



Welcome

Novedades 2021

Interfaces de comunicación

Antonio Gordillo / 5 Mayo 2021 / IMA Marketing



Communication Interfaces

Agenda

- TC Router
- TC ROUTER TOM Software
- CLOUD Client
- NearFi couplers
- Surveillance and new models
- TC 5G PRIVNET ROUTER



What's new at
TC Router ?



TC Router and TOM

Mobile communication

TC ROUTER

- Expanding capabilities

- Urban Infrastructure
Water procurement and wastewater treatment
- Oil and gas industry
Acquiring process data from pumps and pipeline monitoring
- Traffic
Traffic lights, intelligent traffic signs and parking guiding systems
- Renewable energy
Networking for wind generators and solar parks

Features

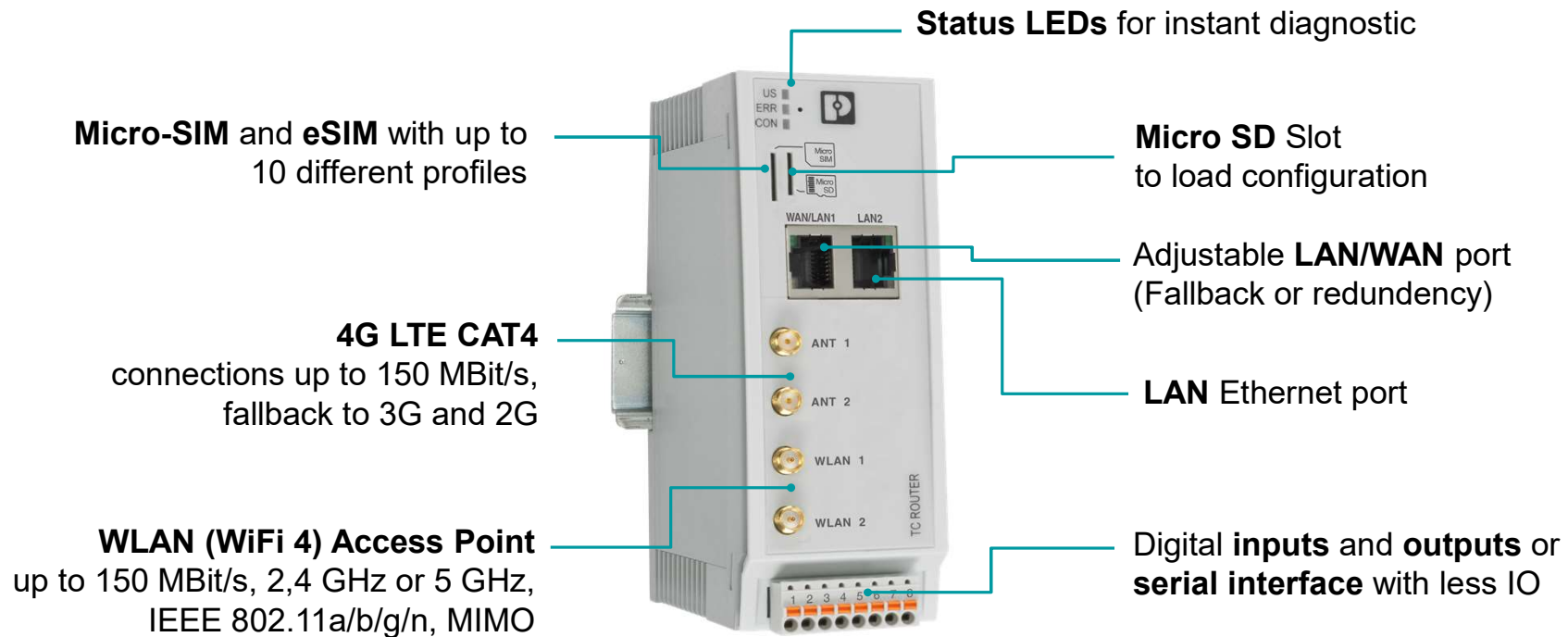
- 4G LTE connections up to 150 mbps, fallback to 3G and 2G
- WLAN (WiFi 4) up to 150 mbps, 2,4 GHz and 5 GHz, IEEE 802.11a/b/g/n, MIMO
- Micro-SIM and eSIM with up to 10 different profiles
- VPN support (IPsec and OpenVPN) as client and server
- Extended operating temperature range -40°C ... 70°C
- 4 digital inputs and 2 digital outputs or integrated serial RS-232/RS-485
- Wide-range power supply, 10...30 VDC



TC Router

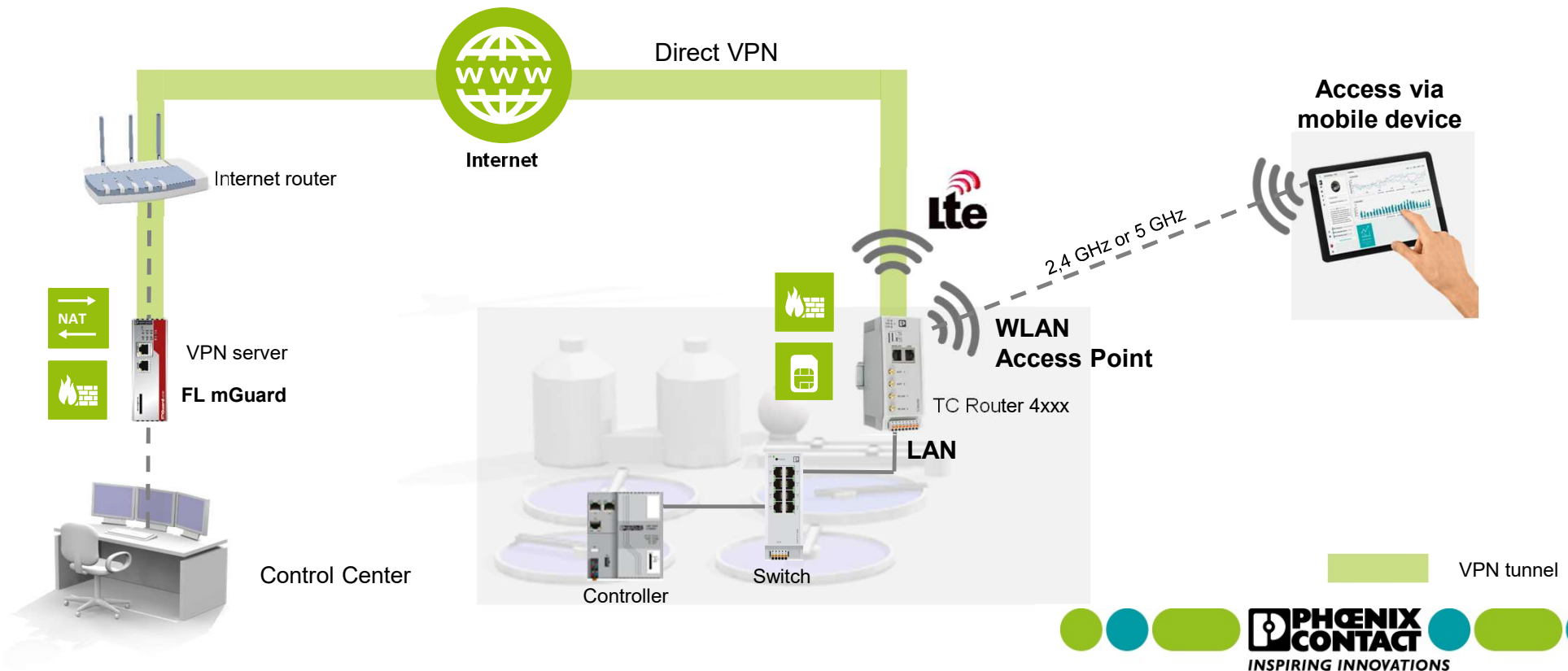
TC ROUTER 4000 - The new router platform for mobile networks

Overview



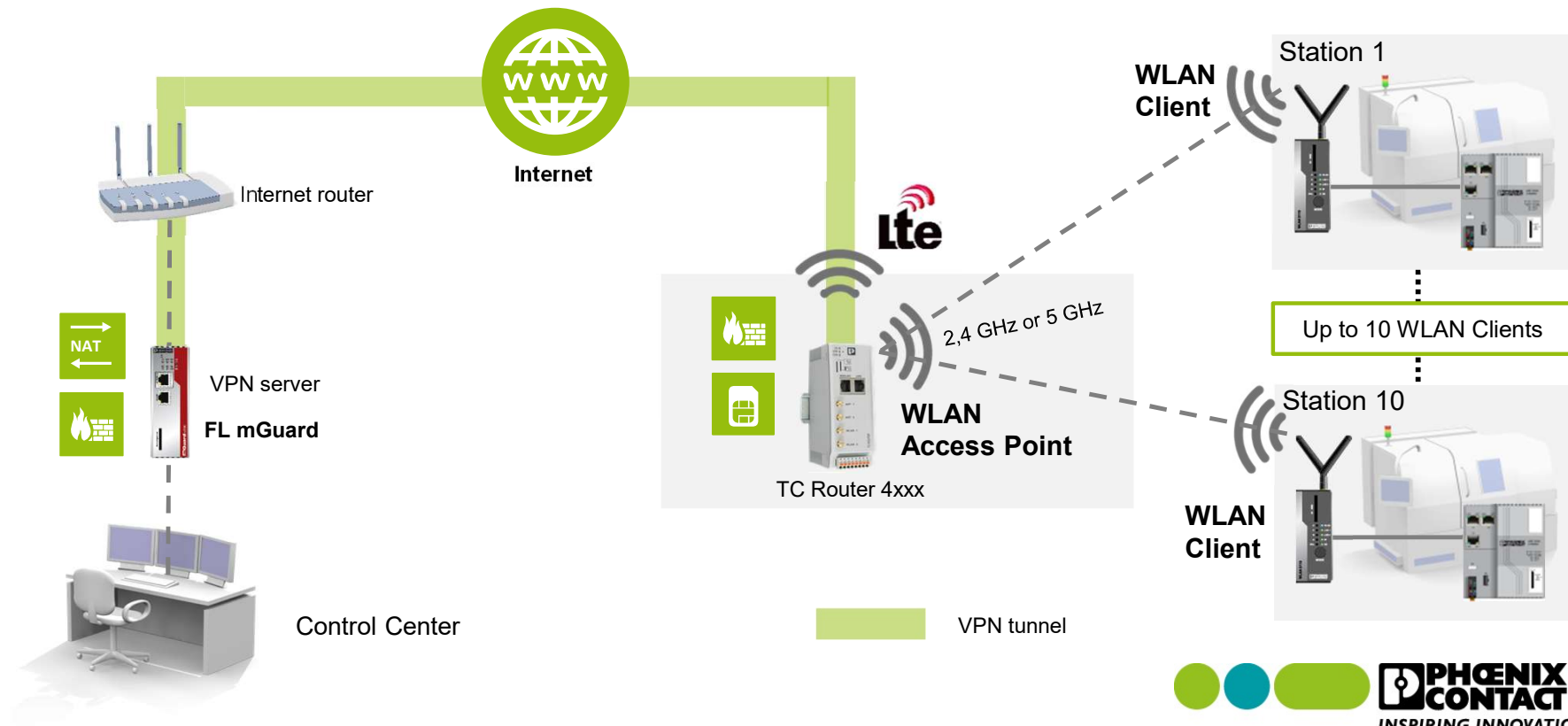
VPN support (IPsec and OpenVPN) as client and server
Extended operating temperature range -40°C ... 70°C

Application example: LAN and WLAN Access Point



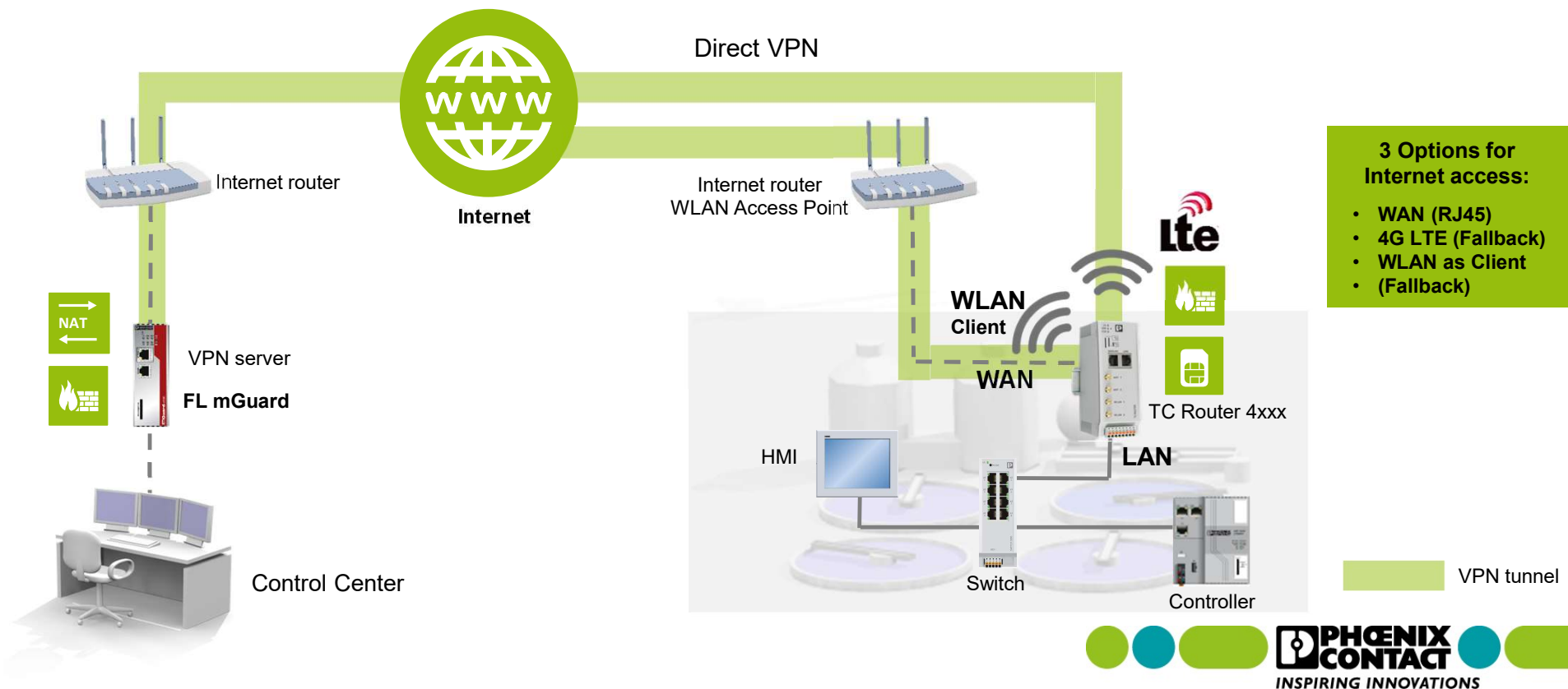
TC ROUTER 4000 - The new router platform for mobile networks

Application example: WLAN Access Point



TC ROUTER 4000 - The new router platform for mobile networks

Application example: WAN, WLAN or mobile Internet access



TC ROUTER 4000 - The new router platform for mobile networks

New Variants



	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,	2,4 GHz WLAN antenna with mounting bracket for outdoor installation,
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	5m antenna cable (SMA)	1,5m antenna cable (RSMA)
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	More solutions available.	More solutions available.
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

* will be launched within 2021

Pre-Launch Information

TC ROUTER - product overview

Product key: DNC4..

Ord.-No.	Designation			Function description
1234352	TC ROUTER 4002T-4G EU			4G-LTE Router with 2 Ethernet-ports, 4 DI & 2 DO
* 1234353	TC ROUTER 4102T-4G EU WLAN			4G-LTE Router with 2 Ethernet-ports, 4 DI & 2 DO and WLAN
1234354	TC ROUTER 4202T-4G EU WLAN			4G-LTE Router with 2 Ethernet-ports, 2 DI, 1 DO, RS-232/485 and WLAN

TC ROUTER Online Manager

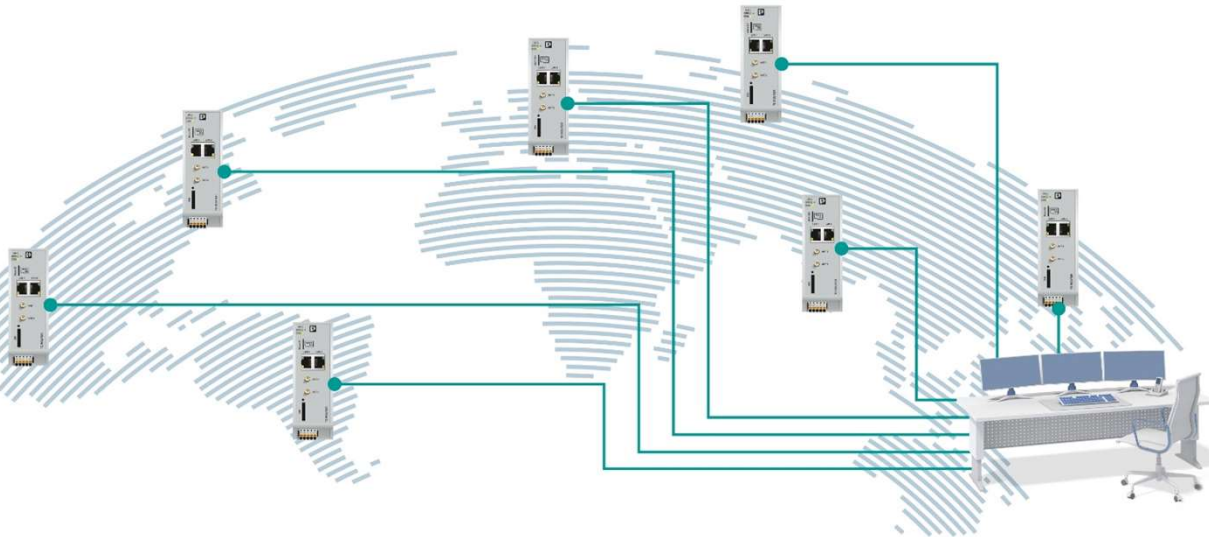
TOM



TC ROUTER TOM Software

TC Router Online Manager

Management for all TC Router

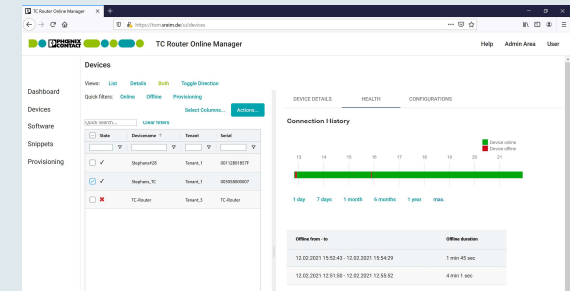


NEW

TOM



- Security and Firmware updates
- Configuration changes
- Device status
- Locally (on premise) or in a cloud.
- Up to 22500 routers can be managed.



What's new at
Cloud Clients ?

CLOUD Client

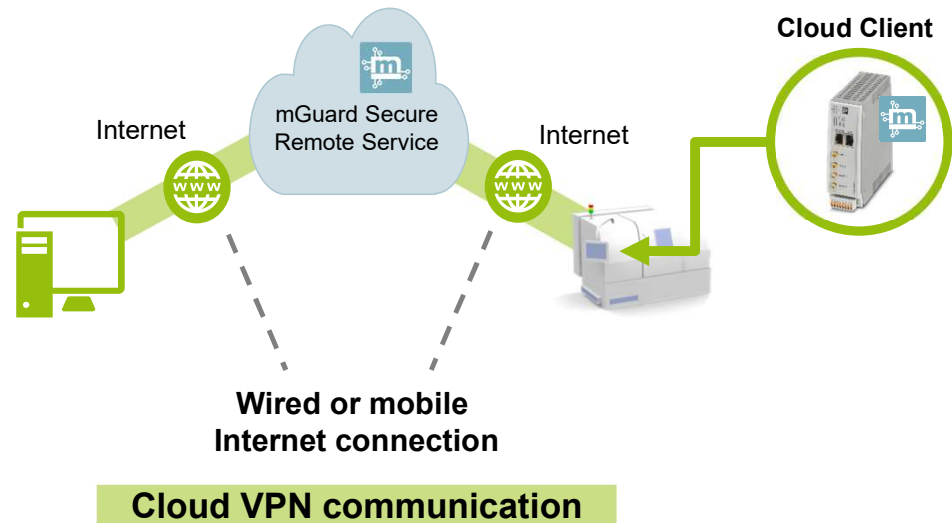


CLOUD Client

Products

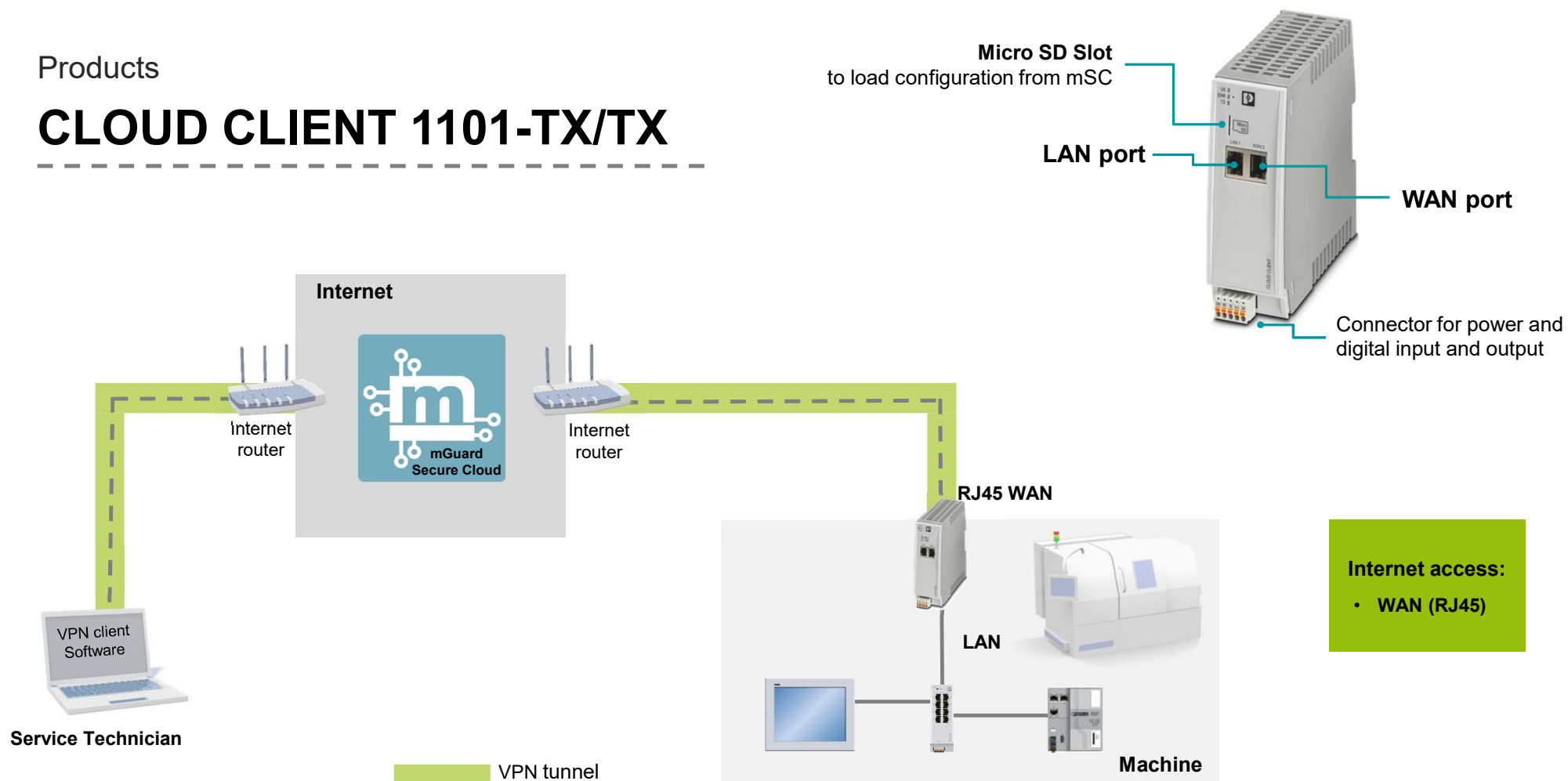
CLOUD CLIENT's for mGuard Secure Remote Service

