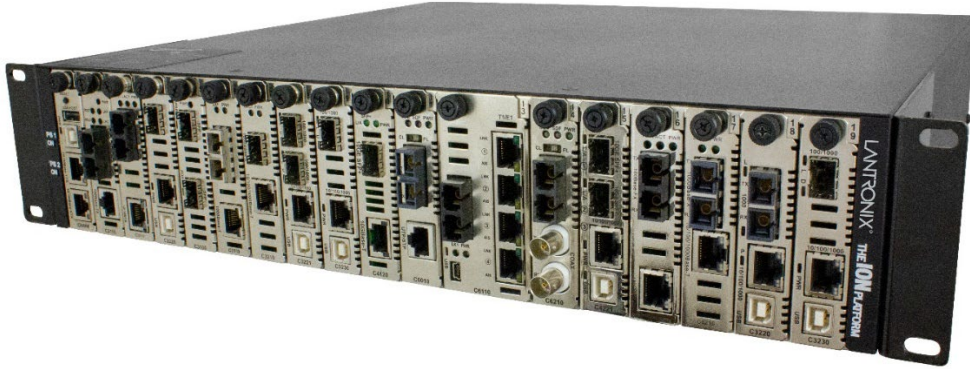


LANTRONIX®



ION219-x
ION 19-Slot Chassis
Install Guide

Part Number 33412
Revision F October 2024

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Revision History

Rev	Date	Description
2/16/10	A	Initial release for ION219-x 19-Slot Chassis.
3/25/11	B	Added DC power supply technical content.
1/28/20	C	Add ION219-AAMB, IONPS-A-R1, IONPS-D-R1, S3221-1040-T, PS 25138, DoC and MTBF, update power supply and contact info, and change format. Update to reflect UL and cUL.
3/10/22	D	Initial Lantronix rebrand.
8/9/23	E	Update IEC 60950-1 to IEC 62368-1. Add IEC 60417-6042 (2010-11) and IEC 60417-6172 (2012-09). Add Package Label and Device Label, add note to “Disconnect all power sources” in English and French, and update Technical Support contact info.
10/17/24	F	Update graphics, add NDAA and TAA compliant, and add IONMM-232. Note that Point System, IONPS-A, and IONPS-D are EoL. Add rack mount safety instructions.

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

Caution: Do not ship or store devices near strong electrostatic, electromagnetic, magnetic, or radioactive fields.

Caution: When handling chassis Devices (NIDs) observe electrostatic discharge precautions. This requires proper grounding (i.e., wear a wrist strap).

Caution: Copper based media ports, e.g., Twisted Pair (TP) Ethernet, USB, RS232, RS422, RS485, DS1, DS3, Video Coax, etc., are intended to be connected to intra-building (*inside plant*) link segments that are not subject to lightening transients or power faults. They are **not** to be connected to inter-building (*outside plant*) link segments that are subject to lightening.

Caution: Do not install the NIDs in areas where strong electromagnetic fields (EMF) exist. Failure to observe this caution could result in poor NID performance.

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 equipment.

Caution: Only trained and qualified personnel should install or perform maintenance on the device. Failure to observe this caution could result in poor performance or damage to the equipment.

Caution: Do not let optical fibers come into physical contact with any bare part of the body since they are fragile, and difficult to detect and remove from the body.

Caution: Do not bend any part of an optical fiber/cable to a diameter that is smaller than the minimum permitted according to the manufacturer's specification (usually about 65 mm or 2.5 in)!

Note that not all Cautions and warnings apply to every configuration and environment.



Warnings

Warning: Use of controls, adjustments, or the performance of procedures other than those specified herein may result in hazardous radiation exposure.

Warning: Visible and invisible laser radiation when open. **Do not** look into the beam or view the beam directly with optical instruments. Failure to observe this warning could result in an eye injury or blindness.

Warning: DO NOT connect the power supply module to external power before installing it into the chassis. Failure to observe this warning could result in an electrical shock or death.

Warning: Select mounting bracket locations on the chassis that will keep the chassis balanced when mounted in the rack. Failure to observe this warning could allow the chassis to fall, resulting in equipment damage and/or possible injury to persons.

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

See [Electrical Safety Warnings](#) on page 28 for Electrical Safety Warnings translated into multiple languages.

Disconnect all power sources.

This device has or supports more than one power source (e.g., different voltages/frequencies or as redundant power). For the removal of all power from the device, please be aware of the following per IEC 60417-6042 (2010-11) and IEC 60417-6172 (2012-09):



Caution: Shock hazard



Caution: Disconnect all power sources

Débranchez toutes les sources d'alimentation.

Cet appareil possède ou prend en charge plus d'une source d'alimentation (p. ex., différentes tensions/fréquences ou comme alimentation redondante). Pour la suppression de toute alimentation de l'appareil, veuillez tenir compte des dispositions suivantes conformément aux normes CEI 60417-6042 (2010-11) et CEI 60417-6172 (2012-09) :



Mis en garde : Risque de choc



Attention : Débranchez toutes les sources d'alimentation Attention : Débranchez toutes les sources d'alimentation

FCC Warning

This equipment has been tested and found to comply with the limits for class A devices, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a commercial installation. This equipment generates, uses, and radiates radio frequency energy; therefore, if not installed and used in accordance with the instructions in this document, the device could cause harmful interference with radio communications. Operation of this equipment in a residential area is likely to cause harmful interference; all customers will be required to correct the interference problem at their expense.

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1 Introduction and Description

Product Description

The ION219-x 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. An end-to-end fiber integration solution can be achieved by pairing the modules in a high density ION chassis with the modules in another ION chassis or an ION stand-alone device. To take full advantage of all the features and functions available with the ION Chassis, an ION Management Module (IONMM) is required. The IONMM connects to the chassis backplane and communicates with the individual cards in the ION Chassis. Each slide-in-module for the ION Chassis has specific features and functions that are controlled via the IONMM. A network administrator can configure, monitor, and troubleshoot ION slide-in-modules remotely via the IONMM.

Features

Access Methods

- **Web-browser:** Access the ION Management Module using a standard web browser such as Internet Explorer or Mozilla Firefox.
- **Command Line Interface (CLI):** CLI access can be done via SSH/telnet remotely or via the local console port on the ION Management Module.
- **SNMP:** Since the ION platform is based on public MIBs you can easily manage the ION with a standard network management system (NMS) such as SNMPc, HPOV or any other standard SNMP platform.

Security Features

When the optional management module is used, the following security features are available, allowing you to control access to the ION Chassis via the ION Management Module. Ensuring that only authorized personnel can view and change the settings to the slide-in-modules.

- Management VLAN
- SSL
- SSH
- 802.1x
- SNMPv1, v2, and v3

Key Management Features

- Variety of management access methods including SSH, telnet, web, and SNMP
- Single slot design allows for more slide-in-modules to be inserted in the ION Chassis
- Management VLAN
- Based on Public MIBs
- Two 10/100 Ethernet interfaces
- USB console port
- Syslog
- TFTP upgrade/backup of slide-in-modules
- Import/Export configuration files in human readable / editable format
- Multiple community strings

The ION219-x is shown below:



Figure 1: ION219-x Chassis

Ordering Information

These ION219-x chassis standard product and options are available:

Product Number	Description
ION219-A	19-Slot Chassis for the ION Platform, AC Powered.
ION219-D	19-Slot Chassis for the ION Platform, DC Powered.
ION219-AAMB	19-Slot Chassis for the ION Platform with (2) AC power supplies and (1) ION Management Module
Accessories (sold separately)	
IONMM	Management Module for the ION Chassis with a USB Type B CLI port.
IONMM-232	Management Module for the ION Chassis with a RS232 RJ-45 CLI port
IONPS-A-R1	Redundant AC Power Supply for ION219 Chassis.
IONPS-D-R1	Redundant -48VDC Power Supply Module for ION19 Chassis.
WMBC-2RU	Wall mount brackets for 2RU Chassis.
IONRE-23	ION Rack Mount Ears.
IONFP	ION Blank face plate (required for open slots).
Power Cord (included)	To order the country-specific power cord, add the -xx from the list below to the end of the SKU; Ex: ION219-A-xx, where -xx = Country Code: -NA = North America, -LA = Latin America, -EU = Europe, -UK = United Kingdom, -SA = South America, -JP = Japan, -OZ = Australia, -BR = Brazil. Note: Only for ION219-A and ION219-AAMB.
SFPs	Lantronix offers a full line of small form factor pluggable (SFP) transceivers and passive coarse wave division multiplexing (CWDM) filters. See the Lantronix SFP page for details.

