

HP 37900D
Signaling Test Set
Installation and
Maintenance Manual

HP 37900D Signaling Test Set
Installation and Maintenance Manual



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About this Manual

The Installation and Maintenance Manual provides information on installing software (and where necessary, firmware) in the HP 37900. It also contains hardware installation and maintenance information.

Overview of Updating/Upgrading/Installing Software

In this manual the following terms are used:

- Update** This refers to *replacing the STS software already available* with a later revision of the same software. No extra test capabilities are added.
- Upgrade** This refers to expanding the HP 37900 test capability (for example adding Emulation capability, or ISDN protocol).
- Install** This refers to *initial installation*, when no HP 37900 software exists on the hard disc, or it has been corrupted.

Summarized Procedure

In general the procedure is;

1. Insert the appropriate disc.
2. Access the Pascal Command Line.
3. From the Pascal Command Line, Stream the appropriate file.
4. Respond to the prompts as they appear. This involves answering questions and inserting discs when requested.
5. Reboot the HP 37900.

Organization

The manual is organized in five main chapters.

Chapter 1 describes how to update the HP 37900 Signaling Test Set (STS) software to the current software revision.

Chapter 2 describes how to upgrade the HP 37900 Signaling Test Set (STS) software by adding more test capabilities, such as Emulation or more signaling protocols.

Chapter 3 describes how to perform initial installation of software. This is performed by Hewlett-Packard before delivering a new HP 37900, and is only required again if, for example, part of the operating system is corrupted or lost, or if you replace the hard disc.

Chapter 4 provides information on hardware installation and maintenance.

Chapter 5 describes how to configure for HP-IB and RS-232-C printers.

Contents

1. Updating to the Current Software Revision	
Introduction	1-1
Before You Start	1-1
Overview	1-2
Discs Required	1-2
The Software Update Procedure	1-3
Updating the Firmware	1-4
Procedure	1-5
ROM Locations	1-5
Updating the Hardware	1-7
Zero Ohm Resistors	1-7
Data-Inversion Links	1-8
2. Upgrading (Adding Extra Test Capability)	
Introduction	2-1
The Upgrade Packages	2-1
Before You Start	2-1
The STS Upgrade Procedure	2-2
To Check Installed Applications	2-2
3. Installing the Complete Software System	
Introduction	3-1
Before You Start	3-1
Overview	3-1
Booting the System	3-2
Initializing the Disc	3-3
Installing Pascal	3-6
Installing the HP 37900 Signaling Test Set (STS) Software	3-7
Installation Procedure	3-7
Adding Additional Applications	3-8

Installing Remote Control	3-10
Reclaiming Wasted Disc Space ("Krunch" Program)	3-11
Using the HP 37900 File Manager	3-11
Using the Pascal Filer	3-11
4. Hardware Installation and Maintenance	
Installing and Removing Plug-in Cards	4-1
Configuring the CPU Assembly	4-2
Storage and Shipment	4-4
Environment	4-4
Packaging	4-4
Initial Inspection	4-6
Preparation For Use	4-7
Power Requirements	4-7
Line Fuse	4-8
Power Cable	4-9
Operating Environment	4-10
Temperature	4-10
Humidity	4-10
Altitude	4-10
Air Flow	4-10
5. Printers	
HP-IB	5-1
RS-232-C	5-3
Index	

Figures

4-1. CPU Assembly Control Switch - Segment Settings	4-2
4-2. Fuse location	4-8
4-3. Plug Configuration and Part Numbers	4-9
5-1. RS-232-C Cable for Hardwired Link	5-3

Tables

4-1. CPU Assembly Control Switch - Segment Function	4-3
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Updating to the Current Software Revision

Introduction

This chapter describes how to update the HP 37900 Signaling Test Set (STS) software to the current software revision. There are also instructions for updating the firmware and hardware if required by the current revision.

The HP 37920A Option 100 product is a software update package comprised of a set of discs and the current editions of user documents.

Before You Start

- Ensure the correct firmware is installed in the Signaling or Signaling/Interface Cards. If you are not sure contact your HP representative. If a change is necessary refer to “Updating the Firmware” in this chapter for instructions.

Note

The software update process cannot be completed if the firmware revision is not compatible with the software revision.



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- Use the STS File Manager Copy facility to back up your user-files, such as personality files, logged data, test sequences, and so on. (For example, insert a flexible disc and copy your files to #3:).
 - Configuration files created with software earlier than revision A.05.00 are not compatible with the current software. If you want to use them again, record the settings so you can re-create them using the new software. Use the STS File Manager to delete them.

Overview

The update involves the following steps.

1. Change the firmware if required (refer to “Updating the Firmware”).
2. Access the Pascal Command Line.
3. Back up your user files.
4. Update the STS software.
5. Update any additional applications ordered with the update, as described in the appropriate application manuals.
6. If necessary, convert your user files for use with the current revision.

Discs Required

MON1 to MON10
UTILITIES (see Note 1)
KERMIT (see Note 2)
BOOTD
BOOT2
ACCESS

Additional application discs as ordered. You need updated versions of all previously installed applications. See Note 1 below.

Note 1. UTILITIES is a utility disc used during initial installation. You can also use it as follows to see what software products have been installed.

