



# **HP Advancenet HP2342A 8-Port Terminal Server**

## **Installation & Operation Guide**



# Notice

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# List of Effective Pages

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The List of Effective Pages gives the date of the current edition and of any pages changed in updates to that edition. Within the manual, any page changed since the last edition is indicated by printing the date the changes were made on the bottom of the page. Changes are marked with a vertical bar in the margin. If an update is incorporated when an edition is reprinted, these bars are removed but the dates remain. No information is incorporated into a reprinting unless it appears as a prior update.

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2.0 . . . .	All . . . . .	October 1988

# Safety Considerations

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This manual includes notices that alert the reader to problem areas or situations that could cause injury to personnel, damage to hardware, or loss of data.

## Safety Symbols

"WARNING" statements precede the text of procedures that could result in injury or death if the conditions of the procedure are not strictly observed. Do not proceed beyond a WARNING sign until the indicated conditions are fully understood and met.

"CAUTION" statements precede the text of procedures that could result in damage to, or complete destruction of part or all of the product if the conditions of the procedure are not strictly observed. Do not proceed beyond a CAUTION sign until the indicated conditions are fully understood and met.

"NOTE" statements highlight essential operating or maintenance procedures, conditions, or clarifying facts.

As with any electrical equipment, you must take precautions consistent with all standard safety practices while installing or servicing this product.

The following warning applies at all times.

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**Warning**

Hazardous voltages are present in the HP TS8 internal power supply. Therefore, only authorized persons should remove the HP TS8 top cover.

Turn off the power to the unit, and unplug the power cord prior to any inspection or service attempts.

Do not spill any liquid on or in the HP TS8, because liquid might not only damage the unit, but might also endanger personnel working with the equipment.

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**Caution**

HP TS8s and other network equipment are susceptible to damage from electro-static discharge (ESD). To reduce failures of the equipment due to ESD, you should be sure that all racks containing HP TS8s are grounded. You can further reduce failures by installing anti-static mats or rugs and by increasing the ambient humidity in areas housing HP TS8s. Personnel should work on this equipment only in static-safe work areas.

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## **Servicing**

Any servicing other than fuse replacement must be performed by qualified service personnel.

## **FCC Statement**

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### **FOR THE UNITED STATES ONLY FEDERAL COMMUNICATIONS COMMISSION (FCC) RADIO FREQUENCY INTERFERENCE STATEMENT**

The U.S. Federal Communications Commission (in 47 CFR 15.818) has specified that the following notice be brought to the attention of the users of this product.

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#### **Warning**

This equipment generates, uses, and can radiate radio frequency energy; and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user, at this own expense, will be required to take whatever measures may be required to correct the interference.

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FCC tests were performed using shielded cables. Cables available from Hewlett-Packard meet these shielding requirements.

# VCCI Statement

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## FOR JAPAN ONLY

This apparatus is a class 1 ITE which complies with the VCCI standard to prevent radio interference in industrial and commercial environments. However, operating this equipment in a residential area may cause interference.

Please note that this equipment must be installed and used in accordance with the operating manuals.

この装置は、第一種情報装置（商工業地域において使用されるべき情報装置）で商工業地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会（VCCI）基準に適合しております。

従って、住宅地域またはその隣接した地域で使用すると、ラジオ、テレビジョン受信機等に受信障害を与えることがあります。

取扱説明書に従って正しい取り扱いをして下さい。

# **BS6301 Statement**

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## **FOR U.K. ONLY**

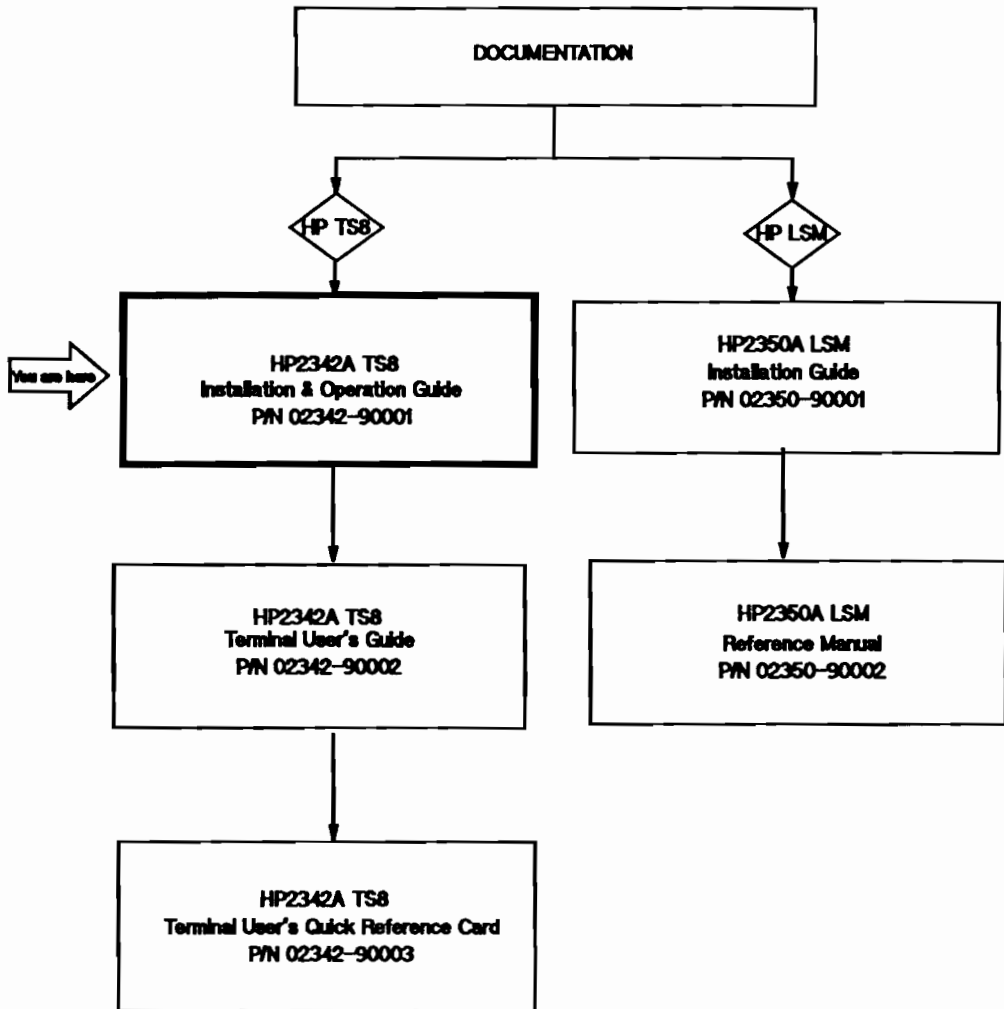
1. Interconnection directly, or by way of other apparatus, of ports marked "WARNING. CONNECT ONLY APPARATUS COMPLYING WITH BS6301 TO THESE PORTS" with ports not so marked may produce hazardous conditions on the network, and advice should be obtained from a competent engineer before such a connection is made.
2. WARNING. CONNECT ONLY APPARATUS COMPLYING WITH BS6301 TO THE LAN PORTS.
3. Connection to the network must be disconnected before the equipment power plug is removed.
4. Connection to the network must NOT be hard wired.





# Documentation Map

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# Introduction

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This chapter contains a general overview of the purpose of an HP 2342A 8-port terminal server (HP TS8) and a list of supported devices.

## HP TS8 Product Description

### Functional Description

The HP TS8 is an intelligent network station that enables asynchronous devices to connect to a local area network (LAN), and to access host systems and other devices on the LAN. The HP TS8 provides access to applications running on a wide variety of host systems on the LAN, and establishes and maintains up to three sessions per HP TS8 port on these systems.

