PoE GIGABIT SWITCH INDUSTRIAL

ORing

# Quick Installation Guide

# IGPS-R9084GP

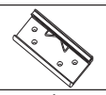
## Industrial Managed PoE Gigabit Switch

## Introduction

The **IGPS-R9084GP** is a managed industrial Ethernet switch with eight 10/100/1000Base-T(X) ports and four 100/1000Base-X SFP ports. The eight RJ45 Ethernet ports are P.S.E-enabled, which can transmit electrical power up to 30 watts per port. With Layer-3 support for higher network performance on large-scale LANs, the switch is optimized to transmit data as fast as Layer-2 switches. With complete support of Ethernet redundancy protocols, O-Ring (recovery time < 30ms for over 250 connected devices) and MSTP (RSTP/STP compatible) can protect your mission-critical applications from network interruptions or temporary malfunctions. With a wide operating temperature from -40°C to 70°C, the device also can be managed centralized via ORing's proprietary Open-Vision platform as well as via Web-based interfaces, Telnet and console (CLI). Therefore, the switch is one of the most reliable choice for highly-managed and fiber Ethernet applications.

## Package Contents

The device is shipped with the following items. If any of these items is missing or damaged, please contact your customer service representative for assistance.

| Contents | Pictures | Number |
|---|---|---|
| IGPS-R9084GP |  | X 1 |
| CD |  | X 1 |
| DIN-rail Kit |  | X 1 |
| Wall-mount Kit |  | X 2 |
| Console Cable |  | X 1 |
| QIG |  | X 1 |

## Preparation

Before you begin installing the switch, make sure you have all of the package contents available and a PC with Microsoft Internet Explorer 6.0 or later, for using web-based system management tools.

### Safety & Warnings

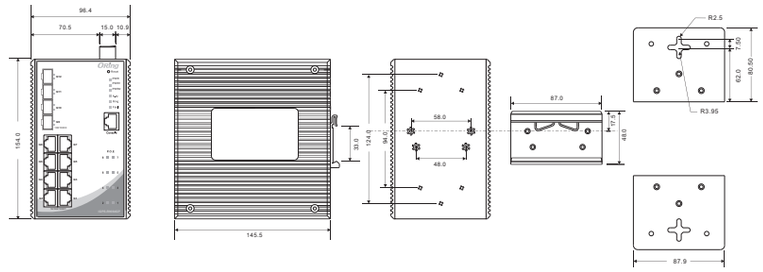
**Elevated Operating Ambient:** If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer.

**Reduced Air Flow:** Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

**Mechanical Loading:** Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

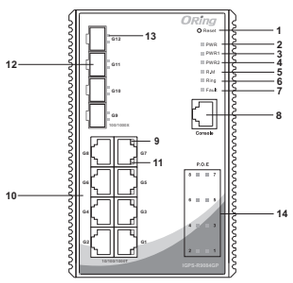
**Circuit Overloading:** Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

### Dimension



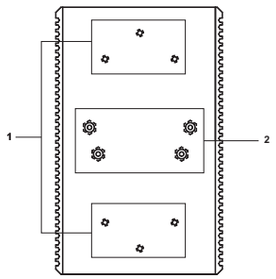
### Panel Layouts

Front View



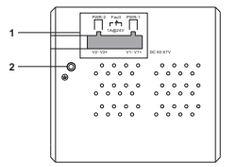
1. Reset button
2. PWR status LED
3. PWR1 LED
4. PWR2 LED
5. R.M. status LED
6. Ring status LED
7. Faulty relay indicator
8. Console port
9. Link/action LED for Gigabit PoE LAN ports (Odd PoE ports)
10. Gigabit Ethernet ports
11. Link/action LED for Gigabit PoE LAN ports (Even PoE ports)
12. SFP port
13. Link/Act LED for SFP port
14. PoE LED for LAN ports

