IMC-P111FX / IMC-P111P M12 Series

Industrial IEC 61850-3 Ethernet to fiber media converter with 1x10/100Base-T(X) M12 connector to 1x100Base-FX fiber or 1x100Base-FX SFP socket

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
- Support Ethernet to fiber or Ethernet to SFP port
- Support **LFP (Link Fault Pass-through)** function
- Supports full/half duplex operation
- Supports store and forward transmission
- Supports relay output for power failed alarm
- Provided DIP-Switch to setting function
- Ultra-rugged enclosure M12 connector for toughest industrial usages
- High reliability and rigid IP-30 housing
- DIN-Rail and wall mounting enabled

Introduction

IMC-P111 M12 series is a cost-effective solution for the conversion between 10/100Base-T(X) M12 connector and 100Base-FX interface; it allows you to extend communication distance by optical fiber.   IMC-P111 M12 series are designed for power substation application and rolling stock application, fully compliant with the requirement of IEC 61850-3 and IEEE 1613.   IMC-P111 M12 series supports MDI/MDIX auto detection, so you don't need to use crossover wires.   IMC-P111 M12 series Ethernet switch use M12 connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock.   IMC-P111 M12 series with wide operating temperature range from -40 ~ 85°C and accepts a wide voltage range power inputs, so it is suitable for harsh operating environments.

IMC-P111 M12 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 M12 series will force the link to shutdown as soon as noticed that the other link has failed, giving the application software a chance to react to the situation.   Therefore, the IMC-P111

M12 series is reliable media converter and can satisfy most demand of power substation and rolling stock application.
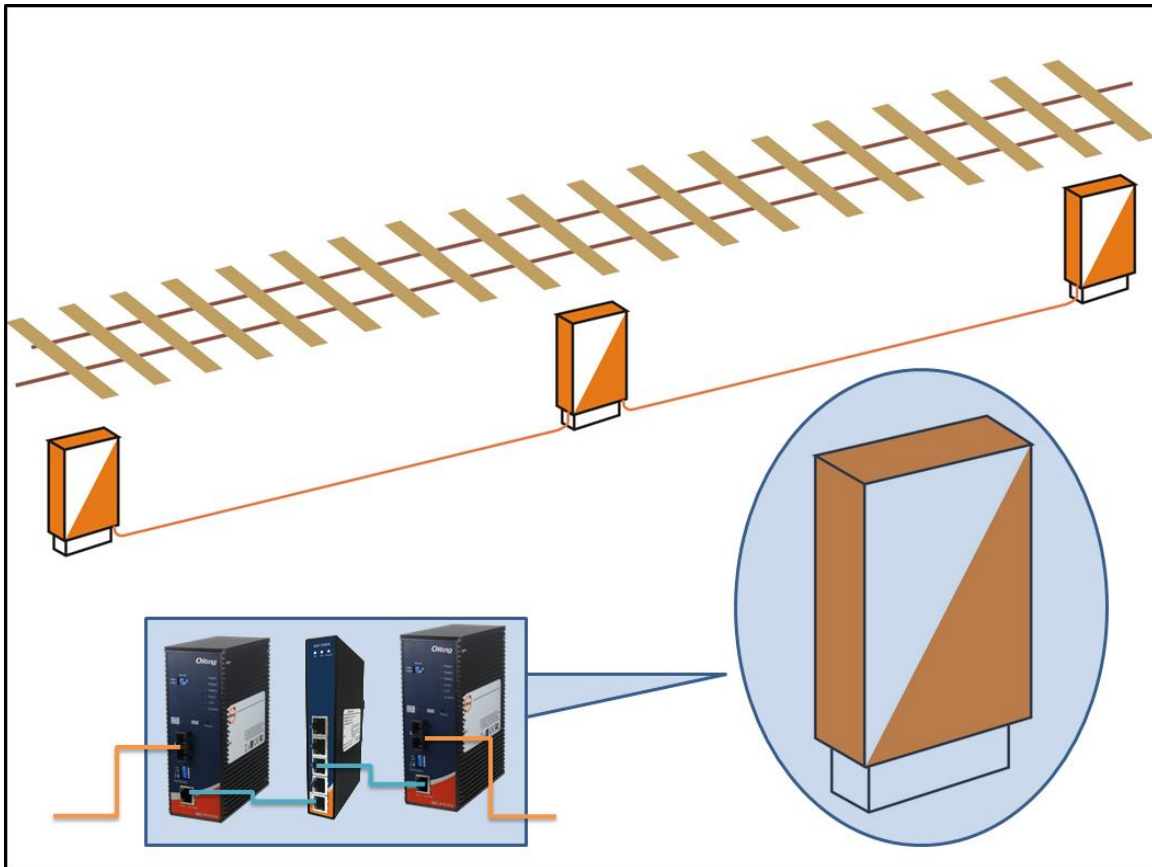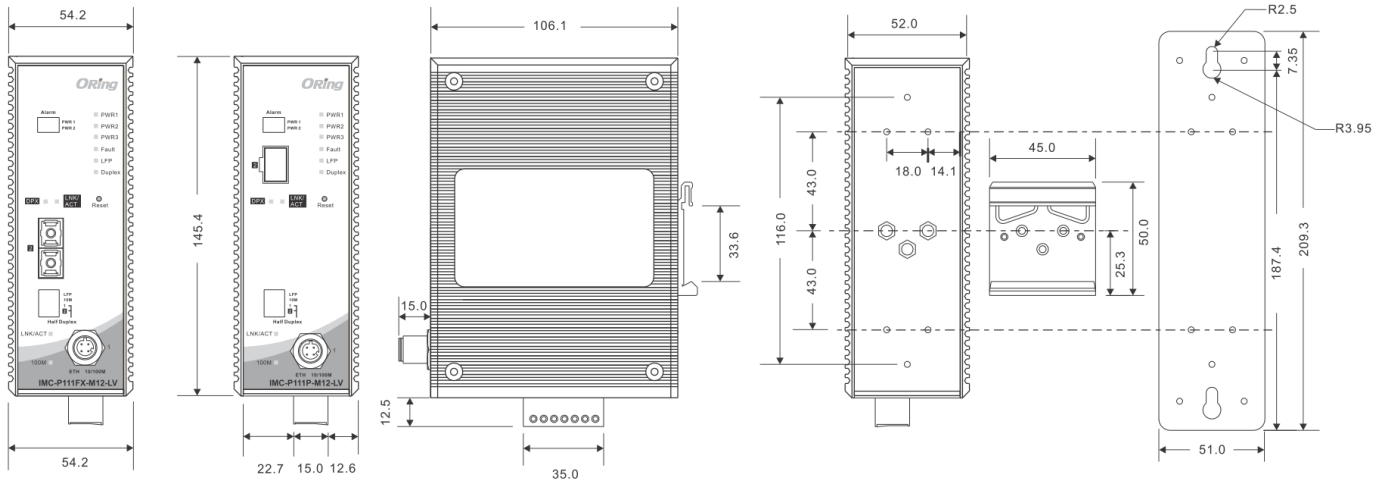

