

AS-Interface sensor/actuator module

VBA-4E4A-KE-ZE/R

- Housing with removable, mechanical and color coded terminals
- Communication monitoring
- Inputs for 2- and 3-wire sensors
- Isolated relay output
- Addressing jack
- Selectable supply to the sensors: External or from the module
- Function display for bus, internal sensor supply, inputs, and outputs

KE switch cabinet module, 4 inputs (PNP) and 4 relay outputs

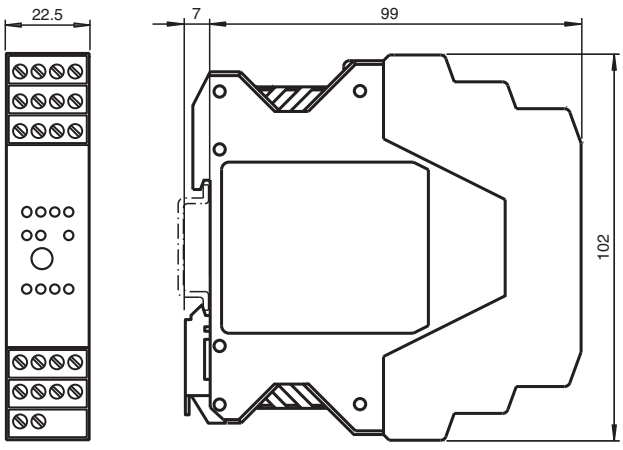
Function

The VBA-4E4A-KE-ZE/R AS-Interface I/O module is a cabinet module with 4 inputs and 4 relay outputs. The only 22.5 mm width housing requires not much space in the switch cabinet. The module is installed by snapping on the 35 mm DIN Rail in accordance with EN 50022.
The connection is made through plug-in terminals. For the inputs and outputs 4-way-terminal blocks (inputs black, outputs red) are used. The connection of the AS-Interface is made via a 2-way-terminal block (yellow). In order to avoid exchanges, the terminals for inputs and outputs as well as AS-Interface are coded mechanically.
The power supply of the inputs and the connected sensors can be made as required via the internal supply of the module (AS-Interface) or via an external voltage source. The switching is carried out by means of a switch that is positioned at the side of the module. The selection of the internal input supply is indicated via the LED INT. The current switching state of each input and output is indicated by the resp. LED IN and OUT.
Note:
The device is equipped with a communication monitoring, which switches the outputs to their de-energized state, when there is no AS-Interface communication with the module for more than 40 ms.
An overloading of the internal input supply will be reported via the function 'peripheral error' to the AS-Interface master. The communication via the AS-Interface remains intact.

Application

For 4-wire sensors, it is only possible to use plug-in slot IN1 or IN3 for inputs 1+2 or 3+4 (jumpered internally).

Dimensions



Technical Data

General specifications	
Node type	A/B node
AS-Interface specification	V3.0
Required gateway specification	≥ V3.0

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Technical Data

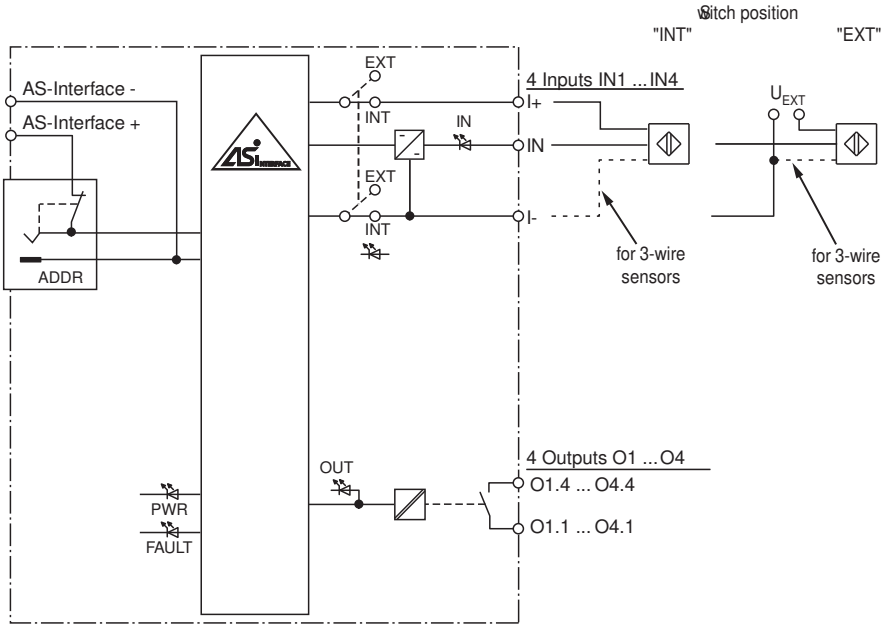
Profile		S-7.A.7
IO code		7
ID code		A
ID1 code		7
ID2 code		7
UL File Number		E106378
Indicators/operating means		
LED FAULT		Fault display; Red LED red: Communication fault or address is 0 red, flashing: Overload, internal input supply
LED INT		Internal input supply active; LED green
LED PWR		AS-Interface voltage; LED green
LED IN		switching state (input); 4 LED yellow
LED OUT		Switching state (output); 4 LED yellow
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	≤ 35 mA (no sensors)/max. 210 mA
Surge protection		O1 ... O4: Over voltage category II 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 (switch position INT, default settings) or external U_{EXT} (switch position EXT)
Voltage		21 ... 31 V DC (INT)
Current loading capacity		≤ 150 mA, overload- and short-circuit protected (INT)
Input current		≤ 8 mA (limited internally)
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)
Output		
Number/Type		4 relay outputs, normally open
Supply		none
Nominal load		
Per contact		2 A / 30 V DC (acc. UL max. 24 V DC); 2 A / 253 V AC
Per module		8 A
Control circuit		≤ 8 mA per relay (from AS-Interface)
Switching delay		< 10 ms (AS-Interface/contact)
Usage category		DC-13 and AC-14
Switching		
Mechanical		5×10^6
Electrical		0.2×10^6 (250 V AC, 2 A, cos ϕ = 0.4)
Galvanic isolation		
Input/Output		safe isolation, rated insulation voltage 300 V AC
Input/AS-Interface		Switch position INT: None Switch position EXT: reinforced insulation, rated insulation voltage 66 V DC
Output/Output		basic insulation, rated insulation voltage 300 V AC
Output/AS-Interface		safe isolation, rated insulation voltage 300 V AC
Directive conformity		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 62026-2:2013 EN 61000-6-4:2007 EN 61326-1:2006
Low voltage		
Directive 73/23/EEC		EN 60947-1:2007
Standard conformity		