1. Insert the UTILITIES disc.
2. Stream the file UTIL:LIST.

If you are also upgrading or adding additional applications software not previously installed in your HP 37900, refer to “The STS Upgrade Procedure” in Chapter 2 and “Adding Additional Applications” in Chapter 3.

Note 2. Only install KERMIT when you intend to transfer files between the HP 37900 and a workstation or PC. If KERMIT has not been installed before, refer to “Adding Additional Applications” in Chapter 3 for the installation procedure.

The Software Update Procedure

1. You need access to the Pascal Command Line to perform the update. To achieve this, press Q to quit from the HP 37900 startup screen.

If your startup screen does not include the Quit option:

- a. To update from software of revision A05.50 or above, press **CTRL-X**.
 - b. To update from software earlier than revision A05.50, use the following procedure.
 - i. Run File Manager.
 - ii. Edit the file `SYS:PAWS.TEXT`
 - iii. Change the line `PAWS OFF` to `PAWS ON` and save the file.
 - iv. Reboot the HP 37900.
2. Insert the **MON1:** disc in the flexible disc drive.
 3. From the Pascal Main Command Line, Stream the file `#3:INST37900`
 4. Respond to the prompts as they are displayed on the screen. If your version of the Pascal Operating system is out of date you are automatically prompted to insert the appropriate **BOOT:** and **ACCESS:** discs.

Note



At the start of the installation process, the HP 37900 checks the applications previously installed and lists the discs you need to update those applications. You are later prompted to install these discs.

If you have the named disc, insert it and press C to continue the installation. If not, press S to skip this part of the installation. (The version currently installed will not be deleted, but may not operate correctly with the new revision of software.) If you need the application you can add it later as described in Chapter 2.

-
5. When prompted at the end of the procedure, reboot by pressing **Shift-CTRL-Reset** simultaneously. When the reboot is finished the HP 37900 Welcome Screen is displayed, showing the current revision code at the top of the screen.

Updating the Firmware

The HP 37920A Option 110 provides two ROMs. These are to replace two ROMs on either:

- The SLP Master Signaling Card (if you have a HP 37900B).
- One HP 37910A Slave Signaling Card.

The HP 37920A Option 111 provides two ROMs. These are to replace two ROMs on one of the following combined Signaling/Interface Cards:

HP 37915A
HP 37916A
HP 37918A
HP 37919A

If the ROMs already fitted on the card(s) have a part number lower than 37901-80009 hardware changes are also necessary, as described in this chapter under “Updating the Hardware”.

Caution



When handling cards, take precautions against electro-static discharge (ESD) damage to parts.

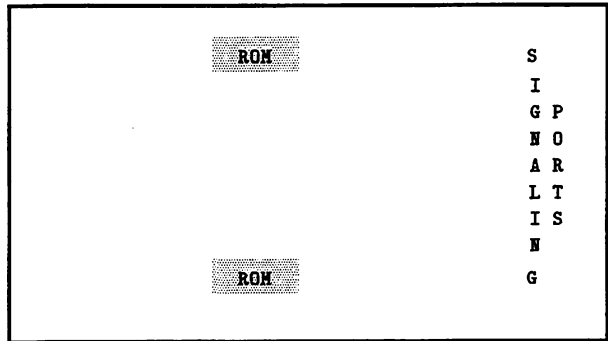
Procedure

1. Switch off the HP 37900 (or HP 37901A) and remove the power cord.
2. Remove the card from the HP 37900.
3. Use the "ROM Locations" diagrams to locate the two ROMs.
4. Remove the ROMs and fit the new ROMs in the vacated sockets.
5. SLP Master Signaling Card or HP 37910A Slave Signaling Card:
Check the part number of the ROMs you removed. If they are lower than 37901-80009 refer to "Updating the Hardware". If they are equal to or higher than this number, re-install the card and tighten the securing screws.

ROM Locations

HP 37910A or Master Signaling Card

(On Rev. C and below, the ROMS are adjacent to empty sockets.)

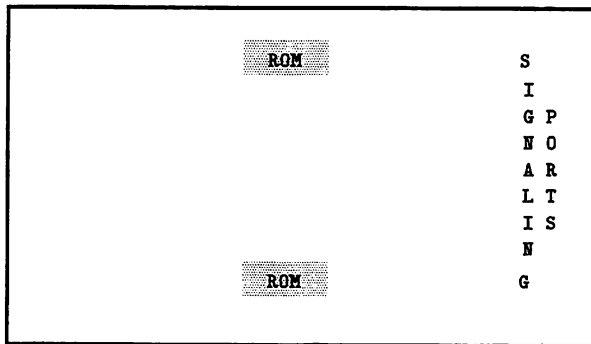


Combined Signaling/Interface Cards

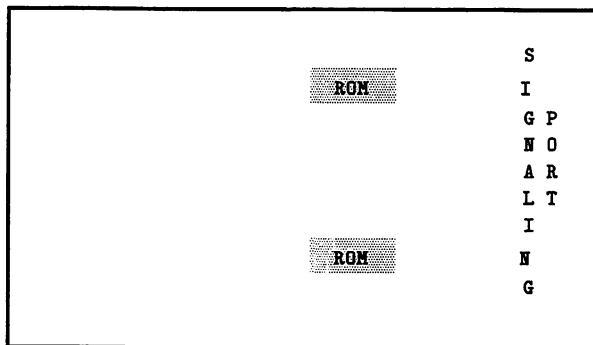
HP 37915A:
U407 and U507

HP 37916A:
U407 and U408

HP 37918A:
U411 and U511



HP 37919A:
U407 and U507



Updating the Hardware

If the old ROMs have a part number lower than 37901-80009, ensure that the following components are in the correct position.