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



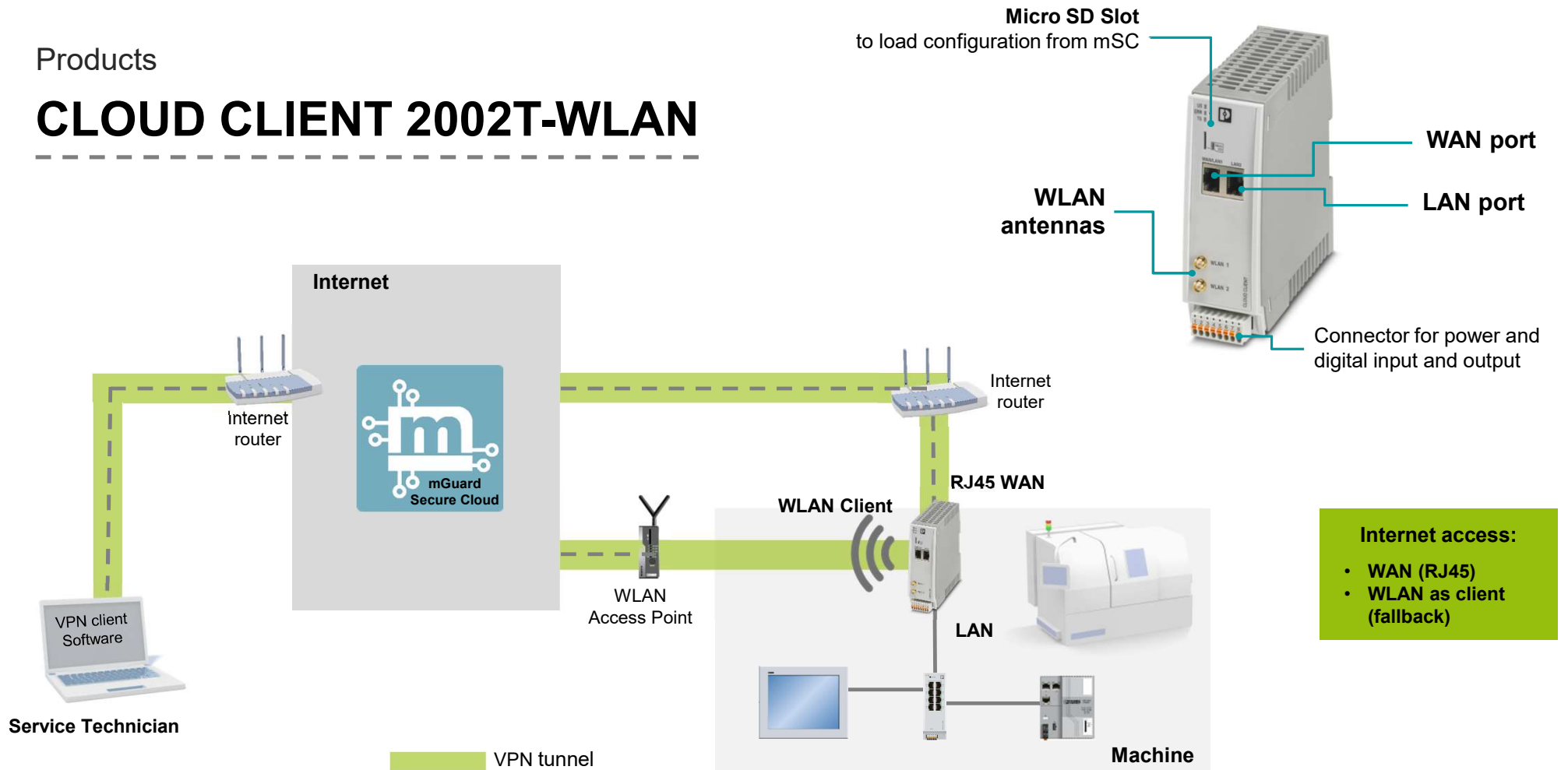
Products

CLOUD CLIENT 1101-TX/TX



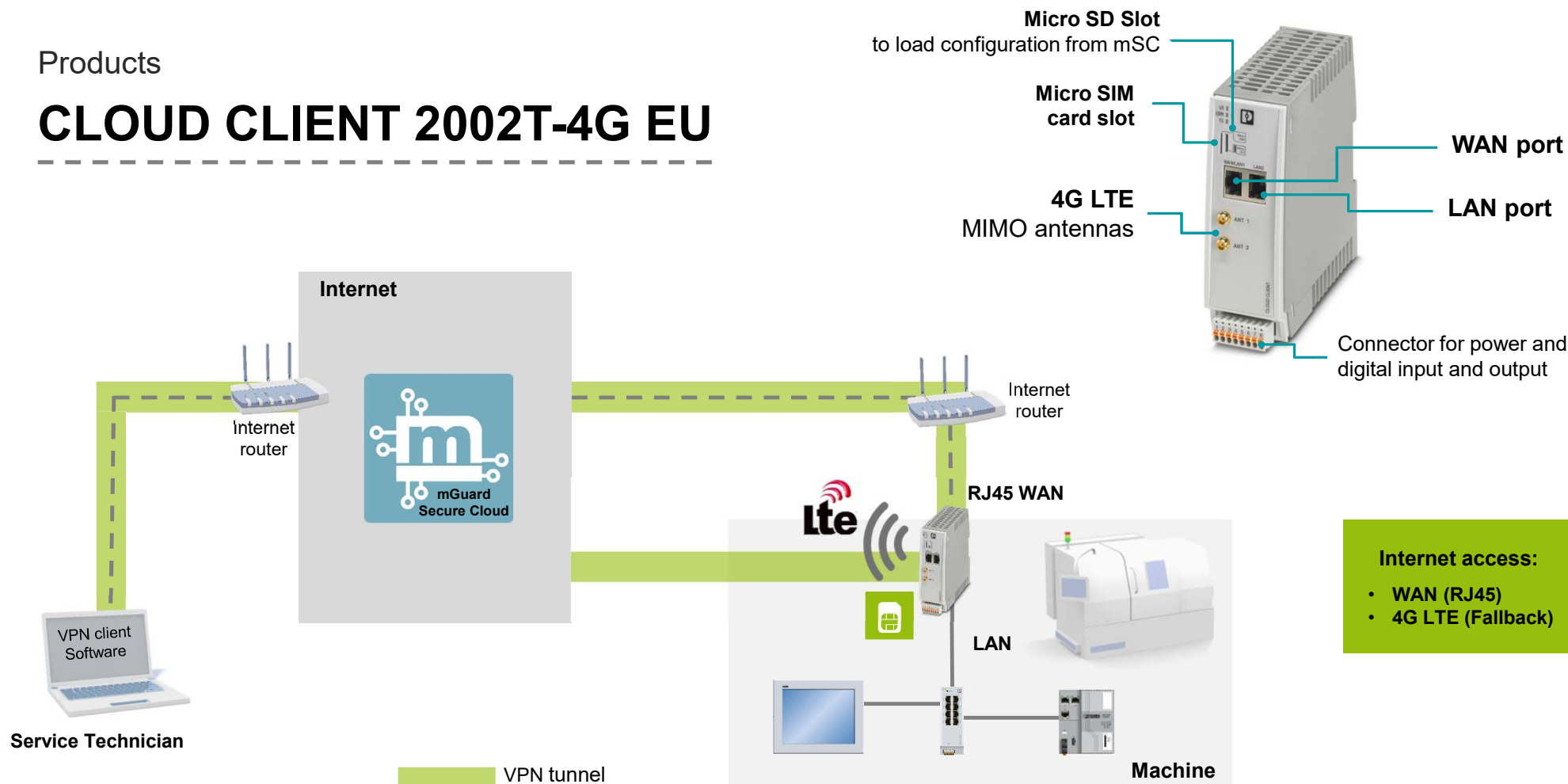
Products

CLOUD CLIENT 2002T-WLAN



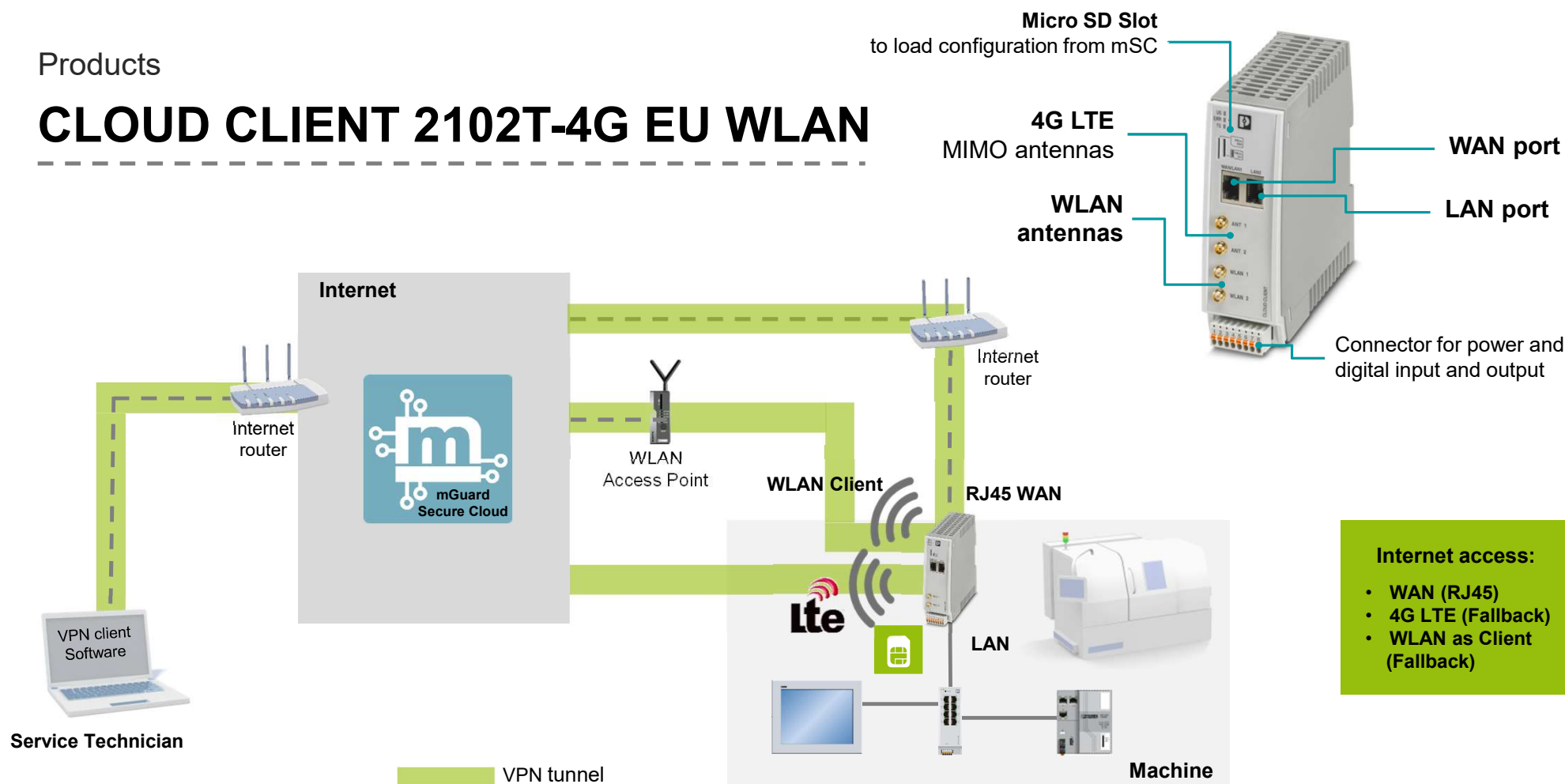
Products

CLOUD CLIENT 2002T-4G EU



Products

CLOUD CLIENT 2102T-4G EU WLAN



New Products 2021

CLOUD CLIENTs



	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/ predefined rules			
VPN Tunnel	1 IPsec VPN tunnel to the mGuard Secure Cloud			
Order number	1221706	1234355	1234360	1234357

Pre-Launch Information

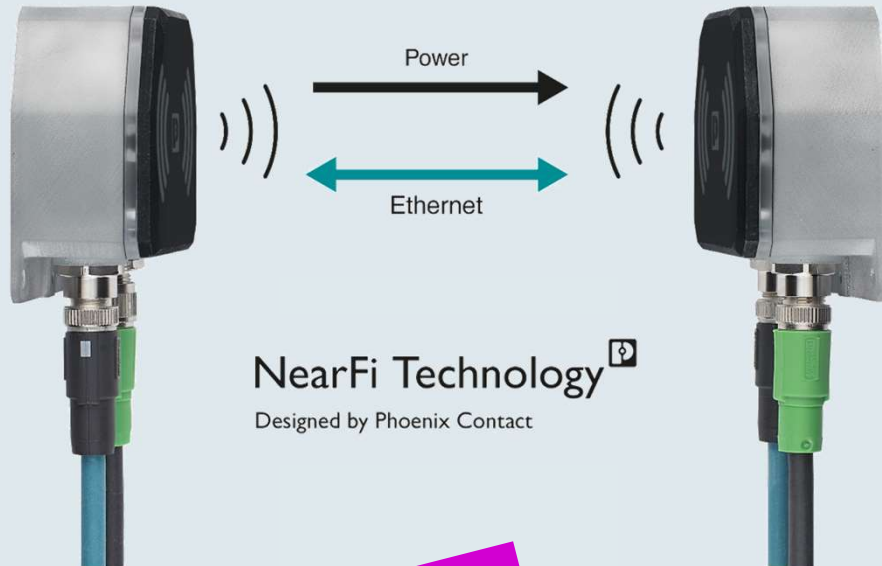
CLOUD CLIENT - product overview

Product key: DNC4..

Ord.-No.	Designation			Function description
1234355	CLOUD CLIENT 2002T-4G EU			Cloud Client for mGuard Secure Cloud connections via 4G-LTE
* 1234360	CLOUD CLIENT 2002T-WLAN			Cloud Client for mGuard Secure Cloud connections via WLAN
1234357	CLOUD CLIENT 2102T-4G EU WLAN			Cloud Client for mGuard Secure Cloud connections via WLAN or 4G-LTE
* 1221706	CLOUD CLIENT 1101T-TX/TX			Cloud Client for mGuard Secure Cloud connections via LAN/WAN Ethernet ports

What is NearFi ?

PROFINET EtherCAT[®] EtherNet/IP[™] Modbus

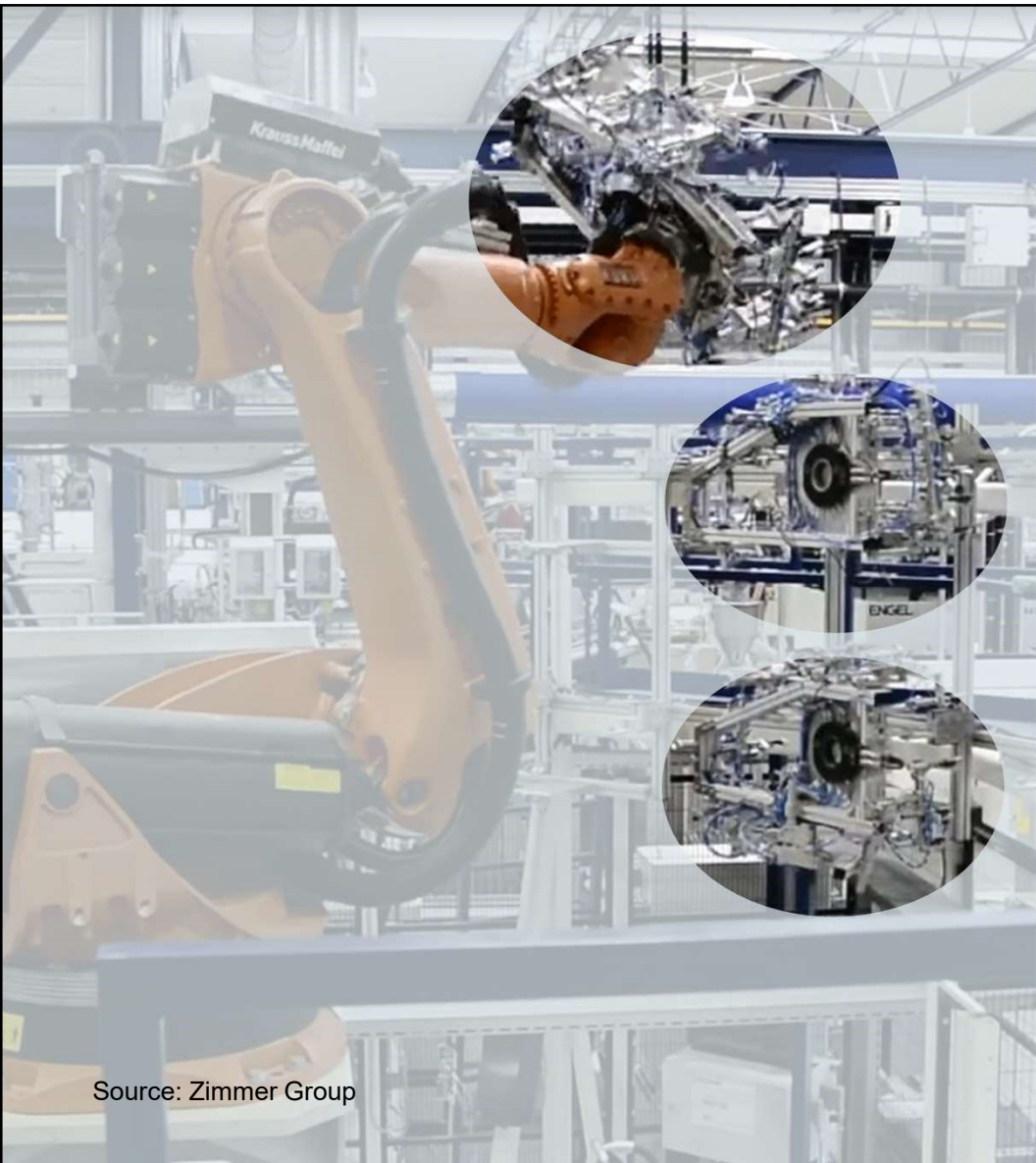


NearFi Technology[®]
Designed by Phoenix Contact

NEW

NearFi coupler

Contactless energy & data communication



Source: Zimmer Group

NearFi coupler

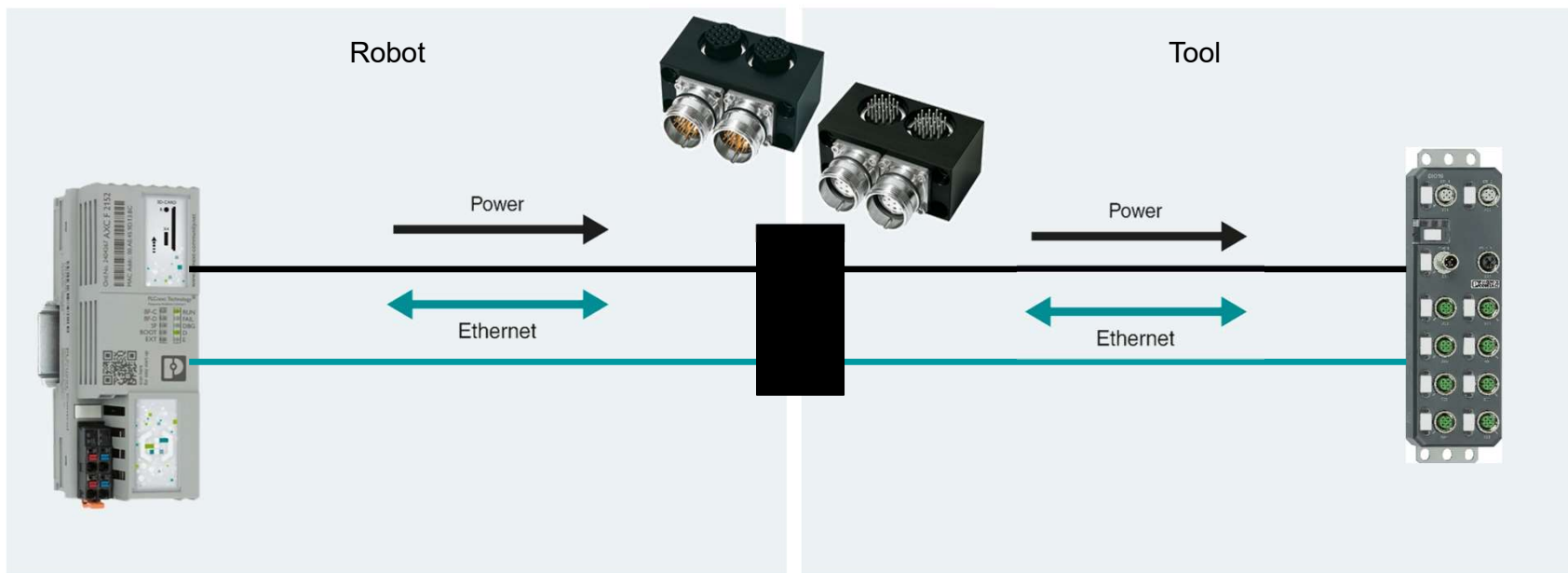
Example: Tool change on the robot

- 3 tools per robot (ø)
- > 500 change/day (ø)
- Max. 100,000 mating cycles

NearFi coupler

Example: Tool change on the robot

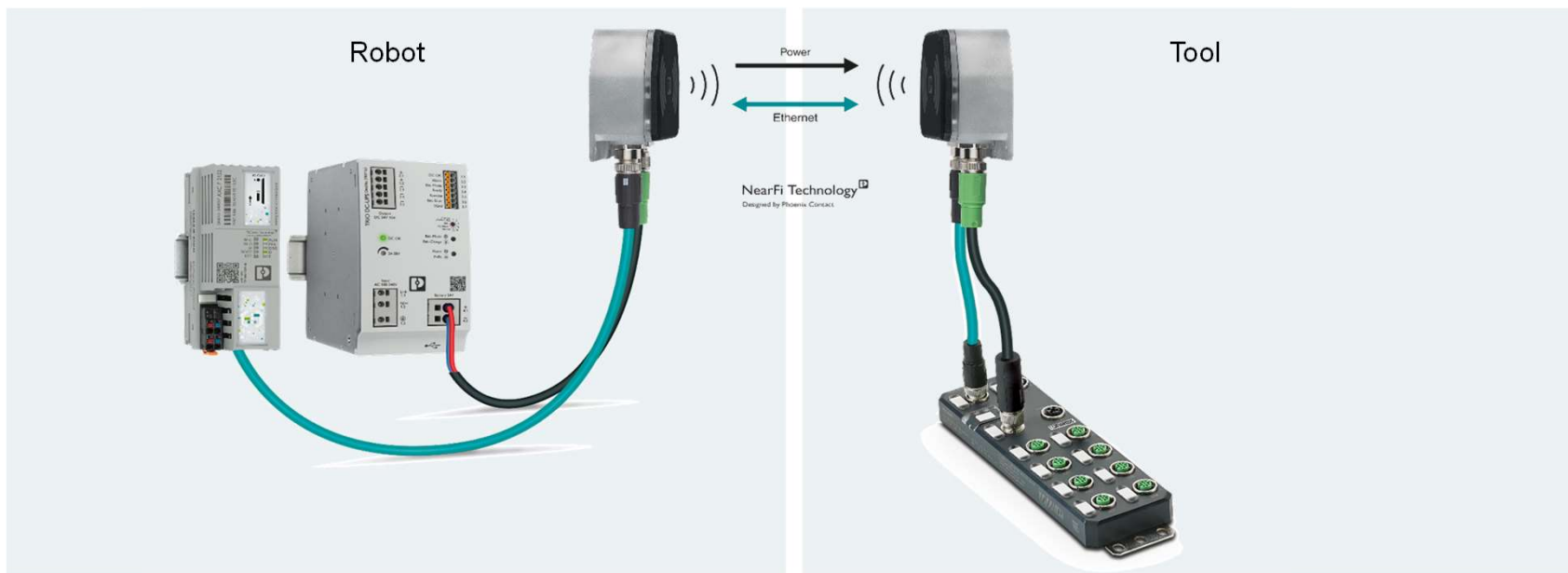
Energy transmission and Ethernet data communication from the robot to the change tool



