COMPLETE line

Safety

For machine building and process applications

PHOENIX CONTACT
INSPIRING INNOVATIONS

Cabinet Confidence

Your trusted partner for the control cabinet

From connectivity to control, Phoenix Contact gives you the confidence you need in your production systems. Our longstanding commitment to quality and innovation will give you the peace of mind and competitive edge to succeed in today's highly complex manufacturing world.

NETWORKING

AUTOMATION AND CONTROL

SIGNAL SWITCHING AND CONDITIONING

SAFETY

CONNECTIVITY

POWER RELIABILITY

SHOP FLOOR PRODUCTIVITY

LIMITED LIFETIME WARRANTY

BUILD WITH CONFIDENCE

Safety

Machine safety means more than OSHA regulations. Proper implementation includes increased productivity, uptime, and profitability. Enact safety measures without limiting production flexibility of machines or production cells. Adaptable cabinet configurations with integrated safety give you the freedom to add or reorganize machines dynamically.

Machine safety

Process safety

Power safety

Contents

Machine safety

Inputs, logic, and outputs

Protect your machine with the required building blocks of functional safety. Sense, decide, and control the hazardous energy in your system utilizing inputs, logic, and outputs. The compact PSRswitch is an electronic, coded safety switch for flexible safety door and position monitoring. Thanks to integrated RFID technology and intelligence, it provides maximum protection against manipulation and the highest level of safety. From the world's smallest, 6.8-mm-wide PSRmini safety relay up to the innovative SafetyBridge distributed safety system, customize and tailor your safety logic to the demands of your system. The CONTACTRON safe hybrid motor starters combine up to four functions in one device: Emergency stop, motor starter, reversing function, and motor protection against overload.

Simplicity in safety – a complete safety solution

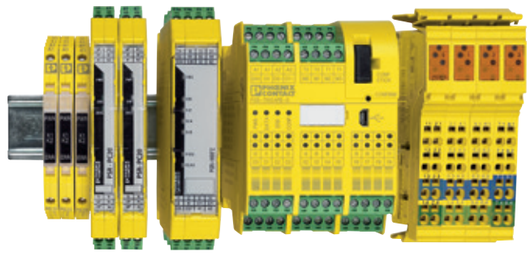
- A full and innovative safety product line
- New RFID door switches with IO-Link diagnostics
- Safety starting at 6mm with PSRmini
- 4-in-1 CONTACTRON hybrid motor starters eliminate the need for redundant contactors

Inputs

Safety sensors initiate the safety function. Safe RFID non-contact door switches offer full SIL 3/PLe safety protection in a series wiring connection. Easily monitor door access and safe position with slim profile, non-contact door switches. PSRswitch allows for up to 30 sensors to be connected in series, with diagnostic status communicated to a controller via IO-Link. Quick and easy connection via M12 cabling makes for a full Phoenix Contact solution.

Logic

Safety logic devices are the brain of the safety system, controlling safety function by monitoring both inputs and outputs. From simple single function, to distributed safe control networks, logic devices ensure proper function and detect any errors from the sensors of output devices. These scalable solutions provide the right safety function for all types of systems, from a single e-stop safety relay to a fully integrated safety solution monitoring a factory automation process.



Outputs

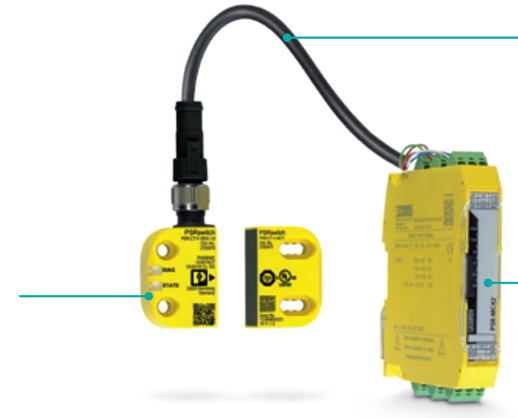
Outputs are responsible for energizing and de-energizing equipment safely and reliably. Hybrid motor starters with integrated safety functionality up to SIL 3/PLe allow streamlined integration of emergency stop circuitry for three-phase motors up to 5HP. Eliminating the need for a redundant contactor and all of the associated interlocking wiring can save 75% on space and wiring time. Additional functionality, such as overload protection or reversing contactors, can all be achieved in a slim, 22.5-mm housing. Outputs are available as stand-alone devices, as part of a modular motor starter system, or as a networkable motor starter.

Machine safety

Inputs

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

Intelligent safety switch system with IO-Link



SAC cabling

Easy installation with M12 male connectors and SAC cables

RFID

PSRswitch

RFID coded, non-contact safety switch

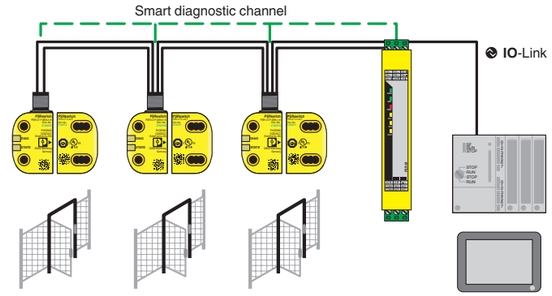
IO-Link

PSRmini

Highly compact safety relay with IO-Link interface

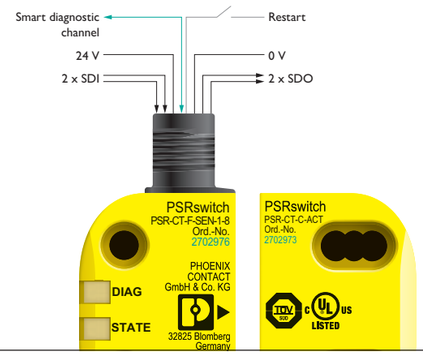
Integrated diagnostic channel

The safe series connection has a two-channel design. In parallel to this, status information on the individual switches is transmitted to the PSR-PC42 PSRmini safety relay via the integrated diagnostic channel. The safety relay transmits the non-safety-relevant diagnostic data of the switch via IO-Link to the controller. The data can then be evaluated centrally there.



