EXTENDER...-G

Gigabit Ethernet extenders



Data sheet
110323_en_00

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1 Description

The Gigabit extenders enable broadband Gigabit applications over any twisted pair cables or coaxial cables up to one kilometer. Use existing cables for sophisticated Ethernet applications and minimize the investment costs of your installation.

With the Power over Link (PoL) and Power over Ethernet (PoE) functions, you supply the entire network and connected devices with power via the data lines.

The G.hn carrier frequency method enables high ranges and data rates. By converting from TCP/IP Ethernet to G.hn, high-performance, robust, and flexible transmission is possible.

Featuring Plug and Play, the Gigabit extenders are easy to start up. Device operation is completely transparent for the connected Ethernet network. The devices do not have their own IP addresses. You do **not** need to configure the network or the IP addresses.

Features

- High-speed Ethernet with 1 Gbps up to a distance of 1 km, Gigabit transmission on conventional copper cables
- Use of existing twisted pair cables or coaxial cables
- Power over Link (PoL): power supply for the Gigabit extenders via twisted pair cables or coaxial cables
- Power over Ethernet (PoE): power supply for the PoE end devices
- Flexible network configuration
- Easy startup, plug and play
- PoL switch on the device front (Off, Out, In)
- Network transparent, no IP configuration required
- Protocol-transparent transmission of all standard Ethernet protocols
- Robust, secure G.hn modulation method

Make sure you always use the latest documentation.
It can be downloaded from the product at phoenixcontact.net/products.

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3 Ordering data

Description	Type	Item no.	Pcs./Pkt.
Gigabit Ethernet extender, network extension with coaxial cable up to 1 kilometer and bandwidth up to 1 Gbps, Power over Link function (PoL) for the power supply of additional devices via the coaxial cable	EXTENDER 1010 ETH COAX-G	1319319	1
Gigabit Ethernet extender, network extension with coaxial cable up to 1 kilometer and bandwidth up to 1 Gbps, Power over Link function (PoL) for the power supply of additional devices via the coaxial cable, Power over Ethernet function (PoE)	EXTENDER 2010 ETH COAX-G	1319320	1
Gigabit Ethernet extender, network extension via twisted pair cable up to 1 kilometer and bandwidth up to 1 Gbps, Power over Link (PoL) function for the power supply of additional devices via the twisted pair cable	EXTENDER 1010 ETH TP-G	1319321	1
Gigabit Ethernet extender, network extension via twisted pair cable up to 1 kilometer and bandwidth up to 1 Gbps, Power over Link (PoL) function for the power supply of additional devices via the twisted pair cable, Power over Ethernet (PoE) function	EXTENDER 2010 ETH TP-G	1319322	1

Accessories	Type	Item no.	Pcs./Pkt.
Patch cable, CAT5, assembled, 0.5 m	FL CAT5 PATCH 0,5	2832263	1
Patch cable, CAT5, assembled, 1 m	FL CAT5 PATCH 1,0	2832276	1
Patch cable, CAT5, assembled, 2 m	FL CAT5 PATCH 2,0	2832289	1
Patch cable, CAT5, assembled, 3 m	FL CAT5 PATCH 3,0	2832292	1
Patch cable, CAT5, assembled, 5 m	FL CAT5 PATCH 5,0	2832580	1
Patch cable, degree of protection: IP20, number of positions: 8, 10 Gbps, $CAT6_A$, cable outlet: straight, Ethernet	NBC-R4AC-R4AC-IE8A/.../...	1411854	1
Patch cable, $CAT6_A$, 4-pair, shielded, connection not crossed (line), assembled at both ends with RJ45/IP20 connectors, outer sheath material: PUR, length: 2.0 m	NBC-R4AC/10G-R4AC/10G-94F/2,0	1408360	1
Patch cable, $CAT6_A$, 4-pair, shielded, connection not crossed (line), assembled at both ends with RJ45/IP20 connectors, outer sheath material: PUR, length: 3.0 m	NBC-R4AC/10G-R4AC/10G-94F/3,0	1408365	1

Accessories	Type	Item no.	Pcs./Pkt.
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 mm², 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	FL CAT5 HEAVY CONF/	2744827	1
RJ45 connector, design: RJ45, degree of protection: IP20, number of positions: 8, 1 Gbps, CAT5 (IEC 11801:2002), material: Plastic, connection method: Insulation displacement connection, connection cross section: AWG 26- 23, cable outlet: straight, color: traffic grey A RAL 7042, Ethernet	VS-08-RJ45-5-Q/IP20	1656725	1
Crimping pliers, for assembling the RJ45 plugs FL PLUG RJ45..., for assembly on site	FL CRIMPTOOL	2744869	1

3.1 Surge protection

Accessories for EXTENDER ... COAX-G	Type	Item No.	Pcs./Pck.
Intermediate plug with surge protection for coaxial signal interface with floating shield. Connection: BNC socket-plug	C-UB/E	2763701	10

