Dracal TECHNOLOGIES

PRECISION USB TEMPERATURE AND RELATIVE HUMIDITY SENSOR — TRH420

DESCRIPTION

The TRH420 is designed for environmental temperature and humidity acquisition where increased accuracy is required. Thanks to its factory-calibrated, linearized, and temperature-compensated digital sensor chip, it is field interchangeable. With its precision electronics, extremely small variations in temperature and humidity can be detected. Its thin probe eases integration, even in space-constrained locations. In addition, an internal 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				
Operating range[1]	-40 to 70	Max	-	°C
Accuracy	20 to 60°C	Typ.	±0.1	°C
		Max	±0.3	
Accuracy	60 to70°C	Typ.	±0.15	°C
		Max.	±0.3	
Accuracy	-40 to 20°C	Typ.	±0.2	°C
		Max.	±0.3	
Accuracy	-40 to 70°C	Typ.	±0.2	°C
		Max.	±0.3	
Resolution	Typ.		0.015	°C
Repeatability	Typ.		0.06	°C
Response time	t63%		10	s
Factory calibrated	Individually[2]		yes	–
Long-term drift	Max.		<0.03	°C/yr
Relative humidity				
Operating range[3]	Non-condensing		0 to 100	%RH
Accuracy	0 to 55 %RH	25°C	Typ. ±1.5	%RH
			Max ±2	
Accuracy	55 to 100 RH%	25°C	Typ. ±2	%RH
			Max ±3	
Accuracy	0 to 100 %RH	0 to 70°C	Typ. ±2	%RH
			Max ±3	
Resolution	Typ.		0.01	%RH
Hysteresis	25°C		0.8	%RH
Factory calibrated	Individually[2]		Yes	–
Long-term drift[5]	Typ., -40 to 70°C		<0.25	%RH/yr
Probe				
Cable material	PVC			
Cable length	1 (3)			m (ft)
First filter material	Polyethylene terephthalate (PET) mesh			
Sec. filter material	PTFE membrane			
Efficiency	Particle size ≥200 nm		99.99	%

SPECIFICATIONS

Parameter	Condition	Value	Units
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)	–	40	g
Housing and USB cable			
Temperature operating range	–	0 to 70	°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)
Miscellaneous			
ADC resolution	–	16	bits
Long-term stability	–	Yes	–
Temperature compensated	By the manufacturer	Yes	–
Lifetime	–	5	years
Certification(s)			
RoHS	RoHS3	Yes	–
CE	CE/REACH	Yes	

[1] Only if the cable is not moved/flexed while the temperature is below 0°C.

[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 for each of them.

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

[5] Typical value for operation in average 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.

TRH420 User manual (PDF)

TRH420
Typical and maximum temperature/humidity tolerances

- T°C: typical tolerance
- T°C: maximal tolerance
- RH%: typical tolerance
- RH%: maximal tolerance

Dracal Technologies inc.
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Temperature (°C) & Humidity (%RH)

Dracal TECHNOLOGIES
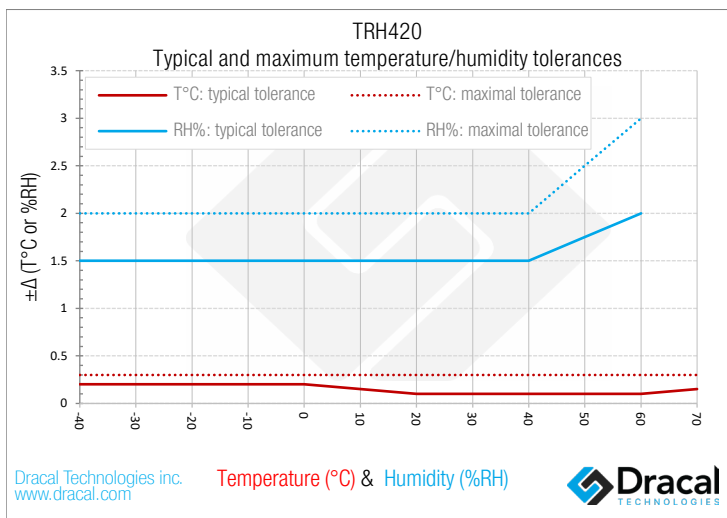
AVAILABLE CHANNEL(S)
As displayed in our logging software

CHANNEL ID*	DECRIPTION	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 DracalView. Virtual channel IDs differ in DracalView and dracal-usb-get.

PRODUCT DIMENSIONS

Dimensions are in inches [mm]
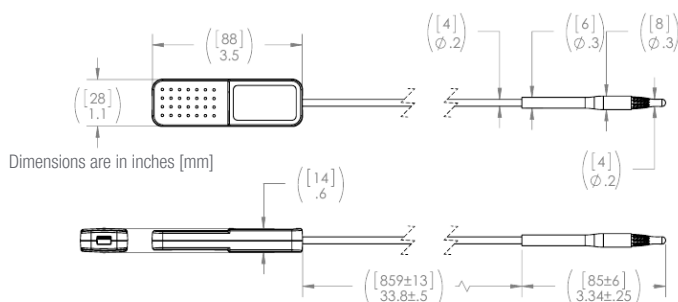
ORDERING

PRODUCT(S)

PART NUMBER	OPTION	DESCRIPTION
601033	USB-TRH420	Enhanced precision USB temperature and humidity sensor (with filter)
608033	USB-TRH420-CAL	Enhanced precision USB temperature and humidity sensor (with filter) - calibratable
603033	VCP-TRH420	Enhanced precision USB temperature and humidity sensor (with filter) - with VCP mode
605033	VCP-TRH420-CAL	Enhanced precision USB temperature and humidity sensor (with filter) - 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

CAUTION: Please remember 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: Before using any precision measurement equipment, it is advised to power the unit for at least 15 minutes.

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