User Guide

MCW-211
SERIES

6645-2202

Industrial Ethernet Media Converter

www.westermo.com

WESTERMO

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 airflow around the unit, follow the spacing recommendations (see Cooling section).

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 water-proof. 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.

Maintenance

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

Functional description

Introduction

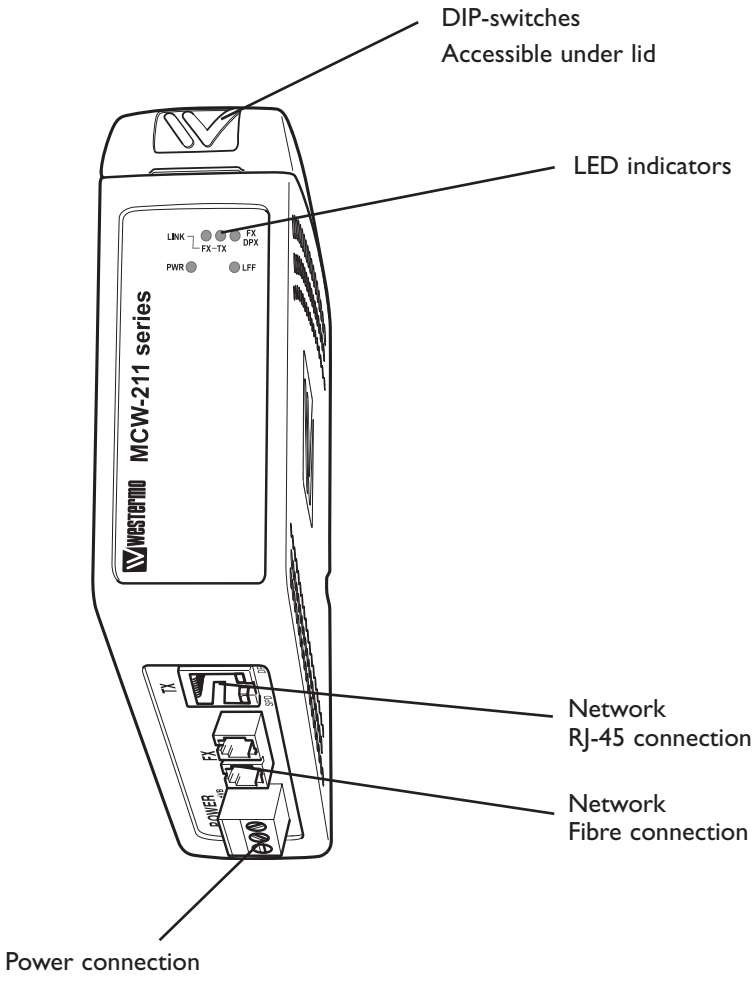
The MCW-211 is an Industrial Ethernet FX/TX Media Converter.
The MCW-211 convert data between Ethernet 10/100Base-TX and 100Base-FX.

The unit is easy to use and install caused by auto-negotiation of speed and duplex, auto-crossover and auto-polarity. The media converter is transparent for large frames (VLAN or QoS). It is also possible to set speed, duplex and flow control via DIP-switches.

The FX side supports Far-End-Fault indication. A link fault from either side is forwarded to the other side, Link Fault Forwarding.

MCW-211 has a wide DC power input range with polarity protection and redundant power from dual sources. With extended temperature range supported as standard the MCW-211 is designed to be used the harshest environments.

Location of Interface ports, LED's and DIP-switches



Westermo Teleindustri AB

Declaration of conformity

The manufacturer Westermo Teleindustri AB
SE-640 40 Stora Sundby, Sweden

Herewith declares that the product(s)

Type of product	Model	Art no	Installation manual
DIN-rail	MCW-211-MM-SC2	3645-0001	6645-2201
	MCW-211-MM-ST2	3645-0010	
	MCW-211-SM-SC15	3645-0020	
	MCW-211-SM-LC15	3645-0030	
	MCW-211-SM-LC40	3645-0040	
	MCW-211-MM-LC2	3645-0050	

is in conformity with the following EC directive(s).

