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DATASHEET

PTB330TS-SYSTEM

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VAISALA

Barometric Pressure Transfer Standard PTB330TS



Features

- PTB330 digital barometer for accurate pressure measurement
- Handheld MI70 indicator with a user-friendly, multilingual display
- Service port for MI70 Link software or computer
- Vaisala HUMICAP® humidity and temperature probe HMP155
- Weatherproof transport case

Barometric Pressure Transfer Standard PTB330TS combines a PTB330 digital barometer with a handheld MI70 indicator into a portable unit that can be used as a transfer standard.

Barometer for portable use

PTB330TS uses a PTB330 series digital barometer that is housed in a tabletop casing. PTB330TS is designed to be operated using the handheld MI70 indicator. The MI70 indicator also provides the operation power for the barometer. Optional HMP155 probe is available for accurate humidity and temperature measurement.

For measurements in industrial and meteorological areas

PTB330TS is suitable for reference measurements in industrial and meteorological areas. PTB330TS is housed in a durable and weatherproof transport case that can be easily carried and shipped. The components of the PTB330TS are placed in a foam interior with accessories and User Guide in the lid organizer. The case includes a shoulder strap.

Available options

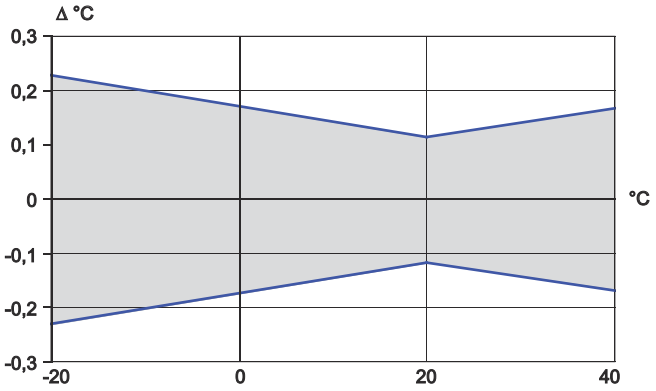
- ISO/IEC 17025 Accredited calibration for PTB330 and HMP155
- HMP155 options: additional temperature probe, manually controlled sensor purge feature
- MI70 Link software and USB or RS-232 cable for downloading measurement data to a computer
- USB service cable for connecting to PTB330 service port

Technical data

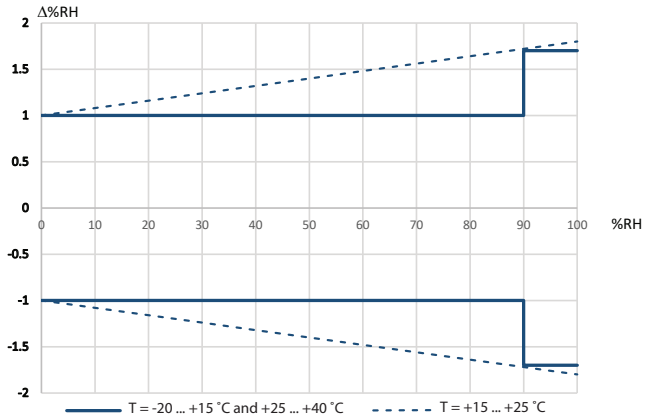
These specifications apply when MI70, PTB330, and HMP155 are used together in PTB330TS. For PTB330 and HMP155 specifications, see the product documentation.

Operating environment

Operating temperature MI70 PTB330 HMP155	 −10 … +40 °C (+14 … +104 °F) −40 … +60 °C (−40 … +140 °F) −80 … +60 °C (−112 … +140 °F)
Storage without display	−55 … +80 °C (−67 … +176 °F)
Storage with display	−40 … +80 °C (−40 … +176 °F)
Operating humidity	0–100 %RH, non-condensing
Maximum pressure limit	5000 hPa absolute
Power supply	Rechargeable NiMH battery pack with AC adapter or 4 x AA size alkalines, type IEC LR6
Menu languages	English, Chinese, French, Spanish, German, Russian, Japanese, Swedish, Finnish
Display	LCD with backlight, graphic trend display of any parameter, character height up to 16 mm
Data logging capacity	2700 points
Alarm	Audible alarm function
Operation time (using rechargeable battery pack)	
Continuous use with PTB330	11 h typical at +20 °C (+68 °F)
Data logging use	Up to 30 days



