

HYPERCOM POINT-OF-SALE

T7 Series Hardware and Installation Manual

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Version 1.4

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This document applies to the *T7 Series Hardware and Installation*.

FCC PART 68 REQUIREMENTS NOTICE

This equipment complies with Part 68 of the FCC Rules. On the bottom of this equipment is a label that contains, among other information, the FCC Registration Number and Ringer Equivalence Number (REN) for this equipment. You must, upon request, provide this information to your telephone company.

NOTE: REN is not required for some types of analog or digital facilities.

This equipment uses an RJ11 jack.

An FCC compliant telephone cord and modular plug are provided with this equipment. This equipment is designed to be connected to the telephone network or premises wiring using a compatible modular jack which is Part 68 compliant. See installation instructions for details.

The REN is useful to determine the quantity of devices you may connect to your telephone line and still have all those devices ring when your telephone number is called. In most, but not all areas, the sum of the REN's of all devices connected to one line should not exceed five (5.0). To be certain of the number of devices you may connect to your line, as determined by the REN, you should contact your local telephone company to determine the maximum REN for your calling area.

NOTE: REN is associated with loop-start and ground-start ports. Do not use for E&M or digital ports.

If your telephone equipment causes harm to the telephone network, the telephone company may discontinue your service temporarily. If possible, they will notify you in advance. But if advance notice is not practical, you will be notified as soon as possible. You will be informed of your right to file a complaint with the FCC.

Your telephone company may make changes in its facilities, equipment, operations or procedures that could affect the proper functioning of your equipment. If they do, you will be notified in advance to give you an opportunity to maintain uninterrupted telephone service.

If you experience trouble with this telephone equipment, please contact the Hypercom Repairs Department at (602) 504-5378 for information on obtaining service or repairs. The telephone company may ask that you disconnect this equipment from the network until the problem has been corrected or until you are sure that the equipment is not malfunctioning.

This equipment may not be used on coin service provided by the telephone company. Connection to party lines is subject to state tariffs.

This telephone receiver is hearing aid compatible (if applicable).

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Introduction

This manual, *T7 Series Hardware and Installation Manual*, is a comprehensive guide to working with the Hypercom T7 Series Terminals. T7 Series refers to the Hypercom T7, T7E, T7P, T7-ES, T7Q, T7GQ, T7PG, T7P-S, T7PRA, T7PRC, and T77 series of terminals. The following printers are also covered in this document: P8S, P8F, T7P Module, T77 Modules.

Document Organization

This book is designed to provide you with information relevant to Hypercom equipment. This book is divided into three chapters:

- **Chapter 1 Equipment Information:** describes the T7 Series terminals in detail
- **Chapter 2 Equipment Installation:** describes how to install the T7 Series terminals
- **Chapter 3 Terminal Setup Procedures:** describes how to set up the T7 Series terminals

Document Conventions

This manual contains the following special terms and style conventions.

Notes

Notes are indented for emphasis, as follows:

NOTE: A note contains neutral or positive information supplementing the main text. It is often information that applies only to special cases.

Component Names

This manual uses special bold text formatting to highlight terminal key names and field description names, as follows:

Manually enter the card account number and press Enter.

The Surcharge field option increments the total purchase amount by the value set in Term-Master.

Procedures

Procedures: Numbered procedures have a special graphic appearing in the margin of the text. The words *Step-by-Step* also appear in bold at the beginning of the procedure. An example of procedure formatting follows.



Step-by-Step

To perform a procedure:

1. Follow the steps outlined in the procedure.
2. Each procedure has at least two steps.

Warning and Caution Messages

When you see a Warning message or Caution message, read it promptly and carefully before proceeding further. The format of these messages is shown in the following examples.



WARNING

Warnings provide information that is essential to the safety of the user, the equipment, or both. Failure to do as instructed may result in physical damage.

CAUTION

A caution advises users that a negative result such as a loss of data may occur if they do not follow the instructions provided.



Equipment Information

This chapter provides an overview of Hypercom's T7 Series terminals and related hardware including ports, adaptors, modems, and printers. Included are the features and benefits of the T7 Series terminals and of Hypercom's terminal management software, Term-Master.

Terminal Information

The Hypercom T7, T7E, T7P, T7GE, T7Q, T7GQ, T77F, T77S, T77T, T77GT, and T77GQT terminals, throughout this document are referred to as T7 terminals. These terminals are full-function terminals that support Draft Capture, Check Verification and Guarantee, Authorization, and Debit.

The T7 terminals incorporate proven SDLC communications technology and bit-mapped record formats to provide efficient communications, flexible message formats, remote diagnostics, network and terminal management, and downline loading of terminal software.

When communication with the host is interrupted, the terminals support off-line transaction capture. These transactions are then communicated to the host before settlement each day.

At settlement time, all terminal totals are matched with host totals. In the rare instance of non-matching totals, automatic batch upline loading allows accurate matching of terminal and host transaction details, providing rapid, automated arbitration and balancing.

Settlement functions are either password protected for manual activation or are handled automatically at a time pre-set to meet merchant needs.

The T7 terminals provide application-level statistical and diagnostic information to the host at the end of each settlement period. This information enables the network operator or processor to be actively involved in maintenance and service.

For software maintenance, the Hypercom T7 terminals use downline application loading from the Hypercom PC-based Term-Master, terminal-to-terminal loading (fast loading), or loading from the processing host.

Hypercom's Term-Master software manages the T7 terminals. Term-Master is a PC application that can store, retrieve, update, and transmit a custom configuration for any terminal in a customer's terminal population. Term-Master also handles terminal software loading using a dial-up request, remote diagnostics, and retrieval of terminal operation statistics.

For initial configuration, the terminal user enters terminal-specific information using Term-Master before the terminal goes on-line for full initialization of operating parameters from the processing host.

Terminal Keyboards

The T7 terminal keyboards have the following features:

- Telco-style 12-key numeric pad
- 23 programmable function keys
- 35-key Qwerty style on the T7Q, T7GQ, T77GQT
- 6 soft keys on the T7PG, T7GE, T77G, T77GT, T77GQT

Terminal Connection Ports

The following is a description of the ports on the T7 terminal.

Serial Port

The serial port is an RS232 Electronic Cash Register (ECR) interface, allowing the terminals to use the ECR for transaction amount entry and to print receipts. The ECR interface is not applicable for T7P terminals. The T77 terminals use an AUX 1 port for external devices.

Parallel Printer Ports

The parallel printer port supports the Model P7 and P8 printers. The P7 and P8 printers rely on the terminal's processor for its printing instructions. A parallel port on the terminal provides all signals including power.

The terminals with integrated printers do not have parallel printer ports.

LAN Port

The RS485 LAN port allows up to 16 terminals to be installed in environments using Hypercom's MiniNAC-II, NAC-1A, or NAC-6A LAN controller.

PIN Pad Port

The PIN pad port supports a range of PIN pads including Hypercom Models S7, S7-C, and S8.

PIN encryption is according to ANSI X 9.8. The capability to generate ANSI X 9.9 Message Authentication Code (MAC) is optional. The PIN pad port supports Multiple Master and working keys.

Terminal Displays

The user display is a high-contrast, liquid crystal display with LED backlight. The non-graphic display terminals use a 2-line by 20-character format. The graphic display terminals use a 128 x 64 character format.

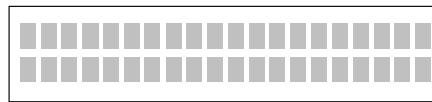


Figure 1-1. 2x20 ASCII display

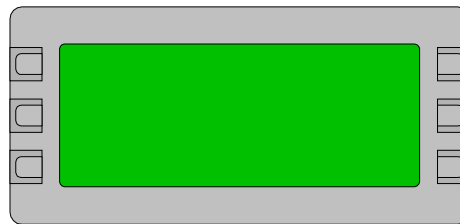


Figure 1-2. 128 x 64 graphics display

The following table lists specifications for the ASCII and the graphics displays.

