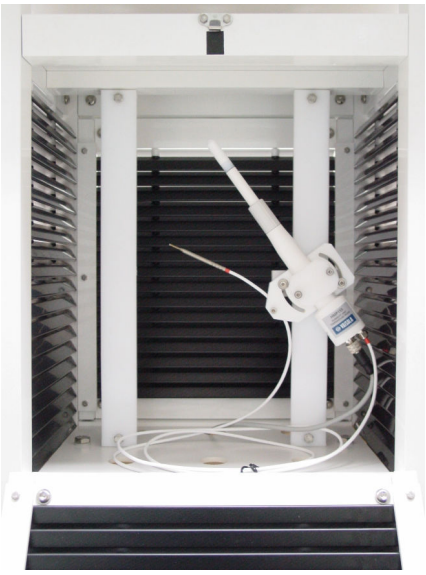
ITEM OPPORTUNITY SYNOPSIS

Scouting Number:	2024-210
Name of the item to be scouted:	Humidity and Temperature Equipment
State item to be used in:	None
Describe the Item:	
Please describe the item application/the end use of the item.	The National Oceanic and Atmospheric Administration (NOAA), Oceanic and Atmospheric Research (OAR), Earth Systems Research Laboratories (ESRL), Global Monitoring Laboratory (GML) manages four historical atmospheric baseline observatories (ABOs) in Alaska, Hawaii, American Samoa, and Antarctica with long continual historical records of atmospheric chemistry and meteorological measurements. In addition to the ABOs, GML also manages a tall tower atmospheric measurement network (AMN) that is currently being enhanced with new meteorological sensors to supplement other atmospheric chemistry related observation data in order to improve data analysis capabilities. All of these sites use the Vaisala meteorological sensors and components for data collection, and new equipment like the Vaisala brand instruments is needed to maintain the existing network.
Supplier Information:	
Type of Supplier Being Sought (select from the list below):	
Manufacturer	x
Contract Manufacturer	
Distributor	
Other (Please Specify)	
Reason for Scouting Submission (select from the list below)	
2nd Supplier	
Price	
Re-Shore	
Past supplier no longer available	
New Product Startup	
BABA	x
Other (Please Specify)	
Summary of Technical Specifications and Performance Requirements:	
Describe the manufacturing processes (elaborate to provide as much detail as possible)	Unknown except as provided in attached specs sheets.
Provide dimensions / size / tolerances / performance specifications of the item	All offered products must be fully compatible (form, fit, and function) with Vaisala's HMP155 Humidity and Temperature Probes, PTB330 Digital and Analog Barometers, MI70 Handheld Measurement Indicators, PTB210 Digital Barometers, and SPH20 Static Pressure Heads are needed to integrate into the current ABO and AMN systems, in order to continue long-term historical records. Additional instrumentation is needed in order to maintain the integrity of data sets, and consistency of measurements of atmospheric chemistry and meteorological data. These are the only known instruments that can meet the Government's needs, and this notice's intent is to identify any other products that meet the full requirements listed below. See attached data sheets for full specifications in order to meet the Government's requirement. HMP155 Equivalent General Specifications: Long-term stability able to withstand harsh environments Solid structure protects sensor with sintered teflon filter Warmed probe able to provide reliable measurements in high-humidity environments Membrane filter for fast response time Calibration via USB cable, push buttons, or indicator PTB330 Equivalent General Specifications: Highly accurate Class A barometer, calibrated against high-precision pressure calibrator Can incorporate 1, 2, or 3 BAROCAP sensors; when 2 or 3 sensors used, barometer continuously compares readings Can be set to compensate for QNH and QFE pressure Multilingual, graphical display; graph updates automatically during measurement Provides WMO pressure trend and tendency codes MI70 Equivalent General Specifications: Multi-probe operation allows two probes to be connected simultaneously Indicator can display both probes for simultaneous data display multilingual, menu-based user interface with clear graphical LCD display Three measurement parameters can be displayed and logged in memory at once Measurement parameters can be displayed graphically and numerically Users can select measurement parameters and units Data transfer through USB connection PTB210 Equivalent General Specifications: Designed to operate in wide temperature range and harsh environments Electronics housing provides IP65 (NEMA 4) standardized protection against sprayed water Available in two pressure ranges in three configurations (see data sheet for ranges/configurations) Higher accuracy barometer calibrated against a high-precision pressure calibrator Available for 500 to 1100 hPa pressure range Integrates directly with Vaisala Static Pressure Head Series Accurate measurement in all wind conditions Uses silicon capacitive absolute pressure sensor for barometric pressure applications SPH20 Equivalent General Specifications: Designed to minimize errors caused by wind Horizontally and vertically symmetrical Reliable barometric pressure measurements in all weather Heated for reliable operation in snowy and icy conditions Thermostat automatically switches on warming power when appropriate Composted of ultraviolet stabilized PC plastics and offshore aluminum Protects against rain and condensed water, preventing capillary condensation Drain holes in lower plate allow rain and water flow out
List required materials needed to make the product, including materials of product components, if applicable	Unknown except as provided in attached specs sheets.

