

## PRODUCT DESCRIPTION

**Transmitters and transducers** with 4 - 20 mA output are designed to measure ambient temperature, to measure temperature in duct and to conversion signals from Pt1000 or Pt100 sensors to current..

**Durable plastic case** from ABS contains electronic and connection terminals.

type *	construction	mounting	external probe connection
<b>P0120</b>	ambient air	wall	- - -
<b>P0132</b>	duct mount	insert to thermowell	- - -
<b>P41x1</b>	external probe Pt1000/3850 ppm	wall	2- wire
<b>P6181</b>	external probe Pt100/3850 ppm	wall	2- wire, 3- wire, 2- wire with compensation loop

\* models marked PxxxZ are custom - specified devices

## INSTALLATION AND OPERATION

The transmitters and transducers designed for mounting on the wall are mounted on a flat surface with two screws or bolts. The stem of P0132 transmitter insert into the stainless steel thermowell (thermowell is not included). Pay attention to device mounting, because incorrect choice of working position or measuring point could adversely affect accuracy and long-term stability of measured values.

The connecting terminals are accessible after unscrewing the four screws in the corners of the case and removing the lid. Pass the current loop cable (maximal length 1200 m) through released upper gland and connect the wires according to diagram. The cable of external probe Pt1000 (Pt100) pass through released lower gland, pass it under the display and connect according to diagram too. Tighten glands and screw the lid.

External temperature probe Pt1000 of P41x1 transducer is connected by two wire shielded cable with length up to 10 m.

Connection of external temperature probe Pt100 (P6181 transducer) is enabled by three ways:

1. Two-wire connection – suitable for short probes (approximately to 1m).
2. Three-wire connection – used for longer probe leads. This wiring compensates parasite resistance of connected probe leads and its temperature dependence.
3. Two-wire connection with compensation loop – similar to three-wire connection but there are 4 wires connected to the cable.

The shielding of the probe cable connect **only** to proper terminal of the device and do not connect it to any other circuitry and **do not** ground it.

For current loop and external probe connection it is recommended to use shielded cable (external diameter 4 to 8 mm) with wire cross-section 0.14 to 1.5 mm<sup>2</sup>.

Devices don't require special operation and maintenance. We recommend you periodic calibration for measurement accuracy validation.

## SAFETY INSTRUCTIONS



- Don't connect or disconnect transmitter and transducer while power supply voltage is on.
- Installation, electrical connection and commissioning should be performed by qualified personnel only.
- Devices contain electronic components, it needs to liquidate them according to currently valid conditions.
- For more information, please use detailed manuals and other documentation which are available at [www.cometsystem.cz/manuals.htm](http://www.cometsystem.cz/manuals.htm) or [www.cometsystem.cz/software.htm](http://www.cometsystem.cz/software.htm)