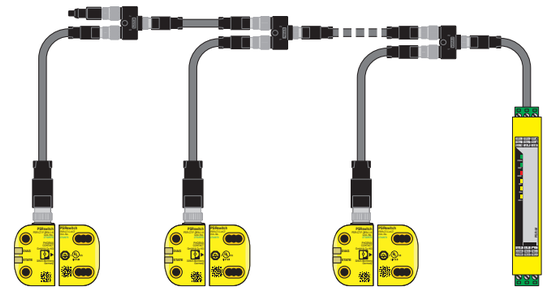
Smart RFID sensor

The diagnostics of a safety relay, with LEDs to indicate sensor status.



Series connection up to PLe

Up to 30 safety switches can be safely wired in series using Y-plug connectors.

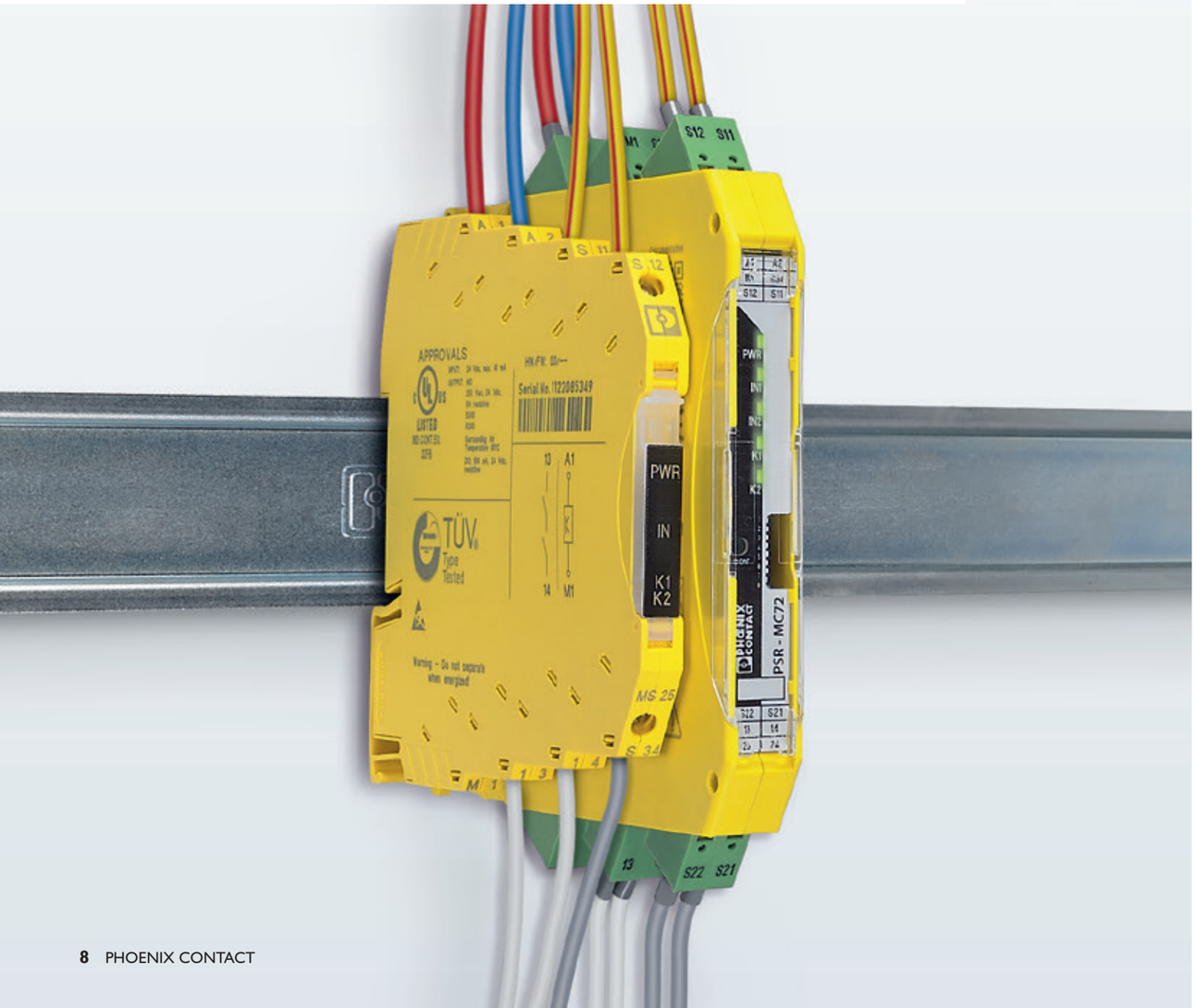


Machine safety

Logic

Safety logic devices control the safety function by monitoring both inputs and outputs. From simple single function to distributed safe control networks, logic devices ensure proper function and detect any errors from sensors of output devices. Scalable solutions provide the right safety function for all types of systems, from a single e-stop safety relay, to a fully integrated safety solution monitoring a factory automation process.

- Safety relays – single-function logic with relay outputs
- Multifunctional safety relays – three safety functions in a single relay housing
- Configurable safety relays – simple software allows robust processor-based logic
- Networkable safety relays – distributes safety signals over an automation network



Safety relays

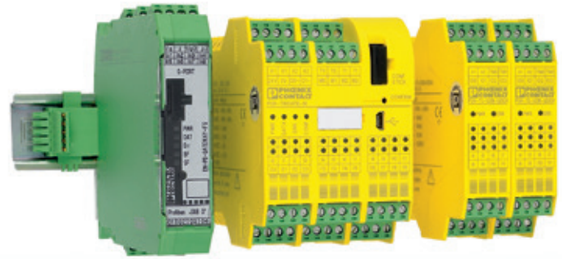
- ☑ One function, one device
- ☑ Slim profiles available (6.8 mm and 12.5 mm)
- ☑ Force-guided relay contacts
- ☑ Manual or automatic reset
- ☑ Highest levels of safety with PLe and SIL 3

Multifunctional safety relays

- ☑ Three dual-channel logic inputs
- ☑ Two independent sensor paths
- ☑ One overriding shutdown
- ☑ Zero software or configuration
- ☑ Individual reset contacts

