www.westermo.com

MCW-211 Series

Industrial Ethernet Media Converter

General information

Legal information

The contents of this document are provided “as is”. Except as required by applicable law, no warranties of any kind, either express or implied, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose, are made in relation to the accuracy and reliability or contents of this document. Westermo reserves the right to revise this document or withdraw it at any time without prior notice.

Under no circumstances shall Westermo be responsible for any loss of data or income or any special, incidental, and consequential or indirect damages howsoever caused.

More information about Westermo can be found at **www.westermo.com**

About This Guide

This guide is intended for installation engineers and users of the Westermo products.

It includes information on safety and regulations, a product description, installation instructions and technical specifications.

Safety and Regulations

Warning signs are provided to prevent personal injuries and/or damages to the product.

The following levels are used:

Level of warning	Description	Consequence personal injury	Consequence material damage
 WARNING	Indicates a potentially hazardous situation	Possible death or major injury	Major damage to the product
 CAUTION	Indicates a potentially hazardous situation	Minor or moderate injury	Moderate damage to the product
 NOTICE	Provides information in order to avoid misuse of the product, confusion or misunderstanding	No personal injury	Minor damage to the product
 NOTE	Used for highlighting general, but important information	No personal injury	Minor damage to the product

Safety Information

Before installation:

Read this manual completely and gather all information on the product. Make sure that you understand it fully. Check that your application does not exceed the safe operating specifications for this product.

SAFETY DURING INSTALLATION

The product must be installed and operated by qualified service personnel and installed into an apparatus cabinet or similar, where access is restricted to service personnel only.

During installation, ensure a protective earthing conductor is first connected to the protective earthing terminal (only valid for metallic housings). Westermo recommends a crosssectional area of at least 4 mm2.

If the product does not have a protective earthing terminal, then the DIN-rail must be connected to protective earth. Upon removal of the product, ensure that the protective earthing conductor, or the connection to earth via the DIN-rail, is disconnected last.

HAZARDOUS VOLTAGE

Do not open an energized product. Hazardous voltage may occur when connected to a power supply.

PROTECTIVE FUSE

The power supply wiring must be sufficiently fused. It must be possible to disconnect manually from the power supply. Ensure compliance to national installation regulations.

Replacing the internal fuse must only be performed by Westermo qualified personell.

REDUCE THE RISK OF FIRE

To reduce the risk of fire, use only telecommunication line cords with a cable diameter of AWG 26 or larger. Regarding power cable dimensions, see Interface Specifications.

CLASS 1 LASER PRODUCT

Do not look directly info a fibre optical port or any connected fibre, although the product is designed to meed the Class 1 Laser regulations and complies with 21 CFR 1040.10 and 1040.11.

FIBRE OPTIC HANDLING

Fibre optic equipment need special treatment. It is very sensitive to dust and dirt. If the fibre is disconnected from the product, the protective plugs on the transmitter/receiver must be connected. The protective plugs must be kept on during transportation. The fibre optics cables must be handled the same way.

CORROSIVE GASES

If the product is placed in a corrosive environment, it is important that all unused connector sockets are protected with a suitable plug, in order to avoid corrosion attacks on the gold plated connector pins.

ELECTROSTATIC DISCHARGE (ESD)

Prevent electrostatic discharge damages to internal electronic parts by discharging your body to a grounding point (e.g. use a wrist strap).

Care recommendations

Follow the care recommendations below to maintain full operation of product and to fulfil the warranty obligations:

• Do not drop, knock or shake the product. Rough handling above the specification may cause damage to internal circuit boards.

• Use a dry or slightly water-damp cloth to clean the product. Do not use harsh chemicals, cleaning solvents or strong detergents.

• Do not paint the product. Paint can clog the product and prevent proper operation.

If the product is used in a manner not according to specification, the protection provided by the equipment may be impaired.

If the product is not working properly, contact the place of purchase, nearest Westermo distributor office or Westermo technical support.

Cleaning of the optical connectors

In the event of contamination, the optical connectors should be cleaned by the use of forced nitrogen and some kind of cleaning stick.

Recommended cleaning fluids:

• Methyl-, ethyl-, isopropyl- or isobutyl-alcohol
• Hexane
• Naphtha

Product disposal

This symbol means that the product shall not be treated as unsorted municipal waste when disposing of it. It needs to be handed over to an applicable collection point for recycling electrical and electronic equipment.

By ensuring the product is disposed of correctly, you will help to reduce hazardous substances and prevent potential negative consequences to both environment and human health, which could be caused by inappropriate disposal.

