M3000 Touchphone

This chapter provides feature and specification information for the M3000 Touchphone which is now retired.

Functional description

This section provides feature and software requirement information for the M3000 Touchphone.

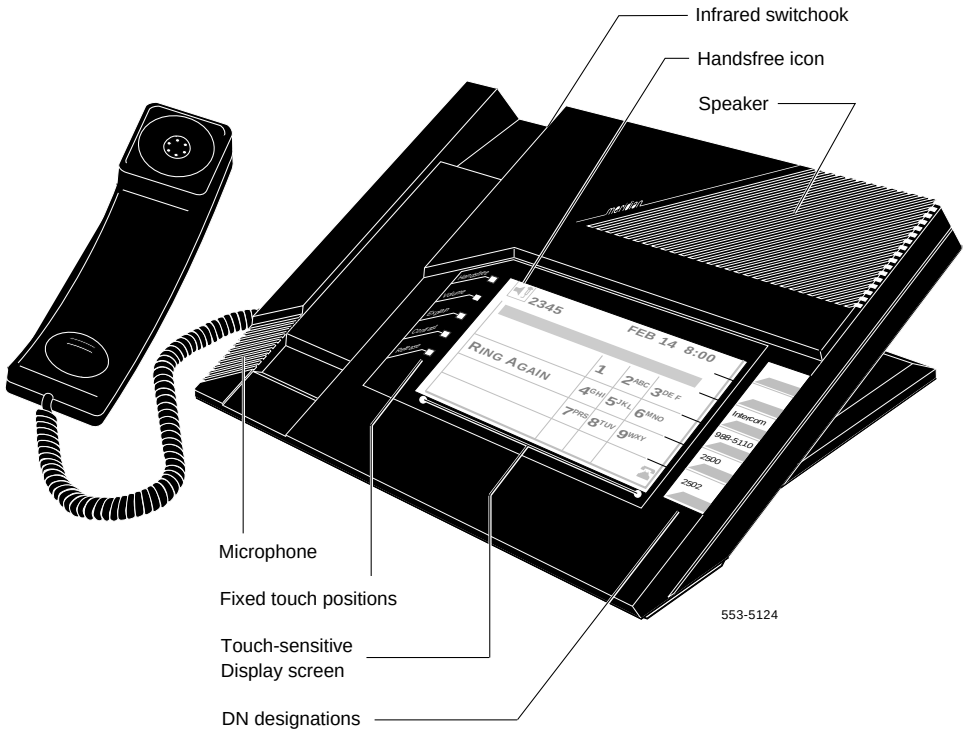
The M3000 Touchphone (see Figure 9) is a digital, integrated voice and data telephone with a touch-sensitive Liquid Crystal Display (LCD) screen, designed to meet the demanding requirements of business decision makers. All features are displayed on the screen and are accessed by touching the appropriate name on the screen. In the idle state, the touch-sensitive screen displays time and date. The Touchphone can display a number of on-line feature descriptions and operating instructions in user-friendly language.

A microphone and a speaker are built into the set to permit Handsfree operation.

The telephone interfaces with the QPC578 or the NT8D02 line card in the Intelligent Peripheral Equipment shelf or the Peripheral Equipment shelf of the Meridian 1. The QPC578 supports 16 Integrated Voice and Data ports, and the NT8D02 supports 32 Integrated Voice and Data ports. Each port supports one voice or data channel. A voice TN and a data TN are assigned in the system software.

> ***Note:*** The minimum vintage M3000 firmware that can connect to the NT8D02 Digital Line Card is 4.15.

Figure 9
M3000 Touchphone



Dimensions:

Length: 11.8 in. (302 mm.)

Width: 8.4 in. (214 mm.)

Height: adjustable

Weight: approximately 3.3 lbs. (1.5 kg.)

The M3000 is connected to the system through a two-wire loop carrying two independent 64 kbps PCM channels with associated signaling channels. One of the two PCM channels is dedicated to voice, while the other is dedicated to data traffic.

General features

The M3000 Touchphone has the following general features:

— No moving mechanical parts associated with the Touchphone.

— No dial pad, no keys, no switchhook. The keys are replaced by touch-sensitive positions on the screen, and an infrared sensor replaces the conventional mechanical switchhook.

— No additional keypads or other external add-on units for future expansion required; consequently, no change in setup or increase in desk space requirements are necessary.

