



Part no.: 549942  
**MSI-MC311**  
Safety relay



Figure can vary

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- Electrical connection
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Part no.: 549942 – MSI-MC311 – Safety relay

## Technical data

| <b>Basic data</b>                                  |                                                                                                                                             |
|----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Series                                             | MSI-MC3x                                                                                                                                    |
| <b>Functions</b>                                   |                                                                                                                                             |
| Functions                                          | Automatic start/restart<br>Start/restart interlock (RES)<br>Static contactor monitoring (EDM)<br>Stop function according to category Stop 0 |
| Restart                                            | Automatic<br>Manual                                                                                                                         |
| <b>Characteristic parameters</b>                   |                                                                                                                                             |
| Performance Level (PL)                             | Up to and including e , EN ISO 13849-1                                                                                                      |
| PFH <sub>D</sub>                                   | 0.000000025 per hour                                                                                                                        |
| PFH <sub>D</sub>                                   | 2,5E-08 per hour                                                                                                                            |
| Mission time T <sub>M</sub>                        | 20 years , EN ISO 13849-1                                                                                                                   |
| Category                                           | Up to and including 4: 1 sensor connected , EN ISO 13849                                                                                    |
| STOP category                                      | 0 , IEC/EN 60204-1                                                                                                                          |
| <b>Electrical data</b>                             |                                                                                                                                             |
| Protective circuit                                 | Fuse on switching output, upstream                                                                                                          |
| Input current, max.                                | 220 mA                                                                                                                                      |
| External contact fuse protection per current path  | 4 A gG                                                                                                                                      |
| <b>Performance data</b>                            |                                                                                                                                             |
| Supply voltage U <sub>B</sub>                      | 24 V , AC/DC , -15 ... 10 %                                                                                                                 |
| <b>Outputs</b>                                     |                                                                                                                                             |
| Number of safety-related switching outputs (OSSDs) | 2 Piece(s)                                                                                                                                  |
| Number of digital switching outputs                | 1 Piece(s)                                                                                                                                  |
| <b>Safety-related switching outputs</b>            |                                                                                                                                             |
| Type                                               | Safety-related switching output OSSD                                                                                                        |
| Voltage type                                       | AC/DC                                                                                                                                       |
| <b>Safety-related switching output 1</b>           |                                                                                                                                             |
| Switching element                                  | Relay , NO                                                                                                                                  |
| <b>Safety-related switching output 2</b>           |                                                                                                                                             |
| Switching element                                  | Relay , NO                                                                                                                                  |
| <b>Switching outputs</b>                           |                                                                                                                                             |
| Type                                               | Digital switching output                                                                                                                    |
| Voltage type                                       | AC/DC                                                                                                                                       |
| <b>Switching output 1</b>                          |                                                                                                                                             |
| Switching element                                  | Relay , NO                                                                                                                                  |
| Function                                           | EDM switching output                                                                                                                        |
| <b>Timing</b>                                      |                                                                                                                                             |
| Response time                                      | 20 ms                                                                                                                                       |
| Pickup delay, automatic start                      | 30 ms                                                                                                                                       |
| Pickup delay, manual start                         | 150 ms                                                                                                                                      |
| <b>Connection</b>                                  |                                                                                                                                             |
| Number of connections                              | 1 Piece(s)                                                                                                                                  |

