LANTRONIX®

IONPS-D-R1
DC Power Supply

User Guide

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Revision History

Date	Rev	Description
6/8/17	A	Release of the IONPS-D-R1 at v1.2.5. IONMM v1.3.1815 is required for the IONPS-D-R1. Document Jumper J5 and update Dying Gasp description.
5/3/21	B	FW v 1.2.9: improve trap notification messages generated by the power supply module. Update MTBF and specs.
2/16/22	C	Initial Lantronix rebrand.
11/2/23	D	Update certs and specs. IONPS-D-R1 FW v 1.2.10 fixed erroneous trap message sent during an upgrade. See the Release Notes for Known limitations. Update IEC 60950-1 to IEC 62368-1. Add note to "Disconnect all power sources" in English and French. Remove references to Focal Point (EoL).

Cautions and Warnings

Definitions

Cautions indicate that there is the possibility of poor equipment performance or potential damage to the equipment. **Warnings** indicate that there is the possibility of injury to person.

Cautions and Warnings appear here and may appear throughout this manual where appropriate. Failure to read and understand the information identified by this symbol could result in poor equipment performance, damage to the equipment, or injury to persons.

Cautions

While installing or servicing the power module, wear a grounding device and observe all electrostatic discharge precautions. Failure to observe this caution could result in damage to, or failure of the power module.

Warnings

Warning: Do not connect the power module to an external power source before installing it into the chassis. Failure to observe this warning could result in an electrical shock, even death.

WARNING: The power module has a provision for grounding. Equipment grounding is vital to ensure safe operation. The installer must ensure that the power module is properly grounded during and after installation. Failure to observe this warning could result in an electric shock, even death.

WARNING: A readily accessible, suitable National Electrical Code (NEC) or local electrical code approved disconnect device and branch-circuit protector must be part of the building's installed wiring to accommodate permanently connected equipment. Failure to observe this warning could result in an electric shock, even death.

WARNING: Turn the external power source OFF and ensure that the power module is disconnected from the external power source before performing any maintenance. Failure to observe this warning could result in an electrical shock, even death.

WARNING: Ensure that the disconnect device for the external power source is OPEN *(turned OFF)* before disconnecting or connecting the power leads to the power module. Failure to observe this warning could result in an electric shock, even death.

See Electrical Safety Warnings on page 48 for Electrical Safety Warnings translated into multiple languages.

Contents

Figures

1   Introduction and Description

IONPS-D-R1 Description

The Lantronix IONPS-D-R1 power module can deliver power or provide optional, redundant DC power for the ION219 chassis. The ION platform is an intelligent, high-density, multi-protocol system supporting a variety of network interface devices. Designed for both carrier class and enterprise network applications where multiple points of fiber integration and secure network management of the fiber interface devices is essential.

The ION219 chassis can support up to two power supply modules which mount in the rear of the chassis. A single power supply can be used to power all the devices installed in the chassis; however, the system can be made redundant with the use of a second power supply. In this configuration, the power supplies operate in an instant-fail-over mode. The IONPS-D-R1 is shown below:
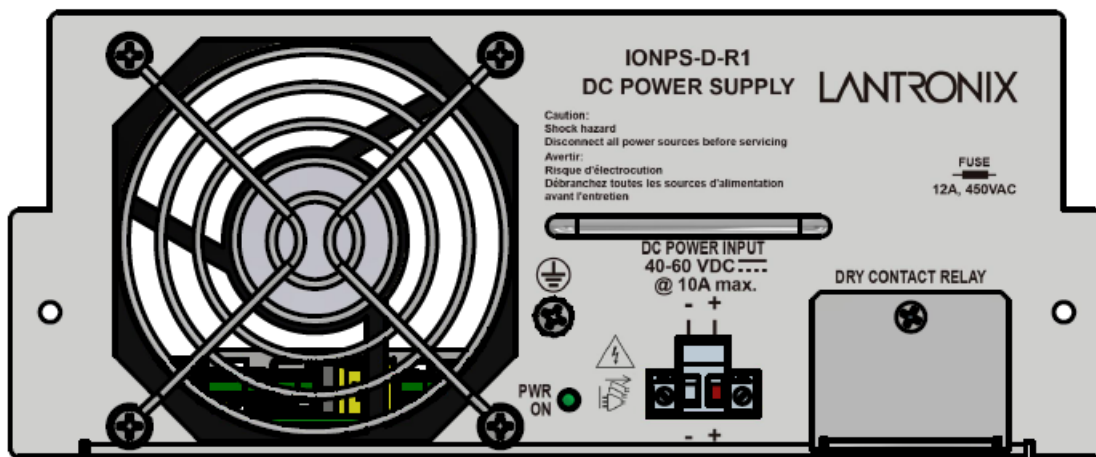
Figure 1: IONPS-D-R1 (DC) Power Supply

General Specifications

The IONPS-D-R1 is designed to meet these standards:

Emission Compliance	EN55022 Class A
Immunity Compliance	EN55024
Certifications	EN 62368-1, FCC Class A, CISPR Class A, CE Mark
Status LEDs	PWR (Power): Indicates power supply module is providing power to the ION chassis
Power input	48VDC (40 – 60VDC) @ 5A (typical for a fully-loaded chassis); 10 Amps max
Under-voltage lockout	40VDC max, 38VDC min
Inrush current	5A max
Power output	12VDC @ 12 Amp max
DC Power Input	40-60 VDC @ 10A max.
Fuse	12A / 450VAC. Caution: For continued protection against risk of fire, replace with same Type & Rating of fuse. Disconnect power source before servicing.

MTBF	IONPS-D-R1: 40,00 MIL-HDBK-217F hours 110,000 Bellcore hours IONDCR-R1: Greater than 250,000 MIL-HDBK-217F Hours Greater than 687,500 Bellcore Hours
Dimensions	Width: 8.3" [211 mm] x Depth: 9.0" [229 mm] x Height: 3.4" [86 mm]
Weight	2 lbs. [0.98 kg]
Operating Temperature	0°C to 50°C (32°F to 122°F)
Storage Temperature	-25°C to 70°C (-13°F 185°F)
Altitude	0-10,000 feet (with de-rating)
Operating Humidity	5% to 95% (non-condensing)
Warranty	Limited Lifetime Warranty

These product specifications are subject to change without further notice. Transition Networks is now Lantronix. Some products/firmware items are still in process of being re-branded and may still reflect the Transition Networks name/logo.

Primary/Secondary Mode

Only one power supply is needed to power the ION219 chassis; however, there is a second slot to house a redundant power supply module. If a redundant power supply is used, please note that:

1. Both power supplies cannot be put in Secondary mode.

2. If there is only one power supply it will set itself to Primary mode.

3. The IONPS-D-R1 default setting is Primary mode.

The Primary/Secondary mode is set via the ION software (Web GUI or CLI command). When two IONPS-D-R1 modules are installed in an ION chassis, you can select either Primary or Secondary for either or both power supplies via ION software.

The IONPS-D-R1 default setting is Primary mode. A warning message and a control system exist that prevents both modules from being set to Secondary mode.

Primary means the IONPS-D-R1 always attempts to provide power to the chassis, and **Secondary** means the IONPS-D-R1 always attempts to standby, only providing power to the chassis when no other source is providing sufficient power.

The IONPS-D-R1 is shipped in Primary mode by default, meaning it will always attempt to power the chassis; if two IONPS-D-R1s are installed in a chassis, they will both attempt to power the chassis, resulting in load-sharing, with the constant ability for either one to take on the full load of the chassis, should a failure occur. If you prefer to have primary/secondary operation instead of load-sharing (still maintaining constant fail-over ability), just change the role of one IONPS-D-R1 from Primary to Secondary.

Power Modules Interoperability Guideline: If you will be using the older IONPS-A or IONPS-D with the newer IONPS-A-R1 or IONPS-D-R1 in the same ION219 chassis, then you should place the newer IONPS-A-R1 or IONPS-D-R1 power supply in the right-hand slot (when facing the back of the ION219 chassis). For more details on the use of dual power supplies in the ION219 chassis, see the following section.

Failover and Load Sharing

Load Sharing is achieved when both Power Supplies are set to Primary.
Failover is achieved when one Power Supply is set to Primary and the other is set to Secondary.

There are two modes for the IONPS-D-R1:

1. If both are in Primary mode, both power supplies are in an un-balanced "Auctioneered" load share mode.
2. If one is Primary and the other is Secondary, then they will work in an instant fail-over mode.

The new IONPS-D-R1 can be used in conjunction with the old IONPS-A. The old IONPS-A will always set itself to Primary when installed in Power Supply slot #1 (chassis slot #22). Likewise, the IONPS-A will always set itself to Secondary when installed in Power Supply slot # 2 (Chassis slot # 23).

The table below shows how the two power supply modules can be configured and how they interact.

#	Control	PS #1	PS #2	Function
1	User control	IONPS-A-R1 Primary/Secondary	IONPS-A-R1 Primary/Secondary	Instant Fail-over or loadshare based on software configuration.
2	Automatic	IONPS-A Primary	IONPS-A Secondary	Instant Fail-over.
3	Automatic	IONPS-A Primary	IONPS-A-R1 Primary	Un-balanced "Auctioneered" loadshare.
4	Automatic	IONPS-A-R1 Primary	IONPS-A-R1 Primary	Un-balanced "Auctioneered" loadshare, but the IONPS-A will carry most of the load.

The IONPS-D-R1 default setting is Primary mode. If you try to set both P/S #1 and P/S #2 are set to Secondary mode, a warning message displays (a control system exist that prevents both modules from being set to Secondary mode).

For redundant operation where two identical power supplies are connected in parallel, diode 'auctioneering' modules are used to eliminate the possibility of a back feed from one power supply to the other, and to allow power supply failure alarms to be operated.

Note that the IONPS-D-R1 can also be used with the DC power supply, IONPS-D.

Fan Speed

The IONPS-D-R1 fan control mode is pre-configured for "automatic" mode; the fan speed is controlled by PWM according to a temperature sensor. The IONPS-D-R1 uses an intelligent temperature monitor and fan controller in Auto Temperature-Fan mode. Auto Temperature-Fan mode is an intelligent, closed-loop control that optimizes fan speed according to pre-defined parameters. This mode allows the IONPS-D-R1 to run as a stand-alone device without intervention.

ION Power Supply Interoperability

The table below shows ION power supply module interoperability. In the table below, where **IONPS-x-R1** is referenced, the *x* indicates **A** or **D** (IONPS-A-R1 or IONPS-D-R1).

#	PS #1 (Slot #22)	PS #2 (Slot #23)	Notes
1	IONPS-x-R1 (Primary)	(empty)	VALID
2	IONPS-x-R1 (Secondary)	(empty)	VALID
3	(empty)	IONPS-x-R1 (Primary)	VALID
4	(empty)	IONPS-x-R1 (Secondary)	VALID
5	IONPS-x-R1 (Primary)	IONPS-x-R1 (Primary)	VALID
6	IONPS-x-R1 (Primary)	IONPS-x-R1 (Secondary)	VALID
7	IONPS-x-R1 (Secondary)	IONPS-x-R1 (Secondary)	INVALID
8	IONPS-A	IONPS-x-R1 (Primary)	VALID
9	IONPS-A	IONPS-x-R1 (Secondary)	VALID
10	IONPS-x-R1 (Primary)	IONPS-A	VALID
11	IONPS-x-R1 (Secondary)	IONPS-A	INVALID
12	IONPS-D	IONPS-x-R1 (Primary)	VALID
13	IONPS-D	IONPS-x-R1 (Secondary)	VALID
14	IONPS-x-R1 (Primary)	IONPS-D	VALID
15	IONPS-x-R1 (Secondary)	IONPS-D	INVALID

➢ IONPS-x-R1 Primary/Secondary functionality is user configurable and works in all scenarios (*except where both supplies are set to* Secondary).

