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a n d S t a n d a r d f r a m e s

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SERIAL NUMBERS

Affects all Miniframe and Standardframe Systems.

A B C D E

HP Part No. E1280-90010
Printed in the Federal Republic of Germany November 1995

Revision 3.0, November 1995

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The manual printing date and part number indicate its current edition. The printing date changes when a new edition is printed. (Minor corrections and updates which are incorporated at reprint do not cause the date to change.) The manual part number changes when extensive technical changes are incorporated.

May 1989 ... Revision 1

Effective Pages: ALL

June 1989 ... Update 1 - Errata

Effective Pages: 7-1, 7-8/9, A-1/2

November 1990 ... Revision 2

November 1991 ... Revision 2.1

November 1995 ... Revision 3.0

Purpose

The purpose of this manual is to describe how to install the HP82000 IC Evaluation System.

Audience

This manual is aimed at the system installation engineer and system users.

Contents

This manual contains 11 chapters and 1 appendix.

1	Installation Paperwork.
2	System Delivery and Placement.
3	Installing the Controller and Peripherals.
4	Software Installation.
5	Standardframe and Miniframe Installation.
6	Changing the PCM Option.
7	Mains Power Connection.
8	DUT Interfacing Mechanics.
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Installation Paperwork

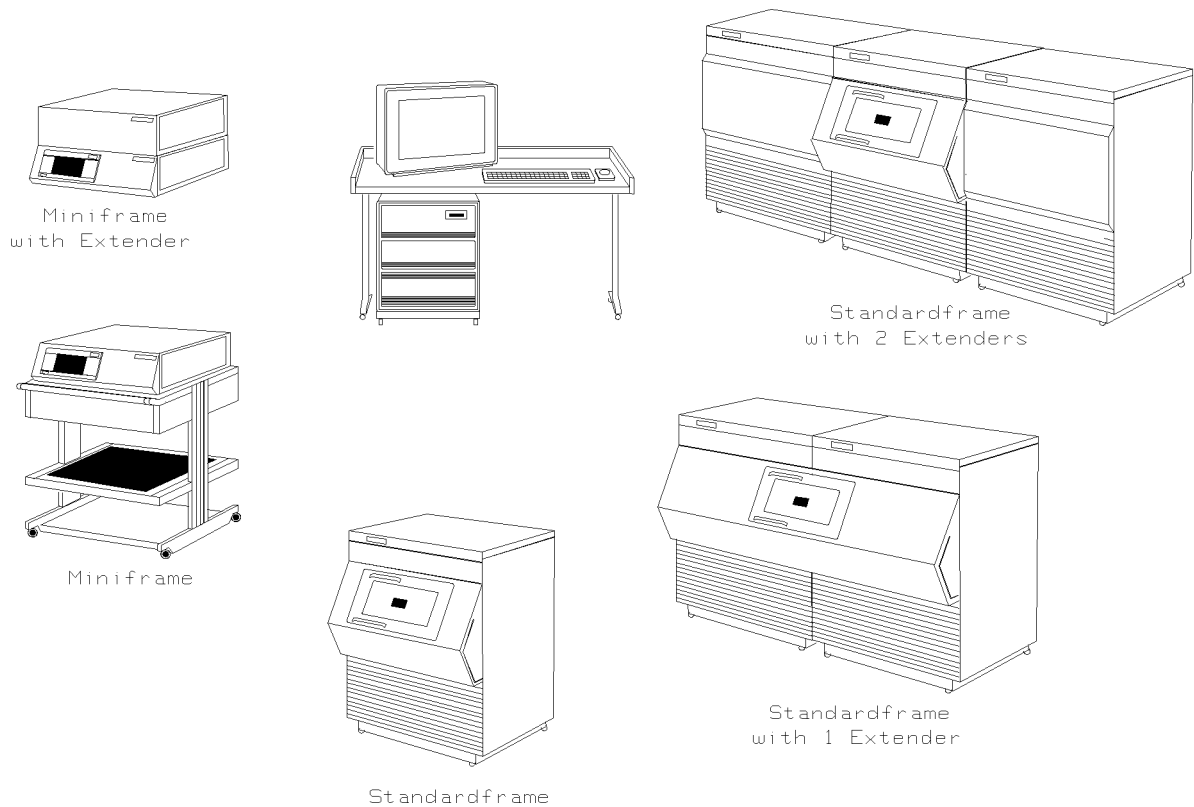


Figure 1-1. The HP82000 IC Evaluation System.

Configuration Sheets

This section contains configuration sheets which should be filled out during the installation of your HP82000 IC Evaluation System (refer to Figure 1-2). On completion of the system installation file these sheets in the System Support Log. Additionally you should have already filled out the checklist with the Site Planning and Preparation Guide before commencing installation.

The configuration sheets are:

1. Standardframe Channel Configuration.
2. Extender 1 Channel Configuration.
3. Extender 2 Channel Configuration.
4. Miniframe Channel Configuration.

5. HP-IB Configuration Table.
6. LAN Configuration Table.
7. Memory Configuration Table.
8. Disc Configuration Table.
9. Interface Card Configuration Table.

S t a n d a r d f r a m e C h a n n e l C o n f i g u r a t i o n

Use this form to document the Master Standardframe configuration. File a copy in the System Support Log.

Standardframe Channel Configuration for DUT Board N^o Standardframe or Extender N^o

BOARD	SLOT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		
CHAN	Term Type Rs Chan Mode	PROCESSOR / CLOCK	SEQUENCER																		
1	Term Type Rs Chan Mode																				
2	Term Type Rs Chan Mode																				
3	Term Type Rs Chan Mode																				
4	Term Type Rs Chan Mode																				
5	Term Type Rs Chan Mode																				
6	Term Type Rs Chan Mode																				
7	Term Type Rs Chan Mode																				
8	Term Type Rs Chan Mode																				
9	Term Type Rs Chan Mode																				
10	Term Type Rs Chan Mode																				
11	Term Type Rs Chan Mode																				
12	Term Type Rs Chan Mode																				
13	Term Type Rs Chan Mode																				
14	Term Type Rs Chan Mode																				
15	Term Type Rs Chan Mode																				
16	Term Type Rs Chan Mode																				

Figure 1-2. Standardframe Channel Configuration

Extender 1 Channel Configuration

Use this form to document Extender 1 configuration. File a copy in the System Support Log.

Standardframe Channel Configuration for DUT Board N^o Standardframe or Extender N^o

BOARD	SLOT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		
CHAN	Term Type Rs Chan Mode	PROCESSOR / CLOCK	SEQUENCER																		
1	Term Type Rs Chan Mode																				
2	Term Type Rs Chan Mode																				
3	Term Type Rs Chan Mode																				
4	Term Type Rs Chan Mode																				
5	Term Type Rs Chan Mode																				
6	Term Type Rs Chan Mode																				
7	Term Type Rs Chan Mode																				
8	Term Type Rs Chan Mode																				
9	Term Type Rs Chan Mode																				
10	Term Type Rs Chan Mode																				
11	Term Type Rs Chan Mode																				
12	Term Type Rs Chan Mode																				
13	Term Type Rs Chan Mode																				
14	Term Type Rs Chan Mode																				
15	Term Type Rs Chan Mode																				
16	Term Type Rs Chan Mode																				

Figure 1-3. Extender Channel Configuration

E x t e n d e r 2 C h a n n e l C o n f i g u r a t i o n

Use this form to document Extender 2 configuration. File a copy in the System Support Log.

Standardframe Channel Configuration for DUT Board N^o Standardframe or Extender N^o

BOARD	SLOT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		
CHAN	Term Type Rs Chan Mode	PROCESSOR / CLOCK	SEQUENCER																		
1	Term Type Rs Chan Mode																				
2	Term Type Rs Chan Mode																				
3	Term Type Rs Chan Mode																				
4	Term Type Rs Chan Mode																				
5	Term Type Rs Chan Mode																				
6	Term Type Rs Chan Mode																				
7	Term Type Rs Chan Mode																				
8	Term Type Rs Chan Mode																				
9	Term Type Rs Chan Mode																				
10	Term Type Rs Chan Mode																				
11	Term Type Rs Chan Mode																				
12	Term Type Rs Chan Mode																				
13	Term Type Rs Chan Mode																				
14	Term Type Rs Chan Mode																				
15	Term Type Rs Chan Mode																				
16	Term Type Rs Chan Mode																				

Figure 1-4. Extender Channel Configuration

M i n i f r a m e C h a n n e l C o n f i g u r a t i o n

Use this form to document the Miniframe and Extender (if fitted) configuration. File a copy in the System Support Log.

Miniframe Channel Configuration for DUT Board N^o
 Miniframe + Extender

BOARD	SLOT	Miniframe						Extender							
		1	2	3	4	5	6	1	2	3	4	5	6		
CHAN	Term Type Rs Chan Mode	PROCESSOR / CLOCK SEQUENCER													
1	Term Type Rs Chan Mode														
2	Term Type Rs Chan Mode														
3	Term Type Rs Chan Mode														
4	Term Type Rs Chan Mode														
5	Term Type Rs Chan Mode														
6	Term Type Rs Chan Mode														
7	Term Type Rs Chan Mode														
8	Term Type Rs Chan Mode														
9	Term Type Rs Chan Mode														
10	Term Type Rs Chan Mode														
11	Term Type Rs Chan Mode														
12	Term Type Rs Chan Mode														
13	Term Type Rs Chan Mode														
14	Term Type Rs Chan Mode														
15	Term Type Rs Chan Mode														
16	Term Type Rs Chan Mode														

Figure 1-5. Miniframe Channel Configuration

HP-IB Configuration

Use this form to record your HP-IB addresses. File a copy in the System Support Log.

Unit	Default Address	Actual HP-IB Address
Standardframe	703	
Std Frame Extender 1	704	
Std Frame Extender 2	705	
Miniframe	703	
DPS 1	702	
HSWG 1	715	
HSWG 2	716	
HSWG 3	717	
HSWG 4	718	
Disc 1	1400	
Disc 2		
Disc 3		
Tape Drive	1401	
Printer	800	
Plotter	801	
Measurement Equip 1	802	
Measurement Equip 2	803	
Measurement Equip 3	804	
Measurement Equip 4	805	
Measurement Equip 5	806	

Interface Card Configuration

Use this form to record your interface card configuration. File a copy in the System Support Log.

Interface	Default Select Code		Actual Select Code	
	Dec	Hex	Dec	Hex
Standard HP-IB Interface	7	07		
High Speed HP-IB Interface	14	0E		
Additional HP-IB Interface	8	08		
LAN	21*	15*		
RS-232 Interface	9	9		

Note



(*) If an SRM card is installed, it must be set to select code 21 (Hex 15). Change the address of the LAN card to another unused address.

LAN Configuration

If your system is to be connected to LAN you should fill in the table. The details will be required during software installation.

System Name	
Sub Domain Name	
Domain Name	
Internet Address	
IPC Address	

Memory Configuration

Check the order form to see how much memory is installed.

Built In RAM	
Extra RAM	

Disc Configuration

If you are planning on running applications other than HP82000, you will need this information when you are installing them.

Total Capacity	
Swap Space Required	60 MByte - (122976 blocks)
Minimum Free Space	5%

S y s t e m D e l i v e r y a n d P l a c e m e n t

I n i t i a l I n s p e c t i o n o f S h i p m e n t C o n t a i n e r f o r D a m a g e

Inspect all shipping containers for damage. If any of the packing materials are damaged, they should be kept until the contents of the shipment have been checked for completeness, and the equipment has been verified mechanically and electrically.

W h a t T o D o I n C a s e o f L o s s o r D a m a g e

Check that the components of the shipment correspond to your order. If the contents are incomplete, mechanical damage or defect is apparent, or if an instrument does not pass the operator's checks or meet specification when received, notify the nearest Hewlett-Packard Sales/Service Office. Keep the shipping materials for carrier's inspection. The HP Office will arrange for repair or replacement of the unit without waiting for settlement of the claim against the carrier.

S h i p p i n g

N o t e



The system components should be protected from temperature extremes which may cause condensation within them.

If a unit is to be shipped to a Hewlett-Packard Sales/Service Office, attach a tag showing owner, return address, model number and full serial number and the type of service required. The original shipping carton and packing material may be re-usable, but the Hewlett-Packard Sales/Service Office will provide information and recommendations on materials to be used if the original packing is no longer available or re-usable. General instructions for re-packing are as follows:

1. Use enough shock-absorbing material (3 to 4 inch layer - 10 cm) around all sides of the equipment to provide a firm cushion and prevent movement inside the container.
2. Seal the shipping container securely.
3. Mark the shipping container *FRAGILE* to encourage careful handling.
4. In any correspondence, refer to the equipment by its-model number and serial number.

U n c r a t i n g t h e S y s t e m

This section provides you with information on uncrating your system.

To unpack the system complete the following procedure:

1. Cut the two straps securing the outer packaging.
2. Lift off the outer packaging.
3. Remove the pallet ramp.
4. Remove the cardboard packing piece from the top of the mainframe.

Note that part of this packing piece is a box containing accessories such as:

- a. Calibration Probe.
 - b. Various Cables.
5. Remove the polythene bag
 6. Store the packing materials in case of later re-use.

S t a n d a r d f r a m e P l a c e m e n t

This section provides you with information on positioning your standardframe(s)

W a r n i n g



When moving the system or its peripherals with a fork-lift truck, care must be taken to avoid injury to personnel. A relatively offset center of gravity could cause a mainframe to tip in any direction, possibly causing serious injury to personnel or damage to the equipment. Move only one mainframe at a time and ensure that it is securely fastened to the fork-lift truck.

C a u t i o n



Some peripherals are equipped with casters, others are not. In either case, the units can be moved short distances provided that extreme care is taken to avoid tipping or jarring the units. Push slowly, being careful to avoid jamming casters or mainframe feet on debris, cables or in seams or cracks in the floor.

Tools Needed

Open ended spanner size 13 mm (9/16 inch) for wooden blocks, feet.

To position your standardframe(s) in the final location follow the next procedure and refer to Figure 2-1.

1. Using a fork-lift truck, move the system mainframe (1) on its pallet (2) close to its final location.
2. Place the pallet ramp (4) as shown in Figure 2-1, ensuring that it is securely located in the locking groove (6) of the pallet.

2-2 System Delivery and Placement

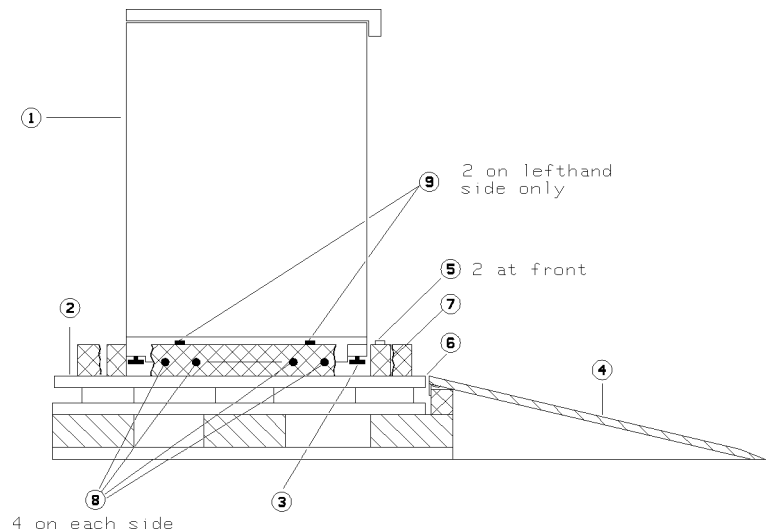


Figure 2-1. Position of Pallet Ramp.

3. Remove the two bolts (5) securing wooden block (7) to the pallet. Remove the wooden block.
4. Remove the four bolts (8) on the right and left side of the standardframe. Support the mainframe when removing the last bolt as it carries the entire weight.
5. Remove the two bolts (9) on the left hand side of the standardframe.
6. Remove the wooden blocks on the left and right hand sides.
7. Check that the four fixed feet (3) (levelling pads) are fully raised, use the 13 mm spanner.

Warning



Failure to raise the fixed feet fully may cause damage to them during the location procedure. The mainframe may therefore become unstable and cause a safety hazard.

Caution



The next step requires two persons.

8. Carefully roll the mainframe down the ramp.

The system power supply modules have been secured for shipment using a Power Supply Lock Bracket. You should remove this bracket before installation.
9. Open the mainframe rear door. Remove the power supply lock bracket (2 bolts) and catch lock(s) (2 screws).

Figure 2-2 shows the power supply lock bracket and catch lock(s).

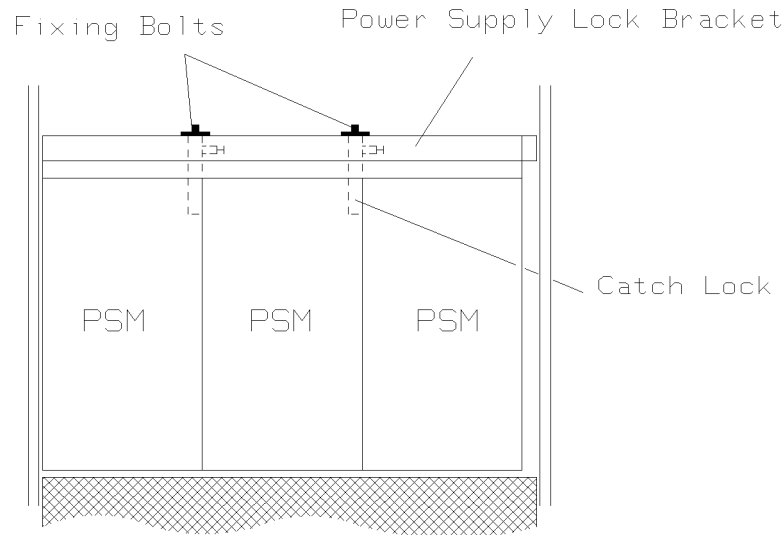


Figure 2-2. Power Supply Lock Brackets and Catch Lock.

10. Close the rear door and push the mainframe to its final position.

N O T E



When installing standard frame cabinets, ensure that there is a distance of at least 100cm (40in) between the cabinet rear and any interior wall or object which may affect the flow of cooling air.

11. Secure the mainframe in position by lowering the four fixed feet (3) until the roller casters no longer support it, ensure that it is level.
12. Remove the pallet (2) , ramp (4) and packaging to a storage location in case of subsequent re-use.

M i n i f r a m e U n p a c k i n g a n d P l a c e m e n t

This section provides you with information on unpacking and positioning your miniframe/extender.

1. Using a forklift truck move the system miniframe on its pallet close to its final location.
2. Cut the adhesive tape sealing the box.
3. Open the box and remove the cardboard and polystyrene packing pieces.

N O T E



When installing miniframes, ensure that there is a distance of at least 40 cm (16 in) between the cabinet sides and any interior wall or object which may affect the flow of cooling air.

2-4 System Delivery and Placement

c a u t i o n



As the miniframe weighs 50kg (110 lbs), two persons are required during handling.

4. Carefully lift out the miniframe/extender and place it on your work bench.

Installing the Controller and Peripherals

Supported Controllers and Peripherals

The HP 82000 IC Evaluation System is controlled by an HP 9000 series controller.

Note



We recommend that you install the controller and software first. The SW installation may take up to 3 hrs, depending on the type of controller to be used. Once you have started the SW install process you will be prompted for answering questions and inserting next media. Therefore, you can continue installing the system hardware to optimize time efficiency. For Series 300/400 controllers all install media are DAT tapes. For Series 700 controllers the HP-UX, UX-Applications and SICL Libraries come on CDROM.

Note



To ease SW installation from scratch on a Series 700 controller only, a customized CDROM comes with the HP82000 system which allows to do the complete install process from one media. Necessary re-boots and kernel configurations are performed automatically without operator intervention.

Controller Requirements

- Supported controllers for the latest SW revision (6.x.x) are listed below:
 - 380
 - 382
 - 425s (VRX Mono and Colour)
 - 425t (VRX Mono and Colour)
 - 725/75 PA-RISC
 - 755 PA-RISC
- Graphics Resolution up to 1280 X 1024 pixels, always high resolution for Series700.
- LAN Interface (if required).
- High Speed Disc Interface (HP-IB or SCSI) with DMA Controller.
- >32 Mbyte RAM recommended

If you have a controller and are unsure of its suitability, check with your local HP representative.

Mass Storage Devices

You need:

- a disk-drive of at least 600 Mbyte capacity.
- a DDS tape drive to install the software.
- a CDROM drive to install HP-UX and UX applications (Series 700 only).

Display

The displays are already included in the recommended controller bundles. The application software will only support displays with a resolution of up to 1024 by 1280 pixels. For other displays, refer to the *HP9000 Computers Configuration Reference Manual P/N 98561-90020*.

Printer

The following printers are supported:

Description	Product Number
Thinkjet Printer (RS232)	HP 2225D
QuietJet Printer (RS232)	HP 2228A
QuietJet+ Printer (RS232) wide carriage	HP 2227A
Paintjet Color Graphics Printer	HP 3630A 001
PaintJet XL300	HP C1645A
Laserjet Printers	All ¹

¹ The entire Laserjet Printer family is supported.

The HP 82000 Application SW does **not** support the HP DeskJet family printers.

System Cables

The cables listed below can be used to connect the system hardware to an HP 9000 Series 300/400/700 controller.

For other cables, refer to the *HP9000 Computers Configuration Reference Manual P/N 98561-90020*.

3-2 Installing the Controller and Peripherals

Description	Product Number
HP-IB cable	
length 1.0 m	HP 10833A
length 2.0 m	HP 10833B
length 4.0 m	HP 10833C

P o w e r C o n n e c t i o n s

The controller and peripherals are normally connected directly to the local mains.

C a u t i o n



Set the power-switches of the controller and peripherals in the OFF position before installing them.

Before switching on mains power, ensure that the voltage-selectors and fuses of the controller and peripherals are correct for the local supply. Refer to the individual manuals for details of power selection.

P o w e r C a b l e

In accordance with international safety standards, the equipment is supplied with a three-wire power cable. When connected to an appropriate AC power socket, the cable grounds the cabinet of the equipment. The type of power cable shipped with each device depends upon the destination country.

W a r n i n g



To prevent possible injury or death, check the following before switching-on the controller or peripherals.

- If the equipment is to be powered via an autotransformer, make sure that the common terminal of the autotransformer is connected to the grounded pole of the mains power source.
- Check that the mains power-socket has a protective-earth. The power cable plug must only be inserted in a socket which has a protective-earth. This protection must not be negated by using an extension-cord which does not have a protective-earth conductor.
- Make sure that the protective-earth terminal of the equipment is connected to the protective-earth conductor of the power cable. To verify this, check that the resistance between the equipment chassis, the front panel and the ground conductor of the power cable is less than 0.1 Ω .
- Check that the plug on the power cable is compatible with the mains socket. If the plug does not fit the socket, or the cable is to be attached to a terminal-block, cut the cable at the plug end and attach a new plug.

W a r n i n g



If a new plug must be connected, it must be done by a qualified electrician. The plug must meet local safety requirements and have the following features:

- Adequate load-carrying capacity.
 - Ground connection.
 - Cable-clamp.
-

I n s t a l l i n g M e m o r y a n d I n t e r f a c e C a r d s

If you need to install memory or interface cards in your system controller, refer to the *HP 9000 Series 300 Peripheral Installation Guide* supplied with your controller.


I n s t a l l i n g t h e K e y b o a r d

1. Connect the keyboard to the controller using the HP-HIL cable supplied. Make sure that the dot-markings on plugs and sockets match.
2. If you require an ID module for other applications, connect it to the keyboard.
3. Connect the mouse to the keyboard.

For information on installing other HP-HIL peripherals, refer to the *HP 9000 Series 300 Peripheral Installation Guide*.

I n s t a l l i n g t h e M o n i t o r


C a u t i o n Check that the monitors power-line setting is compatible to that of the local mains supply. If not refer to the User's Manual for power-line settings.




Connect the video and audio inputs of the monitor as described in the manual supplied with it.

I n s t a l l i n g t h e S y s t e m D i s k (S e r i e s 3 0 0 o n l y)

N o t e The system disk should have a minimum capacity of 600 Mbyte. The disk is shipped separately from the controller.




C a u t i o n Check that the disk's power-setting is compatible with the local mains. If not, refer to the *Users Manual* for the correct power-settings.



Set the power switch on the disk in the OFF position before installing the disk.

-
- Carefully remove the disk from its packaging.
 - Set the Address switches on the back of the disk to address 0. Use the switch labeling as reference.

N o t e For further information on your system disk refer to the owners manual supplied with the disk (especially for details of how to remove the Shipping-Bolt).



Caution



Check that the printer's power-line setting is compatible to that of the local mains supply. If not refer to the Users Manual for the power-line settings.

- To unpack and install your system printer, refer to the Users Guide supplied with the printer.
- If you are connecting the printer via RS-232, connect an HP12342G cable between the printer and the controller RS-232 interface.
- If you are connecting the printer via the HP-IB connect the printer to an **additional** HP-IB Interface. Do not connect it to the fast HP-IB interface used for the disk or to the HP-IB interface used for the HP82000 hardware.

Note



You need a DAT Drive to install the HP 82000 software on the Workstation. This can be either an internal DAT Drive, or an external stand-alone type, which is connected to the Workstation's SCSI bus (not Fast-Wide SCSI). The HP 1.3 GB, 2.0 GB and 8.0 GB (Data Compression) DAT Drives are supported for this installation.

1. Unpack the drive.
-

Caution



Check that the DAT drives power-setting is compatible with the local mains. If not, refer to the Users Manual for the correct power-settings.

2. Switch-off the controller and DAT drive.
3. Set the address of the tape-drive (preferred SCSI address is 3).
4. Connect one end of the SCSI cable to the SCSI socket on the back of the tape drive. Bring the 2 spring-fasteners in position to secure the connection.
5. If not more SCSI cables have to be attached to the DAT drive, make sure that the SCSI termination block is connected to the second SCSI connector on the back of the tape drive.
6. Connect the other end of the SCSI cable to the SCSI interface on the controller.

For further information refer to the manual supplied with your tape-drive.

3-6 Installing the Controller and Peripherals

This procedure tells you how to configure Series700 Workstations for the HP82000 system . This chapter contains information about the installation and configuration of the Workstation, Interfaces and Peripherals required by the HP 82000 IC Verification System. The following topics are covered:

- Supported Workstation Configurations
- Installing an High-Speed HP-IB Interface
- Installing Additional EISA Interfaces
- Installing HP-HIL ID Modules
- Installing Peripherals

S u p p o r t e d W o r k s t a t i o n C o n f i g u r a t i o n s

Recommended Workstation from the HP9000 Series 700 family:

- 725/75 PA-RISC

Code compatible platforms are:

- 745 PA-RISC
- 755 PA RISC

N o t e



This Installation Procedure only covers configuring the 725/75 and the 755 Workstations as the common platforms. For configuration and installation of a 745 Workstation please refer to the appropriate manuals.

Table 3-1 and Table 3-2 show which configurations of the 725/75 and 755 Workstations are required/recommended for use with the HP 82000 system.

Table 3-1. 755 Workstation Configuration

	Minimum	Recommended
RAM	64 MB	128 MB
HARD-DISK	600 MB	2 GB Standard Configuration
Monitor		19 inch Color, 1024 x 1280
SCSI DAT Drive		Internal, with Data Compression
CD-ROM Drive		Internal, 600 MB
HP-IB Interface		E2071B

Table 3-2. 725 Workstation Configuration

	Minimum	Recommended
RAM	64 MB	128 MB
HARD-DISK	600 MB	1 GB Standard Configuration
Monitor		19 inch Color, 1024 x 1280
SCSI DAT Drive		External, with Data Compression
CD-ROM Drive		Internal, 600 MB
HP-IB Interface		E2071B

Workstation Interfaces and Ports

The following diagram shows the connection points for standard HP 9000 Series 755 and 725 configurations:

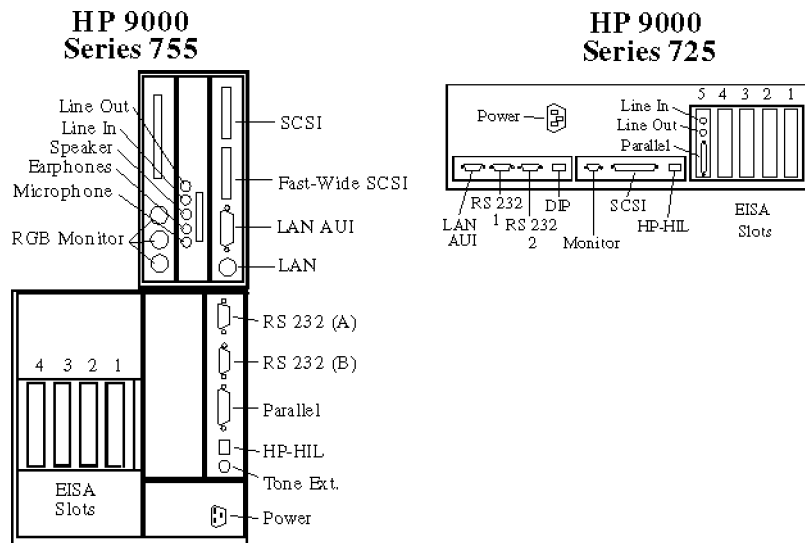


Figure 3-1. HP 9000 Series 755 & 725 Interfaces and Ports

The functions of and connections to these ports and interfaces are described in the documentation supplied with the workstation. This chapter only describes procedures and dependencies which are specific to the HP 82000 system.

Installation Procedure

The detailed procedure for installing an HP 900 Series 700 Workstation is included in the documentation provided with the Workstation. The following is an overview of the steps you should take to configure the Workstation for the HP 82000 IC Verification System:

1. Unpack and install the Workstation, Monitor, Keyboard and Mouse, and install them as described in the documentation provided.
2. Connect the Workstation to mains power, and verify that it boots correctly.
3. Switch the Workstation off again.
4. Remove the cover(s) on the workstation, so that you can access the EISA Slots to install Interface Cards. (See also “Owner’s Guide” of your Workstation).

Caution



Take ESD precautions while installing Interface Cards, to prevent damage to the Workstation and the Interface Cards.

5. Install the EISA Interface Cards supplied, as described in the following sections.

Note



Configurations described in this document take precedence over the standard configurations given in the documentation supplied with the EISA Interface Cards. The configuration given here has been tested and works with the HP 82000 software. It can not be guaranteed that other configurations will work first-time.

6. Reboot the Workstation, to verify that the EISA Interface Cards are installed correctly. (Some of the EISA cards like HP-IB and GPIO interface will NOT automatically be recognized by the Workstation. Especially an HP-IB interface card needs to be configured into the kernel).
7. Replace the covers on the Workstation.
8. Install peripherals, such as external drives, printers, etc.

One EISA High-Speed HP-IB Interface is required to control the HP82000 system, HP-IB Device Power Supplies (DPS's) and HP-IB High Speed Width Generators from the Workstation. Supported is only one model of High-Speed HP-IB Interface:

- E2071B High-Speed HP-IB Interface (supported from HP 82000 Software, Revision 6.x.x).

The installation procedure is as follows:

1. Configure the DIP switches on the HP-IB card.
2. Install the HP-IB Interface in the workstation.
3. Configure the HP-IB Card into the HP-UX Kernel. This is described in the chapter 2.

E 2 0 7 1 B D I P - S w i t c h S e t t i n g s

Before you install the E2071B HP-IB Interface in the workstation, configure the DIP switches as shown in the following Diagram:

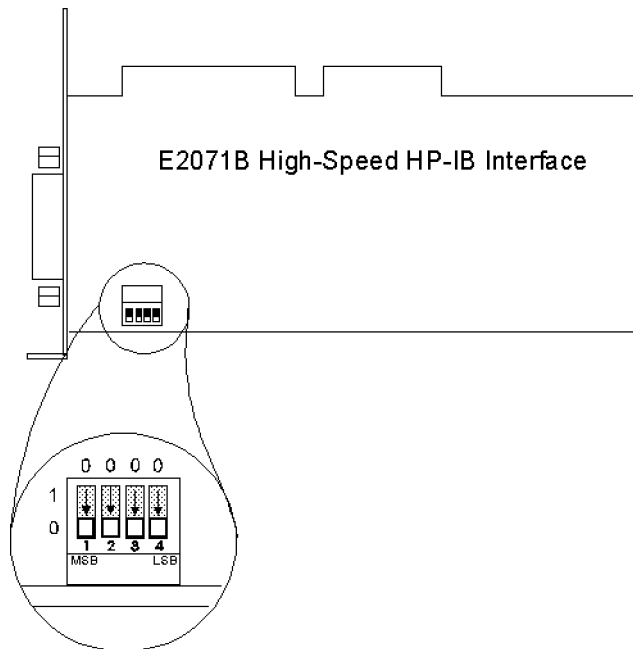


Figure 3-2. DIP Switch Settings - E2071B High-Speed HP-IB Interface

Use the default setting (0000), as shown in Figure 3-2. Other configurations are possible, but we recommend this configuration for the HP 82000 system. (See also HP E2071B Installation Guide).

E I S A A d d r e s s A r e a

The Address Area of the E2071B HP-IB Interface is set to **0x250-0x257** for the HP 82000 system (corresponds to DIP Switch setting **0000**). When you install other EISA Cards that have a fixed, or hard-configurable Address Area (via e.g. DIP Switches or Jumpers), ensure that there is no conflict with the E2071B.

E I S A S l o t N u m b e r

Install the High-Speed HP-IB Interface in **EISA slot 1** of the Workstation, as shown in the following diagram:

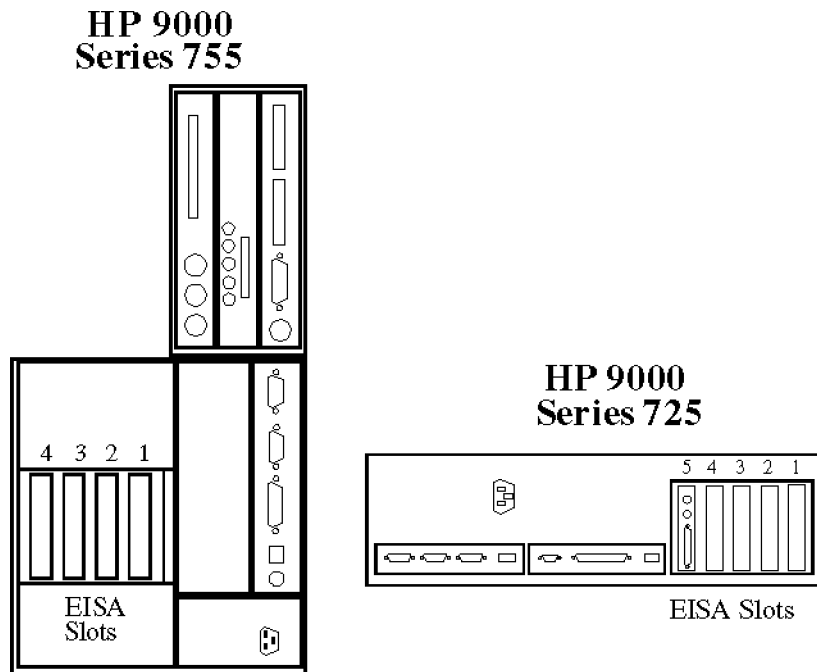


Figure 3-3. EISA Slot Number - E2071B HP-IB Interface

The installation and configuration procedure for each additional EISA Card is supplied with the card. However, you should take care to avoid conflicts with the standard cards.

EISA Slot Assignments

By the definition of EISA, Interface Cards can be installed in any of the EISA slots in the workstation. However, for the HP 82000 system, we recommend that you install EISA Cards in the following order:

Table 3-3. EISA Slot Assignments (HP 9000 Series 725 and 755)

Location	Board Description
Slot 1	E2071B High-Speed HP-IB Interface
Slot 2	empty
Slot 3	Other (Printer HP-IB, Network, etc.)
Slot 4	Parallel (Printer) Interface (preconfigured) ¹

¹ HP 9000 Series 725 only

The EISA slot numbering in HP 9000 Series 755 and 725 Workstations is illustrated in Figure 3-3.

Note



It is not possible to install two EISA HP-IB Interfaces (of any kind) in adjacent slots, as the standard HP-IB Connectors are too large to fit beside each other. Take care that you take such physical limitations into account when you install extra EISA Cards.

EISA Interrupt Level

The Interrupt Level of the E2071B High-Speed HP-IB Interface is set to Interrupt Level 3 by default. (See “Configuring the E2071B HP-IB Card into the Kernel”). When you install/configure another interrupt-driven EISA Card, make sure that there is no conflict with the E2071B.

Note



If you are required to change the Interrupt Level of the E2071B, refer to the documentation supplied with the card. Note that you will have to take account of this change when you configure the HP-IB Interface in to the HP-UX kernel (described in chapter 2, Installing the Software).

One HP-HIL Module is delivered with every HP 82000 System:

Module : C/ANSI C Developer's Bundle .

Note the serial and product number of each ID Module. You will need this information when you install the system software.

The installation of HP-HIL Modules is described in the documentation provided with each module. However, you should note the following:

- You must install ID Modules between the workstation and the keyboard, as shown in Figure 3-4. Do not attempt to install them between the keyboard and mouse, as this will cause problems while you are booting the software.
- The C/ANSI C requires a codeword, which is linked to a specific ID Module (referenced by the module's Serial Number). This codeword is not transferable, so check that you have the correct ID Module and that the codeword was generated for this module.

