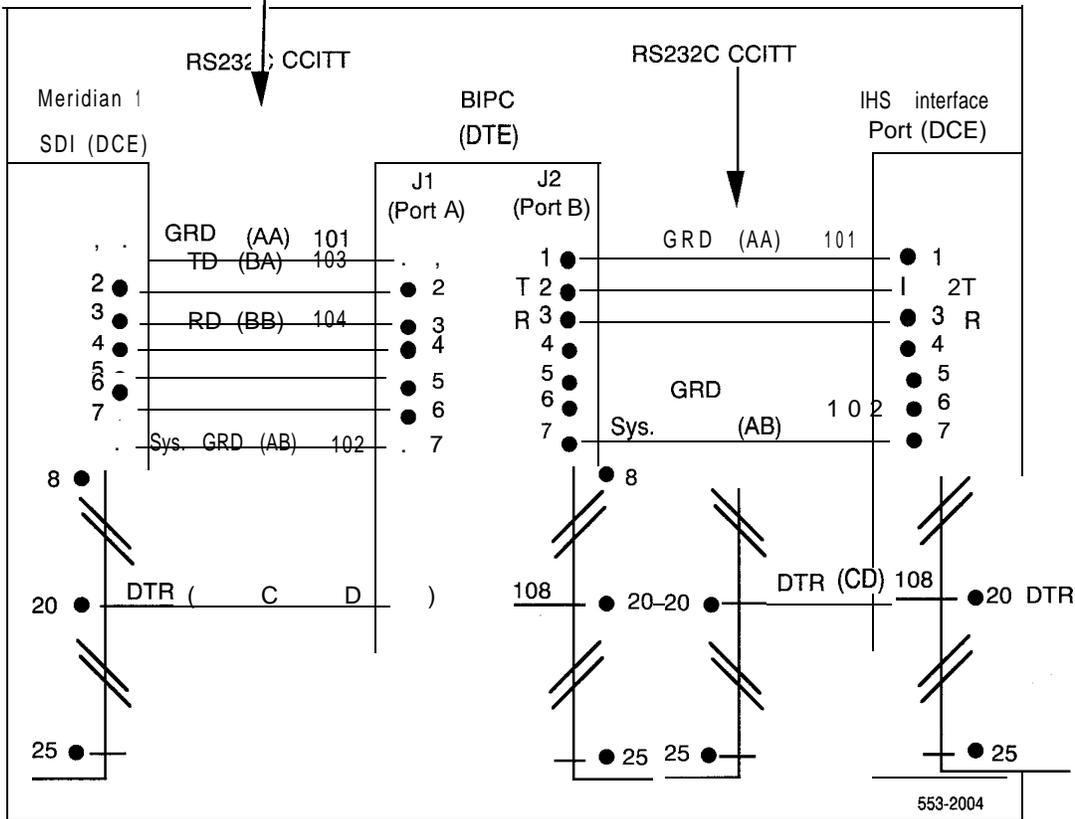
The RS-232-C interchange circuits required at each of the two interface ports are shown in Figure 5. The figure includes RS-232-C CCITT V.24 and Meridian 1 SDI circuit designations for cross reference purposes and the functions of the circuits in BIPC operation. For more details on the interchange circuits, refer to the applicable standard (RS-232-C or CCITT V.24).

The summaries of the electrical characteristics of the interface circuits for Meridian 1/PMS applications are discussed in the Specifications chapter of this document.

Several options are provided for logical control of the data links. The options are selected independently, by means of jumpers on the ports (Figure 16). A PC board layout drawing is necessary to change the jumpers.

Data Terminal Ready (DTR) (on connector pin 20) strapped continuously ON.

Block Character Check (BCC) selected either ON or OFF. With PMS this option is set ON and is selected OFF only if the PMS cannot use or generate BCC error control (The factory setting is ON).

Word format Port A (to the Meridian 1) is always configured for a word format of one start, eight data, no parity, and one stop bits. Port B (to the PMS) word format is switch selectable (switch module SW1). The word format is defined as shown in Figure 6. The BIPC is factory set for 7 data bit, even parity, 1 start bit and 1 stop bit.

Message control

Message   envelopes

BIPC/PMS link The envelope used for messages between the BIPC and the PMS uses the ASCII-encoded control characters listed in Table 1. In addition, each message block is terminated with a BCC character. The BCC is used to maintain message integrity, and is an Exclusive-OR of all bytes following the STX, including the ETX. The general message format from the sender is,

ENQ STX (message body) ETX BCC

BIPC/ Meridian 1 link There is no message protocol supported by the Meridian 1. Messages are simply transmitted into the Meridian 1 when it is ready (indicated by the prompt character). The input message to the Meridian 1 is Message (CR) which it echoes back to the BIPC (echoplex). The terminating (CR) indicates the end of a message into the Meridian 1. The protocol from the Meridian 1 toward the BIPC is

CR	LF	nul	nul	nul	nul	nul	nul	Message Body
CR	LF	nul	nul	nul	nul	nul	nul	Message Body
CR	LF	nul	nul	nul	nul	nul	nul	(prompt)

Note: The number of message lines sent before the prompt is dependent on the command and the Meridian 1 software.

Message   protocol   and   responses

The BCC follows the ETX character in the transmission, and the receiver immediately does a verification check. If the BCC is correct, the receiver responds with ACK. If the BCC does not match, the receiver responds with NAK.

Figure 6
Word   format

Star   bit

Data   bits

Parity bit
(if   any)

Stop   bits

553-2005
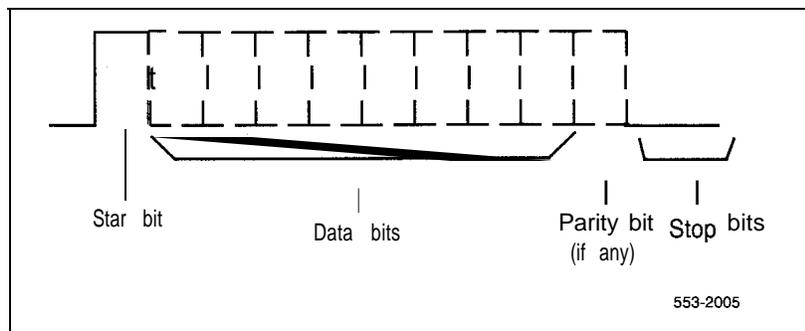
The port is always configured for eight data, no parity, and one stop bits. The PMS port word format is switch selectable.

A new message is not transmitted by the sender until either an ACK response to the previous message is received, or until three attempts (ENQ) have been made to send the message and receive an ACK. If the required ACK is not received after three tries or within a 20 second delay from the time the ENQ is received, the sender flushes the message.

Message   priorities

A receiver may not interrupt a transmitter in the middle of a message. If the PMS is sending to the BIPC, the BIPC waits until it has responded with an ACK or NAK before sending any character. Similarly, if the BIPC is sending to the PMS, the PMS waits until it responds with ACK or NAK before sending any characters to the BIPC. However, a one-second time-out between characters violates the message specifications and allows the receiver to terminate reception of that message.

Table 1
Message control and special character definitions

Character	HEX code	Definitions
Control characters		
E N Q	05	Enquiry solicits a response from the other terminal — from the sender, asking the receiver if it is ready to receive a message — from the receiver, asking the sender to send or resend a message
STX	02	Start of Text message body follows
ETX	03	End of Text end of message body
B C C		Block Check Character (optional)
ACK	06	ACKnowledge affirmative response from the receiver to the sender (if BCC is used, ACK also indicates BCC check matches)
NAK	1 5	Not-Acknowledged negative response from the receiver to the sender (for example, not ready to receive a message or a block of data received with errors requires retransmission)
Special characters		
CR	0 D	Carriage return (or equivalent)
lf	OA	Line feed (or equivalent)
	2 E	ASCII character period (prompt character for Meridian 1)
0 0	0 0	Nul (nu) character
xx		represents any hex number

Figure 7
BIPC connection diagram with communication channels

553-2006
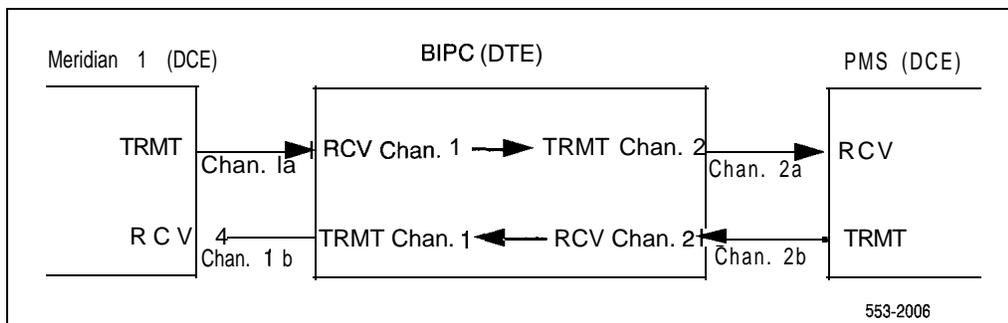
Examples

A number of examples are shown in Figures 8 through 12 to illustrate applications of the message protocols under both normal and error conditions. The diagram in Figure 7 illustrates the message channels implied in the examples.

Figure 8   Valid transaction example (message from PMS to Meridian 1)

Figure 9   Invalid format example (control character in message body from PMS to BIPC)

Figure 10   Transaction with error example (BCC mismatch BIPC to PMS message)

Figure 11   Valid transaction example (single message from Meridian 1 to PMS)

Figure 12   Valid transaction example (multiple Messages from Meridian 1 to BIPC)

Figure 8
Valid transaction example (message from PMS to Meridian 1)

PMS	BIPC	Meridian 1 SDI

ENQ ————————▶ -   -   -

ACK ◀———— SL-1 prompt
(Note)

- - - - -

STX ————————▶ No response
Buffer opens

Message Body ————————▶ No response
Message stored

ETX ————————▶ No response
Awaiting BCC

B   C   C ————————▶ Error check
BCC match

ACK

Message body ————————▶ Message received
All characters echoed

C R ————————▶ CR received

Ready for next ◀———— SL-1 prompt
transaction

Note: ENQs are NAKs until the BIPC receives a prompte from the Meridian 1.