NearFi coupler

The solution for connectors subject to wear and maintenance

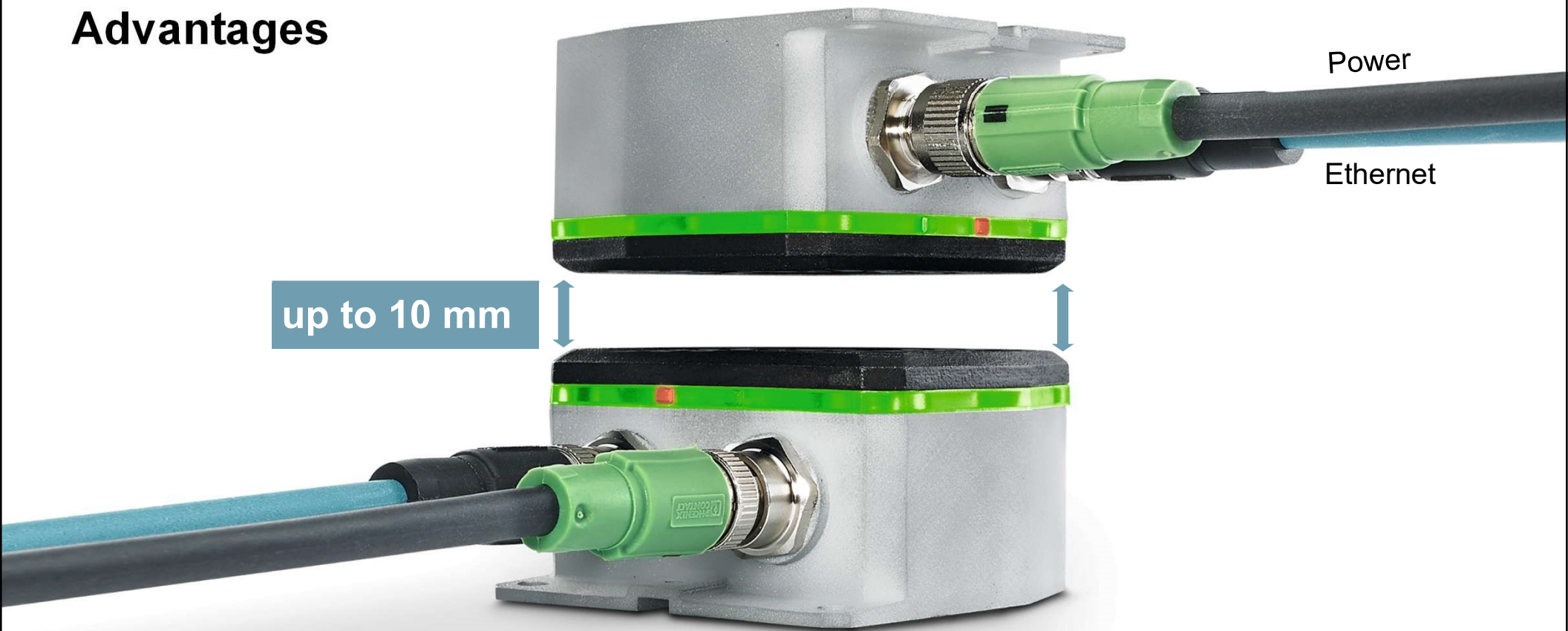
Contactless power transmission and Ethernet data communication from the robot to the change tool



Technology NearFi

NearFi coupler

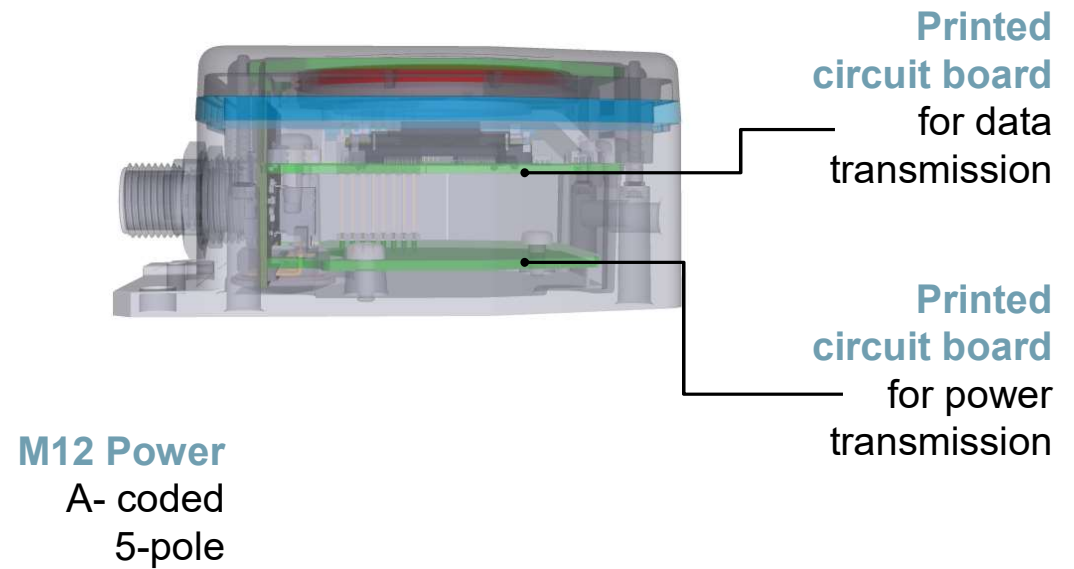
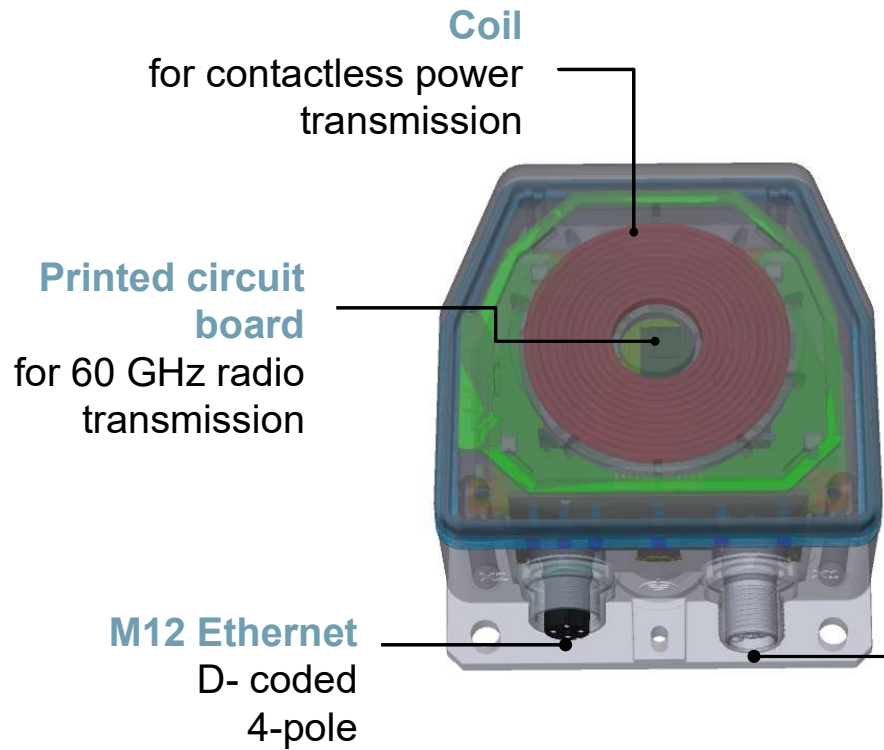
Advantages



NearFi coupler

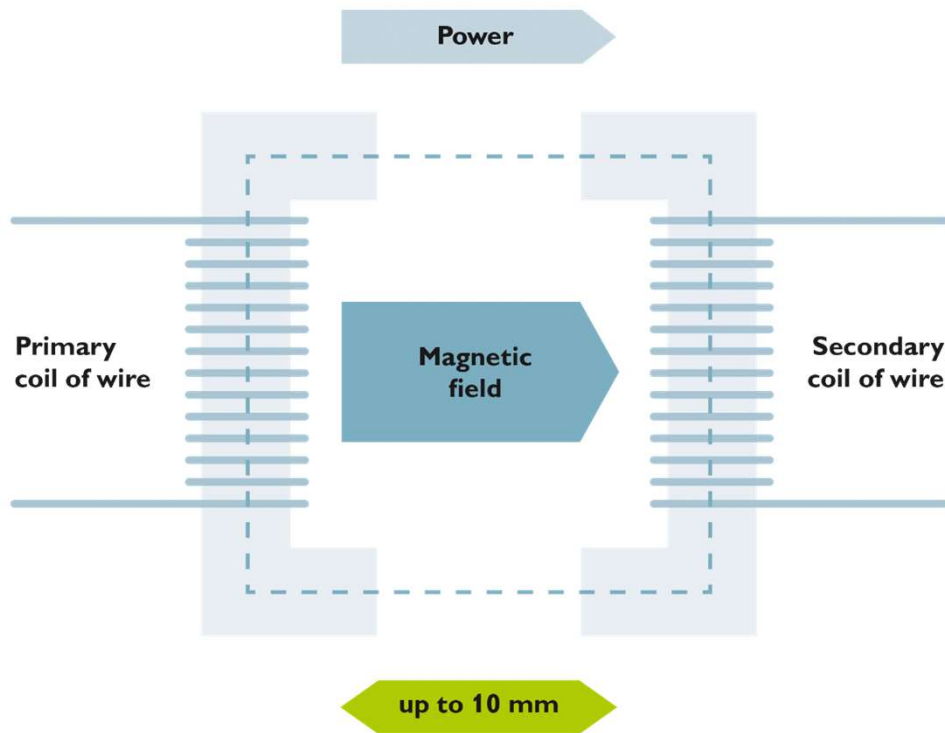
Technical structure coupler

NearFi Technology 
Designed by Phoenix Contact

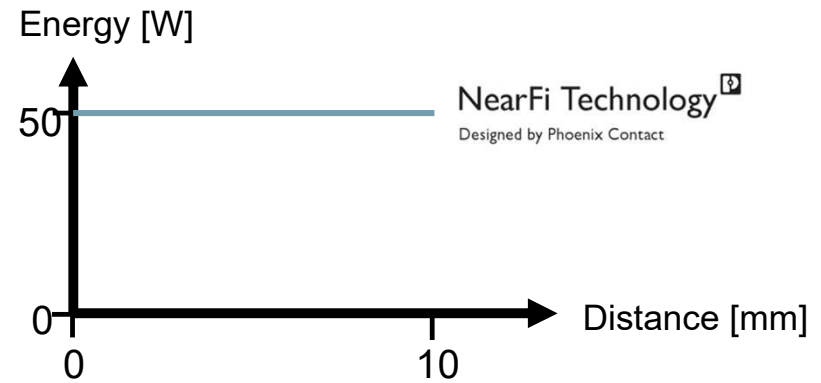


NearFi coupler

Inductive power transmission

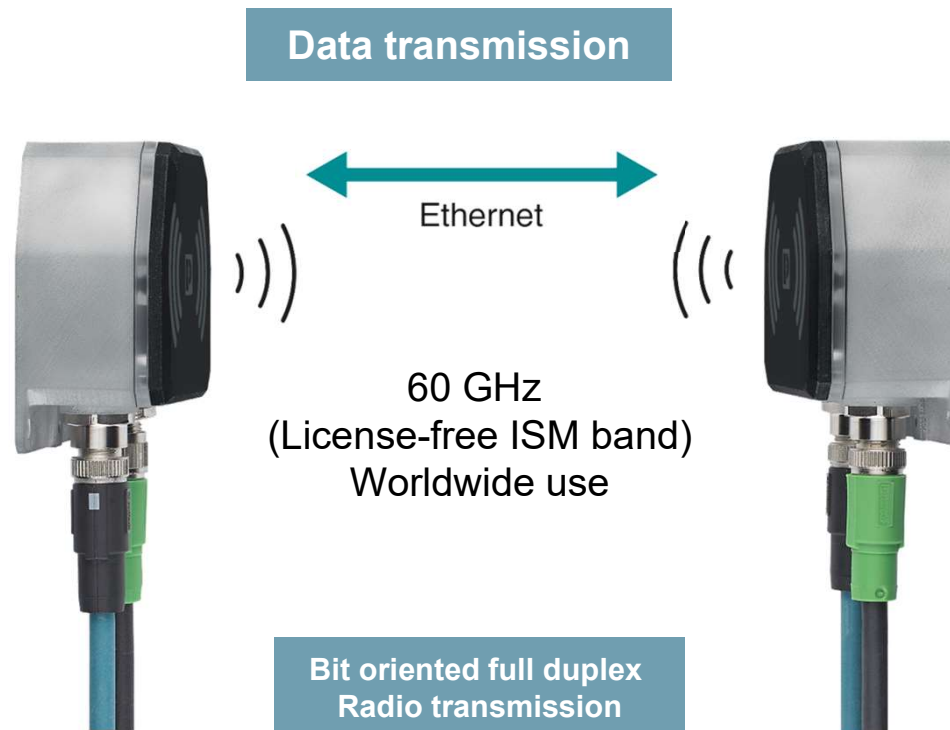


- Inductive power transmission up to 50 W (24 V / 2 A)
- **Constant** energy transmission over 10 mm air gap due to active control



NearFi coupler

Contactless real-time Ethernet communication



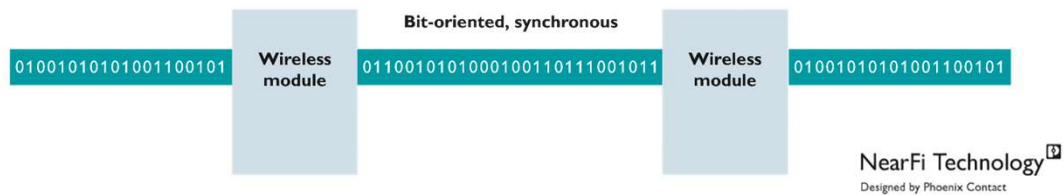
EtherCAT

EtherNet/IP



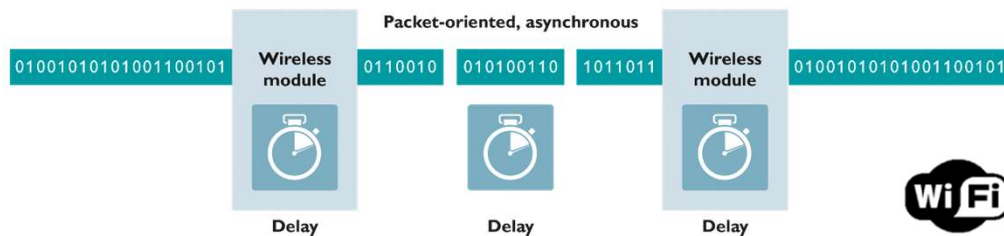
NearFi coupler

Contactless real-time Ethernet communication



Bit-oriented synchronous transmission

- Bit-oriented - Immediate synchronous transfer of data
- Full duplex - Simultaneously in both directions (parallel on separate frequency bands)
- Delay typ. **2 μ s**



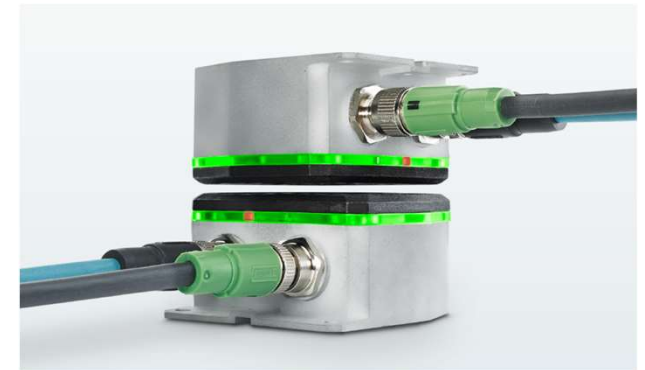
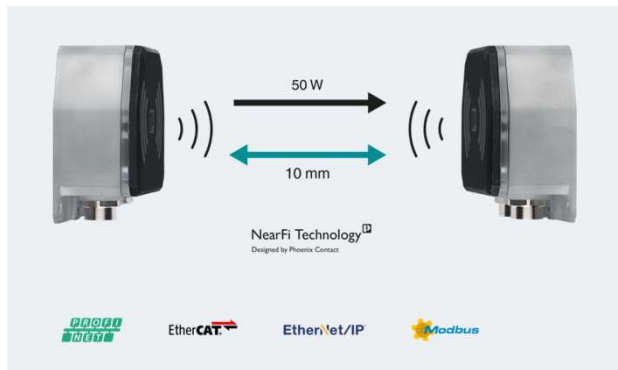
Packet-oriented asynchronous transmission

- Packet-oriented - process includes many asynchronous and latency-causing operations
- Half duplex - alternating in both directions (one after the other on one frequency band)
- Delay typ. **16,000 μ s**

Features

NearFi coupler

Main features



Ethernet in real time

- 100 Mbit/s Ethernet (full duplex)
- Protocol-independent
- Latency-free



Inductive power transmission

- Up to 50 W (24 V / 2 A)
- Constant output over 10 mm working range thanks to active control

Commissioning and diagnostics

- Plug & Play
- Circumferential LED ring for quick diagnosis
- Digital control input
- Digital diagnostic output

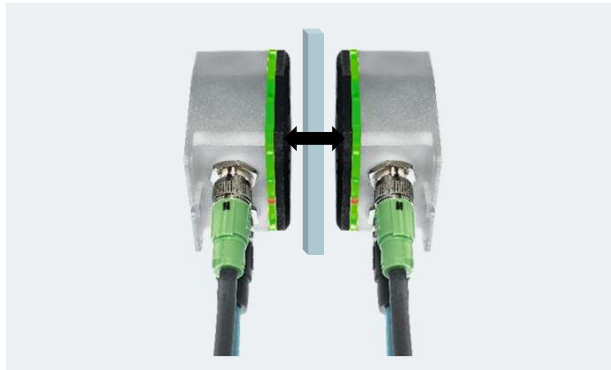
NearFi coupler

Main features



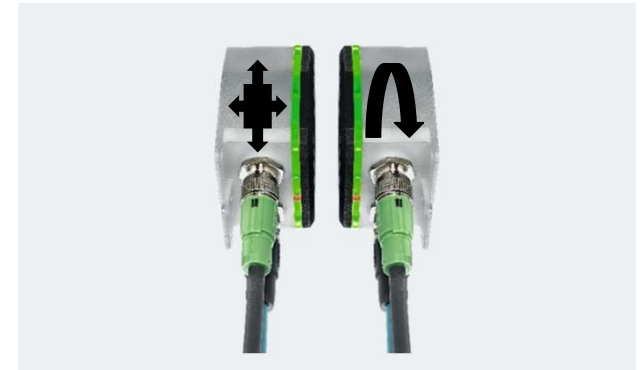
Wear and maintenance free

- Can be used in harsh conditions
- Robust housing (IP65, IK06)
- M12 connection technology



Transmission

also possible through **non-metallic obstacles**

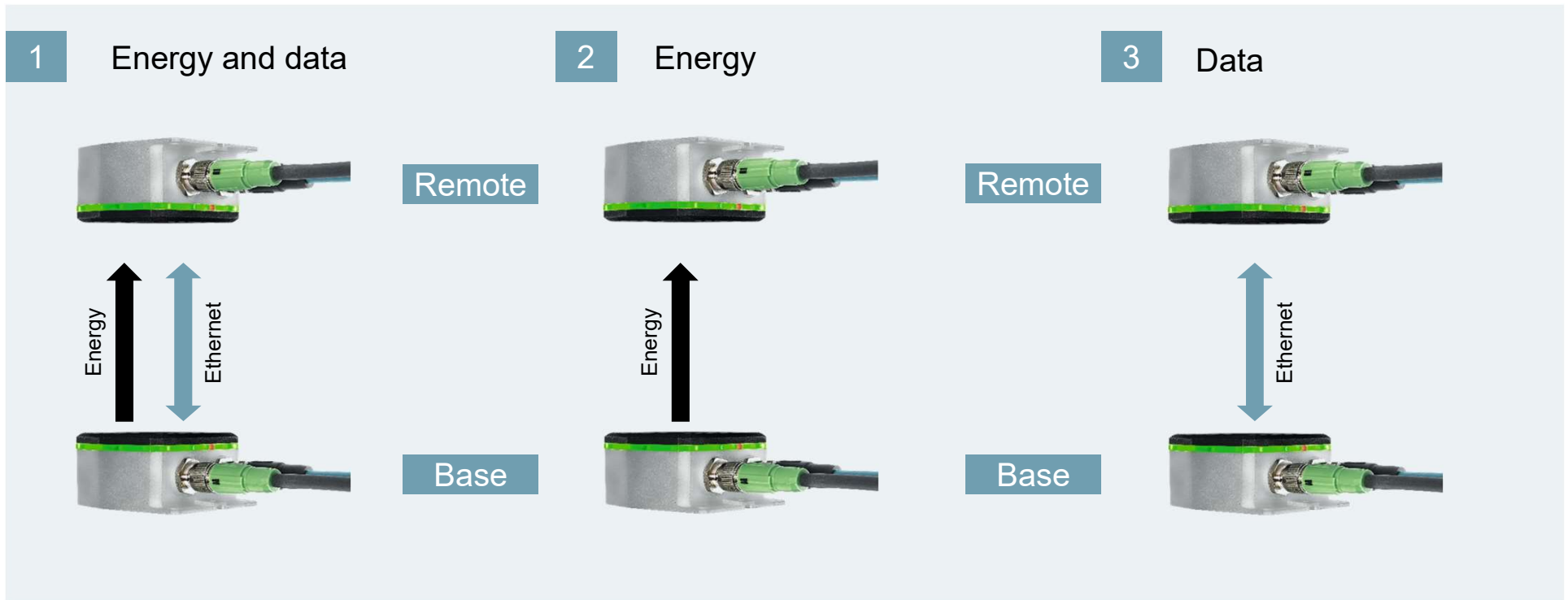


Flexible installation

- Insensitive to vibrations
- No cable break
- Rotation possible




NearFi coupler

Product portfolio - 3 variants



NearFi coupler

Product portfolio

Description	Variants					
Variant	Contactless Energy and data coupler		Contactless energy couplers		Contactless data coupler	
Type	Base	Remote	Base	Remote	Base	Remote
Article description	NEARFI PD 2A ETH B	NEARFI PD 2A ETH R	NEARFI P 2A B	NEARFI P 2A R	NEARFI D ETH B	NEARFI D ETH R
Item number	1234224	1234225	1234226	1234229	1234232	1234234
Product photo						
Recommended market price						