Are there applicable certification requirements?	
Yes	
No	x
Please explain:	
Are there any applicable regulations that apply to the production of this item?	
Yes	
No	x
Please explain:	
Are there any other standards / requirements?	
Yes	
No	x
Please explain:	
NAICS CODES:	
NAICS 1	334519 Other Measuring and Controlling Device Manufacturing
NAICS 2	
Additional Comments:	
Additional technical comments:	All offered products must be fully compatible (form, fit, and function) with existing systems without need for modification to products or system.
Volume and Pricing:	
Estimated Potential Business Volume (i.e. #units per day, month, year):	One-time purchase
Estimated Target Price/Unit Cost Information:	HMP155 range $1,088.00 to $1,779.00 each (quantity 12 total needed) PTB210 $1,857.00 and $2,865.00 each (quantity 2 needed) SPH20 $1,329.00 each (quantity 2 needed) PTB330 $6,593.00 each (quantity 1 needed) Calibration for new instruments $1,134.00 Aggregate for all $28,707.00
Delivery Requirements:	
When is it needed by? (Immediate, 30 days, 6 months, etc.)	Anticipate contract award before end of current fiscal year (by 9/20/2024), with delivery by 60 days after date of award.
Describe packaging requirements (i.e. individually/group packaging, etc.)	N/A
Where will this item be shipped?	Boulder, CO
Additional Comments:	
Is there other information you would like to include?	This is a Simplified Acquisition, which has a shorter lead time to completion than an action over $250,000.00. It is expected that this requirement will be awarded within the next 30-60 days, and any timely scouting (requested completed within 15 days from submission) would be appreciated to align with Simplified Acquisition requirements for posting and the Buy American Act Waiver process. Department of Commerce Point of Contact: Marcelle Loveday, Director, Acquisition Policy & Workforce, Office of Acquisition Management, 202-941-7641, MLoveday@doc.gov.

HUMICAP® Humidity and Temperature Probe HMP155



HMP155 with an additional temperature probe and optional Stevenson screen installation kit.

Features

- Vaisala HUMICAP®180R sensor: superior long-term stability
- Optional warmed humidity probe and chemical purge
- Plug-and-play
- USB connection for service use
- Use with DTR13 and DTR503 radiation shields and a Stevenson screen
- Weather-proof housing IP66
- Optional, fast temperature probe
- Different output possibilities: voltage, RS-485, resistive Pt100
- Applications: meteorology, aviation and road weather, instrumentation

Vaisala HUMICAP® Humidity and Temperature Probe HMP155 provides reliable humidity and temperature measurement. It is designed especially for demanding outdoor applications.

Long-term stability

HMP155 uses the proven Vaisala HUMICAP®180R sensor that has excellent stability and withstands well harsh environments. The probe structure is solid and the sensor is protected by default with a sintered teflon filter, which gives maximum protection against water, dust, and dirt.

Warmed probe and high-humidity environment

Measuring humidity reliably is challenging in environments where humidity is near saturation. Measurements may be corrupted by fog, mist, rain, and heavy dew. A wet probe may not give an accurate measurement in the ambient air.