Rear View



1. Wall-mount screw holes
2. Din-rail screw holes

Top Panel

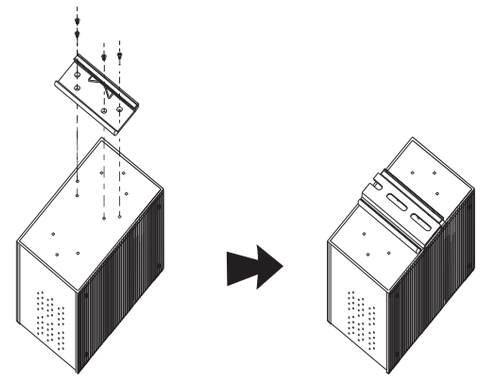


1. Terminal blocks: PWR1, PWR2 , Relay
2. Ground wire.

## Installation

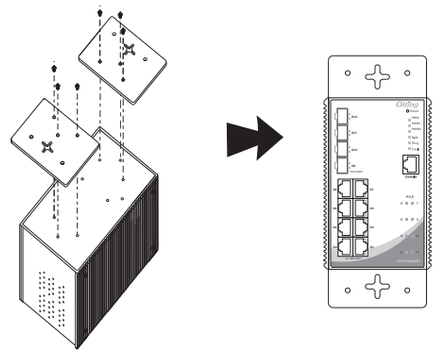
### DIN-rail Installation

**Step 1:** Slant the switch and screw the Din-rail kit onto the back of the switch, right in the middle of the back panel.
**Step 2:** Slide the switch onto a DIN-rail from the Din-rail kit and make sure the switch clicks into the rail firmly.



### Wall-mounting

**Step 1:** Screw the two pieces of wall-mount kits onto both ends of the rear panel of the switch. A total of six screws are required, as shown below.
**Step 2:** Use the switch, with wall mount plates attached, as a guide to mark the correct locations of the four screws.
**Step 3:** Insert four screw heads through the large parts of the keyhole-shaped apertures, and then slide the switch downwards. Tighten the four screws for added stability.



### Network Connection

The switch provides standard Ethernet ports. According to the link type, the switch uses CAT 3, 4, 5, 5e UTP cables to connect to any other network devices (PCs, servers, switches, routers, or hubs). Please refer to the following table for cable specifications.

**Cable Types and Specifications:**

| Cable | Type | Max. Length | Connector |
|---|---|---|---|
| 10BASE-T | Cat. 3, 4, 5 100-ohm | UTP 100 m (328 ft) | RJ-45 |
| 100BASE-TX | Cat. 5 100-ohm UTP | UTP 100 m (328 ft) | RJ-45 |
| 1000BASE-T | Cat. 5 / Cat. 5e 100-ohm UTP | UTP 100 m (328 ft) | RJ-45 |

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**For pin assignments for different types of cables, please refer to the following tables.**

| 10/100Base-T(X) P.S.E. RJ-45 Port | |
|---|---|
| Pin No. | Assignments |
| # 1 | TD+ with PoE Power input + |
| # 2 | TD- with PoE Power input + |
| # 3 | RD+ with PoE Power input - |
| # 6 | RD- with PoE Power input - |

| 1000Base-T P.S.E. RJ-45 Port | |
|---|---|
| Pin No. | Assignments |
| # 1 | BI_DA+ with PoE Power input + |
| # 2 | BI_DA- with PoE Power input + |
| # 3 | BI_DB+ with PoE Power input - |
| # 4 | BI_DC+ |
| # 5 | BI_DC- |
| # 6 | BI_DB- with PoE Power input - |
| # 7 | BI_DD+ |
| # 8 | BI_DD- |

| 10/100 Base-T(X) MDI/MDI-X | | |
|---|---|---|
| Pin Number | MDI port | MDI-X port |
| 1 | TD+(transmit) | RD+(receive) |
| 2 | TD-(transmit) | RD-(receive) |
| 3 | RD+(receive) | TD+(transmit) |
| 4 | Not used | Not used |
| 5 | Not used | Not used |
| 6 | RD-(receive) | TD-(transmit) |
| 7 | Not used | Not used |
| 8 | Not used | Not used |

| 1000Base-T MDI/MDI-X | | |
|---|---|---|
| Pin Number | MDI port | MDI-X port |
| 1 | BI_DA+ | BI_DB+ |
| 2 | BI_DA- | BI_DB- |
| 3 | BI_DB+ | BI_DA+ |
| 4 | BI_DC+ | BI_DD+ |
| 5 | BI_DC- | BI_DD- |
| 6 | BI_DB- | BI_DA- |
| 7 | BI_DD+ | BI_DC+ |
| 8 | BI_DD- | BI_DC- |

