

Functional Safety

From emergency stop relays to safe controllers



PHOENIX CONTACT – in dialog with customers and partners worldwide

Phoenix Contact is a global market leader in the field of electrical engineering, electronics and automation. Founded in 1923, the family-owned company now employs around 14,500 people worldwide. A global sales network with over 50 sales subsidiaries and more than 30 additional sales partners guarantees customer proximity directly on site, anywhere in the world.

Our range of services consists of products associated with various electrotechnical applications. This includes numerous connection technologies for device manufacturers and machine building, components for modern control cabinets, and tailor-made solutions for many applications and industries, such as the automotive industry, wind energy, solar energy, the process industry or applications in the field of water management, power transmission/distribution, and transportation infrastructure.



Global player with personal customer contact

Company independence is an integral part of our corporate policy. Phoenix Contact therefore relies on in-house competence and expertise in a range of contexts: the design and development departments constantly come up with innovative product ideas, developing special solutions to meet customer requirements. Numerous patents emphasize the fact that many of Phoenix Contact's products have been developed in-house.





Functional safety from PHOENIX CONTACT

In order to implement safety standards in the best possible way, consistent and efficient solutions are required.

These requirements are met by the Phoenix Contact safety portfolio. This range is characterized by its easy installation and configuration.

From simple, safe coupling relays to safe controllers, you'll always find the right logic module for your standard-compliant and efficient solution.



Tested safety

- EN ISO 13849-1 and EN 62061 for machine building and systems manufacturing
- IEC 61508 for the process industry
- Germanischer Lloyd (GL) for use in shipbuilding and offshore systems
- EN 50156 for use in furnaces, steam generators, waste heat boilers, rotary furnaces, and hot gas generators



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PSRmini – highly compact safety and coupling relays

The complete PSRmini product range consists of 6 mm, 12 mm, and 17 mm versions.

Despite their highly compact design, the PSRmini devices offer impressive performance features: they switch loads up to 6 A, are compatible with many signal generators, and support versatile use thanks to their comprehensive approvals.

Maximum safety is ensured by force-guided contacts. Save space and increase flexibility without having to make compromises in the application.

Force-guided contacts

A safety relay for monitoring functions in machines and systems is based on relay technology with force-guided contacts according to EN 50205.

In a safety relay module with integrated monitoring, forced guidance is used for safety detection. Dangerous errors, such as the welding of contacts, are therefore reliably detected and a high level of safety is achieved.



Extremely compact

The narrowest safety relay with force-guided contacts offers space savings of up to 70%.

Highly compatible

Compatibility with all important signal generators and safety-related systems enables a large usage range.



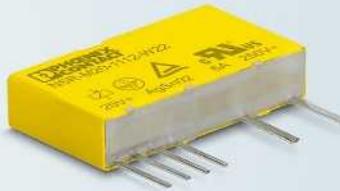
Comprehensive approvals

Thanks to a variety of worldwide approvals, PSRmini is available in all relevant markets. For the first time, the installation of safe coupling relays up to Ex zone 2 is possible.



PSRmini in the Termination Carrier

Termination Carriers prewired by Phoenix Contact enable fast, error-free mounting and connection to common safe systems. Signal connection is by means of Plug and Play using standardized system cables. Standardized or controller-specific front adapters are used for connection to your safe system.



Relay Technology³

Designed by PHOENIX CONTACT

6A

Innovative relay technology from Phoenix Contact offers maximum safety and high switching loads up to 6 A.

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.

Convenient connection methods

Screw and spring-cage connection technology offers convenient control cabinet installation.

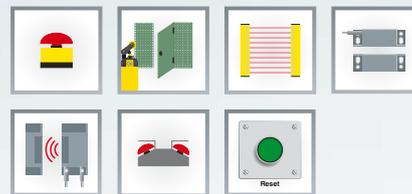
PSRmini – modular safety solutions for machine building

As a mechanical engineer, you are familiar with the dynamics and requirements of your market. Safety technology in particular plays an ever increasing role in this field. Standards and directives make an important contribution.

With the PSRmini, we are giving you the option to create new safety concepts that offer you many advantages:

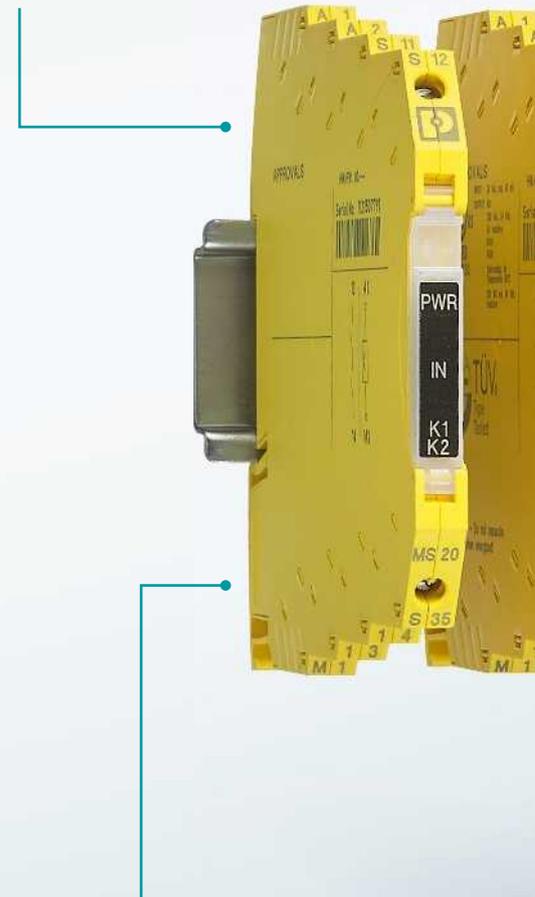
- Optimization of space requirements in the control cabinet
- Maximum availability and compatibility of system components
- Comprehensive approvals for global markets

Scalable safety relay solution



Compatible with numerous signal generators

Compatibility with a wide range of signal generators such as emergency stop equipment, safety door switches, and light grids.



Proven safety for global markets

Force-guided contacts enable maximum safety levels up to PL e in accordance with ISO 13849 and SILCL 3 in accordance with IEC 62061.

Your advantages:

With the new generation of safety relays, classic safety applications can be implemented under optimum conditions. For you, this means:

- Compact design of control cabinet modules through up to 70% less required space
- Cost-benefit optimization through the provision of just one enable contact
- Complete product range enables a large usage range and a reduction in suppliers



Safety technology in machine building



Highly compact design

Up to 70% space savings and high scalability from one enable contact make new safety concepts possible.

PSRmini

Reliable signal availability in the process industry

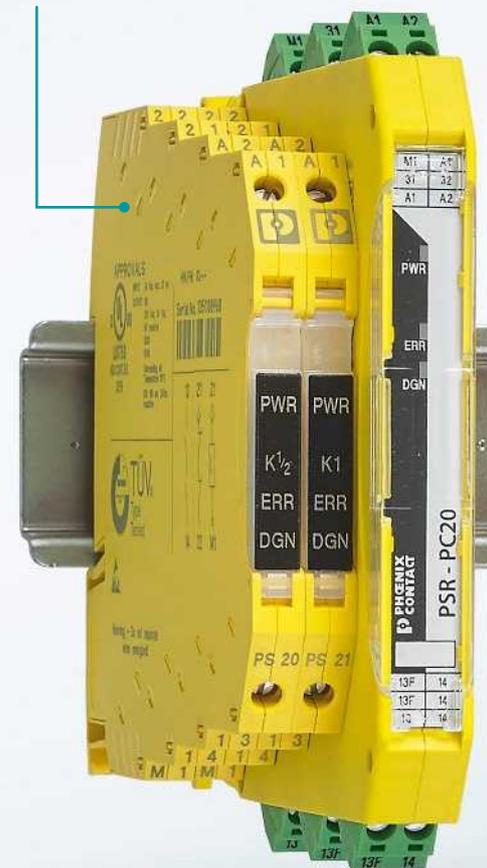
As a specialist in the process industry, you rank compatibility and reliability among the primary requirements for your systems and components.