Configurable safety relays

- ☑ Configure safety with easy SAFECONF software
- ☑ 20 safe inputs and four safe outputs
- ☑ Expandable with I/O and relay modules
- ☑ Live program view via USB mini cable
- ☑ Networking gateway available



Networkable safety systems

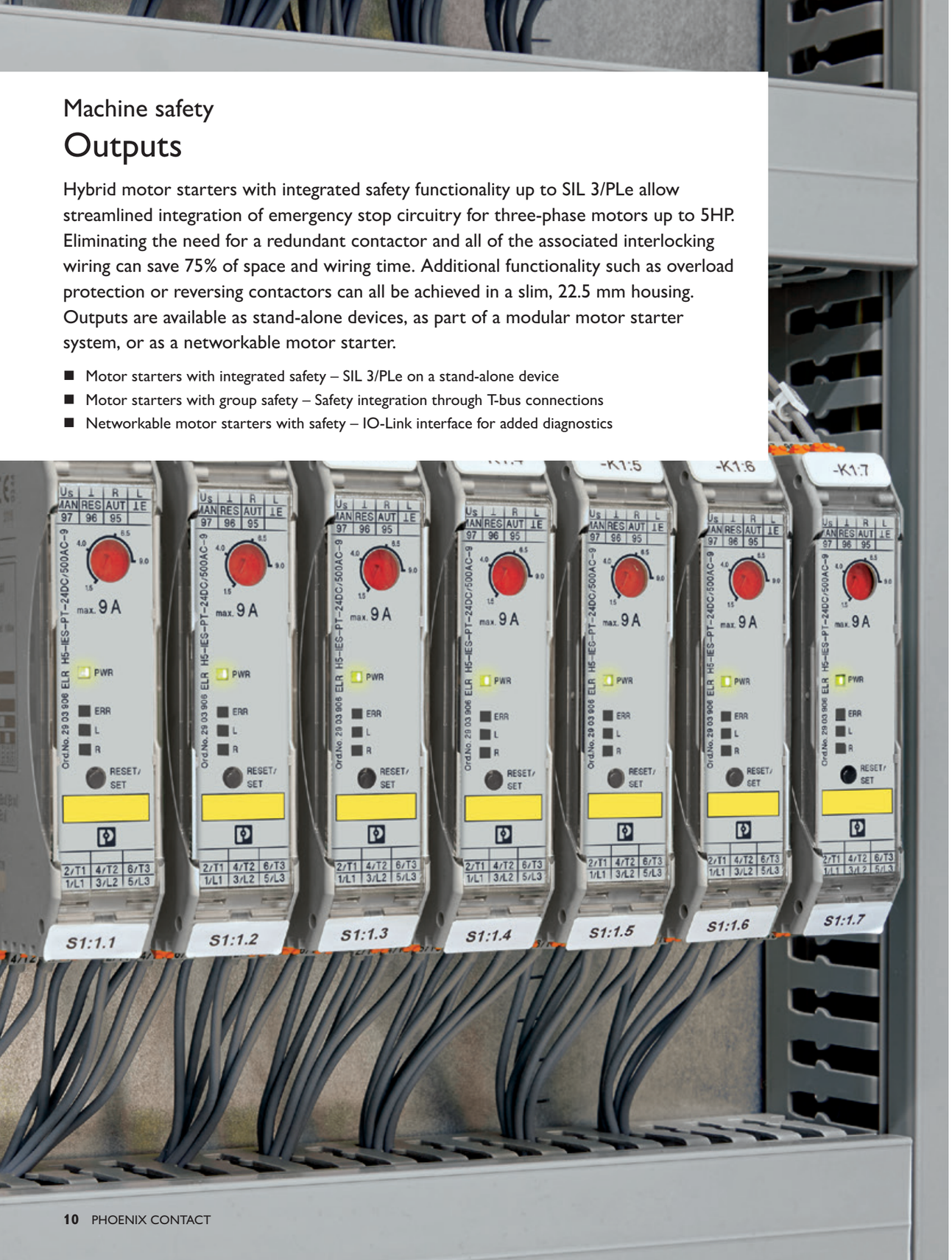
- ☑ Distribute safety signals on a standard control network
- ☑ EtherNet/IP, PROFINET, and MODBUS integration
- ☑ Safe MUX mode for easy distribution of signals
- ☑ High-density modules for larger safety systems

Machine safety

Outputs

Hybrid motor starters with integrated safety functionality up to SIL 3/PLe allow streamlined integration of emergency stop circuitry for three-phase motors up to 5HP. Eliminating the need for a redundant contactor and all of the associated interlocking wiring can save 75% of space and wiring time. Additional functionality such as overload protection or reversing contactors can all be achieved in a slim, 22.5 mm housing. Outputs are available as stand-alone devices, as part of a modular motor starter system, or as a networkable motor starter.

- Motor starters with integrated safety – SIL 3/PLe on a stand-alone device
- Motor starters with group safety – Safety integration through T-bus connections
- Networkable motor starters with safety – IO-Link interface for added diagnostics



Stand-alone motor starters with integrated safety

- ☑ Integrated safety up to SIL 3/PLe
- ☑ Power ratings up to 5HP
- ☑ Slim, 22.5 mm housing saves up to 75% DIN space
- ☑ Built-in overloads and optional reversing contactor
- ☑ Integrated interlocking circuits simplify control wiring considerably
- ☑ Long service life – up to 10x a traditional contactor solution
- ☑ Loop bridge accessories for easy three-phase power distribution

Modular hybrid motor starters with integrated group safety

- ☑ Includes all of the functionality and safety advantages of stand-alone starters
- ☑ Can be used in a group or as a stand-alone device
- ☑ T-bus system distributes safety signals and module power to each device
- ☑ Dedicated safety relay allows for group shutdowns via one interface
- ☑ UL Group Motor rated up to 100kA SCCR with appropriate fusing
- ☑ NEW optional AUX contact modules for feedback and self-sealing circuits
- ☑ Integrated safety up to SIL 3/PLe

