ORing
SWITCH CARD INDUSTRIAL

Quick Installation Guide

CPGS-B9142ET(-M12)-C

Industrial CompactPCI Managed Ethernet Switch with Extension Port

Introduction

ORing's **CPGS-B9142ET(-M12)-C Series** is a compact Ethernet switch with a highly integrated 3U Compact PCI card form factor. Featuring 8x10/100/1000Base-T(X) in CompactPCI sockets and 6x10/100/1000Base-T(X) in RJ45 or M12 connectors, the series is fully compliant with the EN50155 standard, and is ideal for harsh industrial applications, such as factory automation, vehicle, and railway applications. The M12 connectors make the card a perfect fit for rolling stock applications. The device includes two two-wire Ethernet extension ports for longer transmission distance with less cable cost. With complete support for Ethernet redundancy protocols such as O-Ring (recovery time < 30ms over 250 units of connection) and MSTP (RSTP/STP compatible), the switch can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. Featuring a wide operating temperature from -40°C to 70°C, the device can be managed centrally and conveniently via Open-Vision, web browsers, Telnet and console (CLI) configuration, making it one of the most reliable choices for rolling stock applications. Since the switch card is hot swappable, you do not need to turn off the system power during installation.

Package Contents

Contents	Pictures	Number
CPGS-B9142ET-C or CPGS-B9142ET-M12-C		X 1
Console Cable		X 1
CD		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

PCB

CPGS-B9142ET-M12-C **CPGS-B9142ET-C**

Panel Layouts

Front View

Rear View
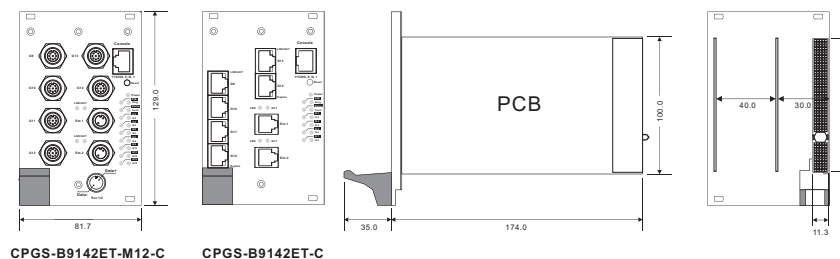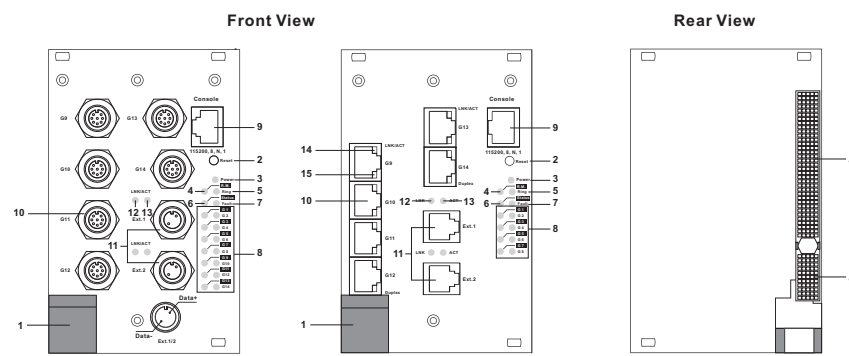
1. Ejection lever
2. Reset button
3. Power status LED
4. R.M. status LED
5. Ring status LED
6. System status LED
7. Fault LED
8. Port status LEDs (port status for G1-G14 for M12 model; port status for G1-G8 for RJ45 model)
9. Console port
10. Ethernet connectors
11. Extender ports
12. Link indicator for extender ports
13. Action indicator for extender ports
14. Link/ACT LED for Ethernet ports
15. Duplex/collision LED for Ethernet ports

Network Connection

The device uses M12 or RJ45 connectors for network connection. Please refer to the following table for cable specifications.

Cable	Type	Max. Length	Connector
10Base-T	Cat. 3, 4, 5 100-ohm	UTP 100 m (328 ft)	8-pin Female CPCI and M12 A-coding connector
100Base-TX	Cat. 5 100-ohm UTP	UTP 100 m (328 ft)	8-pin Female CPCI and M12 A-coding connector
1000Base-T	Cat. 5e,6	UTP 100 m (328 ft)	8-pin Female CPCI and M12 A-coding connector

Console Port Pin Definition

The device can be managed via console ports using a RS-232 cable which can be found in the package. You can connect the port to a PC via the RS-232 cable with a DB-9 female connector. The DB-9 female connector of the RS-232 cable should be connected the PC while the other end of the cable (RJ-45 connector) should be connected to the console port of the switch.

