Safety relays - PSR-SCP- 24DC/FSP2/2X1/1X2 - 2986575

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Safe coupling relay for SIL 2 high and low-demand applications, couples digital output signals to the I/O, 2 enabling current paths, 1 alarm contact, module for safe state off applications, integrated test pulse filter, plug-in screw terminal blocks, width: 17.5 mm

Product Features

- Narrow 17.5 mm housing
- Up to SIL 2 according to EN 61508
- Forcibly guided contacts according to EN 50205
- Easy proof test according to IEC 61508 thanks to integrated signal contact
- Long service life thanks to filtering of controller test pulses
- Two enabling current paths
- Couples digital output signals from failsafe controllers to I/O devices (valves, etc.) for electrical isolation and power adaptation

Key commercial data

package_quantity	1
GTIN	4046356553322

Technical data

Note

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

Dimensions

Width	17.5 mm
Height	99 mm
Depth	114.5 mm

Ambient conditions

Ambient temperature (operation)	-20 °C ... 55 °C
Ambient temperature (storage/transport)	-40 °C ... 70 °C
Max. permissible humidity (storage/transport)	≤ 75 % (Condensation and icing are not permitted based on the average annual temperature)
Max. permissible humidity (storage/transport)	≤ 85 % (On an individual basis, condensation and icing are not permitted)

Input data

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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	55 mA
Typical inrush current	max. 100 mA
Typical response time	50 ms
Typical release time	50 ms
Recovery time	1 s

Output data

Contact type	2 undelayed enabling current paths
Contact type	1 undelayed confirmation current path
Contact material	AgCuNi, + 0.2 µm Au
Minimum switching voltage	15 V AC/DC
Maximum switching voltage	250 V AC/DC
Limiting continuous current	5 A (N/O contact)
Limiting continuous current	100 mA (N/C contact)
Inrush current, minimum	5 mA
Maximum inrush current	5 A
Sq. Total current	50 A^2 ($I_{TH}^2 = I_1^2 + I_2^2 + ... + I_N^2$)
Interrupting rating (ohmic load) max.	120 W (24 V DC, τ = 0 ms, N/C contact: 2.4 W)
Interrupting rating (ohmic load) max.	192 W (48 V DC, τ = 0 ms, N/C contact: 4.8 W)
Interrupting rating (ohmic load) max.	162 W (60 V DC, τ = 0 ms, N/C contact: 6 W)
Interrupting rating (ohmic load) max.	66 W (110 V DC, τ = 0 ms, N/C contact: 11 W)
Interrupting rating (ohmic load) max.	60 W (220 V DC, τ = 0 ms, N/C contact: 22 W)
Interrupting rating (ohmic load) max.	1250 VA (250 V AC, τ = 0 ms, N/C contact: 25 VA)
Maximum interrupting rating (inductive load)	72 W (24 V DC, τ = 40 ms, N/C contact: 2.4 W)
Maximum interrupting rating (inductive load)	43 W (48 V DC, τ = 40 ms, N/C contact: 4.8 W)
Maximum interrupting rating (inductive load)	41 W (60 V DC, τ = 40 ms, N/C contact: 6 W)
Maximum interrupting rating (inductive load)	35 W (110 V DC, τ = 40 ms, N/C contact: 11 W)
Maximum interrupting rating (inductive load)	48 W (220 V DC, τ = 40 ms, N/C contact: 22 W)
Switching capacity min.	75 mW
Output fuse	10 A gL/gG (N/O contact)
Output fuse	6 A gL/gG (N/C contact)

General

Relay type	Electromechanically forcibly guided, dust-proof relay.
Mechanical service life	Approx. 10^7 cycles
Mounting type	DIN rail mounting
Degree of protection	IP20
Min. degree of protection of inst. location	IP54
Mounting position	any
Stop category	0

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General

Designation	Air and creepage distances between the power circuits
Standards/regulations	DIN EN 50178/VDE 0160
Rated surge voltage / insulation	6 kV / Safe isolation, increased insulation
Rated insulation voltage	250 V
Pollution degree	2
Surge voltage category	III

Connection data

Conductor cross section solid min.	0.2 mm²
Conductor cross section solid max.	2.5 mm²
Conductor cross section stranded min.	0.2 mm²
Conductor cross section stranded max.	2.5 mm²
Conductor cross section AWG/kcmil min.	24
Conductor cross section AWG/kcmil max	12
Stripping length	7 mm
Screw thread	M3
Connection method	Screw connection