Networkable hybrid motor starters with integrated safety

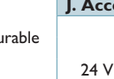
- ☑ IO-Link interface for added monitoring and diagnostics
- ☑ Works with virtually any IO-Link master solution
- ☑ Remotely monitor machine status such as motor currents and e-stop status
- ☑ Remotely control motor on/off, direction of operation, and overload settings
- ☑ Physical e-stop ensures safety regardless of network state
- ☑ Additional diagnostics such as runtime, thermal overload state, and cycle counters available via IO-Link interface

Common products for machine safety

Safety sensors

A. Sensor type	B. Sensor function	C. Output type	D. Onboard diagnostics	E. Part description	F. Part number
Non-contact RFID door switch	Multicode sensor, all coded actuators are detected without learning	OSSD	Yes, "DIAG" and "STATE" LED	PSR-CT-M-SEN-1-8	2702975
	Fixcode sensor, permanently paired to a single actuator through learning	OSSD	Yes, "DIAG" and "STATE" LED	PSR-CT-F-SEN-1-8	2702976
	Unicode sensor, paired to a single actuator through learning. Must relearn new actuators	OSSD	Yes, "DIAG" and "STATE" LED	PSR-CT-C-SEN-1-8	2702972
	Coded actuator, required companion, compatible with all sensor types	-	-	PSR-CT-C-ACT	2702973
	G. Connection accessories				
	M12 Y-plug connector for using PSRswitch modules in series	1x8 pos, A-code and 2x5 pos, A-code connection		SAC-8PY-M/2XF BK 1-PSR	1054338
	M12 plug for PSRswitch, pin 1 bridged to pins 2 and 4	1x5 pos, A-code connection, final plug		SAC-5P-M12MS BK BR 1-2-4	1054366

H. Wiring accessories: sensor cables – yellow 105°C PVC

Drawing	Type	Configuration	0.5 M	1.5 M	2 M	5 M	10 M	20 M	NOTES
	5-pos A-code, non-shielded	Female straight/ open end	-	-	1406169	1406168	1406167	1417975	Connection between two Y-adapters or from final Y-adapter to safety relay
		Male straight/ female straight	1406154	1406153	-	1417902	1417903	1417905	
	8-pos A-code, non-shielded	Female straight/ open end	-	-	1406105	1406104	1406103	1418059	Connection between sensor and Y-adapter or from single sensor to safety relay
		Male straight/ female straight	1406089	1406088	-	1417913	1417914	1417916	

Safety logic modules

A. Safety relay type	B. Control voltage	C. Single- or dual-channel logic	D. Sensor input type			E. Number of safe contacts	F. Number of AUX contacts	G. Reset	H. Width	I. Connection technology and order #	
			NC/NC	NO/NC	OSSD					Screw	Spring
Single function	24 V DC	Single	Single-channel inputs will only accept a non-pulsed 24 V signal on the input			1 NO	1 DO	A	6.8 mm	2904950	-
						1 NO	1 DO	M	6.8 mm	2904951	-
						3 NO	1 DO	A/M	12.5 mm	2700466	2700467
						4 NO	1 NC	A	22.5 mm	2963802	2963954
		Dual	●	-	-	1 NO	1 NC	A	6.8 mm	2904954	-
			●	-	-	1 NO	1 NC	M	6.8 mm	2904955	-
			●	-	●	2 NO	-	A	6.8 mm	2904958	-
			●	-	-	2 NO	1 DO	A/M	12.5 mm	2700498	2700499
			●	-	●	3 NO	1 DO	A/M	12.5 mm	2700569	2700570
			●	●	●	2 NO	1 DO	A/M	22.5 mm	2981486	2981499
			●	-	-	8 NO	1 NC	A/M	45 mm	2963912	2963996
	120 V UC		●	-	-	3 NO	1 NC	A/M	22.5 mm	2901422	2901425
	24-230 V UC		●	-	●	3 NO	1 NC	A/M	22.5 mm	2700524	2700525
	J. Accessories										
	24 V DC	Coupling relay module				5 NO	2 NC	-	22.5 mm	2963747	2963970
						3 NO	3 NC	-	22.5 mm	2981839	2981842
						2 SPDT		-	17.5 mm	2981363	-
		Contact expansion relay				5 NO	1 NC, 1 DO	-	17.5 mm	2702382	2702383
		Contact expansion relay (via T-bus				4 NO	1 NC	-	22.5 mm	2981677	2981680
		T-bus DIN rail connector used with the modular safety relay system								2890425	
		T-bus DIN rail terminator used with the final relay in the modular safety relay system								2981716	
	42-230 V UC	Contact expansion relay				4 NO	2 NC	-	22.5 mm	2702924	2702925
Multifunction	24 VDC	Dual	●	-	-	4 NO	2 DO	A/M	22.5 mm	2902725	2902726
			●	-	●	4 NO	2 DO	A/M	22.5 mm	2903259	2903258
Configurable	24 V DC	Configurable logic via SAFECONF software				20 DI, 4 DO	4 DO	A/M	67.5 mm	2986229	2986232
						20 DI, 4 DO	4 DO	A/M	67.5 mm	2986012	2986025
	J. Accessories										
	24 V DC	IO expansion module via T-bus connection (Trisafe/M only)				8 DI, 4 DO	2 DO	-	22.5 mm	2986038	2986041
						4 NO	4 DO	-	22.5 mm	2986096	2986106
		PROFINET gateway communication module				-	8 DI, 4 DO	-	22.5 mm	2904472	-
		EtherNet/IP gateway communication module				-	8 DI, 4 DO	-	22.5 mm	2901988	-
		MODBUS TCP/IP gateway communication module				-	8 DI, 4 DO	-	22.5 mm	2901528	-
Networkable	24 V DC	Logic and output module for Inline SafetyBridge				8 DO	-	-	48.8 mm	2701625	
		Output module for Inline SafetyBridge				8 DO	-	-	48.8 mm	2985631	
		Input module for Inline SafetyBridge				8 DI	-	-	48.8 mm	2985688	
		Logic and output module for Axioline SafetyBridge				8 DO	-	-	53.6 mm	2702171	
		Output module for Axioline SafetyBridge				8 DO	-	-	53.6 mm	2702264	
		Input module for Axioline SafetyBridge				8 DI	-	-	53.6 mm	2702263	