# Technical specifications

Device type	P4121 až P4191	P6181	P0120	P0132																																												
Supply voltage	9 to 30V	9 to 30V	9 to 30V	9 to 30V																																												
Output in case of error	< 3.5mA or > 24mA	< 3.5mA or > 24mA	< 3.5mA or > 24mA	< 3.5mA or > 24mA																																												
Temperature measuring range	see Table	-100 to +200°C	-30 to +80°C	0 to +150°C																																												
Accuracy of temperature measurement	see Table **	± 0.3°C (up to 100°C) ** ± 0.4°C (over 100°C) **	± 0.4°C	± 0.4°C (up to 100°C) 0.4% FR* (over 100°C)																																												
Response time t63	depends on connected temperature probe	depends on probe	< 2min ***	< 45s ****																																												
Response time t90	depends on connected temperature probe	depends on probe	< 4min ***	—																																												
Recommended calibration interval	2 years	2 years	2 years	2 years																																												
Protection class of the case with electronics	IP65	IP65	IP65	IP65																																												
Temperature operating range of the case with electronics	-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C																																												
Humidity operating range	0 to 100%RH	0 to 100%RH	0 to 100%RH	0 to 100%RH																																												
Mounting position	any position	any position	any position	any position																																												
Storage temperature range (environment without condensation)	-30 to +80°C	-30 to +80°C	-30 to +80°C	-30 to +80°C																																												
Electromagnetic compatibility according to	EN 61326-1	EN 61326-1	EN 61326-1	EN 61326-1																																												
Weight	125 g	125 g	140 g	140 g																																												
Dimensions [mm]																																																
<b>Electrical wiring</b>	<p>Housing dimensions</p>																																															
4 - 20 mA analog output	<p><math>R_{max}[\Omega] = 50 * U_{ss}[V] - 450</math></p>																																															
P41x1 - external probe Pt1000 wiring	<p>2 - wire 3 - wire</p> <p>with closed loop</p>																																															
P6181 - external probe Pt100 wiring	<p>2 - wire 3 - wire</p> <p>with closed loop</p>																																															
	<p>external probe Pt1000/3850ppm</p>	<p>external probe Pt100/3850ppm</p>	<p>external probe Pt100/3850ppm</p>	<p>external probe Pt100/3850ppm</p>																																												
	<table border="1"> <thead> <tr> <th>Type</th> <th>Measuring range</th> <th>Accuracy</th> <th>Temperature calculation [°C, mA]</th> </tr> </thead> <tbody> <tr> <td>P4121</td> <td>-30 to +80°C</td> <td>±0.3°C</td> <td>T=6.875xI-57.5</td> </tr> <tr> <td>P4131</td> <td>0 to +150°C</td> <td>±0.3°C</td> <td>T=9.375xI-37.5</td> </tr> <tr> <td>P4141</td> <td>-100 to +30°C</td> <td>±0.3°C</td> <td>T=8.125xI-132.5</td> </tr> <tr> <td>P4151</td> <td>0 to +35°C</td> <td>±0.2°C</td> <td>T=2.1875xI-8.75</td> </tr> <tr> <td>P4161</td> <td>0 to +250°C</td> <td>±0.4°C</td> <td>T=15.625xI-62.5</td> </tr> <tr> <td>P4171</td> <td>0 to +400°C</td> <td>±0.7°C</td> <td>T=25xI-100</td> </tr> <tr> <td>P4191</td> <td>-50 to +50°C</td> <td>±0.3°C</td> <td>T=6.25xI-7.5</td> </tr> </tbody> </table>	Type	Measuring range	Accuracy	Temperature calculation [°C, mA]	P4121	-30 to +80°C	±0.3°C	T=6.875xI-57.5	P4131	0 to +150°C	±0.3°C	T=9.375xI-37.5	P4141	-100 to +30°C	±0.3°C	T=8.125xI-132.5	P4151	0 to +35°C	±0.2°C	T=2.1875xI-8.75	P4161	0 to +250°C	±0.4°C	T=15.625xI-62.5	P4171	0 to +400°C	±0.7°C	T=25xI-100	P4191	-50 to +50°C	±0.3°C	T=6.25xI-7.5	<table border="1"> <thead> <tr> <th colspan="2">Temperature calculation [°C, mA]</th> </tr> </thead> <tbody> <tr> <td>T=6.875xI-57.5</td> <td></td> </tr> </tbody> </table>	Temperature calculation [°C, mA]		T=6.875xI-57.5		<table border="1"> <thead> <tr> <th colspan="2">Temperature calculation [°C, mA]</th> </tr> </thead> <tbody> <tr> <td>T=6.875xI-57.5</td> <td></td> </tr> </tbody> </table>	Temperature calculation [°C, mA]		T=6.875xI-57.5		<table border="1"> <thead> <tr> <th colspan="2">Temperature calculation [°C, mA]</th> </tr> </thead> <tbody> <tr> <td>T=9.375xI-37.5</td> <td></td> </tr> </tbody> </table>	Temperature calculation [°C, mA]		T=9.375xI-37.5	
Type	Measuring range	Accuracy	Temperature calculation [°C, mA]																																													
P4121	-30 to +80°C	±0.3°C	T=6.875xI-57.5																																													
P4131	0 to +150°C	±0.3°C	T=9.375xI-37.5																																													
P4141	-100 to +30°C	±0.3°C	T=8.125xI-132.5																																													
P4151	0 to +35°C	±0.2°C	T=2.1875xI-8.75																																													
P4161	0 to +250°C	±0.4°C	T=15.625xI-62.5																																													
P4171	0 to +400°C	±0.7°C	T=25xI-100																																													
P4191	-50 to +50°C	±0.3°C	T=6.25xI-7.5																																													
Temperature calculation [°C, mA]																																																
T=6.875xI-57.5																																																
Temperature calculation [°C, mA]																																																
T=6.875xI-57.5																																																
Temperature calculation [°C, mA]																																																
T=9.375xI-37.5																																																

\* FR .... from reading

\*\* accuracy of device without temperature probe

\*\*\* temperature step from +25°C to +80°C, airflow approximately 1 m/s

\*\*\*\* temperature step from 0°C to +100°C, stem with well immersed to fluid, flow velocity 1 m/s