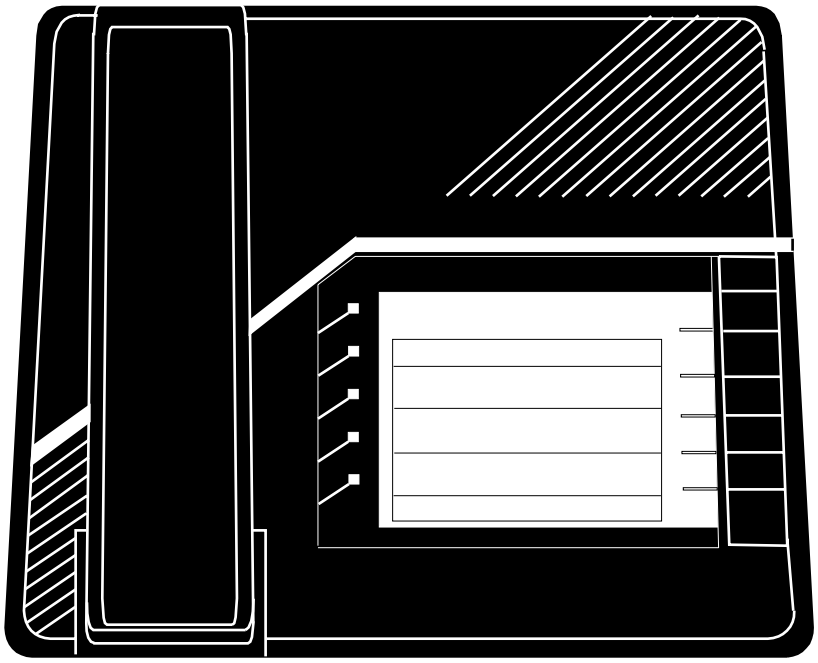
555-4001-112

Meridian 1 Options 201, 211

Meridian SL-100

M3000 Touchphone Reference Manual

MSL03 Standard 05.01 March 1995



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M3000 Touchphone Reference Manual

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This publication was reissued to include new template format and to add Directory, Directory Archiver, and Call Log information.

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Release 04.01 was reissued during Batch Change Supplement (BCS) 31 to include Automatic Set Relocation (ASR) information.

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This publication was reissued to include corrections to the loop engineering for the M3000 Touchphone and additional parameter registers.

Contents

Tables

About this document

When to use this document

Use this document to obtain information on the Meridian M3000 Touchphone. For detailed information on the interface with the Meridian SL-100, refer to 555-4001-101, *Digital Line Module Reference Manual*.

How to check the version and issue of this document

The version and issue of the document are indicated by numbers, for example, 01.01.

The first two digits indicate the version. The version number increases each time the document is updated to support a new software release. For example, the first release of a document is 01.01. In the *next* software release cycle, the first release of the same document is 02.01.

The second two digits indicate the issue. The issue number increases each time the document is revised but rereleased in the *same* software release cycle. For example, the second release of a document in the same software release cycle is 01.02.

To determine which version of this document applies to the software in your office and how documentation for your product is organized, check the release information in the *Commercial Systems Master Index of Publications*, 555-4031-001, or *DSN Master Index of Publications*, 555-4021-001.

This document is written for all DMS-100 Family offices. More than one version of this document may exist. To determine whether you have the latest version of this document and how documentation for your product is organized, check the release information in the *Commercial Systems Master Index of Publications*, 555-4031-001, or *DSN Master Index of Publications*, 555-4021-001.

References in this document

The following documents are referred to in this document:

- 555-4001-105, *Meridian SL-100 Features and Service Description*

- 555-4001-110, *M2000 Digital Telephone Reference Manual*
- 555-4001-315, *Telephone Set/Attendant Console Operation and Test Manual*
- 555-4111-100, *Voice Message Exchange Interface General Description*

What precautionary messages mean

The types of precautionary messages used in NT documents include attention boxes and danger, warning, and caution messages.

An attention box identifies information that is necessary for the proper performance of a procedure or task or the correct interpretation of information or data. Danger, warning, and caution messages indicate possible risks.

Examples of the precautionary messages follow.

ATTENTION Information needed to perform a task

> **ATTENTION**
> If the unused DS-3 ports are not deprovisioned before a DS-1/VT Mapper is installed, the DS-1 traffic will not be carried through the DS-1/VT Mapper, even though the DS-1/VT Mapper is properly provisioned.

DANGER Possibility of personal injury

DANGER
Risk of electrocution
Do not open the front panel of the inverter unless fuses F1, F2, and F3 have been removed. The inverter contains high-voltage lines. Until the fuses are removed, the high-voltage lines are active, and you risk being electrocuted.

WARNING Possibility of equipment damage

WARNING
Damage to the backplane connector pins
Align the card before seating it, to avoid bending the backplane connector pins. Use light thumb pressure to align the card with the connectors. Next, use the levers on the card to seat the card into the connectors.

CAUTION Possibility of service interruption or degradation

CAUTION
Possible loss of service
Before continuing, confirm that you are removing the card from the inactive unit of the peripheral module. Subscriber service will be lost if you remove a card from the active unit.

How commands, parameters, and responses are represented

Commands, parameters, and responses in this document conform to the following conventions.

Input prompt (>)

An input prompt (>) indicates that the information that follows is a command:

>BSY

Commands and fixed parameters

Commands and fixed parameters that are entered at a MAP terminal are shown in uppercase letters:

>BSY CTRL

Variables

Variables are shown in lowercase letters:

>BSY CTRL ctrl_no

The letters or numbers that the variable represents must be entered. Each variable is explained in a list that follows the command string.

Responses

Responses correspond to the MAP display and are shown in a different type:

```
FP 3 Busy CTRL 0: Command request has been submitted.
FP 3 Busy CTRL 0: Command passed.
```

The following excerpt from a procedure shows the command syntax used in this document:

1 Manually busy the CTRL on the inactive plane by typing

>BSY CTRL ctrl_no
and pressing the Enter key.

where

ctrl_no is the number of the CTRL (0 or 1)

Example of a MAP response:

```
FP 3 Busy CTRL 0: Command request has been submitted.
FP 3 Busy CTRL 0: Command passed.
```

Introduction

Integrated Voice and Data is a service that provides simultaneous voice and data communications with data speeds up to 19.2 kbit/s over a single, twisted-pair subscriber loop. M2000 Digital telephones and M3000 Touchphones are supported by this feature.

Three M2000 Digital Telephones and the M3000 Telephone are offered:

- M2009, with 9 programmable feature keys
- M2112, with 11 programmable feature keys and a twelfth key for handsfree mute function, providing integrated handsfree service
- M2018, with 18 programmable feature keys
- M3000, with touch-sensitive Liquid Crystal Display (LCD) screen and integrated handsfree service

The M3000 Touchphones are equipped with the Touch Asynchronous Data Option (TADO), and are capable of transmitting or receiving simultaneous voice and data.

General description

The Meridian M3000 Touchphone provides an integrated voice and data communications capability. These telephones communicate with the Meridian SL-100 system using digital transmission over standard telephone (twisted-pair) wiring. The telephones interface with the Meridian SL-100 system through the Enhanced Digital Port Card (EDPC), which has 16 ports that support 16 digital M3000 telephones.

M3000 Digital Telephones connect to the Meridian SL-100 system through a two-wire loop carrying two independent 64 kbit/s Pulse Code Modulation (PCM) channels with two associated 8 kbit/s signaling channels. One of the two PCM channels is dedicated to voice, the other is dedicated to data.

Line cords and handset cords on all M3000 Digital Telephones are equipped with snap-in TELADAPT connectors for easy and quick connection.

The M3000 Touchphone is a digital telephone with a touch-sensitive LCD screen. All features are displayed on the screen. In the idle state, the screen displays the time and date. The M3000 telephone can also display on-line feature descriptions and operating instructions.

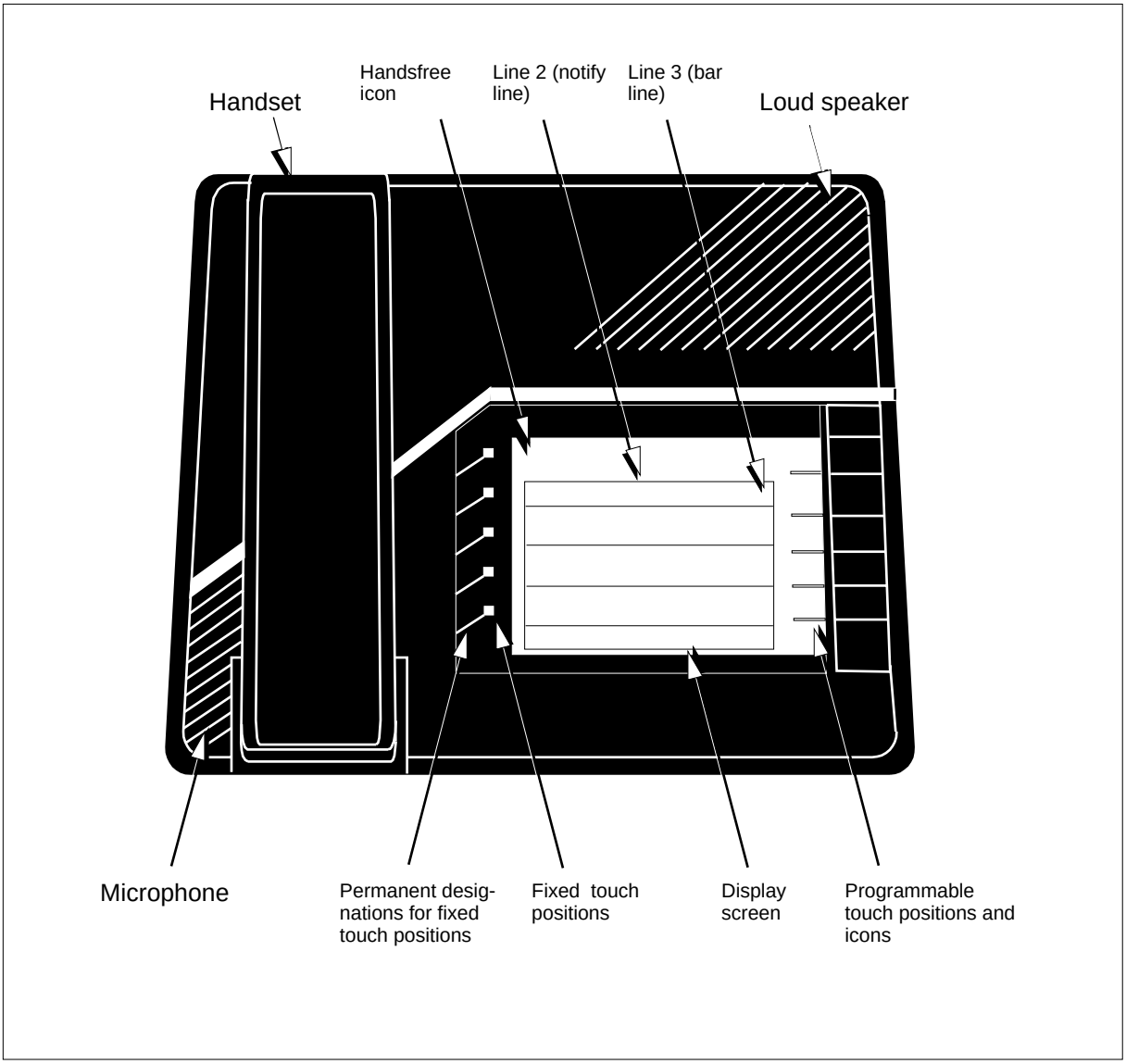
The M3000 offers a personal directory containing from 150 to 450 entries (depending on the length of the entries). Each name in your directory is up to 15 characters long with 8 names per page. Directory searching is completed by scrolling up and down until the desired name is found. The directory number is dialed by touching the name on the screen. The names and directory numbers are entered, changed, and deleted quickly and easily.

The M3000 Touchphone has no moving mechanical parts like a key pad or hookswitch. The touch-sensitive positions on the screen replace the key pad and an infrared sensor hook replaces the mechanical switch.

Physical characteristics

Figure 2-1 shows the configuration and dimensions common to all versions of the fully modular M3000 Digital Telephones.

Figure 2-1xxx
Typical M3000 telephone configurations and dimensions



Data

When equipped with the Touch Asynchronous Data Option (TADO), the M3000 Digital Telephones provide data capabilities. TADO provides an RS-232-C interface to ASCII terminals and personal computers at data speeds from 110 bps to 19.2 kbit/s.

The TADO is connected to the M3000 Touchphone through a flat ribbon cable equipped with a 34-pin header connector. A separate power supply is not required.

The firmware in the TADO serves as an interface between the user and the Meridian SL-100 system for establishing data calls. The firmware performs the following functions:

- scans for user keyboard input
- decodes and converts user inputs to appropriate key-press codes to send to the Line Group Controller (LGC)
- interprets call sequencing commands from the LGC
- generates appropriate prompt messages, based on call setup progress

SL-100 TADO Keyboard Dialing (KBD) provides user interaction with the MADO. Using KBD, the following information is provided:

- command menus
- call progress messages
- user input prompts
- status and error information

KBD displays a menu of features on the data terminal. A user enters a number to be dialed or selects a feature from the menu. KBD prompts the user for any additional information and displays call progress messages or error condition messages, all in English phrases. Once the system establishes the data call, KBD becomes inactive. When the system disconnects the call, KBD resumes operation.

A subset of the keyboard dialing as defined by the Hayes SMARTMODEM also provides user interaction with the TADO. This capability allows the TADO to be used with personal computer software packages based on a Hayes-type keyboard dialing command protocol. For information on KBD and Hayes KBD, refer to 555-4001-110, *M2000 Digital Telephone Reference Manual*.

Power requirements

Data

A 60 Hz, 110-V or a 50 Hz, 220-V ac power is required to provide voltages of +5 V, +12 V, and -12 V to operate the M3000 Touchphone and TADO.

The power supply is connected to the M3000 Touchphone using a 4-pin power connector.

WARNING
Telephone set damage
Do not plug M3000 Digital Telephone into a walljack wired with -48 V for 2500 telephone sets. This causes permanent damage to the M3000 telephone.

Voice

The voice channel carries normal voice communication and signaling messages between the Meridian SL-100 system and the M3000 Touchphone.

Messages from the Meridian SL-100 system to the hardware in the M3000 Touchphone control the handsfree unit and handset, and determine the status of the M3000 Touchphone. Messages from the Meridian Sl-100 system to the software in the M3000 Touchphone are used for the following:

- download data to the M3000 Touchphone
- update the LCD screen
- request diagnostic information from the M3000 Touchphone
- request a partial or complete reset of the M3000 Touchphone

The M3000 Touchphone sends messages to the Meridian SL-100 system to do the following:

- transmit a function number
- request initialization data to be downloaded
- send programmable key entries
- send telephony path activations (hookswitch, handsfree, release)

Peripheral equipment

Digital line module

The M3000 Touchphone interfaces with the Enhanced Digital Port card (EDPC) in the Digital Line Module (DLM) of the Meridian SL-100 system using Time Compression Multiplex (TCM) transmission. The EDPC contains 16 Integrated Voice and Data (IVD) ports, which support 16 M2000 telephones and TADO.

Intelligent peripheral equipment

The Intelligent Peripheral Equipment (IPE) consists of a shelf that is housed in a Universal Equipment Module (UEM). The Extended Peripheral Equipment Controller (XPEC) card resides within the IPE. The IPE also houses 16 slots for analog, digital, and message waiting line cards. These line cards perform the following functions:

- Extended Analog Line Card (XALC) interfaces with the XPEC and allows analog sets, such as 500/2500 sets, to transmit and receive calls. A maximum of 16 analog line interfaces are supported.
- Extended Message Waiting Line Card (XMLC) supports message waiting lamp sets in addition to the 500/2500 sets.
- Extended Digital Line Card (XDLC) interfaces with the IVD digital terminals and supports the M2000 and M3000 series sets and their respective data options. A maximum of 16 digital sets with data are supported.

The UEM is stackable in units of one to four. The UEMs rest on a pedestal base and are covered by a top cap. The UEMs, pedestal, and top cap are collectively called the Intelligent Peripheral Equipment Column (IPEC).

Performance specifications

Environmental and safety requirements

Both the M3000 Touchphones and the Touch Asynchronous Data Option (TADO) meet the requirements of Electronic Industries Association (EIA) specification PN-1361.

Temperature and humidity

Table 3-1 lists temperature and humidity specifications for M3000 Touchphones.

Table 3-1xxx
Name of table

Temperature range	Relative humidity
Operating state: 32° to 104 ° F (0 ° to 5° C)	*Operating state:* 5% to 95 % (noncondensing)
Storage -58° to158 ° F (-50° to 70 ° C)	*Storage:* 5% to 95% (noncondensing)
Note: At temperature above 93 ° (34° C) relative humidity is limited to 52 mbar of water vapor pressure.	

Electromagnetic interference

The radiated and conducted electromagnetic interference meets the requirements of Subpart J of Part 15 of the Federal Communications Commission (FCC) rules for Class A computing devices.

Loop engineering

The M3000 Touchphones operate at their full potential through twisted-pair wiring where the maximum permissible loop length is less than 3500 ft (915 m) of 24 AWG (0.5 mm) standard twisted wire with no bridge taps.

The maximum loop length assumes no under-carpet cable. With under-carpet cable, the maximum allowable loop length must be reduced using the following equation:

LM = (14 - (UC x UL)) / 14

where:

- LM = loop length in ft (km)
- UC = length of the under-carpet cable in ft (km)
- UL = loss of the under-carpet cable in dB/ft (dB/km) at 256 kHz

Data characteristics

The TADO communicates with Data Terminal Equipment (DTE) using the characteristics listed in Table 3-2.

Table 3-2xxx
TADO data characteristics

Characteristic	Specification
Data type	ASCII (ANSI standard X3.4-1977)
Synchronization	Asynchronous
Number of bits	7 bits plus parity or 8 bits no parity
Parity	None, odd, or even
Data rate	110, 150, 300, 600, 1200, 2400, 4800, 9600, or 19200 bits per second
Stop bits	1 bit for all speeds
Datamode	Full Duplex

Features description

Station features

The M3000 Touchphone supports a maximum of six lines that can be any combination of directory numbers (DN), private lines, and intercom appearances.

Touchphone microprocessor

The M3000 Touchphone contains a microprocessor for the local private directory that allows for storage of frequently used names and directory numbers in the M3000 Touchphone. This information can be recalled and the directory number can be dialed by touching the name on the screen.

The microprocessor also supports predial, provides the Meridian SL-100 with feature requests, and indicates the current state of the M3000 Touchphone. The microprocessor maintains call duration timers, time and date display, visible and audible feedback to input, controls Handsfree, provides alerting tones, monitors the switch hook, and provides diagnostics.

The M3000 Touchphone supports the station features listed in Table 4-1. Each feature can be assigned to as many DNs as desired. To verify which features are assigned to your Touchphone Profile, touch **Touchphone** Profile and then **List Features** on your Touchphone. A dark box appears next to the assigned features.

Table 4-1xxx
M3000 Touchphone features

Station feature	Station feature
Automatic Answerback	Intercom
Automatic Line	Last Number Redial from Station
Busy Override	Listen On Hold
Call Forward	Make Set Busy

-continued-

Table 4-1xxx
M3000 Touchphone features (continued)

Station feature	Station feature
Call Hold	Individual Page from Group Intercom
Call Park	Message Waiting
Call Pickup	Multiple Appearance Directory Number
Call Transfer	Multiple Appearance Directory Number Hold
Call Waiting	Multiple Appearance Directory Number Ring Forward
Callback Queuing	On-Hook Dialing
Conference 6	Private Business Line
End-to-End Signaling	Ring Again
Group Intercom	Speed Calling
Handsfree Capability	

-end-

Soft keys

The M3000 Touchphone has 37 software-defined keys that are found in datafill. Keys 1 to 6 are reserved for directory numbers and Group Intercom (GIC). Keys 20 to 37 are reserved. Keys 7 to 19 are only datafilled with the features in the following table. If the M3000 Touchphone does not have the features, the keys are left blank.

Table 4-2xxx
Soft keys

Key	Feature
7	Call Pickup
8	Message Waiting
9	Speed Calling
10	Call Forwarding
11	Conference 6

-continued-

Table 4-2xxx
Soft keys (continued)

Key	Feature
12	Call Waiting
13	Call Transfer
14	Ring Again
15	Privacy Release
16	Make Set Busy
17	Call Park
18	Executive Busy Override
19	Automatic Answerback
	-end-

Code access

The following features can be assigned to a M3000 Touchphone as code access features. These features are activated by dialing an access code. If the M3000 Touchphone is not in the idle state, then the access code must be preceded by touching the Conference 6 or Call Transfer position. If the feature is assigned to the M3000 Touchphone as a touch position, it can not be assigned as a code access feature.

- Speed Call
- Call Park
- Directed Call Park
- Executive Busy Override
- Conference 6
- Malicious Call Hold

For a description of each feature, refer to 555-4001-105, *Meridian SL-100 Features and Services Description.* For operation information, refer to 555-4001-315, *Telephone Set/Attendant Console Operation and Test Manual*.

Feature operation

The touch sensitive screen of the M3000 Touchphone is shown in Figure 4-1. There are 12 display lines for each screen.

