Series Description

The Connect Series offers a portfolio for Industrial Data Communication (IDC) for fast Ethernet network connectivity. It is designed as an ideal solution for industrial applications. It provides effectiveness when connecting Programmable Controllers (CPs), Human Machine Interfaces (HMIs), Frequency Inverters and supervisory stations running on industrial servers or computers.

The Connect Series also supplies a selection of switches and media converter. It has an easy setup procedure, DIN-rail mounting and wall mounting, and a robust IP30 standard design for applications in harsh environments. The Connect Series stands for high temperature variations, which ensures reliable operation at 10/100 Mbps. Furthermore, its high performance switching mechanism meets all requirements for quality industrial data communication.

Purchase Data

MET2-0201-M Items

This product contains the following items:

- A MET2-0201-M Media Converter
- DIN-rail mounting and wall mounting
- Quick installation guide

Product Codes

The following codes should be used when purchasing the product:

Code	Description
MET2-0201-M	2-Port Industrial Media Converter - 1*10/100BaseT(X) + 1*100Fx

Table 1: Media Converter

MET2-0201-M Description

MET2-0201-M is a 2-ports Industrial Media Converter (1*10/100T(X) + 1*100Fx) designed to be compact, which makes it ideal for limited spaced panels, such as machine control boxes and duct assembly rooms. For setups in harsh or extreme environments, MET2-0201-M can be easily mounted directly on the DIN-rail. IP30 level and rigid metal housing, allow the MET2-0201-M to resist a wide temperature range, severe electromagnetic interference and vibration.

Main Features:

Interface & Performance

- Copper port support auto MDI/MDI-X function
- 1*10/100Tx Fast Ethernet and 1*100Fx SC
- Store-and-forward switching architecture
- 128Kbits memory buffer

Power Supply

- Redundant power DC 12~48V with connective 1*6-pin removable terminal block
- Max. Current 0,16A

Certification

- CE/FCC
- UL 61010-1
- UL 61010-2-201

Operating Temperature

- STD: -10°C ~ 70°C (14°F ~ 158°F)

Housing/Installation

- IP30 Protection
- Installation in a Pollution Degree 2 industrial environment
- DIN-rail mounting and wall mounting.

	MET2-0201-M
Available Modes	Media Converter Mode Switch Mode
Connectors	
Ethernet Port	RJ45
Fiber Port	SC
Power Connection	1 removable 6-contact terminal block
Diagnostic LED	
P1 **P2**	Power Supply Input Indicator
Fault	Lack of redundant power input Indication
LAN Port L/A	10/100Mbps connection/traffic indication
LAN Port (SPEED)	10/100Mbps connection speed indication
Fiber Port	100Mbps connection/traffic indication

Specification – MET2-0201-M

		MET2-0201-M
Technology	**Standards**	IEEE 802.3 10BaseT Ethernet IEEE 802.3u 100BaseTX Fast Ethernet
	Processing Type	Store and Forward
	Protocol	CSMA/CD
	Flow Control	IEEE 802.3x flow control, back pressure flow control
Properties	**Memory Buffer**	128Kbits
Interface	**RJ45 Ports**	1*10/100BaseT (X), auto negotiation speed, Full/Half duplex mode, and auto MDI/MDI-X connection
	Fiber Port	1*100Fx SC type connector Multi-mode - 50/125um or 62.5/125um
	Wavelength	1310nm
	LED Indicators	Ethernet Port: On-Link/Flash-data transmitting Fiber Port: On-Link/Flash-data transmitting
Power Requirements	**Input Voltage**	12-48VDC, Redundant Inputs
	Power Connection	1 removable 6-contact terminal block
	Overload Current Protection	Present (Slow-Blow Fuse)
	Reverse Polarity Protection	Present
	System Power Consumption	Max. 1.92W full loading
	Relay Contact	24VDC, 1A resistive
Characteristics	**Housing**	Metal, IP30 protection
	Dimensions (W x H x D)	26 x 95 x 75 mm (W x H x D)
	Weight	Unit Weight: 0.25kg, Shipping Weight: 0.35kg
	Mounting	DIN-Rail Mounting, Wall Mounting
Environmental Limits	**Operating Temperature**	STD: -10°C ~ 70°C (14°F ~ 158°F) EOT: -40°C ~ 80°C (-40°C ~ 176°F)
	Storage Temperature	-40°C ~ 85°C (-40°F ~ 185°F)
	Ambient Relative Humidity	5 to 95%, (non-condensing)
Regulatory Approvals	**EMI**	FCC Part 15 Subpart B Class A, CE EN 55032 Class A, EN 61000-6-4 Class A
	EMS	CE EN 55024 Class A, EN 61000-6-2 Class A, IEC61000-4-2 (ESD), IEC61000-4-3 (RS), IEC61000-4-4 (EFT), IEC61000-4-5 (Surge),IEC61000-4-6 (CS), IEC61000-4-8 (Magnetic Field)
	Free Fall	IEC60068-2-32
	Shock	IEC60068-2-27
	Vibration	IEC60068-2-6
	Green	RoHS Compliant
	Compliance	NEMA TS2 (ITS) – EoT version

