Technical data sheet
Safety relay
Part no.: 547958
MSI-TR1B-01



For Illustration purposes only

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Technical data

Leuze

Basic data

Series	MSI-TB
Application	Evaluation unit for type 2 single beam safety devices in accordance with IEC/EN 61496

Functions

Functions	"Error" signal output
	"Safety ON" signal output
	Contactor monitoring (EDM)
	Periodic function test
	Start/restart interlock (RES)
Restart	Automatic
	Manual

Characteristic parameters

Type	2, IEC/EN 61496
SIL	1, IEC 61508
SILCL	1, IEC/EN 62061
Performance Level (PL)	c, EN ISO 13849-1
$MTTF_d$	78 years, EN ISO 13849-1
PFH_D	8.8E-08 per hour
Mission time T_M	20 years, EN ISO 13849-1
Category	2, EN ISO 13849-1

Electrical data

Protective circuit	Polarity reversal protection
	Short circuit protected
Continuous current per current path, max.	2 A

Performance data

Supply voltage U_B	24 V, DC, -20 ... 20 %
Current consumption, max.	200 mA, Without external load
Power consumption, max.	4.8 W
Residual ripple	-15 ... 15 %
Fuse	External with max. 3.15 A semi time-lag

Inputs

Number of digital switching inputs	4 Piece(s)

Switching inputs

Type	Digital switching input
Switching voltage high, min.	18.2 V
Switching voltage low, max.	2.5 V
Switching voltage, type.	23 V
Voltage type	DC

Digital switching input 1

Function	Control input for contactor monitoring (EDM)

Digital switching input 2

Function	Control input for receiver

Digital switching input 3

Function	RES/Start control input

Digital switching input 4

Function	Control input for Reset

Digital switching input 5

Function	Restart interlock control input

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

Safety-related switching output 2

Switching element	Relay, NO

Switching outputs

Type	Digital switching output
Switching voltage high, min.	18.2 V
Switching voltage low, max.	2.5 V
Switching voltage, type.	23 V
Voltage type	DC

Switching output 1

Switching element	Transistor, PNP
Function	"Safety ON" 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)

Output circuit

Number of outputs, safety-oriented, non-delayed, contact-based	2 Piece(s)
Number of outputs, safety-oriented, delayed, contact-based	0 Piece(s)
Number of outputs, signaling function, non-delayed, contact-based	0 Piece(s)

Time behavior

Response time	20 ms
Switch-on delay	2 s
Regression delay	20 ms
Sensor response time on test request	0.5 ... 60 ms

Connection

Number of connections	1 Piece(s)

Connection 1

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

Cable properties

Connection cross sections	0.2 to 2.5 mm²

Technical data

Mechanical data

Dimension (W x H x L)	22.5 mm x 99 mm x 114.1 mm
Housing material	Plastic
Plastic housing	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)

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
Approvals	c TÜV Rheinland US
	TÜV Süd
US patents	US 6,418,546 B

Classification

Customs tariff number	85371098
ECLASS 5.1.4	27371800
ECLASS 8.0	27371819
ECLASS 9.0	27371819
ECLASS 10.0	27371819
ECLASS 11.0	27371819
ECLASS 12.0	27371819
ECLASS 13.0	27371819
ECLASS 14.0	27371819
ECLASS 15.0	27371819
ETIM 5.0	EC001449
ETIM 6.0	EC001449
ETIM 7.0	EC001449
ETIM 8.0	EC001449
ETIM 9.0	EC001449
ETIM 10.0	EC001449

Electrical connection

Connection 1

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

Terminal	Assignment
5	+24 V
6	GND
7	Safety ON
8	ERROR
13	EDM
14	Test (transmitter)
15	Receiver
16	RES/Start
21	Reset
22	Restart interlock
23	MODE
24	Auto WA
29	OSSD1
30	OSSD2
31	SSD1
32	SSD2

Operation and display

LED	Display	Meaning
1	Green, continuous light	Light path free
2	Yellow, continuous light	Restart locked

Operation and display

LED	Display	Meaning
3	Green, continuous light	EDM selected
4	Green, continuous light	OSSD on
	Red, continuous light	OSSD off