ION219-x Chassis Specifications

The ION219-x chassis was designed to meet these standards:

Slots	19 Slots in front for ION slide in-cards and 2 Slots in rear for power supply modules.
IEEE Standards	IEEE 802.3™-2000
Unit LEDs	Power On LED for each installed power supply module.
Certifications	UL/cUL Listed, EN55022, EN55032, EN55035, CE Mark, UKCA, FCC Class A, CISPR Class A
Power	Two open bays for ION power supply modules, supporting Universal Input 100 – 240 VAC, or -48VDC rated at 200 watts max output. Note: Power supply module supplies +12VDC maximum to each slot in the chassis. Only one power supply module is required to power the chassis and the installed modules, the optional second power supply module provides redundancy for instant fail-over.
Power Consumption	up to 150 watts
Power Source	IONPS-A-R1, IONPS-D-R1
Dimensions	Width: 17.0" (430mm) x Depth: 15.8" (401mm) x Height: 3.5" (89mm).
Weight	19 lbs. [8.6 kg] (ION219 shipping weight).
Operating Temp.	0° ~ +50 °C
Storage Temp.	-40° ~ +85 °C
Altitude	0-10,000 feet
Operating Humidity	5% to 95% (non-condensing).
Compliant	NDAA and TAA compliant.
MTBF*	ION219-A-R1: Greater than 23,570 MIL-HDBK-217F Hours. Greater than 64,800 Bellcore Hours.
	ION219-D-R1: Greater than 42,900 MIL-HDBK-217F Hours. Greater than 118,000 Bellcore Hours.
Warranty	Limited Lifetime Warranty

* MTBF calculations done with these settings: Prediction Method: MIL-HDBK-217F Parts Count. Environment: GB, Ground Benign. Temperature 25°C.

IONPS-x Power Supply Specifications

See the related IONPS-x power supply manual for specifications and standards.

About this Manual

This manual provides instructions on how to install and configure the ION219-x Chassis to accommodate various types of ION slide-in cards (SICs) and power supplies.

Related Manuals and Online Help

A printed documentation card is shipped with each device. Context-sensitive Help screens, as well as cursor-over-help (COH) facilities are built into the Web interface.

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.

For SFP manuals see Lantronix [SFP webpage](#).

Note that this manual provides links to third part web sites for which Lantronix is not responsible.

Other ION System and related device manuals are listed below.

- ION Management Module (IONMM) Install Guide, 33420 and User Guide, 33457
- ION System x323x Remotely Managed NID User Guide, 33432
- ION Systems CLI Reference Manual, 33461
- ION x222x & x32xx Multi-port NIDs Installation Guide, 33433
- ION219 Cxx1x NID Installation Guides, 33414 - 33417
- ION Dry Contact Relay (DCR) Kit Install Guide, 33422
- IONPS-A-R1 AC Power Supply User Guide, 33614
- IONPS-D-R1 DC Power Supply User Guide, 33707
- IONMM-232 Install Guide, 33725
- ION ADP Install Guide, 33413
- SFP manuals (product specific)
- 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. While all 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](#) above. 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.

Unpacking

1. Carefully unpack all ION219-x contents.
2. Verify receipt of all ION219-x components. Contact your sales representative if any items are missing.
3. Place the ION219-x and related materials near the install location.
4. Save the ION219-x shipping carton and packing materials for possible future use.



Figure 2: Unpacking

2 Site Preparation

The ION219-x 19-Slot Chassis contains a fixed 100Mbps full duplex bus with point to-point connection with all endpoints, which greatly improves data bandwidth and response time. Each endpoint in the system (Slide-In Card (SIC), Backplane Controller (BPC), power supply (PS) and Agent) has a dedicated port on a 24-Port non-blocking, full-bandwidth 100Mbps Ethernet switch, supporting simultaneous traffic between all endpoints.

You can achieve an end-to-end fiber integration solution by paring the modules in a high-density ION chassis with the modules in another ION chassis. To take full advantage of all the features and functions available with the ION chassis, an ION Management Module (IONMM or IONMM-232) is required. The IONMM connects to the chassis backplane and communicates with the individual installed SICs. The IONMM controls the specific features and functions of each SIC.

The ION219-x allows the network administrator to connect various copper and fiber-optic network media. The ION219-x chassis provides installation space for up to 19 single-slot SICs. See Figure 3 below.

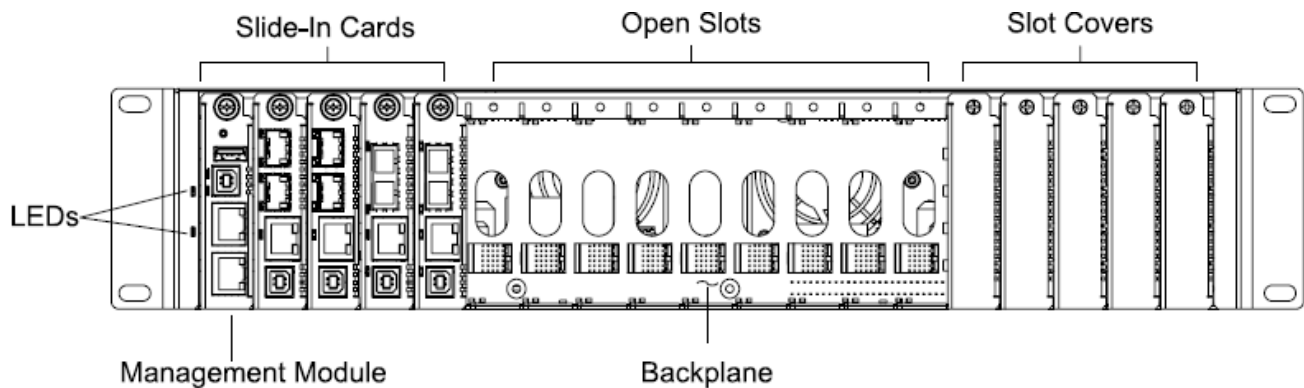


Figure 3: ION219-x Chassis Front

Chassis Management Methods

The ION219-x chassis can be managed and monitored via the IONMM Management Module using the following:

- Web-browser: Access the ION Management Module using a standard web browser such as Internet Explorer, Google Chrome, or Mozilla Firefox.
- Command Line Interface (CLI): CLI access can be done via SSH or telnet remotely or via the local console port on the ION Management Module.
- SNMP: Since the ION platform is based on public MIBs you can easily manage the ION with a standard network management system (NMS) such as SNMPC, HPOV or any other standard SNMP platform.

Chassis Rear

The ION219-x is equipped with an AC power supply or an optional DC power supply installed in one of its rear slots. An extra installation space is available for an optional (AC or DC) power supply for redundancy purposes. See Figure 4 below.

