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User's Manual

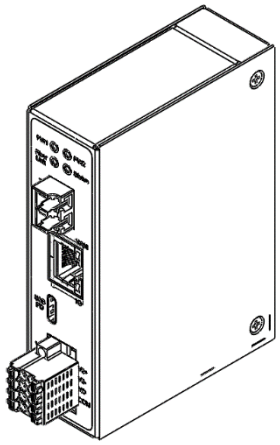
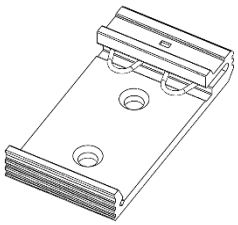
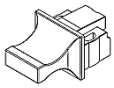
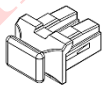
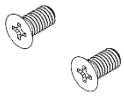
OptoMedia 1G Multi-Power Fiber Media Converter

Table of Contents

Note: In this documentation, the term "OptoMedia 1G Multi-Power Fiber Media Converter" refers to the models CU4-S1-4159Y and CU4-M3-4A59Y.

1. Package Contents

Open the box of OptoMedia 1G Multi-Power Fiber Media Converter and carefully unpack it. The box should contain the following items:

OptoMedia 1G Multi-Power Fiber Media Converter x 1	DIN-rail Kit x 1	Wall-mount Kit x 1
		
RJ45 Dust Cover x 1	Fiber Optic Dust Cover x 1	Screws
		

Note: If any of these are missing or damaged, be sure to contact your dealer immediately; Please retain the carton including the original package materials and use them again to repack the product in case it needs to be returned to us for repair.

2. Product Introduction and Specifications

OptoMedia 1G Multi-Power Fiber Media Converter provides three power supply inputs, including industrial power, Power over Ethernet (PoE), and USB Type-C, realizing the benefit of one device for various environments. A power supply redundancy mechanism is also implemented within the unit to enhance usability and reliability. Data transmission is exclusively handled through the RJ45 network port and fiber optic ports, while the USB Type-C port is used ONLY for power input and does NOT support data transmission.

2.1 General Data

General Data		
Function		Fiber Media Converter
RJ45 port		100 Base-Tx Auto-negotiation (IEEE 802.3u) 1000 Base-T Auto-negotiation (IEEE 802.3ab)
Fiber port		100Base-Tx to 100 Base-FX 1000Base-T to 1000BASE-LX/SX
Properties of Optic Port		
Total number of FO ports		1
Connector type		LC
Fiber Mode		Duplex Fiber
Link Distance (Max)	CU4-S1-4159Y	Up to 10km
	CU4-M3-4A59Y	Up to 550m (OM2)
Wavelength	CU4-S1-4159Y	1310nm
	CU4-M3-4A59Y	850nm
Properties of RJ45 Port		
Total number of RJ45 Ethernet interface		1
Connection type		RJ45
MDI/MDIX switchover		Auto MDI/MDIX
Environmental Spec.		
Operating temperature		-40°C ~ 70°C
Relative Humidity		5% ~ 70% (non-condensing)
Storage Humidity		5% ~ 85% (non-condensing)
Degree of protection		IP20
Power Requirements		
Industrial Power	Nominal power supply	24V DC
	Supply Current	80mA @ 24VDC
Power over Ethernet (PoE)		IEEE 802.3af
USB Type-C	Nominal power supply	5VDC
	Supply Current	300mA @ 5VDC
Physical Characteristics		
Housing		Metal
Dimension		87(L)*28(W)*100.3(H) mm
Weight		245g ± 5%

2.2 Transmitter Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Optical Characteristics- CU4-S1-4159Y						
Optical Output Power	P_{OUT}	-9		-3	dBm	1
Center Wavelength	λ_C		1310		nm	
Optical Characteristics- CU4-M3-4A59Y						
Optical Output Power	P_{OUT}	-9.5	-	-4	dBm	2
Center Wavelength	λ_C		850		nm	

Note:

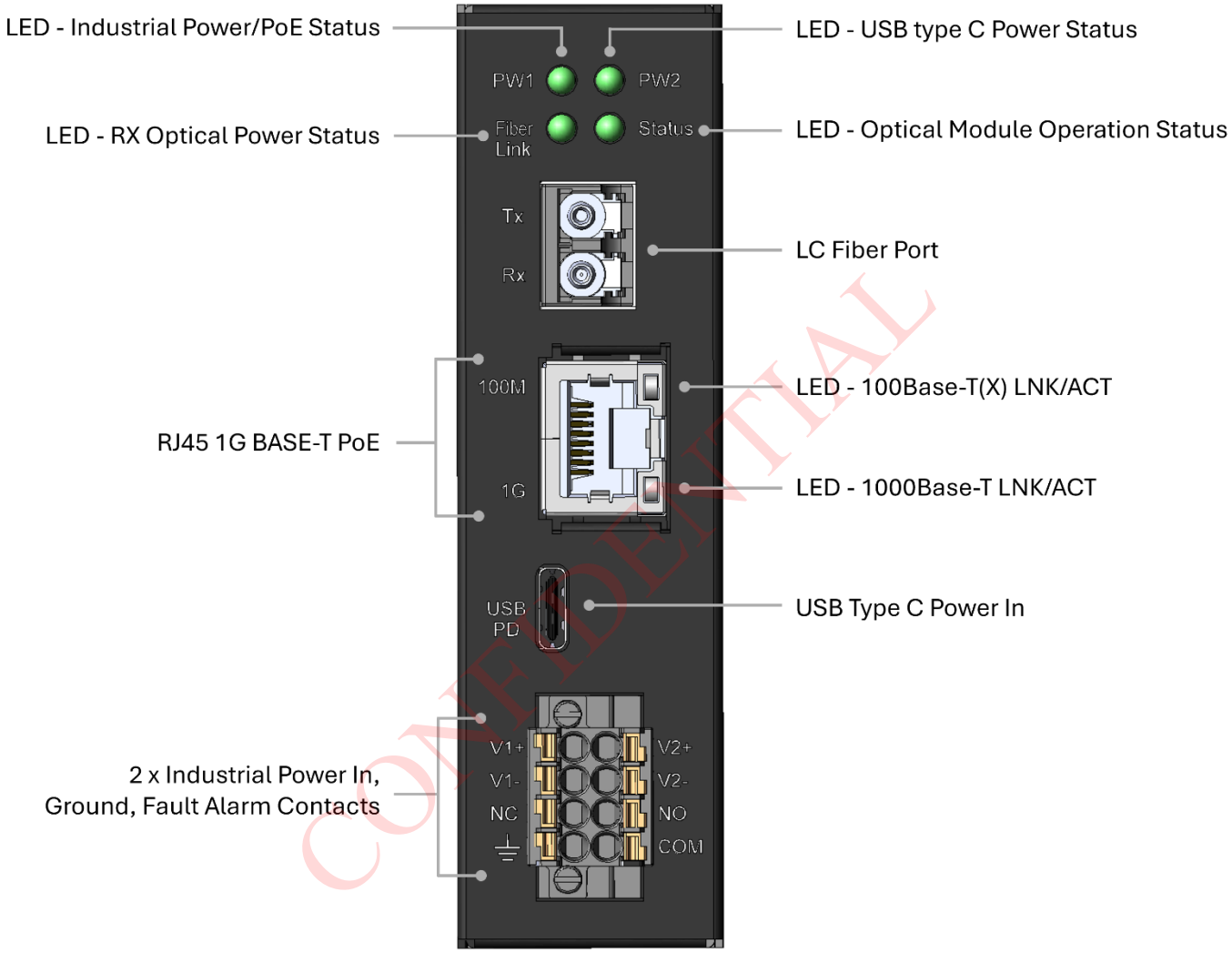
1. Output power is coupled into 9/125 μm Single-mode fibers.
2. Output power is coupled into 50/125 or 62.5/125 μm Multi-Mode fibers.