— Supports multi-line access up to a maximum of six lines that can be any combination of Directory Numbers (DN), private lines, and dial intercom appearances.

— Message waiting alert (a short tone every 5 to 60 minutes) using the Touch Profile Timer Control.

— Built-in microprocessor lets you generate a local private directory where you can store frequently used names and Directory Numbers in the telephone, recall any stored information, and originate a call by touching the name on the touch screen. (The Directory feature is described later in this section.)

— Also supports a predial function and feature requests to the SL-1 system, and indicates the current telephone state to the user by means of touch-positions, icons, and textual information displayed in the Information Area. The microprocessor also maintains call duration timers, provides a time/date display, provides visible and audible feedback for user input, mutes the Handsfree microphone, controls alerting tone cadence, generates sounds, monitors the infrared switchhook, and performs diagnostics.

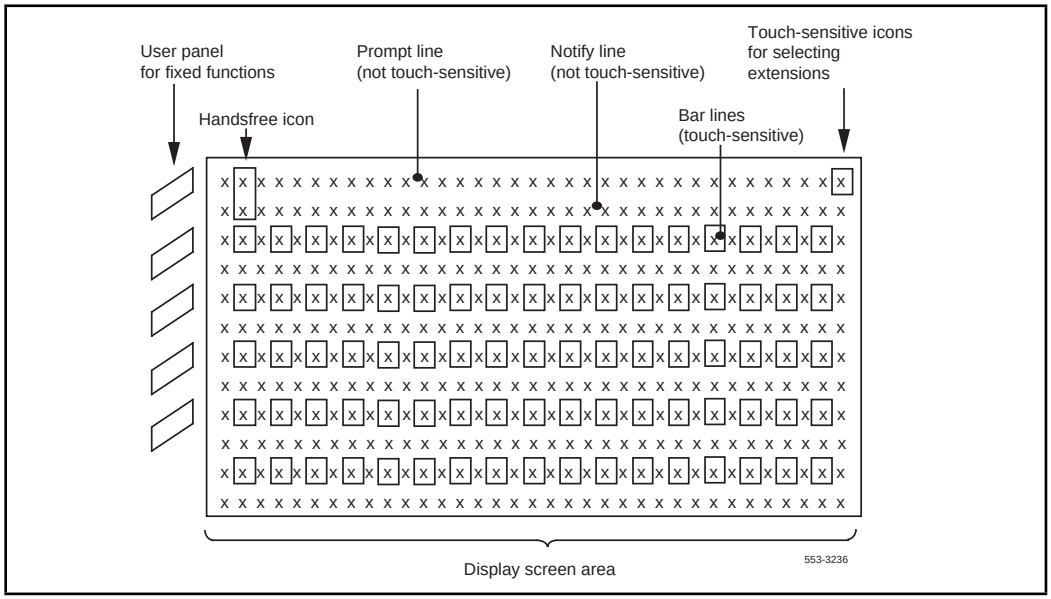
Physical characteristics

The M3000 Touchphone has the following physical characteristics.

Touch-Sensitive LCD screen

The touch-sensitive LCD screen provides access to any of the features on the Touchphone. The display screen consists of a total of 12 rows of display elements, each row with a 29-character display capacity, and is divided into specific display areas. (See Figure 10.)

Figure 10
M3000 Touchphone basic screen layout



The numerous touch-positions and icons appearing with different screen states are described in the *M3000 Touchphone user guide* (P0800569). A summary of all icon symbols used by the Touchphone is shown in Table 7.

Table 7
Icons used by the M3000

Icon	Icon state	Meaning
	On	Call active / Call Log, outgoing calls
	Flashing	Call held
	Flashing	Incoming call
	On	Call Log, answered incoming calls
	On	Call Log, unanswered incoming calls
	On	Identifies the DN associated with the call timer display
	On	Message waiting
	On	Backspace
	On	Voice call forwarded, or set made busy, or auto answer is on
	On	Data calls are forwarded
	On	Scroll down
	On	Scroll up
	On	Handsfree speaker and microphone are on
	On	Handsfree speaker on (microphone is muted)

Display screen partition

Figure 10 illustrates the display screen partitioning that is described in Table 8. The Idle screen (Figure 11) and the dial tone screen (see Figure 12) are shown as general layout examples. The actual touch positions displayed on the dial tone screen and other screens depend on the features assigned to the telephone.