Figure 4-1xxx
Description of display screen

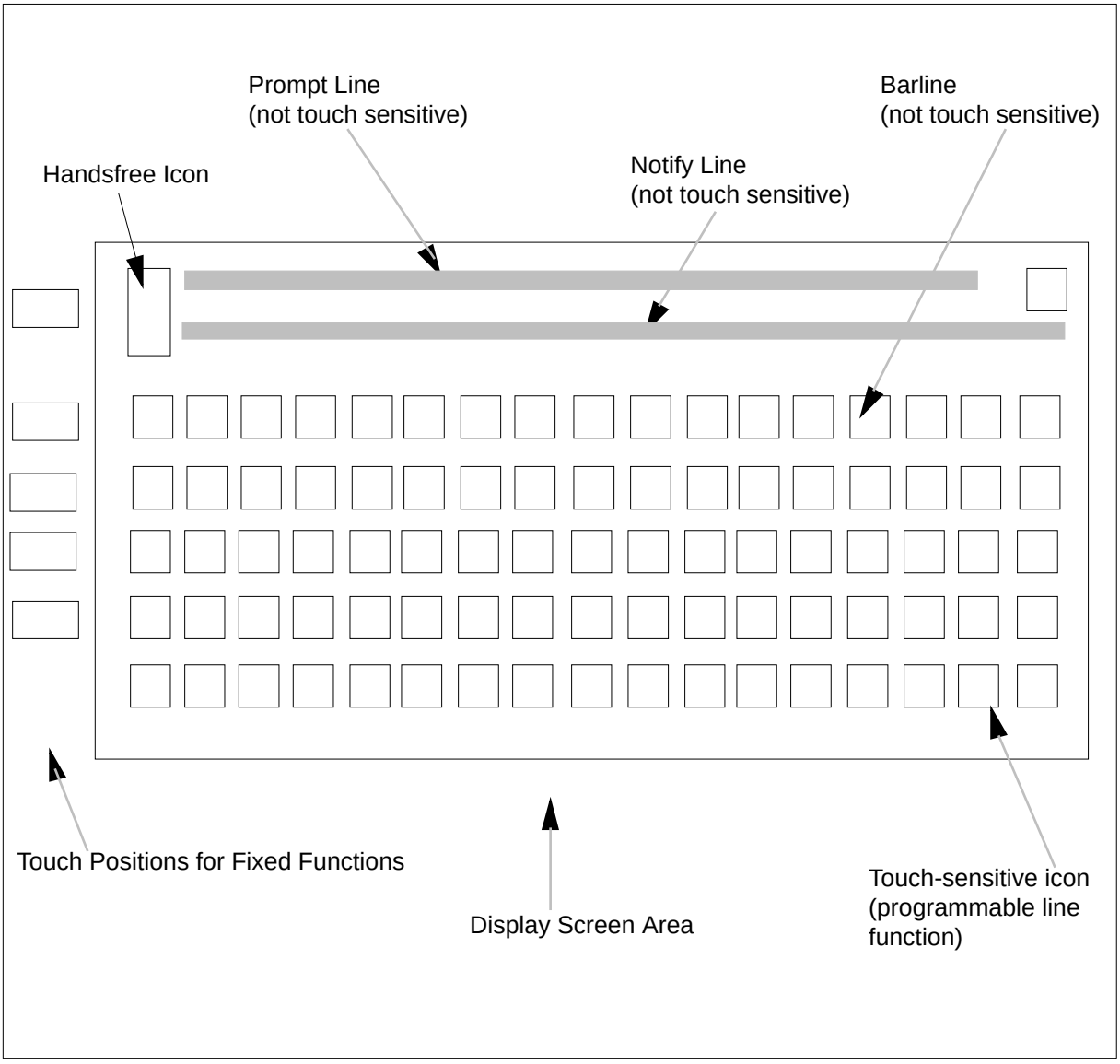


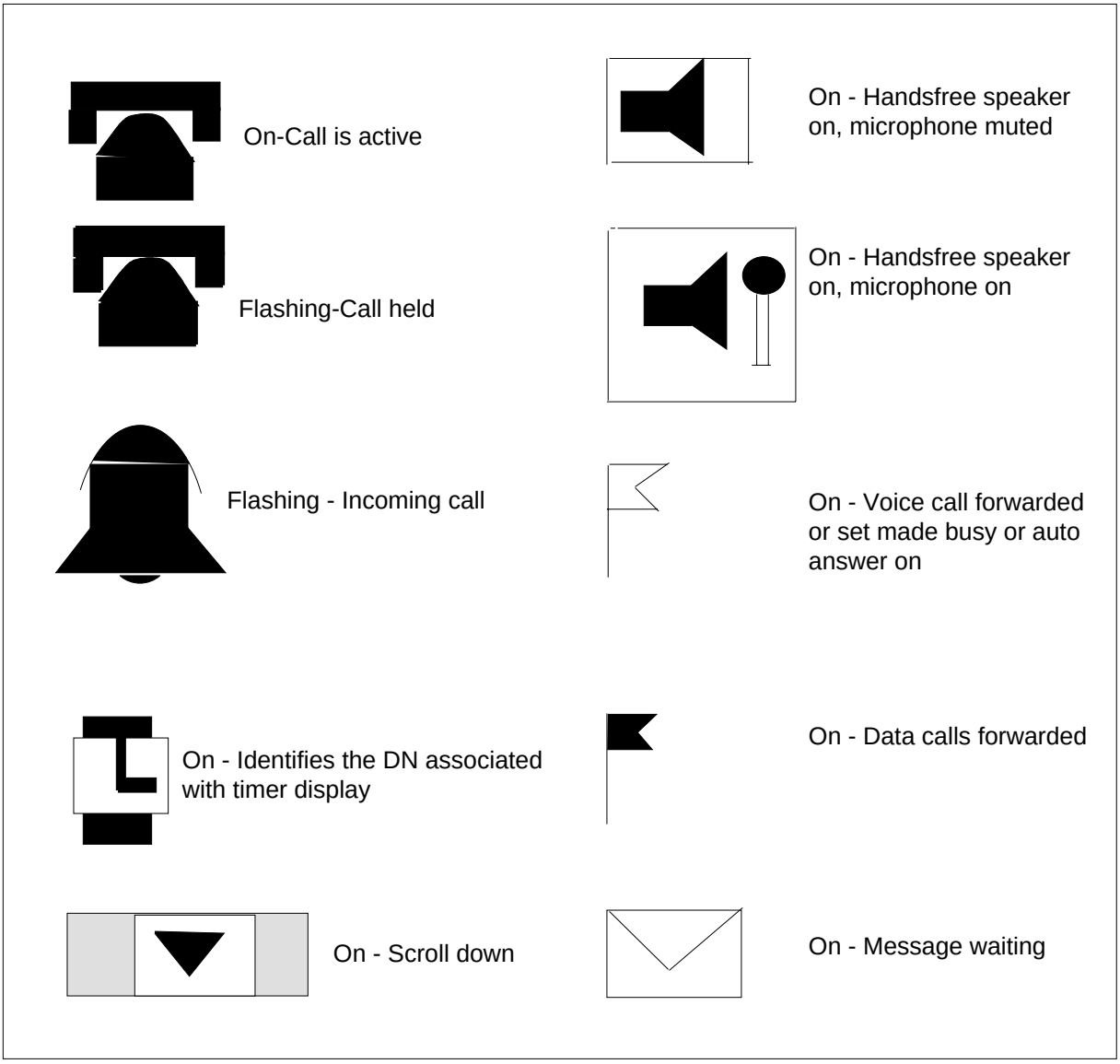
Table 4-3xxx
Display lines

Display Line	Description
Line 1 - Prompt Line	Prompts users for actions or displays call status, call identification, call duration, or time and date.
Line 2 - Notify Line	Displays status information not requiring immediate response like dialed digits. A maximum of 30 characters is displayed. If more are entered, the display wraps around and overwrites the characters in the first column.
Line 3 - Bar Line	Displays screen-dependent information and touch functions. Allows directory entries to be scrolled, provides exits from local functions, moves to the next step by touching the OK icon, and connects a waiting call.
Lines 4 to 12 - General display and touch area	Contains the key pad and touch locations which alter screen states. The number of touch positions used for a function is proportional to the size of the displayed function. A number on the key pad is made up of two touch positions: Programmable and Fixed.

Icons used by M3000 Touchphone

Figure 4-2 shows the icons displayed by the M3000 Touchphone to prompt the user.

Figure 4-2xxx
Icon symbols



Touch position functions

Table 4-4 contains a description of the fixed touch position functions. Table 4-5 contains the programmable touch position functions. Table 4-6 contains a description of the touch positions assigned to features. The idle state screen layout is shown in Figure 4-3.

Figure 4-3xxx
Idle screen state

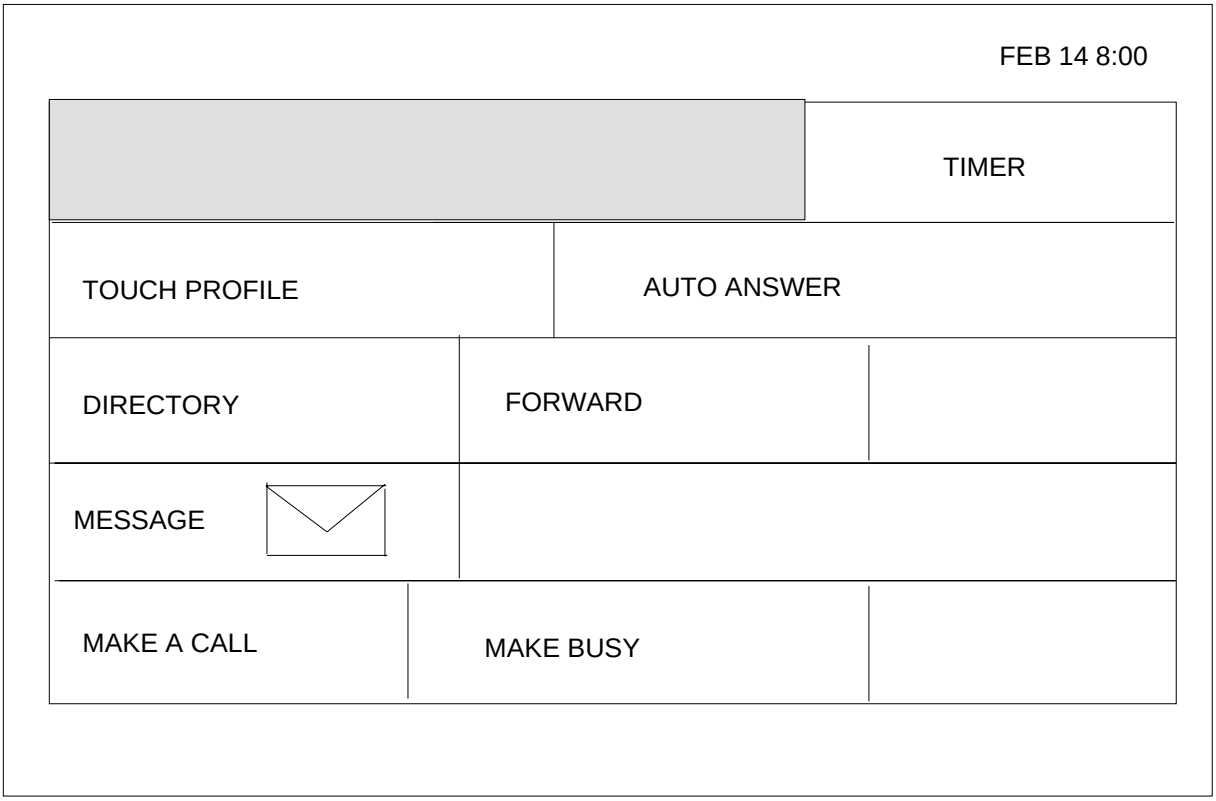


Table 4-4xxx
Fixed touch position functions

Heading	Heading	Heading
Handsfree	IDLE or any active state with the handsfree option not activated	Activates Handsfree. If the M3000 Touchphone is IDLE, a DN is selected to initiate call.
Handsfree	IDLE or any active state with the handsfree option available.	Turns microphone off (muted) if microphone is on when the touch position is operated. Turns microphone on if the microphone is muted when the touch position is operated.

-continued-

Table 4-4xxx
Fixed touch position functions (continued)

Heading	Heading	Heading
Volume	Any voice call or idle screen changes to the volume adjustment state when the Volume position is touched.	Adjusts the volume of selected features. (Figure 4-4). Touching the Exit position on the Volume screen returns the user to the original screen state.
Explain	Any screen state for which an explanation is desired, and is available.	A maximum of 8 lines of text are displayed providing an explanation of the screen state. A maximum of 120 screens are available.
Note 1: An icon is associated with the Handsfree touch position. The icon shows both a loudspeaker and a microphone symbol when the Handsfree is on. The icon shows only a loudspeaker when the microphone is muted. There is no icon shown if Handsfree is off. ***Note 2:*** Lifting the receiver or operating the Rls touch position turns the Handsfree mode off.		
-continued-		

Table 4-4xxx
Fixed touch position functions (continued)

Heading	Heading	Heading
Contrast	Any screen state changes to the contrast adjustment state when the Contrast position is touched. When the Contrast position is touched, all previous contrast or brightness settings are canceled and the M3000 Touchphone returns to the default settings.	
Release	Any active screen.	Release the active voice or data call in progress. The M3000 Touchphone returns to the IDLE state with the Handsfree mode off.
Note 1: An icon is associated with the Handsfree touch position. The icon shows both a loudspeaker and a microphone symbol when the Handsfree is on. The icon shows only a loudspeaker when the microphone is muted. There is no icon shown if Handsfree is off. ***Note 2:*** Lifting the receiver or operating the Rls touch position turns the Handsfree mode off.		
-end-		

Note 1: The icon to the left of each position label is the touch position that activates a call when touched. An incoming call gives an alerting tone, and a bell icon appears beside the DN. The icon alternates between an outline an outline and a solid bell. When the icon is touched, the call is connected and the icon changes to a telephone icon.

Note 2: A call on the Prime DN (PDN) can be connected by lifting the handset or activating Handsfree without touching the flashing icon.

Figure 4-4xxx
Volume state screen

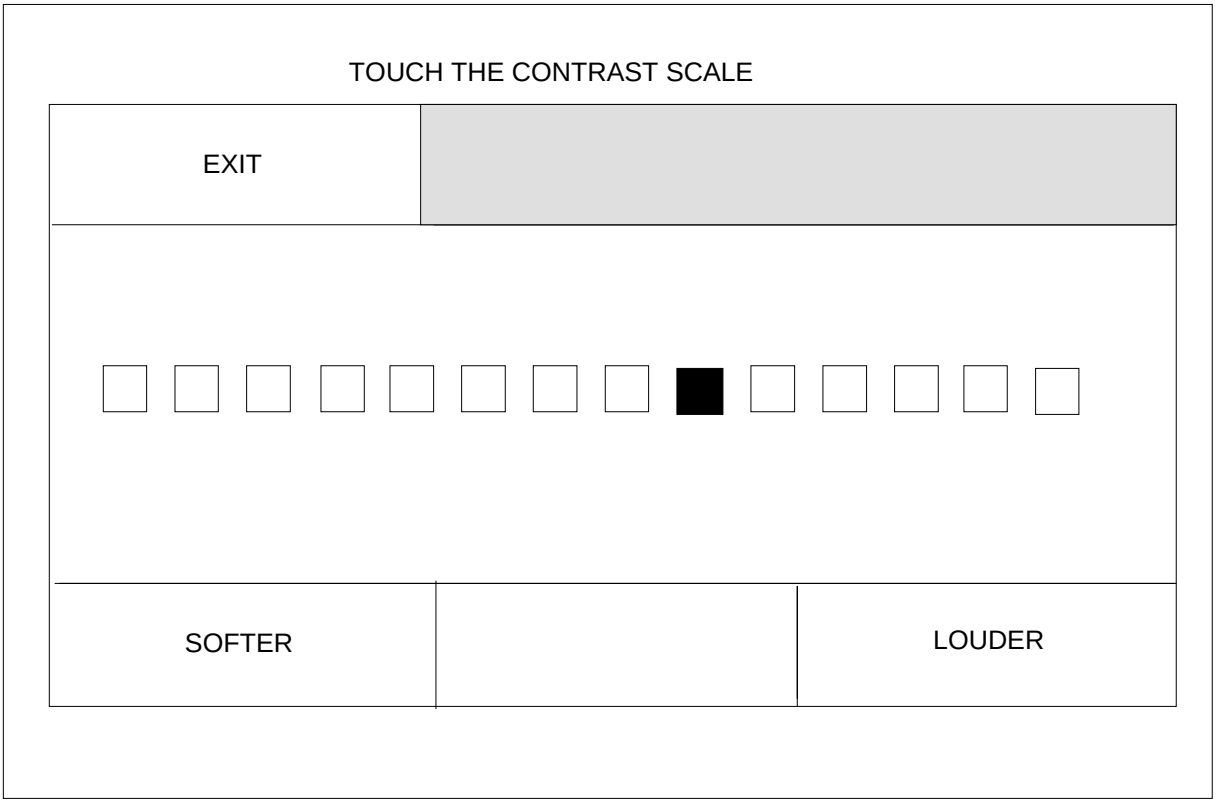


Figure 4-5xxx
Contrast state screen

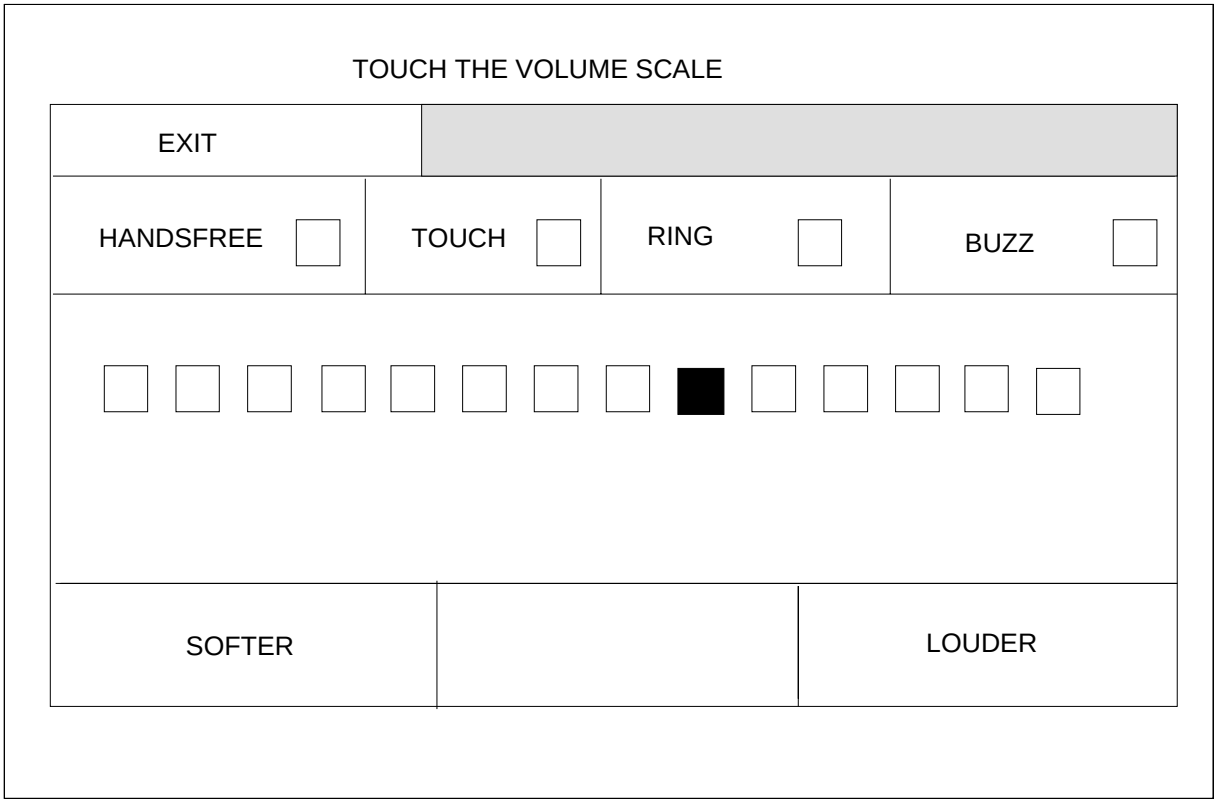


Table 4-5xxx
Programmable touch position functions

Telephone State	Text Displayed On Screen	Possible Actions
Incoming voice call on idle DN	Notify line displays DN if the call originates within the Meridian SL-100. Otherwise, trunk group information is displayed. If the DN or trunk group is in the M3000 Touchphone's private directory, the name is displayed.	Touch flashing icon and lift handset or activate Handsfree option to connect to call.
Incoming call on an active DN while dialing or during ringback	Prompt line displays CONNECT WAITING CALL?. Bar Line displays the CONNECT touch position.	Touch CONNECT position to access call immediately. Previous activity is terminated. If no action is taken before call waiting timeout occurs, the waiting call is disconnected.
Incoming call on idle DN while M3000 Touchphone is active on another DN	Prompt line displays CONNECT WAITING CALL?. Bar Line displays the CONNECT touch position.	Touch CONNECT position to connect call.
	Prompt line displays TOUCH HOLD. If the M3000 Touchphone was performing a local function, that function is terminated.	Touch HOLD position. The previous call is put on hold, and the waiting call is connected. After the waiting call is terminated, press DN to reconnect the original call.

Note 1: If the DTE is set to Automatic Answer, all data calls are answered automatically by the terminal. If the DTE is on but not set to Automatic Answer, the incoming data call can be connected by touching the Y and the Carriage Return on the keyboard.
Note 2: Activating Ring Again when the Ring Again is already in effect for a previous call causes the previous Ring Again to be canceled. Ring Again is canceled by touching the CANCEL RING AGAIN touch position on the RING AGAIN screen, which is accessed by touching the RING AGAIN position on the IDLE screen.

