

# Safety device - PSR-MC43-2SDO-1DO-24DC-SC - 1087561

Please be informed that the data shown in this PDF Document is generated from our Online Catalog. Please find the complete data in the user's documentation. Our General Terms of Use for Downloads are valid (<http://phoenixcontact.com/download>)




Safety relay module with IO-Link for emergency stop, safety doors, and light grids, to SILCL 3, cat. 4, PL e, 2 sensor circuits, automatic or manual, monitored start, 2 safe digital outputs, 1 signal output,  $U_s = 24\text{ V DC}$ , pluggable screw terminal block

## Your advantages

- ✓ Up to Cat. 4/PL e according to ISO 13849-1, SILCL 3 according to IEC 62061, SIL 3 according to IEC 61508
- ✓ For emergency stop and safety door monitoring, plus evaluation of light grids
- ✓ For monitoring 4-wire control strips or safety shut-off mats in accordance with EN ISO 13856-1
- ✓ 2 sensor circuits
- ✓ 2 safe digital outputs
- ✓ 1 digital signal output
- ✓ Diagnostic data via IO-Link in combination with PSR-CT safety switches
- ✓ Single and two-channel control
- ✓ Manually monitored and automatic activation



## Key Commercial Data

Packing unit	1 pc
GTIN	 4 055626 885803
GTIN	4055626885803
Weight per Piece (excluding packing)	130.420 g
Custom tariff number	85371098
Country of origin	Germany
Sales Key	DNA181

## Technical data

### Note

Utilization restriction	EMC: class A product, see manufacturer's declaration in the download area
-------------------------	---

### Dimensions

# Safety device - PSR-MC43-2SDO-1DO-24DC-SC - 1087561

## Technical data

### Dimensions

Width	17.5 mm
Height	112.2 mm
Depth	114.5 mm

### Ambient conditions

Ambient temperature (operation)	-40 °C ... 60 °C (observe derating)
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Max. permissible relative humidity (operation)	75 % (on average, 85% infrequently, non-condensing)
Max. permissible humidity (storage/transport)	75 % (on average, 85% infrequently, non-condensing)
Maximum altitude	≤ 2000 m (Above sea level)

### Power supply

Designation	A1/A2
Rated control circuit supply voltage $U_S$	24 V DC -20 % / +25 % (provide external protection)
	19.2 V DC ... 30 V DC
Rated control supply current $I_S$	typ. 72 mA
Power consumption at $U_S$	typ. 1.73 W
Inrush current	typ. 12 A ( $\Delta t < 10 \mu s$ )
Filter time	1 ms (For the logic. At A1 in the event of voltage dips at $U_S$ )
Protective circuit	Parallel protection against polarity reversal Suppressor diode Provide external fuse protection, see safety notes. Fuse type: 5 AT

### Supply of the IO-Link ports

Designation	L+/L-
Nominal voltage for I/O supply	24 V DC -20 % / +25 % (is provided via the IO-Link interface of the IO-Link master.)
Current consumption	typ. 8 mA
Inrush current	typ. 30 A ( $\Delta t = 10 \mu s$ )
Filter time	1 ms (in the event of voltage dips at $U_L$ )
Type of protection	Serial protection against polarity reversal
Protective circuit/component	Suppressor diode

### Digital inputs

Input name	Sensor circuit S0
	S10, S12, S22
Description of the input	safety-related sensor inputs
Number of inputs	3
Input voltage range "0" signal	0 V DC ... 5 V DC (S10, S12)
	For S22, see note in "Signal generator connection versions" section.
Input voltage range "1" signal	11 V DC ... 30 V DC (S10, S12)
	0 V (S22)
Input current range "0" signal	0 mA ... 2 mA (S10, S12)
Inrush current	< 5 mA (typically with $U_S$ at S10)

# Safety device - PSR-MC43-2SDO-1DO-24DC-SC - 1087561

## Technical data

### Digital inputs

	< 5 mA (Typically with U <sub>S</sub> at S12)
	> -7 mA (typically with U <sub>S</sub> at S22)
Current consumption	< 5 mA (typ. with U <sub>S</sub> at S10)
	< 5 mA (Typically with U <sub>S</sub> at S12)
	> -7 mA (typically with U <sub>S</sub> at S22)
Filter time	max. 1.5 ms (Test pulse width, low test pulses (S10, S12) )
	Test pulse rate = 5 x Test pulse width
	Deactivate the switch-on pulses for safety applications.
Max. permissible overall conductor resistance	150 Ω
Concurrence	∞
Protective circuit/component	Suppressor diode

### 2. Digital inputs

Input name	Sensor circuit S1
	S32, S42
Description of the input	safety-related sensor inputs
	IEC 61131-2 type 3
Number of inputs	2
Input voltage range "0" signal	0 V DC ... 5 V DC
Input voltage range "1" signal	11 V DC ... 30 V DC
Input current range "0" signal	0 mA ... 2 mA
Inrush current	< 10 mA (typically with U <sub>S</sub> , Δt = 500 μs)
Current consumption	< 5 mA (typically with U <sub>S</sub> )
Filter time	max. 1.5 ms (Test pulse width of low test pulses)
	Test pulse rate = 5 x Test pulse width
	Deactivate the switch-on pulses for safety applications.
Max. permissible overall conductor resistance	150 Ω
Concurrence	∞
Protective circuit/component	Suppressor diode