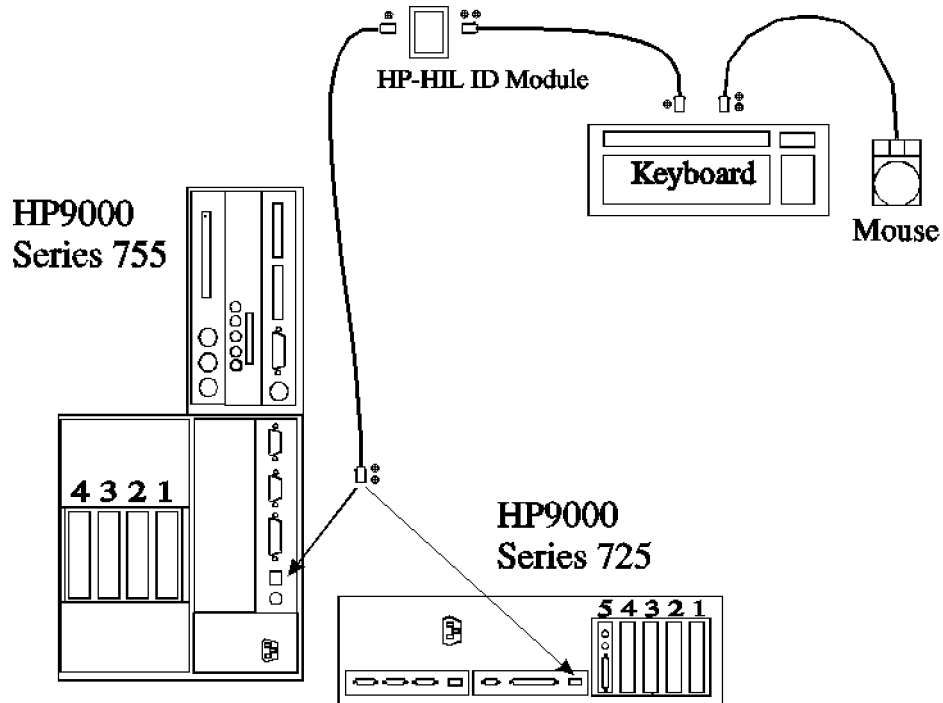


Figure 3-4. Installing HP-HIL Modules

Installing Peripherals

Installing a CD-ROM Drive

You need a CD-ROM Drive to install HP-UX and the SICL Software on the Workstation. This can be either an internal CD-ROM Drive, or an external stand-alone type, which is connected to the Workstation's SCSI bus (not Fast-Wide SCSI).

Installing a DAT Drive

You need a DAT Drive to install the HP 82000 software on the Workstation. This can be either an internal DAT Drive, or an external stand-alone type, which is connected to the Workstation's SCSI bus (not Fast-Wide SCSI). The HP 1.3 GB, 2.0 GB and 8.0 GB (Data Compression) DAT Drives are supported for this installation.

Installing Printers

The HP 82000 software directly supports a limited set of printers, but it is possible to use any printer which is supported by HP-UX and the xpr command. No hardware modifications to the printer are usually required, but a shell script in the HP 82000 software must be modified for each different type of printer. These modifications are described in Chapter 2, Installing the Software.

Connecting the printer to the Workstation is described in the documentation provided with the printer.

S o f t w a r e I n s t a l l a t i o n

This chapter is divided into two main sections:

- See page 4-3 for SW installations on Series 300/400 Workstations
- See page 4-17 for SW installations on Series 700 Workstations

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This part of the chapter describes how to install the SW for the HP 82000 on Series 300/400 workstations. With this procedure, install and configure:

- the HP-UX Run-Time Environment
- the C/ANSI C Developers's Bundle
- HP Basic/UX
- the HP 82000 System Software

These procedures describe the installation on HP 9000 Series 300 and Series 400 Computers. A full decription of the computer hardware required by the HP 82000 hardware and software is given in the chapter "Installing the Controller and Peripherals".

You need the following tapes (at least) for this installation:

Tape	Revision	Tape Number	Format
HP-UX Install	9.0.x	1 OF 1	INSTALL FORMAT
HP-UX RUN-TIME, 1-32 USER	9.0.x	1 OF 1	UPDATE FORMAT
C/ANSI C DEVELOPER'S	9.0.x	1 OF 1	UPDATE FORMAT
HP BASIC/UX Software	6.3	1 OF 1	UPDATE FORMAT
HP 82000 System Software	6.0.4	1 OF 1	UPDATE FORMAT

You should also have a copy of the manual *Installing and Updating HP-UX* for HP 9000 Series 300/400 Computers (Part Number: B1862-90002), which you can refer to during the HP-UX installation.

The 1/4 inch cartridge tape-drive you use for the installation should be connected to HP-IB Bus, select code 7, and have bus address 7. This corresponds to the default `/dev/update.src` device file. If you need to change the address of the Tape-Drive, or the HP-IB Bus it's connected to, remember to change the `update.src` device file to correspond with the new address (use the `mknod` command).

This installation is described in five steps:

- Step 1. Installing the HP-UX Run-Time Environment**
- Step 2. Installing the C/ANSI C Developer's Bundle**
- Step 3. Installing HP Basic/UX**
- Step 4. Installing the HP 82000 System Software**
- Step 5. Enabling the HP 82000 System Software Options**

The installation procedures in each of these steps are given in the form of four-column tables. In these tables:

The **Time** column indicates the time required for each step so that you can carry on with the hardware installation while the software is loading. Note that the times given are estimations, based on measurements made during an installation.

The **Note** column refers you to the notes at the end of each table. Read these notes **before** performing the step.

The **Input** column indicates what you should input to the computer. In the update utility you can press the **HELP** softkey to get more information on a particular part of the installation process.

The **Action Column** describes the action to be taken, or what a particular input does.

Step 1. Installing the HP-UX Run-Time Environment

Use the following procedure to install the HP-UX Run-Time Environment. During the installation you can refer to *Installing and Updating HP-UX* for more details about the installation process.

At this stage it is assumed that the Controller, Monitor, Hard-Disc(s) and a 1/4 inch Cartridge Tape-Drive have been installed correctly and are powered-off.

If you want to set up the computer for networking as part of this procedure, you need to know the following information before you start:

The *IP Address* of the Computer. This is a four-digit network address, with each digit separated by a period (for example, 15.133.3.220).

The system name. This is any name you assign to this Computer's node in the network (for example, `system1`).

Time	Note	Input	Action
▲			Switch-on the Hard-Disk.
⋮			Switch-on the Tape-Drive.
⋮			Insert the HP-UX INSTALL tape in the Tape-Drive, and wait until the tape has loaded.
⋮			
⋮			
⋮			
5 Min			Switch on the Computer and Monitor.
⋮			
⋮	1	2 <input type="button" value="Return"/>	Select <i>Boot Mode Selection</i> .
⋮	1	2 <input type="button" value="Return"/>	Select <i>HP-UX Compatible</i> Boot Mode.
⋮	1	P <input type="button" value="Return"/>	Select <i>Permanent</i> .
⋮			
⋮	2	<input type="button" value="Space Bar"/>	Hold the space bar down, until "keyboard" appears on the screen.
⋮			
▼		2h (for example)	Select SYSHPUX , from tape.

Note 1 These steps are only required if you are installing the software on a Series 400 Computer, which has no HP-UX already installed.

Note 2 Note the following differences between what you type on a Series 300 and on a Series 400 Computer.

Series 300: Type all letters in lower-case (as shown in the procedure) and do *not* press . The result will be displayed in upper-case at the bottom-right corner of the screen.

Series 400: Type all letters in upper-case (as they are displayed on the screen) and press .

If you do not type these characters in this way, the system will not boot correctly.

Time	Note	Input	Action
— 60 Min		y	... to continue loading data. Wait for the system to customize and reboot
—	5	y <input type="text" value="Return"/>	... to set up networking.
▲			Set up the date and time.
⋮			
⋮			
⋮			Wait for the system to reboot.
⋮		root <input type="text" value="Return"/>	Login as <i>root</i> .
5 Min		n <input type="text" value="Return"/>	If your console type is not in the list.
⋮		128 <input type="text" value="Return"/> (for example)	Enter the number of columns.
⋮		46 <input type="text" value="Return"/> (for example)	Enter the number of rows.
⋮		more /tmp/update.log <input type="text" value="Return"/>	Check this file for error messages.
⋮			Unload and remove the tape from the Tape-Drive.
▼			

Note 5 If you want to set up networking enter *y* here. The next steps prompt you for the system hostname, IP address, and the correct time and date.

If you do *not* want to set up networking here, enter *n*, and you will only be prompted for a system name and the correct date and time.

Step 2. Installing the C/ANSI C Programmer's Development Bundle

Use the following procedure to install the C/ANSI C Programmer's Development Bundle. You can refer to *Installing and Updating HP-UX* for more details about the installation process.

Time	Note	Input	Action
▲ ⋮ ⋮ ⋮ 5 Min			Insert the C/ANSI C tape in the Tape-Drive, and wait for the tape to load.
⋮ ⋮ ⋮ ⋮ ⋮ ▼		/etc/update ⋮ Select all filesets ... ⋮ Select Item ⋮ Start Loading Now ⋮ Select Item	Start the update utility. Highlighted menu item. Press this softkey. Highlighted menu item. Press this softkey.
— 50 Min		y	... to start loading filesets.
— 1 Min		more /tmp/update.log <input type="button" value="Return"/>	Check this file for error messages.
—			Unload and remove the tape from the Tape-Drive.

Step 3. Installing HP Basic/UX

Use the following procedure to install the HP Basic/UX software.

Time	Note	Input	Action
▲ ⋮ ⋮ ⋮ 5 Min			Insert the HP BASIC/UX tape in the Tape-Drive, and wait for the tape to load.
⋮ ⋮ ⋮ ⋮ ⋮ ▼		/etc/update ⋮ Select all filesets ... ⋮ Select Item ⋮ Start Loading Now ⋮ Select Item	Start the update utility. Highlighted menu item. Press this softkey. Highlighted menu item. Press this softkey.
— 15 Min		y	... to start loading filesets.
— 1 Min		more /tmp/update.log <input type="button" value="Return"/>	Check this file for error messages.
—			Unload and remove the tape from the Tape-Drive.

Step 4. Installing the HP 82000 Software

Use the following procedure to install the HP 82000 software.

Time	Note	Input	Action
▲ : : : : :			Insert the HP 82000 System Software tape in the Tape-Drive, and wait for the tape to load.
5 Min		/etc/update <input type="button" value="Return"/> ~~~~~ Select/View Filesets ... ~~~~~ Select Item ~~~~~ View Filesets	Start the update utility. Highlight this menu item. Press this softkey. Press this softkey.
:	1	y <input type="button" value="Return"/>	... to select the E12000DEM fileset.
:	1	y ~~~~~ Partit'n Screen ~~~~~ Start Loading	... to select the E12000SYS fileset. Return to the partitions screen.
▼			Press this softkey.
—		y	... to start loading filesets.
20 Min		more /tmp/update.log <input type="button" value="Return"/>	Check this file for error messages.
▲ : : : :			Unload and remove the tape from the Tape-Drive.
5 Min		reboot -r <input type="button" value="Return"/>	Reboot the system.
▼		y <input type="button" value="Return"/>	... the date is OK.

Note 1 Select the filesets of the products you ordered. An n in the leftmost column indicates that a fileset is deselected, and a y means that it is selected. E12000SYS and E12000DEM are the minimum requirement.

If you want to load the E1293A software (HP74200 DCS Link) then, first load HP74200 DCS software. Otherwise you get the error message:

```
/usr/hp74200/etc/eds_config not executable
```

when the update utility customizes the E1293A software.

Use the following procedures to configure the HP 82000 software and some HP-UX parameters.

This section contains four procedures, which:

1. Configure the HP 82000 Software
2. Set Up the Local Default Printer
3. Set Up the Demo User
4. Configure HP-UX
5. Enable the HP 82000 Software

Configuring the HP 82000 Software

Time	Note	Input	Action
▲		root <input type="text" value="Return"/>	Login as root
⋮		n <input type="text" value="Return"/>	If your console is not in the list.
⋮		128 <input type="text" value="Return"/> (for example)	Enter the number of columns.
⋮		46 <input type="text" value="Return"/> (for example)	Enter the number of rows.
⋮			
20 Min	1	vi /hp82000/pws/data/model <input type="text" value="Return"/>	Modify the model file.
⋮			
⋮	2	vi /hp82000/pws/data/mainframes <input type="text" value="Return"/>	Modify the mainframes file.
⋮			
⋮	3	vi /hp82000/pws/data/offl_tester_co <input type="text" value="Return"/>	Create this file if you have D400 boards in the system.
▼			

Note 1 When the system boots, the message `usr/bin/sendmail not executable` may be displayed. To remedy this, you need to edit the file `/etc/netbsdsrc`. Change the first line from `#!/bin/sh` to `#!/bin/ksh`

Note 2 Valid entries are :

- D50,32K for E1210A
- D50,128K for E1210B
- D50,512K for E1210C
- D100,64K for E1211A
- D100,256K for E1211B
- D100,1024K for E1211C
- D200,64K for E1212A
- D200,256K for E1212B
- D200,1024K for E1212C
- D400,64K for E1214A or mixed configuration with E1212A
- D400,256K for E1214B or mixed configuration with E1212B

4-10 Software Installation

Ensure that the entries correspond to your hardware. Do not delete the header line in this file. If you make any changes to this file, remember to save the file afterwards.

Note 3 You must make an entry in this file for every card-cage, DPS and HSWG *channel*. The syntax of these entries is:

- The entry for each **Card Cage** takes the form **Mc,h**, where:
 - c** is the number of the card-cage (1 to 4).
 - h** is the HP-IB address of the clock board in this card-cage.
- The entry for each **HSWG channel** takes the form **HSWG,c,iiii,hh**, where:
 - c** is the HSWG channel-number (1 or 2).
 - iiii** is the number of the I/O channel driving this HSWG channel.
 - hh** is the HP-IB address of this HSWG.
- The entry for each **DPS** takes the form **DPSn,h**, where:
 - n** is the number of the DPS (1 or 2)
 - h** is the HP-IB address of the DPS.

Ensure that the entries correspond to your hardware. Do not delete the header line in this file. If you make any changes to this file, ensure that you save it afterwards.

Note 4 When working with mixed D200/D400 configurations, this file simulates the system configuration in offline mode. This is necessary, because in offline mode the system cannot determine the hardware configuration. This file is never be used in configurations where only D50, D200 or D400 boards are installed.

Each line of this text file represents one mainframe. The sixteen available slots of the mainframe must each be given a number which represents a 200 MHz board, a 400MHz board, a PMU board or an empty slot. No entry is needed for the clock board and sequencer board in slots 1 and 2, respectively. The numbers are separated by a comma. The complete syntax for one mainframe is:

slot 3, slot 4, slot5,... .. slot18

where each slot is either:

- 400 -representing a 400MHz board
- 200 -representing a 200MHz board
- 1 -representing a PMU board
- 0 -representing an empty slot

For example:

400,400,400,400,400,400,400,400,1,0,0,0,0,0,0,0
400,400,400,400,400,400,200,200,1,0,0,0,0,0,0,0

This indicates a two mainframe system with

- 200 MHz boards in slots 7 and 8 of the second mainframe.
- 400 MHz boards in slots 1,2,3,4,5,6,7,8 of the first mainframe, and slots 1,2,3,4,5,6 of the second mainframe.
- PMUs in slot 9 of both mainframes.
- all other slots are empty.

Time	Note	Input	Action
▲		~~~~~ sam (Return)	Start the configuration program.
⋮		~~~~~ Peripheral Devices ->	Highlighted menu item.
⋮		~~~~~ Select Item	Press this softkey.
⋮		~~~~~ Printers and Plotters ->	Highlight this menu item.
⋮		~~~~~ Select Item	Press this softkey.
⋮		~~~~~ Add a local printer...	Highlighted menu item.
⋮		~~~~~ Select Item	Press this softkey.
⋮		lpr (Return)	Enter the printer name.
⋮	1	thinkjet	Enter the printer model.
⋮		(Return)	... the device file name is correct.
10 Min		(Return)	... to set the printer priority to 0.
⋮		y	Make this the default printer.
⋮		~~~~~ Perform Task	Press this softkey.
⋮	2	Internal RS-232 (Return) (for	Enter the printer device interface.
⋮		example)	
⋮	3	9 (for example))	Enter the select code of the printer
⋮			interface.
⋮	4	0 (for example)	Set the channel sub-address.
⋮		~~~~~ DONE	Press this softkey.
⋮		~~~~~ Space Bar	... to continue.
⋮		~~~~~ Space Bar	... to continue.
▼			

Note 1 To configure the line printer for use by the HP82000 IC Verification System, choose one of the supported printer models.
The printer models which are currently supported are:

- thinkjet
- quietjet
- laserjet
- paintjet

Note 2 To get more information as to which interface to use, move the cursor to the "Interface" menu item and press the HELP softkey

Note 3 9 is the default select code of the internal RS-232 and 8 the default for HP-IB.

Note 4 If you are using an RS-232 printer, enter the sub-address of the RS-232 interface. This should be 00 for a non-multiplexed interface, or, a number in the range 1-4 for the HP 98644A. If you are using an HP-IB printer, enter the HP-IB address set on the printer.

Time	Note	Input	Action
▲		y	... to start the printer test.
⋮		n	... not to repeat the printer test.
⋮		n	... no printer configuration change.
⋮		Previous Menu	Press this softkey.
3 Min		Previous Menu	Press this softkey.
⋮		Exit SAM	Press this softkey.
⋮	5	vi /hp82000/com/lbin/hp82000_lp	Modify this file.
▼		<input type="button" value="Return"/>	

Note 5 To configure the line printer for use by the HP82000 IC Verification System, modify the following lines in this file:

```
line_lp=lpr
```

Assuming that the printer that has previously been set up is called lpr.

```
columns=72
```

If the text width of the printer is 72 characters. Otherwise modify this number.

```
graph_lp=$line_lp
```

If the same printer is to be used for text and graphics printout.

```
graph_model=thinkjet
```

If the printer model is ThinkJet, otherwise substitute for the proper printer model. The printer models which are currently supported are:

```
thinkjet
quietjet
laserjet
paintjet
```

```
graph_cmd="lp -d"$graph_lp" -onb -or" line_cmd="lp -d"$line_lp" -onb"
```

If a local printer is connected,

or:

```
graph_cmd=remsh rem_system_name lp -d"$graph_lp" -onb -or" line_cmd=remsh
rem_system_name lp -d"$line_lp" -onb"
```

If the printer is accessible only via LAN. In these lines substitute the name of the remote system for rem_system_name. Note that permission must be granted by this system to start a remote shell (see the `remsh` command).

Time	Note	Input	Action
▲		sam (Return)	Start the configuration program.
⋮		Users ->	Highlighted menu item.
⋮		Select Item	Press this softkey.
⋮		Add a New User Account	Highlighted menu item.
⋮		Select Item	Press this softkey.
5 Min		demo (Return)	Enter the login name.
⋮		Perform task	Press this softkey.
⋮		hp82000 (Return)	Enter the password.
⋮		hp82000 (Return)	Re-enter the password.
⋮		(Space Bar)	... to continue.
⋮		Exit Task	Press this softkey.
⋮		Previous Menu	Press this softkey.
▼		Exit SAM	Press this softkey.

Configuring HP-UX

You only need to follow these steps if you want to set up networking on your system. Some of the entries will already be there if you entered the system name and IP address when you finished installing the HP-UX Run-Time environment.

Time	Note	Input	Action
—	1	vi /etc/hosts	Edit the hosts file, used for networking.
5 Min			
—	2	vi /etc/netlinkrc	Edit the networking shell script.

Note 1 If your system requires another IP Address than 127.0.0.1 (the standalone network address), change this entry to the required address. For example,

15.3.12.1 (TAB) system1

Enter the addresses and hostnames for other remote systems that you will need to access. For example:

15.3.12.2 (TAB) system2

15.3.12.3 (TAB) system3

Note 2 If the system organization and domain name are not the default values, make the following changes to the following two lines:

DOMAIN='/bin/uname -n'
 ORGANISATION=standalone

make the following changes:

DOMAIN=your_domain_name
 ORGANISATION=your_org_name

Enabling the HP 82000 Software Options

Time	Note	Input	Action
▲	1	hp82000/com/bin/hp82000_enable	Start this program, to enable HP 82000 software options.
⋮			
⋮		exit <input type="text" value="Return"/>	Logout.
5 Min			
⋮		demo <input type="text" value="Return"/>	Login as demo .
⋮		hp82000 <input type="text" value="Return"/>	Enter the password for demo .
⋮		n <input type="text" value="Return"/>	If your console type is not in the list.
⋮		300h <input type="text" value="Return"/> (for example)	Enter your terminal type.
▼	2		Configure the demo program.

Note 1 If you have ordered optional HP82000 software, such as EDA Interfaces, execute this program. A list of available optional software will be shown, starting with E1296 (Production Shell). If you ordered this software, you enable it by specifying the codeword, as printed on the License Certificate. If you have no license for the E1290A EDA Interface, press RETURN to skip to your EDA Interface and specify its codeword, or “q” to leave the program.

Note 2 Configure the demo software for the ECL counter and verify the system hardware by using Diagnostics, Calibration and the demo ECL counter (MC10136 or MC10H136). Refer to the chapter “System Verification” for details.

This part of the chapter describes how to install the software for the HP 82000 on Series 700 Workstations.

Caution READ THIS PROCEDURE COMPLETELY BEFORE YOU START WITH THE INSTALLATION!



Note This procedure directly refers to a HP-UX Rev. 9.05 installation. The procedure may change slightly as the UX revisions are progressing, and described discs and their contents could be altered.



Documentation Required:

You will require the manual Installing and Updating HP-UX 9.0x for the software installation.

Media Required:

You require the following CD-ROMs and DAT Tapes for the installation:

Table 4-1. Media required for the Installation

Part Number	Media	Description	Revision
B2826-67920	CD	Kit HP-UX Jewel Case (2 CD's: Install Disc, Core OS)	9.05
B2826-67919	CD	Kit HP-UX S700 Application SW Discs (4 CD's)	9.05
E2091-13401	CD	HP SICL Libraries	3.01
E1222-17600	DAT	HP 82000 Software (S700)	6.0.x
	DAT	HP 82000 Calibration Data	

Licences and Codewords Required:

The HP 82000 system is always shipped with a licence for the **C/ANSI C Developer's Bundle**. This licence is shipped in the box with a codeword and the appropriate HP-HIL ID Module. You should locate these items before you continue with the installation. As part of the HP-UX installation, you will be required to enter the codeword which is on the licence sheet.

In HP-UX Rev. 9.05, the **C/ANSI C Developer's Bundle** is located on **disc 3 of 4**.

A licence sheet for HP 82000 software is shipped in a separate box, with the User Documentation for the system. Codewords are only required for the HP82000 SW Options (Memory Test, CAE Links etc.). The codewords are noted on a separate license certificate, included if options had been ordered.

In general, you should locate all licences and certificates and put them in a safe place. After the installation has been completed they must be stored in a safe place.

Before you continue with the software installation, you should verify that the HP-HIL ID Module required by the **C/ANSI C Developer's Bundle**, is installed on the HP-HIL chain. The serial number of the ID Module required is indicated on each licence certificate.

This section refers to Chapter 3 of the manual *Installing and Updating HP-UX*, and only contains notes and information which is relevant for the HP 82000 system. You must read the manual to find out more details about each step, though all steps are listed in this section.

Step 1: Have all Devices Turned OFF

Turn all computer hardware off and go to the next step.

Step 2: Prepare your Installation Media

Ensure that you have the CD-ROMs and DAT Tapes listed in Table 4-1.

Step 3: Start the Drives and Load the Media

If the Workstation has an internal CD-ROM Drive, use the following procedure:

1. Switch the workstation and monitor on.
2. Stop the Boot-Device search, by pressing the **(ESC)** key.
3. Insert the HP-UX Install Disc in the Drive. The Workstation will automatically recognize the CD-ROM as a bootable device.
4. Go to **Step 5: Select the Device Having the Source Media.**

If you have an *external* CD-ROM Drive connected to the Workstation, use the following procedure:

1. Switch the CD-ROM Drive on.
2. Insert the HP-UX Install Disc in the Drive.
3. Continue to the next step.

Step 4: Start up the System

Power the Workstation and Monitor on.

Step 5: Select the Device Having the Source Media

Select to boot from the CD-ROM.

Step 6: Account for an EISA Configuration Process

Ignore this step and ignore any error messages from the *eisa_config* routine for the moment. Press **Continue**.

Step 7: The Initial Installation Screen**Step 8: Root Destination Menu**

Determine your *root* destination device: System disc.

Step 9: Choose the Type of Filenames for File Systems

Select *LONG FILENAMES*.

Step 11: The Main Menu Continues the Installation

Step 12: Verify the Swap-Space

If the Workstation is equipped with a 1 GByte hard-disk, or bigger, we recommend that you enter a swap-space of 100 MB (102400 1024 Byte blocks). However, if you must save disk-space, the following table shows you what minimum swap-space you will require, which depends on the number of off-line HP 82000 sessions which will be started simultaneously.

Table 4-2. Minimum Swap-Space Requirements

Number of Off-line Sessions	Minimum Swap-Space (MB)	Swap-Space (1024-Byte Blocks)
none	96	98304
1	105	107520
2	120	122880
3	135	138240
4	150	153600

The system will round off the value you enter.

Step 13: A Final View of Destination Devices

Step 14: Initial Loading of Partitions Containing Filesets

After about 2 minutes, the system stops and you are prompted to load the next CD-ROM unit.

1. Remove the Install CD-ROM from the Drive and insert the HP-UX Core OS CD-ROM.
2. Press **RETURN** to continue.
3. During the load process, you will be asked for parameter settings such as system name, time zone, time, root password (and network address, if applicable). Make the entries accordingly.

After approximately 40 min. this unit has loaded, the system will then reboot.

4. Check the file `/tmp/update.log` for errors during the installation.
5. Eject the CD-ROM.

Prepare for the Update routines:

6. Login as *root*.
7. Start the X-windows by typing `x11start` and press **RETURN**.
8. In the *hpterm*-window, enter `sam &`.

In the process of installing or updating the SW from a CD-ROM you will have to mount/un-mount the CD-ROM drive any time you want to change the update media in this drive.

Mounting the CD-ROM drive:

1. Insert the CD-ROM from which you want to update.
2. In **SAM** select *Disks and File Systems*.
3. Select *CDROM, Floppy, and Hard Disks*.
4. Click on bar with CD-ROM drive .
5. From the *Actions* menu, select *Add a Hard Disk Drive*.
6. Select *Set Disk Usage and Options*.
7. In the **Mount Directory** field type `/UPDATE_CDROM` and click on **OK**.
8. Click on **YES** for *cdfs* file system.
9. Click on **OK** for *Set Disk Usage and Options*.
10. Click **FILE** menu and **EXIT**.

Un-mounting the CD-ROM drive:

After the filesets have loaded, un-mount the CD-ROM with SAM:

1. In **SAM** select *Disks and File Systems*
2. Click on bar with CD-ROM drive .
3. From the *Actions* menu, select *Remove a Hard Disk Drive*.
4. Eject CD-ROM.

3: S e t u p a D A T D r i v e

Carry out the following procedure in sequence:

1. If you have an external DAT Drive, check that it is switched-on and connected to the SCSI Bus on the rear of the Workstation.
2. Login as *root*.
3. Enter **sam**.
4. When **SAM** has started, select *Peripheral Devices*.
5. Select **Tape Drives**.
6. Select **DDS Tape Drives**.

The DAT Drive should now be indicated in the window, with it's address and type. Note the address (for example 2.0.1.3.0).

7. Select **Add** in the *Actions* pulldown menu.
8. Confirm all further steps, until **SAM** creates a new kernel and halts the workstation.
9. Create a device file for the DAT drive, using the **mknod** command, as follows:

```
/etc/mknod /dev/dds c 121 0x201307
```

Substitute the address for your DAT Drive in the command, instead of 201307 in the example above.

HP-UX Rev. 9.05 comes with 4 CD-ROMS containing UNIX applications. You may choose to install them all, or, if disc space is a concern, you will have to look at the different filesets to make your selection. This procedure assumes that you are loading all filesets. Some of the applications will need a codeword, and installing for the HP82000, only **C/ANSI C Developer's Bundle** is an application where you must enter a codeword.

Unless you enter the correct codeword for the **C/ANSI C Developer's Bundle**, the fileset will remain invisible to the update program and can't be installed. In addition, the HP-HIL ID Module referenced on the licence certificate must already be installed on the HP-HIL chain, otherwise the codeword will not be accepted.

1. Insert the CD-ROM.
2. Mount the CD-ROM drive. (See Chapter 2).
3. In the *hpterm* window, enter **/etc/update**.
4. Select *Change Source of Destination*.
5. Select *From CD-ROM to Local System*.
6. If a codeword is required, type in the codeword and press *******

DONE**. Otherwise only press *******

DONE**.
7. Select *All Filesets* on the Source Media
8. Start loading.
9. After loading, check the file **/tmp/update.log** for errors during the installation.
10. Un-mount the CD-ROM drive. (See Chapter 2).
11. Eject the CD-ROM from the Drive.

The SICL CD-ROM is **not** mountable. Follow the procedure **exactly** as it is described here. In this procedure, the CD-ROM is treated exactly like a raw tape device, with no filesystem. You do not require a codeword to install the HP SICL Libraries.

1. Login as *root*.
2. Insert the HP SICL CD-ROM in the Drive.
3. In the *hpterm* window, enter **/etc/update** to start the update utility.

Note Do not attempt to mount the CD-ROM, as it does not have a filesystem.



-
4. Select *Change Source of Destination*.
 5. Select *From Tape Drive to Local System*.
 6. Change the source device to **/dev/update.src** (the CD-ROM Drive) and press **^M** **DONE**.
 7. Select and load all filesets on the source media. The workstation does not reboot after loading.
 8. Check the **/tmp/update.log** file for errors during the installation.
 9. Eject the CD-ROM from the Drive.

Carry out the following procedure:

1. Login as *root*.
2. Insert the HP 82000 System Software tape in the DAT Drive and wait for it to load.
3. In the *hpterm* window, enter **/etc/update**, to start the update utility.
4. Select *Change Source of Destination*.
5. Select *From Tape Drive to Local System*.
6. Change the source device to **/dev/dds** and press **DONE**.
7. In the update utility, we recommend to load all filesets. If disc space is a concern, at least the following filesets have to be selected:
 - E1200SYS
 - E1200DEMThese filesets do not require a codeword.
8. Load the selected filesets. This should take a maximum of about ten minutes and the workstation reboots automatically.
9. Check the **/etc/update.log** file for any errors during the installation.
10. Eject the DAT Tape from the Drive.

Use this procedure to install the HP 82000 Calibration Data supplied with the system. This data consists of the following files:

```

    /hp82000/pws/data/model
    /hp82000/pws/data/mainframes
    /hp82000/fw/data/bc_cal_dXXX
    /hp82000/fw/data/dc_cal_dXXX
    /hp82000/dev_tech/cmos/ac_cal_dXXX
    /hp82000/dev_tech/ecl/ac_cal_dXXX
  
```

where: XXX is the I/O board frequency in MHz (50,100,200,400).

N o t e



The **model** and **mainframes** file are for the system configuration shipped from the factory, and do not include any entries for DPS's, HSWG's or I/O Boards added on site. Paragraph **11:Configuring the HP 82000 Software** describes how to edit these files for the actual system configuration.

The calibration files were generated by calibrating the system in the configuration it was shipped in. They do not include appropriate entries for HSWG's or any configuration changes made on site. This data should only be regarded as default calibration data, and the system should be fully re-calibrated (Base Cal, DC and AC Cal) once it is in its final configuration. On the basis of the Calibration Data shipped, it can not be guaranteed that the system will meet its specifications in the final environment and configuration.

Carry out the following procedure:

1. Login as *root*.
2. Insert the HP 82000 Calibration Data tape in the DAT Drive and wait for it to load.
3. In the *hpterm* window, enter **/etc/update** to start the update utility.
4. Select *Change Source of Destination*.
5. Select *From Tape Drive to Local System*.
6. Change the source device to **/dev/dds** and press **DONE**.
7. In the update utility, select all filesets.
8. Load the selected filesets.
9. Check the **/etc/update.log** file for any errors during the installation.
10. Eject the DAT Tape from the Drive.

S: Enable the HP 82000 Software Options

If you have licences for optional HP 82000 software (EDA links, Memory Test Software, etc), you must enter the codewords corresponding to these products.

Just start the file **/hp82000/com/bin/hp82000_enable**. You are asked for codewords for the different SW options. Enter the appropriate codewords and quit the program.

- The codeword consists of a very long ASCII string, so take special care when entering each codeword.
- Type in the codewords exactly as they are listed on the certificates. Note that spaces and character cases (upper, lower) must be retained.

First, configure the printer under HP-UX, using SAM. The documentation supplied with the printer will tell you how to do this. Test that the printer works, either using the printer test in SAM, or by printing a file.

The HP 82000 software has it's own printer script, called *hp82000_lp*. This script enables the HP 82000 software to send screen-dumps and other data to a printer which is configured on the workstation (remote, or local). The following list of printers are pre-configured in this script:

- HP Thinkjet
- HP Quietjet
- HP Laserjet Family
- HP Paintjet
- HP Paintjet XL300

Enabling a Printer Which is on the List of Pre-Configured Printers ...

Carry out the following procedure in sequence:

1. Edit (**vi**) the */hp82000/com/lbin/hp82000_lp* script and locate the following lines:

```
Lp=lpr
Model=thinkjet
GraphicLp=$Lp
GraphicModel=$Model
```

The configuration shown here is the default configuration, and you must edit it for the printer you want to use.

2. Substitute **lpr** (in **Lp=lpr**) with the name of the printer you want to use to print out listings and ASCII text.
3. If you want to use the same printer to print out text and screen dumps, then you do not have to edit the line **GraphicLp=\$Lp**. However, if you want to use a different printer for screen-dumps, you must replace **\$Lp** with the name of this printer.
4. Substitute **\$Model** (in **GraphicModel=\$Model**) with the model name of the printer which will be used for screen-dumps (the one you defined in **GraphicLp=\$Lp**).

10: Set up the Demo User

Carry out the following procedure in sequence.

1. Login as *root*.
2. Enter **sam**.
3. Set up a new user, with the following settings:

User Name: **demo**

Home Directory: **/users/demo**

Password: **hp82000**

The directory **/users/demo** should already exist. It is created when you install the **E1200DEM** fileset of the HP 82000 software.

4. Logout

Carry out the following procedure in sequence:

1. Login as *root*.
2. Edit the file `/hp82000/pws/data/model`. Valid entries in the model file are:

Entry	I/O Board Configuration
D40,32K	40 MHz I/O Boards (E1208A)
D40,128K	40 MHz I/O Boards (E1208B)
D40,512K	40 MHz I/O Boards (E1208C)
D50,32K	50 MHz I/O Boards (E1210A)
D50,128K	50 MHz I/O Boards (E1210B)
D50,512K	50 MHz I/O Boards (E1210C)
D100,64K	100 MHz I/O Boards (E1211A)
D100,256K	100 MHz I/O Boards (E1211B)
D100,1024K	100 MHz I/O Boards (E1211C)
D100X,64K	100 MHz I/O Boards mixable (E1209A)
D100X,256K	100 MHz I/O Boards mixable (E1209B)
D100X,1024K	100 MHz I/O Boards mixable (E1209C)
D200,64K	200 MHz I/O Boards (E1212A)
D200,256K	200 MHz I/O Boards (E1212B)
D200,1024K	200 MHz I/O Boards (E1212C)
D400,64K	400 MHz I/O Boards (E1214A)
D400,256K	400 MHz I/O Boards (E1214B)
D400,64K ¹	mixed 100X/200/400 MHz (E1209A, E1212A and E1214A)
D400,256K ¹	mixed 100X/200/400 MHz (E1209B, E1212B and E1214B)

¹ For mixed 100X/200/400 MHz configurations, the entry in the models file refers to the highest pattern rate boards.

Ensure that the entries correspond to your hardware. Do not delete the header line in this file. If you make any changes, remember to save the file afterwards. The file `/hp82000/pws/data/model.def` contains a full list of valid entries for the **model** file.

3. Edit the file `/hp82000/pws/data/mainframes`. You must make an entry in the **mainframes** file for every card-cage, DPS and HSWG channel.

The entry for each **Card-Cage** takes the form 'Mc,h', where:

- 'c' is the number of the Card-Cage (1 to 4).
- 'h' is the HP-IB address of the Clock Board in this Card-Cage.

4-30 Software Installation

The entry for each DPS takes the form 'DPSn,h', where:

- 'n' is the number of the DPS.
- 'h' is the HP-IB address of the DPS. (2 and/or 7).

The entry for each HSWG channel takes the form as follows:

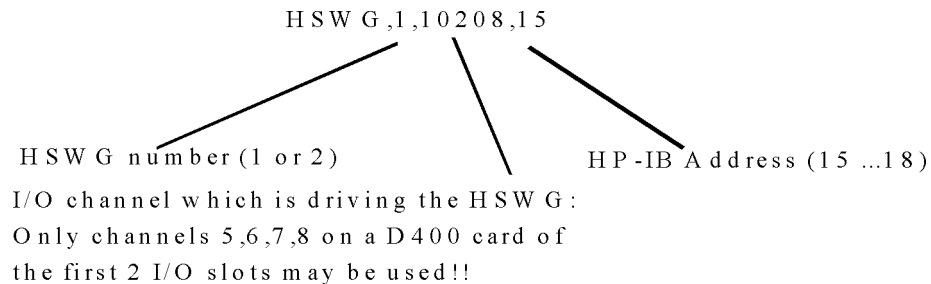


Figure 4-1.

Ensure that the entries correspond to your hardware. Do not delete the header line in this file. If you make any changes, remember to save the file afterwards.

4. When working with mixed D100X,D200/D400 configurations, the file `/hp82000/pws/data/offl_tester_co` simulates the system configuration in Offline mode. This is necessary, because in Offline mode the system cannot determine the hardware configuration. This file is not required in configurations where only D50, D100, D200 or D400 boards are installed.

Each line of this text file represents one mainframe. The 16 available slots of the mainframe must each be given a number which represents a D100X, a D200 or a D400 board, a PMU or an empty slot. No entry is needed for the Clock Board and Sequencer Board in slots 1 and 2, respectively. The numbers are separated by a comma.

The complete syntax for one mainframe is:

slot3, slot4, slot5, slot18

where each slot is either:

400 - represents a 400 MHz board

200 - represents a 200 MHz board

100 - represents a 100X MHz board

1 - representing a PMU board

0 - representing an empty slot

For example:

400,400,200,200,100,100,1,0,0,0,0,0,0,0,0

400,400,200,200,100,100,1,0,0,0,0,0,0,0,0

This indicates a double mainframe system with

- 400 MHz boards in slot 3 and slot4 of both card-cages.
- 200 MHz boards in slot5 and slot6 of both card-cages.
- 100 MHz (D100X) boards in slot7 and slot8 of both card-cages.
- PMU's in the first free slot.
- all other slots are empty.

