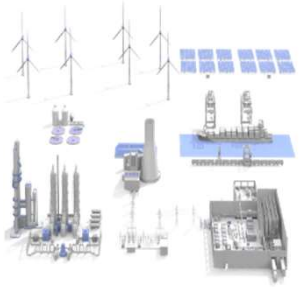
Communication Interfaces – Overview 2021

Products



Application references

NearFi Technology
Designed by Phoenix Contact

PROFIBUS

TRUSTED WIRELESS

Technologies

PoE

HART

5G

"PAVE THE WAY FOR FUTURE BUSINESS"
by addressing relevant trends

SPE & APL

5G

TSN

OPC UA

PHOENIX CONTACT
INSPIRING INNOVATIONS

Communication Interfaces - Our product portfolio

Fieldbus Communication

Ethernet Infrastructure

Smart Camera Box

new

Wireless

new

Remote Communication

PHOENIX CONTACT
INSPIRING INNOVATIONS

Fieldbus Communication 1

Converter
Isolator

Repeater
Segment
Coupler

Fast
connectors
(SUBCON)

Fiber optic
converter

Modular hub

Extender
Serial/Profibus

Protocol
converter

Radioline
Multipoint-
Multiplexer

Terminator
resistor

Fieldbus
Communication 2

PHOENIX CONTACT
INSPIRING INNOVATIONS

Fieldbus Communication 2

Serial Device Server / Gateways

Foundation fieldbus Power

Fieldbus Device Coupler Zone 2

Fieldbus Device Coupler Zone 2

Fieldbus Device Coupler Zone 1

Fieldbus Device Terminal box

Profibus DP/PA Converter

Profibus PA I/O Multiplexer

Ethernet HART Multiplexer

Fieldbus Communication 1

Ethernet Infrastructure

Ethernet Infrastructure

Ethernet Extender

Media Converter

Ethernet Isolator

Ethernet HART Multiplexer

Patch Panel

PoE Injector

Serial Device Server / Gateways

Data connectors

TIME SERVER

Fieldbus communication 2

Wireless

INSPIRING INNOVATIONS

Wireless

Ethernet Infrastructure

Remote communication

Radioline

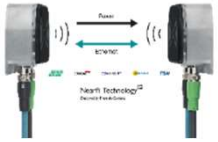
Wireless Multiplexer

Essential Wireless

Radioline Outdoor solution

WLAN 5110

WLAN 1100 / 2100



new

NearFi

Energy and data coupler

new

Bluetooth LowEnergy

new

WLAN 1010 / 2010

Bluetooth EPA

Remote communication

TC Mobile I/O

TC MGuard

new

TC Router

new

TC Cloud Client

mGuard Secure Remote Service

Wireless

Technologies

Technologies

HART Technology

PoE Power over Ethernet

TRUSTED WIRELESS

Remote communication

PROFIBUS

5G

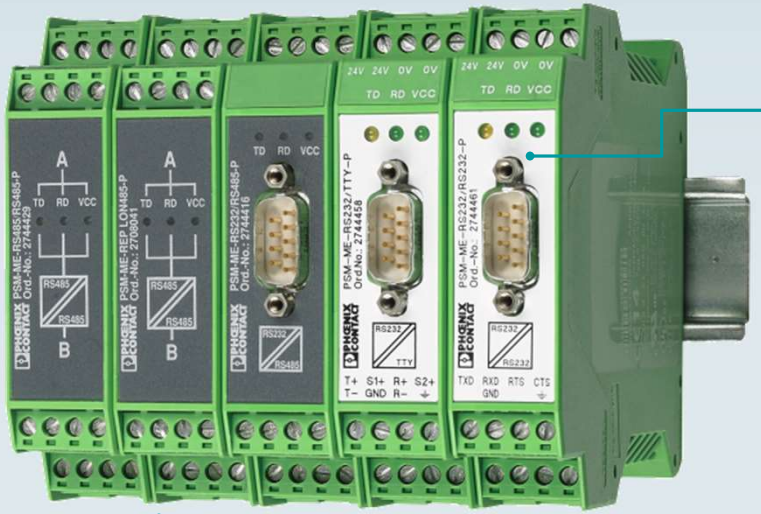
new

NearFi Technology
Designed by Phoenix Contact

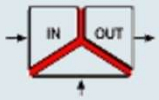
PHOENIX CONTACT
INSPIRING INNOVATIONS

Converter and isolator

Integrated power supply unit
The device can be supplied directly with 24 V AC/DC



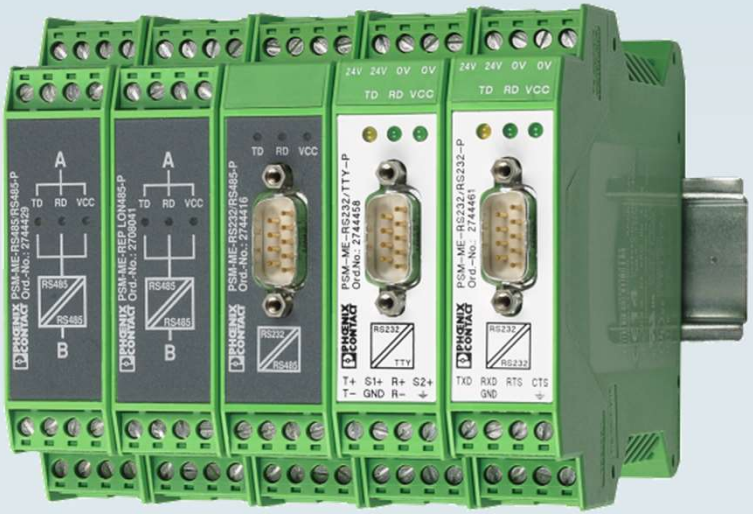
Interference-free and robust
High-grade 2 kV electrical isolation between the power supply and the data interfaces

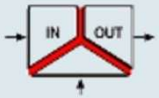


3-way-isolation

Improve performance
Thanks to integrated signal amplification, you can achieve a significant improvement in the transmission speed and range of your network.

Converter and isolator



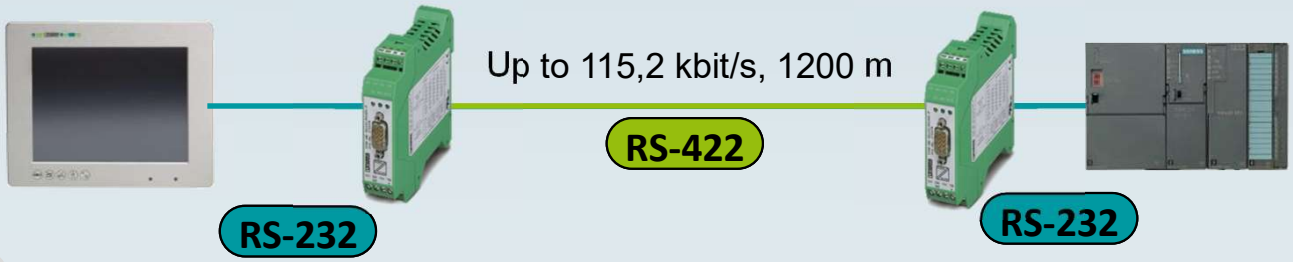


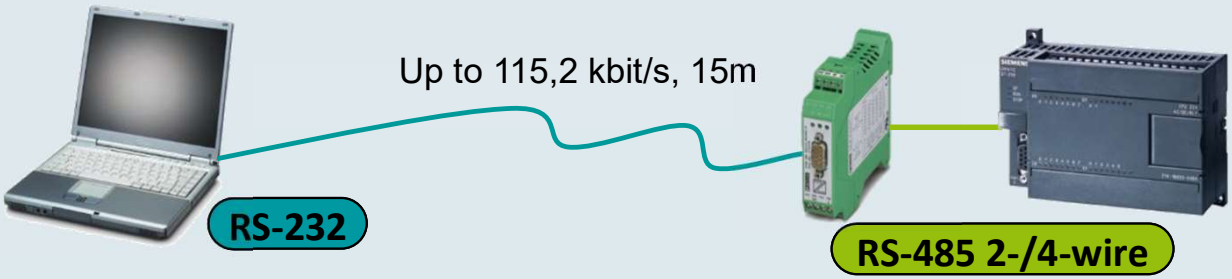
3-way-isolation

- Isolator for RS-232
- Repeater RS 485
- Repeater LON
- Converter for RS-232 to
  - RS-422
  - RS-485 2-wire
  - RS-485 4-wire
- Converter for RS-232 to TTY
- Device-specific approvals:

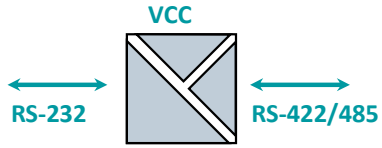
  DNV, UL HazLoc, ATEX, operation at altitudes of up to 5,000 m, railway applications acc. EN 50121-4

Converter and isolator





- Interference-free point-to-point connection
- Increase distances of RS-232 from 15 m up to 1200m by converting to RS-422



Converter and isolator






	PSM-ME-RS232/RS232-P	PSM-ME-RS232/TTY-P	PSM-ME-RS232/RS485-P	PSM-ME-RS485/RS485-P	SM-ME-REP LON485-P
Type	RS-232 isolator	RS-232 on TTY converter	RS-232 on RS-485/RS-422 converter	RS-485 on RS-485 repeater	LON repeater
Interface 1	RS-232	RS-232	RS-232	RS-485	RS-485
Interface 2	RS-232	TTY	RS-485 / RS-422	RS-485	RS-485
Range (max.)	15 m	1000 m	1200 m	1200 m	1200 m
Data rate (max.)	115,2 kbps	19,2 kbps	115,2 kbps	1500 kbps	2000 kbps
Order number	2744461	2744458	2744416	2744429	2708041

ME-SAS (Accessorie)
Shield connection clip for printed circuit terminal block
2863899

PHOENIX CONTACT
INSPIRING INNOVATIONS

Termination resistor

PROFIBUS connection D(A), D(B)

Status LEDs

Slide switch for termination resistor

24 V DC voltage supply

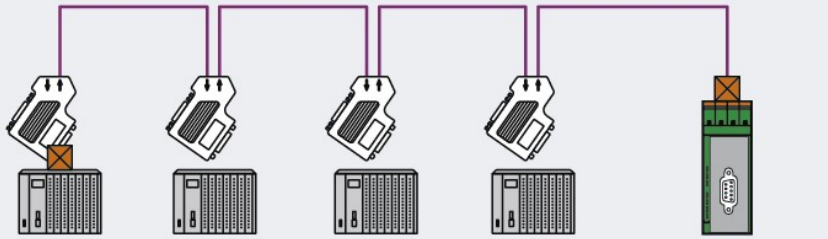
D-SUB, programming interface

- PROFIBUS or other RS-485 networks can be actively terminated at the bus end using the PSI-TERMINATOR-PB-TBUS device
- Active Line termination
- Redundant power supply: 24 VDC
- Diagnostic LED’s for power and data activity
- T-Bus functionality for power supply

Termination resistor

Application examples:

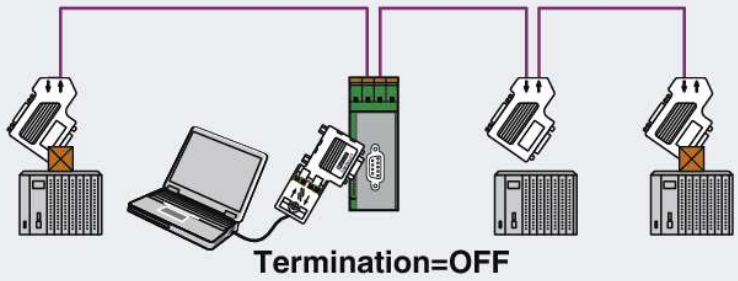
Termination operation



☒ = Active bus termination resistor

The terminator is suitable for ensuring bus termination when changing Profibus slave devices. In this application, the terminator is installed after the last bus device in the cabel. The bus cable is permanently terminated when the termination resistor at the device is switched on.

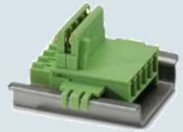
Programming access



☒ = Active bus termination resistor

The terminator can be integrated into the bus system as a fixed programming interface. Termination is deactivated in this mode of operation. Passive and active programming devices are supported.

Termination resistor



	PSI-TERMINATOR-PB-TBUS	ME 22,5 TBUS 1,5/ 5-ST-3,81 G (Accessory)
Description	Active termination resistor for PROFIBUS and RS-485 bus systems, redundant power supply, routing of the supply voltage via DIN rail connector, electrical isolation, switchable termination, integrated programming interface	DIN rail connector for routing the power supply voltage
Interface	PROFIBUS acc. to IEC 61158, RS-485 2-conductor	
Termination resistor	390 Ohm / 220 Ohm / 390 Ohm (can be connected)	
Serial transmission speed	up to 12 Mbps	
Order number	2702636	2707437

The modular hub

Simply snap the devices onto the DIN rail and go!

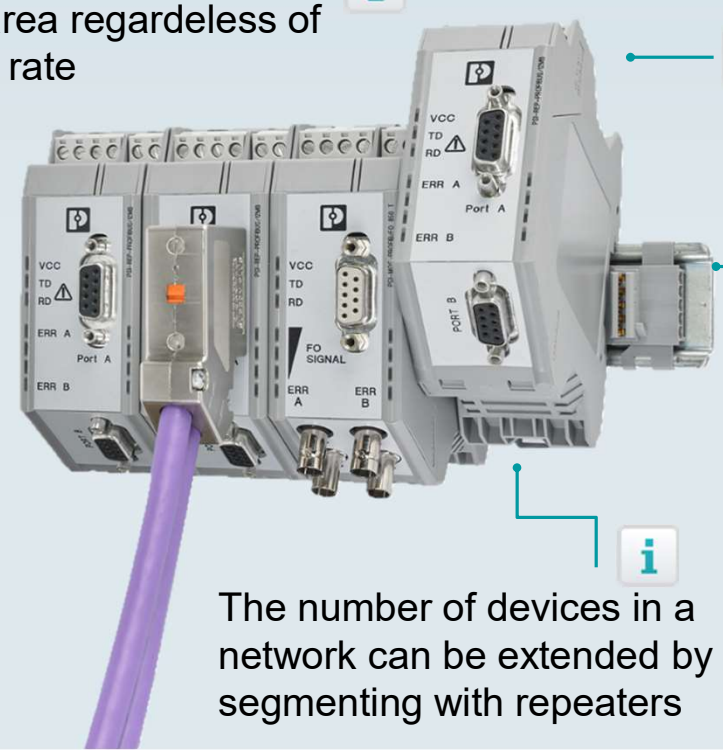
Smooth installation
The DIN rail connector instantly provides data and the supply voltage to each device associated with the station

Combine
The Fiber optic converter can be combined with copper repeater, SHDSL devices in whichever way you choose

PHOENIX CONTACT
INSPIRING INNOVATIONS

Repeater – Copper transmission

Extend your network over a wide area regardeless of the data rate



Extend and distribute channels as required

Modular station with T-Bus connector

Different topologies

The number of devices in a network can be extended by segmenting with repeaters

Features Repeater:

- Bit-Oversampling
- Bit-Retiming
- Start-delimiter detection for PROFIBUS
- Potential segmentation

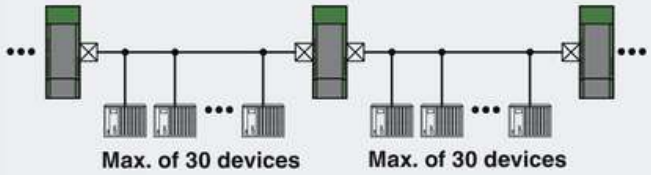
Repeater – Copper transmission

- Transmission speed: <=12 Mbps
- Electrical isolation between all ports
- Operation altitudes of up to 5000m and rail application in line with EN 50121-4
- Wide temperature range: -20°C…+60°C
- Approvals: ATEX, cULus Listed 508, Class1, Zone 2 and Class 1, Div2

Repeater – Copper transmission

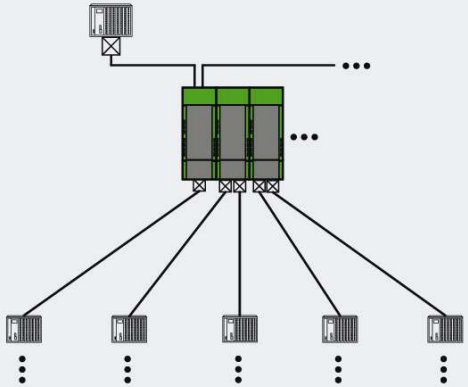
Topologies

Linear structure



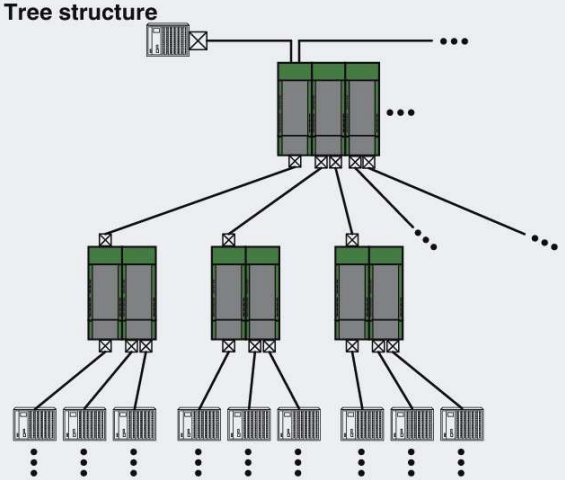
☒= Switch on bus terminating resistor

Star structure



☒= Switch on bus termination resistor

Tree structure

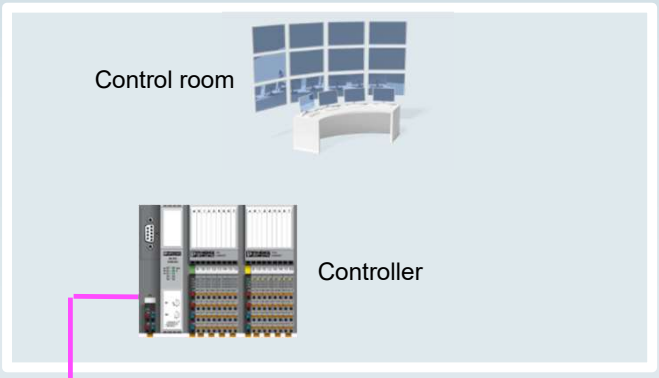


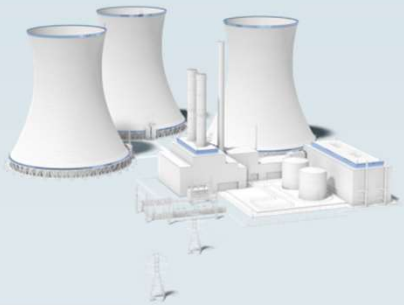
☒= Switch on bus terminating resistor

Bus segmentation with repeater makes it possible to multiply the permission coverage of the network and to extend the number of devices.

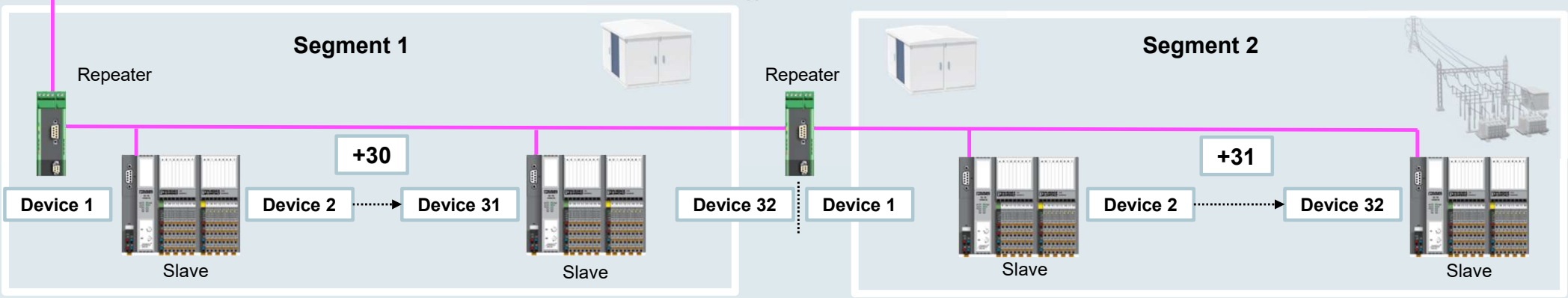
Mixes / network structures, star and tree structures can be created using repeaters.

Repeater – Copper transmission



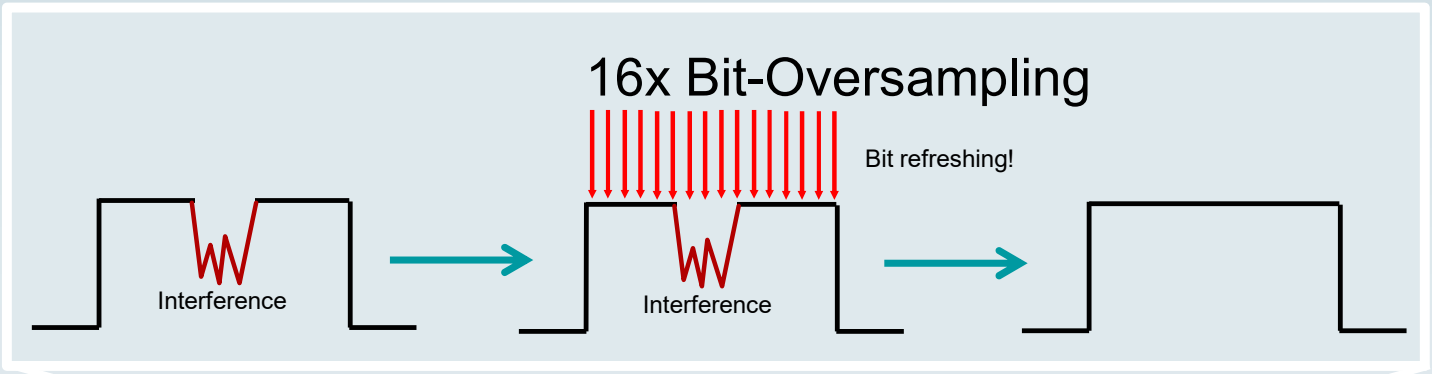


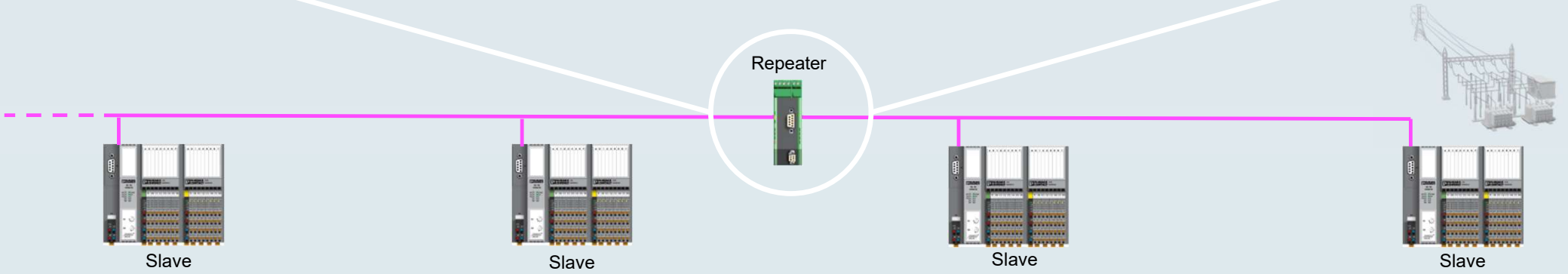
- Max 32 devices in one segment
- Each repeater port counts as one device, but has no node address



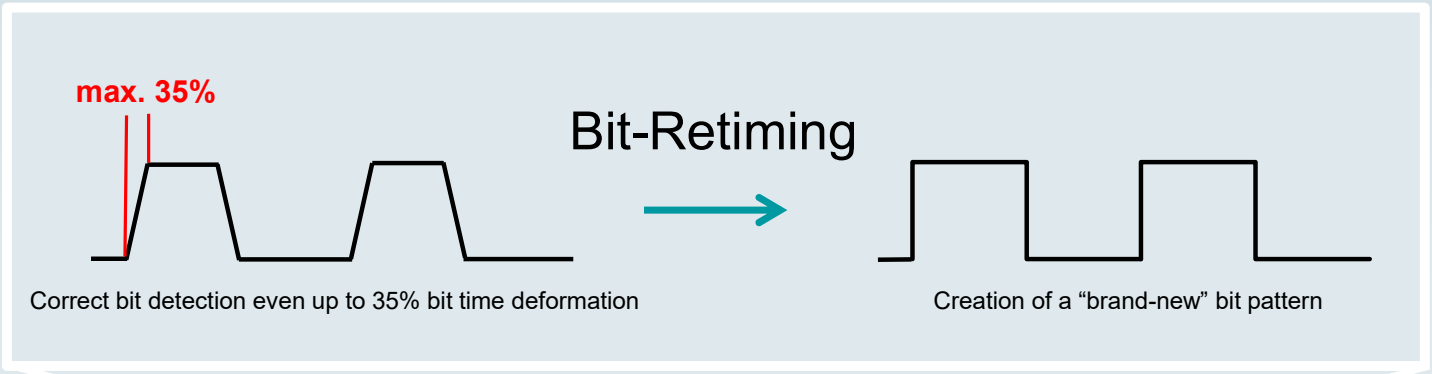
PHOENIX CONTACT
INSPIRING INNOVATIONS

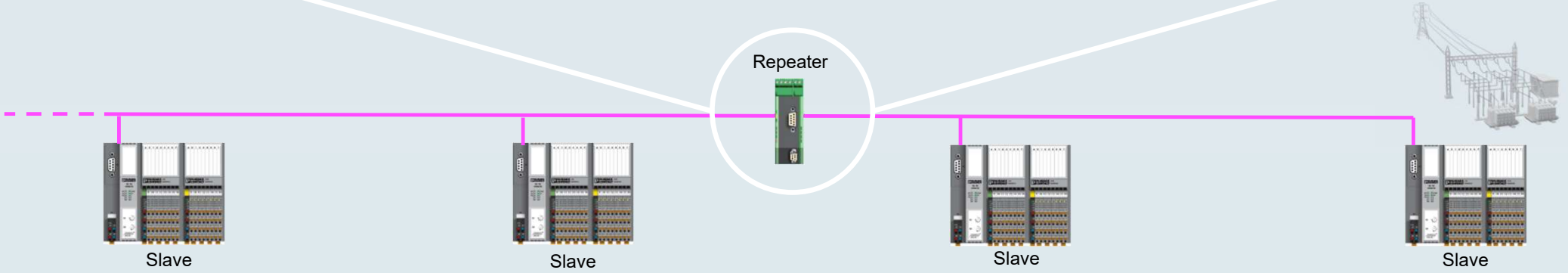
Repeater – Bit-Oversampling



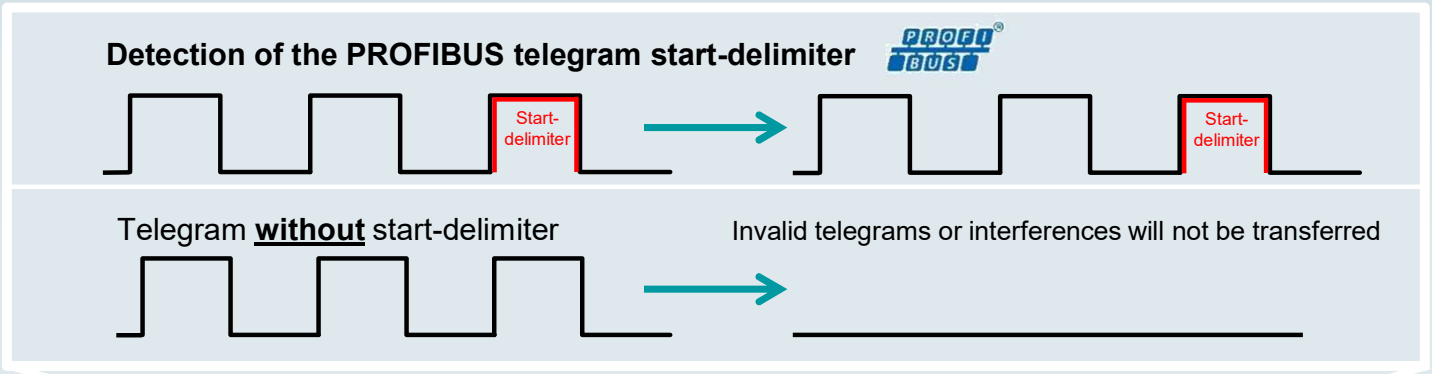


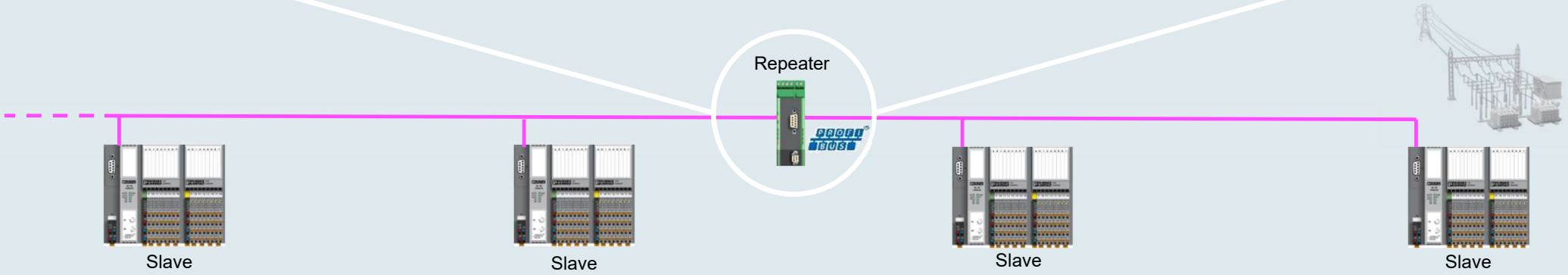
Repeater – Bit-Retiming





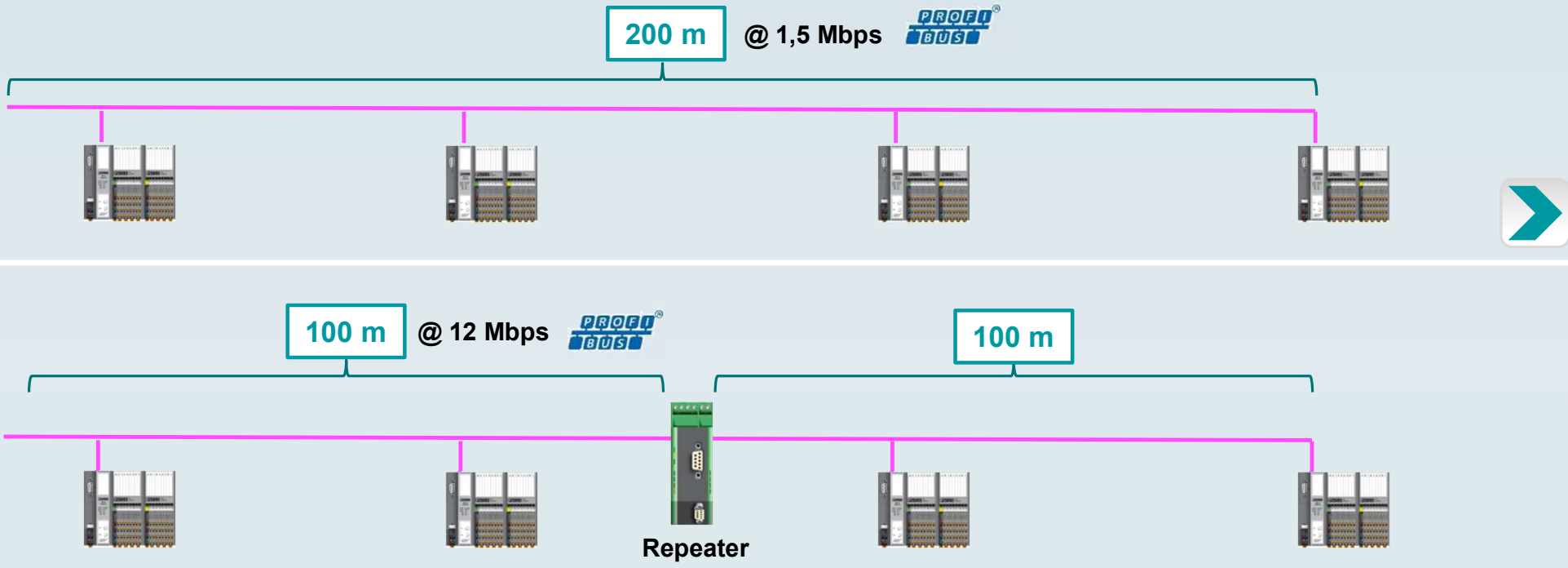
Repeater – Start-Delimiter Detection





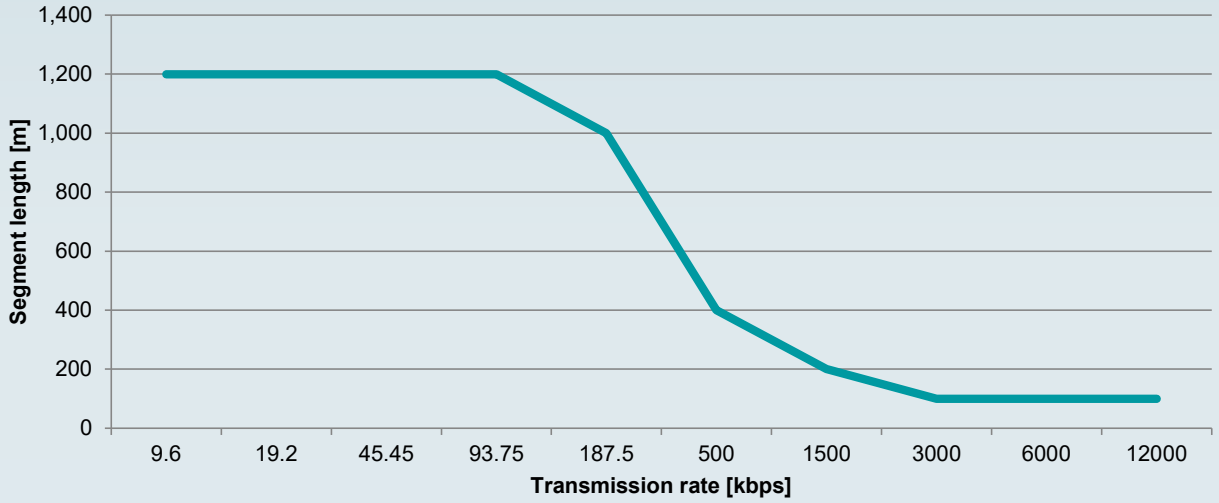
Repeater – Distance vs. Segment length

The maximum segment length depends on the transmission speed!



Transmission rate vs. Segment length

The max. transmisson rate depends on the segment length

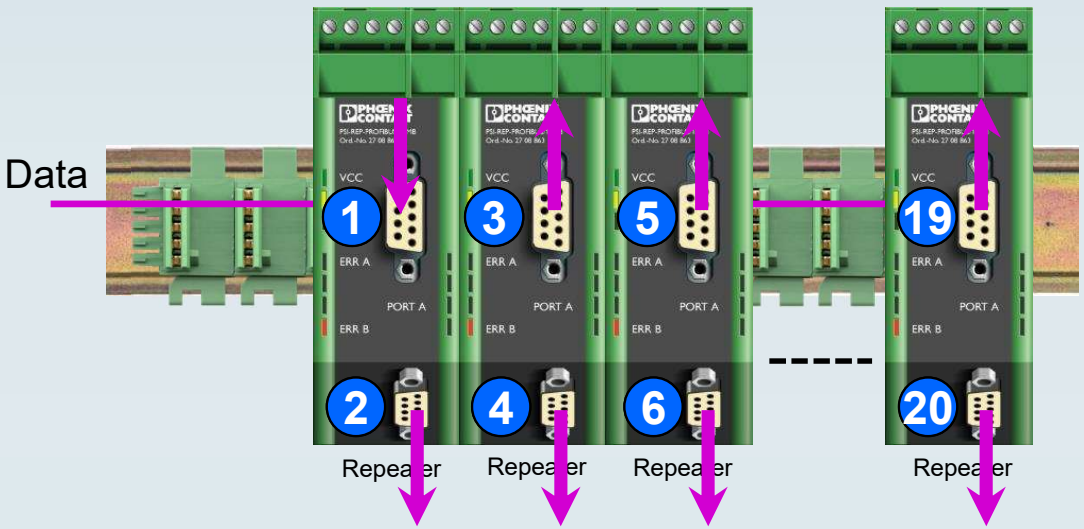


Transmission rate [kbps]	9.6	19.2	45.45	93.75	187.5	500	1,500	3,000	6,000	12,000
Segment length [m]	1,200	1,200	1,200	1,200	1,000	400	200	100	100	100

Repeater – Modular station

Data

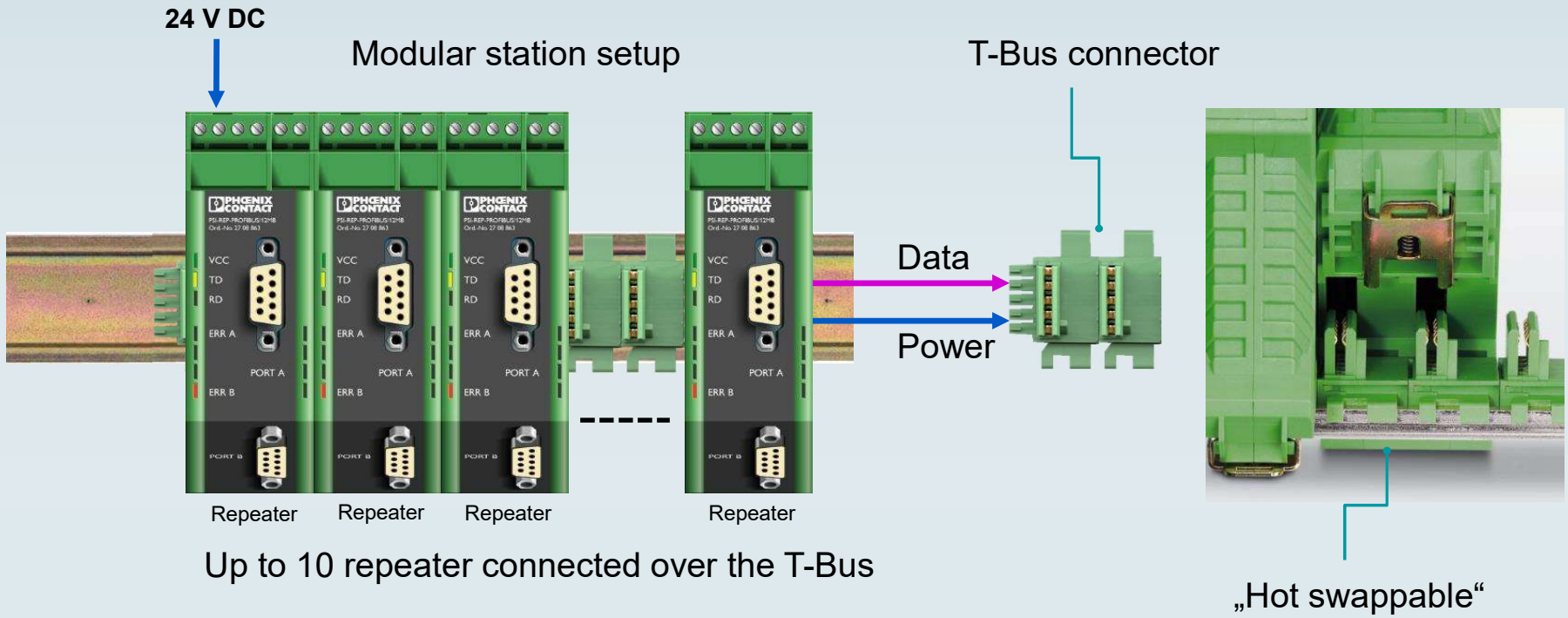
Ports



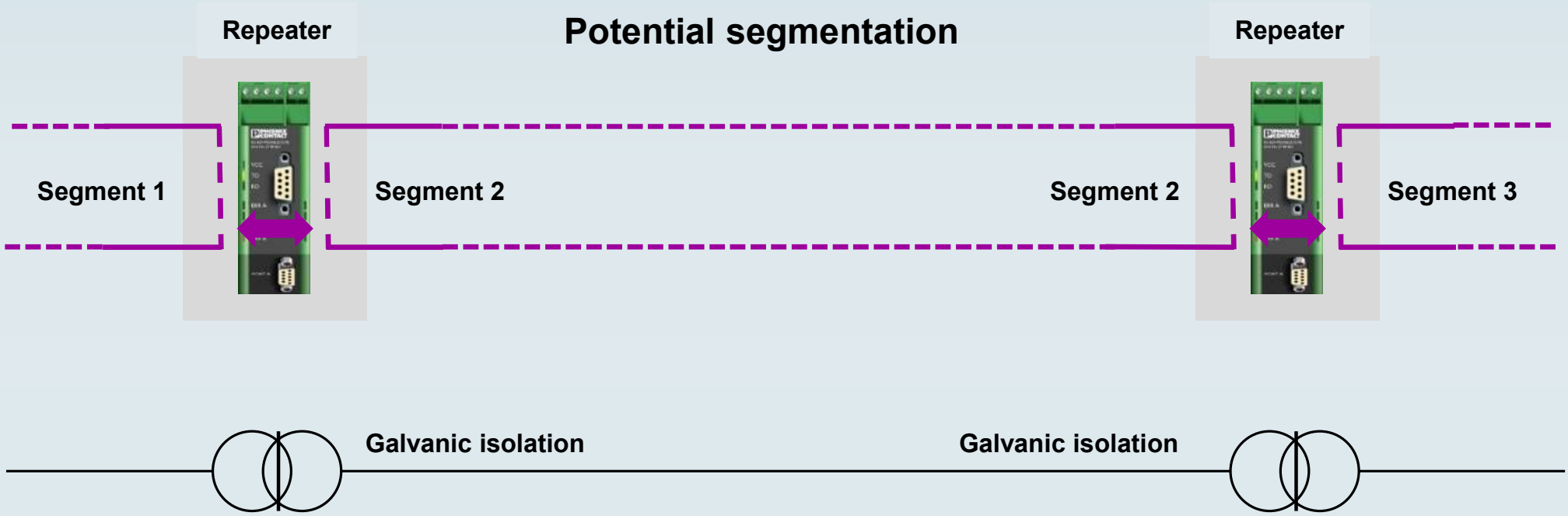
Extend and distribute channels as required

Up to 10 repeater can be connected via the T-Bus

Repeater – Modular station



Repeater – Potential segmentation



Repeater – Copper transmission

	PSI-REP-DNET CAN	PSI-REP-PROFIBUS/12MB	PSI-REP-RS485W2
Device type	CANopen/Device Net repeater	PROFIBUS repeater	RS-485 repeater
Data rate	1000 kbps	up to 12Mbps	500 kbps
Copper range	1000 m	1200 m	1200 m
Interfaces	2 x copper	2 x copper	2 x copper
Order number	2313423	2708863	2313096

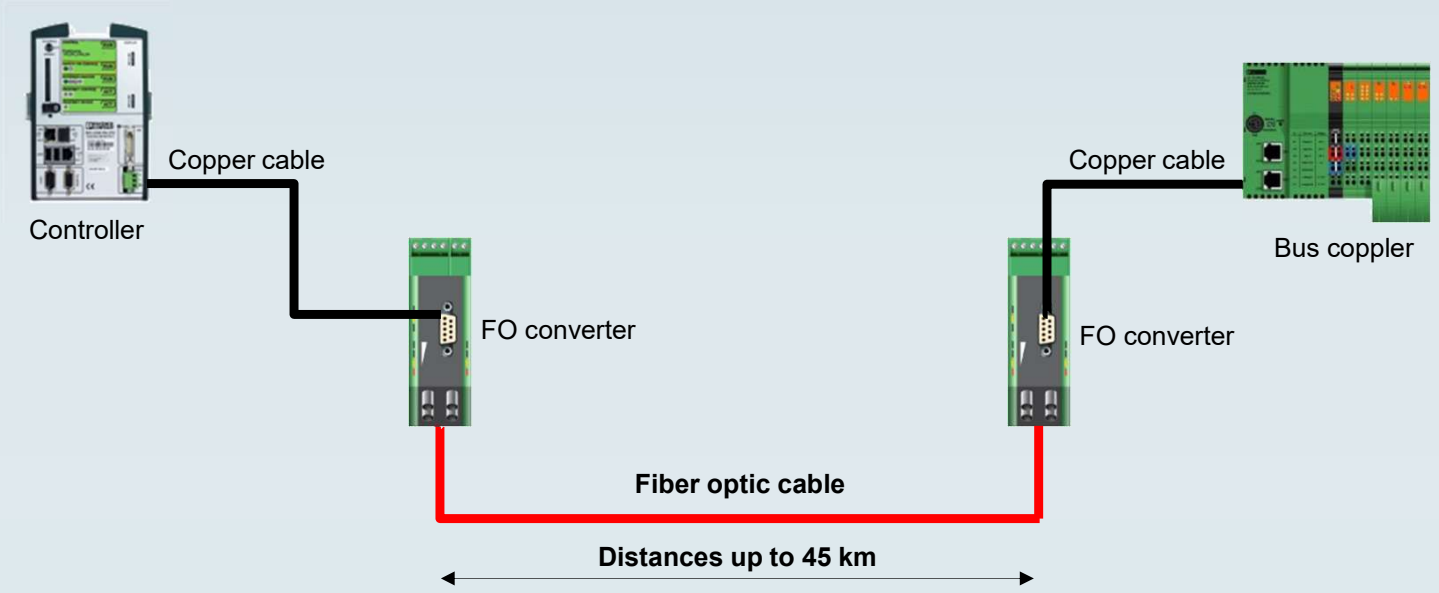
INSPIRING INNOVATIONS

Fiber optic converter

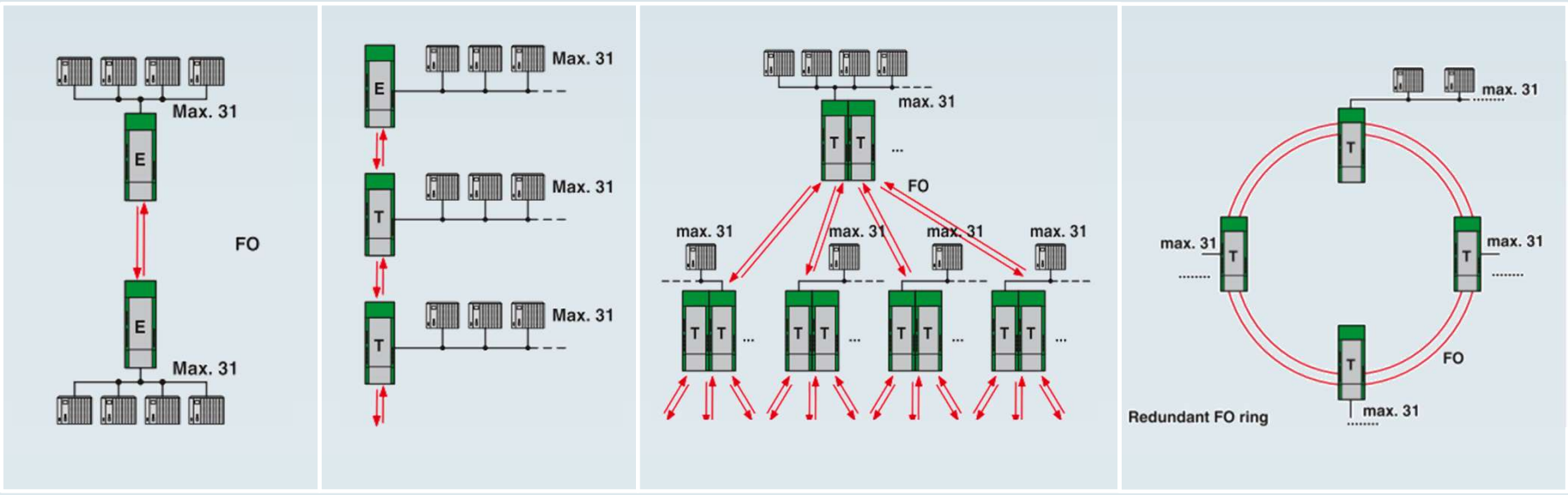
- Permanent monitoring of the fiber optic signal quality (***Worldwide unique***)
- Long transmission distances up to 45 km
- Topologies: Point-to-Point, Star, Line, Ring
- Modular station

Resistant against electromagnetic interferences (EMI)

Fiber optic converter - Distance



Fiber optic converter - Topologies



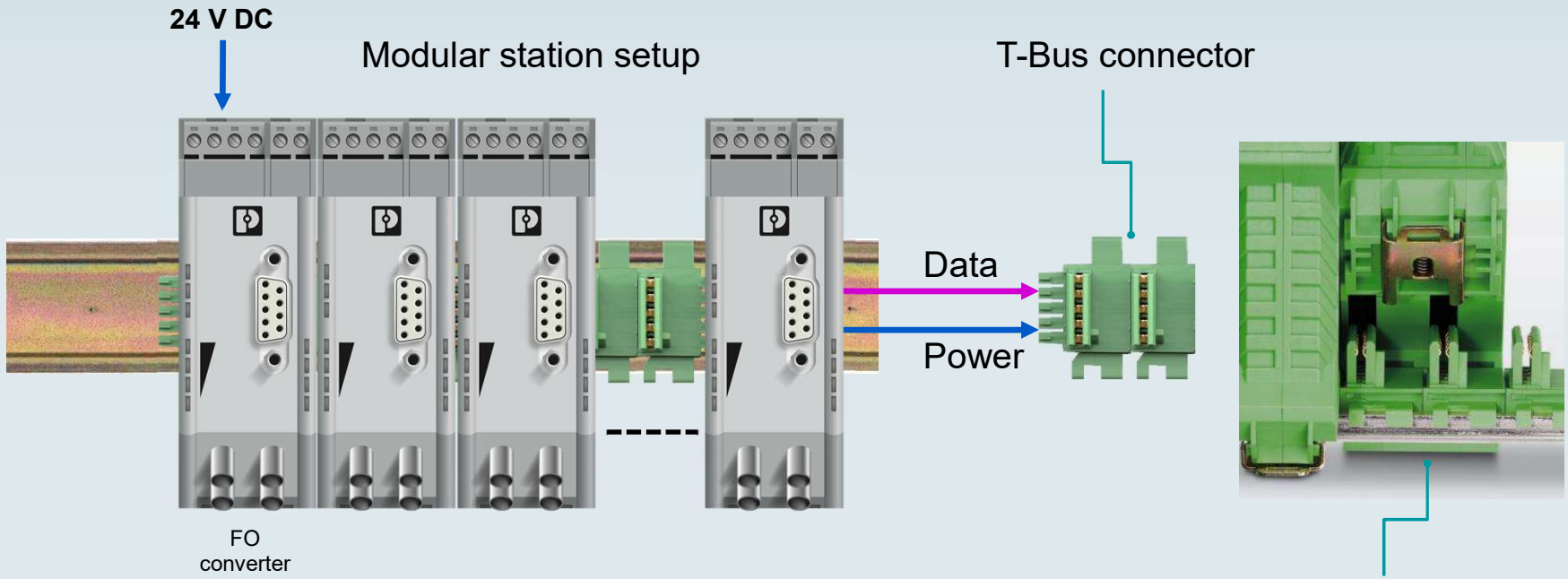
Point-to-Point connection

Linear structure

Star & Tree structure

Redundant ring

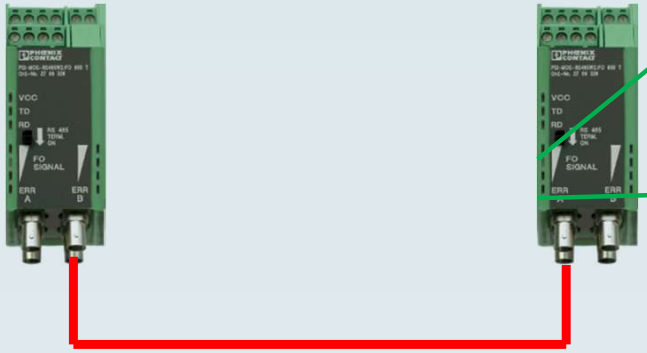
Fiber optic converter – Modular station



Up to 10 converter connected over the T-Bus

Fiber optic converter – Modular station

Diagnosis without PLC possible!