It supports as many as eight RS-232-C devices that include:

- display terminals
- serial printers and plotters
- modems
- PCs in terminal emulation mode.

A complete list of supported devices is provided in the data sheet.

The HP TS8 can operate as either data circuit-terminating equipment (DCE) or data terminal equipment (DTE). (When used as DTE, an external HP TS8 modem cable must also be connected to the rear-panel input/output (I/O) port.)

Each HP TS8 formats data, transmits it to specified network addresses, and responds to software requests from other HP TS8s. Each HP TS8 also performs diagnostics that isolate internal and external faults.

A solitary HP TS8 does not control the network; so, the network is not interrupted if a single station (or node) fails.

## Hardware Description

### External Features

The HP TS8 has 3 LEDs on its front panel which indicate power, status and transmission medium, and one LED on the rear panel for fault isolation (see Chapters 4 and 5). Figure 1-1 shows the location of these LEDs and other HP TS8 features.

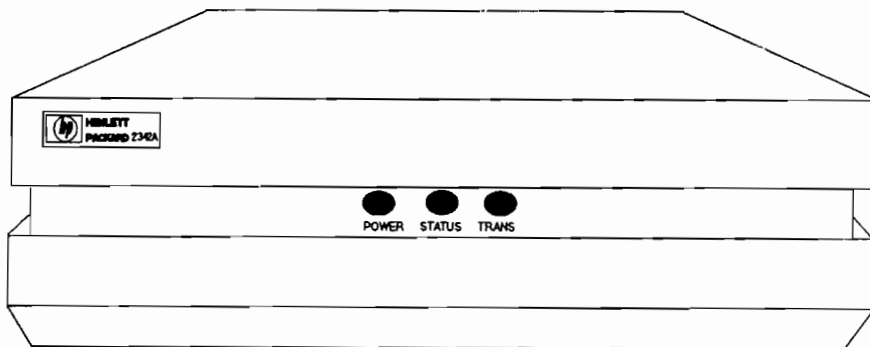
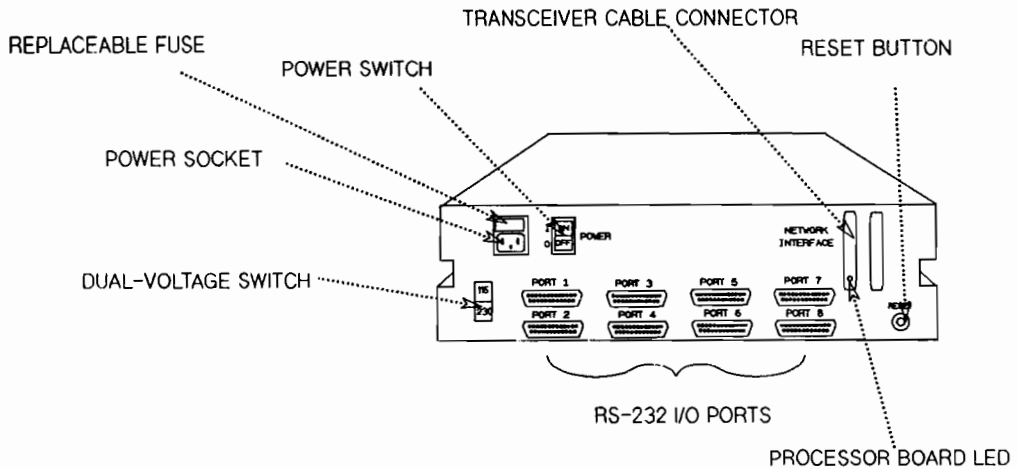


Figure 1-1: Front View of HP TS8



**Figure 1-2: Rear Panel of HP TS8**

The physical dimensions and specifications of the HP TS8 are given in Chapter 2.

## Internal Features

The HP TS8 has the following components:

- 12V and +5V power supply (with replaceable fuse)
- a fan
- a motherboard for serial device communication
- The HP TS8 Processor Board for communication with the LAN. The HP TS8 board is illustrated in Figure 1-2).

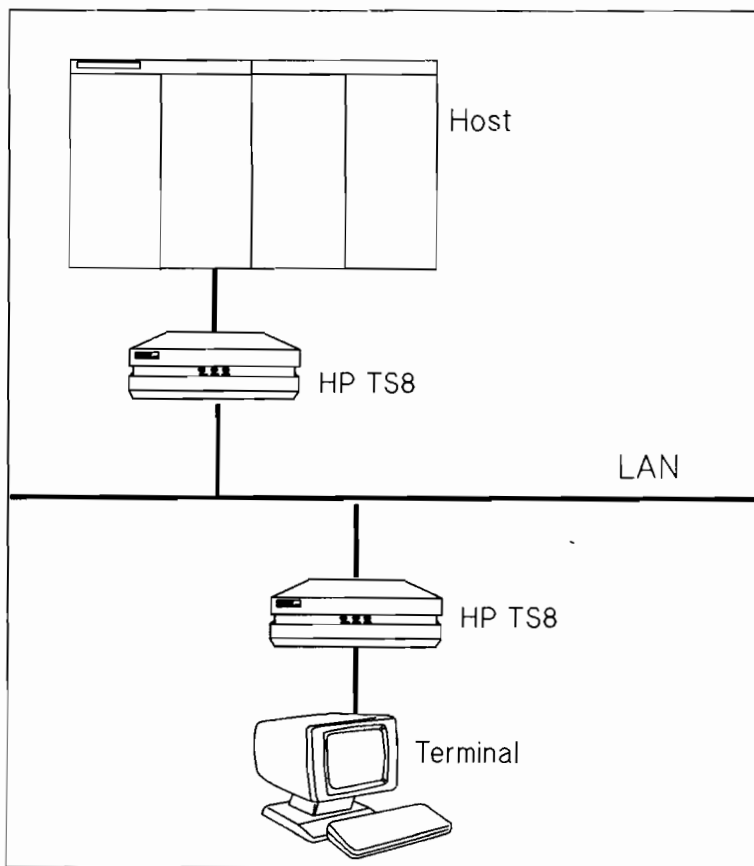
## Connection Arrangements

The HP TS8 may be connected in two arrangements: back-to-back, and direct access.



## Back-to-back Connections

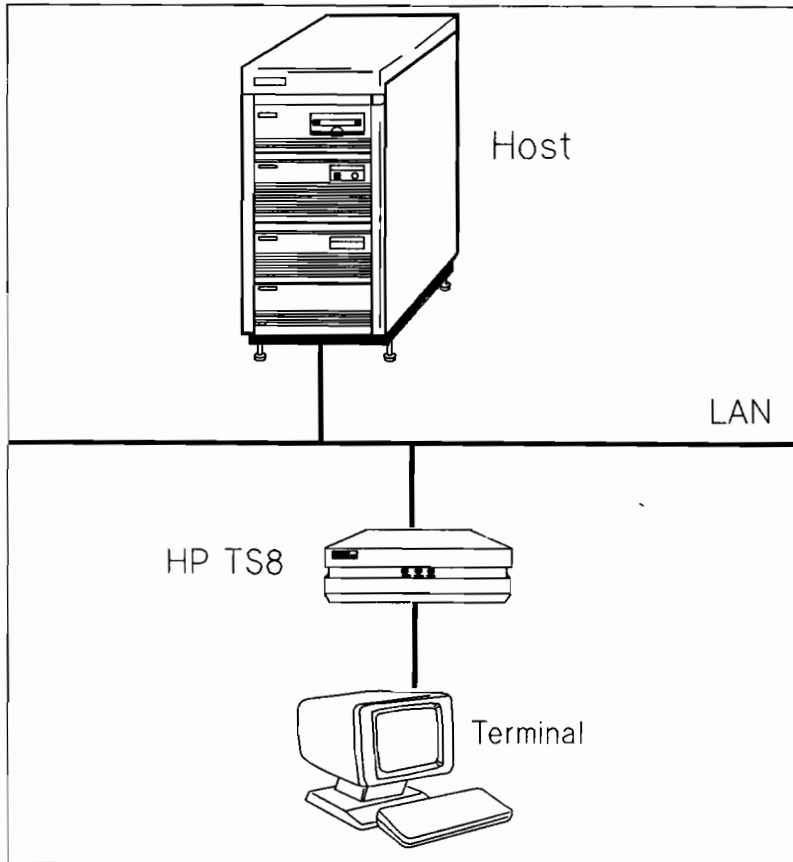
In a back-to-back connection, a device attached to a HP TS8 port can access any host system connected to the LAN through RS-232-C connections of a second HP TS8. This type of connection has low CPU overhead, and allows symbolic name addressing. This means that hosts can be referred to by names assigned to their corresponding HP TS8 ports, instead of by their IP addresses.