Carry out the following procedure:

1. Login as *root*.
2. Copy (**cp**) the file `/usr/pil/defaults/hwconfig.cf` to the directory `/usr/pil/etc`.
3. Change directory (**cd**) to `/usr/pil/etc`.
4. Edit (**vi**) the file `/usr/pil/etc/hwconfig.cf`, and locate the following line:


```
#7 hpib e2071 1 21 0b0000 1 3
```
5. Unmask the line, by deleting the hash symbol (**#**).
6. Modify this line only for additional HP-IB cards. For the HP-IB card in slot 1 leave this line unchanged.

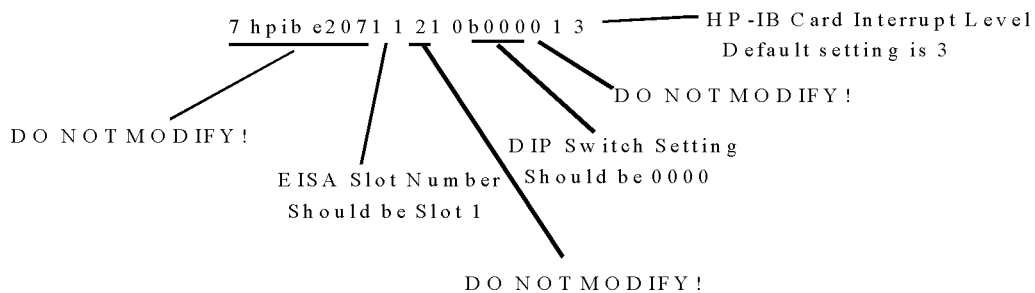


Figure 4-2.

The entry as shown above has our recommended settings and corresponds with the Workstation Configuration described in the chapter **Installing Controller and Peripherals**. With additional EISA cards, the Interrupt Level and the DIP switch setting are the only values which will have to be changed to avoid conflicts with other cards.

Note



EISA Cards which will be used to control instruments may require an entry in the `hwconfig.cf` file. Refer to the Installation Guide for the card for details of how the card should be configured. Note that some EISA Cards do not have to be set up in the `hwconfig.cf` file (for example, the E25560A High-Performance HP-IB Card). If an example configuration entry does not exist in the `hwconfig.cf` file, then **DO NOT CONFIGURE THE CARD!**

7. Save the file, and enter `/usr/pil/bin/pilconf`. The `pilconf` utility reconfigures the HP-UX kernel to include the setup data in the `hwconfig.cf` file.
8. Confirm all questions up to the point where you are asked if the workstation should be rebooted now. You can allow the workstation to reboot.

Note



If you should choose to have a look at the ‘config.log’ file (which is offered during ‘pilconf’), ignore the given information about 2071B HP-IB card DIP switch setting. This information is incorrect.

You may need to use a second E2071B HP-IB Card if the HP82000 Workstation is supposed to control other HP-IB devices than HSWG's and supported DPS's. This may especially be required if a Traceable Calibration is done on the system.

A second HP-IB Card must be located in EISA slot 3. Because of the width of the HP-IB connector there is not enough space to locate a second card in slot 2.

Before plugging the the card into EISA slot 3, set the DIP switches on the E2071B HP-IB card to '1000'.

To configure the card into the kernel, carry out the following procedure:

1. Login as *root*.
2. Change directory (**cd**) to **/usr/pil/etc**.
3. Edit (**vi**) the file **/usr/pil/etc/hwconfig.cf**, and locate the following line:

```
#9 hpib3 e2071 3 21 0b1000 1 5
```

4. Unmask the line, by deleting the hash symbol (**#**).
5. Save the file, and enter **/usr/pil/bin/pilconf**. The *pilconf* utility reconfigures the HP-UX kernel to include the setup data in the **hwconfig.cf** file.
6. Confirm all questions up to the point where you are asked if the workstation should be rebooted now. You can allow the workstation to reboot.

N o t e



If you should choose to have a look at the 'config.log' file (which is offered during 'pilconf'), ignore the given information about E2071B HP-IB card DIP switch setting. This information is incorrect.

Overview

Warning



Before starting the installation ensure that the primary power supply circuit to the system is *SWITCHED OFF*. Do not switch on until instructed to do so. This warning is made for the protection of personnel from electrical shock and to prevent damage to the system.

Note



This is a Safety Class 1 instrument (provided with a terminal for protective earthing) and has been manufactured and tested according to international safety standards.

The HP82000 IC Evaluation System consists of one to three mainframes, a programming work station (PWS) and peripheral equipment. Depending upon the maximum number of channels required for the application, you can install a Master Standardframe (HP E1222M) and up to two Standardframe Extenders (HP E1222E).

The Master and Extender Standardframe consists of an 18 slot card-cage, a device under test (DUT) interface, integrated power supply modules and facility for an optionally integrated DUT power supply (DPS). The first two slots of the Standardframe are already occupied by the Clock board and the Sequencer board. These board positions are fixed. Sixteen slots are available in a card-cage for I/O boards and PMU.

For applications with requirements for more I/O channels than a single card-cage can take, one or two Standardframe Extenders can be added to a Master Standardframe. Extenders are identical to the Master, and clock cables are used to configure one Standardframe to be Master and the other(s) to be Extender(s) 1 or 2.

If your system has DC measurement capabilities (PMU board), install the PMU in the first empty slot after the I/O boards. To have DC measurement capability on channels in the Master Standardframe as well as in the Extender Standardframe(s) every card-cage should have its own PMU as the DC connections are **not** routed from one card-cage to another.

To install a single Standardframe follow the next procedure:

1. Switch off the system power.
2. Check, and if necessary correct the HP-IB address of the Standardframe (Set to 3). Fill in the details in the table in Chapter 1.

Note



The HP-IB switch is located just above the HP-IB connector on the Clock board.

When setting the HP-IB switch note that the **Address LSB** is closest to the HP-IB connector. See Figure 5-1.

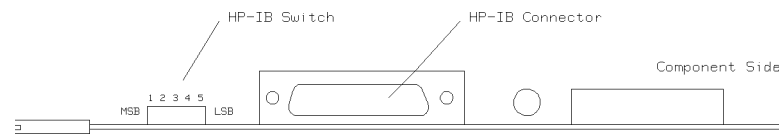


Figure 5-1. HP-IB Switch Location

3. Check that all boards in the card-cage are properly seated.
4. Connect the Standardframe to the test system HP-IB interface on the controller, set to select code 7.

Standardframe cabinets are tied together with clamps. A high speed clock cable (concealed behind the front panels) connects the Sequencer board in both Master and Extender.

The high speed cable P/N E1222-61606 comprises several coaxial cables terminated by a single connector.

To connect one or two Extender(s) to a Standardframe, complete the following procedure:

1. Switch off the system power to the Master and the Extender(s).
2. Remove the top cover of the Master and Extender Standardframes. This is done by opening the rear door and removing the 2 top cover screws. The top cover can now be taken away by pushing it forward (viewed from the rear) and lifting off its hook fasteners. Refer to Figure 5-2.

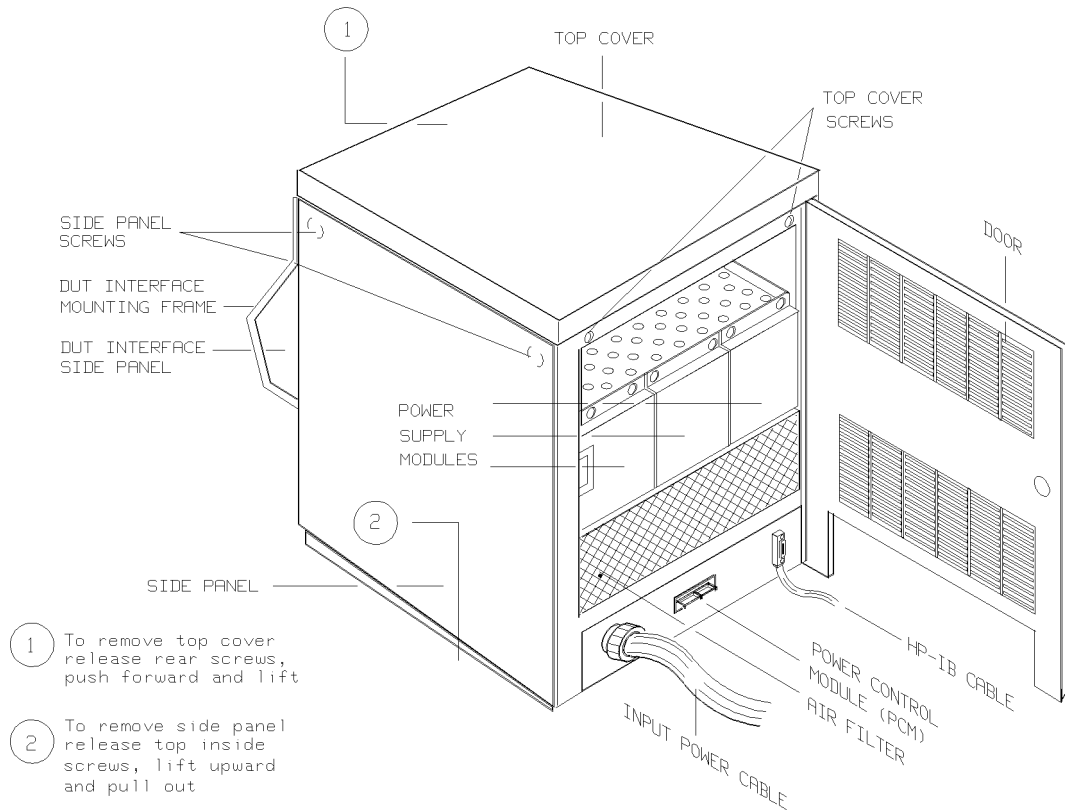


Figure 5-2. Standardframe

3. Remove the side cover(s) of the Master Standardframe where the Extender(s) is/are to be installed. This is done by releasing the two screws located at the top inside of the side panel when viewed from the Standardframe top. The side cover(s) can now be removed by lifting upwards and releasing it/them from the bottom hook fasteners. Refer to Figure 5-1.

If only one Extender is to be connected this has to be placed to the left of the Master when viewed from the front. If two Extenders are to be connected to the Master, they have to be placed on either side of the Master Standardframe.

4. Remove the front paneling of the Standardframe Extender(s).
5. Remove the Master Standardframe top panel (push-on fit).
6. Release the 2 screws securing the DUT interface cover, remove the cover.
7. Release the pogo pin frames from the DUT bottom frame (2 spring loaded screws per frame).
8. Release the 4 spring loaded screws securing the DUT interface, and carefully remove the interface.
9. Refer to Figure 5-3, place the Extender(s) next to Master Standardframe and clamp them together (front, top and back) using the clamps provided:
 - a. P/N E1225-01250 Bracket Top Horizontal.
 - b. P/N E1225-01251 Tie Together Front.

c. P/N 40118-00001 Bracket Rear.

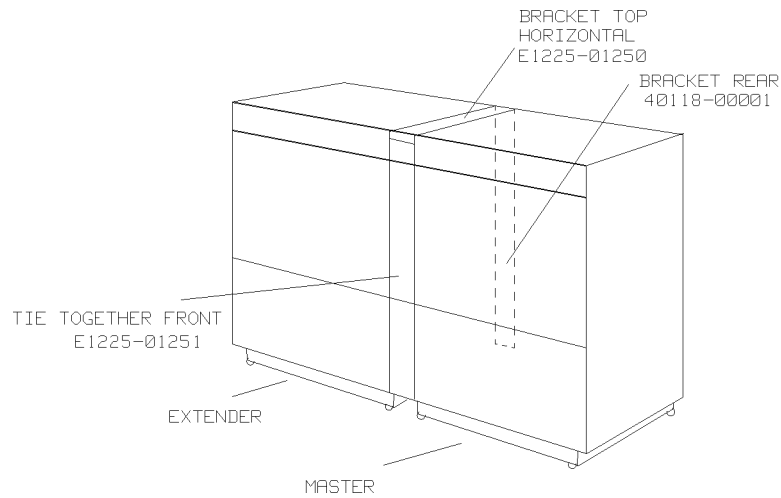


Figure 5-3. Clamping Brackets - Master + 1 Extender.

10. Refit the side covers (from the Master Standardframe).
11. Replace the top covers.
12. Connect the high-speed cable (P/N E1222-61606) between the Master Standardframe's Sequencer board and the Extender Sequencer board.

The high-speed cable synchronizes the timing system by supplying the Master's clock to the Extenders. Note that the interconnecting cable has a "Master" end and an "Extender" end. It is important that the Master end of the cable is connected to the Sequencer in the designated "Master" and the "Slave" end(s) to each of the Extender(s).

Figure 5-4 shows the high-speed cable connections.

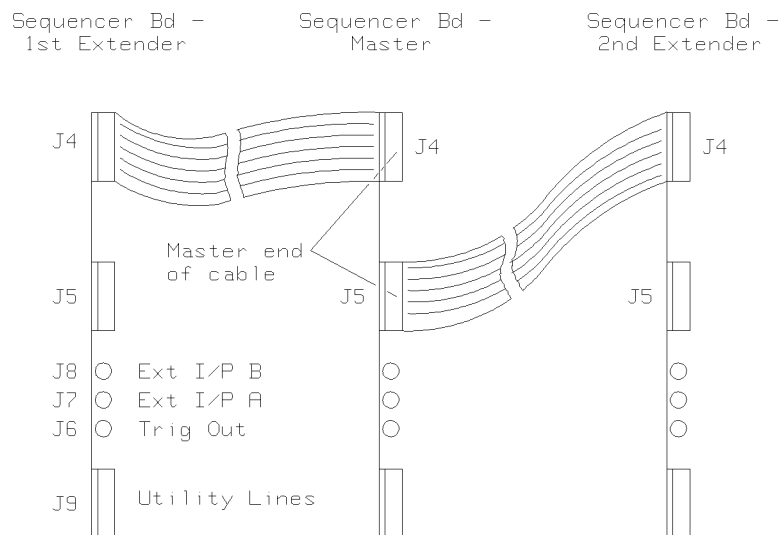


Figure 5-4. High-Speed Cable Connections

5-4 Standardframe and Miniframe Installation

13. Check, and if necessary correct the HP-IB address of the Master Standardframe and Extender. The Master Standardframe should be set to address 3 and the Extender to address 4. Fill in the details in the table in Chapter 1.

N o t e



The HP-IB switch is located just above the HP-IB connector on the Clock board.

When setting the HP-IB switch note that the **Address LSB** is closest to the HP-IB connector. See Figure 5-1.

14. Check that all card-cage boards are properly seated.
15. Refer to DUT Interfacing Mechanics, to check that all pogo pin blocks are in their appropriate pogo pin mounting frames. Install the pogo pin blocks in the frame so that when the frame is fitted into the interface the 'dimpled' ends are nearest to the centre.
16. Install the pogo pin frames in the DUT interface if not already installed.

C a u t i o n



The next procedure requires two people.

17. Lift the DUT interface into position taking great care not to trap any of the I/O cables. Fix it in position with the four spring loaded screws.
18. Connect the Extender Standardframe to the test system HP-IB interface on the controller.
19. Attach the new front cover panel to the Standardframe and Extender.

To connect two Extenders to a Standardframe Master:

1. Complete steps 1 to 11 in **Connecting an Extender to a Standardframe Master**, in this case clamping the Master Standardframe between the two Extenders.

Figure 5-5 shows the location of the clamping brackets in a 3 frame system.

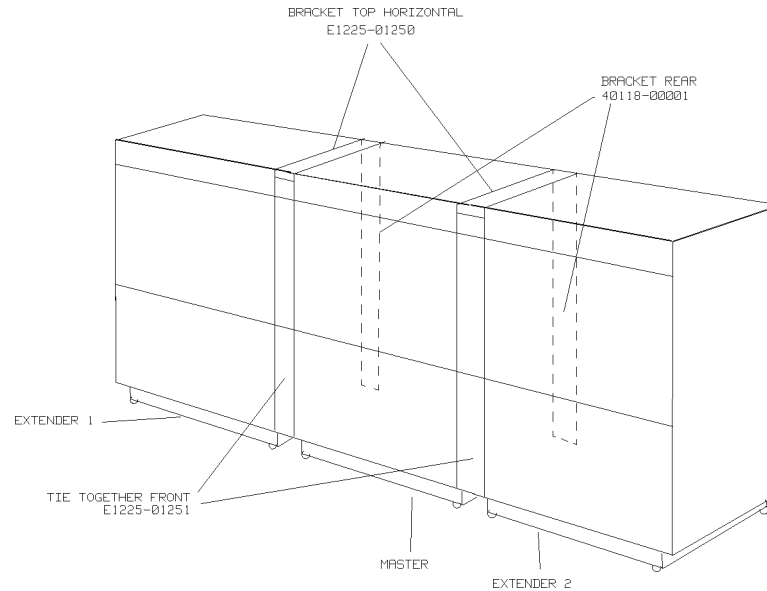


Figure 5-5. Clamping Brackets - Master + 2 Extenders.

2. Connect the high-speed cables (P/N E1222-61606) between the Master Standardframe's Sequencer board and the Extender Sequencer boards.
3. Lift the DUT Interface into position, in this case mounted in the normal position on the Master. Fix it into position with the four spring loaded screws.
4. Check, and if necessary correct the HP-IB address of the Master Standardframe and Extenders. The Master Standardframe should be set to address 3, the first Extender to address 4 and the second Extender to address 5. Fill in the details in the table in Chapter 1.
5. Connect the Master and Extender Standardframes to the HP-IB interface on the controller.
6. Attach the front cover panels on the Master and Extenders.

5-6 Standardframe and Miniframe Installation

Caution



When installing Miniframes, ensure that there is a distance of at least 40cm between the cabinet sides and any interior wall or object which may affect the flow of cooling air.

Overview

The HP 82000 IC Evaluation System Master Miniframe (E1220A) has a 6 slot card-cage containing factory installed Clock Bd. and Sequencer Bd. It has four free slots available for I/O boards.

Figure 5-8 shows the Miniframe:

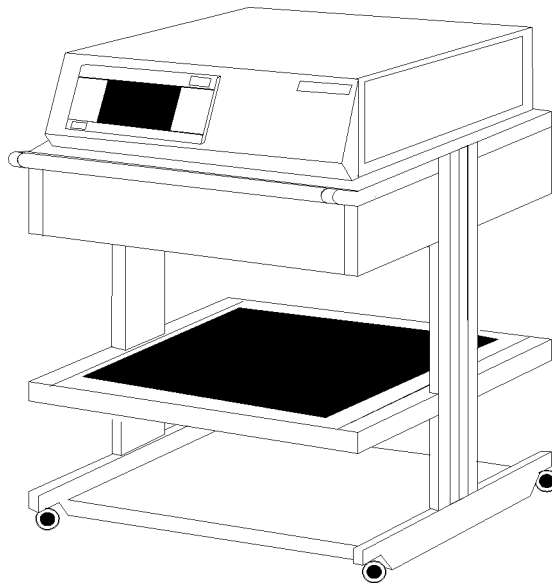


Figure 5-6. Miniframe

By adding a Miniframe Extender (HP E1221A), containing 6 board slots, the channel count can be increased.

Check, and if necessary correct the HP-IB address of the Miniframe (Set to 3). Fill in the details in the table in Chapter 1.

Note



The HP-IB switch is located just above the HP-IB connector on the Processor/Clock board.

When setting the HP-IB switch note that the **Address LSB** is closest to the HP-IB connector. See Figure 5-7.

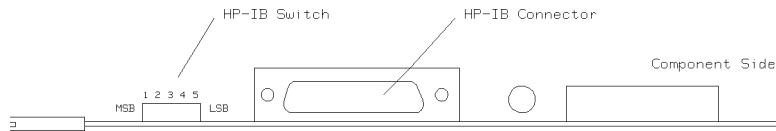


Figure 5-7. HP-IB Switch Location

Connect the Miniframe to the Controller HP-IB I/F on Select Code 7.

C o n n e c t i n g a n E x t e n d e r t o a M i n i f r a m e

To connect a Miniframe Master to an Extender you must:

- remove the DUT Interface from the Master.
- position the Master on the top of the Extender.
- connect all pogo pin blocks according to the configuration sheet.
- Refit the DUT interface to the Extender.

Figure 5-9 shows a Miniframe plus Extender.

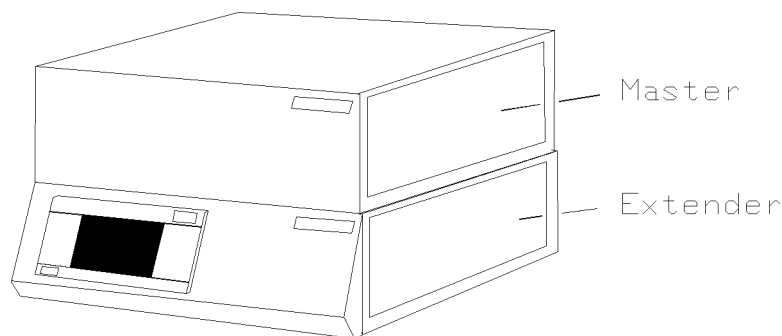


Figure 5-8. Miniframe Plus Extender.

N o t e



The mother boards in the Miniframe Master and Extender are connected together via a connector located beneath the Miniframe Master rear foot.

To connect an Extender to a Miniframe, complete the following procedure:

W a r n i n g



Before starting the next procedure ensure that the power circuit to the system is *SWITCHED OFF*. This warning is made for the protection of personnel from electrical shock. Do not restore the primary power until instructed to do so.

1. Switch off the system power.
2. Remove the Master Miniframe top cover (8 screws).

Figure 5-10 shows an exploded view of the Miniframe Master and Extender.

5-8 Standardframe and Miniframe Installation

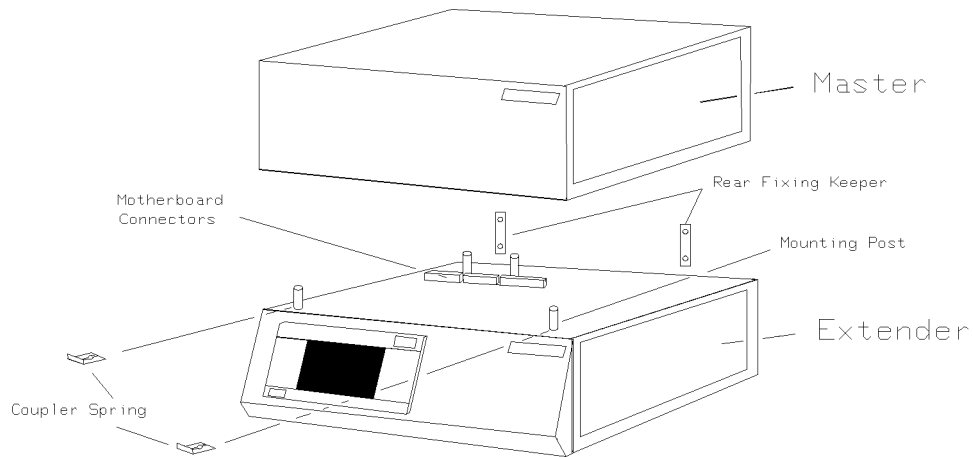


Figure 5-9. Mounting a Master on an Extender.

3. Disconnect the pogopin blocks from the pogo pin frame (DUT Interface).
4. Disconnect the DPS pogo pin connector from the pogo pin frame.
5. Disconnect the PMU power connector (if a PMU board is installed).
6. Remove the DUT interface front cover (6 screws).
7. Remove the DUT interface assembly.
8. Remove the four mounting posts fitted to the top of the Extender.
9. Remove the Extender main cover (8 screws).
10. Remove the Extender front panel (6 screws).
11. Configure the system boards. If a PMU board is to be installed it must be in the board slot after the last IO board. See also Chapter 10.
12. Replace the Extender main cover and the four mounting posts.
13. Replace the Master rear foot containing the termination board with the foot supplied with the Extender (P/N E1220-01025 10 screws).

Note



To allow the Extender and Master motherboards to be connected together, rear foot (P/N 1220-01025) has slots cut in it.

14. Carefully position the Master on top of the Extender ensuring that the motherboard connectors mate properly.
15. Carefully feed all signal connectors and the PMU cable (from Master) down through the opening at the front of the main chassis of the Master into the Extender.
16. Referring to the DUT interface configuration sheet Figure 7-9, fit all pogo pin blocks into position in the DUT frame.
17. Fit the DUT interface assembly to the **Extender**.
18. Refer to Figures 5-10, 5-11 and 5-12. To safely attach the Master to the Extender,

- a. install the two coupler springs (P/N E1221-03230) on the front mounting posts.

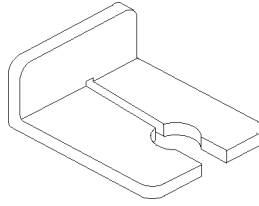


Figure 5-10. Coupler Spring

- b. Fit the two rear keepers (P/N E1221-02330) in position (4 screws).

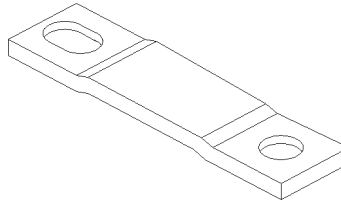


Figure 5-11. Rear Keeper

19. Fit the front panel from the Extender onto the front of the Master.
20. Replace the top cover of the Master.
21. Connect the optional DPS (HP 662xx) to the rear connectors of the Miniframe if not already connected. For more information on installing the DPS (HP 662xx) refer to Device Power Supply Installation section.
22. Connect the test system to the HP-IB interface on the controller.

HP-IB Information

The HP 82000 IC Evaluation System requires HP-IB cables to connect the Standardframe/Miniframe(s) to the system bus. The HP-IB cables are supplied in three different cable lengths:

- HP 10833A 1m (40 inches)
- HP 10833B 2m (80 inches)
- HP 10833C 4m (160 inches)

The HP-IB connector on the rear panel (bottom right hand side of mainframe) is used to connect the Controller to other HP-IB devices. An HP-IB system can be connected together in any configuration (star, linear, or both) as long as the following rules are observed:

1. The total number of devices is no more than 15.
2. The total length of all the cables used is no more than two metres times the number of devices connected together, up to a maximum of 20 metres.

5-10 Standardframe and Miniframe Installation

N o t e



IEEE Std. 488-1978 states that you should be cautious if your individual cable lengths exceed 4m.

Do not stack more than three connector blocks together on any HP-IB connector. The resulting stand out can exert excessive force on the mounting panels. Make sure that all connectors are fully seated and that the lock screws are firmly finger tightened. Do not use a screwdriver. Use a screwdriver only for the removal of the screws.

Set the correct address before powering up.

Each Standardframe/Miniframe uses one HP-IB address.

Table 5-1 gives a list of recommended HP-IB addresses. A blank table is supplied in Chapter 1 which you may fill in with the addresses used in your system.

Table 5-1. Default HP-IB Addresses

UNIT	HP-IB ADDRESS
Standardframe/Miniframe	703
Std Frame Ext 1	704
Std Frame Ext 2	705
DPS	702
HSWG1	715
HSWG2	716
HSWG3	717
HSWG4	718
Disk	1400
Printer	serial or 800
Tape Drive	801, or if not available 1401.

N o t e

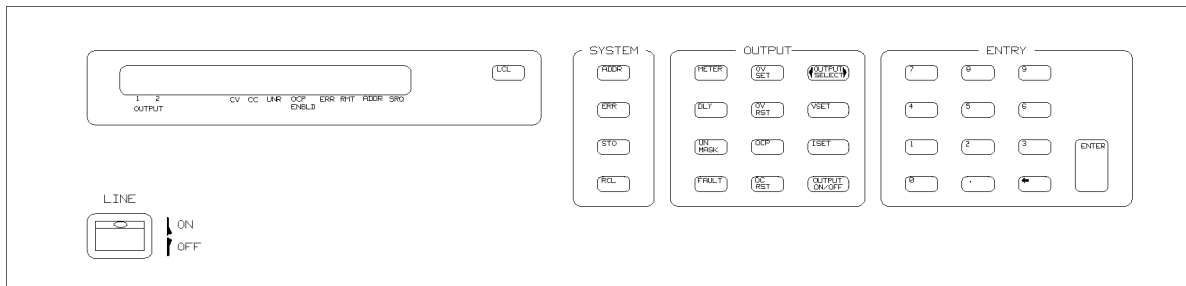


Note that only the disc(s) should be connected to the high speed interface if provided (Select Code 14). The tape should only be connected to the interface if no additional HP-IB interface is installed. It must not be connected to the interface at Select Code 7.

The Standardframes/Miniframes DPSs and HSWGs should be connected to the normal HP-IB interface (Select Code 7).

If any other measurement equipment is to be attached to the system it must be connected to an additional HP-IB interface (Select Code 8 recommended).

FRONT VIEW



REAR VIEW

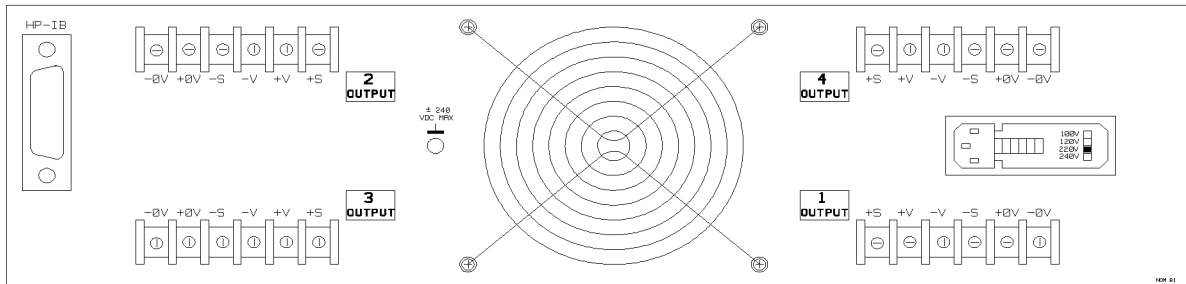




Figure 5-12. HP 66224 Device Power Supply

The HP662xx Device Power Supply provides programmable voltage and current for single or multiple outputs.

The HP662xx is connected to the HP 82000 IC Evaluation System via HP-IB. Connections from the DPS to the Device Under Test (DUT) are via cable P/N E1261-61601 which has been installed by the factory. Connection of the supplies consists of connecting the spade connectors, at one end of the cable, directly to the terminal blocks at the rear of the HP662xx.

Note  Physically, an inside installation of the HP 662xx can only be performed in a **Standardframe Master**.

To install a HP662xx DPS, do the following:

Warning  **When connecting a DPS to a Standardframe or Miniframe ensure that the DPS output voltage is not greater than 42 Volts. Do not touch the DUT board when operating. This warning is made for the protection of personnel from electrical shock.**

1. Remove the HP662xx from its packaging.
2. Check that the HP662xx power line select switch is correctly set for your power option. (Refer to the HP 662xx Operating Manual)
3. Remove the front air grill from the Standardframe by pulling it off.

5-12 Standardframe and Miniframe Installation

- Remove the four screws securing the cover plate at the bottom front of the Standardframe. Remove the cover plate. This area has been reserved to install a DPS.

Note



Within the DPS compartment you should see the following leads:

- Two HP-IB cables.
- One DPS power cable.
- One DPS output cable (P/N E1261-61601)

The DPS output connectors are barrier blocks with 6 screw connections. Figure 5-13 shows the barrier block.

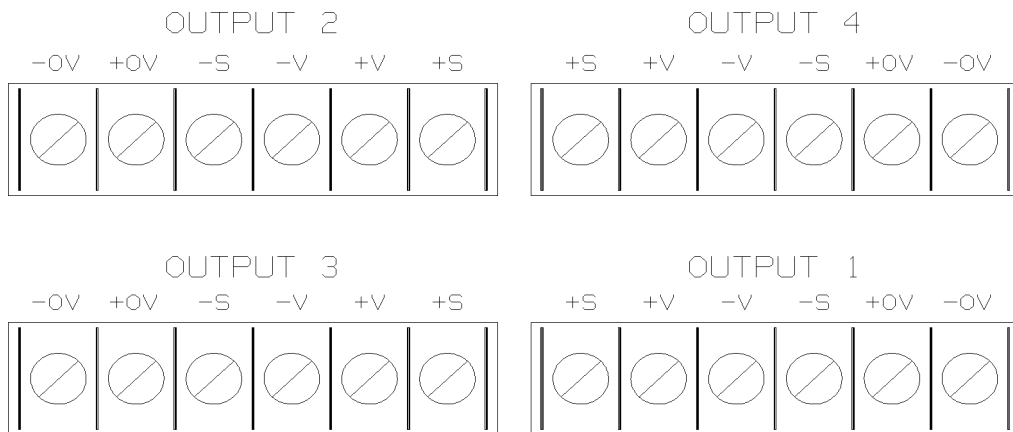


Figure 5-13. DPS Barrier Block

- Connect the DPS cable P/N E1261-61601 to the DPS outputs as shown in table 5-2.

Note



The cables are marked **DPS 1 to 4 - +V,-V,+S,-S**. Remove the shorting links between the Sense and Output connectors at the DPS barrier block.

Table 5-2. DPS Cable Connections

Device Power Supply Output	Signal	Cable Color
DPS 1	+S	Red (Twisted Pair)
	+V	Red (Dble Thick)
	-V	Black (Dble Thick)
	-S	Black (Twisted Pair)
DPS 2	+S	Red (Twisted Pair)
	+V	Red (Dble Thick)
	-V	Black (Dble Thick)
	-S	Black (Twisted Pair)
DPS 3	+S	Red (Twisted Pair)
	+V	Red (Dble Thick)
	-V	Black (Dble Thick)
	-S	Black (Twisted Pair)
DPS 4	+S	Red (Twisted Pair)
	+V	Red (Dble Thick)
	-V	Black (Dble Thick)
	-S	Black (Twisted Pair)

6. Connect the HP-IB cables (factory installed in Master) to the HP662xx.

Figure 5-14 shows the DPS connections at the DUT Board.

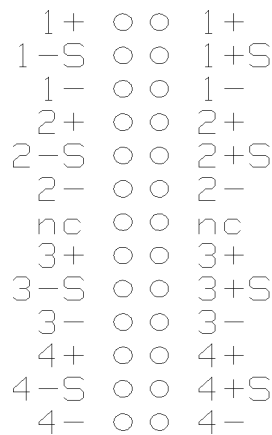


Figure 5-14. DPS Connections - DUT Board.

7. Connect the power line cable (supplied with Master) to the Power Control Module (power output for the DPS), and to the HP662xx power line input socket.

5-14 Standardframe and Miniframe Installation

8. Attach the rack mount flanges (Option 908 Rack Mount Flange Kit P/N 5061-9677) to the right and left sides of the DPS with the screws provided.
9. Carefully insert the HP662xx into the space provided.
10. Secure the HP662xx in position with the coverplate screws. Figure 5-16 shows the routing of DPS cables within the Standardframe.

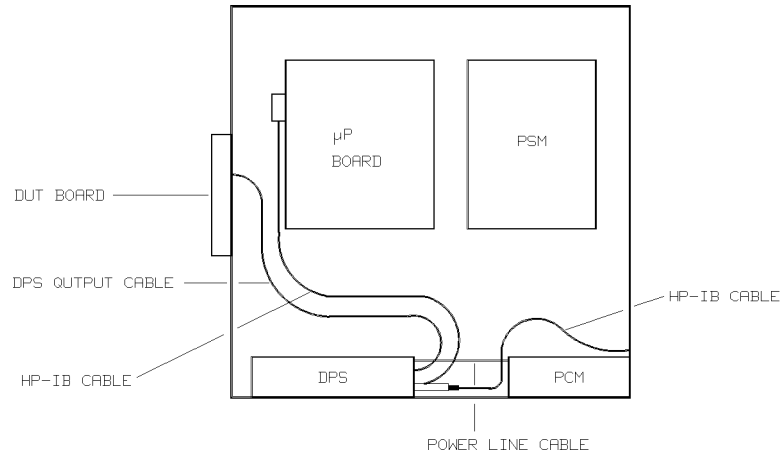
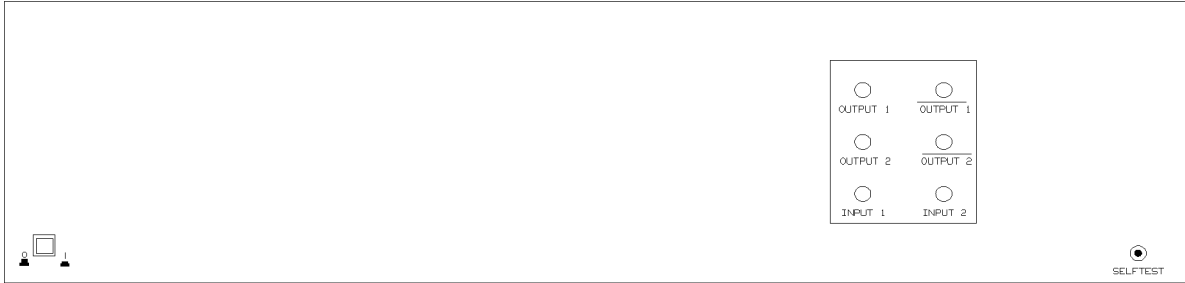


Figure 5-15. DPS cable routing within the Standardframe.

11. Switch the Standardframe PCM on. Power should now be available at the HP662xx, switch it on and monitor its self test procedure. If the HP662xx self-test fails, please refer to the HP662xx manual. If power is not available at the HP662xx refer to HP82000 System Troubleshooting.
12. Set up the required HP-IB address for the DPS (Address = 2). If you're not sure how to do this refer to the HP 662xx Operating Manual.
13. Replace the Standardframe front grille.

