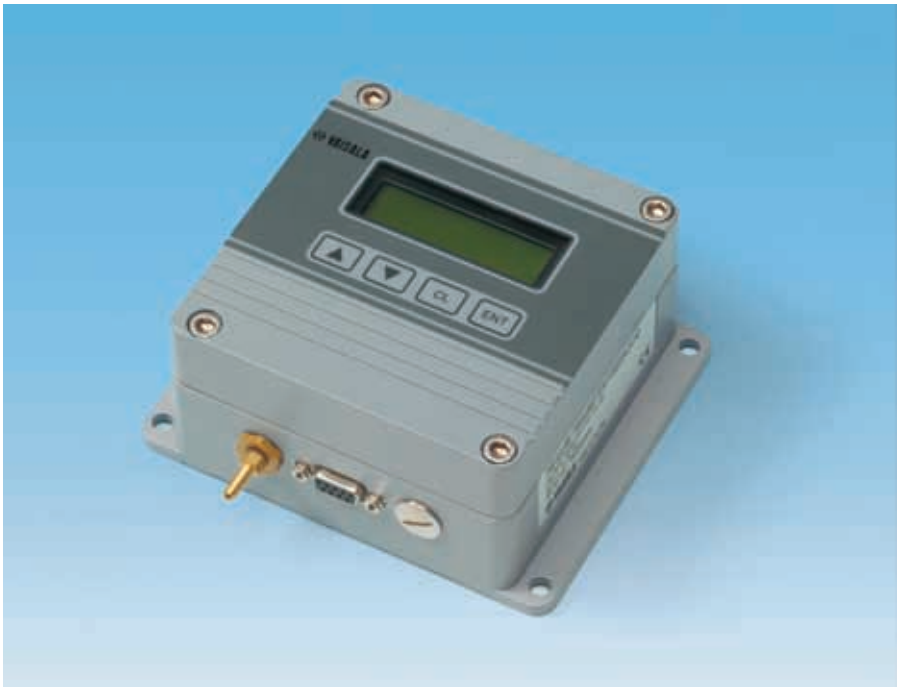
P.O. Box 26, FIN-00421 Helsinki, FINLAND
Tel: +358 9 894 91
Fax: +358 9 8949 2485
Email: industrialsales@vaisala.com
www.vaisala.com

PTB220 Series Digital Barometers



Features/Benefits

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

PTB220 Barometers offer excellent performance in a variety of applications.

PTB220 Barometers are 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

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.

BAROCAP® technology

The PTB220 Series Digital Barometers use the BAROCAP® silicon capacitive absolute pressure sensor developed by Vaisala for barometric pressure measurement applications. The BAROCAP® Sensor has excellent hysteresis and repeatability characteristics, and outstanding temperature and long-term stability.

PTB220TS Transfer Standard

With the PTB220TS, barometers can be used as travelling 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.

The PTB220TS (transfer standard) is comprised of the PTB220 Transmitter and rechargeable battery. Both are conveniently housed in an attractive and rugged oak carrying case that 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
with local display	0...+60 °C
storage	-60...+60 °C
storage with local display	-20...+60 °C
Humidity range	non-condensing

Accuracy

500...1100 hPa

	0.1% R¤	Class A	Class B
Linearity*	±0.05 hPa	±0.05 hPa	±0.10 hPa
Hysteresis*	±0.02 hPa	±0.03 hPa	±0.03 hPa
Repeatability*	±0.02 hPa	±0.03 hPa	±0.03 hPa
Calibration uncertainty**	±70 ppm	±0.07 hPa	±0.15 hPa
Accuracy at ***	±100 ppm	±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 ***		±0.30 hPa
Temperature dependence****		
500...1100 hPa		±0.1 hPa
50...1100 hPa		±0.3 hPa
Total accuracy		
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

¤ Class A / 800...1100 hPa /+20 °C

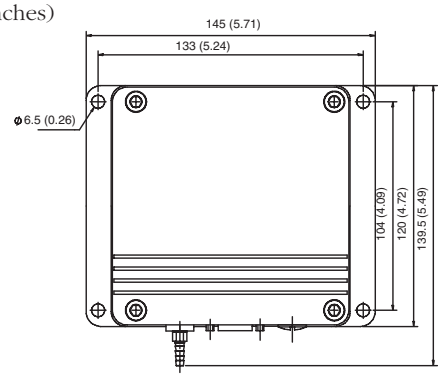
* Defined as ±2 standard deviation limits of endpoint non-linearity, hysteresis error or repeatability error.

** 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.

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

Dimensions in mm (inches)



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, 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	
class A	±0.25 hPa
class B	±0.30 hPa

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