

Translation of the original operating instructions **VBA-8E8A8A-KE4-ZEL/E2L/SE**

## AS-i Safety 8I/8O Module

8 standard inputs, 8 safety outputs, 1-8 release circuits

### Notes on using these connection and operating instructions

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

See the manuals "AS-i Safety 8I/8O Module" and "ASIMON configuration software" for detailed information.

Safety precautions and warnings are designated by the symbol.

Pepperl+Fuchs GmbH 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.

© Reprint and reproduction, in whole or in part, only with the explicit permission of:

### Pepperl+Fuchs GmbH

Lilienthalstraße 200 \* 68301 Mannheim

Telefon (06 21) 7 76-11 11 • Telefax (06 21) 7 76 27-11 11

Internet <http://www.pepperl-fuchs.com>

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



### Specified normal operation

The „AS-i Safety 8I/8O Module“ is a decentralized output module for safe control of actuators in the security bus system AS-i Safety at Work (SaW) by applying the power to lock principle. Thereby these outputs are only usable, if the safe state can be achieved by switching off the power.

The module is approved for safety applications up to Category 4 / PL e / SIL 3.

The module may only be operated within the limits of its technical specifications. It may only be operated with the specified current and voltage values.



Error states of the remote outputs used in the safe configuration can be eliminated by starting and stopping the monitor.



For connecting and commissioning the module, comprehension of the operating instructions as well as the operating instructions of ASIMON configuration and diagnostic software is necessary.



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

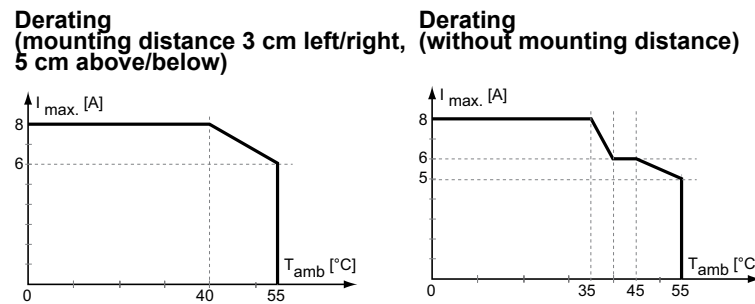


### Person protection function

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

Connection	
AS-i / AUX connection	COMBICON clamps
Length of connector cable	unlimited (loop resistance ≤150Ω)
AS-i	
Profile	configuration slave: S-7.A.5 4I/4O slaves: S-7.F.E diagnostic slaves: S-7.A.E
Addresses	depending on the number of OSSDs
Voltage	18 ... 31,6 V
Required master profile	≥ M4
Since AS-i specification	3.0
Max. current consumption	200 mA
AUX	
Voltage	19 ... 30 V (PELV)
Max. current consumption	8 A
Input	
Number	8 digital inputs
Power supply	out of AUX
Switching threshold	U < 5 V (low); U > 15 V (high)
Output	
Number	8 x fast electronic safe outputs
Number of OSSDs	1-8 OSSDs, freely configurable
Power supply	out of AUX
Max. output current	2 A per output (Σ output current: max. 8 A) (derating))
Test puls	if output is on: minimum interval between 2 test pulses: 250 ms; maximum pulse width 1 ms
Display	
LED display	see table "LED status display"
Environment	
Operating altitude	max. 2000 m
Ambient operating temperature	0 °C ... +55 °C
Storage temperature	-25 °C ... +85 °C
Housing	plastic, for DIN rail mounting
Protection category (EN 60529)	IP20
Tolerable loading referring to humidity	acc. EN 61131-2
Voltage of insulation	≥ 500 V
Weight	270 g
Dimensions (W / H / D in mm)	22,5 / 99 / 114

