PTB220

Digital barometer

Vaisala BAROCAP® Digital Barometer PTB220 is designed for measurements in a wide environmental pressure and temperature range. The barometers are ideal to be used e.g. as ship barometers, as transfer standards, in weather stations and as replacements for mercury barometers.

The MiniTilt is highly compatible with existing pitch and roll sensors. It uses a bank of 6 internal option switches to provide a total of 32 different output data formats.

The zero point can be factory set to any position. This allows for unusual mounting arrangements where the MiniTilt can be placed horizontally rather than vertically. The zero point can be set to any mark on the 360° angle so even offset mounting arrangements can be handled.

Specifications

Product	PTB220 Digital barometer
Country of origin	Finland
Manufacturer	Vaisala Instruments

Accuracy and stability

The PTB220 barometers feature extremely high accuracy. Class A barometers are fine adjusted and calibrated against a deadweight tester. Class B barometers are adjusted and calibrated using electronic working standards. All PTB220 barometers are delivered with a factory calibration certificate, which is NIST traceable. A single barometer can have one, two or three pressure transducers. Two or three transducers provide redundancy, which improves measurement reliability in airport, weather station and pressure standard applications. The local display has two rows and it can simultaneously show the barometric pressure, three-hour pressure trend and WMO pressure tendency code.

Vaisala BAROCAP® technology

The PTB220 barometers use the inhouse developed Vaisala BAROCAP® Sensor. This silicon capacitive absolute pressure sensor has excellent hysteresis and repeatability characteristics, and outstanding temperature and long-term stability

Transfer standard

With the Vaisala BAROCAP® Barometric Pressure Transfer Standard PTB220TS, barometers can be used as traveling and transfer standards. The PTB220TS includes an oak case, a sealed lead acid battery, and recharging electronics. The PTB220 barometer can be installed in the case at the factory. The case can also be ordered separately for installation with the customer's existing PTB220 barometer. The high accuracy of the PTB220 makes the PTB220TS an ideal transfer standard for calibrating barometers in the field.

Features & benefits

- Total accuracy ±0.15 hPa (class A)
- Several output options
- 500...1100 hPa or 50...1100 hPa pressure ranges
- Available with one, two, or three barometric pressure transducers
- Long-term stability ±0.1hPa/yr (500...1100 hPa)
- NIST traceable (certificate included)
- -40...+60 °C (-40…+140 °F) operating temperature range

Technical data

Operating range (1 hPa = 1 mbar)

Pressure range	500...1100 hPa, 50...1100 hPa
Temperature operating	-40...+60 °C
Temperature with local display	0...+60 °C
Storage	-60...+60 °C
Storage with display	-20...+60 °C
Humidity	Non-condensing

Accuracy 500...1100 hPa

	Class A	**Class B**
Linearity	±0.05 hPa	±0.10 hPa
Hysteresis	±0.03 hPa	±0.03 hPa
Repeatability	±0.03 hPa	±0.03 hPa
Calibration uncertainty	±0.07 hPa	±0.15 hPa
Accuracy at +20 °C	±0.10 hPa	±0.20 hPa

Accuracy 50...1100 hPa

		Class B
Linearity		±0.20 hPa
Hysteresis		±0.08 hPa
Repeatability		±0.08 hPa
Calibration uncertainty		±0.20 hPa
Accuracy at +20 °C (68°F)		±0.30 hPa

Temperature dependence

500...1100 hPa	±0.1 hPa
50...1100 hPa	±0.3 hPa

Total Accuracy (-40...+60 °C / -40..+140°F)

	Class A	Class B
500...1100 hPa	±0.15 hPa	±0.25 hPa
50...1100 hPa		±0.45 hPa

Long-Term stability

500...1100 hPa	±0.1 hPa/year
50...1100 hPa	±0.2 hPa/year

General

Supply voltage	10...30 VDC (reverse polarity protected)
Supply voltage sensitivity	negligible
Current consumption **operating mode**	<30 mA
with local display	<50 mA
hardware shutdown mode	<0.1 mA
Serial I/O	RS 232C full duplex TTL level (bidirectional) RS 485/422 half duplex
Code	ASCII
Parity	None, even, or odd
Data bits	7 or 8
Stop bits	1 or 2

General

Pulse Output	TTL level pulse output at 5 kHz or 50 kHz
Pressure Units	hPa, mbar, kPa, Pa, inHg, mmH_2O, mmHg, torr, psia
Baud Rates	300, 600, 1200, 2400, 4800, 9600
Resolution **Class A**	0.01 hPa
Class B	0.1 hPa
Settling time at power-up (one sensor) **Class A**	4 s
Class B	3 s
Response time **Class A**	2 s
Class B	1 s
fast measurement mode	0.2 s

General

Acceleration Sensitivity	negligible
Pressure connector	M5 (10-32) internal thread
Pressure fitting	barbed fitting for 1/8" I.D. thread quick connector with shutoff valve for 1/8" hose
Max Pressure Limit	5000 hPa absolute
Electrical Connector	female 9-pin sub-D
Housing	Epoxy-painted aluminum
Weight	1 kg
Complies with EMC standard EN 61326-1	1997 + Am1:1998+Am2:2001; Generic Enviroment

Optional analog output module

Output range	0…5 VDC or 4…20 mA
Supply Voltage	15...30 VDC
Resolution	4 Pa
Total Accuracy +15...+30° **Class A ±0.25 hPa**	±0.25 hPa
Class B	±0.30 hPa

The module provides a secondary barometer output and is supplied without a calibration certificate