Datasheet - PROTECT-IE-02

Input expander / PROTECT-IE

☒ Preferred typ



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

- Input expander
- 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)

Ordering details

Product type description	Protect-IE-02
Article number	1184759
EAN code	4030661322605

Approval

Approval	cULus USA/CAN

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	≤ 2 x 10^{-7}/h (STOP 1)
- notice	up to max. 36.500 switching cycles/year
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.

Global Properties

Product name	PROTECT-IE
Standards	IEC/EN 60204-1, EN 60947-5-1, EN ISO 13849-1, IEC 61508
Compliance with the Directives (Y/N) CE	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	200 g
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	≤ 20 ms
Drop-out delay	
- Drop-out delay in case of emergency stop	≤ 20 ms

Mechanical data

Connection type	Cage clamps
Cable section	
- Min. Cable section	0,08 mm²
- Max. Cable section	2.5 mm²
Pre-wired cable	rigid or flexible
Detachable terminals (Y/N)	No
Mechanical life	10.000.000 operations
Electrical lifetime	Derating curve available on request
restistance 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 °C
- Max. environmental temperature	+55 °C
Storage and transport temperature	
- Min. Storage and transport temperature	−40 °C
- Max. Storage and transport temperature	+85 °C
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}	800 V
- 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	
- Min. rated DC voltage for controls	20.4 V
- Max. rated DC voltage for controls	28.8 V
Rated AC voltage for controls, 50 Hz	
- Min. rated AC voltage for controls, 50 Hz	20.4 V
- Max. rated AC voltage for controls, 50 Hz	26.4 V
Rated AC voltage for controls, 60 Hz	
- Min. rated AC voltage for controls, 60 Hz	20.4 V
- Max. rated AC voltage for controls, 60 Hz	26.4 V
Contact resistance	max. 100 mΩ
Power consumption	max. 1.7 W; plus signalling outputs Y1…Y4
Type of actuation	DC
Rated operating voltage U_e	24 VDC −15% / +20%, residual ripple max. 10%
Operating current I_e	0,075 A; plus signalling outputs Y1…Y4
Electronic protection (Y/N)	Yes
Fuse rating for the operating voltage	Internal electronic trip, tripping current > 0,1 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	0 piece
Number of openers	2 piece
Input resistance	approx. 2900 Ω at GND or at U_e
Input signal "1"	19 - 28.8 VDC
Input signal "0"	0 - 1 VDC

Outputs

Stop category	0
Number of safety contacts	2 piece
Number of auxiliary contacts	0 piece
Number of signalling outputs	4 piece
Switching capacity	
- Switching capacity of the safety contacts	max. 24 VDC, 2 A ohmic (inductive in case of appropriate protective wiring)

- Switching capacity of the signaling/diagnostic outputs	Y1…Y4: 24 VDC, 0,1 A
Fuse rating	
- Protection of the safety contacts	2 A slow blow
- Fuse rating for the signaling/diagnostic outputs	Internal electronic trip, tripping current > 0,5 A
Utilisation category To EN 60947-5-1	DC-13: 24 V / 2 A
Number of undelayed semi-conductor outputs with signaling function	4 piece
Number of undelayed outputs with signaling function (with contact)	1 piece
Number of delayed semi-conductor outputs with signaling function.	0 piece
Number of delayed outputs with signalling function (with contact).	0 piece
Number of secure undelayed semi-conductor outputs with signaling function	0 piece
Number of secure, undelayed outputs with signaling function, with contact.	2 piece
Number of secure, delayed semi-conductor outputs with signaling function	0 piece
Number of secure, delayed outputs with signaling function (with contact).	0 piece

LED switching conditions display

LED switching conditions display (Y/N)	Yes
Number of LED´s	5 piece

LED switching conditions display

- The integrated LEDs indicate the following operating states.
- Position relay K2
- Position relay K3
- Position relay K4
- LED’s or signalling outputs signalise an opened protective device or emergency stops.
- Position relay K1
- 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...Y4) and the assigned LED is lit.
- Supply voltage U_B

Miscellaneous data

Applications

 Emergency-Stop button

 Pull-wire emergency stop switches

 Guard system

 Safety sensor

Dimensions

Dimensions	
- Width	48 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 obtainable control category according to EN 954-1 depends on type and wiring of the used safety relay module
Control category 4 to EN 954-1 (when an individual guard door is opened).
Control category 3 to EN 954-1 (upon opening of several guard doors simultaneously).
The wiring diagram is shown with guard doors closed and in de-energised condition.

Keywords

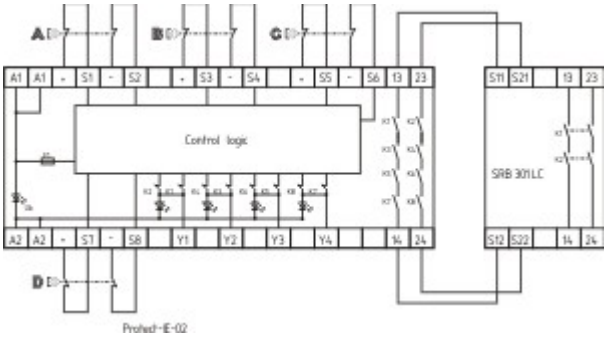
Keywords	Protect

Documents

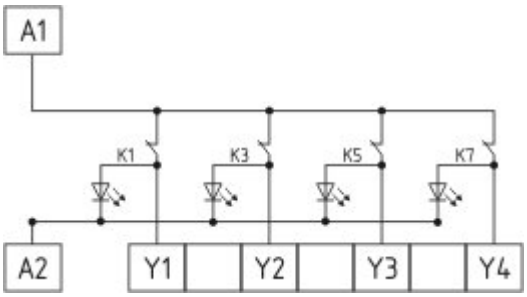
Wiring example (99) 11 kB, 22.08.2008
Code: kpriel02

Wiring example (99) 19 kB, 25.08.2008
Code: kpriel01

Images



Wiring example



Wiring example