Functional safety

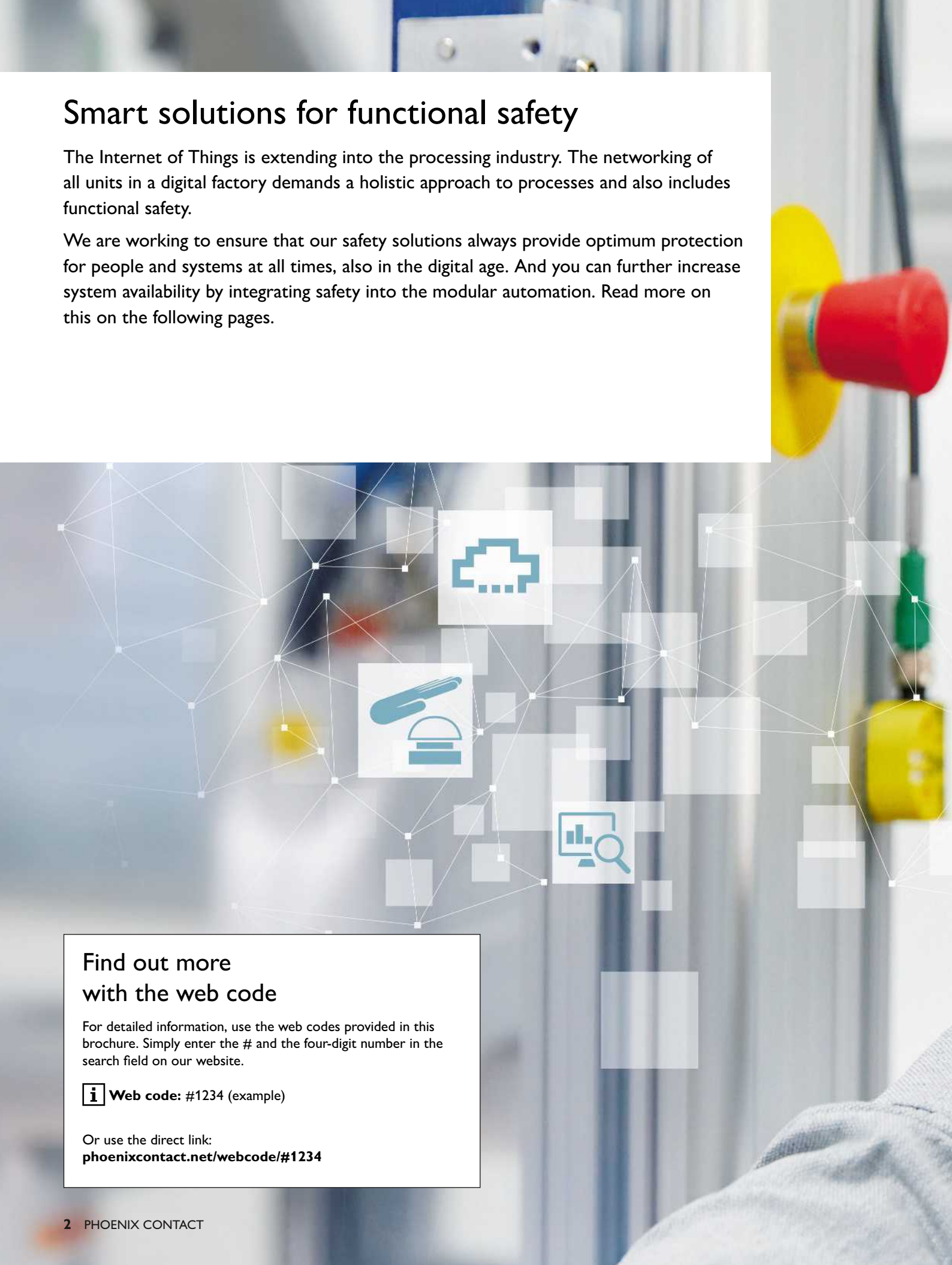
From the safety switch through to the safe controller

PHOENIX CONTACT
INSPIRING INNOVATIONS

Smart solutions for functional safety

The Internet of Things is extending into the processing industry. The networking of all units in a digital factory demands a holistic approach to processes and also includes functional safety.

We are working to ensure that our safety solutions always provide optimum protection for people and systems at all times, also in the digital age. And you can further increase system availability by integrating safety into the modular automation. Read more on this on the following pages.



Find out more with the web code

For detailed information, use the web codes provided in this brochure. Simply enter the # 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

Contents

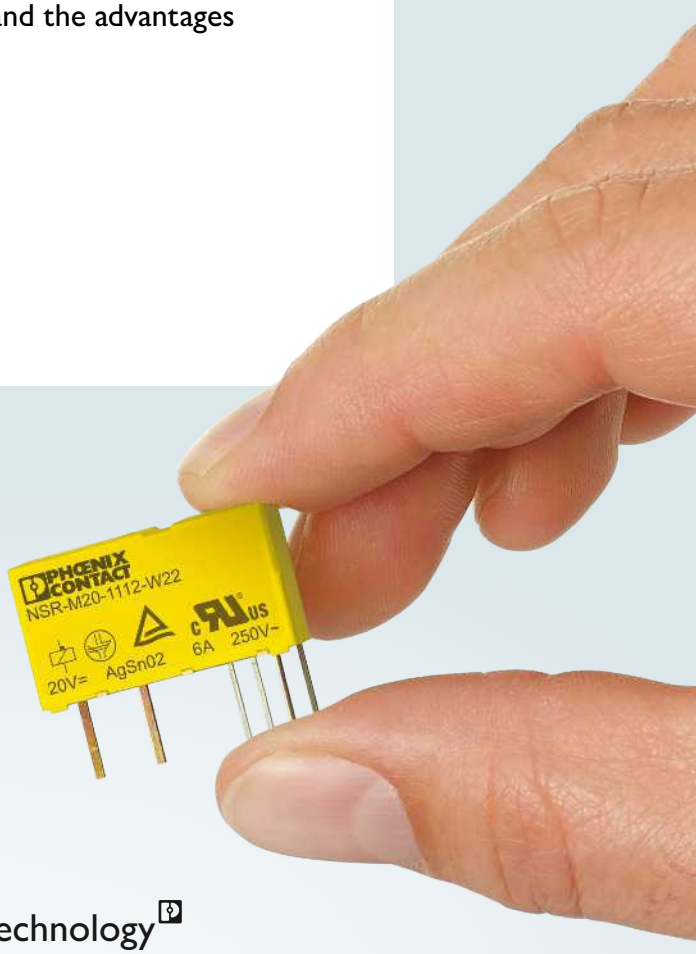
COMPLETE **line**

COMPLETE line is a system comprising coordinated hardware and software products, consulting services, and system solutions that help you optimize your processes in control cabinet manufacturing.

Progress through innovative technologies

Those who want to play a leading role with respect to technology must make a decisive contribution to current trends and developments.

For Phoenix Contact, innovations are a pioneering bridge to the future. Take a look at the technologies we offer in the field of functional safety and the advantages they provide.



Relay Technology

Designed by PHOENIX CONTACT

Relay technology – developed to change

Phoenix Contact has developed a narrow, force-guided elementary relay which features full performance with an overall width of just 6 mm. The miniaturization of mechatronic functions enables modular safety concepts, as required for Industry 4.0.

With a switching capacity of 6 A, the relay ensures superior availability thanks to a redundant diagnostic contact, and allows us to develop the PSRmini safety relay in a 6 mm housing.

Web code: #1974

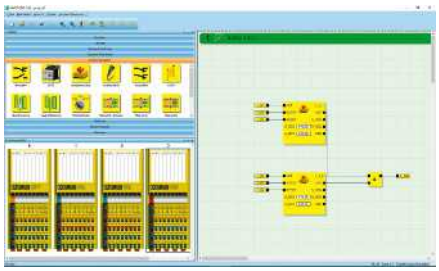
SafetyBridge Technology – safety without a safety controller

What is SafetyBridge Technology?

With SafetyBridge Technology, you can implement decentralized safety solutions. And you can do this without a safety controller and regardless of the network used. The technology is integrated into the Inline and Axioline I/O systems and is compatible with all bus couplers of these systems. The safe I/Os are installed with the standard I/Os decentrally in the equipment.

The system consists of safe input and output modules and a logic module. The latter captures and issues safe signals. It generates and monitors the safety-relevant SafetyBridge transmission protocol and processes the logical connections of the parameterized safety logic. The logic module therefore assumes the task of a safe controller.

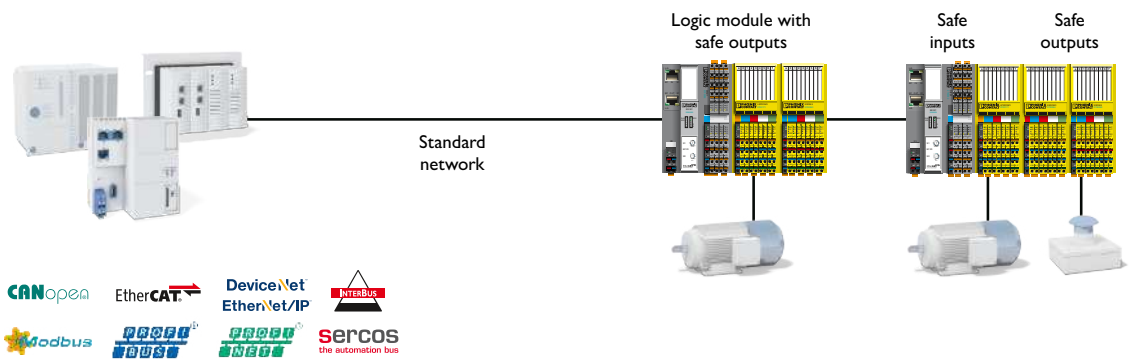
You can create the SafetyBridge safety logic easily via drag-and-drop with our SAFECONF configuration software. The intuitive operation allows you to configure your safety logic in accordance with the standards without the need for programming knowledge.



Easy configuration using SAFECONF

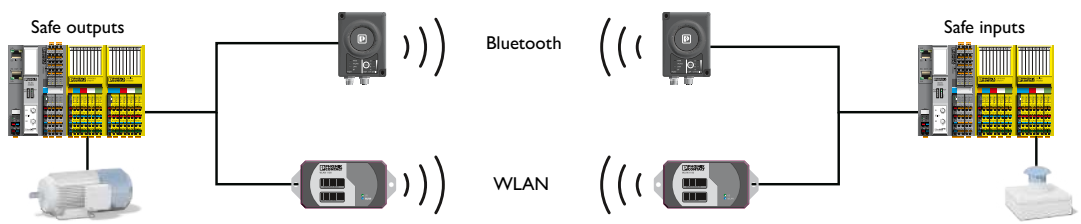
SAFECONF
Configuration Software

SafetyBridge Technology
Designed by PHOENIX CONTACT



Transmitting safe data via wireless systems

SafetyBridge Technology makes it possible for you to transmit all safety-relevant data signals wirelessly. You can choose between the two wireless technologies, Bluetooth and WLAN. You can therefore replace cable and slip ring transmission systems with wireless paths without altering the safety characteristics of the safety application. The combination of safety and wireless has many advantages. This solution can be easily integrated into existing automation networks and helps to save on the costs of a distributed or mobile machine structure. Furthermore, safety signals can be transmitted reliably over large distances.



Successful in application

Our safety products prove themselves daily in a wide variety of areas.

With almost 100 years of experience in the fields of machine building and automation, we are working on tomorrow's intelligent production today.

Furthermore, thanks to our extensive application expertise, we provide you with a broad product range for applications in the automotive industry and the process industry.

Your advantages

- ☑ Many years of experience, innovative solutions, and the latest technologies
- ☑ Member of all key standardization committees
- ☑ Comprehensive knowledge of legal safety
- ☑ A large number of TÜV-certified employees worldwide
- ☑ Active participation in steering committees and research projects

Safety technology for your needs

At home in machine building

Phoenix Contact has close ties with the machine building industry. Because we build our machines ourselves in-house, we completely understand your daily challenges.

We provide:
- A broad range of safety technology, approved globally in accordance with EN ISO 13849-1 and EN 62061
- A high level of sensor compatibility and easy installation for the fast and economical realization of your safety concepts

Experience in the automotive industry

As a long-term partner of the Automotive Industry, Phoenix Contact provides fully developed automation solutions for robust, open, and consistent automation solutions.

We provide:
- A broad range of safety technology, approved globally in accordance with EN ISO 13849-1 and EN 62061
- Comprehensive diagnostic options
- Reliable automation for high-end applications
- No imperfections on the end product thanks to the use of PWIS-free components

Partner for the process industry

With groundbreaking solutions in connection and automation technology, Phoenix Contact is your key partner for superior availability in the process industry.

We provide:
- ATEX-certified, robust safety technology
- Safe components for the use in furnaces (in accordance with IEC 61508/61511 and EN 50156) and in shipping (in accordance with Germanischer Lloyd (GL))
- Comprehensive diagnostic options

Product portfolio

We make functional safety easy. From non-contact safety switches through to complex controllers, all safety products from Phoenix Contact are SIL-certified. You can install and configure the modules easily.