**Figure 1-3: Back-to-Back Access**

## Direct Access Connections

In direct access, a device attached to an HP TS8 port can access any host system connected to the LAN that implements Telnet-TCP/IP protocol. A second HP TS8 is not needed, but there is more CPU overhead, and a Domain Name Server (DNS) must be present to enable symbolic name addressing. Otherwise, the user has to open the connection using the host's IP Address.



**Figure 1-4: Direct Access**

# Other Requirements

In addition to your HP TS8, you will need:

- An HP2350 Local Server Manager (HP LSM) - this is a Network Console to supply operating software to the HP TS8. One or more HP LSMs can exist on a network, each serving up to 64 HP TS8s (this number depends on the hard disk space available on the Vectra, and the IP address range available).
- a transceiver cable and a transceiver to attach the HP TS8 to the LAN. These are supplied as an option when ordering your HP TS8.
- A baseband LAN cable plant (already installed and working).

Other cabling information is supplied in Chapter 3.

# Specifications

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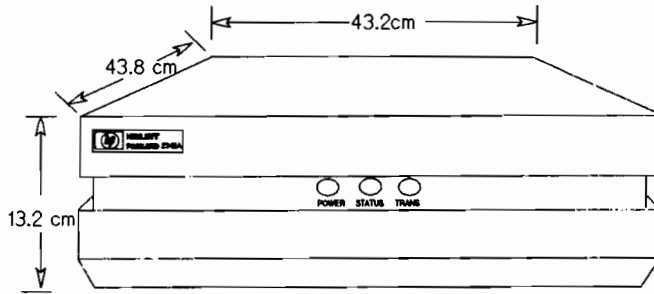
## Unpacking

Make sure that your HP TS8 shipment includes the following items, and if any items are missing, contact your HP Representative.

- HP2342A TS8 unit
- Cables:
  - HP TS8 power cord
  - LAN connection adapter
- Manuals:
  - HP TS8 Installation and Operation Guide
  - HP TS8 Terminal User's Guide
  - HP TS8 Quick Reference Cards (8)

## Physical Specifications

The weight of an HP TS8 is 5.4 kg (12.0 lbs). Its dimensions are shown in Figure 2-1.



**Figure 2-1: HP TS8 dimensions**

## Electrical Specifications

Characteristic	100-120V	220-240V
AC Voltage	90-132	198-264
AC Line Frequency (Hz)	57/63	47-53
AC Power Requirements (Amps max.)	3	1.5
AC Power Consumption (Watts max.)	350	350
Fuse Amps (fastblow)	1.6	1.6

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### Note

The HP TS8 power cord is approved by Underwriters Laboratory

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Make sure the voltage setting on the HP TS8 matches the voltage available at your installation site.

## Environmental Specifications



	Operating	Non-Operating
Temperature range ( $^{\circ}\text{C}$ )	0 to +55	-40 to +70
Relative Humidity	15% to 95% (at 40 $^{\circ}\text{C}$ )	95% (at 65 $^{\circ}\text{C}$ )
Altitude	3000m	15 300m

## Racking Requirements

Because of the temperature limitations above, you must never stack HP TS8s, or permit anything to block the air flow around them. To get around this problem HP TS8s may be racked in an Electronic Industries Association (EIA) standard 19" equipment rack (described below).

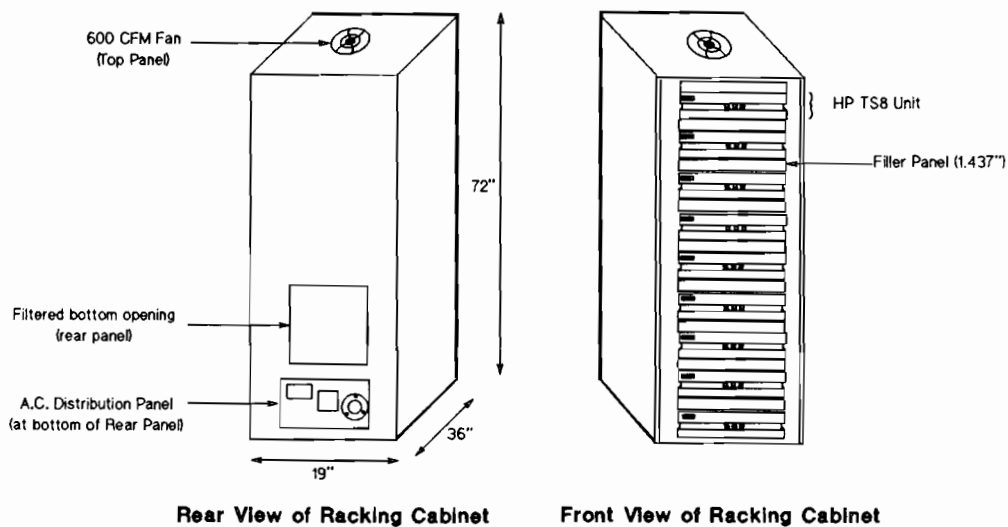
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## Caution

HP TS8s and other network equipment are susceptible to damage from electro-static discharge (ESD). To reduce failures of the equipment due to ESD, you should be sure that all racks containing HP TS8s are grounded, and carpeted floors should be avoided. You can further reduce failures by installing anti-static mats and by increasing the ambient humidity in areas housing HP TS8s. Personnel should work on this equipment only in static-safe work areas.

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## Cabinet Racking Specifications



**Figure 2-2: HP TS8 Racking Cabinet Specifications**

The following are the recommended cabinet specifications (see also Fig 2-2):

EIA standard cabinet: 19 in wide, 36 in deep, 72 in high, with:

- Tapped front rails
- Rear Panel with filtered bottom opening
- AC distribution panel at rear bottom with vertical plug strip at right rear of cabinet (9 outlets)
- Filler panels to close the gaps between units (as required)
- Top panel with 600CFM Fan

### Unit Spacing

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#### Caution

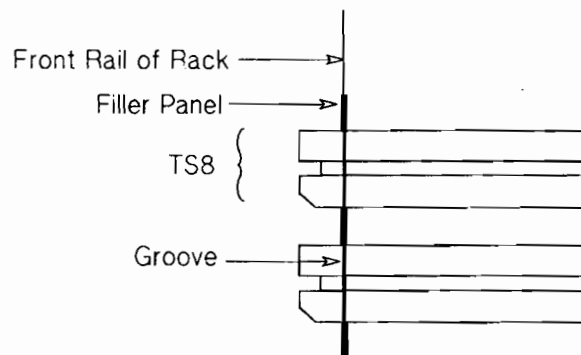
If these instructions are not rigorously adhered to, overheating may result.