### 3. Digital inputs

Input name	Diagnostic input
	DGN
Description of the input	non-safety-related
	Potential A1/A2 or U <sub>S</sub>
Number of inputs	1
Input voltage range	0 V DC ... 30 V DC
Current consumption	typ. 30 mA
Protective circuit/component	Suppressor diode

### 4. Digital inputs

Input name	Start circuit
------------	---------------

# Safety device - PSR-MC43-2SDO-1DO-24DC-SC - 1087561

## Technical data

### 4. Digital inputs

	S34, S35
Number of inputs	2
Input voltage range "1" signal	19.2 V DC ... 30 V DC
Inrush current	< 10 mA (typically with $U_s$ , $\Delta t = 100$ ms)
Current consumption	< 7 mA (Typically with $U_s$ at S34)
	< 5 mA (Typically with $U_s$ at S35)
Max. permissible overall conductor resistance	150 $\Omega$
Protective circuit/component	Suppressor diode

### IO-Link inputs

Designation	IO-Link
Specification	Version 1.1
Transmission speed	230 kbps (COM3)
Cycle Time	5 ms
Process data update	5 ms
Amount of process data	max. 31 Byte (Input data)
	max. 16 Byte (Output data)
Number of ports	1
Connection method	Screw connection
Connection technology	3-conductor
Port type	Class A
Input name	C/Q
Description of the input	IO-Link switching and communication cable
Number of inputs	1
Protective circuit/component	Suppressor diode

### Digital outputs

Output name	14, 24
Output description	Safety-related digital outputs
	PNP, IEC 61131-2 Type 2
Number of outputs	2
Output voltage	$\geq 23$ V DC ( $U_s - 1$ V)
Output current	max. 2.4 A
Inrush current	max. 4.8 A ( $\Delta t = 10$ ms)
Output voltage when switched off	< 5 V DC (in the safe state)
Leakage current	max. 1 mA (in the safe state)
Ohmic load	min. 12 $\Omega$
Max. capacitive load	max. 10 $\mu$ F (2.4 A load)
	max. 4.7 $\mu$ F (1 A load)
Max. inductive load	max. 1 H
Min. load current	2 mA

# Safety device - PSR-MC43-2SDO-1DO-24DC-SC - 1087561

## Technical data

### Digital outputs

Switching frequency	1 Hz (Resistive, inductive, capacitive)
Type of protection	Freewheeling circuit for inductive loads
Short-circuit protection	Yes
Discharging circuit	No
Limitation of the voltage induced on circuit interruption	max. 50 V

### Alarm outputs

Designation	M1
Output description	PNP
	non-safety-related
Number of outputs	1
Voltage	approx. 22 V DC ( $U_s - 2 V$ )
Current	max. 100 mA
Maximum inrush current	500 mA ( $\Delta t = 1 \text{ ms}$ at $U_s$ )
Switching frequency	1 Hz (Resistive, inductive, capacitive)
Protective circuit/component	Suppressor diode

### Times

Typical pickup time at US	< 200 ms (when controlled via A1)
Typical response time at US	< 200 ms (automatic start)
	< 175 ms (manual, monitored start)
Response time	< 10 ms
Restart time	< 1 s (Boot time)
Recovery time	250 ms (following demand of the safety function)

### General

Nominal operating mode	100% operating factor
Net weight	130.42 g
Mounting position	vertical or horizontal
Mounting type	DIN rail mounting
Assembly instructions	See derating curve
Degree of protection	IP20
Min. degree of protection of inst. location	IP54
Housing material	PBT
Housing color	yellow
Operating voltage display	1 x green, yellow, red LED
Status display	5x LED green

### Connection data

Connection method	Screw connection
pluggable	Yes
Conductor cross section solid	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross section flexible	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>

# Safety device - PSR-MC43-2SDO-1DO-24DC-SC - 1087561

## Technical data

### Connection data

Conductor cross-section AWG	24 ... 12
Stripping length	7 mm
Screw thread	M3
Torque	0.5 Nm ... 0.6 Nm

### Safety-related characteristic data

Stop category	0
Designation	IEC 61508 - High demand
Safety Integrity Level (SIL)	3
Designation	EN ISO 13849
Performance level (PL)	e
Category	4
Designation	EN 62061
Safety Integrity Level Claim Limit (SIL CL)	3

### Standards and Regulations

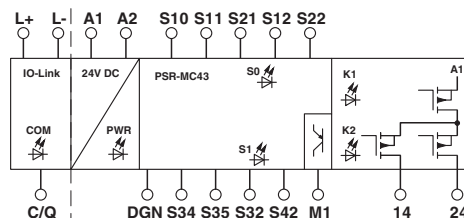
Designation	Air clearances and creepage distances between the power circuits
Standards/regulations	EN 60947-5-1
Rated insulation voltage	63 V
Rated surge voltage/insulation	Safe isolation, 0.5 kw between logic and IO-Link
	Basic insulation 4 kV between all current paths and housing
Degree of pollution	2
Overvoltage category	II
Shock	30g
Vibration (operation)	10 Hz ... 150 Hz, 5g
Conformance	CE-compliant

