Functional safety

From emergency stop
relays to safety controllers

PHŒNIX CONTACT

INSPIRING INNOVATIONS

PHOENIX CONTACT –
in dialog with customers and partners worldwide

Phoenix Contact is a global market leader in the fields of electrical engineering, electronics, and automation. Founded in 1923, the family-owned company now employs around 14,000 people worldwide. A sales network with over 50 sales subsidiaries and more than 30 additional global sales partners guarantees customer proximity directly on site, anywhere in the world.

Our range of services consists of all kinds of products with a wide range of 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 fields of water supply, 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

Contents

PSRmini –
highly compact safety and coupling relays

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

Despite their highly compact design, the PSRmini relays 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.

Highly compact in 6 mm and 12 mm
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.

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 switching device 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.

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.

PL EN ISO 13849   SILCL IEC 62061   SIL IEC 61508

PSRmini in the Termination Carrier

Termination Carriers prewired by Phoenix Contact enable fast, error-free mounting and connection to common safe systems. They also establish the Plug and Play signal connection with standardized system cables. Standardized or controller-specific front adapters are used for connection to your safe system.

Relay Technology

Designed by PHOENIX CONTACT

6 A

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, the 12 mm version with 2 to 3.

Convenient connection methods

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

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.

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

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

Convenient connection technology

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

Safe time functions

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

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.

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.

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.

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.

They also establish the Plug and Play signal connection with 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.

Electromechanical signal generators (e.g., emergency stop)	
Electromechanical signal generators (e.g., mechanical safety door locks)	
Signal generators, OSSD (e.g., light grid, transponder switch, failsafe outputs)	
Contact-free signal generators, magnetic (e.g., reed contacts)	
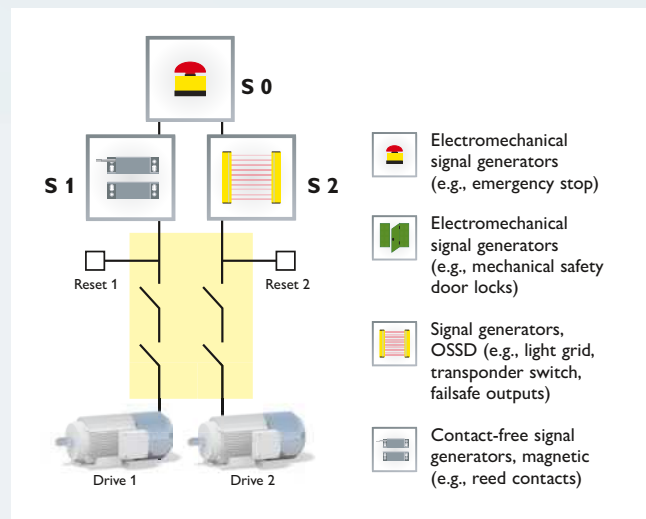
Avoid errors

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 –
speed and downtime monitor

The PSR-RSM4 combined downtime and speed monitor is used to monitor hazardous movements of a machine or system – and, in the event of an error, safely shuts down the machine or system.

Application-related parameters are set in the intuitive PSR-CONF-WIN software and then transferred to the PSR-RSM4 safety module.

Monitor three different speeds and downtime

The external operating mode selection enables the safe monitoring of up to three different speeds and one freely definable downtime threshold.

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

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

$n=0$ $n<n_{max}$

Use standard sensors for motion detection

All common encoders can be connected to the module via the connection terminal blocks using RJ45 cable adapters and initiators.
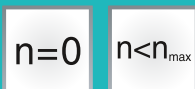
Software-parameterizable speed monitoring

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.
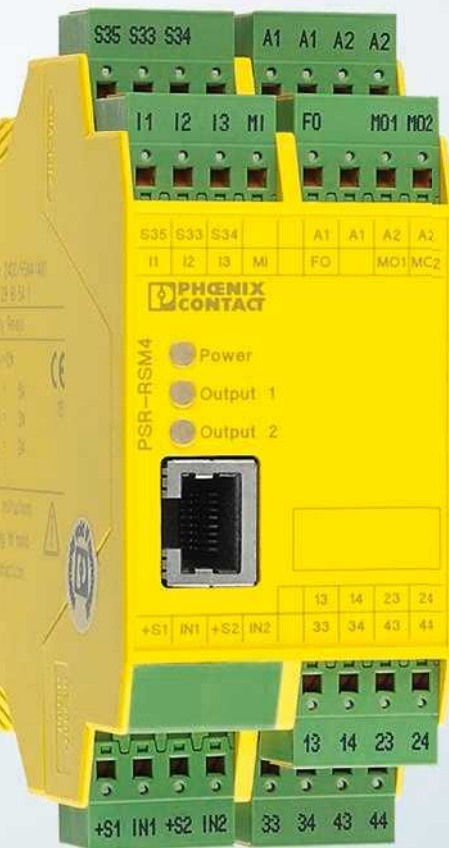
Fast startup

We offer pre-assembled cable adapters for tailor-made connection to popular motor feedback systems of electrical drives.

