

Coupling relay - PSR-SPP- 24DC/FSP/1X1/1X2 - 2981981

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Coupling relay for SIL 3 high/low-demand applications, couples digital output signals to the I/O, 1 enabling current path, 1 signal contact, module for safe state off applications, test pulse filter, fuse, plug-in spring-cage terminal block, width: 17.5 mm


The figure shows a version with a screw connection

Your advantages

- ✓ Narrow 17.5 mm housing
- ✓ Forcibly guided contacts according to EN 50205
- ✓ Up to SIL 3 according to IEC 61508
- ✓ Easy proof test according to IEC 61508 thanks to integrated signal contact
- ✓ Long service life thanks to filtering of controller test pulses
- ✓ With built-in, replaceable fuse in the enabling current path
- ✓ Couples digital output signals from failsafe controllers to I/O devices (valves, etc.) for electrical isolation and power adaptation
- ✓ One enabling current path



Key Commercial Data

| | |
|--------------|---|
| Packing unit | 1 pc |
| GTIN |  4 046356 448345 |
| GTIN | 4046356448345 |

Technical data

Note

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

Dimensions

| | |
|--------|----------|
| Width | 17.5 mm |
| Height | 112 mm |
| Depth | 114.5 mm |

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Technical data

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) |

Input data

| | |
|--|--|
| Rated control circuit supply voltage U_s | 24 V DC -15 % / +10 % |
| Rated control supply current I_s | typ. 55 mA |
| Power consumption at U_s | typ. 1.32 W |
| Inrush current | max. 100 mA |
| Typ. starting time with U_s | 50 ms |
| Typical release time | 50 ms |
| Recovery time | 1 s |
| Operating voltage display | 1 x yellow LED |
| Protective circuit | Surge protection Suppressor diode, 33 V (A1 - A2) |
| Maximum switching frequency | 0.5 Hz |
| Filter time | max. 5 ms (at A1 in the event of voltage dips at U_s) |
| | max. 2 ms (Test pulse width; high test pulse at A1/A2) |
| | ≥ 100 ms (Test pulse width; high test pulse at A1/A2) |
| | Test pulse rate = 80 x Test pulse width |
| | max. 5 ms (Test pulse width; low test pulse at A1/A2) |
| | ≥ 50 ms (Test pulse rate; low test pulse at A1/A2) |
| | Test pulse rate = 15 x Test pulse width |

Output data

| | |
|---------------------------------------|---|
| Contact type | 1 enabling current path |
| | 1 confirmation current path |
| Contact material | AgCuNi, + 0.2 μm Au |
| Maximum switching voltage | 250 V AC/DC (N/O contact / N/C contact, observe the load curve) |
| Minimum switching voltage | 15 V AC/DC (N/O contact / N/C contact) |
| Limiting continuous current | 5 A (N/O contact, pay attention to the derating) |
| | 100 mA (N/C contact) |
| Maximum inrush current | 5 A (N/O contact) |
| | 100 mA (N/C contact) |
| Inrush current, minimum | 5 mA (N/O contact / N/C contact) |
| Sq. Total current | 25 A ² (observe derating) |
| Interrupting rating (ohmic load) max. | 120 W (24 V DC, τ = 0 ms, N/C contact: 2.4 W) |
| | 192 W (48 V DC, τ = 0 ms, N/C contact: 4.8 W) |
| | 162 W (60 V DC, τ = 0 ms, N/C contact: 6 W) |
| | 66 W (110 V DC, τ = 0 ms, N/C contact: 11 W) |

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Output data

| | |
|--|---|
| | 60 W (220 V DC, $\tau = 0$ ms, N/C contact: 22 W) |
| | 1250 VA (250 V AC, $\tau = 0$ ms, N/C contact: 25 VA) |
| Maximum interrupting rating (inductive load) | 72 W (24 V DC, $\tau = 40$ ms, N/C contact: 2.4 W) |
| | 43 W (48 V DC, $\tau = 40$ ms, N/C contact: 4.8 W) |
| | 41 W (60 V DC, $\tau = 40$ ms, N/C contact: 6 W) |
| | 35 W (110 V DC, $\tau = 40$ ms, N/C contact: 11 W) |
| | 48 W (220 V DC, $\tau = 40$ ms, N/C contact: 22 W) |
| Switching capacity | min. 75 mW |
| Mechanical service life | 10x 10 ⁶ cycles |
| Output fuse | 5 A T fuse (N/O contact) |
| | 150 mA Fast-blow (N/C contact) |

General

| | |
|---|---|
| Relay type | Electromechanical relay with forcibly guided contacts in accordance with EN 50205 |
| Nominal operating mode | 100% operating factor |
| Net weight | 99.99 g |
| Mounting position | any |
| Mounting type | DIN rail mounting |
| Degree of protection | IP20 |
| | IP54 |
| Min. degree of protection of inst. location | IP54 |
| Housing material | PBT |
| Housing color | yellow |

Connection data

| | |
|---------------------------------------|------------------------|
| Connection method | Spring-cage connection |
| pluggable | Yes |
| Conductor cross section solid min. | 0.2 mm ² |
| Conductor cross section solid max. | 1.5 mm ² |
| Conductor cross section flexible min. | 0.2 mm ² |
| Conductor cross section flexible max. | 1.5 mm ² |
| Conductor cross section AWG min. | 24 |
| Conductor cross section AWG max. | 16 |
| Stripping length | 8 mm |