There are 12 display lines per screen. Line numbers given in Table 8 are counted from the top and proceed toward the bottom of the display screen.

Table 8
M3000 display screen partition

Line number	Line type	Function of Display line	Touch sensitive	
			yes	no
1	Prompt line	Prompts user for action and/or displays call status, ringing call identification, call duration, or time and date when no other messages are shown.		x
2	Notify line (Information area)	Displays status information not requiring immediate user response (dialed digits, identification of connected call). Truncates information that goes beyond 32 alphanumeric characters (does not scroll).		x
3	Bar line	Displays screen-dependent information and touch functions (allows user to scroll directory entries, exit from local functions, move to the next step in a sequential activity by touching the OK icon, connect a waiting call).	x	
4–12	Screen	Contains the dial pad and touch locations (array of 5 x 16 touch sensitive positions), which alter with screen states. The number of touch positions used for a function is directly proportional to the size of the displayed function (a dial pad digit occupies two touch positions).	x	
1–12	Programmable touch positions	The screen touch positions located at the extreme right (farthest away from the handset) remain outside the 29-character wide lines and are reserved for icons and labels identifying telephone extensions.	x	
1–12	User Panel	The touch positions located at the extreme left (closest to the handset) of the screen are outside the display screen area and are used to access fixed functions, which are identified in print on slanted lines between the touch-sensitive positions and the handset.	x	

Figure 11
M3000 idle state screen

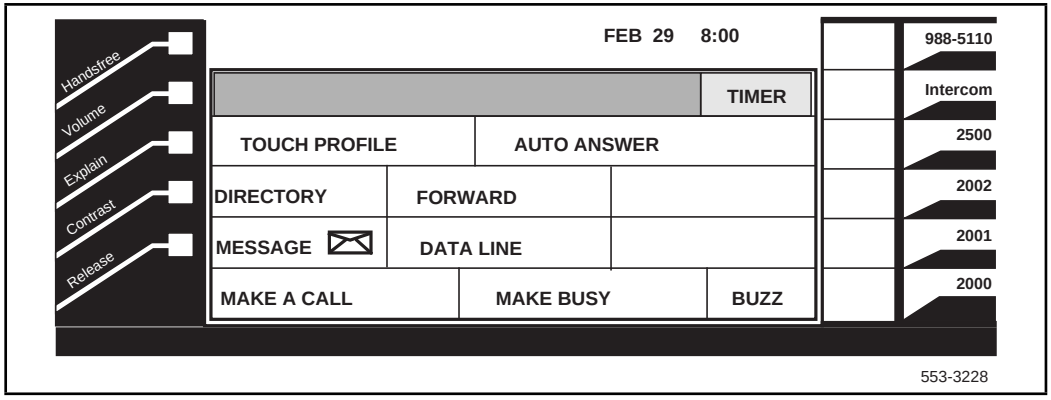
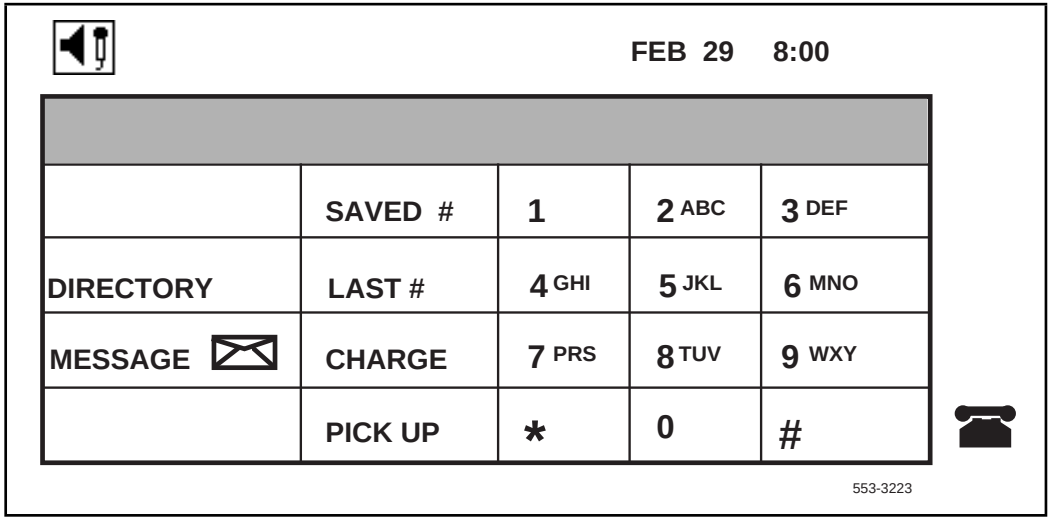


