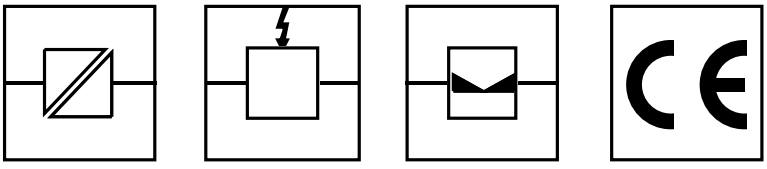
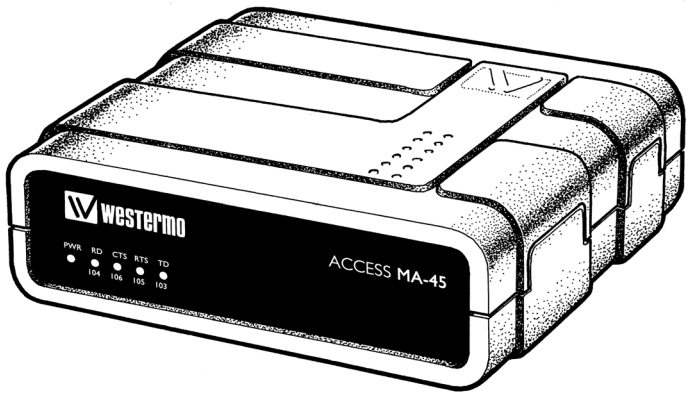
MA-45 AC
MA-45 DC

INSTALLATIONSANVISNING
INSTALLATION MANUAL
INSTALLATIONS ANLEITUNG

6045-2001



Galvanic Isolation | Transient Protection | Balanced Transmission | CE Approved



Omvandlare, RS-232 – RS-422/485
Converter, RS-232 – RS-422/485
RS-232 – RS-422/485 Wandler

westermo®
www.westermo.se

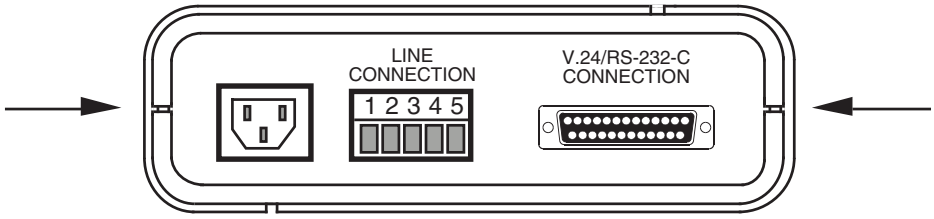
Specifications MA-45

Transmission	Asynchronous, full/half duplex or simplex
Interface 1	EIA RS-232-C/ITU-T V.24 25-position D-sub female, DCE
Interface 2	EIA RS-422/RS-485/ITU-T V.11
Data rate	Up to 115.2 kbit/s
Indicators	Power, RD, CTS, RTS, TD
Insulation	Galvanic insulation with opto-coupler (data transmission) and transformer (supply)
Insulation voltage	1 500 V
Overvoltage protection	**Mains:** Breakdown voltage 440 V at 230 V AC and 220 V at 115 V AC **Interface 2:** Breakdown voltage transmitter and receiver 7 V. Surge capacity 0.6 kW for 1ms
Power supply	Switchable 115/230 V +15/–10% 48–62 Hz
Fuse	AC: 100 mA fast 5x20 mm DC: 1.6 A fast 5 x 20 mm
Power consumption	AC: Max 22 mA at 230 V, max 44 mA at 115 V DC: Max 1.4 W
Temperature range	5–50°C, ambient temperature
Humidity	0–95% RH, non-condensing
Dimensions	161x139x53 mm WxDxH
Weight	AC: 0.5 kg DC: 0.25 kg
Mounting	With rubber pads or screws. Screws: Remove the two “keyholes” on the bottom of the case

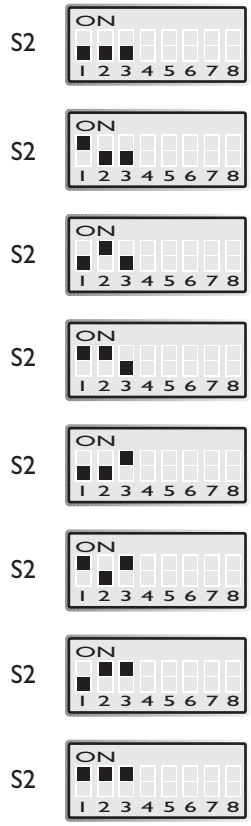
Switch settings

The MA-45 can through different switch settings be adapted to a variety of running conditions. To set the switches, open the plastic case with e.g. a screw-driver.

