Remtron

Optimal solutions, faster

Industrial Ethernet

One network, all options

PHOENIX CONTACT
INSPIRING INNOVATIONS

Australia-wide, with offices in Melbourne, Geelong, Gippsland, Albury, Tasmania & Adelaide

The Industrial Ethernet network portfolio from PHOENIX CONTACT

Phoenix Contact offers you more real time, more wireless, more security, and more reliability. Industrial Ethernet from Phoenix Contact can be easily integrated into your automation infrastructure – because we make Ethernet easy.

Thanks to our many years of experience in automation and industrial Ethernet networks, we are familiar with and understand your expectations and requirements. This is evident and embodied in our products and solutions.

We make Ethernet easy

When we say “We make Ethernet easy”, we are talking about controlling the complexity of high-performance Ethernet networks. Therefore, we have consistently designed our products with the knowledge, the tools, and the skills of the user in mind, the automation specialist.

Contents

Solutions

- Networked production 4
- The networked machine 8
- Networked infrastructure 12
- The networked process system 16

Products

- Media converters 20
- Unmanaged Switches 24
- Managed Automation Switches 26
- Managed Industrial IT Switches 28
- Routers and Layer 3 switches 30
- Power over Ethernet 42
- Wireless Ethernet 46
- Industrial security 50
- Remote communication 54
- Protocol and interface converters 58
- Software 62
- Surge protection 64
- Installation technology 66
- Copper-based cabling 72
- Fiber optic-based cabling 90

Services 98

Find out more with the web code

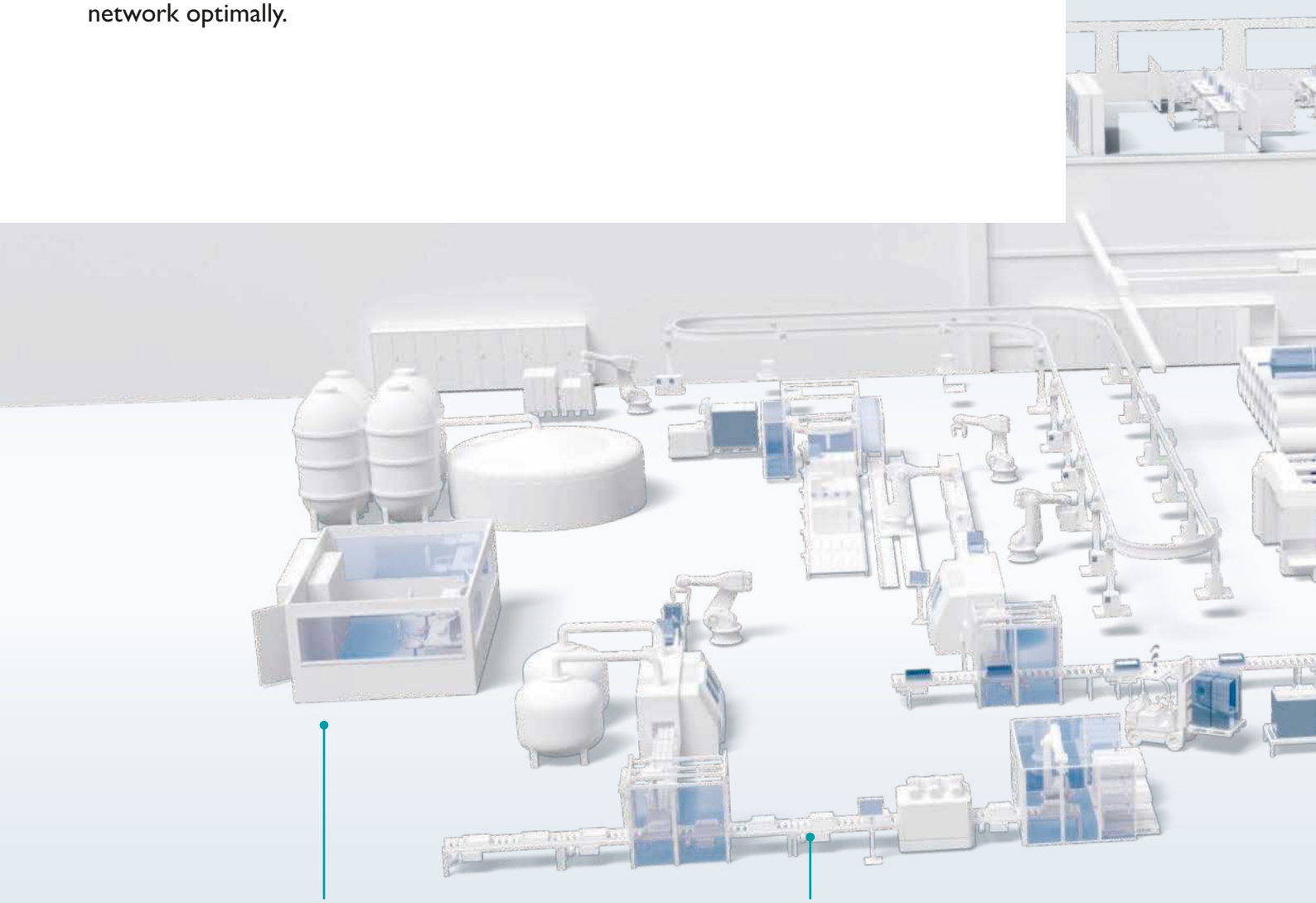
For detailed information, use the web codes provided in this brochure. Simply enter # and the four-digit number in the search field on our website.

Web code: #1234 (example)

Or use the direct link:
phoenixcontact.net/webcode/#1234

Networked production

Highly productive and efficient production requires well structured, high-performance, and secure network infrastructure. The ideal concept and the right components protect your system against automation system failures and costly downtimes. With industrial network products from Phoenix Contact you can easily implement the high requirements of your production network in a future-proof manner. As well as the appropriate products, we also offer you support in planning your production network optimally.



High-availability production network

Without high-performance and robust network infrastructure, modern production no longer works. The ideal concept protects your system against costly failures. We offer the right redundancy solutions, from simple media redundancy through to parallel network structures.

Integration of machines

When integrating third-party machines into the production network, challenges such as IP address conflicts or different IP networks must be solved. We offer:

- High-performance routing solutions between various subnetworks
- A simple solution to IP address conflicts with 1:1 NAT

Connection to the company network

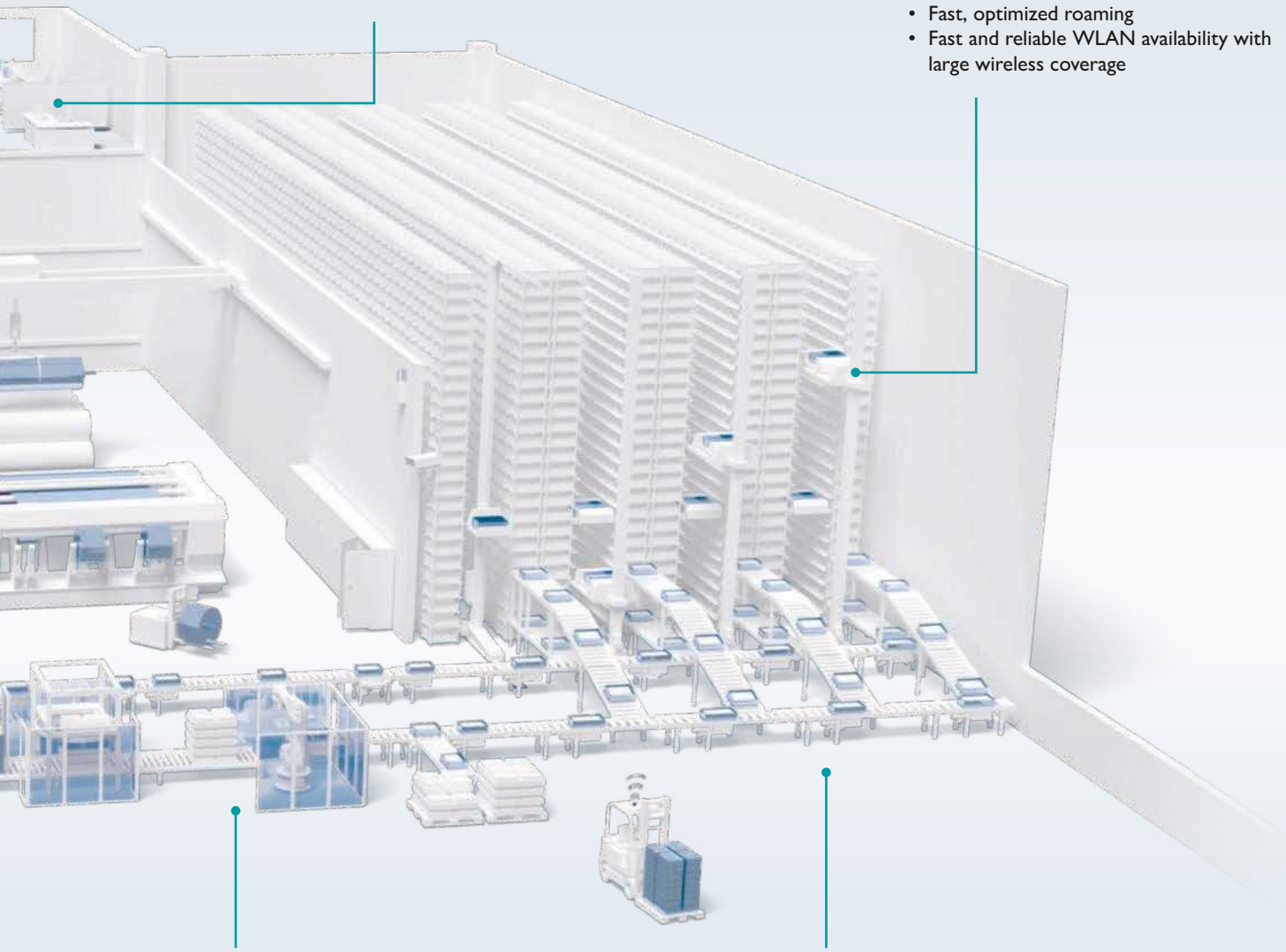
When it comes to communication between company and production networks, different, sometimes contradictory requirements come into conflict with one another. We offer:

- Seamless integration through support of automation and IT standards
- High-performance and failsafe solutions
- Consistent communication between the different Ethernet subnetworks

Communication with mobile systems

Communication with unmanned transport systems and warehouse shuttles requires a reliable and uninterrupted wireless LAN connection. We offer:

- Fast, optimized roaming
- Fast and reliable WLAN availability with large wireless coverage



Cyber security

In networked systems, secure protection against unauthorized access by people or malware is essential. We offer:

- Products and solutions for secure system networks in accordance with IEC 62443 and ISA-99
- Secure access solutions for external service engineers via the Internet
- Industrial virus protection for Windows control systems

Network management

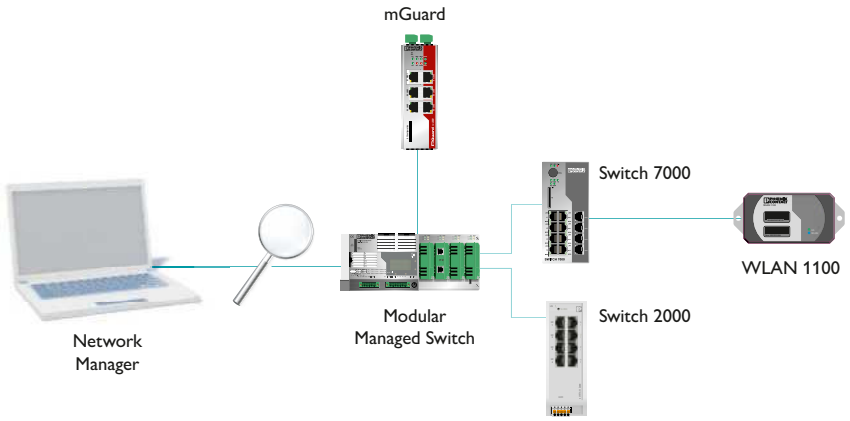
In order to detect problems in the production network prior to an actual failure, you must monitor your production network on a continual basis. However, if a failure does occur, the diagnostic data gathered helps you to swiftly find the error and eliminate it. We offer network management software for network configuration and diagnostics.

Solutions for the production network

Network management

Large production networks include many different network components that all have to be configured and diagnosed. Easily put Phoenix Contact Managed Switches, WLAN components, and security appliances into operation using network management software. You can centrally assign IP addresses for network devices, configure several devices at the same time, and update the firmware.

Further information on software from page 62

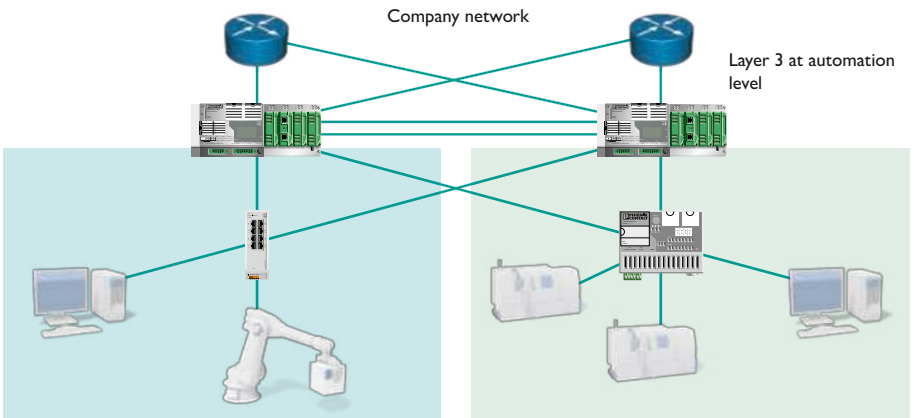


Network management with FL NETWORK MANAGER software

High-performance and failsafe connection to the company network

The Virtual Router Redundancy Protocol (VRRP) allows you to redundantly connect your routers to the company network. Gigabit performance ensures high data throughput, while support of IT standards provides seamless integration (e.g., VLAN, SNMP, RSTP). For consistent communication between up to 28 different IP subnetworks, you can use the Layer 3 function.