Table 1-1. LCD display specifications

Display Specifications	
Type	LCD
Response time	180 ms
Character matrix	5 x 7 dot matrix
LCD type	Transmissive
Backlight	LED
Character size	3.2 x 5.55 mm
Character set	ASCII
Duty cycle	1/16
Contrast	1/6
View angle	30 degrees

Terminal Modem

The internal modem, compatible with the Bell 212A modem and the CCITT V.22 interface, provides for asynchronous or synchronous operation at 1200 BPS. An optional 2400 BPS, V.22bis, internal modem is available. The modem is suitable for both dial and leased-line operation.

Terminal Power Adaptors

A single AC Adaptor, which delivers +24 Vdc1A, supplies the terminal and printer power.

Use the following power supplies for the appropriate terminals.

Table 1-2. Terminal power supplies

Terminal model	Power supply
T7P series only (non-graphic): WLT-2408-1	AC Input: 85V ~ 130V/60 Hz, 800 mA DC Output: 27V-0.8A, 22Wleased-line
All other terminals: SNP-T109 SNP-Q319-H	AC Input: 50-60 Hz (Universal Input), 115V2/1A or 230V ~ 10.5A DC Output: V1+24V--/1A

The T7PRC terminal contains two separate power supplies: 24 volts for the terminal and 12 volts for the CDPD Modem mounted in the box under the terminal.

Transactions and Functions

The T7 Series terminals support the full transaction set required for authorization, draft capture, debit, check verification and guarantee, proprietary cards, and mail and phone.

Term-Master supports automated terminal configuration, terminal interrogation, automated program changes, and merchant installation.

Terminal Initialization

Automated Terminal Configuration is downloaded from the host or from the Hypercom Term-Master. Term-Master terminal profiles are downloaded through terminal initialization to meet the specific requirements of merchant categories such as restaurants (tips), retail, supermarkets, and the hospitality industry.

Terminal Diagnostics

Term-Master supports terminal interrogation and the reporting of status and statistics such as response time measurements, communication errors, re-dials, card-read errors, and password review.

Application Program Changes

Program changes are automated and downloaded through either a host-resident process or Term-Master.

Features

Financial Integrity

The T7 Series terminals generate automatic reversals to achieve total financial transaction integrity. These reversals ensure that communications and processing errors do not result in lost transactions, duplicate processing, or the failure of terminals to balance. The T7 Series terminals also enable simple terminal balancing and settlement, while eliminating network overloads caused by end-of-day batch transfers.

Fast Response Times

The fast response time of the T7 Series terminals is the direct result of the efficient SDLC protocol, which permits pre-dialing and message compression. At a speed of 1200 BPS, EFT messages of 150 characters are transmitted in 0.8 seconds, increasing throughput four to ten times over traditional 300 bps asynchronous terminals.

Reduced Communications Costs

The T7 Series terminals reduce transaction costs by taking advantage of recent advances in communications and networking technology. The savings are generated through short dial-up online times, local area networking, and concentration using the Hypercom regional Network Access Controllers (NACs), reducing long distance costs and improving network economics. These terminals actively interface through Hypercom's NACs with SNA, X.25, and BISYNC networks already in place.

Networking Efficiency

The T7 Series terminals are totally compatible with the Hypercom family of Network Access Controllers (NACs), providing end-to-end network optimization and concentration to keep communication costs low.

Term-Master

The T7 Series terminals support parameter and software downloading. Parameter downloading does not affect merchant totals due to the sophisticated architecture of the terminal. Term-Master collects Management Information System (MIS) statistics and can be interrogated online for speedy problem resolution. The PC-based Term-Master package supports software download requests from terminals even when the PC is unattended, ensuring terminal software is automatically kept up to date.

A merchant can install the T7 Series terminal through the menu-driven procedure that identifies the telephone line profile (tone or pulse, PABX access code), prompts for the telephone numbers for initialization and network management, and prompts for a unique terminal identification number with optional check digit. See Chapter 4, "Terminal Setup Procedures", for detailed setup and terminal initialization information.

Hardware

This section provides a description, history, and features of the Hypercom T7 Series terminals.

T7 Terminal



Figure 1-2. T7 terminal

History

- First Hypercom terminal in the T7 Series
- Changed industry standard by enabling basic functions to be a single keystroke

T7E Terminal



Figure 1-3. T7E terminal

Features

- 35-key keyboard
- Single keystroke alpha entry
- 256K and 512K memory, optional 1 MB of memory available
- Response time of less than 10 seconds for dial access
- SDLC multi-protocol support
- Peripheral support
- High-contrast 2 x 20 back-lit LCD display
- Full track 1 & 2 simultaneous card reader
- Multi-host application support
- Multi-tasking operation system
- Dial, LAN, or leased-line operation

T7P/T7P-T Terminal



Figure 1-4. T7P/T7P-T terminal

Features

- 35-key keyboard
- Single keystroke alpha entry
- 256K and 512K memory, optional 1MB of memory available
- Response time of less than 10 seconds for dial access
- SDLC multi-protocol support
- Peripheral support
- High-contrast 2 x 20 back-lit LCD display
- Full track 1 & 2 simultaneous card reader
- Multi-host application support
- Multi-tasking operation system
- Dial, LAN, or leased-line operation
- Small footprint
- Printer
 - Integrated thermal or impact printer
 - 40-column receipt
 - Thermal speed: 7 lps
 - Impact speed: 1.7 lps
 - Replaceable printer module

T7Q Terminal



Figure 1-5. T7Q terminal

Features

- Full Qwerty keyboard
- 16 soft programmable function keys
- Up to 2 MB RAM available
- Calculator style numeric keypad
- Response time of less than 10 seconds for dial access
- SDLC or asynchronous support
- Flexible message formats
- High-contrast 2 x 20 back-lit LCD display
- Multi-host programming, allows for multiple custom application
- Fully integrated debit, credit and check payment functions
- Dial, LAN, or leased-line operation

T7GQ Terminal



Figure 1-6. T7GQ terminal

Features

- Full Qwerty keyboard
- 256K and 512K memory, optional 1 MB of memory available
- 16 soft programmable function keys
- Calculator style numeric keypad
- Response time of less than 10 seconds for dial access
- SDLC or asynchronous support
- Flexible message formats
- High-contrast 8 x 20 back-lit LCD display
- Multi-host programming, allows for multiple custom application
- Fully integrated debit, credit and check payment functions
- Dial, LAN, or leased-line operation

T7GE Terminal



Figure 1-7. T7GE terminal

Features

- 35-key keyboard
- Single keystroke alpha entry
- 256K and 512K memory, optional 1 MB of memory available
- Response time of less than 10 seconds for dial access
- SDLC multi-protocol support
- Peripheral support
- High-contrast 8 x 20 back-lit LCD display
- Full track 1 & 2 simultaneous card reader
- Multi-host application support
- Multi-tasking operation system
- Dial, LAN, or leased-line operation

T7P-S Terminal



Figure 1-8. T7P-S terminal

Features

- 35-key keyboard
- Single keystroke alpha entry
- 256K and 512K memory, optional 1 MB of memory available
- Response time of less than 10 seconds for dial access
- SDLC multi-protocol support
- Peripheral support
- High-contrast 2 x 20 back-lit LCD display
- Full track 1 & 2 simultaneous card reader
- Multi-host application support
- Multi-tasking operation system
- Dial, LAN, or leased-line operation
- Small footprint
- Printer
 - Integrated printer
 - 40 column receipt
 - Speed: 1.7 lps
 - Replaceable printer module

T7PRA Terminal



Figure 1-9. T7PRA terminal

The T7PRA terminal uses a cellular service with a unique cellular phone number and an Electronic Serial Number (ESN).

Features

- 35-key keyboard
- Single keystroke alpha entry
- 256K memory, optional 1 MB of memory available
- SDLC multi-protocol support
- Peripheral support
- High-contrast 2 x 20 back-lit LCD display
- Full track 1 & 2 simultaneous card reader
- Multi-host application support
- Multi-tasking operation system
- Small footprint
- Printer
 - Integrated printer
 - 40 column receipt
 - Speed: 1.7 lps
 - Replaceable printer module

T7PRC Terminal



Figure 1-10. T7PRC terminal

The T7PRC uses a Cellular Digital Packet Data (CDPD) network configured to an Electronic Identification Number (EID) and an Internet Protocol (IP) address.

