

INSTALLATION/SITE PREPARATION MANUAL

F33659-86C-0054

HP 8902MS MICROWAVE MEASUREMENT SYSTEM



**HEWLETT
PACKARD**

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HP 8902MS MICROWAVE MEASUREMENT SYSTEM INSTALLATION/SITE PREPARATION MANUAL

SERIAL NUMBERS

This manual applies directly to systems with serial numbers prefixed:

2641A

For additional important information about serial numbers, refer to "SERIAL NUMBERS" in Section I.

First Edition

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SAFETY CONSIDERATIONS

GENERAL

This product and related documentation must be reviewed for familiarization with safety markings and instructions before operation.

This product is a Safety Class I instrument (provided with a protective earth terminal).

BEFORE APPLYING POWER

Verify that the product is set to match the available line voltage and the correct fuse is installed.

SAFETY EARTH GROUND

An uninterruptible safety earth ground must be provided from the main power source to the product input wiring terminals, power cord, or supplied power cord set.

SAFETY SYMBOLS

 Instruction manual symbol: the product will be marked with this symbol when it is necessary for the user to refer to the instruction manual (refer to Table of Contents).

 Indicates hazardous voltages.

 Indicates earth (ground) terminal.

WARNING

The WARNING sign denotes a hazard. It calls attention to a procedure, practice, or the like, which, if not correctly performed or adhered to, could result in personal injury. Do not proceed beyond a WARNING sign until the indicated conditions are fully understood and met.

CAUTION

The CAUTION sign denotes a hazard. It calls attention to an operating procedure, practice, or the like, which, if not correctly performed or adhered to, could result in damage to or destruction of part or all of the product. Do not proceed beyond a CAUTION sign until the indicated conditions are fully understood and met.

WARNING

Any interruption of the protective (grounding) conductor (inside or outside the instrument) or disconnecting the protective earth terminal will cause a potential shock hazard that could result in personal injury. (Grounding one conductor of a two conductor outlet is not sufficient protection).

Whenever it is likely that the protection has been impaired, the instrument must be made inoperative and be secured against any unintended operation.

If this instrument is to be energized via an autotransformer (for voltage reduction) make sure the common terminal is connected to the earth terminal of the power source.

Servicing instructions are for use by service-trained personnel only. To avoid dangerous electric shock, do not perform any servicing unless qualified to do so.

Adjustments described in the manual are performed with power supplied to the instrument while protective covers are removed. Energy available at many points may, if contacted, result in personal injury.

Capacitors inside the instrument may still be charged even if the instrument has been disconnected from its source of supply.

For continued protection against fire hazard, replace the line fuse(s) only with 250V fuse(s) of the same current rating and type (for example, normal blow, time delay, etc.). Do not use repaired fuses or short circuited fuseholders.

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Section 1 GENERAL INFORMATION

1-1. INTRODUCTION

This manual contains site preparation information, installation instructions, and hardware service information for the HP 8902MS Microwave Measurement System. The site preparation section describes the system's physical and electrical requirements, and presents a plan for satisfying them. The installation sections contain step-by-step procedures for receiving, moving, and assembling the system. When you complete the installation procedures, your system should be ready for turn-on and operation. Some portions of the site preparation and installation instructions may not apply to your system or situation. Ignore those parts and continue with the remaining instructions.

1-2. USE OF THIS MANUAL

HP 8902MS Microwave Measurement System users should read this entire manual before the system arrives, so that you can prepare the site and anticipate the installation requirements.

SECTION 1 - GENERAL INFORMATION contains introductory information on the HP 8902MS Microwave Measurement System and other installation data.

SECTION 2 - SITE PREPARATION is intended to be a comprehensive plan for preparing the necessary facilities for your HP 8902MS Microwave Measurement System. It contains general guidelines for site preparation and specific details about the HP 8902MS Microwave Measurement System.

SECTION 3 - RECEIVING describes procedures for receiving and unpacking as well as information on transporting the HP 8902MS Microwave Measurement System to its permanent site.

SECTION 4 - ASSEMBLY covers the details of assembling the mechanical and electrical components which were necessarily left unassembled for shipment.

SECTION 5 - REPLACEABLE PARTS provides information for ordering replacement parts for the HP 8902MS Microwave Measurement System.

NOTE

Throughout the rest of this manual the HP 8902MS Microwave Measurement System will be referred to as the standard system.

1-3. SERIAL NUMBERS

System Serial Numbers

Each standard system is identified by a two part serial number in the form 1234A00123. The first four digits and the letter are the prefix which is the same for all the standard systems. The five digit suffix is unique for each individual standard system. The contents of this manual applies directly to each standard system with the same serial number prefix(es) as listed under SERIAL NUMBERS on the title page. For information concerning a serial number prefix not listed on the title page or in the manual changes supplement, contact your nearest Hewlett-Packard Office.

Instrument Identification

Each instrument also has a label which identifies it as part of the standard system. The label includes the standard system model number and serial number. Each instrument also has a serial number plate with its own unique serial number with the same form as the standard system serial number.

1-4. MANUAL CHANGES SUPPLEMENT

A standard system manufactured after the printing of this manual may have a serial number prefix that is not listed on the title page. This unlisted serial number prefix indicates that the instrument is different from those described in this manual in some way. The manuals for the standard system are supplied with manual changes supplements that contain "change information" that documents the difference.

In addition to change information, the supplements may contain information for correcting errors in the manuals. To keep this manual as current and as accurate as possible, Hewlett-Packard recommends that you periodically request the latest manual changes supplement. The supplement is identified with the print date and part number that appears on the title page. Complimentary copies are available from Hewlett-Packard Company.

1-5. DESCRIPTION OF THE STANDARD SYSTEM

The HP 8902MS Microwave Measurement System is a computer controlled test system designed to perform accurate attenuator and signal generator calibration measurements in the frequency range of 10 MHz to 26.5 GHz. Unless otherwise indicated, all instructions in this manual pertain to the standard system as described in Table 1-1 *HP 8902MS Microwave Measurement System Equipment*. In the event that any instrument, cable, or part of the cabinet has to be removed Figure 1-1 *Typical Instrument Stacking* illustrates how the individual instruments are placed in the system. Figure 1-2 *Standard System Cable Inter-connections* indicates the cabling between each of the instruments front and back panels.

1-6. ACCESSORIES SUPPLIED

Table 1-1 also lists the accessories supplied with the standard system.

1-7. TOOLS AND EQUIPMENT

The following tools are recommended for installation:

1. Claw Hammer
2. Knife
3. Pliers
4. Flat Blade Screwdriver
5. Pozidriv Screwdriver
6. Diagonal Cutter
7. Wire Stripper
8. Adjustable Wrench
9. Voltmeter

Additionally, a hoist and spreader bar (or heavy chain) are recommended for unpacking the crated double-bay standard system.

NOTE

The weight of the 8902MS standard system is approximately 218.1 kilograms (480 pounds).

1-8. STANDARD SYSTEM POWER REQUIREMENTS

The standard system is pre-assembled for use with 120 volts, 60Hz, single phase power line connections.