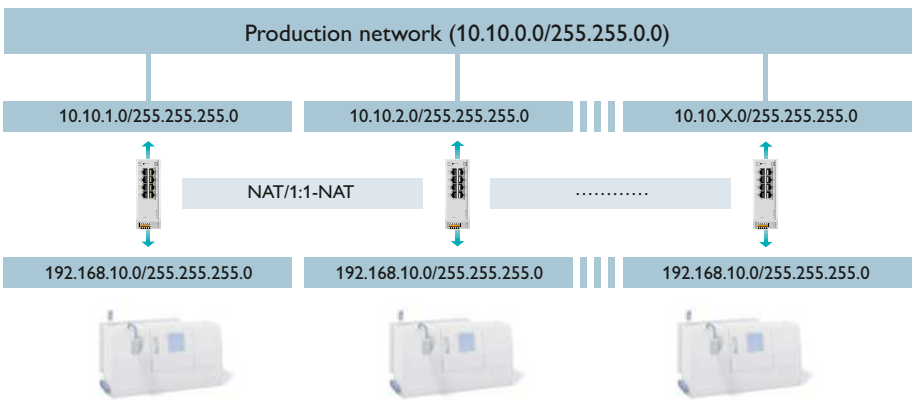
Further information on Modular Managed Switches from page 31



Integration of machines with the same IP address

Machines and their devices have their own, permanently configured IP addresses. When integrated into higher-level production networks, IP address conflicts may therefore occur. However, you do not need to adapt the IP addresses to the production network, which is a time-consuming task. Our NAT switches or mGuard routers easily translate the address areas within the machine to the desired IP address area in the higher-level automation network.

Further information on NAT switches from page 30 and mGuard security routers from page 50



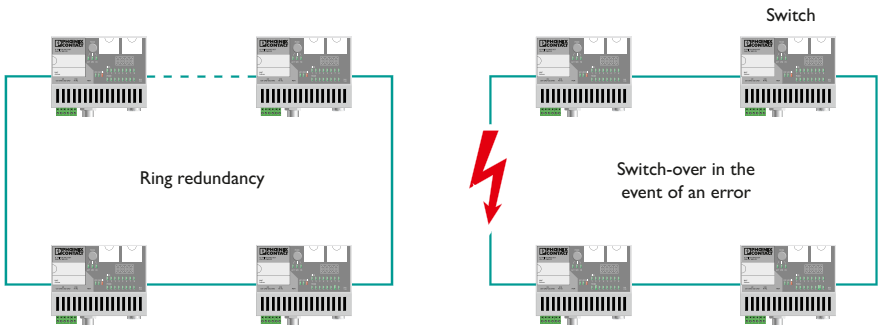
Automatic IP address translation, thanks to switches with NAT function

High network availability due to network redundancy

Fast redundancy switch-over ensures the uninterrupted operation of automation networks in the event of connection failure. We offer:

- DLR (Device Level Ring) for EtherNet/IP™ networks
- MRP (Media Redundancy Protocol) for PROFINET networks
- RSTP (Rapid Spanning Tree Protocol) for standard industrial IT networks

Further information on Managed Switches from page 26

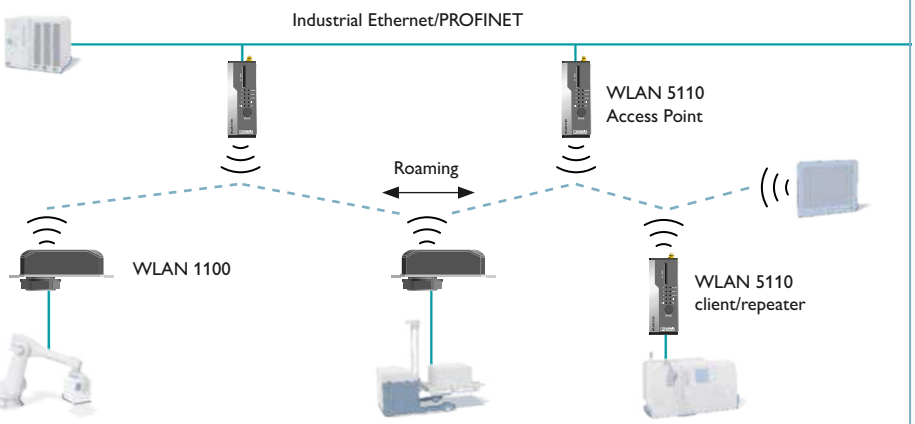


If an error occurs, the network structure is reorganized so that all devices can be reached again

Reliable wireless LAN solution for mobile systems

WLAN products from Phoenix Contact offer optimized roaming and enable wireless cells to be changed in a matter of milliseconds. Realtime communication between the controller and carry system is thus ensured, even in data-intensive applications. Observance of the 802.11n standard as well as use of MIMO antenna technology also ensure stable communication in the industrial environment.

Further information on industrial WLAN from page 47

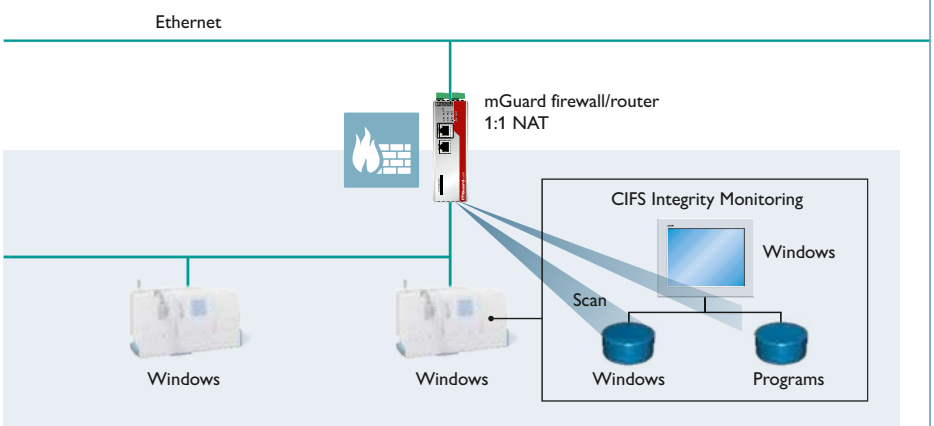


Wireless machine communication with industrial WLAN

Industrial mGuard security solutions

The mGuard firewall routers securely protect your network against hazards that result from increased networking. Firewall rules based on user authentication and the conditional firewall enable person-, company-, and situation-dependent activation of different firewall rules. CIFS Integrity Monitoring detects anomalies on Windows control computers.

Further information on mGuard security routers from page 50



CIFS Integrity Monitoring for protecting computers with Windows operating systems

The networked machine

Today, modern production machines are often networked in various ways. Whether it be with the Internet for remote maintenance, the company network for exchanging production data or with other machines and I/O systems for automated production. However, greater networking also means larger networks, more communication, and increasing security requirements. Phoenix Contact offers you industrial Ethernet solutions and components specially tailored to machine networks, which can be used to tackle not just today's but also future requirements.

Central network configuration and monitoring

In order to start up network components quickly and easily, central network management software is needed. We provide easy, central configuration of components, initial IP address assignment as well as a fast and simple firmware update.

Stable machine networks

The number of Ethernet devices in the machine network continues to rise. In order to guarantee stability and availability in the future as well, intelligent networks are needed for automatic error detection and troubleshooting. We offer intelligent switches for growing networks.

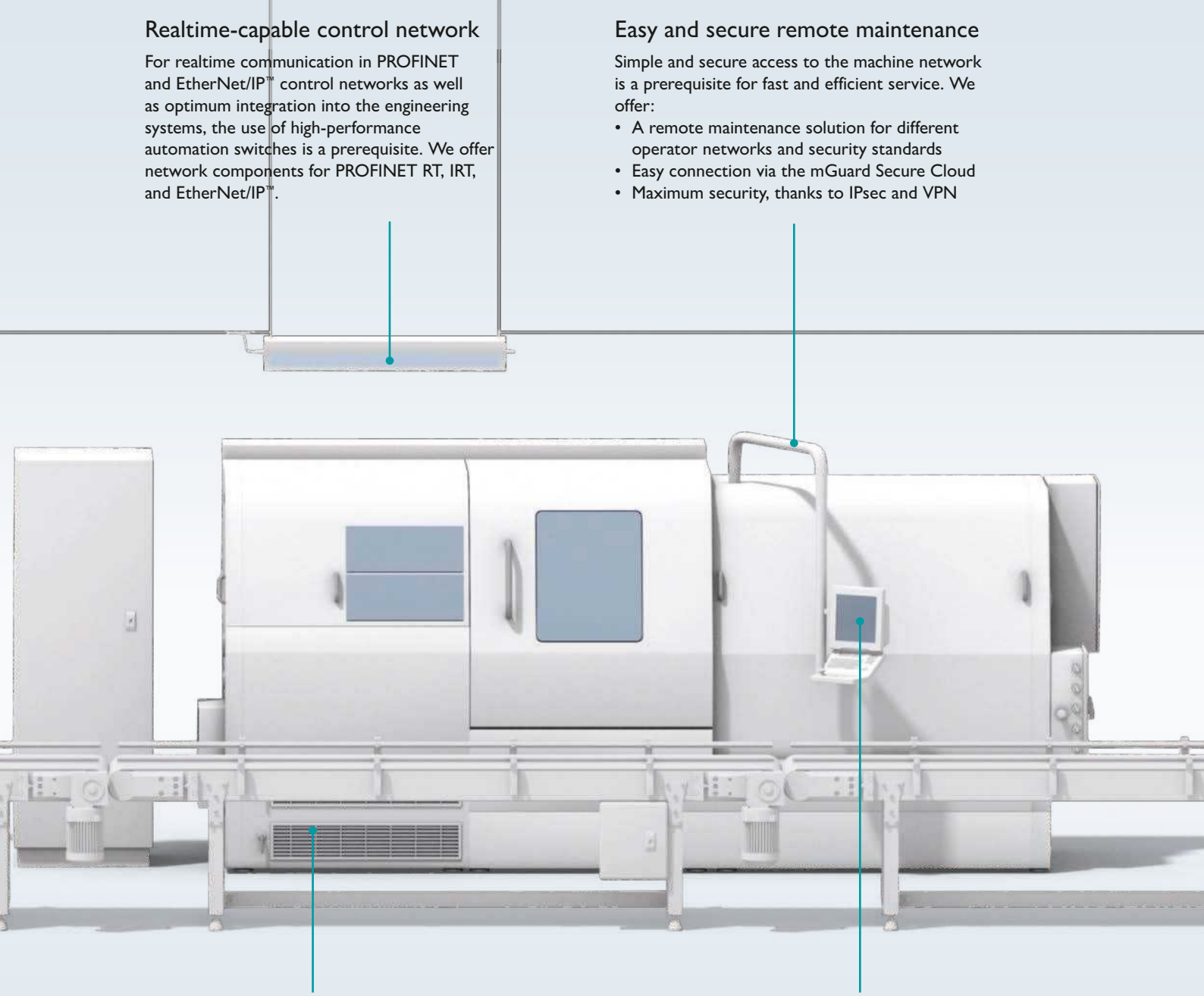
Realtime-capable control network

For realtime communication in PROFINET and EtherNet/IP™ control networks as well as optimum integration into the engineering systems, the use of high-performance automation switches is a prerequisite. We offer network components for PROFINET RT, IRT, and EtherNet/IP™.

Easy and secure remote maintenance

Simple and secure access to the machine network is a prerequisite for fast and efficient service. We offer:

- A remote maintenance solution for different operator networks and security standards
- Easy connection via the mGuard Secure Cloud
- Maximum security, thanks to IPsec and VPN



Operation with smart devices

The current trend is to use tablets or smart glasses to set up and operate machines or for visual support. WLAN access to the machine network is therefore a basic requirement. We offer Access Points with integrated antennas, extensive and reliable wireless reception as well as solutions for simple password management.

Integration into the production network

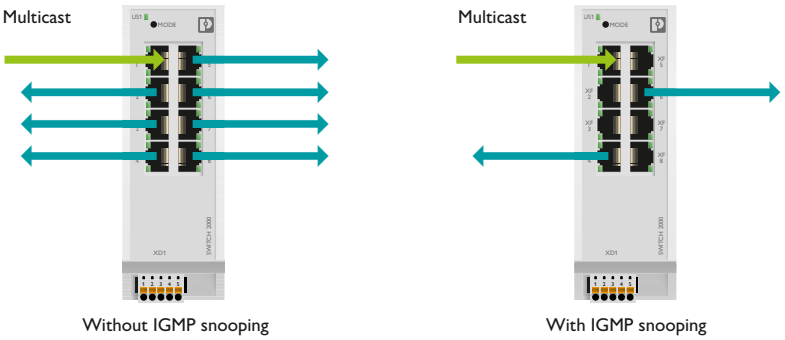
Today, machines are often integrated into a higher-level network. In spite of transparent data exchange, unauthorized access and undesired communication load must be prevented. We offer secure data exchange with the company network, protect the machine against undesired network load, and enable integration into any production networks without IP address adaptation.

Solutions for the machine and system network

Stable machine networks

Intelligent switches offer extensive configuration and monitoring options for the machine network. In doing so, the data load in the network is reduced using multicast filter functions. Redundancy mechanisms maintain communication even in the case of undesired loops or device failures.

Further information on switches for growing networks from page 26

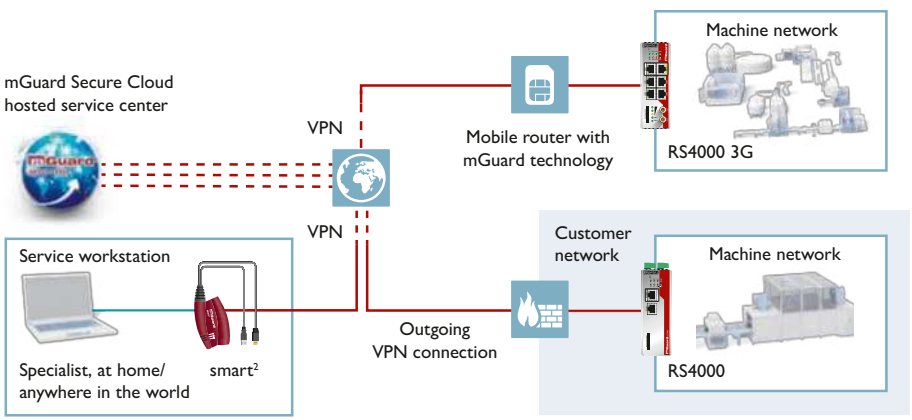


Multicast filters reduce the data load in the network

Easy and secure remote maintenance

mGuard Secure Cloud offers machine builders and system manufacturers a turnkey complete VPN solution, which enables secure remote maintenance without special IT knowledge – from a simple VPN Cloud Client to an extensive security solution including remote maintenance. The wide range of remote maintenance components means that the highly varied requirements of the network operator can be fulfilled.