Features

- 35-key keyboard
- Single keystroke alpha entry
- 256K memory, optional 1 MB of memory available
- SDLC multi-protocol support
- Peripheral support
- High-contrast 2 x 20 back-lit LCD display
- Full track 1 & 2 simultaneous card reader
- Multi-host application support
- Multi-tasking operation system
- Small footprint
- Printer
 - Integrated printer
 - 40 column receipt
 - Speed: 1.7 lps
 - Replaceable printer module

T77 Terminals



Figure 1-11. T77 terminals

Features

- Fast friction, thermal, or sprocket printer
- User-friendly
- 256K and 512K memory, optional 1 MB available.
- Response time of less than 10 seconds for dial access
- SDLC multi-protocol support
- Peripheral support
- High-contrast 8 x 20 back-lit LCD display
- Small footprint
- Full track 1 & 2 simultaneous card reader
- Easy-to-change paper and ribbons
- IC card reader option
- Backwards software compatibility with T7E and T7P terminals
- Dial, LAN, or leased-line operation
- Thermal printer speed of 12 lps

T77 Terminals (continued)



T77G

T77GQT

Figure 1-12. T77 terminals

Features

- Fast thermal printer
- User-friendly
- 256K and 512K memory, 1 MB available
- Response time of less than 10 seconds for dial access
- SDLC multi-protocol support
- Peripheral support
- High-contrast 2 x 20 back-lit LCD display
- Small footprint
- Full track 1 & 2 simultaneous card reader
- Easy-to-change paper and ribbons
- IC card reader option
- Backwards software compatibility with T7E and T7P terminals
- Dial, LAN, or leased-line operation
- Thermal printer speed of 12 lps

Printers

The Hypercom new P8 family of printers offers higher performance, greater reliability, and lower operating costs, making them superior to any other printers on the market.



Figure 1-13. P8 printers

Features

- Terminal-powered printer
- Bi-directional printing
- Quiet operation
- Easy-to-load paper
- Paper-out and power indicator lights
- Extra-wide 3" paper roll
- Small footprint
- Compatible with all Hypercom T7 terminals

T7P Printer Module

The T7P offers either a friction printer module or a thermal printer module. The integrated printers return precious counter space, eliminating the power cord and cable tangle of external printers.

T7P (Friction)

The integrated friction module prints 1.5 lps, 40 columns on two-ply, no-carbon paper.

T7P-T (Thermal)

The integrated thermal module prints 7 lps, 40 columns on single-ply paper and has a scalable font.

T77 Printer Module

The integrated terminal and printer conserve precious counter space, eliminating the power cord and cable tangle of external printers.

T77F (Friction)

The integrated roll printer prints 3.1 lps, 40 columns on two-ply, no-carbon paper (3" x 100').

T77S (Sprocket)

The integrated sprocket printer prints 4 lps, 40 columns on 3" X 100" two-ply, no-carbon paper.

T77T/T77GT/T77GQT (Thermal)

The integrated thermal module prints 12 lps, 42 columns on single-ply paper and has a scalable font.



Equipment Installation

This chapter describes how to install the T7 Series terminals. Included are terminal self-test and diagnostic procedures, step-by-step instructions on how to connect printers, install paper, and replace printer ribbons for the T7 Series.

Some of the procedures in this chapter contain examples of terminal displays, indicated by text within a box.

```
[DATE] [TIME]
SWIPE CUSTOMER CARD
```

Installing the T7 Series

Installing the T7 terminal requires an operating telephone line and a convenient area for operating the terminal.

The T7 rear panel connectors include power, printer, RS232, PIN, and line ports. This does not include the T7P, T7PRC, or T77.

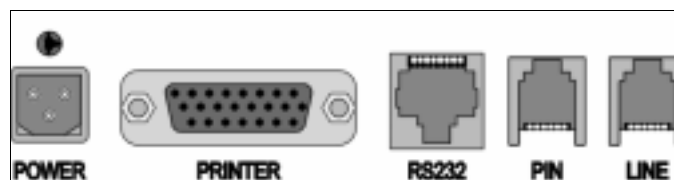


Figure 2-1. T7 rear panel connectors

The T7P, T7PRA, and T7PRC rear panel connectors include line, phone, PIN, and power ports.

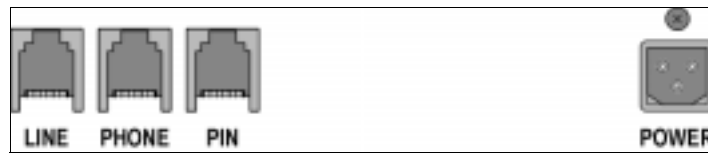


Figure 2-2. T7P rear panel connectors

The T77 rear panel connectors are identical to those on the T7P and T7PRC, but also include an AUX1 port.

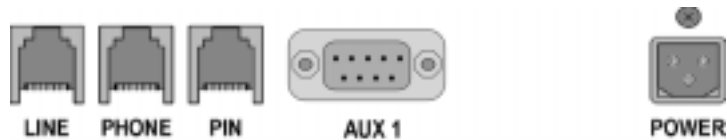


Figure 2-3. T77 rear panel connectors

The T7, T7E, T7Q, T7GQ, T7-ES, and T77 terminals have five ports that are used for installation. The T7P, T7PG, T7P-S, T7PRA, T7PRC, and T7-NT have the same ports; however, they do not include a serial port/AUX1 port.

Table 2-1. Functions of rear panel connectors

Port	Function
POWER	For power connection from adapter supplied with the terminal
PRINTER (Serial Port)	For external Hypercom printer connection
RS232/AUX1	For external check readers or other external print device connection
PIN	For external PIN pad connection
LINE	RJ11 jack for dial-up, leased-line, or LAN operation

Connecting the Telephone Line

Insert the telephone cable shipped with the T7 terminal into a dedicated analog modular telephone receptacle. Insert the other end of the telephone cable into the opening marked *LINE* on the back panel of the T7 terminal. The use of a different cable might result in improper operation. Ensure that the telephone line cable latches are firmly locked into the jacks on both the T7 terminal and wall receptacle.

After connecting of the telephone line, lift the handset, if applicable. A dial tone indicates a good line connection. Check the cable connection if a dial tone is not heard. Connecting another telephone set into the wall jack helps determine whether the telephone line is working.

NOTE: Hypercom recommends that the terminal use a dedicated telephone line.

Hypercom terminals do not function using digital phone lines, for example, PBX lines.

Turning On the Terminal

The T7 terminal operates using a +24 Vdc power cable used in conjunction with a 110-Volt grounded power receptacle.



Step-by-Step

To turn on the T7 Terminal:

1. To turn on the terminal, connect the +24 Vdc power cable from the AC adapter to the three-pin terminal power socket labeled *POWER*.
2. Plug the adapter into a 110-Volt grounded power receptacle. Be sure the connector is firmly seated. When the power is connected successfully, the terminal beeps twice and then performs a self-test and diagnostic routine.



WARNING

Disconnect the AC electric power before replacing the ribbon or printer module.
Do not use an adapter, power extender adapter, power extender cable, or an AC outlet that does not have a ground connection.
Do not disassemble the AC adapter. Only qualified service personnel should service the adapter. The AC adapter was designed for indoor use only. Do not expose to rain or snow.
Do not immerse in fluid.
The reliability of electronic equipment is significantly reduced whenever it is powered from an underground outlet. A low-power AC adapter connects power to the terminal. Connect only one terminal to the AC adapter.

Self-Test and Diagnostics

Following a successful power connection, a double beep indicates the terminal automatically initiated its self-diagnostic routine. The self-test lasts approximately four seconds and displays the software and download status of the terminal. If the terminal is loaded with an application program, the following four displays are typical.

