Product Notes

**Network 9000 Model 119R Redundant AC
Power Input Modules**

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Introducing the Network 9000
Redundant AC Power Input Module

These notes cover the Model 119R Redundant AC Power Control Module for Redundant Network 9000 fifteen-slot chassis, including classic and switchplane chassis. (Order codes are listed on the last page.). The 119R AC Power Input Module provides the means to ensure uninterrupted service, in the event of a power system failure, when an AC circuit within a facility fails, or when an AC Power Input Module fails. These modules are included with the redundant version of the Network 9000 fifteen-slot chassis, and are similar to the standard Network 9000 AC Power Input Module in appearance, features, and operation. Figure 1 depicts the 119R Redundant AC Power Input Module.
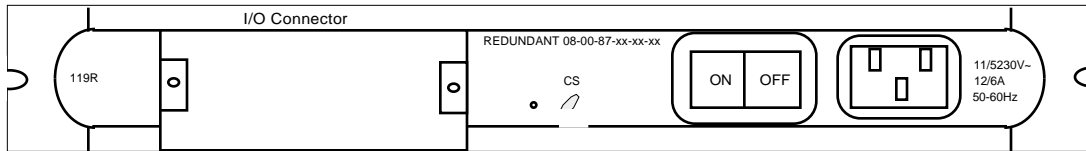

Figure 1. Network 9000 Redundant AC Power Input Module.

Specific topics covered in this Guide include:

- **Product Prerequisites**

- **Controls and Indicators**

- **Installation Notes**

- **Operation**

- **Restrictions**

- **Specifications**

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Product Prerequisites

Redundant AC Power Input Modules require a Redundant Network 9000 fifteen-slot chassis which includes a "split" midplane. Not all Network 9000 fifteen slot chassis include a split midplane. An installed standard Network 9000 fifteen-slot chassis can be upgraded to a Redundant chassis, but this requires that you return the chassis to the factory. Your Xyplex Networks sales representative or distributor can give you more information about upgrading an installed chassis.

Redundant AC Power Input Modules are included as part of the redundant Network 9000 fifteen-slot chassis configuration, or can be ordered separately as a replacement power input module for an installed Redundant Network 9000 fifteen-slot chassis.

Each Redundant Network 9000 fifteen-slot chassis comes with two Redundant AC Power Input Modules pre-installed in the chassis. One Redundant AC Power Input Module is installed in slot 1

(the bottom slot of the Network 9000 chassis), the other in slot 10. Xyplex Networks recommends that you order 2 or 4 power supplies for the chassis to ensure power supply redundancy.

Controls and Indicators

Figure 2 shows the location and purpose of all controls and LED indicators on the Network 9000 Redundant AC Power Input Module.
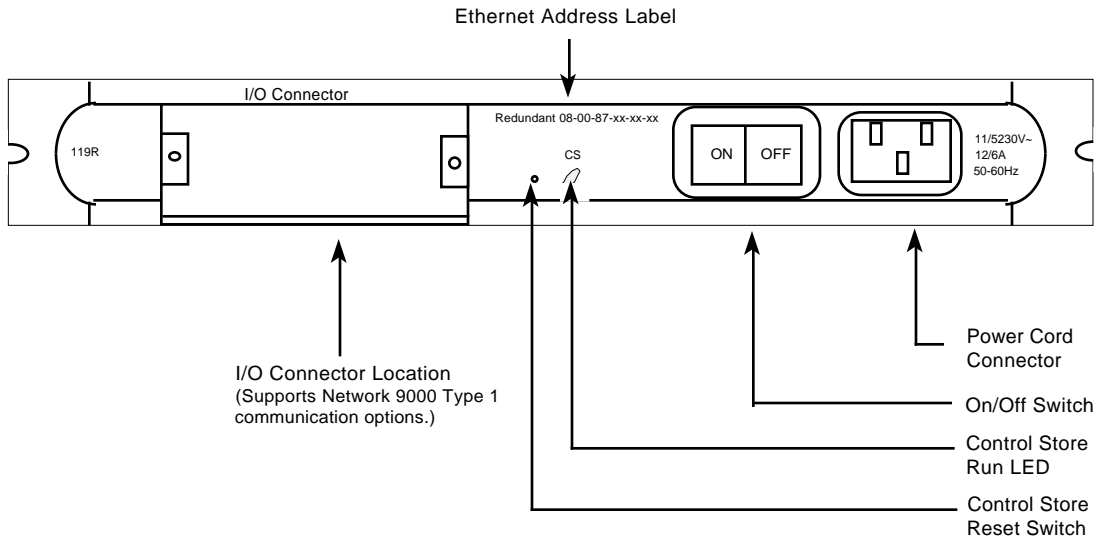

Figure 2. Redundant AC Input Module Controls and Indicators.

