

Safety relays - PSR-MC38-2NO-1DO-24DC-SC - 1009831

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Safety relay for emergency stop, safety doors and light grids up to SILCL 3, Cat. 4, PL e, 1- or 2-channel operation, automatic or manual, monitored start, 2 enabling current paths, 1 signal output, TBUS interface, $U_s = 24 \text{ V DC}$, pluggable screw terminal block

Your advantages

- ✓ Up to Cat. 4/PL e according to ISO 13849-1, SILCL 3 according to IEC 62061, SIL 3 according to IEC 61508
- ✓ Single and two-channel control
- ✓ 2 enabling current paths, 1 digital signal output
- ✓ For emergency stop and safety door monitoring, plus evaluation of light grids
- ✓ TBUS interface for connecting CONTACTRON hybrid motor starters and MINI POWER power supplies



Key Commercial Data

Packing unit	1 pc
GTIN	 4 055626 482705
GTIN	4055626482705
Weight per Piece (excluding packing)	169.380 g
Custom tariff number	85371098
Country of origin	Germany

Technical data

Note

Utilization restriction	EMC: class A product, see manufacturer's declaration in the download area
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Dimensions

Width	22.5 mm
Height	112.2 mm
Depth	114.5 mm

Ambient conditions

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Ambient conditions

Ambient temperature (operation)	-20 °C ... 55 °C (observe derating)
Ambient temperature (storage/transport)	-40 °C ... 70 °C
Max. permissible relative humidity (operation)	75 % (on average, 85% infrequently, non-condensing)
Max. permissible humidity (storage/transport)	75 % (on average, 85% infrequently, non-condensing)
Maximum altitude	≤ 2000 m (Above sea level)

Power supply

Designation	A1/A2
Rated control circuit supply voltage U_s	24 V DC -15 % / +10 % (provide external protection)
Rated control supply current I_s	typ. 75 mA
Power consumption at U_s	typ. 1.8 W
Inrush current	< 4 A ($\Delta t = 3$ ms at U_s)
Filter time	20 ms (at A1 in the event of voltage dips at U_s)
Protective circuit	Serial protection against polarity reversal Suppressor diode

Digital inputs

Input name	Sensor circuit
	S10, S12, S13, S22
Description of the input	safety-related sensor inputs
	NPN (S10, S12, S13), PNP (S22)
Number of inputs	4
Input voltage range "1" signal	20.4 V DC ... 26.4 V DC
Inrush current	< 40 mA (typ. with U_s at S10)
	< 300 mA (typ. with U_s at S12, $\Delta t = 150$ ms)
	< 3 mA (Typically with U_s at S13)
	> -300 mA (Typically with U_s at S22, $\Delta t = 150$ ms)
Current consumption	40 mA (typ. with U_s at S10)
	45 mA (Typically with U_s at S12)
	3 mA (Typically with U_s at S13)
	-35 mA (Typically with U_s at S22, $\Delta t = 150$ ms)
Filter time	2 ms (At S10, S12, S13; test pulse width of low test pulses)
	1 ms (At S10, S12, S13; test pulse rate of low test pulses)
	No brightness test pulses / high test pulses permitted.
Max. permissible overall conductor resistance	50 Ω
Concurrence input 1/2	∞
Protective circuit/component	Suppressor diode
Input name	Start circuit
	Y1, S34, S35
Description of the input	non-safety-related
	NPN
Number of inputs	3

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Digital inputs

Input voltage range "1" signal	20.4 V DC ... 26.4 V DC
Inrush current	< 60 mA (Typically with U_s at Y1, $\Delta t = 150$ ms)
	< 270 mA (Typically with U_s at S34, $\Delta t = 15$ ms)
	< 80 mA (Typically with U_s at S35, $\Delta t = 25$ ms)
Current consumption	typ. 10 mA (Typically with U_s at Y1)
	typ. 34 μ A (Typically with U_s at S35)
Max. permissible overall conductor resistance	50 Ω
Protective circuit/component	Suppressor diode

Relay outputs: enabling current path

Output name	Enabling current path
	13/14, 23/24
Output description	safety-related N/O contacts
	2 NO contacts each in series, without delay, floating
Number of outputs	2 (undelayed)
Contact type	2 enabling current paths
Contact material	AgSnO ₂
Switching voltage	min. 10 V AC/DC
	max. 250 V AC/DC (Observe the load curve)
Limiting continuous current	6 A
Inrush current	min. 10 mA
	max. 6 A
Sq. Total current	72 A ² (observe derating)
Switching capacity	min. 100 mW
Switching frequency	max. 0.5 Hz
Mechanical service life	10x 10 ⁶ cycles
Switching capacity according to IEC 60947-5-1	5 A (24 V (DC13))
	5 A (250 V (AC15))
Output fuse	10 A gL/gG
	4 A gL/gG (for low-demand applications)

