Telephone- and leased line modem for industrial applications

TD-36

Modem for industrial PSTN- and leased line applications

The TD-36 is an analogue V.34 PSTN modem as well as an industrial 2-wire leased line modem.V.34 provides data rates up to 33.6kbit/s on the communication line. Several features make it ideal for use in industrial

applications: Password protection, dial-back security and caller ID answering are only some of its features. The RS-232 interface is accessable via either 9 pin D-sub or screw terminals. A Windows modem driver is supplied with the unit for PC based applications.

The TD-36 is the ideal choice for industrial dial-up and 2-wire leased line applications.

Configuration and diagnostics

The TD-36 is configurable via its serial interface in several ways, either via standard terminal emulation software using AT-Hayes commands or Westermo's own modem configuration, TD-Tool. Additionally the TD-36 can be configured via its onboard DIP-switches. TD-Tool is a Windows based configuration GUI that simplifies setting up the modems, connection statistics can be viewed and configurations saved for further use. To assit in fault finding and reconfiguration of unmanned stations, the modem can be configured remotely via a PSTN connection.

Harsh industrial environment

TD-36 is designed to function reliably within industrial environments and in areas of high-level interference. The modem is equipped with transient protection on the line side and a "watchdog" that monitors and automatically resets the modem in the event of a fault.

The TD-36 is designed to be mounted easily on to a 35 mm DIN-rail, it has screw terminal connections, an extended temperature range from -25° C to $+70^{\circ}$ C and is tri galvanically isolated. The power supply operates over a wide input range, and can be delivered with different power supply options.

Approvals

The construction of the units has gone through extensive testing and approvals both by Westermo and approved test houses. The TD-36 is approved for use in Europe, as well as in USA and Canada.

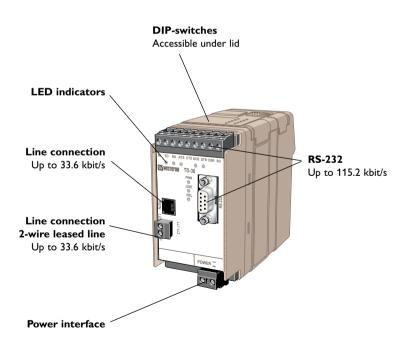
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Application





Interfaces



Technical Data

Power AV		
Rated voltage	20 to 250 VDC 24 to 240 VAC	
Operating voltage	18 to 300 VDC 22 to 264 VAC	
Rated current	125 mA @ 18 VDC 15 mA @ 110 VDC 8 mA @ 250 VDC 120 mA @ 22 VAC 35 mA @ 95 VAC 28 mA @ 240 VAC	
Rated frequency	DC: – AC: 48 – 62 Hz	
Inrush current l ² t	0.45 A ² s	
Startup current*	0.25 Apeak	
Polarity	Polarity independent	
Isolation to	All other ports 3 kVrms 50 Hz 1 min	
Connection	Detachable screw terminal	
Connector size	0.2 – 2.5 mm ² (AWG 24-12)	
Shielded cable	Not required	

Power LV			
Rated voltage	12 to 48 VDC 12 to 27 VAC		
Operating voltage	10 to 60 VDC 10 to 30 VAC 48 – 62 Hz		
Rated current	150 mA @ 12 VDC 70 mA @ 24 VDC 40 mA @ 48 VDC 150 mA @ 12 VAC 70 mA @ 24 VAC		
Rated frequency	DC: – AC: 48 – 62 Hz		
Inrush current l ² t	0.25 A ² s		
Startup current*	0.30 Apeak		
Polarity	Polarity independent		
Isolation to	All other ports 3 kVrms 50 Hz 1 min		
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

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Public Switched Telephone N	etwork (PSTN)		
Electrical specification	Public Switched Telephone Network		
Data rate	300 bit/s – 33.6 kbit/s		
Protocol	B103, B212, V21, V22, V22B, V23C, V23 HDX, V32, V32B, V34		
Protection	Installation Fault Tolerant (up to ±60 V)		
Isolation to	Power port 3 kVrms 50 Hz 1 min Leased Line 2 kVrms 50 Hz 1 min RS-232 2 kVrms 50 Hz 1 min		
Connection	RJ-11C and Detachable screw terminal		
Connector size	Detachable screw terminal 0.2 – 2.5 mm ² (AWG 24 – 12)		
Shielded cable	Not required		

