

## Safety relays - PSR-PIP-24DC/MXF1/4X1/2X2/B - 2903253

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Multifunctional safety relay for emergency stop and safety doors up to SIL 3, Cat. 4, PL e, automatically or manually monitored activation, 4 N/O contacts, 3 safety functions, 2 shutdown levels, plug-in push-in terminal block

### Your advantages

- ✓ Up to Cat.4/PL e according to EN ISO 13849-1, SILCL 3 according to EN 62061, SIL 3 according to IEC 61508
- ✓ 3 safety functions in one device
- ✓ Low housing width of only 22.5mm
- ✓ No software configuration required
- ✓ Also available with push-in connection



### Key Commercial Data

Packing unit	1 pc
GTIN	
GTIN	4046356730181

### 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	106.4 mm
Depth	114.5 mm

#### Ambient conditions

Ambient temperature (operation)	-20 °C ... 45 °C (see derating curve)
Ambient temperature (storage/transport)	-25 °C ... 85 °C
Max. permissible relative humidity (operation)	75 % (on average, 85% infrequently, non-condensing)

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### Ambient conditions

Max. permissible humidity (storage/transport)	75 % (on average, 85% infrequently, non-condensing)
Maximum altitude	≤ 2000 m (Above sea level)

### Input data

Nominal input voltage $U_N$	24 V DC
Input voltage range in reference to $U_N$	0.85 ... 1.1
Typical input current at $U_N$	125 mA (with actuated relays)
	55 mA (Two-channel 24 V/0 V + max. 200 mA control (message outputs 32/62) with non-actuated relays)
Current consumption	typ. 5 mA ( $I_{max}/I_x$ inputs)
	20 mA (in electric torque)
Voltage at input/start and feedback circuit	24 V -15 %; +10 % (first channel: 24 V; second channel: 0 V)
Typical response time	175 ms (monitored/manual start)
	250 ms (automatic start)
Typ. starting time with $U_s$	250 ms (when controlled via A1)
Typical release time	25 ms (when controlled via S11/I1,I3,I5 and S21/I2,I4,I6)
	20 ms (when controlled via A1)
Concurrence input 1/2	∞
Recovery time	1 s (Availability time after activation of sensor circuit: 100ms)
Operating voltage display	1 x green LED
Status display	5 green LEDs
Protective circuit	Surge protection Suppressor diode
Maximum switching frequency	0.5 Hz
Max. permissible overall conductor resistance	100 Ω
Filter time	max. 1.5 ms (Test pulse duration; for all equivalent inputs)
	min. 7.5 ms (Test pulse rate; for all equivalent inputs)

### Output data

Contact type	4 enabling current paths
	2 semiconductor alarm outputs
Contact material	AgCuNi, +0.2 -0.4 μm Au
Maximum switching voltage	250 V AC/DC
Minimum switching voltage	10 V AC/DC
Limiting continuous current	6 A (N/O contact)
	max. 100 mA (Alarm output (24 V DC))
Maximum inrush current	6 A
Inrush current, minimum	10 mA
Sq. Total current	$72 A^2 (I_{TH}^2 = I_1^2 + I_2^2 + I_3^2 + I_4^2)$
Interrupting rating (ohmic load) max.	1500 VA (250 V AC, τ = 0 ms)
	66 W (220 V DC, τ = 0 ms)
	66 W (110 V DC, τ = 0 ms)
	100 W (48 V DC, τ = 0 ms)

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#### Output data

	144 W (24 V DC, $\tau = 0$ ms)
Maximum interrupting rating (inductive load)	48 W (24 V DC, $\tau = 40$ ms)
	43 W (48 V DC, $\tau = 40$ ms)
Switching capacity min.	0.1 W
Mechanical service life	10x 10 <sup>6</sup> cycles
Switching capacity (360/h cycles)	5 A (0,1 Hz; DC13; 24 V)
Output fuse	6 A gL/gG NEOZED (N/O contact)
	4 A gL/gG NEOZED (for low-demand applications)

#### General

Relay type	Electromechanical relay with forcibly guided contacts in accordance with EN 50205
Nominal operating mode	100% operating factor
Net weight	204.88 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 color	yellow

#### Connection data

Connection method	Push-in connection
pluggable	no
Conductor cross section solid min.	0.2 mm <sup>2</sup>
Conductor cross section solid max.	2.5 mm <sup>2</sup>
Conductor cross section flexible min.	0.2 mm <sup>2</sup>
Conductor cross section flexible max.	2.5 mm <sup>2</sup>
Conductor cross section AWG min.	24
Conductor cross section AWG max.	12
Stripping length	10 mm

