PSI-MODEM-SHDSL/SERIAL Copper Extender

perle.com/products/serial-extenders/psi-modem-shdsl-serial-extender.shtml

RS232/422/485 over copper wire

- Transmit serial data up to 20km [12.4 mi]
- Two SHDSL ports for symmetrical data transmission
- Supports RS232, RS422 and RS485 interfaces
- Protocol Transparent

The PSI-MODEM-SHDSL/SERIAL to Copper Extender transparently extends serial data transmission up to 20 km [12.4 mi] across single twisted pair (CAT5/6/7), coax or any existing copper wiring previously used in alarm circuits, E1/T1 circuits, CCTV and CATV applications.

Long Distance Serial Data Transmission over Copper

SHDSL is the technology of choice for the transmission of digital **data over long distance copper wires** of a network. Although performance depends on the characteristics of the cable used, the reach of SHDSL is much further than any other DSL technology currently available. In addition, upload and download bandwidth is symmetrical boasting data rates as high as **15.3 Mbps over 2-wire copper** and **30 Mbps over 4-wire copper.**

The PSI-MODEM-SHDSL/SERIAL to Copper Extender is **protocol transparent** and supports **RS-232, RS-422 and RS-485** interfaces. With two SHDSL ports you can easily set up point-to-point, redundant point-to-point, linear and star topology networks.

Two software configurable digital outputs are available for external device alarm generation.

Although these devices are **"plug and play"**, should additional device configuration be needed during set-up, power can be supplied via a computer USB cable. The easy configuration software provides online diagnostics, logbook function, individual project configuration and saving of project configurations. Furthermore, to provide on-site technicians with quick device diagnostics, the PSI-MODEM-SHDSL/SERIAL has integrated diagnosis functions, a logbook and clearly visible LEDs.

RoHS H D W Ex RS-232 DSL dnp Distributed Network Protocol

PSI-MODEM-SHDSL/SERIAL Technical Specifications

	Serial interface
Interface 1	**V.24 (RS-232) interface in acc. with ITU-T V.28, EIA/TIA-232, DIN 66259-1**

Interface	RS-232
Connection method	D-SUB 9 plug
Transmission length	max. 15 m
Termination resistor	390 Ω - 180 Ω - 390 Ω (can be connected)
Conductor cross section solid min.	0.2 mm²
Conductor cross section solid max.	2.5 mm²
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	2.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	13
Data flow control/protocols	Software handshake, Xon/Xoff, hardware handshake (RTS/CTS), 3964R-compatible, Modbus (RTU/ASCII), transparent protocol - additional protocols supported
Serial transmission speed	0.11/0.3/1.2/2.4/4.8/9.6/19.2/38.4/57.6/115.2/230.4 kbps, NRZ
Interface 2	**SHDSL interface according to ITU-T G.991.2.bis**
Connection method	2 x 2-pos. COMBICON plug-in screw terminal blocks
Transmission length	up to 20 km (Depending on data rate and cable cross section)
Serial transmission speed	4-wire operation: 64 kbps ... 30 Mbps
	2-wire operation: 32 kbps ... 15.3 Mbps
Interface 3	**USB 2.0**
Connection method	Mini-USB type B, 5-pos.
Transmission length	< 5 m (only for configuration and diagnostics)
Interface 4	**RS-422 interface in acc. with ITU-T V.11, EIA/TIA-422, DIN 66348-1**

