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## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



## Safety relays - PSR-SPP-24DC/MXF2/4X1/2X2/B - 2903255

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Multifunctional safety relay for emergency stop and safety doors up to SIL 3, Cat. 4, PL e, automatically or manually monitored activation, 4 N/O contacts, 3 safety functions, 2 shutdown levels, plug-in spring-cage terminal block

### Why buy this product

- Up to Cat.4/PL e according to EN ISO 13849-1, SILCL 3 according to EN 62061, SIL 3 according to IEC 61508
- 3 safety functions in one device
- Low housing width of only 22.5mm
- No software configuration required
- Also available with push-in connection



### Key Commercial Data

|              |   |
|--------------|---|
| Packing unit | 1 STK   |
| GTIN         | <br>4 046356 729796 |
| GTIN         | 4046356729796   |

### Technical data

#### Note

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

#### Dimensions

|        |          |
|--------|----------|
| Width  | 22.5 mm  |
| Height | 117.4 mm |
| Depth  | 114.5 mm |

#### Ambient conditions

|  |   |
|--|---|
| Ambient temperature (operation)                | -20 °C ... 45 °C (see derating curve)               |
| Ambient temperature (storage/transport)        | -25 °C ... 85 °C                                    |
| Max. permissible relative humidity (operation) | 75 % (on average, 85% infrequently, non-condensing) |

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## Technical data

### Ambient conditions

|   |   |
|---|---|
| Max. permissible humidity (storage/transport) | 75 % (on average, 85% infrequently, non-condensing) |
| 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 $U_N$                | 125 mA (with actuated relays)   |
|   | 55 mA (Two-channel 24 V/0 V + max. 200 mA control (message outputs 32/62) with non-actuated relays) |
| Current consumption                           | typ. 5 mA ( $I_{max}/I_x$ inputs)   |
|   | 20 mA (in electric torque)  |
| Voltage at input/start and feedback circuit   | 24 V -15 %; +10 % (first channel: 24 V; second channel: 0 V)  |
| Typical response time                         | 175 ms (monitored/manual start)   |
|   | 250 ms (automatic start)  |
| Typ. starting time with $U_s$                 | 250 ms (when controlled via A1)   |
| Typical release time                          | 25 ms (when controlled via S11/S12 and S21/S22)   |
|   | 20 ms (when controlled via A1)  |
| Concurrence input 1/2                         | ∞   |
| Recovery time                                 | 1 s (Availability time after activation of sensor circuit: 100ms)                                   |
| Status display                                | 5 green LEDs  |
| Maximum switching frequency                   | 0.5 Hz  |
| Max. permissible overall conductor resistance | 100 Ω   |
| Filter time                                   | max. 1.5 ms (Test pulse duration; for all equivalent inputs)  |
|   | min. 7.5 ms (Test pulse rate; for all equivalent inputs)  |

### Output data

|  |   |
|--|---|
| Contact type                                 | 4 enabling current paths                            |
|  | 2 semiconductor alarm outputs                       |
| Contact material                             | AgCuNi, +0,2 -0,4 μm Au                             |
| Minimum switching voltage                    | 10 V AC/DC  |
| Maximum switching voltage                    | 250 V AC/DC   |
| Limiting continuous current                  | 6 A (N/O contact)                                   |
|  | max. 100 mA (Alarm output (24 V DC))                |
| Inrush current, minimum                      | 10 mA   |
| Maximum inrush current                       | 6 A   |
| Sq. Total current                            | $72 A^2 (I_{TH}^2 = I_1^2 + I_2^2 + I_3^2 + I_4^2)$ |
| Interrupting rating (ohmic load) max.        | 1500 VA (250 V AC, τ = 0 ms)                        |
|  | 66 W (220 V DC, τ = 0 ms)                           |
|  | 66 W (110 V DC, τ = 0 ms)                           |
|  | 100 W (48 V DC, τ = 0 ms)                           |
|  | 144 W (24 V DC, τ = 0 ms)                           |
| Maximum interrupting rating (inductive load) | 48 W (24 V DC, τ = 40 ms)                           |



