

## Technical data sheet

### Safety relay

Part no.: 547963

MSI-TSB-02

#### Contents

- Technical data
- Electrical connection
- Operation and display



Figure can vary



## Technical data

### Basic data

Series	MSI-TB
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### Functions

Functions	"Error" signal output
	"STOP 1" signal output
	Contacting 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 <sub>d</sub>	78 years, EN ISO 13849-1
PFH <sub>D</sub>	0.000000088 per hour
Mission time T <sub>M</sub>	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 <sub>B</sub>	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)
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#### 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)
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#### Digital switching input 2

Function	Control input for receiver
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#### Digital switching input 3

Function	RES/Start control input
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#### Digital switching input 4

Function	Control input for Reset
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#### 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
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#### Safety-related switching output 2

Switching element	Relay, NO
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### 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	STOP 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
Time delay	600 ms
Sensor response time on test request	0.5 ... 60 ms

### Connection

Number of connections	1 Piece(s)
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#### Connection 1

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

#### Cable properties

Connection cross sections	0.2 to 1.5 mm <sup>2</sup>
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### 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

### Operation and display

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

## Technical data

### 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

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

### Pin Pin assignment

	5
1	+24V
	6
2	GND
	7
3	STOP
	8
4	ERROR
	13
5	EDM
	14
6	Test (transmitter)
	15
7	Receiver
	16
8	RES/Start
	21
9	Reset
	22
10	WA
	23
11	MODE
	24
12	Auto WA
	29
13	OSSD1
	30
14	OSSD2
	31
15	SSD1
	32
16	SSD2

## Operation and display

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