No	Short name
89/336/EEG	Electromagnetic Compatibility (EMC)

References of standards applied for this EC declaration of conformity.

No	Title	Issue
EN 61000-6-2	Immunity for industrial environments	2 (2001)
EN 61000-6-4	Emission standard for industrial environments	1 (2001)

The last two digits of the year in which the CE marking was affixed: 05

Hans Levin
Technical Manager
9th May 2005

Postadress/Postal address	Tel.	Telefax	Postgiro	Bankgiro	Org.nr/ Corp. identity number	Registered office
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Sweden	Int+46 16428000	Int+46 16428001				

Agency approvals and standards compliance

Type	Approved Agency/ W-mo	Approval / Compliance
EMC	W-mo	EN 61000-6-2, Immunity industrial environments
	W-mo	EN 61000-6-4, Emission industrial environments
Safety	W-mo	EN 60950, IT equipment

Type tests and environmental conditions

Electromagnetic Compatibility			
Phenomena	**Test**	**Description**	**Test levels**
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), 80 – 1 000 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 & 100 ms, interruption 10 ms, 30% reduction 10 ms, 60% reduction +20% above & –20% below rated voltage
Radiated emission	EN 55022	Enclosure	Class B
Conducted emission	EN 55022	DC power ports	Class B
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
Environmental			
Temperature		Operating	–25 to +70°C
		Storage & Transport	–40 to +70°C
Humidity		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	UL 94	PC / ABS	Flammability class V-1
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 I^2t	0.03 A^2s @ 12 VDC
Startup current*	0.75A 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

* External supply current capability for proper startup

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

** Direction relative this unit

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

Position	Direction*	Description	Product marking
1	In/Out	TD+	
2	In/Out	TD-	
3	In/Out	RD+	
4			
5			
6	In/Out	RD-	
7			
8			
Shield		HF-connected	

* Direction relative this unit

Ethernet FX

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

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

* 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

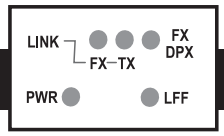
Fibre type	Normal attenuation @ 1310 nm multimode	Normal attenuation @ 1310 nm singlemode
50/125	3.0 dBm/km	–
62,5/125	3.5 dBm/km	–
9/125	–	0.5 dBm/km
10/125	–	0.5 dBm/km

Attenuation in connectors / splices

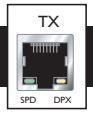
Type	Normal attenuation
Connector	0.2 – 0.4 dBm
Fusion splice	0.1 dBm
Mechanical splice	0.2 dBm

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 ON	Half dupex FX interface 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

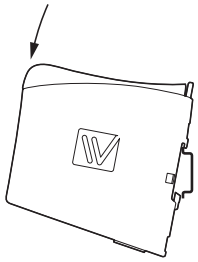
Mounting / Removal

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.

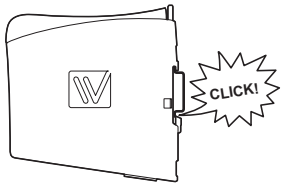
Mounting

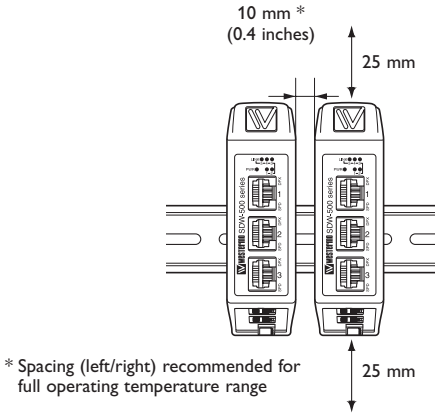


This unit should be mounted on 35 mm DIN-rail which is horizontally mounted on a wall or cabinet backplate.

