IOLAN SCR1618 RDAC
Hardware Installation Guide

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Preface

Audience

This guide is for the network or computer technician responsible for installing the Perle IOLAN SCR1618 RDAC also referred to as the IOLAN within this document.
Familiarity with the concepts and terminology of Ethernet and local area networks is required.

Purpose

This document describes the hardware and physical characteristics of the Perle IOLAN. It covers hardware features as well as installation and operation of the IOLAN. This document does not cover how to configure your Perle IOLAN. Information to configure your Perle IOLAN can be found in the IOLAN SCR User's Guide and in the IOLAN SCR CLI Guide on the Perle website and the IOLAN SCR1618 RDAC Quick Start Guide that came with your product.

Chapter Overviews

Main Topics	Description
IOLAN SCR	Components of your IOLAN.
Reset / Factory Default / Safe Mode	How to reset the IOLAN to custom or factory defaults.
Configuring the IOLAN	Methods to configure the software features for the IOLAN.
Appendix A—Technical Specifications	Overall technical specifications including input power and environmental specifications.
Appendix B—Label (sample)	Product label.
Appendix C—Cabling and Pinouts	Cables and connectors used with the IOLAN.
Appendix D—Maintaining your IOLAN	Maintenance of your IOLAN.
Appendix E—Mechanical	Mechanical drawings showing product dimensions.

Additional Documentation

Document	Description
IOLAN SCR User's Guide	User guide explaining how to configure the IOLAN features using the WebManager applications. New users should use these methods to configure the IOLAN SCR.
IOLAN SCR CLI (Command Line Interface) Reference Guide	Command Line Interface Reference Guide using CLI commands to configure the IOLAN (this is an advanced way to configure the IOLAN).

Document Conventions

This document contains the following conventions:

Most text is presented in the typeface used in this paragraph. Other typefaces are used to help you identify certain types of information. The other typefaces are:

Note: *Means reader take note*: notes contain helpful suggestions.

Caution: Means reader be careful. In this situation, you might perform an action that could result in equipment damage or loss of data.

Warning: **IMPORTANT SAFETY INSTRUCTIONS**

Means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents.

The following warnings and instructions apply:
Limitation of Liability
The information in this manual is subject to change without notice and does not represent a commitment on the part of Perle for any and all direct, indirect, special, general, incidental, consequential, punitive or exemplary damages including, but not limited to loss of profits or revenue or anticipated profits or revenue arising out of the use or inability to use any Perle IOLAN even if Perle has been advised or the possibility of such damages or they are foreseeable or for claims by any third party. Notwithstanding the foregoing, in no event shall Perle aggregate liability arising under or in connection with the Perle product, regardless of the number of events, occurrences, or claims giving rise to liability, be in excess of the price paid by the purchaser for the Perle product.

General cautions and warnings

13		IEC 60417-5041 (2002-10)	Caution, hot surface
14			Refer to manual/safety

Warning: Power sources must be off prior to beginning the power connection steps. Read the installation instructions before you connect the unit to its power source.
Avertissement: Les sources d'alimentation doivent être éteintes avant de commencer les étapes de connexion d'alimentation. Veuillez lire les instructions d'installation avant de connecter l'appareil à sa source d'alimentation.

Warning: Ensure that the voltage and current ratings of the intended power source are appropriate for the IOAN has indicated on the product label.
Avertissement: Assurez-vous que les valeurs nominales de tension et de courant de la source d'alimentation prévue conviennent aux routeurs de la série IOLAN comme indiqué sur l'étiquette du produit.

Warning: Ensure that the installation and electrical wiring of the equipment is performed by trained and qualified personnel and that the installation complies with all local and national electrical codes.
Avertissement: Assurez-vous que l'installation et le câblage électrique de l'équipement sont effectués par du personnel formé et qualifié et que l'installation est conforme à tous les codes électriques locaux et nationaux.

Warning: This equipment must be used in the matter specified by the manufacturer.
Avertissement: Cet équipement doit être utilisé dans les matières spécifiées par le fabricant.

