Agilent Medalist i3070 In-Circuit Test Systems

Site Preparation

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Agilent Technologies

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Site Preparation

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Legal Notices, Warranty, and Safety

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Legal Notices

This section provides important legal information about this product.

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www.agilent.com/see/contact_info

Any adjustment, maintenance, or repair of this product must be performed by qualified personnel. Contact your customer engineer through your local Agilent Technologies Service Center.

Safety Summary

The following general safety precautions must be observed during all phases of operation, service and repair of this product. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the product. Agilent Technologies, Inc. assumes no liability for the customer's failure to comply with these requirements.

- **General**
- **Before Applying Power**
- **Ground the Equipment**
- **Fuses**
- **Do Not Operate in an Explosive Atmosphere**
- **Do Not Remove Equipment Cover**
- **Do Not Operate Damaged Equipment**
- **Do Not Service or Adjust Alone**
- **Do Not Substitute Parts or Modify Equipment**
- **Ensure Rack Stability**
- **Radiated Immunity**
- **Insulation Rating for Wires Connected to Agilent Medalist ICT Systems**
- **Maintain the System as Recommended**
- **Warning, Caution, and Note**

General

For Safety Class 1 equipment (equipment provided with a protective earth terminal), an uninteruptable safety earth ground must be provided from the main power source to the product input wiring terminal or supplied power cable. The protective features of this product may be impaired if it is used in a manner not specified in the operation instructions.

Before Applying Power

Verify that the product is set to match the available line voltage, the correct fuses or circuit breakers are installed, and all safety precautions are taken. Note the system's external markings described under **Safety Symbols**.

Ground the Equipment

To minimize shock hazard, the system chassis and cover must be connected to an electrical protective earth ground. The system must be connected to the ac power mains through a grounded power cable, with the ground wire firmly connected to an electrical ground (safety ground) at the power outlet. Any interruption of the protective (grounding) conductor or disconnection of the protective earth terminal will cause a potential shock hazard that could result in personal injury.

Fuses

For continued protection against fire, only the fuses with the required rated current, voltage, and specified type (normal blow, time delay, etc.) should be used. See **Service Manuals** > **Component Locators** > **Fuse Locators** in the on-line help for the specifications for each fuse. Do not use repaired fuses or short-circuited fuse holders. To do so could cause a shock or fire hazard.

Do Not Operate in an Explosive Atmosphere

Do not operate the product in an explosive atmosphere or the presence of flammable gases or fumes.

Do Not Remove Equipment Cover

Operating personnel must not remove equipment covers or shields. Component replacement and internal adjustments must be made only by qualified service personnel. Under certain conditions, dangerous voltages may exist even with the equipment switched off. To avoid dangerous electrical shock, DO NOT perform procedures involving cover or shield removal.

Equipment that appears damaged or defective should be made inoperative and secured against unintended operation until it can be repaired by qualified service personnel.

Do Not Operate Damaged Equipment

Whenever it is possible that the safety protection features built into this product have been impaired, either through physical damage, excessive moisture, or any other reason, REMOVE POWER and do not use the product until safe operation can be verified by qualified service personnel. If necessary, request service and repair from your Agilent Sales and Service Office to ensure that safety features are maintained.

Do Not Service or Adjust Alone

Do not attempt internal service or adjustment of this equipment unless another person, capable of rendering first aid and resuscitation, is present.

Do Not Substitute Parts or Modify Equipment

Because of the danger of introducing additional hazards, do not install substitute parts or perform any unauthorized modification to the product. If necessary, request service and repair from your Agilent Sales and Service Office to ensure that safety features are maintained.

Ensure Rack Stability

To ensure stability of the test bay, place heavier instruments near the bottom of the rack.

Radiated Immunity

When subjected to high RFI fields (greater than 1 V/m), reduced performance may be experienced when making low-level analog measurements.

Insulation Rating for Wires Connected to Agilent Medalist ICT Systems

Use only external wiring with insulation rated for the maximum voltage (Vrms, Vpk or Vdc) and temperature to which the wire may be subjected in a fault condition.

Example: The system is connected to a source whose output is set for 50 Vrms. The source could be set for as high as 300 Vrms, intentionally or unintentionally. Therefore, the external wiring connected between this source and the system must be rated for 300 Vrms.

Maintain the System as Recommended

The recommended preventive maintenance for the system is documented in the on-line help. Preventive Maintenance should always include testing the Emergency Shut Down (EMO) Switch by pressing it and verifying that all ac and dc power to the testhead turns off.

Warning, Caution, and Note

WARNING

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

CAUTION

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

NOTE

The **NOTE** symbol contains important information.

Safety Symbols

This section shows the safety symbols used on the product and in the documentation.

- General Safety Symbols
- User Safety Symbols

General Safety Symbols

These symbols are used on labels on the product and in the documentation. They indicate that the user must refer to the manual for specific information to avoid personal injury or damage to the product.

Table 1 Safety Symbols

Symbol	Description
	Warning, risk of electric shock
	Warning, hot surface
	Caution, refer to accompanying documents

Table 1 Safety Symbols (continued)

Symbol	Description
	Alternating current
	Both direct and alternating current
	Three-phase alternating current
	Earth (ground) terminal
	Protective earth (ground) terminal
	Frame or chassis terminal

Table 1 Safety Symbols (continued)

Symbol	Description
	Terminal is at earth potential. Used for measurement and control circuits designed to be operated with one terminal at earth potential.
	Terminal for Neutral conductor on permanently installed equipment.
	Terminal for Line conductor on permanently installed equipment.
	Standby (supply). Units with this symbol are not completely disconnected from ac mains when this switch is off. To completely disconnect the unit from ac mains, either disconnect the power cord, or have a qualified electrician install an external switch.
	Laser product or laser subsystem. Do not defeat interlocks.

User Safety Symbols

These symbols are used on labels on various places on the testhead.

Table 2 User Safety Symbols

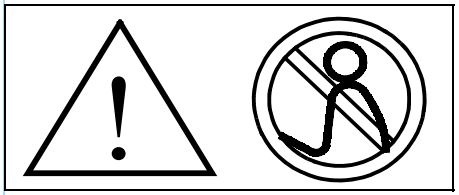
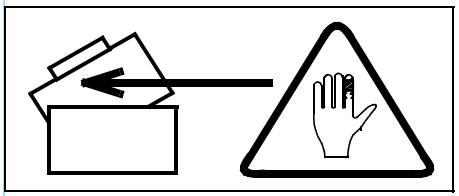
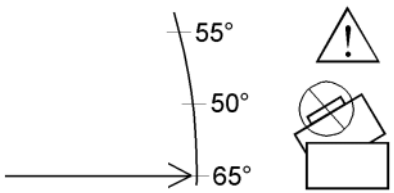
Symbol	Description
	**WARNING** — Do not operate the testhead if you can see this symbol. It means that hazards exist because the safety shroud is not installed. These hazards include pinched fingers from pulling down a test fixture and electrical shock if Agilent Performance Port is installed.
	**WARNING** — Keep your hands away from the indicated areas of the testhead to avoid pinched fingers when rotating the testhead.
	**WARNING** — Do not rotate the testhead past 65 degrees with a fixture installed, or the fixture could fall off the testhead, causing personal injury.

Table 2 User Safety Symbols (continued)

Symbol	Description
	**WARNING - High Leakage Current** — The safety ground in most installation is included in the AC cord. The system has a high leakage current therefore a safety ground must be connected to the same panel or location where the AC voltage is connected. The safety ground in most installation is included in the AC cord. A shock hazard can arise if the AC input and the safety ground are not grounded to the same point.
	**CAUTION - ESD** — Devices sensitive to electrostatic discharge may be present. Follow approved ESD-safe handling practices while working with this equipment.

Emergency Shutdown

Emergency Shutdown Switch

Figure 1 Emergency Shutdown Switch on a Medalist ICT System

- The Emergency Shutdown Switch, (or Emergency Off, EMO) is the red button located at the lower left corner on the front of the testhead. It turns off all ac and dc power to the testhead, and is equivalent to turning off the PDU on the rear of the pod.

  Press the Emergency Shutdown Switch if you ever need to power down the testhead and its associated equipment in an emergency situation.

- DO NOT use the Emergency Shutdown Switch as a substitute for correct power-down (unboot) procedures; i.e., executing the “testhead power off” command.
- To restore power after pressing the Emergency Shutdown Switch, switch the PDU off for 15 seconds and then on again.

1

Site Preparation Process

In this chapter...

- The Importance of Site Preparation, 1-2
- Responsibilities, 1-3
- The Site Preparation Process, 1-5
- Site Prep Checklist, 1-6

The Importance of Site Preparation

The Agilent Medalist family of in-circuit test (ICT) systems includes complex and sophisticated automatic test equipment. To ensure that your site is properly equipped for your new system, and to minimize the possibility of problems or delays in system installation, you must consider many things during site preparation. Before calling your local Agilent representative to install your Medalist ICT system, read and follow the recommendations provided in this manual.

This manual contains the following chapters:

- Chapter 1, **Site Preparation Process** (this chapter) discusses your responsibilities, lists Agilent's responsibilities, and provides a checklist to use as you proceed.
- Chapter 2, **Planning** discusses choosing a site for your system, designing your site layout, assigning people to do various preparation tasks, and scheduling your preparations.
- Chapter 3, **Structural Requirements** describes floor, access, and storage requirements.
- Chapter 4, **RF Attenuation Requirements** describes the additional RF attenuation required as part of the installation to meet the installed radiated emission limits for some countries.
- Chapter 5, **Environmental Requirements** describes air quality, temperature, humidity, and electromagnetic shielding requirements.
- Chapter 6, **Power Requirements** describes power requirements for the various parts of the system and mains power connections.
- Chapter 7, **Compressed Air and Vacuum Requirements** describes the compressed air and vacuum that the system requires.
- Chapter 8, **Communications Cabling Requirements** describes the Local Area Network requirements.
- Chapter 9, **Receiving and Moving Instructions** describes the uncrating, handling, and re-shipping process for a Medalist ICT system.

Responsibilities

Successful system preparation and installation requires planning and effort by both you and Agilent. Following are summaries of each party's responsibilities.

- Agilent's Responsibilities
- Customer's Responsibilities

Agilent's Responsibilities

As a part of the purchase of an Agilent board test system, Agilent will provide the following:

- **Site Preparation Suggestion** — To help you begin, an Agilent representative will visit you to help you understand what you will need to do to make your site ready for your system and answer any questions you may have. This is called the "Initial Site Preparation Visit" and the Agilent Authorized Service Representative will bill up to 2 hours to Agilent Technologies.
- **Electrical and Environmental Inspection** — After primary power has been installed at the site, an Agilent representative will inspect the lines to verify that your electrical power is suitable for the system. At the same time, the Agilent representative will inspect the site to verify that its environmental characteristics conform to the site preparation specifications. The representative will also answer any questions you may have. This is called the "Verifying Site Preparation Visit" and the Agilent Representative will bill up to 2 hours to Agilent.
- **Installation** — After all components of the system have been moved to the site, compressed air and vacuum have been installed, and primary power has been run to the system location, an Agilent representative will complete the system installation. The Service Representative will plug in the pre-installed power cord after testing the power.

  Installation includes removing the system from the pallet, unpacking the smaller boxes, connecting cabling, starting the system, customizing the system software, and performing a complete system verification. The representative will also answer any questions you may have. This is called the "Installation Visit" and the Agilent Service Representative will bill up to 4 hours to Agilent.
- **Warranty** — The Agilent board test systems include a one-year warranty that provides on-site hardware repair, software support and software updates.
- **Insurance** — The system is insured by Agilent until it is delivered to your loading dock.

Customer's Responsibilities

While you are primarily responsible for these activities, you can ask the Agilent representative for advice and information about services offered.

- **Insurance** — You must provide insurance coverage for your system from the time it is delivered to your facility.
- **Software Support Contract** — You are responsible for initiating and renewing support contracts for software, documentation updates, and telephone support. Software support and updates are included during the warranty period.
- **Site Preparation and Maintenance** — You must supply all labor and materials used in site construction and maintenance. You are also responsible for obtaining any building permits and licenses required by local laws and regulations.
- **Proper Use of the System** — You are responsible for ensuring that use of the system is consistent with local laws and regulations.
- **Uncrating** — You should remove the tri-wall box from the testhead, but not remove the system from the pallet. The Agilent representative will remove the testhead from the pallet. You may inventory the shipment using the enclosed packing list. You may leave the smaller boxes for the Agilent representative to unpack when the system is installed.

NOTE

It will be difficult to remove the tri-wall box in a room with less than 2.5 meter (8 foot) clearance.

- **Inspection** — You must inspect the system for physical damage. If you believe that your system was damaged in shipment, call your Agilent representative.
- **Moving** — Moving the equipment from the receiving dock to the installation site is the customers responsibility. The system should be moved, after the tri-wall box is removed, to an area safe from damage or misplaced boxes.
- **Wiring and Cabling** — Wiring primary power to the system is your responsibility, as is installing communications cabling to the system. The actual power connection to the system will be made after the Service Representative has removed the system from the pallet and moved it to the desired location.

The Site Preparation Process

This section describes the steps of the Agilent system site preparation process.

1 The Site Prep Visit

An Agilent representative will come to your site to discuss what you will need to do to make your site ready for your system. During this visit, the Agilent representative will review this manual and answer any questions you may have. This will help you get started preparing your site.

2 Site Planning

The site planning step is crucial. A little effort invested in understanding and planning your system will save much effort at installation time. Plan your system area using Chapter 2, **Planning** of this manual. Assign specialists to perform the various tasks. Make a "system plan drawing" that you and the Agilent representative can use to install your system. If you need help, call your Agilent representative. Schedule all site preparation activities.

3 Site Plan Implementation

Implement the plan. Use Chapter 3, **Structural Requirements** through Chapter 9, **Receiving and Moving Instructions** and the system plan drawing. Work with your specialists.

4 Site Verification Visit

The site verification visit allows the Agilent representative to review your preparations and answer any remaining questions. The Agilent representative will check your power to verify that it is suitable for the system. The Agilent representative will also check your compressed air and vacuum hookups.

5 Receiving the System

When the system arrives at your site, remove the tri-wall box from the testhead, but do not remove the system from the pallet. The Agilent representative will remove the testhead from the pallet. You may inventory the shipment using the enclosed packing list. You may leave the smaller boxes for the Agilent representative to unpack when the system is installed. You should move the system to the site where it will be installed, or a safe storage area.

Site Prep Checklist

Use this checklist to check off each task as you complete it.

Table 1-1 Site preparation checklist

Task	Checklist
Chapter 2, **Planning**	[ ] Location chosen? Specialists assigned? Site Coordinator: _____ System Administrator: _____ Structural Specialist: _____ EMC Specialist: _____ Environmental Specialist: _____ Electrical Specialist: _____ Vacuum Specialist: _____ Compressed Air Specialist: _____ Communications Specialist: _____ [ ] Schedule Created:
Chapter 3, **Structural Requirements**	[ ] Floor suitable? [ ] Room to move the big box? If not, do you have a place to unpack it? [ ] Storage sufficient?
Chapter 4, RF Attenuation Requirements	[ ] Required to meet EMC directives? [ ] Additional attenuation sufficient?

Table 1-1 Site preparation checklist (continued)

Task	Checklist
Chapter 5, **Environmental Requirements**	[ ] Air quality suitable? [ ] Ambient temperature suitable? [ ] Cooling sufficient? [ ] Humidity suitable? [ ] Electromagnetic environment suitable?
Chapter 6, **Power Requirements**	System Power What power option is your system? Opt. _____ [ ] AC mains power verified? [ ] Mains disconnect installed? [ ] Do you need to install power conditioning equipment? [ ] Do you need to install a new transformer? [ ] What system drop wire size is required? Wire Size _____ [ ] What system drop breaker size is required? Breaker Size _____ [ ] Power cable installed for mains? Connect Mains Power [ ] Power installed to system? Convenience Outlet Power [ ] Testhead strip printer? [ ] Testhead server?
Chapter 7, **Compressed Air and Vacuum Requirements**	[ ] Compressed air line installed? [ ] Vacuum plan done? [ ] How many solenoids needed? _____ [ ] Vacuum equipment installed?

Table 1-1 Site preparation checklist (continued)

Task	Checklist
Chapter 8, **Communications Cabling Requirements**	[ ] Local area network planned? [ ] LAN cabling installed?
NOTE The remaining items go beyond site preparation, but must be completed before installation	
Chapter 9, **Receiving and Moving Instructions**	[ ] Insurance coverage arranged for arrival? [ ] System inspected for physical damage? [ ] Shipment inventoried? [ ] Equipment moved to installation site? [ ] Testhead unpacked (tri-wall box removed, but not removed from the pallet). The Agilent service representative will unpack the smaller boxes and move the system as part of installation.

2

Planning

In this chapter...

- The System Plan Drawing, 2-2
- Assigning Specialists, 2-5

The System Plan Drawing

Many things need to be done before the system can be installed. If you make a system plan drawing, you can use it to plan all aspects of site preparation. A complete drawing should detail power availability, communications cabling, compressed air and vacuum lines, and system placement with respect to other equipment. It can also serve to verify physical access.

Planning Aids

Use **Figure 2-1** and **Figure 2-2** to lay out your system on the system plan drawing.

Before installing the system you should determine whether the operator will stand or sit and whether the operator will work from the right or left side of the testhead. These decisions will determine whether the monitor and keyboard should be on the right or left. If you want the monitor and keyboard to be in front of the testhead as shown, you should install them on the same side of the testhead as the operator. However, if you want the monitor and keyboard to be above the testhead, you should install them on the opposite side from the operator. It is important to make this decision correctly.

The figures show the systems with support bays. If your system does not have a support bay, modify your layout accordingly. See Chapter 3, **Structural Requirements** for the exact dimensions of individual testheads and support bays.

Always allow 1 meter (3 feet) of space behind the system so service personnel can access the hardware inside the testhead and support bay and operators can access the red PDU mains disconnect switch.

On your system plan, determine the location of the facility mains disconnect. It should be installed within 3 meters of the system, where it can be easily reached by the system operator without requiring the system to be moved to access the disconnect. See **Mains Disconnect** for more information.

