# PSR-SPP- 24UC/ESA4/2X1/1X2 - Safety relays

2963938

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Safety relay for emergency stop and safety door monitoring up to SIL 3 or Cat. 4, PL e in accordance with EN ISO 13849, 2-channel operation, 2 enabling current paths, nominal input voltage: 24 V DC, plug-in Push-in 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, SIL 3 in accordance with IEC 61508
- 2 channel control
- 2 enabling current paths, 1 signaling current path
- Manually monitored and automatic activation in a single device

## Commercial data

| | |
|---|---|
| Item number | 2963938 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Product key | DNA113 |
| Catalog page | Page 20 (IF-2009) |
| GTIN | 4017918904777 |
| Weight per piece (including packing) | 191.43 g |
| Weight per piece (excluding packing) | 193.9 g |
| Customs tariff number | 85371098 |
| Country of origin | DE |

# Technical data

## Product properties

| | |
|---|---|
| Product type | Safety relays |
| Product family | PSRclassic |
| Application | Emergency stop |
| | Safety door |
| Mechanical service life | approx. $10^7$ cycles |
| Relay type | Electromechanical relay with force-guided contacts in accordance with IEC/EN 61810-3 |

## Electrical properties

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|---|---|
| Maximum power dissipation for nominal condition | 16.44 W ($U_S$ = 26.4 V, $I_L{}^2$ = 72 A², $P_{Total\ max}$ = 2.04 W + 14.4 W) |
| Nominal operating mode | 100% operating factor |

Air clearances and creepage distances between the power circuits

| | |
|---|---|
| Rated insulation voltage | 250 V |
| Rated surge voltage/insulation | See section “Insulation coordination” |

## Input data

General

| | |
|---|---|
| Rated control circuit supply voltage $U_S$ | 24 V DC -15 % / +10 % |
| Power consumption at $U_S$ | typ. 1.68 W (DC) |
| Rated control supply current $I_S$ | typ. 70 mA |
| Input voltage range in reference to $U_N$ | 0.85 ... 1.1 |
| Typical input current at $U_N$ | 70 mA DC |
| Inrush current | < 3.5 A (Δt = 3 ms at $U_s$) |
| | < 100 mA (Δt = 500 ms, with $U_s/I_x$ at S12) |
| | > -100 mA (Δt = 300 ms, with $U_s/I_x$ at S22) |
| | < 6 mA (with $U_s/I_x$ to S34) |
| Current consumption | typ. 38 mA (S12) |
| | typ. -38 mA (S22) |
| | typ. 1 mA (with $U_s/I_x$ to S34) |
| Voltage at input/start and feedback circuit | approx. 24 V DC |
| Filter time | 5 ms (at A1 in the event of voltage dips at $U_s$) |
| | No test pulses permitted |
| Typical response time | 150 ms (automatic start) |
| Typ. starting time with $U_s$ | 250 ms (with $U_s$ when controlled via A1) |
| Typical release time | 20 ms (on demand via the sensor circuit) |
| | 45 ms (on demand via A1) |
| Concurrence | ∞ |
| Recovery time | 1 s (following demand of the safety function) |
| | < 1 s (Boot time) |
| Protective circuit | Surge protection; Suppressor diode |

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| Max. permissible overall conductor resistance | approx. 50 Ω (Input and start circuits at $U_S$) |
| Operating voltage display | Green LED |
| Status display | Green LED |

## Output data

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|---|---|
| Contact switching type | 2 enabling current paths |
| | 1 signaling current path |
| Contact material | $AgSnO_2$, + 0.2 µm Au |
| Maximum switching voltage | 250 V AC |
| Minimum switching voltage | 10 V AC/DC |
| Limiting continuous current | 6 A (N/O contact) |
| Maximum inrush current | 6 A |
| Inrush current, minimum | 10 mA |
| Sq. Total current | 72 $A^2$ (Enabling current paths) |
| | 36 $A^2$ (Signaling current path 31/32) |
| Switching capacity min. | 100 mW |
| Switching capacity in accordance with IEC 60947-5-1 | 6 A (DC13, enabling current paths) |
| | 5 A (AC15, enabling current paths) |
| | 2 A (DC13, signaling current paths) |
| | 1.5 A (AC15, signaling current paths) |
| Output fuse | 10 A gL/gG (Enabling current paths) |
| | 4 A gL/gG (Low-demand enabling current paths) |
| | 6 A gL/gG (Signaling current path) |

## Connection data

### Connection technology

| | |
|---|---|
| pluggable | yes |

### Conductor connection

| | |
|---|---|
| Connection method | Push-in connection |
| Conductor cross section rigid | 0.2 mm² ... 1.5 mm² |
| Conductor cross section flexible | 0.2 mm² ... 1.5 mm² |
| Conductor cross section, flexible, with ferrule, with plastic sleeve | 0.25 mm² ... 1.5 mm² (only together with CRIMPFOX 6) |
| Conductor cross section flexible, with ferrule without plastic sleeve | 0.25 mm² ... 1.5 mm² (only together with CRIMPFOX 6) |
| Conductor cross-section AWG | 24 ... 16 |
| Stripping length | 8 mm |

## Dimensions

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

## Material specifications

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| Color (Housing) | yellow (RAL 1018) |

| | |
|---|---|
| Housing material | Polyamide |

## Characteristics

Safety data

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| Stop category | 0 |

Safety data: EN ISO 13849

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

Safety data: IEC 61508 - High demand

| | |
|---|---|
| Safety Integrity Level (SIL) | 3 |

Safety data: IEC 61508 - Low demand

| | |
|---|---|
| Safety Integrity Level (SIL) | 3 |

Safety data: EN IEC 62061

| | |
|---|---|
| Safety Integrity Level (SIL) | 3 |

## Environmental and real-life conditions

Ambient conditions

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|---|---|
| Degree of protection | IP20 |
| Min. degree of protection of inst. location | IP54 |
| Ambient temperature (operation) | -20 °C ... 55 °C (observe derating) |
| Ambient temperature (storage/transport) | -40 °C ... 70 °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, 2g |

## Standards and regulations

Air clearances and creepage distances between the power circuits

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|---|---|
| Standards/regulations | DIN EN 60947-1 |

## Mounting

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|---|---|
| Mounting type | DIN rail mounting |
| Assembly instructions | See derating curve |
| Mounting position | vertical or horizontal |

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