- Zero ohm resistors (part number HP 8159-0005).
- Data Inversion Links.

Zero Ohm Resistors

Looking towards the backplane connector from the front panel (the signaling ports) locate U907, a thickfilm assembly standing up from the board. To the right of U907 are positions for 5 zero ohm resistors (marked with a single black band).

Resistors must be in these positions only:

R28

R29

R32 (in HP 37900B SLP Master
Signaling Card only)

| Backplane Connector |

```
||  
||  
|| | |  
U R R  
9 3 3  
0 1 2  
7 | |  
|| | | |  
|| R R R  
|| 2 2 3  
|| 8 9 0  
|| | | |
```

For firmware 37901-80009 and above, the zero ohm resistors are in positions R28 and R29 (not R30 or R31). The HP 37901A Master Signaling Card also has a resistor in R32.

Data-Inversion Links

Data inversion (required for applications involving AT&T switches) is controlled by the positions of three links on the signaling card associated with each signaling link.

The available modes are:

- Software control of inversion. This option is available if the signaling card has card-code **D2929** or above. (The card-code is stamped on a metal tag soldered to the component side of the card).
- Forced inversion.
- Forced non-inversion.

The first mode allows the operator to select inversion or non-inversion when configuring the interfaces in Configuration Mode.

For the current revision this is the recommended mode.

In the second and third modes, the position of the links disables software selection.

The link positions for each mode are summarized in the following table.

Mode	TL1	TL2	TL3
Software control	INV	NORM	PARK
Forced inversion	INV	PARK	NORM
Forced non-inversion	NORM	PARK	NORM

Upgrading (Adding Extra Test Capability)

Introduction

This chapter describes how to upgrade the HP 37900 Signaling Test Set (STS) software by adding more test capabilities, such as Emulation or more signaling protocols.

The Upgrade Packages

The HP 37920A upgrade options consist of:

- Option 001: One STS disc, “4LINK: Add extra links capability”.
- Option 003: One STS disc, “EMU1: Add emulation capability”
A set of Pascal discs with associated manuals.

Before You Start

The software you add must be of the same revision as the STS software already installed. Check the revision code (for example A06.00) on the labels of the discs and on the HP 37900 Welcome Screen or Main Menu. If the code on the Welcome Screen or Main Menu is lower than the code on the upgrade discs, update the STS software first (refer to Chapter 1).

The STS Upgrade Procedure

1. To gain access to the Pascal Main Command Line, select `Quit` from the HP 37900 Welcome Screen or Main Menu. If your HP 37900 does not have the option:
 - a. To update from software of revision A05.50 or above, press `CTRL-X`.
 - b. To update from software earlier than revision A05.50, use the following procedure.
 - i. Run File Manager.
 - ii. Edit the file `SYS:PAWS.TEXT`
 - iii. Change the line `PAWS OFF` to `PAWS ON` and save the file.
 - iv. Reboot the HP 37900.
2. Insert the appropriate disc as shown in the table below and Stream the file `#3:INSTAPP`.

To install:	Insert disc:	Stream file:
Extra links	4LINK:	#3:INSTAPP
Emulation	EMU1:	#3:INSTAPP

3. Respond to the prompts as they appear.

To Check Installed Applications

To check what software has been installed:

1. Insert the UTILITIES disc.
2. Stream `UTIL:LIST`

Installing the Complete Software System

Introduction

This chapter describes how to perform initial installation of software. This is performed by Hewlett-Packard before delivering a new HP 37900, and is only required again if, for example, part of the operating system is corrupted or lost, or if you replace the hard disc.

Before You Start

Check that the Configuration Switch is set at 0 (HP 37900B or HP 37900C). If you have an HP 37900C, or an HP 37900B with an R/332 controller, the switch is at the left side of the rear panel **under** the HP-IB cable connector. For any other controller, refer to the appropriate manual. This check does not apply to the HP 37900D.

Overview

Installation involves the following steps:

1. Booting the system from a flexible disc.
2. Initializing the hard disc.
3. Installing Pascal.
4. Installing the HP 37900 software and any applications.
5. Adding extra test capability options if required, see Chapter 2.
6. Updating to the current revision if required, see Chapter 1.
7. Restore backed-up user files. If necessary convert them for use with the current revision, see Chapter 1.

Booting the System

1. **HP 37900D:** Insert the **BOOTD:** disc into the flexible disc drive.
HP 37900B/C: Insert the **BOOT2** disc into the flexible disc drive.
2. To make the HP 37900 boot from the flexible disc;
 - i. Switch the power OFF then ON and hold down the **Space** bar.
 - ii. Release the **Space** bar a few seconds after Keyboard appears on the upper left of the screen.
 - iii. Type 2P
3. After a short time, the following is displayed on the screen:

```
New system date?  
System date is      1-Jun-93  
Clock time is      0: 8:39  
Time Zone is       7: 0: 0  
  
Workstation          Rev. 3.2   1-Jul-89
```

If the date is correct, just press **Return**.

If the time is correct, just press **Return**.