Further information on secure remote maintenance from page 54

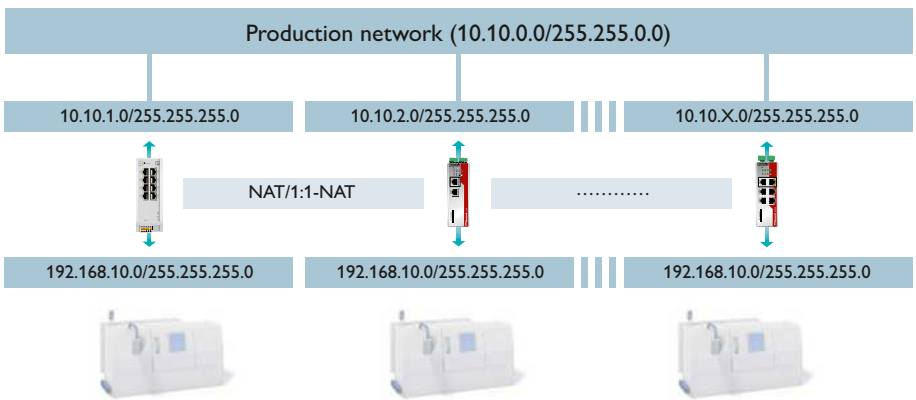


Secure remote maintenance concept with mGuard components

Secure integration into the production network

Machine connection via an NAT or security router enables transparent communication and protects the machine network against unwanted communication at the same time. Faults and threats from the production network are effectively kept away from the machine network. The availability and realtime capability of internal machine communication is thus ensured.

Further information on NAT switches from page 30 and mGuard security routers from page 50

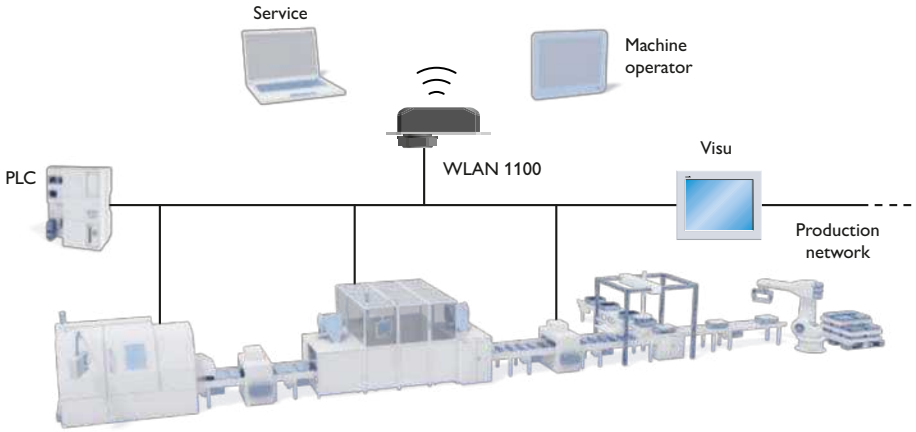


Machine connection with NAT and security routers

Machine operation with smart devices

Users should be able to connect their smart devices to the machine network as easily as possible. However, if the WLAN password is known and has not been changed in a long time, this also allows third parties uncontrolled access to the machine network.
The WLAN 1100 wireless module enables automated key management through the machine control system. This means that secure WLAN machine access can be easily implemented.

Further information on industrial WLAN from page 47

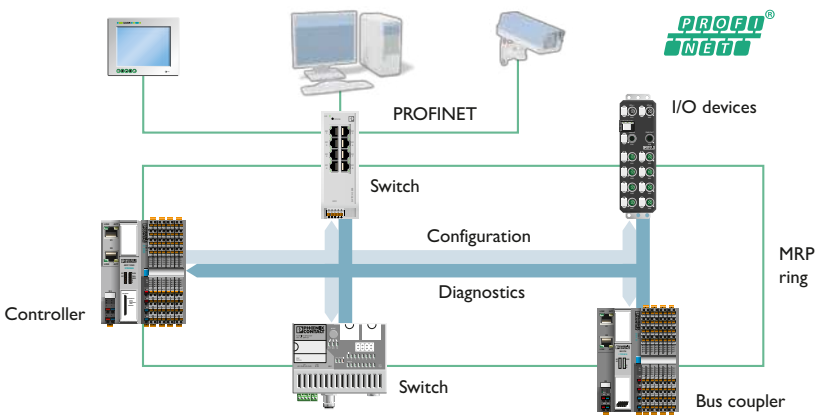


Wireless machine operation and service with wireless LAN

Realtime-capable control network

Automation switches combine IT functions with managed and realtime properties which optimally support PROFINET and EtherNet/IP™ protocols. They ensure stable and realtime-capable communication.
The integrated, fast redundancy methods, such as the Device Level Ring (DLR) for EtherNet/IP™ and the Media Redundancy Protocol (MRP) for PROFINET, prevent the control process from being adversely affected even in the case of device failure.

Further information on managed automation switches from page 26

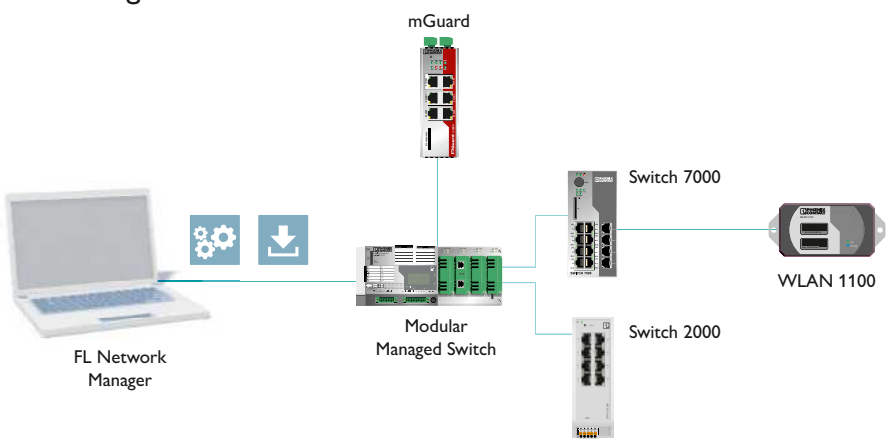


MRP redundancy for a failsafe machine network

Central network configuration and monitoring

Following installation and cabling of the network devices, the central configuration and monitoring of the Phoenix Contact network components can be quickly and easily performed with the FL Network Manager software. This can be done individually or based on prepared machine projects, thereby simplifying configuration and startup for series machine builders in particular.

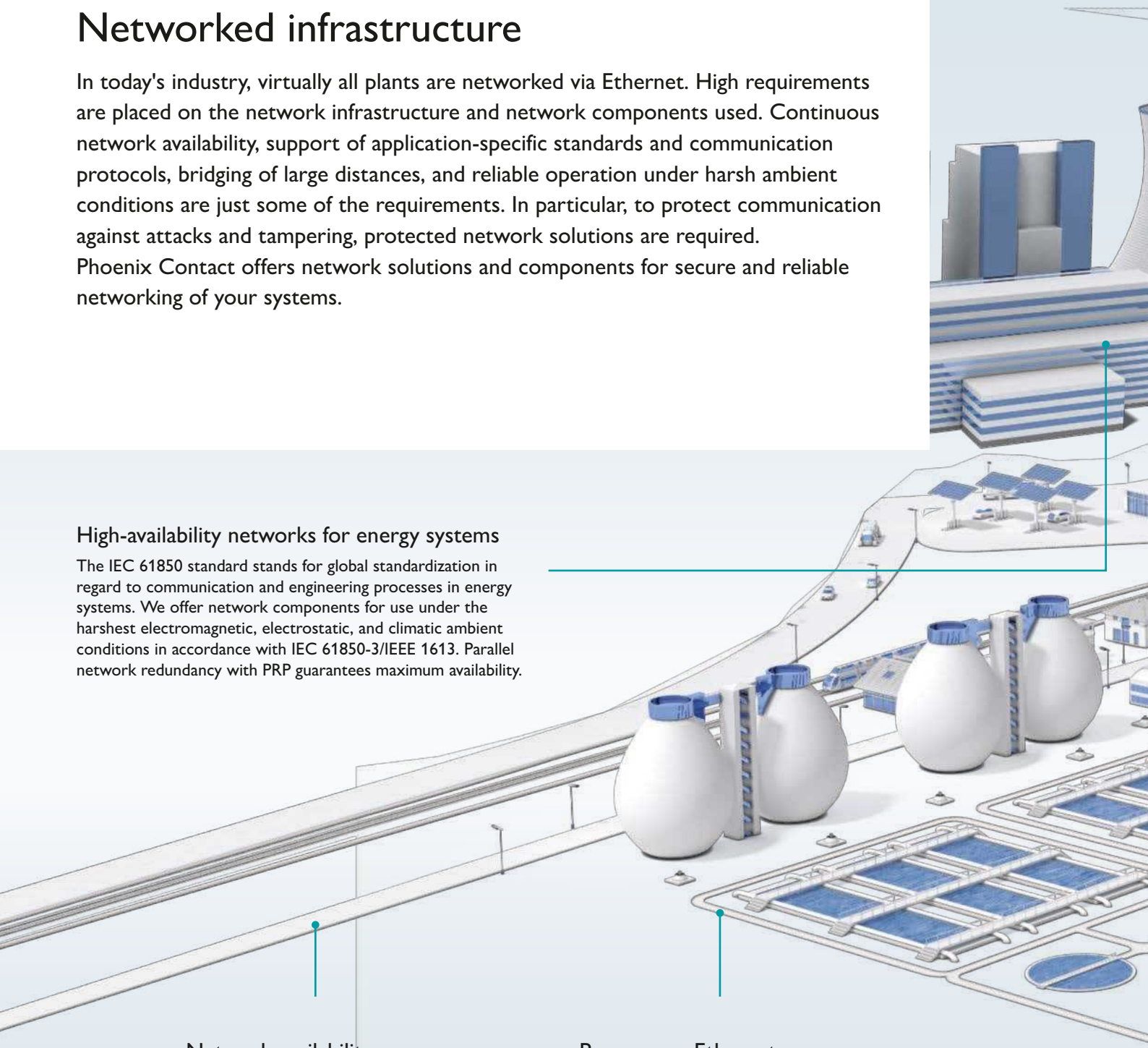
Further information on software from page 62



Network configuration and startup with FL Network Manager software

Networked infrastructure

In today's industry, virtually all plants are networked via Ethernet. High requirements are placed on the network infrastructure and network components used. Continuous network availability, support of application-specific standards and communication protocols, bridging of large distances, and reliable operation under harsh ambient conditions are just some of the requirements. In particular, to protect communication against attacks and tampering, protected network solutions are required.
Phoenix Contact offers network solutions and components for secure and reliable networking of your systems.



High-availability networks for energy systems

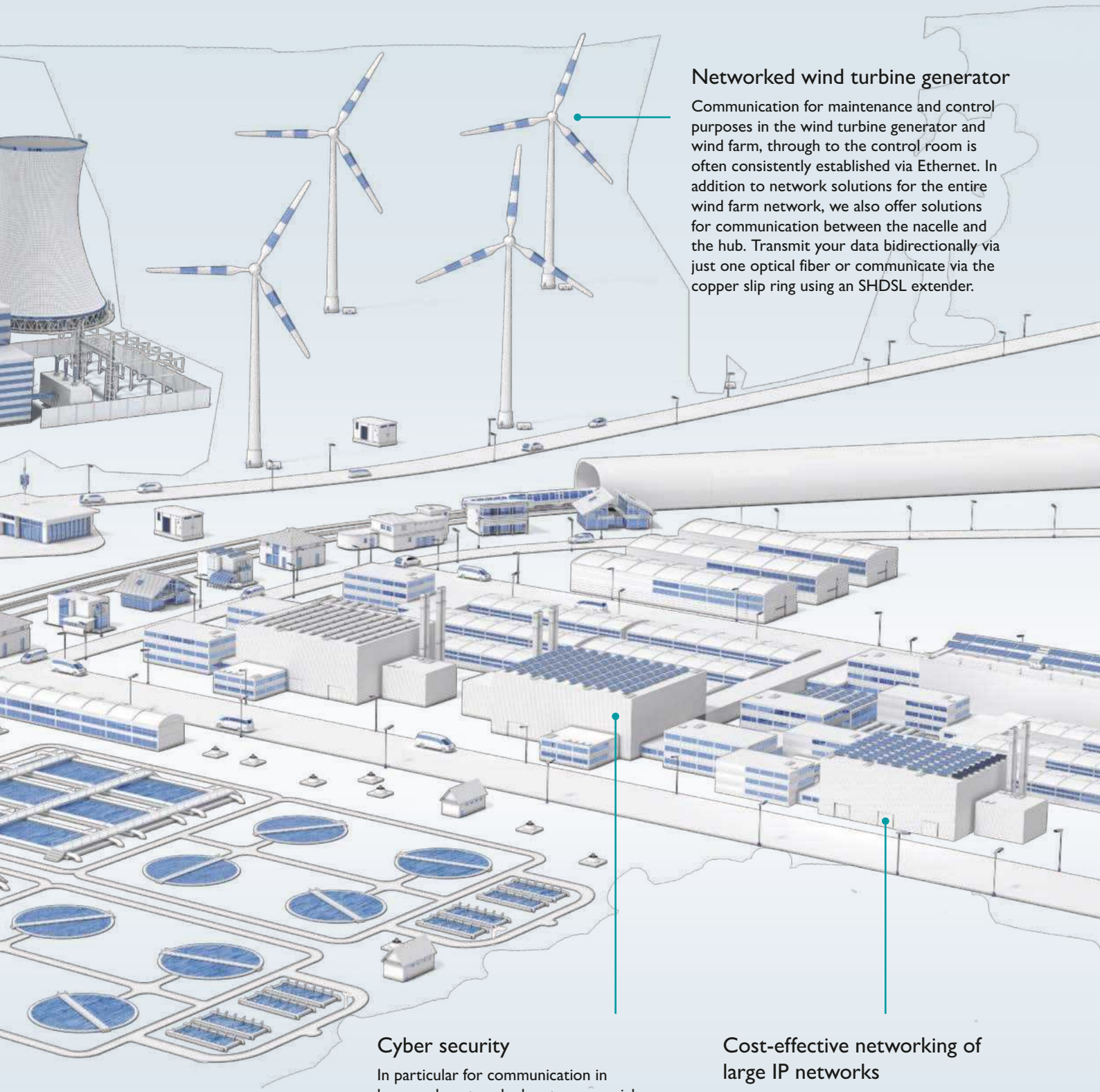
The IEC 61850 standard stands for global standardization in regard to communication and engineering processes in energy systems. We offer network components for use under the harshest electromagnetic, electrostatic, and climatic ambient conditions in accordance with IEC 61850-3/IEEE 1613. Parallel network redundancy with PRP guarantees maximum availability.