Table 2-2. Self-test displays—software loaded into a 256K memory terminal

Description	Terminal display
T7XXXXX: Program name DLL-00: Initialization download number	[T7XXXXX] DLL-00 WAIT - SELF-TEST
The terminal displays the status of installed memory. The display indicates that the first eight 32K memory pages (256K) are installed. The letters indicate the status of the memory page.	MEMORY PAGE STATUS: -AAAAAFF---
	[T7XXXXX] DLL-00 WAIT - SELF TEST
	[DATE] [TIME] SWIPE CUSTOMER CARD

Table 2-3. Self-test—software loaded into a 512K memory terminal

Description	Terminal display
T7XXXXX: Program name DLL-00: Initialization download number	[T7XXXXX] DLL-00 WAIT - SELF-TEST
The terminal displays the status of installed memory. The display indicates that the first sixteen 32K memory pages (512K) are installed. The letters indicate the status of the memory page.	MEMORY PAGE STATUS: -AAAAAAFFFFFFFFF---
	[T7XXXXX] DLL-00 WAIT - SELF TEST
	[DATE] [TIME] SWIPE CUSTOMER CARD

A memory page may be in one of the following states.

Table 2-4. Memory page states

Status	Description
A	Active: application resident
C	Corrupt: checksum error

Table 2-4. Memory page states

Status	Description
F	Free
L	Lost
I	Inactive
U	Unknown
-	No fit—not available for use

If the terminal was not loaded with valid software, the following three displays are typical.

Table 2-5. Self-test displays—software not loaded

Description	Terminal display
T7AEPRM: Boot program name XXX: Boot program release	[T7AEPRMXXX] WAIT - SELF TEST
The memory status indicates that no program is loaded.	MEMORY PAGE STATUS: -F F F F F F F F---
PE indicates program error. In this case, the program was not loaded.	PLEASE INITIALIZE OR CALL HELP - PE

Self-Test and Diagnostic Error Displays

During self-diagnostics, the terminal checks its memory, hardware, software programs, parameter control tables, and configuration tables. If no errors were detected, the terminal idle state display appears, indicating the terminal was configured properly and was initialized with the proper software program, configuration tables, and parameter control tables.

```
[DATE]                [TIME]
SWIPE CUSTOMER CARD
```

If an error condition is detected, an appropriate error message is displayed as shown on the following page. See Chapter 3, "Configuration" for more information.

Error messages containing code PE (Program Error) indicate the terminal needs a program load. By specifying *CONFIGURE TERMINAL*, as described in the following display, the T7 also indicates the requirement for configuration before a program load can take place. See Chapter 3, "Configuration," for more information.

```
CONFIGURE TERMINAL
OR CALL HELP - PE
```

The words *PLEASE INITIALIZE* with the error code *PE* indicates the terminal was configured but requires a program load. See Chapter 3, “Load Program” for more information.

```
PLEASE INITIALIZE
OR CALL HELP - PE
```

Error messages containing the code *CO* indicate that an application program is present but the terminal requires configuration before initialization may proceed. See Chapter 3, “Configuration” for more information.

```
PLEASE INITIALIZE
OR CALL HELP - PE
```

If configuration data and a software program are loaded on the terminal but need the initialization parameters from the initialization host, a message of *PLEASE INITIALIZE* is displayed. See Chapter 4, “Initialization” for more information.

```
PLEASE INITIALIZE
```

For a complete list of error messages, see the *T7 Series Troubleshooting Guide*.

Connecting External Printers

The T7 terminal supports two external printers. See Chapter 1 “Printers” for more information.



Step-by-Step

To connect the P7E or P8 printer to the terminal:

1. Connect the printer cable to the 26-pin PRINTER connector on the back of the terminal. Be sure to secure the connector with the retaining screws.
2. Press **Function + 8 + 2 + Enter** to test printer operation. If the printer is operating properly, a test print is run.

NOTE: The terminal runs the print test (Function 82) even if the printer is normally disabled.

Setting Up the T7P/T7PRA/T7PRC Paper Bucket

The T7P, T7PRC, and T7PRC can use a paper bucket to support the paper roll.



Step-by-Step

To set up the T7P, T7PRA, or T7PRC paper bucket:

1. Close the paper bucket cover. Hold the bucket with the paper guide on top and prongs pointing down.
2. Guide the prongs down into the rectangular mounting slots of the support brackets on the rear of the T7P, T7PRA, or T7PRC terminal. Press down on the paper bucket until the prongs click and seat firmly in the slots.

Installing the T7P/T7PRA/T7PRC Paper Roll

The T7P, T7PRA, and, T7PRC can use a paper roll for receipt printing.



Step-by-Step

To install the T7p, T7PRA, or T7PRC paper roll:

1. Open the paper bucket cover and remove the paper roll.
2. Insert the spindle into the core of the paper roll. Place the paper roll in the bucket so the paper feeds from under the roll, not over the top, and has a straight-line path into the printer paper-feed mechanism.
3. Feed the two-ply paper evenly into the paper feed slot at the rear of the T7P terminal while pressing PAPER FEED.
4. When the paper appears, release PAPER FEED. Close the paper bucket cover. The printer is now ready to print receipts.

Setting Up the T7P Paper Arms Holder

To T7P can use paper arms holder to support the paper roll.



Step-by-Step

To install the T7P paper arms holder:

1. Refer to the letters *L* and *R* on each arm. Place the arm marked *L* in the left-rear support bracket of the terminal.
2. Place the arm marked *R* in the right-rear support bracket.

NOTE: Install the arms so they slant back and away from the T7P case.

3. Press each arm into its support bracket opening until you hear a click indicating the arm is firmly seated.

Installing the T7P Paper Roll with Arms

The T7P can use a paper roll with arms for receipt printing.



Step-by-Step

To install the T7P paper roll with arms

1. Place the roll paper in the holder arms so that the paper feeds from under the roll, not over the top, and has a straight-line path to the printer paper feed mechanism.
2. At the rear of the T7P terminal, feed the two-ply paper evenly in the paper feed slot while pressing **PAPER FEED**.
3. When the paper appears, release **PAPER FEED**. The printer is now ready to print receipts.

Installing the T77F and T77T Paper Roll

The T77F and T77T use a paper roll for receipt printing:



Step-by-Step

To install the T77F and T77T paper roll:

1. Place the paper roll in the bucket so that the paper feeds from under the roll, not over the top, and has a straight-line path into the printer paper-feed mechanism.
2. Feed the two-ply paper evenly into the paper feed slot at the rear of the terminal while pressing **PAPER FEED**. After the feed mechanism begins to feed the paper automatically, the paper appears at the top of the terminal.
3. When the paper appears, release **PAPER FEED**.
4. Press **Function + 8 + 2 + Enter** to perform a printer test. The printer is now ready to print receipts.

Installing the T77S Sprocket Paper

The T77S uses sprocket paper in receipt printing.



Step-by-Step

To install the T77S sprocket paper:

1. Hold the bundle of receipt paper so that the first receipt is right-side up and printed text is facing you. Place the bundle in the paper holder.
2. Pull the paper guide toward you and insert the first receipt downward in the slot between the paper holder and the paper guide.
3. Press **PAPER FEED**. After the feed mechanism begins to feed the paper automatically, the paper appears through the metal header bar. When the paper appears, release **PAPER FEED**.
4. Use the paper release lever to align the top of the colored portion of the receipt with the top of the header bar, then push the paper guide back into position.
5. Press **Function + 8 + 2 + Enter** to perform a printer test. The printer is now ready to print receipts.

Replacing the T77 Printer Ribbon

The printer ribbon and printer module are accessible by releasing the two tabs on the printer cover, located at the back of the T77F and T77S terminal, and raising the cover up.



Step-by-Step

To replace the T77 printer ribbon:

1. Remove the paper from the terminal and leave the paper cover open.
2. Disconnect the power from the T77 terminal.
3. Open the cover. Using both hands, locate the gray levers on the back of the T77 terminal and push them away from you in a downward motion.
4. Carefully remove the modular printer by pulling the printer mechanism away from you.
5. Remove the ribbon cassette by pulling the front-left corner of the ribbon upwards.
6. Tighten the new ribbon by rotating the ribbon feed roller in the direction shown by the arrow.
7. Place the cassette on the printer module to allow the ribbon to slip into the printing gap. Push down gently to lock the cassette in place.