On completion the Pascal Main Command Line is displayed.

```
Compiler Editor Filer Initialize Librarian Run eXecute Version?
```

4. Now go to "Initializing the Disc".

Initializing the Disc

1. Remove the **BOOTD** or **BOOT2** disc and insert the **ACCESS** disc.
2. Press P. You are asked Load what code file?
3. Type **ACCESS:MEDIAINIT** .
4. When the Pascal Command line is redisplayed, press P again.
5. Type **ACCESS:FILER.** (remember the ".") .
6. When the Pascal Command line is redisplayed, remove the **ACCESS** disc.
7. To allow the **UTILITIES** disc to be written to during initialization, ensure the write-protect tab *covers* the square hole at the top right-hand corner of the disc (looking at the label).
Insert **UTILITIES**.
8. Press W for the What command. A screen in the following format is displayed:

```
Assembler Compiler Editor Filer Librarian
liBRary System volume Default volume Quit
```

```
ASSEMBLER:   ASM:ASSEMBLER
COMPILER:    CMP:COMPILER
EDITOR:      ACCESS:EDITOR
FILER:       ACCESS:FILER
LIBRARIAN:   ACCESS:LIBRARIAN
LIBRARY:     SYSVOL:LIBRARY
```

```
* System volume:  BOOTD:
: Default volume: BOOTD:
```

9. Press S to change the System volume.
10. Type **UTIL:** (remember the ".") .
11. Press D to change the Default volume.

12. Type UTIL: (remember the “:”) .
13. Press Q.
14. Press F for Filer.
Press V for Vols
All known volumes are displayed, take a note of them. Volume #11 and all higher numbered volumes must be destroyed. Steps 15 to 17 show how to destroy a volume.

Repeat steps 15 to 17 for all higher numbered volumes. When you have finished press V again.

If no volumes higher than volume #11 are displayed, proceed to step 20.
15. Press F for Filecopy.
16. Type UTIL:INITC.TEXT .
- Filecopy to what ?
17. Type the volume number, for example #11 (remember the “#”) for volume 11, then press .
- You are asked
Destroy EVERYTHING on volume <number>? (Y/N)
or, if the disc was previously formatted for 37900 operation;
Destroy EVERYTHING on volume SYS? (Y/N)

Type Y
Return to step 15 to remove the next volume, and repeat until volume #11 and all higher volumes have been destroyed.
18. Type Q to quit.

19. Type X for execute. You are asked **Execute what file?**
Type UTIL:TABLE. (remember the ".") .
20. Type W for the **What** command.
Type S to change the **System** volume.
Type UTIL: (remember the ":") .
- Type D to change the **Default** volume.
Type UTIL: (remember the ":") .
- Type Q to quit.
21. Type S for the **Stream** command.
22. Type UTIL:INITB for a HP 37900B. This process can take up to 30 minutes.
Type UTIL:INITC for a HP 37900C.
Type UTIL:INITD50 for a HP 37900D with a serial number lower than 3208U00617.
Type UTIL:INITD80 for a HP 37900D with a serial number higher than 3208U00617.
Type UTIL:INITD170 for a HP 37900D Option 170 (upgrade to 170 MBit/s disc).
23. To remove the disc volumes and start installing Pascal, repeat step 20 and **Stream**:
 - a. UTIL:INITVB for a HP 37900B.
 - b. UTIL:INITVC for a HP 37900C.
 - c. UTIL:INITVD50 for a HP 37900D with a serial number lower than 3208U00617.
 - d. UTIL:INITVD80 for a HP 37900D with a serial number equal to or higher than 3208U00617.
 - e. UTIL:INITVD170 for a HP 37900D Option 170 (upgrade to 170 MBit/s disc).

Respond to the prompts until the Pascal Main Command Line is displayed.
24. Now go to "Installing Pascal".

Installing Pascal

Pascal installation follows automatically after disc initialization. You can use the following procedure to update a previously installed version.

1. Insert the **UTILITIES** disc.
2. From the Pascal Main Command Line, type **W** for the **What** command.
3. Type **D** to change the Default volume.
4. Type **UTIL:** (remember the “:”) .
5. Type **S** to change the System volume.
6. Type **UTIL:** (remember the “:”) .
7. Type **Q** for the **Quit** command.
8. Type **S** for the **Stream** command.
9. For a HP 37900B type **STRPASB** .
- For a HP 37900C type **STRPASC** .
- For a HP 37900D type **STRPASD** .
10. Installation of Pascal is documented on the screen. Respond to the prompts as they appear.
11. Now go to “Installing the HP 37900 Signaling Test Set (STS) Software”.

Installing the HP 37900 Signaling Test Set (STS) Software

The HP 37900 product includes the following set of STS discs:

MON1 to MON10

UTILITIES

KERMIT

Additional application discs as ordered.

UTILITIES is a utility disc used during initial installation.

Only install KERMIT when you intend to transfer files between the HP 37900 and a workstation or another HP 37900.

Installation Procedure

1. Insert the **MON1**: disc in the flexible disc drive.
2. From the Pascal Main Command Line, Stream the file #3:INST37900 then press .
3. Carefully read the screens as they are displayed and respond to the prompts.

Which machine ... means which version of the HP 37900. If you are installing a;

HP 37900B press B.

HP 37900C press C.

HP 37900D press D.

When you are asked if Pascal access is required, answer Y if you are going to add Emulation capability (HP 37920A Option 003). Otherwise answer N.