Warning: In case of malfunction or damage, no attempts at repair should be made by the user. Do not dismantle this product. In case of malfunction or damage, contact Perle Technical support.
Avertissement: En cas de dysfonctionnement ou de détérioration, aucune tentative de réparation ne doit être effectuée par l'utilisateur. Ne démontez pas ce produit. En cas de dysfonctionnement ou de dommage, contactez le support technique de Perle.

Warning: If the ambient temperature is to exceed 50°C (122°F), the unit should be installed in a restricted access location where access can only be gained by service personnel or users who have been instructed about the reasons for the restrictions applied to the location and about any precautions that shall be taken; and access is through the use of a tool or lock and key, or any means of security, and is controlled by the authority responsible for the location.
Avertissement: Si la température ambiante doit dépasser 50°C (122°F), l'unité doit être installée dans un emplacement à accès restreint, auquel seul le personnel de service ou les utilisateurs informés des raisons des restrictions appliquées peuvent accéder. sur le lieu et sur les précautions à prendre; et l'accès se fait au moyen d'un outil ou d'un verrou et d'une clé, ou de tout moyen de sécurité, et est contrôlé par l'autorité responsable du lieu.

Warning: The working voltage inputs are designed for operation with Safety extra low Voltage (SELV). Connect only to SELV circuits with voltage restrictions in line with IEC/EN 62368-1.
Avertissement: Les entrées de tension sont conçues pour fonctionner avec une tension de sécurité très basse (SELV). Connectez uniquement aux circuits SELV avec des restrictions de tension conformes à IEC / EN 62368-1.

Warning: For equipment installed within the same end-product enclosure ensure leads are segregated or insulated the leads from different circuits.
Avertissement: Pour les équipements installés dans le même boîtier de produit final, assurez-vous que les conducteurs sont séparés ou isolés des conducteurs de circuits différents.

Class 2 circuit according to National Electrical Code, NFPA-70
Limited Power Supply (LPS) according to EN/IEC 60950-1;
Limited-energy circuit according to EN/IEC 61010-1
Avertissement: l'alimentation de l'équipement doit être correctement dimensionnée (voir annexe pour les spécifications) avec une puissance limitée. Une puissance limitée signifie que vous vous conformez à l'une des exigences suivantes.
Circuit de classe 2 selon le code électrique Canadien, partie 1, C22.1
Circuit de classe 2 selon le code électrique national NFPA-70
Alimentation électrique limitée (LPS) selon EN / IEC 60950-1;
Circuit à énergie limitée selon EN / IEC 61010-1

Warning: If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
Avertissement: Si cet équipement est utilisé d'une manière non spécifiée par le fabricant, la protection fournie par l'équipement peut être altérée.

Warning: In case of malfunction or damage, no attempts at repair should be made. Do not dismantle the product. All repairs need to be made by a qualified Perle representative. Contact Perle Systems Technical support.
Avertissement: En cas de dysfonctionnement ou de dommage, aucune tentative de réparation ne doit être effectuée. Ne démontez pas le produit. Toutes les réparations doivent être effectuées par un représentant qualifié de Perle. Contactez le support technique de Perle Systems.

Warning: Explosion hazard. Do not connect or disconnect while the circuit is live or unless the area is free of ignitable concentrations.
Avertissement: Risque d'explosion. Ne pas connecter ou deconnecter le circuit est sous tension ou à moins que la zone ne présente aucune concentration inflammable.

Warning: Do not use the USB connector unless the area is free of ignitable concentrations.
Avertissement: N'utilisez pas le connecteur USB à moins que la zone ne soit exempte de concentrations inflammables.

Warning: Do not use the reset button unless the area is free of ignitable concentrations.
Avertissement: N'utilisez pas le bouton de réinitialisation à moins que la zone ne soit exempte de concentrations inflammables.

THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS GUIDE ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS GUIDE ARE BELIEVED TO BE ACCURATE BUT ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF ANY PRODUCTS.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio-frequency energy and, if not installed and used in accordance with this hardware guide may cause harmful interference to radio communications.