Figure 2-1 Recommended layouts for UnMux systems

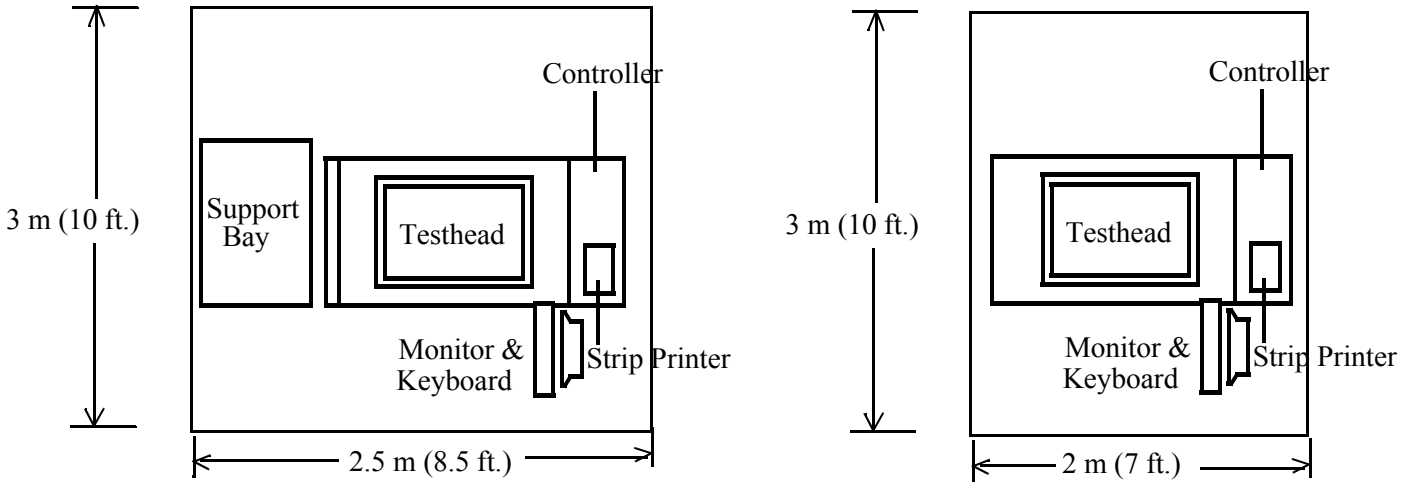
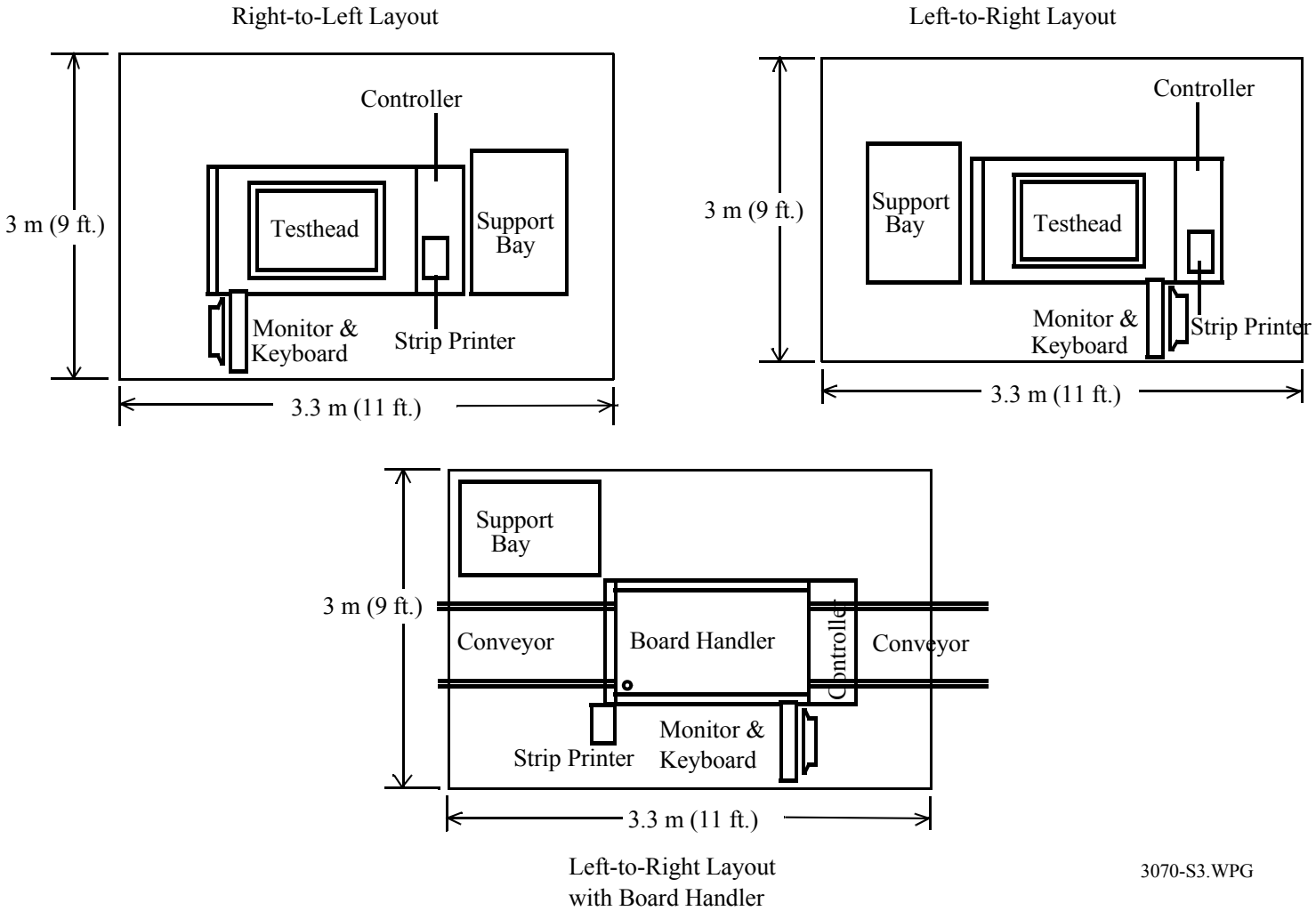


Figure 2-2 Recommended layouts for Mux systems



Assigning Specialists

The concept of "specialists" represents the recognition that, at most facilities, no one person will do all the preparatory work.

- **Site Coordinator**

  One person should manage the site preparation process. In this manual, that person will be called the site coordinator. The site coordinator will plan the installation, maintain the system plan drawing, and check off the site prep checklist. The site coordinator may assign all the other specialists.

- **System Administrator**

  Any successful system requires good system administration. One person should have responsibility of the system administration.

- **Structural Specialist**

  The structural specialist will verify that the floor is suitable for the system in terms of strength and anti-static properties. This specialist will examine the route from the receiving area to the system's proposed location and decide how best to move the system to that place. Storage will be required after the system is in operation, and the structural specialist will decide what storage is needed. Chapter 3, **Structural Requirements** is the primary reference for the structural specialist.

- **EMC Specialist**

  If the installation is in a location where radiated radio-frequency (RF) emissions are restricted for this equipment, such as member states of the European Union, Canada, USA or Australia, an EMC Specialist is needed to assure that the installation meets the required attenuation. This specialist will also be responsible to arrange any on-site testing that may be needed. Chapter 4, **RF Attenuation Requirements** is the primary reference for the EMC Specialist.

- **Environmental Specialist**

  The environmental specialist will verify that your site's environment is suitable for the system. Air quality, ambient temperature, cooling capacity, humidity, and electromagnetic interference are areas that the environmental specialist must address. Chapter 5, **Environmental Requirements** contains information for this specialist.

- **Electrical Specialist**

  The electrical specialist will plan and install the mains power for the system, support bay and the convenience outlets for the other system equipment. These items should be marked on the system plan drawing. Chapter 6, **Power Requirements** contains the electrical information.

- **Air and Vacuum Specialist**

  The compressed air and vacuum specialist will plan and install the compressed air supply for your system. Air lines should be marked on the system plan drawing. The specialist will also plan and

install your system's vacuum control system. Vacuum lines should be marked on the system plan drawing. The information pertaining to air and vacuum control is in Chapter 7, **Compressed Air and Vacuum Requirements**.

- **Communications Specialist**

  The communications specialist will plan the local area network and install the LAN cables to your system. LAN cables and telephone lines should be marked on the system plan drawing. Chapter 8, **Communications Cabling Requirements** contains information for this specialist.

3

Structural Requirements

In this chapter...

- Floor Requirements, 3-2
- Moving Access Requirements, 3-4
- Storage Space Requirements, 3-9

Floor Requirements

The system tester (testhead and support bay, if included) is the heaviest part of the system. The controller and test development stations present no special load-bearing concern. The following table lists the approximate weights of fully-loaded systems.

Table 3-1 System weights

System Type	Product	Weight
UnMux system	Testhead	490 kg (1080 lb)
	Testhead on pallet	590 kg (1295 lb)
	Maximum point floor loading (each leg)	275 kg (600 lb)
	Support bay	210 kg (460 lb)
	Support bay on pallet	280 kg (610 lb)
	Maximum point floor loading (each leg)	185 kg (400 lb)
Mux system: 4-module	Testhead	489 kg (1080 lb)
	Testhead on pallet	587 kg (1295 lb)
	Maximum Point Floor Loading (each leg)	275 kg (600 lb)
	Support Bay	209 kg (460 lb)
	Support Bay on pallet	277 kg (610 lb)
	Maximum Point Floor Loading (each leg)	185 kg (400 lb)
Mux system: 2-module	Testhead	429 kg (945 lb)
	Testhead on pallet	525 kg (1160 lb)
	Maximum floor point loading each leg	275 kg (600 lb)

Table 3-1 System weights (continued)

System Type	Product	Weight
Mux system: 1-module	Testhead	340 kg (750 lb)
	Testhead on pallet	477 kg (1050 lb)
Mux system: 34595A or 44904A off pallet	Instrument rack	182 kg (400 lb)

Anti-Static Surface

Static electricity is destructive to your production process and to your board test system. Careless handling and poor planning can cost you yield and system reliability.

This is not an exhaustive description of anti-static precautions but a reminder as you plan your system area:

- Anti-static flooring. Plan to use an anti-static floor covering or mats.
- Grounding straps. Plan for foot straps in conjunction with anti-static flooring and wrist straps for system operators. The testhead has external connectors for wrist straps.
- Anti-static DUT storage. Plan for anti-static tote bins for your devices-under-test and storage for anti-static bags.

Moving Access Requirements

The system is shipped from the factory on one large crate (on a pallet) and several smaller crates or boxes. The support bay, if included, is shipped on a separate pallet. The large testhead crate may be too large to move to your system's destination. If you cannot move it to its final destination, you will need to unpack the testhead and roll it on its casters (see Chapter 9, **Receiving and Moving Instructions**). Other smaller boxes, containing the controller and test development hardware, should not present access problems.

This section contains:

- **Dimensions of the Crated System**
- **Dimensions of the Uncrated System**
- **Access Requirements**

Dimensions of the Crated System

The dimensions of the system are listed in the following tables.

Table 3-2 Dimensions of the crated system

System Type	Dimension	Measurement
Testhead (without support bay)	Length	2095 mm (82.5 in)
	Width	1080 mm (42.5 in)
	Height	1600 mm (63 in)
Support bay	Length	1120 mm (44 in)
	Width	860 mm (34 in)
	Height	1600 mm (63 in)

Dimensions of the Uncrated System

When removed from the crates, the testhead and support bay can be rolled on their casters. This may make them easier to move.

The following tables list the dimensions of the uncrated testhead and support bay. Chapter 9, **Receiving and Moving Instructions** describes moving the tester on its casters.

CAUTION

When moving a four-module system that has already been installed, you must move the testhead and support bay together, subject to the restraint imposed by the cabling between them. Be very careful not to damage system cables during moving!

Table 3-3 Dimensions of the uncrated system

System Type	Dimension	Measurement
Testhead (with Support Bay)	Length	2100 mm (83 in)
	Width	1000 mm (40 in)
	Height	1250 mm (49 in)
Testhead (without Support Bay)	Length	1860 mm (73 in)
	Width	820 mm (32 in)
	Height	900 mm (36 in)

Table 3-4 Dimensions of the uncrated system

System Type	Dimension	Measurement
UnMux System Testhead (with Support Bay)	Length	2100 mm (83 in)
	Width	1000 mm (40 in)
	Height	1250 mm (49 in)
UnMux System Testhead (without Support Bay)	Length	1860 mm (73 in)
	Width	820 mm (32 in)
	Height	900 mm (36 in)
Mux System 1-Module Testhead (without Support Bay)	Length	1150 mm (45 in) or 1238 mm (49 in)
	Width	870 mm (34 in)
	Height	900 mm (36 in)
Mux System 2- or 4-Module Testhead (without Support Bay)	Length	1680 mm (66 in)
	Width	790 mm (31 in)
	Height	902 mm (36 in)
Mux System 2- or 4-Module Testhead (without Support Bay)	Length	1765 mm (70 in)
	Width	794 mm (31 in)
	Height	907 mm (36 in)

Access Requirements

- Ramps

  When moved on its casters, the testhead will negotiate ramps with inclines up to 8% before the leveling feet drag on the floor.

- Hallways and door

  As a rough guide, if you have room to move a 4-foot by 8-foot (1.25 m x 2.5 m) sheet of plywood, parallel to the floor, through hallways and doors, you will be able to move the crated testhead. If you cannot move the testhead crate all the way, remove it from its crate in a receiving area and push it on its casters to the destination.

Storage Space Requirements

Setting up your system requires planning for storage. Obviously, you will need a handling and staging area for the boards you will be testing. Not so obviously, there are other things that you will need to store, such as the test fixtures.

Backup media storage

The Medalist ICT system is reliable, but no system is safe against data loss due to system disk or computer failure. Run system backups at regular intervals. Before the system is installed, plan for backup media storage in the system area. To be safer still, always place a recent backup in a different area or building.

Fixture storage

You will have a significant investment in your system fixtures. They are precision machines and must be kept clean and undamaged. Plan safe and dust-free storage near the testhead for your fixtures.

You will receive a Pin Verification Fixture with the first testhead at your site to use to test the fixture interface pins of your systems. Be sure to keep the Pin Verification Fixture in your fixture storage area.

Note the following with respect to fixture storage:

- Don’t store fixtures on painted shelves. The bottom of the fixture will scrape small particles of paint off the shelf which will fall into and contaminate the testhead’s interface pins.
- If possible, cover your fixtures when not in use, especially when the air contains a high level of particulates.
- Don’t store fixtures on paper-, cardboard-, or carpet-covered surfaces. These materials could contain corrosive substances that would react with the fixture’s gold-plated personality pins.
- Don’t store fixtures on wooden shelves. Wood splinters can be carried on the bottom of the fixture to the testhead, thereby contaminating testhead interface pins.
- Don’t stack fixtures on top of one another.

4

RF Attenuation Requirements

In this chapter...

- Introduction, 4-2
- Calculating Method, 4-4

Introduction

This chapter describes the installation requirements and possible solutions where additional RF attenuation measures are required as part of the installation. The limits for the radiated RF emissions are set by various standards such as CISPR 11, an international standard, ICES-001 for Canada, EN 61326 for the EU and the Radio communications (Electromagnetic Compatibility) Standard 2001 for Australia.

The **Target Site Attenuation**, meaning the required attenuation provided by the site for the installation, is 10 dB for UnMux systems and 15 dB for Mux systems. Some sites are permitted radiated RF emissions higher than allowed for individual products. For example, in the EU a local PTT agency may provide for a **Site Allowance**. If a **Site Allowance** is permitted, subtract the **Site Allowance** from the **Target Site Attenuation** and this becomes the **Required Site Attenuation**.

NOTE

When the Medalist ICT system is testing a device under test (DUT) the RF emission levels may increase because the DUT will also be radiating RF energy.

The **Available Site Attenuation** of a specific installation can be calculated in the section **Calculating Method**. Consider the location of existing walls as well as installing additional walls when considering the possible locations for the installation. After choosing the installation location and determining any additional needed site preparations, compute the **Available Site Attenuation** for this installation.

NOTE

The **Available Site Attenuation** for this installation must be greater than or equal to the **Required Site Attenuation**.

In the event that the **Available Site Attenuation** for this installation is not greater than or equal to the **Required Site Attenuation**, consider the use of a Shielded Cabin with specified shielding performance. Other shielding methods such as conductive wallpaper, metallized walls, etc. may be used. These methods may require an approval test. This test, called "in situ" testing, may need to be performed by an authorized agency or an organization designated by an authorized agency.

Table 4-1 shows the results of using the **Calculating Method** with no site allowance.

$D = 30\log^{-1}((R - 10 * n) / 20);$
where $R = (10 * n)$, else $D = 30$ m

Table 4-1 Determining available site attenuation without a site allowance

R; Required Site Attenuation (dB)	n; Number of Concrete Walls	Remaining Attenuation Requirement (dB)	D; Distance from Equipment to Real Estate Border (m)
UnMux systems			
10	0	10	95
10	1	0	30
Mux systems			
15	0	15	170
15	1	5	55
15	2	0	30

Calculating Method

To obtain the necessary attenuation at the installation site you can increase the distance between the equipment and the property boundary or you can add walls or other attenuating structures:

- Required Site Attenuation (R)

  R = Target Site Attenuation - Site Allowance

  Where:
  - Target Site Attenuation = 10 dB or 15dB
  - Site Allowance for your site = _____

- The distance from the equipment to the property boundary (D) can be calculated as follows:

  D = 30 or $30*\log^{-1}((R - n * W)/20)$ whichever is greater.

  Where:
  - R = Required Site Attenuation
  - n = number of concrete walls between the equipment to and the property boundary.
  - W= the attenuation of the wall (a concrete wall **without** openings has an attenuation of 10dB)

- Additional attenuation (X) due to a D greater than 30 meters.

  ```
  X = 20log(D/30)
  ```

  Where:
  - D is the distance from the equipment to the property boundary.

- Total attenuation (A) is calculated as follows:

  ```
  A = X + n * W
  ```

  Where:
  - X = Additional Attenuation
  - n = number of concrete walls between the equipment to and the property boundary.
  - W= the attenuation of the wall (a concrete wall **without** openings has an attenuation of 10dB)

Figure 4-1 Obtaining the available Site Attenuation

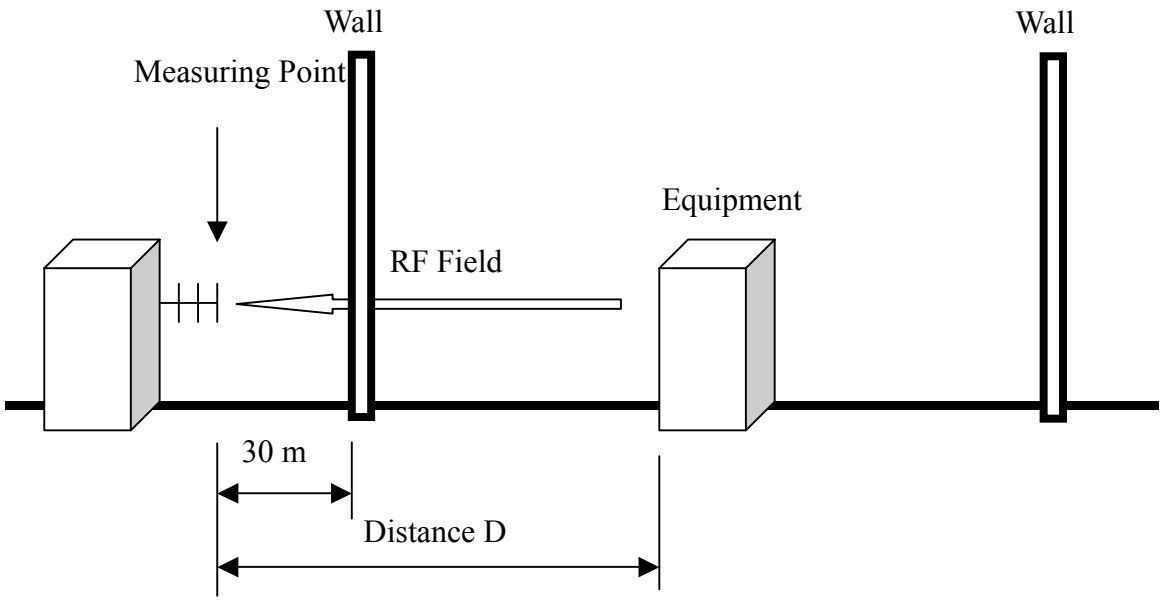


Table 4-2 Determining available site attenuation with a site allowance or a different wall attenuation

Value
R; Required Site Attenuation (dB)
n; Number of Walls
W; Attenuation per wall
R - n *W ; Remaining Attenuation Requirement (dB)
D; Distance from Equipment to Real Estate Border (m)

5

Environmental Requirements

In this chapter...

- Air Quality Requirements, 5-2
- Air Temperature Requirements, 5-3
- Humidity Requirements, 5-5

Air Quality Requirements

As a rule, good air quality is as important for the reliability of your Medalist ICT system as it is for your production process. Three types of airborne contaminants are discussed below. The presence of any of these contaminants at the site will contribute to system degradation, resulting in lower reliability and higher operating costs.