Safety-related characteristic data

| | |
|------------------------------|--|
| Stop category | 0 |
| Designation | IEC 61508 - High demand |
| Safety Integrity Level (SIL) | 3 (max. 10% of the entire SIL; diagnostic coverage (DC) of the control unit at A1/A2 must be $\geq 90\%$) |
| Designation | IEC 61508 - Low demand |

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Technical data

Safety-related characteristic data

| | |
|---|--|
| Safety Integrity Level (SIL) | 3 (max. 10% of the entire SIL; diagnostic coverage (DC) of the control unit at A1/A2 must be $\geq 90\%$) |
| Designation | EN ISO 13849 |
| Performance level (PL) | e (Diagnostic coverage (DC) of the control unit at A1/A2 must be $\geq 99\%$) |
| Category | 4 (Diagnostic coverage (DC) of the control unit at A1/A2 must be $\geq 99\%$) |
| Designation | EN 62061 |
| Safety Integrity Level Claim Limit (SIL CL) | 3 (max. 10% of the entire SIL; diagnostic coverage (DC) of the control unit at A1/A2 must be $\geq 90\%$) |
| Designation | EN 50156 |
| Safety Integrity Level (SIL) | 3 |

Standards and Regulations

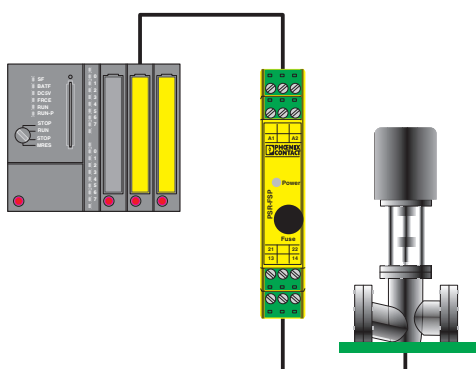
| | |
|--------------------------------|---|
| Designation | Air clearances and creepage distances between the power circuits |
| Standards/regulations | DIN EN 50178/VDE 0160 |
| Rated insulation voltage | 250 V AC |
| Rated surge voltage/insulation | Safe isolation, reinforced insulation 6 kV between the control circuits (A1/A2), (21/22), (13/14) |
| Degree of pollution | 2 |
| Overvoltage category | III |
| Shock | 15g |
| Vibration (operation) | 10 Hz ... 150 Hz, 2g |
| Conformance | CE-compliant |

Environmental Product Compliance

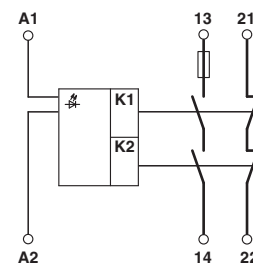
| | |
|------------|---|
| China RoHS | Environmentally friendly use period: unlimited = EFUP-e |
| | No hazardous substances above threshold values |

Drawings

Application drawing



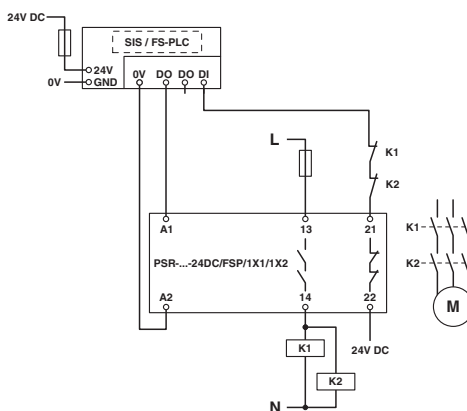
Circuit diagram



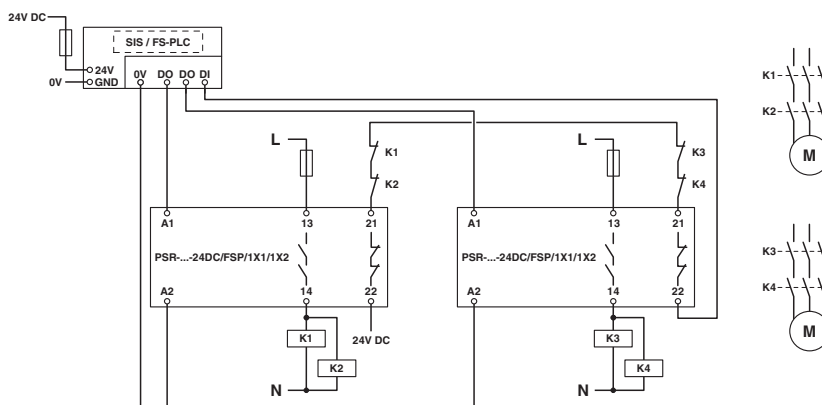
Example of electrical isolation of a safety PLC output from the field.

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Circuit diagram



Circuit diagram



Approvals

Approvals

Approvals

UL Listed / cUL Listed / Functional Safety / EAC / 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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Approvals

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

| | | | |
|-------------------|---|--|------------------|
| Functional Safety |  | | 968/EZ 365.05/16 |
|-------------------|---|--|------------------|

| | | | |
|-----|---|--|---------------|
| EAC |  | | EAC-Zulassung |
|-----|---|--|---------------|

| | | | |
|--------------|---|--|--|
| cULus Listed |  | | |
|--------------|---|--|--|

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