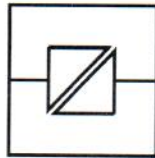


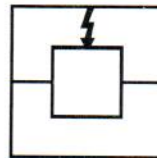
TD-23 AC
TD-23 DC

INSTALLATIONSANVISNING INSTALLATION MANUAL INSTALLATIONS ANLEITUNG

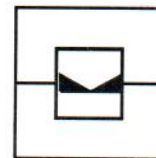
6600-2002



Galvanic
Isolation



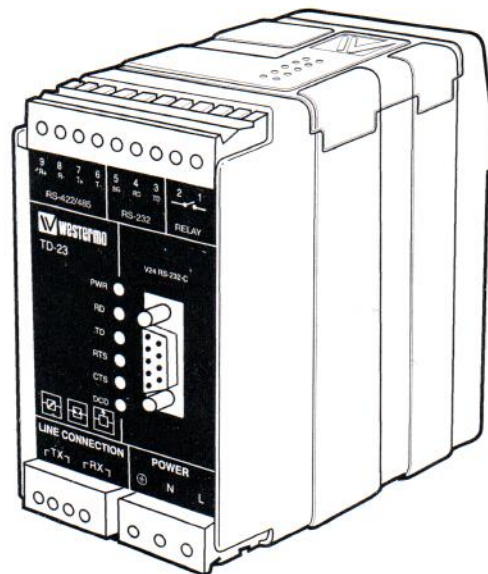
Transient
Protection



Balanced
Transmission



CE
Approved



V.23 modem för hyrda ledningar
Leased Line V.23 Modem
V.23 Standleitungsmodem

 **westermo**[®]
www.westermo.se

[®]
WESTERMO

Modem description

The TD-23 modem is designed for communication on 2- or 4-wire copper cable (twisted pair) using the V.23 standard. Multidrop and point-to-point configurations are possible. The TD-23 will support half duplex on a 2-wire system and full duplex using 4-wire at baud rates up to 1200 bit/s

The TD-23 is designed with a wide range of applications in mind and is consequently very versatile with DIP-switches allowing easy configuration under different operating conditions.

The TD-23 has a RS-232 interface (DCE) and a RS-422/485 interface. The RS-232 connection can be made through either the DB-9 connector or screw terminal on the face of the unit.

When using the RS-232 interface the control of the line is normally done using the RTS handshake signal. If the DTE equipment does not generate RTS or when using RS-485 (RS-485 uses no control signals) the TD-23 can be set to detect incoming data and adjust the direction of communication accordingly. In this mode the data is buffered in the modem for the fraction of a second it takes to change the transmission direction.

When connecting in multidrop configurations the maximum number of units that can be connected on the bus and the maximum bus length depends on the line quality. A typical value is 16 units 25 km apart.

The TD-23 can communicate with other equipment conforming to the V.23 mode 2 standard, but to obtain optimal performance we recommend that all the devices on the network are TD-23's.

Both the transmission level and the carrier detect level can be set on DIP-switches allowing the modems to be optimized for different operating conditions.

When there is no data to transmit the modems transmitter is disconnected from the line. This means that loading on the line is kept to a minimum enabling large numbers of modems to be connected together. TD-23 is also equipped with an activity timer that will disconnect the transmitter after a predetermined time (enable with DIP-switch).

This feature eliminates the risk of one DTE transmitter blocking the line in the event of an RTU problem.

The typical application for the TD-23 is a multidrop network where long distance communication is required over a 2-wire circuit. Another use is to extend the RS-422/485 bus over the 1200 m stipulated in the RS-422/485 standard.

The TD-23 can be used in traffic control installations, multidrop remote telemetry systems and to drive radio systems.

The TD-23 is tested and approved to European standards CTR-15 (2-wire leased line) and CTR-17 (4-wire leased line). On leased lines (supplied by telecoms providers) the above standards limit the maximum output level to -9dBm but for private lines the output can be set up to 3dBm which allows long distance communication despite poor line quality.

The modem has a potential free contact integrated. When the line is activated by the modem, i.e. when data is transmitted on the line side, this contact is closed.

The contact is typically when TD-23 is used together with radio modem. When the power supply is connected via this potential free contact the radio modem receives power only when data is transmitted.

DTE=Data Terminal Equipment (PC, workstation etc.)

