



## MZM 100 ST-SD2PRE-A

- Guard locking monitored
- Connector M23, 8+1-pole
- Power to lock
- serial diagnostic output
- Automatic latching
- Solenoid interlocks with innovating and unique operating principle
- 40 mm x 179 mm x 40 mm
- Electronic contact-free, coded system
- Thermoplastic enclosure
- Max. length of the sensor chain 200 m
- 3 LEDs to show operating conditions
- Sensor technology permits an offset between actuator and interlock of  $\pm 5$  mm vertically and  $\pm 3$  mm horizontally
- Intelligent diagnosis
- Self-monitoring series-wiring
- Patented

## Data

### Ordering data

|                               |                     |
|-------------------------------|---------------------|
| Product type description      | MZM 100 ST-SD2PRE-A |
| Article number (order number) | 101211143           |
| EAN (European Article Number) | 4030661389493       |
| eCl@ss number, version 12.0   | 27-27-26-03         |
| eCl@ss number, version 11.0   | 27-27-26-03         |
| eCl@ss number, version 9.0    | 27-27-26-03         |
| ETIM number, version 7.0      | EC002593            |
| ETIM number, version 6.0      | EC002593            |

### Approvals - Standards

|              |                      |
|--------------|----------------------|
| Certificates | TÜV<br>cULus<br>UKCA |
|--------------|----------------------|

## General data

|  |  |
|--|--|
| Standards                              | EN ISO 13849-1<br>EN ISO 14119<br>EN IEC 60947-5-3<br>EN IEC 61508 |
| Coding                                 | Universal coding   |
| Coding level according to EN ISO 14119 | Low  |
| Working principle                      | inductive  |
| Housing material                       | Plastic, glass-fibre reinforced thermoplastic, self-extinguishing  |
| Reaction time, maximum                 | 150 ms   |
| Duration of risk, maximum              | 150 ms   |
| Gross weight                           | 660 g  |

## General data - Features

|                                     |     |
|-------------------------------------|-----|
| Power to lock                       | Yes |
| Solenoid interlock monitored        | Yes |
| Serial diagnostics                  | Yes |
| Latching                            | Yes |
| Short circuit detection             | Yes |
| Cross-circuit detection             | Yes |
| Series-wiring                       | Yes |
| Safety functions                    | Yes |
| Integral system diagnostics, status | Yes |
| Number of safety contacts           | 2   |
| Number of series-wiring of sensors  | 31  |

## Safety classification

|           |                                |
|-----------|--------------------------------|
| Standards | EN ISO 13849-1<br>EN IEC 61508 |
|-----------|--------------------------------|

## Safety classification - Interlocking function

|  |                          |
|--|--------------------------|
| Performance Level, up to                                   | e                        |
| Category   | 4                        |
| PFH value  | $3.54 \times 10^{-9}$ /h |
| Safety Integrity Level (SIL), suitable for applications in | 3                        |
| Mission time   | 20 Year(s)               |

## Mechanical data

|  |   |
|--|---|
| Mechanical life, minimum               | 1,000,000 Operations  |
| Note (Mechanical life)                 | Actuating speed $\leq 0.5$ m/s<br>Operations for door weights $\leq 5$ kg |
| Holding force, typically               | 750 N   |
| Holding force, guaranteed              | 500 N   |
| Latching force, minimum                | 30 N  |
| Latching force, maximum                | 100 N   |
| Type of the fixing screws              | 2x M6   |
| Tightening torque of the fixing screws | 8 Nm  |

## Mechanical data - Switching distances according EN IEC 60947-5-3

|   |      |
|---|------|
| Assured switching distance "ON" $S_{ao}$  | 0 mm |
| Assured switching distance "OFF" $S_{ar}$ | 1 mm |

## Mechanical data - Connection technique

|                                   |  |
|-----------------------------------|--|
| Length of sensor chain, maximum   | 200 m  |
| Note (length of the sensor chain) | Cable length and cross-section change the voltage drop depending on the output current                     |
| Note (series-wiring)              | Unlimited number of devices, observe external line fusing, max. 31 devices in case of serial diagnostic SD |
| Termination                       | Connector M23, 8+1-pole  |

### Mechanical data - Dimensions

|                  |        |
|------------------|--------|
| Length of sensor | 40 mm  |
| Width of sensor  | 40 mm  |
| Height of sensor | 179 mm |