553-2007

Figure 9
Invalid format example (control character in message body)

PMS   BIPC

ENQ ─────────────► -   -   - ─ (Meridian 1 prompt
                                      must be received
                                      before ACK is sent.)

     - - - - ◄───────────── ACK

STX (Note) ─────────► No response

ETX ─────────────► No response
                         Awaiting BCC

BCC ─────────────► Error check ───────

                                            ACK
                                        (if BCC match)
                                              or
                                            NAK
                    ◄────────────── (if BCC mismatch)

Note: The message can be up to 100 characters. The message body
is not sent to the Meridian 1. Control characters are not permitted in
the mesage body.

553-2008

Figure   10
Transaction with error (BCC mismatch in the **BIPC** to PMS message)

|	
PMS	BIPC
E N Q	- - -
	ACK
STX	No response
Message Body	No response
ETX	No response / Awaiting BCC
B C C	Error check / BCC mismatch
	NAK
ENQ	- m m - - 1
	ACK
STX	No response
Message Body	No response
ETX	No response / Awaiting BCC
B C C	Error check / BCC mismatch
	N A K
E N Q	m e - - - 1
	ACK
STX	No response
Message Body	No response
ETX	No response /Awaiting BCC
B C C	Error check / BCC mismatch
	N A K
BIPC flushes message	553-2009

Figure 11
Valid Transaction (Single message Meridian 1 to PMS)

Meridian 1 SDI	BIPC	PMS

CR LF ——————▶ No response
Buffer opens

00 00 00 00 00 00 ——▶ No response
Nuls not stored

Message body ——————▶ Message body stored
End of Meridian 1 message

00000000 0000 ——▶ No response — — —

Meridian 1 prompt ————————————————▶ ENQ —————▶ - -

◀—— ACK

STX ——————▶

Message Body ——————▶

ETX ——————— No response
Awaiting BCC

BCC ——————▶ Error check
BCC match

Ready for next transaction ◀—————— ACK

553-2010
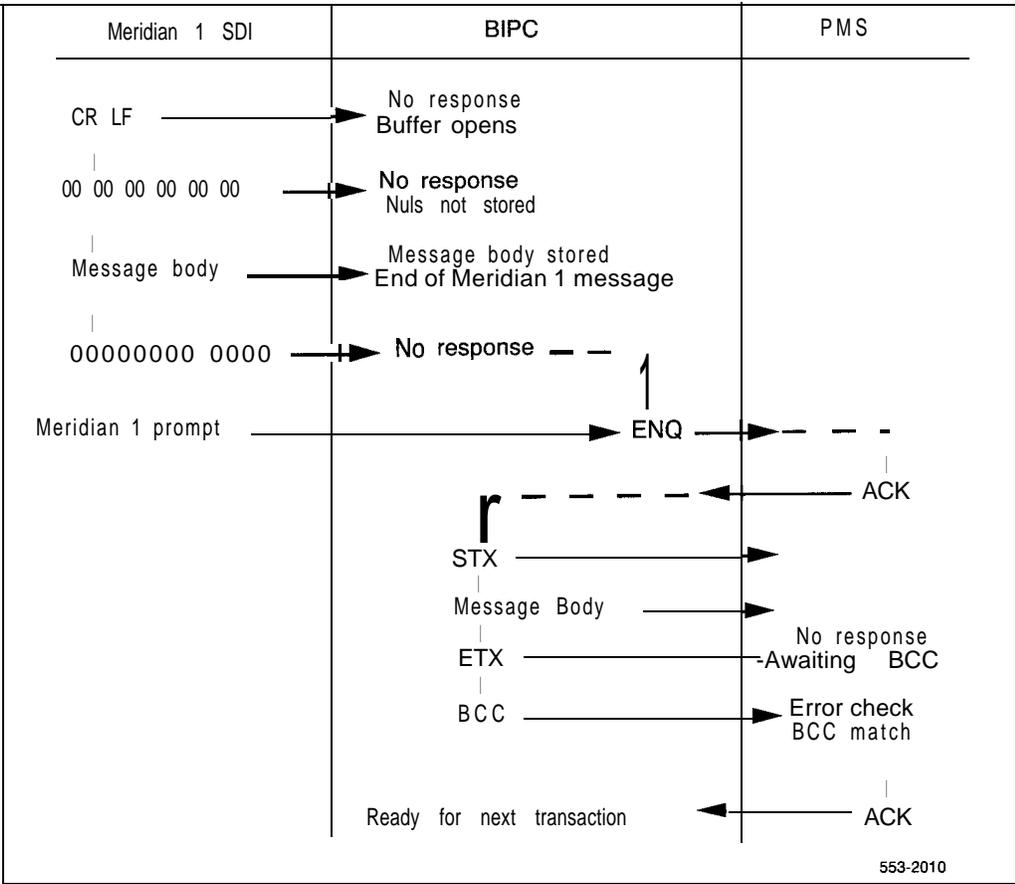
Figure 12
Valid Transaction (Multiple messages from Meridian 1 to BIPC)

Meridian 1 SDI sends | BIPC Response   / Action

CR LF 00 00 00 00 00 00   No response
                                       Buffer opens as CR LF is received

Message body   No repsonse
                                      Message stored

CR LF 00 00 00 00 00 00   Message body ready to
                                      *be sent to PMS (see Figure 8)

Message body   No repsonse
                                      Message stored

CR LF   Message body ready to
                                      be sent to PMS (see Figure 8)

000000000000   No response

Meridian 1 prompt

553-2011
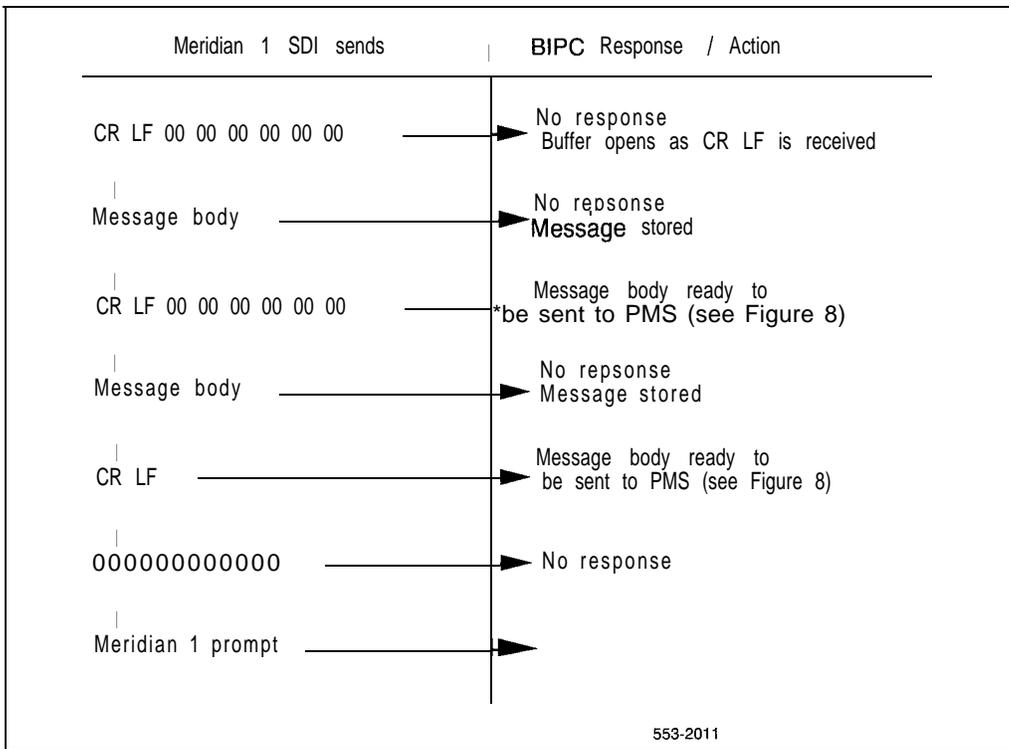
Installation

Mounting location

The BIPC can be mounted at any convenient location which meets or exceeds the following requirements.

— The cable length from the BIPC to the Meridian 1 SDI and to the PMS must not exceed 50 feet (15 m). If the distance is greater than 50 feet, use a short haul modem, or line driver.

— The power supply (Figure 13) must be located so that the BIPC is within reach of the output cable (approximately 7 feet [2.1 m]). A 110/120V, 60 Hz, 3-pin power receptacle is within reach of the power supply power cord (6 feet [1.8 m]).

To prepare the BIPC mounting location, it is only necessary to clear sufficient space for setting the BIPC and the power supply on a flat surface approximately 15 x 8 in (381 x 203 mm) for the BIPC and 5.5 x 3 in (140 x 76 mm) for the power supply). A recommended location for the BIPC is on the top of the Meridian 1 cabinet, with the power supply beside or on top of the BIPC.

Figure 13
BIPC power cabling
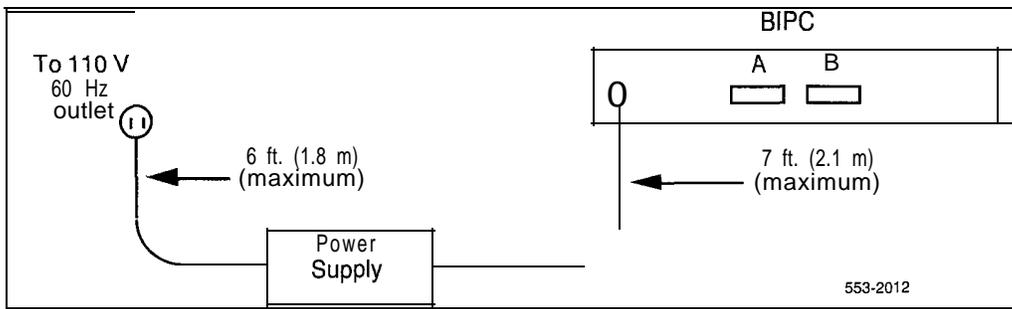
Unpacking and inspection

Unpack and inspect the equipment as detailed in Procedure 1.