Table 2: Specification

Hardware Details – MET2-0201-M

Dimension

MET2-0201-M physical dimensions (W x H x D):

26 x 95 x 75 mm

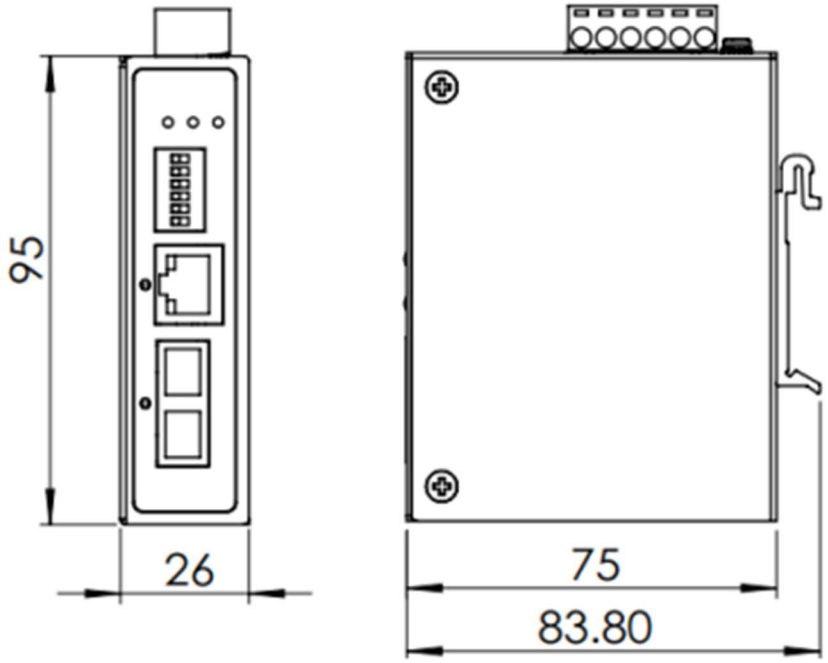

Figure 1: MET2-0201-M Physical Dimensions

Front Panel

The front panel of the MET2-0201-M is shown in the image below:

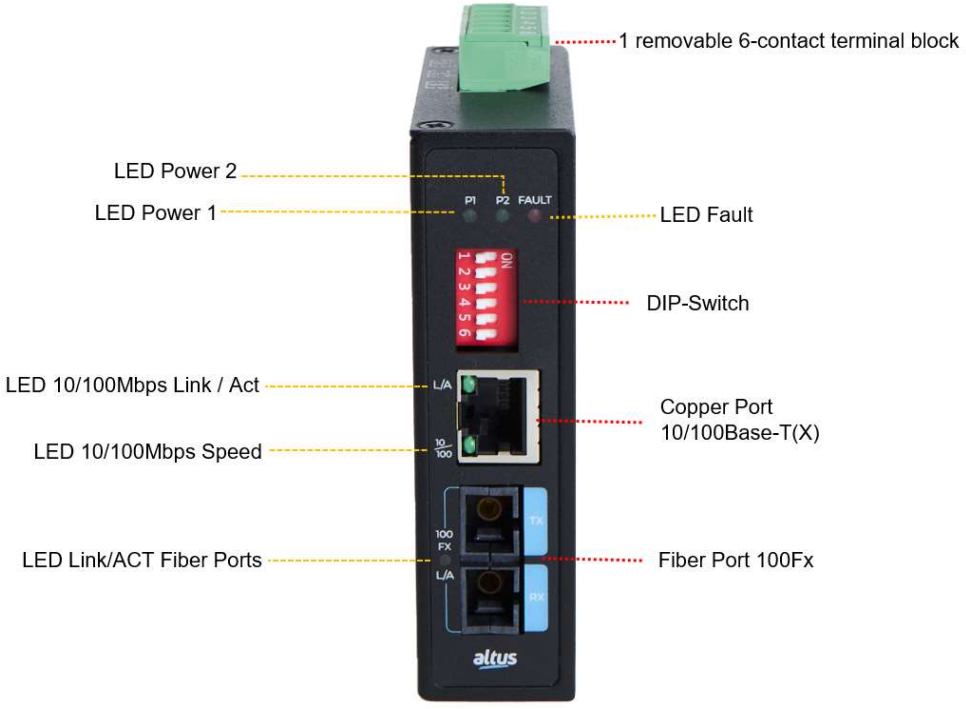

Figure 2: MET2-0201-M Front Panel

Top View

The image below demonstrates the top panel of the MET2-0201-M, which is equipped with one 6-pin removable terminal block connector for dual DC power inputs (12-48VDC).

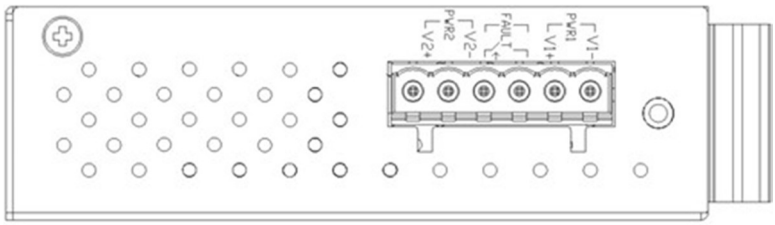

Figure 3: MET2-0201-M Top Panel View

LED Indicators

There are LED indicators located on the front panel of the Media Converter that show the power input and network status. Each LED indicator has a different color and has its own meaning, as shown in the table below:

LED	Colour	Description	
P1	Green	On	Power input 1 is active
		Off	Power input 1 is inactive
P2	Green	On	Power input 2 is active
		Off	Power input 2 is inactive
Fault	Red	On	Power input 1 or 2 is inactive or Port link failed
		Off	Power input 1 and 2 are both functional and Port link correct
LAN port L/A	Green 	On	Connected to network, 10/100Mbps
		Flashing	Network is active
		Off	Not connected to the network
	Green 	On	Connected to network at 100Mbps
		Off	Connected to network at 10Mbps
Fiber Port (LINK/ACT)	Green	On	Connected to network, 100Mbps
		Flashing	Networking is active
		Off	Not connected to network

Table 3: LED indicators for MET2-0201-M

DIP-Switch Setting

Figure 4: DIP Switch

There are 6 pins on DIP-switch on the front panel for setting LFP (Link Fault Pass) function and Transmission control setup. The default setting for all DIP switches is “OFF”. The image below presents a detailed description.

DIP-Switch	1	2	Fiber Port Config.	Copper Port Config.		
			3	4	5	6
ON	LFP Enable	Converter Mode	Half-Duplex Mode	Auto-negotiation Disable	10Mbps	Half-Duplex Mode
OFF	LFP Disable	Switch Mode	Full-Duplex Mode	Auto-negotiation Enable	100Mbps	Full-Duplex Mode

Table 4: DIP-switch setting for MET2-0201-M Series

DIP Switch 1

ON: Enable Link Fault Pass Through

OFF: Disable Link Fault Pass Through (default)

DIP Switch 2

ON: Enable “Converter mode”, which forwards forward a frame immediately without storing in memory. When enabling this mode, please make sure both Ethernet copper port and optic fiber port work at 100Mbps and Full-Duplex.