Modifications to this product not authorized by Perle could void the FCC approval and negate your authority to operate the product.

Cautions and Warnings

Warning: Power sources must be off prior to beginning the power connection steps. Read the installation instructions before you connect the unit to its power source.

Warning: Ensure that the voltage and current ratings of the intended power source are appropriate for the SCR as indicated on the product label.

Warning: Ensure that the installation and electrical wiring of the equipment is performed by trained and qualified personnel and that the installation complies with all local and national electrical codes.

Warning: The working voltage inputs are designed for operation with Safety extra low Voltage (SELV). Connect only to SELV circuits with voltage restrictions in line with IEC/EN 62368-1.

Warning: This equipment must be used in the matter specified by the manufacturer.

Warning: In case of malfunction or damage, no attempts at repair should be made by the user. Do not dismantle this product.

THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS GUIDE ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS GUIDE ARE BELIEVED TO BE ACCURATE BUT ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF ANY PRODUCTS.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio-frequency energy and, if not installed and used in accordance with this hardware guide may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case users will be required to correct the interference at their own expense.

Modifications to this product not authorized by Perle could void the FCC approval and negate your authority to operate the product.

Perle reserves the right to make changes without further notice, to any products to improve reliability, function, or design.

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Publishing History

Date	Revision	Update Details
March 2020	A.03.01.2020	Initial release of the IOLAN SCR series.
June 2021	A.06.23.2021	Updates to the guide.

Overview

The IOLAN SCR all in one Serial Console Server and Ethernet router was specifically design for data center full integration deployments. The IOLAN SCR adds full IPv4/IPv6 routing capabilities with support for RIP, OSPF and BGP protocols and increased security with an integrated firewall support-ing zone firewall and two factor authentication. The IOLAN SCR gives you a way to access serial devices remotely from anywhere there is a network connection. For infrastructure management, the Perle IOLAN SCR will provide the most versatile access to your IT equipment's serial consoles whether in a large scale data center or remote branch.

IOLAN SCR

- 16 RS232 RJ45 serial ports
- 16 auto-sensing Ethernet port (RJ45 10/100/1000 Mbps)
- 1 RS232 RJ45 Console Admin Port
- 2—SFP 1G/2.5G receiver ports
- Dual A/C power

What's Included

The following components are included with your product:

- IOLAN SCR Chassis: 1U-tall (1.75 inch), rack-mountable chassis
    - 16 RS232 RJ45 Ethernet ports
    - 16 RS232 RJ45 serial ports
    - IOLAN SCR1618 RDAC Quick Start Guide
    - Rack Mount Kit

What You Need to Supply

Before you can begin, you need to have the following:

- A serial cable(s) to connect serial devices to your IOLAN unit
- Ethernet CAT5e 10/100/1000BASE-T cable to connect Ethernet devices to your IOLAN

IOLAN Front View
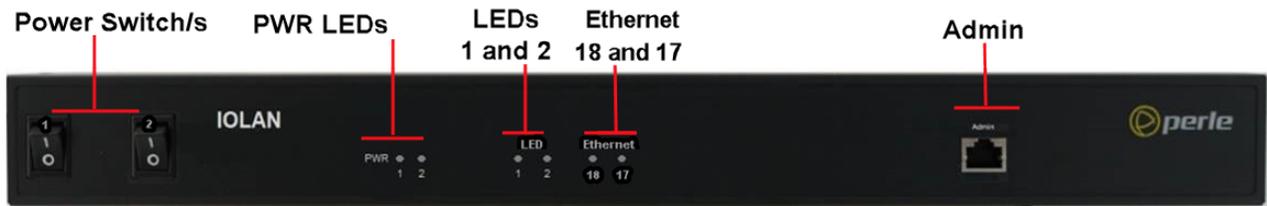
Power Switches

The IOLAN has two power connectors located on the back. The power switches should be in the off position when connecting the power cords.

