

## Technical data sheet

### Muting interface

Part no.: 549954

MSI-MD-FBX

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For illustration purposes only



## Technical data

### Basic data

|             |                                                                                                                                                                            |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Series      | MSI-MD-FB                                                                                                                                                                  |
| Application | Muting interface for muting applications in combination with standard variants of the MLC and ELC safety light curtains, as well as MLD multiple light beam safety devices |

### Functions

|           |                                                                                         |
|-----------|-----------------------------------------------------------------------------------------|
| Functions | Muting enable function<br>Muting-timeout extension<br>Timing controlled 2-sensor muting |
| Restart   | Automatic<br>Manual                                                                     |

### Characteristic parameters

|                             |                          |
|-----------------------------|--------------------------|
| SIL                         | 3, IEC 61508             |
| SILCL                       | 3, IEC/EN 62061          |
| Performance Level (PL)      | e, EN ISO 13849-1        |
| PFH <sub>D</sub>            | 2.5E-09 per hour         |
| Mission time T <sub>M</sub> | 20 years, EN ISO 13849-1 |
| Category                    | 4, EN ISO 13849-1        |

### Electrical data

|                    |                                                                                   |
|--------------------|-----------------------------------------------------------------------------------|
| Protective circuit | Overvoltage protection<br>Polarity reversal protection<br>Short circuit protected |
|--------------------|-----------------------------------------------------------------------------------|

### Performance data

|                               |                                                                                                     |
|-------------------------------|-----------------------------------------------------------------------------------------------------|
| Supply voltage U <sub>B</sub> | 24 V, DC, -20 ... 20 %, Compensation necessary at 20 ms voltage dip, min. 250 mA (+ external loads) |
| Current consumption, max.     | 150 mA, Without external load                                                                       |
| Power consumption, max.       | 3.6 W                                                                                               |
| Residual ripple               | -5 ... 5 %, From U <sub>B</sub>                                                                     |

### Inputs

|                                           |            |
|-------------------------------------------|------------|
| Number of safety-related switching inputs | 2 Piece(s) |
| Number of digital switching inputs        | 8 Piece(s) |

### Switching inputs

|                              |                         |
|------------------------------|-------------------------|
| Type                         | Digital switching input |
| Switching voltage high, min. | 27 V                    |
| Switching voltage low, max.  | 2.5 V                   |
| Switching voltage, type.     | 24 V                    |
| Voltage type                 | DC                      |

### Digital switching input 1

|          |                                                                |
|----------|----------------------------------------------------------------|
| Function | Control input for Reset<br>Control input, reset of the control |
|----------|----------------------------------------------------------------|

### Digital switching input 2

|          |                                               |
|----------|-----------------------------------------------|
| Function | Control input, muting sensor 1 of the control |
|----------|-----------------------------------------------|

### Digital switching input 3

|          |                                             |
|----------|---------------------------------------------|
| Function | Control input, muting enable/muting timeout |
|----------|---------------------------------------------|

### Digital switching input 4

|          |                         |
|----------|-------------------------|
| Function | Control input for Reset |
|----------|-------------------------|

### Digital switching input 5

|          |                                                                                                                                                  |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Function | Control input for muting sensor 1<br>Control input for muting sensor 2<br>Control input for muting sensor 3<br>Control input for muting sensor 4 |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------|

### Safety-related switching inputs

|                              |                        |
|------------------------------|------------------------|
| Type                         | Safety switching input |
| Voltage type                 | DC                     |
| Switching voltage high, min. | 27 V                   |
| Switching voltage low, max.  | 18 V                   |
| Switching voltage, type.     | 24 V                   |

### 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 |
| Switching voltage high, min. | 18 V                                 |
| Switching voltage low, max.  | 2.5 V                                |
| Switching voltage, type.     | 24 V                                 |
| Voltage type                 | DC                                   |
| Switching current, max.      | 380 mA                               |
| Load inductivity             | 2,000 µH                             |
| Load capacity                | 0.3 µF                               |
| Residual current, max.       | 0.2 mA                               |
| Residual current, type.      | 0.002 mA                             |

### Safety-related switching output 1

|                   |                 |
|-------------------|-----------------|
| Switching element | Transistor, PNP |
|-------------------|-----------------|

### Safety-related switching output 2

|                   |                 |
|-------------------|-----------------|
| Switching element | Transistor, PNP |
|-------------------|-----------------|

### Switching outputs

|                          |                          |
|--------------------------|--------------------------|
| Type                     | Digital switching output |
| Switching voltage, type. | 24 V                     |
| Voltage type             | DC                       |

### Switching output 1

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

### Switching output 2

|                   |                             |
|-------------------|-----------------------------|
| Switching element | Transistor, PNP             |
| Function          | ReadyForReset signal output |

### Switching output 3

|                   |                              |
|-------------------|------------------------------|
| Switching element | Transistor, PNP              |
| Function          | "Muting state" signal output |

### Time behavior

|                    |        |
|--------------------|--------|
| Restart delay time | 100 ms |
| Regression delay   | 5 ms   |

### Connection

|                       |            |
|-----------------------|------------|
| Number of connections | 8 Piece(s) |
|-----------------------|------------|

## Technical data

### Connection 1

|                    |                   |
|--------------------|-------------------|
| Function           | Machine interface |
| Type of connection | Connector         |
| Thread size        | M12               |
| Type               | Male              |
| Material           | Metal             |
| No. of pins        | 8 -pin            |

