Phoenix Contact

Products and solutions for machine building



Products and solutions for machine building

Your strong partner for machine building



Products and solutions for machine building

We have a long tradition of machine building



Machine building 1968



Machine building today



Machine building in the future

- The company-based machine building department with 260 employees supports all business units of Phoenix Contact
- The performance portfolio ranges from the creation of manually operated equipment up to complex production systems


Short-term machine construction
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Products and solutions for machine building

Trend topics in machine building



Functional safety



Machine availability



Global communication with machines



Operation data acquisition



Configuration and marking



Reduced production times



Lower part count and inventory costs



Modular machine building

Products and solutions for machine building

Functional safety

- Quick and cost-effective implementation of safety-related applications, thanks to easy installation and configuration
- Keeps operating personnel safe
- Corresponds to the ISO 13849-1 Machinery Directives



Products and solutions for machine building

Functional safety

Services for machine safety:

- Comprehensive, competent and certified support
- Consulting and moderation on site
- Engineering and on-site service
- Safety hotline: + 49 (0) 5281 9462777
- Seminars and workshops

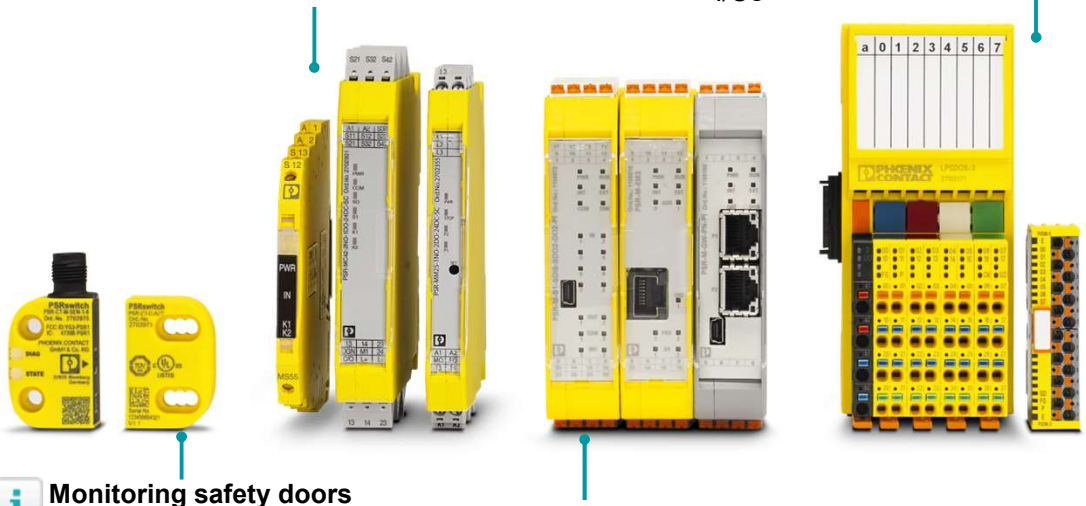


Products and solutions for machine building

Functional safety

Safety for every function
Choose from various PSR safety relays when just a few safety functions are required

Safe without a safety controller
Integrate functional safety without safety controller by means of safe I/Os





new

Emergency stop switches
Switch your machines to a safe state immediately in the event of an emergency.

Monitoring safety doors
Use our PSRswitch electronically coded safety switches with RFID technology for intelligent safety door and position monitoring

Monitoring several functions with one device
The PSRmodular configurable safety system monitors classic safety functions, motion and analog values in one device

Acquire and output safe signals in the field
The Axioline E safe IP67 I/O box enables you to process safe inputs and outputs outside of the control cabinet

Non-contact safety switches

PSRswitch with RFID technology

The compact PSRswitch is an electronic, coded safety switch with RFID technology.

- Safe series connection in accordance with EN ISO 14119
- Flexible use, thanks to compact design
- Rapid diagnostics, thanks to comprehensive status information



Non-contact safety switches

PSRswitch with RFID technology

Intelligent safety switch system consisting of the safety switch PSRswitch and the safety relay PSR mini:

- Compact design for flexible mounting at doors or flaps
- Safe series connection of up to 30 safety switches in two-channel design
- M12 connection technology for convenient installation
- Maximum protection against manipulation, thanks to three RFID coding levels
- Integrated restart function on local switch saves wiring effort

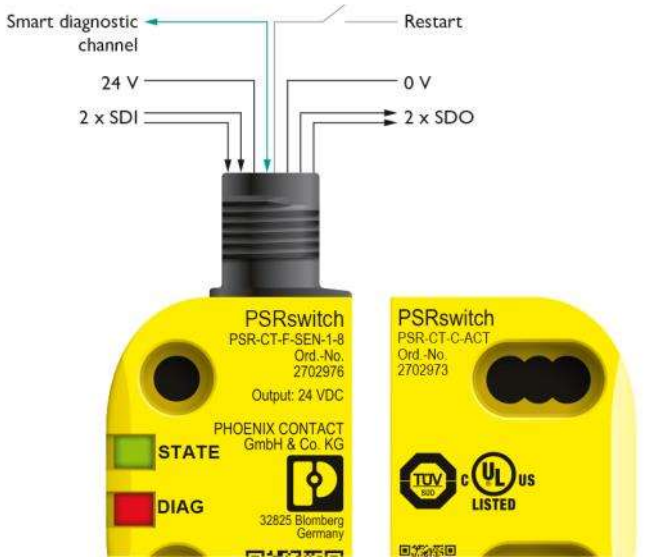


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Non-contact safety switches

PSRswitch with RFID technology

- Three coding types: Fixcode, Unicode, Multicode
- Up to PL e in accordance with ISO 13849
- Locally integrated restart function on the switch
- Adjustable actuator head with 3 approach directions
- 2 safe digital inputs, 2 safe digital outputs
- Diagnostic LED on the sensor
- 24 V signal outputs
- Protection class IP67



Sensor **Actuator**

Safety for every function

Overview of PSR safety relay modules



Highly compact safety relays

- PSRmini are the narrowest safety relays available on the market
- The new safety relays (6 and 12 mm) with force-guided contacts save up to 70 % space at full capacity



Conventional safety relays

- PSRclassic switching devices for conventional safety applications such as emergency stops, light grids and safety doors
- Allow for modular composing of safety relay system



Multifunctional safety relays

- PSRmultifunction unite three safety functions in just a single device
- Easy maintenance and startup, as no software configuration is required

Safety for every function

Highly compact safety relays PSRmini

- The narrowest safety relays available on the market – save up to 70 % space
- Maximum safety and availability, thanks to force-guided contacts
- Cost/benefit optimization when structuring applications starting with one enable path
- Wide range of applications and compatibility with various signal generators



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Safety for every function

Highly compact safety relays PSRmini

6 mm

12 mm



Relay Technology

Designed by PHOENIX CONTACT

6A



Especially compatible
Compatibility with all important signal generators and safety-related systems enables a wide range of applications.

Comprehensive approvals

PL SILCL SIL Ex

Available for one or more contacts
Fine-grained architecture enables the modular design of safety concepts: the 6 mm version comes with 1 to 2 enable paths, the 12 mm version with 2 to 3.

Quick and convenient connection
Screw and spring-cage connection technology.

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Design individual safety solutions

Configurable safety system PSRmodular

Compose various function modules for your individual application:

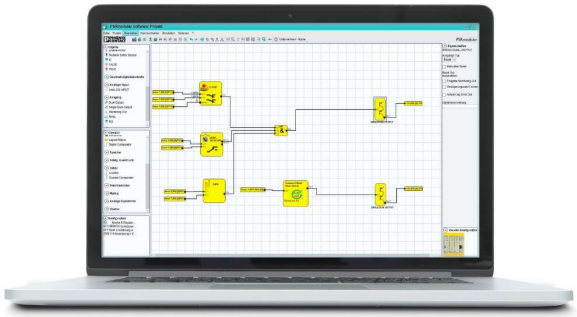
- Basic modules as stand-alone solution for applications with up to 3 safety functions
- Flexible adaptation by expansion modules for comprehensive applications with up to 160 I/Os
- Network connection via gateways

Monitor **classic safety functions** as well as **motion and analog values**



Design individual safety solutions

Configurable safety system PSRmodular



Easily configure extensive diagnostic functions

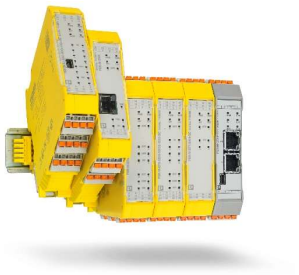
Easy configuration without programming knowledge, by free of charge configuration software:

- Set up your safety system easily via drag & drop by means of preconfigured and TÜV-certified software blocks
- Detailed simulation and reporting function for validation

Design individual safety solutions

Configurable safety system PSRmodular

High scalability



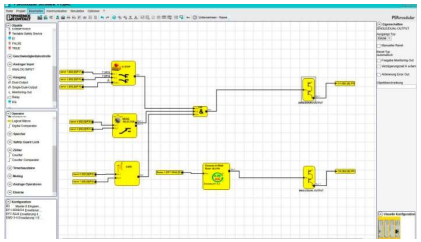
Economical safety solution
thanks to high adaptability to individual requirements

Easy handling



Fast commissioning
thanks to easy configuration of hardware and software

Detailed diagnostics



Minimized machine downtimes by comprehensive and **easily comprehensible diagnostics**

Safe without a safety controller

SafetyBridge Technology

- Safe with your standard PLC
  - Realize a network safety solution without a safe PLC
- Flexible usage
  - Use your preferred networks
- Easily configured
  - Create safety functions per drag & drop with SAFECONF

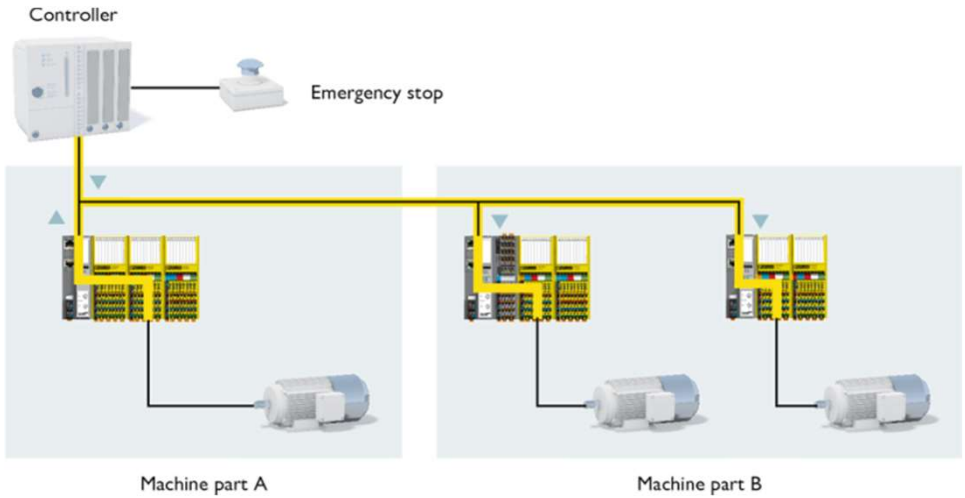


Safe without a safety controller

SafetyBridge Technology

- The standard PLC and network are only used for the transportation of data

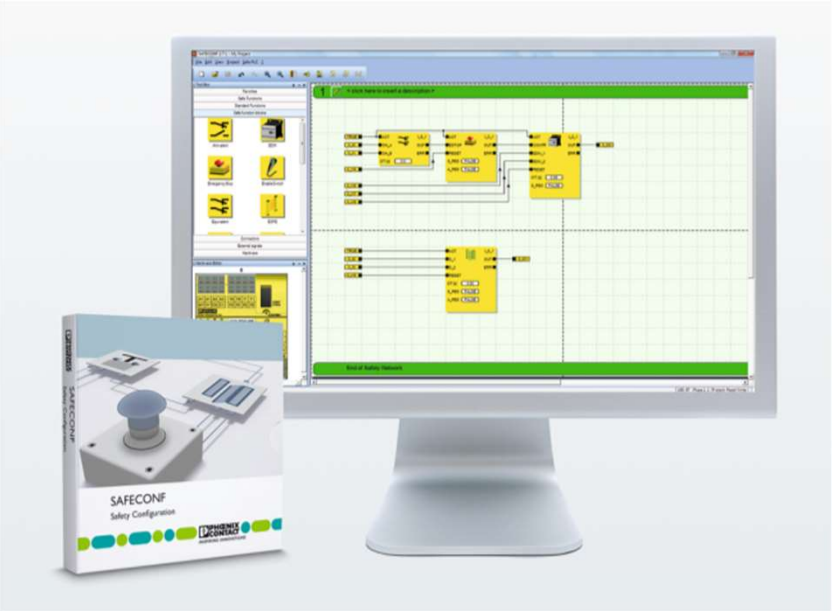
- The logic module generates and monitors the safety protocol and processes the safety logic



Safe without a safety controller

SAFECONF

- Create the safety logic for SafetyBridge technology easily using drag & drop
- Intuitive operation and certified blocks
- Simulation and diagnostics
- Application help
- Integrated e-learning
- Can be downloaded free of charge



Acquire and output safe signals in the field

Safe IP67 I/O box with IO-Link

Process safe inputs and outputs outside of the control cabinet.

- Simple integration of safety-related data via an IO-Link master into the standard network
- Can be used in SafetyBridge technology and PROFIsafe applications
- Adjust safety address without switches



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Acquire and output safe signals in the field

Safe IP67 I/O box with IO-Link

- IP67 degree of protection
- 8 safe inputs
- 4 safe outputs, positive and negative switching



IO-Link

PROFIsafe

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Acquire and output safe signals in the field

Safe IP67 I/O box with IO-Link

- SILCL 3 in accordance with EN 62061
- SIL 3 in accordance with IEC 61508 / EN 61508
- PL e in accordance with eN ISo 13849-1



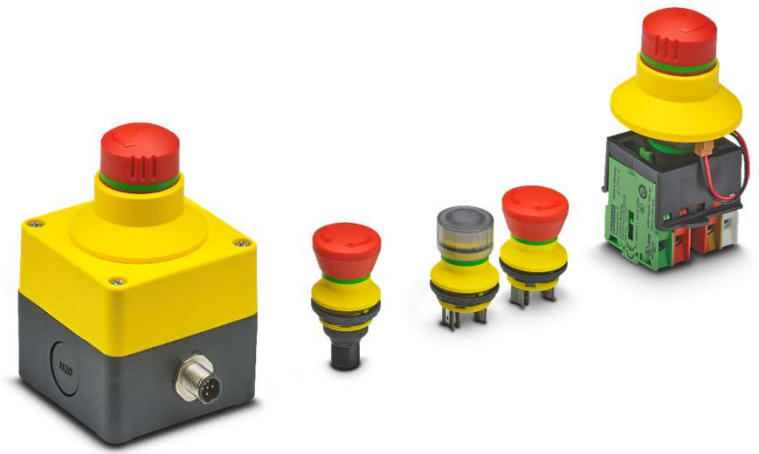
Safety at the push of a button

Emergency stop switches

TÜV-certified control devices with emergency stop or emergency switching off function immediately put your machine or system in a safe state in case of emergency

- Application according to EN ISO 13850 and EN 60204-1
- Installation on the operating panel of the machine or directly at the place of use – even if the local conditions are extreme

Choose from our ready-to-use solutions for your standard application or configure the appropriate your own emergency stop solution tailored to your requirements.