LED indication of the FO interface:

LED		Receive signal
FO signal	Green	Received power is very good
	Green	Received power is good
	Yellow	Received power is critical (system reserve)
ERR	Red	Received power is insufficient, broken fiber

Fiber optic converter

DeviceNet
CANopen






	PSI-MOS-DNET CAN/FO 660/BM	PSI-MOS-DNET CAN/FO 660/EM	PSI-MOS-DNET CAN/FO 850/BM	PSI-MOS-DNET CAN/FO 850/EM	PSI-MOS-DNET/FO 850 E	PSI-MOS-DNET/FO 850 T
Device type	FO converter 660 nm	FO converter 660 nm	FO converter 850 nm	FO converter 850 nm	FO converter 850 nm	FO converter 850 nm
Data rate	800 kbps	800 kbps	800 kbps	800 kbps	1000 kbps	1000 kbps
Polymer fiber range	100 m	100 m	-	-	-	-
HCS fiber range	800 m	800 m	2800 m	2800 m	1800 m	1800 m
Glass MM range	-	-	4800 m	4800 m	4600 m	4600 m
Glass SM range	-	-	-	-	-	-
Copper range	1000 m	1000 m	1000 m	1000 m	1000 m	1000 m
Interfaces	1x FO, 1x copper	1x FO, 1x copper	1x FO, 1x copper	1x FO, 1x copper	1x FO, 1x copper	2x FO, 1x copper
Order number	2708054	2708067	2708083	2708096	2313999	2313986

PHOENIX CONTACT
INSPIRING INNOVATIONS

Fiber optic converter

						
	PSI-MOS-PROFIB/FO 660 E	**PSI-MOS-PROFIB/FO 660 T**	**PSI-MOS-PROFIB/FO 850 E**	**PSI-MOS-PROFIB/FO 850 T**	**PSI-MOS-PROFIB/FO 1300 E**	**PSI-MOS-PROFIB/FO 1300 T**
Device type	FO converter 660 nm	FO converter 660 nm	FO converter 850 nm	FO converter 850 nm	FO converter 1300 nm	FO converter 1300 nm
Data rate	up to 12 Mbps	up to 12 Mbps	up to 12 Mbps	up to 12 Mbps	up to 12 Mbps	up to 12 Mbps
Polymer fiber range	70 m	70 m	-	-	-	-
HCS fiber range	400 m	400m	800 m	800 m	-	-
Glass MM range	-	-	2600 m	2600 m	25 km	25 km
Glass SM range	-	-	-	-	45 km	45 km
Copper range	1200 m	1200 m	1200 m	1200 m	1200 m	1200 m
Interfaces	1x FO, 1x copper	2x FO, 1x copper	1x FO, 1x copper	2x FO, 1x copper	1x FO, 1x copper	2x FO, 1x copper
Order number	2708290	2708287	2708274	2708261	2708559	2708892

INSPIRING INNOVATIONS

Fiber optic converter

RS-232





	PSI-MOS-RS232/FO 660 E	PSI-MOS-RS232/FO 660 T	PSI-MOS-RS232/FO 850 E	PSI-MOS-RS232/FO 850 T	PSI-MOS-RS232/FO 1300 E
Device type	FO converter 660 nm	FO converter 660 nm	FO converter 850 nm	FO converter 850 nm	FO converter 1300 nm
Data rate	115,2 kbps	115,2 kbps	115,2 kbps	115,2 kbps	115,2 kbps
Polymer fiber range	100 m	100 m	-	-	-
HCS fiber range	800 m	800 m	2800 m	2800 m	-
Glass MM range	-	-	4200 m	4200 m	27 km
Glass SM range	-	-	-	-	45 km
Copper range	15 m	15 m	15 m	15 m	15 m
Interfaces	1x FO, 1x copper	2x FO, 1x copper	1x FO, 1x copper	2x FO, 1x copper	1x FO, 1x copper
Order number	2708368	2708410	2708371	2708423	2708588

PHOENIX CONTACT
INSPIRING INNOVATIONS

Fiber optic converter

RS-422





	PSI-MOS-RS422/FO 660 E	PSI-MOS-RS422/FO 660 T	PSI-MOS-RS422/FO 850 E	PSI-MOS-RS422/FO 850 T	PSI-MOS-RS422/FO 1300 E
Device type	FO converter 660 nm	FO converter 660 nm	FO converter 850 nm	FO converter 850 nm	FO converter 1300 nm
Data rate	2 Mbps	2 Mbps	2 Mbps	2 Mbps	2 Mbps
Polymer fiber range	100 m	100 m	-	-	-
HCS fiber range	800 m	800 m	2800 m	2800 m	-
Glass MM range	-	-	4200 m	4200 m	27 km
Glass SM range	-	-	-	-	45 km
Copper range	1000 m	1000 m	1000 m	1000 m	1000 m
Interfaces	1x FO, 1x copper	2x FO, 1x copper	1x FO, 1x copper	2x FO, 1x copper	1x FO, 1x copper
Order number	2708342	2708384	2708355	2708397	2708575

PHOENIX CONTACT
INSPIRING INNOVATIONS

Fiber optic converter

RS-485





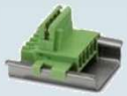
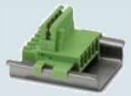
	PSI-MOS-S485W2/FO 660 E	PSI-MOS-RS485W2/FO 660 T	PSI-MOS-RS485W2/FO 850 E	PSI-MOS-RS485W2/FO 850 T	PSI-MOS-RS485W2/FO 1300 E
Device type	FO converter 660 nm	FO converter 660 nm	FO converter 850 nm	FO converter 850 nm	FO converter 1300 nm
Data rate	500 kbps	500 kbps	500 kbps	500 kbps	500 kbps
Polymer fiber range	100 m	100 m	-	-	-
HCS fiber range	800 m	800 m	2800 m	2800 m	-
Glass MM range	-	-	4200 m	4200 m	25 km
Glass SM range	-	-	-	-	45 km
Copper range	1200 m	1200 m	1200 m	1200 m	1200 m
Interfaces	1x FO, 1x copper	2x FO, 1x copper	1x FO, 1x copper	2x FO, 1x copper	1x FO, 1x copper
Order number	2708313	2708300	2708339	2708326	2708562

PHOENIX CONTACT
INSPIRING INNOVATIONS

Fiber optic converter

Accessories

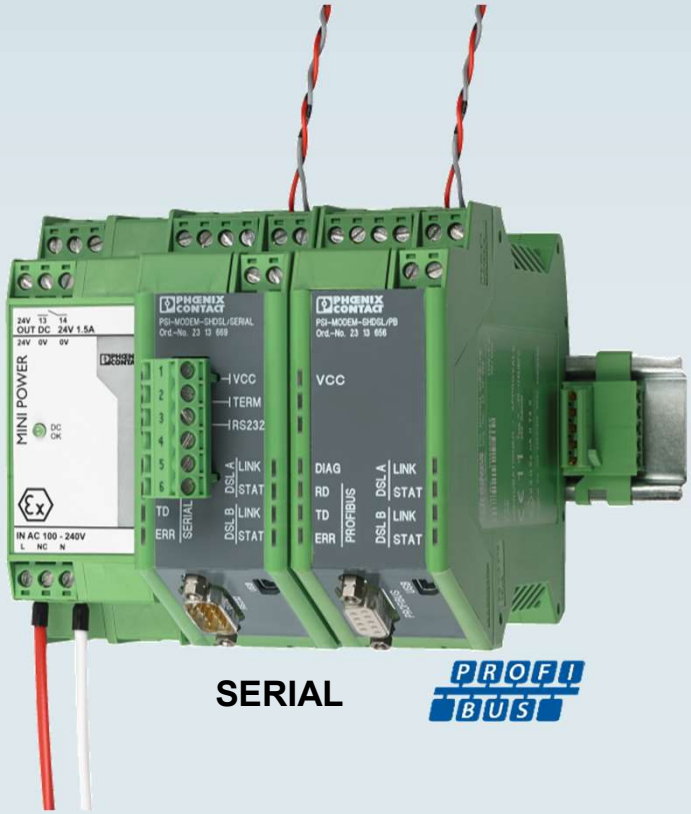


	MINI-PS-100-240AC/24DC/1.5/EX	MINI-SYS-PS-100-240AC/24DC/1.5	ME 17,5 TBUS 1,5/ 5-ST-3,81 GN	ME 17,5 TBUS 1,5/PP000-3,81 BK
Device type	System power supply	System power supply	DIN rail connector	DIN rail connector
Description	For providing the supply voltage via the foot element (Din rail connector) In ex areas	For providing the supply voltage via the foot element (Din rail connector)	For bridging the **supply voltage and for data communication**	For bridging **only** the **supply voltage**
Output voltage	24 V DC	24 V DC	-	-
Output current	1,5 A	1,5 A	-	-
Order number	2866653	2866983	2709561	2890014

INSPIRING INNOVATIONS

Extender – Serial & PROFIBUS



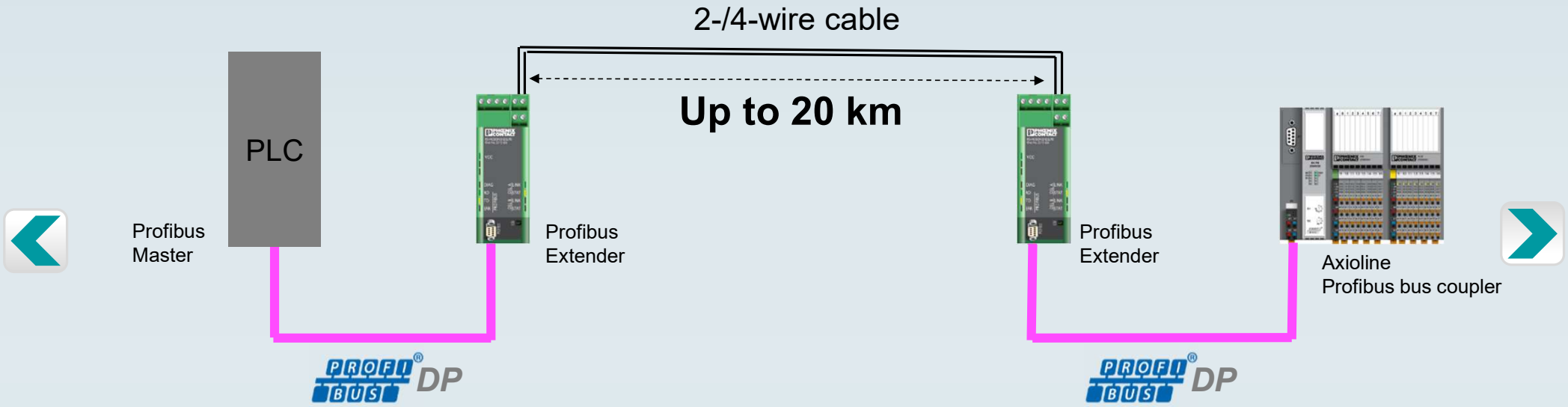
- PROFIBUS and Serial extender for copper-based transmission up to 20 km
- Robust SHDSL modulation method
- Does not required a special cable
- Any 2- or 4-wire cable can be used
- Point-to-Point, line and star structures

Extender - PROFIBUS

- PROFIBUS bus segments on existing on-site lines
- Distances up to 20 km possible with lower data rates and with good cable quality
- Line structure up to 30 SHDSL devices
- PROFIBUS
  - Linear structure: up to 500 kbps
  - Point-to-Point: up to 1,5 Mbps
- Diagnostic via USB port or LEDs
- Configuration software

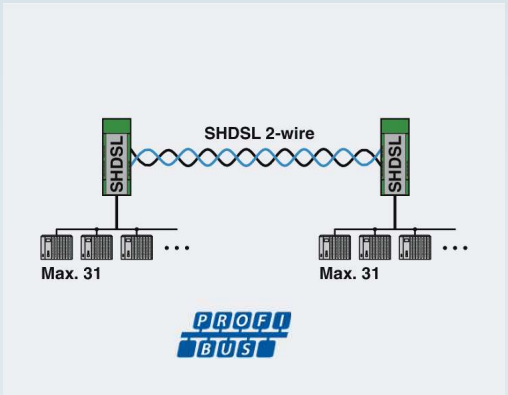
Extender – PROFIBUS

Example:

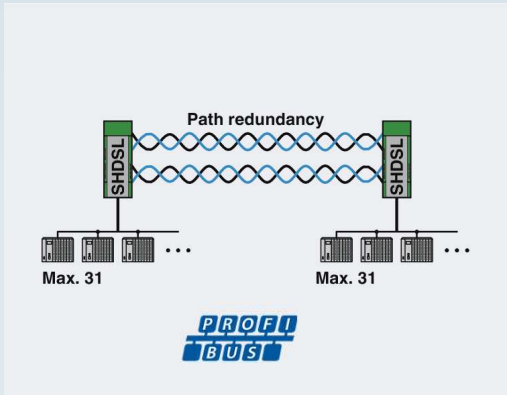


Extender – PROFIBUS

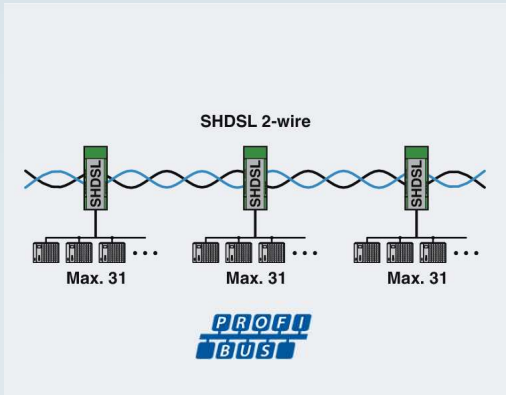
Topologies:



Point-to-Point
2-wire



Point-to-Point
4-wire

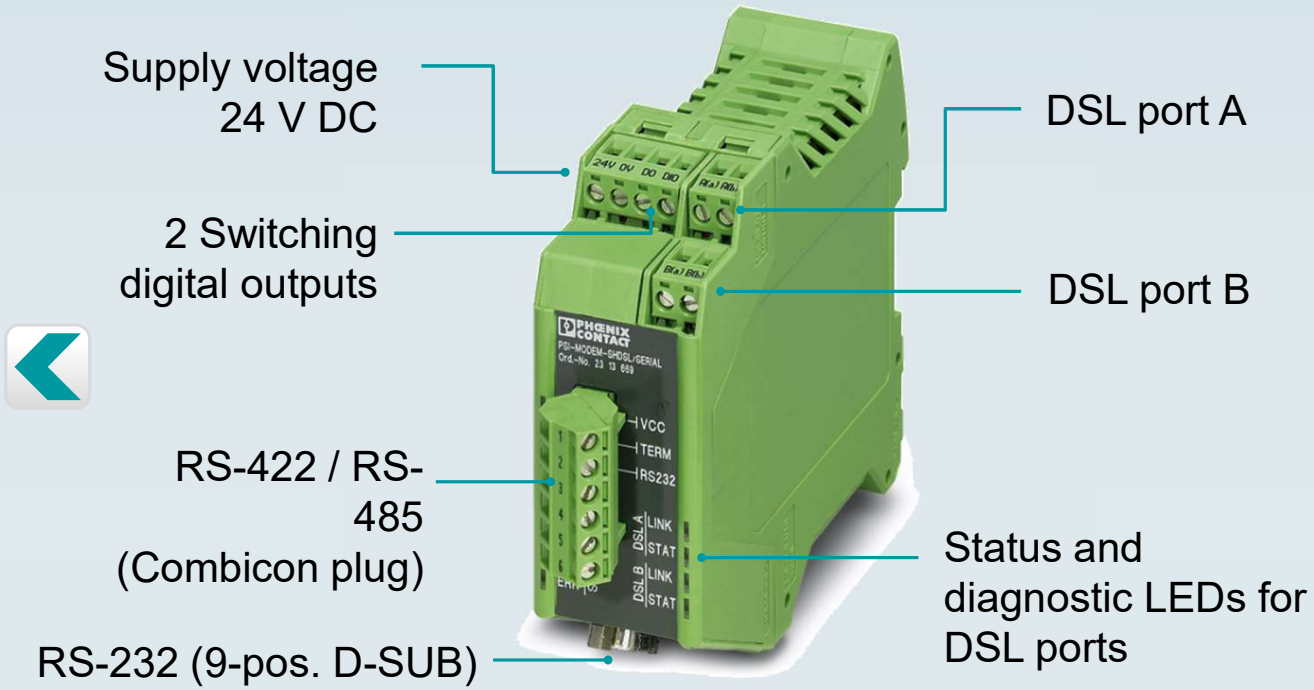


Line
2-wire

PROFIBUS data rate for point-to-point
is up to 1,5 Mbps

PROFIBUS data rate for linear
structure is up to 500 kbps

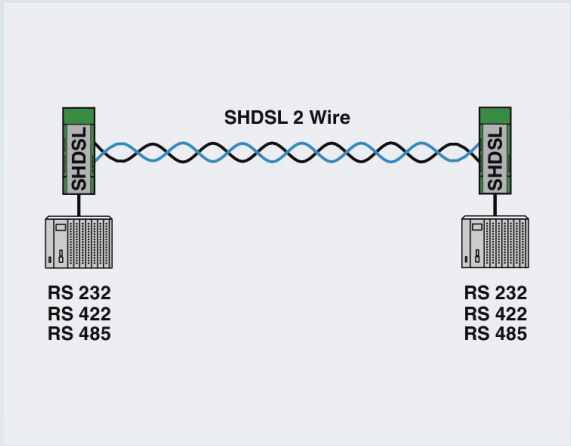
Extender - Serial



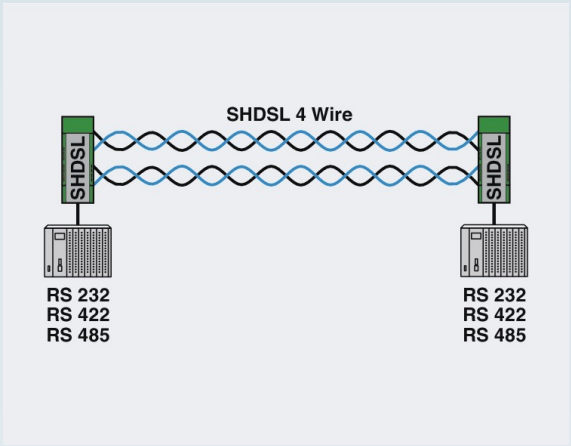
- Distances up to 20 km
- Transparent protocol
- Point-to-Point and line structures
- RS-232, up to 230,4 kbps
- RS-422, up to 2000 kbps
- RS-485 W2, up to 2000 kbps
- Diagnostic via USB port or LEDs
- Configuration software

Extender – Serial

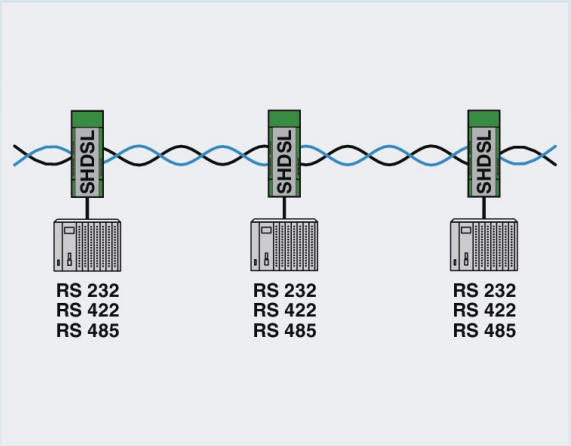
Topologies:



Point-to-Point
2-wire

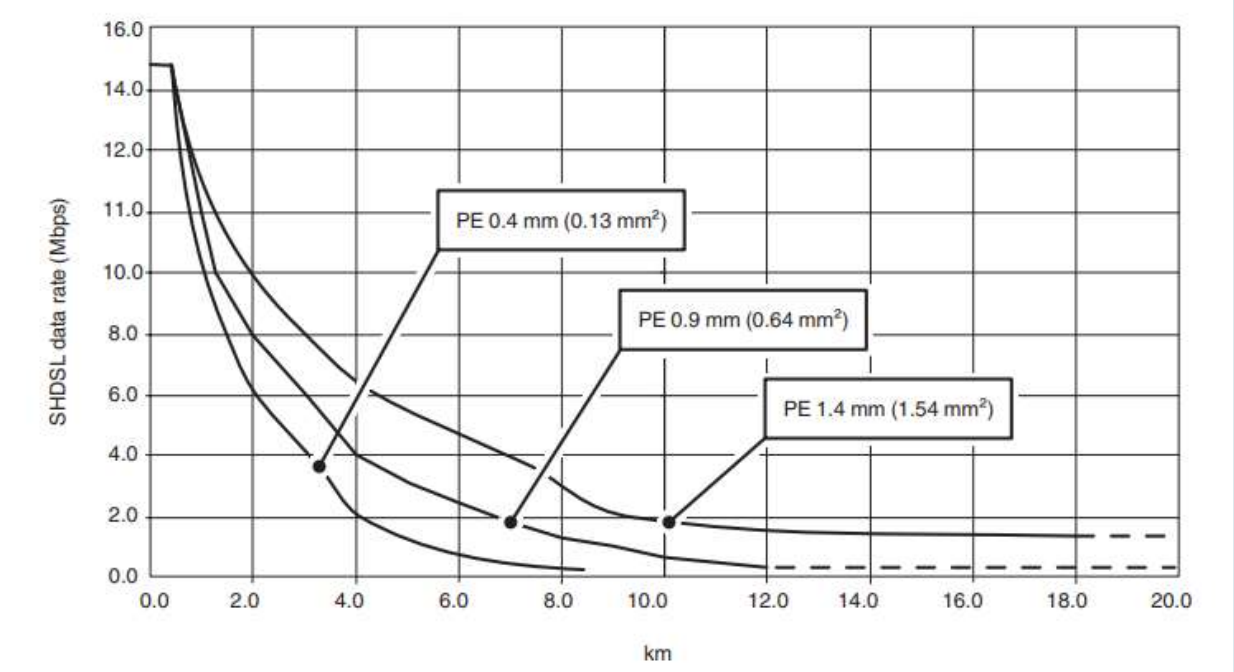


Point-to-Point
4-wire



Line
2-wire

Extender – Serial and PROFIBUS



Dependency of the maximum SHDSL data rate (Mbps) on the distance for a 2-wire connection

Extender – Serial & PROFIBUS

	PSI-MODEM-SHDSL/SERIAL	PSI-MODEM-SHDSL/PB	DT-TELE-SHDSL (Accessory)
Function	Industrial SHDSL extender for serial RS-232/422/485 interfaces	Industrial SHDSL extender for PROFIBUS	Surge protection for two SHDSL telecommunications interfaces
Topologies	Point-to-point, Line structure	Point-to-point, Line structure	-
Interfaces	RS-232 (D-SUB 9 plug), RS-422 (Screw connector), RS-485 (Screw connector)	PROFIBUS D-SUB 9 female connector	RJ 45 an plug-in screw termnal block
Transmission lenght (SHDSL Interface)	20 km	20 km	-
Serial transmission speed	Up to 2000 kbps	Up to 1,5 Mbps	-
Order number	2313669	2313656	2801593

INSPIRING INNOVATIONS

D-SUB fast connectors

Reliable Plug and Play connectors
M12 connection technology for PROFIBUS and CANopen – preventing installation errors

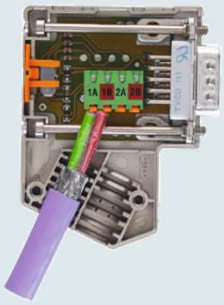
The classic, flexible choice
Screw or spring connection, for bus systems or as a universal version

Specifically for PROFIBUS
It only takes a minute: user-friendly cable connection via screw or IDC terminal block technology

Maximum flexibility thanks to various cable outlets of 35°, 90° and 180°

D-SUB fast connectors

Maximum flexibility thanks to various cable outlets of 35°, 90° and 180°



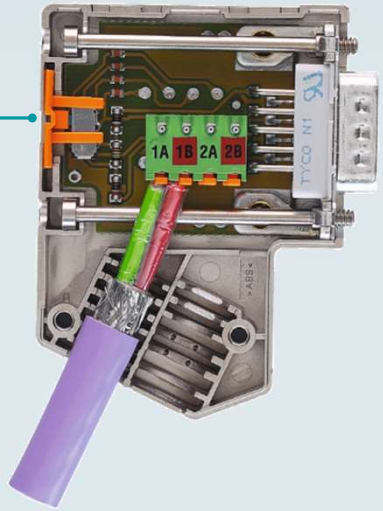
- **Universal plugs**
  Versions with 9, 15 or 25 contacts for all commonly used interfaces
- **Specifically for PROFIBUS**
- **Specifically for CANopen**
- **M12 plugs**
  Direct assembly of M12 cables
  Secure and easy detachable connections
- **Stripping tool** for PROFIBUS cable
- **Termination resistor** included

Universal plugs

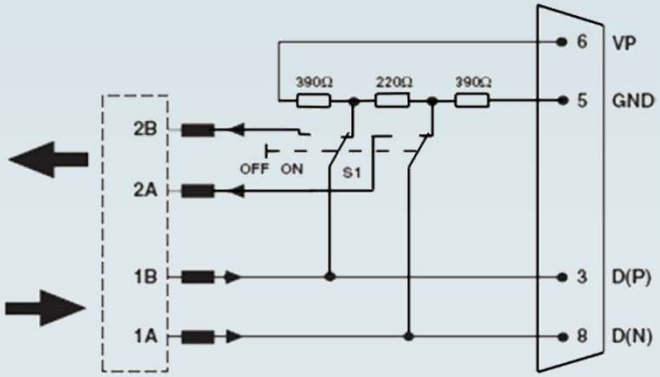
- Easy mounting, thanks to user-friendly connection methods
- High electromagnetic resistance, thanks to metalized housing
- Flexible cable entry at 35-degrees, thanks to reversible PCB's
- Comprehensive product range: versions with different numbers of positions and angles for cable entry
- Versions with 9, 15 or 25 contacts for all commonly used interfaces, such as RS-232/RS-422/RS-485, TTY and many more.

D-SUB connectors – Termination resistor

Slide switch to active the termination resistor



Termination resistor inside



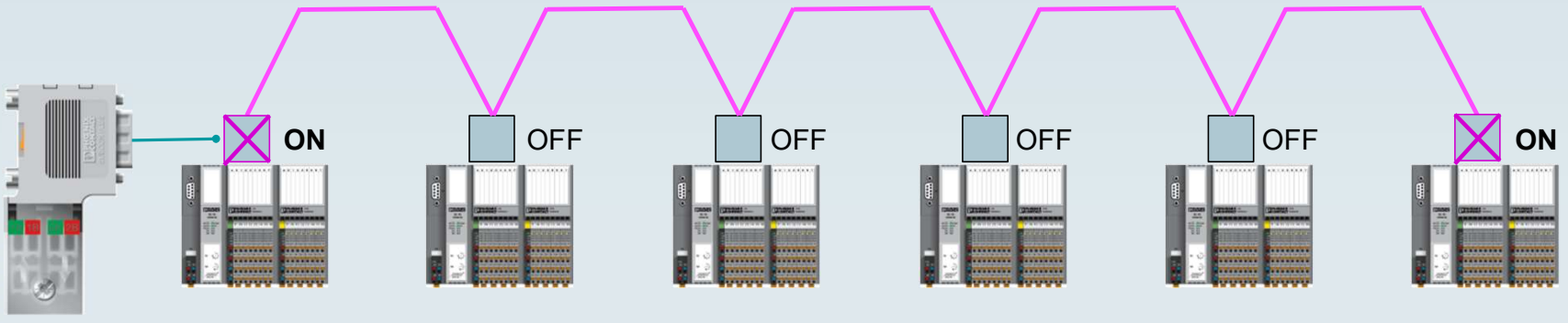
ON

OFF

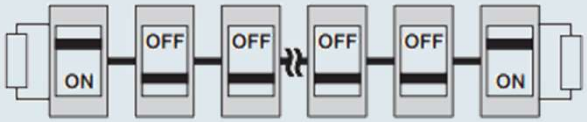
CLICK HERE

PHOENIX CONTACT
INSPIRING INNOVATIONS

D-SUB connectors – Termination resistor

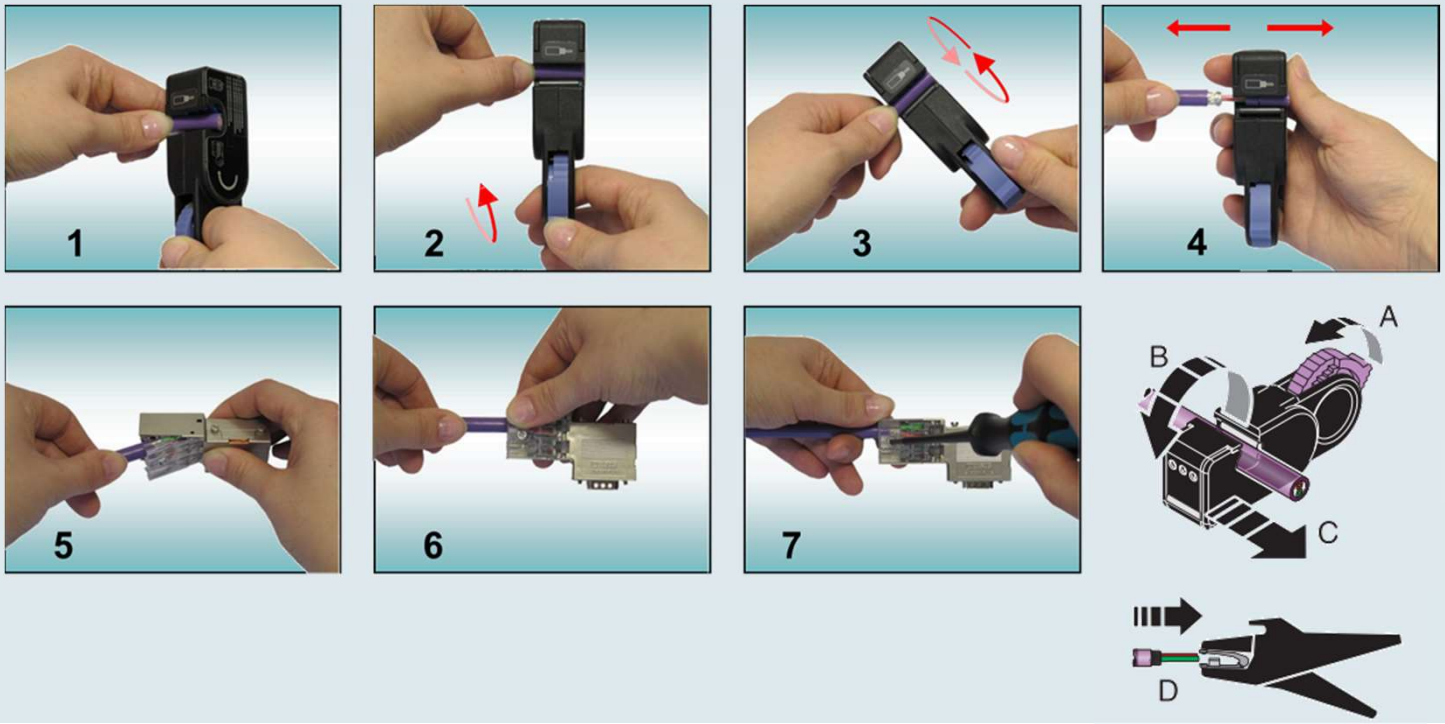


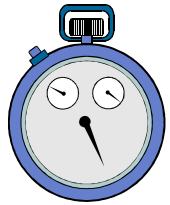
D-Sub connector



Use the side switch on the D-SUB connector, to activate the termination resistor at the start and end point of a bus system!

Stripping tool





The easiest on side termination in **< 1 min.**

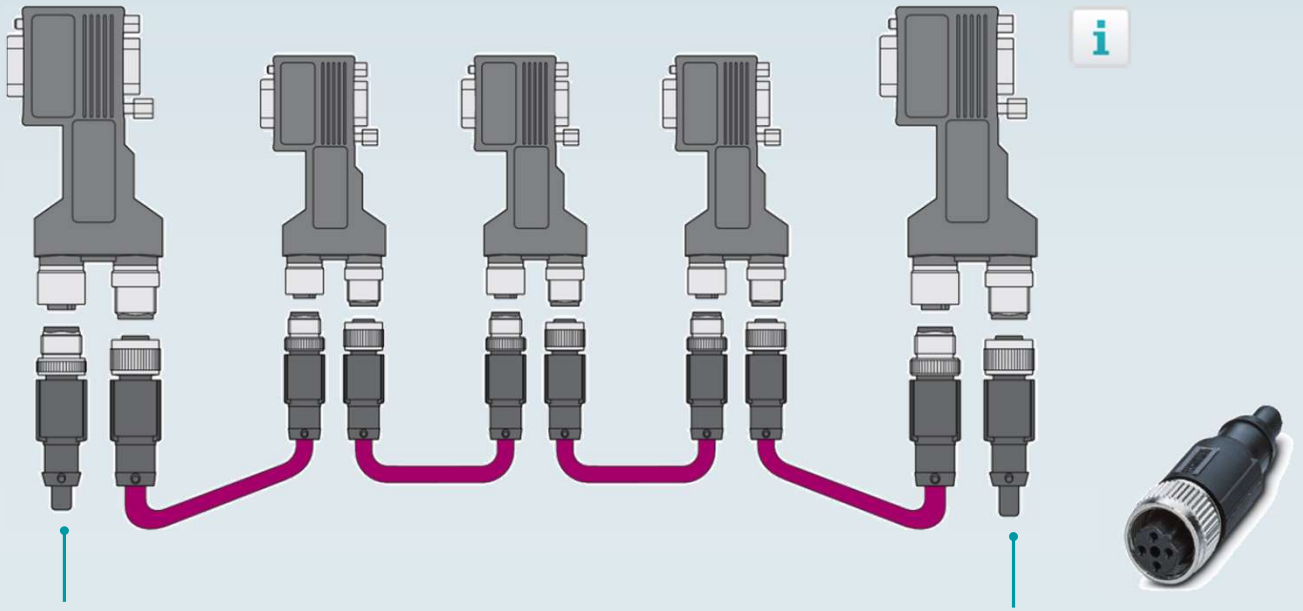
Quick stripping tool
PSM-STRIP-FC/PROFIB
Order number: 2744623

PHOENIX CONTACT
INSPIRING INNOVATIONS

D-SUB fast connectors M12

- **Direct assembly of M12 cables**
  Secure and easy detachable connections
- **Variants for every requirement**
  Different angles of M12 orientation for every application
- **Fault-free Installation**
  by using 100% pre-tested components
- **Full moulded housing**
  resistance against harmful environment
- **M12 SPEEDCON interlock system**
  M12 locking with just a half-turn
- **Complete product range**
  with 14 types for PROFIBUS and CANopen

D-SUB plug with M12 SPEEDCON – Termination resistor



M12 Termination resistor

M12 Termination resistor

D-SUB fast connectors M12







	SUBCON-PLUS-PROFIB/90X/M12 SUBCON-PLUS-CAN/90X/M12	SUBCON-PLUS-PROFIB/90X/PG/M12 SUBCON-PLUS-CAN/90X/PG/M12	SUBCON-PLUS-PROFIB/90/M12 SUBCON-PLUS-CAN/90/M12	SUBCON-PLUS-PROFIB/90/PG/M12 SUBCON-PLUS-CAN/90/PG/M12	SUBCON-PLUS-PROFIB/35/M12 SUBCON-PLUS-CAN/35/M12	SUBCON-PLUS-PROFIB/35/PG/M12 SUBCON-PLUS-CAN/35/PG/M12	SUBCON-PLUS-PROFIB/AX/M12 SUBCON-PLUS-CAN/AX/M12
Description	Long version for Siemens S7 controller		Compact connector for universal operation		Universal version with angular M12 connector		For limited space requirements
Cable inlet	90°	90°	90°	90°	35°	35°	180°
Version	Long	Long with PG	Compact	Compact with PG	Universal	Universal with PG	Axial
Order number PROFIBUS	2902729	2902728	2902318	2902317	2902320	2902319	2902321
Order number CANopen	2902731	2902730	2902323	2902322	2902325	2902324	2902326

PHOENIX CONTACT
INSPIRING INNOVATIONS

D-SUB fast connectors M12 Accessories







	Termination resistor M12	Termination resistor M12	Bus system cable 0,3 m	Bus system cable 1 m	Bus system cable 2 m	Bus system cable 5 m	Bus system cable Free input
Type	SAC-5P-M12MS PB TR	SAC-5P-M12FS PB TR	SAC-2P-MSB/0,3-910/FSB SCO	SAC-2P-MSB/1,0-910/FSB SCO	SAC-2P-MSB/2,0-910 SCO	SAC-2P-MSB/5,0-910/FSB SCO	SAC-2P-MSB-FSB SCO/910/...
Description	PROFIBUS M12	PROFIBUS M12, female connector	Bus system cable, Profibus (12 Mbps)	Bus system cable, Profibus (12 Mbps)	Bus system cable, Profibus (12 Mbps)	Bus system cable, Profibus (12 Mbps)	Bus system cable, Profibus (12 Mbps)
Cable lenght	-	-	0,3 m	1 m	2 m	5 m	0,2 ….40 m
Order number	1507803	1403911	1518106	1518122	1518025	1518148	1538092

PHOENIX CONTACT
INSPIRING INNOVATIONS

D-SUB fast connectors

						
	SUBCON-PLUS-PROFIB/90/IDC	**SUBCON-PLUS-PROFIB/90/SC**	**SUBCON-PLUS-PROFIB/SC2**	**SUBCON-PLUS-PROFIB/AX/SC**	**SUBCON-PLUS-PROFIB/PG**	**SUBCON-PLUS-PROFIB/AX**
Description	IDC terminal block connection	Screw connection teminal blocks	Screw connection teminal blocks	Screw connection teminal blocks	Spring connection terminal blocks	Spring connection terminal blocks
Cable inlet	90°	90°	35°	180° (axial)	35°	180° (axial)
Order number	2313672	2313698	2708232	2744380	2744403	2744377
Order number with Programming Interface	2313685	2313708	2708245	-	2744348	-

INSPIRING INNOVATIONS

D-SUB fast connectors

	SUBCON-PLUS-CAN	SUBCON-PLUS-CAN/SC2	SUBCON-PLUS-CAN/AX
Description	Screw connection terminal blocks, CAN, CANopen®, SafetyBUS p up to 1 Mbps	Screw connection terminal blocks, CAN, CANopen®, SafetyBUS p up to 1 Mbps	Screw connection terminal blocks, CAN, CANopen®, SafetyBUS p up to 1 Mbps
Cable inlet	35° Cable diameter 6…10 mm	35° Cable diameter 7,6…8,4 mm	180° (axial)
Order number	2744694	2708999	2306566
Order number with Programming Interface	-	2708119	-

INSPIRING INNOVATIONS

D-SUB fast connectors - Universal

	SUBCON 9/M-SH	SUBCON 15/M-SH	SUBCON 15 HD/M-SH	SUBCON 25/M-SH	SUBCON 37/M-SH	SUBCON 9/F-SH	SUBCON 15/F-SH	SUBCON 15 HD/F-SH	SUBCON 25/F-SH	SUBCON 37/F-SH
Housing	With one cable entry									
Pin assignment	All contacts (pin / socket) to terminal block									
D-SUB/ No. of pos.	9-pos. pin	15-pos. pin	15-pos- pin HD	25-pos.pin	37-pos. pin	9-pos. socket	15-pos. socket	15-pos. socket HD	25-pos. socket	37-pos. socket
Order number	2761509	2761606	5604602	2761622	2300973	2761499	2761596	5604603	2761619	2300986

PHOENIX CONTACT
INSPIRING INNOVATIONS

D-SUB fast connectors - Universal

	SUBCON-PLUS 9/M	SUBCON-PLUS M1	SUBCON-PLUS M2	SUBCON-PLUS 9/F	SUBCON-PLUS F1	SUBCON-PLUS F2	SUBCON-PLUS F3	SUBCON-PLUS F4	SUBCON-PLUS F5	SUBCON-PLUS-M/AX 9	SUBCON-PLUS-F/AX 9
Housing	With two cable entries									180° (axial)	180° (axial)
Pin assignment	Full assignment to one terminal block	1,2,3,5,6,8 to two terminal blocks	2,3,4,5,7,9 to two terminal blocks	Full assignment to one terminal block	1,2,3,5,6,8 to two terminal blocks	2,3,4,5,7,9 to two terminal blocks	2,3,6,7,8,9 to two terminal blocks	2,3,4,5,6,7 to two terminal blocks	1,1,2,3,6,7 to two terminal blocks	Full assignemnet to one terminal block	
D-SUB/ No. of pos.	9.pos. pin			9.pos. socket						9. Pos pin	9.pos. socket
Order number	2744018	2761826	2761839	2744241	2744267	2799490	2761871	2744089	2744102	2904467	2311797

PHOENIX CONTACT
INSPIRING INNOVATIONS

Ethernet Extender

- SHSDL technology
- Ranges of up to 20 kilometers
- Existing two-wire cables can be used
- Data rates of up to 30 Mbps
- Easy installation via Plug and Play
- Automatic topology and data rate detection
- Point-to-point, line and ring structures
- System extension during operation
- Alerts / diagnostics via SNMP (Simple Network Management Protocol
- VLAN / RSTP (with Firmware 5.xx)

Ethernet Extender

Managed Ethernet Extender

Status / diagnosis display

Unmanaged Ethernet Extender

Replaceable surge protection

VLAN /RSTP

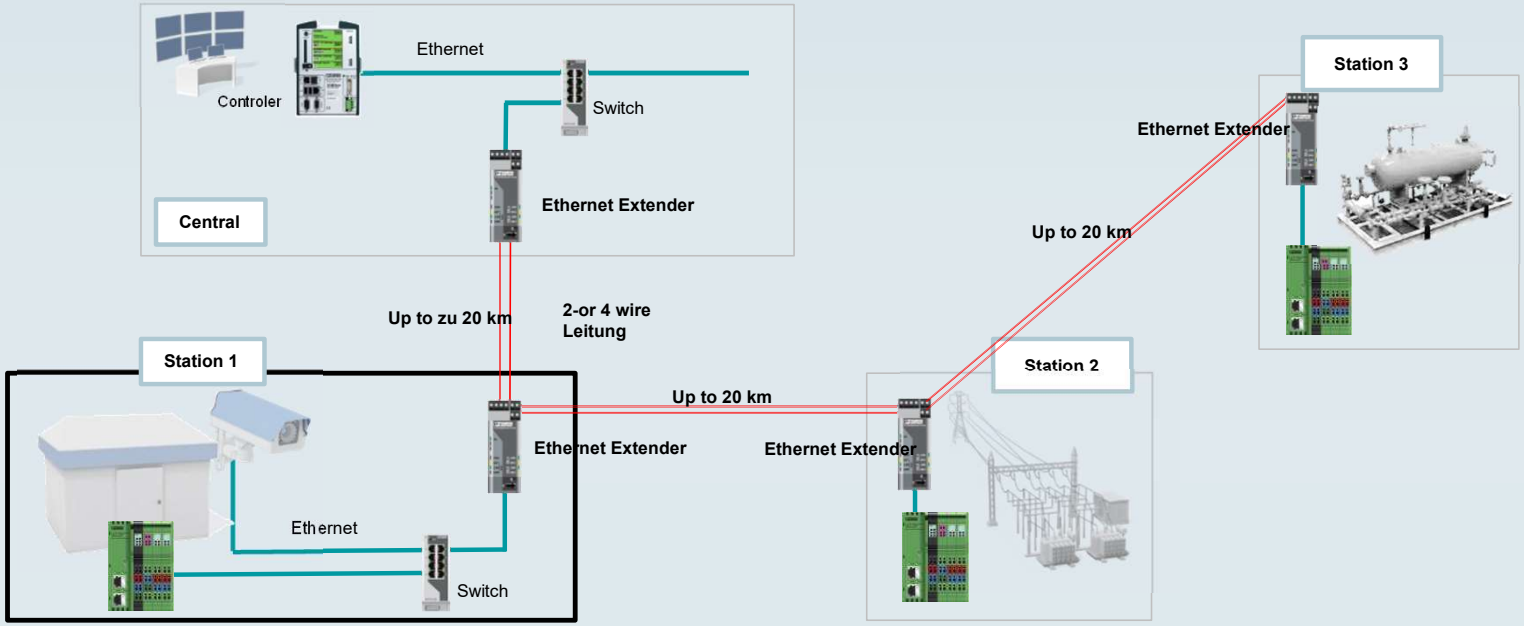
Remote diagnostics of all devices and paths

Line, Star and Ring topologies are possible

INSPIRING INNOVATIONS

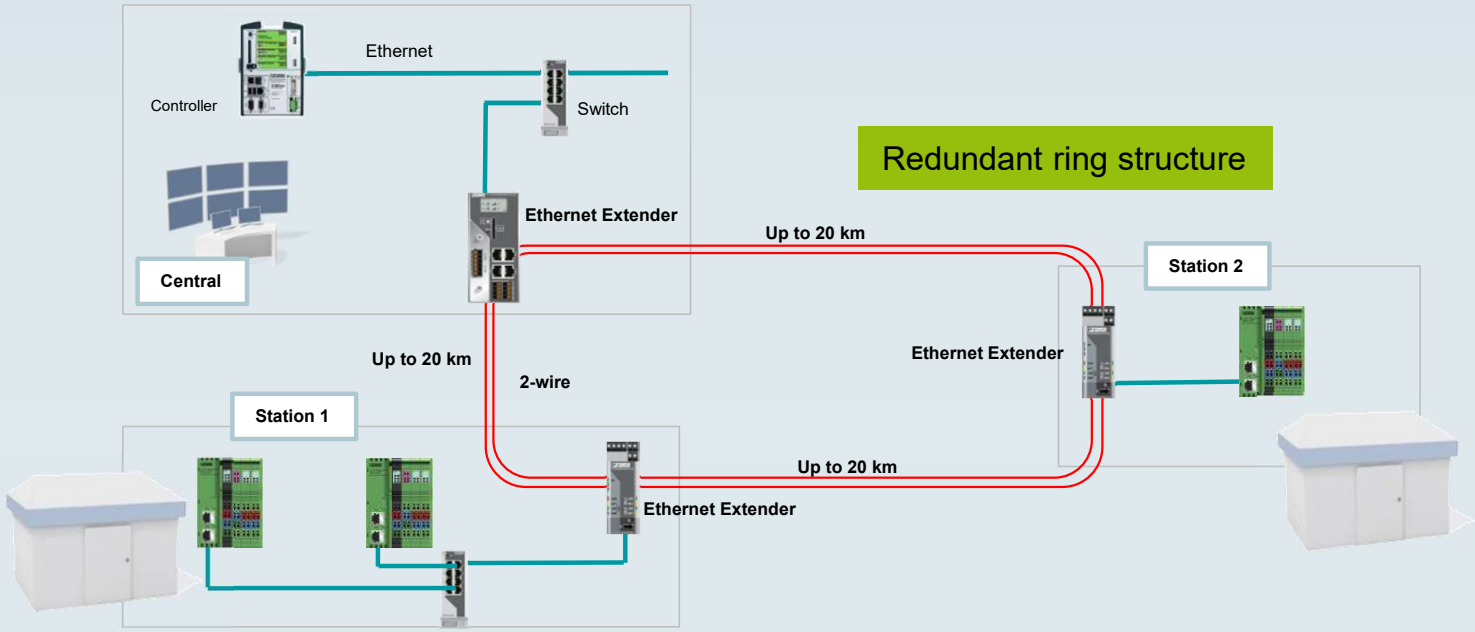
Ethernet Extender

Point-to-Point and Line network structure

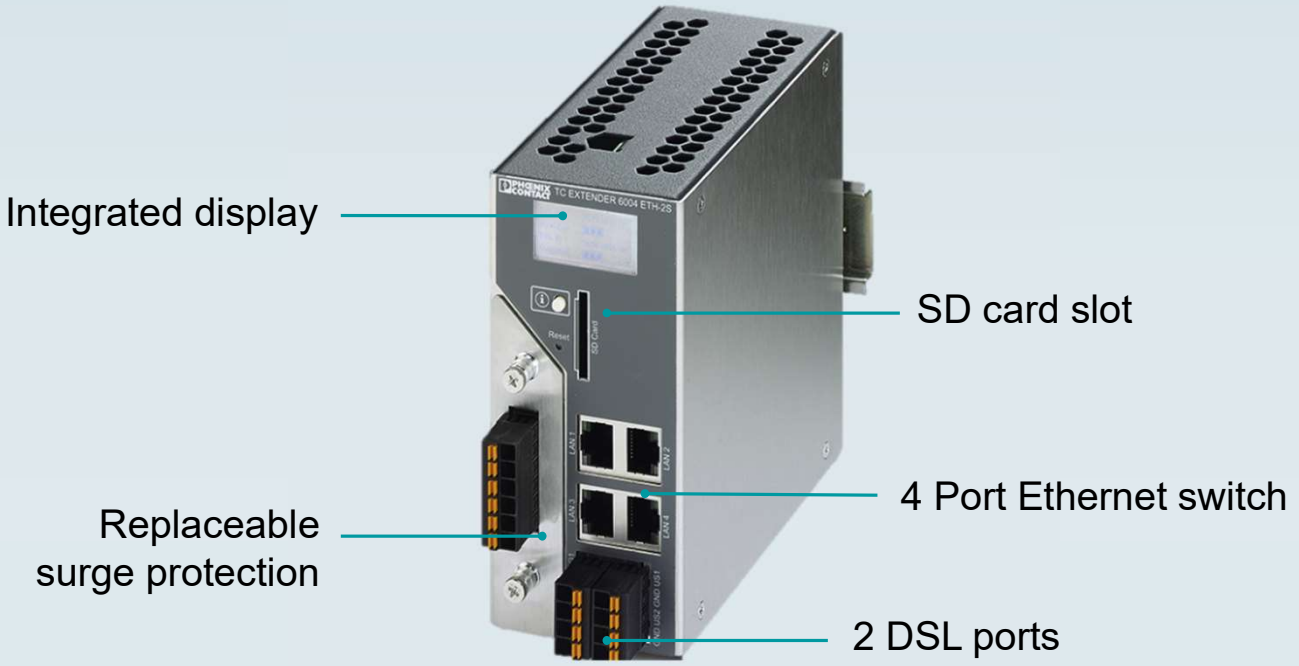


Ethernet Extender

Ring network structure



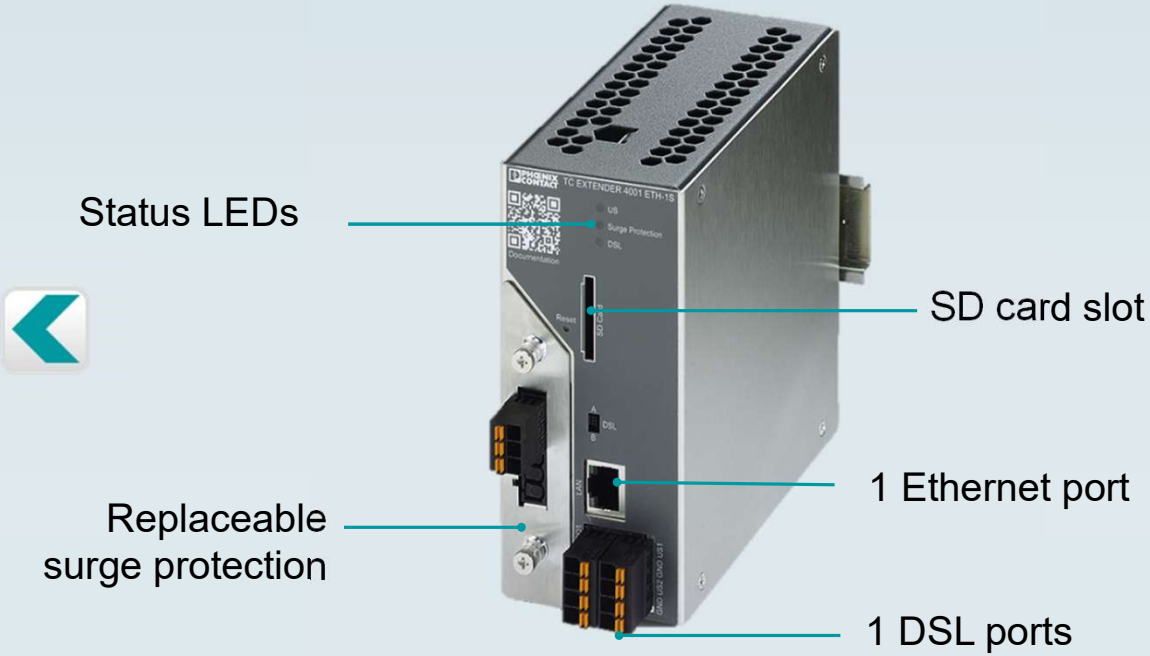
Managed Ethernet extender



TC EXTENDER 6004 ETH-2S

- 2 DSL ports
- Integrated surge protection
- Topology: Point-to-Point, line, redundant ring
- Unique at the market: Plug-&-Play at ring application

Managed Ethernet extender



TC EXTENDER 4001 ETH-1S

- 1 DSL ports
- Topology: Point-to-Point
- Integrated surge protection

Unmanaged Ethernet extender

TC EXTENDER 2001 ETH-2S

- 2 DSL ports
- 1 Ethernet port
- Topology: Point-to-Point, line, redundant ring
- Unique at the market: Plug-&-Play at ring application

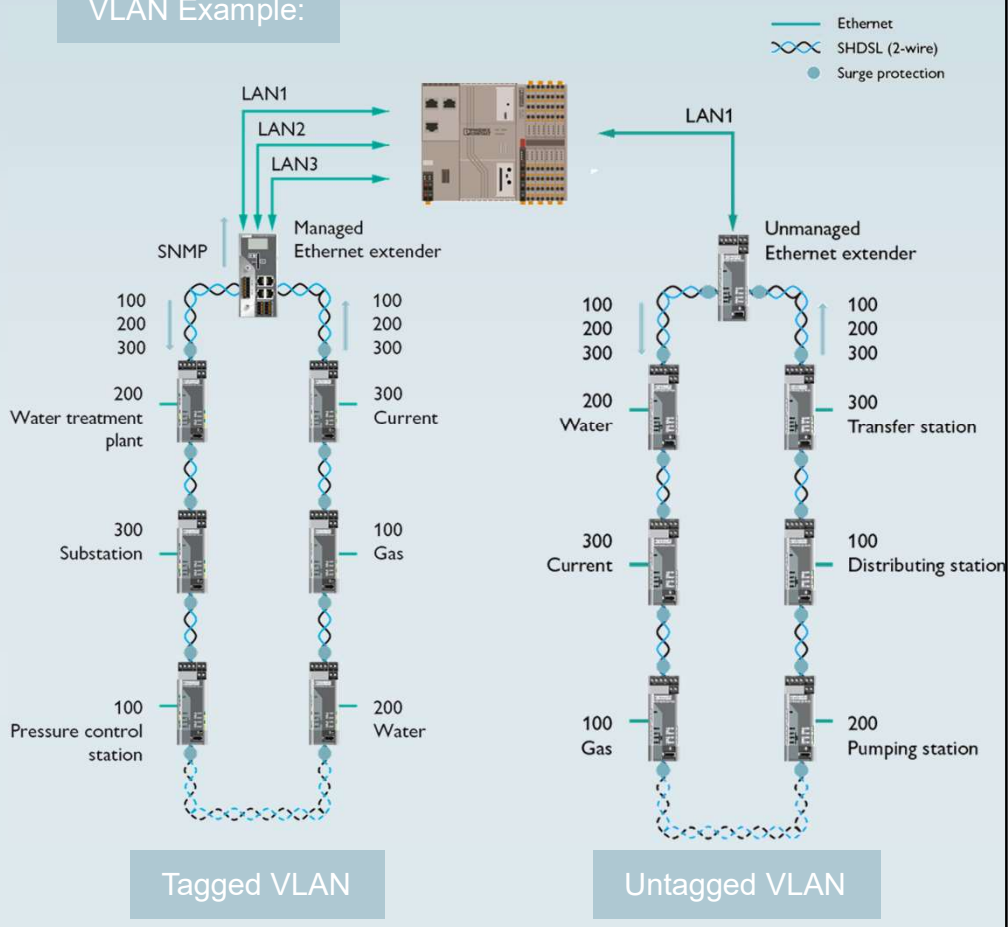
VLAN / RSTP

Improved properties from firmware v5.xx:

VLAN (Virtual Local Area Network):
With VLAN, physical IP networks can now be separated into logical/virtual subnets. Communication is then only possible within the corresponding VLAN, thus isolating critical IP networks and making them more secure.