This is an environment to which Vaisala has designed this patented, warmed probe for reliable measurements. As the sensor head is warmed continuously, the humidity level inside it stays below the ambient level. Thus, it also reduces the risk of condensation forming on the probe.

Fast measurements

With its fast response time, the additional temperature probe for HMP155 is ideal for measuring in environments with changing temperatures. The membrane filter speeds up the relative humidity measurement.

Long lifetime

Protecting the sensor from precipitation, and scattered and direct solar radiation increases its lifetime. Thus, Vaisala recommends installing HMP155 in one of the following radiation shields: DTR503, DTR13, or Stevenson screen. For the additional temperature probe, an installation kit is available for Vaisala DTR502 Radiation Shield.

Calibration

The probe can be calibrated using a computer with a USB cable, with the push buttons, or with the MI70 indicator.

Technical Data

HMP155 humidity measurement performance

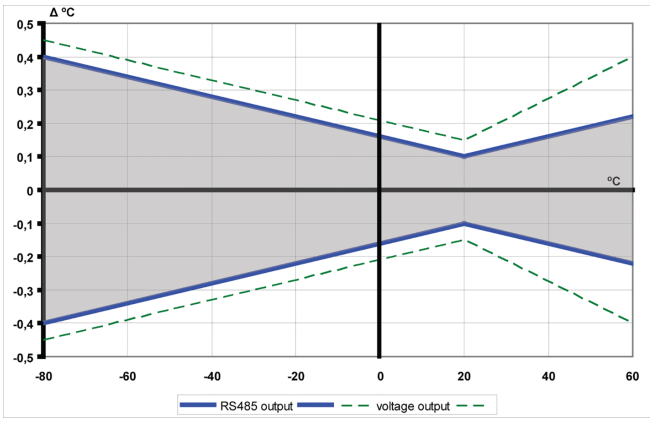
Sensor	HUMICAP®R2, 180R and INTERCAP for typical applications HUMICAP®R2C, 180RC and INTERCAPC for applications with chemical purge and/or warmed probe
Observation range	0 ... 100 %RH
Response time at +20 °C (+68 °F) in still air with sintered Teflon filter	63 %: 20 s 90 %: 60 s
Factory calibration uncertainty at +20 °C (+68 °F)[1)]	±0.6 %RH (0 ... 40 %RH) ±1.0 %RH (40 ... 95 %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

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

HMP155 temperature measurement performance

Sensor	Pt100 RTD element, Class F 0.1 IEC 60751
Observation range	−80 ... +60 °C (−112 ... +140 °F)
Response time for additional temperature probe in 3 m/s (7 mph) air flow	63 %: < 20 s 90 %: < 35 s
Other measured variables	Dew point / frost point temperature, wet bulb temperature, mixing ratio
Accuracy with voltage output	
At −80 ... +20 °C (−112 ... +68 °F)	±(0.226 - 0.0028 × temperature) °C
At +20 ... +60 °C (+68 ... +140 °F)	±(0.055 + 0.0057 × temperature) °C
Accuracy with passive (resistive) output	
According to Tolerance Class AA IEC 60751[1)]	±(0.1 + 0.0017 × |temperature|) °C
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

1) Tolerance Class AA IEC 60751 corresponds to IEC 751 1/3 Class B



HMP155 accuracy over temperature range: voltage and RS-485

HMP155 operating environment

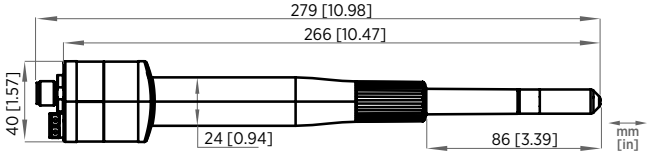
Operating temperature for humidity measurement	−80 ... +60 °C (−112 ... +140 °F)
Storage temperature	−80 ... +60 °C (−112 ... +140 °F)
Operating humidity	0 ... 100 %RH
IP rating	IP66