Safety-related characteristic data

Stop category	0
Designation	IEC 61508 - High demand
Equipment type	Type A
Safety Integrity Level (SIL)	2
Safe Failure Fraction (SFF)	99.61 %
$SFF_{Single-channel}$	99.61 %
MTBF	361 Years
λ_{SU}	55.7 FIT
λ_{SD}	99 FIT
λ_{DU}	1 FIT
λ_{DD}	99 FIT
Mean time to a hazardous failure ($MTTF_d$)	114155.3 Years
Probability of a hazardous failure per hour (PFH_D)	1.00×10^{-9}
Diagnostic coverage (DC)	99 %
Proof test interval	240 Months
Duration of use	240 Months
Designation	IEC 61508 - Low demand
Equipment type	Type A
Safety Integrity Level (SIL)	2
Safe Failure Fraction (SFF)	81.97 %
$SFF_{Single-channel}$	81.97 %
MTBF	185 Years
λ_{SU}	455 FIT

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Safety-related characteristic data

λ_{SD}	0 FIT
λ_{DU}	100 FIT
λ_{DD}	0 FIT
Mean time to a hazardous failure ($MTTF_d$)	1141.55 Years
Probability of a hazardous failure on demand (PFD_{AVG})	9.86×10^{-4}
Probability of a hazardous failure on demand (PFD_{AVG})	4.38×10^{-4} (For T1 = 1 year)
Diagnostic coverage (DC)	0 %
Proof test interval	27 Months
Duration of use	240 Months
Designation	EN ISO 13849
Performance level (PL)	d
Category	2
Mean time to a hazardous failure ($MTTF_d$)	1141.55 Years
CCF	Passed
T_{10d}	114.08 Years
Duration of use	240 Months
Designation	EN 62061
Safety Integrity Level Claim Limit (SIL CL)	2

classifications

eCl@ss

eCl@ss 4.0	27371102
eCl@ss 4.1	27371102
eCl@ss 5.0	27371901
eCl@ss 5.1	27371901
eCl@ss 6.0	27371819
eCl@ss 7.0	27371819
eCl@ss 8.0	27371819