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## Technical data

### Output data

|                         |  |
|-------------------------|--|
|                         | 43 W (48 V DC, $\tau = 40$ ms)                 |
| Switching capacity min. | 0.1 W  |
| Output fuse             | 6 A gL/gG NEOZED (N/O contact)                 |
|                         | 4 A gL/gG NEOZED (for low-demand applications) |

### General

|   |   |
|---|---|
| Relay type                                  | Electromechanical relay with forcibly guided contacts in accordance with EN 50205 |
| Mechanical service life                     | $10 \times 10^6$ cycles   |
| Nominal operating mode                      | 100% operating factor   |
| Net weight                                  | 26.1 g  |
| Mounting type                               | DIN rail mounting   |
| Assembly instructions                       | See derating curve  |
| Mounting position                           | vertical or horizontal  |
| Degree of protection                        | IP20  |
| Min. degree of protection of inst. location | IP54  |
| Control                                     | one and two channel   |
| Housing color                               | yellow  |

### 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  |
| Safety Integrity Level (SIL)                | 3  |
|   | 3  |
| Designation                                 | EN ISO 13849                             |
| Performance level (PL)                      | e (5 A DC13; 3 A AC15; 8760 cycles/year) |
| Category                                    | 4  |
| Safety Integrity Level Claim Limit (SIL CL) | 3  |
| Designation                                 | EN 50156                                 |
| Safety Integrity Level (SIL)                | 3  |

### Standards and Regulations

|             |  |
|-------------|--|
| Designation | Air clearances and creepage distances between the power circuits |
|-------------|--|

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## Technical data

### Standards and Regulations

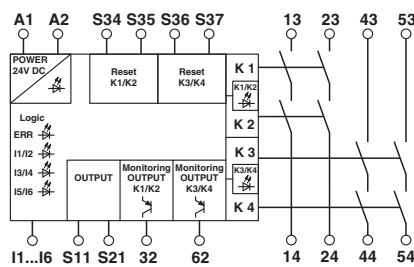
|                                |  |
|--------------------------------|--|
| Standards/regulations          | DIN EN 50178/VDE 0160  |
| Rated insulation voltage       | 250 V AC   |
| Rated surge voltage/insulation | 4 kV/basic isolation (safe isolation, reinforced insulation and 6 kV between input circuit, enabling current paths and safety circuit 1 (13/14, 23/24) and safety circuit 2 (43/44, 53/54).) |
| Degree of pollution            | 2  |
| Overvoltage category           | III  |

### Environmental Product Compliance

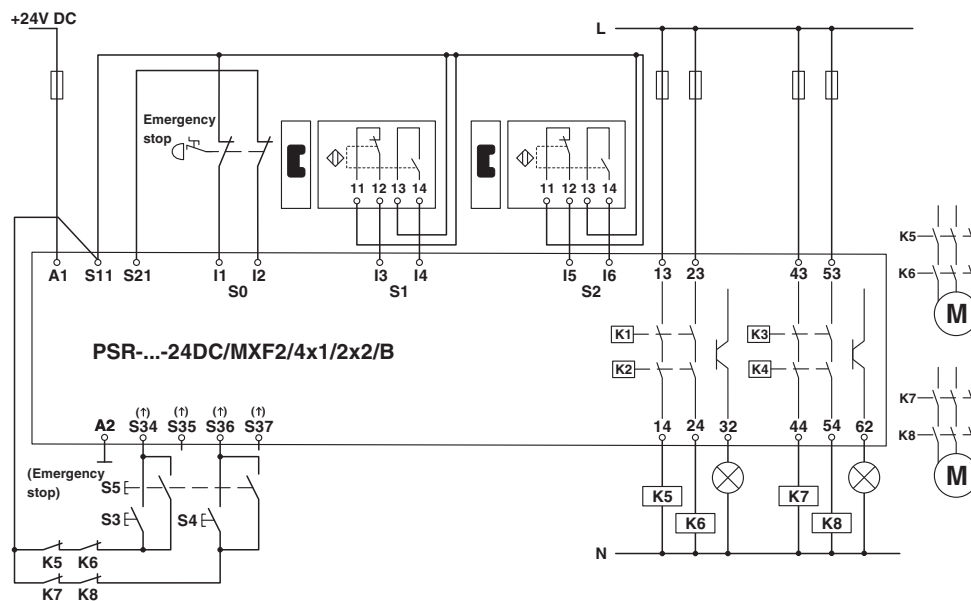
|            |   |
|------------|---|
| China RoHS | Environmentally friendly use period: unlimited = EFUP-e |
|            | No hazardous substances above threshold values          |