Warning: Before servicing this product ensure the power source has been disconnected.

LEDs

	Function	Normal	Meaning
LEDs			
PWR (Power 1)	Normal Operation	Solid **Green**	Power supply is on.
	Dual Power-Supply Monitor	Solid **Amber**	Dual power supply enabled and the current status of the power supply is not normal.
	No power	Off	
	Safe Mode	Solid **Amber**	The IOLAN is in safe mode.
PWR (Power 2)	Solid **Green**	Solid **Green**	Power supply is on.
	Dual Power-Supply Monitor	Solid **Amber**	Dual power supply enabled and the current status of the power supply is not normal.
	No power	Off	
	Safe Mode	Solid **Amber**	The IOLAN is in safe mode.
Power			
System LED 1	No power	Off	
	System Init	Flashing **Amber**	WAN High-Availability/IP Health.
	Normal Operation	Solid **Green**	System is fully booted and is ready for normal operation.
	No config	Flashing **Green**	System has fully booted and there was not a start-up-config file in NVRAM
	Safe Mode	Flashing **Amber**	The IOLAN is in safe mode.
WAN High-Availability/IP Heath LED 2	No power	Off	

	Blinking	**Green** - all interfaces with IP health configured are ACTIVE **Amber** - at least 1 interface's IP health is inactive/failed **Red** - all interfaces IP health are INACTIVE/FAILED	IP Health is configured and enable on at least 1 interface. WAN High-availability mode = **Disabled**
	Solid	**Green** - WAN failover interface with highest priority (primary) is ACTIVE	IP Health is configured and enable on at least 1 interface. WAN High-availability mode = **Failover**
		Amber - highest priority WAN interface is INACTIVE/FAILED, and the SCR has failed over to next highest priority, active (alternate) WAN interface	IP Health is configured and enabled on at least one interface. WAN high-availability mode = **Failover**
		Red - all WAN failover interfaces are INACTIVE/FAILED	IP Health is configured and enabled on at least one interface. WAN high-availability mode = **Failover**
	Solid	**Green** - all load-sharing interfaces are ACTIVE	IP Health is configured and enable on at least 1 interface. WAN High-availability mode = **Load-share**
		Amber - one or more load-sharing WAN interfaces are INACTIVE/FAILED	IP Health is configured and enable on at least 1 interface. WAN High-availability mode = **Load-share**
		Red - all load-sharing WAN interfaces are ACTIVE	IP Health is configured and enable on at least 1 interface. WAN High-availability mode = **Load-share**

SFPs			
Ethernet 17 / SFP	Green solid or flashing		Link fiber is up
Ethernet 18 / SFP	Green solid or flashing		Link fiber is up

Console Admin Port

The IOLAN has one RJ45 console port (8 pin connector with DTE pinouts) on the front for use with PC's equipped with a serial com port or using a USB to serial converter. The IOLAN can be fully configured and managed from the console port. The console port provides direct access to the Command Line Interface (CLI).

The console port is an 8-pin female connector (with DTE pinouts). See *SCR RJ45 Console Port Pinout* in the cabling section of this guide.

Connecting to the Admin Console Port

To connect to the RJ45 console port:

1. Connect the power, then set the power switches on the back of the IOLAN to the On position.
2. Allow the IOLAN to complete the boot up sequence.
3. Connect an RJ45 cable directly from the IOLAN to the COM port on your PC. See *Appendix C— Cabling and Pinouts* for cabling requirements. A serial to USB converter may also be used.
4. On the PC, select Choose Start-> Control Panel-> Hardware and Sound or equivalent on the Windows Operating System you are using. The exact procedure may vary depending on the version of Windows you are using.
5. Click the Hardware tab and choose Device Manager, Expand the Ports (COM & LPT) section. This will expand the drop down to show the number of com ports on your system. Connect the cable to one of these ports (probably COM1 or COM2, in the case of a USB serial to USB converter look for associated installed driver and com port number).
6. Start a terminal emulation program (such as Putty or SecureCRT) on the COM port where you have connected the cable to the PC.
7. Configure this COM port within the terminal emulation program with the following parameters:
   - 9600 baud
   - 8 data bits
   - 1 stop bit
   - No parity
   - None (flow control)
8. Press the Enter key on the keyboard and the login prompt will display.

