



# RH TT REMOTE PROBE



## Relative Humidity (RH), Temperature Transmitter (TT)

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 3, 6, 10, or 20 feet 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

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](http://workaci.com).

## PRODUCT SPECIFICATIONS

<b>RH Supply Voltage (Reverse Polarity Protected):</b>	<b>4-20 mA: 250 Ohm Load:</b> 15 - 40 VDC / 18 - 28 VAC   <b>500 Ohm Load:</b> 18 - 40 VDC / 18 - 28 VAC <b>0-5 VDC:</b> 12 - 40 VDC / 18 - 28 VAC   <b>0-10 VDC:</b> 18 - 40 VDC / 18 - 28 VAC
<b>RH Supply Current (VA):</b>	<b>Voltage Output:</b> 8 mA maximum (0.32 VA)   <b>Current Output:</b> 24 mA maximum (0.83 VA)
<b>RH Output Load Resistance:</b>	<b>4-20 mA:</b> 700 Ohms maximum   <b>0-5 VDC or 0-10 VDC:</b> 4K Ohms minimum
<b>RH Output Signal:</b>	<b>2-wire:</b> 4 - 20 mA (Factory Default)   <b>3-wire:</b> 0-5 or 0-10 VDC & 4 - 20 mA (Field Selectable)
<b>RH Accuracy @ 77°F (25°C):</b>	+/- 1% over 20% RH Range between 20 to 90%   +/- 2% or 3% from 10 to 95%
<b>RH Measurement Range:</b>	0-100%
<b>Operating RH Range:</b>	0 to 95% RH, non-condensing (Conformally Coated PCB's)
<b>Operating Temperature Range:</b>	-40 to 140°F (-40 to 60°C)
<b>Storage Temperature Range:</b>	-40 to 149°F (-40 to 65°C)
<b>RH Stability   Repeatability   Sensitivity:</b>	Less than 2% drift / 5 years   0.5% RH   0.1% RH
<b>RH Response Time (T63):</b>	20 Seconds Typical
<b>RH Sensor Type:</b>	Capacitive with Hydrophobic Filter
<b>RH Transmitter Stabilization Time:</b>	30 Minutes (Recommended time before doing accuracy verification)
<b>RH Connections   Wire Size:</b>	Screw Terminal Blocks (Polarity Sensitive)   16 (1.31 mm <sup>2</sup> ) to 26 AWG (0.129 mm <sup>2</sup> )
<b>RH Terminal Block Torque Rating:</b>	4.43 to 5.31 lb-in (0.5 to 0.6 Nm)
<b>RH NIST Test Points:</b>	<b>Default Test Points:</b> 3 Points (20%, 50% & 80%) <b>1% NIST Test Points:</b> 5 Points within selected 20% Range (ie. 30%-50% are 30, 35, 40, 45 & 50) +8.5 to 32 VDC (Reverse Polarity Protected)   25 mA minimum
<b>TT Supply Voltage   Supply Current:</b>	<b>250 Ohm Load:</b> +13.5 to 32 VDC   <b>500 Ohm Load:</b> +18.5 to 32 VDC
<b>TT Maximum Load Resistance:</b>	(Terminal Voltage - 8.5 V)   0.020 A
<b>TT Output Signals:</b>	<b>Current Output:</b> 4-20 mA (2-Wire Loop Powered) <b>Voltage Output:</b> 1-5 VDC or 2-10 VDC (3-Wires)
<b>TT Calibrated Accuracy   Linearity <sup>1</sup>:</b>	Temperature Spans < 500°F (260°C): +/- 0.2%   Temperature Spans > 500°F (260°C): +/- 0.5%
<b>TT Temperature Drift <sup>2</sup>:</b>	Temperature Spans < 100°F (38°C): +/- 0.04%/°F   Temperature Spans > 100°F (38°C): +/- 0.02%/°F
<b>TTM1K Certification Points:</b>	<b>3 Point NIST:</b> 20%, 50%, 80% of span   <b>5 Point NIST:</b> 20%, 35%, 50%, 65%, 80% of span
<b>TT Warm Up Time   Warm Up Drift:</b>	10 Minutes   +/- 0.1%
<b>Transmitter Operating Temperature/RH Range:</b>	-40 to 185°F (-40 to 85°C)   0 to 90% RH, non-condensing
<b>Platinum RTD (PTC) Number Wires   Wire Colors:</b>	Two   <b>A/TTM1K Series:</b> Black/Black
<b>Platinum RTD Sensor Output @ 32°F (0°C):</b>	<b>A/TTM1K Series:</b> 1000 Ohms Nominal
<b>Platinum RTD Tolerance Class   Accuracy:</b>	+/- 0.06% Class A   <b>Tolerance Formula:</b> +/- °C = (0.15°C + (0.002 *  t )) where  t  is the absolute value of Temperature above or below 0°C in °C
<b>Platinum RTD Sensor Stability:</b>	+/- 0.03% after 1000 Hours @ 572°F (300°C)
<b>Platinum RTD Response Time (63% Step Change):</b>	8 Seconds nominal