Corrosive Contaminants

Corrosion is a complex form of material deterioration or destruction by chemical or electrochemical reaction. The presence of corrosive contaminants (gases) in the atmosphere is very common in industrial environments. If ignored, corrosion can eventually degrade system performance by its effects on high impedance circuits and low impedance interfaces. It can also deteriorate most plastics including software storage media. The effects of corrosive contaminants are usually accelerated at high humidities or high temperatures.

Corrosives generally cannot be filtered out of the air by normal filtration methods, and the techniques that must be used for their removal are complex and costly. If the source of corrosive contaminants cannot be eliminated, the system should be installed in an enclosed environment with a fresh air supply at positive pressure.

Particulate Contaminants

Particulate contaminants (hard particles) consist of smoke, dust, hair, lint, fibers and miscellaneous organic and inorganic materials. The presence of these contaminants in the air can cause system degradation, especially where disk drives, test fixtures, and low impedance interfaces are concerned. Particulate contaminants can be filtered from the air, and appropriate filters should be included with any air conditioning installation. Also consider installing "No Smoking" signs in the area. Tobacco smoke is a well-known factor in fixture contact contamination. It causes false failures leading to unnecessary DUT repairs and higher production costs.

Viscid Contaminants

Viscid contaminants are oily or sticky airborne substances that can be deposited on the system’s electronic and mechanical parts. Besides contributing directly to system degradation, viscid contaminants collect and hold particulate contaminants and make cleaning very difficult. Viscid contaminants can be removed from the air by filtration, but the elimination of their source, if possible, is preferable.

Air Temperature Requirements

This section provides the temperature and cooling requirements for the system. **Table 5-1** summarizes the requirements. For details, see:

- **Air Temperature Specifications**
- **Cooling Requirements**

Table 5-1 Temperature and humidity ranges for operation and storage

	Operating Temperature (measured at tester-to-fixture interface)	Operating Humidity at 40°C	Storage Temperature
Testhead	5°C to 40°C (41°F to 104°F)	5% to 80% non-condensing	-40°C to 70°C (-40°F to 158°F)
Support Bay	5°C to 40°C (41°F to 104°F)	5% to 80% non-condensing	-40°C to 70°C (-40°F to 158°F)
Controller	5°C to 40°C (41°F to 104°F)	15% to 80% non-condensing	-40°C to 70°C (-40°F to 158°F)

Air Temperature Specifications

The Medalist ICT system is designed to operate uninterrupted in an area where the air temperature is stable and in the range from 0°C to 40°C (32°F to 104°F), as measured at the tester-to-fixture interface.

The system has a built-in temperature sensor inside the testhead, located on the ASRU card. This sensor constantly monitors the temperature of the air that has been drawn through the testhead after it cools the system components. If the temperature sensor finds that the air temperature inside the testhead has changed ±5°C (±9°F) since the last time the system ran AutoAdjust All, it will run AutoAdjust All again.

Therefore, to ensure uninterrupted use, it is important that the ambient room temperature remain reasonably stable.

NOTE

The air temperature inside the system is not considered stable until the system has been powered for at least 30 minutes.

If the sensor finds that the air temperature inside the system is too high, the system will shut down; typically, the over-temperature shutdown point is 55°C (131°F).

See **Cooling Requirements** for information on air conditioning requirements.

Cooling Requirements

Design the site cooling capability using the heat dissipation estimates in **Table 5-2**. The numbers are for testheads with fully loaded modules and fully loaded support bays.

Table 5-2 System heat dissipation

Number of Modules	Dissipation
1 Module	10500 BTU (3.1 kW)
2 Modules	19700 BTU (5.8 kW)
3 Modules	28500 BTU (8.4 kW)
4 Modules	3700 BTU (10.9 kW)

Humidity Requirements

The system is designed to operate in the range from 5% to 80% relative humidity (non-condensing).

If the system is subjected to condensation, as if moved from a cold loading dock into a warm environment, allow at least 24 hours for the system to recover before powering up.

6

Power Requirements

In this chapter...

- Customer Responsibilities, 6-2
- About the PDU, 6-3
- Power Requirements, 6-5
- Is PDU Re-wiring Necessary?, 6-12
- PDU Wiring Diagrams, 6-13

Customer Responsibilities

It is the customer's responsibility to (a) prepare the site with adequate ac power for the system, and (b) connect the system to the ac power source. These are not Agilent's responsibilities.

CAUTION

After connecting power to the system, **do not** power up the system. An Agilent service representative will verify the power and complete the system installation and verification.

1. sRead **About the PDU** on page 6-3. You must know where the system's PDU is located to prepare your site.
2. Read **Power Requirements** on page 6-5. In most cases this section will describe all you need to do to prepare your site.
3. If you are connecting the system to a different power configuration than it is wired for, read **Is PDU Re-wiring Necessary?** on page 6-12.

About the PDU

The testhead product number and serial number are located on the rear of the testhead cradle. **Figure 6-1** and **Figure 6-2** show rear views of the systems.

The PDU (power distribution unit) is the device in the system to which you will connect ac power.

The PDU is wired differently for different power configurations. The voltage of the PDU is marked on the front panel of the PDU. If you install a system in a location in which the actual power does not match the power configuration of the PDU, you may need to rewire the outlet connections in the PDU (see **Is PDU Re-wiring Necessary?** on page 6-12).

Figure 6-1 Rear views of the UnMux system

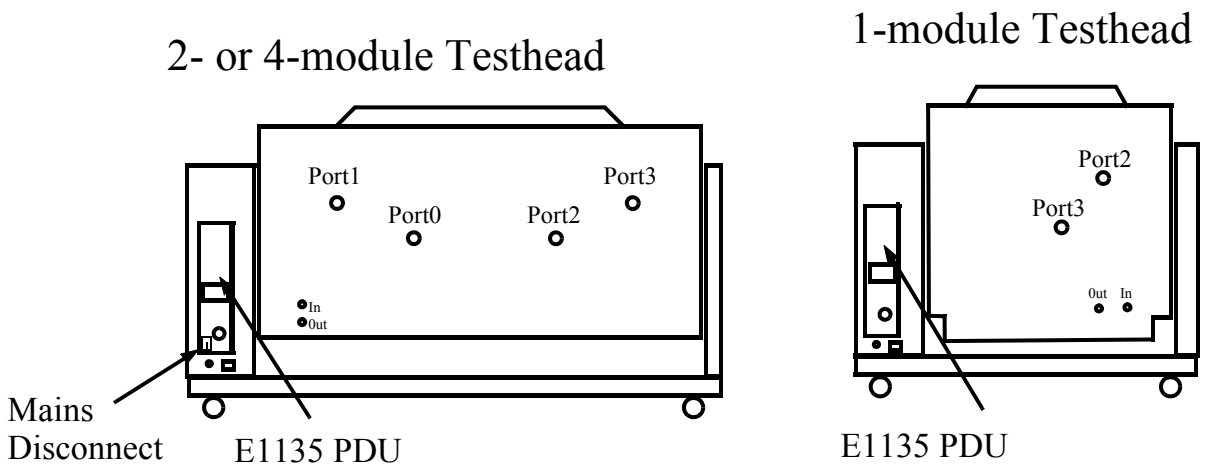
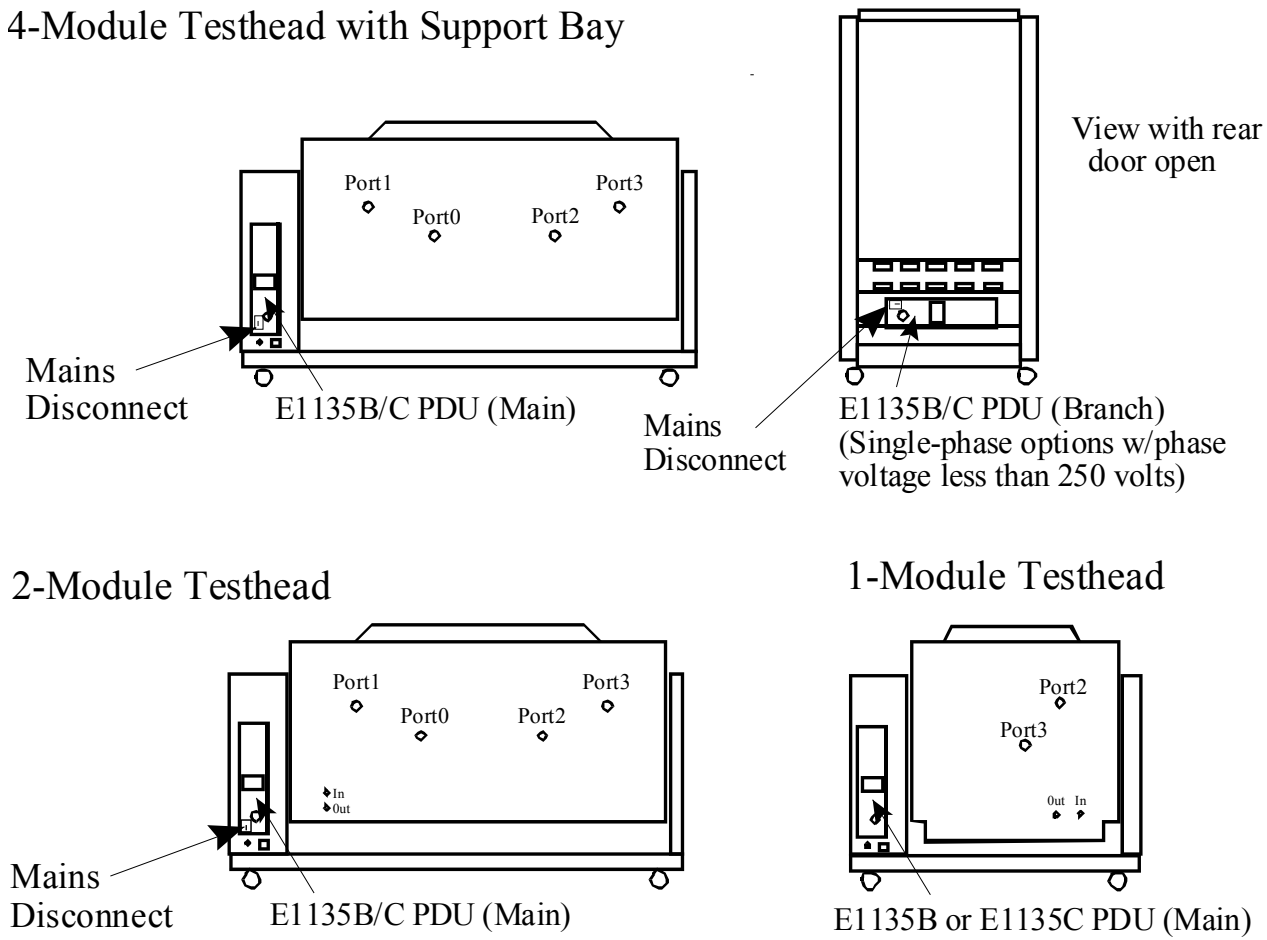


Figure 6-2 Rear views of the Mux system



Power Requirements

This section contains:

- Mains Disconnect, 6-5
- Power Drop, 6-7
- Basic Power Quality Survey, 6-9
- Connecting Power to the PDU, 6-9

Mains Disconnect

A mains disconnect — providing over-current and short-circuit protection — must be provided for the system. It may be a fused disconnect or a circuit breaker (see Figure 6-3 on page 6-6).

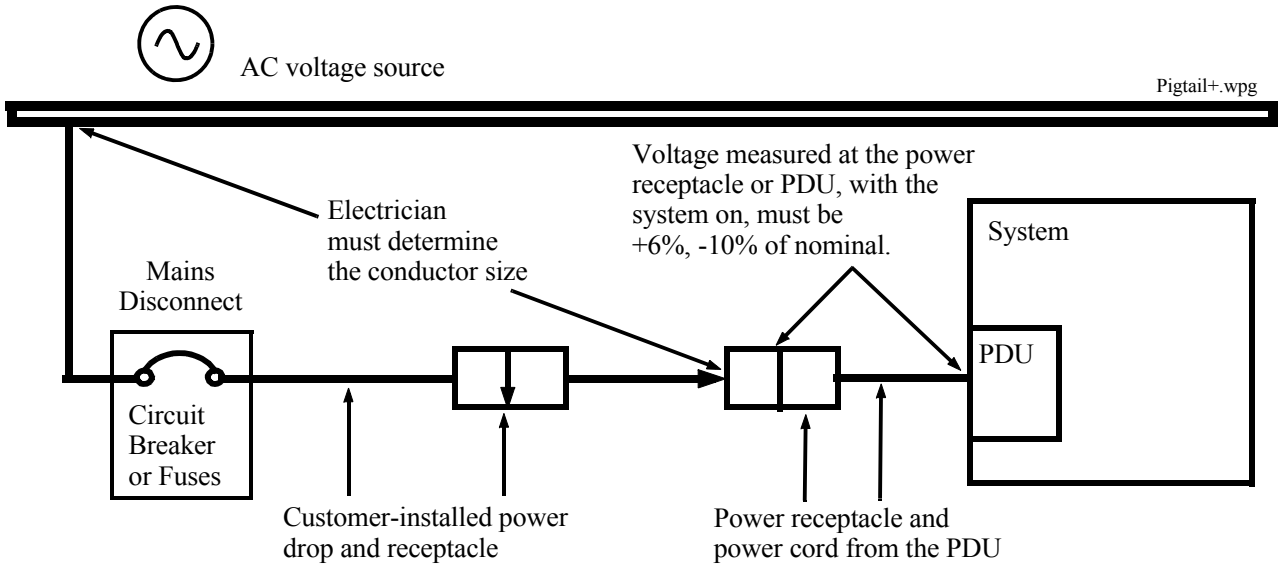
If a fused disconnect is used, it must:

- Be rated for 30 amps in each phase.
- Open all line conductors and neutral conductors where local code applies, but not the protective earth conductor.
- Be marked "System Mains Disconnect" or the equivalent in your local language.
- Be marked with a "|" for the "On" position or "O" for the "Off" position.
- Be capable of being locked in the "Off" position, but not in the "On" position.
- Be installed within 3 meters of the system, where it can be easily reached by the system operator without requiring the system to be moved to access the disconnect.

If a circuit breaker is used, it must meet all of the above requirements plus:

- Be rated for a minimum of 10,000 amps interrupting capacity (AIC) if used on a 200–240 volt circuit, or 14,000 AIC if used on a higher voltage circuit.

Figure 6-3 Wiring diagram



Power Drop

- A dedicated power drop must be provided for the testhead due to its high current requirements.
- Copper wire must be used for the power drop.
- An electrician must determine the wire size for the power drop. The wires must be sized to ensure that the voltage at the system does not drop below 90 percent of nominal (see **Calculating the Minimum Voltage** on page 6-7).
- Convenience outlets should be provided near the system for external equipment such as programming stations, extra equipment bays, and automation equipment. Locate the outlets within one meter (three feet) of the rear of the system. See **Planning** to plan the location of convenience outlets. Convenience outlets should supply current protection at 15A or 20A depending on local code requirements at 100–120 volts or current protected at 10A depending on the local code requirements at 200–240 volts.

Calculating the Minimum Voltage

The voltage at the testhead must be at least 90 percent of nominal. To calculate the minimum rms voltage multiply the rms voltage by 0.9. To calculate the minimum peak voltage, multiply the rms voltage by 0.9 and then 1.414. For example:

208 volts rms * 0.9 * 1.414 = 265 volts peak

Sizing the Input Wires and Circuit Breakers

Table 6-1 shows the full-load amps (FLA) for each system type.

Table 6-1 Power requirements

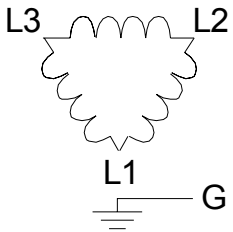
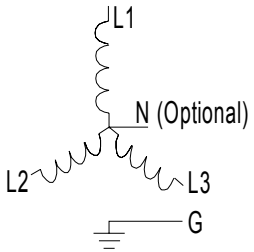
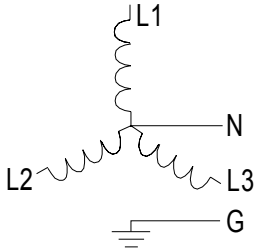
	PDU Power Option	Frequency	Voltage line-to-neut / line-to-line	Full-Load Amps (FLA) for:		
				1-module system	2-module system	4-module system
200–240V 3-Phase Delta 	**3PD**	50/60 hertz	200	13	18	24
			220	13	18	24
			230	13	18	24
			240	13	18	24

Table 6-1 Power requirements

	PDU Power Option	Frequency	Voltage line-to-neut / line-to-line	Full-Load Amps (FLA) for:		
				1-module system	2-module system	4-module system
208–220V 3-Phase Wyel 	**3PY**	50/60 hertz	120 / 208 127 / 220	13 13	18 18	24 24
380–415V 3-Phase Wye w/Neutral 	**3PN**	50/60 hertz	220 / 380 230 / 400 240 / 415	9 9 9	10 10 10	16 16 16

Basic Power Quality Survey

Power quality can affect system performance differently. The following procedure is intended as a guideline and may not be the total solution. Failure to meet these guidelines should serve as an indicator that a power quality consultant might be needed to conduct a more in-depth power quality survey.

1. With the system operating, measure harmonic distortion at the system-input connection. THD should be less than 5% and less than 3% for any single harmonic.
2. With the system operating, measure the ground-to-neutral voltage at the system-input connection; the voltage should be less than 4vp-p.
3. Turn the system power off and measure the line voltage at the system-input connection; record this reading. Turn the system on and begin operating mode. Measure the line voltage at the system-input connection again. The difference between the two measurements should be less than 2%.

Other problematic power qualities include momentary voltage interruptions, ground noise, and voltage spikes. A survey of these problems and others may require the services of a power quality expert with specialized equipment.

Connecting Power to the PDU

One of two different power cords and plugs are attached to the PDU depending on the country where the system will be installed:

- **International** — E1135-61610: uses 5x6 mm^2 5-conductor cord with a IEC 60309 plug and mating receptacle (see **Figure 6-4** on page 6-10).
- **North America** — E1135-61611: uses #10 AWG 5-conductor cord with NEMA plug that mates with NEMA L21-30 (see **Figure 6-5** on page 6-11). The female receptacle is available locally.