-continued-

Table 4-5xxx
Programmable touch position functions (continued)

Telephone State	Text Displayed On Screen	Possible Actions
Incoming data call while M3000 Touchphone is idle	Prompt line displays CONNECT INCOMING DATA CALL? and Bar Line displays CONNECT touch position.	Touch CONNECT position to connect data call. Notify line then displays CONNECTING DATA CALL, and the M3000 Touchphone becomes idle once the data call is connected. If the data call can not be connected, the data call is released and the M3000 Touchphone returns to idle. To release the data call manually, touch the RELEASE touch position.
Incoming data call while the M3000 Touchphone is active on a voice call	Prompt line displays CONNECT INCOMING DATA CALL? and Bar Line displays CONNECT touch position.	Touch CONNECT position to connect data call.
	Prompt line displays TOUCH HOLD.	Touch HOLD position. The previous call is put on hold, and the Notify Line displays CONNECTING DATA CALL. After the data call is connected, the Notify Line clears and the the idle screen shows RELEASE DATA CALL, and the data call timer is displayed unless it is disabled.

Note 1: If the DTE is set to Automatic Answer, all data calls are answered automatically by the terminal. If the DTE is on but not set to Automatic Answer, the incoming data call can be connected by touching the Y and the Carriage Return on the keyboard.
Note 2: Activating Ring Again when the Ring Again is already in effect for a previous call causes the previous Ring Again to be canceled. Ring Again is canceled by touching the CANCEL RING AGAIN touch position on the RING AGAIN screen, which is accessed by touching the RING AGAIN position on the IDLE screen.

-continued-

Table 4-5xxx
Programmable touch position functions (continued)

Telephone State	Text Displayed On Screen	Possible Actions
Activating Ring Again when a busy DN is reached	Notify line displays the dialed DN and the BUSY screen is displayed.	Touch RING AGAIN position to activate Ring Again.
Ring Again Notification indicates that the dialed DN is available	Prompt line displays CONNECT RING AGAIN CALL? and bar line displays CONNECT touch position.	If the M3000 Touchphone is active on another DN, place the current call on hold and touch CONNECT to connect the Ring Again call. If the M3000 Touchphone is idle, touch CONNECT to connect the call.

Note 1: If the DTE is set to Automatic Answer, all data calls are answered automatically by the terminal. If the DTE is on but not set to Automatic Answer, the incoming data call can be connected by touching the Y and the Carriage Return on the keyboard.
Note 2: Activating Ring Again when the Ring Again is already in effect for a previous call causes the previous Ring Again to be canceled. Ring Again is canceled by touching the CANCEL RING AGAIN touch position on the RING AGAIN screen, which is accessed by touching the RING AGAIN position on the IDLE screen.

-end-

Table 4-6xxx
Feature touch positions description

Feature	Touch Position Description
Call Forward	FORWARD
Call Park	PARK
Call Pickup	CONNECT
Call Waiting	TRANSFER
Call Transfer	DATA LINE
Data Call	MAKE BUSY
Make Set Busy	CONFERENCE
Conference 6	MESSAGE
Message Waiting	PRIVACY OFF

-continued-

Table 4-6xxx
Feature touch positions description (continued)

Feature	Touch Position Description
Privacy Release	JOIN BUSY CALL
Busy Override	RING AGAIN
Ring Again	CODE CALL
Speed Call	AUTO ANSWER
Auto Answerback	SWITCH
Switch Parties	JOIN PARTIES
Complete Call Transfer	JOIN PARTIES
Complete Conference	HOLD
Call Hold	MAKE A CALL
Predial	LAST #
Save the Number	SAVE #
Display Key Pad	DIAL
Redial Saved Number	SAVED #
Directory Dialing	DIRECTORY
Touch Profile	TOUCH PROFILE
Reset Timer	TIMER
Directory Password	LOCK DIRECTORY
Custom Ring	CUSTOM RING
Clean M3000 screen	CLEAN SURFACE
-end-	

Procedures 4-1 to 4-16 detail the operation of some features on the M3000 Touchphone. The features operate similar to the features on the M2000 Digital Telephone. The difference is the use of touch positions instead of feature keys. The actual operation is the same.

Table 4-7 contains some of the features and the related procedures.

Table 4-7xxx
IDLE position

IDLE Position	Procedure
Directory (locking)	Procedure 4-9
Message Waiting	Procedure 4-1
Make a Call	Procedure 4-2
Forward	Procedures 4-3 and 4-4
Auto Answer	Procedures 4-5

Procedure 4-1 provides the ability to route/retrieve calls to/from a customer defined Message Center. The M3000 Touchphone also supports Message Waiting with a Voice Message Center (VMX). Once the call to the VM is connected, messages can be manipulated through the use of VMX code access commands (see 555-4111-100, *Voice Message Exchange Interface General Description*).

Note: The Call request Retrieve code is not used to retrieve messages from VMX. The user dials the VMX Subscriber Access DN directly in order to retrieve messages from their mailbox.

Procedure 4-1
Message Waiting

1 Touch **MESSAGE** in the touch position, when the envelope icon appears on the IDLE screen.

Response: The screen is updated to the Message screen.

2 Touch an idle DN position and dial the Message Center DN or Call Request Retrieve (CRR) code.

Response: Message Center DN displays.

3 Release the call, after the Message Center answers and gives messages.

Response: MESSAGE indicator goes out.

The procedure 4-2 describes how to make a touchphone call.

Procedure 4-2
Make A Call

1 Touch the **MAKE A CALL** touch position.

2 Enter the digits to be dialed.

3 Touch an idle DN (use arrow as a backspace).

Response: Screen changes to RINGBACK, BUSY, or REORDER screen. Digits display on the NOTIFY line. Ringback, Busy, or Reorder occurs.

Procedure 4-3 allows the user the ability to forward calls and Procedure 4-4 describes the procedures to cancel call forwarding.

Procedure 4-3
Forward a call

1 Touch the **FORWARD** touch position.

Response: Screen shows a prompt to enter a number.

2 Enter the digits to dial.

Response: Dialed digits are echoed on the screen.

3 Press **OK**.

Response: The screen returns to the IDLE state, and an icon appears next to the FORWARD touch position.

Procedure 4-4
Cancel call forwarding

1 Touch the **FORWARD** touch position.

Response: Screen displays DN where the M3000 Touchphone is forwarded. Screen shows prompt to cancel call forwarding.

2 Touch **CANCEL FORWARDING**.

Response: The screen displays CALLS ARE NOT FORWARDED and the icon next to the FORWARD touch position goes out. Screen returns to the IDLE state.

Procedure 4-5 describes how to auto answer calls.

Procedure 4-5
Auto answer

1 Touch the **AUTO ANSWER** touch position.

Response: A flag appears next to the AUTO ANSWER touch position.

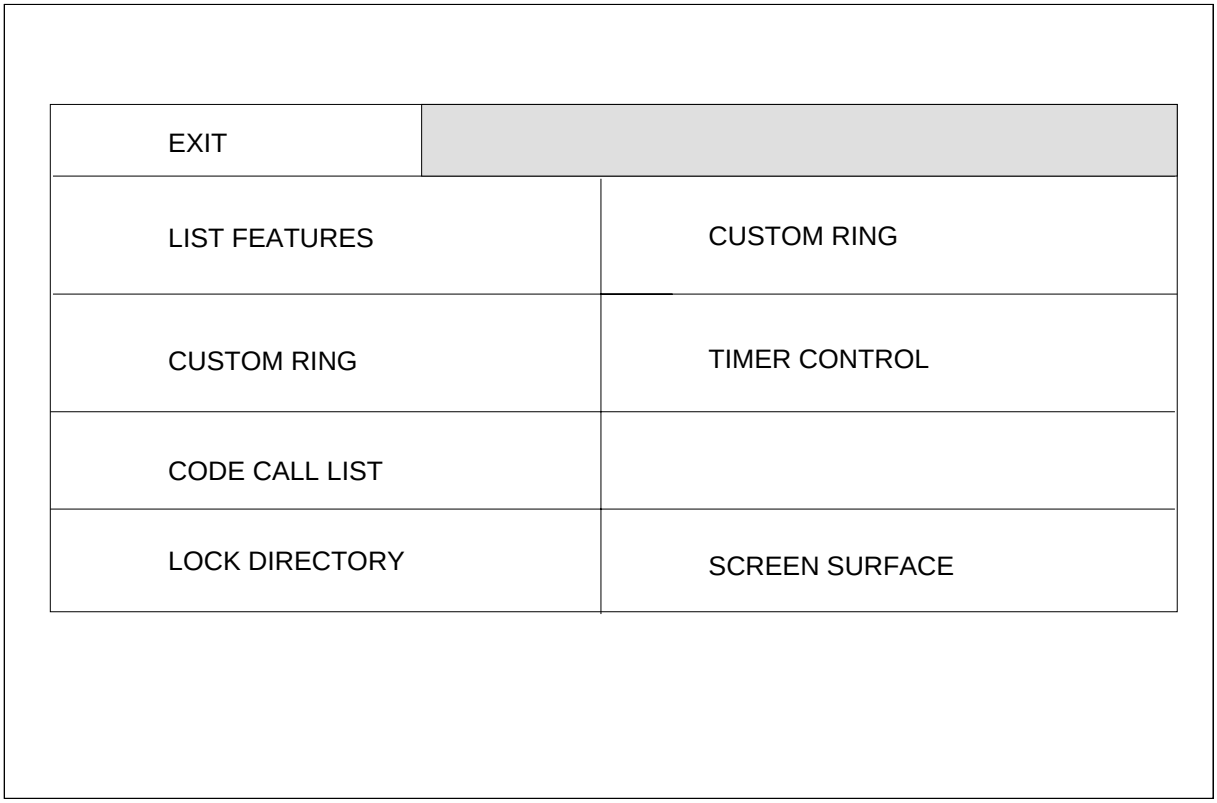
Table 4-8 contains a list of the Touch Profile features and the associated procedures.

Table 4-8xxx
Touch profile

Feature	Procedure
List Features	Procedure 4-6
Select Ring	Procedure 4-7
Code Call List	Procedure 4-8
Lock Directory	Procedure 4-9
Custom Ring	Procedure 4-10
Timer Control	Procedure 4-11
Clean Surface	Procedure 4-12
Originating a Call	Procedure 4-13
Ring Again	Procedure 4-14
Call Park	Procedure 4-15
Call Park Retrieval	Procedure 4-16

Note: The Touch Profile screen can be reached from the IDLE state. See Figure 4-6.

Figure 4-6xxx
List features



Procedure 4-6 describes how to list the set's features.

Procedure 4-6
List features

1 Touch the **LIST FEATURES** touch position.

Response: All possible features are listed in alphabetical order. The boxes beside the features assigned to the M3000 Touchphone are dark.

2 Touch any feature.

Response: The explanation screen for the feature displays. Scroll through the features using the arrows in top right corner.

3 Touch the EXIT key.

Response: Screen returns to the IDLE state.

Procedure in Table 4-7 describes how to select ring. (See Figure 4-7)

Procedure 4-7
Select ring feature

1 Touch the **SELECT RING** touch position.

Response: The SELECT RING screen appears.

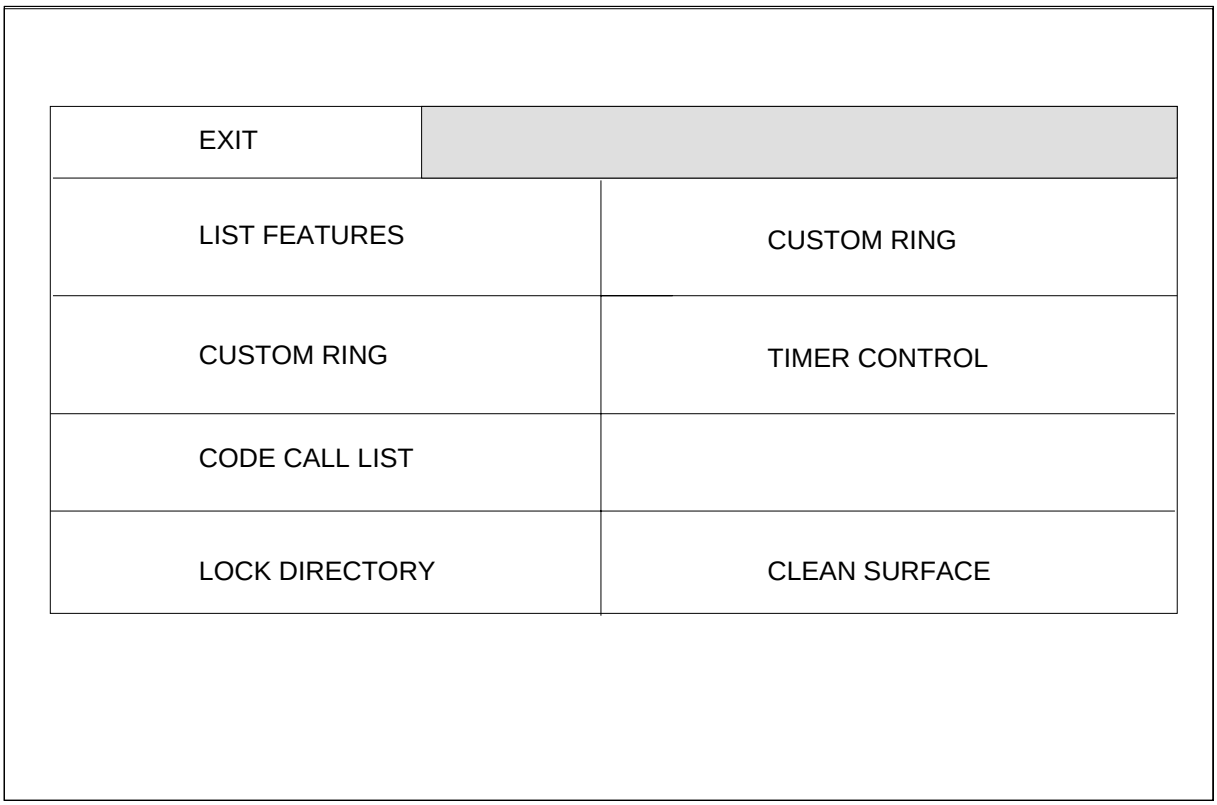
2 Touch and hold each box to receive the ring.

Response: The ring occurs.

3 Touch the box associated with the desired ring.

Response: The box is darkened.

Figure 4-7xxx
Select ring screen



Procedure 4-8 describes how to store DNs for speed dialing.

Procedure 4-8
Code call list feature

1 Touch the **CODE CALL LIST** touch position.

Response: Screen updates to the Program Code Call screen.

2 Touch the **PROGRAM CODE CALL** touch position.

Response: Screen shows a prompt to enter the Speed Call Code.

3 Enter the speed call code and directory number.

Response: Speed call code and directory number display.

4 Press **OK** to update.

5 Repeat Steps 2 through 4 to store each speed call number.

6 Touch the **EXIT** key.

Response: Screen returns to the IDLE state.

Procedure 4-9 describes how to password protect and lock the directory. For more information on using a directory refer to Chapter 6 *Directories*.

Procedure 4-9
Lock directory feature

1 Touch the **LOCK DIRECTORY** touch key.

Response: Screen updates to Lock Directory and displays a keyboard.

2 Enter a password on the keyboard.

3 Touch **OK** when complete.

Response: Screen returns to the IDLE state.

Procedure 4-10 describes how to customize the set's ringing feature.

Procedure 4-10
Custom ring feature

1 Touch the **CUSTOM RING** touch position.

Response: Screen updates to the Custom Ring screen and displays a piano keyboard.

2 Play a new tune on the piano keyboard.

3 Touch **OK** when complete.

Response: Screen returns to the IDLE state and custom ring is updated.

Procedure 4-11 describes how to activate the timer control feature.

Procedure 4-11
Timer control feature

1 Touch the **TIMER CONTROL** touch position.

Response: Screen updates to the Timer Control screen.

2 Touch the **ON** box to turn call timer on and the **OFF** box to turn the call timer off.

Response: Screen returns to the IDLE state.

Procedure 4-12 describes how to activate the clean surface feature.

Procedure 4-12
Clean surface feature

1 Touch the **Clean Surface** touch position.

Response: Screen updates to the Clean Surface screen. The touch screen is disabled for cleaning.

2 Lift the receiver.

Response: The touch surface is enabled.

Procedure 4-13 describes how to originate a call on the M3000 Touchphone.

Procedure 4-13
Originating a call on the M3000 touchphone

1 The IDLE screen displays. Touch one of the Directory Number (DN) icons

or

Lift the handset to select the Prime Directory Number (PDN)

or

Touch the handsfree feature to select the PDN with handsfree capability.

Response: Screen changes to the DIALTONE screen.

2 Enter the DN on the key pad.

Response: Digits display on NOTIFY line. Ringback, Busy or Reorder occurs. Screen changes to the RINGBACK, BUSY, or REORDER screen.

Procedure 4-14 describes how to activate Ring Again (RAG).

Procedure 4-14
Ring again feature

1 Busy, EWRT, or No Circuits occurs. Touch the ring Again (RAG) touch position.

Response: If the request is allowed, the RAG indicator appears on the Bar Line. The Screen changes to IDLE.

Note: The No Circuit (NC) condition must occur at the SI-100 outgoing end. Distant switch NC conditions do not apply.

Procedure 4-15 describes how to activate call park.

Procedure 4-15
Call park feature

1 The call is in the ESTABLISHED (talking) state. Touch the PARK touch position.

Response: The call is parked against the DN of the M3000 Touchphone. A confirmation tone occurs. Screen changes to the IDLE state.

Procedure 4-16 describes how to retrieve calls from call park.

Procedure 4-16
Call park retrieval feature

1 Touch an idle DN position.

Response: A dial tone occurs.

2 Enter the call park retrieve access code defined in Table IBNXLA and the DN from which the call was parked.

Response: Call is connected.

Data call

When an M3000 Touchphone is equipped with the Touch Asynchronous Data Option (TADO), the user makes a data call using Meridian SL-100 Keyboard Dialing or Hayes Keyboard Dialing from the attached terminal. Voice and data communications are carried simultaneously without interference.

Operating a Carriage return on the keyboard activates data call communications. Only one data call in progress is allowed when a data call originates.

The TADO is compatible with all data terminals having the characteristics described in Chapter 3, Table 3-2, “TADO data characteristics”. An M3000 Touchphone equipped with TADO originates or terminates data calls from

other TADO-equipped M3000 Touchphones or any Meridian SL-100 DATAPATH data product

The Meridian SL-100 Keyboard Dialing (KBD) feature provides Data Terminal Equipment (DTE) users a means to establish a switched data call to multihost sites and activate selected telephone features, such as Speed Calling, Autodial, and Ring Again. The KBD routine varies with the data equipment being used, and reference to the user's data terminal manual may be necessary. For a Meridian SL-100 TADO Keyboard Dialing routine, refer to 555-4001-110, *M2000 Digital Telephone Reference Manual.*

The Hayes Keyboard Dialing feature provides DTE users with a means to use personal computer software packages requiring a Hayes-type keyboard dialing command protocol. For a Hayes Keyboard Dialing routine, refer to Chapter 9, "Keyboard dialing". Only one type of keyboard dialing (Meridian SL-100 KBD or Hayes) is active at a time.

The TADO exists in one of four states: autobaud, Meridian SL-100 KBD, Hayes Keyboard Dialing, or data mode. When the TADO is powered up, the autobaud state is active until an acceptable autobaud character is entered. The characters used to set autobaud and autoparity determine the keyboard dialing type.

For incoming calls, the KBD specified in the profile is used. If the TADO has no stored data rate, the incoming call prompt transmits at 19.2 kbit/s. If the DTE is not set to that rate, garbage displays. The TADO has no stored data rate if autobaud has not been set since powering up the TADO or performing maintenance on the line. Since any incoming calls prior to autobaud are not received, autobaud/autoparity should be set upon powering up the TADO.

M3000 Touchphone call states

Table 4-9 describes the M3000 Touchphone states and the responses of the M3000 Touchphone when the touch positions are touched.