Article number, model and description

Article	Model	Description
3645-0001	MCW-211-MM-SC2	10/100Base-T/TX: 1 port 100Base-FX: 1 port
3645-0010	MCW-211-MM-ST2	10/100Base-T/TX: 1 port 100Base-FX: 1 port
3645-0020	MCW-211-SM-SC15	10/100Base-T/TX: 1 port 100Base-FX: 1 port
3645-0030	MCW-211-SM-LC15	10/100Base-T/TX: 1 port 100Base-FX: 1 port
3645-0040	MCW-211-SM-LC40	10/100Base-T/TX: 1 port 100Base-FX: 1 port
3645-0050	MCW-211-MM-LC2	10/100Base-T/TX: 1 port 100Base-FX: 1 port

Simplified EU declaration of conformity

Hereby, Westermo declares that the equipment is in compliance with applicable EU directives. The full EU declaration of conformity and other detailed information are available at the respective product page at www.westermo.com/support/product-support.

Agency approvals and standards compliance

Type	Approval / Compliance
EMC	EN 61000-6-2, Immproducty industrial environments
	EN 61000-6-4, Emission industrial environments
Marine	DNV GL rules for classification – Ships and offshore products[1]
Note	[1] Applicable only for 3645-0030, 3645-0040 , 3645-0050

Corrosive environment:

This product has been successfully tested in a corrosion test according to *IEC 60068-2-60, method 4*. This means that the product meets the requirements to be placed in an environment classified as *ISA-S71.04 class G3*.

CORROSIVE GASES

If the product is placed in a corrosive environment, it is important that all unused connector sockets are protected with a suitable plug, in order to avoid corrosion attacks on the gold plated connector pins.

Type tests and environmental conditions

Electromagnetic Compatibility			
Phenomena	**Test**	**Description**	**Level**
ESD	EN 61000-4-2	Enclosure contact	± 4 kV
		Enclosure air	± 8 kV
RF field AM modulated	IEC 61000-4-3	Enclosure	10 V/m 80% AM (1 kHz), 30 – 2700 MHz
Fast transient	EN 61000-4-4	Signal ports	± 1 kV
		Power ports	± 2 kV
Surge	EN 61000-4-5	Signal ports balanced	± 2 kV line to earth, ± 1 kV line to line
		Power ports	± 2 kV line to earth, ± 2 kV line to line
RF conducted	EN 61000-4-6	Signal ports	10 V 80% AM (1 kHz), 0.15 – 80 MHz
		Power ports	10 V 80% AM (1 kHz), 0.15 – 80 MHz
Voltage dips and interruption	EN 61000-4-29	DC power ports	10 ms, interruption 10 ms, 30% reduction 10 ms, 60% reduction +20% above & –20% below rated voltage
Radiated emission	CISPR 16-2-3 ANSI C63.4 (FCC part 15)	Enclosure	Class A
Conducted emission	CISPR 16-2-1	DC power ports	Class A
Dielectric strength	UL 60950-1	Signal port to other isolated ports	1.5 kVrms 50 Hz 1 min
		Power port to other isolated ports	2 kVrms 50 Hz 1 min
Environmental			
Temperature	EN 60068-2-1 EN 60068-2-2	Operating	–25 to +70°C
		Maximum surface temperature	135°C (temperature class T4)
		Storage & Transport	–40 to +70°C
Humidity	EN 60068-2-30	Operating	5 to 95% relative humidity
		Storage & Transport	5 to 95% relative humidity
Altitude		Operating	2 000 m / 70 kPa
Service life		Operating	10 year
Vibration	IEC 60068-2-6	Operating	7.5 mm, 5 – 8 Hz
			2 g, 8 – 500 Hz
Shock	IEC 60068-2-27	Operating	15 g, 11 ms
Packaging			
Enclosure, MCW-211	UL 94	PC / ABS	Flammability class V-1
Enclosure, MCW-211 Ex		Cabelec 6141	
Dimension W x H x D			35 x 121 x 119 mm
Weight			0.25 kg
Degree of protection	IEC 529	Enclosure	IP 21
Cooling			Convection
Mounting			Horizontal on 35 mm DIN-rail

