

PSR-MC45-3NO-1DO-24DC-SC - Safety relays



1082024

<https://www.phoenixcontact.com/us/products/1082024>

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Safety relay for emergency stop, safety doors, and light grids up to SIL 3, Cat. 4, PL e, 1 or 2-channel operation, automatic or manual, monitored start, 3 enabling current paths, $U_S = 24 \text{ V DC}$, plug-in screw terminal block

Your advantages

- Up to Cat. 4/PL e in accordance with EN ISO 13849-1, SIL 3 in accordance with EN IEC 62061
- 1- and 2-channel control
- 3 enabling current paths, 1 digital signal output
- Manually monitored and automatic activation in a single device
- Cross-circuit detection

Commercial data

Item number	1082024
Packing unit	1 pc
Minimum order quantity	1 pc
Product key	DNA181
GTIN	4055626812144
Weight per piece (including packing)	235.1 g
Weight per piece (excluding packing)	185.26 g
Country of origin	DE

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Technical data

Product properties

Product type	Safety relays
Product family	PSRmini
Application	Emergency stop
	Safety door
	Transponder
	Light grid
Relay type	Electromechanical relay with force-guided contacts in accordance with IEC/EN 61810-3

Times

Typical response time	< 100 ms (automatic start)
	< 100 ms (manual, monitored start)
Typ. starting time with U_S	< 100 ms (when controlled via A1)
Typical release time	< 20 ms (on demand via the sensor circuit)
	< 20 ms (when controlled via A1; applicative deactivation via A1/A2 is not permitted)
Restart time	< 1 s (Boot time)
Recovery time	500 ms (following demand of the safety function)

Electrical properties

Maximum power dissipation for nominal condition	17.21 W (at $U_B = 30\text{ V}$, $I_L^2 = 72\text{ A}^2$)
Nominal operating mode	100% operating factor

Air clearances and creepage distances between the power circuits

Rated insulation voltage	250 V AC
	250 V AC
Rated surge voltage/insulation	Basic insulation 4 kV between all current paths
	Basic insulation 4 kV between all current paths and housing

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. 75 mA
Power consumption at U_S	typ. 1.8 W
Inrush current	typ. 2.2 A ($\Delta t = 300\ \mu\text{s}$ at U_S)
Filter time	1 ms (at A1 in the event of voltage dips at U_S)
Protective circuit	Serial protection against polarity reversal
	Suppressor diode 33 V

Input data

Digital: Sensor circuit (S10, S12, S22)

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Description of the input	safety-related sensor inputs
	NPN (S10, S12), PNP (S22)
Number of inputs	3
Input voltage range "0" signal	0 V ... 5 V (S10, S12)
Input voltage range "1" signal	19.2 V ... 30 V
Input current range "0" signal	0 mA ... 2 mA (S10, S12)
Inrush current	< 5 mA (Typically with U_S at S10/S12, $\Delta t = 500 \mu s$)
	> -5 mA (typically with U_S at S22/0 V, $\Delta t = 500 \mu s$)
Filter time	max. 3 ms (Test pulse width of low test pulses)
	> 1 s (Test pulse rate for low test pulse)
	Where test pulse width < 1 ms: test pulse rate = 5 x test pulse width
	max. 1 ms (Test pulse width, high test pulse)
	> 100 ms (Test pulse rate, high test pulse)
	Unless test pulses are safety-related, they should be disabled.
Concurrency	∞
Max. permissible overall conductor resistance	150 Ω
Protective circuit	Suppressor diode 38.6 V
Current consumption	< 4 mA (typically with U_S at S10/S12)
	> -15 mA (typically with U_S at S22/0 V)

Digital: Start circuit (S34, S35)

Description of the input	non-safety-related
	NPN
Number of inputs	2
Input voltage range "1" signal	19.2 V DC ... 30 V DC
Inrush current	< 10 mA (typically with U_S , $\Delta t = 500 \mu s$)
Max. permissible overall conductor resistance	150 Ω
Protective circuit	Suppressor diode 38.6 V
Current consumption	2.5 mA (Typically with U_S at S34)
	1 mA (Typically with U_S at S35)

Output data

Relay: Enabling current paths (13/14, 23/24, 33/34)

Output description	2 N/O contacts each in series, safety-related, floating
Number of outputs	3
Contact switching type	3 enabling current paths
Contact material	AgSnO ₂
Switching voltage	min. 5 V AC/DC
	max. 250 V AC/DC (Observe the load curve)
Switching capacity	min. 50 mW
Inrush current	min. 10 mA AC/DC
	max. 6 A
Switching capacity in accordance with IEC 60947-5-1	5 A (24 V (DC13))

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	5 A (250 V (AC15))
Limiting continuous current	6 A
Sq. Total current	72 A ² (observe derating)
Switching frequency	0.5 Hz
Mechanical service life	10x 10 ⁶ cycles
Output fuse	6 A gL/gG

Signal: M1

Output description	PNP non-safety-related
Number of outputs	1
Voltage	approx. 23 V DC (U _s - 1 V)
Current	max. 100 mA
Maximum inrush current	1 A (Δt = 5 ms at U _s)
Switching frequency	0.5 Hz (ohmic)
Protective circuit	33 V suppressor diode
Short-circuit protection	Yes

Connection data

Connection technology

pluggable	yes
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Conductor connection

Connection method	Screw connection
Conductor cross section rigid	0.2 mm ² ... 2.5 mm ²
Conductor cross section flexible	0.2 mm ² ... 2.5 mm ²
Conductor cross-section AWG	24 ... 12
Stripping length	7 mm
Screw thread	M3
Tightening torque	0.5 Nm ... 0.6 Nm

Signaling

Status display	2 x green LEDs
Operating voltage display	1 x green LED

Dimensions

Width	22.5 mm
Height	112.4 mm
Depth	114.5 mm

Material specifications

Color (Housing)	yellow (RAL 1018)
Housing material	Polyamide

Characteristics

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Safety data

Stop category	0
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Safety data: EN ISO 13849

Category	4
Performance level (PL)	e (5 A DC13; 8760 switching cycles/year or 5 A AC15; 2190 switching cycles/year)

Safety data: IEC 61508 - High demand

Safety Integrity Level (SIL)	3
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Safety data: IEC 61508 - Low 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	15g for $\Delta t = 11$ ms (continuous shock: 10g for $\Delta t = 16$ ms)
Vibration (operation)	10 Hz ... 150 Hz, 2g

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

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Classifications

ECLASS

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

ETIM

ETIM 9.0	EC001449
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UNSPSC

UNSPSC 21.0	39122200
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Environmental product compliance

REACH SVHC	Lead 7439-92-1
China RoHS	Environmentally Friendly Use Period = 50 years
	For information on hazardous substances, refer to the manufacturer's declaration available under "Downloads"

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