

RH TT Remote Probe

Relative Humidity (RH), Temperature Transmitter (TT)



Automation Components
a DwyerOmega brand

The ACI Relative Humidity with Temperature Transmitter Series Remote Probe utilizes a thermoset polymer capacitive sensing element with a hydrophobic filter to deliver a proportional relative humidity analog output and can also be configured with any resistive temperature sensor such as a thermistor or RTD. The remote probe wiring harness comes in lengths of 0.91 m (3 ft), 1.83 m (6 ft), 3.048 m (10 ft), or 6.096 m (20 ft) to provide mounting flexibility for your remote sensing applications. Single point field calibration can be done on the humidity transmitter, by using the increment and decrement dip switches. Each toggle of the increment and decrement switches will allow for a $\pm 0.5\%$ RH increase or decrease. Calibration of the RH transmitters electronics can also be done using both the Zero and Span potentiometers depending on whether it is a current or voltage output device. All models feature conformally coated circuit boards to improve the reliability of the product in both high moisture and mildly corrosive atmospheres. The standard enclosure is an IP66/NEMA 4X rated moisture and corrosion resistant enclosure. A vinyl cap is provided to place over the sintered filter in applications in wash down applications to protect the sensing element from getting moisture sprayed directly on the sensor. NIST Calibration Certificates (Temperature and RH) are included for all TTM RH part series.

Applications

Clean Rooms, Process Control, Environmental Chambers, Stability Chambers, Pharmaceutical Labs, Remote Sensing Applications

Warranty

The ACI RH TT Remote Probes are covered by ACI's Five (5) Year Limited Warranty. The warranty can be found in the front of ACI's Sensors & Transmitters catalog, as well as on ACI's website, workaci.com.

Specifications

RH Supply Voltage (Reverse Polarity Protected)

4mA to 20 mA: 250 Ω Load: 15 V dc to 40 V dc / 18 V ac to 28 V ac

500 Ω Load: 18 V dc to 40 V dc / 18 V ac to 28 V ac

0 V dc to 5 V dc: 12 V dc to 40 V dc / 18 V ac to 28 V ac

0 V dc to 10 V dc: 18 V dc to 40 V dc / 18 V ac to 28 V ac

RH Supply Current (V A)

Voltage Output: 8 mA maximum (0.32 V A)

Current Output: 24 mA maximum (0.83 V A)

RH Output Load Resistance

4 mA to 20 mA: 700 Ω maximum

0 V dc to 5 V dc or 0 V dc to 10 V dc: 4 k Ω minimum

RH Output Signal

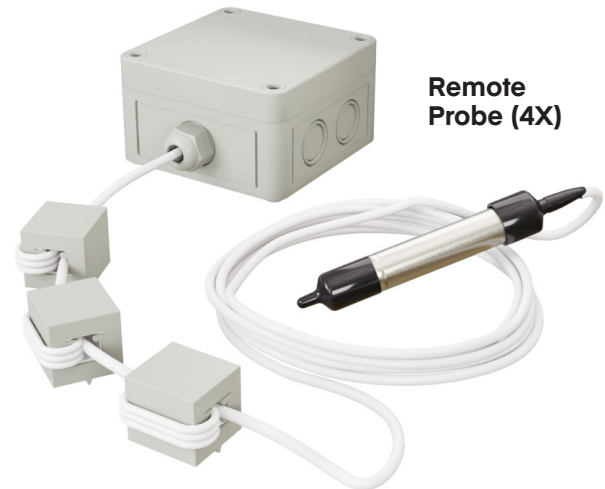
2-wire: 4 mA to 20 mA (Factory Default)

3-wire: 0 V dc to 5 V dc or 0 V dc to 10 V dc & 4 mA to 20 mA (Field Selectable)

RH Accuracy at 25 °C (77 °F): $\pm 1\%$ over 20 % RH Range between 20 % to 90 % | $\pm 2\%$ or 3 % from 10 % to 95 %

RH Measurement Range: 0 % to 100 %

Operating RH Range: 0 % to 95 % RH, non-condensing (Conformally Coated PCB's)



Operating Temperature Range: -40 °C to 60 °C (-40 °F to 140 °F)

Storage Temperature Range: -40 °C to 65 °C (-40 °F to 149 °F)

RH Stability | Repeatability | Sensitivity: Less than 2 % drift / 5 years | 0.5 % RH | 0.1 % RH

RH Response Time (T63): 20 seconds typical

RH Sensor Type: Capacitive with Hydrophobic Filter

RH Transmitter Stabilization Time: 30 minutes

(Recommended time before doing accuracy verification)