### Ambient conditions

|  |  |
|--|--|
| Degree of protection                                       | IP65<br>IP67                           |
| Ambient temperature  | -25 ... +55 °C                         |
| Storage and transport temperature, minimum                 | -25 °C                                 |
| Storage and transport temperature, maximum                 | +70 °C                                 |
| Relative humidity, minimum                                 | 30 %                                   |
| Relative humidity, maximum                                 | 95 %                                   |
| Note (Relative humidity)                                   | non-condensing<br>non-icing            |
| Resistance to vibrations                                   | 10 ... 150 Hz, amplitude 0.35 mm / 5 g |
| Resistance to shock  | 30 g / 11 ms                           |
| Protection class   | III                                    |
| Permissible installation altitude above sea level, maximum | 2,000 m                                |

### Ambient conditions - Insulation values

|                                |        |
|--------------------------------|--------|
| Rated insulation voltage $U_i$ | 32 VDC |
|--------------------------------|--------|

|   |        |
|---|--------|
| Rated impulse withstand voltage $U_{imp}$ | 0.8 kV |
| Overvoltage category                      | III    |
| Degree of pollution                       | 3      |

### Electrical data

|   |   |
|---|---|
| Operating voltage                           | 24 VDC -15 % / +10 % (stabilised PELV power supply) |
| No-load supply current $I_0$ , typical      | 100 mA  |
| Current consumption with magnet ON, average | 350 mA  |
| Current consumption with magnet ON, peak    | 550 mA / 10 ms                                      |
| Rated operating voltage                     | 24 VDC  |
| Operating current                           | 1,100 mA  |
| Required rated short-circuit current        | 100 A   |
| External wire and device fuse rating        | 2 A gG  |
| Time to readiness, maximum                  | 4,000 ms  |
| Switching frequency, maximum                | 1 Hz  |

### Electrical data - Magnet control

|                                   |  |
|-----------------------------------|--|
| Designation, Magnet control       | IN   |
| Switching thresholds              | -3 V ... 5 V (Low)<br>15 V ... 30 V (High) |
| Current consumption at 24 V       | 10 mA                                      |
| Magnet switch-on time             | 100 %                                      |
| Test pulse duration, maximum      | 5 ms                                       |
| Test pulse interval, minimum      | 40 ms                                      |
| Classification ZVEI CB24I, Sink   | C0   |
| Classification ZVEI CB24I, Source | C1<br>C2<br>C3                             |

## Electrical data - Safety digital inputs

|                                      |  |
|--------------------------------------|--|
| Designation, Safety inputs           | X1 and X2                                  |
| Switching thresholds                 | -3 V ... 5 V (Low)<br>15 V ... 30 V (High) |
| Current consumption at 24 V          | 5 mA                                       |
| Test pulse duration, maximum         | 1 ms                                       |
| Test pulse interval, minimum         | 100 ms                                     |
| Classification ZVEI CB24I, Sink      | C1   |
| Classification ZVEI CB24I,<br>Source | C1<br>C2<br>C3                             |

## Electrical data - Safety digital outputs

|   |                             |
|---|-----------------------------|
| Designation, Safety outputs                 | Y1 and Y2                   |
| Rated operating current (safety<br>outputs) | 250 mA                      |
| Design of control elements                  | short-circuit proof, p-type |
| Voltage drop $U_{dV}$ , maximum             | 1 V                         |
| Leakage current $I_p$ , maximum             | 0.5 mA                      |
| Voltage, Utilisation category<br>DC-13      | 24 VDC                      |
| Current, Utilisation category<br>DC-13      | 0.25 A                      |
| Test pulse interval, typical                | 1000 ms                     |
| Test pulse duration, maximum                | 1 ms                        |
| Classification ZVEI CB24I,<br>Source        | C1                          |
| Classification ZVEI CB24I, Sink             | C1                          |

## Electrical data - Diagnostic outputs

|                            |                             |
|----------------------------|-----------------------------|
| Design of control elements | short-circuit proof, p-type |
|----------------------------|-----------------------------|

## Electrical data - Serial diagnostic SD

|                                   |                             |
|-----------------------------------|-----------------------------|
| Designation, Serial diagnostic SD | OUT                         |
| Operation current                 | 150 mA                      |
| Design of control elements        | short-circuit proof, p-type |
| Wiring capacitance                | 50 nF                       |

### Status indication

|   |  |
|---|--|
| Note (LED switching conditions display) | Operating condition: LED green<br>Error / functional defect: LED red<br>Supply voltage UB: LED green |
|---|--|

### Pin assignment

|       |                              |
|-------|------------------------------|
| PIN 1 | A1 Supply voltage UB         |
| PIN 2 | X1 Safety input 1            |
| PIN 3 | A2 GND                       |
| PIN 4 | Y1 Safety output 1           |
| PIN 5 | OUT serial diagnostic output |
| PIN 6 | X2 Safety input 2            |
| PIN 7 | Y2 Safety output 2           |
| PIN 8 | IN serial diagnostic input   |
| PIN 9 | without function             |

### Scope of delivery

|                   |                                      |
|-------------------|--------------------------------------|
| Scope of delivery | Actuator must be ordered separately. |
|-------------------|--------------------------------------|

### Accessory

|                           |              |
|---------------------------|--------------|
| Recommendation (actuator) | MZM 100-B1.1 |
|---------------------------|--------------|

### Note

Note (General)

As long as the actuating unit is applied to the solenoid interlock, the unlocked safety guard can be relocked. In this case, the safety outputs are re-enabled, so that the safety guard must not be opened.