➢ IONPS-A and IONPS-D Primary/Secondary functionality is determined by which slot the Power Supply is installed in Slot 22 (PS1) = Primary, Slot 23 (PS2) = Secondary.

➢ IONPS-x-R1 can be manually configured to Load Share (default, Primary/Primary).

Minimum Firmware/Software Versions Required:

- IONMM FW v 1.3.1815 for IONPS-D-R1
- IONPS-D-R1 v 1.2.5
- MIB v 1.3.14

Related Manuals and Online Help

A printed documentation card is shipped with each device. For Lantronix Documentation, Firmware, App Notes, etc. go to https://www.lantronix.com/technical-support/.

Note that this manual provides links to third party web sites for which Lantronix is not responsible. Other related manuals are listed below.

1. Product Documentation Postcard, 33504
2. ION219-x 19-Slot Chassis Install Guide, 33412
3. ION Management Module (IONMM) Install Guide, 33420 and User Guide, 33457
4. IONPS-A-R1 Power Supply User Guide, 33614
5. IONDCR and IONDCR-R1 Install Procedure, 33422
6. SFP manual (model specific; see Lantronix SFP webpage)
7. Release Notes (firmware version specific)

Note: Information in this document is subject to change without notice. All information was deemed accurate and complete at the time of publication. This manual documents the latest software/firmware version at the time of publication. While all screen examples may not display the latest version number, all the descriptions and procedures reflect the latest software/firmware version, noted in the Record of Revisions.

Package Contents

Contact your sales representative if you have not received the following:

□   One IONPS-D-R1 DC Power Supply
□   One Terminal Block
□   One Documentation Postcard, 33504

Unpacking

1. Carefully unpack all IONPS-D-R1 contents (see above).

2. Verify receipt of all IONPS-D-R1 components.

3. Place the IONPS-D-R1 and related materials near the installed ION219 chassis.

4. Save the IONPS-D-R1 shipping carton and packing materials for future use.

2   Installation

This chapter describes IONPS-D-R1 cautions/warnings, installation, and setup. The ION219 chassis can support up to two power supply modules which mount in the rear of the chassis.

A single power supply can be used to power all the devices installed in the chassis; however, the system can be made redundant with the use of a second power supply. In this configuration, the power supplies operate in an instant-fail-over mode.

Installation Overview

This section describes the installation and site requirements for installing the ION219-A chassis.

Caution: Install the ION219-x chassis so that the airflow around it is not restricted. Failure to observe this caution could result in performance problems or damage to the contents of the chassis.

Caution: Read the installation instructions before connecting the chassis to a power source. Failure to observe this caution could result in poor performance or damage to the chassis and its SICs.

Caution: Only trained and qualified personnel should install or replace the ION219-A chassis. Failure to observe this caution could result in poor performance or damage to the chassis.

Safety considerations: The following considerations will help to ensure your safety as well as protection of the chassis and its contents from damage. This list does not contain all the potentially hazardous conditions that could exist at the installation site, so exercise caution at all times.

- Always unplug all power cords before installing or removing the chassis.
- Keep the chassis area clear and dust free during and after installation.
- Keep tools and chassis components away from walk areas.
- DO NOT place containers containing liquid on top of the chassis.

Electrical safety: Follow these basic guidelines when working with any electrical equipment:
- Disconnect all power and external cables before installing or removing the chassis.
- Do not work alone when potential hazard conditions exist.
- Never assume that power has been disconnect from the circuit—always check.
- Carefully examine your work area for possible hazards such as wet floors, ungrounded power extension cables, and missing safety ground.

WARNING
Do not work on the chassis, connect, or disconnect cables during a storm with lightning activity. Failure to observe this warning could result in an electrical shock or death.

Site Requirements

To assure normal operation and avoid unnecessary maintenance, plan the site configuration and prepare the site before installation.

ION219 Chassis Power Consumption Note: The IONPS-D-R1 can power a fully populated ION219 chassis when loaded with chassis cards that consume 5 Watts of power or less. The IONPS-D-R1 is not recommended for use with the C4120 chassis card as it uses too much power. All other ION chassis cards use 5 Watts of power or less (except the C4120 chassis card).

Caution: To prevent the chassis from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature 50ºC (122ºF).

Caution: The power outlet must be located near the equipment and must be easy to access.

WARNING: If the voltage indication on the label is different from the power outlet voltage, DO NOT plug the chassis into that receptacle. A voltage mismatch can cause equipment damage and may pose a fire hazard.

WARNING: Take care not to overload the circuit that supplies power to the chassis. Failure to observe this warning could result in a fire.

IMPORTANT

- All installation and service must be performed by qualified personnel only.
- Read, understand, and follow all CAUTION and WARNING notices, instructions marked on the product, including in this manual.

The IONPS-D-R1 DC Power Supply can replace an existing IONPS-A or IONPS-D, or it can be installed as the redundant Power Supply in an AC powered ION219-A chassis.

CAUTION: While installing or servicing the Power Supply, wear a grounding device and observe all electrostatic discharge precautions. Failure to observe this caution could result in damage or failure of the Power Supply.

Description

The Lantronix IONPS-D-R1 power module can deliver power or provide optional, redundant DC power for the ION219 chassis.

Power Module Component Identification

The IONPS-D-R1 back panel provides access to the DC Power Input, Power ON LED, Grounding Screw, and fan exhaust as shown in Figure 3:

1 Fan
2 Functional Ground Terminal (Grounding Screw)
3 Power ON LED
4 Two-position Euro Block (± voltage leads)
5 Handle for installing and removing the power module
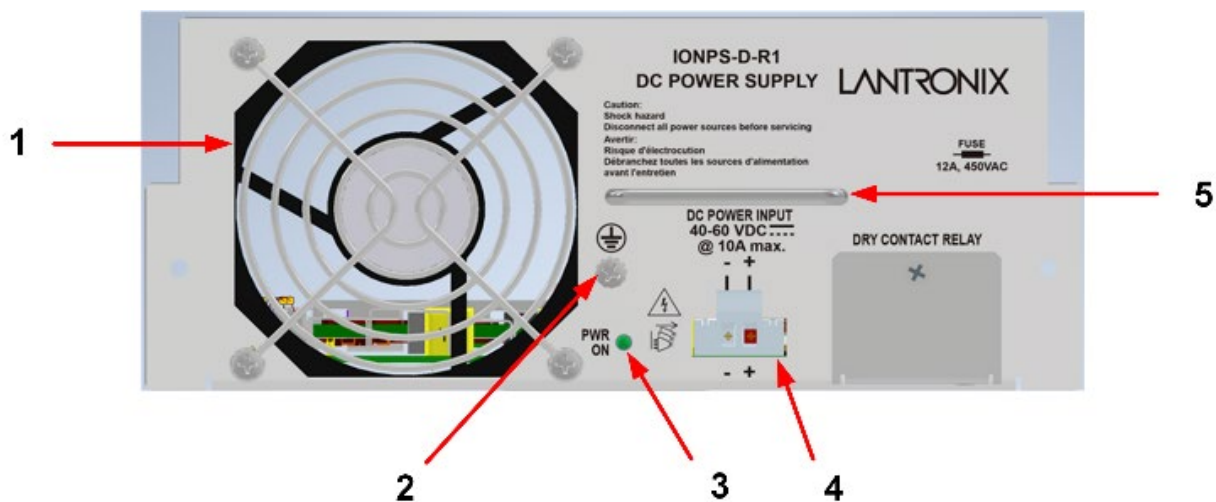

Figure 3: Component Identification

Note

- The IONPS-D-R1 power module must be installed by qualified technical personnel only. Lantronix assumes no responsibility for the improper installation, set up or use of these power modules.
- The information in this user guide is subject to change. For the most current information, see the online user guide on the IONPS-D-R1 product webpage.

IMPORTANT

- All installation and service must be performed by qualified personnel only.
- Read and follow all CAUTION and WARNING instructions marked on the product and in this manual.
- The IONPS-D-R1 DC power module is intended for installation in restricted access location only.

The IONPS-D-R1, DC power module can replace an existing DC power module or an AC power module in an ION219 Chassis.

CAUTION: While installing or servicing the power module, wear a grounding device and observe all electrostatic discharge precautions. Failure to observe this caution could result in damage to, or failure of the power module.

Power Source Circuit Requirements

The IONPS-D-R1 power module must be connected to a Safety Extra Low Voltage (SELV) circuit. The installer must first determine the circuit's characteristics (limited current, and hazardous energy levels, etc.) and then install the power module reliably, routing and securing the DC input wires safely in accordance with local and national electrical codes.

Equipment Ground

WARNING: The power module has a provision for grounding. Equipment grounding is vital to ensure safe operation. The installer must ensure that the power module is properly grounded during and after installation. Failure to observe this warning could result in an electric shock.

Disconnect Requirements

WARNING: A readily accessible, suitable National Electrical Code (NEC) or local electrical code approved disconnect device and branch-circuit protector must be part of the building's installed wiring to accommodate permanently connected equipment. The approved disconnect device and branch-circuit protector must be suitable for the rated voltage and current specified. Failure to observe this warning could result in an electric shock, even death.

WARNING: Ensure that the disconnect device for the external power source is OPEN (turned OFF) before disconnecting or connecting the power leads to the power module. Failure to observe this warning could result in an electric shock, even death.

CAUTION: While installing or servicing the power module, wear a grounding device and observe all electrostatic discharge precautions. Failure to observe this caution could result in damage to, or failure of the power module.

Connecting External Power

WARNING: Do not connect the power module to an external power source before installing it into the chassis. Failure to observe this warning could result in an electrical shock, even death.

Grounding Screw

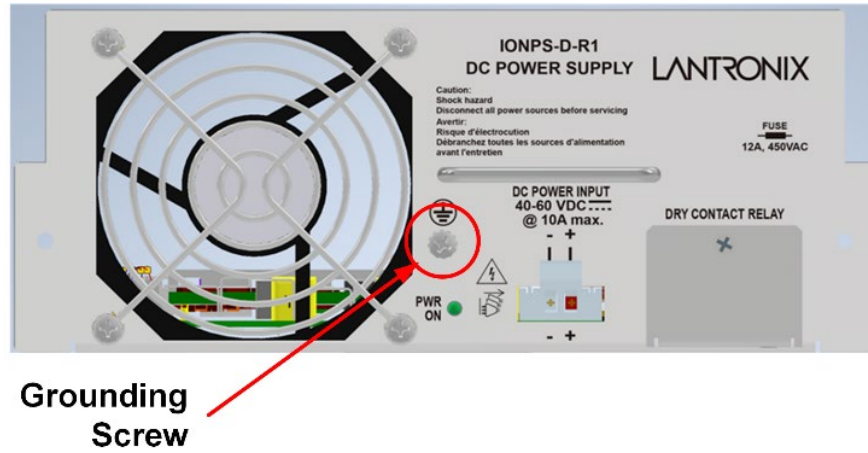The IONPS-D-R1 back panel provides access to the Grounding Screw as shown below.
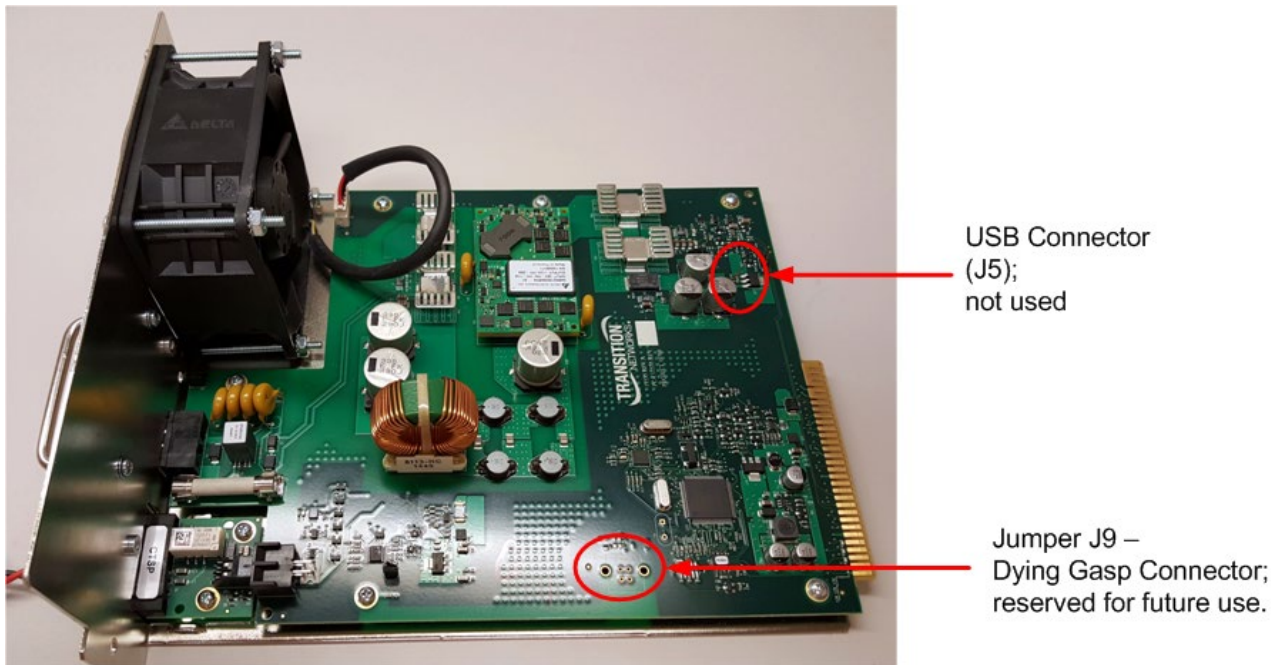

