

## Safety relays - PSR-PIP-24DC/MXF4/4X1/2X2/B - 2903262

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Multifunctional safety relay for emergency stop, safety doors, and light grid monitoring up to SIL 3, Cat. 4, PL e, automatically or manually monitored activation, 4 N/O contacts, 3 safety functions, 2 shutdown levels, fixed push-in terminal blocks

### 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     |
| Weight per Piece (excluding packing) | 260.000 g |
| Custom tariff number                 | 85371099  |
| 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 | 106.4 mm |
| Depth  | 114.5 mm |

#### Ambient conditions

|                                 |                                       |
|---------------------------------|---------------------------------------|
| Ambient temperature (operation) | -20 °C ... 45 °C (see derating curve) |
|---------------------------------|---------------------------------------|

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## Technical data

### Ambient conditions

|                                                |                                                     |
|------------------------------------------------|-----------------------------------------------------|
| Ambient temperature (storage/transport)        | -25 °C ... 85 °C                                    |
| Max. permissible relative humidity (operation) | 75 % (on average, 85% infrequently, non-condensing) |
| 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           | $72 A^2$ ( $I_{TH}^2 = I_1^2 + I_2^2 + I_3^2 + I_4^2$ (note derating)) |

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## Technical data

### Output data

|                                              |                                                |
|----------------------------------------------|------------------------------------------------|
| Interrupting rating (ohmic load) max.        | 1500 VA (250 V AC, $\tau = 0$ ms)              |
|                                              | 66 W (220 V DC, $\tau = 0$ ms)                 |
|                                              | 66 W (110 V DC, $\tau = 0$ ms)                 |
|                                              | 100 W (48 V DC, $\tau = 0$ ms)                 |
|                                              | 144 W (24 V DC, $\tau = 0$ ms)                 |
| Maximum interrupting rating (inductive load) | 48 W (24 V DC, $\tau = 40$ ms)                 |
|                                              | 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                                  | 271.2 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                     | Push-in connection  |
| pluggable                             | no                  |
| Conductor cross section solid min.    | 0.2 mm <sup>2</sup> |
| Conductor cross section solid max.    | 2.5 mm <sup>2</sup> |
| Conductor cross section flexible min. | 0.2 mm <sup>2</sup> |
| Conductor cross section flexible max. | 2.5 mm <sup>2</sup> |
| Conductor cross section AWG min.      | 24                  |
| Conductor cross section AWG max.      | 12                  |
| Stripping length                      | 10 mm               |

### Safety-related characteristic data

|                              |   |
|------------------------------|---|
| Stop category                | 0 |
| Safety Integrity Level (SIL) | 3 |

Safety relays - PSR-PIP-24DC/MXF4/4X1/2X2/B - 2903262

Technical data

Safety-related characteristic data

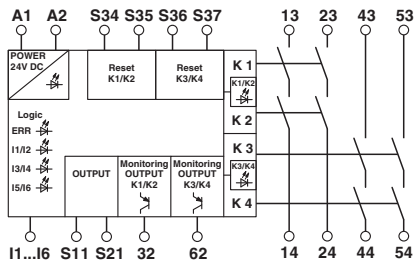
|                                             |                                          |
|---------------------------------------------|------------------------------------------|
|                                             | 3                                        |
| Designation                                 | 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

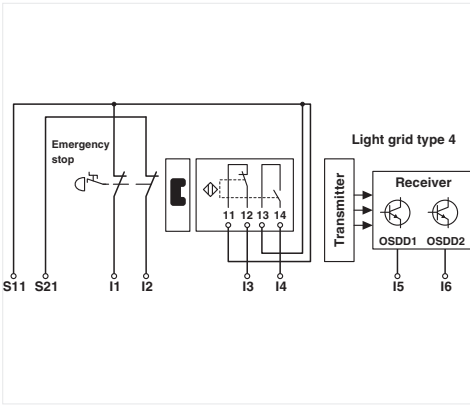
|                                |                                                                                                                                                                                              |
|--------------------------------|--------------------------------------------------------------------------------------------------------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