For this reason, we would like to introduce to you our highly compact, safe coupling relay for electrical isolation and power adaptation.

Adapted to the relevant process control systems and special requirements of your industry, we offer SIL-certified coupling modules for emergency shutdown and fire and gas applications.

Safe shutdown

Thanks to their redundancy and force-guided contacts, the coupling relays for safe shutdown ensure that every command from your SIS is implemented. Safe switching is possible up to SIL 3.



Diagnostics technologies

Application	ESD	ESD with interlocking		F&G
Product	PS20, PS21 PC20, PC32	PS40	PC40	PC50
Visual Diagnostics	✓	✓	✓	—
Error Signal Generator	✓	—	✓	✓
Interlocking	—	✓	✓	—

ESD (Emergency Shutdown):

With the safe shutdown, the PSRmini can be switched back on again by the SIS even after a diagnosed error.

ESD (Emergency Shutdown) with Interlocking:

With the safe shutdown with interlocking, the PSRmini cannot be switched back on again after a diagnosed error.

F&G (Fire & Gas): Safe switch on

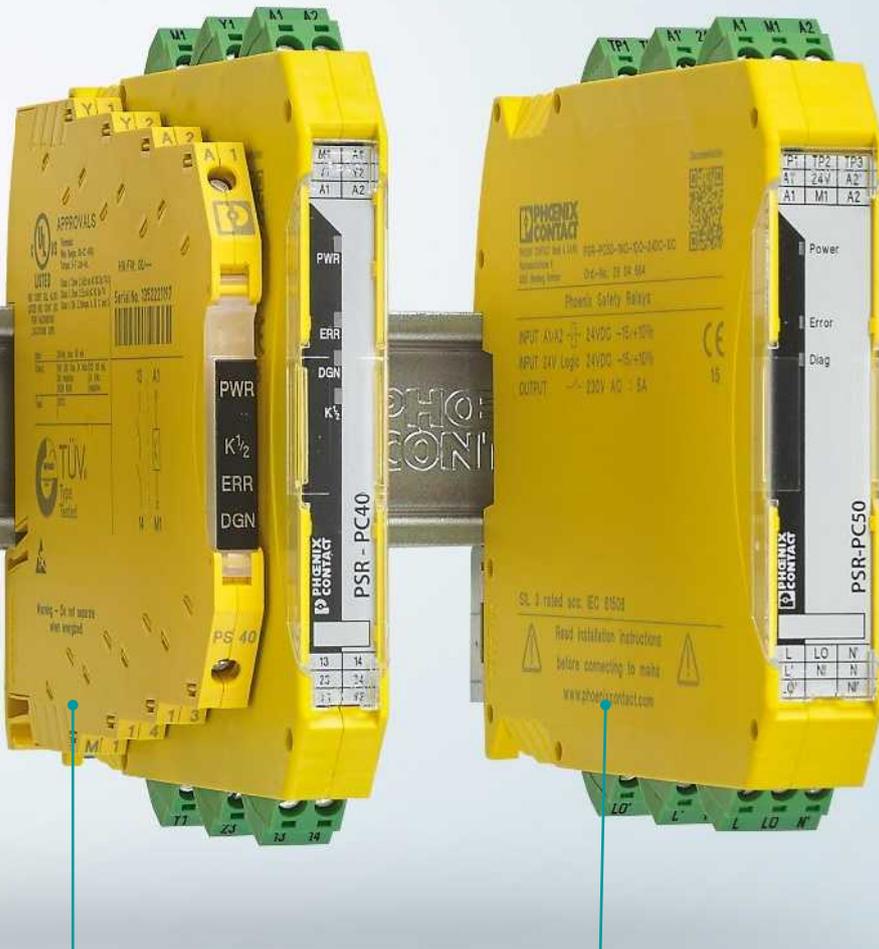
Your advantages:

We strive to contribute to the safety of your system and to minimize downtimes. We also reduce space and material requirements. For you, this means:

- Fewer control cabinets required thanks to up to 70% less required space
- Shorter downtimes during scheduled maintenance phases thanks to simple, fast diagnostics
- For the first time, the use of safe coupling relays all the way up to the potentially explosive areas simplifies the design of distributed concepts
- Reduction in installation times and fast, simple startup



Safety technology in the process industry



Safe shutdown with locking

The internal lock prevents the system from being switched on again in the event of an error.

Safe switch on

The PSR-PC50 ensures that the system can be switched on safely at all times. It also provides comprehensive monitoring of the load side for open and short circuits.

Diagnostics technologies

The PSRmini coupling relays feature innovative diagnostics technologies. With these relays, the hardware and time necessary for the SIL-relevant proof testing required by standards can be reduced to a minimum.

- Visual Diagnostic is the SIL 3-qualified verification of defined LED statuses directly on the module
- The Error Signal Generator initiates the active feedback of a potential error to the affected DO of the controller
- For safety reasons, the interlocking function prevents the PSRmini from being switched back on after a diagnosed error

PSRclassic – conventional safety relays

The comprehensive PSRclassic product range includes conventional safety relays with force-guided contacts.

Functions such as emergency stop, safety doors, light grids, and two-hand control devices are available in various versions with up to eight enable contacts.

The PSRclassic safety relays are characterized by the large selection of functions and versions. They are particularly suitable for applications in machine building.

Fast diagnostics

Status LEDs for the supply voltage, input circuit, and relay ensure precise status display.



An ideal solution for every function

Safety relays are ideal for use in applications where your machine or system only requires a few safety functions and logic operations – one device per function.

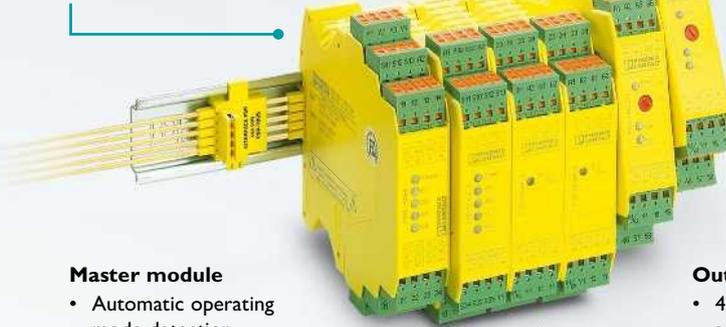


PSRmodular – cross-wiring made easy

The modular safety relays can be extended easily and flexibly based on the modular principle. Cross-wiring of the master safety relay with up to ten extension modules is possible using the system connector at the back. Errors are therefore avoided and you can save wiring and configuration effort.

Input module

- Up to 4 safety sensors can be connected
- Sensor state displayed via signal contact



Master module

- Automatic operating mode detection
- Can also be used as a stand-alone device

Output module

- 4 enable contacts per module
- Time function up to 30 s



Safe time functions

Safety relays with time functions can be set between 0.1 s and 300 s according to the application.

Proven safety technology

The internal redundant design as well as the consistent use of force-guided contacts have long been proven.

