

# Telephone modem for industrial applications

## TDW-33

### Worldwide remote access via analogue PSTN-connections

The TDW-33 is an analogue V.90 PSTN modem. V.90 provides speeds up to 56kbit/s over the telephone line. Several features make it ideal for remote access to industrial applications: Password protection, dial-back security and caller ID answering are only some of its features. The RS-232 interface is accessible via either 9 pin D-sub or screw terminals. A Windows modem driver is supplied with the unit for PC based applications. TDW-33 provides optimum functionality at the best value.



### Configuration and diagnostics

The TDW-33 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 software, TD-Tool. 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 assist in fault finding and reconfiguration of unmanned stations, the modem can be configured remotely via a PSTN connection.

### Harsh industrial environment

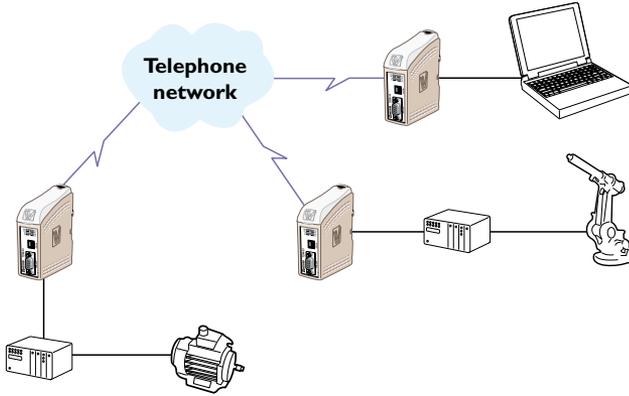
The TDW-33 is designed to function reliably within industrial environments and in areas of high-level interference. The modem is equipped with transient protection on the line side and a "watchdog" that monitors and automatically resets the modem in the event of a fault.

The TDW-33 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°C and is tri galvanically isolated. The power supply operates over a wide input range from 10 to 60VDC.

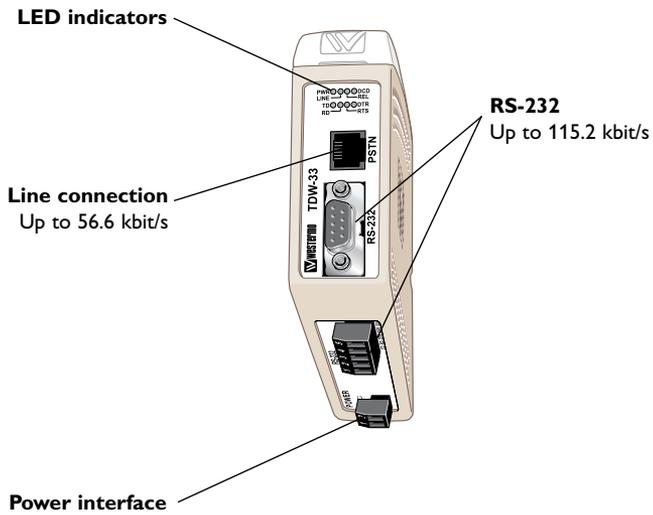
### Approvals

The construction of the units has gone through extensive testing and approvals both by Westermo and approved test houses. The TDW-33 is approved for use in Europe, as well as in USA and Canada.

## Application



## Interfaces



## Technical Data

Power LV	
Rated voltage	12 to 48 VDC or 12 to 34 VAC
Operating voltage	10 to 60 VDC or 10 to 42 VAC
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 I <sup>2</sup> t	0.25 A <sup>2</sup> s
Startup current*	0.30 A <sub>peak</sub>
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 <sup>2</sup> (AWG 24-12)
Shielded cable	Not required

\* External supply current capability for proper startup

Public Switched Telephone Network (PSTN)	
Electrical specification	Public Switched Telephone Network
Data rate	300 bit/s – 56.6 kbit/s
Protocol	Bell103, Bell212, V.21, V.22, V.22Bis, V.23C, V.32, V.32Bis, V.34, V.90
Protection	Installation Fault Tolerant (up to ±60 V)
Isolation to	Power port 3 kVrms 50 Hz 1 min RS-232 2 kVrms 50 Hz 1 min
Connection	RJ-11C
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; $\Sigma$ 9-12 bits
Protocol	Transparent
Retiming	Yes
Transmission range	Cable length < 15 m
Isolation to	Power port 3 kVrms 50 Hz 1 min RS-232 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 mm <sup>2</sup> (AWG 24 – 12)
Shielded cable	Not required **
Conductive housing	Isolated to all other circuits

\*\* To minimise the risk of interference, a shielded cable is recommended when the cable is located inside 3 m boundary to the rails and connected to this port. The cable shield should be properly connected (360°) to an earthing point within 1 m from 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

Electromagnetic Compatibility			
Phenomena	Test	Description	Test levels
ESD	EN 61000-4-2	Enclosure contact	± 6 kV
		Enclosure air	± 8 kV
RF field AM modulated	IEC 61000-4-3	Enclosure	20 V/m 80% AM (1 kHz), 80 – 2000 MHz
RF field 900 MHz	ENV 50204	Enclosure	20 V/m pulse modulated 200 Hz, 900 ± 5 MHz
Fast transient	EN 61000-4-4	Signal ports	± 2 kV
		Power ports	± 2 kV
Surge	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
RF conducted	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
Power frequency magnetic field	EN 61000-4-8	Enclosure	100 A/m, 50 Hz, 16.7 Hz & 0 Hz
Pulse magnetic field	EN 61000-4-9	Enclosure	300 A/m, 6.4 / 16 µs pulse
Voltage dips and interruption	EN 61000-4-11	AC power ports	10 & 5 000 ms, interruption 10 & 500 ms, 30% reduction 100 & 1 000 ms, 60% reduction
Mains freq. 50 Hz	EN 61000-4-16	Signal ports	100 V 50 Hz line to earth
Mains freq. 50 Hz	SS 436 15 03	Signal ports	250 V 50 Hz line to line
Voltage dips and interruption	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
Radiated emission	EN 55022	Enclosure	Class B
	FCC part 15		Class B
Conducted emission	EN 55022	AC power ports	Class B
	FCC part 15	AC power ports	Class B
	EN 55022	DC power ports	Class B
Dielectric strength	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)
Environmental			
Temperature		Operating	-25 to +70°C
		Storage & Transport	-40 to +70°C
Humidity		Operating	5 to 95% relative humidity non condensing
		Storage & Transport	5 to 95% relative humidity non condensing
Altitude		Operating	2 000 m / 70 kPa
Reliability prediction (MTBF)	MIL-HDBK- 217F	Operating	
Service life		Operating	10 year
Vibration	IEC 60068-2-6	Operating	7.5 mm, 5 – 8 Hz
			2 g, 8 – 500 Hz
Shock	IEC 60068-2-27	Operating	15 g, 11 ms
Packaging			
Enclosure	UL 94	PC / ABS	Flammability class V-1
Dimension W x H x D			35 x 121 x 119 mm
Weight			0.21 kg
Degree of protection	IEC 529	Enclosure	IP 21
Cooling			Convection
Mounting			Horizontal on 35 mm DIN-rail