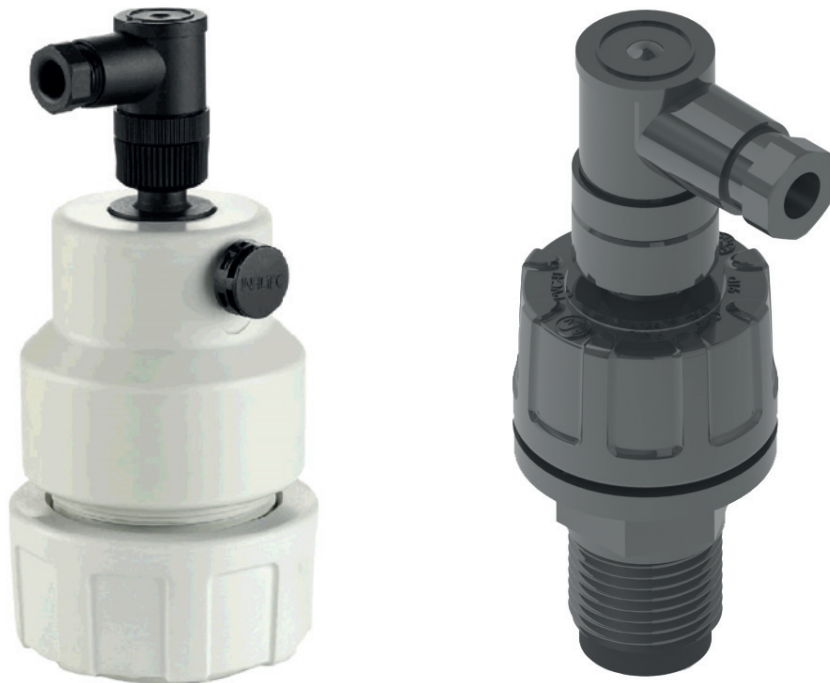


Pressure sensor

Original operating manual

Pump series
PTM-C2 / tinyPTM-C2



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STÜBBE GmbH & Co. KG
Hollwieser Straße 5
32602 Vlotho
Germany
Phone: +49 (0) 5733-799-0
Fax: +49 (0) 5733-799-5000
E-mail: contact@stuebbe.com
Internet: www.stuebbe.com



Subject to technical modifications.
Read carefully before use.
Save for future use.

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1 About this document

This manual:

- is part of the equipment
- applies to all series referred to
- describes safe and proper operation during all operating phases

1.1 Target groups





Operating company

- Responsibilities:
 - Always keep this manual accessible where the device is used on the system.
 - Ensure that employees read and observe this document, particularly the safety instructions and warnings, and the documents which also apply.
 - Observe any additional country-specific rules and regulations that relate to the system.

Qualified personnel, fitter







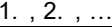



- Mechanics qualification:
 - Qualified employees with additional training for fitting the respective pipework
- Electrical qualification:
 - Qualified electrician
- Transport qualification:
 - Qualified transport specialist
- Responsibility:
 - Read, observe and follow this manual and the other applicable documents, especially all safety instructions and warnings.

1.2 Other applicable documents

To download: Resistance lists Resistance of materials used to chemicals www.stuebbe.com/pdf/300051.pdf	
To download: Data sheet PTM-C2 Technical data and conditions of operation www.stuebbe.com/pdf/300190.pdf	
To download: Data sheet tinyPTM-C2 Technical data and conditions of operation www.stuebbe.com/pdf/302424.pdf	
To download: CE declaration of conformity Conformity with standards www.stuebbe.com/pdf/300298.pdf	


Tab. 1 Other application documents, purpose and where found

1.3 Warnings and symbols

Symbol	Meaning
	<ul style="list-style-type: none"> • Immediate acute risk • Death, serious bodily harm
	<ul style="list-style-type: none"> • Potentially acute risk • Death, serious bodily harm
	<ul style="list-style-type: none"> • Potentially hazardous situation • Minor injury
	<ul style="list-style-type: none"> • Potentially hazardous situation • Material damage
	<p>Safety warning sign</p> <ul style="list-style-type: none"> ▶ Take note of all information highlighted by the safety warning sign and follow the instructions to avoid injury or death.
	Instruction
	Multiple-step instructions
	Precondition
	Cross reference
	Information, notes

Tab. 2 Warnings and symbols

2 General safety instructions


 The manufacturer accepts no liability for damages caused by disregarding any of the documentation.

2.1 Intended use

The device allows pressure in a liquid medium to be measured.

- Device must only be used for measuring pressure in liquid media.
- Only use the device with suitable media (→ resistance lists).
- Adhere to the operating limits (→ [9.1 Technical specifications, Page 9](#)).

2.2 General safety instructions

 Observe the following regulations before carrying out any work.