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

M12/8P Pin Definition

PIN No.	1000Base-T	10/100Base-T(X)
	Description	
#1	BI_DC+	N.C.
#2	BI_DD+	N.C.
#3	BI_DD-	N.C.
#4	BI_DA-	TD-
#5	BI_DB+	RD+
#6	BI_DA+	TD+
#7	BI_DC-	N.C.
#8	BI_DB-	RD-

Backplane Pin Definition

The device is equipped with eight Gigabit ports in CompactPCI sockets. The table below provides information of each pin on the backplane of the card. Please refer to the table for the pin assignment of each port.

Pin	Z	A	B	C	D	E	F
25	GND	5V				5V	GND
24	GND		5V				GND
23	GND				5V		GND
22	GND		GND				GND
21	GND						GND
20	GND		GND				GND
19	GND				GND		GND
18	GND		GND				GND
17	GND				GND		GND
16	GND		GND				GND
15	GND						GND
14							
13		KEY AREA					
12							
11	GND				GND		GND
10	GND		GND				GND
9	GND				GND		GND
8	GND		GND				GND
7	GND				GND		GND
6	GND		GND				GND
5	GND				GND		GND
4	GND		HEALTHY#				GND
3	GND				5V		GND
2	GND		5V				GND
1	GND	5V				5V	GND

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Pin	Z	A	B	C	D	E	F
22	GND						GND
21	GND			GND			GND
20	GND	LED6_0	LED6_1	GND	LED8_0	LED8_1	GND
19	GND	LED5_0	LED5_1	GND	LED7_0	LED7_1	GND
18	GND	LED2_0	LED2_1	GND	LED4_0	LED4_1	GND
17	GND	LED1_0	LED1_1	GND	LED3_0	LED3_1	GND
16	GND	P8_A_P	P8_A_N	GND	P8_C_P	P8_C_N	GND
15	GND	P8_B_P	P8_B_N	GND	P8_D_P	P8_D_N	GND
14	GND	P7_A_P	P7_A_N	GND	P7_C_P	P7_C_N	GND
13	GND	P7_B_P	P7_B_N	GND	P7_D_P	P7_D_N	GND
12	GND	P6_A_P	P6_A_N	GND	P6_C_P	P6_C_N	GND
11	GND	P6_B_P	P6_B_N	GND	P6_D_P	P6_D_N	GND
10	GND	P5_A_P	P5_A_N	GND	P5_C_P	P5_C_N	GND
9	GND	P5_B_P	P5_B_N	GND	P5_D_P	P5_D_N	GND
8	GND	P4_A_P	P4_A_N	GND	P4_C_P	P4_C_N	GND
7	GND	P4_B_P	P4_B_N	GND	P4_D_P	P4_D_N	GND
6	GND	P3_A_P	P3_A_N	GND	P3_C_P	P3_C_N	GND
5	GND	P3_B_P	P3_B_N	GND	P3_D_P	P3_D_N	GND
4	GND	P2_A_P	P2_A_N	GND	P2_C_P	P2_C_N	GND
3	GND	P2_B_P	P2_B_N	GND	P2_D_P	P2_D_N	GND
2	GND	P1_A_P	P1_A_N	GND	P1_C_P	P1_C_N	GND
1	GND	P1_B_P	P1_B_N	GND	P1_D_P	P1_D_N	GND
Pin	Z	A	B	C	D	E	F

J2

Note : LEDn_0: LNK/ACT
LEDn_1: Duplex/Collision
All LED signals are active low

Application
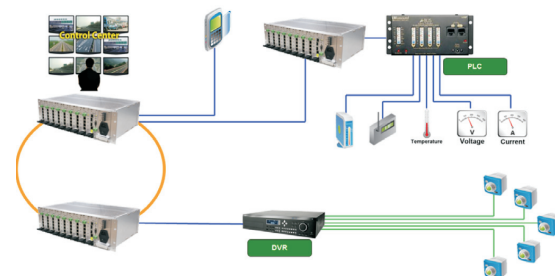
Installation

Follow the steps below to install the card to your PC.

