**Pressure and Temperature Sensor PTM C4 / R / MD**

Pressure measuring range 0–10 bar, 0–5 bar, 0–2 bar, 0–1 bar, 0–0.5 bar
Temperature measuring range -10–100 °C
Voltage supply 18–30 V DC

**Features**
- Programmable pressure and temperature sensor
- Ideal as a dry run protection device for pumps and for process monitoring
- Pressure range from 0.5 up to 10 bar
- Alternative signal output interfaces (current loop / relay / Modbus RTU)
- Compact version for space-saving installation
- Flex version for difficult-to-reach or heavily contaminated locations

**Note**
The display and control unit (UNI display) is required for setting the sensor in the relay and Modbus version!

[www.stuebbe.com/en/products-systems/instrumentation/]
PTM Compact / Flex
R / C4 / MD

Pressure
0–0.5 bar
0–1 bar
0–2 bar
0–5 bar
0–10 bar

Temperature
-10–100 °C

C4
Current: 4 wires, 2x 0/4...20mA
Operating voltage: 20...30 V DC

R
Relay: 4 relays, 2 inputs, 1 Micro USB
Programmable NC/NO switching function
Operating voltage: 18...30 V DC

MD
Modbus – RTU: 2 relays, 2 inputs
Change-over contact switching function
Operating voltage: 18...30 V DC

Signal output

PTM Compact

Sensor / Housing

PTM Flex

Connection

Sealing
EPDM
FPM

Socket
Spigot

Connection Material (process connection)

1. PVC-U socket DIN
2. PP socket DIN, spigot (IR) DIN
3. PVDF socket DIN, spigot (IR) DIN

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Application
- The PTM can be used as a dry run protection device for pumps and for process monitoring. A sensor measures the temperature of the medium in addition to the pressure.

Use
- Pressure and temperature transducers for installation in pipes
- Comprehensive operating and display possibilities with relay output, 0/4–20 mA signal output or Modbus RTU connection

Function
- The process pressure is registered by a ceramic transducer made of Al₂O₃. This system is additionally equipped with a temperature sensor. The values are converted in the connection housing.
- The output values can be indicated by the UNI display and/or transmitted via the respective outputs.
- Versions
  C₄: The current module transmits pressure and temperature via normalised 0/4–20 mA signals.
  R: The relay module is equipped with four programmable relay outputs. It is particularly suitable for the direct control of sensitive plant components, e.g. for dry run protection of pumps.
  MD: The Modbus module enables data bus communication. It contains two additional freely programmable relay outputs which can be used for directly intervening in the process if necessary.

Type
- PTM Compact as a compact one-piece variant
- PTM Flex with the connection housing separate from the sensor housing, connected by a 3 m long sensor cable

Display and control unit (UNI display)
- Can be used for all measuring instruments of the UNI display platform (USF, PTM, HFT or UFM).
- Housing: ABS
- Cover: PA, transparent
- Display: Illuminated LCD
- Operation: 4-key function
- Front film: polyester
- Data logger function with date stamp
- Firmware update possible
- Parameter settings can be saved and transmitted to other sensors.
- Storage function on a microSD card
- Battery: CR1220, 3 V
- The display unit can be removed from the sensor housing after the settings have been made.
- The display unit is required for setting the relay and Modbus version.
# Pressure and Temperature Sensor PTM C4 / R / MD

## Technical data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>PTM-C4, R, MD Compact</th>
<th>Value</th>
<th>PTM-C4, R, MD Flex</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Measuring</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measuring range pressure</td>
<td>bar</td>
<td>0–0.5, 0–1, 0–2, 0–5 or 0–10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measuring range temperature</td>
<td>°C</td>
<td>-10–100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measuring resolution pressure</td>
<td>mbar</td>
<td>≤ 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measuring resolution temperature</td>
<td>kelvin</td>
<td>≤ 0.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step response (10–90%)</td>
<td>ms</td>
<td>300</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integration time adjustable</td>
<td>s</td>
<td>0–60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measuring deviation absolute</td>
<td>%</td>
<td>±1.5 at 25 °C, 12.5 at 0–85 °C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power up</td>
<td>s</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature compensation</td>
<td></td>
<td>Automatic</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Voltage supply</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage supply</td>
<td>V DC</td>
<td>18–30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power consumption max.</td>
<td>W</td>
<td>2.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Signal output</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current loop C4</td>
<td>mA</td>
<td>0/4–20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relay R</td>
<td></td>
<td>4 relays, 5 A / 30 V AC, 2 inputs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modbus RTU MD</td>
<td></td>
<td>2 relays, 1 A / 30 V DC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cable outside diameter</td>
<td>mm</td>
<td>5–11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nominal cross-section (max.)</td>
<td>mm²</td>
<td>0.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connection</td>
<td></td>
<td>pluggable screw connectors</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Material coming into contact with the media</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensor</td>
<td></td>
<td>Al₂O₃</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensor housing</td>
<td>PVC-U</td>
<td></td>
<td>PP</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PP</td>
<td></td>
<td>PVDF</td>
<td></td>
</tr>
<tr>
<td>Sensor seal</td>
<td></td>
<td>FPM or EPDM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Union nut</td>
<td>PVC-U</td>
<td></td>
<td>PP</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PP</td>
<td></td>
<td>PVDF</td>
<td></td>
</tr>
<tr>
<td>Process sealing</td>
<td></td>
<td>FPM or EPDM</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Material not coming into contact with the media</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housing</td>
<td></td>
<td>PP-GF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housing cover</td>
<td></td>
<td>PP-GF / PA transparent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cover seal</td>
<td></td>
<td>NBR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connection cable sensor / display</td>
<td></td>
<td>TPE-V/U, UV resistant, 3 m</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Process conditions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>°C</td>
<td>-20–70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Atmospheric ambient pressure</td>
<td>bar</td>
<td>0.8–1.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relative humidity</td>
<td>%</td>
<td>20–85</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Process temperature</td>
<td>°C</td>
<td>0–50, 0–70, 0–100, 0–50, 0–70, 0–10–80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum pressure range</td>
<td>bar</td>
<td>2x nominal pressure</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

