

PSR-MC43-2SDO-1DO-24DC-SP - Safety relay module



1087569

<https://www.phoenixcontact.com/mx/products/1087569>

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Safety relay module with IO-Link for emergency stop, safety doors, and light grids, to SIL 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 Push-in terminal block

Your advantages

- Up to Cat. 4/PL e in accordance with ISO 13849-1, SIL 3 in accordance with EN IEC 62061, SIL 3 in accordance with 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
- 1- and 2-channel control
- Manually monitored and automatic activation

Commercial data

Item number	1087569
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	02
Product key	DNA181
GTIN	4055626883960
Weight per piece (including packing)	161.3 g
Weight per piece (excluding packing)	126.06 g
Customs tariff number	85371098
Country of origin	DE

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Technical data

Product properties

Product type	Safety relays
Product family	PSRmini
Application	Emergency stop
	Safety door
	Light grid
	Transponder
	Switching capacities
	Safety shut-off mats

Times

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

Electrical properties

Maximum power dissipation for nominal condition	4 W ($U_B = U_{BL} = 30$ V, $I_{L1} = I_{L2} = 2.4$ A)
Nominal operating mode	100% operating factor

Air clearances and creepage distances between the power circuits

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

Supply

Designation	L+/L-
Nominal voltage for I/O supply	24 V DC -20 % / +25 % (Provided via the IO-Link interface of the IO-Link master.)
Current consumption	typ. 8 mA
Protective circuit	Serial protection against polarity reversal; Suppressor diode

Supply

Designation	A1/A2
Rated control circuit supply voltage U_S	19.2 V DC ... 30 V DC
Rated control circuit supply voltage U_S	24 V DC -20 % / +25 % (provide external protection)
Rated control supply current I_S	typ. 72 mA
Power consumption at U_S	typ. 1.73 W
Inrush current	typ. 12 A ($\Delta t < 10$ μ s)
Filter time	1 ms (For the logic. At A1 in the event of voltage dips at U_S)

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Protective circuit	Parallel protection against polarity reversal; Suppressor diode (Provide external fuse protection, see safety notes. Fuse type: 5 AT)
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Input data

Digital: Sensor circuit S0 (S10, S12, S22)

Description of the input	safety-related sensor inputs
	IEC 61131-2 type 3 (S10, S12) PNP (S22)
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)
	< 5 mA (Typically with U_S at S12)
	> -7 mA (typically with U_S 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.
Concurrence	∞
Max. permissible overall conductor resistance	150 Ω
Protective circuit	Suppressor diode
Current consumption	< 5 mA (typ. with U_S at S10)
	< 5 mA (Typically with U_S at S12)
	> -7 mA (typically with U_S at S22)

Digital: 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_S , $\Delta t = 500 \mu s$)
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.
Concurrence	∞
Max. permissible overall conductor resistance	150 Ω
Protective circuit	Suppressor diode
Current consumption	< 5 mA (typically with U_S)

Digital: Diagnostic input (DGN)

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Description of the input	non-safety-related
	Potential A1/A2 or U_S
Number of inputs	1
Input voltage range	0 V DC ... 30 V DC
Protective circuit	Suppressor diode
Current consumption	typ. 30 mA

Digital: Start circuit (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)
Max. permissible overall conductor resistance	150 Ω
Protective circuit	Suppressor diode
Current consumption	< 7 mA (Typically with U_S at S34)
	< 5 mA (Typically with U_S at S35)

IO-Link

Designation	IO-Link
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)
Description of the input	IO-Link switching and communication cable
Number of inputs	1
Connection method	Spring-cage connection
Connection technology	3-conductor
Number of ports	1
Port type	Class A

Output data

Digital: 14, 24

Output description	Safety-related digital outputs
	PNP, IEC 61131-2 Type 2
Number of outputs	2
Protective circuit	Freewheeling circuit for inductive loads
Short-circuit protection	Yes
Output voltage	≥ 23 V DC ($U_S - 1$ V)
Leakage current	max. 1 mA (in the safe state)
Ohmic load	min. 12 Ω
Max. capacitive load	max. 10 μ F (2.4 A load)
	max. 4.7 μ F (1 A load)
Max. inductive load	max. 1 H
Limitation of the voltage induced on circuit interruption	max. 50 V

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Output current	max. 2.4 A
Inrush current	max. 4.8 A ($\Delta t = 10$ ms)
Min. load current	2 mA
Switching frequency	1 Hz (Resistive, inductive, capacitive)
Output voltage when switched off	< 5 V DC (in the safe state)
Discharging circuit	No

Signal

Voltage	approx. 22 V DC
Switching frequency	1 Hz (Resistive, inductive, capacitive)
Protective circuit	Suppressor diode

Connection data

Connection technology

pluggable	yes
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Conductor connection

Connection method	Push-in connection
Conductor cross section rigid	0.2 mm ² ... 1.5 mm ²
Conductor cross section flexible	0.2 mm ² ... 1.5 mm ²
Conductor cross section, flexible, with ferrule, with plastic sleeve	0.25 mm ² ... 1.5 mm ² (only together with CRIMPFOX 6)
Conductor cross section flexible, with ferrule without plastic sleeve	0.25 mm ² ... 1.5 mm ² (only together with CRIMPFOX 6)
Conductor cross-section AWG	24 ... 16
Stripping length	8 mm

Signaling

Status display	5x LED green
Operating voltage display	1 x green, yellow, red LED

Dimensions

Width	17.5 mm
Height	116.6 mm
Depth	114.5 mm

Material specifications

Housing material	PBT
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Characteristics

Safety data

Stop category	0
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Safety data: EN ISO 13849

Category	4
Performance level (PL)	e

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Safety data: IEC 61508 - High demand

