AS-Interface safety module
VBA-4E1A-KE3-ZEJ/SR

- Safety output module with diagnostic node
- Safe relay output with galvanically isolated contact sets
- Assigns a complete address for the safe output and one A/B address for the inputs
- 4 inputs can be used either for diagnostics and EDM or as standard inputs
- Applications up to category 4/PL e/SIL 3
- Several safe output modules can be grouped into one enabling circuit

KE3 control cabinet module, 4 inputs, 1 control-safe relay output
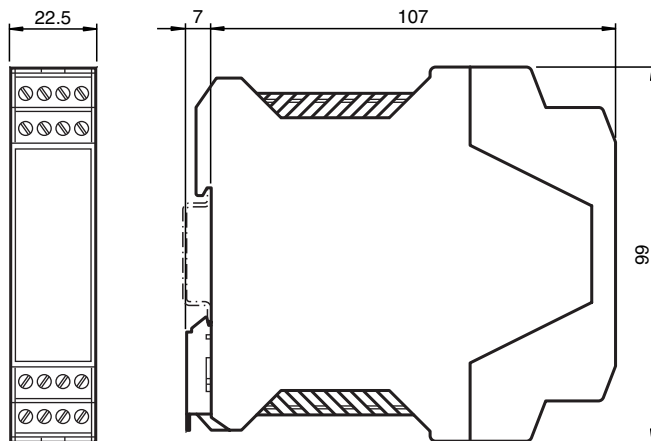
Function

The AS-Interface relay output module VBA-4E1A-KE3-ZEJ/SR is a control cabinet module with 4 inputs and a relay output. The inputs comprise 3 conventional and 1 EDM input. The relay-switched output can be loaded with 3 A at 24 V DC or 230 V AC. The use of the relay output module enables safe switching sequences to be achieved remotely in the field. This means that the parallel wiring of safe actuators in the field is a thing of the past.
The housing, which is only 22.5 mm wide, requires little space in the switch cabinet. The module is installed by simply snapping it onto the 35 mm standard mounting rail to EN 50022. An addressing socket is integrated in the module.
The connection is made via plug-in terminals. Four-terminal blocks (black) are used for the outputs. Connection of the AS-Interface is by means of a 2-station terminal block (yellow). This permits the simple removal of the sensors or of the supply during commissioning or servicing. The supply to the inputs and the connected sensors is fed internally via the module from the AS-Interface. The current switching state of the inputs and of the output relay is indicated via yellow LEDs. Communication faults and the set output bit A0 are indicated via red LEDs. The display of the operating voltage and the address 0 is provided by a green LED.
Access to the addressing of the safe output slaves and of the integrated A/B-Slaves takes place by switching over the programming switch to the operating mode "Prg" and "Run".

Dimensions

Technical Data

General specifications	
Node type	A/B node
AS-Interface specification	V2.1
Required gateway specification	≥ V2.1
UL File Number	E223772
Functional safety related parameters	
Safety Integrity Level (SIL)	SIL 3

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Technical Data

Performance level (PL)		PL e
Indicators/operating means		
LED FAULT		error display; LED red red: communication error
LED PWR		AS-Interface voltage; LED green
LED IN		switching state (input); 4 LED yellow
LED OUT		For flashing patterns see diagnostics table
LED ALARM		PLC reports alarm; red LED
Electrical specifications		
Auxiliary voltage (input)	U_{EXT}	12 ... 30 V DC PELV
Rated operating voltage	U_e	26.5 ... 31.6 V from AS-Interface
Rated operating current	I_e	≤ 30 mA (without sensors) / max. 200 mA
Protection class		III
Surge protection		U_{EXT}, U_e: Over voltage category III, safe isolated power supplies (PELV)
Input		
Number/Type		4 inputs for 2- or 3-wire sensors (PNP), DC
Supply		from AS-Interface
Voltage		21 ... 31 V DC
Current loading capacity		≤ 90 mA, overload- and short-circuit proof (INT)
Input current		≤ 8 mA (limited internally)
Sensor supply		≤ 90 mA
Switching point		according to DIN EN 61131-2 (Type 2)
0 (unattenuated)		≤ 2 mA
1 (attenuated)		≥ 4 mA
Signal delay		< 2 ms (input/AS-Interface)
Signal frequency		≤ 250 Hz
Output		
Number/Type		1 safety relay output
Supply		from AS-Interface
Nominal load		
Per contact		3 A / 24 V DC; 3 A / 230 V AC
Usage category		DC-13 and AC-15
Directive conformity		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 62026-2:2013 EN 61000-6-2:2005, EN 61000-6-4:2007
Standard conformity		
Degree of protection		EN 60529:2000
Input		EN 61131-2
Emitted interference		EN 61000-6-4:2007
AS-Interface		EN 62026-2:2013
Noise immunity		EN 61000-6-2:2005 EN 62026-2:2013
Programming instructions		
Profile		S-7.A.E
IO code		7
ID code		A
ID1 code		5 (Can be changed to 7 or F)
ID2 code		E
Data bits (function via AS-Interface)		**Input**Output
D0		E0 LED ALARM Diagnosis (see table Device colors)
D1		E1 OUT1 (see P1)
D2		E2 -
D3		E3 = 1.Y1 -
Parameter bits (programmable via AS-i)		**function**

