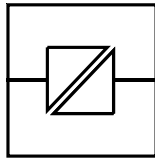


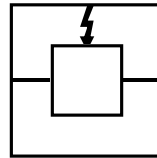
MD-54 AC  
MD-54 DC

# INSTALLATIONSANVISNING INSTALLATION MANUAL INSTALLATIONS ANLEITUNG

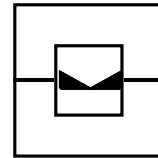
6605-2001



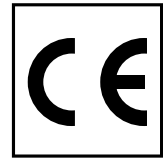
Galvanic  
Isolation



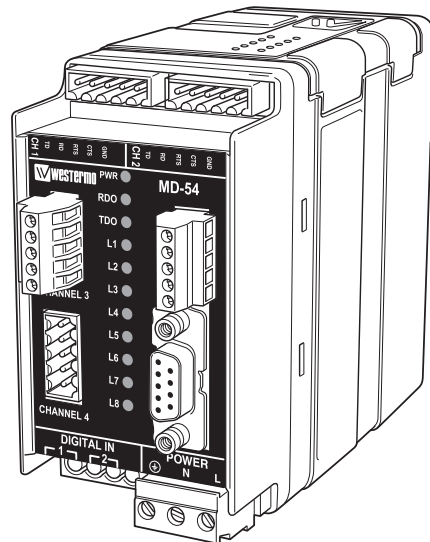
Transient  
Protection



Balanced  
Transmission



CE  
Approved



**CTS-generator,  
Xon/Xoff till CTS-omvandlare**

**CTS-generator,  
Xon/Xoff to CTS converter**

**CTS-Generator,  
Xon/Xoff auf CTS Wandler**

 **westermo**<sup>®</sup>  
[www.westermo.se](http://www.westermo.se)

## Specifications MD-54

<b>Transmission</b>	Asynchronous, full/half duplex or simplex
<b>Interface</b>	<b>Channel 3:</b> RS-232/V.24: 5-pin screw terminal <b>Channel 0:</b> RS-232/V.24: 9-pin D-sub RS-422/485: 5-pin screw terminal
<b>Transmission rate</b>	<b>Channel 3:</b> 300–115 200 bit/s <b>Channel 0:</b> RS-232/V.24: 1 200–115 200 bit/s RS-422/485: 1 200–460 800 bit/s
<b>Buffer</b>	<b>Channel 3:</b> 16 kb <b>Channel 0:</b> 16 kb
<b>Power supply</b>	230V AC +15%/–10% 48–62 Hz, 12–36V DC
<b>Isolation voltage</b>	3000V AC, 1500V DC
<b>Fuse</b>	AC 100mA fast 5x20 mm, DC 1.6A
<b>LED Indicators</b>	PWR, RD0, TD0, L1, L2, L3, L4, L5, L6, L7, L8
<b>Power consumption</b>	AC 30 mA, DC 1.5W
<b>Temperature range</b>	5–50°C, ambient temperature
<b>Humidity</b>	0–95% RH non-condensing
<b>Dimension</b>	55x100x128 mm (WxHxD)
<b>Weight</b>	AC 0.5 kg, DC 0.3 kg
<b>Mounting</b>	35 mm DIN-rail

## Description MD-54

The MD-54 is a device that solves serial data incompatibility problems between two devices. For example it can be used as a 'CTS-generator' or a 'XON/XOFF to RTS/CTS-converter'. It can also be used as a parameter and/or speed-converter and data buffer.

The unit is set up using a terminal or PC and settings are stored in non volatile memory.

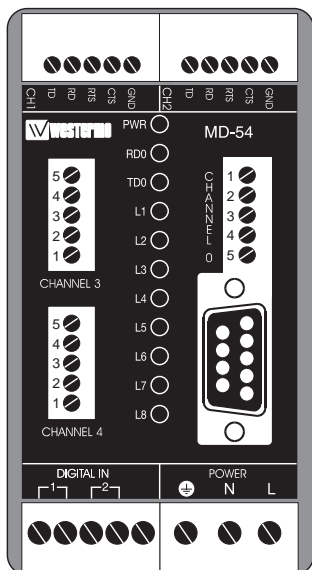
The unit consists of two RS-232/V.24 interfaces and two 16 kb data buffers, one in each direction. There is also a RS-422/485 interface connected in parallel to one of the RS-232/V.24 interfaces. Both RS-232/V.24 interfaces are DCE connections.