Alarm outputs

Designation	Y30
Output description	PNP
	non-safety-related
Number of outputs	1
Voltage	approx. 23.9 V DC ($U_s - 0.1$ V)
Current	max. 100 mA
Maximum inrush current	500 mA ($\Delta t = 1$ ms at U_s)
Protective circuit/component	Suppressor diode

Times

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Times

Typical pickup time at US	200 ms (when controlled via A1)
Typical response time at US	200 ms (automatic start)
	30 ms (manual, monitored start)
Typical release time at US	25 ms (when actuation is via the sensor circuit)
	60 ms (when controlled via A1)
Restart time	< 1 s (Boot time)
Recovery time	< 500 ms

General

Relay type	Electromechanical relay with forcibly guided contacts in accordance with EN 50205
Nominal operating mode	100% operating factor
Net weight	169.38 g
Mounting position	vertical or horizontal
Mounting type	DIN rail mounting
Assembly instructions	See derating curve
Degree of protection	IP20
Min. degree of protection of inst. location	IP54
Housing material	PBT
Housing color	yellow
Operating voltage display	1 x green LED
Status display	4 x green LEDs

Connection data

Connection method	Screw connection
pluggable	Yes
Conductor cross section solid min.	0.2 mm ²
Conductor cross section solid max.	2.5 mm ²
Conductor cross section flexible min.	0.2 mm ²
Conductor cross section flexible max.	2.5 mm ²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	12
Stripping length	7 mm
Screw thread	M3
Torque	0.5 Nm ... 0.6 Nm

Safety-related characteristic data

Stop category	0
Designation	IEC 61508 - High demand
Safety Integrity Level (SIL)	3
Designation	IEC 61508 - Low demand
Safety Integrity Level (SIL)	3
Designation	EN ISO 13849

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Safety-related characteristic data

Performance level (PL)	e
Category	4 (5 A DC13; 5 A AC15; 8760 switching cycles/year)
Designation	EN 62061
Safety Integrity Level Claim Limit (SIL CL)	3

Standards and Regulations

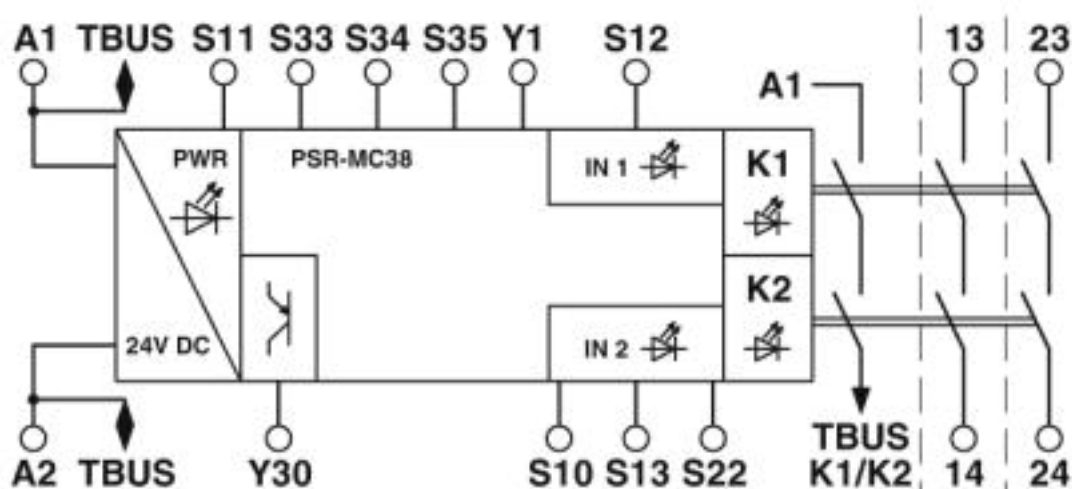
Designation	Air clearances and creepage distances between the power circuits
Standards/regulations	DIN EN 50178
Rated insulation voltage	250 V
	250 V
Rated surge voltage/insulation	Safe isolation, reinforced insulation 6 kV between input circuit and enabling current path (13/14) and enabling current path (23/24) Basic insulation 4 kV between all current paths and housing
Degree of pollution	2
Overvoltage category	III
Shock	15g
Vibration (operation)	10 Hz ... 150 Hz, 2g
Conformance	CE-compliant