Benefit from the comprehensive service offered by our certified safety experts. With our comprehensive services, we can help you to meet all machine safety requirements.

Web code: #0299

Safety switch

Use our non-contact safety switches with RFID technology for intelligent safety door and position monitoring.

Safety relay modules

If you require just a small number of safety functions, you can choose from our large range of safety relays, safe signal conditioners, and safe motor starters.

Configurable safety systems

The PSRmodular configurable safety system is a flexible safety solution for monitoring your machine or system.

Safe I/Os

Integrate functional safety into your existing network, whether in the control cabinet or in the field. With SafetyBridge Technology, the safety function is processed directly in the I/O modules.

Safe control technology

With our safe high-performance controllers, you can integrate reliable functional safety into PROFIsafe networks for applications with special demands on safety and availability.

Safe power supplies

Our high-performance QUINT POWER power supplies ensure superior availability of your system and satisfy all functional safety requirements.

Non-contact safety switches

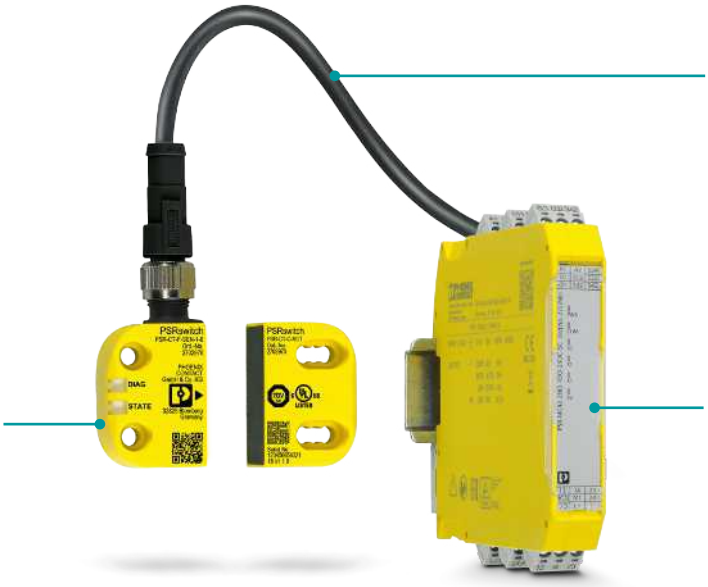
The compact PSRswitch is an electronic, coded safety switch for flexible safety door and position monitoring. Thanks to the integrated RFID technology and intelligence, it provides maximum protection against manipulation and the highest level of safety in accordance with EN ISO 13849 and EN ISO 14119. You receive a cost-effective complete solution with compatible evaluation units and sensor/actuator cabling.

Web code: #1940

Your advantages

- Compact design for flexible mounting on doors and hatches
- Safe series connection of up to 30 safety switches in a two-channel design
- M12 for easy installation and maintenance
- Three types of RFID coding for maximum manipulation protection
- Restart function locally on the switch saves wiring expenditure

Intelligent safety switch system with IO-Link



RFID

PSRswitch

RFID coded, non-contact safety switch

SAC cabling

Easy installation with M12 male connectors and SAC cables

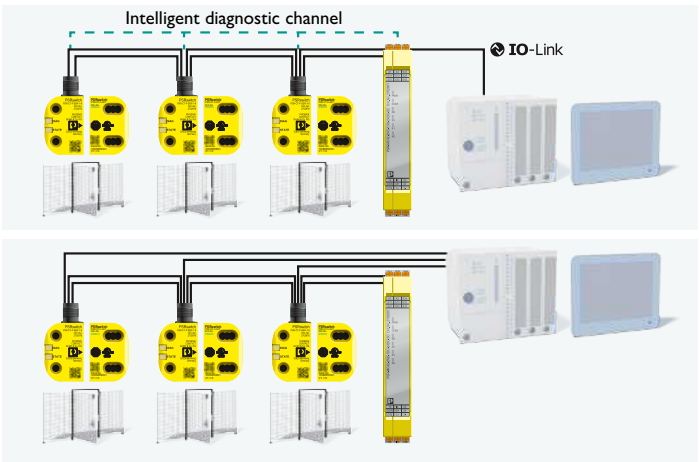
IO-Link

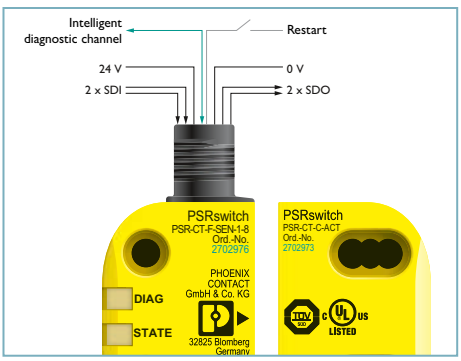
PSRmini

Highly compact safety relay with IO-Link interface

Integrated diagnostic channel

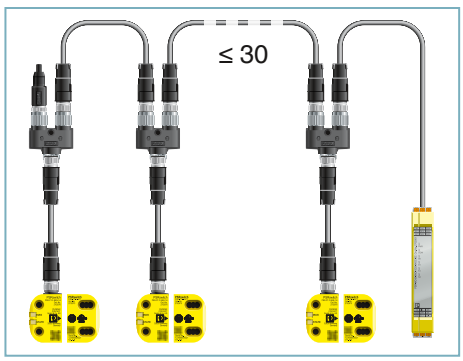
Our safety switch system comprises the PSRmini evaluation unit and the PSRswitch safety switches. The safe series connection is in a two-channel design. In parallel to this, status information on the individual switches is transmitted to the PSR-MC42 PSRmini safety relay via the integrated diagnostic channel. The safety relay transmits the non-safety-relevant diagnostic data of the switch to the controller via IO-Link. The data can then be evaluated centrally there.





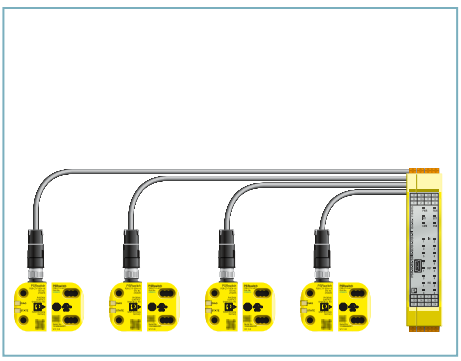
Smart sensor

The sensor has the properties of a safety relay. LEDs indicate the current status of the sensor at all times.



Series connection up to PL e

Up to 30 safety switches can be safely connected in series with PL e in accordance with EN ISO 13849.



Safe individual wiring

You can wire the safety switches individually. PSRmodular and safe I/Os are also suitable evaluation units.

Safety relays

With the PSRmini and PSRclassic safety relays from Phoenix Contact, you can implement all safety functions for applications where the motto is one function, one device. The safety relays are compatible with many signal generators such as emergency stop units, safety door switches, and light grids. The modules are available in various sizes, with various connection technologies and a wide range input.

Web code: #1944

Relay Technology

Designed by PHOENIX CONTACT

Your advantages

- Space savings of up to 70% with the compact design
- Relay technology developed in-house features proven safety thanks to force-guided relay contacts
- High level of scalability, starting at just one enable contact
- Compatibility with many safety signal generators

Safety relays for machine building

Highly compact PSRmini safety relays

PSRmini safety relays are the narrowest on the market. With overall widths of just 6 and 12 mm, we provide you with proven safety thanks to relay technology developed in-house with force-guided contacts. Thanks to an innovative DIP switch concept, you can implement selected settings directly on the module. The needs-based structure starting at one enable path also ensures increased flexibility of your application without limiting performance.

Main features

- Overall width 6 mm and 12 mm
- Proven safety, thanks to force-guided relay contacts
- TÜV-certified
- Approvals for all global markets
- PL e in accordance with ISO 13849 and SILCL 3 in accordance with IEC 62061
- High level of scalability, starting at just one enabling path

PSRclassic conventional safety relays

The PSRclassic safety relays have a long proven track record. Thanks to the 2-channel wiring and force-guided contacts, you can reliably switch functions such as two-hand controllers or light grids. Screw or spring connection technology and status LEDs ensure fast wiring of contacts and easy diagnostics.

Main features

- Overall width starting at 17.5 mm
- Large selection of versions
- Proven safety, thanks to force-guided relay contacts
- TÜV-certified
- Approvals for all global markets
- PL e in accordance with ISO 13849 and SILCL 3 in accordance with IEC 62061

Modular safety relay system

Design your safety system exactly as required. Our modular safety relays can be extended easily and flexibly based on the modular principle. The PSR-TBUS DIN rail connector combines the master safety relay with up to ten extension modules directly on the DIN rail. This eliminates the need for the usual cross-wiring and configuration.

Main features

- Overall width 22.5 mm
- Can be extended to up to 42 contacts
- Proven safety, thanks to force-guided relay contacts
- TÜV-certified
- Approvals for all global markets
- PL e in accordance with ISO 13849 and SILCL 3 in accordance with IEC 62061

Safe coupling relays

The safe coupling relays with force-guided contacts are SIL-certified and are used for electrical isolation and power amplification. You can choose between the PSRclassic, the market-standard version, and the highly compact PSRmini coupling relay. With an overall width of just 6 and 12 mm, the PSRmini coupling relays are the narrowest on the market. Both product families feature coupling relays for emergency shutdown and fire-and-gas applications that are compatible with various safe systems.

Web code: #1945

Relay Technology

Designed by PHOENIX CONTACT

Your advantages

- Space savings of up to 70% with the compact design
- Relay technology developed in-house features proven safety thanks to force-guided relay contacts
- High level of scalability, starting at just one enable contact
- Innovative diagnostic technologies reduce the time necessary for the proof testing required by standards to a minimum

Safe coupling relays for the process industry

PSRmini highly compact safe coupling relays

Thanks to the relay technology developed in-house, the PSRmini coupling relays are the narrowest coupling relays in the world for safe startup and shutdown.
The force-guided contacts allow quick and easy diagnostics. Thanks to visual LED diagnostics, SIL 3-qualified inspection is possible directly at the module. Furthermore, active error messaging to the controller ensures short downtimes during planned maintenance phases.

Main features

- Overall width 6 mm and 12 mm
- Safe diagnostics and easy proof test in accordance with IEC 61508
- Proven safety thanks to force-guided relay contacts
- TÜV-certified
- Approvals for all global markets
- SIL 3 in accordance with IEC 61508 / IEC 61511 / EN 50156

PSRclassic conventional safe coupling relays

In the PSRclassic series, you will find the conventional coupling relays with force-guided contacts for safe shut down. The conventional coupling relays are characterized by a wide range of features and versions. They are compatible with standard safe systems.
With a housing width starting from 17.5 mm, they correspond with market-standard housing dimensions.

Main features

- Overall width starting at 17.5 mm
- Proven safety, thanks to force-guided relay contacts
- Safe diagnostics and easy proof test in accordance with IEC 61508
- Approvals for all global markets
- SIL 3 in accordance with IE 61508 / IEC 61511 / EN 50156

Flexible I/O marshalling system

Smart I/O, i.e., universal I/O modules, offer brand new possibilities for users in the process industry, both for new plants and for retrofits.
The flexible I/O marshalling system from Phoenix Contact helps to make Universal I/O truly “universal” on the interface and marshalling level. The system comprises a combination of a standardized basic module and replaceable input-output accessories (IOAs) with various electrical functions.

Main features

- Flexible channel configuration for special functions with replaceable IOAs
- Easy handling and quick replacement of plug-in IOAs
- Error-free wiring with special codings
- Reliable signal protection with integrated shielding in the base element
- SIL 3 in accordance with IEC 61508

Multifunctional safety relays

PSRmultifunction provides you with one higher-level sensor circuit and two local sensor circuits in one safety relay. You can implement common applications with up to three safety functions such as emergency stop, safety door, and light grid monitoring using just one device. The compatibility with all important signal generators and safety-relevant systems enables a wide range of applications.

Web code: #1547

Relay Technology

Designed by PHOENIX CONTACT

Your advantages

- Space requirement cut by two thirds thanks to three safety functions in one safety relay
- Pre-connected safety functions in the device mean fewer potential wiring errors
- Compatible with all important signal generators and safety-relevant systems

Multifunctional safety relays with three functions

PSRmultifunction safety relays

Three safety functions are combined in one narrow housing. This reduces your costs for warehousing and logistics and saves space in the application. Safety functions already connected in the device reduce potential wiring errors.
Four device versions with three connection technologies are available for monitoring various types of sensors.

