

## Safety module - PSR-SPP- 24DC/TS/M - 2986025

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Freely configurable safety module, with 20 safe inputs and 4 safe outputs, 4 signal, 2 clock, and 2 ground switching outputs; can be extended via additional I/O modules, up to SILCL 3, Cat. 4/PL e, SIL 3, EN 50156, plug-in spring-cage terminal block

The figure shows a version with a screw connection

### Your advantages

- ✓ Freely configurable safety module for monitoring emergency stops, safety doors, light grids, etc.
- ✓ With 20 safe inputs, 4 safe outputs, 4 alarm outputs, and 2 clock outputs on a design width of just 67.5 mm
- ✓ Multifunctional use for a wide range of safety functions
- ✓ Including IFS-CONFSTICK memory stick for easily storing and saving the configuration
- ✓ Easy graphical configuration with the SAFECONF software
- ✓ Easy graphical configuration instead of complex programming
- ✓ Quick startup thanks to comprehensive simulation and test functions
- ✓ Option for connecting fieldbus gateways for diagnostics and signaling functions
- ✓ Up to Cat. 4/PL e according to ISO 13849-1, SILCL 3 according to IEC 62061, SIL 3 according to IEC 61508
- ✓ EN 50156
- ✓ Safe and standard extension via INTERFACE DIN rail TBUS
- ✓ Flexible extension with safe inputs and outputs



### Key Commercial Data

|                                      |                                                                                                         |
|--------------------------------------|---------------------------------------------------------------------------------------------------------|
| Packing unit                         | 1 pc                                                                                                    |
| GTIN                                 | <br>4 046356 345897 |
| GTIN                                 | 4046356345897                                                                                           |
| Weight per Piece (excluding packing) | 400.000 g                                                                                               |
| Custom tariff number                 | 85371098                                                                                                |
| Country of origin                    | Germany                                                                                                 |

# Safety module - PSR-SPP- 24DC/TS/M - 2986025

## Technical data

### Note

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

### Dimensions

|        |          |
|--------|----------|
| Width  | 67.5 mm  |
| Height | 112 mm   |
| Depth  | 114.5 mm |

### Ambient conditions

|                                                |                                                                                                         |
|------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| Ambient temperature (operation)                | -20 °C ... 55 °C                                                                                        |
| Ambient temperature (storage/transport)        | -20 °C ... 70 °C                                                                                        |
| Max. permissible relative humidity (operation) | 75 % (On average, 85 % occasionally)                                                                    |
| Max. permissible humidity (storage/transport)  | 75 % (On average, 85 % occasionally)                                                                    |
| Air pressure (operation)                       | 70 kPa ... 108 kPa (up to 3000 m above sea level)                                                       |
| Air pressure (storage/transport)               | 66 kPa ... 108 kPa (up to 3500 m above sea level)                                                       |
| Maximum altitude                               | max. 2000 m (See Appendix "Using PSR-TRISAFE modules at altitudes greater than 2000 m above sea level") |

### Power supply

|                                            |                                                                     |
|--------------------------------------------|---------------------------------------------------------------------|
| Rated control circuit supply voltage $U_s$ | 24 V DC (A1/A2)                                                     |
|                                            | 18 V DC ... 30 V DC (Incl. all tolerances, incl. residual ripple)   |
| Rated control supply current $I_s$         | typ. 110 mA                                                         |
| Limiting continuous current                | max. 6 A (For looped-through current paths A1/A1 and A2/A2)         |
| Filter time                                | typ. 20 ms (Load-dependent, in the event of voltage dips at $U_s$ ) |
| Status display                             | 3x LED green, 1x LED red                                            |
| Protective circuit                         | Yes, within the scope of the operating voltage limits               |

### Digital inputs

|                                |                                  |
|--------------------------------|----------------------------------|
| Description of the input       | Digital, type HTL                |
| Number of inputs               | 10 (Two-channel, up to SIL 3)    |
|                                | 20 (Single-channel, up to SIL 2) |
| Input voltage range "0" signal | 0 V DC ... 5 V DC (for safe Off) |
| Input voltage range "1" signal | 11 V DC ... 30 V DC              |
| Current consumption            | typ. 4 mA                        |
| Cable length                   | max. 2000 m                      |
| Status display                 | 20 x LED green (1 LED per input) |