Figure 6-4 International 3-phase systems

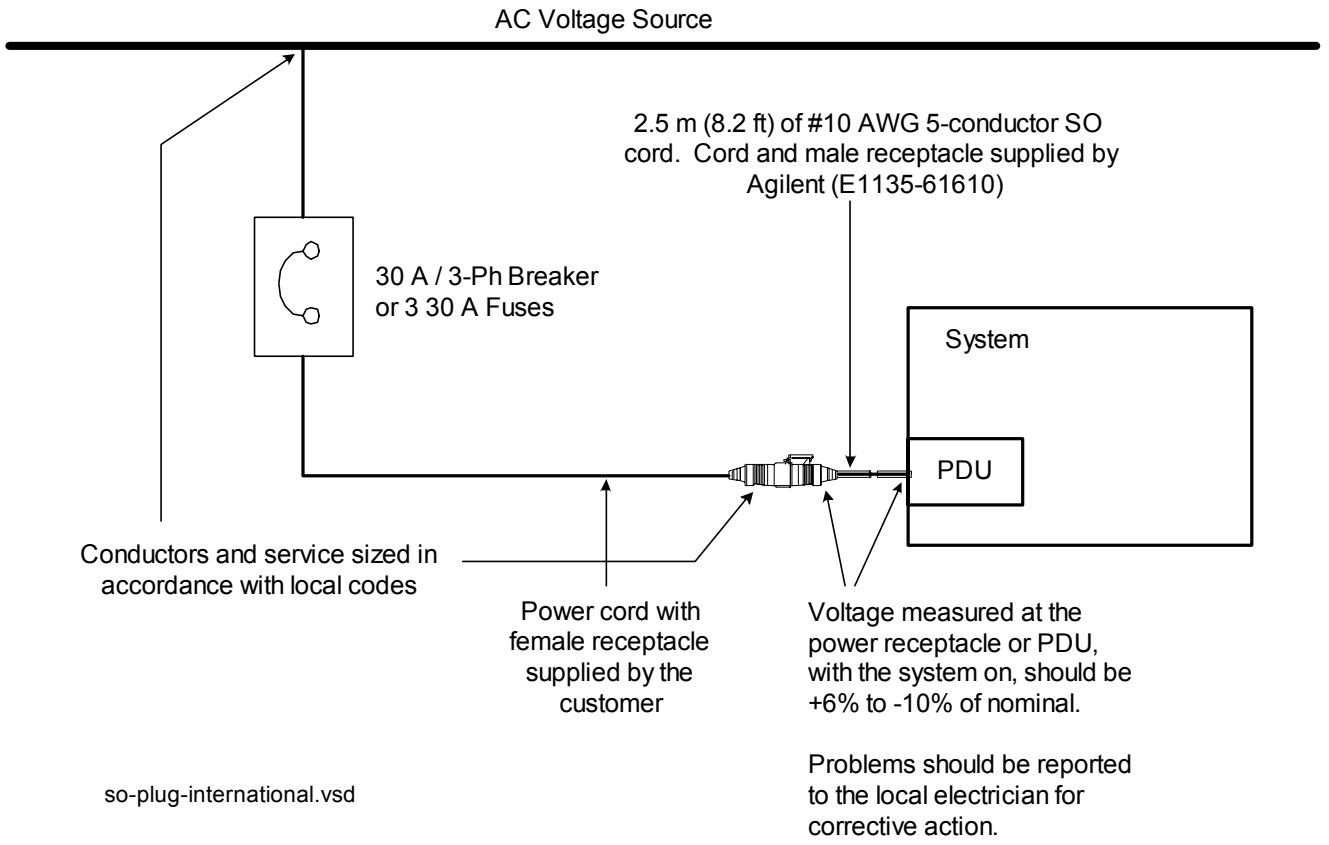
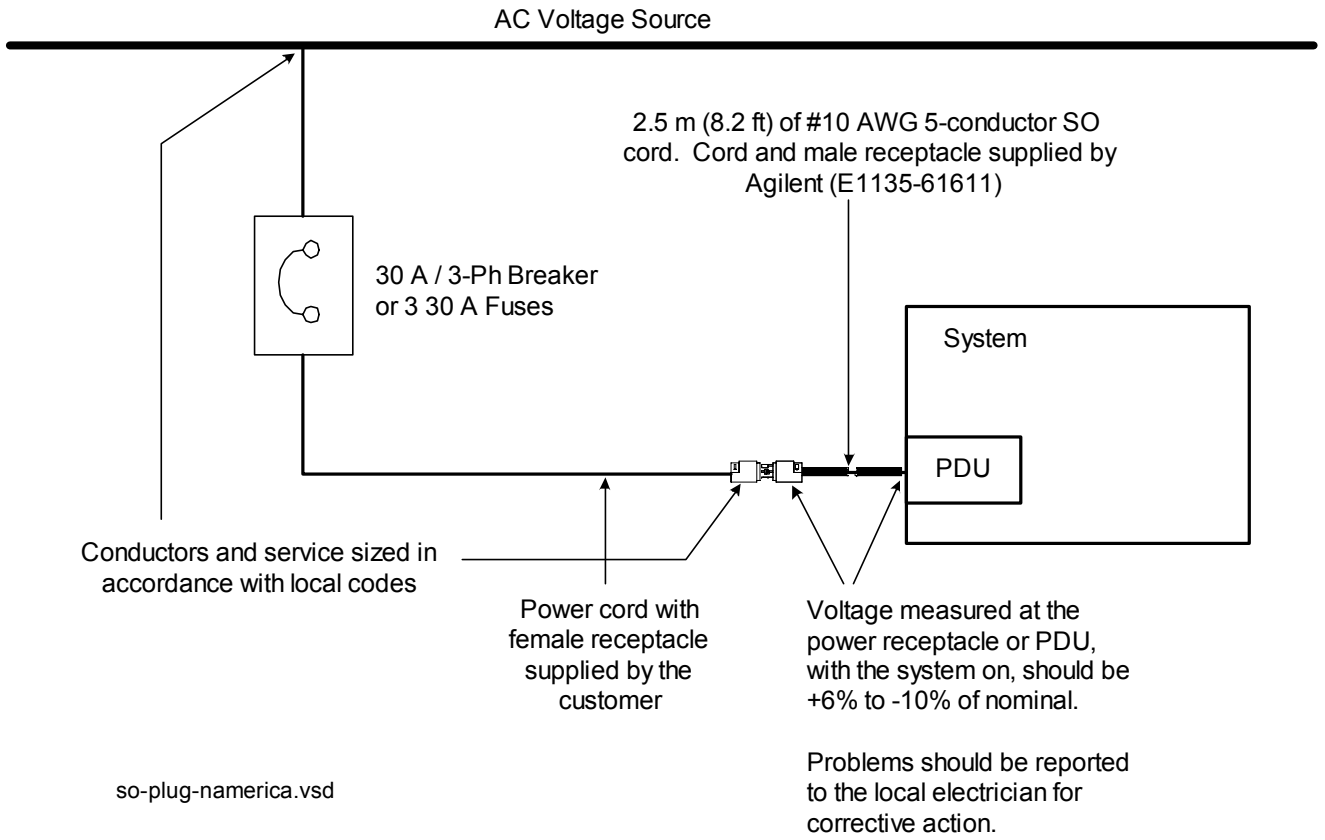


Figure 6-5 North American 3-phase systems



Is PDU Re-wiring Necessary?

Re-wiring the PDU is necessary only if you are connecting it to a different power configuration than it was wired for, not merely a different voltage. Delta (3PD) and Wye (3PY) are equivalent configurations.

See **Table 6-2** and the examples below.

Suppose your system's PDU is wired for 220 volts wye (option 3PY) and you want to connect it to:

1 208 volts wye (option 3PY)

   No re-wiring is necessary; this is merely a voltage change and all internal components will handle 200 to 240 volts.

2 220 volts delta (option 3PD)

   No re-wiring is necessary; options 3PY and 3PD have the same internal wiring.

3 220 volts wye with neutral (opt 3PN)

   Re-wiring is necessary because the internal circuits are wired phase-to-phase and the internal components would experience over-voltage. Whenever you switch from a non-neutral to a neutral configuration, or vice versa, you must re-wire the PDU.

Table 6-2 Power Options / Configurations

Power Options	Configuration Description[1]
3PD	200–240 volts 3-phase Delta (50/60Hz) Includes 200V, 220V, 230V, 240V
3PY	208–220 volts 3-phase Wye (50/60Hz) Includes 208V, 220V
3PN	380–415 volts 3-phase Wye with Neutral (50/60Hz) Includes 380V, 400V, 415V

1. Regardless of the power option, the internal system components always operate at 200–240 volts.

If you determine that re-wiring the PDU is necessary, see the **PDU Wiring Diagrams** on page 6-13.

PDU Wiring Diagrams

Table 6-3 PDU wiring diagram

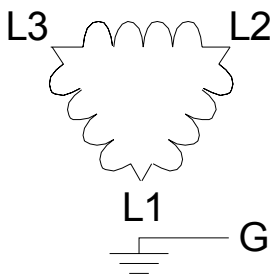
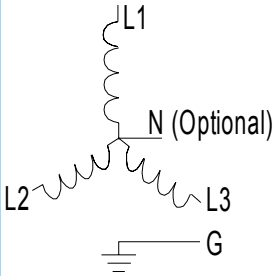
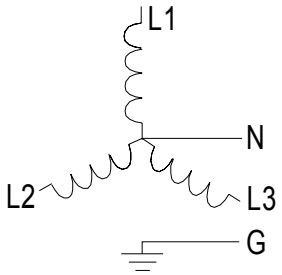
	PDU Power Option	Voltage line-to-neut / line-to-line	Testhead Outlet Locations		
			1-module	2-module	4-module
Outlet Locations			**Figure 6-6** on page 6-15	**Figure 6-11** on page 6-19	**Figure 6-16** on page 6-23
200–240V 3-phase Delta 	**3PD**	200 220 230 240	**Figure 6-7** on page 6-16	**Figure 6-12** on page 6-20	UnMux systems: **Figure 6-17** on page 6-24 Mux systems: **Figure 6-21** on page 6-28, **Figure 6-23** on page 6-30
208–220V 3-Phase Wye 	**3PY**	120 / 208 127 / 220	**Figure 6-7** on page 6-16	**Figure 6-12** on page 6-20	UnMux systems: **Figure 6-17** on page 6-24 Mux systems: **Figure 6-21** on page 6-28, **Figure 6-23** on page 6-30

Table 6-3 PDU wiring diagram

	PDU Power Option	Voltage line-to-neut / line-to-line	Testhead Outlet Locations		
			1-module	2-module	4-module
380–415V 3-Phase Wye w/Neutral 	**3PN**	220 / 380 230 / 400 240 / 415	**Figure 6-9** on page 6-18	**Figure 6-14** on page 6-22	UnMux systems: **Figure 6-19** on page 6-26 Mux systems: **Figure 6-24** on page 6-31 **Figure 6-26** on page 6-33

One-Module System AC Outlets

Figure 6-6 One-Module System

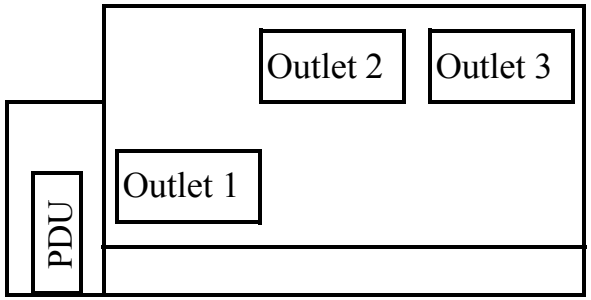


Figure 6-7 One-Module System Options 3PY, 3PD

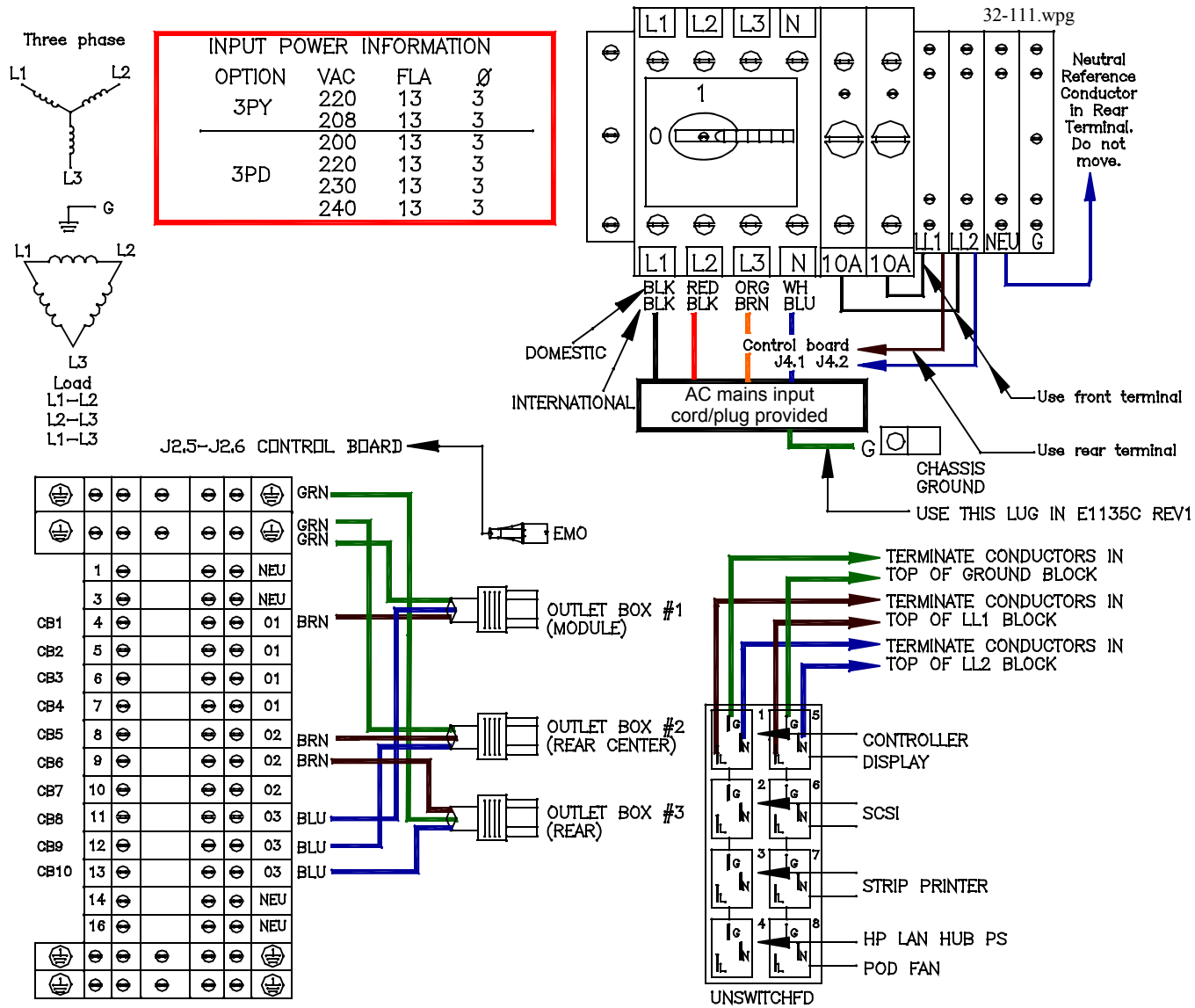


Figure 6-8 One-Module System Options 3PY, 3PD

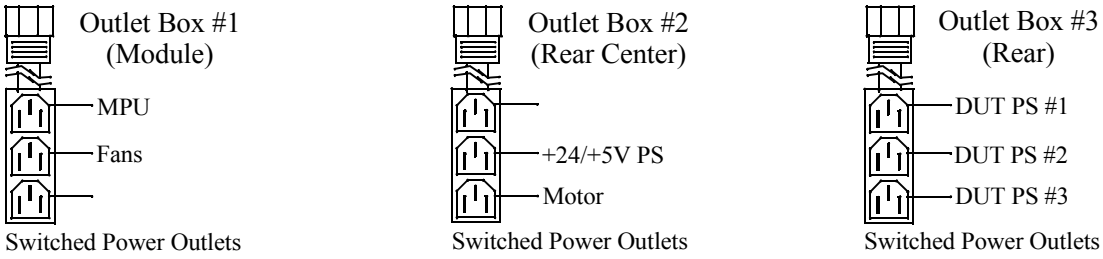


Figure 6-9 One-Module System Option 3PN

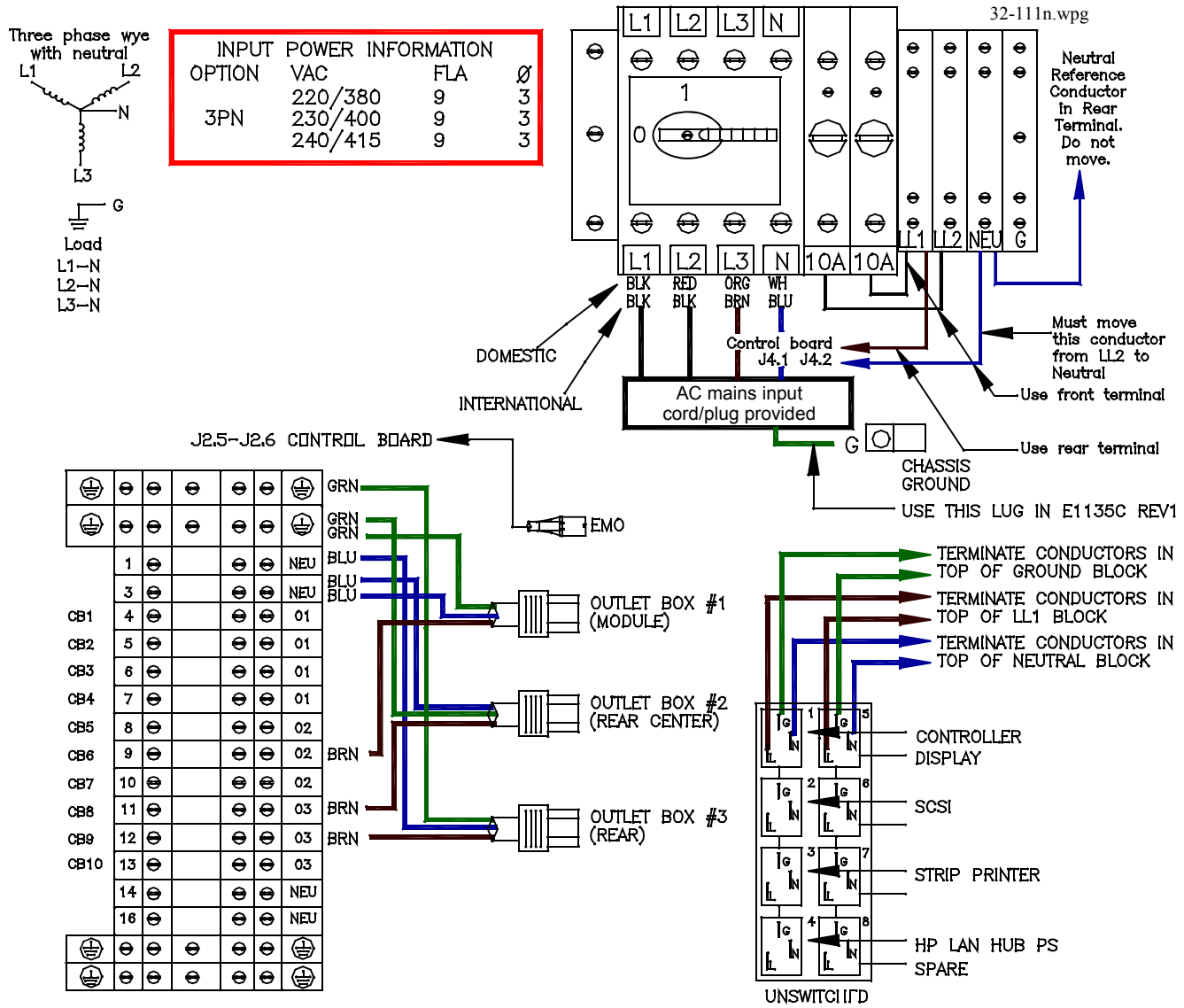
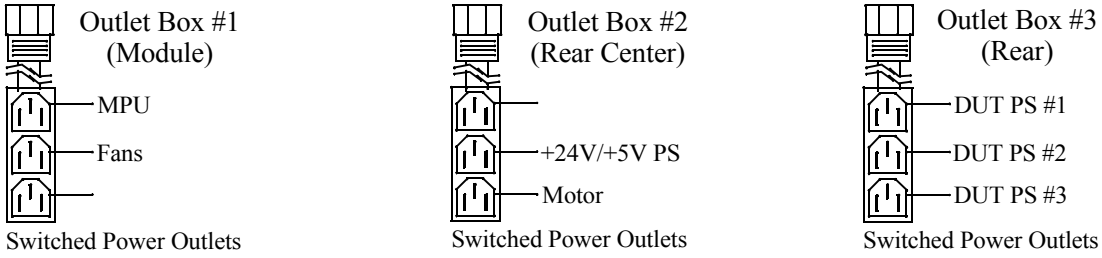


