# 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

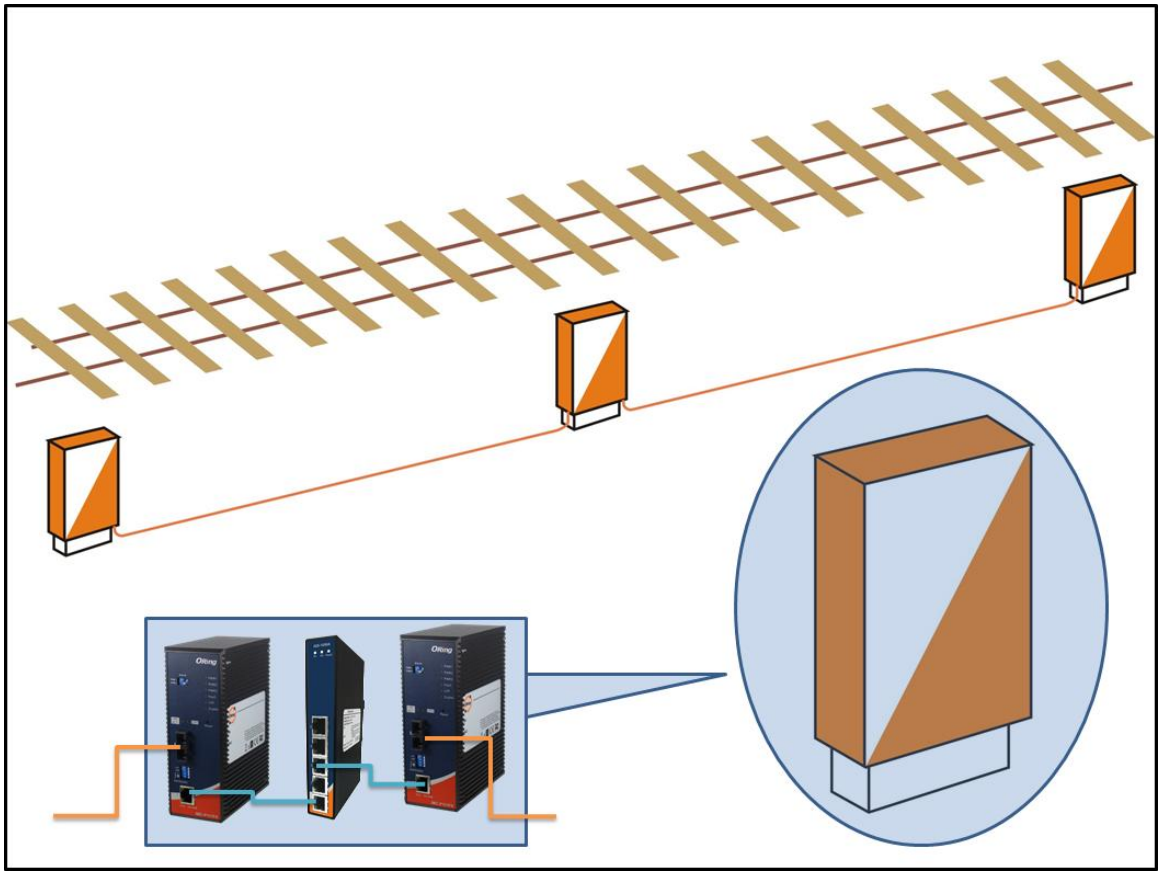
IEC61850 EN50155 Redundant PWR -40~85°C Temperature ROHS CE FC

## Introduction

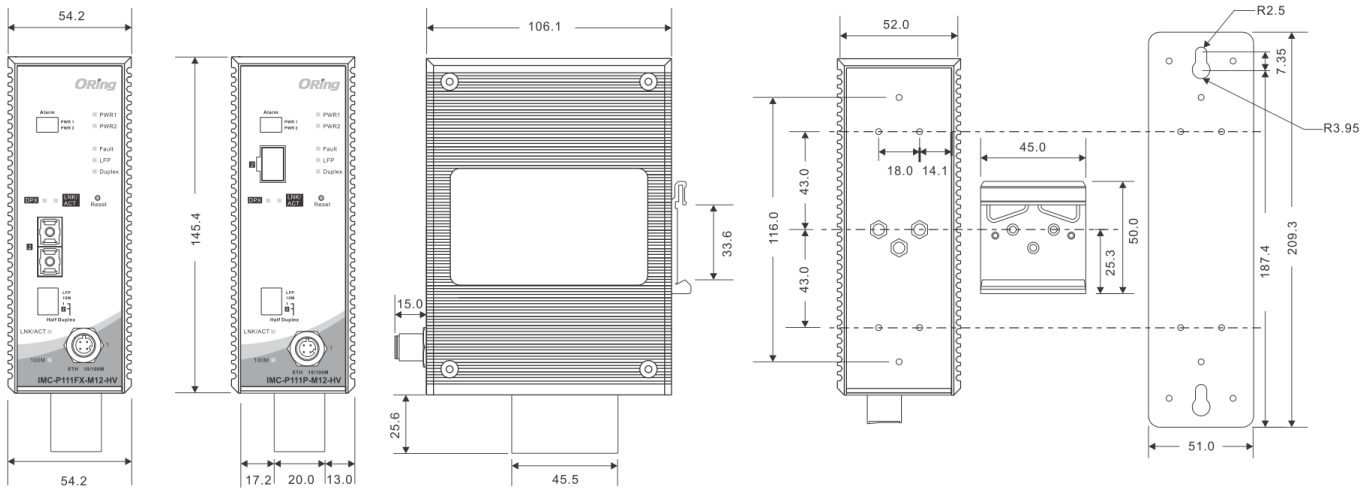
IMC-P111 M12 series is a cost-effective solution for the conversion between 10/100Base-T(X) M12 connector and 100Base-FX interface; it allows you to extend communication distance by optical fiber. IMC-P111 M12 series are designed for power substation application and rolling stock application, fully compliant 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$^{O}$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.

