# 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.
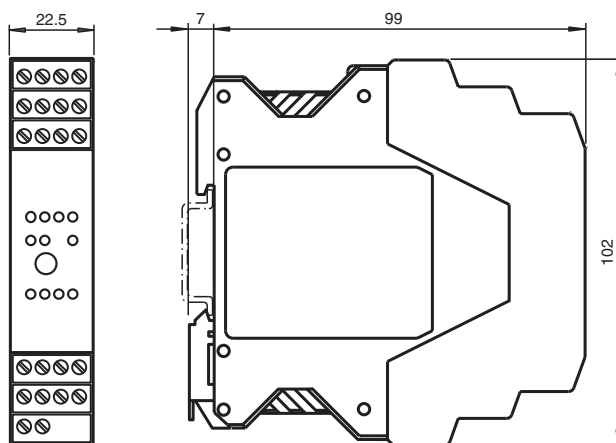**Note:**
The device is equipped with a communication monitoring, which switches the outputs to their de-energized state, when there is no AS-Interface communication with the module for more than 40 ms.
An overloading of the internal input supply will be reported via the function 'peripheral error' to 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<br>red: Communication fault or address is 0<br>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<br>$U_{EXT}$, $U_e$: 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 | | $5 \times 10^6$ |
| Electrical | | $0.2 \times 10^6$ (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** | | |

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

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## Technical Data

| | |
|---|---|
| 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<br>rated connection capacity:<br>rigid/flexible (with and without wire-end ferrules): 0.25 mm² ... 2.5 mm²<br>for multiple-wire connection with two wires of equal cross-section:<br>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
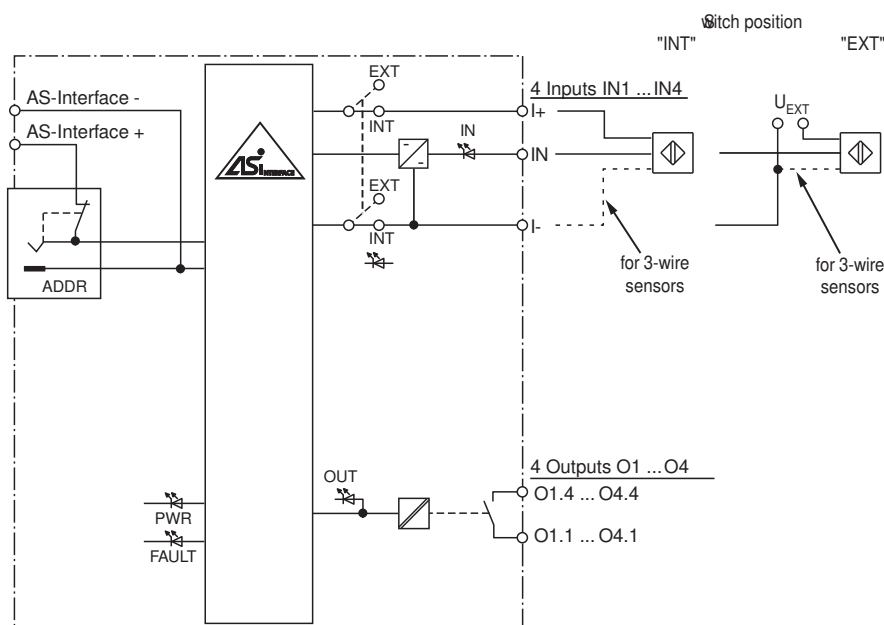


## Connection

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.
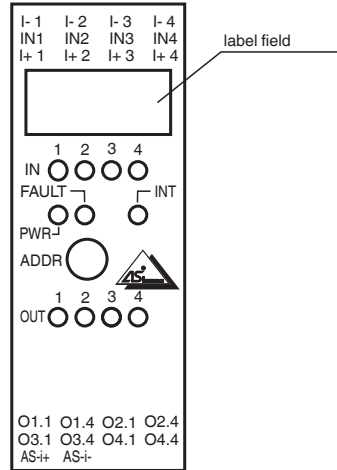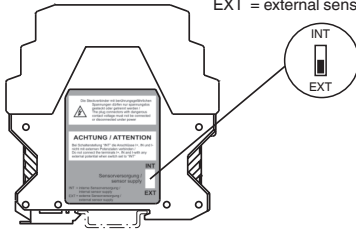
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## Assembly

⚠️ 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

```
I- 1   I- 2   I- 3   I- 4
IN1    IN2    IN3    IN4        label field
I+ 1   I+ 2   I+ 3   I+ 4

           1  2  3  4
IN       O  O  O  O
FAULT                 INT
PWR
ADDR         O
           1  2  3  4
OUT      O  O  O  O

O1.1  O1.4  O2.1  O2.4
O3.1  O3.4  O4.1  O4.4
AS-i+   AS-i-
```

## 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<br>P0=0 monitoring off, the outputs maintain the status if communication fails<br>P0=1 monitoring on, if communication fails, the outputs are deenergised, default setting |
| P1 | Input filter<br>P1=0 input filter on, pulse suppression ≤ 2 ms<br>P1=1 input filter off, default setting |
| P2 | Synchronous mode<br>P2=0 Synchronous mode on<br>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 |

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

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