Drawings

Circuit diagram

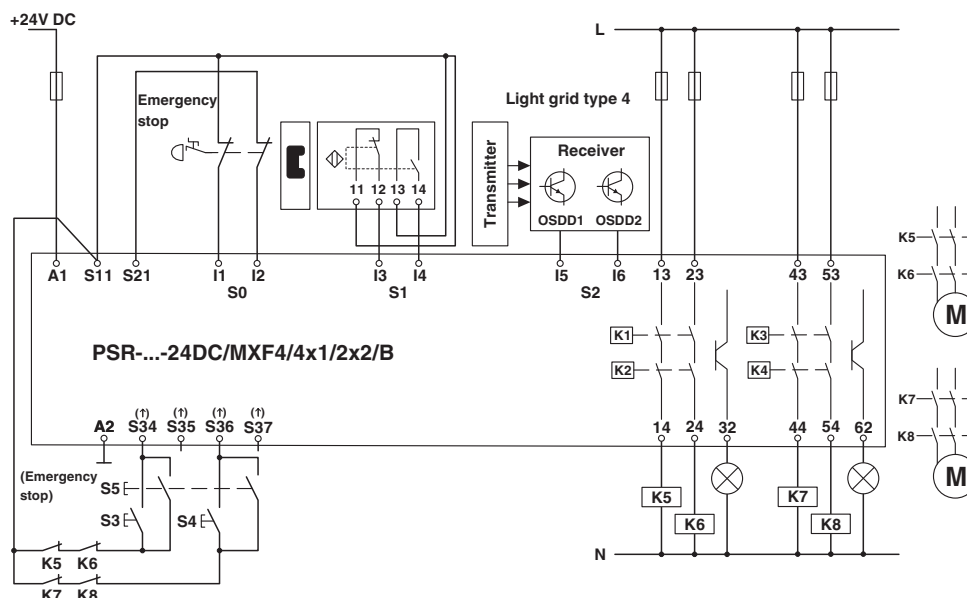


Circuit diagram

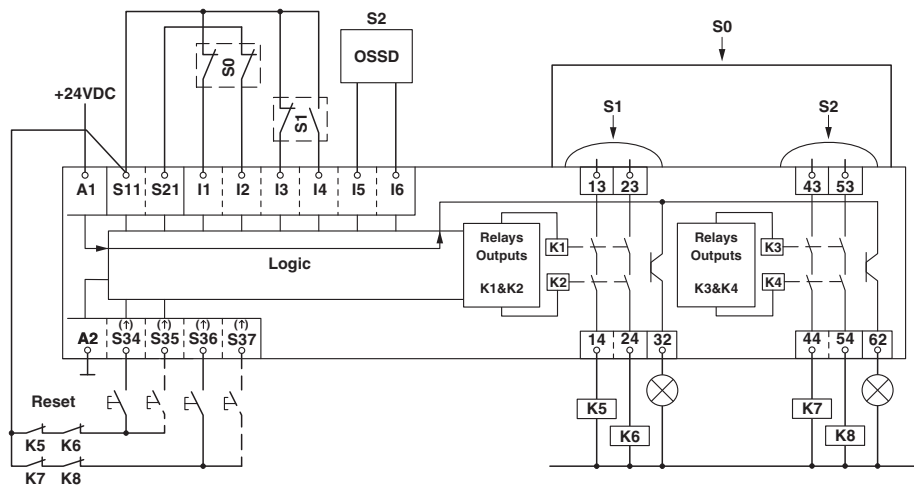


## Safety relays - PSR-PIP-24DC/MXF4/4X1/2X2/B - 2903262

Application drawing



Circuit diagram



### 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 |

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### Classifications

#### eCl@ss

|            |          |
|------------|----------|
| eCl@ss 7.0 | 27371819 |
| eCl@ss 8.0 | 27371819 |
| eCl@ss 9.0 | 27371819 |

#### ETIM

|          |          |
|----------|----------|
| ETIM 4.0 | EC001449 |
| ETIM 5.0 | EC001449 |

### 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

|                                     |
|-------------------------------------|
| 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 |
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|-------------------------|
| EAC 7500651.22.01.00244 |
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| cULus Listed  |
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