Technical data sheet
Safety relay
Part no.: 547953
MSI-SR5B-02

For Illustration purposes only

Contents

Technical data

Leuze

Basic data

Series	MSI-SR5B
Application	E-Stop circuits
	Optoelectronic protective devices
	Position switches (mechanical contacts)
	Solenoid switches (reed contacts, equivalent)
	Transponder switches (OSSD outputs)

Functions

Functions	Contactor monitoring (EDM)
	Cross circuit monitoring
	Double sensor monitoring
	Start/restart interlock (RES)
Restart	Automatic
	Manual

Characteristic parameters

SIL	3, IEC 61508
SILCL	3, IEC/EN 62061
Performance Level (PL)	e, EN ISO 13849-1
$MTTF_d$	73 years, EN ISO 13849-1
PFH_D	1E-08 per hour
PFH_D, nop = 4800	0.00000001 per hour
PFH_D, nop = 28800	0.00000002 per hour
PFH_D, nop = 86400	0.00000005 per hour
Mission time T_M	20 years, EN ISO 13849-1
Category	4, EN ISO 13849-1
STOP category	0, IEC/EN 60204-1
$B10_d$ at AC1 (ohmic load)	400,000 number of cycles
$B10_d$ at DC13 (inductive load)	4,000,000 number of cycles

Electrical data

Protective circuit	Fuse on switching output, upstream
Continuous current per current path, max.	2 A
Input current, max.	150 mA
External safeguarding for supply circuit	200 mA delay-action
External contact fuse protection per current path	5 A quick-action, or 3.15 A delay-action
Permissible input line resistance, max.	30 Ω

Performance data

Supply voltage U_B	24 V, DC, -20 ... 20 %
Current consumption, additional note	Without external load
Power consumption, max.	4.8 W

Outputs

Number of safety-related switching outputs (OSSDs)	2 Piece(s)

Safety-related switching outputs

Type	Safety-related switching output OSSD
Voltage type	DC

Safety-related switching output 1

Switching element	Relay, NO

Safety-related switching output 2

Switching element	Relay, NO

Output circuit

Number of outputs, safety-oriented, undelayed, contact-based	2 Piece(s)
Number of outputs, safety-oriented, delayed, contact-based	0 Piece(s)
Number of outputs, signaling function, undelayed, contact-based	0 Piece(s)
Max. thermal continuous current I_{th}, release current paths	6 A

Time behavior

Pickup delay, automatic start	350 ms
Pickup delay, manual start	50 ms
Regression delay	10 ms
Test pulse acceptance, max.	1 ms
Time window between 2 channels of a sensor, max.	60 ms

Connection

Number of connections	1 Piece(s)
Connectible safety sensors (AOPDs)	Up to 2 AOPDs type 4, type 3 or type 2 self-testing
Connectible electro-mechanical safety devices	E-Stop command devices, 1 and 2-channel
	Safety switches

Connection 1

Function	Connection to device
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 mm²

Mechanical data

Dimension (W x H x L)	22.5 mm x 111 mm x 114.1 mm
Housing material	Plastic
Plastic housing	PA 66
Net weight	170 g
Housing color	Gray
Type of fastening	Snap-on mounting
Mechanical life time	10,000,000 actuation cycles

Operation and display

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

Environmental data

Ambient temperature, operation	0 ... 55 °C
Ambient temperature, storage	-25 ... 70 °C
Relative humidity (non-condensing)	0 ... 95 %

Certifications

Degree of protection	IP 20 (terminals)
	IP 40 (housing)
Protection class	II
Certifications	c UL US
	TÜV Süd
US patents	US 6,418,546 B

Technical data

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
ETIM 5.0	EC001449
ETIM 6.0	EC001449
ETIM 7.0	EC001449
ETIM 8.0	EC001449
ETIM 9.0	EC001449

Electrical connection

Connection 1

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

Terminal	Assignment
5	+24 V
6	0 V
7	Sensor input 1 channel 2, 24V
8	Sensor input 2 channel 2, 24V
13	Sensor input 1 channel 2, 0V
14	Sensor supply, contacts 24V OUT
15	Sensor input 2 channel 2, 0V
16	Restart input
21	Sensor input 1 channel 1, 24V
22	Sensor supply contacts 0V OUT
23	Sensor input 2 channel 1, 24V
24	Restart automatic output
29	Relay contact 1 IN
30	Relay contact 1 OUT
31	Relay contact 2 IN
32	Relay contact 2 OUT

Operation and display

LED	Display	Meaning
1	Green, continuous light	Supply voltage on
2	Green, continuous light	Channel 1
3	Green, continuous light	Channel 2
4	Orange, continuous light	Start/restart interlock locked