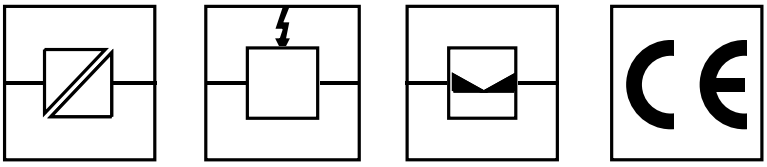
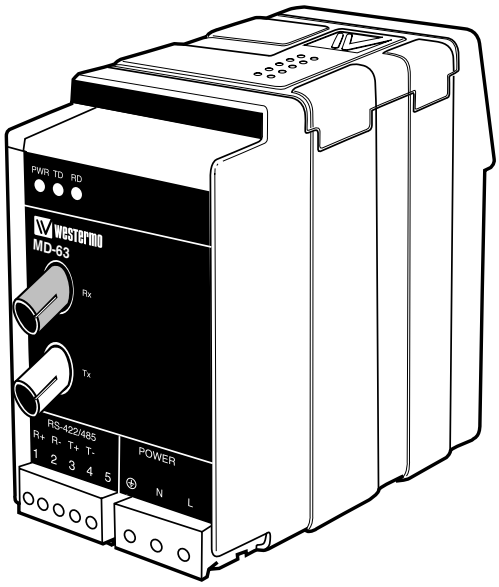
MD-63 AC
MD-63 DC

INSTALLATIONSANVISNING
INSTALLATION MANUAL
INSTALLATIONS ANLEITUNG

6071-2002



Galvanic Isolation | Transient Protection | Balanced Transmission | CE Approved



Omvandlare, optisk fiber
– RS-422/485/V.11
Converter, fibre-optic
– RS-422/485/V.11
Glasfaser Wandler
– RS-422/485/V.11

westermo®
www.westermo.se

Specifications MD-63

Transmission	Asynchronous*, full/half duplex or simplex
Interface 1	EIA RS-422/485 CCITT V.11, 5-position detachable screw-terminal
Interface 2	ST-connectors, see table of power budget
Data rate	Up to 1.5 Mbit/s
Indicators	Power, TD, RD
Temperature range	5–50°C, ambient temperature
Humidity	0–95% RH without condensation
Dimensions	55x100x128 mm (WxHxD)
Weight	0.45 kg AC / 0.3 kg DC
Mounting	On 35 mm DIN-rail

Power supply alternatives

Model description	MD-63 AC	MD-63 115V AC	MD-63 DC	MD-63 36–55V DC
Power supply	230V AC +15/–10%	115V AC +15/–10%	24V DC +50/–50%	48V DC +15/–25%
Frequency	48–62Hz	48–62Hz	–	–
Fuse, F2	100mA S 5x20 mm Littelfuse	100mA S 5x20 mm Littelfuse	1.6A S 5x20 mm Littelfuse	1.6A S 5x20 mm Littelfuse
Power consumption	5VA	5VA	3W	3W
Overvoltage protection	430V	220V	–	–
Isolation RMS	1 500V	1 500V	500V	500V

* *Synchronous protocols can be transmitted under certain circumstances.*
See "selection of bits" page 10.

Functional description MD-63

MD-63 is developed for RS-422/485 point to point communication via fibre optic cables. Transmission rates up to 1.5 Mbit/s and transmission distances up to 25 km is possible. The MD-63 consists of one F/O channel with separate transmitter and receiver, Tx and Rx. On the front of the unit there are also three LED's indicating the data transmission on the channel. The fibre optical cable is completely immune to external interference, which makes it ideal for harsh environments.

Power budget

Min. budget

Unit			
Fibre	**820 nm**	**1300 nm**	**single mode**
50/125	10.7 dB	8.1 dB	
62.5/125	14.5 dB	11.6 dB	
100/140	20.6 dB		
9/125			6.3 dB

Typ. budget

Unit			
Fibre	**820 nm**	**1300 nm**	**single mode**
50/125	16.6 dB	14.6 dB	
62.5/125	18.6 dB	15.1 dB	
100/140	25.9 dB		
9/125			12.3 dB

”Min. budget” states the minimum guaranteed power budget. Experience shows however that the typical value is in the range of the indicated ”Typ. budget”.

Attenuation in fibre cable

The values below can differ depending on quality and manufacturer of the fibre-optic cable.