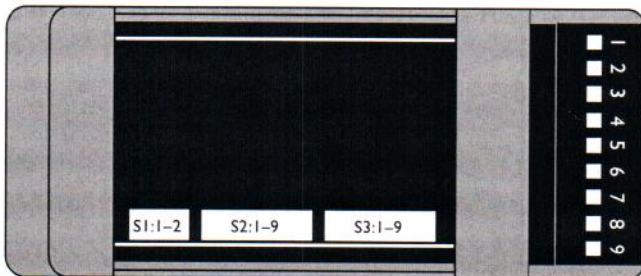
DCE=Data Communication Equipment (modem)

Specification TD-23 AC

Transmission:	Asynchronous, full/half duplex or simplex
Interface 1	EIA RS-232-C/CCITT V.24/V.28, 9-pin D-sub female or 9-pin detachable screw block (only signals SG, RD, TD, are available)
Interface 2	EIA RS-422/RS-485/CCITT V.11 detachable 9-pin screw block
Interface 3	CCITT V.23. 2- or 4-wire. 4 pin detachable screw block
Transmission rate	Up to 1200 bit/s
LED Indicators	PWR, RD, TD, RTS, CTS, DCD
Isolation	Transformer (power supply and line interface) 3000V
Overvoltage protection	Mains: breakdown voltage 440V at 230V AC and 220V at 115V AC Line: Zener diodes, breakdown voltage 68V, discharge 600W for 1 ms, gas tubes 300V
Power supply	230V AC +15% -10%, option 115V AC
Fuse	100 mA, fast
Power consumption	<2W
Temperature range	5-50 Deg C ambient temperature
Humidity	0-95% RH, non-condensing
Dimension	55x100x128 mm
Weight	0.4 kg
Mounting	35 mm DIN-rail

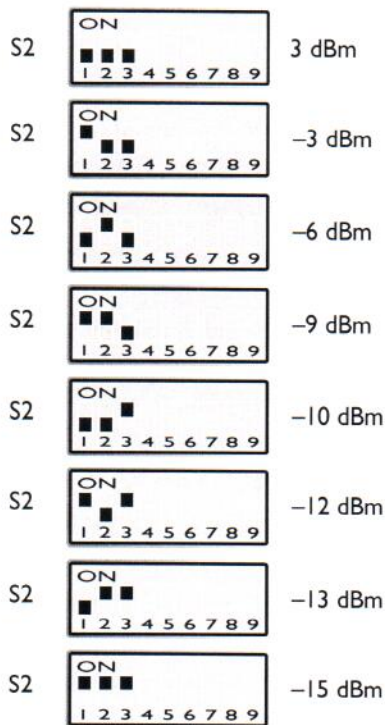
Settings

The TD-23 can be set for a range of different operating conditions. All settings are made via the DIP-switches located under the cover on the modem's top.



Warning! Do not open connected unit

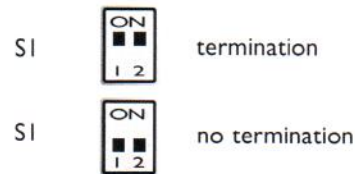
Selection of transmission level



Selection of transmission level specifies the maximum output power level. The maximum value is 3dBm.

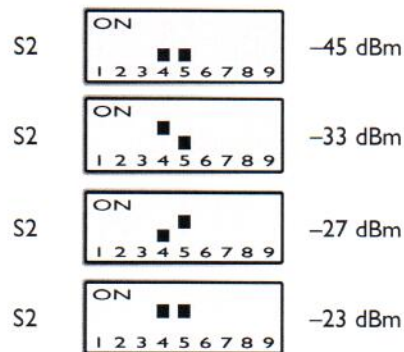
By selecting the higher transmission levels communication over longer distances can be achieved, but the noise and disturbance levels will increase. We recommend that you try your system with the factory default setting first. If disturbances are detected (faulty characters or other errors) decrease the power level step by step. If the transmission fails because of a weak signal the transmission level can be increased step by step until a satisfactory transmission quality is achieved. Please note that levels above -9dBm are not allowed on PTT networks and can only be used on private wires!

Termination of the line



The line should be terminated at the end-points.

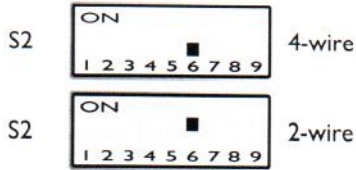
Selection of minimum level, DCD detection



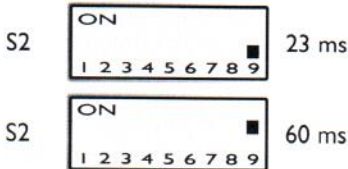
Selection of minimum level, DCD detection specifies the minimum power level the receiver can handle. With the receiver having a dynamic range of 30dBm, this means that with the level set to -15dBm the TD-23 will pick up signals in the range -15dBm to -45dBm.

