

Introduction

The **DGS-R9812GP-AIO_S** series is a managed industrial Ethernet switch with eight 10/100/1000Base-T(X) ports and twelve 100/1000Base-X SFP ports. With two sets of bypass ports that ensure constant optical network connectivity if power outage or node failure occurs, the device will bypass the inactive switch and pass network traffic to the next switch in the relay. In addition, the switch features Layer 3 to ensure faster forwarding via hardware. With support for various Ethernet redundancy protocols such as O-Ring (recovery time < 30ms over 250 units of connection) and MSTP (RSTP/STP compatible), the switch can protect mission-critical applications from network interruptions or temporary malfunctions with fast recovery technology. With a wide operating temperature from -40°C to 70°C, the device can be managed centrally via ORing's proprietary Open-Vision platform as well as via Web-based interfaces, Telnet, and console (CLI). The switch is one of the most reliable choices 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
DGS-R9812GP-AIO_S		X 1
CD		X 1
Console Cable		X 1
QIG		X 1
Power Cord		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.

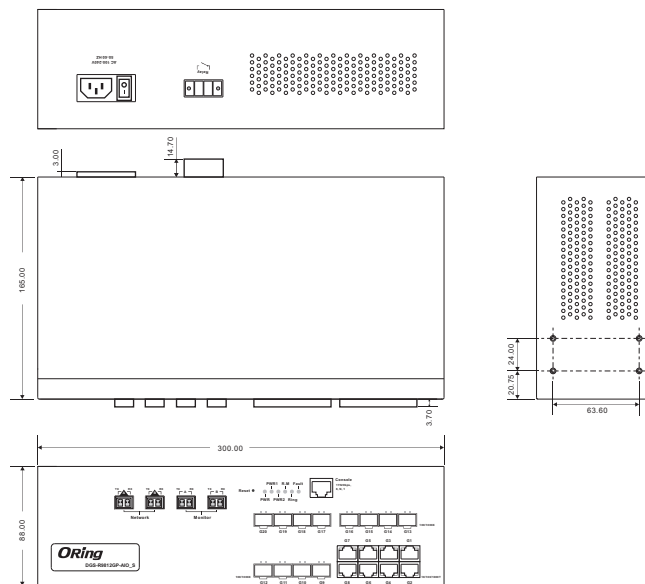
Safety & Warnings

- 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 (T_{ma}) 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.

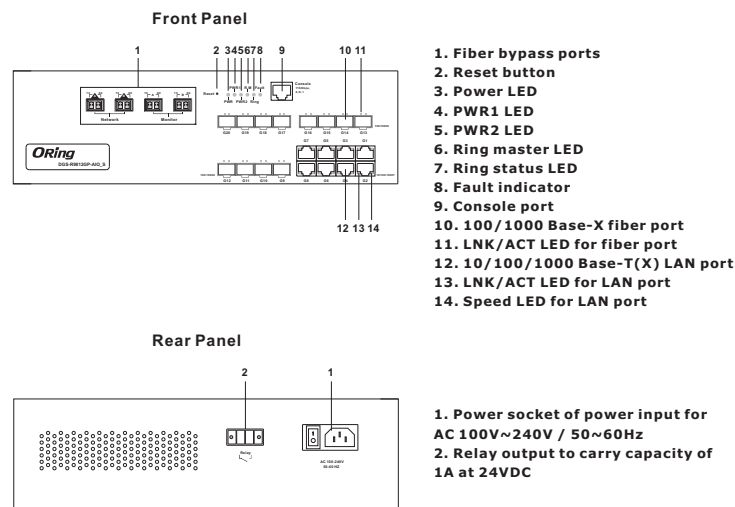


Circuit Overloading: Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this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

Dimension



Panel Layouts



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 (328ft)	RJ-45

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

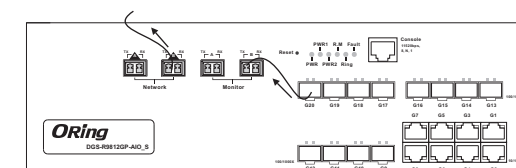
10/100Base-T(X) RJ-45 Port			1000Base-T RJ-45 Port	
Pin Number	Assignments		Pin Number	Assignment
1	TD+		1	BI_DA+
2	TD-		2	BI_DA-
3	RD+		3	BI_DB+
4	Not used		4	BI_DC+
5	Not used		5	BI_DC-
6	RD-		6	BI_DB-
7	Not used		7	BI_DD+
8	Not used		8	BI_DD-