Downtime monitoring

• 2 safe relay outputs and 1 signal output

Speed monitoring

• 2 safe relay outputs and 1 signal output

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.

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.
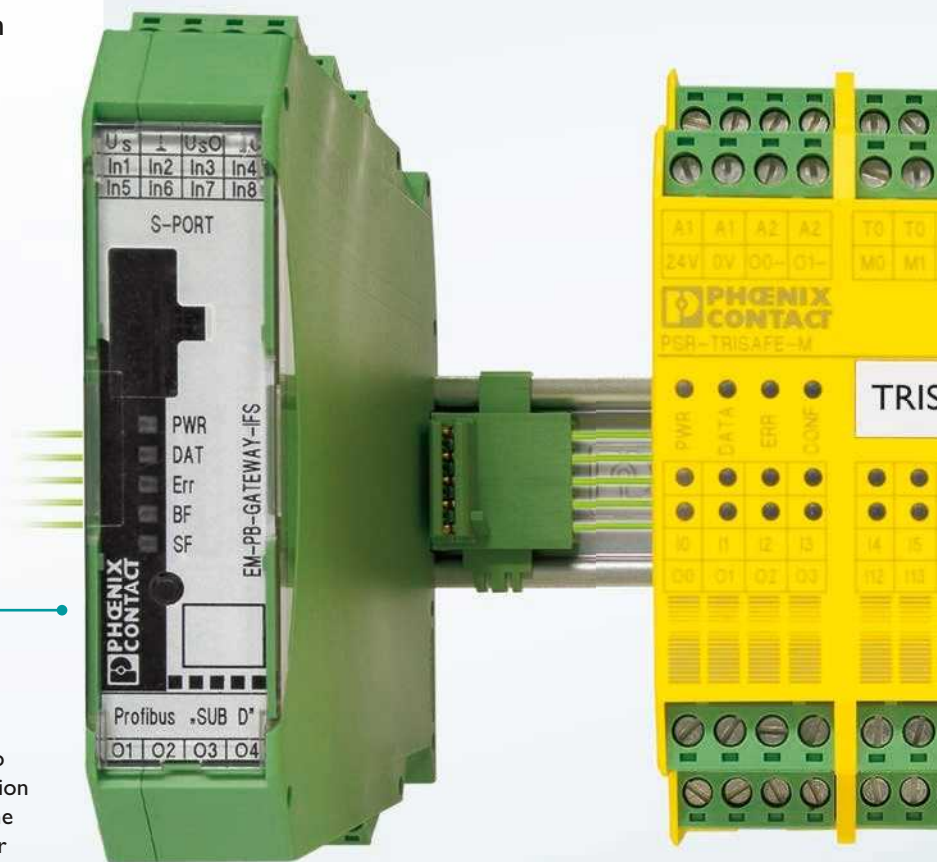
CANopen

DeviceNet

EtherNet/IP

Modbus

PROFIBUS

PROFINET

Easy configuration using the SAFECONF software

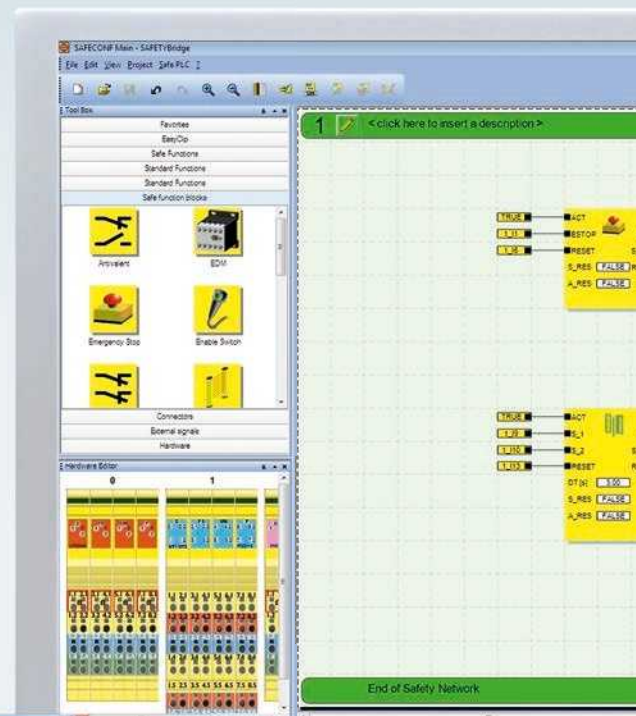With SAFECONF, you can easily create the safety logic for TRISAFE and SafetyBridge Technology using drag and drop.

