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Safety relay with IO-Link for emergency stop, safety doors, and light grids, up to SIL 3, Cat. 4, PL e, 2 sensor circuits, automatic or manual, monitored start, 2 enabling current paths, 1 signal output, $U_S = 24$ V DC, plug-in screw terminal block

Your advantages

- 2 enabling current paths, 1 digital signal output
- Diagnostic data via IO-Link in combination with PSR-CT safety switches
- For emergency stop and safety door monitoring, plus evaluation of light grids
- Automatic and manual activation
- 1- and 2-channel control
- 2 sensor circuits
- 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

Commercial data

Item number	2702901
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	DN01
Product key	DNA181
GTIN	4055626458540
Weight per piece (including packing)	187.65 g
Weight per piece (excluding packing)	157.28 g
Customs tariff number	85371098
Country of origin	DE

Technical data

Notes

Note on application

Note on application

Only for industrial use

Product properties

Product type	Safety relays
Product family	PSRmini
Application	Emergency stop Safety door Light grid Magnetic switch Transponder
Control	1 and 2 channel
Relay type	Electromechanical relay with force-guided contacts in accordance with IEC/EN 61810-3

Insulation characteristics

Overvoltage category	II
Degree of pollution	2

Times

Typical response time	< 220 ms (automatic start) < 175 ms (manual, monitored start)
Typ. starting time with U_s	< 250 ms (when controlled via A1)
Typical release time	< 20 ms (on demand via the sensor circuit) < 20 ms (on demand via A1)
Restart time	< 1 s (Boot time)
Recovery time	< 500 ms
Start pulse length	≥ 500 ms (manual start)

Electrical properties

Maximum power dissipation for nominal condition	6.45 W ($U_S = 30$ V, $U_L = 30$ V, $I^2 = 72$ A 2)
Nominal operating mode	100% operating factor
Rated insulation voltage	320 V
Rated surge voltage/insulation	See data sheet, section "Insulation coordination".

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. 16 mA
Protective circuit	Serial protection against polarity reversal Suppressor diode

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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. 60 mA
Power consumption at U_S	typ. 1.44 W
Inrush current	typ. 2.5 A ($\Delta t = 500 \mu s$ 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

Input data

Digital: Sensor circuit S0 (S12, S22)

Description of the input	safety-related sensor inputs
Number of inputs	2
Input voltage range "0" signal	0 V DC ... 5 V DC (S12) For S22, see note in "Signal generator connection versions" section.
Input voltage range "1" signal	11 V DC ... 30 V DC
Input current range "0" signal	0 mA ... 2 mA (S12, S22)
Inrush current	< 5 mA (typ. with U_S at S12, $\Delta t = 500 \mu s$) < 5 mA (typ. with U_S at S22/24 V, $\Delta t = 500 \mu s$) > -5 mA (typ. with U_S at S22/0 V, $\Delta t = 500 \mu s$)
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 (typ. with U_S at S12) < 5 mA (typ. with U_S at S22/24 V) > -5 mA (typ. with U_S at S22/0 V)

Digital: Sensor circuit S1 (S32, S42)

Description of the input	safety-related sensor inputs
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	< 20 mA (typ. with U_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	∞

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Max. permissible overall conductor resistance	150 Ω
Protective circuit	Suppressor diode
Current consumption	< 5 mA (typ. with U_S)

Digital: Diagnostic input (DGN)

Description of the input	non-safety-related
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)

Description of the input	NPN (manual start), PNP (autostart)
Number of inputs	1
Input voltage range "1" signal	19.2 V DC ... 30 V DC (manual start, autostart: 0 V)
Inrush current	< 10 mA (typ. with U_S , $\Delta t = 100$ ms)
Max. permissible overall conductor resistance	150 Ω
Protective circuit	Suppressor diode
Current consumption	< 5 mA (typ. with U_S at S34/24 V) > -5 mA (typ. with U_S at S34/0 V)

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	Screw connection
Connection technology	3-conductor
Number of ports	1
Port type	Class A

Output data

Relay: Enabling current path (13/14, 23/24)

Output description	safety-related N/O contacts
	2 NO contacts each in series, without delay, floating
Number of outputs	2 (undelayed)
Contact switching type	2 enabling current paths
Contact material	AgSnO ₂
Switching voltage	min. 12 V AC/DC
	max. 250 V AC/DC
Switching capacity	min. 60 mW

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Inrush current	min. 3 mA
	max. 6 A
Switching capacity	5 A (AC15)
	4 A (DC13)
Limiting continuous current	6 A
Sq. Total current	72 A ² (observe derating)
Switching frequency	0.1 Hz
Mechanical service life	10x 10 ⁶ cycles
Output fuse	6 A gL/gG
	4 A gL/gG (for low-demand applications)

Signal: 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 (Δt = 1 ms at U _s)
Protective circuit	Suppressor diode

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	5 x LED (green)
Operating voltage display	1 x LED (green, yellow, red)