Table 1-1. HP 8902MS Microwave Measurement System Equipment

Components	Model #	Instrument Description	Qty	Options
	8902A	Measuring Receiver	1	030,032,037,H15
	11793A	Microwave Converter	1	H15
	8673D	Signal Generator	1	H15
	11792A	Sensor Module (#1)	1	H15
	11792A	Sensor Module (#2)	1	H16
	8673D	Signal Generator	1	
VSWR Bridges and Associated Attenuators	60A50-1	SWR Bridge/APC-7	1	
	60NF50-1	SWR Bridge/Type N (f)	1	
	58A50	SWR Bridge/APC-7	1	
	28A50-1	Precision Termination/APC-7	1	
	26N50	Precision Termination/Type N (m)	1	
	34AN50	Adaptor N-Male/APC-7	1	
	34ANF50	Adaptor N-female/APC-7	1	
	34AS50	Adaptor SMA Male/APC-7	1	
	34ASF50	Adaptor SMA Female/APC-7	1	
	34NN50A	Adaptor N-Male/N-Male	1	
	34NFN50	Adaptor N-Female/N-Female	1	
	34SFSF50	Adaptor SMA(f)/SMA(f)	1	
	22A50	Open/Short/APC-7	1	
	22N50	Open/Short N-Male	1	
	22NF50	Open/Short N-Female	1	
	22S50	Open/Short SMA Male	1	
	22SF50	Open/Short SMA Female	1	
	18A50	Precision Air Line/PC-7	1	
	29A50-20	Precision Offset/PC-7	1	
Matching Attenuators	8493C	3.5mm, 26.5 GHz	2	010
	8491B	TYPE N, 18 GHz	2	010,H48
	8492A	APC-7, 18 GHz	2	010,H48
Coaxial Cables	08902-60067	Type N (m)	2	
	08902-60068	APC-7	2	
	08902-60069	3.5mm Male	2	
	08902-60070	3.5mm Female	2	
Controller	9826A	Controller	1	
	82906A	160CPS Printer	1	002
	98256A	256 Kbyte RAM Cards	2	
	98603A	Ram-based Basic 4.0	1	042
Cabinet	29402C	Cabinet	2	200,300,400

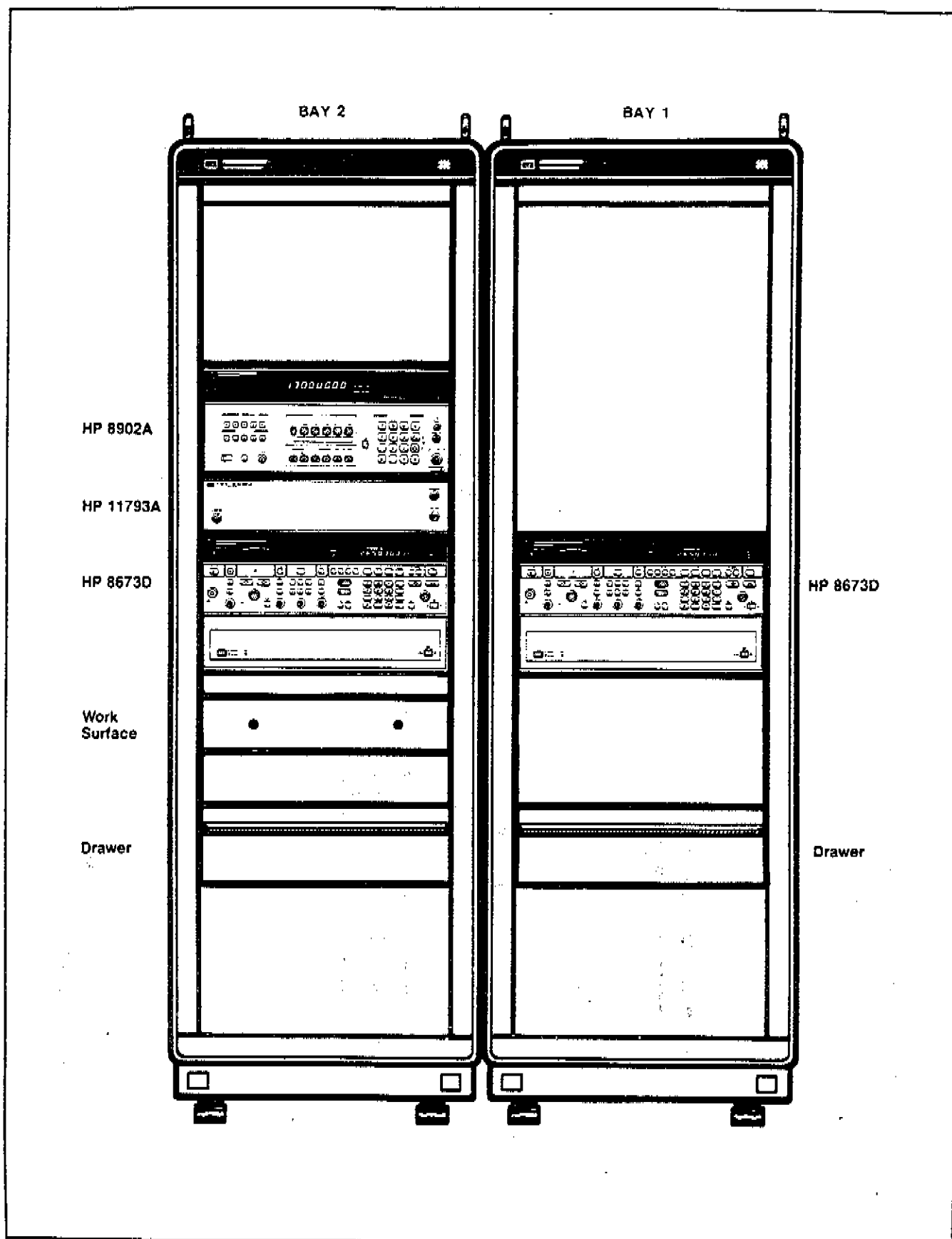
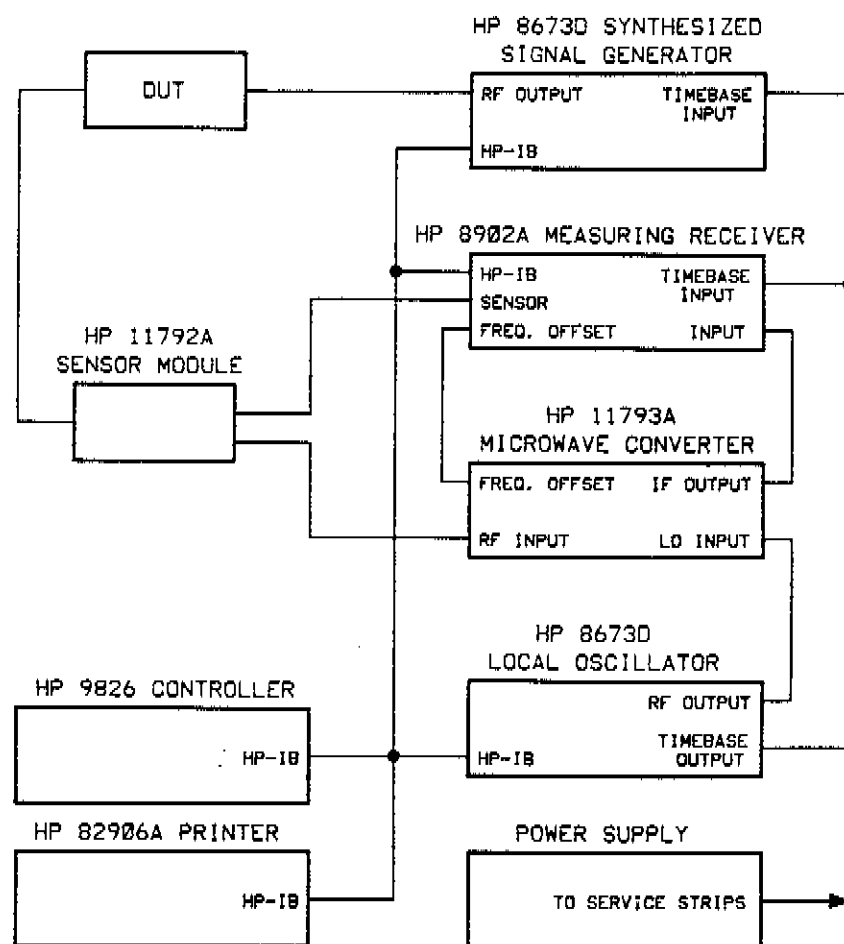