The front cover has 11 LED's for status indication.

As with other Westermo products the MD-54 provides a high level of galvanic isolation both on power and inputs. Operating modes are set-up via DIP-switches located under the lid on the top of the unit. The MD-54 is available in both AC (230V) and DC (12–36V) supply voltage. The unit is designed for mounting on 35 mm DIN-rail.

# Switch settings MD-54




The MD-54 can be set for a range of different operating conditions. Some settings are made via DIP-switches located under the lid on the top of the unit.






**Warning! Do not open connected unit**



## Function switch 1

- S1  Normal function
- S1  New program can be downloaded via channel 0 \*
- S1  Settings can be made via channel 0 \*\*

## Function switch 2

- S2  Termination 4-wire (RS-422)
- S2  Termination 2-wire (RS-485)
- S2  No termination

\*) The unit will automatically adapt its communication parameters for channel 0. PC based software from Westermo is required to download a new program.

\*\*\*) In this setting channel 0 communicates as follow:  
 – 9 600 bit/s  
 – 8 bits wordlength  
 – no parity  
 – 1 stop bit

## Function switch 2

- S2  4-wire (RS-422)
- S2  2-wire (RS-485)

## Factory settings



## Connections MD-54

### Connection channel 0, RS-232/V.24

Direction DCE	Connection 9-pos D-sub	CCITT V.24 Description	Signal description
○	2	104	RD/Received Data
I	3	103	TD/Transmitted Data
-	5	102	SG/Signal Ground
I	7	105	RTS/Request To Send
○	8	106	CTS/Clear To Send

I = Input MD-54    ○ = Output MD-54

### Connection channel 0, RS-422/485

Direction	Connection no.	CCIT V.11 Description
Receiver	1	A' (R+)
Receiver	2	B' (R-)
Transmitter	3	A (T+)
Transmitter	4	B (T-)
	5	Shield

Digital In, channel 1, 2 and 4 not used.  
The definitions R+/R-, T+/T- can be various between different manufactures.

### LED's description

Designation	Description
PWR	Power supply OK
RD0	RD signal channel 0
TD0	TD signal channel 0
L1	RTS signal channel 0
L2	-
L3	CTS signal channel 3
L4	-
L5	RD signal channel 3
L6	TD signal channel 3
L7	RTS signal channel 3
L8	-


### Connection channel 3, RS-232/V.24

Direction DCE	Connection no.	CCITT V.24 Description	Signal description
I	1	103	TD/Transmitted Data
○	2	104	RD/Received Data
I	3	105	RTS/Request To Send
○	4	106	CTS/Clear To Send
-	5	102	SG/Signal Ground

I = Input MD-54    ○ = Output MD-54

## Power connection MD-54 AC

3-position screw-terminal

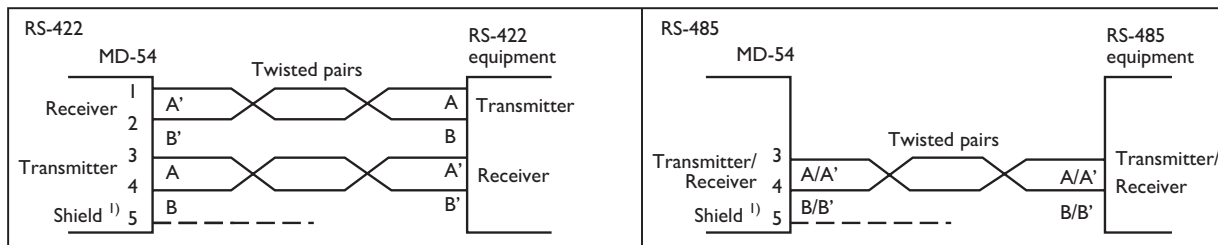
Screw	Power supply
L N	230V AC power
	Earth