NearFi coupler

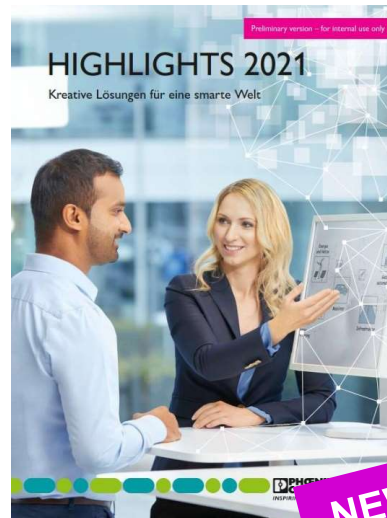
Marketing material - print



Industrial Wireless
Drahtlos vom Sensor bis ins Netzwerk

NEW

"Industrial Wireless" Brochure



NEW

"Highlights 2021" brochure



New products 2021
Connection and automation technology

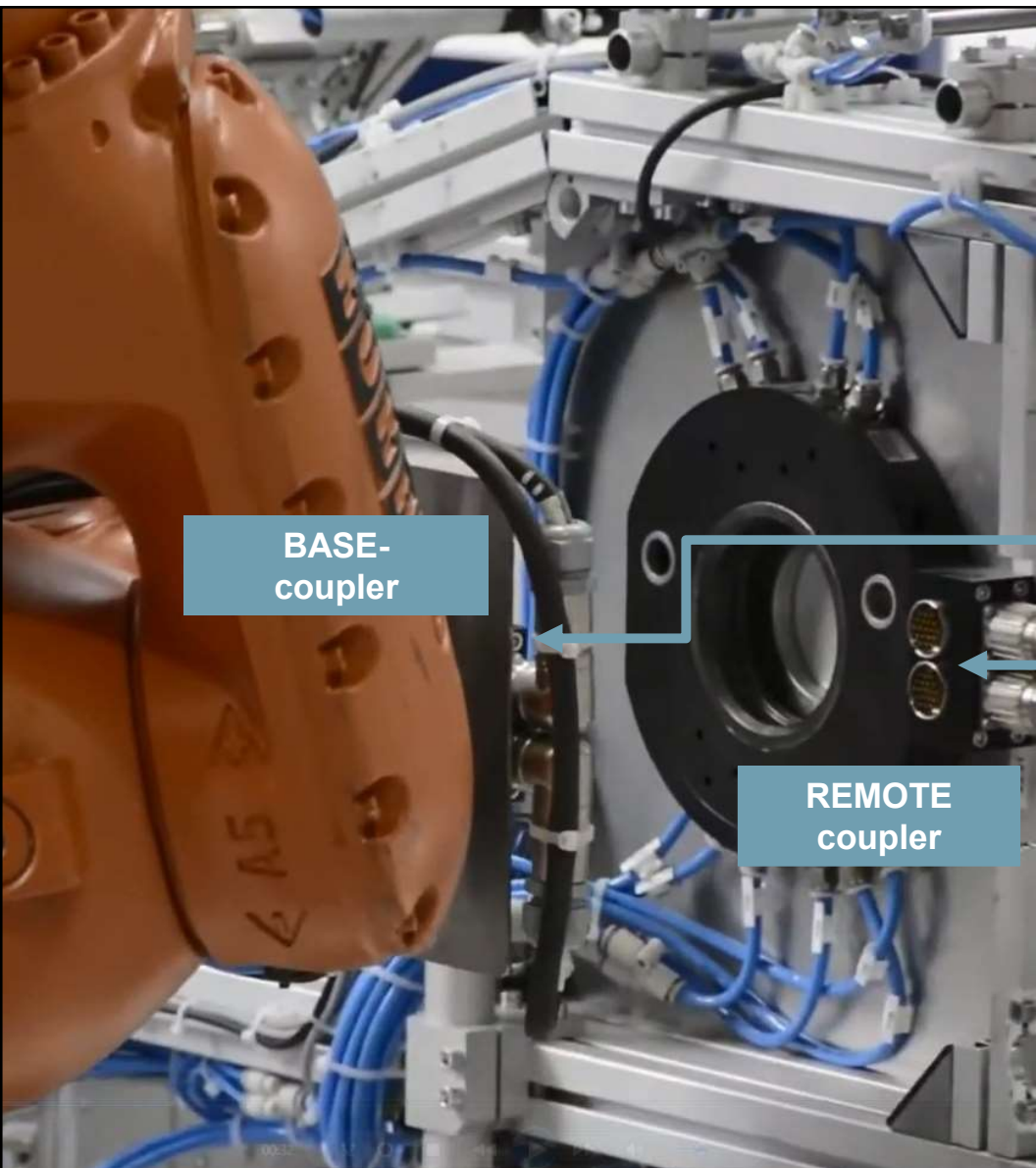
NEW

"New products 2021" brochure



NEW

Press Info



NearFi coupler

Assembly example: Robot change tool



NearFi coupler

Example: Tool change on the robot

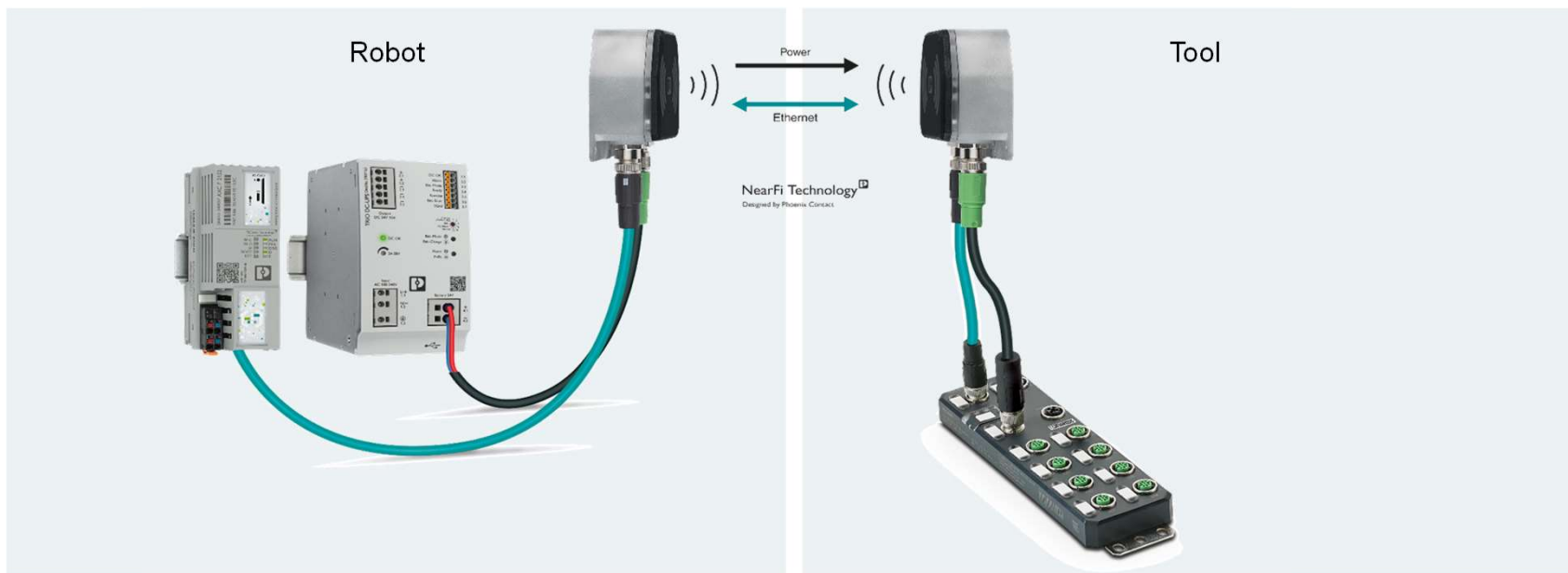


Quelle: Zimmer Group

NearFi coupler

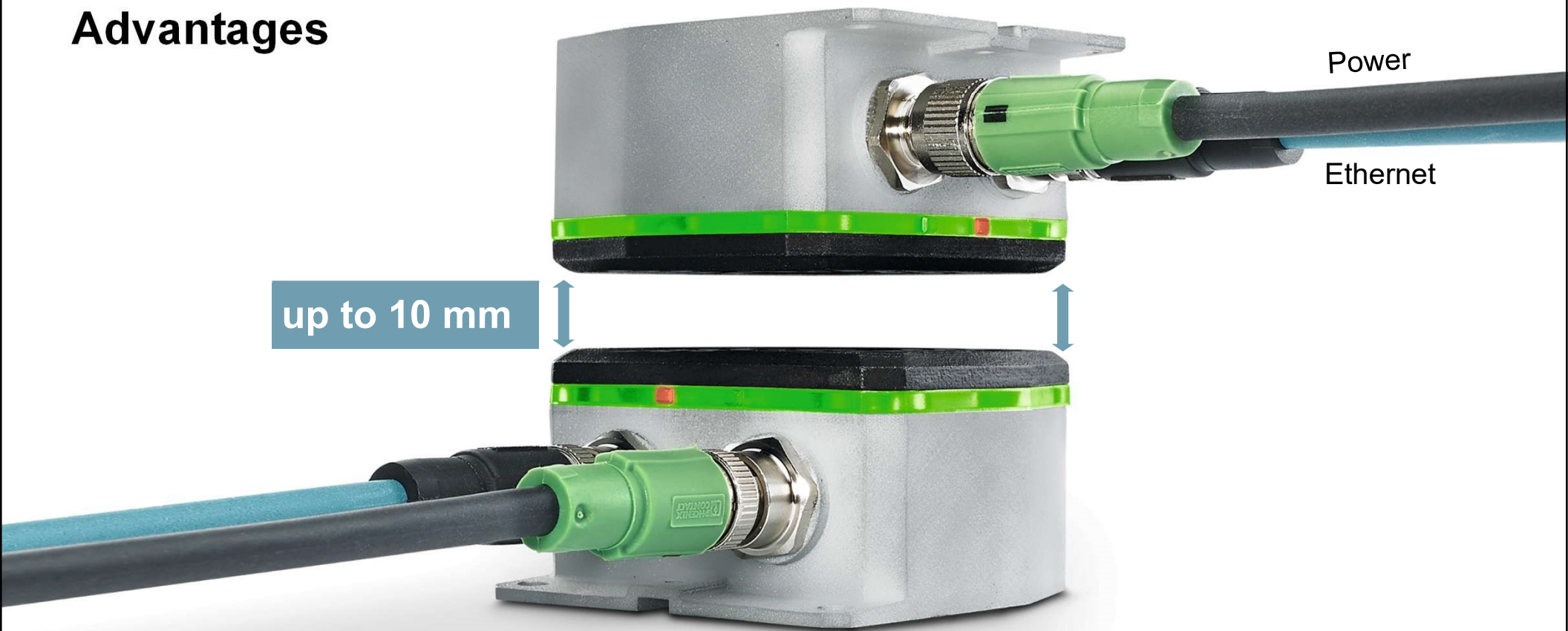
The solution for connectors subject to wear and maintenance

Contactless power transmission and Ethernet data communication from the robot to the change tool



NearFi coupler

Advantages



NearFi coupler

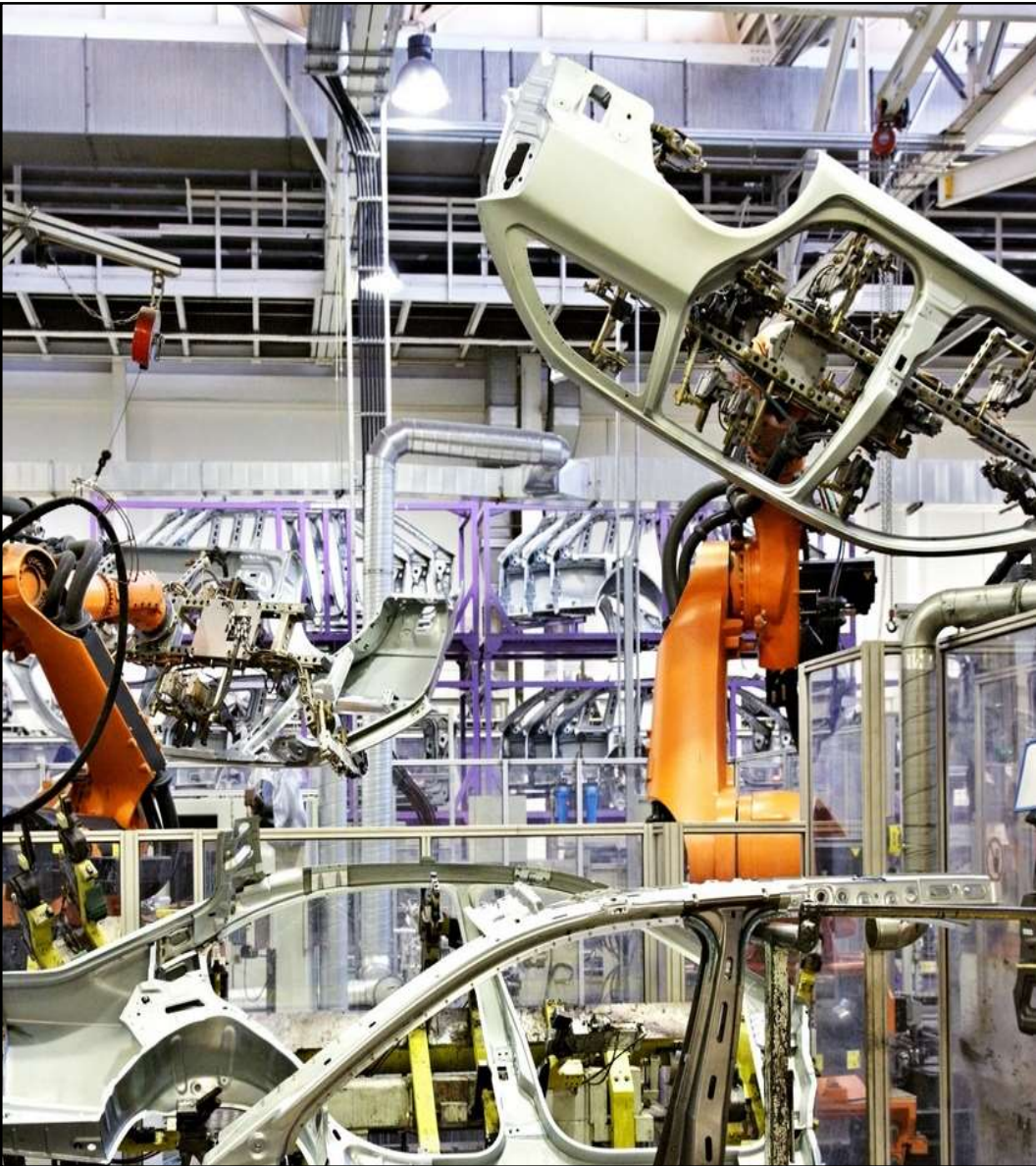
Advantages



NearFi Technology 
Designed by Phoenix Contact

- 1 Reduction of downtime
- 2 No mechanical wear
- 3 No pollution
- 4 No tilting during coupling
- 5 High mounting freedom
- 6 Accelerated coupling process
- 7 Protocol-independent real-time communication

Applications



Application example

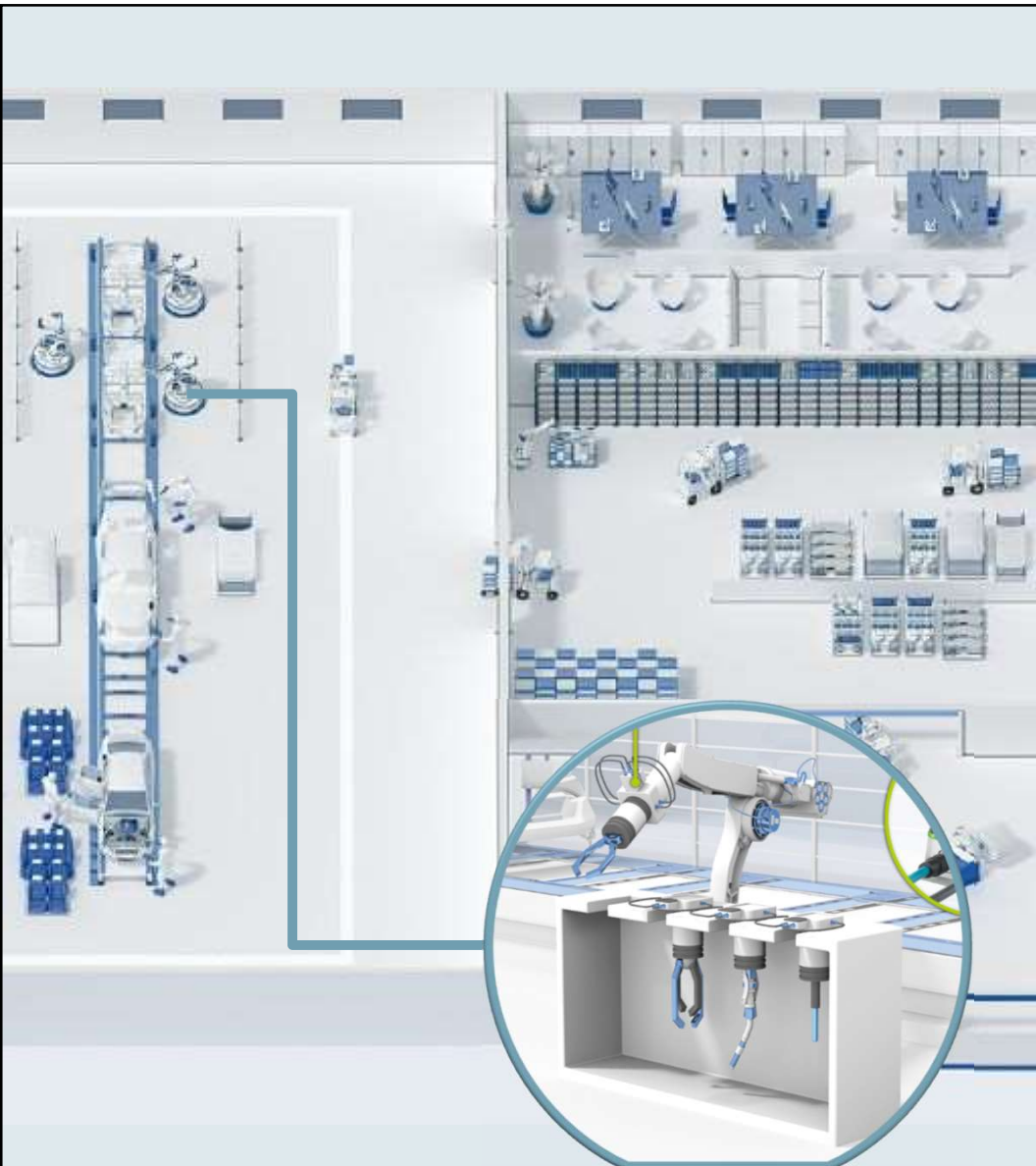
Automotive industry

Target applications:

- Robot with interchangeable tools
- Rotary tables, rotary indexing tables, presses
- Transport systems (framer)
- Load and workpiece carriers

Key Requirements:

- Real-time communication
- Fast Startup
- Coexistence with WLAN
- Robust
- Low solution costs



Application example

Robot tool change

Target applications:

- Robot with interchangeable tools

Key Requirements:

- Coexistence with existing WLAN
- Profinet Fast Startup
- Real-time communication

Solution:

- NearFi: Profinet real-time communication in the 60 GHz band, near field (max 10 mm)



Application example

Rotary indexing tables

Target applications:

- Slip ring replacement

Key Requirements:

- Compact design
- Real-time communication

Solution:

- NearFi: Profinet real-time communication in the 60 GHz band, near field (max 10 mm)



Application example

Transport systems

Target applications:

- Identification of workpieces in goods distribution and material flow systems

Key Requirements:

- Coexistence with existing WLAN
- High mounting freedom due to flexible approach options

Solution:

- NearFi: Profinet real-time communication in the 60 GHz band, near field (max 10 mm)



Application example

Mechanical and plant engineering

Target applications:

- Beverage filling machines
- Machine tools
- Packaging machines

Key Requirements:

- High performance
- Compact design
- Robust
- Real-time communication
- Low solution costs



Application example

Machine tools

Target applications:

- Slip ring replacement

Key Requirements:

- Compact design
- Real-time communication

Solution:

- NearFi: Profinet real-time communication in the 60 GHz band, near field (max 10 mm)



Application example

Industrial robot

Target applications:

- Human-robot collaboration
- Lightweight robot
- Regular docking at various workstations

Key Requirements:

- Contactless Ethernet real-time communication
- Robust housing
- High mounting freedom due to flexible approach options



Application example

Logistics

Target applications:

- Driverless transport systems
- Identification of pallets in transport systems
- Goods distribution and material flow systems

Key Requirements:

- Real-time communication
- Coexistence with WLAN
- Compact design
- Robust
- Low solution costs



Application example

Driverless transport vehicles

Target applications:

- Contactless transfer of transport orders between AGV and fleet control in the loading station

Key Requirements:

- Coexistence with existing WLAN
- High mounting freedom due to flexible approach options

Solution:

- NearFi: communication in the 60 GHz band, near field (max 10 mm)



Application example

Cleanroom systems

Target applications:

- Medical technology, food, electrical industry
- Avoidance of particle contamination due to plug connections
- Transmission through glass or other materials






Key Requirements:

- Real-time communication
- Coexistence with WLAN
- Robust
- Obstacle penetration

Technology NearFi

NearFi coupler

Technology comparison - data transmission

Technology	Wear	Data rate (gross)	Transmission type	Latency
Wired / Connector	---	+++ < 1,000 Mbit/s	Full duplex	+++
NearFi Technology ¹² <small>Designed by Phoenix Contact</small>	+++	+++ < 1,000 Mbit/s	Full duplex	++ ~ 0.002 ms
	- (pollution)	+++ < 1,000 Mbit/s	Full duplex	++ > 0.001 ms
	+++	++ < 1,000 Mbit/s	Half duplex	+ > 1 ms
	+++	+ < 600 Mbit/s	Half duplex	- > 16 ms
	+++	- < 150 Mbit/s	Half duplex	-- > 30 ms
	+++	< 3 Mbit/s	Half duplex	> 30 ms

NearFi coupler

Real-time contactless communication



PATENTED

Real-time Ethernet transmission

- Bit-oriented full duplex transmission
- Ethernet protocol independent
- Latency-free
- 500 times faster than 5G
- Fast start-up (Fast start-up)
- Worldwide use (license-free 60 GHz ISM band)
- Near-field communication in the millimeter range
- Trouble-free operation next to WLAN



