Lucent Technologies
Bell Labs Innovations

PacketStar™

PSAX 1250 Access Concentrator Installation and Operation Guide

A *PacketStar*™ PSAX Central Office Product

Issue 1, October 2000
System Software Release 6.3.0
AQueView™ EMS Software Release 4.4

Copyright and Legal Notices

Copyright

Copyright © 2000 by Lucent Technologies. All rights reserved.

This material is protected by the copyright laws of the United States and other countries. It may not be reproduced, distributed, or altered in any fashion by any entity (either internal or external to Lucent Technologies), except in accordance with applicable agreements, contracts or licensing, without the express written consent of the InterNetworking Systems, Access Technology organization and the business management owner of the material.

This document was prepared by the Information Design and Development department of Lucent Technologies, InterNetworking Systems, Access Technology group. Offices are located in Landover, Maryland, U.S.A.

Trademarks

AQueView, PacketStar, Lucent, Lucent Technologies, and the Lucent Technologies logo are trademarks of Lucent Technologies. Other product and brand names mentioned in this guide are trademarks or registered trademarks of their respective owners.

Warranty Information

Software and Hardware Limited Warranties

Lucent Technologies provides a 90-day limited software warranty, and a one-year limited hardware warranty on this product. Refer to the *Software License and Limited Warranty Agreement* and the *Lucent Technologies InterNetworking Systems Global Warranty* that accompanied your package for more information.

Every effort has been made to ensure that this document is complete and accurate at the time of release, but information is subject to change. Lucent Technologies assumes no responsibility or liability for errors or inaccuracies that may appear in this guide.

Warranty Warnings

⚠ **CAUTION:**
Do not make electrical or mechanical modifications to any of the components in the PSAX system. Lucent Technologies is not responsible for the safety or the performance of a modified Lucent product. Do not attempt to repair any failed Power Supply module, Stratum 3–4 module, CPU module, I/O, or Server module.

⚠ **CAUTION:**
Do not make electrical or mechanical modifications to any of the components in the PSAX system. Lucent Technologies is not responsible for the safety or the performance of a modified Lucent product. Do not attempt to repair any failed removable I/O or server modules.

⚠ **CAUTION:**
Modifying or tampering with PSAX chassis components may void your warranty. Any modification to this equipment not expressly authorized by Lucent Technologies may void your granted authority to operate such equipment.

⚠ **CAUTION:**
Air vents in the PSAX chassis are provided to aid in ventilation and to protect from overheating. These vents must be regularly inspected by the user and cleared of dust and blockage. Equipment failure associated with improper maintenance or suspected failure to adhere to proper ventilation procedures as described above will void your warranty.

⚠ **CAUTION:**
You must replace an air filter having an accumulation of dust to ensure adequate airflow through the PSAX chassis. Reduced airflow could result in damaging heat buildup within the chassis.

- **Periodically inspect the air filter for accumulated dust and replace the filter as needed. At a minimum, monthly inspection is recommended. Equipment failure due to inadequate airflow voids your equipment warranty.**

- **Use only filters supplied by Lucent Technologies in your PSAX chassis. Use of other filters voids your equipment warranty.**

⚠ **CAUTION:**
You must maintain a minimum 5.08 cm (2 in) of clearance around the chassis for adequate airflow. Failure to adhere to this space requirement may result in equipment failure due to overheating. Failure to provide a minimum of 5.08 cm (2 in) of clearance between this unit and any other device/structure will void your warranty.

> ⚠ **CAUTION:**
> **If your system or location loses power or your current session ends abnormally while you are in the process of configuring the system, and you have not yet saved the values permanently, you will lose all unsaved values you have applied on the various windows.**

> ⚠ **CAUTION:**
> **Shipping the chassis with removable modules installed may cause damage to the chassis and the modules. Damage to any of the components in the system resulting from shipping the chassis with removable modules installed could void your warranty. Only Lucent-authorized personnel should ship the PSAX 1250 chassis with a module installed.**

Regulatory Standards Compliance

The PSAX 1250 Access Concentrator is fully compliant with the following environmental, safety, and emissions standards. Appropriate statements appear in the next subsection.

Safety Requirements

- Underwriter's Laboratory (UL) — Safety and Factory Compliance UL 1950

- CB-Scheme — IEC 60950:1991+A1:1992+A2:1993+A3:1995+A4:1996

Electromagnetic Compatibility (EMC) and Physical Requirements

- Federal Communications Commission (FCC) — EMC compliance (Part 15 Class A)

- Network Equipment Building System (NEBS) GR-63-CORE and GR-1089-CORE, Level 3 requirements

- EN 55022:1994 Class A (CISPR22:1993)

- EN 50082-1:1992

- VCCI Class A

CE Marking

CE marking of the Lucent Technologies PSAX 1250 ATM Access Concentrator consisting of the following model numbers:

20S00, 20S10, 20P01, 20P02, 20P03, 20P04, 20P05, 20P06, 20P09, 20P10, 20P11, 20P12, 20P13, 20P14, 20P15, 20P16, 20P17, 20P18, 20P20, 20P21, 20P22, 20P23, 20A04, 20A09, 20A12, 20A13, 20A14, 20N01, 20N05, 21N05, 20N11, 20N07, 20N16, 20N20, 20N22, 20N27, 20N28, 20N29, 20N34, 20N40, 20N41, 20N56, 20N62, 20N63, 20N64, 20N65, 20N92, 20N93, 23N27, 23N66

is based upon conformity with the following standard(s) or other normative document(s):

- EN 55022:1994 Class A

- EN 50082-1:1992

- EN 60950:1992+A1:1993+A2:1993+A3:1995+A4:1997+A11:1997

- CTR 4/A1 as specified in Commission Decision 98/520/EC

- CTR 12/A1 as specified in Commission Decision 97/520/EC

- CTR 13 as specified in Commission Decision 97/521/EC

- CTR 24 as specified in Commission Decision 97/639/EC

in accordance with the provisions of the following Council directives:

- Electromagnetic Compatibility (EMC) 89/336/EEC

- Low Voltage 73/23/EEC

- Telecommunications Terminal Equipment and Satellite Earth Station Directive 98/13/EC

The European Community Declarations of Conformity for the PSAX 1250 Access Concentrator are included in the EC Declarations of Conformity Appendix in the back of this guide.

$C \in 168 X$

Regulatory Statements

United States Federal Communications Commission (FCC) Statements

Part 15. This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and,

if not installed and used in accordance with this guide, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference; in this case, you would be required to correct the interference at your own expense.

All cables used to connect to peripherals must be shielded and grounded. Operation with cables, connected to peripherals, that are not shielded and grounded may result in interference to radio and television reception.

The user is cautioned that any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Part 68. This equipment complies with Part 68 of the FCC rules. On the back of the PSAX 1250 chassis is a label that contains the FCC registration number, in addition to other information. You must provide this information to the telephone company, if they request it. The FCC requires Lucent Technologies, Inc., to provide you with the following information:

1. The PSAX 1250 system has digital service interface capabilities using RJ-48C and RJ-48H connectors. The facility interface codes with which the PSAX 1250 system complies for digital services are as follows: 04DU9-BN, 04DU9-DN, 04DU9-1KN, and 04DU9-1SN. The PSAX 1250 system has loop start interface capabilities using an RJ-11C connector. The facility interface code with which the PSAX 1250 system complies for service is 02LS2. The service order codes for the PSAX 1250 system are 6.0F for the T-1 interface and 9.0Y for the loop start interface.

2. An FCC-compliant telephone network interface jack is built into this equipment and is compatible with interconnections that are Part 68 compliant.

3. The REN for the Voice 2-Wire Office module when used in the PSAX 1250 system is 0.7B.

4. If the PSAX 1250 system causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service might be required. But if advance notice is not practical, the telephone company will notify you as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe this is necessary.

5. The telephone company might make changes in its facilities, equipment, operations, or procedures that could affect the operation of this equipment. If this happens, the telephone company will provide advance notice for you to make necessary modifications to maintain uninterrupted service.

6. If you experience trouble with the PSAX 1250 system, or need repairs or warranty information, please refer to the Limited Hardware Warranty card that accompanied your PSAX 1250 product shipment for instructions on obtaining technical support in your area.

   If the PSAX 1250 system is causing harm to the telephone network, the telephone company might request that you disconnect the equipment until the problem is resolved.

7. This equipment has no user-serviceable parts.

This equipment cannot be used on public coin telephone service provided by the telephone company. Connection to party line service is subject to state tariffs. Contact your state public utility commission, public service commission, or corporation commission for information.

Canadian Regulatory Statements

Industry Canada Information

Ringer Equivalence Number (REN) Notice. The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational, and safety requirements. The Department does not guarantee that the equipment will operate to the user's satisfaction.

Before installing this equipment, the user should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed by using an acceptable method of connection. In some cases, the company's inside wiring associated with a single-line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above condition may not prevent degradation of service in some situations.

Repairs to some certified equipment should be made by an authorized maintenance facility designated by the supplier. Any repairs or alternations made by the user to this equipment or equipment malfunctions might give the telecommunications company cause to request the user to disconnect the equipment.

For their own protection, users should ensure that the ground connections of the power utility, telephone lines, and internal metallic water pipe system are connected together. This precaution may be particularly important in rural areas.

▲ CAUTION:
Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority or electrician.

The Ringer Equivalence Number (REN) assigned to the Voice 2-Wire Office module denotes the percentage of the total load to be connected to a telephone loop, which is used by the device, to prevent overloading. The termination on a loop may consist of any combination of devices subject only to the requirement that the total of the REN of all devices does not exceed 5.

The REN for the Voice 2-Wire Office module when used in the PSAX 1250 system is 0.7B.

Renseignements Industrie Canada

Avis de nombre équivalent de sonneries (REN). Le label Industrie Canada permet de reconnaître les équipements homologués. Cette homologation indique que l'équipement satisfait certaines règles de protection, d'exploitation et de sécurité des réseaux de télécommunications. Le ministère de l'Industrie ne garantit pas que l'équipement fonctionnera à la satisfaction de l'utilisateur.

Avant d'installer cet équipement, l'utilisateur doit s'assurer qu'il est permis de le connecter aux installations de la compagnie de télécommunications locale. L'équipement doit également être connecté suivant une méthode convenable. Dans certains cas, il sera nécessaire de prolonger le câblage intérieur de la ligne d'abonné de la compagnie au moyen d'un connecteur homologué (rallonge de téléphone). L'abonné doit savoir que, dans certaines situations, la conformité aux dispositions ci-dessus ne prévient pas nécessairement la dégradation du service.

La réparation de certains équipements homologués doit être assurée par un atelier agréé désigné par le fournisseur. Toute réparation ou altération effectuée par l'utilisateur ou tout mauvais fonctionnement de cet équipement peut donner à la compagnie de téléphone des raisons de demander audit utilisateur de déconnecter celui-ci.

Pour leur propre sécurité, les utilisateurs doivent veiller à ce que les mises à la terre de l'alimentation secteur, des lignes téléphoniques et du système intérieur de conduites d'eau métalliques soient raccordés ensemble. Cette précaution peut s'avérer particulièrement importante dans les zones rurales.

⚠ **CAUTION:**
Les utilisateurs ne doivent pas tenter d'effectuer eux-mêmes ces raccordements, mais doivent prendre contact avec un électricien ou organisme de vérification compétent.

Le nombre équivalent de sonnerie (REN) attribué au module central bifilaire (Voice 2-Wire Office) correspond au pourcentage de la charge totale à connecter à un circuit téléphonique bifilaire; il est utilisé par l'appareil pour prévenir la surcharge. Le circuit peut être terminé par n'importe quelle combinaison d'appareils, à la seule condition que le total des REN de ces derniers ne dépasse pas cinq.

International Regulatory Statements

CISPR22. This is a Class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

Australian/New Zealand Regulatory Statements

AS/NZS-3548 Warning. This is a Class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

Japanese Regulatory Statement

Voluntary Control Council (VCCI) Class A Regulatory Statement. This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may occur, in which case, the user may be required to take corrective actions.

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

Safety Information

When installing and operating the PSAX 1250 Access Concentrator, follow the safety guidelines provided below to help prevent serious injury and/or damage to the PSAX 1250 equipment. Please read all warnings and instructions supplied before beginning installation or configuration of the PSAX 1250 equipment. In addition to the general safety information provided below, you should also refer to the text in the user and installation guides for other important safety information and procedures.

⚠ **DANGER:**
Never push and/or place an object in or through any vent in the PSAX 1250 chassis. Doing so may result in personal injury, equipment damage, or both. Touching exposed electrical components may cause injury.

⚠ **DANGER:**
Install only equipment identified in the installation guide for the PSAX 1250 system. Using other equipment may result in improper connection of circuitry, which may lead to equipment fire, personal injury, or equipment damage.

⚠ **DANGER:**
Do not install or use the PSAX 1250 unit in wet locations. In the event the unit becomes wet, turn it off, disconnect it from the facility power source, and allow the unit to dry thoroughly. If, after this procedure, you encounter problems with the performance of the unit, please contact your NetworkCare Service Center. (See the *Lucent Technologies InterNetworking Systems Global Warranty* that accompanied your shipment for the appropriate telephone number.)

⚠ **DANGER:**
When removing an alternating current (AC) power cord from an PSAX 1250 chassis running on AC power, remove the power cord from the connector by grasping and pulling the plug, not the power cord.

⚠ **DANGER:**
Dangerous voltage is present in a PSAX 1250 alternating current (AC) Power Supply module when connected to an AC electrical power source. Ensure that the power cord is disconnected from the module during installation, removal, and at all times when the module is not fully seated in the PSAX PSAX 1250 chassis.

⚠ **DANGER:**
To avoid the risk of electrical shock when replacing a fuse on the PSAX 1250 alternating current (AC) Power Supply, be sure to first

disconnect the power cord from the module before removing it from the PSAX 1250 chassis.

⚠ **DANGER:**

When setting up a PSAX 1250 Access Concentrator system that uses a single (i.e. non-redundant) Power Supply module, you must install a blank faceplate over the empty Power Supply slot to minimize electromagnetic radiation interference (EMI).

⚠ **DANGER:**

Ensure that the voltage and frequency of the facility power source match the requirements of the PSAX 1250 Power Supply unit. The PSAX 1250 system should only be operated from the power source type indicated on the marking label. Failure to meet this requirement may cause personal injury, fire, and/or damage to the unit.

⚠ **DANGER:**

The OC-3c Single Mode (SM) and the STM-1 Single Mode (SM) modules contain a laser-generating device, which emits a laser light beam from the transmit port. This port is labeled TX on the module faceplate. When the module is inserted into an operational PSAX 1250 chassis, personal injury may result from looking into, or near, either port. Personal injury may also result from looking into, or near, the far end of a connected fiber optic cable. For additional laser safety information, see Appendix B of the *OC-3c Multi-Mode and Single-Mode Module Guide*, the *OC-3c Multi-Mode and Single-Mode 1+1 APS Module Guide*, the *STM-1 Multi-Mode and Single-Mode Module Guide*, and the *STM-1 Multi-Mode and Single-Mode 1+1 MSP Module Guide*.

⚠ **DANGER:**

Interface lines connected to the Voice 2-Wire Office module (model number 20N32) that exit the building premises must be connected to any nationally recognized testing laboratory (NRTL) listed telecommunications protection device that provides primary and secondary protection. These protection devices provide overvoltage protection to the Voice 2-Wire Office module interface lines.

⚠ **DANGER:**

Direct current (DC) power supplies must be installed only in restricted areas (dedicated equipment rooms, equipment closets, or the like), in accordance with Articles 110-16, 110-17, and 110-18 of the National Electric Code, ANSI/NFPA 70. Connect to a -48 V dc source that is electrically isolated from the alternating-current (AC) source and reliably grounded to the earth.

This equipment is designed to permit the connection of the grounded conductor of the direct-current supply circuit to the grounding conductor

on the equipment. If this connection is made, all of the following conditions must be met:

- **This equipment shall be connected directly to the direct-current supply system grounding electrode conductor, the bonding jumper from a grounding terminal bar, or a bus to which the direct-current supply system grounding electrode conductor is connected.**

- **This equipment shall be located in the same immediate area (such as adjacent cabinets) as any other equipment that has a connection between the grounded conductor of the same direct-current supply circuit and the grounding conductor, and also has the point of grounding of the direct-current system. The direct-current system shall not be grounded elsewhere.**

- **The direct-current supply source must be located within the same premises as the equipment.**

- **There shall be no switching or disconnecting devices in the grounded circuit conductor between the direct-current source and the point of connection of the grounding electrode conductor.**

⚠ DANGER:
A readily accessible disconnect device must be provided in the fixed wiring for a direct-current Power Supply. It must be suitable for the rated voltage and current specified in the PSAX 1250 installation guide.

⚠ DANGER:
When installing the unit, the ground connection must always be initiated first and disconnected last.

⚠ DANGER:
Read all installation instructions before connecting the system to a power source.

⚠ DANGER:
This equipment is to be properly grounded prior to operation. Ensure the PSAX 1250 chassis is properly grounded during normal use.

⚠ DANGER:
Wire the direct-current power supply using the appropriate lugs at the wiring end, as shown in the illustration of the direct-current Power Supply terminal block in the installation guide for the PSAX 1250 system. The proper wiring sequence is ground to ground, positive to positive (line to L), and negative to negative (neutral to N). Before servicing direct-current supply voltages, ensure the power is removed from the direct-current circuit. To ensure all power is OFF, locate the circuit breaker on the panel board that services the direct-current circuit, switch the circuit breaker to the OFF position, and tape the switch handle to the circuit breaker in the OFF position. After wiring the direct-current Power Supply, remove the tape from the circuit breaker switch handle and reinstate power by moving the handle of the circuit breaker to the ON position.

⚠️ **DANGER:**
Do not work on the system, connect, or disconnect cables during periods of possible lightning activity.

⚠️ **DANGER:**
Do not perform any action that could create a possible hazard to others or make the working environment and/or the equipment unsafe.

⚠️ **DANGER:**
Locate the emergency power-OFF switch for the location in which work is being performed so, in the event an electrical accident occurs, power can be turned off quickly.

⚠️ **WARNING:**
When using the PSAX product with a PBX and/or Key Telephone System, our system and your equipment must use a common chassis ground connection to avoid ground current loops.

⚠️ **WARNING:**
Be sure to cover all empty slots with blank faceplates to protect your equipment.

⚠️ **WARNING:**
This product relies on the building's installation of short-circuit (over-current) protection. Ensure that a fuse or circuit breaker no larger than 120 V ac, 15 A U.S. (240 V ac, 10 A international) is used on the phase conductors (all current-carrying conductors).

⚠️ **WARNING:**
When stranded wiring is required, use approved wiring terminations, such as closed-loop or spade-type with upturned lugs. These terminations should be the appropriate size for the wires and should clamp both the insulation and conductor.

⚠️ **WARNING:**
Once the PSAX 1250 chassis is operational (power is applied to the chassis) and the OC-3c SM or STM-1 SM module is fully inserted into the chassis backplane, use extreme caution during removal of the fiber optic cable from one or both ports. Keep the protective port caps supplied with these two types of modules nearby (for example, taped to the cable for the port), and place said cap on the port immediately after removing the cable from an operational module.

⚠️ **WARNING:**
If you place the PSAX 1250 chassis on or near the floor, dust or debris may accumulate faster inside the chassis than it would if placed on a table or standing structure. Therefore, if this unit is placed on or near the floor, accelerated routine vent and air filter inspection is necessary to avoid the risk of unit failure and/or injury to property or persons.

▲ **WARNING:**
Be sure to use the ejector handles during installation and removal of I/O and server modules.

▲ **WARNING:**
When inserting modules into the chassis, slide them gently, not forcefully. Excessive force may cause the modules to be seated improperly in the chassis, and result in possible damage to the module or the chassis.

▲ **WARNING:**
Electrostatic discharge (ESD) can damage module and chassis components. All personnel should be grounded and follow proper ESD procedures before installing, removing, or handling PSAX 1250 components.