Option settings

Use the steps in Procedure 2 for selecting the options.

SDI options

Set the address and speed switches on the SDI circuit pack. See *Circuit card installation and testing* (553-3001-211) for the settings for your particular SDI card.

> *Note:* The address is determined locally, and can be any number (00 to 15) not previously assigned to another SDI port.

BIPC options

Option switches and jumpers are located on the BIPC as shown in Figure 14. The options are on SW1 as seen in Figure 3. Set the jumper on W2 (A) to the data rate of the Meridian 1 (9600 BPS, for example). Set the jumper on W1 (B) to the data rate of the PMS (1200 BPS, for example). Be sure the power is off and observe the static.

Figure 14
BIPC option switches and jumpers

Generic   BCC   Number of Data Bits   Parity   Number of Stop Bits

1 = X11

1 = Enabled
0 = Disabled

0 = 5
01 = 7
10 = 6
11 = 8

1 = Enabled
0 = Disabled

1 = Even
0 = Odd

00 = Invalid
01 = 1.5
10 = 1
11 = 2

ON   1 2 3 4 5 6 7 8

SW1

553-2014
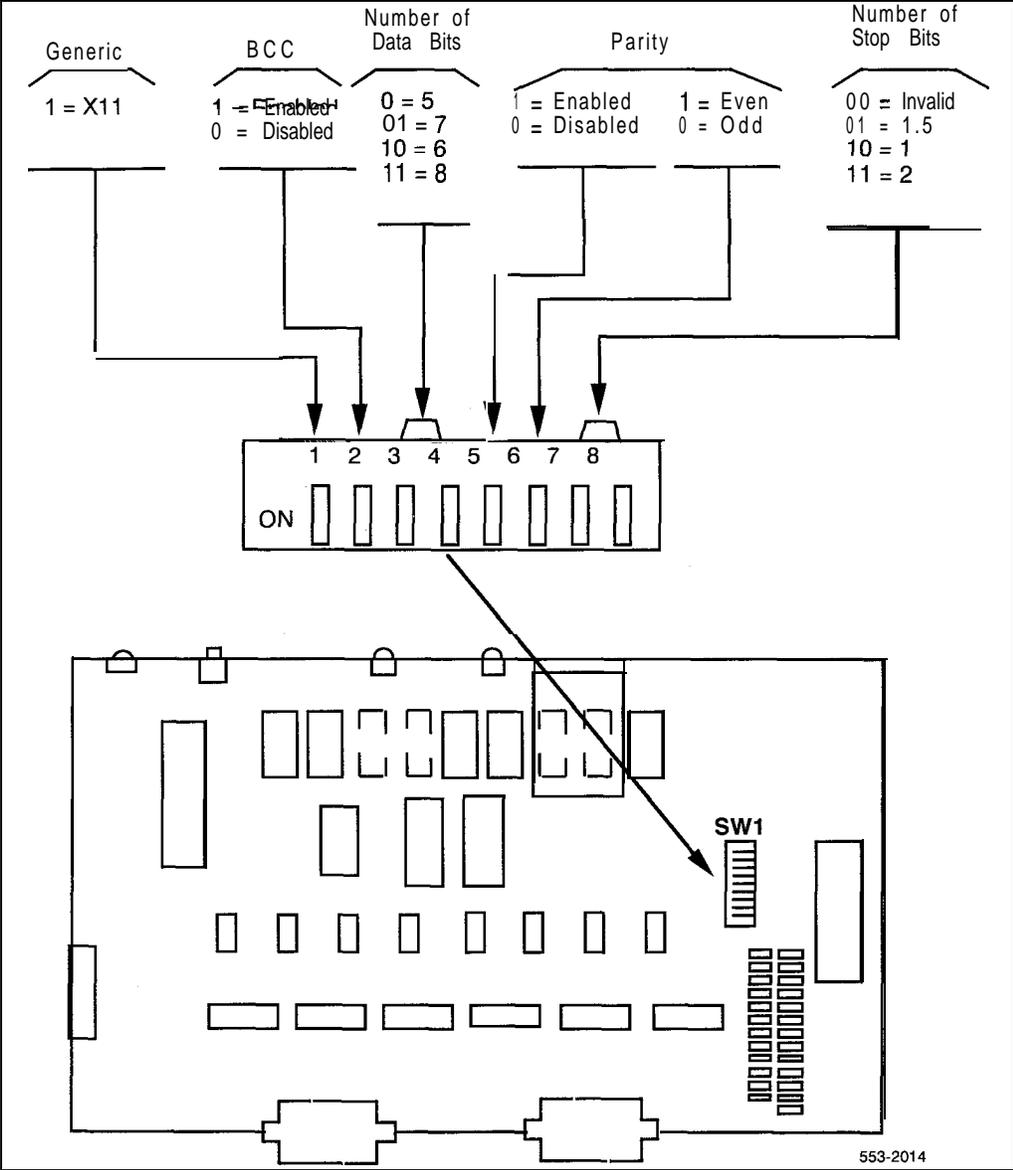
Cable connections

Connect data and power cables to the BIPC as detailed in Procedure 3.

Operational checks

After the BIPC is installed, perform operational checks to verify that the BIPC is correctly transferring message data between the Meridian 1 and the PMS processor in both directions.

The actual operations for the test depend on the feature being controlled by the PMS. In general, the procedure should check the following.

— commands and data from the Meridian 1 are being correctly received by the PMS processor

commands and data from the PMS are being correctly received by the Meridian 1

Note: A datascope can be used to monitor data transfer if a problem is suspected.

Procedure 4 illustrates a typical operational exercise using Room Status.

Summary

To install the BIPC, follow these steps. Where the step refers to another procedure, go to that procedure for complete instructions.

1 Unpack and inspect the equipment (Procedure 1).

2 Ensure the required option settings are set on the BIPC. For an PMS IBM Series 1 computer, or your In House System (IHS), refer to Procedure 2.

3 Clear the BIPC mounting location.

4 Install the BIPC in its operating location.

5 Verify, and set if necessary, the option selections on the SDI circuit pack.

6 Using RS-232-C cables, connect BIPC Port A to the SDI and BIPC Port B to the PMS data port (Procedure 3).

7 Connect power to the BIPC, and press the RESET button on the faceplate.

8 Check the installation by performing typical operations on the system (Procedure 4)

Note: To verify message transactions between the Meridian 1 and the PMS, it may be necessary to connect a datascope into the circuit. Once the operation is verified, the datascope can be removed.

Before unpacking your BIPC, ensure the IBM series 1 has been modified for PBX interface by LODGISTIX.

Procedure 1
Unpacking and inspection procedure

1   Open the shipping cartons and carefully remove the equipment.
    Inspect all items for external evidence of shipping damage.
    If there is noticeable damage, save the shipping cartons and notify
    Northern Telecom.

2   Remove the four screws securing the cover on the BIPC, and lift the
    cover from the unit.

3   Inspect the interior for components that may have been loosened or
    damaged in shipment (especially the 2716 PROM).

4   Report evidence of damage to Northern Telecom.

    Note: If physical installation of the BIPC is to continue at this time,
    leave the cover off until the option selectors have been verified and the
    power cabling is connected. Otherwise, replace the cover on the unit.

Procedure 2
BIPC option verification

1   Remove the top cover of the BIPC (may already be removed in
    Procedure 1).

2   Check the data speeds for Ports A and B. Jumpers on options W2 and
    W1 must be set to the positions marked with the required rates
    (Figure 14).

    Note: Always use Port A for the **BIPC/Meridian** 1 interface, and Port
    B for the **BIPC/PMS** interface.

3   Verify the options for Port B (selectors 3 to 8 on switch module **SW1).**

4   Verify selector 1 on switch module SW1 (ON for Meridian 1 systems).

5   Verify selector 2 on switch module SW1 (ON for BCC).

6   Replace the cover on the BIPC or proceed to Procedure 3.

Procedure 3
BIPC cable connection

1 Position the BIPC and the power supply at their operating locations (on top of the Meridian 1 cabinet, for example).

2 With the top cover removed from the BIPC, connect the power cable from the power supply to the power connector on the BIPC.

3 Replace the cover on the BIPC.

4 Connect one end of an RS-232-C cable to Port A on the BIPC, and the other to the applicable SDI connector on the SDI card.

5 Connect an RS-232-C cable (maximum length, 50 feet) between the PMS data port and Port B on the BIPC. If the distance is greater than 50 feet, use a line driver or short haul modem.

6 Plug the power supply cord into a 110 V 60 Hz AC outlet.

7 The BIPC can now be placed in service, at any time.

A typical exercise to verify the correct operation of a BIPC unit in a system set up for Room or Maid Status control is illustrated in the following procedure. Before installing the BIPC, the Meridian 1 must be prepared for the interface. The preparation consists of the following.

1   Room status feature must be assigned to guest room directory numbers (CCSA class of service).

2   Program a background terminal capability on an SDI port. The room status feature can be administered from any terminal designated by a service change as a background terminal. Use LD17 to configure the terminal with the following prompt/response sequence:

  ι   IOTB — YES

  ι   ADAN — NEW/CHG TTY xx

  ι   USER — BGD (Note 1)

  ι   PARM — YES

  ι   NDIS — 150 (Note 2)

3   Use LD22 and the following prompt/response sequence to verify the system configuration update:

  ι   REQ — PRT

  ι   TYPE — CFN

4   Verify that the number of NDIS shown on the printout is 150 or more and that the only user listed on the background terminal is BGD.

5 Connect an ASCII terminal (or TTY) to the background port and set the following options. After the options are set, type in OP (CR) to verify the settings.

