

## Modem - TC EXTENDER 2001 ETH-2S - 2702409

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Second generation: Unmanaged Ethernet extender for point-to-point connections, line and ring structures, data rates up to 30 Mbps, distances of up to 20 km on in-house copper cables, diagnostics via USB and LEDs, 2 SHDSL ports, 1 LAN port

### Why buy this product

- ✓ Distances up to 20 km
- ✓ Up to 15.3 Mbps in 2-wire operation
- ✓ Up to 30 Mbps in 4-wire operation
- ✓ Robust modulation method (SHDSL)
- ✓ PROFINET
- ✓ Automatic SHDSL data rate detection
- ✓ Network transparent (no IP configuration required)
- ✓ Protocol transparent
- ✓ Automatic detection of network cable type (auto MDI(X))
- ✓ Automatic network data rate detection (10/100 Mbps)
- ✓ Easy startup, plug and play
- ✓ Future proof (IPv4 and IPv6-compatible)
- ✓ Two digital outputs for alerting external controllers




Ethernet



Distributed Network Protocol



### Key Commercial Data

Packing unit	1 STK
GTIN	 4 055626 162560
GTIN	4055626162560
Weight per Piece (excluding packing)	258.700 g
Custom tariff number	85176200
Country of origin	Germany

### Technical data

#### Note

# Modem - TC EXTENDER 2001 ETH-2S - 2702409

## Technical data

### Note

Utilization restriction	EMC: class A product, see manufacturer's declaration in the download area
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### Dimensions

Width	35 mm
Height	99 mm
Depth	114.5 mm

### Ambient conditions

Ambient temperature (operation)	-20 °C ... 60 °C (Freestanding (40 mm spacing to the right and left), no supply of other modules via the device)
	-20 °C ... 55 °C (Mounted in rows with zero spacing and low power dissipation of aligned modules)
	-20 °C ... 50 °C (Mounted in rows with zero spacing)
	-20 °C ... 45 °C (Mounted in rows with zero spacing and supply of other modules via the device)
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

### General

Electrical isolation	VCC // Ethernet // DSL (A) // DSL (B) // FE
Test voltage data interface/power supply	1.5 kV <sub>rms</sub> (50 Hz, 1 min.)
Standards/regulations	EN 50121-4
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Net weight	258.7 g
Housing material	PA 6.6-FR
Color	gray
MTTF	711 Years (SN 29500 standard, temperature 25 °C, operating cycle 21 % (5 days a week, 8 hours a day))
	308 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
	125 Years (SN 29500 standard, temperature 40 °C, operating cycle 100 % (7 days a week, 24 hours a day))
Conformance	CE-compliant
ATEX	# II 3 G Ex nA IIC T4 Gc X (Please follow the special installation instructions in the documentation!)
UL, USA/Canada	cULus listed UL 508

### 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

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## Technical data

### Power supply

Typical current consumption	< 180 mA (24 V DC)
Connection method	COMBICON plug-in screw terminal block

### Serial interface

Interface 1	Ethernet interface, 10/100Base-T(X) in acc. with IEEE 802.3u
Interface	Ethernet
No. of ports	1
Connection method	RJ45 socket, shielded
	1 port 10/100Base-T(X), auto negotiation
Transmission length	< 100 m (shielded twisted pair)
Protocols supported	Protocol-transparent for TCP/IP, IPv4, and IPv6
Serial transmission speed	10/100 Mbps, auto negotiation
Interface 2	SHDSL interface according to ITU-T G.991.2.bis
No. of ports	2 (2-wire operation)
Connection method	2 x 2-pos. COMBICON plug-in screw terminal blocks
Transmission length	< 20 km (Depending on data rate and cable cross section)
Conductor cross section solid min.	0.2 mm <sup>2</sup>
Conductor cross section solid max.	2.5 mm <sup>2</sup>
Conductor cross section flexible min.	0.2 mm <sup>2</sup>
Conductor cross section flexible max.	2.5 mm <sup>2</sup>
Conductor cross section AWG min.	24
Conductor cross section AWG max.	14
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)

