

PTB220 Digital Barometer



The Vaisala BAROCAP® Digital Barometer PTB220 offers excellent performance in a variety of applications.

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.

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

Features/Benefits

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

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.



The PTB220TS (transfer standard) includes an oak case, a sealed lead acid battery and rechargeable battery. When the PTB220 transmitter is enclosed, the case provides added protection and ease of portability.

Technical Data

Operating range (1hPa=1mbar)

Pressure range (order specified)	500...1100 hPa, 50...1100 hPa
Temperature range	
operating	-40...+60 °C (-40...+140 °F)
with local display	0...+60 °C (+32...+140 °F)
storage	-60...+60 °C (-76...+140 °F)
storage with local display	-20...+60 °C (-4...+140 °F)

Humidity range	non-condensing
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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

50...1100 hPa

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)

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

Long-term stability

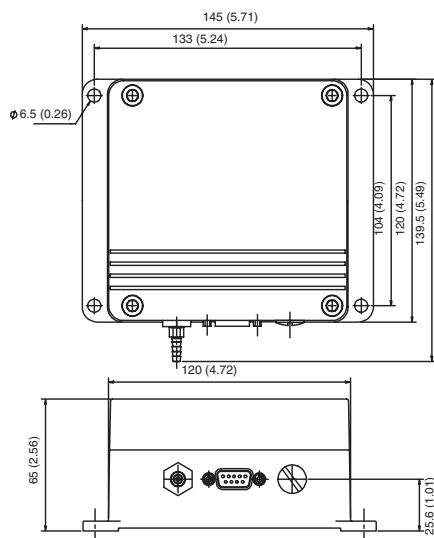
500...1100 hPa	±0.1 hPa/year
50...1100 hPa	±0.2 hPa/year

* Defined as ±2 standard deviation limits of endpoint non-linearity, hysteresis error or repeatability error.

** Defined as ±2 standard deviation limits of inaccuracy of the working standard including traceability to NIST.

*** Defined as the root sum of the squares (RSS) of endpoint nonlinearity, hysteresis error, repeatability error and calibration uncertainty at room temperature.

Dimensions in mm (inches)



****Defined at ±2 standard deviation limits of temperature dependence over the operating temperature range.

General

(•Factory setting)

Supply voltage	10...30 VDC reverse polarity protected
Supply voltage sensitivity	negligible
Current consumption	
operation mode	less than 30 mA
with local display	less than 50 mA
hardware shutdown mode	less than 0.1 mA
Serial I/O	RS 232C• full duplex or bidirectional TTL level or RS 485/422 half duplex
code	ASCII
parity	none, even•, odd
data bits	7• or 8
stop bits	1• or 2
Pulse output	TTL level pulse output at 5 kHz or 50 kHz
Pressure units	hPa•, mbar, kPa, Pa, inHg, mmH20, 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 (one sensor)	
class A	2 s•
class B	1 s•
fast measurement mode	0.2 s•
Acceleration sensitivity	negligible
Pressure connector	M5 (10-32) internal thread
Pressure fitting	barbed fitting for 1/8" I.D. tubing quick connector with shutoff valve for 1/8" hose
Maximum pressure limit	5000 hPa abs.
Electrical connector	female 9-pin subD
Housing	epoxy painted aluminum
Weight	1 kg
Complies with EMC standard EN 61326-1:1997 + Am1:1998 + Am2:2001; Generic Environment.	

Optional analog output module

Output range	0...5 VDC•, 4...20 mA
Supply voltage (reverse polarity protected)	15...30 VDC
Resolution	4 Pa
Total accuracy +15...+30 °C (+60...+85 °F)	
class A	±0.25 hPa
class B	±0.30 hPa

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

Note: The analog output is available only for one pressure transducer.

Accessories

213119	DC adapter for PTB220/PTU200 series
213026	DC adapter for PTB220/PTU200 series & RS232 cable for PC
	AC adapter, universal 100-240 VAC with US, EURO, UK or AUS plugs, to be used together with 213119 or 213026

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Specifications subject to change without prior notice.

