BAROCAP Digital Barometer PTB330

For professional meteorology, aviation, and industrial users

Features

- Vaisala BAROCAP sensor
- Accurate measurement
- Excellent long-term stability
- Added reliability through redundancy
- Graphical trend display with 1-year history data
- Height and altitude corrected pressure (QFE, QNH)
- For aviation, professional meteorology, laboratories, and demanding industrial applications
- Corrosion-resistant IP65/IP66 housing, suitable for outdoor and marine environment

Vaisala BAROCAP® Digital Barometer PTB330 is designed for a wide range of high-end atmospheric pressure measurements. The pressure measurement of PTB330 is based on the Vaisala silicon capacitive, absolute pressure sensor - the Vaisala BAROCAP sensor. It provides high measurement accuracy and excellent long-term stability.

Highly accurate

The PTB330 series is highly accurate. Class A barometers for the most demanding applications are fine-tuned and calibrated against a high-precision pressure calibrator. Class B barometers are adjusted and calibrated using an electronic working standard. All PTB330 barometers come with a traceable factory calibration certificate.

Reliability through redundancy

According to your choice, PTB330 can incorporate 1, 2, or 3 BAROCAP sensors. When 2 or 3 sensors are used, the barometer continuously compares the readings of the pressure sensors against one another and reports if they are within the set internal difference criteria. This unique feature provides redundancy in pressure measurement. Users also get a stable and reliable pressure reading at all times, as well as a pre-indication of when to service or recalibrate the barometer.

QNH and QFE

PTB330 can be set to compensate for the QNH and QFE pressure used especially in aviation. The QNH represents the pressure reduced to sea level, based on the altitude and temperature of the observation site. The QFE represents the height-corrected pressure of small differences in altitude, for example, the air pressure at the airfield elevation.

Graphical display

PTB330 features a multilingual, graphical display allowing users to monitor measurement trends. PTB330 updates the graph automatically during measurement and it provides a 1-year measurement history. In addition to instant pressure, PTB330 provides the WMO pressure trend and tendency codes.

Applications

PTB330 can be used successfully for aviation, professional meteorology, and for demanding industrial pressure measurement applications such as accurate laser interferometric measurement and exhaust gas analysis in engine test benches.

Technical data

Measurement performance

Property	Class A	Class B
Barometric pressure range 500 … 1100 hPA		
Linearity [1]	±0.05 hPa	±0.10 hPa
Hysteresis [1]	±0.03 hPa	±0.03 hPa
Repeatability [1]	±0.03 hPa	±0.03 hPa
Calibration uncertainty [2]	±0.07 hPa	±0.15 hPa
Accuracy at +20 °C (+68 °F) [3]	±0.10 hPa	±0.20 hPa
Barometric pressure range 50 … 1100 hPA		
Linearity [1]	–	±0.20 hPa
Hysteresis [1]	–	±0.08 hPa
Repeatability [1]	–	±0.08 hPa
Calibration uncertainty [2]	–	±0.15 hPa
Accuracy at +20 °C (+68 °F) [3]	–	±0.20 hPa
Temperature dependence [4]		
500 … 1100 hPa	±0.1 hPa	±0.1 hPa
50 … 1100 hPa	±0.3 hPa	±0.3 hPa
Total accuracy −40 … +60 °C (−40 … +140 °F)		
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	±0.1 hPa/year
50 … 1100 hPa	±0.2 hPa/year	±0.2 hPa/year
Miscellaneous		
Pressure units	hPa, mbar, kPa, Pa inHg, mmH20, mmHg, torr, psia	hPa, mbar, kPa, Pa inHg, mmH20, mmHg, torr, psia
Resolution	0.01 hPa	0.1 hPa
Settling time at startup (1 sensor)	4 s	3 s
Response time (1 sensor)	2 s	1 s
Acceleration sensitivity	–	Negligible
Maximum pressure limit	–	5000 hPa absolute
Maximum measurement rate [5]	–	10 Hz

1) Defined as ±2 standard deviation limits of endpoint non-linearity, hysteresis, or repeatability error.
2) Defined as ±2 standard deviation limits of inaccuracy of the working standard including traceability to international standards.
3) Defined as the root sum of the squares (RSS) of endpoint non-linearity, hysteresis error, repeatability error, and calibration uncertainty at room temperature.
4) Defined as ±2 standard deviation limits of temperature dependence over the operating temperature range.
5) For class A you need a longer averaging time or measurement interval.

Operating environment

Pressure range	500 … 1100 hPa, 50 … 1100 hPa
Operating temperature	−40 … +60 °C (−40 … +140 °F)
Operating temperature with local display	0 … +60 °C (+32 … +140 °F)
IP rating	IP66 IP65 (NEMA4) with local display [1]

1) IP rating of PTB330AWS is IP40.