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Safety at the push of a button

Emergency stop switches



Increased occupational safety with illuminated active or inactive status indicator



Rapid on-site diagnostics with color-coded switching position indicator



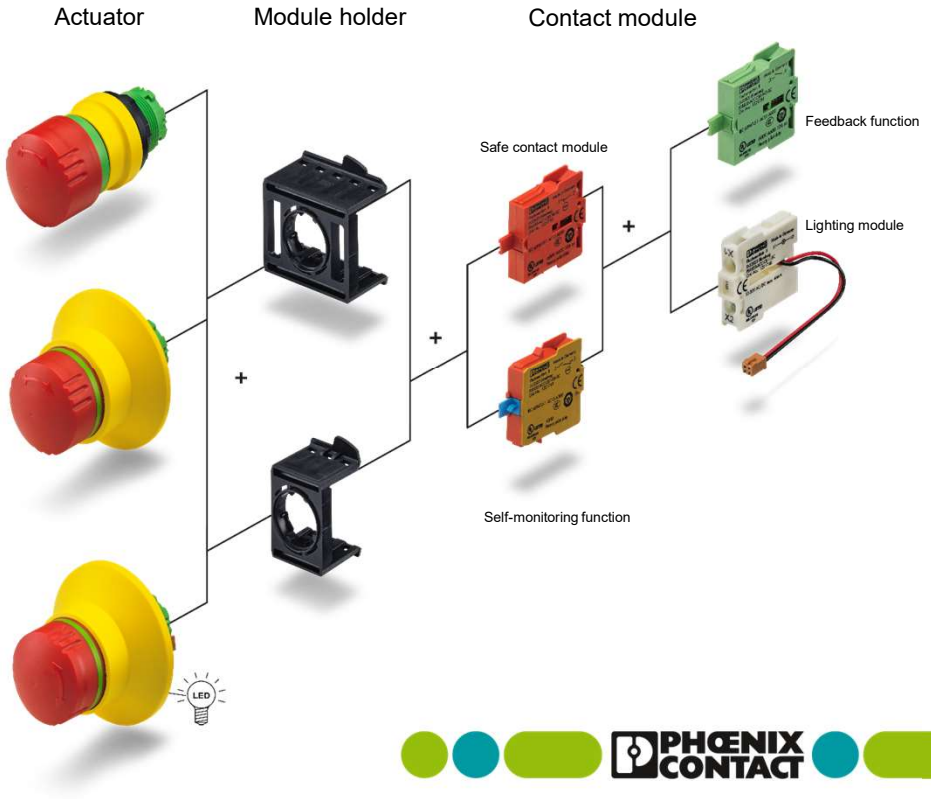
Protection against installation errors with self-monitoring emergency stop contact module

Safety at the push of a button

Emergency stop switches

Modular system for individual applications

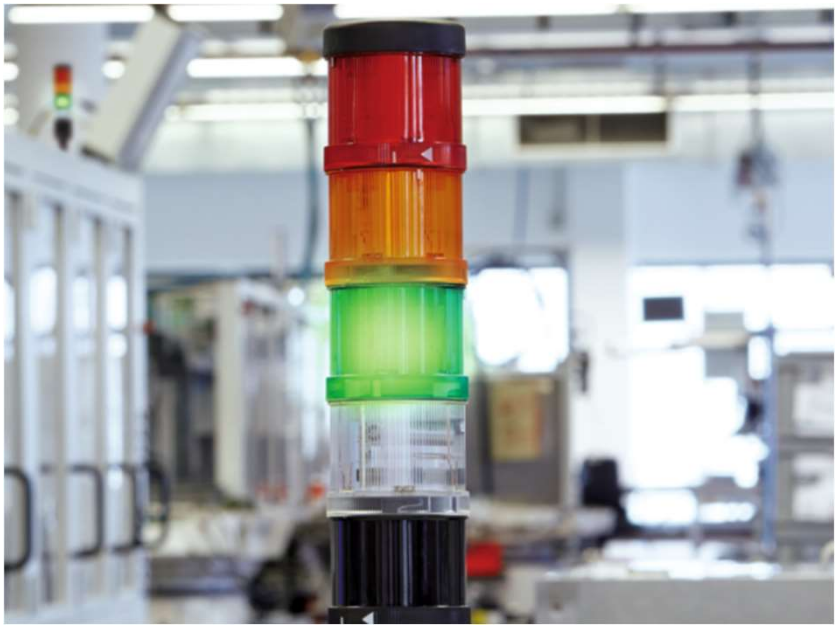
- cost-efficient safety solutions tailored to your requirements
- Individual combination of actuators, module holders, and contact modules
- Integration of additional functions for a high level of safety, such as illuminated anti-lock collars



Products and solutions for machine building

Avoiding expensive downtimes

- Highest availability and productivity due to reliable components
- Avoidance of downtimes and production losses lead to increased competitiveness



Products and solutions for machine building

Avoiding expensive downtimes

Selective fuse protection for circuits
Device circuit breakers provide individual protection for equipment, variants with IO-Link for integration into the control system

Easy and efficient operation of asynchronous motors
Safe, simple, and efficient operation of three-phase asynchronous motors with the new device class speed starter.

Clever motor switching
Hybrid motor starters switch motors fast and reliably

new











new

Protection against surge voltages
Protect the supply and signal interfaces against overvoltages

Reliable power supplies
Power supplies with SFB-Technology trip circuit breakers fast and reliably

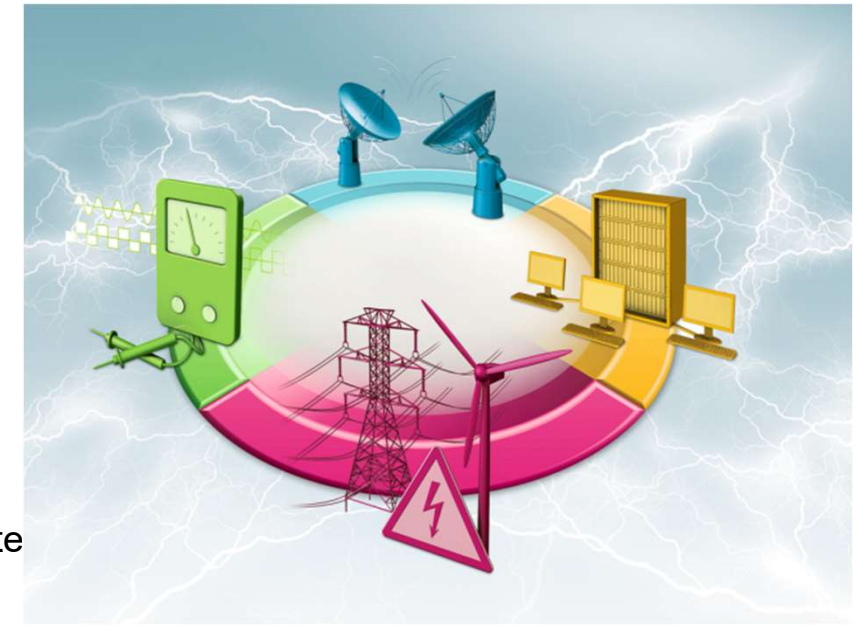
Clever motor protection
Motor managers detect critical load states

PHOENIX CONTACT

Protect against surge voltages

Surge protection for all purposes

- Power supply
  Surge protection for supply, distributors, and terminal devices safeguard the power supply
- MCR technology
  Optimized arresters are available for a wide variety of signal types and measuring principles
- Information technology
  High-speed protection (CAT.6+)
- Transceiver technology
  To maintain reception with private mobile radio and mobile communication as well as with satellite and radio systems, whatever the weather.



Protect against surge voltages

Surge protection VALVETRAB SEC Type 2

- Optimal protection of the main distribution panel and the following installation due to the low protection level
- Space-saving installation, thanks to compact design and fuse-free use up to 315 A
- High system availability, thanks to high-performance protective circuit



Protect against surge voltages

Surge protection Type 3

- Variable connection technology
- Quick, tool-free installation with Push-in connection technology
- Increased service life and availability of the system, thanks to optimal protection of your industrial power supply
- Easy maintenance and testing thanks to pluggable protective devices
- Safe disconnection and signaling in the event of overload



Selective fuse protection for circuits

Individual electronic circuit breaker system

new



Product

The customizable standard

- Wide range of combination options for every application
- Future-proof modular system
- Minimum space requirement (3mm per channel)

Digital Customer Journey

Simple operation for everyone

- Intuitive configurator for easy system configuration
- Toolless construction
- Uninterrupted exchange of modules during operation
- Transparent operating status

Service

Strikingly simple design-in

- Comprehensive support from selection to digital services
- Individually configured systems permanently have a unique article number
- Continuous planning (interoperability) incl. power supplies

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Selective fuse protection for circuits

Multi-channel electronic circuit breakers

Greater functionality in a small amount of space

- Versatile use, thanks to fine nominal current levels
- Space-saving, easy installation, thanks to the compact design and Push-in connection technology
- Increased system safety, thanks to electronic locking of the set nominal currents
- Various fields of application, thanks to the wide temperature range and high resistance to shock and vibration
- Available with I/O-Link interface



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Selective fuse protection for circuits

Single-channel electronic circuit breakers

System protection in accordance with your needs starting from overall widths of 6 mm

- Maximum flexibility thanks to individual combinations and settings
- Remote control, thanks to remote messaging function
- Operating state transparency, thanks to device LED display
- Connects quickly, thanks to Push-in connection technology



Reliable power supplies

TRIO POWER – ideal for machine building

- High system availability thanks to robust design
  - Electrically robust, thanks to high electric strength
  - Mechanically robust, thanks to high vibration and shock resistance
- Very cost-effective, thanks to time-saving, tool-free Push-in connection
- Reliable starting of difficult loads, thanks to the dynamic power reserve, with 150 % of the nominal current for a maximum of five seconds
- IP67 degree of protection: Resistant to extreme ambient conditions
  - Optimally suited for installation in the field thanks to its weather-resistant design





Reliable power supplies

QUINT POWER for highest requirements

- Strongest output side: easy system expansion, reliable heavy load startup, and miniature circuit breaker tripping
- Most robust input side: high noise immunity, thanks to integrated gas-filled surge arrester (up to 6 kV) and ≥ 20 ms mains failure buffer time
- Most comprehensive signaling: preventive function monitoring reports critical operating states before errors occur
- Available pre-configured: from a batch quantity of just 1
- NEW: QUINT POWER with 40 A output current



Reliable power supplies

QUINT DC-USV – intelligent and networked

- Monitor, parameterize and safely shut down systems regardless of location, thanks to integrated interfaces: PROFINET, EtherNet/IP, EtherCAT or USB
- Avert failures and plan battery replacement, thanks to the intelligent evaluation with IQ Technology
- Superior system availability, thanks to rapid recharge with most powerful battery charger
- Efficiency enhancement, thanks to the monitoring of currents and voltages at the input and output



Clever motor switching

CONTACTRON Hybrid motor starters

Forward running
Easy control via 24 V DC or 230 V AC signal

Reverse running
Optional: Reversing function including locking circuit and load wiring

Motor protection
Easy protection using electronic motor protection relay with automatic and remote reset function

Emergency stop
Integrated safety function for use in safety-relevant emergency stop applications



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Clever motor switching

CONTACTRON Hybrid motor starters

Switch motors safely and reliably with compact standalone, modular, and network-ready hybrid motor starters

- Flexible and straightforward fieldbus connection with a suitable gateway
- Fast connection of other IFS devices, thanks to the DIN rail connector latching concept
- Easy group shutdown via DIN rail connectors after an emergency stop, thanks to an upstream safety relay



Clever motor switching

CONTACTRON Hybrid motor starters

- **Intelligent switching and reliable protection**
  with hybrid motor starters
- **High system availability**
  Service life is ten times longer, thanks to gentle switching with CONTACTRON hybrid technology
- **Space savings**
  Up to 89 % space savings as compared to conventional switching devices
- **Acquire process data**
  quickly and easily via common bus systems or IO-Link



Clever motor protection

CONTACTRON Motor Manager

- Full motor protection
  - Bi-metal function class 5-30
  - Thermistor evaluation

- Monitoring
  - Monitoring of all electric parameters (U, I, P, S, Q, cos φ, ...)
  - Operating data acquisition (operating hours, energy consumption, operating cycle counter…)



The motor manager uses the motor as a sensor!

Clever motor protection

CONTACTRON Motor Manager

- Monitoring of the effective motor power P
- P allows interference to torque
- Detection of all critical states:
  - Under- and overload
  - Wear
  - Contamination
- Expensive sensors not needed



The Motor Manager - protection for motor and system in one device

Clever motor protection

CONTACTRON Motor Manager

- Gateway for motor manager to Profibus DP – up to 12MBit/s
- Certified acc. DPV1 specification (EN 50170)
- 8 digital inputs
- 4 digital outputs
- GSD- file (e-shop and CD)
- Up to 16 EMM on one Gateway
- Connection by T-BUS connector



Easy and efficient operation of asynchronous motors

Connect, set, start

CONTACTRON Speed Starter, the new device class with intuitive operation for soft start, different speeds, motor protection, and Safe Torque Off.

Direct start

Reversing start

Motor protection

Safe Torque Off

Different speeds

Ramp function

new



PHOENIX CONTACT

Easy and efficient operation of asynchronous motors

Starting motors softly

Safe, simple and efficient motor operation is an important requirement for many applications.

The CONTACTRON Speed starter provides reliable operation with different speeds for applications from normal speed, positioning and soft start to ramp functionality.



COMPLETE line

Push-in Technology
Designed by Phoenix Contact

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Easy and efficient operation of asynchronous motors

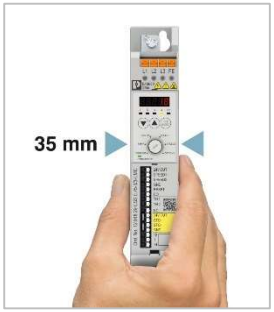
Benefits of speed starter



✓ **Quick installation and commissioning thanks to simple wiring and intuitive operational concept**



✓ **Safe shutdown thanks to integrated Safe-Torque-Off (STO) functionality**



✓ **Space saving in the control cabinet due to compact design starting from only 35 mm width**



✓ **Economic solution with all necessary functions for different speeds and soft start**

Products and solutions for machine building

Communicating with machines worldwide

- Global use of machines is made possible
- The ability of machines to communicate worldwide avoids the need for on-site servicing



Products and solutions for machine building

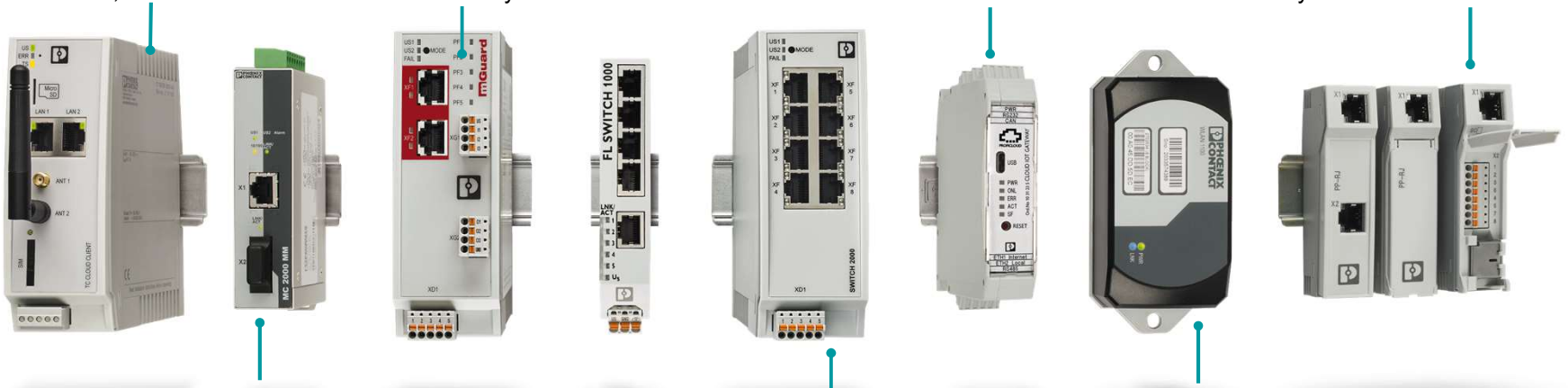
Communicating with machines worldwide

Global access to data
Modems and routers offer all options to remotely control, maintain, or alarm.