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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Technical Data

P0	not used
P1	Output linkage: P1 = 1: safe output switches on release. P1 = 0: safe output switches on release and OUT1=1
P2	**ID1=5** not used **ID1=7 or F** P2 = 0 IN3 is input P2 = 1 IN3 notifies of release
P3	not used
Ambient conditions	
Ambient temperature	0 ... 55 °C (32 ... 131 °F)
Storage temperature	-25 ... 85 °C (-13 ... 185 °F)
Mechanical specifications	
Degree of protection	IP20
Connection	removable terminals rated connection capacity: rigid/flexible (with and without wire-end ferrules): 0.25 mm^2 ... 2.5 mm^2 for multiple-wire connection with two wires of equal cross-section: flexible with twin wire-end ferrules: 0.5 mm^2 ... 1.5 mm^2
Material	
Housing	PA 66-FR
Mounting	DIN mounting rail

Assembly

Set switch:
Prg = Programming of safety-related AS-Interface adress enabled.
Protective mode not possible.
Run = Programming of non safety-related AS-Interface adress enabled.
Protective mode possible.
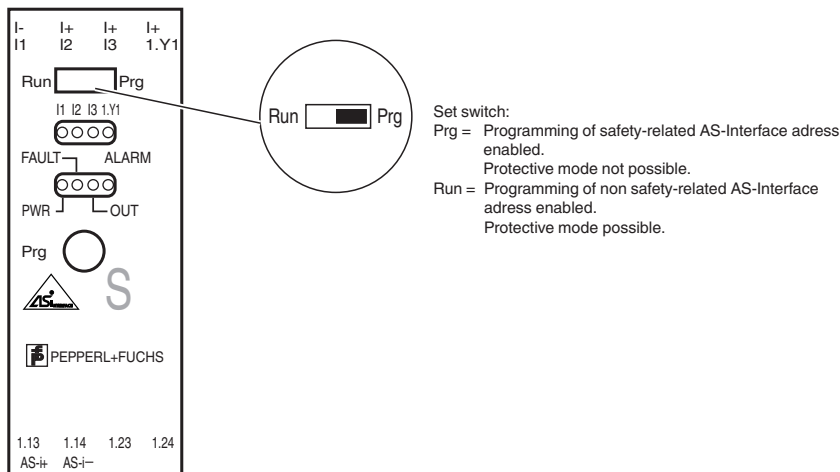
Connection

Do not connect inputs and outputs, which are supplied via the module from AS-interface or via auxiliary power, with power supply and signal circuits with external potentials.

Connection

Accessories

	VBP-HH1-V3.0-KIT	AS-Interface Handheld with accessory
	VAZ-PK-1,5M-V1-G	Adapter cable module/hand-held programming device
	VAZ-CHAIN-BU/BN70MM/1,0-25	25-point wiring link for control cabinet modules with screw terminals

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

Troubleshooting

Diagnostic

Value	Color	Description	State change	LED out
0	green	output on		on
1	green flash.	-		-
2	yellow	restart inhibit	auxillary signal 2	1 Hz
3	yellow flash.	-		-
4	red	output off		off
5	red flash.	waiting for reset of error condition	auxillary signal 1	8 Hz
6	grey	internal error such as fatal error	only via Power on on device	all LED flashing
7	green/yellow	output released, but not switched on	switching on by setting of A1	off

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