### Environmental Product Compliance

REACH SVHC	Lead 7439-92-1
------------	----------------

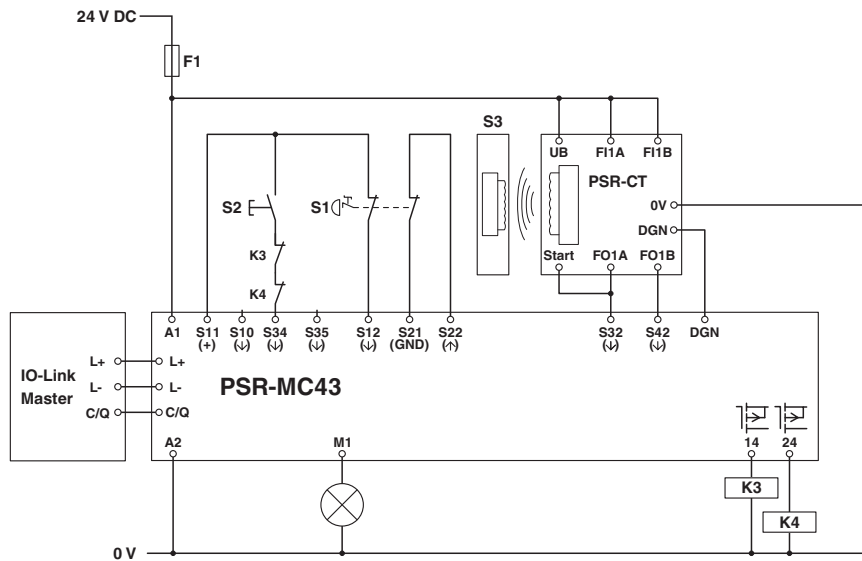
## Drawings

Block diagram



# Safety device - PSR-MC43-2SDO-1DO-24DC-SC - 1087561

Circuit diagram



## Classifications

eCl@ss

eCl@ss 10.0.1	27371819
eCl@ss 11.0	27371819
eCl@ss 8.0	27371819
eCl@ss 9.0	27371819

ETIM

ETIM 5.0	EC001449
----------	----------

## Approvals

Approvals

Approvals

Functional Safety / UL Listed / cUL Listed / Functional Safety / UL Listed / cUL Listed

Ex Approvals

## Approval details

Functional Safety		44-205-15124317
-------------------	--	-----------------

# Safety device - PSR-MC43-2SDO-1DO-24DC-SC - 1087561

## Approvals

UL Listed		<a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a>	FILE E 140324
-----------	--	---	---------------

cUL Listed		<a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a>	FILE E 140324
------------	--	---	---------------

Functional Safety			44-780-15124317
-------------------	--	--	-----------------

UL Listed		<a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a>	FILE E 140324
-----------	--	---	---------------

cUL Listed		<a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a>	FILE E 140324
------------	--	---	---------------

## Accessories

### Accessories

#### Coding element

Coding profile - CP-MSTB - 1734634

Coding profile, is inserted into the slot on the plug or inverted header, red insulating material



Coding section - CR-MSTB - 1734401

Coding section, inserted into the recess in the header or the inverted plug, red insulating material



#### Network management software



# Safety device - PSR-MC43-2SDO-1DO-24DC-SC - 1087561

## Accessories

Software - IOL-CONF - 1083065



IOL-CONF is a browser-based configuration software tool for the easy startup of IO-Link devices

---

## Safety switches

Safety switch sensor - PSR-CT-C-SEN-1-8 - 2702972



Proximity safety circuit up to Cat. 4, PL e (EN ISO 13849), SIL 3 (IEC 61508), unicode sensor with RFID coding, model 4 (EN ISO 14119), automatic or manual start, integrated diagnostics, 24 V DC supply, IP69K, M12 connector

---

Safety switch sensor - PSR-CT-M-SEN-1-8 - 2702975



Proximity safety circuit up to Cat. 4, PL e (EN ISO 13849), SIL 3 (IEC 61508), multicode sensor with RFID coding, model 4 (EN ISO 14119), automatic or manual start, integrated diagnostics, 24 V DC supply, IP69K, M12 connector

---

Safety switch sensor - PSR-CT-F-SEN-1-8 - 2702976



Proximity safety circuit up to Cat. 4, PL e (EN ISO 13849), SIL 3 (IEC 61508), fixcode sensor with RFID coding, model 4 (EN ISO 14119), automatic or manual start, integrated diagnostics, 24 V DC supply, IP69K, M12 connector

---

Safety switch actuator - PSR-CT-C-ACT - 2702973



Proximity safety circuit up to Cat. 4, PL e (EN ISO 13849), SIL 3 (IEC 61508), coded actuator, compatible with all sensor coding types, supplied inductively via the sensor, IP69K

---