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| <b>Connection 1</b>                                        |                                                                                                                                                                                                                                                                                                                                                                   |
|------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type of connection                                         | Terminal                                                                                                                                                                                                                                                                                                                                                          |
| Function                                                   | Connection to device<br>Voltage supply                                                                                                                                                                                                                                                                                                                            |
| Type of terminal                                           | Screw terminal                                                                                                                                                                                                                                                                                                                                                    |
| No. of pins                                                | 16 -pin                                                                                                                                                                                                                                                                                                                                                           |
| <b>Cable properties</b>                                    |                                                                                                                                                                                                                                                                                                                                                                   |
| Connection cross sections                                  | 1 x 0.2 to 2.5 mm <sup>2</sup> , wire<br>1 x 0.2 to 2.5 mm <sup>2</sup> , wire<br>1 x 0.25 to 2.5 mm <sup>2</sup> , wire with wire-end sleeve<br>2 x 0.2 to 1.0 mm <sup>2</sup> , wire<br>2 x 0.2 to 1.5 mm <sup>2</sup> , wire<br>2 x 0.25 to 1.0 mm <sup>2</sup> , wire with wire-end sleeve<br>2 x 0.5 to 1.5 mm <sup>2</sup> , wire with twin wire-end sleeve |
| <b>Mechanical data</b>                                     |                                                                                                                                                                                                                                                                                                                                                                   |
| Dimension (W x H x L)                                      | 22.5 mm x 99 mm x 113.6 mm                                                                                                                                                                                                                                                                                                                                        |
| Housing material                                           | Plastic , PA                                                                                                                                                                                                                                                                                                                                                      |
| Net weight                                                 | 203 g                                                                                                                                                                                                                                                                                                                                                             |
| Housing color                                              | Gray                                                                                                                                                                                                                                                                                                                                                              |
| Type of fastening                                          | Snap-on mounting                                                                                                                                                                                                                                                                                                                                                  |
| Mechanical life time                                       | 10,000,000 actuation cycles                                                                                                                                                                                                                                                                                                                                       |
| <b>Operation and display</b>                               |                                                                                                                                                                                                                                                                                                                                                                   |
| Type of display                                            | LED                                                                                                                                                                                                                                                                                                                                                               |
| Number of LEDs                                             | 3 Piece(s)                                                                                                                                                                                                                                                                                                                                                        |
| <b>Environmental data</b>                                  |                                                                                                                                                                                                                                                                                                                                                                   |
| Ambient temperature, operation                             | -5 ... 55 °C                                                                                                                                                                                                                                                                                                                                                      |
| Ambient temperature, storage                               | -25 ... 70 °C                                                                                                                                                                                                                                                                                                                                                     |
| Relative humidity (non-condensing)                         | 4 ... 100 %                                                                                                                                                                                                                                                                                                                                                       |
| <b>Certifications</b>                                      |                                                                                                                                                                                                                                                                                                                                                                   |
| Degree of protection                                       | IP 20 (terminals)<br>IP 40 (housing) , Installation in switch cabinet or housing with degree of protection of at least IP 54                                                                                                                                                                                                                                      |
| Certifications                                             | c UL US<br>TÜV Süd                                                                                                                                                                                                                                                                                                                                                |
| Test procedure for oscillation in accordance with standard | EN 60947-5-3                                                                                                                                                                                                                                                                                                                                                      |
| <b>Classification</b>                                      |                                                                                                                                                                                                                                                                                                                                                                   |
| Customs tariff number                                      | 85423990                                                                                                                                                                                                                                                                                                                                                          |
| eCl@ss 8.0                                                 | 27371819                                                                                                                                                                                                                                                                                                                                                          |
| eCl@ss 9.0                                                 | 27371819                                                                                                                                                                                                                                                                                                                                                          |
| ETIM 5.0                                                   | EC001449                                                                                                                                                                                                                                                                                                                                                          |
| ETIM 6.0                                                   | EC001449                                                                                                                                                                                                                                                                                                                                                          |

## Electrical connection

| <b>Connection 1</b> |          |
|---------------------|----------|
| Type of connection  | Terminal |

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| Connection 1     |                                        |
|------------------|----------------------------------------|
| Function         | Connection to device<br>Voltage supply |
| Type of terminal | Screw terminal                         |
| No. of pins      | 16 -pin                                |

| Terminal | Assignment |
|----------|------------|
| EDM      | EDM        |
| SI       |            |
| 23       | OSSD21     |
| 13       | OSSD11     |
| A1       | +24V       |
| A2       | 0 V        |
| SR1      | Start 1    |
| SR2      | Start 2    |
| S12      | Sensor SA2 |
| S11      | Sensor SA1 |
| S22      | Sensor SB2 |
| S21      | Sensor SB1 |
| S02      |            |
| S01      |            |
| 24       |            |
| 14       | OSSD12     |

## Operation and display

### LEDs

| LED | Display                 | Meaning            |
|-----|-------------------------|--------------------|
| 1   | Green, continuous light | Supply voltage on  |
| 2   | Green, continuous light | Relay K1 picked up |
| 3   | Green, continuous light | Relay K2 picked up |