HMP155 inputs and outputs

Operating voltage	7 ... 28 V DC
Minimum operating voltage	0 ... 1 V output or RS-485: 7 V 0 ... 5 V output, or warmed probe: 12 V 0 ... 10 V output, chemical purge, or XHEAT: 16 V
Outputs	Voltage output: 0 ... 1 V, 0 ... 5 V, 0 ... 10 V Resistive Pt100 4-wire connection RS-485
Average power consumption (+15 V DC, load 100 kΩ)	0 ... 1 V output: < 3 mA 0 ... 10 V output: +0.5 mA RS-485: < 4 mA During chemical purge: Maximum 110 mA With warmed probe: Maximum 150 mA
Settling time at startup	Voltage output: 2 s RS-485: 3 s

HMP155 mechanical specifications

Dimensions (H × W)	279 × 40 mm (10.9 × 1.6 in)
Weight	93 g (3.25 oz)
Length of additional T-probe cable	2 m (6 ft 7 in)
Connection	8-pin male M12 connector
Connection cables	3.5 m (11 ft 6 in), 10 m (32 ft 10 in), 30 m (98 ft 5 in)
Maximum wire size	0.129 mm^2 (26 AWG)
Service cables	USB connection cable MI70 connection cable
Materials	
Filter	Sintered Teflon or membrane
Housing	Polycarbonate (PC)
Additional temperature probe	Stainless steel AISI 316L
Cable	PUR



Dimensions in mm (inches)

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MI70 Handheld Measurement Indicator

Features

- Wide selection of measurement probes – HM70, DM70, MM70, GM70
- Multi-probe operation - combine any two probes
- Can be connected to selected Vaisala's fixed transmitters
- Intuitive interface
- Nine language options
- Suitable for field checking of fixed instruments

Vaisala Handheld Measurement Indicator MI70 is a user-friendly indicator. When combined with a measurement probe it is ideal for field checking and calibration of Vaisala's fixed instruments.

MI70 has probes for measuring humidity and temperature, dewpoint, moisture in oil, and CO_2. In addition, MI70 can be used as a display when connected to selected Vaisala transmitters.

Multi-Probe Operation

The MI70 indicator has two cable ports by which a combination of any two probes (or transmitters) can be connected to it simultaneously. For example, a humidity and temperature probe could be connected to the one port, and a CO_2 probe to the other. The indicator can display the measurements made by both probes, so humidity, temperature, and CO_2 data could be displayed simultaneously.

Intuitive User Interface

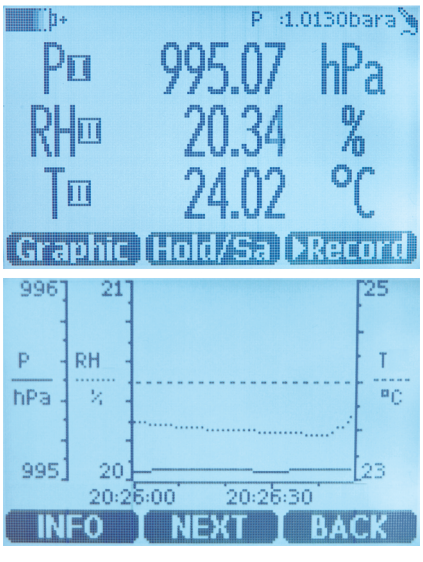
MI70 features a multilingual, menu-based user interface and a clear graphical LCD display. All in all three measurement parameters can be displayed and simultaneously logged in the memory. The display shows measurement trends graphically and numerically. Users can select the measurement parameters and units. MI70's intuitive user interface operates with menus and keypads to change settings, logging, and display preferences.

Multiple Language Options

There are nine language options in MI70: Chinese, English, Finnish, French, German, Japanese, Russian, Spanish, and Swedish.

Optional Connection to PC

The optional MI70 Link Windows® software and the USB connection cable form a practical tool for transferring logged data as well as real time measurement data from the MI70 to a PC



Users can select and display up to three measurement parameters at the same time. The graphic display shows the stabilization of measurement and process trends.