Figure 2: Grounding Screw

Jumper J5 – USB Connector

The USB connector (J5) is not used. It is not included on all builds.

Jumper J9 – Dying Gasp Connector

The Dying Gasp connector (J9) is reserved for future use.

Note: The power module can be hot swapped (i.e., swapped while the chassis is in operation) provided the power module has been disconnected from its external power source.

Warning Equipment grounding is vital to ensure safe operation. The installer must ensure that the power module is properly grounded during and after installation. Failure to observe this warning could result in an electric shock.

To connect power to the DC power module in the ION219 chassis, do the following:

1. Turn main power source OFF.

2. Loosen the two (2) mounting screws, attaching the Euro Block to the power module and pull it from the power module. See Figure 4.
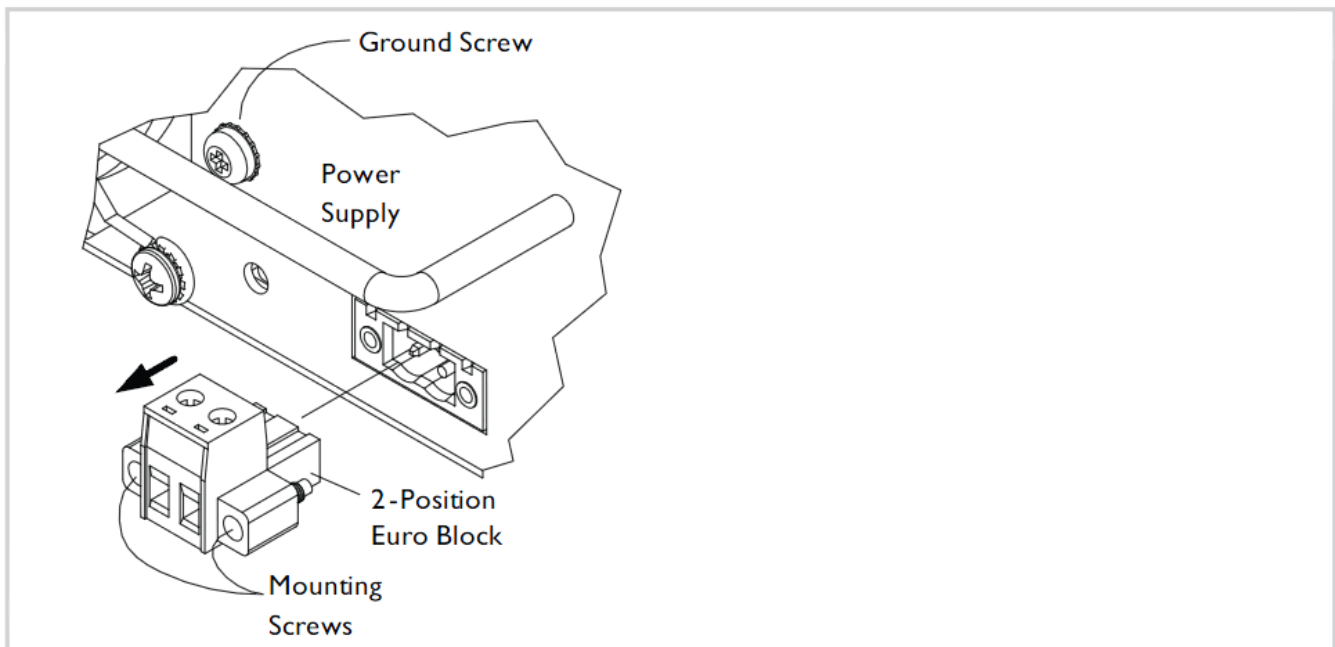
Figure 4: Removing the Euro Block from Power Module

3. Note polarity; insert the two (2) power wires into the Euro Block. The IONPS-D-R1 has reverse polarity protection; if incorrectly wired, the IONPS-D-R1 will not power up. If incorrectly wired, change the wiring connection polarity and continue.

4. Use the two (2) wire-securing screws to secure the power wires in the Euro Block. See Figure 5 below.
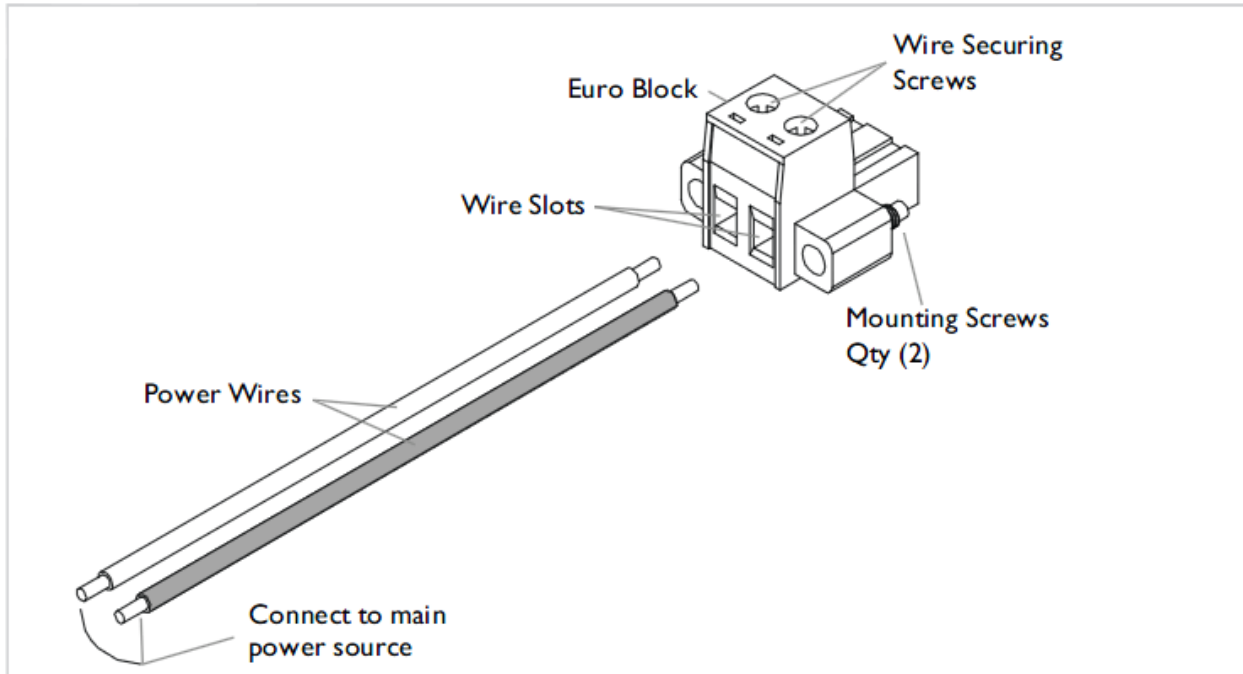
Figure 5: Installing Power Wires

5. Connect the other end of the power wires to the main power source.

6. Reinsert the Euro Block into the power module and secure it using the two (2) Euro Block mounting screws, shown in Figure 5 above.

7. Turn the main power ON: the power LED on the power module should be ON and the fan will be rotating.

Redundant (Failover) Chassis Power Module

Note: In a dual redundant power module configuration (second module inserted into the chassis), the fan in the second power module will operate without external power applied, if power is applied to the chassis.
This provides extra chassis heat exhaust when the power module is not in use, and in stand-by mode.

To install and set up a second power module for redundancy (failover):

1 Remove and keep the two (2) 6-32 Philips head screws attaching the slot cover to the chassis. See Figure 6.
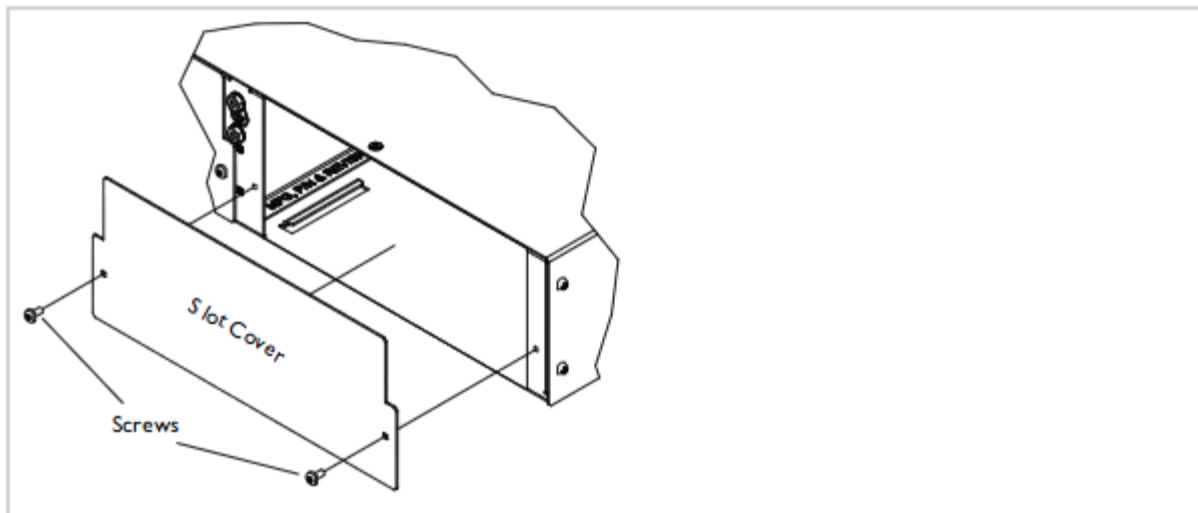
Figure 6: Remove Slot Cover

2. Remove the Euro Block from the power module.

3. Ensure that the main power source is switched OFF.

4. Note polarity, insert the two (2) power wires into the Euro Block and secure them. The IONPS-D-R1 has reverse polarity protection; if incorrectly wired, the IONPS will not power up. Change the wiring connection polarity and continue.