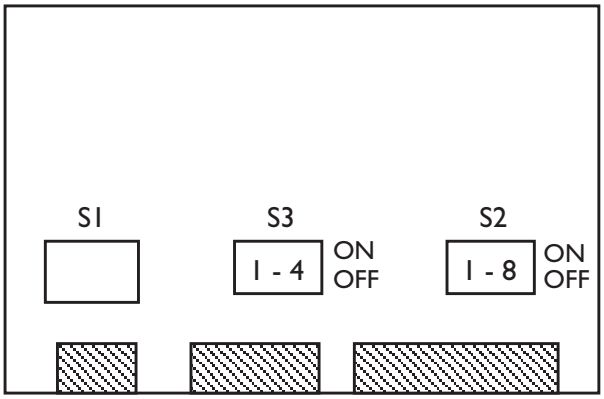
DANGER! DO NOT OPEN CONNECTED UNIT



Selection of data rate



It is not necessary to set the datarate or the number of bits when RTS-control is used.

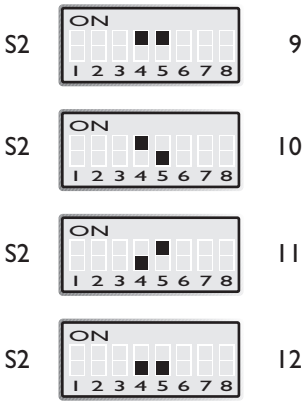


S1 Selection of power supply 115/230 V AC

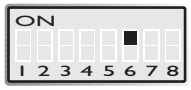
S2 Selection of data rate
Selection of 2- or 4-wire transmission
Selection of no. of data bits
(see table below)

S3 Selection of termination and fail-safe
(see next page)

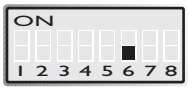
Selections of bits



2/4-wire transmission

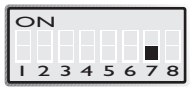
S2 

2-wire

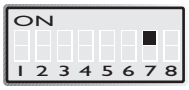
S2 

4-wire

Data control by data flow or RTS-control

S2 

Data control

S2 

RTS-control

Factory settings

S2 

S3 

S2: 8 not used

Terminering with fail-safe

S3 

Terminated (4-wire)

S3 

Terminated (2-wire)

S3 

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.

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	12

Connections

Line connection

(5-Position screw-terminal)

Direction	Connection no.	ITU-T 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.

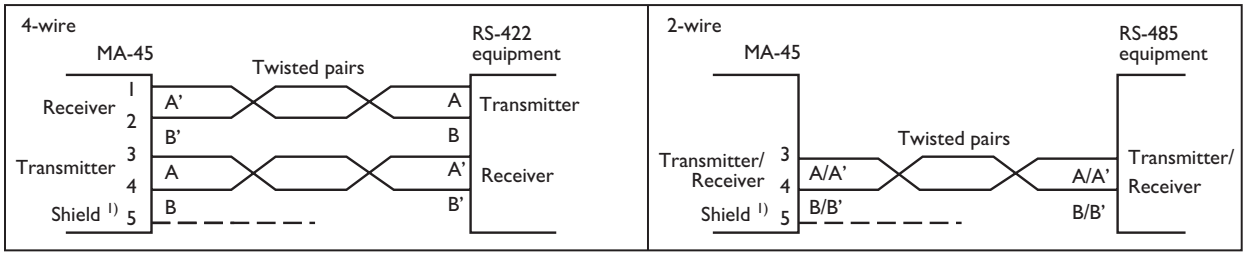
Terminal connection (DCE)

(RS-232-C/V.24, 25-Position D-sub, female)

Direction	Connection	ITU-T V.24 Code	Signal name
I	2	103	TD/Transmitted data
O	3	104	RD/Received Data
I	4	105	RTS/Request To Send
O	5	106	CTS/Clear To Send
O	6	107	DSR/Data Set Ready
–	7	102	SG/Signal Ground
O	8	109	DCD/Data Carrier Detect

I = Input **O** = Output on MA-45

Line connection



1) If shielded cable is used, connect the shield only at one end to avoid ground currents.

