General information
Thank you for purchasing this Sens4 product. This quick start guide contains important safety information and we encourage you to read this guide prior to installation and use of this product.

Symbols used
Following symbols are used in the quick start guide:

- **WARNING!** Critical information to prevent dangerous situations that can result in serious injury or death.
- **CAUTION!** Important information to prevent dangerous situations that can damage the device or auxiliary equipment.
- **ACTION!** Requires action or attention.
- **INFORMATION:** Important recommendations and information for efficient use and best practice.

Intended use
The PCM-1 pressure transmitter is intended for gas and liquid pressure measurement and control within the limits listed in the specifications. The device is designed for screw-in fittings mounting. The device complies to EMC (Electro Magnetic Compatibility) class B immunity requirements for industrial environments.

Quick start guide
Our passion | Your value™

Electrical installation
The PCM-1 requires an external power supply supplying in the range 12-30 VDC. The external power supply shall be with safe isolation according to PELV (Protective Extra Low Voltage) requirements of EN60204-1. The transmitter is protected against momentary overvoltage on the supply line. The internal 100 mA thermal fuse will limit current draw in case of overvoltage to limit overheating. Additionally, the transmitter is protected against reverse polarity caused by incorrect wiring to the power supply.

The transmitter electronics have a high level of immunity against external electromagnetic interference. It is not required to use bared shielded cables to comply with the immunity requirements according to EN61326-1 industrial locations, but it is recommended for best measurement performance.

To ensure that the product complies with its IP (ingress protection) rating proper mating connectors with sealing material must be used.

The integrated hydrophobic membrane prevents internal moisture accumulation and water condensation when changes in ambient pressure, temperature and humidity occur.

Electrical connection (0-10 VDC voltage output)
The voltage output transducer provides a voltage signal proportional to the measured pressure.

<table>
<thead>
<tr>
<th>Connector pinout 4 pin DIN175301-803A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>SH</td>
</tr>
</tbody>
</table>

The high resolution 16-bit voltage signal can be interfaced to a PLC, A/D converter, voltmeter or other readout devices.

INFORMATION: It is recommended to use a differential input to measure the output signal that uses a separate signal return wire connected to the transmitter connector. If power supply return and signal return share the same wire connection the voltage drop as function of supply current will cause a measurement deviation. In that case, the measurement deviation will increase with the cable length.

Connectors and cable wiring (0-10 VDC voltage output)

<table>
<thead>
<tr>
<th>Connector pinout 4 pin MIL1012-101</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
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</tr>
<tr>
<td>SH</td>
</tr>
</tbody>
</table>

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Connectors and cable wiring (0-10 VDC voltage output)

<table>
<thead>
<tr>
<th>Cable (Color code DIN41700)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code</td>
</tr>
<tr>
<td>White</td>
</tr>
<tr>
<td>Brown</td>
</tr>
<tr>
<td>Green</td>
</tr>
<tr>
<td>Grey</td>
</tr>
<tr>
<td>Pink</td>
</tr>
<tr>
<td>Yellow</td>
</tr>
</tbody>
</table>

(1) The solid-state relay is a hardware option and needs to be specified when ordering the part. The setpoint value can be programmed using the S4-Connect™ interface. For programming of setpoint values refer to the full operating instructions.

Safety information
This product should be installed and operated by technically skilled or trained personnel only.

**WARNING!** This product is not intended for installation and use in the presence of flammable gases or other explosive environments.

**WARNING!** Ensure that the gases or liquids exposed to the wetted materials are compatible with the wetted materials described in the specifications table and the used sealing materials.

**WARNING!** The pressure rating of the sensor element, connecting process fittings and sealing must comply with the maximum possible pressure in the application.

**WARNING!** The CE marking on the device does not apply to the pressure equipment directive. Special precautions must be taken, if pressure peaks by water hammering can occur.

**WARNING!** Ensure that the process connection is tightened according to the recommended torque specification. Ensure that there are no leaks from the process connection before pressurizing the installation.

**WARNING!** Do not remove the transmitter from the installation when the installation is pressurized or contains hazards fluids.

Mechanical installation
The transmitter is intended for installation in a screw-in process fitting.

**WARNING!** Refer to maximum allowed pressure, sealing method and assembly practices for the different process connector types.

DIN 3852-E installation
The DIN 3852-E flange is delivered with a sealing O-ring. Do not use thread seal material.

1. Ensure that the O-ring and its sealing surfaces are clean and free of scratches or other damages.
2. Screw the transmitter into the corresponding flange thread by hand.
3. Tighten it with a wrench. For G1/4": approx. 5 Nm; for G1/2” NPT: approx. 10 Nm.

**CAUTION!** Do not exceed tightening torque values.

NPT flange installation
The NPT flange requires a suitable thread seal tape.

4. Screw the transmitter into the corresponding flange thread by hand.
5. Tighten it with a wrench. For 1/4” NPT: approx. 30 Nm; for 1/2” NPT: approx. 75 Nm.