Figure 6-10 One-Module System Option 3PN



Two-Module System AC Outlets

Figure 6-11 Two-Module System

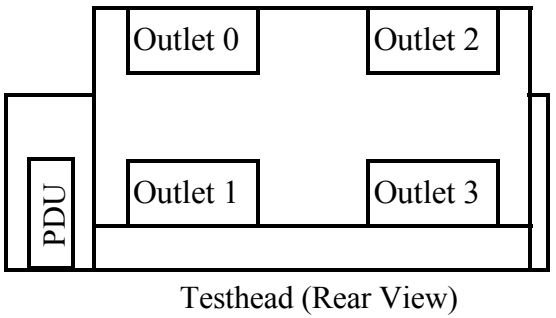


Figure 6-12 Two-Module System Options 3PY, 3PD

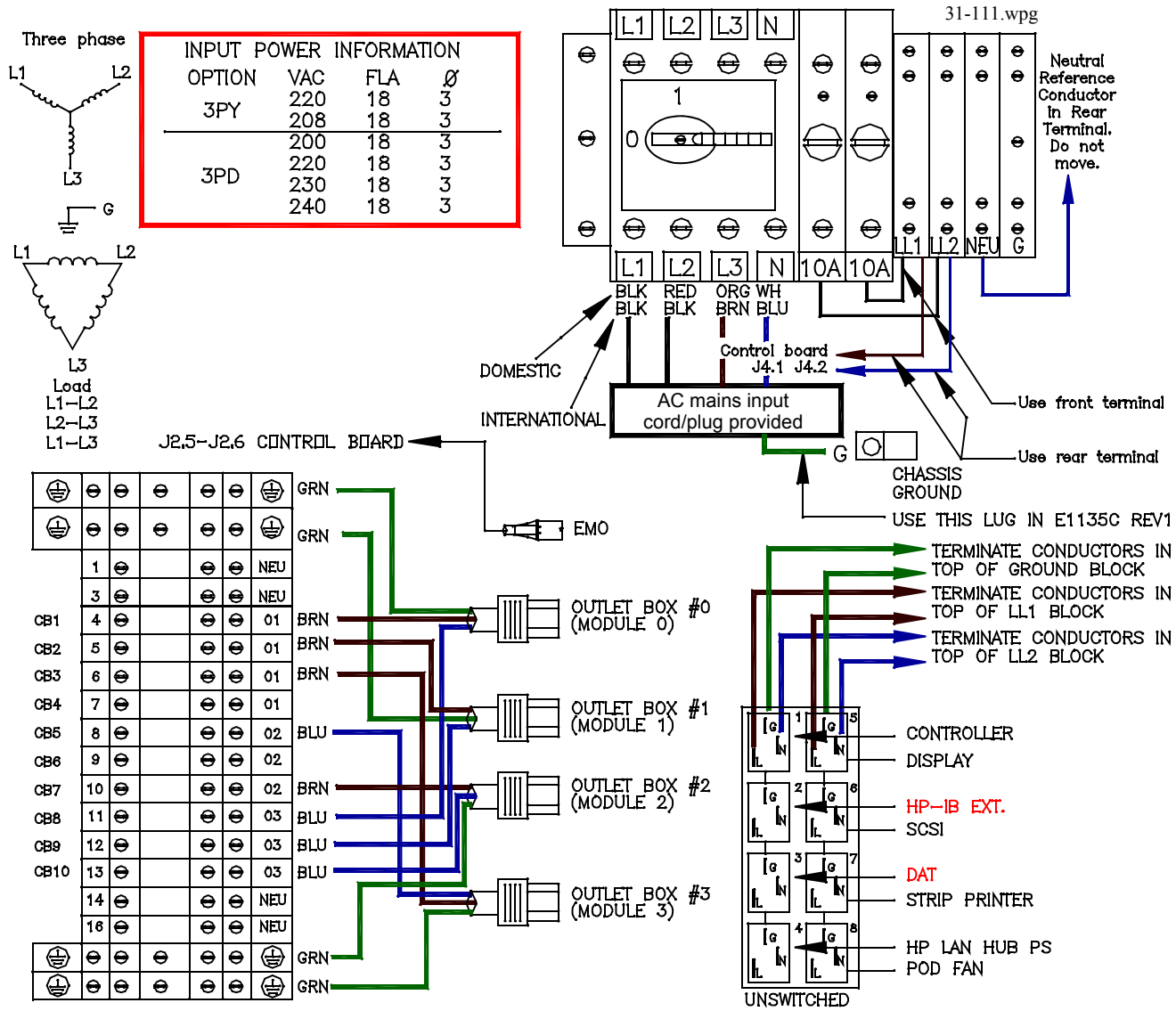


Figure 6-13 Two-Module System Options 3PY, 3PD

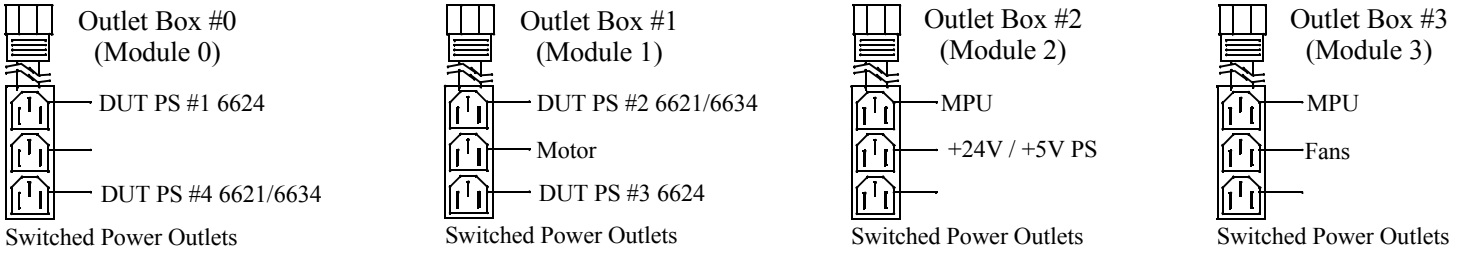


Figure 6-14 Two-Module System Option 3PN

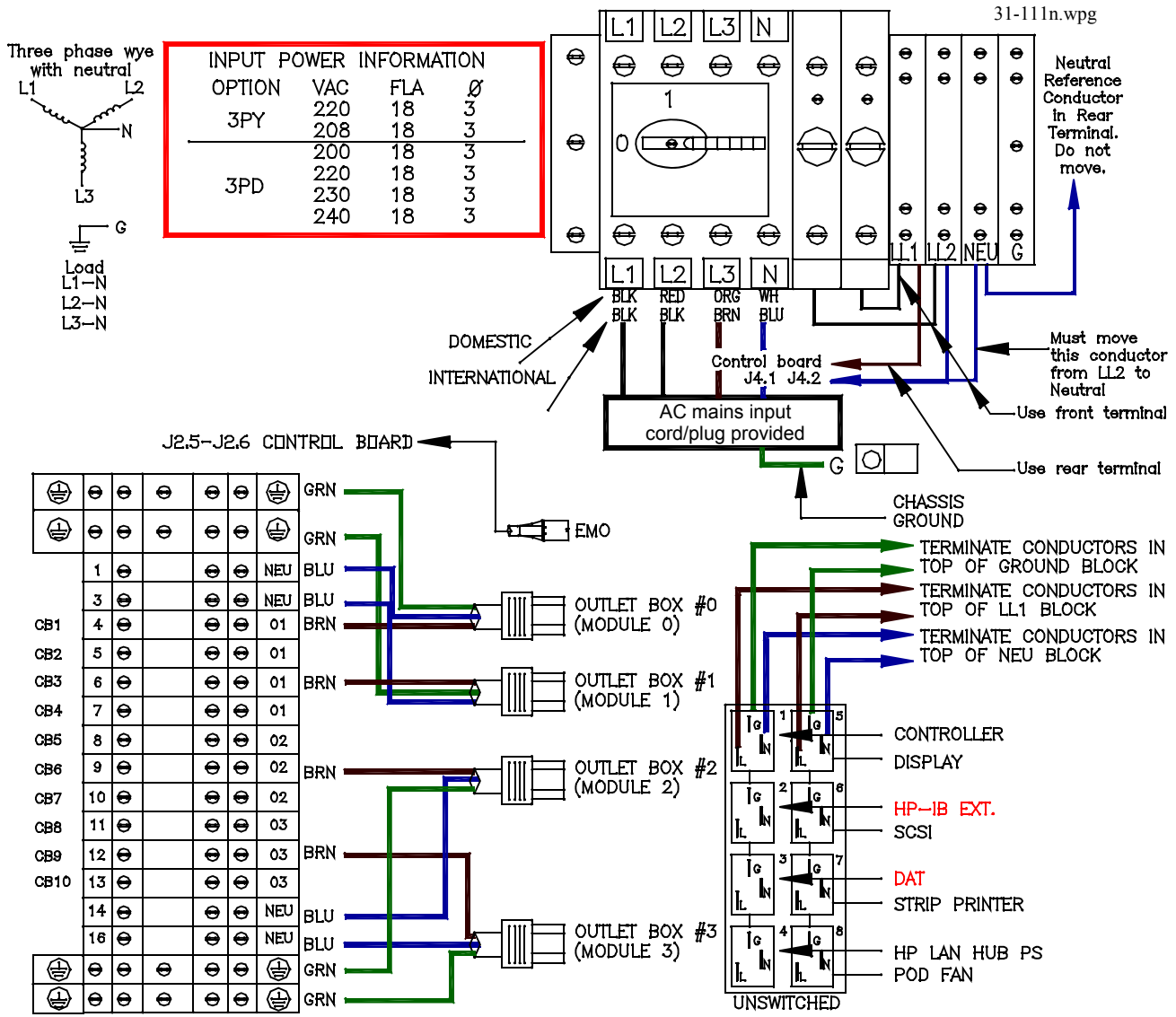
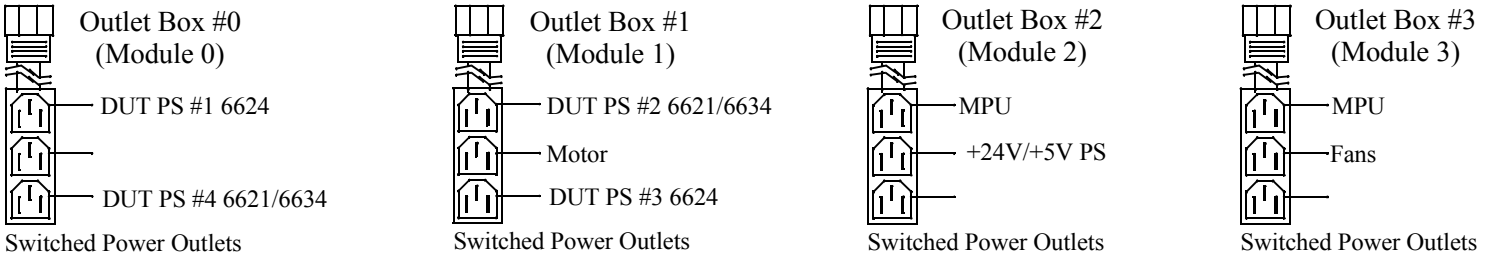
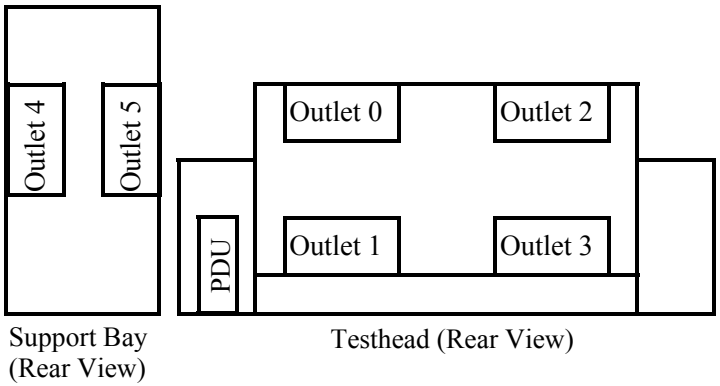


Figure 6-15 Two-Module System Option 3PN



Four-Module System AC Outlets

Figure 6-16 Four-Module system



- **Unmux Systems: Four-Module System Options 3PY, 3PD**
- **Unmux Systems: Four-Module System Option 3PN**
- **Mux Systems: Four-Module System Options 3PY, 3PD**
- **Mux Systems: Options 3PY, 3PD (Support Bay)**
- **Mux Systems: Four-Module System Option 3PN**
- **Mux Systems: Option 3PN (Support Bay)**