Setup Mode

Setup mode provides a simple method of doing an initial setup from a PC. Your IOLAN is shipped in factory default mode.
1. Complete the Connecting the Power step.
2. Set your PC to obtain an IP address automatically using DHCP.
3. Plug your PC into any of the IOLAN's Ethernet ports (located on the back of the unit).
4. Use a standard browser to enter "http://192.168.0.1" to access your IOLAN.

On the setup screen, select, Getting Started.
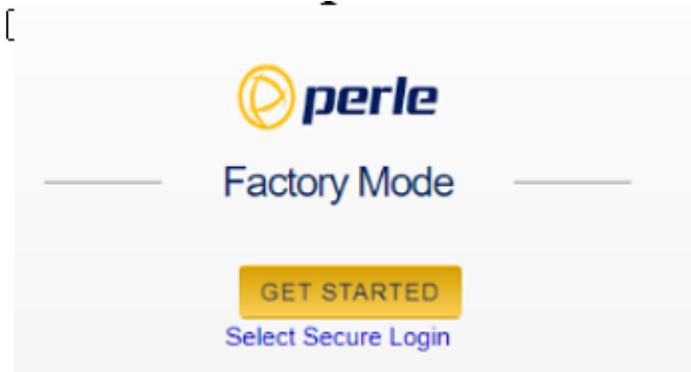
5. Once connected, fill in the required fields, apply changes then save and exit. The configuration changes are immediately applied to the IOLAN.
6. The IOLAN's web configuration sign-on screen is displayed. Using the credentials, you previously defined in Step 2, you can now access your IOLAN's full configuration.

IOLAN Back View

Serial Ports (1- 16)   **Ethernet Ports 1 - 18**   **Serial Ports**   **Ethernet Ports**   **Reset**   **Dual AC Power Supplies**
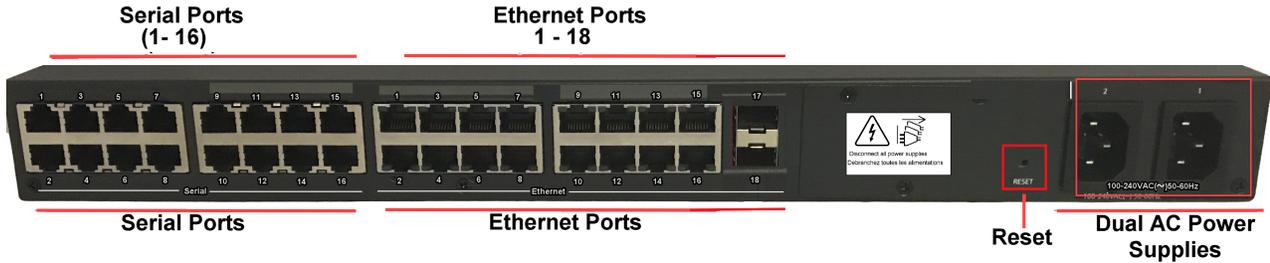
Connecting Serial Devices

Connect serial devices using a straight through serial cables. See *Appendix C—Cabling and Pinouts* for cabling pinouts.

Connecting Ethernet Devices

The Ethernet RS232 RJ45 ports provide the standard Ethernet interface speeds of 10/100/1000 Mbps through twisted pair (UTP) cables of up to 100 meters (328ft) in length. By default all of the 10/100/1000 ports will automatically set themselves up to match the speeds of all attached devices. If auto negotiation is not supported by one or more attached devices, the ports can be configured to operate at fixed speeds and duplex settings. Once a link has been established, the LED will indicate whether you have a 10, 100 or 1000 Mbps link on the Ethernet port. See Ethernet Link Status table.