Figure 1-1. Standard System Instrument Stacking

*Figure 1-2. Standard System Cable Inter-connections*

Section 2 SITE PREPARATION

2-1. INTRODUCTION

Consideration should be given to items in the Site Preparation Checklist when choosing the site location and arrangement. Throughout this manual, reference is made to the standard system. The standard system is composed of four instruments and two cabinets listed in Table 1-1 *HP 8902MS Microwave Measurement System Equipment*.

2-2. SITE SPACE AND ARRANGEMENT

Floor Plan

The amount of space required for your system can be determined by using Figure 2-1 *System Equipment Template and Blank Grid Sheet*. Each side of a square represents 30 centimeters or approximately 12 inches (11.81 inches). On the grid portion of Figure 2-1 the template figure is drawn to the same scale.

NOTE

The square around the figure indicates necessary or desirable free space for passage, swinging doors, chairs, etc.

Power Outlets

Power outlet locations should be shown on the site drawing and used for planning equipment placement. The potential load of all power outlets should be factored into your total site power calculations.

Doors

Doorways (full swing) and aisles should be shown on the layout.

Operator Space

Since there may be occasions when several people may be gathered in front of the system during operation or for group instruction, additional space should be considered. Sufficient room should be allowed for the handling of materials and equipment if tests are to be performed in the area.

Service Space

Approximately 1 meter (3 feet) is required at the rear of the system cabinet for servicing.

Working Space

Adequate work space should be allotted so that personnel traffic does not interfere with operations.

Table 2-1. Site Preparation Checklist

Check	Item
—	Suitability of Site
—	1. Is proper and adequate power available to site?
—	2. If below ground level, is the water drainage system adequate?
—	3. Has possible need for lifting equipment for installation been investigated?
—	4. Are elevators adequate to support size and weight of equipment?
—	5. Will stairways allow passage of equipment?
—	6. Will flooring enroute to installation site support weight of equipment?
—	7. Will all doorways enroute to installation site allow clearance for equipment?
—	8. Will hallways and corridors enroute to installation site allow clearance for equipment?
—	Floor Plan
—	9. Has grid layout been completed?
—	10. Does it show the locations for all the proposed equipment?
—	11. Does it allow for approximately 1 metre (3 feet) in front and rear of cabinet for operation and service?
—	12. Has a table for the calculator and optional peripherals been provided?
—	13. Is sufficient space provided for personnel safety, comfort and freedom of movement?
—	14. Does the grid layout show locations of all doors and aisle ways?
—	15. Is sufficient space provided for manuals and supplies?
—	16. Does site allow for future expansion?
—	Electrical Power
—	17. Have tests been conducted to determine the voltage fluctuations throughout the day?
—	18. If tests indicated a greater than -10% or +5% fluctuation, have provisions been made for voltage or frequency regulation?
—	19. Have provisions been made for the installation of a sufficient amount of receptacles throughout the site for free-standing equipment?
—	20. Considering all factors such as wire size, distribution equipment, etc., is the proposed electrical installation plan adequate for the presently proposed system and possible future expansion?
—	Signal and Power Cables
—	21. Have interface bus cable length restrictions been adhered to (non-standard systems only)?
—	22. Have necessary cables other than those supplied with equipment been provided?
—	23. Have power cord and plug been provided for system cabinet?
—	Temperature
—	24. Has the installation area been checked for minimum and maximum temperature ranges of 15° to 30°C (59° to 85°F).
—	Safety Precautions
—	25. Have standard safety precautions for a production or testing area been considered?