Figure 6-17 UnMux Systems: Four-Module System Options 3PY, 3PD

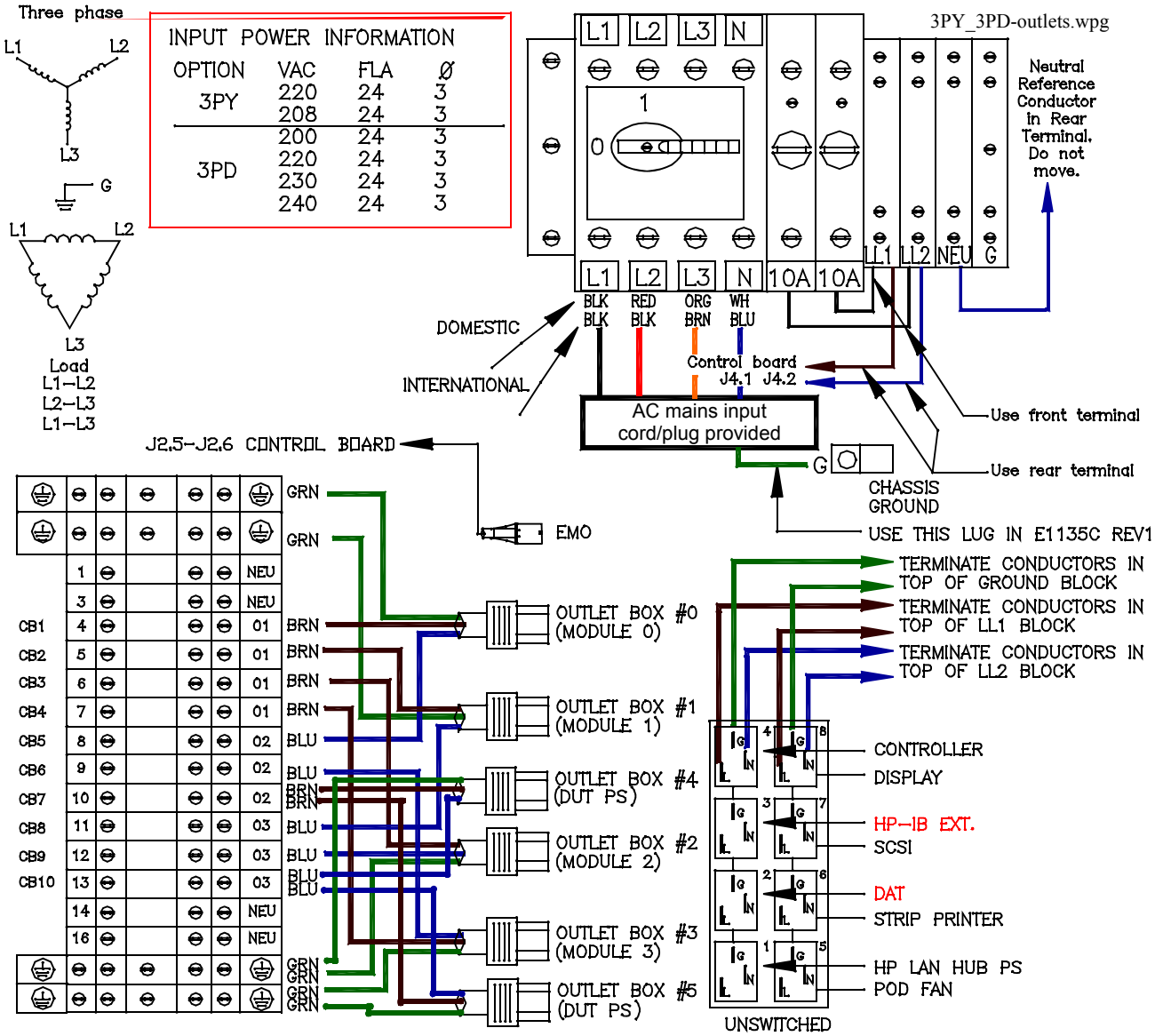


Figure 6-18 UnMux Systems: Four-Module System Options 3PY, 3PD

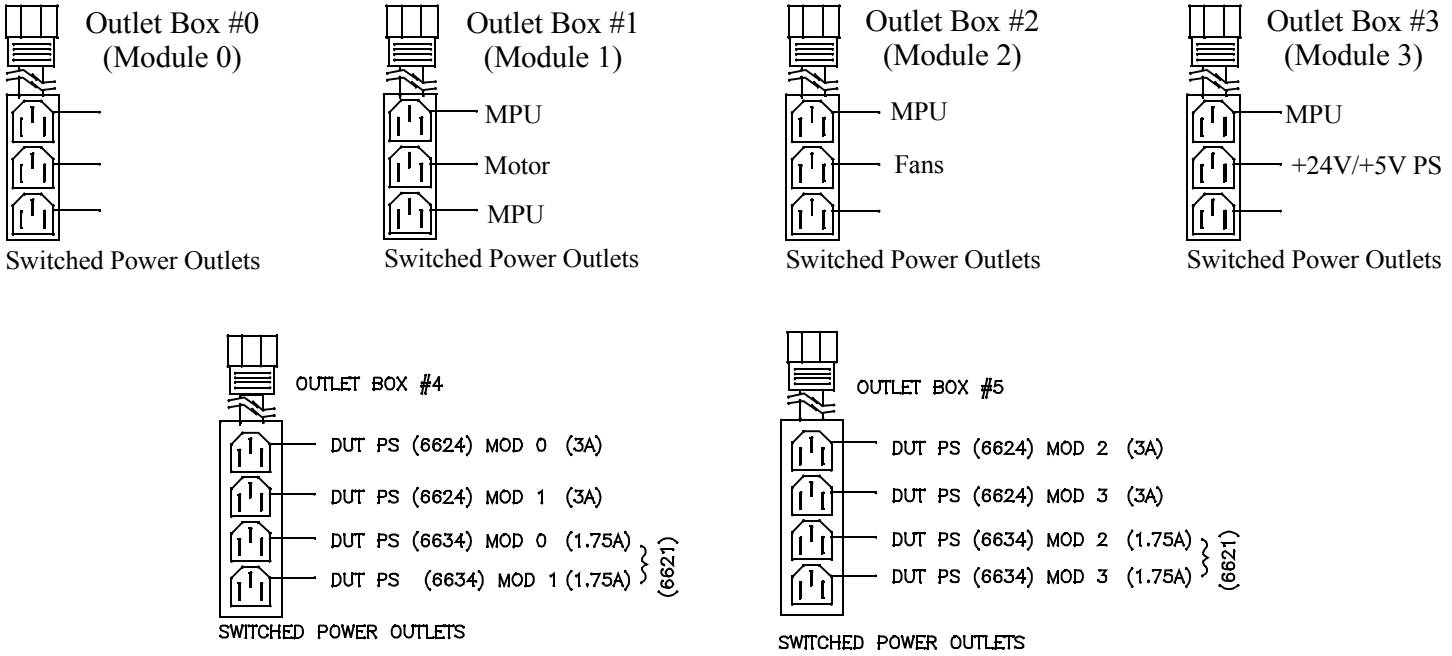


Figure 6-19 UnMux Systems: Four-Module System Option 3PN

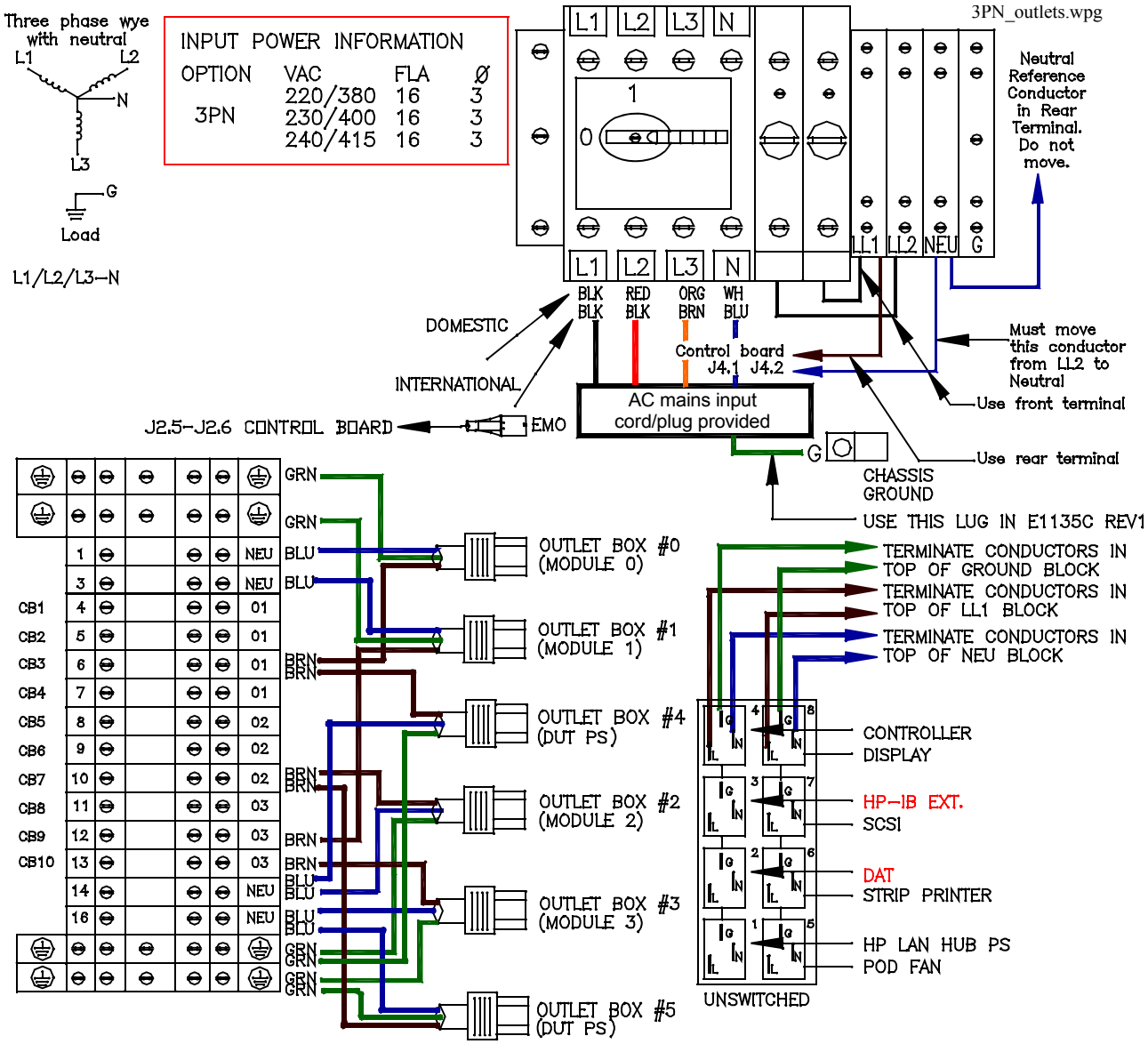


Figure 6-20 UnMux Systems: Four-Module System Option 3PN

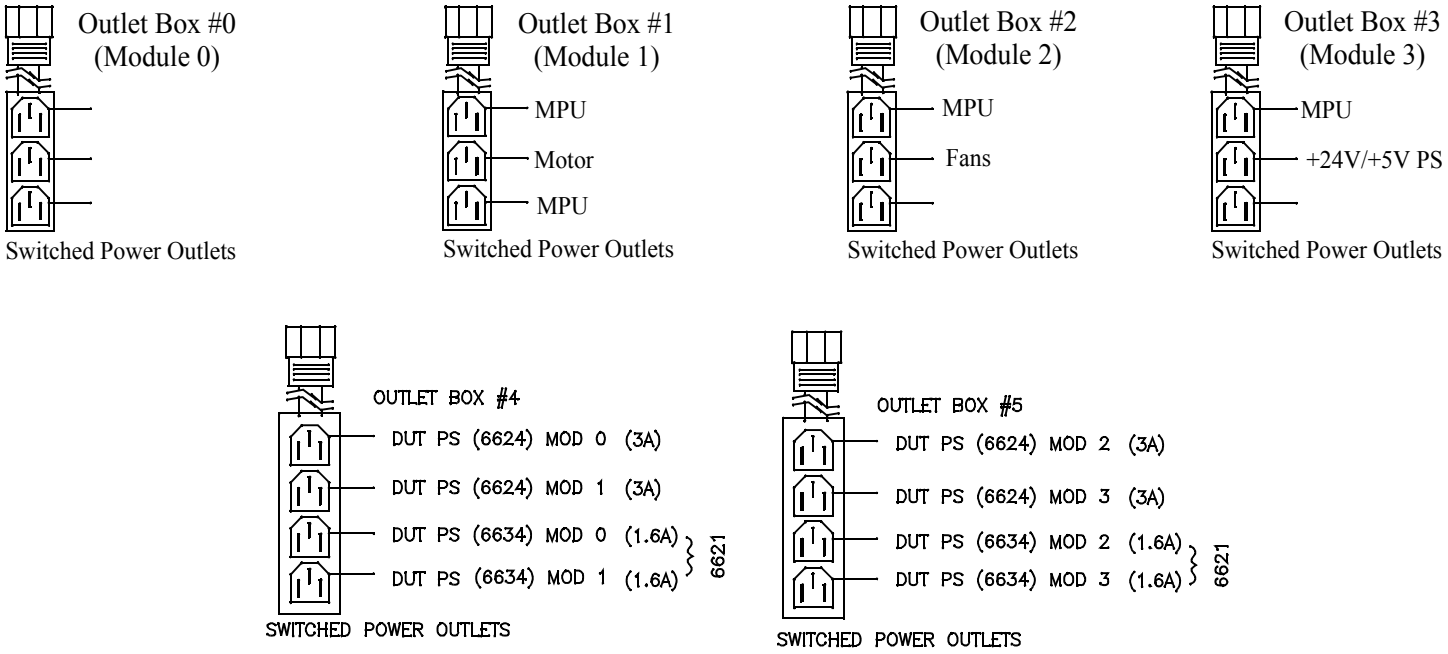


Figure 6-21 Mux Systems: Four-Module System Options 3PY, 3PD

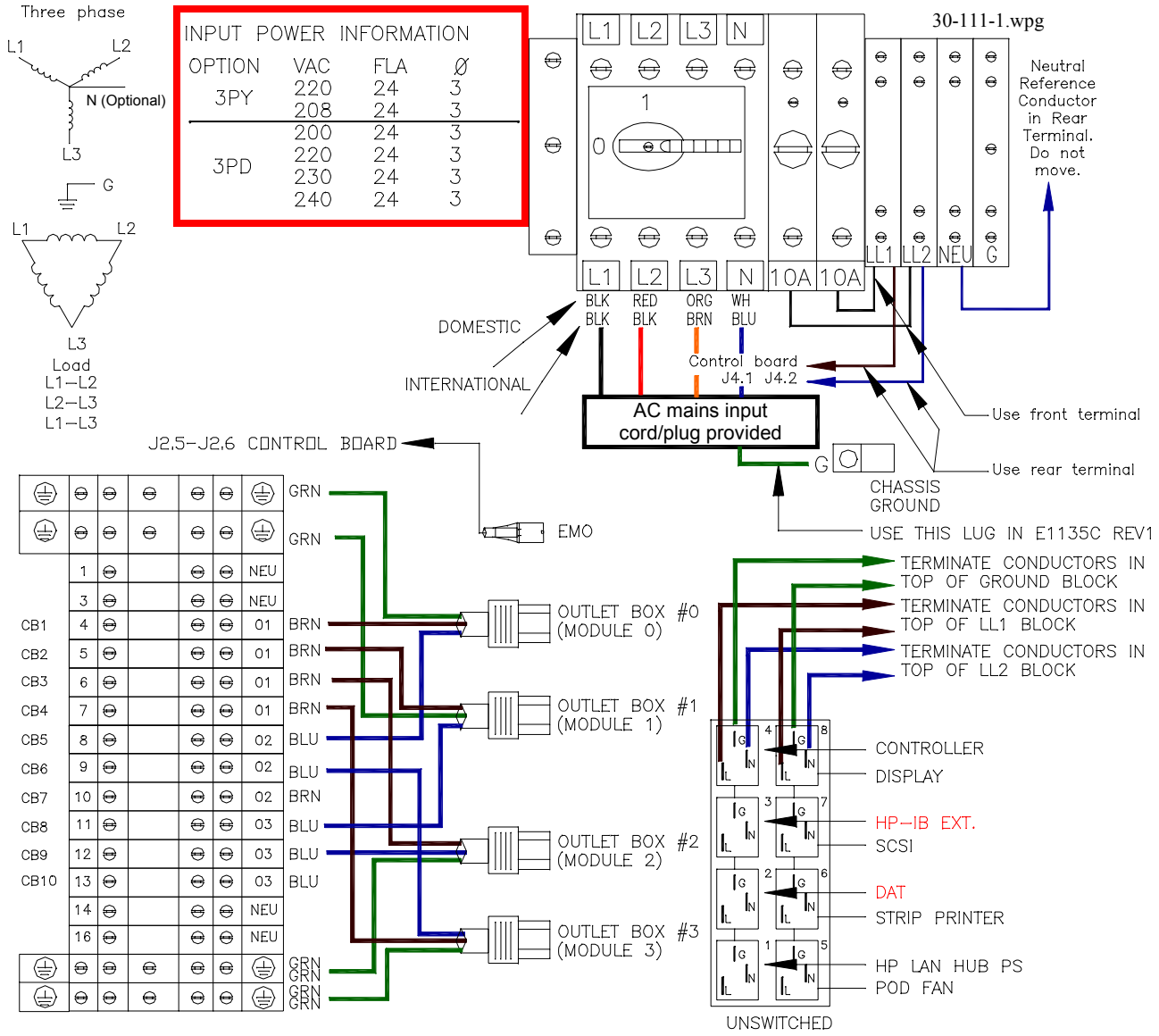


Figure 6-22 Mux Systems: Four-Module System Options 3PY, 3PD

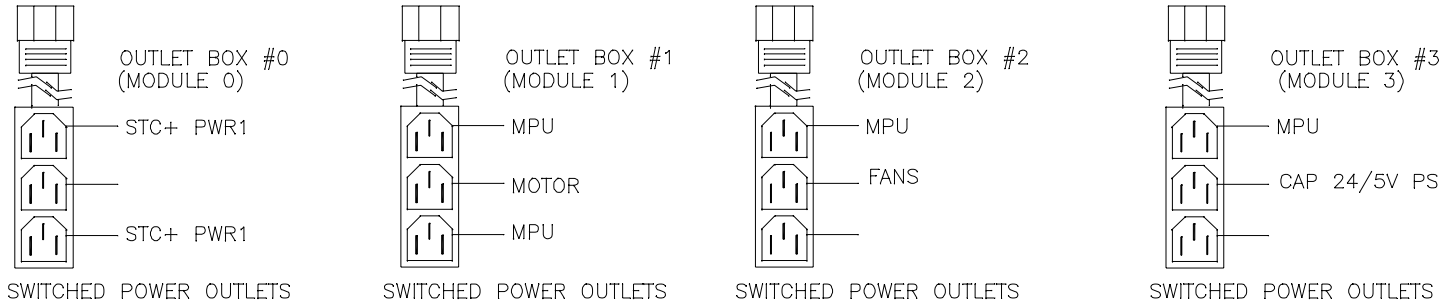


Figure 6-23 Mux Systems: Options 3PY, 3PD (Support Bay)