We recommend that you try your network with the factory settings. If disturbances are detected (faulty characters or other errors) decrease the level step by step. If there is no communication because of a weak signal the receiver sensitivity can be increased step by step until satisfactory transmission quality is achieved.

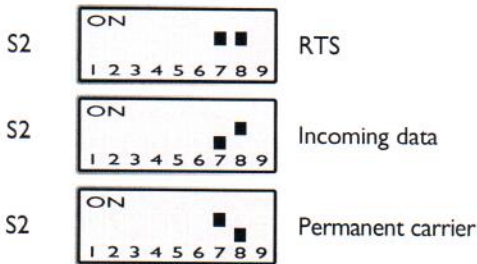
Selection of 2/4 wire (line side)



RTS - CTS delay, 23 or 60 ms

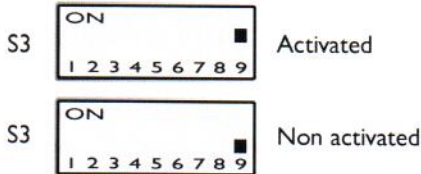


Carrier active using RTS or incoming data



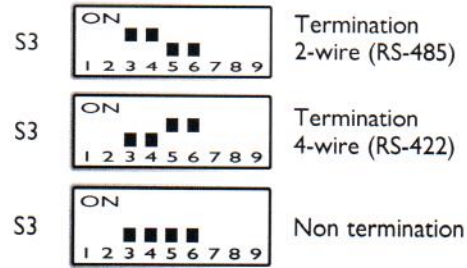
If the DTE uses the control signal- (RTS) the RTS signal is used to activate the transmitter.
 If the DTE does not control RTS or if RS-485 is used then the transmitter is activated by incoming data. In this case the data is buffered in the TD-23 while the carrier is established. By setting RTS always active a permanent carrier will be established. This is the typical setting for a full duplex 4-wire communication.

Relay connection



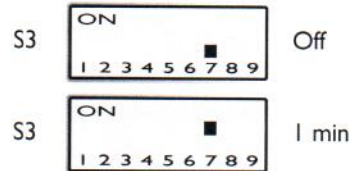
When this function is activated the relay closes when data is sent. If the function is not activated, the relay is always open.

Termination of RS-422/485



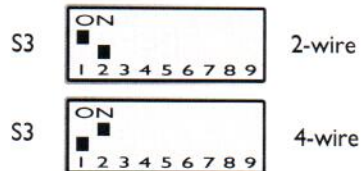
All RS-422/485 lines should be terminated at the end-points. The RS-422/485 interface also has a fail-safe circuit which forces a non-active line into idle state.

Activity timer

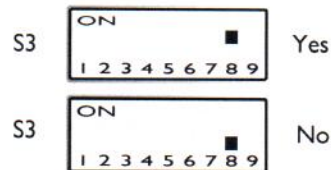


The use of the timer is a fail safe to ensure that a faulty unit connected to the modem will not block the line.

Selection of 2/4 wire (RS-422/485 side)



Filtering of DCD and RxD



If this is enabled, RxD is delayed (buffered) 6 ms in order to avoid garbage characters when carrier is deactivated. The turn around time for the modem from sending to receiving on the line is 10 ms if this filter is enabled.

Factory setting



Connections TD-23

RS-422/485 connection

(9-pole screw terminal)

Direction	No.	Description
Receiver	9	A' (R+)
Receiver	8	B' (R-)
Transmitter	7	A (T+)
Transmitter	6	B (T-)
	5	Shield

Line connection

(4-pole screw terminal)

Direction	Pin no. line	Description
Receiver	3	R
Receiver	4	R
Transmitter	1	T
Transmitter	2	T

2-wire lines are connected to pins 1 and 2

Terminal connection (DCE)

(RS-232-C/V.24, 9-pole D-sub, female alt. 9-pole screw terminal)