## Drawings

Circuit diagram

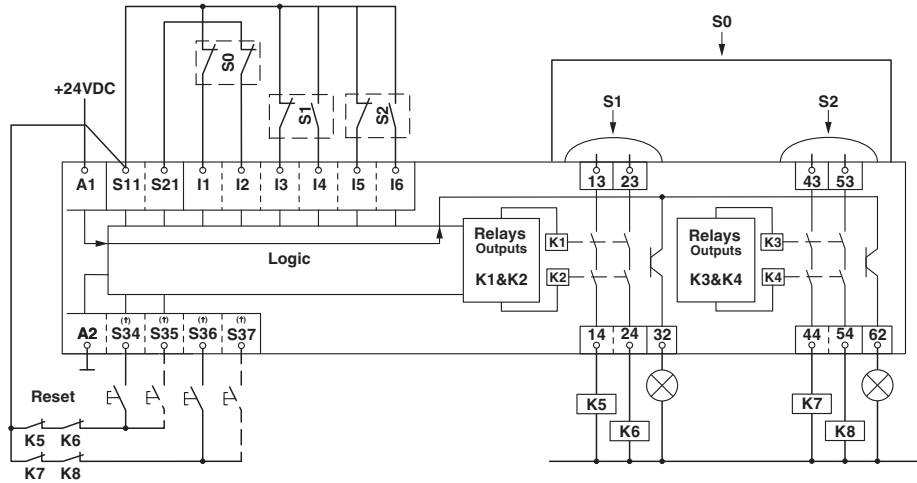


Circuit diagram

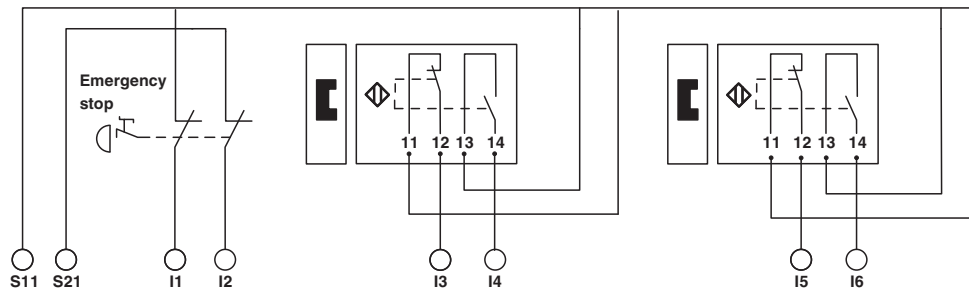


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Circuit diagram



Circuit diagram



## Approvals

Approvals

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Approvals

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

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Ex Approvals

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Approval details

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## Approvals

|                   |  |                   |
|-------------------|--|-------------------|
| Functional Safety |  | 01/205/5353.00/13 |
|-------------------|--|-------------------|

|           |  |   |               |
|-----------|--|---|---------------|
| UL Listed |  | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a> | FILE E 140324 |
|-----------|--|---|---------------|

|            |  |   |               |
|------------|--|---|---------------|
| cUL Listed |  | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a> | FILE E 140324 |
|------------|--|---|---------------|

|     |  |                          |
|-----|--|--------------------------|
| EAC |  | RU C-<br>DE.A*30.B.01082 |
|-----|--|--------------------------|

|              |  |  |
|--------------|--|--|
| cULus Listed |  |  |
|--------------|--|--|

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PHOENIX CONTACT GmbH & Co. KG  
Flachsmarktstr. 8  
32825 Blomberg  
Germany  
Tel. +49 5235 300  
Fax +49 5235 3 41200  
<http://www.phoenixcontact.com>