

## IOLAN SDG1 W Hardware Installation Guide



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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.

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# Hardware

## Preface

### Audience

This guide is for the network or computer technician responsible for installing the Perle IOLAN SDG1 W. 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 SDG1 W. It covers hardware features as well as installation and basic configuration and operation of the product. For detail information on configuring the various features of the IOLAN please see the “IOLAN Secure User’s Guide”.

### 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. Only qualified personnel should connect power to this unit.



Warning – more information is contained within this guide



Warning – equipment rated above 40°C. Equipment may be very hot.

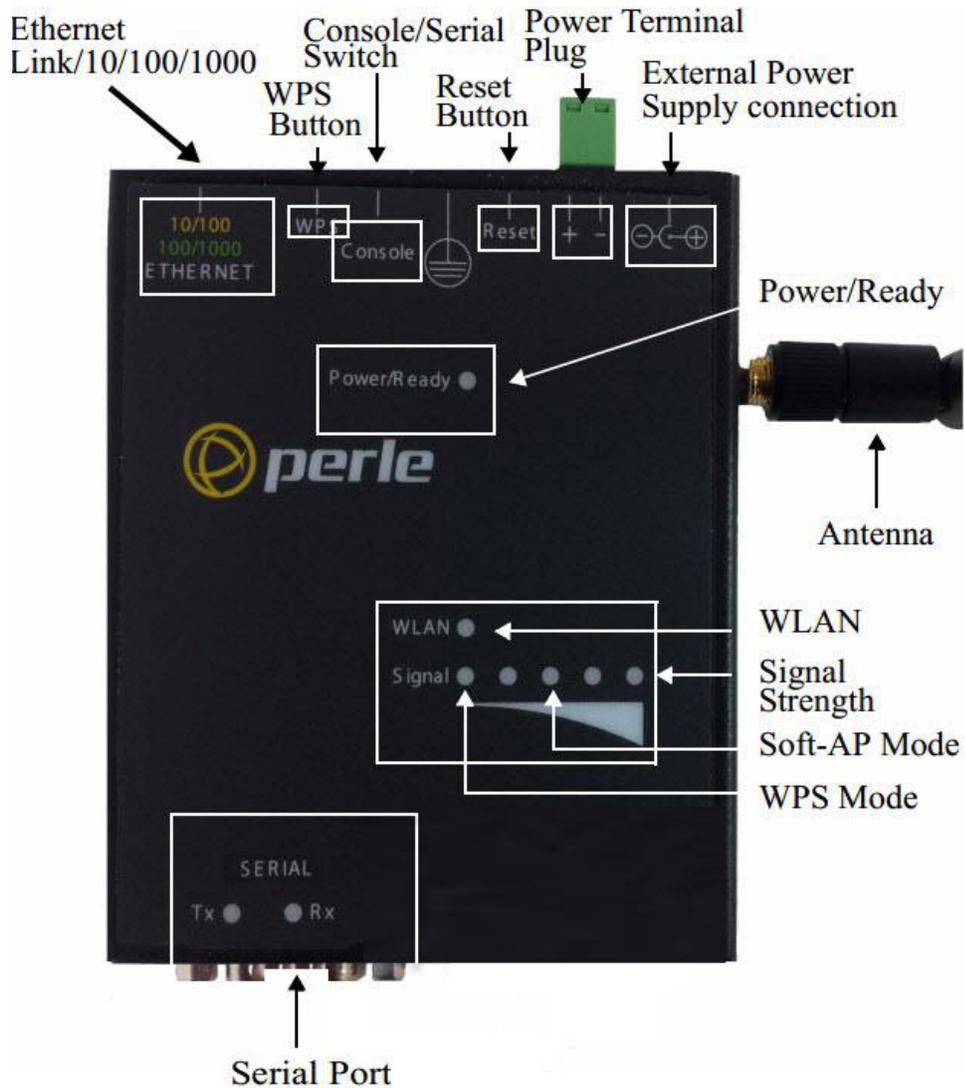
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## Overview

This guide provides information on installing and doing the initial configuration on the IOLAN SDG1 W unit.