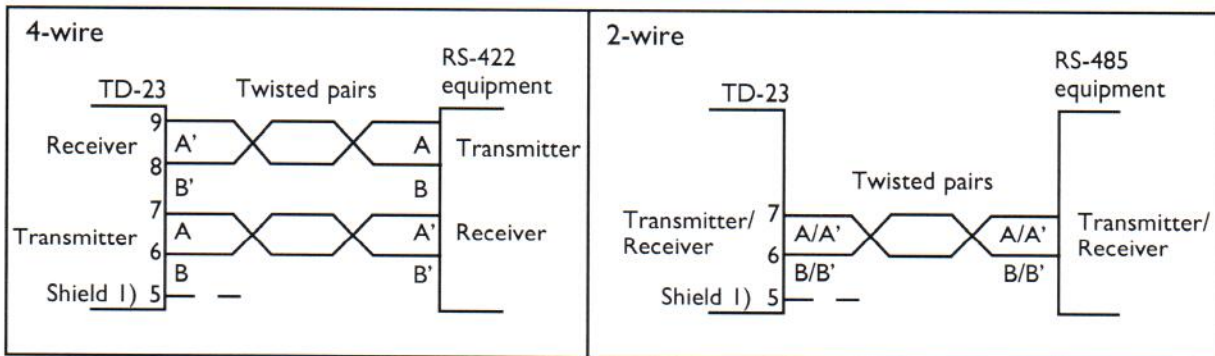
Direction	Pin no.	Screw-terminal	CCITT V.24 Description	Signal description
O	1		109	DCD/Data Carrier Detect
O	2	4	104	RD/Received Data
I	3	3	103	TD/Transmitted Data
NC	4			
-	5	5	102	SG/Signal Ground
O	6		107	DSR/Data Set Ready
I	7		105	RTS/Request to Send
O	8		106	CTS/Clear to Send
NC	9			

Potential free contact

The connection to the potential free contact (relay) is made by position 1 and 2 in the 9-pole screw terminal.

I = input **O** = output **NC** = not connected


RS-485/422 connection



1) NB if shielded cable is used it should be connected only at one extreme in order to avoid circulating earth currents in the shield.

Power connection (AC)

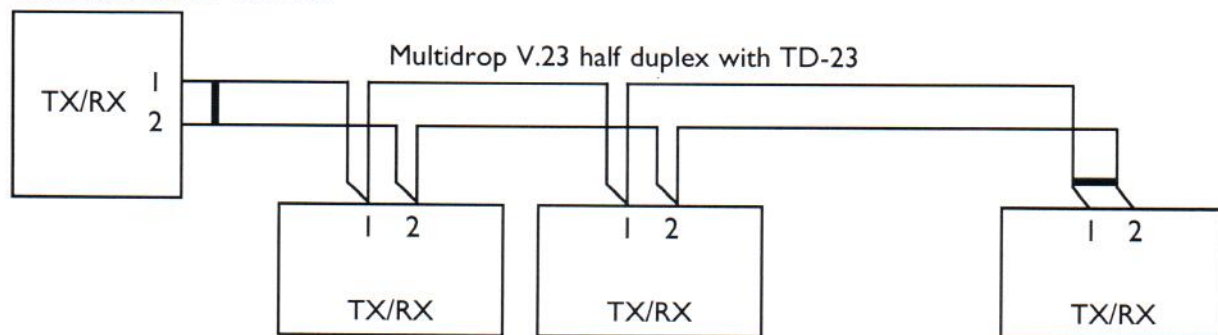
(3-pole screw terminal)