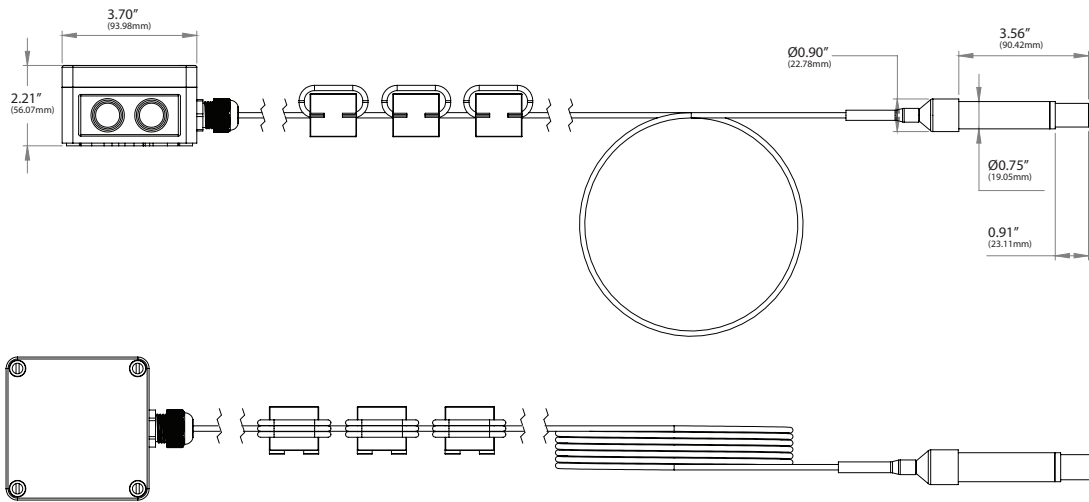
**PRODUCT SPECIFICATIONS**

<b>Sensor Lead Length:</b>	3.0' (0.914 m), 6.0' (1.829 m), 10.0' (3.048 m), 20.0' (6.096 m)
<b>Cable Operating Temperature Range:</b>	32 to 167°F (0 to 75°C)
<b>Minimum Cable Bend Radius:</b>	1.92" (48.77 mm) or 10x the Cable Diameter
<b>Cable Ratings   Cable Jacket Material:</b>	UL(CMP, CL3P, FPLP); CSA (CMP, FT6), Plenum Rated   Polyvinyl Chloride (PVC)
<b>Enclosure Specifications (Material, Flammability, Temperature, NEMA/IP Ratings):</b>	<b>"-4X" Enclosure:</b> Polystyrene Plastic; UL94-V2; -40 to 158°F (-40 to 70°C); NEMA 4X (IP 66)
<b>Sensing Tube Material   Filter Material:</b>	304 Series Stainless Steel   304 Series Stainless Steel
<b>Enclosure Dimensions (L x W x D):</b>	See drawings on back of data sheet
<b>Product Weight:</b>	<b>A/RHx-TTM1K-RP2-4X Series:</b> 1.25 lbs (0.566 kg)
<b>Agency Approvals:</b>	RoHS2, WEEE

**Note<sup>1</sup>:** A Transmitter is calibrated at 71°F (22°C) Nominal | **Note<sup>2</sup>:** Temperature Drift is referenced to 71°F nominal calibration temperature

**DIMENSIONAL DRAWING**

**Remote Probe [4X]**



**Standard View**

**CUSTOM ORDERING**

Model # Example: <b>A/</b> <b>RH2</b> <b>TTM1K</b> <b>RP2-6'</b> <b>4X</b> <b>1</b> <b>50-150°F</b>		<b>MODEL #</b>
A. B. C. D. E. F. G.		
<b>A. Sensor Series</b> No Selection Required	A/	A/
<b>B. Accuracy</b> Select One (1)	RH1 = +/-1% (20% Range between 20 to 90% RH)   RH2 = +/-2%   RH3 = +/-3%	
<b>C. Model Series</b> No Selection Required	TTM1K = Matched 1K Ohms (3 Point RH & Temperature NIST)	TTM1K
<b>D. Configuration</b> Select One (1)	RP2-3' = 3' Cable   RP2-6' = 6' Cable   RP2-10' = 10' Cable   RP2-20' = 20' Cable	
<b>E. Enclosure</b> No Selection Required	4X = NEMA 4X Enclosure	4X
<b>F. Transmitter Output</b> Select One (1)	4 = 4 to 20 mA   1 = 1 to 5 VDC*   2 = 2 to 10 VDC*	
<b>G. Calibrated Span</b>	Specify Span in °F or °C (Best Accuracy in 100°F Increments)	

**Note:** A Temperature Transmitter Output of 1-5 VDC or 2-10 VDC would have a RH Output of 0-5 VDC or 0-10 VDC





ACCESSORIES ORDERING		
Model #	Item #	Description
A/SINTERED FILTER	143433	3/8" Sintered Filter for RH Duct/Stainless Plate/Remote Probes
A/1" VINYL PULL CAP	143462	1" 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.

