ROBUST, HIGH PRECISION USB TEMPERATURE, HUMIDITY AND AIR PRESSURE SENSOR — PTH450

DESCRIPTION

The PTH450 includes an enhanced precision temperature and humidity sensor, pushing the precision limit a step further. It is designed for environmental temperature, humidity and atmospheric pressure (barometric) data acquisition. Its core digital sensor chips are built around industry-proven technologies and are individually factory-calibrated, linearized and temperature-compensated, resulting in a cutting-edge performance and field interchangeability. Thanks to its probe special construction, the PTH450 can sustain a wide range of temperature. The compact probe eases integration, even in space-constrained locations, and the built-in particle filter provides protection against dust, soot and other contaminants.

APPLICATIONS

- OEM
- Greenhouse
- Server rooms
- Manufacturing
- Pre-certification
- LIMS integration
- Humidity control
- Scientific research
- Building automation
- Engineering and R&D
- Environmental chamber

INSTALLATION TIME

Less than 10 minutes

UNIQUE SERIAL NUMBER

Each unit is assigned a unique serial number allowing for traceability and certification

FREE DAQ SOFTWARE

Real-time data visualization and logging

DATA INTEGRATION

Command-line tools for direct data access and integration

OPTIONS

- Virtual COM Port (VCP) communication protocol
- 3-point user calibration mechanism

ALSO AVAILABLE

Traceability certificates

Warning: This product should not be used in applications where its failure may cause personal injury.

Note: While every effort has been made to ensure accuracy in this publication, no responsibility can be accepted for errors or omissions.

Note: Data may change without notification, and you are strongly advised to obtain copies of the most recently issued datasheet.

SPECIFICATIONS

Parameter	Condition		Value	Units
Temperature (probe)				
Operating range	-40 to 125	Max	-	°C
Accuracy	-40 to 20°C	Typ.	±0.2	°C
		Max.	±0.3	
Accuracy	20 to 60°C	Typ.	±0.1	°C
		Max	±0.3	
Accuracy	60 to 125°C	Typ.	±0.4	°C
		Max.	±0.6	
Accuracy	-40 to 125°C	Typ.	±0.4	°C
		Max.	±0.6	
Resolution	Typ.		0.015	°C
Repeatability	Typ.		0.06	°C
Response time	t63%		10	s
Factory calibrated	Individually[2]		yes	–
Extended temperature range[6]	-45 to 130			°C
Long-term drift	Max.		<0.03	°C/yr
Relative humidity (probe)				
Operating range[3]	Non-condensing	–	0 to 100	%RH
Accuracy	0 to 80 %RH, 25°C	Typ.	±1.5	%RH
		Max	±2	
Accuracy	80 to 100 RH%, 25°C	Typ.	±2	%RH
		Max	±3	
Accuracy	0 to 80 %RH, 10 to 50°C	Typ.	±1.5	%RH
		Max.	±2	
Accuracy	0 to 100 %RH, 0 to 80°C	Typ.	±2	%RH
		Max.	±3	
Resolution	Typ.		0.01	%RH
Hesterisis	25°C		0.8	%RH
Factory calibrated	Individually[2]		Yes	–
Long-term drift[5]	Typ., -40 to 125°C		<0.25	%RH/yr

SPECIFICATIONS (continued)

Atmospheric pressure				
Sensor location	Inside the USB interface housing			
Operating temperature range	–		-20 to 70	°C
Operating pressure range	For full accuracy		45 to 110	kPa
Accuracy	70 to 110 kPa	25°C Typ.	±0.15	kPa
Accuracy	70 to 110 kPa	10 to 40°C Typ.	±0.18	kPa
Accuracy	45 to 110 kPa	0 to 50°C Typ.	±0.2	kPa
Extended pressure range[6]	Linear range of ADC		1 to 120	kPa
Overpressure	Pmax		600	kPa
Altitude resolution[4]	–		≈10	cm
ADC resolution	–		24	bits
Response time	–		0.5	s
Sensor location	Inside the USB interface housing			
Factory calibrated	Individually[2]		Yes	–
Signal Noise Filter	1st order		–	–
Noise	–		±0.0012	kPa
Long term drift	–		±0.1	kPa/yr
Probe				
Cable material	Silicon			
Cable lenght	–	1 (3)	m (ft)	
First filter material	Punctured anodized aluminum	–	–	
Sec. fi ter material	PTFE membrane		–	
Efficiency	Particle size ≥200 nm	99.99	%	
Housing and USB cable				
Temperature operating range	–	-20 to 70	°C	
Humidity operating range	Non condensing	10 to 90	%RH	
Material	–	ABS	–	
IP rating[3]	–	51	–	
USB cable length	–	1 (3)	m (ft)	