Interface	RS-422
Connection method	Plug-in/screw connection via COMBICON
File format/coding	Serial asynchronous UART/NRZ, 7/8 data bits, 1/2 stop bits, 1 parity bit (even, odd, mark, space, none), 9/10/11-bit character length
Transmission length	≤ 1200 m
Termination resistor	390 Ω - 180 Ω - 390 Ω (can be connected)
Data flow control/protocols	Automatic control // Modbus RTU/ASCII
Serial transmission speed	1.2/2.4/4.8/7.0/9.6/19.2/38.4/57.6/75/93.75/115.2/136/187.5/375/500/1500/2000 kbps, NRZ
Interface 5	**RS-485 interface, in acc. with EIA/TIA-485, DIN 66259-4/RS-485 2-wire**
Interface	RS-485
Connection method	Plug-in/screw connection via COMBICON
File format/coding	Serial asynchronous UART/NRZ, 7/8 data, 1/2 stop, 1 parity, 10/11-bit character length
Transmission length	up to 1200 m
Termination resistor	390 Ω - 180 Ω - 390 Ω (can be connected)
Protocols supported	Transparent, including 3964R protocol
Data flow control/protocols	Automatic control // Modbus RTU/ASCII
Serial transmission speed	1.2/2.4/4.8/7.0/9.6/19.2/38.4/57.6/75/93.75/115.2/136/187.5/375/500/1500/2000 kbps, NRZ
	Digital outputs
Output name	Digital output
Number of outputs	2
Voltage output signal	depending on the operating voltage
Current output signal	≤ 150 mA (Short-circuit-proof)
Behavior of the outputs	Deactivated for device supply via DIN rail connector

Function	
Management	User-friendly software: Guided configuration, plausibility checks, diagnostic functions, log book
Status and diagnostic indicators	LEDs: VCC (supply voltage), RD/TD (serial data traffic), ERR (errors), TERM (termination resistor active), RS-232 (RS-232 active)
	2 x LINK / 2 x STAT (DSL data traffic port A and port B), DIAG (diagnostic messages)
Ambient Conditions	
Ambient temperature (operation)	-20 °C ... 60 °C (for derating, see technical documentation)
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Altitude	5000 m (For restrictions see manufacturer's declaration)
Degree of protection	IP20
Noise immunity	EN 61000-6-2
General	
Electrical isolation	DIN EN 50178 (VCC, RS-232 // RS-422, RS-485 // DSL (A) // DSL (B) // FE)
Test voltage data interface/power supply	1.5 kVrms (50 Hz, 1 min.)
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Net weight	339.4 g
Housing material	PA 6.6-FR
Color	green
MTTF	693 Years (SN 29500 standard, temperature 25°C, operating cycle 21 % (5 days a week, 8 hours a day))

	301 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
	121 Years (SN 29500 standard, temperature 40°C, operating cycle 100 % (7 days a week, 24 hours a day))
Conformance	CE-compliant
Noise emission	EN 55011
MTBF	1004 Years (Telcordia standard, 25°C temperature, 21% operating cycle (5 days a week, 8 hours a day))
	199 Years (Telcordia standard, 40°C temperature, 34.25% operating cycle (5 days a week, 12 hours a day))
Power supply	
Nominal supply voltage	24 V DC ±5 % (as an alternative or redundant, via backplane bus contact and system current supply)
	5 V DC (configuration only, via mini-USB type B)
Supply voltage range	18 V DC ... 30 V DC
Typical current consumption	< 180 mA (24 V DC)
Connection method	COMBICON plug-in screw terminal block
Dimensions	
Width	35 mm
Height	99 mm
Depth	114.5 mm
Environmental Product Compliance	
China RoHS	Environmentally Friendly Use Period = 50
Reach and RoHS Compliant	Reach and RoHS Compliant
Standards and Regulations	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conformance	CE-compliant

ATEX	II 3 G Ex nA nC IIC T4 Gc X
UL, USA/Canada	cULus listed UL 508
Shock	15g in all directions in acc. with IEC 60068-2-27
Noise emission	EN 55011
Noise immunity	EN 61000-6-2
Vibration (operation)	In acc. with IEC 60068-2-6: 5g, 150 Hz