5. Insert the Euro Block into the power module and tighten the two (2) screws to secure it to the chassis.

6. Connect the ground wire to the power module chassis.

7. Slide the second power module into the chassis. See Figure 7 below.

Note: The fan in the second power module will operate without external power applied, if power is applied to the chassis.
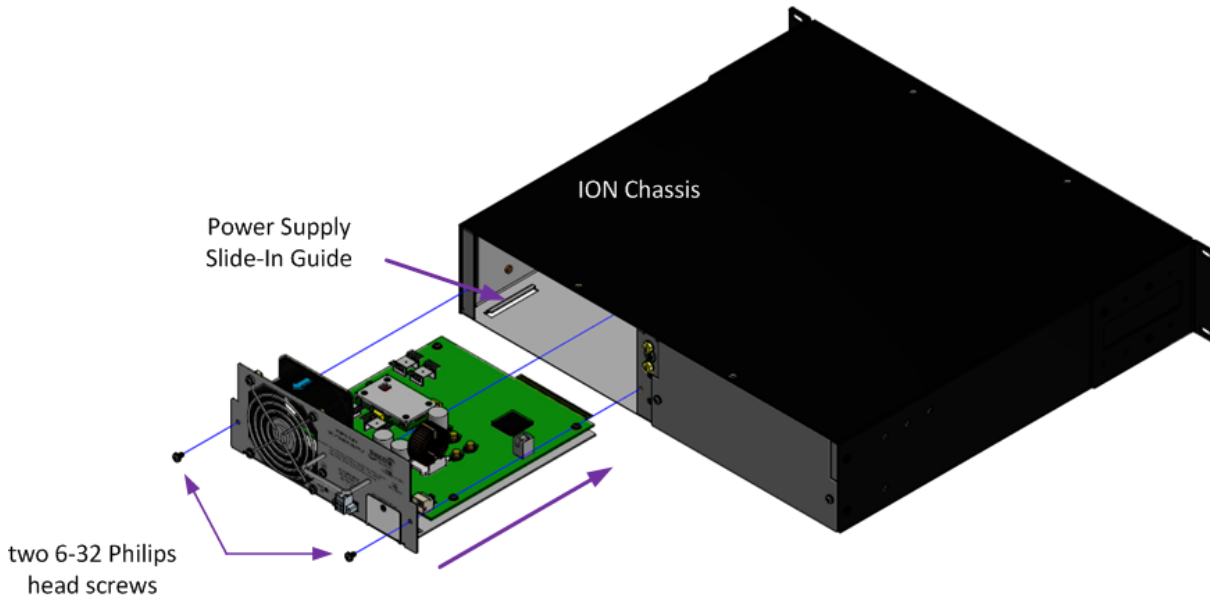
Figure 7: Power Module Installation

8. Secure the power module to the chassis with the two 6-32 Philips head screws.

9. Switch main power source ON — the LED on the redundant module should be lit.

Power Module Redundancy

The IONPS-D-R1, DC Power Module includes Instant failover (IFO) circuitry that provides the capability for the primary Power Module to power the chassis backplane while the Secondary Power Module is in 'hot' standby mode. If the IFO circuitry detects the loss of primary power, the Secondary Power Module instantly provides power to the chassis backplane. When primary power is restored, the IFO circuitry places the Secondary Power Module in 'hot' standby mode. The chassis primary Power Module is located in the left slot of the chassis as viewed from the rear. The chassis Secondary Power Module is located in the right slot of the chassis as viewed from the rear.

A single Power Module installed in either bay can power the chassis backplane.

The IONPS-D-R1 Power supplies provide failover and load sharing. See Failover and Load Sharing on page 8.

3   Maintenance

WARNING: Do not connect the power module to the external power source before installing it into the chassis. Failure to observe this warning could result an electrical shock, even death.

Replacing the Power Supply Module

Note: The power supply can be hot swapped (i.e., swapped while the chassis is in operation) provided that it is not connected to an active (switched ON) external power source. To replace the power module:

1. Make sure that the external power source is switched OFF.

2. Remove the chassis grounding lug if necessary.

3. Remove the ground wire connected to the power module.

4. Remove the Euro Block containing the power wires.

5. Remove and keep the two (2) 6-32 Philips head screws, securing the power module to the chassis.

6. Carefully pull the power module from the chassis.

7. Locate the new power module.

8. Install the Euro Block containing the two (2) power wires. The IONPS-D-R1 has reverse polarity protection; if incorrectly wired, the IONPS-D-R1 will not power up. Change the wiring connection polarity and continue.

9. Position the power module at the chassis slot, as shown in Figure 8 below.

10. Slide the power module completely into the chassis slot.

11. Insert the two screws to attach the power module to the chassis.
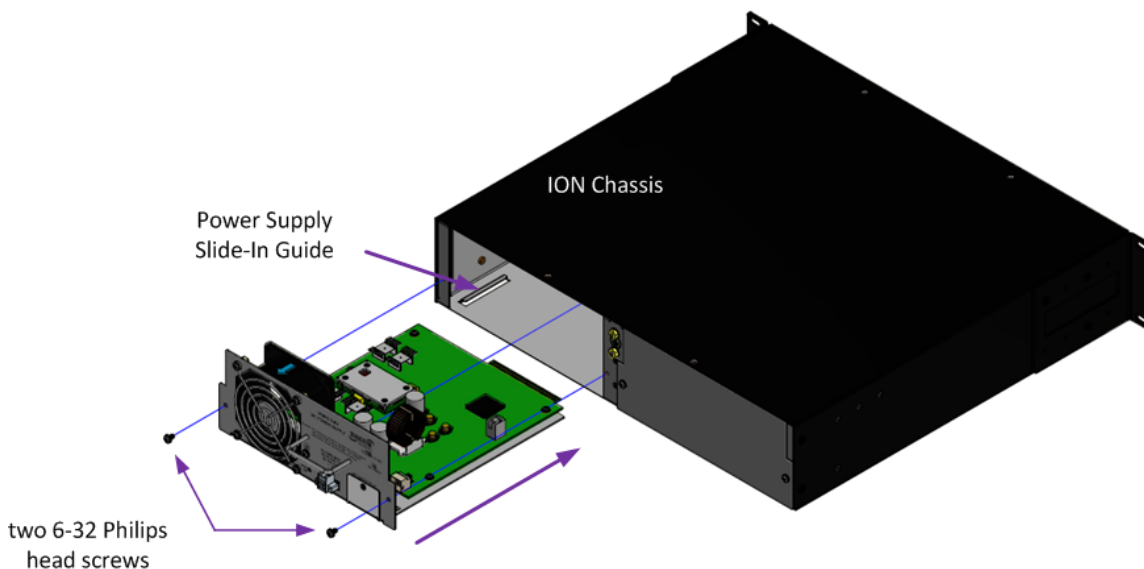
Figure 8: Replacing the Power Module

12. If necessary, attach the chassis grounding log.

13. Switch the main power source to the ON position. The fan is operational and the power LED is lit.

Replacing the Fuse

WARNING: Ensure that the IONPS-D-R1, DC power module has been disconnected from the external power source. Failure to observe this warning could result in an electrical shock or death.

Caution: For continued protection against risk of fire, replace with same Type & Rating of fuse: 12A / 450VAC. Disconnect power source, before servicing,

To replace the fuse in the IONPS-D-R1, DC power module, do the following:

1. Ensure the main power source is switched OFF.

2. Remove the power module from the chassis to expose the fuse. See Figure 9 below.

3. Carefully pull the fuse from the fuse holder. See Figure 9.
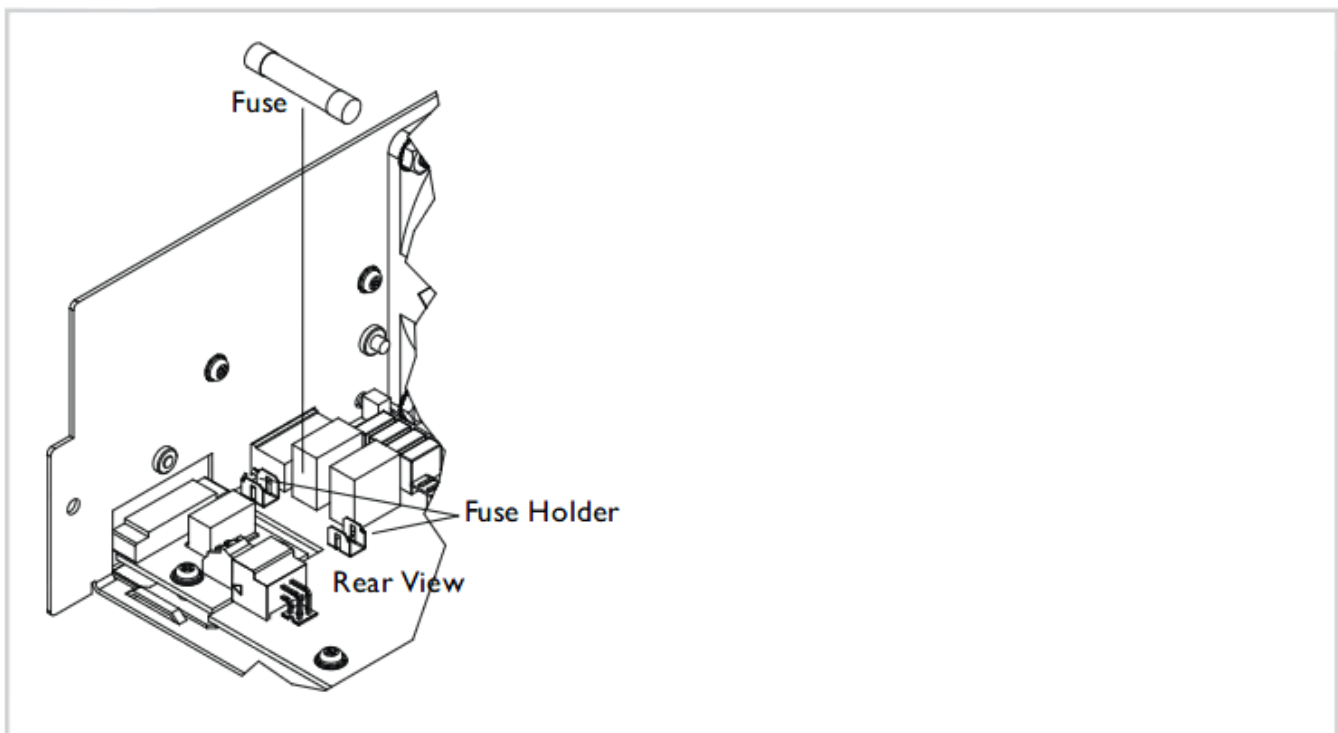
Figure 9: Fuse Holder with Fuse

4. Replace the fuse with an equivalent amperage and voltage rated fuse.

5. Insert and secure the power module to the chassis.

6. Switch the main power source to ON: the fan is operational and the power LED is lit.

4   IONPS-D-R1 Software Configuration

This section provides information on configuring the IONPS-D-R1 in an ION219 chassis:

- IONPS-D-R1 Redundant AC Power Supply for ION219 Chassis
- ION Power Supply Temperature, Voltage, Power, and Fan sensors

The ION219 chassis can support up to two power supply modules which mount in the rear of the chassis. A single power supply can be used to power all the devices installed in the chassis; however, the system can be made redundant with the use of a second power supply. In this configuration, the power supplies operate in an instant-fail-over mode.

The IONPS-D-R1 supports a Dry Contact Relay (DCR) which can be enabled and disabled in the Entity Sensor Thresholds for "Temperature", "Voltage", "Power", and "Fan".

The IONPS-D-R1 can be configured using either the CLI or Web method.

IONPS-D-R1 CLI Commands

The IONPS-D-R1 supports the device level and port level CLI commands listed below.

```
set power relay state
set sensor stid
show ionpsr1 mode
set ionpsr1 mode
show cardtype
show power config
stat
```

The IONPS-D-R1 CLI commands are described below.

Command: Enable / Disable Power Relay

Syntax: **set power relay state**

Description: Enable or disable the power relay.