▲ **WARNING:**
The AC power cord is rated at 125 V ac. If you will be using this unit in an application above 125 V ac, you must source an appropriate Agency-approved cordset.

▲ **WARNING:**
You must maintain the minimum 5.08 cm (2 in) of clearance on both sides of the chassis for adequate airflow, or the equipment might fail due to overheating. If you place the unit on or near the floor, dust will accumulate faster inside the chassis.

▲ **WARNING:**
Interface lines connected to the Voice 2-Wire Station module must be connected only to telephone sets. Do not connect these station port interface lines to Public Switched Telephone Network (PSTN) type interfaces.

▲ **CAUTION:**
If your system or location loses power or your current session ends abnormally while you are in the process of configuring the system, and you have not yet saved the values permanently, you will lose all unsaved values you have applied on the various windows.

▲ **CAUTION:**
Ultimate disposal of this product should be handled according to all laws and regulations in your specific geographic region.

▲ **CAUTION:**
Install or remove modules one at a time. Doing this aids in preventing the PSAX 1250 system from indicating any erroneous failure messages, and allows the PSAX 1250 system to reinitialize and display the accurate configuration of the module that is inserted.

▲ **CAUTION:**
When using a DSP2A, DSP2B or DSP2C Voice Server module and an Enhanced DS1/E1 module with a PBX and/or Key Telephone System, the PSAX 1250 system and your equipment must use a common chassis ground connection to avoid ground current loops, which could affect voice quality.

Contents

Contents

Contents

Installation Checklist

This section provides an overview of the tasks you must complete to install the PSAX 1250 system. Use the following installation checklist to help assure that your installation goes well. Details on system installation follow this checklist.

Note: Be sure to take notes on your installation process, results, and any problems associated with your installation of the PSAX 1250 system. Additional space is provided at the end of this checklist for notes.

Procedure	Your Notes/ Comments
Before You Start Installation:	
1. Read all installation instructions before proceeding. Be sure you understand and follow the safety precautions provided in "Safety Information" on page xi.	❐
2. Verify that your equipment shipment is complete. Ensure that you have ordered the correct equipment for your system configuration. (See Table 14 on page 23 for the various types of installation configurations for the PSAX 1250 system.):	❐
~ If you are installing the PSAX 1250 system into a telco frame or cabinet rack, check the width of the frame to ensure that you have the appropriate chassis size.	
~ Check your mounting brackets to ensure they are the correct type (front-position or mid-position).	
3. Select a location that:	❐
~ Accommodates the weight and size of the PSAX 1250 system	
~ Offers adequate ventilation and a controlled climate	
~ Is conveniently located near electrical outlets or other power sources and the equipment it will serve	
4. Ensure that you have the appropriate tools needed for installation. See the heading "Tools and Materials Needed" on page 26 for a list of the items you will need.	❐
5. Verify that the input power from your facility power source meets the specifications in Table 13 on page 22 for the type of Power Supply you will be using in your PSAX 1250 system.	❐

Installation Checklist

Procedure		Your Notes/ Comments
6.	If you are installing multiple PSAX 1250 systems, calculate the amount of electrical supply capacity needed to accommodate all equipment on each circuit. See "Facility Power Source Requirements" on page 22 for details.	❒
	Installing Hardware in the Telco Rack or Cabinet:	
1.	Install the EMI filter kit(s) (in your Power Supply box) in the air deflector(s).	❒
2.	Install the PSAX 1250 chassis into the telco rack. See "Mounting the Chassis and Air Deflector" on page 37 for details.	❒
3.	Install the air deflector into the telco rack. See "Mounting the Chassis and Air Deflector" on page 37 for details.	❒
4.	Ground the PSAX 1250 chassis. See "Grounding the Chassis" on page 42 for details.	❒
5.	Insert the Power Supply, Stratum 3–4, and CPU modules into the chassis. See "Installing the Common Equipment Modules" on page 45 for details.	❒
6.	Insert the I/O modules into the chassis. See "Installing the I/O and Server Modules" on page 48 for details.	❒
Note:	Note: Do not take the individual modules out of their electrostatic discharge (ESD) protective bags until you are actually ready to install them in the chassis.	
	Making Connections to the Unit:	
1.	Connect your network cabling to the unit. See "Connecting Your Network Cabling" on page 50 for details.	❒
2.	Connect the computer you will use for system configuration and management to the PSAX 1250 system. See "Connecting the Console Workstation to the PSAX 1250 System" on page 52 for details.	❒
	Starting Up the PSAX 1250 System:	
1.	Apply power to the PSAX 1250 system. See "Supplying Power to the System" on page 53 for details.	❒

Procedure	Your Notes/ Comments	
2. Verify that the LED indicators on the equipment and I/O modules are reporting that all components are functioning properly. See "Checking the LED Indicators" on page 54 for details.		❒
3. Ensure that the connection between the PSAX 1250 system and the computer is operational.		❒

Additional Notes

Note: Use this page for additional notes about the process, results, and any problems associated with your installation of the PSAX 1250 system.

Additional Notes

Installation Checklist

About This Guide

Purpose of This Guide

The *PacketStar™PSAX 1250 Installation and Operation Guide* provides information about the following:

- Observing appropriate safety, electrostatic discharge (ESD), and ventilation precautions in setting up and operating the PSAX 1250 Access Concentrator (PSAX 1250) system

- Setting up your hardware components in preparation for installation

- Installing your PSAX 1250 chassis and related hardware

- Installing user-selected input/output (I/O) and server modules into the PSAX 1250 chassis

- Starting up the PSAX 1250 system

- Running system checkout tests on the PSAX 1250 system

- Shutting down the PSAX 1250 system

- Removing modules from the installed PSAX 1250 system

Note: If you are installing a new, unconfigured system for the first time, you should read through this guide before beginning the installation process.

Audience for This Guide

The information in this guide is intended for people who will install the PSAX 1250 system hardware.

What You Should Know

Before you use this document or operate the PSAX 1250 chassis you should already understand and have experience with the following:

- Electrical safety and electrical installation techniques and procedures

- General installation of communications hardware

Only authorized personnel should use the Access Concentrator system.

Related Reading

Lucent Technologies Information Products

Product Information Library
To install and use your PSAX 1250, you will need to read the following publications, which are provided on your Lucent Technologies PSAX 1250 Product Information Library CD-ROM.

Printed Documents
For your convenience, the following documents from your Product Information Library CD-ROM are also available in printed form. For ordering information, contact your Lucent Technologies distributor or account representative.

Table 1. PacketStar ™ Release 6.3.0 Product Information Library (Printed Documents)

Document	Issue	COMCODE	Document Number
PSAX 1250 Installation and Operation Guide, Release 6.3	Issue 1	300303237	255-700-015
PSAX 1250 User Guide, Release 6.3	Issue 1	300303252	255-700-017
PSAX 1250 Fan Tray and Patch Panel Installation Guide	Issue 3	300165701	585-229-123
PacketStar ™ *Family of Access Concentrators, Release Note, System Software Release 6.3.0*	Issue 1	N/A	N/A
PacketStar ™ *Connection Gateway API Developer's Guide, Release 6.3.0*	Issue 1	300314515	255-700-100
Using the PacketStar ™ PSAX Access Concentrator Caller ID Feature Application Note	Issue 1	300284338	255-700-006
PacketStar ™ ATM Access Concentrators and DEFINITY ECS Application Note	Issue 1	300306065	255-700-122
PacketStar ™ ATM Access Concentrators Trunk Conditioning Application Note	Issue 1	300287018	255-700-072
Connecting a CBX or GC Switch to a PacketStar ™ PSAX Access Concentrator Via an ATM Port Application Note	Issue 1	300287059	255-700-012

Table 2. *PacketStar™* **Modules Product Information Library (Printed Documents)**

Document	Issue	COMCODE	Document Number
Alarm Module User Guide, Release 6.3	Issue 1	300303062	255-700-027
Channelized DS3 Module User Guide, Release 6.3	Issue 1	300303070	255-700-028
Channelized STS-1e T1 Module User Guide, Release 6.3	Issue 1	300303088	255-700-029
DS1 IMA Module User Guide, Release 6.3	Issue 1	300303096	255-700-032
DS3 ATM Module User Guide, Release 6.3	Issue 1	300303104	255-700-033
DS3 Frame Relay Module User Guide, Release 6.3	Issue 1	300303112	255-700-034
DSP2A, DSP2B and DSP2C Voice Server Modules User Guide, Release 6.3	Issue 1	300303120	255-700-035
E1 IMA Module User Guide, Release 6.3	Issue 1	300303138	255-700-036
E3 ATM Module User Guide, Release 6.3	Issue 1	300303146	255-700-037
Enhanced DS1 Module User Guide, Release 6.3	Issue 1	300303161	255-700-038
Enhanced E1 Module User Guide, Release 6.3	Issue 1	300303161	255-700-039
Ethernet Module User Guide, Release 6.3	Issue 1	300303179	255-700-040
High-Density E1 Module User Guide, Release 6.3	Issue 1	300303187	255-700-073
High-Speed Module User Guide, Release 6.3	Issue 1	300303195	255-700-041
Medium-Density DS1 Module User Guide, Release 6.3	Issue 1	300298676	255-700-120
Multi-Serial Module User Guide, Release 6.3	Issue 1	300303203	255-700-042

Table 2. *PacketStar*™ **Modules Product Information Library (Printed Documents)**

Document	Issue	COMCODE	Document Number
OC-3c Multi-Mode and Single- Mode 1+1 APS Modules User Guide, Release 6.3	Issue 1	300303211	255-700-043
OC-3c Multi-Mode and Single-Mode Modules User Guide, Release 6.3	Issue 1	300303229	255-700-044
Route Server Module User Guide, Release 6.3	Issue 2	300303328	255-700-052
STM-1 Multi-Mode and Single-Mode 1+1 MSP Modules User Guide, Release 6.3	Issue 1	300303336	255-700-046
STM-1 Multi-Mode and Single-Mode Modules User Guide, Release 6.3	Issue 1	300303344	255-700-045
Tones and Announcements Server Module User Guide, Release 6.3	Issue 1	300303427	255-700-121
Voice 2-Wire Office Module User Guide, Release 6.3	Issue 1	300303351	255-700-047
Voice 2-Wire Station Module User Guide, Release 6.3	Issue 1	300303377	255-700-048

Other Publications

Numerous books are currently available on the subject of basic telecommunications technology and specific protocols. In addition to such general reading, you should also be familiar with the specifications identified in the following documents:

- American National Standards Institute (ANSI) documents

  - ~ T1.207, Operations, Administration, Maintenance, and Provisioning (OAM&P) Terminating Test Line Capabilities and Access Arrangements
  - ~ *T1.403, af-phy-0016.000* and *af-test-0037.000*
  - ~ *T1.646, Broadband ISDN-Physical Layer Specification for UNI Including DS1/ATM*

- ATM Forum Technical Committee Specifications:

  - ~ *Circuit Emulation Service Interoperability Specification Version 2.0, af-vtoa-0078.000*
  - ~ *Specifications of (DBCES) Dynamic Bandwidth Utilization, af-vtoa-0085.000*
  - ~ *Integrated Local Management Interface Specification Version 4.0, af-ilmi-0065.000*
  - ~ *Interim Inter-switch Signaling Protocol (IISP) Specification Version 1.0, af-pnni-0026.000*

- ~ *Private Network-Network Interface (PNNI 1.0) Specification Version 1.0, af-pnni-0055.000*
- ~ *Private Network-Network Interface (PNNI 1.0) Specification Version 1.0 Addendum, af-pnni-0066.000*
- ~ *Private Network-Network Interface (PNNI 1.0) Specification Version 1.0 Errata and PICS, af-pnni-0081.000*
- ~ *Traffic Management Specification Version 4.1*, af-tm-0121.000
- ~ *User to Network Interface (UNI) Specification Version 3.0*
- ~ *User to Network Interface (UNI) Specification Version 3.1*
- ~ *VTOA AAL1 Trunking Services,* af-vtoa-0098.000

- • ATM Forum Implementation Agreements:

  - ~ *Inverse Multiplexing over ATM Version 1.0, af-phy-0086.000*
  - ~ *Inverse Multiplexing over ATM Version 1.1, af-phy-0086.1*

- • Bellcore Documents:

  - ~ *FR-796, Reliability and Quality Generic Requirements*
  - ~ *GR-63-CORE, NEBS*
  - ~ *GR-124-CORE (for OAM)*
  - ~ GR-246-CORE (for Tones and Announcements Server Module test capability)
  - ~ *GR-253-CORE, Issue 2, Synchronous Optical Network (SONET) Transport Systems: Common Generic Criteria (for Channelized STS-1e module)*
  - ~ *GR-499-CORE, Common Requirements for TSGR*
  - ~ *GR-820-CORE, OTGR Section 5.1, Generic Transmission Surveillance*
  - ~ *GR-1089-CORE, Emissions*
  - ~ *GR-1248-CORE, Operations of ATM Network Elements*

- • *CCITT Interface Between Data Terminal Equipment and Data Circuit-Terminating Equipment for Synchronous Operation of Public Data Networks, Recommendation X.21*

- • CTR Documents

  - ~ CTR 4
  - ~ CTR 12
  - ~ CTR 13

- • ETSI 300-233, Access Digital Section for ISDN Primary Rates

- • Frame Relay Forum (FRF) Implementation Agreements:

  - ~ *FRF.1—User-to-Network Interface (UNI)*
  - ~ *FRF.2—Network-to-Network Interface (NNI)*
  - ~ *FRF.3—Multi-protocol Encapsulation Impementation Agreement*
  - ~ *FRF.5—Frame Relay/ATM PVC Network Interworking*
  - ~ *FRF.8—Frame Relay/ATM PVC Service Interworking*

- • *IEEE 802.1D Specification*

- • *International Telecommunication Union (ITU) Documents*

~ *G.703, Physical/Electrical Characteristics of Hierarchical Digital Interface*

~ *G.704, Synchronous Frame Structures Used at Primary and Secondary Hierarchical Levels*

~ *G.736, Characteristics of Synchronous Digital Multiplex Equipment Operating at 2048 Kb*

~ *G.775, Loss of Signal (LOS) and Alarm Indication Signal (AIS)*

~ *G.823, The Control of Jitter and Wander Within Digital Networks Which Are Based on the 2048 Kb/S Hierarchy*

~ *I.356, B-ISDN ATM Layer Cell Transfer Performance*

~ *I.361, B-ISDN ATM Layer Specification*

~ *I.363, B-ISDN ATM Adaptation Layer (AAL) Specification*

~ *I.371, B-ISDN Traffic Control and Congestion Control*

~ *I.431, ISDN, PRI User-Network Interface Layer 1 Specifications*

~ *I.610, ISDN Maintenance Principles, B-ISDN OAM*

~ *Q.2110, B-ISDN SAAL Service Specific Connection Oriented Protocol (SSCOP)*

~ *Q.2130, B-ISDN SAAL Service Specific Coordination Function (SSCF) for Support of Signaling at the User-Network Interface*

~ *Q.2931, B-ISDN DSS2 User-Network Interface (UNI) Layer 3 Specification*

- *TIA/EIA-464-B Requirements for Private Branch Exchange (PBX) Switching Equipment* (for caller ID/flash hook signaling)

- *44.736 Mbps DS3 Physical Layer,* af-uni-0010.002 (for Channelized DS3 module)

- *DS3 Physical Interface Specification,* af-phy-0054 (for Channelized DS3 module)

- Sun Microsystems, JRE 1.2.1_3 Release Notes

- *Internet Engineering Task Force (IETF) Request for Comment (RFC) Documents*

    ~ *RFC 792, Internet Control Message Protocol (ICMP)*

    ~ *RFC 1406, Definitions of Managed Objects for the DS1 and E1 Interface Types*

    ~ *RFC 1407, Definitions of Managed Objects for the DS3 and E3 Interface Types*

    ~ *RFC 1595, Definitions of Managed Objects for the SONET/SDH Interface Types*

    ~ *RFC 1661, Point-to-Point Protocol*

    ~ *RFC 1662, PPP in HDLC-like Framing*

    ~ *RFC 2364, PPP Over AAL-5*

Conventions Used in This Document

Text Conventions

Text Types Used in This Document

This book uses a different kind of type for each kind of text you will see on screens and equipment. In general, text you see in the book will closely resemble what you see on the screens and equipment. The following table shows how each typographical convention is used.

Appearance	How it is used
SERIF NORMAL, ALL CAPS	Text on module panels or other hardware
`Fixed-width normal`	Text you read on a screen
Sans serif bold	Menu commands followed by commands on pull-down menus (separated by commas)
	A menu item followed by a pull-down menu item
Serif bold	Text you type on a text-based screen or inside a field in a window
	Any key that you press on the keyboard
Serif italics	A variable name for which you will substitute your own information
	An argument or parameter on a command line

Icons and Symbols

Follow all safety guidelines in this document to help prevent personal injury to you and damage to the PSAX 1250 Access Concentrator system equipment. Refer to the procedures within this installation guide for important safety information and proper procedures.

Standard icons and symbols to alert you to dangers and cautions are listed below.

⚠ **DANGER:**
Warnings for a general personal injury hazard are identified by this format.

▲ **WARNING:**
Warnings relating to risk of equipment damage or failure are identified by this format.

▲ **CAUTION:**
Warnings relating to risk of data loss or other general precautionary notes are identified by this format.

Note: Identifies additional information pertinent to the text preceding this note.

Technical Support

If you experience a problem with your PSAX 1250 system, refer to the *Lucent Technologies InterNetworking Systems Global Warranty* card that accompanied your PSAX 1250 product shipment for instructions on obtaining support in your area.

About Lucent Technologies

History

Lucent Technologies is the communications systems and technology company formed through the restructuring of AT&T. We bring with us a tradition of more than 125 years of experience and a dedication to superior customer service.

Lucent Technologies manufactures, sells, and services a complete line of customer premises communications units, and commercial and multimedia communications and messaging systems designed and supported by our research and development unit, Bell Laboratories.

Our legacy and our spirit of innovation allow Lucent to provide our customers with the tools needed to communicate effectively, any time and anywhere, and to integrate the latest technologies into real-life solutions that help make business work.

For More Information

To learn more about the *PacketStar*™ family of ATM Multiservice Access Concentrators and the complete line of Lucent Technologies products, visit our Web site at *www.lucent.com.*

About the *PacketStar*™ PSAX Product Family

Lucent's PacketStar ™ PSAX family provides a complete range of multiservice access concentrators, as described in Table 3.

This manual applies to the PSAX 1250 only. For details on installing, operating, or managing other PSAX equipment, see the appropriate guides for those chassis.

Table 3. *PacketStar*™ PSAX Product Family

Target Market	Device Name	Application/Description
Small Customer Premises	AC 60	The *PacketStar* AC 60 is ideal for enterprise networks seeking to consoli-date branch office voice, video, and data traffic onto a single ATM net-work.
		Supporting up to four user interfaces, this system offers high port-den-sity in a small footprint for mid-to-large sized customer premises appli-cations. It supports a full range of interfaces such as DS1/E1, DS3/E3, OC-3c and STM-1 in both Single- and Multi-mode, 10/100BaseT Ether-net, analog voice, or digital voice with processing capabilities.
	PSAX 15	The *PacketStar* PSAX 15 offers a low-speed T-1/E-1 integrated access option, especially for AAL-2 voice-focused applications.
		A scalable, multiservice access concentrator for enterprise applications, the *PacketStar* PSAX 15 optimizes wide area network (WAN) bandwidth with toll-quality voice compression, traffic optimization, and port scal-ability from T-1/E-1 to OC-3c connections.
	PSAX 20	The *PacketStar* PSAX 20 system is the most scalable and flexible multi-service access product in its class. This scalability enables service provid-ers to meet the demands of a growing enterprise customer with a single-edge solution.
		The PSAX 20 optimizes wide area network bandwidth with toll-quality voice compression, traffic optimization, and port scalability from T1/E1 to OC-3c/STM-1 connections.
	PSAX 50	The *PacketStar* PSAX 50 provides a low-cost, entry-level platform for multiservice access onto a public or private asynchronous transfer mode (ATM) network at speeds up to T-1/E-1. The PSAX 50 unit accommodates up to 10 I/O interfaces, supporting a variety of voice, video, and data connections. It is upgradable to the more powerful PSAX 100 unit simply by upgrading the software.
		This low-speed T-1/E-1 integrated access solution is also appropriate for remote sites.