Protecting networks and data
FL MGUARD security appliances protect against unauthorized access by users or malware.

Transfer data to the cloud
The Cloud IoT Gateway sends your data directly to the cloud.

Easy-to-install network infrastructure
Ethernet patch panels allow quick and easy connection into the field.



Integrating fiberglass technology into machines
Media converters convert the data to be transmitted from copper to fiber optics.

Distributing data in the network
Reliable and efficient data distribution thanks to Ethernet Switches.

Connecting mobile machine parts via WLAN
Use the WLAN 1100 wireless module and Ethernet-Port adapter to install a fast and stable WLAN network.

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Global access to data

Router for infrastructure applications

- Cost-effective entry into cloud-based remote maintenance
- Simple startup due to configuration wizards in the cloud
- Convenient operation right on the front of the device
- Flexible communication with the cloud via operator or 4G LTE networks
- Intuitive operation of web interface



Global access to data

Industrial remote communication

Worldwide and control-independent

- Mobile network
- Public telephone network
- In-house cables

Secure communication – integrated security functions protect applications and expertise!

Robust hardware – durable, high-performance, and reliable in harsh industrial environments



Global access to data

Protect sensitive data

The solutions for industrial remote communication are based on Virtual Private Network (VPN) technology:

- Cloud-based remote maintenance with the mGuard Secure Cloud
- Solutions hosted in-house
- Continuously protected 24-hour connections for remote control technology



Integrating fiberglass technology into machines

FO media converters

- Maximum immunity to interference and perfect electrical isolation thanks to optical data transmission

- Use in potentially explosive areas – approved for zone 2



Integrating fiberglass technology into machines

FO media converters

- The class 1000 media converters for Ethernet networks with basic requirements

- Easy and cost-effective entry in order to integrate fiber optic technology in machines



Integrating fiberglass technology into machines

FO media converters

- Easy commissioning with auto negotiation function
  - Media converters choose automatically the optimal transmission speed and transmission medium

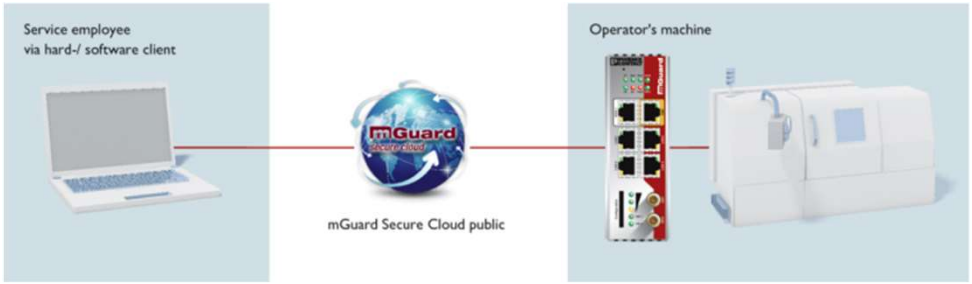
- Permanent monitoring of connection with link fault pass through function

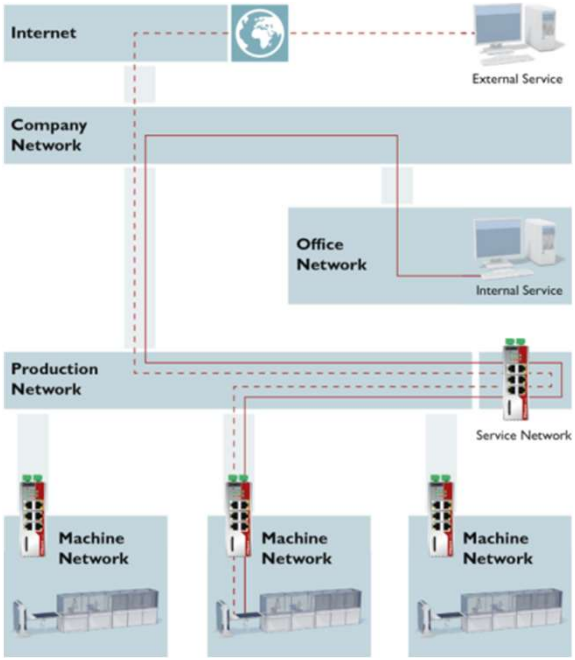


Protecting networks and data

Security routers and firewalls

- Protection of the machine from dangers and unauthorized access
- Integration of machines into higher-level networks
- Remote maintenance and monitoring via Internet





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Protecting networks and data

mGuard 1100 series

The first step towards more Cyber Security

- With Easy Protect Mode, wire bridges are used to protect network cells without requiring any device configuration
- Firewall Assistent automatically suggests firewall rules based on the inbound and outbound data traffic
- Test Mode identifies and reports non-defined communication connections and proposes additional firewall rules



Protecting networks and data

mGuard 4000 series

Cyber Security for professionals

- Easy and secure remote access via VPN
- Highest security level thanks to various further security features, e.g. Deep Packet Inspection, CIFS, User-/Conditional-Firewall and many more
- Grows with your requirements thanks to license and feature enhancements
- Professional device and patch management via central management tool
- Various applications: as compact mounting rail module, in PCI format or as portable device with USB power supply



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Transfer data to the cloud

Cloud-IoT-Gateway

- Direct connection to the Proficloud
- Connection of new and existing systems to the Internet of Things without interfering with the automation logic
- Open IoT platform
- Sensor and process data can be collected, processed, and monitored in the Proficloud



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Transfer data to the cloud

Cloud-IoT-Gateway

- Various protocols supported, e.g. Modbus/TCP
- Robust hardware for use in the industrial environment
- Secure transmission, thanks to TLS (Transport Layer Security) encryption



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Transfer data to the cloud

Cloud-IoT-Gateway

- Dashboard for easy visualization of sensor and processor data
- Web-based management for configuring the Cloud-IoT-Gateway
- Data can be used, for example, for machine monitoring or data analysis



Distributing data in the network

Ethernet Switches

Communication hubs of your industrial network

- Reliable, efficient data exchange
- Ensuring the robustness of your network
- The right switch for every application: Unmanaged Switches, Managed Switches and Layer 3 switches
- Support for various IT standards and automation protocols such as PROFINET und EtherNet/IP™
- Gigabit switches for large networks with high data throughput
- Power-over-Ethernet switches for use of cameras and other PoE terminal devices



Distributing data in the network

Unmanaged switches

- Gigabit versions with Jumbo Frames for high data throughput
- Save space in the control cabinet thanks to especially narrow housings and flat mounting
- Improved prioritization of data traffic for more stable networks and increased system availability
- PROFINET versions with PTCP filter for reliable communication in PROFINET networks
- Devices in IP 67 for the use in field applications

new



Daten im Netzwerk verteilen

Power over Ethernet Switches

- Managed und unmanaged Switches
- Einfache Geräteinstallation durch reduzierten Verkabelungsaufwand
- Herstellerübergreifend einsetzbar, da normgerecht nach IEEE 802.3
- Schnelle Nachrüstung bestehender Anlagen dank einfacher Handhabung
- Bis zu 60W Leistung pro Port
- Praktische Zusatzfunktionen wie PoE-Watchdog und PoE-Scheduler (nur Managed Switches)



Distributing data in the network

Managed switches

- Simple and versatile configuration options
- Integration in PROFINET and EtherNet/IP™ networks, thanks to LLDP and multicast filter
- Approvals for maritime applications and the process industry
- Flexible network structure, thanks to various connection methods and combo ports
- Network monitoring by means of diagnostic functions and digital alarm output
- Different shapes and protection classes are available

new



Connecting mobile machine parts via WLAN

Industrial WLAN 1100 and 1010

WLAN solution for machine building – stable wireless reception, quickly implemented

- Installing the module directly on machines, mobile vehicles or control cabinets saves space in the control cabinet
- Fast and reliable communication, thanks to powerful antenna technology
- Fast and easy connection, thanks to single-hole mounting
- Extremely robust housing, shockproof in accordance with IK08



Connecting mobile machine parts via WLAN

Ethernet port adapter

- WLAN and Bluetooth support in just one device
- Easy installation, thanks to integrated antenna and M12 connections
- Reliable transmission of safety signals over long distances
- Easy and safe setup, thanks to largely automatic configuration
- Robust IP65 industrial housing



Easy-to-install network infrastructure

Ethernet patch panel

- Quick and easy mounting
- Large selection of different connection technologies
- Tool-free cable shield contacting and strain relief
- Concealed wiring space, thanks to front cover
- Transparent transmission of up to 1 Gbit/s for all Ethernet protocols



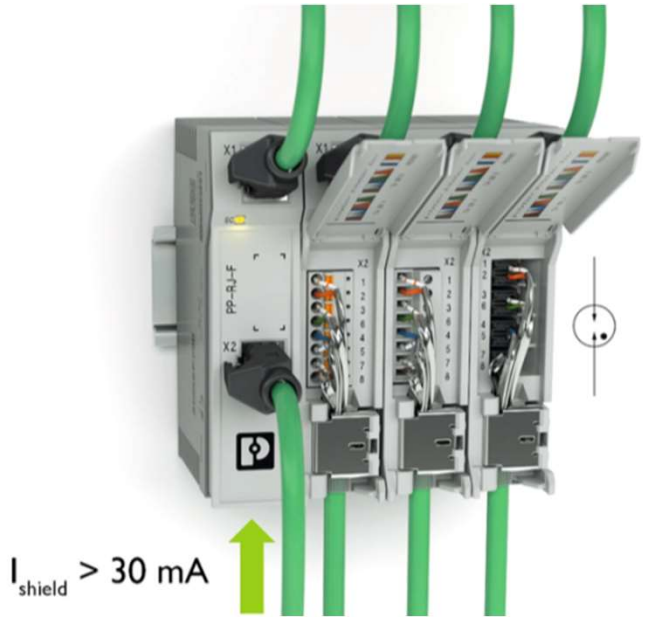
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Easy-to-install network infrastructure

Ethernet patch panel with surge protection

- Integrated surge protection of IEC test category C2 according to DIN EN 61643-21 for connection port X2

- Shield current monitoring via diagnostic indicator*

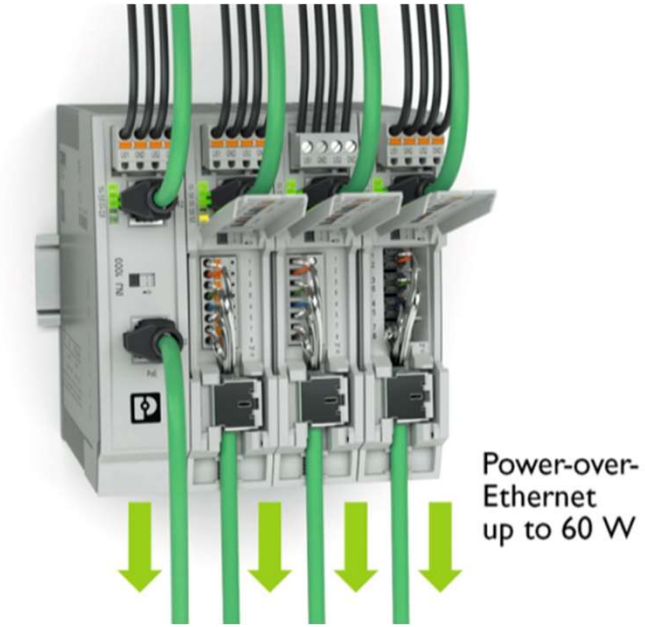


*Shield current monitoring only with Power-over-Ethernet supply

Easy-to-install network infrastructure

Ethernet patch panel with PoE injector function

- Patch panel and injector in one device
- Different power classes up to 30 W / 60 W
- Integrated surge protection and shield current protection
- Electrical isolation of the power supply unit for extended supply from 18 up to 57 VDC



Products and solutions for machine building

Reliable acquisition and evaluation of operating data

- Optimization of machines and production processes based on machine and system data
- Predictive maintenance thanks to the collection and evaluation of values such as flow rates, currents or temperatures
- Improved machine performance and reduction of machine downtimes



Products and solutions for machine building

Reliable acquisition and evaluation of operating data

Converting current
The PACT current transformer converts high alternating currents up to 4000 A into small currents of 1 or 5 A

Measuring currents
The MCR current transducers record direct, alternating and distorted currents

Acquiring and monitoring energy data
EMpro energy measuring devices record and monitor electrical characteristics of machines



Acquire machine data and transfer it to the cloud
The PLCnext control acquires operating data and transfers it to the Cloud

new



Global access to data
With the Smart Service EMMA and the IoT capable EMpro energy measuring devices, you profit from the intuitive and flexible monitoring, analysis and evaluation of energy and power data.

Monitoring machines and motors
The CONTACTRON motor and machine manager brings together precise energy measurement with the monitoring of important parameters

PHOENIX CONTACT

Converting currents

Current and voltage measurement

- Comprehensive product range for converting alternating currents up to 4000 A into low secondary currents

- Install current measuring technology subsequently, with current transformers for simple retrofitting



Converting currents

PACT RCP current transformers

- PACT RCP current transformers for retrofitting
- Easy installation despite space shortage
- Acquire alternating currents up to 4000 A AC
- Fast installation without removing system parts



Converting currents

PACT current transformers

- Complete product range for converting alternating currents up to 4000 A into secondary currents of 1 A and 5 A

- Current measurement in different transformation ratios, accuracy classes, and rated power values – in a total of 3,300 versions.