## Power connection MD-54 DC

2-position screw-terminal

Connection	Power supply
-	- Voltage
+	+ Voltage

## Line connection



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

## Transmission range (RS-422/485)

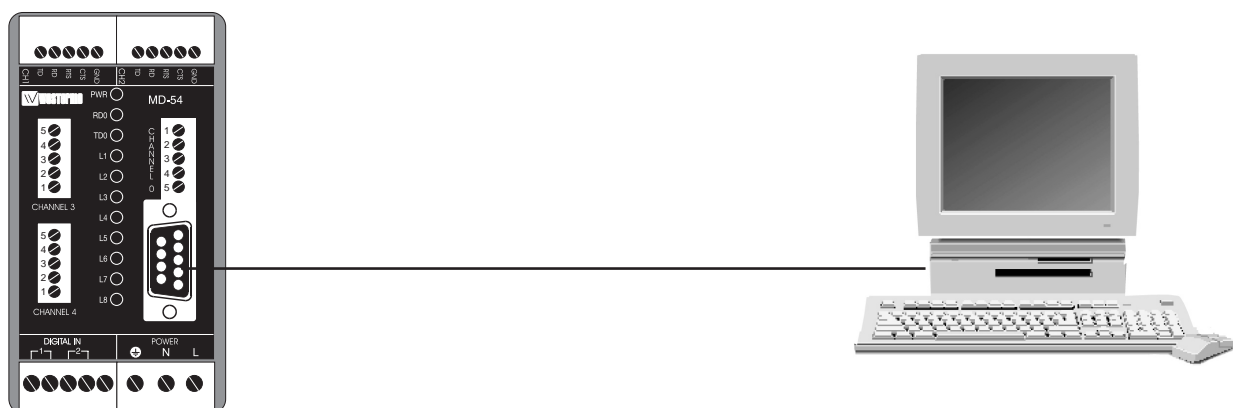
Use twisted pair cable. Max transmission range 1200 metre.

(cable specifications 0.3 mm<sup>2</sup> and capacitance 42pF/m).

The transmission range will increase if a cable with lower capacitance and larger diameter is used.

Use shielded cable in heavy industrial environments.

# How to make settings through a terminal



1. Make sure the power is off ('PWR' LED off).
2. Connect communication-cable between CH0 (D-sub) and terminal.
3. Set switch 1:2 ON
4. Connect power cable

A menu should appear on the screen. It is now possible to make settings.  
After settings have been made:

5. Disconnect power
6. Set switch 1:2 OFF

**Note!** Remember to save settings before disconnecting power cable.

You will need a modem cable to program the MD-54

MD-54	PC 9-way	PC 25-way
1	1	8
2	2	3
3	3	2
4	4	20
5	5	7
6	6	6
7	7	4
8	8	5
9	9	22

## Settings

The following settings can be selected through a terminal:

### Interface

RS-232/V.24  
RS-485 (not selectable for channel 3)  
RS-422 (not selectable for channel 3)

### Parity

None  
Odd  
Even

### Number of stop bits

One  
Two

### Wordlength

7 bit  
8 bit

### Baudrate

300 bit/s (not selectable for channel 0)  
600 bit/s (not selectable for channel 0)  
1 200 bit/s  
2 400 bit/s  
4 800 bit/s  
9 600 bit/s  
19 200 bit/s  
38 400 bit/s  
57 600 bit/s  
115 200 bit/s  
230 400 bit/s (not selectable for RS-232/V.24)  
460 800 bit/s (not selectable for RS-232/V.24)

**Transmit condition** (not selectable for RS-422/485)

RTS  
Time -----



**Time CTS – data out**

10 ms  
50 ms  
150 ms  
250 ms  
User defined (0–250 ms)

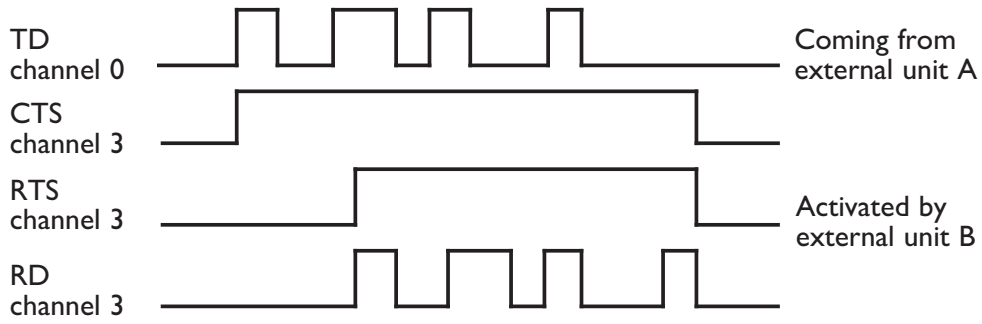
**Time CTS passive**

0 ms  
10 ms  
50 ms  
100 ms  
User defined (0–250 ms)