For details of the SAFECONF software, please refer to pages 18 and 19.
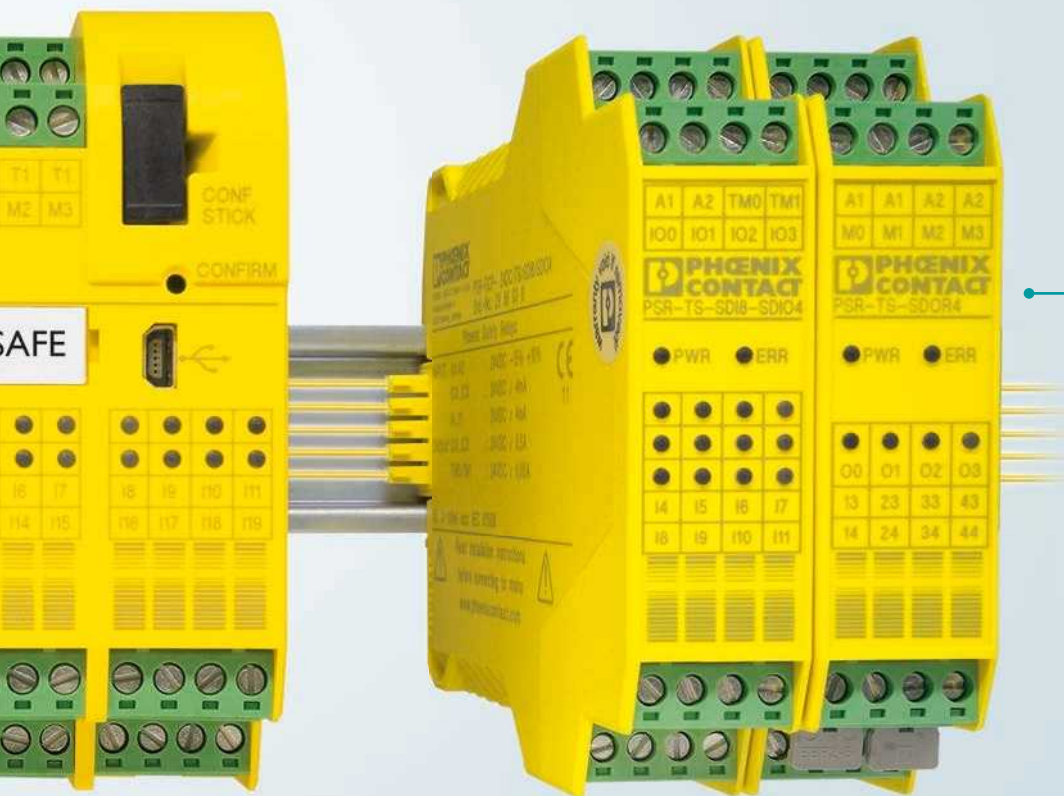
Extension modules

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

In any network, the SafetyBridge I/Os perform all the relevant safety tasks and very easily integrate functional safety into your machine or system.

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

Benefit from the flexibility and cost-saving advantages of SafetyBridge Technology.

What are the advantages of network independence?

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
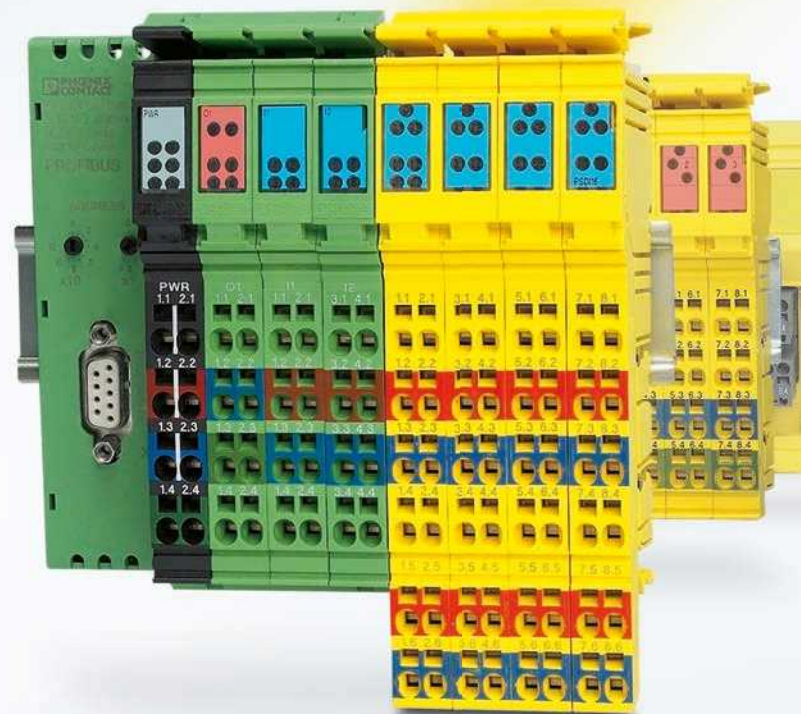
Various I/O modules