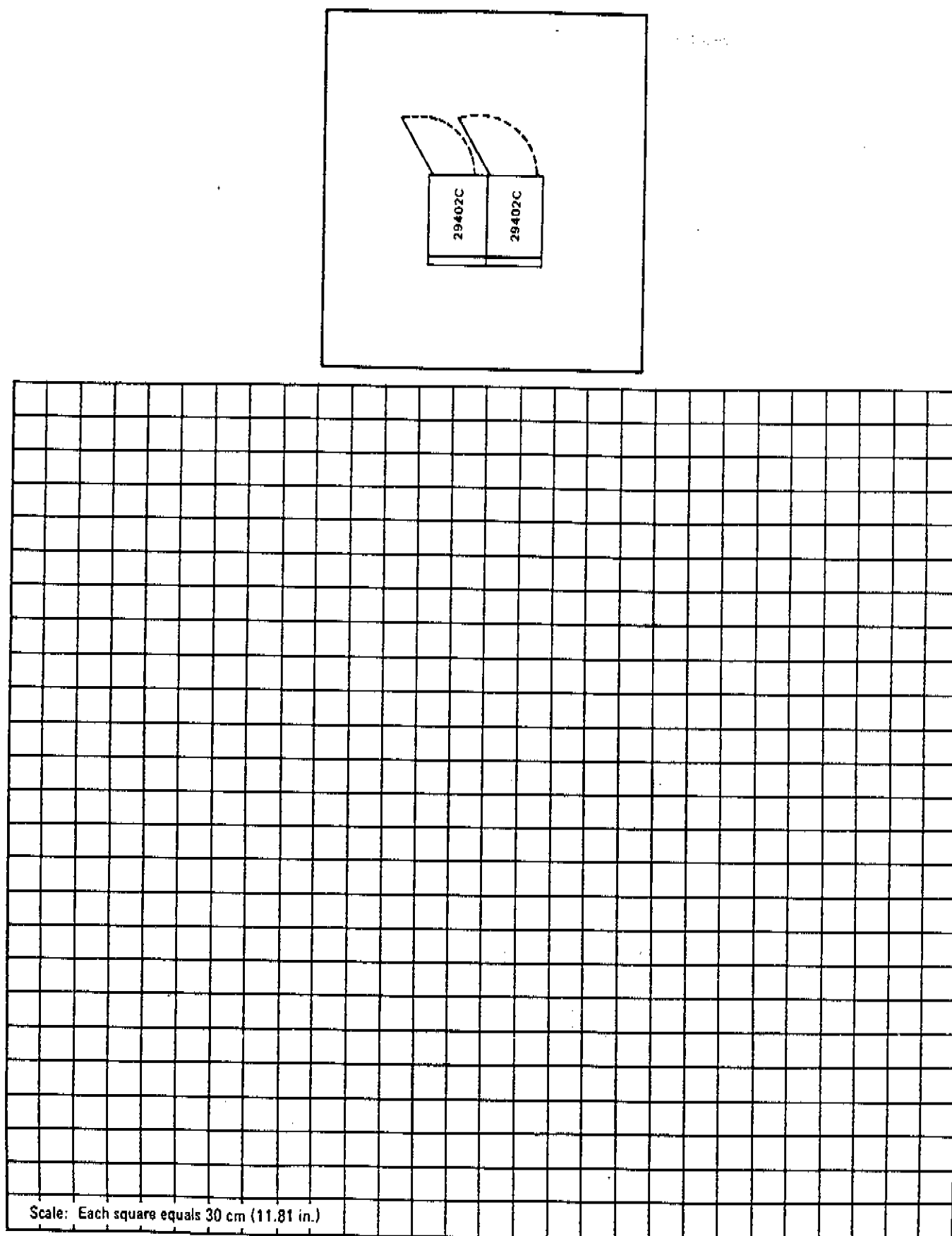


Figure 2-1. System Equipment Template and Grid Sheet

Storage Space

Storage space should be allotted near the system for storage of individual instrument manuals and other miscellaneous supplies associated with the standard system.

2-3. ADDITIONAL CONSIDERATIONS

Fire-Proof Storage

A fire-proof area should be considered for storage of combustible materials such as permanent master documents, discs, etc. Any adverse effects to the stored materials by fire extinguishing systems must also be considered, for example, water damage from a sprinkler system.

Passageways

All doors, elevators, and passageways between the receiving location and the installation site must be checked to ensure adequate space and floor loading capacity for the system and related equipment.

NOTE

Dimensions for the standard system cabinets (largest item in the system) are as follows:

Height: 163 cm (64.25 in.)

Width: 106 cm (42 in.)

Depth: 70 cm (27.6 in.)

For floor loading information, refer to Flooring, Support.

Flooring

Insulation. Tile, or other non-conductive floor covering should be used directly beneath the system and operating area. Carpeting, especially nylon, is not recommended due to static charge build-up.

WARNING

Do not place the system on metal or other conductive surfaces—personal injury could result. Consult electrical code expert to ensure that your flooring conforms to local requirements.

NOTE

Concrete is electrically conductive because of moisture absorption and reinforcing steel.

Support. Wood, concrete, and other industrial floor materials can generally provide adequate support for the system. Raised floors which accommodate cable runs, also are generally adequate. However, if there is any question about floor loading capacity a structural engineer should be consulted.

NOTE

The overall weight of the standard system in its cabinets are approximately 218.1 kg. (480 lbs.) concentrated through eight casters.

The weight of any lifting equipment (for example, a forklift) used to install the system must be considered for floor loading. However, the cabinets are equipped with eight casters and should not require special rigging for moving it.

WARNING

Do not use a forklift to move the system cabinets unless no other alternative exists. A relatively high and offset center of gravity and point of balance could cause the cabinet to topple in any direction, resulting in possible personal injury and damage to equipment.

Wire Covers

Special wiring arrangements or covers should be used to protect power and signal cables exposed on flooring.

Illumination

It is recommended that an average 500 to 1000 lux of total illumination (measured one meter above the floor) be maintained in the system area, or (approximately 50 to 100 footcandles, three feet above the floor). This will provide optimum visibility of lighted indicators.

Electrical

Local Laws. In some localities, special codes and regulations may exist for the installation of system sites. It is your responsibility to ensure that the requirements of all local laws, regulations, and codes for the site electrical distribution are considered and that your site plan and construction are in compliance. The suggestions for code and regulation compliance in this manual should be considered as only reminders that local laws, codes, and regulations exist. It is suggested that you contact local power companies and electrical contractors for information on codes and techniques applicable to your region.

Power Requirements. Instruments inside the system cabinet receive power from the cabinet's primary input. The power you supply for the cabinets should be adequate for the system's needs and should be properly fused to protect your facility.

NOTE

The standard system cabinets require 90-126 volts, 20 amperes, 60 Hertz, single phase. The system is wired with three 20 ampere circuit breakers.

Optional or additional equipment used at the site (including equipment required to service the system) must also have a power source. It will be necessary for you to determine the potential power requirements for these instruments and to factor them into your total site requirement.

Grounding. AC power cords for the cabinet, instruments, and service outlets are the three-conductor type (which include a safety earth ground conductor.) Safe operation of the system requires that the (mains) power cord be connected only to an outlet with a protective earth contact. In addition, a redundant earth ground lead of equal or greater current capacity than the AC power input leads must be connected from the terminal provided on the Power Fan Panel to an appropriate earth ground at the service equipment.

Temperature Conditions

Operating Range. The operating temperature for the system is 15 to 30_C (59 to 85_F.) If additional instruments are added to the system, the range will be the tightest specification of either the system or the additional equipment.

Air Conditioning. If air conditioning equipment is used at the site, the system heat dissipation will add directly to the air conditioning load.

Safety Precautions

Adequate precautions should be taken to ensure the safety of operating and maintenance personnel, and of equipment against the hazards of fire, electricity, chemicals, or mechanical dangers that may be present at the site.

2-4. HEWLETT-PACKARD INTERFACE BUS

The following quantitative restrictions apply to any system connected on the Hewlett-Packard Interface Bus:

1. The total interface cable length for the system must be less than or equal to 20 meters (65.5 feet.)
2. The total cable length for the system must be less than or equal to 2 meters (6.5 feet) times the number of devices connected to the bus.
3. A maximum of 15 devices, including controller, can be connected on one contiguous bus.

CAUTION

HP-IB connectors used in the system have lock screws with metric threads (black finish with letter "M" marking.) Older HP-IB instruments and cables may have non-metric threads. The two connectors are not compatible and require a metric conversion kit, HP Part Number 5060-0138, available from Hewlett-Packard.

There are no restrictions to the way HP-IB cables may be interconnected. However, it is recommended that no more than three or four HP-IB connectors be stacked together on one device. The resulting structure could exert great force on the instrument connector and cause mechanical damage. Threaded mounting fasteners should only be torqued finger-tight.

More information on the HP-IB can be found in the Operating and Service Manual for each instrument in the standard system.

Section 3 RECEIVING

3-1. INTRODUCTION

Proper receiving and handling is the first important step in installing your system. Following the procedures contained in this section should minimize the time it takes to receive and inspect the system.

The receiving procedure has three major parts. The first is inspection of the system crates and/or boxes before unpacking. The second is the inspection of the system components after unpacking. This portion of the receiving procedure is necessary so you can promptly report any damage that may have occurred in shipment. The final step is transporting the system to its permanent site.

It is suggested that you read all the detailed instructions for familiarization before you begin to unpack the system.

Check the shipping containers for identification labels located on each container. The label identifies your Hewlett-Packard order number, the number of containers in the shipment, and the contents of the container.

3-2. VISUAL INSPECTION

Visually inspect the boxes or crates for external damage. If, in the visual inspection, a box or crate appears to be damaged, retain the carrier representative for visual inspection of the system instruments and accessories during unpacking.

3-3. UNPACKING CRATES

Each standard system is packed and crated with both cabinets bolted together in one shipping crate.