Table 3. *PacketStar*™ **PSAX Product Family**

Target Market	Device Name	Application/Description
Customer Premises	PSAX 100	The *PacketStar* PSAX 100 unit offers high-speed (n X T-1/E-1 to OC-3c/STM-1) integrated access at the customer's premises. Designed to enable service providers to offer multiple applications and broadband services to corporate customers, the *PacketStar* PSAX 100 unit cost-effectively extends ATM services beyond the wide area network, into the customer premises.
		The PSAX 100 unit can accommodate up to 17 I/O interfaces that support a high mix of native applications and broadband services, including 10/100 Mbps Ethernet, frame relay, circuit-switched services for voice and video applications, and high-speed ATM connections for broadband services. The PSAX 100 also supports a wide range of ATM interfaces for network uplink access to a wide area network, including T-1/E-1, T-1/E-1 ATM IMA, T-3/E-3, and OC-3c/STM-1.
	PSAX 600	The *PacketStar* PSAX 600 is a more sophisticated unit, ideal for low-end multiservice access concentration in the customer's premises or small central office. Designed to enable service providers to offer multiple applications and broadband services to multitenant and large enterprise customers, the *PacketStar* PSAX 600 furnishes a powerful, mid-level broadband service access solution and low-speed ATM access concentration.
		The PSAX 600 economically supports a high mix of applications and services enabling service providers to deliver advanced data, voice, and video services. The PSAX 600 unit can accommodate up to 57 I/O interfaces supporting 10/100 Mbps Ethernet ports, frame relay, circuit-switched services for voice and video applications, and high-speed ATM connections for broadcast-quality MPEG video over ATM, and high-throughput router and server connections, as well as advanced broadband services.
Carrier Class Office	PSAX 1250	The *PacketStar* PSAX 1250 is designed to provide a full range of central office-based multiservice access concentration. Ideal for the central office or a large enterprise's multiservice access concentration, the *PacketStar* PSAX 1250 provides highly reliable network access for TDM voice, frame relay, and ATM data applications.
		The PSAX 1250 I/O interfaces (that include 75 bps to 30 Mbps serial, T-1/E-1, DS3/E-3/STS-1e, OC-3c/STM-1, Ethernet and 2-wire station/office options) are supported by a sophisticated package of features. These features include a PNNI (Private Network-to-Network Interface), ILMI (Integrated Local Management Interface), 1+1 APS (Automatic Protection Switching), trunk alarming, and an SS7 signaling gateway interface. Featuring a 1.2 Gbps ATM cell bus architecture, carrier-class reliability, and full redundancy, the PSAX 1250 is a cost-effective access switch solution for bridging to legacy equipment.

Table 3. *PacketStar*™ **PSAX Product Family**

Target Market	Device Name	Application/Description
	PSAX 2300	The *PacketStar* PSAX 2300 offers carrier-grade, high-density multiservice access concentration. Designed to provide multiservice access concentration in the central office or for a large enterprise customer, the *PacketStar* PSAX 2300 provides network access for TDM voice, frame relay, and ATM data applications.
		The PSAX 2300 I/O interfaces (that include 75 bps to 30 Mbps serial, T-1/E-1, DS3/E3/STS-1e, OC-3c/STM-1, Ethernet and 2-wire station/office) are supported by a sophisticated package of features, such as PNNI (Private Network-to-Network Interface), ILMI (Integrated Local Management Interface), 1+1 APS (Automatic Protection Switching), trunk alarming, and an SS7 signaling gateway interface. Featuring a 3.9 Gbps ATM cell bus architecture, carrier-class reliability, provisions for OC-12c interfaces, and N x T-1/E-1 module protection switching, the PSAX 2300 solves many demanding and diverse network design challenges with ease.

Comments on This Guide

To comment on the *PacketStar*™*PSAX 1250 Installation and Operation Guide*, please complete the comment card that accompanied your shipment and mail it to the following address:

Manager, Information Design and Development
InterNetworking Systems
Broadband Carrier Networks
Access Technology Group
Lucent Technologies
8301 Professional Place
Landover, MD 20785
U.S.A.

You may also fax the comment card to us at: 301-809-4540.

About This Guide
Comments on This Guide

Getting Started

Overview of This Section

This section provides a general description of the PacketStar ™ ™ PSAX 1250 Access Concentrator hardware components, hardware and environmental specifications for the PSAX 1250 Access Concentrator, and guidelines for protecting the equipment from ESD damage. Read this section to ensure that you have ordered the equipment you need for your environment, and that you have all required tools and materials to perform installation.

Using the Installation Checklist

Planning and preparation are essential for completing a successful installation and system startup. An Installation Checklist is provided in the front of this guide. The checklist serves as an overview of the tasks as you progress through the procedures in this guide. Check off the tasks as you complete them.

Before You Begin

Before you start setting up, configuring, and using your new PSAX 1250 system, be sure you complete the following:

- Carefully read the safety cautions listed in the section, "Safety Information," at the beginning of this guide.

- Record your site-specific specifications such as the IP addresses you will use, and the connections and interfaces you will need. Decide which user names and passwords you will assign.

- Make sure you have IP connectivity to all PSAX devices to be managed.

- Determine the numbering scheme for the in-band connections you will be using.

Product Modification or Repair

Do not make electrical or mechanical modifications to any of the components in the PSAX 1250 systems. Lucent Technologies is not responsible for the

safety or the performance of a modified Lucent Technologies product. Do not remove or attempt to repair or modify any components inside the PSAX 1250 chassis. Do not attempt to repair or modify any failed I/O or server modules. Modifying or tampering with PSAX 1250 components voids your warranty.

PSAX 1250 System Hardware Components

The PSAX 1250 Access Concentrator has two options for different system configurations. The following hardware components make up the PSAX 1250 system:

- Chassis—two types available:
  - ~ 48.26-cm (19-in.) chassis, user-mounted in a standard 48.26-cm (19-in.) cabinet rack or telco frame
  - ~ 58.42-cm (23-in.) chassis, user mounted in a standard 58.42-cm (23-in.) cabinet rack or telco frame
- Common equipment modules:
  - ~ Three types of Power Supply modules available:
    - 110 V ac module
    - 220 V ac module
    - -48 V dc module

    The chassis accommodates redundant Power Supply modules. The redundant configuration is optional, but highly recommended.
  - ~ Stratum 3–4 module

    The chassis accommodates redundant Stratum 3–4 modules. The redundant configuration is optional, but highly recommended.
  - ~ Central processing unit (CPU) module

    The chassis accommodates redundant CPU modules. The redundant configuration is optional, but highly recommended.
- User-selected input/output (I/O) and server modules

  A variety of I/O and server modules are available. See the PSAX 1250 User Guide for more information about the PacketStar I/O and server modules (see "Related Reading" on page 2).

PSAX 1250 System Hardware Specifications

PSAX 1250 Chassis Specifications

The specifications for the PSAX 1250 chassis are given in Table 4.

Table 4. PSAX 1250 Chassis Hardware Specifications

Specification	Description
Slot configuration:	
• 48.26-cm (19-in.) chassis:	16 slots total—12 slots for CPU modules and user-selected I/O and server modules
• 58.42-cm (23-in.) chassis:	20 slots total—16 slots for CPU modules and user-selected I/O and server modules
	2 reserved slots for Stratum 3–4 modules
	2 reserved slots for power supply modules
Dimensions:	
• 48.26-cm (19-in.) chassis:	48.26 cm (19 in.) wide x 26.67 cm (10.5 in.) deep x 17.78 cm (7 in.) high
• 58.42-cm (23-in.) chassis:	58.42 cm (23 in.) wide x 26.67-cm (10.5 in.) deep x 17.78 cm (7 in.) high
Weight:	
• 48.26-cm (19-in.) chassis:	Empty: 4.09 kg (9 lb) Fully populated: approximately 13.62 kg (30 lb)
• 58.42-cm (23-in.) chassis:	Empty: 5.45 kg (12 lb) Fully populated: approximately 15.89 kg (35 lb)
Material:	Aluminum
Color:	Black
Cooling method:	• Convection when mounted in rack • Fan cooling when installed in table-top cabinet or when used with optional fan tray assembly

PSAX 1250 Power Supply Module Specifications

The specifications for the PSAX 1250 110 V ac Power Supply module are found in Table 5.

Table 5. PSAX 1250 110 V ac Power Supply Specifications

Specification	Description
Slot configuration:	Slot 23 or 24 or both (for redundant configuration)
Dimensions:	
Height:	15.75 cm (6.2 in.)
Depth:	24.13 cm (9.5 in.)
Width:	5.4 cm (2.125 in.)
Weight:	1.14 kg (2.5 lb.)
Operating temperature:	0° to 50° C
Operating humidity:	Up to 95%, noncondensing
Storage temperature:	-40° to +70° C (-40° to 158° F)
Units per system:	2 recommended (for redundancy)
Input power:	
• Voltage range:	100 to 240 V ac at 50 to 60 Hz; -48 V dc
• Current required:	4 to 10.5 A ac; 48 V dc
• Maximum power:	540 W
Connector:	One 3-pin connector on the faceplate
LED indicators:	Three indicators: • ACTIVE—green • FAIL—red • NONREDUNDANT—amber (yellow)

The specifications for the PSAX 1250 220 V ac Power Supply module are found in Table 6.

⚠️ **WARNING:**
The AC power cord is rated at 125 V ac. If you will be using this unit in an application above 125 V ac, you must source an appropriate Agency-approved cordset.

Table 6. PSAX 1250 220 V ac Power Supply Specifications

Specification	Description
Slot configuration:	Slot 23 or 24 or both (for redundant configuration)
Dimensions:	

Table 6. PSAX 1250 220 V ac Power Supply Specifications

Specification	Description
Height:	15.75 cm (6.2 in.)
Depth:	24.13 cm (9.5 in.)
Width:	5.4 cm (2.125 in.)
Weight:	• Empty: 1.14 kg (2.5 lb.)
Units per system:	2 recommended (for redundancy)
Input power: • Voltage range: • Current required: • Maximum power:	 100 to 250 V ac at 50 to 60 Hz; -48 V dc 4 to 10.5 A ac; 22.4 A dc 540 W
Connector:	One 3-pin connector on the faceplate
LED indicators:	Three indicators • ACTIVE—green • FAIL—red • NONREDUNDANT—amber (yellow)

The specifications for the PSAX 1250 -48 V dc Power Supply module are found in Table 7.

Table 7. PSAX 1250 -48 V dc Power Supply Specifications

Specification	Description
Slot configuration:	Slot 23 or 24 or both (for redundant configuration)
Dimensions:	
Height:	15.75 cm (6.2 in.)
Depth:	24.13 cm (9.5 in.)
Width:	58.42 cm (23 in.)
Weight:	• Empty: 5.45 kg (12 lb.)
Units per system:	2 recommended (for redundancy)
Input power: • Voltage range: • Current required: • Maximum power:	 -48 V dc 22.4 A 540 W
Connector:	One 3-pin connector on the faceplate
LED indicators:	Three indicators • ACTIVE—green • FAIL—red • NONREDUNDANT—amber (yellow)

PSAX 1250 Stratum 3–4 Module Specifications

The hardware specifications for the PSAX 1250 Stratum 3–4 module are given in Table 8.

Table 8. PSAX 1250 Stratum 3–4 Module Specifications

Specification	Description
Slot configuration:	Slot 21 or 22 or both (for redundant configuration)
Dimensions:	1.78 cm (0.7 in.) wide x 24.13 cm (9.5 in.) deep x 15.75 cm (6.2 in.) high
Weight:	.02 kg (0.475 lb)
Operating temperature:	0° to 50° C
Operating humidity:	Up to 95%, noncondensing
Storage temperature:	-40° to +70° Celsius (-40° to 158° Fahrenheit)
Units per system:	2 recommended (redundant)
Synchronization source:	Internal or external
Accuracy:	Stratum 3 or 4, selectable
External clock input:	Standard ANSI or ITU 64 kbps composite clock
Connector:	One RJ12 connector on the faceplate
LED indicators:	Three indicators: • ACTIVE—green • CLK LOS (clock loss of signal)—amber (yellow) • FAIL—red

⚠ CAUTION:
The external synchronization interface port provided on the Stratum 3–4 module is intended only to be connected to an in-building reference clock signal. The port is not intended to be directly connected to a network interface as outside plant.

PSAX 1250 CPU Module Specifications

The hardware specifications for the PSAX 1250 CPU module are given in Table 9.

Table 9. PSAX 1250 CPU Module Specifications

Specification	Description
Slot configuration:	Slots 11 and 12 (19-in) or Slots 15 and 16 (23-in)
Height:	15.75 cm (6.2 in)
Width:	2.41 cm (0.95 in)
Depth:	24.13 cm (9.5 in)
Weight:	On average, 0.45 kg (1 lb)
Units per system:	2 required (for redundancy)
Power consumption	18 W, average
Processing:	RISC microprocessor
Memory:	128 MB flash drive
	64 MB RAM
Connectors:	One RJ-45 connector labeled ETHERNET and one RJ-12 connector labeled CONSOLE on the faceplate
LED indicators:	Three indicators:
	• ACTIVE—green
	• LOAD—amber (yellow)
	• FAIL—red

PacketStar ™ I/O and Server Module Physical Specifications

The hardware specifications that all PacketStar ™ I/O and server modules have in common are given in Table 10. Specifications unique to each PacketStar ™ module are given in the individual PacketStar ™ Module User Guides.

Table 10. Hardware Specifications for the PacketStar ™ I/O and the Server Modules

Specification	Description
Slot configuration for the PSAX 1250 chassis:	
• 48.26-cm (19-in.) chassis:	Slots 1–10
• 58.42-cm (23-in.) chassis:	Slots 1–14
Height:	15.75 cm (6.2 in.)
Width:	2.41 cm (0.95 in.)
Depth:	24.13 cm (9.5 in.)
Weight:	On average, 1.0 lb (0.45 kg)

PacketStar ™ I/O and Server Module Environmental Specifications

The environmental specifications for the PacketStar ™ I/O and Server modules are given in Table 11.

Table 11. Environmental Specifications for the PacketStar ™ I/O and Server Modules

Specification	Range of Values
Operating temperature:	32° to 122° F
	0° to 50° C
Storage temperature:	-40° to +158° F
	-40° to +70° C
Operating relative humidity:	40 to 60%, optimum; Up to 95%, noncondensing

PacketStar ™ I/O and Server Module Memory, Bandwidth, and Power Consumption

Memory allocation, bandwidth classification (based on the module throughput), and power consumption for each *PacketStar* I/O and server module are given in Table 12 the following table. The bandwidth classification is provided to help you place modules in optimal positions in the PSAX 1250 and PSAX 2300 chassis.

Table 12. Memory Allocation, Bandwidth Classification, and Power Consumption per Module

Module Type	Total Amount of SDRAM (MB)	Module Program and Data Space (MB)	Maximum Input Buffer (MB)	Output Buffer (MB)	Bandwidth Classification	Maximum Heat Dissipa-tion/Power Consump-tion (Watts)
Channelized DS3	24 MB	7 MB	4 MB	13 MB	High	13 W
Channelized STS-1e T1	24 MB	7 MB	4 MB	13 MB	High	13 W
Enhanced DS1	16–64 MB	8 MB	1 MB	Total minus 9 MB	Low	18 W
DS1 IMA	16–64 MB	8 MB	1 MB	Total minus 9 MB	Low	18 W
DS3 ATM	8–64 MB	3 MB	1 MB	Total minus 4 MB	High	15 W
DS3 Frame Relay	8–64 MB	4 MB	1 MB	Total minus 4 MB	High	13 W
DS3 IMA	24 MB	7 MB	4 MB	13 MB	High	13 W

Table 12. Memory Allocation, Bandwidth Classification, and Power Consumption per Module

Module Type	Total Amount of SDRAM (MB)	Module Program and Data Space (MB)	Maximum Input Buffer (MB)	Output Buffer (MB)	Bandwidth Classification	Maximum Heat Dissipa-tion/Power Consump-tion (Watts)
DSP2A Voice Server	512 KB (SRAM)	384 KB (SRAM)	N/A	N/A	Low	14 W
DSP2B Voice Server	512 KB (SRAM)	384 KB (SRAM)	N/A	N/A	Low	14 W
DSP2C Voice Server	1 MB (SRAM)	512 KB (SRAM)	N/A	N/A	Low	16–17 W
Enhanced E1	16–64 MB	8 MB	1 MB	Total minus 9 MB	Low	18 W
E1 IMA	16–64 MB	8 MB	1 MB	Total minus 9 MB	Low	18 W
E3 ATM	8–64 MB	3 MB	1 MB	Total minus 4 MB	High	15 W
Ethernet	64 MB	8 MB	4 MB	4 MB	Low	16 W
High-Density E1 (21-port)	24 MB	7 MB	4 MB	13 MB	High	14.5 W
High-Speed	8–64 MB	3 MB	1 MB	Total minus 4 MB	High	20 W
Medium-Density DS1 (12-port)	24 MB	7 MB	4 MB	13 MB	High	14.5 W
Multi-Serial	8–64 MB	3 MB	1 MB	Total minus 4 MB	Low	15 W
OC-3c MMAQ and SMAQ (two types); STM-1 MMAQ and SMAQ (two types)	8–64 MB	3 MB	Total minus 3 MB, divided by 2	Total minus 3 MB, divided by 2	High	15 W
OC-3c MMTS and SMTS (two types); STM-1 MMTS and SMTS (two types)	8–64 MB	3 MB	Total minus 5 MB	2 MB	High	15 W
OC-3c MM 1+1 APS and SM 1+1 APS (two types)	32 MB	8 MB	12 MB	12 MB	High	11.5 W
Route Server	64 MB	8 MB	N/A	N/A	Low	15 W
STM-1 MM 1+1 MSP and SM 1+1 MSP (two types)	32 MB	8 MB	12 MB	12 MB	High	11.5 W

Table 12. Memory Allocation, Bandwidth Classification, and Power Consumption per Module

Module Type	Total Amount of SDRAM (MB)	Module Program and Data Space (MB)	Maximum Input Buffer (MB)	Output Buffer (MB)	Bandwidth Classification	Maximum Heat Dissipation/Power Consumption (Watts)
Tones and Announcements Server	1 MB (SRAM)	512 KB (SRAM)	N/A	N/A	Low	16–17 W
Voice 2-Wire Office	8 MB	4 MB	N/A	N/A	Low	14 W
Voice 2-Wire Station	8 MB	4 MB	N/A	N/A	Low	15 W

Note: The I/O buffers carry 16,384 cells per megabyte for all Access Concentrator modules except the Voice 2-Wire Office module, the Voice 2-Wire Station module, and the DSP2A, DSP2B, and DSP2C Voice Server modules, which have no cells carried on the I/O buffers. The I/O buffers carry 16,384 cells per megabyte.

Facility Power Source Requirements

Three types of Power Supply modules are available for the PSAX 1250 system:

- 110 V ac Power Supply

- 220 V ac Power Supply

- -48 V dc Power Supply

⚠ WARNING:
Be sure that you have adequate wiring capacity and fuse panel/circuit breaker capacity to accommodate all PSAX 1250 systems and other equipment you plan to install. Insufficient capacity will cause fuses to fail or circuit breakers to trip.

Table 13 provides the facility power source requirements for the operation of one PSAX 1250 system. Use these specifications for one chassis to calculate how much electrical supply capacity you would need for multiple systems.

