Dracal TECHNOLOGIES

PRE-WIRED I2C TEMPERATURE AND HUMIDITY PROBE FOR OEM APPLICATIONS — I2C-TRH SERIES

DESCRIPTION

Based on the Sensirion SHT31/35, the I2C-TRH sensor series is designed for OEMs who wish to integrate our sensors into their applications. The sensor communicates using a standard I2C protocol, which facilitates the integration with a wide variety of microcontrollers and single board computers such as Raspberry pi, Arduino and compatible.

These sensors can be used for temperature and humidity acquisition in difficult and extreme humidity conditions. The factory-calibrated, linearized and temperature-compensated sensor chip makes it an interchangeable sensor in the field. Thanks to its precision electronics, it is possible to acquire extremely small temperature and humidity variations.
Its compact probe makes it easy to fit in areas where space is at a premium, and the built-in particulate filter provides protection from 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

LENGHT'S OPTIONS

- 100 cm
- 180 cm

ALSO AVAILABLE

Traceability certificates

I2C-TRH320 SPECIFICATIONS

Parameter	Condition	Value	Units
Temperature			
Operating range[1]	–	-40 to 70	°C
Accuracy	Typ., 0 °C to 70 °C	±0.2	°C
Accuracy	-40 °C to 0 °C	±0.5	°C
Resolution	–	0.015	°C
Repeatability	Typ.	0.06	°C
Response time	t63% (75°C)	8	sec
Long-term drift[4]	Typ.	≤0.03	°C/yr
Factory calibrated	Individually[2]	Yes	–
Relative humidity			
Operating range[3]	Non-condensing	0 to 100	%RH
Accuracy	Typ., 25 °C, 0 to 100 %RH	±2	%RH
Accuracy	Max., 25 °C, 0 to 90 %RH	±2.5	%RH
Accuracy	Max., 25 °C, 90 to 100 %RH	±3.5	%RH
Resolution	Typ.	0.01	%RH
Repeatability	–	0.15	%RH
Long-term drift[4]	Typ.	≤0.25	%RH/yr
Hysteresis	at 25 °C	±0.8	%RH
Factory calibrated	Individually[2]	Yes	–
Probe			
Sensor	SHT31		
Cable material	PU		
Cable lenght	See ordering options		
Filters			
First filter material	Polyethylene terephthalate (PET) mesh		
Second filter matirial	PTFE membrane		
Efficiency	Particle size ≥200 nm	99.99	%

I2C-TRH420 SPECIFICATIONS

Condition	Value	Units
Temperature		
–	-40 to 70	°C
Typ., 20 to 60°C	±0.1	°C
-40 to 70°C	±0.2	°C
Typ.	0.015	°C
Typ.	0.06	°C
t63%	8	s
Typ.	≤0.03	°C/yr
Individually[2]	Yes	–
Relative humidity		
Non-condensing	0 to 100	%RH
Typ., 25°C, 0 to 80 %RH	±1.5	%RH
Typ., 25°C, 80 to 100 %RH	±2	%RH
–	–	–
Typ.	0.01	%RH
–	0.15	%RH
Typ.	≤0.25	%RH/yr
at 25 °C	±0.8	%RH
Individually[2]	Yes	–
Probe		
Sensor	SHT35	
PU		
See ordering options		
Filters		
Polyethylene terephthalate (PET) mesh		
PTFE membrane		
Particle size ≥200 nm	99.99	%

I2C-TRH450 SPECIFICATIONS

Condition	Value	Units
Temperature		
–	-40 to 125	°C
Typ., 20 to 60°C	±0.1	°C
-40 to 70°C	±0.2	°C
Typ.	0.015	°C
Typ.	0.06	°C
t63%	8	s
Typ.	≤0.03	°C/yr
Individually[2]	Yes	–
Relative humidity		
Non-condensing	0 to 100	%RH
Typ., 25°C, 0 to 80 %RH	±1.5	%RH
Typ., 25°C, 80 to 100 %RH	±2	%RH
–	–	–
Typ.	0.01	%RH
–	0.15	%RH
Typ.	≤0.25	%RH/yr
at 25 °C	±0.8	%RH
Individually[2]	Yes	–
Probe		
Sensor	SHT35	
Silicon		
See ordering options		
Filters		
Anodized aluminum		
PTFE membrane		
Particle size ≥200 nm	99.99	%