Convenient connection technology

The COMBICON connectors are coded and available either as a screw version or a double spring-cage version.

PSRclassic – conventional coupling relays

Designed specifically for the process industry, the PSRclassic range offers coupling relays with force-guided contacts for safe switch on and shutdown.

SIL-certified coupling relays are available for safe signal processing for a large number of functions that are required for emergency shutdown or fire and gas applications, for example.

Compatible with a range of different safe systems

The integrated test pulse filter and the adapted current control circuit ensure a long service life and optimum compatibility with common safe systems from well-known manufacturers in the process industry.



Approvals and characteristics

All certificates and characteristics are available for easy loop calculation, configuration, and document creation. SIL certification can be identified by the yellow housing color.



Easy diagnostics

Features and functions such as force-guided safety relays and line and load detection ensure optimum diagnostics and availability.

PSRclassic in the Termination Carrier

As with PSRmini, the prewired Termination Carriers from Phoenix Contact enable fast, error-free mounting and connection to common safe systems.

Signal connection is by means of Plug and Play using standardized system cables. Standardized or controller-specific front adapters are used for connection to your safe system.



Coupling relays with forced guidance

The use of coupling modules with force-guided contacts is recommended wherever safe diagnostics is required.

PSRmultifunction – multifunctional safety relays

PSRmultifunction offers one higher-level sensor circuit and two local sensor circuits in a single device.

You can therefore implement common applications with safety functions such as emergency stop, safety door or light grid monitoring using just one device.

There are four device versions for monitoring different types of sensor, each with screw, spring-cage or tool-free push-in connection.

Highly compatible

Compatibility with all important signal generators and safety-related systems enables a large usage range.

Advantages in comparison with three safety relays

- Preconnected safety functions in the device mean fewer potential wiring errors
- Space requirement cut by two thirds
- Reduced costs for warehousing and logistics

Three functions in one device

The three safety functions are combined in the same narrow housing measuring just 22.5 mm. This reduces your costs for warehousing and logistics and saves space in the application.



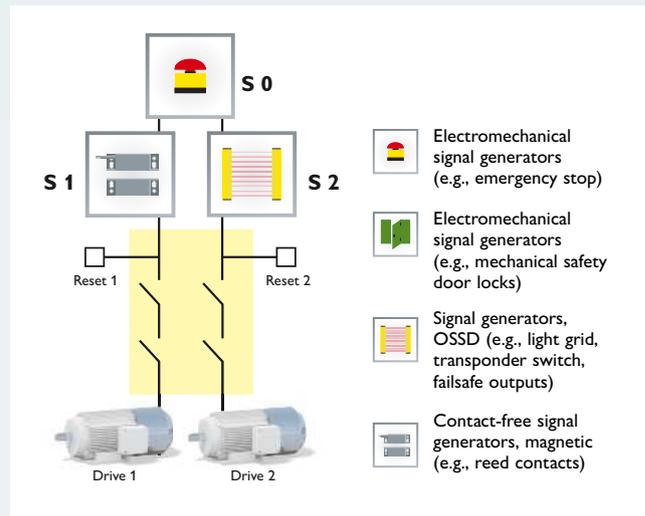
Method of operation of multifunctional safety relays

The PSRmultifunction safety relays have three sensor circuits which can all be 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 a function such as a safety door or a light grid. In the event of an error, both sensor circuits can be reactivated independently of one another.

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



Avoid errors

Preconnected safety functions in the device mean fewer potential wiring errors.

Various connection technologies

Choose between screw, spring-cage, and tool-free push-in connection.

PSRmotion – zero-speed and over-speed safety relays

The PSRmotion safety relay modules reliably monitor the speed and downtime of rotating parts in systems and machines.

The narrow PSR-MM25 zero-speed safety relay does not require any additional sensors for monitoring. The residual voltage induced by the motor windings is analyzed in order to detect downtime.

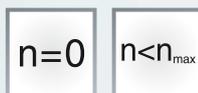
With the combined PSR-RSM4 zero-speed and over-speed safety relay, sensors such as encoders and initiators can be used for motion detection.

PSR-MM25: flexible zero-speed safety relay

- Sensor-free monitoring of one and three-phase alternating current and direct current motors
- Application-specific adjustment options for the switching threshold and time delay
- Can be used for machines with or without frequency inverters

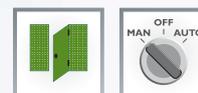


Sensor-free
motor monitoring



Safety functions that can be implemented according to EN 61800-5-2

- STO: safe torque off
- SLS: safe limited speed
- SMS: safe speed monitoring



PSR-RSM4: One device, two functions

- Safe monitoring of up to three different speeds and one freely definable downtime threshold
- Can be adjusted by means of the PSR-CONF-WIN software

Software-parameterizable speed monitoring

You can easily integrate the PSR-RSM4 zero-speed and over-speed safety relays into your system, thanks to the PSR-CONF-WIN software. The PSR-CONF-WIN software allows you to easily set and transfer the speed monitoring parameters.

The software can be downloaded free of charge on our website and easily installed on your Windows system.



Convenient connection methods

Screw and spring-cage connection technology offers convenient control cabinet installation.



Control of electromechanical guard locks

Highly compact at 12.5 mm

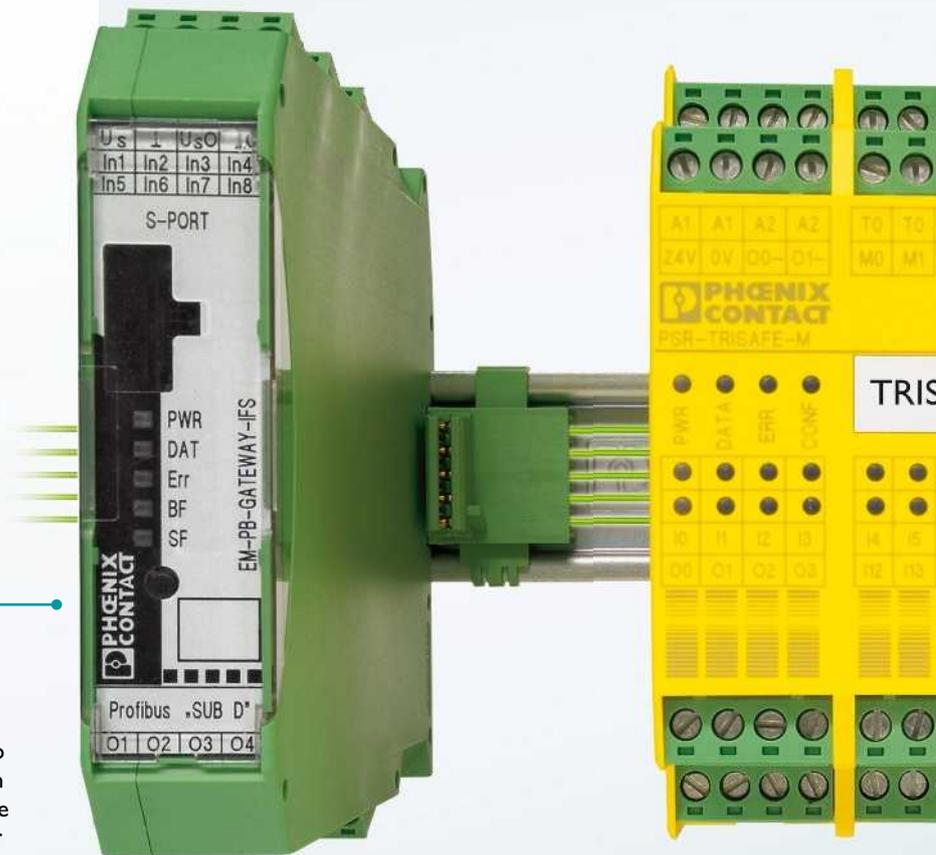
Up to 75% space savings without limiting performance, thanks to relay technology developed in-house

Trisafe – configurable safety modules

Use Trisafe configurable safety modules to customize and combine all safety functions according to your requirements.