Installation Notes

The power input modules and power supply modules are removable. When configured as a redundant system, individual power input modules and power supply modules may be "hot swapped" without bringing the unit down. Generally, you install power supply modules and Redundant AC Power Input Modules using the standard Network 9000 installation and removal procedures, that are described in Chapter 3 of the Network 9000 Installation Guide. (If you are not familiar with these installation procedures, refer to the Network 9000 Chassis *Hardware Installation and Maintenance Guide*.)   This section describes some minor differences from procedures, that are due to the use of Redundant AC Power Input Modules.

Safety Considerations

Although only low voltages are present on exposed pins , high voltages also exist within the Network 9000 Chassis

☞ **Do not insert any item, such as a screwdriver (for example to straighten out a bent pin, etc), into the inside of the chassis while power is on as damage to the equipment can occur.**

Use caution when installing or removing modules. (Do not remove the Network 9000 midplane.) All modifications or upgrades to the midplane must be made at the factory.

Power Supply Planning Considerations

With a Redundant Network 9000 chassis configuration, you can obtain redundancy for a system drawing a maximum of 300W of power (two 150 W power supplies when using P/S 130 power supply modules). When using the power supply worksheets, you must ensure that the communication options that you install in the Network 9000 chassis can be adequately powered by a total of 300W.

Installing Power Supplies

When using a Redundant AC Power Input Module, each individual module shares some of the load during normal operation. The power input module in slot 1 provides AC power to the power supplies in power supply slots 1, 2, and 3. The power input module in slot 10 provides AC power to the power supplies in power supply slots 4 and 5. When one power input module fails, the power supplies in the associated power supply slots will go into a fault condition. The power supplies that are associated with the functioning power input module take over the entire load.

To make sure that each segment of the split midplane receives power, install power supplies in pairs into power supply slots in the following order, rather than the order shown in the Network 9000 Chassis *Hardware Installation and Maintenance Guide*: P/S 3, P/S 4, P/S 2, and P/S 5. Figure 3 shows this order.

Figure 3. Installing Power Supplies.
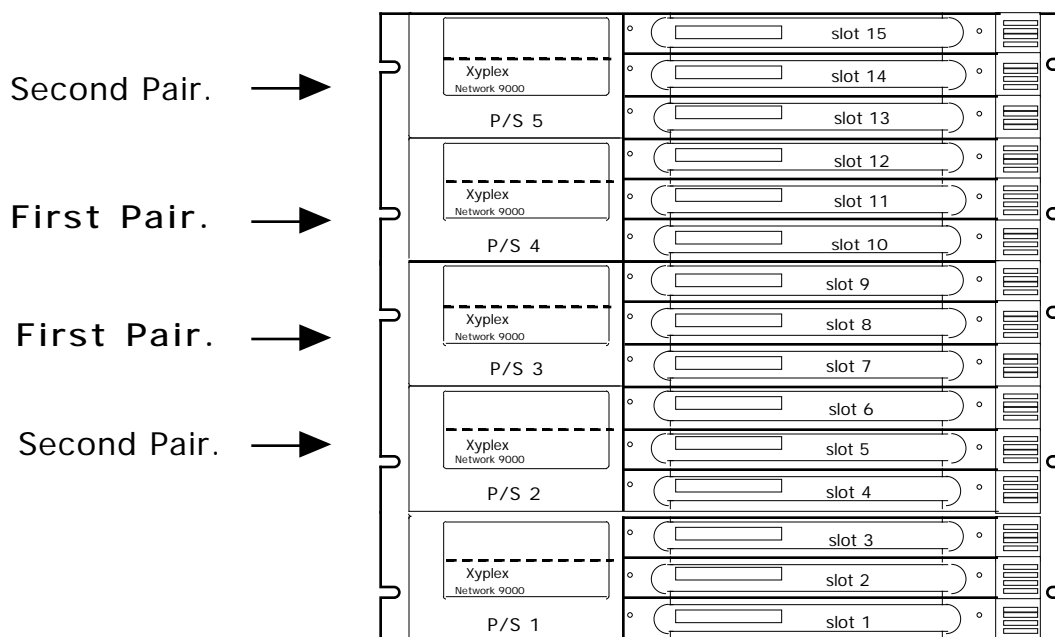
The actual installation of power supply modules is uncomplicated and is fully described in the Network 9000 Chassis *Hardware Installation and Maintenance Guide*. Each unused power supply slot is covered by a blank panel. To install a new power supply module, remove the blank panel and insert the power supply module. Secure the module with the Phillips head captive screw.

