Safety relays - PSR-MC40-3NO-1DO-24DC-SC - 2700569

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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, 3 enabling current paths, U_S = 24 V DC, plug-in screw terminal block

Your advantages

- Up to Cat.4/PL e according to ISO 13849-1, SILCL 3 according to IEC 62061
- Low housing width of just 12.5 mm
- Two-channel control
- 3 enabling current paths, 1 digital signal output
- Manually monitored and automatic activation in a single device

Key Commercial Data

Packing unit	1 pc
GTIN	4 046356 912570
GTIN	4046356912570

Technical data

Note

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

Dimensions

Width	12.5 mm
Height	112.2 mm
Depth	114.5 mm

Ambient conditions

Ambient temperature (operation)	-40 °C ... 55 °C (observe derating)
Ambient temperature (storage/transport)	-40 °C ... 85 °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)

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Ambient conditions

Maximum altitude	≤ 2000 m (Above sea level)

Power supply

Designation	A1/A2
Rated control circuit supply voltage U_S	24 V DC -15 % / +10 %
	20.4 V DC ... 26.4 V DC
Rated control supply current I_S	typ. 80 mA
Power consumption at U_S	typ. 1.92 W
Inrush current	5 A (Δt = 200 µs at U_s)
Filter time	1 ms (at A1 in the event of voltage dips at U_s)
Protective circuit	Surge protection Suppressor diode
	Protection against polarity reversal for rated control circuit supply voltage

Digital inputs

Input name	Sensor circuit
	S12, S22
Description of the input	safety-related sensor inputs
Input voltage range "0" signal	0 V DC ... 5 V DC (for safe Off; at S12 and S22)
Input current range "0" signal	0 mA ... 2 mA (for safe Off; at S12 and S22)
Inrush current	< 20 mA (with U_s/I_x to S12)
	< 5 mA (with U_s/I_x to S22)
Current consumption	< 5 mA (with U_s/I_x to S12)
	< 5 mA (with U_s/I_x to S22)
Filter time	max. 1.5 ms (at S12, S22; test pulse width)
	min. 7.5 ms (at S12, S22; test pulse rate)
	Test pulse rate = 5 x Test pulse width
Max. permissible overall conductor resistance	150 Ω
Input name	Start circuit
	S34
Description of the input	non-safety-related
Number of inputs	1
Input voltage range "1" signal	20.4 V DC ... 26.4 V DC
Inrush current	typ. 200 mA
Current consumption	< 10 mA ()
	> -5 mA ()
Max. permissible overall conductor resistance	150 Ω
Protective circuit/component	Suppressor diode

Relay outputs: enabling current path

Output name	Enabling current paths
	13/14, 23/24, 33/34
Output description	safety-related N/O contacts

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Relay outputs: enabling current path

Number of outputs	3 (undelayed)
Contact type	3 enabling current paths
Contact material	$AgSnO_2$
Switching voltage	min. 12 V AC/DC
	max. 250 V AC/DC (Observe the load curve)
Limiting continuous current	6 A (observe derating)
Inrush current	min. 3 mA
	max. 6 A
Sq. Total current	48 A^2 (observe derating)
Switching capacity	min. 60 mW
Switching frequency	0.5 Hz
Mechanical service life	10x 10^6 cycles
Output fuse	6 A gL/gG (N/O contact)
	4 A gL/gG (for low-demand applications)

Alarm outputs

Designation	M1
Output description	non-safety-related
Number of outputs	1 (digital, PNP)
Voltage	22 V DC (U_s - 2 V)
Current	max. 100 mA
Maximum inrush current	500 mA (Δt = 1 ms at U_s)
Short-circuit protection	no

Times

Typical pickup time at US	< 250 ms (when controlled via A1)
Typical response time at US	< 175 ms (automatic start)
	< 175 ms (manual, monitored start)
Typical release time at US	< 20 ms (when controlled via A1 or S12 and S22.)
Recovery time	< 500 ms

General

Relay type	Electromechanical relay with force-guided contacts in accordance with IEC/EN 61810-3
Nominal operating mode	100% operating factor
Net weight	172.9 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

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General

Housing color	yellow
Operating voltage display	1 x green LED
Status display	3 x green LED

Connection data

Connection method	Screw connection
pluggable	Yes
Conductor cross section solid	0.2 mm² ... 2.5 mm²
Conductor cross section flexible	0.2 mm² ... 2.5 mm²
Conductor cross-section AWG	24 ... 12
Stripping length	7 mm
Screw thread	M3

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
Performance level (PL)	e (4 A DC13; 5 A AC15; 8760 switching cycles/year)
Category	4
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 AC
	250 V AC
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) and enabling current path (33/34) 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