Table 13. Facility Power Source Requirements for One PSAX 1250 System

AC power source for the 110 V ac Power Supply:	
Voltage range:	90 to 130 V ac at 50 to 60 Hz
Maximum current:	5 A
Maximum power:	300 W

Table 13. Facility Power Source Requirements for One PSAX 1250 System

AC power source for the 220 V ac Power Supply:	
Voltage range:	180 to 250 V ac at 50 to 60 Hz
Maximum current:	2.5 A
Maximum power:	300 W
DC power source for the -48 V dc Power Supply :	
Voltage range:	-42.5 to -56 V dc
Maximum current:	12 A
Maximum power:	550 W

PSAX 1250 System Configurations

Be sure you have ordered and received the correct combination of PSAX 1250 chassis type, Power Supply type, cable management guide kit, air deflector kit, and fan tray assembly for the type of installation configuration you need for your operational environment. Table 14 summarizes system configurations based on equipment required for particular operational environments.

Table 14. PSAX 1250 System Configurations Based on Required Equipment

Equipment Selected			Accessories Required		
Chassis Size	Power Supply Type	Operational Environment	Air Deflector Below Chassis	Air Deflector Above Chassis	Cable Management Guide Kit
58.42 cm (23 in.)	-48 V dc	NEBS	Yes	Yes	Yes
58.42 cm (23 in.)	-48 V dc	Standard	Yes	Yes	Yes
48.26 cm (19 in.)	110 V ac or 220 V ac	Standard	Yes	Yes	No

Note: In some situations, you may need to install a fan tray assembly in addition to an air deflector. Use of the fan tray is recommended when:

- The system is installed in a non-controlled environment where the temperature may exceed the range of optimum operating temperatures.

- The system is directly exposed to sunlight.

- The unit is placed in a closed room or cabinet with poor circulation.

- At least one I/O module has a power consumption rating of 18 watts or higher (see Table 12 on page 20).

If you are uncertain about whether to use a fan tray with your system, contact Lucent Technologies, Inc. Technical Support (see "Technical Support" on page 8). For additional information about the fan tray and instructions on how to install this equipment, see the *PSAX 1250 Fan Tray and Patch Panel Installation Guide* (see "Related Reading" on page 2). This guide is provided on your PSAX 1250 Product Information Library CD-ROM.

Electrostatic Discharge (ESD) Precautions

The room in which the PSAX 1250 will be located must have built-in precautions to provide protection from ESD damage to electronic components. To protect your PSAX 1250 system, observe the precautions given below.

Grounding Wrist Straps

Using a grounding wrist strap (see Figure 1) is recommended when installing and operating the PSAX 1250.
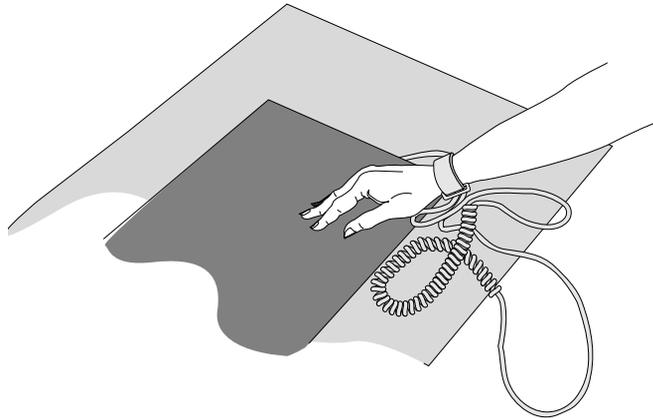

Figure 1. Grounding Wrist Strap

Follow these guidelines for grounding wrist straps:

- Attach at least one wrist strap to a common ground for each unit/electronic rack to be handled.

- Wrist straps or wrist strap cords should have built-in 1 mega ohm (minimum) resistors for operator protection.

- Wrist straps and wrist strap cords should be UL listed.

- Ensure that the cord for the wrist strap is long enough so that you can wear it while working at the cabinet front or back.

Place the wrist strap so you can touch it first and discharge through it instead of discharging on the cabinet.

Floor Covering

Be sure that the room has antistatic flooring (conductive mat, carpeting, or tiles) to minimize static buildup as you walk across the room. Follow these guidelines for installing and maintaining proper flooring:

- The use of grounding foot straps is recommended while walking in rooms providing antistatic flooring. Foot straps provide additional protection against electrostatic discharge. Foot straps should have built-in 1 mega ohm (minimum) resistors for your protection.

- Wool carpeting is not an acceptable flooring.

Other types of carpeting (when used) require daily spraying with a topical antistatic chemical before any work in the system room is performed. This constant attention to carpeting maintenance is acceptable, but time-consuming.

Humidity

Maintaining the proper humidity in the room where the PSAX 1250 system will be located helps control many static problems. This is especially important during the winter heating season. Follow these guidelines to maintain proper humidity for your PSAX 1250 system:

- Maintain the relative humidity of the room between 40 and 60 percent.

- To avoid damage to equipment, do not allow the humidity to increase to the level where condensation would appear on surfaces.

Clothing

When working with the PSAX 1250 system, avoid wearing clothing made from wool or synthetic materials. Try to minimize contact between clothing and electronic units.

Handling Chassis, Modules, and Components

Follow these guidelines for proper installation and handling of the PSAX 1250 hardware to minimize ESD damage.

- Remove the chassis, modules, and components from their shipping containers immediately before you are ready to install them.

- When installing modules and components, use wrist straps connected to a common ground to prevent electrostatic discharge damage. (A common ground is a circuit that provides a ground to the workplace, personnel, grounding wrist straps and foot straps, and so on—a single ground system.)

Store components in static-shielding bags when those components are not in use.

Ventilation

> ⚠ **DANGER:**
> **Openings in the unit are provided for ventilation, to protect it from overheating. These openings must not be blocked or covered. Inadequate ventilation may result in overheating and possible failure of equipment.**

Adequate ventilation around the PSAX 1250 system is critical. Be sure that the ventilation openings are not blocked in any way.

The PSAX 1250 chassis has no cooling fans. To ensure adequate airflow for an PSAX 1250 system when it is installed in an equipment rack or telco frame, you must maintain a minimum clearance of 10.16 cm (4 in.) above and below the chassis. For a system installed in a table-top cabinet, cooling is provided by two fans in the rear of the cabinet. If your system is installed in a table-top cabinet, you must maintain a minimum of 10.16 cm (4 in.) between the cabinet and any object behind the rear of the cabinet.

If you do not provide adequate ventilation, the equipment might overheat and fail. In table-top systems, the cooling fans could cause buildup of dust on the modules in the chassis. To prevent module failure due to dust contamination, you must periodically check for and remove any dust buildup inside the chassis.

Equipment failure due to lack of adequate ventilation, or due to heavy dust contamination voids your warranty.

Equipment Grounding

Be sure that the PSAX 1250 is properly grounded to a common electrical ground. The grounding of the PSAX 1250 unit is provided through the three-wire power cord that connects to the Power Supply modules and grounding point on the chassis. The chassis grounding point must be connected to a common electrical ground to provide proper protection. See "Grounding the Chassis" on page 42 for grounding instructions.

Tools and Materials Needed

Before beginning installation procedures, be sure to have the following tools and materials on hand:

- Grounding wrist strap and foot strap

- Small, pocket-sized slotted (flathead) screwdriver

- Cross-recessed screwdrivers:

  - ~ #3 cross-recessed screwdriver for mounting the terminal block to back side of the air deflector

  - ~ #2 cross-recessed screwdriver for attaching the chassis and air deflector mounting brackets to the telco frame

- Optional power screwdriver (this will save time if you are installing multiple units)

- Nut driver

- Wire cutters and wire strippers

- Plastic cable ties (tie wraps; included with your installation kit)

- Assorted screws (included with your installation kit)

- Wire (8-gauge) for grounding the PSAX 1250 chassis

- Metal file (for grounding the PSAX 1250 chassis to the telco frame)

- Wax string (optional for cable management)

Installing and Operating the PSAX 1250 System

Overview of This Section

This section provides detailed procedures for installing the PSAX 1250 Access Concentrator system.

Note: It is recommended that two people (an installer and an assistant) install this equipment. The time required to install a redundant PSAX 1250 system with air deflector is approximately 3 hours.

▲ **CAUTION:**
Before you begin using the procedures in this section, be sure you have read the "Safety Warnings" and "Getting Started" sections. If you have any questions about or problems with the preparatory tasks, be sure to call Lucent Technologies Technical Support first before beginning the actual installation of the equpiment (see "Technical Support").

Setting Up the Hardware

The PSAX 1250 system is shipped ready to be mounted in an equipment rack cabinet or a telco frame.

The 48.26-cm (19-in.) PSAX 1250 chassis for rack mounting can be mounted in a standard 48.26-cm (19-in.) equipment rack cabinet or a 48.26 cm (19-in.) telco frame. The 58.2-cm (23-in.) PSAX 1250 chassis is mounted in a 58.2-cm (23-in.) cabinet or telco frame.

To prepare for mounting the PSAX 1250 chassis, do the following tasks before installing the chassis into an equipment rack cabinet or telco frame:

- Determine whether you want to reposition the PSAX 1250 mounting angle brackets from their factory-installed position, and then reposition them if necessary. See "Repositioning Chassis Angle Brackets" on page 1.

- Determine whether you want to reposition the air deflector mounting angle brackets from their factory-installed position, and then reposition them if necessary. See "Repositioning Air Deflector Angle Brackets" on page 1.

- If you are installing a 58.2-cm (23-in.) chassis with -48 V dc power supplies, you need to install the -48 V dc filter kit into the 23-in. air deflector. See "Installing the -48 V dc Filter Kit" on page 1.

▲ **WARNING:**
To avoid the risk of personal injury or possible damage to your equipment or configuration, you must install the PSAX 1250 equipment in a restricted access location.

Repositioning Chassis Angle Brackets

For installing the PSAX 1250 chassis in a standard 48.26-cm (19-in) or 58.2-cm (23-in) cabinet or frame, the following options are available for positioning the PSAX 1250 chassis in the rack or frame:

• Mounting angle brackets are placed in a position (front edge of the chassis sidewall), as shipped from the factory, with rack-attaching flanges facing the front for flush-front mounting in a equipment rack. See Figure ? for the positioning of the brackets.
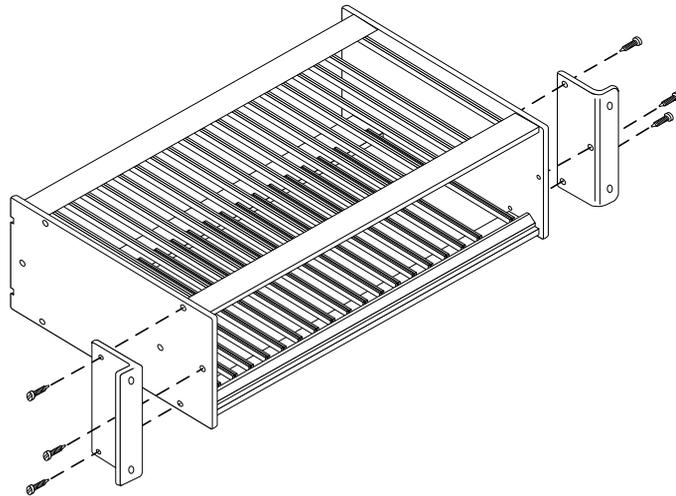
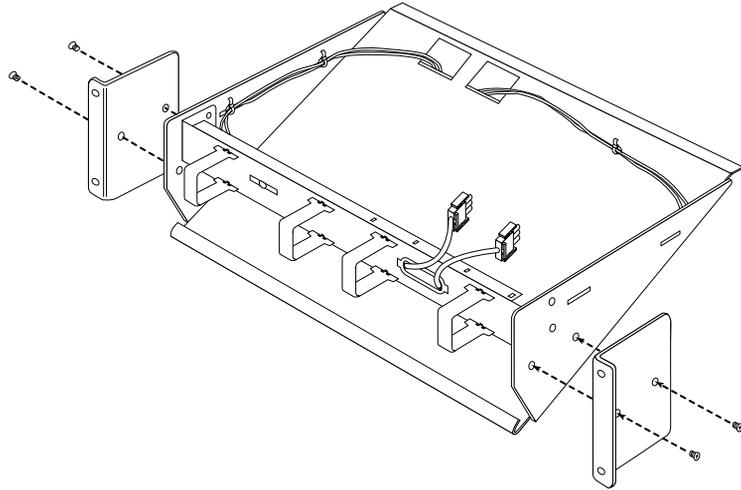**Figure 2. PSAX 1250 Chassis with Front-Position-Mounted Brackets**

- Mounting angle brackets are placed in a position with frame-attaching flanges facing the rear for mid-position mounting in a telco frame. See Figure ? for the positioning of the brackets.
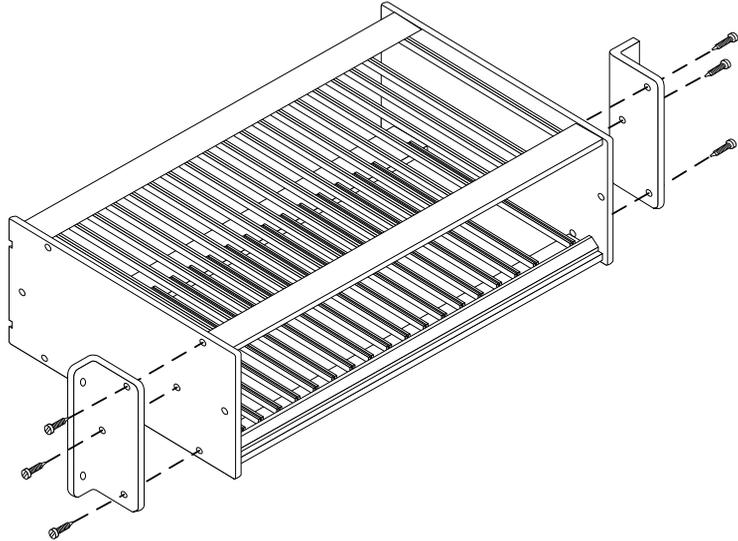
Figure 3. PSAX 1250 Chassis with Mid-Position-Mounted Brackets

- Mounting angle brackets are placed in a position (rear edge of chassis sidewall) with rack-attaching flanges facing the rear for flush-rear mounting on a wall. Do not use this mounting position in a cabinet or frame. This position is available only for the 48.26-cm (19-in.)chassis. See Figure ? for the positioning of the brackets.
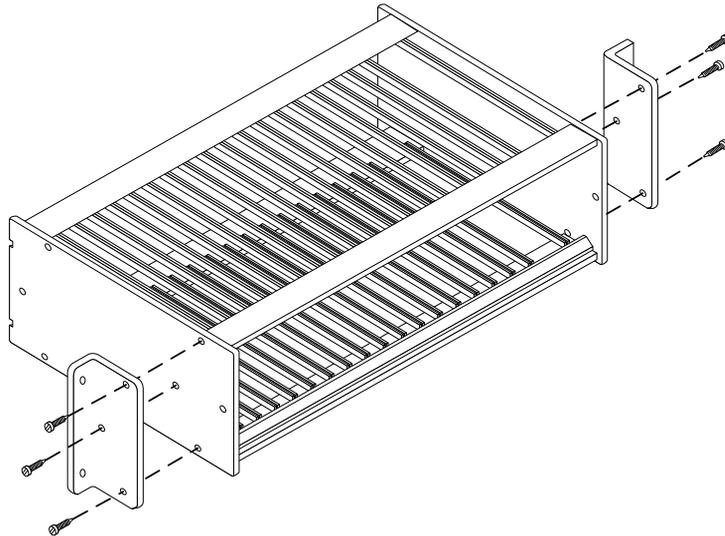
Figure 4. PSAX 1250 Chassis with Rear-Position Mounted Brackets (48.26-cm/19-in. Chassis Only)

Do the following to change the position of the mounting angle brackets:

1 Determine whether you want to reposition the angle brackets.

2 To change the mounting position, if necessary, remove the mounting screws, reposition the brackets, and reinsert the screws.

Repositioning Air Deflector Angle Brackets

The following options are available for positioning the PSAX 1250 chassis in the rack or frame:

- Mounting angle brackets are placed in a position (front edge of the air deflector sidewall), as shipped from the factory, with rack-attaching flanges facing the front for flush-front mounting in an equipment rack. See Figure ? for the positioning of the brackets. This figure illustrates a

filter kit for a -48 V dc Power Supply installed on the back side of the
cable management guide. If you are using an AC Power Supply, this kit is
not needed.

Figure 5. Air Deflector with Front-Position-Mounted Brackets

- Mounting angle brackets are placed in a position with frame-attaching
  flanges facing the rear for mid-position mounting in a telco frame. See
  Figure ? for the positioning of the brackets. This figure illustrates a filter

kit for a -48 V dc Power Supply installed on the back side of the cable management guide. If you are using an AC Power Supply, this kit is not needed.
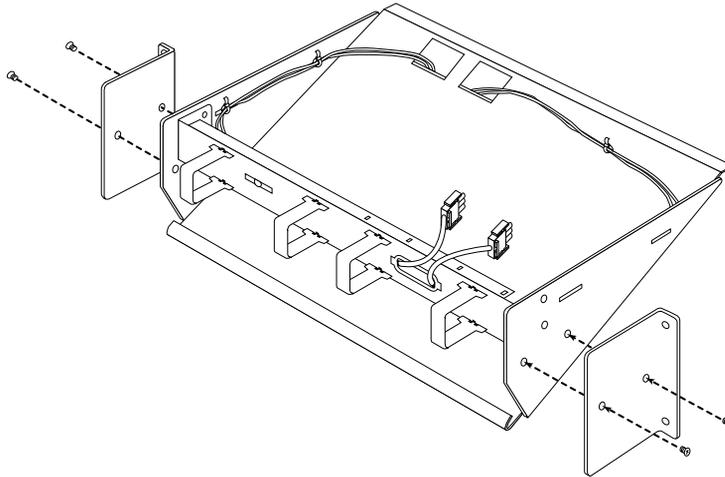
Figure 6. Air Deflector with Mid-Position-Mounted Brackets

Do the following to change the position of the mounting angle brackets:

1 Determine whether you want to reposition the angle brackets.

2 To change the mounting position, if necessary, remove the mounting screws, reposition the brackets, and then reinsert the screws.

Installing the -48 V dc Filter Kit

If you are installing a -48 V dc Power Supply in your PSAX 1250 chassis, you must install a filter kit (shipped with the Power Supply) into the air deflector/cable management guide assembly before installing it into the cabinet or frame. The air deflector assembly is shipped already assembled as

one unit. The filter kit is shipped with its component parts already assembled as illustrated in Figure ?.

RED
(-48 V dc)

TERMINAL BLOCK
IS ATTACHED TO
AIR DEFLECTOR

BLACK
(RETURN)

CABLE TIES
PERMANENT LOCK

FILTER IS INSERTED INTO
CABLE MANAGEMENT GUIDE

GREEN &
YELLOW
(FRAME
GROUND)

FILTERS

PAN HEAD SCREWS

PLUG IS INSERTED INTO
FACEPLATE OF -48 V dc
POWER SUPPLY
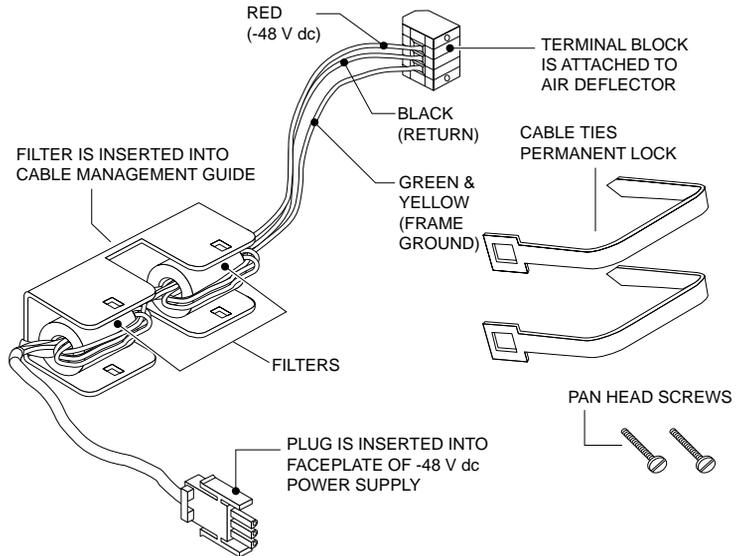
Figure 7. Filter Kit for the -48 V dc Power Supply

Figure ? illustrates the installation of the filter kit into the air deflector/cable management guide assembly.