### Digital outputs

|                   |                                                                                |
|-------------------|--------------------------------------------------------------------------------|
| Number of outputs | 4 (Safe semiconductor outputs, up to Cat. 4 in accordance with EN ISO 13849-1) |
|-------------------|--------------------------------------------------------------------------------|

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## Technical data

### Digital outputs

|                              |                                                                   |
|------------------------------|-------------------------------------------------------------------|
|                              | 2 (Ground switching outputs)                                      |
| Nominal output voltage       | 24 V DC (Supply via 24 V/0 V)                                     |
| Nominal output voltage range | 18 V DC ... 30 V DC (Incl. all tolerances, incl. residual ripple) |
| Limiting continuous current  | 2 A (Per channel, see Derating)                                   |
|                              | 2 A (Total current of all outputs)                                |
| Output voltage               | < 5 V (Low state)                                                 |
| Leakage current              | max. 2 mA                                                         |
| Max. capacitive load         | max. 1 µF (Electronic components)                                 |
| Max. inductive load          | See "Protective circuit"                                          |
| Test pulses                  | < 1 ms                                                            |
| Short-circuit protection     | Yes                                                               |
| Note on protection circuit   | Yes, within the scope of the operating voltage limits             |
| Status display               | 4 x LED green (1 LED per output)                                  |

### Clock outputs

|                             |                               |
|-----------------------------|-------------------------------|
| Output description          | Digital                       |
| Number of outputs           | 2                             |
| Voltage                     | 24 V DC (Supply via 24 V/0 V) |
| Limiting continuous current | 100 mA                        |
| Test pulses                 | < 1 ms                        |
| Short-circuit protection    | Yes                           |

### Alarm outputs

|                             |                               |
|-----------------------------|-------------------------------|
| Output description          | Digital                       |
| Number of outputs           | 4                             |
| Voltage                     | 24 V DC (Supply via 24 V/0 V) |
| Limiting continuous current | 100 mA                        |
| Short-circuit protection    | Yes                           |

### Times

|               |                                                 |
|---------------|-------------------------------------------------|
| Response time | max. 30 ms (plus response time of PSR-TS-SDOR4) |
| Recovery time | < 10 s                                          |

### General

|                        |                        |
|------------------------|------------------------|
| Nominal operating mode | 100% operating factor  |
| Net weight             | 154 g                  |
| Mounting position      | On horizontal DIN rail |
| Mounting type          | DIN rail mounting      |
| Degree of protection   | IP20                   |

## Safety module - PSR-SPP- 24DC/TS/M - 2986025

### Technical data

#### General

|                                             |                                                |
|---------------------------------------------|------------------------------------------------|
|                                             | IP54                                           |
| Min. degree of protection of inst. location | IP54                                           |
| Housing material                            | Polyamide PA non-reinforced                    |
| Housing color                               | yellow                                         |
| Number of possible extension modules        | 1 (Max. continuous current via PSR-TBUS: 4 A)  |
| Number of possible safe extension modules   | 10 (Max. continuous current via PSR-TBUS: 4 A) |

#### Connection data

|                                       |                        |
|---------------------------------------|------------------------|
| Connection method                     | Spring-cage connection |
| pluggable                             | Yes                    |
| Conductor cross section solid min.    | 0.2 mm <sup>2</sup>    |
| Conductor cross section solid max.    | 1.5 mm <sup>2</sup>    |
| Conductor cross section flexible min. | 0.2 mm <sup>2</sup>    |
| Conductor cross section flexible max. | 1.5 mm <sup>2</sup>    |
| 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)                | 2 (1-channel parameterization) |
|                                             | 3 (2-channel parameterization) |
| Designation                                 | IEC 61508 - Low demand         |
| Safety Integrity Level (SIL)                | 2 (1-channel parameterization) |
|                                             | 3 (2-channel parameterization) |
| Designation                                 | EN ISO 13849                   |
| Performance level (PL)                      | d (1-channel parameterization) |
|                                             | e (2-channel parameterization) |
| Category                                    | 2 (1-channel parameterization) |
|                                             | 4 (2-channel parameterization) |
| Designation                                 | EN 62061                       |
| Safety Integrity Level Claim Limit (SIL CL) | 2 (1-channel parameterization) |
|                                             | 3 (2-channel parameterization) |
| Designation                                 | EN 50156                       |
| Safety Integrity Level (SIL)                | max. 3 (Reference IEC 61508)   |