- Extremely versatile



Measuring currents

MCR current transducers

- Measure direct and alternating currents of any waveform
- Programmable upper and lower limits
- Optimum mapping of the measuring range



Measuring currents

MCR current transducers

- Quick basic configuration via DIP switches
- Advanced configuration and diagnostic options via software
- High operational reliability thanks to 3-way electrical isolation



Measuring currents

MCR current transducers

- Measuring principles:
  - True r.m.s. value for AC and DC without leading sign detection
  - Arithmetic mean value for DC with leading sign detection
- Through connection, diameter: 10.5 mm
- Safe electrical isolation with 4 kV test voltage
- Operating temperature: -20°C … +60°C



Monitoring machines and motors

CONTACTRON motor and machine manager

- Protection of motors and systems: The motor manager combines overload and underload detection in a single device. In the event of an emergency, it protects the motor and shuts down the drive
- Monitor your motors and machines: Electronic machine management combines precise energy measurement with the display and monitoring of important parameters of motors, machines or other 3-phase loads
- Keep a constant eye on your process data: e.g., electrical variables (U, I, P, cos phi, S, B), operating hours and switching cycles



Monitoring machines and motors

CONTACTRON motor and machine manager

- Integrated full motor protection, thanks to bimetal function and thermistor evaluation
- Protection of high-quality system parts, thanks to freely configurable signaling and switching thresholds
- Production data and energy data acquisition without the need for complex sensors



Monitoring machines and motors

CONTACTRON motor and machine manager

- DIN rail connector (T-BUS) interface for direct connection and transmission of process data
- Increased system availability, thanks to service intervals based on process data
- Flexible use in the central control cabinet and in the decentral control box



Acquiring and monitoring energy data

EMpro energy meters

- Enrgy measurement in just three steps thanks to intuitive installation wizard
  1. Set up the communication interface
  2. Select the power grid type
  3. Configure the current and voltage measuring input
- Save time during wiring and configuration due to direct connection of Rogowski coil from any manufacturer
- Service friendly because of smart web server and display functions
- Data security due to deactivation of operating elements and interfaces

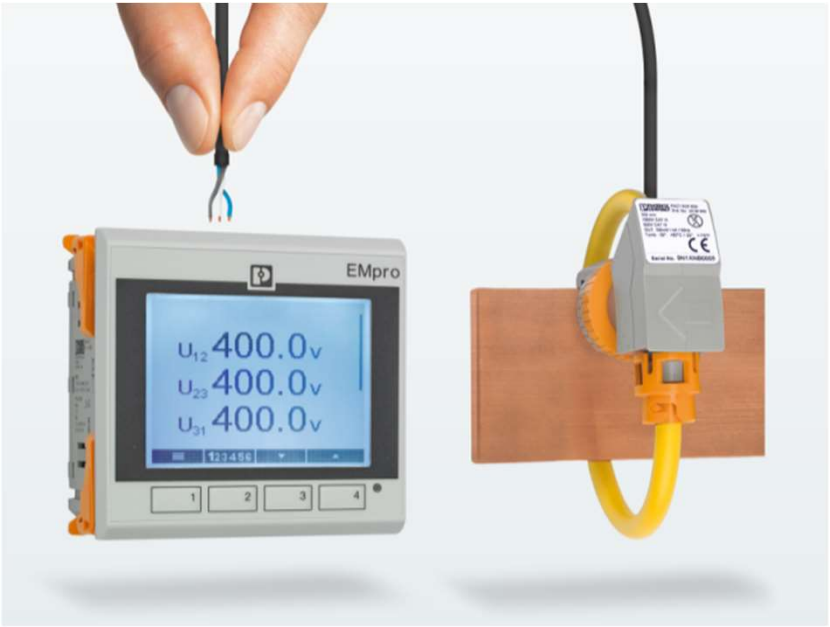


Acquiring and monitoring energy data

EMpro energy meters

Variants with Rogowski measuring input

- Save time during wiring and configuration
- Connect Rogowski coils from any manufacturer on the market directly
- Measuring transducer is not needed as device can directly process the coil‘s output signal

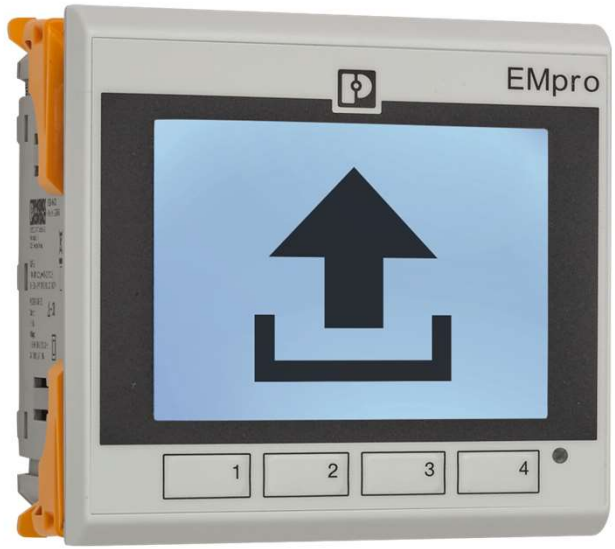


Acquiring and monitoring energy data

EMpro energy meters

The IoT-capable variant

- The IOT-capable EMpro directly transfers its data to the cloud via MQTT communication protocol
- EMpro Proficloud Rest API enables programmers to easily integrate data from energy meters in the cloud into one overall control system, in a standardized way



Acquire and transfer machine data

PLCnext Technology

Ecosystem for industrial automation

- Combination of open control platform, modular engineering software, growing online community and software store
- Easy adaptation to changing requirements
- Efficient use of current and future software services
- Easy cloud integration
- Integration of open-source software



Acquire and transfer machine data

PLCnext Technology

New opportunities in the Ecosystem

- Small controller AXC F 1152 enables a cost-effective start
- Controller 2152 for standard applications
- High-performance controller AXC F 3152 for applications with maximum performance requirements
- Ethernet or INTERBUS modules extend the control functions, stackable on the left



Acquire and transfer machine data

PLCnext Control

- For conventional control tasks and acquisition of operating data
- High performance thanks to the two ARM Cortex A9 processor cores – each with 800 MHz
- Security is based on a Trusted Platform Module (TPM) where user certificates can also be stored
- Parallel programming via IEC 61131-3 or other high-level languages
- Flexible, thanks to the fast, easy integration of open-source software and apps
- Cloud connection and integration of current and future communication standards



Acquire and transfer machine data

PLCnext Store

- Digital sales platform for application software for functional expansion of the PLCnext Control range
- In addition to Phoenix Contact software, apps are also offered by third-party providers
- Diverse portfolio of different apps for all applications – from software libraries to programmed apps



Acquire and transfer machine data

Global access to data

- Access your measured data and component data anywhere in the world, without using an additional IoT gateway.
- You won’t need an IoT gateway to aggregate data, to convert between local network protocols and IoT protocols, or for encryption.
- The IoT-capable EMpro device is able to transfer its data directly and securely to the cloud using a router.

Proficloud.io
Designed by Phoenix Contact Smart Business

new



COMPLETE line

PHOENIX CONTACT

Acquire and transfer machine data

Global access to data

- Energy monitoring, management, analytics: The EMMA Smart Service and the IoT-capable EMpro energy measuring devices are empowering your energy management system of the future.

- Go straight into the IoT with EMpro and benefit from cloud-based data acquisition and intuitive, flexible functions for target-oriented, informative visualization.



EMMA Service
Powered by Proficloud.io

PHOENIX CONTACT

Acquire and transfer machine data

Global access to data

- High degree of user-friendliness with a systemic overall concept with intuitive menu navigation and automated data transfer to the Proficloud.
- Access your energy and performance data anywhere in the world at any time. Purpose-built visualizations provide you with a targeted overview.
- Constantly increasing value proposition for your energy data analyses with continuous, user-oriented further development



PHOENIX CONTACT

Products and solutions for machine building

Consistent configuration and marking

- Time savings in control cabinet manufacturing, thanks to quick and easy planning, configuration and marking
- Optimized processes, thanks to uniform markings
- Reduced planning times, thanks to the direct exchange with CAE programs



Products and solutions for machine building

Consistent configuration and marking

Configuration and marking with a single software
The PROJECT complete planning and marking software supports the entire control cabinet manufacturing process



The right printing system for any demand
There is a suitable printing system for every demand



The right marking material for your application
Wide range of materials for terminal blocks, cables, conductors, equipment, and plant marking



Preassembled terminal strip
Made by you or supplied by Phoenix Contact



PHOENIX CONTACT

Consistent configuration and marking

PROJECT complete

Comprehensive process support from planning through to the fully equipped DIN rail

Intuitive planning tool for the control cabinet

- Interfaces to all standard CAE programs
- Smart functions like auto-correction, speed marking or 3D viewer
- Quick and easy ordering thanks to direct connection to the web

Efficient marking program

- Individual design of markings
- Compatible with all MARKING system printing systems



Consistent configuration and marking

PROJECT complete



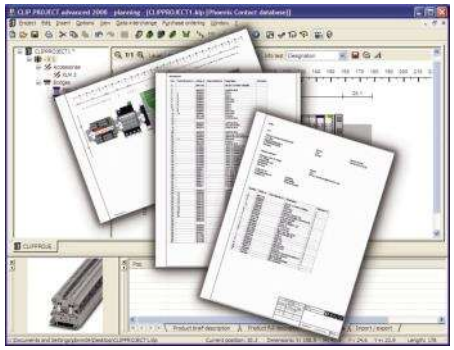
Perfect CAE Integration

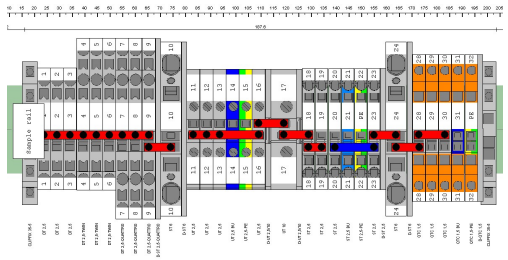
Intuitive software operation

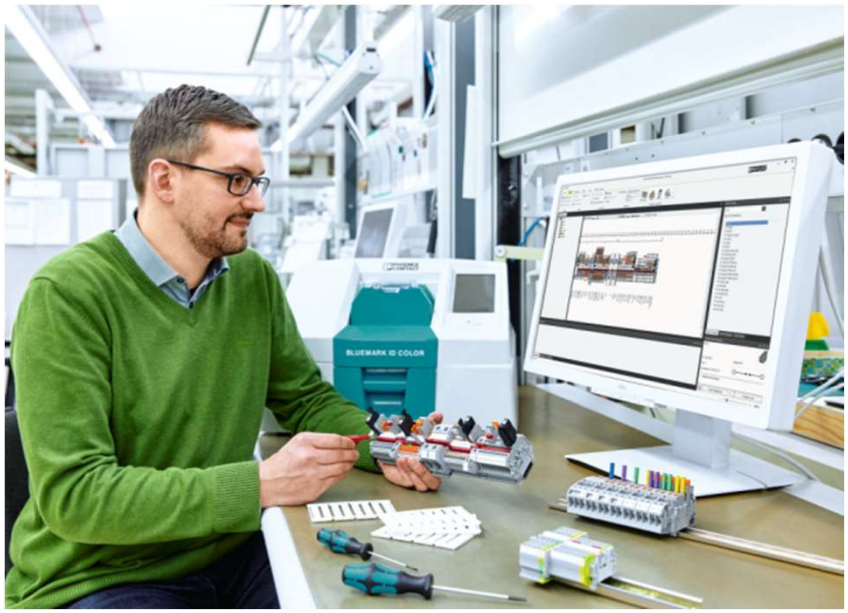
Order in real time

Consistent configuration and marking

PROJECT complete - production







The right marking material for your application

Marking and labeling

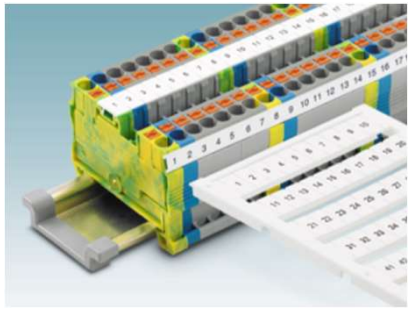
- Standard marking with preprinted labels or individual labeling
- Plant marking, equipment marking, terminal marking, conductor and cable marking
- Marking according to your requirements, whether preprinted, unmarked or custom-printed material
- For every requirement: whether for high or low print volumes, in card format or in continuous format



The right marking material for your application

Marking material

Terminal marking



- Large-surface and distinct marking
- Materials with a wide range of geometries
- Card and roll format

Wire and cable marking



- For industrial areas indoors and outdoors
- Wire marking for threading, pushing, clipping, with adhesive or cable binder
- Different materials for different requirements

Equipment marking



- High wipe and scratch resistance
- Self-adhesive, mounted signs, GPE, tamper-proof labels

Plant marking



- A wide range of materials for various applications
- Ready-made labels and printable materials
- Excellent resistance to environmental influences
- Safety thanks to clear plant marking

The right marking material for your application

Marking durability



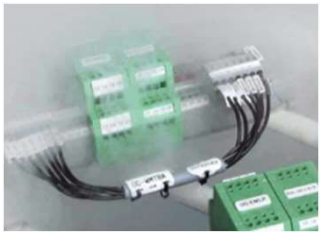
UV light resistance
DIN EN ISO 4892-2



Oil and chemical resis-
tance DIN EN ISO 175



Corrosion test
DIN 50018



Salt spray
IEC 60068-2-11/-52



Wear and wipe resistance
DIN EN 61010-1 | DIN EN 62208



Scratch resistance
DIN EN ISO 1518



Grid test
DIN EN ISO 2409



Adhesive power
FINAT 1, 2 und 9



DIN EN 60529/ISO 20653



Vibration resistance
DIN EN 50155

The right printing system for any demand

BLUEMARK ID COLOR

High-speed UV LED printing system

- Versatile in application, thanks to optional CMYK printing, and the availability of over 1300 marking materials
- Intuitive operation, thanks to integrated marking software
- Optimized fluid use, thanks to scalable print resolution
- Flexible material assembly, thanks to front feed and de-stacking magazine
- Time savings, thanks to high print speed



The right printing system for any demand

TOPMARK NEO

Efficient laser marker

- Intuitive operation, thanks to integrated marking software
- Avoidance of printing errors, thanks to automatic material identification
- Wide range of the materials, comprising stainless steel, aluminium, ABS, polyacrylics, and polycarbonate
- Individual design, thanks to easy image file importing
- Clear print image, thanks to high resolution (500 dpi)



The right printing system for any demand

THERMOMARK GO

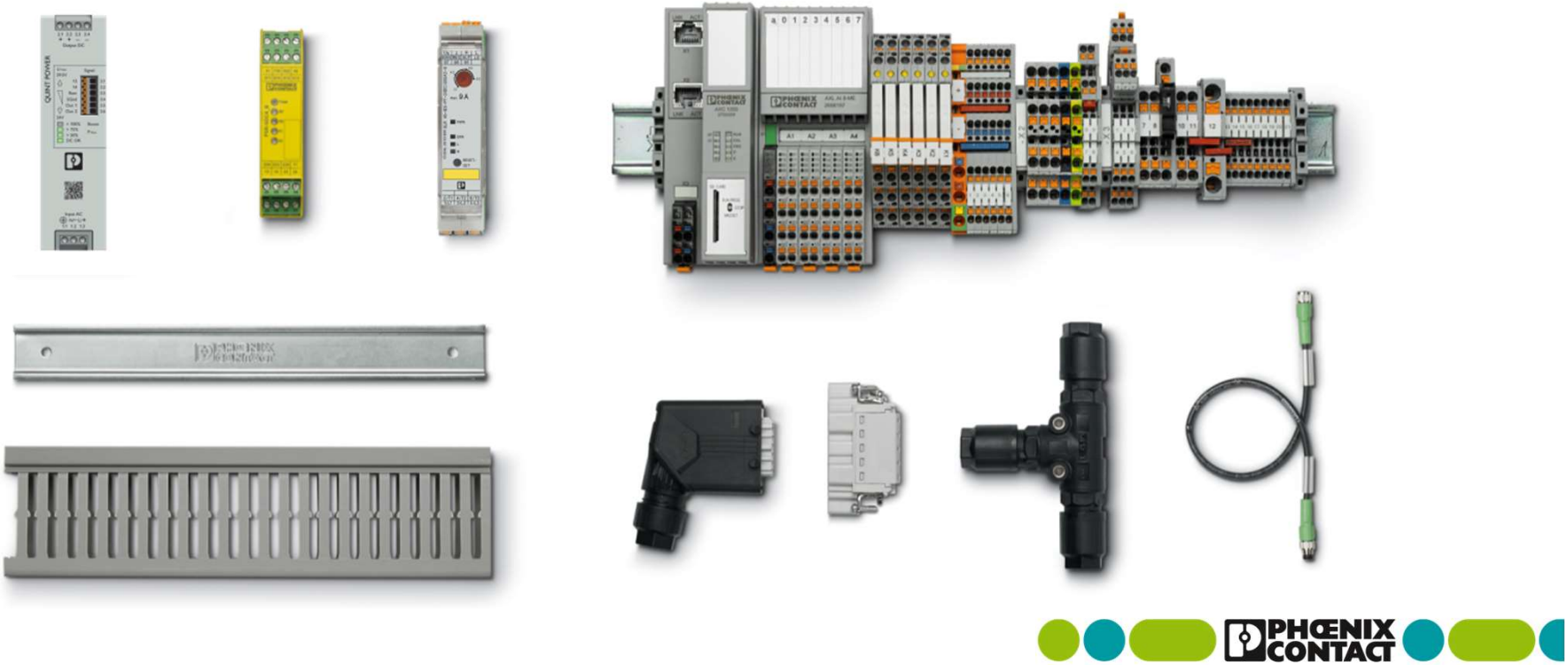
Mobile thermal transfer printer for easy, professional marking directly on site

- Operate the printer from a smart device thanks to the MARKING system app
- Communication via Bluetooth and NFC
- Enables digital creation of application-specific marking solutions
- Automatic material identification for optimal printing quality
- Automatic updates via Proficloud



Preassembled terminal strip

Terminal strip and product set configuration



Preassembled terminal strip

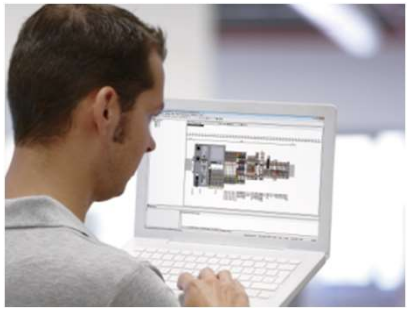
Order pre-assembled DIN rails

- Easy planning: configuration and marking software PROJECT complete
- Fast and error-free configuration thanks to auto correction feature
- Complete documentation and parts lists
- Direct terminal strip ordering online
- Can be reordered easily at any time thanks to electronic archiving
- Reduction in warehouse logistics



Preassembled terminal strip

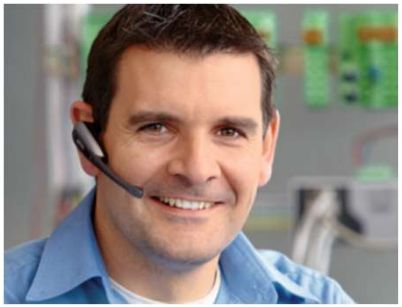
Terminal strip and product set configuration



Planning

You give us your requirements by …

- drawing
- parts list
- via data transfer by PROJECT complete



Ordering

Our experts team give you special advice and check your project configuration.