2.2.1 Obligations of the operating company

Safety-conscious operation

- Only operate the device if it is in perfect technical condition and only use it as intended, staying aware of safety and risks, and in adherence to the instructions in this manual.
- Ensure that the following safety aspects are observed and monitored:
 - Intended use
 - Statutory or other safety and accident-prevention regulations
 - Safety regulations governing the handling of hazardous substances
 - Applicable standards and guidelines in the country where the pump is operated
- Make personal protective equipment available.

Qualified personnel

- Make sure all personnel tasked with work on the device have read and understood this manual and all other applicable documents, especially the safety, maintenance and repair information, before they start any work.
- Organize responsibilities, areas of competence and the supervision of personnel.
- The following work should be carried out by specialist technicians only:
 - Installation, repair and maintenance work
 - Work on the electrical system
- Make sure that trainee personnel only work on the device under supervision of specialist technicians.

2.2.2 Obligations of personnel

Only complete work on the device if the following requirements are met:

- System is empty
- System has been flushed
- System is depressurized
- System has cooled down
- System is secured against being switched back on again
- Do not make any modifications to the device.

2.3 Specific hazards

2.3.1 Hazardous media

- When handling hazardous media, observe the safety regulations for the handling of hazardous substances.
- Use personal protective equipment when carrying out any work on the device.
- Collect leaking pumped liquid and residues in a safe manner and dispose of in accordance with environmental regulations.

3 Layout and Function

3.1 Type plate



Fig. 1 Type plate

- 1 Device type
- 2 Pressure measurement range
- 3 Outlet
- 4 Connection (material and nominal diameter)
- 5 Gasket material
- 6 ID number

Device types

- PTM-C2 – Standard, current output

3.2 Description

The device measures the pressure of a liquid medium. It transmits the measured value via a current output.

3.3 Assembly

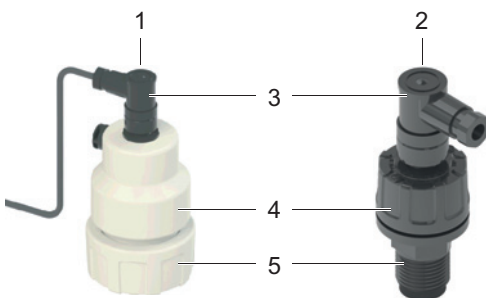


Fig. 2 Assembly

- 1 PTM-C2
- 2 tinyPTM-C2
- 3 Plug connector
- 4 Sensor housing
- 5 Process connection

4 Transport, Storage and Disposal

4.1 Unpacking and inspection on delivery

1. Unpack the device when received and inspect it for transport damage and completeness.
2. Check that the information on the type plate agrees with the order/design data.
3. Report any transport damage to the manufacturer immediately.
4. If fitted immediately: Dispose of packaging material according to local regulations.
 - If fitted at a later point: leave device in its original packaging.

4.2 Transportation

- ▶ Device should preferably be transported in the original packaging.


4.3 Storage

NOTE

Material damage due to inappropriate storage!

- ▶ Store the device properly.
1. Make sure the storage room meets the following conditions:
 - Dry
 - Frost-free
 - Vibration-free
 - Not in direct sunlight
 - Storage temperature +10 °C to +60 °C
 2. Device should preferably be stored in the original packaging.

4.4 Disposal

 Plastic parts can be contaminated by poisonous or radioactive media to such an extent that cleaning will not be sufficient.

WARNING

Risk of poisoning and environmental damage from medium!

- ▶ Use personal protective equipment when carrying out any work on the device.
- ▶ Prior to the disposal of the device: Neutralize residues of medium in the device.

1. Remove battery and dispose of in accordance with local regulations.
2. Remove electronic parts and dispose of in accordance with local regulations.
3. Dispose of plastic parts in accordance with local regulations.

5 Installation and connection

5.1 Check operating conditions


1. Ensure the required operating conditions are met:
 - Resistance of body and seal material to the medium (→ resistance lists).
 - Media temperature (→ 9.1 Technical specifications, Page 9).
 - Working pressure (→ 9.1 Technical specifications, Page 9).
2. Consult with the manufacturer regarding any other use of the device.

5.2 Install device

WARNING

Risk of injury and poisoning due to medium spraying out!

- ▶ Use personal protective equipment when carrying out any work on the fitting.

 Avoidance of medium buildup.
Select installation location so that no build-up or crystallization is possible.

5.2.1 Install PTM-C2

- ✓ Process pipework has been properly prepared.
 - ✓ Process pipework has been secured against unintentional opening with shut-off valves.
1. Unscrew union nut.
 2. Insert union nut on to the spool piece of the process pipework.
Check mounting direction.

3. Weld device insert to the process pipework spool piece.
4. Check O-ring fitting.
5. Connect device to the process pipework. Tighten union nut by hand only.

