# Extension module - PSR-M-EM6-HTL2-SC

1105016

https://www.phoenixcontact.com/us/products/1105016

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Safe extension module for monitoring zero-speed, speed, direction of rotation, monitoring of 2 axes, NPN/PNP proximity switch, 2 x HTL encoder, TBUS interface, up to SIL 3, Cat. 4/PL e, pluggable screw terminal block, TBUS connector included

## Product Description

The configurable and individually scalable PSRmodular safety system is a flexible safety solution for monitoring your machine or system. The safe extension module is used to monitor downtimes, speed, and direction of rotation. The module is suitable for connection of NPN/PNP proximity switches and HTL encoders.

## Your advantages

- Cost-effective safety solution with a high level of adaptability to individual requirements
- Fast startup, thanks to easy hardware and software configuration
- Machine downtimes minimized with comprehensive, easy-to-understand diagnostics
- Narrow housing width of just 22.6 mm
- Up to Cat. 4/PL e in accordance with EN ISO 13849-1, SIL 3 in accordance with IEC 62061, SIL 3 in accordance with IEC 61508
- Suitable for elevator applications in accordance with EN 81-20

## Commercial Data

| | |
|---|---|
| Item number | 1105016 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales Key | C18 |
| Product Key | DNA363 |
| GTIN | 4055626975207 |
| Weight per Piece (including packing) | 196.8 g |
| Weight per Piece (excluding packing) | 173 g |
| Customs tariff number | 85371098 |
| Country of origin | IT |

## Technical Data

### Product properties

| | |
|---|---|
| Product type | Safety device |
| Application | Over-speed safety relay |
| | Zero-speed safety relay |
| | Monitoring the direction of rotation |

Insulation characteristics

| | |
|---|---|
| Protection class | III |
| Overvoltage category | III |

Times

| | |
|---|---|
| Response time | see user manual |
| Restart time | min. 5 s (Boot time) |
| | max. 10 s (Boot time) |

### Electrical properties

| | |
|---|---|
| Maximum power dissipation for nominal condition | 3.22 W ($U_B$ = 28.8 V, IN1 = IN2 = 50 mA, $U_{ENC}$ = 30 V) |
| Nominal operating mode | 100% operating factor |
| Interfaces | DIN rail TBUS for connection to the master module, supplied as standard |
| | Encoder |
| | Proximity switches |
| Rated insulation voltage | 250 V AC |
| Rated surge voltage/insulation | Basic insulation 4 kV between 24 V power supply and I/Os to the housing |

Supply

| | |
|---|---|
| Designation | A1/A2 |
| Rated control circuit supply voltage $U_S$ | 19.2 V DC ... 28.8 V DC |
| Rated control circuit supply voltage $U_S$ | 24 V DC -20 % / +20 % (provide external protection, typically 1 A) |
| Rated control supply current $I_S$ | typ. 50 mA |
| Power consumption at $U_S$ | typ. 1.2 W |
| Inrush current | 3.5 A ($\Delta t$ = 1 ms at $U_s$) |
| Filter time | typ. 20 ms (in the event of voltage dips at $U_s$) |
| Protective circuit | Serial protection against polarity reversal |
| | Suppressor diode |

### Input data

Measurement

| | |
|---|---|
| Input name | Proximity switch inputs |
| Description of the input | NPN / PNP (3- or 4-wire) |
| Number of inputs | 2 |

| | |
|---|---|
| Input voltage range "0" signal | 0 V DC ... 5 V DC (NPN) |
| | 16 V DC ... 28.8 V DC (PNP) |
| Input voltage range "1" signal | 16 V DC ... 28.8 V DC (NPN) |
| | 0 V DC ... 5 V DC (PNP) |
| Input current range "0" signal | < 2 mA (NPN) |
| Precision | 5 % (in reference to the parameterized limit value) |
| Limit frequency | max. 5 kHz |
| Max. permissible overall conductor resistance | 150 Ω |
| Protective circuit | Suppressor diode |
| Current consumption | typ. 13 mA (NPN, at $U_S$) |
| | typ. -13 mA (PNP, at $U_s$) |
| | max. 17 mA (NPN, at 28.8 V DC) |
| | max. -15 mA (PNP, at 28.8 V DC) |