RH Connections | Wire Size: Screw Terminal Blocks (Polarity Sensitive) | 1.31 mm² (16 AWG) to 0.129 mm² (26 AWG)

RH Terminal Block Torque Rating: 0.5 Nm to 0.6 Nm (4.43 lb-in to 5.31 lb-in)

RH NIST Test Points

Default Test Points: 3 Points (20 %, 50 % & 80 %)

1 % NIST Test Points: 5 Points within selected 20 % Range (ie. 30 % to 50% are 30 %, 35 %, 40 %, 45 % & 50 %)

TT Supply Voltage | Supply Current

8.5 V dc to 32 V dc (Reverse Polarity Protected) | 25 mA minimum

250 Ω Load: 13.5 V dc to 32 V dc

500 Ω Load: 18.5 V dc to 32 V dc

TT Maximum Load Resistance: (Terminal Voltage – 8.5 V) | 0.020 A

TT Output Signals

Current Output: 4 mA to 20 mA (2-Wire Loop Powered)

Voltage Output: 1 V dc to 5 V dc or 2 V dc to 10 V dc (3-Wires)

TT Calibrated Accuracy | Linearity¹

Temperature Spans < 260 °C (500 °F): $\pm 0.2\%$

Temperature Spans > 260 °C (500 °F): $\pm 0.5\%$

TT Temperature Drift²

Temperature Spans < 38 °C (100 °F): $\pm 0.04\%$ / °F

Temperature Spans > 38 °C (100 °F): $\pm 0.02\%$ / °F

TTM1K Certification Points: 3 Point NIST: 20 %, 50 %, 80 % of span | 5 Point NIST: 20 %, 35 %, 50 %, 65 %, 80 % of span

TT Warm Up Time | Warm Up Drift: 10 minutes | ± 0.1 %

Transmitter Operating Temperature/RH Range: -40 °C to 85 °C (-40 °F to 185 °F) | 0 % to 90% RH, non-condensing

Platinum RTD (PTC) Number Wires | Wire Colors: Two | A/TTM1K Series: Black/Black

Platinum RTD Sensor Output at 0 °C (32 °F): A/TTM1K Series: 1000 Ω Nominal

Platinum RTD Tolerance Class | Accuracy:

± 0.06 % Class A | **Tolerance Formula:** \pm °C = (0.15°C + (0.002 * |t|)) where |t| is the absolute value of Temperature above or below 0 °C in °C)

Platinum RTD Sensor Stability: ± 0.03 % after 1000 Hours at 300 °C (572 °F)

Platinum RTD Response Time (63 % Step Change): 8 seconds nominal

Sensor Lead Length: 0.914 m (3 ft), 1.829 m (6 ft), 3.048 m (10 ft), 6.096 m (20 ft)

Cable Operating Temperature Range: 32 °F to 167 °F (0 °C to 75 °C)

Minimum Cable Bend Radius: 48.77 mm (1.92 in) or 10x the Cable Diameter



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Cable Ratings | Cable Jacket Material: UL(CMP, CL3P, FPLP); CSA (CMP, FT6), Plenum Rated | Polyvinyl Chloride (PVC)

Enclosure Specifications (Material, Flammability, Temperature, NEMA/IP Ratings)

"-4X" Enclosure: Polystyrene Plastic; UL94-V2; -40 °C to 70 °C (-40 °F to 158 °F); NEMA 4X (IP 66)

Sensing Tube Material | Filter Material: 304 Series Stainless Steel | 304 Series Stainless Steel

Enclosure Dimensions (L x W x D): See dimension drawings on this data sheet

Product Weight: A/RHx-TTM1K-RP2-4X Series: 0.566 kg (1.25 lb)