Flexibly adapt the Trisafe system to your application requirements using various safe extension modules and fieldbus couplers.

The safety logic is created very easily with the SAFECONF configuration software using drag and drop.



CANopen

DeviceNet

EtherNet/IP

Modbus

PROFI
BUS

PROFI
NET

Fieldbus coupler

You can use a fieldbus coupler to easily extend your Trisafe station so that status information for the safety circuits is also available for the machine controller.

Easy configuration using the SAFECONF software

With SAFECONF, you can easily create the safety logic for Trisafe and SafetyBridge technology using drag and drop.

For details of the SAFECONF software, please refer to pages 22 and 23.



Extension modules

Thanks to the modular system, you can easily extend your Trisafe by adding safe digital inputs and outputs, as well as safe relay outputs.

Digital I/O module

- 8 safe inputs, 4 safe outputs
- Clock and signal outputs

Relay output module

- 4 floating relay contacts
- Can be individually configured for 1- or 2-channel shutdown



Trisafe configurable safety module

Safe and freely configurable master module:

- Also available as version for safe extension
- 20 safe inputs, 4 safe outputs
- Clock, signal, and ground switching outputs
- Clear indication of all I/O states by LEDs

SafetyBridge – network safety solutions

Reliably integrate functional safety into your network with the Inline and Axioline F I/O systems.

To do this you do not need a safety controller, you can still use your preferred standard network and your standard controller.

The SafetyBridge network solution is suitable both for new systems and for retrofitted applications. Benefit from the flexibility and cost-saving advantages of SafetyBridge technology.

What are the advantages of independence from the network?

SafetyBridge technology can be integrated extremely easily into all common fieldbus and Ethernet-based networks.

Continue to benefit from the advantages of your preferred network solution. No additional safety networks are required, which saves you time and money when designing your machines and systems.

SafetyBridge Technology 

Designed by PHOENIX CONTACT



SafetyBridge logic modules for Inline and Axioline F

The logic module represents the core feature of a SafetyBridge application. It controls the safe application and monitors safety-related communication between the safe I/O modules. The intelligent logic modules can be connected with up to 16 devices.

Easy configuration using the SAFECONF software

With SAFECONF, you can easily create the safety logic for Trisafe and SafetyBridge technology using drag and drop.

For details of the SAFECONF software, please refer to pages 22 and 23.



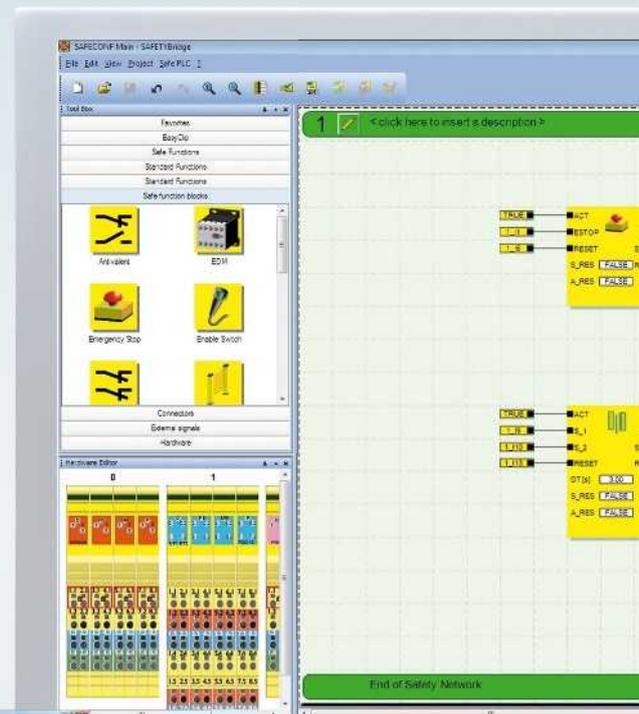
SafetyBridge extension modules for Axioline F and Inline

Distributed in the network, the extension modules record safety-related signals and output them wherever they are required. They record either safe digital inputs or outputs and feature relay contacts.

Easy configuration – using the SAFECONF software

The SAFECONF configuration software can be downloaded free of charge and provides you with all the tools you need to configure your safety logic in accordance with the relevant standards – easily and in a single user interface.

With SAFECONF, you can easily create the safety logic for Trisafe and SafetyBridge technology using drag and drop.



Integrated E-Learning

The E-Learning features integrated in the software offer support in various areas, such as determining performance levels and providing an easy introduction to the software.

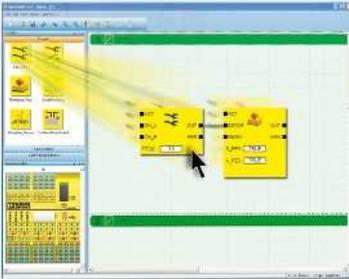
Application help

Extremely comprehensive help is available in the form of block-specific and TÜV-certified application examples. This makes the implementation of safety requirements even easier.

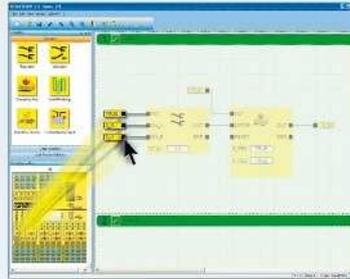
Easy configuration using the SAFECONF software

With SAFECONF, you can easily create the safety logic for Trisafe and SafetyBridge technology using drag and drop.

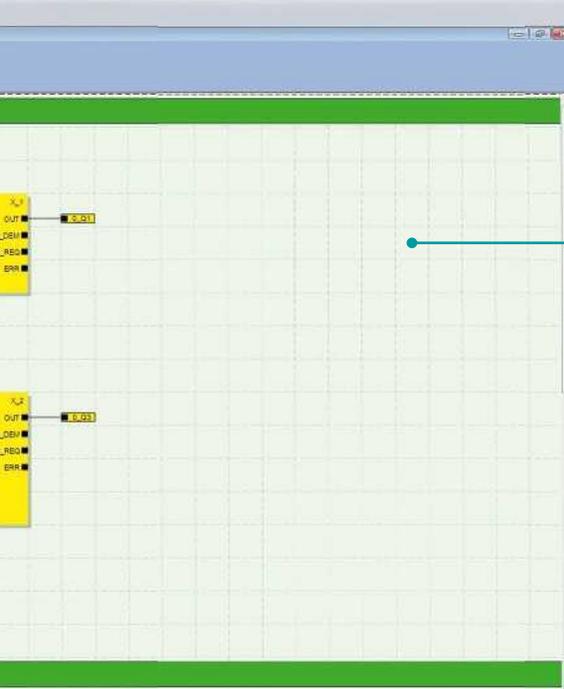
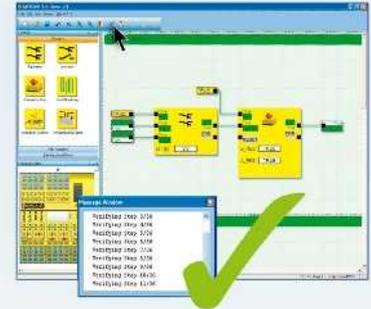
1 Select and configure the safety functions.