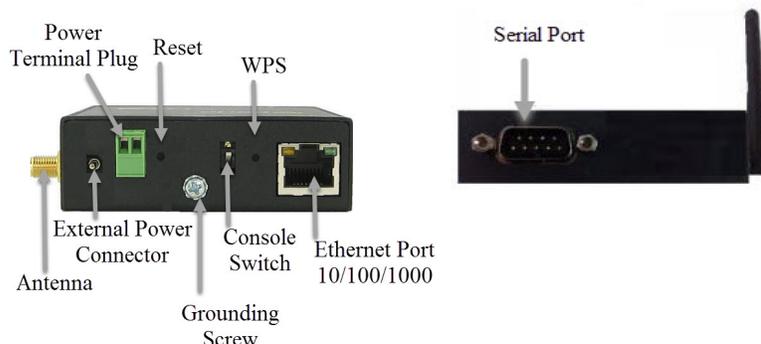
The IOLAN SDG1 W has one DB-9 serial port.

## IOLAN SDG1 W (Top View)



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## IOLAN SDG1 W (Side Views)



## Ethernet and Serial Ports

### 10/100/1000Base-T Port

The Ethernet port provides the standard Gigabit Ethernet interface speeds of 10/100/1000 Mbps through twisted pair (UTP) cables of up to 100 meters (328ft) in length.

### Serial / Console Port

The unit has one DB-9 port. The port can be used to connect a serial device. When used to connect a serial device, the port can operate in EIA-232, EIA-422 or EIA-485 mode. When port 1 is used to connect a console, the port can be used to fully configure and manage the IOLAN. For details on how to connect to the serial ports see [Connecting the Serial Port](#).

For details on the serial port pin-out see [Appendix D - Cabling and Connectors](#).

## Button/Switch Functions

### Reset Button

The inset “Reset” button will reboot the IOLAN if pushed in and released quickly. It will reset the IOLAN to factory defaults if pushed in and held for more than three seconds. For more details on the operation of the Reset button see [“Resetting the IOLAN”](#)

### Console / Serial DIP Switch

Serial port 1 can act as a console port or a serial port. The mode of operation is determined by the position of the “console/serial port” DIP switch. The DIP is set in the factory to serial (up position). Unless you plan to attach a console to the IOLAN, leave the DIP switch in the serial position. In console mode, this port can be used to provide access to the IOLAN management function using the industry standard CLI command set (see [Console Port Mode](#)).

See the IOLAN Command Line Interface Reference Guide for a complete set of the commands available via the console.

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## **WPS Button**

Insert a paper clip into the inset hole labeled as “WPS” and gently press inwards. Pressing this button for less than 3 seconds will put the IOLAN SDG4 WLA/LE in WPS mode, greater than 4 seconds will put the unit in Soft-AP mode.

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## LED Indicators

### Power/Ready

State	Description
<b>Green - solid</b>	System Ready
<b>Green - flashing</b>	System is booting or dip switch is in console mode
<b>Amber - flashing</b>	System is booting
<b>Red</b>	Error condition

### Link 10/100/1000

State	Description
<b>Green</b>	1000 Mbps (flashes with activity)
<b>Green/Amber</b>	100 Mbps (flashes with activity)
<b>Amber</b>	10 Mbps (flashes with activity)
<b>Off</b>	No LAN connection

### WPS (Wi-Fi Protected Mode)

State	Description
<b>Amber - flashing</b>	The first LED within the signal strength display will pulse amber on and off

### Soft-AP Mode (Access Point Mode)

State	Description
<b>Green - flashing</b>	The third LED within the signal strength display will pulse green on and off

### WLAN

State	Description
<b>Green - solid</b>	A wireless connection has been established
<b>Green - flashing</b>	Data is being transmitted over the wireless network
<b>Off</b>	no wireless connection established