SPECIFICATIONS

Parameter	Condition	Value	Units
Power supply			
Supply voltage[5]	With a 12 cm probe	3.0 to 5	VDC
Current consumption	Measuring, at 5V	1.5	mA
Current consumption	Idle, periodic acq., 5V	45	µA
Communication			
Protocol	–	I²C	–
I2C address	–	0x44	–
Speed	Maximum	1	Mhz
Mechanical			
Connector type	–	none	–
Overall length	I2C-TRH320-P100	100	cm
	I2C-TRH320-P180	180	cm
Weight	I2C-TRH320-P100	46	g
	I2C-TRH320-P180	80	g
Overall length	I2C-TRH420-P100	100	cm
	I2C-TRH420-P180	180	cm
Weight	I2C-TRH420-P100	46	g
	I2C-TRH420-P180	80	g
Overall length	I2C-TRH450-P100	100	cm
	I2C-TRH450-P180	180	cm
Weight	I2C-TRH450-P100	40	g
	I2C-TRH450-P180	48	g

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

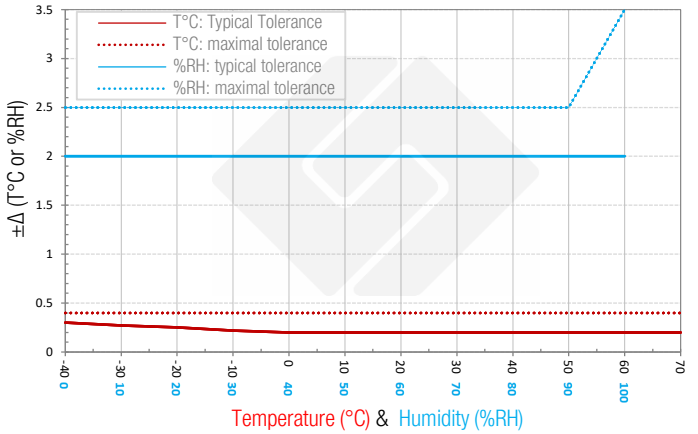
[2] Each sensor is individually conditioned by the manufacturer of the semi-conductor sensor chips, in the best stable conditions and their correction coefficients are recorded in each of them.

[3] If water condensation or splashing is possible, the probe's tip should be orientated downward.

[4] Typical value for operation in normal RH/T operating range.

[5] Cable lenght dependent.

I2C-TRH320-*xxx*
Typical and maximum temperature/humidity tolerances



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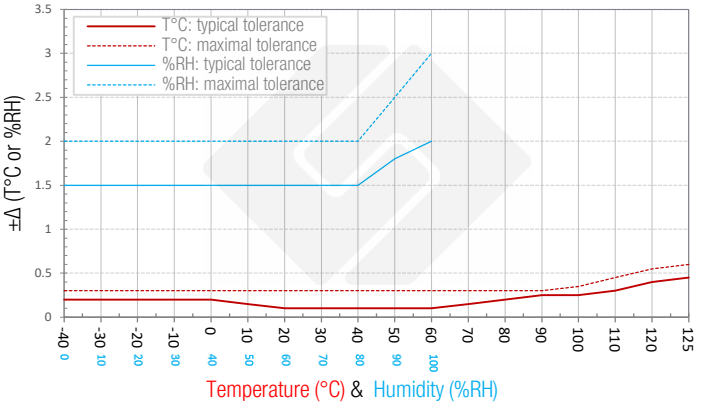
I2C-TRH420-*xxx* and I2C-TRH450-*xxx*
Typical and maximum temperature/humidity tolerances



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ORDERING

PRODUCT(S)

PART NUMBER	OPTION	DESCRIPTION
601102	I2C-TRH320-100	Pre-wired I2C temperature and humidity probe for OEM applications, 100 cm
601163	I2C-TRH320-180	Pre-wired I2C temperature and humidity probe for OEM applications, 180 cm
601103	I2C-TRH420-100	Pre-wired I2C temperature and humidity probe for OEM applications, 100 cm
601164	I2C-TRH420-180	Pre-wired I2C temperature and humidity probe for OEM applications, 180 cm
601105	I2C-TRH450-100	Pre-wired I2C temperature and humidity probe for OEM applications, 100 cm
601165	I2C-TRH450-180	Pre-wired I2C temperature and humidity probe for OEM applications, 180 cm

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

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.

SIGNAL CONNEXIONS

V+	Black
SCL	White
SDA	Brown
Ground (-)	Blue

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.