

Datasheet - PROTECT-PE-11-SK

Input expander / PROTECT-PE



- 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 all sensors (Y5, group signal)

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

Ordering details

Product type description	PROTECT-PE-11-SK
Article number	101210945
EAN Code	4030661395517
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
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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)	No

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 K4	
- Position relay K2	
- Position relay K3	
- Position relay K1	
- 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
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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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