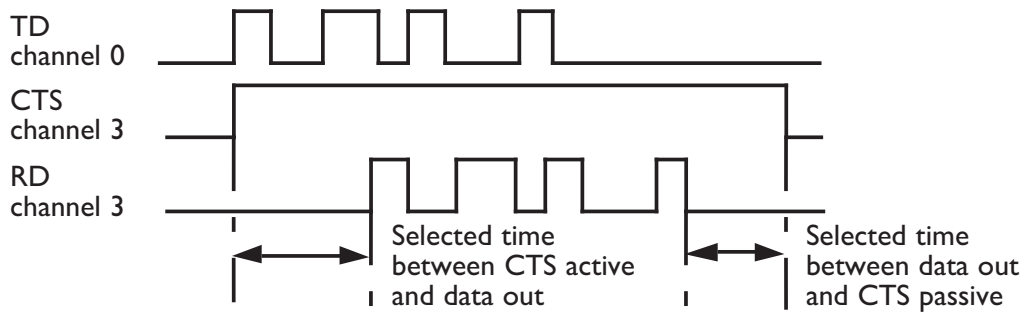
**Flow control** (not selectable for CTS-generator)

RTS/CTS  
XON/XOFF  
None

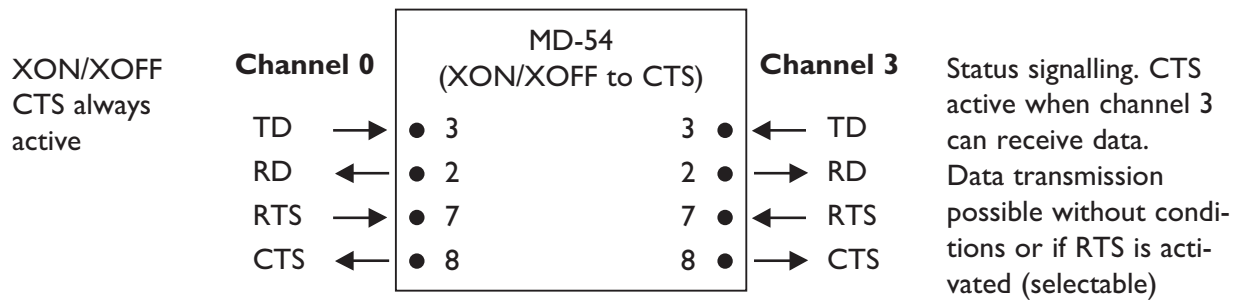
**Note!** 7 bit, no parity, 1 or 2 stopbits not selectable for channel 0.



An example of a data flow when condition for transmission of data is an active RTS signal.

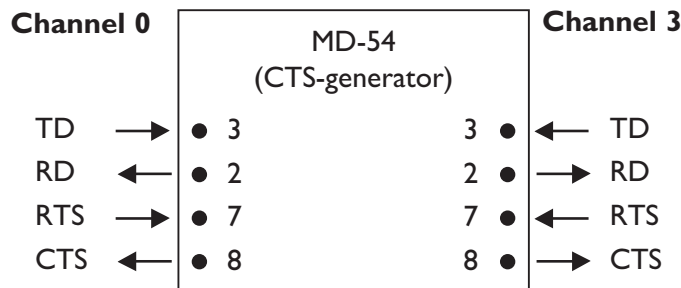


An example of a data flow when condition for data transmission is a selectable time after activating CTS.



### MD-54 as 'XON/XOFF to CTS-converter'

The MD-54 is used in this mode if a system that controls its data flow with XON/XOFF is required to communicate with another system which controls data flow by means of CTS. The data flow on channel 0 is controlled using XON/XOFF. Channel 3 indicates to its connected unit that its buffer is full by deactivating CTS. Both RS-232/V.24 interfaces are DCE.

