



ORing

Quick Installation Guide

IES-2060/2042FX Series Industrial Lite-Managed Switch

Introduction

IES-2060/2042FX series are lite-Managed Redundant Ring Ethernet switches with 6x10/100Base-T(X) ports or 4x10/100Base-T(X) and 2x100Base-FX ports. With completely support of Ethernet Redundancy protocol, O-Ring (recovery time < 10ms over 250 units of connection), O-Chain and STP/RSTP (IEEE802.1w/D) can protect your mission-critical applications from network interruptions or temporary malfunctions with its fast recovery technology. **IES-2060/2042FX series** can be managed centralized and convenient by a powerful windows utility — Open-Vision. In addition, the wide operating temperature range from -40°C to 75°C can satisfy most of operating environment. Therefore, these switches are one of the most reliable choice for easy managed Fiber Ethernet application.

- **O-Ring:** O-Ring is ORing's proprietary redundant ring technology, with recovery time of less 10 milliseconds and up to 250 nodes. The O-Ring redundant ring technology can protect mission-critical application from network interruptions or temporary malfunction with its fast recover technology.
- **O-Chain:** O-Chain is the revolutionary network redundancy technology that provides the add-on network redundancy topology for any backbone network, O-Chain allows multiple redundant network rings of different redundancy protocols to join and function together as a larger and more robust compound network topology. O-Chain providing ease-of-use while maximizing fault-recovery swiftness, flexibility, compatibility, and cost-effectiveness in one set of network redundancy topology.

The product is open type, intended to be installed in and industrial control panel or an enclosure.

Package Contents

The series are 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
IES-2060/ IES-2042FX-MM-SC/ IES-2042FX-SS-SC		X 1
CD		X 1
DIN-rail Kit		X 1
Wall-mount Kit		X 1
QIG		X 1

Preparation

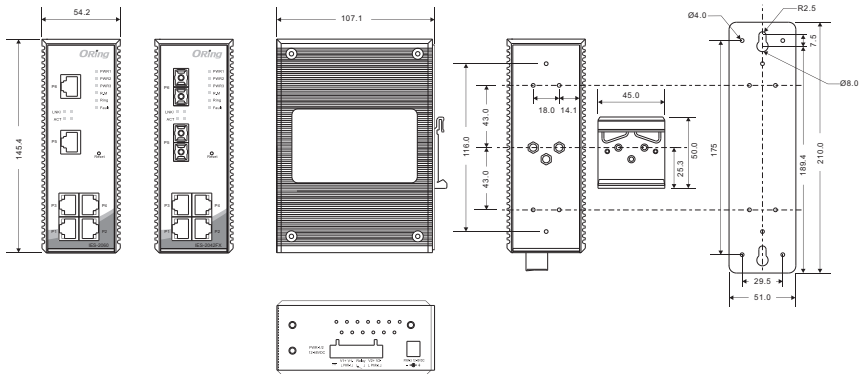
Before you begin installing the device, make sure you have all of the package contents available and a PC with Microsoft Internet Explorer 6.0 or later, for using web-based system management tools.

Safety & Warnings

- ⚠ **Elevated Operating Ambient:** If installed in a closed environment, make sure the operating ambient temperature is compatible with the maximum ambient temperature (Tma) specified by the manufacturer.

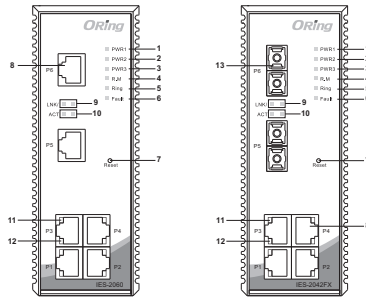
- ⚠ **Reduced Air Flow:** Make sure the amount of air flow required for safe operation of the equipment is not compromised during installation.
- ⚠ **Mechanical Loading:** Make sure the mounting of the equipment is not in a hazardous condition due to uneven mechanical loading.
- ⚠ **Circuit Overloading:** 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** Unit =mm (Tolerance ±0.5mm)



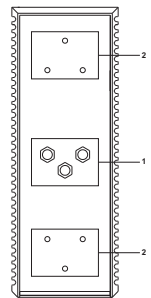
Panel Layouts

Front View



1. PWR1 LED
2. PWR2 LED
3. PWR3 LED
4. R.M status LED
5. Ring status LED
6. Fault indicator
7. Reset button
8. LAN port
9. LNK/ACT LED for P5
10. LNK/ACT LED for P6
11. LNK/ACT for P1 to P4
12. LNK LED for P1 to P4
13. Fiber ports