A SE OP DI ON <CR>

SE OP DI ME OF <CR>

SE OP TE OF <CR>

SE OP DI DE OF **<CR>**

B SE OP PO (Port ID) OFF <CR>

SE OP PO (Port ID) ST ON **<CR>**

C SE OP CH ON <CR>

D SE OP TI DE OF <CR>

E SE OP TI RE OF <CR>

F SE OP TI DI ON <CR>

G SE OP SA ON <CR>

H SE OP CO OF <CR>

6 Use the following step/action/verification procedure to test the operation of the room status feature.

Note *1:* Only BGD message type should be assigned to this port. If other users (MTC, SCH, BUG, etc.) are already assigned to the port, they must be removed before proceeding to the next step.

Note 2: The number of background display messages can be from 0 to 255. To prevent loosing Room status messages during heavy traffic periods, NDIS should be set to 150 or higher. If the system memory does not allow for such an accommodation, the maximum number allowed should be assigned.

Procedure 4
Typical operational exercise

Step	Action	Verification

Room Status test

1	Input: SE ST xxxx CH IN (CR) (Set status of room DN to Check In. xxxx is the room directory number)	Try making an outgoing call from telephone xxxx. The system should permit this call type as well as room-to-room dialing.
	Input: SE ST xxxx CH OU (CR). (Set status of room DN to Check Out).	Try making an outgoing call from telephone xxxx. The system should not permit this call type. However room-to-room dialing should be possible.
	Input: SE ST xxxx CH IN (CR). (Set status of room DN to Check In).	Try making an outgoing call from telephone xxxx. The system should now permit this call type as well as room-to-room dialing.
2	Generate room status (RMS) messages by dialing the proper digits from the guest room telephone.	Verify the status update which should be automatically displayed on the terminal.
3	If the above test is successful use LD43 to perform a data dump.	

Meridian 1/**BIPC**/**PMS** link test

Be sure the BIPC is correctly installed and turned on before continuing on.

4	Press the RESET button to initialize the BIPC.	The diagnostic LED on Port A flashes momentarily.
5	Type the proper commands on a PMS terminal to initiate the database swap from PMS to Meridian 1.	The Port A and Port B LEDs flash to indicate activity on the ports.
6	After the database swap, check into a room by entering the proper commands on a PMS terminal.	The telephone in the room should be unrestricted room-to-room and outgoing calls can be made).
7	Check out of the room by entering the commands on a PMS terminal.	The telephone in the room should be restricted except for (room-to-room calling.
6	Repeat steps 6 and 7 for other rooms.	Verify the responses.
9	Generate maid status messages by dialing the proper digits from a room telephone.	Verify the cleaning status update on a PMS terminal.

Note *1:* If the above sampling of commands and responses (or a similar sampling) is processed

Note 2: It may be necessary to connect a datascope into the circuit to verify the operations. It should be removed after the tests are completed.

34 Installation

Operating procedures

Placing in service

To place the BIPC in service:

1 Verify that the BIPC has been correctly installed, that Meridian 1 data fill is completed and that all data and power cables are connected securely.

2 Plug in the power supply (The red power indicator lights).

3 Press the BIPC RESET button. This sends a (CR) to the Meridian 1

The BIPC is now ready. No further adjustment is required for normal operation.

Restoring service

If, for any reason, service through the BIPC is interrupted, the BIPC can be restored to operation by pressing the RESET switch. However, if the BIPC itself is faulty, it may be necessary to replace the unit. Additionally, check the **SDI** port to be sure it is set and operating properly.

Repair procedure

The BIPC has no field replaceable parts, other than the power supply. A faulty BIPC should be replaced by a working unit to ensure continued operation. Normal Meridian 1 defective units replacement procedures should then be followed.

36 Operating procedures

Ordering information

BIPC equipment can be ordered from Northern Telecom by quoting the applicable ordering codes and quantities required.

Equipment	Ordering Code	Quantity Required
BIPC	A0297075	One per PMS/Meridian 1 Interface (includes one power supply)
Power Supply	A0297998	One per BIPC

38 Orderina information

Specifications

Mechanical

BIPC Mechanical specifications and associated hardware are shown here.

BIPC

Size	Width: 14 inches (356 mm) Height: 2.5 inches (64 mm) Depth: 7 inches (178 mm)
Weight	2.5 Ibs (3.6 kg)
Enclosure	all metal

Power Supply (A0297998)

Size	Length: 4.75 inches (121 mm) Width: 2.75 inches (70 mm) Height: 2.25 inches (57 mm)
Cables	Input: 6 feet (1.8 m), 3-wire, fitted with a UL/CSA approved, 3-pin plug
	Output: 7 feet (2.1 m), 5-wire (18 AWG) with strain relief

Electrical

BIPC Electrical specifications and associated equipment are shown here.

BIPC

Power Requirement	+ 5 V dc, 800 mA
	+ 12 V dc, 100 mA
	-12 V dc, 100 mA

Power Supply (A0297998)

Input Power	105 to 129 V ac, 57 to 60 Hz
Output Power	+ 5 V dc ±5% at 1.0 A
	+ 12 V dc ±5% at 0.2 A
	-12 V dc ±5% at 0.2 A
Ripple And Noise	≤ 10 mV ms on all outputs
Regulation	≤.±5% on all outputs

UL and CSA approved

RS-232-C interface

The following is a summary of the mechanical, and electrical characteristics of the interface between the BIPC and an SDI port.

— Electrical Interface: Compatible with EIA Standard RS-232-C

— Operating Mode: Full duplex, asynchronous

— Signal Logic Levels:

  ı Space or ON = more positive than + 3 V (binary 0)

  ı Mark or OFF = more negative than -3 V (binary 1)

— ASCII character set

— No parity (parity disabled)

— Word Framing   10 bits consisting of
  ı 1 START bit
  ı 8 DATA bits (Bit 8 always tied to high)
  ı 1 STOP bit

— No message control (logical) protocol (i.e., no ENQ, ACK, etc.)

- No data record frame characters

- **SDI** port connector is female

- **SDI** data port addresses 00 to 15

- Prompt character is a period (hex 2E)

- Character sequence indicating that a Meridian 1 initiated data stream is to follow:

    ODH OAH OOH OOH OOH OOH OOH OOH (CR LF nul nul nul nul nul nul)

The following is a summary of the mechanical/electrical characteristics of the interface between the BIPC and a PMS port.

- Electrical Interface: Compatible with EIA Standard RS-232-C

- Operating Mode: Full duplex, asynchronous

- Signal Logic Levels
    ˌ Space or ON = more positive than + 3 V (high)
    . Mark or OFF = more negative than -3 V (low)

- Signal Form: Compatible with EIA Standard RS404

- Data rate: 110, 134, 150, 300, 600, 1200, 1800, 2400, 3600, 4800, 7200, or 9600, selectable

- Parity: Odd or Even (or no parity), selectable

- Word Framing
    ˌ 1 START bit
    ˌ 5, 6, 7, or 8 DATA bits (selectable)
    ˌ 1 PARITY bit
    ˌ 1, 1-1/2, or 2 STOP bits (selectable)

- Maximum Message Text; 100 bytes

- PMS port connector is female

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List of terms

ACK	Acknowledge or affirmative response from the receiver to the sender. If BCC is used, ACK also indicates BCC check matches.
BCC	Block Character Checks
BIPC	Buffer Interface/Protocol Converter
DCE	Data Communication Equipment; the interfacing equipment that couples from a data terminal into a transmission circuit or channel, and from a transmission circuit or channel into a data terminal.
DTE	Data Terminating Equipment. The functional unit of a data station that serves as a data source or data sink and provides for the data communication control function to be performed in accordance with link protocol.
DTR	Data Terminal Ready
NAK	Not Acknowledged or a negative response from the receiver to the sender. For example, not ready to receive a message or a block of data received with errors requires retransmission.
PMS	Property Management System
SDI	Serial Data Interface

SL-1
Buffer Interface/Protocol Converter

Description

northern telecom

S L - 1

Property Management System Interface
Description

Publication number: 553-2801-l 01
Product release: Xl 1 release 19
Document release: 5.0
Document status: Standard
Date: August 1, 1993

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Revision history

December **20, 1990**

This document is reissued to include updates and changes for Xl 1 release 16.
Updates are indicated by revision bars in the margins.

December **1, 1991**

This document is issued to include changes and updates for X1 1 release 17.
Due to the extent of changes, revision bars are omitted.

August **1, 1993**

This document is reissued to include updates and changes for Xl I release 19.
Updates are indicated by revision bars in the margins.

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Feature description

This document provides feature, message control, and installation and configuration information for the Property Management System Interface (PMSI).

The Property Management System Interface is an optional software package (package 103) that allows the Meridian 1 to interface directly with a customer provided Property Management System (PMS) through a Serial Data Interface (SDI) port. This provides an effective means of information between the PMS and the Meridian 1.

> Note: A PMS typically consists of a computer, terminal(s), and software to perform billing and property management functions within the Hotel/ Motel environment.

Both the PMS and the Meridian 1 have independent copies of the database, so, whenever the Meridian 1 updates its database, the PMS must be informed in order to keep both databases current.

Commands may be entered from a PMS associated with a terminal, a background terminal, or a telephone. If you issue a command from a telephone or a background terminal, the Meridian 1 will update its database, and the new status will be sent to the PMS. However, if a command is entered from the PMS terminal, this command will be sent to the Meridian 1 and the Meridian 1 will update its database accordingly.

To ensure that all your commands are received correctly, issue only single room DN commands at one time. Room cleaning status changes initiated by the cleaning staff from guest room telephones are provided to the PMS from the Meridian 1. These changes are initiated by Off-Hook Detection, Dial Access, using a Room Status Key (RMK), or by direct entry from the Background Terminal (BGD).

The Background Terminal (BGD) and Meridian Hospitality Voice Services (MHVS) interact closely with the PMSI. These features are described briefly in the following sections.