Technical Data

MI70 Measurement Indicator

Operating Environment	
Operating temperature	-10 ... +40 °C (+14 ... +104 °F)
Operating humidity	0 ... 100 % RH, non-condensing
Storage temperature	-40 ... +70 °C (-40 ... +158 °F)
Inputs and Outputs	
Max. no of probes	2
Power supply	Rechargeable NiMH battery pack with AC adapter or 4xAA size alkalines, type IEC LR6
PC interface	MI70 Link software with USB or serial port cable
Analog Output	
Scale	0...1 VDC
Output resolution	0.6 mV
Accuracy	0.2 % full scale
Temperature dependence	0.002 %/°C full scale
Minimum load resistor	10 kΩ to ground
Mechanical Specifications	
Housing classification	IP54
Housing materials	ABS/PC blend
Weight	400 g
Compatibility	
EMC compliance	EN61326-1, Portable Equipment
Other	
Menu languages	English, Chinese, Spanish, Russian, French, Japanese, German, Swedish, Finnish
Display	• LCD with backlight • Graphic trend display of any parameter • Character height up to 16 mm
Alarm	Audible alarm function
Data logging capacity	2700 real time data points
Logging interval	1 s to 12 h
Logging duration	1 min ... memory full
Resolution	0.01 %RH, 0.01 °C/°F, 0.01 hPa, 0.01 a_w, 10 ppm / 0.01 %CO_2

Battery Operation Time

Typical charging time	4 hours
Operation Times	
Continuous use (one probe of HM70, DM70 and MM70 series)	48 h typical at +20 °C (68 °F)
Continuous use (GM70 handle)	better than 8 h at +20 °C (+68 °F)
Continuous use (GM70 pump)	better than 5 h at +20 °C (+68 °F)
Data logging use	up to a month, depending on logging interval

Measurement Probes for the MI70

HM70 Series Humidity and Temperature Probes	
HMP75(B)	General purpose probe
HMP76(B)	Long, stainless steel probe
HMP77(B)	Small probe, with 5 m cable
DM70 Series Dewpoint Probes	
DMP74A, DMP74B	Pressure tight probes for dry air measurements
DMP74C	Probe for SF6 gas measurements
MM70 Moisture in Oil Probe	
MMP78	Pressure tight, stainless steel probe
GM70 Carbon Dioxide Probes	
GMH70	Handle for probe for diffusion sampling
GM70PUMP	Sampling pump for GM70

For full specifications of the measurement probes see relevant brochures/ User's Guides (use the relevant order form to define ordered probe)

Spare Parts and Accessories

Carrying Cases	
A weatherproof carrying case for HM70, DM70 and GM70 short probes	MI70CASE3
A weatherproof carrying case for HM70 and MM70 long probes	MI70CASE4
A soft carrying case for HM70, DM70 and GM70 short probes	MI70SOFTCASE
Transmitter Connection Cables	Small probe, with 5 m cable
MMT/HMT330, HMT120/130, DMT340, PTB330, PTU300 Series	211339
HMD60/70 Series	HMA6070
DMT242	27160ZZ
DMT143, DMT143L, DMT152, MMT162 HMW90 Series, HMDW110 Series and GMW90 Series	219980SP
MMT/HMT310 Series, GMP343	DRW216050SP
GMT220, GMD20	GMA70
HMP155	221801
Software	
MI70 Link software with USB cable	219687
MI70 Link software with serial port cable	MI70LINK
Other	
Analog output cable	27168ZZ
10 m (32.81 ft) extension cable for probe	213107SP
Battery, NiMH 4.8 V	26755

CE

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BAROCAP® Digital Barometer PTB210

Features

- 500 ... 1100 hPa or 50 ... 1100 hPa pressure ranges with serial output
- Different scalings between 500 ... 1100 hPa with analog output
- Electronics housing IP65 protected against sprayed water
- Accurate and stable measurement
- Traceable calibration (certificate included)

Vaisala BAROCAP® Digital Barometer PTB210 is a reliable outdoor barometer for harsh conditions.