WARNING

DO NOT ATTEMPT TO SET THE LOADED SYSTEM CABINETS UPRIGHT WHILE STILL CRATED. Attempting to do so could cause the crate to tip over causing damage to the equipment and possible injury to personnel. System cabinets are shipped lying down, on a padded base, within the shipping crate. The system is strapped to the base with nylon straps.

Uncrating Procedure:

- a. Remove the top of the crate by forcing a hammer claw or heavy screwdriver under one wire of the long leg of the fasteners. (See Figure 3-1.)
- b. Place one hand over top of the fastener to prevent it from springing off.
- c. Raise the tool and the fastener will come free of the panel.
- d. Complete the removal procedure for each fastener on top of the crate.
- e. Remove the fasteners on the sides of the crates following Step a through Step d.
- f. Remove the top and sides of the crate. (See Figure 3-2.)
- g. Cut nylon straps holding the cabinets to the base and remove packing.

- h. Connect a spreader bar or heavy duty chain between the lifting devices on top of the cabinet. Attach hoist to the center of the bar or strap so cabinet will lift evenly. (See Figure 3-3.)
- i. Lift top of cabinet approximately 25 centimeters (10 inches.)
- j. Slide bottom of cabinet toward the end of the crate.
- k. With the hoist, lift cabinet from the top while guiding the bottom to the floor; set cabinet upright on its casters.

NOTE

When the system cabinet has been set upright and no further lifting is required, remove the lifting fixtures from the cabinet top. Removal of the fixtures will allow increased ventilation. Store lifting fixtures for possible future use.

- l. Visually check external surfaces of the cabinet and rack-mounted instruments for any damage. If any damage is present, follow the carrier's procedures for filing a claim. Also, notify your local Hewlett-Packard Field Office.



Figure 3-1. Removing Fasteners

3-4. UNPACKING BOXES

Any instruments not built into the cabinets are packed in cardboard boxes with polystyrene plastic or foam molded to the contour of the instrument. Accessories and manuals are also packaged in cardboard boxes. The following unpacking procedure applies to all boxed items.



Figure 3-2. Crate Disassembly

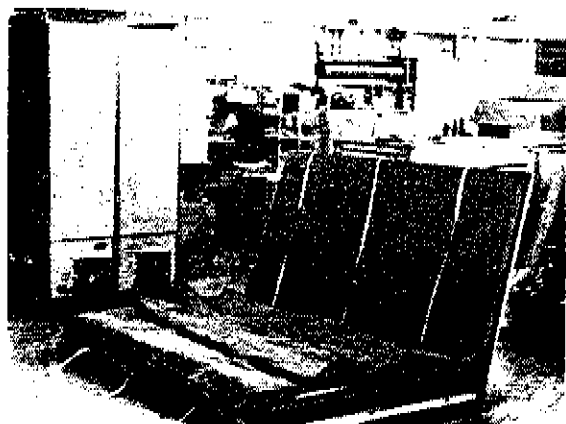


Figure 3-3. Removing Cabinet From Crate

CAUTION

Do not use long bladed knives, screwdrivers, or instruments that could pierce the protective foam and damage the instrument.

Box Unpacking Procedure:

- a. Carefully cut the nylon tape on top of the box.
- b. Remove the foam or polystyrene from the top of the instrument.
- c. Lift the instrument from the box.
- d. Remove all miscellaneous items from the box.

3-5. TRANSPORTING THE SYSTEM CABINETS

Electronic systems require special handling. Personnel in charge of moving such equipment should be aware of the precautions described in this section.

The cabinets are equipped with anti-tip extensions which are removed for shipment. They should be removed or retracted whenever the cabinet is moved a considerable distance. This precaution should be observed to avoid damage to the leveling feet if they should hit an obstruction.

WARNING

Anti-tip base extensions should be installed and extended as soon as possible after cabinet arrives at its permanent site to enhance the stability of the cabinet. Refer to the anti-tip extension procedure in the assembly section.

Casters

The system cabinet is equipped with casters which generally provide the recommended means of transportation.

WARNING

When moving the cabinets about on their casters, push only on the front of the cabinet and move it backward. Move slowly and use extreme care to prevent jamming casters on debris, in seams, or in cracks in the floor surface. The high center of gravity of the unit combined with the pushing/pulling force and momentum could cause the unit to tip if a caster jammed, resulting in damage to the equipment and possible personnel injury.

Hoisting

If your equipment has to be lifted or hoisted into place, it is important to check into the rigging equipment available and the ease of access to the site from the unloading point. If experienced riggers and rigging equipment are not available in your facility, Hewlett-Packard recommends that you hire this service. Notify the appropriate personnel of the arrival date of your system. Also inform them of the precautions and procedures given below.

3-6. LIFTING FIXTURES

The cabinets are equipped with lifting fixtures to be used for hoisting. They must be removed prior to operating the system, since ventilating holes in the cabinet top are covered by the fixtures and proper ventilation could not take place.

WARNING

If a forklift must be used, observe all possible precautions and strap the cabinets down to help protect against tipping.

CAUTION

If a forklift must be used, the cabinets should be on a pallet. This will prevent damage to the bottom trim.

3-7. FORKLIFT USE

A cabinet can be moved by using a forklift. However, this method is not recommended and should only be used if no alternative exists. The relatively high, offset center of gravity could cause the cabinet to topple, resulting in damage to the equipment and possible personal injury.

Section 4 ASSEMBLY

4-1. INTRODUCTION

After the system has arrived at its permanent site, it is time to complete the final assembly. It is assumed that you have already prepared the site according to the guidelines in Section 2, *Site Preparation*, contained in this manual.

This section contains instructions for both mechanical and electrical assembly. You should complete the mechanical assembly first.

4-2. MECHANICAL ASSEMBLY

Anti-Tip Base Extension Legs

The front and rear extendable legs should be installed as soon as possible after the system has been located at its permanent site. To install the extendable legs, refer to Section 2-9 through 2-11 of the *HP 29402C Installation and Service Manual* (HP Part Number 02940-90320).

WARNING

Once installed, the extendable legs should never be removed unless absolutely necessary. If the extendable legs are removed, no instruments should be extended from the rack. Failure to follow this warning could result in injury to personnel, damage to equipment, or both.

Removing the Lifting Fixtures

After the system has reached its permanent site and the extendable legs have been installed the lifting fixtures should be removed at this time. Ventilation holes in the cabinet top are covered by the lifting fixtures which would prevent proper cooling if left in place. Figure 4-1 *Anti-Tip Base Extensions* illustrates where the lifting fixtures are located.