Safety Integrity Level (SIL)	3
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Safety data: EN IEC 62061

Safety Integrity Level (SIL)	3
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Environmental and real-life conditions

Ambient conditions

Degree of protection	IP20
Min. degree of protection of inst. location	IP54
Ambient temperature (operation)	-40 °C ... 60 °C (observe derating)
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Maximum altitude	≤ 2000 m (Above sea level)
Max. permissible humidity (storage/transport)	75 % (on average, 85% infrequently, non-condensing)
Max. permissible relative humidity (operation)	75 % (on average, 85% infrequently, non-condensing)
Shock	30g
Vibration (operation)	10 Hz ... 150 Hz, 5g

Approvals

CE

Identification	CE-compliant
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Standards and regulations

Air clearances and creepage distances between the power circuits

Standards/regulations	EN 60947-5-1
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Mounting

Mounting type	DIN rail mounting
Assembly instructions	See derating curve
Mounting position	vertical or horizontal
Connection method	Push-in connection

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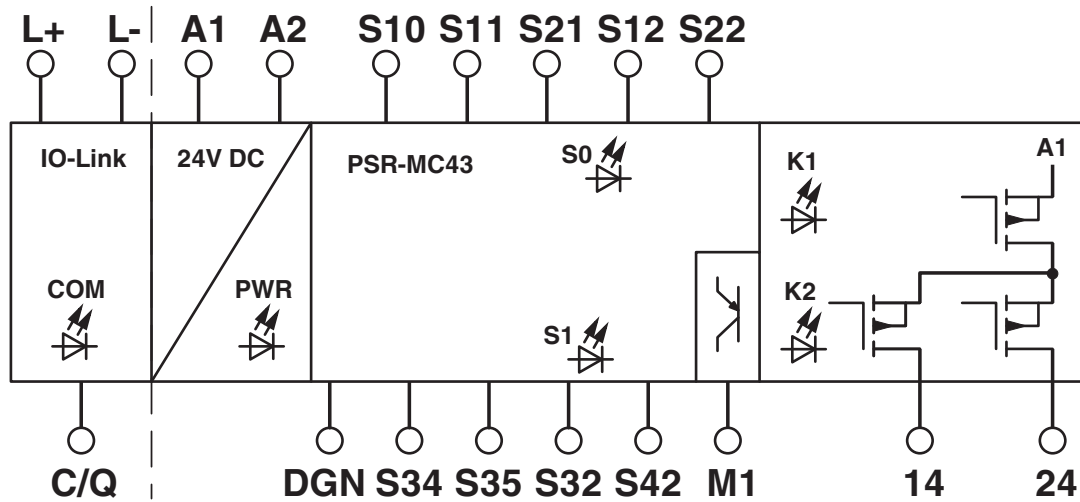


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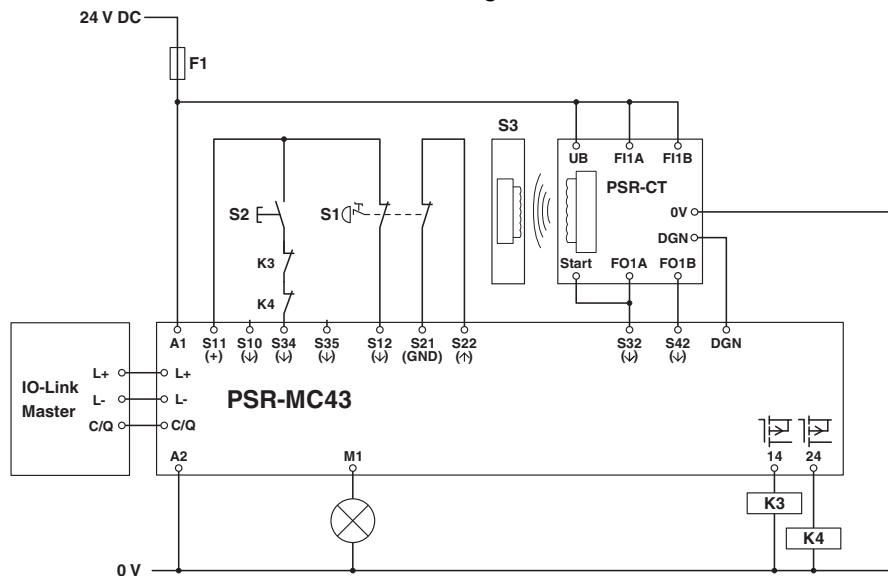
Drawings

Block diagram



Block diagram

Circuit diagram



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Approvals

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UL Listed

Approval ID: FILE E 140324



cUL Listed

Approval ID: FILE E 140324



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UL Listed

Approval ID: FILE E 140324



Functional Safety

Approval ID: 44-780-15124317



Functional Safety

Approval ID: 44-205-15124317

cULus Listed

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Classifications

ECLASS

ECLASS-11.0	27371819
ECLASS-13.0	27371819
ECLASS-12.0	27371819

ETIM

ETIM 8.0	EC001449
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UNSPSC

UNSPSC 21.0	39122200
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Environmental product compliance

REACH SVHC

Lead 7439-92-1

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Accessories

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

2702972

<https://www.phoenixcontact.com/mx/products/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

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

2702975

<https://www.phoenixcontact.com/mx/products/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

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

2702976

<https://www.phoenixcontact.com/mx/products/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

PSR-CT-C-ACT - Safety switch actuator

2702973

<https://www.phoenixcontact.com/mx/products/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

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CP-MSTB - Coding profile

1734634

<https://www.phoenixcontact.com/mx/products/1734634>

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



CR-MSTB - Coding section

1734401

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



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IOL-CONF - Network management software

1083065

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

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