Main features

- Overall width 22.5 mm
- Proven safety, thanks to force-guided relay contacts
- No software configuration required
- TÜV-certified
- Approvals for all global markets
- PL e in accordance with ISO 13849 and SILCL 3 in accordance with IEC 62061
- Screw, spring-cage, and Push-in connection
- Compatible connections to the hybrid motor starter

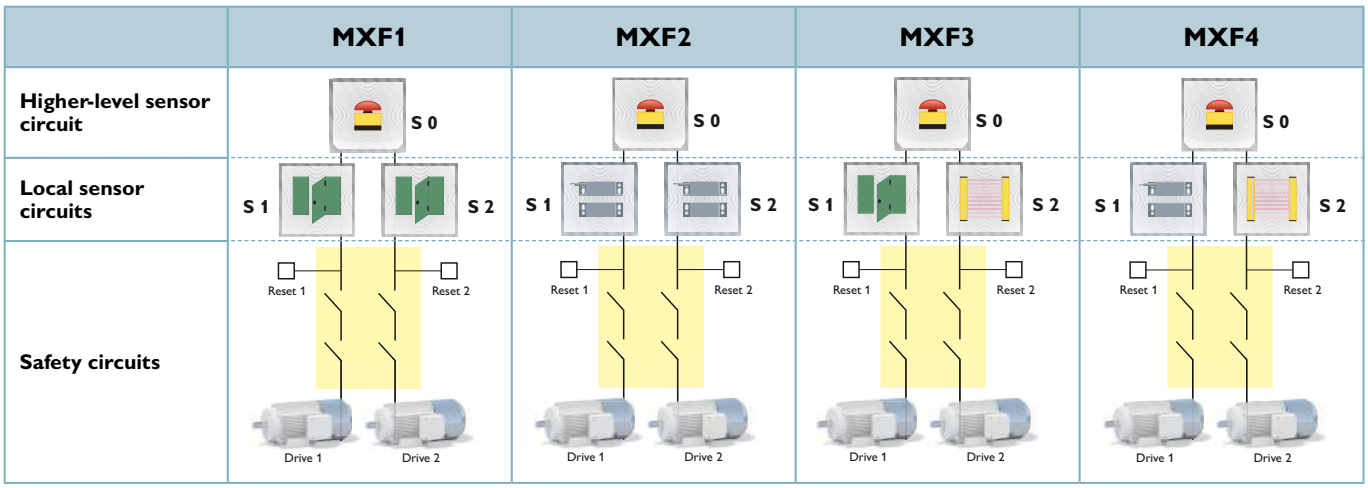
Use of three different safety functions

The PSRmultifunction safety relays have three sensor circuits which are all connected via one or two channels:

- One higher-level sensor circuit S0
- Two local sensor circuits S1 and S2

The local sensor circuits S1 and S2 each cover one function. In the event of an error, you can reactivate both sensor circuits independently of one another.

The higher-level sensor circuit S0 monitors both local sensor circuits. If triggered, the safety circuits protected by S1 and S2 are both shut down.



Electromechanical signal generator (e.g., emergency stop)

Electromechanical signal generator (e.g., mechanical safety door locks)

Signal generator, OSSD (e.g., light grid, transponder switch, failsafe outputs)

Magnetic and non-contact signal generator (e.g. reed contacts)

Over-speed and zero-speed safety relays

Excessive speeds pose a danger to people and machinery. The compact PSRmotion over-speed and zero-speed safety relays shut down rotating machine parts safely in the event of an emergency. Combined with a safety door unit, the PSR-MM25 zero-speed safety relay without sensor ensures that the door remains locked until the dangerous motion stops. The PSR-MM30 over-speed and zero-speed safety relay also monitors the speed and disconnects safely in the event of danger.

Web code: #1546

Relay Technology

Designed by PHOENIX CONTACT

Your advantages

- Space savings of up to 75%, thanks to the compact design
- Relay technology developed in-house features proven safety thanks to force-guided relay contacts
- Easy configuration via buttons on the product
- Fast configuration and live monitoring with the PSRmotion software

Over-speed and zero-speed safety relays for motion monitoring

PSRmotion over-speed and zero-speed safety relays

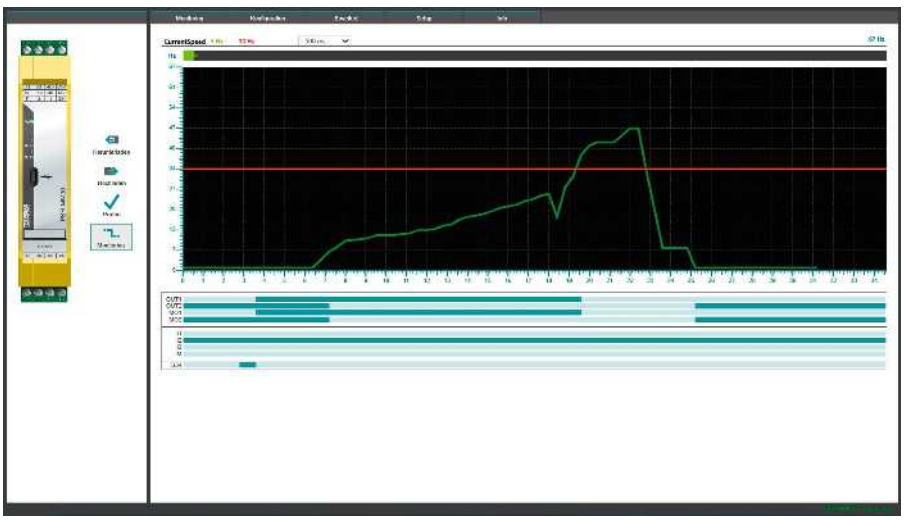
With the combined PSR-MM30 over-speed and zero-speed safety relay, you can monitor up to three different operating modes in addition to zero-speed mode. The PSR-MM30 ensures high system availability, thanks to the reliable measuring procedure. The integrated safety door monitoring system makes it compatible with PSRswitch non-contact safety switches.

Main features

- Overall width 22.5 mm
- Compatible with modern safety encoders up to SIL 3
- Up to SIL 3 and PL e
- Startup via USB connection
- Force-guided relay outputs
- Configurable signal outputs

Live monitoring with the PSRmotion software

The PSR-MM30 over-speed and zero-speed safety relay can be commissioned, configured, and monitored conveniently with the PSRmotion software.
In live measuring operation, you can visualize the motion sequences of your machine. You can download the Windows-based software free of charge. Adaptations are implemented via a USB interface.



PSRmotion
Configuration Software

PSRmotion zero-speed safety relays

The highly compact PSR-MM25 safety relay module monitors the downtime of single and three-phase AC and DC motors without additional sensor technology.
The residual voltage induced by the motor windings is analyzed in order to detect zero speed.

Main features

- Overall width 12.5 mm
- Easy startup via configuration button
- Can be used for machines with or without frequency converters
- Force-guided relay outputs
- Two signal outputs

Safe signal conditioners

Reliable and safe: MACX Analog signal conditioners provide you with comprehensive solutions for safe, interference-free analog and digital signal processing. In addition to explosion protection for all zones and material groups, MACX Analog provides functional safety in accordance with IEC/EN 61508 (SIL) and EN ISO 13849 (PL).

Web code: #1137

Your advantages

- Safe and reliable: International Ex approvals and functional safety in accordance with SIL and PL
- High signal quality with safe electrical isolation and a long service life with low self-heating
- Overall width of just 12.5 mm for single- and two-channel standard functions
- Easy 24 V power bridging with group error messaging or wide-range input up to 230 V AC/DC
- Service-friendly connection technology: coded, plug-in terminal blocks

Signal conditioners with functional safety and explosion protection

Functional safety for the process industry and machine building and systems manufacturing

Phoenix Contact meets the demands of functional safety in accordance with IEC/EN 61508. The product family has a safety integrity level of SIL 2 through to SIL 3. Selected MACX Analog signal conditioners are also certified in accordance with EN ISO 13849-1 and provide a performance level starting from PL c through to PL d.

Maximum explosion protection
All MACX Analog signal conditioners are suitable for installation in zone 2. Furthermore, the Ex i signal conditioners are ATEX and IECEx-approved. They can therefore be used universally for all Ex zones and all material groups.

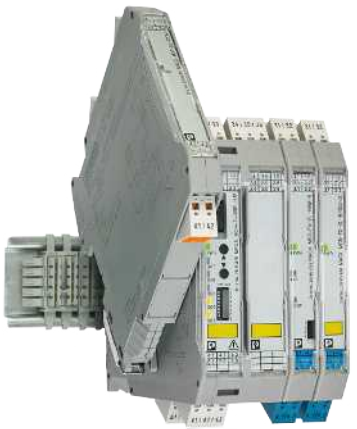
MACX Analog signal conditioners for your application

With MACX Analog you have a comprehensive product range available that covers all functions:

- Repeater power supplies and input signal conditioners, output signal conditioners, input signal conditioners
- Signal duplicators
- Measuring transducers for potentiometer, analog, and temperature signals
- Solenoid drivers
- Threshold value switch

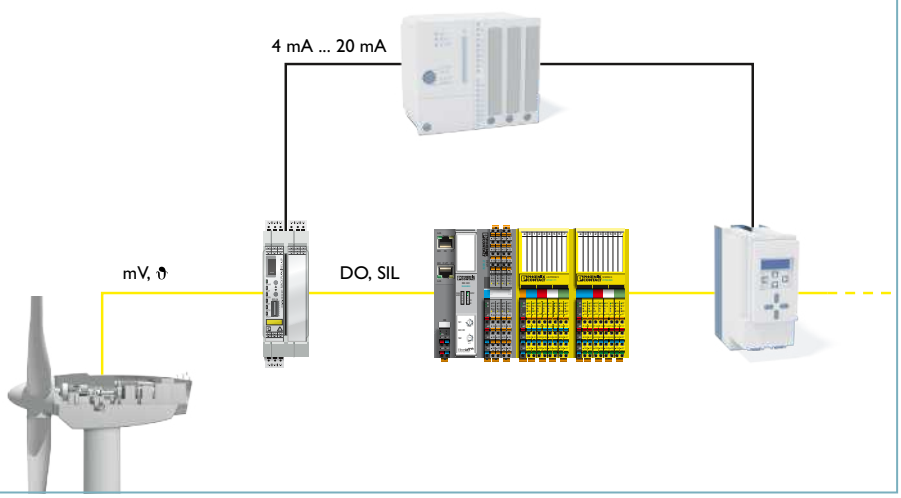
Main features

- SIL 2 through to SIL 3 in accordance with IEC 61508
- Selected devices also with PL d in accordance with EN ISO 13849-1
- Ex-approvals: ATEX, IECEx, and additional national approvals
- Overall width of just 12.5 mm for single- and two-channel standard functions
- Power bridging via DIN rail connector possible
- Versions with wide range supply



Safety-relevant temperature monitoring

The MACX T-UIREL universal temperature transducer has three switching outputs, in addition to an analog output. The safety-relevant switching output, to which two relays are connected, switches limit values directly and safely without an additional safety controller.



Safe hybrid motor starters

The CONTACTRON safe hybrid motor starters combine up to four functions in one device: emergency stop, motor starter, reversing function, and motor protection against overload. In addition to standard devices for parallel wiring, network-capable versions are also available that can be integrated into fieldbus environments.

Web code: #0568

Your advantages

- Safe shutdown with integrated safety function up to SIL 3 and Category 3/PL e
- Space savings of up to 89% with the narrow design with an overall width of 22.5 mm
- Service life up to 10 times longer, thanks to gentle switching with CONTACTRON hybrid motor starter technology
- Adjustable motor protection with bimetal function up to 9 A
- Easy wiring with an integrated locking circuit and load wiring

Safe motor starters for modern motor control

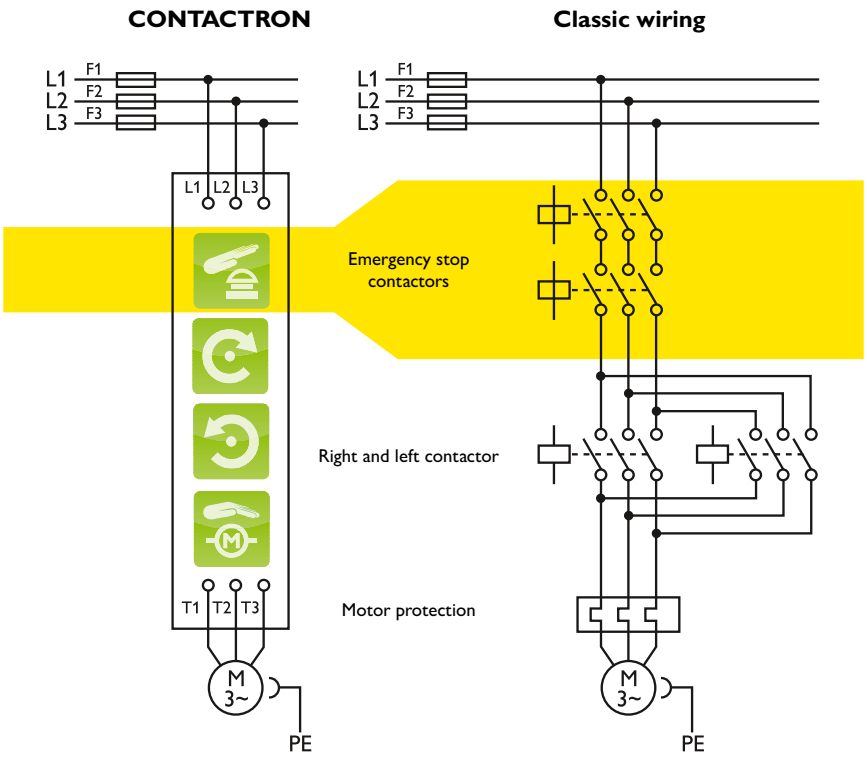
Intelligent switching and reliable protection

Emergency stop
The integrated safety function allows it to be used in safety-relevant emergency stop applications.