SPECIFICATIONS (continued)

Parameter	Condition	Value	Units
Power supply			
Voltage	Powered through a USB port	5	V
Current	At 5V	15	mA
Miscellaneous			
Temperature compensated	By the manufacturer	Yes	–
Lifetime	–	5	years
Certification(s)			
RoHS	RoHS3	Yes	–

[2] Each sensor is individually conditioned by the manufacturer of the semi-conductor sensor chips, in the best stable conditions and their correction coefficients are recorded in each of them.

[3] If water condensation or splashing is possible, it is recommended to install the probe pointing down to reduce the risk of water build-up in the sensor. If water splashing is possible, protect the sensor and the cable converter using extra precautions. Extra housing may be required depending on the application.

[4] In a fully controlled environment.

[5] Typical value for operation in normal relative humidity and temperature range. Maximum value is < 0.5 %RH/yr. Higher drift values might occur due to contaminant environments with vaporized solvents, out-gassing tapes, adhesives, packaging materials, etc. For optimal perfomance, keep the unit in a contaminant free (VOCs) and well ventilated area.

[6] To prevent damage, refrain from exposing the sensor to extended periods outside its operating range. Precision is not guaranteed beyond the specified operating ranges.

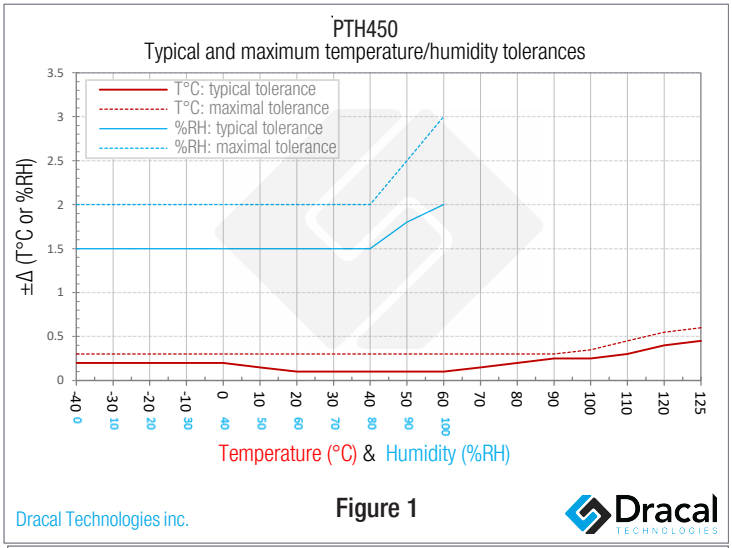


Figure 1

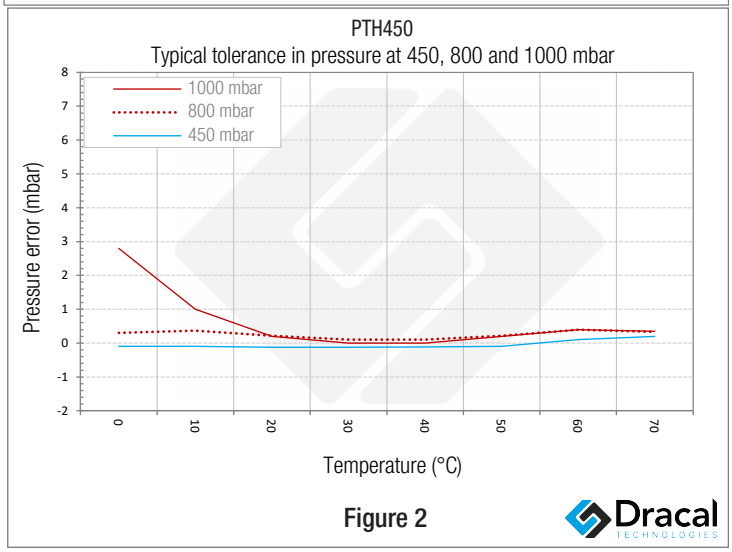


Figure 2

CAUTION: Please keep in mind that electromagnetic interference (EMI) may decrease the accuracy of the sensor. Avoid using this device near EMI sources such as motors, high voltage transformers and fluorescent tubes.

NOTE: Note that this product is not waterproof and requires protection if contact with water is possible.

TIP: Avoid installing the sensor in a location where strong vibration is likely to occur. Strong vibrations may cause slight inaccuracies in the reading.