Transmission range (interface 2)

Use twisted pair cable. Max transmission range 1 200 metre.
(cable specifications 0.3 mm^2 and capacitance 42 pF/m).
The transmission range will increase if a cable with lower capacitance and larger diameter is used.
Use shielded cable in heavy industrial environments.

MA-45 DC

Specifications

Power supply	12–36 V DC
Power consumption	Max 2 W
Insulation	1 000 V
Fuse F1	1.6 A fast 5x20 mm

All other specifications according to MA-45 AC

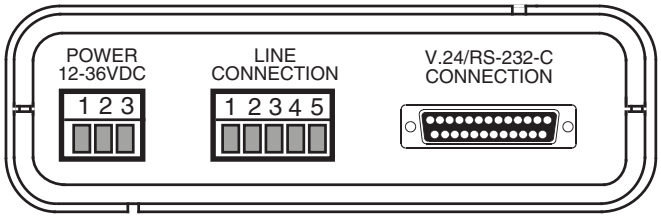
Switch settings

According to MA-45 AC

Connections

According to MA-45 AC, except power supply

Connection no.	Power supply
1	+ Voltage
2	– Voltage
3	

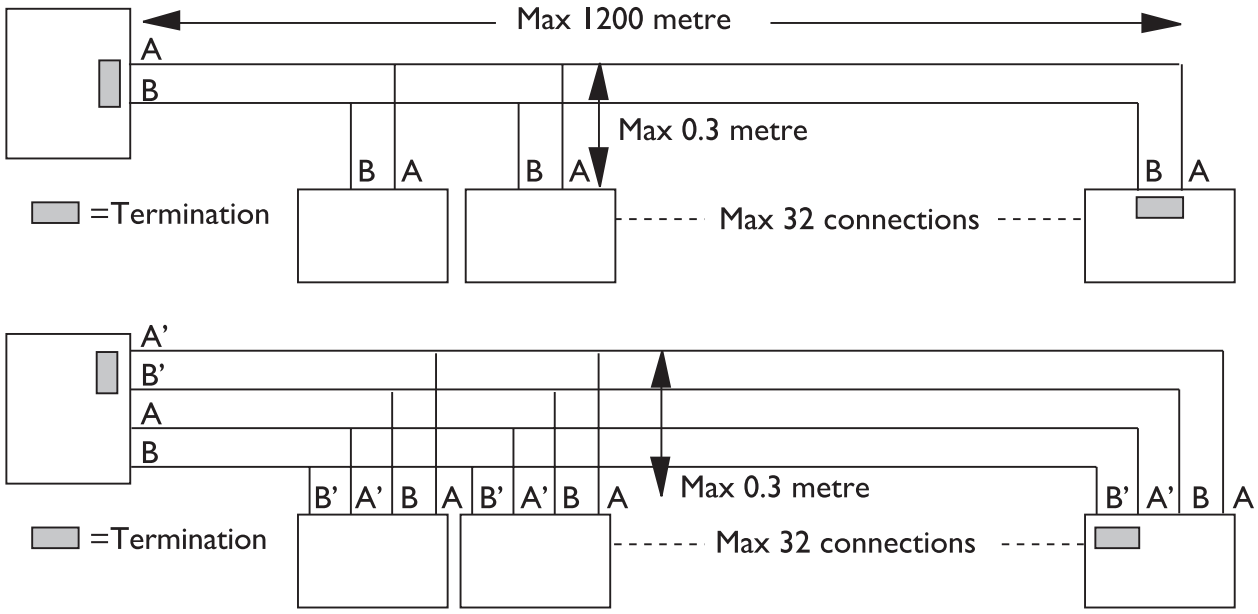


Hints

The MA-45 uses the RS-422/485 interface. RS-422/485 was designed for multidrop applications. When a system is installed it should form a bus structure (see diagrams). Star shaped networks should never be created, there are other Westermo products designed to work in star net applications. To install correctly, an RS-422/485 network should be terminated at the correct points. The recommendation is to terminate the receiver on the master unit and the final bus slave unit. See diagrams for details of how this is done with RS-485 (2 wire) and RS-422 (4 wire).