OFF: Enable “Store-and-Forward switch mode” (default)

DIP Switch 3

ON: Set Fiber Port at Half-Duplex

OFF: Set Fiber Port at Full-Duplex (default)

DIP Switch 4

ON: Disable Auto-negotiation on Copper Port

OFF: Enable Auto-negotiation on Copper Port (default)

DIP Switch 5

ON: Set Copper Port transmission speed at 10Mbps

OFF: Set Copper Port transmission speed at 100Mbps (default)

DIP Switch 6

ON: Set Copper Port transmission speed at Half-Duplex

OFF: Set Copper Port transmission speed at Full-duplex (default)

Caution: To change the current DIP-switch setting, the device must be powered off and then powered on again to make the setting effective.

Special Models

MET2-0201-S3 Industrial Media Converter - 1*10/100Tx + 1*100Fx (SC Connector, Multi-mode, 2km/1310nm)

Ports

Ethernet ports

RJ45 ports automatically identify connections from 10Base-T and 100Base-TX devices. Automatic MDI/MDIX means that the Media Converter can connect to another Media Converter or workstation without changing direct or crossover cabling. The squematic of crossover and direct are shown in the table below:

Crossover Cable		**Direct Cable**	
Nº / Pin signal	Nº / Pin signal	Nº / Pin signal	Nº / Pin signal
1 / RX+	3 / TX+	1 / RX+	1 / TX+
2 / RX-	6 / TX-	2 / RX-	2 / TX-
3 / TX+	1 / RX+	3 / TX+	3 / RX+
6 / TX-	2 / RX-	6 / TX-	6 / RX-

Table 5: 10Base-T and 100Base-TX

NOTE:"+" and "-" signals represent the polarity of the wires that make up each pair.

Fiber ports

The Fiber Port of the SC connector Type can operate in Multimode. When connecting Fiber Ports to each other, follow the instructions as illustrated below to make the connection correctly. A wrong connection will cause abnormal operation.

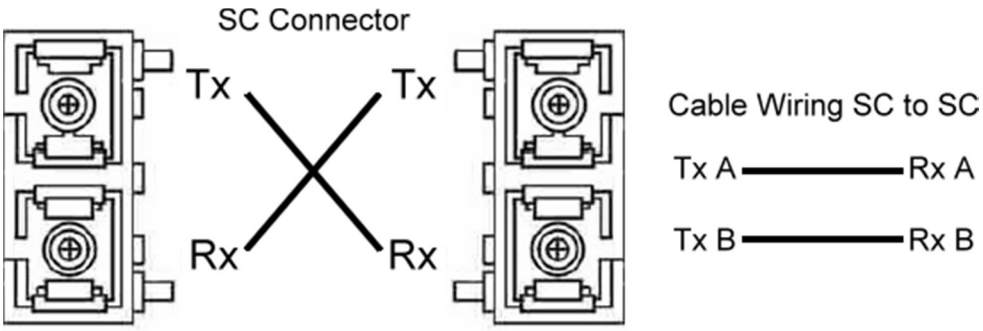

Figure 5: SC connector

Caution: This is a Class 1 Laser/LED product. Do not look directly at the Laser/LED beam.

Cabling

Use the 2/4 pair CAT 5e twisted pair cable or top cabling for RJ45 port connections. The cable between the Media Converter and the device (switch, hub, workstation, etc.) must be less than 100m long.

Fiber segment using single-mode connector type must use 9/125µm single-mode fiber cable. When using multimode connector type, a 50 or 62.5/125µm multi-mode fiber cable must be used.

Connecting Power Inputs

The steps below demonstrate the electrical installation process of the equipment.

Step 1: Insert the positive and negative wires into the PWR1 (V1+, V1-) and PWR2 (V2+, V2-) contacts on the terminal block connector as shown below:

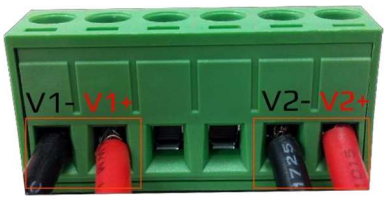

Figure 6: Power Terminal Block

Step 2: Tighten the wire-clamp screws to prevent the wires from loosening, as shown below:

Figure 7: Power Terminal Block

Note: Use only copper conductors (60-75ºC). Tighten the screws at 0.56 N.m.The wire gauge for the block terminal should be 18-20 AWG (0.81mm to 1.02mm).