8. To replace the modular printer, guide it into the two slots located on the bottom of the terminal.
9. Use the gray levers to guide the printer into the terminal by pulling the levers toward you.
10. Close the cover and reconnect the power supply.
11. Reload the paper and close the cover.
12. Test the printer module by executing the printer test. Press **Function + 8 + 2 + Enter**.

Replacing the T7P Printer Ribbon

The printer ribbon is accessible by opening the cover.



Step-by-Step

To replace the T7P printer ribbon:

1. Remove the paper from the terminal.
2. Disconnect the power from the T7P terminal.
3. Open the cover and remove the ribbon from the printer mechanism. Press down on the portion of the ribbon cassette labeled **PUSH**. The opposite side of the cassette snaps up. Remove the cassette.
4. Tighten the ribbon by rotating the ribbon feed roller in the direction shown by the arrow. Place the cassette on the printer module to allow the ribbon to slip into the printing gap.
5. Push down gently to lock the cassette in place.
6. Reconnect the power.
7. Press **Function + 8 + 2 + Enter** to execute the printer test.

Replacing the T77 Modular Printer

The T77 terminal uses a modular printer. This modular printer can be replaced by following the steps below.



Step-by-Step

To replace the T77 modular printer:

1. Remove the paper from the terminal, and leave the paper cover open.
2. Disconnect the power from the T77 terminal.
3. Open the cover. Using both hands, locate the levers on the back of the T77 terminal and push them away from you in a downward motion.
4. Carefully remove the modular printer by pulling the printer mechanism away from you.
5. To replace the modular printer, guide it into the two slots located on the bottom of the terminal.
6. Use the gray levers to guide the printer into the terminal by pulling the levers toward you.
7. Close the cover and reconnect the power supply.
8. Reload the paper and close the cover.
9. Test the printer module by executing the printer test. Press **Function + 8 + 2 + Enter**.

Replacing the T7P/T7P-T Modular Printer

The T7P and T7P-T terminal use a modular printer. This modular can be replaced by following the steps below.



Step-by-Step

To replace the T7P or T7P-T modular printer:

1. Remove the paper from the terminal.
2. Disconnect the power from the T7P or T7P-T terminal.
3. If replacing the T7P modular printer, open the cover and remove the ribbon from the printer mechanism. See “Replacing the T7P Printer Ribbon” on page 2-11.
4. Squeeze the tab labeled *Lift Up Tab and Pull Out*. When you apply a moderate squeezing pressure to the tab while exerting a smooth, pulling pressure, the module slides free of the T7P terminal.

5. To replace the printer module, simply insert the module into the silver slot, applying moderate pressure until it is firmly seated.
6. Install the ribbon and paper.
7. Reconnect the power.
8. Test the printer module by executing the printer test. Press **Function + 8 + 2 + Enter**.

Installation Instructions

This section provides basic information for installing the T7PRA and T7PRC terminals.

T7PRA Installation

The T7PRA uses a cellular service instead of a dial line to connect to the host system. Instead of standard telephone numbers, the T7PRA terminals use a cellular phone number and serial number. Each T7PRA must have a unique cellular phone number and serial number so it can register with the cellular service.

When a transaction is initiated, the terminal connects to the cellular service and places a cellular phone call to connect to the appropriate host system. For detailed installation instructions, refer to "Installing the T7 Series" on page 2-1.

Connecting the T7PRA Antenna



Step-by-Step

To connect the T7PRA antenna:

1. Locate the 90 degree TNC antenna connector protruding from the right side of the T7PRA.
2. Thread the antenna in a counter-clock-wise direction onto the connector until it is secure.

Connecting the T7PRC Antenna

The T7PRC antenna is a magnetic mount TNC with 3 db gain on a four-foot cable.



Step-by-Step

To connect the T7PRC antenna:

1. To plug in, connect the back, open end, of the external antenna and place on the antenna connection on the back of the CDPD modem.
2. Turn the silver part of the antenna counter-clock-wise until it is secure.
3. If the antenna is too close to the CDPD modem in the terminal, the antenna creates extra noise in the modem and degrades the CDPD signal strength so the modem cannot register with the CDPD network. To minimize this noise feedback to the modem, place the antenna at least four feet away from the T7PRC terminal.

T7PRC Installation

You can use an operating telephone line for program loads and initializations. This method provides a lower-cost solution for programming purposes.



Step-by-Step

To install the T7PRC terminal:

1. Insert the telephone cable shipped with the T7PRC terminal into a dedicated analog modular telephone receptacle. Using a different cable might result in improper operation.
2. Insert the other end of the telephone cable into the opening marked LINE on the back panel of the T7PRC terminals.
3. Ensure that the telephone line cable latches are firmly locked into the jacks on both the terminals and wall receptacles.
4. Lift the handset. A dial tone indicates that the line connection is good. If there is no dial tone, check the cable connection. Connecting another telephone to the wall jack helps determine whether the telephone line is working.

The T7PRC terminal uses a Cellular Digital Packet Data (CDPD) network instead of a dial line to connect to the host system. Instead of telephone numbers, the T7PRC terminals use IP addresses. Each T7PRC terminal must have a unique IP address to register with the CDPD network. When the CDPD modem inside the T7PRC terminal is turned on, it checks the signal strength of the CDPD network. If the signal strength is adequate, the CDPD modem broadcasts its electronic ID (EID) and IP address to the CDPD network to register with the network.

If the CDPD service provider configures their system to recognize the EID and the Internet Protocol (IP) address of the CDPD modem, The CDPD network allows the CDPD modem to register. If the T7PRC terminal is not registered, it cannot communicate through the CDPD network to the other CDPD modems registered with the network. When the T7PRC terminal is registered with the CDPD network, the terminal can connect the CDPD router of the host system using the destination IP address. The terminal can then communicate with the host system. As long as the CDPD modem in the T7PRC terminal is turned on, it tries to stay registered with the CDPD network.

Turning on the CDPD Modem

Connect the +12 Vdc power supply cable from the AC adapter to the CDPD modem receptacle. Plug the three-pin plug from the AC adapter to the AC outlet. See figure 2-2 on page 2-2.



Figure 2-4. Back panel of CDPD modem

On the front of the CDPD modem a light indicates when the modem is on.

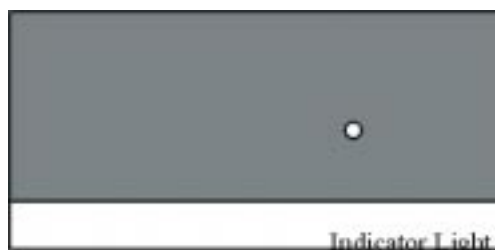


Figure 2-5. Front Panel of CDPD modem



Terminal Setup Procedures

This chapter provides setup procedures for the Hypercom T7 Series terminals, including the steps necessary to perform terminal configuration, program load, and initialization.

The procedures in this chapter contain examples of terminal displays, indicated by text within a box.

[DATE]	[TIME]
SWIPE CUSTOMER CARD	

T7 Series Setup Procedures

A number of conditions, such as a terminal shipped without a loaded application, require the following setup procedures.

Configuration

Configuration sets the parameters the terminal uses to communicate with a Term-Master. When configuration is complete, the terminal is able to receive the terminal application software or initialization options. During configuration, use the **Backspace** to erase an incorrect entry.



Step-by-Step

To set up the terminal configuration:

Step	Action	Terminal display
1	Press Function + 2 + Enter . The password is requested. Type the 4 digit password and press Enter .	MERCH PROG Enter PASSWORD
2	The Terminal ID number is displayed. This is a default number. To enter the Terminal ID number, type the appropriate 8 digit number and a modulus 10-check digit. (All terminals in a network must have unique ID numbers.) Press Enter .	TERMINAL ID NUMBER XXXXXXXX
3	Type the initialization host telephone number. When entered, this telephone number is used for initialization. Verify that this number is correct, then press Enter .	INIT. TELEPHONE NO. XXXXXXXX
4	Type the NMS telephone number used for NMS diagnostics and software downloading. Verify that the telephone number is correct, then press Enter .	NMS TELEPHONE NO. XXXXXXXX
5	Select the dial type, then press Enter .	DIAL: 0-TONE 1-PULSE 0
6	If the terminal is connected to a business PABX system, type the appropriate number, usually a 9 or none, then press Enter .	PABX ACCESS CODE
7	Press the Cancel key if all of the settings are correct, or press Enter to review the settings.	EXIT, PRESS 'CANCEL'
8	If a program load or initialization is still required, the next display indicates that the terminal is not yet ready to operate. The display indicates that there is a program error and that the terminal requires a new program. Continue by loading the program.	PLEASE INITIALIZE OR CALL HELP - PE

Load Program

Program load is required when no software is currently in a terminal. When a program load is initiated, the software application is the only part that is loaded. The merchant-specific information is loaded in a terminal through an initialization.

