Technical data sheet

Safety relay

Part no.: 50133023

MSI-SR-ES31-03

For Illustration purposes only

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The Sensor People

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Technical data

Leuze

Basic data

Series	MSI-SR-ES31
Application	E-Stop circuits
	Position switches (mechanical contacts)

Functions

Functions	Contactor monitoring (EDM)
	Start/restart interlock (RES)
Restart	Automatic
	Manual

Characteristic parameters

SIL	2, IEC 61508
SILCL	2, IEC/EN 62061
Performance Level (PL)	d, EN ISO 13849-1
$MTTF_d$	73 years, EN ISO 13849-1
PFH_D	8,6E-10 per hour
Mission time T_M	20 years, EN ISO 13849-1
Category	3, EN ISO 13849-1
DC_{AVG}	99 %
$B10_d$ at DC13 (inductive load)	300,000 number of cycles, (5 A, 230 V), 700,000 (1 A, 230 V)
$B10_d$ at AC15 (inductive load)	200,000 number of cycles, (5 A, 230 V), 380,000 (1 A, 230 V)

Electrical data

Continuous current per current path, max.	8 A

Performance data

Supply voltage U_B	24 V, AC/DC, -15 ... 10 %
Power consumption, max.	1.3 W

Supply circuit

Nominal voltage U_N	24 V
Nominal frequency	50 ... 60 Hz
Operating voltage	0.85 ... 1.1 x U_N
Rated power DC	1.3 W
Galvanic isolation between supply and control circuit	Yes (when U_N ≥ AC 115-120 V, AC 230 V)

Output circuit

Number of outputs, safety-oriented, undelayed, contact-based	3 Piece(s)
Number of outputs, safety-oriented, delayed, contact-based	0 Piece(s)
Number of outputs, signaling function, undelayed, contact-based	1 Piece(s)
Release current paths	NO
Signaling current paths	NC
Contact material	Ag alloy, gold-plated
Usage category AC-15 (NO contact)	Ue 230V, Ie 5A
Usage category DC-13 (NO contact)	Ue 24V, Ie 5A
Short circuit protection (NO contact)	gG class safety fuse 6A, melting integral
Nominal switching voltage, release current paths AC	230 V
Nominal switching voltage, signaling current paths AC	230 V
Max. thermal continuous current I_{th}, release current paths	8 A
Max. thermal continuous current I_{th}, signaling current paths	5 A
Max. total current I^2 of all current paths	9 A²
Mechanical life time	100,000,000 switching cycles

Control circuit

Evaluation of the inputs	one- or two-channel
Nominal output voltage DC	24 V
Input current at the control inputs (safety circuit/reset circuit)	90 mA
Max. peak current at the control inputs (safety circuit/reset circuit)	1,500 mA
Max. cable resistance, per channel	≤ (5 + (1.333 x U_B / U_N - 1) x 200) Ω
Minimum switch-on time	60 ms
Response time (automatic start t_{A2})	60 ms
Release time t_R	60 ms
Recovery time t_W	200 ms

Time behavior

Regression delay	60 ms

Connection

Number of connections	1 Piece(s)

Connection 1

Function	Signal IN
	Signal OUT
	Voltage supply
Type of connection	Terminal
Type of terminal	Spring-cage terminal
No. of pins	15 -pin

Cable properties

Connection cross sections	2 x 0.2 to 1.5 mm², wire
	2 x 0.2 to 1.5 mm², wire
	2 x 0.25 to 1.5 mm², wire with wire-end sleeve

Mechanical data

Dimension (W x H x L)	22.5 mm x 106.5 mm x 114 mm
Net weight	200 g
Housing color	Gray
Type of fastening	Snap-on mounting

Environmental data

Ambient temperature, operation	-25 ... 55 °C

Certifications

Certifications	c UL US
	TÜV Rheinland

Classification

Customs tariff number	85364900
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