Network availability

In critical infrastructures, interference-free and failsafe communication even across large distances is a fundamental requirement.
We offer robust switches with an extensive range of IT functions and fast redundancy mechanisms, which ensure uninterrupted communication in the event of connection failure.

Power over Ethernet

The installation of distributed network devices in the system, such as surveillance cameras or WLAN Access Points, can be extremely time consuming due to the long transmission paths. Here, Power over Ethernet technology considerably reduces cabling effort.



Networked wind turbine generator

Communication for maintenance and control purposes in the wind turbine generator and wind farm, through to the control room is often consistently established via Ethernet. In addition to network solutions for the entire wind farm network, we also offer solutions for communication between the nacelle and the hub. Transmit your data bidirectionally via just one optical fiber or communicate via the copper slip ring using an SHDSL extender.

Cyber security

In particular for communication in large-scale networked systems, special protective measures are required to prevent unauthorized access or tampering. We offer extensive mGuard security solutions, such as Deep Packet Inspection for the highest possible level of security in communication and help you to effectively plan a secure network.

Cost-effective networking of large IP networks

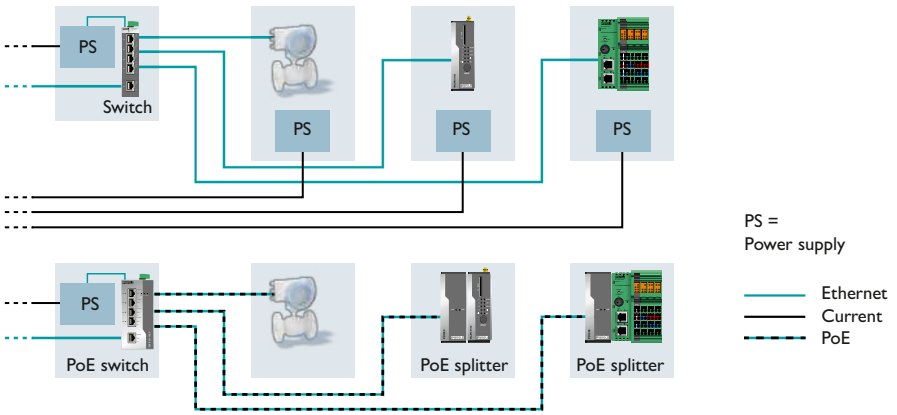
In extensive applications, subsequent networking for process data acquisition presents an economic challenge. Using existing, in-house copper wires in combination with Ethernet extenders is an inexpensive alternative to new installations.

Solutions for infrastructure networks

Power over Ethernet

In the case of Power over Ethernet (PoE), data and energy are transmitted over a standard Ethernet cable. This considerably reduces the cabling effort for the network devices installed in the field, such as surveillance cameras or WLAN Access Points. PoE is standardized in IEEE 802.3 and thus non-proprietary use is supported. Thanks to PoE splitters, you can also supply standard Ethernet devices with energy via PoE.

Further information on Power over Ethernet from page 42

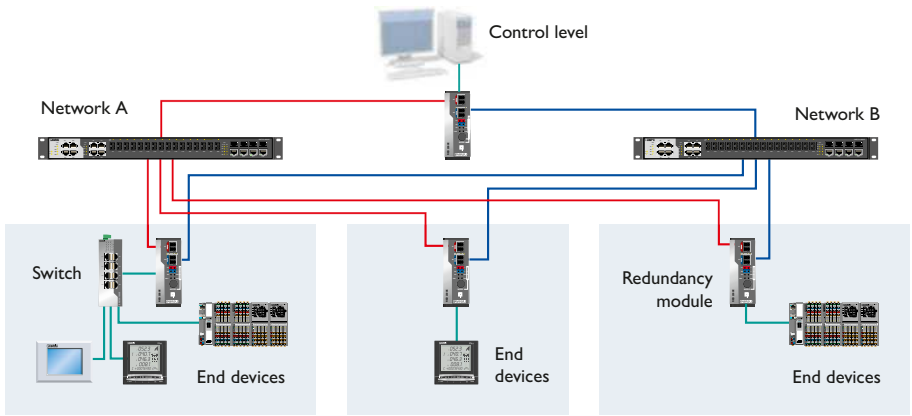


Streamlined and cost-effective cabling thanks to PoE

Parallel network redundancy with PRP

PRP network redundancy is based on two independent, active network paths between two devices. The transmitter uses two independent network interfaces that both send out the same data simultaneously. The redundancy control protocol therefore makes sure that the recipient only uses one data packet and discards the second. If just one packet is received, the recipient knows that a failure has occurred on the other path.

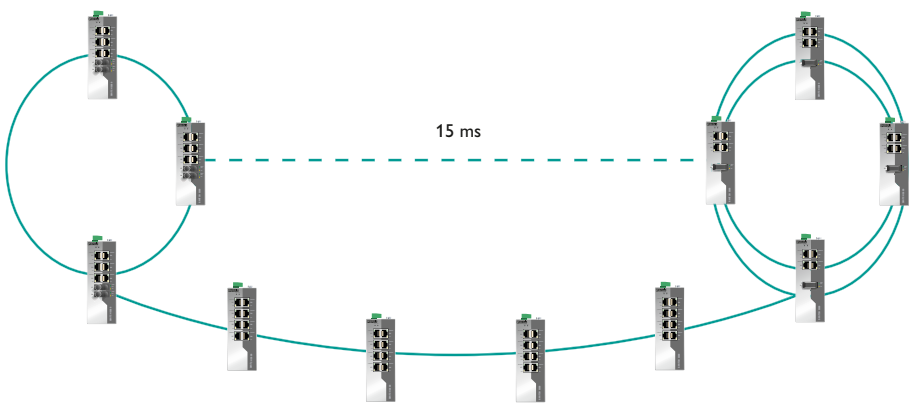
Further information on PRP redundancy modules from page 67



Extended ring redundancy for high network availability

In critical infrastructure applications, the extended ring redundancy offers a quick redundancy switch-over in the event of connection failure. This enables a switching time (recovery time) of a maximum of 15 ms for up to 200 devices in one ring. Up to three linked rings with up to 600 switches are also supported. Dual redundant rings enable maximum fault tolerance.

Further information on Managed Switches from page 26

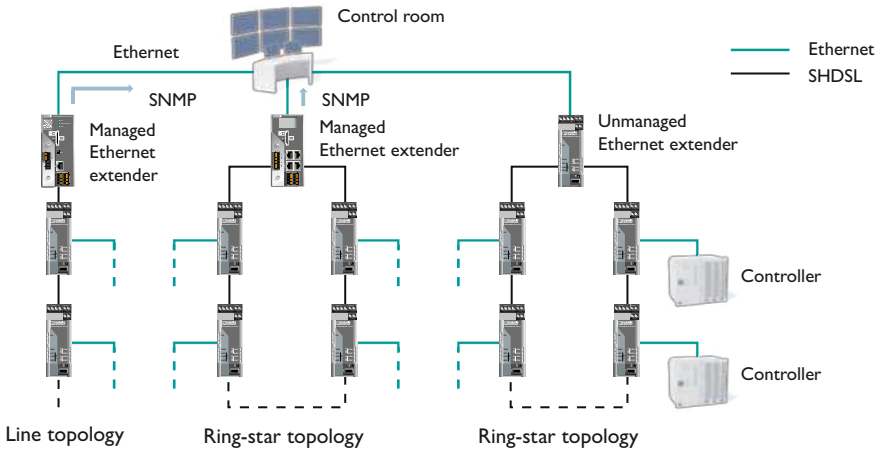


Extended ring redundancy for minimal switching times

Ethernet communication via any 2-wire cable up to 20 km

With the Ethernet extenders, not only can you connect simple point-to-point Ethernet applications, but also extended IP networks of up to 20 km. Thanks to managed Ethernet extenders, unmanaged Ethernet extenders can now also be diagnosed centrally via IP. The system generates a warning using SNMP when unexpected events occur, such as path weakening.

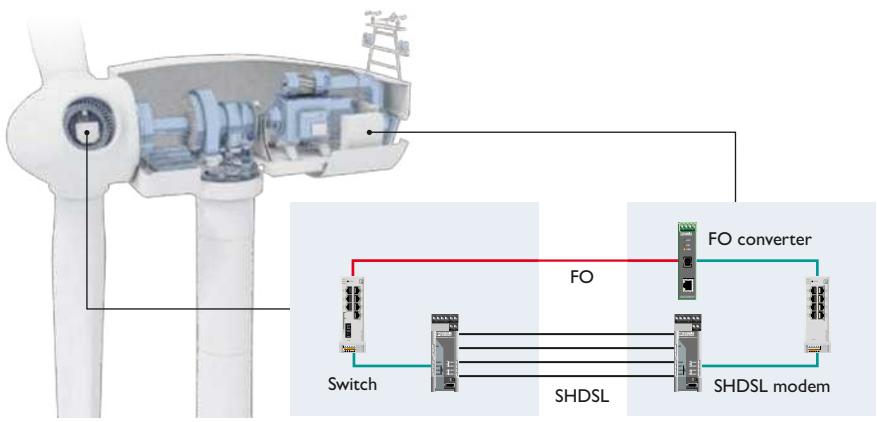
Further information on Ethernet extenders from page 55



Networked wind turbine generator

With the WDM method, two different wavelengths (1310/1550 nm) enable data to be transmitted and received simultaneously – without limiting the transmission quality or bandwidth. This means that interference-free full duplex communication is possible in rotating applications. SHDSL modems enable double redundancy to be established via the copper slip ring using SHDSL technology and two Ethernet extenders.

Further information about WDM products from page 21 and 39 and modems from page 54

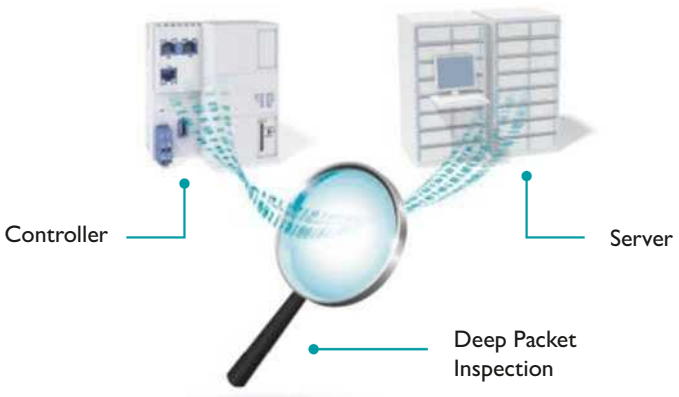


Redundant communication solution for secure data transmission to the hub

Cyber security

With distributed remote control solutions based on our mGuard security routers, you can protect your systems reliably against unauthorized access. In the case of Deep Package Inspection (DPI), the content of the data packet is also checked in addition to IP addresses and port regulation. This increases the safety level in the case of OPC Classic or Modbus/TCP communication, for example.

Further information on mGuard security routers from page 50 and remote maintenance from page 54

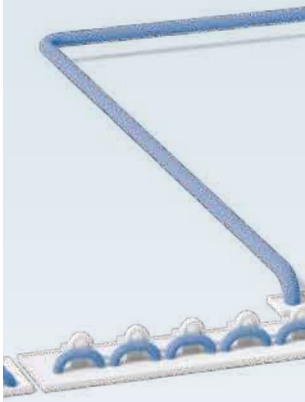


Deep Packet Inspection for OPC Classic and Modbus/TCP

The networked process system

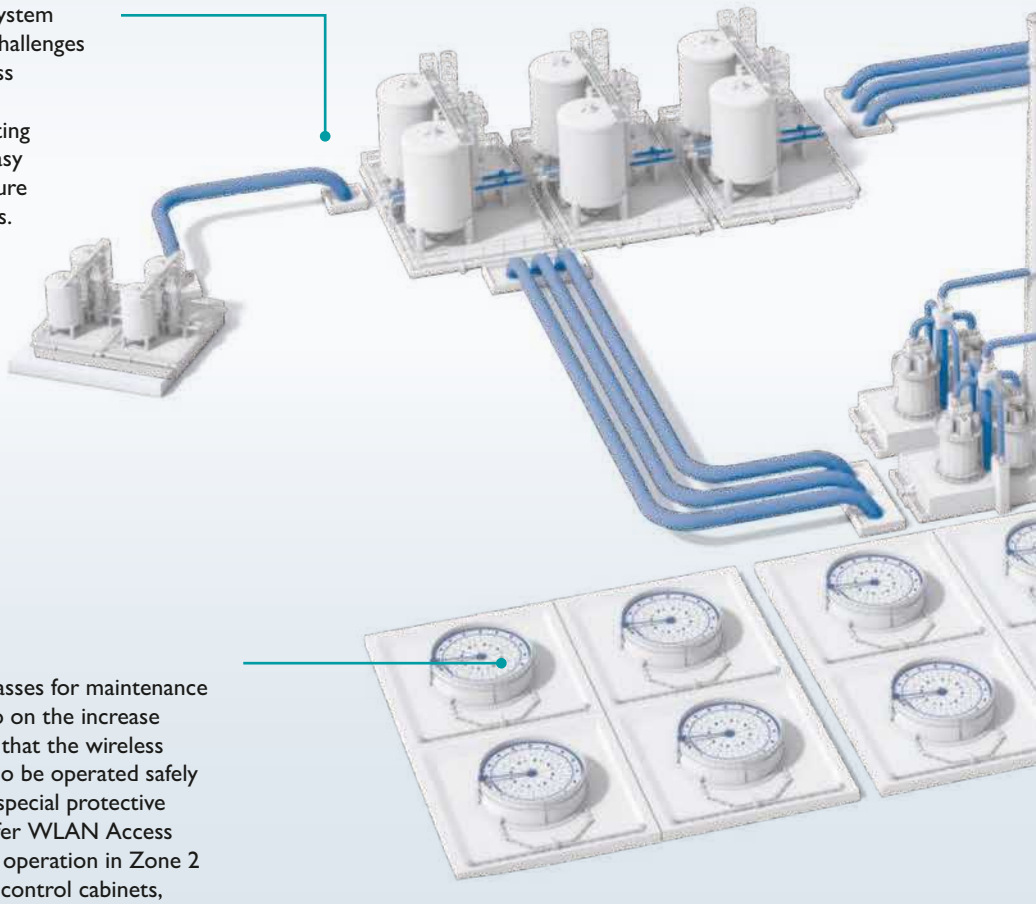
Transparent communication from the sensor through to the control center is a prerequisite for optimum control of continuous processes in process engineering systems.