Approvals

UL Listed
cUL Listed
EAC
ATEX
cULus Listed

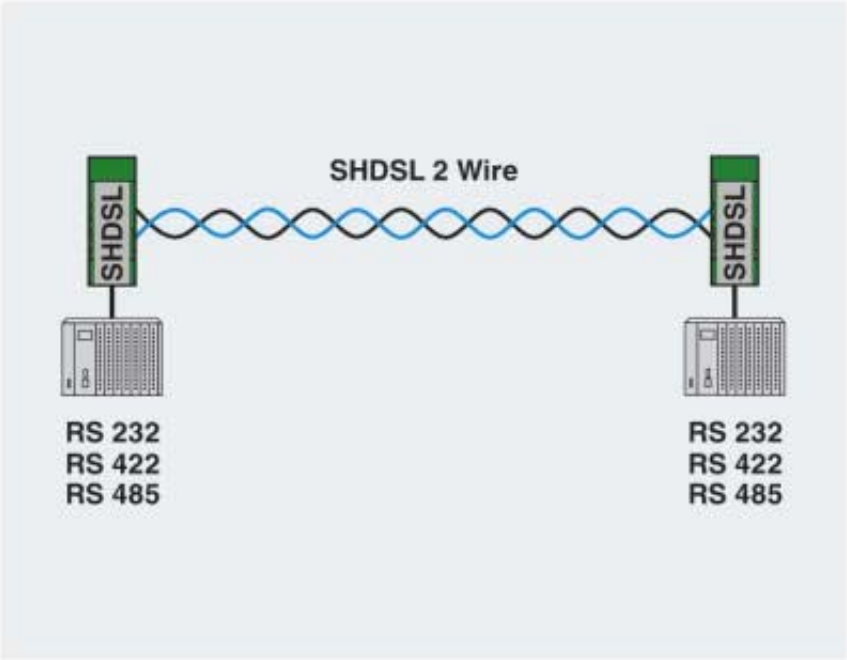
Commercial data

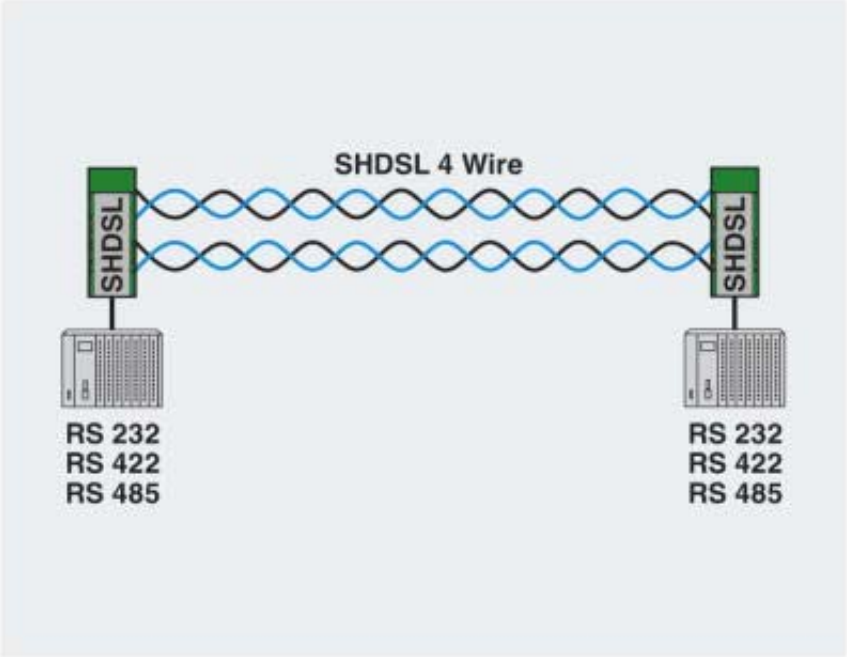
Packing unit	1
Weight per piece	360.0 g
Country of origin	Germany

Interfaces

- RS-232, up to 230.4 kbps, automatic DCE/DTE switchover
- RS-422, up to 2000 kbps
- RS-485 W2, up to 2000 kbps, termination resistor can be connected