Rear View



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

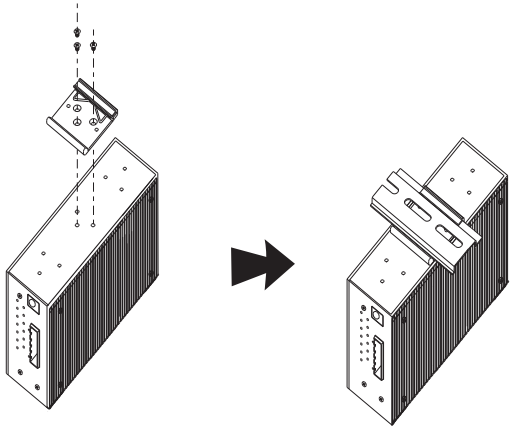
- ⚠ **Warning [AVERTISSEMENT]**
Take into consideration the following guidelines before wiring the device.
[Tenez compte des directrices suivantes avant de câbler l'appareil.]
1. Terminal block is mating with Plug and suitable for 12-24AWG. Torque value 4.5 lb-in.
[Le bornier est compatible avec les connecteurs et convient pour 12-24AWG. Valeur de couple 4,5 lb-in.]
2. The temperature rating of the input connection cable should higher than 105°C
[La température de service nominale du câble d'entrée doit être supérieure à 105 °C]
3. Use Copper Conductors Only.
[Utilisez uniquement des conducteurs en cuivre.]

Installation

Use the mounting kits attached with the package and follow the steps below to install the switch to a rail or to the wall.

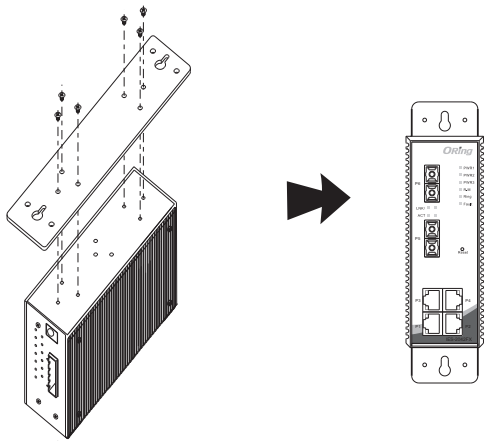
DIN-rail Installation

- 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 wall-mount kit (in the package) onto the back 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 wall-mounting screws.
Step 3: Insert a screw head through the large part of the keyhole-shaped aperture on the plate, and then slide the switch downwards. Tighten the screw for added stability.



- ⚠ Instead of screwing the screws in all the way, it is advised to leave a space of about 2mm to allow room for sliding the switch between the wall and the screws.

Network Connection

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



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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

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

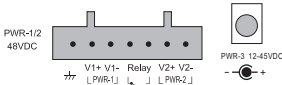
10/100 Base-T(X) RJ-45		10/100 Base-T(X) MDI/MDI-X		
Pin Number	Assignment	Pin Number	MDI port	MDI-X port
1	TD+	1	TD+(transmit)	RD+(receive)
2	TD-	2	TD-(transmit)	RD-(receive)
3	RD+	3	RD+(receive)	TD+(transmit)
4	Not used	4	Not used	Not used
5	Not used	5	Not used	Not used
6	RD-	6	RD-(receive)	TD-(transmit)
7	Not used	7	Not used	Not used
8	Not used	8	Not used	Not used

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

Wiring

Power inputs

The switch provides three DC inputs. The 12~48VDC power supply is on 7-pin terminal block, along with the grounding screw and relay output, and the 12~45VDC is on a power jack. Follow the steps below to wire power cables on the terminal block.



- STEP 1:** Insert the negative/positive wires into the V-/V+ terminals, respectively.
STEP 2: To keep the wires from pulling loose, use a small flat-blade screwdriver to tighten the wire-clamp screws on the front of the connector.

Relay contact

The relay contact on the terminal block allow you to form fail close circuits. The relay contact will respond to user-configured events according to the setting.

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.



- * Indoor use and pollution degree II, it must be wiped with a dry cloth for clean up the device and label.
- * Utilisation en intérieur et degré de pollution II, il faut l'essuyer avec un chiffon sec pour nettoyer l'appareil et son étiquette.
- * Do not block air ventilation holes.
- * Ne bloquez pas les orifices de ventilation.
- * If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired."
- * Si l'appareil est utilisé d'une manière non spécifiée par le fabricant, la protection qu'il apporte peut se voir diminuer."
- * Shall be mounted in the Industrial Control Panel and ambient temperature is not exceed 75 degree C
- * doit être monté dans le panneau de commande industriel et la température ambiante ne doit pas dépasser 75 degrés C

Contact for maintenance and repair service:

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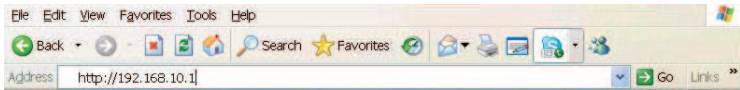
Configurations

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

LED	Color	Status	Description
PW1	Green	On	Power module 1 activated
PW2	Green	On	Power module 2 activated
PW3	Green	On	Power module 3 activated
R.M	Green	On	System running in Ring Master mode
Ring	Green	On	System running in Ring mode
		Blinking	Ring structure is broken (i.e. part of the ring is disconnected)
Fault	Amber	On	Faulty relay (power failure or port malfunctioning)
10/100Base-T(X) Fast Ethernet ports			
LNK/ACT	Green	On	Links are connected
		Off	Links are dis-connected
		Blinking	Transmitting data
LNK	Amber	On	Links are connected
		Off	Links are dis-connected
Fiber ports			
LNK/ACT	Green	On	Links are connected
		Off	Links are dis-connected
		Blinking	Transmitting data
LNK	Amber	On	Links are connected
		Off	Links are dis-connected

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



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 less than 5 seconds.