- Maximum of 16 safe inputs
- Maximum of 8 safe outputs
- 1 relay module

Easy configuration using the SAFECONF software

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

SAFECONF
Safety Configuration

EtherNet/IP™

INTERBUS

Modbus

PROFIBUS®

PROFINET®

sercos
the automation bus

Intelligent logic module

- With 8 safe outputs
- Can be linked to up to 16 additional safe I/O modules

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!
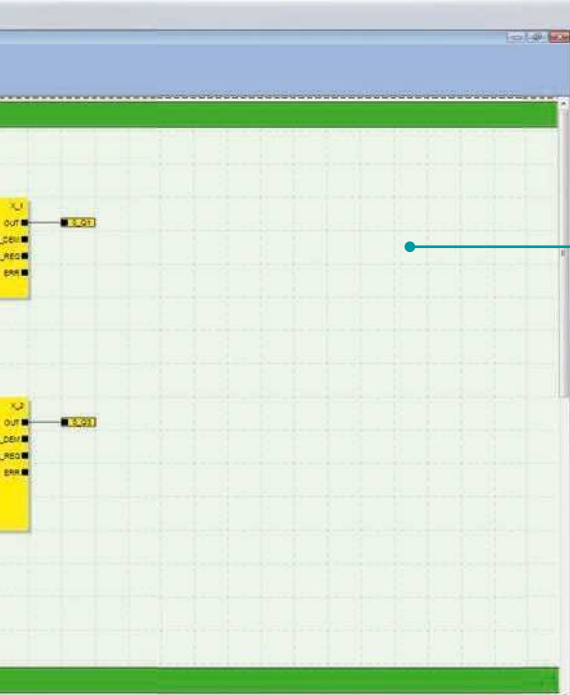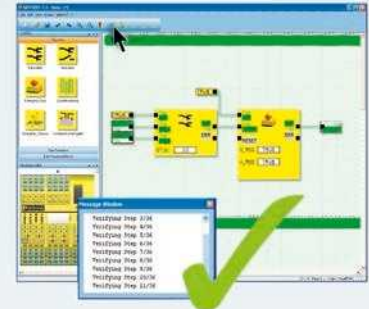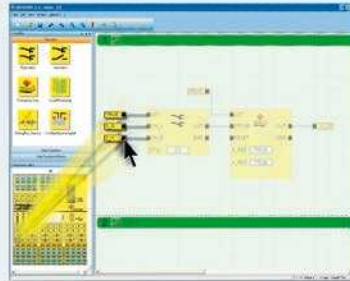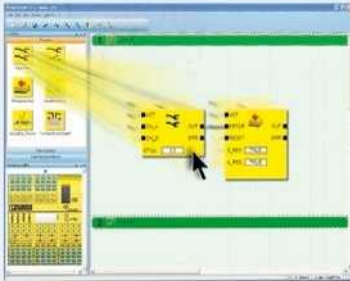
Intuitive operation and certified blocks

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.
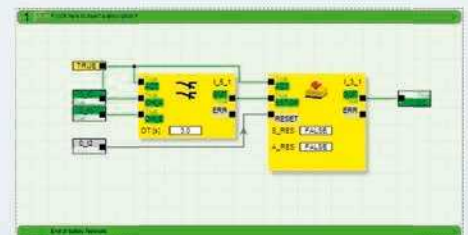
Simulation and diagnostics

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.

Axioline PROFIsafe I/O modules

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.

Inline PROFIsafe I/O modules

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.
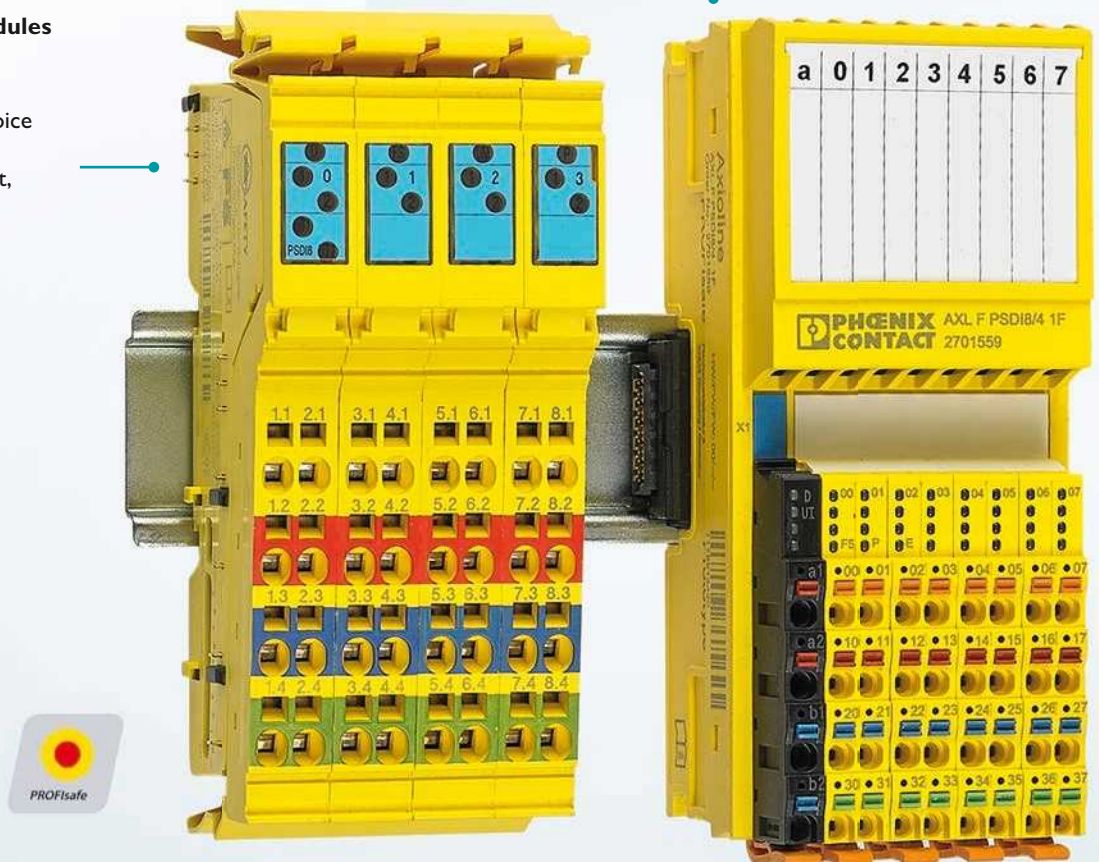
Coupling of PROFINET/PROFIsafe systems