REAR VIEW OF AIR DEFLECTOR/CABLE MANAGEMENT ASSEMBLY

(A) SNAP THE FILTER BRACKETS INTO THE INSIDE OF THE CABLE MANAGEMENT GUIDE.

(B) ATTACH THE TERMINALBLOCKS TO THE FLANGES ON THE BACK SIDE OF THE AIR DEFLECTOR.

(C) PUSH THE PLUGS THROUGH THE LARGE HOLE IN THE CABLE MANAGEMENT GUIDE.

(D) SECURE THE WIRES TO THE TIE-DOWN LOOPS USING THE PLASTIC CABLE TIES.

WIRES TO THE POWER SUPPLY

FLANGE TO AIR DEFLECTOR

FASTEN SCREWS FOR WIRES TO THE FACILITY POWER SOURCE

Figure 8. Installing the Filter Kit for the -48 V dc Power Supplyinto the Air Deflector

Using Figure ? on page 1 and Figure ? as a guide, do the following to install the filter kit into the air deflector/cable management assembly:

1 Remove the air deflector and filter kit from their packaging. You should save the original carton (including cushioning foam material and module packaging) in which the equipment was received. This allows you to safely ship the system to another location in the future (see "Shipping the System" on page 1).

2 Place the air deflector assembly on a level surface with the front facing away from you.

3 Remove the metal tab covering the large oval hole in the cable management guide (on the front side of the air deflector assembly) by gently twisting the tab several times. Discard the tab.

4 Snap the filter bracket (for the right-hand dc Power Supply) into the clips on the right-hand side (with the front of the air deflector assembly facing you)of the horizontal flange of the cable management guide (label A in Figure ?).

5 Push the terminal block through the square hole near the back of the air deflector (label B in Figure ?).

6 Attach the terminal block to the flange on the back, right-hand side of the air deflector assembly (with the front of the air deflector assembly facing you) using the two screws included with the filter kit. (This will help you determine later which terminal block serves which Power Supply in the event you need to disconnect power. You may also label the terminal blocks and their corresponding Power Supplies appropriately.)

7 Push the plug to the front of the cable management guide through the large oval hole on the vertical plane of the guide (label C in Figure ? on page 1).

8 Make a convenience loop in the wires connecting the filter and the terminal block. Then secure the wires to the inside of the air deflector by using the plastic cable ties (included with the filter kit) to fasten the wires to the tie-down loops (label D in Figure ? on page 1).

9 If you are installing redundant Power Supplies, repeat steps 3–7 for the filter kit that will be used for the left-hand Power Supply, but attach the filter kit to the left-hand side of the horizontal flange on the cable management guide and attach the terminal block to the flange on the back, left-hand side of the air deflector.

Note: Be sure to clip the plastic cable ties closely to remove any excess plastic and avoid leaving sharp exposed ends; this helps protect workers who may be performing subsequent maintenance on the unit from injuring themselves.

To review what the installed filter kit looks like from the front of the air deflector/cable management guide assembly, refer to Figure ? on page 1.

⚠ **WARNING:**
At this point, do not attach the plugs to the faceplate connectors of the -48 V dc Power Supply module, and do not attach the facility power source wires to the terminal blocks. These steps are provided in "Supplying Power to the System" on page 1.

Mounting the Chassis and Air Deflector

Before installing the chassis and the air deflector assembly in a rack cabinet or telco frame, you must:

- Position the angle brackets in the desired position on the PSAX 1250 chassis and on the air deflector assembly (see "Repositioning Chassis Angle Brackets" on page 1)

- If using the -48 V dc Power Supply module, install the filter kit into the air deflector/cable management guide assembly (see "Installing the -48 V dc Filter Kit" on page 1)

⚠ **WARNING:**
In some situations, you may need to install a fan tray in addition to an air deflector. Using the fan tray is recommended when:

- The system is installed in a non-controlled environment where the temperature may exceed more or less than normal temperatures

- The system is directly exposed to sunlight

- The unit is placed in a closed room or cabinet with poor circulation

- At least one I/O module is 18 watts or higher, as indicated on the module

If you are uncertain about whether to use a fan tray with your system, contact Lucent Technologies, Inc. Technical Support (see "Technical Support" on page 8). For additional information about the fan tray and instructions on how to install this equipment, see the *Fan Tray and Patch Panel Installation Guide* (585-229-756). This guide is provided on the PSAX 1250 Product Information Library CD-ROM.

Figure ? shows a 58.2-cm (23-in.) PSAX 1250 chassis mounted in a frame with an air deflector/cable management guide assembly and an installed filter kit for a -48 V dc Power Supply.
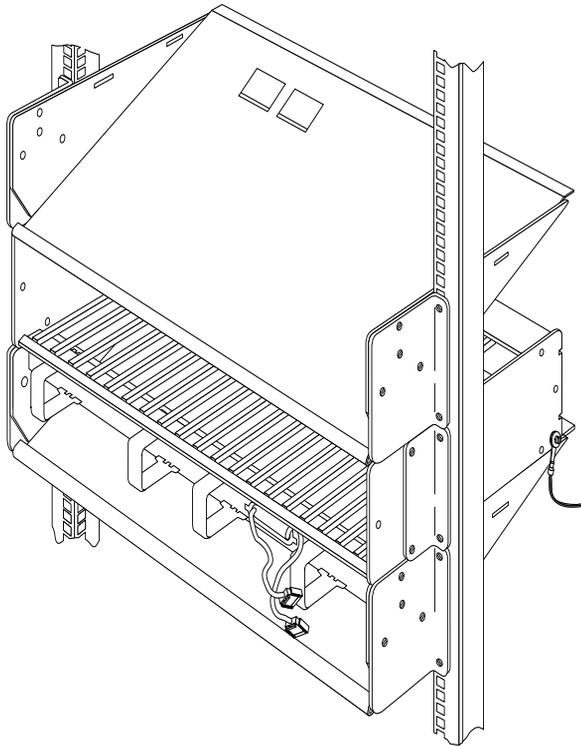
Figure 9. Rack-Mounted 58.2-cm/23-in. PSAX 1250 System with Air Deflectors

⚠ **DANGER:**
When populated with modules, the PSAX 1250 chassis can weigh up to 13.62 kilograms (30 pounds) or more. Lifting or holding such a load

while trying to fasten it to a rack can be hazardous, especially when working alone. To avoid personal injury or damage to the equipment, mount and securely bolt the chassis to the rack or the frame before inserting the modules.

Perform the following steps to mount the chassis and air deflector to a rack or frame:

1 Remove the PSAX 1250 chassis from its packaging. You should save the original carton (including cushioning foam material and module packaging) in which the PSAX 1250 chassis or the PSAX 1250 table-top cabinet was received. This allows you to safely ship the system to another location in the future (see "Shipping the System" on page 1).

2 Place the chassis top-side up (with the slot numbers appearing in the bottom of the chassis) in the desired position in the rack cabinet or the frame.

3 Align the holes on the mounting brackets with the holes on the telco frame. (Use a network diagram provided by your network designer, if available, to identify the correct location for the chassis.) Two installers should complete this step so that one person can hold the chassis in place, while the other person screws the mounting brackets to the frame.

Note: If you are installing more than one PSAX 1250 chassis in a rack cabinet or a frame, be sure that the clearance above and below the chassis is enough to accommodate the air deflectors. Ensure that the clearance behind the rack is at least 10.16 cm (4 in.).

4 Secure the chassis to the rack cabinet or the frame with the screws provided in the installation kit as shown in Figure ?.
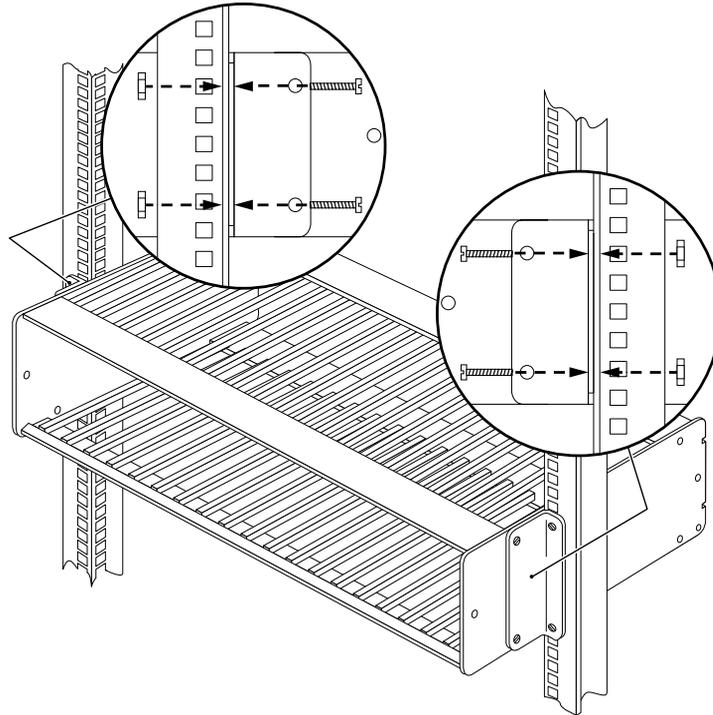

Figure 10. Securing the PSAX 1250 Chassis to a Telco Frame

5 If you are installing more than one PSAX 1250 chassis in a rack cabinet or a frame, be sure that the clearance above and below the chassis is enough to accommodate the air deflectors. Ensure that the clearance behind the rack is at least 10.16 cm (4 in.).

⚠ **WARNING:**
You must install an air deflector/cable management assembly both above and below each PSAX 1250 chassis in the rack or frame. If you are operating your equipment in a NEBS environment, you must install an air deflector (with no cable management guide or filter kit) above the highest chassis in the rack or frame (see Table 14 on page 23).

6 Place an air deflector/cable management guide assembly above the PSAX 1250 chassis in the rack or the frame.

7 Secure the assembly to the rack or the frame with the screws provided in the installation kit as shown in Figure ?.
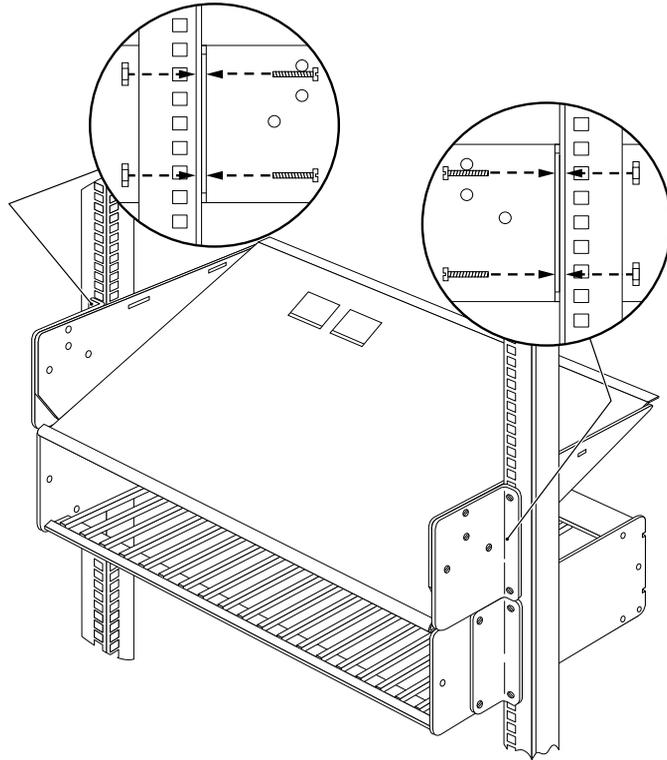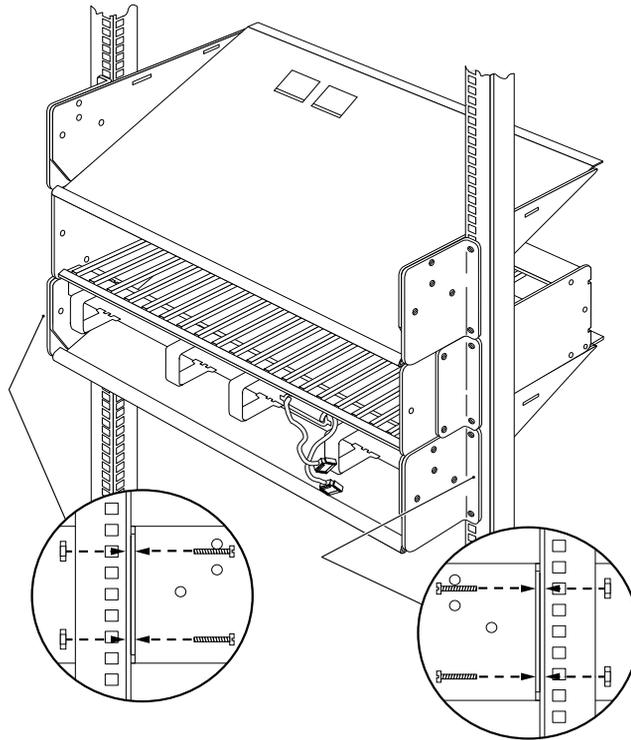

Figure 11. Securing an Upper Air Deflector Assembly to a Telco Rack

8 Place an air deflector/cable management guide assembly below the PSAX 1250 chassis in the rack or the frame.

9 Secure the assembly to the rack or the frame with the screws provided in the installation kit as shown in Figure ?.

Figure 12. Securing the Lower Air Deflector Assembly to a Telco Rack

10 Repeat steps 1 through 9 for each chassis in the rack or frame.

Note:

- For a NEBS environment, install an air deflector (with no cable management guide or filter kit) above the highest chassis in the rack or frame.

- For a 48.26-cm (19-in.) chassis with AC power supplies, a cable management guide is not required, but is highly recommended to help keep the cable connections on the module faceplates secure and organize the cabling on the side of the chassis out of the way.

Grounding the Chassis

Be sure that the PSAX 1250 is properly grounded to a common electrical ground. Use one of the following methods to ground the chassis.

Grounding the Chassis from the Grounding Stud

Note: Grounding the chassis from the grounding stud is the preferred method for grounding your PSAX 1250 equipment. However, your facility may have other, additional instructions for grounding your equipment. You should consult with your network designer and facilities management for any specific instructions on grounding equipment at your location.

Connect the facility ground wire to the PSAX 1250 chassis by following these steps:

1 Do either one of the following (see Figure ? on page 1):

a. Grounding wire with terminal ring: Place the terminal ring of the facility ground wire onto the grounding screw (with green head, provided in the installation kit), and insert the screw into the hole located about 1.27 cm (1/2 in) from the bottom and rear edges of the right side of the chassis.

b. Grounding wire with bare end: Insert the grounding screw (with green head, provided in the installation kit) into the hole located about 1.27 cm (1/2 in) from the bottom and rear edges of the right side of the chassis, and tightly wrap the bare end of the facility grounding wire for several rotations around the screw.

2 Using a screwdriver or nut driver, tighten the screw securely to the side of the chassis as shown in Figure ?
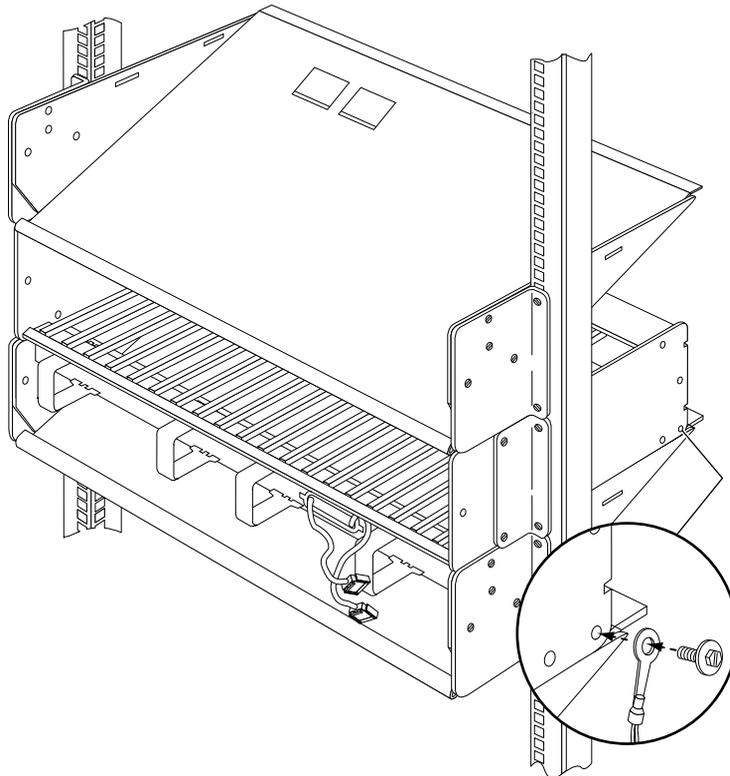

Figure 13.   Grounding the PSAX 1250 Chassis from the Grounding Stud

3 Connect the other end of this grounding wire to either the telco frame (if the frame is grounded) or to the facility grounding point.

Grounding the Chassis from the Terminal Block

⚠ WARNING:
Grounding the chassis from the grounding screw, as described above, is the preferred method for grounding your PSAX 1250 equipment. However, your facility may have other, additional instructions for grounding your equipment. You should consult with your system engineer and facilities management for any specific instructions on grounding equipment at your location.

⚠ DANGER:
Use this procedure only if the telco frame is itself grounded.

1   If the telco frame is painted, use the metal file to remove all paint from the area on which you will ground the chassis.

2   Attach a terminal ring to one end of the green grounding wire supplied in your installation kit.

3   Insert a regular metal screw through the terminal ring and insert the screw into an existing hole in the telco frame within the area from which you removed the paint. Tighten the screw to secure the terminal ring to the frame.

4   Secure the bare end of the green grounding wire to the opening on the terminal block that corresponds to the green ground wire (coming from the Power Supply) on the opposite side of the terminal block.

5   Tighten the screw using your small flathead screwdriver to secure the green wire in the opening of the terminal block.

⚠️ **WARNING:**
When using a DSP module and an Enhanced DS1/E1 module with a PBX and/or key telephone system, the PSAX 1250 system and your equipment must use a common chassis ground connection to avoid ground current loops, which could affect voice quality.

Go to "Installing the Common Equipment Modules" for more instructions.

Installing the Common Equipment Modules

Install the common equipment modules first in the PSAX 1250 chassis, before installing the I/O and server modules. See Figure ? for an illustration of slot numbering on the 48.26-cm (19-in.) PSAX 1250 chassis.
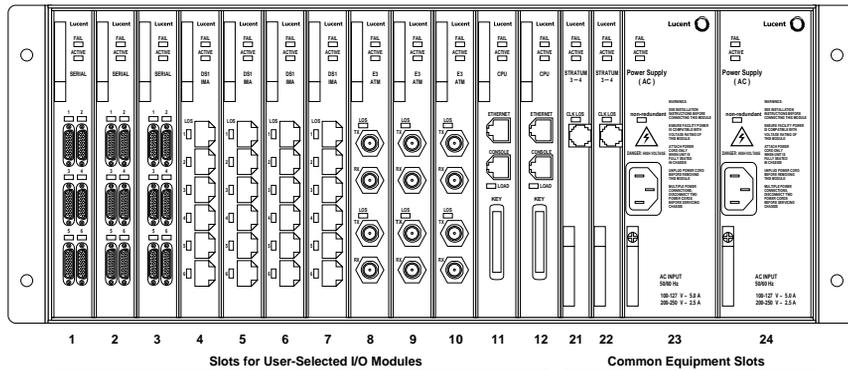

Figure 14. Front View of a Typical 48.26-cm (19-in.) PSAX 1250 System

Installing the Power Supply Modules

Perform the following steps to install the AC or DC Power Supply in the chassis.