Accessories for EXTENDER ... TP-G	Type	Item No.	Pcs./Pck.
Surge protection plug for base element, coarse protection for four signal lines grounded on one side	PT 4-F-ST	2858441	10
Base plug for PT protective plug with protective circuit for a 4-wire floating signal circuit, bridge between connections 3 ... 4 (GND) and 9 ... 10, mounting on NS 35/7,5 and NS 35/15, housing width: 17.5 mm	PT 4-BE	2839402	10

4 Technical data

Supply	EXTENDER 1010...	EXTENDER 2010...
Connection method	Push-in spring connection	Push-in spring connection
Supply voltage range	18 V DC ... 57 V DC	18 V DC ... 57 V DC
Nominal supply voltage	24 V DC (without PoL) 48 V DC (with PoL)	24 V DC (without PoL, without PoE) 48 V DC (with PoL or with PoE)
Nominal current	≤ 0.31 A (at 24 V, without PoL) ≤ 0.16 A (at 48 V, without PoL) ≤ 0.78 A (at 48 V, with PoL)	≤ 0.31 A (at 24 V, without PoL, without PoE) ≤ 0.16 A (at 48 V, without PoL, without PoE) ≤ 0.78 A (at 48 V, without PoL, with PoE) ≤ 0.78 A (at 48 V, with PoL, without PoE) ≤ 1.72 A (at 48 V, with PoL, with PoE)
Power consumption	≤ 7.5 W (without PoL) ≤ 37.5 W (with PoL)	≤ 7.5 W (without PoL, without PoE) ≤ 37.5 W (without PoL, with PoE) ≤ 37.5 W (with PoL, without PoE) ≤ 82.5 W (with PoL, with PoE)
Overload protection, protection against polarity reversal	Internal device protection: 2x 5 AF, internal series diode	Internal device protection: 2x 5 AF, internal series diode
Electrical isolation	VCC (US+GND) // Ethernet (PoE) // G.hn (without PoL) // FE	VCC (US+GND) // Ethernet (PoE) // G.hn (without PoL) // FE
Test voltage	1.5 kV AC (50 Hz, 1 min.)	1.5 kV AC (50 Hz, 1 min.)

Ethernet interface, 10/100/1000Base-T(X) in accordance with IEEE 802.3	EXTENDER 1010...	EXTENDER 2010...
Number of ports	1	1
Connection method	RJ45 jack, shielded	RJ45 jack, shielded
Note on the connection method	CAT6	CAT6
	Autonegotiation	Autonegotiation
Serial transmission speed	10/100/1000 Mbps	10/100/1000 Mbps
Transmission length	< 100 m (shielded twisted pair)	< 100 m (shielded twisted pair)
Protocols supported	Protocol-transparent for TCP/IP, IPv4, and IPv6	Protocol-transparent for TCP/IP, IPv4, and IPv6
Interface	**Ethernet**	**PoE standard IEEE 802.3at, af**
PoE data	-	PoE port status: Always active Mode: Auto
Maximum output power	-	15 W (at ≤55°C) 30 W (at ≤50°C)

G.hn interface in accordance with ITU G.9960	EXTENDER ... COAX-G	EXTENDER ... TP-G
Connection method	BNC female connector for coaxial cables	Push-in spring connection
Note on the connection method	Short-circuit-proof	Short-circuit-proof
Output voltage	≤ 57 V DC	≤ 57 V DC
Output power	≤ 91 W (with PoL)	≤ 74 W (with PoL)

Gigabit Ethernet extender in accordance with ITU G.9960	
Transmission speed	≤ 1000 Mbps (Depending on the quality of the data line)
Transmission length	≤ 1000 m (Depending on the quality of the data line)
Transmission method	QAM (quadrature amplitude modulation) carrier frequency method
Management	Plug and Play, diagnostics via LEDs, PoL switch on the device
Encryption methods	AES path encryption, Advanced Encryption Standard
Redundancy	Ring segment redundancy, all devices at a ring segment
Number of supported devices	≤ 15 (per G.hn segment, without PoL)

Push-in spring connection	
Stripping length	10 mm
Conductor cross section	
flexible	0.2 mm² ... 6 mm²
rigid	1 mm² ... 6 mm²
AWG flexible	24 AWG ... 10 AWG
Flexible with ferrules without plastic sleeve	0.2 mm² ... 4 mm²
Flexible with ferrules with plastic sleeve	0.2 mm² ... 4 mm²
2 conductors with the same cross section, flexible, with TWIN ferrule with plastic sleeve	0.5 mm² ... 1.5 mm²