The terminal displays the following message.

**PLEASE INITIALIZE
OR CALL HELP - PE**

Configure the terminal properly to call for a program download.



Step-by-Step

To perform a program download:

Step	Action	Terminal display
1	Press Function + 9 + 2 + Enter, or press Initialize + Enter. This function can be password protected. If this is the case, you must enter a password before the next display appears.	PROG. LOAD CORRECT ? YES OR NO
2	Press the Enter key. The terminal dials the NMS telephone number and initiates the program load. This process takes approximately five minutes for each page. The displayed messages varies, depending on the state of the line and other conditions. The following sequence is typical on a dial line with enhanced dial messages enabled.	PROG. LOAD CHECKING LINE
	If enhanced dialing is enabled, the next eight prompts display on dial lines.	PROG. LOAD WAIT FOR DIAL TONE
	The terminal dials the host.	PROG. LOAD DIALING NOW
	The terminal waits for the host to answer.	PROG. LOAD WAITING FOR ANSWER
	The terminal initiates connection to the host.	PROG. LOAD TRAINING MODEM
	The terminal sends the information to the host.	PROG. LOAD PROCESSING NOW
	The program load begins.	PROG. LOAD LOADING MEM XX XXXX

Initialization

When a terminal receives a new program download, an initialization is required to start terminal operations. It may also be required later because of changes in the operating parameters, such as new card types or the addition of a printer. Initialization normally takes 20 to 45 seconds to complete.

During initialization, the terminal automatically connects to the initialization host to receive downline loading of the initialization parameters, known as a terminal profile, for the terminal. The initialization steps are prompted by displays.



Step-by-Step

To perform an initialization:

Step	Action	Terminal display
1	Press the Initialize key. The following display appears.	INITIALIZE CORRECT ? YES OR NO
2	Type the password and press Enter.	ENTER PASSWORD
3	Press the Enter key. The terminal connects to the initialization host. The following display appears.	INITIALIZE DIALING NOW
	This display appears only on dial lines. When the connection is secure, the terminal display indicates that the host is connected and that downloading of operational parameters is in progress.	INITIALIZE PROCESSING NOW
	When the initialization process is successfully completed, the following display appears.	INITIALIZE TRANSACTION COMPLETE

T7PRA Set Up Procedures

When loading a T7PRA terminal with an application, use DIAL mode. The initialization can be performed in cellular mode.

When providing a new cellular phone number for the terminal, the cellular service provider requires the full 11-digit serial number as displayed by the terminal. Make sure that the service provider is set up to handle the 214 prefix of the cell board serial number. Ask for the service provider System ID and whether the provider uses System A or System B. Then load the information in the cell board.

Perform the following steps to display the cell phone terminal for the electronic serial number (ESN), and display or change the cell phone cellular phone number, system ID, and system A/B setup.



Step-by-Step

To perform the setup procedures:

Step	Action	Terminal display
1	Press Function + 11 + Enter.	0-CELL CONFIG 1-CELL TEST
2	Press 0 to begin configuring the terminal.	0-CELL CONFIG 1-CELL TEST
3	The current configuration of the cellular terminal is displayed.	PHONE # XXXXXXXXXXXX ESN #XXX/XX/XXXXXX
4	Type the cell phone number, then press Enter.	CELL CONF CELL PHONE NUMBER?
5	Type the system ID, then press Enter.	CELL CONF SYSTEM ID ?
6	Type the system A/B, then press Enter.	SYSTEM 0/1-B/A ONLY 2-NORMAL 3-HOME ?1

Cell Test

This procedure is used to test the cell terminal and display the radio mode, cellular channel, and the cell strength.



Step-by-Step

To perform a cell test:

Step	Action	Terminal display
1	Press Function + 11 + Enter.	0-CELL CONFIG 1-CELL TEST
2	Press 1 to test the cellular configuration.	0-INIT 1-CMD LINE 2-SYSTEM INFO QUERY
3	Press 0 to initialize the cell board.	PLEASE WAIT
4	Press 2 to display system information.	0-INIT 1-CMD LINE 2-SYSTEM INFO QUERY
	<p>The terminal displays the following message. Descriptions of this display are:</p> <p>0825: This indicates a successful test of the ability of the cell terminal.</p> <p>aa (radio mode): This should always be 04.</p> <p>bbbb (cellular channel): This is a hexadecimal value that displays the channel the terminal has locked onto.</p> <p>cccc (cell strength): This is the cell strength of the terminal on the specific channel.</p> <p>NOTE: 0000 shows the terminal is not locked on to a channel. Anything over a 0025 in hexadecimal is a good cell strength.</p>	0825aabbbbc

T7PRC Setup Procedures

To program load or initialize the T7PRC terminal, configure the terminal with the line type appropriate for your communication setup.

Table 3-1. Line types

Line	Type
Leased-line type	Type 0
Dial line type	Type1
Tone Dial mode	mode 0
Pulse Dial mode	mode 1
LAN line type	Type 2 or 3

There are two ways to set up communications using the CDPD modem:

- ISO 8583 message formats using modem mode 0 for a dial terminal
- Async message formats using VISA I and VISA II protocols



Step-by-Step

To set up communications using ISO 8583 format messages:

Step	Action	Terminal display
1	Use Term-Master to set up the protocol and modem mode for the desired acquirer (Modem Mode 45).	
2	Use Term-Master to change the modem mode, to change the CDPD Host IP Address/Port number, and to initialize the terminal. Use the following format to enter the CDPD host IP address and the port number as the desired acquirer telephone number. Use the full 12 digits of the IP address when entering the data into the telephone number field. Each 3 digit section requires leading zeros. Example: IP address <i>198.22.44.66/1234</i> becomes acquirer telephone # <i>1980220440661234</i> .	

3	Initialize the terminal using Term-Master. Remember to perform initialization using a telephone line in dial mode. Press Initialize . The following displays appear:	INITIALIZATION CORRECT? YES OR NO
	NOTE: For the best results during connection, set the connection time-out to 12-15 seconds. Host response time-out should remain at 30 seconds.	INITIALIZATION DIALING NOW
		INITIALIZATION PROCESSING NOW
		INITIALIZATION TRANSACTION COMPLETED



Step-by-Step

To set up communications with async format messages using VISA I and VISA II protocols:

Step	Action	Terminal display
1	Use Term-Master to set up the protocol and modem mode for the desired acquirer.	
2	Use Term-Master to change the modem mode, to change the CDPD host IP address and port number, and to initialize the terminal. Use the following format to enter the CDPD host IP address and the port number as the desired acquirer telephone number. Use the full 12 digits of the IP address when entering the data into the telephone number field. Each 3 digit section requires leading zeroes. Example: IP address <i>198.22.44.66/1234</i> would be acquirer telephone # <i>1980220440661234</i> .	
3	Initialize the terminal using Term-Master. Remember to perform initialization using a telephone line in dial mode. Press Initialize . The following displays appear.	INITIALIZATION CORRECT? YES OR NO
		INITIALIZATION DIALING NOW
		INITIALIZATION PROCESSING NOW
		INITIALIZATION TRANSACTION COMPLETED

Configuration

This procedure is used to configure the CDPD modem for the proper operational mode. This option enables the user to configure the CDPD modem with the proper operational profile, to change the IP address and the CDPD modem's side preference of the CDPD modem.

Select Operational Profile

This function is used to select the operational profile.