Leased Line (LL)			
Electrical specification	2- or 4-wire Leased Line		
Data rate	300 bit/s – 33.6 kbit/s		
Protocol	B103, B212,V21,V22,V22B,V23C,V23 HDX,V32,V32B,V34		
Transmission range	PSTN 30 dB		
Budget	Leased Line max 40 dB		
Protection	Installation Fault Tolerant (up to \pm 60 V)		
Isolation to	Power port 3 kVrms 50 Hz 1 min Leased Line 2 kVrms 50 Hz 1 min RS-232 2 kVrms 50 Hz 1 min		
Connection	Detachable screw terminal		
Connector size	0.2 – 2.5 mm ² (AWG 24 – 12)		
Shielded cable	Not required		

RS-232			
Electrical specification	EIA/TIA-232		
Data rate	1200 bit/s – 115.2 kbit/s		
Data format	7 or 8 data bits, Odd, even or none parity, 1 or 2 stop bits, 9-12 bit words		
Protocol	Transparent		
Retiming	Yes		
Transmission range	Cable length ≤ 15 m		
Isolation to	Power port 3 kVrms 50 Hz 1 min PSTN Line 2 kVrms 50 Hz 1 min Leased Line 2 kVrms 50 Hz 1 min		
Connection	9-pin D-sub female (DCE) and Detachable screw terminal (DCE)		
Connector size	Detachable screw terminal 0.2 – 2.5 mm² (AWG 24 – 12)		
Shielded cable	Not required*		

^{*} Railway installation close to the rails.

Technical data www.westermo.com

For a cable located within 3 m and connected to this port, the use of shielded cable is recommended, this is to minimise the risk of interference. The cable shield should be properly connected (360°) to an earthing point within 1 m of this port. This earthing point should have a low impedance connection to the conductive enclosure of the apparatus cabinet, or similar, where the unit is built-in. This conductive enclosure should be connected to the earthing system of an installation and may be directly connected to the protective earth.

Type tests and environmental conditions

Torre	Description	Test levels
	F	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
EN 61000-4-2		± 6 kV
		± 8 kV
IEC 61000-4-3	Enclosure	10 V/m 80% AM (1 kHz), 80 – 1000 MHz 20 V/m 80% AM (1 kHz), 80 – 2000 MHz
ENV 50204	Enclosure	20 V/m pulse modulated 200 Hz, 900 ± 5 MHz
EN 61000-4-4	Signal ports	± 2 kV
	Power ports	± 2 kV
EN 61000-4-5	Signal ports unbalanced	± 2 kV line to earth, ± 2 kV line to line
	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
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
EN 61000-4-11	AC power ports	10 & 5 000 ms, interruption 10 & 500 ms, 30% reduction 100 & 1 000 ms, 60% reduction
EN 61000-4-16	Signal ports	100 V 50 Hz line to earth
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
EN 55022	Enclosure	Class A
FCC part 15		Class A
EN 55022	AC power ports	Class B
FCC part 15	AC power ports	Class B
EN 55022	DC power ports	Class B
EN 60950	Signal port to other isolated ports	2 kVrms 50 Hz 1 min
	Power port to other isolated ports	3 kVrms 50 Hz 1 min 2 kVrms 50 Hz 1 min (@ rated power <60 V)
	Operating	-25 to +70°C
	Storage & Transport	-40 to +70°C
	Operating	5 to 95% relative humidity non condensing
	Storage & Transport	5 to 95% relative humidity non condensing
	Operating	2 000 m / 70 kPa
MIL-HDBK- 217F	Operating	
	Operating	10 year
IEC 60068-2-6	Operating	7.5 mm, 5 – 8 Hz 2 g, 8 – 500 Hz
IEC 60068-2-27	Operating	15 g, 11 ms
12 11111 2 27		
UL 94	PC / ABS	Flammability class V-1
J = 7.		55 x 100 x 132 mm
IEC 529	Enclosure	0.36 kg
IEC 529	Enclosure	
	EN 61000-4-4 EN 61000-4-5 EN 61000-4-6 EN 61000-4-16 EN 61000-4-16 EN 61000-4-29 EN 55022 FCC part 15 EN 55022 EN 60950	EN 61000-4-2 Enclosure contact Enclosure Enclosure ENV 50204 EN 61000-4-3 Enclosure EN 61000-4-4 Signal ports Power ports EN 61000-4-5 Signal ports unbalanced Signal ports balanced Power ports EN 61000-4-6 Signal ports Power ports EN 61000-4-11 AC power ports EN 61000-4-16 Signal ports EN 61000-4-16 Signal ports Power ports EN 61000-4-17 AC power ports EN 61000-4-18 EN 61000-4-29 DC power ports EN 55022 FCC part 15 EN 55022 FCC part 15 AC power ports EN 55022 FCC port 15 EN 55022 FCC power ports Signal port to other isolated ports Power port to other isolated ports Power port to other isolated ports Power ports Operating Storage & Transport Operating Storage & Transport Operating Operating IEC 60068-2-6 Operating IEC 60068-2-6 Operating IEC 60068-2-6 Operating

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