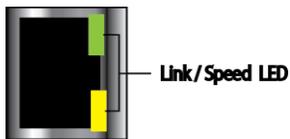
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## Signal strength

State	Description
<b>Amber/ Green</b>	Wireless signal strength from amber LEDs to green LEDs with green being the strongest signal strength

## Ethernet Port Status Indicators

### Port Link / Speed



State	Description
<b>Green</b>	1000 Mbps (flashes with activity)
<b>Green/Amber</b>	100 Mbps (flashes with activity)
<b>Amber</b>	10 Mbps (flashes with activity)
<b>Off</b>	No LAN connection

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# Installation

## General 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 IOLAN 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 62368-1:2018

**Warning:** If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

**Warning:** Transient protection shall be provided that is set at a level not exceeding 140% of the peak rated voltage value at the supply terminals to the equipment.

**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.

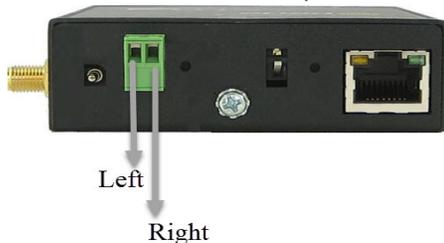
**Warning:** This unit should be installed in a restricted access location where access can only be gained by service personnel or users who have been instructed about the reasons for the restrictions applied to the location and about any precautions that shall be taken; and access is through the use of a tool or lock and key, or any means of security, and is controlled by the authority responsible for the location.

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## Connecting the Hardware

### Power

Either the barrel or TB (Terminal Block) connector can be used to power the SDG1 W.



### Connecting the barrel connector

Plug the power adapter into a power socket and connect the barrel connector end into the IOLAN SDG1 W. The SDG1 W will perform a power up sequence. The Power/Ready LED should show a solid green. See [LED Indicators](#) for power up sequence.

### Connecting the terminal block connector

1. Ensure power is NOT applied to the wires prior to connection.
2. On each end wire (16-20 AWG), remove the insulation from the copper wire 5 mm (3/16 of an inch).
3. Loosen the left screw on the top of the terminal connector block, then insert your positive (+) wire into the left terminal and screw it down tight (.51Nm torque). Loosen the right screw on the top of the terminal connector block, then insert your negative (-) wire into the right terminal and screw it down tight (.51Nm torque).
4. Re-insert the terminal block connector if removed.

### Grounding and Power Cord Relief clip

If your installation requires additional grounding, follow this procedure.

Grounding the chassis requires the following items:

- One grounding lug (not provided)
- One 12AWG wire (not provided)

Follow the manufacturers instructions for attaching the ground wire to the grounding lug.

1. Attach the grounding lug to the chassis and secure with the grounding screw provided. See Figure 1.
2. Attach the power cord relief clip as shown in Figure 2.

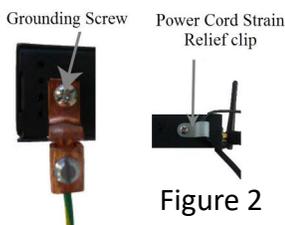


Figure 1

Figure 2

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## Connecting the Serial Port

The Serial port is normally used to connect serial devices. Serial port 1 can also be used as a console to fully configure and manage the IOLAN.

The serial port is an DB-9 connector. For complete details on the pinout of the port see [Appendix D - Cabling and Connectors](#)

### Console Port Mode

1. Power off the IOLAN.
2. Set the “console/serial DIP switch” to the console (down) position.
3. Connect a DB-9 cable directly from serial port 1 of the IOLAN to the COM port of your PC.
4. Choose Start > Control Panel > Systems or equivalent on the Windows Operating System 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).
6. Start a terminal-emulation program (such as Putty or SecureCRT) on the COM port where you have connected the IOLAN serial port.
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. Connect the power and allow the IOLAN to complete the boot up sequence.
9. You should now be able to see all messages sent to the console of the IOLAN.