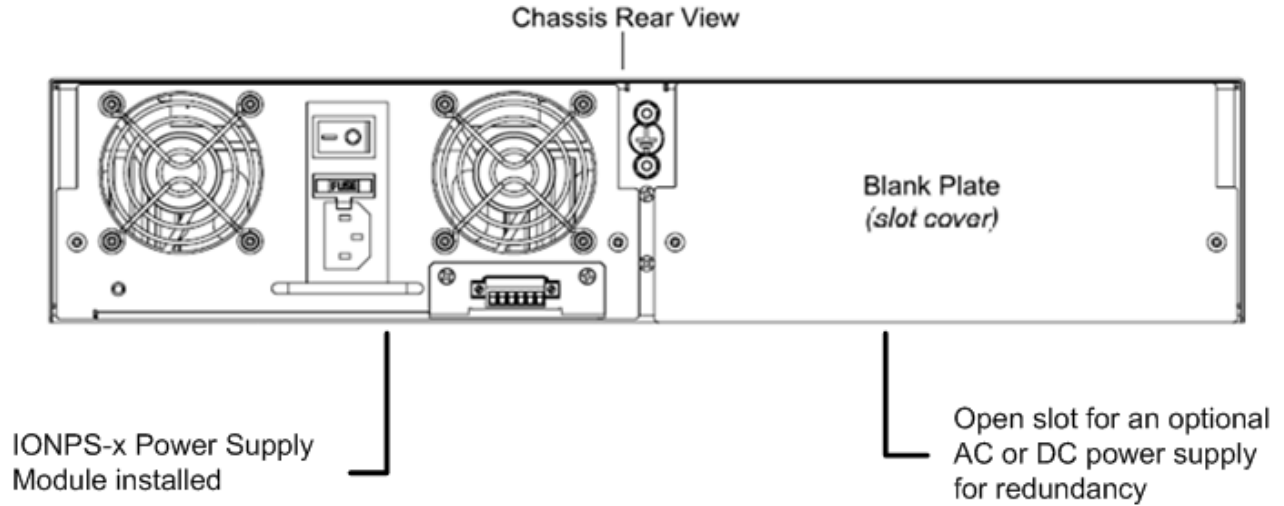


Figure 4: ION219-x Chassis Rear View

3 Installation

This chapter describes ION219-x cautions/warnings, site requirements, installation, and setup.

Cautions

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 ION210-x 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.

Lifting Safety

Even though the ION219-x chassis weighs less than twenty (20) pounds, use proper lifting to move the chassis about. Keep your back straight and lift with your legs, not your back. If you need to bend down to lift the chassis, bend at the knees, not at the waist to reduce potential for straining your lower-back muscles. See Figure 5 below.



Figure 5: Unsafe Lifting Techniques

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. After installation, make sure that the site maintains an ambient temperature of 0°C to +50°C (+32°F to +122°F).

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

AC Power

See the related ION Power Supply User Guide for input voltage, current, power, and other operating ranges.

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.

WARNING: The chassis must be grounded. Make sure that the host is connected to earth ground during normal use. Failure to observe this warning could result in electrical shocks.

Plant Wiring

The following guidelines consider the plant wiring and cabling at your site. When planning the location of the chassis, consider the distance limitations of signaling, electromagnetic interference (EMI), and connector capability.

When wires are run from any significant distance in an electromagnetic field, interference can occur between the field and the signal on the wires.

If wires exceed recommended distances, or if wires pass between buildings, consider the potential for lightning strikes. The electromagnetic pulse (EMP) caused by lightning or other high-energy phenomena can easily couple enough energy into unshielded cable to destroy electronic devices.

Site Environment

The chassis can operate as a standalone system or can be mounted in a rack in a secure wiring closet. It requires a dry, clean, well-ventilated environment. An internal fan system pulls air from the front of the system and exhausts it through the chassis rear. The flow of ambient air must be maintained to ensure proper operation. If the airflow is blocked or restricted, or if the intake air is too warm, an over temperature condition will occur. To ensure normal operation and avoid unnecessary maintenance, plan your site configuration, and prepare your site before installation. After installation, make sure the site maintains an ambient temperature of 0°C to +50°C (+32° to +122°F). Keep the area around the chassis as dust free as possible.

Equipment Racks

Multiple chassis can be rack-mounted with little or no clearance above and below them. However, when mounting the chassis in a rack with other equipment or when placing it on the floor with other equipment located close by, ensure that the exhaust from other equipment does not blow into the intake of the chassis.

Installation Procedures

Installing the Chassis

The ION219-x chassis can be installed in a standard 19-inch rack or on a table, shelf, or other stable surfaces.

Tabletop Installation

The ION219-x chassis comes with nine (9) rubber feet for installation on a table or other flat, stable surface in a well-ventilated area. If tabletop installation is desired, remove the rubber feet from the card and place them on the bottom of the chassis. Distribute the feet so that the chassis is level when placed upright.

Rack Installation

The Maximum Recommended Ambient Temperature (TMRA) for the ION219-x chassis is +50°C (+122°F). When installing the ION219-x chassis in a closed or multiunit rack assembly, the operating ambient temperature of the rack environment could be greater than room ambient.

Note: Reliably grounding is required for rack-mounted equipment. Power supply connections other than direct connections to the branch circuit (e.g., use of power strips) should be employed.

WARNING: Select mounting bracket locations on the chassis that will keep the chassis balanced when mounted in the rack. Failure to observe this warning could allow the chassis to fall, resulting in equipment damage and/or possible injury to persons.

Rack Mount Ears

The ION219-x chassis has facilities that allow the installation of the rack mount ears on the chassis, either flush against the front or recessed from the front of the rack as shown in Figure 6 below.

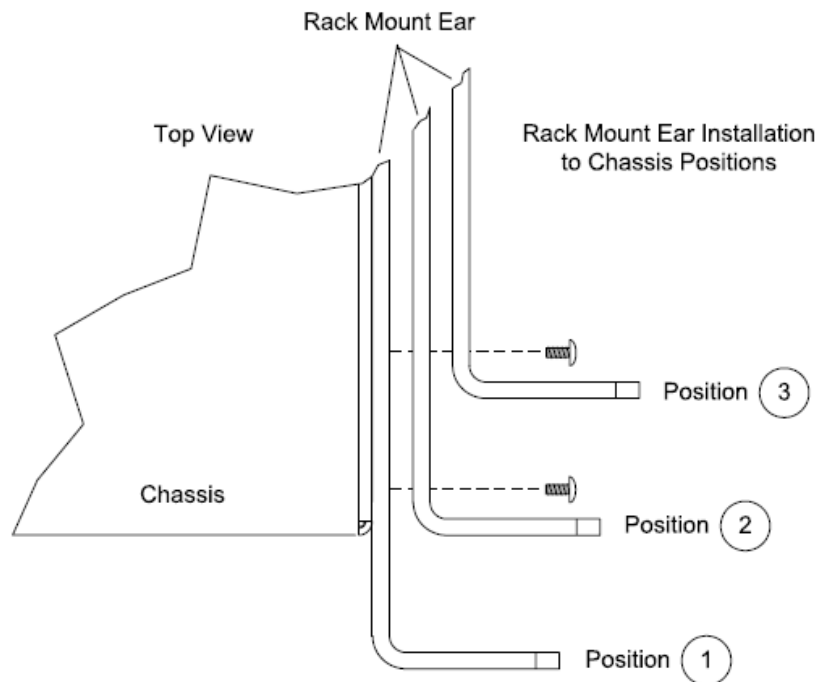


Figure 6: Rack Mount Ear Installation Positions

Installing Rack Mount Ears

Note: Installation rack-mount-ear mounting screws (cover-to-frame screws, see Figure 7 below) are provided. Rack mount “screws” and “clip nuts” are NOT provided.

To install the ION219-x chassis rack mount ears, do the following:

1. Determine the preferred alignment of the chassis into the rack.
2. Using a Phillips screwdriver, remove the six (6) cover-to-frame screws (three on each side of the chassis). See Figure 7 below.
3. Align the mounting bracket in the selected installation position, as shown in Figure 7 below.

