



# 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 professional meteorology and aviation, laboratories, demanding industrial applications

Vaisala BAROCAP® Digital Barometer PTB330 is a new-generation barometer, designed for a wide range of high-end atmospheric pressure measurement. 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. The 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 electronic working standard. All PTB330 barometers come with a traceable factory calibration certificate.

### Reliability through Redundancy

According to your choice, PTB330 can incorporate one, two, or three BAROCAP sensors. When two or three 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 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 one-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

### Barometric Pressure Range 500 ... 1100 hPa

	Class A	Class B
Linearity <sup>1)</sup>	±0.05 hPa	±0.10 hPa
Hysteresis <sup>1)</sup>	±0.03 hPa	±0.03 hPa
Repeatability <sup>1)</sup>	±0.03 hPa	±0.03 hPa
Calibration uncertainty <sup>2)</sup>	±0.07 hPa	±0.15 hPa
Accuracy at +20 °C (+68 °F) <sup>3)</sup>	±0.10 hPa	±0.20 hPa

### Barometric Pressure Range 50 ... 1100 hPa

	Class B
Linearity <sup>1)</sup>	±0.20 hPa
Hysteresis <sup>1)</sup>	±0.08 hPa
Repeatability <sup>1)</sup>	±0.08 hPa
Calibration uncertainty <sup>2)</sup>	±0.15 hPa
Accuracy at +20 °C <sup>3)</sup>	±0.20 hPa

### Temperature Dependence <sup>4)</sup>

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	±0.1 hPa/year

- 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.

## 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)
Compliance	EMC standard EN61326-1:1997 + Am1:1998 + Am2:2001: Industrial Environment

## Data Transfer Software

MI70 Link Interface software requirements	Microsoft® Windows OS Microsoft® Excel
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## Mechanical Specifications

Housing material	G AISi10 Mg (DIN 1725)
Housing classification	IP66 IP65 (NEMA4) with local display
Weight	1 - 1.5 kg (2.2 - 3.3 lbs)

## Inputs and Outputs

Supply voltage	10 ... 35 VDC	
Supply voltage sensitivity	Negligible	
Typical power consumption at +20 °C (U <sub>in</sub> 24 VDC, one pressure sensor)		
RS-232	25 mA	
RS-485	40 mA	
U <sub>out</sub>	25 mA	
I <sub>out</sub>	40 mA	
Display and backlight	+20 mA	
Serial I/O	RS-232C, RS-485, RS-422	
Pressure units	hPa, mbar, kPa, Pa inHg, mmH2O, mmHg, torr, psia	
	<b>Class A</b>	<b>Class B</b>
Resolution	0.01 hPa	0.1 hPa
Settling time at startup (one sensor)	4 s	3 s
Response time (one sensor)	2 s	1 s
Acceleration sensitivity	Negligible	
Pressure connector	M5 (10-32) internal thread	
Pressure fitting	Barbed fitting for 1/8 inch I.D. tubing or quick connector with shutoff valve for 1/8 inch hose	
Maximum pressure limit	5000 hPa abs.	

## Analog Output (Optional)

Current output	0 ... 20 mA, 4 ... 20 mA	
Voltage output	0 ... 1 V, 0 ... 5 V, 0 ... 10 V	
<b>Accuracy at pressure range</b>	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

## Accessories

Serial interface cable	19446ZZ
USB-RJ45 serial connection cable	219685
Software interface kit	215005
Wall mounting kit	214829
Outdoor installation kit (weather shield)	215109
Installation kit for pole or pipeline	215108
Power supply module	POWER-1
Temperature compensated analog output module	AOUT-1T
Isolated RS-485 module	RS485-1
DIN Rail Kit	215094



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Order form  
Purchaser

Valid from December 2015  
Order no.