Dimension
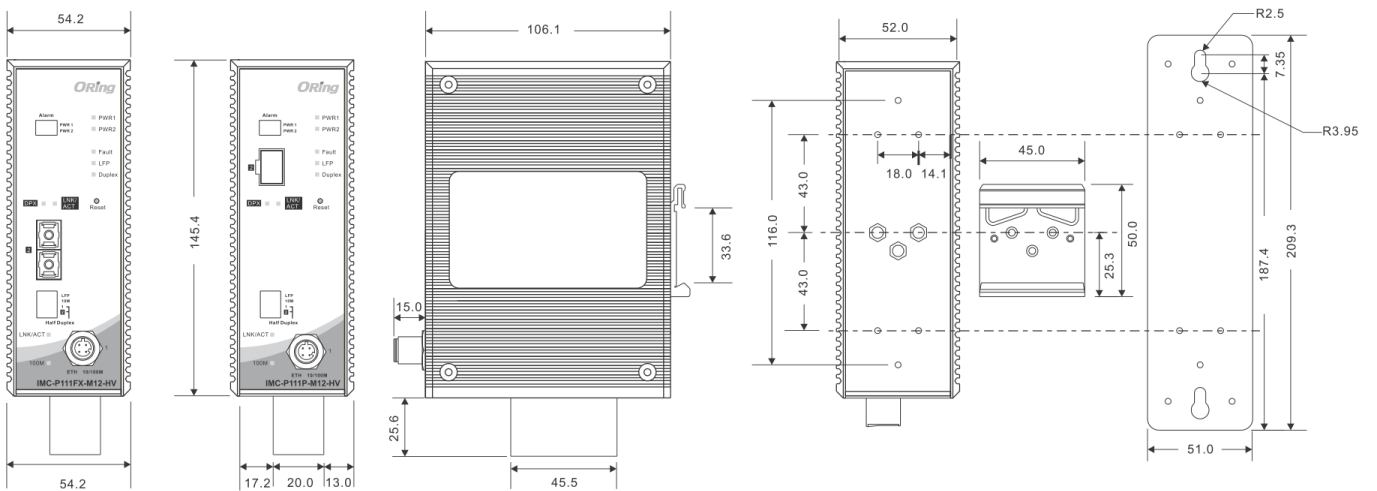
IMC-P111-M12-HV Series

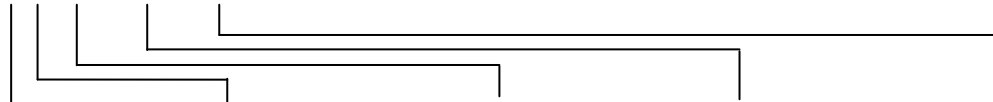**Unit=mm**

IMC-P111-M12-LV Series

Unit=mm

Specifications

ORing Media Converter Model	IMC-P111FX-MM-SC-M12	IMC-P111FX-SS-SC-M12	IMC-P111P-M12
Physical Ports			
10/100 Base-T(X) Port in RJ45 Auto MDI/MDIX	**1 (M12 A-coded)**	**1 (M12 A-coded)**	**1 (M12 A-coded)**
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-T(X) 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		
Alarm DIP-Switch			
DIP-Switch 1	Power-1 failed warning : (ON) enable, (OFF) disable		
DIP-Switch 2	Power-2 failed warning : (ON) enable, (OFF) disable		
LED indicators			
Power indicator	LV Model : Green : Power LED x 3 (ON : power input on-line / (OFF) power input off-line HV Model : Green : Power LED x 2 (ON : power input on-line / (OFF) power input off-line		

Note: "Fiber Port Specification" appears as a vertical label spanning the fiber port rows.

10/100Base-T(X) RJ45 port indicator	Green for port Link/Act – (ON) Link up / (Blinking) Acting / (OFF) Link down
	Amber 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
	Amber for fiber port duplex indicator – (ON) Full-Duplex / (OFF) Half-Duplex
LFP statue indicator	Amber LED – (ON) LFP function fail / (OFF) LFP function disable
Fault indicator	Amber : Indicate unexpected event occurred
Duplex indicator	Green for port duplex indicator – (ON) Full-Duplex / (OFF) Half-Duplex
Power	
LV Model Input Power	Triple DC inputs. Dual 12~48VDC on 7-pin terminal block, one 12~45VDC on power jack
HV Model Input Power	Dual 100~240VAC power inputs on 8-pin terminal block
Power consumption (Typ.)	LV model : 12 Watts, HV model : 100VAC/4.8Watts, 240VAC/5.8Watts) / LV model : 12 Watts HV model : 100VAC/4.8Watts, 240VAC/5.8Watts) / LV model : 12 Watts HV model : 100VAC/4.8Watts, 240VAC/5.8Watts)
Overload current protection	Present
Reverse polarity protection	Present on terminal block
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	54.2(W) x 106.1(D) x 145.4(H) mm (2.05x4.18x5.68 inch.)
Weight (g)	LV model : 691 g / HV model : 833 g — LV model : 681 g / HV model : 823 g
Environmental	
Storage Temperature	-40 to 85ºC (-40 to 185ºF)
Operating Temperature	-40 to 85ºC (-40 to 185ºF)
Operating Humidity	5% to 95% Non-condensing
Regulatory approvals	
Power Automation	IEC 61850-3, IEEE 1613
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

Ordering Information

IMC-P1ABCC-DD-EE-M12-FF

Code Definition	10/100Base-T(X) Port Number	100Base-FX Fiber Port Number	Fiber Port Type	Fiber Optical Mode	Fiber Optical Connector	Voltage Type
Option	**- 1:** 1 ports	**- 1:** 1 port	**- FX:** 100Base-FX fiber **- P:** 100Base-FX SFP	**- MM:** Multi-mode **- SS:** Single-mode	**- SC:** SC connector	**- LV:** Low-Voltage power inputs **- HV:** High-Voltage power inputs

