PSR-UNI-L-2X2NO-2DO-24DC-SC - Safety relays

1487647

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Configurable safety relay, multi functions, up to SIL 3, Cat. 4, PL e, 2 sensor circuits, 1/2-channel operation, automatic/manual, monitored start, 2 x 2 enabling current paths, 2 signal outputs, U_S = 24 V DC, plug-in screw terminal block

Product description

The PSR-UNI-L multifunctional safety relay is a flexible safety solution for industrial applications. It enables the monitoring of various items of safety equipment, e.g., emergency stop, safety doors, and light grids. Thanks to its configurability, it can be adapted to specific requirements.

Your advantages

- Up to Cat. 4/PL e in accordance with EN ISO 13849-1, SIL 3 in accordance with EN IEC 62061, SIL 3 in accordance with IEC 61508
- 2 independent circuits
- Locally configurable
- Configuration help via clipx ENGINEER dp
- 1- and 2-channel control
- Manually monitored and automatic activation in a single device
- Low housing width of only 22.5mm

Commercial data

Item number	1487647
Packing unit	1 pc
Minimum order quantity	1 pc
Product key	DNA191
GTIN	4063151930585
Weight per piece (including packing)	237.15 g
Weight per piece (excluding packing)	214.83 g
Country of origin	DE

Technical data

Product properties

Product type	Safety relays
Product family	PSRuni
Application	Emergency stop
	Safety door
	Light grid
	Magnetic switch
	Two-hand control
	Safety shut-off mats
Control	1 and 2 channel
Relay type	Electromechanical relay with force-guided contacts in accordance with IEC/EN 61810-3

Insulation characteristics

Overvoltage category	III (Between logic and enabling current paths)
Degree of pollution	2

Times

Typical response time	< 100 ms (Automatic/manual start)
	< 500 ms (Safety shut-off mat operation)
Typ. starting time with U_s	1 s (when controlled via A1; applicative control via A1/A2 is not permitted)
Typical release time	< 25 ms (on demand via the sensor circuit)
	< 85 ms (Safety shut-off mat operation)
	< 25 ms (When requested via A1; applicative deactivation via A1/A2 is not permitted)
Restart time	< 1 s (Boot time)
Recovery time	500 ms (following demand of the safety function)
	> 100 ms (Availability time after activating the sensor circuit during manual start)
	> 500 ms (Availability time after activating the sensor circuits during manual start in safety shut-off mat operation)
Start pulse length	min. 500 ms (manual start)

Electrical properties

Maximum power dissipation for nominal condition	9.15 W (At U_S = 30 V, I_L^2 = 144 A², configured functions: mode 1 = 2, mode 2 = 2)
Nominal operating mode	100% operating factor
Rated insulation voltage	250 V
Rated surge voltage/insulation	See data sheet, section “Insulation coordination”.

Supply

Designation	A1/A2
Rated control circuit supply voltage U_S	24 V DC -20 % / +25 %

Rated control supply current I_S	typ. 65 mA (When sensor circuit and start circuit are controlled internally)
	typ. 45 mA (When sensor circuit and start circuit are controlled externally)
Power consumption at U_S	typ. 1.32 W
Inrush current	typ. 35 A (Δt = 25 µs at U_s)
Filter time	1 ms (logic)
Protective circuit	Serial protection against polarity reversal; Suppressor diode

Input data

Digital: Logic (I1.1, I1.2, I2.1, I2.2)

Description of the input	safety-related
	IEC 61131-2 type 3
Number of inputs	4
Input voltage range "0" signal	0 V DC ... 5 V DC
Input voltage range "1" signal	11 V DC ... 30 V DC
Input current range "0" signal	0 mA ... 1.5 mA
Inrush current	< 45 mA (typ. with U_S, Δt <50 µs)
Filter time	max. 3 ms (Test pulse width of low test pulses)
	min. 50 ms (Test pulse rate for low test pulse)
	< 1 ms (High test pulses at >100 ms test pulse rate possible)
Concurrence	∞ (2-channel wiring), 5 s (non-equivalent wiring), 0.5 s (two-hand control)
Limit frequency	min. 0 Hz
	max. 0.1 Hz
Max. permissible overall conductor resistance	150 Ω
Protective circuit	Varistor
Current consumption	3.5 mA (typ. with U_S)

Digital: Start circuit (S34, S36)

Description of the input	non-safety-related
	IEC 61131-2 type 3
Number of inputs	2
Input voltage range "0" signal	0 V DC ... 5 V DC
Input voltage range "1" signal	11 V DC ... 30 V DC
Input current range "0" signal	0 mA ... 1.5 mA
Inrush current	< 45 mA (typ. with U_S, Δt <50 µs)
Filter time	max. 3 ms (Test pulse width of low test pulses)
	min. 50 ms (Test pulse rate for low test pulse)
Limit frequency	min. 0 Hz
	max. 0.1 Hz
Max. permissible overall conductor resistance	150 Ω
Protective circuit	Varistor
Current consumption	< 3.5 mA (typ. with U_S)