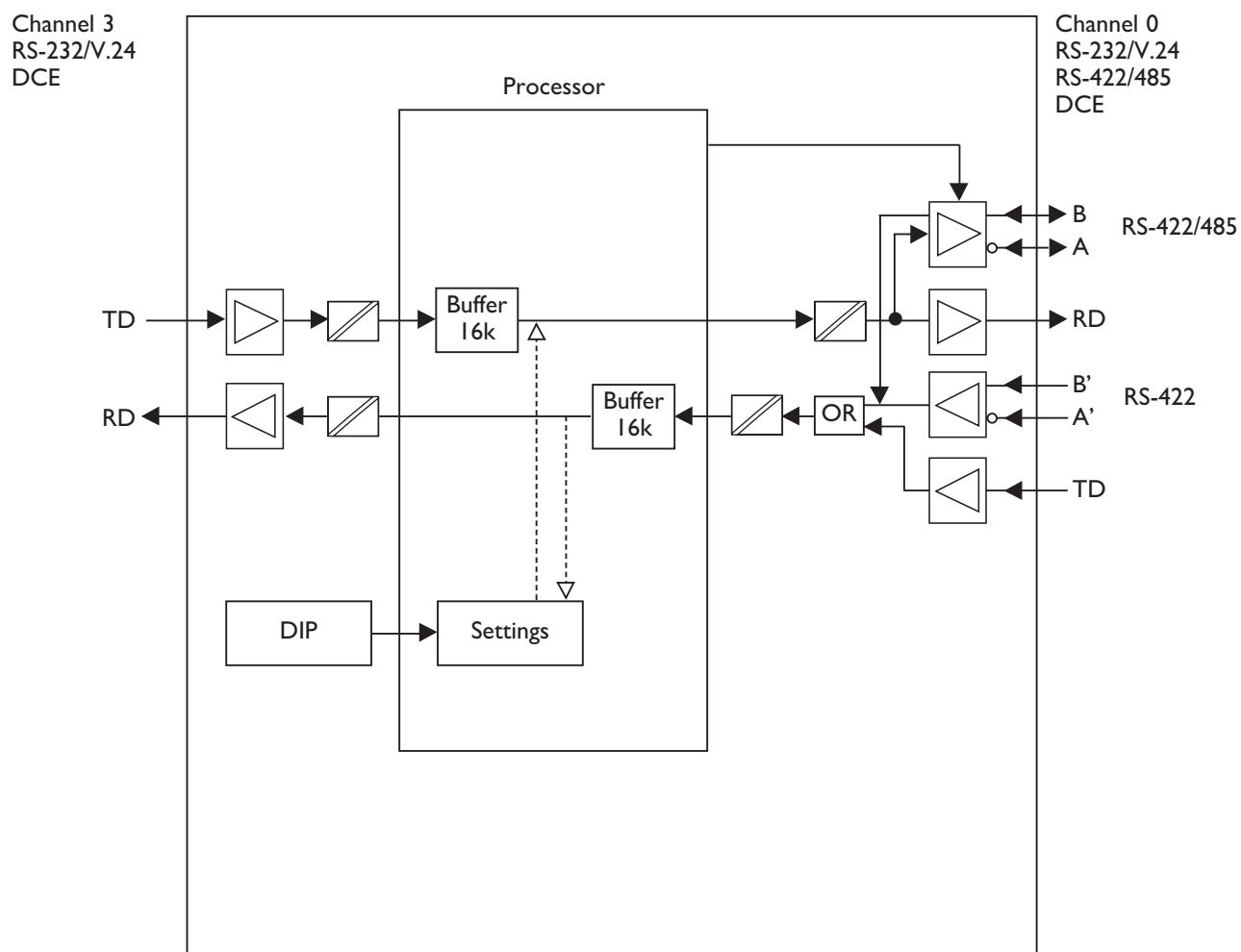


### MD-54 as 'CTS-generator'

When a channel has data to send it indicates this by activating CTS. Data may not be sent until an active RTS, or a set time has elapsed since CTS was first activated. The MD-54 will buffer the incoming data until these condition are fulfilled. Both RS-232/V.24 interfaces are DCE.



## Block diagram



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