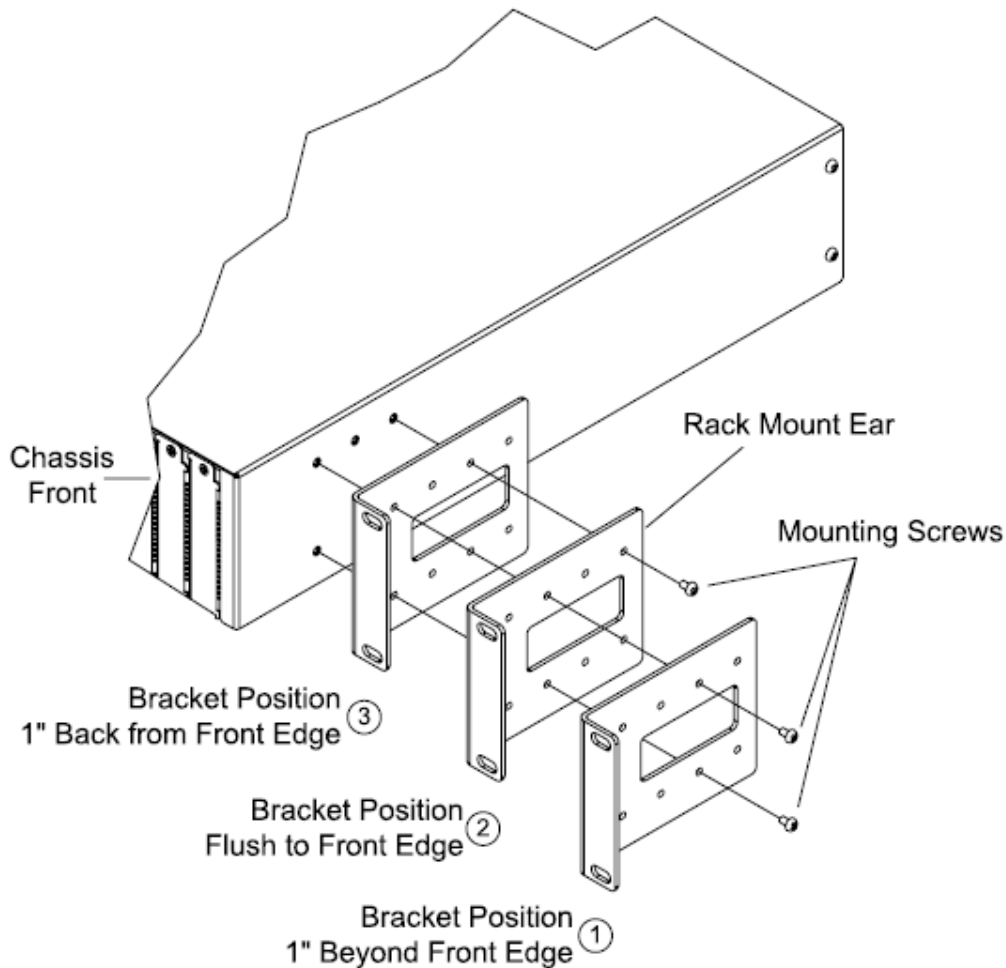


Figure 7: ION219-x Rack Mount Ear Installation

4. Using a Phillips screwdriver, install the three (3) screws to mount the rack mount ear to the side of the chassis. See Figure 7 above.
5. Repeat steps 2 and 4 for the second rack mount ear.

Rack Mount Safety Instructions

The instructions below (or similar) are intended for rackmount installation environments:

1. Elevated Operating Ambient: if installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may exceed room ambient. Install the equipment in an environment compatible with the maximum ambient temperature (T_{ma}) specified.
2. Reduced Air Flow: install the equipment in a rack so that the amount of air flow required for safe operation is not compromised.
3. Mechanical Loading: Mount the equipment in the rack so that a hazardous condition does not occur due to uneven mechanical loading (weight distribution/rack balance).
4. Circuit Overloading: give consideration to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Consider all equipment nameplate ratings when addressing this concern.
5. Reliable Earthing: maintain reliable earthing of rack-mounted equipment; pay particular attention to supply connections other than direct connections to the branch circuit (e.g., use of power strips).
6. It is your responsibility to ensure that the final combination of equipment and rack complies with all applicable safety standards and local electric code requirements.

Rack Installation Procedure

To install the chassis in a rack, do the following:

1. Review the Safety Instructions above.
2. Locate four (4) mounting screws (not provided) and optional clip-nuts (not provided) for each chassis to be installed.
3. Carefully position and align the chassis to the mounting holes in the rack, as shown in Figure 8 below.
4. Install two (2) screws through the right bracket into the right mounting rail and two (2) screws through the left bracket into the left mounting rail, using the clip nuts (not provided) to secure the chassis to the rack.

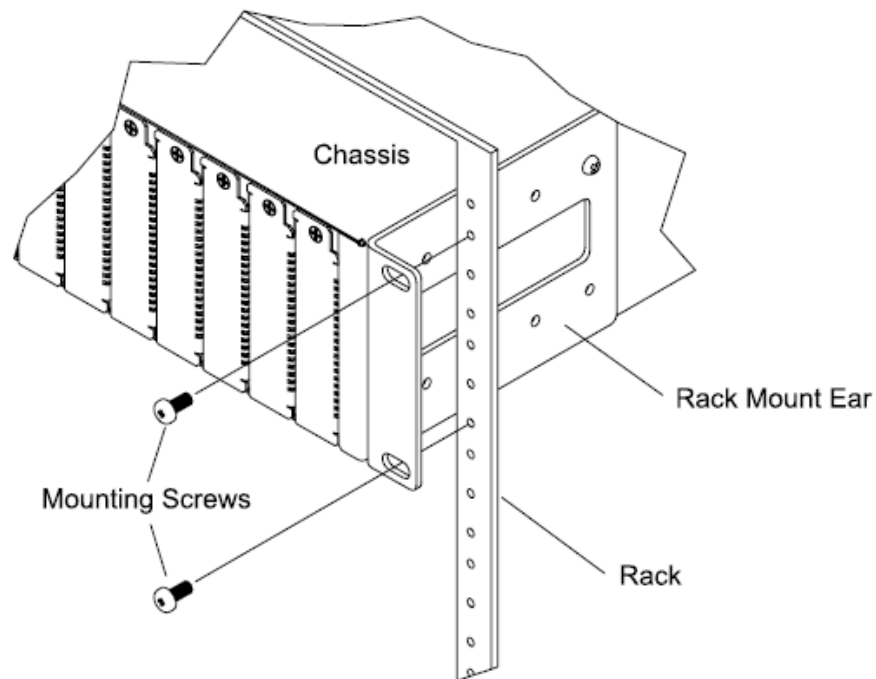


Figure 8: Rack Mounting

Grounding Lugs

The ION219-x chassis comes equipped with grounding lugs, which are provided for a grounding conductor wire terminated with a two-hole, compression-type grounding connector. The grounding wire must be a copper conductor (not provided).

Grounding Path

The electrical conducting path from the chassis to ground must:

- Flow via the grounding lugs to the Common Bonding Network (CBN) for telecom installations, or to an alternate approved grounding system (if required) for non-telecom installations.
- Be sufficiently low in impedance to conduct fault currents likely to be present on the chassis.
- Enable proper operation of any over-current protection devices.

Fasten the two-hole compression-type grounding connector to the grounding lugs with the provided Kepsnut fasteners. See Figure 9 below.