Environmental Product Compliance

REACH SVHC	Lead 7439-92-1
China RoHS	Environmentally Friendly Use Period = 50 years
	For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration"

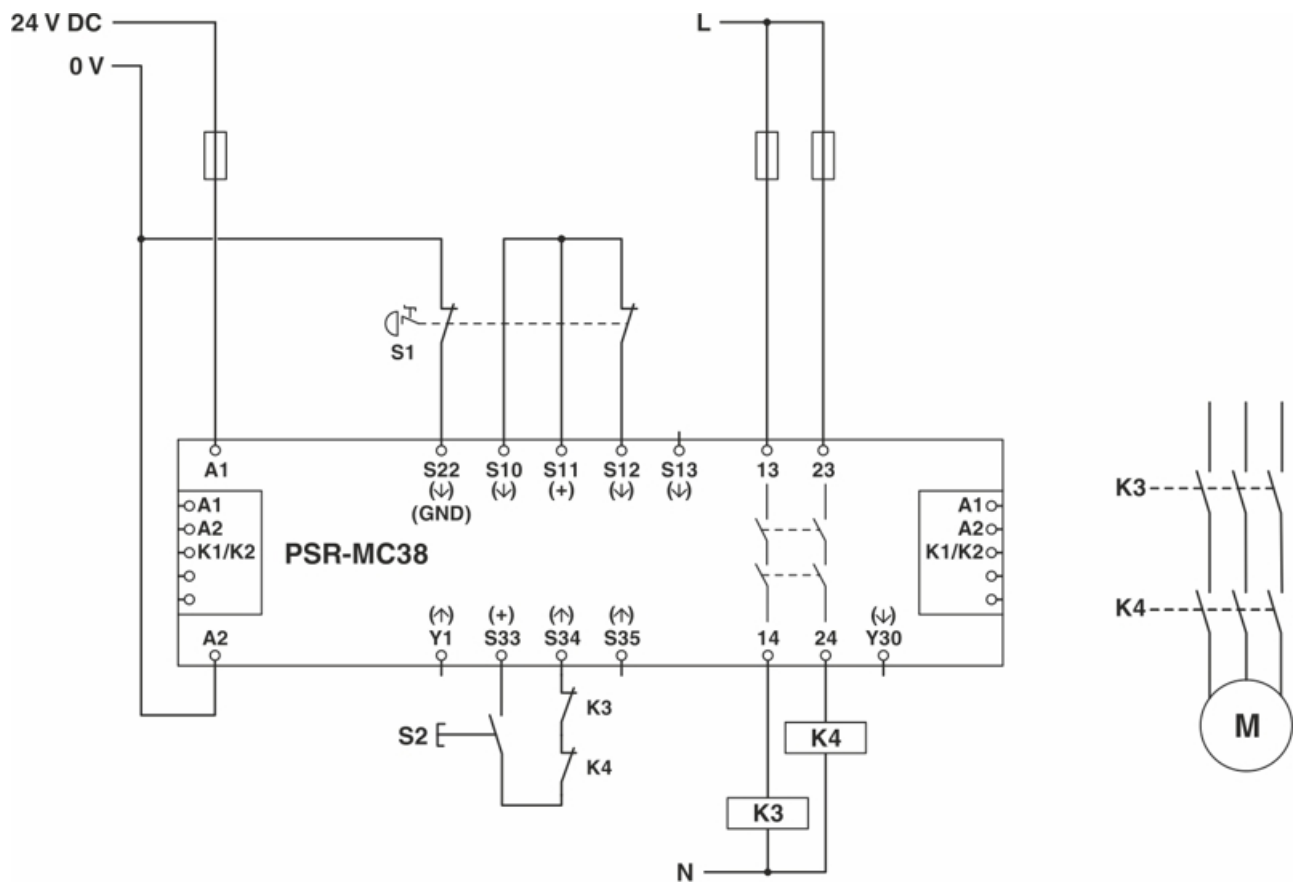
Drawings

Block diagram



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Circuit diagram



Classifications

eCl@ss

eCl@ss 8.0

27371819

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eCl@ss

eCl@ss 9.0	27371819
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ETIM

ETIM 5.0	EC001449
ETIM 6.0	EC001449
ETIM 7.0	EC001449

Approvals

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UL Listed / cUL Listed / cULus Listed

Ex Approvals

Approval details

UL Listed		http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm	FILE E 140324
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cUL Listed		http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm	FILE E 140324
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cULus Listed			
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Accessories

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DIN rail connector

DIN rail bus connectors - PSR-TBUS - 2890425



DIN rail connector for safety switching devices, for supplying/controlling/monitoring (depending on the module)

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DIN rail bus connectors - ME 17,5 TBUS 1,5/ 5-ST-3,81 GN - 2709561



DIN rail connector for DIN rail mounting. Universal for TBUS housing. Gold-plated contacts, 5-pos.