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1. An equipment cabinet 72 inches high has 63 inches of vertical rack mount space available. To maintain reasonable air flow, a maximum of 9 HP TS8s can be racked (see Fig 2-1).
2. The HP TS8 has air intake slots at the bottom of the front panels. Therefore, filler panels (1.437 inches) must be used to close up all the gaps in the front of the cabinet to maintain an air column on the inside.
3. If less than 9 of the enclosures are used, the systems must be stacked from the bottom up, and any unused rack space at the top must be closed-up with filler panels.
4. When positioning the HP TS8 unit, it must be slid forward in the rack so that its vertical groove is aligned with the front edge of the racking



cabinet (see Fig 2-3). If this is not done, the filler panel will not completely close the gaps, and the air flow will be impaired.



Side View of Rack

Figure 2-3

## Safety and RFI Standards

The HP TS8 has passed the following approvals and safety standards:

- Radio Frequency Interference (RFI): FCC Class A and FTZ level A
- UL 478
- CSA C22.2 number 154
- IEC 380/435/950

Other approvals are pending.

# Installation and Operation

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This chapter describes the procedures for installing and operating the HP TS8.



## Cables

The cables needed to attach your HP TS8 to the network, and your devices to the HP TS8 are listed in Table 3-1. See Appendix A for pin-out diagrams.

The numbers in the left column refer to the numbers marked on the cabling diagram (Fig 3-1). The exact choice of cables within a given category will depend on the type of connection required (ie with or without modem signals), and certain device characteristics (European or US modem, for example). The information given in the right-hand column (HP TS8 Config), describes the RS-232 Signal Behaviour that must be configured for the HP TS8 port when a given cable is used.

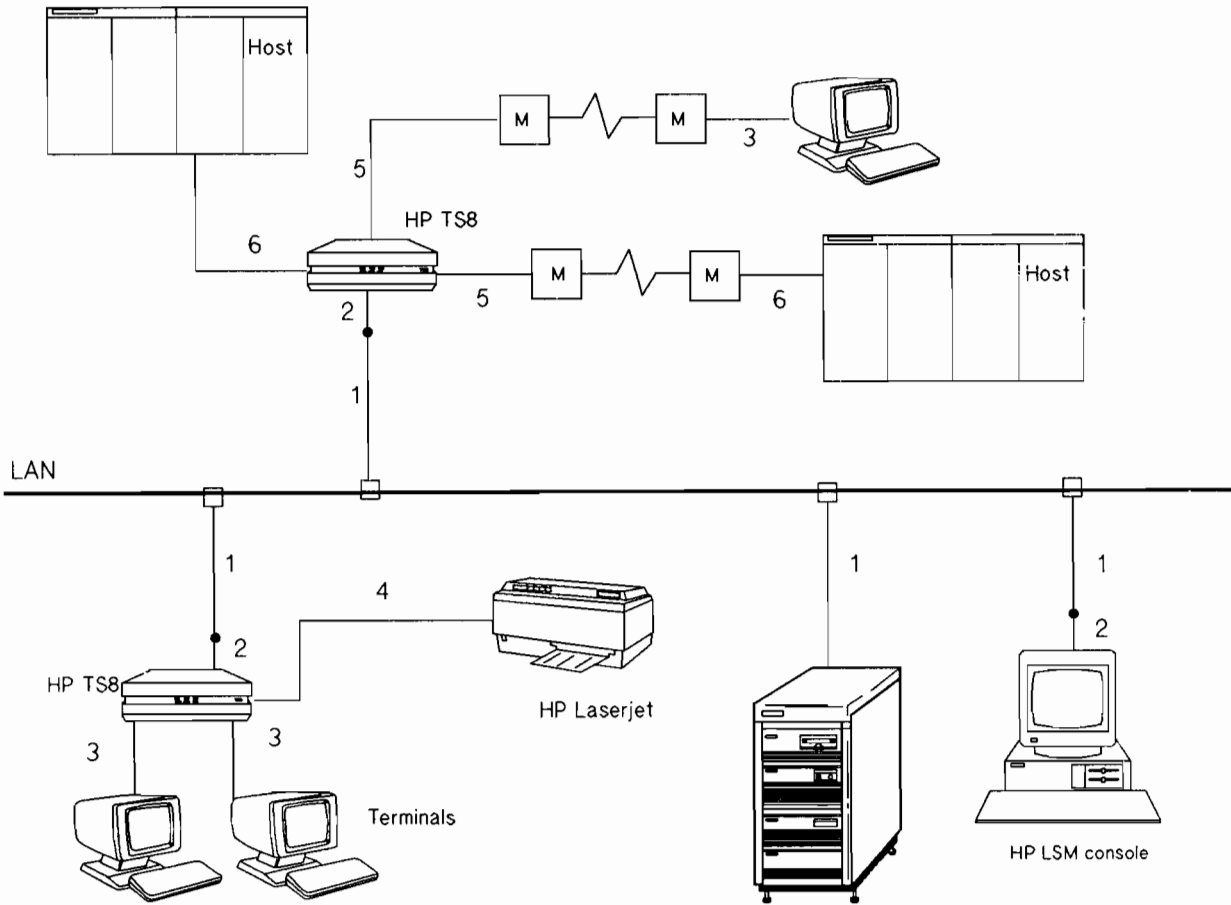
## DCE and DTE Operation of the HP TS8 Ports

Each of the HP TS8 ports is wired as a data-circuit-terminating-equipment (DCE) port. DCE always connects to data-terminal equipment (DTE), and vice-versa. Thus, the HP TS8 can accommodate 8 DTE devices.

If, however, you wish to connect a DCE device (ie a modem) to the HP TS8, you must attach it to the HP TS8 port using an HP TS8 modem cable (HP 40231A), which re-routes RS-232-C signals; in addition to this, the port must be configured as DTE by your network administrator.

### Table 3:1: Cables

Number	Type of cable	Cable Description	Cable Number	HP TS8 Config
1	LAN Connection cable	Thick LAN option Thin LAN option	option 242 option 240	N/A
2	LAN Connection adapter	slide-lock/screw-lock adapter	02342-60009	N/A
3	Terminal Cable	For HP 2622A terminal:  Direct European modem US modem	13222Y 13222M 13222N	DCESIGS=A DCESIGS=C DCESIGS=C
		For other models of terminal:  Direct European modem US modem	13242Y or 40242Y 13242M or 40242M 13242N	DCESIGS=A DCESIGS=C DCESIGS=C
4	Printer Cable	US modem European modem	13242N 13242M	DCESIGS=A or C DCESIGS=C
5	HP TS8 Modem Cable	Connects HP TS8 to external modem	40231A	DTESIGS= F or G
6	<b>HP 1000:</b> 12040D interface	RFI filter, symmetrical 4 wires (2 & 3 crossed)	40242G 92219H	} DCESIGS=A (Direct connect only)
	<b>HP 3000:</b> ATP/M and ATP/DTC (40290A op 0125)	25-3 pin cable (wires 2 & 3 crossed)	40230A	
	<b>HP 9000</b> series 800: 40299A and 98642A	modem cable 25-25 pin (wires 2 & 3 crossed)	30062B	} <u>Direct connect:</u> DCESIGS=A  <u>Modem connect WITH modem:</u> DTESIGS=F or G <u>Modem connect WITHOUT modem:</u> DCESIGS=C
		25-25 pin asymmetrical (wires 2 & 3 crossed)	92219Q	
<b>HP 9000</b> series 800:	For the moment there is no specific cable for this, so use the following cable and adaptors together  RJ11 RJ11/RS-232-C Adaptor Terminal Cable	92219T 92219U 13242H	Direct connect only: DCESIGS=A	



**Figure 3-1: Cables**

# Overview of Installation Procedure

This overview describes the steps to carry out to install an HP TS8 on the LAN.

