

Precont PU4

Pressure transmitter for general industrial applications
Operating manual BA09.18



Technical modifications reserved.

1 Safety instructions

The operating manual is part of the device and must be kept always accessible nearest its installation location.

Installation, electrical connection, commissioning, operation, dismantling and disposal of the device must be made by a qualified and authorized expert according to the information's in this Operating Manual and the relevant standards and rules.

This expert must have read and understood this Operating Manual and especially the safety notes.

Complementary the Technical Information TI has to be adhered to, that can be ordered by the manufacturer or downloaded from the homepage.

If the device is intended for use in explosion-hazardous areas, additionally the safety instructions for electrical apparatus for explosion-hazardous areas must be observed.

1.1 Operational safety

The device is safely built and tested according to state-of-the-art technology.

The device meets the legal requirements of all relevant EU directives. This is confirmed by attaching the CE mark. The associated EU-Declaration of Conformity can be ordered or downloaded from the homepage.

This measuring device meets article 4 (3) of the EU directive 2014/68/EU (pressure equipment directive) and is designed and produced in good engineer practice.

Devices with measurement end value > 200 bar are constructed for media of fluid group 2.

1.2 Intended use

The device is an electronic pressure transmitter / pressure switch for monitoring, control and continuous measurement of pressures in gases, vapors, liquids and dusts.

The device may only be used within the permitted operation limits. Every use besides these limits as agreed can lead to serious dangers.

The materials of the device must be checked for compatibility with the respective application requirements (contacting materials, process temperature) before use. An unsuitable material can lead to damage, abnormal behavior or destruction of the device and to the resulting dangers.

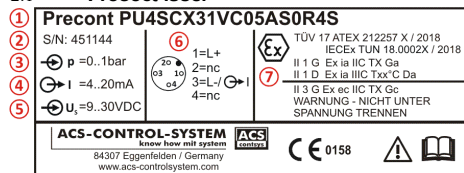
The sensors may not be used as sole device for prevention of dangerous conditions in machines and plants.

The operational reliability of the device is ensured only at the intended use.

An inappropriately use, disregarding the Operating Manual and the technical rules, using under-qualified personnel, making unauthorized alterations as well as damage of the device releases the manufacturer from liability for any resulting damage. This renders the manufacturer's warranty null and void.

2 Installation

2.1 Product label



- ① Type code
- ② Serial number
- ③ Input signal / Measuring range
- ④ Output signal
- ⑤ Power supply
- ⑥ Pin assignment
- ⑦ Ignition protection type

2.2 Installation place

The correct function of the device within the specific technical data can only be guaranteed, if the permitted process and environmental conditions at the installation place (see Technical Information TI) will not be exceeded.

The installation of the device at locations where high pressure blows can occur should be avoided.

Pressure measurement in gases: Install device above the tapping point, so that the condensate can flow into the process.

Pressure measurement in steams: Install device after a siphon and a shut-off device below the tapping point. Fill the siphon with fluid before commissioning.

Pressure measurement in liquids: Install device after a shut-off device below or at the same level as the tapping point. Install device below the lowest measuring point. Do not mount the device in the fill flow, in the suction area of a pump, in the tank outlet or at a point in the container which could be affected by pressure pulses from an agitator.

The installation position can generate a zero value shift because of the deadweight of the measuring diaphragm (see Technical Information TI).

The installation of the device should be made if possible at temperature calmed places. High process temperature steps can produce short-time higher measuring signal deviations.

At high process temperatures a heat transfer to the terminal enclosure can be reduced by isolation of the medium carrying part of the plant or by the use of a temperature decoupler.

At underrun of the dew point, e.g. cold process medium at high environmental temperature, there is the possibility of condensate formation within the pressure measuring sensor (Type C, capacitive), which can lead to temporary increased measurement deviations resp. malfunctions. These deviations are fully reversible by drying the condensate. The use of a device with a strain gauge pressure measuring sensor (Type E/K/M) is recommended.

2.3 Installation notes

Do not remove packaging until just before mounting and check the device for any damage.

The protective cap, which is attached at the process connection resp. the diaphragm, must only be removed immediately before the installation. The diaphragm may not be damaged.

Pollution or damaging of the pressure compensation opening (Hole besides the electrical connection) can lead to faulty measuring results.

DANGER - Install the device only when the system is pressureless. There is a risk of fast escaping media resp. pressure blow.

DANGER - Let the system cool down sufficiently before installing the device. There is a risk of dangerous and hot media escaping. Sealing faces and threads on the device and at the mounting point must be clean and without damage.

Parallel threads must be sealed by a suitable O-ring, flat or profile gasket. An additional sealing material such as yam, hemp or PTFE tape should not be used. Tapered threads should be wound with additional sealing material, e.g. PTFE tape for sealing.

The installation of the device into a closed off completely with process liquid filled connection can lead to destruction of the measuring diaphragm. The reduction of the volume of the liquid at screw-in leads to a very high pressure boosting, which can exceed the permitted maximum value by a multiple. Thus, before installation, the connection must be sufficiently emptied. The tightening of the thread process connection may only be done at the hexagon by a suitable spanner at most with the maximum permitted torque strength ($\leq 50\text{Nm}$ / Type PU4SC – Process connection type 9 – Thread G½", front-flush $\leq 20\text{Nm}$).

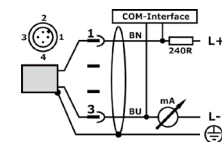
3 Electrical connection

Danger – Install the device only when power supply is off. There is a risk of electric shock.

Note – For inauguration deactivate all connected control devices, to avoid unwanted control reactions.

The device must be grounded, e.g. by the metallic process connection. Install cable separated from power leading cables, if existing connect shield to earth. Cable: M12 – A-coded, 1-BN = brown / 2-WH = white / 3-BU = blue / 4-BK = black

3.1 Electronic type A – Current 4...20mA HART®



Use a cable 2-core, twisted, shielded.

Observe maximum permitted supply voltage:

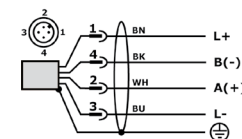
- U_s = 9...35VDC
- Ex: U_s = 9...30VDC

Observe maximum permitted load resistor of the analogue output:

- RL \leq (U_s - 9V) / 22mA

Observe a communication resistance of 250Ω for HART®.

3.2 Electronic type V – RS485 Modbus®-RTU



Connect the device at bus topology (line). A stub line must be avoided.

Observe line termination resistors 120Ω (A+ to B-) and bias network resistors 720Ω (A+ to L+ / B- to L-).

Use a cable 4-core acc. to the EIA485 recommendations:

Impedance	135...165Ω @ 3...20Mhz
Cable capacity	< 30pF/m
Cable diameter	> 0,64mm
Cable cross section	0,34 mm² / AWG 22
Loop resistance	< 110Ω/km
Shielding	Braided shield /shield foil
Cable length	38400 Baud \leq 1200m

Observe maximum permitted supply voltage:

- U_s = 6...35VDC