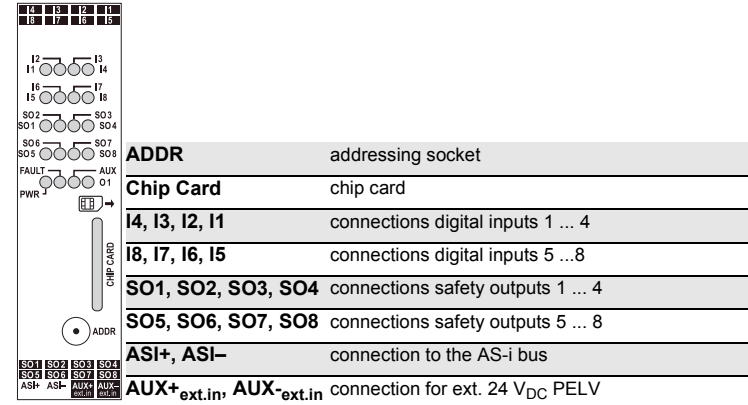


### Safety characteristics

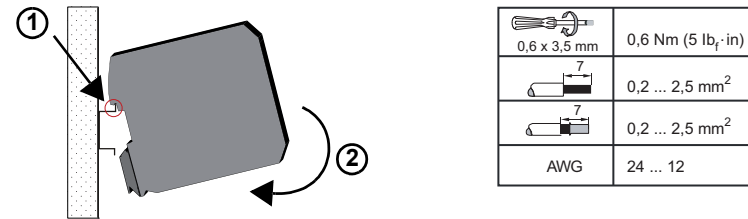
Characteristics	Value	Standard
Safety category	4	EN ISO 13849-1
Performance Level (PL)	e	EN ISO 13849-1
Safety Integrity Level (SIL)	3	EN 61508, EN 62061
Service life (T <sub>M</sub> ) [year]	20	EN ISO 13849-1
Maximal power-on time [month]	12	EN 61508
PFD <sup>1</sup>	9,58 x 10 <sup>-07</sup>	EN 61508
PFH <sub>D</sub> <sup>1</sup> [1/h]	5,08 x 10 <sup>-09</sup>	EN 62061
Max. system reaction time for the input [ms]	11	
Max. system reaction time for the output [ms]	40	

1. The failure rates are specified for a maximum ambient temperature of 50° C.

## Connections and controls



### 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.



Install the safety relay in a control cabinet with a minimum protection type of IP54!



### Have installation done professionally

Electrical installation is to be performed by a trained expert. During installation, care must be taken that supply and signal cables and also the AS-i bus cable are laid separately from high-voltage cables. In the switch cabinet, it must be ensured that appropriate spark quenching equipment is used with contactors. Where drive motors and brakes are used, attention must be paid to the installation instructions in the corresponding operating instructions. Please note that the maximum cable length of the AS-i bus cable is 100 m. Cables above that length require the use of a suitable circuit extension.

When installing the cables, make sure that no parasitic voltages can arise.



The AS-i and/or the 24 V must be supplied by a PELV power supply.

### 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 AS-i slave must be activated at least once per year and the switching behavior must be inspected by monitoring the output circuits of the AS-i 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<sub>M</sub>) has been reached, the device must be checked at the manufacturer's factory to ensure that it is functioning correctly.

## Diagnostic slaves

Bit	output	input	
Bit0	1: O1 LED on 0: O1 LED off	diagnostic color	
Bit1	P1=1		1: switches output on, if release granted. 0: switches output off, although release is granted.
	not used		
Bit2	not used		
Bit3	nonexistent	P2=0	1: feedback for user: release switched on 0: feedback for user: release switched off
		P2=1	state of related input

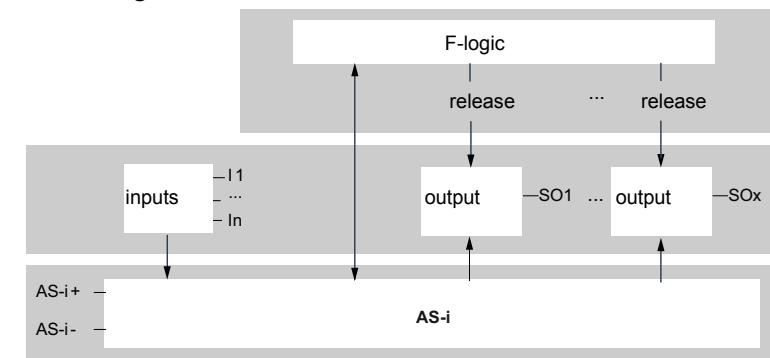
Value	color	description	state change	LED SO <sub>n</sub>
0	green	output on		on
1	green flashing	—		—
2	yellow	restart inhibit	help signal 2	1 Hz
3	yellow flashing	—		—
4	red	output off		off
5	red flashing	waiting for „reset of error condition“	help signal 1	8 Hz
6	grey	internal error, such as „fatal error“	only by means of „power-on“ of the device	all LEDs 8 Hz
7	green/yellow	output released, but not switched on	switching-on by setting „00“	off

