



Part no.: 547959
MSI-TR1B-02
Safety relay



Figure can vary

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- Technical data
- Electrical connection
- Operation and display

Part no.: 547959 – MSI-TR1B-02 – Safety relay

Technical data

| Basic data | |
|------------------------------------|---|
| Series | MSI-TB |
| Functions | |
| Functions | "Error" signal output "Safety ON" signal output Contactor monitoring (EDM), selectable Periodic function test Start/restart interlock (RES), selectable |
| Restart | Automatic Manual |
| Characteristic parameters | |
| Type | 2 , IEC/EN 61496 |
| Performance Level (PL) | Up to c , EN ISO 13849-1 |
| MTTF _d | 78 years , EN ISO 13849-1 |
| PFH _D | 0.000000088 per hour |
| PFH _D | 8.8E-08 per hour |
| Mission time T _M | 20 years , EN ISO 13849-1 |
| Category | 2 , EN ISO 13849 |
| Electrical data | |
| Protective circuit | Polarity reversal protection Short circuit protected |
| Performance data | |
| Supply voltage U _B | 24 V , DC , -20 ... 20 % |
| Current consumption, max. | 200 mA , Without external load |
| Residual ripple | -15 ... 15 % |
| Fuse | External with max. 3.15 A semi time-lag |
| Inputs | |
| Number of digital switching inputs | 4 Piece(s) |
| Switching inputs | |
| Type | Digital switching input |
| Switching voltage high, min. | 18.2 V |
| Switching voltage low, max. | 2.5 V |
| Switching voltage, typ. | 23 V |
| Voltage type | DC |
| Digital switching input 1 | |
| Function | Control input for contactor monitoring (EDM) |
| Digital switching input 2 | |
| Function | Control input for receiver |
| Digital switching input 3 | |
| Function | RES/Start control input |
| Digital switching input 4 | |
| Function | Control input for Reset |
| Digital switching input 5 | |
| Function | Restart interlock control input |

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Outputs

| | |
|--|------------|
| Number of safety-related switching outputs (OSSDs) | 2 Piece(s) |
| Number of digital switching outputs | 3 Piece(s) |

Safety-related switching outputs

| | |
|--------------------|--------------------------------------|
| Type | Safety-related switching output OSSD |
| Voltage type | DC |
| Current load, max. | 2,000 mA |

Safety-related switching output 1

| | |
|-------------------|------------|
| Switching element | Relay , NO |
|-------------------|------------|

Safety-related switching output 2

| | |
|-------------------|------------|
| Switching element | Relay , NO |
|-------------------|------------|

Switching outputs

| | |
|------------------------------|--------------------------|
| Type | Digital switching output |
| Switching voltage high, min. | 18.2 V |
| Switching voltage low, max. | 2.5 V |
| Switching voltage, typ. | 23 V |
| Voltage type | DC |

Switching output 1

| | |
|-------------------|---------------------------|
| Switching element | Transistor , PNP |
| Function | "Safety ON" signal output |

Switching output 2

| | |
|-------------------|-----------------------|
| Switching element | Transistor , PNP |
| Function | "Error" signal output |

Switching output 3

| | |
|-------------------|----------------------------------|
| Switching element | Transistor , PNP |
| Function | Test signal output (transmitter) |

Timing

| | |
|--------------------------------------|---------------|
| Response time | 20 ms |
| Start-up delay | 2 s |
| Sensor response time on test request | 0.5 ... 60 ms |

Connection

| | |
|-----------------------|------------|
| Number of connections | 1 Piece(s) |
|-----------------------|------------|

Connection 1

| | |
|--------------------|--|
| Type of connection | Terminal |
| Function | Connection to device Voltage supply |
| Type of terminal | Spring-cage terminal |
| No. of pins | 16 -pin |

Cable properties

| | |
|---------------------------|----------------------------|
| Connection cross sections | 0.2 to 1.5 mm ² |
|---------------------------|----------------------------|

Mechanical data

| | |
|-----------------------|-------------------------------------|
| Dimension (W x H x L) | 22.5 mm x 111 mm x 114.1 mm |
| Housing material | Plastic , Unreinforced polyamide PA |
| Net weight | 200 g |
| Housing color | Gray |
| Type of fastening | Snap-on mounting |

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Operation and display

| | |
|-----------------|------------|
| Type of display | LED |
| Number of LEDs | 4 Piece(s) |

Environmental data

| | |
|------------------------------------|---------------|
| Ambient temperature, operation | -30 ... 60 °C |
| Ambient temperature, storage | -40 ... 70 °C |
| Relative humidity (non-condensing) | 0 ... 95 % |

Certifications

| | |
|----------------------|-------------------------------|
| Degree of protection | IP 40 |
| Protection class | II |
| Certifications | c TÜV Rheinland US TÜV Süd |
| US patents | US 6,418,546 B |

Classification

| | |
|-----------------------|----------|
| Customs tariff number | 85371098 |
| eCl@ss 8.0 | 27371819 |
| eCl@ss 9.0 | 27371819 |
| ETIM 5.0 | EC001449 |
| ETIM 6.0 | EC001449 |

Electrical connection

| Connection 1 | |
|--------------------|--|
| Type of connection | Terminal |
| Function | Connection to device Voltage supply |
| Type of terminal | Spring-cage terminal |
| No. of pins | 16 -pin |

| Terminal | Assignment |
|----------|--------------------|
| 5 | +24V |
| 6 | GND |
| 7 | Safety ON |
| 8 | ERROR |
| 13 | EDM |
| 14 | Test (transmitter) |
| 15 | Receiver |
| 16 | RES/Start |
| 21 | Reset |
| 22 | WA |
| 23 | MODE |
| 24 | Auto WA |
| 29 | OSSD1 |
| 30 | OSSD2 |
| 31 | SSD1 |
| 32 | SSD2 |

Operation and display

LEDs

| LED | Display | Meaning |
|-----|--------------------------|-----------------|
| 1 | Green, continuous light | Light path free |
| 2 | Yellow, continuous light | Restart locked |
| 3 | Green, continuous light | EDM selected |
| 4 | Green, continuous light | OSSD on |
| | Red, continuous light | OSSD off |