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.
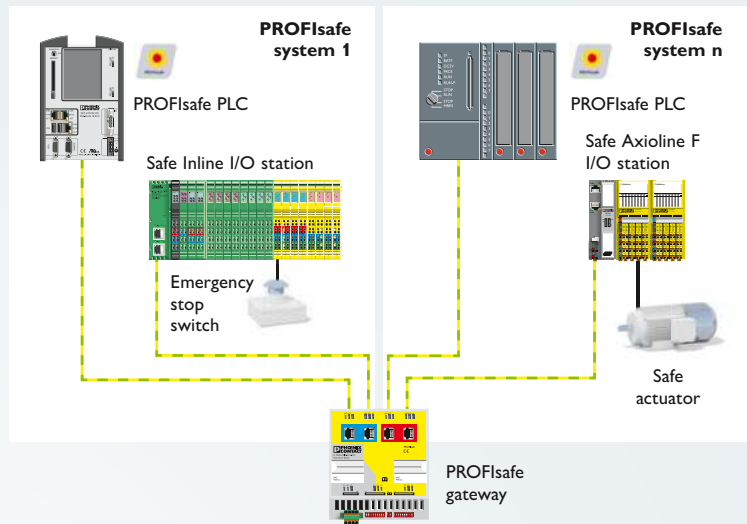
PROFINET gateway

The safe PROFINET gateway for cross-network PROFINET/PROFIsafe applications.
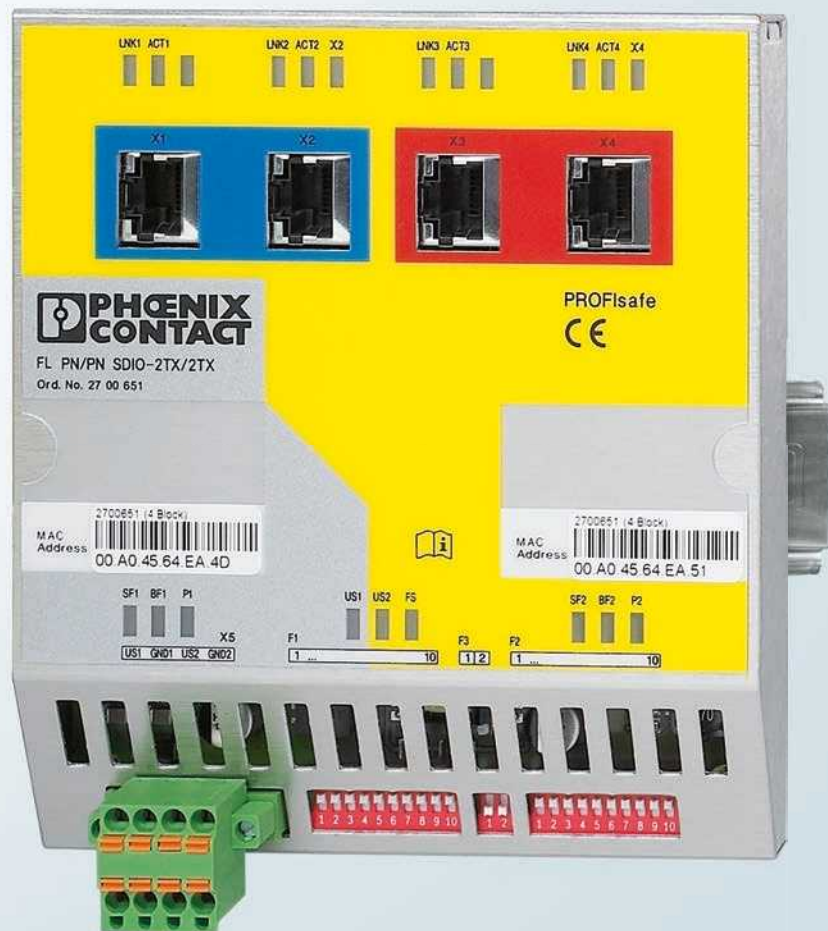
PROFIsafe control technology – compact high-performance controllers

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 PROFIsafe 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 machine safety.
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 31.