### Serial Port Mode

Serial mode is used when the IOLAN acts as a communication sever to provide access to the serial device which is connected to its serial port. For the different methods which can be used to connect to the serial device see the IOLAN Secure User’s Guide. When serial port 1 is in this mode, all console mode functions are disabled on the port.

To set serial port 1 in this mode, ensure that the “console/serial DIP switch” is in the serial (up) position.

## Connecting Data Ports

### Wi-Fi Connections

Connect the Wi-Fi antenna by simply screwing the antenna onto the connector on the IOLAN.

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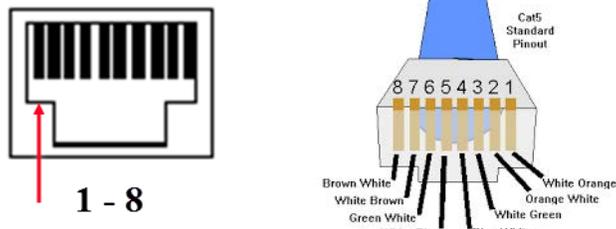
## Ethernet Connection

By default the 10/100/1000 Ethernet port will automatically set itself up to match the speed of the port it is connected to. If auto negotiation is not supported by that port then, the port can be configured to operate at a fixed speed and duplex settings.

To connect to 10Base-T, 100Base-TX or 1000Base-T follow these steps:

1. Connect a straight through Ethernet cable from the IOLAN SDG1 W Ethernet port to an 10/100/1000 RJ45 port on the network hub/switch.
2. Once the IOLAN SDG1 W is connected and the link is established, the link LEDs will turn on. These LEDs will indicate whether you have a 10,100 or 1000 Mb/s link to your hub/switch. See. ([LED Indicators](#)) for more details.

### Ethernet Connector - 8-pin RJ-45



#### MDI Port Pinouts

Pin	Signal
1	Tx+
2	Tx-
3	Rx+
6	Rx-

#### MDI-X Port Pinouts

Pin	Signal
1	Rx+
2	Rx-
3	Tx+
6	Tx-

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# Operation

## Resetting the IOLAN

To reset the IOLAN insert a paper clip into the inset hole labelled as “Reset” and gently press inwards. The Power/Ready LEDs on the IOLAN SDG1 W will go ON and then momentarily OFF when released to show that the unit has been reset.



## Resetting the IOLAN to Factory Default Configuration

To reset the configuration of the IOLAN, insert a paper clip into the inset hole labelled as “Reset” and hold the reset button between 3 and 10 seconds, the IOLAN will reset the configuration to factory default (either the Perle or custom default configuration). If you hold the reset button greater than 10 seconds, then the IOLAN will reset the configuration to the Perle factory default configuration.

## Configuring the IOLAN

The IOLAN can be configured, operated and monitored using any of the following methods. See the IOLAN Secure User’s Guide for more details.

### CLI

A text-based Command Line Interface based on industry standard syntax and structure. The CLI can be accessed from the console port. An IP address is not required for CLI access on the console port. Once an IP address has been assigned the IOAN can also be accessed by Telnet, SSH, SNMP or the Web interface.

### Web Manager

The Perle Web Manager is an embedded Web based application that provides an easy to use browser interface for configuring and managing the IOLAN. Once an IP address has been assigned/configured on IOLAN, it can be accessed through any standard desktop web browser.

### Device Manager

This windows-based utility provides the ability to do either an initial setup (out of the box) or to configure and manage the IOLAN. In order to use this utility the IOLAN must be connected to your network. You can download the Device Manager software from our website at [www.perle.com](http://www.perle.com).

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# Appendix A - Technical Specifications

## IOLAN SDG1 W Technical Specifications

<b>SDG1 W</b>	
Power	Input Voltage Range: 9 - 30 VDC Typical Power Consumption @24VDC - 3.9 Watts
Operating Temperature	-40°C to 75°C -40°F to 167°F
Storage Temperature	-40°C to 85°C -40°F to 185°F
Operating and Storage Humidity	5 to 95% (non condensing)
Weight	0.25 kg (0.55 lbs)
Dimensions	90 by 76 by 24 mm 3.5 by 3.0 by 0.9 in.