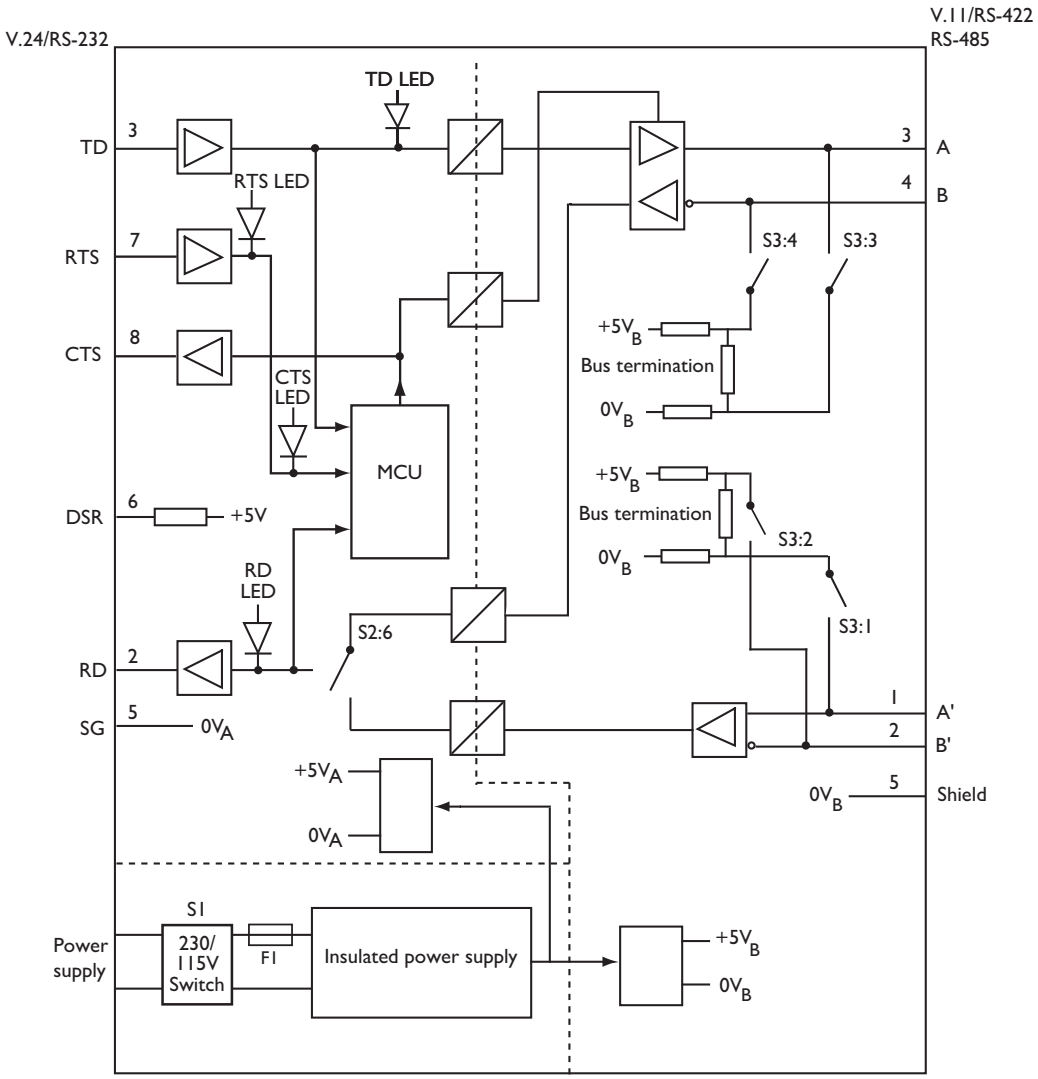
The line transmitter used in the MA-45 is activated by data received on the RS-232 interface, unlike conventional converters that rely on a control signal (e.g. RTS).
If any problems do occur on set up of the MA-45, the LED's will be helpful.

- PWR: The unit has power.
- RD: Data received on the RS-422/485 interface.
- CTS: Follows RTS
- RTS: Status of RTS from the RS-232 interface
- TD: Data received on RS-232 interface



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

Block diagram



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