Output data

Relay: Enabling current paths (13/14, 23/24, 33/34, 43/44)

Output description	safety-related
	2 NO contacts each in series, without delay, floating
Number of outputs	4 (undelayed)
Contact switching type	4 enabling current paths
Contact material	AgCuNi +0.2 µm ... 0.4 µm Au / $AgSnO_2$ +0.2 µm Au
Switching voltage	min. 10 V AC/DC
	max. 250 V AC/DC
Switching capacity	min. 60 mW
Inrush current	min. 3 mA
	max. 6 A
Limiting continuous current	6 A
Sq. Total current	144 A^2 (K1 = 72 A², K2 = 72 A², observe derating)
Switching frequency	max. 0.1 Hz
Mechanical service life	10x 10^6 cycles
Output fuse	6 A gL/gG
	4 A gL/gG (for low-demand applications)

Signal: M1, M2

Output description	non-safety-related
Number of outputs	2
Voltage	typ. (U_S - 2,5 V)
Current	max. 100 mA
Maximum inrush current	500 mA (Δt = 10 ms at U_s)
Ohmic load	min. 192 Ω (max.100 mA)
Switching frequency	max. 0.1 Hz
Protective circuit	Reverse polarity protection Suppressor diode
Short-circuit protection	Yes
Discharging circuit	no

Clock: T1, T2

Output description	non-safety-related
Number of outputs	2
Voltage	typ. (U_S - 2,5 V)
Current	max. 100 mA
Maximum inrush current	500 mA (Δt = 10 ms at U_s)
Protective circuit	Reverse polarity protection Suppressor diode
Short-circuit protection	Yes
Cable length	See inputs
Discharging circuit	no

Connection data

Connection technology

pluggable	yes

Conductor connection

Connection method	Screw connection
Conductor cross-section rigid	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
Tightening torque	0.5 Nm ... 0.6 Nm

Signaling

Status display	4 x LED (green, yellow, red)
Operating voltage display	1 x LED (green, yellow, red)
Error indication	1 x LED (red)

Dimensions

Width	22.5 mm
Height	112.2 mm
Depth	114.5 mm

Material specifications

Color	yellow (RAL 1018)
Housing material	Frianyl B63 V0 GV30

Characteristics

Safety data

Stop category	0

Safety data: EN ISO 13849

Category	4 (5 A DC13; 3 A AC15; 8760 cycles/year)
Performance level (PL)	e

Safety data: IEC 61508 - High demand

Safety Integrity Level (SIL)	3

Safety data: IEC 61508 - Low demand

Safety Integrity Level (SIL)	3

Safety data: EN IEC 62061

Safety Integrity Level (SIL)	3

Environmental and real-life conditions

Ambient conditions

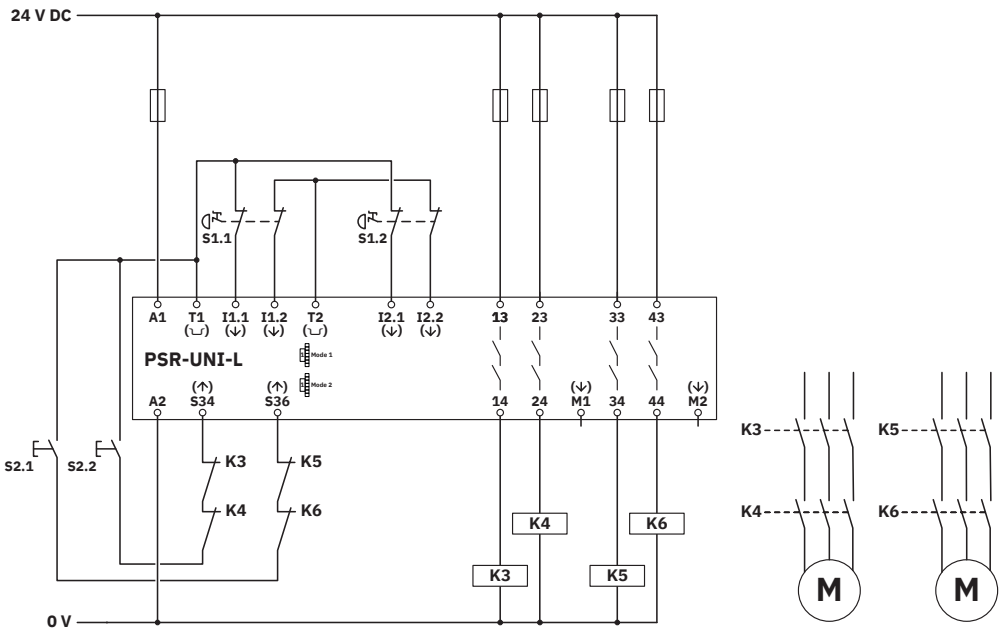
Degree of protection	IP20
Min. degree of protection of inst. location	IP54
Ambient temperature (operation)	-25 °C ... 60 °C (observe derating)
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Maximum altitude	≤ 2000 m (Above sea level)
Max. permissible humidity (storage/transport)	75 % (on average, 85% infrequently, non-condensing)
Max. permissible relative humidity (operation)	75 % (on average, 85% infrequently, non-condensing)
Shock	15g
Vibration (operation)	10 Hz ... 150 Hz, 2g