**CAUTION!** Do not exceed tightening torque values.

Ensure that the process connection is leak tight using proper leak testing methods.

Signal to pressure conversion (0-10 VDC voltage output)
The transmitter with 0-10 VDC voltage output is available with different pre-configured output scalings.

The voltage signal (u) can be converted to pressure using the following linear expression:

\[
P(u) = a \cdot u + b
\]

Calculation of constants:

\[
a = \frac{P_{\text{max}} - P_{\text{min}}}{u_{\text{max}} - u_{\text{min}}}
\]

\[
b = -a \cdot u_{\text{min}} + P_{\text{min}}
\]

Where \(P_{\text{max}}\) and \(P_{\text{min}}\) are the minimum and maximum pressure, respectively; \(u_{\text{max}}\) and \(u_{\text{min}}\) are the minimum and maximum voltage, respectively.

User configuration of voltage output scaling
The S4-Connect™ interface enables flexible user configuration of the analog voltage output. The minimum and maximum output voltage and pressure can be set to any value within the valid range for the transmitter. For more information refer to the full operating instructions or visit www.sens4.com/s4-connect.html
Electrical connection (4-20 mA current output)

The 2-wire 4-20 mA current loop combines the transmitter output signal and supply voltage in one cable where the current consumption represents the measurement signal. The 4-20 mA signal complies with the NAMUR NE 43 standard.

A current loop resistor \( r \) value of 250 ohms is commonly used and will provide a 1-5 VDC across the resistor. The current loop resistor value can be chosen freely up to a maximum of 800 Ohm, provided that the minimum and maximum supply voltage range is respected.

**INFORMATION**: The loop current resistor should have a low temperature drift coefficient to ensure best measurement performance.

**Calculation of current**: \( I = \frac{E}{r + R} \)

**Calculation of voltage**: \( U = I \times R \)

**Calculation of resistor**: \( r = \frac{U}{I} - R \)

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### Connector pinout and wiring (4-20 mA current output)

#### Connector pinout 4 pin DIN175301-803A

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1+</td>
<td>Positive supply voltage</td>
<td>V+</td>
</tr>
<tr>
<td>2</td>
<td>Supply voltage return</td>
<td>GND</td>
</tr>
<tr>
<td>3</td>
<td>Not connected</td>
<td>SH</td>
</tr>
<tr>
<td>4</td>
<td>Shield</td>
<td>SH</td>
</tr>
</tbody>
</table>

#### Connector pinout 4 pin M12, IEC61076-2-101

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1+</td>
<td>Positive supply voltage</td>
<td>V+</td>
</tr>
<tr>
<td>2</td>
<td>Not connected</td>
<td>NC</td>
</tr>
<tr>
<td>3</td>
<td>Supply voltage return</td>
<td>GND</td>
</tr>
<tr>
<td>4</td>
<td>Shield</td>
<td>SH</td>
</tr>
</tbody>
</table>

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### Cable (Color code DIN41700)

- **White**: V+ Positive supply voltage
- **Brown**: GND Supply voltage return
- **Green**: SH Shield

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### Specifications

**General**

- **Measuring range** (0 bar to full-scale) 1.3, 5, 10, 20, 50, 100, 250, 500, 1000 bar
- **Measuring range** (± 0.1 to 10 bar) 0-200 psi, 0-12 bar
- **Accuracy** ±0.1 % of full-scale
- **Thermal drift (± 0.01 %/°C)*** ±0.01 %/°C
- **Output signal (Voltage)** 0-10VDC
- **Output resolution** (Voltage) 10 bit / 1 mV
- **Current signal** (Current) 8mA
- **Output current (Current)** 16 bit / 244 mA
- **Reverse current short circuit** 10mA
- **Solid state relay contact rating** 250 mA, 50 VDC / VAC peak

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### User configuration of current output scaling

The S4-Connect™ interface enables flexible user configuration of the analog current output. The minimum and maximum output current can be set to any value within the valid range for the transmitter. For more information refer to the full operating instructions or visit www.sens4.com/s4-connect.html

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### Warranty and disclaimer

**Sens4** warrants this product to be free from defects in materials and workmanship for a period of 24 months from the date of delivery.

Warranty does not cover:
1. Mechanical or corrosive damage to the sensor
2. Physical or deposition contamination of the sensor diaphragm
3. Damage caused by shipping
4. Normal wear and tear
5. Incorrect use or installation
6. Operation beyond the published design limits

**Sens4 is not liable for any claims arising from improper use, incorrect installation or use with gases or liquids not compatible with the media wetted materials described in the specifications table. Sens4 is not liable for loss of profits or revenue, overheads, loss of data, installation costs, damage to other equipment or any incidental or consequential damages of any nature.**

The Standard Terms and Conditions can be found on www.sens4.com and shall apply to the sales contract and use of this product.