Figure 12
M3000 dial tone screen



User panel

The left-most area of the screen contains the user panel. The user panel consists of five fixed-touch positions:

— Handsfree

— Volume

— Explain

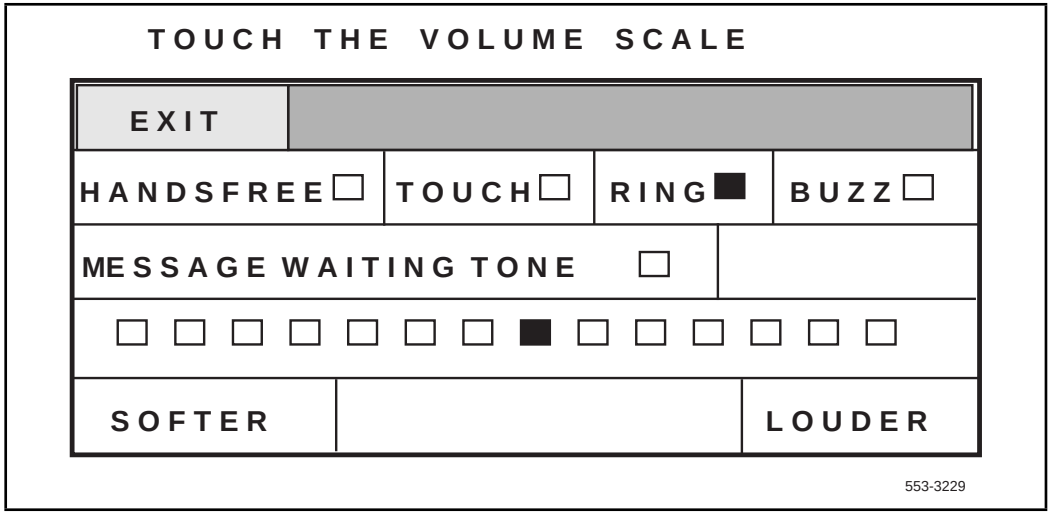
— Contrast

— Release

Handsfree key You can make a Handsfree call on your prime DN by pressing this position or on any free extension by touching the extension area without lifting the handset. If Handsfree is active, touching this position mutes the microphone, so the party at the far-end cannot hear you. Touch Handsfree to activate the muted microphone.

Volume key You can adjust the volume during any voice call or from the Idle screen by pressing this position. Figure 13 shows the volume screen.

Figure 13
M3000 volume state screen

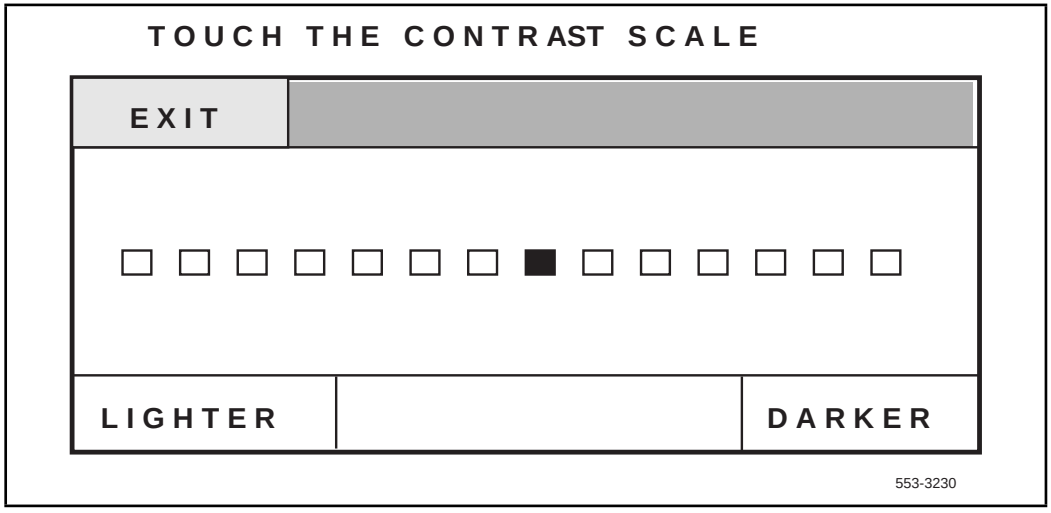


Adjust volume up or down by touching the select-scale. You can also make incremental volume adjustments by pressing the “Softer” or “Louder” touch-sensitive areas displayed on the screen. Touch the “Exit” position on the volume screen to save the changes and return to the previous screen state.