ETIM

ETIM 2.0	EC001449
ETIM 3.0	EC001449
ETIM 4.0	EC001449
ETIM 5.0	EC001449

UNSPSC

UNSPSC 6.01	30211901
UNSPSC 7.0901	39121501
UNSPSC 11	39121501
UNSPSC 12.01	39121501
UNSPSC 13.2	39121501

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approvals

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

Approval details

UL Listed

cUL Listed

Functional Safety

cULus Listed

Drawings

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Connection diagram

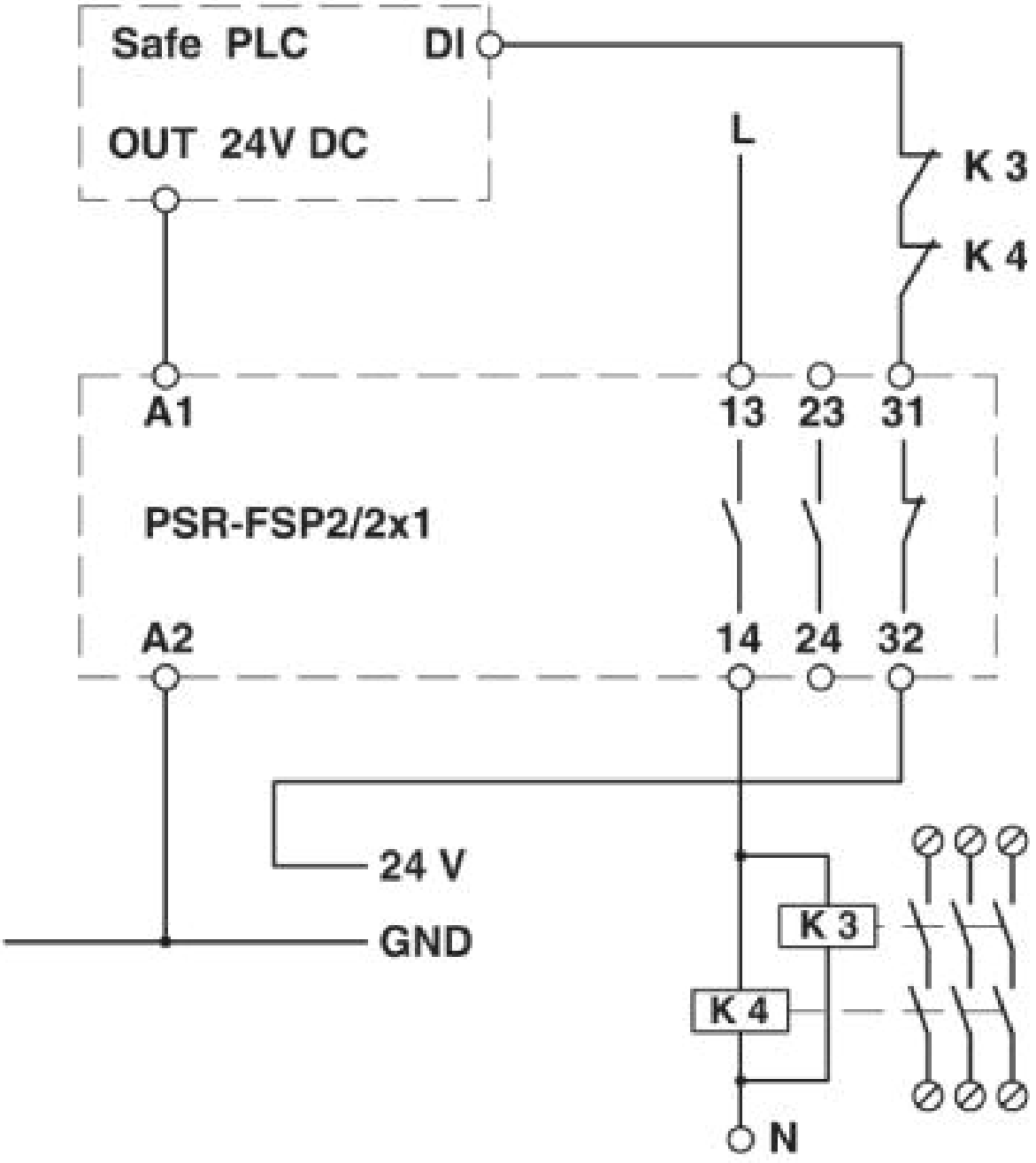

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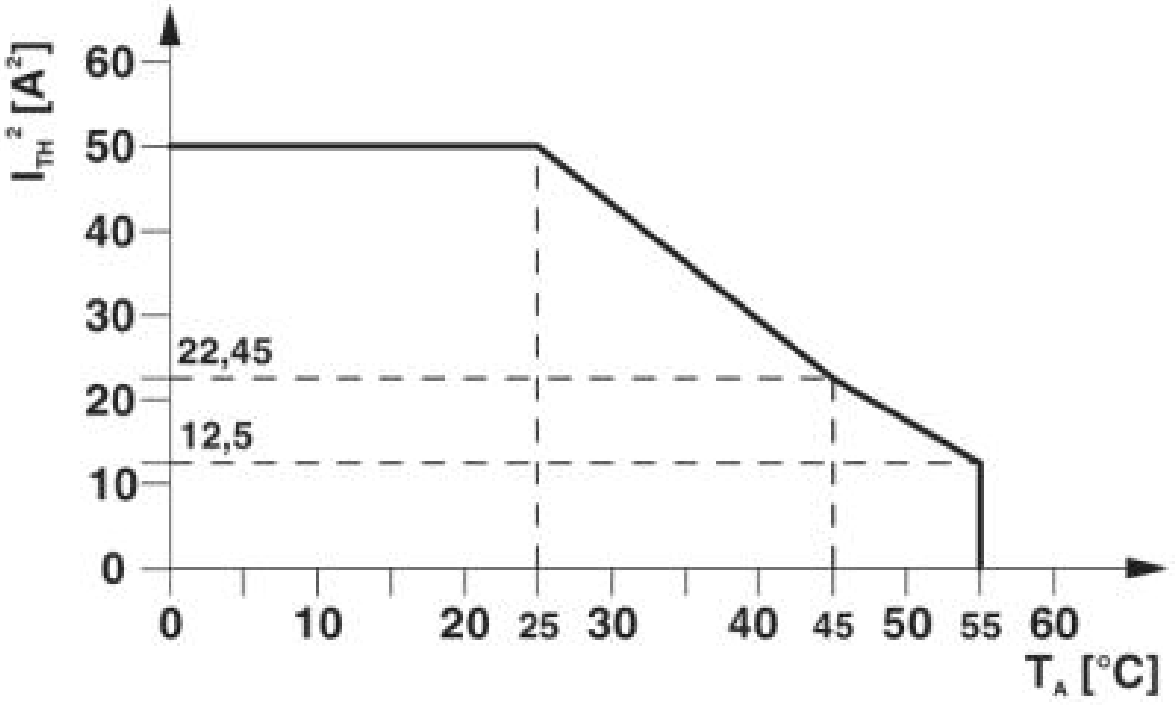
Diagram



