# Safety relays - PSR-MS50-1NO-1DO-24DC-SC - 2904956

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Safety relay for monitoring non-equivalent signal generators up to SILCL 3, Cat. 4, PL e, 2-channel, non-equivalent operation, automatic start, 1 enabling current path, $U_S$ = 24 V DC, fixed screw terminal block

## Why buy this product

- Up to Cat.4/PL e according to ISO 13849-1, SILCL 3 according to IEC 62061
- Low housing width of just 6.8 mm
- Two-channel non-equivalent control
- 1 enabling current path, 1 digital signal output
- Automatic activation

## Key Commercial Data

| | |
|---|---|
| Packing unit | 1 pc |
| GTIN | 4 046356 904063 |
| Weight per Piece (excluding packing) | 69.0 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 | 6.8 mm |
| Height | 93.1 mm |
| Depth | 102.5 mm |

### Ambient conditions

| | |
|---|---|
| Ambient temperature (operation) | -40 °C ... 60 °C (observe derating) |

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## Technical data

### Ambient conditions

| | |
|---|---|
| Ambient temperature (storage/transport) | -40 °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) |
| Shock | 15g |
| Vibration (operation) | 10 Hz ...150 Hz, 2g |
| Maximum altitude | max. 2000 m (Above sea level) |

### Input data

| | |
|---|---|
| Rated control supply voltage $U_S$ | 24 V DC -15 % / +10 % |
| Power consumption at $U_S$ | typ. 1 W |
| Rated control supply current $I_S$ | typ. 42 mA |
| Typical inrush current | 4.5 A (Δt = 120 µs at $U_s$) |
| Current consumption | < 5 mA (with $U_s/I_x$ to S12) |
| | < 5 mA (with $U_s/I_x$ to S13) |
| | < 10 mA (with $U_s/I_x$ at the start circuit) |
| Voltage at input/start and feedback circuit | 24 V DC -15 % / +10 % |
| Typical response time | < 175 ms |
| Typical pick-up time | < 250 ms (when controlled via A1) |
| Typical release time | < 20 ms (when controlled via A1 or S12 and S13.) |
| Recovery time | < 500 ms |
| Status display | 2 x green LEDs |
| Maximum switching frequency | 0.5 Hz |
| Max. permissible overall conductor resistance | 150 Ω |

### Output data

| | |
|---|---|
| Contact type | 1 enabling current path |
| Contact material | $AgSnO_2$ |
| Minimum switching voltage | 20 V AC/DC |
| Maximum switching voltage | 250 V AC/DC |
| Limiting continuous current | 6 A (N/O contact) |
| Inrush current, minimum | 3 mA |
| Maximum inrush current | 6 A |
| Sq. Total current | 36 $A^2$ (see to derating) |
| Switching capacity | min. 60 mW |
| Output fuse | 6 A gL/gG (N/O contact) |
| | 4 A gL/gG (for low-demand applications) |

### Alarm outputs

| | |
|---|---|
| Number of outputs | 1 (digital, PNP) |
| Voltage | 22 V DC ($U_s$ - 2 V) |
| Current | max. 100 mA |
| Maximum inrush current | 500 mA (Δt = 1 ms at $U_s$) |

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## Technical data

### Alarm outputs

| | |
|---|---|
| Short-circuit protection | no |

### General

| | |
|---|---|
| Relay type | Electromechanical relay with forcibly guided contacts in accordance with IEC/EN 61810-3 (EN 50205) |
| Mechanical service life | 10 x $10^6$ cycles |
| Net weight | 69 g |
| Mounting type | DIN rail mounting |
| Assembly instructions | See derating curve |
| Degree of protection | IP20 |
| Min. degree of protection of inst. location | IP54 |
| Mounting position | vertical or horizontal |
| Control | Two-channel |
| Parameters as per EN ISO 13849 | 4 |
| Stop category | 0 |
| Parameters for IEC 61508 | 3 |
| Designation | Air clearances and creepage distances between the power circuits |
| Standards/regulations | DIN EN 50178 |
| Rated surge voltage/insulation | Safe isolation, reinforced insulation 6 kV between input circuit and enabling current path<br>Basic insulation 4 kV between all current paths and housing |
| Rated insulation voltage | 250 V AC |
| Pollution degree | 2 |
| Overvoltage category | III |
| Housing material | PBT |

### Connection data

| | |
|---|---|
| Connection method | Screw connection |
| pluggable | no |
| Conductor cross section solid min. | 0.2 mm² |
| Conductor cross section solid max. | 2.5 mm² |
| Conductor cross section flexible min. | 0.2 mm² |
| Conductor cross section flexible max. | 2.5 mm² |
| Conductor cross section AWG min. | 26 |
| Conductor cross section AWG max. | 12 |
| Stripping length | 12 mm |
| Screw thread | M3 |

## Classifications

### eCl@ss

| | |
|---|---|
| eCl@ss 5.1 | 27371901 |

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## Classifications

### eCl@ss

| | |
|---|---|
| eCl@ss 6.0 | 27371819 |
| eCl@ss 8.0 | 27371819 |

### ETIM

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

## Approvals

### Approvals

Approvals

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

Ex Approvals

Approvals submitted

### Approval details

UL Listed

cUL Listed

Functional Safety

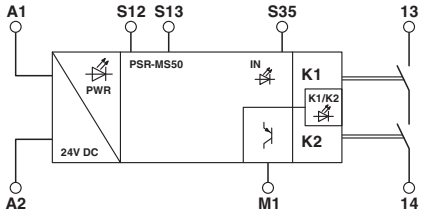
EAC

cULus Listed

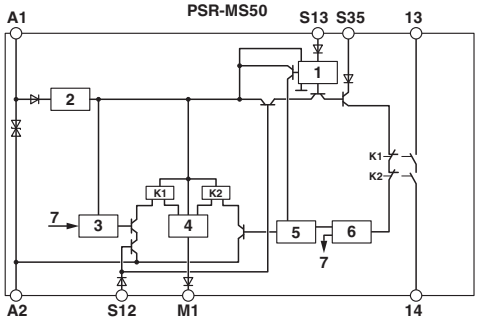
## Drawings

# Safety relays - PSR-MS50-1NO-1DO-24DC-SC - 2904956

Block diagram




Block diagram




Key:
1 = Input circuit
2 = Voltage limitation
3 = Control circuit channel 1
4 = Control circuit signal output
5 = Control circuit channel 2
6 = Start channel 1 and 2
7 = Channel 1
K1, K2 = Force-guided elementary relays

Circuit diagram