Interface specifications

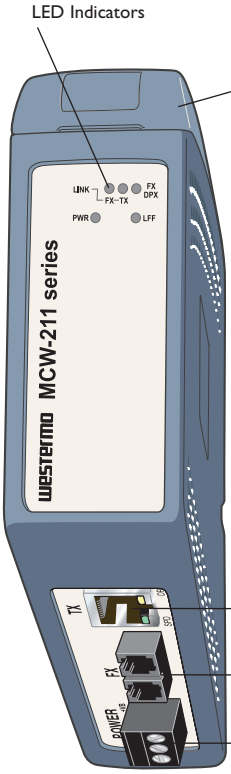
Power	
Rated voltage	12 to 48 VDC
Operating voltage	10 to 60 VDC
Rated current	200 mA @ 12 VDC 100 mA @ 24 VDC 50 mA @ 48 VDC
Rated frequency	DC
Inrush current I2t	0.03 A^2s @ 12 VDC
Startup current*	0.75 A peak
Polarity	Reverse polarity protected
Redundant power input	Yes
Isolation to	Ethernet TX
	Ethernet FX
Connection	Detachable screw terminal
Connector size	0.2 – 2.5 mm^2 (AWG 24 – 12)
Shielded cable	Not required

* Direction relative this product

Ethernet TX	
Electrical specification	IEEE std 802.3. 2000 Edition
Data rate	10 Mbit/s or 100 Mbit/s, manual or auto
Duplex	Full or half, manual or auto
Transmission range	100 m
Isolation to	Power
Connection	RJ-45

Ethernet FX	
Optical specification	IEEE std 802.3. 2000 Edition
Data rate	100 Mbit/s
Duplex	Full or half
Connection	SC, ST or LC

Location of interface ports and LEDs



Ethernet TX – RJ-45

Position	Direction*	Description
1	In/Out	TD+
2	In/Out	TD–
3	In/Out	RD
4	–	–
5	–	–
6	In/Out	RD–
7	–	–
8	–	–

* Direction relative this product

Ethernet FX – SC, ST or LC

Position	Direction*	Description	Product marking
Rx	In	Receive port	Rx
Tx	Out	Transmit port	Tx

* Direction relative this product

Power

Position	Direction*	Description	Product marking
1	–	Common	COM
2	In	+ Voltage A	+VA
3	In	+ Voltage B	+VB

* Direction relative this product

Fibre optic power budget

Model	MCW-211-MM xx2	MCW-211-SM SC15	MCW-211-SM LC15	MCW-211-SM LC40
Transmitted wavelength	1310 nm	1310 nm	1310 nm	1310 nm
Min. output power, transmitter	–19 dBm	–15 dBm	–15 dBm	–5 dBm
Max. output power, transmitter	–12 dBm	–8 dBm	–8 dBm	0 dBm
Input sensitivity, receiver	–31 dBm	–34 dBm	–31 dBm	–34 dBm
Min. power budget	12 dBm	19 dBm	16 dBm	29 dBm
Max. power budget	19 dBm	26 dBm	23 dBm	34 dBm
Recommended fibre cable and core / cladding diameter	Multimode 50/125, 62.5/125	Singlemode 9/125, 10/125	Singlemode 9/125, 10/125	Singlemode 9/125, 10/125

Fibre type	Normal attenuation @ 1310 nm multimode	Normal attenuation @ 1310 nm singlemode
50/125	3.0 dBm/km	–
62,5/125	3.5 dBm/km	–
9/125	–	0.5 dBm/km
10/125	–	0.5 dBm/km

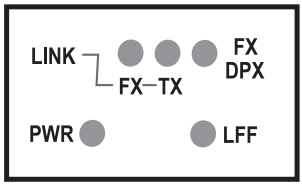
Attenuation in connectors / splices

Type	Normal attenuation
Connector	0.2 – 0.4 dBm
Fusion splice	0.1 dBm
Mechanical splice	0.2 dBm

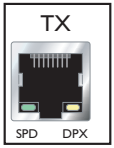
LED indicators

LED indicators are available on the front panel and on the RJ-45 TX connector.

LED	Status	Description
PWR	ON	Internal power, initialising OK
	Slow flash	Initialisation progressing
	Fast flash	Initialisation error
LINK TX	OFF	No Ethernet link TX
	ON	Good Ethernet link TX
	Flash	Ethernet data is transmitted or received on TX interface
LINK FX	OFF	No Ethernet link FX
	ON	Good Ethernet link FX
	Flash	Ethernet data is transmitted or received on FX interface
FX DPX	OFF	Half dupex FX interface
	ON	Full duplex FX interface
LFF	OFF	Link fault forward is not active
	ON	Link fault forward is active and has shutdown an interface



LED	Status	Description
SPD	OFF	10 Mbit/s TX interface
	ON	100 Mbit/s TX interface
DPX	OFF	Half duplex TX interface
	ON	Full duplex TX interface



Installation

Mounting / Removal

HAZARDOUS VOLTAGE

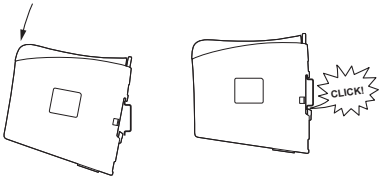
Do not open an energized product. Hazardous voltage may occur when connected to a power supply.