Measurement

| | |
|---|---|
| Input name | Encoder inputs |
| Description of the input | HTL |
| | IEC 61131-2 Type 2 |
| Number of inputs | 2 |
| Precision | 5 % (in reference to the parameterized limit value) |
| Limit frequency | max. 300 kHz |
| Max. permissible overall conductor resistance | 150 Ω |
| HTL Signal form/signal level | 11 V ... 30 V (Duty factor trace A, B: 50% ±15%, phase shift trace A, B: 90° ±40°) |
| Current consumption | typ. 12 mA (Per track for $U_S$) |

## Output data

Digital: Proximity switch supply (24V/0V)

| | |
|---|---|
| Short-circuit protection | no |
| Nominal output voltage range | 16.7 V DC ... 26.3 V DC ($U_S$ - 2,5 V) |

## Connection data

Connection technology

| | |
|---|---|
| pluggable | yes |

Conductor connection

| | |
|---|---|
| Connection method | Screw connection |
| Conductor cross section solid | 0.2 mm² ... 2.5 mm² |
| Conductor cross section flexible | 0.2 mm² ... 2.5 mm² |
| Conductor cross-section AWG | 24 ... 12 |
| Stripping length | 7 mm |
| Screw thread | M3 |
| Tightening torque | 0.5 Nm ... 0.6 Nm |

## LED signaling

| | |
|---|---|
| Status display | 1 x LED (green), 2 x LED (orange) |
| | 6 x LED (yellow) |
| Operating voltage display | 1 x green LED |
| Error indication | 2 x LED (red) |

## Dimensions

| | |
|---|---|
| Width | 22.61 mm |
| Height | 112.58 mm |
| Depth | 114.5 mm |

## Material specifications

| | |
|---|---|
| Housing material | Polyamide PA non-reinforced |
| Housing color | yellow |

## Characteristics

Safety data: EN ISO 13849-1

| | |
|---|---|
| Category | 4 |
| Performance level (PL) | e |

Safety data: IEC 61508 - High demand

| | |
|---|---|
| Equipment type | Type B |
| Safety Integrity Level (SIL) | 3 |
| Probability of a hazardous failure per hour ($PFH_D$) | $7{,}42 \times 10^{-9}$ |
| Proof test interval | 240 Months |
| Duration of use | 240 Months |

## Environmental and real-life conditions

Ambient conditions

| | |
|---|---|
| Degree of protection | IP20 |
| Min. degree of protection of inst. location | IP54 |
| Ambient temperature (operation) | -10 °C ... 55 °C (observe derating) |
| Ambient temperature (storage/transport) | -20 °C ... 85 °C |
| Maximum altitude | ≤ 2000 m (Above sea level) |
| Max. permissible humidity (storage/transport) | 95 % (non-condensing) |
| Max. permissible relative humidity (operation) | 95 % (non-condensing) |
| Shock | 10g for Δt = 16 ms (continuous shock, 1000 shocks in each space direction) |
| Vibration (operation) | 10 Hz ... 150 Hz, 2g |