Derating curve

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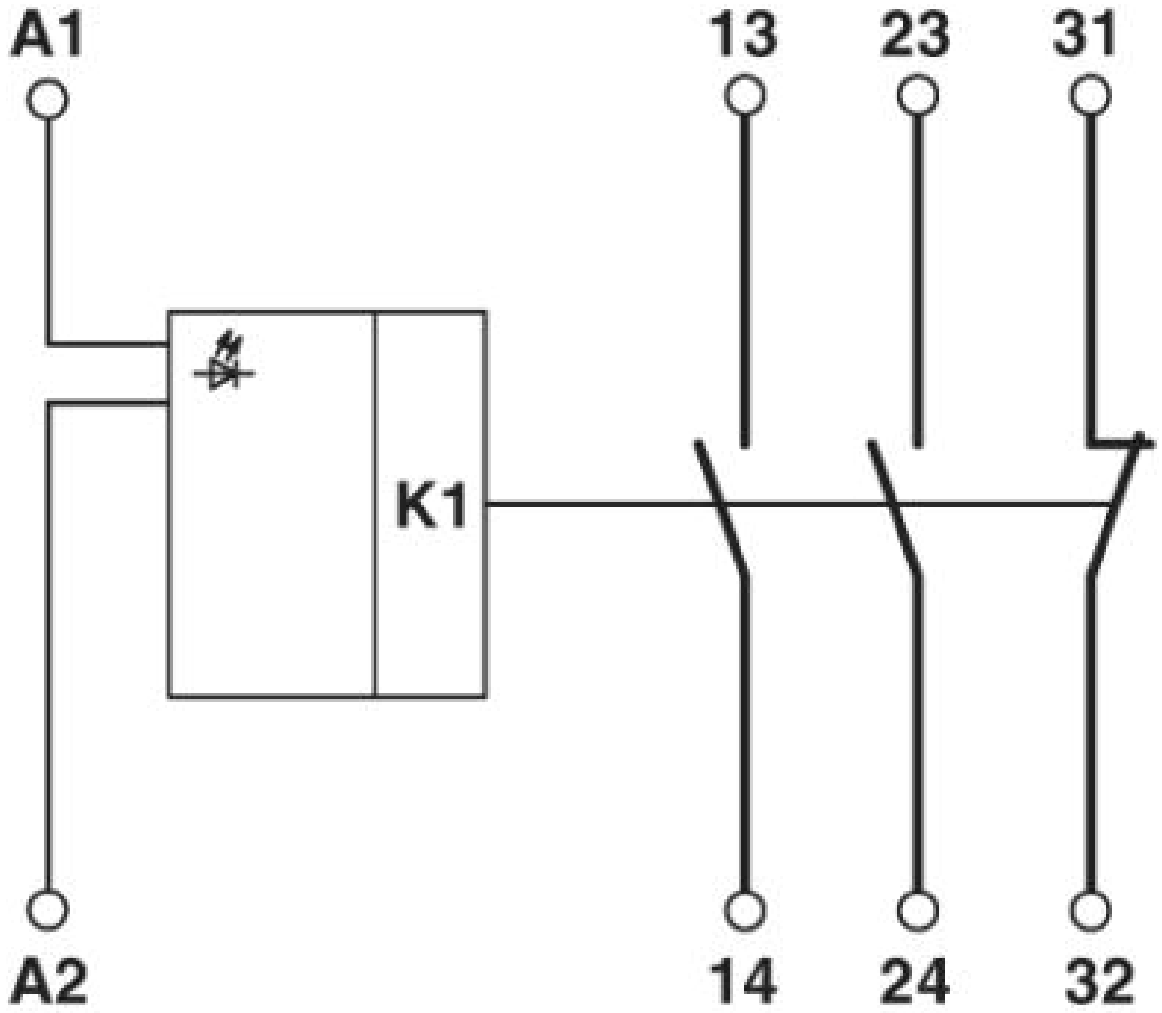
Circuit diagram



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