Step-by-Step

To select operational profile:

Step	Action	Terminal display
1	Press Function + 40 + Enter.	mmm dd, yy hh:mm SWIPE CUSTOMER CARD
2	Select 1 to change the CDPD configuration.	0-CDPD PROFILE + 1-IP TEST n
3	Press 1 + Enter, or press Cancel to keep the current CDPD mode. NOTE: Mode 1.1 is preferred.	0-CDPD MODE 1.0 1-CDPD MODE 1.1
	This prompt is displayed rapidly while setting the profile.	SETTING CDPD PROFILE
	This prompt is displayed rapidly while saving the profile.	SAVING CDPD PROFILE
	This prompt is displayed rapidly while setting the mode.	SETTING CDPD MODE n.n
	This prompt is displayed rapidly while saving the profile.	SAVING CDPD PROFILE
4	Return to step 2.	ACTIVATING CDPD MODE

Enter or View Modem IP Address

This function is used to enter or view the modem Internet Protocol (IP) address.



Step-by-Step

To enter or view the modem IP address:

Step	Action	Terminal display
1	Press Function + 4 + 0 + Enter.	mmm dd, yy hh:mm SWIPE CUSTOMER CARD
2	Select 2 for IP test.	0-CDPD PROFILE + 1-IP TEST n
	This prompt is displayed while receiving the IP address.	GETTING IP ADDRESS 0
3	Press Enter to change the IP address, or press Cancel to keep the current IP address.	CURRENT IP ADDRESS 0 www.xxx.yyy.zzz
4	Type the IP address and press Enter. To type a period, press 1 and then press the # key four times. Press Cancel to keep the current IP address.	ENTER IP ADDRESS 0
5	Return to step 2.	SETTING IP ADDRESS 0

Select Side Setting

This function is used to select the side setting.



Step-by-Step

To select the side setting:

Step	Action	Terminal display
1	Press Function + 4 + 0 + Enter.	mmm dd, yy hh:mm SWIPE CUSTOMER CARD
2	Press the scroll menu (<-----).	0-CDPD PROFILE + 1-IP ADDRESS n
3	Press 3 for side.	3-SIDE 4-GET EID
4	Press one of the following, or press Cancel to keep the current side: 1: A side only 2: B side only 3: A side preferred 4: B side preferred NOTE: A only or B only is the preferred settings.	1/2-A/B ONLY 3/4-A/B PREFERRED
	The following prompt displays while setting the side.	SELECTING SIDE
5	Return to step 2.	

Display Modem EID

This function is used to display the modem Electronic Identification Number (EID).



Step-by-Step

To display the modem EID:

Step	Action	Terminal display
1	Press Function + 40 + Enter.	mmm dd, yy hh:mm SWIPE CUSTOMER CARD
2	Press the scroll menu (<-----).	0-CDPD PROFILE + 1-IP ADDRESS n
3	Press 4 for EID.	3-SIDE 4-GET EID
	The following prompt displays while receiving the EID.	GETTING EID
	Press Enter to return to step 3.	CDPD MODEM EID: nnnnnnnnnnnnnn

CDPD Register Status

This function is used to view the CDPD registration status.



Step-by-Step

To get the CDPD register status:

Step	Action	Terminal display
1	Press Function + 40 + Enter.	mmm dd, yy hh:mm SWIPE CUSTOMER CARD
2	Press 1 + Enter.	1-STATUS 2-PING 3-RST CDPD 4-SW REL
3	Press 1 + Enter.	1-REGSTAT 2-SIGSTAT 3-CONNSTAT
	The following prompt displays while registering the status.	SETTING ECHO MODE
	<p>Register status is updated once each second. A setting of 161,000,005 means the modem is registered.</p> <p>NSTAT Network Status, S register 57</p> <p>161: registered 160: not registered, signal strength good 128: modem is not set for auto registration, do Select Operational Profile 032: not registered, signal strength not good 000: configured wrong</p> <p>ESTAT Extended Network Registration Error Codes, S register 56</p> <p>000: no error code 001: registration denied 002: service currently unavailable 003: invalid NEI (IP address) 004: insufficient authentication credentials 005: unsupported authentication credentials 006: NEI exceeded use limitations 007: service denied on this subnetwork; try an alternate provider 250: timed out waiting for home MDIS response (see REGP) 251: MDLP parameters, version not supported 252: MDLP parameters, version not supported 254: could not access CDPD network 255: could not register NEI because it was not registered</p>	

REGP Registration Protocol State, S register 126	NSTAT	ESTAT	REGP
000: protocol not active	nnn	nnn	nnn
001: waiting for TEI assignment			
002: link connection established pending (waiting for UA)			
003: encryption key exchange pending (SABME sent, waiting for IKE)			
004: registration pending (ESH sent, waiting for ISC)			
005: NEI successfully registered			

CDPD Register Status: NOVTEL

This function is used to check the registration status of the Novatel CDPD modem.



Step-by-Step

To check the registration status of the Novatel modem:

Step	Action	Terminal display
1	Press Function + 4 + 1 + Enter.	mmm dd, yy hh:mm SWIPE CUSTOMER CARD
2	Press 1 + Enter.	1-STATUS 3-RESET 2-PING 4-IDEN
3	Press 1 + Enter.	1-REGISTR STATUS 2-SIGNAL STATUS
	This prompt displays when the register is complete.	NETWORK STATUS:ABCDE OK
	Register status is updated once each second.	NSTAT ESTAT REGP nnn nnn nnn
	NETWORK STATUS: IJKLM RSSI LOW	
	NETWORK STATUS: IJKLM ERROR RATE: HIGH	
	NETWORK STATUS: IJKLM LINK NOT ESTABLISHED	
	NETWORK STATUS: IJKLM UNREGISTERED	
	NETWORK STATUS: IJKLM LAST REG ERROR: XXX	
	NETWORK STATUS: IJKLM CHANNEL: SEARCHING	

CDPD Signal Status

This function is used to check the CDPD signal status.



Step-by-Step

To check the CDPD signal status:

Step	Action	Terminal display
1	Press Function + 4 + 1 + Enter.	mmm dd, yy hh:mm SWIPE CUSTOMER CARD
2	Press 1 + Enter.	1-STATUS 2-PING 3-RST CDPD 4-SW REL
3	Press 2 + Enter.	1-REGSTAT 2-SIGSTAT 3-CONNSTAT
	This prompt displays while receiving signal status.	SETTING ECHO MODE
	Signal Status is updated once each second. CHAN RF Channel Currently Reported, S register 100 0001 - 1023 AVAIL CDPD Available Flag, S register 101 000: CDPD not available 001: CDPD available RSSI Signal Strength for Current RF Channel, S register 102 -000 to -255 signal strength is usually between -60 to -130 the lower the value the better. PWR Transmit Power Level, S register 103 000 to 007 0 = highest, 7 = lowest	

CDPD Signal Status: NOVATEL

This function is used to check the signal status of the Novatel modem.



Step-by-Step

To check the signal status for Novatel:

Step	Action	Terminal display
1	Press Function + 4 + 1 + Enter.	mmm dd, yy hh:mm SWIPE CUSTOMER CARD
2	Press 1 + Enter.	1-STATUS 3-RESET 2-PING 4-IDEN
3	Press 2 + Enter.	1-REGISTR STATUS 2-SIGNAL STATUS
	This prompt displays while receiving signal status.	SETTING ECHO MODE
	Channel currently reported.	RF CHANNEL: nnn
		RSSI ABOVE - 113: nn
		CELL SITE ID: nnn
		BKICJ ERRIR RATE: n

Connectivity Failure Status

This function is used to verify the connectivity failure status.