Robust, high-availability, and secure Ethernet networks are therefore increasingly becoming the basis for communication in modern process systems. Secure protection against unauthorized access by people or malware is a must. Phoenix Contact offers industrial Ethernet solutions and components for high-performance and secure networking of process systems.



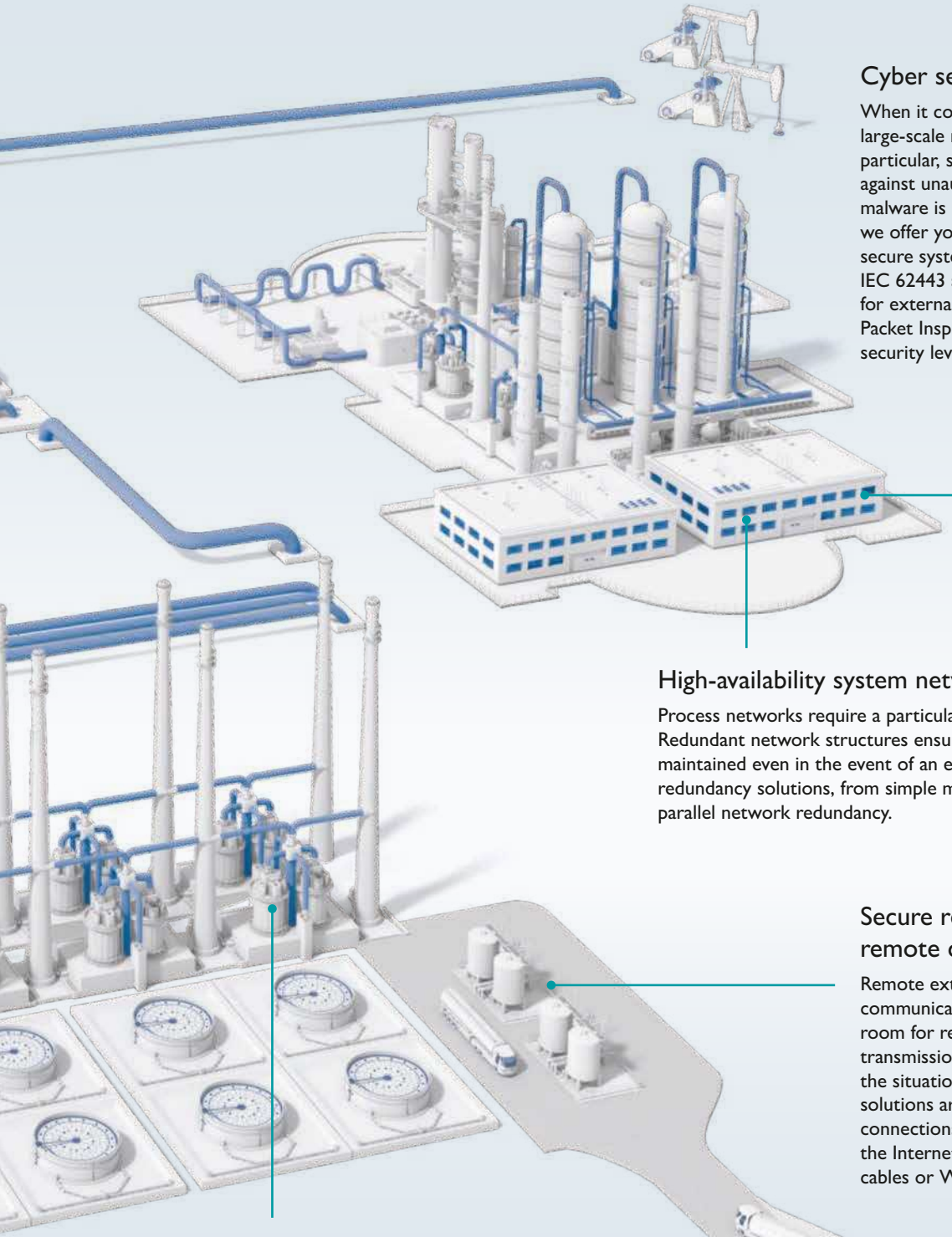
Integration of modular systems

When it comes to integrating new, modular system parts into the system network, a number of challenges need to be overcome. These include IP address conflicts or secure Internet access for remote maintenance. We offer high-performance routing solutions between various subnetworks, an easy solution for IP address conflicts as well as secure remote maintenance of individual system parts.



WLAN in the Ex area

The use of tablets or smart glasses for maintenance and diagnostic purposes is also on the increase in process systems. To ensure that the wireless Ethernet infrastructure can also be operated safely in potentially explosive areas, special protective measures are required. We offer WLAN Access Points, which are designed for operation in Zone 2 or can be mounted directly in control cabinets, thanks to integrated antennas.



Cyber security

When it comes to communication in large-scale networked process systems, in particular, secure protection of the network against unauthorized access by people or malware is essential. With this in mind, we offer you products and solutions for secure system networks in accordance with IEC 62443 and ISA-99, secure access solutions for external service engineers as well as Deep Packet Inspection for the highest possible security level.

High-availability system network

Process networks require a particularly high failsafe performance. Redundant network structures ensure that communication is maintained even in the event of an error. We offer the right redundancy solutions, from simple media redundancy through to parallel network redundancy.

Secure remote maintenance and remote control

Remote external and substations must be communicatively connected to the control room for remote maintenance or continual transmission of process data. Depending on the situation on site, different transmission solutions are needed. We offer secure connections via the public telephone network, the Internet, the mobile network, in-house cables or WLAN.

Using HART data

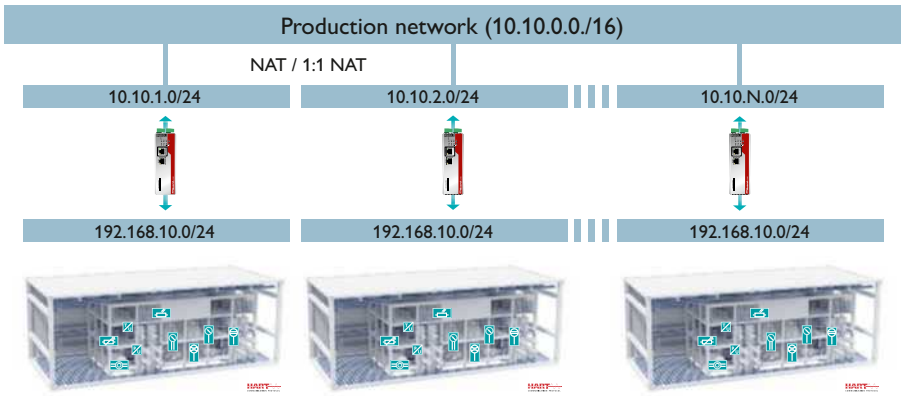
Today, HART is the most widely supported protocol standard in the process industry. We provide interface converters for integrating HART devices into your Ethernet network. For smooth processing, you can transmit the otherwise slow HART signals at Ethernet speed to the control system.

Solutions for process networks

Solution to IP address conflicts

Modular system parts and their devices have their own permanently configured IP addresses. When integrated into higher-level system networks, this can therefore cause IP address conflicts. To avoid the time-consuming process of adapting IP addresses to the production network, NAT switches or mGuard routers can easily translate the address areas within the machine to the desired IP address area in the higher-level automation network.

Further information on NAT switches from page 30 and mGuard security routers from page 50

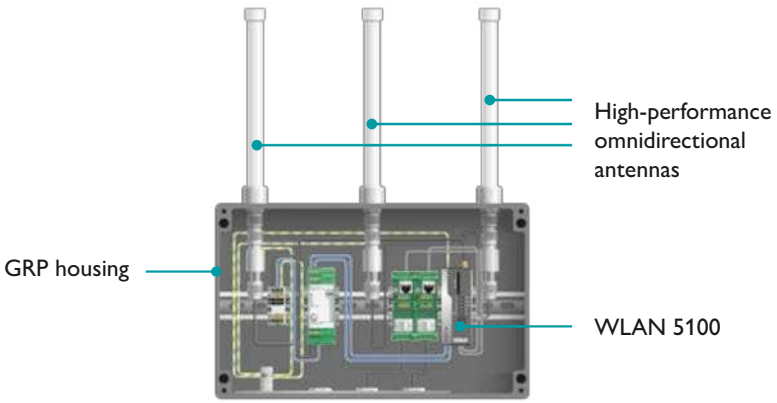


Access to system parts with the same IP addresses, thanks to 1:1 NAT function

WLAN in potentially explosive areas

You can also benefit from the advantages of well-established industrial WLAN products from Phoenix Contact in potentially explosive areas. In addition to compact WLAN modules for direct mounting on control cabinets and systems, we offer ready-made WLAN Access Point solutions for potentially explosive areas.

Further information on industrial WLAN from page 47

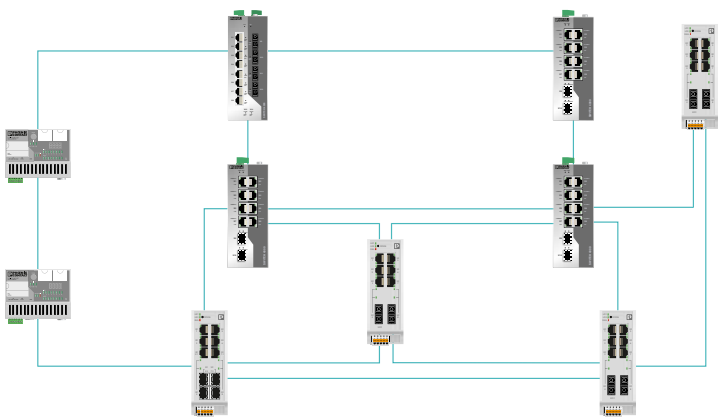


WLAN solutions for potentially explosive areas

Rapid Spanning Tree for high-availability systems

RSTP is a standardized redundancy method (IEEE 802.1D-2004) which is supported by virtually all Managed Switches from Phoenix Contact. It supports ring and tree topologies and meshed networks. Special extensions include Fast Ring Detection for faster switching times and Large Tree Support for networks with up to 57 devices.

Further information on Managed Switches from page 26

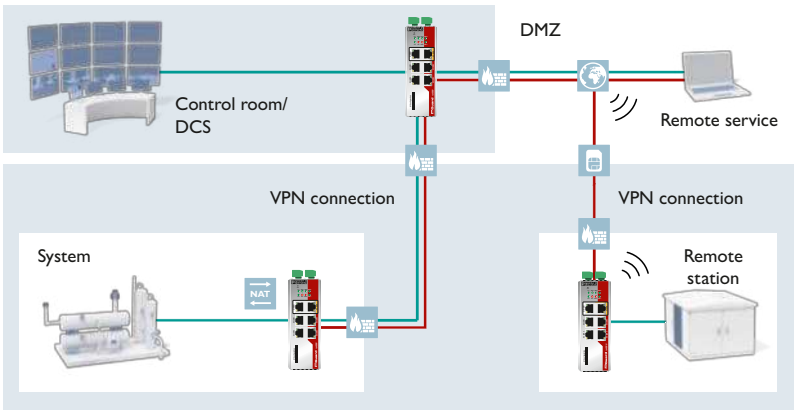


RSTP redundancy for high network availability

Cyber security

The mGuard firewall routers securely protect your network against many hazards that result from increased networking. Reliably protect your system parts against unauthorized access by using secure VPN connections with an integrated firewall. Deep Packet Inspection (DPI) also inspects the content of data packets and increases the safety level in the case of OPC Classic or Modbus/TCP communication.

Further information on mGuard security routers on from page 50

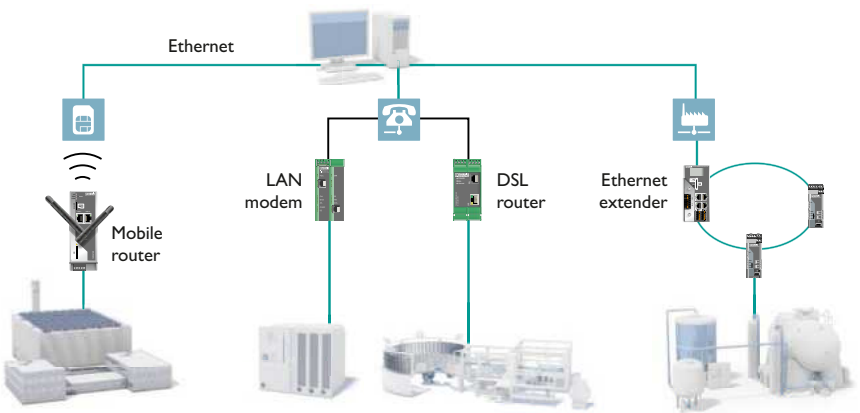


Protection of process systems with mGuard technology

Remote communication

Various communication methods are available for data transmission to remote or widespread networks or for monitoring systems all over the world. Communicate wirelessly at high speed via mobile networks. Access remote network devices via the telephone network, which is available worldwide, or use 2-wire in-house cables for transmission speeds of up to 30 Mbps.

Further information about remote communication from page 54

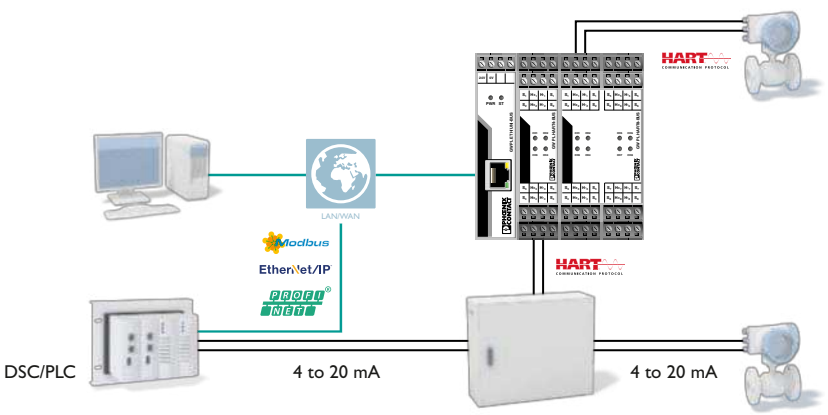


Mobile network | Public telephone network | Private network

Using HART data

Ethernet HART multiplexers are an easy and cost-effective option for converting HART signals into Ethernet-based protocols. You can connect up to 40 HART devices via your own HART master. This enables communication at Ethernet speed. The modular design provides a scalable solution for modern distributed control systems and phased roll-outs.