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.

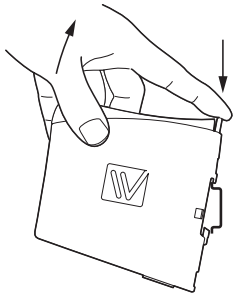
Snap on mounting, see figure





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

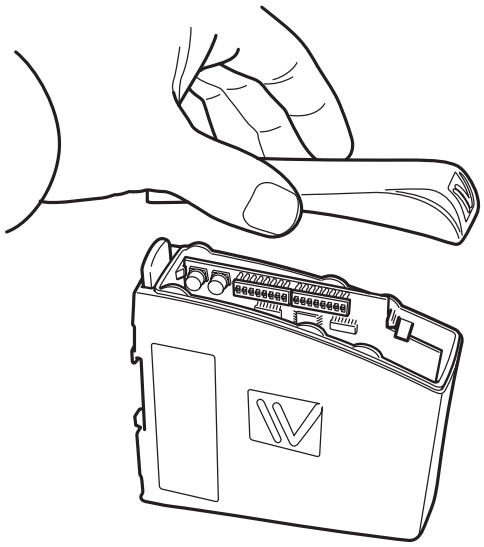
Before DIP-switch settings:

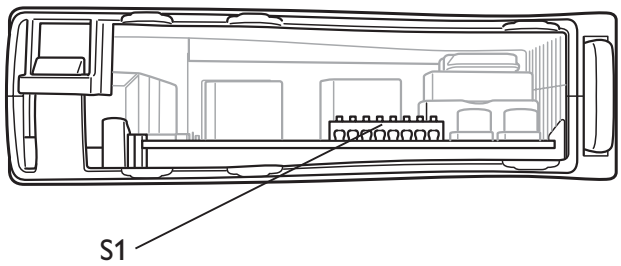
Prevent damage to internal electronics from electrostatic discharges (ESD) by discharging your body to a grounding point (e.g. use of wrist strap).

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

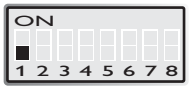
To be observe when the DIP-switches will be configured

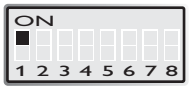
- Speed and duplex setting only valid when auto-negotiation is disabled.
- If auto-negotiation and auto MDI/MDI-X disabled the TX ports supports MDI-X configuration.

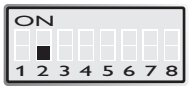


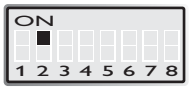


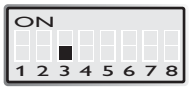
TX Port settings

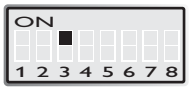
S1  Auto-negotiation and auto MDI / MDI-X disabled TX port

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

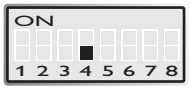
S1  10 Mbit/s speed selected TX port

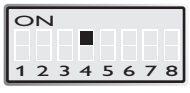
S1  100 Mbit/s speed selected TX port

S1  Half duplex selected TX port

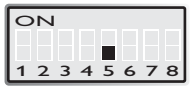
S1  Full duplex selected TX port

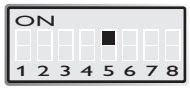
FX Port settings

S1  Half duplex selected FX port

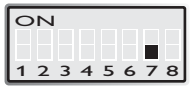
S1  Full duplex selected FX port

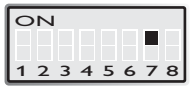
Flow control setting

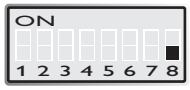
S1  Flow control disabled

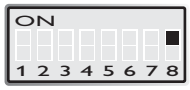
S1  Flow control enabled

Link fault forward settings

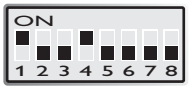
S1  TX → FX Link fault forward disabled

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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