Forward running
Easy control directly via 24 V PLC output cards or 230 V AC signal.

Reverse running
Optional: reversing function including locking circuit and load wiring.

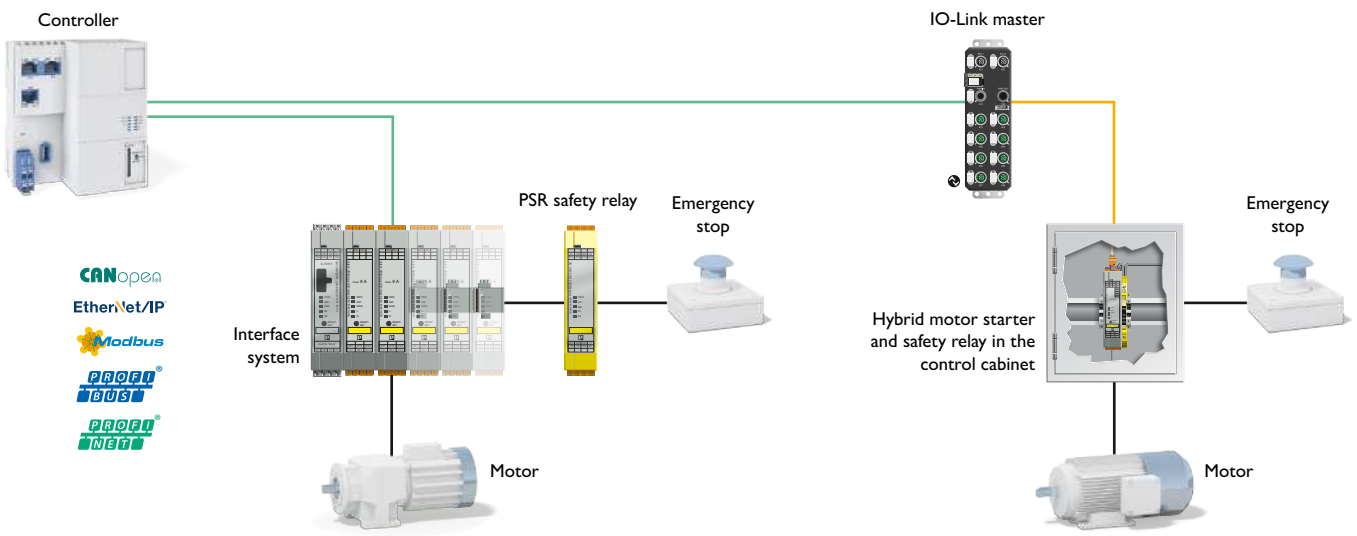
Motor protection
Convenient protection with the electronic motor protection relay with automatic and remote reset function.



Consistent networking via the interface system or IO-Link

The new network-capable versions allow consistent communication between the field and the control level.

It can be integrated into all common fieldbus systems through the interface system or IO-Link.



Configurable safety systems

With configurable safety systems from Phoenix Contact, you can adapt your safety technology so it is tailored to your needs. Use our high-performance basic modules as a stand-alone solution or extend the system flexibly with extension modules including the monitoring of motion and analog value data. Our configurable safety systems combine functionality and flexibility. At the same time, they close the gap between simple safety relays and programmable safe controllers.

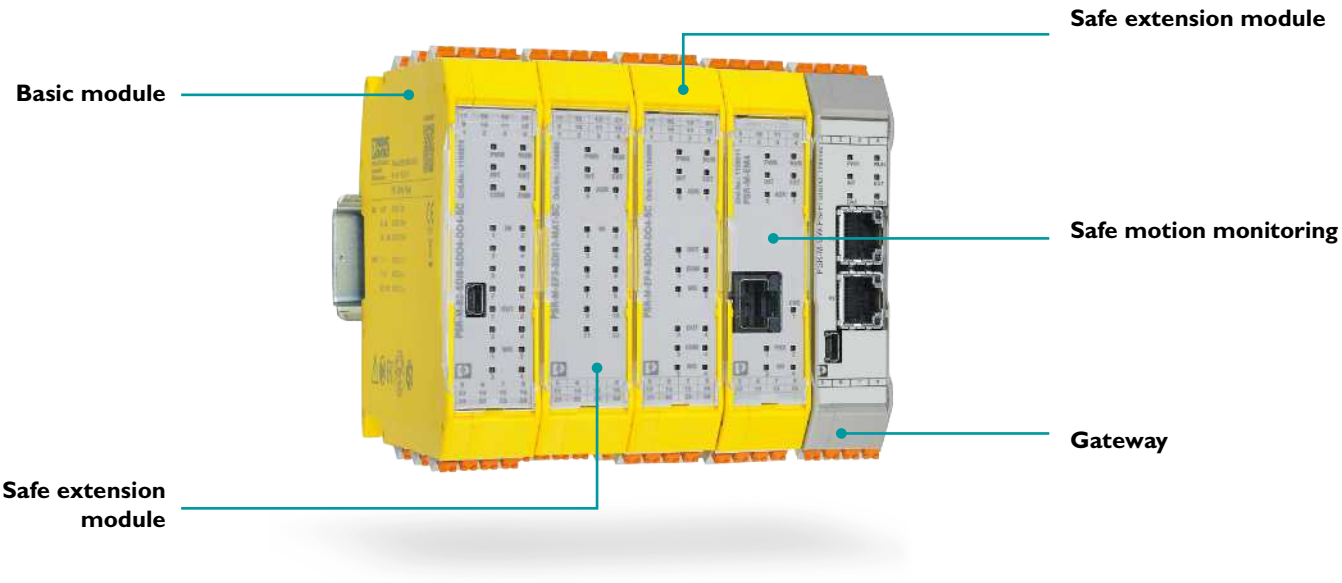
Web code: #1257

CANopen
EtherCAT
PROFINET
PROFIBUS
CC-Link
DeviceNet
Modbus
EtherNet/IP

Your advantages

- Cost-effective safety solution with a high level of adaptability to individual requirements
- Fast startup, thanks to easy hardware and software configuration
- Minimized machine downtimes with comprehensive, easy-to-understand diagnostics

Configurable safety system for your specific application

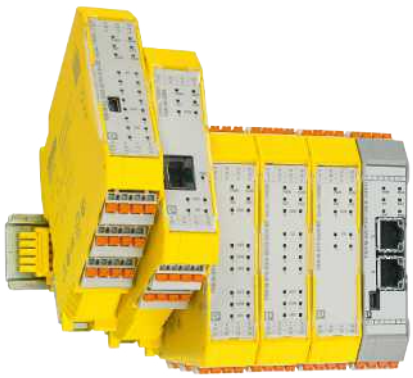


PSRmodular safety system

PSRmodular is a flexible safety solution for monitoring your machine or system. Alongside monitoring classic safety functions such as emergency stop signals, safety door locks, light grids, and safety shut-off mats, safety functions such as speed, downtime, direction of rotation, and secure analog value monitoring can also be realized.

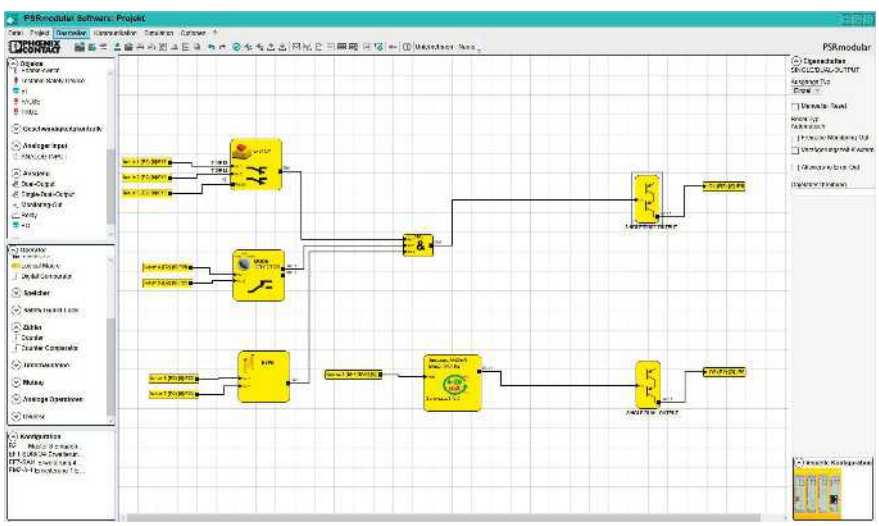
Main features

- Modular extension possible up to 160 I/Os
- Applications up to PL e or SIL 3
- TÜV-certified
- Overall width 22.5 mm
- COMPLETE line standard
- 17 extension modules
- Push-in Technology
- TBUS DIN rail connectors



Comprehensive diagnostic functions that can be configured easily

PSRmodular provides you with comprehensive function and diagnostic options, and can easily be configured without prior programming knowledge. Use our configuration software comprised of preconfigured and TÜV-certified software blocks. Design your safety system easily by drag and drop. A detailed simulation and a reporting function are available for validation.



PSRmodular
Configuration Software

Safe I/Os

With our I/O systems, you can integrate functional safety easily and reliably into your favored network, whether in the control cabinet or in the field. Use our safe PROFIsafe I/O modules as usual in combination with your safety controller in the PROFINET or PROFIBUS environment. As an alternative, SafetyBridge Technology allows you to realize decentralized safety solutions easily and regardless of network, without the need for a safety controller.

Web code: #1544

PROFIsafe

SafetyBridge Technology

Designed by PHOENIX CONTACT

EtherCAT

EtherNet/IP

sercos the automation bus

Modbus

PROFINET

PROFIBUS

Your advantages

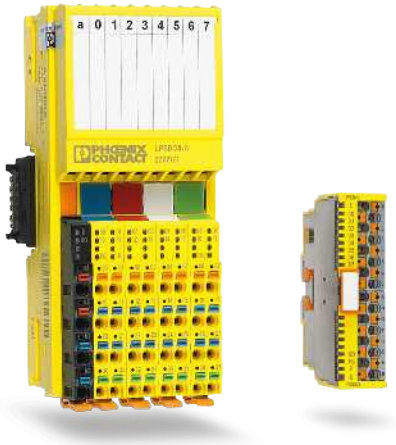
- Easy integration into all common networks through PROFIsafe or SafetyBridge communication
- Realize cost-effective safety solutions without additional safety controllers thanks to SafetyBridge Technology
- Maximum system availability with real-time access to safety-related status and diagnostic information

Safe I/Os for the control cabinet and field installation

Safe I/Os for the control cabinet: Axioline

Axioline F
Axioline F is the I/O system with a block-based modular design. Thanks to its particularly short response times, Axioline F is ideal for fast and synchronous processes. With the safe SafetyBridge Technology I/O modules, you can easily realize safe, decentralized communication solutions without safe PLCs. In PROFIBUS and PROFINET networks, the PROFIsafe modules are used to acquire and output safety-related signals.

Axioline Smart Elements
Axioline Smart Elements are compact, plug-in, and system-independent I/O elements. You can combine safe input and output modules as well as non-safe Smart Elements on one backplane to save space. Comply with the highest safety requirements up to PL e and SIL 3 with our TÜV-certified and PROFIsafe-capable I/O modules.



Safe I/Os for the control cabinet: Inline

Inline offers not only a particularly large choice of function terminals, but also allows you to use a tailor-made number of channels on modules and supports local bus extension to the field thanks to the branch terminal. You can therefore create your own individual I/O solution. The Inline ECO Safe I/O terminal is particularly cost-effective. It takes on the function of two safety relays and disconnects connected standard output modules in the event of an error.

Main features
- Maximum flexibility thanks to a large selection of I/O terminals, function terminals, bus couplers, and controllers
- The narrow overall width and tailored number of terminal channels save space in the control cabinet
- Local bus extension into the field without an additional bus coupler thanks to the branch terminal

Safe I/O box for field installation

The Axioline E Safe IP67 I/O box is the new addition to the modular Axioline E system. The I/O box allows you to process safe inputs and outputs outside of the control cabinet.
You can use the I/O box in SafetyBridge Technology and PROFIsafe applications. The safety protocol is transmitted to the standard network via an IO-Link master. Thanks to the SPEEDCON fast locking system, sensors and actuators can be connected very quickly and easily.

Main features
- 8 safe inputs
- 4 safe outputs
- Integrated IO-Link interface
- Fast connection with SPEEDCON fast locking system

IO-Link

Safe control technology

High-performance controllers (Remote Field Controllers) allow you to realize automation applications with special demands on safety or availability, for example. For applications with PLCnext Technology requiring a high safety level, choose our safety controller up to SIL 3 to be on the safe side.