Example:

```
Agent III C1|S23|L1D>set power relay state ?
  disable
  enable
Agent III C1|S23|L1D>set power relay state enable
Error: this command should be executed on a relay!
Agent III C1|S23|L1D>go l1p=1
Agent III C1|S23|L1P1>set power relay state enable
Error: Relay state can only be set on IONPS-A, IONPS-D, and IONPSDCR1!
Agent III C1|S23|L1P1>
```

Command:	**Show IONPS-D-R1 Mode**
Syntax:	**show ionpsr1 mode**
Description:	Display the current IONPS-D-R1 primary or secondary mode setting. The default is "primary".
	Configuration Mode indicates whether this is currently configured as the 'primary' power supply or the 'secondary' power supply. The secondary power supply is the fail-over or redundant (backup) power supply.

Example:
```
Agent III C1|S22|L1D>show ionpsr1 mode
IONPS-A/D-R1 Operating as:           master
IONPS-A/D-R1 Configured as:          master
Agent III C1|S22|L1D>
```

Command:	**Set IONPS-D-R1 Mode**
Syntax:	**set ionpsr1 mode**
Description:	Configures the current IONPS-D-R1 'primary' or 'secondary' mode setting. The default is 'primary'. This is the configured (running) mode that exists in IONPS-D-R1 flash. This value is always equal to '*ionpsr1OperMode*' except for the case of two IONPS-D-R1s in secondary mode being inserted in a chassis; one or both of them will be changed to primary mode.

Example:
```
Agent III C1|S23|L1D>show ionpsr1 mode
IONPS-A/D-R1 Operating as:           slave
IONPS-A/D-R1 Configured as:          slave
Agent III C1|S23|L1D>set ionpsr1 mode ?
  master
   slave
Agent III C1|S23|L1D>set ionpsr1 mode master
Agent III C1|S23|L1D>show ionpsr1 mode
IONPS-A/D-R1 Operating as:           master
IONPS-A/D-R1 Configured as:          master
Agent III C1|S23|L1D>
```

Message: The message "*There are 2 IONPS-D-R1 in chassis, you cannot set all of them to Secondary mode!*" displays on the Web UI. The CLI lets you set master/slave mode, but without limitation. It allows setting both power supplies to slave.

Command:	**Show Card Type**
Syntax:	**show cardtype**
Description:	Display the current slot's model number.

Example:
```
Agent III C1|S23|L1D>show cardtype
Card type:                   IONPS-D-R1
Agent III C1|S23|L1D>
```

Set Power Supply or Fan STID

Command: **Set PS Sensor Threshold Parameters**

Syntax: **set sensor stid**=(notification/relation/severity/value)

Description: Sets the current IONPS-A-R1 Sensor Transaction ID (stid) settings. The STID is used for power supply / sensor configuration via the set sensor stid command to define notification, relation, severity, and value parameters. The **show power config** command displays the power supply sensors information. The STID is shown in the Web interface at the Power Supply tab > Temp, Volt, Power, and Fan sub-tabs.

The *stid* is the port number, where Temperature = port 1, Voltage = port 2, Power = port 3, and Fan = port 4.

The *stid* (Sensor Transaction ID) parameters are:

notification: select true to be informed of Temperature Sensor events or select false to not receive notification of Temperature Sensor events. If this value is false (disabled), then no SensorThresholdNotification will be generated on this device. If this value is true (enabled), then whether a SensorThresholdNotification for a threshold will be generated or not depends on the instance value of SensorThresholdNotificationEnable for that threshold.

relation: Less Than (<), Less Or Equal (>), Greater Than (>), Greater Or Equal (>), Equal To (=), or Not Equal To (≠), where:

- LessThan: if the sensor value is less than the threshold value.
- LessOrEqual: if the sensor value is less than or equal to the threshold value.
- GreaterThan: if the sensor value is greater than the threshold value.
- GreaterOrEqual: if the sensor value is greater than or equal to the threshold value.
- EqualTo: if the sensor value is equal to the threshold value.
- NotEqualTo: if the sensor value is not equal to the threshold value.

Relation indicates the relation between sensor value (entSensorValue) and threshold value (ionEntSensorThresholdValue), required to trigger the alarm.

When evaluating the relation, entSensorValue is on the left of SensorThresholdRelation, and SensorThresholdValue is on the right (e.g., entSensorValue ≥ SensorThresholdValue).

severity: select minor, major, critical or other. Critical is the most severe, Major is the next most severe, and Minor is the least severe. The system might shut down the sensor associated FRU automatically if the sensor value reaches the Critical problem threshold.

value: defines the value of the threshold (e.g., for a Major threshold severity selection, set a relation of Greater than or equal to 65 as the requirement for notification). To correctly display or interpret this variable's value, you must also know the SensorType, SensorScale, and SensorPrecision. However, you can directly compare SensorValue with the threshold values given in the SensorThresholdTable without any semantic knowledge.

Example: Below is an example of CLI commands for all 4 ports (sensors) and all thresholds:

```
Agent III C1|S22|L1D>go l1p=1 (Temperature)
Agent III C1|S22|L1P1>set sensor stid=1 notif=enable
Agent III C1|S22|L1P1>set sensor stid=1 value=10
Agent III C1|S22|L1P1>set sensor stid=2 severity=major
Agent III C1|S22|L1P1>set sensor stid=2 notif=enable
Agent III C1|S22|L1P1>set sensor stid=3 notif=enable
Agent III C1|S22|L1P1>set sensor stid=4 relation=greaterThan
```

```
Agent III C1|S22|L1P1>go l1p=2 (Voltage)
Agent III C1|S22|L1P2>set sensor stid=1 relation=lessOrEqual
Agent III C1|S22|L1P2>set sensor stid=2 value=12900
Agent III C1|S22|L1P2>set sensor stid=3 severity=other
Agent III C1|S22|L1P2>set sensor stid=4 value=14600

Agent III C1|S22|L1P2>go l1p=3 (Power)
Agent III C1|S22|L1P3>set sensor stid=1 value=9
Agent III C1|S22|L1P3>set sensor stid=2 severity=major
Agent III C1|S22|L1P3>set sensor stid=3 notif=enable
Agent III C1|S22|L1P3>set sensor stid=4 value=199

Agent III C1|S22|L1P3>go l1p=4 (Fan)
Agent III C1|S22|L1P4>set sensor stid=1 relation=lessThan
Agent III C1|S22|L1P4>set sensor stid=2 notif=enable
Agent III C1|S22|L1P4>set sensor stid=3 value=9499
Agent III C1|S22|L1P4>set sensor stid=4 relation=greaterThan
```

Use the **show power config** command to display the related current status; see below for description.

Note: Use the **stat** command to view the chassis slot assignments. Power Supplies are assigned slot 22 and slot 23 by default. The ION219 chassis has **PS 1 ON** and **PS 2 ON** LEDs to indicate power supply presence and function.

```
Agent III C1|S22|L1D>stat
ION statck
        Chassis -- BPC
                [  1]  IONMM
                        Port 1
                        Port 2
                [ 11]  C2210-1013
                        Port 1
                        Port 2
                [ 22]  IONPS-D-R1
                        Temperature Sensor
                        Voltage Sensor
                        Power Sensor
                        Fan-1
Agent III C1|S22|L1D>
```

Command: **Show PS Sensor Information**

Syntax: **show power config**

Description: Displays the current IONPS-D-R1's Temperature, Voltage, Power, and Fan data. ION Power
                   Supply SENSORID: The ION power supplies have four sensors: Temperature, Voltage, Power, and
                   Fan. You can view a summary of the current status and settings by accessing the power slot-
                   device level (e.g., go c=1 s=22 L1D) and performing a "show power config" command.

Example:

```
Agent III C1|S22|L1D>show power config
Power supply sensors information:

Temperature Sensor:
        Type:                   celsius
        Scale:                  units
        Precision:              0
        Value:                  128
        Operation status:       nonoperational
        Units display:          The data units displayed for temperature is units(9)


Threshold information:
index        severity       relation       value       evaluation      notifEnable
-----------------------------------------------------------------------------------
1            other          lessThan       0           false           disable
2            minor          greaterThan    60          false           disable
3            major          greaterOrEqual 65          false           disable
4            critical       greaterThan    70          false           enable

Voltage Sensor:
        Type:                   voltsDC
        Scale:                  milli
        Precision:              0
        Value:                  0
        Operation status:       nonoperational
        Units display:          The data units displayed for volts is milli(8)


Threshold information:
index        severity       relation       value       evaluation      notifEnable
-----------------------------------------------------------------------------------
1            critical       lessThan       11220       true            enable
2            minor          greaterThan    13000       false           disable
3            major          greaterOrEqual 14000       false           disable
4            critical       greaterOrEqual 14673       false           enable

Power Sensor:
        Type:                   watts
        Scale:                  units
        Precision:              0
        Value:                  0
        Operation status:       nonoperational
        Units display:          The data units displayed for watts is in units(9)


Threshold information:
index        severity       relation       value       evaluation      notifEnable
-----------------------------------------------------------------------------------
1            critical       lessOrEqual    10          true            enable
2            minor          greaterThan    250         false           disable
3            major          greaterOrEqual 260         false           disable
4            critical       greaterOrEqual 280         false           enable
```

```
Relay:
        Type:                   other
        Scale:                  units
        Precision:              0
        Value:                  1
        Operation status:       ok
        Units display:          The data units displayed for Relay is in units(9)


        Installed:              true
        State:                  disable
        Module type:            disable
        Oper mode:              master

Fan-1:
        Type:                   rpm
        Scale:                  units
        Precision:              0
        Value:                  65535
        Operation status:       nonoperational
        Units display:          The data units displayed for Fan 1 in RPM is in units(9)


Threshold information:
index           severity        relation        value           evaluation      notif
Enable
-------------------------------------------------------------------------------
-------
1               critical        lessThan        1400            false           enable
2               minor           greaterThan     8500            false           disable
3               major           greaterOrEqual  9500            false           disable
4               critical        greaterOrEqual  9900            false           enable
Agent III C1|S22|L1D>
```

Command: **Show Current Stack Status**

Syntax: **stat**

Description: Display the current ION219 chassis stack configuration in terms of slots, devices and ports.

Example:
```
Agent III C1|S23|L1D>stat
ION statck
      Chassis -- BPC
              [  1]  IONMM
                       Port 1
                       Port 2
              [  2]  C2110-1013
                       Port 1
                       Port 2
              [  5]  C3110-1013
                       Port 1
                       Port 2
              [ 10]  C3231-1040
                       Port 1
                       Port 2
                       Port 3
              [ 15]  C6210-3040
                       Port 1
                       Port 2
              [ 18]  C4120-1040
                       Port 1
                       Port 2
              [ 22]  IONPS-A
                     Temperature Sensor
                     Voltage Sensor
                     Power Sensor
                     Fan-1
                     Fan-2
              [ 23]  IONPS-D-R1
                     Temperature Sensor
                     Voltage Sensor
                     Power Sensor
                     Fan
      Agent III C1|S23|L1D>
```

IONPS-D-R1 CLI Messages

Error: Cannot set IONPS-A/D-R1 operation mode on this card!

Error: Cannot display card information on this module!

Error: Software version of this card is too old, please upgrade it!

Error: System is busy, please retry this command later!

Error: only IONPS-A/D-R1 can run this command!

Cannot set slot power on this card!

Failed to get IONPS-A/D-R1 operation mode!

Failed to get IONPS-A/D-R1 configure mode!

Failed to get IONPS-A/D-R1 fan control mode!

% There is no matched command.

% Command incomplete.

Error: Please change to power supply slot first before showing its configuration!

Warning: IONPS-A/D-R1 operation mode is different from configured mode, you cannot insert 2 Secondary mode IONPS-A/D-R1s in chassis!

Error: Relay state can only be set on IONPS-A, IONPS-D, and IONPSDCR1!

Error: this command should be executed on a relay!

Error: this command should be executed on a sensor!

Error: this command should be executed on an ION power supply!

Power Supply Config – Web Method

The ION Web interface allows configuration of the IONPS-D-R1 Power Supply's Temperature Sensor, Voltage Sensor, Power Sensor, and Fan.