For harsh environments

PTB210 is ideal for outdoor installations and harsh environments. PTB210 is designed to operate in a wide temperature range, and the electronics housing provides IP65 (NEMA 4) standardized protection against sprayed water.

PTB210 is ideal for use in applications such as weather stations, data buoys, ships, airports, and agrology. It is also an excellent solution for monitoring barometric pressure in industrial equipment such as laser interferometers and engine test benches.

Several pressure ranges

PTB210 is designed for various pressure ranges. It is available in 2 pressure ranges in 3 configurations:

- Serial output for 500 ... 1100 hPa
- Serial output for 50 ... 1100 hPa
- Analog output with different scalings between 500 ... 1100 hPa

Accurate and stable measurement

PTB210 is digitally adjusted and calibrated by using electronic working standards. A higher accuracy barometer, which is fine-tuned and calibrated against a high-precision pressure calibrator, is available for the 500 ... 1100 hPa pressure range.

In addition, PTB210 integrates directly with Vaisala Static Pressure Head Series SPH10/20. This pairing offers accurate measurement in all wind conditions.

Vaisala BAROCAP technology

PTB210 uses the Vaisala BAROCAP sensor, a silicon capacitive absolute pressure sensor developed by Vaisala for barometric pressure applications. The Vaisala BAROCAP sensor provides excellent hysteresis and repeatability characteristics and outstanding temperature and long-term stability. PTB210 is delivered with a traceable factory calibration certificate.

PTB210 paired with SPH10 static pressure head

Technical Data

Measurement performance

Pressure range			
Serial output		500 ... 1100 hPa 50 ... 1100 hPa	
Analog output		500 ... 1100 hPa 600 ... 1060 hPa 800 ... 1060 hPa 900 ... 1100 hPa	
Serial output, accuracy (hPa)			
Pressure range	500 ... 1100		50 ... 1100
	Class A	**Class B**	
Non-linearity [1]	± 0.10	± 0.15	± 0.20
Hysteresis [1]	± 0.05	± 0.05	± 0.10
Repeatability [1]	± 0.05	± 0.05	± 0.10
Calibration uncertainty [2]	± 0.07	± 0.15	± 0.20
Accuracy at +20 °C (+68 °F) [3]	± 0.15	± 0.20	± 0.35
Temperature dependency [4]	± 0.20	± 0.20	± 0.40
Total accuracy -40 ... +60 °C (-40 ... +140 °F) [3]	± 0.25	± 0.30	± 0.50
Long-term stability (hPa/year)	± 0.10	± 0.10	± 0.20
Analog output, accuracy			
Non-linearity [1]		± 0.20 hPa	
Hysteresis [1]		± 0.05 hPa	
Repeatability [1]		± 0.05 hPa	
Calibration uncertainty [2]		± 0.15 hPa	
Accuracy at +20 °C (+68 °F) [3]		± 0.30 hPa	
Temperature dependency [4]		± 0.50 hPa	
Total accuracy -40 ... +60 °C (-40 ... +140 °F) [3]		± 0.60 hPa	
Long-term stability		± 0.10 hPa/year	

1) *Defined as the ±2 standard deviation limits of end point non-linearity, hysteresis error, 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 end point 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

Operating temperature	−40 ... +60 °C (−40 ... +140 °F)
Operating humidity	0 ... 100 %RH, non-condensing

Compliance

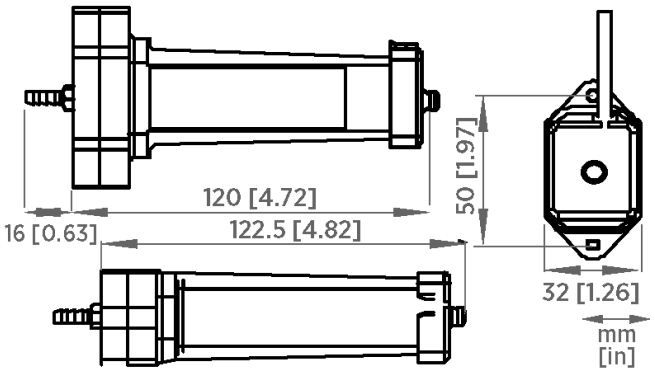
Directives	EMC Directive (2014/30/EU) RoHS Directive (2011/65/EU)
EMC compatibility	EN / IEC 61326-1, Electrical equipment for measurement, control and laboratory use - EMC requirement; Basic environment CISPR 32 / EN 55032, Class B
Compliance	CE, FCC, UKCA