2.3 Receiver Specifications

Parameter		Symbol	Min.	Typ.	Max.	Unit	Note
Optical Characteristics- CU4-S1-4159Y							
Sensitivity	1G Ethernet	P_{IN}			-21	Bm	
	100M Fast Ethernet (Single-Mode)	P_{IN}			-20	dBm	
	100M Fast Ethernet (OM2)	P_{IN}			-20	dBm	
Receiver Overload		P_{IN}	-3			dBm	
Wavelength range		λ_c	1270		1620	nm	
Optical Characteristics- CU4-M3-4A59Y							
Sensitivity (OM2)		P_{IN}			-17	dBm	
Receiver Overload		P_{IN}			0	dBm	
Wavelength range		λ_c	770		860	nm	

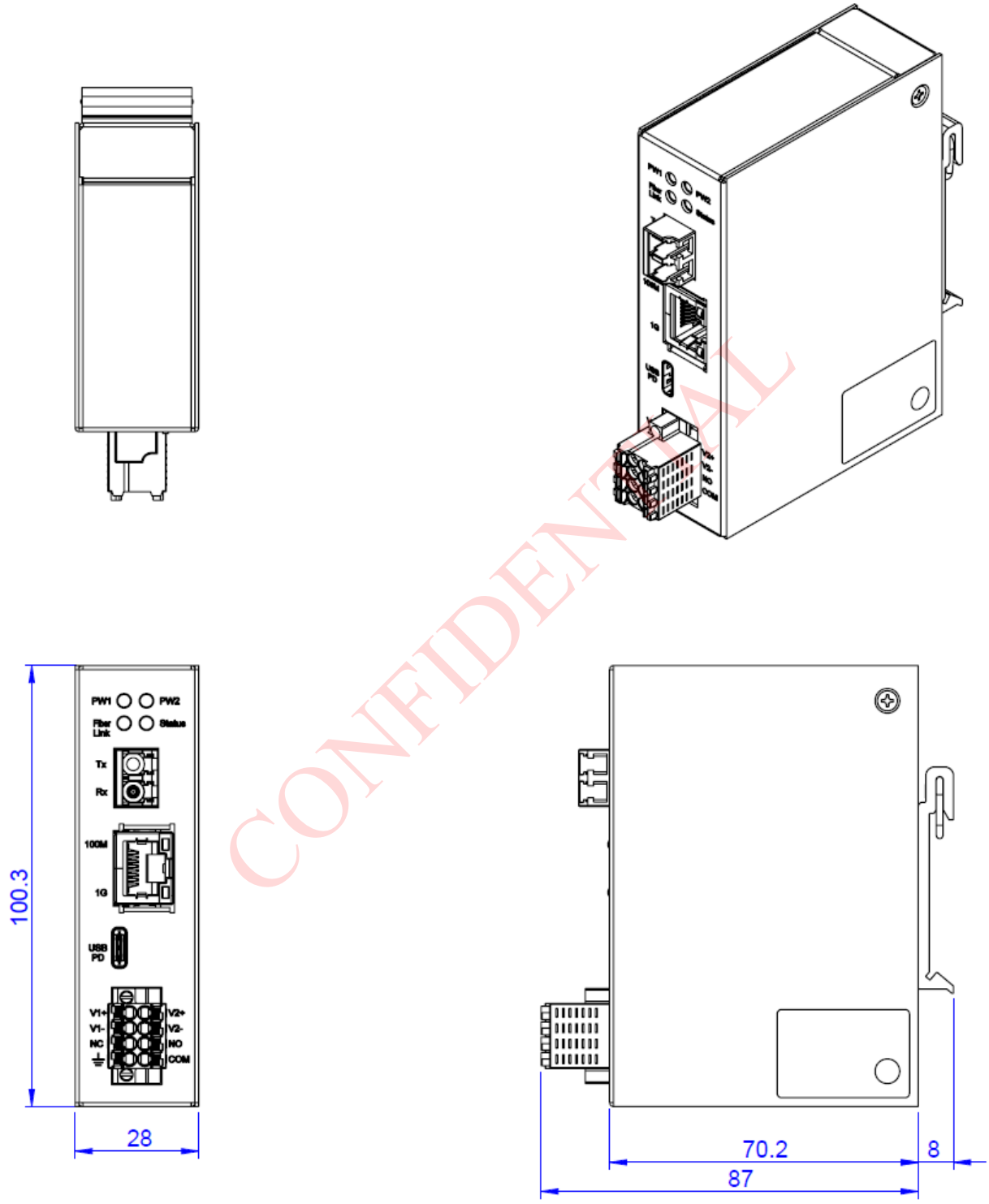
3. Hardware Introduction

3.1 Media Converter Front Panel



3.2 Three-View Diagram

Dimensions (mm)

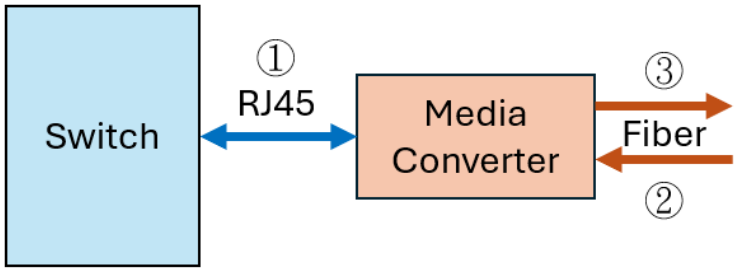


Unspecified tolerance: ± 0.5

3.3 LED Definition

Description		Color	Status	Meaning
PW1		Green	On	Supply voltage in Industrial Power or PoE
			Off	No supply voltage in Industrial Power and PoE
PW2		Green	On	Supply voltage in USB Type-C
			Off	No supply voltage in USB Type-C
Status		Green	On	Optical module is normal
			Off	Optical module is abnormal
Fiber Link		Green	On	Rx optical power is normal
			Off	Rx optical power is abnormal
Link/ACT	100M	Orange	On	Connected
			Off	Disconnected