Table 4-9xxx
Call processing states

Call processing state	Description
Idle	On-hook (voice and data)
Dialtone	Ready to transmit dialed digits
Intercom dialtone	Ready to transmit digits for a group intercom call

-continued-

Table 4-9xxx
Call processing states (continued)

Call processing state	Description
Dialing	Transmitting dialed digits
Busy	Called party is off-hook
Reorder	Called party is unavailable
Ringback	Called party is ringing
ERWT_CBQ	Initial set of routes is not available-the user receives Expensive Route Warning Tone (ERWT)
Established	Connection made
Intercom established	Connection is established in a group intercom call
CONF/XFER dialtone	Special dialtone for CONF/XFER calls
CONF/XFER dialing	After receiving a special dialtone, the user is dialing digits on a CONF/XFER call.
CONF/XFER busy	CONF/XFER called party is off-hook
CONF/XFER reorder	CONF/XFER called party is unavailable
XFER ringback	Ringing called party for XFER
CONF ringback	Ringing called party for CONF
Consultation	Third party has answered a CONF/XFER call.
Consultation hold	User is talking to the original party and the consulting party is on hold.
Established hold	Call held by another party
-end-	

Table 4-10xxx
M3000 Touchphone positions labels and related screen displays

Action	Response	Next Screen/State
IDLE State (Figure 4-3)		
Touch profile	Displays menu of local services available.	Touch Profile
-continued-		

Table 4-10xxx
M3000 Touchphone positions labels and related screen displays (continued)

Action	Response	Next Screen/State
Message	User is prompted to select a line to dial message center.	Idle with prompt
Held Call	If a Call Waiting is held, Notify line displays: held party's DN (user is connected to held party).	Active
	If a party was held through the Conference feature, Notify line displays: consulting party's DN (user is connected back to the consulting party previously called using the conference feature).	Consultation
	If a previously consulted party was placed on hold using the Transfer feature, Notify line displays: consulting party's DN (the user is connected back to the consulting party previously called using the transfer feature).	Consultation
	If more than one of the Held Call conditions exist, displays Held Call Access screen to permit choice as to which held call is to be reactivated.	Held Call Access
Data Line	If no data call is already established at data port, no dial tone occurs, but user can make a data call.	Data Call Initiation
Release Data Call	Changes Release Data Call softkey to Data Line label and disconnects active data call.	No change
Forward	If Data option is equipped: screen allows user to select the desired type of forwarding.	Forward Menu
Directory	If directory is locked, the Unlock screen prompts user to enter a password.	Unlock

-continued-

Table 4-10xxx
M3000 Touchphone positions labels and related screen displays (continued)

Action	Response	Next Screen/State
	If directory is not Locked, a maximum of 12 directory names displays.	Directory Page 1
Auto Answer	Displays Flag icon beside Auto Answer touch position (if feature is ON) and allows user to toggle Auto Answer status on or off.	No change
Make Busy	Displays Flag icon beside Auto Answer touch position (if feature is ON) and allows user to toggle Auto Answer status on or off.	No change
Ring Again	User may check Ring Again number and/or cancel Ring Again.	Ring Again
Connect	In Ring Again mode, prompt line prompts user to select a line. If user selects line, the Touchphone displays: Dial Tone screen.	(a) No change (b) Dial Tone
	In Call Waiting mode, Touchphone sends Ring Again request, and Call Wait.	(a) Ringback (b) Active
	In Data Ring Again mode: (a) if data line is in use, user is prompted to release the data call to proceed. No change, except for text on Prompt line.	Data Dialing followed by Data Ringback
	(b) sends Data Call command (idle line) or Data Ring Again (Data Call Initiation screen).	
	In Incoming Data Call mode: Touchphone sends Data Call command.	Data Call Established
	If more than one event is offered or has been initiated already, Touchphone displays the Async Event screen to allow user selection of desired event to be initiated.	Async Event

-continued-

Table 4-10xxx
M3000 Touchphone positions labels and related screen displays (continued)

Action	Response	Next Screen/State
Directory	If directory is locked, the Unlock screen prompts user to enter password.	Search
	If directory is not locked, displays: QWERTY keyboard to allow user to find entry to be dialed.	Unlock
Saved #	Redials last number saved by the user.	Dialing
Last #	Redials last number saved by the user.	Dialing
	Dial tone (from Central Office).	Dialing (external call)
Pick Up	Picks up call. Notify line displays calling party's DN. If there is no call to pick up, user receives the reorder tone.	(a) Active (b) Reorder
Code Call	Dial tone is removed. User can dial code for number stored in the Meridian SL-100.	Dialing
Digits	Notify line echoes digits entered. Dial tone is removed.	Dialing
Message	Connects user to message center.	Dialing
Connect	In Ring Again mode: Prompt line prompts user to select a line. If user selects line, the Touchphone displays Dial Tone screen, and then Ring Again request.	(a) Idle (with prompt) (b) Dial Tone (c) Ringback
	-end-	

Figure 4-8xxx
Dial and conference transfer dial state screen

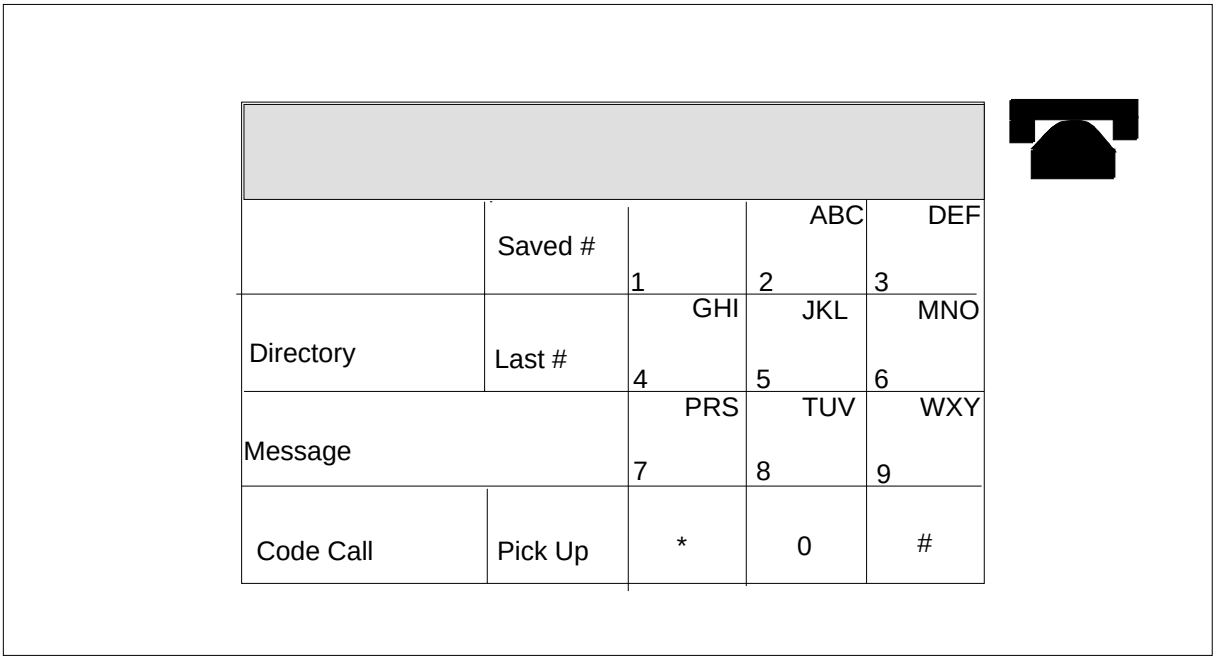


Table 4-11xxx
Dial and conference transfer dial state

Action	Responses	Next Screen/State
IDLE State (Figure 4-8)		
Connect	In Ring Again mode, prompt line prompts user to select a line. If user selects line, the Touchphone displays Dial Tone screen, and then Ring Again request.	(a) Idle (with prompt) (b) Dial Tone (c) Ringback
	In Call Waiting mode: Touchphone drops dial tone. After Meridian SL-100 sends Idle screen, Touchphone sends Call Wait to the Meridian SL-100.	(a) Idle (b) Active
	In Data Ring Again mode: Touchphone drops dial tone.	Idle
	(a) if data line is in use, user is prompted to release the data call to proceed.	Idle (with prompt)
	(b) Sends Data Call command (Idle line) or Data Ring Again (Data Call Initiation screen).	(a) Data Dialing (b) Data Ringback

Table 4-11xxx
Dial and conference transfer dial state (continued)

Action	Responses	Next Screen/State
	In Incoming Data Call mode: Touchphone sends Data Call command.	Data Call Established
	If more than one event is already offered or initiated, the Touchphone displays the Async Event screen allowing user to select and activate desired event.	Async Event (local screen)
IDLE State (Figure 4-9)		
Digits	Notify line echoes digits entered.	No change
	When last digit of authorization code is entered, dial tone is provided.	Dial tone
Ring Again	Notify line displays: notifies you when line is free.	Idle

Figure 4-9xxx
Dial and conference transfer dialing state screen

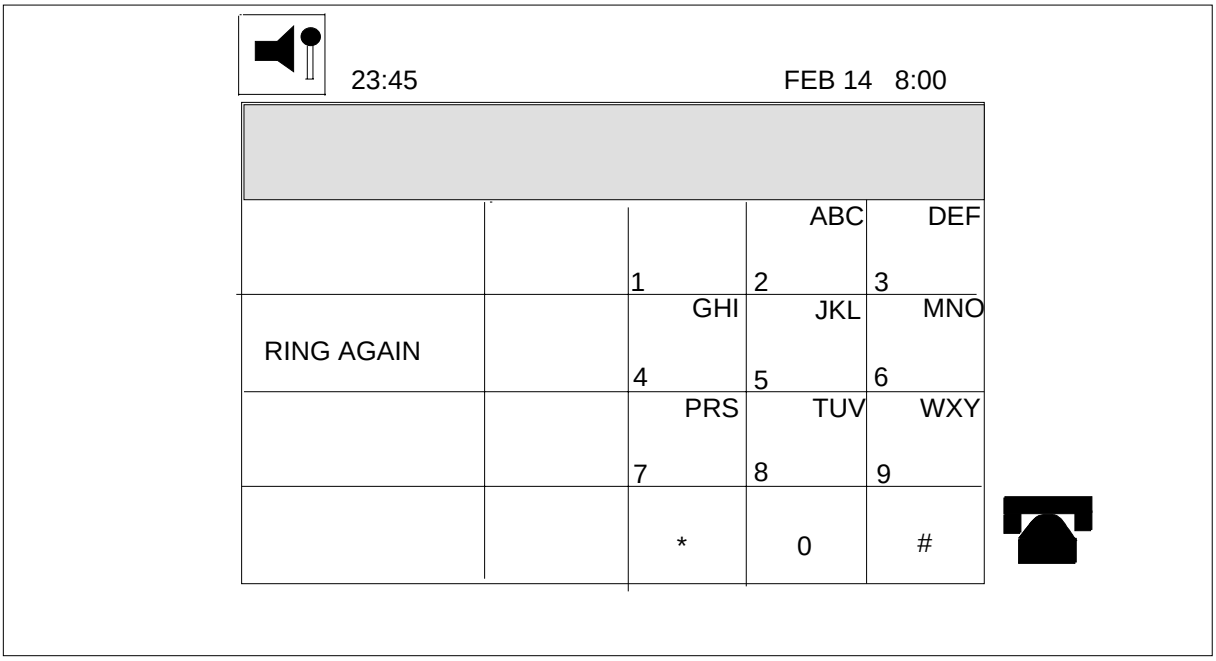


Table 4-12xxx
Dial and conference transfer dial state

Action	Responses	Next Screen/State
IDLE State (Figure 4-10)		
Ring Again	Notify line displays: notifies you when line is free.	Idle
Save #	Prompt line displays: NEW NUMBER SAVED (number is saved in the save number buffer)	No charge
Join Busy Call (or Override)	Connects user to both parties of the busy call unless Privacy was invoked. Other parties receive a warning tone. Notify line displays: YOU HAVE JOINED THE BUSY CALL.	Active

Figure 4-10xxx
Busy and conference transfer busy state screen

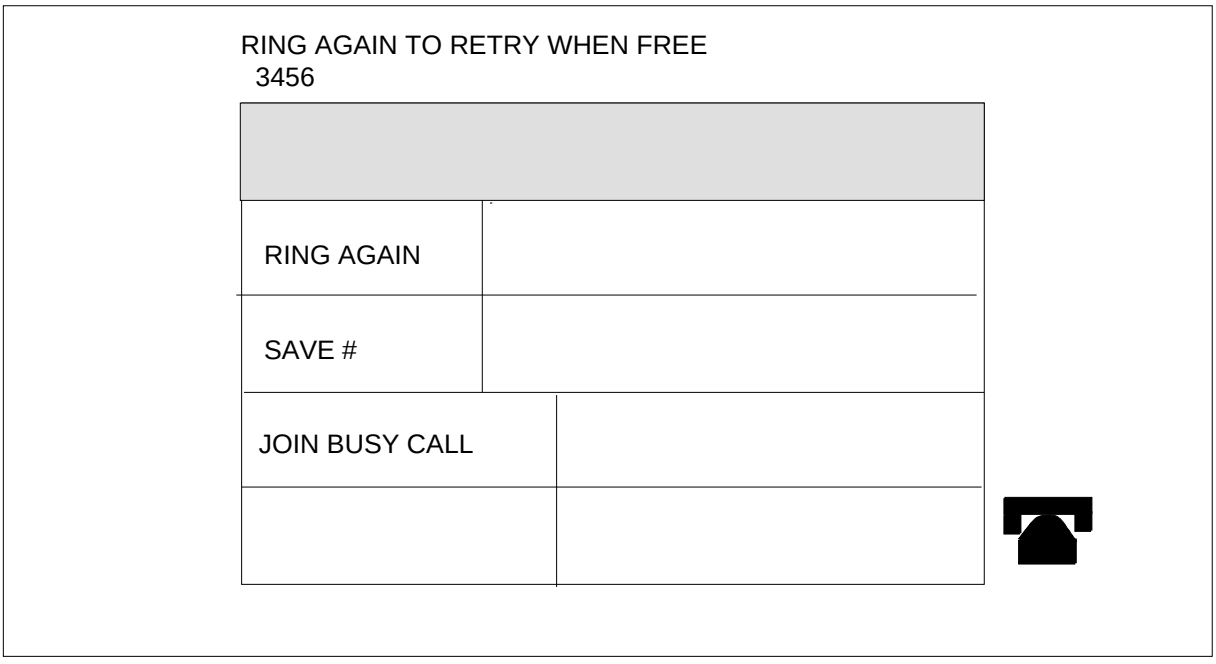


Table 4-13xxx
Expensive route warning tone - call back queueing state screen

Action	Responses	Next Screen/State
ERWT_CBQ (Figure 4-11)		
Ring Again	Notify line displays: notifies you when line free.	Idle
Save #	Prompt line displays: NEW NUMBER SAVED (number is saved in the save number buffer)	No charge

Figure 4-11xxx
Expensive route warning tone - call back queueing state screen

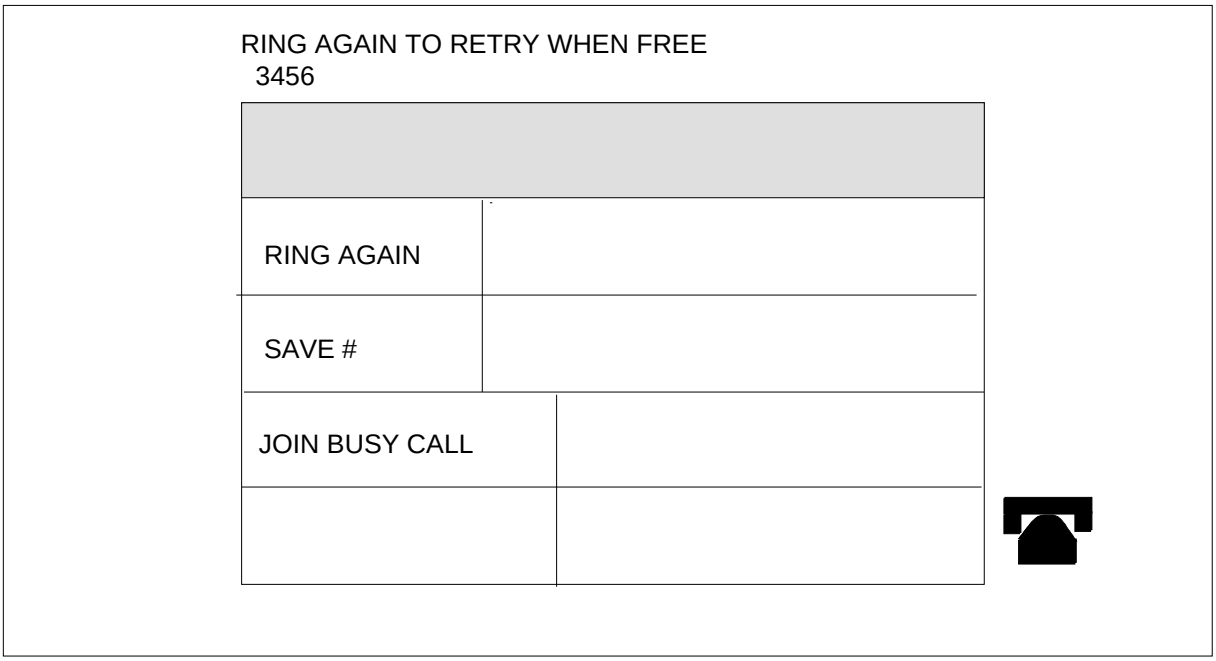


Table 4-14xxx
Ringback state

Action	Responses	Next Screen/State
Ringback State (Figure 4-12)		
Save #	Prompt line displays: NEW NUMBER SAVED (number is saved in the save number buffer)	No charge

Figure 4-12xxx
Ringback and transfer ringback state screen

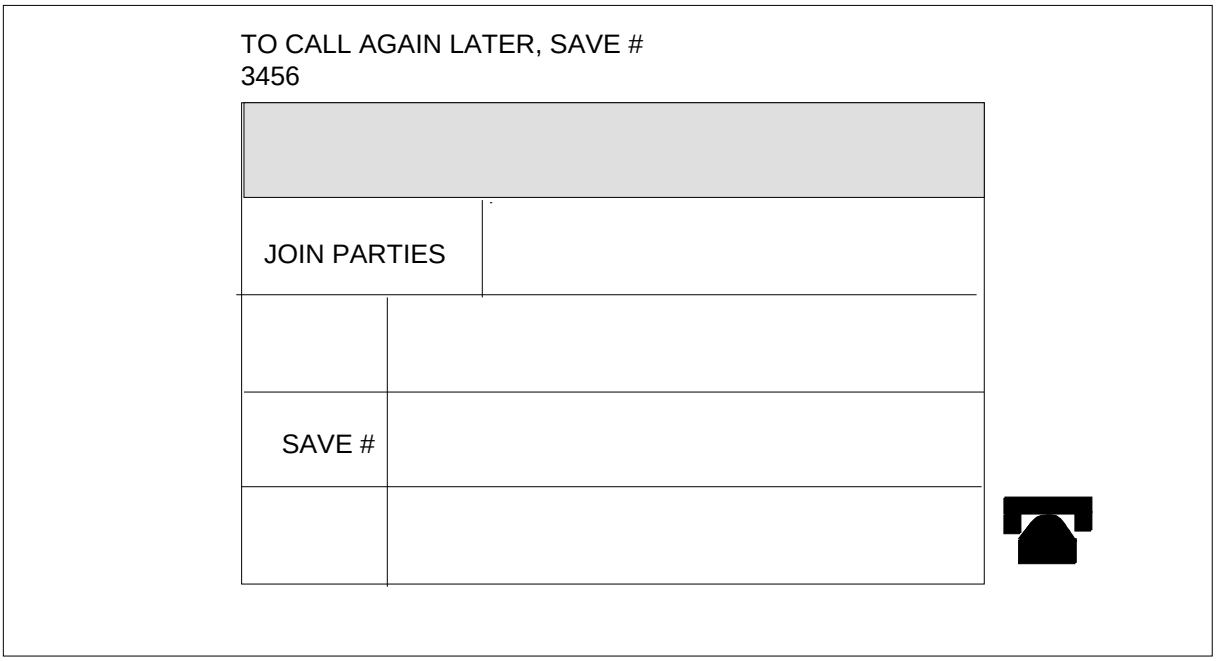


Table 4-15xxx
Active state

Action	Responses	Next Screen/State
Active State (Figure 4-13)		
Operator	Active call is put on hold. User receives Ringback tone. Notify line displays: the attendant DN.	Ringback
-continued-		

Table 4-15xxx
Active state (continued)

Action	Responses	Next Screen/State
Save #	Prompt line displays: NEW NUMBER SAVED (number is saved in the save number buffer)	No charge (remains in Active state)
Touch Profile	Displays menu of local services available.	Touch Profile
Hold	Icon of line that is holding the call winks.	Idle
Transfer	Active call is held while user receives a special dial tone.	Conference Transfer Dial Tone
	If the active call was at a DN icon, this icon winks (the held party cannot do any call modification). Held party's screen is in Active Hold state.	Conference Transfer Dial Tone
Conference	Active call is held while user receives a special dial tone.	Conference Transfer Dial Tone
Directory	If directory is Locked, the Unlock screen prompts user to enter a password.	Unlock
Make Busy	Status icon lights. Notify line displays: SET MADE BUSY.	No change (remains in Active state)
Privacy Off	If active DN is in multiple appearance, another user can join the call.	No change
Dial	Displays Active Dial screen to allow user to end-to-end signal on the active line, using dial pad or directory.	Active Dial
Park	Displays Park screen to allow user to park an active call on hold.	Park
Connect	In all modes, prompt line prompts user to TOUCH HOLD. This action produces the Idle screen.	Idle
	In Ring Again mode, Idle screen prompt line prompts user to select a line. If user selects line, the Touchphone displays Dial Tone screen, and then Ring Again request.	(a) Idle (with prompt) (b) Dial Tone or Conference Transfer Dial Tone (c) Ringback, Transfer Ringback, or Conference Ringback.
	In Data Ring Again mode: Set removes dial tone.	