### LED status display

LEDs	Status	Description
PWR (green)		AS-i voltage OK
FAULT (red)		AS-i error
I1 ... In (yellow)		state of inputs
SO1 ... SO <sub>n</sub> (yellow)		state of safety outputs
O1 (yellow)		PLC indicates alarm
AUX (green)		24 V <sub>DC</sub> AUX

LED on LED flashing LED off

### Block diagram



As long as the F-Logic is granting the release via the safety AS-i output slaves, the physical outputs can be switched with the standard PLC via the data bits of the 4I/4O slaves. If the release is omitted, the outputs will be switched off safely.

All 8 physical outputs can be released jointly by one safety AS-i output slave. It is also possible to configure a separate safety AS-i output slave for each physical output. Each intermediate setting is possible, e.g. one safety AS-i output slave for two physical outputs.

Pepperl+Fuchs GmbH  
Lilienthalstraße 200  
68307 Mannheim  
Germany  
Phone +49 621 776-0  
Fax +49 621 776-1000

No. / Nr.: DOC-2502  
Date / Datum: 2016-01-19

Copyright Pepperl+Fuchs  
www.pepperl-fuchs.com



#### Declaration of conformity / Konformitätserklärung

We, Pepperl+Fuchs GmbH declare under our sole responsibility that the **products** listed below are in conformity with the listed **European Directives and standards**.

Die Pepperl+Fuchs GmbH erklärt hiermit in alleiniger Verantwortung, dass die unten gelisteten **Produkte** den genannten **Europäischen Richtlinien und Normen** entsprechen.

#### Products / Produkte

Product / Produkt	Item number	Description / Beschreibung
VBA-8E8A8A-KE4-ZEL/E2L/SEL	284050	AS-interface Safety Module

#### Directives and Standards / Richtlinien und Normen

EU-Directive EU-Richtlinie	Standards Normen
<b>2004/108/EC (EMC)</b> valid until 2016-04-19 (L390/24-37) <b>2014/30/EU (EMC)</b> valid from 2016-04-20 (L96/79-106)	EN 62026-2:2013 EN 61000-6-2:2005 EN 61000-6-4:2007/A1:2011 EN 61131-2:2007
<b>2006/42/EC (MD)</b> (L157/24-86)	EN ISO 13849-1:2008/AC:2009 EN ISO 13849-2:2012 EN 62061:2005/A1:2013
<b>2011/65/EU (RoHS)</b>	EN 50581:2012

Supplemental Standards Sonstige Normen	Remarks Bemerkungen
EN 61326-3-1:2008	Immunity requirements for safety-related systems and for equipment intended to perform safety-related functions (functional safety)
EN 61508:2010 parts 1...7	Functional safety of electrical/electronic/programmable electronic safety-related systems

#### Affixed CE Marking / Angebrachte CE-Kennzeichnung



#### Signatures / Unterschriften

Mannheim, 2016-01-19

ppa. Dr. Thomas Sebastiany  
Director Business Unit SYSTEMS

i.V. Erwin Schmidt  
Product Manager

#### ANNEX MD

Authorised to compile the technical file/

Bevollmächtigt zur Zusammenstellung der technischen Unterlagen

Pepperl+Fuchs GmbH  
Lilienthalstraße 200  
68307 Mannheim  
Germany

#### Certificates / Zertifikate

Products / Produkte		
Serial number Seriennummer	Certificate Zertifikat	Issuer ID Aussteller ID
40000014735689 - 40000014740688	44 205 16000 802	0044

#### Key for Issuer ID / Schlüssel zur Aussteller ID

ID	Aussteller
0044	TÜV NORD CERT GmbH Langemarkstraße 20 45151 Essen Germany