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Pressure and Temperature Sensor PTM C4 / R / MD

### Mechanical data

<table>
<thead>
<tr>
<th>Description</th>
<th>Type of protection</th>
<th>PTM-C4, R, MD Compact</th>
<th>PTM-C4, R, MD Flex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight of sensor kg</td>
<td></td>
<td>PVC-U 0.4</td>
<td>PP 0.3</td>
</tr>
<tr>
<td>Weight of connection cable kg/m</td>
<td></td>
<td>PVC-U 0.6</td>
<td>PP 0.5</td>
</tr>
<tr>
<td>Mounting position</td>
<td></td>
<td>PVC-U As required</td>
<td>PP 0.1</td>
</tr>
<tr>
<td>Connection thread (male thread)</td>
<td></td>
<td>PVC-U 1 1/2&quot;</td>
<td>PP</td>
</tr>
<tr>
<td>Type of protection</td>
<td></td>
<td>PVC-U IP67</td>
<td>PP</td>
</tr>
</tbody>
</table>

### Accessories

- UNI display
- PSU power pack
- 1/2" pressure gauge adapter

### Ohmic resistance

<table>
<thead>
<tr>
<th>R (Ω)</th>
<th>U [V]</th>
</tr>
</thead>
<tbody>
<tr>
<td>750</td>
<td>18</td>
</tr>
<tr>
<td>600</td>
<td>30</td>
</tr>
</tbody>
</table>

### Pressure and temperature diagram

**Description**
- P Operating pressure
- T Temperature

The pressure/temperature limits of the materials are valid for the stated nominal pressures and a service life of 25 years.

These values are guide values for flow medium types which do not negatively impact the physical and chemical characteristics of the valve material. It may be necessary to take diminution factors into consideration.

The operating life of the wear parts depends on the conditions of use.

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### PTM Compact

1. Housing cover
2. Connection housing
3. Sensor housing
4. Device connection

### PTM Flex

1. Housing cover
2. Connection housing
3. Sensor housing
4. Device connection
5. Sensor cable
6. Mounting clip

### Terminal connection plan, relay version

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>18–30 V DC</td>
<td>Voltage supply (18–30 V DC)</td>
</tr>
<tr>
<td>0 V DC</td>
<td>Voltage supply (–)</td>
</tr>
<tr>
<td>IN1</td>
<td>Start button</td>
</tr>
<tr>
<td>IN2</td>
<td>Stop button</td>
</tr>
<tr>
<td>1NO</td>
<td>Relay 1 normally open contact</td>
</tr>
<tr>
<td>1COM</td>
<td>Relay 1 COM</td>
</tr>
<tr>
<td>2NO</td>
<td>Relay 2 normally open contact</td>
</tr>
<tr>
<td>3NO</td>
<td>Relay 3 normally open contact</td>
</tr>
<tr>
<td>4NO</td>
<td>Relay 4 normally open contact</td>
</tr>
<tr>
<td>2–4 COM</td>
<td>Relay 2–4 COM</td>
</tr>
</tbody>
</table>
Terminal connection plan, 4-wire current version

- **Connector X3**
  - **PWR: 18–30 V DC**
    - Voltage supply (18–30 V DC)
  - **PWR: 0 V DC**
    - Voltage supply (–)

- **Connector X1**
  - **OUT1: 0–20 mA**
    - 0/4–20 mA signal
  - **OUT1: 0 V DC**
    - Earth, signal
  - **OUT2: 0–20 mA**
    - 0/4–20 mA temperature
  - **OUT2: 0 V DC**
    - Earth, temperature

Terminal connection plan, Modbus RTU version

- **Connector X2 / X4**
  - Plug-type connection
    - UNI display

- **Connector X5**
  - **IN1**
    - Start button
  - **IN2**
    - Stop button
  - **NO1**
    - Relay 1 normally open contact
  - **NC1**
    - Relay 1 normally closed contact
  - **COM1**
    - Relay 1 COM
  - **NO2**
    - Relay 2 normally open contact
  - **NC2**
    - Relay 2 normally closed contact
  - **COM2**
    - Relay 2 COM

- **Connector X7**
  - **PWR: 18-30 V DC**
    - External voltage supply (inputs / relays)
  - **PWR: 0 V DC**
    - External earth

- **Connector X3 / X1**
  - **A**
    - RS485 A
  - **B**
    - RS485 B
  - **PWR: +24 V**
    - Operating voltage supply, sensor
  - **PWR: GND**
    - Operating voltage supply, sensor (earth)

Pin assignment, 4 pole
PTM Compact

PTM Flex