

Datasheet - PROTECT-PE-11-AN-SK

Input expander / PROTECT-PE



Preferred typ



(Minor differences between the printed image and the original product may exist!)

- with antivalent output contacts
- Input expander
- Possibility to connect up to 4 sensors with non-isolated signals, e.g. the CSS products from Schmersal as well as AOPD's (only PROTECT-PE-02)
- Input for up to 4 sensors per interface e.g.: magnetic safety switches type BNS, emergency stop devices, interlocking devices and others
- 2 safety contacts
- Signalling output for each sensor (monitoring of both circuits of the sensors) and and all sensors (Y5, group signal)

Ordering details

| | |
|--------------------------|---------------------|
| Product type description | PROTECT-PE-11-AN-SK |
| Article number | 101210946 |
| EAN Code | 4030661395548 |
| eCl@ss | 27-37-19-01 |

Approval

Approval



Classification

| | |
|------------------|--|
| Standards | EN ISO 13849-1, IEC 61508, EN 60947-5-1 |
| PL | up d (STOP 0) |
| Control category | up 3 (STOP 0) |
| DC | > 60% (STOP 0) |
| CCF | > 65 points |
| PFH value | $\leq 2 \times 10^{-7}/h$ (STOP 1) |
| - notice | up to max. 36.500 switching cycles/year and at max. 60% contact load |
| SIL | up 2 (STOP 0) |
| Mission time | 20 Years |
| - notice | The PFH value is applicable for the combinations listed in the table for |


contact load (K) (current through enabling paths) and switching cycle number (n-op/y).

In case of 365 operating days per year and a 24-hour operation, this results in the specified switching cycle times (t-cycle) for the relay contacts.

Diverging applications on request.

| K | n-op/y | t-cycle |
|-------|---------|----------|
| 20 % | 525.600 | 1,0 min |
| 40 % | 210.240 | 2,5 min |
| 60 % | 75.067 | 7,0 min |
| 80 % | 30.918 | 17,0 min |
| 100 % | 12.223 | 43,0 min |

Global Properties

| | |
|--|---|
| Permanent light | PROTECT-PE |
| Standards | IEC/EN 60204-1, EN 60947-5-1, EN ISO 13849-1, IEC 61508 |
| Compliance with the Directives (Y/N)  | Yes |
| Climatic stress | EN 60068-2-78 |
| Mounting | snaps onto standard DIN rail to EN 60715 |
| Terminal designations | IEC/EN 60947-1 |
| Materials | |
| - Material of the housings | Plastic, glass-fibre reinforced thermoplastic, ventilated |
| Weight | 220 |
| Start conditions | Automatic |
| Start input (Y/N) | No |
| Feedback circuit (Y/N) | No |
| Start-up test (Y/N) | No |
| Automatic reset function (Y/N) | Yes |
| Reset with edge detection (Y/N) | No |
| Pull-in delay | |
| - ON delay with automatic start | typ. 10 ms |
| Drop-out delay | |
| - Drop-out delay in case of power failure | ≤ 60 |
| - Drop-out delay in case of emergency stop | ≤ 10 |

Mechanical data

| | |
|---|---------------------------------------|
| Connection type | terminals, plug-in |
| Cable section | |
| - Min. Cable section | 0,14 |
| - Max. Cable section | 1.5 |
| Pre-wired cable | rigid or flexible |
| Tightening torque for the terminals | 0,6 |
| Detachable terminals (Y/N) | Yes |
| Mechanical life | 10.000.000 operations |
| Electrical lifetime | Derating curve available on request |
| resistance to shock | 30 g / 11 ms |
| Resistance to vibration To EN 60068-2-6 | 10...55 HZ, Amplitude 0,35 mm, ± 15 % |

Ambient conditions

| | |
|--|-----|
| Ambient temperature | |
| - Min. environmental temperature | -25 |
| - Max. environmental temperature | +55 |
| Storage and transport temperature | |
| - Min. Storage and transport temperature | -40 |
| - Max. Storage and transport temperature | +85 |

| | |
|---|-----------------|
| Protection class | |
| - Protection class-Enclosure | IP20 |
| - Protection class-Terminals | IP20 |
| - Protection class-Clearance | IP20 |
| Air clearances and creepage distances To IEC/EN 60664-1 | |
| - Rated impulse withstand voltage U_{imp} | 4 kV |
| - Overvoltage category | III To VDE 0110 |
| - Degree of pollution | 2 To VDE 0110 |

Electromagnetic compatibility (EMC)

| | |
|------------|-----------------------------|
| EMC rating | conforming to EMC Directive |
|------------|-----------------------------|

Electrical data

| | |
|---|--|
| Rated DC voltage for controls | |
| - Max. rated DC voltage for controls | 21.1 |
| - Max. rated DC voltage for controls | 28.8 |
| Rated AC voltage for controls, 50 Hz | |
| - Min. rated AC voltage for controls, 50 Hz | 21.1 |
| - Max. rated AC voltage for controls, 50 Hz | 26.4 |
| Rated AC voltage for controls, 60 Hz | |
| - Min. rated AC voltage for controls, 60 Hz | 21.1 |
| - Max. rated AC voltage for controls, 60 Hz | 26.4 |
| Contact resistance | max. 100 m Ω |
| Power consumption | max. 1.7 W; plus signalling outputs Y1...Y5 |
| Type of actuation | DC |
| Rated operating voltage U_e | 24 VDC -12% / $+20\%$, residual ripple max. 10% |
| Operating current I_e | 0,075 A; plus signalling outputs Y1...Y5 |
| Electronic protection (Y/N) | Yes |
| Fuse rating for the operating voltage | Internal electronic trip, tripping current $> 0,3$ A |
| Current and tension on control circuits | 24 VDC, 10 mA |