-continued-

Table 4-15xxx
Active state (continued)

Action	Responses	Next Screen/State
	(a) if data line is in use, user is prompted to release the data call to proceed.	(a) Idle (b) Active
	(b) If data line is idle, Touchphone sends Data Call command. When Touchphone receives Data Call initiation screen, it sends Data Ring Again.	Idle or Idle (with prompt)
	In Incoming Data Call mode: Touchphone sends Data Call command.	Data Dialing followed by Data Ringback. Data Call Established
	If more than one event is offered or has been initiated already, Touchphone displays the Async Event screen to allow user selection of desired event to be initiated.	Async Event
-end-		

Figure 4-14xxx
Active state screen

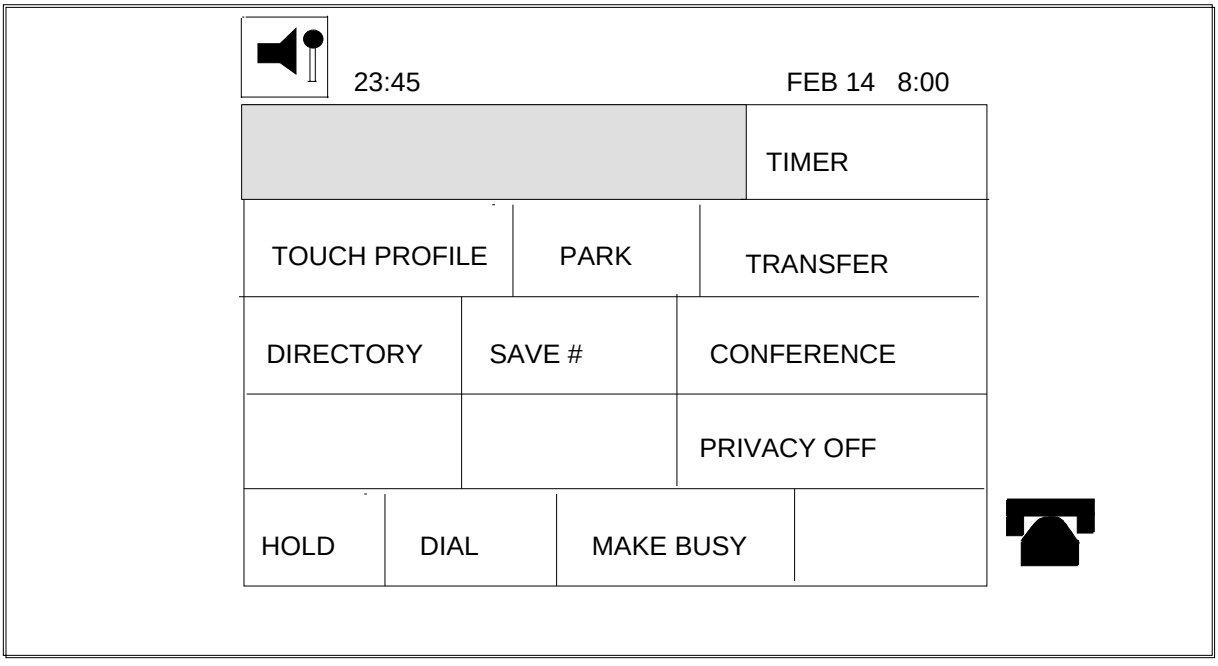


Table 4-16xxx
Conference state screens

Action	Responses	Next Screen/State
CONFERENCE TRANSFER DIAL TONE (Figure 4-8)		
Directory	If directory is Locked, the Unlock screen prompts user to enter password.	Unlock
	If directory is not locked: Displays a maximum of 12 directory names.	Directory Page 1
Saved #	Redials last number saved by the user.	Dialing
Digits	Notify line echoes digits entered. Dial tone is removed.	Conference Transfer Dialing
CONFERENCE TRANSFER DIAL State (Figure 4-9)		
Digits	Notify line echoes digits entered. Dial tone is removed.	No change
Ring Again	Notify line displays: notifies you when line is free (initiated by the Touchphone).	Idle
CONFERENCE TRANSFER BUSY State (Figure 4-10)		
Ring Again	Notify line displays: notifies you when line is free.	Idle
Save #	Notify line displays: New number saved (number is saved in the save number buffer).	No change
CONFERENCE RINGBACK State (Figure 4-11)		
Join Parties	Transfers a Held party to a third party. The Held icon goes blank.	Idle
Save #	Notify line displays: NEW NUMBER SAVED (number is saved in the save number buffer).	No change

-continued-

Table 4-16xxx
Conference state screens (continued)

Action	Responses	Next Screen/State
Ring Again	Notify line displays: notifies you when line free.	Idle
CONFERENCE RINGBACK State		
Digits	End-to-end signaling takes place, and user receives the EES tone until digit is released. Notify line echoes digits entered.	No change
-end-		

Table 4-17xxx
Consultation state

Action	Responses	Next Screen/State
CONSULTATION State (Figure 4-11)		
Join Parties	Notify line remains blank, Held DN icon is displayed and all parties join in conference.	Active
	Notify line remains blank, Held party is transferred to consulting party, and the Held icon goes blank.	Idle
	Other party's screen is updated from Active Hold to Active.	Active (other party)
Switch Parties (Return to Held)	Puts consulting party on Hold and returns to Held party. Prompt line displays: HELD PARTY. Notify line displays: ACTIVE PARTY. If the Held party is connected to a fixed DN key, line icon changes from Held to Active.	Consultation Hold
Hold	Notify line remains blank. Both the consulting party and the originating party are put on Hold.	
-continued-		

Table 4-17xxx
Consultation state (continued)

Action	Responses	Next Screen/State
Hold	Notify line remains blank. Both the consulting party and the originating party are put on Hold. If the originating party is at a DN icon, this DN icon winks.	Idle
Digits	End-to-end signaling takes place, and user receives the EES tone until digit is released. Notify line echoes digits entered.	No change
Switch Parties (Consult)	Puts originating party on Hold and returns to consulting party. If the originating party is at a DN icon, this icon winks. Notify line displays: the consulting party's DN.	Consultation
Digits	End-to-end signaling takes place, and user receives the EES tone until digit is released. Notify line echoes digits entered.	No change
Join Parties	Sends Switch Parties and Complete to the Meridian SL-100. Meridian SL-100 does not support Complete in Consultation Hold state	(a) Consultation (b) Active
Hold	Notify line remains blank. Both the consulting party and the originating party are put on Hold. If the originating party is at a DN icon, this DN icon winks.	Idle

-end-

Table 4-18xxx
Intercom dial state

Action	Responses	Next Screen/State
INTERCOM DIAL TONE State (Figure 4-8)		
Directory	If directory is Locked, the Unlock screen prompts user to enter a password.	Unlock
	If the directory is not locked, displays a maximum of 12 quick-access entries from the user's directory.	Directory Page 1

-continued-

Table 4-18xxx
Intercom dial state (continued)

Action	Responses	Next Screen/State
	If the directory is not locked, displays a maximum of 12 quick-access entries from the user's directory.	Directory Page 1
Saved#	Redials last number saved by the user.	Dialing
Last #	Redials the most recent number dialed (no dial tone).	Dialing
Digits	Notify line echoes digits entered. Dial tone is removed.	Dialing
Pick Up	Picks up call. Notify line displays calling party's DN. If there is no call to pick up, user receives the reorder tone.	(a) Active (b) Reorder
Digits	Notify line echoes digits entered. Dial tone is removed.	No change
Saved#	Redials last number saved by the user.	Dialing
Last #	Redials the most recent number dialed.	No change
Directory	If directory is Locked, the Unlock screen prompts user to enter a password.	Unlock
	If the directory is not locked, displays a maximum of 12 quick-access entries from the user's directory.	Directory Page 1
INTERCOM/PRIVATE LINE ACTIVE State		
Touch Profile	Displays menu of services available. Allows user to edit directory, get training, and access other local services.	Touch Profile
Hold	If the call is at an icon, the icon winks.	Idle
Directory	If directory is Locked, the Unlock screen prompts user to enter password.	Unlock
	If the directory is not locked; Displays a maximum of 12 quick-access entries from the user's directory.	Directory Page 1

-continued-

Table 4-18xxx
Intercom dial state (continued)

Action	Responses	Next Screen/State
Transfer	Active call is held while user receives special dial tone. The Held party cannot do any call modification. Held party's screen is in Active Hold state.	Intercom Dial Tone
Conference	Active call is held while user receives special dial tone. The Held party cannot do any call modification. Held party's screen shows ACTIVE HOLD.	Intercom Dial Tone
Make Busy	The Make Busy touch position permits the user to toggle this option ON or OFF. If Make Busy Status is turned ON, the flag icon lights, and the notify line displays: BUSY TO INCOMING CALLS. Incoming calls get busy tone. If Make Busy status is turned OFF, flag icon extinguishes and notify line displays: NOT BUSY TO INCOMING CALLS.	No change (remains in Active state)
Dial	Displays Active Dial screen to allow user to end-to-end signal on the active line, using dial pad or directory.	Active Dial
	-end-	

Installation procedures

Unpacking or packing a digital telephone

Use proper care while unpacking M3000 Touchphones. Check for damaged containers so that appropriate claims can be made to the transport company for items damaged in transit.

If a telephone must be returned to the factory, ensure it is packed in the appropriate container to avoid damage during transit. Remember to include all loose parts in the shipment, such as cords, handset, power unit, labels, and lenses.

M2000 digital telephone installation

The step-by-step routine in Procedure 5-1 details the installation procedures for any M3000 Touchphone. For additional installation information, refer to the *Meridian SL-100 Telephone Set/Attendant Console Installation Manual*, 555-4001-212.

Procedure 5-1
M3000 Touchphone installation

1 Place telephone upside down on several sheets of soft, clean paper on a solid, level work surface to prevent damage to movable keys and telephone face plate.

Note: If TADO is not provided proceed to step 7.

If Installing TADO:

2 Remove the M3000 Touchphone stand by removing the four screws that fasten the stand to the telephone body and lift off the locating posts in a straight, upward motion.

Note: If the M3000 Touchphone is already connected, unplug the power supply at the outlet and disconnect the line cord from the wall. Disconnect the power supply, line cord, and handset from the M3000 Touchphone before removing the stand.

3 Snap TADO into rear of the M3000 Touchphone with the ribbon cable and header connector protruding from the front of the TADO.

4 Plug the 34-pin header connector at the end of the ribbon cable into the receptacle located in the body of the M3000 Touchphone and push in firmly to ensure a secure connection.

5 Replace the M3000 Touchphone stand by placing the stand over the telephone body and position over the four locating posts.

6 Use the four screws to fasten the stand securely to the M3000 Touchphone.

7 Connect handset cord four-conductor TELADAPT connectors to the handset and the telephone.

Response: The TELADAPT connectors have a latch-tab to ensure correct alignment and prevent cord from being pulled out inadvertently during service.

8 Snap the latch-tab firmly into place.

9 After connecting the handset cord to the connector in the base of the telephone, turn the smooth side of handset cord up (away from telephone base) before tucking it under the restraining tab.

Response: This ensures that the telephone sits level on the desk after installation is complete. See Figure 5-1.

10 Connect the line cord to the telephone base.

Response: See Figure 5-1.

11 Tuck the line cord under the four restraining tabs.

0**Response:** This allows the telephone to sit level on the desk.

12 Insert line cord into wall jack.

Response: The TELADAPT connectors have a latch-tab, which ensures correct alignment and prevents the cord from being pulled out inadvertently during service.

13 Connect the six-conductor line cord to the telephone base.

Response: See Figure 5-1.

14 Tuck the line cord under the four restraining tabs.

Response: This allows the telephone to sit level on the desk.

15 Insert connecting block into wall jack.

16 Insert line cord into connecting block.

Response: The TELADAPT connectors have a latch-tab, which ensures correct alignment and prevents the cord from being pulled out inadvertently during service.

17 Snap the latch-tab firmly into place.

18 Plug the electrical cord into the auxiliary power supply.

19 Turn telephone right side up, and place in final position.

Response: The M3000 Touchphone display screen shows STARTING UP and prompts PLEASE WAIT.

Note: The character displayed between the prompt PLEASE WAIT and the string of five numbers at the bottom of the screen are codes used only for service routines. There is no significance during M3000 Touchphone installation.

Reset Internal Memory:

CAUTION

Clearing Internal Memory

The clearing of the internal memory should only be completed when installing the M3000 for the first time. It does not need to be repeated when the M3000 is moved.

20 Touch positions 1 3 3 2 (in that order) in the number string at the bottom of the START UP screen display. The internal memory is cleared.

Response: The M3000 Touchphone resets the directory, password, local timer, clock, calendar, features, ring type, and volume and contrast level.

21 Print directory number on designation card.

22 Remove number lens by inserting the end of a paper clip into the hole at the middle of the lens and levering upwards.

23 Insert designation card.

24 Snap lens with card back in place.

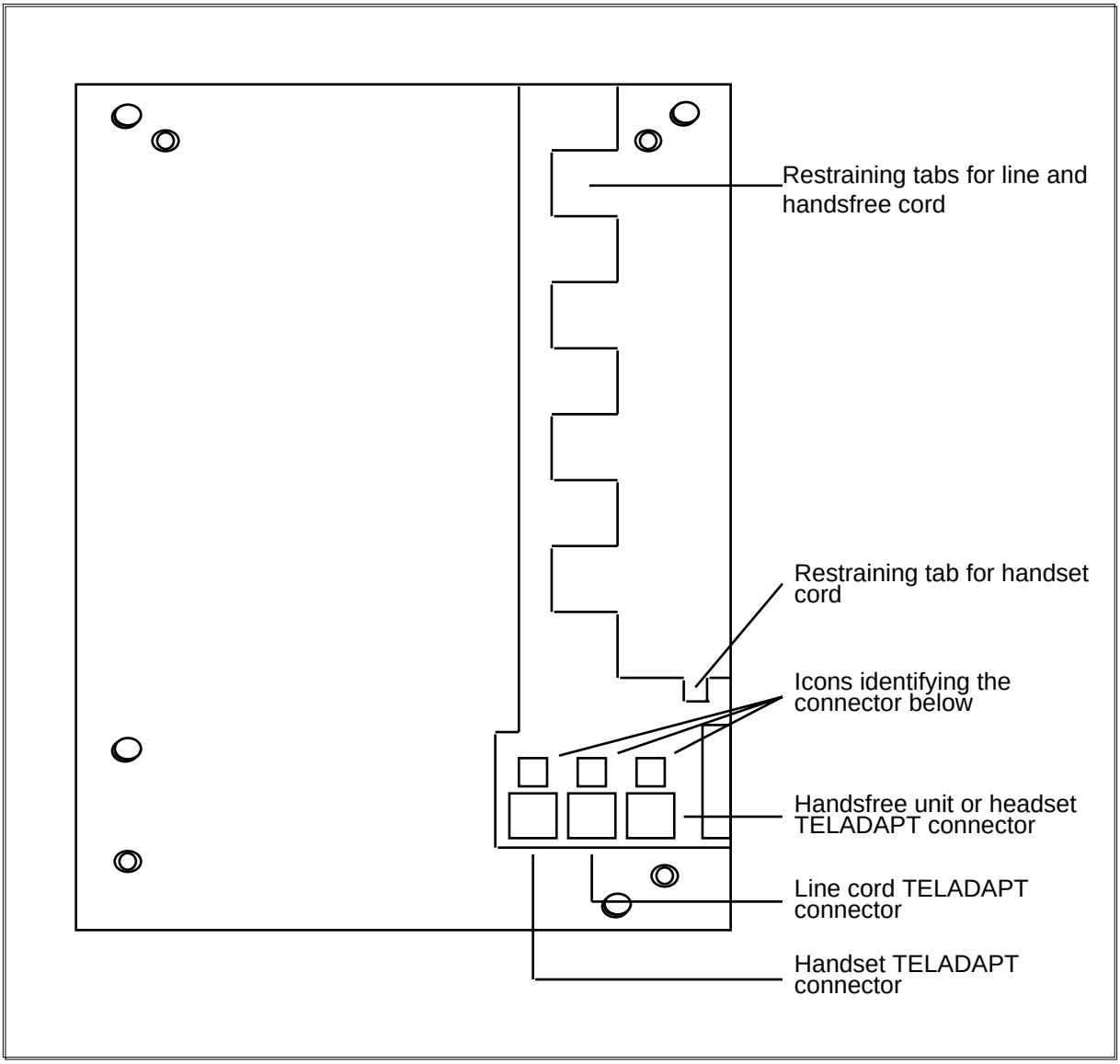
25 Designate button labels for key designations.

26 Fold labels, insert inside plastic button cover, and snap button cover over movable key, pressing down on key, as required.

27 Repeat Steps 20 and 21 for all keys.

Task is complete.

Figure 5-1xxx
View of jacks and tabs at base of telephone



Data terminal installation

To connect a data terminal to the M3000 Digital Telephone, perform the steps in Procedure 5-2.

Procedure 5-2
Data terminal installation

1 Connect the RS-232-C interface connector from the data terminal to the matching header connector in the back of the M2000 digital telephone. (See Figure 5-2.)

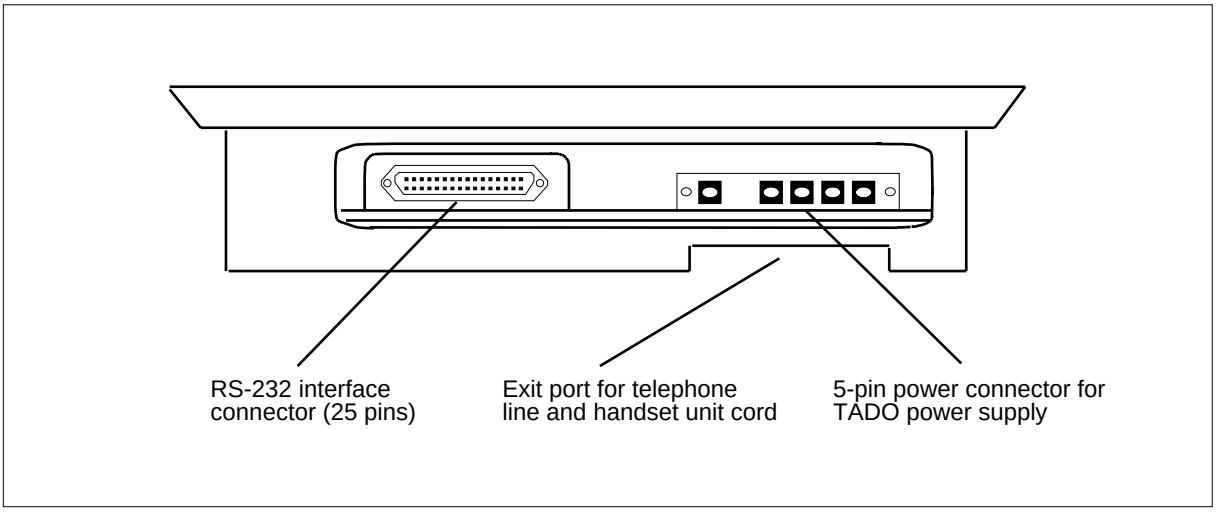
2 Insert the two captive screws in the connector body into the threaded holes in the header connector, and secure tightly to prevent accidental disconnection during data terminal operation.

3 Plug power supply/converter connector securely into power jack that is to the right of the RS-232-C connector.

4 Plug power supply/transformer into the nearest ac outlet.

Task is complete.

Figure 5-2xxx
Connection of the data terminal and TADO power supply to M3000 digital telephone



Configuration notes

To configure the connector pin numbers and the signals associated with each pin for the standard RS-232-C interface of the M3000 Touchphone, refer to Table 5-1.

Table 5-1xxx
Standard RS-232-C Signals

Circuit Designation			Pin	Signal Source		
EIA	**COMMON**	**CCITT**		**DTE**	**DCE**	**NAME**
BA	TXD	103	2	X		Transmit Data
BB	RXD	104	3		X	Receive Data
CA	RTS	105	4	X		Request to Send
CB	CTS	106	5			Clear to Send
CC	DSR	107	6		X	Data Set Ready
AB	GND	102	7			Signal Ground
CD	DTR	108.2	20	X		Data Terminal Ready
CE	RI	125	22		X	Ring Indicator

Table 5-2xxx
Apple Macintosh to TADO

9-Pin Connector (From Terminal)	RS-232-C Connector (at TADO Point)
Pin 3	Pin 7
Pin 5	Pin 2
Pin 9	Pin 3
	Strap Pins 4 and 5 together. Strap Pins 6, 8, and 20 together.

Note: A 9-pin connector cable from Apple is required to connect the Apple Macintosh to the RS-232-C connector in the TADO.

Personal directory

M3000 personal directory

The personal directory is one of the most useful features of the M3000 Touchphone. The directory contains up to 450 entries (depending upon the length of each entry). A maximum of 15 characters for each name is used, with 8 names on a page. Once the name is added, touch the entry and the number is automatically dialed.

Use the following procedures to add an entry, edit, use, and maintain your personal directory.

Add an entry

When a new name and number is added to the directory, it is automatically inserted alphabetically into the directory or add frequently called numbers to Page 1 of the directory. Use procedure 6-1 to add an entry to your directory.

Procedure 6-1
Add an entry

1 Touch **Directory**.

2 Touch **Add**.

3 Type the name. Use the following to modify the name by touching:

- **Arrow** symbol to delete the last character typed
- **Clear** to delete the entire entry and try again
- **Space** to add a space between characters in the name

4 Touch **OK**, when the name is entered correctly.

5 Type the number. Use any of the following to modify the number by touching:

- **Last #** to enter the last number dialed
- **Arrow** symbol to delete the last digit typed
- **Clear** to delete the entire entry and reenter the entry

6 Touch **OK** when the number is entered correctly.

7 Touch **Voice Number** or **Data Number** to indicate what type of number you are entering, if you have the Data Communication option.

8 Touch **Yes** to have the entry appear on Page 1. Select a location for the new entry on Page 1 by touching the screen, and then touch **OK**.

or

Touch **NO** if you do not want the entry to appear on Page 1. The alphabetical section of the directory number appears.

9 Touch **EXIT** to return the screen to idle, when all entries are added.

Edit a directory

Use the following edit procedures to:

- change or rotate the name of an entry
- delete an entry
- add an entry from page 1 of the directory
- remove an entry from page 1 of the directory

Change an entry

Use procedure 6-2 to change or rotate and entry.

Procedure 6-2
Change or rotate a name or entry

1 Touch **Directory**.

Response: Screen is updated to Directory screen.

2 Touch the **Arrows** at the top of the screen to find the entry to be changed.

3 Touch **Edit**.

Response: The user is prompted to select name to edit.

4 Touch the entry to change.

5 Touch **Rotate Name** to rotate the position of the first and last name.

6 Touch **Change Name** to make changes to the name.

7 Edit the name and touch **OK**. Use the following to modify a name by touching:

- **Arrow** symbol to delete the last character typed
- **Clear** to delete the entire entry and try again
- **Space** to add a space between characters in the name

8 Touch **Change Number** to change a number.

9 Edit the number and touch **OK**.

Response: Directory is updated and screen returns to IDLE state.