Machine operators

Machine manufacturers

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

- Machinery Directive
- CE declaration of conformity

System integrators

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

- EN ISO 13849, EN 62061
- SISTEMA

Safety Lifecycle

Phase 0
Risk Assessment

Phase 1
Safety Planning

Phase 2
Specification

Phase 3
Validation Planning

Phase 4
Realization

Phase 5
Verification

Phase 6
Code Simulation

Phase 7
Validation

Functional Safety Services

PSRmini – highly compact safety relays for machine building

Type	Applications						Output contacts		Safety approvals		Overall width	Connection method	
									PL EN ISO 13849-1	SILCL EN 62061		Screw, plug-in	Push-in spring-cage, plug-in
PSR-MS20	X	X	–	X	–	A	1	1 DO	c[1]	1[1]	6.8 mm	2904950	–
PSR-MS25	X	X	–	X	–	M	1	1 DO	c[1]	1[1]	6.8 mm	2904951	–
PSR-MS30	X	X	–	X	X	A	1	–	e	3	6.8 mm	2904952	–
PSR-MS35	X	X	–	X	X	M	1	–	e	3	6.8 mm	2904953	–
PSR-MS40	X	X	–	–	X	A	1	1 DO	e	3	6.8 mm	2904954	–
PSR-MS45	X	X	–	–	X	M	1	1 DO	e	3	6.8 mm	2904955	–
PSR-MS50	–	X	–	X	–	A	1	1 DO	e	3	6.8 mm	2904956	–
PSR-MS55	–	X	–	X	–	M	1	1 DO	e	3	6.8 mm	2904957	–
PSR-MS60	X	X	X	X	X	A	2	–	e	3	6.8 mm	2904958	–
PSR-MC20	X	X	–	X	–	A/M	3	1 DO	c[1]	1[1]	12.5 mm	2700466	2700467
PSR-MC30	X	X	–	X	X	A/M	2	1 DO	e	3	12.5 mm	2700498	2700499
PSR-MC34	X	X	–	X	X	A/M	3	1 DO	e	3	12.5 mm	2700540	2700548
PSR-MC40	X	X	X	X	X	A/M	3	1 DO	e	3	12.5 mm	2700569	2700570
PSR-MC50	–	X	–	X	–	A/M	3	1 DO	e	3	12.5 mm	2700553	2700564

[1] Up to PL e/SILCL 3 possible depending on the application
A = Automatic start; M = Manual, monitored start; DO = Digital signal output

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

Type	Applications	Output contacts		Diagnostics/proof test				Safety approvals					Overall width	Connection method	
	Highly compact, safe coupling relays for fail-safe controllers…			Visual via LED	Active error acknowledgment via A1	Measurement on the device	Self-monitoring with integrated lock	SIL IEC 61508/61511	SIL IEC 50156	ATEX / IECEx / Class I Zone 2	G3 ANSI / ISA-S71.04	GL		Screw, plug-in	Push-in spring-cage, plug-in
PSR-PS20		1	1 NC / 1 DO	X	X	X	–	3	3	X	X	X	6.8 mm	2700356	–
PSR-PS21		1	1 NC / 1 DO	X	X	X	–	2	2	X	X	X	6.8 mm	2700357	–
PSR-PS40	… for safety-related shutdown (ESD)	1	1 DO	X	–	–	X	3	3	X	X	X	6.8 mm	2700398	–
PSR-PC20		1	1 NC / 1 DO	X	X	X	–	3	3	X	X	X	12.5 mm	2700577	2700578
PSR-PC40		2	1 DO	X	X	–	X	3	3	X	X	X	12.5 mm	2700588	2700589
PSR-PC50	…for safety-related switch on (F&G)	1	1 DO	–	X	X	–	3[1]	–	X	–	X	17.5 mm	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 (NO)	(NC)	(CO)	Screw, plug-in	Spring-cage, plug-in	Screw, fixed	Spring-cage, fixed	Input voltage	Order No.
PSR-URM		5	2	–	X	–	–	–	24 V UC	2963747
					X	–	–	–	120 V UC	2981402
					–	X	–	–	24 V UC	2963970
					–	X	–	–	120 V UC	2981415
PSR-URM/3X1		3	3	–	X	–	–	–	24 V UC	2981839
	Coupling relays for universal applications				–	X	–	–	24 V UC	2981842
PSR-URM/5X1		5	1	–	X	–	–	–	24 V UC	2981952
					–	X	–	–	24 V UC	2981965
PSR-URM/2X21		–	–	2	–	–	X	–	24 V UC	2981363
					–	–	X	–	120 V UC	2981376
PSR-URM/4X1		4	2	–	–	–	X	–	24 V UC	2981444
					–	–	X	–	120 V UC	2981460
					–	–	–	X	24 V UC	2981457
					–	–	–	X	120 V UC	2981473