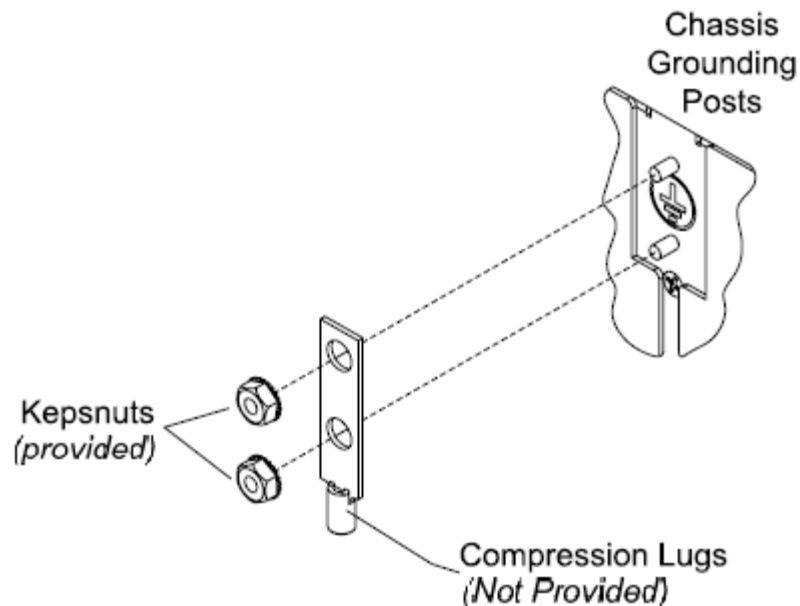


Figure 9: Chassis Grounding Hardware

Ground Installation

To ground the ION219-A chassis, do the following:

1. Obtain one (1) properly terminated, grounding conductor (12 AWG copper wire gauge or larger) with a two-hole, compression-type, grounding connector. Note the manufacturer's applied torque required for the connector.
2. Attach the grounding conductor to the chassis by placing the two-hole, compression-type connector onto the grounding lugs and then fasten with the appropriate lock-washers and lug nuts at the proper torque. See Figure 10 below.
3. Attach the opposite end of the properly terminated grounding conductor to the Common Bonding Network (CBN) for telecom installations, or to an approved grounding system (if required) for non-telecom installations.

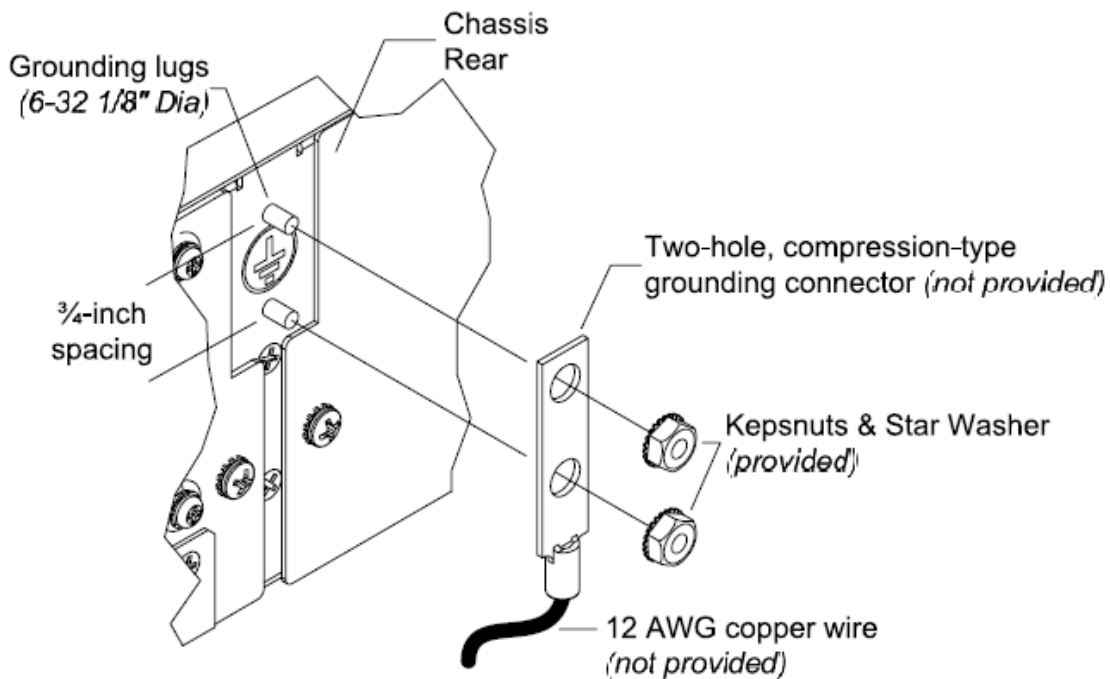


Figure 10: Grounding the Chassis

Chassis Slide-In Cards (SICs) and IONMM Installation

Refer to the user guide for each SIC for specific information on the cables, connectors, and LED indicators of the individual SICs.

Chassis Power LEDs

The power LEDs are located left side of the chassis front panel. The LEDs indicate power supply ON/Ready state. See Figure 11 below.

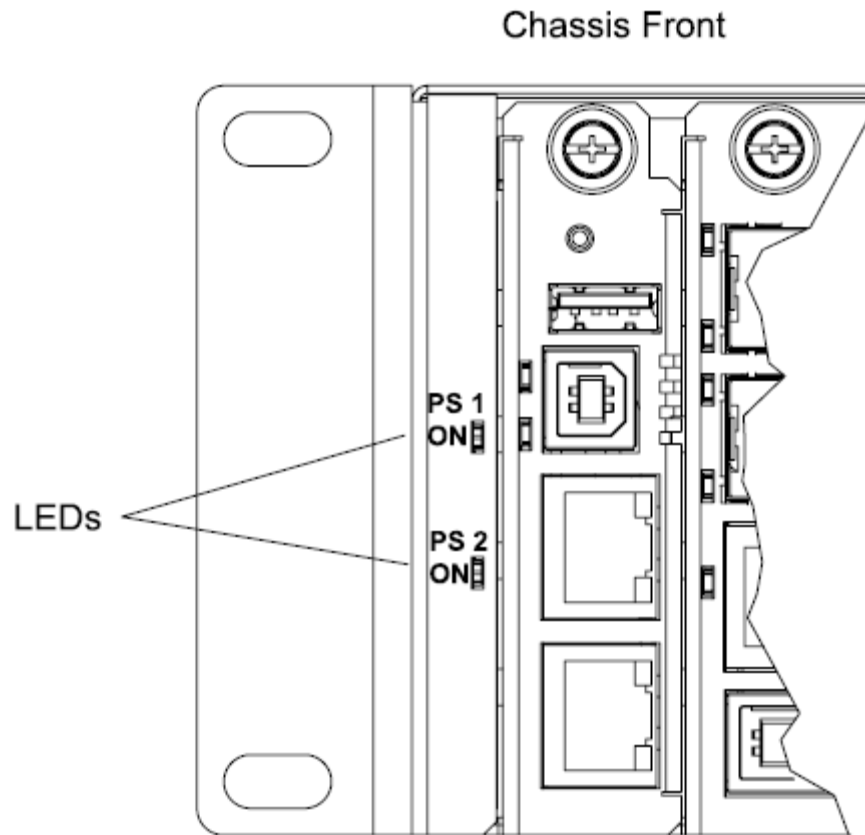


Figure 11: Power Supply LEDs

Power Indicator LEDs

Power LED indicators present the state of each installed power supply. The LED will light when the respective power supply (PS1 or PS2) is plugged into power with the power ON/OFF switch in the ON position. The number designations associated with the LED on the chassis are as follows:

- PS1 refers to the power supply installed in the left primary slot when looking at the chassis from the rear. When plugged into power, with the power ON/OFF switch in the ON position, the PS1 LED will be lit.
- PS2 refers to the power supply installed in the right secondary slot (redundant power supply) when looking at the chassis from the rear. When plugged into power, with the power ON/OFF switch in the ON position, the PS2 LED will be lit. The LED will be lit even if the power supply is not supplying power to the chassis (redundant standby state).

Powering the ION219-x chassis

The ION219-x chassis has several power options. The following sections provide specific information on and Warnings and Cautions specific to Power Supply Components, Optional Power Supply Module Installation, Connecting External Power, Replacing Power Supply Fuse, Replacing the Power Supply Module, Removing a Power Supply Module from a Chassis, Positioning the Power Supply Module at a Chassis Slot, Powering the ION219-D Chassis, Power source circuit requirements, Equipment grounding and Disconnect Requirements, Connecting External Power Requirements, Removing EURO Block from DC Power Supply, Installing Power Wires, Equipment grounding, Power Supply Replacement, Optional AC or DC Power Supply Module, Dual Power Supplies, Removing Blank Plate Slot Cover, and Power Supply Module Installation (Secondary Slot).