General data	
Degree of protection	IP20
Mounting position	Vertical (horizontal DIN rail)
Assembly instructions	To allow for air circulation, mount the device freestanding, with a clearance of at least one centimeter on all sides to other devices.
Pollution degree	2
Flammability rating according to UL 94	V0
Dimensions (W/H/D)	23 mm x 101 mm x 115 mm
Material	PA 6.6-FR (Housing)
Color	
Housing	gray (7042)
Vibration resistance in accordance with EN 60068-2-6/ IEC 60068-2-6	1g
Shock in accordance with EN 60068-2-27/IEC 60068-2-27	15g, 11 ms

MTTF (mean time to failure)	EXTENDER 1010 ETH COAX-G	EXTENDER 2010 ETH COAX-G	EXTENDER 1010 ETH TP-G	EXTENDER 2010 ETH TP-G
SN 29500 standard, temperature 25°C, operating cycle 21%	324 Years	293 Years	294 Years	268 Years
SN 29500 standard, temperature 40°C, operating cycle 34.25%	151 Years	134 Years	144 Years	128 Years
SN 29500 standard, temperature 40°C, operating cycle 100%	62 Years	55 Years	61 Years	54 Years

Ambient conditions	
Ambient temperature	
Operation	-40 °C ... 60 °C (Free standing, without PoE)
	-40 °C ... 55 °C (Free standing, PoE up to 15 W)
	-40 °C ... 50 °C (Free standing, PoE up to 30 W)
Storage/transport	-40 °C ... 85 °C
Humidity	
Operation	10 % ... 95 % (non-condensing)
Storage/transport	10 % ... 95 % (non-condensing)
Altitude	≤ 2000 m

Conformance/Approvals	
CE	CE-compliant
Corrosive gas test	ISA-S71.04-1985 G3 Harsh Group A

Conformance with EMC Directive 2014/30/EU		
Immunity in accordance with EN 61000-6-2		
Electrostatic discharge	EN 61000-4-2	
	Contact discharge	± 6 kV
	Discharge in air	± 8 kV
	Indirect discharge	± 6 kV
	Comments	Criterion B
Electromagnetic HF field	EN 61000-4-3	
	Frequency range	80 MHz ... 3 GHz (80% amplitude modulation with 1 kHz)
	Field intensity	10 V/m
	Frequency range	3 GHz ... 6 GHz (80% amplitude modulation with 1 kHz)
	Field intensity	3 V/m
	Comments	Criterion A
Fast transients (burst)	EN 61000-4-4	
	Input	± 2.2 kV
	Signal	± 2.2 kV (Ethernet, G.hn)
Surge current loads (surge)	EN 61000-4-5	
	Input	± 0.5 kV (Symmetrical, unshielded supply line) ± 1 kV (Asymmetrical, unshielded supply line)
	Signal	± 1 kV (Ethernet signal / asymmetrical: shielded Ethernet cable) ± 4 kV (Ethernet signal / asymmetrical: cable to ground, unshielded G.hn cable) ± 2 kV (Ethernet signal / symmetrical: cable to cable, unshielded G.hn cable)
		± 4 kV (Telecommunication lines, symmetrical, unshielded, with primary protection) ± 1 kV (Telecommunication lines, symmetrical, unshielded, without primary protection)
	Comments	Criterion B
Conducted interference	EN 61000-4-6	
	Frequency range	0.15 MHz ... 80 MHz (80% amplitude modulation with 1 kHz)
	Voltage	10 V
	Comments	Criterion A

Criterion A	Normal operating behavior within the specified limits.
Criterion B	Temporary impairment to operational behavior that is corrected by the device itself.

Emitted interference in acc. with EN 61000-6-4	
Noise emission	EN 61000-6-4, Class A, industrial area of application

5 Safety regulations and installation notes

WARNING:

Observe the following safety notes when using the device.

- Installation, operation, and maintenance may only be carried out by qualified electricians. Follow the installation instructions as described.
- When installing and operating the device, observe the applicable regulations and safety directives (including national safety directives), as well as the generally recognized technical regulations.
- Observe the safety information, conditions, and limits of use specified in the product documentation. Comply with them.
- Opening or modifying the device is prohibited. Do not repair the device yourself; replace it with an equivalent device instead. Repairs may only be carried out by the manufacturer. The manufacturer is not liable for damage resulting from non-compliance.
- The IP20 degree of protection (IEC/EN 60529) specifies that the device is intended for use in a clean and dry environment. Do not subject the device to mechanical and/or thermal stress that exceeds the specified limits.
- The device is designed exclusively for operation with SELV/PELV from a Class ES1 “electrical energy source” in accordance with EN/IEC 62368-1 and VDE 0868-1. The device may only be connected to devices that meet the requirements of class ES1 in accordance with EN/IEC 62368-1.

WARNING: risk of electric shock!

With Power over Link, the devices are supplied with power via the twisted pair cable or the coaxial cable.

Use of a power supply above 60 V DC is **not** permitted.

– Use a power supply that delivers a **maximum of 60 V DC**.