PSRclassic – conventional safe coupling relays for the process industry

Type / Input voltage	Applications	Output contacts (NO)	(NC)	(CO)	SIL IEC 61508	SIL IEC 61511	SIL IEC 50156	Screw, plug-in	Spring-cage, plug-in	Order No.
PSR-FSP 24 V DC		1	1	–	3	3	3	X	–	2981978
								–	X	2981981
PSR-FSP/2x1 24 V DC		2	1	–	3	3	3	X	–	2986960
								–	X	2986957
PSR-FSP2/2x1 24 V DC	Coupling relays for failsafe controllers	2	1	–	2	2	2	X	–	2986575
								–	X	2986588
PSR-ETP 24 V DC		1	–	–	3*	3*	–	X	–	2986711
								–	X	2986562
PSR-ESP4 24 V DC		2	1	–	3	3	–	X	–	2981020
								–	X	2981017

*Low demand

PSRclassic – accessories

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

# PSRclassic – conventional safety relays for machine building

Type / Input voltage	Applications					Output contacts			Safety approvals CAT/PL EN ISO 13849-1	SILCL EN 62061	SIL IEC 50156	Connection method Screw, plug-in	Spring-cage, plug-in	Order No.
PSR-ESA2-B 24 V AC/DC	X	X	–	–	–	4	–	1	1/c [4]	1 [4]	–	X	–	2963802
												–	X	2963954
PSR-ESAM2/3x1-B 230 V AC/DC	X	X	–	–	–	3	–	1	1/c [4]	1 [4]	–	X	–	2901430
												–	X	2901431
PSR-ESAM4/2x1 24 V AC/DC	X	X	–	–	–	2	–	1	4/e	3	3	X	–	2900525
												–	X	2900526
PSR-ESAM4/3x1-B 24 V AC/DC	X	X	–	–	–	3	–	1	4/e	3	3	X	–	2900509
												–	X	2900510
PSR-ESAM4/3x1-B 42 … 48 V AC/DC	X	X	–	–	–	3	–	1	4/e	3	3	X	–	2901416
												–	X	2901417
PSR-ESAM4/3x1-B 60 V AC/DC	X	X	–	–	–	3	–	1	4/e	3	3	X	–	2901426
												–	X	2901427
PSR-ESAM4/3x1-B 120 V AC/DC	X	X	–	–	–	3	–	1	4/e	3	3	X	–	2901422
												–	X	2901425
PSR-ESAM4/3x1-B 230 V AC/DC	X	X	–	–	–	3	–	1	4/e	3	3	X	–	2901428
												–	X	2901429
PSR-ESAM4/3x1 24 … 230 V AC/DC	X	X	–	–	–	3	–	1	4/e	3	–	X	–	2981114
												–	X	2981127
PSR-ESAM4/8x1 24 V AC/DC	X	X	–	–	–	8	–	1	4/e	3	–	X	–	2963912
												–	X	2963996
PSR-ESL4 24 V AC/DC	X	X	X	–	–	3	–	1	4/e	3	–	X	–	2981059
												–	X	2981062
PSR-ESD-30 24 V DC	X	X	X	–	–	2	2	–	4/e	3	–	X	–	2981800
												–	X	2981813
PSR-ESD-300 24 V AC/DC	X	X	X	–	–	3	2	1	4 [3]/e [3]	3 [3]	–	X	–	2981428
												–	X	2981431
PSR-ESD-T 24 V AC/DC	X	X	X	–	–	3	2	1	4 [3]/e [3]	3 [3]	–	X	–	Fixed times – see catalog for ordering data
												–	X	
PSR-THC4 24 V AC/DC	–	X	–	–	X	2	–	1	4 [2]/e	3	–	X	–	2963721
												–	X	2963983
PSR-URML4 24 V DC	Contact extensions for electrosensitive protective equipment					3	–	1	4/e	3	–	X	–	2903583
												–	X	2903584
PSR-URM4 42 … 230 V AC/DC	Contact extensions					4	–	2	4 [1]/e [1]	3 [1]	3	X	–	2902935
												–	X	2902936
PSR-URM4 24 V AC/DC	Contact extensions					5	–	2	4 [1]/e [1]	3 [1]	–	X	–	2963734
												–	X	2964005
PSR-URM4-B 24 V AC/DC	Contact extensions					5	–	2	4 [1]/e [1]	3 [1]	–	X	–	2981033
												–	X	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 method			Order No.
						(NO)	(delayed)	(NC)	CAT/PL EN ISO 13849-1	SILCL EN 62061	SIL IEC 50156	Screw	Spring-cage	Push-in	
PSR-MXF1 24 V DC	X	X	–	–	–	4	–	2	4/e	3	X	X	–	–	2902725
												–	X	–	2902726
												–	–	X	2903253
PSR-MXF2 24 V DC	X	X	–	X	–	4	–	2	4/e	3	X	X	–	–	2903254
												–	X	–	2903255
												–	–	X	2903256
PSR-MXF3 24 V DC	X	X	X	–	–	4	–	2	4/e	3	X	X	–	–	2903257
												–	X	–	2903258
												–	–	X	2903259
PSR-MXF4 24 V DC	X	X	X	X	–	4	–	2	4/e	3	X	X	–	–	2903260
												–	X	–	2903261
												–	–	X	2903262