L

FRONT VIEW



REAR VIEW

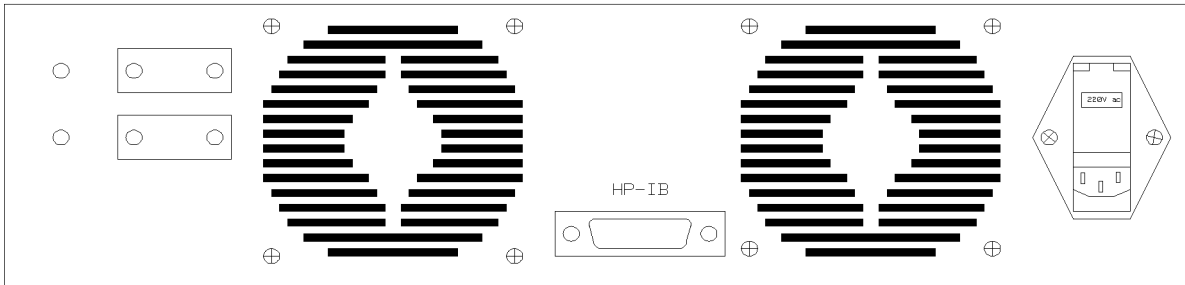


Figure 5-16. High Speed Width Generator

The **HP E1215 High Speed Width Generator (HSWG)** uses the edges from a 400 MHz board to generate RZ format pulses.

Following are the rules for installing HSWGs:

R u l e s



Take precautions against Electrostatic Discharge when handling HSWGs, especially when making connections to the SMA sockets on the front.

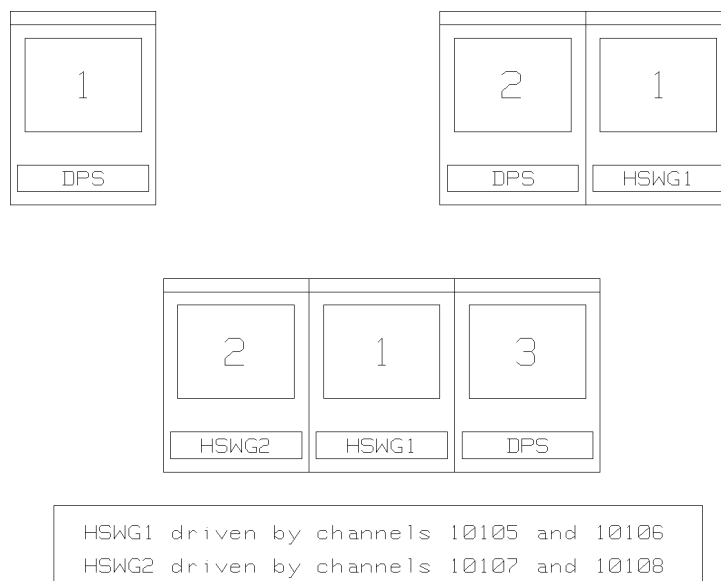



Figure 5-17. HSWG Locations


1. An HSWG fits in a 3-unit instrument-slot.
2. Before installing a HSWG in a mainframe, you must remove the *feet* on the underside and rear of the HSWG.

C a u t i o n If you do not remove these feet, you could damage the HSWG when you push it into the mainframe.



3. You must attach the rack-mount flanges to the sides of the HSWG, with the screws provided.
4. HSWGs can be installed in the instrument slot under the card-cage, or outside the mainframe. See Figure 5-17.
5. The HSWG must be connected to one of the Test Equipment Outlets on the PCM. Read HSWG Power for details of how to change the setting of the voltage-selector switch on the back of the HSWG.

N o t e HSWGs must be connected to the same protective-earth as the maxiframe mainframe and PCM.



6. A maximum of four HSWGs is allowed in a system. A maximum of two HSWGs can be fitted in a triple Standardframe. Each HSWG has two channels.
7. Channels 5, 6, 7 and 8 on a 400 MHz board can be used to drive an HSWG. Therefore a 400 MHz board can drive 2 HSWGs (2 channels per HSWG).
8. The 400 MHz boards connected to HSWGs must be installed in slots 3 and 4 of card-cage 1 (the bottom-right card-cage). The I/O channels which can drive HSWGs are:
Channels 10105 to 10108

Channels 10205 to 10208

9. HSWGs must be connected to HP-IB select-code 7. The HP-IB connector is on the rear of the HSWG. HP-IB addresses 15, 16, 17, and 18 are reserved for HSWGs. These addresses are allocated to individual HSWGs depending on which I/O channels are used to drive the HSWG. Details of how to set the HSWG HP-IB address are given in the section **Setting HSWG HP-IB Addresses**, later in this chapter.

HSWG	HP-IB Address	driven by channel
1	15	10105 and 10106
2	16	10107 and 10108
3	17	10207 and 10208
4	18	10205 and 10206

10. For each HSWG channel you must put an entry in the file `/hp82000/pws/data/mainframes`. This entry takes the form:

```
HSWG,c,iiii,hh
```

Where:

`c` is the HSWG channel-number (1 or 2).

`iiii` is the number of the I/O channel driving this HSWG channel.

`hh` is the HP-IB address of this HSWG.

11. In a system with HSWGs, all I/O boards must have the extra-long (P/N E1256A) cable-set.
12. Special I/O cables are needed for HSWGs. There are three cable-sets for this purpose. These cable-sets are colour-coded and which cable-set you use depends on where the HSWG is installed and which I/O channel is driving it. The cable-sets are:

Part Number	Colour Code	Input Cable	Output Cable
E1215A#001	Red	62 cm	89 cm
E1215A#002	White	92 cm	36 cm
E1215A#003	Blue	70 cm	96 cm

HSWGs installed in the instrument-slot under the card-cage use cable-set E1215A#002 (White).

13. You must always connect both the outputs (normal and complement) of each HSWG channel to HSWG output cables. Both outputs must be loaded for the HSWG channel to operate correctly.

These rules are summarized in Figure 5-17 which shows the allowed locations of HSWGs in different system configurations.

5-18 Standardframe and Miniframe Installation

N o t e



After you have installed a HSWG, write the following information on the label on each HSWG cable:

- HSWG number.
- Channel number.
- Input, output or output.

This makes it easier to identify each cable and trace problems, if they arise.

Details of where to install HSWG pogo-pins in the DUT interface, are given in the chapter DUT Interfacing Mechanics.

Installing H S W G I / O C a b l e s

If the 400 MHz I/O board(s) to be used with the HSWG(s) are not equipped with the cable-set shown in Figure 5-18 then you must replace the old I/O cables on the relevant channels with the new HSWG I/O cables.



Take precautions against Electrostatic Discharge when handling I/O boards and cables attached to I/O boards, and when connecting cables to the HSWG inputs and outputs.

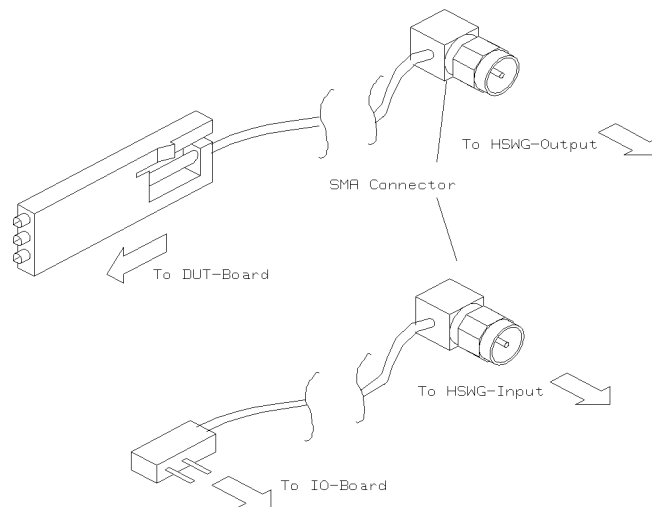


Figure 5-18. HSWG I/O Cables

Figure 5-18 shows the cables for one HSWG channel only. Each cable-set (two channels) consists of:

- 2 HSWG input-cables.
- 4 HSWG output-cables.

C a u t i o n



This procedure must be carried out by qualified service personnel only.

Handle the I/O cables with care. They are coaxial cables with a soft foam-dielectric between the inner-conductor and the outer shield. Using this type of dielectric improves the propagation characteristics of the cable but makes it very easy to damage. In general, crushing or pinching the cable can cause the following:

- The outer shield touches the inner-conductor, giving a short-circuit.
 - The impedance of the transmission-line increases at the damaged point and this causes reflections.
-

P r o c e d u r e

1. Remove the I/O board from the card-cage.
2. Connect the HSWG channels on the I/O boards in order, as follows:

Connect channel	to	of
10105	input 1	HSWG1
10106	input 2	HSWG1
10107	input 1	HSWG2
10108	input 2	HSWG2
10207	input 1	HSWG3
10208	input 2	HSWG3
10205	input 1	HSWG4
10206	input 2	HSWG4

The next steps describe how to remove a normal I/O cable and replace it with the HSWG I/O cable.

3. Remove the spring-clip holding the I/O cable plug.
4. Pull the plug out of its socket and cut the tie-wrap securing it (and the other three I/O cables) to the I/O board.
5. Remove the pogo-pin end of the I/O cable from the pogo-pin block.
6. Connect the HSWG input-cable to the empty socket on the I/O board.
7. Reattach the spring-clip.

C a u t i o n



Always use a torque-spanner (HP Part Number 8710-1582) to tighten SMA-connectors.

8. Connect the SMA-end of the HSWG input-cable to one of the inputs on the HSWG (call this input X , where X is either 1 or 2).
9. Connect the SMA-ends of the two HSWG output-cables to the outputs labeled output X and output \bar{X} (where X is the same as in the last step).

C a u t i o n Be careful not to crush or pinch the I/O cables.



-
10. If you have finished with this bundle of I/O cables, attach a new tie-wrap to secure the cables to the I/O board.

N o t e Remember to connect **both** the outputs of each HSWG channel to an HSWG output cable.



S e t t i n g H S W G H P - I B A d d r e s s e s

N o t e HSWGs must be connected to HP-IB select-code 7.



The HP-IB addresses 15,16,17 and 18 on HP-IB select-code 7 are reserved for HSWGs. No other addresses can be used by HSWGs and these addresses must not be used by other devices.

The procedure for setting HSWG HP-IB addresses is:

P r o c e d u r e

1. Switch-on the PCM.
2. Switch-on the disc-drive.
3. Switch-on the controller and monitor.
4. Login to the system.
5. Type `cd /hp82000/fw/bin` and press `(Return)`.
6. Type `./hswg_conf` and press `(Return)`.

Message: Turn off all High Speed Width Generators then press Return

N o t e **Do not** run the `hswg_conf` configuration program in an HP-UX shell started from the HP 82000 software. The HP 82000 software must not be running at the same time as this program.



-
7. Make sure that all HSWGs are switched off, then press `(Return)`.

Message: Turn on the High Speed Width Generator to configure. then press Return.

8. Switch on HSWG1 and press **Return**.

Note



When you switch-on a HSWG, a self-test program runs. If it runs correctly and finds no faults, the LED on the front-right of the HSWG lights for approximately two seconds and then switches-off. If this LED remains lit or does not light, there is a fault. Refer to the *HP 82000 Troubleshooting Manual*.

If no HSWG can be found:

Message: **Error: No High Speed Width Generator found on address 15**

The program then stops, and you should refer to the *HP 82000 Troubleshooting Manual* for troubleshooting details.

Otherwise:

Message: **High Speed Width Generator found on address X (X some number)**

New address ?

9. Type 15 and press **Return**.

Message: **Address set to 15**

Message: **More High Speed Width Generators (Y/N) ?**

10. Press **y** to go through the same procedure as before and set the HP-IB address of HSWG2 to 16. Repeat the procedure for HSWG3 and HSWG4.

When all HSWG HP-IB addresses have been set, press **n**.

Message: **Turn off all High Speed Width Generators**

11. Turn off all HSWGs.

Message: **Turn on all High Speed Width Generators.**

12. Do this and the program stops automatically, returning the HP-UX prompt. Turning the HSWGs off and on again caused them to retain the HP-IB addresses set.

Next, you must modify the `mainframes` file to tell the software which HSWG channels are at which HP-IB address, and what I/O channels are driving these HSWG channels.

13. On the HP-UX command-line, type `vi /hp82000/pws/data/mainframes`.

14. For each HSWG, add a line to this file (`mainframes`) like the following:

HSWG,HSWG channel ,driver channel ,HP-IB address

Where:

HSWG channel - is the number of the HSWG channel (1 or 2) being driven by *driver channel*.

driver channel - is the number of the driver channel driving *HSWG channel*.

HP-IB address - is the HP-IB address you set in the last part of this procedure.

For Example:

HSWG,1,10105,15

HSWG,2,10106,15

15. Press **(ESC)**, type :wq and press **(Return)**, to save the modifications and end the editing session.

Changing the PCM Option

This section provides information on changing the system power option to suit local needs.

Changing the Standardframe PCM Option

Warning



The Standardframes are configured for 400 Volt three phase operation (Option 400). If you need to reconfigure your PCM(s) to reflect local power supplies, perform the relevant procedure in this chapter.

Failure to comply may result in the hazard of injury or death or damage to the system.

This procedure must be performed by a qualified electrician. To avoid the hazard of injury or death make sure that power to the mains distribution point is switched off. Ensure also, that when completing this work, any local regulations and safety codes are adhered to.

Note



When changing between options **400** and **415**, no configuration changes are necessary within the PCM.

The PCM is comprised of the following main components:

- Fuse Block - for connecting the primary supply to the PCM.
- Four Circuit Breakers - to isolate the PCM from the primary supply.
- Emergency Off (EMO) - switches the PCM off when the EMO button on the front of the system is pressed.
- Power Option Board - used to configure PCM to the required power option.
- Three Mains Filters (LF1, LF2 and LF3) - to provide a filtered supply to the power supply modules (PSMs).
- Ten fuses.

Fuse Name	Location	Type	Part Number
Transformer Primary (F1)	Option Board	250 V, 0.25 A	2110-0303
Transformer Primary (F2)	Option Board	250 V, 0.25 A	2110-0303
PMU Fuse (F3)	Option Board	250 V, 0.25 A	2110-0303
PMU Fuse (F4)	Option Board	250 V, 0.25 A	2110-0303
4 × Fuse-Block Fuses	Fuse-Block	500 V, 30 A	2110-0843
2 × Trip-Coil Trafo Fuses	Trip-Coil Board	250 V, 0.25 A	2110-0201

Note

All fuses have a time-delay characteristic.



The PCM is supplied already wired for option 400/415. If you need to change the option you must do the following:

- Change the Power Line Strapping to suit your chosen option. Note that for Options 400, 415 and 208 the Power Line Strapping at the fuse block is identical. For Option 200 and 240 the strapping is identical. (**Cables B1, B2, B3 and B4**)
- Check and if necessary re-position the EMO cables for the appropriate power option. Install short-circuits and jumper-wires as necessary.
- Check and if necessary re-position the frequency selector plug for the fan power supply.
- Check and re-position the fuse (**F1**) for the appropriate power option.
- Check and reconnect the cables connecting the Circuit Breakers to the Line Filters (**Cables 1B, 2B and 3B**).
- Verify the power output voltage of the PCM at sockets **SP1, SP2, and SP3** (200 - 240 Volts AC).
- Check that your device power supply's (HP 6624) power option is configured to suit your primary power supply input voltage.
- Check that your High Speed Width Generator's (HP 1215A) power option is configured to suit your primary power supply input voltage.

6-2 Changing the PCM Option

To locate the main assemblies in the PCM refer to Figure Figure 6-1.

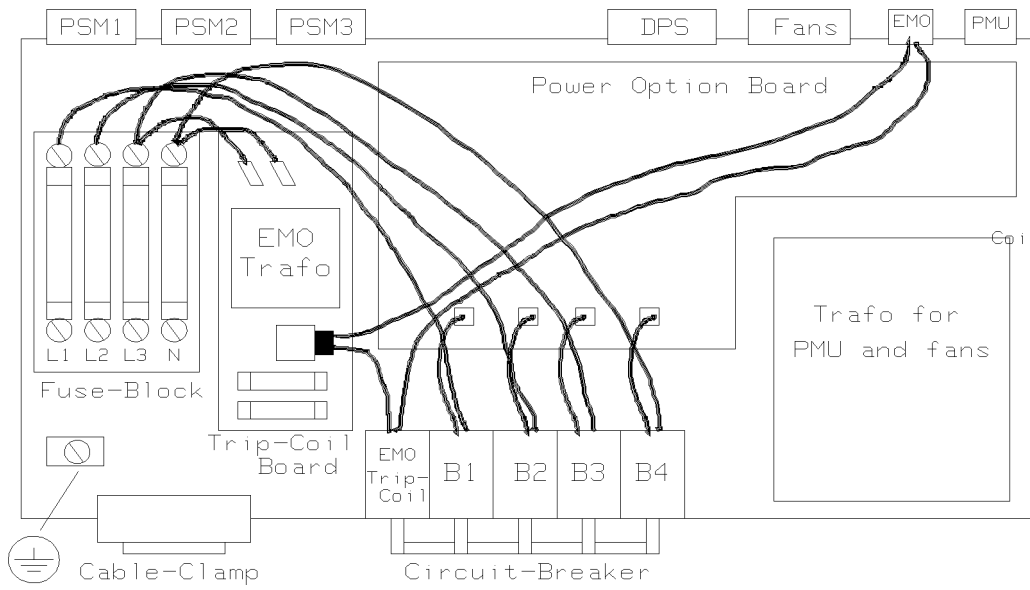


Figure 6-1. Power Control Module - Internal View

To change the PCM power option, the connections between the fuse block and the circuit breakers may require alteration. The connections for the various options are given below:

Option 200/240

Figure Figure 6-2 shows the power line strapping for Option 200/240. At the fuse block reconnect the cables in the following way:

- Connect to TERMINAL L1: CABLE B1 and CABLE B3
- Connect to TERMINAL L2: CABLE B2 and CABLE B4

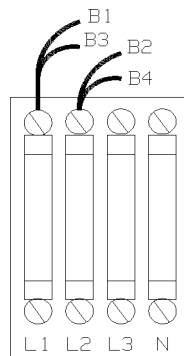


Figure 6-2. Option 200/240 Power Line Strapping.

Option 208

Figure Figure 6-3 shows the power line strapping for Option 208. At the fuse block reconnect the cables in the following way:

- Connect to TERMINAL L1: CABLE B1
- Connect to TERMINAL L2: CABLE B2
- Connect to TERMINAL L3: CABLE B3
- Connect to NEUTRAL N: CABLE B4

Remove the fuse on the neutral line (N) and replace it with a short-circuit (provided).

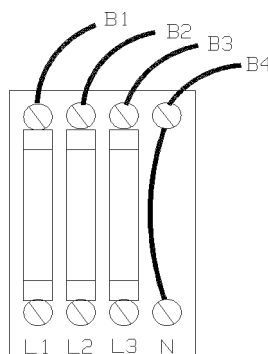


Figure 6-3. Option 208 - Power Line Strapping

6-4 Changing the PCM Option

Option 400/415

Figure 6-4 shows the power line strapping for Option 400/415. At the fuse block reconnect the cables in the following way:

Connect to TERMINAL L1: CABLE B1

Connect to TERMINAL L2: CABLE B2

Connect to TERMINAL L3: CABLE B3

Connect to NEUTRAL N: CABLE B4

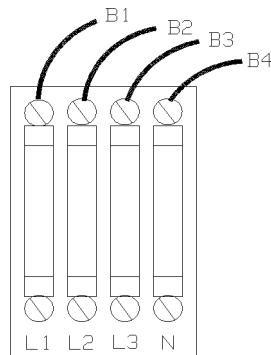


Figure 6-4. Option 400/415 - Power Line Strapping

Make the connections described for the appropriate power option.

Option 200/240

1. Connect the two EMO cables from the EMO transformer to the terminals on the fuse-block, as shown in Figure 6-5.
2. Connect jumper-cables (supplied) between terminals **L1** and **L3** and terminals **L2** and **N**, as shown in Figure 6-5.

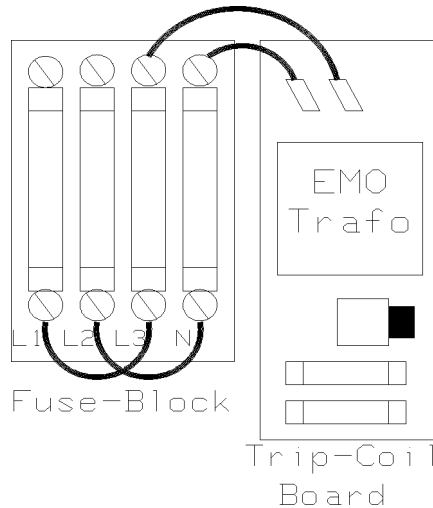


Figure 6-5. EMO Connections - Option 200/240

Option 208

Connect the two EMO cables from the EMO transformer to the terminals on the fuse-block, as shown in Figure 6-6.

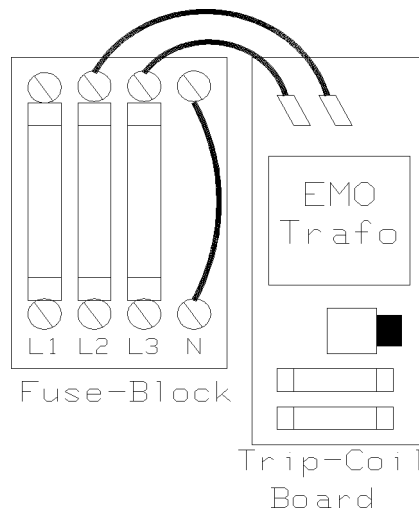


Figure 6-6. EMO Connections - Option 208

6-6 Changing the PCM Option

Option 400/415

Connect the two EMO cables from the EMO transformer to the terminals of the fuse-block, as shown in Figure 6-7.

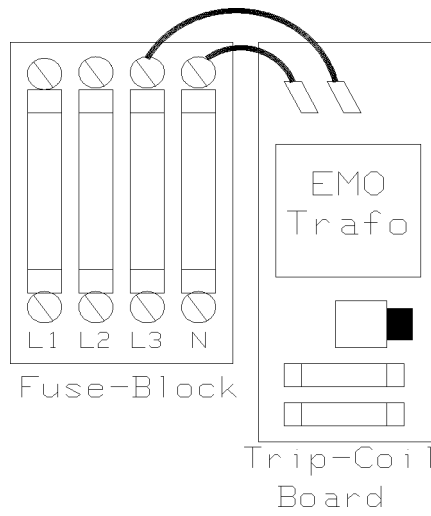


Figure 6-7. EMO Connections - Option 400/415

Figure 6-8 shows the power option board. Establish the **frequency** of your primary power supply (50 or 60Hz).

Depending upon your primary power supply frequency, reposition the plug connector into:

Connector 9A/9B for a **50Hz** Supply

Connector 9C/9D for a **60Hz** Supply

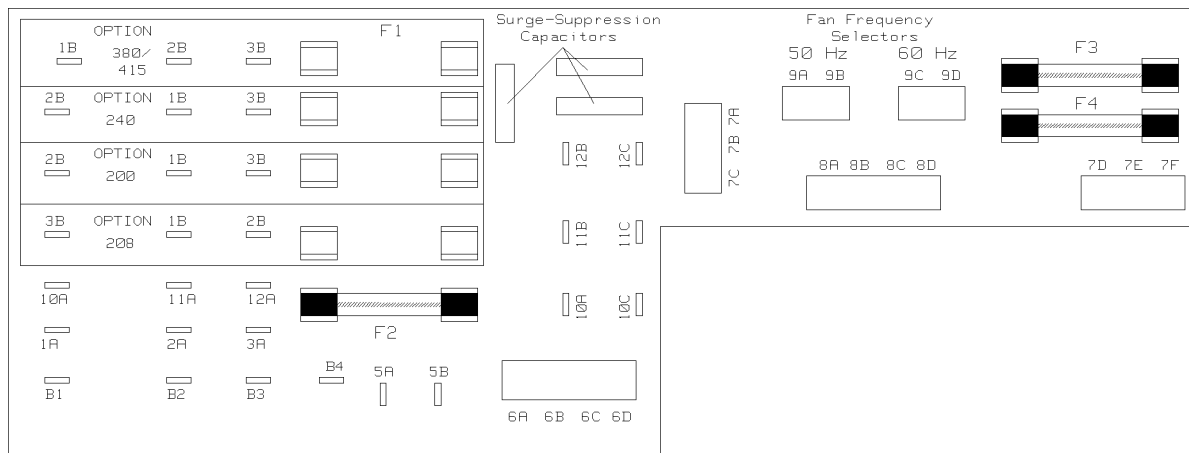


Figure 6-8. Power Option Board

To change the PCM power option the connections between the Circuit Breakers and the Line Filters may require alteration (**Cables 1B, 2B and 3B**). Check and reposition fuse **F1** for the appropriate option.

The connections for the various options follow.

Option 200

C a u t i o n



When repositioning the cables **1B, 2B and 3B**, ensure that they are connected to the **correct terminals** for the new option. The terminals are clearly identified on the power option board.

1. Reconnect the cables **1B, 2B and 3B** as shown in Figure Figure 6-9.
2. Reposition the fuse **F1** as shown in Figure Figure 6-9.

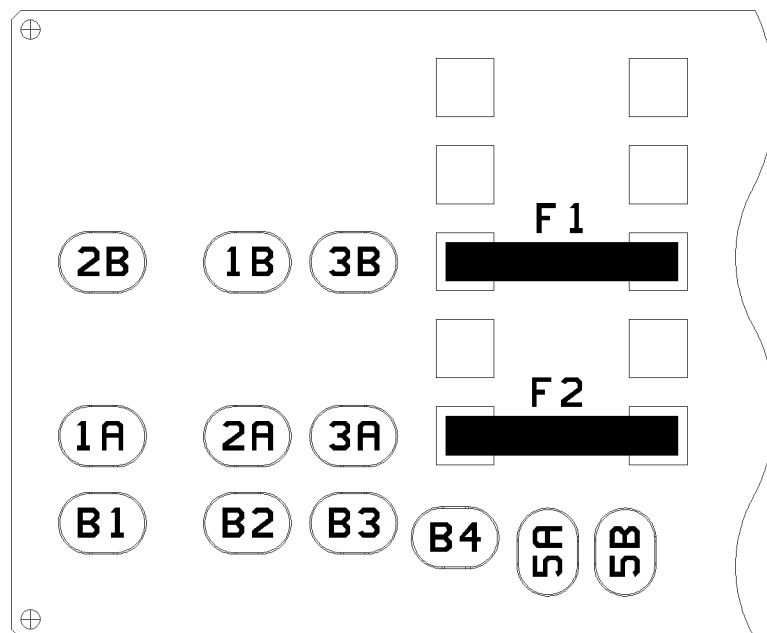


Figure 6-9. Connections to Power Option Board - Option 200

Option 240

CAUTION



When repositioning the cables **1B**, **2B** and **3B**, ensure that they are connected to the **correct terminals** for the new option. The terminals are clearly identified on the power option board.

1. Reconnect the cables **1B**, **2B** and **3B** as shown in Figure Figure 6-10.
2. Reposition the fuse **F1** as shown in Figure Figure 6-10.

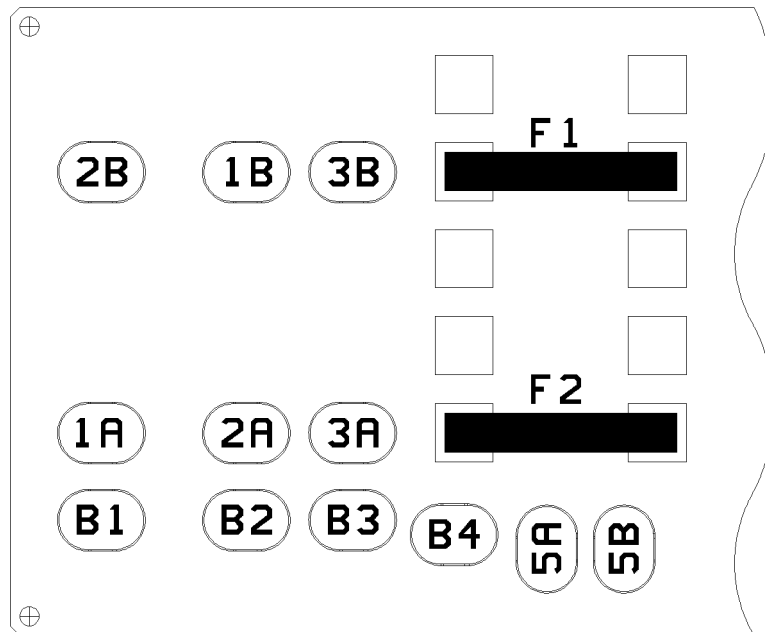


Figure 6-10. Connections to Power Option Board - Option 240

Option 208

CAUTION



When repositioning the cables **1B, 2B and 3B**, ensure that they are connected to the **correct terminals** for the new option. The terminals are clearly identified on the power option board.

1. Reconnect the cables **1B, 2B and 3B** as shown in Figure Figure 6-11.
2. Reposition the fuse **F1** as shown in Figure Figure 6-11.

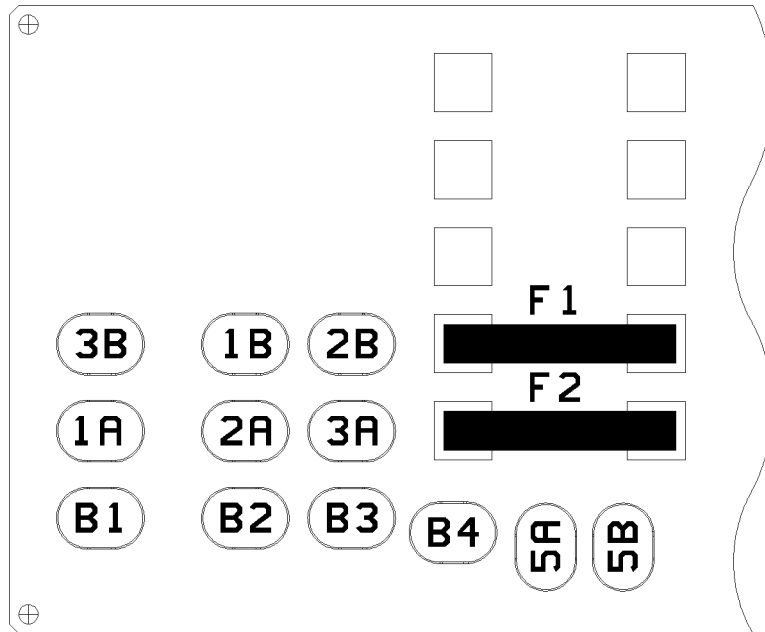


Figure 6-11. Connections to Power Option Board - Option 208.

Options 400 and 415

CAUTION



When repositioning the cables **1B**, **2B** and **3B**, ensure that they are connected to the **correct terminals** for the new option. The terminals are clearly identified on the power option board.

1. Reconnect the cables **1B**, **2B** and **3B** as shown in Figure Figure 6-12.
2. Reposition the fuse **F1** as shown in Figure Figure 6-12.

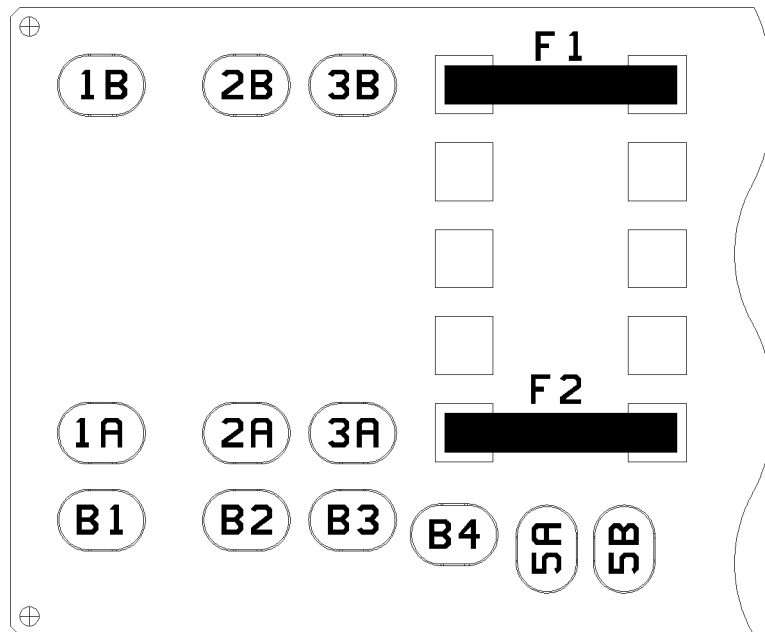


Figure 6-12. Connections to Power Option Board - Options 400 and 415.

Caution



After reconfiguring your PCM, we recommend that you verify the output voltages at **SP1, SP2 and SP3**.

Figure Figure 6-13 shows the system power output sockets (SP1,2,3) on the front of the PCM.

Note



The PCM will only work if the two pins in the EMO connector are short-circuited by having the EMO switch attached.

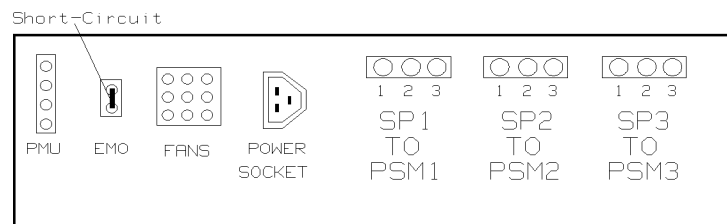


Figure 6-13. PCM - Front View

Using table B-2, check that the voltage between **pin 1 and pin 3** on sockets **SP1, SP2 and SP3**, is correct for your chosen power option.

Table 6-1. System Power - Output Voltages

Power Option	Voltage - Pin 1 to Pin 3
400	230 Volts AC
415	240 Volts AC
240	240 Volts AC
200	200 Volts AC
208	208 Volts AC

W a r n i n g



This procedure must be performed by a qualified electrician. To avoid the hazard of injury or death make sure that power to the mains distribution point is switched off. Ensure also, that when completing this work, any local regulations and safety codes are adhered to.

This section tells you how to change the **Miniframe Power Option** to meet local needs.

To change the power option you must:

1. **reposition the cables on connectors J8 and J9 - Power Option Board (Refer to Figure 6-15).**
2. **reposition a link on each of the Power Supply Units (Refer to Figure 6-16 and to Figure 6-17).**

Figure 6-14 shows the Miniframe rear view.

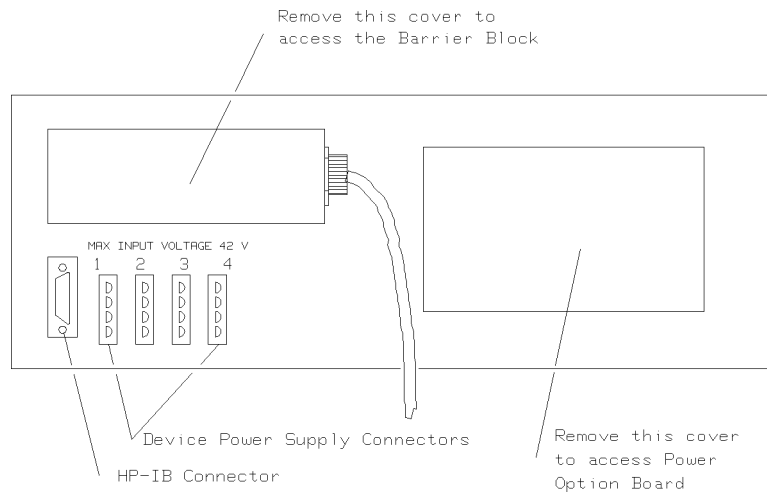


Figure 6-14. Miniframe - Rear View.

C o n n e c t i o n s t o t h e P o w e r O p t i o n B o a r d

C a u t i o n



When repositioning the cables ensure that they are connected to the correct terminals for the new option. The terminals are clearly identified on the power option board.

Option 230

1. Refer to Figure 6-14: Remove the access cover to the power option board (2 screws).
2. Refer to Figure 6-15:
Connect:
 - a. **the Black/Red cable to connector J8.**
 - b. **the Black/Yellow cable to connector J9.**

6-14 Changing the PCM Option

3. Replace the access cover.

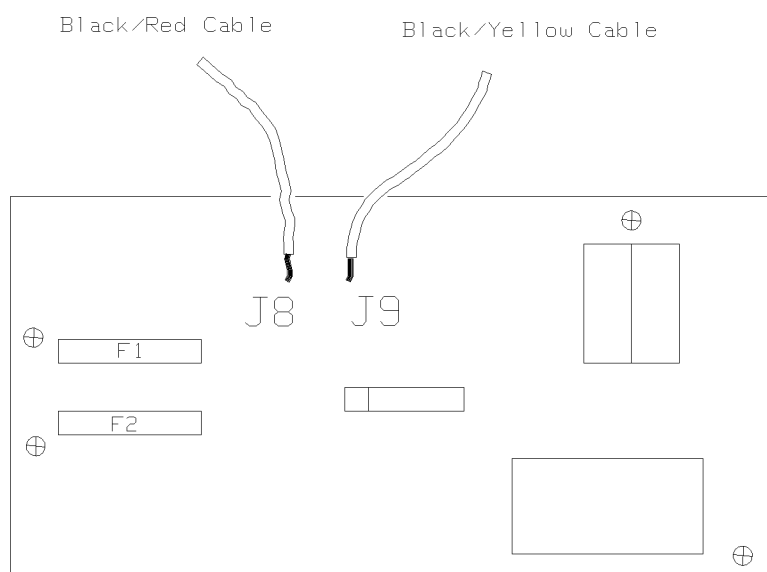


Figure 6-15. Power Option Board - Miniframe.

Note

Fuses F1 and F2 are rated T0.75 Amp.



Option 110

1. Refer to Figure 6-14: Remove the access cover to the power option board (2 screws).
2. Refer to Figure 6-15:
Connect:
 - a. **the Black/Red cable to connector J9.**
 - b. **the Black/Yellow cable to connector J8.**
3. Replace the access cover.

Repositioning the Line Voltage selection links on the Power Supply Units

Refer to Figure 6-16 and to Figure 6-17.

1. Remove the miniframe top cover (8 screws).
2. Remove the 2 screws (in depressions) at the front of the power supply assembly.
3. Lift up the power supply assembly (hinged at the rear).
4. Refer to Figure 6-16. Locate the eight spade terminals , two per Power Supply Unit.

Note

The spade terminals are clearly identified on the Power Supply Unit boards (110/230 Volts).