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

Specifications

ORing Switch Model	IES-2060	IES-2042FX-MM	IES-2042FX-SS
Physical Ports			
10/100 Base-T(X) Ports in RJ45 Auto MDI/MDIX	6	4	4

Fiber Port Specification	Fiber Ports Number	-	2	2
	Fiber Ports Standard	-	100Base-FX	100Base-FX
	Fiber Mode	-	Multi-mode	Single-mode
	Fiber Diameter (µm)	-	62.5/125 µm 50/125 µm	9/125 µm
	Fiber Optical Connector	-	SC	SC
	Typical Distance (Km)	-	2 Km	30 Km
	Wavelength (nm)	-	1310 nm	1310 nm
	Max. Output Optical Power (dbm)	-	-14 dbm	-8 dbm
	Min. Output Optical Power (dbm)	-	-23.5 dbm	-15 dbm
	Max. Input Optical Power (Saturation)	-	0 dbm	0 dbm
	Min. Input Optical Power (Sensitivity)	-	-31 dbm	-34 dbm
	Link Budget (db)	-	7.5 db	19 db
Technology				
Ethernet Standards	IEEE 802.3 for 10Base-T, IEEE 802.3u for 100Base-TX and 100Base-FX, IEEE 802.3x for Flow control, IEEE 802.1D for STP (Spanning Tree Protocol), IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol), IEEE 802.1AB for LLDP (Link Layer Discovery Protocol),			
MAC Table	1K			
Packet buffer	1Mbits			
Priority Queues	4			
Processing	Store-and-Forward			
Switch Properties	Switching latency: 7 µs	Switching latency: 5.05 µs	Switching latency: 7.45 µs	
	Switch bandwidth: 1.2Gbps			
	Throughput (packet per second): 76.19Mpps@64Bytes packet			
	VLAN: Port based			
Security Features	Enable/disable ports, VLAN to segregate and secure network traffic			
Software Features	STP/RSTP (IEEE 802.1D/w) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units DHCP Client Port Base VLAN LLDP (Link Layer Discovery Protocol) Port configuration, status, statistics, monitoring, security SNMP v1/v2c/v3 and private MIB support			
Network Redundancy	O-Ring O-Chain Fast recovery RSTP/STP			
Fault Contact				
Relay	Relay output to carry capacity of 1A at 24 VDC			
Reset Function				
Reset Button	< 5 sec: System reboot, > 5 sec: Factory default			
Power				
Redundant Input power	Triple DC inputs. 12~48VDC on 7-pin terminal block, 12~45VDC on power jack.  * Supplied by SELV or double insulation source evaluated by UL 61010-1 or 61010-2-201 power supply only. * Fourni par la source SELV ou double isolation évaluée uniquement par l'alimentation UL 61010-1 or 61010-2-201.			
Power consumption(Typ.)	≤6Watts, 12VDC/0.48A (6W), 24VDC/0.24A (6W), 48VDC/0.14A (6W)	≤7Watts, 12~48VDC: 0.55A~0.16A on 7-pin terminal block, 0.55A~0.15A on power jack.	≤6Watts, 12~48VDC: 0.48A~0.14A on 7-pin terminal block, 0.55A~0.15A on power jack.	
Overload current protection	Present			
Reverse polarity protection	Present on terminal block			
Physical Characteristic				
Dimension (W x D x H)	54.2(W) x 107.1(D) x 145.4(H) mm (2.13 x 4.22 x 5.72 inch.)			
Weight (g)	657 g	670 g	670 g	
Environmental				
Storage Temperature	-40 to 85°C (-40 to 185°F)			
Operating Temperature	-40 to 75°C (-40 to 167°F)			
Operating Humidity	5% to 95% Non-condensing			
Operating Altitude	Up to 2000m			
Regulatory Approvals				
EMC	CE EMC (EN 55024, EN 55032), FCC Part 15 B			
EMI	EN 55032, EN 61000-3-2, EN 61000-3-3, VCCI class A, C-Tick class A, FCC Part 15 B class A			
EMS	EN 55024 (IEC/EN 61000-4-2 (ESD: Contact 4KV, Air 8KV), IEC/EN 61000-4-3 (RS: 3V), IEC/EN 61000-4-4 (EFT Power 0.5KV, Signal 0.5KV), IEC/EN 61000-4-5 (Surge: Power 1KV, RJ45 1KV), IEC/EN 61000-4-6 (CS: 3V), IEC/EN 61000-4-8(PFMP), IEC/EN 61000-4-11 (DIP))			
Shock	IEC60068-2-27			
Free Fall	IEC60068-2-31			
Vibration	IEC60068-2-6			
Safety	EN 62368-1 (LVD)	EN 62368-1 (LVD), UL61010-1, UL61010-2-201		
MTBF	1411775.2460 hrs	595597.3384 hrs.	609551.4207 hrs	
Warranty	5 years			