1. Note the HP TS8 Unit number, and supply it to the network administrator.
2. Ensure that the HP TS8 power switch is set to OFF.
3. Ensure that the position of the dual-voltage switch of the HP TS8 (see Fig 1-2) is correctly set for your power supply.
4. Position the HP TS8.
5. Attach HP TS8 power cord to power source (leaving power switch OFF).
6. Attach the HP TS8 to the Thin MAU (for Thin LAN) or AUI (for Backbone LAN), using the LAN connection adapter.
7. Attach user equipment (devices) to the I/O ports on HP TS8 rear panel
8. Label the user equipment cables.
9. Check that the HP TS8 has been installed and configured on an HP LSM.
10. Switch on HP TS8.
11. Put HP LSM in download server mode.
12. Check LEDs on HP TS8.

The rest of this chapter reviews each of these steps in more detail.

## Positioning The HP TS8

Install the unit in an environment that complies with the environmental specifications listed in Chapter 2.

---

### Caution

Since the HP TS8 is cooled by convection, do not stack HP TS8s. Ensure that nothing blocks the air flow into the enclosure.

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1. Place the HP TS8 no farther than 50 meters (164 feet) from the transceiver, and within reach of a grounding-type AC power outlet.

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### Note

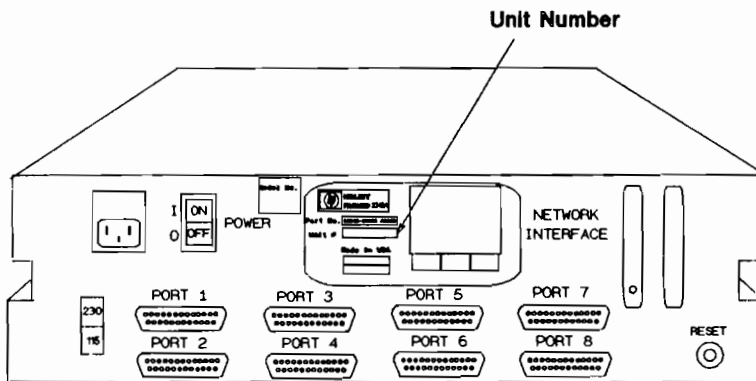
In the U.S. the outlet should be an NEMA standard 5-15R, 3-prong receptacle.

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2. Also, if you are rack mounting an HP TS8, allow enough cable slack so that the HP TS8 can be slid forward on the rack. Therefore, allow an additional 56cm (22”) of slack on your device cables, power cord, and AUI (Attachment Unit Interface) cable.

## Noting Unit Number

The position of the label displaying the HP TS8 unit number is shown in Fig 3-2.



Rear Panel of HP TS8

Figure 3-2: Location of Unit Number

This number is used by the network administrator when setting up the software files that allow the HP TS8 to work with the network software. This software definition is done using the HP LSM "Install a Unit" program.

### Port addressing

Each HP TS8 I/O port on the LAN has a unique identity, consisting of the HP TS8 address, the processor board ID (always "A"), and the port number. Thus, port name 1024A1 identifies Port 1 of processor board A in HP TS8 Number 1024.

(The processor board ID of an HP TS8 is always "A", because only one processor board resides in the unit.)

This port number is used for labeling cables (see "Connecting User Equipment to the HP TS8")

# Connecting to the LAN

This manual assumes that your LAN is already installed and operational.

## Tools

The only tools required for installing an HP TS8 are a flat-blade screwdriver and a 7/16" open-end wrench.

## Procedure

1. Set the HP TS8 rear-panel POWER switch to OFF.
2. Attach the LAN connection adapter's 15-pin male connector to the 15-pin "D" female connector on the HP TS8 rear panel.
3. Attach the other end of the LAN connection adapter to the transceiver.
4. Attach the other end of the transceiver to the LAN cable.

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# Connecting User Equipment to the HP TS8

User equipment is connected to the HP TS8 at the I/O ports (connectors) located on the rear panel.

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## Note

Check with your network administrator before attaching any devices to the network. This allows the network administrator to keep a record of where devices are being installed.

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When you attach hosts, terminals, printers, and other devices to the HP TS8, use masking tape or a tag to label both ends of your device cables.

Where the host or peripheral device attaches to the HP TS8, label the device cable with a tag that identifies:

- a. which HP TS8 and port the device attaches to, and
- b. what the device is or who uses it.

For example, the tag at the HP TS8 end of an RS-232-C cable might read "1024a1," which is that HP TS8 port's address, and "Joe's CRT."

This information is valuable if you have disconnected a cable and want to re-attach it, or if you wish to alert users that the HP TS8 must be powered off or reset.

## Powering On the HP TS8

Before powering on your HP TS8, verify that its voltage setting is compatible with your power source. If necessary, change the voltage setting switch shown in Figure 3-2. Also, check with your network administrator to verify that software files for your HP TS8 are defined (configured).

When you power-on the HP TS8, by pressing the rear-panel power switch, or reset it, by pressing the reset button, the processor in the HP TS8 is reset, and a self-test is performed.

If the self-test is successful, the HP TS8 will broadcast a bootstrap request on the LAN (every 15 secs, until successful). If this request is answered, it will request a download of its configuration files.

The results of the self-test can be found by observing its LED indicators.

## LED Indicators

On the front panel, there are three LEDs:

- |               |   |
|---------------|---|
| <b>POWER</b>  | One green LED that lights when the + 5 V internal power supply is operating.  |
| <b>STATUS</b> | One yellow LED that indicates internal diagnostic tests are being run and that software is being downloaded. It has 3 possible states: ON (indicating a fault in the internal logic of the HP TS8), BLINKING SLOWLY (requesting download of its software from the HP LSM, and BLINKING RAPIDLY (receiving software download from HP LSM). |
| <b>TRANS</b>  | One red LED that lights when a faulty condition is detected anywhere in the transmission medium. Typical problems include a bad connection, a bad cable (either transceiver or network cable), or a bad transceiver.  |

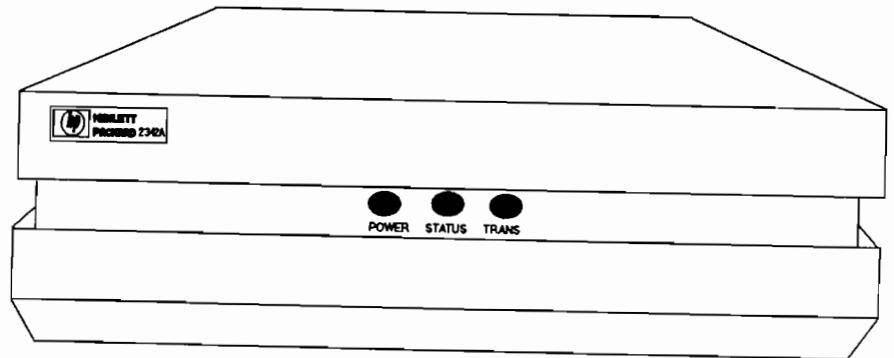
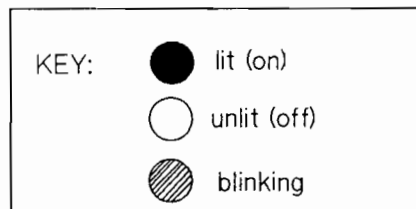







Figure 3-3: HP TS8 Front Panel showing LEDs

## Normal Operation of LEDs at Power-on

If the LEDs do not behave as described below, follow the troubleshooting flowchart in Chapter 4.