When you are asked to select the default personality file, your selection copies one of the following into the default personality file PERFILE.P

CCITTRB.P (the "standard" European personality file).

ANSI8588.P (the "standard" North American personality file).

If a system already exists on the hard disc, select N (Neither) to retain the existing version of PERFILE.P.

If you are not sure select A or C. PERFILE.P can easily be changed after installation.

When you are asked to select the options to be installed, enter your selections as described on the display. For example,

1 2 3 or 1,2,3

to select the first three options.

Only the files associated with your selected options will be loaded from the flexible disc.

4. Insert each application disc (and press) when prompted.
5. When prompted at the end of the procedure, reboot by pressing simultaneously. When the reboot is finished the HP 37900 Welcome Screen is displayed, showing the current revision code at the top of the screen.

Adding Additional Applications

To install any application software, access the the Pascal Main Command Line then stream the file #3:INSTAPP.

For example, to add basic and primary rate ISDN capability;

1. Insert the ISDN1 disc.
2. Stream #3:INSTAPP
3. Respond to the prompts as they appear.

Flexible discs are supplied with each application, and are listed below.

Application	Disc(s) Supplied
Basic and Primary Rate ISDN	ISDN1
SS7 Statistics	Q791
GSM Monitor	GSM1, GSM2, GSM3, GSM4,GSM5, GSM6,GSM7
HP 8922G Protocol Port	8922G1
LAPB	X25
IS41 MAP	37975A
Q781 Conformance Tests	Q781
CZECH + SLOVAK ISUP	CZECH
ETSI ISUP	ETSI
Chilean Natl Variant	CHILE
Chinese Natl Variant	S05

Installing Remote Control

The remote control option not normally factory installed. If you want to add this option, use the following procedure.

1. Ensure the write-protect tab on the **UTILITIES** disc *covers* the square hole at the top right-hand corner of the disc (looking at the label). The disc will be written to during installation.
2. Insert the **UTILITIES** disc.
3. From the Pascal Main Command Line, type W for the **What** command.
4. Type D to change the Default volume.
5. Type UTIL: (remember the “:”) .
6. Type S to change the System volume.
7. Type UTIL: (remember the “:”) .
8. Type Q for the **Quit** command.
9. Type S for the **Stream** command.
10. Type INSTRMT to install remote control.

Reclaiming Wasted Disc Space (“Krunch” Program)

Using the HP 37900 File Manager

1. Press F to select File manager.
2. Press K and follow the prompts.

Using the Pascal Filer

1. From the Pascal Filer Main Command Level;
Press and .
2. Press K
3. You are asked;
Crunch what directory ?
4. Type the volume name (for example SYS:) and press .
5. You are asked to confirm the krunch, for example;
Crunch directory SYS ? (Y/N)
Press Y
6. A message is displayed while the krunch is in progress, for example;

Crunch of directory SYS in progress
DO NOT DISTURB !!
7. On completion, the message;
Crunch completed is displayed, and the Filer Command Line is redisplayed.
8. You can now continue to work in Filer, or press Q to quit.

You can Krunch any volume, for example STSS: or #3.

If the volume is badly fragmented, the Krunch can take a few minutes.



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Hardware Installation and Maintenance

Installing and Removing Plug-in Cards

Caution



- Plug-in cards can be irreparably damaged if exposed to electrostatic discharge (ESD).
 - Ensure the HP 37900D is isolated from its power source before removing or installing plug-in cards.
 - Ensure the cards have been completely installed and screws tightened before applying power to the instrument.
 - Do not use excessive force to seat plug-in cards. If excessive force seems to be needed, remove the card and inspect the backplane assembly connectors for bent pins.
-

To replace an existing plug-in card, begin at step 1, otherwise begin at step 2.

1. Loosen the two screws on the rear-panel of the plug-in card. Grip the two handles and withdraw the card from the instrument.
2. Remove the blanking panel from the required slot.
3. Remove the new plug-in card from its anti-static bag, holding it by the handles. If you are replacing an unserviceable card, remove the ROMs and install them on the new card.
4. Install the new plug-in card in the appropriate slot.
5. Press on the rear-panel of the card to engage its connector and tighten the two screws. *Do not overtighten the screws.*

Configuring the CPU Assembly

A control switch is located on the CPU assembly. The switch location and segment settings are shown in Figure 4-1. The function and factory setting of each segment is described in Table 4-1.

If you replace the CPU assembly, set the control switch on the new assembly exactly as on the original assembly.

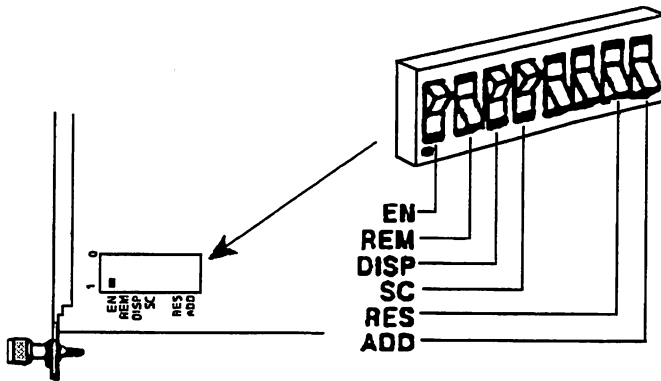


Figure 4-1. CPU Assembly Control Switch - Segment Settings

Table 4-1. CPU Assembly Control Switch - Segment Function

Segment Label	Function
EN	RS-232-C Control 0 = Control lines disabled * 1 = Control lines enabled
REM	Remote Terminal Control * 0 = Local terminal active 1 = Remote terminal active
DISP	Display Control 0 = Video output enabled - not supported * 1 = Video output disabled
SC	HP-IB System Controller 0 = Is not controller * 1 = Is controller
RES	Video Control * 0 = Medium resolution 1 = High resolution
ADD	RS-232-C in Address Space * 0 = RS-232-C interface enabled 1 = RS-232-C interface disabled

* Indicates factory setting.