Further information on HART multiplexers on page 58



HART multiplexers can also be easily retrofitted in existing systems

Media converters for conversion to fiber optics

For maximum immunity to interference and transmission ranges in industrial Ethernet applications, fiberglass media converters transparently convert Ethernet data to fiber optics. The media converters allow you to bridge distances up to 40 km depending on your choice of device and cable.
The extended temperature range means that they can be used for numerous industrial applications. In addition to this, the media converters offer comprehensive diagnostic options, thereby increasing system availability.

Web code: #1269

For standard applications

Class 1000 media converters are designed for applications with basic requirements. They offer an easy and inexpensive entry-level solution for converting to FO technology in industrial Ethernet networks.

For realtime protocols

Class 2000 media converters are ideal for applications with time-critical Ethernet protocols such as Powerlink, EtherCAT® or Sercos. Thanks to the switch-over to pass through operation, they enable very short delays (latency).

Your advantages

- Maximum immunity to interference and perfect electrical isolation, thanks to optical data transmission
- Maximum transmission distances with an extremely high data rate
- Use in potentially explosive areas – approved for Zone 2

With special approvals

Thanks to the ATEX approval and DNV shipbuilding approval, you can use the devices from the FL MC EF class in the process industry, machine building and wind power, through to shipbuilding. With single-mode fiberglass, you can achieve transmission ranges of up to 36 km.

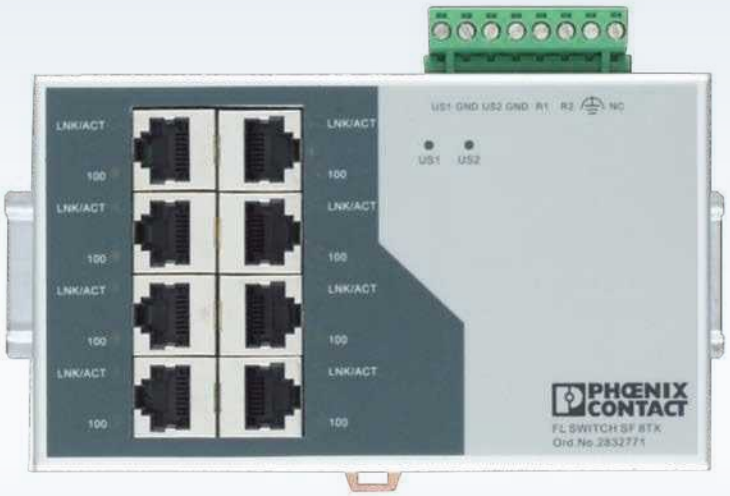
For special applications

We provide perfect solutions, even for special applications such as rotating applications, PROFINET networks or use in the energy industry.

Unmanaged Switches

Unmanaged Switches from Phoenix Contact excel with standard functions, a variable number of ports, and various designs. Thanks to a high level of immunity, robust metal housing, and a wide temperature range, they are entirely suitable for industrial applications. Select the right switch for your application.

Web code: #1550



Cost-optimized for basic applications

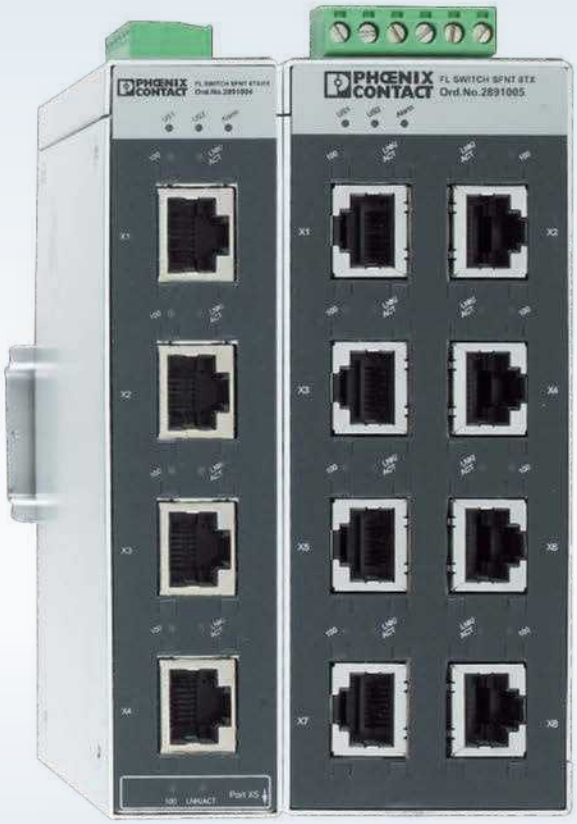
Available with 5 or 8 ports and an optional fiberglass port, SNFB switches are ideal for small machines and monitoring applications with basic Ethernet functions.

For standard industrial applications

You can choose between ultra flat (SF) and narrow (SFN) devices with 5 to 16 ports. With up to three multimode fiberglass ports with SC or ST connectors, flexibility can be ensured in the network. In addition, the Gigabit versions of the SFN ensure data transfer that also meets high performance requirements.

Your advantages

- Autonegotiation and autocrossing ensure easy network creation and expansion
- Gigabit variants for high data throughput
- Electrical isolation and fiber optic versions for failure-free operation in industrial environments



For harsh ambient conditions

SFNT devices are designed for use in very demanding applications for the Oil and Gas sector, shipbuilding, and other outdoor applications. All versions with a signal contact and link monitoring have important diagnostic options.

For field applications

Thanks to the unique narrow design and extended temperature range, the IP67 switch is ideal for use in machine building. In addition, the M12 connections enable quick and easy startup of the switch.

Managed Switches: Automation Switches

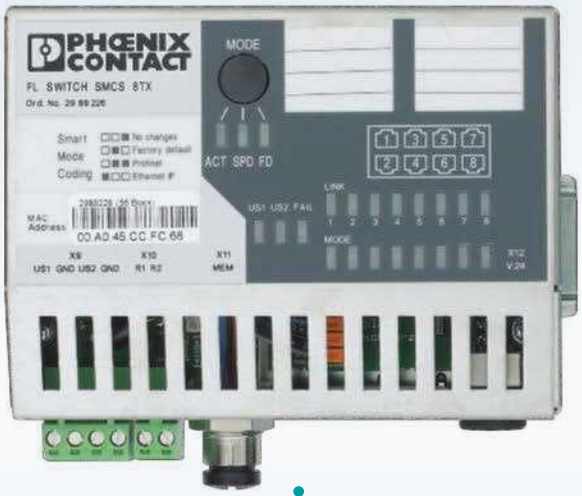
Communication in automation networks differs from communication in company networks in several key aspects. The switches must be tailored to the specific requirements of industrial environments as well as the automation protocols used there.

Phoenix Contact offers innovative Managed Switches tailored to your system with an optimum performance spectrum. Select the medium, connections, approvals, supported protocols, and scope of functions to suit your needs.

For growing networks

The 2000 series Managed Switches offer clear configuration and diagnostics options as well as automatic error detection and troubleshooting. Alongside a wider range of functions, the 2200 and 2300 versions also offer communication via fiberglass and approvals for the process industry.

Web code: #1551



For PROFINET Class B

The Managed Switches of the 2200, 2300 and SMCS series offer excellent realtime properties with high data throughput. They are ideal for use in a PROFINET RT environment. Through support of Fast Ethernet or Gigabit on all ports, they can be integrated into IT realtime services, such as video or voice-over IP.

Web code: #1552

Your advantages

- ☑ Easy integration into existing networks and flexible redundancy for all topologies, thanks to the RSTP standard
- ☑ High availability, thanks to rapid redundancy switch-over through fast ring detection
- ☑ Diagnostics and analysis options, thanks to integrated software functions
- ☑ Varied connection methods for high flexibility

For PROFINET IRT

FL SWITCH IRT switches offer optimum realtime properties for PROFINET applications. They detect PROFINET data packets due to their ID and relay these data packets with the highest priority. The polymer fiber ports can form interference-free fiber optic rings that can be diagnosed – optionally with an additional fiber optic branch.

Web code: #1553

Optimized for EtherNet/IP™

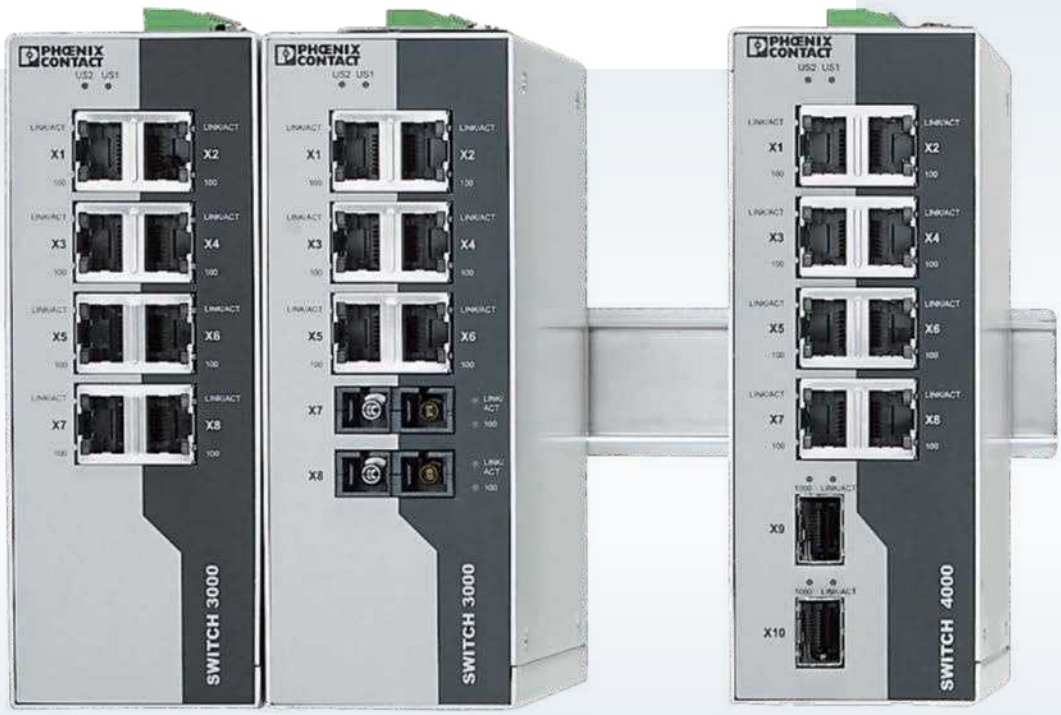
The 7000 series Managed Switches support the Device Level Ring (DLR) redundancy mechanism. The switch is integrated directly into the ring and provides you with the option to connect up to six devices to it. Thanks to the Common Industrial Protocol (CIP), the FL SWITCH 7000 switches can be fully integrated into your EtherNet/IP™ control system.

Web code: #1554

Managed Switches: Industrial IT switches

The 3000 series Managed Switches offer you optimum performance and availability for demanding infrastructure applications. They support a range of IEEE standards and IT functions for consistent integration into your network structures. The 4000 series also enables high-performance gigabit data transmission and is therefore particularly well suited to connecting distributed devices in the field to the control level. For use in energy systems, versions are also available in accordance with IEC 61850-3 and IEEE 1613.

Web code: #1555



For standard applications

Switches from the 3000 and 4000 series are perfectly suited to challenging infrastructure applications. Thanks to rapid redundancy switch-over in less than 15 ms, they ensure a high level of availability. Fiber optic versions facilitate error-free communication over large distances. Special attention has been paid to user-friendly operation and configuration.

For high network availability

The PRP redundancy modules enable parallel network redundancy without switching time in case of failure and ensure high availability for your network. They are suitable for use under the harshest electromagnetic, electrostatic, and climatic ambient conditions in accordance with IEC 61850-3/IEEE 1613.

More information on PRP modules on page 71

For energy systems

The E-versions of the series 3000 and 4000 switches are even suitable for use under the harshest ambient conditions in accordance with IEC 61850-3 and IEEE 1613. Thanks to the extended temperature range, impact resistance, shock resistance, and vibration resistance, the fanless switches are particularly robust. The products are resistant to electrostatic discharge (ESD), fast, transient disturbance variables (burst), surge voltages (surge), and magnetic fields.

Managed Switches:
Routers and Layer 3 switches

With industrial routers and Layer 3 switches from Phoenix Contact, you can integrate machines, production systems or entire subnetworks into your higher-level company network. The switches with NAT routing function combine the properties of a Managed Switch with those of a 1:1 NAT router – in a single DIN rail device. The Managed Switches with a modular design form the backbone of your automation application.

Web code: #1556

For easy integration into the network

The FL NAT 2000 switches offer you switch functions and NAT routing in just one DIN rail device. The NAT switches have a total of 8 ports that you can use as LAN or WAN ports based on the application. This enables a redundant connection of machines to your higher-level network.

Your advantages

- ☑ Optimum network structure, thanks to segmentation via Layer 3 switches
- ☑ Easy connection of machines to the production network irrespective of the address area
- ☑ Integration of systems with the same IP address areas into higher-level networks, thanks to switch with NAT function
- ☑ Connection of several subnetworks via various different types of media, thanks to Layer 3 function and wide range of media

For the most demanding requirements

Our most powerful switch is the Modular Managed Switch. As a gigabit switch with optional Layer 3 function, it is particularly suitable for use as an automation backbone and for connection to the higher-level company network. A large range of combinable media modules as well as use in PROFINET RT and EtherNet/IP™ offer maximum flexibility.