Background   Terminal

The Background Terminal (BGD) facilities allow the hotel administration staff to enter, retrieve, and modify data that is associated with automatic wake-up service, message registration, and room status on the Meridian 1 system. As with PMS, the BGD is connected to the Meridian 1 via an SDI port, and, in many cases, both the BGD and PMSI link are configured into the Meridian 1 system. This means that when a craftsperson enters a "check-in" command from a BGD terminal, for example, an updated room status message will be displayed on the BGD terminal and will also be transmitted to the PMS. For more information on the BGD, refer to *Background Terminal Facility description* (553-2311-316)

Meridian Hospitality Voice Services

The Meridian Hospitality Voice Services (MHVS) consists of the Meridian 1 and the Meridian Mail Server (MMS). It uses the PMSI link (link between the PMS system and the Meridian 1) to automate processes, such as, setting up mail boxes for hotel guests and creating group distribution lists. For example, a "check-in" message sent from the PMS will be used to set up a hotel guest's voice mailbox with a default greeting and new password.

The MMS is located between the Meridian 1 and the PMS in an MHVS system, and any command that is transmitted by the PMS is always intercepted and filtered by the MMS. Similarly, whenever a status message is sent by the Meridian 1, this message will always pass through the MMS first, before it is passed to the PMS. For more information on MHVS, refer to the module "Meridian Hospitality Voice Services" in the *X1 I features and services* (553-3001-305)?.

PMSI and Meridian 1 messages

The types of messages that are sent from the PMS to the Meridian 1 and from the Meridian 1 to the PMS are described below.

Types of messages

The types of messages that are sent from the PMS to the Meridian I are:

— Check-in/Check-out commands

  Activating/Deactivating Telephone Restriction commands

— Activating/Deactivating Message Waiting lamp commands

— Activating/Deactivating Do-Not-Disturb feature commands

— Call Party Name Display commands

— Multi-Language Wake-Up commands

The types of messages that are sent from the Meridian 1 to the PMS are:

— Cleaning status changes as dialed by maids from hotel guestrooms

  Cleaning status changes as entered on background terminals or special telephones (Maid-inspector update)

— Cleaning status changes which are caused by automatic update commands that could be programmed on the Meridian 1

  Call Number Information messages

  Error messages that are caused by invalid PMS commands

— Polling messages (with Xl 1 release 19 and later)

PMS messages sent to the Meridian 1

Room status messages

Table 1 contains a list of messages formatted and sent by the PMS to the Meridian 1. Each message is expected to have the appropriate protocol appended.

If the Directory Number Expansion (DNXP) package is equipped, a Directory Number (DN) related field in a Room status command and response is expanded to accommodate up to 7 digits. X1 1 release 17 adds VIP status and Maid ID to the SE command. Maid ID introduces the MI key word and a 1 to 4 digit Maid identification number. The MI keyword, with the Maid ID, can be appended to a cleaning status command if the Maid ID package is equipped.

Table 1
Room status commands (Part 1 of 2)

SEt	STatus	DN	CHeck (IN)
SEt	STatus	DN	CHeck OUt
SEt	STatus	DN	Occupied
SEt	STatus	DN	VAcant
SEt	STatus	DN	SAle
SEt	STatus	DN	NS (Not for Sale)
SEt	STatus	DN	REquest (cleaning)
SEt	STatus	DN	PRogress (cleaning in)
SEt	STatus	DN	CLeaned
SEt	STatus	DN	PAssed
SEt	STatus	DN	FAiled
SEt	STatus	DN	SKipped

Table 1
Room status commands (Part 2 of 2)

SEt	STatus	DN	COntrolled (ON)
SEt	STatus	DN	COntrolled OFf
SEt	STatus	DN	COntrolled (ON)/OFf
SEt	STatus	DN	EI (ON)/OFf
SEt	STatus	DN	E2 (ON)/OFf
SEt	STatus	D N	REquest MI nnnn
SEt	STatus	DN	VIp(ON)/OFf
SEt	STatus	DN	LAO
SEt	STatus	DN	LAEN

Note: DN represents the room directory number. Upper case letters are the
minimum input required to execute the command.

Message Waiting and Do Not Disturb status

The telephone set message waiting lamp is normally controlled by the
Message Center Attendant. Do Not Disturb (DND) is controlled from an
attendant console. With PMSI enabled, it is possible to turn these lamp
conditions ON or OFF using the PMS computer.

At the physical link layer, the PMS computer functions as a TTY and is
connected to the switch by means of an switch Serial Data Interface (SDI)
port. In the switch, each character received from the PMSI data link is treated
as if it were entered from a TTY and each character transmitted to the PMS
computer is handled the same way as characters output to a TTY.

The command processor interprets only the first two letters of each command
word typed in. These letters are shown in uppercase, while the rest of the
commands, including input parameters, are shown in lowercase. Parentheses
indicate a keyword that is optional (or a variable that is a default).

The exact commands listed here are expected to have the appropriate protocol
appended.

Message   Waiting:
SEt STatus DN MW (ON)
SEt STatus DN MW OFf

Do-Not Disturb:
SEt STatus DN DNd (ON)
SEt STatus DN DNd OFf

For PMSI, all new and existing commands are supported as of X11 release
17. In addition, the new parameter (X11 release 16 software), LAnguage,
added to the OPtion, STatus, and CPnd commands are also recognized by the
PMSI.

Note: Only single Room Status commands should be sent from the PMS
to the Meridian 1.

Automatic control

The PMS can request the system to automatically change the room status of
all occupied rooms to "REquested" every day at a specific time by sending
the following message where "hourl" is the time in 24-hour format:

SEt OPtion TIme REquested hour1

To cancel the automatic status change, the following message is sent:

SEt OPtion TIme REquest OFf

Off-hook   detection

The PMS can specify a time when the cleaning staff can use the room phone
to signal that the room has been cleaned. The room phone handset is lifted and
left off-hook to signal "cleaning in PRogress." When the handset is replaced,
cleaning status is updated to "CLeaned."

X11 release 17 introduces Maid Identification. Off-hook detection sends the
default Maid ID number of zero (0) to the PMS if the Maid ID package is
equipped. See *X1 l features and services* (553-3001-305).

The option is set using the following command where "tl" is the start time for
the off-hook detection plan, and "t2" is the end time for the off-hook detection
plan:

SEt OPtion TIme DEtect tl t2

Note: End time (t2) must be greater than the start time (tl). If the end time is not entered, t2 defaults to midnight, 2400.

Dial Access

The Dial Access option is an enhancement of the off-hook detection method for updating RMS data, and expands the list of RMS commands to seven. To set the PMS for Dial Access use the following command:

SEt OPtion TIme DIal (ON)

To disable Dial Access, use the next command:

SEt OPtion TIme DIal OFf

Dial Access is only supported by room phones with Controlled Class of Service Allowed (CCSA) and is limited to changing the status of its own room. Also, Dial Access requires the use of SPRE numbers which precede special access codes for RMS functions. Table 2 shows the necessary SPRE dialing commands.

Table 2
SPRE dialing commands

of-i-hook	SPRE# 861	on-hook (REquested)
off-hook	SPRE# 862	on-hook (in PRogress)
off-hook	SPRE# 863	on-hook (CLeaned)
off-hook	SPRE# 864	on-hook (PAssed)
off-hook	SPRE# 865	on-hook (FAiled)
off-hook	SPRE# 866	on-hook (SKipped)
off-hook	SPRE# 867	on-hook (No Sale)
off-hook	SPRE# 86X*nnnn#	on-hook (Status) Maid ID

Note *1:* The X in 86X for Maid ID must be I-7.

Note *1:* The characters 8, 9, 0, #, and * are reserved for special functions and are not allowed as input for SPRE code commands.

Call Party Name Display name change

The PMS computer can change a Call Party Name Display (CPND) "name" associated with a given DN. To execute the change, use the following commands.

SEt CPnd dn "guest name" xpln **LAnguage #** room status

Legend

d n   = station set DN

"guest name" = CPND name for the DN

xpln   = Expected Name Length

= language assignment for the room

room status = RMS coded indicator (checked in or out)

The CPND name must be enclosed in double quotes and   contain an asterisk (*), colon (:), or carriage return (<CR>). You must define the CPND data block in LD95 before implementing the SEt CPnd command.

The first SET CPND command defines the CPND Name and the expected length. If the XPLN field is not specified, then it defaults to the actual size of the name string or the Default Length (DFLN) defined in LD95, whichever is larger.

Refer to *X11 features and services* (553-3001-305) to configure and enable CPND.

Call Number Information Messages

With X11 release 12 and later, if the terminating telephone has Call Number Information Allowed (CNIA) Class Of Service (COS), the system sends Call Initiation and Call Disconnection messages for calling and called DNs on a real time basis to the Background Terminal (BGD) and PMSI ports.

Class of Service for CNIA is limited to 60 sets and is assigned in LD10 and LD11. Refer to Northern Telecom Publications *1 features and services* (553-3001-305) and *X11 input/output guide* (553-3001-400).

> *Note:* A set that is assigned Virtual ACD Agent (VMA) Class Of Service *cannot* be assigned CNIA Class Of Service.

Message formats sent to the BGD port and PMSI ports are shown below where "XXXX" is the calling DN, and "YYYY" is the called DN:

ST-CI XXXX YYYY

ST-CT **XXXX** YYYY

> *Note:* The calling or called DN can have up to 7 digits if equipped with the DNXP package.

When equipped with the DNXP package, the Originating DN and Terminating DN fields in Call-Initiated and Call-Terminated messages are expanded from 6 bytes to 7 bytes.

Call-Initiated (CI) A Call-Initiated message is sent when the terminating set has Call Number Information Allowed (CNIA) Class Of Service (COS) and one of the following conditions occurs:

— the telephone set goes off-hook and a number is dialed

— the call is re-established from On-Hold status

— the telephone set is the third party in a Call Transfer

— the set terminates a Forwarded Call

— the call is Picked Up by a station

— the Call Waiting key on a CNIA set is pressed

— the call is extended by an attendant

Call-Terminated (CT) A Call-Terminated message is sent when the terminating set has Call Number Information Allowed (CNIA) Class Of Service (COS) and one of the following conditions occurs:

- Call termination to a non-CNIA set
- Call Forward No Answer (CFNA)
- Call Park
- Call Transfer from originating or terminating sets
- Call Pick Up received by the set
- Conference Call
- Call On-Hold

No messages are sent for the following call types.