Web code: #1543

PROFIsafe

PROFINET

PLCnext Technology
Designed by PHOENIX CONTACT

Your advantages

- Integration of PLCnext Technology
- Standard and safety programming with PLCnext Engineer
- Realization of the highest safety requirements in accordance with SIL 3 or PL e respectively
- Connection to Proficloud and use of apps from the PLCnext Store

Safe control technology for complex systems

Safe PLCnext Control

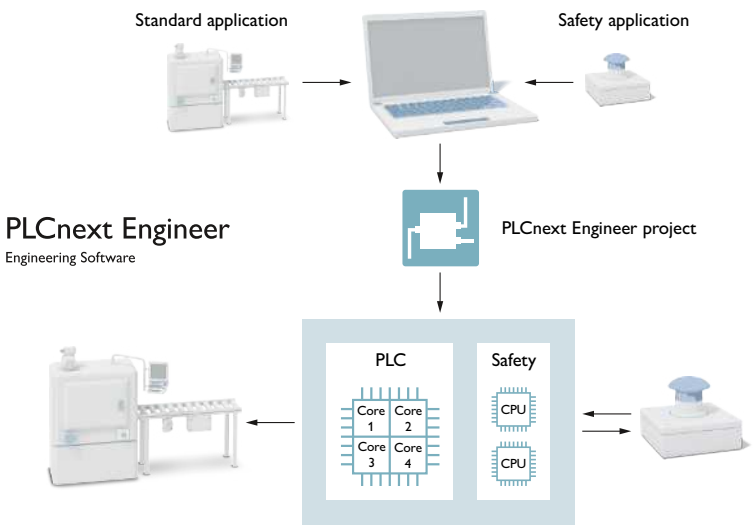
The first PLCnext Control that combines standard and safety-relevant calculations in one device. As a part of the open PLCnext Technology ecosystem, parallel programming based on established software tools is possible. This allows you, for example, to freely combine functions in accordance with IEC 61131-3 with routines from C/C++, C#, or MATLAB® Simulink®, and to merge them to create a complete system. You can connect to Proficloud directly and integrate individual cloud services.

Main features

- PROFINET controller and device
- Support for PROFIsafe Profile V2.6.1
- Safety CPU:
  1 x ARM® Cortex® A9, 800 MHz,
  1 x ARM® Cortex® A8, 600 MHz
- Standard CPU: Intel® Core™ 5-6300U (dual core, 2.4 GHz)
- M2M system networking with OPC UA
- Standard and safety programming with PLCnext Engineer

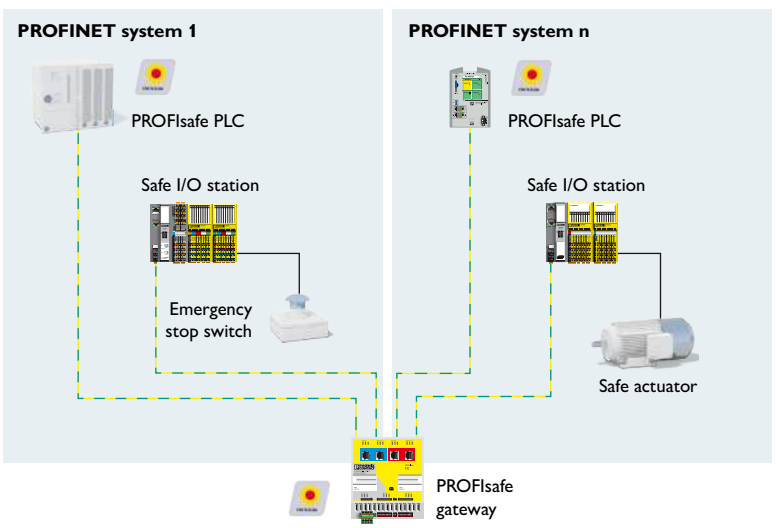
Safety programming

With PLCnext Engineer, it is possible to perform both the standard PLC programming and the programming of all safety functions in one editor. The PLC and safety programming are then installed on the PLCnext Control device in one project. This extracts and automates the programs in two parts – the PLC code and the safety code.



Coupling PROFINET/PROFIsafe systems

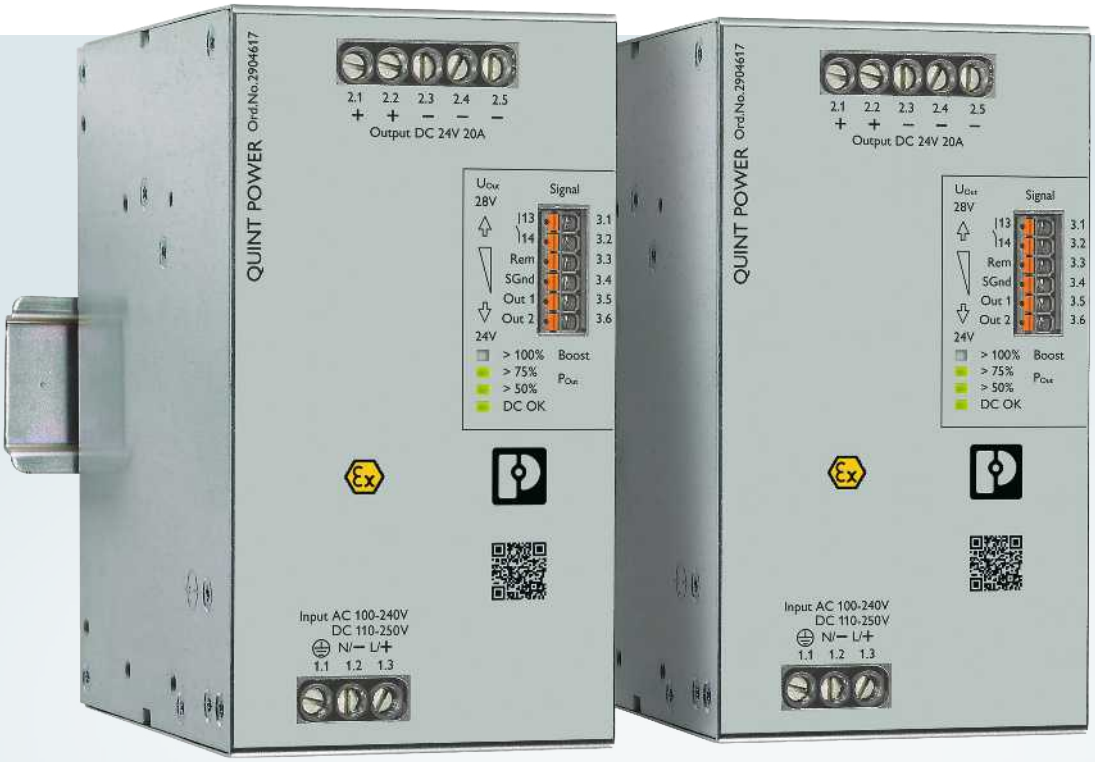
The safe PROFINET gateway represents two PROFIsafe devices. Standard I/O process data is exchanged between two PROFIsafe systems via PROFINET, and safe I/O process data is exchanged via PROFIsafe. This makes it possible to implement manufacturer-neutral emergency stop concepts across systems. The PROFINET gateway supports safety functions up to SIL 3 and PL e.



Safe power supplies

The high-performance QUINT POWER power supplies ensure superior availability of your system thanks to high-level functionality. QUINT POWER satisfies the requirements in accordance with functional safety (SIL) and ensures maximum operational safety. Whether in parallel operation or connected to different phases, the load is reliably supplied even in the event of problems with the input voltage.

Web code: #1513



Your advantages

- Superior system availability, thanks to SFB Technology and preventive function monitoring
- Safe supply for your application with SIL certification in accordance with IEC 61508 and IEC 61511
- Fully functional monitoring with redundant system

Power supplies with maximum functionality

QUINT POWER for maximum operational safety

The QUINT POWER Plus version satisfies the requirements in accordance with functional safety (SIL 3, HFT = 1 in accordance with IEC 61508 and IEC 61511), and can therefore be installed in safety-related applications.
The TÜV-certified double OVP (Overvoltage Protection) switches the output off in the event of an error in order to protect the load against overvoltages.

Thanks to an integrated decoupling MOSFET, this power supply is suitable for 1+1 and n+1 redundancy and increases system availability.

With a protective coating, ATEX, IECEx, and HazLoc approvals, it can also be used within potentially explosive areas.

The solution is rounded out with an approved temperature range of -40°C to +75°C.

Main features

- Strongest output side, thanks to static boost, dynamic boost and SFB Technology
- Robust input side with integrated gas discharge tube
- Comprehensive signaling with analog, digital, and relay contact
- 1+1 and n+1 redundancy with integrated decoupling MOSFET
- Double OVP with SIL 3 certification in accordance with IEC 61508 and IEC 61511
- Protective coating and ATEX/IECEx approval
- UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)
- Wide temperature range of -40°C to +75°C

SIL IEC 61508

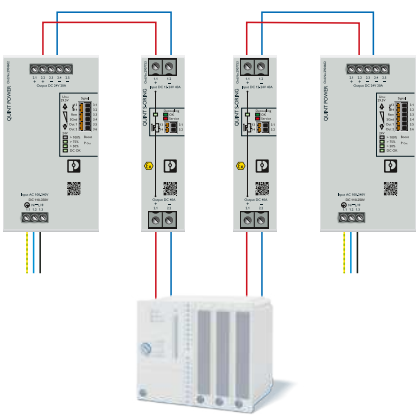
Redundant system for functional safety

Phoenix Contact provides you with two options for the design of a safe, redundant power supply system. In both cases, the functional safety requirements are satisfied with a safety integrity level of SIL 3, meaning that use in safety-related applications is possible.

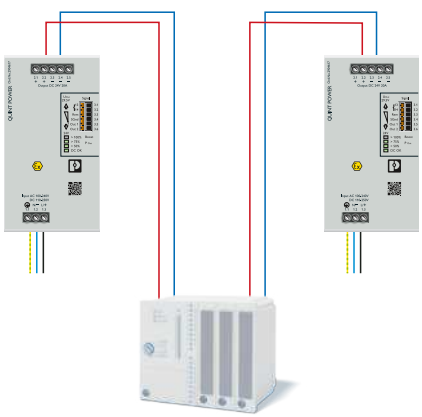
Whether in parallel operation or connected to different phases, the load is reliably supplied with power even if problems arise with the input voltage. Moreover, both systems provide comprehensive preventive function monitoring in order to detect errors early and therefore increase system availability.

In addition to symmetrical load distribution, the 1+1 redundant power supply system comprising QUINT POWER 20 A and QUINT POWER Single ORING also provides separate cable routing right through to the consumer.

The QUINT POWER Plus version with integrated decoupling MOSFET for 1+1 and n+1 redundancy does not require an additional redundancy module, therefore saving space and installation costs in the control cabinet.



Safe power supply system with QUINT POWER Single ORING



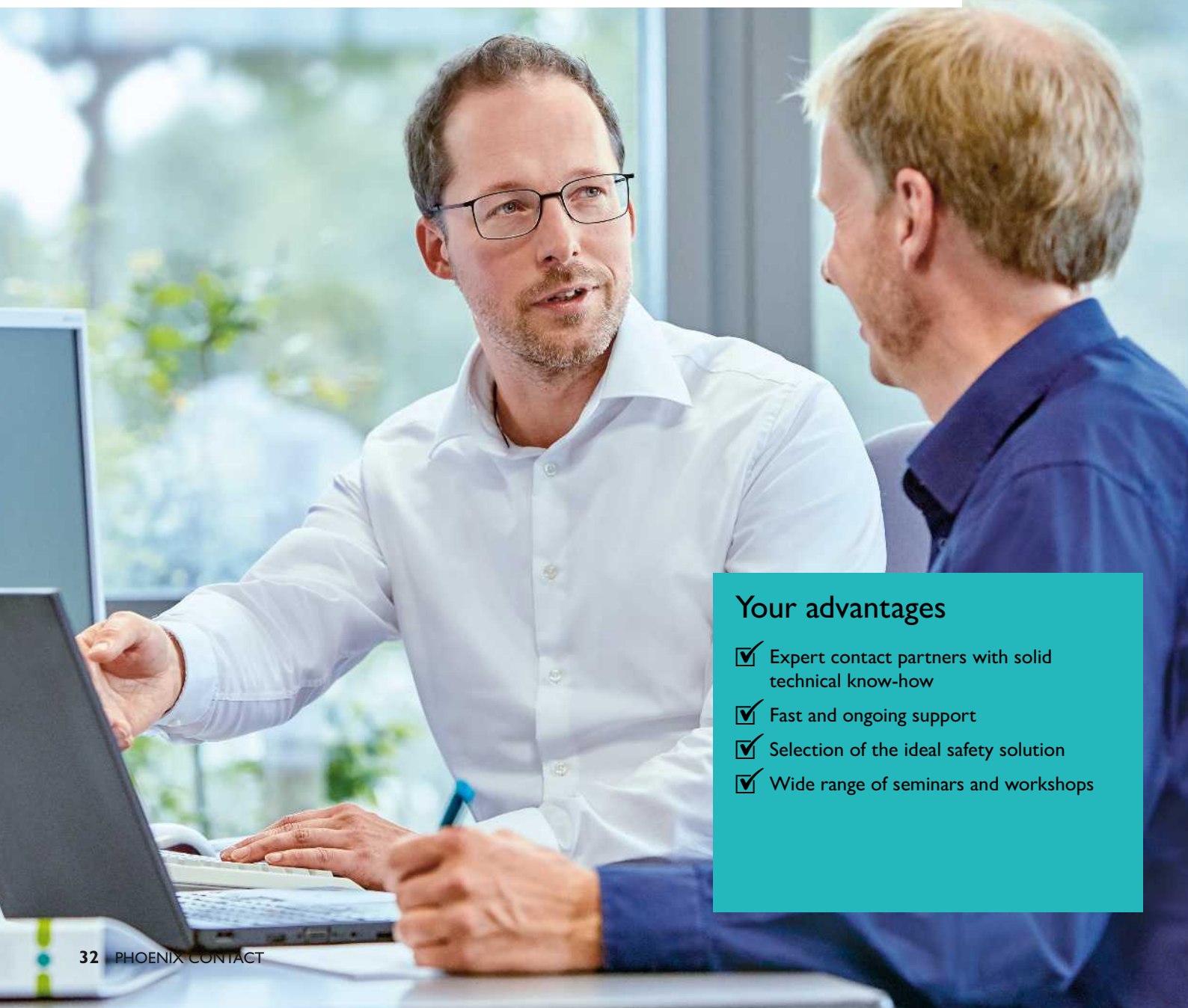
Safe power supply with integrated decoupling MOSFET

Services and support

We will support you in all aspects of functional safety with our flexible range of services. Choose between industry-specific services for machine and system safety or services for safety in the process industry.