			Blinking	Activity
	1G	Green	On	Connected
			Off	Disconnected
			Blinking	Activity

LEDs presentation for Link Fault Pass-Through (LFPT)



No	Conditions	Media Converter LED Presentation		
		Description	Color	Status
	Normal Operations	Status	Green	On
		Fiber Link	Green	On
		Link/ACT	Orange / Green	On
①	**Switch and Media Converter disconnected**	Status	Green	On
		Fiber Link	Green	On
		Link/ACT	Orange / Green	Off
②	**Media Converter RX Fiber disconnected ***	Status	Green	On
		Fiber Link	Green	Off
		Link/ACT	Orange / Green	Off
③	**Media Converter TX Fiber disconnected ***	Status	Green	On
		Link/ACT	Orange / Green	Off

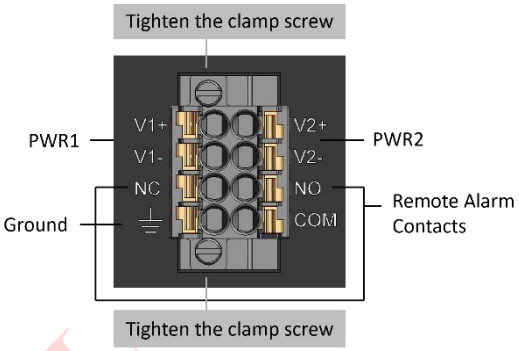
Note：* The device at the remote side shall support Link Fault Pass-Through (LFPT)

4. Wiring

4.1 Wiring the Power Inputs

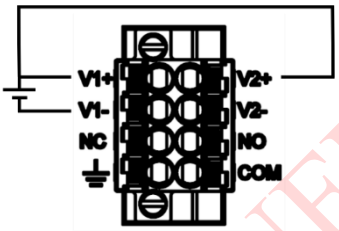
4.1.1. Industrial 24VDC

The 8-contact terminal block connector contains two 24VDC redundant power inputs. For each terminal, use a small flat-head screwdriver to press the spring to open the slot. Insert the wire, then release it to secure the connection. Please see the following steps for each contact installation.