Storage and Shipment

Environment

The instrument can be stored or shipped in environments within the following limits:

- Temperature : -20 to +60°C
Humidity : 10 to 90% at +40°C
Altitude : Up to 4600 m (15,000 ft)

The instrument should also be protected from temperature extremes which cause condensation within the instrument.

Packaging

Caution



Inappropriate packaging materials can result in damage to the instrument during transit. Original shipping or equivalent materials should be used.

Containers and material identical to those used in the factory packaging are available through Hewlett-Packard offices. If the instrument is being returned to Hewlett-Packard, attach a tag with the the following information:

- Description of the problem (include error messages or specific performance data related to the problem).
- Whether the problem is constant, or intermittent.
- Name and phone number of technical contact person.
- Return address.
- Model number of returned instrument.
- Full serial number of returned instrument.
- List of accessories returned with the instrument.

If the original or equivalent shipping material cannot be obtained, instructions for repackaging with commercially available materials are as follows:

1. Wrap the instrument in anti-static plastic to reduce the possibility of damage caused by ESD.
2. Use a double walled, corrugated cardboard carton of 159 kg (350 lb) test strength. The carton must be large enough to allow 3 to 4 inches on all sides of the instrument for packing material, and strong enough to accommodate the weight of the instrument.
3. Surround the instrument with 3 to 4 inches of packing material to protect the instrument and prevent it from moving in the carton.

Caution

NEVER use styrene pellets as packaging material. They do not adequately cushion the instrument, or prevent the instrument from moving in the carton. They also cause damage by generating static electricity.

If packing foam is not available, the best alternative is S.D.-240 Air Cap from Sealed Air Corporation (Commerce, California 90001). Air Cap looks like a plastic sheet with air bubbles. Wrap the instrument with several layers of pink (anti-static) Air Cap to protect the instrument, and prevent it from moving within the carton.

4. Seal the carton with strong, nylon, adhesive tape.
5. Mark the carton "FRAGILE, HANDLE WITH CARE".
6. Retain copies of all shipping papers.
7. In any correspondence, refer to the instrument by model number and full serial number.

Initial Inspection

Warning



To avoid electrical shock, do not perform electrical tests when there are signs of shipping damage to any part of the outer enclosure of the instrument.

Inspect the shipping container for damage. If the shipping container or cushioning material is damaged, it should be kept until the contents of the shipment have been checked for completeness and the instrument has been checked mechanically and electrically. If the contents are incomplete, if there is mechanical damage or defect, or if the HP 37900D does not pass the Performance Tests, notify the nearest Hewlett-Packard office. If the shipping container is damaged, or the cushioning material shows signs of stress, notify the carrier as well as the Hewlett-Packard office. Keep the shipping materials for the carrier's inspection. The HP office will arrange for repair or replacement at HP option without waiting for claim settlement.

Undamaged shipping materials should be kept. Original HP or equivalent materials are required for re-shipment, as substandard packaging can result in damage to the instrument. Refer to "Storage and Shipment" for information about re-shipment.

Preparation For Use

Warning



To avoid the possibility of injury or death, observe the following precautions before connecting the HP 37900D to a power source.

- A. If this instrument is to be energized via an auto-transformer to reduce or increase the line voltage, make sure that the common terminal of the auto-transformer is connected to the neutral pole of the power source.
- B. The instrument must only be used with the mains cable provided. The protection provided by grounding the outer enclosure of the instrument can be lost if any power cord other than the type provided is used. If the mains cable provided is not suitable, contact your nearest Hewlett-Packard office.
- C. The mains plug shall only be inserted in a socket outlet provided with a protective earth contact. The protective action must not be negated by the use of an extension cord (power cord) without a protective conductor (grounding).

Power Requirements

The HP 37900D requires a power source in the range 90 to 132 V ac, or 198 to 264 V ac, at a frequency in the range 47 to 63 Hz single phase. Total power consumption is 200 VA maximum.

Line Fuse

The power supply is protected by a fuse located below the power switch on the rear-panel, as shown in Figure 4-2. Before connecting the HP 37900D to the power source, check that a fuse of the correct type and rating is fitted.

To remove the fuse, slide the fuse holder out using a flat-bladed screwdriver placed under the fuse holder lip. The fuse holder is hinged and folds down to allow access to the fuse. Remove the fuse with a pair of pliers. The correct rating is 2 AT, 250 V.