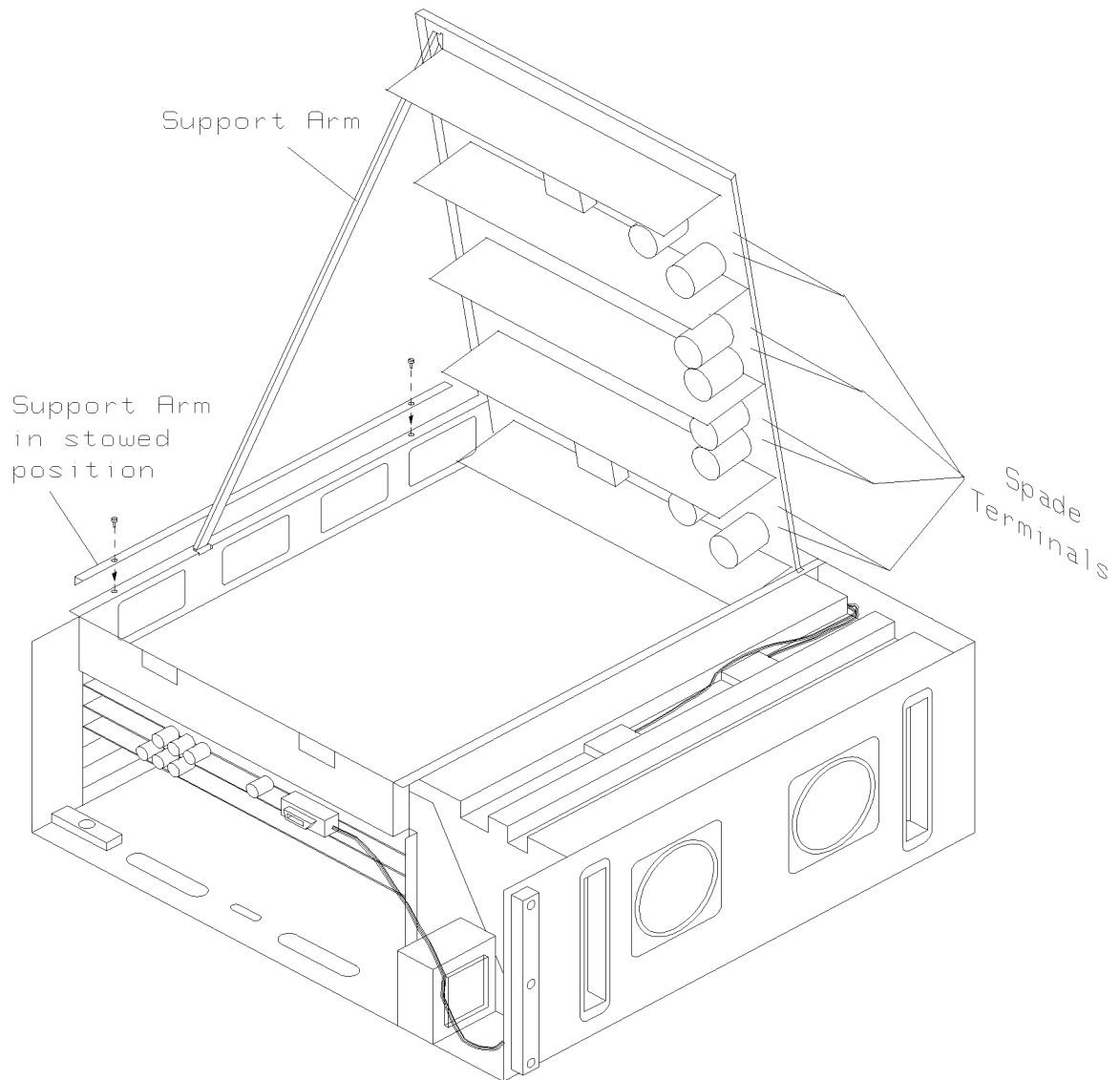


Figure 6-16. Miniframe - Showing Power Supply Assembly

5. Position the spade connector according to your power option requirements (110/230 Volts).
6. Reposition the power supply assembly.
7. Replace the Miniframe top cover.

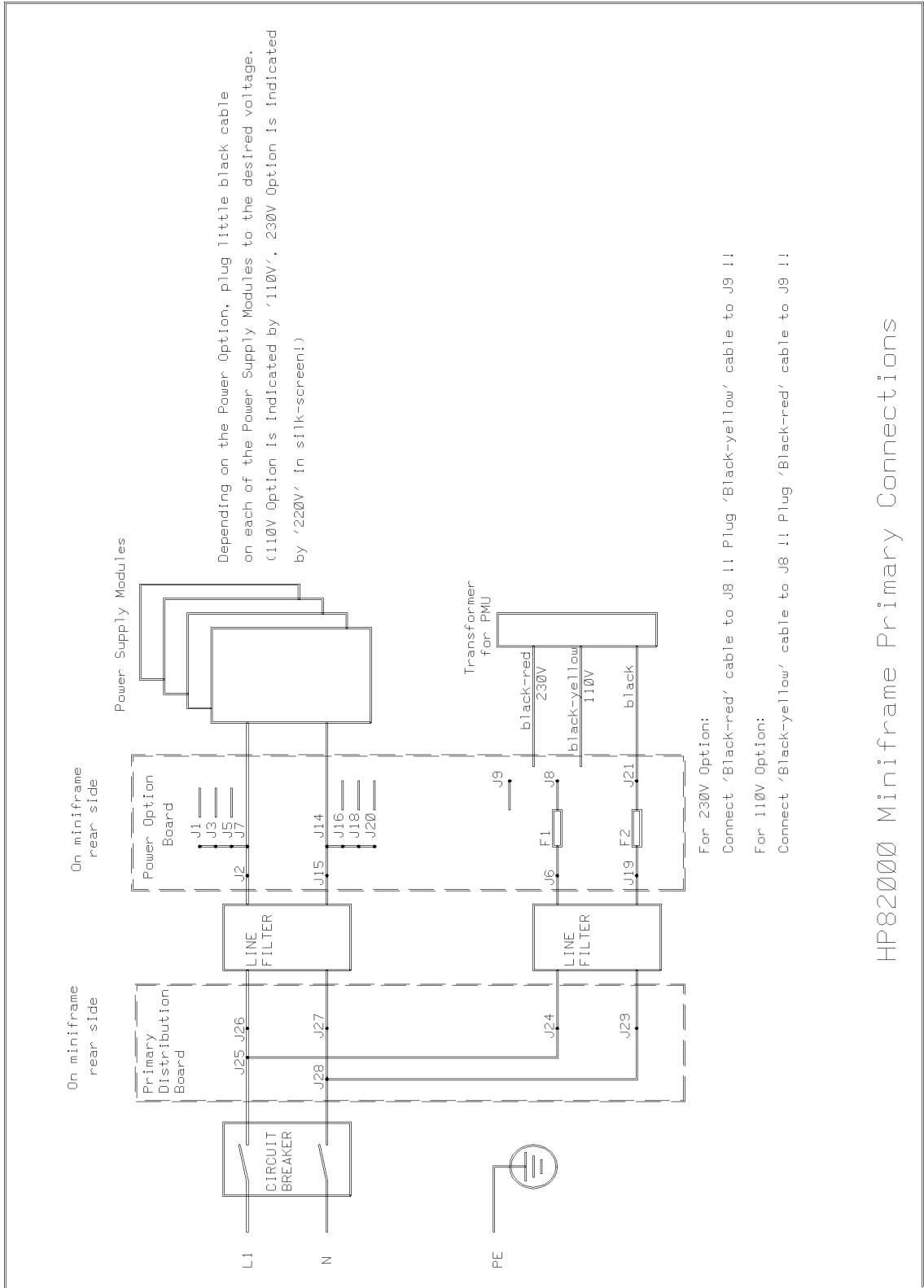


Figure 6-17. Miniframe - Primary Connections

HP82000 Miniframe Primary Connections

Check that your DPS is configured for the correct power option using the following table. The DPS power option can be checked by examining the door on the line module. Refer to DPS Operating Manual P/N 5957-6332.

Table 6-2. DPS - Power Options

PCM Option	DPS Option
208 Volts	120 Volts
400 Volts	240 Volts
415 Volts	240 Volts
200 Volts	220 Volts
240 Volts	240 Volts

Note



The HSWG is a Safety Class 1 instrument, that is, an instrument with an exposed metal chassis that is directly connected to earth via its power cable.

Before connecting a HSWG to the PCM make sure that the voltage-selector switch on the HSWG is at the correct setting for the PCM power option.

Table 6-3. HSWG - Power Options

PCM Option	HSWG Option
208 Volts	120 Volts
400 Volts	240 Volts
415 Volts	240 Volts
200 Volts	220 Volts
240 Volts	240 Volts

Note



Use delayed-action (slow-blow) fuses.

The procedure for changing the setting of the voltage-selector switch and the fuse, is:

1. Switch off the HSWG and remove the power cable.

6-18 Changing the PCM Option

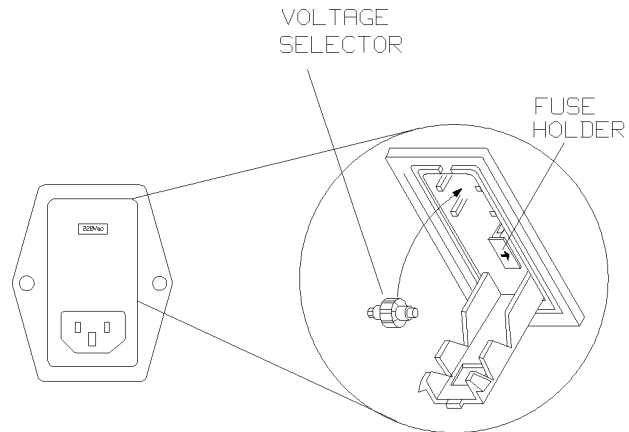


Figure 6-18. Voltage Selector Switch

2. Use a screwdriver to open the cover of the voltage selector switch.

c a u t i o n



If you do not complete the following steps correctly you could damage the HSWG when you try to use it.

3. Remove the voltage selector and replace it with the correct voltage visible through the slot in the cover.
4. If necessary, change the fuse in accordance with the new voltage setting.
5. Replace the cover on the HSWG.

M a i n s P o w e r C o n n e c t i o n

M a i n s P o w e r S u p p l y V e r i f i c a t i o n

This section tells you how to verify your primary power supply.

W a r n i n g



Ensure that the protective earth connection to the PCM at the Protective Earth Stud is made. Failure to make this connection properly may allow lethal charges to develop on the mainframe cabinet.

C a u t i o n



The primary power installation must be verified before energizing the system. Attempting to operate with improper voltage or wiring can result in serious damage to the system.

To verify your primary power supply, complete the next procedure.

1. Measure the mains voltage at the power distribution point to be used by the system.
2. If any discrepancies are found, notify the system supervisor or plant engineer and rectify them before proceeding. De-energize the primary power circuit.

S t a n d a r d f r a m e M a i n s P o w e r C o n n e c t i o n

S t a n d a r d f r a m e P o w e r O p t i o n s

Your standardframe has been configured at the factory for 400 Volt, three-phase operation. The following information is given to allow you to check the internal connections. Refer to Chapter 6 for details on changing the PCM options.

C a u t i o n



All mains fuses must have a time delay characteristic.

Table 7-1. Standardframe Power Options

Option	Voltage	Voltage Tolerance	No of Phases	Rated Current
200	200V	-13% +6%	2	30A Max
208	208V	-13% +6%	3	3 X 16A Max
240	240V	-13% +6%	2	25A Max
400	400V	-13% +6%	3	3 X 9A Max
415	415V	-13% +6%	3	3 X 8.5A Max

Option 200

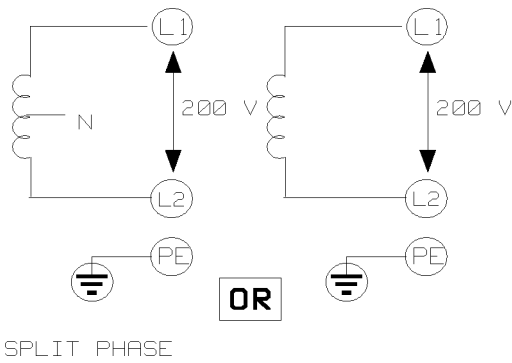


Figure 7-1. Option 200

Option 240

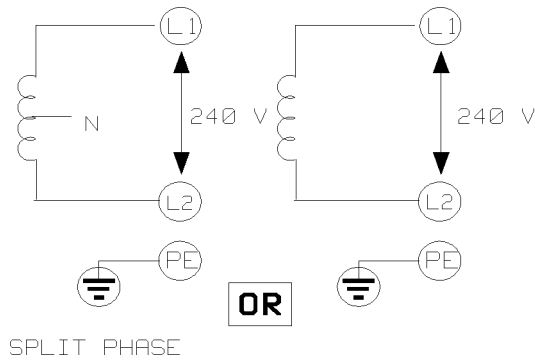


Figure 7-2. Option 240

7-2 Mains Power Connection

Option 208

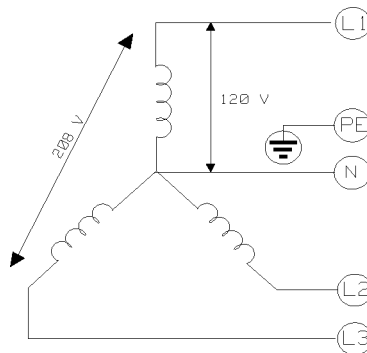


Figure 7-3. Option 208

Option 400

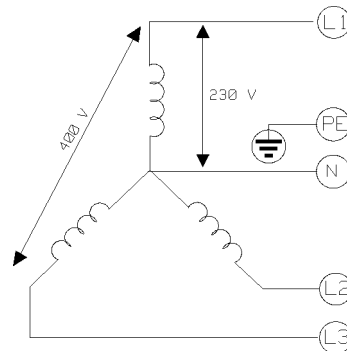


Figure 7-4. Option 400

Option 415

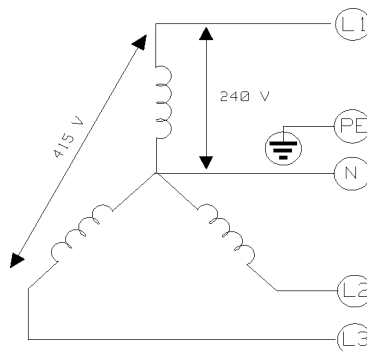


Figure 7-5. Option 415

CAUTION



Verify that the correct PCM is supplied to your system. The system power options are printed on the rear of the PCM. If you need to change the PCM option, refer to the chapter **Changing the PCM Power Option**.

To connect the primary power supply you need to remove the PCM.

Figure 7-6 shows a front view of the PCM.

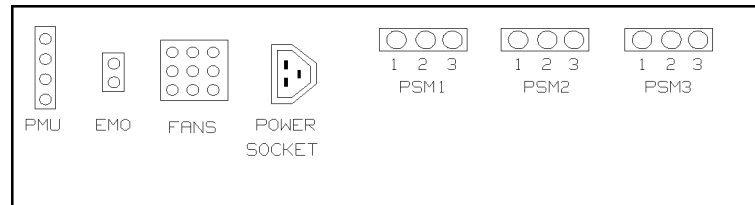


Figure 7-6. Front View - Power Control Module

Figure 7-7 shows a rear view of the PCM.

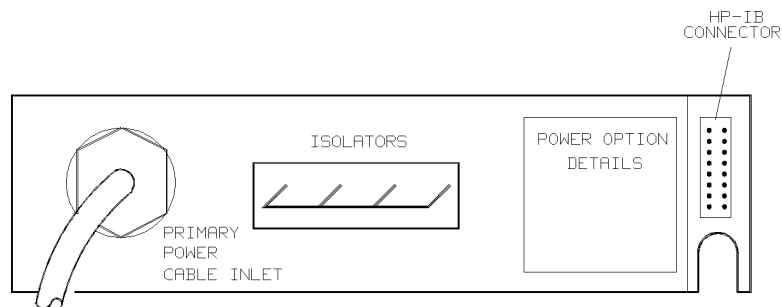


Figure 7-7. Rear View - Power Control Module

To remove the PCM, complete the following procedure.

w a r n i n g

Make sure that the primary power supply is switched off.



1. Switch off the system power.
2. Open the Standardframe rear door.
3. Remove the four screws securing the PCM in position.
4. Slide the PCM out.
5. Installation is the reverse of this procedure.

Figure 6-8 shows the location of the PCM.

7-4 Mains Power Connection

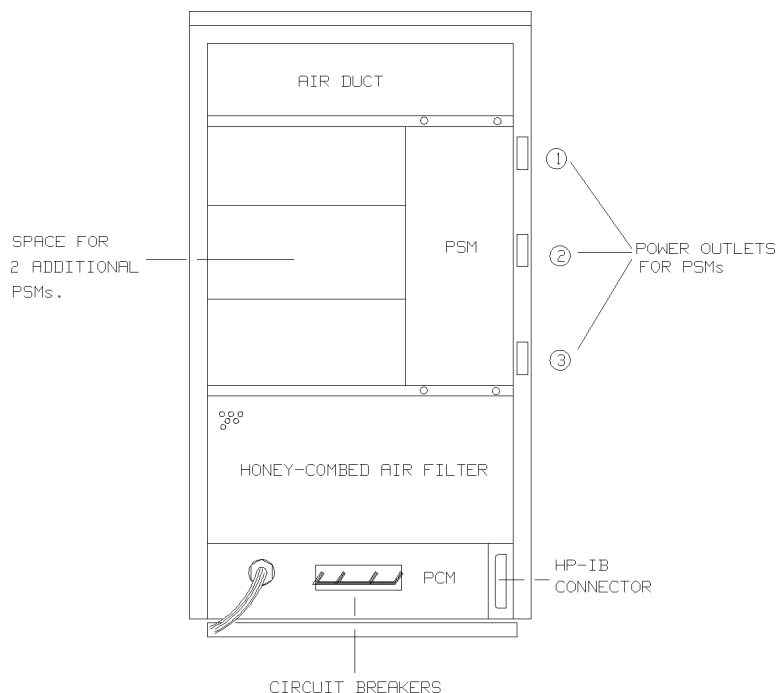


Figure 7-8. Location of PCM

Primary Power Connection (Standardframe)

The following instructions are to be used by the electrician connecting the Standardframe(s) to the mains supply.

Warning **Any electrical installation work must be carried out by a qualified electrician.**



Tools Needed

- Cross-head screwdriver
- Flat-head screwdriver
- HP 3478A Multimeter (or equivalent) with power cord and test leads.

Warning **Make sure that the power circuit to the Standardframe(s) is *SWITCHED OFF*.**



Warning **Failure to properly connect the protective earth connector may allow lethal charges to develop on the Standardframe cabinet.**



1. Check off the following items to verify that primary power has been correctly installed:

[] *PROTECTIVE EARTH* - The mains supply must include a protective earth conductor. This is necessary to provide operator protection from electrical shock.

[] *POWER LINE WIRING AND MAINS SWITCH* - Check that the power wiring is of a sufficient rating for the system and power option.

[] *PCM OPTION* - Ensure that the PCM is correct for the local power.

Note



A mains power cord is not supplied with the system. It is the customer's responsibility to ensure that local regulations regarding power cabling are met.

2. Remove the 10 screws securing the cover plate to the PCM. Remove the cover plate to access the fuse block.

Figure 6-9 shows an internal view of the PCM.

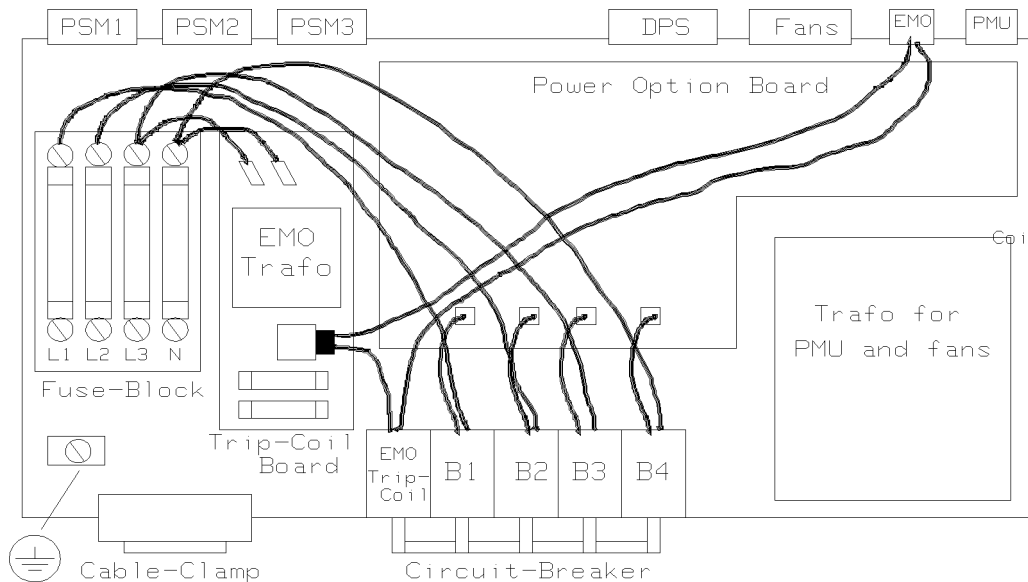


Figure 7-9. Internal view of PCM.

3. Loosen the cable clamp on the rear panel of the PCM and pass the power cable through the clamp and into the PCM.

Warning



Failure to properly connect the protective earth connector may allow lethal charges to develop on the Standardframe cabinet.

4. Before any other connection is made, connect the protective earth conductor to the protective earth connector on the bottom plate of the PCM.

7-6 Mains Power Connection

5. The PCM is equipped with three surge-suppression capacitors for options **400/415** and **208**. If you are installing one of these options, make the connections shown in Figure 7-10.

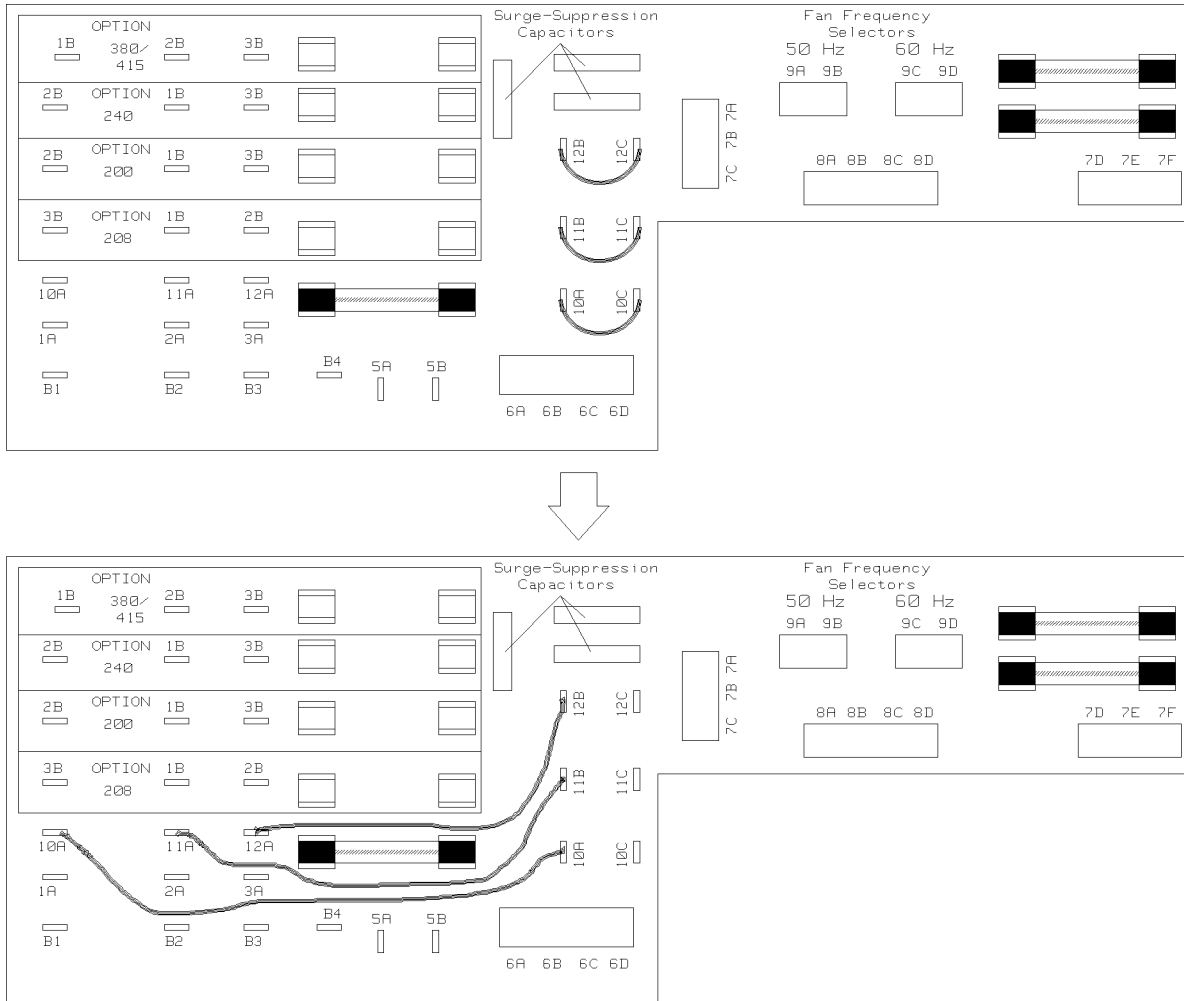


Figure 7-10. Connecting the Surge Suppression Capacitors

6. According to your power option, connect the power lines to the fuse block as shown in Figure Figure 7-11.

caution



The connections in the terminal block and earth stud are designed for copper cables. If you are using aluminium cables, the appropriate terminals are available. Contact your local HP Sales and Service Office for more details.

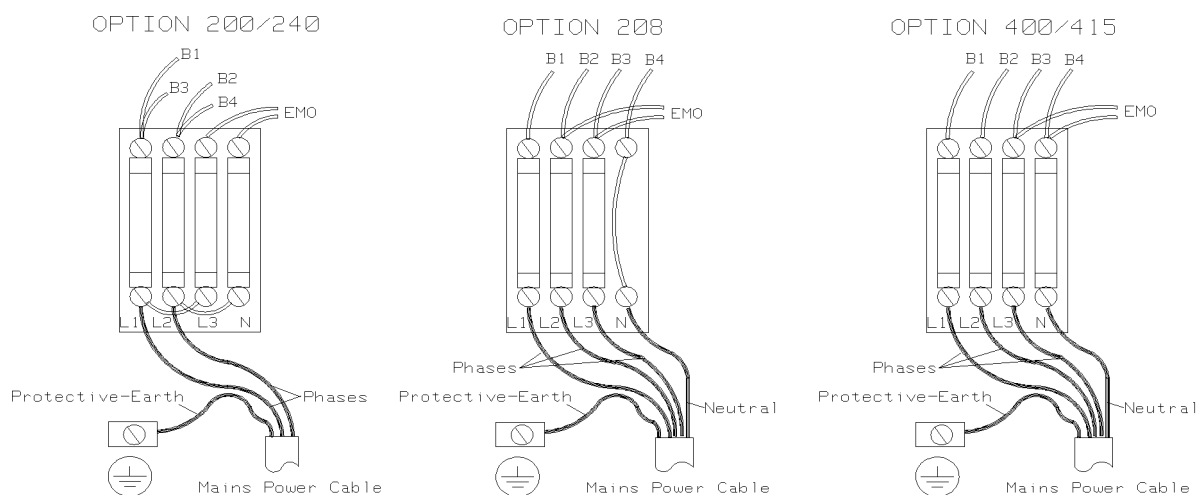


Figure 7-11. Mains Power Connection Options

Warning



Any interruption of the protective earth conductor inside or outside the apparatus is dangerous and could result in injury or death. Intentional interruption is prohibited.

7. Allow enough cable in the PCM to prevent cable strain, tighten the cable clamp.

caution



The overall sheath of a non-detachable supply cord shall continue into the equipment through any inlet bushing or cord guard and extend by at least half the cord diameter beyond the clamp of the cord anchorage.

8. Replace the PCM top cover and re-install the PCM.

The following information is given to enable you to check the internal connections.

C a u t i o n All mains fuses must have time delay characteristics.



Table 7-2. Miniframe Power Options

Option	Voltage	Voltage Tolerance	No of Phases	Rated Current
110	110V	-13% +6%	1	18A Max
230	230V	-13% +6%	1	9A Max

Option 110

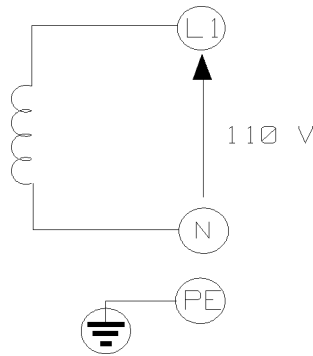


Figure 7-12. Option 110

Option 230

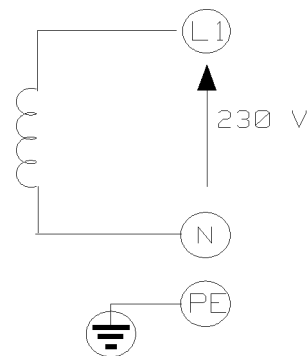


Figure 7-13. Option 230

Use the following instructions to connect the Miniframe(s) to the mains supply.

Warning



Any electrical installation work must be carried out by a qualified electrician. All local electrical codes must be observed.

Make sure that the power circuit to the Miniframe(s) is *SWITCHED OFF*.

Check off the following items to verify that primary power has been correctly installed:

PROTECTIVE EARTH - The mains supply must include a protective earth conductor. This is necessary to provide operator protection from electrical shock.

POWER LINE WIRING AND MAINS SWITCH - Check that the power wiring is of a sufficient rating for the system and power option.

POWER OPTION - Ensure that the power option is correct for the local power.

Note



A mains power cord is not supplied with the system. It is the customer's responsibility to ensure that local regulations regarding power cabling are met.

Warning



Any interruption of the protective earth conductor inside or outside the apparatus is dangerous and could result in injury or loss of life. Intentional interruption is prohibited.

Caution



The overall sheath of a non-detachable supply cord shall continue into the equipment through any inlet bushing or cord guard and extend by at least half the cord diameter beyond the clamp of the cord anchorage.

To connect a Miniframe to the primary power supply complete the following procedure.

1. Refer to Figure 7-14, remove the access cover to the fuse block.

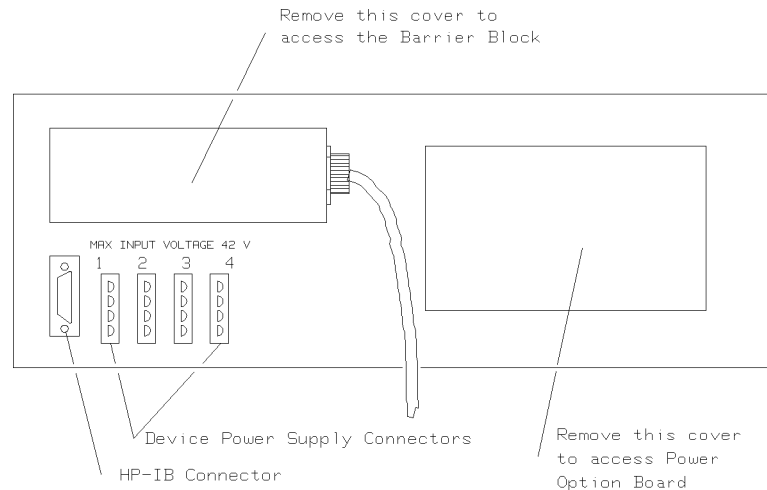


Figure 7-14. Miniframe - Rear

2. Select the correct cable clamp for your power option. Pass the power cable through the clamp and attach the clamp to the mounting bracket. Carefully tighten the cable clamp ensuring that the cable is not allowed to twist.

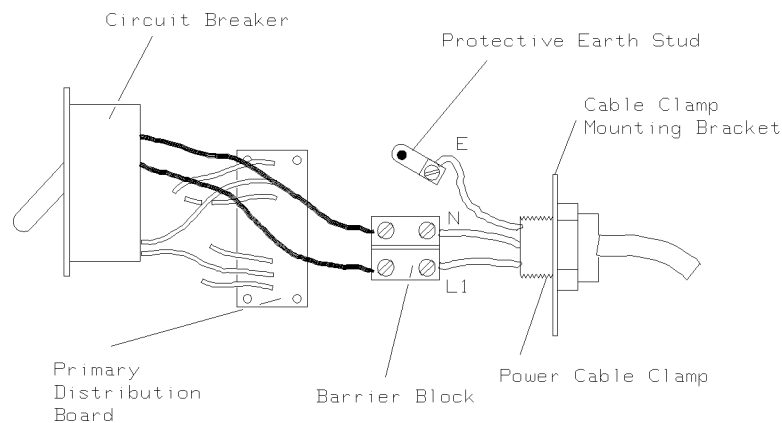


Figure 7-15. Miniframe - Barrier Block

Warning



Failure to properly connect the protective earth connector may allow lethal charges to develop on the Miniframe cabinet.

3. Before any other connection is made, connect the protective earth conductor to the protective earth stud.
4. Connect the power lines to the fuse block.
 - a. **Connect the live cable to L1**
 - b. **Connect the neutral cable to N**
5. Replace the access cover.

D U T I n t e r f a c i n g M e c h a n i c s

D U T I n t e r f a c e K i t s

Four DUT Interface Kits are available.

E 1223 A DUT Interface Mounting Kit 1M

(Standard frame only)

Consists of:

1. Cabinet front cover for one cabinet
2. DUT mounting frame to mount the DUT interface onto the front of one E1222M at an angle of 0°.

E 1224A DUT Interface Mounting Kit 1M45

(Standard frame only)

Consists of:

1. Cabinet front cover for one cabinet
2. DUT mounting frame to mount the DUT interface onto the front of one E1222M at an angle of 45°.

E 1225A DUT Interface Mounting Kit 2M45

(Standard frame only)

Consists of:

1. Cabinet front cover for two cabinets.
2. DUT mounting frame to mount the DUT interface onto the front of one E1222M+E1222E combination at an angle of 45°.

E 1226A DUT Interface Mounting Kit 3M45

(Standard frame only)

Consists of:

1. Cabinet front cover for three cabinets.
2. DUT mounting frame to mount the DUT interface onto the front of one E1222M+E1222E+E1222E combination at an angle of 45°.

The DUT interface assembly comprises 2 main mechanical parts:

1. A **Bottom Frame** - houses blocks of pogo-pins carrying DUT signals. Fitted to the bottom frame are 4 mounting pins which position the DUT board.
2. A **Top Frame** - of heavy construction, when clamped into position, it holds the DUT board pads firmly against the pogo pins ensuring a good electrical contact.

D U T S i g n a l P a t h

DUT signals are fed from the I/O boards via coaxial cables to pogo pins which make contact with pads on the DUT board. From there the signals are fed to the DUT itself via printed circuit track (pre-wired DUT boards) or hard wired (standard boards).

The pogo pin triangular head design, ensures a good electrical contact with the DUT board pads.

Pogo pins are mounted in pogo blocks.

The pogo pin blocks are fixed into frames which are mounted in the DUT bottom frame (see Figure 8-1).

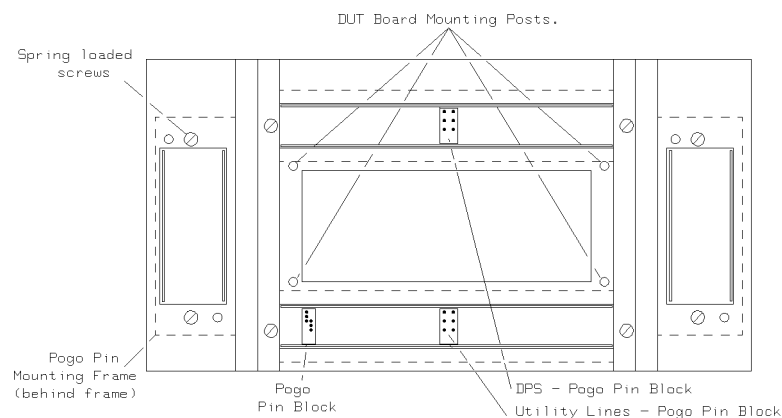


Figure 8-1. Bottom Frame

8-2 DUT Interfacing Mechanics

D U T B o a r d s

S e l e c t i n g a D U T B o a r d

Consider the following four areas when selecting your DUT Board:

1. Impedance 50 Ω for a 200MHz System, 100 Ω for a 50MHz System.
2. Channel Count Combined with the physical size of the board.
3. Wiring **Standard** for user wiring.
Pre-wired for DIL(Dual in Line)/PGA(Pin Grid Array)
Customized (External services are available for socket connection, channel connection and installation of special components.
4. Purpose **Packaged IC:** Grid array for DUT test-fixture.
Prober Interface: cabling connection to probe card.
General Purpose for cable connection of:
accessories, modules, handler.

You can mount Rs (Serial Resistor) as a through-hole component on both standard and Pre-wired DUT boards.

D U T B o a r d s f o r M i n i f r a m e s a n d S t a n d a r d f r a m e s

11.34 \times 5.43 in (288 \times 138 mm) DUT boards for use in miniframes and standardframes:

Standard Boards (not pre-wired)

Impedance	Frequency	Pins	Product Number
100 Ω	50 MHz	up to 160	E 1235A Opt. 001
50 Ω	100/200/400 MHz	up to 80	E 1235A Opt. 001 ¹

¹ Offers HSWG soldering pads.

N o t e

All pre-wired boards are wired for PGA, unless otherwise stated.



Pre-Wired Boards

Impedance	Frequency	Pins	Product Number
100 Ω	50 MHz	up to 64	E 1235A Opt. 002 ¹
50 Ω	100/200/400 MHz	up to 64	E 1238A Opt. 002
100 Ω	50 MHz	144	E 1235A Opt. 004
50 Ω	100/200/400 MHz	72	E 1238A Opt. 004

¹ Wired for DIL package

11.34 × 15.75 in (288 × 400 mm) DUT boards for use in standardframes only:

Standard Boards (not pre-wired)

Impedance	Frequency	Pins	Product Number
100 Ω	50 MHz	768	E 1237A Opt. 009 ¹
50 Ω	100/200/400 MHz	up to 384	E 1240A Opt. 009 ²¹

1 Offers high-current provision.

2 Offers HSWG soldering pads.

N o t e

All pre-wired boards are wired for PGA, unless otherwise stated.