#### Standards and Regulations

|             |                                                                  |
|-------------|------------------------------------------------------------------|
| Designation | Air clearances and creepage distances between the power circuits |
|-------------|------------------------------------------------------------------|

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## Technical data

### Standards and Regulations

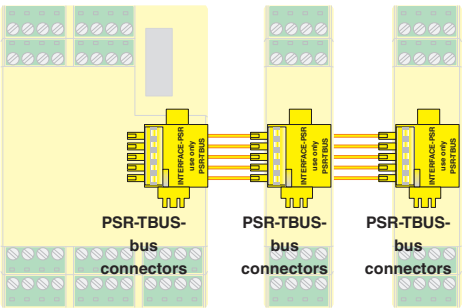
|                       |                                                                         |
|-----------------------|-------------------------------------------------------------------------|
| Standards/regulations | DIN EN 50178                                                            |
| Degree of pollution   | 2                                                                       |
| Overvoltage category  | III                                                                     |
| Vibration (operation) | 2g                                                                      |
| Shock (operation)     | 10g (Δt = 11 ms, three shocks in each space direction)                  |
|                       | 10g (Δt = 16 ms, continuous shock, 1000 shocks in each space direction) |

### Environmental Product Compliance

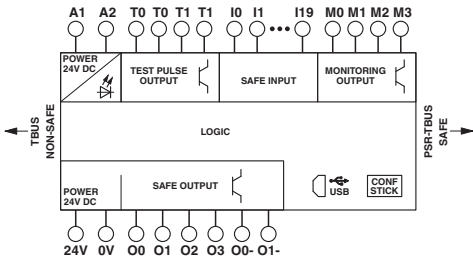
|            |                                                         |
|------------|---------------------------------------------------------|
| REACH SVHC | Lead 7439-92-1                                          |
| China RoHS | Environmentally friendly use period: unlimited = EFUP-e |
|       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

## Drawings

Connection diagram

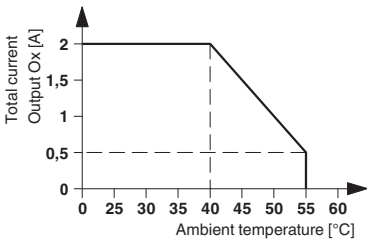


Circuit diagram



PSR-TBUS DIN rail connectors are used for cross-wiring between the modules.

Diagram





## Safety module - PSR-SPP- 24DC/TS/M - 2986025

### Classifications

#### UNSPSC

|               |          |
|---------------|----------|
| UNSPSC 7.0901 | 39121501 |
| UNSPSC 11     | 39121501 |
| UNSPSC 12.01  | 39121501 |
| UNSPSC 13.2   | 39121501 |

### Approvals

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#### Approvals

UL Listed / cUL Listed / Functional Safety / cULus Listed

#### Ex Approvals

#### Approval details

|           |                                                                                     |                                                                                                                                                       |               |
|-----------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| 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 |  | 01/205/5151.03/17 |
|-------------------|-------------------------------------------------------------------------------------|-------------------|

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

### Accessories

#### Accessories

#### Device parameterization

## Safety module - PSR-SPP- 24DC/TS/M - 2986025

### Accessories

Configuration package - SAFECONF - 2986119



Configuration software for SafetyBridge technology and PSR-TRISAFE modules, connecting cable for PSR-TRISAFE

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### DIN rail connector

DIN rail bus connectors - ME 22,5 TBUS 1,5/ 5-ST-3,81 GN - 2707437



DIN rail connector, nominal current (Ex): 8 A, nominal voltage (Ex): 125 V, number of positions: 5, pitch: 3.81 mm, Articles with gold-plated contacts, bus connectors for connecting with electronic housings

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DIN rail bus connectors - PSR-TBUS - 2890425



DIN rail connector for safety switching devices, for supplying/controlling/monitoring (depending on the module)

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### Filter terminal block

Filter terminal block - PSR-FTB/20/86 - 2904477



Terminal block for filtering test pulses from safe semiconductor outputs with adjustable filter values (20  $\mu$ F/86  $\mu$ F), as well as for EMC filtering of 24 V signals up to an amperage of 2 A.