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

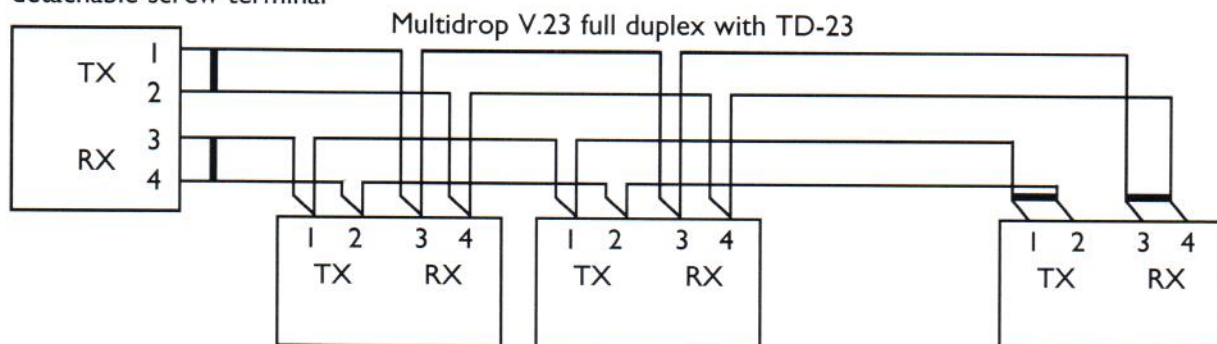
* TD-23 115V

Line connection

4-pole detachable screw terminal



4-pole detachable screw terminal



— Termination to be set with DIP-switches

TD-23 DC

Specifications

Power supply 12-36, 36-55V DC

Power consumption <2W

Isolations voltage 1000V

Fuse F1 1.6 mA fast

All other specifications according to TD-23 AC

Switch settings

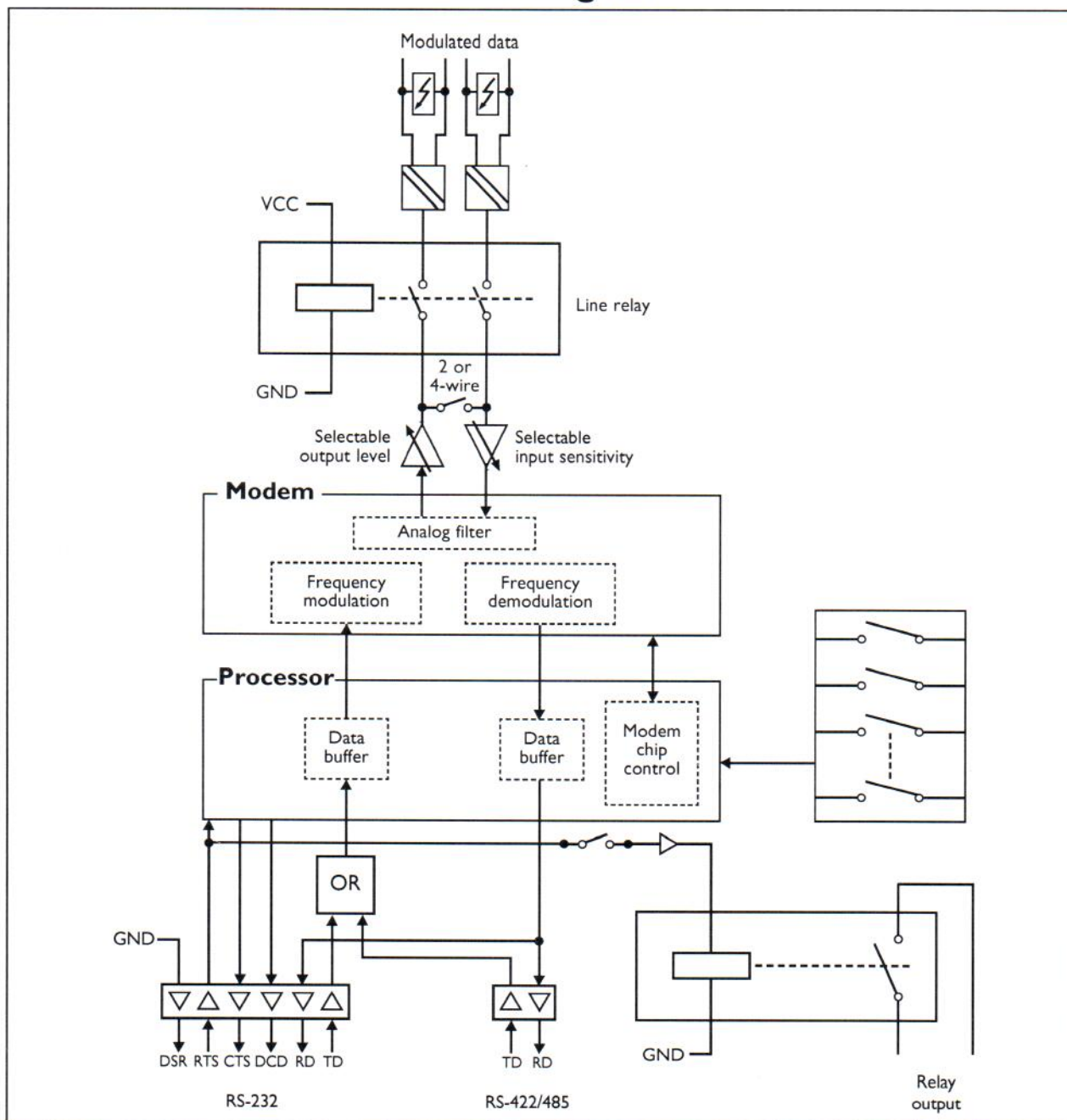
According to TD-23 AC

Connections

According to TD-23 AC, except power supply

Connection no.	Power supply
1	- Voltage
2	+ Voltage

Block diagram



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



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