

Technical data sheet

Safety relay

Part no.: 549988

MSI-TR1



Figure can vary

Contents

- Technical data
- Electrical connection
- Operation and display



Technical data

Basic data

Series	MSI-T
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Functions

Functions	"Error" signal output
	"Safety ON" signal output
	Contact monitoring (EDM), selectable
	Periodic function test
	Start/restart interlock (RES), selectable

Characteristic parameters

Type	2, IEC/EN 61496
Performance Level (PL)	Up to c, EN ISO 13849-1
MTTF _d	78 years, EN ISO 13849-1
PFH _D	0.000000088 per hour
Mission time T _M	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 _B	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	"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)

Timing

Response time	20 ms
Start-up delay	2 s
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	Screw terminal
No. of pins	16 -pin

Cable properties

Connection cross sections	1 x 0.2 to 2.5 mm ² , wire
	1 x 0.2 to 2.5 mm ² , wire
	1 x 0.25 to 2.5 mm ² , wire with wire-end sleeve
	2 x 0.2 to 1.0 mm ² , wire
	2 x 0.2 to 1.5 mm ² , wire
	2 x 0.25 to 1.0 mm ² , wire with wire-end sleeve
	2 x 0.5 to 1.5 mm ² , wire with twin wire-end sleeve

Technical data

Mechanical data

Dimension (W x H x L)	22.5 mm x 99 mm x 113.6 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)

Environmental data

Ambient temperature, operation	-20 ... 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 NRTL US

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	Screw terminal
No. of pins	16 -pin

Pin Pin assignment

	5
1	+24V
	6
2	GND
	7
3	Safety ON
	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

Electrical connection

Pin	Pin assignment
	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