DIN rail bus connectors - ELR-TBUS-22,5-P - 2203861



Special DIN rail connector only suitable for ELR H...-P and EM-...-P.

Hybrid motor starter

Hybrid motor starter - ELR H5-IES-PT- 24DC/500AC-3-P - 2909556



Hybrid motor starter as an alternative to a conventional reversing contactor. Reverses 3~ AC motors up to 3 A, offers motor protection, ATEX, and emergency stop up to SIL 3. Possible group shut-down, supply, and relay extension via DIN rail connector.

Hybrid motor starter - ELR H5-IES-PT- 24DC/500AC-9-P - 2909554



Hybrid motor starter as an alternative to a conventional reversing contactor. Reverses 3~ AC motors up to 9 A, offers motor protection, ATEX, and emergency stop up to SIL 3. Possible group shut-down, supply, and relay extension via DIN rail connector.

Hybrid motor starter - ELR H5-IS-SC- 24DC/500AC-3-P - 2908699



Hybrid motor starter as an alternative to a conventional reversing contactor. Reverses 3~ AC motors up to 3 A, offers motor protection and emergency stop up to SIL 3/PL e. Possible group shut-down, supply, and relay extension via DIN rail connector.

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Accessories

Hybrid motor starter - ELR H5-IS-SC- 24DC/500AC-9-P - 2908697



Hybrid motor starter as an alternative to a conventional reversing contactor. Reverses 3~ AC motors up to 9 A, offers motor protection and EMERGENCY STOP up to SIL 3 / PL e. Possible group shut-down, supply, and relay extension via DIN rail connector.

Hybrid motor starter - ELR H5-IS-PT- 24DC/500AC-3-P - 2909569



Hybrid motor starter as an alternative to a conventional reversing contactor. Reverses 3~ AC motors up to 3 A, offers motor protection and emergency stop up to SIL 3/PL e. Possible group shut-down, supply, and relay extension via DIN rail connector.

Hybrid motor starter - ELR H5-IS-PT- 24DC/500AC-9-P - 2909567



Hybrid motor starter as an alternative to a conventional reversing contactor. Reverses 3~ AC motors up to 9 A, offers motor protection and emergency stop up to SIL 3/PL e. Possible group shut-down, supply, and relay extension via DIN rail connector.

Hybrid motor starter - ELR H3-IS-SC- 24DC/500AC-3-P - 2908700



Hybrid motor starter as an alternative to a conventional protective circuit. Starts 3~ AC motors up to 3 A, offers motor protection and emergency stop up to SIL 3/PL e. Possible group shut-down, supply, and relay extension via DIN rail connector.

Hybrid motor starter - ELR H3-IS-SC- 24DC/500AC-9-P - 2908698



Hybrid motor starter as an alternative to a conventional protective circuit. Starts 3~ AC motors up to 9 A, offers motor protection and emergency stop up to SIL 3/PL e. Possible group shut-down, supply, and relay extension via DIN rail connector.

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Accessories

Hybrid motor starter - ELR H3-IS-PT- 24DC/500AC-3-P - 2909570



Hybrid motor starter as an alternative to a conventional protective circuit. Starts 3~ AC motors up to 3 A, offers motor protection and emergency stop up to SIL 3/PL e. Possible group shut-down, supply, and relay extension via DIN rail connector.

Hybrid motor starter - ELR H3-IS-PT- 24DC/500AC-9-P - 2909568



Hybrid motor starter as an alternative to a conventional protective circuit. Starts 3~ AC motors up to 9 A, offers motor protection and emergency stop up to SIL 3/PL e. Possible group shut-down, supply, and relay extension via DIN rail connector.

Power supply

Power supply unit - MINI-SYS-PS-100-240AC/24DC/1.5 - 2866983



Primary-switched MINI POWER supply for DIN rail mounting, input: 1-phase, output: 24 V DC/1.5 A