STP/ RSTP (rapid spanning tree protocol):
The availability of the entire Ethernet network is guaranteed, even in the event of an emergency. This ensures that redundant network paths can be activated again via STP/RSTP if required, for example, if a connection fails

VLAN Example:

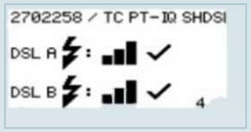
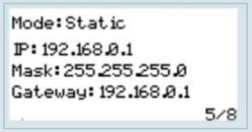
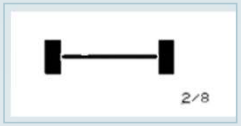
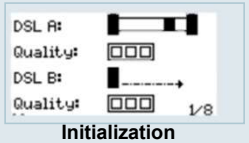
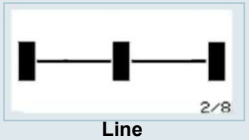
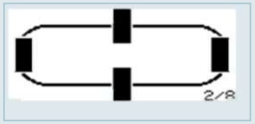
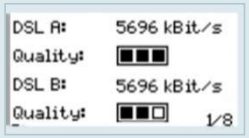


Tagged VLAN

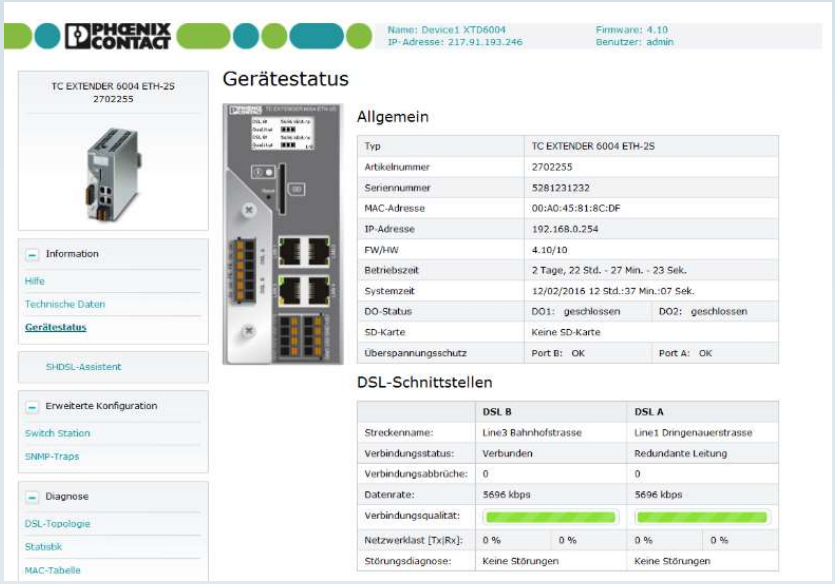
Untagged VLAN

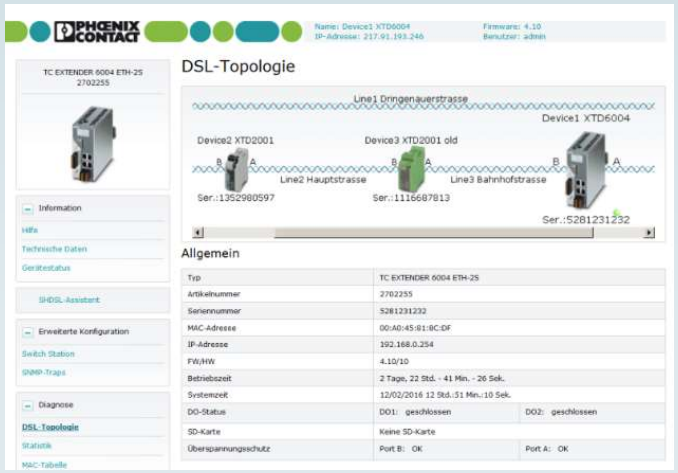
INSPIRING INNOVATIONS

Status- / diagnosis display

SHDSL-connection	System topology	- Power supply - Outputs DO	Surge protection	Ethernet parameter	Device information	Link documentation	optional
							
No remote device	No remote device	- Both power supplies ⇒ OK - Both outputs ⇒ low	Protection module OK ⇒ OK				Individually configurable via web server
							
Remote device found	Point-to-Point						
							
Initialization	Line						
							
Current data rate	Redundant Ring						
							
Current data rates							

Remote diagnosis via IP (Web based management)





Alerts / diagnostics via SNMP possible!

(Simple Network Management Protocol)

Live test link to an Ethernet Extender in Bad Pyrmont:

http://217.91.193.246:1000

Login:
User Name: user
Password: user

Product overview

INSPIRING INNOVATIONS

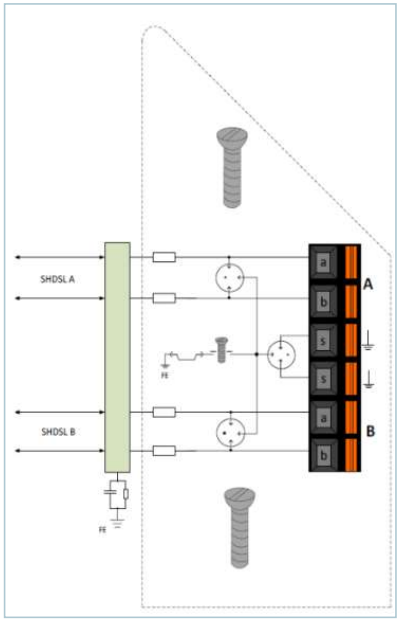
Integrated surge protection

Alarm via SNMP

(Simple Network Management Protocol):

Status	Action
Protective module ok	-------
Performance limit reached	DSL port is at performance limit, replacement of protective module is recommended
Module overloaded	DSL port is overloaded, replacement required, Replace protective module

Circuit diagram



Extension of complex IT networks





	TC EXTENDER 2001 ETH-2S	TC EXTENDER 4001 ETH-1S	TC EXTENDER 6004 ETH-2S	TC EXTENDER PT-IQ-1S	TC EXTENDER PT-IQ-2S
Function	Unmanaged Ethernet-Extender	Managed Ethernet-Extender	Managed Ethernet-Extender	Replaceable surge protection module Only for Ethernet extender 4001 ETH-1S (2702253)	Replaceable surge protection module Only for Ethernet extender 6004 ETH-2S (2702255)
Topologies	Ring, Line, Point-to-point	Point-to-point	Ring, Line, Point-to-point		
Replaceable surge protection	No	Yes	Yes		
Diagnostic indicators	LEDs	LEDs	Display		
Ports	2x SHDSL, 1x Ethernet	1x SHDSL, 1x Ethernet	2x SHDSL, 4x Ethernet		
Order number	2702409	2702253	2702255	2702257	2702258

PHOENIX CONTACT
INSPIRING INNOVATIONS

Ethernet Media Converter

Maximum interference immunity,

very short delays (latency)

Link-fault-pass-through function: constant connection monitoring

Maximum transmission distances with an extremely high data rate up to 40 km

approved for zone 2

INSPIRING INNOVATIONS

Ethernet Media Converter

For standard application
Class 1000 media converter
They offer an easy and inexpensive entry-level solution for converting to FO technology

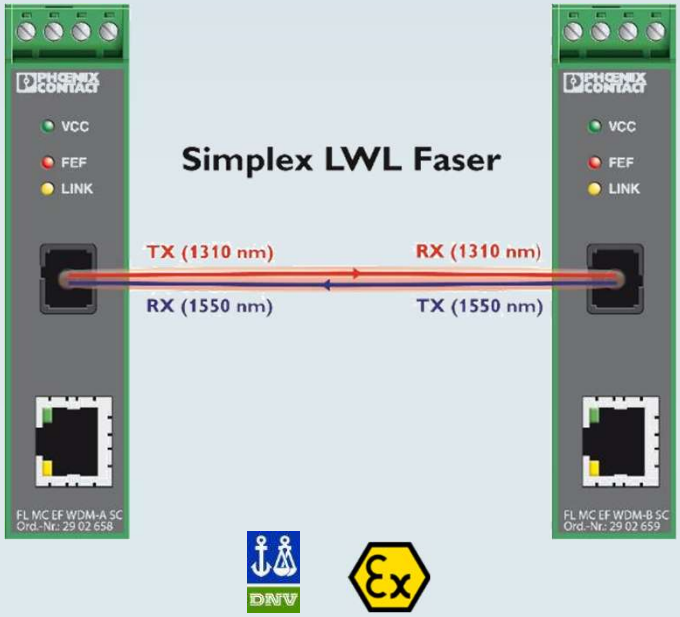
For realtime protocols
Class 2000 media converter
Time cricial Ethernet protocols such as Powerlink, EtherCAT or Sercos. Thanks to the switch-over to pass through operation, they enable very short delays (latency)

With special approvals
ATEX and DNV shipbuilding approval for e.g. process industry, machine building and wind power, through to shipbuilding.

For special application
Provide perfect solution, even for special applications such as rotating applications, PROFINET networks or use in the energy industry.

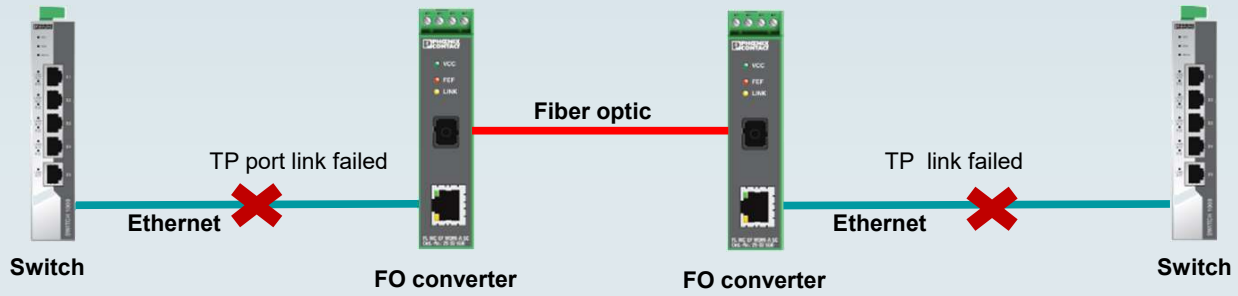
INSPIRING INNOVATIONS

Ethernet Media Converter WDM



- Full duplex transmission via a single optical fiber
- 10/100Base-T(X) auto negotiation
- Link fault pass through (LFP)
- Fare End Fault signaling (FEF)
- SC simplex connection
- Redundant power supply possible
- Operation mode and speed can be set manually

Link Fault Pass Through (LFP)



The LFP function provides permanent connection monitoring

- The link on the fiber optic connection switches off, if the connection is lost on the copper side of the FO converter
- The FO converter on the other side registers the aborted link via the fiber optic path and likewise interrupts the connection for the twisted pair segment

Ethernet Media Converter






	FL MC 1000 SC	FL MC 1000 ST	FL MC 2000T SC	FL MC 2000T ST	FL MC 2000T SM20 SC	FL MC 2000T SM40 SC
Transmission	Multimode fiberglass				Singlemode fiberglass	
Connection method	SC duplex	B-FOC (ST*)	SC duplex	B-FOC (ST*)	SC duplex	
Temperature range	0°C…+60°C		-40°C…+75°C			
Range	Up to 9.6 km				Up to 20 km	Up to 40 km
Light wavelength	1310 nm					
Special features	Auto negotiation and MDI (x)		Store-and-forward or pass through mode can be selected via DIP switch with a short latency time of 835 ns. They can therefore be used for realtime Ethernet protocols			
Order number	2891320	2891321	2891315	2891316	2891317	2891318

PHOENIX CONTACT
INSPIRING INNOVATIONS

Ethernet Media Converter





	FL MC EF 1300 MM SC	FL MC EF 1300 MM ST	FL MC EF 1300 SM SC	FL MC 2000E	FL MC 2000E SM40 LC
Transmission	Multimode fiberglass		Singlemode fiberglass	Multimode fiberglass	Singlemode fiberglass
Connection method	SC duplex	B-FOC (ST*)	SC duplex	LC duplex	
Temperature range	-40°C…+65°C			-40°C…+75°C	
Range	Up to 10 km		Up to 36 km	Up to 9.6 km	Up to 40 km
Light wavelength	1310 nm				
Special features	LFPT and FEF diganostic functions, auto negotiation and auto MDI (x), backplane bus for redundant or alternative power supply			Accordance to IEC 61850/IEEE1613 4 kV insulation voltage, high EMC protection	
Order number	2902853	2902854	2902856	2891056	2891156

PHOENIX CONTACT
INSPIRING INNOVATIONS

Ethernet Media Converter





	FL MC EF WDM-SET SC	FL MC EF WDM-A SC	FL MC EF WDM-B SC	FL MC ETH/FO 660 T	FL MC EF 660 SCRJ
Transmission	Multimode and single mode glass fiber			Polymer fiber PCF	
Connection method	SC simplex			SC-RJ	
Temperature range	-40°C…+65°C			-20 °C ... 55 °C	
Range	Up to 38 km			Up to 100 m	
Light wavelength	1310/1550 nm			660 nm	
Special features	Converters A and B	Converter A	Converter B	T-coupler with two FO connections and two RJ45 sockets	Single-port media converter
Order number	2902660	2902658	2902659	2313164	2702944

Patch panels

Ethernet connectivity

Simple and fast connection between your Ethernet field and cabinet cabling

- Large selection of different connection technologies
- Protective functions for high system availability
- Concealed wiring space, thanks to front cover
- 10 / 100 / 1000 Mbps

Benefits -Patch panels

Connection point between your Ethernet field and cabling

Defined handover point for responsibility from the panel builder to the electrician!

Save approx. 60% in time compared to contacting an "RJ45" connector

=> Save costs with different field cable connection options

Tool free installation

(Optional)

Protect your cabinet against overvoltages in one unit

=> Save cost & increase availability

PoE

Power your device over Ethernet

=> PoE Injector

The cabinet builder delivers an attractive cabinet.

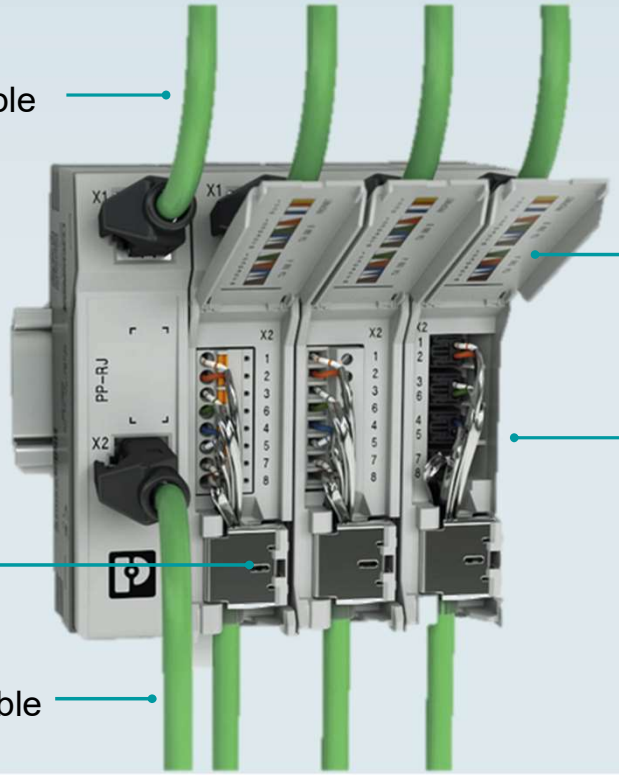
The cover hides the wiring

=> Appearance is important

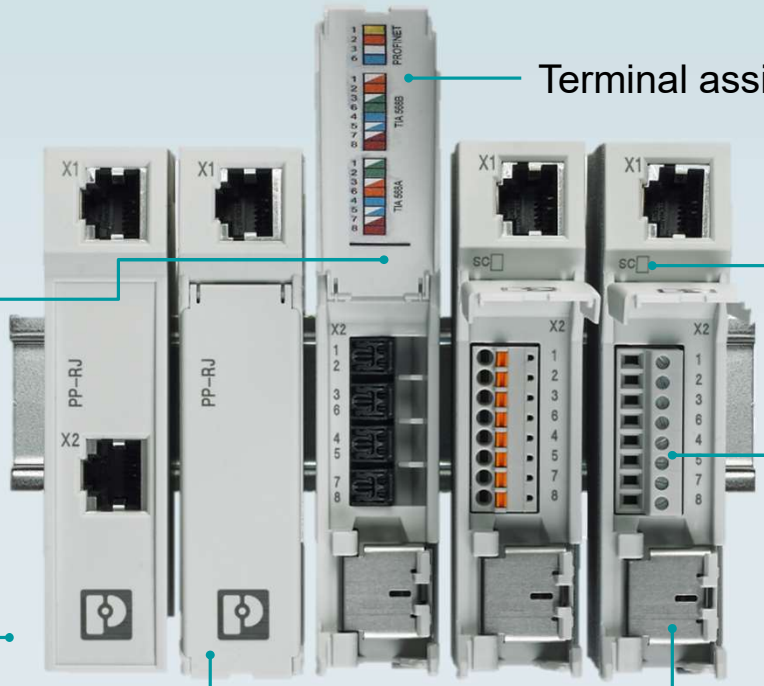
Product overview

PHOENIX CONTACT
INSPIRING INNOVATIONS

Benefits -Patch panels



Patch panels



Terminal assignment for Ethernet

Length for cable stripping

Shield current detection

Different connection technologies

- Screw
- Push-In
- IDC
- RJ45

Integrated surge protection

Covered cable installation

Cable shield contact spring
(shield contacting with strain relief)

Patch panels

Ethernet connectivity

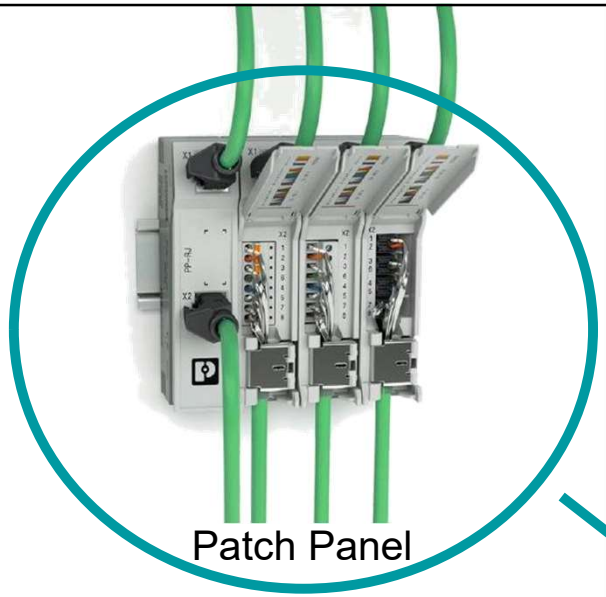
Choose a simple and fast connection between your Ethernet field and cabinet cabling.

1	 Patch Panel			
2	 Patch Panel	+	Integrated surge protection	
3	 Patch Panel (PoE Injector)	+	Power Injection (PoE)	
4	 Patch Panel (PoE Injector)	+	Integrated surge protection	+ Power Injection (PoE)

Ethernet terminal block

Patch panel

Simple and fast connection
between your
Ethernet field and cabinet cabling



Patch Panel

Defined handover point for
responsibility from the
panel builder to the electrician!

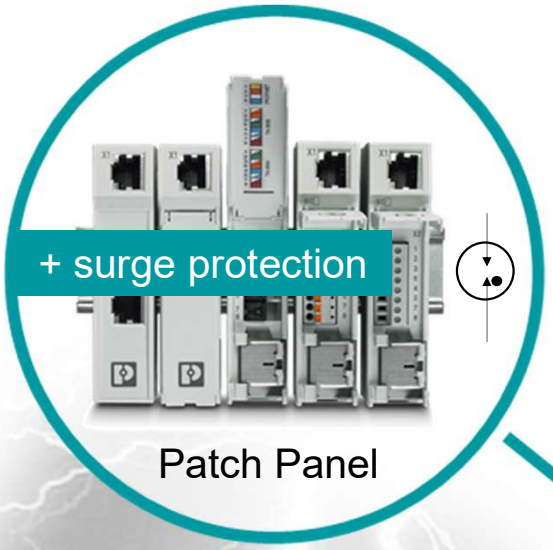
Ethernet cable

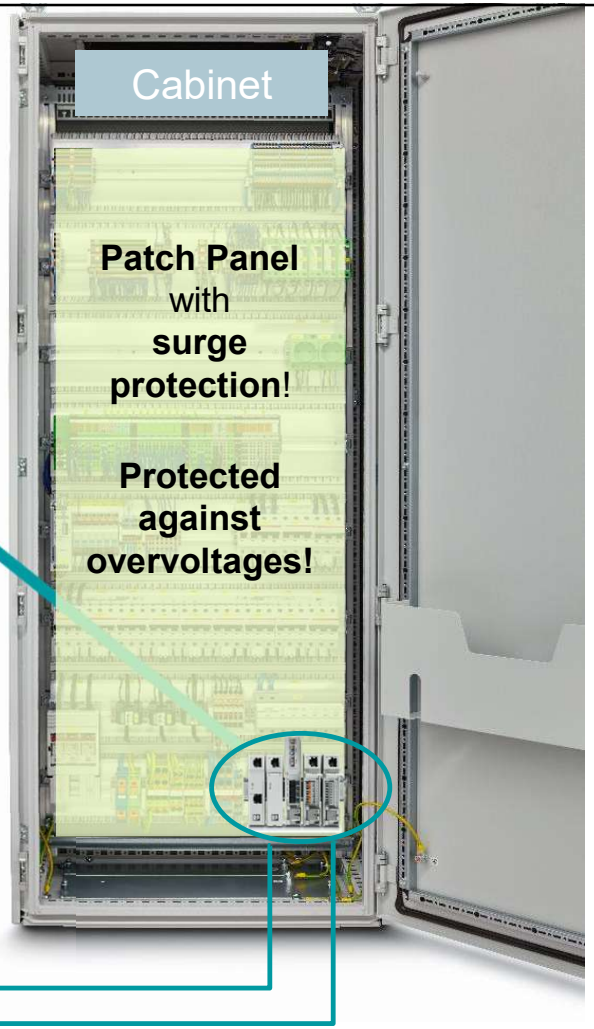
PHOENIX CONTACT
INSPIRING INNOVATIONS

Ethernet terminal block

Patch panel

Simple and fast connection
between your
Ethernet field and cabinet cabling





Protect your cabinet
with integrated
surge protection!

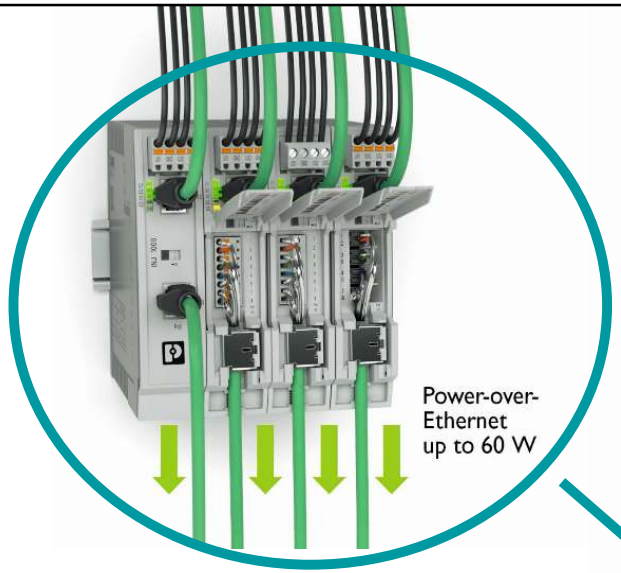
Ethernet cable

Product overview

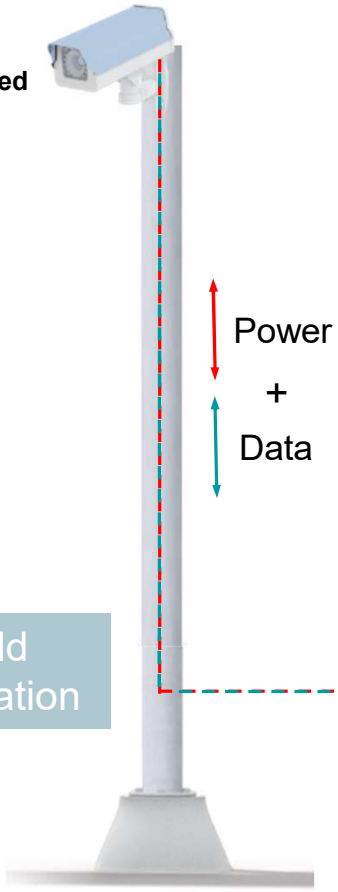
PHOENIX CONTACT
INSPIRING INNOVATIONS

Ethernet terminal block

PoE Injector



PoE injector with direct field cable connection

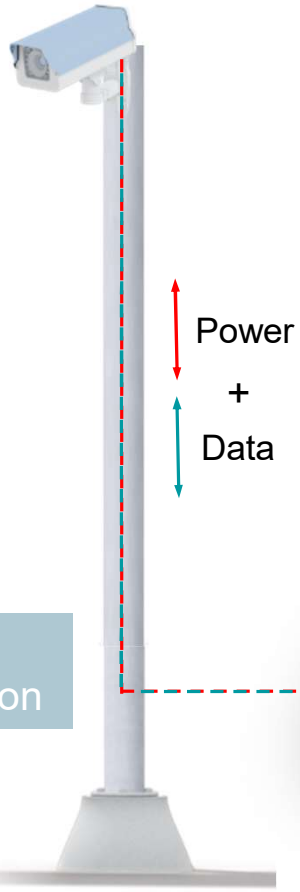


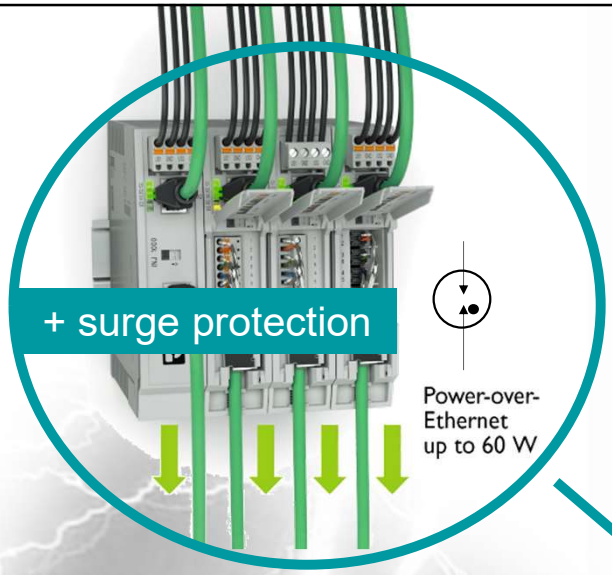
Power over Ethernet (PoE)

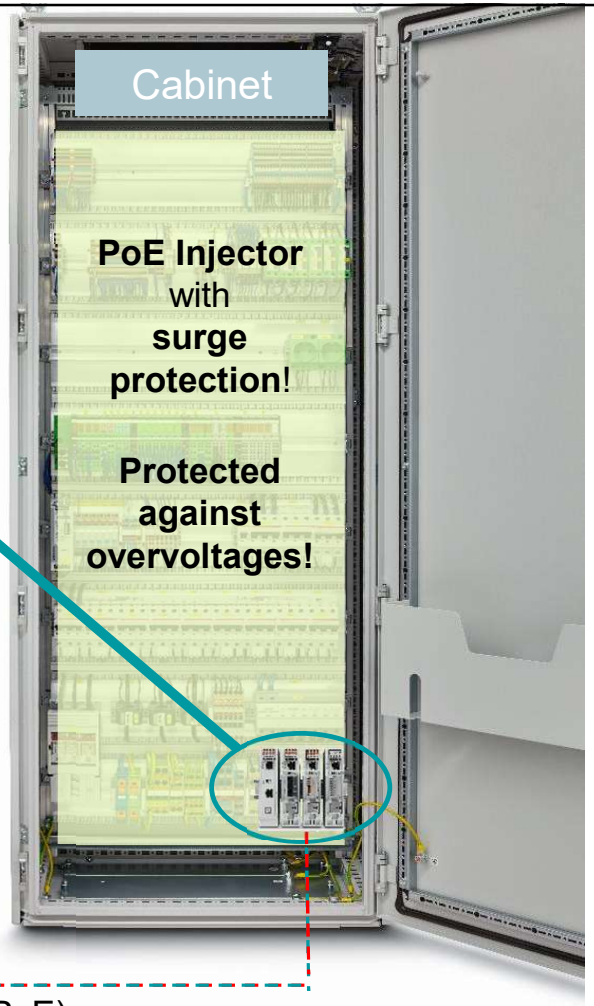
PHOENIX CONTACT
INSPIRING INNOVATIONS

Ethernet terminal block

PoE Injector







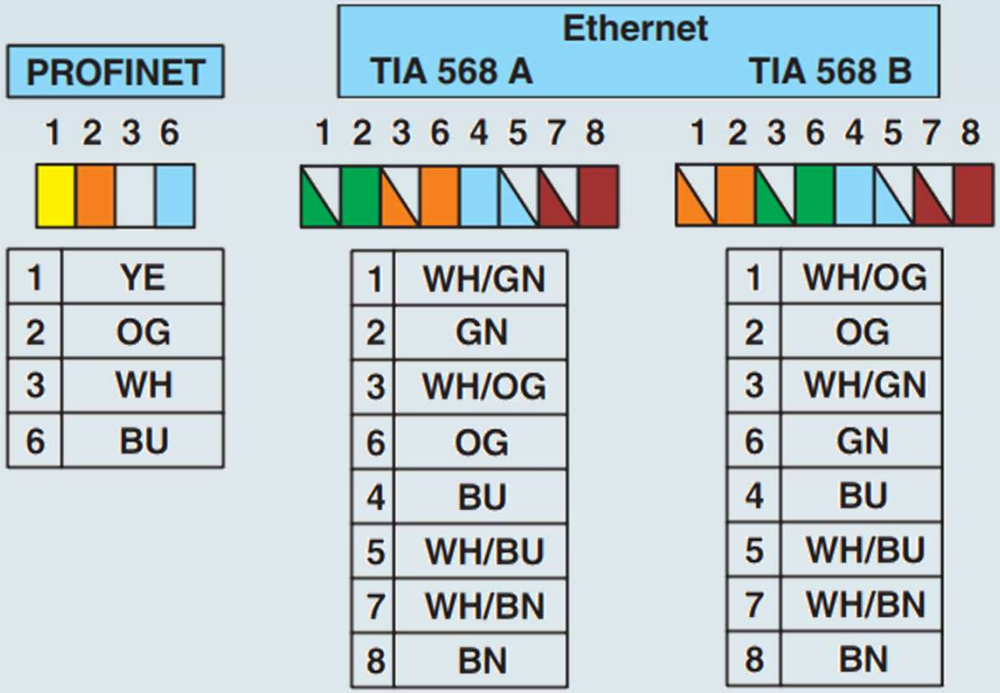
Protect your cabinet with integrated **surge protection**

Power over Ethernet (PoE)

Product overview

PHOENIX CONTACT
INSPIRING INNOVATIONS

Terminal assignment



1	YE
2	OG
3	WH
6	BU

1	WH/GN
2	GN
3	WH/OG
6	OG
4	BU
5	WH/BU
7	WH/BN
8	BN

1	WH/OG
2	OG
3	WH/GN
6	GN
4	BU
5	WH/BU
7	WH/BN
8	BN

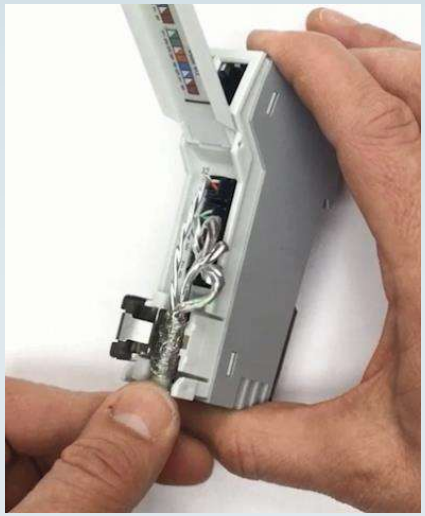
Terminal assignment for Ethernet (IEC 80.3u: TIA 568 A, TIA 568 B) and Profinet

Key:

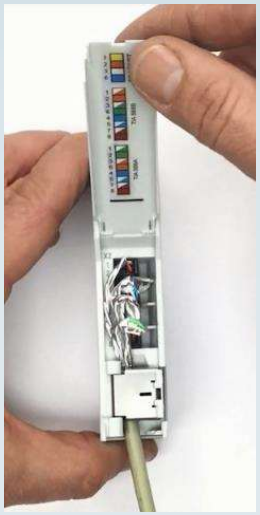
OG	Orange
WH	White
GN	Green
YE	Yellow
BU	Blue
BN	Brown

Cable shield connection

Step 1:
Connect the wires without special tools



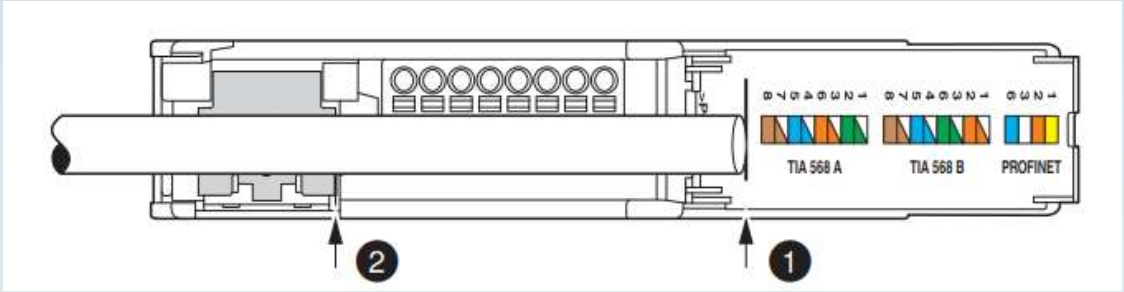
Step 2:
Laying the cable jacket and shielding underneath the shielding clamp



Step 3:
Closing the cover

Step 4:
Ready!
Clean installtion

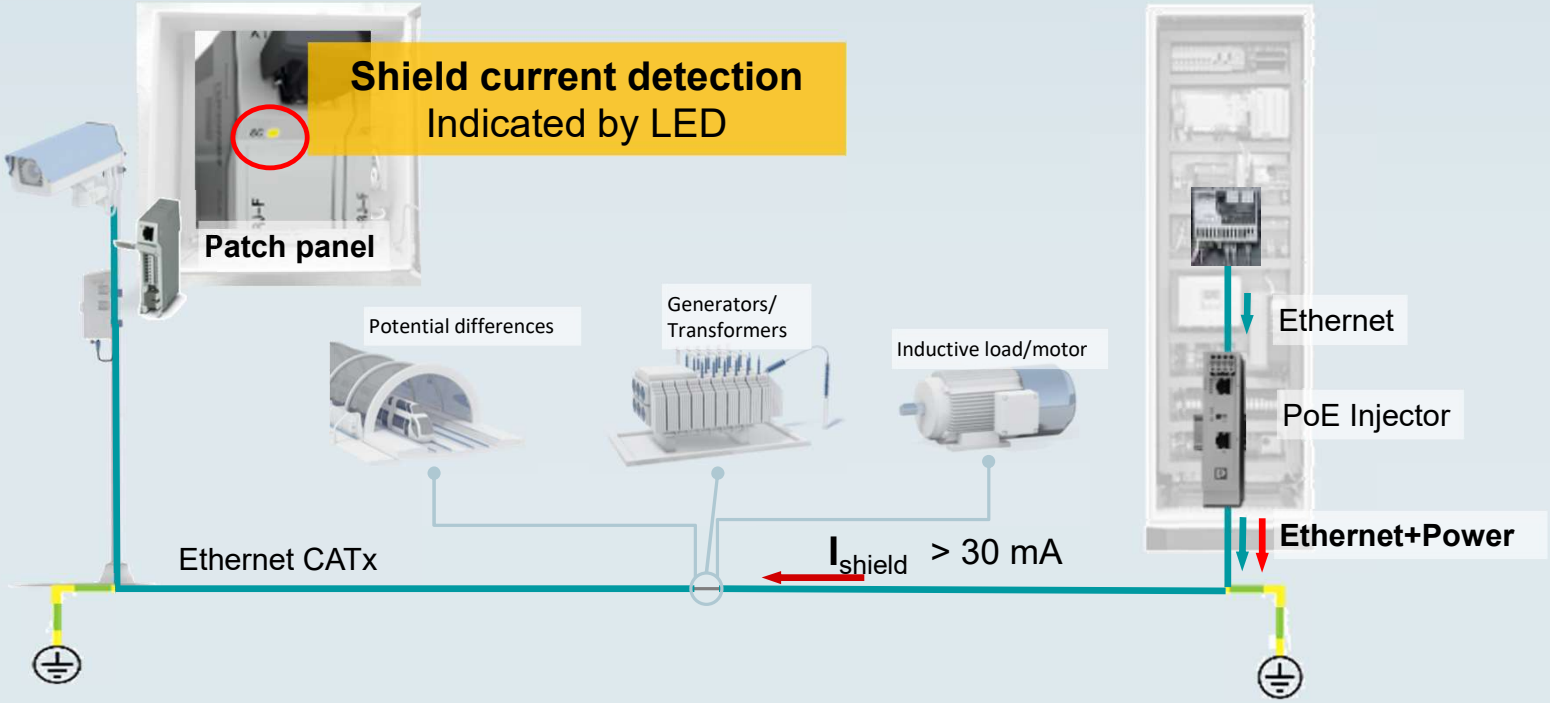
Crimping length



The edge off the shield contact spring indicates the correct length for stripping (5,5 cm)

Place the cable end on the marking line

Shield current detection



- If there are different potential references within an installation, equalization currents can flow via the cable shielding.
- LED (SC) lights up in the event of cable shield currents greater than +30 mA and less than -30 mA

Patch panels

	PP-RJ-RJ	PP-RJ-SC	PP-RJ-SCC	PP-RJ-IDC	PP-RJ-RJ-F	PP-RJ-SC-F	PP-RJ-SCC-F	PP-RJ-IDC-F
Function	Standard patch-panel	Standard patch-panel	Standard patch-panel	Standard patch-panel	Functional patch-panel	Functional patch-panel	Functional patch-panel	Functional patch-panel
Cable connection	RJ45/ RJ45	RJ45/ Screw	RJ45/ Push-In	RJ45/ IDC	RJ45/ RJ45	RJ45/ Screw	RJ45/ Push-In	RJ45/ IDC
Surge protection	No	No	No	No	**Yes**	**Yes**	**Yes**	**Yes**
Shield current detection	No	No	No	No	**Yes**	**Yes**	**Yes**	**Yes**
Order number	2703015	2703016	2703018	2703019	2703020	2703021	2703022	2703023

Patch panels

	FL CAT5 TERMINAL BOX	FL-PP-RJ45-SC	FL-PP-RJ45-SCC	FL-PP-RJ45-LSA
Connection type	RJ45/Screw	RJ45/Screw	spring-cage connection	LSA-connection
Description	4-pole, 10/100 MBit/s	8-pole, 10/100/1000 MBit/s		
Shielding	Directly on the DIN-rail	directly on the DIN rail or optionally via RC combination		
Shield connection	Bracket clamp with screws			
Order number	2744610	2901643	2901642	2901645

PHOENIX CONTACT
INSPIRING INNOVATIONS

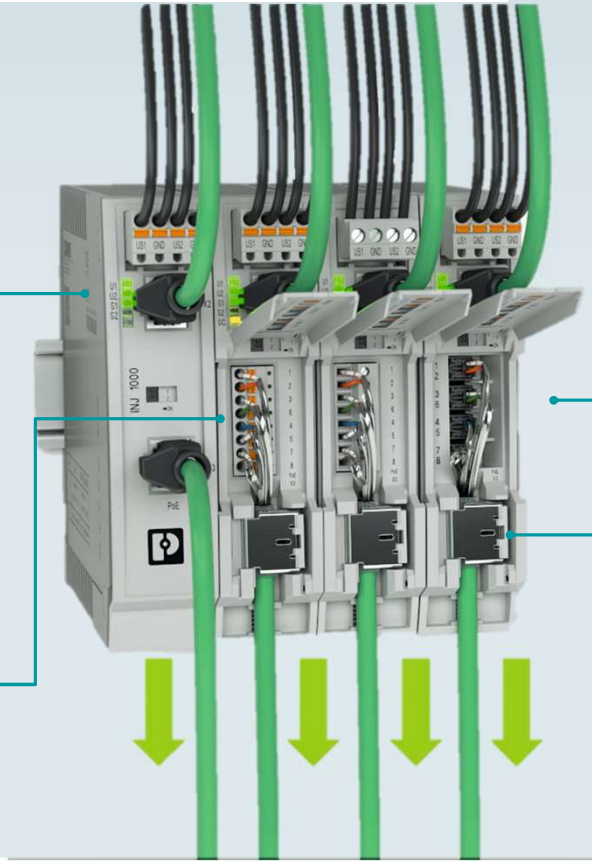
Patch panels

	FL-PP-RJ45/RJ45	FL-PP-RJ45/ RJ45-B	FL-PP-RJ45-SCC/ SC041	FL-PP-RJ45-SCC/ SC045
Connection type	RJ45/Screw	RJ45/Screw	spring-cage connection	LSA-connection
Description	8-pole, 10/100/1000 MBit/s	Extended temperature range -40 °C ... 85 °C, narrow width	Cable sharing module with cable outlet to the front	Cable sharing module with cable outlet upwards
Shielding	Directly on the DIN rail or optionally via RC combination	Continuous shield	Directly on the DIN rail or optionally via RC combination	
Shield connection	Via RJ45 port		Bracket clamp with screws	
Order number	2901646	2904933	2903532	2904577

INSPIRING INNOVATIONS

Power over Ethernet Injectors

Surge protection and shield current monitoring on the field cable side



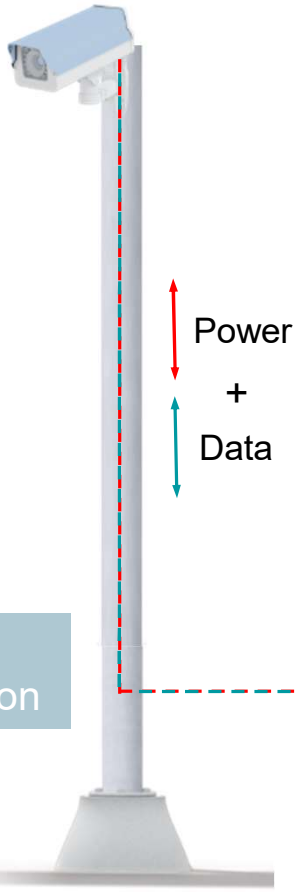
Different performance standards (15 / 30 / 60 W) and **galvanic isolation**

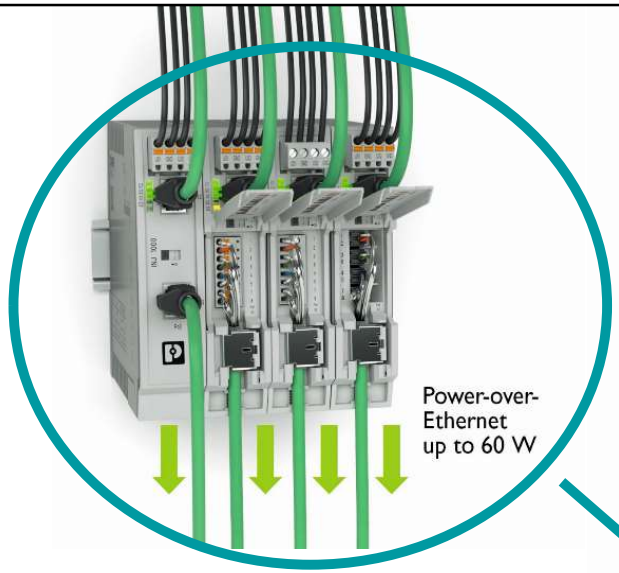
Multiple connection technologies and covered wiring space