Note: Cat5e cables are recommended for 1000 Mbps connections.

Ethernet Ports

Right

Left

Right

Left

16
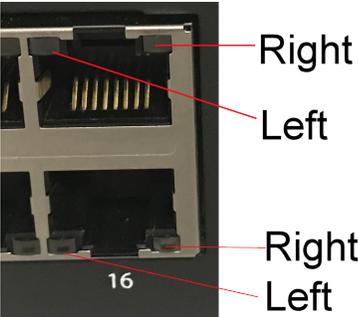
Ethernet Link Status

Left LED	Right LED	Description
Off	Amber	1000 Mbps/flashes with activity
Amber	Green	100 Mbps/flashes with activity
Green	Off	10 Mbps/flashes with activity
Off	Off	No LAN connection

Connecting Fiber

1. Insert the SFP/s. See *SFP Ports*.
2. Connect the 1000Base-X devices to the fiber ports using appropriate fiber cables. See

SFP Ports

The following SFPs are supported.
- SGMII copper
- 1 Gbps fiber
- 2.5 Gbps fiber

SFP Ports

Inserting SFPs

SFP modules are inserted in the SFP slots on the front of the IOLAN
1. Align the SFP module in front of the slot to establish alignment.
2. Insert the module and push inwards with your thumb until you hear a click. Do not force the SFP module in. SFP modules are keyed so you can only insert them one way.If the SFP module is equipped with a clasp, ensure the clasp is in the locked position. The appropriate fiber cable can now be connected to the SFP module.
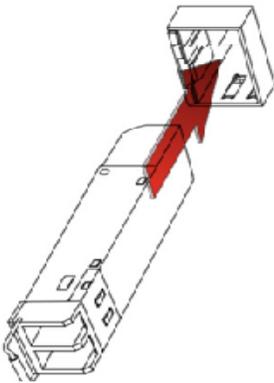

Removing SFPs

SFP modules are inserted in the SFP slots on the front of the IOLAN.
1. Disconnect the fiber cable from the SFP module.
2. If the SFP module is equipped with a clasp, move it to the locked position and use the clasp to pull the SFP towards you.

3. If the SFP module is not equipped with a clasp, then with your fore finger and thumb, firmly grip the SFP and pull towards you.
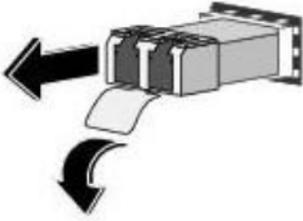
Connecting the Fiber

Ensure that cable implements the proper the TX to RX crossover. Once the device is connected and link is established the link LEDs will turn on. The SFP LEDs will begin to flash once data activity is initiated.
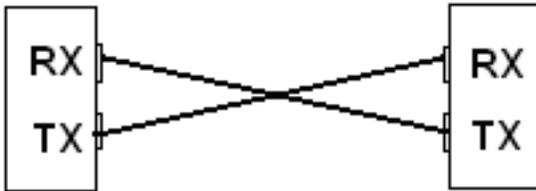
Resetting the IOLAN

Reset / Factory Default / Safe Mode

The table below shows how the reset button can be used to accomplish the below function.

Mode	Description	LEDs	System Status
Restart	Press and Release the Reset button when the router is running	Power LED will begin to blink Red	Reboots. All configuration and files will remain the same.
Factory default	Press Reset and Hold for 10 seconds when the router is running	All LEDs flash Red, release Reset button, then Power LED flashes Red	Reboots and resets the configuration to the Perle factory default configuration. All configuration, user IDs, passwords and security certificates are deleted.
Safe	Press the Reset button while powering up	All LEDs, except power blinking Red	• Saves the startup config • Boots with no config file • Allows you to do setup mode

Configuring the IOLAN

The IOLAN can be configured, operated and monitored using any of the following methods. See the IOLAN SCR User's Guide for more details on these methods.

WebManager

The Perle WebManager is an embedded Web based application that provides an easy to use a browser interface for managing the IOLAN. This interface provides the ability to configure and manage the IOLAN through any standard desktop web browser. The default IP address for your IOLAN is 192.168.0.1.