Fibre	Attenuation at 820 nm	Attenuation at 1300 nm	Attenuation at single mode (1300 nm)
50/125 µm	3.0 dB/km	1.0 dB/km	
62.5/125 µm	3.5 dB/km	1.2 dB/km	
100/140 µm	4.0 dB/km		
9/125 µm			0.5 dB/km

Attenuation in connectors

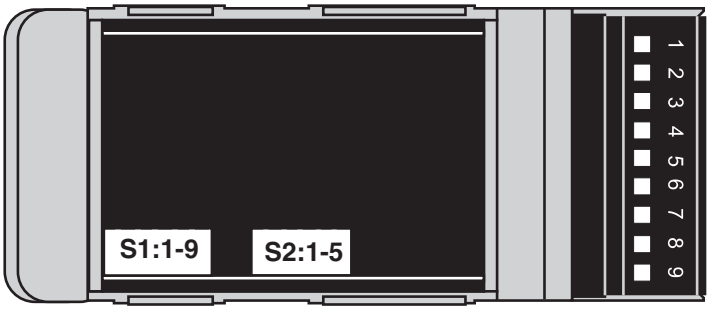
0.2–0.4 dB

Attenuation in splice

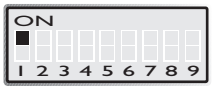
Fusion	0.1 dB
Mecanical	0.2 dB

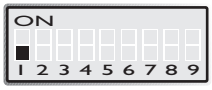
Switch settings MD-63

The MD-63 can through different switch settings be adapted to a variety of running conditions. To set the switches, open the plastic case by removing the top cover.



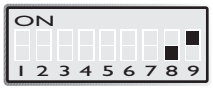
Selection of 2- or 4-wire

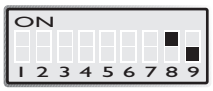
S1  4-wire

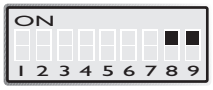
S1  2-wire

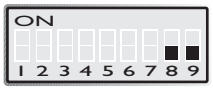
S1: 2-3 not used

Selections of bits

S1  9

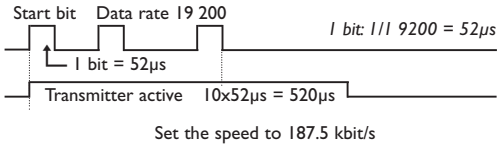
S1  10

S1  11

S1  *

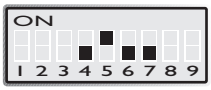
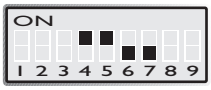
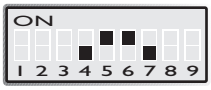
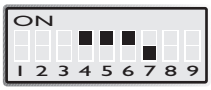
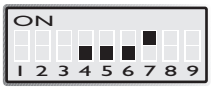
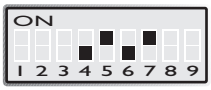
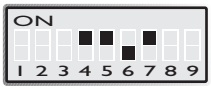
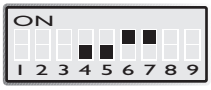
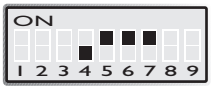
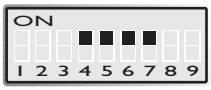
**) Use this setting for synchronous protocols. The transmitter will be active from the start bit to 10 bit-times after the last high databit (see example below). The speed shall be set to ≅10 times the required communication speed.*

Example 19 200 bit/s



Set the speed to 187.5 kbit/s

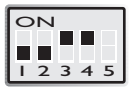
Selection of Turning time/ Transmission rate

		Turning time	Transmission rate
S1		0.4 ms	≤ 2 400 bit/s
S1		0.2 ms	4 800 bit/s
S1		0.1 ms	9 600 bit/s
S1		75 µs	14 400 bit/s
S1		50 µs	19 200 bit/s
S1		37 µs	28 800 bit/s
S1		25 µs	38 400 bit/s
S1		16 µs	62 500 bit/s
S1		11 µs	93 750 bit/s
S1		9 µs	115.2 kbit/s
S1		6 µs	187.5 kbit/s
S1		3 µs	375 kbit/s
S1		2 µs	500 kbit/s
S1		1 µs	1–1.5 Mbit/s

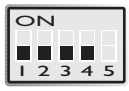
Termination with fail-safe

S2 

Termination (2-wire)

S2 

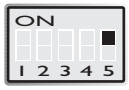
Termination (4-wire)

S2 

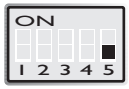
No termination

The fail-safe function forces the signal state of the receiver to OFF when the connected transmitter is in tri-state (transmitter inactive). The receiver located furthest away shall be terminated.