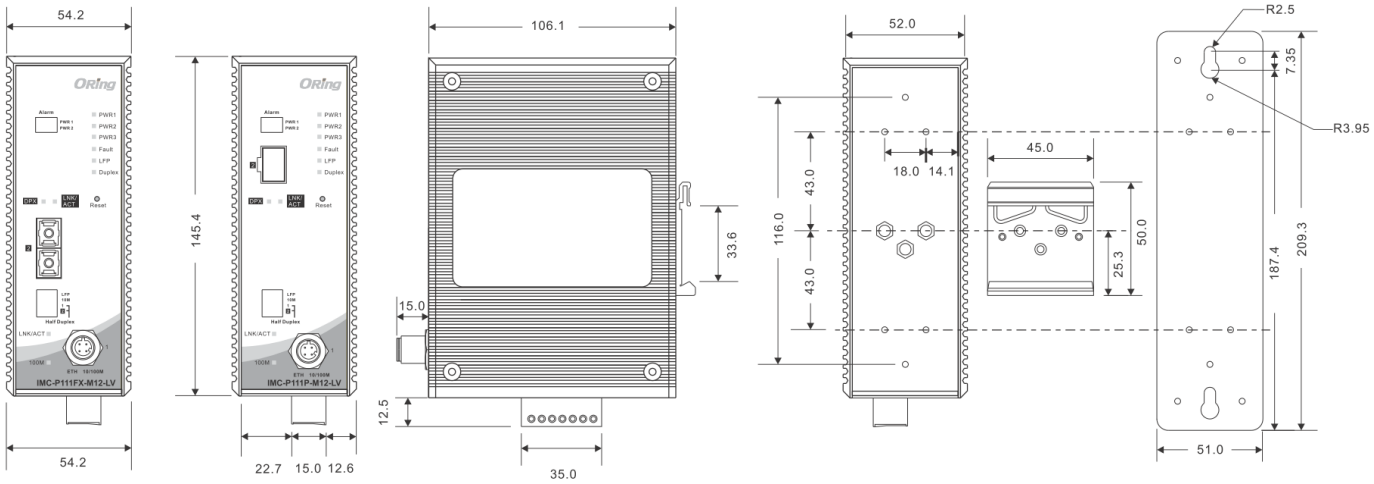


## Dimension




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 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<br>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<br>IEEE 802.3u for 100Base-T(X) and 100Base-FX<br>IEEE 802.3x for Flow control | | |
| Processing | | Store-and-Forward | | |
| DIP-Switch setting | | DIP-Switch 1 for LFP mode selection : (ON) enable / (OFF) disable<br>DIP-Switch 2 for Ethernet speed selection : (ON)10Mbps / (OFF) 10/100Mbps Auto-negotiate<br>DIP-Switch 3 for Ethernet full/half duplex selection : (ON) Half-duplex / (OFF) Full/Half-Duplex Auto-negotiate<br>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<br>HV Model : Green : Power LED x 2 (ON : power input on-line / (OFF) power input off-line | | |

| | | | |
|---|---|---|---|
| 10/100Base-T(X) RJ45 port indicator | Green for port Link/Act – (ON) Link up / (Blinking) Acting / (OFF) Link down<br>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<br>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,<br>HV model : 100VAC/4.8Watts, 240VAC/5.8Watts) | LV model : 12 Watts<br>HV model : 100VAC/4.8Watts, 240VAC/5.8Watts) | LV model : 12 Watts<br>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<br>HV model : 833 g | | LV model : 681 g<br>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<br>**- P:** 100Base-FX SFP | **- MM:** Multi-mode<br>**- SS:** Single-mode | **- SC:** SC connector | **- LV:** Low-Voltage power inputs<br>**- HV:** High-Voltage power inputs |

| | Model Name | Description |
|---|---|---|
| Available Model | 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 |
| | 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**

## Optional Accessories

- **SFP100 series : 100Mbps SFP optical transceiver**
- **DR-75 series : 75 Watts power supply**
- **DR-45 series : 45 Watts power supply**
- **DR-120 series : 120 Watts power supply**

Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

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- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
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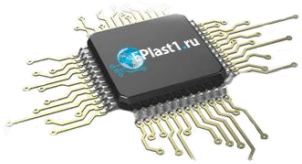
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits,General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.




**Как с нами связаться**

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