

## Coupling relay - PSR-PC50-1NO-1DO-24DC-SC - 2904664

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Coupling relay for SIL 3 low demand applications, couples digital output signals to the periphery, 1 enabling current path, module for F&G applications, test pulse filter, plug-in screw connection, 17.5 mm width

### Your advantages

- ✓ Up to SIL 3 according to IEC 61508
- ✓ Easy proof test according to IEC 61508 thanks to integrated signal contact
- ✓ Installation in zone 2 permitted
- ✓ Couples digital output signals from failsafe controllers to I/O devices (valves, etc.) for electrical isolation and power adaptation



### Key Commercial Data

|                                      |                                                                                                         |
|--------------------------------------|---------------------------------------------------------------------------------------------------------|
| Packing unit                         | 1 pc                                                                                                    |
| GTIN                                 | <br>4 046356 919937 |
| GTIN                                 | 4046356919937                                                                                           |
| Weight per Piece (excluding packing) | 221.100 g                                                                                               |
| Custom tariff number                 | 85364900                                                                                                |
| Country of origin                    | Germany                                                                                                 |

### Technical data

#### Note

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

#### Dimensions

|        |          |
|--------|----------|
| Width  | 17.5 mm  |
| Height | 112.2 mm |
| Depth  | 114.5 mm |

#### Ambient conditions

|                                 |                  |
|---------------------------------|------------------|
| Ambient temperature (operation) | -20 °C ... 55 °C |
|---------------------------------|------------------|

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### Ambient conditions

|                                                |                                                     |
|------------------------------------------------|-----------------------------------------------------|
| Ambient temperature (storage/transport)        | -40 °C ... 65 °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)                          |

### Power supply

|                                            |                                                   |
|--------------------------------------------|---------------------------------------------------|
| Rated control circuit supply voltage $U_s$ | 24 V DC -15 % / +10 % (A1/A2)                     |
|                                            | 20.4 V DC ... 26.4 V DC                           |
| Rated control supply current $I_s$         | typ. 65 mA (A1/A2)                                |
| Inrush current                             | ≤ 200 mA (A1/A2)                                  |
| Filter time                                | < 2 ms (Test pulse duration)                      |
|                                            | ≥ 100 ms (Test pulse rate)                        |
| Diagnostic supply voltage $U_D$            | 24 V DC -15 % / +10 % (24V/A2)                    |
| Input current at $U_D$                     | typ. 15 mA (24V/A2; depending on load M1 +100 mA) |
| Inrush current at $U_D$                    | 2.5 A (24V/A2; for 10 µs)                         |
| Protective circuit                         | Overload protection Suppressor diode              |

### Digital inputs

|                     |                                  |
|---------------------|----------------------------------|
| Number of inputs    | 3 (Test point for proof test)    |
| Inrush current      | 200 mA (Inputs TP1, TP2 and TP3) |
| Current consumption | typ. 20 mA (Input TP1)           |
|                     | typ. 18 mA (Input TP2)           |
|                     | typ. 35 mA (Input TP3)           |

### Relay outputs: enabling current path

|                                               |                                                                                |
|-----------------------------------------------|--------------------------------------------------------------------------------|
| Output name                                   | Enabling current path                                                          |
| Output description                            | safety-related N/O contacts                                                    |
| Number of outputs                             | 1 (undelayed)                                                                  |
| Contact type                                  | 1 enabling current path                                                        |
| Contact material                              | AgNi, gold-flashed                                                             |
| Switching voltage                             | min. 15 V AC/DC without diagnostics                                            |
|                                               | min. 20 V AC/DC (with diagnostics)                                             |
|                                               | max. 250 V AC                                                                  |
|                                               | max. 125 V DC                                                                  |
| Limiting continuous current                   | 5 A                                                                            |
| Inrush current                                | min. 100 mA                                                                    |
|                                               | max. 5 A                                                                       |
| Switching capacity                            | min. 1.5 W                                                                     |
| Switching frequency                           | max. 0.5 Hz                                                                    |
| Diagnostic threshold                          | 20 Ω ... 18 kΩ (lower/upper)                                                   |
| Max. permissible overall conductor resistance | < 10 Ω (LO/LO' and NI/NI' and load resistance in the event of a short circuit) |

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## Technical data

### Relay outputs: enabling current path

|                         |                                |
|-------------------------|--------------------------------|
| Mechanical service life | approx. $5 \times 10^7$ cycles |
|-------------------------|--------------------------------|

### Alarm outputs

|                          |                    |
|--------------------------|--------------------|
| Output description       | non-safety-related |
| Number of outputs        | 1 (digital)        |
| Voltage                  | 23 V DC            |
| Current                  | max. 100 mA        |
| Short-circuit protection | no                 |
| Output fuse              | 150 mA fast blow   |

### Times

|                            |                                |
|----------------------------|--------------------------------|
| Typical pickup time at US  | 30 ms (when controlled via A1) |
| Typical release time at US | 30 ms (when controlled via A1) |
| Recovery time              | 1 s                            |

### General

|                                             |                                                                                   |
|---------------------------------------------|-----------------------------------------------------------------------------------|
| Relay type                                  | Electromechanical relay with forcibly guided contacts in accordance with EN 50205 |
| Nominal operating mode                      | 100% operating factor                                                             |
| Net weight                                  | 221.1 g                                                                           |
| Mounting position                           | vertical or horizontal                                                            |
| Mounting type                               | DIN rail mounting                                                                 |
| Degree of protection                        | IP20                                                                              |
| Min. degree of protection of inst. location | IP54                                                                              |
| Housing material                            | PBT                                                                               |
| Housing color                               | yellow                                                                            |
| Operating voltage display                   | Yellow LED                                                                        |
| Status display                              | Green LED                                                                         |
| Indication                                  | Red LED                                                                           |