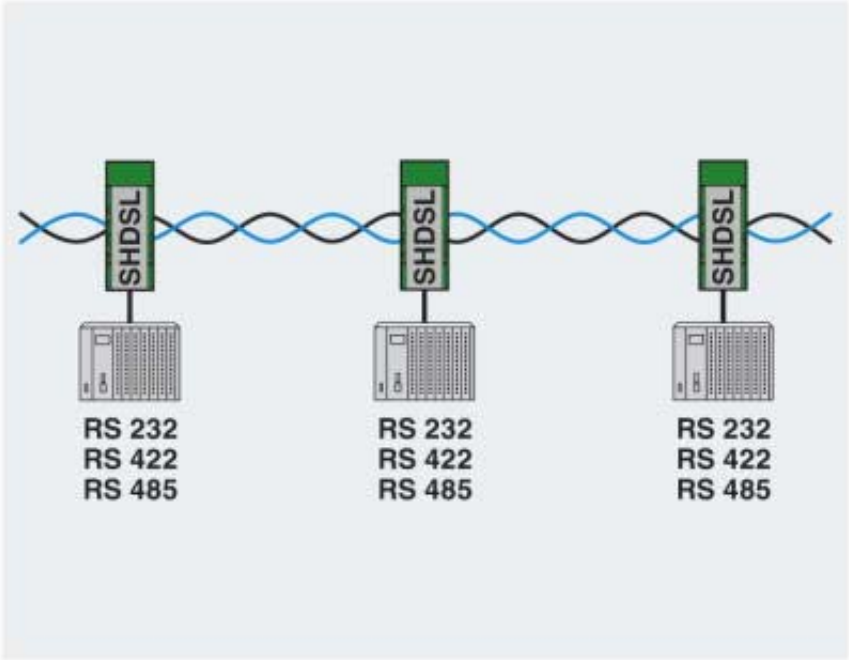
Long Distance Point-to-point connections between serial devices over copper