1. Select the IONPS-D-R1 Power Supply. The **MAIN** tab displays the current power supply information.
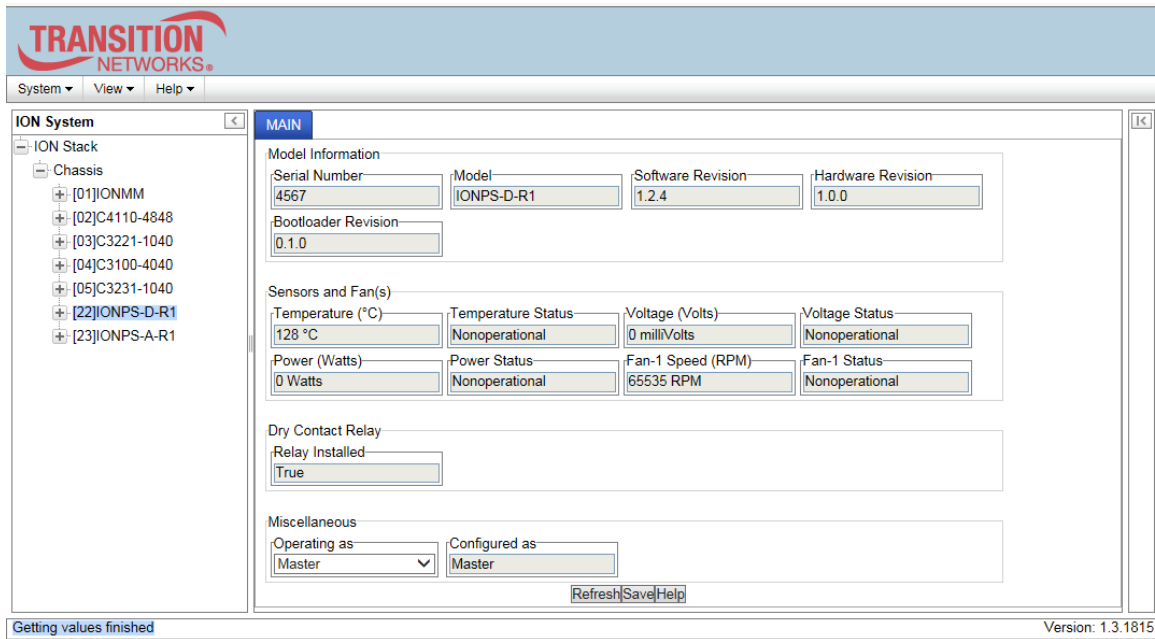
The **MAIN** tab displays an overview of power supply model information, data on the sensor and fan(s), and Miscellaneous information. The **MAIN** tab's **Miscellaneous** section includes:

- **Operating as** (Primary/Secondary Mode): if a redundant module exists, this value sets/shows whether this is currently underlined operating as the Primary power supply or the Secondary power supply. The Secondary power supply is the fail-over or redundant (backup) power supply. This value is always equal to 'ionpsr1OperMode' except for the case of two IONPS-D-R1s in 'Secondary' mode being inserted in a chassis; one or both of them will be changed to 'Primary' mode.

- **Configured as**: indicates if this is currently underlined configured as the 'Primary' power supply or the 'Secondary' power supply. After changing the 'Operating as" setting, you may have to click the **Refresh** button to change the 'Configured as" displayed.

2. From the Power Supply's **MAIN** tab, click the IONPS-D-R1 [+] icon to expand the tree and select the Temperature Sensor, Voltage Sensor, Power Sensor, or Fan for configuration and status information.
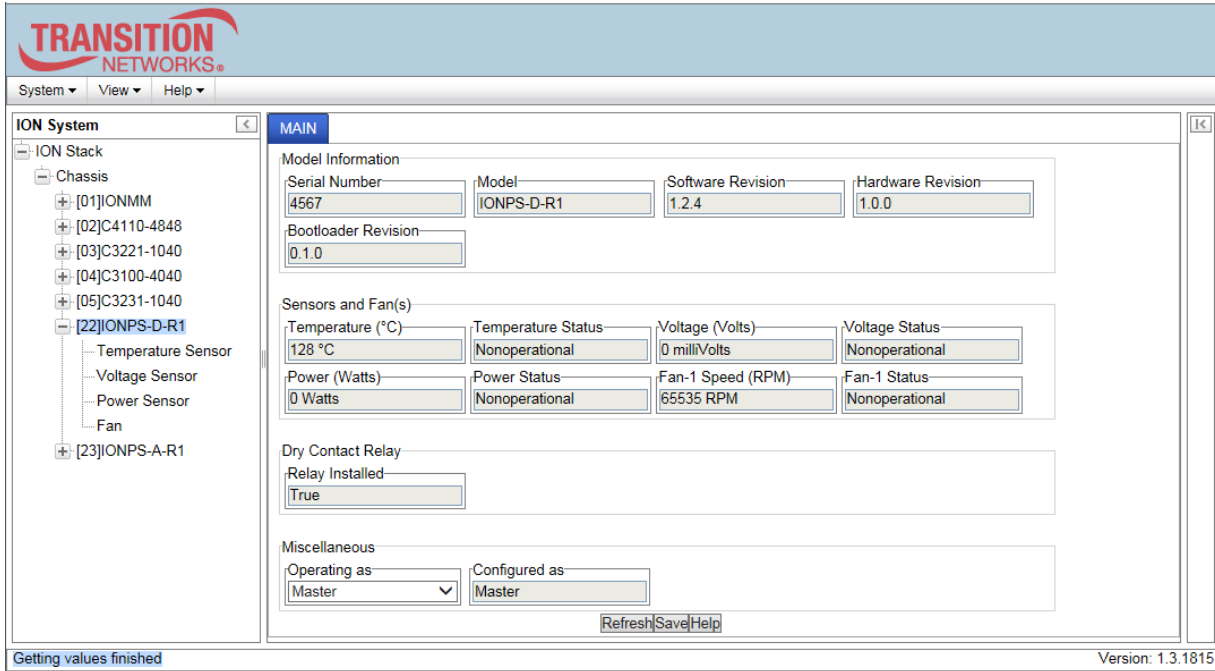
The Temperature Sensor, Voltage Sensor, Power Sensor, and Fan configuration and status information is described in the following sections.

Temperature Sensor Configuration

The Threshold Settings table lists the threshold severity, relation, and comparison value for a sensor listed in the Entity-MIB Physical Table.

- **Temperature**: displays the most recent temperature measurement obtained by the agent for this sensor.

- **Temperature Status**: displays the operational status of the physical sensor.
  - **OK** - indicates that the agent can obtain the sensor value.

  - **Unavailable** - indicates that the agent presently cannot obtain the sensor value.

  - **Nonoperational** - indicates that the agent believes the sensor is broken. The sensor could have a hard failure (disconnected wire), or a soft failure (e.g., out-of-range, jittery, or wildly fluctuating readings).

- **Relay Enabled**: select True to enable relay operation. The IONPS-D-R1 supports a Dry Contact Relay which can be enabled or disabled in the Entity Sensor Thresholds for "Temperature", "Voltage", "Power", and "Fan". See the example below for operating details.

- **Index**: use the cursor to select an index line / number that uniquely identifies an entry in the Threshold Table. The index permits the same sensor to have several different threshold values set.

- **Severity**: select **Minor**, **Major**, **Critical** or **Other**. Critical is the most severe, Major is the next most severe, and Minor is the least severe. The system might shut down the sensor associated FRU automatically if the sensor value reaches the Critical problem threshold.

- **Relation**: Less Than (<), Less Or Equal (≤), Greater Than (>), Greater Or Equal (≥), Equal To (=), or Not Equal To (≠).
  - Less Than: if the sensor value is less than the threshold value.
  - Less Or Equal: if the sensor value is less than or equal to the threshold value.
  - Greater Than: if the sensor value is greater than the threshold value.
  - Greater Or Equal: if the sensor value is greater than or equal to the threshold value.
  - Equal To: if the sensor value is equal to the threshold value.
 - Not Equal To: if the sensor value is not equal to the threshold value.

Indicates the relation between sensor value (entSensorValue) and threshold value (ionEntSensorThresholdValue), required to trigger the alarm.
When evaluating the relation, entSensorValue is on the left of SensorThresholdRelation, and SensorThresholdValue is on the right (e.g., entSensorValue ≥ SensorThresholdValue).

- **Value**: defines the value of the threshold (e.g., for a Major threshold severity selection, set a relation of Greater than or equal to 65 as the requirement for notification). To correctly display or interpret this variable's value, you must also know the SensorType, SensorScale, and SensorPrecision. However, you can directly compare SensorValue with the threshold values given in the SensorThresholdTable without any semantic knowledge.

- **Notification**: select **Enabled** to be informed of Temperature Sensor events or select **Disabled** to not receive notification of Temperature Sensor events. If this value is **Disabled**, then no SensorThresholdNotification will be generated on this device. If this value is **Enabled**, then whether a SensorThresholdNotification for a threshold will be generated or not depends on the instance value of SensorThresholdNotificationEnable for that threshold.

- **Last Evaluation**: displays **True** if parameters were included in the most recent measurement, otherwise displays **False**. This value indicates the result of the most recent evaluation of the threshold. If the threshold condition is True, then SensorThresholdEvaluation is True. If the threshold condition is False, then SensorThresholdEvaluation is False. Thresholds are evaluated at the rate indicated by the SensorValueUpdateRate (e.g., 0= on demand (when polled), when the sensor value changes (event-driven), or the agent does not know the update rate).

3. Click the **Save** button when finished with Temperature Sensor configuration.

Temperature Sensor Voltage Sensor Relay Operation Example

The example below outlines the relay operation.
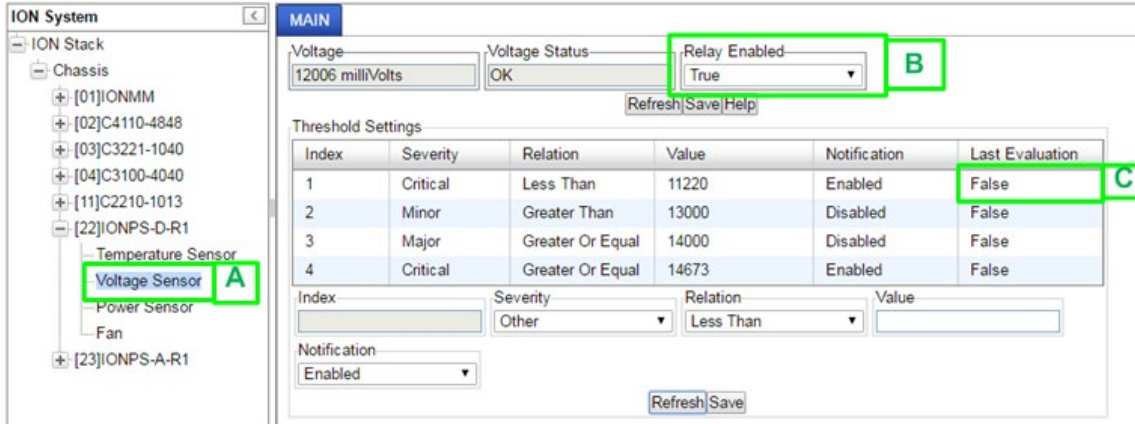
Looking at Box B "Relay Enabled" in the picture above:

- When "Relay Enabled "is set to <u>False</u>, it means the Voltage Sensor readings of the IONPS-D-R1 in slot 22 [Box A] <u>will **not**</u> have any effect on the Dry Contact Relay alarm indications. No alarm will ever be set based on power supply voltage output.
- When "Relay Enabled is set to <u>True</u>, it means the Voltage Sensor readings of the IONPS-D-R1 in slot 22 [Box A] <u>will</u> affect the Dry Contact Relay alarm indications. Power supply voltage output that is too high or too low will set an alarm.

