

Enhanced precision humidity and wide range temperature sensor

TRH450



DESCRIPTION

The TRH450 is designed for environmental temperature and humidity acquisition where enhanced precision ($\pm 0.1^{\circ}\text{C}/\pm 1.5\% \text{RH}$) and extended temperature range (-40°C to $+125^{\circ}\text{C}$) are required. Additionally, its compact aluminum probe includes extra physical protection for harsh environmental conditions and an internal filter provides protection against dust, soot and other contaminants. The TRH450 is field interchangeable, thanks to its factory calibrated, linearized and temperature-compensated digital sensor chip. Its thin probe eases integration, even in space-constrained locations.

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

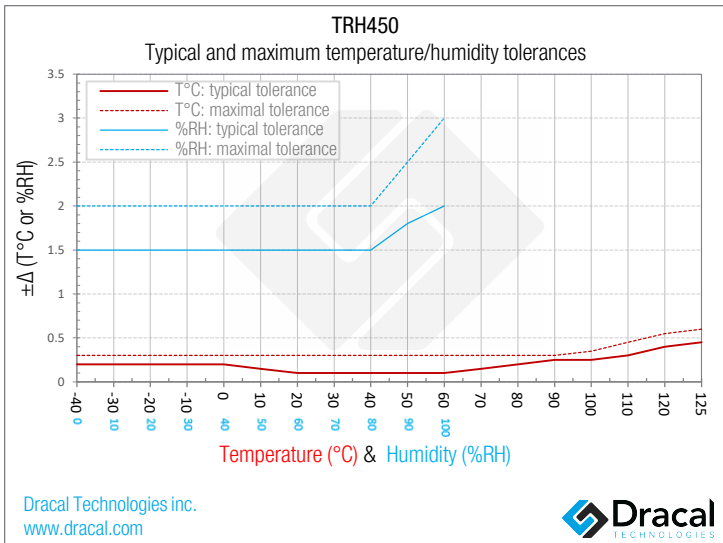
Traceability certificates

SPECIFICATIONS			
Parameter	Condition	Value	Units
Temperature			
Operating range	–	-40 to 125	$^{\circ}\text{C}$
Accuracy	Typ., 20 to 60 $^{\circ}\text{C}$	± 0.1	$^{\circ}\text{C}$
Accuracy	-40 to 20 $^{\circ}\text{C}$	± 0.2	$^{\circ}\text{C}$
Accuracy	60 to 125 $^{\circ}\text{C}$	± 0.4	$^{\circ}\text{C}$
Resolution	Typ.	0.01	$^{\circ}\text{C}$
Repeatability	Typ.	0.06	$^{\circ}\text{C}$
Response time	t63%	8	s
Factory calibrated	Individually ^[2]	Yes	–
Relative humidity			
Operating range ^[3]	Non-condensing	0 to 100	%RH
Accuracy	Typ., 25 $^{\circ}\text{C}$, 0 to 80 %RH	± 1.5	%RH
Accuracy	Typ., 25 $^{\circ}\text{C}$, 80 to 100 %RH	± 2	%RH
Resolution	Typ.	0.01	%RH
Repeatability	–	0.15	%RH
Factory calibrated	Individually ^[2]	Yes	–
Probe			
Operating range	–	-40 to 125	$^{\circ}\text{C}$
Cable material	Silicon		
Cable length	–	1 (3)	m (ft)
Filter - Layer 1			
Material	Anodized Aluminum		
Filter - Layer 2			
Material	PTFE membrane		
Efficiency	Particles size ≥ 200 nm	99.99	%

SPECIFICATIONS			
Parameter	Condition	Value	Units
Housing and USB cable			
Temperature operating range	–	0 to 70	$^{\circ}\text{C}$
Humidity operating range	Non condensing	10 to 90	%RH
Material	–	ABS	–
IP rating ^[3]	–	51	–
System galvanic isolation	–	None	–
USB cable length	–	1 (3)	m (ft)
Power supply			
Voltage	Powered through a USB port	5	V
Current consumption	At 5V	≤ 18	mA
Mechanical			
Dimensions	See schema below	–	–
Colour	–	Cyan	–
Weight (without USB cable)	–	50	g
Miscellaneous			
ADC resolution	–	16	bits
Long-term stability	–	Yes	–
Temperature compensated	By the manufacturer	Yes	–
Lifetime	–	5	years

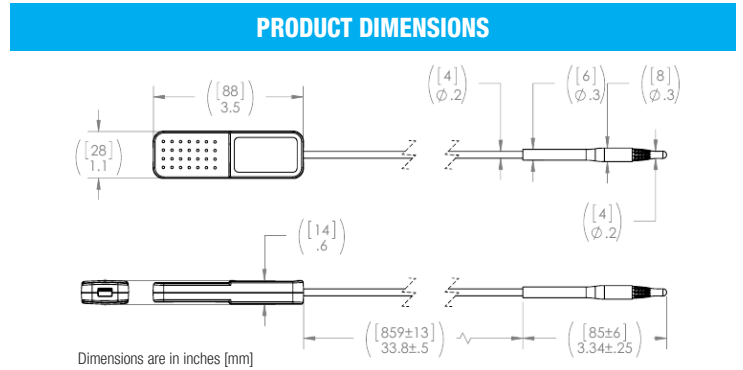
^[2] Each sensor is individually conditioned by the manufacturer of the semi-conductor sensor chips, in the best stable condition and their correction coefficients are recorded in each of them.

^[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 cable converter using extra precautions. Extra housing may be required depending on the application.



AVAILABLE CHANNEL(S) As displayed in our logging software			
CHANNEL ID*	DESCRIPTION	TYPE	NATURE
00	SHT31 Temperature	Temperature	Real
01	SHT31 Relative Humidity	Relative Humidity	Real
02	Dew point	Dew point	Virtual
03	Humidex	Humidex	Virtual
04	Heat index	Heat index	Virtual

* Channel Id as it appears in QTenki. Virtual channel Id differ in QTenki and usbtkeniget.



ORDERING

PRODUCT(S)		
PART NUMBER	OPTION	DESCRIPTION
601034	USB-TRH450	Enhanced precision USB temperature and humidity sensor (aluminium probe)
603034	VCP-TRH450	Enhanced precision USB temperature and humidity sensor (aluminium probe) - with VCP mode
608034	USB-TRH450-CAL	Enhanced precision USB temperature and humidity sensor (aluminium probe) - calibratable

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

CAUTION: Keep in mind that electromagnetic interferences (EMI) may adversely reduce the precision of the sensor. Avoid using this unit close to EMI sources such as motor, transformers, high voltage and fluorescent light.

NOTE: This product is not waterproof and must be protected if contact with water is possible.

If the probe is inadvertently splashed or submerged in water for a few seconds, unplug the unit, shake it up and let it dry.

Tip: Avoid installing the sensor in a location where considerable vibrations may be present. Large vibrations can introduce extra inaccuracy in the pressure readings.

- Warning:** This product is not designed for use in, and should not be used for, human applications.
- 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.

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