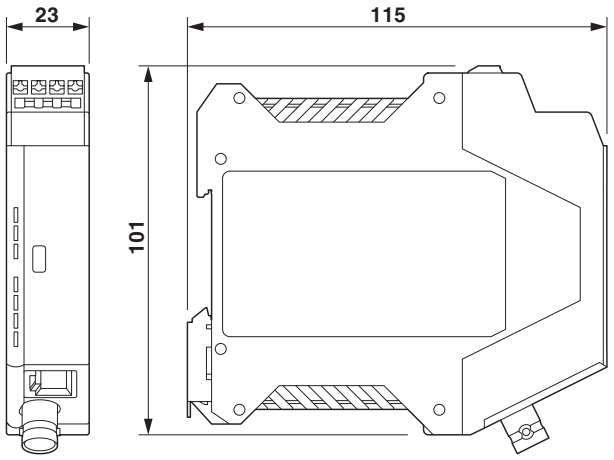
6 Transport and unpacking

- Check the delivery for visible damage caused by transportation.
- Submit claims for any transport damage immediately. Inform Phoenix Contact or your supplier as well as the shipping company without delay.
- Read the complete packing slip carefully.
- Retain the packing slip.
- Keep the packaging for a possible later transport.

7 Product description

7.1 Dimensions

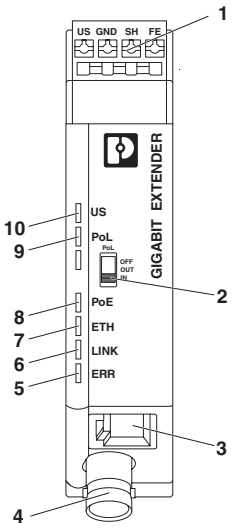
Figure 1 Housing dimensions



7.2 Function elements

Extender for coaxial cables

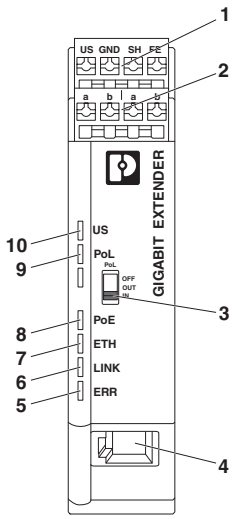
Figure 2 Function elements



1	**COMBICON plug-in push-in spring connection terminal**		
	US	Supply voltage	
	GND	Ground	
	SH	Shield connection	
		Option to bridge the coaxial cable shielding to a functional ground. To do so, use a plug-in bridge between FE and SH.	
		ⓘ If you use PoL, the negative potential is on the shield. Take this into account when bridging functional ground. In doing so, take the equipotential bonding of your entire application into account.	
	FE	Functional ground	
2	PoL switch		PoL (OFF, OUT, IN)
3	RJ45 Ethernet port		
4	BNC female connector for coaxial cables, G.hn interface		
5	ERR-LED	Green/red	
6	LINK-LED	Green/yellow	Ethernet status
7	ETH-LED	Green/yellow	G.hn status
8	PoE-LED	Green/red	Power over Ethernet, only with EXTENDER 2010...
9	PoL-LED	Green/red	Power over Link
10	US-LED	Green/red	Supply voltage

Extender for twisted pair cables

Figure 3 Function elements



1	**COMBICON plug-in Push-in spring connection terminal block, supply**		
	US	Supply voltage	
	GND	Ground	
	SH	Shield connection	
		Option to bridge the twisted pair cable shielding to a functional ground. To do so, use a plug-in bridge between FE and SH.	
	FE	Functional ground	
2	**COMBICON plug-in Push-in spring connection terminal block, twisted pair cable**		
	a/b	Connections for twisted pair cable, G.hn interface	
	a/b	Connections for twisted pair cable	
		To design network structures (line, tree, star, ring)	
3	PoL switch		PoL (OFF, OUT, IN)
4	RJ45 Ethernet port		
5	ERR-LED	Green/red	
6	LINK-LED	Green/yellow	Ethernet status
7	ETH-LED	Green/yellow	G.hn status
8	PoE-LED	Green/red	Power over Ethernet, only with EXTENDER 2010...
9	PoL-LED	Green/red	Power over Link
10	US-LED	Green/red	Supply voltage