	LED State	Event
1.	 POWER    STATUS    TRANS	HP TS8 Powered-on or Reset
2.	 POWER    STATUS    TRANS	Transmission media test (TRANS ON for 1 second)
3.	 POWER    STATUS    TRANS	HP TS8 requesting download from LSM (STATUS blinking slowly)
4.	 POWER    STATUS    TRANS	HP TS8 receiving download from LSM (STATUS blinking rapidly)
5.	 POWER    STATUS    TRANS	Ready for use and normal operating state



# Troubleshooting & Diagnostics

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## Caution

HP does not authorize repair or removal of HP TS8 parts except for the fuse. Whenever any parts, other than the fuse, need repair or servicing, contact your HP Representative before returning the unit or having it serviced. Unauthorized removal or replacement of any parts, other than the fuse, voids the warranty.

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These troubleshooting procedures described in this chapter help you isolate problems both inside the HP TS8 (including a defective fuse) and outside the HP TS8 (ie in your cable plant or in the attached devices).

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## Note

Before resetting a HP TS8, notify all users of devices connected to the HP TS8 that their devices are about to be disconnected.

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# General Network Failure

To determine if the problem is in the cable plant or in the HP TS8, check which of the HP TS8's front panel LEDs are lit, and then go to the applicable Troubleshooting flow-chart.

You should also determine if any other HP TS8s are also inoperative. A complete network failure is usually caused when:

- A cable connection is short circuited.
- A transceiver fails.
- A cable is "kinked", causing an impedance mismatch.

To isolate these problems, refer to the troubleshooting flow-chart for TRANS LED.

If you can enter HP TS8 commands (CONNECT, LIST-STATUS, SET FLOW, etc.) at a terminal, but cannot log on to your host computer, the host computer may not be defined properly in the HP LSM "CONFIGURE Units" option, or the host computer may have failed.

During download to the HP TS8, messages are displayed at the LSM. If any "retries" are indicated, this probably means that there is a LAN error. The HP TS8 will work, but the performance will be poor.

## Recovery Procedures

To troubleshoot a baseband HP TS8, answer the questions below in the order presented.

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### Note

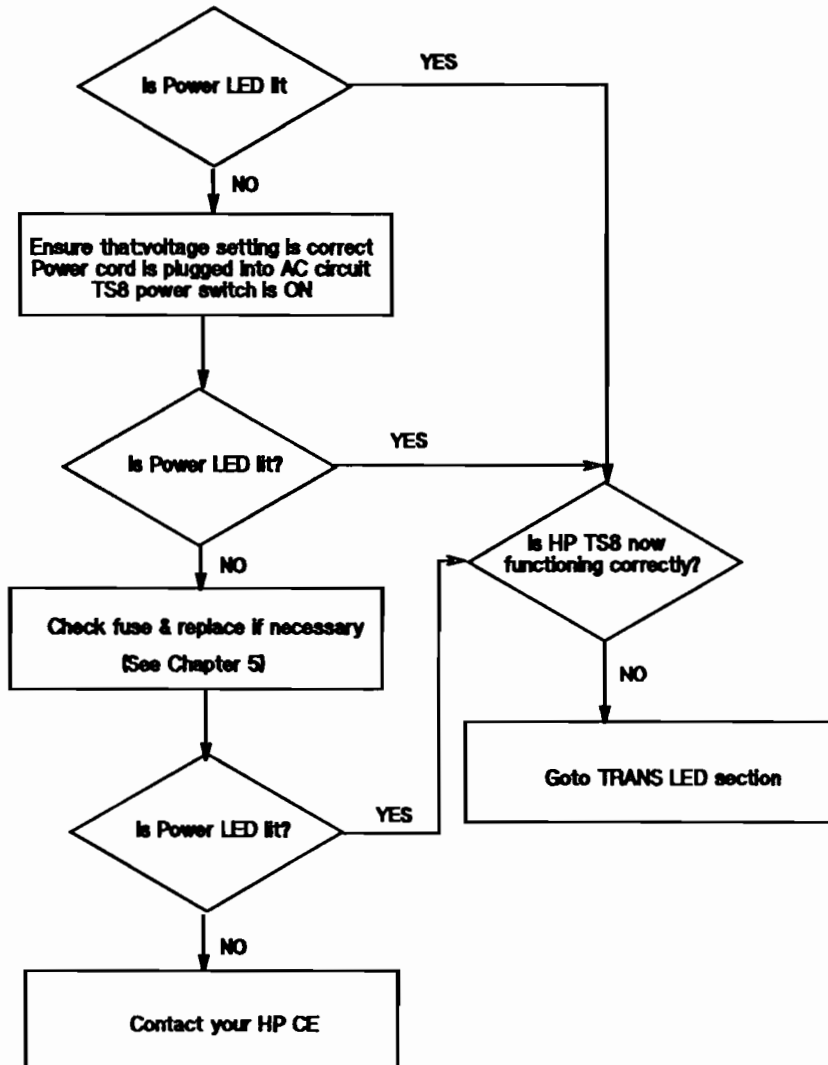
To troubleshoot problems when the HP TS8 TRANS LED is lit, you will need to use a **loopback connector**, which is included in the HP2350 LSM Installation kit.

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# Troubleshooting Flowcharts

## POWER LED

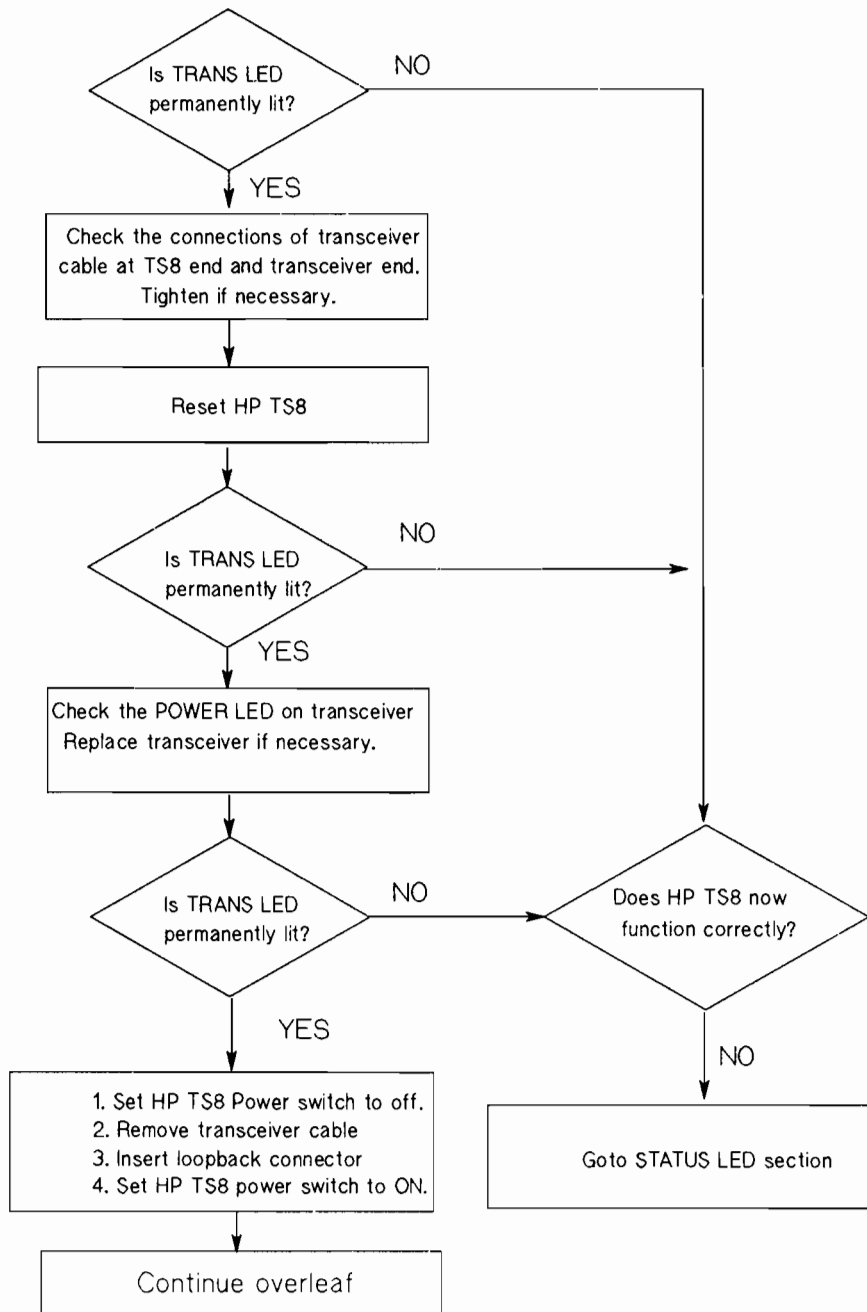
Normal functioning: permanently lit, indicating +5V