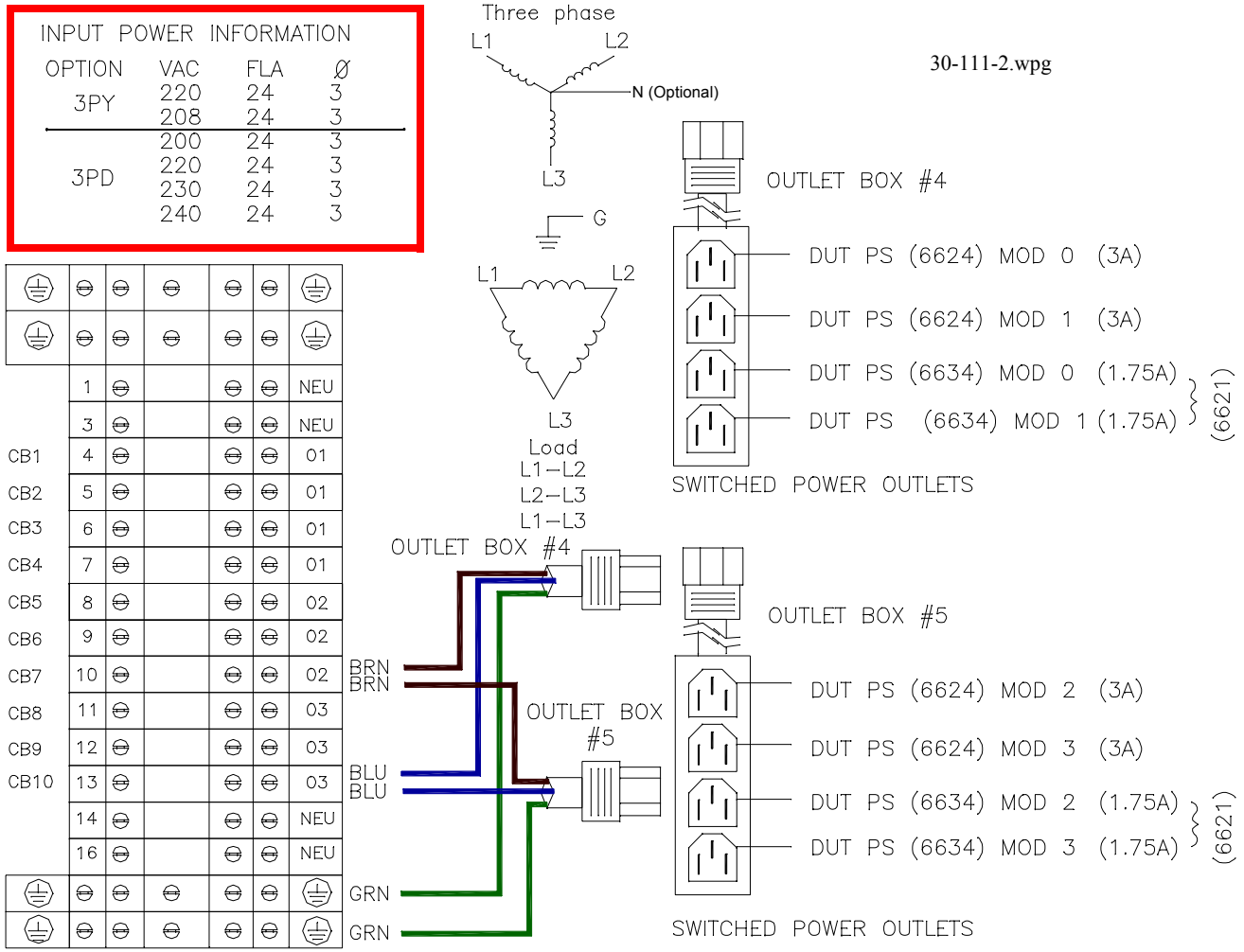


Figure 6-24 Mux Systems: Four-Module System Option 3PN

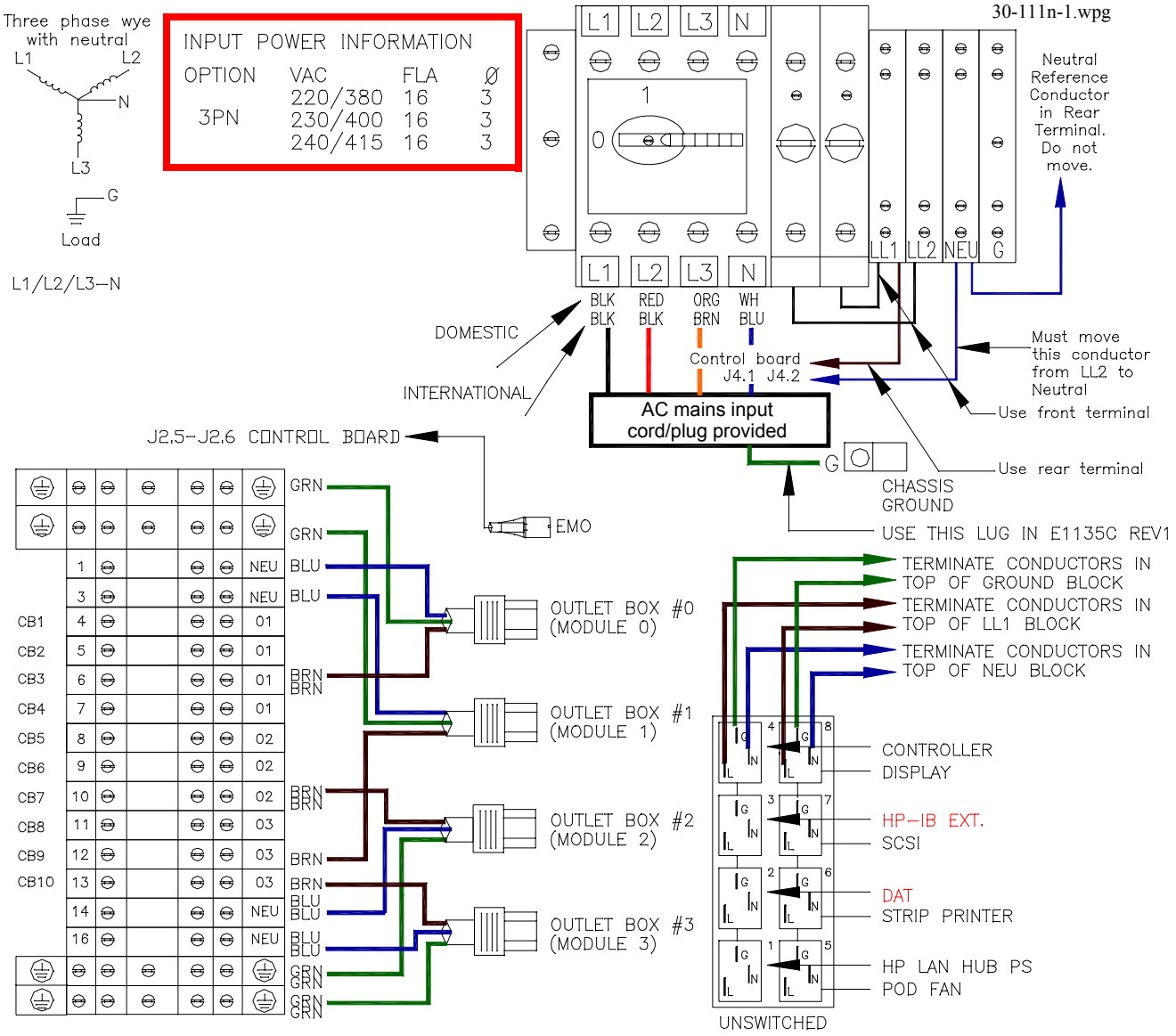


Figure 6-25 Mux Systems: Four-Module System Option 3PN

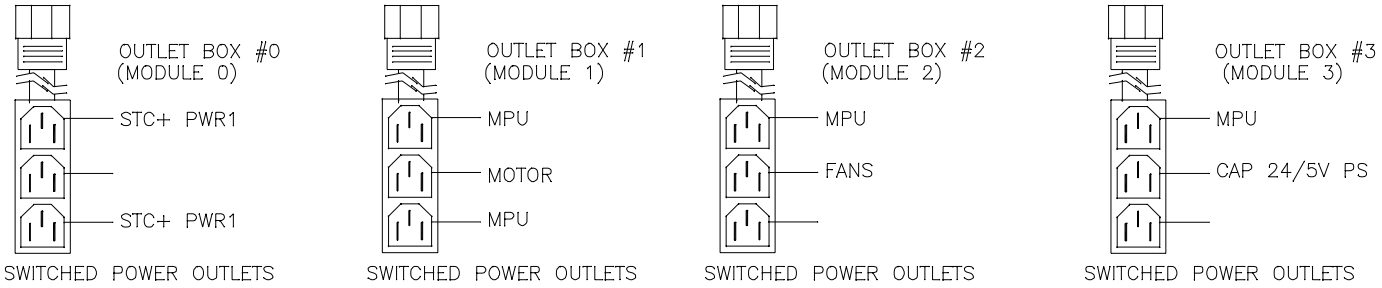
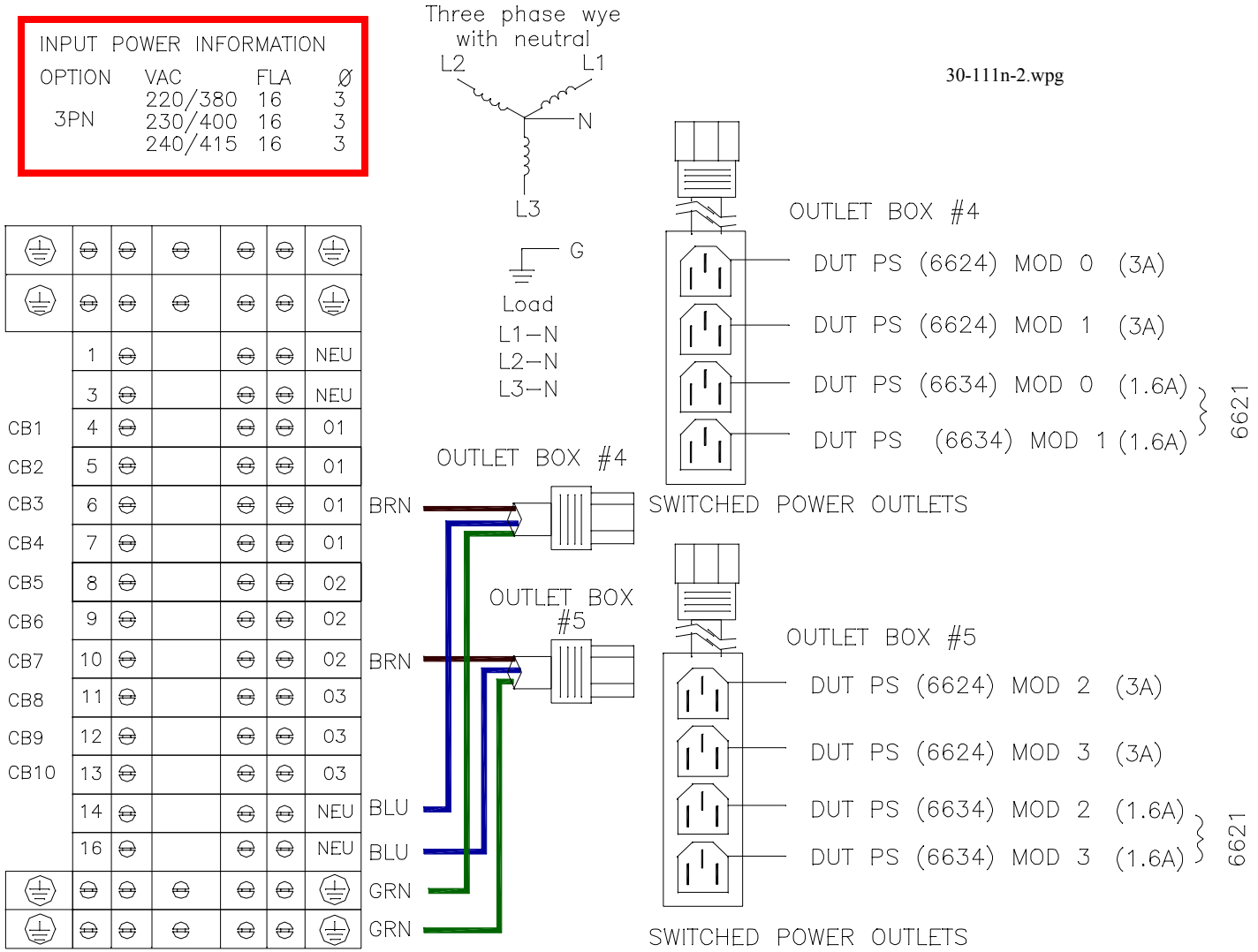


Figure 6-26 Mux Systems: Option 3PN (Support Bay)



7

Compressed Air and Vacuum Requirements

In this chapter...

- Introduction, 7-2
- Compressed Air Requirements, 7-3
- Vacuum Requirements, 7-6
- Compressed Air and Vacuum Primer, 7-9

Introduction

Both compressed (or pressurized) air and vacuum are used in the testhead. Compressed air is used primarily to secure the test fixture to the testhead. Vacuum is used primarily to actuate the test fixture: that is, to make contact between the board under test and the probes in the fixture. Compressed air is sometimes also used for air-assisted, solenoid-actuated valves used to switch the vacuum, and for air-actuated test fixtures.

The site preparation requirements for compressed air and vacuum are different depending on the type of testhead you are preparing the site for. This chapter describes those requirements.

For more about compressed air and vacuum principles and terminology, see the short **Compressed Air and Vacuum Primer** on page 7-9.

Compressed Air Requirements

The Medalist ICT system uses compressed air to pressurize air cylinders that actuate fixture pull-down towers. Pull-down towers are used to pull and hold a fixture down onto the testhead, enabling contact between the pins on the fixture and the spring-loaded interface pins in the testhead.

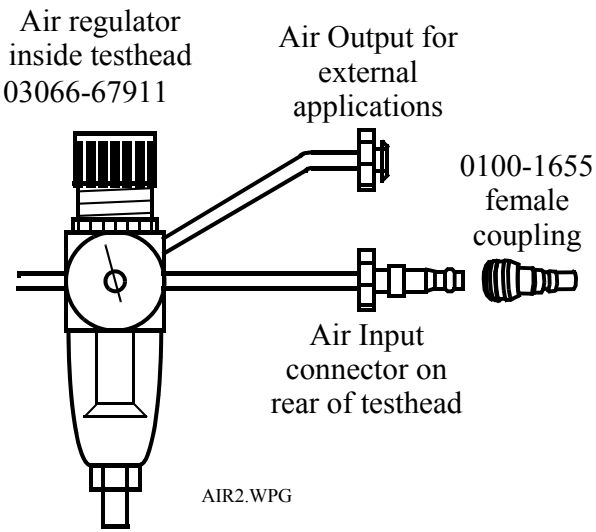
- **Connecting Air to the Testhead, 7-3**
- **Compressed Air Specifications, 7-4**
- **Air Quality, 7-5**

Connecting Air to the Testhead

Install compressed air lines using rigid line to a point near the testhead. An air cutoff valve is recommended for situations when the air line must be disconnected.

When the system is installed, connect the air to the testhead with a flexible line that has a Hansen Series 3000 Push-tite 1/4-inch female coupling or equivalent. The testhead air input connector is shown in **Figure 7-1**.

Figure 7-1 Compressed air connection to the testhead



Compressed Air Specifications

Table 7-1 shows the compressed air specifications for the systems. The air flow rates when using Performance Port are the maximum that could be needed. Some installations might require lower volumes.

Table 7-1 Compressed air specifications for the system

Description	Measurement
Maximum Pressure for Testhead Only	1035 kPa (150 psi)
Minimum Pressure for Testhead with Performance Port	690 kPa (100 psi)
Minimum Pressure for Testhead Only	480 kPa (70 psi)
Minimum Flow Rate for Testhead Only	0.66 l/s at STP (1.4 SCFM)
Minimum Flow Rate for Testhead with Performance Port	7.1 l/s at STP (15 SCFM)
Relative Humidity allowed	70% for compressed air (150 psi) at 25°C 50% for compressed air (150 psi) at 40°C Dew point must be not more than 5°C

Air Quality

The compressed air must be oil-free and must meet the humidity specifications in **Table 7-1**. We recommend that the air be filtered to remove contaminants such as oil and aerosols. The filter should filter 0.3-micron particles.

Vacuum Requirements

The Medalist ICT system uses vacuum (with vacuum-actuated test fixtures) to pull the board under test down onto test probes. Because of the different sizes of test systems, test fixtures, and the variety of boards that can be tested, vacuum requirements can vary significantly.

Agilent recommends that you work with a qualified vendor of vacuum pumps who can give you advice based on your requirements.

- **Vacuum Recommendations and Guidelines, 7-7**
- **Connecting Vacuum to the Testhead, 7-8**

Vacuum Recommendations and Guidelines

Table 7-2 shows the vacuum recommendations for a typical system.

Table 7-2 Vacuum recommendations for the system

Description	Measurement
Recommended Flow Rate of Pump	18.9 l/s at STP (40 SCFM) Use this value as a guideline. Vacuum specification is dependent on the fixture, not the testhead. Agilent has found this specification will pull down most fixtures.
Pressure Performance	50 kPa (7.2 psi)
Vacuum Control Ports available for controlling external vacuum valves	4 vacuum control ports: switched 24 volts dc, 750 milliamps maximum per port

Vacuum Guidelines

Keep these additional guidelines in mind as you design your system:

CAUTION

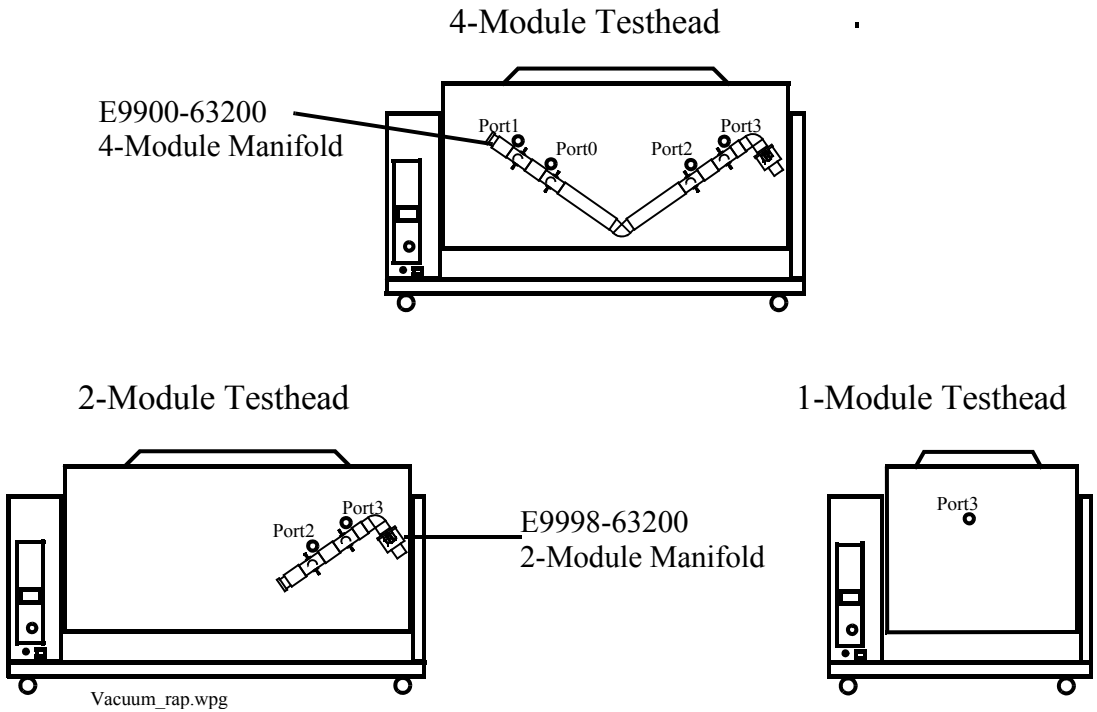
Vacuum pumps installed for the tester should be installed outside or vented outside in order to prevent the vacuum pump from exhausting oil-bearing air or carbon fragments in areas where there are people.

- Use the largest diameter of pipe practical from the vacuum pump to the testhead area. This diminishes vacuum loss due to friction in the piping (especially at bends), and provides a demand reservoir.
- Agilent also recommends that a filter be installed between the vacuum supply and the testhead to prevent dirt or contaminants from being sucked through the test fixture into the vacuum supply.
- Pressure meters, flow meter, and filters are optional but recommended.
- If the vacuum manifold is used, a 2-inch vacuum hose should be used. If vacuum ports are connected individually, a 1-inch vacuum hose must be used.

Connecting Vacuum to the Testhead

Figure 7-2 shows the vacuum port locations on the system. The vacuum manifolds shown are optional.

Figure 7-2 Vacuum port locations



Compressed Air and Vacuum Primer

There are two key concepts involved in understanding the compressed air and vacuum requirements for the Medalist ICT system. The first is pressure and the second is flow rate.

Pressure is the force per unit area that a gas exerts on a surface. If zero is used as a reference, the measurement of pressure is called “absolute”; if the local atmospheric pressure is used as a reference, the measurement is called “gage.” Although atmospheric pressure varies with altitude and weather, gage pressure is typically used for engineering measurements, so it is used in this manual. A pressure value below zero gage is considered a vacuum.

Common units for measuring pressure are kilopascals (kPa), pounds per square inch (psi), and atmospheres (atm).

Flow rate is the quantity of a gas moving through a given area per unit of time. Since air is compressible, you must know both the speed and pressure of the air when measuring the flow rate. To reduce confusion, the industry has agreed on a standard set of conditions for flow rate measurements called “standard temperature and pressure” (STP). The standard temperature is 0°C (32°F), and the standard pressure is one atmosphere (101.3 kPa or 14.7 psi).

Common units for measuring flow rate are liters per second (l/s) and cubic feet per minute (CFM). When using standard conditions, the units are written as “l/s at STP” or “SCFM” (standard cubic feet per minute).

Compressed Air

The Medalist ICT system uses compressed air to activate both the fixture pull-down towers and the vacuum valves. The system also provides an outlet for supplying air to accessory equipment such as handlers and air assisted fixtures.

The minimum pressure needed is 480 kPa (70 psi). The system has an internal regulator to restrict the maximum pressure inside the system to 550 kPa (80 psi).

The flow rate needed is dependent on how often fixtures are changed, but is generally much less than what is available in most production areas. Additional air (flow rate) may be needed to supply the outlet for custom fixtures or presses depending on their requirements.

Vacuum

The system doesn’t use vacuum directly. Rather, the vacuum is used by the fixture to pull a device under test (DUT) onto the probes. The system provides valves, plumbing and control to assist in supplying vacuum to the customer’s fixture.

The pressure requirements for vacuum come from the need to compress the probes, fixture springs and seals. Since most commercial vacuum systems operate around 50 kPa (7.5 psi), vacuum fixtures are limited in their ability to handle DUTs with high probe densities. If the sum of the probe, spring and seal forces divided by the area of the DUT is above 48 kPa (7 psi) the fixture will not be able to properly pull the DUT onto the probes.

The flow requirements for vacuum come from fixture leaks, number of fixture cycles per minute, the size of the DUT and the need to quickly evacuate the fixture to make a good seal around the DUT. Due to the variability of these factors, it is difficult to provide an exact flow rate recommendation. Agilent has found that a flow rate of 19 l/s (40 SCFM) will pull down most fixtures.

8

Communications Cabling Requirements

In this chapter...

- Local Area Network Requirements, 8-2
- Gathering Configuration Information for Networking, 8-4

Local Area Network Requirements

Your Medalist ICT system communicates with other systems via IEEE 802.3 Local Area Networking. All the necessary software and licensing comes with the system, but you will need to purchase and install the LAN cabling and associated LAN hardware external to the system. For help, contact your area's Agilent Local Area Network specialist.

System Networking

Figure 8-1 on page 8-3 shows the system in a network.

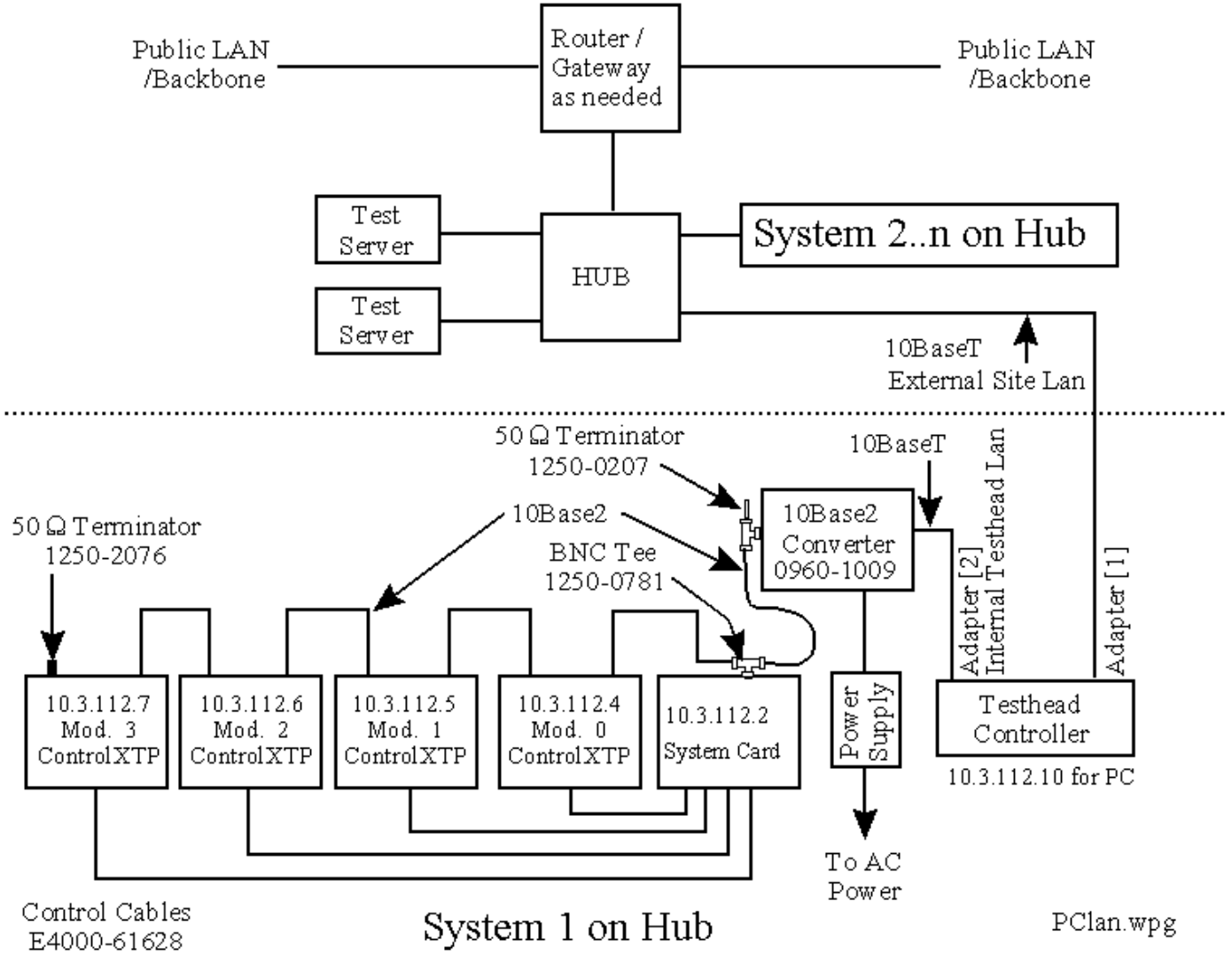
Each external site LAN (LAN0) must have a unique IP address. The internal testhead LAN (LAN1) within each system — which includes the System Card and ControlXTP Cards — is identical between systems.