Pre-Wired Boards

Impedance	Frequency	Pins	Product Number
100 Ω	50 MHz	240	E 1237A Opt. 004
100 Ω	50 MHz	480	E 1237A Opt. 005
50 Ω	100/200/400 MHz	120	E 1240A Opt. 004
50 Ω	100/200/400 MHz	240	E 1240A Opt. 005
50 Ω	100/200/400 MHz	360	E 1240A Opt. 007 ¹

1 Offers high-current provision

F i t t i n g a D U T B o a r d

To fit a DUT board complete the next procedure:

1. Refer to Figure 8-2, release the clamps holding the top frame in position.

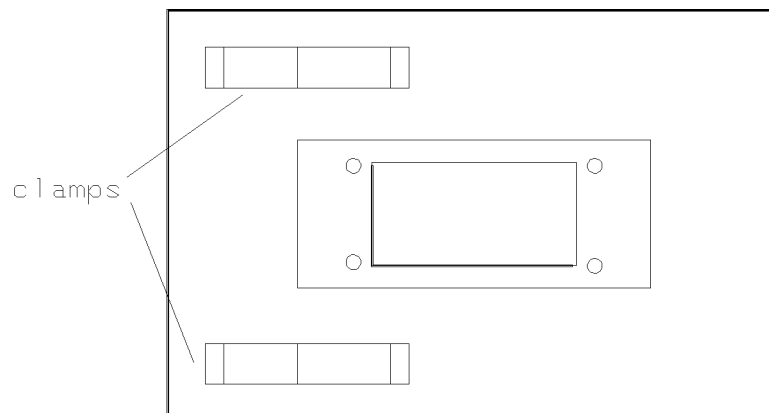


Figure 8-2. DUT Interface - Top Frame

8-4 DUT Interfacing Mechanics

2. The top frame is hinge mounted at the right hand side, swing the frame clear of the bottom frame.
3. The DUT board is positioned on four mounting posts. Insert/remove the DUT board.
4. Close the top frame.

C u s t o m i z e d D U T B o a r d S e r v i c e s

A customizing service is available for DUT board design and layout. Contact your local HP representative for details of customized DUT boards.

I n s t a l l i n g P o g o - P i n s i n P o g o - B l o c k s

I/O P o g o - P i n s

Figure 8-3 shows how I/O pogo-pins must be inserted pogo-blocks.

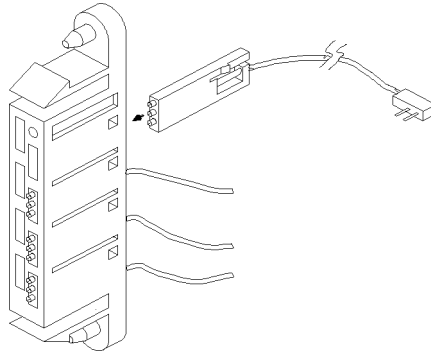


Figure 8-3. I/O Pogo-Pins and Pogo Block

N o t e



There is a clip on one side of the pogo-pins and a corresponding notch on one side of the slots in the pogo-blocks. The pins must be oriented correctly so that they lock into position. If they are not inserted correctly they will not lock in position, and will be pushed out of the pogo-block when the DUT board is pressed against the pogo-pins.

Pogo-pins are arranged differently in the pogo-blocks according to the type of I/O board (50/100/200/400 MHz) and the mainframe number. The next diagram shows the correct pogo-pin configurations for the different types of I/O boards.

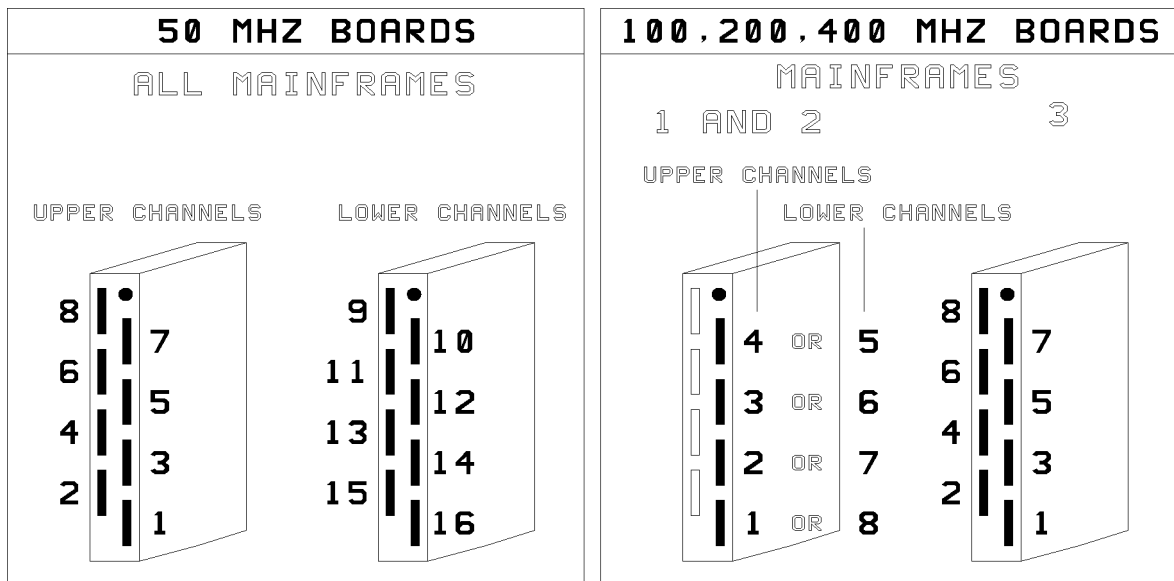


Figure 8-4. I/O Pogo-Pin Configurations

D P S P o g o - P i n s

Figure 8-5 gives the orientation information required to plug the DPS cable into the DPS pogo pin block (this cable is normally installed at the factory). Install the DPS pogo pin block with the 'dimple' to the centre of the DUT interface. The two possible locations of the DPS pogo-blocks are shown in the diagrams in the next section.

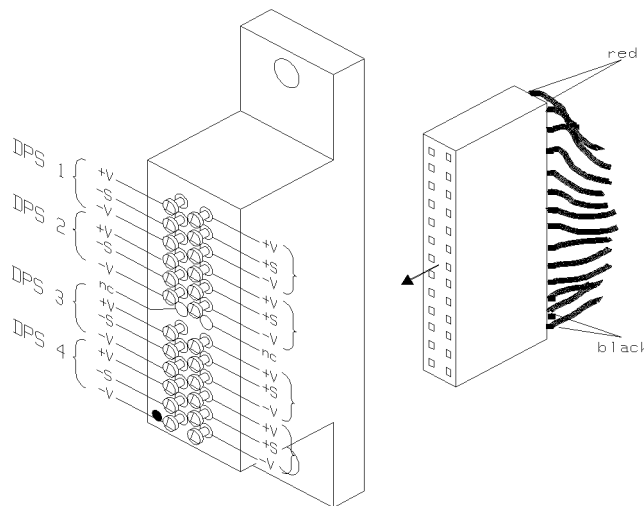


Figure 8-5. DPS Pogo Pin Block

8-6 DUT Interfacing Mechanics

Utility Line Pogo Pins

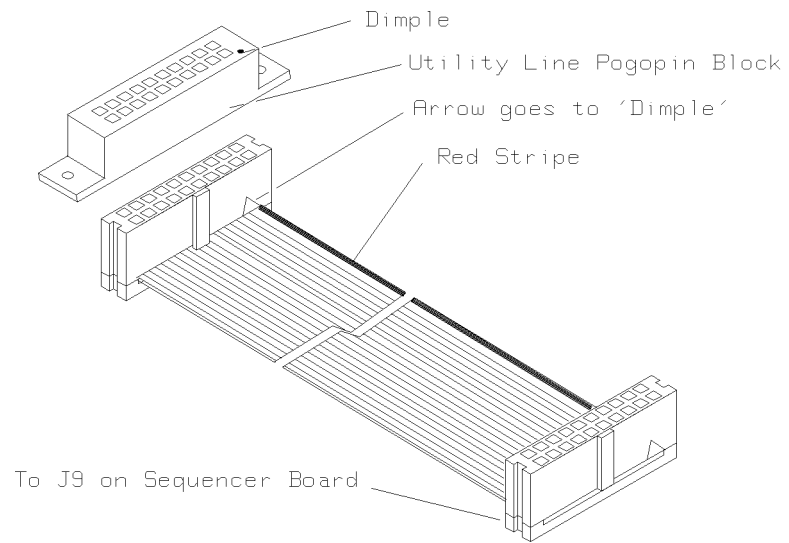


Figure 8-6. Connecting - Utility Line Pogo Pin Block.

C o n f i g u r i n g t h e D U T I n t e r f a c e

Use the following information when installing pogo pin blocks in DUT bottom frames.

S t a n d a r d f r a m e D 1 0 0 / 2 0 0 / 4 0 0

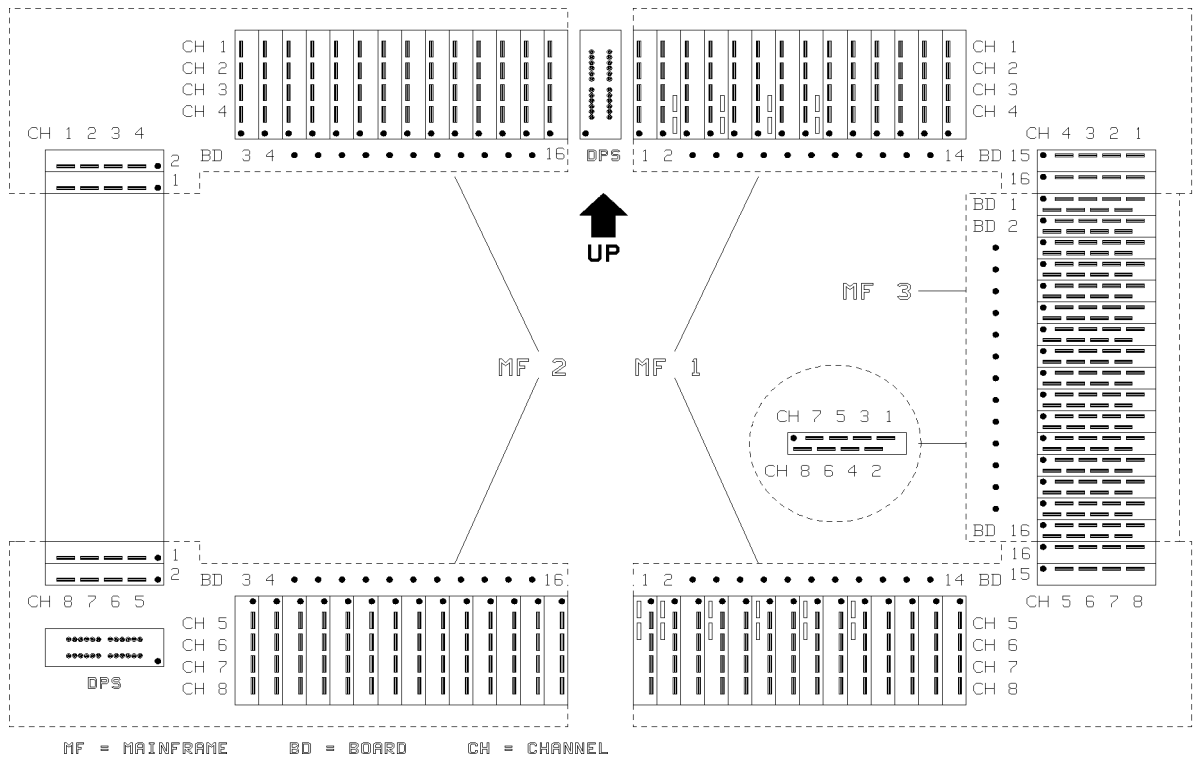


Figure 8-7. Standardframe DUT Interface D100/200/400

8-8 DUT Interfacing Mechanics

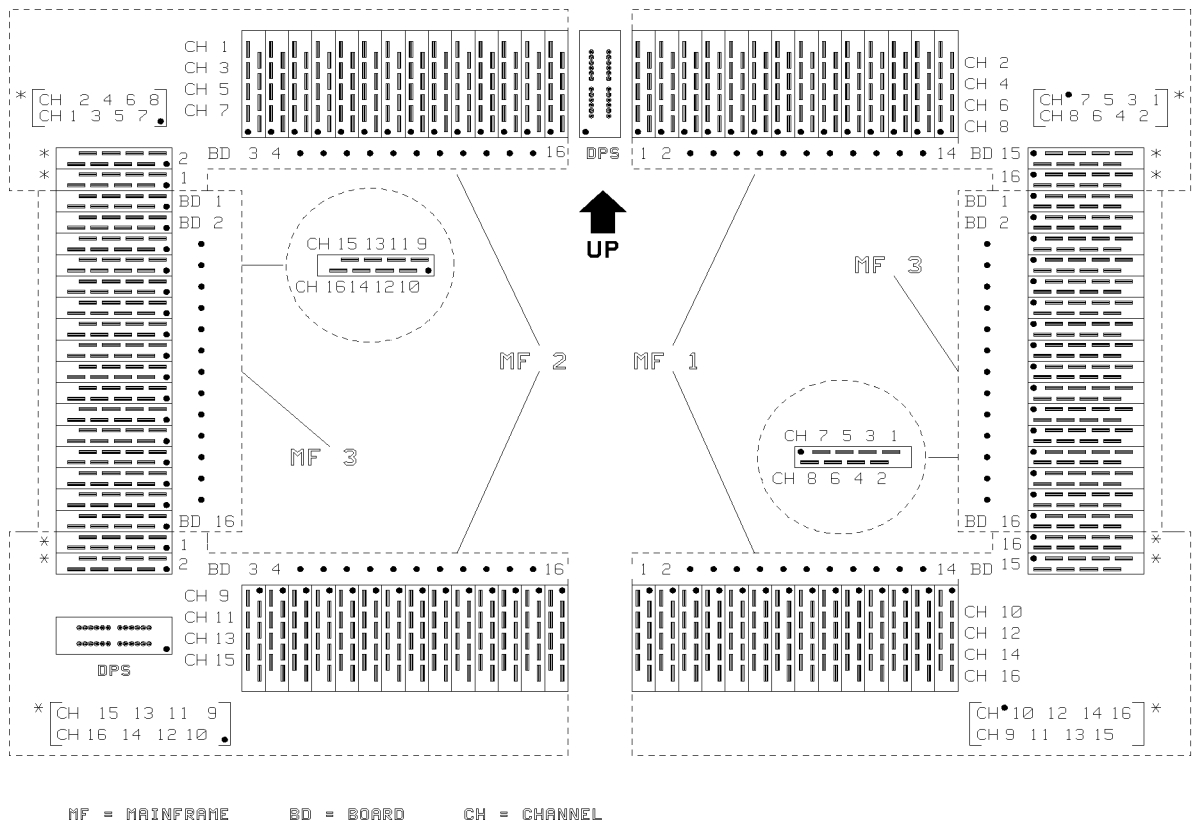


Figure 8-8. Standardframe DUT Interface D50

The following diagram shows in which pogo-blocks you must put the HSWG pogo-pins. In this diagram:

- Lines are drawn through the channels which drive the HSWGs (10105-10108 and 10205-10208). You remove these pogo-pins when installing the HSWG I/O cables, so some of these positions should be empty, depending on how many HSWGs are being installed.
- If the I/O boards corresponding to some of the channels indicated in the diagrams are not installed, install the HSWG pogo-pins in an empty pogo-block (supplied).

Install the HSWG pogo-pins in the appropriate pogo-blocks, according to the following diagram.

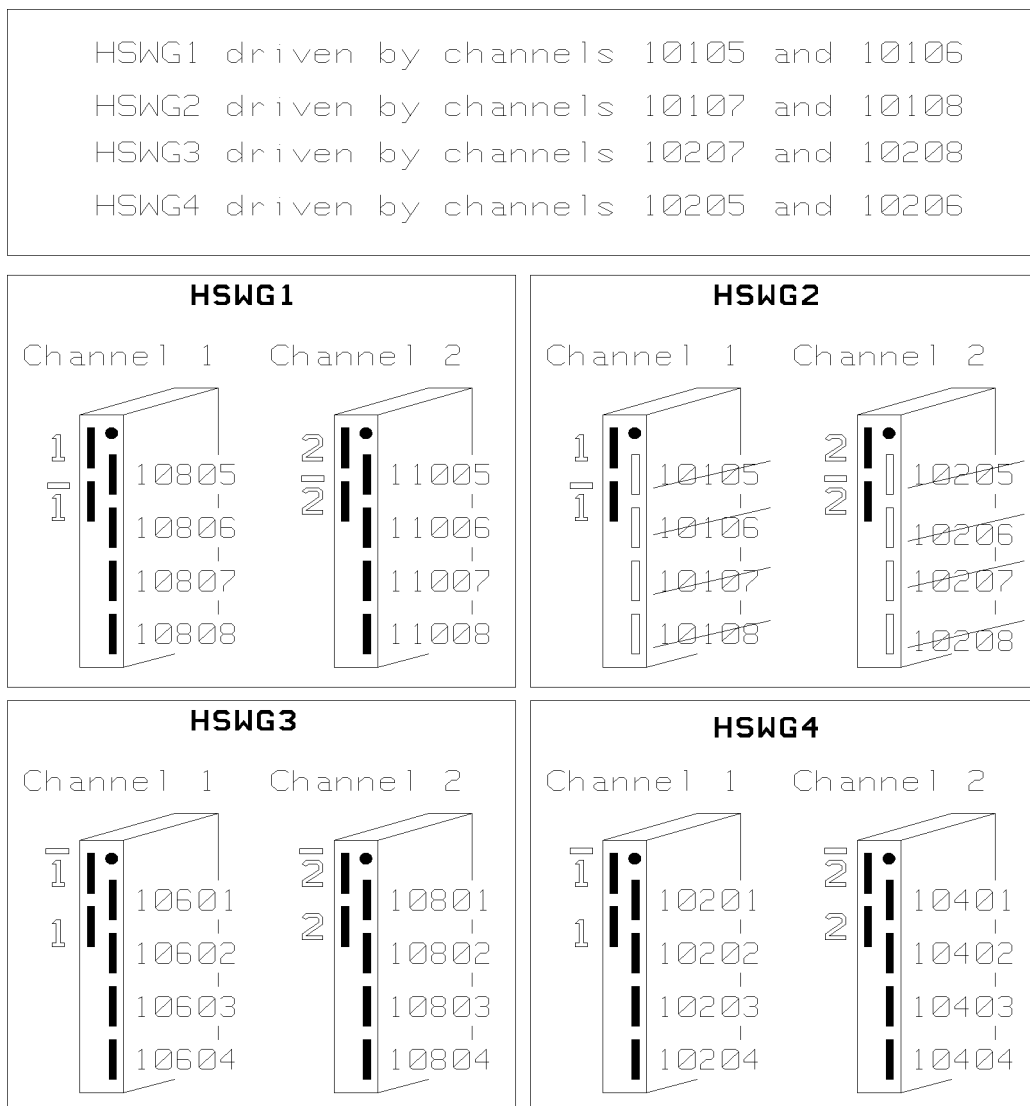
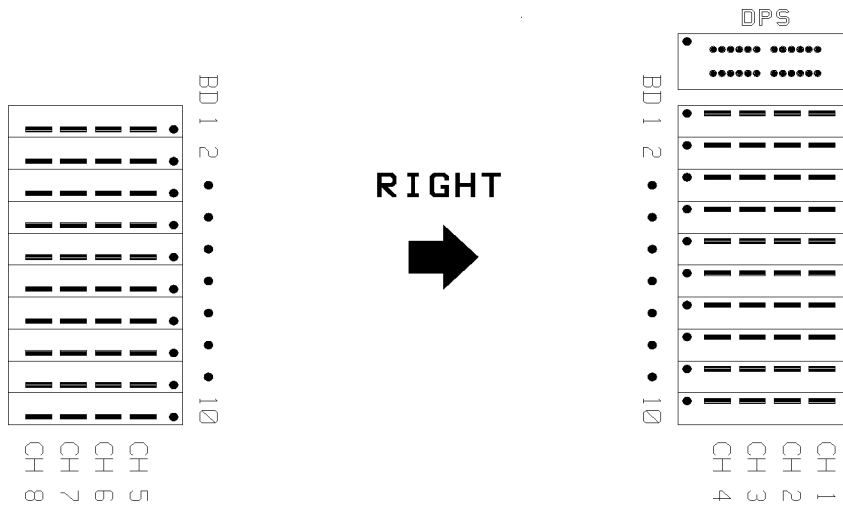
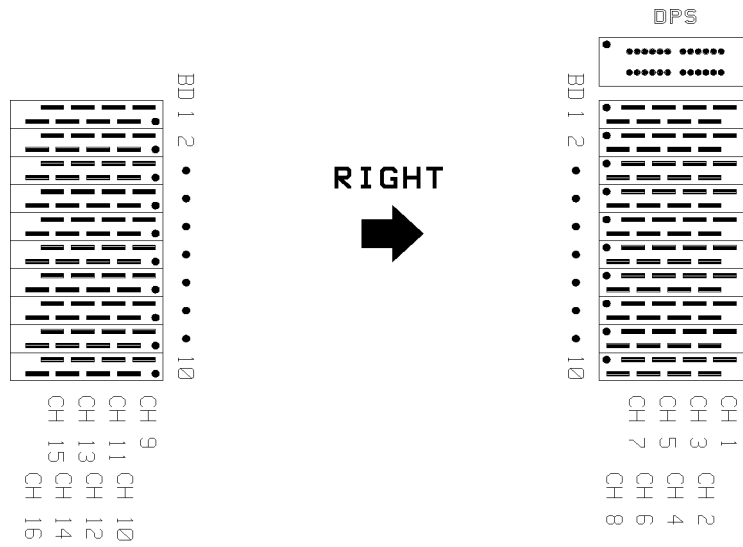


Figure 8-9. HSWG Pogo-Block Configurations



BD = BOARD CH = CHANNEL

Figure 8-10. Miniframe DUT Interface D100/200/400



BD = BOARD CH = CHANNEL

Figure 8-11. Miniframe DUT Interface D50

The gap between the top and bottom frames of the DUT interface can be adjusted for different thicknesses of DUT boards.

N o t e This procedure requires two people.



P r o c e d u r e

1. Open the top frame and remove pogo-blocks (pogo-frames).
2. Insert the DUT board and close the top frame.
3. Loosen the Hex-Bolts securing the top frame hinges and the clamp-clasps to the bottom frame (these are the only Hex-Bolts on the sides of the DUT interface).
4. While one person presses the top-frame against the DUT board, the second person must:
 - a. Tighten the Hex-Bolts securing the top frame hinges.
 - b. Push the clamp-clasps back until they meet the clamps, then secure them by tightening the Hex-Bolts.
5. Open the top frame and remove the DUT board.
6. Replace the pogo-frames in their original positions.
7. Replace the DUT board and close the top frame.

S y s t e m V e r i f i c a t i o n

This chapter tells you how to:

- Verify a DPS.
 - Run Diagnostics.
 - Run Extended Diagnostics.
 - Run Calibration.
 - Test the functions of the system with a Demo Device.
-

V e r i f y i n g a D P S

If the DPS powers-up correctly and passes its self-test, as described in **Installing Device Power Supplies**, you can carry-out some further tests using local control.

The following procedures use the display and keys on the front panel to check each of the DPS outputs. No test equipment, other than a jumper-wire, is required. Both procedures must be carried-out for each DPS output.

N o t e



The following procedures are identical for all models and for all outputs. If an output fails any of the tests, refer to the manual supplied with the DPS for troubleshooting details.

V o l t a g e T e s t

1. Press **VSET** **1** **0** **ENTER** to set the voltage of the selected output to 10 V.
2. Check that the display reads approximately 10 V and 0 A and the CV annunciator indicates that the supply is in the constant-voltage mode of operation.
3. Press **OVSET** **1** **9** **ENTER** to set the over-voltage to 19 V.
4. Press **VSET** **1** **6** **ENTER** to set the voltage to 16 V.
5. The display should read approximately 16 V and 0 A.
6. Press **VSET** **2** **0** **ENTER** to set the voltage to 20 V.
7. The display should read “OVERVOLTAGE”.
8. Press **VSET** **1** **6** **ENTER** **OVRST** to reset the supply.
9. The display should read approximately 16 V and 0 A.

C u r r e n t T e s t

1. Switch-off the supply.
2. Remove the barrier-block cover from the output to be tested and connect a short-circuit (jumper-wire) between the +V and -V terminals of the output.
3. Switch-on the supply.
4. Use the **OUTPUT SELECT** key to select the output to be tested.
5. The display should read approximately 0 V and 0 A and the CC annunciator should be on, indicating that the DPS is in the constant current mode of operation.
6. Press **VSET** **5** **ENTER** to set the voltage to 5.
7. The display should read the same as in step 5.
8. Press **ISET** **1** **.** **5** **ENTER** to set the current to 1.5 A.
9. The display should read approximately 0V and 1.5A.
10. Press **OCP** to enable the over-current protection.
11. The OCP ENBLD annunciator should indicate that the over-current protection is enabled and the display should read "OVERCURRENT". When in over-current mode, the output is disabled.
12. Press **OCP** to disable the over-current protection.

Because the output terminals are shorted, this step prevents the output from going into over-current immediately after you reset the supply.
13. Press **OCPRST** to reset the output.
14. The display should read the same as in step 9.
15. Switch-off the supply and remove the short-circuit from the output terminals.
16. Repeat steps 9 through to 11 for the next output to be tested.

For further information refer to the manual supplied with the DPS.

D P S C a b l e C o n n e c t i o n T e s t

Once you have installed the DPS in the mainframe and connected the DPS cable, you can carry out the following test to verify that the DPS cable has been connected properly.

1. Use **OUTPUT SELECT** to select output 1.
2. Press **VSET** **1** **ENTER** to set the voltage to 1 V.
3. Use **OUTPUT SELECT** to select output 2.
4. Press **VSET** **2** **ENTER** to set the voltage to 2 V.
5. Use **OUTPUT SELECT** to select output 3.
6. Press **VSET** **3** **ENTER** to set the voltage to 3 V.
7. Use **OUTPUT SELECT** to select output 4.
8. Press **VSET** **4** **ENTER** to set the voltage to 4 V.

9-2 System Verification

9. Using a DPS, for each output measure the voltages at the DPS pogo-pins, between:
- +V and -V
 - +V and -S
 - +S and -S
 - +S and -V

Use the following diagram to identify the where to measure these voltages at the DPS pogo block.

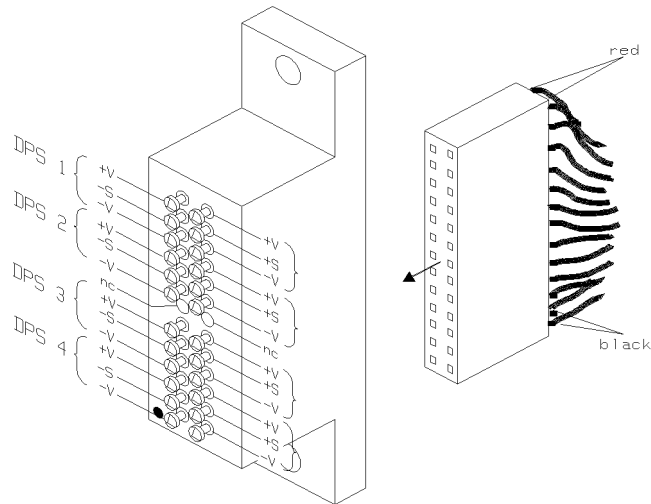


Figure 9-1. DPS Pogo Block

If the DPS cable is connected properly, these voltages will be (approximately):

- | | |
|----------|------------------|
| Output 1 | all voltages 1 V |
| Output 2 | all voltages 2 V |
| Output 3 | all voltages 3 V |
| Output 4 | all voltages 4 V |



Take precautions against electrostatic discharge when working with the DUT interface and when making connections to system boards.

P r o c e d u r e

1. At the HP-UX prompt, type `hp82000 &` and press **Return**, to start the HP 82000 software. The option `&` retains the original UX-SHELL to work in.
2. Check the Report Area and confirm that no errors have been reported.
3. Start Diagnostics by clicking **Diagnostics** in the **AUX** menu.

Figure 9-2 shows an example of the Diagnostic Window.

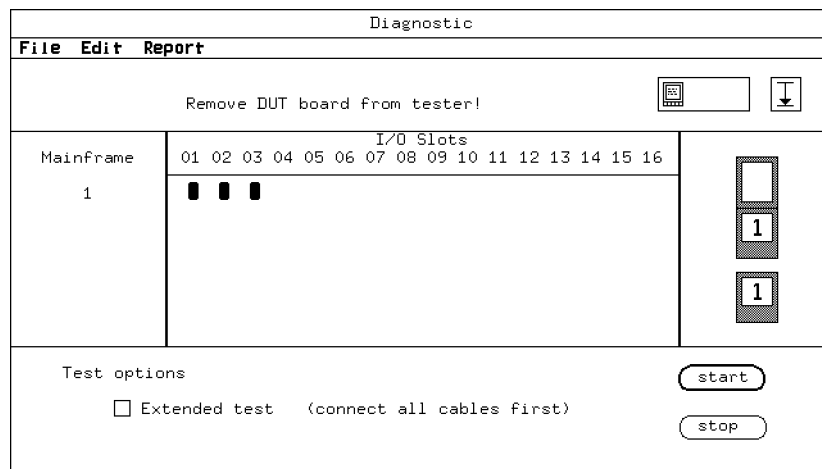


Figure 9-2. Diagnostic Window.

4. Remove the DUT Board.
5. If you intend to run extended diagnostics (only needed if you intend to use the external sequencer inputs) make the following connections and then click the **Extended Diagnostics** box:

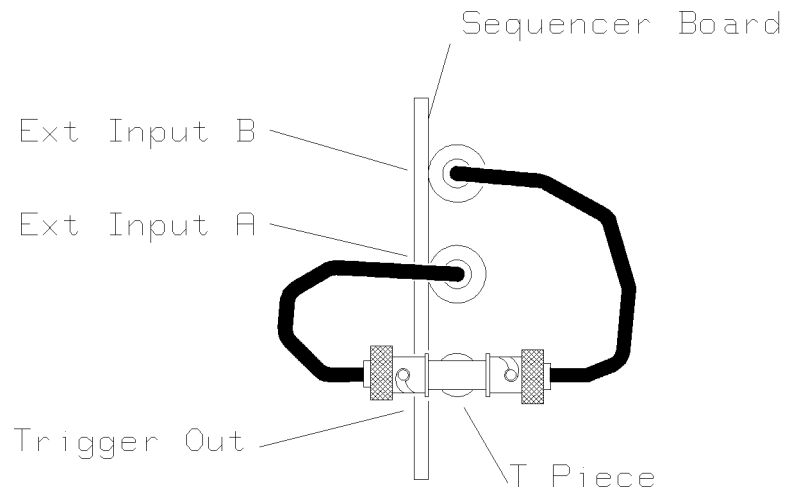


Figure 9-3. Extended Diagnostics - Connections Required.

- a. Fit the BNC Tee piece (P/N 1250-0781) to the **TRIG OUT** socket on the Sequencer Board.
 - b. Connect a BNC cable (P/N HP10502A) between one end of the Tee piece and the **EXT A** socket.
 - c. Connect a BNC cable (P/N HP10502A) between the other end of the Tee piece and the **EXT B** socket.
6. Start Diagnostics by clicking **start**.
 7. Confirm that nothing is attached to the DUT interface by pressing **continue**.
 8. When you see the message **Diagnostics finished with no errors** in the Diagnostics Window, close the Diagnostics Window by double-clicking the X11 button in the top left corner.

If errors are reported refer to the *HP 82000 Troubleshooting Manual*.

N o t e



The HP 82000 hardware must be running for at least 30 minutes before you run calibration.



Take precautions against electrostatic discharge when using the calibration probe and working with the DUT interface.

Single Channel Calibration Probe

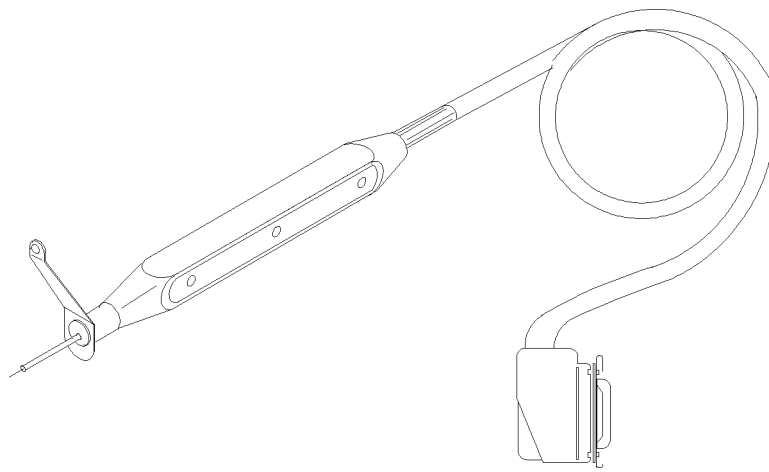


Figure 9-4. Single Channel Calibration Probe

Connect the calibration probe to the connector on the Clock Board in card-cage 1. The single channel calibration probe is used in conjunction with the standard DUT Boards to perform an AC Calibration on one channel at a time.

Extender Cable and Multiplexed Calibration Probe

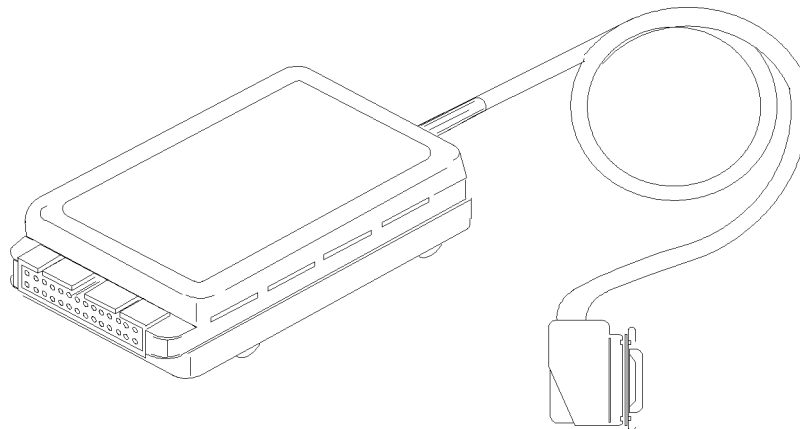


Figure 9-5. MUX Calibration Probe

The E1262A and E1263A Calibration Matrix products consist of a Calibration Board, a 16 channel Multiplexed (MUX) Calibration Probe and a Calibration Extender Cable.

Plug one end of the extender-cable into the calibration socket on the Clock Board and fit the other end to the slot in the BNC-rail above card-cage 1.

Connect the MUX Calibration Probe to the connector now on the BNC rail. The Calibration Board's only purpose is to interface with the MUX Calibration Probe. The MUX Calibration Probe can calibrate 16 channels at a time, without having to move the probe.

Note For greater accuracy use the Single Channel Calibration Probe.



Base Calibration



Take precautions against electrostatic discharge when making connections to system boards.

Base Calibration checks the accuracy of the system timing-reference and measures the gain of the ADCs on the Clock Board and any PMU Boards.

Equipment Required

- A Power Supply capable of delivering -12 V to +12 V
- A HP3456A DVM
- A HP5370B Time Interval Counter
- Three BNC cables
- One BNC TEE-piece (P/N 1250-0781)
- Two BNC to dual banana-plugs (P/N 1251-2277)

Base Calibration Procedure

1. Remove the DUT Interface.
2. Switch on the HP 82000 Mainframe.
3. Type `hp82000` and press **Return**, to start the HP 82000 software.
4. Click **AUX** and **HP-UX Shell**, to open an HP-UX window.
5. Connect the test-equipment as shown in Figure 9-6.

caution



Before connecting the power supply, check that the output voltage does not exceed the limits -20 V and $+20\text{ V}$.

Picture 1
Measurement set; Base Calibration

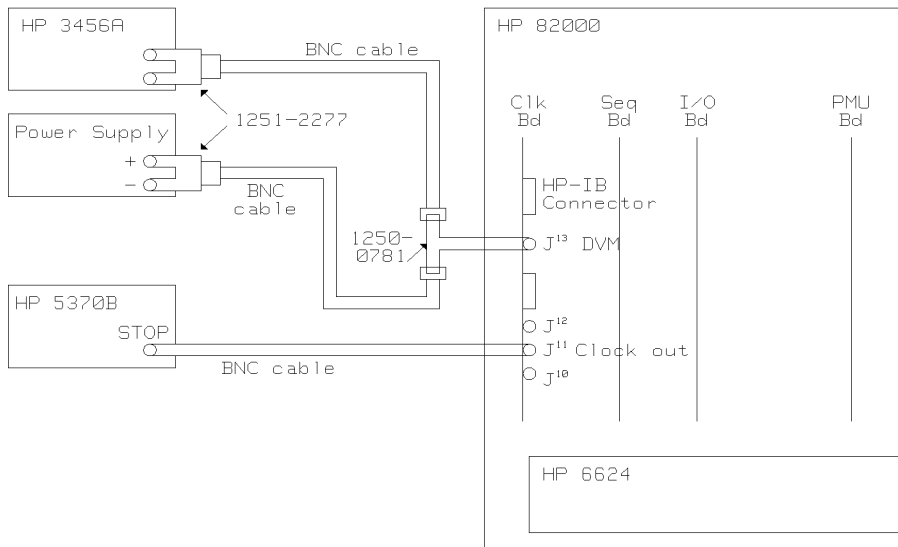


Figure 9-6. Base Calibration - Measurement Set Up

note



Allow a warm-up time of 30 minutes before continuing with the calibration.

Make sure that you connect the banana-plug to the DVM with the correct orientation. These banana-plugs have a dedicated GND terminal.