Inductive power transmission

- High power density
- Constant power over large working range due to active control



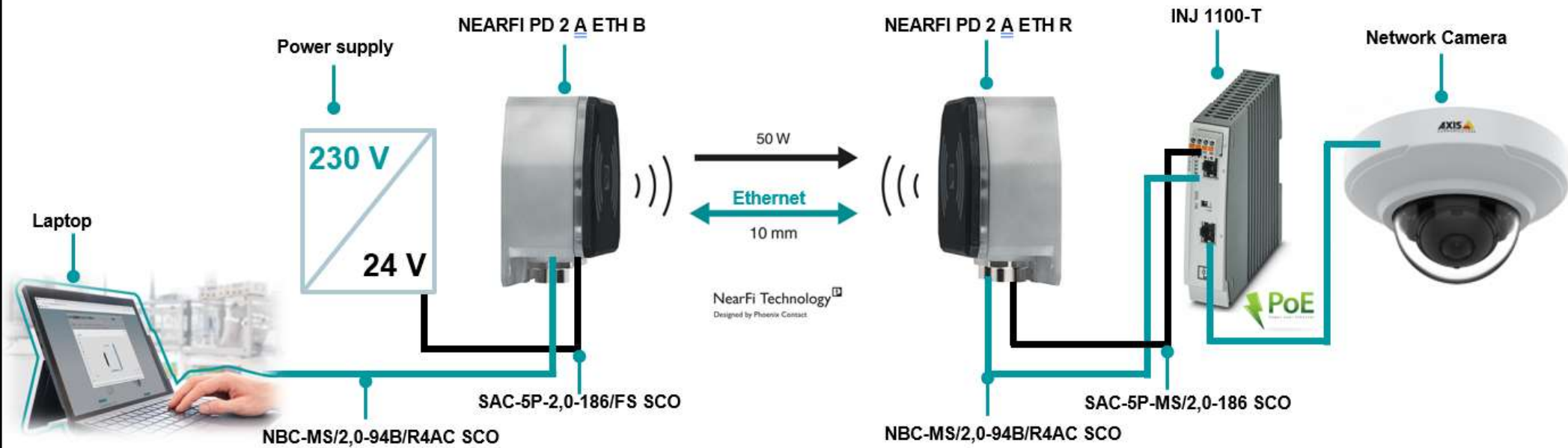
Wear and maintenance free

- No mechanical wear
- No bending
- No soiling
- High mounting freedom due to flexible approach options

Live demo

NearFi coupler

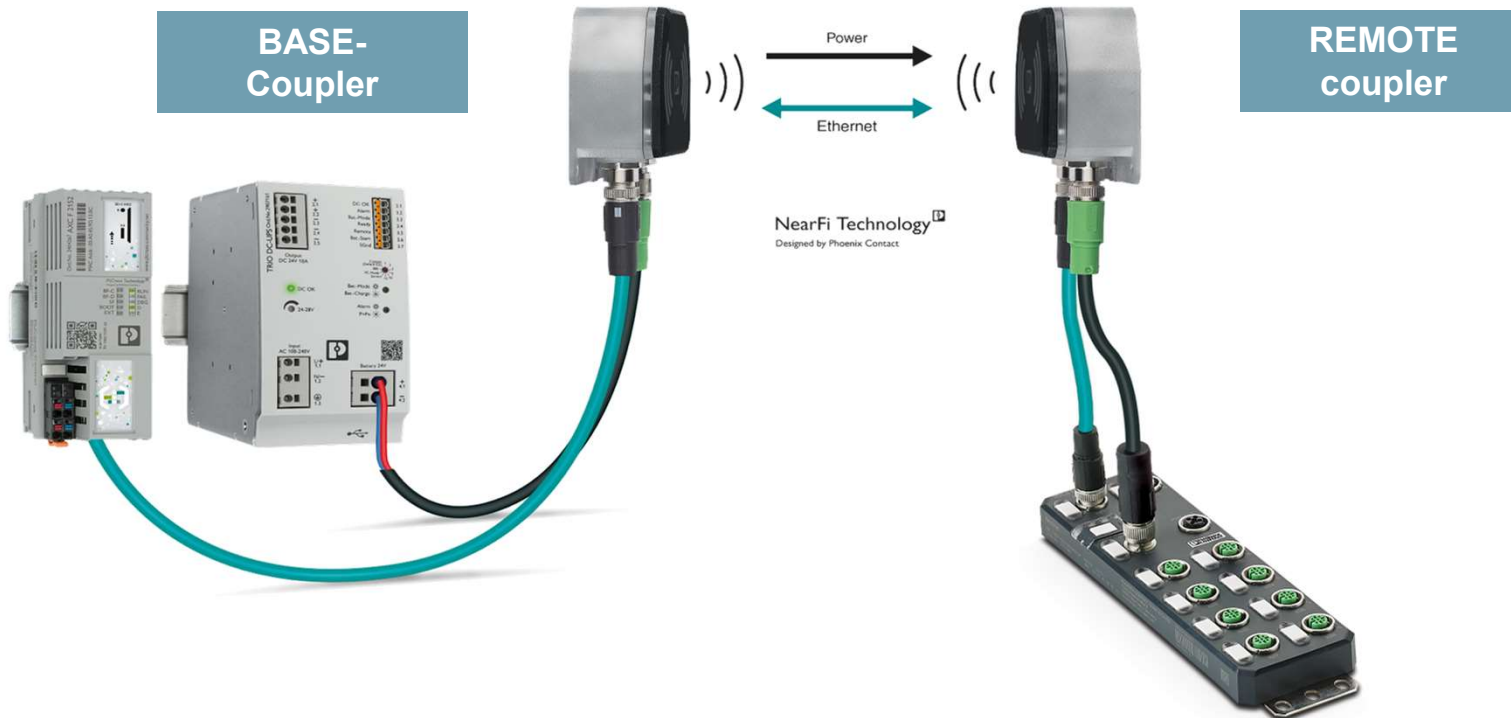
Live Demonstration



Features

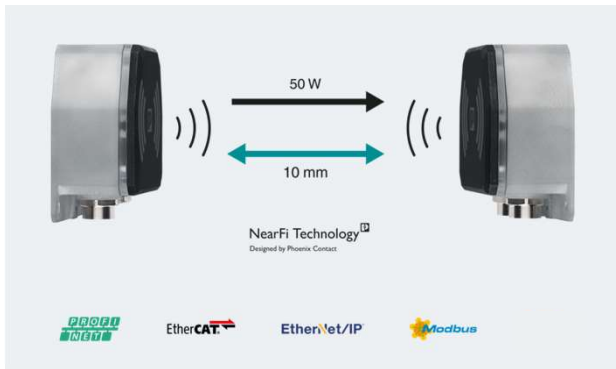
NearFi coupler

Installation example base and remote coupler



NearFi coupler

Main features



Ethernet in real time

- 100 Mbit/s Ethernet (full duplex)
- Protocol-independent
- Latency-free



Inductive power transmission

- Up to 50 W (24 V / 2 A)
- Constant output over 10 mm working range thanks to active control



Commissioning and diagnostics

- Plug & Play
- Circumferential LED ring for quick diagnosis
- Digital control input
- Digital diagnostic output

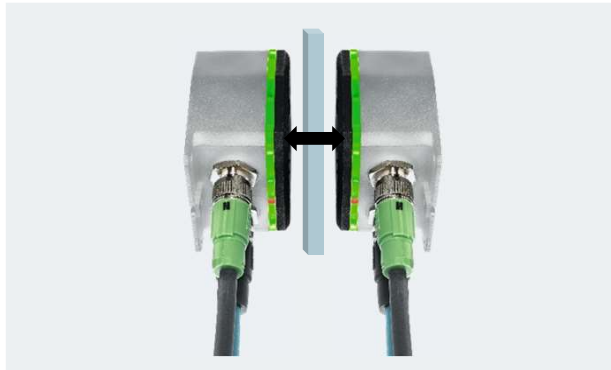
NearFi coupler

Main features



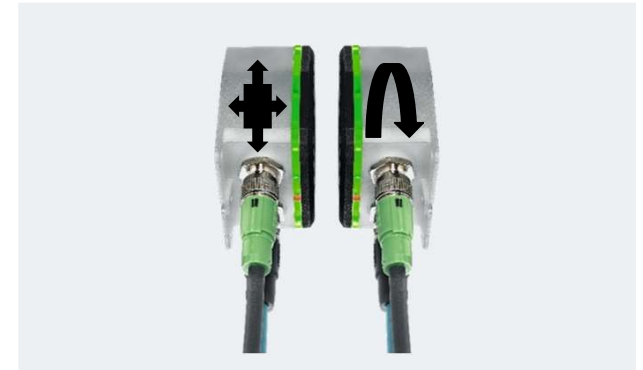
Wear and maintenance free

- Can be used in harsh conditions
- Robust housing (IP65, IK06)
- M12 connection technology



Transmission

also possible through **non-metallic obstacles**



Flexible installation

- Insensitive to vibrations
- No cable break
- Rotation possible

NearFi coupler

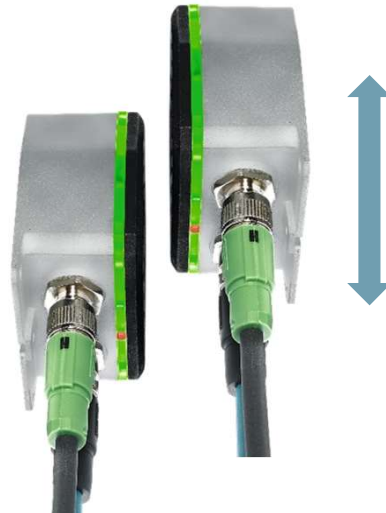
Flexible approach

Linear approach frontal



Example:
Robot tool change

Linear approach lateral

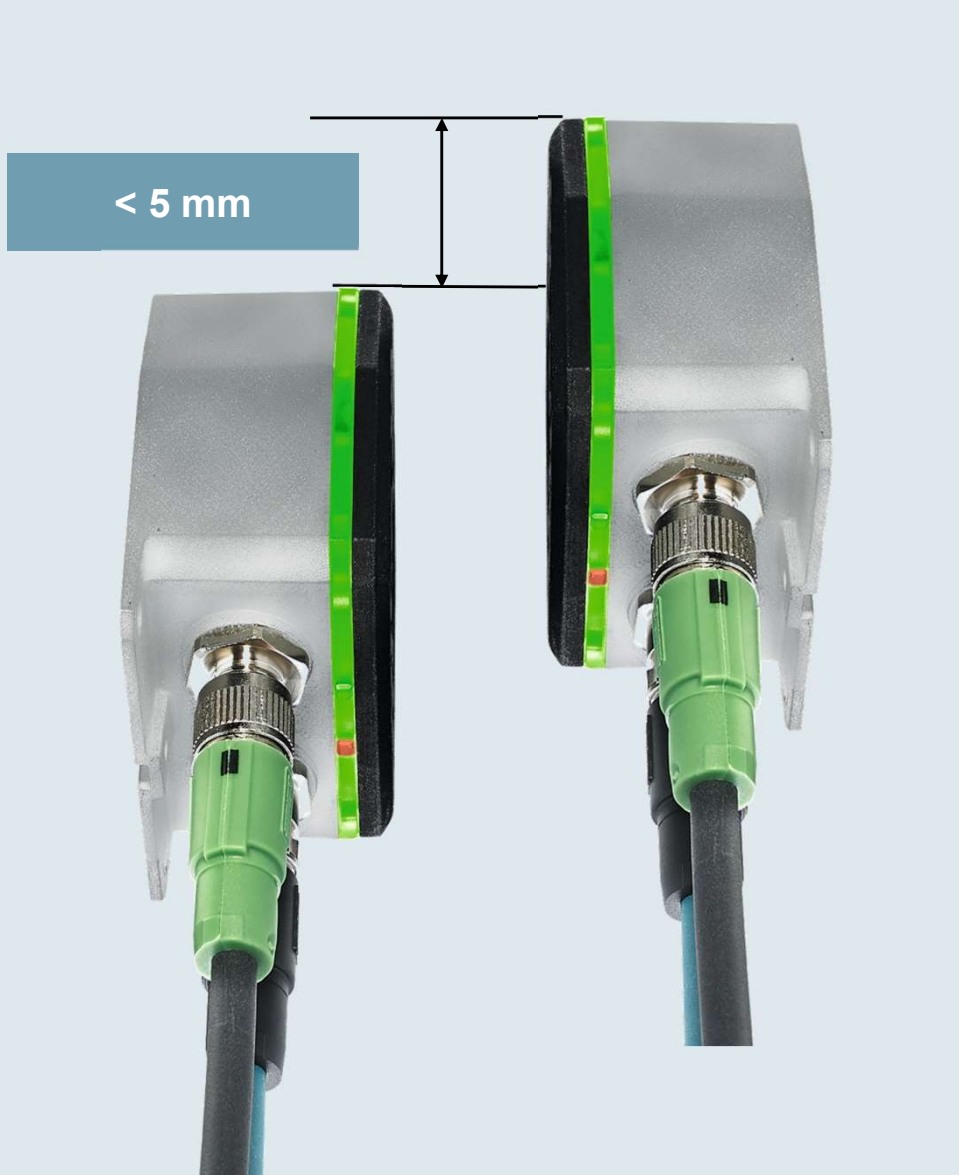


Example:
Conveyor belt, goods transport system

Rotating approach frontal



Example:
Rotating equipment



NearFi coupler

Lateral offset

Transmission distance	Max. lateral offset
0-10 mm	± 5 mm



NearFi coupler

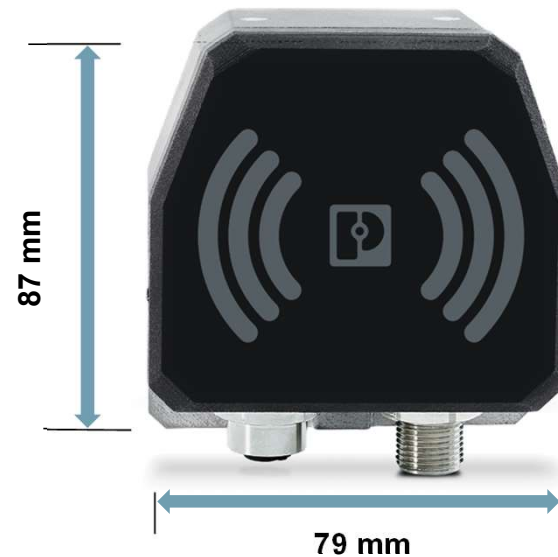
Angular offset

Transmission distance	Max. Angular offset
0-10 mm	7°

NearFi coupler

Robust housing

- Protection class IP65
- Shockproof IK06
- M12 connection technology



Dimension



NearFi coupler

Flexible mounting

Mounting hole 5,5mm

Ground connection
for M4 screw

Mounting hole 5,5mm

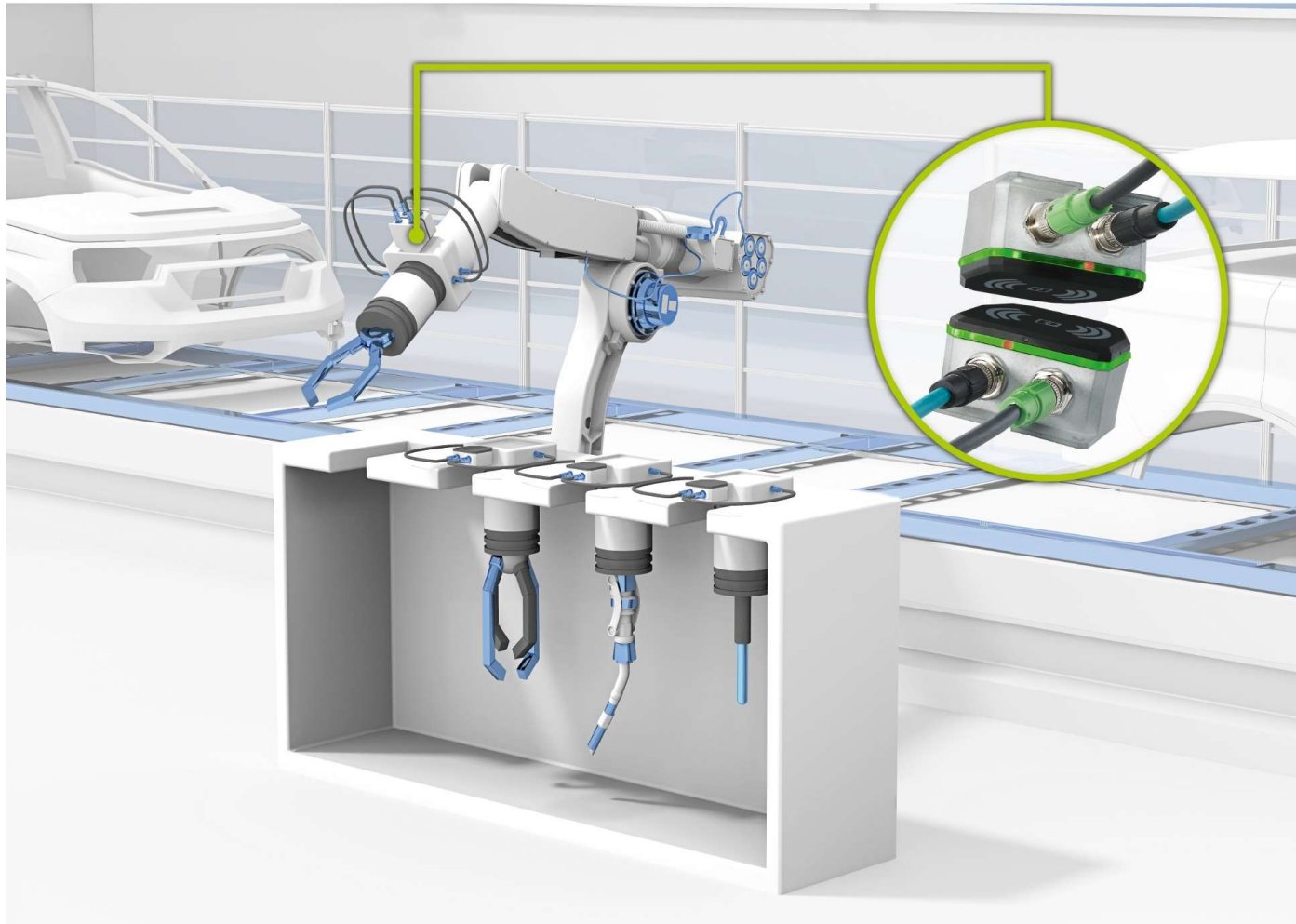


M6 thread with
8mm thread depth

Mounting

NearFi coupler

Assembly example: robot with change tool

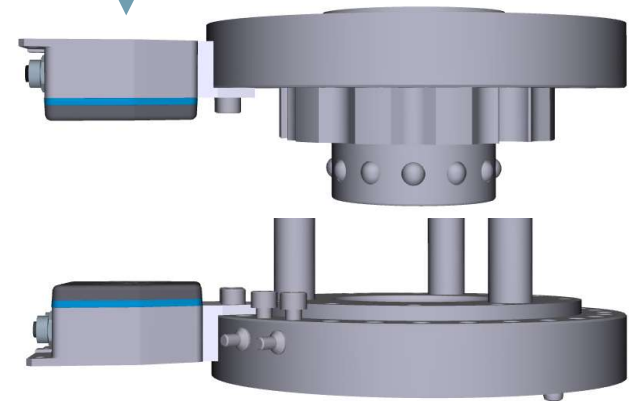
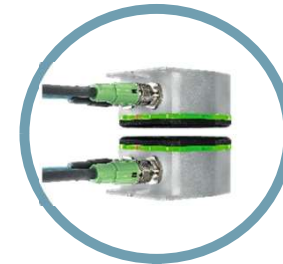


NearFi coupler

Mounting on robot change tools



Today

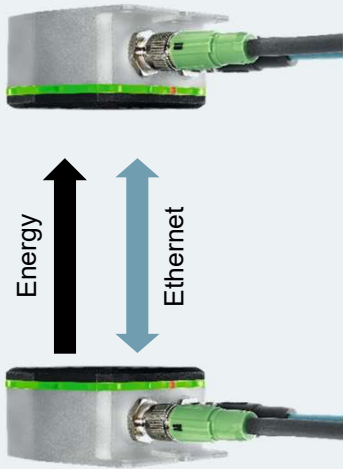


With NearFi coupler

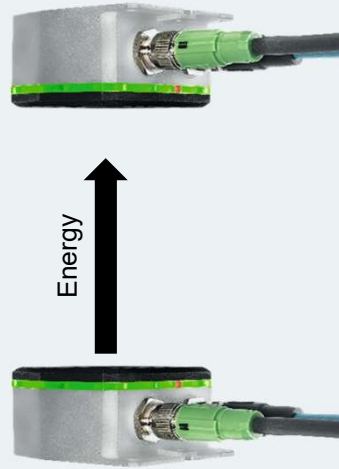
NearFi coupler

Product portfolio - 3 variants

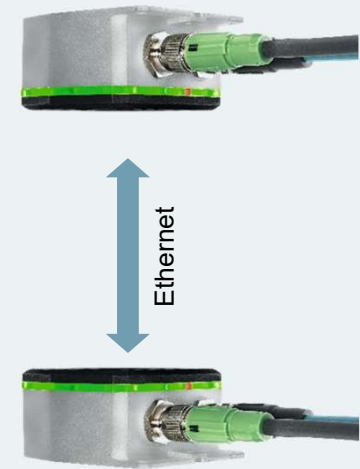
1 Energy and data



2 Energy






3 Data



NearFi coupler

Product portfolio

Description	Variants					
Variant	Contactless Energy and data coupler		Contactless energy couplers		Contactless data coupler	
Type	Base	Remote	Base	Remote	Base	Remote
Article description	NEARFI PD 2A ETH B	NEARFI PD 2A ETH R	NEARFI P 2A B	NEARFI P 2A R	NEARFI D ETH B	NEARFI D ETH R
Item number	1234224	1234225	1234226	1234229	1234232	1234234
Product photo						
Recommended market price						