⚠ DANGER:

Shock hazard! Do not perform any maintenance on this equipment until you have turned off the power using the specified procedure. Failure to observe proper precautions could cause serious injury or death. Dangerous voltage is present in a Power Supply connected to an electrical power source. Before beginning installation of the Power Supply module, be sure the power cord is not connected to the module.

⚠ WARNING:

The input voltage from the AC power source must be compatible with the type of AC Power Supply module you are installing or it will fail (see Table 13 on page 22).

1 Prepare the Power Supply by doing one of the following:

   a. **AC Power Supply.** Remove the module from its protective packing material and protective bag. Save these materials for future use, if needed. Open the ejector clip. Go to step 2.

   b. **DC Power Supply.** Ensure that you have installed the filter kit for the -48 V dc Power Supply into the air deflector/cable management guide assembly (see "Installing the -48 V dc Filter Kit" on page 1). Remove the module from its protective packing material and protective bag and save these materials for future use, if needed. Open the ejector clip. Go to step 2.

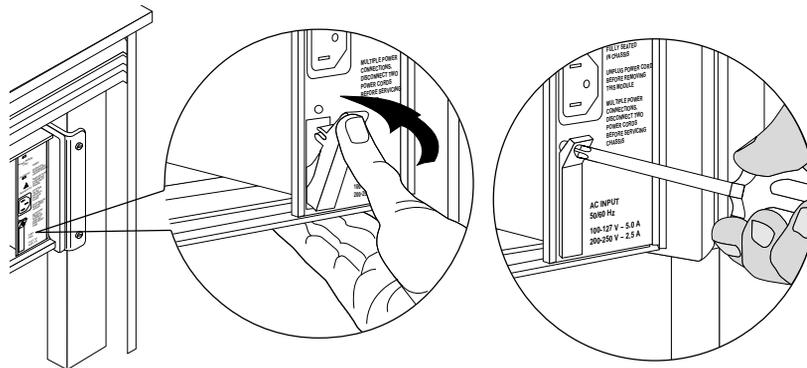2 Slide the AC or the DC Power Supply module into the top and bottom channels of either slot 23 or 24 of the chassis.

Figure 15. Securing the PSAX 1250 Power Supply Module in the Chassis

3 Firmly press the ejector handle on the faceplate, as shown in Figure ?, and verify that the module is secure in its slot.

4 Using a cross-recessed screwdriver, tighten the captive screw in the ejector handle securely to the faceplate of the Power Supply module.

⚠ DANGER:
Shock hazard! Do not perform any maintenance on this equipment until you have turned off the power using the specified procedure. Failure to observe proper precautions could cause serious injury or death.
When setting up an PSAX 1250 system that uses a single (that is, nonredundant) Power Supply module, you must install a blank faceplate over the empty Power Supply slot to prevent potential electrical shock.

5 If you are not installing a second (redundant) Power Supply, insert a blank faceplate into the empty slot (either slot 23 or 24).

Note: A blank faceplate to cover the empty CPU module slot is included in the installation kit packed with your PSAX 1250 system. Additional faceplates are available.

6 **Optional.** Repeat steps 1 through 4 to install the redundant Power Supply module into slot 23 or 24.

Installing the Stratum 3–4 Modules

Use the following procedure to install the Stratum 3–4 module:

⚠ CAUTION:
Be sure to wear a grounding wrist strap when handling I/O, CPU, and Stratum 3–4 modules.

1 Remove the module from its protective packing material and protective bag. Save these materials for future use, if needed.

2 Slide the Stratum 3–4 module into slot 21 or 22 of the chassis. Visually inspect the slot numbers to ensure that you are inserting the module into the correct slot.

3 Firmly press the latch on the faceplate, and verify that the module is secure in its slot.

4 If you are not installing a second (redundant) Stratum 3–4 module, insert a blank faceplate into the empty slot (either slot 21 or 22).

Note: A blank faceplate to cover the empty Stratum 3–4 module slot is available.

5 **Optional.** Repeat steps 1 and 2 to install the redundant Stratum 3–4 module into slot 21 or 22.

Installing the CPU Modules

Use the following procedure to install the CPU module:

> **⚠ CAUTION:**
> **Be sure to wear a grounding wrist strap when handling I/O, CPU, and Stratum 3–4 modules.**

1 Remove the module from its protective packing material and protective bag. Save these materials for future use, if needed.

2 Open the ejector clip (seating tab) on the CPU module. Note that the ejector clip on the CPU module is located at the top of the module; ensure that you place the module into the chassis right-side up.

3 To install the CPU module, do **one of** the following:

~ **In the 48.26-cm (19-in.) chassis**, slide the CPU modules (redundant configuration) into slots 11 and 12.

Note: For a single CPU chassis, position the CPU module in slot 12 and a blank I/O faceplate in slot 11.

~ **In the 58.2-cm (23-in.) chassis**, slide the CPU modules (redundant configuration) into slots 15 and 16.

Note: For a single CPU chassis, position the CPU module in slot 16 and a blank I/O faceplate in slot 15.

4 Firmly press the latch on the module faceplate and verify that the module is secure in its slot as demonstrated in Figure ? on page 1.

Installing the I/O and Server Modules

Install the PSAX 1250 common equipment modules first (see "Installing the Common Equipment Modules" on page 1), before installing the I/O and the server modules. See Figure ? on page 1 for an illustration of slot numbering on the PSAX 1250 chassis.

Because of the architecture of the backplane, we recommend that you install your I/O and server modules beginning at the left side of the chassis in slot 1. If you have a mix of different module types with lower speed line rates such as the DS1 module and higher speed line rates such as the OC-3c module, you should position your modules so that neither of the dual buses on the backplane is overloaded. The reason for this scheme is that traffic from odd-numbered slots is routed through bus A and traffic from even-numbered slots is routed through bus B. For example, given slots 1 through 10 and five modules with higher-speed rates and five modules with lower-speed rates, you would position two higher-speed modules in adjacent slots 1 and 2, then two lower-speed modules in the next slots 3 and 4, then two higher-speed modules in the next slots 5 and 6, and so on.

Use the following procedure to install the I/O and server modules:

> **⚠ CAUTION:**
> **Be sure to wear a grounding wrist strap when handling I/O, CPU, and Stratum 3–4 modules.**

1   To install the I/O and server modules, slide the module vertically into any slot 1 through 10 in the 48.26-cm (19-in.) PSAX 1250 chassis, or slot 1 through 14 in the 58.2-cm (23-in.) chassis, as shown in Figure ?.
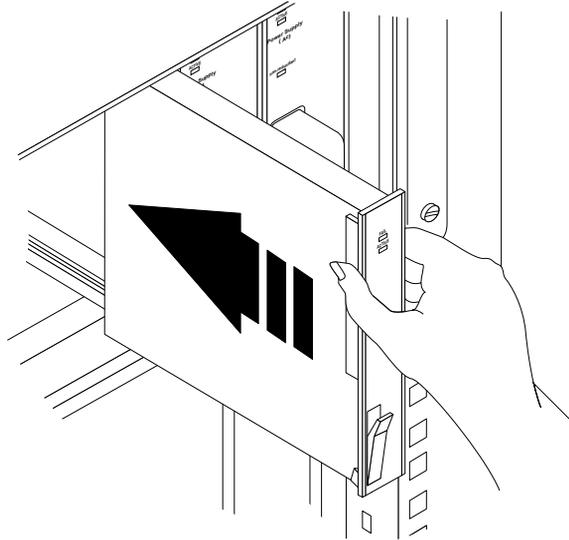

Figure 16.   Installing an I/O or Server Module

2   Firmly press the latch on the module faceplate and verify that the module is secure in its slot as demonstrated in Figure ? on page 1.

3   Insert blank faceplates into any remaining empty slots numbered 1 through 12 in the PSAX 1250 chassis.

Note: Blank faceplates to cover any empty I/O module slots are separately orderable items.

⚠️**WARNING:**
Electrostatic discharge can severely damage sensitive electronic circuits. Before handling any electronic hardware, be sure to wear a grounding wrist strap or other static-dissipating device.
Be sure to cover all empty slots with blank faceplates to maintain optimum electromagnetic interference (EMI) shielding of the chassis.

⚠️ **DANGER:**
The OC-3c Single Mode (SM) and the STM-1 Single Mode (SM) modules contain a laser-generating device, which emits a laser light beam from the transmit port, labeled TX on the module faceplate. While the module is inserted into an operational PSAX 1250 chassis, do not look directly (deliberately or accidentally) into either port, because direct contact of the laser beam will damage the human eye.

⚠ **WARNING:**
Once the PSAX 1250 chassis is operational (power is applied to the chassis) and the OC-3c SM or STM-1 SM module is fully inserted into the chassis backplane, use extreme caution if you need to remove the fiber-optic cable from one or both ports. Keep the protective port caps supplied with these two types of modules nearby (for example, taped to the cable for the port), and place a cap on the port immediately after removing a cable from a live module.

Connecting Your Network Cabling

Once all modules are fully installed in the PSAX 1250 chassis, use the steps in the following procedure to connect your network cabling to the module and chassis interface connectors.

Note: You must supply most of your own network cabling. Specialized cables for the Multi-Serial and the High-Speed modules are available as separately orderable parts.

1 To provide Stratum 3–4 clock synchronization, connect your network cabling (user supplied) to the EXTERNAL SYNC. port on the Stratum 3–4 faceplate.

2 Connect the network cabling for your chosen I/O modules to the connectors on the module. If applicable, refer to the appropriate module user guide for pin configurations (see "Related Reading" for a list of the I/O and server module user guides).

An example of an equipment configuration showing network cabling is shown in Figure ?. Note that, in this example, an optional patch panel and a fan tray are used.
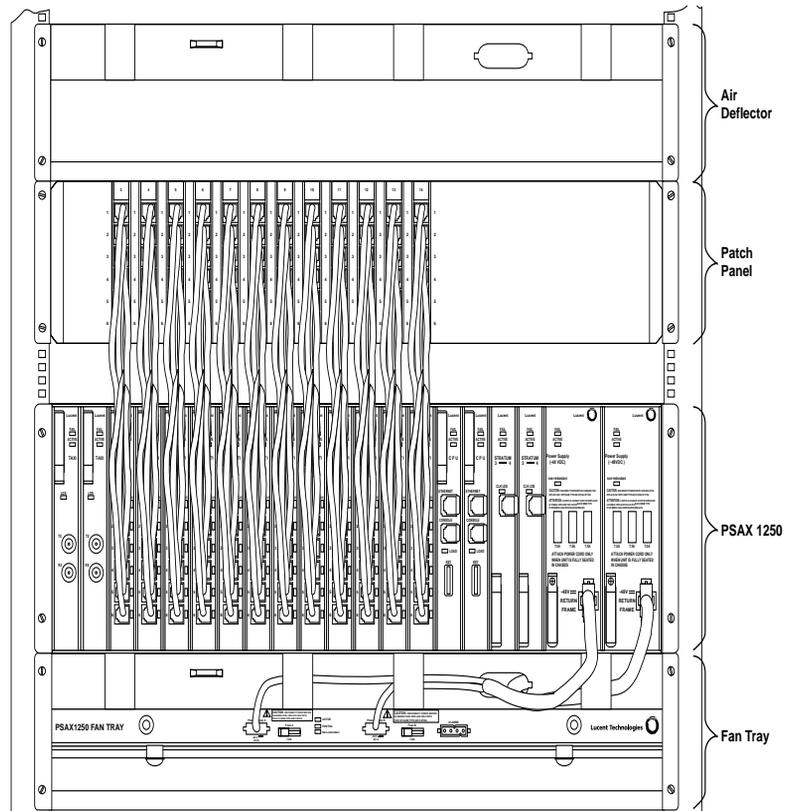
Figure 17. A Sample Completed Installation with a 23-In. PSAX 1250 Chassis with Fan Tray, Patch Panel, and Network Cabling

Operating the System

Before starting up your PSAX 1250 system, be sure you have:

- Installed the Power Supply module(s), the Stratum 3–4 module(s), the CPU module(s), and the I/O and server modules

- Verified that all modules are properly seated in the chassis

- Verified your network and electric power cabling connections

⚠ **DANGER:**

Shock hazard! Do not perform any maintenance on this equipment until you have turned off the power using the specified procedure. Failure to observe proper precautions could cause serious injury or death. Neither the PSAX 1250 chassis nor the Power Supply module has an on/off switch. The power to the chassis is automatically applied when you have properly installed the Power Supply module into the chassis, and you connect the power cord to the power source.

Connecting the Console Workstation to the PSAX 1250 System

You can connect your PSAX 1250 system to a console workstation in one of two ways:

- Connect the PSAX 1250 system directly to a personal computer workstation by using the serial interface cable supplied in the installation kit.

- Connect the PSAX 1250 system to an Ethernet device by using an Ethernet cable (user-supplied).

To install the serial interface cable for connecting the PSAX 1250 system directly to a personal computer workstation (or notebook computer), use the steps in the following procedure:

Connecting the Serial Interface Cable

Begin

1 Install the RJ11-to-DB9 adaptor (supplied in the installation kit) into a serial port on the personal computer.

2 Insert one RJ11 connector on the serial interface cable (supplied in the installation kit) into the RJ11 port labeled CONSOLE on the Stratum 3–4 module faceplate, and the other RJ11 connector into the RJ11-to-DB9 adaptor (see Figure ?).
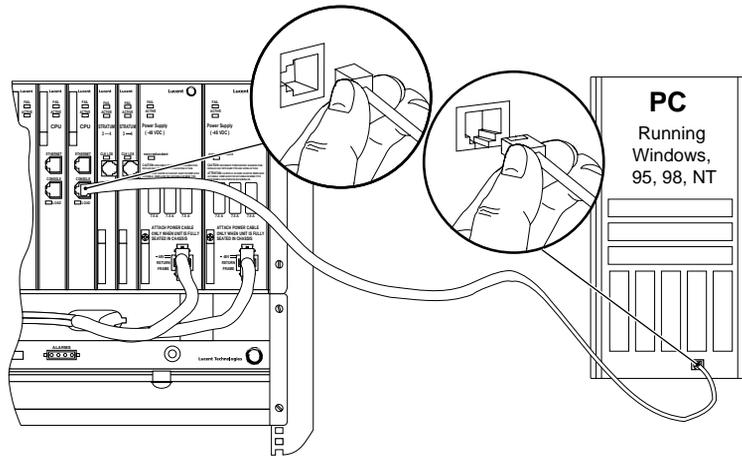
Figure 18. Connecting the Serial Interface Cable from the Computer to the PSAX 1250 Chassis

End

To install an Ethernet cable for connecting the PSAX 1250 system to an Ethernet device, use the steps in the following procedure:

Connecting the Ethernet Cable

Begin

1 Insert one RJ45 connector on the Ethernet cable into the RJ45 port labeled ETHERNET on the PSAX 1250 chassis faceplate.

2 Insert the other RJ45 connector into the desired Ethernet device (such as a hub).

End

Supplying Power to the System

1 Verify that the input power from the power source meets the specifications in Table 13 on page 22 for the type of Power Supply you have installed in your chassis.

2 Press the L-shaped plug of the power cord firmly onto the Power Supply module faceplate, as shown in Figure ?.
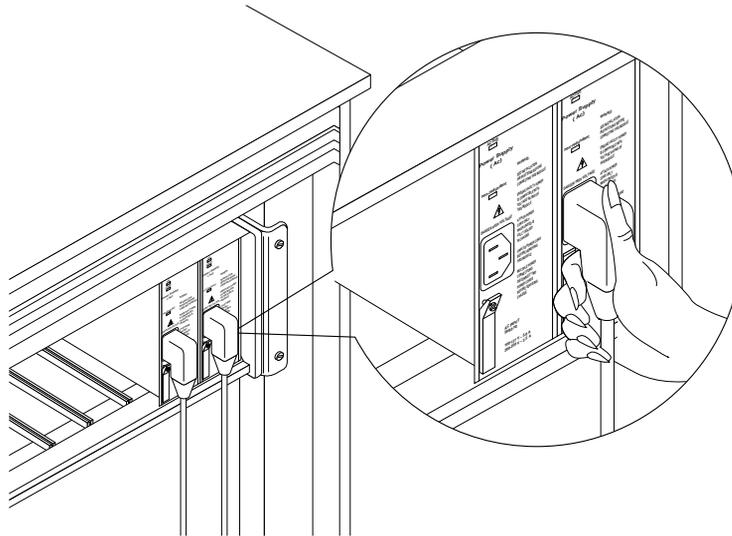
Figure 19. Inserting the Power Cord into the PSAX 1250 AC Power Supply Module

Variation for the -48 V dc Power Supply. Push the connector plug onto the pins on the faceplate. Make sure the connector plug is attached to the wire securely.

3 Make certain that the plug is fully seated onto the pins on the faceplate.

4 Insert the standard male plug at the other end of the power cord into the AC power source.

Variation for the -48 V dc DC Power Supply. Insert the wires from the facility power source, making sure to match the red wires and the black wires to each other, into the terminal block and tighten the screws. Also check to make sure the wires coming from the filters are connected tightly.

5 **Optional.** Repeat steps 2–4 to connect the redundant Power Supply to the input power source.

System response: The PSAX 1250 system initializes (takes about 10–15 seconds). If you have a table-top cabinet system, the cooling fans start up.

Checking the LED Indicators

Once you have supplied power to your PSAX 1250 system, verify that the LED indicators on the equipment modules and each I/O module are reporting the correct status:

1   Check to see that the green light-emitting diode (LED) indicators, ACTIVE, on both Power Supply modules (or one for a nonredundant system) are illuminated. If the red LED indicator, FAIL, is illuminated, the Power Supply module is not functioning, or the power source is not providing power.

Note: If your PSAX 1250 system does not start up correctly, contact Lucent Technologies, Inc. Technical Support (see "Technical Support" on page 8).

2   Check the CPU module(s), Stratum 3–4 module(s), and each I/O module to ensure that their LED indicators are reporting the correct status. See "Status Indicators for the Common Equipment Modules" on page 1 for details.

Shutting Down the System

⚠ **DANGER:**

Shock hazard! Do not perform any maintenance on this equipment until you have turned off the power using the specified procedure. Failure to observe proper precautions could cause serious injury or death. Neither the PSAX 1250 chassis nor the Power Supply module has an on/off switch. The power to the chassis is automatically removed when you disconnect the power cord (both power cords for redundant systems) from the power source.

1   Disconnect the power cord from the facility receptacle or other power source by pulling the plug, **not** the cord, out of the receptacle or connector.

2   Firmly grasp the plug inserted in the Power Supply module faceplate, and pull it, **not** the cord, with a steady pressure out of the faceplate, as shown in Figure ?.

Figure 20. Removing the Power Cord from the PSAX 1250 AC Power Supply Module

Variation for the DC Power Supply. Turn the collar on the connector plug counterclockwise until it is loose, and pull the plug out of the faceplate.

Status Indicators for the Common Equipment Modules

The common equipment modules have light-emitting diode (LED) indicators that provide visual status of various functions in the modules. Status indicators for the Power Supply module, the Stratum 3–4 module, and the CPU module are described in this section. (See the appropriate PacketStar ™ Access Concentrator module guides for descriptions of the LED indicators on the I/O modules you are using.)