In the first part of the test, you measure the accuracy of the timing reference on the Clock Board in Card-Cage 1.

6. Type `/hp82000/pws/bin/hpt` and press **Return**, to start the HP-IB driver.
7. Type `*rst` and press **Return**.
8. Type `sqst off` and press **Return**.
9. Type `sclk int,100`, and press **Return**. This sets the operating frequency to 10 MHz. Notice that *two* commas are required in this command.

9-8 System Verification

10. Type `sqst run` and press `(Return)`.

11. Program the counter as follows:

Gate Time	: 0.1 seconds
Statistics	: mean
Input Amp	: 50Ω
Level	: preset
Start Com/Separate	: Separate
AC/DC	: AC

12. Read the frequency from the display of the counter. The frequency should be within the range 10 MHz ±10 kHz.

If the timing reference does not operate within the specified range, then the Clock Board must be replaced. There is no adjustment procedure for this reference. Remember to check the timing reference on the new Clock Board.

In systems with more than one card-cage, only the Clock Board in **Card-Cage 1** must be checked. This is the timing reference for the whole system.

In the next part of the procedure, you calculate the gain of the ADC on the Clock Board.

13. Type `*rst` and press `(Return)`.

14. Type `sqst off` and press `(Return)`.

15. Set the power supply output to approximately 7 V. Read the voltage from the DVM, and record it as $V1$, in μV . Retain the + or - sign, indicating the polarity of the voltage.

16. Type `adcm? 1` and press `(Return)`.

The syntax of this command is:

```
adcm? card_cage
```

Where *card_cage* is the number of the Card-Cage with the Clock Board which is being calibrated.

The system responds by returning the ADC bit pattern (close to 4000). Record this value as *adc_value_1*.

17. Set the power supply output to approximately -3 V. Read the voltage from the DVM, and record it as $V2$, in μV . Retain the + or - sign, indicating the polarity of the voltage.

18. Type `adcm? 1` and press `(Return)`.

The system responds by returning the ADC bit pattern (close to 500). Record this value as *adc_value_2*, in μV .

19. Calculate the gain using this formula:

$$\text{gain} = \frac{(V1 - V2)}{(\text{adc_value_1} - \text{adc_value_2})}$$

N o t e

Typically, the value should be around 3200.



Remember that $V1$ and $V2$ must be in **microvolts**.

If there is one or more PMU Boards installed in the system, you must perform the following part of the procedure for each PMU Board. These steps describe how to calibrate the ADC in the *two* PMU's on each I/O Board.

20. Type `*rst` and press `(Return)`.
21. Type `sqst off` and press `(Return)`.
22. Set the power supply output to approximately +11 V. Read the voltage from the DVM, and record this value as $V1$, in μV . Retain the + or - sign, indicating the polarity of the voltage.
23. Type `pmbc? p11` and press `(Return)`.

The syntax of this command is `pmbc? pcard_cagepmu_no`
Where:

`card_cage` is the number of the Card-Cage with the PMU Board installed.

`pmu_no` is the number of the PMU on the PMU Board being calibrated. Remember that there are two PMU's on each PMU Board.

The system responds by returning the ADC bit-pattern, which looks like the following example:

```
PMBC P11,850,2669.6,2172,2109,0,2046.7....
```

Record the first value in the string (850) as `adc_value_1`.

24. Set the external power supply to approximately -11 V. Read the voltage from the DVM, and record this value as $V2$, in μV . Retain the + or - sign, indicating the polarity of the voltage.
25. Type `pmbc? p11` and press `(Return)`.
The system responds by returning the ADC bit pattern. Record this value as `adc_value_2`.
26. Calculate the gain using the following formula:

$$gain = \frac{(V1 - V2)}{(adc_value_2 - adc_value_1)}$$

N o t e

Typically the gain should be around 10000.



Remember that the voltages $V1$ and $V2$ must be in μV .

27. Repeat steps **20 to 26** for the next PMU on this PMU Board. Remember to change the `pmu_no` parameter in the `pmbc?` query, as follows:

```
pmbc? p12
```

Now the calibration values for Card-Cage 1 have been determined, you must repeat the Clock Board ADC procedures and the PMU Board ADC procedures for every Card-Cage. You do

9-10 System Verification

not need to repeat the measurement on the timing reference, because the timing reference on the Clock Board in Card-Cage 1 is the reference for the whole system. The following steps describe the procedure in general terms.

28. Move the BNC TEE connector to the EXT DC connector on the Clock Board in the next Card-Cage to be calibrated.
29. Calculate the gain of the Clock Board ADC as described before.
30. If there is a PMU installed in this Card-Cage, calculate the gain of the two PMU ADC's as described before.
31. Repeat the last three steps for every Card-Cage and PMU Board. Remember to change the *card_cage* parameter in the *adcm?* and *pmbc?* queries, to match the Card-Cage you are working on.

Once you have calibrated all Card-Cages, you will have to determine the temperature in Card-Cage 1. The following steps show you how to do this.

32. Type `temp?` and press **Return**.

The system returns the temperature measured in each Card-Cage, with a line like the following:

```
TEMP 1,270
```

Where 1 is the number of the Card-Cage, and 270 is the temperature measured in Kelvin.

Record the temperature in Card-Cage 1 as *temp_1*.

Now that all calibration values have been determined, you can stop the `hpt` driver, and you will have to enter the gain values in a calibration file in order to make them accessible for the HP 82000 software.

33. Press **CTRL** and **D** simultaneously, to stop the HP-IB driver.
34. Use the HP-UX `vi` editor to edit the file: `/hp82000/fw/data/bc_cal_dmodel`

Where *model* is either 40, 40X, 50, 100, 100X, 200 or 400.

N O T E Do not make any changes to the file header, `hp82000,calibration,0.1`



35. Add one line like the following:

```
CALI card_cage,BC,"date",temp_1
```

Where:

card_cage is the number of the Card-Cage.

date is today's date, in the format *mm/dd/yy*.

temp_1 is the temperature (in Kelvin) measured in Card-Cage 1.

Example:

```
CALI 1,BC,"02/12/95",299
```

36. Add one line for each Clock Board, as follows:

```
MCLD card_cage,gain,,,,,,,,,
```

Where *card_cage* is the number of the Card-Cage with the calibrated Clock Board, and *gain* is the calculated ADC gain for that board.

Example:

```
MLCD 1,3212,,,,,,,,
```

N o t e

You must have exactly 8 commas after the gain value.



37. Add two lines for each PMU Board, as follows:

```
PBCD Pcard_cage1,gain,,,,,,,,,
```

```
PBCD Pcard_cage2,gain,,,,,,,,,
```

Where *card_cage* is the number of the Card-Cage containing the calibrated PMU, and *gain* is the calculated PMU ADC gain.

Example:

```
PBCD P11,10011,,,,,,,,
```

```
PBCD P12,10015,,,,,,,,
```

N o t e

You must have exactly 11 commas after the gain value.



The following example shows how a completed Base Calibration file should look. This example is for a single Card-Cage system:

```
hp82000,calibration,0.1
```

```
CALI 1,BC,"02/12/95",299
```

```
MLCD 1,3212,,,,,,,,
```

```
PBCD P11,10011,,,,,,,,
```

```
PBCD P11,10012,,,,,,,,
```

You must now download the new Base Calibration values into the hardware:

38. Quit the HP 82000 system software by clicking **QUIT** in the **MAIN** menu.

39. At the HP-UX prompt, type `hp82000` and press **Return**, to restart.

When the system restarts, the calibration file has been downloaded.



Take precautions against electrostatic discharge when handling the calibration probe.

N o t e



Before starting the DC Calibration Routine:

- make sure that the Calibration Probe is connected to the system. This can be either a Single Channel Probe or the Multiplexed Probe.
- ensure that the DUT Board has been removed from the DUT Interface.
- make sure that you have a valid Base Calibration file. If there is no Base Calibration file, the DC Calibration will not run. If the values in the Base Calibration file are not valid, the DC Calibration results will not be valid.

N o t e



The procedure is the same on a single or a multi card-cage system. Note that in a multi card-cage system, the gain and offset values for the DACs on the I/O Boards are determined by the ADC on the Clock Board in the same card-cage. There is no DC link between card-cages.

1. At the HP-UX prompt, type hp82000 and press **(Return)**.
2. Click **(Calibration)** in the **(AUX)** menu.
3. Click **Select** and select DC-Cal from the pull-down menu. The DC Calibration screen will be displayed, as shown in Figure 9-7.

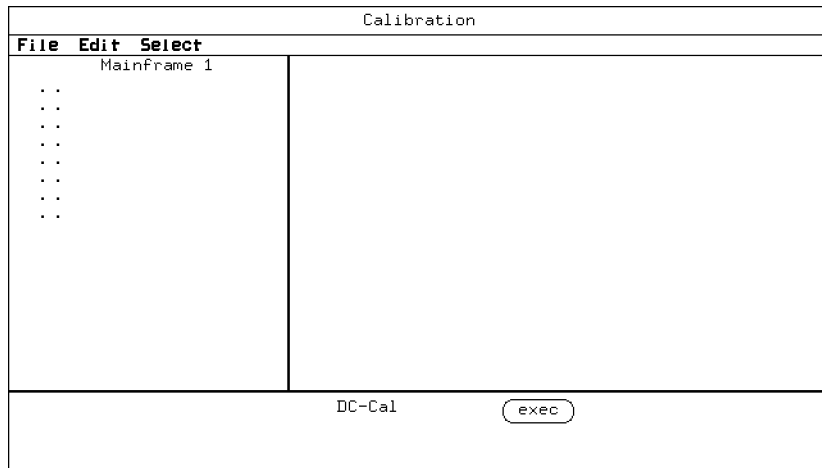


Figure 9-7. DC Calibration Window

This example is from a single card-cage system with two D200 I/O boards.

In this window:

- **Mainframe number** indicates the card-cage number.
- The dots represent I/O channels.
- Each column of dots represents one I/O board (8 or 16 dots per column, depending on the type of I/O board). Check that the number of columns corresponds to the number of I/O boards in each card-cage.

4. Click **(exec)**, to start the DC Calibration routine.

You will hear relays clicking as the routine executes.

When the DC Calibration routine has finished **(exec)** reappears in the Calibration window.

If any errors are detected during DC Calibration they will be listed in the Report window after the DC Calibration has finished. (Any error messages will be generated during the download of new correction values into the hardware.)

If any errors are reported. Refer to the *HP 82000 Troubleshooting Manual*.

5. If no errors were reported, save the correction values by clicking **File** and selecting **Save** in the pull-down menu.



Take precautions against electrostatic discharge when using the calibration probe and working with the DUT interface.

Note



Before starting the Standard AC Calibration Routine:

- make sure that the Calibration Probe is connected to the system. This can be either a Single Channel Probe or the Multiplexed Probe.
- make sure that you have valid Base and DC Calibration files. If either of these files is missing the Standard AC Calibration will not run. If the values in either file are not valid, the AC Calibration results will not be valid.

1. Click **Calibration** in the **AUX** menu.
2. Click **Select** and select **Standard AC_Cal** in the pull-down menu. The Standard AC Calibration screen will be displayed as shown in Figure 9-8.

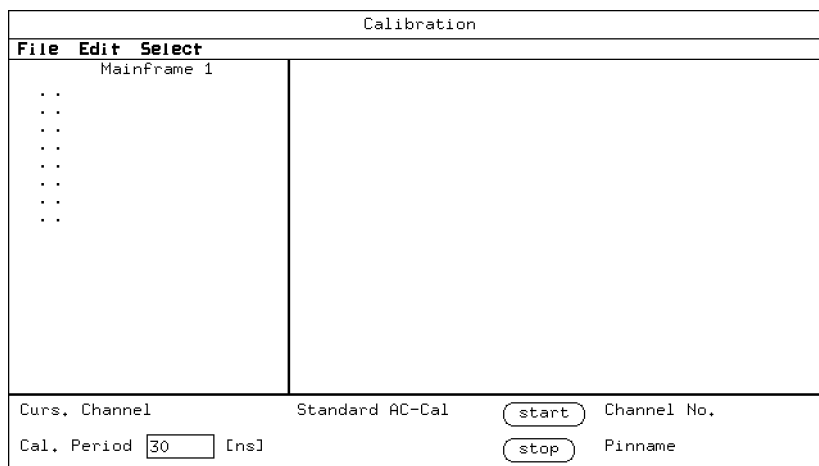


Figure 9-8. Standard AC Calibration Window

This example is of a single card-cage system with two D200 I/O boards.

3. Before starting the Standard AC Calibration routine, install the Calibration DUT Board or the DUT board to be used by the system. **Do not insert a DUT.**
4. Connect the Calibration Probe to the system. Do not connect the Calibration Probe tip(s) to the system channels until you are told to do so.
5. Ensure that there are no loads connected to the DUT Board.
6. Click **start** to start the Standard AC Calibration.

A message will appear telling you not to connect the Calibration Probe yet. Click **start** again and wait for the Calibration Probe measurements to finish. When the LED on the Calibration Probe goes off and the message

cal probe measurement is finished

appears, you can start to calibrate the system channels.

N o t e

It can take several minutes for this message to appear.



-
7. Connect the tip of the Single Channel Calibration Probe to the end of a Transmission Line (TML) on the DUT Board. Contact the probe to a point as close as possible to the end of the TML or at the DUT socket. Hold the probe in this position until the LED on the probe switches on and off twice.

N o t e

Always connect the GND contact to the DUT Interface Ground Shield first. Take great care to maintain this contact while the channel is being calibrated. Not doing so will affect signal performance of the calibrated edges and will thus have a substantial impact on the calibration result.



If you are using the MUX Calibration Probe, connect the probe to one of the connectors on the Calibration board. The 16 channels connected are then calibrated. When the LED on the probe switches-off and stays off, there will be some relay switching noise. Then move the probe to the next connector.

While the tester is identifying each system channel the **Channel No.** and **Pinname** fields show the system channel number and pin name (only shown if a pin configuration has been downloaded). When the channel has been calibrated, the corresponding small dot changes to a large filled dot.

8. When all channels have been calibrated click **stop**. After a while the calibrated channels are shown as large empty dots.
9. Click **file**. Select the **save_as** function in the pull-down menu.
10. Type one of the following into the entry field of the **save** sub-window:
 - ac_cal_d40** : for a 40 MHz system.
 - ac_cal_d40X** : for a 40 MHz mixable system.
 - ac_cal_d50** : for a 50 MHz system.
 - ac_cal_d100** : for a 100 MHz system.
 - ac_cal_d100X** : for a 100 MHz mixable system.
 - ac_cal_d200** : for a 200 MHz or a mixed 100X/200 MHz system.
 - ac_cal_d400** : for a 400 MHz or a mixed 100X/200/400 MHz system.
11. Click **save_as** to save the AC calibration data.
12. Click **HP-UX** in the **AUX** menu, to open a HP-UX window.

13. At the HP-UX prompt, type `cd /users/demo/mc10136/calibration` and press **Return**.
14. Type `cp ac_cal_dxxx /hp82000/dev_tech/ecl/calibration/ac_cal_dxxx` and press **Return**. (xxx is 40, 40X, 50, 100, 100X, 200 or 400, as above)
15. Type `cp ac_cal_dxxx /hp82000/dev_tech/cmos/calibration/ac_cal_dxxx` and press **Return**.
16. Type `cd ../calib_raw` and press **Return**.
17. Type `cp ac_cal_dxxx /hp82000/dev_tech/ecl/calib_raw/ac_cal_dxxx` and press **Return**.
18. Type `cp ac_cal_dxxx /hp82000/dev_tech/cmos/calib_raw/ac_cal_dxxx` and press **Return**.
19. Click the box in the top-left corner of the HP-UX window to close the window. The AC calibration files are now *global* calibration files.

Demo Device

A Demo Device on a pre-wired Demo DUT Board is supplied with the system. For D40, D50, D100, D100X and D200 systems the demo device is a MC10136 4-bit ECL counter. For D400 (with and without HSWGs) or mixed D200/400 systems, the Demo Device is an MC10H136. This is a faster version of the MC10136.



Take precautions against electrostatic discharge when handling the demo device and working with the DUT interface.

The wiring on the Demo DUT Board is different for the different types of I/O boards and when HSWGs are installed. This means that different I/O channels are connected to the pins of the Demo Device, depending on which I/O board you have. For the four types of I/O boards, the channels are connected as follows:

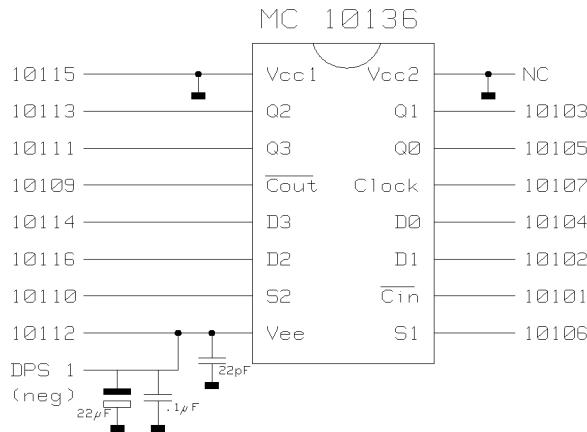


Figure 9-9. D40, D50

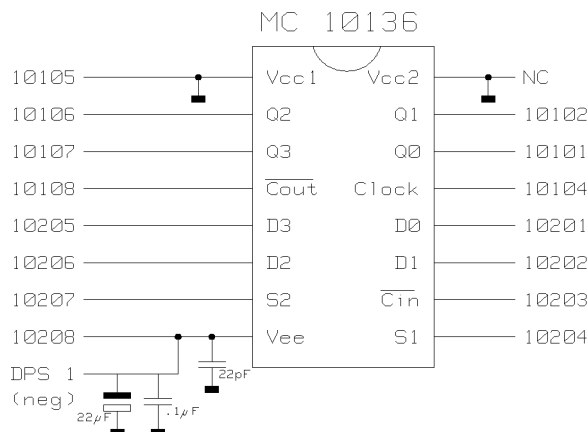


Figure 9-10. D100, D100X and D200

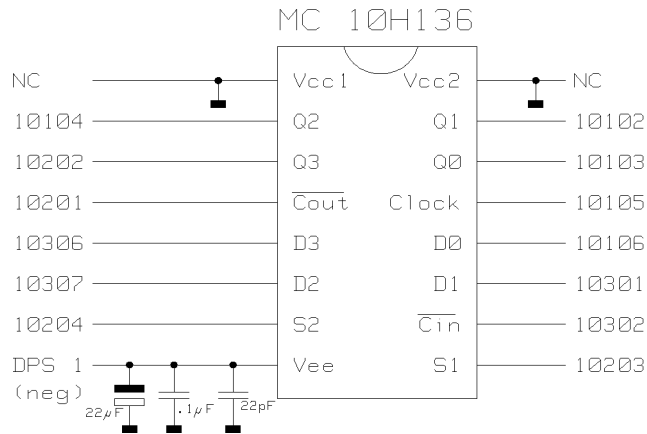


Figure 9-11. D400 and mixed D200 and D400

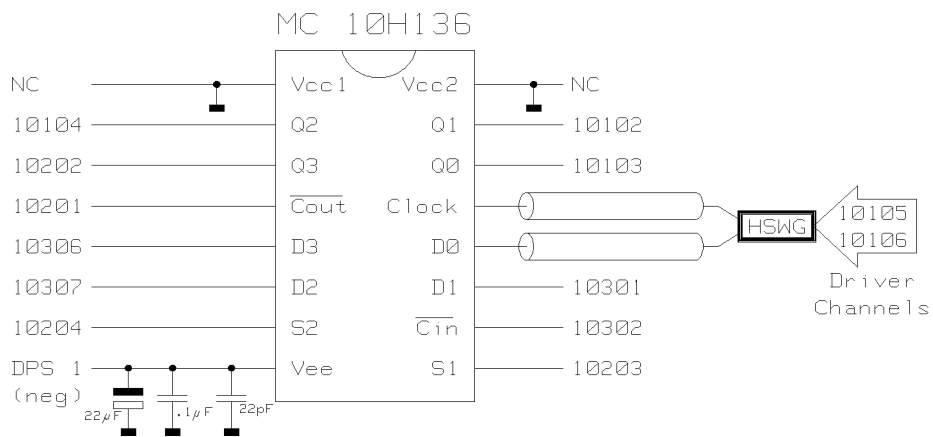




Figure 9-12. D400 with HSWG

There are also pre-programmed setups and tests for the Demo Device. You can use these tests to verify that the system is functioning correctly.

Note  Before you can run any tests on the device, you must calibrate for the Demo Device (Standard AC Calibration).

Note  At configurations with D100X boards and just 1 D400 board the demo device testing cannot be performed, as a D400 does not provide the 100 MHz mode necessary for the test. With 2 D400 boards in I/O slot 1 and 2 the fast demo device can be tested according to Figure 9-11.



Take precautions against electrostatic discharge when using the calibration probe and working with the DUT interface.

This procedure describes how to run Standard AC calibration for the Demo Device.

1. Install the Demo DUT board in the DUT interface and remove the Demo Device.
2. Click **Change Dev** in the **AUX** menu.
3. Click **enter** in the System Administrator window.
4. Click the path name box.
5. Type the path-name `/users/demo` over the current path-name and press **Return**.
6. Use the scroll-bar to move along the list of files in the browser, and find the file `mc10136`.
7. Click `mc10136` and **enter device**, to select the Demo Device.
8. Click **continue** in the store "LAST_SETTING" window. The files for the Demo Device load.
9. Click **Calibration** in the **AUX** menu.
10. Click **Select** and select **Standard AC_Gal** in the pull-down menu.

Depending on the types of I/O boards in the system, you must calibrate the channels given in the following tables.

N o t e



Calibrate at the pins of the socket for the Demo Device without having the Demo Device inserted.

D40, D50

10101	10109
10102	10110
10103	10111
10104	
10105	10113
10106	10114
10107	
10108	10116

N o t e



Channels 10115 and 10112 are connected to pins on the Demo Device, but can not be calibrated, because:

- 10115 is connected to ground.
- 10112 is connected to a DPS output.

D100, D100X and D200

10101	10201
10102	10202
	10203
10104	10204
	10205
10106	10206
10107	10207
10108	

N o t e



Channels 10105 and 10208 are connected to pins on the Demo Device, but can not be calibrated, because:

- 10105 is connected to ground.
- 10208 is connected to a DPS output.

D400 and mixed D100X/D200/D400

	10201	10301
10102	10202	10302
10103	10203	
10104	10204	
10105		
10106		10306
		10307

N o t e



If you have HSWGs installed, channels 10105 and 10106 are HSWG channels. Calibrate these two channels in the same way as ordinary I/O channels.

11. Click **start** twice, to start the AC calibration.

Wait until the following message appears in the Report window:

Cal probe measurement is finished, contact cal probe to channel.

12. Press the “grounding-clip” of the calibration probe against the ground-plate on the front of the DUT interface.
13. Press the probe-tip against the socket-pin corresponding to the I/O channel you want to calibrate.

If the contact is good, then the LED on the probe will be on and the channel number will be displayed in the Calibration window.

Hold the probe in position until the dot representing the channel being calibrated, changes to a large filled dot.

14. Repeat this procedure for all remaining pins.
15. Click **stop** when you have calibrated all the necessary channels.
16. Click **File** and select **save_as** in the pull-down menu.
17. Type `cal_10136` and press **Return**.
18. Click **save_as**, to save the AC calibration data for the Demo Device.

Running Demo Tests

In order to verify that your system operates correctly, test the Demo Device using the pre-programmed Demo Tests.

1. Install the Demo DUT Board and Demo Device in the DUT interface.
2. Click **HP-UX** in the **AUX** menu, to open a HP-UX window.
3. At the HP-UX prompt, type `cd /users/demo/configs/lbin`.
4. At the HP-UX prompt, type `./config_demo` and press **Return**. This runs the `config_demo` program, which reads the system configuration from the `mainframes` and `models` files and modifies the set-ups for the Demo Device accordingly.

Note



If you change the system configuration and you want to use the Demo Device to verify the functions of the system:

- Make sure that you have updated the `mainframes` and `model` files correctly.
- Check that the Demo Device and DUT Board are correct for the new configuration.
- Run the `config_demo` program, with the `-newconfig` option specified.

-
5. Click **TestControl** in the **MAIN** menu.
 6. In the **Test Control** window, click **File**, and select **load** in the pull-down menu.
 7. Find the file `d1_demo` in the browser and click it.
 8. Click **load**. The pin configuration and vectors for the Demo Device load.
 9. Click **exec**. The tester configuration for the Demo Device is activated.
 10. Click **File**, and select **load** in the pull-down menu.
 11. Find the file `ac_func_test` and click it.
 12. Click **load** to load the functional test file.
 13. Click **exec** to run the functional test.

The message:

```
functional      = passed
```

should appear in the Report window.

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- Click **Error Map** in the **MAIN** menu. An Error Map screen is shown in Figure 9-13. An Error Map shows marks at cycle addresses where the expected data pattern differs from the received data pattern.

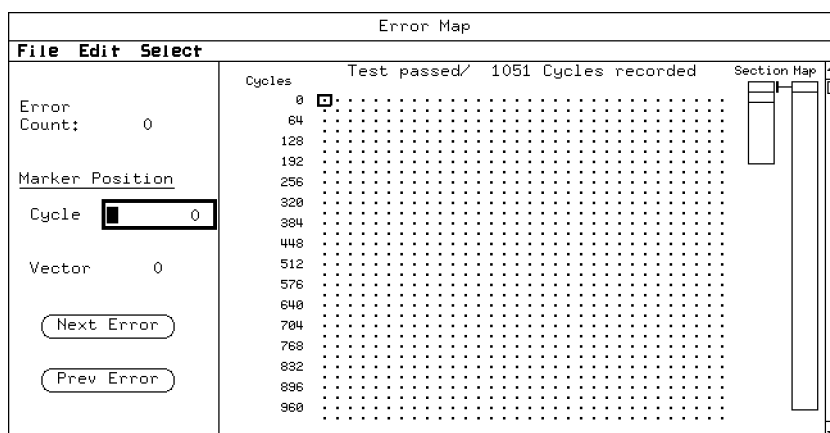


Figure 9-13. Error Map

- Click **File** in the **Test Control** window and select **load** in the pull-down menu.
- Find the file **ac-acquire_data** in the browser and click it.
- Click **load**.
- Click **exec** to run the **acquire-data** test.

The message:

```
acquire data = done
```

should appear in the Report window.

- Click **Tim.Diagram** in the **MAIN** menu. A Timing Diagram is shown in Figure 9-14. A Timing Diagram shows the received signal status per cycle at the sampling point.

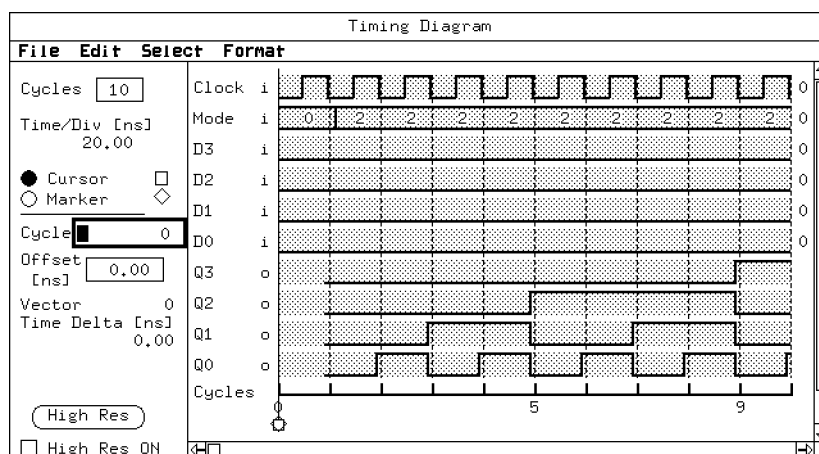


Figure 9-14. Timing Diagram

N o t e



You now have the choice of running the other pre-programmed tests:

- Manually, by selecting and running them as before.
- Automatically, from **Rocky Mountain Basic (RMB)**.

The procedure for running these tests automatically is described in the following three steps.

20. Click **BASIC** in the **Main** menu.
21. At the RMB prompt, type LOAD "DEMO" and press **Return**. The demo program loads.
22. Type RUN and press **Return**. All the pre-programmed tests run automatically.

Reconfiguring the System

Installing Standardframe Power Supply Module (E1231A)

Normally your Standardframe will be supplied with the PSM's already installed. Should you require to fit a PSM, this section provides you with the necessary information.

Caution



If you are replacing an existing PSM, remove the module boards that are supplied by the PSM to be replaced. Failure to remove the boards may result in damage to board edge connectors.

To install an E1231A PSM refer to Figure 10-1 and complete the next procedure.

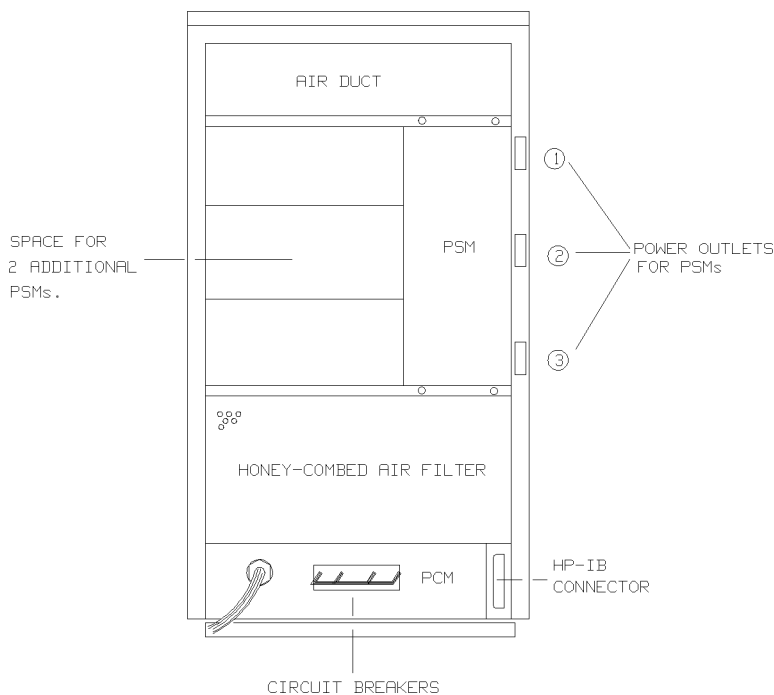


Figure 10-1. Standardframe Rear View - PSM Position

Warning



Before starting the next procedure ensure that the primary power circuit to the system is *SWITCHED OFF*. This warning is made for the protection of personnel from electrical shock. Do not restore the primary power until instructed to do so.

1. Switch off the system power.
2. Open the Standardframe rear door.

3. Carefully locate the PSM so that the fixing screws line up with their respective holes.
4. Secure the PSM in position with the four spring-loaded fixing screws.
5. Connect the PSM's power supply lead to the appropriate PSM power output.
6. Shut the Standardframe rear door.
7. You are now ready to reconnect the system power.

Installing Miniframe Power Supply Module (E1230A)

In the case of power supply failure or adding module boards you may need to install additional E1230A power supplies in your Miniframe.

To install an E1230A power supply (2 units) in a **Miniframe Master** follow the next procedure.

Warning



This procedure must be performed by qualified service personnel. To avoid the hazard of injury or death make sure that the power to the mains distribution point is switched off. Ensure also that when completing this work, any local regulations and safety codes are adhered to.

-
1. Switch off the system power supply.
 2. Remove the Miniframe main cover (8 screws).
 3. Remove the 2 screws (in depressions) at the front of the power supply assembly.
 4. Lift up the power supply assembly (hinged at rear) and fix it in position with the support arm.

Note



The support arm is fixed in its storage position with 2 screws, located at the top left hand side of the card cage.

-
5. Remove the 4 screws holding the power supply unit in position.
 6. Disconnect all cable connectors.

Note



If you are installing a new power supply unit, make a note of the position of the existing power supply cables to make replacement easier.

-
7. Replace the power supply unit.
 8. Connect all cable connectors taking care to ensure that they are in the correct position.
 9. Replace the Miniframe top cover.

10-2 Reconfiguring the System

To replace power supply units in the **Miniframe Extender** follow the next procedure.

C a u t i o n



When working with the Miniframe extender take care to protect the mother board connectors located on the top of the unit.

1. Switch off the system power supply.
2. Remove the Miniframe Extender main cover (8 screws).
3. Remove the 2 screws (in depressions) at the front of the power supply assembly.

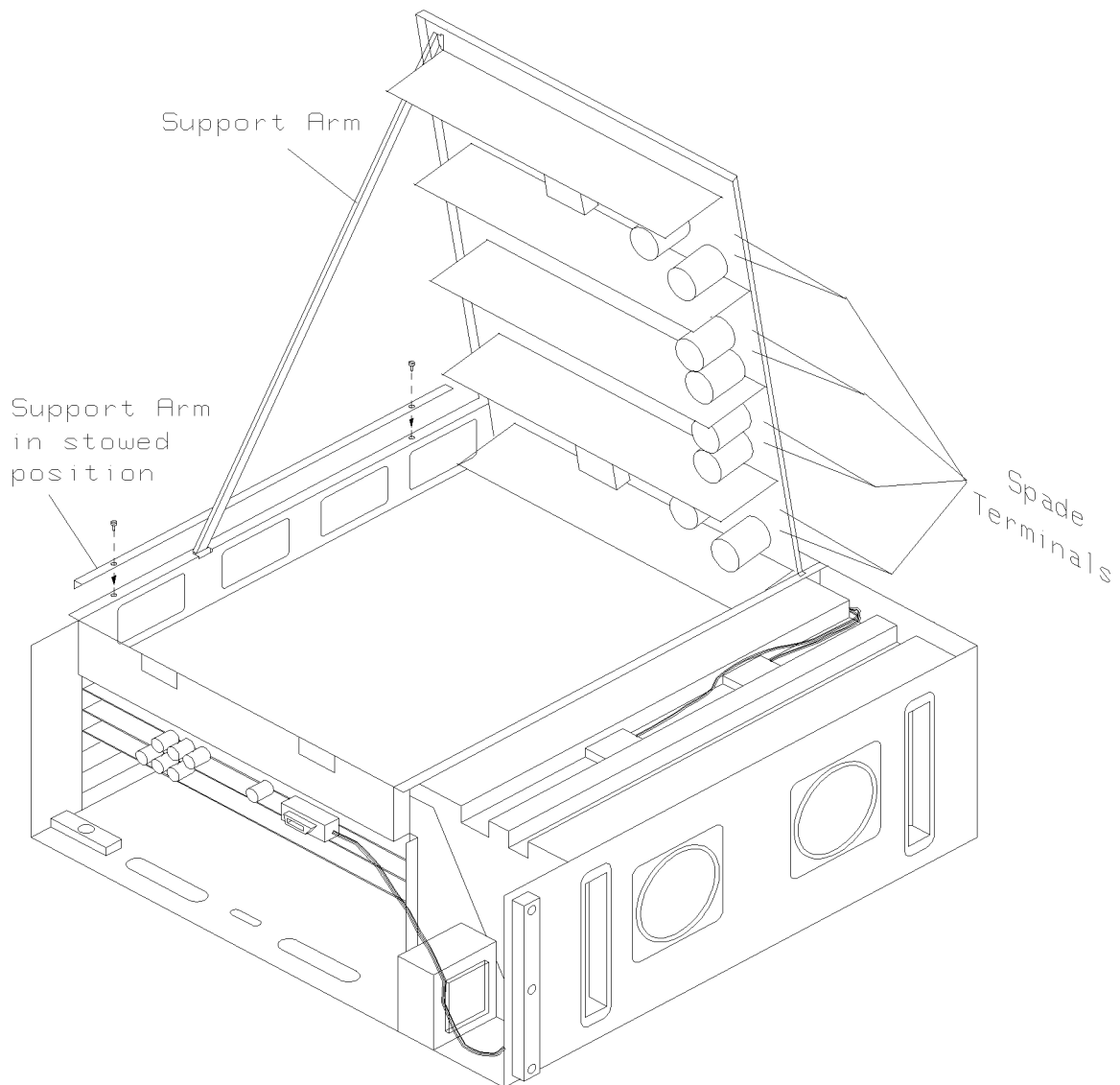


Figure 10-2. Replacing Miniframe Power Supplies

4. Lift up the power supply assembly (hinged at the rear) and fix it in position with the support arm (see Figure 10-2).

N o t e



The support arm is fixed in its storage position with 2 screws located just in front of the unit's front foot.

5. Remove the 4 screws holding the power supply unit in position.
6. Disconnect all cable connectors.

N o t e



If you are installing a new power supply unit, make a note of the position of the existing power supply cables to make replacement easier.

7. Replace the power supply unit.
8. Connect all cable connectors taking care to ensure that they are in the correct position.
9. Replace the extender top cover.

The base of the Standardframe cabinet contains a Power Control Module (PCM). The PCM provides a connection between the local mains supply and the system Standardframe. To connect the primary power supply you need to remove the PCM.

Figure 10-3 shows a front view of the PCM.

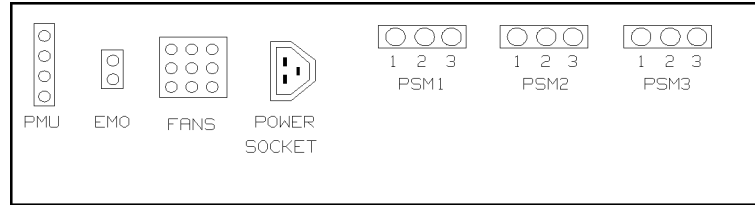


Figure 10-3. Front View - Power Control Module

Figure 10-4 shows a rear view of the PCM.

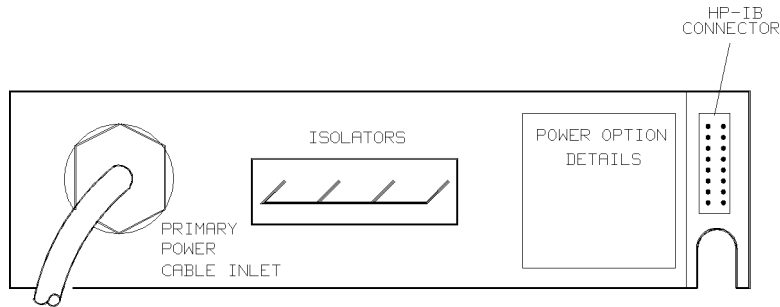


Figure 10-4. Rear View - Power Control Module

To remove the PCM, complete the following procedure.

w a r n i n g **Make sure that the primary power supply is switched off.**



-
1. Switch off the system power.
 2. Open the Standardframe rear door.
 3. Remove the four screws securing the PCM in position.
 4. Carefully slide the PCM out.
 5. Installation is the reverse of this procedure.