Tool-free shield connection

Ethernet terminal block

PoE Injector





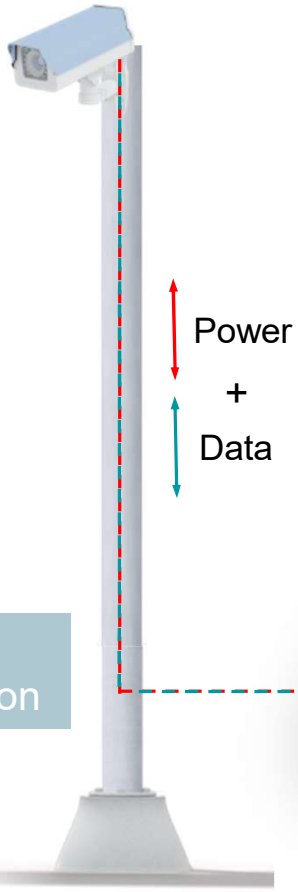
PoE injector with direct field cable connection

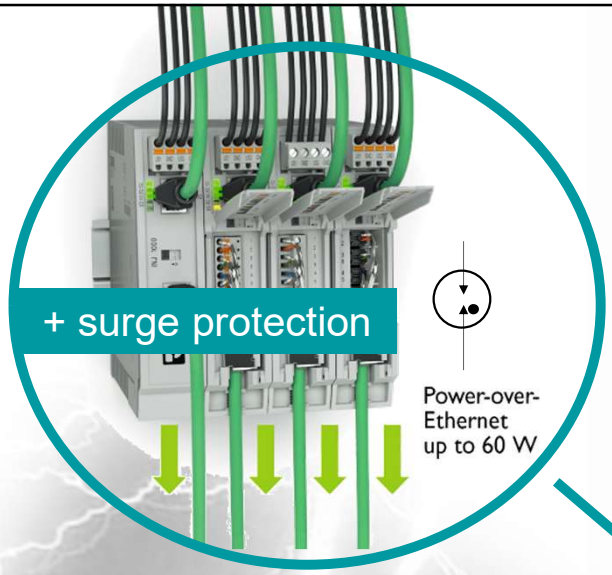
Power over Ethernet (PoE)

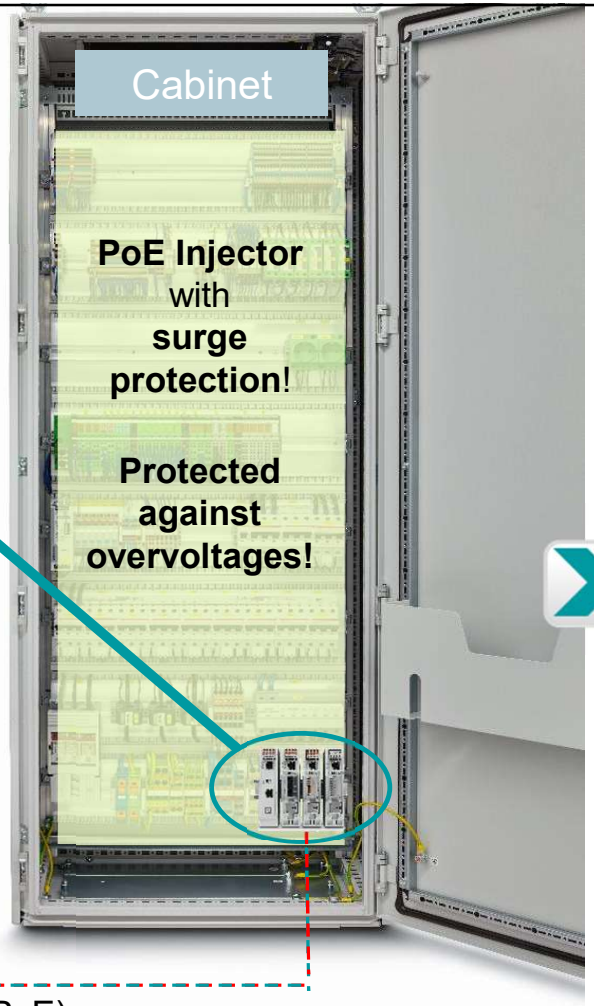
INSPIRING INNOVATIONS

Ethernet terminal block

PoE Injector







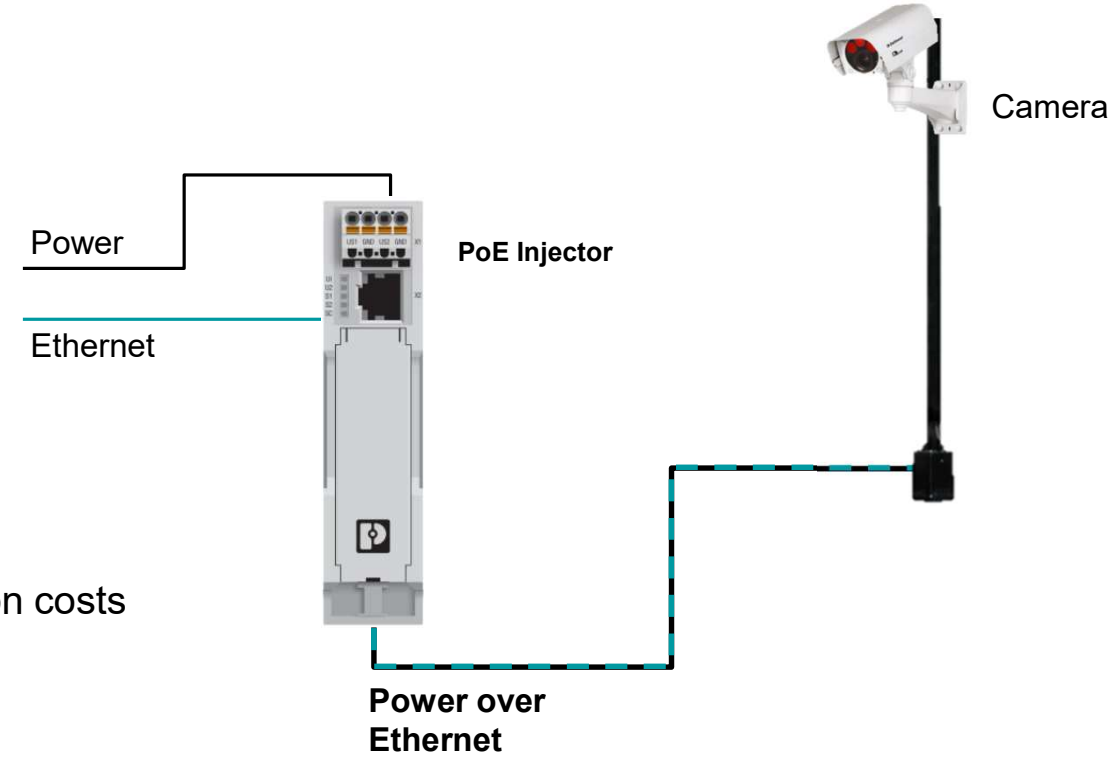
Protect your cabinet with integrated **surge protection**

Power over Ethernet (PoE)

Product overview

PHOENIX CONTACT
INSPIRING INNOVATIONS

Power over Ethernet Injectors



Save installation costs

Different performance standards

Different performance standards and **galvanic isolation**

- IEEE 802.3 at, up to 15 W
- IEEE 802.3 af, up to 30 W
- PoE ++, up to 60 W (pre IEEE 802.3 bt)

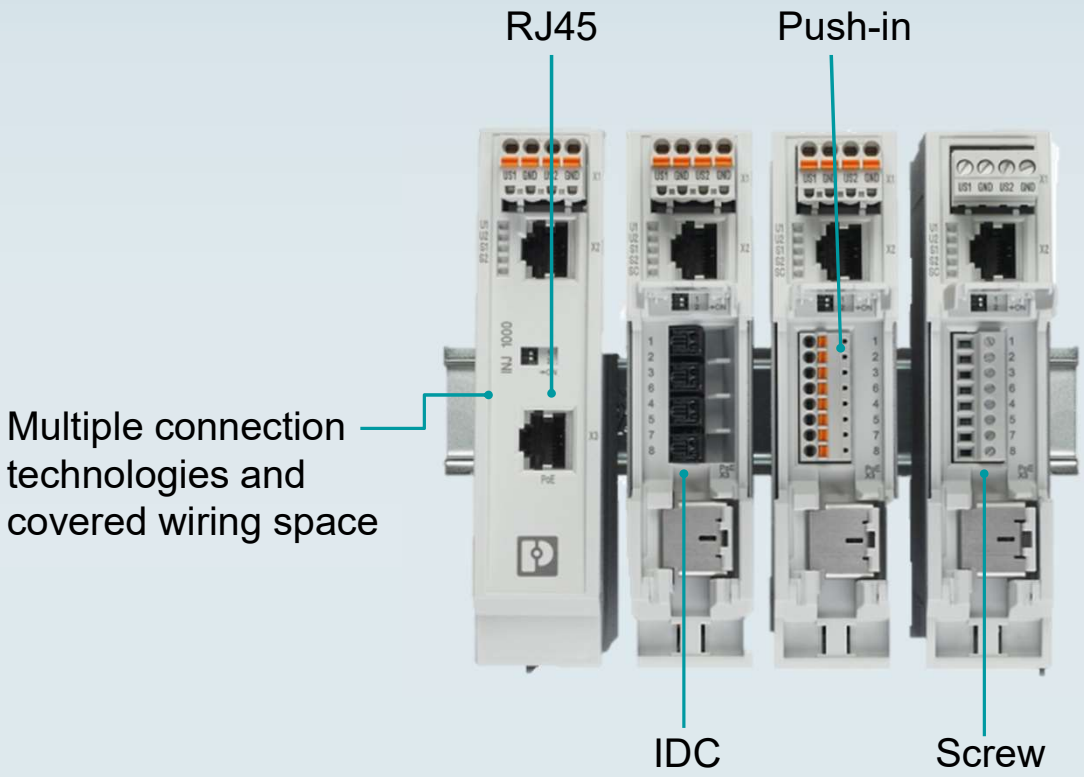
- supply voltage and Power over Ethernet port are electrically isolated in certain Injector´s

Surge protection and shield current monitoring

Surge protection and shield current monitoring on the field cable side

- integrated surge protection protects devices and application against sudden high voltages in the data cables
- An LED indicates differences in potential or other shield currents caused by the effects of EMC

Multiple connection technologies



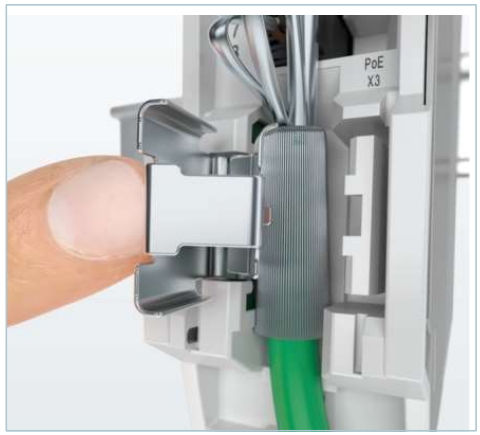
- IDC, Push-in, screw, and RJ45 connections.
- Covered cable wiring space

PHOENIX CONTACT
INSPIRING INNOVATIONS

Tool-free shield connection

Tool-free shield connection

- Quick and easy connection of the cable shielding without tools
- strain relief is assured
- Simply lay the cable in the shaft provided and close the shroud



PHOENIX CONTACT
INSPIRING INNOVATIONS

Power over Ethernet Injectors







	INJ 1000 INJ 1010	INJ 1000-T INJ 1010-T	INJ 1100-T INJ 1110-T	INJ 2102-T INJ 2112-T	INJ 2103-T INJ 2113-T	INJ 2101-T INJ 2111-T	FL PSE 2TX
Connection technology	RJ45 / RJ45	RJ45 / RJ45	RJ45 / RJ45	RJ45 / IDC	RJ45 / Push-In	RJ45 / Screw	2 x RJ45/RJ45
Temperatur range	0°C … +60°C	-40 °C … +75 °C					0°C … +55°C
Galvanic isolation	No			Yes			
Overvoltage protection, shield current diagnosis	No			Yes			No
Order number PoE af*/at, 15*/30W	2703005	2703006	2703009	2703012	1004065	2703011	*2891013
Order number PoE bt, 60W	2703007	2703008	2703010	2703014	1004066	2703013	-

PHOENIX CONTACT
INSPIRING INNOVATIONS

Ethernet Network Isolator

- Protection against aggressive environmental influences, particularly harsh industrial environments, thanks to coated PCB
- Dielectric strength of up to 4 kV
- No power supply required
- Approval for railway applications (rolling stock) according to EN 50155 and EN 50121

INSPIRING INNOVATIONS

Ethernet Network Isolator

Without power supply

4000 V AC electrical isolation

Approval for
- EN 50121 (track)
  EN 50155 (rolling stock)

Wall or DIN rail mounting
Optional with DIN Rail mounting kit

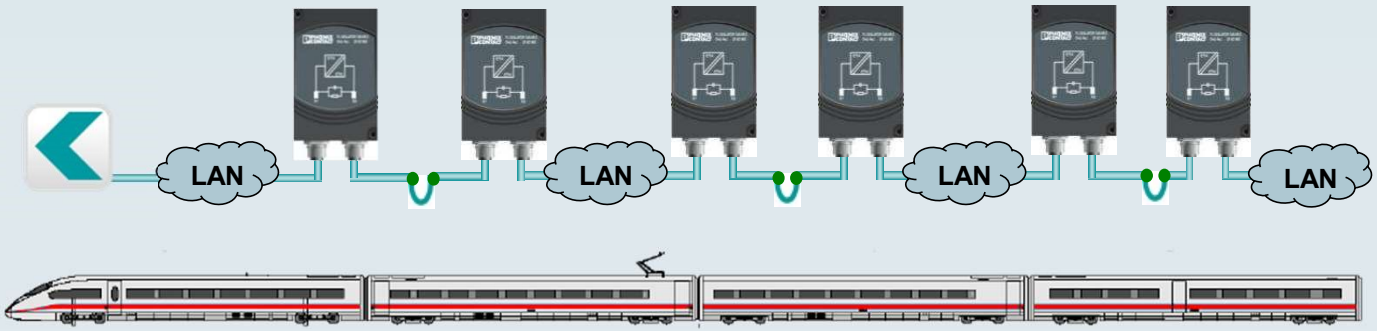
Vibration-resistant M12 connection

SPEEDCON LOCKING

INSPIRING INNOVATIONS

Ethernet Network Isolator

Railway application



- Avoids high potential equalizing currents between individual sections of the train up to 4 kV
- Approval for EN 50121 (track)
- Approval for EN 50155 (rolling stock)

Ethernet Network Isolator

Reliable protection in case of potential differences

4,000 VAC galvanic isolation

Passive device

10/100/**1000** MBit/s

Screw terminal

RJ-45 connector

10/100 MBit/s

Ethernet Network Isolator





	FL Isolator 1000-RJ/RJ	FL Isolator 100-RJ/RJ	FL Isolator 100-RJ/SC	FL Isolator 100-M12	FL EPA RMS
EN 50155–rolling stock EN 50121- wayside	Yes	Yes	Yes	Yes	Set for mounting devices with EPA design on a DIN rail for FL Isolator 100-M12
Port 1	RJ-45	RJ-45	RJ-45	M12 D-coded	
Port 2	RJ-45	RJ-45	Screw	M12 D-coded	
Baudrate im Mbps	10 / 100 / 1000	10 / 100	10 / 100	10 / 100	
Galvanic isolation up to	4000 V	4000 V	4000 V	4000 V	
Mounting on	DIN Rail	DIN Rail	DIN Rail	Wall	
Order number	2313915	2313931	2313928	2902985	2701133

PHOENIX CONTACT
INSPIRING INNOVATIONS

Serial Device Server / Gateways

Serial Device Server and **Gateways** enables easy integration of legacy serial devices and buses into Ethernet networks.

Serial Device Server / Gateways

256-bit AES encryption for secure transfer of sensitive data

User authentication to prevent unauthorized access

Simple configuration and built-in diagnostics

Compact, DIN rail mount form factor

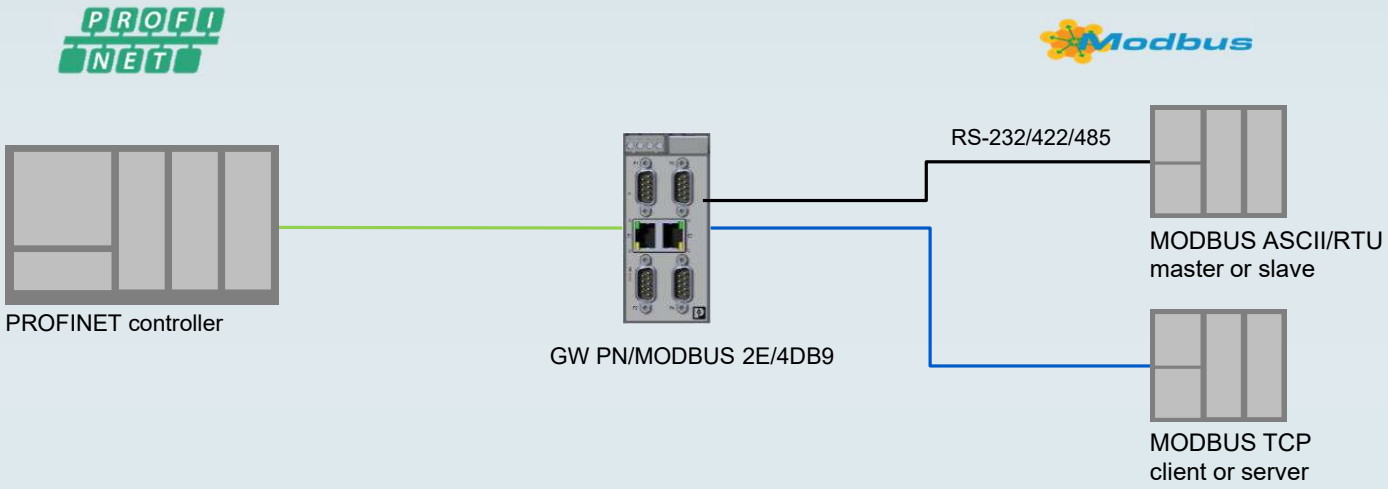
Windows COM port driver for seamless integration

Application example:

- PROFINET to MODBUS ASCII/ RTU / TCP
- PROFIBUS DP to PROFINET
- Modbus RTU/ASCII to Modbus TCP
- Serial Tunneling (point to point)
- Serial Tunneling (multiplexing)
- Multiple devices with the same Device ID
- Private Modbus Networks
- Virtual COM Port
- ASCII to Ethernet/IP
- ASCII to Modbus RTU

Device servers - Application example

PROFINET to MODBUS ASCII / RTU / TCP

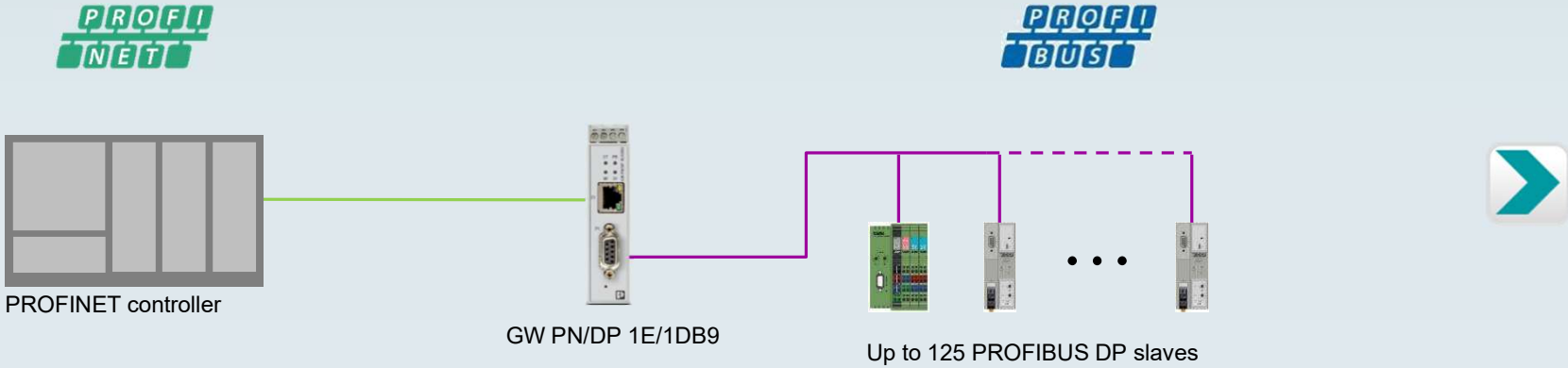


PROFINET to MODBUS ASCII / RTU / TCP

- Functions as a PROFINET slave and a MODBUS client/master and/or MODBUS server/slave
- Supports up to 1600 MODBUS registers and up to 2560 MODBUS coils
- Multiport options available to meet every application
- GSDML files available for simple integration into Profinet controllers

Device servers - Application example

PROFIBUS DP to PROFINET

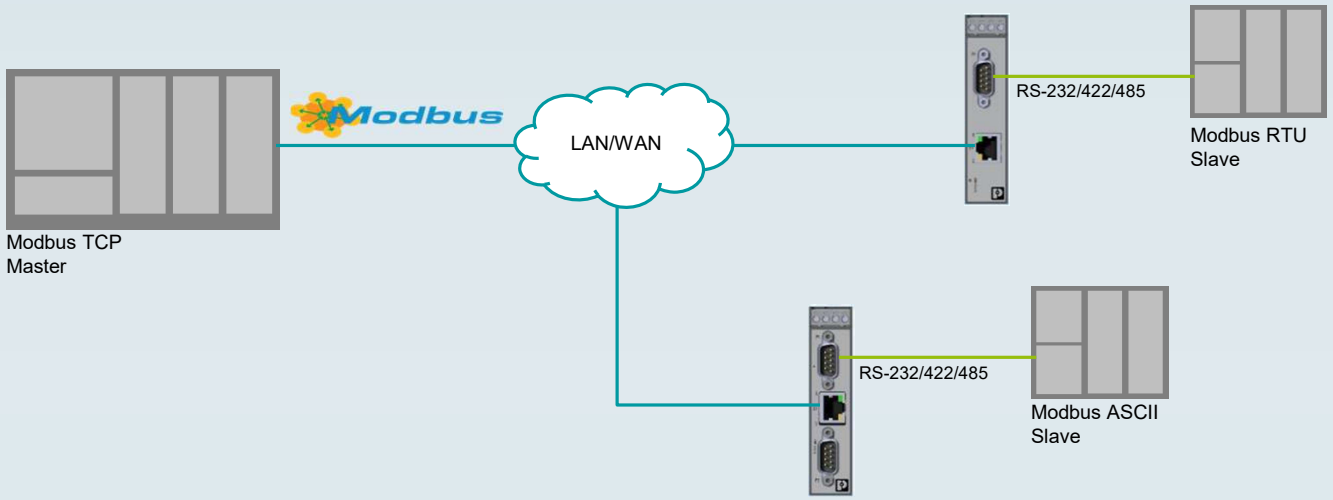


PROFINET to MODBUS ASCII / RTU / TCP

- Functions as a PROFINET slave and PROFIBUS DP master
- Supports up to 31 PROFIBUS DP slaves directly and up to 125 slaves using repeaters
- GSDML generator for simple integration into PROFINET controllers
- DTM file for simple configuration of PROFIBUS DP network

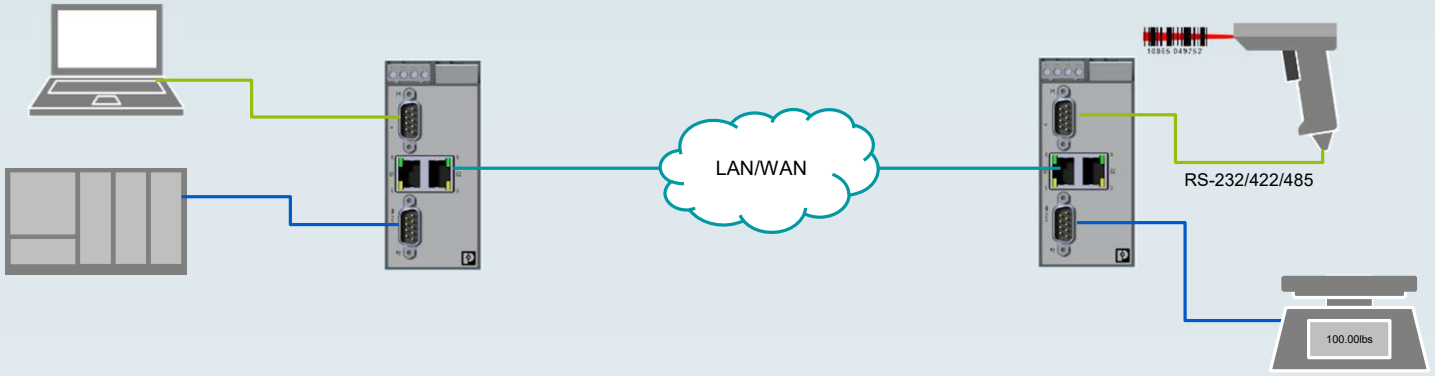
Device servers - Application example

Modbus RTU/ASCII to Modbus TCP



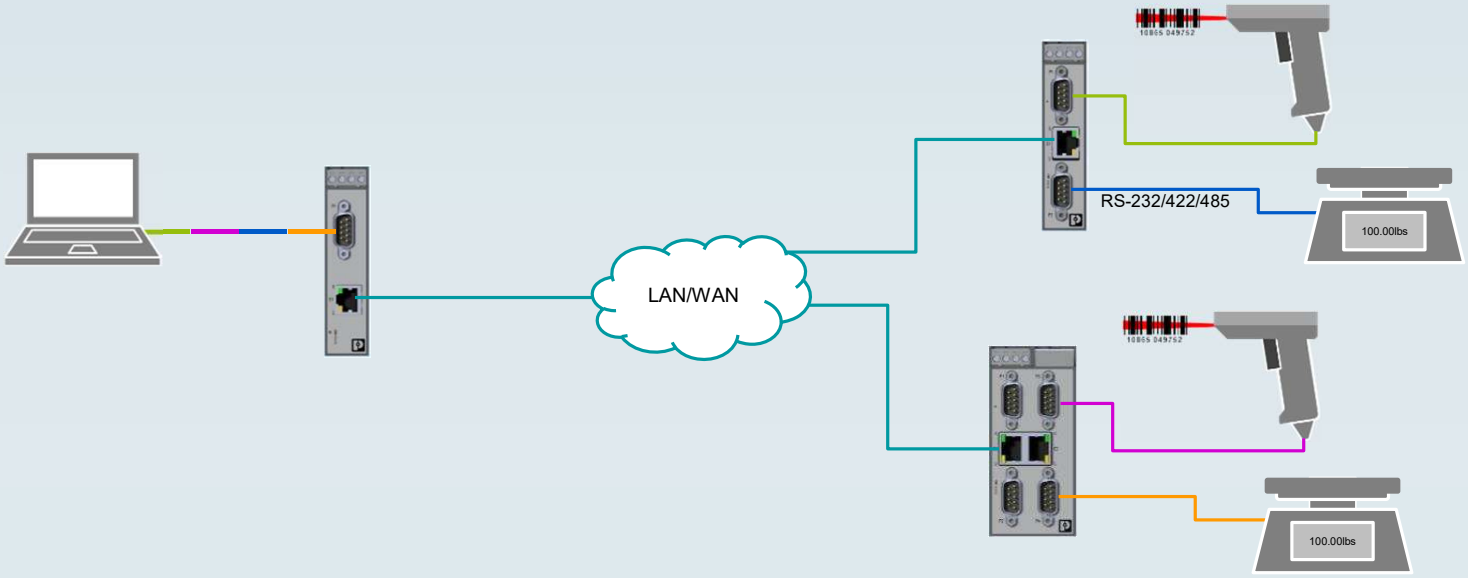
Device servers - Application example

Serial Tunneling (point to point)



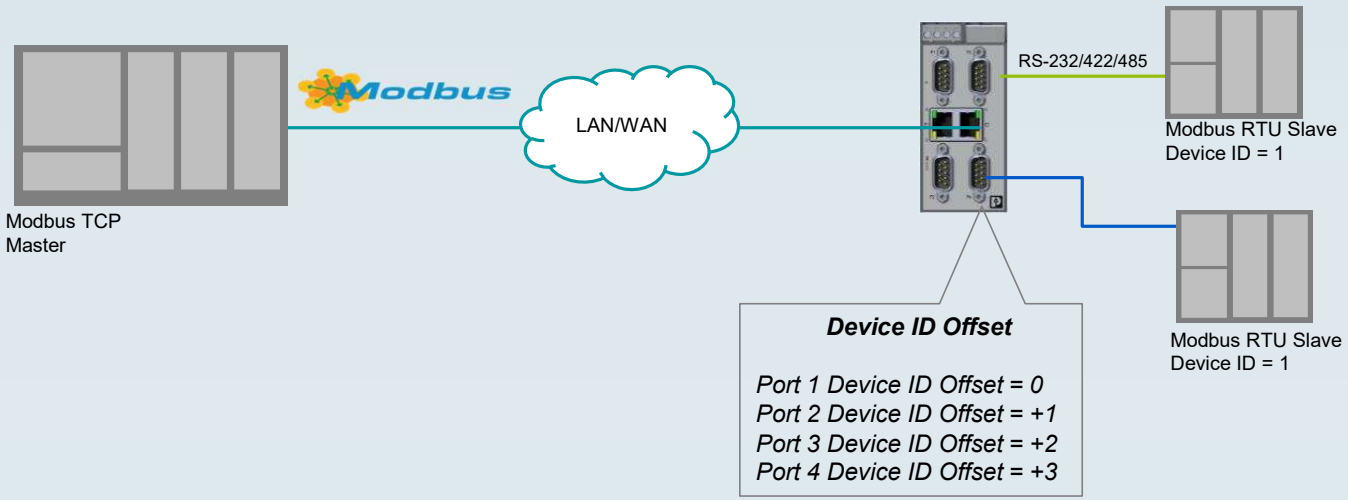
Device servers - Application example

Serial Tunneling (multiplexing)



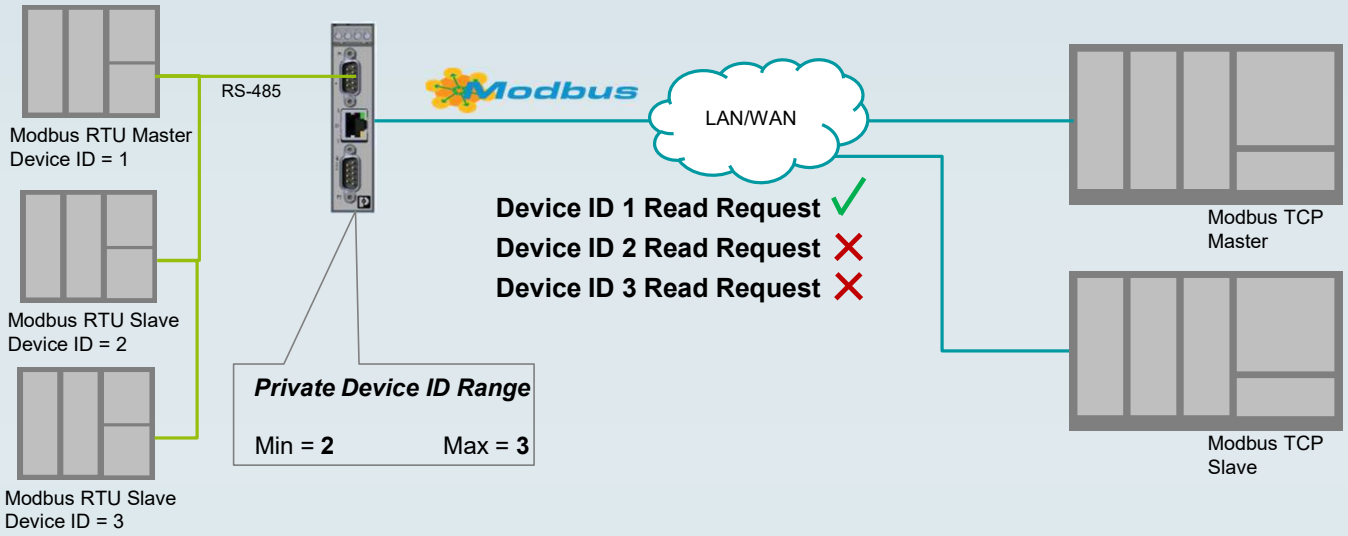
Device servers - Application example

Multiple devices with the same Device ID



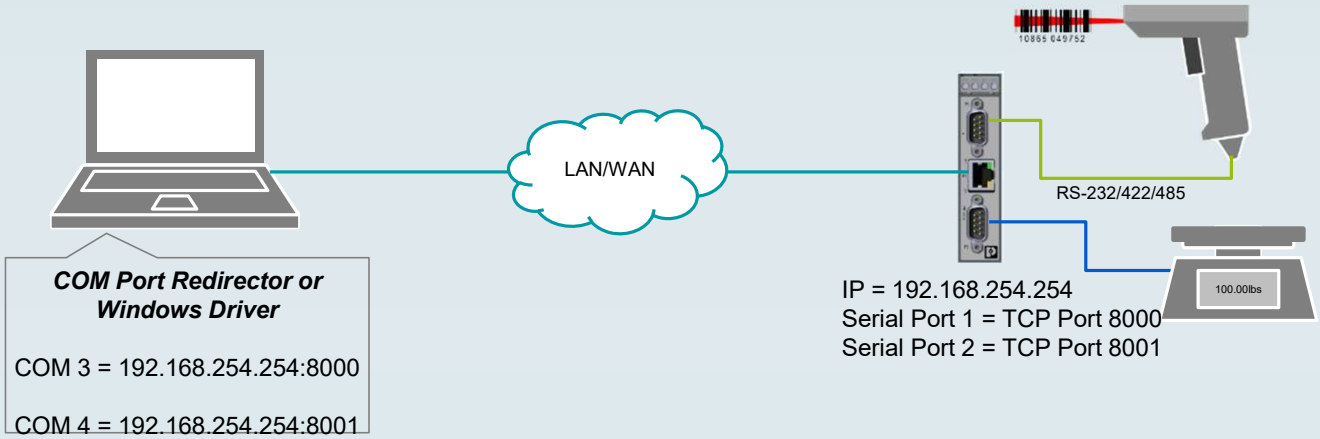
Device servers - Application example

Private Modbus Networks



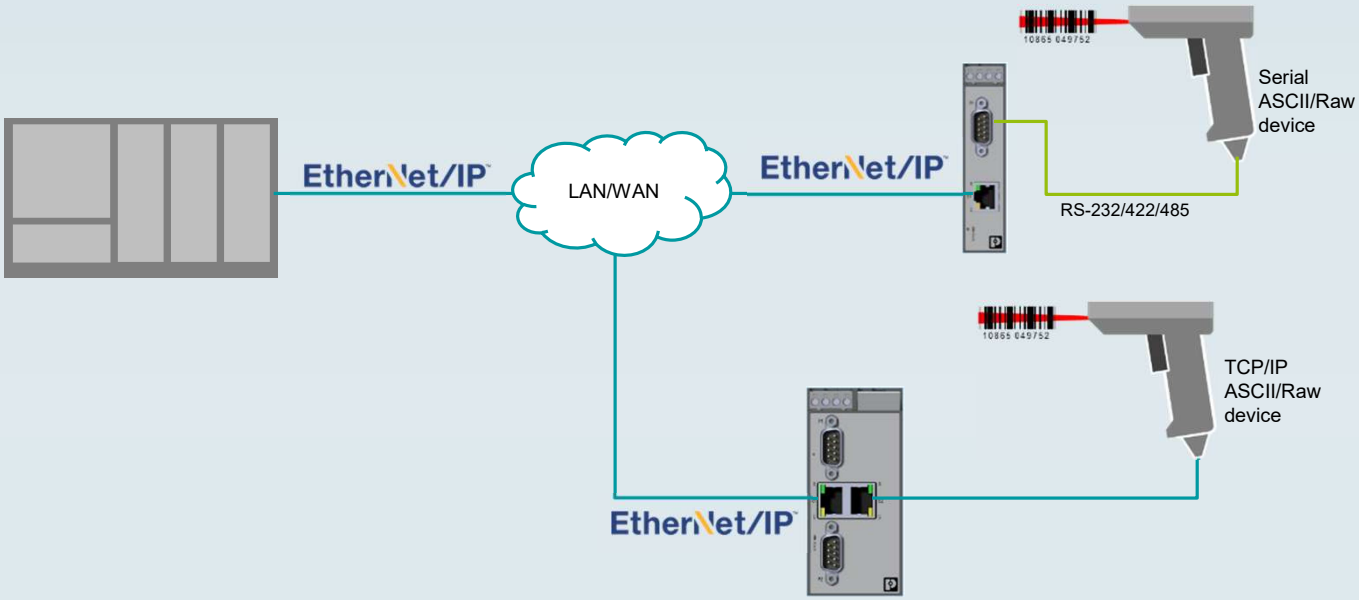
Device servers - Application example

Virtual COM Port



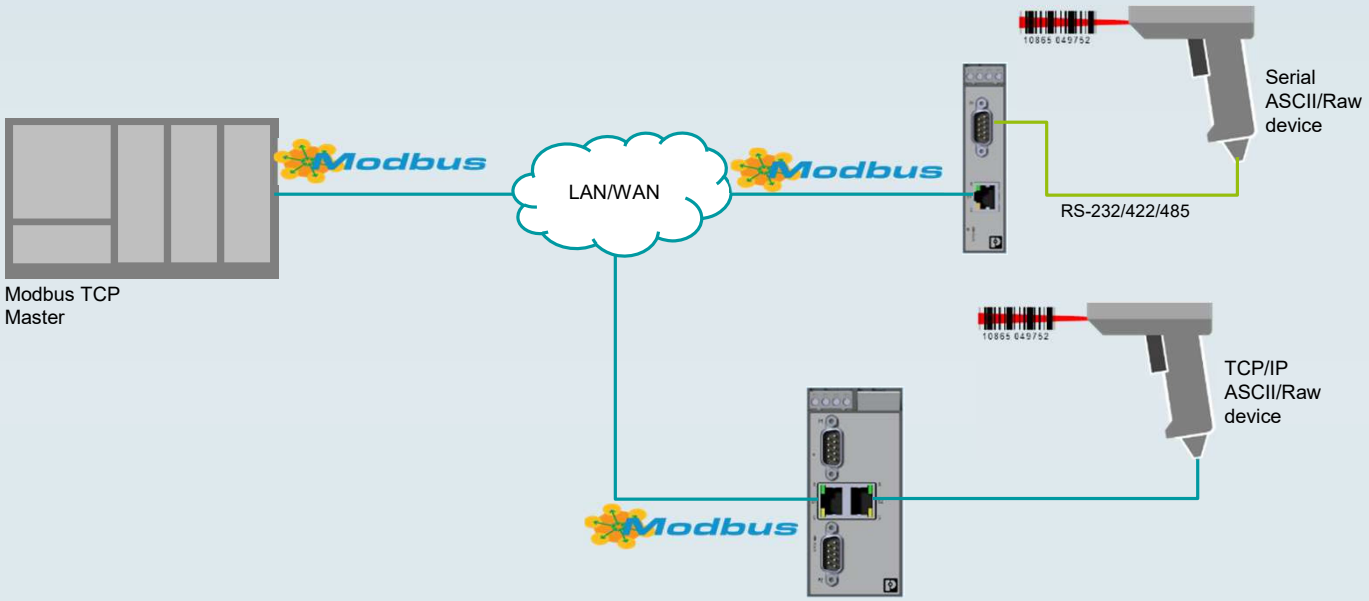
Device servers - Application example

ASCII to Ethernet/IP



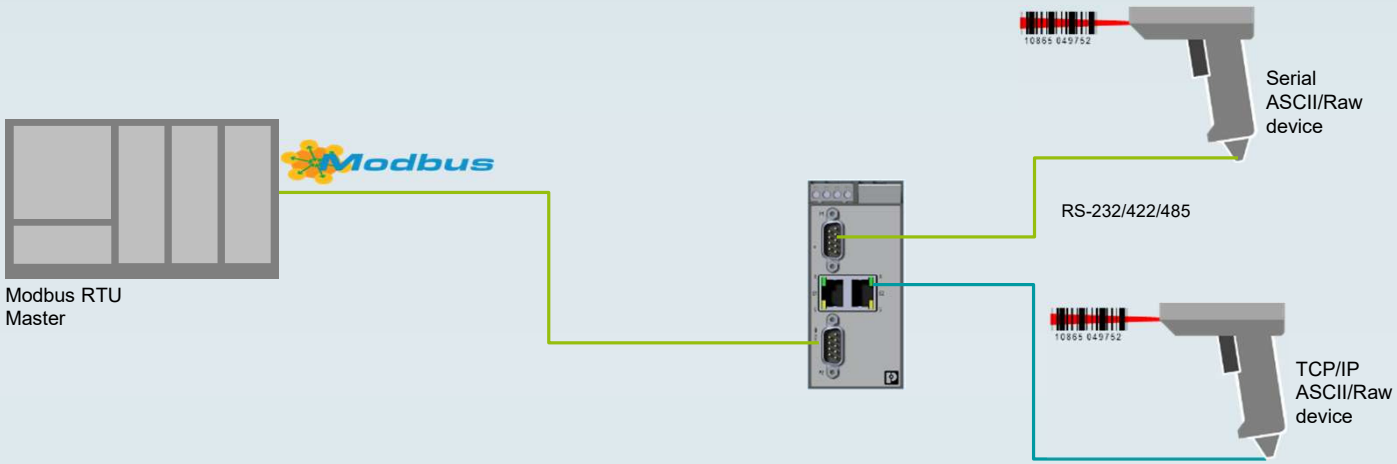
Device servers - Application example

ASCII to Modbus TCP



Device servers - Application example

ASCII to Modbus RTU



Serial Device Server





	FL COMSERVER BASIC	GW DEVICE SERVER 1E/1DB9	GW DEVICE SERVER 1E/2DB9	GW DEVICE SERVER 2E/2DB9	GW DEVICE SERVER 2E/4DB9
Protocol	**Protocol transparent**				
Ethernet interface	1x RJ45	1x RJ45		2x RJ45	
Serial interface (RS-232/422/485)	1x D-SUB 9	1x D-SUB 9	2x D-SUB 9		4x D-SUB 9
Special features	ATEX. UL (Class I, Division 2)	ATEX, IECEx, UL (Class I, Division 2)			
Order no.	2313478	2702758	2702760	2702761	2702763

INSPIRING INNOVATIONS

Gateways









	FL COMSERVER UNI	GW MODBUS TCP/RTU 1E/1DB9	GW MODBUS TCP/RTU 1E/2DB9	GW MODBUS TCP/RTU 2E/2DB9	GW MODBUS TCP/RTU 2E/4DB9	GW MODBUS TCP/ASCII 1E/1DB9	GW MODBUS TCP/ASCII 1E/2DB9	GW MODBUS TCP/ASCII 2E/2DB9	GW MODBUS TCP/ASCII 2E/4DB9
Protocol	**Modbus/RTU to Modbus/TCP**					**RAW, ASCII to Modbus/TCP**			
Ethernet interface	1x RJ45	1x RJ45		2x RJ45		1x RJ45		2x RJ45	
Serial interface (RS-232/422/485)	1x D-SUB 9	1x D-SUB 9	2x D-SUB 9		4x D-SUB 9	1x D-SUB 9	1x D-SUB 9		4x D-SUB 9
Special features	ATEX, UL (Class I, Divisson 2)	ATEX, IECEx, UL (Class I, Division 2)							
Order no.	2313452	2702764	2702765	2702766	2702767	2702768	2702769	2702770	2702771

PHOENIX CONTACT
INSPIRING INNOVATIONS

Gateways

	GW PN/ASCII 1E/1DB9	GW PN/ASCII 1E/2DB9	GW PN/ASCII 2E/2DB9	GW PN/ASCII 2E/4DB9	GW EIP/ASCII 1E/1DB9	GW EIP/ASCII 1E/2DB9	GW EIP/ASCI 2E/2DB9	GW EIP/ASCII 2E/4DB9
Protocol	**RAW, ASCII to PROFINET**				**RAW, ASCII to EtherNet/IP**			
Ethernet interface	1x RJ45		2x RJ45		1x RJ45		2x RJ45	
Serial interface (RS-232/422/485)	1x D-SUB 9	2x D-SUB 9	2x D-SUB 9	4x D-SUB 9	1x D-SUB 9	2x D-SUB 9	2x D-SUB 9	4x D-SUB 9
Special features	ATEX, IECEx, UL (Class I, Division 2)							
Order no.	1021080	1021058	1021056	1020882	2702772	2702773	2702774	2702776

Gateways

	GW EIP/MODBUS 1E/1DB9	GW EIP/MODBUS 1E/2DB9	GW EIP/MODBUS 2E/2DB9	GW EIP/MODBUS 2E/4DB9	GW PN/MODBUS 1E/1DB9	GW PN/MODBUS 1E/2DB9	GW PN/MODBUS 2E/2DB9	GW PN/MODBUS 2E/4DB9
Protocol	**Modbus to Ethernet/IP**				**Modbus to Profinet**			
Ethernet interface	1x RJ45		2x RJ45		1x RJ45		2x RJ45	
Serial interface (RS-232/422/485)	1x D-SUB 9	2x D-SUB 9	2x D-SUB 9	4x D-SUB 9	1x D-SUB 9	2x D-SUB 9	2x D-SUB 9	4x D-SUB 9
Special features	ATEX, IECEx, UL (Class I, Division 2)				ATEX, IECEx, UL (Class I, Division 2)			
Order no.	1062540	1062423	1062380	1062388	1105707	1105708	1105709	1105710

Gateways

	GW PN/DP 1E/1DB9
Protocol	**Profibus DP to Profinet**
Ethernet interface	1x RJ45
Serial interface (RS-232/422/485)	1x D-SUB 9
Special features	Connect up to 125 PROFIBUS DP slaves to a PROFINET host
Order no.	1108712

INSPIRING INNOVATIONS

TIMESERVER NTP

The FL TIMESERVER is receiving very

accurate

time and **geo-location information**
via GNSS (GPS, Galileo, GLONASS) and
provides the
time and date information
via NTP protocol
in Ethernet networks to time clients.

PHOENIX CONTACT
INSPIRING INNOVATIONS

FL TIMESERVER NTP

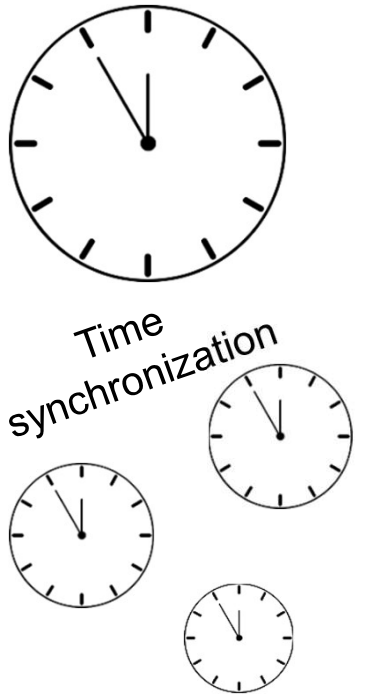
Time synchronisation

In Ethernet networks it is very important that all devices have an accurate, synchronous system time. This way, all decentral activities in the network can be documented with exact timing.
Example:

- Logfiles in network devices
- Camera images (image / time alignment)
- Telecontrol protocols IEC 60870-5-104, DNP3 ... have a time stamp

Only if all devices display the same exact time, a sequence of events can be displayed.

The FL TIMESERVER NTP provides the time to the network via NTP



FL TIMESERVER NTP

Geo-location information

The FL TIMESERVER NTP provides accurate geo-location information (GPS coordinates).
The information can be used to determine the exact location.

Example:

- GPS positioning of e.g. containers, vehicles, buildings...

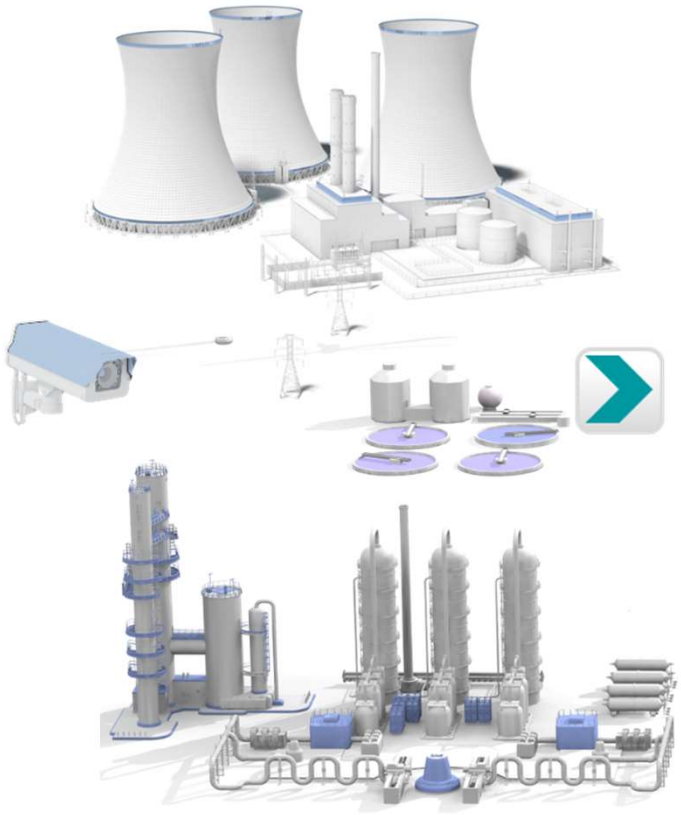
Precise position determination via web-based management, SNMP, NMEA or JSON streaming.

geo-location information

FL TIMESERVER NTP

Applications & target groups

- Energy automation
- Infrastructure
- Water- / Wastewater
- Process & Pipeline
- Camera & Surveillance



FL TIMESERVER NTP

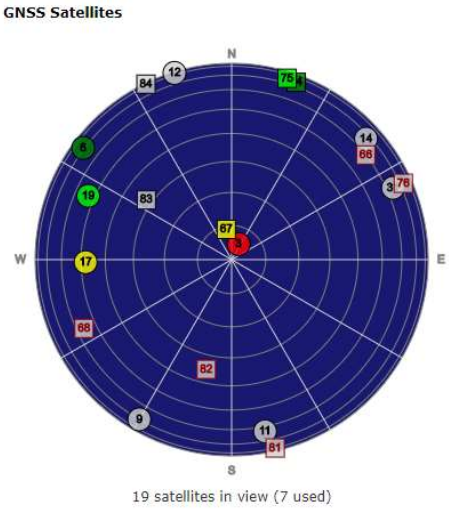
Customer benefit

- Synchronization of Ethernet devices in one network with the same time
- Precise localization (geo-localization information)
- No Internet access necessary for more security

FL TIMESERVER NTP

Satellite

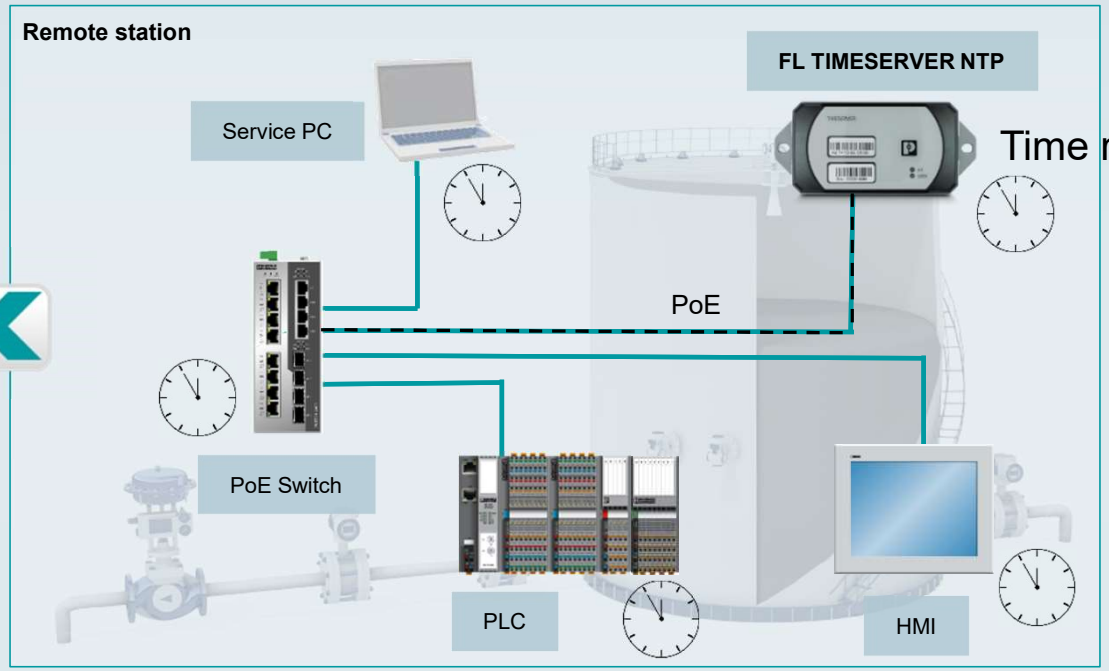
- High availability thanks to a range of different satellite systems
- GNSS (Global Navigation Satellite System) for various satellite such as:
  - GPS (USA)
  - GLONASS (Russian Federation)
  - Galileo (EU)
- Automatic switching between the satellites with integrated antenna



FL TIMESERVER NTP

Time synchronisation

GPS, Galileo
and GLONASS



- Accurate time synchronization of Ethernet devices in a network via NTP protocol
- No Internet access necessary for more security

FL TIMESERVER NTP

Geo-location information

GNSS Position

Please raise a telnet connection to port 2947 for getting raw NMEA information.