Mounting

Mounting type	DIN rail mounting
Assembly note	See derating curve
Mounting position	vertical or horizontal

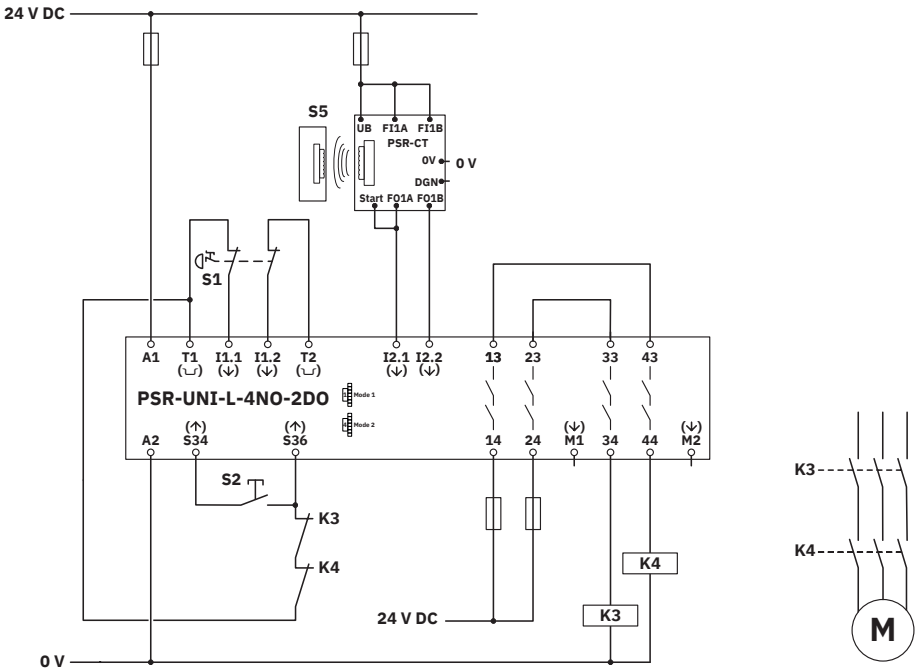
Drawings

Circuit diagram



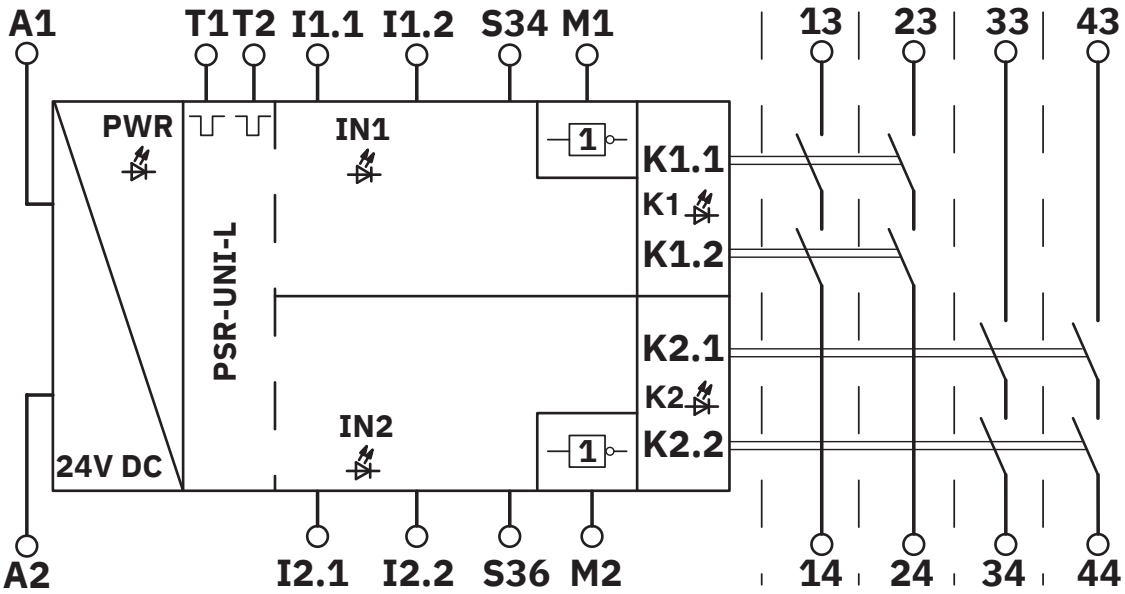
2-channel emergency stop monitoring

Circuit diagram



Emergency stop monitoring and transponder monitoring with common load

Block diagram



Block diagram

Approvals

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cULus Listed
Approval ID: E140324

Functional Safety
Approval ID: 01/205/6009.00/24

Classifications

ECLASS

ECLASS-13.0	27371819
ECLASS-15.0	27371819
ECLASS-15.0 ASSET	27250101

ETIM

ETIM 9.0	EC001449

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