Power Supply Module Indicators

The Power Supply modules have three types of LED indicators. The 110 V ac Power Supply is shown in Figure ?, the 220 V ac Power Supply is shown in

Figure ? on page 1, and the -48 V dc Power Supply is shown in Figure ? on page 1.
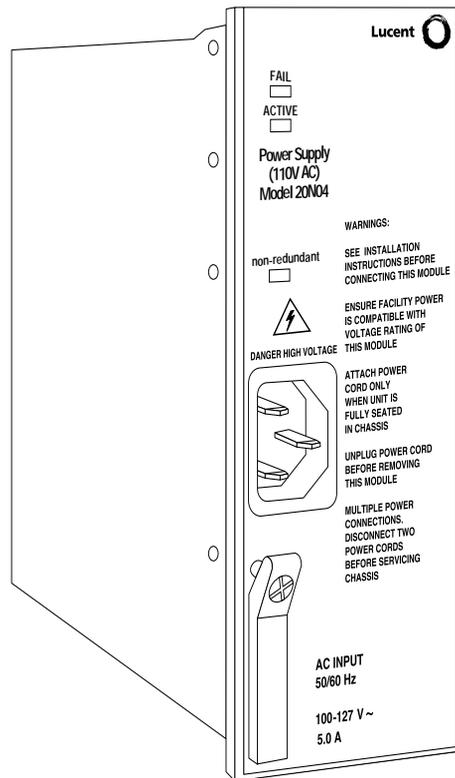
Figure 21. PSAX 1250 110 V ac Power Supply Module
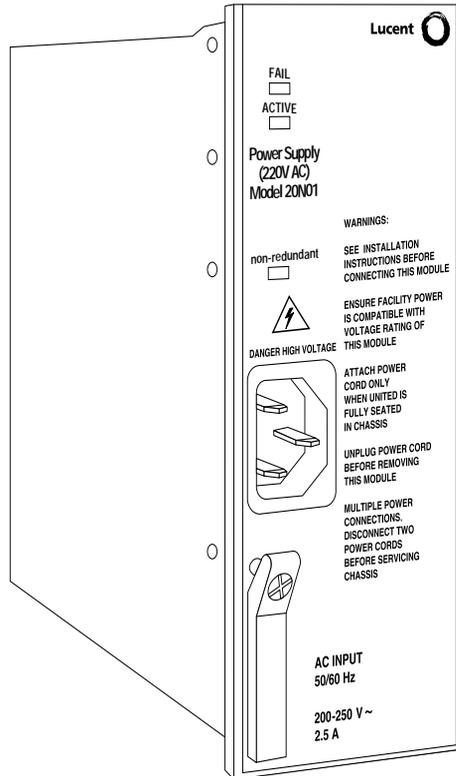
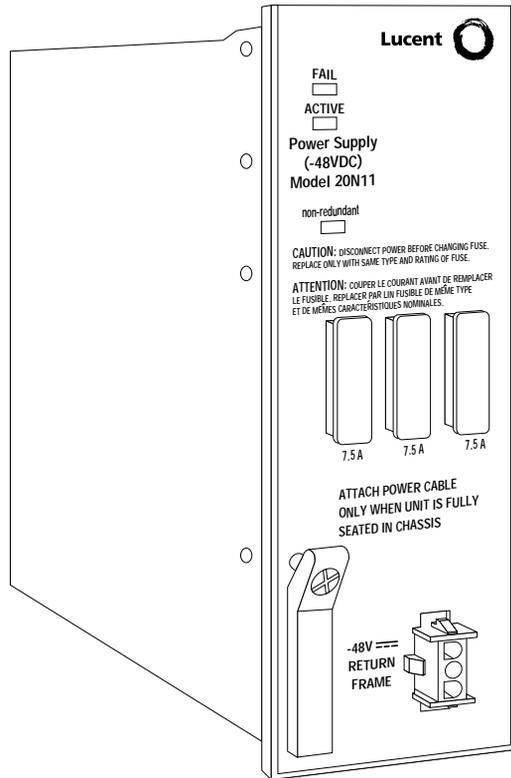**Figure 22. PSAX 1250 220 V ac Power Supply Module**

Figure 23. PSAX 1250 -48 V dc Power Supply Module

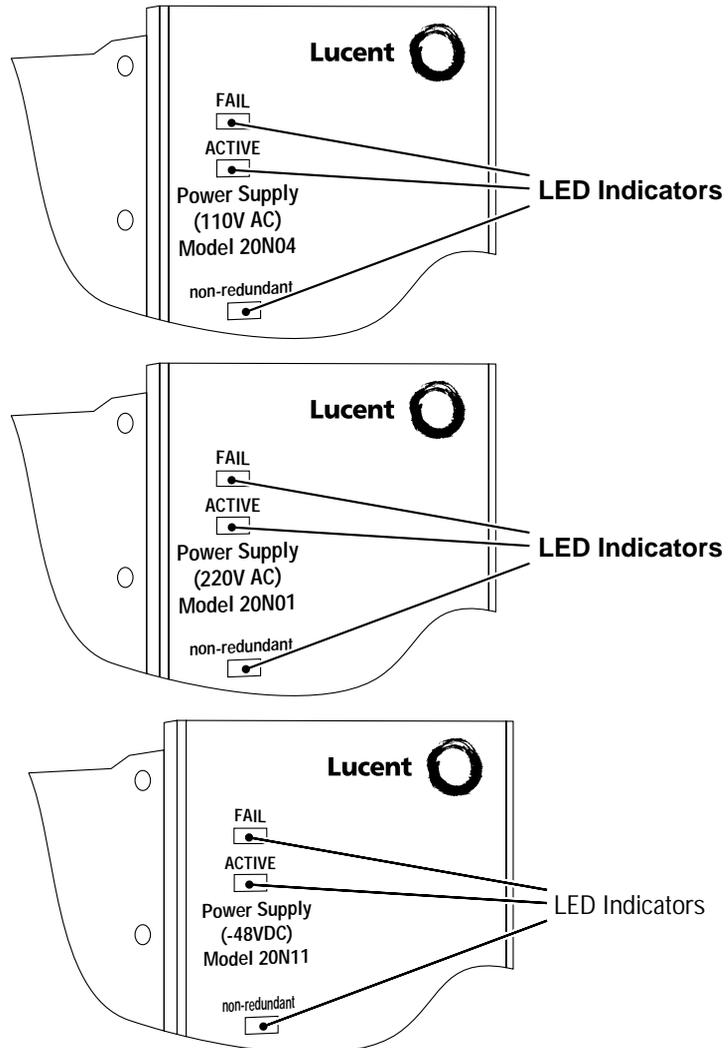The status indicators for the Power Supply modules are shown in Figure ?.

Figure 24. LED Indicators for the Power Supply Modules

The status indicators for the Power Supply modules are described in Table ?.

Table 15. PSAX 1250 Power Supply Module Status Indicators

Color	Status	Description
Red	FAIL	Indicates that the Power Supply module is not functioning or connected to a power source. **Note:** If only one Power Supply module is used in a PSAX 1250 system and the module fails, none of the other modules in the chassis would have illuminated LEDs because no power would be supplied to the system.
Green	ACTIVE	Indicates that the Power Supply module is functioning properly. **Note:** The PSAX 1250 Power Supply modules have no on/off switch. The green ACTIVE LED is illuminated when the Power Supply module is properly inserted into the chassis backplane, and the power cord is properly connected to both the Power Supply module faceplate and the power source.
Yellow	NON-REDUN-DANT	Indicates two different conditions depending on whether one or two Power Supply modules is in use: • When only one Power Supply module is installed, a yellow LED indicates that the chassis has no redundant module. • When two Power Supply modules are installed, a yellow LED on one or both modules indicates that at least one Power Supply module is drawing power at more than one-half of its capacity, which is an abnormal condition. If one of the modules were to fail in this situation, the other would not be able to fully power the system. If this situation occurs, call Technical Support (see "Technical Support" on page 8).

Stratum 3–4 Module Indicators

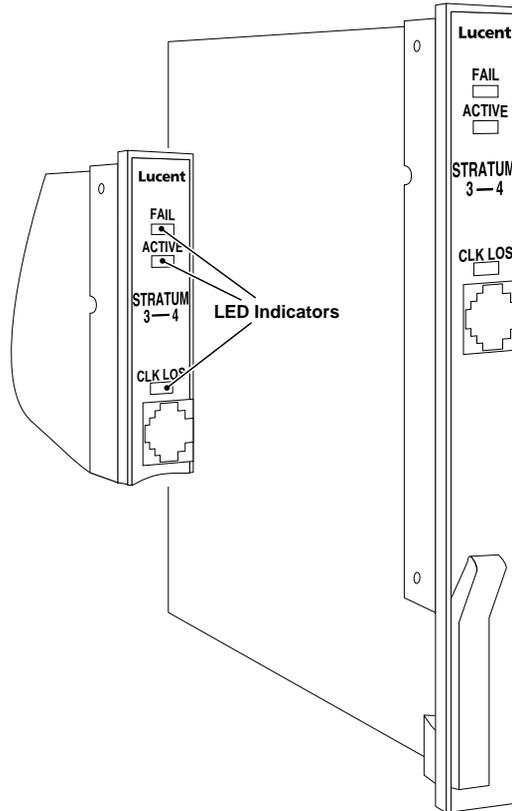The Stratum 3–4 module has three types of LED indicators, as shown in Figure ?.

Figure 25. PSAX 1250 Stratum 3–4 Module

The status indicators for the Stratum 3–4 module are described in Table ?.

Table 16. PSAX 1250 Stratum 3–4 Module Status Indicators

Color	Status	Description
Red	FAIL	Indicates that the Stratum 3–4 module is not functioning.
Green	ACTIVE	Indicates that the stratum module is functioning properly.
		In a redundant configuration, the green LED identifies which of the two stratum modules is providing system synchronization. The green LED on the redundant stratum module (in standby mode) is not illuminated.
Yellow	CLK LOS (Clock Loss of Signal)	Indicates a loss of signal from the external composite clock synchronization source.
		This LED indicator is operational only when the synchronization source value **CompositeClock** was selected on the Stratum Configuration screen. This LED is not operational when synchronization source values **Freerun** or **LineTiming** are selected.

CPU Module Status Indicators

The CPU module has three types of LED indicators, as shown in Figure ?.
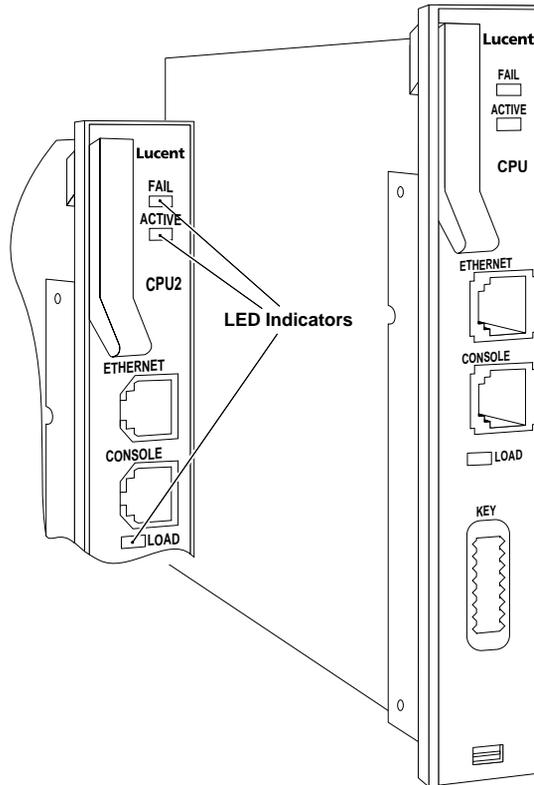
Figure 26. PSAX 1250 CPU Module

The status indicators for the CPU module are described in Table ?.

Table 17.   PSAX 1250 CPU Module Status Indicators

Color	Status	Description
Red	FAIL	Indicates that the CPU module is not functioning
Green	ACTIVE	Indicates that the CPU module is functioning properly. Both modules in a redundant configuration have illuminated green LEDs.
Yellow	LOAD	Indicates that the module is initializing the PSAX 1250 system software from the hard disk on the module.

Removing Modules from the Chassis

You can remove any of the I/O and server modules, the CPU modules, the Stratum 3–4 modules, and the Power Supply modules (see the following warning) from the PSAX 1250 chassis with the system running, that is, with power applied to the chassis. The design of the PSAX 1250 system supports live insertion and deinsertion of modules without disrupting service on the other modules in the system.

Removing the AC Power Supply Module

⚠ **DANGER:**
Shock hazard! Do not perform any maintenance on this equipment until you have turned off the power using the specified procedure. Failure to observe proper precautions could cause serious injury or death.
Dangerous voltage is present in a Power Supply module connected to a power source. Do not attempt to remove the Power Supply module from the chassis before disconnecting the power cord. Follow the instructions in "Shutting Down the System" on page 1 first.

⚠ **DANGER:**
Shock hazard! Do not perform any maintenance on this equipment until you have turned off the power using the specified procedure. Failure to observe proper precautions could cause serious injury or death.
When removing the AC Power Supply module from a chassis with redundant power supplies, be sure that you do not touch the inside of the other Power Supply still connected to facility power.

⚠️ **CAUTION:**
When removing the AC Power Supply module from a chassis, be sure not to touch the finned surface (right side) of the module because it might be very hot.
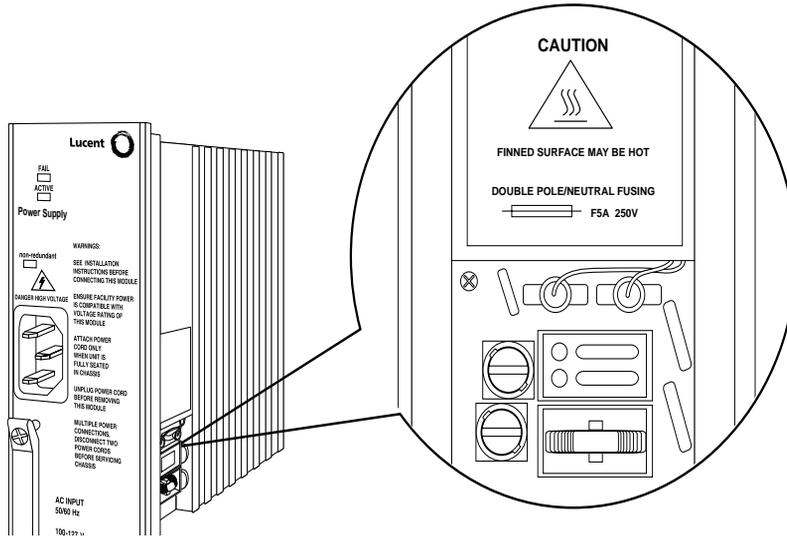

Figure 27. AC Power Supply with Heat Caution Label

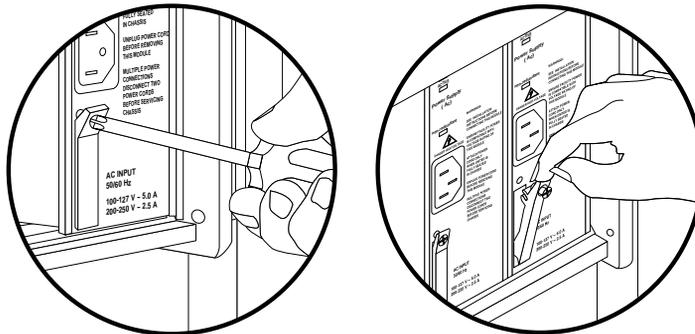To remove the AC Power Supply module, perform the following steps:

Figure 28. Removing the PSAX 1250 AC Power Supply Module from the Chassis

1 Using a cross-recessed screwdriver, loosen the captive screw in the ejector handle from the front panel of the Power Supply module as shown in Figure ?.

2. Pull the ejector handle on the module faceplate toward you until it releases to the open position.

3 Slide the module out of the chassis.

4 Put the module in an ESD protective bag, and close the bag with adhesive tape.

Removing the I/O, Stratum 3–4, and CPU Modules

To remove the I/O, Stratum 3–4, and CPU modules, perform the following steps:

⚠️ **CAUTION:**
Be sure to wear a grounding wrist strap when handling I/O, CPU, and Stratum 3–4 modules.

1 Pull the ejector handle on the module faceplate toward you until it releases to the open position.

2 Slide the module out of the chassis.

3 Put the module in an ESD protective bag, and close the bag with adhesive tape.

Shipping the System

At some point, you might need to ship your PSAX 1250 system to another location. To prepare the system for shipment, do the following:

⚠️ **DANGER:**
When populated with modules, the PSAX 1250 can weigh up to 30 pounds or more. Lifting or holding such a load while trying to unfasten it from a rack can be hazardous, especially when working alone. To avoid personal injury or damage to the equipment, remove all the modules from the chassis before removing the chassis from the rack.

1 After removing power from the system, remove all modules from the chassis, place them in ESD protective bags, seal the bags with tape, and then place them in sturdy cartons with foam packing material (use the original packaging if you saved it).

⚠️ **CAUTION:**
Shipping the chassis with removable modules installed may cause damage to the chassis and the modules. Damage to any of the components in the system resulting from shipping the chassis with removable modules installed could void your warranty. Only Lucent-authorized personnel should ship the PSAX 1250 chassis with a module installed.

2 For a rack-mounted chassis, remove the mounting screws.

3 Place the PSAX 1250 chassis (or the PSAX 1250 table-top cabinet with chassis) in a sturdy carton (use the original packaging if you saved it). Use foam packing material to cushion the equipment.

4 Secure the boxes with heavy-duty packaging tape.

A   Pin Configurations

Overview of This Appendix

This appendix describes the pinout configurations for the connectors on the PSAX 1250 common equipment modules.

Configuration for the Power Supply Connectors

AC Power Supply Connector

The configuration of the connector pins on the faceplates of the 110 V ac and the 220 V ac Power Supply modules is shown in Figure A-1.
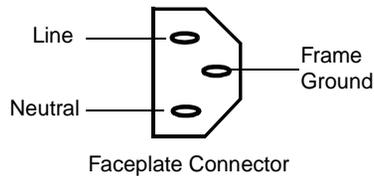

Figure A-1. Pin Configuration for the Connector on the 110 V ac and the 220 V ac Power Supply Modules

Table A-1 describes the pin configuration for the connector on the 110 V ac and the 220 V ac Power Supply modules.

Table A-1. Pin Descriptions for the Connector on the 110 V ac and the 220 V ac Power Supply Modules

Pin	Description
Line	Accepts the appropriate phased voltage.
Frame-Ground	Provides the frame ground for the PSAX 1250 chassis. A 2 K ohm resistance separates the frame ground and the logical ground for all circuits in the PSAX 1250 chassis, and on the I/O and server modules.
Neutral	In conjunction with the line pin, provides the reference voltage.

-48 V dc Power Supply Module

The configuration of the connector pins on the -48 V dc Power Supply module faceplate is shown in Figure A-2.
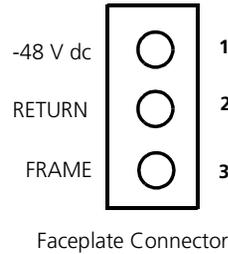

Faceplate Connector

Figure A-2. Pin Configuration for the Connector on the -48 V dc Power Supply Module

Table A-2 describes the pin configuration for the connector on the -48 V dc Power Supply module.

Table A-2. Pin Descriptions for the -48 V dc Power Supply Module

Pin	Description
1	Input from battery
2	Return to battery
3	Provides the frame ground for the PSAX 1250 chassis

Configuration for the CPU Connectors

Two different interfaces are available for direct access to the CPU module. You can use the console serial interface or the Ethernet interface to connect to the terminal emulator for configuring and managing the PSAX 1250 system.

Console Serial Interface

The serial port console interface of the CPU module faceplate accepts an RJ-11 connector.The faceplate connector accommodates the standard RJ-11 interface; however, due to differences among manufacturers of connectors, be sure to check your cable and connector to determine what type you have. DB9 connectors are available with different wire-coloring schemes. If you are using the serial port of a personal computer (PC) or workstation as the console, use a standard DB9 female connector with an attached RJ-11 connector. Be sure to use the correct type of cable to ensure proper

operation. Table A-3 and Table A-4 describe the pin configuration for DB9
connectors with two different wire coloring schemes.

**Table A-3. Pin Descriptions for the Serial Interface DB9 Connector with
Black/Red/Green Wires**

Pin	Description
2	Black = RX (receive)
3	Red = TX (transmit)
5	Green = Ground

**Table A-4. Pin Descriptions for the Serial Interface DB9 Connector with
Yellow/Green/Red Wires**

Pin	Description
2	Yellow = RX (receive)
3	Green = TX (transmit)
5	Red = Ground

The SUN Microsystems workstation (as well as other types of workstations)
can also be used to connect to the console serial port. If you are using the
serial port of a SUN workstation as the console, use a DB25 male connector.
Table A-5 describes the pin configuration for the DB25 connector.