Latitude:	51.979499
Longitude:	9.279771
Altitude:	77.00
Location:	Bad Pyrmont, Germany

Map

- Precise position determination via web-based management, SNMP, NMEA or JSON streaming

FL TIMESERVER NTP

Features

- IP67/68 outdoor housing with integrated antenna
- Extended temperature - 40 … + 70°C
- GNSS receiver for GPS, Galileo and GLONASS
- Diagnostic LEDs for power supply and satellite-fix (disengageable)

FL TIMESERVER NTP

Features

- NTP time server for Ethernet networks
- Gigabit Ethernet with **Power over Ethernet** supply
- Alternative external 10 … 30 V DC supply

FL TIMESERVER NTP

Mounting

Fast and easy connection
thanks to single-hole mounting

Product overview

FL TIMESERVER NTP

Mounting

Fast and easy connection
thanks to single-hole mounting
Quick fastening with nut

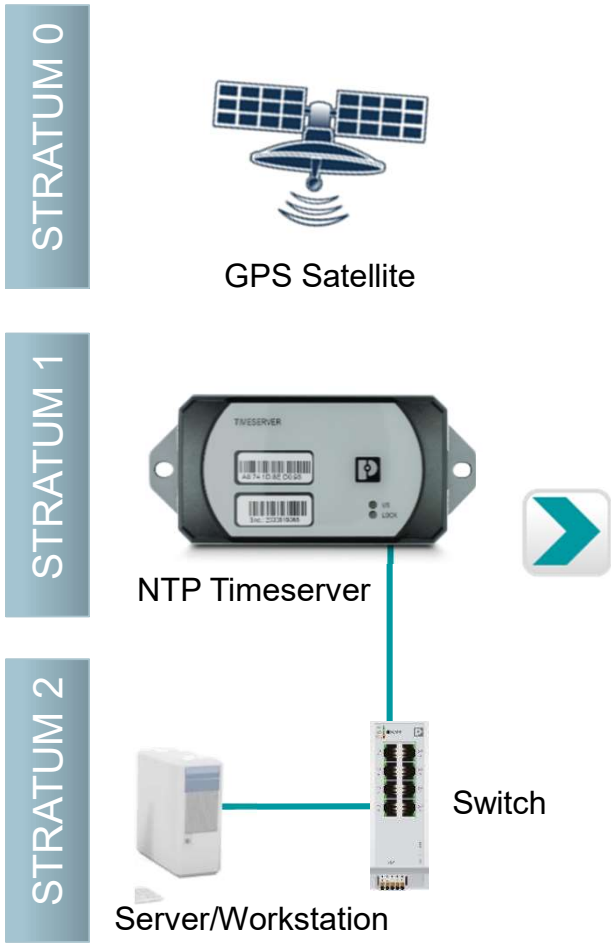
Power supply (Alternatively)
10 to 30 V DC

Gigabit Ethernet with
Power over Ethernet (PoE) supply

FL TIMESERVER NTP

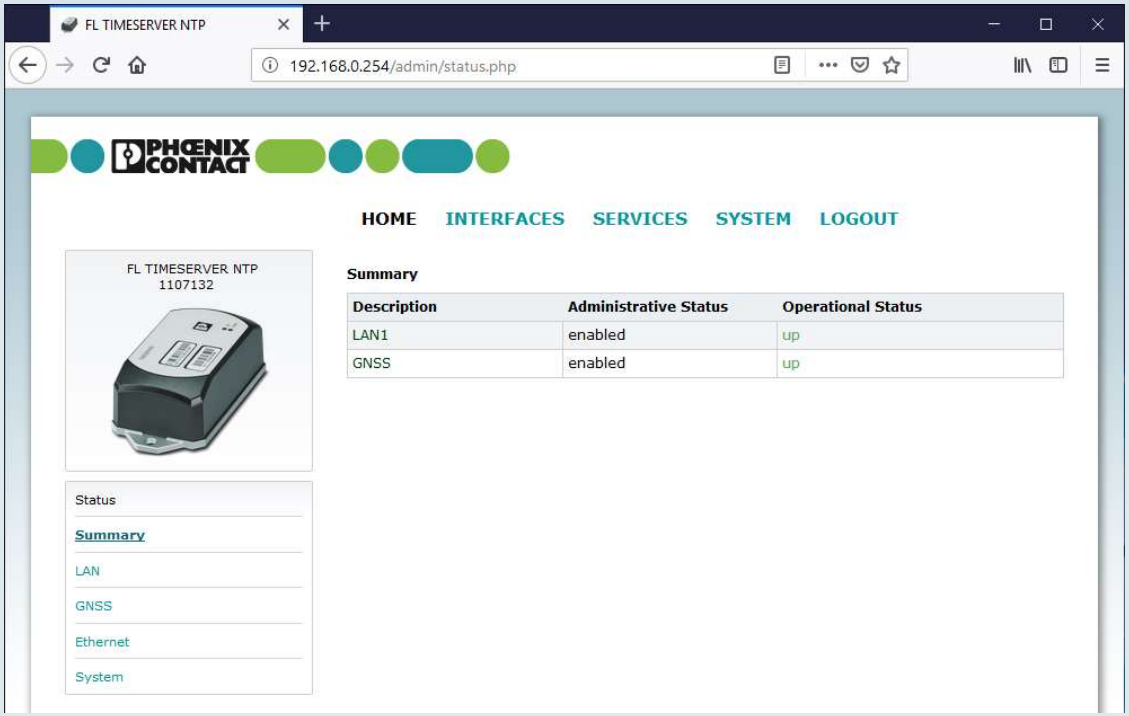
NTP Server

- Network Time Protocol (NTP) is a standard Internet Protocol (IP) for synchronizing the time of computer clocks over a network
- As a server, it makes its own time available to other NTP clients in the network.
- NTP uses a hierarchical architecture
  - Each level in the hierarchy is known as a stratum.
  - Stratum 0: are hardware reference clocks (atomic or GNSS)
  - Stratum 1: NTP servers have a direct connection to a hardware clock



FL TIMESERVER NTP

Start-up / Configuration



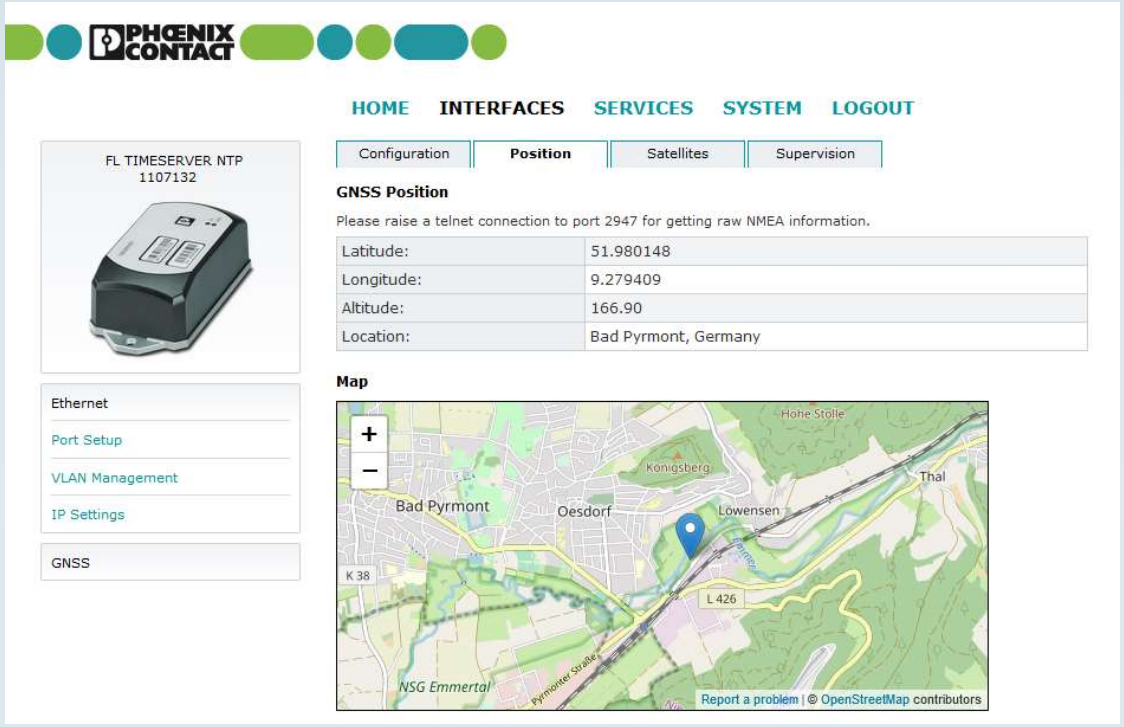
Web Based Management for Configuration and Diagnostic

Default IP parameters
IP address: 192.168.0.254
Subnet mask 255.255.255.0

Welcome Screen with Overview about LAN and GNSS status

FL TIMESERVER NTP

Start-up / Configuration



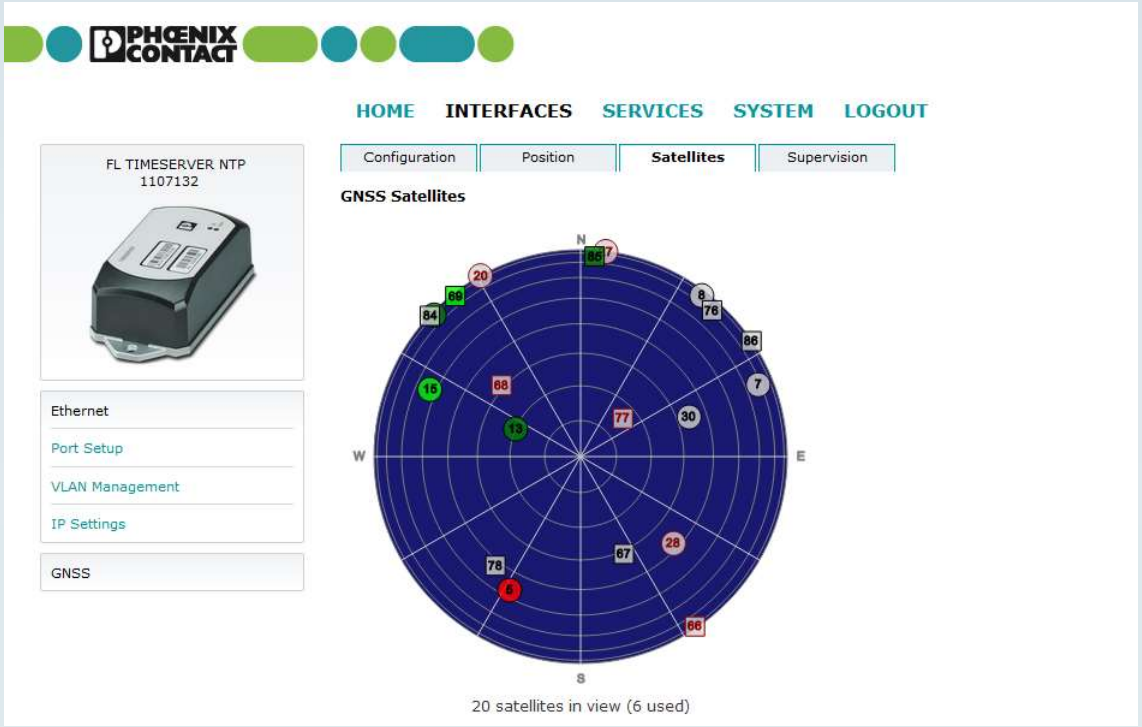
Web Based Management for Configuration and Diagnostic

Geo position is displayed comfortable via Open Street Map (Internet access needed)

Without Internet access only Latitude, Longitude and Altitude is displayed.

FL TIMESERVER NTP

Start-up / Configuration

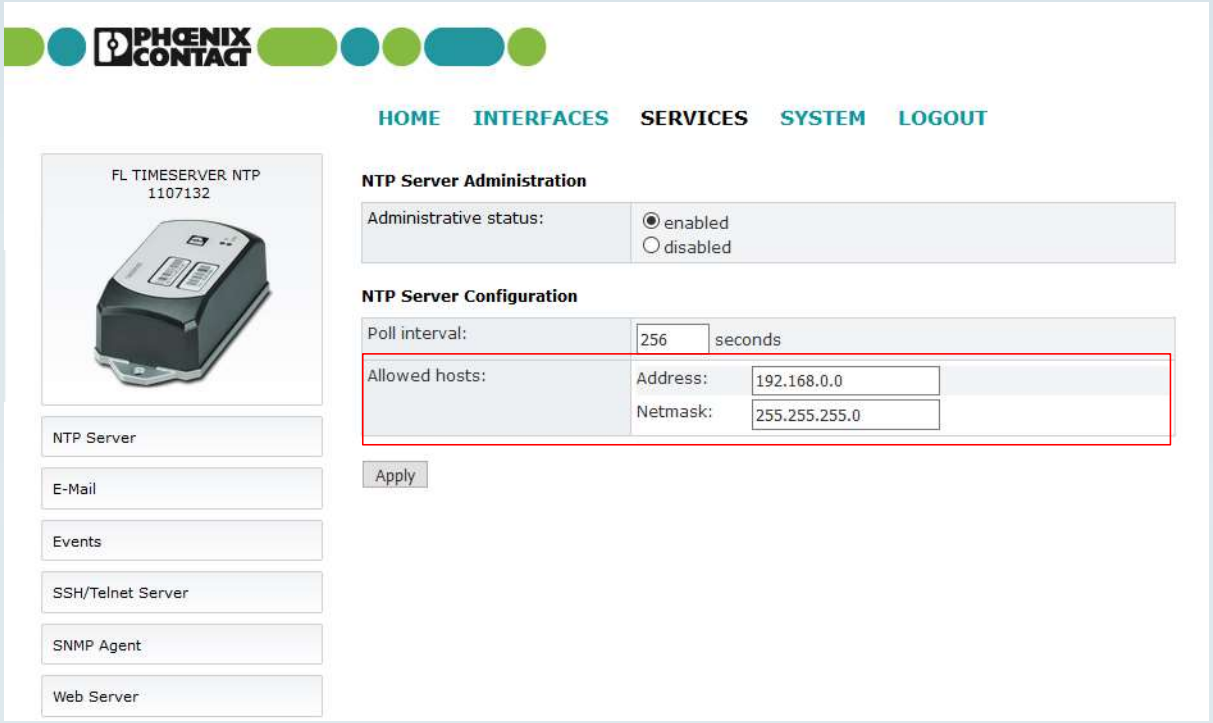


Web Based Management for Configuration and Diagnostic

Easy and comfortable overview about the available GNSS satellites

FL TIMESERVER NTP

Start-up / Configuration



Web Based Management for Configuration and Diagnostic

For requesting the time via NTP, it is important to set up the „Allowed hosts“ and „Netmask“ of NTP Clients in the network!

FL TIMESERVER NTP

Start-up / Configuration

Web Based Management for Configuration and Diagnostic

For requesting the geo-position the NMEA0183 and JSON protocol can used on TCP port 2947

```
$GPGSV,3,1,10,05,35,203,17,07,15,071,20,08,11,030,26,13,80,291,20*74
$GPGSV,3,2,10,15,46,294,44,20,08,328,29,21,08,306,29,24,05,255,31*7E
$GPGSV,3,3,10,28,58,119,16,30,47,071,25*70
$GLGSV,3,1,09,67,47,160,24,68,69,299,,69,20,323,45,76,08,045,25*6F
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$GAGSV,2,1,06,304,50,148,,305,19,307,37,309,68,281,35,315,07,355,*66
$GAGSV,2,2,06,321,11,045,,324,09,214,*64
$GNGLL,5158.77597,N,00916.78496,E,152719.00,A,A*76
```

Product overview

TIMESERVER NTP

	TIMESERVER NTP
Type	FL TIMESERVER NTP
Order number	1107132
Description	NTP timeserver with GNSS receiver

TC Mobile I/O

Smallest remote control or alerting station
4 relay outputs
4 digital & 2 analog inputs

USB port
Configuration via web browser

Alerting at power failure
Sends SMS message

TC Mobile I/O APP

Communication over the mobile network

- Alerting via SMS and E-Mail
- or constant communication with the ODP protocol

Application example

- Switching relay via APP
- Device to Device communication

INSPIRING INNOVATIONS

TC Mobile I/O X200 App

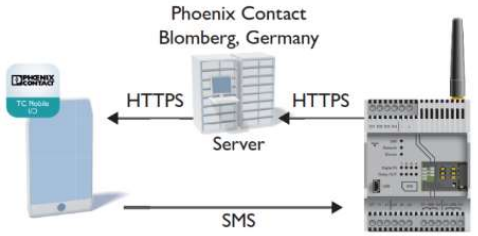
Get the APP on

Google play or Apple Store

iOS

Android

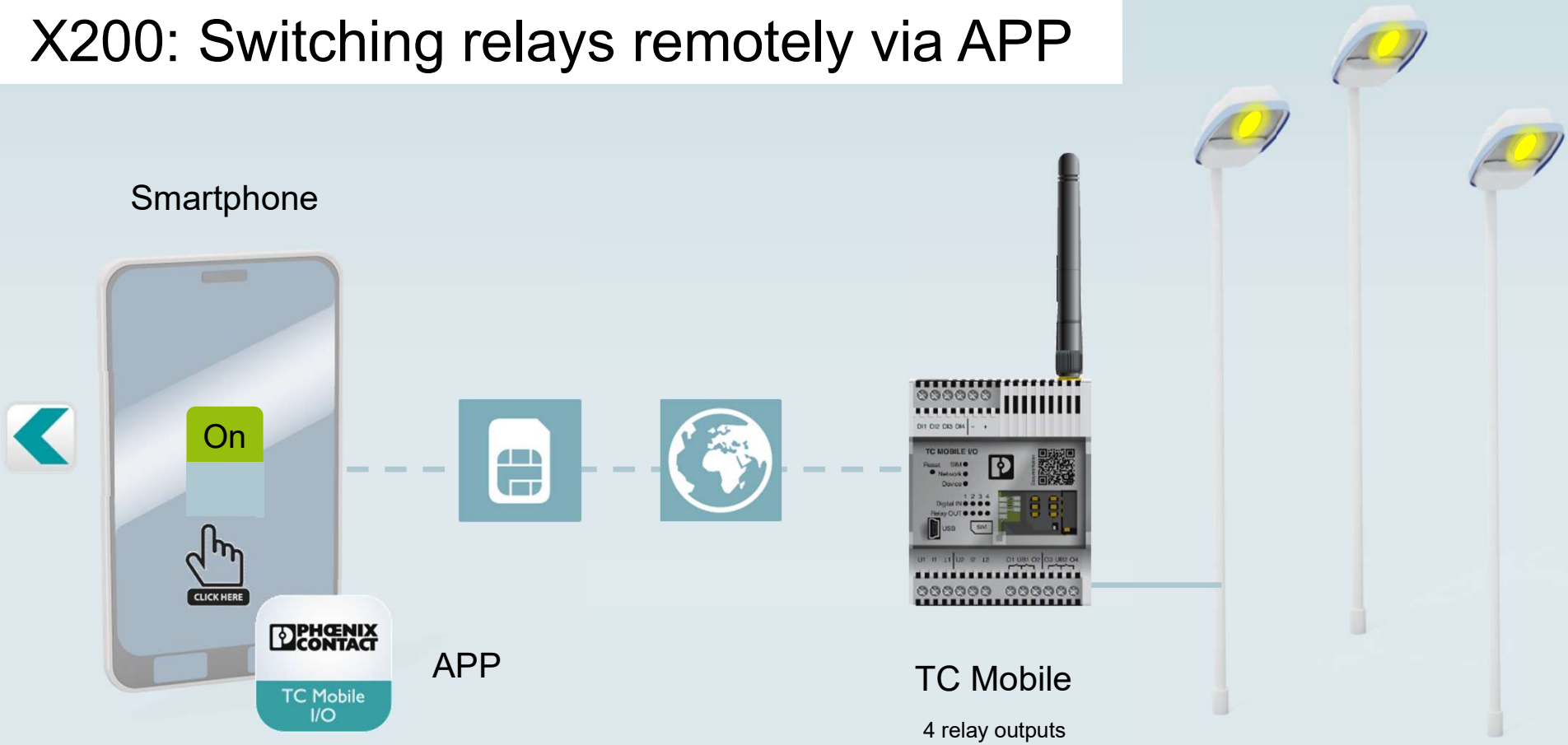
- User-friendly visualization
- Switch outputs on touch
- No SMS typing
- Query the device status automatically or manual
- Full cost control
- Easy to use



Product overview

INSPIRING INNOVATIONS

X200: Switching relays remotely via APP



INSPIRING INNOVATIONS

X200: Switching relays remotely via APP

Smartphone

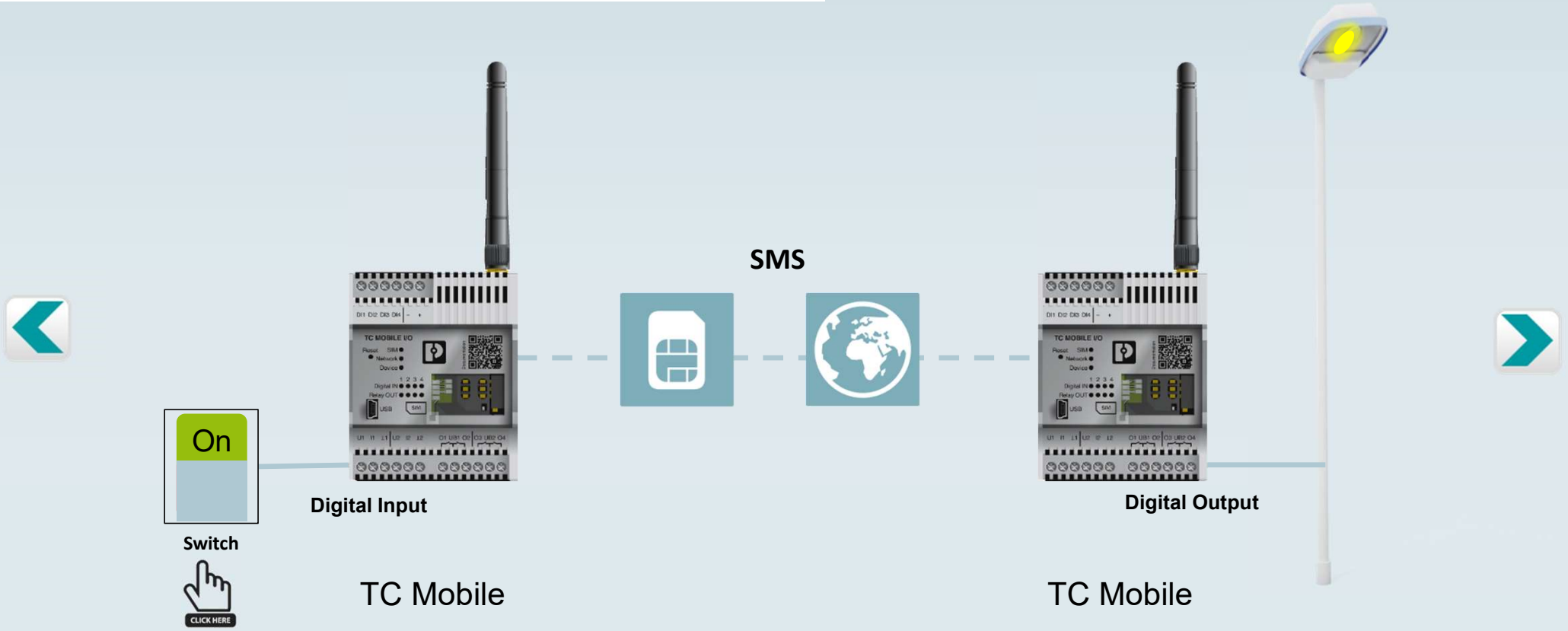
APP

TC Mobile

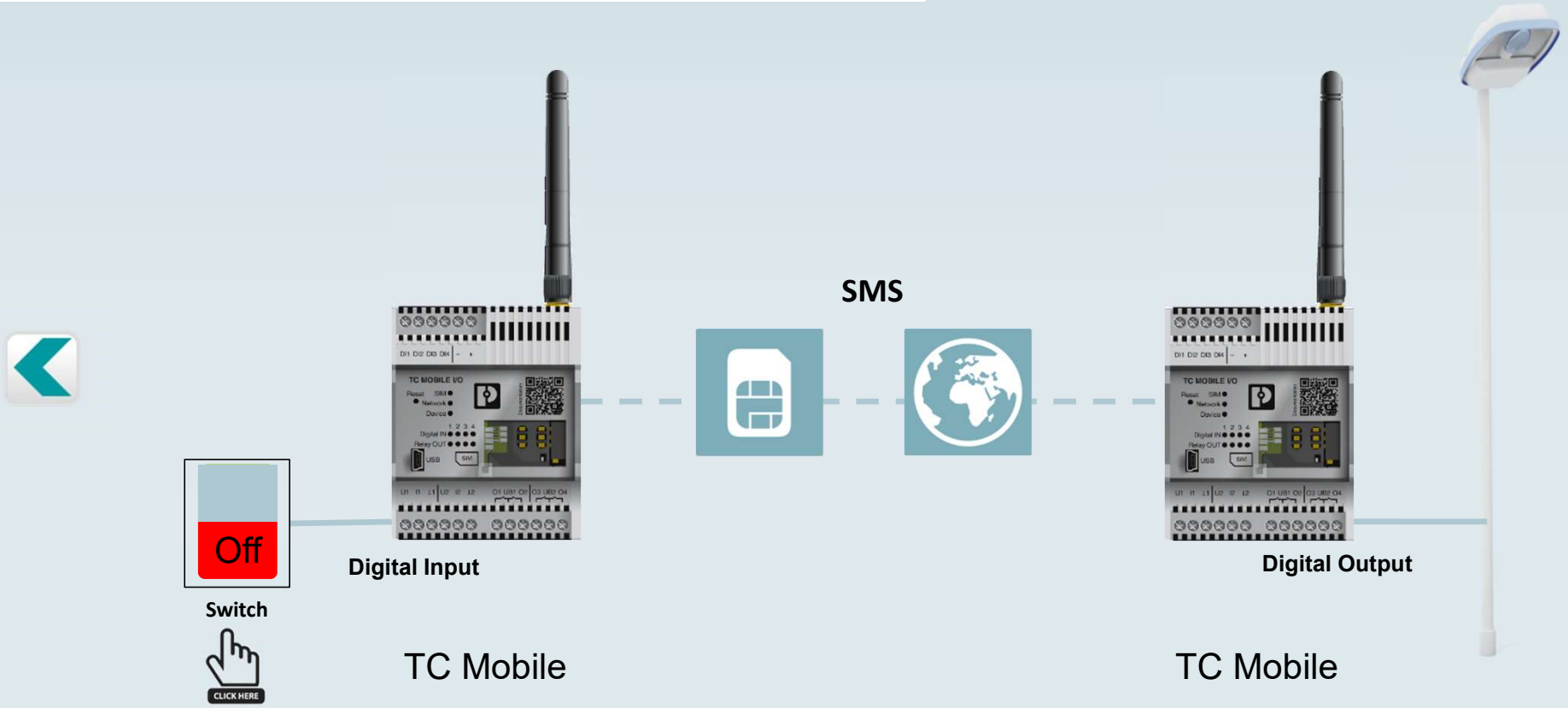
4 relay outputs
4 digital & 2 analog inputs

INSPIRING INNOVATIONS

X200: Switching relays remotely



X200: Switching relays remotely

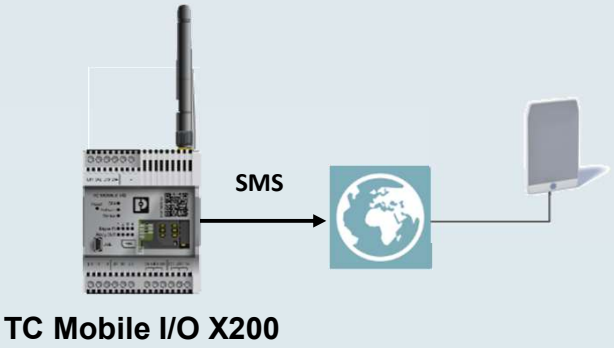


X200: Sending e-mails / SMS

E-mail

- The device can send alarms and cyclical messages by e-mail.
- Also the entire log book can be send as an e-mail.
- E-Mail communication can take place without encryption or with SSL encryption.

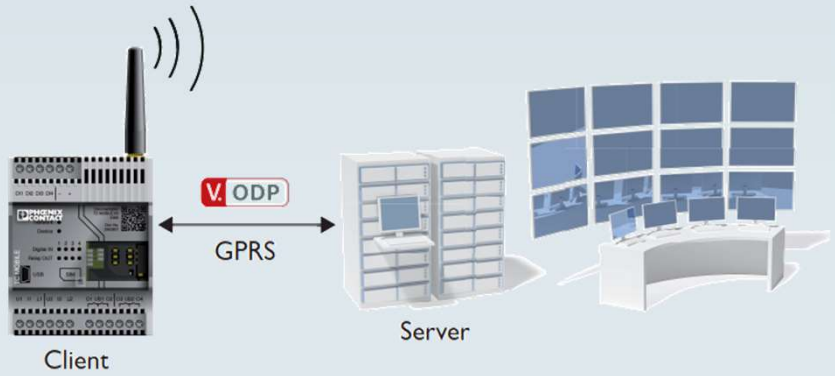
SMS



- The device can send an SMS even without an Internet connection
- Send SMS to individual devices or to device groups
- Switch the integrated relays via SMS messages

- **In the event of a power failure, one last SMS can still be sent to a selected device!**

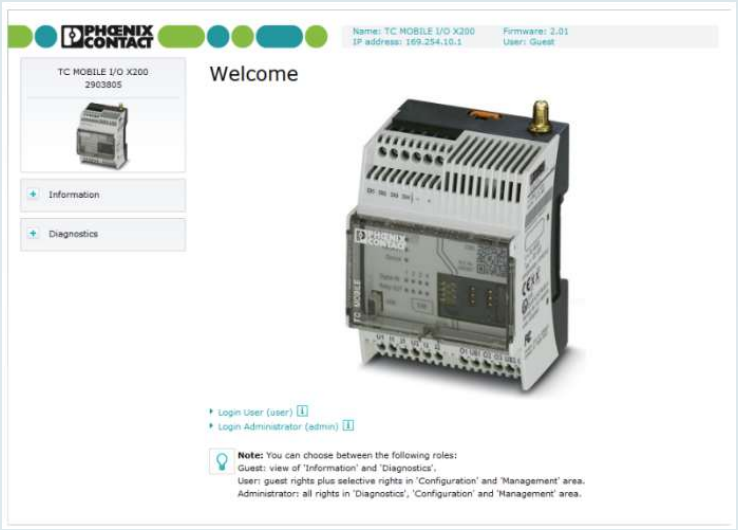
X300: Communication with ODP server



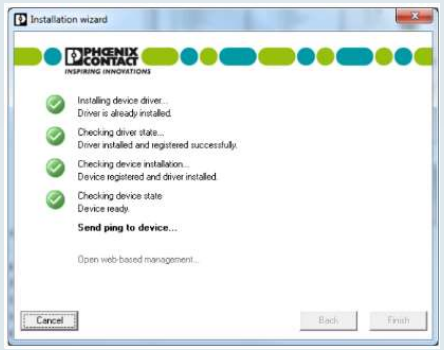
TC Mobile I/O X300

- The device communicates via the ODP protocol (Open Data Port)
- The TC Mobile I/O X300 is an ODP client
- ODP is a solution for remote transmission of data in order to adequately monitor systems transmit the data immediately or with a delay via the GPRS mobile communication service
- The ODP protocol stands for scalable and low data communication. It can therefore reduce the costs of mobile data communication
- Configuration via web browser

Web browser



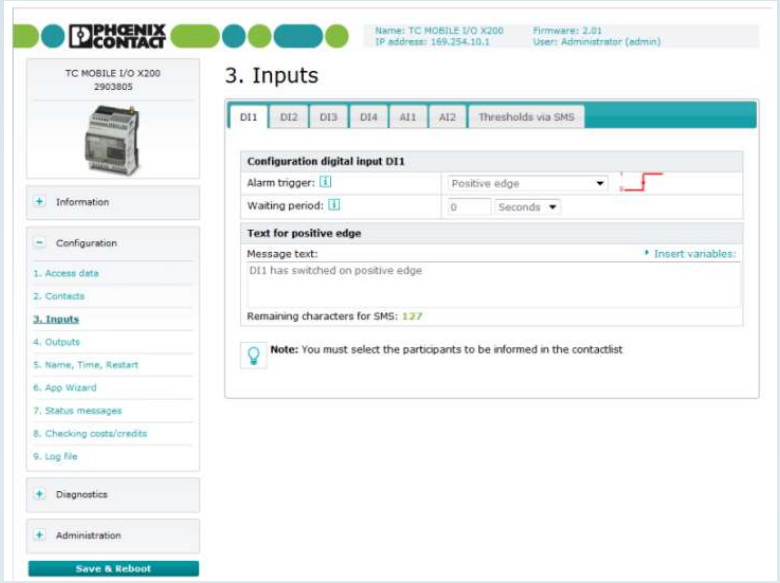
- Connect the devices via USB cable
- An installation wizard will support you during initial startup of the device.
- No additional software is required



PHOENIX CONTACT
INSPIRING INNOVATIONS

Web browser – Digital Input

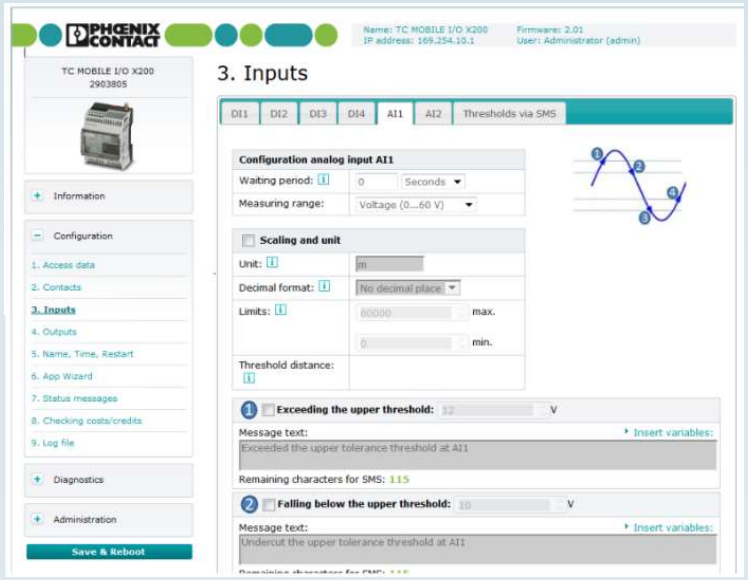
4 digital inputs



Digital Inputs

- 4 digital input channels
- The alarm can be triggered in three ways:
  - For positive edge
  - For negative edge
  - For positive and negative edge
- The alarm can be triggered immediately or after a waiting period of 1 … 999 s/min/h
- Save different message texts for each edge

Web browser – Analog Input



2 analog inputs

Scalable analog inputs (DC device only)

- 2 analog input channels
- The alarm can send up to four messages per analog input
  - Exceeding the upper tolerence
  - Falling below the upper tolerance
  - Exceeding the lower tolerance
  - Falling below the lower tolerance
- Input signal
  - 0 … 20 mA or 4 … 20 mA
  - 0 …. 60 V DC

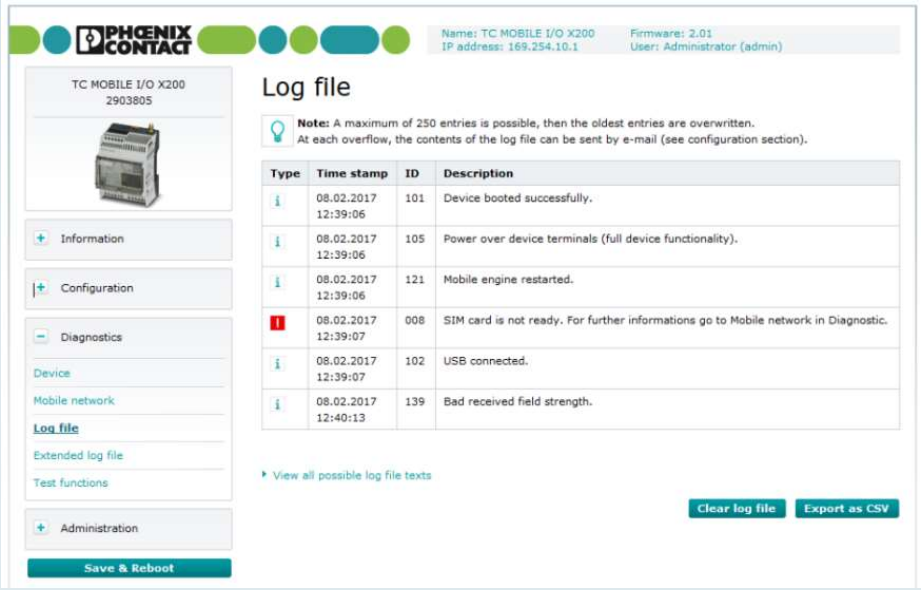
Web browser – Relay Output

4 relay outputs

Relay Outputs

- 4 relay outputs
- Open or close the relays via telephone call or SMS
- One command can also switch several relays at the same time
- For security reason, incoming e-mails are not supported
- If a relay has been closed, it can be opened again automatically after a freely selectable waiting period (1 … 999 s/min/h)
- Send a confirmation SMS to the recipient after a relay is opened or closed

Web browser – Log book



Log book

- Important information about the device is recorded
- The device can send the contend of the log book automatically via e-mail
  - At overflow
  - At regular intervals, e.g. once a week
  - After an incoming SMS
- The content of the log book are not saved in the event of power failure

TC Mobile I/O

	X200-4G	X200-4G AC	X300 DC	X300 AC
	SMS, E-Mail, App	**SMS, E-Mail, App**	**ODP client**	**ODP client**
Mobile radio Interface	**LTE 4G**	**LTE 4G**	**2G**	**2G**
Digital relay inputs	4	4	4	4
Digital relay outputs	4	4	4	4
Analog inputs (0/4…20 mA) (0 … 60V DC)	2	-	2	-
Temperature range	-25°C .. +70°C	-25°C .. +70°C	-25°C .. +70°C	-25°C .. +70°C
Supply voltage	10 V DC … 60 V DC	**93 V AC…250 V AC**	10 V DC … 60 V DC	**93 V AC…250 V AC**
Order number	1038567	1038568	2903807	2903808

TC Router

Europe / USA Version

verizon

AT&T

4G LTE Router

Europe Version!

new

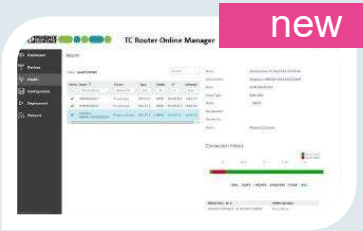
4G LTE Router

new

4G LTE Router with WLAN

Software

new



TC Router Online Manager (TOM)

Central device and network management for TC Router

PHOENIX CONTACT
INSPIRING INNOVATIONS

TC Router – 3002T-4G

Integrated logbook

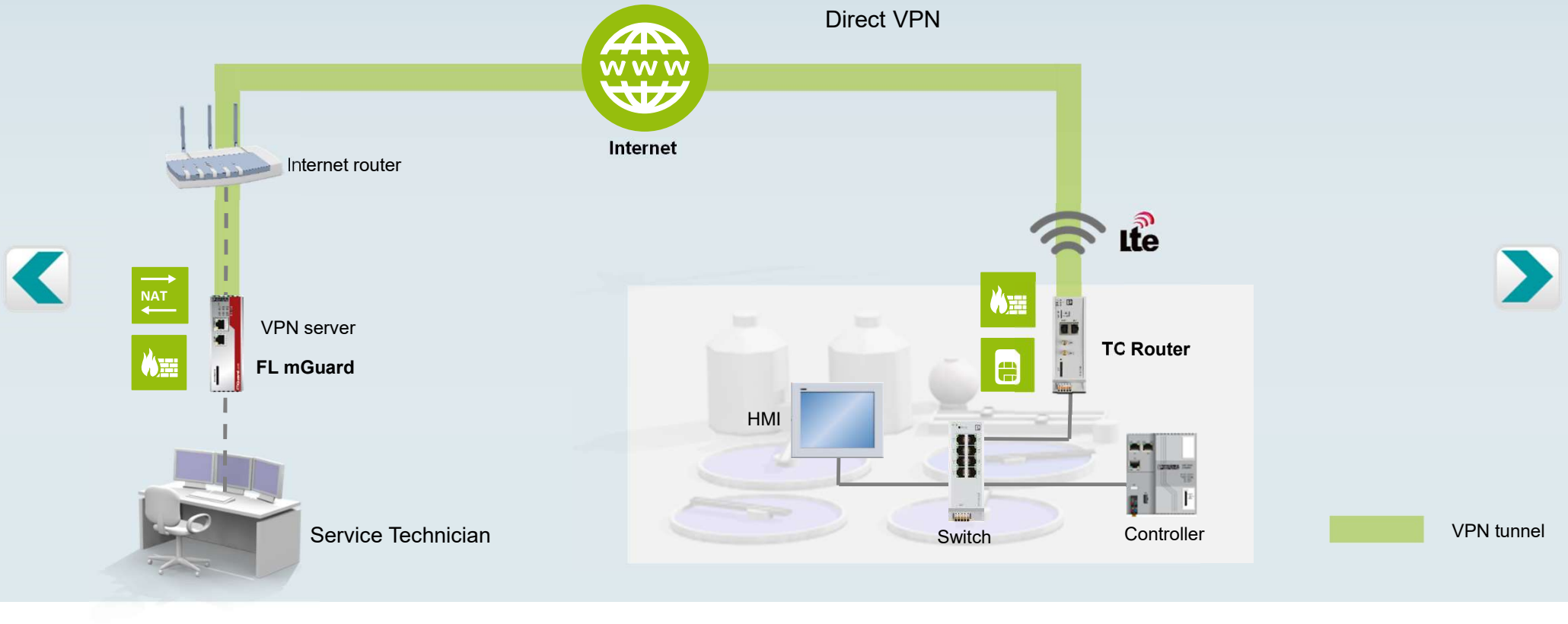
Configuration via web-based management or microSD card

Two local Ethernet connections

4G mobile router
Fallback to 3G (UMTS/HSPA) and 2G (GPRS/EDGE)

- Mobile high speed data links up to 150 Mbit/s via 4G LTE networks
- IPsec and OpenVPN
- Up to three VPN tunnels simultaneously
- VPN remote start via call or SMS
- Stateful inspection firewall for dynamic filtering

TC Router – 3002T-4G



PHOENIX CONTACT
INSPIRING INNOVATIONS

TC Router – 3002T-4G

Status LEDs
for instant diagnostic

MIMO antennas
for best signal reception

Micro SD Slot
to load configuration

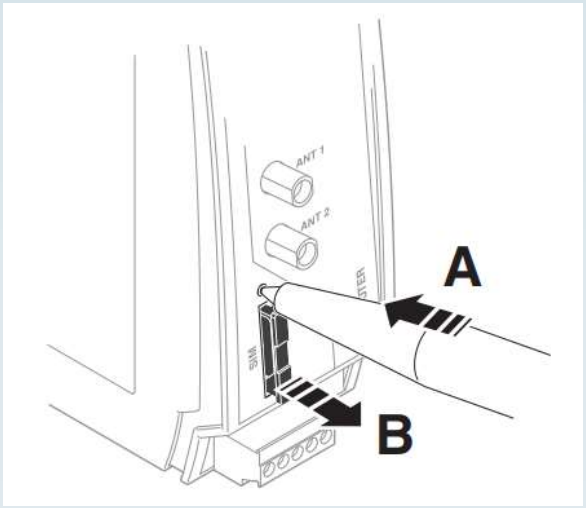
Two local Ethernet connections

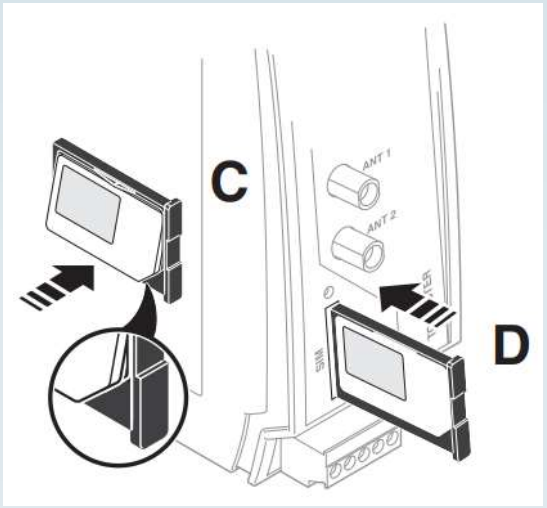
SIM slot for rugged industrial mini SIM card

Switching inputs and outputs

Energy Saving Mode
Deactivation of the communication interfaces for max. energy saving

SIM card





Remove the SIM card holder, inside the SIM card

SIM slot for rugged industrial mini SIM card

PHOENIX CONTACT
INSPIRING INNOVATIONS

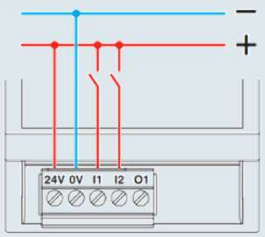
Switching inputs and outputs

Two configurable **switching inputs** for following functions:

- SMS can be sent, even to multiple recipients
- E-Mail can be sent, even to multiple recipients
- Controlling an Output at a remote station via SMS
- Restart the router
- Start or stop a mobile data connection
- Switching the Ipsec or OpenVPN connection
- Automatically loading a configuration from a microSD card
- Activating energy-saving mode

One configurable **switching output**, activated by

- Activation by the input at a remote station
- SMS
- Web-based management
- Incoming call
- Connection abort
- Status of the mobile network connection, mobile data link and VPN connection



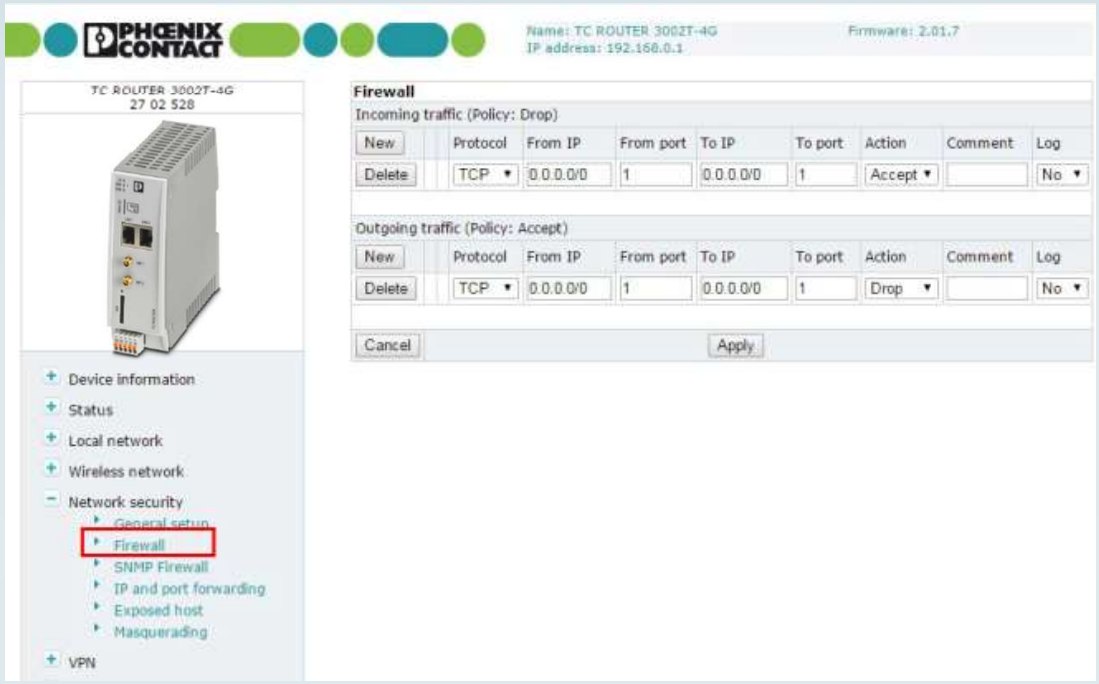
Switching inputs and outputs

Configuration via web-based management

The router is configured via web-based management

- Device information
- Status
- Local network
- Wireless network
- Network security
- VPN
- I/O
- System

Firewall



- The device includes a stateful inspection firewall
- The device supports a maximum of 32 rules for incoming data traffic and 32 rules for outgoing data traffic
- SNMP firewall to restrict SNMP access
- IP and port forwarding
- Exposed host (server setup)
- Masquerading

VPN

Requirements for a VPN connection

- The IP addresses of the VPN partners are known and can be accessed
- The device supports up to three Ipsec connections and up to two OpenVPN connections.