Mechanical specifications

Pressure fitting	Barbed fitting for 1/8-inch (inside diameter) tubing or quick connector with shutoff valve for 1/8-inch hose
Pressure connector	M5 (10-32) internal thread
Housing material	G AlSi10 Mg (DIN 1725)
Weight	1 … 1.5 kg (2.2 … 3.3 lb)

Inputs and outputs

Supply voltage	10 … 35 V DC
Supply voltage sensitivity	Negligible
Typical power consumption at +20 °C (+68 °F) (voltage at 24 V DC with 1 pressure sensor)	RS-232: 25 mA RS-485: 40 mA Output voltage U_{out}: 25 mA Output current I_{out}: 40 mA Display and backlight: +20 mA
Serial communication	RS-232, RS-485, RS-422

Analog output (optional)

Current output	0 … 20 mA, 4 … 20 mA	
Voltage output	0 … 1 V, 0 … 5 V, 0 … 10 V	
Accuracy at pressure range	500 … 1100 hPa	50 … 1100 hPa
At +20 °C (+68 °F)	±0.30 hPa	±0.40 hPa
At −40 … +60 °C (−40 … 140 °F)	±0.60 hPa	±0.75 hPa

Data transfer software

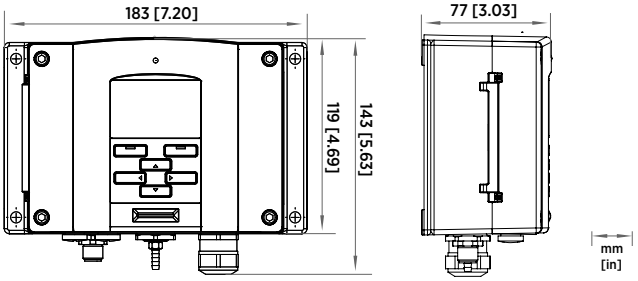
MI70 Link Interface software requirements	Microsoft® Windows OS Microsoft® Excel

Accessories

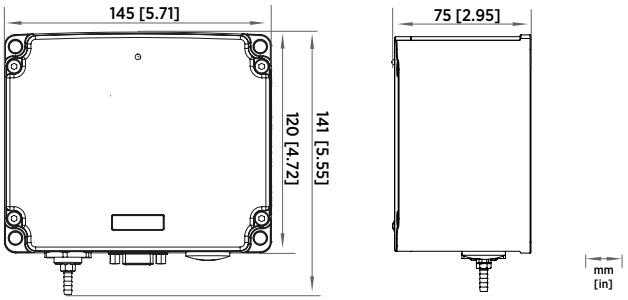
Modules	
Relay module	RELAY-1L
Temperature-compensated analog output module	AOUT-1T
Isolated RS-485 module	RS485-1
Power supply module	POWER-1
AC adapters for devices already equipped with an external AC adapter connector	
AC adapter, EU	MI70EUROADAPTER
AC adapter, USA	MI70USADAPTER
AC adapter, UK	MI70UKADAPTER
AC adapter, AUS	MI70AUSDAPTER
Static pressure head	
Static pressure head	SPH10
Static pressure head with heating	SPH20
Barometer mounting accessories	
Junction box	ASM211113
Wall mounting kit	214829
Installation kit for pole or pipeline	215108
Outdoor installation kit (weather shield)	215109
DIN rail clips with installation plate	215094
Panel mounting frame	216038
Connection cables	
Connection cable for PTB330 and MI70 handheld meters for spot check or calibration and adjustment	211339
Service cables	
USB-RJ45 serial connection cable	219685
D9-RJ45 serial connection cable	215005
Output cables for 8-pin connector	
Connection cable 5 m with 8-pin M12 female, black	212142
Female connector 8-pin M12 with screw terminals	212416
Cable bushings	
PTB330/220/PTU200 DC adapter and RS-232 cable for PC	213019
PTB330/PTB220/PTU200 DC adapter cable	213026
Others	
Dust filter	237018SP
Barbed pressure fitting 1/8-inch	19498SP
Quick connector 1/8-inch	220186

Compliance

Property	Value
EU directives and regulations	RoHS Directive (2011/65/EU) amended by 2015/863 EMC Directive (2014/30/EU) Low Voltage Directive (2014/35/EU), applies to units equipped with single-phase AC power supply Power-1
Electrical safety	EN 61010-1:2010 + A1:2019, applies to units equipped with single-phase AC power supply Power-1
Electromagnetic compatibility (EMC)	EN 61326-1, industrial environment EN 55011:2009 + A1:2010
Environmental	EN IEC 63000:2018



PTB330 dimensions



PTB330AWS dimensions

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