10 Touch **OK** to return to the Directory Menu or touch **EXIT** to return to the IDLE screen.

Delete an entry

Use procedure 6-3 to remove an entry from your directory.

Procedure 6-3
Delete an entry

1 Touch **Directory**.

2 Touch the **Arrows** at the top of the screen to find the entry.

3 Touch **Edit**.

4 Touch the entry to delete.

5 Touch **Delete Entry**.

6 Touch **Put Back Entry** and **OK** if you want to return the entry to the directory.

7 Touch **OK** to return to the Directory Menu or touch **EXIT** to return to the IDLE screen.

Add an entry

Use procedure 6-4 to add an entry to page 1 of your directory.

Procedure 6-4
Add an entry to page 1

1 Touch **Directory**.

2 Touch the **Arrows** at the top of the screen to add an entry to Page 1 of the directory.

3 Touch **Edit**.

4 Touch the entry to add.

5 Touch a position on the screen to put the entry on Page 1 of the Directory.

6 Touch **OK** to return to page 1 of the directory location screen or touch **EXIT** to cancel the change.

Remove an entry

Use procedure 6-5 to remove an entry from page 1 of the directory:

Procedure 6-5
Remove an entry to page 1

1 Touch **Directory**.

2 Touch **Edit**.

3 Touch the entry to remove from Page 1.

4 Touch **Remove From Page 1** to remove the entry.

5 Touch **OK** or **EXIT**.

Use your directory

Once a personal directory is created, use the following procedures to:

- dial a number automatically
- charge a call to an account number
- find a name
- use a password to lock/unlock your directory

Dial a number

Use procedure 6-6 to dial a number automatically from your directory.

Procedure 6-6
Dial a number

1 Touch **Directory**.

2 Touch the **Arrows** at the top of the screen to find the number to dial.

3 Touch the number.

4 Select a line if making a handsfree call or pick up the handset. The number is automatically dialed.

Charge a call

Use the following procedures to charge a call to an account number before dialing the number or after the call is in progress. Additionally, use the following procedure to charge a portion of the call when a new person is conferenced into the call or when a call is transferred.

Procedure 6-7
Charge a call before dialing

1 Touch a free phone line.

2 Touch **Charge**.

3 Touch **directory** and the directory entry with the account number.

4 Dial the number using the dial pad or touch **Directory** to dial from your directory.

Use procedure 6-8 to charge a call in progress.

Procedure 6-8
Charge a call in progress

1 Touch **Charge**.

2 Touch **Charge Account** to charge the call to an account number.

3 Touch **Directory** and the directory entry with the account number.

4 Touch **Calling Number** then dial the number and touch **OK** to record the caller's number.

Note: The Calling Number is applicable only if the Calling Party Number is enabled.

Locate a name

Use procedure 6-9 to search a directory name or a specific number in a multi-page directory.

Procedure 6-9
Find a name

1 Touch **Directory**.

2 Touch **Find**.

3 Touch the starting letter or number of the entry to find. The following conditions exist:

- If there are eight names or less that begin with the starting letter entered, the directory displays all names beginning with that starting letter.
- If there are more than eight names that begin with the starting letter entered, the systems request more letters.
- If no match is found, the system displays NO MATCH FOUND. Reenter the starting letter of the entry to find.

Lock/unlock a directory

Lock a directory to protect it from unauthorized use. To lock the directory, set up a password. If the directory is locked, the locked directory option is not displayed. The directory must be unlocked before it is displayed under Touch Profile.

Note: The password used for Call Logs is the same as used for a directory but are independent of each other.

Use procedures 6-10 through 6-12 to lock/unlock a directory.

Procedure 6-10
Lock a directory with existing password

1 Touch **Touch Profile**.

2 Touch **Lock Directory**.

3 Touch **Use Existing Password**.

Procedure 6-11
Lock a directory

1 Touch **Touch Profile**.

2 Touch **Lock Directory**.

3 Enter the new password and then touch **OK**.

Procedure 6-12
UnLock a directory

1 Touch **Directory**.

2 Enter the password and then touch **OK**.

Password maintenance

Use procedure 6-13 to modify a password.

Procedure 6-13
Change an existing password

1 Touch **Touch Profile**.

2 Touch **Directory**.

3 Touch **Change Password**.

4 Enter the old password and then touch **OK**.

5 Enter the new password and then touch **OK**.

6 Reenter the password to confirm and touch **OK**.

Directory archiver

The directory archiver is an optional unit that fits into the handset cradle of the touchphone (see Figure 6-1). If installed, the directory contents and touchphone settings are saved to your directory archiver. Use the Directory archiver as a backup copy of your directory and touchphone settings.

The Directory archiver saves the following information:

- directory contents
- volume settings
- contrast settings
- touch sound (click or beep)
- ring sound
- password
- call log settings (which calls are logged)

Note: Before using the Directory archiver, forward your calls to another extension.

Use directory archiver

Use procedure 6-14 to operate the Directory Archiver.

Procedure 6-14
Directory archiver

1 Remove the handset and place the Directory Archiver in the handset cradle.

2 Press the red button on the Directory Archiver.

3 Touch one of the following options or touch **EXIT** to cancel.

- Touch **Backup Directory** to save a copy of the Directory contents and Touchphone settings to the Directory Archiver.

Note: Backing up the Directory does not affect the Directory information on your Touchphone.

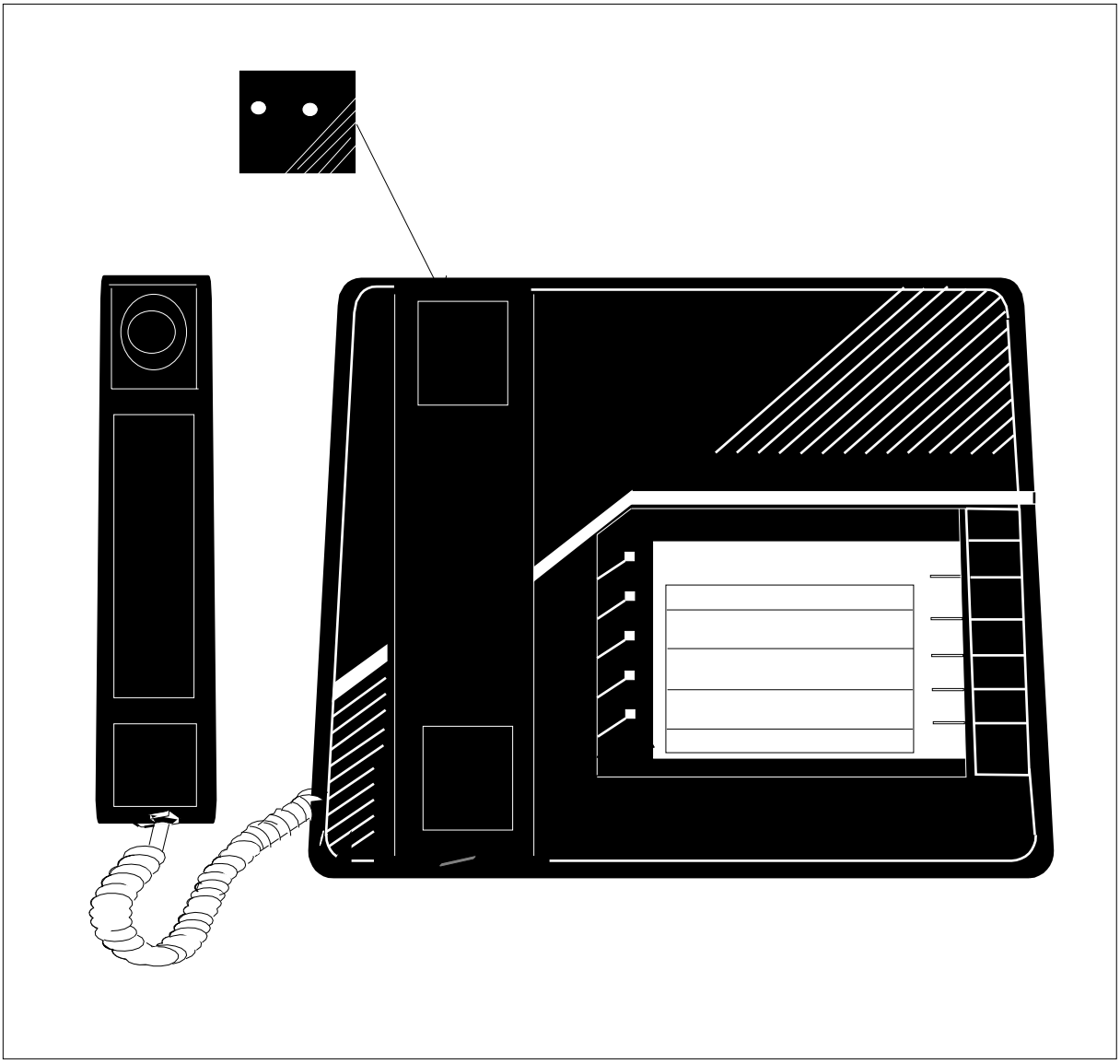
- Touch **Restore Directory** to install the contents of the Directory Archiver to the Touchphone.
- Touch **Erase Archiver** to erase the contents of the Directory Archiver.

4 Touch **Yes** to begin the Archiver operation. To cancel, touch **No**.

5 When the operation is complete, touch the screen to continue.

6 Remove the Directory Archiver and replace the handset.

Figure 6-1xxx
Directory archiver



Call logs

M3000 Touchphone call log

The Call Log (Figure 7-1) keeps a record of the date, time, and number of the last 28 calls made or received by the M3000 Touchphone. The Call Log is displayed at any time and is used to review its contents or dial a number automatically.

Figure 7-1xxx
Call logs

Note: The contents of a call log are not saved if a power failure occurs. Copy all important numbers to your directory.

Use procedures 7-1 through 7-10 to set up, display, dial a number, clear, copy to a directory, and lock/unlock a call log.

Call log maintenance

Set up call log

Choose all or selectively choose one of the following types of calls to log:

- unanswered incoming calls
- answered incoming calls
- outgoing calls

Note: If all three of these options are turned off, no calls are logged in the Call Log.

Use procedure 7-1 to set up a call log.

Procedure 7-1
Set up call log

1 Touch **Touch Profile**.

2 Touch **Call Log Control**.

3 Touch the box for each type of call to include in the log. The dark box indicates that the option is enabled. The light box indicates that the option is disabled.

4 Touch **EXIT**.

Display a call log

Display a call log to review an log entries. If there are no entries in the call log, the feature name does not appear on the screen. Use procedure 7-2 to display the Call Log.

Procedure 7-2
Display a call log

1 Touch **Call Log**. The first page of the call log appears.

2 Touch the **Arrow** at the top of the display to move to the next page of the log.

3 To display the date and time of a call, touch the icon next to the telephone number.

Dial a number from a call log

Automatically dial any dialable number from the Call Log. A dialable entry is any digit (0-9), asterisk (*), and octothorpe (#). A private number is dialable and does not require an Access Code Prefix. Use procedure 7-3 to dial a number from the Call Log.

Procedure 7-3
Dial a number from a call log

1 Touch **Call Log**. The first page of the call log appears.

2 Touch the number to dial.

3 Pick up the handset and the number is automatically dialed. If handsfree is used, select a line, and the number is automatically dialed.

Clear a call log entry

A call log keeps a record of 28 calls. Clear either the entire call log or selected entries. Use procedures 7-4 and 7-5 to clear a Call Log.

Procedure 7-4
Clear entire call log

1 Touch **Call Log**. The first page of the call log appears.

2 Touch **Clear Log**.

3 Touch **All** to clear the entire Call Log. All entries flash when selected.

4 Touch **OK** and return to the IDLE screen.

or

Touch **EXIT** to cancel and return to the IDLE screen.

or

Touch **CANCEL** to cancel all selected Call Log entries.

5 Touch **EXIT** from the Call Log entry menu when completed.

Procedure 7-5
Clear selected call log entries

1 Touch **Call Log**. The first page of the call log appears.

2 Touch **Clear Log**.

3 Touch each entry icon to clear. Each entry flashes when selected.

4 Touch **OK** and return to the Call Log entry menu.

or

Touch **EXIT** to cancel and return to the IDLE screen.

or

Touch **CANCEL** to cancel selected Call Log entries or touch the entry icon again to return to the Call Log entry menu.

5 Touch **EXIT** from the Call Log entry menu when completed.

Paste a call log number

The Call Log is a temporary listing. Paste any numbers to keep into your Directory. When adding numbers into your directory, the chance is given to change the name in the Directory. Use Procedure 7-5 to paste a Call Log number.

Procedure 7-5
Paste a call log number

1 Touch **Call Log**.

2 Touch **Paste**.

3 Touch the number to paste to the Directory.

4 Touch **Change Name** to change the name for the directory entry.

5 Touch **Clear** and enter a name.

Note: If a name is not entered, the number itself appears as the Directory entry.

6 Touch **OK** to add the entry to the Directory.

7 Touch **EXIT** to return to the IDLE screen.

Lock/Unlock the call log

Lock a Call Log to protect it from unauthorized use. To lock or unlock a Call Log, set up a password. The password used for the Call Log is the same used for your Directory. If the directory is locked, the locked directory option is not displayed. The Call Log must be unlocked before it is displayed under Touch Profile. Use procedures 7-6 through 7-9 to lock/unlock the Call Log.

Note: The password used for the Call Log is the same as the one used for your Directory.

Procedure 7-6
Lock a call log with existing password

1 Touch **Touch Profile**.

2 Touch **Lock Call Log**.

3 Touch **Use Existing Password**.

Procedure 7-7
Lock a call log with new password

1 Touch **Touch Profile**.

2 Touch **Lock Call Log**.

3 Enter the new password and then touch **OK**.

4 Reenter the new password to confirm and then touch **OK**.

Note: If you do not remember your password, see your system Administrator.

Procedure 7-8
UnLock a call log

1 Touch **Call Log**.

2 Enter the password and then touch **OK**.

Procedure 7-9
Change an existing password

1 Touch **Touch Profile**.

2 Touch **Call Log**.

3 Touch **Change Password**.

4 Enter the old password and then touch **OK**.

5 Enter the new password and then touch **OK**.

6 Reenter the password to confirm and touch **OK**.

Control types of calls logged

There are three types of calls to include in a call log:

- answered incoming calls
- unanswered incoming calls
- outgoing calls

Follow procedure 7-10 to select which calls are logged:

Procedure 7-10
Type of calls logged

1 Touch **Touch Profile**.

2 Touch **Call Log Control**.

Response: The screen lists the call log options. A dark box indicates an option is selected.

3 Select (or unselect) the options by touching them.

4 Touch **Exit** when finished.

Testing and maintenance

M3000 Digital Telephone testing consists basically of acceptance test procedures. Impulse noise, background noise, and crosstalk compatibility problems are unlikely. Examine the loop length, connect the telephone, and check the performance by establishing a communication path to another telephone (or data terminal) and going through the different call routines (enabled features) while observing and verifying the responses at the telephone and data terminal.

Check the polarity of tip and ring leads for reversals before going into more detailed follow-up tests. The M2000 Digital Telephones are polarity sensitive, and a dead loop or absence of dial tone may indicate reversed tip and ring polarities.

Use Procedure 8-1 to verify call processing on the M3000 Touchphone.

Procedure 8-1
Verifying a call on the M3000 touchphone

Note: Call process verification should be performed when there are no incoming calls and the M3000 Touchphone is in idle state.

1 Select a DN by touching the associated icon position. Handsfree is activated automatically.

Response: Handsfree icon shows speaker and microphone symbols. IDLE screen changes to DIAL TONE screen. Dial tone occurs.

2 Enter the DN by touching the numbers on the touch-sensitive key pad.

Response: Notify line displays digits dialed. Ringback occurs.

3 Answer the ringing DN to establish voice continuity.

4 Touch **RELEASE** position.

Response: ACTIVE screen changes to IDLE screen.

Use Procedure 8-2 to verify data calls.

Procedure 8-2
Verifying a data call on the M3000 touchphone

Note: Data call verification should be performed when there are no incoming calls, and the M3000 Touchphone is in idle state.

1 Turn the power on to the DTE.

Response: Notify line displays DIAL DATA CALL.

2 Dial DN of the data call.

Response: Notify line displays the digits dialed. If the data call is not connected, an error message displays on the M3000 Touchphone screen. When the data call is connected, the M3000 Touchphone screen changes to the IDLE screen. The DTE displays CALL CONNECTED, SESSION STARTS.

3 Initiate log-on procedure. Send data.

Response: Verify the arrival of the data at the remote terminal.

4 Touch RELEASE DATA CALL.

Response: Remote terminal screen shows the call was released.

Trouble locating procedures

Trouble conditions are reported either by the telephone user (customer report) or by the Meridian SL-100 trouble indicating system.

Facility maintenance actions are invoked manually through the following levels on the Maintenance and Administration Position (MAP) workstation:

- Line Test Position (LTP)
- Line Test Position Manual (LTPMAN)
- Line Test Position Line Test Access (LTPLTA)

Periodic maintenance actions are invoked on M3000 Touchphones through the Automatic Line Test (ALT) level of the MAP workstation. For more information on line maintenance, refer to 297-2101-516, *Line Maintenance Reference Manual*.

For a detailed diagnostic program description, consult 555-4001-101, *Digital Line Module (DLM) Reference Manual*.

For recommended trouble locating routines, refer to Procedures 8-3 through 8-5.

Procedure 8-3
Trouble locating for data communications failure

1 If the Touchphone screen shows the prompt: CHECK TERMINAL AND TRY AGAIN, check for a disconnected RS-232 plug or power source.

Response: Touchphone screen changes to Data Call Initiation state. Attempt data call from DTE keyboard. If unsuccessful, proceed with Step 2.

2 If Touchphone screen shows the prompt: REPORT DATA CHANNEL PROBLEM, check if TADO is faulty. Perform the TADO Self-Test.

Response: Attempt to make a data call from the DTE keyboard If not successful, proceed with Step 3.

3 Contact service personnel to replace TADO circuit board. Reconnect TADO power supply/converter.

Procedure 8-4
Trouble locating for EDPC failure

1 Check the Meridian SL-100 MAP workstation for displayed error code.

2 Replace faulty components.

Response: Try to establish a call. If unsuccessful, proceed to check the M3000 Touchphone.

Procedure 8-5
Trouble locating for telephone (voice or dialing) failure

1 Check line cord and handset cord to determine if all TELADAPT connectors are firmly in place and resecure if loose.

Lift handset and listen for dial tone and/or dial a directory number. If unsuccessful, proceed with Step 2.

2 Wiggle line cord and/or handset cord while listening for sounds from handset. If crackling or ticking sounds result, replace cord.

Response: Try to establish a call. If unsuccessful, proceed with Step 3.

3 Replace M3000 Touchphone.

Response: Try to establish a call. If unsuccessful, proceed with Step 4.

4 Check wiring between EDPC, distribution panel, and telephone for breaks or loose connections. If necessary, rerun wiring.

TADO self test

The TADO Self Test enables a user to test the TADO circuit board, even if there is no DTE present.

This test can be run in response to problems with keyboard functions.

The access code to activate the TADO Self-Test feature must be datafilled in Table XLANAME and Table IBNXLA. In datafill, the TADO Self-Test is referred to as the Meridian Asynchronous Data Option (MADO).

While TADO Self Test is running, the data line and associated voice line are call processing busy (CPB), causing a simultaneous test at the MAP workstation to fail.

The following restrictions and limitations apply to the TADO Self Test:

- No calls can be made or received on either the voice line or the data line of the M3000 Touchphone while the test is in progress.
- The test can only be initiated from the voice line of a M3000 Touchphone equipped with TADO.
- The test cannot be initiated on a voice line that is currently engaged in another feature.
- TADO Self Test tests only the TADO within the M3000 Touchphone that initiated the test.

The TADO Self Test may not operate for the following reasons:

- A feature data block could not be allocated.
- The call is being blocked in the network.
- Another feature is already in progress on the line to be used for the test. TADO Self Test cannot run on the third leg of Conference 3 or Call Transfer.
- A maintenance process is currently operating on the M3000 Touchphone.
- The TADO line has not been datafilled.
- The TADO Self Test was initiated from a telephone other than M3000 Touchphone.

Follow Procedure 8-6 to test the TADO.

Procedure 8-6
TADO Self Test

1 Press a loop (DN) key.

Response: Dial tone occurs.

2 Enter TADO Self Test access code (usually two or three digits defined in Table IBNXLA).

Response: DN LCD FLASHES. TADO IS UNDER TEST appears on the DTE screen.

If the LCD does not flash, TADO IS UNDER TEST does not appear on the screen, and reorder tone is received continuously, the TADO Self Test could not be set up. Check to ensure power source is properly connected. Replace handset and try TADO Self Test again at a later time. If TADO Self Test can not be set up repeatedly, contact service personnel.

If confirmation tone occurs and TADO TEST IS COMPLETE appears on the DTE screen, the TADO circuit board is in working order. If there is a data communications failure, the DTE, RS-232-C interface, or cable could be faulty.

If reorder tone occurs for 5 seconds and TADO TEST IS COMPLETE appears on the DTE screen the TADO Self Test failed. The power source may be disconnected. If the power source is securely connected, contact service personnel to replace the TADO circuit board.

3 Replace handset.

Response: TADO Self Test completed. The test is over when the handset is replaced, regardless of whether the test has completed or not.

Note 1: If the HOLD key is touched during the TADO Self Test, the test is over regardless of whether the test has been completed or not.

Note 2: If TADO Self Test is initiated and no tone is received within 15 seconds, reorder tone occurs followed by normal call treatment.

Table XLANAME

The Translation Name table controls the addition and deletion of the translator to the IBN Translation table.

Each translator is assigned a 1- to 8- character name plus the default data. Use the default data for the translator name whenever an access code is not specified in Table IBNXLA.