10/100Base-T(X) MDI/MDI-X			1000Base-T MDI/MDI-X		
Pin Number	MDI port	MDI-X port	Pin Number	MDI port	MDI-X port
1	TD+(transmit)	RD+(receive)	1	BI_DA+	BI_DB+
2	TD-(transmit)	RD-(receive)	2	BI_DA-	BI_DB-
3	RD+(receive)	TD+(transmit)	3	BI_DB+	BI_DA+
4	Not used	Not used	4	BI_DC+	BI_DD+
5	Not used	Not used	5	BI_DC-	BI_DD-
6	RD-(receive)	TD-(transmit)	6	BI_DB-	BI_DA-
7	Not used	Not used	7	BI_DD+	BI_DC+
8	Not used	Not used	8	BI_DD-	BI_DC-

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

Bypass Connection

The device provides two sets of bypass fiber ports, giving the SFP fiber ports addition redundancy capabilities. Connect a LC fiber cable from a fiber port to a monitor port on the front panel and another LC fiber cable from the corresponding network port to another switch. When the switch breaks down, incoming traffic will travel through the bypass port board and onto another active switch.



The fiber port will still work if it is not connected to any monitor port. However, the fiber port will not have bypass ability when the device is down.

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 TxD	PIN#2 TxD
PIN#3 TxD	PIN#3 RxD	PIN#3 RxD
PIN#5 GND	PIN#5 GND	PIN#5 GND

Wiring

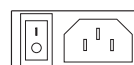
Fault Relay

The relay contacts of the 2-pin terminal block connector are used to detect user-configured events. The two wires attached to the fault contacts form a close circuit when a user-configured event is triggered. If a user-configured event does not occur, the fault circuit remains opened.



AC Power Connection

For power supply, simply insert the AC power cable to the power connector at the back of the switch and turn on the power switch. The input voltage is 100V~240V / 50~60Hz



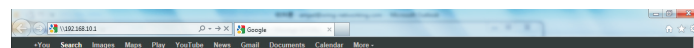
Configurations

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

LED	Color	Status	Description
System LED indicators			
PWR	Green	On	System is on and power supplies are functioning properly.
PW1	Green	On	Power module 1 activated
PW2	Green	On	Power module 2 activated
R.M	Green	On	System is operating in O-Ring Master mode
Ring	Green	On	Ring enabled
		Blinking	Ring structure is broken (i.e. part of the ring is disconnected)
Fault	Amber	On	Faults occur
10/100/1000Base-T(X) Gigabit Ethernet ports			
LNK/ACT	Green	On	Port is connected
		Blinking	Transmitting data
Speed	Green	On	Port link at 1000Mbps
		Amber	Port link at 100Mbps
		Green/Amber	Port link at 10Mbps
100/1000Base-X SFP Ports			
LNK/ACT	Green	On	Port is linked
		Blinking	Transmitting data

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.

Specifications

ORing Switch Model	DGS-R9812GP-SS-AIO_S	DGS-R9812GP-MM-AIO_S
Physical Ports		
10/100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX	8	
100/1000Base-X with SFP port	12	
LC Bypass Port Type	Single-Mode	Multi-Mode
Technology		
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3z for 1000Base-X IEEE 802.3ab for 1000Base-T IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.3x for Flow Control IEEE 802.1p for COS (Class of service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1x for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)	
MAC Table	8K	
Priority Queues	8	
Processing	Store-and-Forward	
Switch Properties	Switch latency: 7 us Switch bandwidth: 40Gbps Max. Number of Available VLANs: 256 IGMP multicast groups: 128 for each VLAN Port rate limiting: User Define Https / SSH enhance network security	
Jumbo frame	Up to 9.6K Bytes	
Security Features	Device Binding Enable/disable ports, MAC based port security Port based network access control (802.1x) Single 802.1x and Multiple 802.1x MAC-based authentication QoS assignment Guest VLAN MAC address limit TACACS+ VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SMPV3 encrypted authentication and access security Web and CLI authentication and authorization Authorization (15 levels) IP source guard Https / SSH enhance network security	
Software Features	Hardware routing, RIP and static routing IEEE 1588v2 clock synchronization IEEE 802.1D Bridge, auto MAC address learning/aging and MAC address (static) Multiple Registration Protocol (MRP) RSTP/MSTP (IEEE 802.1w/s) Redundant Ring (O-Ring) with recovery time less than 30ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging Voice VLAN IGMP v2/v3 Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/snooping DHCP Relay Modbus TCP DNS client proxy ARP inspection 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 100~240V AC power inputs in single power socket	
Power consumption(Typ.)	16 Watts	
Overload current protection	Present	
Physical Characteristic		
Enclosure	IP-30	
Dimension (W x D x H)	300 (W) x 165 (D) x 88 (H) mm (11.8 x 6.49 x 3.46 inch)	
Weight (g)	2410g	

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