#### Safety-related characteristic data

Stop category	0
Safety Integrity Level (SIL)	3
	3
Designation	EN ISO 13849
Performance level (PL)	e (5 A DC13; 3 A AC15; 8760 cycles/year)
Category	4
Safety Integrity Level Claim Limit (SIL CL)	3
Designation	EN 50156
Safety Integrity Level (SIL)	3

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## Technical data

### Standards and Regulations

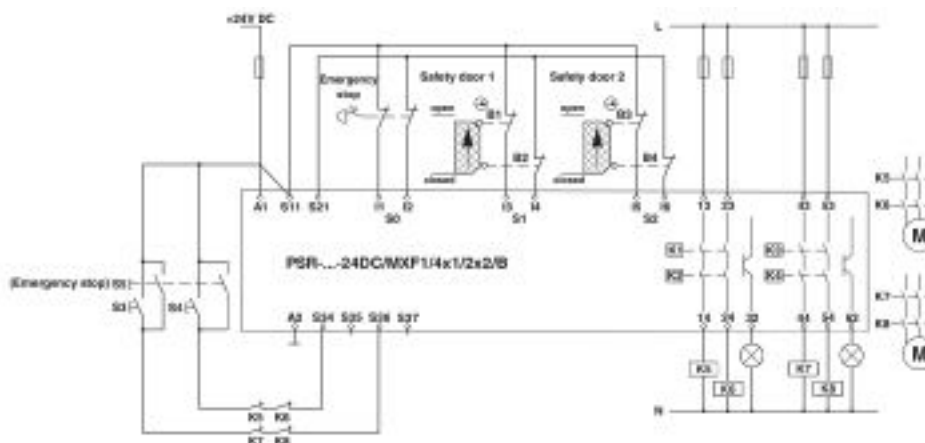
Designation	Air clearances and creepage distances between the power circuits
Standards/regulations	DIN EN 50178/VDE 0160
Rated insulation voltage	250 V AC
Rated surge voltage/insulation	4 kV/basic isolation (safe isolation, reinforced insulation and 6 kV between input circuit, enabling current paths and safety circuit 1 (13/14, 23/24) and safety circuit 2 (43/44, 53/54).)
Degree of pollution	2
Overvoltage category	III

### Environmental Product Compliance

REACH SVHC	Lead 7439-92-1
China RoHS	Environmentally friendly use period: unlimited = EFUP-e
	No hazardous substances above threshold values

