



**Part no.: 547963**  
**MSI-TSB-02**  
**Safety relay**



Figure can vary

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Part no.: 547963 – MSI-TSB-02 – Safety relay

## Technical data

<b>Basic data</b>	
Series	MSI-TB
<b>Functions</b>	
Functions	"STOP 1" signal output Start/restart interlock (RES), selectable Periodic function test Contactor monitoring (EDM), selectable "Error" signal output
Restart	Automatic Manual
<b>Characteristic parameters</b>	
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
PFH <sub>D</sub>	8.8E-08 per hour
Mission time T <sub>M</sub>	20 years, EN ISO 13849-1
Category	2, EN ISO 13849
<b>Electrical data</b>	
Protective circuit	Polarity reversal protection Short circuit protected
<b>Performance data</b>	
Supply voltage	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
<b>Inputs</b>	
Number of digital switching inputs	4 Piece(s)
<b>Switching inputs</b>	
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
<b>Digital switching input 1</b>	
Function	Control input for contactor monitoring (EDM)
<b>Digital switching input 2</b>	
Function	Control input for receiver
<b>Digital switching input 3</b>	
Function	RES/Start control input
<b>Digital switching input 4</b>	
Function	Control input for Reset
<b>Digital switching input 5</b>	
Function	Restart interlock control input

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<b>Outputs</b>	
Number of safety-related switching outputs (OSSDs)	2 Piece(s)
Number of digital switching outputs	3 Piece(s)
<b>Safety-related switching outputs</b>	
Type	Safety-related switching output OSSD
Voltage type	DC
Current load, max.	2,000 mA
<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
Switching voltage high, min.	18.2 V
Switching voltage low, max.	2.5 V
Switching voltage, typ.	23 V
Voltage type	DC
<b>Switching output 1</b>	
Switching element	Transistor, PNP
Function	STOP signal output
<b>Switching output 2</b>	
Switching element	Transistor, PNP
Function	"Error" signal output
<b>Switching output 3</b>	
Switching element	Transistor, PNP
Function	Test signal output (transmitter)
<b>Timing</b>	
Response time	20 ms
Start-up delay	2 s
Time delay	600 ms
Sensor response time on test request	0.5 ... 60 ms
<b>Connection</b>	
Number of connections	1 Piece(s)
<b>Connection 1</b>	
Type of connection	Terminal
Function	Connection to device Voltage supply
Type of terminal	Spring-cage terminal
No. of pins	16 -pin
<b>Cable properties</b>	
Connection cross sections	0.2 to 1.5 mm <sup>2</sup>
<b>Mechanical data</b>	
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	TÜV Süd c TÜV Rheinland US
US patents	US 6,418,546 B

### Classification

eCl@ss 8.0	27371819
eCl@ss 9.0	27371819
ETIM 5.0	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	STOP
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