Accuracy of HMP155 temperature measurement over temperature range



Accuracy of HMP155 humidity measurement over temperature range

Measurement performance

Barometric pressure (PTB330)	
Measurement range	500–1100 hPa
Linearity [1]	±0.05 hPa
Hysteresis [1]	±0.03 hPa
Repeatability [1]	±0.03 hPa
Calibration uncertainty [2]	±0.07 hPa
Accuracy at +20 °C (+68 °F) [3]	±0.10 hPa
Temperature dependence [4]	±0.1 hPa
Total accuracy -40 … +60 °C (-40 … +140 °F)	±0.15 hPa
Long-term stability	±0.1 hPa/year
Settling time at startup (1 sensor)	4 s
Response time (1 sensor)	2 s
Acceleration sensitivity	Negligible
Relative humidity (HMP155)	
Measurement range	0–100 %RH
Accuracy (including non-linearity, hysteresis, and repeatability)	
At +15 … +25 °C (+59 … +77 °F)	±1 %RH (0–90 %RH) ±1.7 %RH (90–100 %RH)
At −20 … +40 °C (−4 … +104 °F)	±(1.0 + 0.008 × reading) %RH
At −40 … −20 °C (−40 … −4 °F)	±(1.2 + 0.012 × reading) %RH
At +40 … +60 °C (+104 … +140 °F)	±(1.2 + 0.012 × reading) %RH
At −60 … −40 °C (−76 … −40 °F)	±(1.4 + 0.032 × reading) %RH
Factory calibration uncertainty at +20 °C (+68 °F) [5]	±0.6 %RH (0–40 %RH) ±1.0 %RH (40–95 %RH)
Humidity sensor	HUMICAP®R2, 180R and INTERCAP for typical applications HUMICAP®R2C, 180RC and INTERCAPC for applications with chemical purge and/or warmed probe
Response time at +20 °C (+68 °F) in still air with sintered Teflon filter	63 %: 20 s 90 %: 60 s
Temperature (HMP155)	
Measurement range	−80 … +60 °C (−112 … +140 °F)
Accuracy with RS-485 output	
At −80 … +20 °C (−112 … +68 °F)	±(0.176 − 0.0028 × temperature) °C
At +20 … +60 °C (+68 … +140 °F)	±(0.07 + 0.0025 × temperature) °C
Sensor	Pt100 RTD element, Class F 0.1 IEC 60751
Response time with additional temperature probe in 3 m/s air flow	
63%	< 20 s
90%	< 35 s

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 NIST.
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) Defined as ±2 standard deviation limits. Small variations possible (see also the calibration certificate).

Available parameters

Pressure parameters	P, P3h, HCP, QFE, QNH
Humidity and temperature parameters	RH, T, T_{df}, T_d, x, T_w

Inputs and outputs

MI70 probe ports	2
MI70 data interface	RS-232 (accessible only with MI70 Link software)
PTB330 supply voltage	10–35 V DC (if not powered by MI70)
PTB330 data interface	RS-232C
PTB330 serial I/O connectors	RJ45 (service port) male 8-pin M12 (user port)
HMP155 data interface	RS-485
HMP155 serial I/O connector	Male 8-pin M12

Mechanical specifications

PTB330	
Housing material	G-AlSi 10 mg (DIN 1725)
IP rating	IP65
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
HMP155	
Housing material	Polycarbonate, PC
IP rating	IP66
Additional T-probe cable length	2 m (6 ft 6 in)
Cable material	PUR
Sensor protection	Sintered polytetrafluoroethylene, PTFE
MI70 measurement indicator	
IP rating	IP54
Housing material	Acrylonitrile butadiene styrene / polycarbonte (ABS/PC) blend
Transport case	
IP rating (when closed)	IP67
Plastic parts	TTX01®, PP+SEBS, POM
Metal parts	Stainless steel AISI303
Interior foam material	Polyethylene and polyether
Weight with all instruments and typical accessories	5.9 kg (13 lb)
Exterior dimensions (L × W × H)	405 × 330 × 165 mm (15.94 × 12.99 × 6.50 in)

Compliance

Property	Value
EU directives and regulations	RoHS Directive (2011/65/EU) as 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

Spare parts and accessories

PTB330	
MI70 – PTB330 spiral cable	223235SP
USB-RJ45 serial connection cable	219685
D9-RJ45 serial connection cable	215005
Barbed fitting 1/8 in	19498SP
Quick connector 1/8 in	220186
Transport case with interior foams and tabletop casing for PTB330	224068SP
MI70	
USB cable for MI70, includes MI70 Link software	219687
MI70 Link software	MI70LINK
MI70 connection cable to HMT330, MMT330, DMT340, HMT100, PTB330	211339
MI70 battery pack variety of AC adapters available	26755
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	MI70AUSADAPTER
All AC adapter	MI70ALLADAPTER
HMP155	
HMP155 - MI70 connection cable	221801
Protection set for HMP155 calibration buttons: protective cover, 2 O-rings and protective plug	221318
USB cable for HMP155	221040
Sintered Teflon filter + O-ring	219452SP
Humidity calibrator	HMK15
HMK15 adapter fitting for 12-mm probes	218377SP



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