DESKTOP SWITCH INDUSTRIAL

ORing

Quick Installation Guide

DGS-9168GP-AIO_S

Industrial Desktop Managed Gigabit Switch

Introduction

The **DGS-9168GP-AIO_S series** is a managed industrial Ethernet switch with sixteen 10/100/1000Base-T(X) ports and eight 100/1000Base-X SFP ports. With two sets of bypass ports (the optical ports) that ensure constant network connectivity if power outage or node failure occurs, the traffic will bypass the inactive switch and continue to transfer to the next active switch. The switch supports Ethernet Redundancy protocols, O-Ring (recovery time <30ms over 250units of connection) and MSTP (RSTP/STP compatible) to 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-9168GP-AIO_S		X 1
CD		X 1
Console Cable		X 1
QIG		X 1
Power Cable		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

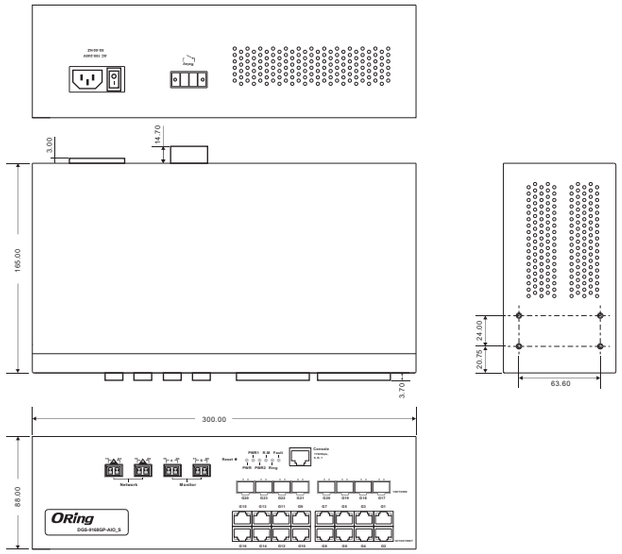
Elevated Operating Ambient: If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature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

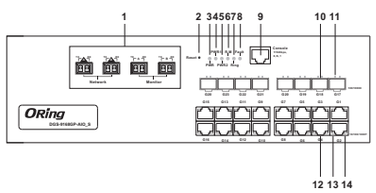
Circuit Overloading: Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this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

Dimension



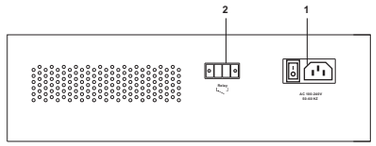
Panel Layouts

Front Panel



1. Fiber bypass ports
2. Reset button
3. Power LED
4. PWR1 LED
5. PWR2 LED
6. Ring master LED
7. Ring status LED
8. Fault indicator
9. Console port
10. 100/1000 Base-X fiber port
11. LNK/ACT LED for fiber port
12. 10/100/1000 Base-T(X) LAN port
13. LNK/ACT LED for LAN port
14. Speed LED for LAN port

Rear Panel



1. Power socket of power input for AC 100V~240V / 50~60Hz
2. Relay output to carry capacity of 1A at 24VDC

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.

1000Base-T RJ-45 Port	
Pin Number	Assignment
1	BI_DA+
2	BI_DA-
3	BI_DB+
4	BI_DC+
5	BI_DC-
6	BI_DB-
7	BI_DD+
8	BI_DD-

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

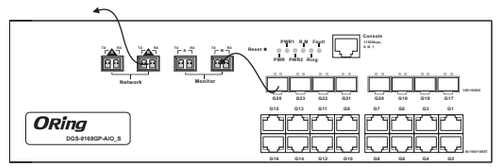
1000Base-T MDI/MDI-X		
Pin Number	MDI port	MDI-X port
1	BI_DA+	BI_DB+
2	BI_DA-	BI_DB-
3	BI_DB+	BI_DA+
4	BI_DC+	BI_DD+
5	BI_DC-	BI_DD-
6	BI_DB-	BI_DA-
7	BI_DD+	BI_DC+
8	BI_DD-	BI_DC-

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

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

Optical Bypass Connection

The device provides two sets of optical bypass fiber ports, giving the SFP fiber ports additional 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 module and onto another active switch connected to the network port.



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.

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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

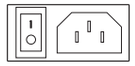
Power inputs

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



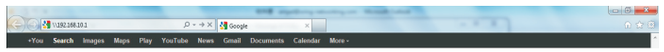
Configurations

After installing the switch, the green power LED should turn on. Please refer to the following tablet 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
Fault	Amber	On	Faults occur
10/100/1000Base-T(X) Gigabit Ethernet ports			
LNK/ACT	Green	On	Port is connected and running
		Off	Port is disconnected
Speed	Green	On	Port is running at 1000Mbps
	Amber	On	Port is running at 100Mbps
		Off	Port is running 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-9168GP-SS-AIO_S	DGS-9168GP-MM-AIO_S
Physical Ports		
10/100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX	16	
100/1000Base-X with SFP port	8	
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	
Buffer Size	4Mbit	
Jumbo Frame	9.6K Bytes	
Switch Properties	Switch latency: 7 us Switch bandwidth: 48Gbps Max. Number of Available VLANs: 256 IGMP multicast groups: 128 for each VLAN Port rate limiting: User Define Https / SSH enhance network security	
Security Features	Device Binding security feature Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security Https / SSH enhance network security	
Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/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 and GVRP supported IGMP Snooping for multicast filtering IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server / Client support SMTP Client Modbus TCP	
Network Redundancy	O-Ring, Open-Ring, O-chain, MRP, Fast Recovery, 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.)	25 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)	2326 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	

ORing

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