CLI

A text-based Command Line Interface based on industry standard syntax and structure. The CLI can be accessed from the console port. Once a valid IP address is configured on the IOLAN, Telnet, SSH or the Web interface can also be used to access the IOLAN for administration purposes. See the IOLAN SCR Command Line Interface Reference Guide for more information.

SNMP

The IOLAN can be managed with an SNMP compatible management station that is running platforms such as HP Openview.

Appendix A—Technical Specifications

Technical Specifications	
Power Supply	Dual AC power supplies
Nominal Input voltage	110/230v AC
Input Voltage Range	100-240 VAC, 47-63 Hz
Interfaces	
RJ45 Serial class RS232 ports	16 ports
Ethernet Port	16 Ethernet 10/100/1000 Up to 100 meters (328 ft.) Auto-negotiation Auto-MDI/MDIX Ethernet isolation 1500 V
Console Port	RJ45 DTE - serial port
Small Form Factor Pluggable (SFPs) slots	Empty receiver ports for 2 x 1G/2.5G SFP modules
Standards	
	IEEE 802.3 for 10Base-TX IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow Control
Environmental Specifications	
Operating Temperature Ranges	0°C to 55°C (32°F to 131°F)
Storage Temperature	-40°C to 85°C (-40°F to 185°F)
Operating Humidity Range	5% to 95% non-condensing
Storage Humidity Range	5% to 95% non-condensing
Operating Altitude	Up to 3,048 meters (10,000 feet)
Standards and Certifications	
Safety	UL/ULC/EN 62368-1 (previously 60950-1) CE Mark CAN/CSA-C22.2 No. 62368-1-14
EMI/EMC	FCC 47 Part 15 Subpart B Class A or better ICES-003 (Canada) EN55011(CISPR11) EN55032 (CISPR32) EN55024

Technical Specifications	
	EN61000-3-2 Limits for Harmonic Current Emissions
	EN61000-3-3 Limits of Voltage Fluctuations and Flicker
	EN61000-4-2 (ESD): Contact:
	EN 61000-4-3 (RS):
	EN 61000-4-4 (EFT):
	EN61000-4-5 (Surge):
	EN 61000-4-6 (CS):
	EN 61000-4-8 (PFMF):
	EN 61000-4-11

Appendix B—Label (sample)
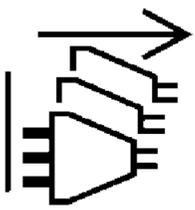
Appendix C—Cabling and Pinouts

SCR RJ45 Serial Connector Pinout

Pin 1
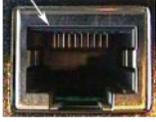
RJ45 Socket

Pinout	Direction	EIA-232
1	in	CTS
2	in	DSR
3	in	RxD
4		GND
5		GND
6	out	TxD
7	out	DTR
8	out	RTS

SCR RJ45 Console Port Pinout
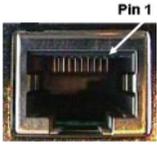
RJ45 Socket

Pinout	Direction	EIA-232
1	out	RTS
2	out	DTR
3	out	TxD
4		GND
5		GND
6	in	RxD
7	in	DSR
8	in	CTS

SCR RJ45 to RJ45 Cable Pinout
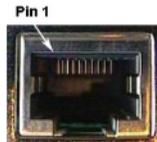
RJ45 Socket

Pinout	
1	--------------->1
2	--------------->2
3	--------------->3
4	--------------->4
5	--------------->5
6	--------------->6
7	--------------->7
8	--------------->8

Appendix D—Maintaining your IOLAN

Ensure there is clearance of 50.8mm (2 inches) on all sides of the IOLAN to provide proper airflow through the unit

- Do not use solvents or cleaning agents on this unit
- Keep vent holes clear of debris
- If case gets dirty wipe with a dry cloth
- Ensure all cables are in working condition

Appendix E—Mechanical