NearFi coupler

Device connection according to variant

1

Energy and data



2

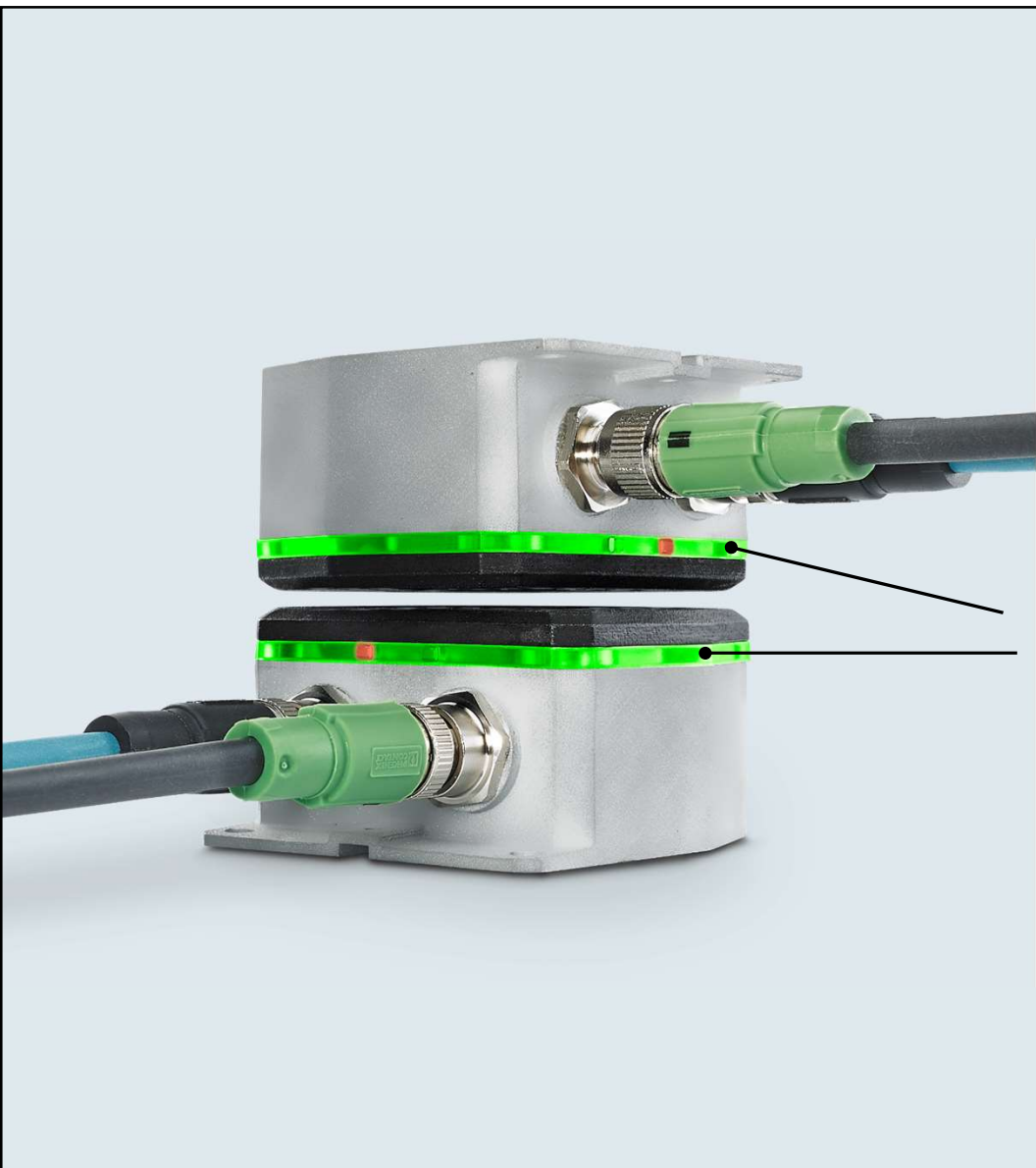
Energy



3

Data



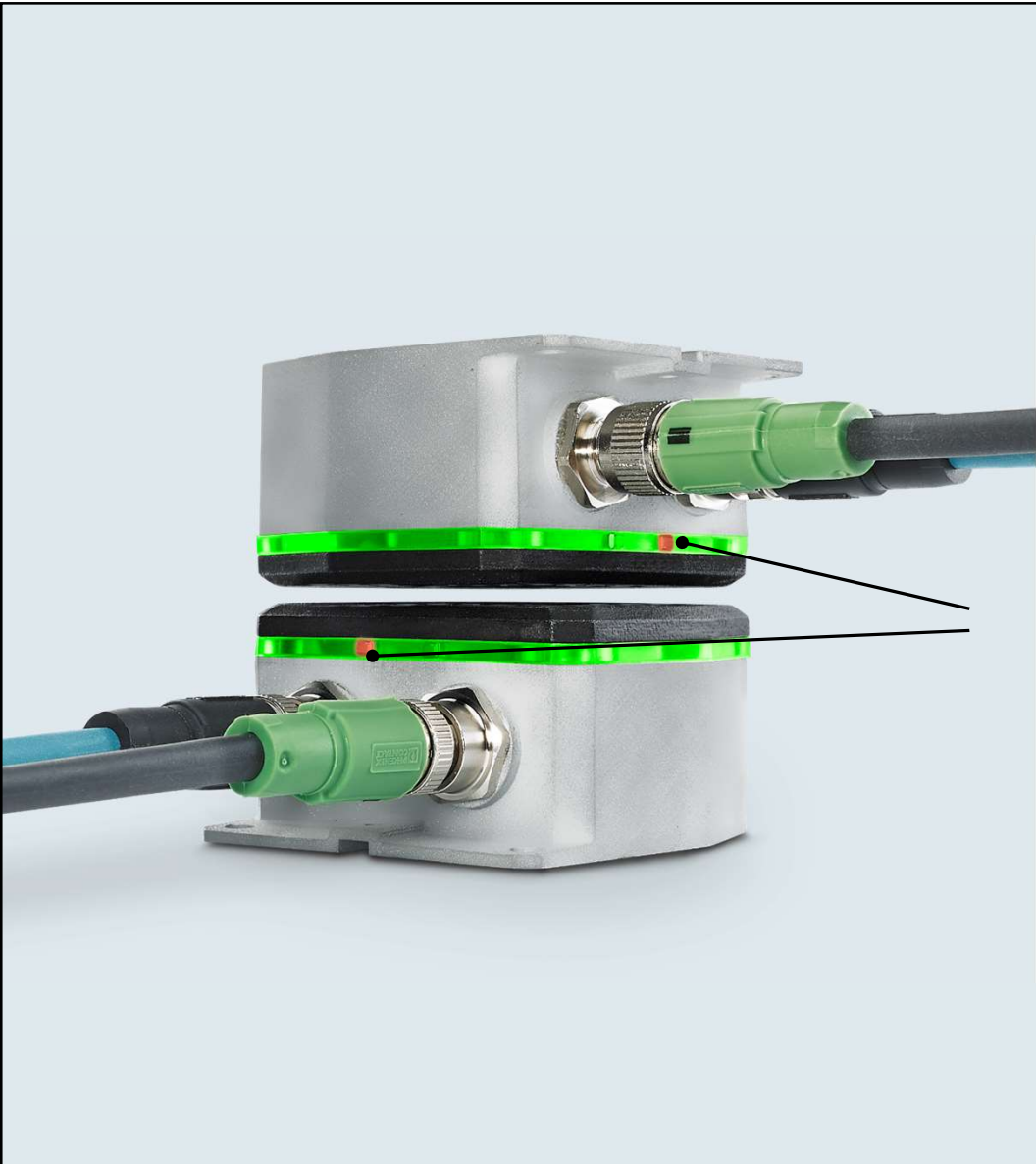


NearFi coupler

Diagnosis

Device status via LED ring

Light ring	State
Green - ON	Base and remote coupler coupled (energy and data transmission active)
Green - OFF	Base coupler not ready for operation or switched off via control input (DI)
Green - Flashing	Base coupler ready for operation, energy and data transmission not active, air gap/offset too large
Red - ON	Critical error - internal temperature too high, external supply voltage seriously out of nominal range
Red - OFF	No error



NearFi coupler

Diagnosis

Status LED- Ethernet transmission

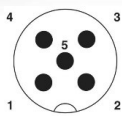
Ethernet Link	State
Yellow - ON	Ethernet link and radio link available
Yellow - OFF	Ethernet link or radio link not available
Yellow - Flashing	Ethernet data are transmitted

NearFi coupler

Diagnosis

Digital control input (pin 2)

PIN 2	State
24 V / NC	Energy transmission activated
0 V	Energy transfer disabled



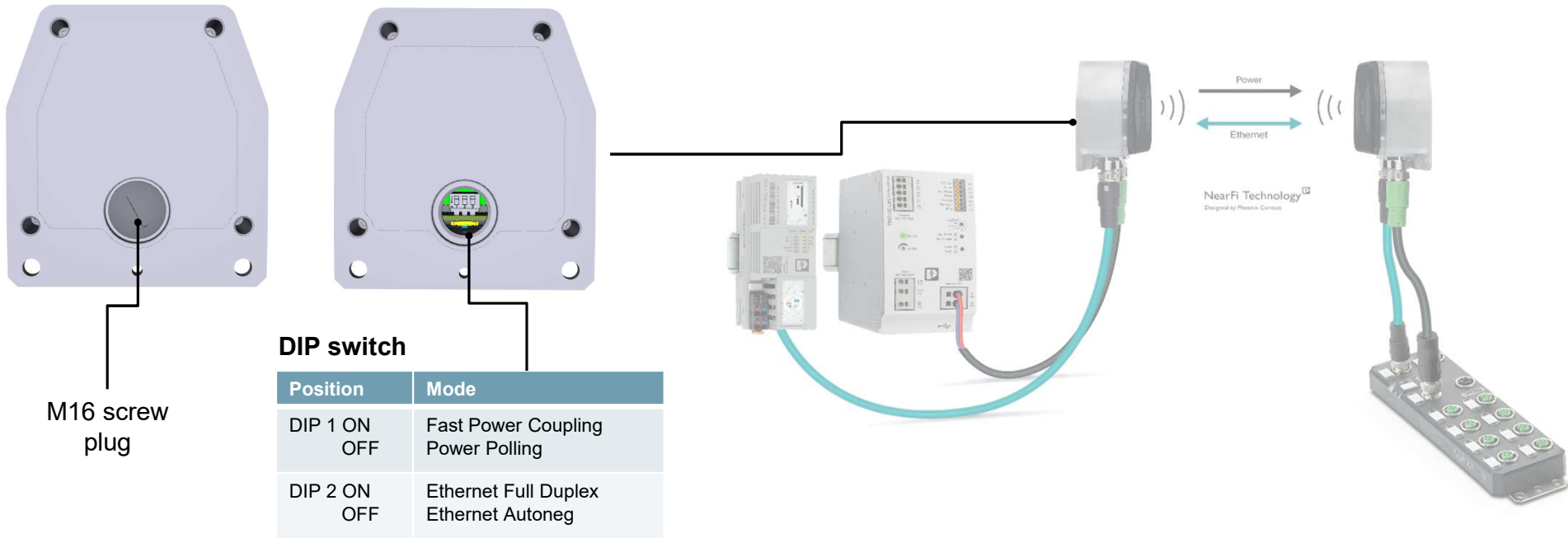
M12 plug, A-coded

Digital status output (Pin4)

Signal code	State	Signal shape
1	Base Error: External supply voltage outside the nominal range (19-30V)	 Number of pulses: 1, pulse length: 100 ms, pause: 1000 ms,
2	Base Error: Internal supply voltage, current consumption, or temperature outside nominal range	 Number of pulses: 2, pulse length: 100 ms, pause: 1000 ms,
3	Remote Error: Output voltage outside nominal range or distance too large	 Number of pulses: 3, pulse length: 100 ms, pause: 1000 ms,
4	Remote Error: Voltage output overload/short circuit	 Number of pulses: 4, pulse length: 100 ms, pause: 1000 ms,
5	Base and remote not coupled (Energy and data transmission inactive)	 Number of pulses: 5, pulse length: 100 ms, pause: 1000 ms,
OFF	Base and Remote coupled (Energy and data transmission active)	

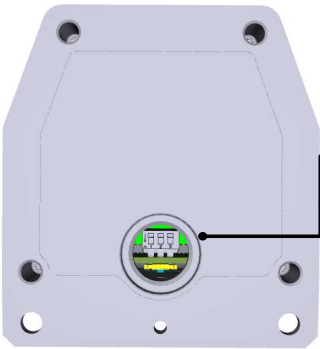
NearFi coupler

Configuration (optional)



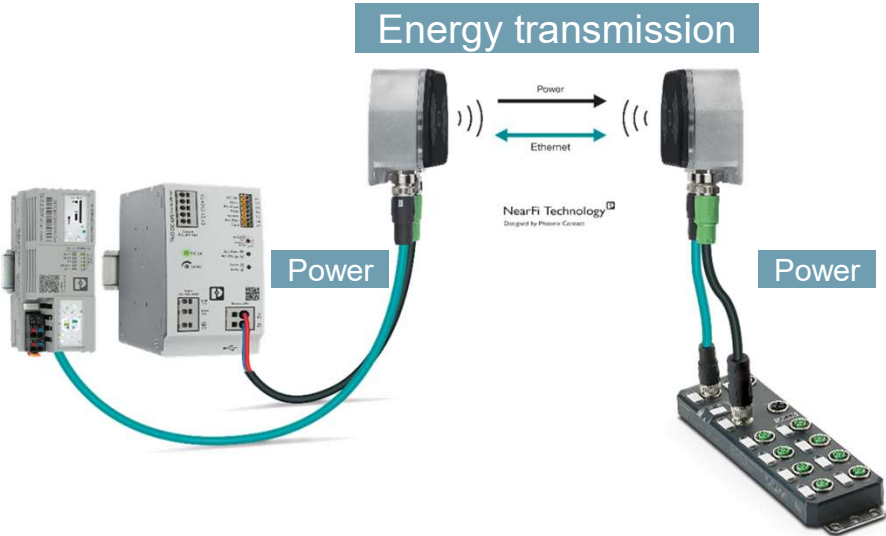
NearFi coupler

Fast Power Coupling



DIP switch

Position	Mode
DIP 1 ON OFF	Fast Power Coupling Power Polling
DIP 2 ON OFF	Ethernet Full Duplex Ethernet Autoneg

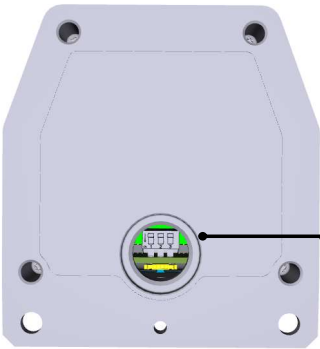


Fast Power Coupling

DIP	Position	Function
1	ON	Fast Power Coupling enabled: The base coupler permanently tries to establish a connection to the remote coupler. The <i>energy transfer is permanently active</i> . Note: Metallic foreign bodies may become hot in the air gap between the couplers.
1	OFF (factory setting)	Power polling enabled: The base coupler tries to establish a connection to the remote coupler 1 time per second. Only when the connection is established, the energy transfer between base and remote coupler is switched active.

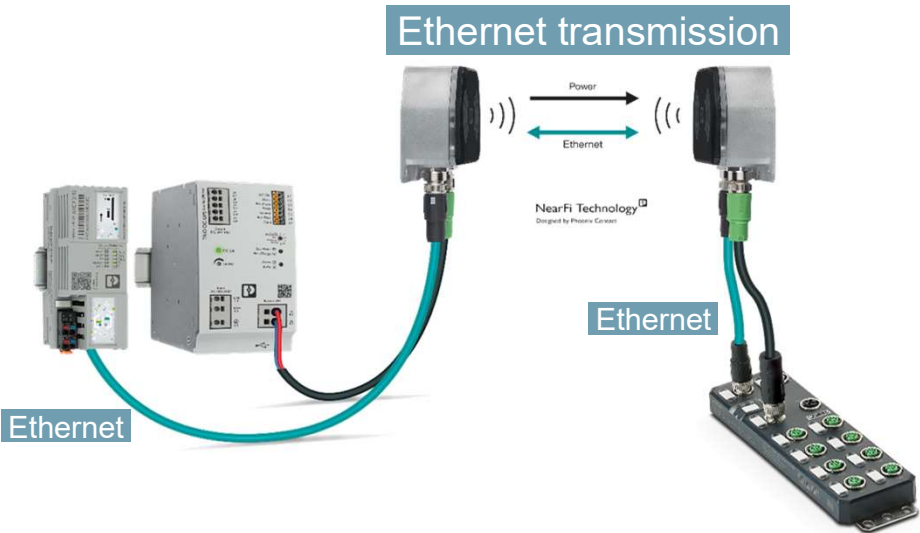
NearFi coupler

Ethernet Full Duplex / Autoneg



DIP switch

Position	Mode
DIP 1 ON OFF	Fast Power Coupling Power Polling
DIP 2 ON OFF	Ethernet Full Duplex Ethernet Autoneg

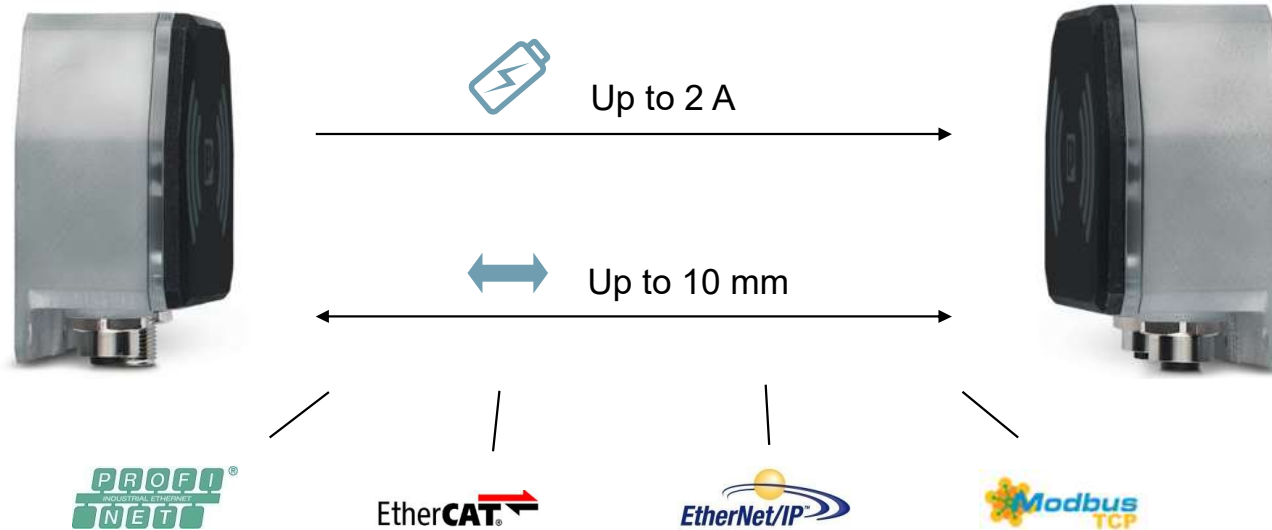


Ethernet Full Duplex / Autoneg

DIP	Position	Function
2	ON	Ethernet Full Duplex: The Ethernet connection is set with a transmission rate of 100 MBit/s and the transmission type full duplex fixed .
2	OFF (factory setting)	Autoneg enabled: The connected end devices negotiate the transmission rate 10/100 Mbit/s and the transmission type half/full duplex directly . The entire route thereby behaves like a directly connected copper cable

NearFi coupler

Highlight 2021



With the contactless energy and data couplers, you supply devices with energy and real-time data **without wear and maintenance**. High costs due to long downtimes are a thing of the past.



Sales focus on

Factory automation Automotive industry






Target applications:

- Robot with interchangeable tools
- Rotary tables, rotary indexing tables, presses
- Transport systems (framer)
- Load and workpiece carriers

PoE and Video Surveillance





Surveillance Infrastructure Campaign

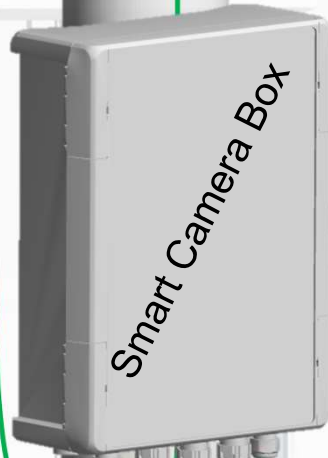
Video surveillance in all vertical markets

Energy	Video Surveillance	Factory Automation	Video Surveillance	Infrastructure	Video Surveillance	Process	Video Surveillance
							
<div><h3>Video Surveillance</h3><p>It's not the next vertical market, it's just an application within all verticals</p></div>							

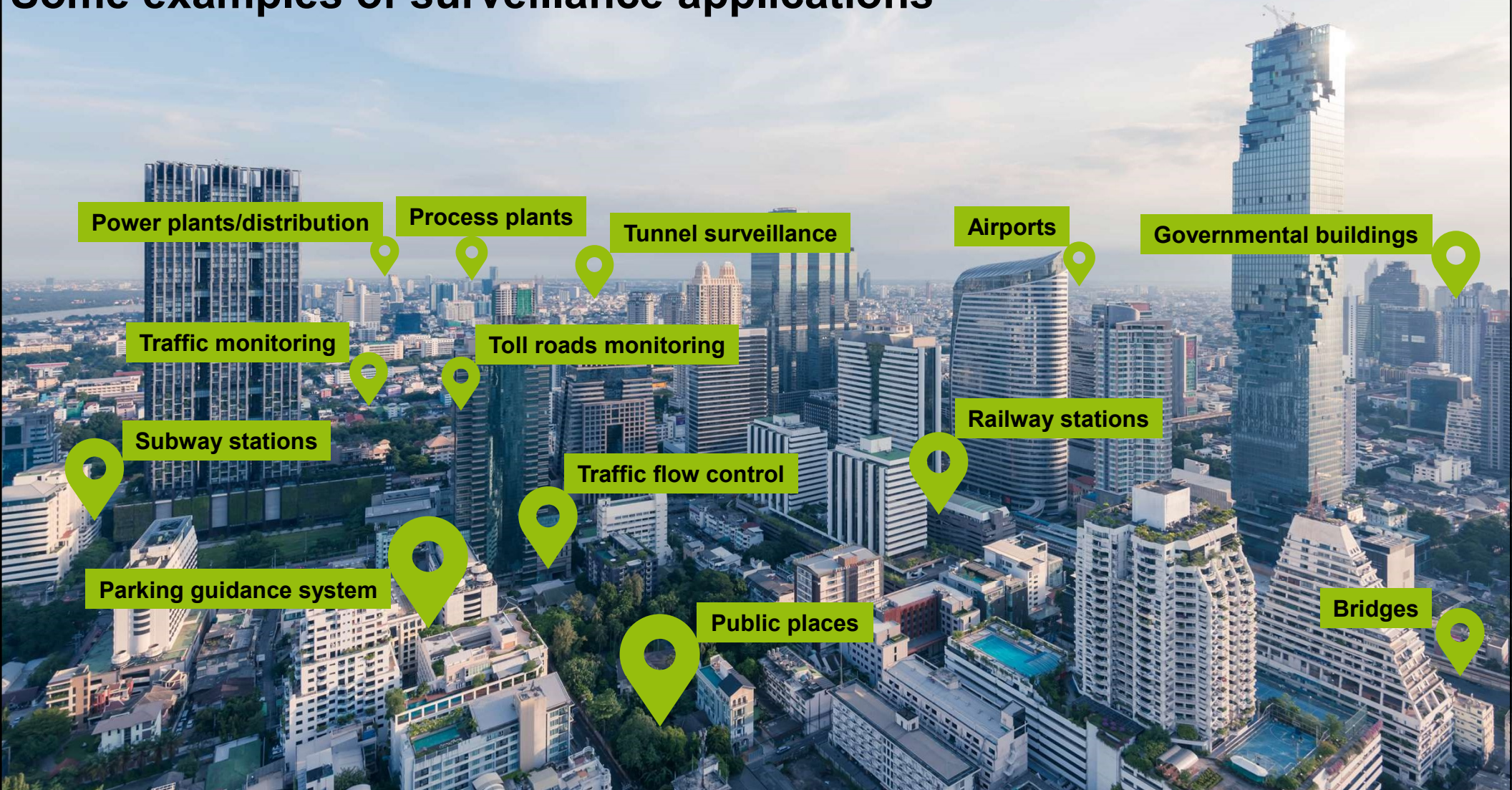
Smart Camera Box

All-in-one device

				
	SCX 4POE 2LX	SCX 2POE 2LX	SCX 4POE 2T	SCX 2POE 2T
Uplink ports	2 x fibre optic cable	2 x fibre optic cable	2 x Ethernet copper	2 x Ethernet copper
PoE ports	4	2	4	2
Item no.	1102626	1108543	1108542	1108544



Some examples of surveillance applications



Video Surveillance & SCX



Hard



But smart

Use case aviation

- Up to 70% time saving installations in critical areas!
- Apron, Taxiway, Runway
- Full managed and surge protected
- Compound, Perimeter, Fences
- Suitable for all airport applications
- Entry- and waiting zones, Boarding counter, Security check



Use case aviation

- Many large international airports are operating above capacity limits
- Partially closing these areas incurs significant costs
- the cameras are not accessible for maintenance work in regular operation
- can be restarted from the control center
- **Monitoring the status of the camera network is assured**
- the components in the widely distributed areas are protected against overvoltage.