Our certified safety experts will be happy to advise you and support you during the necessary work steps and in the creation of the verification documentation.

Web code: #1075



Your advantages

- Expert contact partners with solid technical know-how
- Fast and ongoing support
- Selection of the ideal safety solution
- Wide range of seminars and workshops

Range of services for machine and system safety

Consultation

We provide advice on various subjects during the planning and implementation of your system:

- Design of the safety lifecycle: standards and their implementation
- Machinery Directive
- Retrofit of machines and systems
- Interlinking machinery

Engineering

To assess the safety integrity, we determine the PL or SIL of the safety functions with the help of your technical documentation. These must be sufficiently robust to withstand random errors. In the case of Machinery Directive requirements, we implement the entire safety lifecycle process, from the risk assessment all the way through to the operating instructions.

Product support

We will provide support regarding any Phoenix Contact safety hardware and software questions. You can contact our support team about anything – from a preliminary clarification of the technical aspects through planning and implementation to operation.

Seminars

We provide instruction and practical training that is tailored to your individual requirements, e.g.:

Safety application software:

- Requirements for safety-related software
- Specification of safety requirements and software
- Implementation of safety functions
- Development of function blocks

Functional safety in the process industry in accordance with EN 61511:

- Risk analysis
- Safety Lifecycle
- Creation of PCE safety functions

Demands on safety in the process industry

Design guidelines relating to functional safety are in place for the requirements on the safe operation of systems in the process industry. The internationally harmonized procedure is described in IEC 61511.

A significant component of this is the safety lifecycle in conjunction with functional safety management.

Product overview

Legend for applications, outputs, and safety approvals


Emergency stop


Transponder switch


Safety door switch

Operating mode selector switch


Enabling current path / N/O contact


Safety door switch, mechanical


Start/restart


Two-hand function


Contactor control


N/C contact


Light grid


Initiators


Muting


Encoder


Changeover contact


Solenoid switch

Extended temperature range


Enable switch


Sensor-free motor monitoring


Contact with dropout delay


Safety shut-off mats

PSRswitch: Non-contact safety switches					
Type	**Description**	**Coding type / function**	**Connection technology**		
			Screw connection	Spring-cage connection	M12 connection
PSR-CT-F-SEN-1-8	Safety sensor	Fixcode: The sensor accepts a single actuator. This actuator is taught in by the user during commissioning. It is not possible to teach in further actuators.	–	–	2702976
PSR-CT-C-SEN-1-8		Unicode: The sensor accepts one actuator. The actuator is taught in by the user during commissioning. It is possible to teach in an unlimited number of further actuators in succession. Previously taught in actuators are blocked by the sensor. They can no longer be used.	–	–	2702972
PSR-CT-M-SEN-1-8		Multicode: The sensor accepts all actuators. It is not necessary to teach them in during commissioning.	–	–	2702975
PSR-CT-C-ACT	Actuator	Coded, suitable for all sensor coding types	–	–	2702973
PSR-MC42	Safety relay	With integrated IO-Link interface	2702901	2702902	–
SAC-8PY-M/2XF BK 1-PSR	Y distributor	Type 1 for series connection of PSR-CT safety circuits	–	–	1054338
SAC-8PY-M/2XF BK 2-PSR		Type 2 for manual startup behavior	–	–	1054339
SAC-8PY-M/2XF BK 3-PSR		Type 3 for integrated diagnostics via signal contact with PSR-CT safety circuits	–	–	1054341
SAC-5P-M12MS BK BR 1-2-4	Bridge plug	Dummy plug for every sensor circuit	–	–	1054366

You will find a large selection of SAC cables in our online configurator at phoenixcontact.com:

Web code: #1975

PSRmini: Highly compact safety relays for machine building

Type	Applications								Output contacts				Safety approvals		Over-all width	Connection technology	
													PL in accordance with EN ISO 13849-1	SILCL in accordance with EN 62061	In mm	Screw connection	Push-in connection
PSR-MS20[1] 24 V DC	●	●	–	●	–	–	–	A	1	–	–	1	c[4]	1[4]	6.8	2904950	–
PSR-MS21 24 V DC	Coupling module for safe controllers						–	A	1	–	–	1	e	3	6.8	2702192	–
PSR-MS25[1] 24 V DC	●	●	–	●	–	–	–	M	1	–	–	1	c[4]	1[4]	6.8	2904951	–
PSR-MS30 24 V DC	●	●	–	●	–	●	–	A	1	–	–	–	e	3	6.8	2904952	–
PSR-MS35 24 V DC	●	●	–	●	–	●	–	M	1	–	–	–	e	3	6.8	2904953	–
PSR-MS40[3] 24 V DC	●	●	–	–	–	●	–	A	1	–	–	1	e	3	6.8	2904954	–
PSR-MS45[3] 24 V DC	●	●	–	–	–	●	–	M	1	–	–	1	e	3	6.8	2904955	–
PSR-MS50[2] 24 V DC	●	●	–	●	–	–	–	A	1	–	–	1	e	3	6.8	2904956	–
PSR-MS55[2] 24 V DC	●	●	–	●	–	–	–	M	1	–	–	1	e	3	6.8	2904957	–
PSR-MS60[3] 24 V DC	●	●	●	●	–	●[10]	–	A	2	–	–	–	e	3	6.8	2904958	–
PSR-MC20[1] 24 V DC	●	●	–	●	–	–	–	A/M	3	–	–	1	c[4]	1[4]	12.5	2700466	2700467
PSR-MC30 24 V DC	●	●	–	●	–	●	–	A/M	2	–	–	1	e	3	12.5	2700498	2700499
PSR-MC31 24 V DC	●	●	●	●	–	●	●	A/M	2 (pnp)	–	–	1	e	3	12.5	1015520	1015503
PSR-MC32 24...230 V DC	●	●	●	●	–	●[10]	–	A/M	3	–	1	–	e	3	22.5	2700524	2700525

[1] 1-channel sensor circuit [2] Antivalent sensor circuit [3] Without cross-circuit detection [4] Up to PL e / SILCL 3 possible depending on the application
[5] EN 81 approval [6] In conjunction with suitable evaluation device [7] Non-delayed contacts: Cat. 4 / PL e, SILCL 3; contacts with dropout delay: Cat. 3 / PL d, SILCL 2
[8] Type IIIA in accordance with EN 574 [9] Type IIIC in accordance with EN 574 [10] Also compatible with PSRswitch [11] IO-Link device [12] Safety relay for CONTACTRON pro
A = autostart, M = manual, monitored start

Product overview

PSRmini: Highly compact safety relays for machine building																	
Type	**Applications**								**Output contacts**				**Safety approvals**		**Over-all width**	**Connection technology**	
													PL in accordance with EN ISO 13849-1	SILCL in accordance with EN 62061	In mm	Screw connection	Push-in connection
PSR-MC34 24 V DC	●	●	–	●	–	●	–	A/M	3	–	–	1	e	3	12.5	2700540	2700548
PSR-MC37[5] 24 V DC	●	●	–	●	–	–	–	A	3	–	1	1	e	3	22.5	2702411	2702412
PSR-M38[12] 24 V DC	●	●	●	●	–	●[10]	–	A/M	2	–	–	1	e	3	22.5	1009831	1009832
PSR-MC40[3] 24 V DC	●	●	●	●	–	●[10]	–	A/M	3	–	–	1	e	3	12.5	2700569	2700570
PSR-MC42[11] 24 V DC	●	●	●	●	–	●[10]	–	A/M	2	–	–	1	e	3	17.5	2702801	2702902
PSR-MC43[11] 24 V DC	●	●	●	●	–	●[10]	–	A/M	2 (pnp)	–	–	1	e	3	17.5	1087561	1087569
PSR-MC45 24 V DC	●	●	●	●	–	●	–	A/M	3	–	–	1	e	3	22.5	1082024	1082029
PSR-MC50[2] 24 V DC	●	●	–	●	–	–	–	A/M	3	–	–	1	e	3	12.5	2700553	2700564
PSR-MC60[8] 24 V DC	–	–	–	–	●	–	–	A	2	–	–	1	c	1	12.5	2700571	2700572
PSR-MC62[9] 24 V DC	–	–	–	–	●	–	–	A	2	–	–	1	e	3	12.5	2700574	2700575
PSR-MC70 24 V DC	●	●	●	●	–	●[10]	–	A/M	1	1	–	1	c[4]	1[4]	12.5	2702094	2702095
PSR-MC72 24 V DC	●	●	●	●	–	●[10]	–	A/M	1	1	–	1	e	3	12.5	2702096	2702097
PSR-MC73 24 V DC	●	●	●	●	–	●[10]	–	A/M	3	2	–	1	e	2	22.5	1015533	1015526
PSR-MC82 24 V DC	Contact extension						–	–	5	–	1	1	e[6]	3[6]	17.5	2702382	2702383

[1] 1-channel sensor circuit [2] Antivalent sensor circuit [3] Without cross-circuit detection [4] Up to PL e / SILCL 3 possible depending on the application
[5] EN 81 approval [6] In conjunction with suitable evaluation device [7] Non-delayed contacts: Cat. 4 / PL e, SILCL 3; contacts with dropout delay: Cat. 3 / PL d, SILCL 2
[8] Type IIIA in accordance with EN 574 [9] Type IIIC in accordance with EN 574 [10] Also compatible with PSRswitch [11] IO-Link device [12] Safety relay for CONTACTRON pro
A = autostart, M = manual, monitored start

PSRclassic: Conventional safety relays for machine building

Type	Applications							Output contacts				Safety approvals		Connection technology	
												PL in accordance with EN ISO 13849-1	SILCL in accordance with EN 62061	Screw connection	Push-in connection
PSR-ESA2-B 24 V AC/DC	●	●	–	–	–	–	A	4	–	1	–	c[2]	1[2]	2963802	2963954
PSR-ESAM2/3X1-B 230 V AC/DC	●	●	–	–	–	–	A/M	3	–	1	–	c[2]	1[2]	2901430	2901431
PSR-ESAM4/2X1 24 V AC/DC	●	●	–	–	–	–	A/M	2	–	1	–	e	3	2900525	2900526
PSR-ESAM4/3X1-B Voltage variants	●	●	–	–	–	–	A/M	3	–	1	–	e	3	See catalog for ordering data	
PSR-ESAM4/8X1 24 V AC/DC	●	●	–	–	–	–	A/M	8	–	1	–	e	3	2963912	2963996
PSR-ESD-30 24 V DC	●	●	●	●	–	●	A/M	2	2	–	–	e	3	2981800	2981813
PSR-ESD-300 24 V DC	●	●	●	–	–	●	A/M	3	2	1	–	e[4]	3[4]	2981428	2981431
PSR-ESL4[1] 24 V AC/DC	●	●	●	–	–	●	A/M	3	–	1	–	e	3	2981059	2981062
PSR-THC4[5] 24 V AC/DC	–	●	–	–	●	–	A	2	–	1	–	e	3	2963721	2963983
PSR-URML4[1] 24 V DC	Contact extension for OSSD signals							3	–	1	–	e	3	2903583	2903584
PSR-URM4 42 ... 230 V AC/DC	Contact extension							4	–	2	–	e[3]	3[3]	2702924	2702925
PSR-URM4 24 V AC/DC	Contact extension							5	–	2	–	e[3]	3[3]	2963734	2964005
PSR-URM4-B 24 V AC/DC	Contact extension							5	–	2	–	e[3]	3[3]	2981033	2981046

[1] Without cross-circuit detection [2] Up to PL e / SILCL 3 possible depending on the application [3] In conjunction with suitable evaluating device
[4] Non-delayed contacts: Cat. 4 / PL e, SILCL 3, contacts with dropout delay: Cat. 3 / PL d, SILCL 2 [5] Type IIIC in accordance with EN 574
A = autostart, M = manual, monitored start