**Note: "+" and "-" signs represent the polarity of the wires that make up each wire pair.**

**Console Port Pin Definition**

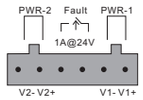
To connect the console port to an external management device, you need an RJ-45 to DB-9 cable, which is also supplied in the package. Below is the console port pin assignment information.

| PC (male) pin assignment | RS-232 with DB9 (female) pin assignment (RJ45-DB9 cable) | RJ45 pin assignment |
|---|---|---|
| PIN#2 RxD | PIN#2 RxD | PIN#2 RxD |
| PIN#3 TxD | PIN#3 TxD | PIN#3 TxD |
| PIN#5 GND | PIN#5 GND | PIN#5 GND |

## Wiring

### Power inputs

The switch supports dual redundant power supplies, Power Supply1 (PWR1) and Power Supply 2 (PWR2). The connections for PWR1, PWR2 and the RELAY are located on the terminal block.




**STEP 1:** Insert the negative/positive wires into the V-/V+ terminals, respectively.

**STEP 2:** To keep the DC wires from pulling loose, use a small flat-blade screwdriver to tighten the wire-clamp screws on the front of the terminal block connector.

### Relay contact

The two sets of relay contacts of the 6-pin terminal block connector are used to detect user-configured events. The two wires attached to the fault contacts form an close circuit when a user-configured event is triggered. If a user-configured event does not occur, the fault circuit remains opened.

### Grounding

Grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI). Run the ground connection from the ground screws to the grounding surface prior to connecting devices.

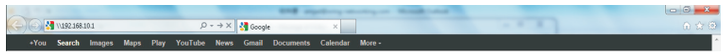
## Configurations

After installing the switch, the green power LED should turn on. Please refer to the following tablet for LED indication.

| LED | Color | Status | Description |
|---|---|---|---|
| **PWR** | Green | On | DC power on |
| **PWR1** | Green | On | DC power module 1 activated |
| **PWR2** | Green | On | DC power module 2 activated |
| **R.M** | Green | On | Ring Master |
| **Ring** | Green | On | Ring enabled |
| | | Blinking | Ring structure is broken (i.e. part of the ring is disconnected) |
| **Fault** | Amber | On | Faulty relay (power failure or port disconnected) |
| **PoE** | Green | On | Power supplied over Ethernet |
| 10/100/1000Base-T(X) Gigabit PoE Ethernet ports | | | |
| **LNK/ACT with speed** | Green | On | Port link at 1000Mbps |
| | | Blinking | Data transmitted |
| | Amber | On | Port link at 10/100Mbps |
| | | Blinking | Data transmitted |
| SFP ports | | | |
| **LNK/ACT** | Green | On | Port link up |
| | | Blinking | Data transmitted |

Follow the steps to set up the switch:

1. Launch the Internet Explorer and type in IP address of the switch. The default static IP address is **192.168.10.1**




2. Log in with default user name and password (both are **admin**). After logging in, you should see the following screen. For more information on configurations, please refer to the user manual. For information on operating the switch using ORing's Open-Vision management utility, please go to ORing website.


## Resetting

To reboot the switch, press the **Reset** button for 2-3 seconds.

To restore the switch configurations back to the factory defaults, press the **Reset** button for 5 seconds.