2 Connect the module I/Os to the safety functions.



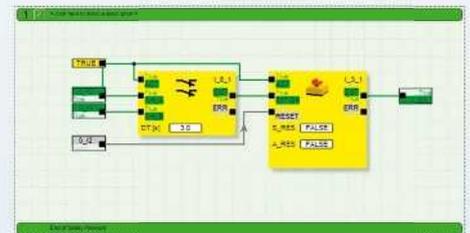
3 Check and save the safety functions – and you're done!



Intuitive operation and certified blocks

Easy configuration of the safety logic without any programming knowledge. The safety logic is created using the TÜV-certified blocks by means of drag and drop.

All tools are arranged directly in one window, enabling you to work intuitively with the SAFECONF software.



	Name	Value	Pretest 1	Pretest 2	Pretest 3	Description
1	IO_C1	True	True	True	True	Pretest 1
2	IO_C2	True	True	True	True	Pretest 2
3	IO_C3	True	True	True	True	Pretest 3
4	IO_C4	True	True	True	True	Pretest 4
5	IO_C5	True	True	True	True	Pretest 5
6	IO_C6	True	True	True	True	Pretest 6
7	IO_C7	True	True	True	True	Pretest 7
8	IO_C8	True	True	True	True	Pretest 8
9	IO_C9	True	True	True	True	Pretest 9
10	IO_C10	True	True	True	True	Pretest 10
11	IO_C11	True	True	True	True	Pretest 11
12	IO_C12	True	True	True	True	Pretest 12
13	IO_C13	True	True	True	True	Pretest 13
14	IO_C14	True	True	True	True	Pretest 14

Simulation and diagnostics

Shorter project processing times and standardized implementation of safety circuits thanks to the integrated simulation mode. Easy checking and validation of the safety logic directly from your PC.



PROFIsafe control technology – I/O systems

Reliably integrate functional safety into your PROFINET networks with the Inline and Axioline I/O systems.

The PROFIsafe gateway enables safe communication between two PROFINET systems.

PROFIsafe I/O modules for Axioline F

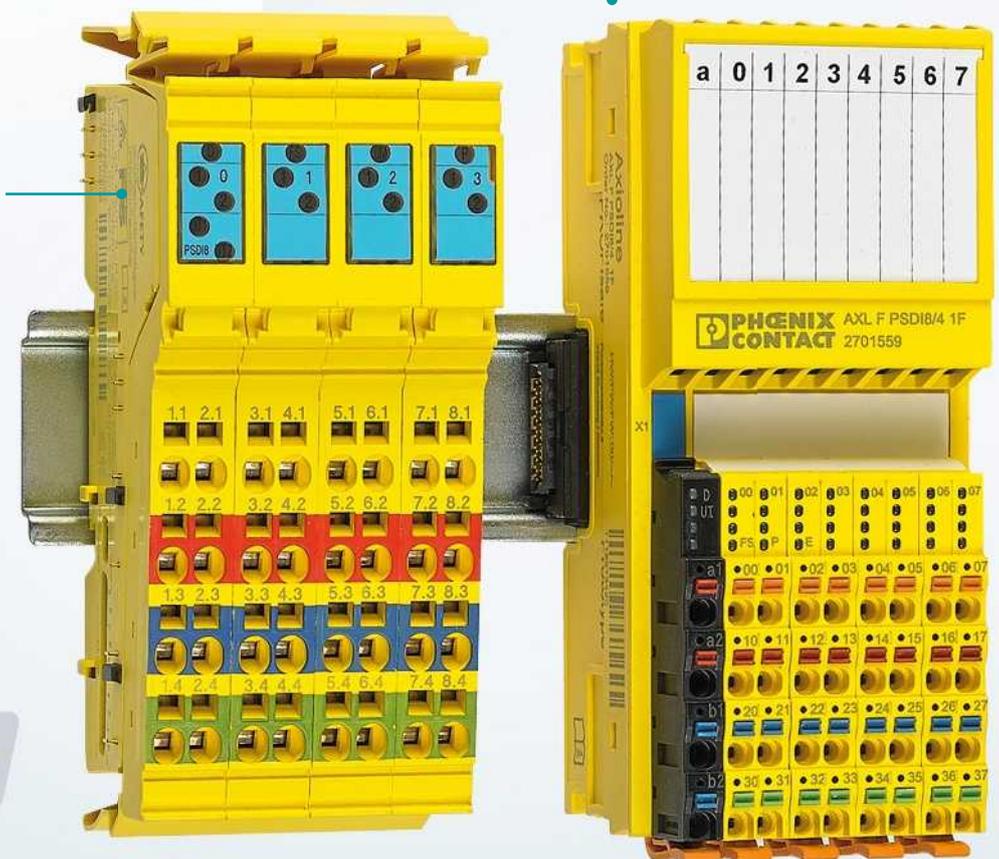
Axioline F is the robust I/O system that is characterized by its modular design. A safe input module and a safe output module are available for your PROFIsafe application.

PROFIsafe I/O modules for Inline

The Inline I/O system is the flexible all-rounder in a fine-grained design. The wide choice of I/O modules and function terminals offers input, output, and relay modules for your PROFIsafe application.

Emphasis on modularity

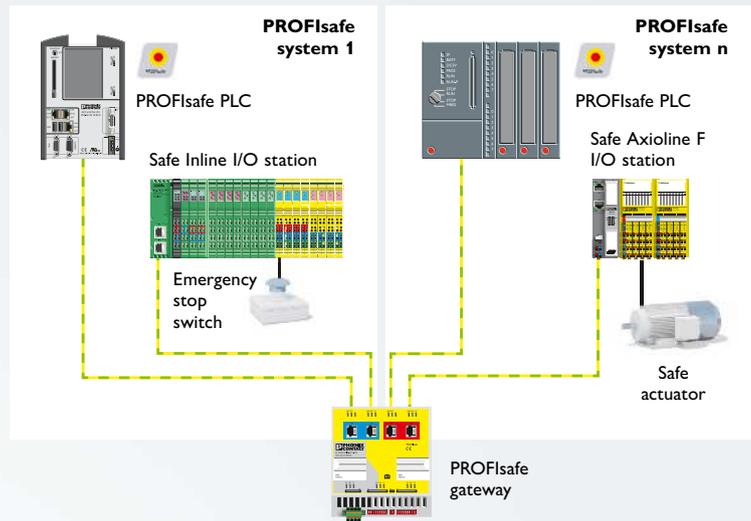
The functions can be combined flexibly as required.



Coupling of PROFINET/PROFIsafe systems

The safe PROFINET gateway represents two PROFIsafe devices. Standard I/O process data is exchanged between two PROFIsafe systems using PROFINET and safe I/O process data is exchanged via PROFIsafe.

This makes it possible to implement manufacturer-neutral emergency stop concepts across systems.



PROFINET gateway

The safe PROFINET gateway for cross-network PROFINET/PROFIsafe applications.

