Start

Functional Safety EN ISO 12100 SIL

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Trends Inspiring safety technologies



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Safety product portfolio From safety switches to safe controllers



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Progressive through innovative technologies **Relay Technology**

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

Watch movie



Progressive through innovative technologies **Relay Technology**







Webinar IMA Septiembre 2021

Relés de seguridad para proceso, oferta, selección y aplicación



Fecha	21 Septiembre 2021
Hora	16:00
Hora	17:00
Duración	1 hora
Costo	gratuito

Conozca los conceptos básicos en relevadores de seguridad para proceso, la oferta que Phoenix Contact desarrolla para Sistemas de Seguridad y las posibilidades de ahorro de espacio y flexibilidad con las nuevas tecnologías VIP I/O que pueden involucrar elementos de seguridad

Aprenda los diferentes tipos de relevadores de acoplamiento, su selección, compatibilidad, características esenciales y particulares que son requeridas para una mejor funcionalidad, ahorros en hardware, diagnóstico, pruebas y sus mejores prácticas de aplicación en las instalaciones de los segmentos de proceso más reconocidos en la Industria. Los relés de acoplamiento con contactos de conducción forzada cuentan con certificación de nivel de integridad de seguridad (SIL). Sirven para la separación galvánica y la amplificación de potencia.





Overview safe coupling realys – Safety relays for the process industry



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Smart safety solutions Signal coupling and switching

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Smart safety solutions Signal coupling and switching

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Safety for production automation



Safety for process automation





Products Conventional safe coupling relays

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Conventional safe coupling relays PSRclassic

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.

- ✓ Safe diagnostics and easy proof test in accordance with IEC 61508
- ✓ Overall width from 17.5 mm
- ✓ Proven safety, thanks to force-guided relay contacts
- ✓ TÜV-certified and approvals for all global markets
- ✓ SIL 3 in accordance with IEC 61508 / IEC 61511 / EN 50156

Product overview





Smart safety solutions Signal coupling and switching

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Multifunctional safety relays PSRmultifunction

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Safe coupling relays PSRmini and PSRclassic



Emergency Shutdown



Highly-compact safe coupling relays **Product overview**

Туре	Applications Highly compact, safe coupling relays for failsafe controllers:	Output contacts			Diagnostics / proof test					Safet	y appi	rovals		Width	Connection technology	
		4	7	K	Vsual via LED	Active error acknow- ledgment via A1 ²¹	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	GL In mm	Screw connection	Push-in connection
PSR-PS20 24 V DC	For safety-related shutdown (ESD)	1	1	1	•	•	•	25	3	3	•	•	•	6.8	<u>2700356</u>	
PSR-PS21 24 V DC		1	1	1	•	•	•	-	2	2	•	•	•	6.8	<u>2700357</u>	<u> </u>
PSR-PS22 24 V DC		1	1	-	•	•	•		3	3	•	•	•	6.9	<u>2702524</u>	-
PSR-PS23 24 V DC		1	3		•	9	•	1	3	3	•	•	•	6.8	<u>2702663</u>	
PSR-PS40 24 V DC		1		1	•	-		•	3	3	•	•	•	6.8	<u>2700398</u>	-
PSR-PC20 24 V DC		1	1	1	•	•	•	1	3	3	•	•	•	12.5	<u>2700577</u>	<u>2700578</u>
PSR-PC32 24 230 V		2	1	-	•	£	•	4	3	3	•	•	•	17.5	<u>2700581</u>	<u>2700582</u>
PSR-PC40 24 V DC		2	-	1	•	•			3	3	•	•	•	12.5	<u>2700588</u>	<u>2700589</u>





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Products Highly-compact safe coupling relays

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Highly-compact safe coupling relays PSRmini

PSRmini coupling relays are the narrowest coupling relays in the world, available for safe switch-on and switch-off.

- ✓ Safe diagnostics and easy proof test in accordance with IEC 61508
- ✓ Diagnostic LEDs for SIL 3-qualified inspection directly on the module
- Active error messaging to the controller ensures short downtimes during planned maintenance phases
- Overall width 6 mm and 12 mm
- ✓ TÜV-certified and approvals for all global markets
- SIL 3 in accordance with IEC 61508 / IEC 61511 / EN 50156

Product overview







Fire and Gas Safety



Highly-compact safe coupling relays **Product overview**

Type	Applications Highly compact, safe coupling relays for failsafe controllers:	Output contacts			Diagnostics / proof test					Safet	у аррі	ovals	Width	Connection technology		
		4	7	K	Visual via LED	Active error acknow- ledgment via A1 ²⁰	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	ln mm	Screw connection	Push-in connection
PSR-PC50 24 V DC	For safety-related startup (F&G)	1	ine:	1	-	٠	•	25	34	-	÷		•	17.5	<u>2904664</u>	<u>2904665</u>
PSR-PC51 24 V DC		1	1	-		•	•		3	3	•	•	•	17.5	<u>2702522</u>	<u>2702523</u>
PSR-PC52 24 V DC		1	4	-		•	•	-	з	3	•	•	•	17.5	<u>1017062</u>	<u>1017064</u>















- Safe-state on function
- Load open and short circuit detection
- Load supply drop out detection
- Trip alarm via A1



High Power Field Devices – deluge valves, beacons, horns, signaling devices























Safe coupling relays **Tank monitoring**

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INSPIRING INNOVATIONS

Complete solutions for automated tank farm management

With a broad portfolio of SIL-certified technology for functional safety, Ex-i signal conditioners and modular control systems, you can design efficient level control. An overflow protection is installed parallel to the level control, which activates a safety valve in an emergency and immediately stops the flow of the conveyed material.



