Pressure transmitter
For sanitary applications
Model SA-11

Applications
- For gases, compressed air, vapour, liquids, pastes and powdery media
- Ultra-pure steam systems for SIP
- Hydrostatic level measurement:
- Vacuum pressure monitoring, e.g. vacuum conveyors, pump monitoring
- Food and beverage manufacturing, pharmaceutical industry, biotechnology, sanitary applications

Special features
- Wide variety of aseptic process connections, for process temperatures up to 150 °C
- Flush diaphragm with a surface roughness of Ra < 0.38 μm
- Fully welded
- Suitable for SIP and CIP
- Ingress protection up to IP 68

Description
The pressure transmitter SA-11 is designed especially for the requirements of the food and beverage, pharmaceutical and biotechnology industries.
It is particularly suitable for the special conditions of CIP/SIP cleaning processes, such as chemical stability towards cleaning liquids and high temperatures.
The flush diaphragm is directly welded to the process connection. This guarantees a crevice-free connection of the process connection and the measuring cell so that additional sealings are not required.
For dead-space free instrumentation, aseptic process connections (clamp, threaded, VARIVENT® and NEUMO®) are available.

The SA-11 pressure transmitter is ideally suited to fulfil the stringent demands of sanitary applications and is EHEDG certified. Furthermore, the SA-11 is marked with the 3-A symbol and current version number, as it conforms, based on a third party verification, to the 3-A standard.

Design
A diaphragm made of 1.4435 stainless steel forms a flush separation of the process medium from the pressure measuring instrument.
The process pressure is transmitted hydrostatically from the diaphragm, via an FDA-approved system fill fluid, to a piezo-resistive sensor.
The measuring range covers 0 ... 250 mbar up to 0 ... 25 bar.
The SA-11 pressure transmitter is powered with a DC voltage of 10 (14) ... 30 V. Available electronic output signals are 4 ... 20 mA, 0 ... 20 mA or 0 ... 10 V output.
A stainless steel case with an ingress protection of up to IP 68 offers a secure protection for external cleaning with splashed water and enables its use in high-humidity environments. Through the integrated cooling section, process temperatures of up to 150 °C can be realised.
### Specifications

**Model SA-11**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Bar</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Measuring range</strong></td>
<td>0.25</td>
</tr>
<tr>
<td><strong>Overpressure limit 1)</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>Burst pressure</strong></td>
<td>2.4</td>
</tr>
</tbody>
</table>

(Vacuum, overpressure, +/-, and absolute pressure (from 1 bar) are available)

1) The pressure containment of the connection fittings must be considered.

#### Process connection

- See page 4 ff.

#### Material

- **Wetted parts**: Stainless steel 1.4435
- **Case**: Stainless steel 1.4571

#### Pressure transmission medium

- Synthetic oil, KN 77, FDA conform, FDA CFR No. 21CFR178.3750
  - Neobee ® M-20, KN 59, FDA conform, FDA CFR No. 21CFR174.5

#### Power supply U+

- U+ in DC V: 10 < U+ ≤ 30 (14 ... 30 for 0 ... 10 V output signal, 11 ... 30 V for field case)

#### Output signal and permissible max. load RA

- RA in Ohm: 4 ... 20 mA, 2-wire: RA ≤ (U+ - 10 V) / 0.02 A
- RA ≤ (U+ - 3 V) / 0.02 A (0 ... 10 V, 3-wire)
- RA > 10 k (other output signals, e.g. CANopen, on request)

#### Adjustability of zero point/span

- %: ±5 through potentiometer within the instrument

#### Response time (10 ... 90 %)

- ms: ≤ 10 ms

#### Dielectric strength DC V

- 500 V

#### Accuracy

- % of span: ≤ 0.5 % (0.25) (Calibrated in vertical mounting position, process connection downwards)
- % of span: ≤ 0.2 % (BFSL) per IEC 61298-2

#### Non-linearity

- % of span: ≤ 0.1

#### Non-repeatability

- % of span: ≤ 0.2

#### Stability per year

- % of span: ≤ 0.2

#### Permissible temperature ranges

- Medium: °C -20 ... +150
- Ambient: °C -20 ... +80
- Storage: °C -40 ... +100

4) Also meets EN 50178, tab. 7, operation (C) 4K4H, storage (D) 1K4, transport (E) 2K3

#### Compensated temperature range

- °C: 0 ... +80

#### Temperature coefficients in compensated temperature range

- **Mean TC of zero point**: % of span ≤ 0.2 / 10 K for measuring range 0 ... 0.6 bar to 0 ... 25 bar
- % of span ≤ 0.25 / 10 K for measuring range 0 ... 0.4 bar
- % of span ≤ 0.4 / 10 K for measuring range 0 ... 0.25 bar