7.3 Diagnostics and status indicators

LED	Color	Status	Meaning	
US	**Green/red**	**Supply**		
		Off	Supply voltage not present	
	Green/red	On	Initialization phase	
	Green	On	Supply voltage OK	Via push-in terminal block or PoL
PoL	**Green/red**	**Power over Link**		
		Off	No PoL power	
	With PoL switch position OFF or IN			
		Off	No Power over Link, default setting	
	Red	Flashing	Error state	
	With PoL switch position OUT:			
		Off	PoL not yet connected	
	Green	On	PoL is connected	
	Red	On	PoL error	
	Red	Flashing	Generic error	
PoE	**Green/red**	**Power over Ethernet, only with EXTENDER 2010...**		
		Off	In at mode: No PoE voltage	
	Red	On	In af mode: No PoE voltage	
	Green	On	PD is supplied via PoE, IEEE 802.3af	
	Green/red	On	PD is supplied via PoE, IEEE 802.3at	
	Green/red	Flashing	Error, e.g., negotiated performance exceeded, PD not supplied	
ETH	**Green/yellow**	**Ethernet status**		
		Off	No Ethernet link	
	Green	Flashing	Data transmission	1000 Mbps
	Green	On	Link is connected	1000 Mbps
	Yellow	Flashing	Data transmission	10/100 Mbps
	Yellow	On	Link is connected	10/100 Mbps
LINK	**Green/yellow**	**G.hn status**		
		Off	No G.hn link	
	Green	Flashing	Connection with high data rate	
	Yellow	Flashing	Connection with low data rate	
ERR	**Red**	**Various errors**		

7.4 PoL switch

With the Power over Link (PoL) function, you can supply other Gigabit extenders connected in the network via the coaxial cable or the twisted pair cable.

You do not require an additional power supply for the device that is supplied remotely.

Pos.	Meaning
OFF	No Power over Link, default setting
OUT	The device supplies other devices.
IN	The device is fed remotely.
	① **NOTE: Malfunction** Do **not** connect a power supply to US and GND.

7.5 Function description

High bandwidth and range

With the Gigabit Ethernet extenders, you use existing twisted pair cables or coaxial cables for high-bandwidth Ethernet communication over long distances.

The devices enable broadband Ethernet applications up to 1 Gbps over distances of up to 1 km. This goes far beyond the standard Ethernet distance of a maximum of 100 m.

Existing twisted pair cables or coaxial cables are sufficient for robust transmission. You can of course use an existing CAT Ethernet cable; however, this is not necessary.

The maximum achievable data rate depends on the cable used:

– Cross-section
– Connection points
– Twisted or coaxial

The quality of a coaxial cable is superior to that of twisted pair cables of the same length.

Power transmission via Power over Link or Power over Ethernet

With the PoL and PoE functions, you can transmit additional power via the data cable. This ensures that the extenders themselves, as well as connected PoE end devices, are supplied with power. This means you need fewer power supplies to power the extenders and the connected PoE end devices in the field. Installation is simpler and faster.

Depending on the network structure, multiple extenders and PoE end devices require just **one** power supply unit. This reduces the costs and installation effort considerably.

With the Power over Link function, the extenders can supply each other. Use the PoL switch on the device front to set the operating mode. An extender supplied via PoL can in turn supply up to 30 watts to a connected PoE camera with PoE af/at.

NOTE: Malfunction

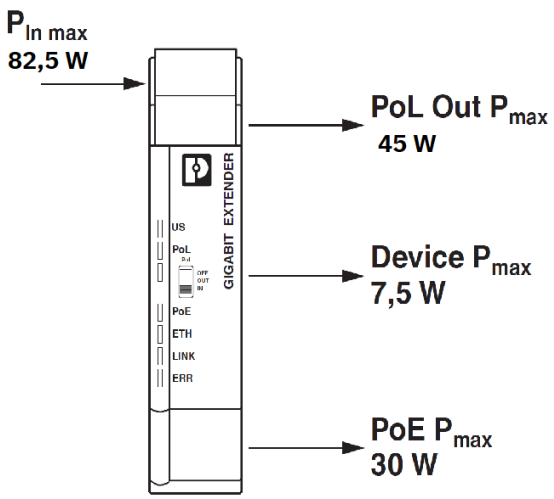
If you use the PoE or PoL function, please observe the following notes.

– Supply voltage range when using PoE or PoL: 48 V DC ... 57 V DC
– To keep the current on the coaxial cables or twisted pair cables low, we recommend a controllable power supply unit with a voltage range up to 57 V DC.
– A G.hn segment may contain only **one** PoL supplier.
– The PoL function is not available in a ring structure.
– Termination resistors are **not** required.
– If you use the PoL function, you may **not** use any termination resistors.
– The PoL supply to the devices in the G.hn segment (PoL/PoE devices) is delivered via the power supply connected to the PoL supplier.
– When dimensioning the central power supply and cables, consider the maximum power consumption of the entire network.

7.6 Power budget

EXTENDER 2010... with PoE function, in nominal operation

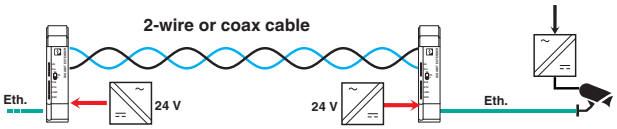
Figure 4 Power budget for IEEE 802.3at



7.7 Installation examples

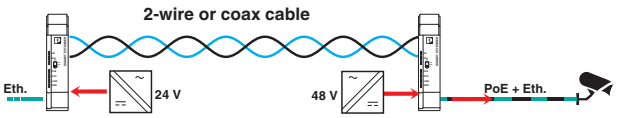
If neither PoE nor PoL is used, separate power supply units are required to supply each device.

