ORing Industrial Networking Corp.

Version 1.0

MEDIA CONVERTER INDUSTRIAL

Quick Installation Guide

IMC-P111 Series Industrial Media Converter

Introduction

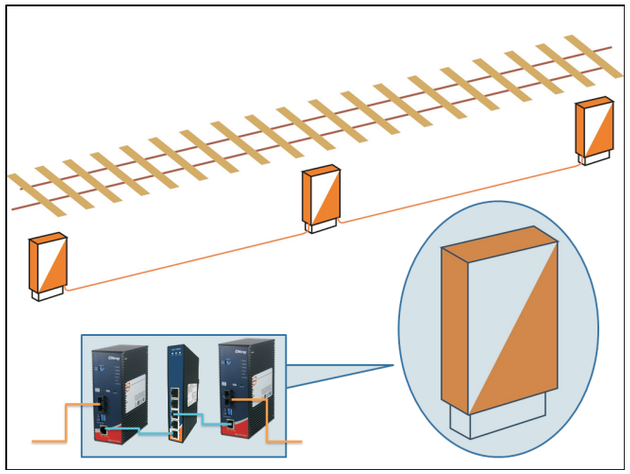
IMC-P111 series is a cost-effective solution for the conversion between 10/100Base-T(X) and 100Base-FX interface, it allows you to extend communication distance by optical fiber. **IMC-P111 series** is designed for power substation application and rolling stock application, fully compliant with the requirement of IEC 61850-3 and IEEE 1613. **IMC-P111 series** supports MDI/MDIX auto detection, so you don't need to use crossover wires. **IMC-P111 series** with wide operating temperature range from -40 ~ 70°C and accepts a wide voltage range power inputs, so it is suitable for harsh operating environments.

IMC-P111 series also support the **LFP (Link Fault Pass-through)** feature. When one side of the link fails, the other side continues transmitting packets, and waiting for a response that never arrives from the disconnected side. Use the DIP-Switch to enable the LFP function, then **IMC-P111 series** will force the link to shutdown as soon as noticed that the other link is failed, giving the application software a chance to react to the situation. Therefore, the **IMC-P111 series** is reliable media converter and can satisfy most demand of power substation and rolling stock application.

Features

- **Designed for Railway application and fully compliant with the requirement of IEC 61850-3 and IEEE 1613**
- **Leading EN50155-compliant Ethernet switch for rolling stock application**
- **Supports 1 port 10/100Base-T(X) auto-negotiation and auto-MDI/MDI-X**
- **Supports Ethernet to fiber or Ethernet to SFP port**
- **Supports LFP (Link Fault Pass-through) function**
- **Supports full/half duplex operation mode**
- **Supports store and forward transmission**
- **Supports relay output for power failed alarm**
- **Provided DIP-Switch to setting function**
- **High reliability and rigid IP-30 housing**
- **DIN-Rail and wall-mount enabled**