Products Safe signal conditioners

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Signal conditioners with SIL and PL functional safety

Signal conditioners for safe isolation, conditioning, filtering, and amplifying - also suitable for the Ex area.

- SIL certified
- PL d in accordance with EN ISO 13849-1
- Versions with wide range input for worldwide power supply networks
- Push-in connection technology
- Ex approvals in accordance with ATEX and IECEx





Safe signal conditioners Safe signal conditioning with functional safety

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Products Safe power supply

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Safe power supplies QUINT POWER

The high-performance power supplies QUINT POWER ensure superior availability of your system. It satisfies the requirements in accordance with functional safety (SIL) and ensures maximum operational safety.

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

Product overview



Safe power supply Increased demands on functional safety

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Redundant system for functional safety

The 1+1 redundant power supply system provides symmetrical load distribution and increases system availability. Thanks to isolated conductor routing, consistent

redundancy through to the load is assured.

Thanks to the SIL 3 certification in accordance with IEC 61508, the system can be integrated into redundant applications with the greatest demands on functional safety and superior system availability.



Safe power supplies **Product overview**



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BU Interface Components **VIP I/O-Marshalling**





VIP I/O-Marshalling Traditional Process Automation Project

- Extremely unflexible when it comes to changes (e.g. signal types)
- High planning efforts neccessary
- Exact number and types of IOAs need to be known at a very early stage

Delays in project execution time very likely



VIP I/O-Marshalling

Process Automation Project with Universal I/O

- High flexibility due to adaptable I/O channels
- Reduced planning effort
 - Only overall I/O number needed, not I/O types
- Reduce commissioning efforts
 - By using standard adaptable UIO cabinets

Approx. 30% savings in project execution times



VIP I/O-Marshalling Product Overview



Utilize the full potential of Universal I/O

Complex process automation projects contain many challenges in planning and implementation. Improvements have already been achieved with the universal I/O approach. However, planners and users also need an equally flexible solution at the marshalling and interface level.

VIP I/O Marshalling makes Universal I/O systems truly universal also on the marshalling and interface level.

Learn more about the Universal I/O approach and the VIP I/O Marshalling product portfolio in this webinar

Topics:

- What is Universal I/O?

- What role does VIP I/O Marshalling play for Universal I/O Systems?

- What does the product portfolio look like today?

- Which extensions are planned?

- What is the sales approach?



Products VIP IO Safety

Pluggable SIL coupling relay as an input/output accessory for VIP base module, SIL 3 high and low-demand applications, safestate-off, couples digital output signals to the periphery, 1 enabling current path, 1 confirmation current path, test pulse filter



IOA-PSR-PS22

Pluggable SIL coupling relay for use on a VIP base module

Data sheet 108235_en_02

PHOENIX CONTACT 2019-07-04



IOA-PSR-PS22-1NO-1NC-24DC - 2702971



VIP IO System

IOA-PSR-PS22

Application description:

The application example illustrates the safe switch-off of a load in high-demand operation. The safe coupling relay is controlled via a single channel using a failsafe controller. The device starts automatically.



High-demand application with failsafe controller



VIP I/O-Marshalling







VIP I/O-Marshalling









PHOENIX CONTACT Virtual DEMO Better understanding

Virtual DEMO



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Quality assurance **Certified products and processes**

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Allgemeine Gestaltungslei

che Fassung EN 150 1384

s of control systems

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Quality assurance over the product lifecycle



13849-1-200F

- Certified Functional Safety Management (FSM)
- Independent product certifications
- Qualified personnel (FS Engineers)
- Application oriented services and support
- Qualified training programs

Certified and tested for your application

- EN 50205 force-guided contacts
- EN ISO 13849-1 and EN 62061 for machine building
- IEC 61508/61511 for the process industry
- EN 50156 for use in furnaces, steam generators, waste heat boilers, rotary furnaces and hot gas generators
- Jand C Germanic Lloyd (GL) for use in shipbuilding and offshore systems

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Safety service and support Worldwide support from TÜV certified experts

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Service and support

The safety experts support in planning, building, operating, and modifying your machinery in accordance with legal requirements. The specialist knowledge of our TÜV-certified experts provides you with legal certainty regarding the safety of machinery and systems in machine building and in the process industry.

Learn more

Safety service and support Services for machine and system safety

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Consulting

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

- Design of the safety lifecycle: standards and their implementation
- Machinery Directive
- Changes to machinery and systems



Engineering

To assess the safety integrity, we determine the 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**.



Product support

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



Seminars and trainings

We offer instruction and practical training that is tailored to your individual requirements, e.g. safety application software:

- Demands on safety-related software
- Specification of safety
 requirements and software
- Realization of safety functions



Safety service and support Services for safety in the process industry

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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.

Seminars for functional safety in the process industry in accordance with EN 61511:

- Risk analysis
- Safety lifecycle
- Creation of process control technology



Successful in use Industries

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- Extensive diagnostic features
- ✓ IEC 61508/61511 and EN 50156 for the use in furnaces, steam generators, waste heat boilers, rotary furnaces and hot gas generator
- ✓ Germanischer Lloyd (GL) for the use in shipbuilding and the offshore industry
- ATEX





Process Relays

Thank you

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