Vaisala BAROCAP® Digital Barometer PTB330 - One Sensor

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	Price
	Digital Barometer with One Pressure Sensor	PTB330						A							0	
1	Accuracy Class	Class A Class B	(only 500... 1100 hPa range)	A B												
2	Display	No display Keypad and graphical display with backlight		0 1												
3	Power Supply	10...35 VDC 10...35 VDC with external power on/off triggering 10...35 VDC, 24 VAC with galvanic isolation Internal AC-power (110...240 VAC) Internal AC-power (110...240 VAC) + EUR power cord Internal AC-power (110...240 VAC) + US power cord Internal AC-power (110...240 VAC) + UK power cord Internal AC-power (110...240 VAC) + AUS power cord External EUR AC-adaptor External US AC-adaptor External UK AC-adaptor External AUS AC-adaptor			A B C D E F G H J K L M											
4	Signal Output	RS-232 only, no analog output Analog output	4...20 mA 0...20 mA 0...1 V 0...5 V 0...10 V		A C D E F G K											
5	Pressure range	500...1100 hPa 50...1100 hPa					H J									
6	Optional Module (slot 3)	No module Relay module	Class B only					A B								
7	Optional Module (slot 4)	No module	Select A with internal AC power					A								
8	Customer Connection	Cable bushing for 10...14 mm cable Conduit fitting NPT 1/2" 8-pole M12 connector with 5 m cable 8-pole M12 connector with screw terminals D9 connector							C D E F P							
9	Pressure Fitting	Barbed fitting 1/8" Quick connector 1/8" Dust filter	spare: 237018SP						E L P							
10	Optional Connection	None Plugged	Select A only with external AC adapter Recommended with internal AC power							A B C D						
11	Installation	Normal mounting Wall mounting plate Pole installation kit Pole installation kit with Rain Shield DIN rail kit	item: 214829 item: 215108 item: 215109 item: 215094								0 1 2 3 4					
12	Calibration	ISO 9001 compliant factory calibration Special calibration, please see separate order form	service item: PCALDA service item: HELACCRCAL									A Y				
13	Service contract	No Service Contract													0	
14	User's Guide language	No User's Guide English Chinese French Spanish Japanese German Russian														A B C D E J F R

Selections in *italic* are available at an extra price.

Accessories to be ordered separately

Interface cables

19446ZZ	Serial Interface Cable
215005	Software Interface Kit (MI70LINK + serial interface cable)
219685	USB-RJ45 Serial Connection Cable
219916	MI70LINK software for Windows® + USB-RJ45 Serial Connection Cable

Example of order code with typical settings:

PTB330 | A 0 A A H A A C E B 0 A 0 B



Order form  
Purchaser

Valid from December 2015  
Order no.

### Vaisala BAROCAP® Digital Barometer PTB330 - Two Sensors

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	Price
<b>Digital Barometer with Two Pressure Sensors, Single Redundancy</b>		<b>PTB330</b>														
1	<b>Accuracy Class</b>	Class A (only 500... 1100 hPa range) Class B		A B					A							
2	<b>Display</b>	No display Keypad and graphical display with backlight		0 1												
3	<b>Power Supply</b>	10...35 VDC 10...35 VDC with external power on/off triggering 10...35 VDC, 24 VAC with galvanic isolation External EUR AC-adaptor External US AC-adaptor External UK AC-adaptor External AUS AC-adaptor		A B C J K L M												
4	<b>Signal Output</b>	RS-232 only, no analog output Analog output			A C D E F G K											
5-6	<b>Pressure Range</b> (Same range for both sensors)	500...1100 hPa 50...1100 hPa					H J	H J								
7	<b>Optional Module (slot 4)</b>	No module							A							
8	<b>Customer Connection</b>	Cable bushing for 10...14 mm cable Conduit fitting NPT 1/2" 8-pole M12 connector with 5 m cable 8-pole M12 connector with screw terminals D9 connector								C D E F P						
9	<b>Pressure Fitting</b>	Barbed fitting 1/8", differential measurement Barbed fitting 1/8" Quick connector 1/8", differential measurement Quick connector 1/8" Dust filter								E F L M P						
10	<b>Optional Connection</b>	None Plugged Cable bushing for 10...14 mm cable Conduit fitting NPT 1/2" Barbed fitting 1/8", for differential measurement Quick connector 1/8", for differential measurement									A B C D E L					
11	<b>Installation</b>	Normal mounting Wall mounting plate Pole installation kit Pole installation kit with Rain Shield DIN rail kit													0 1 2 3 4	
12	<b>Calibration</b>	ISO 9001 compliant factory calibration Special calibration, please see separate order form													A Y	
13	<b>Service contract</b>	No Service Contract													0	
14	<b>User's Guide language</b>	No User's Guide English Chinese French Spanish Japanese German Russian														A B C D E J F R