Connections of Media converter and LFP function



Specifications

ORing Media Converter Model		IMC-P111FX-MM	IMC-P111FX-SS	IMC-P111P
Physical Ports				
10/100 Base-T(X) Ports in RJ45 Auto MDI/MDIX		**1**	**1**	**1**
Fiber Port Specification	Fiber Ports Number	**1**	**1**	-
	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	-
100Base-FX SFP port		-	-	**1**
Technology				
Ethernet standards		IEEE 802.3 for 10Base-T, IEEE 802.3u for 100Base-TX and 100Base-FX, IEEE 802.3x for Flow control		
Processing		Store-and-Forward		
DIP-Switch setting		DIP-Switch 1 for LFP mode selection : (ON) enable / (OFF) disable DIP-Switch 2 for Ethernet speed selection : (ON)10Mbps / (OFF) 10/100Mbps Auto-negotiate DIP-Switch 3 for Ethernet full/half duplex selection : (ON) Half-Duplex / (OFF) Full/Half-Duplex Auto-negotiate DIP-Switch 4 for fiber full/half duplex selection : (ON) Half-Duplex / (OFF) Full Duplex		
LED Indicators				
Power indicator		Green: Power LED x 3 (ON : power input on-line / (OFF) power input off-line		
10/100Base-T(X) RJ 45 port indicator		Green for port Link/Act -(ON) Link up / (Blinking) Acting / (OFF) Link down Amber for 100Mbps/10Mbps indicator- (ON) Working at 100Mbps / (OFF) Working at 10Mbps Green for port duplex indicator- (ON) Full-Duplex / (OFF) Half-Duplex		
100Base-FX fiber port indicator		Green for fiber port Link/Act - (ON) Link up / (Flash) Acting / (OFF) Link down Green for fiber port duplex indicator- (ON) Full-Duplex/ (OFF) Half-Duplex		
LFP statue indicator		Amber LED - (ON) LFP indication / (OFF) LFP function disable		
Fault indicator		Amber : Indicate unexpected event occurred		
Power				
Input power		Triple DC inputs. 12-48VDC on 7-pin terminal block, 12-45VDC on power jack		
Power consumption(Typ.)		3W		
Overload current protection		Present		
Reverse polarity protection		Present on terminal block		
Physical Characteristic				
Enclosure		IP-30		
Dimension (W x D x H)		54.1(W) x 106.1(D) x 145.4(H) mm (2.13 x 4.18 x 5.72 inch.)		
Weight (g)		640g		635g
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		

Installation

- **Din-Rail Install Step**
- **Wall-mounted Install Step**

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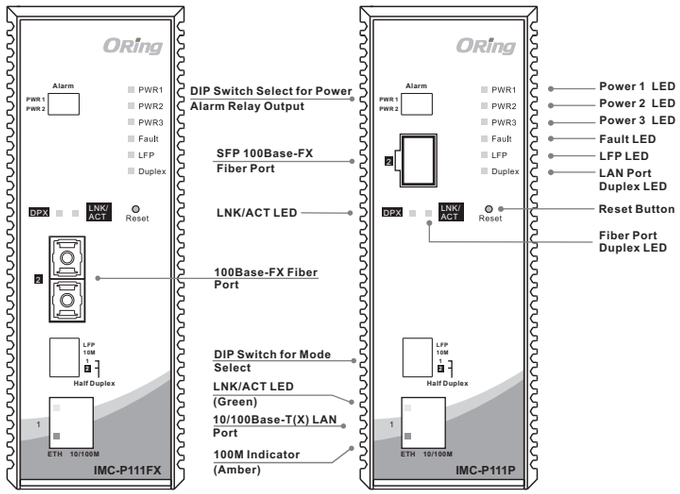
Front Panel



DIP Switch Function

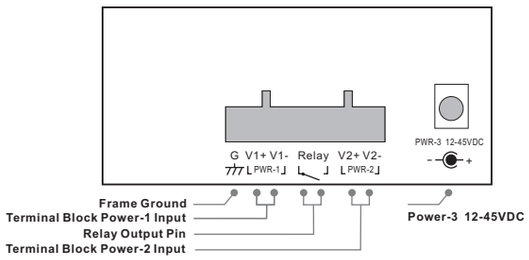
■ Mode Select

DIP-Switch		Description
1	ON	LFP mode enable
	OFF	LFP mode disable
2	ON	Ethernet speed 10Mbps
	OFF	Ethernet speed 10/100Mbps Auto-negotiate
3	ON	Ethernet Half-duplex
	OFF	Ethernet Full/Half-duplex Auto-negotiate
4	ON	Fiber Half-duplex
	OFF	Fiber Full-duplex

■ Power Side

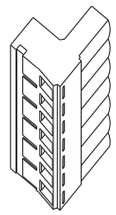
DIP-1	DIP-2	Description
OFF	OFF	Power failure relay alarm disabled
ON	OFF	PWR-1 failure, relay alarm enabled
OFF	ON	PWR-2 failure, relay alarm enabled
ON	ON	PWR-1 or PWR-2 failure, relay alarm enabled