1. Remove the metal cover plate on the back of an available CPCI slot.
2. Insert the card into the slot and use the bracket screws to secure it firmly in place.
3. Replace the cover on the computer.
4. Re-connect the power.
5. Connect the card to the desired network devices.
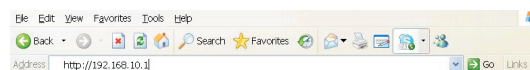

Configurations

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

LED	Color	Status	Description
Power	Green	On	Power is on
R.M	Green	On	Port is operated as Ring Master.
Ring	Green	On	Port is operated in Ring mode
Status	Green	On	System status indication
Fault	Amber	On	An error has occurred
10/100/1000Base-T(X) port			
LNK/ACT	Green	On	Port is linked
		Blinking	Transmitting data
Dup/Col (RJ45 model only)	Amber	On	Port is operating in full duplex mode
		Blinking	Port is operating in half duplex mode and collisions are occurring
Extension port			
LNK	Green	On	Port is linked
ACT	Green	Blinking	Transmitting data

Follow the steps to set up the card:

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

Address http://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.

Information Message

System
Name — CPGS-B9142ET-M12-C
Description — 3U CompactPCI EN50155 16-port managed Gigabit Ethernet switch with 8x10/100/1000Base-T(X) in CompactPCI sockets, and 6x10/100/1000Base-T(X) in M12 connector with 2 Extension Ports
Location
Contact
OID — 1.3.6.1.4.1.25972.100.0.11.157
Hardware
MAC Address — 00-1e-94-11-55-66
Time
System Date — 1970-01-02 03:28:11+00:00
System Uptime — 1d 03:28:11
Software
Kernel Version — v9.38
Software Version — v1.00
Software Date — 2015-10-26T17:30:52+08:00
Auto-refresh ☐ Refresh
Enable Location Alert

Resetting

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

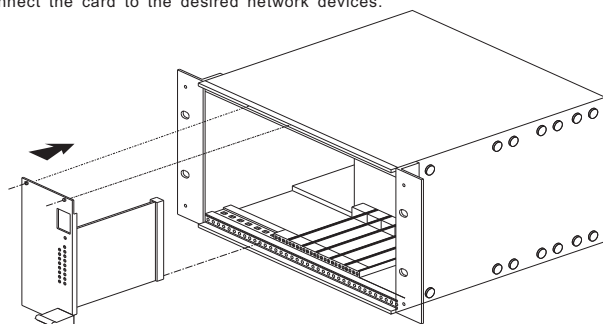To restore the switch configurations back to the factory defaults, press the **Reset** button for 5 seconds.

Specifications

ORing Switch Model	CPGS-B9142ET-M12-C	CPGS-B9142ET-C
Physical Ports		
10/100/1000Base-T(X) Ports Auto MDI/MDIX	14-port (8-port with CompactPCI interface, 6-port with M12 connector) (PICMG 2.0 compatible)	14-port (8-port with CompactPCI interface, 6-port with RJ-45 connector) (PICMG 2.0 compatible)
2-Wire Extension Ports		2
Technology		

Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1D for STP (Spanning Tree Protocol) 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: 28.4Gbps Max. Number of Available VLANs: 4096 IGMP multicast groups: 128 for each VLAN Port rate limiting: User Define
Jumbo Frame	Up to 9.6K Bytes
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 802.1w/s) TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging IGMP Snooping IP-based bandwidth management Application-based QoS management DOS/DDOS auto prevention Port configuration, status, statistics, monitoring, security DHCP Server/Client/Relay SMTP Client Modbus TCP
Network Redundancy	O-Ring, O-Chain, MRP, MSTP (STP / RSTP compatible)
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. 115200bps, 8, N, 1
Power	
Power Input	CompactPCI bus powered (5VDC)
Power Consumption (Typ.)	21.5 Watt
Overload current protection	Present
Physical Characteristic	
Dimension (W x D x H)	81.7(W)x129.0(H)x209.0(D) mm (3.22x5.08x8.23 inch.)
Weight (g)	563g / 469g
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, EN50155 (EN50121-3-2, EN55011, EN50121-4)
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

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