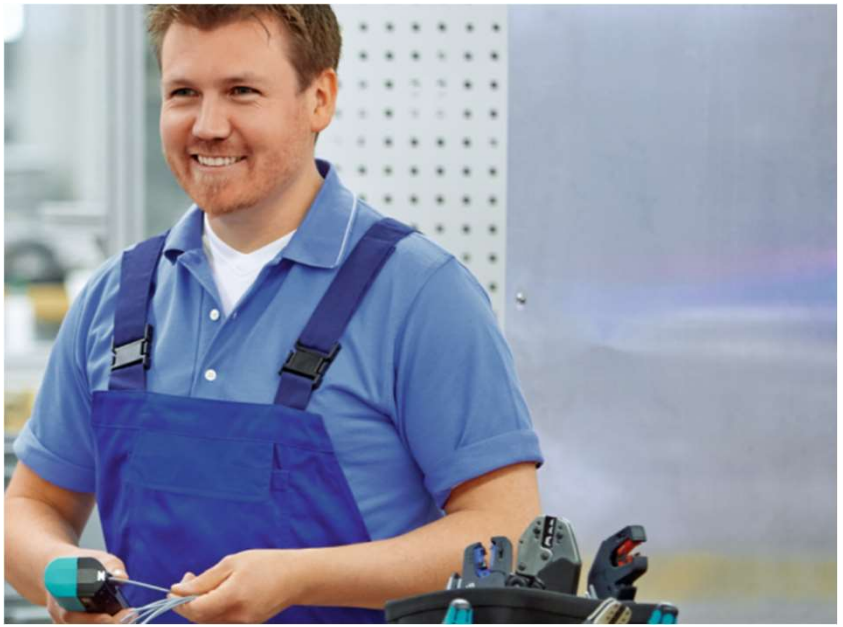
Assembling

Your product will be assembled and receives one article number. In case of reordering, you have only one order number.

Products and solutions for machine building

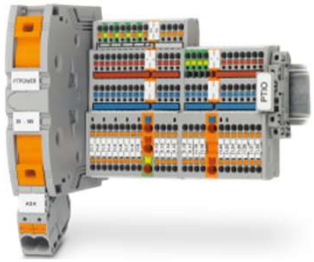
Reduction of production times

- Quick and easy installation thanks to the innovative Push-in connection technology
- Shorter production times and reduced costs, thanks to quick and error-free connection



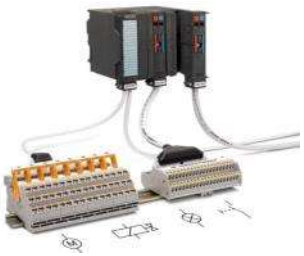
Products and solutions for machine building

Reduction of production times



Tool-free conductor wiring

Thanks to the push-in technology, conductors 0.25 and larger can be connected quickly - directly and without tools



Connect the field level safely to the controller

VARIOFACE system cabling connects the controller to the field – easily and without any errors



Acquire I/O signals in the field

Axioline E is the particularly robust I/O system for field installation



Communicate with IO-Link

Exchange data consistently with IO-Link – from the controller to the lowest field level.



The right tool for every application

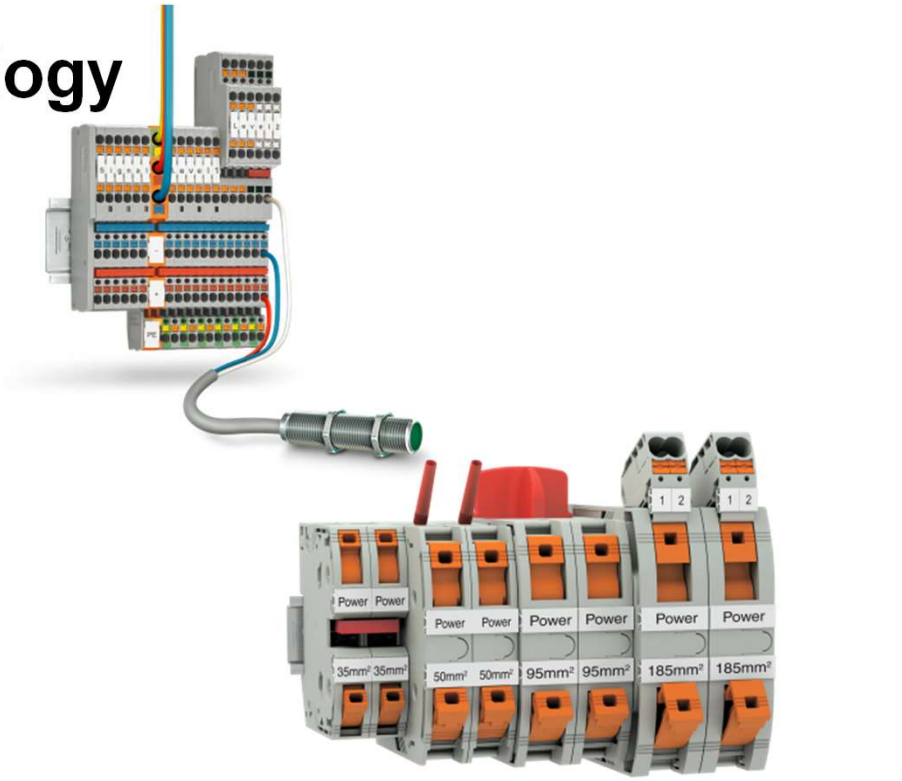
The TOOLfox program impresses with ergonomic design, simple handling, long service life, and excellent operative results.

Tool-free conductor wiring

Push-in connection technology

- PTIO sensor/actuator terminal blocks
  - Clear conductor assignment
  - High packing density for 3.5 mm space requirement
  - Signaling the switching states (LED)

- PTPOWER high-current terminal blocks
  - Push-in connected directly or by pivoting the control lever
  - Efficient and safe high-voltage connection up to 309 A and 1500 V (IEC)
  - Direct and DIN rail mounting
  - Available for delivery as preassembled terminal block bases



Tool-free conductor wiring

Push-in connection technology

- SAC M12 Sensor-/ Aktor-Steckverbinder
  - Direct insertion of solid and pre-treated conductors, easily and without tools
  - Lever for opening the terminal point and connecting fine stranded litz wires
  - In straight and angled design, as well as shielded version
  - Reliable signal and data transmission

- HEAVYCON heavy-duty connectors
  - Quick and easy connection of contact inserts, even already installed in the control cabinet
  - Compatible with other connection technologies
  - Also for high-position applications thanks to compact terminal chamber or modules with double conductor connection



PHOENIX CONTACT

Tool-free conductor wiring

Push-in connection technology

- RIFLINE industrial relay system
  - All standard relay applications
  - Isolate, multiply or amplify signals
  - Easy and tool-free wiring

- Axiocontrol and Axioline F
  - Quick response time and installation
  - Robust design and mechanics
  - Fast module replacement when pre-wiring
  - Reduced installation time thanks to fast connection technology

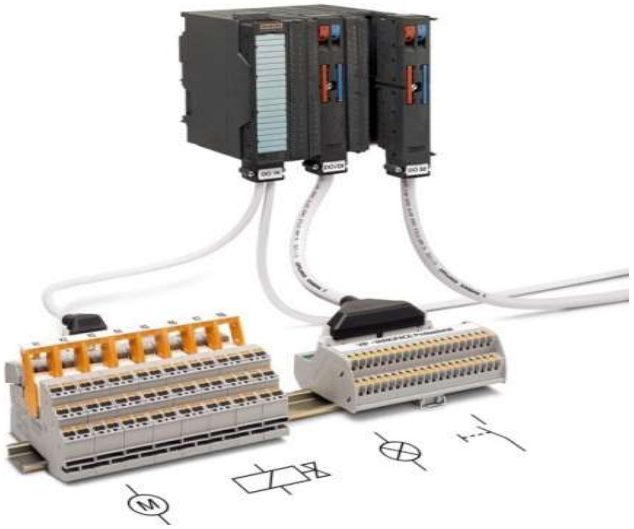




Connecting the field level safely to the controller

System cabling

- Compact solutions that enable easy planning, mounting, and startup
- Flexible connections: screw, spring-cage, and Push-in connection technology
- Quick and error-free, thanks to assembled system cables
- Versatile, thanks to components designed for universal use



Connecting the field level safely to the controller

System cabling

- Versatile functioning
  - Relays
  - Solid-state relay
  - 1-to-1 feed-through connector
- Various connection methods
  - Fast, error-free and uniform wiring
- Easy planning
  - Project planning cross list
  - Online selector

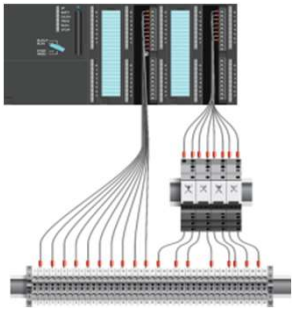


PHOENIX CONTACT

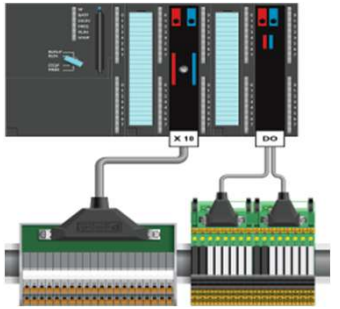
Connecting the field level safely to the controller

System cabling

- Wiring with single wires
  - Conventional wiring of single wires is complex
  - Many individual signal lines
  - Confusing, troubleshooting is tedious

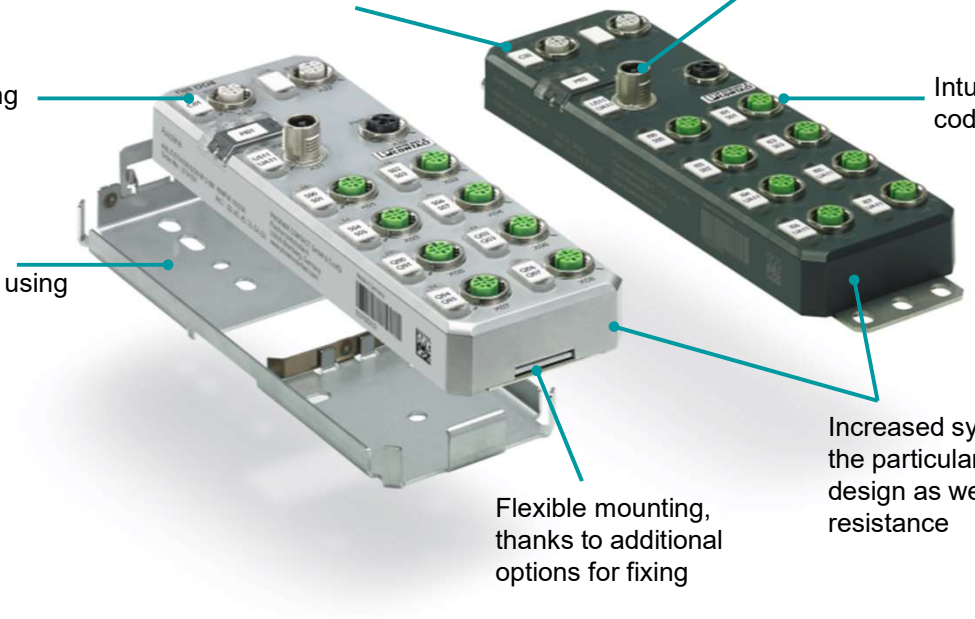


- Wiring with system components
  - Pluggable components
  - Time-saving
  - Reliable, fast and error-free



Recording I/O signals in the field

Axioline E



Individual and fast marking, thanks to MARKING system printing systems

High current carrying capacity and simple supply concept, thanks to M12 power connectors

Clear signaling

Intuitive installation, thanks to color-coded M12 connections

Tool-free device replacement when using the mounting plate

Increased system availability, thanks to the particularly robust mechanical design as well as shock and vibration resistance

Flexible mounting, thanks to additional options for fixing

Recording I/O signals in the field

Axioline E

- One cable for all supply voltages with 2x 12 A simplifies the cabling effort and saves installation time
- Greater flexibility, thanks to IO-Link communication
- Minimize downtimes, thanks to a high level of mechanical robustness
- A wide temperature range from -25°C to +60°C increases the variety of possible applications



Recording I/O signals in the field

Axioline E-IO-Link-I/O-Box

- IO-Link specification v1.1.2
- Connection of 8 and 16 channels (DI8, DO8 or DI16)
- Diagnostics and status indicators
- Short-circuit and overload protection of the sensor supply
- Device rating plate stored
- Degree of protection IP65, IP67



The right tool for every application

TOOLFOX hand tools



CUTFOX
Cutting tools



MICROFOX
Electronics tools



WIREFOX
Stripping tools



CRIMPFOX
Crimping tools



UNIFOX
Universal tools



SCREWFOX
Screwdriver tools



TESTFOX
Testing and measuring tools



TOOL SETS
Tool sets

PHOENIX CONTACT

The right tool for every application

New hand tools

CRIMPFOX DUO



Professional crimping pliers for flexible use

CORDLES SCREWDRIVER



Compact cordless screwdriver for simple screwing tasks

CRIMPFOX 4IN1



Multi-functional crimping pliers

CRIMPHANDY



Mobile crimping device

The right tool for every application

TOOLFOX – Automatic tools





CF 10



WF1000



CF 500



CF 1000



CF 3000

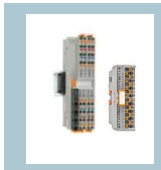


ZAP

Communicate with IO-Link

IO-Link portfolio

IO-Link master



Axioline F / Smart Elements Master
IP20



Standalone Master
IP20



Axioline E Master
IP67

Interface to superior control system

IO-Link devices



Safety relay
IP20



Circuit breaker
IP20



Hybrid motor starter
IP20



Safe I/O Box
IP67



I/O Box
IP67

For all sensors or actuators connected to the system

Software



Software IOL-CONF



Software PLCnext Engineer

Engineering/Parameterization

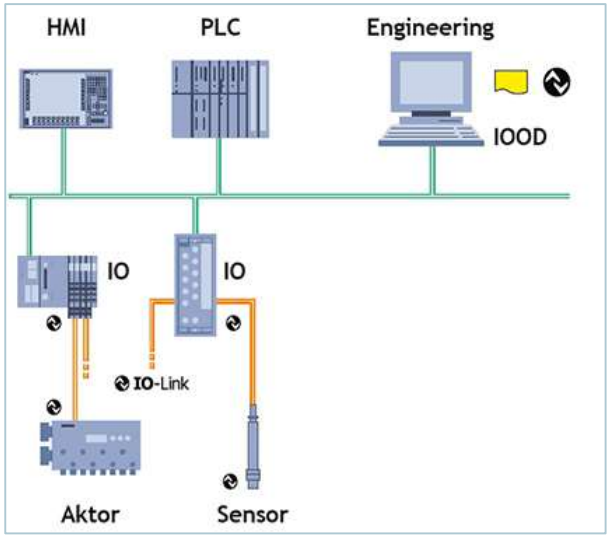
Consistent communication from the control cabinet to the field level