TIP: As for any precision measurement equipment, it is advised to power on the unit at least 15 minutes before using it.

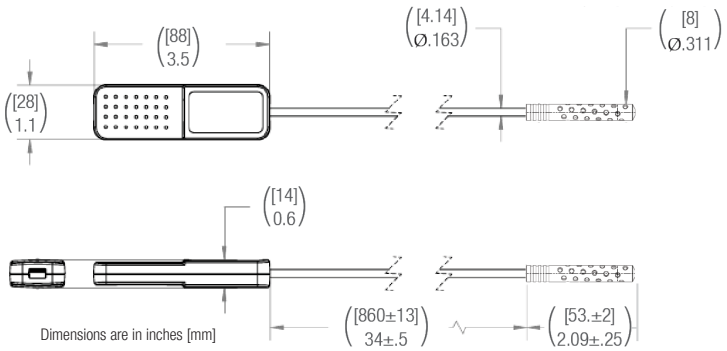
AVAILABLE CHANNEL(S)

As displayed in our logging software

CHANNEL ID*	DECRIPTION	TYPE	NATURE
00	MS5611 Pressure	Pressure	Real
01	SHT31 Temperature	Temperature	Real
02	SHT31 Relative Humidity	Relative Humidity	Real
03	Dew point	Dew point	Virtual
04	Humidex	Humidex	Virtual
05	Heat index	Heat index	Virtual
06	Altitude	Height	Virtual

* Channel Id as it appears in DracalView. Virtual channel Id differ in DracalView and dracal-usb-get.

PRODUCT DIMENSIONS



ORDERING

PRODUCT(S)

PART NUMBER	OPTION	DESCRIPTION
601081	USB-PTH450	Atmospheric pressure, temperature and relative humidity sensor with improved accuracy and aluminum probe.
608081	USB-PTH450-CAL	Atmospheric pressure, temperature and relative humidity sensor with improved accuracy and aluminum probe - calibratable.
603081	VCP-PTH450	Atmospheric pressure, temperature and relative humidity sensor with improved accuracy and aluminum probe - with VCP mode.
605081	VCP-PTH450-CAL	Atmospheric pressure, temperature and relative humidity sensor with improved accuracy and aluminum probe - calibratable with VCP mode.

TRACEABILITY CERTIFICATE(S)

NT1WT	1-point temperature certificate for one (1) unit
NT2WT	2-point temperature certificate for one (1) unit
NT3WT	3-point temperature certificate for one (1) unit
NT4WT	4-point temperature certificate for one (1) unit
NT1WH	1-point relative humidity certificate for one (1) unit
NT2WH	2-point relative humidity certificate for one (1) unit
NT3WH	3-point relative humidity certificate for one (1) unit
NT4WH	4-point relative humidity certificate for one (1) unit
NT1WP	1-point pressure certificate for one (1) unit
NT2WP	2-point pressure certificate for one (1) unit
NT3WP	3-point pressure certificate for one (1) unit
NT4WP	4-point pressure certificate for one (1) unit
NT5WP	5-point pressure certificate for one (1) unit