Switches overview

Switches				
	Unmanaged Switches Page 36	**2000/2100 class switches** Page 38	**2200/2300 class switches** Page 38	**3000 class switches** Page 40
Port speed (Mbps)	10/100/1000	10/100/1000	10/100/1000	10/100
Alarm contact/alarm output	(●) / –	– / –	– / ●	● / –
Filter functions				
Quality of Service	(●)	●	●	●
VLAN	–	●	●	●
Multicast/IGMP snooping	–	●	●	●
Redundancy				
Rapid Spanning Tree Redundancy (RSTP)	–	●	●	●
Fast Ring Detection (FRD)	–	–	●	–
Large Tree Support	–	–	●	–
Extended ring redundancy 15 ms	– / –	–	–	●
MRP manager/client	– / –	– / ●	● / ●	– / –
Management functions				
Address Conflict Detection (ACD)	–	●	●	–
Port configuration, statistics, and utilization	–	●	●	●
DHCP server	–	Port-based	Pool-/port-based, Option 82	–
Link Layer Discovery Protocol (LLDP)	–	●	●	●
Command Line Interface (CLI)	–	●	●	–
Automation protocols				
EtherNet/IP™, extended multicast filtering	–	●	●	–
EtherNet/IP™, CIP	–	–	–	–
PROFINET device	–	–	●	–
PROFINET conformance class	(A)	A	B	A
Approvals/certificates				
Maritime approvals	(●)	–	(●)	–
Ex approvals	(●)	–	(●)	(●)
IEC 61850-3	(●)	–	–	(●)

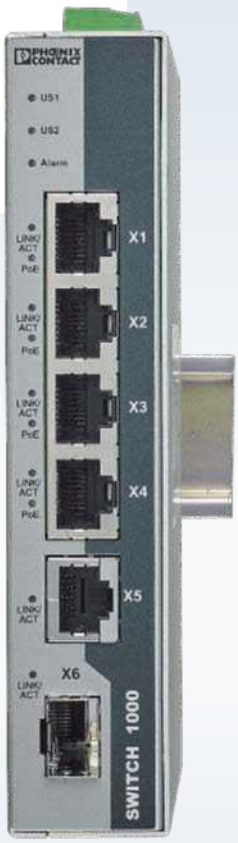
– not available, ● available, (●) available in selected models

4000/4800 class switches Page 40	**Smart Managed Switches** Page 38	**PROFINET IRT switches** Page 39	**7000 class switches** Page 39	**Modular Managed Switch** Page 41	**NAT switch** Page 41
10/100/1000	10/100/1000	10/100	10/100/1000	10/100/1000	10/100/1000
● / –	● / –	● / –	● / –	● / –	– / (●)
●	●	●	●	●	●
●	●	–	●	●	●
●	●	–	●	●	●
●	●	–	●	●	●
–	●	–	●	●	(●)
–	●	–	●	●	(●)
●	–	–	–	–	–
– / –	● / ●	● / ●	– / –	● / ●	(●) / ●
–	●	–	●	–	●
●	●	●	●	●	●
–	–	–	Pool-/port-based, Option 82	Option 82	Port-based (pool-based, Option 82)
●	●	●	●	●	●
–	–	–	–	●	●
–	●	–	●	●	●
–	–	–	●	–	–
–	●	●	–	●	(●)
A	B	C	A	B	(B)
–	(●)	–	–	–	(●)
(●)	(●)	–	–	–	(●)
(●)	–	–	–	–	–

Power over Ethernet (PoE)

Power over Ethernet devices suitable for industrial use enable the combined transmission of power and data via an Ethernet connection (LAN). You can therefore integrate end devices, such as WLAN access points, IP phones, and IP cameras into your network quickly and cost-effectively.

Web code: #1557



Injectors

The compact stand-alone solution is available in various performance classes of up to 60 watts. In addition to the RJ45 socket, the PoE injectors feature alternative connection technologies for the field cable and integrated surge protection.

Unmanaged Switches

The extended temperature range of the Unmanaged PoE Switches allows for reliable operation in harsh environments. Furthermore, the switches have full gigabit ports and jumbo frames that were developed specifically for the high data requirements of surveillance cameras.

Your advantages

- Easy device installation, thanks to reduced cabling effort
- Non-proprietary use supported, thanks to standardization in accordance with IEEE 802.3
- Fast retrofitting of existing systems, thanks to easy handling

Managed Switches

The Managed PoE Switches offer a high level of flexibility with multiple port constellations, high power budgets of 60 watts per port for the use of PoE-operated high power devices. PoE-specific managed features make it possible to control, plan, and monitor devices from a remote location.

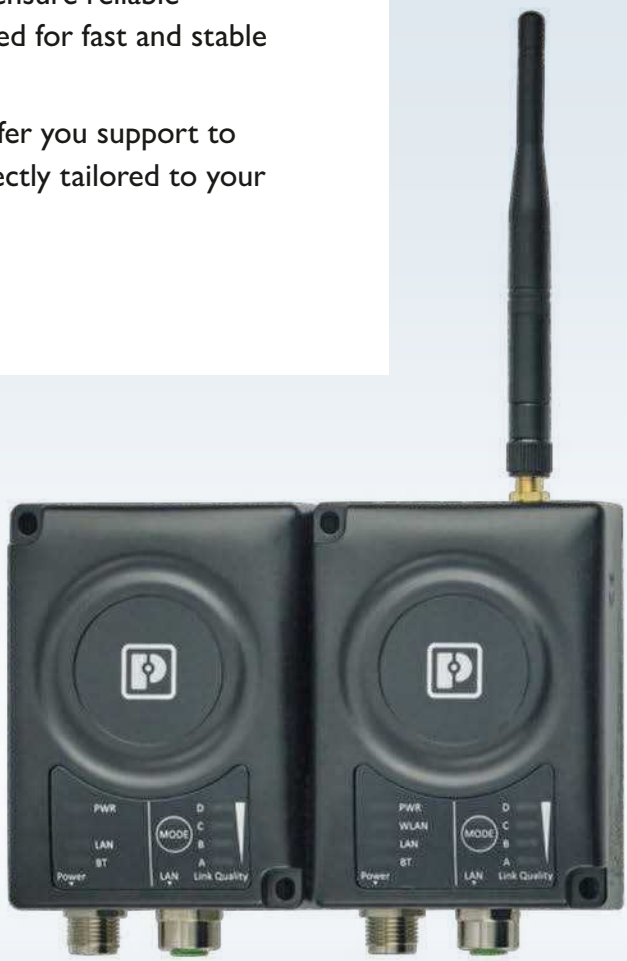
Splitter

The PD 1001 PoE splitter splits data and power locally and therefore enables even non-PoE-capable devices to be installed in remote stations in an easy and inexpensive way.

Industrial Wireless

Industrial wireless systems open up new options for flexible and efficient automation solutions. With wireless LAN or Bluetooth, you can eliminate the need for expensive cable runs and integrate mobile devices easily and reliably into your automation network. Wireless Ethernet systems from Phoenix Contact ensure reliable communication even under harsh conditions and are optimized for fast and stable PROFINET and EtherNet/IP™ transmission.

In addition to a comprehensive range of products, we also offer you support to ensure the design of your individual wireless network is perfectly tailored to your requirements.



Your advantages

- Seamless and inexpensive integration into existing networks, thanks to flexible installation and configuration concepts
- Maximum reliability and availability with optimum properties for industrial applications
- Versatile use, thanks to Ethernet being used as the common communication standard – even for safety applications

Industrial Bluetooth

The Bluetooth- and WLAN-capable EPA modules combine a reliable wireless module with an integrated special antenna in a robust IP65 housing. This allows you to establish functionally safe communication via PROFIsafe or SafetyBridge Technology. Typical Bluetooth features: the protocol-transparent Ethernet communication and interruption-free parallel operation for WLAN networks.

Web code: #1558

Industrial WLAN

The new WLAN 1100 and WLAN 2100 wireless modules make it easy to install a fast and stable WLAN network on your machines. Featuring two integrated antennas and extreme robustness, the space-saving wireless modules have been carefully considered down to the last detail for applications in machine building.

The WLAN 5110 Access Point combines maximum reliability, data throughput, and range in a compact metal housing. The central cluster management makes the configuration and maintenance of larger WLAN networks considerably easier.

Web code: #1532

Industrial security

Protect your systems against unauthorized access by people or malware with the mGuard security product range from Phoenix Contact. Use industrial router/firewall solutions and industrial-level virus protection to secure your automation network.

The VPN-compatible devices also enable sensitive data to be transmitted in encrypted form, providing secure remote maintenance of machines over public networks.

Web code: #1270

Protection of machines and production cells

Use mGuards to protect your machines and production cells against unauthorized access – regardless of whether access is from the local network or via the Internet. A wide range of security functions as well as central management software help to easily increase the security level of your production facilities.

High-performance firewall

The center port is a high-performance firewall that can also be used as a central peer for up to 3000 VPN tunnels.

Your advantages

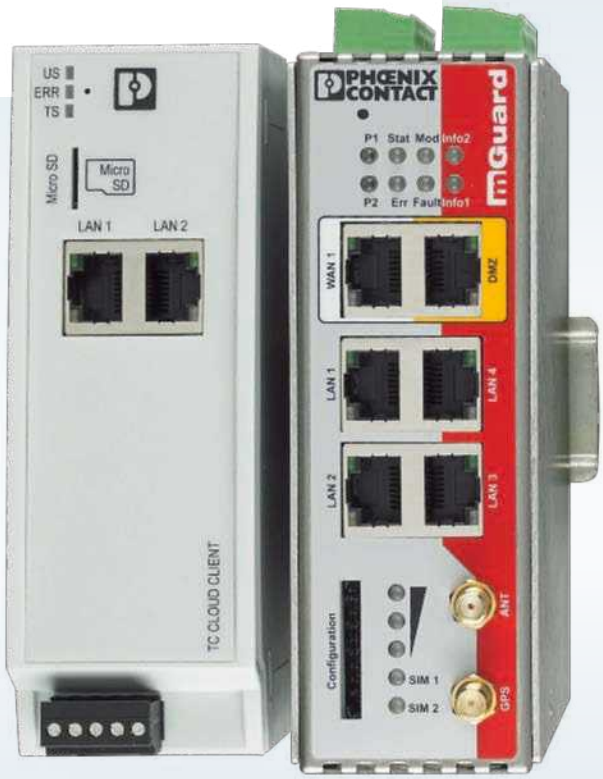
- ☑ Can be integrated into a defense-in-depth concept in accordance with IEC 62443
- ☑ Can be retrofitted easily, thanks to stealth mode
- ☑ Central management software for global management of several thousand field devices
- ☑ Extremely secure, thanks to active CVE (Common Vulnerabilities and Exposures) management process

Remote communication

Remote control technology and remote maintenance are important components of industrial communication solutions. They facilitate seamless connection of remote stations or system components to your control system on different transmission paths.

Phoenix Contact provides you with a large range of industrial remote communication products for implementing your individual solution.

Web code: #0499



Remote maintenance via the public telephone network

DSL broadband routers and modems enable the high-speed connection of industrial Ethernet and RS-232 devices using proven ADSL transmission technology. Globally recognized standards and an extensive network expansion ensure availability around the world.

Remote maintenance via the Internet and mobile network

TC Cloud Clients and mGuards enable secure connection to the mGuard Secure Cloud. Communication is established via Internet or mobile network. While the TC Cloud Client can only be connected to the mGuard Secure Cloud, the mGuards also offer peer-independent VPN tunnels, NAT, and a firewall.

Remote maintenance: Global, direct access to controllers and Ethernet networks

Remote control: Secure and continuous transmission of process data to the control center

Remote control via the mobile network

The TC ROUTER mobile routers from Phoenix Contact enable powerful data connections via 4G LTE networks with up to 150 Mbps. Even in harsh and demanding environments, they create a mobile broadband connection for highly flexible site networking wherever a cable-based Internet connection is not available.

Remote control via in-house cables

Connect extensive IP networks of up to 20 kilometers easily via existing two-wire cables with the Ethernet extender system. The innovative combination of unmanaged and managed extenders enables particularly cost-effective networking and central diagnostics of all devices and paths via IP.

Protocol converters and interface converters

Device servers and gateways enable easy integration of legacy serial devices and buses into modern Ethernet networks. The most common industrial data transmission protocols are supported, with various combinations of serial transmission.

Depending on the application, choose between simple device servers for interface conversion or gateways and proxies with integrated protocol conversion.

Web code: #1559

Converting serial interfaces

You can integrate any serial protocols into your Ethernet network using the serial device servers and gateways. Serial data can either be transmitted transparently over Ethernet or converted to Modbus/TCP, PROFINET or EtherNet/IP™ using the gateways.

Your advantages

- ☑ Universal use in various applications
- ☑ Network integration of serial devices via virtual COM ports
- ☑ Cable replacement in serial point-to-point connections
- ☑ Integration of serial devices in modern Ethernet protocols

Converting HART protocol

The new HART gateways convert the digital HART protocol into Ethernet protocols, HART-IP, Modbus/TCP or PROFINET. This means you can easily parameterize and monitor HART field devices via Ethernet networks. Thanks to the modularity of the HART to Ethernet gateway, you can connect up to 40 HART devices.

Converting PROFIBUS and INTERBUS protocols

Use the gateways and proxies to smoothly integrate PROFIBUS and INTERBUS applications into a PROFINET network. Our gateways for PROFIsafe also enable controller-independent and comprehensive integration of functional safety.

Software

Configure and monitor your system intuitively using software tools from Phoenix Contact. We also offer a wide range of solutions that enable you to efficiently use Ethernet networks in automation systems.

Benefit from easy configuration and setup of your network components with FL Network Manager and mGuard Device Manager software. With SNMP/OPC software you can ensure reliable communication between network management tools, automation hardware, and visualization software.

Web code: #1560

Your advantages

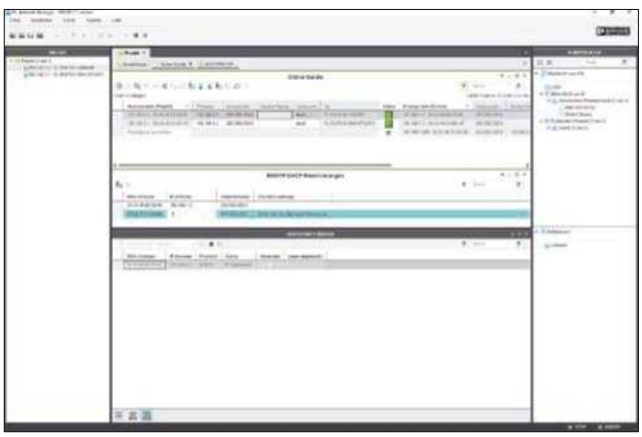
- Fast diagnostics through continuous query of the network devices
- Reduction of standstill times and downtimes, thanks to a short response time in the network
- Direct access to the individual web interfaces of the devices
- Error detection even for temporary errors in the network

Product overview software

	Description	Language	Basic	Order no.
Network configuration and startup: FL Network Manager				
	Start up your network quickly and easily with the FL Network Manager software. The software provides support in scanning an available network, in IP assignment and device configuration, in handling configuration data and in a firmware update.	English	SNMP	2702889
mGuard configuration and startup: mGuard Device Manager				
	The mGuard Device Manager provides support during the configuration, roll-out, and management of all mGuard devices. Centrally create and manage all safety-related mGuard settings and then transmit them to the desired devices.	English	–	2981974
Consistent communication with OPC and SNMP protocols: SNMP OPC server				
	For reliable communication between network management tools, automation hardware, and visualization software, the SNMP and OPC protocol types must be converted. The FL SNMP OPC server ensures data exchange between OPC-based visualization software and SNMP automation components.	German, English	SNMP	2701139
	An additional license for 100 more devices for the SNMP-OPC server			2701138

Network Manager

The use of Managed Switches or WLAN components always involves configuration effort. The Network Manager makes it easier to deal with an increasing number of manageable devices in a network, as network components can be monitored, configured and kept up to date with a tool. To also satisfy industrial Ethernet protocols EtherNet/IP™ and PROFINET, IP assignment is integrated via DHCP and DCP.