Communicate with IO-Link

Components of an IO-Link system

An IO-Link system basically consists of the following components:

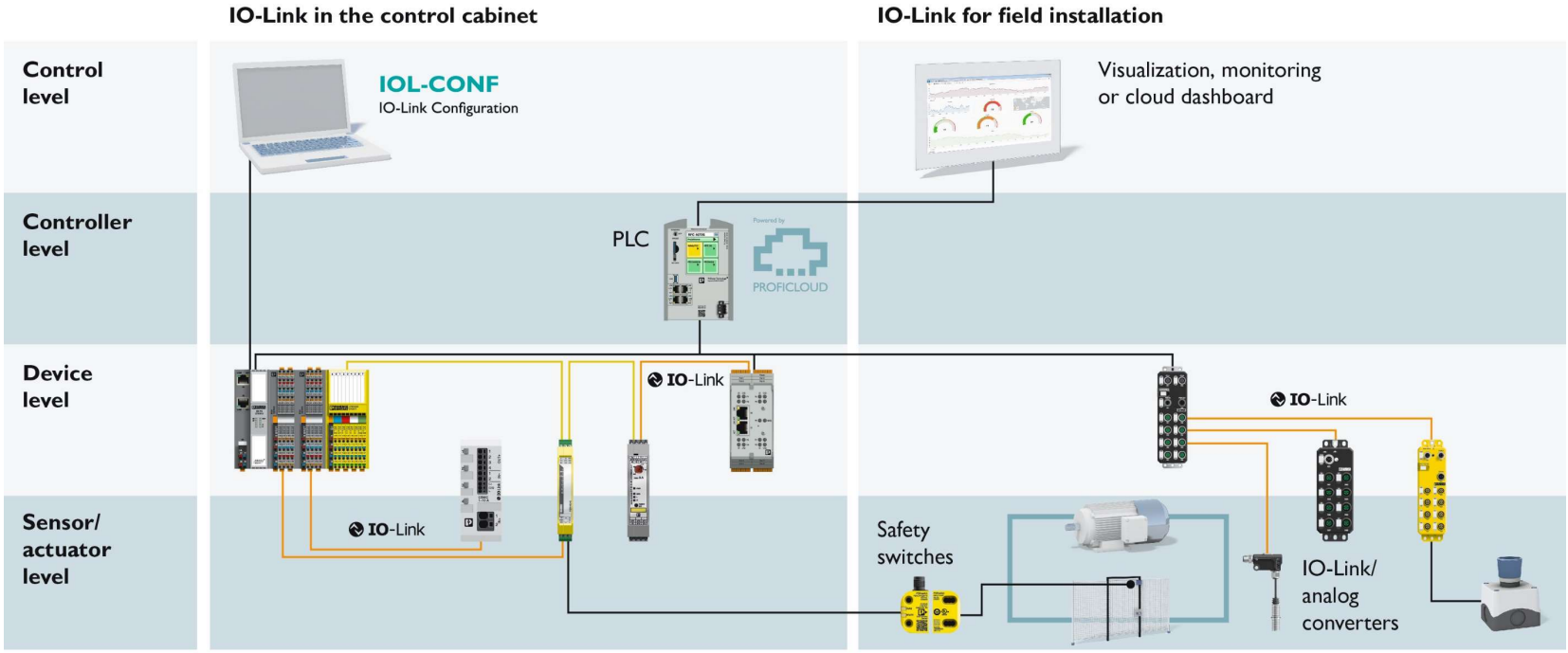
- IO-Link master
- IO-Link device (e.g. sensors, RFID reader, valves, motor starter, I/O modules)
- Unshielded 3- or 5-wire standard cables
- Engineering tool for project planning and parameterization of IO-Link



Source: www.io-link.com

Communicate with IO-Link

Interaction of IO-Link products



Products and solutions for machine building

Reducing part counts and lowering storage costs

- Harmonized product solutions reduce manufacturing costs
- Reduced storage costs, thanks to lower part counts
- Uniform design and operating concepts make startup and maintenance easier

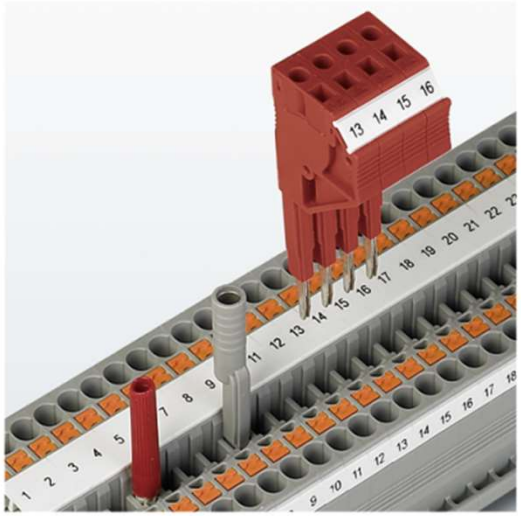


Reducing part counts and lowering storage costs

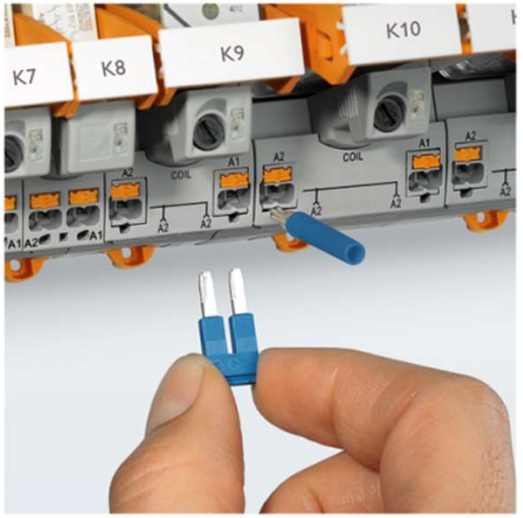
Uniform and standardized accessories



Clear marking



Standardized test system



Flexible jumper system

Products and solutions for machine building

Reducing part counts and lowering storage costs

Distribution blocks with integrated disconnect elements
The function distribution blocks with Push-in technology are available with various terminal points, mounting types, colors and disconnect versions.

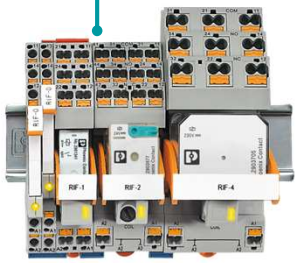
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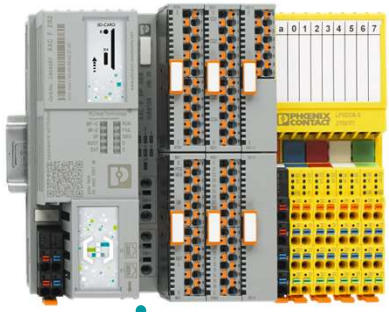




One terminal block system for all connection technologies
Unique terminal block system offers a choice of connection technology

One relay system for all standard applications
Relay system with universal pluggable design supports quick, easy, and error-free handling





Modular automation system
Control Axiocontrol and I/O system Axioline F for a modular automation solution.

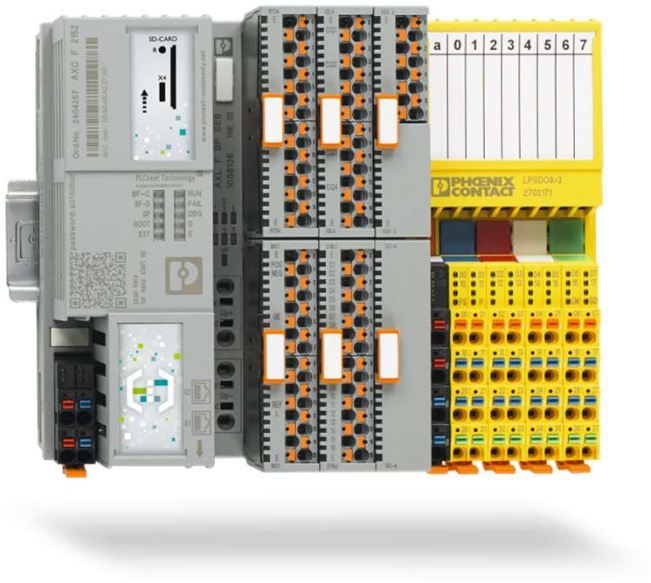
Heavy-duty connectors with variable cable outlet
The HEAVYCON EVO connector system features a standardized mount for cable glands in sizes ranging from M20 to M40



Modular automation system Axioline

Automation solutions from the kit

- Scalable automation system for simple up to complex tasks
- Large selection of modules based on the modular principle
- Systematic installation or connection to networks thanks to various head modules



Modular automation system Axioline

Axiocontrol controllers and Axioline F I/O-System

- Increased machine output, thanks to fast and synchronous signal acquisition
- Optimum performance by high local bus speed
- Increased system availability due to particularly robust mechanical design, shock and vibration resistance
- Easy integration of low voltage modules
- Easy relay connection via system cabling (FLK)
- Fast and intuitive wiring, thanks to color-coded contact points and simple handling (Push-in Technology)



Modular automation system Axioline

Axioline smart elements

Compact, pluggable, and system-independent I/O modules

- Isolated I/O functionality - communication with the respective I/O system is implemented in combination with a backplane
- 32 channels and two different I/O functionalities over a width of 15 mm
- Reduced installation times, thanks to Push-in and low parameterization effort
- Can be combined with Axioline F modules in any way in an I/O station
- Enables IoT in combination with PLCnext Control



Heavy-duty connectors with variable cable outlet

HEAVYCON EVO

- Housing solutions for a wide range of applications
  - EMV protection
  - Degree of protection: up to IP67 / NEMA 4X
  - Shock resistance: IK08
- Reduction of housing diversity
  - One housing size e.g. for 4 screw connection sizes: M20 | M25 | M32 | M40
- Compatible with the industry standard
  - 100 % compatible with all recognized manufacturers





HEAVYCON STANDARD
Housing solutions in frame size B32 and B48

Heavy-duty connectors with variable cable outlet

HEAVYCON EVO

- Bayonet interlock
  - Every housing: all screw connection sizes
  - Free selection of cable outlet direction
  - Housing with TWIN cable gland

- Robust plastic housing
  - Material: Polyamide GF
  - Degree of protection: IP66 / NEMA 4X
  - Shock resistance: IK09
  - Ambient temperature: -40°C to 125°C

- EMC protected Al housing
  - Material: Al Si 12
  - Degree of protection: IP67 / NEMA 4X
  - Shock resistance: IK09



Heavy-duty connectors with variable cable outlet

HEAVYCON EVO

- Cable gland with bayonet interlock
  - 4 screw connection sizes: M20 | M25 | M32 | M40
  - Designs: plastic | metal



Standard
Cable gland



Corrugated pipe
adapter



Multi-cable screw
connection



Thread adapter
M | PG | NPT



Cable gland with
strain relief



Cable gland with
bend protection

One terminal block system for all connection technologies

All connection technologies – CLIPLINE complete





Push-in-connection



Spring-cage connection



Bolt connection



QUICKON-connection



Screw connection

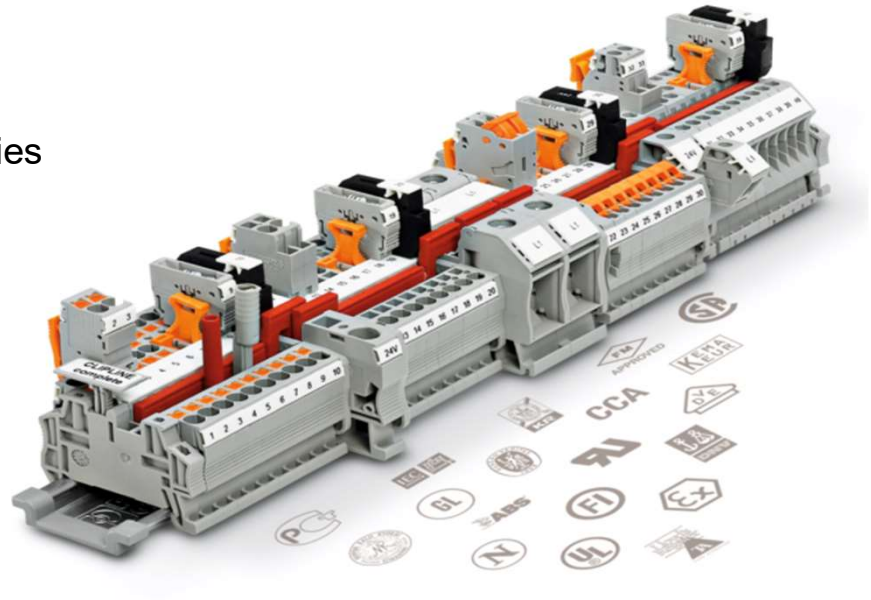


Connection technology PTV
New connection technology PTV with vertical conductor connection.