Power Connection Guide



Accessory

① 7-Pin Terminal block

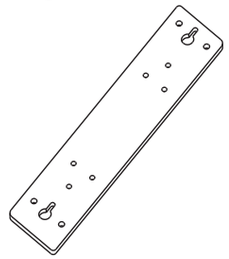


② Dust Cover (RJ-45)

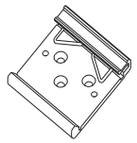
③ Dust Cover (SFP)

④ Flat Screw (M3 X 5)

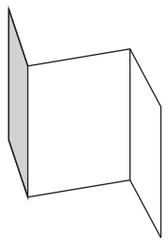
⑤ Wall-mounted kit



⑥ 25mm DIN-Rail kit



⑦ QIG



Packing list

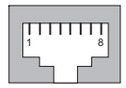
Model name	Model Description	Accessory
IMC-P111FX-MM-SC-LV	Industrial IEC 61850-3 Ethernet to fiber media converter with 1x10/100Base-T(X) and 1x100Base-FX, multi-mode, 2Km/1310nm, SC connector, 12~48VDC power inputs	①X 1, ②X 1, ④X 6, ⑤X 1, ⑥X 1, ⑦X 1
IMC-P111FX-SS-SC-LV	Industrial IEC 61850-3 Ethernet to fiber media converter with 1x10/100Base-T(X) and 1x100Base-FX, single-mode, 30Km/1310nm, SC connector, 12~48VDC power inputs	①X 1, ②X 1, ④X 6, ⑤X 1, ⑥X 1, ⑦X 1
IMC-P111P-LV	Industrial IEC 61850-3 Ethernet to fiber media converter with 1x10/100Base-T(X) and 1x100Base-FX, SFP socket, 12~48VDC power inputs	①X 1, ②X 1, ③X 1, ④X 6, ⑤X 1, ⑥X 1, ⑦X 1

Communication Connections

10/100Base-T(X) Ethernet Port Connection

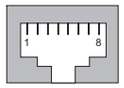
■ RJ45 (8-pin, MDI) Port Pinouts

Pin	Single
1	Tx+
2	Tx-
3	Rx+
6	Rx-

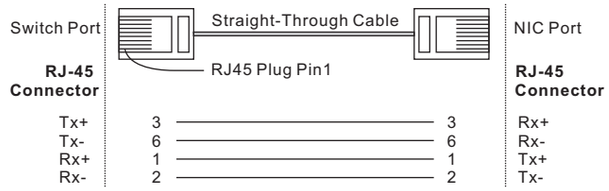


■ RJ45 (8-pin, MDI-X) Port Pinouts

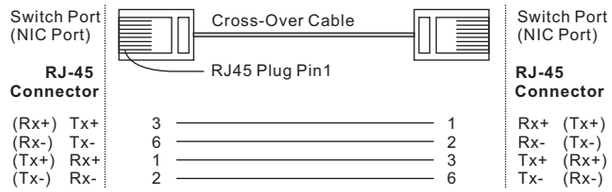
Pin	Single
1	Rx+
2	Rx-
3	Tx+
6	Tx-



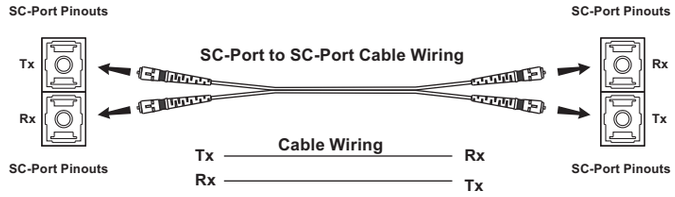
■ RJ45 (8-pin) to RJ45 (8-Pin) Straight-Through Cable Wiring



■ RJ45 (8-pin) to RJ45 (8-Pin) Cross-Over Cable Wiring



100Base-FX Connection



100Base-FX SFP Port Connection