### Connection data

|                                       |                     |
|---------------------------------------|---------------------|
| Connection method                     | Screw connection    |
| pluggable                             | Yes                 |
| 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                      | 7 mm                |
| Screw thread                          | M3                  |

### Safety-related characteristic data

|             |                        |
|-------------|------------------------|
| Designation | IEC 61508 - Low demand |
|-------------|------------------------|

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## Technical data

### Safety-related characteristic data

|                              |                       |
|------------------------------|-----------------------|
| Safety Integrity Level (SIL) | 3 (15 % of total SIL) |
|------------------------------|-----------------------|

### Standards and Regulations

|                                |                                                                  |
|--------------------------------|------------------------------------------------------------------|
| Designation                    | Air clearances and creepage distances between the power circuits |
| Standards/regulations          | DIN EN 50178                                                     |
| Rated insulation voltage       | 250 V AC                                                         |
| Rated surge voltage/insulation | 6 kV/safe isolation (through protective impedance)               |
| Degree of pollution            | 2                                                                |
| Overvoltage category           | III                                                              |
| Shock                          | 15g                                                              |
| Vibration (operation)          | 2g                                                               |
| Conformance                    | CE-compliant                                                     |
| ATEX                           | # II 3 G Ex nA nC IIC T4 Gc                                      |
| IECEX                          | Ex nA nC IIC T4 Gc                                               |
| UL, USA/Canada                 | cULus                                                            |
|                                | Class I, Zone 2, AEx nA nC IIC T4 / Ex nA nC IIC Gc T4 X         |
|                                | Class I, Div. 2, Groups A, B, C, D, T4                           |
| GL                             | C, EMC2                                                          |
| Environmental simulation test  | ISA-S71.04 (G3)                                                  |

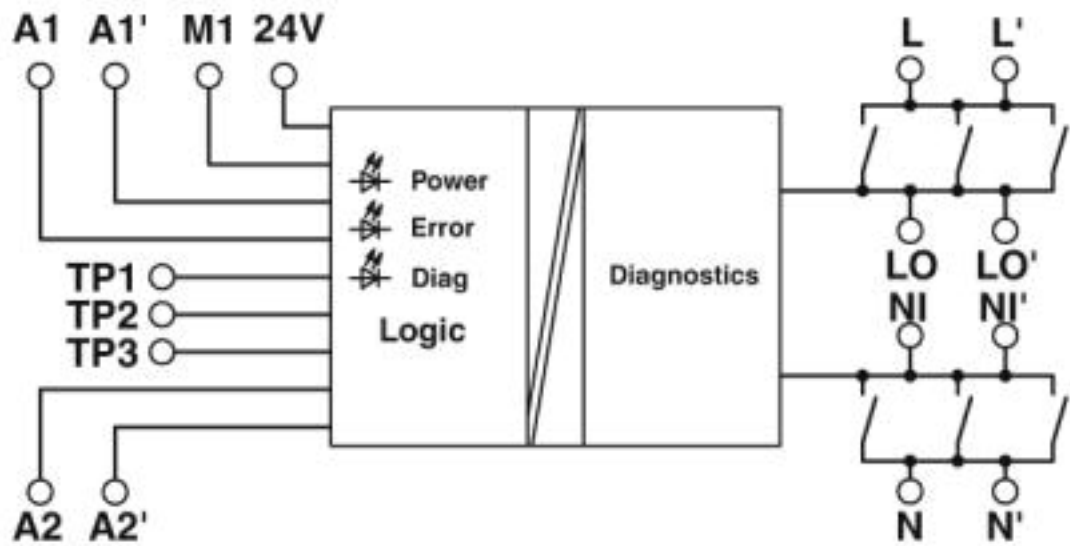
### Environmental Product Compliance

|            |                                                                                                     |
|------------|-----------------------------------------------------------------------------------------------------|
| REACH SVHC | Lead 7439-92-1                                                                                      |
| China RoHS | Environmentally Friendly Use Period = 50                                                            |
|            | For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration" |

## Drawings

Coupling relay - PSR-PC50-1NO-1DO-24DC-SC - 2904664

Block diagram



Classifications

eCl@ss

|            |          |
|------------|----------|
| 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 |
| eCl@ss 8.0 | 27371819 |
| eCl@ss 9.0 | 27371819 |

ETIM

|          |          |
|----------|----------|
| ETIM 4.0 | EC001449 |
| ETIM 5.0 | EC001449 |
| ETIM 6.0 | EC001449 |
| ETIM 7.0 | EC001449 |

Approvals

Approvals

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

Ex Approvals

IECEX / ATEX / UL Listed / cUL Listed / cULus Listed

## Coupling relay - PSR-PC50-1NO-1DO-24DC-SC - 2904664

### Approvals

#### Approval details

|                   |                                                                                     |                                                                                                                                                       |                          |
|-------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| GL                |    | <a href="https://approvalfinder.dnvgl.com/">https://approvalfinder.dnvgl.com/</a>                                                                     | 11253-14 HH              |
| 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 |   |                                                                                                                                                       | 968/FSP 1011.00/14       |
| EAC               |  |                                                                                                                                                       | RU C-<br>DE.A*30.B.01082 |
| cULus Listed      |  |                                                                                                                                                       |                          |