Hybrid motor starters

A. Starter type	B. Control voltage	C. Direct or reversing starter	D. FLA current range	E. Connection technology	F. Type description	G. Order #
Stand-alone	24 V DC	Direct	75mA-600mA	SCREW	ELR H3-IES-SC-24DC/500AC-0, 6	2900566
				PUSH-IN	ELR H3-IES-PT-24DC/500AC-0, 6-T	2906061
			180mA-2.4A	SCREW	ELR H3-IES-SC-24DC/500AC-2	2900567
				PUSH-IN	ELR H3-IES-PT-24DC/500AC-2-T	2906062
			1.5A-9A	SCREW	ELR H3-IES-SC-24DC/500AC-9	2900569
				PUSH-IN	ELR H3-IES-PT-24DC/500AC-9-T	2906064
		Reversing	75mA-600mA	SCREW	ELR H5-IES-SC-24DC/500AC-0, 6	2900582
				PUSH-IN	ELR H5-IES-PT-24DC/500AC-0, 6-T	2906058
			180mA-2.4A	SCREW	ELR H5-IES-SC-24DC/500AC-2	2900414
				PUSH-IN	ELR H5-IES-PT-24DC/500AC-2-T	2906059
			1.5A-9A	SCREW	ELR H5-IES-SC-24DC/500AC-9	2900421
				PUSH-IN	ELR H5-IES-PT-24DC/500AC-9-T	2906060
	120/240 V AC	Direct	180mA-2.4A	SCREW	ELR H3-IES-SC-230AC/500AC-2	2900568
			1.5A-9A	SCREW	ELR H3-IES-SC-230AC/500AC-9	2900570
		Reversing	180mA-2.4A	SCREW	ELR H5-IES-SC-230AC/500AC-2	2900420
			1.5A-9A	SCREW	ELR H5-IES-SC-230AC/500AC-9	2900422
	H. Accessories					
	Loop bridge (AC power distribution); 4 position			SCREW	BRIDGE- 4-3M	2901659
				PUSH-IN	BRIDGE-PT 4	2904492
Modular	24 V DC	Direct	180mA-3A	SCREW	ELR H3-IS-SC-24DC/500AC-3-P	2908700
				PUSH-IN	ELR H3-IS-PT-24DC/500AC-3-P	2909570
			1.5A-9A	SCREW	ELR H3-IS-SC-24DC/500AC-9-P	2908698
				PUSH-IN	ELR H3-IS-PT-24DC/500AC-9-P	2909568
		Reversing	180mA-3A	SCREW	ELR H5-IS-SC-24DC/500AC-3-P	2908699
				PUSH-IN	ELR H5-IS-PT-24DC/500AC-3-P	2909569
			1.5A-9A	SCREW	ELR H5-IS-SC-24DC/500AC-9-P	2908697
				PUSH-IN	ELR H5-IS-PT-24DC/500AC-9-P	2909567
	H. Accessories					
	Loop bridge (AC power distribution); 4 position			SCREW	BRIDGE-4-3M	2901659
				PUSH-IN	BRIDGE-PT 4	2904492
	Modular 2-channel safety relay (group shutdown)			SCREW	PSR-MC38-2NO-1DO-24DC-SC	1009831
				PUSH-IN	PSR-MC38-2NO-1DO-24DC-PI	1009832
	Auxiliary contact module (incl. T-bus connector)			SCREW	EM-2RSC/21AU-R/L-P	2908701
				PUSH-IN	EM-2RPT/21AU-R/L-P	2909573
	T-bus connector, hybrid starter connection			-	ME 17,5 TBUS 1,5/ 5-ST-3,81 KM	2713645
	T-bus connector, safety relay connection				PSR-TBUS	2890425
Networkable	IO-Link	Direct	180mA-3A	PUSH-IN	ELR H3-IEC-PT/500AC-3-IOL	2908671
			1.5A-9A		ELR H3-IEC-PT/500AC-9-IOL	2908672
		Reversing	180mA-3A		ELR H5-IEC-PT/500AC-3-IOL	2908669
			1.5A-9A		ELR H5-IEC-PT/500AC-9-IOL	2908670
	H. Accessories					
	Loop bridge (AC power distribution); 4 position			PUSH-IN	BRIDGE-PT 4	2904492

PSRswitch sensor and actuator

PSR-MS60 PSRmini relay

PSR-MC40 PSRmini relay

CONTACTRON Pro hybrid motor starter

Process safety

Power and signal conditioning

Safety integrity level (SIL) is a measure of safety system performance in terms of the probability of failure on demand. The SIL rating of a device reflects the degree of reliability in which the product has to fail safely. As the SIL increases, the safety level of the product increases, meaning the probability that the system will fail to perform properly decreases. Often used in the processing industry, SIL provides intricate safety regulations to ensure the avoidance of catastrophic accidents and errors that can be detrimental to the most stringent operations.

Your advantages

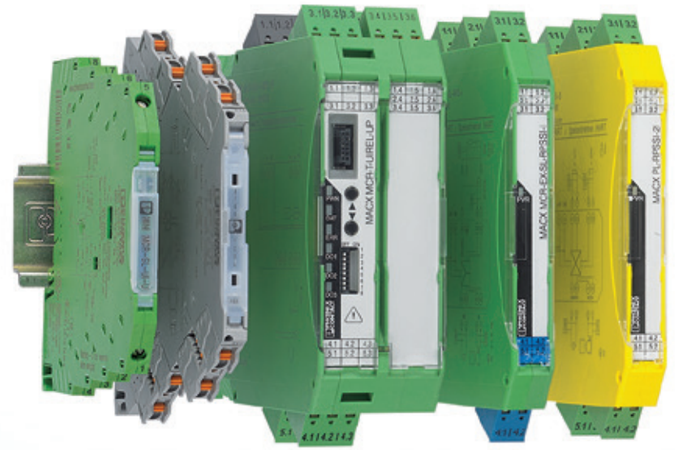
- Easy system expansion, reliable heavy load startup and circuit breaker tripping
- Preventive function monitoring reports critical operating states before errors occur
- High level of immunity, thanks to integrated gas-filled surge arrester
- Integrated decoupling MOSFET for 1+1 and n+1 redundancy
- Safe supply with SIL 3 certification in accordance with IEC 61508

Power

The overvoltage protection (OVP) circuitry and integrated decoupling MOSFET built into the QUINT power supplies are certified to electrical safety in accordance to IEC 61508 and multiple EMC standards. This system can be used in SIL 3 applications according to IEC 61508. The safety function is to limit the output voltage to 32 V DC. If the voltage rises above 32 V DC, the device will switch off, creating a safe state of no output voltage. Error conditions above 32 V on an SIS can cause loss of primary safety control, regardless of redundancy on the functional safety system, driving the requirement for a SIL 3-rated power circuit.