One terminal block system for all connection technologies

All connection technologies – CLIPLINE complete

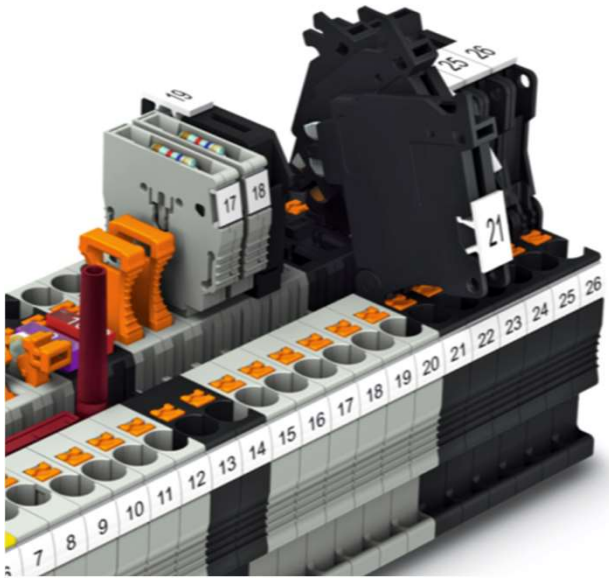
- Free combination of connection technologies
  - Flexibly combinable terminal block system
- Combinable functions and standardized accessories
  - Flexible plug-in bridge system
  - Standardized test system
  - Large-surface marking option
  - Multifunctional disconnect zone
- Universal application
  - Flexible and specific use
  - Internationally approved and proven



One terminal block system for all connection technologies

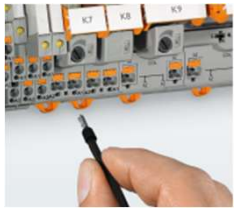
All connection technologies – CLIPLINE complete

- Multifunctional disconnect zone
  - For a wide range of switching tasks
- Components for switching functions
  - Feed-through connector
  - Knife disconnect terminal block
  - Isolating plug
  - Component connector
  - Fuse plug
- Modular COMBI plug-in system
  - also see:
    "Building machines in a modular and flexible way"



One relay system for all standard applications

RIFLINE complete industrial relay system



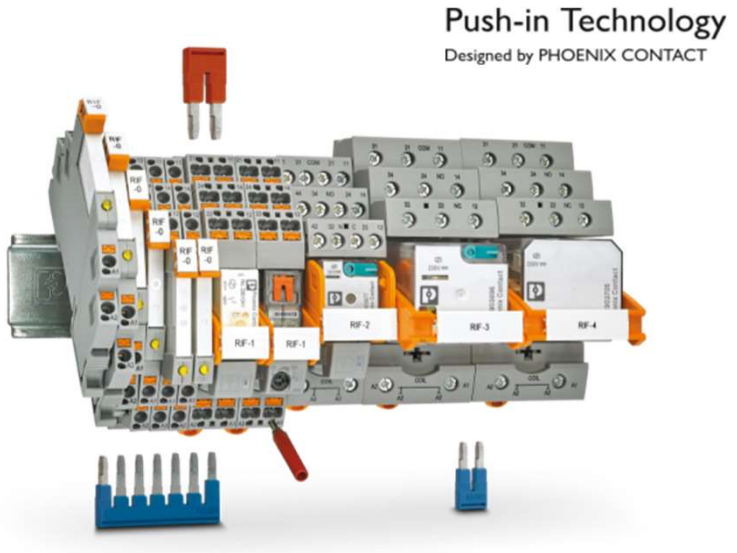
Easy wiring
thanks to push-in connection technology



Easy potential distribution
with pluggable bridges from the
CLIPLINE complete system accessories



Easy extension
with the pluggable timer module



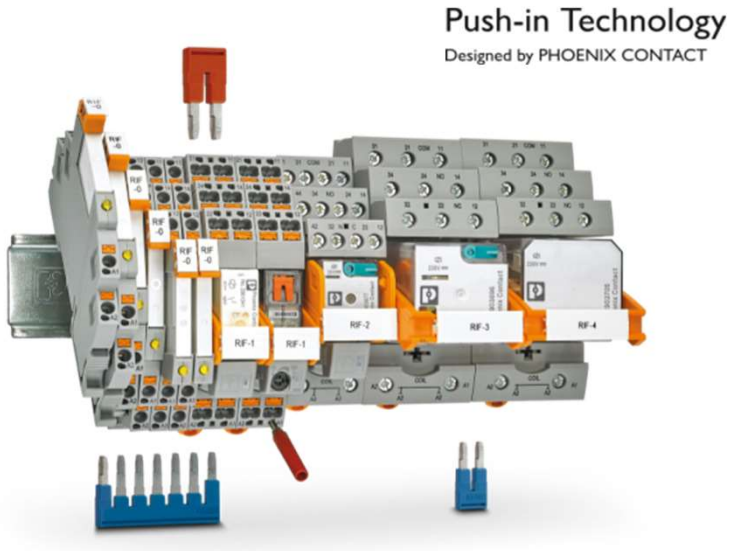
One relay system for all standard applications

RIFLINE complete industrial relay system

One continuous relay system – for all standard relay applications

With CLIPLINE complete system accessories:

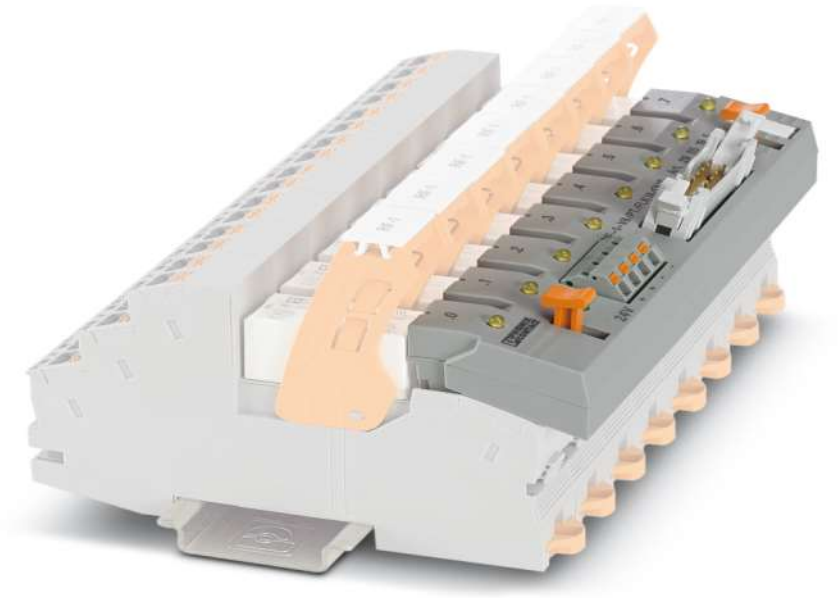
- Pluggable jumpers
- Marking material
- Test accessories



One relay system for all standard applications

RIFLINE complete industrial relay system

- System cabling adapter for fast and error-free connection
- The adapter can be snapped onto a row of eight RIF-1 modules without the need for any tools
- Power supply via push-in connection terminal blocks
- Input voltage: 24 V DC
- LED status indicator for each relay module



Connection-ready distribution blocks with Push-in connection

PTFIX distribution blocks

- Quick mounting: Time savings of up to 80 %, thanks to ready-to-mount blocks without manual bridging
- Flexible use in your application, thanks to DIN rail, direct or adhesive mounting
- Time- saving conductor connection of pretreated and rigid conductors, thanks to tool-free Push-in direct connection technology



Connection-ready distribution blocks with Push-in connection

PTFIX distribution blocks

- Space savings of up to 50 % on the DIN rail, thanks to transverse mounting
- Clear and safe wiring, thanks to eleven color variants
- Can be bridged and aligned with standard plug-in bridges
- Testing option for all common test probes



Connection-ready distribution blocks with Push-in connection

PTFIX online configurator

- Convenient configuration: create your desired solution with just a few clicks
- Tailored combinations – PTFIX distribution blocks in accordance with your specific requirements
- User-friendly visualization – real-time 3D representation of your configuration
- Reduce your logistics costs, thanks to the delivery of blocks ready for use



Products and solutions for machine building

Building machines in a modular and flexible way

- Quickly adaption to market changes and higher flexibility thanks to a modular concept
- Simplified transport and installation of large and ample machines due to a modular structure



Products and solutions for machine building

Building machines in a modular and flexible way



Modular power distribution

The new power distribution board CrossPowerSystem enables mounting via „Plug and Play“.



Space-saving cable feed-through and pluggable terminal blocks

The modular CES cable entry system routes cables and lines in the field in a space-saving manner.



Reliable connection with sensor/actuator cabling

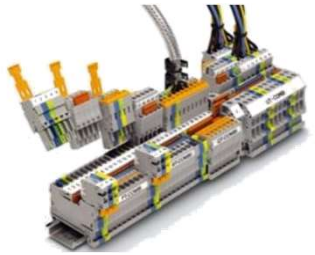
Pre-configured M8 and M12 cables, along with matching connection boxes, guarantee efficient data, signal and power wiring.

new



M12 push-pull connectors

M12 push-pull internal locking allows fast and secure connection, especially for applications in confined spaces and with high cabling density.



Pluggable connection solutions

The COMBI connection system enables modular and time-saving signal and power wiring up to 41 A.



Robust industrial connectors

HEAVYCON complete heavy-duty connectors with single and double push-in connection can be combined flexibly with one another.

Robust industrial connectors

HEAVYCON complete

- HEAVYCON STANDARD
  - Convenient locking latch
  - Compact sizes for limited space conditions and decentralised installations
- HEAVYCON EVO
  - Swivel cable gland with bayonet locking
  - Compact M1-single module housing
- HEAVYCON ADVANCE
  - Robust without compromise and tight up to IP69K
  - Save space and costs by dispensing with panel mounting base
  - Compatible with standard panel cut-outs



PHOENIX CONTACT

Robust industrial connectors

HEAVYCON complete

- All connection technologies
  - Push-in in all sizes
  - QUICKON (IDC)
  - Screw
  - Crimp
- Modular contact inserts
  - Signals, data, energy and compressed air in just one connector
- All contact insert sizes
  - High-position series in sizes: BB, BBB and DD
  - High-current / high-voltage application HS and HV



Robust industrial connectors

HEAVYCON complete



Online product configurator
Easy configuration of your individual connector set-up based on contact inserts, contacts, housings and cable glands:

- Customized configuration
- Electronic article list
- Time saving order processing



Connector sets
Sets, consisting of housing, push-in contact insert and cable gland are available in all connector pole sizes:

- Individual fit batch size
- Reduce logistic efforts
- Matched delivery time



Cable assembly
Your individual connector solution is realized based on our comprehensive selection of cables and connectors:

- Service-Center
- Tailor-made product
- Short-term availability

Cable feed-through and pluggable terminal blocks

Cable entry system (CES)

- Space saving
- Time-saving
- Flexibility
- Reliable degree of protection
- Tool-free assembly



Cable feed-through and pluggable terminal blocks

Cable entry system (CES)

- Application
  - Use of standard panel cutouts
  - High cable density
- Sealing frames
  - Only two locking elements
  - Metal reinforcement is integrated
- Locking of sealing frames
  - Screw locking
  - Locking latch
- IP65 requirements
  - Screw locking
  - Usage of coned sleeves with cable binders



Cable feed-through and pluggable terminal blocks

Cable entry system (CES)

- Variants of cable sleeves
  - 2 to 24 mm diameter
  - 1 to 4 through holes

- Thermoplastic sleeves, gray
  - Flammability in accordance with UL 94-V0
  - Resistance to acids and alkalis

- Rubber sleeves, black (NBR)
  - Long-term resistant, especially in case of temperature variations
  - Material properties:
    - Halogen-free
    - Resistant to oils, fats, fuels



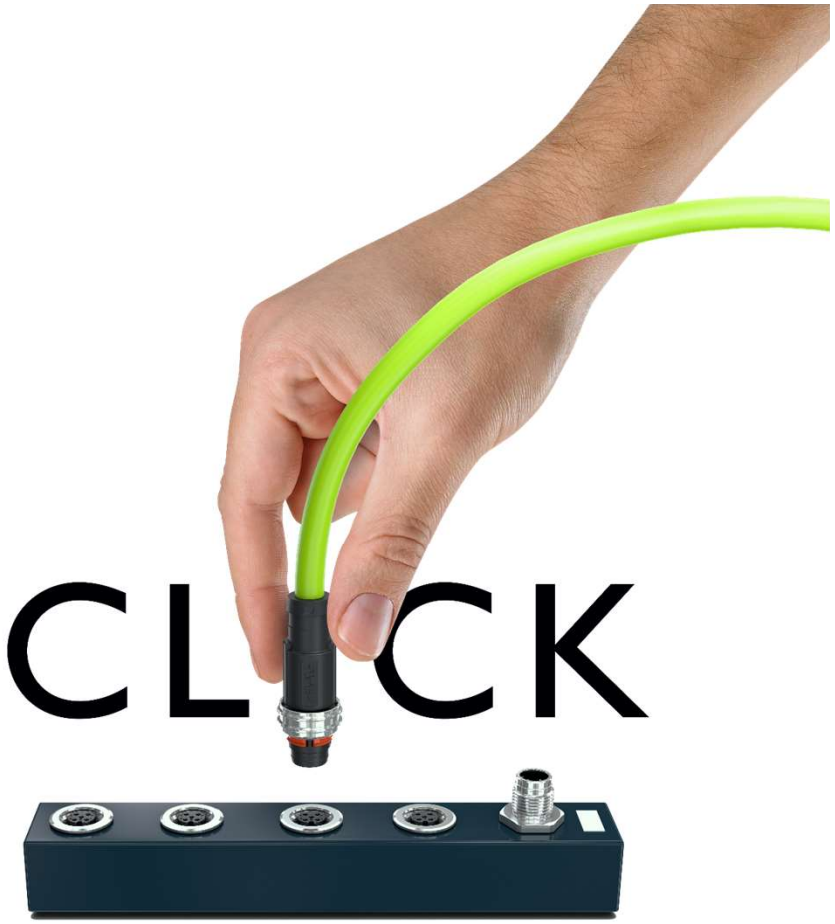
Products and solutions for machine building

M12 push-pull connectors

Easy connection, fast locking

The M12 connectors with push-pull fast-locking system guarantee easy cabling and a space-saving device connection. Especially in confined spaces and high cabling density, such as in factory automation, M12 Push-Pull offers significant assembly advantages due to fast push-in and pull-out of the components.

The new standard in automation technology



new

PHOENIX CONTACT

Products and solutions for machine building

M12 push-pull connectors

- Plug and Produce: quick and reliable connection even in confined spaces
- Greater flexibility: one M12 device connection for screw and push-pull connectors
- Easy design-in: countersunk M12 ports for compact device concepts
- Flying leads: Connectors in male and female variants
- Highly future-proof: standardized product range for worldwide availability



Products and solutions for machine building

M12 push-pull connectors



Plug and Produce
With the cross-manufacturer locking system, plugging is now reliable and convenient – even in confined spaces. This saves up to 80% installation time compared to screw connections.



Greater flexibility
The M12 duo contour allows for a flexible field wiring with proven M12 screw connectors or the new push-pull fast-locking system. An easy push-pull device integration is even possible for existing M12 solutions.



More compact designs
The new M12 push-pull concept with counter-sunk M12 ports allows flush integration into the housing. Through the higher packing density your device designs become more compact.



Flying leads
Easily implement extensions in the field: Establish flying leads with connectors in male and female versions.



Highly future-proof
The consistently standardized push-pull product range guarantees worldwide availability. Cross-manufacturer compatibility, thanks to the IEC61076-2-010 standardization.

Reliable connection with sensor/actuator cabling

Sensor/actuator cabling

- Complete spectrum of products and solutions
  - Decentral cabling with passive distribution systems
  - One connection principle for signals, data and power
  - Ethernet-based I/O system AXIOLINE E
- Wide range of individual solutions
  - Pre-assembled or field-installable products
  - Application-specific cable qualities
- Fast, reliable and efficient technologies
  - QUICKON (IDC): unbeatable fast
  - Push-in: comfortable and easy
  - Push-Lock: comfortable and fast, also for flexible conductors without ferrules





PHOENIX CONTACT

Reliable connection with sensor/actuator cabling

Totally protected shielding

In the manufacturing process of the connectors with Advanced Shielding Technology, liquid metal encloses the cable shield firmly bonded and ensures a totally protected and large-scale 360° shield connection.