## Approval data

CE

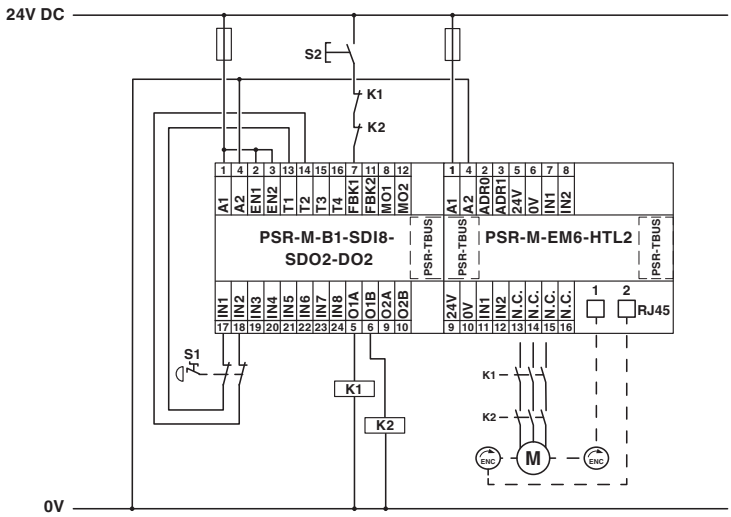
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|---|---|
| Certificate | CE-compliant |

## Mounting

| | |
|---|---|
| Mounting type | DIN rail mounting |
| Assembly instructions | Observe derating |
| Mounting position | vertical or horizontal |

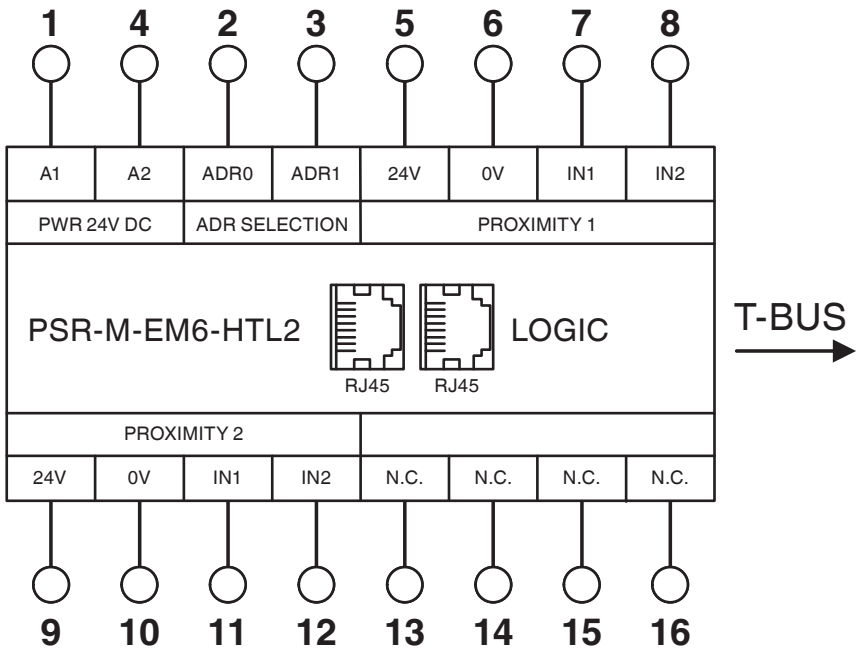
## Drawings

Application drawing




Example application

Block diagram




Block diagram

## Approvals

**UL Listed**
Approval ID: FILE E 238705

**cUL Listed**
Approval ID: FILE E 238705

**EAC**
Approval ID: RU*-DE*B.00606/20

**Functional Safety**
Approval ID: Z10 029429 0013

**cULus Listed**

## Classifications

### ECLASS

| | |
|---|---|
| ECLASS-9.0 | 27371819 |
| ECLASS-10.0.1 | 27371819 |
| ECLASS-11.0 | 27371819 |

### ETIM

| | |
|---|---|
| ETIM 8.0 | EC001449 |

### UNSPSC

| | |
|---|---|
| UNSPSC 21.0 | 39122200 |

## Environmental Product Compliance

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

## Accessories

### Coding profile

Coding profile - CP-MSTB - 1734634

https://www.phoenixcontact.com/us/products/1734634

Coding profile, is inserted into the slot on the plug or inverted header, red insulating material



### Coding section

Coding section - CR-MSTB - 1734401

https://www.phoenixcontact.com/us/products/1734401

Coding section, inserted into the recess in the header or the inverted plug, red insulating material




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