### Connection 2

|                    |                            |
|--------------------|----------------------------|
| Function           | Connection - safety sensor |
| Type of connection | Connector                  |
| Thread size        | M12                        |
| Type               | Female                     |
| Material           | Metal                      |
| No. of pins        | 5 -pin                     |

### Connection 3

|                    |                               |
|--------------------|-------------------------------|
| Function           | Connection - muting indicator |
| Type of connection | Connector                     |
| Thread size        | M12                           |
| Type               | Female                        |
| Material           | Metal                         |
| No. of pins        | 5 -pin                        |

### Connection 4

|                    |                                  |
|--------------------|----------------------------------|
| Function           | Connection - acknowledgment unit |
| Type of connection | Connector                        |
| Thread size        | M12                              |
| Type               | Female                           |
| Material           | Metal                            |
| No. of pins        | 5 -pin                           |

### Connection 5

|                    |                                     |
|--------------------|-------------------------------------|
| Function           | Connections for four muting sensors |
| Type of connection | Connector                           |
| Thread size        | M12                                 |
| Type               | Female                              |
| Material           | Metal                               |
| No. of pins        | 5 -pin                              |

### Connection 6

|                    |                   |
|--------------------|-------------------|
| Function           | Service interface |
| Type of connection | USB               |
| Connector type     | USB 2.0 Micro-B   |

### Cable properties

|                                            |                      |
|--------------------------------------------|----------------------|
| Permissible conductor cross section, type. | 0.25 mm <sup>2</sup> |
| Length of connection cable, max.           | 50 m                 |

### Mechanical data

|                       |                                                                        |
|-----------------------|------------------------------------------------------------------------|
| Dimension (W x H x L) | 60 mm x 38.3 mm x 225 mm                                               |
| Net weight            | 560 g                                                                  |
| Housing color         | Yellow                                                                 |
| Type of fastening     | Mounting plate<br>Mounting plate with L-angle<br>Through-hole mounting |

### Operation and display

|                                     |                             |
|-------------------------------------|-----------------------------|
| Type of display                     | LED                         |
| Number of LEDs                      | 14 Piece(s)                 |
| Operational controls                | DIP switch                  |
| Function of the operational control | Selection of operating mode |

### 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 67                |
| Protection class                                           | III                  |
| Approvals                                                  | c UL US<br>TÜV Süd   |
| Test procedure for oscillation in accordance with standard | IEC/EN 60068-2-6     |
| Shock resistance                                           | 100 m/s <sup>2</sup> |
| Test procedure for shock in accordance with standard       | IEC/EN 60068-2-6     |
| US patents                                                 | US 6,418,546 B       |

### Classification

|                       |          |
|-----------------------|----------|
| Customs tariff number | 85369095 |
| ECLASS 5.1.4          | 27371811 |
| ECLASS 8.0            | 27371811 |
| ECLASS 9.0            | 27371811 |
| ECLASS 10.0           | 27371811 |
| ECLASS 11.0           | 27371819 |
| ECLASS 12.0           | 27371819 |
| ECLASS 13.0           | 27371819 |
| ECLASS 14.0           | 27371819 |
| ECLASS 15.0           | 27371819 |
| ETIM 5.0              | EC001448 |
| ETIM 6.0              | EC001448 |
| ETIM 7.0              | EC001448 |
| ETIM 8.0              | EC001449 |
| ETIM 9.0              | EC001449 |

## Electrical connection

### Connection 1

### SC

|                    |                   |
|--------------------|-------------------|
| Function           | Machine interface |
| Type of connection | Connector         |
| Thread size        | M12               |
| Type               | Male              |
| Material           | Metal             |
| No. of pins        | 8 -pin            |
| Encoding           | A-coded           |

### Connection 2

### LC/LG

|                    |                            |
|--------------------|----------------------------|
| Function           | Connection - safety sensor |
| Type of connection | Connector                  |
| Thread size        | M12                        |
| Type               | Female                     |
| Material           | Metal                      |
| No. of pins        | 5 -pin                     |
| Encoding           | A-coded                    |

### Connection 3

### ML

|                    |                               |
|--------------------|-------------------------------|
| Function           | Connection - muting indicator |
| Type of connection | Connector                     |
| Thread size        | M12                           |
| Type               | Female                        |
| Material           | Metal                         |
| No. of pins        | 5 -pin                        |
| Encoding           | A-coded                       |

### Connection 4

### RES

|                    |                                  |
|--------------------|----------------------------------|
| Function           | Connection - acknowledgment unit |
| Type of connection | Connector                        |
| Thread size        | M12                              |
| Type               | Female                           |
| Material           | Metal                            |
| No. of pins        | 5 -pin                           |
| Encoding           | A-coded                          |

### Connection 5

### MS1 ... MS4

|                    |                                     |
|--------------------|-------------------------------------|
| Function           | Connections for four muting sensors |
| Type of connection | Connector                           |
| Thread size        | M12                                 |
| Type               | Female                              |
| Material           | Metal                               |
| No. of pins        | 5 -pin                              |
| Encoding           | A-coded                             |

### Connection 6

|                    |                   |
|--------------------|-------------------|
| Function           | Service interface |
| Type of connection | USB               |