Explain You can receive up to eight lines of help text on the screen using this fixed-touch position. First touch Explain, then touch the item on the screen that needs to be explained.

Contrast You can adjust the contrast from any screen state by pressing this position. When you touch the contrast position, the screen displays a row of 14 touch positions, with the current setting selected. Figure 14 shows the contrast screen.

Figure 14
M3000 contrast state screen



Touching the contrast level scale changes the LCD viewing angle to the position touched to improve visibility while sitting or standing. Touching the “Lighter” or “Darker” touch positions adjusts the LCD viewing angle one step at a time. Touch the “Exit” position to save the change and return to the previous screen state.

Release You can disconnect any active call by simply touching this fixed touch position. The Touchphone returns to the idle state, with Handsfree turned off.

Touch profile soft key

The Touch Profile is a soft key available when the Touchphone is idle. It lets you check on local Touchphone features and make adjustments, where applicable. Below is a summary of the local Touchphone features you can access using the Touch Profile:

— List Features presents a list of common features with a check box beside each to indicate whether your Touchphone has access to it. You can display help information by touching the feature name.

— Select Ring lets you choose one of four ring sounds or make one of your own using a piano-style keyboard displayed on the screen.

— Lock Directory allows you to prevent unauthorized use of the Directory by locking it so that a password is needed to access its contents. The same password applies to the Call Log.

— Lock Call Log allows you to prevent unauthorized use of the Call Log by locking it so that a password is needed to access its contents. The same password applies to the Directory.

— Timer Control lets you toggle the Call Timer and Message Waiting Timer ON or OFF. You can also choose the time lapse between Message Waiting alerting beeps.

— Call Log control lets you choose what type of calls to log: incoming unanswered, incoming answered, or outgoing.

— Clean Surface turns off the display screen for cleaning. Lift the handset to turn on the touch surface.

Call Log

The Call Log lets you review the last 28 calls the M3000 Touchphone placed or received. You can check the time and date of any call in the Call Log by pressing the icon (telephone or bell) at the left of the screen. You can also call back an entry in the Call Log by pressing the entry and selecting an idle extension.

Each page of the Call Log shows four calls, starting with the most recent. If the Call Log is empty, the Call Log key will not appear on the set, since there is nothing to view.

You can select which types of calls are logged (incoming answered, incoming unanswered, outgoing) in the Touch Profile.

You can lock the Call Log to prevent unauthorized access. Use the Touch Profile to lock the Call Log so a password must be entered to access it. The same password is used for both the Directory and Call Log. You can lock and unlock your Call Log without affecting the Directory. If you have forgotten the password, use LD 32 ("CPWD" followed by the TN) to unlock the Touchphone. The Call Log will remain unlocked until a new password is entered.

Call Log entries that contain dialable numbers can be copied to the Directory. (See the following sections for a description of the Directory and the Directory Archiver.) While using the Paste command, you can also choose to edit the name and number.

If there is a system power failure, the contents of the Call Log are lost.

> ***Note:*** To log incoming calls, your M3000 Touchphone must have TDD (Touchphone display option) class of service set in LD 11.

Directory

The M3000 Touchphone offers a private Directory that you can access by touching the display screen. You can search for an entry in the Directory, scroll the Directory display up or down, and dial the desired DN by touching the corresponding name on the screen. You can add, change, or delete names and numbers quickly and easily.

The Directory allows 15-character names. The Directory is organized alphabetically; eight names are displayed per page. The Directory can store from 150 to 450 names, depending on the length of each entry. Multiple entries with the same phone number are allowed. The Rotate key allows the entries to be placed in the desired orientation.

You can lock the Directory to prevent unauthorized access. Use the Touch Profile to lock the Directory so a password must be entered to access it. The same password is used for both the Directory and Call Log. You can lock and unlock your Directory without affecting the Call Log. If the password is forgotten, use LD 32 (“CPWD” followed by the TN) to unlock the Touchphone. The Directory will remain unlocked until a new password is entered.