- Shock- and vibration-proof under high mechanical loads, as well as safe current flow and low warming in the case of a short circuit
- Resistant and robust to transient overvoltages and lightning currents up to 20 kA
- Future-proof high-speed data transmission up to 40 Gbit/s and secure EMC protection



Reliable connection with sensor/actuator cabling

SAC cabling for specific applications

- Suitable for use in the food industry, thanks to the hygienic design and specially chosen materials
- Suitable for railway applications, thanks to the fire and vibration-resistant design
- For outdoor applications, thanks to UV and corrosion resistance
- Can be used in robots and drag chains, thanks to highly flexible special cables
- High power transmission with the M12 power range, even in compact applications
- Cabling for mobile working and construction machines with Deutsch and Superseal connectors





Pluggable connection solutions

COMBI connection system

- Performance
  - Free choice of connection technologies
  - No reduction of the conductor nominal current
  - Pluggable wiring up to 41 A and 1000 V
- Shock protection
  - IP 20 touch-proof in accordance with IEC 20259
  - PE contact capacitive in accordance with IEC 60204-1
- Potential distribution
  - FBD as standardized bridge system
  - Bridge shaft as function shaft for test plug

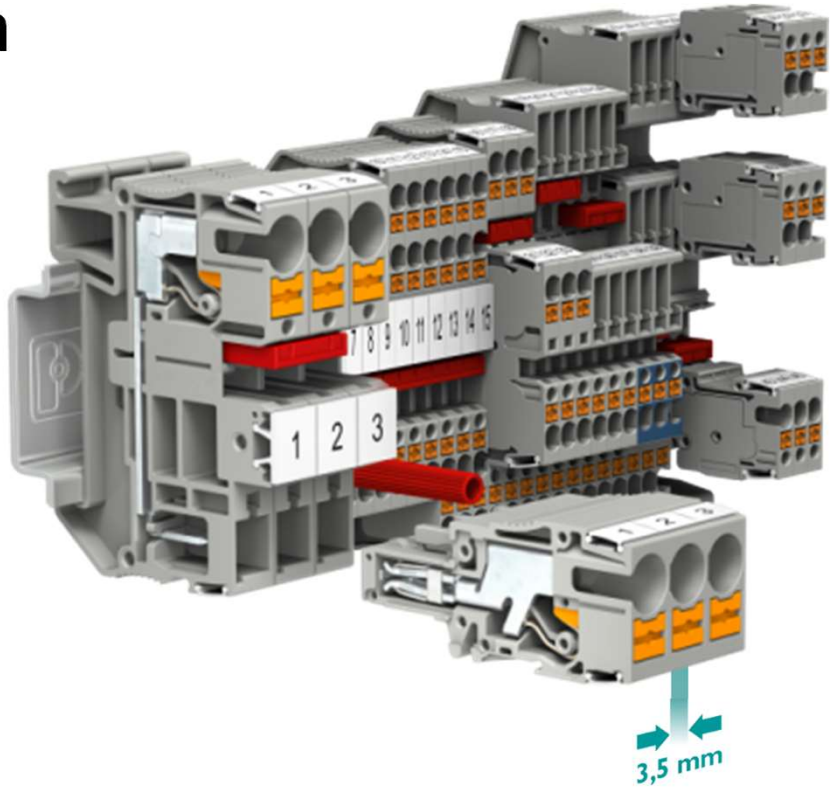


Pluggable connection solutions

COMBI connection system

- Identification and marking
  - Abundant and easily readable marking
  - Increased wiring safety due to coding

- User-friendly conductor connection
  - Push-in connection technology – fast and effortless
  - Wiring – direct without special tool
  - Conductor cross section 0.25 to 10mm²

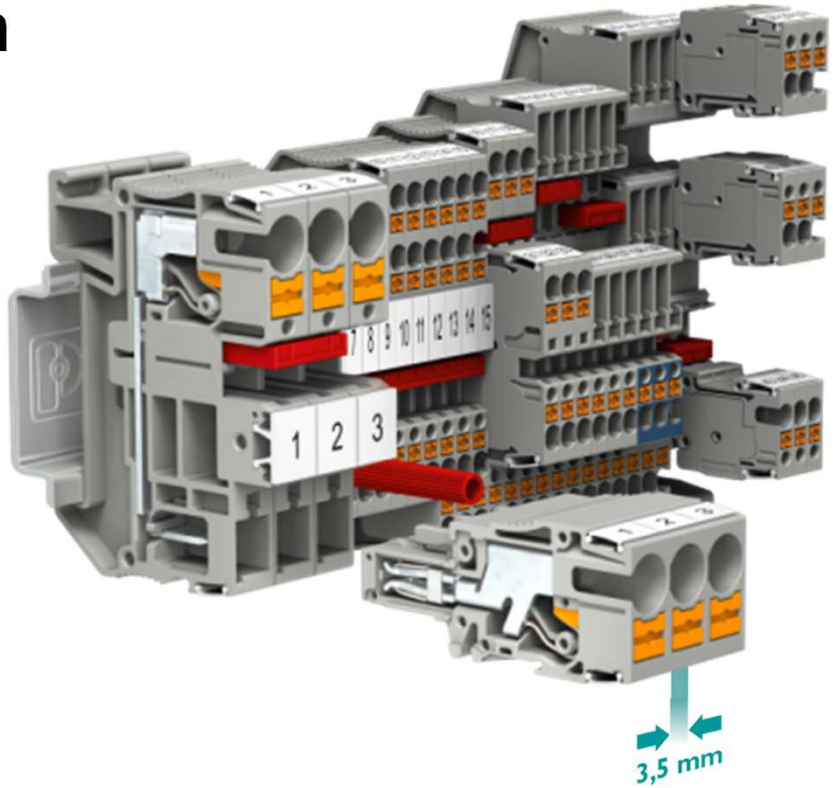


Pluggable connection solutions

COMBI connection system

- Space savings in the control cabinet
  - 3.5 mm space requirement with PT 1.5/S
  - Maximum packing density
  - 150 mm of space savings for every 100 terminal blocks

- Pluggable power wiring
  - PT 10 for secure conductor connection up to 10 mm²
  - Nominal data up to 41 A and 1000 V
  - Compact connector with strain relief, options for latching and cable housing



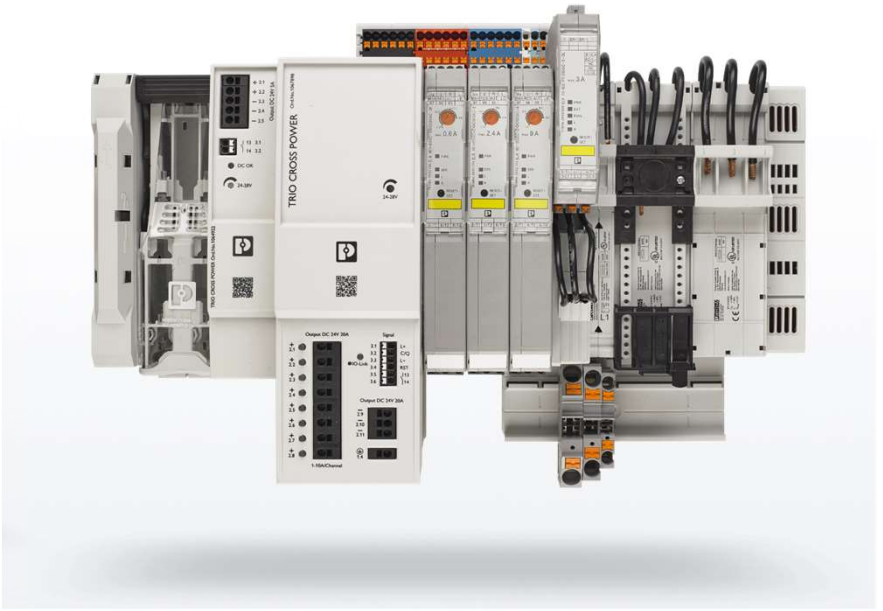
PHOENIX CONTACT

Modular power distribution board for the control cabinet

CrossPowerSystem

The DIN rail with built-in power distribution

- Quick, complete out-of-the-box system
- Tool-free and wireless mounting of power supplies up to motor starters
- Three-phase devices are mounted onto the power distributor via Plug and Play
- No need for 3 separate AC feed-ins per device – phase rotation is not possible
- More compact design compared to conventional power distribution



Modular power distribution board for the control cabinet

Power supply for CrossPowerSystem

Perfectly adapted for use in machine building: The TRIO CROSS POWER power supply for reliable 24 V supply

- Rapid startup: tool-free mounting and automatic contacting onto the power distribution board CrossPowerSystem
- Reliable protection thanks to eight independent channels for selective shutdown in case of error (overload and short circuit)
- Tool-free setting of the rated current via LED buttons, channel by channel
- Extensive diagnostic possibilities and worldwide access via connection in I/O-Link infrastructure



Modular power distribution board for the control cabinet

Adapter rails for CrossPowerSystem

Fast and efficient wiring

- Easy and variable adaption to the power distribution board CrossPowerSystem
- Mounting for PTFIX distribution blocks for 24 V distribution, data connections as well as N and PE conductors
- Bigger diameters can be realized by means of the adapter rail and terminal blocks up to 35 mm²



Products and solutions for machine building

Worldwide service and support

- The focus is on the customer
- Personal consultation directly on site
- Global sales network



Products and solutions for machine building

Worldwide service and support



Comprehensive after-sales services

- Detailed product information and product master data in electronic form
- Individual logistics and order handling
- Comprehensive after-sales services



Comprehensive training program

- From general foundations to specialized knowledge
- From evening compact seminar to three-day expert seminar
- Placement according to Basic, Advanced and Individual



Product sets and terminal boxes

- Consignment of product set
- Terminal strip assembly and wiring
- Integration in suitable terminal boxes



Cable assembly

- Assembly of specific cable solutions
- Customized cabling product consisting of connectors and cable lines in desired length



Industrie 4.0 in smart factory production line at Phoenix Contact

The global production language

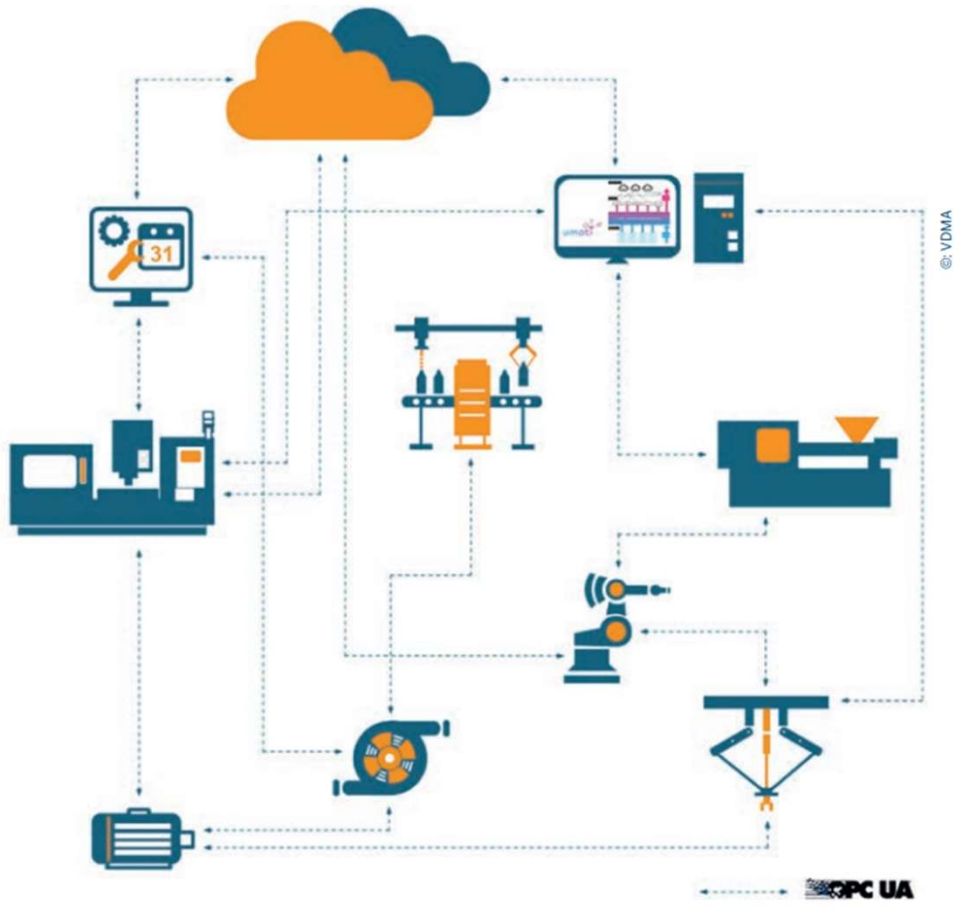
OPC UA

In the world of digital production, it's essential that machines from different manufacturers can communicate with each other. That's why uniform standards are needed, and VDMA is playing a vital part in creating them: the OPC UA Companion Specifications.

ProduktionNRW
Kompetenznetz Maschinenbau/Produktionstechnik

PHOENIX CONTACT

ProduktionNRW
Kompetenznetz Maschinenbau/Produktionstechnik

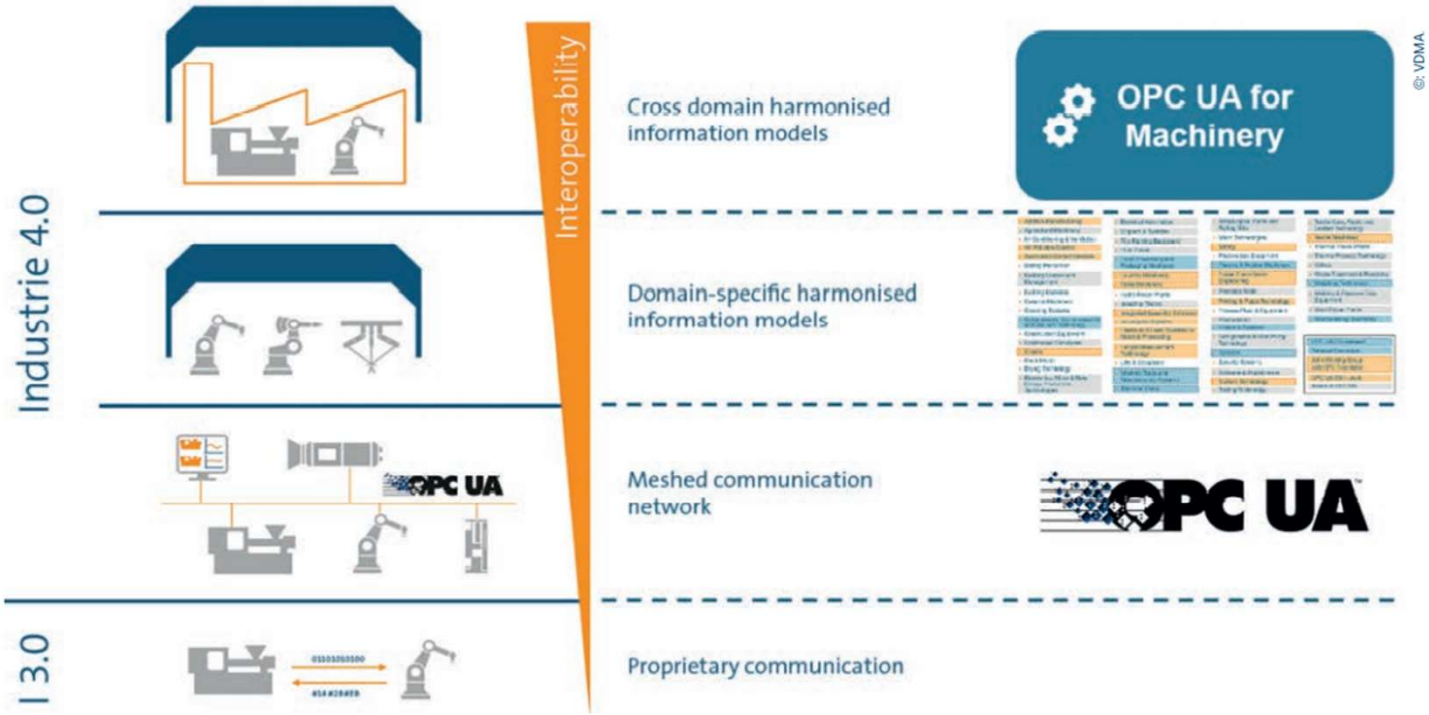


OPC UA enables cross-hierarchy communication from the shop floor to the cloud.

PHOENIX CONTACT

For machine building

OPC UA



Multisector interoperability with OPC UA.

ProduktionNRW
Kompetenznetz Maschinenbau/Produktionstechnik

PHOENIX CONTACT

Phoenix Contact

Products and solutions for machine building