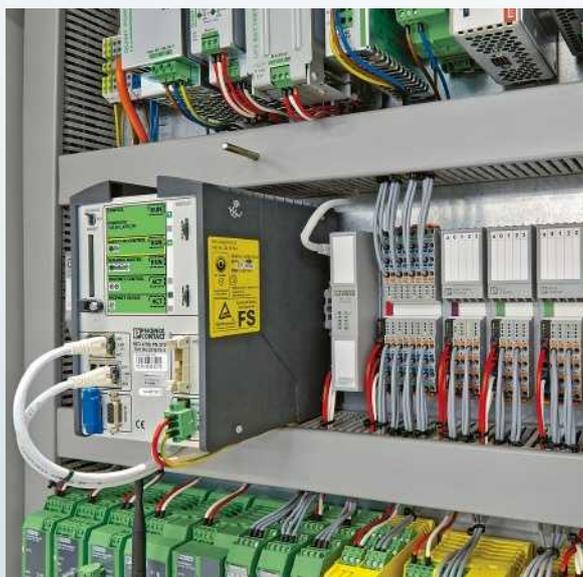


PROFIsafe control technology – compact high-performance controllers

The RFC 470S is the safety version of the most powerful class 400 PLC. It offers high performance at an attractive price.

An integrated diagnostics display shows information relevant to the process and event-controlled error messages directly on site. If a device needs to be replaced, simply insert the Flash memory of the faulty controller into the new device. It couldn't be easier.

Safe controller in use



SAFETYPROG programming system

SAFETYPROG is the programming software for our high-performance controllers. You can use it to implement standard-compliant safety systems for PROFI-safe or INTERBUS-Safety networks in functional safety applications.

We offer an additional solution package for safe software-based analog value processing, without safe I/O modules.

A demo version of SAFETYPROG is available to download on our website. You can install it on your Windows system.



Diagnostics via the display

High-resolution display with plain text messages for quick and easy local diagnostics.

The safety controller with power reserves

Controls large numbers of I/Os reliably thanks to powerful processor technology.

The safety controller as a 2-in-1 combination

The RFC 470S is a PLC with integrated safety controller. It enables the integration of safety functions in your system or machine. You can therefore reduce installation time and wiring effort.

Services for functional safety

Benefit from the comprehensive service offered by our certified safety experts: product and technology expertise from a single source.

Our services can help you to meet requirements for the safety of machinery. We will support you in the necessary steps and the verification documentation as well as all the requirements for functional safety.

Our services:

Individual support on request

- Safety hotline
- Consultation and presentation on site or via the web
- Engineering and on-site service
- Seminars and workshops

For further information, see page 35.

Machine operators

Machine manufacturers

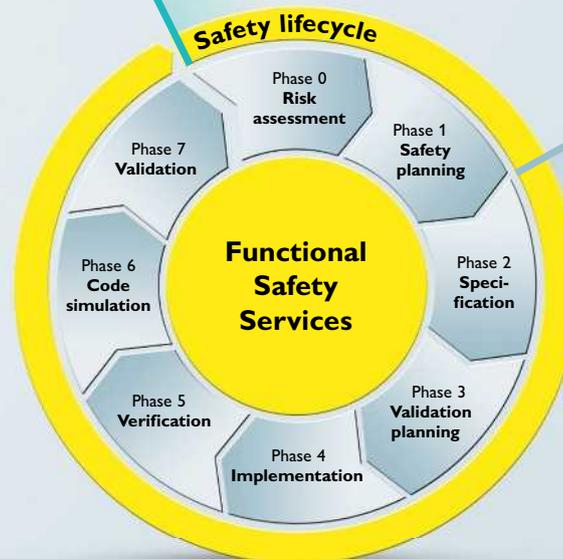
We provide support from **phase 0 to 7** for your specific concept:

- Machinery Directive
- EC Declaration of Conformity

System integrators

We provide support from **phase 2 to 7** for:

- EN ISO 13849, EN 62061
- SISTEMA



PSRmini – highly compact safety relays for machine building

Type	Applications							Output contacts			Safety approvals		Overall width in mm	Connection technology		
											PL EN ISO 13849-1	SILCL EN 62061		Screw connection technology	Spring-cage connection technology	
PSR-MS20	●	●	–	●	–	–	A	1	–	1 DO	c ¹⁾	1 ¹⁾	6.8	2904950	–	
PSR-MS21	Coupling module for safe controllers						–	A	1	–	1 DO	c ¹⁾	1 ¹⁾	6.8	2702192	–
PSR-MS25	●	●	–	●	–	–	M	1	–	1 DO	c ¹⁾	1 ¹⁾	6.8	2904951	–	
PSR-MS30	●	●	–	●	●	–	A	1	–	–	e	3	6.8	2904952	–	
PSR-MS35	●	●	–	●	●	–	M	1	–	–	e	3	6.8	2904953	–	
PSR-MS40	●	●	–	–	●	–	A	1	–	1 DO	e	3	6.8	2904954	–	
PSR-MS45	●	●	–	–	●	–	M	1	–	1 DO	e	3	6.8	2904955	–	
PSR-MS50	–	●	–	●	–	–	A	1	–	1 DO	e	3	6.8	2904956	–	
PSR-MS55	–	●	–	●	–	–	M	1	–	1 DO	e	3	6.8	2904957	–	
PSR-MS60	●	●	●	●	●	–	A	2	–	–	e	3	6.8	2904958	–	
PSR-MC20	●	●	–	●	–	–	A/M	3	–	1 DO	c ¹⁾	1 ¹⁾	12.5	2700466	2700467	
PSR-MC30	●	●	–	●	●	–	A/M	2	–	1 DO	e	3	12.5	2700498	2700499	
PSR-MC34	●	●	–	●	●	–	A/M	3	–	1 DO	e	3	12.5	2700540	2700548	
PSR-MC40	●	●	●	●	●	–	A/M	3	–	1 DO	e	3	12.5	2700569	2700570	
PSR-MC50	●	●	–	●	●	–	A/M	3	–	1 DO	e	3	12.5	2700540	2700548	
PSR-MC60	–	–	–	–	–	●	A	2	–	1 DO	c	1	12.5	2700571	2700572	
PSR-MC62	–	–	–	–	–	●	A	2	–	1 DO	e	3	12.5	2700574	2700575	
PSR-MC70	●	●	●	●	●	–	A/M	1	1	1 DO	c ¹⁾	1 ¹⁾	12.5	2702094	2702095	
PSR-MC72	●	●	●	●	●	–	A/M	1	1	1 DO	e	3	12.5	2702096	2702097	
PSR-MC82	Contact extension						A	5	–	1 NC/1 DO	e ²⁾	3 ²⁾	12.5	2702382	2702383	

¹⁾ Up to PL e/SILCL 3 possible, depending on the application; ²⁾ In conjunction with suitable analysis device; ³⁾ 1-channel sensor circuit; ⁴⁾ Antivalent sensor circuit;
⁵⁾ No cross-circuit detection; A = automatic start; M = manual, monitored start; DO = digital signal output; NC = N/C contact

PSRmini – highly compact, safe coupling relays for the process industry

Type	Applications	Output contacts		Diagnostics/proof test				Safety approvals				Overall width in mm	Connection technology		
				Visual Diagnostic	Interlocking	Error Signal Generator	Safe readback of the N/C contact	SIL IEC 61508/61511	SIL IEC 50156	ATEX / IECEx / Class I Zone 2	G3 ANSI / ISA-571.04		GL	Screw connection technology	Spring-cage connection technology
PSR-PS20	Highly compact, safe coupling relay for fail-safe controllers... ... for a safety-related shutdown (ESD)	1	1 NC / 1 DO	●	–	●	●	3	3	●	●	●	6.8	2700356	–
PSR-PS21		1	1 NC / 1 DO	●	–	●	●	2	2	●	●	●	6.8	2700357	–
PSR-PS40		1	1 DO	●	●	–	–	3	3	●	●	●	6.8	2700398	–
PSR-PC20		1	1 NC / 1 DO	●	–	●	●	3	3	●	●	●	12.5	2700577	2700578
PSR-PC32		2	1 NC	●	–	–	●	3	3	●	●	●	17.5	2700581	2700582
PSR-PC40		2	1 DO	●	●	●	–	3	3	●	●	●	12.5	2700588	2700589
PSR-PC50	...for safety-related switch on (F&G)	1	1 DO	–	–	●	●	3 ¹⁾	–	●	–	●	17.5	2904664	2904665