Product overview

Modular safety relay system															
Type	**Applications**							**Output contacts**				**Safety approvals**		**Connection technology**	
												PL in accordance with EN ISO 13849-1	SILCL in accordance with EN 62061	Screw connection	Push-in connection
PSR-SDC4 24 V DC	●	●	●	●	–	●	A/M	2	–	–	1	e	3	2981486	2981499
PSR-URM4/B 24 V DC	Contact extension							4	–	2	–	e	3	2981677	2981680
PSR-URD3/3 24 V DC	Contact extension							–	4	2[1)]	–	e	3	2981732	2981745
PSR-URD3/30 24 V DC	Contact extension							–	4	2[1)]	–	e	3	2981512	2981525
PSR-URD3/T2 24 V DC	Contact extension							–	4	2[1)]	–	e	3	2981703	2981729
PSR-SIM4	IP20 input extension – interface module for up to four safety sensors													2981936	2981949
PSR-SACB…	IP65 / IP67 input extension – sensor box for up to four safety sensors, available with 5 m and 10 m cable lengths													5 m	2981871
														10 m	2981884

[1)] Delayed, A = autostart, M = manual, monitored start

PSRmini: Highly compact, safe coupling relays for the process industry

Type	Applications	Output contacts			Diagnostics / proof test				Safety approvals					Width	Connection technology	
	Highly compact, safe coupling relays for failsafe controllers:				Visual via LED	Active error acknowledgment via A1[2]	Measurement on the device	Self-monitoring with interlocking	SIL in accordance with IEC 61508 / 61511	SIL in accordance with IEC 50156	ATEX / IECEx / Class I zone 2	G3 in accordance with ANSI / ISA-S71.04	GL	In mm	Screw connection	Push-in connection
PSR-PS20 24 V DC	For safety-related shutdown (ESD)	1	1	1	●	●	●	–	3	3	●	●	●	6.8	2700356	–
PSR-PS21 24 V DC		1	1	1	●	●	●	–	2	2	●	●	●	6.8	2700357	–
PSR-PS22 24 V DC		1	1	–	●	●	●	–	3	3	●	●	●	6.8	2702524	–
PSR-PS23 24 V DC		1	1	–	●	–	●	–	3	3	●	●	●	6.8	2702663	–
PSR-PS40 24 V DC		1	–	1	●	–	–	●	3	3	●	●	●	6.8	2700398	–
PSR-PC20 24 V DC		1	1	1	●	●	●	–	3	3	●	●	●	12.5	2700577	2700578
PSR-PC32 24 ... 230 V		2	1	–	●	–	●	–	3	3	●	●	●	17.5	2700581	2700582
PSR-PC40 24 V DC		2	–	1	●	●	–	●	3	3	●	●	●	12.5	2700588	2700589
PSR-PC50 24 V DC	For safety-related startup (F&G)	1	–	1	–	●	●	–	3[1]	–	●	–	●	17.5	2904664	2904665
PSR-PC51 24 V DC		1	1	–	–	●	●	–	3	3	●	●	●	17.5	2702522	2702523
PSR-PC52 24 V DC		1	1	–	–	●	●	–	3	3	●	●	●	17.5	1017062	1017064

[1] Low demand mode [2] With suitable controller

PSRclassic: Conventional safe coupling relays for the process industry

Type	Applications	Output contacts			Diagnostics / proof test				Safety approvals					Width	Connection technology	
	Classic, safe coupling relays for failsafe controllers:				Visual via LED	Active error acknowledgment via A1	Measurement on the device	Self-monitoring with interlocking	SIL in accordance with IEC 61508 / 61511	SIL in accordance with IEC 50156	ATEX / IECEx / Class I zone 2	G3 in accordance with ANSI / ISA-S71.04	GL	In mm	Screw connection	Push-in connection
PSR-FSP 24 V DC	For safety-related shutdown (ESD)	1	1	–	–	–	●	–	3	3	–	–	●	17.5	2981978	2981981
PSR-FSP/2x1 24 V DC		2	1	–	–	–	●	–	3	3	–	–	●	17.5	2986960	2986957
PSR-FSP2/2x1 24 V DC		2	1	–	–	–	●	–	2	2	–	–	●	17.5	2986575	2986588
PSR-ESP4 24 V DC		2	1	–	–	–	–	●	1[1)]	–	–	–	●	22.5	2981020	2981017

1) Depending on the application up to PL e / SILCL 3 possible

PSRclassic: Classic safe coupling relays for universal applications

Type	Applications	Output contacts			Safety approvals		Input voltage	Connection technology			
					PL in accordance with EN ISO 13849-1	SILCL in accordance with EN 62061		Screw connection	Spring-cage connection	Screw connection, fixed	Push-in connection
PSR-URM	Coupling relays for universal applications	5	2	–	c	1	24 V AC/DC	2963747	2963970	–	–
							120 V AC/DC	2981402	2981415	–	–
PSR-URM/3X1		3	3	–	c	1	24 V AC/DC	2981839	2981842	–	–
PSR-URM/5X1		5	1	–	c	1	24 V AC/DC	2981952	2981965	–	–
PSR-URM/2X21		–	–	2	c	1	24 V AC/DC	–	–	2981363	–
							120 V AC/DC	–	–	2981376	–
PSR-URM/4X1		4	2	–	c	1	24 V AC/DC	–	–	2981444	2981457

PSRmultifunction: Multifunctional safety relays

Type	Applications							Output contacts		Safety approvals		Connection technology		
										PL in accordance with EN ISO 13849-1	SILCL in accordance with EN 62061	Screw connection	Spring-cage connection	Push-in connection
PSR-MXF1 24 V DC	●	●	–	–	–	–	A/M	4	2	e	3	2902725	2902726	2903253
PSR-MXF2 24 V DC	●	●	–	●	–	–	A/M	4	2	e	3	2903254	2903255	2903256
PSR-MXF3 24 V DC	●	●	●	–	–	●	A/M	4	2	e	3	2903257	2903258	2903259
PSR-MXF4 24 V DC	●	●	●	●	–	●	A/M	4	2	e	3	2903260	2903261	2903262

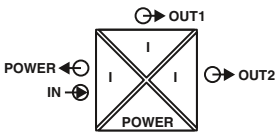
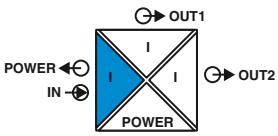
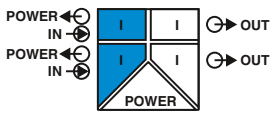
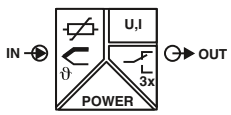
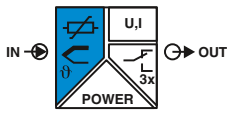
PSRmotion: Over-speed and zero-speed safety relays

Type	Applications					Output contacts		Safety approvals			Connection technology	
				n=0	$n<n_{max}$			Category in accordance with EN ISO 13849-1	PL in accordance with EN ISO 13849-1	SILCL in accordance with EN 62061	Screw connection	Push-in connection
PSR-MM25 24 V DC	●	–	–	●	–	1	2	3	e	3	2702355	2702356
PSR-MM30 24 V DC	–	●	●	●	●	2	2	4	e	3	2702357	2702358

PSRmotion: Configuration software

Type	Applications	Order No.
PSRmotion	Free configuration software for PSRmotion PSR-MM30 over-speed and zero-speed safety relay. Download at phoenixcontact.com	–

Product overview

MACX Analog: Safe signal conditioners									
Type	Function	Analog input	Output	Safety approvals			Width	Connection technology	
				SIL in accordance with IEC 61508	PL in accordance with EN ISO 13849-1	Ex i approval (ATEX, IECEx)	In mm	Screw connection	Push-in connection
	Repeater power supply and input signal conditioner with two outputs	Repeater power supply operation: 4 mA … 20 mA Input isolator operation: 4 mA … 20 mA Transmitter supply voltage: >16 V (20 mA)	2 x 0 mA … 20 mA, 2 x 4 mA … 20 mA; IN = OUT	2	d	–	12.5	2924825	2924838
				2	d	●	12.5	2865366	2924236
	Repeater power supply, two-channel	Repeater power supply operation: 4 … 20 mA per channel Transmitter supply voltage: >16 V (20 mA) per channel	2 x 4 mA … 20 mA; IN = OUT Load: ≤450 Ω (20 mA)	3	d	●	12.5	2865382	2924676
	Temperature transducer, universally configurable with limit value relay	RTD, TC, potentiometer, linear resistors ±1,000 mV, ±20 mA	Analog: 4 mA … 20 mA, active Digital: 1 PDT relay; 1 PDT relay, functionally safe	2	d	–	35	2811378	2811828
				2	d	●	35	2865751	2924799

CONTACTRON: Safe motor starters

Type	Functions															Maximum load current				Connection technology	
	Direct starter	Reversing starter	Motor protection	Emergency stop	Modular	Can be networked	Cannot be networked	Short-circuit-proof	>1 cm busbar width	Classic adapter set	Compact adapter set	DIN rail adapter set	Category in accordance with EN ISO 13849-1	PL in accordance with EN ISO 13849-1	SIL in accordance with IEC 61508	0.6 A 24 V DC	2.4 A 24 V DC	3 A 24 V DC	9 A 24 V DC	Screw connection	Push-in connection
ELR H3-IES	●	–	●	●	–	●	–						3	e	3	●	–	–	–	2905154	2905141
ELR H5-IES	●	●	●	●	–	●	–						3	e	3	●	–	–	–	2905151	2905138
ELR H3-IES	●	–	●	●	–	●	–						3	e	3	–	–	●	–	2905155	2905142
ELR H5-IES	●	●	●	●	–	●	–						3	e	3	–	–	●	–	2905152	2905139
ELR H3-IES	●	–	●	●	–	●	–						3	e	3	–	–	–	●	2905156	2905143
ELR H5-IES	●	●	●	●	–	●	–						3	e	3	–	–	–	●	2905153	2905140
ELR H3-IS	●	–	●	●	●	–	●						3	e	3	–	–	●	–	2908700	2909570
ELR H5-IS	●	●	●	●	●	–	●						3	e	3	–	–	●	–	2908699	2909569
ELR H3-IS	●	–	●	●	●	–	●						3	e	3	–	–	–	●	2908698	2909568
ELR H5-IS	●	●	●	●	●	–	●						3	e	3	–	–	–	●	2908697	2909567
ELR H3-IES	●	–	●	●	–	–	●						3	e	3	●	–	–	–	2900566	2903914
ELR H5-IES	●	●	●	●	–	–	●						3	e	3	●	–	–	–	2900582	2903902
ELR H3-IES	●	–	●	●	–	–	●						3	e	3	–	●	–	–	2900567	2903916
ELR H5-IES	●	●	●	●	–	–	●						3	e	3	–	●	–	–	2900414	2903904
ELR H3-IES	●	–	●	●	–	–	●						3	e	3	–	–	–	●	2900569	2903918
ELR H5-IES	●	●	●	●	–	–	●						3	e	3	–	–	–	●	2900421	2903906
ELR-H51	●	●	●	●	–	–	●	●	●	●			3	e	3	●				2904334	–
ELR-H51	●	●	●	●	–	–	●	●	●	●			3	e	3		●			2904336	–
ELR-H51	●	●	●	●	–	–	●	●	●	●			3	e	3				●	2904338	–
ELR-H51	●	●	●	●	–	–	●	●	●		●		3	e	3	●				2904333	–
ELR-H51	●	●	●	●	–	–	●	●	●		●		3	e	3		●			2904335	–
ELR-H51	●	●	●	●	–	–	●	●	●		●		3	e	3				●	2904337	–
ELR-H51	●	●	●	●	–	–	●	●				●	3	e	3	●				2902952	–
ELR-H51	●	●	●	●	–	–	●	●				●	3	e	3		●			2902953	–
ELR-H51	●	●	●	●	–	–	●	●				●	3	e	3				●	2902954	–

[1] Select the gateway to match the bus system.