When the Relay Enabled is set to "True", the Threshold settings show the conditions that will indicate alarm. Those conditions are editable. Any condition showing "True" in the Last Evaluation column means an alarm was occurring when the webpage was loaded or last refreshed.

With v 1.2.5 firmware or above, the relay operates per the table below:

ION219 with ...	IONPS-D-R1 operation with the relay's energized state = alarm:
One PS installed, in slot 22	When power is provided to PS, it indicates no alarm.
	When no power is provided to the PS, it does not indicate alarm.
One PS installed, in slot 23	When power is provided to PS, it indicates no alarm.
	When no power is provided to the PS, it does not indicate alarm.
Two PS installed: one PS in slot 22 one PS in slot 23	When power is applied to both PS, both indicate no alarm.
	When power is applied to the PS in slot 22, but not the PS on slot 23, slot 22 indicates no alarm and slot 23 indicates alarm.
	When power is applied to the PS in slot 23, but not the PS on slot 22, slot 23 indicates no alarm and slot 22 indicates alarm.
	When power is not supplied to either PS, both do not indicate alarm.

Voltage Sensor Configuration

The Threshold Settings table lists the threshold severity, relation, and comparison value for a sensor listed in the Entity-MIB Physical Table.

- **Voltage**: displays the most recent voltage measurement obtained by the agent for this sensor in milliVolts.

- **Voltage Status**: displays the operational voltage status of the sensor.
  - **OK** - indicates that the agent can obtain the sensor value.

  - **Unavailable** - indicates that the agent presently cannot obtain the sensor value.

  - **Nonoperational** - indicates that the agent believes the sensor is broken. The sensor could have a hard failure (disconnected wire), or a soft failure (e.g., out-of-range, jittery, or wildly fluctuating readings).

- **Relay Enabled**: select **False** to disable DCR (Dry Contact Relay) operation or select **True** to enable it. This selection enables or disables the relay contact d (ExtRelayInstalled) in the power supply.

- **Index**: select an index line / number that uniquely identifies an entry in the Threshold Table. The index permits the same sensor to have several different threshold values set.

- **Severity**: select **Other**, **Minor**, **Major**, or **Critical**. Critical is the most severe, Major is the next most severe, and Minor is the least severe. The system might shut down the sensor associated FRU automatically if the sensor value reaches the Critical problem threshold.

- **Relation**: Less Than (<), Less Or Equal (≤), Greater Than (>), Greater Or Equal (≥), Equal To (=), or Not Equal To (≠).
  - Less Than: if the sensor value is less than the threshold value.
  - Less Or Equal: if the sensor value is less than or equal to the threshold value.
  - Greater Than: if the sensor value is greater than the threshold value.
  - Greater Or Equal: if the sensor value is greater than or equal to the threshold value.
  - Equal To: if the sensor value is equal to the threshold value.
  - Not Equal To: if the sensor value is not equal to the threshold value.

Indicates the relation between sensor value (SensorValue) and threshold value (SensorThresholdValue), required to trigger the alarm.
When evaluating the relation, SensorValue is on the left of SensorThresholdRelation, and SensorThresholdValue is on the right (e.g., SensorValue ≥ SensorThresholdValue).

- **Value**: defines the value of the threshold (e.g., for a Major threshold severity selection, set a relation of Greater than or equal to 14000 as the requirement for notification). To correctly display or interpret this variable's value, you must also know the SensorType, SensorScale, and SensorPrecision. However, you can directly compare SensorValue with the threshold values given in the SensorThresholdTable without any semantic knowledge.

- **Notification**: select Enabled to be informed of Temperature Sensor events or select Disabled to not receive notification of Temperature Sensor events. If this value is **Disabled**, then no SensorThresholdNotification will be generated on this device. If this value is **Enabled**, then whether a SensorThresholdNotification for a threshold will be generated or not depends on the instance value of SensorThresholdNotificationEnable for that threshold.

- **Last Evaluation**: displays **True** if parameters were included in the most recent measurement, otherwise displays **False**. This value indicates the result of the most recent evaluation of the threshold. If the threshold condition is True, then SensorThresholdEvaluation is True. If the threshold condition is False, then SensorThresholdEvaluation is False. Thresholds are evaluated at the rate indicated by the SensorValueUpdateRate (e.g., 0= on demand when polled), when the sensor value changes (event-driven), or the agent does not know the update rate.

4. Click the **Save** button when finished with Voltage Sensor configuration.

Power Sensor Configuration

The Threshold Settings table lists the threshold severity, relation, and comparison value for a sensor listed in the Entity-MIB Physical Table.

- **Power**: displays the most recent power measurement obtained by the agent for this sensor in Watts.

- **Power Status**: displays the operational power status of the sensor.
    - **OK** - indicates that the agent can obtain the sensor value.
    - **Unavailable** - indicates that the agent presently cannot obtain the sensor value.
    - **Nonoperational** - indicates that the agent believes the sensor is broken. The sensor could have a hard failure (disconnected wire), or a soft failure (e.g., out-of-range, jittery, or wildly fluctuating readings).

- **Relay Enabled**: select **False** to disable DCR (Dry Contact Relay) operation or select **True** to enable it. This selection enables or disables the relay contact d (ExtRelayInstalled) in the power supply.

- **Index**: select an index line / number that uniquely identifies an entry in the Threshold Table. The index permits the same sensor to have several different threshold values set.

- **Severity**: select **Other**, **Minor**, **Major**, or **Critical**. Critical is the most severe, Major is the next most severe, and Minor is the least severe. The system might shut down the sensor associated FRU automatically if the sensor value reaches the Critical problem threshold.

- **Relation**: Less Than (<), Less Or Equal (≤), Greater Than (>), Greater Or Equal (≥), Equal To (=), or Not Equal To (≠).
    - Less Than: if the sensor value is less than the threshold value.
    - Less Or Equal: if the sensor value is less than or equal to the threshold value.
    - Greater Than: if the sensor value is greater than the threshold value.
    - Greater Or Equal: if the sensor value is greater than or equal to the threshold value.
    - Equal To: if the sensor value is equal to the threshold value.
    - Not Equal To: if the sensor value is not equal to the threshold value.

Indicates the relation between sensor value (entSensorValue) and threshold value (ionEntSensorThresholdValue), required to trigger the alarm.
When evaluating the relation, entSensorValue is on the left of SensorThresholdRelation, and SensorThresholdValue is on the right (e.g., entSensorValue ≥ SensorThresholdValue).

- **Value**: defines the value of the threshold (e.g., for a Major threshold severity selection, set a relation of Greater than or equal to 14000 as the requirement for notification). To correctly display or interpret this variable's value, you must also know the SensorType, SensorScale, and SensorPrecision. However, you can directly compare SensorValue with the threshold values given in the SensorThresholdTable without any semantic knowledge.

- **Notification**: select Enabled to be informed of Temperature Sensor events or select Disabled to not receive notification of Temperature Sensor events. If this value is **Disabled**, then no SensorThresholdNotification will be generated on this device. If this value is **Enabled**, then whether a SensorThresholdNotification for a threshold will be generated or not depends on the instance value of SensorThresholdNotificationEnable for that threshold.

- **Last Evaluation**: displays **True** if parameters were included in the most recent measurement, otherwise displays **False**. This value indicates the result of the most recent evaluation of the threshold. If the threshold condition is True, then SensorThresholdEvaluation is True. If the threshold condition is False, then SensorThresholdEvaluation is False. Thresholds are evaluated at the rate indicated by the SensorValueUpdateRate (e.g., 0= on demand when polled), when the sensor value changes (event-driven), or the agent does not know the update rate.

5. Click the **Save** button when finished with Power Sensor configuration.

Fan Configuration

The IONPS-D-R1 fan control mode and speed can be set via the ION software. The IONPS-D-R1 uses an intelligent temperature monitor and fan controller.

- **Fan-1 Speed**: displays the current actual (measured) fan speed in RPMs from 1000 - 9900 RPMs (e.g., *1304*).

- **Fan-1 Status**: displays the current fan status (e.g., *OK* or *Non-Operational*).

- **Fan Relay Enabled**: select **False** to disable DCR (Dry Contact Relay) operation or select **True** to enable it. This selection enables or disables the relay contact (ExtRelayInstalled) in the power supply.

- **Index**: select an index line that uniquely identifies an entry in the Threshold Table. The index permits the same sensor to have several different threshold values set.

- **Severity**: select **Other**, **Minor**, **Major**, or **Critical**. Critical is the most severe, Major is the next most severe, and Minor is the least severe. The system might shut down the sensor associated FRU automatically if the sensor value reaches the Critical problem threshold.

- **Relation**: Less Than (<), Less Or Equal (≤), Greater Than (>), Greater Or Equal (≥), Equal To (=), or Not Equal To (≠).
  - **Less Than**: if the sensor value is less than the threshold value.
  - **Less Or Equal**: if the sensor value is less than or equal to the threshold value.
  - **Greater Than**: if the sensor value is greater than the threshold value.
  - **Greater Or Equal**: if the sensor value is greater than or equal to the threshold value.
  - **Equal To**: if the sensor value is equal to the threshold value.
  - **Not Equal To**: if the sensor value is not equal to the threshold value.

  Indicates the relation between sensor value and sensor threshold value, required to trigger the alarm.

  When evaluating the relation, SensorValue is on the left of SensorThresholdRelation, and SensorThresholdValue is on the right (e.g., SensorValue ≥ SensorThresholdRelation ≥ SensorThresholdValue).

- **Value**: defines the value of the threshold (e.g., for a Major threshold severity selection, set a relation of Greater than or equal to 14000 as the requirement for notification). To correctly display or interpret this variable's value, you must also know the SensorType, SensorScale, and SensorPrecision. However, you can directly compare SensorValue with the threshold values given in the SensorThresholdTable without any semantic knowledge.

- **Notification**: select Enabled to be informed of Temperature Sensor events or select Disabled to not receive notification of Temperature Sensor events. If this value is **Disabled**, then no SensorThresholdNotification will be generated on this device. If this value is **Enabled**, then whether a SensorThresholdNotification for a threshold will be generated or not depends on the instance value of SensorThresholdNotificationEnable for that threshold.

- **Last Evaluation**: displays **True** if parameters were included in the most recent measurement, otherwise displays **False**. This value indicates the result of the most recent evaluation of the threshold. If the threshold condition is True, then SensorThresholdEvaluation is True. If the threshold condition is False, then SensorThresholdEvaluation is False. Thresholds are evaluated at the rate indicated by the SensorValueUpdateRate (e.g., 0= on demand when polled), when the sensor value changes (event-driven), or the agent does not know the update rate.

5. Click the **Save** button when finished with Fan configuration.

Upgrading the IONPS-D-R1

You can upgrade IONPS-D-R1 to a specific (newer) firmware revision via the IONMM. The upgrades do not require the reconfiguration of the SNMP management or device feature settings.

Note that there are some cases which cause upgrade failure:

- Communication between the IONPS-D-R1 and IONMM is corrupted, causing an upgrade protocol timeout.
- There is no valid IONPS-D-R1 firmware file stored in the IONMM, such as no specific revision IONPS-D-R1 firmware, or a corrupted firmware file.
- An internal FLASH failure occurred.

If the IONPS-D-R1 bootloader cannot detect a valid firmware installed after the device is powered up or rebooted, it will enter upgrade mode automatically to request a valid firmware from the IONMM; When the IONPS-D-R1 finishes upgrading successfully, it will reboot itself and let the bootloader check the firmware again. If a valid firmware file is found, the IONPS-D-R1 will load the firmware and enter normal operation mode; otherwise the IONPS-D-R1 will continue entering upgrade mode.

There are two ways to upgrade the firmware revision via the IONMM:

- Via the ION Web interface: see the *ION Management Module (IONMM) User Guide* for procedures.
- Via CLI command: see the *ION Management Module (IONMM) User Guide* for procedures.

See the Release Notes for known limitations when using the IONMM v1.4.3 or earlier to upgrade the IONPS-D-R1 power supply to FW v1.2.9.