- Dial Intercom calls
- Overridden calls
- Attendant calls
- CNIA-originated calls
- Automatic Wake-Up calls
- Trunk calls

Meridian 1 messages sent to the PMS

The following table provides a list of Meridian 1 messages sent to the PMS.

Table 3
Meridian 1 messages sent to PMS

Message formats	Type of message
ST <dn> RE	Cleaning Status (Cleaning Requested)
ST <dn> PR	Cleaning Status (Cleaning in Progress)
ST <dn> CL	Cleaning Status (Room Cleaned)
ST <dn> PA	Cleaning Status (Passed Inspection)
ST <dn> FA	Cleaning Status (Failed Inspection)
ST <dn> SK	Cleaning Status (Cleaning skipped)
ST <dn> NS	Cleaning Status (Note For Sale)
ST-CI <dn1> <dn2>	Call initiation
ST-CT <dn1> <dn2>	Call termination
ST PO (X11 r19 and later)	Polling message

Message control and protocols

The envelope used for messages between the Meridian 1 and the PMS is ASCII-encoded control characters listed in Table 4 (<STX>, <ETX> <ACK>, and <NAK>). In addition, each message block is terminated with a <BCC> character. The <BCC> is used to maintain message integrity, and is an "exclusive or" of all bytes following the <STX>, including the <ETX>.

The general message format is listed below:

STX (message body) ETX BCC

The <BCC> follows the <ETX> character in the transmission, and the receiver immediately verifies the message. If the <BCC> is correct, the receiver responds with an <ACK>. If the <BCC> does not match, the receiver responds with <NAK>.

Table 4
Message control and special characters.

Character	Hex code	Definition
STX	02	Start of Text: message body follows.
ETX	03	End of Text: End of message body.
BCC		Block Check Character.
ACK	06	ACKnowledge: affirmative response from the receiver to the sender. If BCC is used, ACK also indicates BCC check matches.
NAK	15	Not-Acknowledged: negative response from the receiver to the sender of a block of data received with errors requires retransmission.

Message protocols

Software protocols have been implemented to supply a method of flow control across the data link. The PMS computer is given priority and the responsibilities of the system and the PMS have been defined.

Meridian 1 protocol

The following sections list the transmitting and receiving requirements for the Meridian 1 protocol:

Transmitting requirements

The Meridian 1 must calculate a <BCC> for each message, and transmit it as a terminating character.

Prior to X11 release 19, when the Meridian 1 transmitted a message to the PMS, it would ignore any <ACK> or <NAK> received from the PMS, and would not attempt to retransmit the message. Instead, the Meridian 1 could transmit a new message to the PMS immediately following the previous message, without any gap in transmission.

With Xl 1 release 19 and later, when the Meridian 1 transmits a message to the PMS, it no longer ignores an <ACK> or <NAK> received from the PMS, but waits for a specified interval (defined on a system basis) for the PMS to respond before sending the next message.

Receiving requirements

— When the Meridian 1 receives a message from the PMS, a <BCC> for the received characters following the <STX> and including the <ETX> will be calculated and compared with the received <BCC>. If the BCCs match, an <ACK> is sent to the PMS. If the BCCs do not match, a <NAK> is sent to the PMS.

The <ACK> or <NAK> sent back to the PMS will follow any message that is currently being transmitted by the Meridian 1 (such as, a room cleaning status message).

PMS protocol

The PMS can operate using three slightly different protocols:

— PMS1
The first PMS protocol is the standard interface and default value.

— Format 2 (Format B)
The second protocol allowed requires a carriage return (<CR>) to recognize the input message.

— Format 3 (Format C)
The third protocol allows for any updated RMS message sent to be followed by the old room status whenever a room DN checks in or checks out.

Within all three types, it is recommended that the PMS adhere to the following protocol requirements.

Transmitting requirements

— The PMS must calculate a <BCC> for each message, and transmit it as a terminating character.

All messages transmitted by the PMS should be "single room" commands. The PMS may run into timing and flow control problems if you use "multiple" room commands.

— After transmitting a message, the PMS must wait for the Meridian 1 to acknowledge receipt of the message within a predefined period of time.

The recommended period of time for the message acknowledgement timer is 2 seconds.

If the PMS receives an <ACK> from the Meridian 1 before the acknowledgement timer expires, the PMS can transmit the next message immediately (that is, the PMS does not have to wait for the acknowledgement timer to expire before transmitting the next message).

If the PMS receives a <NAK> from the Meridian 1 before the acknowledgement timer expires, the PMS can retransmit the same message immediately (that is, the PMS does not have to wait for the acknowledgement timer to expire before retransmitting the next message).

After three retransmission attempts, however, the PMS should take the following actions:

· Flag the problem to hotel personnel so that the usual corrective action can be taken.

Note: The usual corrective action for most problems would involve the determination of the exact cause of failure, the correction of the problem, and a database swap to resynchronize the system.

· Store the message in an error file, and then send the next message.

— If the PMS does not receive an **<ACK>** or **<NAK>** from the Meridian 1 before the acknowledgement timer expires, the PMS should assume that the message was lost, and should retransmit the same message. The PMS should continue to retransmit the same message until the Meridian 1 acknowledges receipt of that message.

The PMS should queue all other messages for the Meridian 1. If the PMS queue fills up, messages may be lost and a database swap will be required to recover the lost messages. If PMSI messages are lost, the PMS should flag the problem for the hotel personnel.

Note: Some vendors using the PMS protocol may want to follow an earlier strategy of allowing only three transmission attempts, after which the message is stored in a PMS error file and the next message is transmitted. The new strategy described above is designed to facilitate recovery from short link outages.

— The PMS should send an <ACK> or <NAK> upon receiving a message from the Meridian 1.

Prior to release 19, it was not necessary to send these characters in response to PMSI messages because the Meridian 1 did not retransmit a <NAK> message, and did not wait for a response before transmitting the next message.

With release 19 and later, it is strongly recommended that the PMS send <ACK> and <NAK> responses because the Meridian 1 now has the capability to retransmit messages.

In addition to message retransmission, Xl 1 release 19 introduces a polling functionality to test the status of the PMSI link. The polling message may not be recognized by the PMS, however, it is strongly recommended that the PMS treat the polling message as a standard Meridian 1 message by responding with an **<ACK>** upon receiving the message in its correct form.

Note: It is required that **<ACK>** and **<NAK>** characters be sent only between message packets. That is, if the PMS is in the middle of sending a message to the Meridian 1, it must finish sending the complete message before sending an **<ACK>** or **<NAK>** back to the Meridian 1.

Receiving requirements

— When the PMS receives a message from the Meridian 1, it is recommended that the **<BCC>** of the messages received be checked internally by the PMS and an **<ACK>** or **<NAK>** sent back to the Meridian 1.

— It is recommended that any error detected should be stored in an error file.

Note: The PMS must not send any error response to the Meridian 1, such as, "Invalid command or "Syntax error," about a received message.

18 Message control and protocols

Installation, configuration, and maintenance

Property Management Interface (PMSI), package 103 requires the following additional packages.

Controlled Class Of Service (CCOS), package 8 1

Background Terminal (BGD), package 99

Room Status (RMS), package 100

PMSI has the following feature interactions.

Message Registration and Automatic Wake Up features are not supported by the PMSI link. These features may be activated via the Background Terminal.

— Message waiting messages (NO LAMP or BAD LAMP) are not sent.

PMSI is mutually exclusive with the following features.

— Centralized Attendant Services (CAS)

— Coordinated Dialing Plans (CDP)

Multi-Tenant

PMSI link requirements

The PMSI is a full duplex EIA RS-232-C Asynchronous Data Link (ADL) which operates under a specific message protocol and format. The link provides a channel to allow the PMS computer and a switch to exchange information. The Meridian 1 uses a Serial Data Interface (SDI) port to connect to the PMS.

The PMS must provide an Asynchronous Data Link (ADL) which conforms to the following requirements:

|	
Data baud rates:	110, 150, 300, 600, 1200, 2400, 4800, 9600 bps
Electrical interface:	EIA RS-232-C
Operating mode:	Full Duplex
Word framing options:	1 start
	8 data
	1 stop
	10 bits/character
Parity:	OFF
Message format:	STX message string ETX BCC
	STX = Start text
	ETX = End text
	BCC = Block Character Check

The Block Character Check (BCC) is defined as being equal to the "exclusive or" of each of the 7 data bits (not including parity) of the message and the ETX. It does not include the "exclusive or" of the STX.

It is recommended that the **SDI** port have a data rate of 1200 baud to speed up the data swap.

If a PMS link is configured with a high baud rate, there is a chance that characters in the message could be lost. If the customer experiences transmission problems, a lower baud rate is recommended (refer to the section titled "Message transmission and retransmission" later in the chapter). Also, it is recommended that the PMS commands only be run during slow hours (2400-0200) to avoid overloading the system with too many PMS jobs having higher priorities.

RS-232-C cables For normal connections, RS-232-C cables fitted with 25-pin connectors are required. The cables must include straight-through connections between pins 1, 2, 3, 4, 5, 6, 7, 8, and 20 on the two connectors to provide RS-232-C interchange circuits AA, AB, BA, BB, and CD. Refer to the basic schematic in Figure 1.

