



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

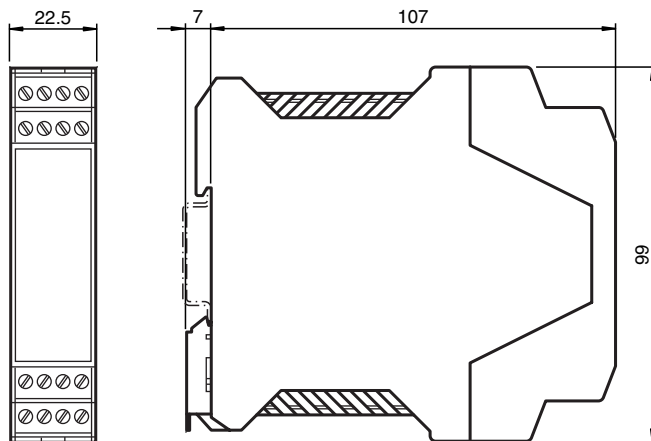
The AS-Interface relay output module VBA-4E1A-KE3-ZEJ/SR is a control cabinet module with 4 inputs and a relay output. The inputs comprise 3 conventional and 1 EDM input. The relay-switched output can be loaded with 3 A at 24 V DC or 230 V AC. The use of the relay output module enables safe switching 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

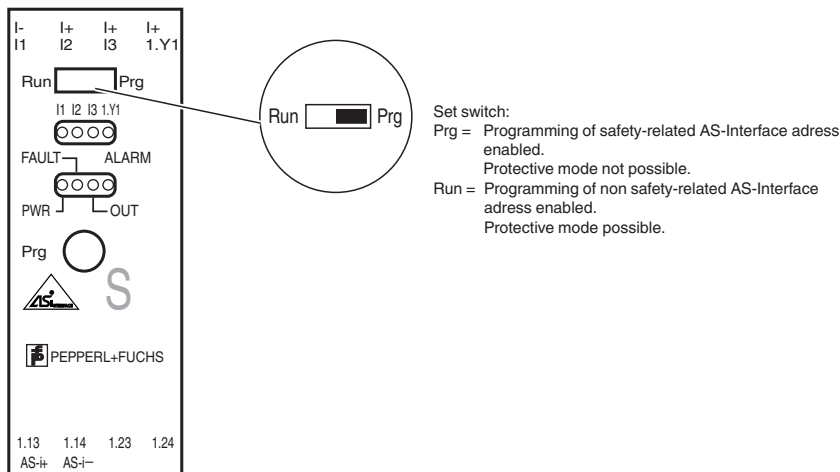
Performance level (PL)	PL e	
Indicators/operating means		
LED FAULT	error display; LED red red: communication error	
LED PWR	AS-Interface voltage; LED green	
LED IN	switching state (input); 4 LED yellow	
LED OUT	For flashing patterns see diagnostics table	
LED ALARM	PLC reports alarm; red LED	
Electrical 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	

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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



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

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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