Video surveillance in tunnels

- **Housing for harsh environments that resists liquids and gases**
- Carbon monoxide, nitrogen monoxide / dioxide, high pressure water for regularly cleaning
- **Backbone performance for high resolution video**
- Height control, wrong way drivers, counters, smoke detection
- **Easiest mounting**
- Innovative mounting adapter ensures rapid installation



Video surveillance in tunnels

- **Dirty conditions are also usual when retrofitting in road traffic tunnels.**
- Inside a tunnel the conditions are typically dark, cold and loud
- **Spray water protection according IP65**
- Resistant to regular tunnel tube cleaning.
- **The ability to link different systems**
- Video, automation, and transportation technology, on a shared network.



Use case traffic and transport

- Suitable for all kind of applications like roads, railroads, waterways, cable cars, etc.
- Redundant network technology is possible
- The SCX could be extended via modem
- Suitable up to 4 Cameras at 1 SCX



Video surveillance in the solar industry

- **The objective of a video surveillance system**
- The technology must cover the entire area and be optimally protected against vandalism and the environmental conditions
- **Comprehensive protection of solar parks and large installations**
- Criminals are not just focusing on solar panels, but are also increasingly targeting connecting cables and even inverters



Video surveillance in the solar industry

- **Backbone for intrusion detection systems**
 - Can include perimeter sensors, resistance wires, intrusion detection sensors, anti-tamper devices for panels, photoelectric barriers and other equipment
- **High POE performance for high power Cam's**
 - Support of traceable PTZ Infrared-Cams
- **Automatically Camera restart option**
 - Suitable for unmaned solar parcs, integrated network monitoring



Video surveillance in water management

- Like other utilities, it is critical infrastructure
- Video surveillance is used as a preventive measure requires for its maintenance and protection
- **Approximately 100,000 hectoliters of drinking water have been drained**
- A man's licentiousness also caused significant monetary losses
- **Monitoring inlets, screens, storage reservoirs, sewers, and service buildings**
- The combination of process control visualization with real images is a great advantage



Video surveillance in water management

- In many countries there are also strategies for monitoring wastewater treatment
- What is needed, therefore, is connection technology that is installed outdoors, protects against vandalism, and provides years of reliable service
- **The water cycle is a mesh of many water events**
- Sewage, heavy rains, canals, rivers should be surveilled to avoid floodwaters



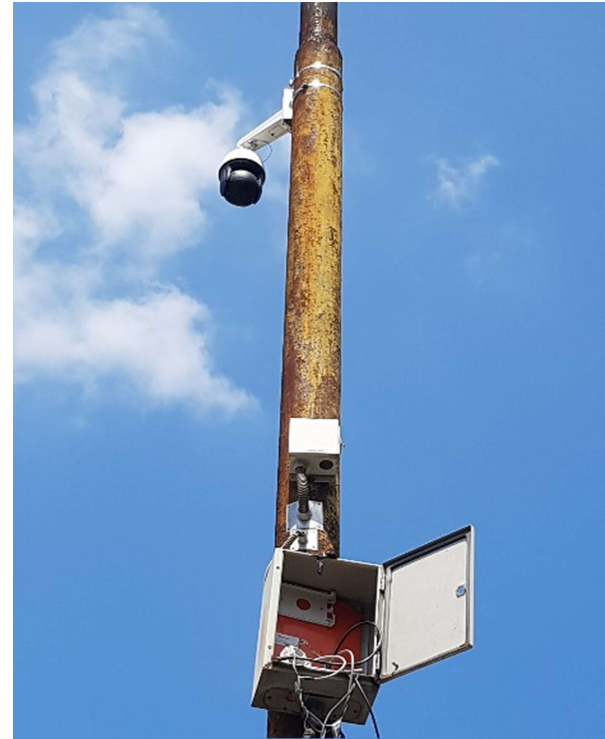
Use case border control

- **A variety of different systems are used in divergent fields of surveillance**
- Efficient installation and constant availability are a very high priority
- **It is necessary to protect national borders from unauthorized intrusion**
- In any case it speeds up entry or transit checks
- **The possibility to use fiber optics in the uplink ports, so that significantly larger distances can be networked than the camera eye can see**



Use case border control

- **The Smart Camera Box should be suitable for every environment**
- Ambient temperatures from -40° to +70° Celsius at a relative humidity of 10% to 95%
- **The Smart Camera Box uses additional features to make operation particularly safe**
- The connection boxes can be mechanically locked, have door signal contacts and are of course integrated into the control centres via SNMP
- **The Smart Camera Box neither ages, deforms or perforates and is more or less immune to mechanical influences**



Use case perimeter observation

- **Capability to support up to four cameras within just one SCX**
- Combined infrared and PTZ cameras are typically for entrance areas
- **High performance backbone for easy integration into the campus network with fibre connections**
- High POE performance also for special cameras and extraordinary applications



Use case mining

- Designed for extreme conditions
- Fiber Optic Uplink Ports
- Full managed Network Switches
- Backbone might be used also for distributed IO data in the field



Partner initiative

Partner

Partnering with Axis in Germany

Project description

- Large Prison facility in Germany – Critical Infrastructure
- Renewal and expansion of security and video systems
- Hundreds of cameras – planning ongoing



Smart Camera Box – The door opener

- Axis A&E Manager was convinced by
 - ... the All-in-one design
 - ... less planning effort
 - ... good PoE capabilities
 - ... integrated sabotage alarm
- Smart Camera Box became part of Axis project planning

Axis introduced us to the leading project planner

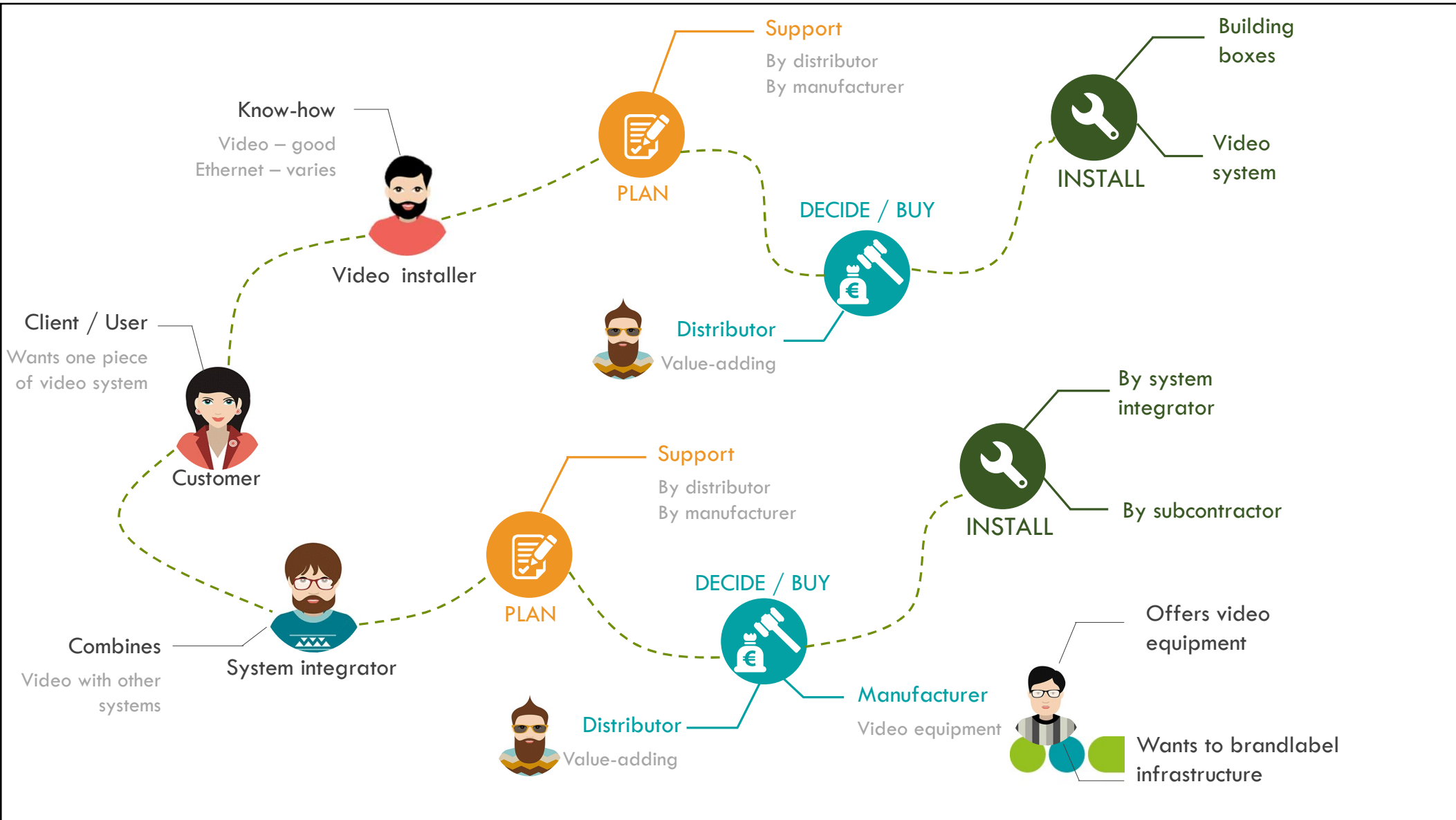
- He immediately was convinced by the Smart Camera Box
- He understood Phoenix Contact is more than a manufacturer of terminal blocks...

Cross-selling

- Surge protection
- Fiber optic cables
- Connectors

Highly confidential





Partner initiative

Partnership with HIKVISION

Compound growth
rate from 2010 to 2019 **36%**



Total revenue
in 2019 **\$8.26B**



59

International
subsidiaries and
branch offices

100,000+

Partners globally

150+

Our products are used in
countries and regions



HIKVISION®

2001 Year
founded



18+ Years steady
growth



40,000+ Employees
worldwide

19,000+ R&D
engineers

Over 9% Annual revenue
invested in R&D

Partner initiative

Promotional brochure

- Partner brochure soon available
- To be posted to all HIKVISION partners to create awareness for Phoenix Contact



Partner initiative

Technical Partner Program

- Phoenix Contact listed in HIKVISION's public Technical Partner Program (TPP)
- Focused on our Smart Camera Box
- Linked with our solutions website



All-in-one device Smart Camera Box from Phoenix Contact for Hikvision Cameras

Provided by Phoenix Contact GmbH & Co. KG, 2021-01-29

This solution has not been fully tested with dedicated Hikvision products, please contact this partner for further information.

HikCentral	Optimus	IPC	PTZ	Thermal Camera	NVR	DVR	Encoder
Decoder	Mobile	Access Control	Video intercom	Traffic	Alarm	Parking	Others

Solution Description





The Smart Camera Box connects any IP Hikvision camera with the video server. The all-in-one device saves time during planning and installation. The integrated mounting adapter for wall and mast mounting makes installation much easier and quicker. Numerous management and monitoring functions ensure reliable operation of the video system.

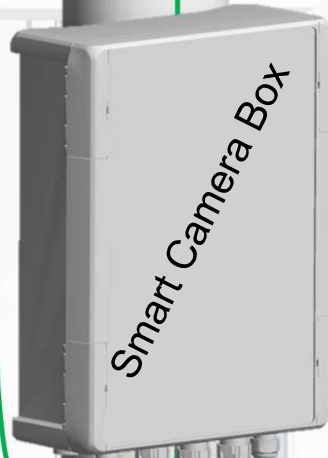
Smart Camera Box by PHOENIX CONTACT

© Hangzhou Hikvision Digital Technology Co., Ltd. All Rights Reserved.

Smart Camera Box

All-in-one device

				
	SCX 4POE 2LX	SCX 2POE 2LX	SCX 4POE 2T	SCX 2POE 2T
Uplink ports	2 x fibre optic cable	2 x fibre optic cable	2 x Ethernet copper	2 x Ethernet copper
PoE ports	4	2	4	2
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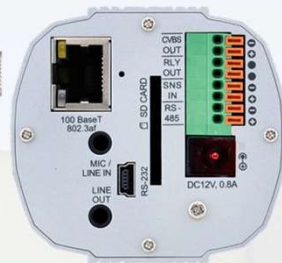


Extension Products

Application

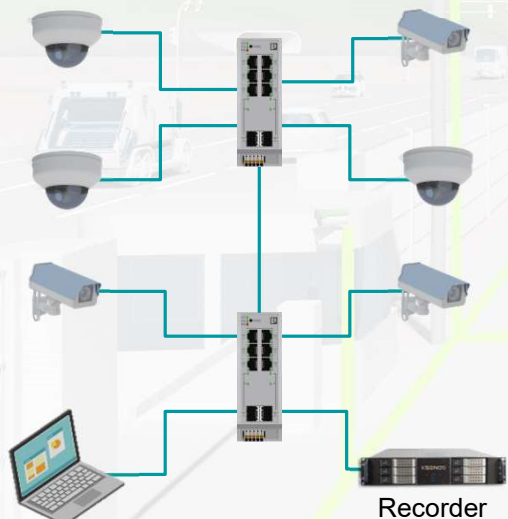
IP Cameras

Power over Ethernet



Video networks

- Standard Ethernet
- High Bandwidth
- 100 m point-to-point

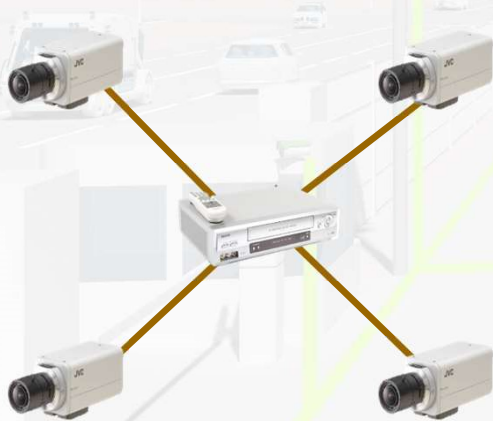


Application

Analog Cameras



Coax cable
600m



Video networks

- Star topology
- Point-to-point
- Analog video signal



PHOENIX CONTACT TC EXTENDER 6004 ETH-2S

DSL A: 5696 kBit/s
Quality:
DSL B: 5696 kBit/s
Quality: 1/8

Reset




SD Card

LAN 1
LAN 2
LAN 3
LAN 4

DSL B DSL A

GND US2 GND US1

Ethernet Extender (SHDSL)

		
Extender unmanaged	Extender Managed	Extender Managed
Up to 20 km Up to 30 Mbit/s 1 x Ethernet Port	Up to 20 km Up to 30 Mbit/s 1 x Ethernet Port	Up to 20 km Up to 30 Mbit/s 4 x Ethernet Port

Project example

Airport Hannover



Upgrade and expansion of the existing analogue video system

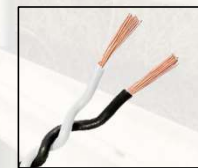
- 450 cameras - Bosch FullHD
- Use of coaxial cables of the analogue video system
- Use of twisted pair cables of the airport lighting system

Project example

Motorways Switzerland

Expansion of video systems for traffic monitoring

- Partly no power supply and data lines available
- Use of existing telephone lines required
 - Data connection
 - Power supply



Twisted Pair

Portfolio

Think about Cross Selling!