However, the hardware address for each System Card and ControlXTP Card is unique. The hardware address, not to be confused with the LAN address, is assigned at the factory and is marked on each card.

Install the LAN Cabling

Before the system is delivered, install and test the external LAN interface cabling.

Figure 8-1 An example network



Gathering Configuration Information for Networking

Before the Agilent Authorized Service Representative can turn on the controller, they will need the information in **Table 8-1**. Before they come to the site, fill out the appropriate information with the assistance of the network administrator or LAN manager. This is vital information they will need to set up the system for networking.

Some of the information may not be needed depending on how your networking is implemented. Even if you don't intend to put the system on a network at all, the first two items in the table are still necessary for system setup.

Windows LAN configuration information

Use **Table 8-1** to gather the information needed to configure your computer for a LAN.

Table 8-1 Windows LAN configuration information

Task (Network Parameter)	Write System Information Here	Description
1 Network Identification: Computer Name or Hostname	Domain Computer Name or Hostname: _____	A unique name that identifies your computer controller.
2 Network Identification: Workgroup or Domain?	Member of (select one): [ ] Workgroup [ ] Domain Workgroup or Domain name _____	The Workgroup name is the name of a computer or group of computers on a peer-to-peer network. The Domain name is the identifier for the server that controls and manages a group of computers on a client/server network.
3 Network Identification: Create a Computer Account in the Domain	Domain User Name: _____ Domain Password: _____	This is the name by which your computer is recognized by the network domain. See your network administrator to establish or verify domain account information.
4 Will a DHCP Server be Used?	[ ] Yes [ ] No	If yes, go to **Task 16**, **Will Other Network Protocols Be Configured?**

Table 8-1 Windows LAN configuration information (continued)

Task (Network Parameter)	Write System Information Here	Description
5 IP Address	IP Address: _____._____._____._____ Subnet Mask: _____._____._____._____ Default Gateway: _____._____._____._____	IP Address: The IP address for this workstation. Subnet Mask: This number masks (ignores) information that is not specific to your local network. Default Gateway: IP address of the system that is used to route network traffic to other networks.
6 Advanced IP Addressing: Gateways	_____._____._____._____ _____._____._____._____	Gateway(s) for any backup routers of network traffic.
7 Will DNS be Used? (Domain Name System)	[ ] Yes [ ] No	If no, go to **Task 12**, **Will WINS Be Used? (Windows Internet Name Services)**
8 DNS: Hostname	_____	The name by which this system will be known under DNS is the same as the Computer Name in **Task 1**.
9 DNS: Domain	_____	The domain in which this machine will operate. This domain is associated with your TCP/IP address.
10 DNS: DNS Service Search Order	_____._____._____._____ _____._____._____._____	IP Addresses (in order) of DNS servers that this system uses for resolving host names.

Table 8-1 Windows LAN configuration information (continued)

Task (Network Parameter)	Write System Information Here	Description
11 DNS: Domain Suffix Search Order	_____ _____	Ordered domain suffix list used when searching for a host.
12 Will WINS Be Used? (Windows Internet Name Services)	[ ] Yes [ ] No	If no, go to **Task 16**, **Will Other Network Protocols Be Configured?**
13 WINS Address: Primary WINS Server, Secondary WINS Server	_____._____._____._____ _____._____._____._____	
14 WINS Address	[ ] Enable DNS for Windows Resolution [ ] Enable LMHOSTS Lookup	Select either of these options. **CAUTION** If configuring for DNS, check **Enable DNS for Windows Resolution**.

Table 8-1 Windows LAN configuration information (continued)

Task (Network Parameter)	Write System Information Here	Description
15 WINS Address: Scope ID	_____	
16 Will Other Network Protocols Be Configured?	[ ] AppleTalk Protocol _____ [ ] DLC Protocol _____ [ ] NetBEUI Protocol _____ [ ] NWLink IPX/SPX Compatible Transport _____ [ ] Point To Point Tunneling Protocol _____ [ ] Streams Environment _____	This list is not exhaustive; other protocols can be configured. Use this space to document other network protocol information.

9

Receiving and Moving Instructions

In this chapter...

- Inventory the Shipment, 9-2
- Uncrating the System, 9-3
- Uncrating the Support Bay, 9-6
- Placing the System, 9-9
- Re-shipping a System, 9-10

Inventory the Shipment

Use the packing list that came with your system to determine if the system was fully received. Carefully examine the boxes for shipping damage. If you suspect the system was damaged in shipment, contact your Agilent representative.

Uncrating the System

The customer should remove the tri-wall box from the pallet. The Agilent service representative will uncrate the system pallets. Leave the smaller boxes intact for the Agilent representative to unpack when the system is installed.

WARNING

The testhead weighs approximately 454 kilograms (1000 pounds). To avoid personal injury, follow these instructions carefully and do not work alone. The shipping straps are stretched taut and will whip when cut. Wear eye protection when cutting straps.

In uncrating the testhead, you will roll the testhead down a ramp from one end of the pallet. To do this you will need an area approximately 2.5 meters (8 feet) wide by 5.5 meters (18 feet) long.

Tools Needed to Uncrate the Testhead

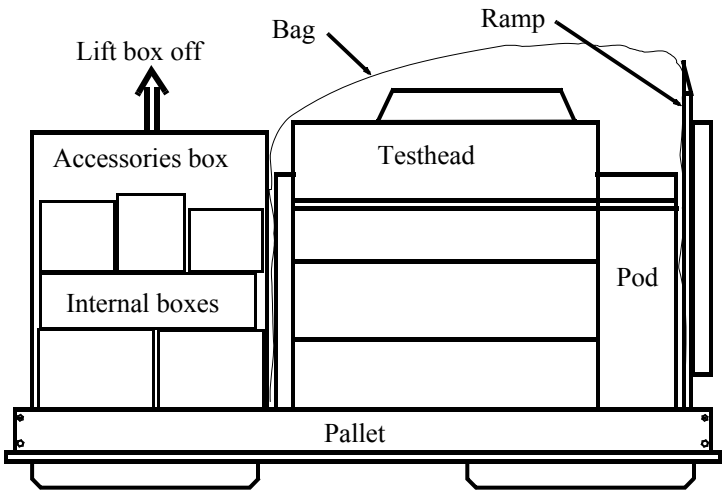
- Utility knife
- Cordless drill with hex shank
- 9/16-inch and 3/4-inch socket with ratchet and 6-inch (150-millimeter) extension

Uncrating Procedure

1 Cut the strap around the ramp. Lift the ramp off the pallet and set it aside. Remove the plastic bag covering the testhead and discard it.

2 (One-module system only) **Figure 9-1**: Cut the strap over the accessory box and lift the box off the pallet. Set the box aside for later use by the system installer.

Figure 9-1 One-module system



3 Discard all packing materials.

4 Remove two 175-millimeter (7-inch) bolts from the plastic bag attached to the ramp. Save any other materials that may be in the plastic bag.

5 **Figure 9-2**: Remove bolts 1 through 3 from the sides of the pallet and the top of the end board. Then remove the “Removable End” board.

6 **Figure 9-2**: Remove bolts 4 and 5 from the platform.

Figure 9-2 Removing the bolts from the end board

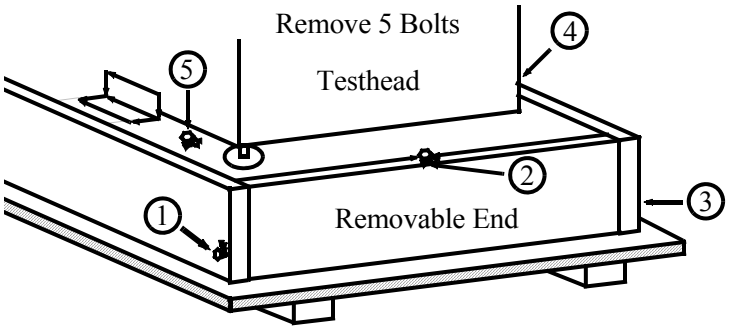
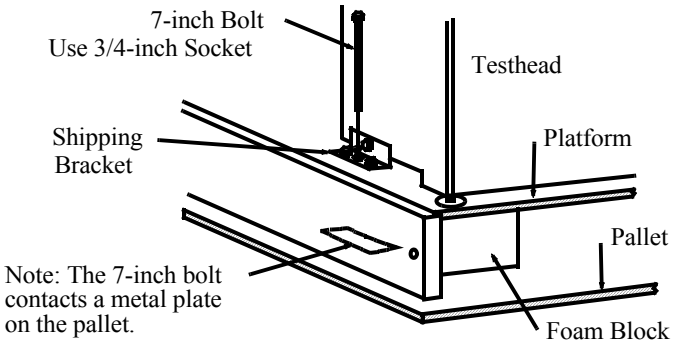


Figure 9-3 Raising and lowering the platform



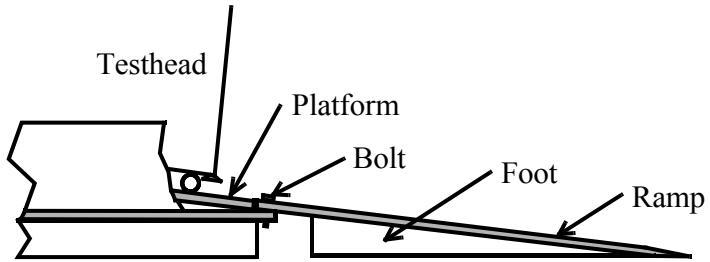
7 **Figure 9-3**: Using a cordless drill with hex shank and 3/4-inch socket, screw the bolts from step 4 into the nuts on the shipping brackets on the end of the pallet from which you removed the end board. Screw the bolts down (clockwise) until the platform rises slightly.

8 **Figure 9-3**: Remove the two foam blocks from the space between the platform and pallet.

9 **Figure 9-3**: After removing the foam blocks, screw the 7-inch bolts up (counter-clockwise) to lower the platform all the way down onto the pallet. Alternately lower each side a little at a time. Then remove the 7-inch bolts.

10 **Figure 9-4**: Place the ramp on the pallet. Ensure that the feet under the ramp are folded down to the floor. Place two bolts that you removed from the sides of the pallet in step 5 through the holes in the ramp to keep the ramp from sliding off the pallet.

Figure 9-4 Attaching the ramp



11 (One-module system only) **Figure 9-5**: Remove the **two** shipping brackets from the pod-end of the testhead and only the testhead bolts indicated from the opposite end of the testhead.

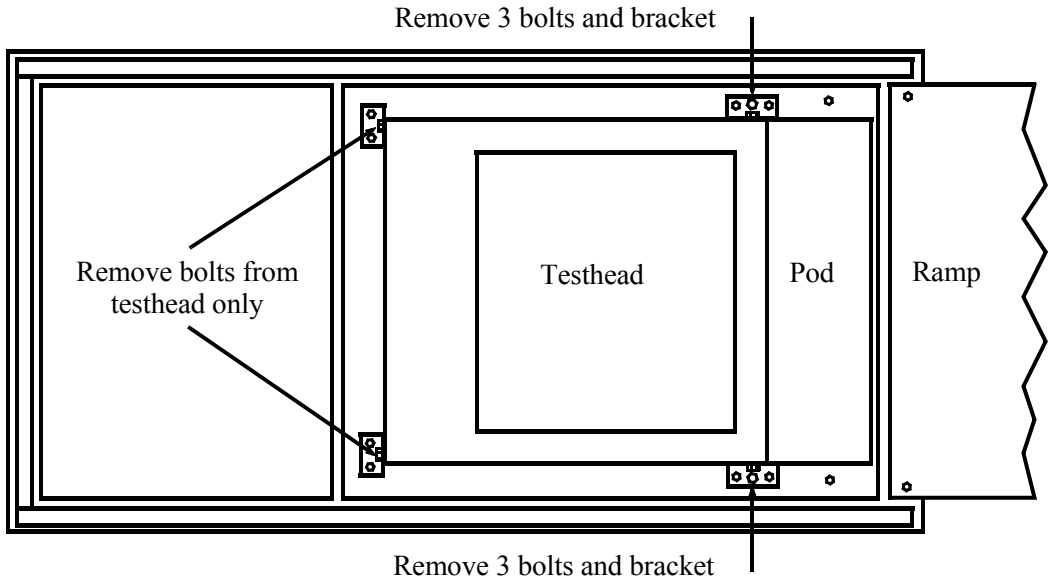
12 (Two- or four-module system only) Remove all **four** shipping brackets from the testhead and pallet.

13 Roll the testhead down the ramp and onto the floor.

NOTE

Save the pallet, ramp, and shipping materials in case the system has to be shipped to another facility. The only safe way to ship the testhead is using the pallet and shipping materials provided.

Figure 9-5 one-module system shipping brackets and bolts



Uncrating the Support Bay

WARNING

The support bay weighs approximately 209 kilograms (460 pounds). To avoid personal injury, follow these instructions carefully and do not work alone. The shipping straps are stretched taut and will whip when cut. Wear eye protection when cutting straps.

In uncrating the support bay, you will roll the support bay down a ramp from the pallet. To do this you will need an area approximately 2 meters (6 feet) wide by 4 meters (13 feet) long.

Tools Needed to Uncrate the Support Bay

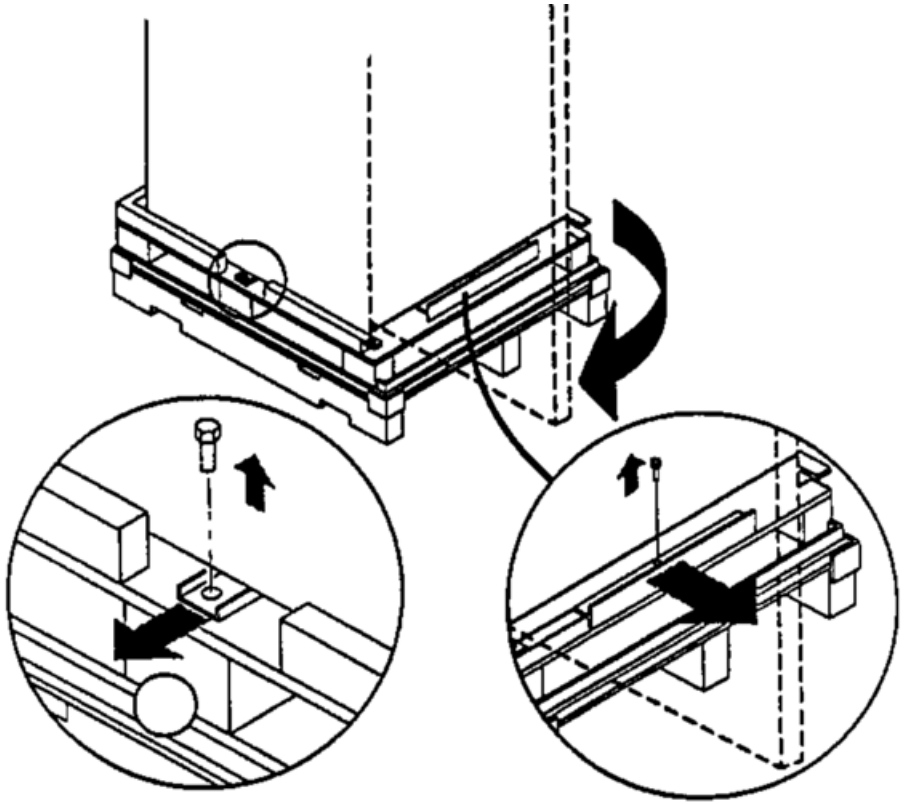
- Utility knife
- 7/16-inch socket with ratchet
- 9/16-inch socket with ratchet

Uncrating Procedure

1 Remove the ramp and packing material from the top of the support bay and remove the packing material from around the outside of the support bay.

2 **Figure 9-6**: Remove the two shipping clamps (one on each side) from the bottom of the support bay.

Figure 9-6 Removing the shipping hardware



3 **Figure 9-7**:

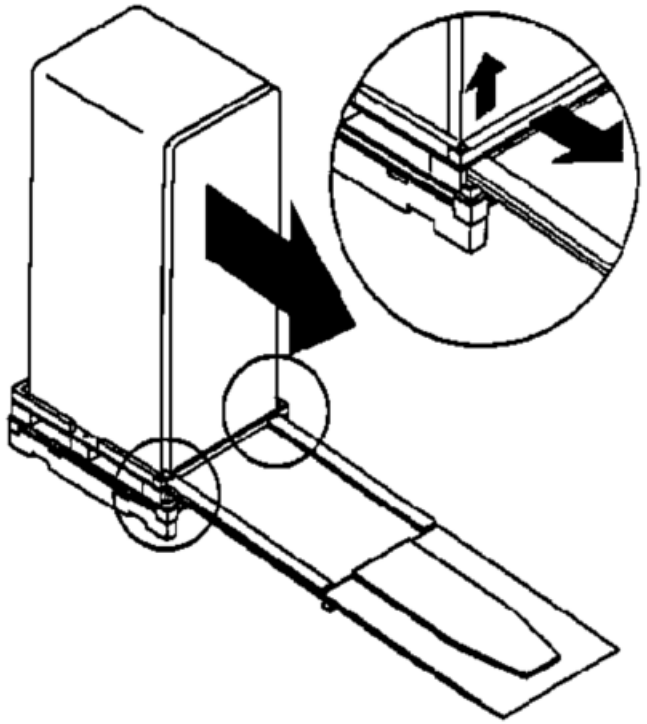
a Remove the two bolts from each corner.

b Pull the block out from under the bay.

c Position the ramp so the block of wood under the ramp locks into the edge of the pallet.

d Roll the bay down the ramp.

Figure 9-7 Installing the ramp



Placing the System

Moving the Testhead and Support Bay

Make sure all leveling feet are turned up as high as they go before rolling the system.

Place the system exactly as the system plan drawing shows. Remember that the testhead will be rotated up for service and that cable length will be critical.

Immobilizing and Leveling the System

Immobilize and level all bays by screwing the leveling feet down to the floor. The testhead may be difficult to unlock or rotate if it is not level.

If local building codes require equipment to be anchored to the floor due to potential seismic activity (earthquakes), you will need to bolt the system to the floor. The shipping brackets used to secure the system to the pallet are suitable for this purpose, but you will need to supply fasteners suitable for your situation.

Re-shipping a System

When it becomes necessary to pack and ship a system to another location, Agilent can help. You can either purchase an Agilent Move, which includes Agilent personnel disassembling, packing, shipping, and setting up the system at the new location; or you can purchase a shipping kit from Agilent which includes the pallet and other materials required to ship a system.

See **Re-Shipping Kits** in *Parts* for the shipping kit part numbers.

WARNING

When re-shipping a support or instrument bay, **do not** use the ramp to move the bay onto the pallet to avoid possible injury due to the bay tipping over on you. The ramp is designed for removal of the bay only. Instead, use a hoist and attach to the hooks on the top of the bay and lift the bay onto the pallet.

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