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Dimensioned drawings

All dimensions in millimeters
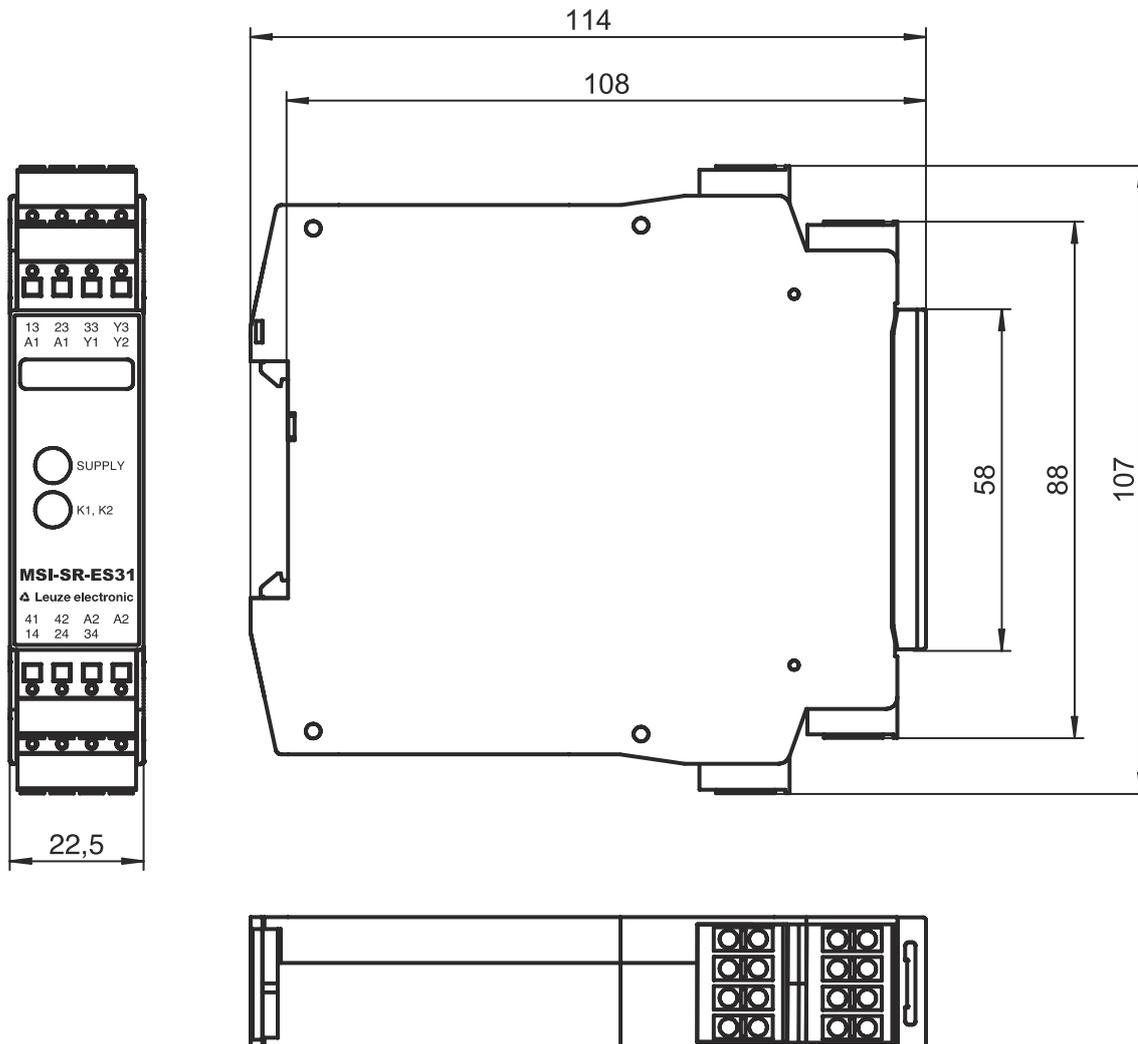
Electrical connection

Connection 1

Function	Signal IN
	Signal OUT
	Voltage supply
Type of connection	Terminal
Type of terminal	Spring-cage terminal
No. of pins	15 -pin

| Terminal	Assignment
13	Release current path 1 (NO contact)
14	Release current path 1 (NO contact)
23	Release current path 2 (NO contact)
24	Release current path 2 (NO contact)
33	Release current path 3 (NO contact)

Electrical connection

Terminal	Assignment
34	Release current path 3 (NO contact)
41	Signaling current path (NC contact)
42	Signaling current path (NC contact)
A1	+24 V
A1	+24 V
A2	GND
A2	GND
Y1	Control circuit of reset button
Y2	Control circuit of reset button (automatic reset)
Y3	Control circuit of reset button (manual reset)

Circuit diagrams
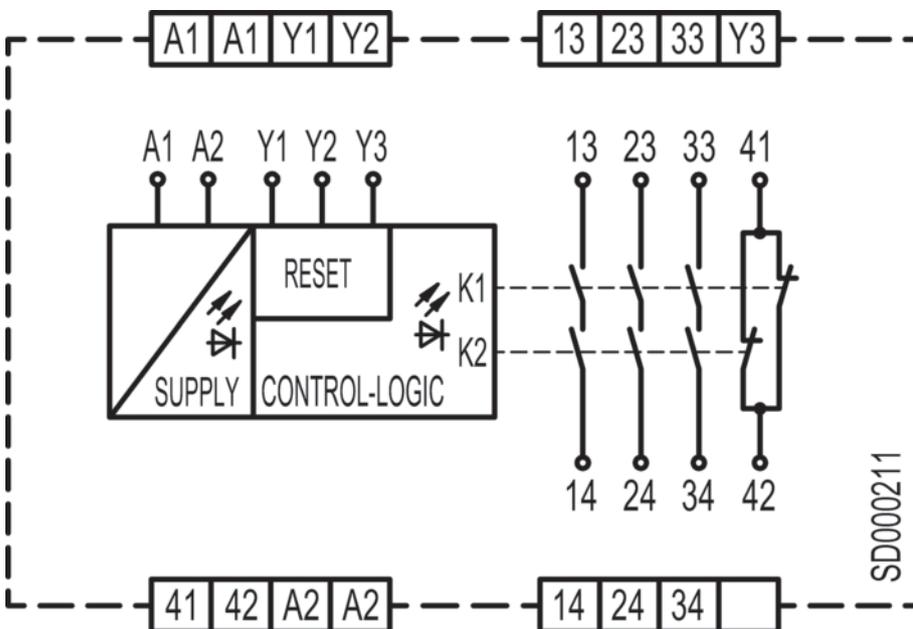
Notes

⚠ **Observe intended use!**

↳ The product may only be put into operation by competent persons.

↳ Only use the product in accordance with its intended use.