	Model Name	Description
	IMC-P111FX-MM-SC-M12-LV	Industrial IEC 61850-3 Ethernet to fiber media converter with 1x10/100Base-T(X) M12 connector and 1x100Base-FX, multi-mode, 2Km/1310nm, SC connector, low-voltage power inputs
	IMC-P111FX-SS-SC-M12-LV	Industrial IEC 61850-3 Ethernet to fiber media converter with 1x10/100Base-T(X) M12 connector and 1x100Base-FX, single-mode, 30Km/1310nm, SC connector, low-voltage power inputs
	IMC-P111FX-MM-SC-M12-HV_US	Industrial IEC 61850-3 Ethernet to fiber media converter with 1x10/100Base-T(X) M12 connector and 1x100Base-FX, multi-mode, 2Km/1310nm, SC connector, high-voltage power inputs, US power cord
	IMC-P111FX-SS-SC-M12-HV_US	Industrial IEC 61850-3 Ethernet to fiber media converter with 1x10/100Base-T(X) M12 connector and 1x100Base-FX, single-mode, 30Km/1310nm, SC connector, high-voltage power inputs, US power cord
	IMC-P111FX-MM-SC-M12-HV_UK	Industrial IEC 61850-3 Ethernet to fiber media converter with 1x10/100Base-T(X) M12 connector and 1x100Base-FX, multi-mode, 2Km/1310nm, SC connector, high-voltage power inputs, UK power cord
Available Model	**IMC-P111FX-SS-SC-M12-HV_UK**	Industrial IEC 61850-3 Ethernet to fiber media converter with 1x10/100Base-T(X) M12 connector and 1x100Base-FX, single-mode, 30Km/1310nm, SC connector, high-voltage power inputs, UK power cord
	IMC-P111FX-MM-SC-M12-HV_EU	Industrial IEC 61850-3 Ethernet to fiber media converter with 1x10/100Base-T(X) M12 connector and 1x100Base-FX, multi-mode, 2Km/1310nm, SC connector, high-voltage power inputs, EU power cord
	IMC-P111FX-SS-SC-M12-HV_EU	Industrial IEC 61850-3 Ethernet to fiber media converter with 1x10/100Base-T(X) M12 connector and 1x100Base-FX, single-mode, 30Km/1310nm, SC connector, high-voltage power inputs, EU power cord
	IMC-P111FX-MM-SC-M12-HV_JP	Industrial IEC 61850-3 Ethernet to fiber media converter with 1x10/100Base-T(X) M12 connector and 1x100Base-FX, multi-mode, 2Km/1310nm, SC connector, high-voltage power inputs, JP power cord
	IMC-P111FX-SS-SC-M12-HV_JP	Industrial IEC 61850-3 Ethernet to fiber media converter with 1x10/100Base-T(X) M12 connector and 1x100Base-FX, single-mode, 30Km/1310nm, SC connector, high-voltage power inputs, JP power cord
	IMC-P111P-M12-LV	Industrial IEC 61850-3 Ethernet to fiber media converter with 1x10/100Base-T(X) M12 connector and 1x100Base-FX, SFP socket, low-voltage power inputs
	IMC-P111P-M12-HV_US	Industrial IEC 61850-3 Ethernet to fiber media converter with 1x10/100Base-T(X) M12 connector and 1x100Base-FX, SFP socket, high-voltage power inputs, US power cord
	IMC-P111P-M12-HV_UK	Industrial IEC 61850-3 Ethernet to fiber media converter with 1x10/100Base-T(X) M12 connector and 1x100Base-FX, SFP socket, high-voltage power inputs, UK power cord
	IMC-P111P-M12-HV_EU	Industrial IEC 61850-3 Ethernet to fiber media converter with 1x10/100Base-T(X) M12 connector and 1x100Base-FX, SFP socket, high-voltage power inputs, EU power cord
	IMC-P111P-M12-HV_JP	Industrial IEC 61850-3 Ethernet to fiber media converter with 1x10/100Base-T(X) M12 connector and 1x100Base-FX, SFP socket, high-voltage power inputs, JP power cord

Packing List

- **IMC-P111-M12 x 1**
- **Quick Installation Guide x 1**
- **Din-Rail Kit x 1**
- **Wall-Mount Kit x 1**