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Galvanic isolation		EN 60947-1:2007
Degree of protection		EN 60529:2000
Fieldbus standard		EN 62026-2:2013
Input		EN 61131-2:2004
Emitted interference		EN 61000-6-4:2007
AS-Interface		EN 62026-2:2013
Noise immunity		EN 61000-6-2:2005, EN 61326-1:2006, EN 62026-2:2013
Ambient conditions		
Ambient temperature		-25 ... 60 °C (-13 ... 140 °F)
Storage temperature		-25 ... 85 °C (-13 ... 185 °F)
Relative humidity		85 % , noncondensing
Climatic conditions		For indoor use only
Altitude		≤ 2000 m above MSL
Pollution degree		2
Mechanical specifications		
Degree of protection		IP20
Connection		removable terminals rated connection capacity: rigid/flexible (with and without wire-end ferrules): 0.25 mm² ... 2.5 mm² for multiple-wire connection with two wires of equal cross-section: flexible with twin wire-end ferrules: 0.5 mm² ... 1.5 mm²
Material		
Housing		PA 66-FR
Mass		170 g
Mounting		DIN mounting rail
Tightening torque of clamping screws		0.5 Nm ... 0.6 Nm

Connection



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.

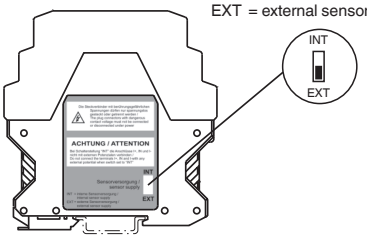
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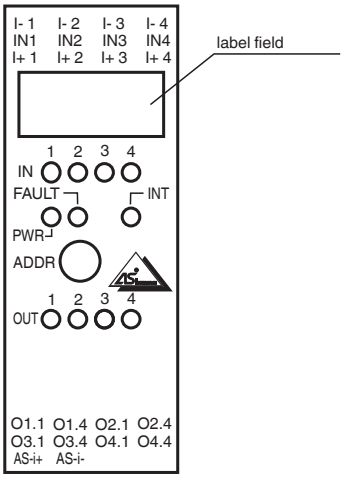
Assembly

The plug connectors with dangerous contact voltage must not be connected or disconnected under power

ATTENTION
Do not connect the terminals I+, IN and I- with any external potential when switch set to "INT"

Sensor supply:
INT = internal sensor supply (from AS-i)
EXT = external sensor supply





Programming

Data bits
(function via AS-Interface)

Data bit	Input	Output
D0	IN1	O1
D1	IN2	O2
D2	IN3	O3
D3	IN4	O4

Parameter bits
(programmable via AS-Interface)

Parameter bit	Function
P0	Communication monitoring P0=0 monitoring off, the outputs maintain the status if communication fails P0=1 monitoring on, if communication fails, the outputs are deenergised, default setting
P1	Input filter P1=0 input filter on, pulse suppression ≤ 2 ms P1=1 input filter off, default setting
P2	Synchronous mode P2=0 Synchronous mode on P2=1 Synchronous mode off, default setting
P3	not used

Accessories

	**VBP-HH1-V3.0-KIT**	AS-Interface Handheld with accessory
	**VAZ-PK-1,5M-V1-G**	Adapter cable module/hand-held programming device

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