You can use more than one letter to define the search parameters. For example, if your Directory has more than one page of names that begin with the letter “S,” the Find command will allow you to enter a second letter, such as “O” to go directly to the page with names beginning with “SO.”

Version 4.15 firmware and earlier The Directory allows nine-character names. Twelve names are displayed on each page. The Find command takes you to the first page that contains names beginning with a specific letter.

Directory Archiver

The M3000 provides an option to save the contents of the Directory by using the M3000 Directory Archiver. The M3000 Directory Archiver is a small hand-held, battery operated unit that fits in the receiver cradle of the M3000 Touchphone. In addition to saving the contents of the Directory, it saves the following information:

— Last number (Redial)

— Saved number

— Password (Directory and Call Log)

— Call Log control

— Ringing tone and volume

— Volume settings

— Contrast setting

— Touch sound, beep, or click

— Number of times the telephone has been restarted (powered up)

Note: The Directory Archiver is compatible with firmware version 5.5 and later of the M3000 Touchphone.

The Directory Archiver has one push-button and one LED. Once inserted into the handset cradle, the push-button initiates an archiver session and the LED indicates proper functioning. Once the Directory Archiver gains control of the telephone, the screen changes to give you the following options:

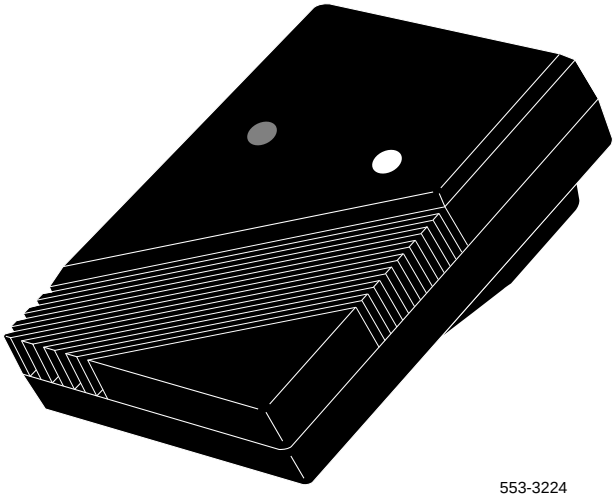
— Backup Directory

— Restore Directory

— Erase archiver

Note: Before using the Directory Archiver, release any voice or data calls and forward your telephone.

Figure 15
Directory Archiver



553-3224

Dimensions:

Length: 4.5 in (115 mm)

Width: 2.9 in (73 mm)

Height (front): 1.2 in (30 mm)

Height (rear): 2 in (51 mm)

A horizontal bar graph is displayed during an update or restore on the telephone.

> **CAUTION**
> Do not remove the Directory Archiver in the middle of operation. If you do, or if you are not sure if the operation was complete, perform the entire operation again.

A screen tells you when the operation has been completed successfully. The screen disappears after about 10 seconds, or you can acknowledge the message by touching the screen. The M3000 returns to normal operation.

Erasing the Directory and Call Log

You can erase the entire Directory and Call Log and reset all of the Touchphone settings to their defaults by touching the numbers along the bottom row of the STARTING UP screen display in the following sequence:

1 3 3 2

The entire memory store of the Touchphone is erased. All Touch Profile parameters are reset to their defaults.

Icon symbols used by the M3000 Touchphone

The Touchphone displays icons to prompt the user without involving letters and language. Table 7 summarizes the Touchphone icons.

Asynchronous Data Option

When an M3000 is equipped with the Asynchronous Data Option (ADO), you can make a data call using keyboard dialing from your attached terminal or personal computer, without interfering with voice communication.

See “Data options” on page 99 for more information on the ADO.

Software requirements

The M3000 Touchphone is supported by X11 release 7 and later software. The option number for the M3000 is package (89). The mnemonic is TSET. The DSET package (88) is also required.

Specifications

This section lists the specifications required for the M3000 Touchphone.

Environmental and safety considerations

The M3000 Touchphone meets the requirements of the Electronic Industries Association (EIA) specification PN-1361.