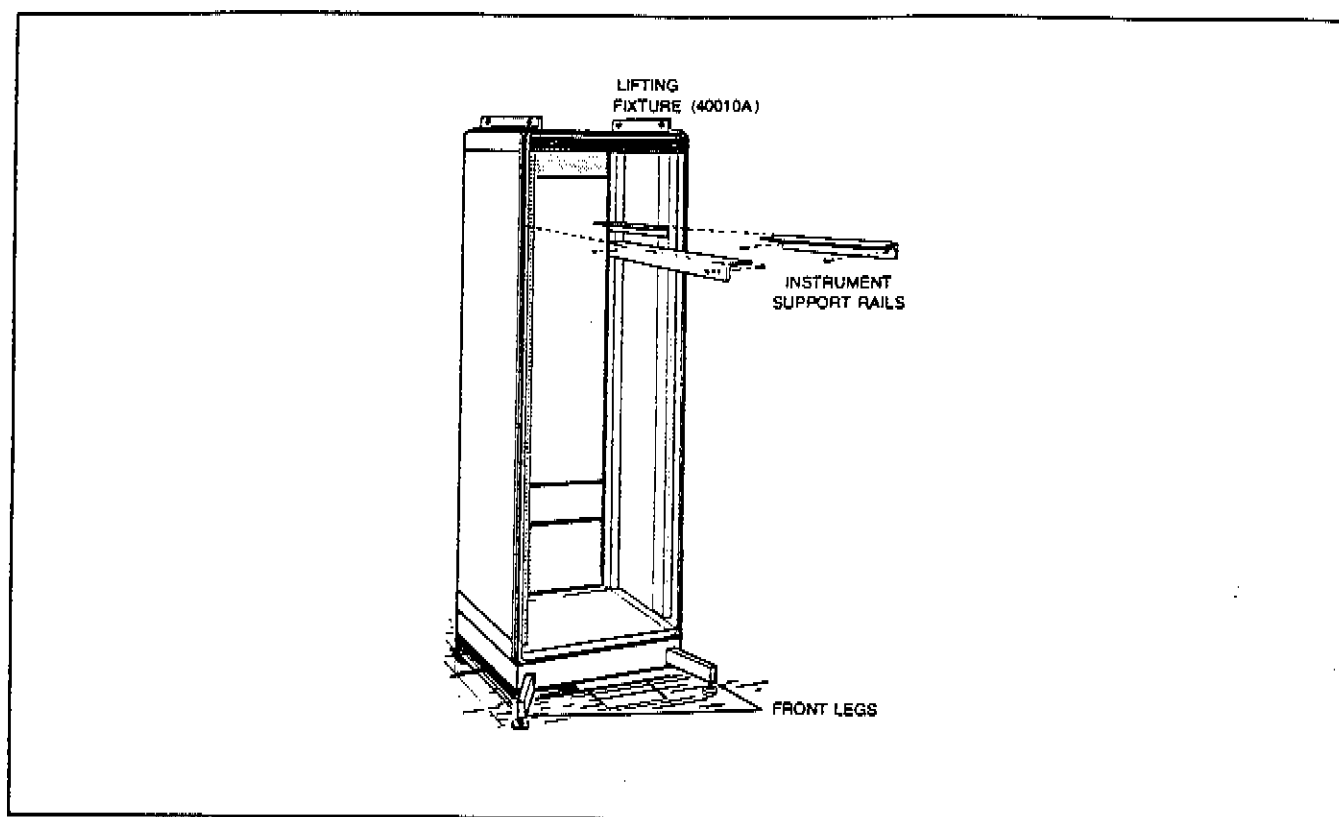


Figure 4-1. Anti-Tip Base Extensions

WARNING

For personnel protection, a redundant earth ground lead must be connected from the system cabinets to ground at the service equipment or other acceptable building earth ground. The appropriate terminal is provided on the Power Fan Panel of the 29402C Cabinet.

Only a qualified electrician should install and inspect main power cable and plug to ensure proper grounding.

CAUTION

Since the cabinets are shipped with electronic equipment installed, disconnect the individual instrument power cords until it has been determined that proper voltage is available at the internal service strips.

System Power and Distribution

The standard system is housed in two 29402C cabinets (bays). The system is pre-wired for 120 volts, 60 Hz signal phase with Bay #1 containing the Power Control Unit (PCU). See Figure 4-2 *Power Control Unit* for the proper configuration. Power distribution is achieved through the PCU to two service strips in Bay #1 and through the power distribution unit (terminal where power from Bay #1 is wired to Bay #2) to the other (one) service strip located in Bay #2. The total system current rating is 20 amperes maximum (three 20 ampere circuit breakers in parallel) for normal operation. Figure 4-3 *Standard System Wiring Diagram* illustrates the power distribution between the two systems.

WARNING

Before power is applied to the system, connect an insulated ground lead to the terminal provided on the Power Fan Panel. The redundant ground lead should be grounded to earth at the service equipment or other acceptable building earth ground.

Alternate Line Voltage Configurations

For voltage requirements other than 120 volts, 60 Hz single phase refer to Table 4-1 *System Jumper Wiring Scheme*, and see Figure 4-4 *Main Power Terminal Connections* to determine the correct set-up for other line voltages.

4-3. INITIAL TURN-ON

After you have finished the assembly procedures, arrange the system according to your site preparation plan. Connect an HP-IB cable from any one of the standard system instrument HP-IB connectors to the controller. It is assumed that the controller installation has been made according to instructions in the controller manuals, and that the controller peripherals (disc drives, printer, etc.) have been connected to the controller HP-IB connector. Next set the three 20 ampere circuit breakers (rear of Bay #1) to the "ON" position. Your system should now be ready for turn-on.

After checking the instruments to make sure they are set to the correct line voltage, and each instrument's power cord is connected to the cabinet power strip, press the main power switch which is located at the top of the cabinet, and identified with the legend "SYSTEM ON/OFF" (both cabinets are controlled with one main power switch).

If any of the individual instrument power switches are in the "ON" position, the instruments should start through the power-on self-check, if any exists. If the instrument power switches are in the "OFF" position, they should all be turned-on at this time.

At this time it is advisable to perform the operator's checks for each instrument in the system. These checks are contained in the individual instrument manuals and are used to insure that each instrument is operating correctly.

After each instrument has been checked, and is operating properly, the system is ready for use.