Mechanical specifications

Housing material	PC plastic
IP rating, electronics	IP65 (NEMA 4)
IP rating, sensor	IP53
Weight, sensor	110 g (3.9 oz)
Cable weight	28 g/m (1.0 oz)

Inputs and outputs

Serial output	
Shutdown	ON/OFF
Settling time at startup	2 s
Serial I/O	RS-232C RS-232C / TTL (optional) RS-485, non-isolated (optional)
Parity	None, even, odd
Data bits	7, 8
Stop bits	1, 2
Baud rate	1200, 2400, 4800, 9600, 19200
Response time	1 s
Resolution	0.01 hPa (1 measurement/s) 0.03 hPa (10 measurements/s)
Current consumption, normal mode	< 15 mA (factory setting)
Current consumption, shutdown mode	0.2 mA
Analog output	
Outputs	0 ... 5 V DC, 0 ... 2.5 V DC (order specified)
Shutdown	ON/OFF
Response time	500 ms
Resolution	300 µV
Measurement rate	3 measurements/s
Current consumption, normal mode	< 8 mA
Current consumption, shutdown mode	0.2 mA
All models	
Max. pressure	5 000 hPa absolute
Pressure connector	M5 (10-32) internal thread
Pressure fitting	Barbed fitting for 1/8 in I.D. tubing
Supply voltage (reverse polarity protected), with RS-232/TTL output	5 ... 28 V DC
Supply voltage (reverse polarity protected), with RS-485 or analog output	8 ... 18 V DC



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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

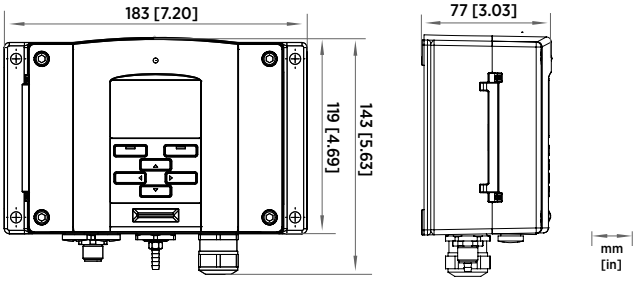
MI70 Link Interface software requirements	Microsoft® Windows OS Microsoft® Excel

Accessories

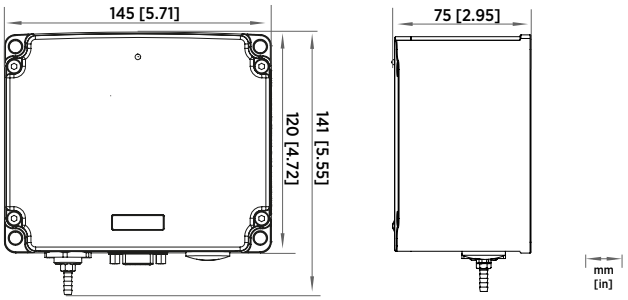
Modules	
Relay module	RELAY-1L
Temperature-compensated analog output module	AOUT-1T
Isolated RS-485 module	RS485-1
Power supply module	POWER-1
AC adapters for devices already equipped with an external AC adapter connector	
AC adapter, EU	MI70EUROADAPTER
AC adapter, USA	MI70USADAPTER
AC adapter, UK	MI70UKADAPTER
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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Static Pressure Head Series SPH10/20

for Minimizing Wind Induced Error

SPH10/20 is easy to install and connect. In the picture, SPH10 is connected to PTB210.

Features

- Minimizes wind induced error
- Reliable barometric pressure measurement in all weather
- Wind tunnel tested structure
- Easy to clean
- Easy to install

SPH10/20 Static Pressure Heads minimize the effects of wind on barometric pressure readings.