¹⁾ Low demand; NC = N/C contact; DO = Digital signal output
 Customer-specific Termination Carriers are available on request

PSRclassic – coupling relays with forced guidance for universal use

Type	Applications	Output contacts			Input voltage	Connection technology			
						Screw connection technology	Spring-cage connection technology	Screw connection technology, fixed	Spring-cage connection technology, fixed
PSR-URM	Coupling relays for universal applications	5	2	–	24 V UC	2963747	2963970	–	–
					120 V UC	2981402	2981415	–	–
PSR-URM/3X1		3	3	–	24 V UC	2981839	2981842	–	–
					120 V UC	–	–	–	–
PSR-URM/5X1		5	1	–	24 V UC	2981952	2981965	–	–
					120 V UC	–	–	–	–
PSR-URM/2X21		–	–	2	24 V UC	–	–	2981363	–
					120 V UC	–	–	2981376	–
PSR-URM/4X1		4	2	–	24 V UC	–	–	2981444	2981457
					120 V UC	–	–	–	–

PSRclassic – conventional safe coupling relays for the process industry

Type	Input voltage	Applications	Output contacts			Safety approvals			Connection technology	
						SIL IEC 61508	SIL IEC 61511	SIL IEC 50156	Screw connection technology	Spring-cage connection technology
PSR-FSP	24 V DC	Coupling relays for failsafe controllers	1	1	–	3	3	3	2981978	2981981
PSR-FSP/2x1	24 V DC		2	1	–	3	3	3	2986960	2986957
PSR-FSP2/2x1	24 V DC		2	1	–	2	2	2	2986575	2986588
PSR-ETP	24 V DC		1	–	–	3*	3*	–	2986711	2986562
PSR-ESP4	24 V DC		2	1	–	3	3	–	2981020	2981017

*Low demand

PSRclassic – Termination Carrier

TC-DO16-ESD	Termination Carrier for ESD applications with PSR-FSP	2902913
TC-C-PSR3-M	Cable set if confirmation contact is used with the PSR-FSP	2903390
TC-C-PSR3	Cable set if confirmation contact is not used with the PSR-FSP	2903389
TC-C-PTSM-J	Bridge plug for occupying unused module slots	2903388
TC-DO16-F&G	Termination Carrier for F&G applications with PSR-ETP or PSR-PC50	2902914
TC-C-PSR3-24V	Cable set with 24 V module supply for PSR-ETP	2903391
TC-C-PCX3-24V	Cable set with 24 V module supply for PSR-PC50	2906003

PSRclassic – conventional safety relays for machine building

 Type Input voltage	Applications					Output contacts			Safety approvals			Connection technology	
									CAT/PL EN ISO 13849-1	SILCL EN 62061	SIL IEC 50156	Screw connection technology	Spring-cage connection technology
PSR-ESA2-B 24 V AC/DC	●	●	–	–	–	4	–	1	1/c ⁴⁾	1 ⁴⁾	–	2963802	2963954
PSR-ESAM2/3x1-B 230 V AC/DC	●	●	–	–	–	3	–	1	1/c ⁴⁾	1 ⁴⁾	–	2901430	2901431
PSR-ESAM4/2x1 24 V AC/DC	●	●	–	–	–	2	–	1	4/e	3	3	2900525	2900526
PSR-ESAM4/3x1-B 24 V AC/DC	●	●	–	–	–	3	–	1	4/e	3	3	2900509	2900510
PSR-ESAM4/3x1-B 42 ... 48 V AC/DC	●	●	–	–	–	3	–	1	4/e	3	3	2901416	2901417
PSR-ESAM4/3x1-B 60 V AC/DC	●	●	–	–	–	3	–	1	4/e	3	3	2901426	2901427
PSR-ESAM4/3x1-B 120 V AC/DC	●	●	–	–	–	3	–	1	4/e	3	3	2901422	2901425
PSR-ESAM4/3x1-B 230 V AC/DC	●	●	–	–	–	3	–	1	4/e	3	3	2901428	2901429
PSR-ESAM4/3x1 24 ... 230 V AC/DC	●	●	–	–	–	3	–	1	4/e	3	–	2981114	2981127
PSR-ESAM4/8x1 24 V AC/DC	●	●	–	–	–	8	–	1	4/e	3	–	2963912	2963996
PSR-ESL4 24 V AC/DC	●	●	●	–	–	3	–	1	4/e	3	–	2981059	2981062
PSR-ESD-30 24 V DC	●	●	●	–	–	2	2	–	4/e	3	–	2981800	2981813
PSR-ESD-300 24 V AC/DC	●	●	●	–	–	3	2	1	4 ³⁾ /e ³⁾	3 ³⁾	–	2981428	2981431
PSR-ESD-T 24 V AC/DC	●	●	●	–	–	3	2	1	4 ³⁾ /e ³⁾	3 ³⁾	–	Fixed times – see catalog for ordering data	
PSR-THC4 24 V AC/DC	–	●	–	–	●	2	–	1	4 ²⁾ /e	3	–	2963721	2963983
PSR-URML4 24 V DC	Contact extensions for electrosensitive protective equipment					3	–	1	4/e	3	–	2903583	2903584
PSR-URM4 42 ... 230 V AC/DC	Contact extensions					4	–	2	4 ¹⁾ /e ¹⁾	3 ¹⁾	3	2902935	2902936
PSR-URM4 24 V AC/DC	Contact extensions					5	–	2	4 ¹⁾ /e ¹⁾	3 ¹⁾	–	2963734	2964005
PSR-URM4-B 24 V AC/DC	Contact extensions					5	–	2	4 ¹⁾ /e ¹⁾	3 ¹⁾	–	2981033	2981046

¹⁾ = In conjunction with suitable basic device, ²⁾ = Type IIIC according to EN 574,

³⁾ = Undelayed contacts: Cat. 4, PL e, SILCL 3, dropout delayed contacts: Cat. 3, PL d, SILCL 2, ⁴⁾ = Up to PL e possible depending on the application

PSRmultifunction – safety relays

 Type Input voltage	Applications					Output contacts			Safety approvals			Connection technology		
										CAT/PL EN ISO 13849-1	SILCL EN 62061	SIL IEC 50156	Screw connection technology	Spring-cage connection technology
PSR-MXF1 24 V DC	●	●	–	–	–	4	–	2	4/e	3	●	2902725	2902726	2903253
PSR-MXF2 24 V DC	●	●	–	●	–	4	–	2	4/e	3	●	2903254	2903255	2903256
PSR-MXF3 24 V DC	●	●	●	–	–	4	–	2	4/e	3	●	2903257	2903258	2903259
PSR-MXF4 24 V DC	●	●	●	●	–	4	–	2	4/e	3	●	2903260	2903261	2903262