Selections in *italic* are available at an extra price.

**Accessories to be ordered separately**  
**Interface cables**

19446ZZ	Serial Interface Cable
215005	Software Interface Kit (MI70LINK + serial interface cable)
219685	USB-RJ45 Serial Connection Cable
219916	MI70LINK software for Windows® + USB-RJ45 Serial Connection Cable

**Example of order code with typical settings:**

PTB330	A	0	A	A	H	H	A	C	E	B	0	A	0	B
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Order form  
Purchaser

Valid from December 2015  
Order no.

Vaisala BAROCAP® Digital Barometer PTB330 - Three Sensors

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	Price
<b>Digital Barometer with Three Pressure Sensors, Double Redundancy</b>		<b>PTB330</b>														
1	<b>Accuracy Class</b>	Class A Class B		(only 500... 1100 hPa range)												
2	<b>Display</b>	No display Keypad and graphical display with backlight		0 1												
3	<b>Power Supply</b>	10...35 VDC 10...35 VDC with external power on/off triggering		A B C J K L M												
		10...35 VDC, 24 VAC with galvanic isolation														
		External EUR AC-adaptor		Not IP65												
		External US AC-adaptor		Not IP65												
		External UK AC-adaptor		Not IP65												
		External AUS AC-adaptor		Not IP65												
4	<b>Signal Output</b>	RS-232 only, no analog output		A C D E F G K												
		Analog output		4...20 mA 0...20 mA 0...1 V 0...5 V 0...10 V												
		RS-485														
5-7	<b>Pressure Range</b>	500...1100 hPa		H H H												
	(Same range for all sensors)	50...1100 hPa		J J J												
8	<b>Customer Connection</b>	Cable bushing for 10...14 mm cable Conduit fitting NPT 1/2"		C D E F P												
		8-pole M12 connector with 5 m cable														
		8-pole M12 connector with screw terminals														
		D9 connector		Not IP65												
9	<b>Pressure Fitting</b>	Barbed fitting 1/8" Quick connector 1/8" Dust filter		G N P												
10	<b>Optional Connection</b>	None Plugged		A B C D												
		Cable bushing for 10...14 mm cable		Select A only with external AC adaptor												
		Conduit fitting NPT 1/2"		Recommended with internal AC power												
11	<b>Installation</b>	Normal mounting		0 1 2 3 4												
		Wall mounting plate		item: 214829												
		Pole installation kit		item: 215108												
		Pole installation kit with Rain Shield		item: 215109												
		DIN rail kit		item: 215094												
12	<b>Calibration</b>	ISO 9001 compliant factory calibration		service item: PCALDA												
		Special calibration, please see separate order form		service item: HELACCRCAL												
13	<b>Service contract</b>	No Service Contract		0												
14	<b>User's Guide language</b>	No User's Guide English Chinese French Spanish Japanese German Russian		A B C D E J F R												
<i>Selections in italic are available at an extra price.</i>															TOTAL VALUE	

Accessories to be ordered separately  
Interface cables

19446ZZ	Serial Interface Cable Russian
215005	Software Interface Kit (MI70LINK + serial interface cable)
219685	USB-RJ45 Serial Connection Cable
219916	MI70LINK software for Windows® + USB-RJ45 Serial Connection Cable

Example of order code with typical settings:

PTB330 | A | 0 | A | A | H | H | H | C | G | B | 0 | A | 0 | R