Signal conditioning

Digital and analog signals are the backbone of many processes and industries. Phoenix Contact has a variety of solutions to convert, display, isolate, and network process data. Digital signals from output cards can be protected with interposing relays by introducing a dry contact. Analog signals that transmit information such as temperature, compression, position, flow, level, frequency, pH, etc., are often transducers that are typically imbedded in a process, nestled in the field. Analog devices for field applications reduce installation efforts and increase uptime and safety.



Process safety

Power

External redundancy modules are now a requirement of the past! QUINT POWER now offers a single device solution approved for functional safety applications up to SIL 3. The strict safety requirements of SIL 3 are associated with a low probability that a system will fail to perform properly. We have designed a fully loaded QUINT 20+ power supply with an integrated decoupling MOSFET to meet rigorous SIL 3 safety regulations without the need for any external components.

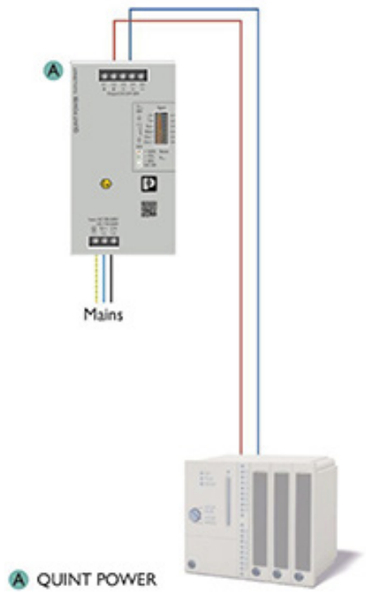
Overvoltage protection is essential for any safety instrumented system (SIS). With a protective coating and ATEX/IECEx approval in accordance with the standards IEC 60079-0, IEC 60079-7, IEC 60079-11, and IEC 60079-15, it can also be mounted within potentially explosive areas (Zone 2).

SIL-rated power

- ☑ SIL 3 certification in accordance with IEC 61508
- ☑ Integrated decoupling MOSFET
- ☑ Protective coating and ATEX/IECEx approval
- ☑ High level of immunity with integrated gas-filled surge arrestor

