**Model number**

VBA-2E-G11-I/U/PT100-F

G11 analog module
2 analog inputs

**Features**

- Addressing jack
- Function display for bus, internal and external sensor power supply, inputs
- Supply for inputs from AS-Interface or auxiliary voltage

**Function**

The VBA-2E-G11-I/U/PT100-F analog module has two analog inputs which can be current input (4 mA to 20 mA), voltage input (0 to 10 V) or resistance thermometer input (-200 to 850 °C).

The power supply to the measurement value generators takes place depending on the position of the internal slide switch, via AS-Interface or through auxiliary voltage. The choice of input supply is displayed via the INT/EXT LED.

Measured value conversion and data transfer is provided asynchronously according to the AS-Interface profile 7.3. The resolution of the analog values is 16 bit with a value range of 4000 to 20000 (current input), 0 to 10000 (voltage input) and - 200 °C to 850 °C (resistance thermometer input). Network interference can be eliminated with a configurable filter (50 Hz/60 Hz) in the A/D converter.

**Note:** An overload of the internal input supply is also reported to the AS-Interface master via the 'peripheral fault' function. Communication via the AS-Interface continues.

**Indicating / Operating means**

1...2 Pt100 inputs
3...4 Current inputs
5...6 Voltage inputs
7 Internal switch
8 Addressing socket
9 Status indication

5: functional ground

Set switch:
- Open: unscrew the blind plug
- INT= sensor supply from AS-Interface
- EXT= sensor supply through auxiliary voltage

Change switch only with the power off!
## Technical data

### General specifications
- **Slave type**: Standard slave
- **AS-Interface specification**: V3.0
- **Required master specification**: ≥ V2.1
- **UL File Number**: E87056

### Functional safety related parameters
- **MTTFd**: 190 a
- **Mission Time (TM)**: 20 a
- **Diagnostic Coverage (DC)**: 0%

### Indicators/operating means
- **LED AS-i/FAULT**
  - Status display; multi-colour LED
  - Green: normal operation
  - Red: communication fault
  - Flashing yellow/red: address 0
  - Flashing green/red: peripheral fault

- **LED ANALOG**
  - Status of input signal; LED yellow
  - Off: not active
  - On: signal within measurement range
  - Flashing: signal outside of measurement range

- **LED AUX**
  - Ext. auxiliary voltage $U_{AUX}$; dual LED green/red
  - Green: voltage OK
  - Red: reverse voltage

- **LED INT/EXT**
  - Status display input supply; LED green
  - Off: input supply from AS-Interface
  - On: input supply from auxiliary voltage

### Electrical specifications
- **Auxiliary voltage (output)**: $U_{AUX}$, $20 \ldots 30 \text{ V DC PELV}$
- **Rated operational voltage**: $U_e$, $26.5 \ldots 31.6 \text{ V from AS-Interface}$
- **Rated operational current**: $I_e$, $\leq 60 \text{ mA (without sensors)}$ / $\leq 200 \text{ mA}$
- **Protection class**: III
- **Overvoltage protected**: $U_{AUX}$, $U_e$. Over voltage category III, safe isolated power supplies (PELV)

### Input
- **Number/Type**: 2 analog inputs
  - Current: $0 \ldots 20 \text{ mA/4 \ldots 20 mA}$
  - Voltage: $0 \ldots 10 \text{ V}$
  - PT100: $-200 \ldots 850 \text{ °C}$

- **Supply**
  - from AS-Interface (switch position INT, basic setting) or auxiliary voltage $U_{EXT}$ (switch position EXT)

- **Current loading capacity**
  - $\leq 140 \text{ mA from AS-Interface}$
  - $\leq 600 \text{ mA from external auxiliary voltage } U_{AUX}$

- **Input resistance**
  - Current input: $\leq 70 \text{ Ω}$
  - Voltage input: $100 \text{ kΩ}$

### Accuracy
- **Voltage/current**: $0.1\%$ of accumulated value
  - PT100: $0.1\%$ of indicated temperature $[°C] + 0.3 °C$

- **Resolution**
  - 16 Bit / 1 $\mu\text{A}$ (current input)
  - 16 bit / 1 mV (voltage input)
  - 16 Bit / 0.1°C (temperature input)

### Temperature influence
- **Voltage/current**: $20 \text{ ppm/K}$
  - PT100: $(10 \text{ ppm of indicated temperature } [°C] + 0.003 °C)/K$

### Programming instructions
- **Profile**: S-7.3.D
- **IO code**: 7
- **ID code**: 3
- **ID2 code**: D

### Data bits
- **Parameter bits** (programmable via AS-i)
  - **P0**: 50/60 Hz filter
    - P0=1, enabled
    - P0=0, disabled

  - **P1**: Projecting of the 2nd channel
    - P1=1, channel 2 is projected
    - P1=0, channel 2 is not projected

  - **P2**: Indication of the peripheral fault by exceeding measuring range
    - P2=1, peripheral fault is reported
    - P2=0, peripheral fault is not reported

  - **P3**: P3=1, normal operating mode
    - P3=0, both channels in current mode and without recognition of wire breakage

### Ambient conditions
- **Ambient temperature**: $-25 \ldots 70 °C (-13 \ldots 158 °F)$
- **Storage temperature**: $-25 \ldots 85 °C (-13 \ldots 185 °F)$

### Mechanical specifications
- **Protection degree**: IP68 / IP69K
- **Connection**: AS-Interface/$U_{AUX}$, cable piercing method, flat cable yellow/flat cable black
- **Inputs**: M12 round connector

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## Accessories

### VBP-HH1-V3.0
- **AS-Interface Handheld**
  - **VAZ-PK-1,5M-V1-G**
  - Connection cable module/hand-held programming device
Connecting instruction
Use shielded cable to connect the sensors.

Mounting instructions
Screw the device onto a level mounting surface using two M4 attachment screws. The functional earth of the M12 round connectors is connected with the metal insert in the base via the tightened central screw. Make sure that the metal insert is connected to protective earth via the mounting screws. The mounting screws are not included.

Screw a blind plug onto spare connections to ensure the protection category.

Shutdown 2nd channel
When delivered, the PT100 input PT2 is bridged to turn off channel 2. Remove the bridge to use channel 1 & 2.