Figure 5 Separate supply with one power supply unit each



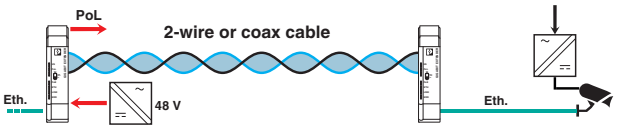
Use the PoE function on the remote extender to supply a connected PoE end device.

Figure 6 PoE supply of a PoE end device



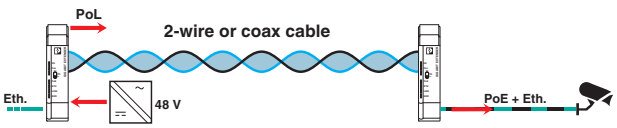
If you supply the local extender with 48 V DC, you can also supply the remote extender via PoL.

Figure 7 PoL supply of the remote extender



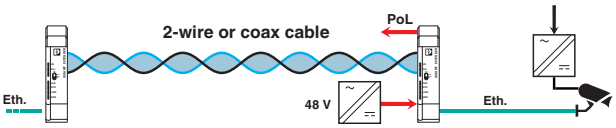
The extender supplied via PoL can in turn supply a PoE end device via PoE.

Figure 8 PoL supply of the remote extender and PoE supply of a PoE end device



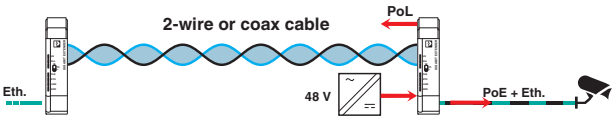
With a 48 V DC power supply at the remote device, you can also supply the local device via PoL.

Figure 9 PoL supply of the local extender



In addition to the local extender, the remote extender can also supply a PoE end device.

Figure 10 PoL supply of the local extender and PoE supply of a PoE end device



7.8 Compatibility

The transmission of EXTENDER...-G Gigabit Ethernet extenders is based on the G.hn carrier frequency method. The previous extenders in the TC EXTENDER... product family use SHDSL transmission technology.

Direct coupling of the different transmission technologies is **not** possible. However, they can be combined for complex applications. The SHDSL extenders are then coupled to the Gigabit extenders via the Ethernet data connection.

For example, you can configure a powerful backbone ring with Gigabit Ethernet extenders and connect hard to reach remote stations via SHDSL extenders. SHDSL has a range of up to 20 kilometers.

The Gigabit extenders with and without PoE are network-compatible with each other. However, you cannot combine devices for coaxial cables and twisted pair cables. The modulation methods are optimized for the transmission medium and therefore differ.

7.9 Possible topologies

You can use the Ethernet extenders to configure the following network topologies:

- Point-to-point
- Line
- Star
- Tree
- Ring

No configuration is required with the Plug and Play devices, enabling easy startup of your system. The devices recognize each other automatically.

If you do **not** use PoL, you can connect up to 15 devices in a network. Note the table below.

In addition, you can also use power supply via PoL and PoE in the network, depending on the cable used and the total length.

- All Gigabit extenders in a network have a direct copper connection to each other. They form a large G.hn copper segment.
- The maximum range is 1000 m. The longest connection between the Gigabit extenders must **not** exceed 1000 m. Here, every possible device connection is considered.
- The maximum data rate that can be achieved is 1 Gbps. The available bandwidth budget in a network is split up dynamically between the individual devices. Point-to-point connections are ideal.
- The available bandwidth budget of a network depends on the length and quality of all cable connections. As the number of devices in a network increases, it can only be qualified by practical tests in the relevant application (see table).

Topology	Application	Devices in the system, qualified in the test	PoL Out P_{max}	Note
Point-to-point	Without PoL	2	-	-
	With PoL, without remotely powered PoE device	2	7.5 W	-
	With PoL, one remotely powered PoE device, 30 W	2	37.5 W	-
Network	Without PoL	5	-	Technically possible: 15 devices
				Phoenix Contact recommends: ≤5 devices (qualified by Phoenix Contact) >5 devices (with application test)
				Due to the high number of devices, there may be so much bandwidth distribution that user data transmission is limited. Example: large number of WLAN devices at an access point
	With PoL, without remotely powered PoE device	5	30 W (4 x 7.5 W)	-
	With PoL, with two remotely powered PoE devices, 2 x 15 W	3	45 W (2 x 7.5 W + 30 W or 2 x 7.5 W + 2 x 15 W)	-