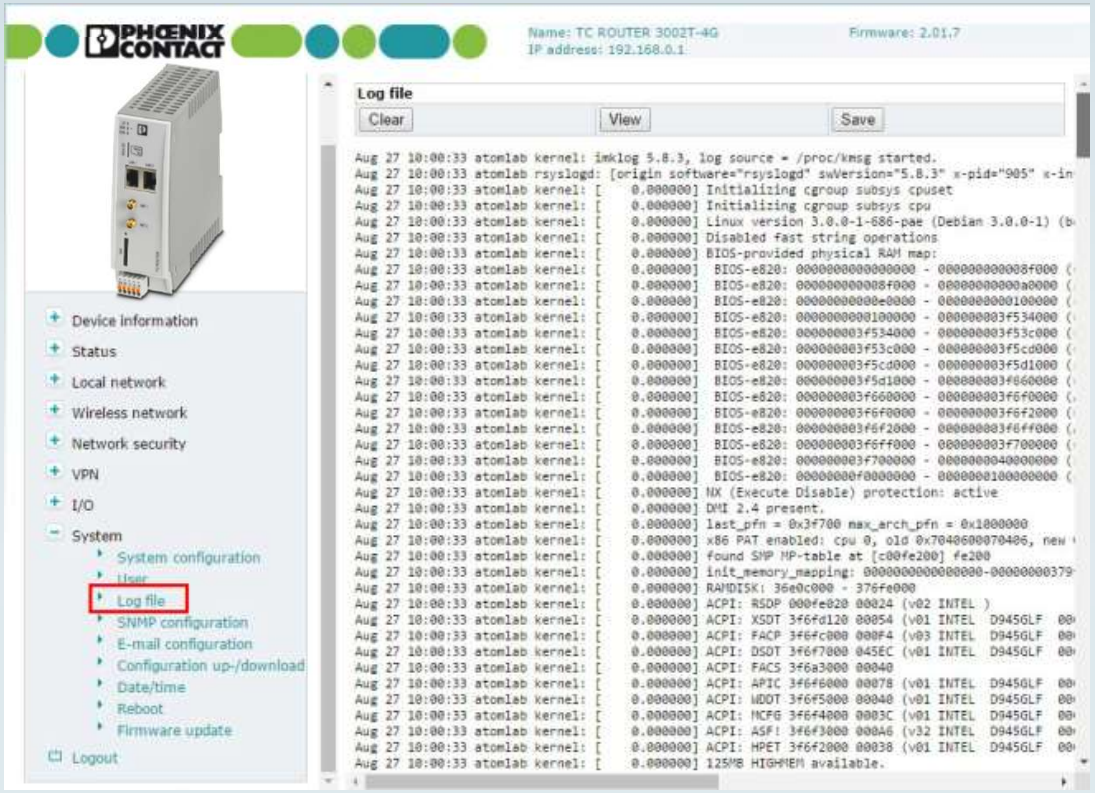
In order to successfully establish an **IPsec connection**, the VPN partner must support IPsec with the following configuration:

- Authentication via X.509 certificate or pre-shared secret key (PSK)
- Diffie-Hellman group 2 or 5
- 3DES or AES encryption
- MD5 or SHA-1 hash algorithms
- Tunnel mode
- Quick mode
- Main mode
- SA lifetime (one second to 24 hours)

The following functions are supported for **OpenVPN** connections:

- OpenVPN client
- TUN device
- Authentication via X.509 certificate or pre shared secret key (PSK)
- Static key
- TCP and UDP transmission protocol
- Keep Alive

Log file



- The router log file can be used to diagnose various events operating states
- The log file is a form of circulating storage where the oldest entries are overwritten first (FIFO)

TC Router 4102T-4G EU WLAN

new

- ✓ Internet access on moving machines or locations without a wired internet connection, thanks to 4G-LTE mobile communications
- ✓ Wireless network access, thanks to an integrated WLAN access point
- ✓ More reliability by using multiple mobile networks thanks to dual SIM (micro-SIM and eSIM) and wired WAN access
- ✓ Low energy consumption thanks to an efficient energy-saving mode
- ✓ Direct connection of legacy devices thanks to integrated RS-232/RS-485 interface

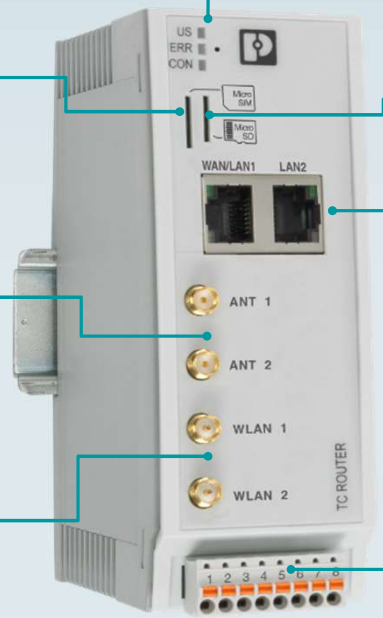
TC Router 4102T-4G EU WLAN

new

Status LEDs for instant diagnostic

Micro-SIM and **eSIM** with up to 10 different profiles

Micro SD Slot to load configuration



Adjustable **LAN/WAN** port (Fallback or redundency)

4G LTE connections up to 150 mbps, fallback to 3G and 2G

WLAN (WiFi 4) Access Point up to 150 mbps, 2,4 GHz or 5 GHz, IEEE 802.11a/b/g/n, MIMO

Switching **inputs** and **outputs**

- VPN support (IPsec and OpenVPN) as client and server
- Extended operating temperature range -40°C … 70°C

TC Router 4102T-4G EU WLAN

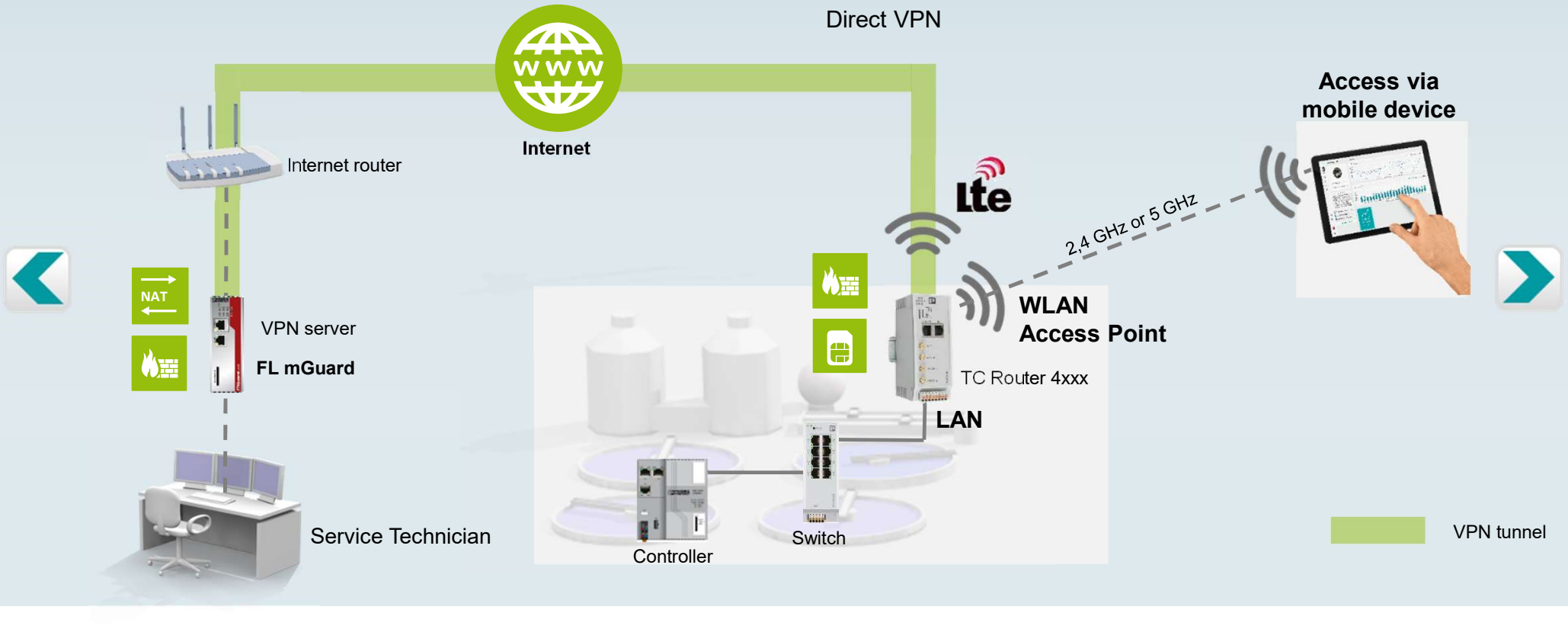
new

- WLAN Client or Access Point, 2,4 GHz or 5 GHz, Bridged or routed
- Energy saving mode
  - PMIC controlled energy saving mode
  - Calendar / timer or input
- TOM (TC ROUTER Online Manager) support
  - Diagnostics, management and mass rollout
- SNMP MIB, VLAN, XML, L2TP, GRE, PPTP, MQTT Broker,…

TC Router 4102T-4G EU WLAN

new

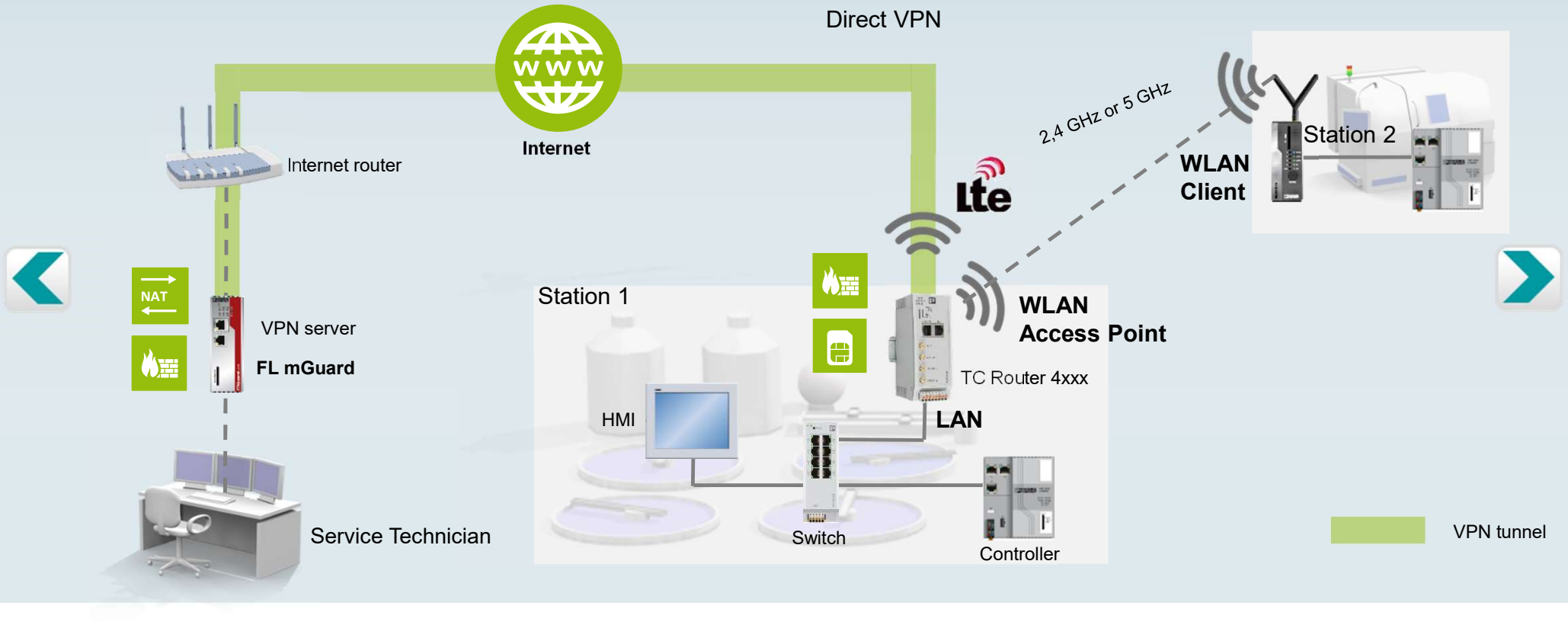
Application example: LAN and WLAN Access Point



TC Router 4102T-4G EU WLAN

new

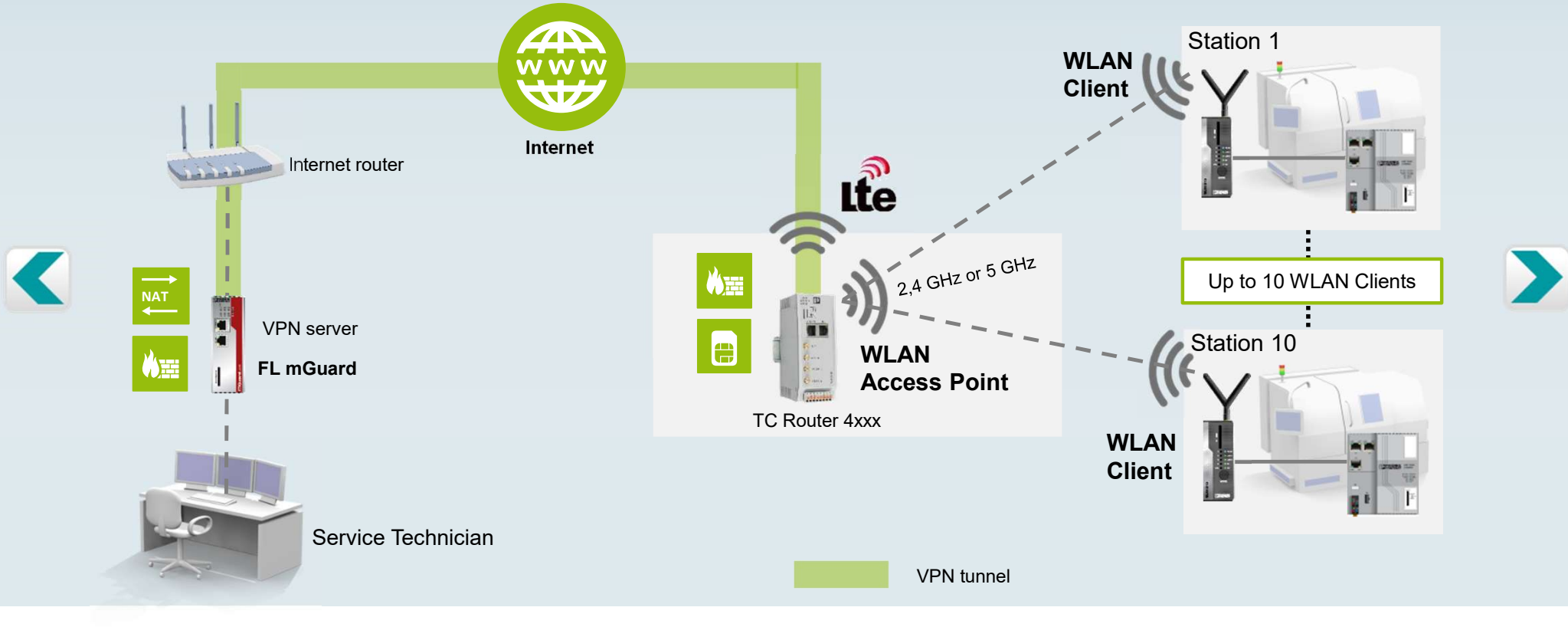
Application example: LAN and WLAN Access Point



TC Router 4102T-4G EU WLAN

new

Application example: WLAN Access Point



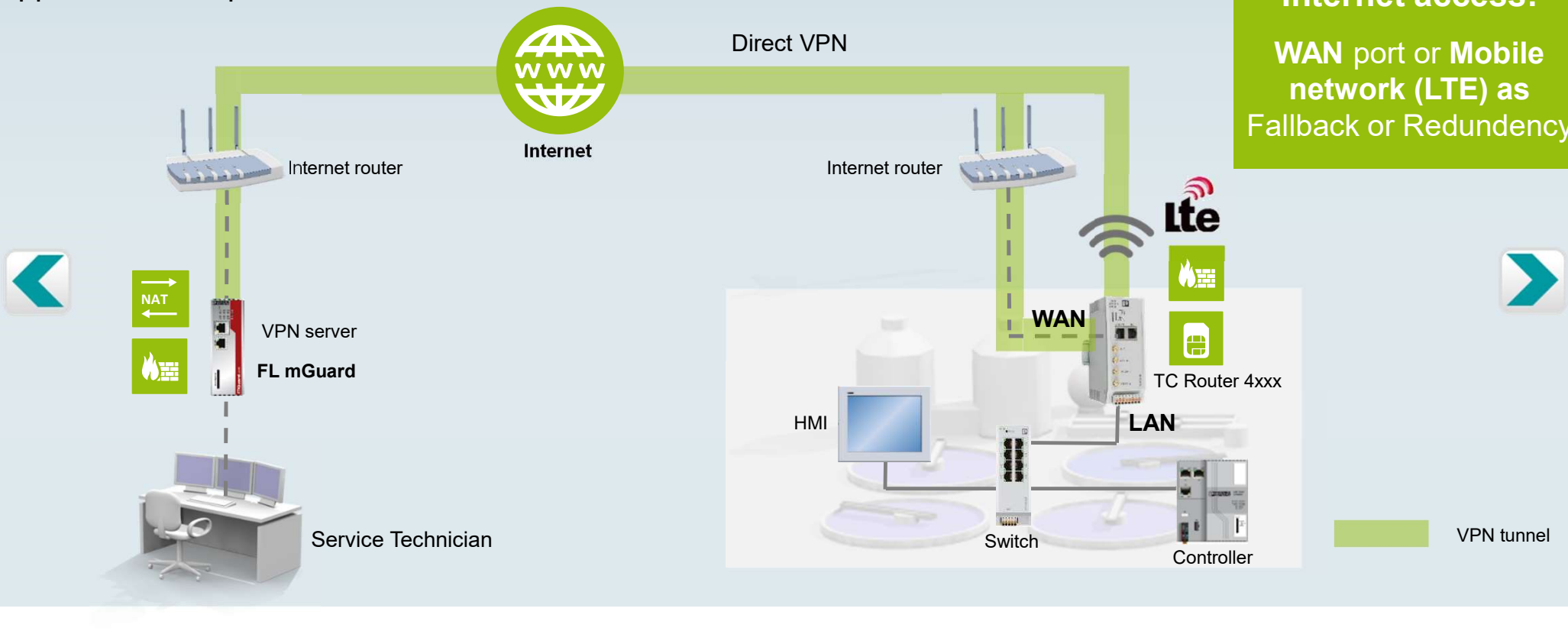
TC Router 4102T-4G EU WLAN

new

Application example: WAN or mobile Internet access

Internet access:

WAN port or **Mobile network (LTE) as** Fallback or Redundancy



TC Router



	TC ROUTER 3002T-4G	TC ROUTER 2002T-4G	TC ROUTER 3002T-4G VZN	TC ROUTER 3002T-4G ATT	TC ANT MOBILE WALL 5M
Function	Industrial 4G router European version	Industrial 4G router European version	Industrial 4G router **USA** For communication in **Verizon** Wireless mobile network	Industrial 4G router **USA** For communication in **AT&T** Wireless mobile network	Multiband mobile phone antenna with mounting bracket for outdoor installation, 5m antenna cable (SMA)
Transmission speed	150 Mbit/s LTE Downlink	150 Mbit/s LTE Downlink	150 Mbit/s LTE Downlink	150 Mbit/s LTE Downlink	
Switching inputs and outputs	2 digital Inputs, 1 digital output	2 digital Inputs, 1 digital output	2 digital Inputs, 1 digital output	2 digital Inputs, 1 digital output	
General	Firewall, NAT, **IPsec, OpenVPN** SMS and e-mail transmission	Firewall, NAT SMS and e-mail transmission	Firewall, NAT, **IPsec, OpenVPN** SMS and e-mail transmission	Firewall, NAT, **IPsec**, **OpenVPN** SMS and e-mail transmission	
Order number	2702528	2702530	2702532	2702533	2702273

PHOENIX CONTACT
INSPIRING INNOVATIONS

TC Router

new

new

new

	TC ROUTER 4002T-4G EU	TC ROUTER 4102T-4G EU WLAN	TC ROUTER 4202T-4G EU WLAN	TC ANT MOBILE WALL 5M	RAD-ISM-2400-ANT-OMNI-2-1-RSMA
Function	4G-LTE Router with 2 Ethernet-ports, 4 DI & 2 DO	4G-LTE Router with 2 Ethernet-ports, 4 DI & 2 DO and WLAN	4G-LTE Router with 2 Ethernet-ports, 2 DI, 1 DO, RS-232/485 and WLAN	Multiband cellular antenna with mounting bracket for outdoor installation, 5m antenna cable (SMA) More solutions available.	2,4 GHz WLAN antenna with mounting bracket for outdoor installation, 1,5m antenna cable (RSMA) More solutions available.
Mobile radio Interface / Interfaces	4G (Fallback 3G or 2G) EU market	4G (Fallback 3G or 2G) WLAN Client & Access Point EU market	4G (Fallback 3G or 2G) WLAN Client & Access Point RS232/485, EU market		
Transmission speed	150 Mbit/s LTE Downlink 50 Mbit/s Upload	150 Mbit/s LTE Downlink 50 Mbit/s Upload	150 Mbit/s LTE Downlink 50 Mbit/s Upload		
Switching inputs and outputs	4 digital Inputs, 2 digital output	4 digital Inputs, 2 digital output	2 digital Inputs, 1 digital output and RS-232 or RS-485		
Order number	1234352	1234353	1234354	2702273	2701362

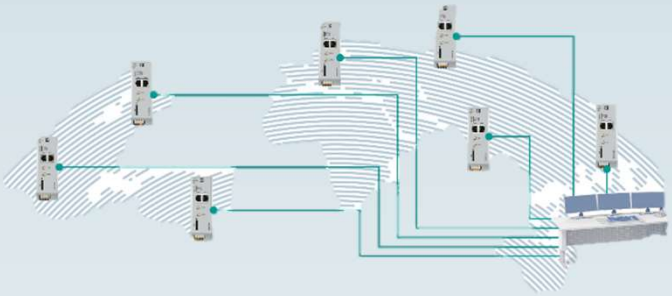
PHOENIX CONTACT
INSPIRING INNOVATIONS

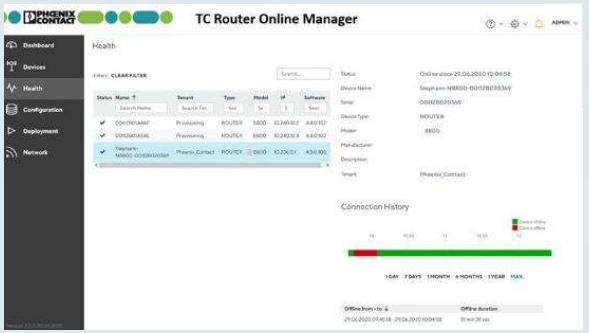
TOM (TC Router Online Manager)

new

Central device and network management for TC Router

- TOM enables automated regular maintenance cycles for all devices of the TC Router family from Phoenix Contact.
- Security updates, current firmware versions and configuration changes can be transmitted to all devices worldwide as a mass rollout in defined time windows.
- This web-based management platform also documents the device status, i.e. the online connection of all TC Routers over several years.
- The TC Router Online Manager can be operated locally (on premise) or in a cloud.
- Depending on the hardware performance, between 250 and 22500 routers can be managed.





TOM (TC Router Online Manager)

new

On-premise

- Data center or Personal Computer
- Linux
- Operating system:
  Ubuntu 16.04 Server or 18.04 Server
- CPU: 2 cores with 2.5 GHz each
- RAM: 16 GB
- Disk space: 120 GB
- Must be accessible from the Internet

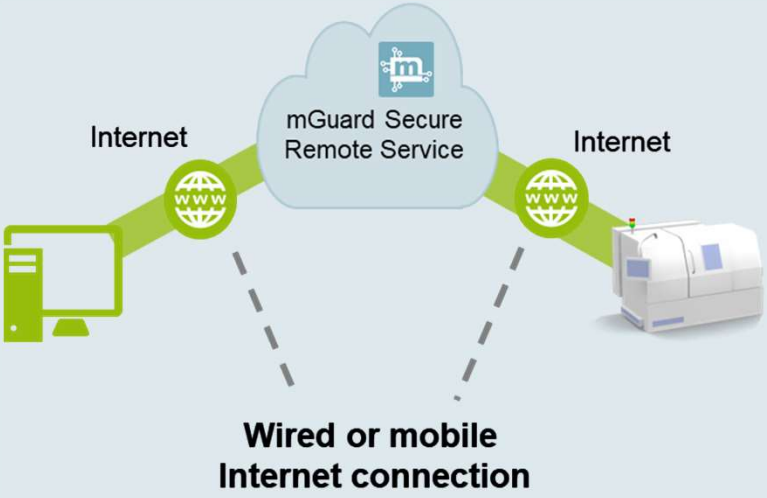
Cloud

Tested on Amazon Web Services

aws

CLOUD CLIENT’s

The CLOUD CLIENT... are industrial VPN gateways, that connect your machines securely via the Internet to the mGuard Secure Cloud.



new

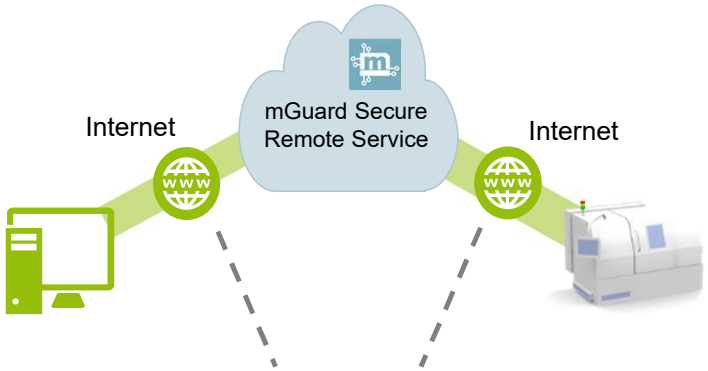
CLOUD CLIENT’s

Only for "simple"
Remote maintenance

Direct integration into
existing networks

- Secure transparent communication channel over the Internet with the mGuard Secure Cloud
- Turnkey VPN solution
- No IT know-how necessary
- Simple commissioning through configuration wizard

Cloud VPN communication

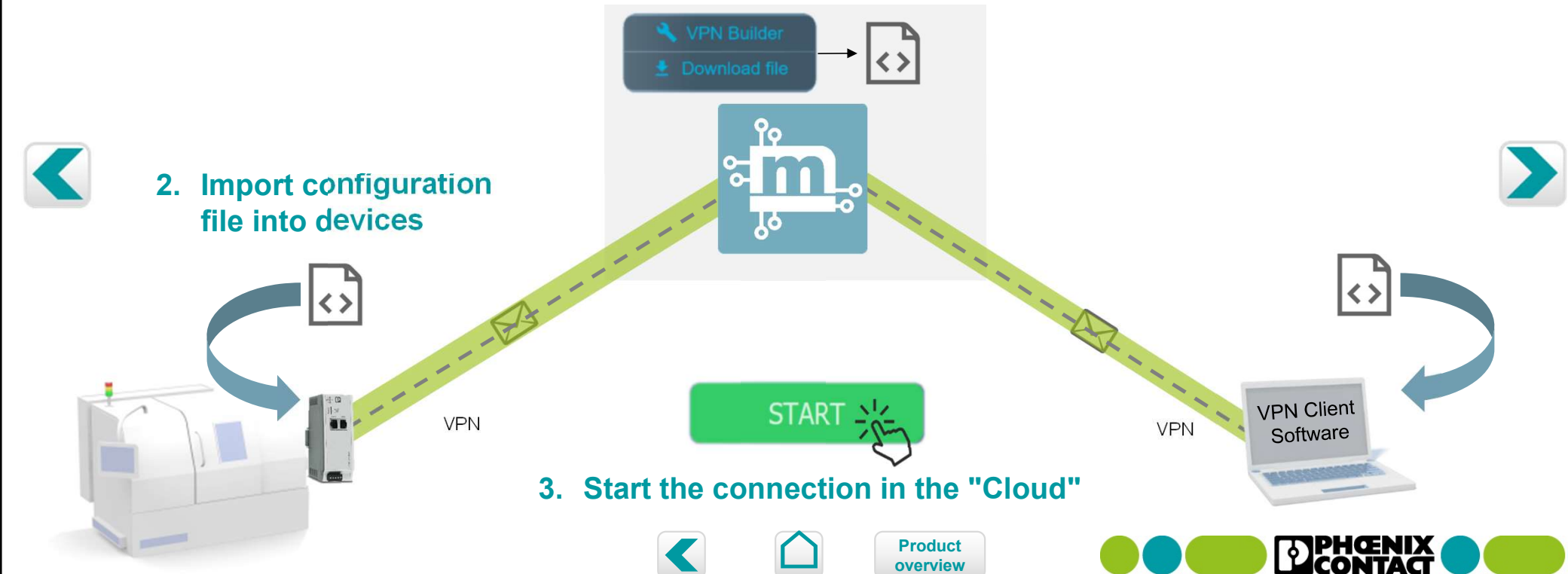


Secure transparent communication channel between the field device and the service technician, over the Internet and the mGuard Secure Cloud

Cloud Client

Cloud – Configuration in 3 steps

1. Create configuration file for devices

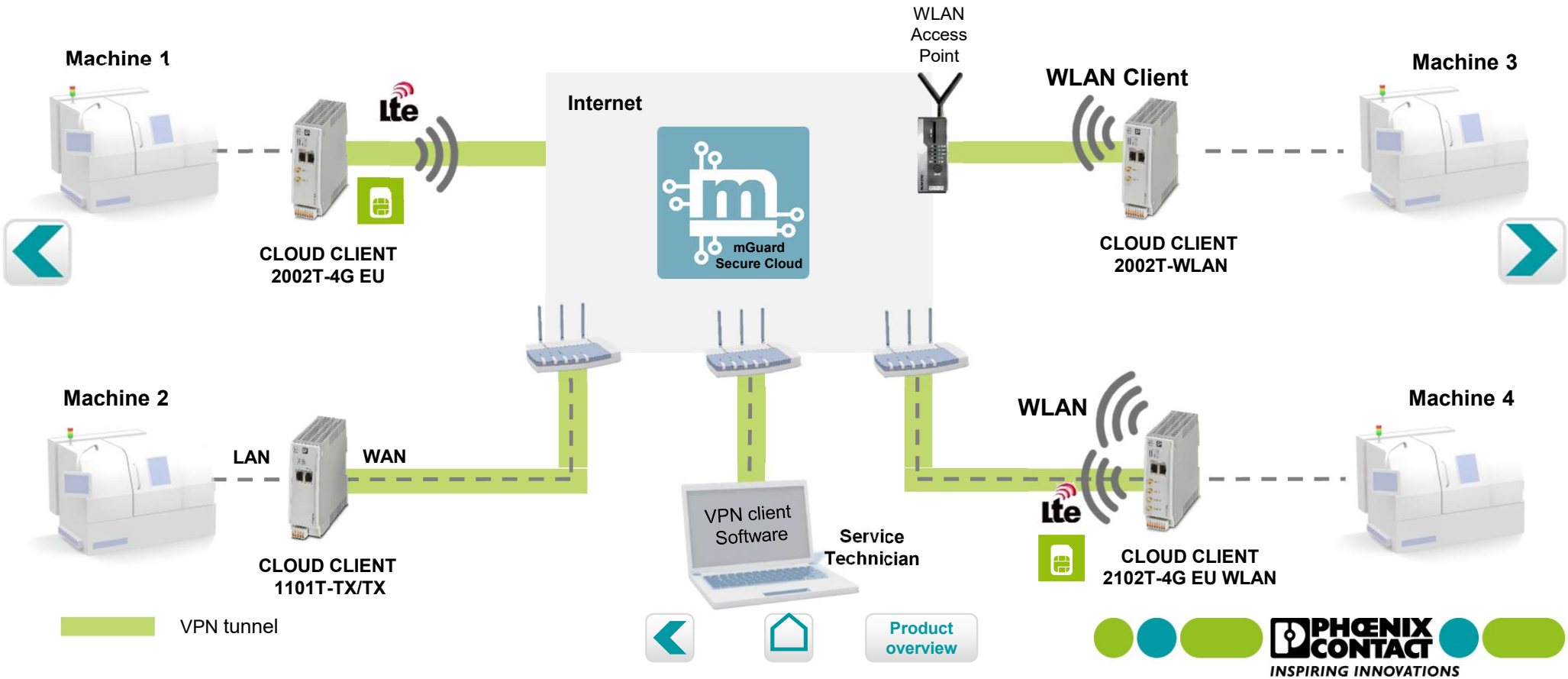


Product overview

INSPIRING INNOVATIONS

Cloud Clients

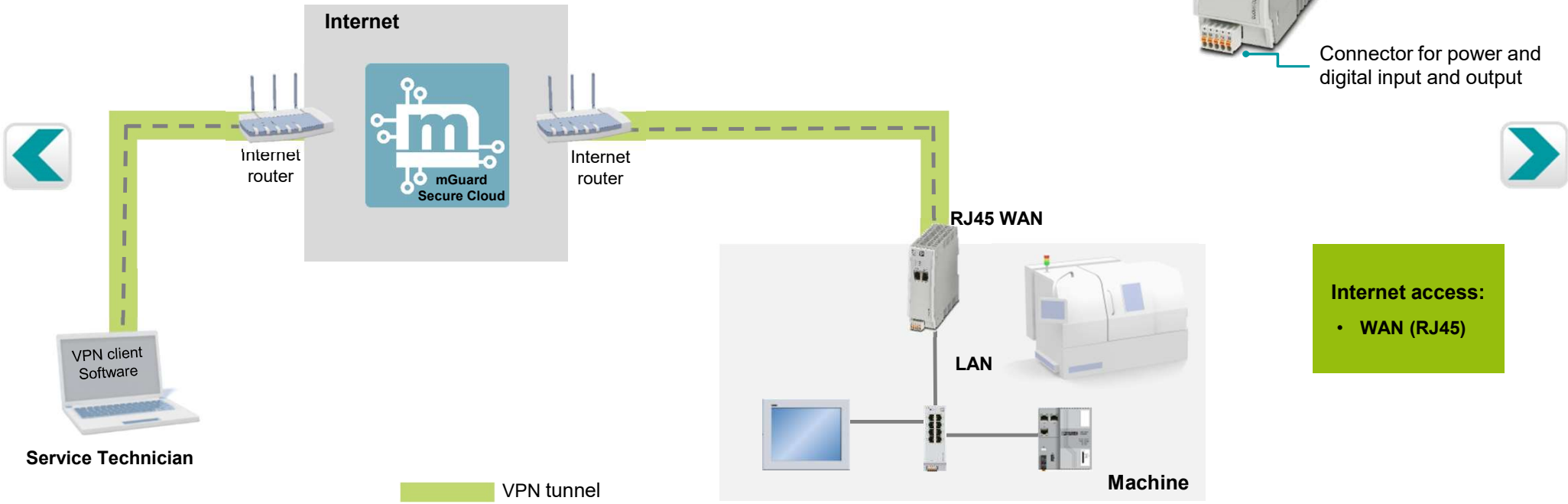
4 variants



Products

CLOUD CLIENT 1101-TX/TX

new



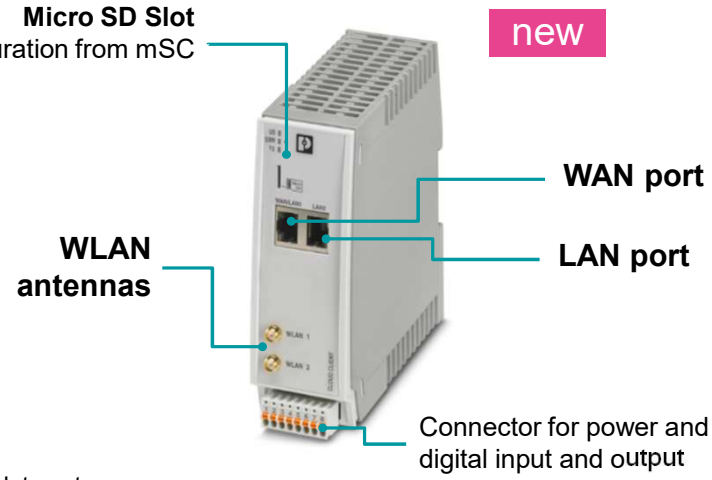
Internet access:

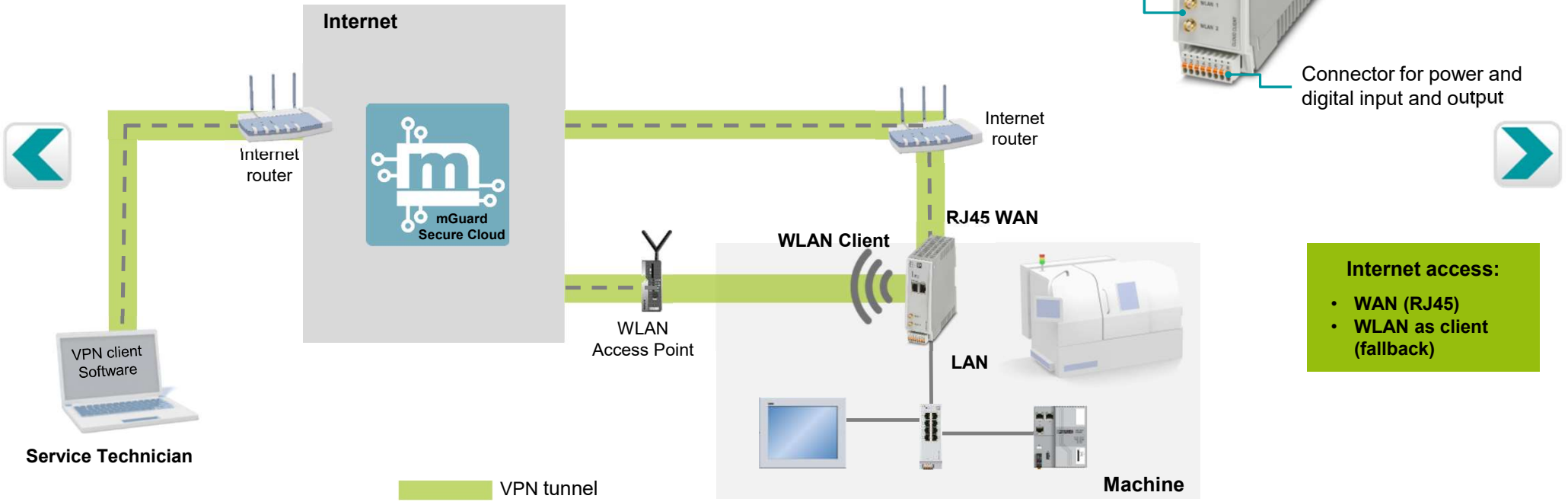
- **WAN (RJ45)**

PHOENIX CONTACT
INSPIRING INNOVATIONS

Products

CLOUD CLIENT 2002T-WLAN





Internet access:

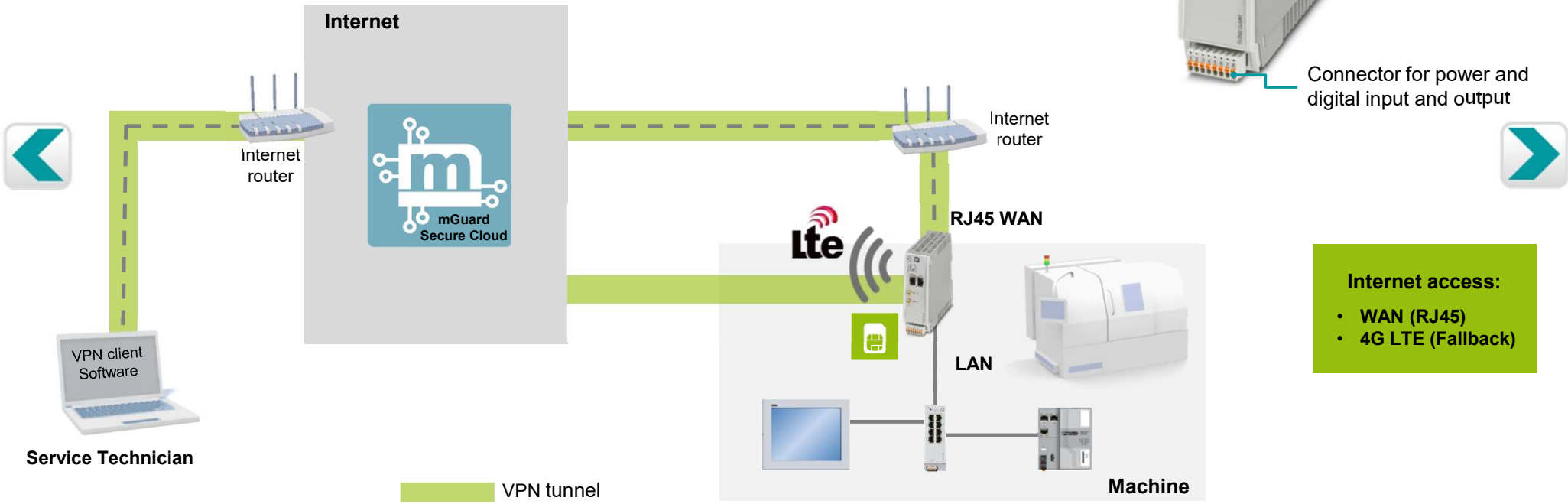
- **WAN (RJ45)**
- **WLAN as client (fallback)**

PHOENIX CONTACT
INSPIRING INNOVATIONS

Products

CLOUD CLIENT 2002T-4G EU

new



Internet access:

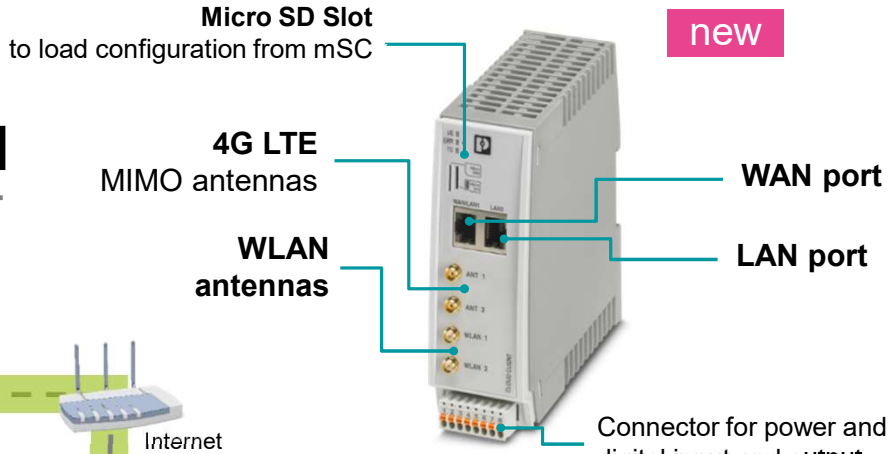
- **WAN (RJ45)**
- **4G LTE (Fallback)**

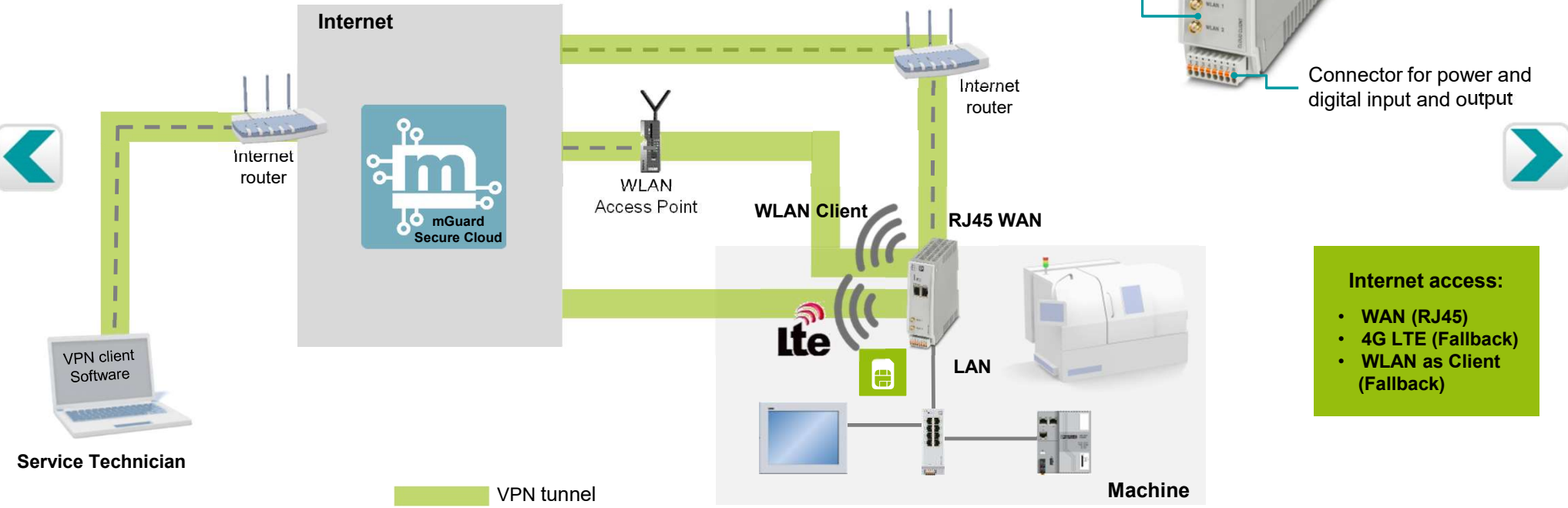
Product overview

PHOENIX CONTACT
INSPIRING INNOVATIONS

Products

CLOUD CLIENT 2102T-4G EU WLAN





Internet access:

- **WAN (RJ45)**
- **4G LTE (Fallback)**
- **WLAN as Client (Fallback)**

PHOENIX CONTACT
INSPIRING INNOVATIONS

Cloud Client

	CLOUD CLIENT 1101-TX/TX	CLOUD CLIENT 2002T-4G EU	CLOUD CLIENT 2002T-WLAN	CLOUD CLIENT 2102T-4G EU WLAN
Transmission medium	Ethernet WAN	4G LTE Ethernet WAN	WiFi (WLAN) Ethernet WAN	4G LTE WiFi (WLAN) Ethernet WAN
Description	VPN-Router for mGuard Secure Cloud via WAN (successor of CC 1002-TX/TX)	VPN-Router for mGuard Secure Cloud via 4G or WAN	VPN-Router for mGuard Secure Cloud via WLAN or WAN	VPN-Router for mGuard Secure Cloud via 4G, WLAN or WAN
Configuration	**Device configuration in mGuard Secure Cloud, simplified Web-Interface**			
Firewall	Easy to use firewall w/ predfined rules			
VPN Tunnel	1 IPsec VPN tunnel to the mGuard Secure Cloud			
Order number	1221706	1234355	1234360	1234357

PHOENIX CONTACT
INSPIRING INNOVATIONS

Cloud Client

	TC CLOUD CLIENT 1002-4G VZW	TC CLOUD CLIENT 1002-4G ATT
Transmission medium	4G LTE Verizon, US	4G LTE AT&T, US
Description	Industrial VPN gateway for mGuard Secure Cloud, cloud communication via 4G LTE, Verizon (US)	Industrial VPN gateway for mGuard Secure Cloud, cloud communication via 4G LTE, AT&T (US)
Configuration	**Device configuration in mGuard secure cloud, simplified Web-Interface**	
Firewall	No	No
VPN Tunnel	1 VPN tunnel to the mGuard Secure cloud	
Order number	2702887	2702888

PHOENIX CONTACT
INSPIRING INNOVATIONS

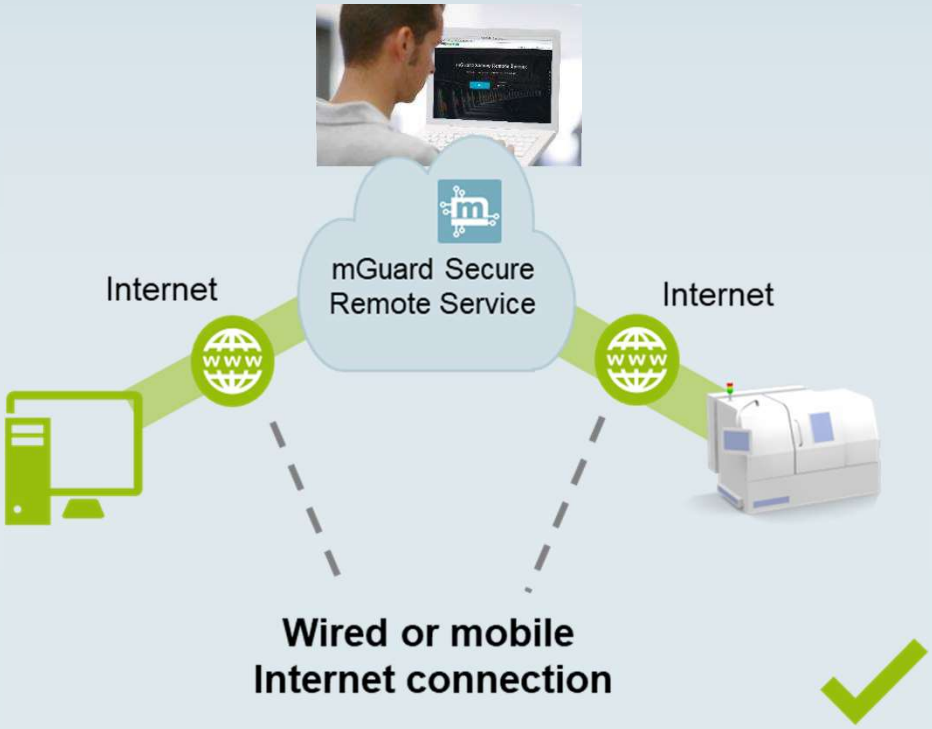
TC mGuard




	TC MGUARD RS4000 3G VPN	TC MGUARD RS2000 3G VPN	TC MGUARD RS4000 4G VPN	TC MGUARD RS2000 4G VPN
VPN tunnel optionally expandable	Up to 10 parallel (Up to 250 with additional license)	2 parallel	Up to 10 parallel (Up to 250 with additional license)	2 parallel
Firewall	Intelligent firewall	2-click firewall	Intelligent firewall	2-click firewall
Integrated switch	4-Port managed	4-Port managed	4-Port managed	4-Port managed
Special features	WAN, GPS reciever, 2 SIM card slots, NAT/1:1 NAT	GPS reciever, 2 SIM card slots, NAT/1:1 NAT	WAN, GPS reciever, 2 SIM card slots, NAT/1:1 NAT	GPS reciever, 2 SIM card slots, NAT/1:1 NAT
Mobile interface	3G	3G	4G	4G
Order number	2903440	2903441	2903586	2903588

PHOENIX CONTACT
INSPIRING INNOVATIONS

mGuard Secure Cloud



Phoenix's mGuard Secure Cloud offers operators and machine builders a highly secure, web-based method for instant remote services to any machine and production plant within a client's network.