Table 8-1 describes the fields for datafill. For more information on the XLANAME table, see 555-4021-851 or 555-4031-851, *Customer Data Schema.*

Table 8-1xxx
Table XLANAME

Field Name	Value	Comments
XLANAME	alphanumeric	TRANSLATOR NAME. Enter the 1- to 8-character name assigned to the customer, feature or preliminary translator.
DEFAULT	alphanumeric	DEFAULT DATA. This field is identical to that described in the RESULT field in Table IBNXLA.

Table IBNXLA

Table IBNXLA is used to assign the access code that an M3000 Touchphone equipped with the TADO Self-Test feature must dial to activate the Self-Test.

Table 8-2 describes the fields for datafill. For more information on the IBNXLA table, see 555-4021-851 or 555-4031-851, *Customer Data Schema.*

Table 8-2xxx
Table IBNXLA

Field Name	Value	Comments
KEY	alphanumeric	KEY. This field consists of subfields XLANAME and DGLIDX.
XLANAME	alphanumeric	TRANSLATOR NAME. Enter the 1- to 8-character name assigned to the translator.
DGLIDX	numeric	DIGILATOR INDEX. Enter the digit(s) assigned as the access code for the special feature.
RESULT	alphanumeric	RESULT. This field consists of subfields TRSEL, ACR, SMDR, and FEATURE.
TRSEL	FEAT	TRANSLATION SELECTOR. Enter the translation selector FEAT.
ACR	Y or N	ACCOUNT CODE ENTRY. Enter Y (yes), when an account code entry is required for all calls to the special feature access code; otherwise, N (no), when no account code entry is required.
SMDR	N or Y	STATION MESSAGE DETAIL RECORDING. Enter Y (yes), when all calls to the feature are to be station message detail recorded; otherwise, enter N (No).
FEATURE	TADO	FEATURE. Enter the feature assigned to the function code: Touch Asynchronous Data Option Self-Test (TADO) or Cancel Call Waiting.

Maintenance

The M3000 Touchphone requires a few precautions for cleaning and operating procedures.

Cleaning

WARNING
Shock hazard and equipment damage
Never spray any kind of cleaning solvent directly on the screen or any other part of the telephone.

The touch-sensitive screen of the M3000 Touchphone can be damaged by some cleaning agents. Only use the materials specified in this publication. Prior to cleaning the screen, disable the touch-functions of the display screen to prevent accidental activation or erasure of directory entries. To clean the M3000 Touchphone, do the following:

- From IDLE or ACTIVE state screens, touch TOUCH PROFILE.
- From the TOUCH PROFILE screen, activate the CLEAN SCREEN position (right bottom corner of screen). This disables all the touch screen functions.
- Wipe the display screen clean using only a new, fresh TEXWIPE Optic Pad #TX-811. Other areas of the M3000 Touchphone can be cleaned with the same material after the screen has been cleaned.
- After cleaning the M3000 Touchphone, enable the touch functions by lifting the handset from its cradle and placing it back in its cradle. This returns the screen to the state accessed from the TOUCH PROFILE screen.

Operating

Do not place the M3000 Touchphone in a position where it is exposed to direct, unfiltered sunlight for prolonged periods of time to prevent damage to the LCD beneath the touch surface.

Only use fingers to operate the touch positions on the M3000 Touchphone display screen. Do not use a pencil or ball-point pen because sharp, hard objects may scratch or otherwise damage the touch surface.

Automatic Set Relocation (ASR)

Automatic Set Relocation (ASR) allows a telephone user to move IVD telephone sets from one location to another without the intervention of service personnel. The ASR process involves two steps.

The first step is the ASR out process. This step requires the user to enter special codes and unplug the telephone set. Entering these codes causes the switch to perform the equivalent of a CKLN SERVORD command on the set. All directory numbers and features associated with the set are transferred from the old LEN to a virtual LEN (a temporary LEN). All

directory numbers and features are deleted from the old LEN and the old LEN state is set to hardware assigned software unassigned (HASU).

The second step of the process, ASR in, requires the user to plug the set into any LEN in the HASU state that supports an IVD set. The user goes offhook or presses the primary directory number (PDN) key and dials the special ASR in code. This causes the switch to perform the equivalent of a CKLN SERVORD command on the set again. All directory numbers and features associated with the set are transferred from the virtual LEN to its new location.

This feature provides three advantages over the previous system. First, it avoids the loss of telephone service due to telephone service being in one location and the set in another location. Second, it reduces the workload of the service personnel. And finally, the SERVORD command CKLN provides the user with the ability to complete the ASR in process.

Prior to invoking the ASR process, the following tasks must be accomplished to allow the ASR to function.

- Feature translators ASRI and ASRO must be added to Tables IBNXLA and XLANAME.
- To use authorization codes, the codes must first be defined in Tables AUTHCODE and AUTHPART.
- Table WRDN must be datafilled to accommodate up to 160 specific ASR DNs that may be added to the table.
- To enable a user to relocate a telephone set back into the system, the system must create a temporary datafill allowing the user to receive dial tone and dial the ASR in code. To accomplish this, the system must have a directory number to use, as well as having a customer group set aside for ASR in use, as described in the following:
  - One directory number (DN) must be set aside for ASR in use only. One DN must be set aside for each set that is relocated at the same time as other sets are relocated. Up to 1023 DNs may be relocated at the same time. Therefore, up to 1023 DNs must be set aside for ASR use.
  - A special customer group must be identified for ASR in use only. This customer group is entered in the system like any other customer group. However, this special ASR customer group must also be identified in Table OFCVAR for the entry ASR_CUSTGRP. If the customer group is not identified for ASR_CUSTGRP, then no sets can perform the ASR in or ASR out process.

Note: It is recommended that the customer group is established so that the user can only dial the ASR in code. If the user is allowed to perform normal telephone functions with the temporary datafill, there is no incentive for the user to perform the ASR in process. If every user who performs the ASR out process decides not to bring their set back into service by performing the ASR in process, the maximum number of sets allowed in the ASR out state would be reached quickly.

- The customer group identified in ASR_CUSTGRP is used for the temporary datafill in Table KSETLINE along with a SUBDRP of 0 and an NCOS of 0.

- The ASR feature is assigned on a customer group basis. Each customer group allowed to perform ASR must have an entry in Table CUSTHEAD identifying the ASR feature translator.

For a successful relocation, the new location must be equipped and datafilled with the appropriate card type (8X47BA) in Table LNINV.

ASR process

To perform the ASR out process, follow the steps in Procedure 8-5. To perform the ASR in process, follow the steps in Procedure 8-6.

If the user forgets the personal identification code in Procedure 8-5 Step 5, a service personnel can use the QUERY command ASRSHOW, based on the PDN of the set, to find the identification number dialed by the user.

If an error is made during the code collection, the user presses the asterisk (*) key to restart. However, if treatment has been given, pressing the asterisk does not allow the user to reenter the digits for that step. The user must disconnect and try the ASR process again.

Displays associated with IVD sets are not used for any ASR processing instructions.

Neither the ASR out nor the ASR in process is available during an image. If the user attempts to perform the ASR process, treatment is given.

If a user mistakingly performs the ASR out process, only the service personnel can return the LEN to service by:

- accessing Table ASRTABLE and deleting the entry corresponding to the personal identification code entered by the user
- accessing the LTP level of the MAP workstation and BUSY the user’s line before returning it to service

Procedure 8-5
ASR Out Process

1 Place the set offhook with the PDN.

Response: Dial tone occurs.

2 Dial ASR out code (datafilled in Table IBNXLA).

Note: Treatment is given when attempting to dial the ASR out code on a secondary DN of the set.

Special dial tone occurs.

3 Dial required ASR authorization code.

Response: Special dial tone occurs for successful authorization. The first invalid code results in dial tone. Treatment is given for the second invalid authorization code.

4 Dial required Personal Authorization Code

Response: Special dial tone occurs for successful authorization. The first invalid code results in dial tone. Treatment is given for the second invalid authorization code.

5 Dial 6-digit ID code.

Note: Remember this number. It is used again in Procedure 8-6.

Response: Dial tone occurs for duplicate ID codes. Confirmation tone results for successful authorization and the system disconnects the call. The LEN associated with the set and the LEN of the associated data device are taken out of service by setting the line states to INB. The set's datafill is moved from the old LEN to a virtual LEN.

6 Unplug the telephone set.

7 Take the set to its new location.

Procedure 8-6
ASR in process

1 Plug the set into any properly equipped jack. See the following warning.

Response: System recognizes the set and datafills new LEN with temporary datafill.

WARNING
Telephone set damage
If the set is plugged into a wrong jack several things could happen.

1. If the jack belongs to a non-IVD line card an IVD set is plugged into this jack, damage to the digital set or line card or both may result.

2. If the jack does belong to an IVD line card and the line is already datafilled, the user may receive no dial tone (if the jack is out of service) or may receive normal dial tone (if the jack is in service).

Only plug the set into an IVD line card (8X47BA).

2 Wait 30 seconds before proceeding to Step 3.

3 Lift handset of the telephone set.

Response: Stuttered dial tone occurs.

Note: If no dial tone occurs, release the call and try again. If no dial tone again, contact the system administrator.

4 Dial ASR in code (datafilled in Table IBNXLA).

Response: Special dial tone occurs.

5 Dial the 6-digit ID code specified in Procedure 8-5, Step 5.

Response: Confirmation tone occurs for successful code. Dial tone results for the first invalid code and treatment is given for the second invalid personal ID code.

6 Wait 1 minute before attempting to use the telephone set or the corresponding data device.

Response: System is moving the datafill for the telephone during this time from the virtual LEN to the new LEN.

ASR audit

If a user performs the ASR out process and takes the telephone set to an empty LEN and plugs the set in, the ASR process creates temporary datafill. If the user does not perform the ASR in process, the temporary datafill is deleted by an ASR audit, which is run once a day. This audit searches Table IVDINV for ASR created entries. When it finds one, it deletes the directory number and line information from the corresponding entry in Table KSETLINE and then removes the ASR entry in Table IVDINV.

To allow flexibility in executing this audit each day, office parameter, ASR_AUDIT_TIME, in Table OFCVAR is provided. It is recommended that this audit be executed during non-peak hours. It is also recommended that the ASR audit not be executed during the time of the CC REXX or XPM REXX tests. These tests may affect the audit. The default time for the audit is 1:00 a.m.

Keyboard dialing

Operation

Do the following to prepare for operation:

- turn the terminal power on
- set the terminal on-line
- select the desired data rate

Two types of keyboard dialing are possible: Touch Asynchronous Data Option (TADO) Keyboard Dialing (KBD) and Extended Hayes Keyboard Dialing. The type of keyboard dialing is determined by the characters used to set autobaud and autoparity.

- To initiate TADO KBD, type a period (.) followed by a carriage return.
- To initiate Hayes Keyboard Dialing, type “AT” followed by a carriage return.

TADO KBD

Successful KBD initiation is indicated by a menu display on the terminal screen. A selection can be made from the menu and a connection can be established, after responding to any prompt. Distinct prompts are provided at each stage of the call setup to enable the user to take proper action.

KBD features

KBD supports the following calling features:

- calls to a local or remote host
- Autodial
- Speed Calling
- Resource Call (modem pooling)
- Ring Again
- automatic answering of incoming calls

Other associated KBD-supported functions are as follows:

- updating the Autodial number and Speed Calling list
- setting/resetting the remote loopback status
- cancellation of a pending Ring Again request
- status/data query
- setting the answer mode (manual or auto answer)

These KBD features are datafilled in the same way as data units. For information on how to fill the data tables, refer to *Digital Line Module (DLM) Reference Manaual,* 555-4001-101.

Keyboard dialing menus

Main menu

The main menu is displayed when the terminal is properly set up for operation and no KBD call is in progress. This menu contains feature operation selections and instructions. Functions can be selected by entering the letter representing the function required. For an example of the main menu format, see Figure 9-1.

Modify menu

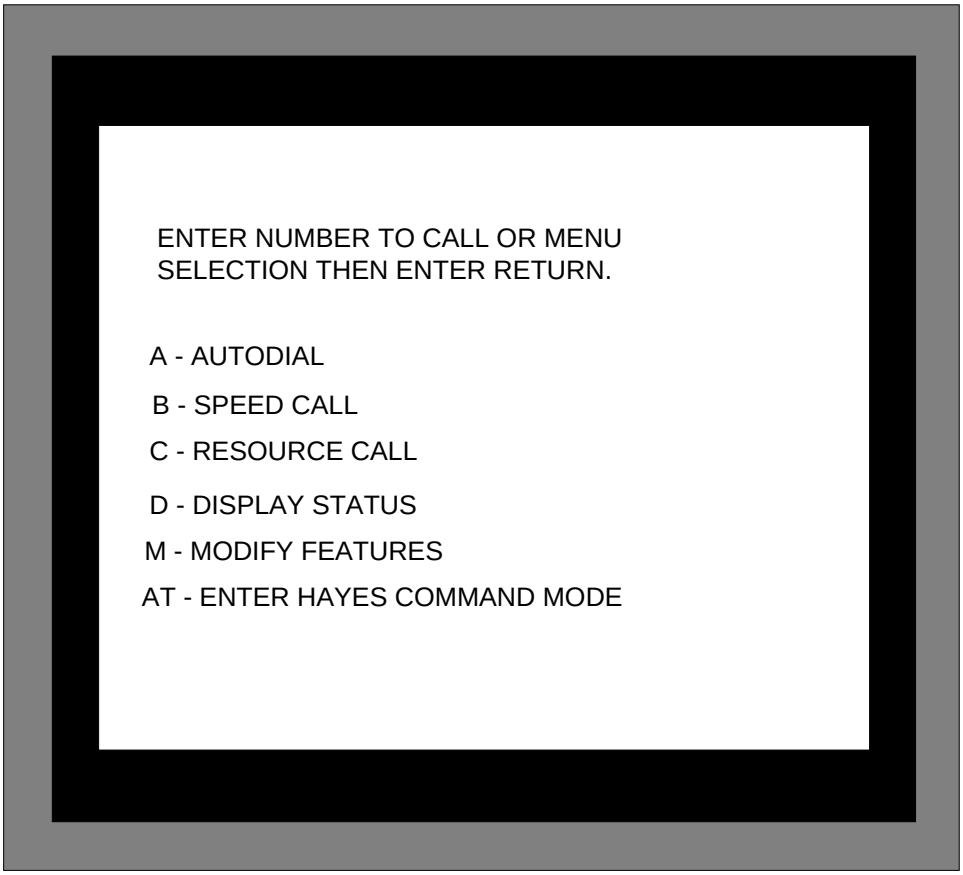
The modify menu is displayed when the M (Modify Features) function is selected from the main menu. For an example of the modify menu, see Figure 9-2.

User input characteristics

User KBD input must conform to the following characteristics:

- Input can be in upper or lower case. All input is echoed to the terminal (appears on the screen).
- Input in response to prompts for numbers must be numeric.
- Invalid input results in a prompt asking the user to re-enter the input.
- Input can be edited by using the Backspace key (ASCII 08) or the @ key.
- The Delete key can be used to delete the entire input line.
- The maximum number of characters allowed before a carriage return is 40. Exceeding this number of characters results in a re-prompt.
- Input of more than one menu selection on a line is not allowed. A terminal beep sounds and a backspace results if this occurs.
- The input session can be aborted by using a Control- and Z-key combination (CTRL-Z).

Figure 9-1xxx
Main Menu

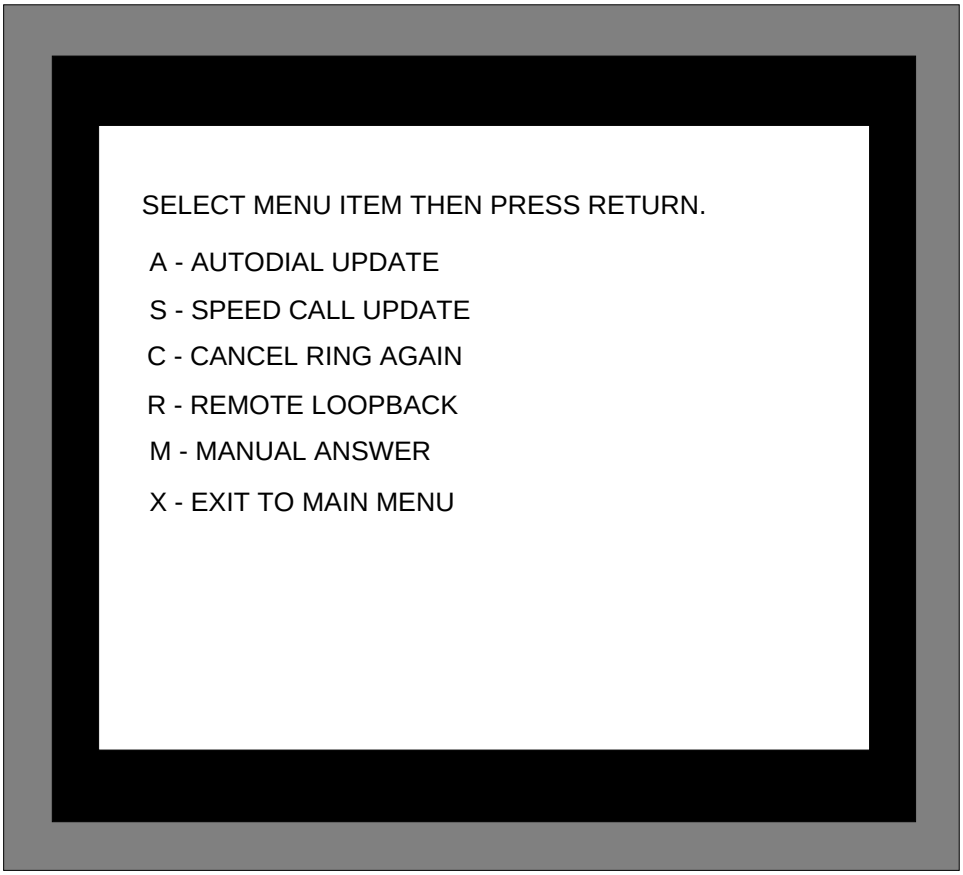


Prompt message characteristics

Prompt messages have the following characteristics:

- All prompts are in upper case.
- All prompts are preceded by a line feed.
- Prompts requiring user input are followed by a colon (:) and three spaces.
- Other prompts end with a carriage return and a line feed.

Figure 9-2xxx
Modify menu



Call disconnection

During call setup, a KBD call attempt can be aborted by using CTRL-Z. A prompt message is displayed to confirm the aborted call attempt.

After a call is established and KBD is not in operation, a data call is disconnected by one of the following actions:

- Enter three plus signs (+++) in succession (no spaces). The three plus signs must be preceded and followed by at least 1 second of no data entry. The time between entry of succesive plus signs must not exceed 1 second.
- Log off from the host.
- Place the ON/OFF-Line switch in the OFF position.
- Power off the terminal.

Keyboard feature operation

Procedures 9-1 through 9-14 present dialing procedures for KBD operation.

Note: (**CR**) indicates a carriage return in the following procedures.

Use Procedure 9-1 for both local and remote data calls.

Procedure 9-1
Place local or remote data call

1 Enter **nnnnn (CR)** where nnnnn is a Directory Number: 24 digits maximum.

Screen Display from Main Menu: Calling (nnnnn)

Screen Display from Main Menu: CONNECTION IN PROGRESS

System Response: Ringing occurs at the local set or termination occurs on an outgoing trunk.

Use Procedure 9-2 for modem pool calls. Modem pool feature activation codes are assigned locally and designate the type and speed of modem used.

Procedure 9-2
Place resource call

1 Enter **R (CR)** to select resource cell.

Screen Display from Main Menu: ENTER PREFIX THEN PRESS RETURN.

2 Enter **pp (CR)** for modem pool feature activation code.

Screen Display from Main Menu: MODEM RESERVED, ENTER NUMBER THEN PRESS RETURN.

Response: The modem pool member is reserved, but not yet connected.

3 Enter **nnnnn (CR)** . User enters Directory number (DN).

Screen Display from Main Menu: CALL CONNECTED. SESSION STARTS.

Response: System establishes data call.

Use Procedure 9-3 to activate Ring Again (RAG). When a local data call is dialed and the destination is busy, the prompt shown in Step 1 is displayed.

Procedure 9-3
Activate ring again

1 **Screen Display from Main Menu:** BUSY. DO YOU WISH TO RING AGAIN? TYPE **Y/N**.

or

Screen Display from Main Menu: BUSY. PREVIOUS RING AGAIN ACTIVE, REPLACE? TYPE **Y/N.**

Response: RAG has previously been activated against this number.

2 Enter **Y (CR)**

Screen Display from Main Menu: RING AGAIN PLACED, CALL RELEASED.

Response: User activates RAG, and the call is released.

or

Enter **N (CR)**

Screen Display from Main Menu: CALL RELEASED.

Response: RAG is not activated.

3 **Screen Display:** MAIN MENU

Response: System displays the main menu.

Use Procedure 9-4 to recall a previously busy station with RAG activated against that station. The prompt shown in Step 1 is displayed when the called station becomes idle.

Procedure 9-4
Recall ring again

1 **Screen Display from Main Menu:** DATA STATION NOW AVAILABLE. PLACE CALL? TYPE **Y/N**.

Response: Both stations are idle, and RAG has been activated. A terminal beep also sounds to alert the activating station user.

2 Enter **N (CR)**

Screen Display: Main Menu

Response: RAG times out.

or

3 Enter **Y (CR)**

Screen Display: CALLING nnnnn

Response: nnnnn = called RAG station.

Screen Display: CONNECTION IN PROGRESS.

Response: Local data call is being placed.

Screen Display: System establishes data call.

Use Procedure 9-5 to cancel a pending RAG request.