Step-by-Step

To verify connectivity failure status:

Step	Action	Terminal display
1	Press Function + 4 + 1+ Enter.	mmm dd, yy hh:mm SWIPE CUSTOMER CARD
2	Press 1 + Enter.	1-STATUS 2-PING 3-RST CDPD 4-SW REL
3	Press 3 + Enter.	1-REGSTAT 2-SIGSTAT 3-CONNSTAT
	This prompt displays while receiving connectivity failure status.	SETTING ECHO MODE
	CFPR Connectivity Failure Process Related, S register 62 000: no connectivity errors 001: during connection process 002: during transmission of a packet 003: during reception of a packet CFPC Connectivity Failure Probable Cause, S register 63 000: no connectivity errors 024: no socket available 067: address already in use 069: network is down 070: network is unreachable 072: network dropped connection on reset 073: socket is already connected 076: socket is not connected 078: connection timed out 079: connection refused; for MC-DART to MC-DART the server is not active or is of the wrong type 081: host is down 082: host is unreachable	CFPR CFPC nnn nnn

Ping: CMI

This function is used to ping the CMI network.



Step-by-Step

To ping CMI:

Step	Action	Terminal display
1	Press Function + 4 + 1+ Enter.	mmm dd, yy hh:mm SWIPE CUSTOMER CARD
2	Press 2 + Enter.	1-STATUS 2-PING 3-RST CDPD 4-SW REL
3	Type the full 12 digit, numeric IP address, and zero fill. When typing the IP address the decimal is not required.	ENTER IP ADDRESS
	nn bytes: number of bytes sent pckt#=nn: packet sequence number time=nnn.ms: time it took the message to reach CDPD node in milliseconds. The process displays continuously.	nn bytes pckt#=nn time=nnn. ms

Ping: NOVATEL

This function is used to ping the Novatel network.



Step-by-Step

To ping Novatel:

Step	Action	Terminal display
1	Press Function + 4 + 1+ Enter.	mmm dd, yy hh:mm SWIPE CUSTOMER CARD
2	Press 2 + Enter.	1-STATUS 2-PING 3-RST CDPD 4-SW REL
3	Type the full 12 digit, numeric IP address, and zero fill. When typing the IP address the decimal is not required.	ENTER IP ADDRESS
	nn bytes: number of bytes sent pckt#=nn: packet sequence number time=nnn.ms: time it took the message to reach CDPD node in milliseconds. The process displays continuously.	nn bytes pckt#=nn time=nnn. ms

Function 99-32 Test Transaction Statistics

This function is used to view the transaction statistics. The terminal displays the number of transactions and the amount of time in seconds.



Step-by-Step

To view the test transaction statistics:

Step	Action	Terminal display
1	Press Function + 99 + Enter.	mmm dd, yy hh:mm SWIPE CUSTOMER CARD
2	Type the maintenance password and press Enter.	ENTER PASSWORD
3	Press 3 + 2 + Enter.	PROGRAM FUNCTION
4	Press the <----- key.	---<2---02---03---04 0000 0000 0000 0000
5	Press the <----- key.	---<05---06---07---11 0000 0000 0000 0000
6	Press the <----- key.	---<16---21---26---31 0000 0000 0000 0000
7	Press the <----- key.	---<36---41---40----- 0000 0000 0000
8	Press Enter.	TOTAL AVG BAD 0002 00.0 0000
9	Press Enter.	TOTAL ELAPSED TIME 00000
10	Press Enter to exit, or press Clear to clear the memory.	'CLEAR' TO CLEAR MEM

Program Loading

The following section is for loading terminals that do not have software.

Function 2 Program Load Set Up



Step-by-Step

To set up the terminal for a program load:

Step	Action	Terminal display
1	Press Function + 2 + Enter.	CONFIGURE TERMINAL OR CALL HELP - PE
2	Type the terminal ID and press Enter.	TERMINAL ID NUMBER 700000011
3	Type the initialization telephone number and press Enter.	INIT. TELEPHONE NO.
4	Type the NMS telephone number and press Enter.	NMS TELEPHONE NO.
5	Type the dial method, or press Enter to skip this prompt.	DIAL: 0-TONE 1-PULSE 0
6	Type the PABX access code, or press Enter to skip this prompt.	PABX ACCESS CODE
7	Press Cancel to return to the idle prompt.	EXIT, PRESS 'CANCEL'

Function 92 Program Load

Use this function to initiate a full program load for the terminal.



Step-by-Step

To set up the terminal for a program load:

Step	Action	Terminal display
1	Press Function + 9 + 2 + Enter.	PLEASE INITIALIZE OR CALL HELP - PE
2	Press Yes to start the program load, or press No to return to the idle prompt.	PROGRAM LOAD CORRECT? YES OR NO
	The following prompts appear while the program load continues.	PROGRAM LOAD CHECKING LINE
		PROGRAM LOAD WAITING FOR DIAL TONE
		PROGRAM LOAD DIALING NOW
		PROGRAM LOAD WAITING FOR ANSWER
		PROGRAM LOAD TRAINING MODEM
		PROGRAM LOAD PROCESSING NOW
		PROGRAM LOAD LOADING MEM PP NNN
		PROGRAM LOAD PAGE LOAD GOOD

Entering Special Modem Characters

The first column of the table below represents the numeric key pressed followed by repeatedly pressing the pound key (#) until the desired character appears in the corresponding row.

Number key	Alphanumeric scroll keys							
0	\$;	=	:	?	^	\	0
1	Q	Z	space	.	1			
2	A	B	C	-	2			
3	D	E	F	*	3			
4	G	H	I	+	4			
5	J	K	L	/	5			
6	M	N	O	%	6			
7	P	R	S	&	7			
8	T	U	V	'	8			
9	W	X	Y	@	9			

Additional Information

- Enter the IP address only once for the modem. If you enter the IP address again, the credentials have to be reset. To reset the credentials, you must call the provider.
- The IP address assigned to a terminal is for that terminal only. If the same IP address is put into two terminals, that address is invalid for both terminals, and you need to call the provider to reset the credentials.
- The current software version of the modem is 3.0.9, 7/2/96.

CDPD Test Functions

This function is used to check the CDPD registration and signal status.



Step-by-Step

To check the CDPD status:

Step	Action	Terminal display
1	Press Function + 4 + 1 + Enter to perform a CDPD test.	1-STATUS 3-RESET 2-PING 4-IDENT
2	Select 1 for status.	1-REGISTR STATUS 2-SIGNAL STATUS
3	Select 1 for the registration status. nnn:The registration status code number. xxxxxxxxxxxxxxxx: The definition of the registration status code.	NETWORK STATUS: nnn xxxxxxxxxxxxxxxx
4	Press Cancel.	1-REGISTER STATUS 2-SIGNAL STATUS
5	Select 2 for Signal Status. The RF channel is the channel the CDPD modem is currently locked on to.	RF CHANNEL: nnnn
	The terminal displays CDPD availability information. Valid values are: 000:CDPD not available. 001:CDPD available.	CDPD AVAILABLE FLAG: nnnn
	RSSI:Receive signal strength for the current RF channel. Range is between -000 to -225. Signal strength is usually between -60 to -130. NOTE: The lower the value the better.	MEAN RSSI: nnn
	Transmit power output. Values range from 00 to 07. 00: the highest output 07: the lowest output	XMIT POWER LEVEL: nn

Dial and Cellular Modes

If the terminal is getting its initialization through CDPD communication, the modem mode must be set to 45 in the boot level. The initialization and NMS numbers represent IP and port addresses.

If the IP address is 204.23.120.3 and the port address is 220, the dial string equals 2040231200030220. Period characters are omitted. Each section of the IP address is assumed to have three characters and requires leading zeros if the number has fewer than three digits. The port address is added to the IP address as a four-character suffix and also requires leading zeros.



Step-by-Step

To switch between dial and cellular modes:

Step	Action	Terminal display
1	Press Function + 2 + Enter.	MERCH PROG ENTER PASSWORD
2	Type the four-digit password and press Enter.	TERMINAL ID NUMBER nnnnnnnn (n)
3	Press Enter.	INIT. TELEPHONE NO. nnnnnnnnnn
4	Press Enter.	NMS TELEPHONE NO. nnnnnnnnnn
5	Press Enter. When the + character appears in the upper-right corner of the display, it indicates that an additional screen can be viewed by pressing the <----- key.	0=TONE DIAL MODE + 1=PULSE?
		3=CDPD TCP/IP 4=CDPD
6	Select the dial type and press Enter.	PABX ACCESS CODE
7	Press Cancel.	DEFAULT IDLE PROMPT

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