Connecting the Fault Alarm Contact

The fault alarm contact is in the middle of the terminal block connector as the image shows below. By inserting the wires, it will detect the fault status including power failure or port link failure (managed industrial Media Converter only) and form a normally open circuit. An application example for the fault alarm contact is shown below

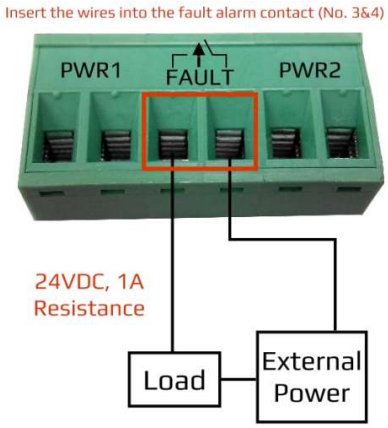

Figure 8: Connecting the Fault Alarm Contact

Note: The wire gauge for the block terminal should be between **12-24 AWG (0.51mm to 2.05mm).** If using only one power source, jumper Pin 1 to Pin 5 and Pin 2 to Pin 6 to eliminate power fault alarm.

Grounding note

Grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI). Run the ground connection from the ground screw to the grounding surface prior to connecting devices. The groundingscrew symbol is shown below:

Figure 9: Ground screw

Caution: Using shielded wires allows better electromagnetic compatibility.

Mechanical Assembly

DIN Rail Mouting

The DIN-Rail is pre-installed on the industrial Media Converter from the factory. If the DIN-Rail isn't on the Media Converter, follow the tutorial below to learn how to install it.

Figure 10: Media Converter back and DIN rail holder

Follow the steps below to learn how to fix the Media Converter:

Step 1: Use the screws to mount the DIN rail holder on the back of the Media Converter.

Step 2: To remove the DIN rail holder, do the opposite of Step 1.

Step 3: After the DIN rail holder mounted on the back of the Media Converter, insert the top of the bracket into the rail, as shown in the image below:

Figure 11: Insert the Media Converter into the DIN rail

Step 4: Pull the bracket slightly down the rail, as shown in the image below:

Figure 12: Stabilize the Media Converter on the DIN rail

Step 5: Check if the bracket is mounted tightly on the rail.

Step 6: To remove the rail Media Converter, do the opposite of the steps above.

Wall Mounting

Follow the steps below to mount the Media Converter using the wall mount bracket.

Step 1: Remove the DIN rail holder from the Media Converter when loosening the screws.

Step 2: Position the wall mount brackets on the top and bottom of the Media Converter.

Step 3: Use the screws to secure the wall mount bracket to the Media Converter.

Step 4: Use the hook holes at the corners of the wall mount bracket to secure the Media Converter to the wall.

Step 5: To remove the wall mount bracket, do the opposite of the steps above.

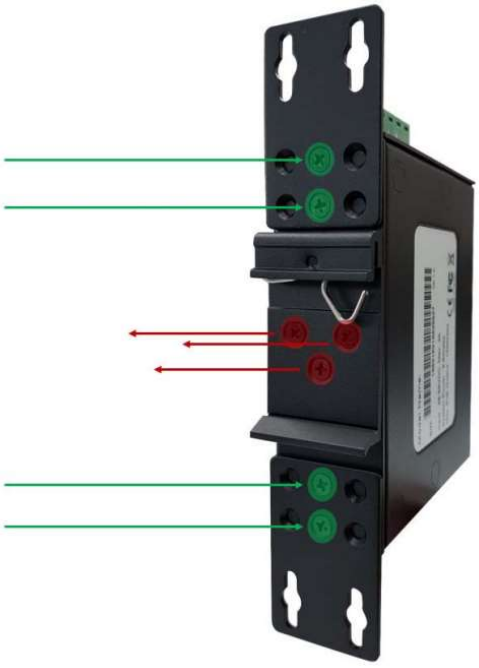

Figure 13: DIN rail support

The image below demonstrates the dimensions of the wall mounting holder:

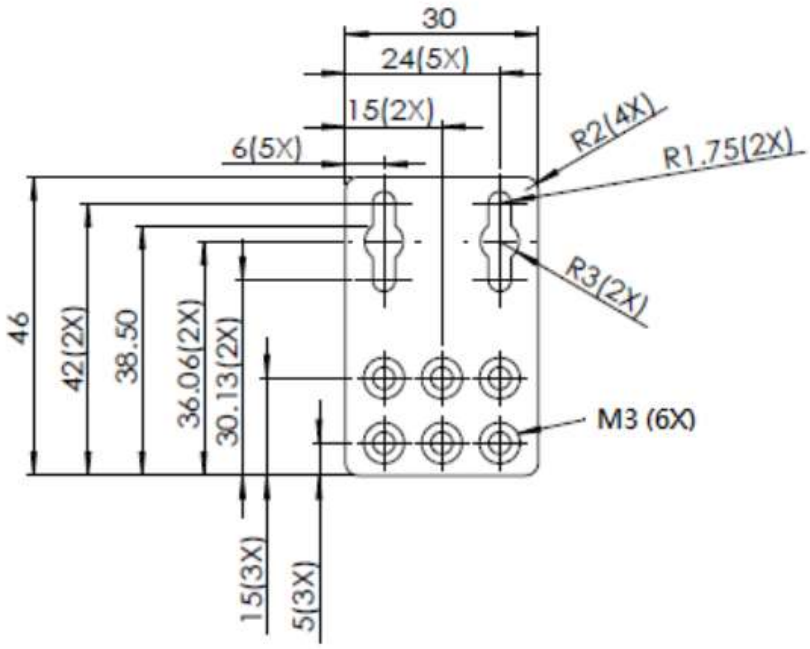

Figure 14: Wall Mounting Holder Dimensions

Hardware Installation

Installation Steps

This section explains how to install the Media Converter:

Installation Steps:

Step 1: Unpack the Media Converter from the original box

Step 2: Make sure the bracket screwed onto the Media Converter.

- If the DIN rail bracket isn't screwed into the Media Converter, refer to the DIN Rail Mounting section for DIN Rail Installation.

- If you want to wall mount the Media Converter, refer to the Wall Mounting section.

Step 3: To attach the Media Converter to a DIN rail or wall, see the Mechanical Mounting section.

Step 4: Power up the Media Converter and then the Power LED will turn on.

- If you need help connecting the power cords, refer to the Connecting Power Inputs section.

- See the LED Indicators section for LED light indication.

Step 5: Prepare the straight-through CAT5 twisted pair cable for the Ethernet connection.

Step 6: Insert one end of the RJ45 cable into the Media Converter 's Ethernet port, and the other end into the Ethernet network device (PC, server, etc.). The Ethernet port LED on the Media Converter will light when the cable is plugged into the network device.

- See the LED Indicators section for indication of LED lights.

Step 7: When all connections made and the LED lights indicate normal operation, installation is complete.

Troubleshooting

- Make sure you have the correct power cord and/or adapter. Never use a power supply or adapter with anon-compliant DC output voltage, the equipment will burn.

- Select the appropriate UTP/STP cable to establish the network. Use an unshielded twisted pair cable (UTP, or Unshielded Twisted Pair) or a shielded twisted pair cable (STP, or Shielded Twisted Pair) for RJ45:100Ω CAT5e connections for 10M/100Mbps. Also, ensure that the length of any twisted pair cable connection does not exceed 100 meters.
- Diagnosing LED indicators: To aid in problem identification, the Media Converter can be easily monitored with LED indicators, which help identify if any problems exist.
- See the LED Indicators section for LED light indication
- If the power indicator LED does not turn on when the power cord plugged in, the user may be having aproblem with the cord. Look for loose power connections, power outages, or power outlet surges.
- Contact Altus for technical support service if the problem persists.
- If the Media Converter LED indicators are normal and the cables are properly connected, but packets still not being transmitted, check the configuration or status of the Ethernet devices in the system.