The mGuard Secure Cloud is a professionally hosted, turnkey remote-services ecosystem for both the machine builder and the plant operator

https://de.cloud.mguard.com/

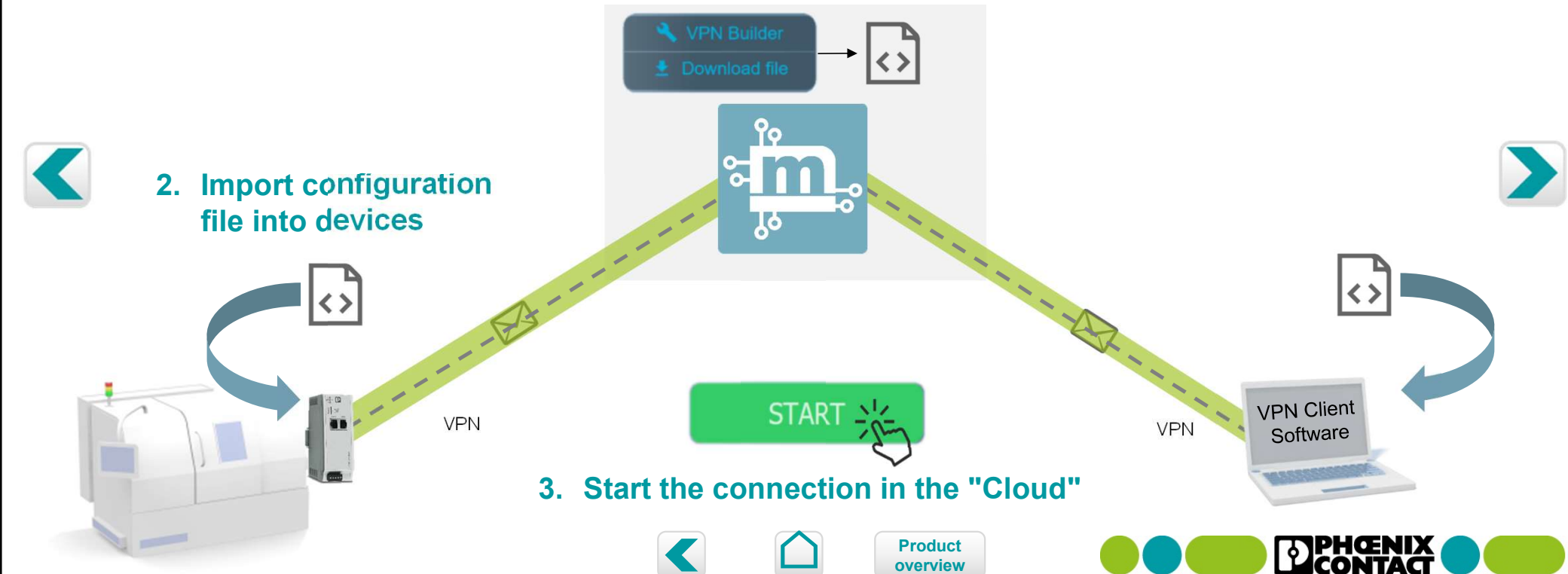
Link to Website

PHOENIX CONTACT
INSPIRING INNOVATIONS

Cloud Client

Cloud – Configuration in 3 steps

1. Create configuration file for devices

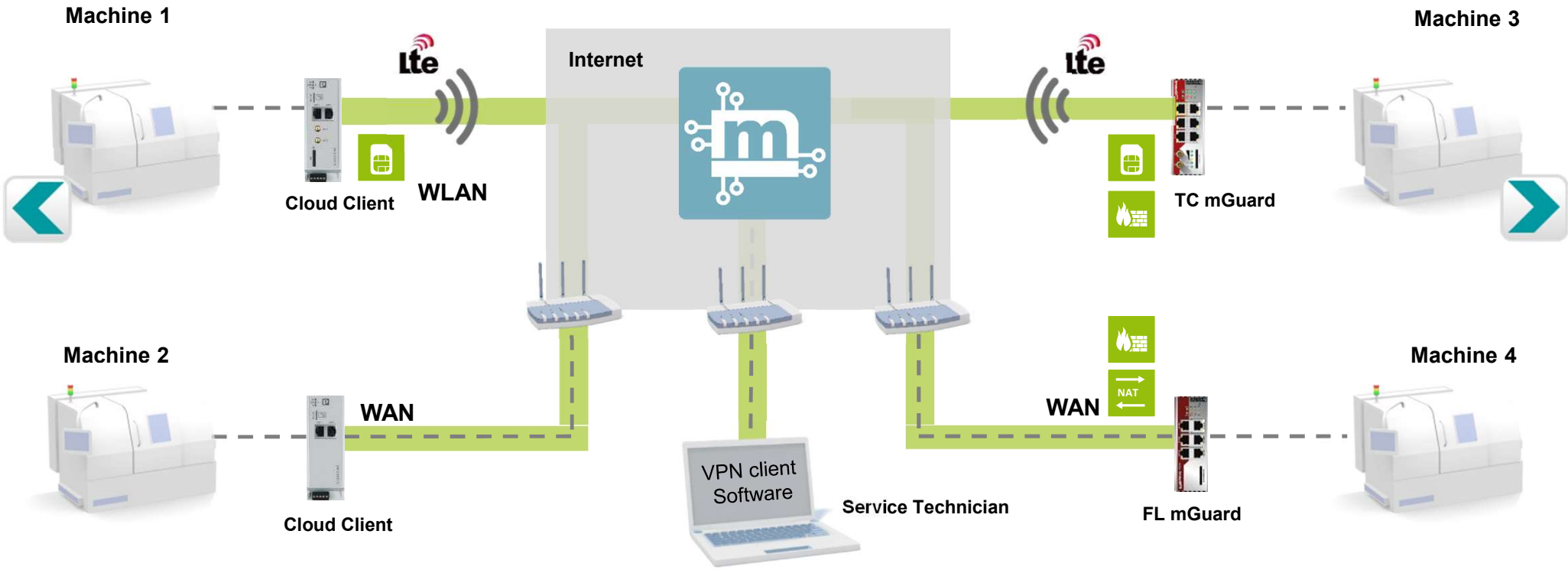


Product overview

INSPIRING INNOVATIONS

How can a remote maintenance concept look like?

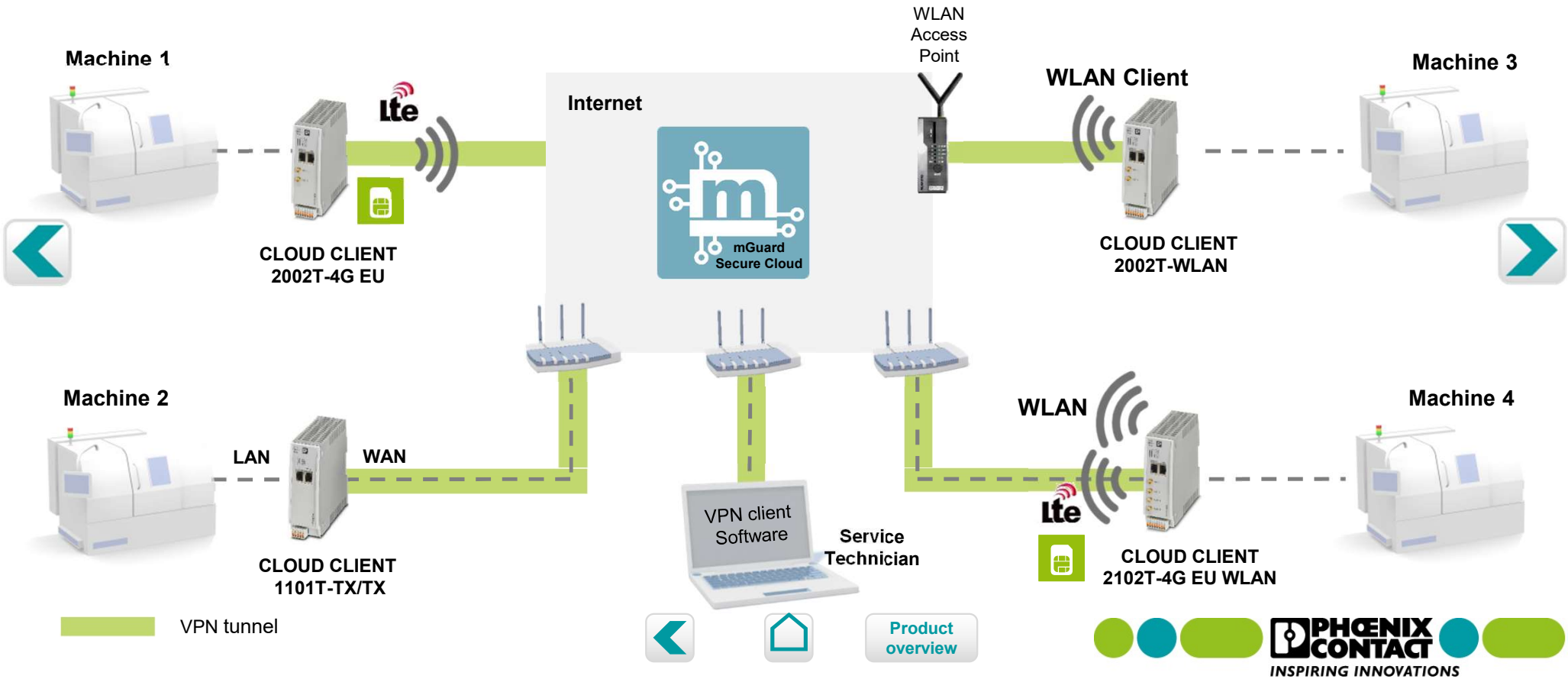
mGuard / Cloud Client



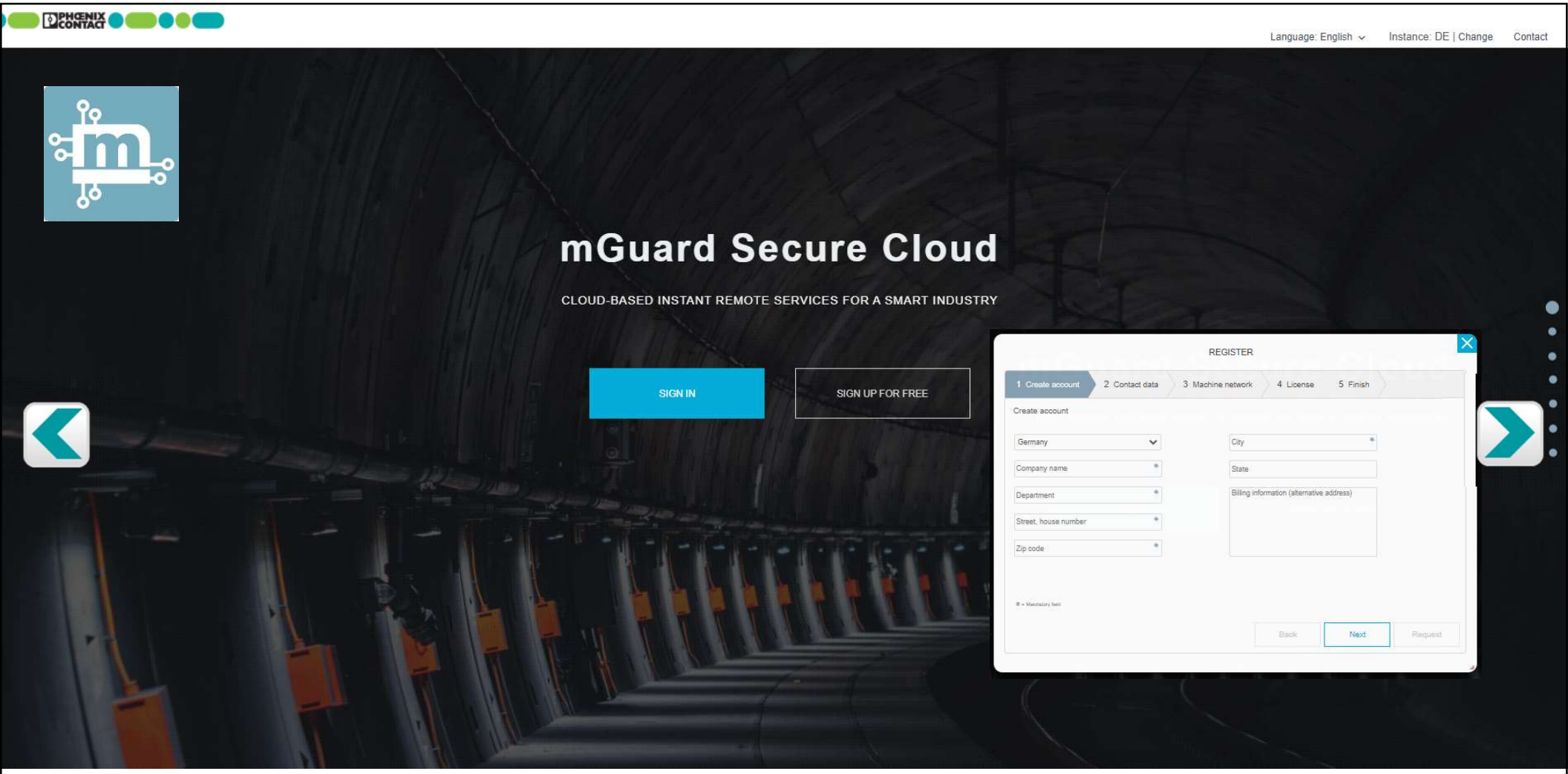
PHOENIX CONTACT
INSPIRING INNOVATIONS

Cloud Clients

Cloud Client options

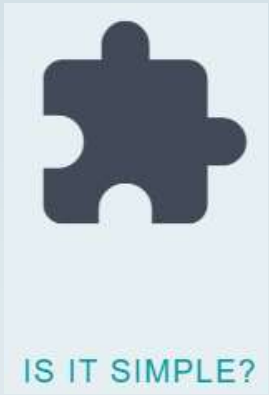


PHOENIX CONTACT
INSPIRING INNOVATIONS



INSPIRING INNOVATIONS

mGuard Secure Cloud



IS IT SIMPLE?

Implementing and operating an industry-standard remote services solution can be a complex task. Our cloud-based service remedies this situation, with a turnkey system for industrial remote services for utility operators, machine builders and plant technicians. Setup takes place in a few easy steps with hard- and software configuration provided.

IS IT SECURE?

The mGuard VPN technology uses the IPsec security protocol with strong encryption. This guarantees the confidentiality, authenticity and integrity of all information and data transmitted between the service staff and the machines.

IS IT RELIABLE?

The mGuard Secure Cloud forms a powerful and scalable VPN infrastructure in the cloud, securely interconnecting service staff with machines and plants via the Internet. Operated in a state-of-the-art data center with 24x7x365 monitoring, this ensures maximum reliability and availability to support your machines, facilities and customers.

Link to Website

PHOENIX CONTACT
INSPIRING INNOVATIONS

mGuard Secure Cloud

March 2021

WHERE IS THIS AVAILABLE?

Companies from the following countries can use the mGuard Secure Cloud:

EMEA (EU)

Austria | Österreich
Belgium | België | Belgique | Belgien
Bulgaria | България
Croatia | Hrvatska
Cyprus | Κύπρος | Kıbrıs
Czech Republic | Česko
Denmark | Danmark
Deutschland | Germany
Estonia | Eesti
Finland | Suomi
France
Greece | Ελλάδα, Ελλάς
Hungary | Magyarország
Ireland | Éire
Italia | Italy
Latvia | Latvija
Lithuania | Lietuva
Luxembourg | Lëtzebuerg | Luxemburg
Malta
Netherlands | Nederland
Poland | Polska
Portugal
Romania | România
Slovakia | Slovensko
Slovenia | Slovenija
Spain | España
Sweden | Sverige
United Kingdom

EMEA (NON-EU)

Albania
Andorra
Armenia
Azerbaijan
Belarus
Bosnia and Herzegovina
Georgia
Iceland
Kosovo
Liechtenstein
Moldova
Monaco
Montenegro
North Macedonia
Norway | Norge
San Marino
Serbia
South Africa
Switzerland | Schweiz | Suisse
Turkey
Ukraine
United Arab Emirates
Vatican City

AMER

NORTH AMERICA
Canada
United States
Mexico

CARIBBEAN
Antigua and Barbuda
Bahamas
Cuba
Dominica
Dominican Rep.
Grenada
Haiti
Jamaica
Saint Kitts and Nevis
Saint Lucia
Saint Vincent and the Grenadines
Trinidad and Tobago

CENTRAL AMERICA
Belize
Costa Rica
El Salvador
Guatemala
Honduras
Nicaragua
Panama

SOUTH AMERICA
Argentina
Brazil
Bolivia
Chile
Colombia
Ecuador
Falkland Islands
French Guiana
Guyana
Paraguay
Peru
Suriname
Uruguay

Link to Website

PHOENIX CONTACT
INSPIRING INNOVATIONS

mGuard Secure Cloud

March 2021

Requirements

Service Workstations

For service workstations, the mGuard Secure Cloud is also available for use with certified VPN software clients: the mGuard Secure VPN Client and the Shrew Soft VPN Client. The mGuard Secure VPN Client is a major component of the mGuard Ecosystem and ideal for road warriors, service staff and teleworker in mobile and stationary use cases. But also any mGuard VPN devices can be used: from USB-powered portable mGuards, devices for the desktop together with PCI-compliant versions.

VPN CLIENTS

- mGuard Secure VPN Client
- Apple iOS/iPadOS VPN-Client
- Apple macOS VPN-Client
- NCP Secure Android VPN Client Premium
- FL MGUARD SMART2 VPN
- FL MGUARD DELTA VPN
- FL MGUARD PCI4000 VPN
- FL MGUARD PCIE4000 VPN

WEBBROWSER

- Google Chrome
- Mozilla Firefox
- Microsoft Edge
- Apple Safari (iOS/iPadOS, macOS)

Service Targets (Machines)

For the secure connection of machines to the mGuard Secure Cloud any mGuard VPN devices can be used. The comprehensive mGuard portfolio allows tremendous flexibility in application scenarios while maintaining high protection. The range varies from industrial-hardened versions with wired and wireless interfaces as well as hazardous location approvals, mGuards for 19" racks together with PCI-compliant and virtualized versions.

VPN CLIENTS

- FL MGUARD RS2000 TX/TX VPN
- TC MGUARD RS2000 3G VPN
- TC MGUARD RS2000 4G VPN
- TC MGUARD RS2000 4G VZW VPN
- TC MGUARD RS2000 4G ATT VPN
- FL MGUARD RS4000 TX/TX VPN
- TC MGUARD RS4000 3G VPN
- TC MGUARD RS4000 4G VPN
- TC MGUARD RS4000 4G VZW VPN
- TC MGUARD RS4000 4G ATT VPN
- FL MGUARD RS2005 TX/DTX VPN
- FL MGUARD RS4004 VPN
- FL MGUARD PCI4000 VPN
- FL MGUARD PCIE4000 VPN
- TC CLOUD CLIENT TX/TX
- TC CLOUD CLIENT 4G
- TC CLOUD CLIENT 4G VZW
- TC CLOUD CLIENT 4G ATT
- PLCnext AXC F 2152
- PLCnext AXC F 1152

Link to Website

PHOENIX CONTACT
INSPIRING INNOVATIONS

mGuard Secure Cloud

AVAILABLE EDITIONS

EVAL
30 days free testing

BASIC
Free service

PREMIUM
Fee-based service

SPECIFICATION PREMIUM EDITION

Number of users:	Unlimited
Number of machines:	Unlimited
Number of service workstations:	Unlimited
Supported machine networks:	Unlimited
Number of concurrent service connections:	3
Transfer volume per service connection:	4 GB /month
Transfer volume in total:	12 GB /month
Guaranteed bandwidth:	Yes (1 Mbit/s)
Guaranteed availability:	Yes (98% p.a.)
Service VPN clients:	mGuards, IPsec Software
Mobile service VPN clients:	Apple iPad, iPhone, Android
Machine VPN clients:	mGuards, TC Cloud Clients, PLCnext
Hotline:	Telephone, e-mail
Extendable	Yes

FEATURES

Permission model:	Enhanced (location/machine)
Reporting:	Yes
Report filtering:	Yes
Report export:	Yes (CSV, XLS, PDF)
Two-factor authentication:	Yes
Configuration Blueprints:	Yes
User groups:	Yes (service allocation)
Configurable timeouts:	Yes (account, user)

Smart Camera Box - **All-in-One device**

The Smart Camera Box

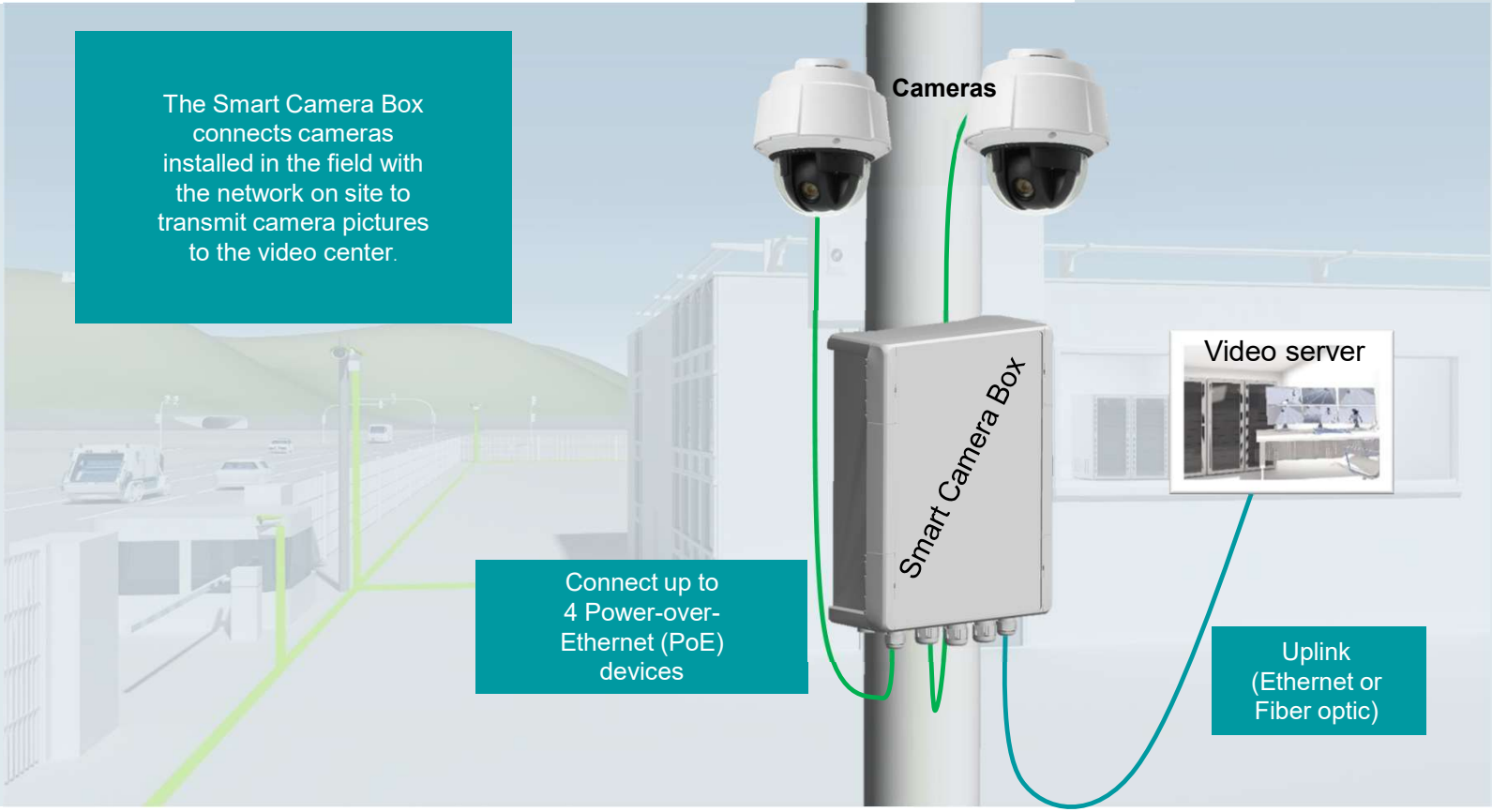
More than just an outdoor PoE switch

It connects PoE devices to Ethernet networks, such as IP cameras to a video server.

The compact all-in-one device replaces modular control cabinet solutions and saves time during planning and installation.

Smart Camera Box - **All-in-One device**

The Smart Camera Box connects cameras installed in the field with the network on site to transmit camera pictures to the video center.



PHOENIX CONTACT
INSPIRING INNOVATIONS

Smart Camera Box

Ethernet Switch
10/100/1000 Mbit/s
Up to 4 cameras ports
2 uplink ports

Integrated fiber optic splice cassette

Sabotage alarm

Uplink to video center (Variants)
2 x fiber optic SFP
2 x Standard Ethernet
1 x 2-wire Ethernet

Outdoor housing
IP65
IK10

Power over Ethernet
Up to 90W per Port (IEEE802.3bt)
Flexible power management

Power Supply
100 VAC … 240 VAC

Management functionality
Network management
PoE Management

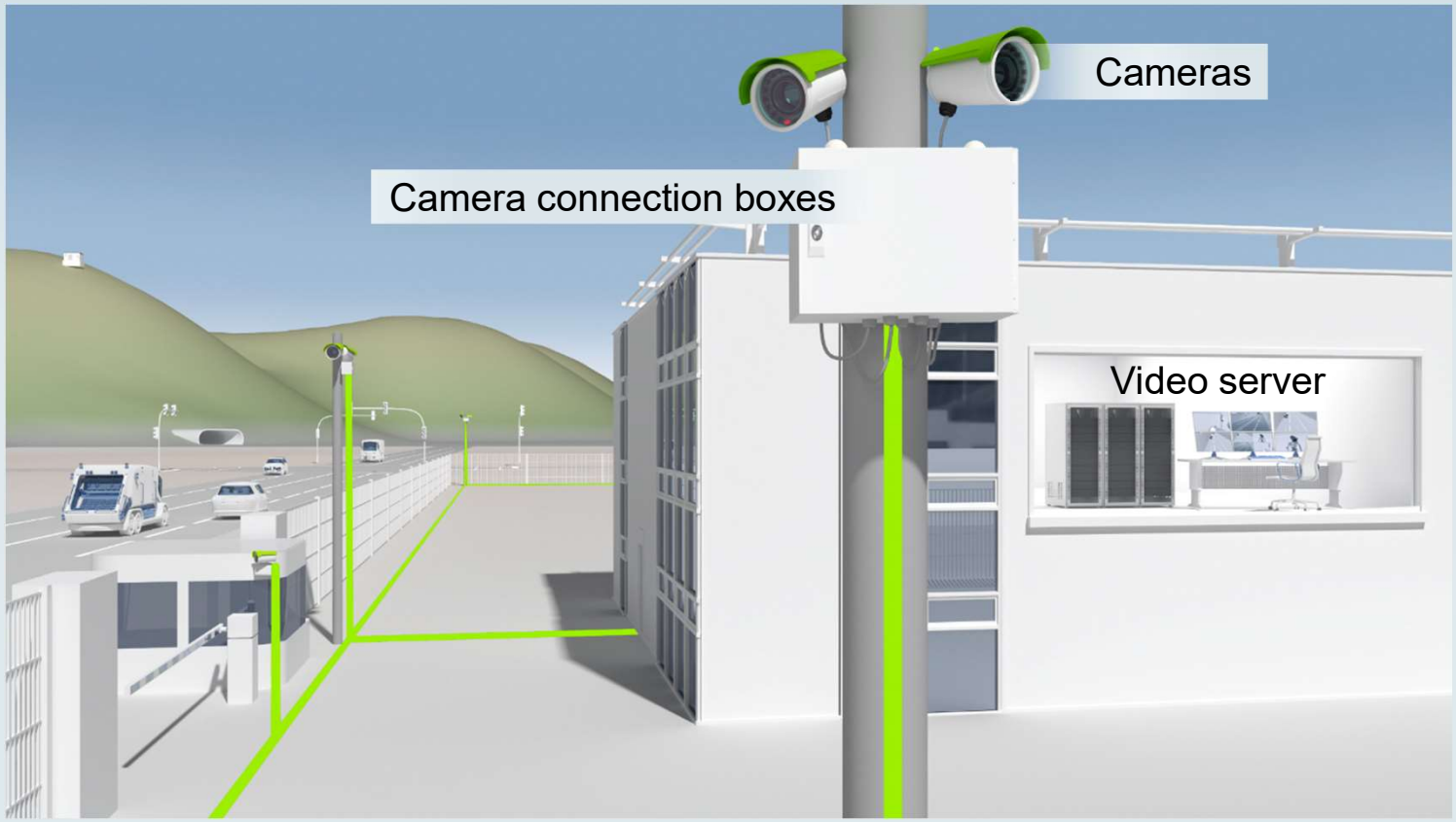
Temperatur Management
-40°C … +70°C

Reliable data communication
RSTP, VLAN
Multicast Filtering

Overvoltage protection
on 230 V AC supply
Monitored
Interchangeable

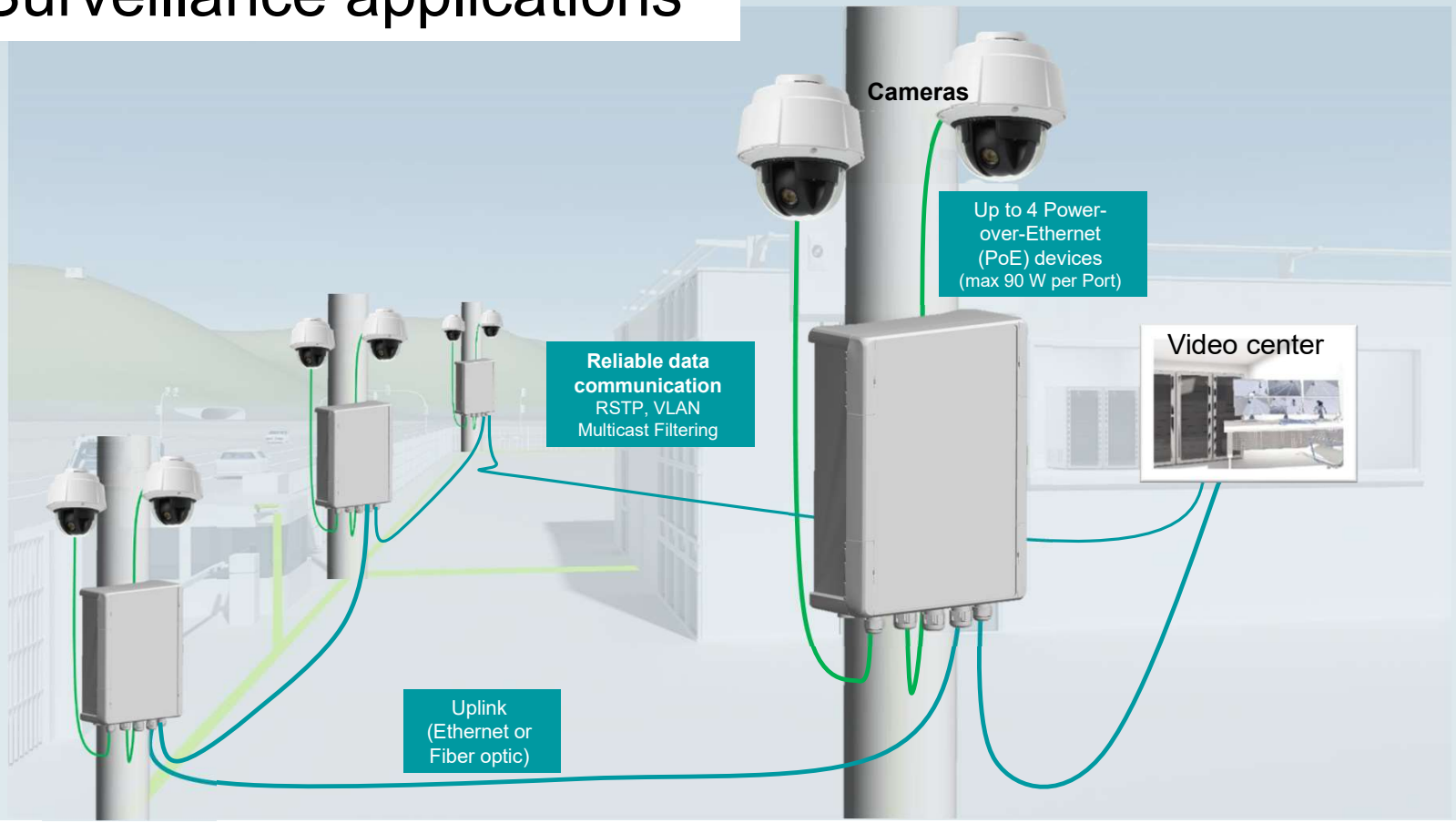
Flexible configuration
Web-based management
Configuration software (FL NETWORK MANAGER)
SNMP, CLI
Smart-Mode button

Video Surveillance applications



PHOENIX CONTACT
INSPIRING INNOVATIONS

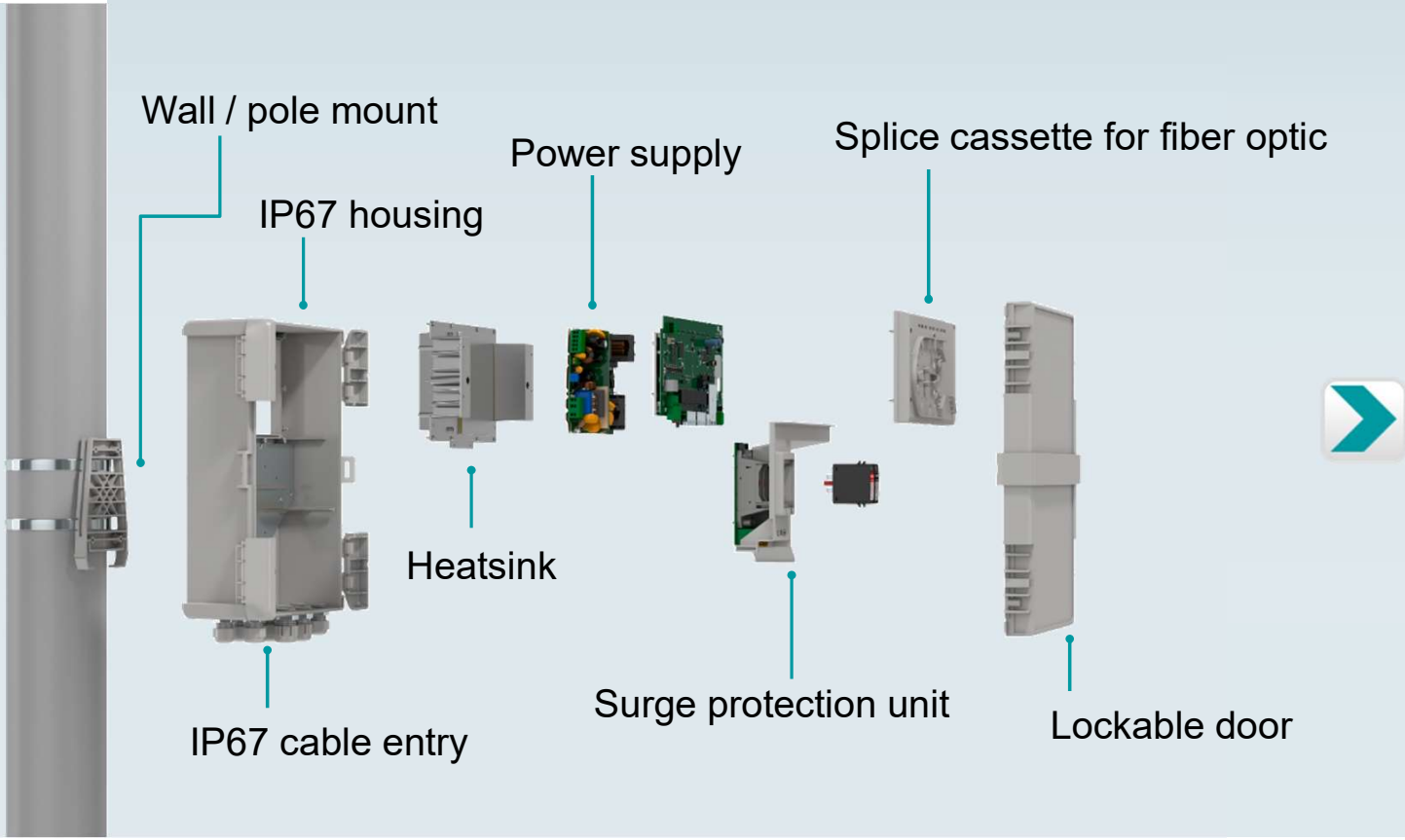
Video Surveillance applications



Video Surveillance applications

Smart Camera Box

All-in-One device



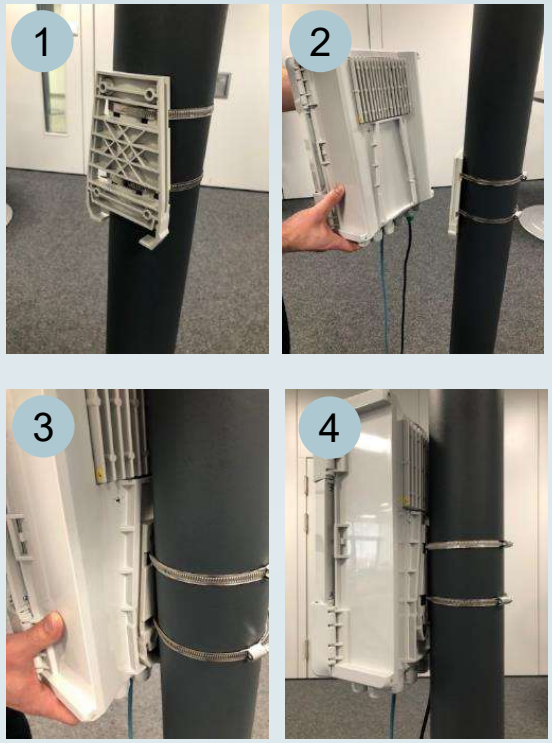
Smart Camera Box – Mounting adapter

Back view

Lightweight, robust casing
IP65 - Outdoor housing
IK10 - Vandalism proof

Mounting adapter
Provides secure fit
Hidden release mechanism, can only be released with a tool

Wall mounting
Holes for direct mounting on a wall



Smart Camera Box – Cable entry

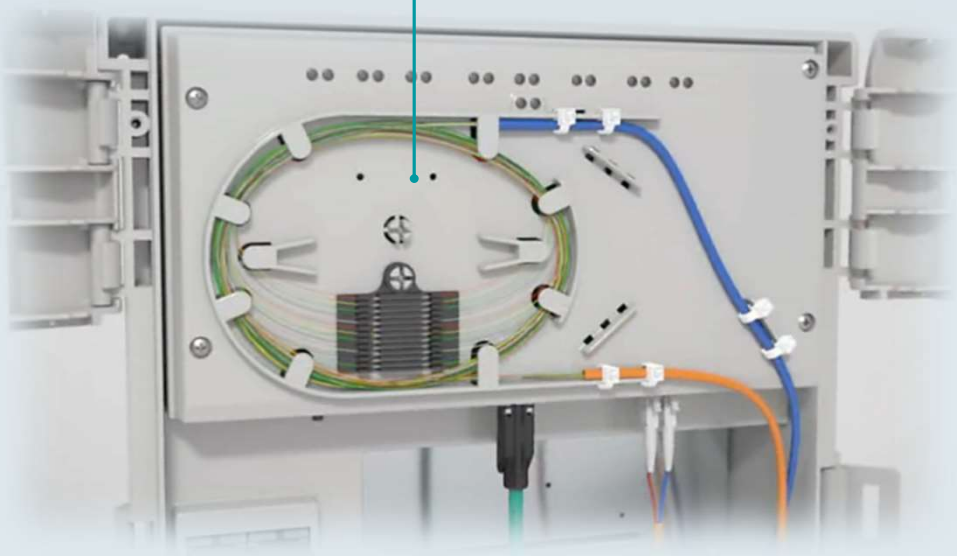
Direct connection of pre-assembled patch cables

- Due to the slotted seal, the connectors fit directly through the cable glands

Smart Camera Box – Splice box

Integrated fiber optic splice cassette

- No additional splice box needed
- Secure connection of all fiber optic cables
- Enhanced cable routing inside the box



Smart Camera Box – Heat sink

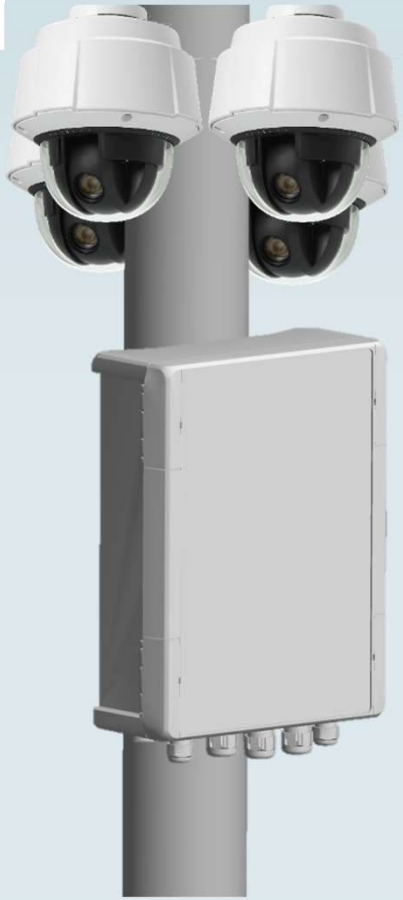
Integrated heat sink

- Enables the reliable use in harsh environments
- Temperature Range -40° C … +75° C

Heat sink

Smart Camera Box – Power over Ethernet

- Powering cameras with up to **90W** per port (new IEEE802.3bt standard)
- **Automatic restart** of malfunctioning cameras
- Prevent overload through **power budget information**
- **Alarm message** when temperature or power budget is exceeded



Smart Camera Box – Ethernet Management

Reliable networks

- Redundancy for failsafe networks
- VLANs
- Multicast filtering

Power over Ethernet

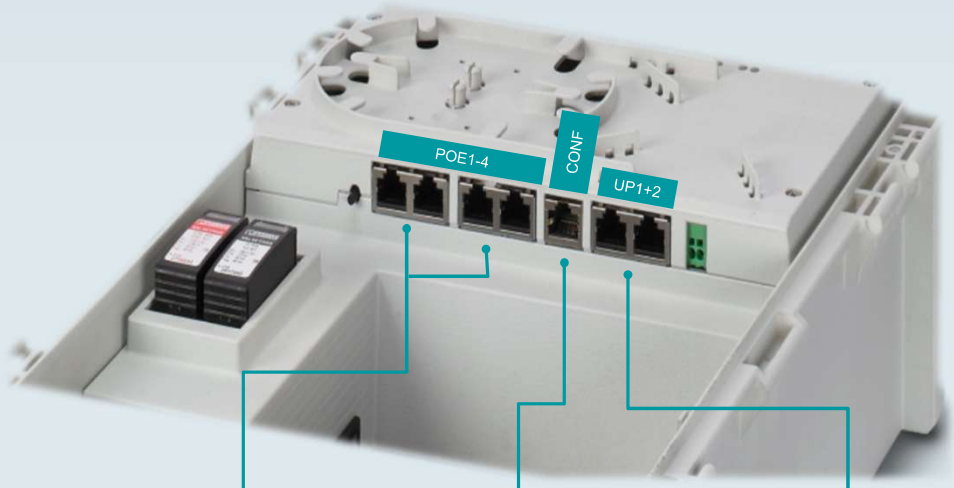
- Flexible power management on all ports
- Monitoring the power budget and powered devices

Flexible configuration options

- Web interface in responsive design
- FL NETWORK MANAGER support
- SNMP, CLI
- Unmanaged mode

Smart Camera Box – Switch

Switch Ports



(PoE) Power-over-Ethernet Ports 1 - 4

Local configuration port

Uplink Ports 1+2
(Ethernet or SFP (fiber optic) slots)

Smart Camera Box – Switch Uplink connection

Example: Ethernet cables and optical fibres

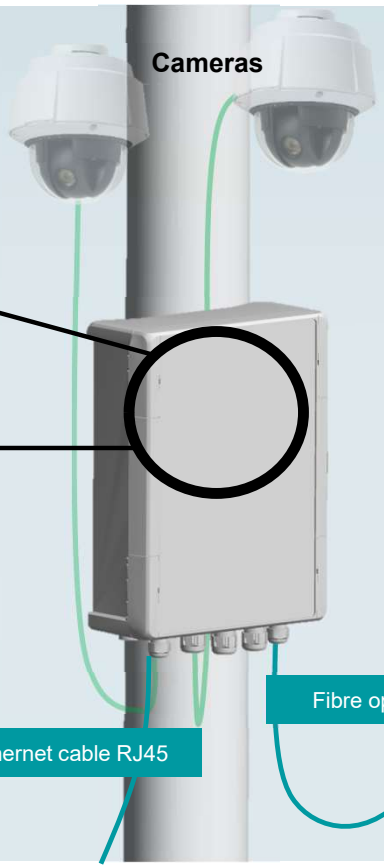
UP1

UP2

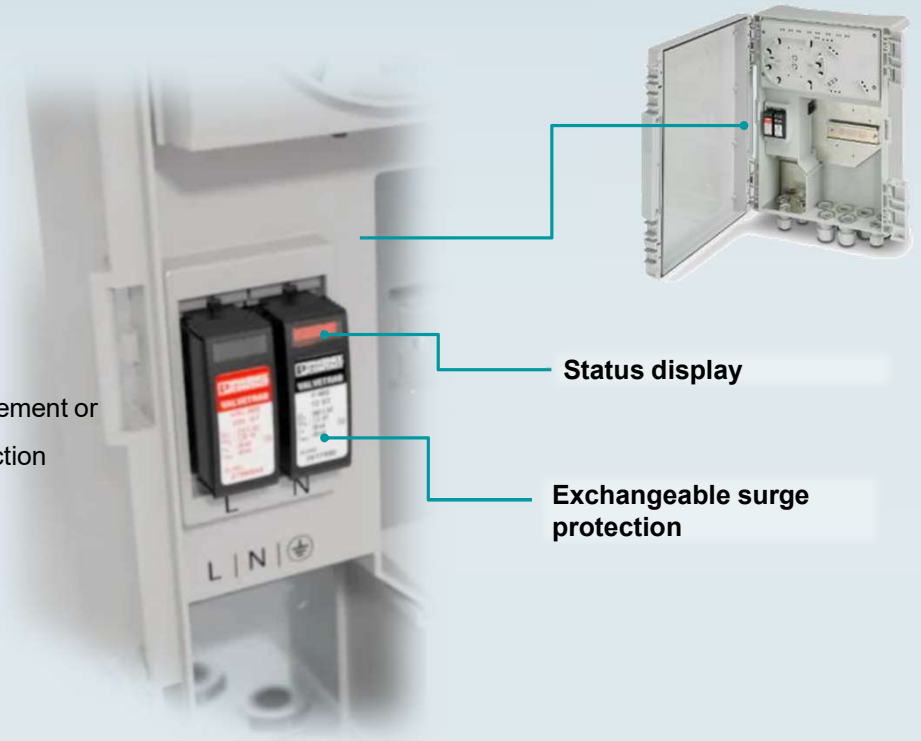
SFP Module
FL SFP GT - 2989420
With a data transmission rate of 1000 MBit/s at a maximum transmission length of 100 m.

SFP Module
FL SFP SX2 - 2702397
With a data transmission rate of 1000 MBit/s at a wavelength of 1310 nm and a maximum transmission length of 2 km.

Other SFP modules are available!