Product overview

PSRmodular: Configurable safety system									
Type	**Description**	**Inputs/outputs**				**Safety approvals**		**Connection technology**	
		Inputs / EDM reset inputs	Outputs	Clock outputs	Signal outputs	PL in accordance with EN ISO 13849	SIL in accordance with EN 62061 / IEC 61508	Screw connection	Push-in connection
Basic modules									
PSR-M-B1	Basic module	8/2	2 (pair)	4	2	e	3	1104981	1104972
PSR-M-B2	Basic module (with large program memory)	8/4*	2 (pair) or 4 (single)	4	4*	e	3	1104974	1104975
Safe extension modules									
PSR-M-EF1	Failsafe extension module	8/4*	2 (pair) or 4 (single)	4	4*	e	3	1104890	1104889
PSR-M-EF2	Failsafe extension module	16	–	4	–	e	3	1104888	1104887
PSR-M-EF3	Failsafe extension module for safety shut-off mats	12	–	8	–	e	3	1104885	1104884
PSR-M-EF4	Failsafe extension module	-/4	4 pairs	–	4	e	3	1104856	1104868
PSR-M-EF5	Failsafe extension module	-/4	2 (pair) or 4 (single), each 2 A	–	8	e	3	1104976	1104977
PSR-M-EF6	Failsafe extension module	-/4	4 relays	–	–	e	3	1104982	1104983
PSR-M-EF7	Failsafe extension module	4 analog	–	–	–	e	3	1104985	1104986
PSR-M-EF8	Failsafe extension module	8/2	2 (pair)	4	2	e	3	1105522	1105523
PSR-M-E1	Non-safe extension module	–	–	–	8	–	–	1105132	1105133
PSR-M-E2	Non-safe extension module	–	–	–	16	–	–	1105134	1105136
PSR-M-TBUS1	TBUS extension module	1 connection channel for local bus extension (up to 50 m per segment)				e	3	1105095	1105096
PSR-M-TBUS2	TBUS extension module	2 connection channels for local bus extension (up to 50 m per segment)				e	3	1105097	1105098

PSRmodular: Configurable safety system

Type	Description	Safety function in accordance with EN 61800-5-2				Sensor type				Encoder interfaces	Safety approval		Connection technology	
		SOS	SLS	SSR	SDI	Proximity switch	TTL	HTL	SIN/COS		PL in accordance with EN ISO 13849	SIL in accordance with EN 62061 / IEC 61508	Screw connection	Push-in connection
Safe motion monitoring														
PSR-M-EM1	Motion – PROXIMITY extension module	●	●	●	–	●				–	e	3	1104987	1104988
PSR-M-EM2	Motion – TTL extension module	●	●	●	●	●	●			1	e	3	1104989	1104990
PSR-M-EM3	Motion – HTL extension module	●	●	●	●	●		●		1	e	3	1105009	1105010
PSR-M-EM4	Motion – SINCOS extension module	●	●	●	●	●			●	1	e	3	1105011	1105012
PSR-M-EM5	Motion – TTL extension module	●	●	●	●	●	●			2	e	3	1105014	1105015
PSR-M-EM6	Motion – HTL extension module	●	●	●	●	●		●		2	e	3	1105016	1105017
PSR-M-EM7	Motion – SINCOS extension module	●	●	●	●	●			●	2	e	3	1105018	1105093

* Configurable

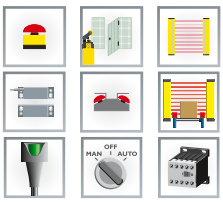
Product overview

PSRmodular: Configurable safety system			
Type	**Description**	**Connection technology**	
		Screw connection	Push-in connection
Gateways			
PSR-M-PB	Gateway – PROFIBUS	1105099	1105100
PSR-M-PN	Gateway – PROFINET	1105101	1105102
PSR-M-DNET	Gateway – DeviceNet™	1105103	1105473
PSR-M-CAN	Gateway – CANopen®	1105104	1105105
PSR-M-ETH	Gateway – EtherNet/IP™	1105106	1105107
PSR-M-ModTCP	Gateway – Modbus/TCP	1105108	1105127
PSR-M-CCLINK	Gateway – CC-Link	1105128	1105129
PSR-M-ECAT	Gateway – EtherCAT®	1105130	1105131

PSRmodular: Accessories		
Type	**Description**	**Order No.**
PSR-M-MEMORY	Optional external memory	1105142
TBUS	DIN rail connector for basic module	2200244
PSR-M-CABLE50	Cable for TBUS extension module	1104841

PSRmodular: Configuration software		
Type	**Applications**	**Order No.**
PSRmodular	Free configuration software for the configurable PSRmodular safety system. Download at phoenixcontact.com	–

PSRtrisafe: Configurable safety modules

Type	Applications	Inputs/outputs					Safety approvals					Connection technology	
		Inputs	Safe control outputs	Ground switching outputs	Clock outputs	Signal outputs	Category in accordance with EN ISO 13849-1	PL in accordance with EN ISO 13849-1	SILCL in accordance with EN 62061	SIL in accordance with IEC 61508	SIL in accordance with IEC 50156	Screw connection	Spring-cage connection
PSR-TRISAFE-S 24 V DC	Master module (not extendable)	20	4	2	2	4	4	e	3	3	3	2986229	2986232
PSR-TRISAFE-M 24 V DC	Master module (safely extendable)	20	4	2	2	4	4	e	3	3	3	2986012	2986025
PSR-TS-SDI8-SDIO4 24 V DC	Safe digital I/O extension module	8	4[1)]	–	2[1)]	2[1)]	4	e	3	3	3	2986038	2986041
PSR-TS-SDOR4 24 V DC	Safe relay module	–	4[3)]	–	–	4	4[2)]	e[2)]	3[2)]	3[2)]	3	2986096	2986106

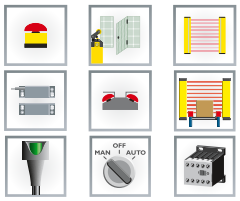
[1)] Configurable via software: outputs to inputs / signal outputs to clock outputs [2)] Depending on connection, up to ...
[3)] Configurable via software: 4 x 1-channel or 2 x 2-channel

PSRtrisafe: Configuration software

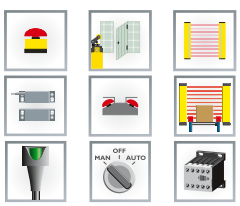
Type	Applications	Order No.
IFS-CONFSTICK	Memory modules for PSRtrisafe	2986122
SAFECONF	Free configuration software for PSRtrisafe and SafetyBridge modules. Download at phoenixcontact.com	–
	Configuration package including software, USB cable, and quick start guide; multi-lingual	2986119

Product overview

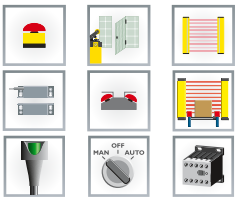
Axioline F: Safe I/Os

Type	Applications	Inputs/outputs				Protocol		Safety approvals				Order No.
		Safe inputs	Safe outputs	Clock outputs	Relay outputs	SafetyBridge Technology	PROFIsafe	Category in accordance with EN ISO 13849-1	PL in accordance with EN ISO 13849-1	SILCL in accordance with EN 62061	SIL in accordance with IEC 61508	
AXL F SSDI8/4 1F 24 V DC	Input module	8	–	8	–	●	–	4	e	3	3	2702263
AXL F PSDOR4/2 1F	Relay module	–	–	–	4	–	●	4	e	3	3	2702858
AXL F SSDOR4/2 1F	Relay module	–	–	–	4	●	–	4	e	3	3	2702589
AXL F SSDO8/3 1F 24 V DC	Output module	–	8	–	–	●	–	4	e	3	3	2702264
AXL F PSDI8/4 1F 24 V DC	Input module	8	–	8	–	–	●	4	e	3	3	2701559
AXL F PSDO8/3 1F 24 V DC	Output module	–	8	–	–	–	●	4	e	3	3	2701560
AXL F LPSDO8/3 IF 24 V DC	Logic module with SafetyBridge Technology V3	–	8	–	–	●	–	4	e	3	3	2702171

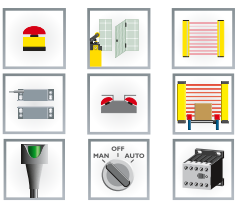
Axioline Smart Elements: Safe I/Os

Type	Applications	Inputs/outputs				Protocol		Safety approvals				Order No.
		Safe inputs	Safe outputs	Clock outputs	Relay outputs	SafetyBridge Technology	PROFIsafe	Category in accordance with EN ISO 13849-1	PL in accordance with EN ISO 13849-1	SILCL in accordance with EN 62061	SIL in accordance with IEC 61508	
AXL SE PSDI8/3	Input module	8	–	2	–	–	●	4	e	3	3	1079241
AXL SE PSDO4/2 2A	Output module	–	4	–	–	–	●	4	e	3	3	1079231

Inline: Safe I/Os

Type	Applications	Inputs/outputs				Protocol		Safety approvals				Order No.
		Safe inputs	Safe outputs	Clock outputs	Relay outputs	SafetyBridge Technology	PROFIsafe	Category in accordance with EN ISO 13849-1	PL in accordance with EN ISO 13849-1	SILCL in accordance with EN 62061	SIL in accordance with IEC 61508	
IB IL 24 PSDI 8-PAC 24 V DC	Input module	8	–	8	–	●	●	4	e	3	3	2985688
IB IL 24 PSDI 16-PAC 24 V DC	Input module1)	16	–	16	–	●	●	4	e	3	3	2700994
IB IL 24 PSDO 8-PAC 24 V DC	Output module	–	8	–	–	●	●	4	e	3	3	2985631
IB IL 24 PSDO 4/4-PAC 24 V DC	Output module (positive and negative switching)	–	4	–	–	●	●	4	e	3	3	2916493
IB IL 24 PSDOR 4-PAC 24 V DC / 230 V DC	Relay module	–	–	–	4	●	●	4	e	3	3	2985864
IB IL SAFE 2-ECO 24 V DC	Input module with two sensor circuits	–	–	–	–	–	–	4	e	3	3	2702446
IB IL 24 LPSDO 8 V2-PAC 24 V DC	Logic module with SafetyBridge Technology V2	–	8	–	–	●	–	4	e	3	3	2700606
IB IL 24 LPSDO 8 V3-PAC 24 V DC	Logic module with SafetyBridge Technology V3	–	8	–	–	●	–	4	e	3	3	2701625

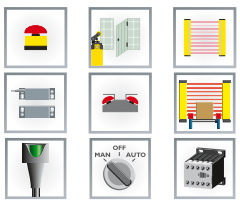
Axioline E: Safe I/Os

Type	Applications	Inputs/outputs				Protocol		Safety approvals				Order No.
		Safe inputs	Safe outputs	Clock outputs	Relay outputs	SafetyBridge Technology	PROFIsafe	Category in accordance with EN ISO 13849-1	PL in accordance with EN ISO 13849-1	SILCL in accordance with EN 62061	SIL in accordance with IEC 61508	
AXL E IOL SDI8 SDO4 2A M12 L	Input and output module	8	4	8	–	●	●	4	e	3	3	1185380

1) Only compatible with IB IL 24 LPSDO V3-PAC.

Product overview

SAFECONF: Configuration software		
Type	**Applications**	**Order No.**
SAFECONF	Free configuration software for PSRtrisafe and SafetyBridge modules. Download at phoenixcontact.com	–
	Configuration package including software, USB cable, and quick start guide; multi-lingual	2986119

PLCnext Control: Safe control technology								
Type	**Applications**	**Inputs/outputs**	**Protocol**	**Safety approvals**				**Order No.**
				Category in accordance with EN ISO 13849-1	PL in accordance with EN ISO 13849-1	SILCL in accordance with EN 62061	SIL in accordance with IEC 61508	
RFC 4072S	Safety controller that can be freely programmed using LD and FBD	Up to 300 safe devices	PROFIsafe via PROFINET	4	e	3	3	1051328
FL PN/PN SDIO-2TX/2TX	Safe PROFINET gateway	–	PROFIsafe via PROFINET	4	e	3	3	2700651

SD cards		
Type	**Applications**	**Order No.**
SD card MUX	Two of these SD cards, with two ILC 131 ETHs and the individually required input and output terminals, form a multiplexer system that requires no programming.	2701872
SD FLASH easy safe basic	Program and configuration memory, plug-in, 2 GB, with license key and user program for easy web-based configuration and startup of a SafetyBridge solution.	2403297
SD FLASH easy safe pro	As per SD FLASH easy safe basic, plus communication via Modbus/TCP, PROFINET, and e-mail.	2403298

QUINT POWER: Safe power supplies

Type	Applications	Output current				Safety approvals						Dimensions W x H x D	Order No.
		Nominal output current	Static boost	Dynamic boost	SFB Technology	IEC 60950-1	SIL in accordance with IEC 61508	ATEX / IECEx / Class I zone 2	UL ANSI / ISA-12.12.01 Class I Division 2	DNV GL	HART-compatible	[mm]	
High-performance power supplies, single phase													
Input voltage: 85 V AC … 264 V AC, 90 V DC … 350 V DC Output voltage: 24 V DC … 29.5 V DC													
QUINT4-PS/ 1AC/24DC/20	For the safe supply of your systems	20 A	25 A	30 A (5 s)	120 A (15 ms)	●	SIL 2	–	●	●	●	70 x 130 x 125	2904602
QUINT4-PS/ 1AC/24DC/20/+	For the safe supply of your systems	20 A	25 A	30 A (5 s)	120 A (5 ms)	●	SIL 3	●	●	●	●	70 x 130 x 125	2904617
Active redundancy module, Plus version													
Input voltage: 8 V DC … 26 V DC Output voltage: U_{in} – 0.1 V DC													
QUINT4-S-ORING/ 12-24DC/1X40/+	For decoupling	40 A	45 A	60 A (5 s)	240 A (15 ms)	●	SIL 3[1)]	●	●	●	–	32 x 130 x 125	2907753

[1)] In combination with QUINT4-PS/1AC/24DC/20.

Open communication with customers and partners worldwide

Phoenix Contact is a global market leader based in Germany. We are known for producing future-oriented components, systems, and solutions in the fields of electrical engineering, electronics, and automation. With a global network reaching across more than 100 countries with over 17,600 employees, we maintain close relationships with our customers, something we believe is essential for our common success.

Our wide variety of innovative products makes it easy for our customers to implement the latest technology in a variety of applications and industries. We focus on developing the fields of energy, infrastructure, process, and factory automation.

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