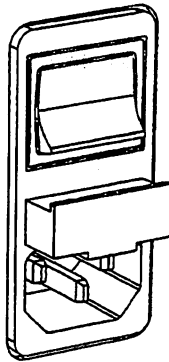


Figure 4-2. Fuse location

Power Cable

The HP 37900D is equipped with a three-wire power cable. When connected to an appropriate ac power receptacle, the cable grounds the instrument cabinet. The type of power cable plug depends on the country of destination. Refer to Figure 4-3 for the part numbers of the power cable and plug configurations available. If the appropriate power cable is not included with the instrument, notify your nearest Hewlett-Packard office.

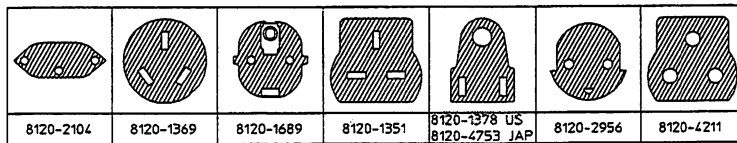


Figure 4-3. Plug Configuration and Part Numbers

The color code used in each power cable is:

- Line (or Active Conductor) : Brown
- Neutral (or Identified Conductor) : Blue
- Earth (or Safety Ground) : Green/Yellow

Operating Environment

Temperature

The instrument can be operated in temperatures from +5°C to +40°C. The maximum temperature gradient is 10°C per hour.

Humidity

The instrument can be operated in environments with humidity from 20% to 80% RH at 29°C. The instrument should also be protected from temperature extremes which cause condensation within the instrument.

Altitude

The instrument can be operated at altitudes up to 4600 m (15,000 ft).

Air Flow

The air intake is via two fans mounted on either side of the instrument. To provide adequate cooling, an air gap of at least 50 mm (2 in) should be maintained around the instrument.

Printers

HP-IB

Set up and connect the printer as follows:

1. Set the printer address switch to 1.
2. Switch LISTEN ALWAYS to OFF.
3. Connect the printer (via a HP-IB cable) to the back of the controller. You can mount it on the back of one of the disc-drive cable connectors.

The following procedure is only necessary if the configuration has previously been changed from the HP-IB default configuration.

1. Quit from the HP 37900 Signaling Test Set software to obtain the Pascal command line. If the Q facility is not available with your version of the HP 37900:
 - a. If you are updating from software of revision A05.50 or above, press **CTRL-X**.
 - b. If you are updating from software earlier than revision A05.50, use the following procedure.
 - i. Run File Manager.
 - ii. Edit the file `SYS:PAWS.TEXT`
 - iii. Change the line `PAWS OFF` to `PAWS ON` and save the file.
 - iv. Reboot the HP 37900.
 - v. Press Q.
 - c. Press F for the Filer program.
 - d. Press F again for Filecopy.
You are asked Copy what file?

e. Type *HPIBTAB.CODE followed by **Return**.

You are asked Copy to what?

f. Type *TABLE followed by **Return**.

You are told File already exists.

g. Press R to replace.

h. Press Q to quit the Filer program.

2. Reboot the system by pressing **Shift** **CTRL** **Reset**.

If you edited the PAWS file (as described above) use the same procedure to change it back to PAWS OFF.

RS-232-C

■ Configure and connect the printer:

1. Speed 2400
2. Stop Bits 1
3. Bits/Char 8
4. Protocol XON/XOFF
5. Parity OFF
6. Connect the printer to the HP 37900 using the following cables.
 - a. **HP 37900C or HP 37900D:** HP 40242Z (5m modem bypass cable) plus HP 13242M (5m).
 - b. **HP 37900B:** HP 92221P (1.5m modem bypass cable) plus HP 31391A (5m) or plus HP 31391B (10m).

If you do not have the combined RS-232-C cable specified, use a cable which provides the critical pin connections shown below:

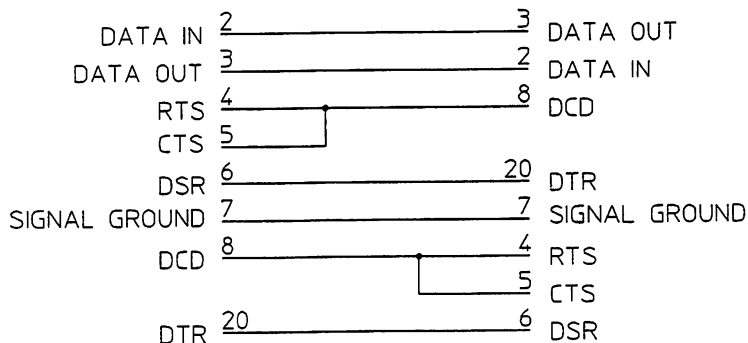


Figure 5-1. RS-232-C Cable for Hardwired Link

- Quit to the Pascal command line as described under "HP-IB".
- Use the Pascal Filer to re-configure the printer control software:
 1. From the Pascal main menu, press F to select the Filer.

2. Press F again for Filecopy.

You are asked Copy what file?

Type *TABLE followed by .

You are asked Copy to what?

Type *HPIBTAB.CODE followed by .

If you are told that the file already exists, press 0 to overwrite.

3. If you are told that there is insufficient space in the volume, use the Pascal Filer "Krunch" facility, described later in this chapter under "Reclaiming Wasted Disc Space ("Krunch" Program)" in Chapter 3.

4. Press F for Filecopy again.

You are asked Copy what file?

Type *RS232TAB.CODE followed by .

You are asked Copy to what?

5. Type *TABLE followed by .

You are told File already exists.