PoE
Injektoren



PoE
Unmanaged Switches



PoE
Managed Switches



PoE Splitter



Smart Camera Box



Surge protection



Ethernet cable



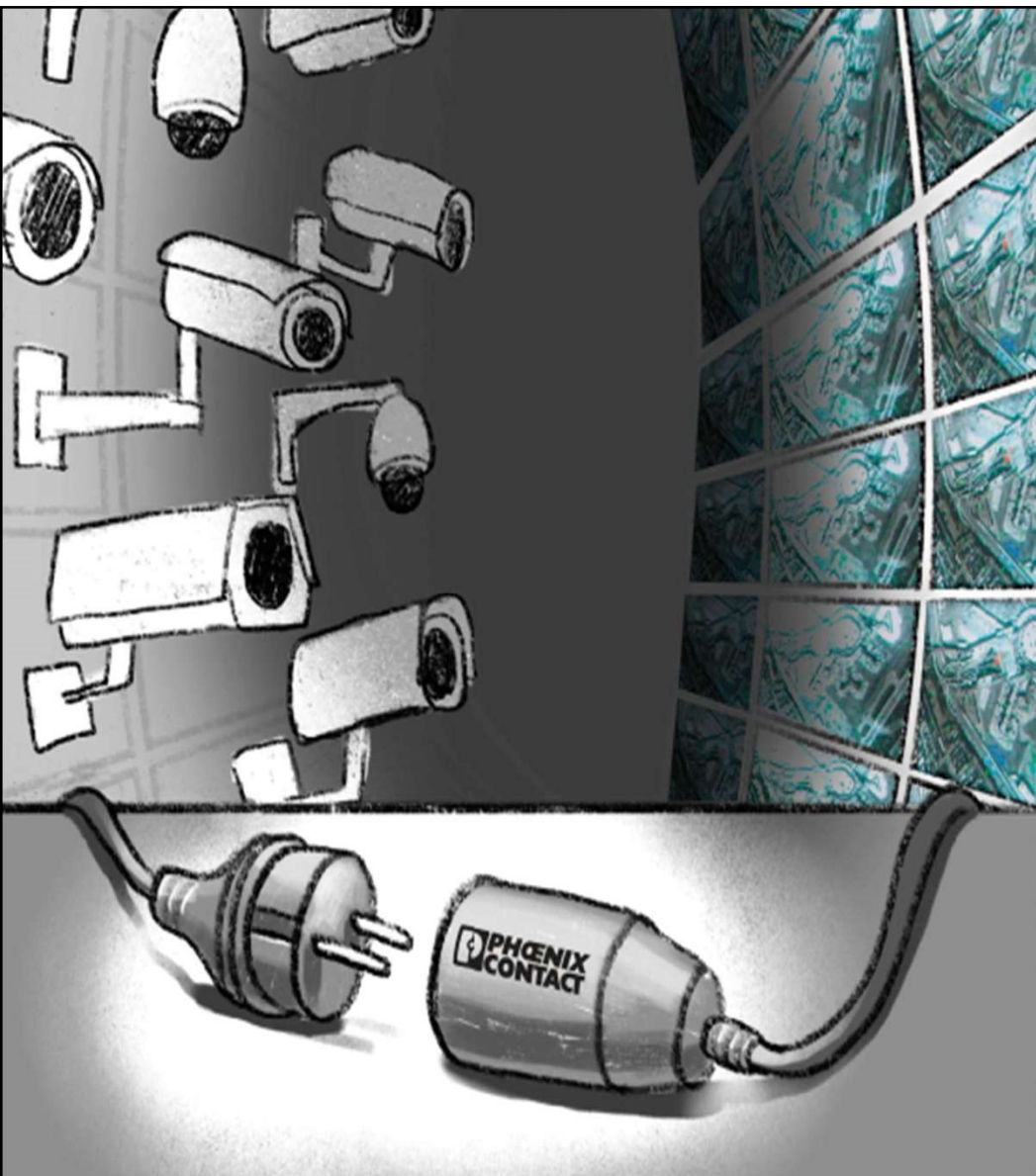
SFP modules



Connector



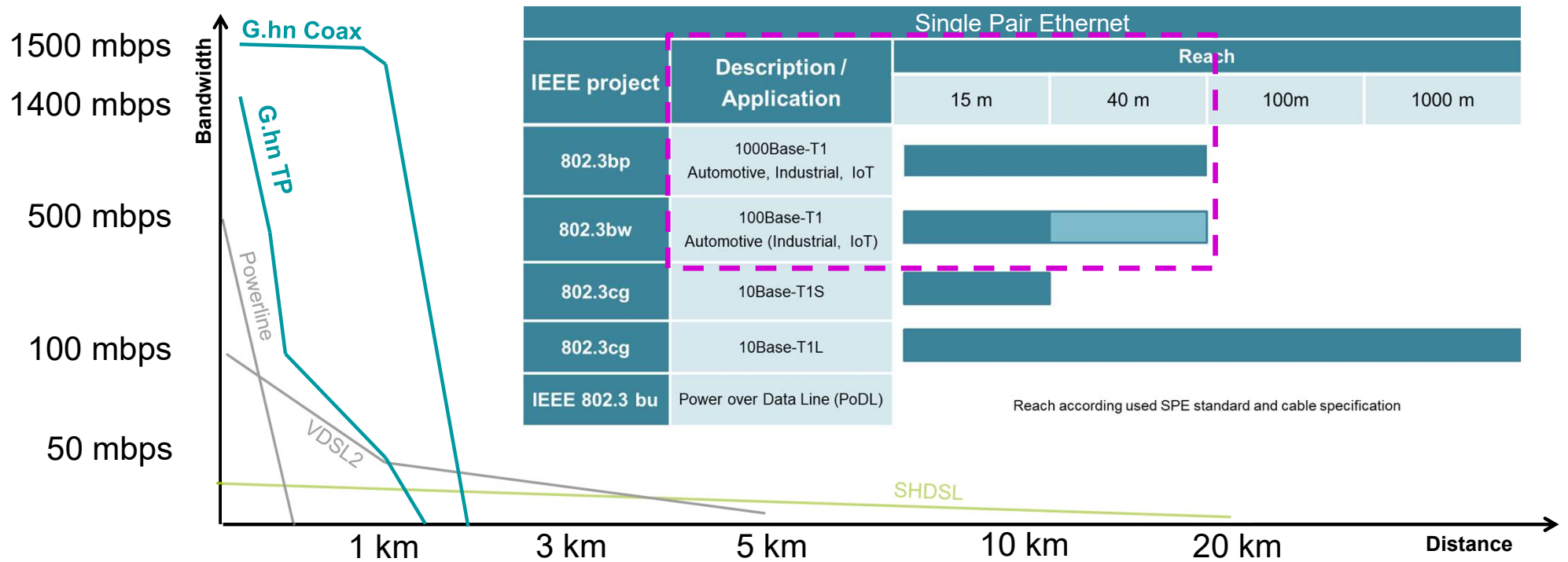
Patch Panel



Gigabit Ethernet Extender

Gbit Ethernet Extender

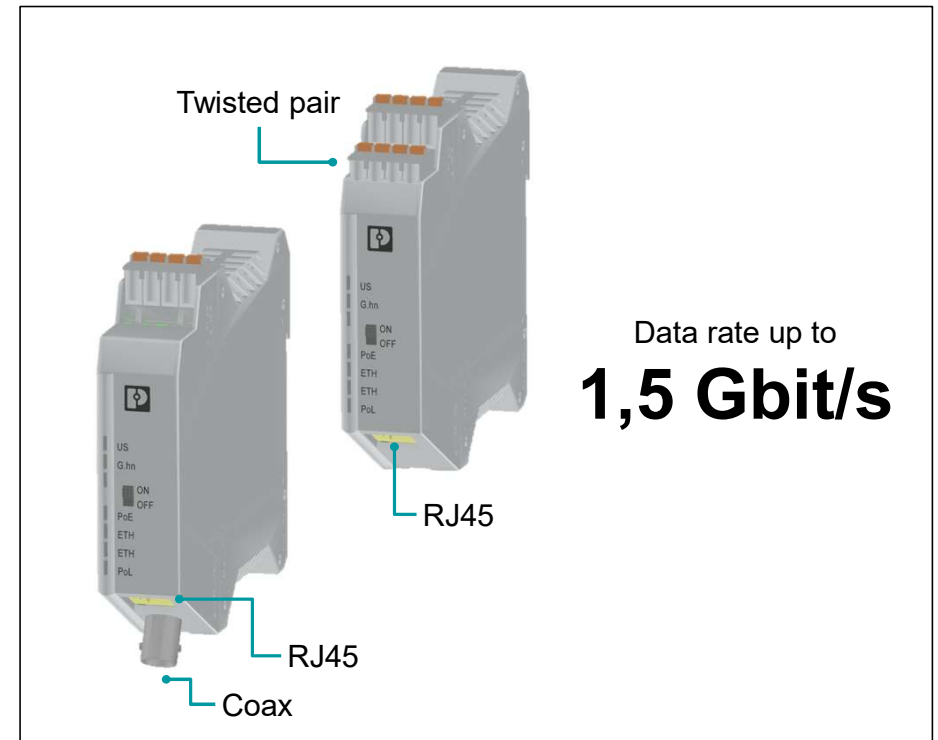
Technology comparison



Product Features

Gbit Ethernet Extender

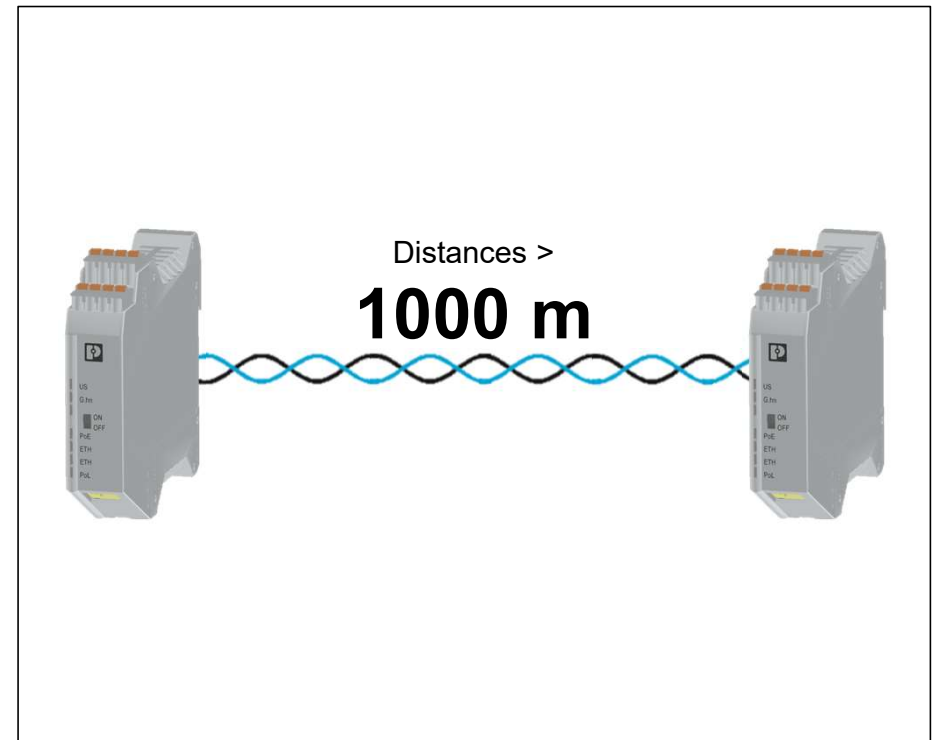
- Coax cable and twisted pair
- Highspeed Ethernet up to 1.5 Gbit/s



Product Features

Gbit Ethernet Extender

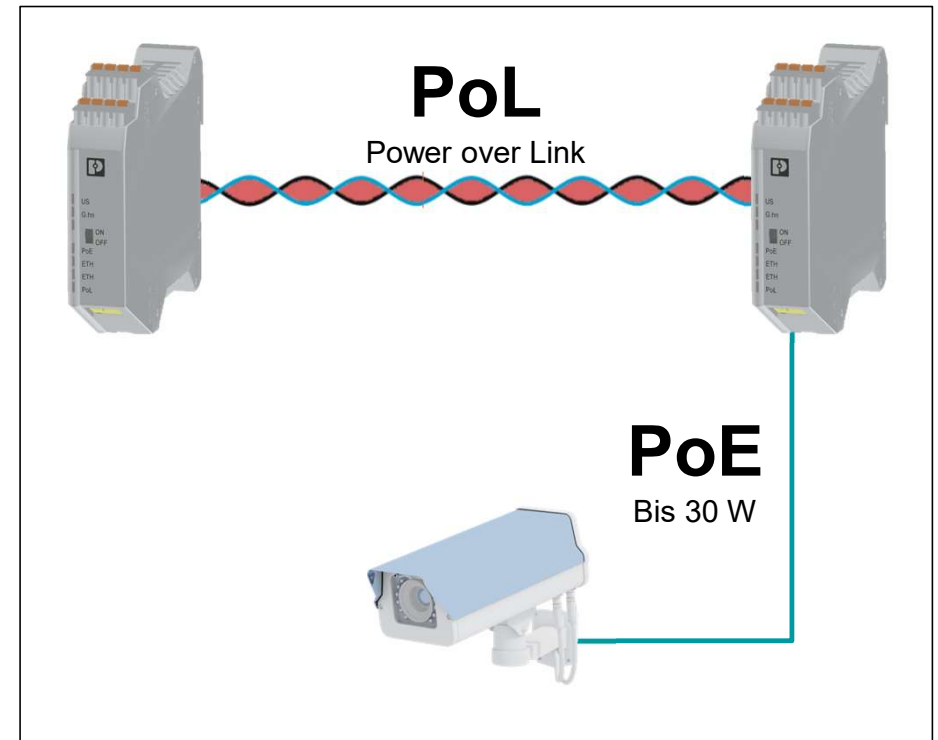
- Coax cable and twisted pair
- Highspeed Ethernet up to 1.5 Gbit/s
- Distances up to > 1000 m



Product Features

Gbit Ethernet Extender

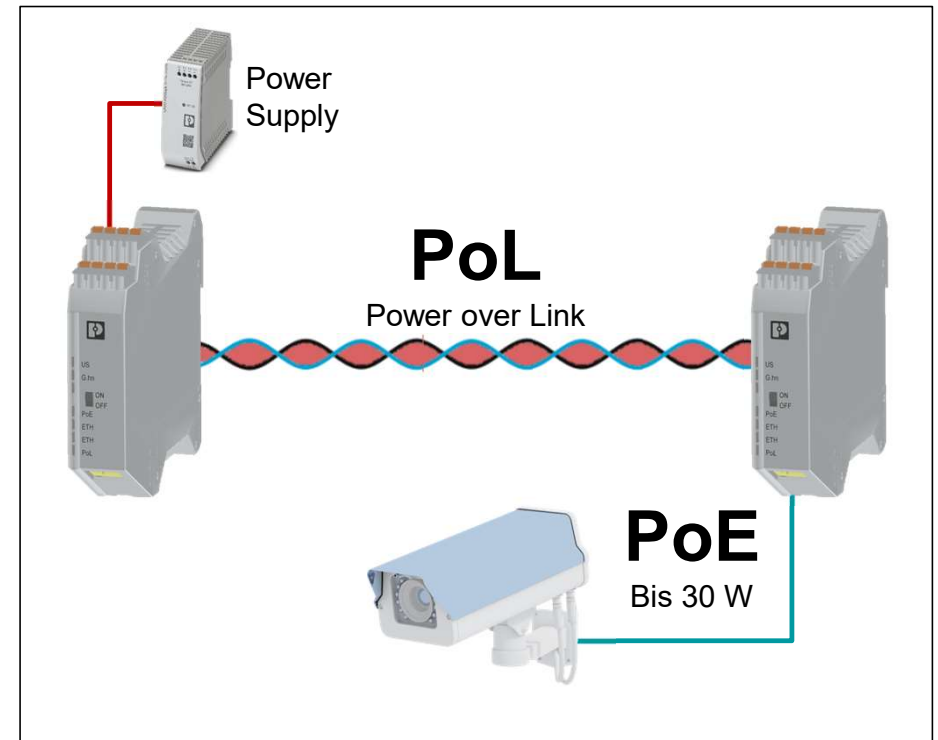
- Coax cable and twisted pair
- Highspeed Ethernet up to 1.5 Gbit/s
- Distances up to > 1000 m
- Power over Link
- Power over Ethernet – 30 W



Product Features

Gbit Ethernet Extender

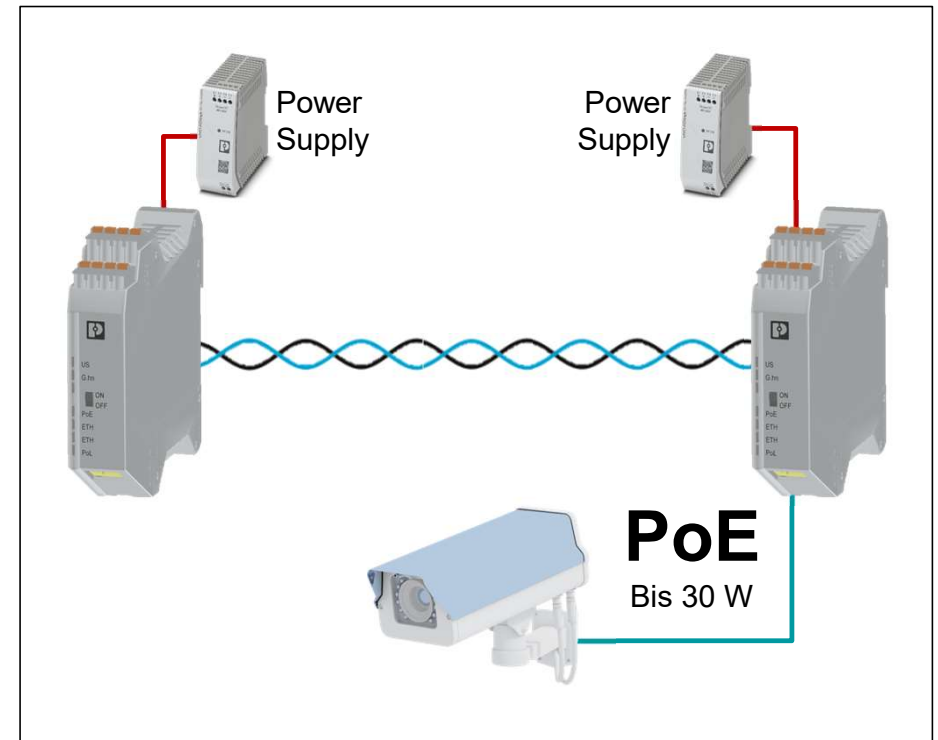
- Coax cable and twisted pair
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- Distances up to > 1000 m
- Power over Link
- Power over Ethernet – 30 W
- Variable supply options



Product Features

Gbit Ethernet Extender

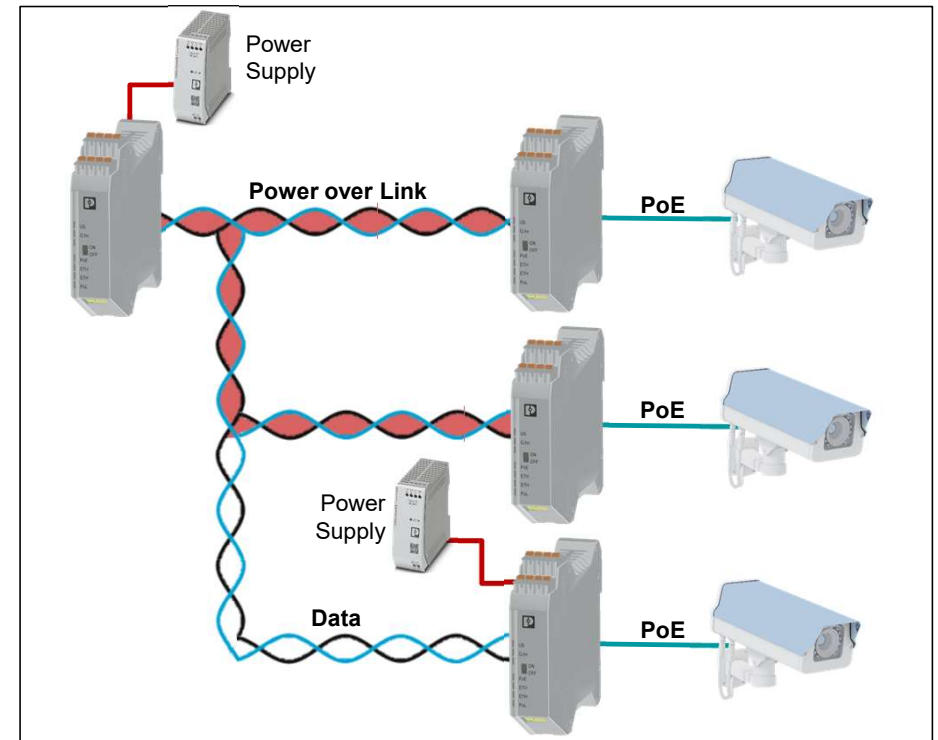
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- Distances up to > 1000 m
- Power over Link
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- Variable supply options



Product Features

Gbit Ethernet Extender

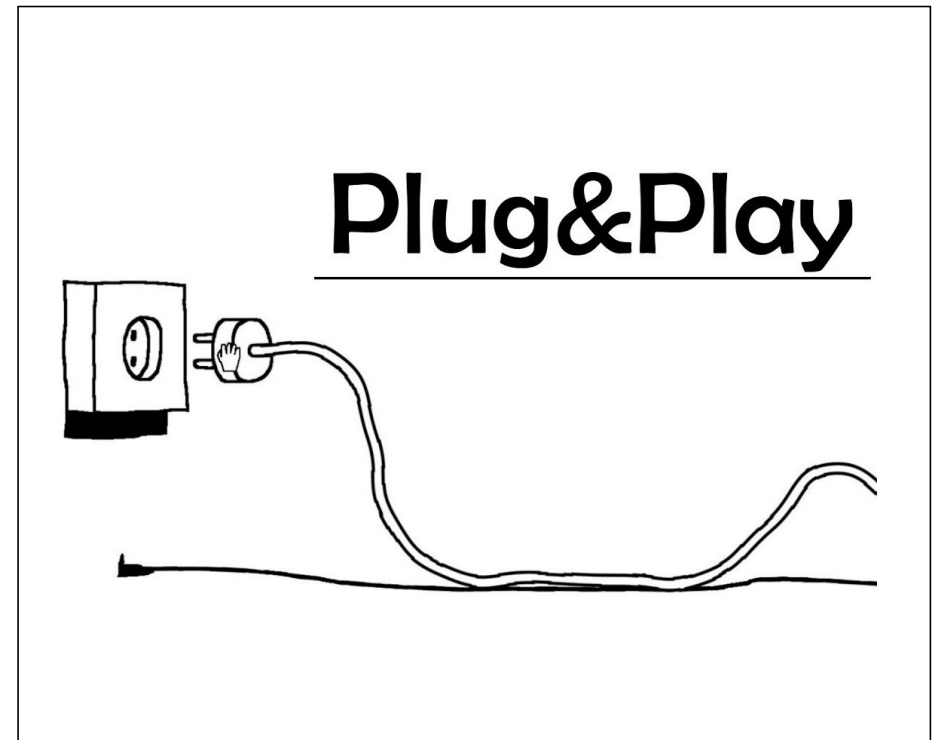
- Coax cable and twisted pair
- Highspeed Ethernet up to 1.5 Gbit/s
- Distances up to > 1000 m
- Power over Link
- Power over Ethernet – 30 W
- Variable supply options
- Variable network setup



Product Features

Gbit Ethernet Extender

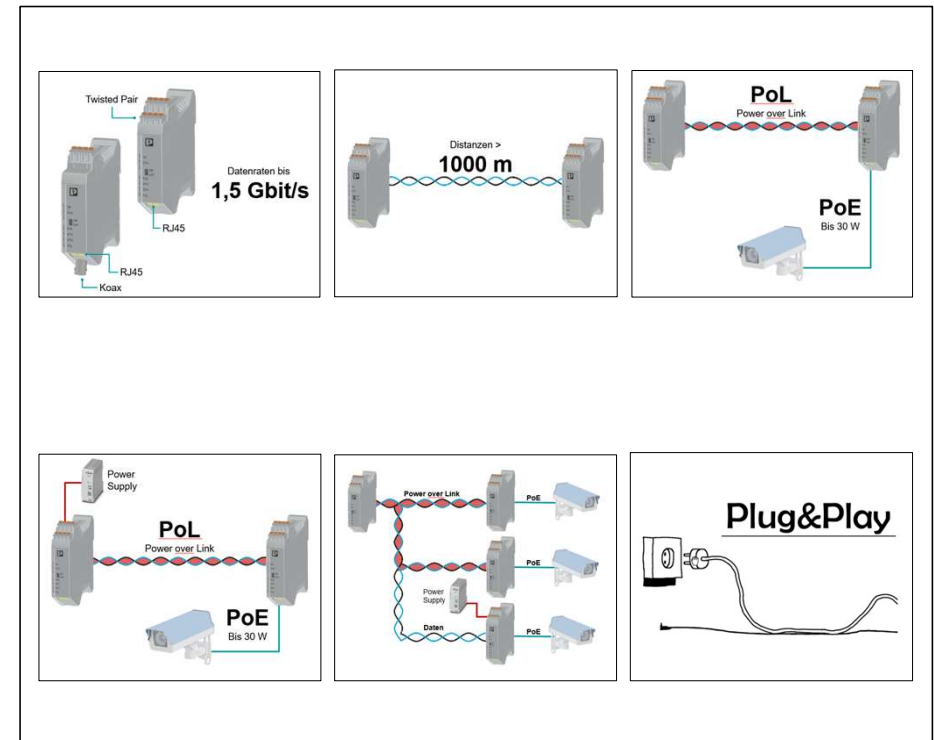
- Coax cable and twisted pair
- Highspeed Ethernet up to 1.5 Gbit/s
- Distances up to > 1000 m
- Power over Link
- Power over Ethernet – 30 W
- Variable supply options
- Variable network setup
- Plug and Play



Gbit Ethernet Extender









Product Advantages - Customer Benefits

- ✓ Cost savings through...
 - ✓ Use of existing cabling
 - ✓ Fewer power supplies
 - ✓ Fewer converters
- ✓ High flexibility in system design
- ✓ Easy to use

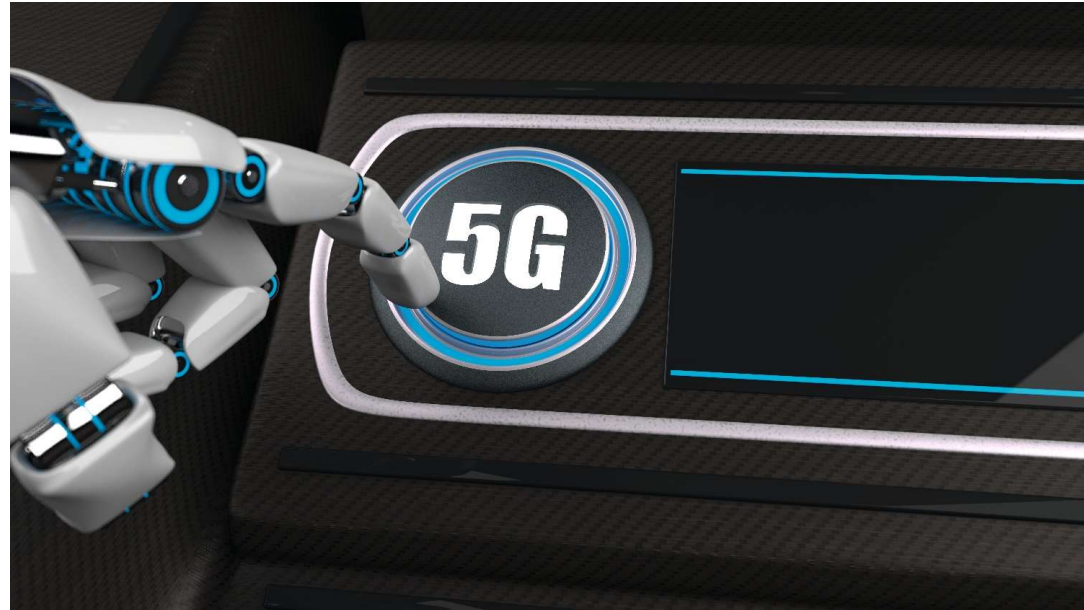


Gbit Ethernet Extender

Product portfolio

 	 	 	 
Gbit Extender TP	Gbit Extender TP	Gbit Extender Coax	Gbit Extender Coax
Up to 1 km Up to 1,5 Gbit/s 1 x Ethernet	Up to 1 km Up to 1,5 Gbit/s 1 x PoE	Up to 1 km Up to 1,5 Gbit/s 1 x Ethernet	Up to 1 km Up to 1,5 Gbit/s 1 x PoE

TC ROUTER 5G



TC 5G PRIVNET ROUTER

Cooperation

Phoenix Contact 5G



Phoenix Contact, Quectel and Ericsson jointly develop the first industrial 5G router for private networks

Press Release

TC 5G PRIVNET ROUTER

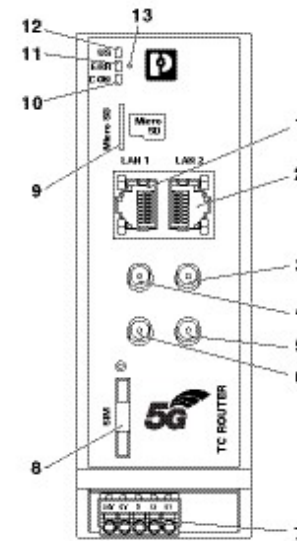
(06/20) Phoenix Contact, Quectel and Ericsson have worked together to develop and deploy the first industrial 5G router for local industrial applications in a private 5G network.

With the help of the newly developed 5G Router, industrial applications, such as machines, controls and other equipment, can now be connected to a private 5G network and thus be orchestrated in their resource usage, priority and behavior. They therefore offer a decisive advantage compared to previous mobile radio solutions, which can only use all - mostly license-free - radio bands with a best effort principle and which have to accept performance losses in equal measure when the radio spectrum is heavily occupied.



TC 5G PRIVNET ROUTER

To achieve this, all three companies brought their strengths together: Phoenix Contact as the first choice supplier of WLAN, Bluetooth and mobile radio routers for industrial applications, Quectel as the leading global supplier of cellular and GNSS modules and Ericsson supporting the product development as a network supplier and a leading force of the 5G technology development. By starting to interact at an early stage, the three companies have been able to rapidly develop a solution that provides industrial-grade performance over private 5G networks. The collaboration between Quectel, Phoenix Contact and Ericsson has seen extensive interoperability testing at the Ericsson lab to ensure the reliable commercial performance of the 5G router. The experience made is highly important for Ericsson following the strategic approach offering 5G solutions jointly with mobile network operators towards the industry. In addition, all three companies cooperated closely to enable Industry 4.0 applications with this 5G standalone private network.



Role of Mobile

5G