# Appendix C - Sample Label

 IOLAN SDG1 W  
FCC ID : Z64-WL18DBMOD

Product Number : 04031660  


Serial Number : 93-013315M10112  


ETHERNET Address : 00:80:D4:11:FF:BE  
WLAN Address : 00:80:D4:21:FF:BE

Wireless Password : 40459777

9 -30VDC  
-  +

Max. Current Input: 0.45A

Conforms to UL 62368-1:2019.  
Certified to CSA-C22.2 No. 62368-1:2019.

Made in Canada

# Appendix D - Cabling and Connectors

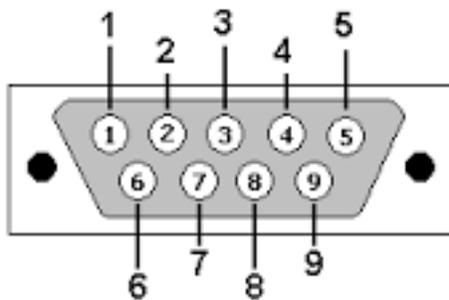
This appendix provides information for the serial DB-9 male connector and the Ethernet cable.

A Starter Kit (optional) can be purchased from <https://www.perle.com/products.shtml>.

The serial port can operate in either EIA 232, 422 or 485 mode. This is a software configuration. If EIA 422 or 485 is selected, the line termination may need to be set. SW5 has two switches associated with the serial port. See [Terminating 485/Full/Half and 422 Mode](#) below.

Ensure you have the appropriate cable for connecting your serial devices to the serial ports on the IOLAN.

## IOLAN DB-9(male) Connector



### Pinout

Pinout	RS232	EIA 422/485 Full Duplex	RS485 Half Duplex
1 (in)	DCD	-	-
2 (in)	RxD	RxD+	-
3 (out)	TxD	TxD-	TxD-/RxD-
4 (out)	DTR	-	-
5	GND	GND	GND
6 (in)	DSR		-
7 (out)	RTS	TxD+	TxD+/RxD+
8 (in)	CTS	RxD-	-
9	-		

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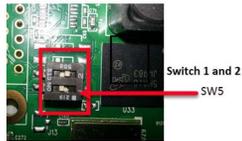
## Terminating 485/Full/Half and 422 Mode

When in 485/full/half or 422 mode, termination is not necessary unless the IOLAN's are the end points.

Remove the screws from the case and gently lift the top section of the case from the bottom section. Locate SW 5 on the board.

To set RX Termination on port 1: Set DIP switch #1 ON (used for 422/485 half duplex)

To set TX Termination on port 1: Set DIP switch #2 ON (used for 485 full duplex).



Note: For EIA-232 these switches must be in the OFF position (default)

## Ethernet Cable

The 10/100/1000BaseT(X) port is located on the back of the IOLAN SDG1 W. This Ethernet port will automatically adjust depending on the type of Ethernet cable used (straight-through or cross-over), and the type of device (NIC-type or HUB/Switch-type) connected to the port.

### Requirements:

- Cat 5 UTP or STP, Cat 5e cables
- 24-22 AWG (0.20mm<sup>2</sup> - 0.33mm<sup>2</sup>)
- Straight through or Ethernet Crossover cable

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## Appendix E - IOLAN Maintenance

- Ensure there is clearance of 50.8mm (2 inches) on all sides of the IOLAN SDG1 W 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 good working condition and replace any frayed cables or cables without clips

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# Contacting Perle Systems Limited

## Contacting Technical Support

Contact information for the Perle Technical Assistance Center (PTAC) can be found at the link below.

[https://www.perle.com/support\\_services/support\\_request.shtm](https://www.perle.com/support_services/support_request.shtm)

## Warranty / Registration

This product is covered by the Perle IOLAN SDG Warranty. Details can be found at:

[https://www.perle.com/support\\_services/warranty.shtml](https://www.perle.com/support_services/warranty.shtml)