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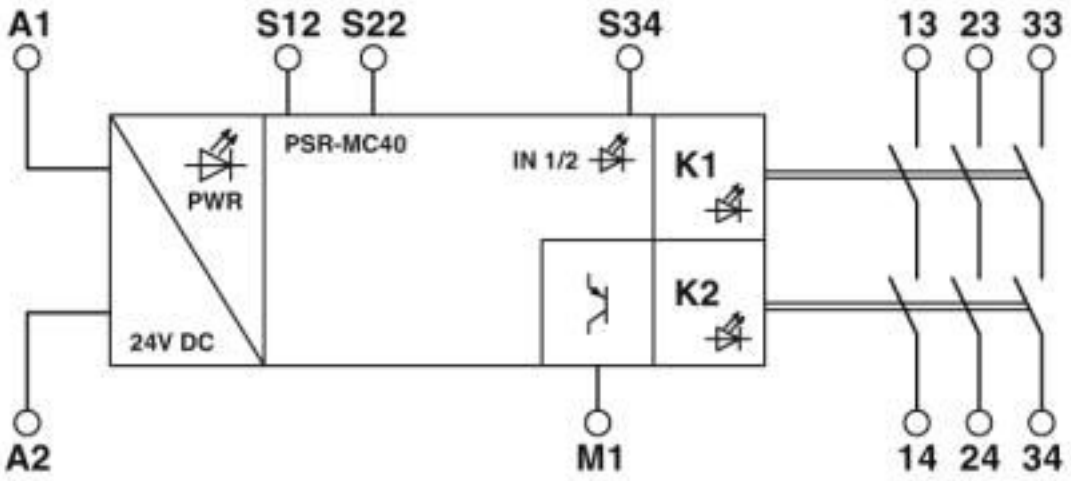
Technical data

Environmental Product Compliance

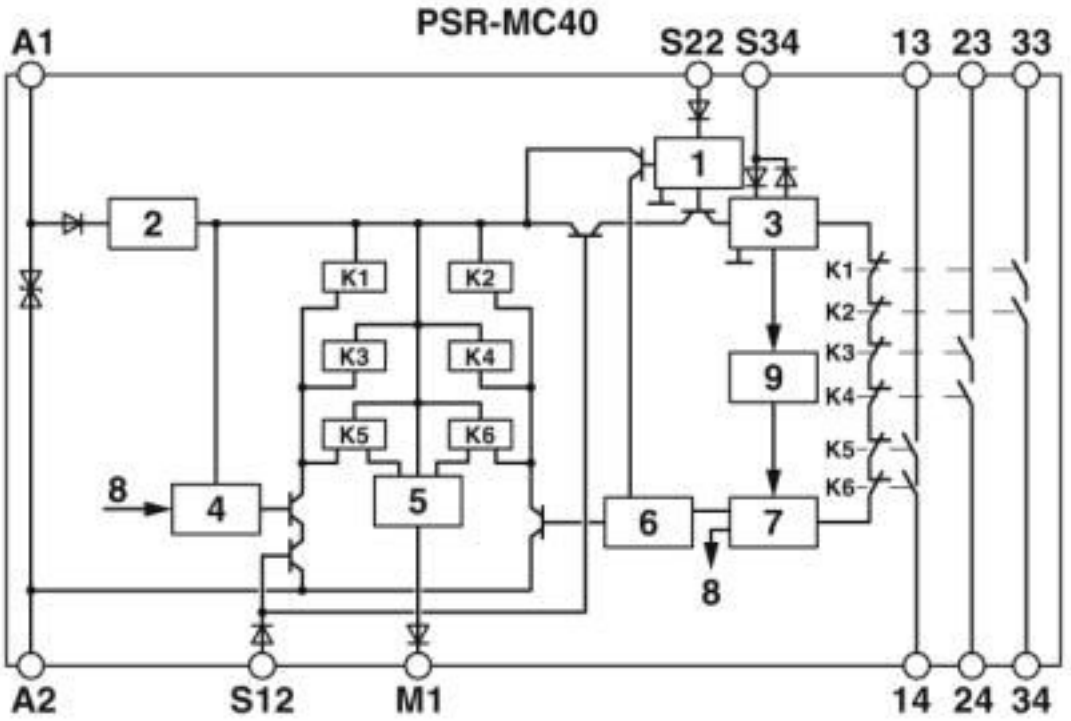
	For details about hazardous substances go to tab “Downloads”, Category “Manufacturer's declaration”

Drawings

Block diagram



Block diagram



Key:

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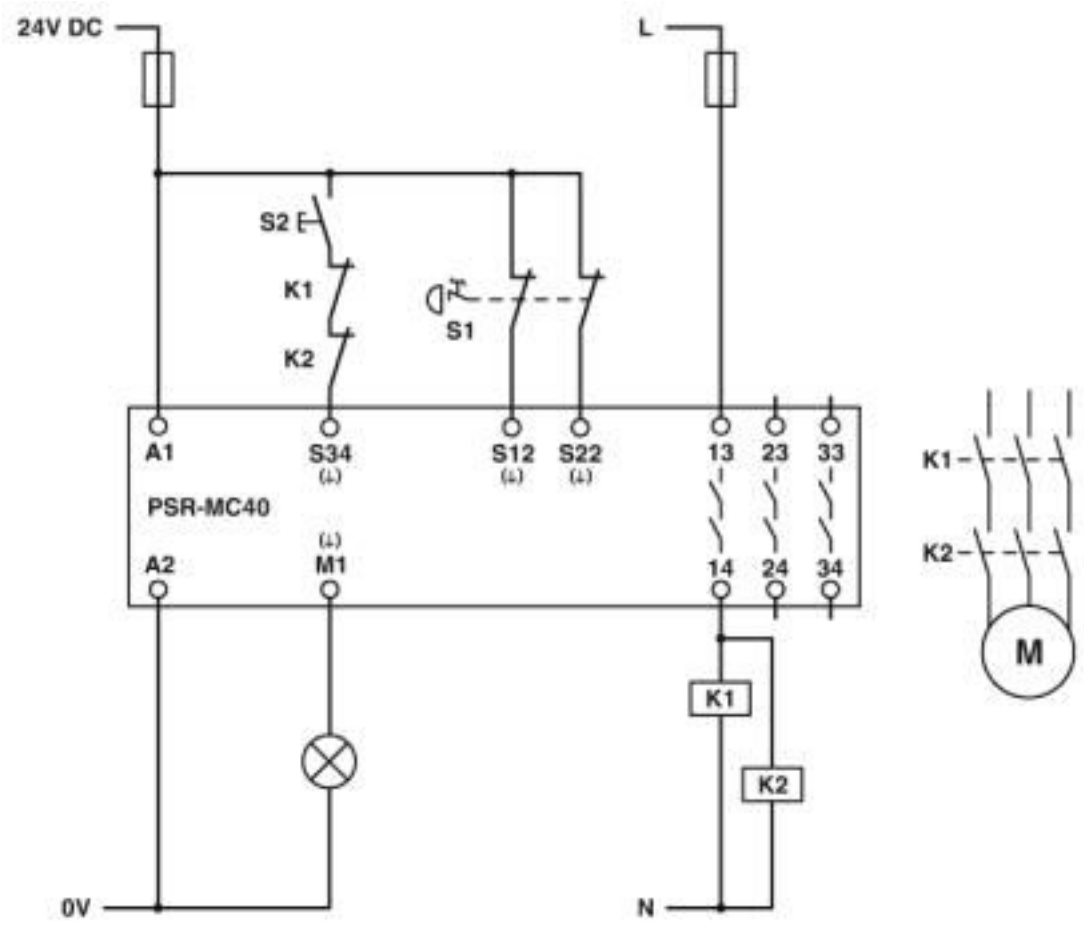
1 = Input circuit
2 = Voltage limitation
3 = Start circuit
4 = Control circuit channel 1
5 = Control circuit signal output
6 = Control circuit channel 2
7 = Start channel 1 and 2
8 = Channel 1
9 = Diagnostics
K1, K2 ... K6 = Force-guided elementary relays

Circuit diagram



Classifications

eCl@ss

eCl@ss 10.0.1	27371819
eCl@ss 4.0	40020600
eCl@ss 4.1	40020600
eCl@ss 5.0	27371900
eCl@ss 5.1	27371900
eCl@ss 6.0	27371800
eCl@ss 7.0	27371819

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Classifications

eCl@ss

eCl@ss 8.0	27371819
eCl@ss 9.0	27371819

ETIM

ETIM 5.0	EC001449
ETIM 6.0	EC001449
ETIM 7.0	EC001449

UNSPSC

UNSPSC 13.2	39121501
UNSPSC 18.0	39122205
UNSPSC 19.0	39122205
UNSPSC 20.0	39122205
UNSPSC 21.0	39122205

Approvals

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UL Listed / cUL Listed / Functional Safety / EAC / Functional Safety / cULus Listed

Ex Approvals

Approval details

UL Listed		http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm	FILE E 140324
cUL Listed		http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm	FILE E 140324
Functional Safety			44-205-13755201
EAC			RU C-DE.A*30.B.01082

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Approvals

Functional Safety		44-780-13755201

cULus Listed	

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