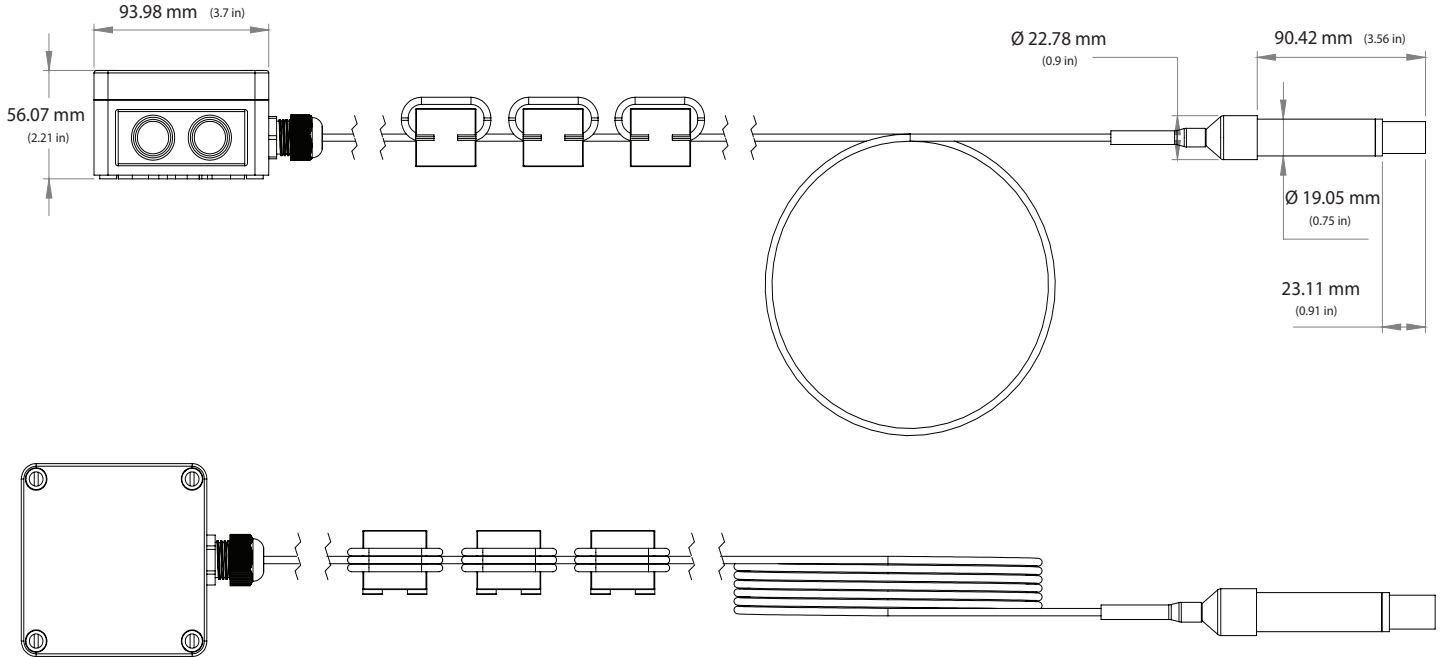
Agency Approvals: CE, UKCA, RoHS2, WEEE

Note¹: A Transmitter is calibrated at 22 °C (71 °F) nominal.

Note²: Temperature Drift is referenced to 22 °C (71 °F) nominal calibration temperature.

Dimensions and Weight

Remote Probe (4X)



Standard View



Custom Ordering

		Options and Descriptions				Model #
A. Sensor Series <i>No Selection Required</i>	A/	—————→				A/
B. Accuracy <i>Select One (1)</i>	RH1 = ±1 % (20 % Range between 20 % to 90 % RH)	RH2 = ±2 %	RH3 = ±3 %			
C. Model Series <i>No Selection Required</i>	TTM1K = Matched 1 kΩ (3 Point RH & Temperature NIST) —————→				TTM1K	
D. Configuration <i>Select One (1)</i>	RP2-3' = 0.914 m (3 ft) Cable	RP2-6' = 1.829 m (6 ft) Cable	RP2-10' = 3.048 m (10 ft) Cable	RP2-20' = 6.096 m (20 ft) Cable		
E. Enclosure <i>No Selection Required</i>	4X = NEMA 4X Enclosure —————→				4X	
F. Transmitter Output <i>Select One (1)</i>	4 = 4 mA to 20 mA	1 = 1 V dc to 5 V dc*	2 = 2 V dc to 10 V dc*			
G. Calibrated Span	Specify Span in °F or °C (Best Accuracy in 100 °F Increments)					
	Model # Example: A/ RH2 TTM1K RP2-6' 4X 1 50 °F to 150 °F					
	A. B. C. D. E. F. G.					

Note: A Temperature Transmitter Output of 1 V dc to 5 V dc or 2 V dc to 10 V dc would have a RH Output of 0 V dc to 5 V dc or 0 V dc to 10 V dc.

Accessories Ordering

Model #	Item #	Description
A/SINTERED FILTER	143433	9.53 mm (3/8 in) Sintered Filter for RH Duct/Stainless Plate/Remote Probes
A/1" VINYL PULL CAP	143462	25.4 mm (1 in) EZ Vinyl Filter Cover for RH Stainless Plates & Remote Probes
Model # Example:		A/SINTERED FILTER or 143433

Accessories Ordering (NIST)

Model #	Description
-5PTNIST	TTM Calibration Certificate (5 Point NIST)

Note: For TTM100 or TTM1K part numbers, the default NIST is 3 points | 5 points may be specified by using "-5PTNIST" at the end of any TTM part number.



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