- **Mean TC of span**: % of span ≤ 0.2 / 10 K

#### Shock resistance

- g: 500 per IEC 60068-2-27 (mechanical shock)

#### Vibration resistance

- g: 15 per IEC 60068-2-6 (vibration under resonance)

#### Electrical connection

- See page 4

#### Wiring protection

- **Overvoltage protection**: DC V 36
- **Short-circuit resistance**: U+ vs. U-
- **Reverse polarity protection**: U+ vs. U-
- **Ingress protection**: In accordance with EN 60529 / IEC 60529, see page 4

#### Weight

- kg: Approx. 0.5 (approx. 0.6 with option of linear error 0.25 % of span)

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1) Items in curved brackets are optional extras for an additional price.
Installation example

Pressure transmitter model SA-11 with M12 x 1 circular connector and DIN 11864-1 grooved union nut mounted on a welding socket

The total height of the model SA-11 pressure transmitter includes the electrical connection, the transmitter case and the process connection.

Pressure transmitter model SA-11 and the 4 electrical connection variants

- with angular connector
- with field case
- with circular connector
- with cable outlet
Dimensions in mm

Ingress protection IP per IEC 60529. The stated ingress protections only apply when connected and when using mating connectors that have the appropriate ingress protection.

Electrical connections

DIN 175301-803 A
Angular connector
Conductor cross-section up to max. 1.5 mm²
Conductor outer diameter 6-8 mm
IP 65
Order code: A4

Stainless steel field case
IP 67
Compression fitting, nickel-plated copper alloy
Order code: FH
Option: field case with conduit connection

M12 x 1
Circular connector
4-pin
IP 67
Order code: M4
Mating connectors are not included in the delivery

Cable outlet
without access to zero point and span potentiometer, for conductor cross-sections of 0.5 mm², AWG 20 with end splices, conductor outer diameter 6.8 mm, IP 68
Order code: EM

Version Dimensions in mm

<table>
<thead>
<tr>
<th>Version</th>
<th>Dimension H in mm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>with accuracy 0.5 %</td>
</tr>
<tr>
<td>Angular connector</td>
<td>64</td>
</tr>
<tr>
<td>Field case</td>
<td>123</td>
</tr>
<tr>
<td>M12 x 1</td>
<td>64</td>
</tr>
<tr>
<td>Cable outlet</td>
<td>79.5</td>
</tr>
</tbody>
</table>

Other electrical connections on request

Process connections

Clamp connection (clamp)

Version Dimensions in mm

<table>
<thead>
<tr>
<th>Version</th>
<th>Dimensions in mm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ØD</td>
</tr>
<tr>
<td>Tri-Clamp 1)</td>
<td>1 1/2“</td>
</tr>
<tr>
<td></td>
<td>2“</td>
</tr>
<tr>
<td>DIN 32676</td>
<td>DN 32</td>
</tr>
<tr>
<td></td>
<td>DN 40</td>
</tr>
<tr>
<td>DN 50</td>
<td>64</td>
</tr>
<tr>
<td>ISO 2852</td>
<td>DN 33.7</td>
</tr>
<tr>
<td></td>
<td>DN 38</td>
</tr>
<tr>
<td></td>
<td>DN 40</td>
</tr>
<tr>
<td></td>
<td>DN 51</td>
</tr>
</tbody>
</table>

1) Process connections per ASME BPE

EHEDG compliant only in combination with a Kalrez stainless steel gasket from Dupont de Nemours or with a T-ring seal from Combifit International B.V.
### Grooved union nut

**DIN 11851**

- With conical coupling for pipes per DIN 11850

**Version** | **Dimensions in mm**
---|---
**G Ød3** |  
**DIN 11851**
DN 25 | Rd 52 x 1/6 | 44  
DN 40 | Rd 65 x 1/6 | 48  
DN 50 | Rd 78 x 1/6 | 61  

3-A compliant only in combination with profile sealing from SKS Komponenten BV or Kieselmann GmbH.

EHEDG compliant only in combination with ASEPTO-STAR k-flex upgrade sealing from Kieselmann GmbH.

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### Grooved union nut

**SMS**

**Version** | **Dimensions in mm**
---|---
**G Ød3** |  
**SMS**
1 1/2" Rd 60 x 1/6 | 47.5  
2" Rd 70 x 1/6 | 60  

3-A compliant only in combination with a sealing with support ring per ISO 2853.