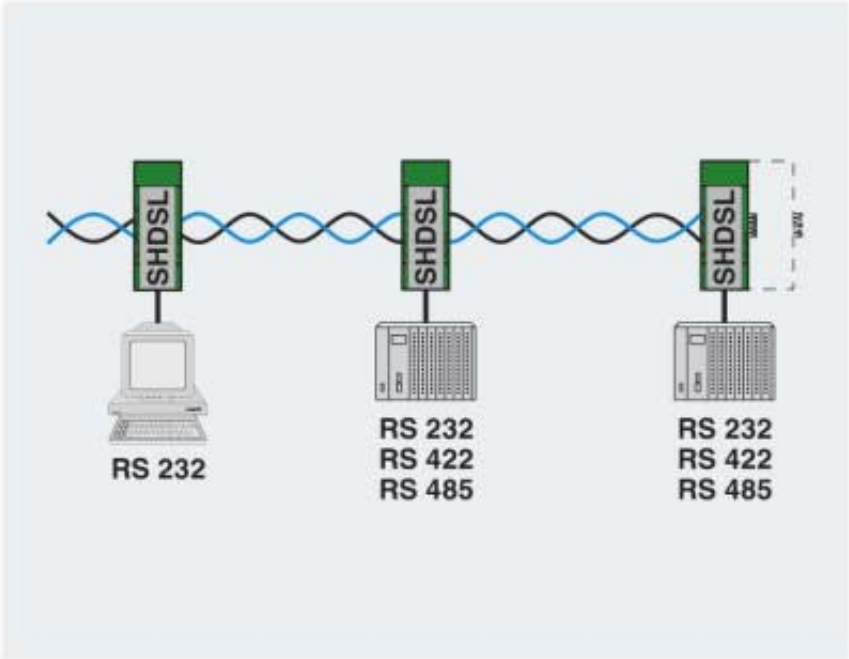




Long Distance Linear Topology Network

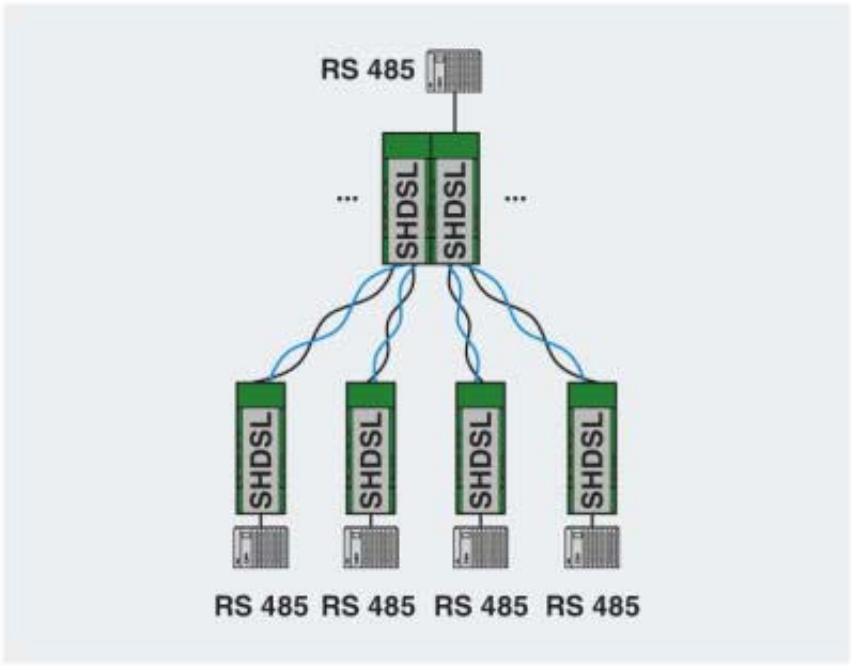
Connect up to 255 SHDSL devices. Use multiple RS-232 interfaces or a mixed operation including RS-422 and RS-485. The PSI-MODEM-SHDSL/SERIAL transmits the data protocol transparently.

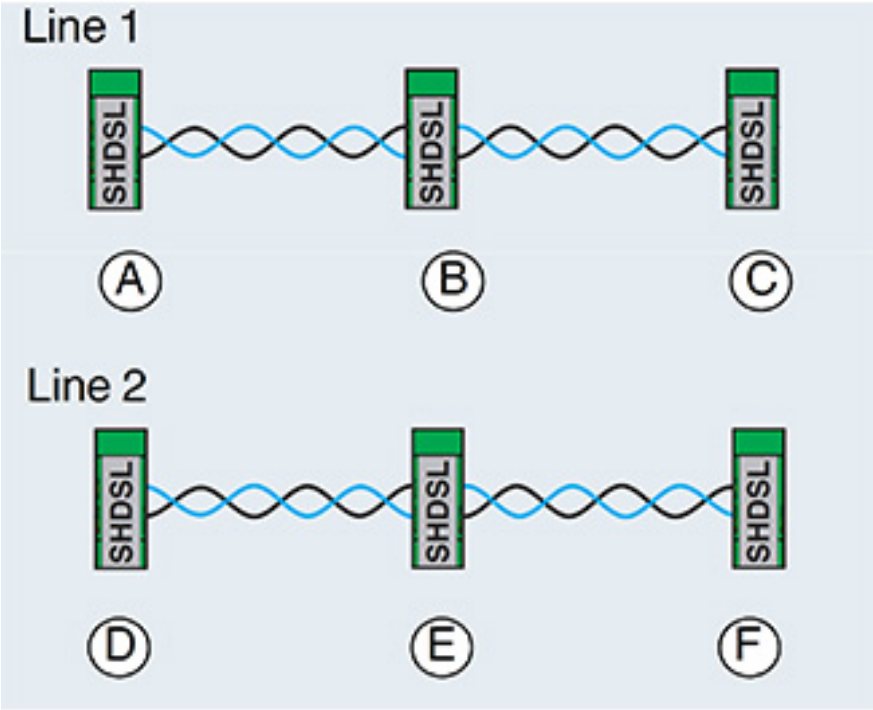




Long Distance Star Topology Network

The devices are connected via the DIN rail connector(TBUS) in the head station. The DIN rail connector supports RS-485. It can not be used with RS-232 and RS-422. To configure a star topology, you must create several line topologies. In the example below, you must create two linear topologies each comprising of three devices.





Range

The maximum possible SHDSL data rate depends on several parameters. Two important parameters are the

cable length and cable cross section. This diagram illustrates the dependency of the maximum SHDSL data rate on the line length with 3 cable types. Longer distances can be achieved using high-quality cables with larger diameters. The PSI-MODEM-SHDSL/SERIAL enables data rates over 2-wire copper from 32 kbps to 15.3 Mbps. Data rates of up to 30 Mbps are possible over 4-wire copper.
Figure 1: SHDSL data rate depending on the distance,2-wire