



# RH TT OUTSIDE AIR

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

The ACI Relative Humidity with Temperature Transmitter Outside Air Series utilizes a thermoset polymer capacitive sensing element with a factory applied hydrophobic filter to deliver a proportional analog current or voltage output signal. The hydrophobic filter provides added resistance to moisture, dust, and other chemicals for greater long term reliability. The RH Outside Air transmitter features integral DIP switches for field selection of the proper output signal and supply voltage to meet your applications requirements. Each unit also contains 0%, 50%, and 100% test options to verify that the transmitter is both working and wired properly. Field calibration can be performed by using the increment and decrement calibration DIP switches without the need to replace the sensing element. These enhancements provide increased flexibility and outstanding long-term reliability. The temperature transmitter can be used as either a two-wire 4 to 20 mA proportional output or as a 3-Wire voltage output transmitter that

includes a 100 Ohm or 1K Ohm Class A, Platinum RTD. All RH-TT Series Outside Air transmitters are mounted in a IP66/NEMA 4X enclosure with a 4.5" polycarbonate tube to protect the sensing elements from dust, rain, and snow. These units should be installed under an eave or protective shield on the north side of the building out of direct sunlight. The RH transmitter is conformally coated for added protection from moisture and other contaminants. NIST Calibration Certificates are available for all RH TTM part series.

**Applications:** Monitoring Outdoor Temperature and Humidity, Humidification, Dehumidification, Roof Top Units, Air Handlers, Enthalpy and Dew Point Control Calculations, Process Control, Wash Down, Warehouse and NIST Certified Applications

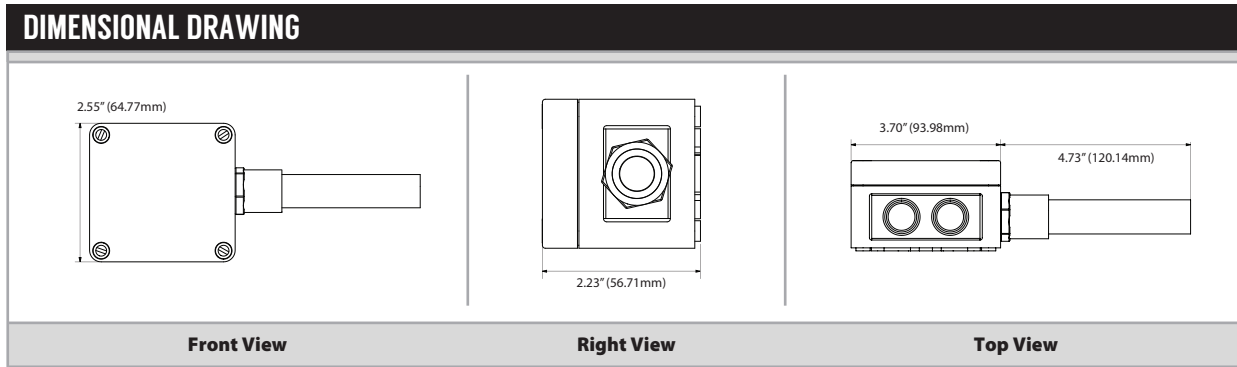
**The ACI RH TT Outside Air is covered by ACI's Five (5) Year Limited Warranty. The warranty can be found in the front of ACI's Sensors & Transmitters catalog, as well as on ACI's website, [www.workaci.com](http://www.workaci.com).**