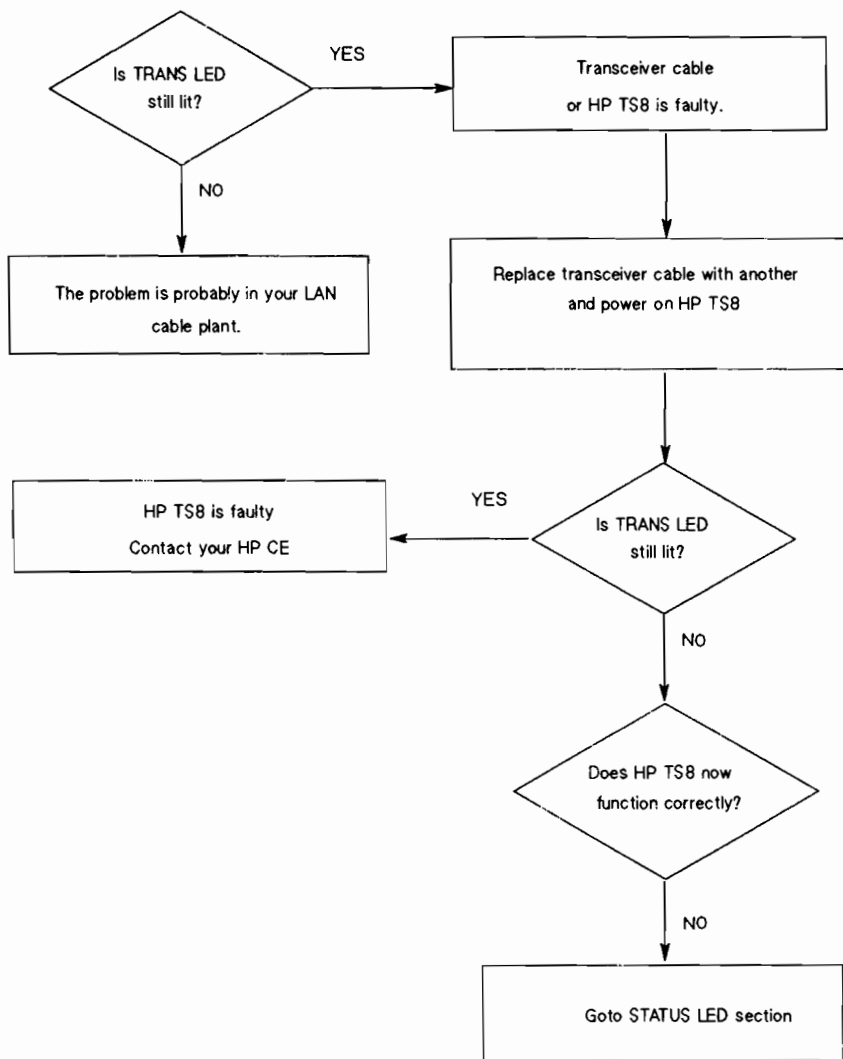


# TRANS LED

Normal functioning: OFF (ON for 3 secs while executing transmission medium test)

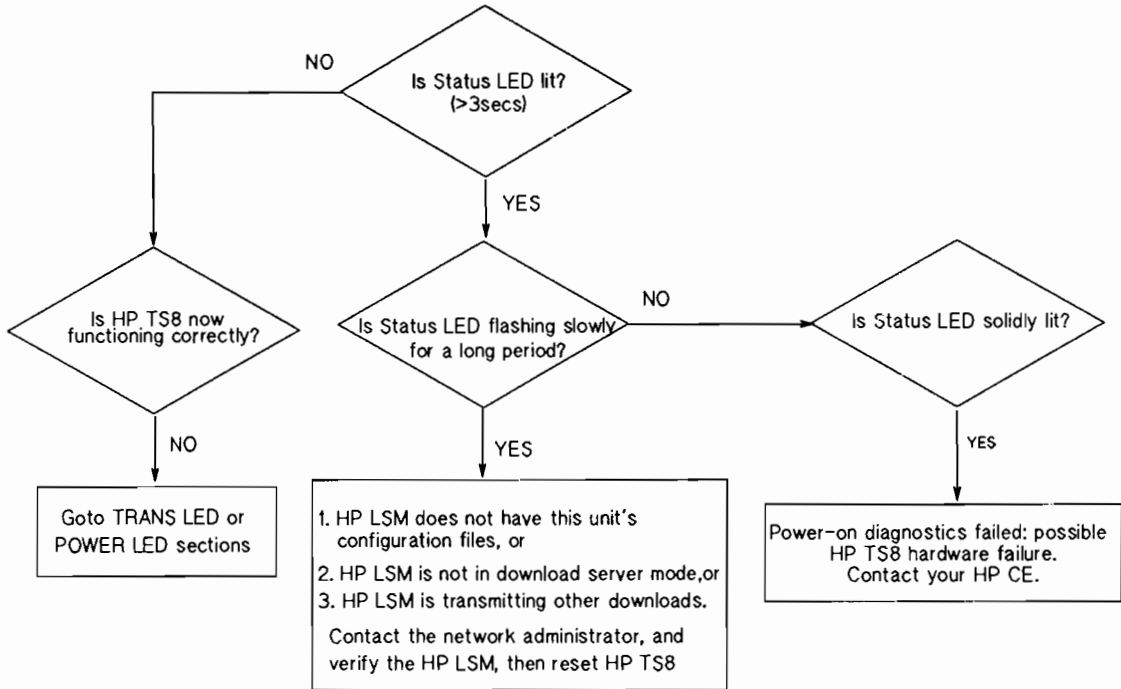


# TRANS LED (cont'd)



# STATUS LED

Normal functioning: OFF (except when receiving or requesting download)



# Maintenance

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## Caution

HP does not sanction unauthorized repair or removal of HP TS8 parts except for the fuse. Whenever any parts, other than the fuse, need repair or servicing, contact your HP Representative before returning the unit or having it serviced. Unauthorized removal or replacement of any parts, other than the fuse, voids the warranty.

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## Replacing the Fuse

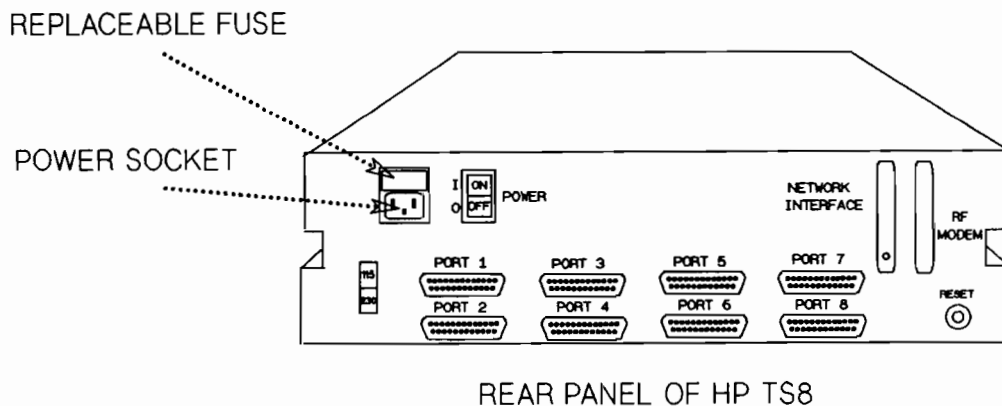
The fuse is in a fuse holder located directly beside the AC POWER switch and above the power socket (Figure 5-1).