Figure 10-1 shows the location of the PCM.

The system comes partly configured to your requirements, in accordance with your ordering information. The Mainframe, Miniframe and Extenders, will contain the system module boards.

The following module boards are available:

- E1208A - 40 MHz 16 channel I/O board (32K × 2 bit on drive and receive)
- E1208B - 40 MHz 16 channel I/O board (128K × 2 bit on drive and receive)
- E1208C - 40 MHz 16 channel I/O board (512K × 2 bit on drive and receive)
- E1210A - 50 MHz 16 channel I/O board (32K × 2 bit on drive and receive)
- E1210B - 50 MHz 16 channel I/O board (128K × 2 bit on drive and receive)
- E1210C - 50 MHz 16 channel I/O board (512K × 2 bit on drive and receive)
- E1211A - 100 MHz 8 channel I/O board (64K × 2 bit on drive and receive)
- E1211B - 100 MHz 8 channel I/O board (256K × 2 bit on drive and receive)
- E1211C - 100 MHz 8 channel I/O board (1024K × 2 bit on drive and receive)
- E1209A - 100 MHz 8 channel I/O board (64K × 2 bit on drive and receive)
- E1209B - 100 MHz 8 channel I/O board (256K × 2 bit on drive and receive)
- E1209C - 100 MHz 8 channel I/O board (1024K × 2 bit on drive and receive)
- E1212A - 200 MHz 8 channel I/O board (64K × 2 bit on drive and receive)
- E1212B - 200 MHz 8 channel I/O board (256K × 2 bit on drive and receive)
- E1212C - 200 MHz 8 channel I/O board (1024K × 2 bit on drive and receive)
- E1214A - 400 MHz 8 channel I/O board (256K × 1 bit on drive or receive)
- E1214B - 400 MHz 8 channel I/O board (1024K × 1 bit on drive or receive)
- E1213A - DC measurement board with two parametric measurement units.

Note



The E1209A/E1212A/E1214A I/O boards are mixable in the same card-cage.
The E1209B/E1212B/E1214B I/O boards are mixable in the same card-cage.
The E1209C/E1212C I/O boards are mixable in the same card-cage.

The Master and Extender Standardframes have an 18 slot card-cage. The first two slots of the card-cage are already occupied by the Clock Board and the Sequencer Board. The position of these boards is fixed and must not be changed. Consequently, 16 slots are available for additional module boards.

If you have ordered Extender(s) with your system you will have to connect the Master/Slave cable(s) P/N E1222-61606 (see Chapter 5).

N o t e



When installing module boards take care to make proper use of the plastic board extractors with the card-cage before pushing the board into its fully seated position.

If you are reconfiguring your system by adding or removing module boards then complete the following procedure:

c a u t i o n



To prevent damage to circuitry and to maintain the system's low current measurement capacity:

- wear cotton gloves and a grounded wrist strap when handling boards.
 - handle boards only by their edges.
-

1. Switch off the power supply to the system.
2. Remove the DUT board from the DUT interface.
3. Release the 2 screws securing the DUT interface cover, remove the cover.
4. Release the pogo pin frames from the DUT bottom frame (2 spring loaded screws per frame).
5. Release the 4 spring loaded screws securing the DUT interface, carefully remove the interface.
6. Disconnect the HP-IB connector and the Cal probe from the Clock board.
7. Disconnect Utility Line cable and eventually Master/Slave cable(s) from the Sequencer board.
8. Remove the 3 air-guiding shields (1 spring loaded screw on left hand side of each shield).
9. Remove the module board from its packaging.
10. Reconfigure your system by inserting or removing your module board(s) and associated cables. Refer to the following sections:
 - Installing Clock Boards
 - Installing Sequencer Boards
 - Installing I/O Boards
 - Installing PMU Boards
 - I/O Cables
 - Board Interconnections
11. Replace the air-guiding shields carefully feeding the I/O cables through the gaps between them.

12. Re-connect all cables.
13. Re-attach the DUT interface assembly.
14. Mount the pogo pin frames into the DUT bottom frame.
15. Re-attach the DUT interface cover (2 screws).

Miniframe Preparatory Procedures

The Master Miniframe has a 6 slot card-cage, the first two slots of the card-cage being already occupied by the Clock Board and the Sequencer Board. The position of these boards is fixed and must not be changed. Consequently, 4 slots are available for additional module boards.

A Miniframe Extender has six slots available for module boards as it does not hold any Clock Board or Sequencer Board.

Warning



To avoid the hazard of injury or death make sure that power to the system is switched off.

If you need to add/remove a module board, follow the next procedure.

1. Switch off and disconnect the primary power supply.
2. Remove the Miniframe top cover (8 screws).
3. Remove the DUT interface front cover.
4. Disconnect the pogo pin frame (4 captive screws).
5. Remove the DUT interface (6 screws).
6. Disconnect the HP-IB connector and Cal probe from the Clock Board.
7. Disconnect the Utility Line cable from the Sequencer Board.
8. Remove the three air-guiding shields (1 captive screw/shield).
9. You can now reconfigure your system by inserting or removing module boards as required. These procedures are described in the following sections.

Figure 10-5 shows board location in the Miniframe Master and Extender.

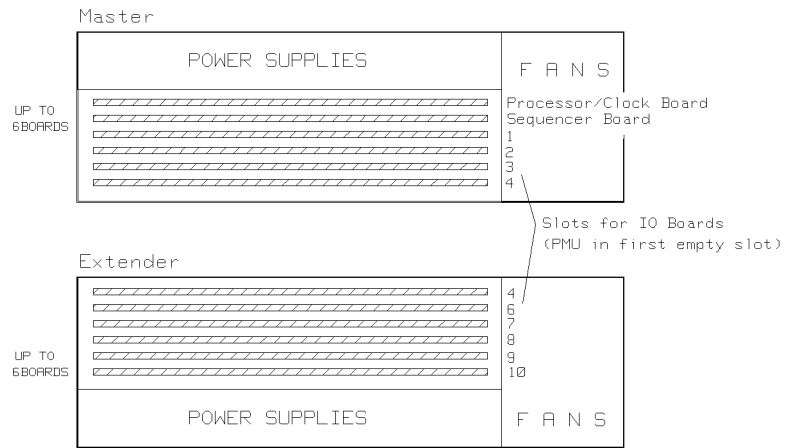


Figure 10-5. Board Location - Miniframe Master and Extender.

10. Reassembly is the reverse of this procedure.

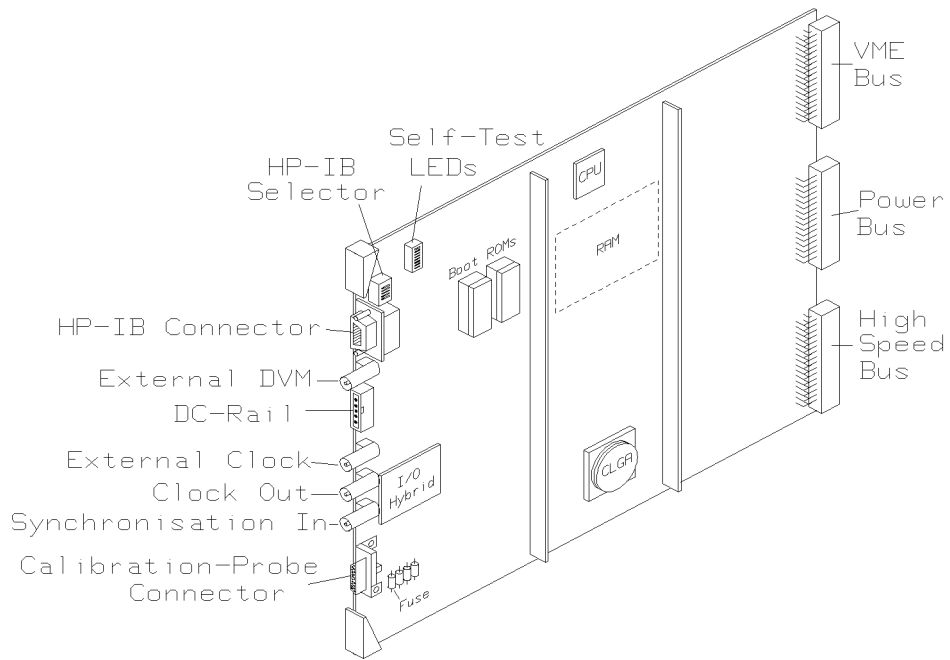


Figure 10-6. Clock board

Rules

1. One Clock Board is needed in each Mainframe.
2. The Clock Board must be put into **slot 1**.
3. Each Clock Board of a Mainframe must be connected to HP-IB bus select-code 7. The HP-IB cable for the Clock Boards is installed in the factory and is routed to the card-cage.
4. The HP-IB address of each card-cage is set on its Clock Board, using the DIP-switches shown in Figure 10-6. The addresses for each Mainframe are:

Mainframe	HP-IB address
1	3
2	4
3	5

On the DIP-switches the LSB is closest to the HP-IB connector.

10-10 Reconfiguring the System

5. There must be an entry for each card-cage in the file `/hp82000/pws/data/mainframes`. These entries take the form:

`Mm,h`

Where:

`m` is the number of the Mainframe.

`h` is the HP-IB address on the Clock Board in this card-cage.

6. The system calibration-probe must be connected to the D-type connector on the Clock Board in card-cage 1.

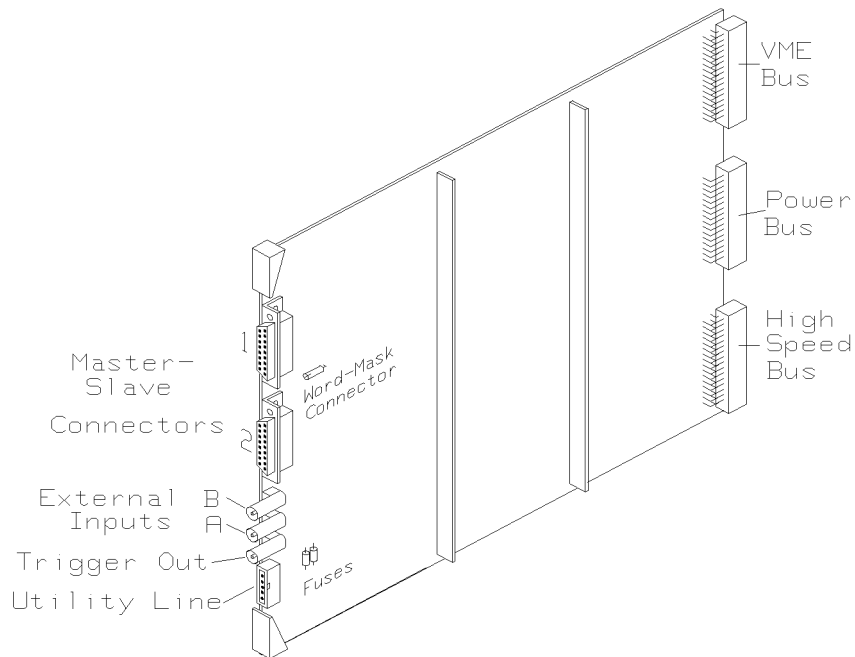


Figure 10-7. Sequencer Board

R u l e s

1. One Sequencer Board (E1222-66574) is needed for every Mainframe.
2. The Sequencer Board must be installed in **slot 2**.
3. The sequencer in Mainframe 1 must be connected to other sequencers by a **Master/Slave Cable** (E1222-61606).
4. The Master/Slave Cable must be inserted into Connector 1 on the slave sequencers.
5. The D-type connectors on a **Standardframe Sequencer** are numbered 1 to 2 in Figure 10-7, and are connected to **Connector 1** on the other (slave) sequencers, as follows:
 - a. Connector 1 to the sequencer in card-cage 2.
 - b. Connector 2 to the sequencer in card-cage 3.

The connectors on the ends of this Master/Slave Cable are labeled *Master* and *Slave*. The *Master* side must be connected to the sequencer in card-cage 1. The other side of this cable must be inserted into connector 1 on the other (slave) sequencers.

6. The sequencer in Mainframe 1 must be connected to the I/O board in slot 3 by the word-mask cable (see Installing The Word-Mask Cable).

10-12 Reconfiguring the System

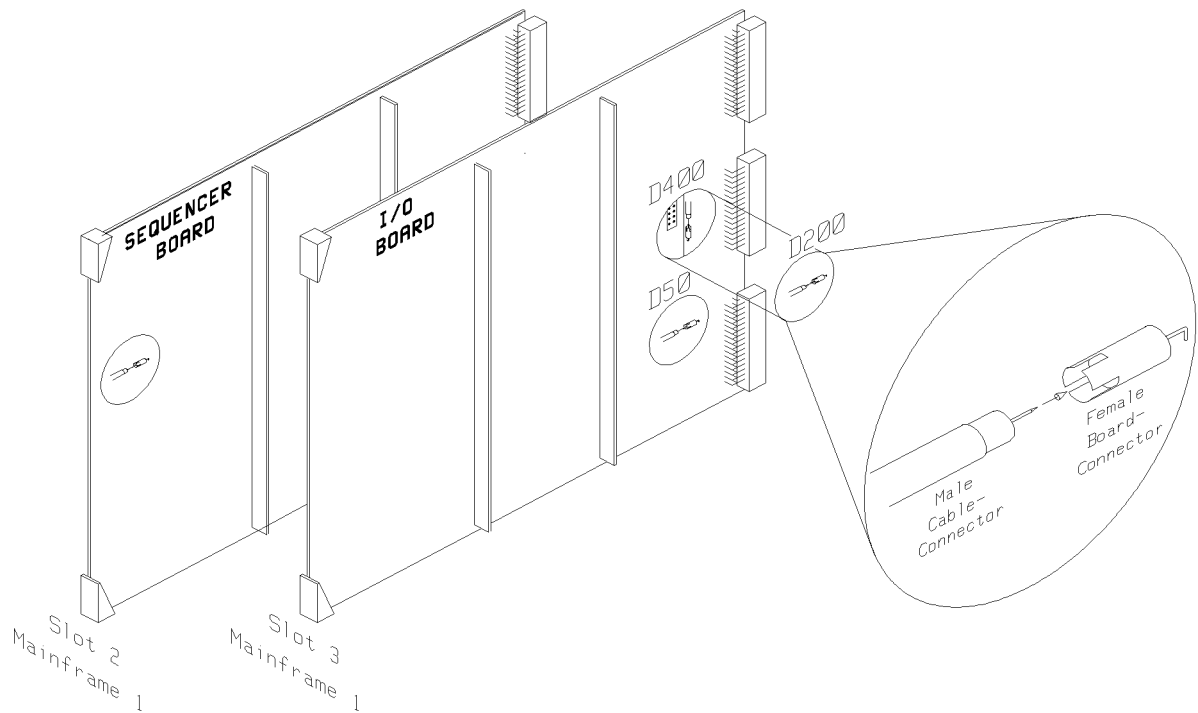


Figure 10-8. Word-Mask Cable

Procedure

1. Slide the master-sequencer out of slot 2.

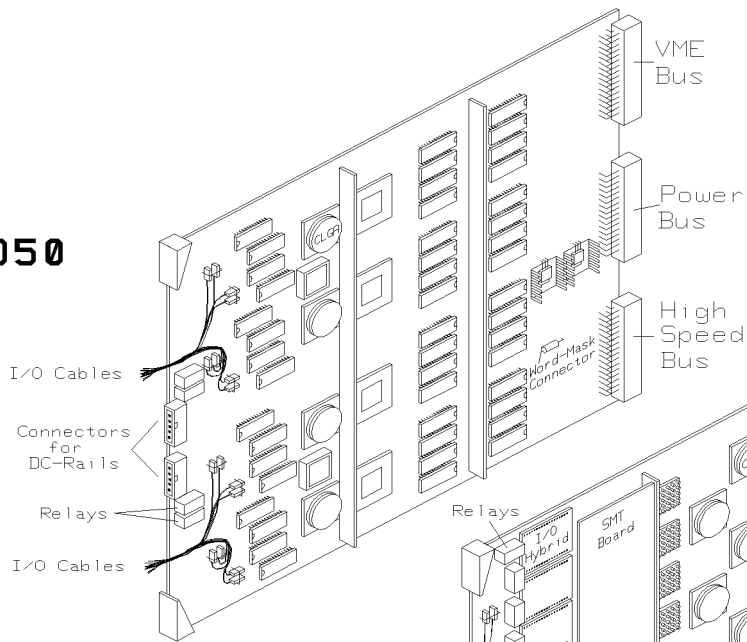
Caution



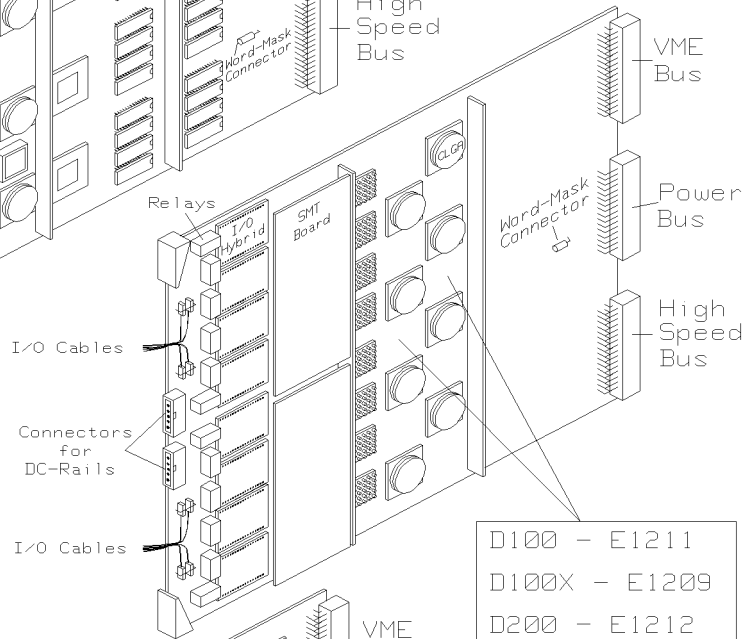
When pushing the connector on the word-mask cable into the socket on each board, it is possible to push the tip into the soft insulating material. Make sure that the word-mask plug goes into the connector straight.

2. For a Standardframe, place the coiled wordmask cable on top of the card-cage and secure it in position with a tie-wrap.
3. Push one end of the word-mask cable into the socket on the sequencer, as shown in Figure 10-8.
4. Slide the sequencer back into position.
5. Slide the first I/O board out of slot 3.
6. Push the remaining end of the word-mask cable into the socket on the I/O board, as shown in Figure 10-8.
7. Slide the I/O board fully into position.
8. Connect the Master/Slave Cables between the sequencer in Mainframe 1 and the sequencers in other card-cages.

D40/D50



D100(X)/D200



D100	-	E1211
D100X	-	E1209
D200	-	E1212

D400

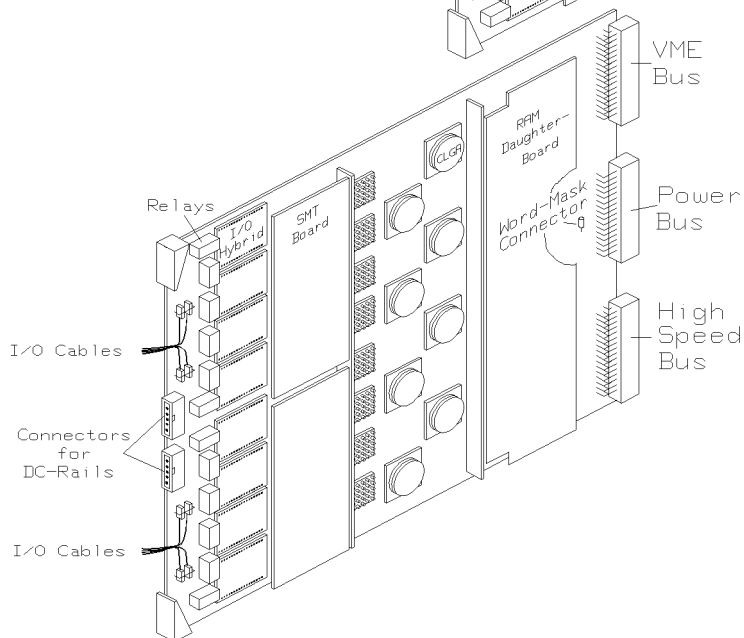


Figure 10-9. I/O boards

Following is a list of general rules for installing I/O boards:

R u l e s

1. I/O Boards can be installed in slots 3 to 18.
2. Slots 3 to 18 must be filled in sequence.
3. If a card-cage is not completely filled with I/O boards, the last slot in the card-cage must contain a PMU Board or a Serializing Board, if you want to perform scan-path testing.
4. I/O boards must be connected in a chain using the DC-Rails (flat ribbon-cables).
5. The top connector of the first I/O board (slot 3) must be connected to the connector on the Clock Board by the DC-Calibration Cable (flat ribbon-cable).
6. The first I/O board (slot 3) in Mainframe 1 must be connected to the Sequencer Board in Mainframe 1 (slot 2) via the Word-Mask cable. Read **Installing the Word-Mask Cable**, in the section **Installing Sequencer Boards**.
7. If HSWGs are to be installed, all I/O boards must have the extra-long (P/N E1256A) I/O cable-set.
8. 100 MHz mixable and 200 MHz boards can be combined with 400 MHz boards in one card-cage. See Mixed 100X, 200, 400 MHz Configuration.
9. The E1211A,B,C 100 MHz I/O boards can not be mixed with other types of I/O boards.
10. 50 MHz boards can not be mixed with other types of I/O boards.
11. A maximum of two *400 MHz boards with HSWGs* is allowed.
12. 400 MHz boards with HSWGs have to sit in slots 3 and 4 of Mainframe 1 (see **Installing HSWGs**).

13. The file `/hp82000/pws/data/model` must contain an entry which shows the type of I/O boards in the system. The possible entries for the different configurations are:

Entry	I/O Board Configuration
D40,32K	40 MHz I/O Boards (E1208A)
D40,128K	40 MHz I/O Boards (E1208B)
D40,512K	40 MHz I/O Boards (E1208C)
D50,32K	50 MHz I/O Boards (E1210A)
D50,128K	50 MHz I/O Boards (E1210B)
D50,512K	50 MHz I/O Boards (E1210C)
D100,64K	100 MHz I/O Boards (E1211A)
D100,256K	100 MHz I/O Boards (E1211B)
D100,1024K	100 MHz I/O Boards (E1211C)
D100X,64K	100 MHz I/O Boards mixable (E1209A)
D100X,256K	100 MHz I/O Boards mixable (E1209B)
D100X,1024K	100 MHz I/O Boards mixable (E1209C)
D200,64K	200 MHz I/O Boards (E1212A)
D200,256K	200 MHz I/O Boards (E1212B)
D200,1024K	200 MHz I/O Boards (E1212C)
D400,64K	400 MHz I/O Boards (E1214A)
D400,256K	400 MHz I/O Boards (E1214B)
D400,64K ¹	mixed 100X/200/400 MHz (E1209A, E1212A and E1214A)
D400,256K ¹	mixed 100X/200/400 MHz (E1209B, E1212B and E1214B)

¹ For mixed 100X/200/400 MHz configurations, the entry in the models file refers to the highest pattern rate boards.

Mixed 100X, 200, 400 MHz Configuration

Following are rules specifically for mixed 100X/200/400 MHz systems:

Rules

- The following combinations of 100, 200 and 400 MHz boards are allowed:
 - E1209A, E1212A and E1214A.
 - E1209B, E1212B and E1214B.
- The card-cage must be filled first with 400 MHz boards, then the 200 MHz boards should follow before the 100X boards.

10-16 Reconfiguring the System

For example

if you have:

- A double Standardframe.
- Two Clock Boards
- Two Sequencer Boards (1 slave and 1 master)
- Eighteen 400 MHz I/O boards
- Fourteen 200 MHz I/O boards

then the card-cages are filled as follows:

Mainframe	Slot	Board
1	1	Clock Board
	2	Sequencer Board
	3 to 18	400 MHz I/O boards
2	1	Clock Board
	2	Sequencer Board
	3 and 4	400 MHz I/O boards
	5 to 18	200 MHz I/O boards

3. The `/hp82000/pws/data/model` file must contain the entry `D400,64K` or `D400,256K`, depending on the vector memory depth of the boards.

Entry	Board Combination
<code>D400,64K</code>	E1209A, E1212A and E1214A
<code>D400,256K</code>	E1209B, E1212B and E1214B

4. The file `/hp82000/pws/data/offl_tester_co` must contain an entry for each card-cage, which shows the model of the I/O board in each slot. The syntax of this entry is:

`slot 3,slot 4,slot 5,.....,slot 18`

Where `slot number`, can be one of the following:

- 100 - for a 100 MHz board.
- 200 - for a 200 MHz board.
- 400 - for a 400 MHz board.
- 1 - for a PMU Board.
- 0 - for an empty slot.

Each line of the file represents one card-cage. The first entry is card-cage 1, the second entry card-cage 2, and so-on.

For example

```
400,400,400,400,400,400,400,1,0,0,0,0,0,0,0,0
200,200,200,200,100,100,1,0,0,0,0,0,0,0,0
```

This indicates a double Standardframe, with:

- 400 MHz boards in slots 3 to 9 of Mainframe 1.
- 200 MHz boards in slots 3 to 6 of Mainframe 2.
- 100 MHz boards in slots 7 and 8 of Mainframe 2.
- A PMU Board in slot 10 of Mainframe 1 and slot 9 of card-cage 2.

N o t e



This file is only necessary for mixed 100X/200/400 MHz systems if you want to run the system software in offline mode. Refer to the manual *Using the HP 82000* for more details.

I/O Channel Numbering Scheme

I/O channels are identified by a single number of the form **MBBCC**, where:

M is the Mainframe number.

BB is the I/O board number (the I/O board in slot 3 is 01).

CC is the number of the channel on the I/O board (marked beside each I/O cable socket on the I/O board).

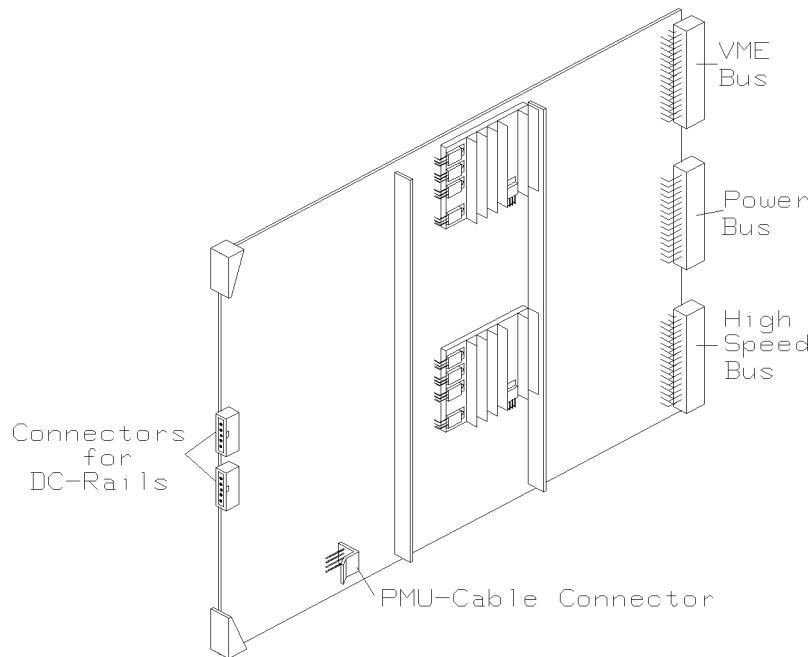


Figure 10-10. PMU Board

R u l e s

1. One PMU Board (2 PMUs) is allowed in each Mainframe.
2. In each card-cage the PMU Board must be installed in the next slot after the last I/O board.
3. A PMU cable from the PCM must be connected to each PMU Board. This cable supplies the PMU with a 28-34 Vac supply. This cable is installed in the factory and routed to the card-cage. The connector on the PMU Board for the PMU cable is labeled *PMU-Cable Connector* in Figure 10-10.



Take precautions against Electrostatic Discharge when handling I/O cables which are connected to I/O boards.

The I/O cables connect the channels on the I/O board to the DUT board. They are coaxial cables with a soft foam-dielectric between the inner-conductor and the outer shield. Using this type of dielectric improves the propagation characteristics of the cable but also makes it sensitive for damage. In general, crushing or pinching the cable can cause the following:

- The outer shield touches the inner-conductor, giving a short-circuit.
- The impedance of the transmission-line decreases at the damaged point and causes a locally higher capacitive load affecting signal performance.
- The impedance of the transmission-line increases at the damaged point and thus causes reflections.

The characteristic impedance of the I/O cables on D100/200/400 I/O boards is 50 Ω . On D50 boards it is 100 Ω .

I/O cables are terminated at one end with three pogo-pins. The outer pins are connected to the outer shield of the I/O cable. This shields the inner I/O pin as far as the DUT board. The pogo-pins from each I/O channel are fitted in pogo-blocks which can then be mounted in pogo-frames. See also Chapter 8: **DUT Interfacing Mechanics**.

The other end of the I/O cable is terminated with a right-angled plug which connects to a matching socket on an I/O board.

N o t e



All I/O cables must be within 1 ns electrical length of each other, otherwise the system can not be calibrated properly.

W a r n i n g

Switch-off the PCM before carrying-out this procedure.

This procedure tells you how to change I/O cables.

Procedure

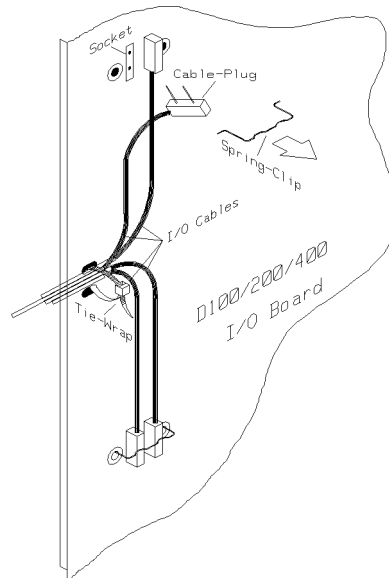


Figure 10-11. Changing I/O Cables

1. Take the I/O board out of the card-cage.
2. Starting with the top set of I/O cables, remove the metal spring-clips holding the black I/O cable connectors in place. See Figure 10-11
3. Pull the I/O cable-plugs out of the sockets on the I/O board.
4. Cut the tie-wraps holding the I/O cables to the board and remove the I/O cables.
5. Repeat the last three steps for all the I/O cables you want to change.
6. Starting at the bottom of the I/O board, connect the new cables to the sockets on the I/O board and replace the spring-clips.

c a u t i o n

Be careful not to pinch or crush the I/O cables.



7. Secure the cables to the I/O board with new tie-wraps.

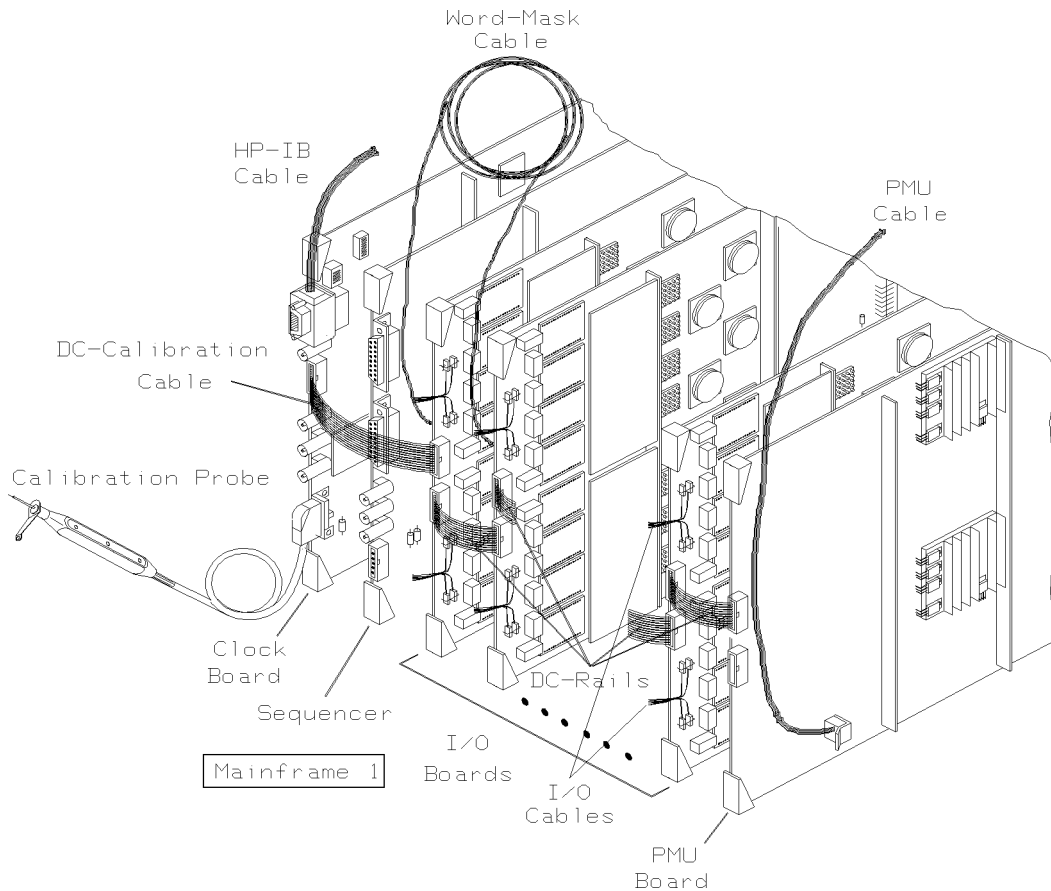


Figure 10-12. Board Interconnections - Standardframe

Figure 10-12 shows the board interconnections for Mainframe 1.

DC-Calibration Cable - a flat ribbon-cable, connected between the Clock Board and the top DC rail connector on the first I/O board.

DC-Rails - a chain of flat ribbon-cables which runs between the I/O boards as far as the PMU Board (if installed). The top and bottom DC rail connectors on each board are equivalent, so a board can be connected to the top or bottom connector of the next board.

Word-Mask Cable - a coaxial cable, connected between the master-sequencer and the first I/O board in Mainframe 1. This cable is needed for masking-out I/O channels during testing. Read, Installing the Word-Mask Cable in the section Sequencer Boards.

Sequencer Cable (also Master/Slave Cable)- connects the sequencer in card-cage 1 to the sequencers in the other card-cages. These cables are not shown in Figure 10-12. Read the section, Sequencer Board .

PMU Cable connected between the PCM and the PMU Board. It delivers a 28-34 V ac supply to the PMU Board.

HP-IB Cable - the Clock Board in each card-cage must be connected to the HP-IB bus (Select-Code 7) via a HP-IB cable.

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De-installing the System

System De-installation

This section describes the procedures used when dismantling the HP 82000 IC Evaluation System in order to move it to another site. The instructions on actual de-installation are dealing with Long Distance Moves, when shipping is necessary to another location, perhaps in another country.

Short Distance Transportation of System Standardframe(s)

If the move is short, the System Standardframe can be wheeled to the new location on its castors.

Caution Two people are needed to move the system.



For instructions on lowering the system castors and on moving the Test System in general, refer to Chapter 2. Take note of any warnings or cautions relating to moving the system.

System De-installation for Long Distance Moves

If the system is to be transported any distance, for example to a neighboring town or to another country, it must be crated in order to protect it from mechanical damage. The original factory packaging is recommended, as it has been designed to protect the system.

Besides the necessary electrical disconnections the long distance move will require:

- for 2 and 3 Standardframe Systems, removal of the DUT Interface and physical separation of the Standardframe cabinets.
- packing all of the equipment, in the original packing materials, if possible.

Warning



The electrical disconnections must be performed by a qualified electrician.

To avoid the hazard of injury or death, make sure that power to the mains distribution point is removed. Ensure also that when completing this work any local regulations and safety codes are adhered to.

System Specifications

Weight

Table A-1. System Weight

Unit	Net Weight	Ship Weight
HP E1220A Miniframe	50 kg	75 kg
HP E1221A Miniframe Extender	50 kg	75 kg
HP E1222M Standardframe	250 kg	300 kg
HP E1222E Standardframe Extender	250 kg	300 kg

Overall Dimensions

Table A-2. Dimensions

Unit	Height	Width	Depth
HP E1220A Miniframe	245mm	600mm	800mm
HP E1220A Miniframe + Extender	500mm	600mm	800mm
HP E1222M Standardframe (0°)	1000mm	600mm	830mm
HP E1222M Standardframe (45°)	1000mm	600mm	1060mm
HP E1222E Standardframe Extender	1000mm	600mm	830mm

Table A-3. Power Requirements

Unit	No of Phases	Line Voltage (V)	Frequency (Hz)	Max Current (A)
Miniframe	1	110 -13% +6%	49 to 61	14
Miniframe	1	230 -13% +6%	49 to 61	7
Standardframe or Extender	3	208 -13% +6%	49 to 61	3 × 11
Standardframe or Extender	3	400 -13% +6%	49 to 61	3 × 6
Standardframe or Extender	3	415 -13% +6%	49 to 61	3 × 5.8
Standardframe or Extender	1	200 -13% +6%	49 to 61	20
Standardframe or Extender	1	240 -13% +6%	49 to 61	17

Table A-4. Environmental Requirements

Parameter	Limits
Operating Temperature	+15°C to +35°C
Storage Temperature	-20°C to +70°C
Operating Humidity @ +30°C	<80% RH non condensing.
	If this level is exceeded, the system must
	be allowed to stand for 24 hours at 25°C. 50% RH
Dissipated Heat - full cardcage per frame	Standardframe - 3500W Max (11935 Btu/hr)
	Miniframe - 1200W Max (4092 Btu/hr)

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