Figure 11 Point-to-point connection

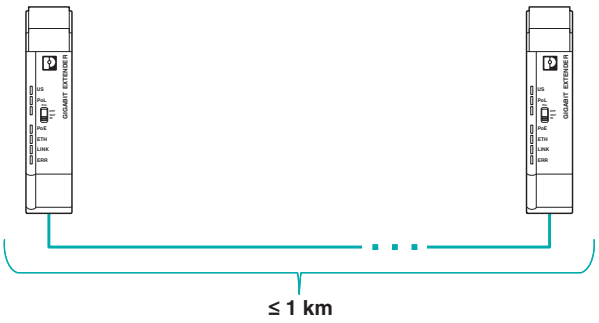


Figure 12 Line structure

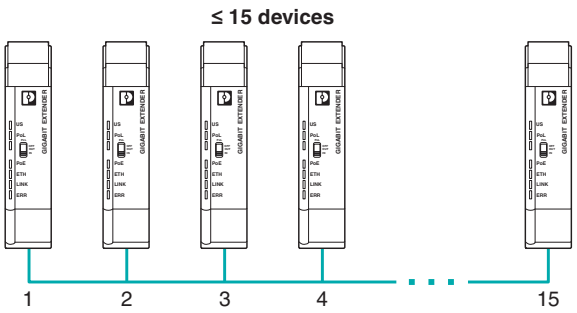


Figure 13 Star structure

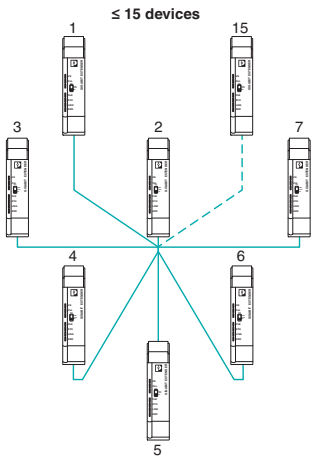


Figure 14 Tree structure

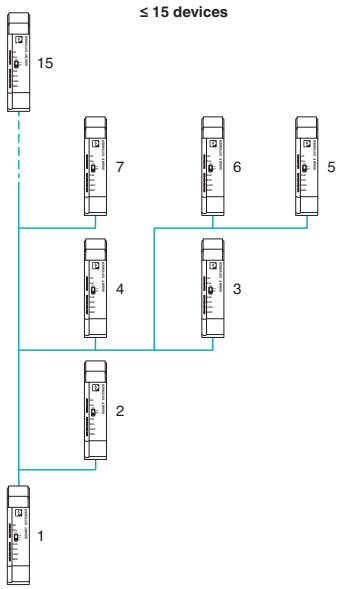
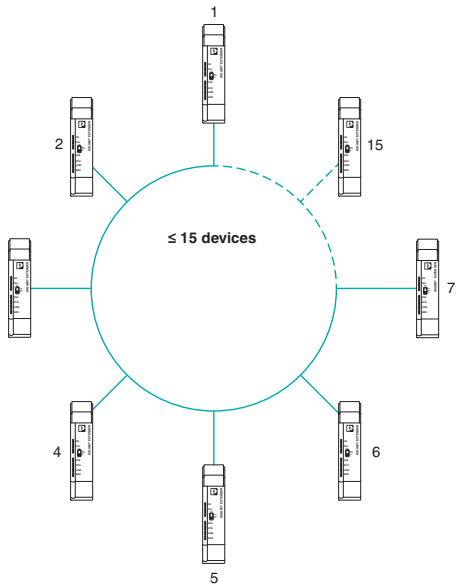


Figure 15 Ring structure



8 Installation

CAUTION: Electric shock

Only mount and remove devices when the power supply is disconnected.

NOTE: Electrostatic discharge

Electrostatic discharge can damage or destroy components.

– When handling the device, observe the necessary safety precautions against electrostatic discharge (ESD) in accordance with EN 61340-5-1 and IEC 61340-5-1.

NOTE: Malfunction

Use a grounding terminal block to connect the DIN rail to protective earth ground. The devices are grounded when they are snapped onto the DIN rail (installation according to PELV).
This ensures that the shielding is effective.
Connect protective earth ground with low impedance.

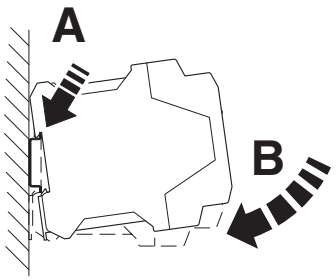
8.1 Mounting

NOTE: Overheating during operation

The device may overheat during operation.

– To enable air circulation, mount the device freestanding, with a clearance of at least one centimeter on all sides to other devices.

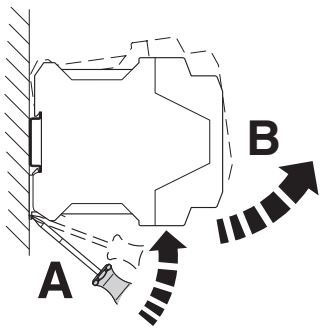
Figure 16 Mounting on a DIN rail



- Mount the device vertically on a horizontal DIN rail.
- To avoid contact resistance, only use clean, corrosion-free 35 mm DIN rails according to DIN EN 60715.
- Place the device onto the DIN rail from above. Push the device from the front toward the mounting surface until it audibly engages.