Temperature and humidity

Operating state:	
Temperature range	0˚ to 40˚C (32˚ to 104˚F)
Relative humidity	5% to 95% (noncondensing). At temperatures above 34˚C (93˚F) relative humidity is limited to 52 mbar of water vapor pressure.
Storage:	
Temperature range	–30˚ to 60˚C (–22˚ to 140˚F)
Relative humidity	5% to 95% (noncondensing). At temperatures above 34˚C (93˚F) relative humidity is limited to 52 mbar of water vapor pressure.

Electromagnetic Interference

The radiated and conducted electromagnetic interference of the Touchphone meets the requirements of Subpart J, Part 15 of the FCC rules for class A computing devices.

Line engineering

The M3000 Touchphone operates through twisted pair wiring on transmission lines that comply with *Digital telephone line engineering* (553-2201-180). Table 9 lists the permissible loop lengths for the M3000 connecting to different line cards using different cable types and gauges.

Table 9
Loop lengths for Meridian digital telephones

	QPC578 A and B	QPC578 C +	NT8D02
PVC insulated cable (polyvinyl chloride)			
22 or 24 AWG	100–3000 ft. (30.5–915 m)	0–4000 ft. (0–1219 m)	0–4000 ft. (0–1219 m)
26 AWG	100–2100 ft. (30.5–640 m)	0–2600 ft. (0–793 m)	0–2600 ft. (0–793 m)

Note 1: No bridge taps or loading coils are allowed.

Note 2: Effect of line protector at MDF reduces loop length by 500 ft.

Circuit features

This section provides an abbreviated summary of circuit and circuit board capabilities. For more detailed information refer to *Meridian 1 line cards description* (553-3001-105).

The M3000 Touchphone provides integrated voice and data communications. The Touchphone communicates with the SL-1 Integrated Services Network using digital transmission over standard twisted pair wiring. The Touchphone interfaces with the Meridian 1 system through the NT8D02 or the QPC578 line card. No additional hardware is required at the line circuit to provide data communications.

Hardware capabilities

Microprocessor The Touchphone has an 8-bit CMOS microprocessor that runs at 10 MHz. This microprocessor coordinates the operation of the display screen and the touch panel. It initiates display prompts, runs features, and relays messages between the Touchphone and the system. It interfaces with all the microcircuits contained within the Touchphone.

Auxiliary Processors The Digital Set Interface Chip (DSIC) provides two-way voice, data, and signaling communications between the Touchphone and the Digital Line Interface Chip (DLIC) that resides in the line card in the system. It controls the Handsfree unit, the handset, and the Asynchronous Data Option.

Power requirements

Only one 110 V 60 Hz (in some countries 220 V 50 Hz) power supply unit is needed to supply the +5 V and ±12 V dc required to operate the Touchphone and the Asynchronous Data Option, if equipped. This power supply plugs into any 110 V (or 220 V) wall outlet and is equipped with a 4-pin keyed connector at the end of the power supply cord for connection to the Touchphone.

If the external power should fail, the M3000 loses all functions until power is restored.

A lithium battery is built into the nonvolatile RAM component that houses the Directory and other information in the M3000 Touchphone. Regardless of whether power to the Touchphone is on or off, the contents of the Directory, Speed Call list, Saved Number, and Last Number (Redial) are saved in battery-backed memory. The contents of the Call Log are lost.

The Directory Archiver runs on a 9-volt alkaline battery, good for approximately 65–75 transactions. Data is stored in EEPROM in the archiver. The Directory Archiver retains its data when the battery is removed.

> ***Note:*** Before changing the battery in the Directory Archiver, first remove excess static electricity from your body by touching any grounded metal surface or conductor.

Alerting tone characteristics

The tone frequency combinations are as follows:

Tone	Frequencies	Warble Rate (Hz)
1	667 Hz, 500 Hz	10.0
2	667 Hz, 500 Hz	2.5
3	320 Hz, 250 Hz	10.0
4	320 Hz, 250 Hz	2.5
5	user defined	custom

Archiver specifications

The radiated and conducted electromagnetic interference of the Directory Archiver meets the requirements of Subpart J, Part 15 of the FCC rules for class A computing devices.

The 9 V dc required by the Directory Archiver is obtained by one 9 V alkaline battery.

Operating temperature:

Temperature range	0˚ to 50˚C (32˚ to 122˚F)
Relative humidity	10% to 90% (noncondensing)

Storage temperature:

Temperature range	–40˚ to 70˚C (–40˚ to 158˚F)
Relative humidity	5% to 95% (noncondensing)