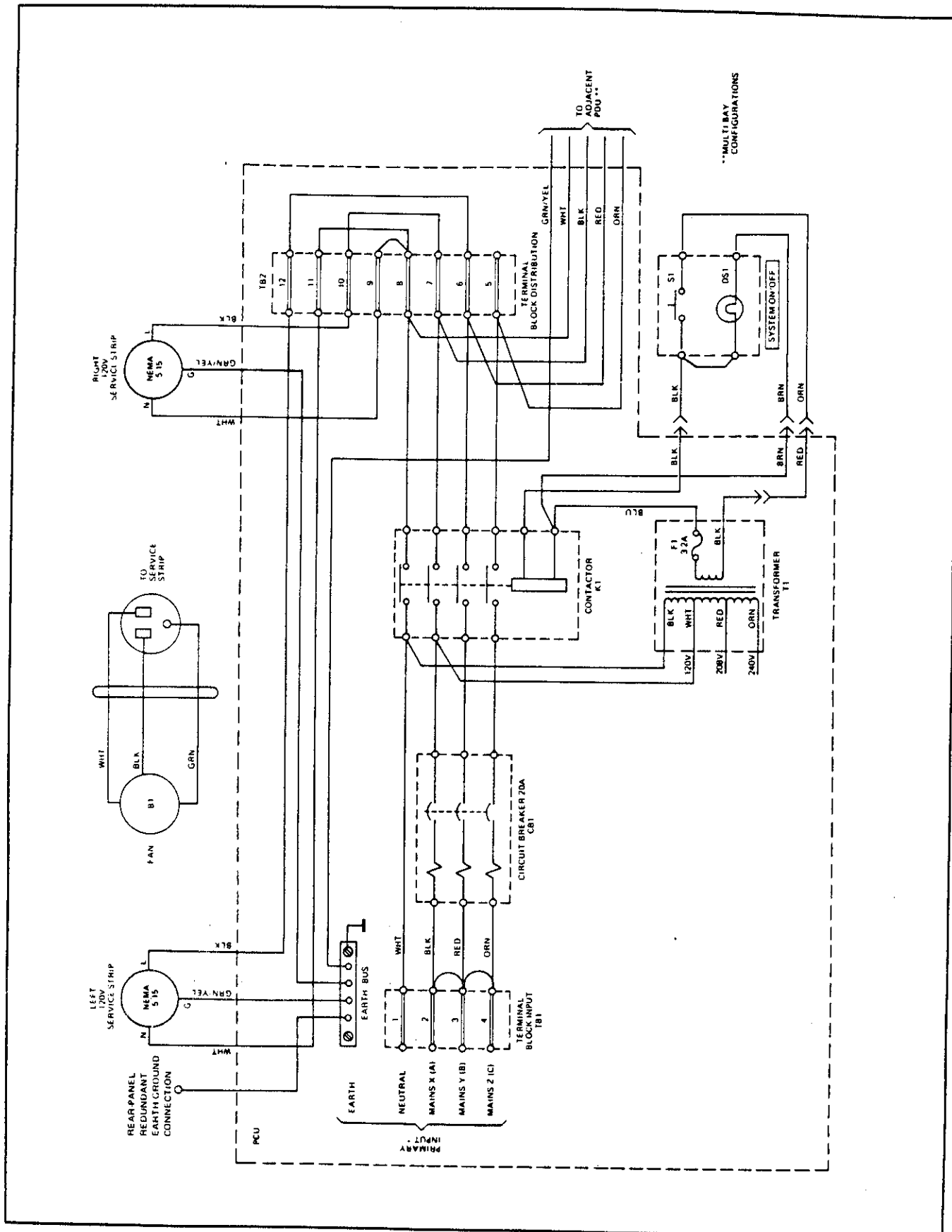


Figure 4-2. Power Control Unit

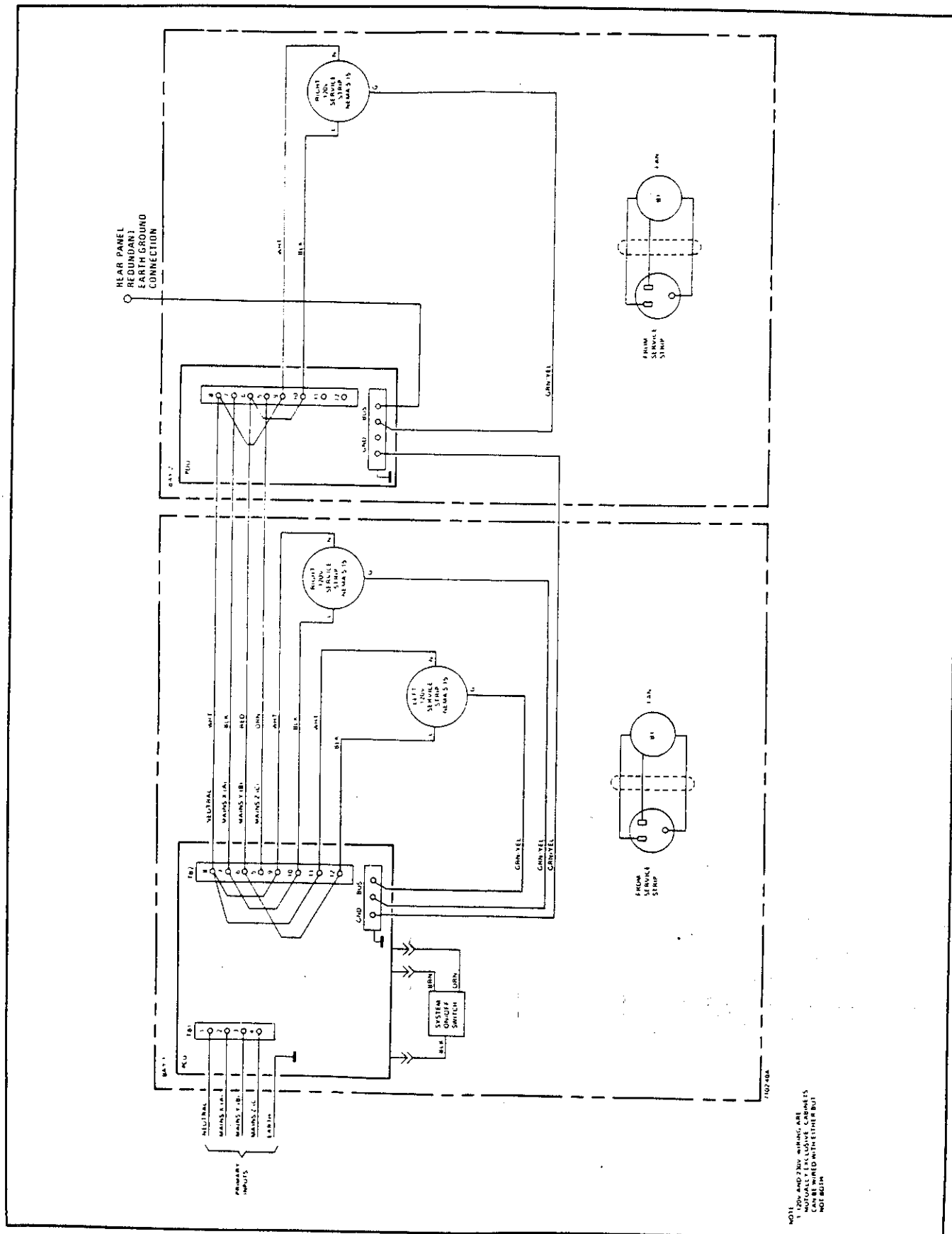


Figure 4-3. Standard System Wiring Diagram

Table 4-1. Standard System Jumper Wiring Scheme

T81 TERMINAL NO.	SINGLE PHASE 60 HZ		SPLIT PHASE 60 HZ		THREE PHASE 60 HZ	
	120 VAC		120/240 VAC		120/208 VAC	
	COLOR	LEAD	COLOR	LEAD	COLOR	LEAD
1	WHITE	NEUT	WHITE	NEUT	WHITE	NEUT
2	BLACK	LINE	BLACK	LINE 1	BLACK	PHASE A
3	JUMPER TO 2		RED	LINE 2	RED	PHASE B
4	JUMPER TO 3		JUMPER TO 3		BLUE	PHASE C
EARTH BUS	GREEN	EARTH	GREEN	EARTH	GREEN	EARTH