Smart Camera Box – Surge protection



Integrated overvoltage protection

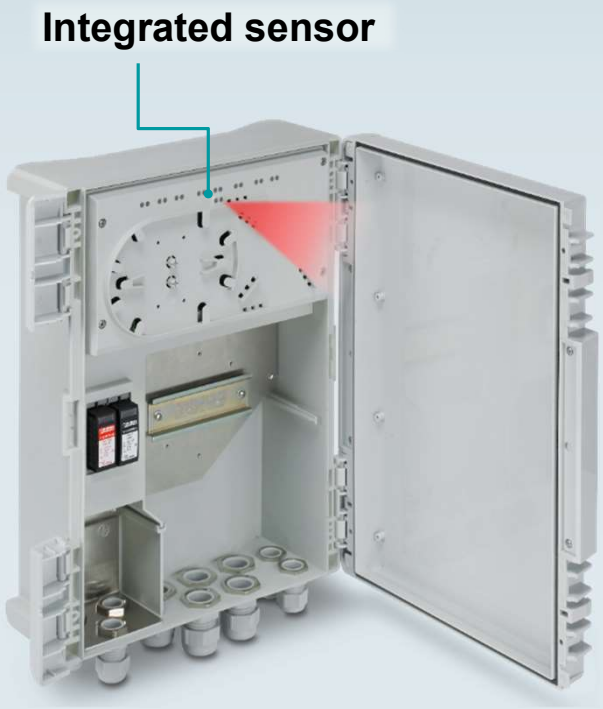
- Exchangeable, pluggable
- Alarm message via Web-based management or SNMP in case of defective surge protection

Surge protection modules:
VAL-MS 230 ST, item no. 2798844
VAL-MS 350 VF ST, item no. 2856595

Smart Camera Box – Sabotage alarm

Integrated door opening sensor

- Detects open and closed doors
- Alarm message via Ethernet as soon as the door gets opened
- No additional equipment needed



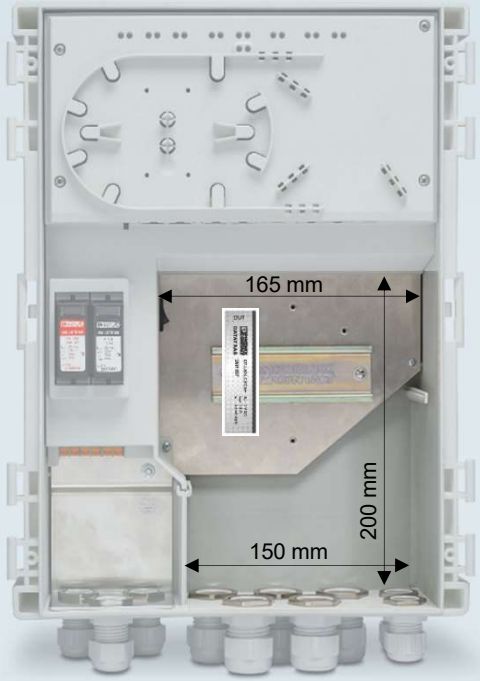
Smart Camera Box – Security – Mechanical security

Light weight but robust enclosure
IP65 – outdoor housing
IK10 – vandal proof

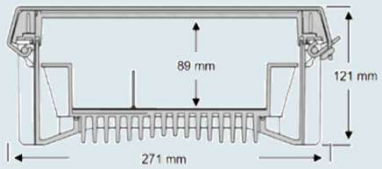
Metal door latch
Enables a safe locking of the door

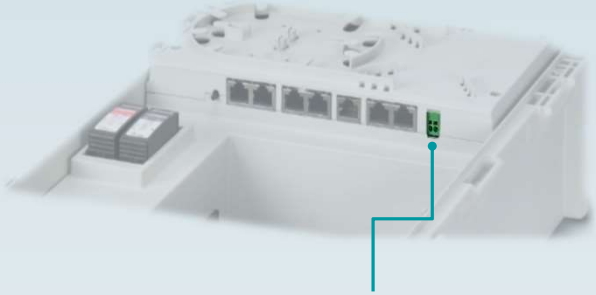
Mounting adapter
Provides secure fit
Hidden release mechanism
Can only be released with a tool

Smart Camera Box – Space for more



Integrated DIN rail
Allows the use of additional equipment, e.g.
- Overvoltage protection for data cables
- Relay for switching external lights etc.
- 4G router
- WLAN access point





24 V DC output
- Power supply of additional devices
- Switchable via WBM and SNMP

INSPIRING INNOVATIONS

Smart Camera Box

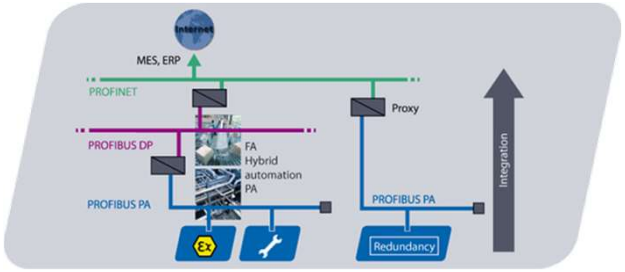


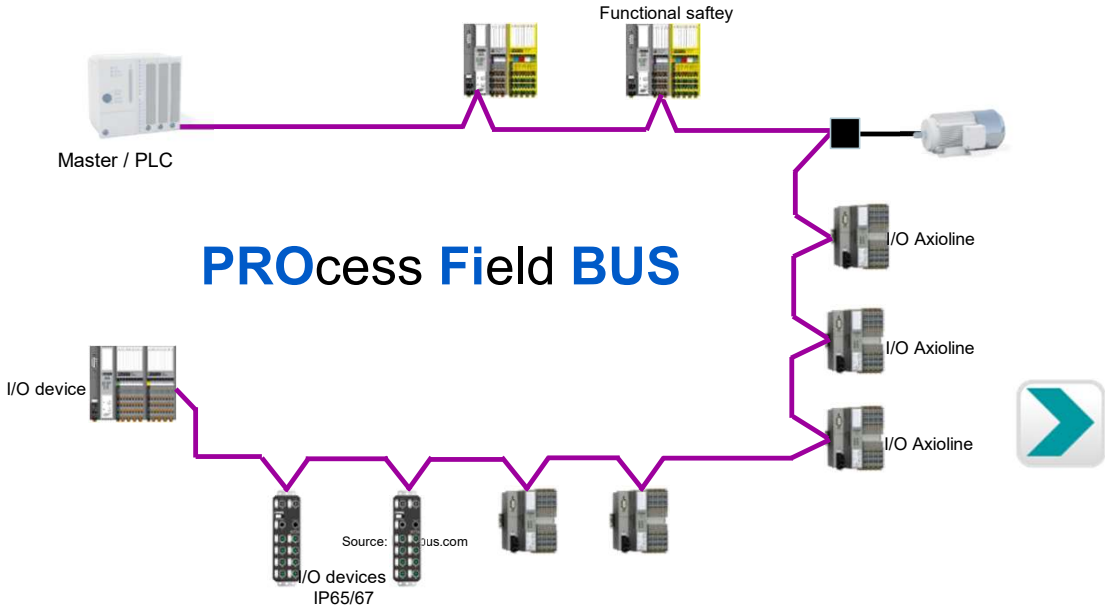

	SCX 4POE 2LX	SCX 2POE 2LX	SCX 4POE 2T	SCX 2POE 2T
	Fiber optic	Fiber optic	Ethernet copper	Ethernet copper
PoE ports (RJ45 jack)	4	2	4	2
Uplink ports	2 (SFP ports)	2 (SFP ports)	2 (RJ45 jack)	2 (RJ45 jack)
General	PoE standard IEEE 802.3bt, at, af; 10/100/1000 Mbps Supply voltage 100…240 VAC, (Power supply, managed switch, surge protection, splice tray) Wall or mast mounting			
Order number	1102626	1108543	1108542	1108544

PHOENIX CONTACT
INSPIRING INNOVATIONS

PROFIBUS

PROFIBUS connects controllers or control systems with a number of field devices (sensors and actuators) via a single cable.





PROFIBUS • PROFINET

INSPIRING INNOVATIONS

PROFIBUS

PROFIBUS DP and PROFIBUS PA

- **PROFIBUS DP** (**D**ecentralized **P**eriphery) is mainly used for high speed input/output devices and to link intelligent devices such as drives. It can use different physical layers such as RS-485, wireless or fiber optics.

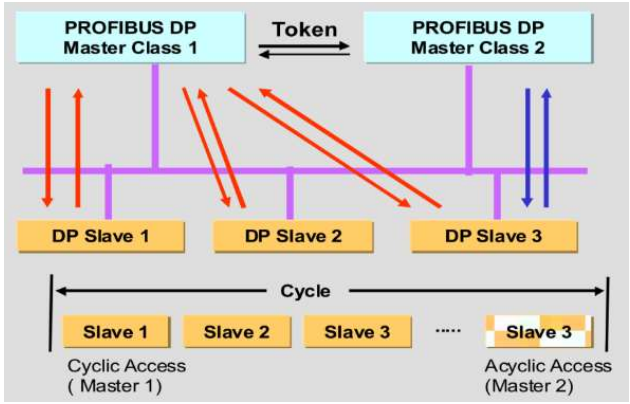
- **PROFIBUS PA** (**P**rocess **A**utomation) refers to the following features:
  - Bus powered by using the Manchester encorded Bus Powered (MBP) physical layer according to IEC 61158-2
  - Intrinsically safe design
  - Configuration over the bus
  - Device profile

PROFIBUS

PROFIBUS DP (**D**ecentralized **P**eriphery)

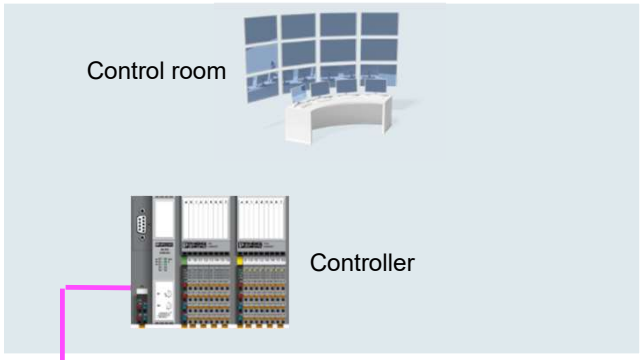
A single open communication protocol for all applications

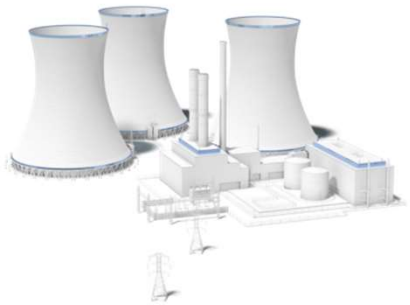
- "Master-Slave" procedure -
  The master controls one or more slaves
- “Token Passing" procedure -
  The token is passed on via the network



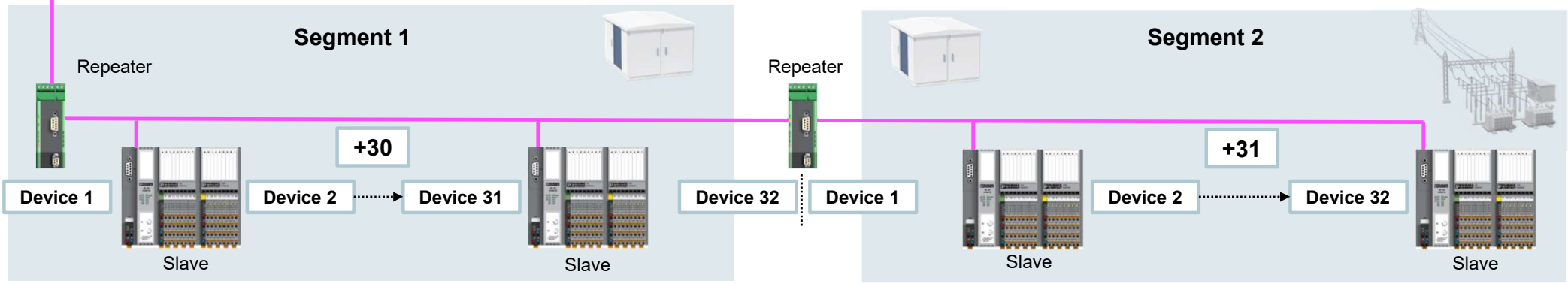
PHOENIX CONTACT
INSPIRING INNOVATIONS

PROFIBUS – Network specification

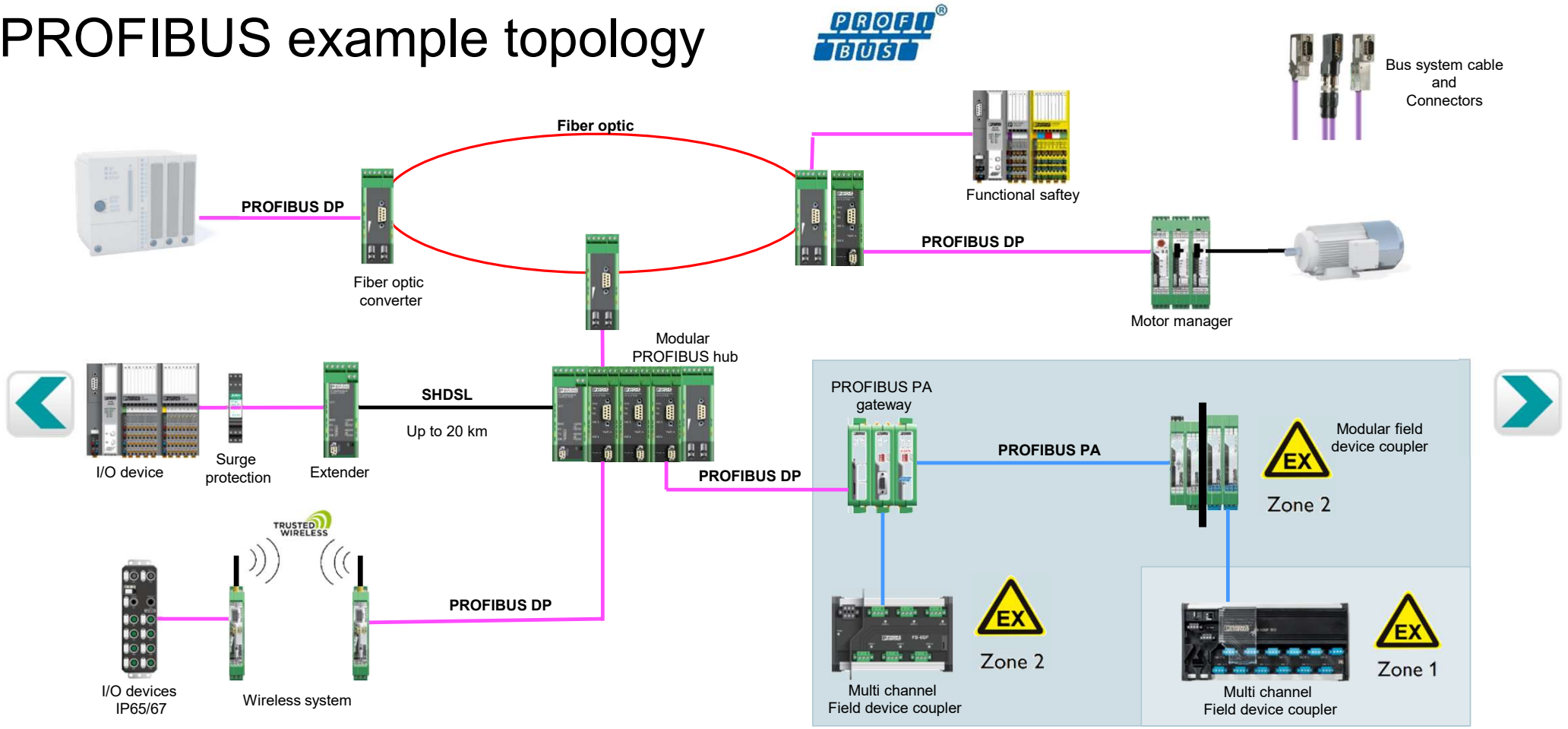




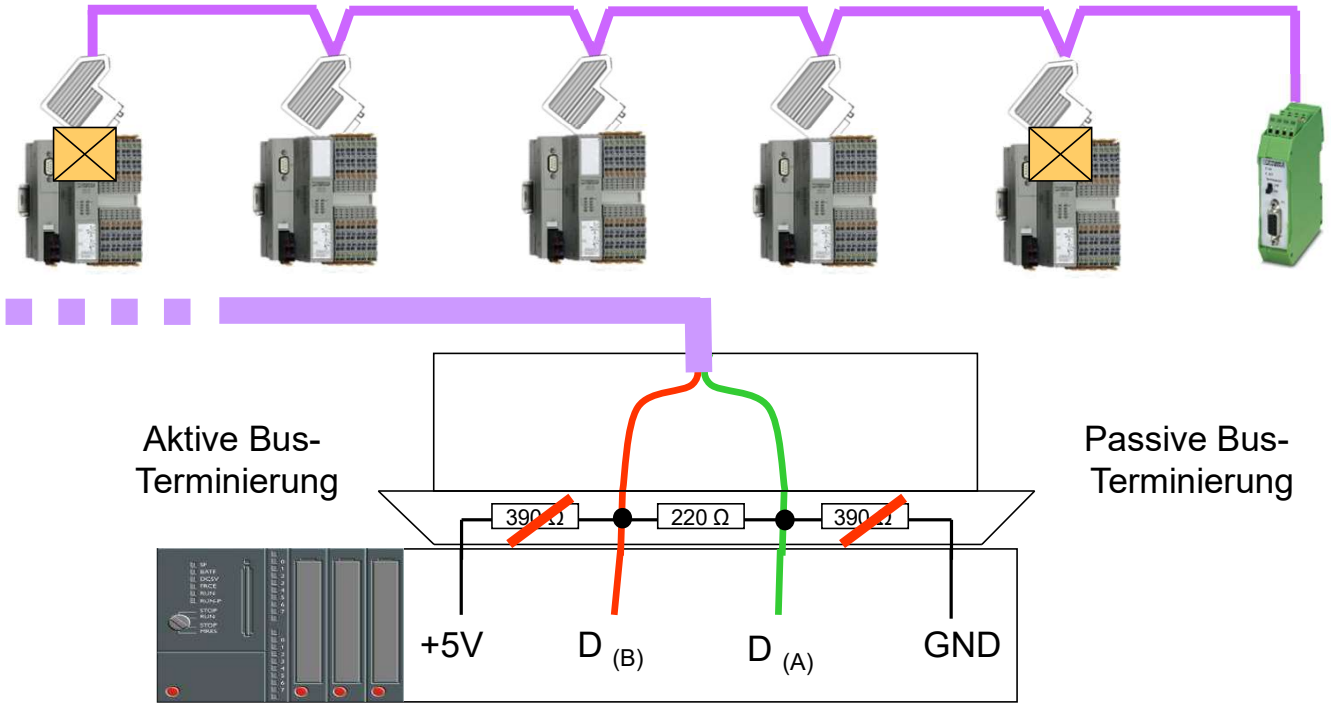
- Max 32 devices in one segment
- Address oriented protocol
- Maximum 128 bus addresses (0.....127)
- Maximum 125 network participants (master and slave) Rest for diagnostics, programming, broadcast, reserve



PROFIBUS example topology



PROFIBUS


Aktive Bus-
Terminierung
Passive Bus-
Terminierung
390 Ω
220 Ω
390 Ω
+5V
D (B)
D (A)
GND

PROFIBUS

PROFIBUS benefit for….

Engineering Staff
- Less wiring, less hardware
- Faster engineering
- Huge vendor choice
- Easier commisioning
- Simpler documentation

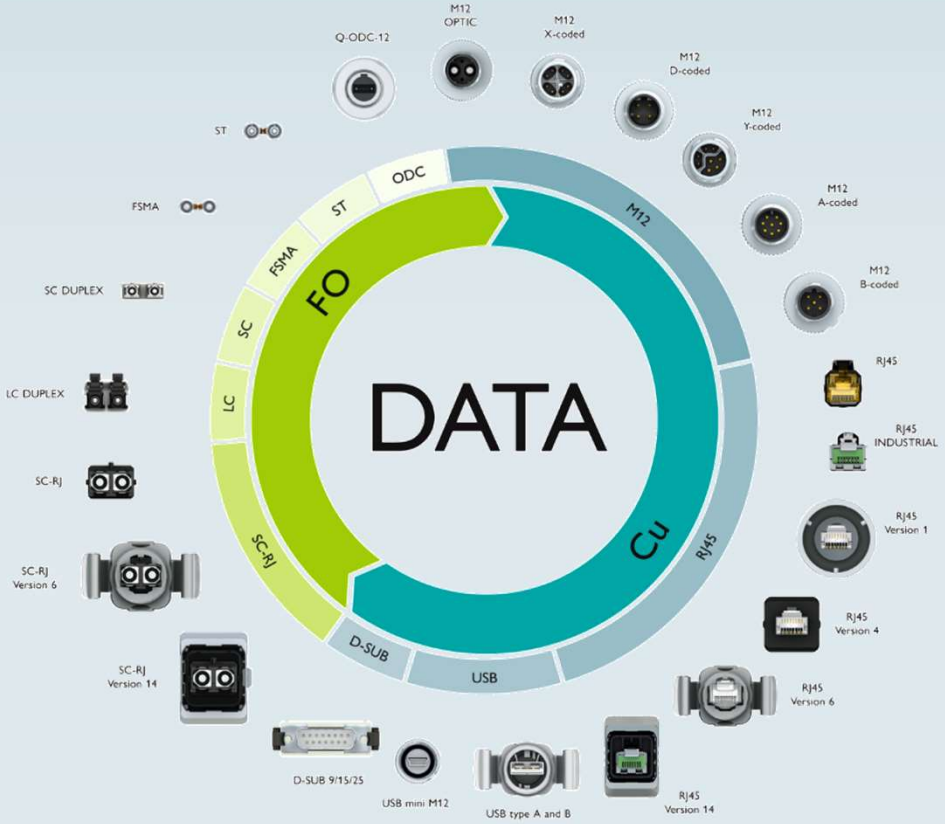
Operation Staff
- Transparency down to the sensor
- Better maintenance conditions
- Improves Asset Management
- Shorter plant downtime
- More flexible production

Plant Managers
- Lower costs
- Faster and more flexible production
- Better production quality
- Safer plants
- Increased ROI

Plants
- Advanced technology
- Easy migration
- Easier revamps
- Less expensive upgrades
- Longer Plant Lifetime

INSPIRING INNOVATIONS

Data connectors for copper and fiber-optic cabling



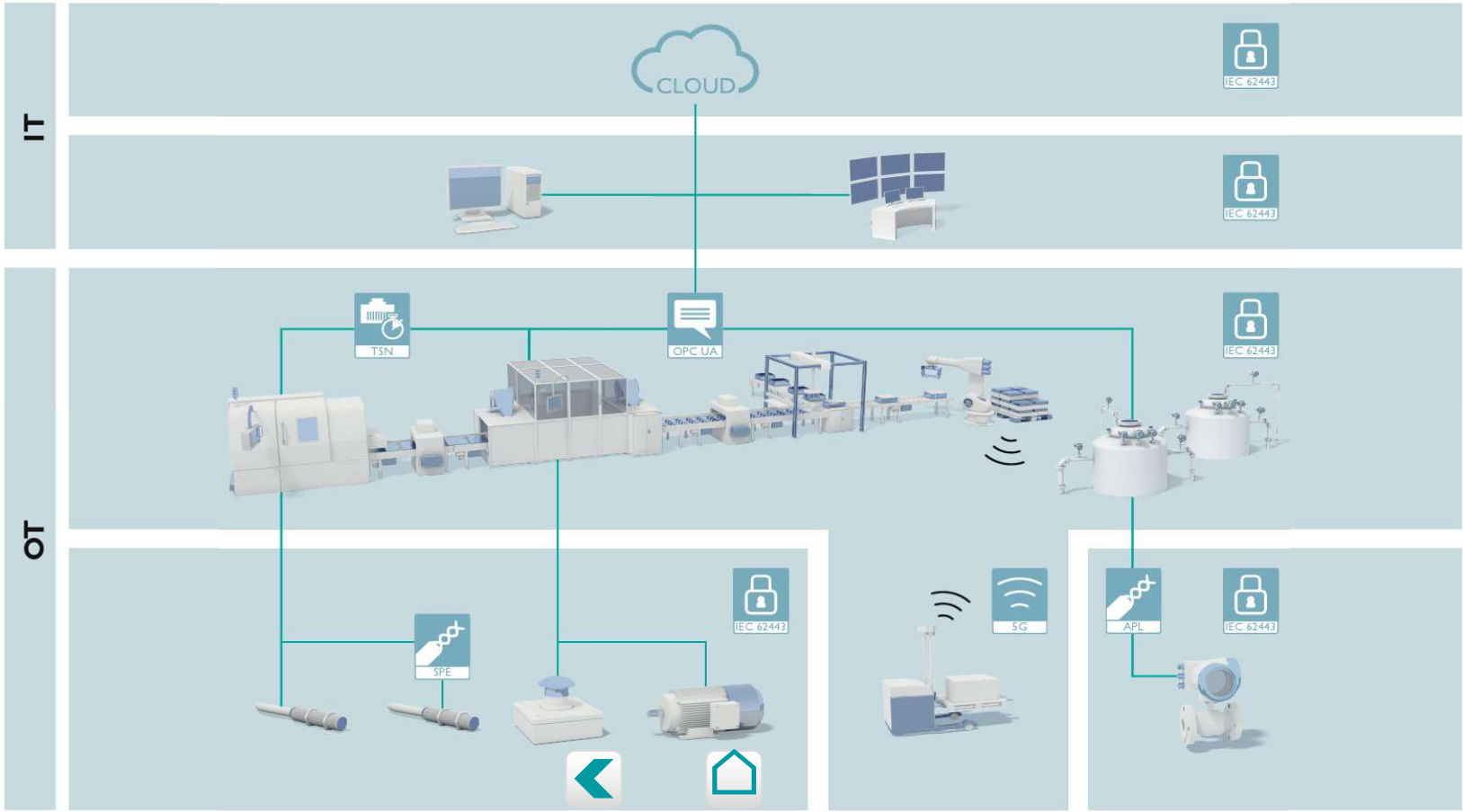
Solution for copper cabling

- Transmission rates up to 10 Gbps
- Protection class IP20 and IP69k
- Spring, pierce and IDC insulation displacement connection
- 360 shielding concept
- For all common networks and fieldbusses

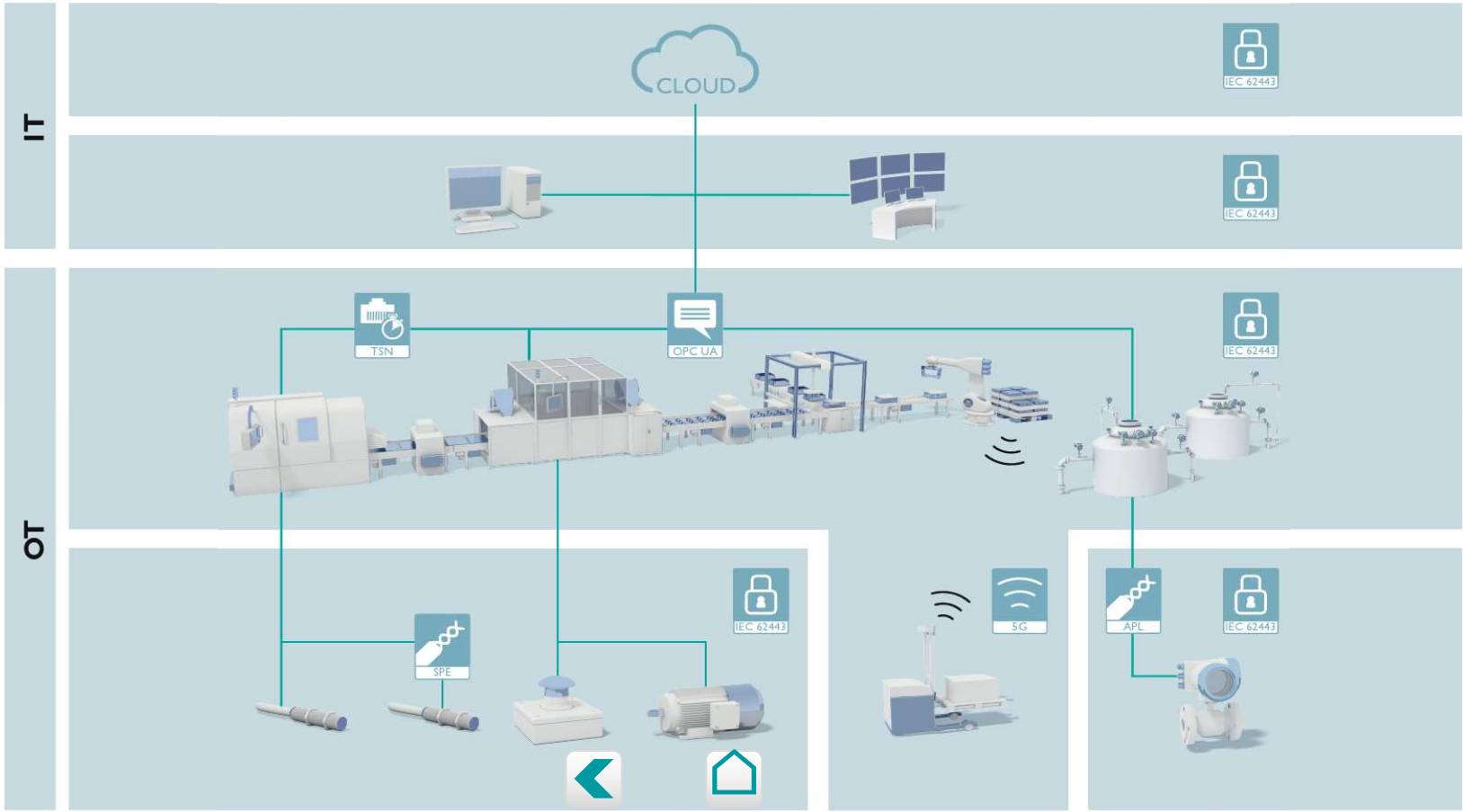
Solution for fiber-optic cabling

- Transmission rates up to 40 Gbps
- Protection class IP20 and IP65/67 and IP68
- For POF,PCF and GOF
- For all common fiber-optic interfaces

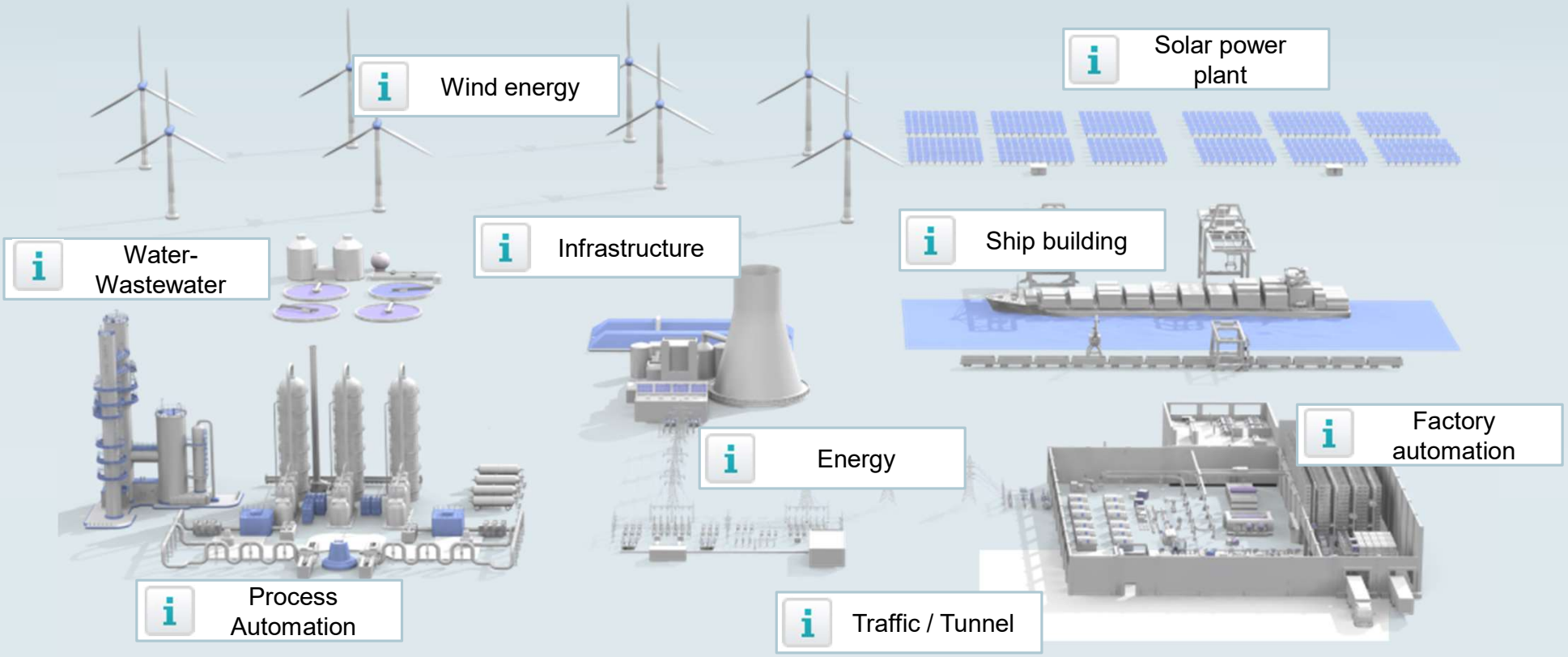
SEAMLESS COMMUNICATION FROM THE SENSOR TO THE CLOUD



SEAMLESS COMMUNICATION FROM THE SENSOR TO THE CLOUD



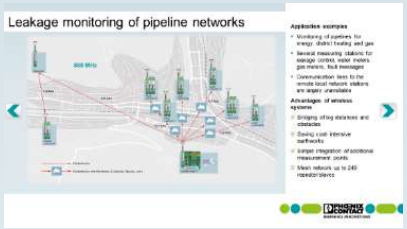
Application references

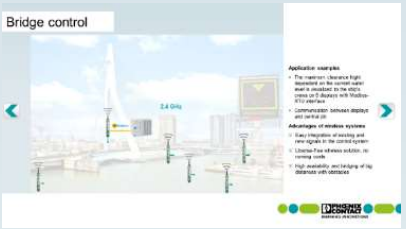


Infrastructure applications

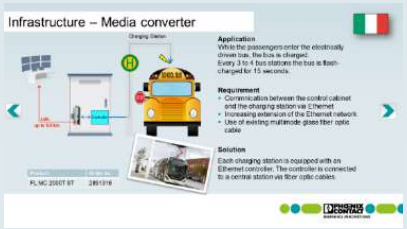
Click on image!

Radioline

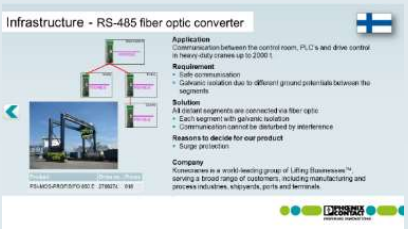




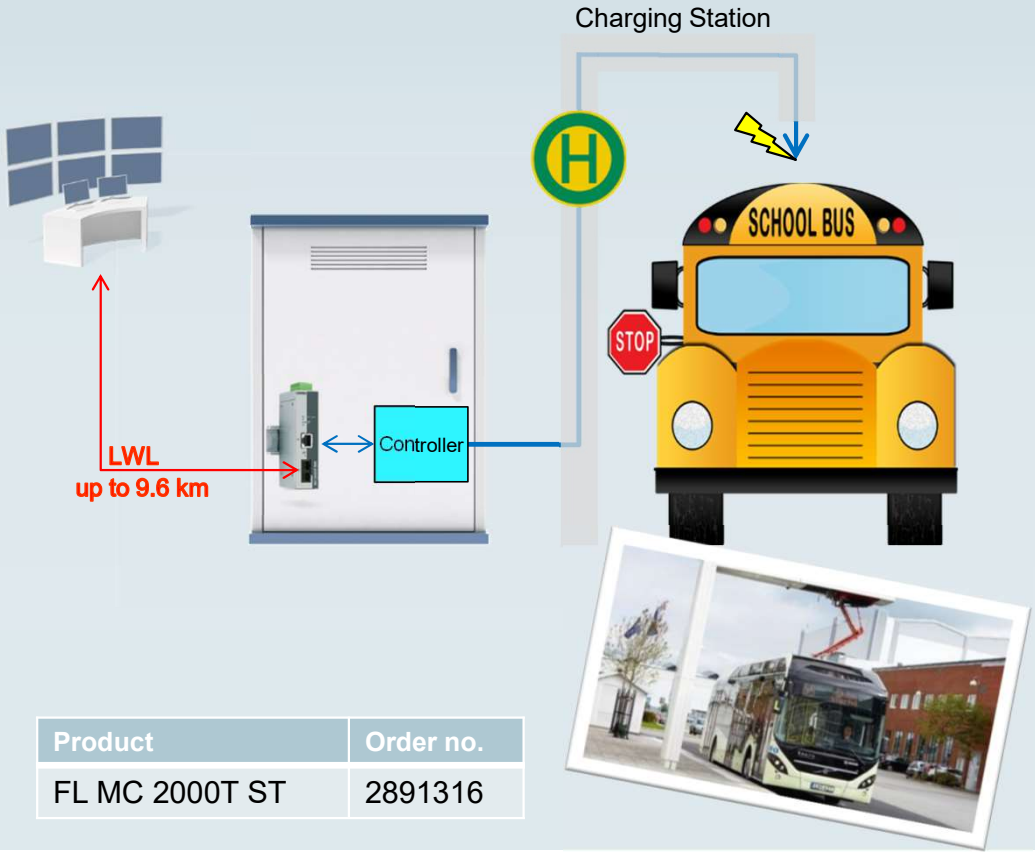
Media Converter



PSI-MOS Profibus



Infrastructure – Media converter



Product	Order no.
FL MC 2000T ST	2891316

Application

While the passengers enter the electrically driven bus, the bus is charged.
Every 3 to 4 bus stations the bus is flash-charged for 15 seconds.

Requirement

- Commnication between the control cabinet and the charging station via Ethernet
- Increasing extension of the Ethernet network
- Use of existing multimode glass fiber optic cable

Solution

Each charging station is equipped with an Ethernet controller. The controller is connected to a central station via fiber optic cables.

PHOENIX CONTACT
INSPIRING INNOVATIONS

Infrastructure

Product	Order no.
PSI-REP-PROFIBUS/12MB	2708863
PSI-MOS-PROFIB/FO 850 E	2708274
SUBCON-PLUS-PROFIB/90/SC	2313698

Application
Four huge flood barriers controlled by Profibus to protect the Venice and the Venetian Lagoon.

Requirement
- reliable transmission of data
- Long distance between flood barriers and control room
- Adversely conditions

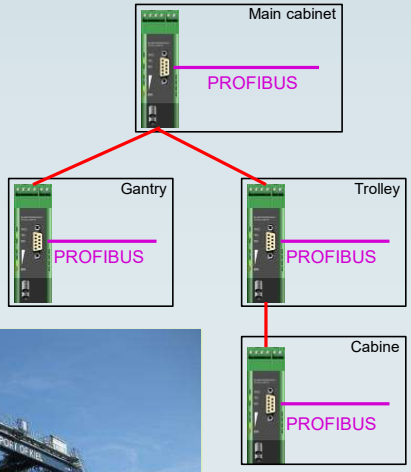
Solution
- Communication via fiber optic cable from the barrier to the control room
- easy combination of copper and fiber within our modular Profibus-Hub

Reasons to decide for our product
- Short circuit detection of the repeater
- Seamless combination of copper and fiber within our modular Profibus-Hub

Company
ABB helped to develop a storm tide protection in venice.

PHOENIX CONTACT
INSPIRING INNOVATIONS

Infrastructure - RS-485 fiber optic converter



Product	Order no.
PSI-MOS-PROFIB/FO 850 E	2708274

Application

Communication between the control room, PLC's and drive control in heavy-duty cranes up to 2000 t.

Requirement

- Safe communication
- Galvanic isolation due to different ground potentials between the segments

Solution

All distant segments are connected via fiber optic

- Each segment with galvanic isolation
- Communication cannot be disturbed by interference

Reasons to decide for our product

- Surge protection

Company

Konecranes is a world-leading group of Lifting Businesses™, serving a broad range of customers, including manufacturing and process industries, shipyards, ports and terminals.

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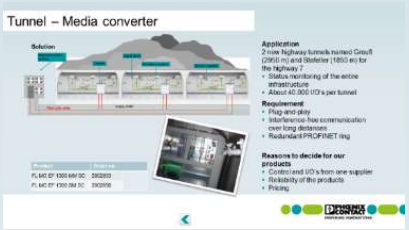
PHOENIX CONTACT
INSPIRING INNOVATIONS

Traffic / Tunnel applications

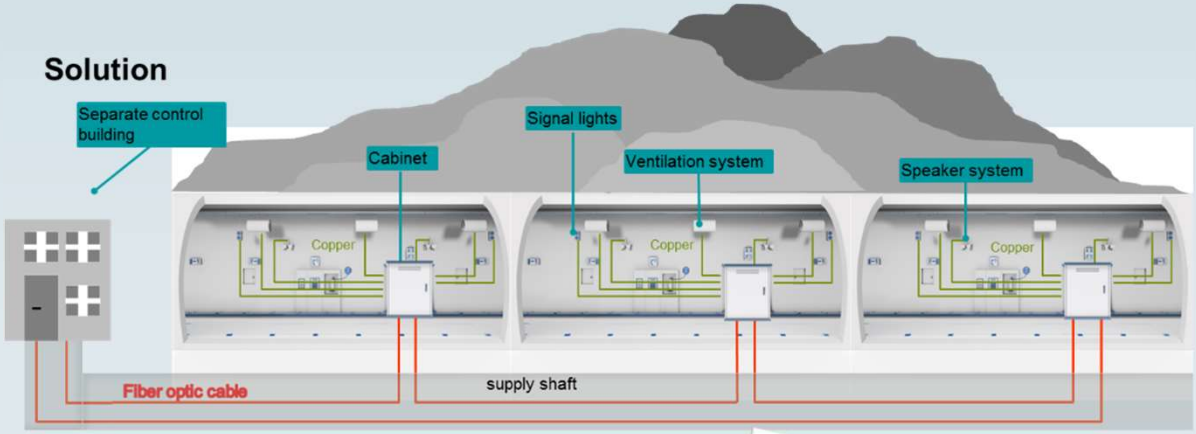
Click on image!

Radioline

Media Converter



Tunnel – Media converter



Product	Order no.
FL MC EF 1300 MM SC	2902853
FL MC EF 1300 SM SC	2902856

Application

2 new highway tunnels named Grouft (2950 m) and Stafelter (1850 m) for the highway 7

- Status monitoring of the entire infrastructure
- About 40.000 I/O's per tunnel

Requirement

- Plug-and-play
- Interference-free communication over long distances
- Redundant PROFINET ring

Reasons to decide for our products

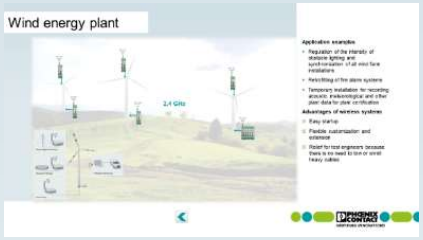
- Control and I/O's from one supplier
- Reliability of the products
- Pricing

PHOENIX CONTACT
INSPIRING INNOVATIONS

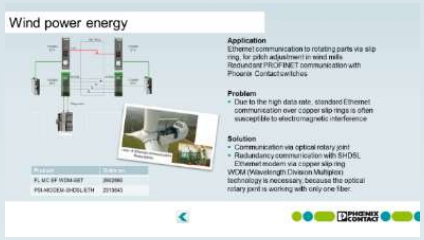
Wind applications

Click on image!

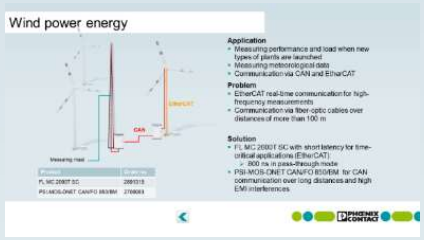
Radioline



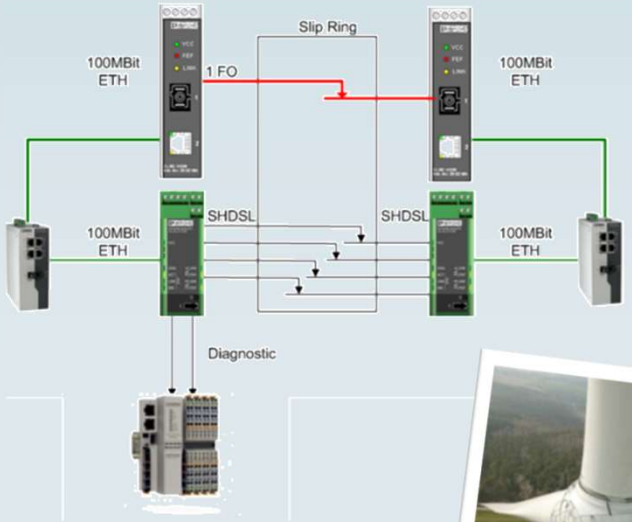
Media Converter / SHDSL



Media Converter / PSI MOS



Wind power energy



Product	Order no.
FL MC EF WDM-SET	2902660
PSI-MODEM-SHDSL/ETH	2313643

Application

Ethernet communication to rotating parts via slip ring, for pitch adjustment in wind mills
Redundant PROFINET communication with Phoenix Contact switches

Problem

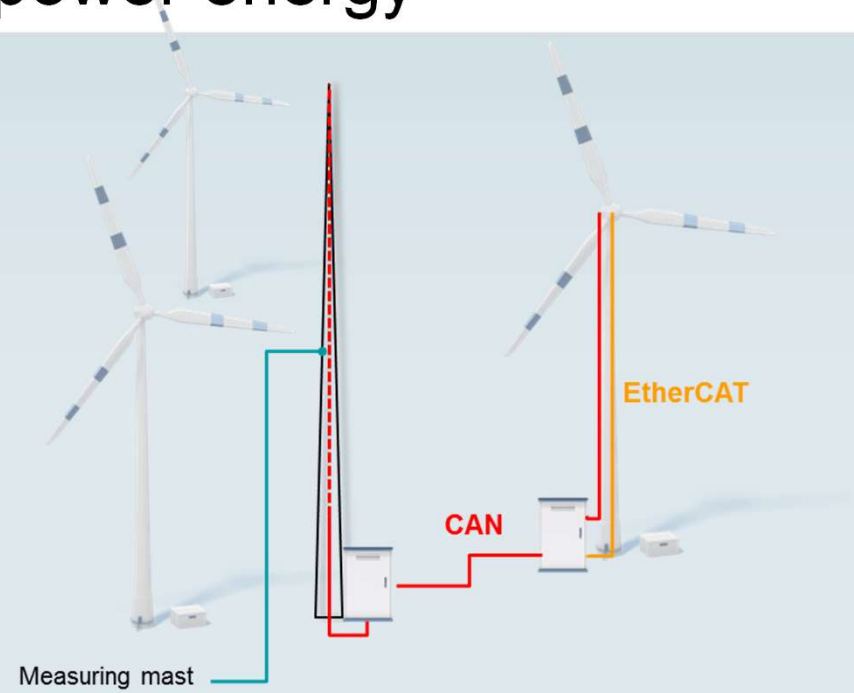
- Due to the high data rate, standard Ethernet communication over copper slip rings is often susceptible to electromagnetic interference

Solution

- Communication via optical rotary joint
- Redundancy communication with SHDSL Ethernet modem via copper slip ring

WDM (Wavelength Division Multiplex) technology is necessary, because the optical rotary joint is working with only one fiber.

Wind power energy



Product	Order no.
FL MC 2000T SC	2891315
PSI-MOS-DNET CAN/FO 850/BM	2708083

Application

- Measuring performance and load when new types of plants are launched
- Measuring meteorological data
- Communication via CAN and EtherCAT

Problem

- EtherCAT real-time communication for high-frequency measurements
- Communication via fiber-optic cables over distances of more than 100 m

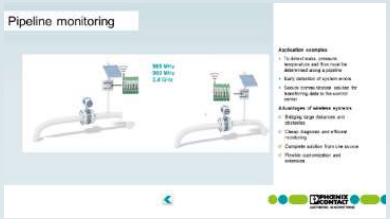
Solution

- FL MC 2000T SC with short latency for time-critical applications (EtherCAT):
  - 800 ns in pass-through mode
- PSI-MOS-DNET CAN/FO 850/BM for CAN communication over long distances and high EMI interferences

Process applications

Click on image!

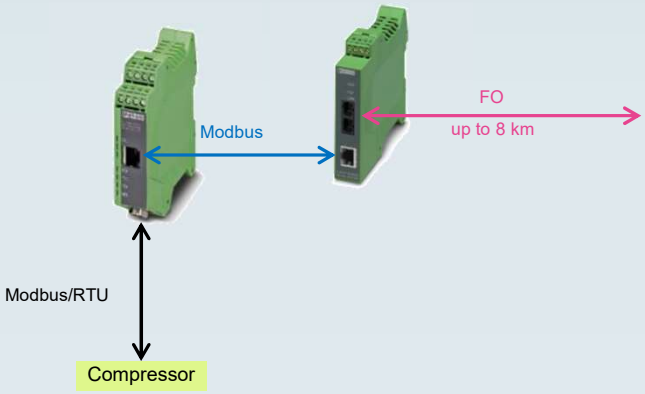
Radioline



Comserver

PSI-MOS Profibus

Process - COMSERVER



Product	Order no.
FL COMSERVER UNI 232/422/485	2313452
FL MC EF 1300 MM ST	2902854

Application

- Communication with several compressors in the field via Modbus/RTU

Requirement

- Conversion of serial data into Ethernet
- Bridging long distances to the data server

Reasons to decide for our product

- Complete device portfolio for this sector
- Better relationship with end customer

Company description

- The Dow Company is driving innovations that extract value from material, polymer, chemical and biological science. Dow Iberica produce and supply a wide range of chemicals from drinking water, food and medicines to paints, packaging materials, personal hygiene and health products.

Process - PROFIBUS fiber optic converters

Application
A steel plant is fully controlled via a complex and extended PROFIBUS network.

Problem
- Bus errors in the PROFIBUS network due to short circuits

Solution
- Segmentation of the PROFIBUS network using repeaters and fiber optic converters
- Short-circuit protection and galvanic isolation of each segment

Product	Order no.
PSI-MOS-PROFIB/FO 850 E	2708274
PSI-MOS-PROFIB/FO 850 T	2708261
PSI-REP-PROFIBUS/12MB	2708863

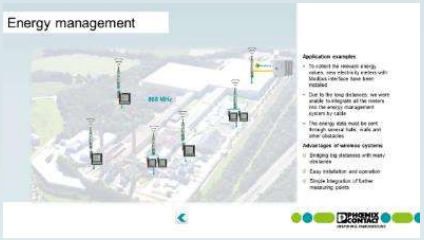
Reasons to decide for our product
- Technical features
- Lower price
- Fiber optic signal monitoring for better diagnostics
- Connection via DIN rail connector for less wiring effort
- Good relationship

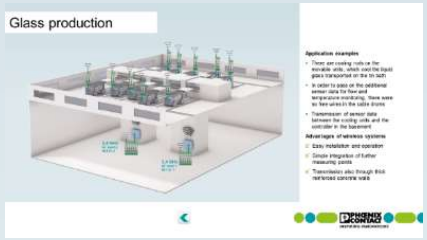
Factory automation applications

Click on image!

Wireless MUX

Radioline





Comserver

Factory automation

Product	Order no.
FL COMSERVER BASIC 232/422/485	2313478

Application

- Serial screens are connected to a computer to show speed, quality and other parameters of a factory line.

Requirement

- Conversion of Ethernet into serial data
- Different serial interfaces (RS 232/422/485

Reasons to decide for our product

- Costumer uses the Comserver for many systems worldwide

Company description

- For more than 50 years, BHS Corrugated has been working with the construction of corrugators and the manufacture of corrugating rolls. Thanks to years of experience BHS Corrugated is the world's largest provider of solutions for the Corrugated Industry.

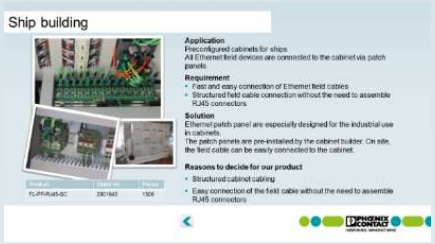
PHOENIX CONTACT
INSPIRING INNOVATIONS

Ship building applications

Click on image!

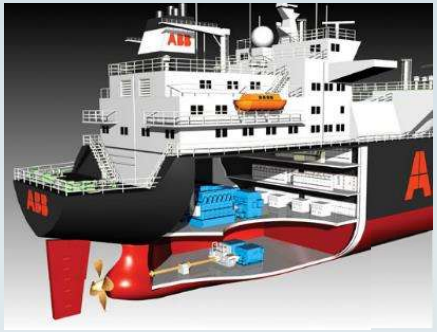
Comserver

Patch Panel



INSPIRING INNOVATIONS

Ship building



Product	Order no.
FL COMSERVER UNI 232/422/485	2313452

Application

- In a vessel, different sensors capture important data such as gas flow, performance or pressure for analysis

Requirement

- Serial data (RS-based) should be converted into Ethernet

Reasons to decide for our product

- Familiar with the Comserver product family

Company description

- ABB is a pioneering technology leader that is writing the future of industrial digitalization. In this case ABB deliver solutions for marine e.g. vessels and terminals.

PHOENIX CONTACT
INSPIRING INNOVATIONS

Ship building

Product	Order no.
FL-PP-RJ45-SC	2901643

Application

Preconfigured cabinets for ships
All Ethernet field devices are connected to the cabinet via patch panels.

Requirement

- Fast and easy connection of Ethernet field cables
- Structured field cable connection without the need to assemble RJ45 connectors

Solution

Ethernet patch panel are especially designed for the industrial use in cabinets.
The patch panels are pre-installed by the cabinet builder. On site, the field cable can be easily connected to the cabinet.

Reasons to decide for our product

- Structured cabinet cabling
- Easy connection of the field cable without the need to assemble RJ45 connectors

PHOENIX CONTACT
INSPIRING INNOVATIONS