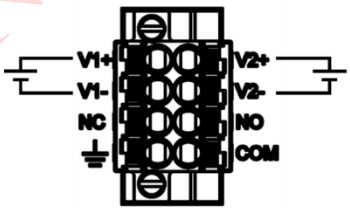


Caution: Ensure that the power is OFF before performing any procedures like inserting the wires to prevent electric shock.

Insert the positive and negative DC power wires as shown in the diagram below.



Power connections for single power supply



Power connections for redundant power

Note:

- The DC power input required is 24VDC.
- Use power conductors between 0.5 – 1.3 mm² (20 - 16 AWG).

4.1.2. Power over Ethernet (PoE)

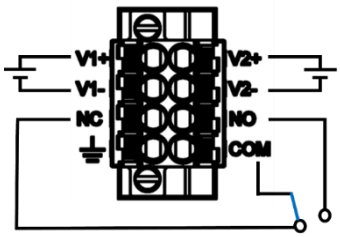
Insert the RJ45 Ethernet cable into the PoE port to enable both power supply and data transmission. If the user's network equipment does NOT support PoE, a separate power source, such as Industrial 24VDC or USB Type-C, is required.

4.1.2. USB Type-C Power

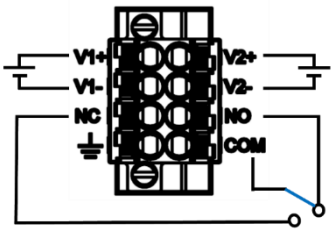
Insert the USB Type-C cable into the USB-C port to receive the power supply. Please note that USB Type-C is ONLY for power input and does NOT support data transmission.

4.2 Wiring the Remote Alarm Contacts

There are three terminals: Normally Closed (NC), Normally Open (NO), and Common (COM). It is possible to integrate with external systems and provide the operation status of the optical module. Please refer to the 'Status' in Section 3.3 LED Definition and follow the wiring diagram below.



Relay contact status when the 'Status' LED is green.



Relay contact status when the 'Status' LED is off.

Note:

- Use power conductors between 0.5 – 1.3 mm² (20 - 16 AWG).
- Contact rating 2A/30VDC

4.3 Grounding the Device

To ensure proper grounding, users MUST connect a grounding wire from an Earth ground connection to the device's grounding terminal.

Failure to properly ground the device may result in severe damages, which are NOT covered under the product warranty.

Caution: After completing the wiring, make sure to tighten both sides of the screws on the terminal block to secure the connections properly.

5. Multi-Power Redundancy: Setup and Recommendations

OptoMedia 1G Multi-Power Fiber Media Converter supports three power input types. Users can choose different configurations listed below according to their applications or environments. When multiple power sources are connected at the same time, the converter will prioritize them in the following sequence: **Industrial Power (24VDC) > PoE > USB-C Power**.

Note: If ONLY 24VDC and PoE power are connected, switching from 24VDC to PoE will cause a temporary power loss due to handshaking between Power Sourcing Equipment (PSE) and Powered Device (PD). To ensure seamless operation, the following actions are recommended:

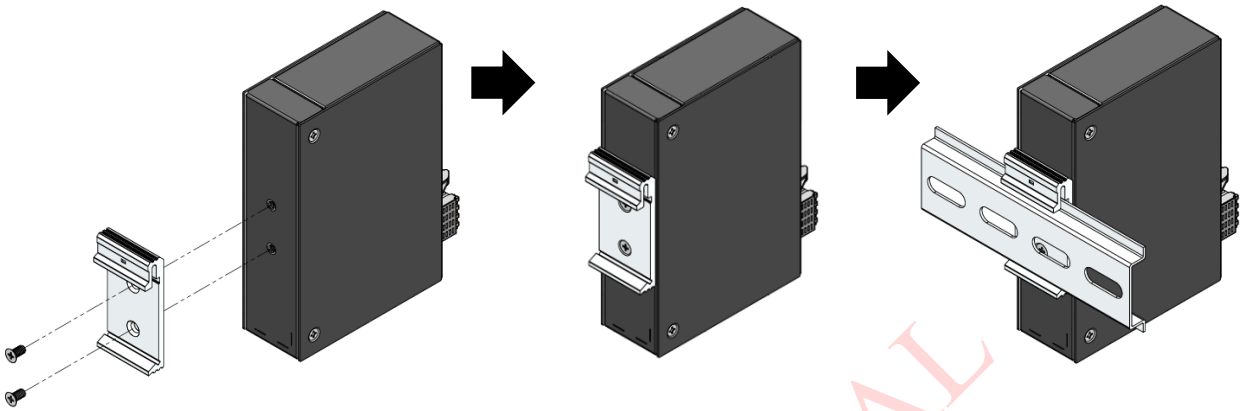
1. Connect both 24VDC inputs for redundancy of industrial power supplies.
2. If switching to PoE is inevitable, USB-C power supply must be connected beforehand.

Configuration	Industrial 24VDC	PoE	USB-C	Power Source Priority
3 Power Inputs	• ○	○	○	24VDC > PoE > USB-C
2 Power Inputs	• ○	✕	○	24VDC > USB-C
	✕	• ○	○	PoE > USB-C
	• ○	○	✕	24VDC > PoE *PoE handshaking will cause temporary power loss
1 Power Input	• ○	✕	✕	N/A
	✕	• ○	✕	N/A
	✕	✕	• ○	N/A

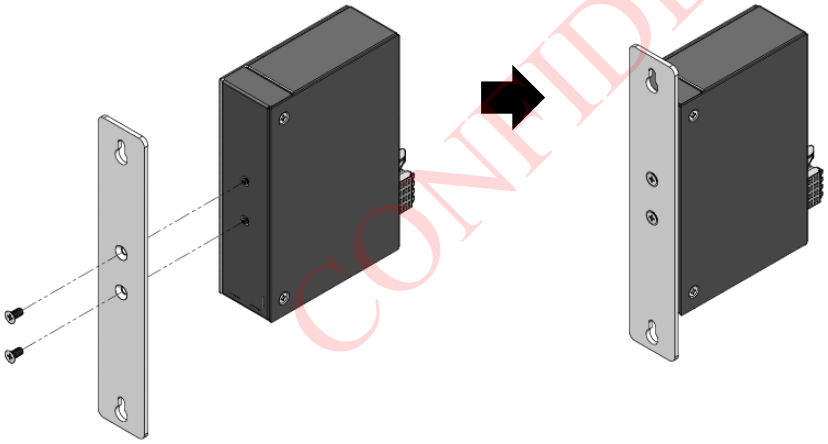
Note:
1. ○= connected, X = not connected.
2. The black dot (•) indicates the power source prioritized for use.

6. Hardware Installation

6.1 DIN-rail Mounting Installation



6.2 Wall Mounting Installation



Caution: You must use the screws supplied with the wall-mounting brackets. Damage caused by using incorrect screws to the parts will NOT be covered by the warranty.

7. Certificates and Warranty Policy

OptoMedia 1G Multi-Power Fiber Media Converter complies with the following international certificates:

Standards and Certifications		
Safety	TUV and cTUVus	EN 62368-1 / EN 60825-1 UL 62368-1 / CAN/CSA-C22.2 NO.62368-1
EMC	CE	EN 55032 / EN 55035
EMI	FCC	47 CFR FCC Rules and Regulations Part 15 Subpart B Class B Digital Device
Green product	RoHS and REACH	(EU)2015/863 (EU) 2018/851

OptoMedia Technology Inc. provides a 2-year warranty under normal use from the date of purchase. This warranty is valid only for the original purchaser with proof of purchase and does NOT cover damages caused by misuse, unauthorized modifications, or external factors. For warranty service or any further questions regarding the product, please contact your local dealers or refer to the contact information below.

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8. Revision History

Revision	Date	Remark
1.0	April 15, 2025	First Release