Transmitted power

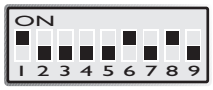
S2 

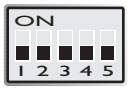
Low

S2 

High

Factory settings

S1 

S2 

Supervision table when selecting data bits							
7 bits	●	●	●		●		
8 bits				●		●	●
No parity	●	●		●		●	
Parity			●		●		●
1 stop bit	●		●	●			●
2 stop bits		●			●	●	
Number of bits	9	10	10	10	11	11	11

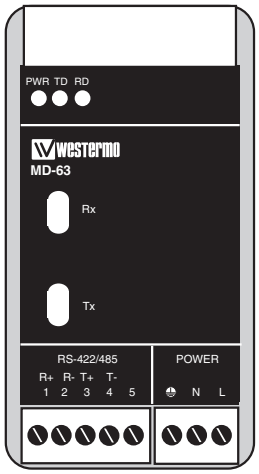
Connections MD-63

Line connection

(5-position screw-terminal)

Direction	Connection No.	CCITT V.11 Description
Receiver	1	A' (R+)
Receiver	2	B' (R–)
Transmitter	3	A (T+)
Transmitter	4	B (T–)
	5	Shield

The definations R+/R–, T+/T– can be various between different manufactures.



Power connection MD-63 AC

(3-position screw-terminal)

Connection No.	Power supply
L N	115*/230V AC power
⏚	PE/Protective Earth

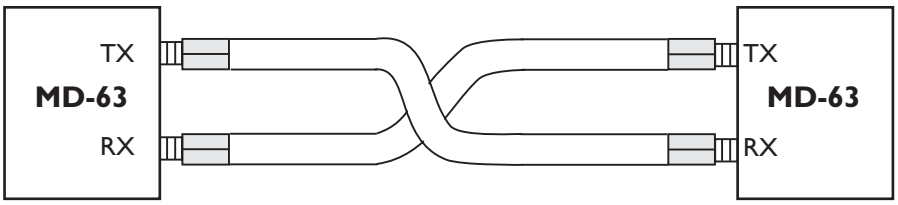
** Only MD-63 115V*

Power connection MD-63 DC

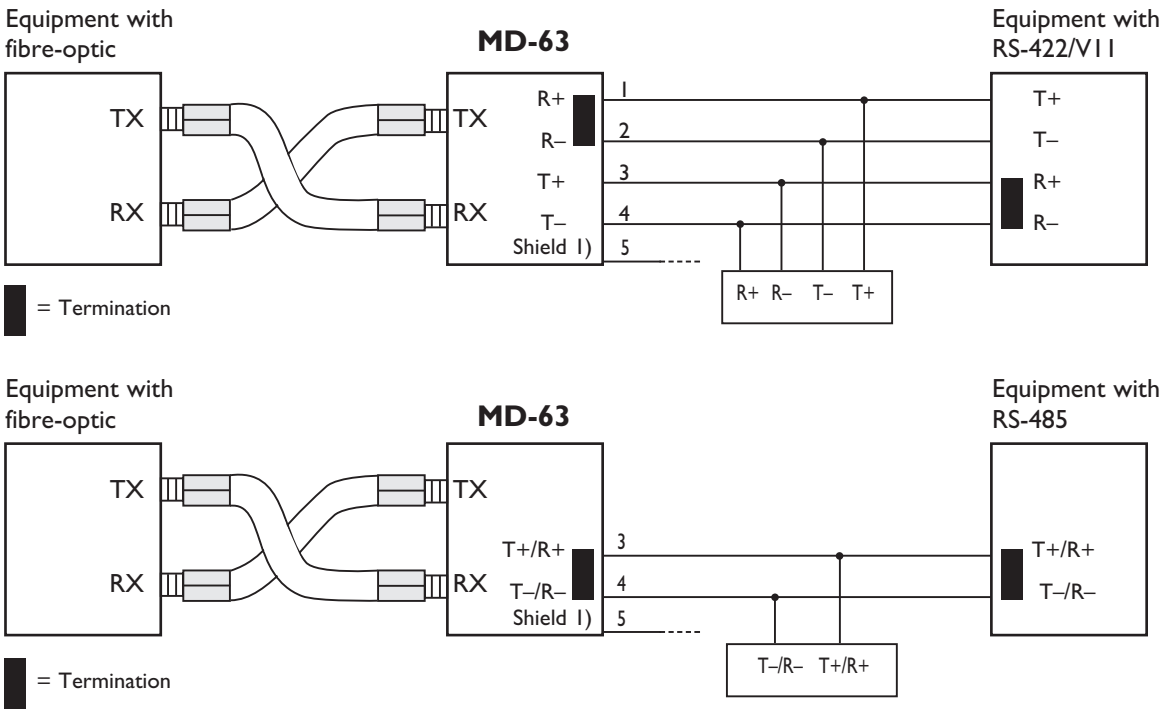
(2-position screw-teminal)

Connection No.	Power Supply
1	– Voltage
2	+ Voltage

Fibre connection



How to connect



1) If shielded wire is used, connect shield only in one end to avoid ground loop currents.