IONDCR-R1 Dry Contact Relay Module

The IONDCR-R1 is a field installable dry contact relay module for the IONPS-D power supply. This optional module mounts in the lower right-hand corner of the IONPS-D face-plate, allowing the power supply to be tied into a separate alarm circuit. Contacts will be activated on the loss of power, enabling an external visual or audible alarm.

Applications for this type of fault alarm output would include enterprise networks as well as in industrial applications. The dry contact relay modules provide another layer of fault indicators, complementing network management software by providing a signal to either a local or remote alarm system. The IONDCR-R1 has 3 contacts:

1. **NO** (Normally Open): The connection between this and Common is Open when the relay is relaxed and Closed when the relay is energized.
2. **C** (Common): shared connection with Normally Open or Normally Closed.
3. **NC** (Normally Closed): The connection between this and Common are Closed when the relay is relaxed, and Open when the relay is energized.

The relay's relaxed position indicates normal operation, while the energized position indicates alarm. For more information see the IONDCR and IONDCR-R1 Install Procedure, 33422_B .

5   Troubleshooting, Support, and Compliance Information

Messages

Message:

Primary power supply is at critical temperature: %d

Secondary power supply is at critical temperature: %d

Meaning: Notification that an IONPS-D-R1 is overheated. The Power Supply temperature trap "tnPowerSupplyEnvMonTemperatureNotif" was sensed.

Recovery: 1.

Message: *Error: only IONPS-D-R1 can run this command!*

Meaning: You tried to enter an unsupported command.

Recovery: 1. Try another command on this device. 2. Switch to another device (***go*** command) and re-try the original command.

Message: *Error: System is busy, please retry this command later!*

Meaning: You tried to enter a command while the system is processing another command.

Recovery: 1. Wait a few moments and then re-try the command.

Message: *Error: this command should be executed on a device!*

Meaning: You tried to enter a port-level command while at the CLI command device level.

Recovery: 1. Try another command. 2. Switch to the port level (***go*** command) and then re-try the command.

Message: *Fail to get IONPS-D-R1 operation mode!*

Meaning: You entered the ***show ionpsr1 mode*** command but the information requested could not be returned.

Recovery: 1. Make sure this is the command you want. 2. Make sure this is the device on which you want to enter the command. 3. Try another command or try another device.

Message: *Fail to get IONPS-D-R1 configure mode!*

Meaning: You entered the ***show ionpsr1 fan config*** command but the information requested could not be returned.

Recovery: 1. Make sure this is the command you want. 2. Make sure this is the device on which you want to enter the command. 3. Try another command or try another device.

Message: *You are now logged out*

Meaning: The ION system will log out a user idle (inactive) for 15 minutes.

Recovery: Log back in id desired.

Message: *There are 2 power supplies in the chassis, you can not set both of them to slave mode!*

Warning: IONPS-A/D-R1 operation mode is different from configured mode, you can not insert 2 slave mode power supplies in chassis!

Meaning: You tried to configure both IONPS-D-R1 power supplies as "Secondary" devices.

Recovery:

1. Review the "General Specifications" on page 6.

2. Re-configure one of the two IONPS-D-R1 devices as the "Primary" supply (see chapter 3. IONPS-D-R1 Software Configuration on page 17.

Message: *Error: Relay state can only be set on IONPS-A!*

Meaning: You tried to enter an unsupported command for this device.

Recovery:

1. Try another command on this device.

2. Switch to another device (*go* command) and re-try the original command.

Message: *Error: Cannot set IONPS-D-R1 fan control mode on this card!*

Error: Cannot set IONPS-D-R1 operation mode on this card!

Error: only IONPS-D-R1 can run this command!

Fail to get IONPS-D-R1 fan control mode!

Fail to set IONPS-D-R1 fan control mode!

Fail to set IONPS-D-R1 fan speed!

Fail to set IONPS-D-R1 operation mode!

Meaning: You misconfigured the IONPS-D-R1.

Recovery:

1. Review chapter 4 IONPS-D-R1 Software Configuration on page 22.

2. Re-configure one or more of theIONPS-D-R1 parameters (see chapter 4 IONPS-D-R1 Software Configuration on page 22).

Message: *IONPS-D-R1 fan speed is out of range, its range is 2500 - 8300!*

Meaning: You misconfigured the IONPS-D-R1 fan speed.

Recovery:

1. Re-configure the IONPS-D-R1 fan speed.

2. See Power Supply Config – Web Method on page 30.

Message: *The Operation Mode cannot be set as Slave on both power supplies!*

Meaning: You tried to configure both IONPS-D-R1 power supplies as "Secondary" devices.

Recovery:

1. Re-configure one of the two IONPS-D-R1 devices as the "Primary" supply (see chapter 3. IONPS-D-R1 Software Configuration on page 17.

SNMP Service and Function

When installed in an ION219 chassis, the IONPS-D-R1 can be managed with the SNMP protocol via the IONMM (the ION platform management unit). The IONPS-D-R1 supports SNMP V1, V2c, and V3.

The IONPS-D-R1 implements these MIBs:

- entPhySensorTable
- ionEntSensorExtTable
- ionEntSensorThresholdTable
- ionpsr1CfgTable
- ionpsr1FanCfgTable

The IONPS-D-R1 complies with IETF RFCs 1157, 1158, and 2578 for SNMP. See http://tools.ietf.org/html/ for details.

```
tech1@E5: ~
tech1@E5:~$ snmpwalk -c public -v 2c 192.251.240.135 | grep 231735552
SNMPv2-SMI::mib-2.47.1.1.1.1.2.231735552 = STRING: "ION Module IONPS-A-R1, Temperature Sensor"
SNMPv2-SMI::mib-2.47.1.1.1.1.3.231735552 = ""
SNMPv2-SMI::mib-2.47.1.1.1.1.4.231735552 = INTEGER: 231735296
SNMPv2-SMI::mib-2.47.1.1.1.1.5.231735552 = INTEGER: 8
SNMPv2-SMI::mib-2.47.1.1.1.1.6.231735552 = INTEGER: 1
SNMPv2-SMI::mib-2.47.1.1.1.1.7.231735552 = STRING: "Temperature Sensor"
SNMPv2-SMI::mib-2.47.1.1.1.1.8.231735552 = ""
SNMPv2-SMI::mib-2.47.1.1.1.1.9.231735552 = ""
SNMPv2-SMI::mib-2.47.1.1.1.1.10.231735552 = ""
SNMPv2-SMI::mib-2.47.1.1.1.1.11.231735552 = ""
SNMPv2-SMI::mib-2.47.1.1.1.1.12.231735552 = ""
SNMPv2-SMI::mib-2.47.1.1.1.1.13.231735552 = ""
SNMPv2-SMI::mib-2.47.1.1.1.1.14.231735552 = ""
SNMPv2-SMI::mib-2.47.1.1.1.1.15.231735552 = ""
SNMPv2-SMI::mib-2.47.1.1.1.1.16.231735552 = INTEGER: 2
SNMPv2-SMI::mib-2.47.1.1.1.1.17.231735552 = ""
SNMPv2-SMI::mib-2.47.1.1.1.1.18.231735552 = ""
tech1@E5:~$ snmpwalk -c public@231735296 -m +TN-ION-ENTITY-SENSOR-MIB:ENTITY-MIB -v 2c 192.251.240.135 | grep 231735552
ENTITY-SENSOR-MIB::entPhySensorType.231735552 = INTEGER: celsius(8)
ENTITY-SENSOR-MIB::entPhySensorScale.231735552 = INTEGER: units(9)
ENTITY-SENSOR-MIB::entPhySensorPrecision.231735552 = INTEGER: 0
ENTITY-SENSOR-MIB::entPhySensorValue.231735552 = INTEGER: 29
ENTITY-SENSOR-MIB::entPhySensorOperStatus.231735552 = INTEGER: ok(1)
ENTITY-SENSOR-MIB::entPhySensorUnitsDisplay.231735552 = STRING: The data units displayed for temperature is units(9)
ENTITY-SENSOR-MIB::entPhySensorValueTimeStamp.231735552 = Timeticks: (0) 0:00:00.00
ENTITY-SENSOR-MIB::entPhySensorValueUpdateRate.231735552 = Gauge32: 0 milliseconds
tech1@E5:~$
```

Resolves the trap's index number to being a temp sensor for a IONPS-A-R1 in slot 23

And reports the index number of the parent IONPS-A-R1

(both index numbers to be used in the next command)

Gets the current status of slot 23 IONPS-A-R1 temp sensor

Troubleshooting

If the Power Supply fails, isolate and correct the failure by determining the answers to the following questions and then taking the indicated action:

1. Is the Power LED on the IONPS-D-R1 lit?

> NO

> • Is the Power Supply inserted properly into the chassis?

> • Is the Power Supply properly connected to the external power source?

> • Does the external power source provide power?

> • Contact Technical Support.
> YES

> • Proceed to step 2.

2. Is the fuse on the IONPS-D-R1 intact?

> NO

> • CAUTION: See the "Replace the Fuse" section for the proper method to replace the Power Supply fuse.

> • Contact Technical Support.

> YES

3. When a problem or exception occurs, the IONPS-D-R1 sends the related Trap messages.

4. Use MGSoft to check the MIB value, and/or use other Ethernet tools to capture the traffic package for further analysis.

Recording Information

Gather information needed for the Tech Support Specialist, including information on the ID Sticker on the bottom of the IONPS-D-R1:

Model Number: _____

Serial Number: _____

Firmware Rev. _____

Related Lantronix and 3rd party devices:

_____

_____

_____

Note any error messages, failure codes, operating characteristics, etc. for contacting Technical Support:

_____

_____

_____

_____

_____

_____

_____

_____

EU Declaration of Conformity

Manufacture's Name: Lantronix, Inc.
Manufacture's Address: 48 Discovery, Suite 250, Irvine, California 92618 USA

Declares that the products:
IONPS-A-R1, IONPS-D-R1

Conforms to the following Product Regulations:
FCC Part 15 Class A, EN 55032:2012, EN 55024:2010
Directive 2014/30/EU
Low-Voltage Directive 2014/35/EU
EN 62368-1 2nd Clause 5.6.4.2.1
EN 50581:2012

With the technical construction on file at the above address, this product carries the CE Mark

I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standard(s).

Place: Irvine, California
Date: June 5, 2023
Signature: *Eric Bass*
Full Name: Eric Bass
Position: Vice President of Engineering

Electrical Safety Warnings

Electrical Safety

IMPORTANT: This equipment must be installed in accordance with safety precautions.

Elektrische Sicherheit

WICHTIG: Für die Installation dieses Gerätes ist die Einhaltung von Sicherheitsvorkehrungen erforderlich.

Elektrisk sikkerhed

VIGTIGT: Dette udstyr skal installeres i overensstemmelse med sikkerhedsadvarslerne.

Elektrische veiligheid

BELANGRIJK: Dit apparaat moet in overeenstemming met de veiligheidsvoorschriften worden geïnstalleerd.

Sécurité électrique

IMPORTANT: Cet équipement doit être utilisé conformément aux instructions de sécurité.

Sähköturvallisuus

TÄRKEÄÄ: Tämä laite on asennettava turvaohjeiden mukaisesti.

Sicurezza elettrica

IMPORTANTE: questa apparecchiatura deve essere installata rispettando le norme di sicurezza.

Elektrisk sikkerhet

VIKTIG: Dette utstyret skal installeres i samsvar med sikkerhetsregler.

Segurança eléctrica

IMPORTANTE: Este equipamento tem que ser instalado segundo as medidas de precaução de segurança.

Seguridad eléctrica

IMPORTANTE: La instalación de este equipo deberá llevarse a cabo cumpliendo con las precauciones de seguridad.

Elsäkerhet

OBS! Alla nödvändiga försiktighetsåtgärder måste vidtas när denna utrustning används.

LANTRONIX®

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Sales Offices
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www.lantronix.com/about/contact.