

Technical data sheet

Safety relay

Part no.: 50133023

MSI-SR-ES31-03

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For illustration purposes only



Technical data

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, non-delayed, contact-based	3 Piece(s)
Number of outputs, safety-oriented, delayed, contact-based	0 Piece(s)
Number of outputs, signaling function, non-delayed, 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 A ²
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
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Connection

Number of connections	1 Piece(s)
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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 mm ² , wire 2 x 0.2 to 1.5 mm ² , wire 2 x 0.25 to 1.5 mm ² , wire with wire-end sleeve
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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

Technical data

Environmental data

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

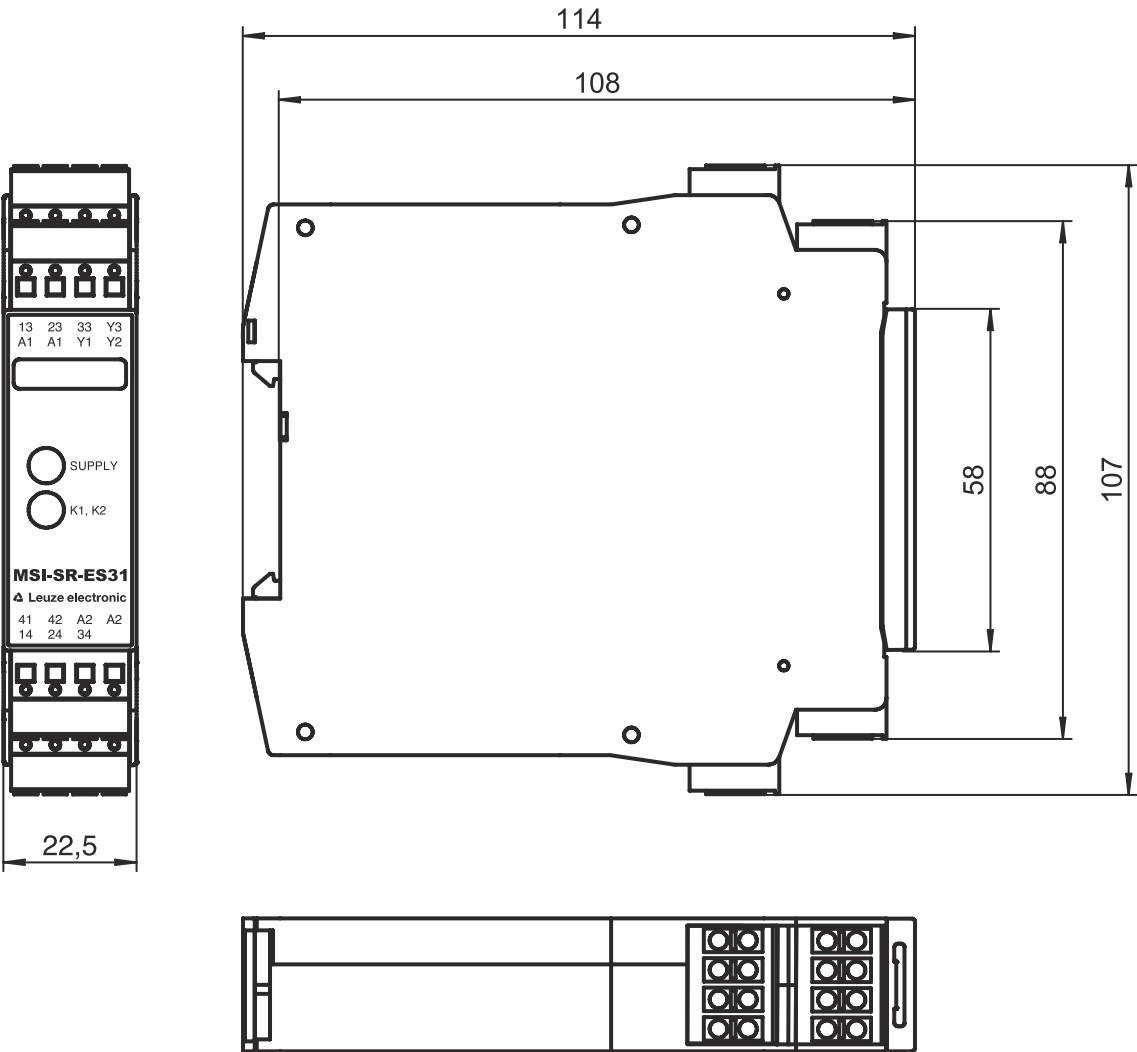
Approvals	c UL US
	TÜV Rheinland

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
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

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

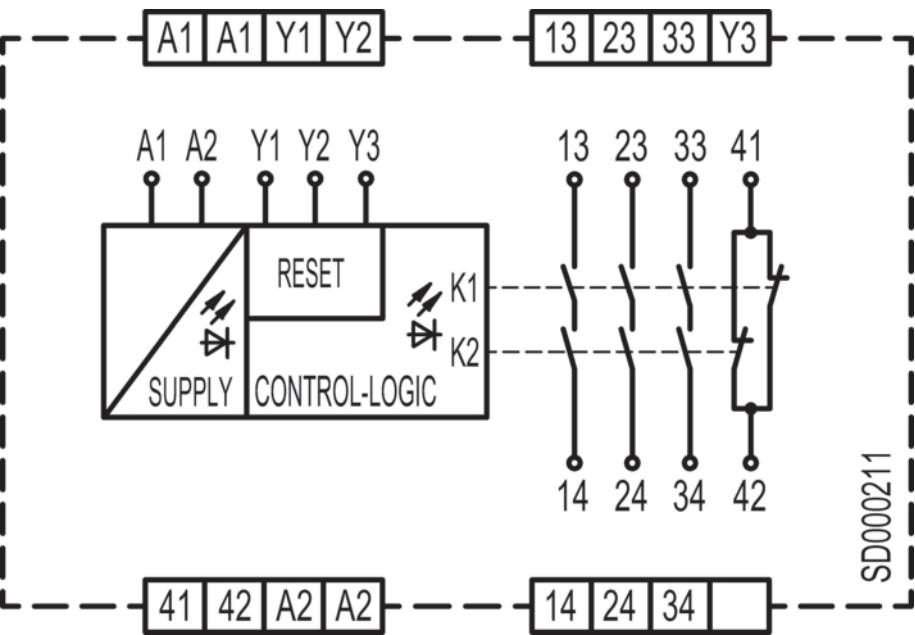
Assignment

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.