Startup support for mGuard Device Manager

The mGuard Device Manager is ideal for rolling out and managing large groups of mGuards that are configured identically. Widely distributed installations with thousands of systems can be implemented quickly and efficiently.
For easy initial startup of the software, support by means of remote access by a Phoenix Contact employee is included.

Surge protection

Uninterruptible production calls for the reliable transmission of all relevant data and signals. In addition to unauthorized access and malware, surge voltages caused by lightning strikes or switching operations also present a danger to your network. In particular where cabling extends beyond a building, it is primarily the devices that are connected to an Ethernet cable that are at risk.
Protect your components with surge protection from Phoenix Contact to avoid the expense of repairs and system downtimes and the loss of important data.

Web code: #0145

Your advantages

- Protection in accordance with Class EA (CAT.6A)
- Reliable transmission up to 10 Gbps
- Power over Ethernet (PoE+) “Mode A” and “Mode B”
- RJ45 attachment plug with separate grounding cable and ground connection snap-on foot for NS 35 DIN rails

Installation technology

In addition to the permissible active components, a high-performance network requires a robust installation. The Phoenix Contact installation technology offers you all required components for implementing industrial networks.

Web code: #1561

Injectors

The compact stand-alone solution is available in various performance classes of up to 60 watts. In addition to the RJ45 socket, the PoE injectors feature alternative connection technologies for the field cable and integrated surge protection.

Patch panels

Ethernet patch panels allow quick and easy connection between your field and control cabinet cabling. In the covered wiring space, the IDC, Push-in or screw connection simplifies installation of the field cable. Optionally, these interface modules are also available with surge protection and shield current monitoring.

SFP modules

SFP (small form-factor pluggable) modules enable you to flexibly use the SFP ports of your Ethernet Switches. Whether you require single-mode or multimode transmission, Fast Ethernet or Gigabit, Phoenix Contact offers the right SFP modules for your application.

Network isolators

The FL ISOLATOR electrically isolates copper-based Ethernet devices with transmission speeds of up to 1 Gbps. The Ethernet isolator is simply installed before the network device to be protected. As such, high-voltage ranges in power distributions up to 4 kV can be disconnected securely from the data network and equipotential bonding currents prevented.

PRP redundancy modules

The PRP redundancy modules enable parallel network redundancy without switching time in case of failure and ensure high availability for your network. They are suitable for use under the harshest electromagnetic, electrostatic, and climatic ambient conditions in accordance with IEC 61850-3/ IEEE 1613.

Copper-based data cabling for networks and fieldbuses

Complex automation processes call for high volumes of data at ever-increasing transmission speeds. Benefit now from high-performance connectors and cables for on-site assembly.

Whether it's future-proof high-speed cabling up to 10 Gbps or innovative hybrid cabling – we will find the perfect solution for your automation network.

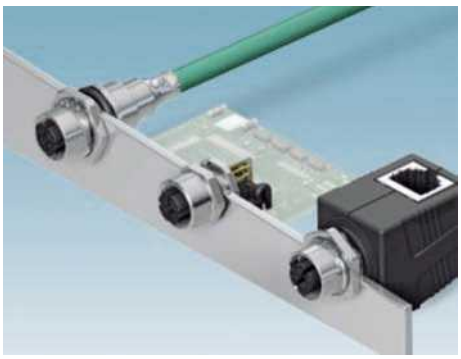
Web code: #0297

Fast assembly

Fast assembly without special tools – with IDC and pierce fast connection.

Wide range of plugs

Wide range of connectors from RJ45 to USB, D-SUB to M12.

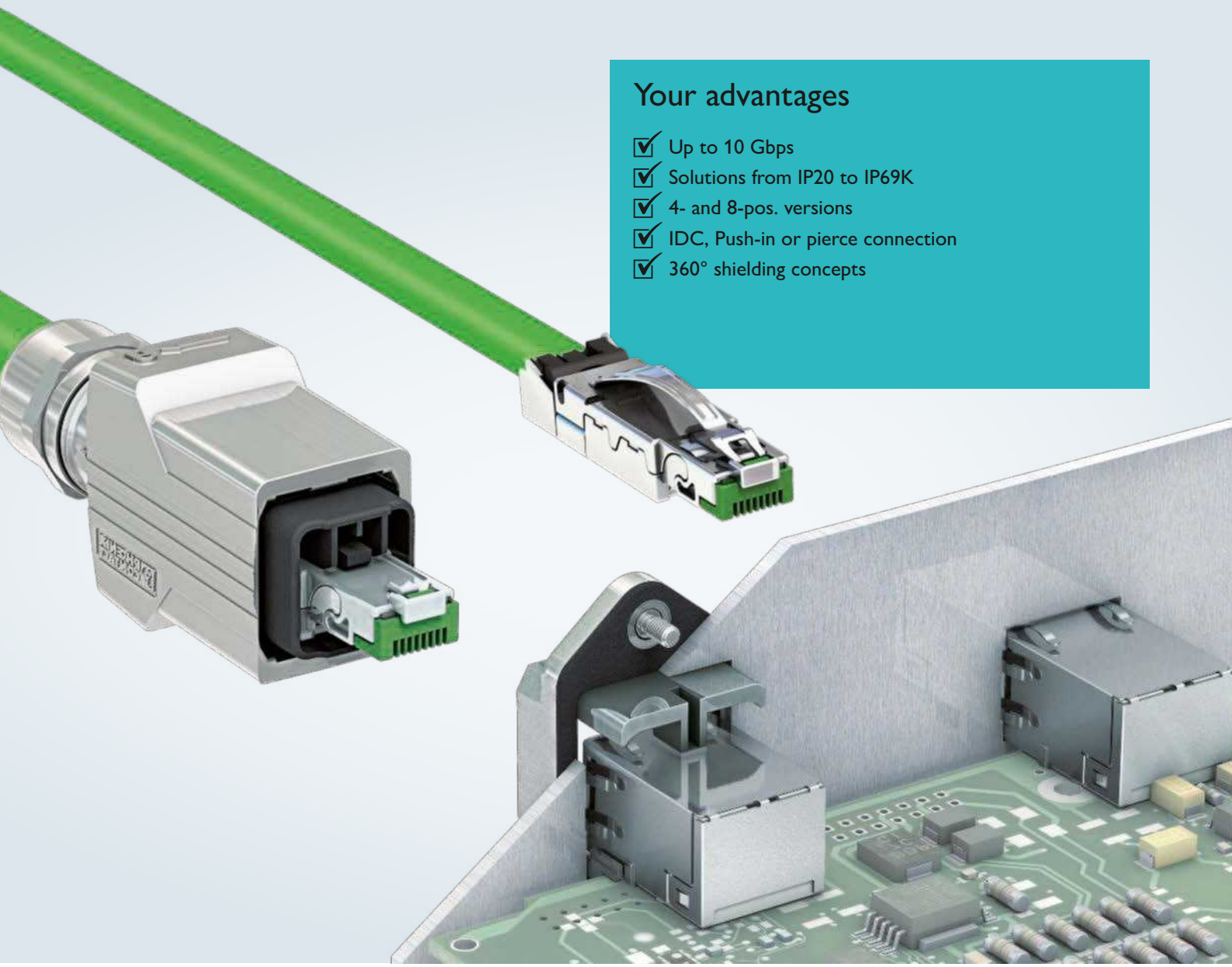


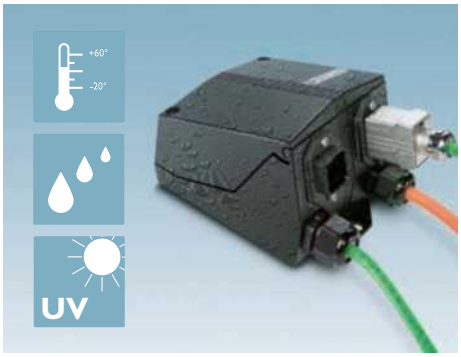
Flexible device connection

Flexible device connection, thanks to versatile housing feed-throughs for devices and control cabinets.

Your advantages

- Up to 10 Gbps
- Solutions from IP20 to IP69K
- 4- and 8-pos. versions
- IDC, Push-in or pierce connection
- 360° shielding concepts



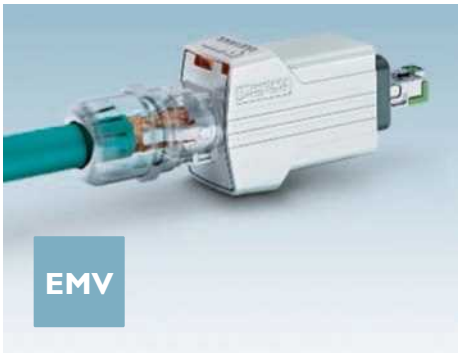


Reliable protection

Reliable protection against extreme temperatures, liquids, vibrations, and UV light.

Fast data transmission

Fast data transmission, thanks to data rates up to 10 Gbps and components that meet the $CAT6_A$ standard.



Special shielding concepts

Special shielding concepts with 360° EMC shielding guarantee a high level of resistance to EMC and ESD.

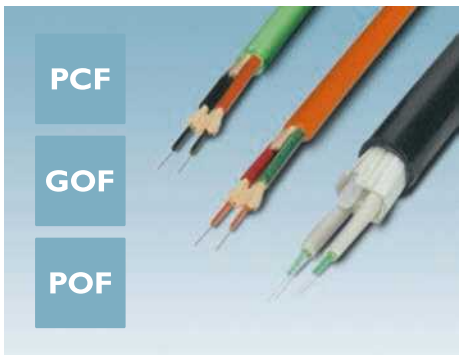
Fiber-optic-based data cabling for networks and fieldbuses

High transmission speed, low attenuation, resistance to electromagnetic interference: fiber-optic cables are among the modern transmission media for industrial systems and infrastructure applications. Whatever the fiber type or interface – you can choose the right connection technology from our extensive portfolio.

Web code: #0298

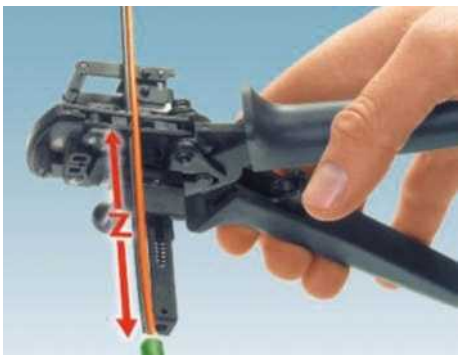
Wide choice of versions

Wide choice of versions from SC-RJ, LC, SC, F-SMA to ST, plus POF, PCF, and GOF fiber types.



Comprehensive range of cables

Extensive range of cables for all applications, networks, and standard interfaces.



Fast assembly

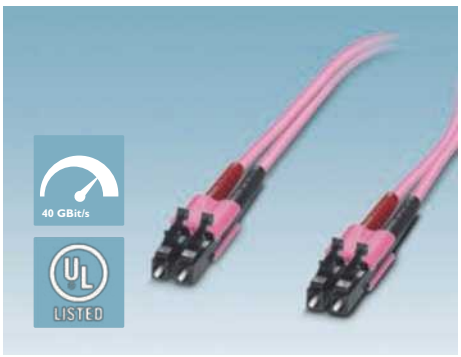
Fast assembly in the field using professional tools.

Your advantages

- ☑ Transmission speeds of up to 40 Gbps
- ☑ Solutions from IP20 to IP65/IP67 and IP68
- ☑ For all common fiber types
- ☑ Maximum protection against the effects of EMC and ESD
- ☑ The right fiber type can be selected for your application (POF, PCF, GOF multimode, GOF single mode)

Reliable protection

Reliable protection against extreme temperatures, liquids, and UV light.



High-quality patch cable

High-quality UL-listed patch cable up to 40 Gbps.

Push-pull locking technology

Push-pull ADVANCE locking technology protects against unintentional pulling.

Your partner for ICS security and industrial communication services

You do not need to be an expert. We provide you with much more than products. We also offer you support whenever you need it. Phoenix Contact offers a comprehensive portfolio of ICS security and industrial communication services throughout the service life of your system. The protection objectives of availability, integrity, and confidentiality must be in the foreground.

We not only support you over the phone or by e-mail, but also directly on site, if you so desire. Contact us for more information.

In dialog with customers and partners worldwide

Phoenix Contact is a globally present, Germany-based market leader. Our group is synonym for future-oriented components, systems, and solutions in the fields of electrical engineering, electronics, and automation. A global network across more than 100 countries, and 15,000 employees ensure a close proximity to our customers, which we believe is particularly important.

The wide variety of our innovative products makes it easy for our customers to find future-oriented solutions for different applications and industries. We especially focus on the fields of energy, infrastructure, process and factory automation.

You will find our complete product range at:

phoenixcontact.com

PHOENIX CONTACT
INSPIRING INNOVATIONS

Remtron

Melbourne
PO Box 3201
Mentone East Vic 3194
Unit 12/2 Sibthorpe St
Braeside Vic 3195
Ph: (03) 9587 1233
Fax: (03) 9587 1591

Geelong
Unit 2, 32-44
Tarkin Court, Bell Park
Victoria, 3215
Australia
Ph: 03 8677 7651

Albury
PO Box 3067
Albury NSW 2640
444 Wilson Street
Albury NSW 2640
Ph: (02) 6023 1819
Fax: (02) 6023 1820

Adelaide
22 Marlow Road
Keswick SA 5035
Ph: (08) 9587 1233
Fax: (08) 9587 1591

Gippsland
1/29-31 Eastern Road
Traralgon VIC 3844
Ph: (03) 5176 0227
Fax: (03) 5176 0627

Tasmania
6 Ferguson Drive
Quciba
Devonport TAS 7310
Ph: (03) 6423 4875
Fax: (03) 6423 4874

Australia-wide, with offices in Melbourne, Geelong, Gippsland, Albury, Tasmania & Adelaide

Issued: 22.8.18 Rev.1