





## **General information**

### **Legal information**

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More information about Westermo can be found at the following Internet address:  
[www.westermo.com](http://www.westermo.com)

## Safety



### **Before installation:**

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

This unit should only be installed by qualified personnel.

This unit should be built-in to an apparatus cabinet, or similar, where access is restricted to service personnel only.

The power supply wiring must be sufficiently fused, and if necessary it must be possible to disconnect manually from the power supply. Ensure compliance to national installation regulations.

This unit uses convection cooling. To avoid obstructing the air flow around the unit, follow the spacing recommendations (see Installation section).



### **Before mounting, using or removing this unit:**

Prevent access to hazardous voltage by disconnecting the unit from power supply.

Warning! Do not open connected unit. Hazardous voltage may occur within this unit when connected to power supply.



### **Class 1 Laser Product**

Do not look directly into fibre optical fibre port or any connected fibre although this unit is designed to meet the Class 1 Laser regulations.

## Care recommendations

Follow the care recommendations below to maintain full operation of unit and to fulfil the warranty obligations.

This unit must not be operating with removed covers or lids.

Do not attempt to disassemble the unit. There are no user serviceable parts inside.

Do not drop, knock or shake the unit, rough handling above the specification may cause damage to internal circuit boards.

Do not use harsh chemicals, cleaning solvents or strong detergents to clean the unit.

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

Do not expose the unit to any kind of liquids (rain, beverages, etc). The unit is not waterproof. Keep the unit within the specified humidity levels.

Do not use or store the unit in dusty, dirty areas, connectors as well as other mechanical part may be damaged.

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

Fibre connectors are supplied with plugs to avoid contamination inside the optical port.

As long as no optical fibre is mounted on the connector, e.g. for storage, service or transportation, should the plug be applied.

## Note. Fibre Optic Handling

Fibre optic equipment needs special treatment. It is very sensitive to dust and dirt. If the fibre will be disconnected from the modem the protective hood on the transmitter/receiver must be connected. The protective hood must be kept on during transportation. The fibre optic cable must also be handle the same way.

If this recommendation not will be followed it can jeopardise the warranty.

## 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

## Maintenance

No maintenance is required, as long as the unit is used as intended within the specified conditions.

## 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 this 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](http://www.westermo.com).

## Agency approvals and standards compliance

Type	Approval / Compliance
EMC	EN 61000-6-2, Immunity industrial environments
	EN 61000-6-4, Emission industrial environments
Marine	DNV GL rules for classification – Ships and offshore units <sup>1</sup>
Note	<sup>1</sup> Applicable only for 3645-0030, 3645-0040 , 3645-0050

### Corrosive environment Notice:

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*.

**Note!** 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 pins in connectors.

## Type tests and environmental conditions

<b>Electromagnetic Compatibility</b>			
<b>Phenomena</b>	<b>Test</b>	<b>Description</b>	<b>Level</b>
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	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	EN 60950	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
<b>Environmental</b>			
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
<b>Packaging</b>			
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

<b>Power</b>	
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 I <sub>2t</sub>	0.03 A <sup>2</sup> s @ 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 <sup>2</sup> (AWG 24 – 12)
Shielded cable	Not required

\* Direction relative this unit

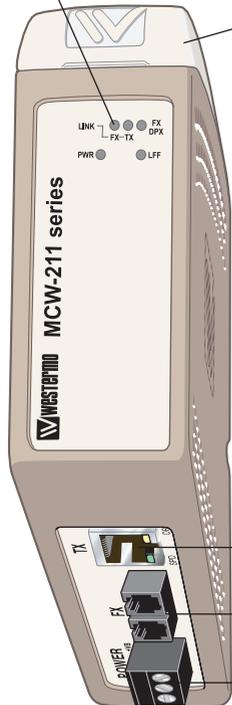
<b>Ethernet TX</b>	
Electrical specification	IEEE std 802.3. 2000 Edition
Data rate	10 Mbit/s or 100 Mbit/s, manual or auto
Duplex	Full or half, manual or auto
Transmission range	100 m
Isolation to	Power
Connection	RJ-45

<b>Ethernet FX</b>	
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 LED's

LED Indicators (for details see page 13)

DIP switches are accessible under the lid



### 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 unit

### Ethernet FX – SC, ST or LC

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

\* Direction relative this unit

### Power

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

\* Direction relative this unit

## 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 duplex 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

#### Before mounting or removing the unit:

Prevent damage to internal electronics from electrostatic discharges (ESD) by discharging your body to a grounding point (e.g. use of wrist strap).

Prevent access to hazardous voltages by disconnecting the unit from AC/DC mains supply and all other electrical connections.

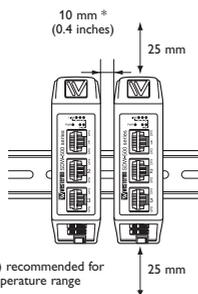
#### Mounting

This unit should be mounted on 35 mm DIN-rail which is horizontally mounted on a wall or cabinet backplate.

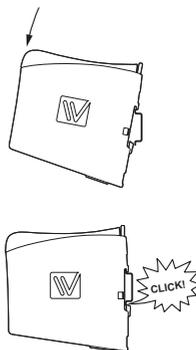
This unit uses convection cooling. To avoid obstructing the airflow around the unit, use the following spacing rules.

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

Snap on mounting, see figure



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



#### Removal

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



## Configuration

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



### DIP-switch settings

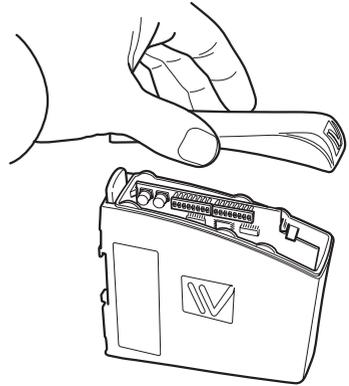
#### Before DIP-switch settings:

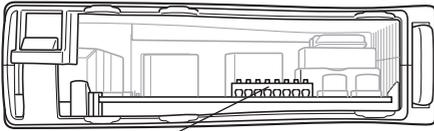
Prevent damage to internal electronics from electrostatic discharges (ESD) by discharging your body to a grounding point (e.g. use of wrist strap).

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

#### To be observe 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.





S1

### 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

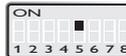
S1  100 Mbit/s speed selected TX port

S1  Half duplex selected TX port

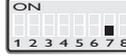
S1  Full duplex selected TX port

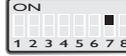
### Flow control setting

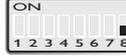
S1  Flow control disabled

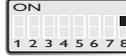
S1  Flow control enabled

### 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

### FX Port settings

S1  Half duplex selected FX port

S1  Full duplex selected FX port

### Factory settings

S1 





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