PSRmodular – modular safety relay system with wiring via system connector

 Type Input voltage	Applications					Output contacts			Safety approvals		Connection technology	
									CAT/PL EN ISO 13849-1	SILCL EN 62061	Screw connection technology	Spring-cage connection technology
PSR-SDC4 24 V DC	●	●	●	●	–	2	–	1 ³⁾	4/e	3	2981486	2981499
PSR-URM4/B 24 V DC	Contact extensions					4	–	2	4/e	3	2981677	2981680
PSR-URD3/3 24 V DC	Contact extensions					–	4	2 delayed	3/d	2	2981732	2981745
PSR-URD3/30 24 V DC	Contact extensions					–	4	2 delayed	3/d	2	2981512	2981525
PSR-URD3/T2 24 V DC	Contact extensions					–	4	2 delayed	3/d	2	2981703	2981729
PSR-SIM4	IP20 input extension – interface module for up to 4 safety sensors										2981936	2981949

 PSR-SACB...	Description		Order designation		Order No.
	IP65/IP67 input extension – sensor box for up to 4 safety sensors	Cable length: 5 m	PSR-SACB-4/4-L-5,0PUR-SD	2981871	
		Cable length: 10 m	PSR-SACB-4/4-L-10,0PUR-SD	2981884	
Blind plug for free slots	SAC-2P-M12MS ASI TR	1539570			

³⁾ = Undelayed contacts: Cat. 4, PL e, SILCL 3, dropout delayed contacts: Cat. 3, PL d, SILCL 2

PSRmodular – accessories

PSR-TBUS	DIN rail connector	PSR-TBUS	2890425
	Blind plug	PSR-TBUS-TP	2981716

PSRmotion – zero-speed and over-speed safety relay

Type Input voltage	Applications					Contacts		Safety approvals		Connection technology	
				$n=0$	$n < n_{max}$			CAT/PL EN ISO 13849-1	SILCL EN 62061	Screw connection technology	Spring-cage connection technology
PSR-MM25 24 V DC	●	–	–	●	–	1	2 DO	3/e	3	2702355	2702356
PSR-RSM4 24 V DC	–	●	●	●	●	4	3 DO	4/e	3	2981538	2981541
PSR-CONF-WIN for RSM4	Configuration software with connecting cable for PSR-RSM4									2981554	
Cable-/...	Adaptation of the zero-speed and over-speed safety relays to existing drive systems									on request	

³⁾ = Undelayed contacts: Cat. 4, PL e, SILCL 3, dropout delayed contacts: Cat. 3, PL d, SILCL 2

Trisafe – configurable safety modules

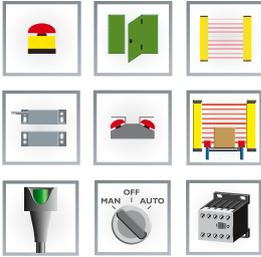
Type Input voltage	Applications			Inputs/outputs			Safety approvals				Connection technology			
				Inputs	Safe control outputs	Ground switching outputs	Clock outputs	Signal outputs	CAT/PL EN ISO 13849-1	SILCL EN 62061	SIL IEC 61508	SIL IEC 50156	Screw connection technology	Spring-cage connection technology
PSR-TRISAFE-S 24 V DC	Master module (stand-alone)			20	4	2	2	4	4/e	3	3	3	2986229	2986232
PSR-TRISAFE-M 24 V DC	Master module (safe extension)			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*	–	(2)*	2*	4/e	3	3	3	2986038	2986041
PSR-TS-SDOR4 24 V DC	Safe relay module			–	4***	–	–	4	4**/ e**	3**	3**	3	2986096	2986106
PSR-TRISAFE starter kit	Contents: PSR-TRISAFE-M, prewired, international power supply, USB cable for device configuration, SAFECONF configuration software, quick start guide									2986300				
EM-PB-GATEWAY-IFS	PROFIBUS GATEWAY									2297620		–		
COPYSTATION-IFS	Copy and delete station for IFS-CONFSTICK-type memory modules									2901985				

*Configurable via software: outputs to inputs / signal outputs to clock outputs; ** Up to ... depending on connection; *** Configurable via software: 4 x 1-channel or 2 x 2-channel

SAFECONF – configuration software

IFS-CONFSTICK	Memory module for Trisafe		2986122
	SAFECONF	Free configuration software for Trisafe and SafetyBridge modules. Download at phoenixcontact.com	
		Configuration package including software, USB cable, and quick start guide	Multilingual 2986119

SafetyBridge – network safety solutions

 Type Input voltage	Applications 	Inputs/outputs					Safety approvals			Order No.
		Safe inputs	Safe outputs	Clock outputs	Signal outputs	Relay outputs	CAT/PL EN ISO 13849-1	SILCL EN 62061	SIL IEC 61508	
IB IL 24 LPSDO 8-PAC 24 V DC	Logic module	–	8	–	–	–	4/e	3	3	2916024
IB IL 24 LPSDO 8 V2-PAC 24 V DC	Logic module	–	8	–	–	–	4/e	3	3	2700606
IB IL 24 LPSDO 8 V3-PAC 24 V DC	Logic module	–	8	–	–	–	4/e	3	3	2701625
ILC 130 SBT V2 starter kit	ILC 130 ETH, IB IL 24 LPSDO 8 V2-PAC, IB IL 24 PSDI 8-PAC, fully wired, SAFECONF configuration software, quick start guide, and example project									2700993
MUX SD card	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 application program for easy web-based configuration and startup of a SafetyBridge solution.									2403297
SD FLASH easy safe pro	Program and configuration memory, plug-in, 2 GB, with license key and application program for easy web-based configuration and startup of a SafetyBridge solution including communication via Modbus/TCP, PROFINET, and e-mail.									2403298

Inline SafetyBridge and PROFIsafe I/O modules

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 module *	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

* Only compatible with IB IL 24 LPSDO V3-PAC logic module

Axioline F PROFIsafe I/O modules

AXL F LPSDO8/3 1F 24 V DC	Logic module	–	8	–	–	–	4/e	3	3	2702171
AXL F SSDI8/4 1F 24 V DC	Input module	8	–	–	–	–	4/e	3	3	2702263
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	–	–	–	–	4/e	3	3	2701559
AXL F PSDO8/3 1F 24 V DC	Output module	–	8	–	–	–	4/e	3	3	2701560

PROFIsafe control technology

Type	Applications	Number of I/Os	Safety protocol	Software	Safety approvals			Order No.
					CAT/PL EN ISO 13849-1	SILCL EN 62061	SIL IEC 61508	
 RFC 470S PN 3TX	Safety controller that can be freely programmed using LD and FBD	Up to 170 safe devices	PROFIsafe via PROFINET	SAFETYPROG	4/e	3	3	2916794
 FL PN/PN SDIO-2TX/2TX	Safe PROFINET gateway	–	PROFIsafe via PROFINET	–	4/e	3	3	2700651

SAFETYPROG – programming software

	SAFETYPROG Basic	SAFETYPROG programming software, including certified PLCopen blocks	2700443
	SAFETYPROG Advanced		2700441
	SAFETYPROG Professional		2700442
	SAFE AI function block	Function block library for safety-related analog value acquisition with standard I/O modules	2400057

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Key for applications, outputs, and safety approvals

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 Safety door switch, mechanical	 Start/restart	 Two-hand function	 Contactor control	 N/C contact	 Zero-speed safety relay
 Light grid	 Initiators	 Muting	 Encoder	 Changeover contact	 Over-speed safety relay
 Solenoid switch	 Expanded temperature range	 Enable switch	 Sensor-free motor monitoring	 Dropout delayed contact	 Switching capacity



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