See the related ION Power Supply User Guide (e.g., IONPS-A-R1 or IONPS-D-R1) for specific IONPS-x-R1 Descriptions, Specifications, Primary/Secondary Mode, Failover and Load Sharing, Fan Speed, Related Manuals and Online Help, Package Contents, Unpacking, Pre-installation, Installation, Cautions and Warnings, Site Requirements, Grounding Screw, Installing an Optional Power Supply into the ION Chassis, Connecting the IONPS to External Power, Replacing the IONPS, Replacing the Fuse, IONPS Software Configuration (Power Supply Config via the CLI and Web UI), Temperature Sensor / Voltage Sensor / Power Sensor / Fan Configuration, Upgrading the IONPS, SNMP Service and Function, Troubleshooting, Support, Compliance Information, Messages, and Electrical Safety Warnings.

See the [Related Manuals and Online Help](#) section on page 10 for specifics.

4 Network Connectivity

Connecting Chassis SICs to the Network

CAUTION: Connect input/output network cables ONLY to SICs within the same network protocol (such as Ethernet-to-Ethernet, Fast Ethernet-to-Fast Ethernet, ATM-to-ATM). Failure to observe this caution will cause data transfers to fail.

SICs to Network Connections

Once the ION219-x chassis has been installed, the SICs can be connected to the network. Refer to the SIC user guide for cabling specifications and instructions.

Chassis Daily Operation

Daily operation of the ION219-x chassis requires no network administrator activity except for the occasional monitoring of the status LED indicators on the chassis and on the installed SICs.

SIC Monitoring

The IONMM and each SIC have one or more LED indicators to help monitor the ION219-x chassis in the network. Refer to the user guide for the IONMM and each SIC to interpret the LED indicators.

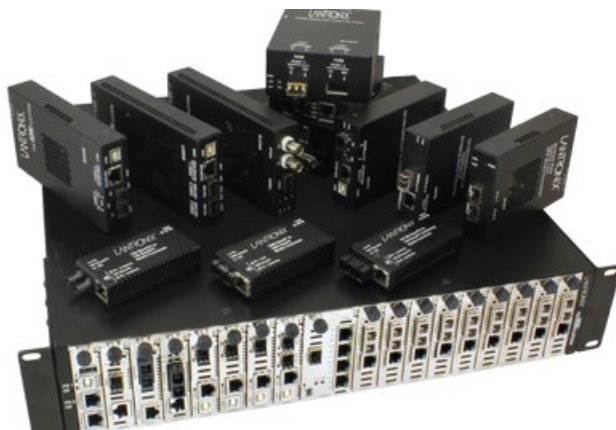
Network Management

Firmware and Applications

The ION219-x firmware in the IONMM is described in the IONMM User Guide. See the ION System [Products page](#) for links to ION manuals and other resources.

The ION219-x firmware is embedded in the management module. The firmware allows the network administrator to configure and manage the SICs in the ION219-x chassis from an attached terminal or from a remote, networked computer.

The firmware includes the Lantronix Command Line Interface (CLI), a telnet server, a Web browser, and an SNMP (Simple Network Management Protocol) agent.



5 Troubleshooting, Compliance, and Safety

Introduction

This section provides basic troubleshooting information for the ION219-x chassis via a problem and cause table. The problems are stated in the problem column and the potential cause is listed in the cause column. If the problem cannot be remedied, based on the information below, contact Technical Support.

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 ION219-x chassis lit?

NO

- Is the Power Supply inserted properly into the ION 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 ION219-x intact?

NO

- CAUTION: See the “Replace the Fuse” section of the Install Guide for the proper method to replace the Power Supply fuse.
- Contact Technical Support.

YES

- Contact Technical Support.

3. When a problem or exception occurs, the ION219-x sends the related Trap messages to the FP 3.0 Trap Server to report this event. You can launch the Trap Server in Focal Point 3.0 to capture the Trap message to get more details of the running ION219-x status.

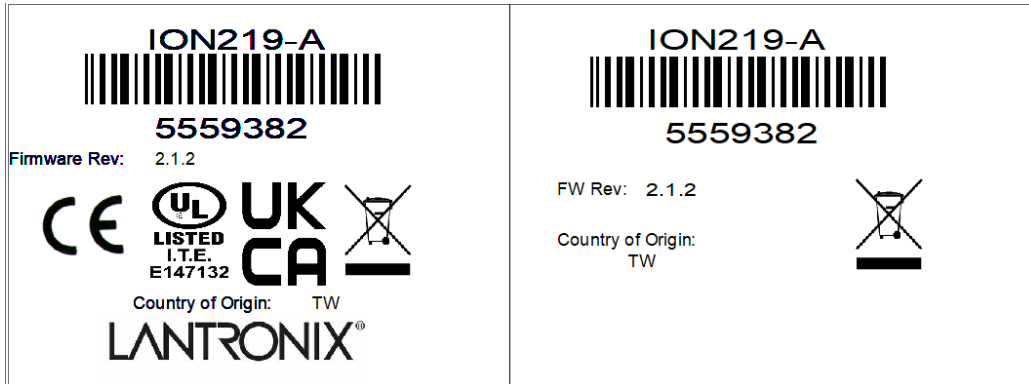
4. Use MGSoft to check the MIB value, and/or use other Ethernet tools to capture the traffic package for further analysis.

Note: If the LEDs on the front of the ION219 or the IONMM indicate one of the power supplies modules has failed, remember that when looking at the rear of the chassis that the power supply on the left is PS1 / slot #22 and the power supply on the right is PS2 / slot # 23.

Looking at the front of the chassis, the LEDs are labeled PS1 and PS2. Looking in the IONMM module, the power supply slots are labeled 22 and 23. Looking at the back of the chassis where the power supplies are, there is no labeling to indicate which slot is 22 or PS1 or 23 or PS2.

Label Information

The Product Label and Box Label provide important information:



Product Label

Box Label

Record Model and System Information

After performing the troubleshooting procedures above, and before contacting Tech Support, record as much information as possible to help the Tech Support Specialist. Information sources include the product label on the bottom of the ION219-x, the S/N label on the packaging, the ION device web GUI, and the ION device CLI.

Model #: _____ Serial #: _____

Your Lantronix service contract #: _____

Describe the problem: _____

Describe any action(s) already taken to resolve the problem (e.g., changing mode, resetting, etc.):

The model # and serial # of all other Lantronix products in the network: _____

Describe your network environment (layout, cable type, cable distance, etc.): _____

Lantronix device history (have you returned the device before, is this a recurring problem, etc.):

Any previous Return Material Authorization (RMA) numbers: _____

List Lantronix or third party equipment in the network: _____

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

ION219 Chassis Firmware Download Request

Firmware for the ION219 Chassis is dependent on the serial number of your chassis. Go to the Lantronix webpage at <https://www.lantronix.com/ion219-chassis-firmware-download-request/> to get the correct version of the firmware for your chassis.

Compliance Information

FCC Regulations

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 the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at the user's own expense.

Canadian Regulations

This digital apparatus does not exceed the Class A limits for radio noise for digital apparatus set out on the radio interference regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la Class A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

European Regulations

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

Achtung !

Dieses ist ein Gerät der Funkstörgrenzwertklasse A. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten. In diesem Fall ist der Benutzer für Gegenmaßnahmen verantwortlich.

Attention !

Ceci est un produit de Classe A. Dans un environnement domestique, ce produit risque de créer des interférences radioélectriques, il appartiendra alors à l'utilisateur de prendre les mesures spécifiques appropriées.

NDAA, RoHS, REACH and WEEE Compliance

See the compliance webpage at <https://www.lantronix.com/legal/rohs/>.

Trade Agreement Act (TAA) Compliant Products

See the TAA webpage at <https://www.lantronix.com/legal/rohs/taa-compliant-products/>.

