

## Safety relays - PSR-SPP- 24DC/ESP4/2X1/1X2 - 2981017

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Safety relay for SIL 3 high and low-demand applications, also approved according to EN 50156, Germanischer Lloyd, and EN ISO 13849, emergency stop and safety door monitoring, 1-channel, 2 enabling current paths, 1 signal contact, plug-in spring-cage terminal block, width: 22.5 mm

### Product Features

- Up to Cat. 4/PL e according to ISO 13849-1, SILCL 3 according to IEC 62061, SIL 3 according to IEC 61508
- Single-channel control
- Safe isolation
- With inrush current reduction, therefore suitable for coupling to failsafe controllers (PSR-ESP4)



### Key Commercial Data

|                                      |          |
|--------------------------------------|----------|
| Packing unit                         | 1 pc     |
| Weight per Piece (excluding packing) | 240.0 g  |
| Custom tariff number                 | 85364900 |
| Country of origin                    | Germany  |

### Technical data

#### Note

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

#### Dimensions

|        |          |
|--------|----------|
| Width  | 22.5 mm  |
| Height | 112 mm   |
| Depth  | 114.5 mm |

#### Ambient conditions

|                                 |                  |
|---------------------------------|------------------|
| Ambient temperature (operation) | -20 °C ... 55 °C |
|---------------------------------|------------------|

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#### Ambient conditions

|                                                |                            |
|------------------------------------------------|----------------------------|
| Ambient temperature (storage/transport)        | -40 °C ... 70 °C           |
| Max. permissible relative humidity (operation) | 75 %                       |
| Max. permissible humidity (storage/transport)  | 75 %                       |
| Shock                                          | 15g                        |
| Vibration (operation)                          | 10 Hz ... 150 Hz, 2g       |
| Maximum altitude                               | ≤ 2000 m (Above sea level) |

#### Input data

|                                             |                                |
|---------------------------------------------|--------------------------------|
| Nominal input voltage $U_N$                 | 24 V DC                        |
| Input voltage range in reference to $U_N$   | 0.85 ... 1.1                   |
| Typical input current at $U_N$              | 50 mA DC                       |
| Typical inrush current                      | < 1 A                          |
| Voltage at input/start and feedback circuit | 24 V DC                        |
| Typical response time                       | 60 ms (Automatic/manual start) |
| Typical release time                        | 20 ms                          |
| Recovery time                               | approx. 1 s                    |
| Status display                              | Green LED                      |

#### Output data

|                                              |                                                         |
|----------------------------------------------|---------------------------------------------------------|
| Contact type                                 | 2 enabling current paths                                |
|                                              | 1 signaling current path (type B according to EN 50205) |
| Contact material                             | AgSnO <sub>2</sub> , gold-flashed                       |
| Minimum switching voltage                    | 10 V                                                    |
| Maximum switching voltage                    | 250 V AC/DC                                             |
| Limiting continuous current                  | 6 A (N/O contact/N/C contact, high demand)              |
|                                              | 4 A (N/O contact/N/C contact, low demand)               |
| Inrush current, minimum                      | 10 mA                                                   |
| Maximum inrush current                       | 6 A                                                     |
| Sq. Total current                            | $72 \text{ A}^2 (I_{TH}^2 = I_1^2 + I_2^2)$             |
| Interrupting rating (ohmic load) max.        | 144 W (24 V DC, $\tau = 0 \text{ ms}$ )                 |
|                                              | 200 W (48 V DC, $\tau = 0 \text{ ms}$ )                 |
|                                              | 77 W (110 V DC, $\tau = 0 \text{ ms}$ )                 |
|                                              | 70 W (220 V DC, $\tau = 0 \text{ ms}$ )                 |
|                                              | 1500 VA (250 V AC, $\tau = 0 \text{ ms}$ )              |
| Maximum interrupting rating (inductive load) | 42 W (24 V DC, $\tau = 40 \text{ ms}$ )                 |
|                                              | 40 W (48 V DC, $\tau = 40 \text{ ms}$ )                 |
|                                              | 35 W (110 V DC, $\tau = 40 \text{ ms}$ )                |
|                                              | 33 W (220 V DC, $\tau = 40 \text{ ms}$ )                |

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## Technical data

### Output data

|                         |                                |
|-------------------------|--------------------------------|
| Switching capacity min. | 0.2 W                          |
| Output fuse             | 6 A gL/gG NEOZED (High demand) |
|                         | 4 A gL/gG NEOZED (Low demand)  |