Procedure 9-5
Cancel ring again

1 Enter **M (CR)**

Screen Display from Main Menu: Modify Menu

Response: System displays Modify Menu.

2 Enter **C (CR)**

Screen Display from Main Menu: RING AGAIN CANCELLED.

Response: System returns to Main Menu screen.

Use Procedure 9-6 to initiate a data call to a previously programmed Autodial number using KBD. (Autodial is compatible with modem pooling.)

Procedure 9-6
Activate Autodial

1 Enter **A (CR)**

Response: User selects autodial feature.

2 **Screen Display from Main Menu:** CONNECTION IN PROGRESS.

Response: System establishes data call.

Use Procedure 9-7 to program or update the data Autodial number using KBD.

Procedure 9-7
Update autodial number

1 Enter **M (CR)**

Screen Display from Main Menu: Modify Menu

Response: System displays Modify Menu.

2 Enter **A (CR)**

Screen Display from Main Menu: TYPE AUTODIAL NUMBER THEN PRESS RETURN.

Response: User selects Autodial Update feature.

3 Enter **nnnnn (CR)**

Response: User enters Autodial Directory Number (DN), 24 digits maximum.

4 **Screen Display from Main Menu:** Modify Menu

Response: System returns to Modify Menu.

Use Procedure 9-8 to dial a data Speed Call through KBD. (Speed Calling is compatible with modem pooling.)

Procedure 9-8
Activate speed call

1 Enter **S (CR)**

Screen Display from Main Menu: TYPE ACCESS CODE THEN PRESS RETURN.

Response: User selects Speed Call feature.

2 Enter **nn (CR)**

Screen Display from Main Menu: CONNECTION IN PROGRESS.

Response: User enters 1- or 2- digit Speed Call access code (nn).

Response: Ringing occurs at the local set or termination occurs on an outgoing trunk.

3 **Screen Display from Main Menu:** CALL CONNECTED. SESSION STARTS.

Response: System establishes data call.

Use Procedure 9-9 to add or update the Speed Call list for data calls. Either 1- or 2-digit access codes can be used.

Procedure 9-9
Update speed call list

1 Enter **M (CR)**

Screen Display from Main Menu: Modify Menu.

Response: System displays Modify Menu.

2 Enter **S (CR)**

Screen Display from Main Menu: TYPE ACCESS CODE THEN PRESS RETURN.

Response: User selects Speed Call Update feature.

3 Enter **nn (CR)**

Response: User enters 1- or 2-digit access code.

4 **Screen Display from Main Menu:** TYPE SPEED NUMBER THEN PRESS RETURN.

5 Enter **nnnnn (CR)**

Response: User enters Speed Call directory number.

6 **Screen Display from Main Menu:** Main Menu

Response: System returns to Main Menu.

Use Procedure 9-10 to verify the integrity of the data and signaling channels of the data loop. When the user activates Remote Loopback (RLB), the user's data loops through the called data device's RS-232-C interface back to the user's Data Terminal Equipment (DTE). After RLB is set, the user's next data call character input echoes back to the user's screen, which verifies proper operation of the data loop.

Loopback tests can be made over digital trunks, but cannot be used with modem pooling. RLB must be set before the data call is placed.

Procedure 9-10
Set or reset remote loopback operation

1 Enter **M (CR)**

Screen Display from Main Menu: Modify Menu

Response: System displays Modify Menu.

2 Enter **R (CR)**

Screen Display from Main Menu: REMOTE LOOPBACK? TYPE **Y/N.**

Response: User selects Remote Loopback feature.

3 Enter **Y (CR)**

Response: User sets RLB.

or

Enter **N (CR)**

Response: User clears RLB.

4 **Screen Display from Main Menu:** Modify Menu

Response: System returns to Modify Menu.

5 Enter **X (CR)**

Screen Display from Main Menu: Main Menu

Response: System exits to Main Menu.

Procedure 9-11
Display status information

1 Enter **D (CR)**

Screen Display from Main Menu:
BAUD RATE: nnnn
REMOTE/LOOPBACK: TYPE Y/N
AUTO ANSWER: TYPE Y/N
RING AGAIN: TYPE Y/N

2 **Screen Display from Main Menu:** Main Menu

Response: System returns to Main Menu.

Use Procedure 9-12 to allow a user to set the data call answer mode. Answer modes can be manual or automatic.

Procedure 9-12
Update answer mode

1 Enter **M (CR)**

Screen Display from Main Menu: Modify Menu

Response: System displays Modify Menu.

2 Enter **M (CR)**

Screen Display from Main Menu: Manual Answer? TYPE **Y/N**.

Response: User selects Answer Mode Feature.

3 Enter **Y (CR)**

Response: User sets answer mode to manual.

or

Enter **N (CR)**

Response: User sets answer mode to automatic.

4 **Screen Display from Main Menu:** Modify Menu

5 **Response:** System returns to Modify Menu.

Use Procedure 9-13 when the user's answer mode is set for manual answer and an incoming data call occurs.

Procedure 9-13
Answer data call manually

1 **Screen Display:** INCOMING CALL ANSWER: TYPE **Y/N**.

Response: The DTE detects an incoming call, which is not yet connected. A terminal beep also sounds to alert the user.

or

Screen Display: UNDER TEST

Response: The calling party is testing Remote Loopback on the incoming data call loop. The TADO auto-answers the call.

2 Enter **Y (CR)**

Screen Display INCOMING CALL CONNECTED.

Response: Both terminals are compatible. System establishes data call.

or

Screen Display: INCOMPATIBLE INCOMING CALL.
CALL RELEASED **(incompatible parameter displayed)**

Response: Incoming data call connection fails because of mismatch in terminal parameters. A terminal beep also sounds to alert the user.

or

Enter **N (CR)**

Screen Display CALL RELEASED.

Response: User elects not to receive incoming data call.

3 **Screen Display** Main Menu.

Response: System returns to Main Menu.

Use Procedure 9-14 when the user's answer mode is set for Automatic Answer and an incoming data call occurs.

Procedure 9-14
Answer data call automatically

1 **Screen Display** INCOMING CALL CONNECTED.

Response: Both terminals are compatible. System establishes data call.

or

Screen Display UNDER TEST

Response: The calling party is testing Remote Loopback on the incoming data loop.

or

Screen Display INCOMPATIBLE INCOMING CALL.
CALL RELEASED **(incompatible parameter displayed)**

Response: Incoming data call connection fails because of mismatch in terminal parameters. A terminal beep also sounds to alert the user.

Keyboard dialing exceptions

Table 9-1 contains exceptions to normal KBD operating procedures including suggested corrective actions. (The Break key refers to the Control-Z sequence.

Table 9-1xxx
KBD operation exceptions

Problem	Screen Display	Corrective Action
Attempt to activate unassigned feature failed, or call attempt failed.	`NO SYSTEM RESPONSE. RESELECT:`	Key in a new selection from the appropriate menu.
Incoming or outgoing call failed because of communications incompatibility.	`INCOMPATIBLE COMMUNICATIONS PARAMETER. CALL RELEASED.`	Reenter appropriate selection or proper DN.
Dialing aborted by pressing Break key (Control Z).	`ABORTED`	No corrective action necessary. Main Menu is redisplayed.
User pressed CR only when prompted for number input.	`ABORTED`	No corrective action necessary. Main Menu is redisplayed.
User input errors committed.	`INVALID COMMAND/ENTRY. REENTER:`	Reenter appropriate selection or proper DN.
DN input times-out, or RAG activation times-out.	`CALL RELEASED`	No corrective action necessary. Main Menu is redisplayed.
RAG recall timeout occurs.	`RING AGAIN CANCELLED`	No corrective action necessary. Main Menu is redisplayed.

Extended Hayes keyboard dialing

Prompt Message Characteristics

Prompt messages are either a numeric code or word code, depending upon the value of the V parameter (see Hayes Keyboard Dialing Parameters). Hayes KBD prompts are listed in Table 9-2.

Table 9-2xxx
Hayes keyboard dialing prompts

Digit Code	Word Code	Meaning
0	OK	Command line processed without error
1	CONNECT	Data connection established
2	RING	Incoming call
3	NO CARRIER	Data synchronization lost or never found
4	ERROR	Command line error
5	CONNECT 1200	Data connection established at 1200 baud
7	BUSY	Called number busy
10	CONNECT 2400	Data connection established at 2400 baud
11	CONNECT 4800	Data connection established at 4800 baud
12	CONNECT 9600	Data connection established at 9600 baud
14	CONNECT 19200	Data connection established at 19,200 baud

User input characteristics

Hayes Keyboard Dialing input must conform to the following characteristics:

- Each command line must begin with the letters AT and end with a carriage return. If the TADO is in autobaud mode, AT is used to set autobaud and autoparity. Processing of the command line is not done until the carriage return is received.
- Input may be in either upper or lower case, but not mixed.
- Simple character editing may be done on each command using the ASCII backspace.
- Each command line can contain several commands. Each line is limited to 40 characters, excluding AT.
- Punctuation characters, like commas or parentheses, are allowed but are included in the character count of the command line. A space can also be used, but it is not counted in the character count.
- Call setup parameters may be programmed through a register set called the S-registers. (Refer to Table 9-3)

The firmware does not perform a range check on the value assigned to an S register. The range in Table 9-3 indicates only those values that give the expected results. Any other values may or may not function as desired and are not flagged as an error when the command is processed. Valid ASCII

codes range from 0 to 127. Values larger than 127 may disable the function associated with that S register. Values larger than 255 are accepted without an error, but are stored modulo 256.

Table 9-3xxx
Hayes keyboard dialing parameter registers

Register	User Input	Default	Description
S 0	0-255 rings	1	Number of rings before answer
S 1	0-255 rings	0	Counts number of rings
S 2	0-127 valid ASCII code	43	Escape code character
S 3	1-127 valid ASCII code	13	Carriage return character
S 4	0-127 valid ASCII code	10	Line feed character
S 5	0-32, 127 ASCII codes	8	Backspace character
S 7	1-255 s	30	Wait time for carrier
S 8	0-255 s	2	Pause time for comma (,) (not supported)
S10	1-255 x (0.1) s	7	Loss of carrier timeout
S12	20-255 x (0.02) s	50	Escape sequence guard time
S21			RESERVED
S22			RESERVED
S36	0, 1	0	0: No adaption 1: Adaption
S37	0-3, 5-7, 9	0	Select maximum connect speed: 0: Connect at last AT command 1-3: Connect at 300 baud 5: Connect at 1200 baud 6: Connect at 2400 baud 7: Connect at 4800 baud 9: Connect at 9600 baud
S51	0-255 x (0.25) s	16	Delay until modem pool activation

-continued-

Table 9-3xxx
Hayes keyboard dialing parameter registers (continued)

Register	User Input	Default	Description
S52	Any valid ASCII code	39	Most significant product code character
S53	Any valid ASCII code	36	Middle character of product code
S54	Any valid ASCII code	30	Least significant product code character

-end-

Hayes keyboard dialing commands

Table 9-4 provides a complete list of Hayes commands supported by the TADO.

Note: If the commands are input without a numerical parameter, it is assumed to be 0. For example, user input of ATE is interpreted as ATE0, which disables the echoing of the keyboard dialing commands.

Table 9-4xxx
Hayes keyboard dialing commands

Heading	Heading
A/	Re-execute previous command line; not preceded with the letters AT nor followed by a carriage return.
A	Go into answer mode; and attempt to go into the on-line state.
AT (CR)	Command line syntax
D	Go into originate mode; dial number that follows; and attempt to go into the on-line state.
E0	Disable character echo in the command state.
E1	Enable character echo in the command state (default setting).
H0	Go on-hook.

-continued-

Table 9-4xxx
Hayes keyboard dialing commands (continued)

Heading	Heading
I0	Request product identification code; and output contents of S registers S52-S54: Values are - 960 (Smartmodem V-series 9600) (default value) 124 (Smartmodem 1200) 240 (Smartmodem 2400 or Smartmodem V-series 2400)
I1	Returns a 2s compliment checksum of TADO Read-Only Memory (ROM)
I4	Displays a037800c004420 b100000000 (same value as Smartmodem V-series 9600 returns)
N1	TADO ignores S37; connection is attempted at the speed of the last autobaud command.
O	Go into the on-line state.
O1	Go into the on-line state.
Q0	TADO returns result codes (default setting).
Q1	TADO does not return result codes.
Sr	Set pointer to Register r.
Sr=n	Set Register r to Value n.
Sr?	Display value stored in Register r.
V0	Display result codes in numeric form.
V1	Display result codes in verbose form (as words) (default setting).
X0	Enable result codes 0-4.
X1	Enable result codes 0-5, 10-12, and 14.
X2	Enable result codes 0-5, 10-12, and 14.
X3	Enable result codes 0-5, 7, 10-12, and 14 (default setting).
X4	Enable result codes 0-5, 7, 10-12, and 14 (default setting).
&C0	Assume data carrier is always present. This command asserts the three EIA control leads CD, CTS, and DSR. This command is the default if ASSERTRTS DPOPT is datafilled for TADO.
&C1	CTS, DC, and DSR track far-end RTS. This command is the default if ASSERTRTS DPOPT is not datafilled for TADO.

-continued-

Table 9-4xxx
Hayes keyboard dialing commands (continued)

Heading	Heading
&D0	Ignore DTR. This command is the default if ASSERTDTR DPOPT is datafilled for TADO.
&D1	Assume command state when the on-to-off transition of DTR occurs.
&D2	Go on-hook when the on-to-off transition of DTR occurs. This command is the default if ASSERTDTR DPOPT is not datafilled for TADO.
&D3	Go on-hook and reset to default settings (i.e. TADO profile configuration).
&Q0	TADO ignores S37; connection is attempted at the speed of the last autobaud command.
&Q5	TADO attempts to connect at baud rate selected by S37.
&R0	CTS, CD, and DSR track far-end RTS. This command is the default if ASSERTRTS DPOPT is not datafilled for TADO.
&R1	Assume CTS is always present. This command asserts the EIA control leads CTS, CD, and DSR. This command is the default if ASSERTRTS DPOPT is datafilled for TADO.
&S0	Assume DSR is present. This command asserts the EIA control leads CTS, CD, and DSR. This command is the default if ASSERTRTS DPOPT is datafilled for TADO.
&S1	CTS, CD, and DSR track far-end RTS. This command is the default if ASSERTRTS DPOPT is not datafilled for TADO.
Z0	Reset TADO to default settings.
Z1	Reset TADO to default settings.
&F	Reset TADO to default settings.
&Y0	Reset TADO to default settings.
&Y1	Reset TADO to default settings.
-end-	

Hayes keyboard dialing feature operation

Procedures 9-15 through 9-19 present dialing procedures for Hayes Keyboard Dialing (KBD) operation.

Note: (**CR**) indicates a carriage return in the following procedures.

Use Procedure 9-15 to establish a Hayes KBD data call.

Procedure 9-15
Establish a Hayes KBD data call

1 Enter **ATD nnnn (CR)**

Screen Display: Main Menu

Response: TADO send digits when (CR) is received.

2 **Response:** System establishes network connection.

3 **Screen Display:** CONNECT

Response: System establishes data connection.

Procedure 9-16 describes an incomplete call while using Hayes KBD. Calls can fail to complete because of incompatible parameters or a noisy data path. Register S7 contains the maximum time to wait for the call to complete. If synchronization is not attained in this amount of time, the call is released.

Procedure 9-16
Incomplete call with Hayes KBD

1 Enter **ATD nnnn (CR)**

Response: TADO send digits when (CR) is received.

2 **Response:** System establishes network connection.

3 **Response:** Data connection fails.

4 **Screen Display:** NO CARRIER

Response: System releases the call.

Procedure 9-17 describes auto-answering a Hayes KBD data call. Incoming calls are answered automatically if Register S0 is set to any value between 1 and 255. This value is the number of rings before the incoming call is answered by the TADO.

Note: No audible ringing is provided by the TADO for manual or auto-answering. The RI lead of the RS-232-C connection is high for 2 seconds and low for 4 seconds. This cycle is counted like physical ringing.

Procedure 9-17
Answer a Hayes KBD data call automatically

1 **Screen Display:** RING

2 **Response:** TADO counts rings up to the value of Register S0.

3 **Response:** TADO answers the call.

4 **Screen Display:** CONNECT

Response: System establishes the data connection.

Use Procedure 9-18 to answer a Hayes KBD data call manually. If Register S0 contains 0, the TADO does not answer automatically, and the data call must be answered using the ATA command.

Procedure 9-18
Answer a Hayes KBD data call manually

1 **Screen Display:** RING

2 **Response:** TADO detects the incoming call.

3 **Response:** TADO counts rings up to the value of Register S0.

4 Enter **ATA (CR)**

Response: TADO send answers the call.

5 **Screen Display:** CONNECT

Response: System establishes the data connection.

Use Procedure 9-19 for an escape sequence for Hayes KBD. When configured for Hayes KBD, the TADO operation consists of two states: the command state and the on-line (or transparent) data state. After the call is established, the TADO enters the on-line state. To return from the on-line state to the command state, use the escape code sequence in Procedure 9-19.

Procedure 9-19
Escape Hayes KBD

1 **Response:** Wait at least 1 second after previous entry,

2 Enter **+++**

Response: Space each plus-sign entry less than 1 second apart.

3 **Response:** Wait at least 1 second before next entry,

Incoming calls

Incoming calls activate the most recently used keyboard dialing type. The prompts are transmitted at the previously detected data rate.

If autobaud is not set, the TADO acts as though it was autobauded at 19.2 kbp/s. If the terminal connected to the TADO is at any speed other than 19.2 kbp/s, then an unreadable display results because of the incompatibility of

baud rates. Autobaud the TADO immediately following any TADO installation or maintenance.

If the data rate of the DTE changes, but the autobaud is not set, an incoming call transmits at an incompatible data rate.

Call disconnection

Before establishing a data connection, the TADO is in the keyboard dialing command state even if a number is partially or completely dialed. To release the partially or completely dialed call before a data connection, enter any character or drop Data Terminal Ready (DTR) from the DTE.

Drop DTR by switching the DTR switch on the back of the DTE OFF, switching the DTE OFF, or disconnecting the RS-232-C cable from the TADO.

Once a data connection is established, follow the steps in Procedure 9-16 to return to the keyboard dialing command state, then enter the ATH command. Alternatively, release a call by dropping DTR as previously mentioned.

Ordering information

Replacement parts

The following M3000 Digital Telephones parts can be replaced in the field:

- handset
- handset cord
- line cord (both equipped with TELADAPT connectors)
- power supply/converter
- key lenses
- labels

Table 10-1 lists the available replacement parts.

If an M3000 Digital Telephone fails to function properly, or if mechanical breakage occurs, do not attempt repairs in the field. Return the unit to the manufacturer. For the proper packing procedures, refer to the chapter on “Installation procedures”.

Table 10-1xxx
M3000 digital telephone stocklist

Description	Ordering Code	Engineering Code
Telephone Assembly	A0317359	NT1F1101
Stand	P0665343	P0665343-35
Rubber Foot (4 required)	P0652773	P0652773
Handset Assembly	A0324524	NT1F04CA-03
Handset Cord (black) 6 ft (1.8 m) 12 ft (3.6 m)	 A0274215 A0274233	 H4DUQA-03 H4DUQA-03

-continued-

Table 10-1xxx
M3000 digital telephone stocklist (continued)

Description	Ordering Code	Engineering Code
Line Cord (silver satin) 6.5 ft (2.7 m) 14 ft (4.2 m)	 A0315049 A0325049	 NED2QU-87 NED2QU-87
Lens, Directory Number	P0652765	P0652765
Card, Line Designation	P0652766	P06552766
Power Supply	A0326800	A0326800
Touch Asynchronous Data Option	A0315990	NT1F10AA
-end-		

List of Terms

ASR

Automatic Set Relocation

BCS

Batch Change Supplement

CPB

Call Processing Busy

CR

Carriage Return

CRR

Call Request Retrieve

DLM

Digital Line Module

DN

Directory Number

DTE

Data Terminal Equipment

DTR

Data Terminal Ready

EDPC

Enhanced Digital Port Card

EIA

Electronic Industries Association

FCC

Federal Communications Commission

GIC

Group Intercom

HASU

Hardware assigned software unassigned

IPE

Intelligent Peripheral Equipment

IPEC

Intelligent Peripheral Equipment Column

IVD
Integrated Voice and Data

KBD
Keyboard Dialing

LCD
Liquid Crystal Display

LGC
Line Group Controller

LTP
Line Test Position

LTPLTA
Line Test Position Line Test Access

LTPMAN
Line Test Position Manual

MAP
Maintenance and Administration Position

PCM
Pulse Code Modulation

PDN
Primary Directory Number

RAG
Ring Again

RLB
Remote Loopback

RIs
Release

TADO
Meridian Asynchronous Data Option

TCM
Time Compression Multiplexing

UEM
Universal Equipment Module

VMX
Voice Message Center

XALC
Extended Analog Line Card

XDLC
Extended Digital Line Card

XMLC
Extended Message Waiting Line Card

XPEC

Extended Peripheral Equipment Controller

Meridian 1 Options 201, 211

Meridian SL-100

M3000 Touchphone Reference Manual

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules, and the radio interference regulations of the Canadian Department of Communications. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at the user's own expense.

Allowing this equipment to be operated in such a manner as to not provide for proper answer supervision is a violation of Part 68 of FCC Rules, Docket No. 89-114, 55FR46066.

The SL-100 system is certified by the Canadian Standards Association (CSA) with the Nationally Recognized Testing Laboratory (NRTL).

This equipment is capable of providing users with access to interstate providers of operator services through the use of equal access codes. Modifications by aggregators to alter these capabilities is a violation of the Telephone Operator Consumer Service Improvement Act of 1990 and Part 68 of the FCC Rules.

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