Table A-5. Pin Descriptions for the Serial Interface DB25 Connector

Pin	Description
2	Red = TX (transmit)
3	Black = RX (receive)
7	Green = Ground

Ethernet 10Base-T Interface

The CPU module faceplate also accommodates the Ethernet interface using standard RJ-45 pin assignments. Figure A-3 shows the pin locations for the RJ-45 connector for the 10Base-T connector on the faceplates.
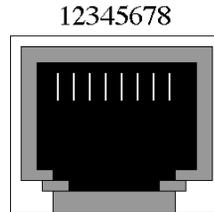

Figure A-3. Pin Locations on the RJ-45 Connector

Table A-6 describes the pin configuration for the RJ-45 faceplate connector.

Table A-6. Pin Descriptions for the RJ-45 Connector for the CPU Ethernet Interface

Pin	Description
1	TD+ (transmit to UTP wire)
2	TD– (transmit to UTP wire)
3	RD+ (receive from UTP wire)
4	Not used by 10Base-T
5	Not used by 10Base-T
6	RD– (receive from UTP wire)
7	Not used by 10Base-T
8	Not used by 10Base-T

Configuration for the Stratum 3–4 Connector

The composite clock signal for the Stratum 3–4 module is a 64-Kbps bipolar signal with an 8-Kbps bipolar violation signal. Figure A-4 is a diagram for general reference only. Detailed parameters for the composite clock signal are described in Bellcore document TA-TSY-000378. ITU G.703.
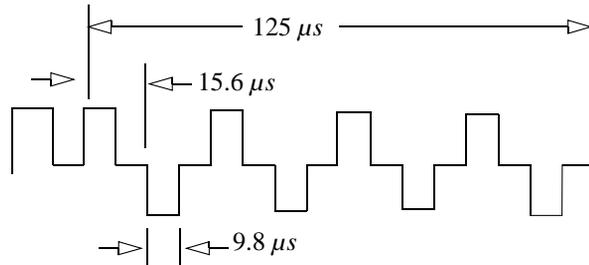
Figure A-4. Composite Clock Signal

The composite clock signal is a balanced signal, which is transmitted over a shielded twisted pair cable. The cable shield is grounded at the composite clock source.

Table A-7 describes the pin configuration for the faceplate connector on the Stratum 3–4 module.

Table A-7. Pin Descriptions for the RJ-11 Connector on the Stratum 3–4 Module

Pin	Description
1	Not used
2	Not used
3	RX
4	RX
5	Not used
6	Not used

Pin Configurations

Configuration for the Stratum 3–4 Connector

B European Community Declarations of Conformity

Overview of This Appendix

This appendix contains the European Community (EC) Declarations of Conformity for Electromagnetic Compatibility Directives, as applicable to the PSAX 1250 Access Concentrator.

EC DECLARATION OF CONFORMITY

We,

Lucent Technologies
Access Technology Division
8301 Professional Place
Landover, Maryland 20785
USA

declare, under our sole responsibility, that the product:

Lucent Technologies PSAX 1250 (AC120) ATM Access Concentrator, 19" Chassis; consisting of the following model numbers:

20S00, 20A04, 20A10, 20A11, 20A12, 20A13, 20A14, 20A63, 20A64, 20A67, 20N05, 21N05, 20N07, 20N11, 20N16, 20N20, 20N22, 20N27, 20N28, 20N29, 20N34, 20N40, 20N41, 20N56, 20N62, 20N63, 20N64, 20N65, 20N92, 20N93, 23N27, 23N28, 23N66

to which this declaration relates, is in conformity with the following standard(s) or other normative documents
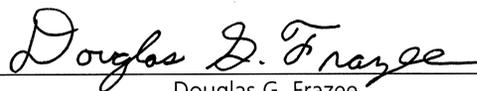
> **EN 55022:1994 +A1:1995+A2:1997**
> **EN 50082-1:1992**

in accordance with the provisions of the **Electromagnetic Compatibility Directive (EMC) 89/336/EEC**.

I, the undersigned, hereby declare that the equipment specified above conforms to the listed directives and standards.

Place of Issue: Landover, Maryland; USA
Date: June 26, 2000

Douglas G. Frazee
Regulatory Compliance Manager
Lucent Technologies
Access Technology Division
Tel: +01 301 809 4415

1250M0A6301X1C

Supplementary Information

Manufacturer: **Solectron Massachusetts Corporation**
1 Solectron Drive
P.O. Box 5147
Westborough, Massachusetts 01581-5147

Test Report: **MET Laboratories Reports EMI1067A, EMI1112A, EMI1250B**

EC DECLARATION OF CONFORMITY

We,

Lucent Technologies
Access Technology Division
8301 Professional Place
Landover, Maryland 20785
USA

declare, under our sole responsibility, that the product:

Lucent Technologies PSAX 1250 (AC120) ATM Access Concentrator, 23" Chassis; consisting of the following model numbers:

20S10, 20S11, 20A09, 20A10, 20A11, 20A12, 20A13, 20A63, 20A64, 20A67, 20N05, 21N05, 20N07, 20N11, 20N16, 20N20, 20N22, 20N27, 20N28, 20N29, 20N34, 20N40, 20N41, 20N56, 20N62, 20N63, 20N64, 20N65, 20N92, 20N93, 23N27, 23N28, 23N66

to which this declaration relates, is in conformity with the following standard(s) or other normative documents
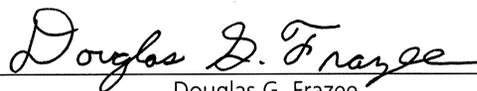
EN 55022:1994 +A1:1995+A2:1997
EN 50082-1:1992

in accordance with the provisions of the **Electromagnetic Compatibility Directive (EMC) 89/336/EEC**.

I, the undersigned, hereby declare that the equipment specified above conforms to the listed directives and standards.

Place of Issue: Landover, Maryland; USA
Date: June 26, 2000

Douglas G. Frazee
Regulatory Compliance Manager
Lucent Technologies
Access Technology Division
Tel: +01 301 809 4415

1250M0A6301X1E

Supplementary Information

Manufacturer: **Solectron Massachusetts Corporation**
1 Solectron Drive
P.O. Box 5147
Westborough, Massachusetts 01581-5147

Test Report: **MET Laboratories Report EMI9290A**

EC DECLARATION OF CONFORMITY

We,

> **Lucent Technologies**
> **Access Technology Division**
> **8301 Professional Place**
> **Landover, Maryland 20785**
> **USA**

declare, under our sole responsibility, that the product:

> **Lucent Technologies PSAX 1250 (AC120) ATM Access Concentrator, 19" Chassis; consisting of the following model numbers:**
>
> **20S00, 20A04, 20A10, 20A11, 20A12, 20A13, 20A14, 20A63, 20A64, 20A67, 20N05, 21N05, 20N07, 20N11, 20N16, 20N20, 20N22, 20N27, 20N28, 20N29, 20N34, 20N40, 20N41, 20N56, 20N62, 20N63, 20N64, 20N65, 20N92, 20N93, 23N27, 23N28, 23N66**

to which this declaration relates, is in conformity with the following standard(s) or other normative documents
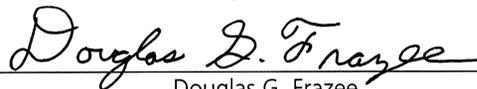
> **EN 60950:1992+A1:1993+A2:1993+A3:1995+A4:1997+A11:1997**

in accordance with the provisions of the **Low Voltage Directive 73/23/EEC**.

I, the undersigned, hereby declare that the equipment specified above conforms to the listed directives and standards.

Place of Issue: Landover, Maryland; USA
Date: June 26, 2000

Douglas G. Frazee
Douglas G. Frazee
Regulatory Compliance Manager
Lucent Technologies
Access Technology Division
Tel: +01 301 809 4415

1250M0A6301X1D

Supplementary Information

Manufacturer: **Solectron Massachusetts Corporation**
                      1 Solectron Drive
                      P.O. Box 5147
                      Westborough, Massachusetts 01581-5147

Test Report: **TUV Rheinland CB-Scheme Report G9971133**

CB Certificate: **US-TUVR-0516**

GS Certificate: **S 9979066**

EC DECLARATION OF CONFORMITY

We,

Lucent Technologies
Access Technology Division
8301 Professional Place
Landover, Maryland 20785
USA

declare, under our sole responsibility, that the product:

Lucent Technologies PSAX 1250 (AC120) ATM Access Concentrator, 23" Chassis; consisting of the following model numbers:

23S10, 23S11, 20A09, 20A10, 20A11, 20A12, 20A13, 20A63, 20A64, 20A67, 20N05, 21N05, 20N07, 20N11, 20N16, 20N20, 20N22, 20N27, 20N28, 20N29, 20N34, 20N40, 20N41, 20N56, 20N62, 20N63, 20N64, 20N65, 20N92, 20N93, 23N05, 23N27, 23N28, 23N66

to which this declaration relates, is in conformity with the following standard(s) or other normative documents
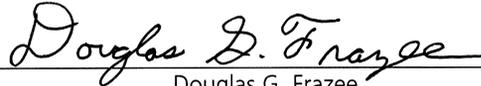
EN 60950:1992+A1:1993+A2:1993+A3:1995+A4:1997+A11:1997

in accordance with the provisions of the **Low Voltage Directive 73/23/EEC**.

I, the undersigned, hereby declare that the equipment specified above conforms to the listed directives and standards.

Place of Issue: Landover, Maryland; USA
Date: June 26, 2000

Douglas G. Frazee
Regulatory Compliance Manager
Lucent Technologies
Access Technology Division
Tel: +01 301 809 4415

1250M0A6301X1F

Supplementary Information

Manufacturer: **Solectron Massachusetts Corporation**
1 Solectron Drive
P.O. Box 5147
Westborough, Massachusetts 01581-5147

Test Report: **TUV Rheinland CB-Scheme Report G9971133**

CB Certificate: **US-TUVR-0516**

GS Certificate: **S 9979066**

PacketStar™ *PSAX 1250 Installation and Operation Guide*, Issue 1   Release 6.3.0
255-700-016   79   **Lucent Technologies**
Bell Labs Innovations

EC DECLARATION OF CONFORMITY

We,

Lucent Technologies
Access Technology Division
8301 Professional Place
Landover, Maryland 20785
USA

declare, under our sole responsibility, that the product:

Lucent Technologies PSAX 2300 / PSAX 1250 CPU Module; consisting of the following model numbers:

20N20, 20P20, 20P21, 20P22, 20P23

to which this declaration relates, is in conformity with the following standard(s) or other normative documents

EN 300 386-2:1997
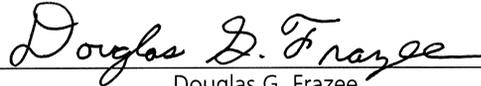**EN 55022:1994 +A1:1995+A2:1997**
EN 50082-1:1992

in accordance with the provisions of the *Electromagnetic Compatibility (EMC) Directive 89/336/EEC*.

I, the undersigned, hereby declare that the equipment specified above conforms to the listed directives and standards.

Place of Issue: Landover, Maryland; USA
Date: June 26, 2000

Douglas G. Frazee
Regulatory Compliance Manager
Lucent Technologies
Access Technology Division
Tel: +01 301 809 4415

502M0A6301X1I

Supplementary Information

Manufacturer: **Solectron Massachusetts Corporation**
1 Solectron Drive
P.O. Box 5147
Westborough, Massachusetts 01581-5147

Test Report: **MET Laboratories Reports EMI1067A, EMI1112A, EMI1250B, EMI9290A**
Global Product Compliance Laboratory Report TR 99-6

EC DECLARATION OF CONFORMITY

We,

Lucent Technologies
Access Technology Division
8301 Professional Place
Landover, Maryland 20785
USA

declare, under our sole responsibility, that the product:

Lucent Technologies CPU Module 32MB Memory Upgrade, model 20A10
Lucent Technologies CPU Module 64MB Memory Upgrade, model 20A12

to which this declaration relates, is in conformity with the following standard(s) or other normative documents
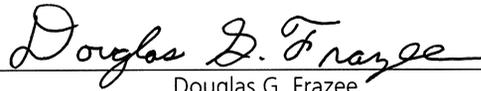
EN 300 386-2:1997
EN 55022:1994 +A1:1995+A2:1997
EN 50082-1:1992

in accordance with the provisions of the **Electromagnetic Compatibility (EMC) Directive 89/336/EEC**.

I, the undersigned, hereby declare that the equipment specified above conforms to the listed directives and standards.

Place of Issue: Landover, Maryland; USA

Date: June 26, 2000

Douglas G. Frazee
Regulatory Compliance Manager
Lucent Technologies
Access Technology Division
Tel: +01 301 809 4415

502M0A6301X1J

Supplementary Information

Manufacturer: **Solectron Massachusetts Corporation**
1 Solectron Drive
P.O. Box 5147
Westborough, Massachusetts 01581-5147

Test Report: **MET Laboratories Reports EMI1067A, EMI1112A, EMI1250B, EMI9290A**
Global Product Compliance Laboratory Report TR 99-6

EC DECLARATION OF CONFORMITY

We,

Lucent Technologies
Access Technology Division
8301 Professional Place
Landover, Maryland 20785
USA

declare, under our sole responsibility, that the product:

Lucent Technologies PSAX 1250 Stratum 3-4 Module; consisting of the following model numbers:

20N05, 21N05

to which this declaration relates, is in conformity with the following standard(s) or other normative documents
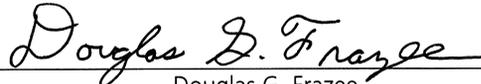
EN 55022:1994 +A1:1995+A2:1997
EN 50082-1:1992

in accordance with the provisions of the **Electromagnetic Compatibility (EMC) Directive 89/336/EEC**.

I, the undersigned, hereby declare that the equipment specified above conforms to the listed directives and standards.

Place of Issue: Landover, Maryland; USA
Date: June 26, 2000

Douglas G. Frazee
Regulatory Compliance Manager
Lucent Technologies
Access Technology Division
Tel: +01 301 809 4415

524M0A6301X1L

Supplementary Information

Manufacturer: **Solectron Massachusetts Corporation**
1 Solectron Drive
P.O. Box 5147
Westborough, Massachusetts 01581-5147

Test Report: **MET Laboratories Reports EMI1067A, EMI1112A, EMI1250B, EMI9290A**

EC DECLARATION OF CONFORMITY

We,

Lucent Technologies
Access Technology Division
8301 Professional Place
Landover, Maryland 20785
USA

declare, under our sole responsibility, that the product:

Lucent Technologies PSAX 1250 220VAC Power Supply, model 20N01

to which this declaration relates, is in conformity with the following standard(s) or other normative documents
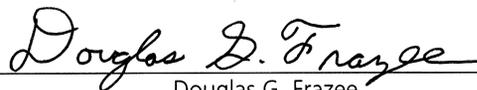
EN 55022:1994 +A1:1995+A2:1997
EN 50082-1:1992

in accordance with the provisions of the **Electromagnetic Compatibility (EMC) Directive 89/336/EEC**.

I, the undersigned, hereby declare that the equipment specified above conforms to the listed directives and standards.

Place of Issue: Landover, Maryland; USA
Date: June 26, 2000

Douglas G. Frazee
Douglas G. Frazee
Regulatory Compliance Manager
Lucent Technologies
Access Technology Division
Tel: +01 301 809 4415

540M0A6301X1N

Supplementary Information

Manufacturer: **Solectron Massachusetts Corporation**
1 Solectron Drive
P.O. Box 5147
Westborough, Massachusetts 01581-5147

Test Report: **MET Laboratories Reports EMI1067A, EMI1250B**

Lucent Technologies
Bell Labs Innovations

EC DECLARATION OF CONFORMITY

We,

> **Lucent Technologies**
> **Access Technology Division**
> **8301 Professional Place**
> **Landover, Maryland 20785**
> **USA**

declare, under our sole responsibility, that the product:

> **Lucent Technologies PSAX 1250 220VAC Power Supply, model 20N01**

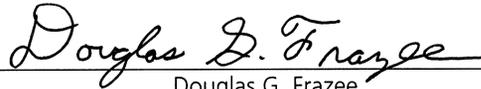to which this declaration relates, is in conformity with the following standard(s) or other normative documents

> **EN 60950:1992+A1:1993+A2:1993+A3:1995+A4:1997+A11:1997**

in accordance with the provisions of the **Low Voltage Directive 73/23/EEC**.

I, the undersigned, hereby declare that the equipment specified above conforms to the listed directives and standards.

> **Place of Issue:** Landover, Maryland; USA
> **Date:** June 26, 2000

Douglas G. Frazee

Douglas G. Frazee
Regulatory Compliance Manager
Lucent Technologies
Access Technology Division
Tel: +01 301 809 4415

540M0A6301X1O

Supplementary Information

Manufacturer: **Solectron Massachusetts Corporation**
                     1 Solectron Drive
                     P.O. Box 5147
                     Westborough, Massachusetts 01581-5147

Test Report: **TUV Rheinland CB-Scheme Report G9971133**

CB Certificate: **US-TUVR-0516**

GS Certificate: **S 9979066**

EC DECLARATION OF CONFORMITY

We,

Lucent Technologies
Access Technology Division
8301 Professional Place
Landover, Maryland 20785
USA

declare, under our sole responsibility, that the product:

Lucent Technologies PSAX 2300 -48VDC Power Supply, model 23N11

to which this declaration relates, is in conformity with the following standard(s) or other normative documents
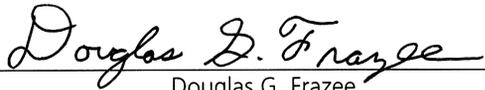
EN 300 386-2:1997
EN 55022:1994 +A1:1995+A2:1997

in accordance with the provisions of the **Electromagnetic Compatibility (EMC) Directive 89/336/EEC**.

I, the undersigned, hereby declare that the equipment specified above conforms to the listed directives and standards.

Place of Issue: Landover, Maryland; USA

Date: June 26, 2000

Douglas G. Frazee

Douglas G. Frazee
Regulatory Compliance Manager
Lucent Technologies
Access Technology Division
Tel: +01 301 809 4415

542M0A6301X1R

Supplementary Information

Manufacturer: **Solectron Massachusetts Corporation**
1 Solectron Drive
P.O. Box 5147
Westborough, Massachusetts 01581-5147

Test Report: **Global Product Compliance Laboratory Report TR 99-106**

Lucent Technologies
Bell Labs Innovations

EC DECLARATION OF CONFORMITY

We,

Lucent Technologies
Access Technology Division
8301 Professional Place
Landover, Maryland 20785
USA

declare, under our sole responsibility, that the product:

Lucent Technologies PSAX 2300 -48VDC Power Supply, model 23N11

to which this declaration relates, is in conformity with the following standard(s) or other normative documents
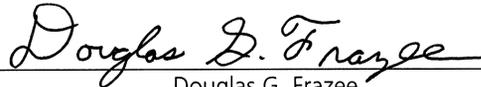
EN 60950:1992 +A1:1993+A2:1993+A3:1995+A4:1997+A11:1997

in accordance with the provisions of the **Low Voltage Directive 73/23/EEC**.

I, the undersigned, hereby declare that the equipment specified above conforms to the listed directives and standards.

Place of Issue: Landover, Maryland; USA
Date: June 26, 2000

Douglas G. Frazee

Douglas G. Frazee
Regulatory Compliance Manager
Lucent Technologies
Access Technology Division
Tel: +01 301 809 4415

542M0A6301X1S

Supplementary Information

Manufacturer: **Solectron Massachusetts Corporation**
                     1 Solectron Drive
                     P.O. Box 5147
                     Westborough, Massachusetts 01581-5147

Test Report: **UL CB Scheme Report 00ME11191-020900**

CB Certificate: **US/4127/UL**

Printed on paper with 100%
total recycled content.
Please recycle.

Lucent Technologies
Bell Labs Innovations