PSRmodular – modular safety relay system with wiring via system connector

Type / Input voltage	Applications					Output contacts			Safety approvals		Connection method		Order No.
						(NO)	(delayed)	(NC)	CAT/PL EN ISO 13849-1	SILCL EN 62061	Screw, plug-in	Spring-cage, plug-in	
PSR-SDC4 24 V DC	X	X	X	X	–	2	–	1 [3]	4/e	3	X	–	2981486
											–	X	2981499
PSR-URM4/B 24 V DC	Contact extensions					4	–	2	4/e	3	X	–	2981677
											–	X	2981680
PSR-URD3/3 24 V DC	Contact extensions					–	4	2 delayed	3/d	2	X	–	2981732
											–	X	2981745
PSR-URD3/30 24 V DC	Contact extensions					–	4	2 delayed	3/d	2	X	–	2981512
											–	X	2981525
PSR-URD3/T2 24 V DC	Contact extensions					–	4	2 delayed	3/d	2	X	–	2981703
											–	X	2981729
PSR-SIM4	IP20 input extension – interface module for up to 4 safety sensors										X	–	2981936
											–	X	2981949

	Description	Order designation	Order No.
PSR-SACB…	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

		Order designation	Order No.
PSR-TBUS	DIN rail connector	PSR-TBUS	2890425
	Blind plug	PSR-TBUS-TP	2981716

PSRmotion – downtime and speed monitor

Type Input voltage		Applications		Contacts		Safety approvals		Connection method		Order No.
		$n=0$	$n<n_{max}$	⏻	⏻	CAT/PL EN ISO 13849-1	SILCL EN 62061	Screw, plug-in	Spring-cage, plug-in	
PSR-RSM4 24 V DC		X	X	4	–	4/e	3	X	–	2981538
								–	X	2981541
PSR-CONF-WIN	Configuration software with connecting cable for PSR-RSM4									2981554
Cable-/...	Adaptation of the downtime and speed monitor 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	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, plug-in	Spring-cage, plug-in	Order No.
PSR-TRISAFE-S 24 V DC	Master module (stand-alone)	20	4	2	2	4	4/e	3	3	3	X	–	2986229
											–	X	2986232
PSR-TRISAFE-M 24 V DC	Master module (safe extension)	20	4	2	2	4	4/e	3	3	3	X	–	2986012
											–	X	2986025
PSR-TS-SDI8-SDIO4 24 V DC	Safe digital I/O extension module	8	4*	–	(2)*	2*	4/e	3	3	3	X	–	2986038
											–	X	2986041
PSR-TS-SDOR4 24 V DC	Safe relay module	–	4***	–	–	4	4**/e**	3**	3**	3	X	–	2986096
											–	X	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

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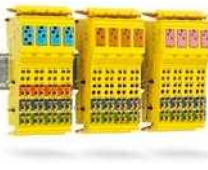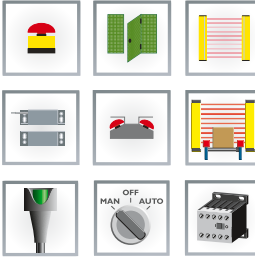** Up to ... depending on connection
*** Configurable via software: 4 x 1-channel or 2 x 2-channel

SAFECONF – configuration software

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

SafetyBridge – network safety solutions

Type Input voltage	Applications	Safe inputs	Safe outputs	Clock outputs	Signal outputs	Relay outputs	CAT/PL EN ISO 13849-1	SILCL EN 62061	SIL IEC 61508	Order No.
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

Inline SafetyBridge and PROFIsafe I/O modules

Type Input voltage	Applications	Safe inputs	Safe outputs	Clock outputs	Signal outputs	Relay outputs	CAT/PL EN ISO 13849-1	SILCL EN 62061	SIL IEC 61508	Order No.
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

Type Input voltage	Applications	Safe inputs	Safe outputs	Clock outputs	Signal outputs	Relay outputs	CAT/PL EN ISO 13849-1	SILCL EN 62061	SIL IEC 61508	Order No.
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	CAT/PL EN ISO 13849-1	SILCL EN 62061	SIL IEC 61508	Order No.
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

Order designation	Description	Order No.
SAFETYPROG Basic		2700443
SAFETYPROG Advanced	SAFETYPROG programming software, including certified PLCopen blocks	2700441
SAFETYPROG Professional		2700442

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	Safety door switch, mechanical		Two-hand function		N/C contact
	Light grid		Muting		Changeover contact
	Solenoid switch		Enable switch		Dropout delayed contact
	Transponder switch		Mode selector switch		Forced guidance
	Start/restart		Contactor control	n=0	Downtime monitor
	Initiators		Encoder	$n<n_{max}$	Speed monitor
	Extended temperature range	6A	Switching capacity		

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