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### Grooved union nut

**IDF**

**Version** | **Dimensions in mm**
---|---
**G ØC2 ØC7** |  
**IDF**
1 1/2" IDF 1.5 | 42.5 47  
2" IDF 2 | 56 60.5  

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### Grooved union nut

**APV-RJT**

**Version** | **Dimensions in mm**
---|---
**G ØC1 ØC7 ØC12** |  
**APV-RJT**
1 1/2" 2 5/16" x 8 | 45.2 54 40.5  
2" 2 7/8" x 6 | 57.7 66.6 53.2  

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### Grooved union nut

**VARIVENT®**

**Version** | **Dimensions in mm**
---|---
**ØD** |  
**VARIVENT®**
Form F | 50  
Form N | 68  

EHEDG compliant only in combination with EPDM O-ring.
**Grooved union nut**

BioControl®

**Size:** 50

\[ \begin{align*}
\Phi_d & = 50 \\
\Phi_d_2 & = 4 \times 9 \\
\Phi_D & = 90 \\
\Phi_k & = 70 \\
H & = 27
\end{align*} \]

**Size:** 65

\[ \begin{align*}
\Phi_d & = 68 \\
\Phi_d_2 & = 4 \times 11 \\
\Phi_D & = 120 \\
\Phi_k & = 95 \\
H & = 27
\end{align*} \]

**Flange connection**

BioConnect®

**DN 40**

\[ \begin{align*}
\Phi_d_2 & = 44.2 \\
\Phi_d_4 & = 4 \times 9 \\
\Phi_D & = 100 \\
\Phi_k & = 80 \\
F_b & = 10
\end{align*} \]

**DN 50**

\[ \begin{align*}
\Phi_d_2 & = 56.2 \\
\Phi_d_4 & = 4 \times 9 \\
\Phi_D & = 110 \\
\Phi_k & = 90 \\
F_b & = 12
\end{align*} \]

**Clamp connection**

BioConnect®

**DN 40**

\[ \begin{align*}
\Phi_d_5 & = 65 \\
\Phi_d_10 & = 53.7 \\
\Phi_d_11 & = 4 \times 9 \\
\Phi_k & = 17 \\
\Phi_b_2 & = 27
\end{align*} \]

**DN 50**

\[ \begin{align*}
\Phi_d_5 & = 77.5 \\
\Phi_d_10 & = 65.7 \\
\Phi_d_11 & = 4 \times 9 \\
\Phi_k & = 17 \\
\Phi_b_2 & = 27
\end{align*} \]

**NEUMO BioControl®**

**Flange with notch for pipe dimensions in accordance with DIN 11850 and 11866 series A**

**NEUMO BioConnect®**

**Flange form V**
Electrical connections

<table>
<thead>
<tr>
<th>Version</th>
<th>Dimensions in mm</th>
<th>2-wire</th>
<th>3-wire</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BioConnect®</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DN 40 M56 x 2</td>
<td>44.2</td>
<td>U+</td>
<td>U+</td>
</tr>
<tr>
<td>DN 50 M68 x 2</td>
<td>56.2</td>
<td>U+</td>
<td>U+</td>
</tr>
<tr>
<td><strong>Angular connector</strong></td>
<td></td>
<td>U+</td>
<td>S+</td>
</tr>
<tr>
<td>DIN 175301-803 A</td>
<td></td>
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</tr>
<tr>
<td><strong>Stainless steel field case</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Circular connector</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M12 x 1, 4-pin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cable outlet</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>with 1.5 m cable length</td>
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<td></td>
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</tr>
</tbody>
</table>

Legend:
- Voltage supply
- Load

3-A compliant in self-draining mounting position (see data sheet DS 99.39, bottom of page 2)
CE conformity

EMC directive
2004/108/EC, EN 61326 emission (group 1, class B) and interference immunity (industrial application)

RoHS conformity
Yes

Approvals

- GOST, metrology/measurement technology, Russia
- CRN, safety (e.g. electr. safety, overpressure, ...), Canada
- CSA, safety, sanitary applications, Canada

Certificates 1)

- 2.2 test report per EN 10204 (e.g. state-of-the-art manufacturing, material proof, indication accuracy for diaphragm seal systems)
- 3.1 inspection certificate per EN 10204 (e.g. material proof for wetted metallic parts, indication accuracy for diaphragm seal systems)
- FDA conformity of the system fill fluid
- 3-A conformity only in connection with the above-mentioned process connections, based on third party verification, in accordance with 3-A standard No. 74
- EHEDG conformity only in connection with the process connections appropriately marked above
- Manufacturer’s declaration regarding EU regulation 1935/2004 EC
- Others on request

1) Option

Approvals and certificates, see website

Ordering information

Model / Output signal / Measuring range / Process connection / Electrical connection / Certificates / Options