8.2 Removal

Figure 17 Removal



- Push down the locking tab with a screwdriver, needle-nose pliers or similar.
- Slightly pull the bottom edge of the device away from the mounting surface.
- Pull the device away from the DIN rail.

8.3 Connecting the supply voltage

WARNING: risk of electric shock!

With Power over Link, the devices are supplied with power via the twisted pair cable or the coaxial cable.

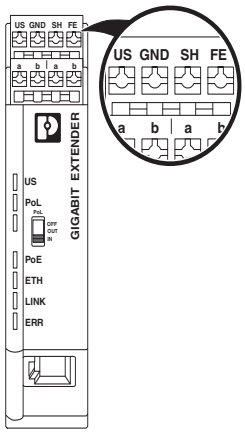
Use of a power supply above 60 V DC is **not** permitted.

– Use a power supply that delivers a **maximum of 60 V DC**.

CAUTION: Electric shock

The device is designed exclusively for operation with SELV/PELV from a Class ES1 “electrical energy source” in accordance with EN/IEC 62368-1 and VDE 0868-1.

Figure 18 Connecting the supply voltage

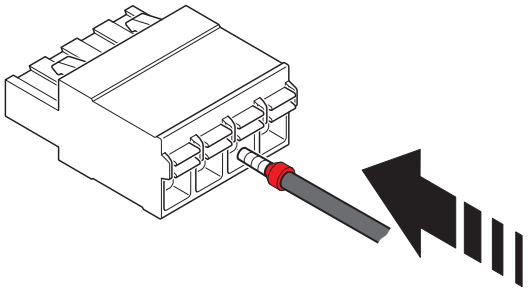


- Connect the supply voltage to the US and GND terminals (0 V).

8.4 Push-in connection

Connecting cables

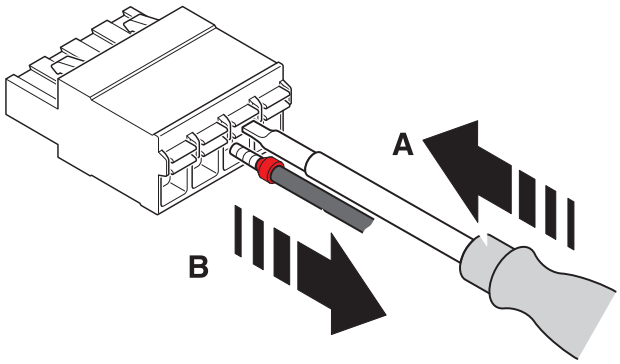
Figure 19 Connecting cables



- Rigid conductors / ferrule assembled conductors: Insert the conductors directly into the terminal block without using a tool.
- Flexible conductors: open the terminal block first. To do so, insert a screwdriver into the release slot above the connection terminal block.

Uninstalling cables

Figure 20 Uninstalling cables



- Insert a screwdriver into the release slot above the connection terminal block (A).
- Remove the conductor from the terminal block (B).

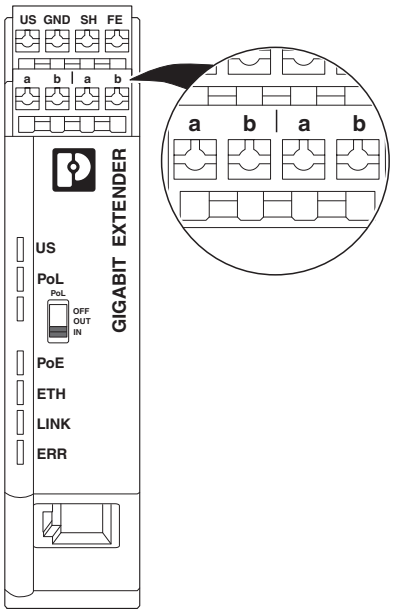
8.5 Data cable

Coaxial cable, for EXTENDER ... COAX-G

- Connect the coaxial cable to the BNC connection of the device.
- Rotate a quarter turn to lock the bayonet.
- Check that the BNC connector is fitted securely.

Twisted pair cable, for EXTENDER ... TP-G

Figure 21 Connection of the twisted pair cable



- Use shielded twisted pair cables.
- Connect terminal a to terminal a of the opposite device.
- Connect terminal b to terminal b of the opposite device.

RJ45 interface

- Insert the Ethernet cable with the RJ45 connector into the interface until the plug audibly snaps in.

9 Disposal

The symbol with the crossed-out trash can indicates that this item must be collected and disposed of separately. Phoenix Contact or our service partners will take the item back for free disposal. For information on the available disposal options, visit www.phoenixcontact.com.

– Delete personal data before returning the item.