Wind induced effects are one of the main sources of error when measuring barometric pressure. Variations due to strong and gusty wind can be overcome by using a static pressure head to reduce the effect of dynamic pressure.

Vaisala Static Pressure Head Series SPH10/20 are designed to minimize the errors caused by wind. Their wind tunnel tested structure is both horizontally and vertically symmetrical. This design ensures reliable barometric pressure measurements in all weather.

Ideal for Outdoor Installations

Vaisala static pressure heads are available in two models: Vaisala Static Pressure Head SPH10 is a basic version, and Vaisala Static Pressure Head SPH20 is a heated version for reliable operation in snowy and icy conditions. The heated SPH20 contains a thermostat that switches on the warming power at temperatures where the risk of icing may occur.

Composed of ultraviolet stabilized PC plastics and offshore aluminum, SPH10/20 static pressure heads are durable and weather resistant.

SPH10/20 protects against rain and condensed water. This prevents capillary condensation of a water column in the pressure channel resulting in a pressure error. The drain holes in the lower plate allow rain and water to flow out. The static pressure heads have internal netting that prevents insects and debris from blocking the pressure channel.

Carefree Maintenance

SPH10/20 static pressure heads are easy to install and disassemble, service, and clean – even at the installation site. Vaisala BAROCAP® Digital Barometer PTB210 can be installed directly on top of SPH10/20 static pressure heads. Other barometers can be connected to the heads with pressure tubing.

SPH10 and SPH20 are a perfect pair for all Vaisala barometers. They ensure an accurate and reliable measurement in all weather conditions.

Technical Data

Operating Environment

Operating temperature	-60 ... +80 °C (-76... +176 °F)

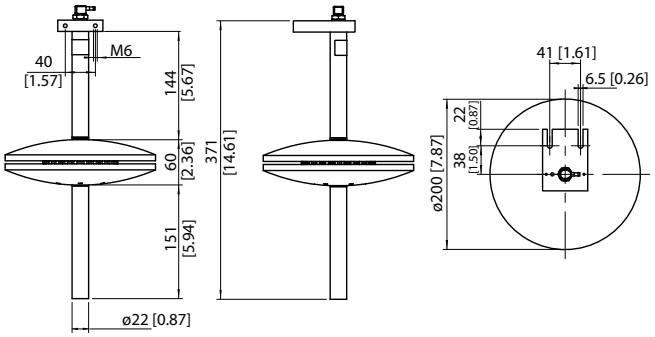
Mechanical Specifications

Weight	SPH10: 800 g (1.76 lb) SPH20: 1360 g (3.0 lb)
Materials	PC plastic, offshore aluminium
Mounting	With 2 bolts (M6 × 20 mm min.)
Hose connection	Barbed fitting for 4 mm I.D. hose or Rp1/4 thread (parallel)

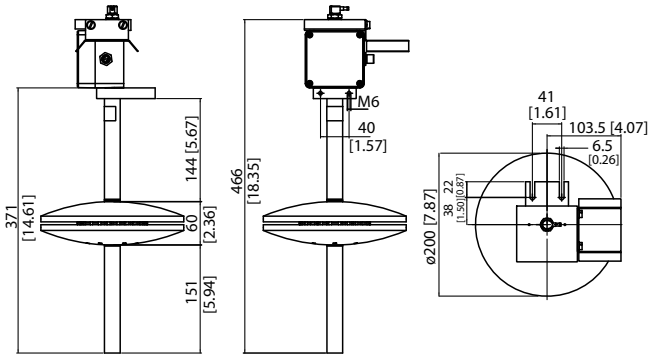
SPH20 Inputs and Outputs

Electrical connections	M12 connector
Power supply	Factory setting: 12 V Changed connection: 24 V
Power consumption during heating	70 W
Thermostat Switching Temperature	
On	+4 °C (±3 °C) +39.2 °F (±4.4 °F)
Off	+13 °C (±3 °C) +55.4 °F (±4.4 °F)

Dimensions in mm (inches)



SPH10



SPH20

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