Inputs

Monitored inputs

| | |
|------------------------------------|--|
| - Short-circuit recognition (Y/N) | Yes |
| - Wire breakage detection (Y/N) | Yes |
| - Earth connection detection (Y/N) | Yes |
| Number of shutters | 1 |
| Number of openers | 1 |
| Input resistance | approx. 2900 Ω at GND or at U_e |
| Input signal "1" | 19 - 28.8 VDC |
| Input signal "0" | 0 - 1 VDC |
| Conduction resistance | max. 40 Ω |

Outputs

| | |
|---|---|
| Stop category | 0 |
| Number of safety contacts | 0 |
| Number of auxiliary contacts | 2 (13-14; 23- 24) |
| Number of signalling outputs | 7 (Y1-Y5) |
| Switching capacity | |
| - Switching capacity of the safety contacts | max. 24 VDC, 2 A ohmic (inductive in case of appropriate protective |

| | |
|--|---|
| - Switching capacity of the signaling/diagnostic outputs | wiring) 24 VDC / 100 mA |
| Fuse rating | |
| - Protection of the safety contacts | 2 A slow blow |
| - Fuse rating for the signaling/diagnostic outputs | Internal electronic trip, tripping current > 0,75 A |
| Utilisation category To EN 60947-5-1 | DC-13: 24 V / 2 A |
| Number of undelayed semi-conductor outputs with signaling function | 0 |
| Number of undelayed outputs with signaling function (with contact) | 9 |
| Number of delayed semi-conductor outputs with signaling function. | 0 |
| Number of delayed outputs with signalling function (with contact). | 0 |
| Number of secure undelayed semi-conductor outputs with signaling function | 0 |
| Number of secure, undelayed outputs with signaling function, with contact. | 0 |
| Number of secure, delayed semi-conductor outputs with signaling function | 0 |
| Number of secure, delayed outputs with signaling function (with contact). | 0 |
| Outputs with antivalent safety contacts (Y/N) | Yes |

LED switching conditions display

| | |
|---|-----|
| LED switching conditions display (Y/N) | Yes |
| Number of LED's | 6 |
| LED switching conditions display | |
| - The integrated LEDs indicate the following operating states. | |
| - Position relay K3 | |
| - Position relay K1 | |
| - Position relay K2 | |
| - Position relay K4 | |
| - Internal operating voltage Ui | |
| - LED's or signalling outputs signalise an opened protective device or emergency stops. | |
| - Monitoring effected on both contact circuits of the sensor. | |
| - When the safety guard or the emergency stop circuit is opened, a 24V signal is switched at each output concerned (Y1...Y5) and the assigned LED is lit. | |

Miscellaneous data

| | |
|--------------|---|
| Applications |  Emergency-Stop button  Pull-wire emergency stop switches  Guard system  Safety sensor  Safety light curtain |
|--------------|---|

Dimensions

| | |
|------------|---------|
| Dimensions | |
| - Width | 65.5 mm |
| - Height | 126 mm |
| - Depth | 61 mm |

notice

Inductive loads (e.g. contactors, relays, etc.) are to be suppressed by means of a suitable circuit.

notice - Wiring example

Start level: Depends on the wiring of the safety relay module.

Sensor level: 2-channel control of magnetic safety switches according to EN 60947-5-3

Output level: 2-channel control of a downstream safety relay module

The control recognises cross-short, cable break and earth leakages in the monitoring circuit.

If the inputs S1, S3, S5 and S7 are not used, they have to be bridged to +

If the inputs S2, S4, S6 and S8 are not used, they have to be bridged to -

The safety relay modules must be suitable for signal processing for single or dual-channel floating NC-contacts

Start and actuator configuration has to be effected in accordance with the data sheet

The wiring diagram is shown with guard doors closed and in de-energised condition.

Keywords

Keywords PROTECT

Ordering code

PROTECT-PE-(1)-(2)

| | |
|---------|--|
| (1) | |
| 02 | 2 Opener (NC) |
| 11 | 1 Normally open contact (NO) / 1 Opener (NC) |
| -AN | with antivalent output contacts |
| (2) | |
| without | Cage clamps |
| SK | Screw connection, plug-in |

Documents

Operating instructions and Declaration of conformity (de) 543 kB, 14.07.2016

Code: mrl_protect-pe_de

Operating instructions and Declaration of conformity (jp) 629 kB, 17.10.2016

Code: mrl_protect-pe_jp

Operating instructions and Declaration of conformity (en) 533 kB, 14.07.2016

Code: mrl_protect-pe_en

Operating instructions and Declaration of conformity (it) 456 kB, 25.07.2016

Code: mrl_protect-pe_it

Operating instructions and Declaration of conformity (da) 469 kB, 15.10.2015

Code: mrl_protect-pe_da

Operating instructions and Declaration of conformity (pl) 480 kB, 22.11.2016

Code: mrl_protect-pe_pl

Operating instructions and Declaration of conformity (es) 457 kB, 20.07.2016

Code: mrl_protect-pe_es

Operating instructions and Declaration of conformity (cs) 475 kB, 24.02.2016

Code: mrl_protect-pe_cs

Operating instructions and Declaration of conformity (fr) 463 kB, 17.02.2014

Code: mrl_protect-pe_fr

Operating instructions and Declaration of conformity (nl) 471 kB, 29.06.2018

Code: mrl_protect-pe_nl

Operating instructions and Declaration of conformity (pt) 473 kB, 12.04.2017

Code: mrl_protect-pe_pt

CCC certification (cn) 1 MB, 14.03.2014

Code: q_prop01

CCC certification (en) 1 MB, 14.03.2014

Code: q_prop02

Images

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The data and values have been checked thoroughly. Technical modifications and errors excepted.

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