### PRODUCT SPECIFICATIONS

<b>RH Supply Voltage (Reverse Polarity Protected):</b>	<b>4-20 mA:</b> 250 Ohm Load: 15 - 40 VDC / 18 - 28 VAC   <b>500 Ohm Load:</b> 18 - 40 VDC / 18 - 28 VAC
<b>RH Supply Current (VA):</b>	<b>0-5 VDC:</b> 12 - 40 VDC / 18 - 28 VAC   <b>0-10 VDC:</b> 18 - 40 VDC / 18 - 28 VAC
<b>RH Output Load Resistance:</b>	<b>Voltage Output:</b> 8 mA maximum (0.32 VA)   <b>Current Output:</b> 24 mA maximum (0.83 VA)
<b>RH Output Signal:</b>	<b>4-20 mA:</b> 700 Ohms maximum   <b>0-5 VDC or 0-10 VDC:</b> 4K Ohms Minimum
<b>RH Accuracy @ 77°F (25°C):</b>	<b>2-wire:</b> 4 - 20 mA (Factory Default)   <b>3-wire:</b> 0-5 or 0-10 VDC and 4 - 20 mA (Field Selectable)
<b>RH Measurement Range:</b>	+/- 1% over 20% RH Range between 20 to 90%   +/- 2%, 3%, or 5% from 10 to 95%
<b>Operating RH Range:</b>	0-100%
<b>Operating Temperature Range:</b>	0 to 95% RH, non-condensing (Conformally Coated PCB's)
<b>Storage Temperature Range:</b>	-40 to 140°F (-40 to 60°C)
<b>RH Stability   Repeatability   Sensitivity:</b>	-40 to 149°F (-40 to 65°C)
<b>RH Response Time (T63):</b>	Less than 2% drift / 5 years   0.5% RH   0.1% RH
<b>RH Sensor Type:</b>	20 Seconds Typical
<b>RH Transmitter Stabilization Time:</b>	Capacitive with Hydrophobic Filter
<b>RH Connections   Wire Size:</b>	30 Minutes (Recommended time before doing accuracy verification)
<b>RH Terminal Block Torque Rating:</b>	Screw Terminal Blocks (Polarity Sensitive)   16 (1.31 mm <sup>2</sup> ) to 26 AWG (0.129 mm <sup>2</sup> )
<b>RH NIST Test Points:</b>	4.43 to 5.31 lb-in (0.5 to 0.6 Nm)
<b>TT Supply Voltage   Supply Current:</b>	<b>Default Test Points:</b> 3 Points (20%, 50% & 80%) or 5 Points (20%, 35%, 50%, 65% & 80%)
<b>TT Maximum Load Resistance:</b>	<b>1% NIST Test Points:</b> 5 Points within selected 20% Range (ie. 30%-50% are 30, 35, 40, 45 & 50)
<b>TT Output Signals:</b>	+8.5 to 32 VDC (Reverse Polarity Protected)   25 mA minimum
<b>TT Calibrated Accuracy   Linearity <sup>1</sup>:</b>	<b>250 Ohm Load:</b> +13.5 to 32 VDC   <b>500 Ohm Load:</b> +18.5 to 32 VDC
<b>TT Temperature Drift <sup>2</sup>:</b>	(Terminal Voltage - 8.5 V)   0.020 A
<b>TTM100/TTM1K Certification Points:</b>	<b>Current Output:</b> 4-20 mA (2-Wire Loop Powered)
<b>TT Warm Up Time   Warm Up Drift:</b>	<b>Voltage Output:</b> 1-5 VDC or 2-10 VDC (3-Wires)
<b>Operating TT Temperature Range:</b>	Temperature Spans < 500°F (260°C): +/- 0.2%   Temperature Spans > 500°F (260°C): +/- 0.5%
<b>Operating TT RH Range:</b>	Temperature Spans < 100°F (38°C): +/- 0.04%/°F   Temperature Spans > 100°F (38°C): +/- 0.02%/°F
<b>Platinum RTD (PTC) Number Wires   Wire Colors:</b>	<b>3 Point NIST:</b> 20%, 50%, 80% of span   <b>5 Point NIST:</b> 20%, 35%, 50%, 65%, 80% of span
<b>Platinum RTD Sensor Output @ 32°F (0°C):</b>	10 Minutes   +/- 0.1%
<b>Platinum RTD Tolerance Class   Accuracy:</b>	-40 to 185°F (-40 to 85°C)
<b>Platinum RTD Sensor Stability:</b>	0 to 90% RH, non-condensing
<b>Platinum RTD Response Time (63% Step Change):</b>	Two   <b>A/TT100/TTM100 Series:</b> Brown/Brown   <b>A/TT1K/TTM1K Series:</b> Black/Black
<b>Enclosure Specifications (Material, Flammability, Temperature, NEMA/IP Rating):</b>	<b>A/TT100/TTM100 Series:</b> 100 Ohms Nominal   <b>A/TT1K/TTM1K Series:</b> 1000 Ohms Nominal
<b>Sensing Tube Dimensions   Tube Material:</b>	+/- 0.06% Class A   <b>Tolerance Formula:</b> +/- °C = (0.15°C + (0.002 *  t ))
<b>Product Dimensions (L x W x D):</b>	where  t  is the absolute value of Temperature above or below 0°C in °C
<b>Product Weight:</b>	+/-0.03% after 1000 Hours @ 572°F (300°C)
<b>Agency Approvals:</b>	8 Seconds nominal
	<b>Enclosure Specifications (Material, Flammability, Temperature, NEMA/IP Rating):</b> "4X" Enclosure: Polystyrene Plastic; UL94-V2; -40 to 158°F (-40 to 70°C); NEMA 4X (IP 66)
	<b>Sensing Tube Dimensions   Tube Material:</b> 4.73" (120.14 mm) x 0.845" (21.46mm)   ASA/PC FA-30
	<b>Product Dimensions (L x W x D):</b> See drawings on back of data sheet
	<b>Product Weight:</b> <b>A/RHx-TT-O-4X Series:</b> 0.56 lbs (0.254 kg)
	<b>Agency Approvals:</b> RoHS2, WEEE

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





CUSTOM ORDERING		Model # Example: <span style="font-size: small;">A/ RH2 TT100 O-4X 1 20-120°F</span>	MODEL #
		A. B. C. D. E. F.	
<b>A. Sensor Series</b> <i>No Selection Required</i>	A/ <span style="font-size: small;">—————&gt;</span>		A/
<b>B. Accuracy</b> <i>Select One (1)</i>	RH1 = +/-1% (Specify a 20% Range between 20 to 90% RH) RH2 = +/-2%   RH3 = +/-3%   RH5 = +/-5%		
<b>C. Model Series</b> <i>Select One (1)</i>	TT100 = 100 Ohms   TTM100 = Matched 100 Ohms (Specify 3 or 5 Point NIST) TT1K = 1K Ohms   TTM1K = Matched 1K Ohms (Specify 3 or 5 Point NIST)		
<b>D. Configuration</b> <i>No Selection Required</i>	O-4X = Outside Air (NEMA 4X Enclosure) <span style="font-size: small;">—————&gt;</span>		O-4X
<b>E. Transmitter Output</b> <i>Select One (1)</i>	4 = 4 to 20 mA   1 = 1 to 5 VDC*   2 = 2 to 10 VDC*		
<b>F. 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 (NIST)		Model # Example: <span style="font-size: small;">NIST RH CERT</span>
Model #	Description	
---- (Default)	TTM Calibration Certificate (3 Point NIST)	
NIST TTM CERT - 5PT.	TTM Calibration Certificate (5 Point NIST)	
NIST RH CERT	TTM Calibration Certificate (Specify 3 Point or 5 Point NIST)	

Note: When ordering NIST certificates, please add an additional line item under the corresponding A/RHx-TTMxx-O Model Number

