



Translation of the original operating instructions Art.Nr-PF

Safe Contact Expander

2 independent channels, 4 contact sets per channel

Notes on using these connection and operating instructions

These connection and operating instructions contains information regarding the proper and effective use of the module.

Safety precautions and warnings are designated by the symbol.

Pepperl+Fuchs SE is not liable for damage resulting from improper use of its equipment. Familiarity with these instructions constitutes part of the knowledge required for proper use.

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This operating instruction is a part of the scope of delivery.



Specified normal operation

The module is used for contact multiplication.

The module is approved for safety applications up to Category 4.

The module may only be operated within the limits of its technical specifications.



For connecting and commissioning the module, comprehension of the operating instructions as well as the operating instructions of ASI-MON360/ASI Control Tools360 system manual is necessary.



The orderer has to guarantee the traceability of the devices via the serial number.



Person protection function

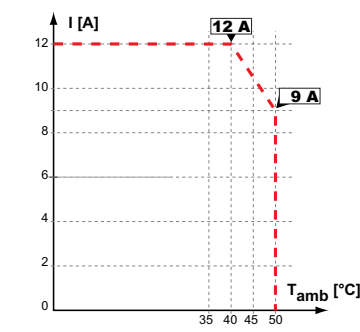
The module fulfills a person protection function. Improper installation impairs the function! The manufacturer of the machine/plant in which the safety related system is used is responsible for the correct and safe total function of every individual safety component! Depending on the choice of safety devices used, the safety system as a whole may also be assigned to a lower safety category!

Technical Data

General information	
Type of device	safe contacts, instantaneous
Number of independent channels	2
Number of contact sets per channel	4
Input	
Signal level	0-Signal: < 2,4 V _{DC} 1-Signal: 18 ... 26,5 V _{DC}
Permissible test pulse time	max. 1,5 ms
Rated current	60 mA per channel
Output	
Connection	force-guided
Minimal short circuit protection of output circuits (external)	6 A gG
Electrical life	AC1 (360 S/h) ca. 100000
Operate delay / delay time	< 20 ms / <20 ms
Switching frequency	15 Hz
Max. inrush current	20 A for 20 ms
Rated impulse voltage	4 kV ⁽¹⁾
Contact load EDM (1.51, 1.52 and 2.51, 2.52)	
Switching current	max. 20 mA
Contact load contact set (1.13, 1.14, 1.23, 1.24 and 2.13, 2.14, 2.23, 2.24)	
Switching voltage AC	10 ... 230 V
Switching voltage DC	10 ... 230 V
Insulation to input	double insulation
Switching current	5 mA... 3 A
Contact load contact set (1.33, 1.34, 1.43, 1.44 and 2.33, 2.34, 2.43, 2.44)	
Switching voltage AC	10 ... 230 V
Switching voltage DC	10 ... 230 V
Insulation to input	basic insulation
Switching current	5 mA... 3 A
Total current (per channel)	12 A (see "Diagram: total current through all the contact sets of a channel")
Usage category (EN 60347-4-1 / EN 60947-5-1)	AC1: 230 V/3 A (ca. 150 x 10 ³ cycles) AC 15: 230 V/3 A (ca. 80 x 10 ³ cycles) DC 1: 24 V/3 A (ca. 500 x 10 ³ cycles) DC 13: 24 V/3 A/0,1 Hz (ca. 50 x 10 ³ cycles)
B _{10d} (AC15)	1,96 x 10 ⁶ cycles
B _{10d} (DC13)	780 x 10 ³ cycles
Display	
LED CH 1	state of safety input 1
LED CH 2	state of safety input 2
LED EDM 1	state of EDM channel 1
LED EDM 2	state of EDM channel 2
Environment	
Overvoltage category	III
Degree of pollution	2
Mechanical lifetime	approx. 10 x 10 ⁶ switching operations
Ambient operating temperature	-20 °C ... 50 °C
Storage temperature	-40 °C ... 70 °C
Housing	plastic, for DIN rail mounting
Protection category (EN 60529)	IP20
Relative humidity	not condensing
Weight	270 g
Dimensions (W / H / D in mm)	22,5 / 99 / 114

(1) Safe isolation, reinforced insulation and 6 kV between A1/A2, 51/52, 43/44, 33/34 and 23/24, 13/14. Outputs among one another have basic insulation.

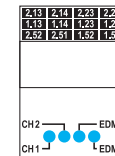
Diagram: total current through all the contact sets of a channel



Safety characteristics

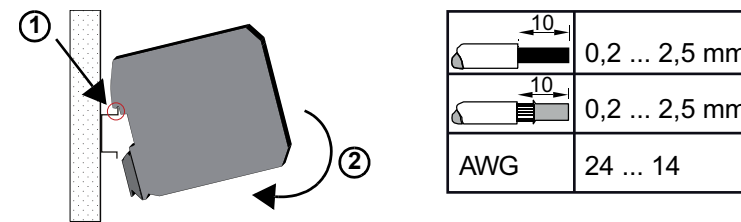
Characteristics	Value	Standard
Safety category	4	EN ISO 13849-1
Service life (T _M) [year]	20	EN ISO 13849-1
Maximal power-on time [month]	12	IEC 61508

Connections



1.13, 1.14	channel 1.1
1.23, 1.24	channel 1.2
1.33, 1.34	channel 1.3
1.43, 1.44	channel 1.4
2.13, 2.14	channel 2.1
2.23, 2.24	channel 2.2
2.33, 2.34	channel 2.3
2.43, 2.44	channel 2.4
1.51, 1.52	EDM channel 1 (I _{max} = 20 mA)
2.51, 2.52	EDM channel 2 (I _{max} = 20 mA)
1.A1, 1.A2	channel 1 NO-contacts
2.A1, 2.A2	channel 2 NO-contacts

Assembly



The module is mounted on 35 mm standard rails in accordance with EN 60715.

For assembling, position the module on the upper edge of the standard rail and then snap it onto the bottom edge.



The device should be installed in a control cabinet with a protection type of at least IP54!



Professional installation

Electrical installation is to be performed by qualified personnel. During installation, make sure that supply and signal cables and also the ASI bus cable are laid separately from high-voltage cables. In the switching cabinet, it must be ensured that appropriate spark extinction equipment is used for contactors. If drive motors and brakes are used, observe the installation instructions in the corresponding operating manual. Please note that the maximum cable length of the ASI bus cable is 100 m. Cable lengths longer than this require the use of suitable cable extensions.



It is essential to adhere to the prescribed fuse protection; this is the only way of guaranteeing safe disconnection in the case of a fault.

Maintenance

The proper function of the module within the system to be secured, i.e. the safe shutdown following the triggering of an assigned safety related sensor or switch, is to be checked at least once a year by the safety officer.



For this purpose, every safety related ASI module must be activated at least once per year and the switching behavior must be inspected by monitoring the output circuits of the ASI safety monitor.



The maximum power-on time and total operating time depends on the PFD value selected for the overall failure probability.

When the maximum power-on time has been reached (see safety characteristics), the safety system must be checked to ensure that it is functioning correctly by prompting the shutdown function.

When the maximum service life (T_M) has been reached, the device must be checked at the manufacturer's factory to ensure that it is functioning correctly.

LED status display

LEDs	Status	Description
CH 1, CH 2 (green)		contact open
		contact closed
EDM 1, EDM 2 (green)		feedback circuit open
		feedback circuit closed

LED on LED flashing LED off