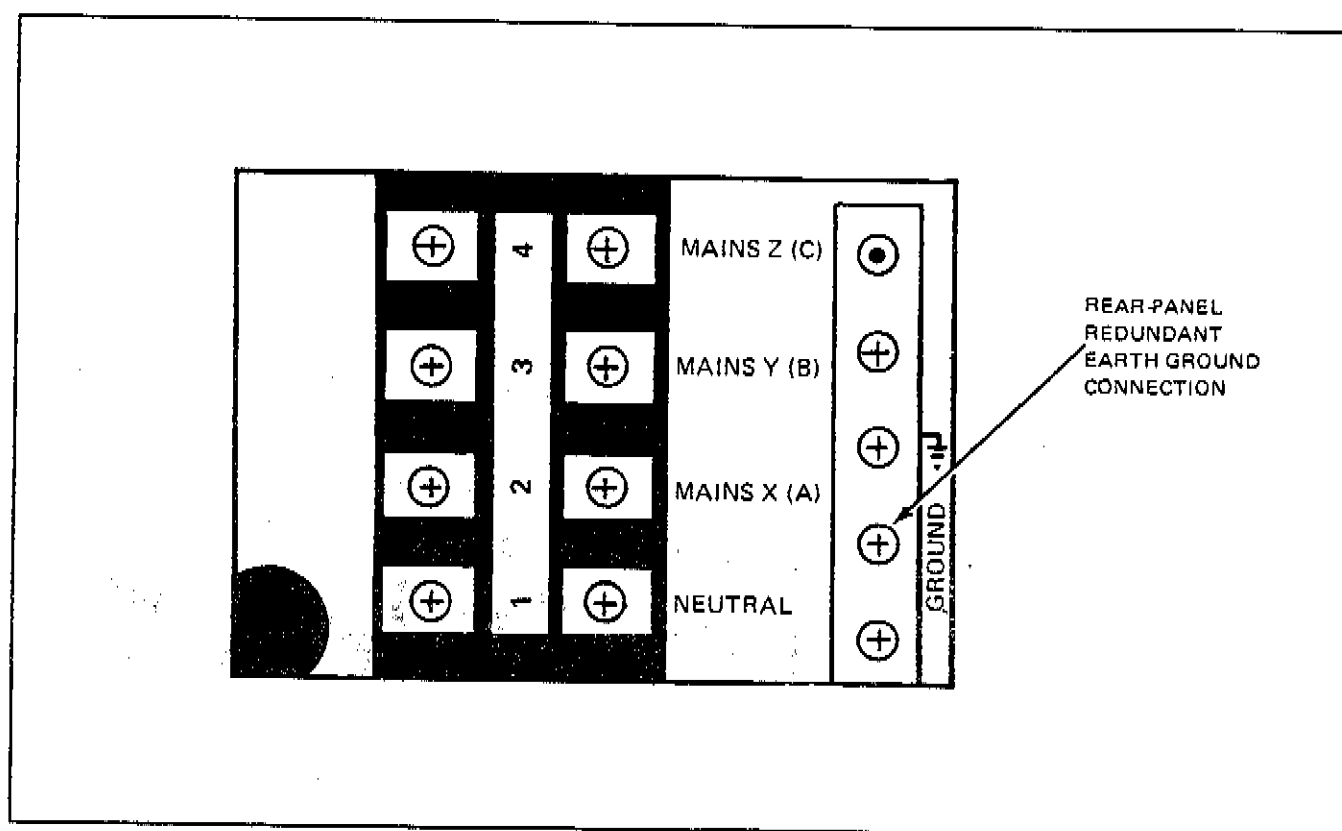


Figure 4-4. Main Power Terminal Connections

4-4. REMOVING AN INSTRUMENT

WARNING

Be very careful when sliding instruments out of the cabinet. The instruments are not attached to the rails and will slide completely free. The heaviest items in the system cabinet are shown below.

Instrument and Weight

HP 8902A Measuring Receiver	23.6 kg (52 lb)
HP 8673D Synthesized Signal Generator	42.4 kg (94 lb)
HP 11793A Microwave Converter	13.3 kg (27 lb)

Do not slide heavy equipment out of the cabinet unless the anti-tip base extension legs are fully extended. The cabinet can become top heavy.

To remove one of the mounted instruments, proceed as follows:

1. System power is off.
2. Disconnect all cables from rear of the instrument to be removed.
3. Remove plastic trim strips at each side of the cabinet front see Figure 4-5. To remove the trim strips, use fingertips, large coin, or some other convenient wedge to pull one end out of cabinet channel in which it is mounted. Then carefully remove strip from the cabinet. Do not make any sharp bend in strip.
4. With both trim strips removed, all mounting screws are accessible. These are Pozidriv screws and should be removed with a Pozidriv screwdriver of the proper size. The unit can now be removed from the system.
5. When re-installing the unit in the cabinet, first put rack-mounting screws in the bottom holes of the rack-mounting brackets; then proceed upward with remaining screws. After attaching the new unit to rack, re-connect the system cables to the unit.

NOTE

See Figure 1-2 Standard System Cable Inter-connections to re-connect the instruments for proper operation.

6. Complete the installation procedure by replacing the plastic trim strips removed in step 3. To replace each strip, place one end into the guide channel and press along its entire length. When replacing the trim strip, be sure it is mounted firmly in the channel.



Figure 4-5. Plastic Trim Strip Installation

Section 5 REPLACEABLE PARTS

5-1. INTRODUCTION

This section contains information for ordering replaceable parts. Some of the unique replaceable system parts are listed in Table 5-1 *Unique System Replaceable Parts List*. For parts not listed in Table 5-1 refer to the individual Service Manuals for each instrument, and additional system hardware, such as the system cabinets.

5-2. ORDERING INFORMATION

To order a part, quote the Hewlett-Packard part number (with the check digit), indicate the quantity required, and address the order to nearest Hewlett-Packard Office. The check digit (CD) will ensure accurate and timely processing of your order.

To order a system part that is not listed in the table below or a part used in one of the standard or optional instruments, include the instrument model number, instrument serial number, description and function of the part, and the quantity required. Address the order to the nearest Hewlett-Packard Office.

NOTE

Within the USA, it is better to order directly from the HP Corporate Parts Center in Mountain View, California. Ask your nearest HP Office for information and forms for the "Direct Mail Order System".

Table 5-1. Unique System Replaceable Parts

Part Number	Description	QTY
Redundant Ground		
8150-2721	Wire 750mm	1
0362-0511	TML SCR TNG	2
2190-0011	WSHR LK .195ID10	1
2190-0012	WSHR LK .195ID10	1
2680-0107	SM1032 .750PNPD	1
2740-0003	Nut-Hex 10-B2	2
Slide Out Table (Work Surface)		
0515-0212	SMM3.5 6 PN PD	4
0515-0218	SMM3.5 6 FL PD	2
0535-0006	NUTM-DBLHX M4	10
0624-0029	SW S 8 .750RDSL	6
1390-0589	FSTNR Latch PAWL	2
1490-0868	Slide CHAS 1309LG	1
2190-0073	WSHR LK. .168ID 8	10
2680-0295	SM1032 .625FLP.D	4
3050-0066	WSHR FL .147ID 6	4
3050-0071	WHSR FL .169ID 8	26
03047-04304	PNL WS	1
03047-04306	PNL-Slide MNT	2
03047-04702	Support Rail MTG	2
03047-04704	RAIL INS SUP	2
03047-05001	WR S Retainer	1
03047-20101	Deck WS	1
03047-24701	Support WS	2
Cabinet		
5061-9674	Rack MIKIT 88.1H	3
5061-9677	Rack MIKIT 132.6H	2
5061-9678	Rack MTKIT 177.0H	1
12680-01002	PNL Blank 1.75	5
12681-01002	PNL Blank 3.5	4
12682-01002	PNL Blank 5.25	5
12683-01002	PNL Blank	3
12673B	Storage Drawer	2
40010A	Lifting Fixture	2