ELECTROSTATIC DISCHARGE (ESD)

Prevent electrostatic discharge damages to internal electronic parts by discharging your body to a grounding point (e.g. use a wrist strap).

Mounting

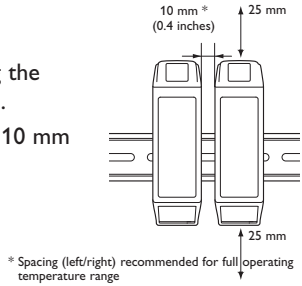
This product should be mounted on 35 mm DIN-rail which is horizontally mounted on a wall or cabinet backplate. Snap on mounting, see figure



Cooling

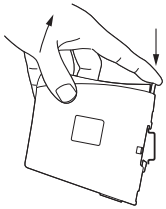
This product uses convection cooling. To avoid obstructing the airflow around the product, use the following spacing rules.

Recommended spacing 25 mm (1.0 inch) above/below and 10 mm (0.4 inches) left/right the product.



* Spacing (left/right) recommended for full operating temperature range

Removal Press down the black support at the back of the product, see figure.



Configuration

DIP switches are accessible under the lid on top of the product. DIP switches are used to configure the product.

DIP-switch settings

HAZARDOUS VOLTAGE

Do not open an energized product. Hazardous voltage may occur when connected to a power supply.

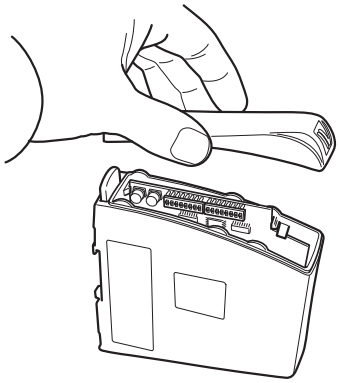
ELECTROSTATIC DISCHARGE (ESD)

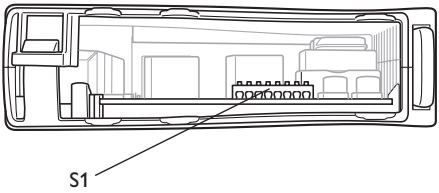
Prevent electrostatic discharge damages to internal electronic parts by discharging your body to a grounding point (e.g. use a wrist strap).

NOTE! DIP-switch alterations are only effective after a power on.

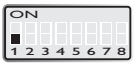
Observe this when the DIP-switches will be configured

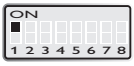
- Speed and duplex setting only valid when auto-negotiation is disabled.
- If auto-negotiation and auto MDI/MDI-X disabled the TX ports supports MDI-X configuration.

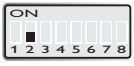


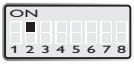


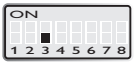
TX Port settings

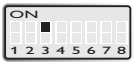
S1  Auto-negotiation and auto MDI / MDI-X disabled TX port

S1  Auto-negotiation and auto MDI / MDI-X enabled TX port

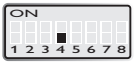
S1  10 Mbit/s speed selected TX port

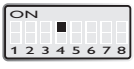
S1  100 Mbit/s speed selected TX port

S1  Half duplex selected TX port

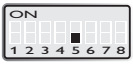
S1  Full duplex selected TX port

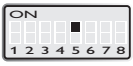
FX Port settings

S1  Half duplex selected FX port

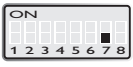
S1  Full duplex selected FX port

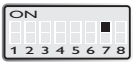
Flow control setting

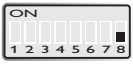
S1  Flow control disabled

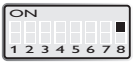
S1  Flow control enabled

Link fault forward settings

S1  TX → FX Link fault forward disabled

S1  TX → FX Link fault forward enabled

S1  FX → TX Link fault forward disabled

S1  FX → TX Link fault forward enabled

Factory settings

S1 

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