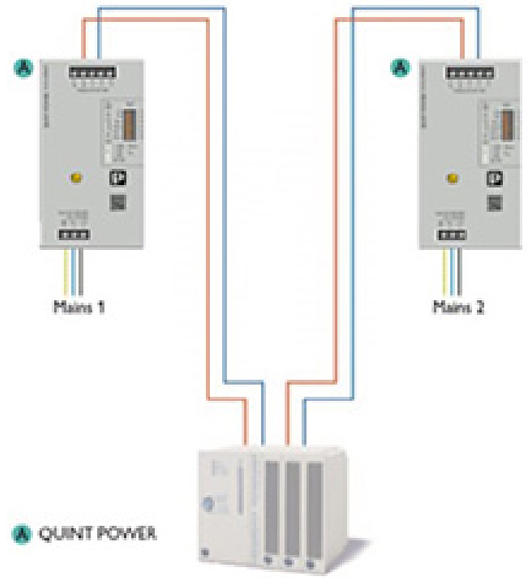
Safe OFF

SIL 3 power supply stand-alone application – 20 A



Safe ON

SIL 3 redundant power supply application – 20 A



Process

Signal conditioning

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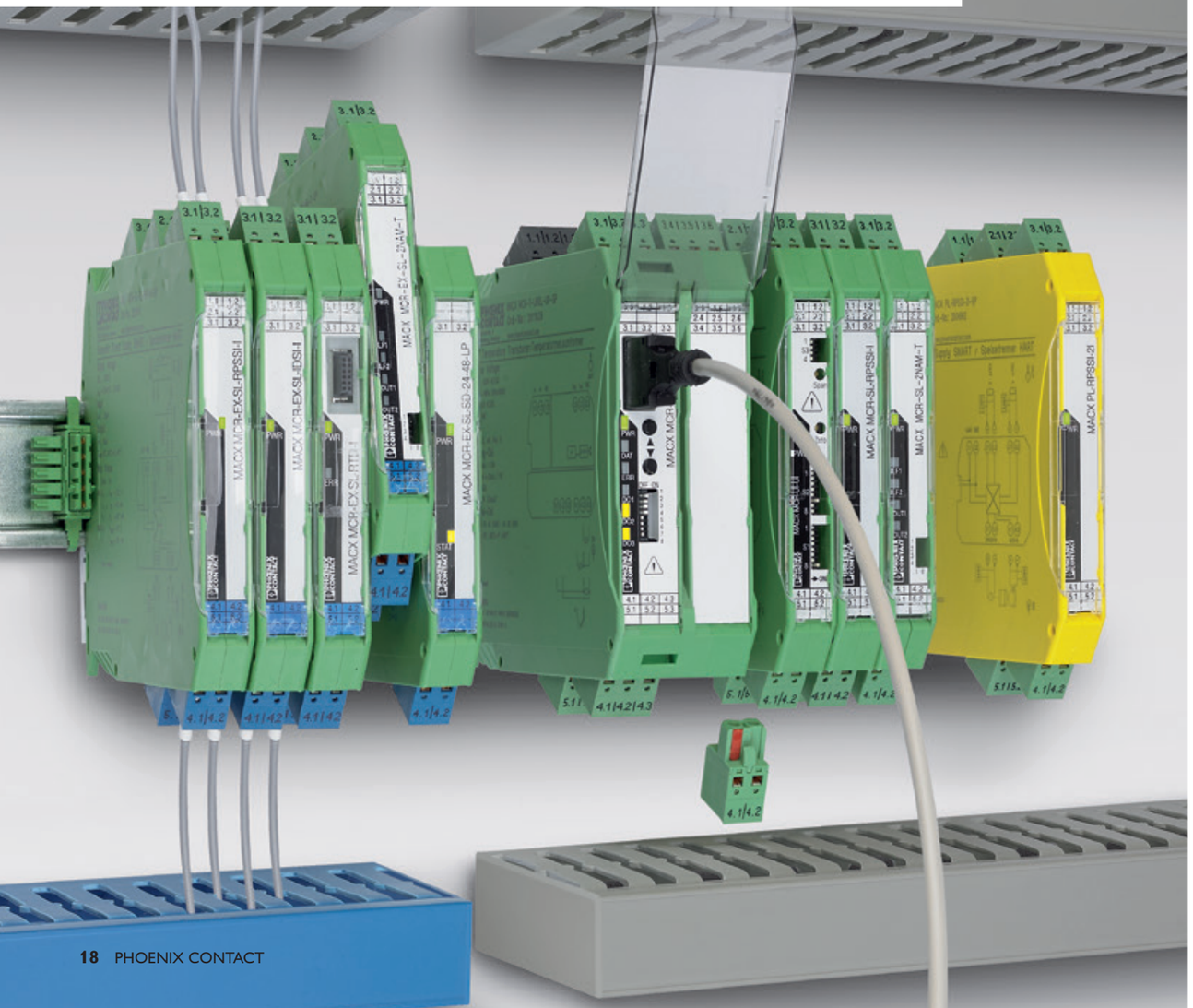
- SIL interposing relays – maintain SIL level while converting solid state to relay outputs
- Loop-powered temperature transducers – universal temp input, loop power reduces wiring
- SIL-rated signal conditioners – reliable data for process safety applications
- Intrinsic safety isolators – energy-limiting devices for hazardous locations



SIL-rated interposing safety relays

- ☑ Slim profile at 6.8 mm and 12.5 mm
- ☑ Innovative “proof test” for simple maintenance
- ☑ Modules with active error acknowledgment via A1 connection cut wiring in half
- ☑ CID2, ATEX, and IECEx approvals for HAZLOC application

Loop-powered temperature transducers

- ☑ Universal temperature inputs
- ☑ Two sensors with simple mathematical functions
- ☑ DIN rail-mount and head transmitter-mount versions
- ☑ Modules for Ex (i) and non-Ex (i) applications
- ☑ Versions with SIL certifications and reliability data
- ☑ Global approvals for worldwide usage

SIL-rated signal conditioners

- ☑ Single- and dual-channel modules in 12 mm-wide housing
- ☑ Analog and digital signal conditioners
- ☑ Available in intrinsically safe versions
- ☑ Optional wide-range power supplies
- ☑ Full line of signal conditioners for all signal types

SIL-rated intrinsic safety isolators

- ☑ Single- and dual-channel modules in 12 mm-wide housing
- ☑ Analog and digital signal conditioners
- ☑ SIL safety certification with reliability data
- ☑ Optional wide-range power circuit versions
- ☑ Full line of signal conditioners for all signal types – analog, temperature, resistance, NAMUR/digital inputs, solenoid/digital output versions

Common products for process safety

Ask these questions:	
Question 1: Signal type (AI, AO, DI, DO, or temperature)?	**Other module power options are:**
Question 2: Ex (in blue) or non-Ex?	Universal powered (UP), which is a 24-240 V AC/DC powered module.
Question 3: Input signal?	Loop powered (LP at end of description) in which the module is powered by the 4-20 mA input signal or by output side 4-20 mA loop.
Question 4: Output signal?	
Question 5: Module power?*	
* Standard is module powered by separate 24 V DC circuit.	All MACX MCR modules come with SIL reliability data

Analog in – 4-20 mA – HART					
Field side	**Control side**	**Powered**	**Order #**	**Type description**	
4-20 mA/HART	4-20 mA/HART	Line	2865955	MACX MCR-SL-RPSSI-I	2- or 4-wire input, active or passive output
4-20 mA/HART	4-20 mA/HART	Line	2865340	MACX MCR-EX-SL-RPSSI-I	2- or 4-wire input, active or passive output
4-20 mA/HART	2x 4-20 mA/2x HART	Line	2924825	MACX MCR-SL-RPSSI-2I	Signal duplicator
4-20 mA/HART	2x 4-20 mA/2x HART	Line	2865366	MACX MCR-EX-SL-RPSSI-2I	Signal duplicator
4-20 mA/HART	2x 4-20 mA/HART	Line	2908855	MACX MCR-EX-SL-RPSSI-2I-1S	Signal duplicator
2x 4-20 mA/HART	2x 4-20 mA/HART	Line	2904089	MACX MCR-SL-RPSSI-2I-2I	2 channel
2x 4-20 mA/HART	2x 4-20 mA/HART	Line	2865382	MACX MCR-EX-SL-RPSSI-2I-2I	2 channel
Universal	Universal	Line	2811446	MACX MCR-UI-UI-NC	Universal signal convertor
4-20 mA	4-20 mA	Loop	2905278	MACX MCR-SL-I-I-ILP	Input loop powered
4-20 mA	4-20 mA	Loop	2907704	MACX MCR-I-I-HV-ILP	Input loop powered, high-voltage isolation
4-20 mA	4-20 mA	Loop	2905280	MACX MCR-SL-2I-2I-ILP	Input loop powered, 2 channel
4-20 mA	4-20 mA	Loop	2907706	MACX MCR-2I-2I-HV-ILP	Input loop powered, 2 channel, high-voltage isolation

Analog out – 4-20 mA – HART output					
Field side	**Control side**	**Powered**	**Order #**	**Type description**	
4-20 mA/HART	4-20 mA/HART	Line	2865971	MACX MCR-SL-IDSI-I	
4-20 mA/HART	4-20 mA/HART	Line	2865405	MACX MCR-EX-SL-IDSI-I	