N.B. R+/R–, T+/T– definitations are not standard, it can help to shift A and B if the unit does not work.

Hints

RS-422/485 were designed for multidrop applications. When a system is installed it should form a bus structure.

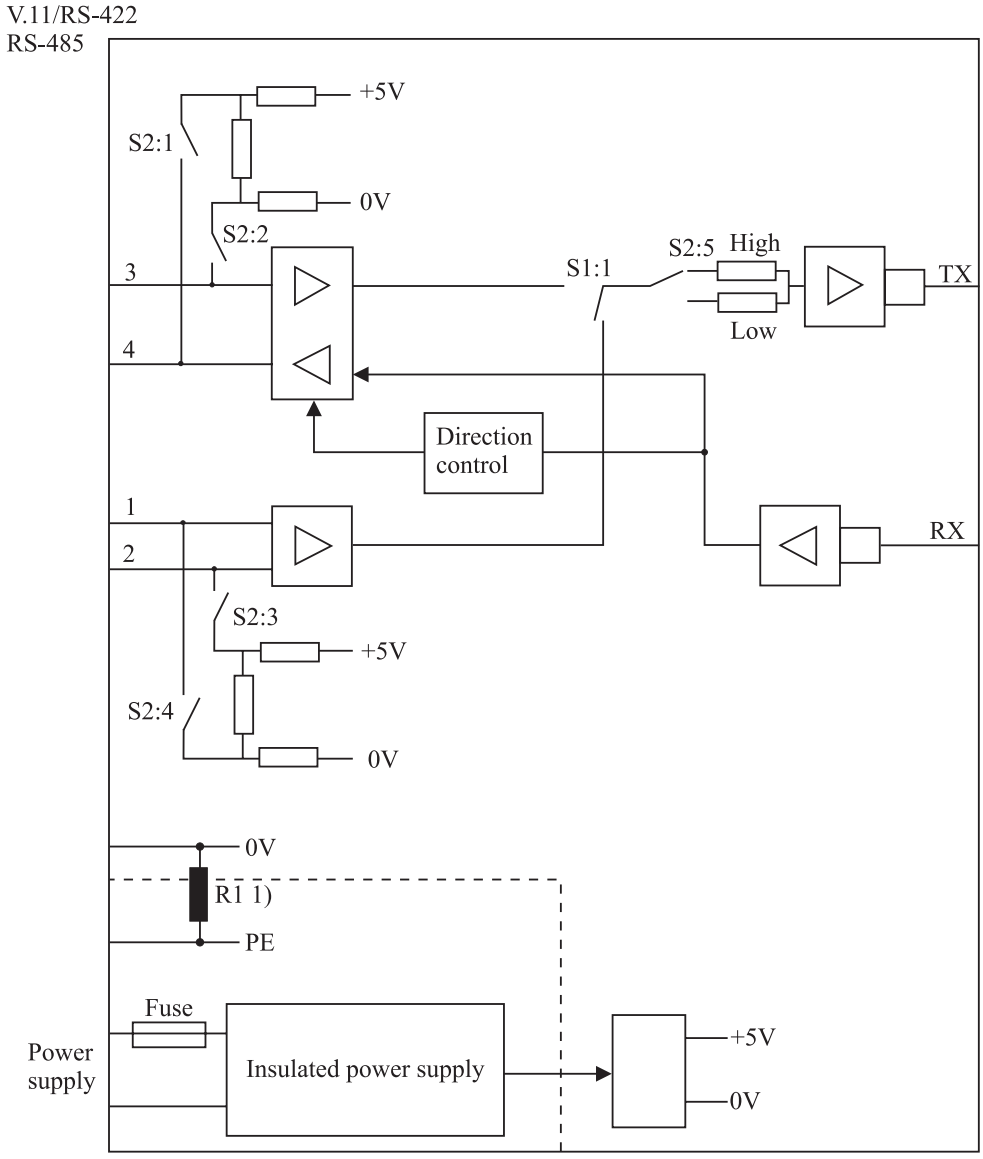
Star shaped networks should never be created, there are other Westermo products designed to work in star net applications. To correctly install, an RS-422/485 network should be terminated at the correct points.

The recommendation is to terminate the receiver on the first unit and the final bus unit. See diagrams under the headline ”Line connection” for details of how this is done with RS-485 (2 wire) and RS-422 (4 wire).

If any problems do occur on set up of the MD-63, the LEDs will be helpful.

- PWR: The unit has power.
- RD: Data received on the opto interface.
- TD: Data received on the RS-422/485 interface.

Block diagram



1) Jumper R1 is normally not used.

Westermo Teleindustri AB have distributors in several countries, contact us for further information.

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