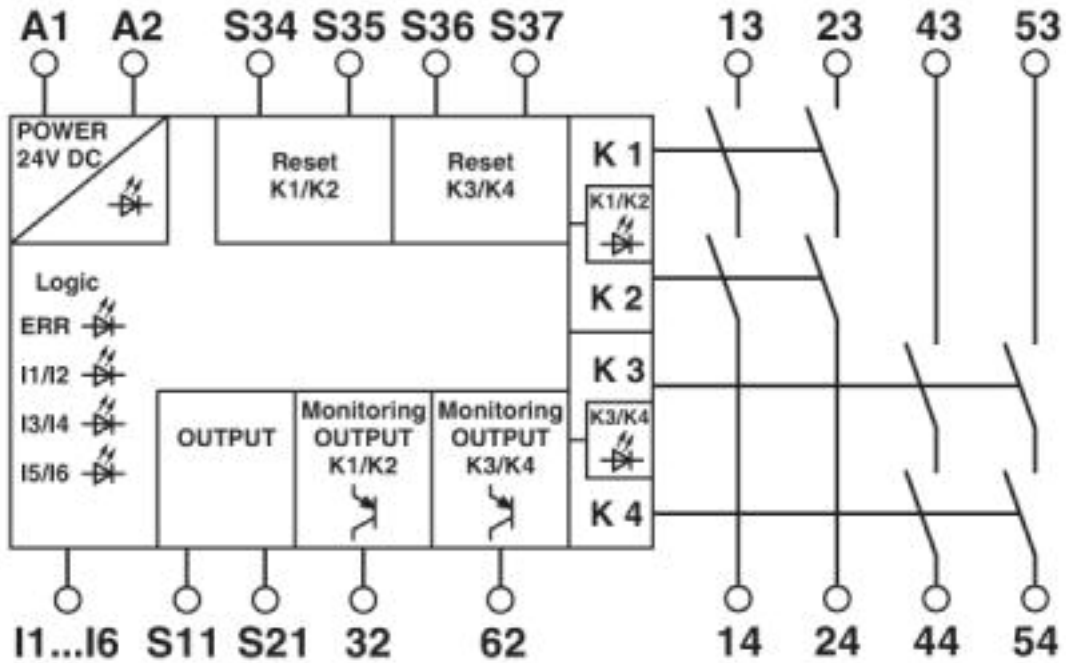
## Drawings

Application drawing

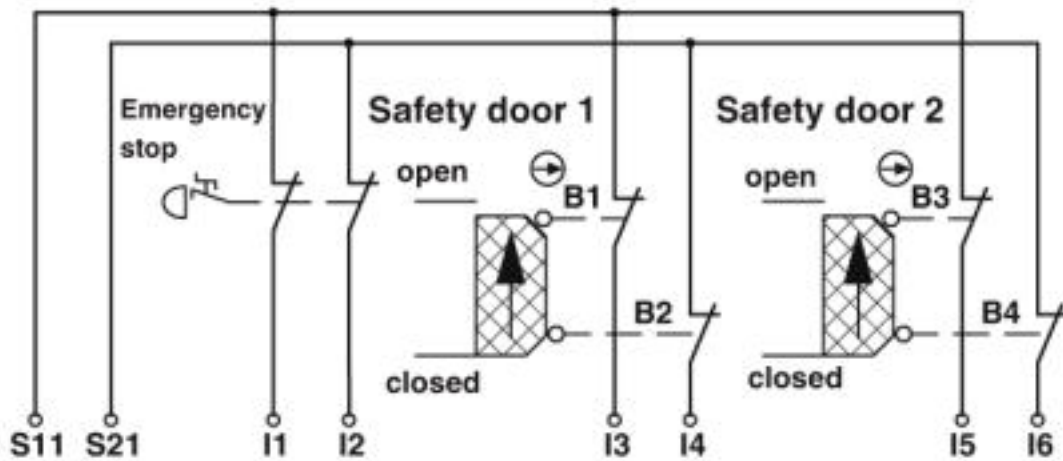


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Circuit diagram

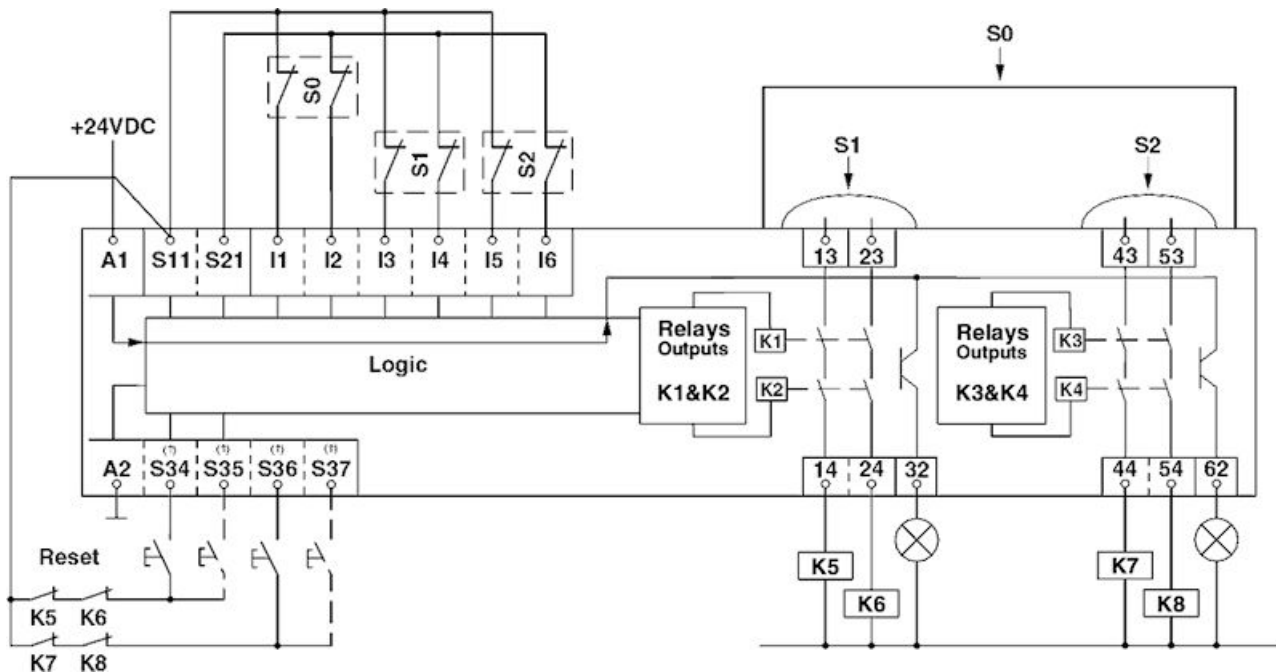


Circuit diagram



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Circuit diagram



## Approvals

Approvals

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Approvals

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

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Ex Approvals

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## Approval details

## Safety relays - PSR-PIP-24DC/MXF1/4X1/2X2/B - 2903253

### Approvals

UL Listed		<a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a>	FILE E 140324
cUL Listed		<a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a>	FILE E 140324
Functional Safety			01/205/5353.00/13
EAC			RU C- DE.A*30.B.01082
cULus Listed			

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