### Function

Management	Plug and Play, diagnostics via PSI-CONF software or web-based management (only with managed Ethernet extenders)
Status and diagnostic indicators	LEDs: US (supply voltage), ACT/LINK (Ethernet data traffic), ERR (errors) 2x LINK / 2x STAT (DSL data traffic port A and port B), DIAG (diagnostic messages)

### 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)
Connection method	2 x 2-pos. COMBICON plug-in screw terminal blocks
Behavior of the outputs	Deactivated for device supply via DIN rail connector

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## Technical data

### Standards and Regulations

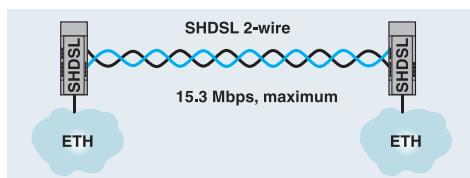
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Type of test	Vibration resistance in acc. with EN 60068-2-6/IEC 60068-2-6
Test result	5g, 10...150 Hz, 2.5 h, in XYZ direction
Type of test	Shock in acc. with EN 60068-2-27/IEC 60068-2-27
Test result	15g
Standards/regulations	EN 61000-4-2
Contact discharge	± 6 kV
Indirect discharge	± 6 kV
Standards/regulations	EN 61000-4-3
Frequency range	80 MHz ... 3 GHz
Standards/regulations	EN 61000-4-4
Comments	Criterion B
Standards/regulations	EN 61000-4-5
Signal	± 1 kV (asymmetrical, shielded Ethernet cable)
Standards/regulations	EN 55011
	EN 61000-4-6
Frequency range	0.15 MHz ... 80 MHz
Standards/regulations	EN 50121-4
Conformance	CE-compliant
ATEX	# II 3 G Ex nA IIC T4 Gc X
UL, USA/Canada	cULus listed UL 508
Noxious gas test	ISA-S71.04-1985 G3 Harsh Group A

### Environmental Product Compliance

China RoHS	Environmentally Friendly Use Period = 50
	For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration"

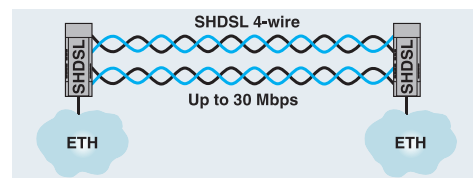
## Drawings

Application drawing



Point-to-point connection (2-wire)

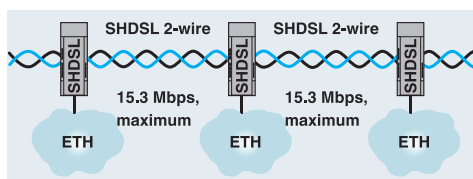
Application drawing



Point-to-point connection (4-wire)

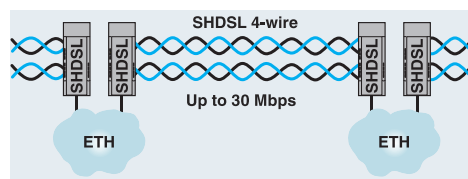
# Modem - TC EXTENDER 2001 ETH-2S - 2702409

Application drawing



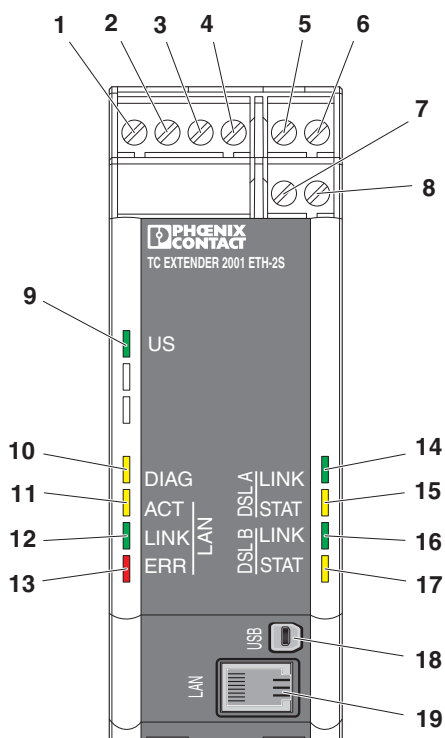
Linear structure (2-wire)

