

Barotransmitter PTB 100

Instruction for use 3.1158.00.073 / 3.1158.10.073



1. General information

The PTB 100 series analogue barometers feature the silicon capacitive pressure sensor developed. The sensor has been especially designed for accurate and stable measurement of barometric pressure. The PTB 100 series barometers have 0...5 VDC output and they can be used in either three or four wire connection. Shutdown mode is jumper selectable. With the shutdown mode enabled the barometers can be turned on/off by using an external TTL level signal.

2. Technical Data

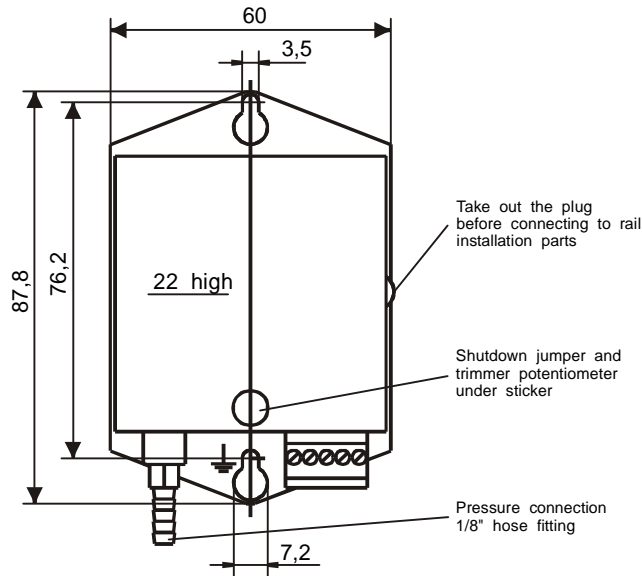
Typ	PTB 100 A	PTB 100 B
Bestell – Nr.	3.1158.00.073	3.1158.10.073
Pressure range	: 800 ... 1060 hPa	600 ... 1060 hPa
Output voltage	: 0 ... 5 V DC	
Temperature range	-40 ... +60°C	
Humidity range	non-condensing	
Accuracy		
Linearity	: ±0.25 hPa	± 0,45 hPa
Hysteresis	: ±0.03 hPa	± 0,05 hPa
Repeatability	: ±0.03 hPa	± 0,05 hPa
Calibration uncertainty	: ±0.15 hPa	±0,15 hPa
Total accuracy		
+20°C	: ±0.3 hPa	± 0,5 hPa
0 ... +40°C	: ±1 hPa	± 1,5 hPa
-20 ... +45°C	: ±1,5 hPa	± 2 hPa
-40 ... +60°C	: ±2,5 hPa	± 3 hPa
Long-term stability	±0.1 hPa / year	
Supply voltage	: 10 ... 30 V DC	
Supply voltage control	: with TTL level voltage	
Supply voltage sensitivity	: less than 0.1 hPa	
Supply consumption	: less than 4 mA less than 1 µA in shutdown mode	
Resolution	: 0.1 hPa	
Load resistance	: 10 kΩ minimum	
Load capacitance	: 47 nF maximum	
Pressure fitting	: barbed fitting for 1/8" I.D. tubing	
Minimum pressure limit	: 0 hPa abs.	
Maximum pressure limit	: 2000 hPa abs.	
Electrical connector	: a removable connector for five wires	
Weight	: 85 g	

3. Mounting

The PTB 100 series barometer are designed to be installed indoors or inside equipment only. The barometers can also be mounted on a 35 mm wide standard DIN mounting rail by using a mounting foot and screw supplied with the barometers.

The barometers should be installed vertically with the connectors downwards to prevent any ingress of condensated water. Horizontal installation can be used under conditions where no condensation can take place.

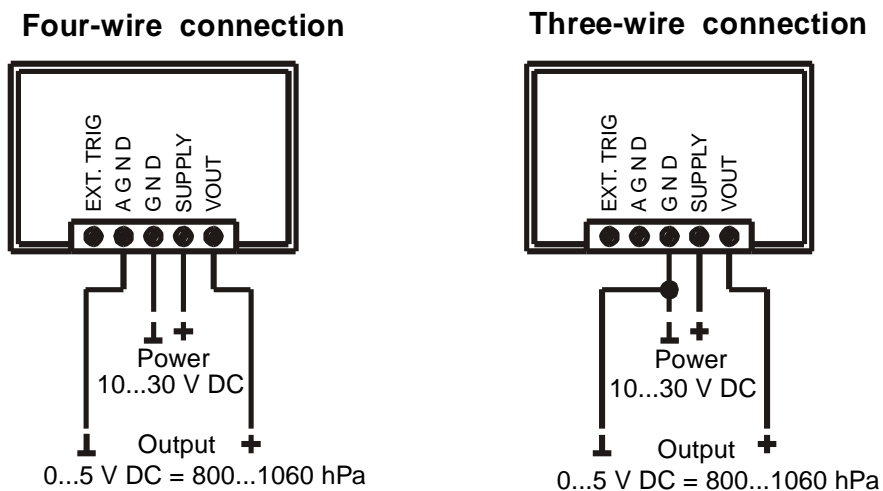
Scale drawing



3.1 Operating modes

The PTB 100 series barometers have two operating modes: normal and shutdown. In the normal operating mode the barometer measures continuously when powered-up. In the shutdown operating mode the barometer is turned on/off using an external TTL level signal. When needed, the shutdown operating mode is under the small sticker on the front panel. The normal operating mode is reselected by reinstalling the jumper. The barometers are supplied from factory in the normal operating mode with the shutdown mode disabled with a jumper.

3.2 Electrical connection



Both grounds (AGND and GND) are in the same electrical potential in the barometer. Both three-wire and four-wire connections can be used; the four-wire connection must be used when the voltage drop in the supply ground line affects the pressure measurement accuracy. In normal operating mode no connection to the EXT.TRIG terminal is recommended. The barometers are protected against reverse operating voltage.

The barometer meets CE requirements for EMC/ESD only when a braided cable and proper grounding technique are used. The braid should be grounded at the barometer using the crimp connector supplied with the barometer.

4. Evaluation

The barometric pressure (P) can be calculated from measured output voltage (U) using a simple equation.

$$\text{PTB 100 A} \quad P = 800 \text{ hPa} + \frac{260 \text{ hPa}}{5 \text{ V}} \times U [\text{V}]$$

$$\text{PTB 100 B} \quad P = 600 \text{ hPa} + \frac{460 \text{ hPa}}{5 \text{ V}} \times U [\text{V}]$$

Note that the output voltage of the barometer saturates at about 50 mV.

5. Calibration

For offset fine adjustment a trimmer potentiometer is available under the small sticker on the front panel. This trimmer potentiometer can be used at any pressure level to make a maximum ± 1 hPa (mbar) offset adjustment to the barometer output. A calibration interval of one year is recommended.

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