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## Specifications

| ORing Switch Model | IGPS-R9084GP |
|---|---|
| **Physical Ports** | |
| 10/100/1000Base-T(X) with P.S.E. Ports in RJ45 Auto MDI/MDIX | **8** |
| 100/1000Base-X with SFP port | **4** |
| **Technology** | |
| Ethernet Standards | IEEE 802.3 for 10Base-T<br>IEEE 802.3u for 100Base-TX and 100Base-FX<br>IEEE 802.3ab for 1000Base-T<br>IEEE 802.z for 1000Base-X<br>IEEE 802.3x for Flow control<br>IEEE 802.3ad for LACP (Link Aggregation Control Protocol)<br>IEEE 802.1p for COS (Class of service)<br>IEEE 802.1Q for VLAN Tagging<br>IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol<br>IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol)<br>IEEE 802.1x for Authentication<br>IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)<br>IEEE 802.3at PoE specification (up to 30 Watts per port for P.S.E.) |
| MAC Table | 8K |
| Priority Queues | 8 |
| Processing | Store-and-Forward |
| Switch Properties | Switch latency: 7 us<br>Switch bandwidth: 24Gbps<br>Max. Number of Available VLANs: 256<br>IGMP multicast groups: 128 for each VLAN<br>Port rate limiting: User Define |
| Jumbo frame | Up to 9.6K Bytes |
| Security Features | Device Binding<br>Enable/disable ports, MAC based port security<br>Port based network access control (802.1x)<br>Single 802.1x and Multiple 802.1x<br>MAC-based authentication<br>QoS assignment<br>Guest VLAN<br>MAC address limit<br>TACACS+<br>VLAN (802.1Q) to segregate and secure network traffic<br>Radius centralized password management<br>SNMPv3 encrypted authentication and access security<br>Web and CLI authentication and authorization<br>Authorization (15 levels)<br>IP source guard<br>Https / SSH enhance network security |
| Software Features | Hardware routing, RIP and static routing<br>IEEE 1588v2 clock synchronization<br>IEEE 802.1D Bridge, auto MAC address learning/aging and MAC address (static)<br>Multiple Registration Protocol (MRP)<br>RSTP/MSTP (IEEE 802.1w/s)<br>Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units<br>TOS/Diffserv supported<br>Quality of Service (802.1p) for real-time traffic<br>VLAN (802.1Q) with VLAN tagging<br>Voice VLAN<br>IGMP v2/v3 Snooping<br>IP-based bandwidth management<br>Application-based QoS management<br>DOS/DDOS auto prevention<br>Port configuration, status, statistics, monitoring, security<br>DHCP Server/Client/snooping<br>DHCP Relay<br>Modbus TCP<br>DNS client proxy<br>ARP inspection<br>SMTP Client |
| Network Redundancy | O-Ring, Open-Ring, O-Chain, MRP, MSTP (RSTP/STP compatible) |
| RS-232 Serial Console Port | RS-232 in RJ45 connector with console cable. Baud rate setting: 115200bps, 8, N, 1 |
| **Fault Contact** | |
| Relay | Relay output to carry capacity of 1A at 24VDC |
| **Power** | |
| Redundant Input power | Dual DC inputs. 50-57VDC on 6-pin terminal block |
| Power consumption(Typ.) (PoE output not included) | 19W (PoE output not included) |
| Overload current protection | Present |
| Reverse Polarity Protection | Present |
| **Physical Characteristic** | |
| Enclosure | IP-30 |
| Dimension (W x D x H) | 96.4 x 145.5 x 154 mm (3.8 x 5.73 x 6.06 inch) |
| Weight (g) | 1560 g |
| **Environmental** | |
| Storage Temperature | -40 to 85°C (-40 to 185°F) |
| Operating Temperature | -40 to 70°C (-40 to 158°F) |
| Operating Humidity | 5% to 95% Non-condensing |
| **Regulatory Approvals** | |
| EMI | FCC Part 15, CISPR (EN55022) class A |
| EMS | EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge),EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11 |
| Shock | IEC60068-2-27 |
| Free Fall | IEC60068-2-32 |
| Vibration | IEC60068-2-6 |
| Safety | EN60950-1 |
| **Warranty** | 5 years |