Digital input					
Field side	**Control side**	**Powered**	**Order #**	**Type description**	
NAMUR	1x NO, NC (SPDT)	Line	2865997	MACX MCR-SL-NAM-R	
NAMUR	1x NO, NC (SPDT)	Line	2865434	MACX MCR-EX-SL-NAM-R	
NAMUR	2x NO (SPST)	Line	2865010	MACX MCR-SL-NAM-2RO	
NAMUR	2x NO (SPST)	Line	2865450	MACX MCR-EX-SL-NAM-2RO	
2x NAMUR	2x NO (SPST)	Line	2865049	MACX MCR-SL-2NAM-RO	
2x NAMUR	2x NO (SPST)	Line	2865476	MACX MCR-EX-SL-2NAM-RO	
2x NAMUR	2x NO, NC (SPDT)	Line	2865052	MACX MCR-SL-2NAM-R-UP	AC/DC universal powered
2x NAMUR	2x NO, NC (SPDT)	Line	2865984	MACX MCR-EX-SL-2NAM-R-UP	AC/DC universal powered
NAMUR	2x transistors	Line	2865023	MACX MCR-SL-NAM-2T	< = 5kHz
NAMUR	2x transistors	Line	2865463	MACX MCR-EX-SL-NAM-2T	< = 5kHz
2x NAMUR	2x transistors	Line	2865036	MACX MCR-EX-SL-2NAM-T	< = 5kHz
2x NAMUR	2x transistors	Line	2865489	MACX MCR-EX-SL-2NAM-T	< = 5kHz

Digital output/solenoid drivers					
Maximum output	**Input**	**Powered**	**Order #**	**Type description**	
25.1V, 39 mA	Loop-powered 20-30 V DC	Loop	2865492	MACX MCR-EX-SL-SD-21-25-LP	
25.1V, 87 mA	Loop-powered 20-30 V DC	Loop	2865764	MACX MCR-EX-SL-SD-21-40-LP	
27.7V, 101 mA	Loop-powered 20-30 V DC	Loop	2865609	MACX MCR-EX-SL-SD-24-48-LP	
25.1V, 188 mA	Loop-powered 20-30 V DC	Loop	2865515	MACX MCR-EX-SL-SD-21-60-LP	
23.98V, 37.4 mA	Switching level 15-30 V DC	Line	2905669	MACX MCR-EX-SL-SD-21-25-LFD	
25.3V, 94 mA	Switching level 15-30 V DC	Line	2924867	MACX MCR-EX-SL-SD-23-48-LFD	
27.06V, 91.11 mA	Switching level 15-30 V DC	Line	2906155	MACX MCR-EX-SL-SD-24-48-LFD	

Temperature signals					
Field side	**Control side**	**Powered**	**Order #**	**Type description**	
RTD	4-20mA	Line	2865078	MACX MCR-SL-RTD-I-NC	
RTD	4-20mA	Line	2865573	MACX MCR-EX-SL-RTD-I-NC	
Thermocouple	4-20mA	Line	2924346	MACX MCR-SL-TC-I-NC	
Thermocouple	4-20mA	Line	2865586	MACX MCR-EX-SL-TC-I-NC	
Universal analog	Universal analog w/set pt.	Line	2811394	MACX MCR-T-UI-UP	With 1 set point relay
Universal analog	Universal analog w/set pt.	Line	2865654	MACX MCR-EX-T-UI-UP	With 1 set point relay
Universal analog	Universal analog w/3 set pts.	Line	2811378	MACX MCR-T-UIREL-UP	With 3 set point relays
Universal analog	Universal analog w/3 set pts.	Line	2865571	MACX MCR-EX-T-UIREL-UP	With 3 set point relays
Universal temp.	4-20mA/HART	Loop	2908662	MACX MCR-TS-I-OLP-SP	
Universal temp.	4-20mA/HART	Loop	2908664	MACX MCR-EX-TS-I-OLP-SP	
Universal temp.	4-20mA/HART	Loop	2908742	FA MCR-HT-TS-I-OLP-PT	
Universal temp.	4-20mA/HART	Loop	2908743	FA MCR-EX-HT-TS-I-OLP-PT	

Displays/specialty analog					
Field side	**Control side**	**Powered**	**Order #**	**Type description**	
Universal analog/temperature	Universal display w-2 set points	Line	2907216	FA MCR-D-TUI-UI-2REL-UP	
Universal analog/temperature	Universal display w-2 set points	Line	2907216	FA MCR-EX-D-TUI-UI-2REL-UP	
Universal analog/temperature	Universal display w-2 set points	Line	2907781	FA MCR-FD-TUI-UI-2REL-UP	Comes in IP67 housing
Universal analog/temperature	Universal display w-2 set points	Line	2907781	FA MCR-EX-FD-TUI-UI-2REL-UP	Comes in IP67 housing
4-20 mA/HART	4-20 mA/HART plus display	Loop	2908781	FA MCR-DS-I-I-OLP	
4-20 mA/HART	4-20 mA/HART plus display	Loop	2908800	FA MCR-EX-DS-I-I-OLP	
4-20 mA/HART	4-20 mA/HART plus display	Loop	2908782	FA MCR-FDS-I-I-OLP	Comes in IP67 housing
4-20 mA/HART	4-20 mA/HART plus display	Loop	2908801	FA MCR-EX-FDS-I-I-OLP	Comes in IP67 housing

MACX MCR accessories					
	Description		**Order #**	**Type description**	
	Power/fault signaling module		2865625	MACX MCR-PTB	
	Termination carrier		2924854	TC-D37SUB-ADIO16-EX-P-UNI	
	Termination carrier		2902932	TC-D37SUB-AIO16-EX-PS-UNI	
	Termination carrier for RUSIO		2904967	TC-D37SUB-ADIO16-EX-A-RUSIO	

PSRmini: Classic safe coupling relays for the process industry

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

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

Ex (i) NAMUR isolation amplifier

Ex (i) repeater power supply

PSR-PS40 PSRmini relay

PSR-PC51 PSRmini relay

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