### General

|                                             |                                                                                   |
|---------------------------------------------|-----------------------------------------------------------------------------------|
| Relay type                                  | Electromechanical relay with forcibly guided contacts in accordance with EN 50205 |
| Mechanical service life                     | Approx. $10^7$ cycles                                                             |
| Net weight                                  | 199.6 g                                                                           |
| Mounting type                               | DIN rail mounting                                                                 |
| Degree of protection                        | IP54                                                                              |
|                                             | IP20                                                                              |
| Min. degree of protection of inst. location | IP54                                                                              |
| Mounting position                           | On horizontal and vertical DIN rail                                               |
| Control                                     | single-channel                                                                    |
| Housing material                            | Polyamide PA non-reinforced                                                       |

### Connection data

|                                       |                        |
|---------------------------------------|------------------------|
| Connection method                     | Spring-cage connection |
| pluggable                             | Yes                    |
| Conductor cross section solid min.    | 0.2 mm <sup>2</sup>    |
| Conductor cross section solid max.    | 1.5 mm <sup>2</sup>    |
| Conductor cross section flexible min. | 0.2 mm <sup>2</sup>    |
| Conductor cross section flexible max. | 1.5 mm <sup>2</sup>    |
| Conductor cross section AWG min.      | 24                     |
| Conductor cross section AWG max.      | 16                     |
| Stripping length                      | 8 mm                   |

### Safety-related characteristic data

|                                             |                                                |
|---------------------------------------------|------------------------------------------------|
| Stop category                               | 0                                              |
| Designation                                 | IEC 61508 - High demand                        |
| Safety Integrity Level (SIL)                | 1 (up to SIL 3 depending on the application)   |
| Designation                                 | IEC 61508 - Low demand                         |
| Safety Integrity Level (SIL)                | 1 (up to SIL 3 depending on the application)   |
| Designation                                 | EN ISO 13849                                   |
| Performance level (PL)                      | c (up to PL e depending on the application)    |
| Category                                    | 1 (up to Cat. 4 depending on the application)  |
| Designation                                 | EN 62061                                       |
| Safety Integrity Level Claim Limit (SIL CL) | 1 (up to SILCL 3 depending on the application) |

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### Technical data

#### Standards and Regulations

|                                |                                                                  |
|--------------------------------|------------------------------------------------------------------|
| Shock                          | 15g                                                              |
| Designation                    | Air clearances and creepage distances between the power circuits |
| Standards/regulations          | DIN EN 50178/VDE 0160                                            |
| Rated insulation voltage       | 250 V                                                            |
| Rated surge voltage/insulation | 6 kV / Safe isolation, increased insulation                      |
| Degree of pollution            | 2                                                                |
| Overvoltage category           | III                                                              |
| Vibration (operation)          | 10 Hz ...150 Hz, 2g                                              |

### Classifications

#### eCl@ss

|            |          |
|------------|----------|
| eCl@ss 4.0 | 27371102 |
| eCl@ss 4.1 | 27371102 |
| eCl@ss 5.0 | 27371901 |
| eCl@ss 5.1 | 27371901 |
| eCl@ss 6.0 | 27371819 |
| eCl@ss 7.0 | 27371819 |
| eCl@ss 8.0 | 27371819 |

#### ETIM

|          |          |
|----------|----------|
| ETIM 2.0 | EC001449 |
| ETIM 3.0 | EC001449 |
| ETIM 4.0 | EC001449 |
| ETIM 5.0 | EC001449 |

#### UNSPSC

|               |          |
|---------------|----------|
| UNSPSC 6.01   | 30211901 |
| UNSPSC 7.0901 | 39121501 |
| UNSPSC 11     | 39121501 |
| UNSPSC 12.01  | 39121501 |
| UNSPSC 13.2   | 39121501 |

### Approvals

#### Approvals

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## Approvals

Approvals

UL Listed / cUL Listed / GL / Functional Safety / EAC / Functional Safety / Functional Safety / cULus Listed

Ex Approvals

Approvals submitted

## Approval details

|                                                                                                  |
|--------------------------------------------------------------------------------------------------|
| UL Listed       |
| cUL Listed    |
| GL                                                                                               |
| Functional Safety                                                                                |
| EAC                                                                                              |
| Functional Safety                                                                                |
| Functional Safety                                                                                |
| cULus Listed  |

## Drawings

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Circuit diagram