Figure 1
Dedicated RS-232-C connector pins

Not more than 50 feet unless using a
short haul modem, or a line driver.
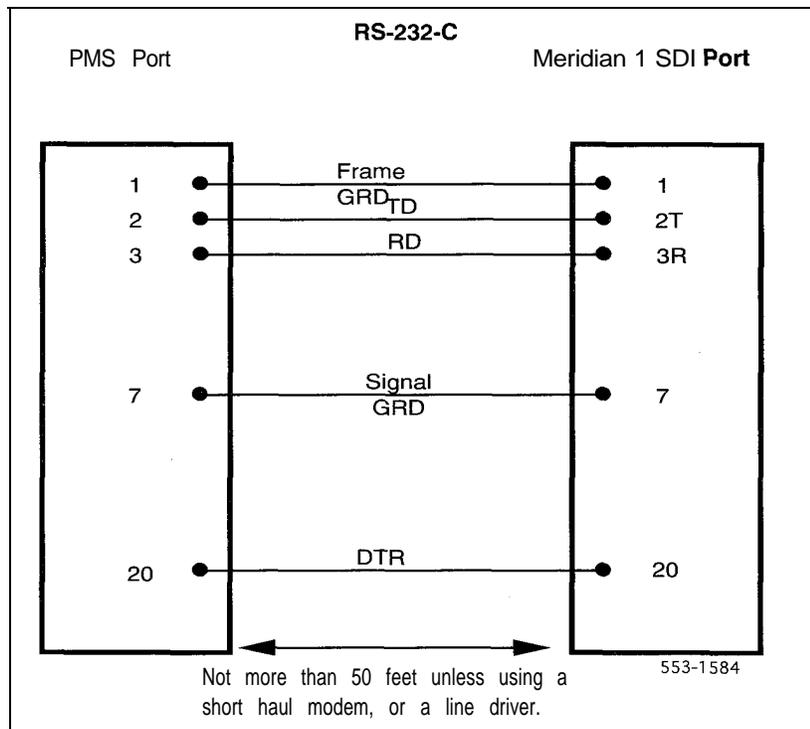
PMSI installation requirements

- For setting up PMSI, use an EIA RS-232-C asynchronous data link (with SDI port connecting to PMS).

- For setting up MLWU, use QPC74 RAN trunk interface cards, and a compatible Audichron HQ-1 112 continuous mode RAN machine.

If you are using many different SDI cards, refer to *Circuit card installation and testing* (553-3001-211) to be sure the switch settings are correct for the card you are using.

If required, define a TTY for use as a Background Terminal. Refer to *Background Terminal Facility description* (553-2311-316) for information.

PMSI set option commands

In order to operate a PMS, a PMS port must be assigned for RMS and the confirm option turned OFF. Therefore, a BGD is used to issue the following commands:

SEt OPtion POrt 'pmsportid' **STatus SEt**

SEt OPtion COnfirm OFf

PMSI Standardization

The PMSI Standardization features in Xl 1 release 19 and later provide the Meridian 1 with the following enhancements:

- Message retransmission

- Polling

- Message monitoring

These features are described below. Refer to the configuration section for information on how to configure these options.

> *Note:* Upon loading Xl 1 release 19, these features are not automatically activated. You must go into **LD17** to enable these features.

Message transmission

Prior to **X1** 1 release 19, the Meridian 1 ignored any response returned by the PMS after sending a room status message to the PMS, and did not attempt to retransmit the message. As a result, the database between the PMS and the Meridian 1 could not be maintained consistently.

Message retransmission

With X11 release 19 and later, PMSI Standardization provides the Meridian 1 with the capability to retransmit a message to the PMS. This means that, whenever the Meridian 1 transmits a room message or the new polling message to the PMS, the Meridian 1 will wait for an <ACK> response from the primary PMSI port. If the Meridian 1 receives a <NAK>, or does not receive any response before the predefined response timer expires, the same message will be retransmitted to the primary PMSI port.

With PMSI Standardization, the full content of the room status or new polling message is stored in a call register (whether the retransmission feature is activated or not). The call register is then linked to the PMSI output queue and transmitted on a first-in-first-out basis.

Message retransmission disabled

Message retransmission is disabled (turned OFF) when the retransmission timer (XTMR prompt) in LD17 is set to zero (0). If message retransmission is disabled and a message is transmitted from the Meridian 1 to the PMS, the call register where the message is stored becomes idle immediately, and the Meridian 1 ignores the response that it receives from the primary PMSI port.

Message retransmission activated

Message retransmission is activated (turned ON) when the retransmission timer (XTMR prompt) in LD17 is set to a non zero value. If message retransmission is activated and a message is transmitted from the Meridian 1 to the PMS, the call register where the message is stored does not become idle but waits for an **<ACK>** response from the primary PMSI port.

If the Meridian 1 receives an **<ACK>** from the PMS before the retransmission timer expires, the call register becomes idle. If the Meridian 1 receives a **<NAK>,** or does not receive any response from the PMS before the retransmission timer expires, the Meridian 1 will retransmit the message if both of the following conditions are met:

- ·   The message has not completed its full transmission cycle (that is, the Meridian 1 has not retransmitted the same message for the predefined number of times specified in the XNUM prompt in LD17).

- ·   Message retransmission has not been automatically disabled. Refer to "Automatic disabling of message retransmission" below for more information.

Automatic disabling of message retransmission

If the Meridian 1 does not receive an **<ACK>** from the primary PMSI port after two consecutive full transmission cycles, message retransmission will be automatically disabled and the Meridian 1 performs the following actions:

- ·   Displays a **"RE-XMIT OFF"** message on the maintenance TTY(s).

- ·   Turns on the minor alarm on the attendant console (if the option is configured in LD17).

Until message retransmission is re-enabled, further message transmission is be handled in the same way as it is when message retransmission is disabled in LD17. Refer to "Message retransmission disabled" for more information.

Automatic re-enabling of message retransmission

After message transmission has been automatically disabled, it is automatically re-enabled when the Meridian 1 receives an **<ACK>** from the primary PMSI port, and performs the following action:

· Displays a "**RE-XMIT** ON" message on the maintenance TTY(s).

Note: When message transmission is automatically re-enabled, the minor alarm on the attendant console will not be automatically cleared, as the alarm may indicate other problems.

Polling

Prior to X11 release 19, the Meridian 1 did not have the capability to monitor the status of the PMSI link (that is, the link between the Meridian 1 and the PMS).

With X11 release 19 and later, PMSI Standardization provides this monitoring capability by enabling the Meridian 1 to poll the PMSI link at predefined intervals.

Polling activated

Polling is activated when the polling timer (PTMR prompt) in LD17 is set to a non zero value. Polling is disabled when the polling timer is set to zero (0).

The polling timer is reset whenever the Meridian 1 sends a message to the PMS. When the polling timer expires, the polling message "ST PO" is automatically sent to the PMS.

Note: A polling message may be retransmitted from the Meridian 1 to the PMS in the same way as a room status message is retransmitted. Refer to "Message retransmission" for more information.

Message monitoring

Prior to X11 release 19, the Meridian 1 did not have the capability to track incoming messages from the PMS or outgoing messages to the PMS.

With X11 release 19 and later, PMSI Standardization provides this tracking capability by enabling these incoming/outgoing messages between the Meridian 1 and the PMS to be displayed on all maintenance (MTC) **TTYs** on the Meridian 1.

Message monitoring output information contains the following fields:

transmission-type **msg_content** *time-stamp*

Where:

Transmission-type is a two character field that indicates the source of the message:.

PT	PMS transmitted message
PR	PMS retransmitted message
M T	Meridian 1 transmitted message
MR	Meridian 1 retransmitted message
PO	Meridian 1 transmitted polling message
PX	Meridian 1 retransmitted polling message

Msg_content is the content of the message.

You can specify the message output to be either in alphanumeric or hexadecimal format. Some examples are provided below:

Alphanumeric format

PT [STX] SE ST 5006 CH IN [ETX] [BCC] 12:30:32
MT [NAK] 12:30:32
PR [STX] SE ST 5006 CH IN [ETX] [BCC] 12:31:32

Hexadecimal format

PT 02 53 45 20 53 54 20 35 30 30 36 20 43 48 20 49 4E 03 1E 12:30:32
MT 95 12:30:32
PR 02 53 45 29 53 54 20 35 30 30 36 20 43 48 20 49 4E 03 1D 12:30:32

Time-stamp is the time when the message is sent/received by the Meridian 1.

Activating message monitoring

Activating and disabling message monitoring can be performed in two ways:

- · Turning message monitoring on in LD37. If you use this option, you can selectively turn message monitoring ON/OFF for incoming *or* outgoing calls.

- • Using dial access from a maintenance telephone (that is a telephone that is MTA class of service). If you use this option, (SPRE +9913), you must turn message monitoring ON/OFF for both incoming and outgoing calls at the same time.

  To turn *on* message monitoring from a maintenance telephone, dial:

  SPRE + 9913 + 1 + 03

  To turn *off* message monitoring from a maintenance telephone, dial:

  SPRE + 9913 + 0 + 03

X11 release 17 PMSI configuration

Configuration for the Background Terminal (BGD) and the Property Management Interface (PMSI) ports for X11 release 17 and earlier is provided in LD17. The prompts are listed below.

Table 5
X11 release 17 PMSI configuration

Prompt	Response	Explanation
REQ	CHG, END	Change data or terminate overlay
TYPE	CFN	Configuration record
IOTB	Yes	Change input/output terminals or devices
HIST	<cr>	History file buffer length
ADAN	NEW/CHG/OUT TTY O-l 5	Add, change, move, or remove an I/O device, type aaa, port x
ESDI	<cr>	Not an ESDI port
CDNO	o-1 5	SDI card number
DENS	SDEN, DDEN, 4DEN	single, double, or quad ports on SDI card
USER	aaa aaa BGD PMS	Enter one or more of following terminal functions: Background Terminal Property Management Interface
CUST	o-99	Customer number
MANU	(PMSI), PMS2, PMS3	PMS interface type
ADAN	<cr>	Add, change, move, or remove an I/O device, type aaa, port x

XI 1 release 18 **PMSI** configuration

Configuration for the Background Terminal (BGD) and the Property Management Interface (PMSI) ports for X11 release 18 and earlier is provided in LD17. The prompts are listed below.