Connecting AC Power

Perform the following steps to connect AC power:

a. **Set the power switch located to the left of the AC power cord connector (socket) on the rear of both power input modules to the OFF position.**

b. **Plug the AC line cords (supplied) into the power cord connectors in the rear of the power input modules and plug the other end of each into nearby power receptacles. You must connect each power cord to a different AC circuit to ensure redundant operation of the Network 9000 hub,**

c. **Set the power switches located to the left of the AC power socket on the rear of the power input module in slot 1 to the ON position. Then do the same for the module in slot 10.**

Installing and Removing the AC Power Input Module

If a Redundant AC Power Input Module fails, use the procedures described in the Network 9000 Chassis *Hardware Installation and Maintenance Guide* to remove the failed module and replace it with another one.

Operation

During normal operation, each redundant AC power input module shares some of the load of providing AC input power to the Network 9000 Power Supplies. Specifically, the Redundant AC Power Input Module in I/O module slot 1 provides AC power to the power supply modules in power supply slots 1, 2, and 3, while the Redundant AC Power Input Module in I/O module slot 10 provides AC power to the power supply modules in power supply slots 4 and 5.

Both Redundant AC Power Input Modules maintain in control storage the slot Ethernet addresses and initializtion configuration changes for each Network 9000 device.

In the event that AC power is lost in one connected circuit, or an AC power input modules fails, the power supply modules serviced by the failed AC power input module also go out of service, but the remaining power supply modules continue to provide power to <u>all</u> Network 9000 processor modules and I/O modules in the chassis, including the control storage of the AC power input module that lost power.

Prior to the replacement of the failed primary power input module, any processor modules that are reinitialized will use the secondary module for storing initialization configuration changes. After the primary module is replaced, when the processor module is next initialized, it will again use the primary module for storing changes to initialization configurations .

Recovering From Primary AC Power Input Module Failure. Recent releases of software include features that make it easier to recover from a primary module failure.

The Table A lists the minimum revision of the software and firmware needed on each processor module to support full redundancy.

Table A. Product Support for Full Redundancy.

Processor Module Type	Software Revision	Firmware Revision
720	6.0	480000 (H)
210	5.1	4B0000 (K)
211	5.1	4B0000 (K)
220	5.1	430000 (C)
221	5.1	430000 (C)
401	6.0	520000 (S)
402	6.0	520000 (S)
501	6.0	430000 (C)
610	1.0	410000 (A)

Use the SHOW UNIT command to determine the software and firmware revision.

All processor modules should load normally, after installing the replacement AC power input module. The replacement module will have a status of Present. (You can view the status using the SHOW CHASSIS LOADDUMP CHARACTERISTICS command. Look in the CCS Information section at the bottom of the display.)You must then change the status of the replacement module from Present to Current.

To force the replacement power input module to the Current status, you must type a DEFINE CHASSIS command (for example DEFINE CHASSIS SLOT LOAD IMAGE PROTOCOL CARD ENABLE) at each processor module to update its chassis parameters.

If you do not update the replacement module, and the other power input module fails, then all control storage parameters will be lost, and there would a mismatch between the Ethernet address of the replacement power input module and the names of the parameter files. In this case, you would need to order a new primary module with a factory-installed Ethernet address .

Type 1 Products. Type 1 processor modules only know about the primary AC power input module. (A Type 1 option is a Network 9000 product or a MAXserver family product which does not support chassis management commands, and has a *link* to midplane Ethernet segment A only.) Therefore, when the primary AC power input module fails, Type 1 products no longer function properly.

Powering On Input Modules Incorrectly. You should turn on the AC power input module in slot 1 before you turn on the module in slot 10. If you do not turn these modules on in the correct order, you can create a situation where the processor modules become confused about where to obtain initialization configuration data.

Specifications

Item	Description
Type	12A Thermal Circuit Breaker with integrated ON/OFF switch.
Dimensions	Height -- 2.8 cm. (1.2 in.) Depth -- 13.5 cm. (5.3 in.) Width -- 35.6 cm. (13.98 in.)
Weight	0.44 kg. (1 lb.)
Display lights	CS (Control Store Run LED)
Controls	ON/OFF switch and Control Store Run/Reset push button switch
Operating Environment	20% to 80% humidity, noncondensing, 0° - 40° C (32° - 104° F)
Input Voltage	110 - 240 Vac 50 - 60 Hz

Power	Maximum: 120V - 10.0A
	                  240V - 5.0A
	
	               +5V - 3.0A
	               +12V - 0.3A
	               -12V - 0.3A

Enclosure Requirements	One I/O slot in a Redundant Network 9000 intra-networking hub.
Emissions Compliance	FCC Class A, EEC/89/336 Class A

Order Codes

Product Name and Description	Order Code
Classic Network 9000 Redundant Fifteen-Slot Chassis (includes two Redundant AC Power Control Modules)	N9-9015-022
Switchplane Network 9000 Redundant Fifteen-Slot Chassis (includes two Redundant AC Power Control Modules)	N9-9115-022
Redundant AC Power Input Module (spare)	N9-000-119R