6. Press R to replace.

7. Press Q to quit the Filer program.

■ Reboot the HP 37900 by pressing .

■ When the reboot process is finished;

1. Quit to the Pascal command line.

2. Execute *SLAVE.

3. Press U to "uninstall".

4. Execute *STS.

Index

B

Booting the System, 3-2

C

Crunch, 3-11

D

Data-Inversion Links, 1-8

F

Firmware, 1-4

H

HP 37920A, 2-1

HP-IB printer, 5-1

I

Initializing the Disc, 3-3

K

Kermit, 1-2

Krunch, 3-11

P

Pascal

Command Line, 3-2

Installation, 3-6

Main Command Line, 2-2

Printers, HP-IB, 5-1

Printers, RS-232-C, 5-3

Quit to Pascal Command Line, 2-2

R

RQMs, 1-4

Software

Initial installation, 3-1

Updating, 1-1

Upgrading, 2-1

U

Updating software, 1-1

Updating to new rev., 1-1

Upgrading (Adding Extra Test
Capability), 2-1

UTIL, 1-2, 2-2

Utility disc, 1-2

C

C

C

WIN AN HP CALCULATOR!

Fill in the Reader Comment Card supplied opposite;
return it to HP and you could win an HP Calculator.

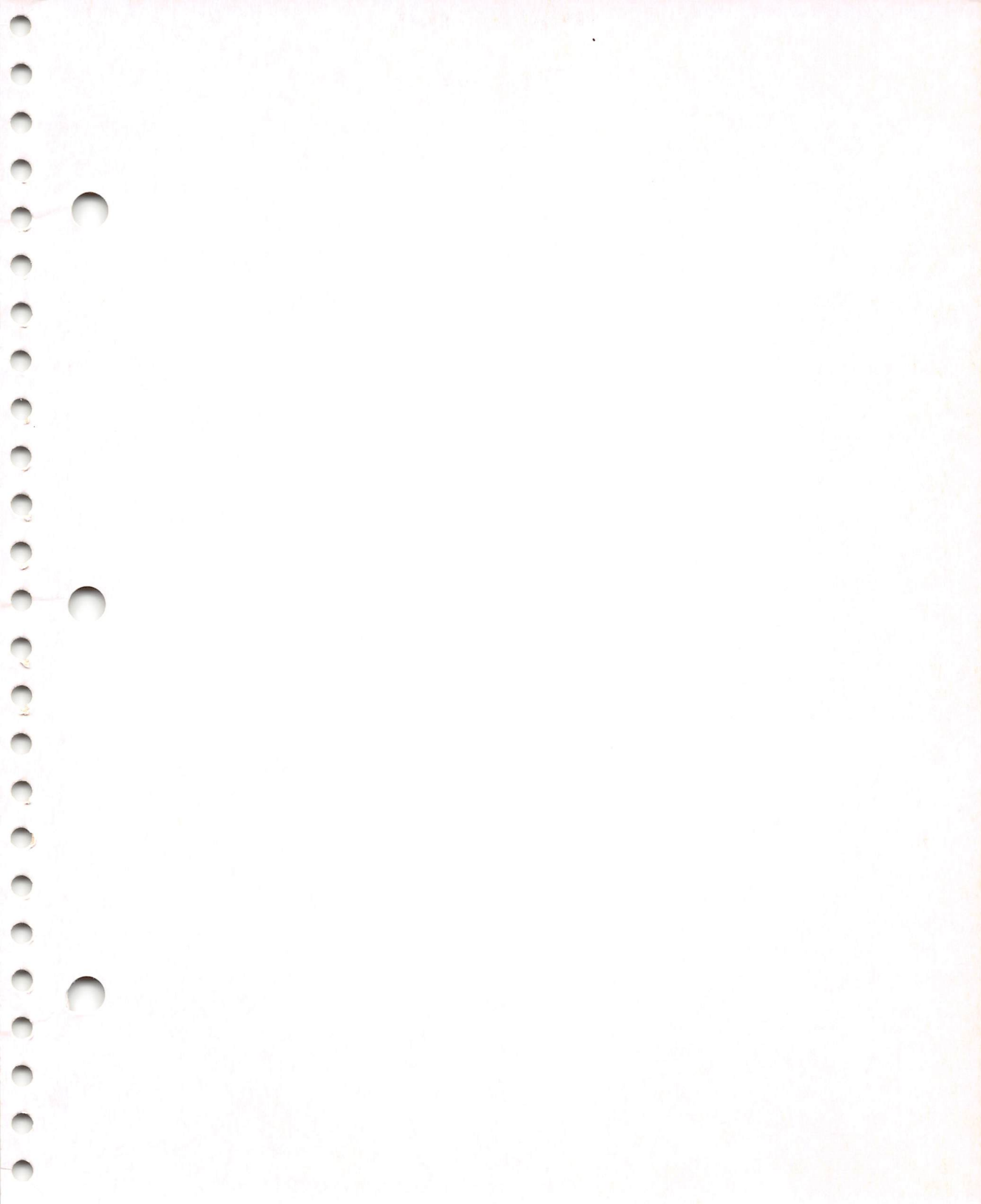
Every three months, all returned cards will be entered into a free
prize draw for either an HP Scientific or HP Business Calculator.

Note



When you fill in the card, remember to tick the box showing
which type of calculator you would prefer if you win.

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