Table 6
XI 1 release 18 **PMSI** configuration

Prompt	Response	Explanation
REQ	CHG, END	Change data or terminate overlay
TYPE	CFN	Configuration record
ADAN	Yes	Change input/output terminals or devices
HIST	<cr>	History file buffer length
ADAN	NEW/CHG/OUT TTY O-I 5	Add, change, move, or remove an I/O device, type aaa, port x
ESDI	<cr>	Not an ESDI port
CDNO	o-1 5	SDI card number
DENS	SDEN, DDEN, 4DEN	single, double, or quad ports on SDI card
USER	aaa aaa BGD PMS	Enter one or more of following terminal functions: Background Terminal Property Management interface
CUST	o-99	Customer number
MANU	(PMSI), PMS2, PMS3	PMS interface type
ADAN	<cr>	Add, change, move, or remove an I/O device, type aaa, port x

XI 1 release 19 **PMSI** configuration

The X11 release19 PMSI Standardization retransmission and polling features are configured in LD17; the message monitoring feature is configured in LD37. Printing of the configuration record is performed in LD22.

Configuration prompts for LD1 7

The seven new prompts for LD17 are: PMSI, PORT, PMCR, XTMR, XNUM, PMIN, and PTMR. These prompts are listed below.

Table 7
X11 release 19 PMSI configuration

Prompt	Response	Explanation
req	chg	Change data command.
type	parm	System parameters.
PMSI	(NO)/YES	Modify PMSI data. (Refer to Note 1.)
_MANU	PMS1/ PMS2/ PMS3	PMS interface type. (Refer to Notes 1 and 2).
PMCR	o-99	Customer number
USER	BGD PMS	PMSI port
CUST	5-(60)-250 <25%>	The maximum number of call registers that can be used at any one time to store outgoing room status messages. 60 or 25% of system call registers as defined by NCR. 250 or 25% of system call registers. (Refer to Note 1)
PORT	O-l 5/X	Primary PMSI port number. Enter O-l 5 to define a primary PMSI port. Enter X to delete the existing primary PMSI port. (Refer to Note 1.)
XTMR	(0) - 6	Retransmission timer, in seconds. Enter 0 to turn OFF message retransmission. Enter 1 to 6 to turn ON message retransmission. (Refer to Notes 1 and 3.)
_XNUM	(1) - 4	Maximum number of retransmissions for a single message.
_PMIN	(NO)/YES	Option to turn on minor alarm whenever retransmission is automatically disabled. (Refer to Notes 1,3, and 4.)
PTMR	(0) - 31	Polling timer, in minutes. Enter 0 to turn OFF polling. Enter 1 to 31 to turn ON polling. (Refer to Notes 1 and 3.)

Note *1:* If the response to the PMSI prompt is NO, prompts MANU, PORT, XTMR, XNUM, PMIN, and PTMR will not be given.

Note 2:   MANU is an existing prompt that is now grouped with the PMSI prompts.

Note 3:   If primary PMSI port is not defined, the prompts XTMR, XNUM, PMIN, and PTMR will not be given.

Note 4:   If message retransmission is turned OFF (that is XTMR is set to 0), the prompts XNUM and PMIN will not be given.

Configuration examples for **LD1** 7

Three configuration examples are provided below:

Example 1

MANU	PMS3
PMCR	150
PORT	0

With this configuration:

- ·   Meridian 1 will use PMS protocol 3.
- ·   Up to 150 system call registers may be used to store output messages at any given time.
- ·   No primary PMSI port is defined.

Example 2

MANU	PMS3
PMCR	150
PORT	1
_XTMR	0
_PTMR	0

With this configuration:

- · Meridian 1 will use PMS protocol 3.

- · Up to 150 system call registers may be used to store output messages at any given time.

- · Port 1 is defined as the primary PMSI port.

- · Message retransmission is OFF because the retransmission timer (XTMR) is set to 0.

- · Polling is OFF because the polling timer **(PTMR)** is set to 0.

Example 3

MANU	PMS3
PMCR	150
PORT	1
_XTMR	0
PTMR	2

With this configuration:

- · Meridian 1 will use PMS protocol 3.

- · Up to 150 system call registers may be used to store output messages at any given time.

- · Port 1 is defined as the primary PMSI port.

- · Message retransmission is OFF because the retransmission timer **(XTMR)** is set to 0.

- · Polling is ON, and the polling timer is set to 2 minutes.

Example 3

MANU	PMS3
PMCR	150
PORT	1
_XTMR	2
__XNUM	2
__PMIN	YES
_PTMR	0

With this configuration:

- · Meridian 1 will use PMS protocol 3.

- · Up to 150 system call registers may be used to store output messages at any given time.

- · Port 1 is defined as the primary PMSI port.

- • Message retransmission is ON, and the retransmission timer is set to 2 seconds.

- · Maximum number of retransmission attempts is set to 2.

- · Whenever retransmission is automatically disabled, the attendant minor alarm will be turned on.

- · Polling is OFF because the polling timer is set to 0.

Configuration commands for LD37

Several new commands have been added to this maintenance LD to enable you to turn ON/OFF message monitoring for the primary PMSI port, and to specify the format of the message monitoring output.

The new commands are listed below.

Command	Purpose
SET MON 0	Define output to be in alphanumeric format
SET MON 1	Define output to be in hexadecimal format.
ENL MSGI	Turn ON monitoring of incoming messages from primary PMSI port.
ENL MSGO	Turn ON monitoring of outgoing messages to primary PMSI port.
DIS MSGI	Turn OFF monitoring of incoming messages from primary PMSI port.
DIS MSGO	Turn OFF monitoring of outgoing messages to primary PMSI port.
STAT MON	Display monitoring status. Format of the output for the STAT MON command is: **MSGI:** ON/OFF MSGO: ON/OFF **ALPH/HEX**

Configuration example for LD37

If you enter the following commands in LD37

ENL MSGI
ENL MSGO
SET MON 0
STAT MON

The message "MSGI: ON MSGO: ON ALPH"

is displayed to indicate that monitoring is ON for both incoming and outgoing messages, and that the message will be in alphanumeric format.

Configuration prompts for LD22

The print program LD22 has been modified to include the new prompts, provided in LD17.

> Note I: XTMR, XNUM, PMIN, and PTMR prompts are not printed if no primary PMSI port is defined (that is, PORT = NONE in LD17).

> *Note 2:* XNUM, and PMIN are not printed if message retransmission is turned OFF (that is, XTMR = 0 in LD17).

Configuration examples for LD22

Examples of typical printouts are provided below:

Example 1

PMSI

_MANU   PMS3

_PMCR   *60*

PORT   NONE

This is an example output of the configuration data when the primary PMSI port is defined.

Example 2

PMSI

_MANU	PMS3
_PMCR	60
-PORT	1
__XTMR	0
__PTMR	0

This is an example output of the configuration data when the primary port is defined; retransmission and polling are OFF for the primary PMSI port.

Example 3

PMSI

_MANU	PMS3
_PMCR	60
PORT	1
__XTMR	2
___XNUM	2
___PMIN	YES
_PTMR	2

This is an example output of the configuration data when the primary port is defined; retransmission and polling are ON for the primary PMSI port; attendant minor alarm is to be turned on whenever message retransmission is automatically disabled.

Operating parameters

Important PMSI operating parameters are listed below:

— The Meridian 1 supports one PMSI link.

— Activation of PMSI Standardization may require modifications to Property Management System software.

— When the Meridian 1 experiences initialization, sysload, or power failure, all output messages in the queue are lost.

— Setting Call register values for a typical application and a data swap are listed below:

— Call register recommendations for a typical scenario and a database swap scenario are provided below:

Typical scenario When using a typical application, it is recommended that you use the default (60) number of call registers. A typical application might consist of the following:

A hotel with 8,000 guests, 2,400 of who check out between 11 AM and 12 PM. Cleaning status of 667 rooms is changed during this hour with heavy traffic being generated using, for example, the Maid ID and On-Hook/Off-Hook Detection features.

Database Swap scenario When performing database swap between the PMS and Meridian 1, it is recommended that you increase the number of call registers to the maximum (25% of system call registers).

— When the number of messages in the PMSI output queue exceeds the limit defined by the PMCR prompt in LD17, the meridian 1 discards the oldest message in the PMSI output queue, and issues an error message. Refer to XII *input/output* guide (553-3001-400) for a list of Meridian 1 and PMS error messages.

— Turn off the echo mode if the PMSI link is configured with a modem. If the echo code is turned on, characters may bounce back and forth between the modem and the Meridian 1, thus impacting the system processing and the dial tone rate.

Feature interactions

Important PMSI feature interactions are listed below:

- Multipurpose Serial Data Link (MSDL) - Serial Data Interface (SDI) Application

  With the X11 release 19 **MSDL-SDI** feature, if the primary PMSI port is defined on an MSDL card and is attached to a modem that is not connected correctly, the MSDL-SD1 driver will not send any output to, nor receive any input from, the primary PMSI port. The error message IOD332 is displayed to indicate the modem connection problem.

  Because message transmission between the Meridian 1 and PMS is blocked, the Meridian 1 assumes that the primary PMSI port is experiencing a problem, and disables message retransmission automatically.

- Call Number Information messages

  Message retransmission applies to call number information messages (CNIM) in the same way as it applies to room status messages, and the new polling message.

- Faster I/O buffer

  In X11 release 17, the Faster I/O Buffer feature increased the PMSI input buffer to accommodate incoming commands to the Meridian 1 that are no longer than 20 characters. Because PMSI Standardization applies only to outgoing messages to the PMS, it has no interaction with the Faster I/O Buffer feature.

- Attendant Minor Alarm

  In LD17, you can specify that the attendant minor alarm is turned ON when message retransmission is automatically disabled. Note, however, that, if the attendant minor alarm is turned ON as a result of message retransmission being automatically disabled, the attendant alarm will not be automatically cleared when message retransmission is automatically re-enabled.

PMSI Standardization recommendations

The following recommendations are provided for PMSI Standardization.

1   For those existing PMS systems that do not return **<ACK>** or **<NAK>** characters upon receiving a message from the Meridian 1, it is recommended that you turn OFF message retransmission in LD17.

2   For those existing PMS systems that do not recognize the new polling message "ST PO," message retransmission may become automatically disabled if polling is set to ON in LD17.

3   If system call registers are heavily used for applications such as call processing, Command Status (CLS) link, and PMSI link, it is recommended that you increase the number of call registers (NCR in LD17) for the system accordingly.

SL-1
Property Management System Interface
Description

northern telecom