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Filter terminal block - PSR-FTB/1.5/11.5 - 2904476



Terminal block for filtering test pulses from safe semiconductor outputs with adjustable filter values (1.5  $\mu$ F/11.5  $\mu$ F), as well as for EMC filtering of 24 V signals up to an amperage of 2 A.

# Safety module - PSR-SPP- 24DC/TS/M - 2986025

## Accessories

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### Gateways/Proxies

#### Data interface - EM-CAN-GATEWAY-IFS - 2901504



Gateway for the connection of up to 32 INTERFACE system devices to a higher-level controller via CANopen®. The INTERFACE system devices are connected to the Gateway via DIN rail connectors, the DIN rail connectors are provided.

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#### Data interface - EM-MODBUS-GATEWAY-IFS - 2901528



Gateway for the connection of up to 32 INTERFACE system devices via Modbus/TCP to a higher-level controller. The INTERFACE system devices are connected to the Gateway via DIN rail connectors, the DIN rail connectors are provided.

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#### Data interface - EM-DNET-GATEWAY-IFS - 2901529



Gateway for the connection of up to 32 INTERFACE system devices to a higher-level controller via DeviceNet™. The INTERFACE system devices are connected to the Gateway via DIN rail connectors, the DIN rail connectors are provided.

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#### Data interface - EM-ETH-GATEWAY-IFS - 2901988



Gateway for the connection of up to 32 INTERFACE system devices to a higher-level controller via EtherNet/IP™. The INTERFACE system devices are connected to the Gateway via DIN rail connectors, the DIN rail connectors are provided.

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#### Data interface - EM-PNET-GATEWAY-IFS - 2904472



Gateway for the connection of up to 32 INTERFACE system devices via PROFINET to a higher-level controller. The INTERFACE system devices are connected to the Gateway via DIN rail connectors, the DIN rail connectors are provided.

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## Safety module - PSR-SPP- 24DC/TS/M - 2986025

### Accessories

#### Data interface - EM-PB-GATEWAY-IFS - 2297620



Gateway for the connection of up to 32 INTERFACE system devices to a higher-level controller via PROFIBUS DP. The INTERFACE system devices are connected to the Gateway via DIN rail connectors, the DIN rail connectors are provided.

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#### Data interface - EM-RS232-GATEWAY-IFS - 2901526



Gateway for the connection of up to 32 INTERFACE system devices to a higher-level controller via Modbus/RS-232. The INTERFACE system devices are connected to the Gateway via DIN rail connectors, the DIN rail connectors are provided.

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#### Data interface - EM-RS485-GATEWAY-IFS - 2901527



Gateway for the connection of up to 32 INTERFACE system devices to a higher-level controller via Modbus/RS-485. The INTERFACE system devices are connected to the Gateway via DIN rail connectors, the DIN rail connectors are provided.

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### Memory block

#### Memory block - IFS-CONFSTICK - 2986122



Multi-functional memory block for the INTERFACE systemf for easy storage and backup of the configuration.

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#### Copy and delete station - COPYSTATION - IFS - 2901985



Copy and delete station for IFS-CONFSTICK memory modules for copying data from a master stick to up to four slave sticks and for deleting data on one ore more slave sticks, connection via USB/mini USB cable.

## Safety module - PSR-SPP- 24DC/TS/M - 2986025

### Accessories

#### Programming cable

USB cable - CABLE-USB/MINI-USB-3,0M - 2986135



USB connecting cable: USB plug type A to USB plug type Mini-B; length: 3 m

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#### Starter kit

Starter kit - PSR-TRISAFE STARTER KIT - 2986300



STARTER kit for the PSR-TRISAFE safety module consisting of: PSR-TRISAFE demoboard (with inputs & outputs), SAFECONF CD, Quick Start Guide, USB cable (3m) , voltage supply with international connector adapters and package inserts.