Application drawing



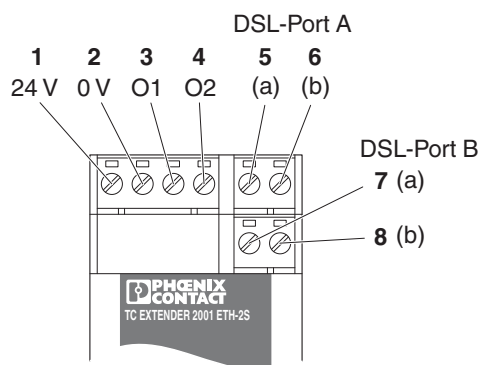
Linear structure (4-wire)

Schematic diagram



Front view

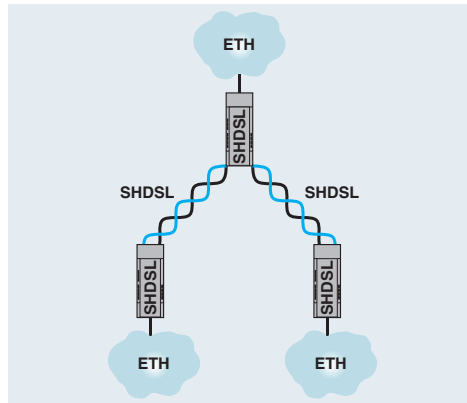
Schematic diagram



Device connections

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Application drawing



Star structure

## Classifications

eCl@ss

eCl@ss 5.1	27242208
eCl@ss 8.0	19060590
eCl@ss 9.0	19060590

ETIM

ETIM 4.0	EC000740
ETIM 5.0	EC000740
ETIM 6.0	EC000740

UNSPSC

UNSPSC 6.01	30211506
UNSPSC 7.0901	39121008
UNSPSC 11	39121008
UNSPSC 12.01	39121008
UNSPSC 13.2	43222628

## Approvals

Approvals

Approvals

UL Listed / cUL Listed / cULus Listed

Ex Approvals

ATEX

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## Approvals

### Approval details

UL Listed		<a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a>	FILE E 238705
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cUL Listed		<a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a>	FILE E 238705
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cULus Listed			
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## Accessories

### Accessories

#### Data cable preassembled

Network cable - FL CAT5 HEAVY CONF/ - 2744827



CAT5-SF/UTP cable (J-02YS(ST)C HP 2 x 2 x 24 AWG), heavy-duty installation cable, 2 x 2 x 0.22 mm<sup>2</sup>, solid conductor, shielded, outer sheath: 7.8 mm diameter, inner sheath: 5.75 mm ± 0.15 mm diameter, preassembled on both sides with RJ45 plug, crossover or line

#### DIN rail connector

Electronic housing - ME 17,5 TBUS 1,5/ 5-ST-3,81 GN - 2709561



DIN rail connector for DIN rail mounting. Universal for TBUS housing. Gold-plated contacts, 5-pos.

#### Patch cable

Patch cable - FL CAT5 PATCH 0,5 - 2832263



Patch cable, CAT5, assembled, 0.5 m

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### Accessories

Patch cable - FL CAT5 PATCH 5,0 - 2832580



Patch cable, CAT5, assembled, 5 m

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### Power supply

Power supply unit - MINI-SYS-PS-100-240AC/24DC/1.5 - 2866983



Primary-switched MINI POWER supply for DIN rail mounting, input: 1-phase, output: 24 V DC/1.5 A

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### Programming cable

Cable for programming - PSI-CA-USB A/MINI B/1METER - 2313575



USB 2.0 cable, USB A male plug to mini-USB B male plug, length: 1 m

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USB cable - CABLE-USB/MINI-USB-3,0M - 2986135



USB connecting cable: USB plug type A to USB plug type Mini-B; length: 3 m

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### Safety locking

Security element - FL PATCH SAFE CLIP - 2891246



Security element for FL patch cable

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### Surge protection for information technology



## Modem - TC EXTENDER 2001 ETH-2S - 2702409

### Accessories

Surge protection device - DT-TELE-SHDSL - 2801593



Attachment plug with surge protection for two SHDSL telecommunications interfaces (ports). Connection: RJ45 (RJ12/RJ11) and plug-in screw terminal block (COMBICON). Alternatively, can be snapped onto a DIN rail.