5.2.2 Install tinyPTM-C2

- ✓ Process connection meets the requirements:
 - Realization and gasket according to EN 837
 - Thread G 1/2"
 - Diameter for centering pin ≥ 7 mm

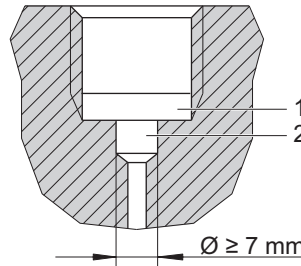



Fig. 3 Process connection

- 1 Position of the gasket
- 2 Position of the centering pin

1. Ensure diameter of ≥ 7 mm (2) so that the centering pin can plunge freely.
2. Depending on the material variant, insert the gasket in the process connection (1):
 - With stainless steel/PTFE, the gasket is mandatory.
 - With other materials, the gasket is recommended. Alternatively, the sensor is sealed via the thread.
3. Screw in the device using a size 22 open-end wrench, making sure that the centering pin does not come into contact (2).


5.3 Performing the hydrostatic test

 Perform hydrostatic test using neutral medium, e.g. water.

1. Pressurize the device, ensuring:
 - Test pressure $< 2.0 \times P_N$ (nominal pressure)
 - Test pressure $<$ permissible system pressure
2. Check that the device is not leaking.

5.4 Electrical connection of device

- ✓ Device is connected to the process pipework.
- ✓ Power supply switched off and secured against being switched back on again.


 Cable without shielding can be used to connect the device. If electromagnetic interference is anticipated, then shielded cable must be used.

1. Cut sensor cable supplied to length.
2. Fit plug (→ 9.3 Plug assignment, Page 9).
3. Connect sensor housing with sensor cable.

6 Operation

6.1 Initial start-up

- ✓ Device is connected properly to the process pipework.
- ✓ Device is connected properly with the power supply and ready for operation.

 For this purpose, the current output for pressure must be displayed in the higher-level controller as a measured value.

- ▶ After starting the higher-level controller, the device transmits the pressure as current signal (4 ... 20 mA).

7 Maintenance

WARNING

Risk of injury and poisoning due to hazardous or hot media!

- ▶ Use personal protective equipment when carrying out any work on the device.
- ▶ Allow device to cool.
- ▶ Make sure the device is depressurized.
- ▶ Block the media supply to the device.
- ▶ Empty the process pipework, safely collect the media and dispose of it in accordance with environmental regulations.
- ▶ Switch off the power supply to the system.
- ▶ Secure the power supply against being switched back on again.
- ▶ Provide warning of maintenance and repair work and set up warning signs.

7.1 Servicing

Interval	Action
As necessary	<ul style="list-style-type: none"> • Clean device with a damp cloth.
Six-monthly	Visual and function check: <ul style="list-style-type: none"> • Normal operating conditions unchanged • No leaks • No unusual operating noises or vibrations

Tab. 3 Servicing activities

- ▶ Perform maintenance tasks according to the table.

7.2 Maintenance

7.2.1 Removing the device

- ✓ System is empty.
 - ✓ System has been flushed.
 - ✓ System is depressurized.
 - ✓ System has cooled down.
 - ✓ System must be secured against being switched back on again.
1. Unplug connection cable.
 2. Disassemble device from the process pipework.
 3. Decontaminate device if required.

7.2.2 Replacement parts and return

1. Have the following information ready to hand when ordering spare parts (→ 3.1 Type plate, Page 6).
 - Device type
 - ID number
 - Nominal pressure and diameter
 - Connection and gasket material
2. Please complete and enclose the document of compliance for returns (→ www.stuebbe.com/en/service/download).



3. Use only spare parts from STÜBBE.

8 Troubleshooting

WARNING

Risk of injury and poisoning due to hazardous media liquids!


- ▶ Use personal protective equipment when carrying out any work on the device.

Error	Possible cause	Corrective action
Medium escaping at process connection (PTM-C2)	Pre-tension of the O-ring too small	▶ Retighten union nut by hand.
Medium escaping at process connection (tinyPTM-C2)	Process connection does not meet EN 837	▶ Perform process connection according to EN 837 (→ Fig. 3 Process connection, Page 7). In case of aggressive media, change the device.
	With the stainless steel/PTFE variant, no gasket is fitted	▶ Mount gasket (→ 5.2.2 Install tinyPTM-C2, Page 7). In case of aggressive media, change the device.


Tab. 4 Troubleshooting

9 Appendix

9.1 Technical specifications

 Technical data (→ Data sheet).

9.2 Dimensions

 Dimensions (→ Data sheet).

9.3 Plug assignment

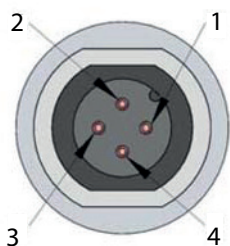


Fig. 4 Connection diagram

- 1 Signal (+)
- 2 Signal (-)
- 3 n.c.
- 4 n.c.