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UK Declaration of Conformity

LANTRONIX®

UK CA

UK DECLARATION OF CONFORMITY

Manufacturer's Name: LANTRONIX INC.
Manufacturer's Address: 48 Discovery, Suite 250, Irvine, CA 92618 USA
Product Name: 19-Slot Rack Mount Chassis
Model Number: ION219-X

Manufacturer's Quality System:



ISO 9001:2015 Certificate No. 74 300 4282 TÜV Rheinland

Electrical Equipment Regulations 2016 (Safety)

- EN 62368-1:2014 + A11:2017

Electromagnetic Compatibility Regulations 2016 (EMC)

- BS EN 55032:2015/A1:2020 (Class A)
- BS EN 55035:2017+A11:2020
- BS EN 61000-3-3:2013/A2:2021

UK SI 2012 No. 3032 for Restriction of Hazardous Substance (RoHS2) with exemption 7(c)-I and 6(c).

- 1) 2011/65/EU Restriction of the use of Hazardous Substances in EEE (RoHS)
- 2) 2015/863/EU Change of Annex II from 2011/65/EU
- 3) Directive 2018/736/EU[7(c)-I] and 2018/741/EU[6(c)]

BS EN IEC 63000 : 2018

Statement of Conformity: The product specified above meets the test requirements of the relevant legislation of United Kingdom, including the application of sound engineering practice.

Signature: Eric Bass Date: July 13, 2023

Name: Eric Bass Title: VP of Engineering

EU Declaration of Conformity

LANTRONIX[®]

CE

EU DECLARATION OF CONFORMITY

Manufacturer's Name: LANTRONIX INC.
Manufacturer's Address: 48 Discovery, Suite 250, Irvine, CA 92618 USA
Product Name: 19-Slot Rack Mount Chassis
Model Number: ION219-X

Manufacturer's Quality System:



ISO 9001:2015 Certificate No. 74 300 4282 TUV Rheinland

Applicable EU Directives:

Low Voltage Directive (2014/35/EU)

- EN 62368-1:2014 + A11:2017

EMC Directive (2014/30/EU)

- EN 55032:2015/A1:2020 (Class A)
- EN 55035:2017+A11:2020
- EN 61000-3-3:2013/A2:2021

EU Directive 2011/65/EU for Restriction of Hazardous Substance (RoHS2) with exemption 7(c)-I

- EN IEC 63000:2018

Statement of Conformity: The product specified above complies with applicable EU directive referenced, including the application of sound engineering practice.

Signature: Eric Bass Date: July 13, 2023

Name: Eric Bass Title: VP of Engineering

North America and EU Declaration of Conformity

LANTRONIX®

SUPPLIERS DECLARATION OF CONFORMITY

Manufacturer's Name: LANTRONIX INC.
Manufacturer's Address: 48 Discovery, Suite 250, Irvine, CA 92618 USA
Product Name: 19-Slot Rack Mount Chassis
Model Number: ION219-X

North America

- ANSI C63.4-2014,
- FCC Part 15 Subpart B
- Canada ICES-003 issue 7
- UL 62368-1 2nd

European Union

- EN 55032:2015/A1:2020 (Class A)
- EN 55035:2017+A11:2020
- EN 61000-3-3:2013/A2:2021
- EN 62368-1:2014 + A11:2017

Signature: Eric Bass Date: July 13, 2023

Name: Eric Bass Title: VP 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.

Appendix A Cable Specification and Connectors

RJ45 Cable

Wire: Category 5, 5e, 6
 Gauge: 24 to 22 AWG
 Attenuation: 22.0 dB/100m @ 100 MHz
 Max. Cable Distance: 100 meters

- Straight-through or crossover cable may be used.
- Shielded twisted-pair (STP) or unshielded twisted-pair (UTP) may be used.
- Pins 1&2 and 3&6 are the two active pairs in an Ethernet network (RJ-45 Pin-out: Pin 1 = TD+, Pin 2 = TD-, Pin 3 = RD+, Pin 6 = RD-).
- All pin pairs (1&2, 3&6, 4&5, 7&8) are active in a Gigabit Ethernet network. See Figure 27 below.
- Use only dedicated wire pairs for the active pins: (e.g., blue/white & white/blue, orange/white & white/orange, etc.)
- Do not use flat or silver satin wire.

Table 1: RJ-45 Pinouts

Pin	Name	Description
1	TX_D+	Transmit data +
2	TX_D-	Transmit data -
3	RX_D2+	Receive data+
4	B1_D3+	Bi-directional data+
5	B1_D3-	Bi-directional data-
6	RX_D2-	Receive data-
7	B1_D4+	Bi-directional data+
8	B1_D4-	Bi-directional data-

Note: CAT5 wire lengths should not exceed 100 meters.

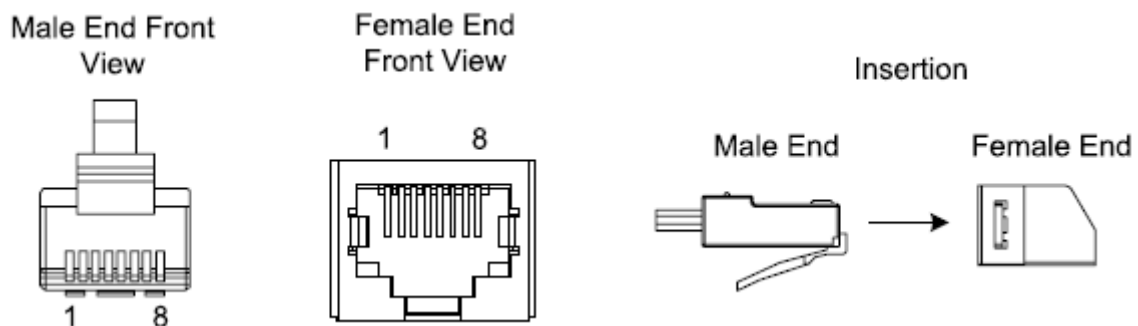


Figure 12: RJ45 Pinouts

Coax Cable and BNC Connectors

BNC (Bayonet Neil-Concelman) are bayonet type connectors, commonly used in CCTV systems. These connectors are specified by IEC standard IEC60169-8. BNC coaxial-cable media is used for circuits such as DS3, E1, and 10Base-2 Ethernet. The impedance of the coaxial cable is determined by the interface type; for example:

- 75 ohm for DS3
- 50 ohm for 10Base-2 Ethernet

Coax cable length is dependent upon application, impedance, frequency, and cable quality.

Special attention should be given to the grounding requirements of coaxial cable circuits. Installation may require grounding at both cable ends or only one cable end or neither cable end. See Figure 28 below.