## Ordering code

Product type description:  
MZM 100(1)(2)(3)(4)(5)-A

|                |  |
|----------------|--|
| (1)            |  |
| <b>without</b> | Solenoid interlock monitored   |
| <b>B</b>       | Actuator monitored   |
| (2)            |  |
| <b>ST2</b>     | Connector plug M12, 8-pole   |
| <b>ST</b>      | Connector plug M23, 8+1-pole   |
| (3)            |  |
| <b>1P2P</b>    | 1 p-type diagnostic output and 2 p-type safety outputs (only in connection with "Solenoid interlock monitored")  |
| <b>1P2PW</b>   | Similar to -1P2P, combined diagnostic signal: guard door closed and solenoid interlock locked (only in connection with "Solenoid interlock monitored") |
| <b>1P2PW2</b>  | Similar to -1P2P, combined diagnostic signal: guard door closed and can be locked (only in connection with "Actuator monitored")                       |
| <b>SD2P</b>    | serial diagnostic output and 2 p-type safety outputs   |
| (4)            |  |
| <b>without</b> | without latching (only in connection with "Solenoid interlock monitored")  |
| <b>R</b>       | electrical latching force, typically 30 N  |
| <b>RE</b>      | electrically adjustable latching force 30 ... 100 N  |
| (5)            |  |
| <b>M</b>       | permanent magnet, typically 15 N   |

## Pictures



## Product picture (catalogue individual photo)



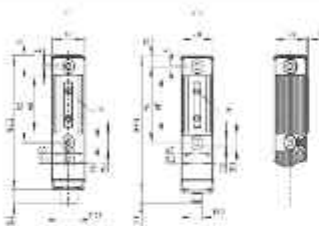
ID: kmzm1f08

| 1.4 MB | .jpg | 216.253 x 833.261 mm - 613 x 2362 px - 72 dpi

| 235.7 kB | .png | 74.083 x 285.397 mm - 210 x 809 px - 72 dpi

| 28.1 kB | .jpg | 32.103 x 123.472 mm - 91 x 350 px - 72 dpi

## Dimensional drawing basic component



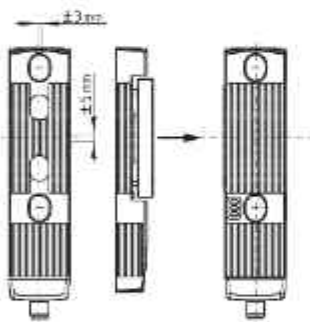
ID: 1mzm1g14

| 20.7 kB | .swf |

| 5.2 kB | .png | 74.083 x 50.8 mm - 210 x 144 px - 72 dpi

| 160.8 kB | .jpg | 352.778 x 242.358 mm - 1000 x 687 px - 72 dpi

## Dimensional drawing miscellaneous

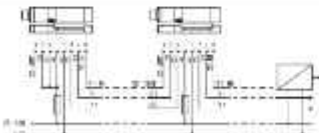


ID: 1mzm1g15

| 12.9 kB | .swf |

| 290.8 kB | .jpg | 352.425 x 362.656 mm - 999 x 1028 px - 72 dpi

## Wiring example

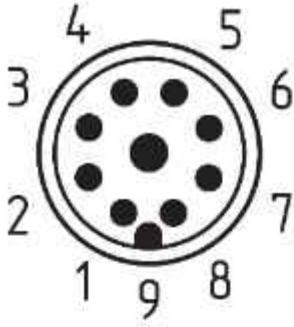


ID: kmzm1i04

| 38.1 kB | .cdr |

| 83.1 kB | .jpg | 352.778 x 144.639 mm - 1000 x 410 px - 72 dpi

## Contact arrangement



ID: km23-k9d

| 18.5 kB | .cdr |

| 5.4 kB | .png | 74.083 x 77.611 mm - 210 x 220 px - 72 dpi

| 149.1 kB | .jpg | 352.778 x 369.711 mm - 1000 x 1048 px - 72 dpi

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The details and data referred to have been carefully checked. Images may diverge from original. Further technical data can be found in the manual. Technical amendments and errors possible.

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