Dimensions

Width	17.5 mm
Height	112.2 mm
Depth	114.5 mm

Material specifications

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

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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 (4 A DC13; 5 A AC15; 8760 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)	-25 °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
Vibration (operation)	10 Hz ... 150 Hz, amplitude 0.15 mm, 2g

Approvals

CE

Identification	CE-compliant
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Mounting

Mounting type	DIN rail mounting
Assembly note	See derating curve
Mounting position	vertical or horizontal

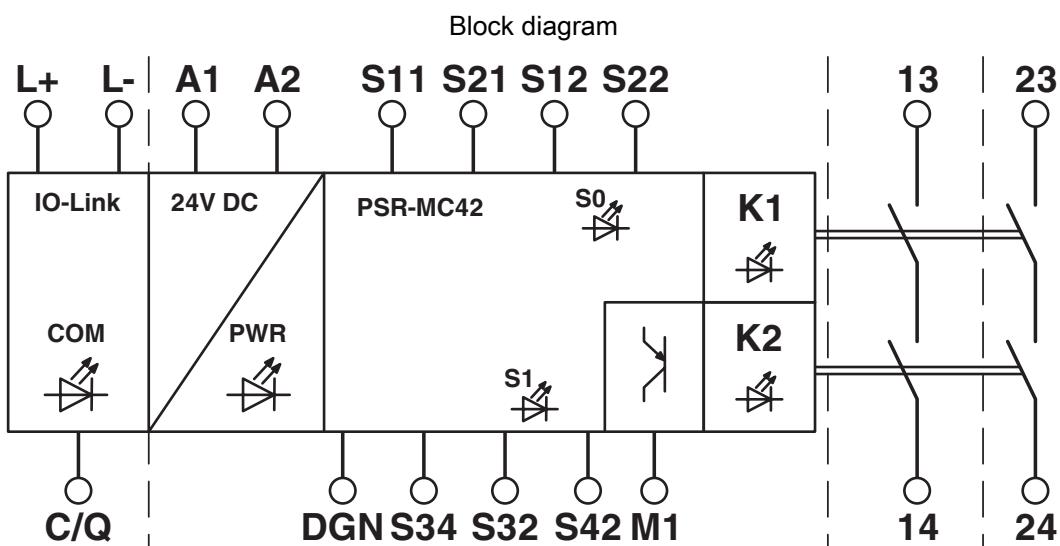
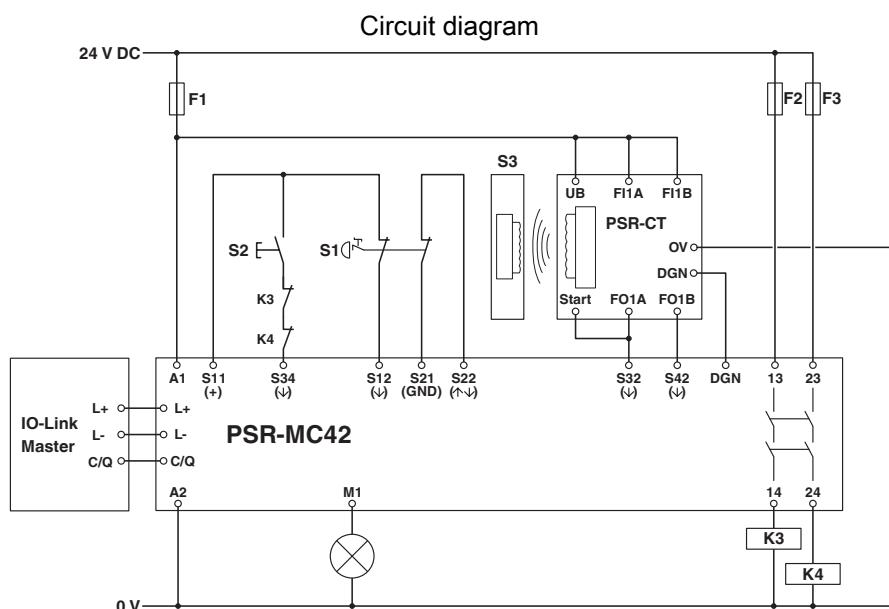
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Drawings



Block diagram

Approvals

ⓘ To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2702901>



cULus Listed

Approval ID: E140324



Functional Safety

Approval ID: 01/205/5677.02/24

Classifications

ECLASS

ECLASS-13.0	27371819
ECLASS-15.0	27371819
ECLASS-15.0 ASSET	27250101

ETIM

ETIM 9.0	EC001449
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UNSPSC

UNSPSC 21.0	39122200
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Environmental product compliance

EU RoHS

Fulfills EU RoHS substance requirements	Yes
Exemption	7(a), 7(c)-I

China RoHS

Environment friendly use period (EFUP)	EFUP-50
An article-related China RoHS declaration table can be found in the download area for the respective article under "Manufacturer declaration". For all articles with EFUP-E, no China RoHS declaration table issued and required.	

EU REACH SVHC

REACH candidate substance (CAS No.)	Lead(CAS: 7439-92-1)
SCIP	06c37c05-4d86-4236-997e-0585da70bfa9

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