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## Note

You cannot remove the fuse without first un-plugging the power cord.

---



**Figure 5-1: Location of HP TS8 fuse**

If you suspect that the fuse has failed:

1. Set the **POWER** switch to **OFF**.
2. Un-plug the power cord.
3. Insert a screwdriver behind the bottom of the tab on the plastic fuse holder, and pry out the fuse holder.
4. Remove the fuse from the fuse holder, using either a fuse-removal tool or your fingers.
5. Put in a new 1.6 A fuse .
6. Replace the fuse holder.

## Cleaning the HP TS8 Finish

The exterior of the HP TS8 should be wiped down occasionally to remove dust or grime:

1. Turn off the unit and unplug the power cord.
2. Wipe the exterior of the HP TS8 with a moist cloth or sponge dipped in a mild detergent solution

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### **Warning**

Do not let any water or cleaning fluid enter the HP TS8 enclosure. Any liquid spilled on or in the HP TS8 might not only damage the unit but could also endanger personnel working with the equipment.

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# Pin Assignments

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This appendix lists the pin assignments for the input/output (I/O) connectors on the HP TS8 and for the attachable HP TS8 modem cable.

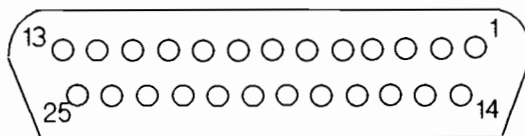
Voltage can be checked on the connectors to aid in fault isolation.

## RS-232-C Pin Listings

The HP TS8 provides eight 25-pin female input/output (I/O) connectors that transfer the RS-232-C signals.

Table A-1 is a pin-by-pin listing of the signals for all of the eight rear-panel I/O connectors. (All I/O ports have the same pin assignments.)

Figure A-1 shows the pin-numbering convention for the I/O connectors.



**Figure A-1: Pin Numbers of HP TS8 I/O Ports**



**Table A-1: RS-232-C Pin Listing for I/O connectors**

<b>PIN</b>	<b>SIGNAL NAME</b>	<b>TYPE</b>
1	Frame Ground	Power
2	TXD + (Transmit Data)	Output
3	RXD- (Receive Data)	Input
4	RTS- (Request To Send In)	Input
5	CTS + (Clear To Send Out)	Output
6	DSR + (Data Set Ready Out)	Output
7	Ground	Power
8	DCD + (Data Carrier Detect Out)	Output
9	+12 Volts	Power
10	-12 Volts	Power
11	DTE- (Data Terminal Eqpt. Select)	Input
12	DRSO (Data Rate Select Out)	Output
13	DRSI (Data Rate Select In)	Input
14	Not Used	None
15	TXCO + (Transmit Clock Out)	Output
16	Not Used	None
17	RXCO + (Receive Clock Out)	Output
18	DCDI- (Data Carrier Detect In)	Input
19	(Not Used)	None
20	DTR- (Data Terminal Ready in)	Input
21	SQO + (Signal Quality Out)	Output
22	RIO + (Ring Indicator Out)	Output
23	RII- (Ring Indicator In)	Input
24 & 25	Not Used	None

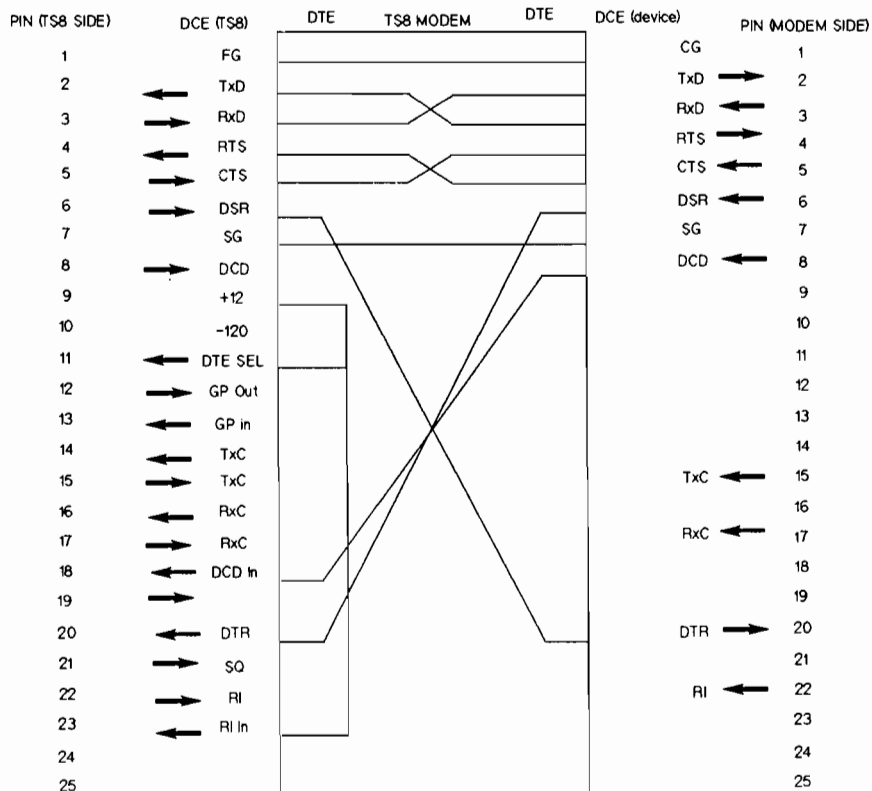
# Pin Assignments for HP 40231A Cable

Each port on the HP TS8 is equipped as a data-circuit-terminating equipment (DCE) port. This means that the HP TS8 accommodates as many as eight data-terminal equipment (DTE) devices. (Since DCE is always connected to DTE and vice-versa).

However, if you wish to connect a piece of DCE (eg a modem) to the HP TS8, you **must** connect an HP TS8 modem cable (HP 40231A) to the I/O port on the HP TS8, and then connect your DCE device to the HP TS8 modem cable. The port's software configuration must also be changed from DCE to DTE.

Pin assignments for the HP TS8 modem cable are specified in Fig A-2.

**Figure A-2: HP TS8 Modem Pin Assignments for Connecting to DCE Devices**



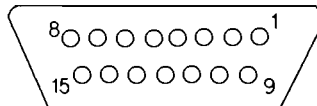
# Pin-Assignments for Transceiver Cable Connector

Pin assignments for the Ethernet transceiver-cable connector are defined according to the following list.

**Table A-2: Transceiver-Cable Connector Pin-Assignments**

PIN	SIGNAL NAME	TYPE
1	Shield	None
2	Collision Presence +	Input
3	TXD + (Transmit Data Out)	Output
4	Not assigned	None
5	RXD + (Receive Data In)	Input
6	Power Return	Power
7	Not assigned	None
8	Not assigned	None
9	Collision Presence -	Input
10	TXD- (Transmit Data Out)	Output
11	Not assigned	None
12	RXD- (Receive Data In)	Input
13	Power( +12 Volts)	PA

Figure A-3 shows the pin numbers for the transceiver-cable connector.



**Figure A-3: Pin Numbers for Transceiver Cable**