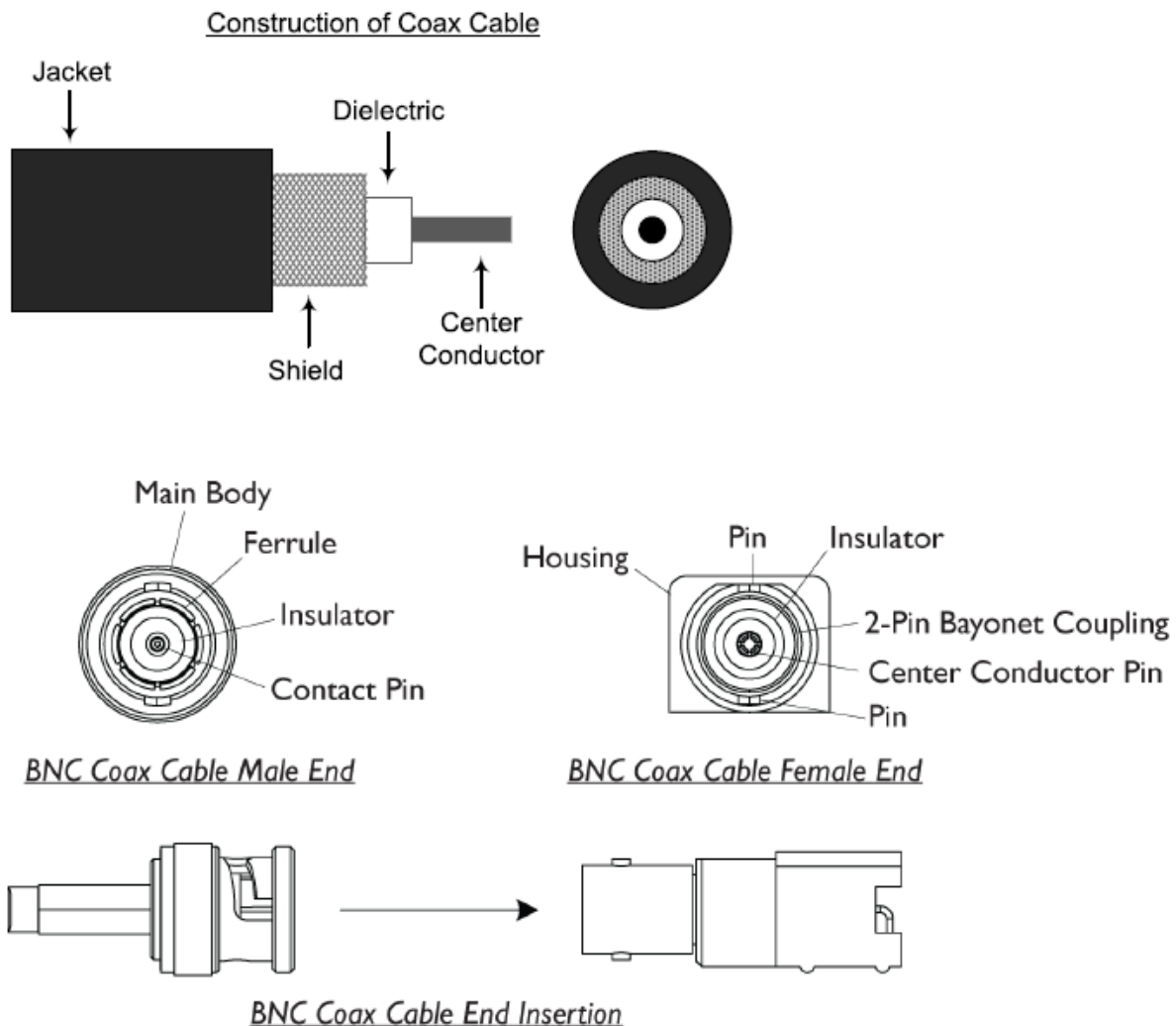


Figure 13: Coax Cable and BNC Coax Connector Ends

USB (Universal Serial Bus)

USB uses 4 shielded wires:

- two for power (+5v and GND)
- two for differential data signals (labelled as D+ and D- in pinout)

NRZI (Non Return to Zero Invert) encoding scheme used to send data with a sync field to synchronize the host and receiver clocks. In USB data cable, Data+ and Data- signals are transmitted on a twisted pair—no termination needed. Half-duplex differential signaling helps to combat the effects of electromagnetic noise on longer lines: D+ and D- operate together; they are not separate simplex connections. See Figure 29 below.

Table 2: USB Pinouts

Pin	Name	Cable Color	Description
1	VCC	Red	+5 VDC
2	D-	White	Data -
3	D+	Green	Data +
4	GND	Black	Ground

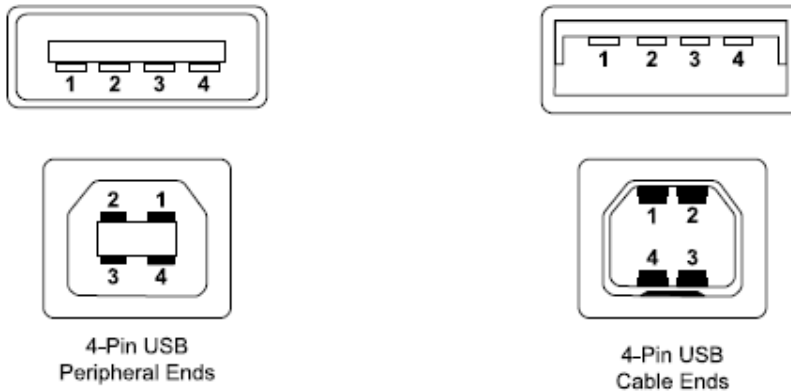


Figure 14: USB Peripheral and Cable Ends

Cable Shield Grounding

Media converter network cabling can be shielded or unshielded. Shielded cables must be grounded, according to the specific requirements of the media and port type. For example:

- Shielded RJ-45 cable used for 100Base-Tx Ethernet **MUST** be grounded at both cable endpoints via shielded RJ-45 jacks.
- Shielded RS-232 cable **MUST** have shield grounded at both cable endpoints via shielded RS-232 connectors.
- COAX cable used for 10Base-2 Ethernet **MUST** only be grounded at a single point.

Some media converters provide a jumper option or other grounding mechanism. Special attention should be given to the grounding requirements of coaxial cable circuits. Installation may require grounding at both cable ends or only one cable end or neither cable end. See the individual device user guide for grounding requirements.

Fiber Cables

Figure 15 shows the typical construction of simplex fiber optic equipment cable.

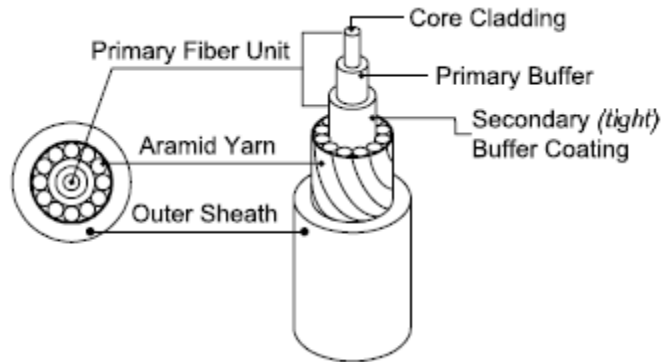


Figure 15: Simplex Fiber Optic Equipment Cable

Table 3: Fiber types and common features

Type	Attenuation	Bandwidth	Dispersion Slope	Numerical Aperture
	dB/KM@850/1300/1550	MHz-KM@850/1300nm	ps(nm ² -km)	
8/125	—/0.4/0.25	n/a	0.093	0.1
50/125	3.5/1.2/—	400/600	n/a	0.20
62.5/125	3.5/1.2/—	160/500	n/a	0.275
100/140	4.5/2.0/—	200/200	n/a	0.29

Fiber Connectors

The following are typical connector ends for fiber cables used to connect Lantronix NIDs and media converters. See Figure 31 below.

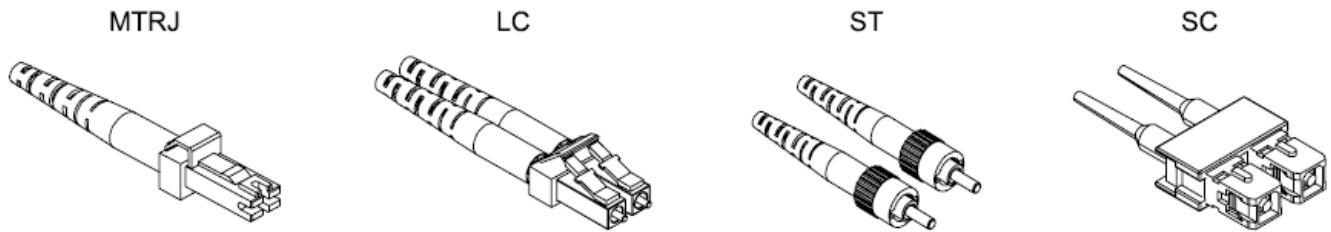


Figure 16: Fiber Optic Cable Connector Ends

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Technical Support

Online: <https://www.lantronix.com/technical-support/>

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