RH TT DUCT

Relative Humidity (RH), Temperature Transmitter (TT)

The ACI Relative Humidity with Temperature Transmitter Duct Series utilizes a thermoset polymer capacitive sensing element with a factory fitted hydrophobic filter to improve its moisture resistance. The sensing elements multilayer construction also provides excellent resistance in applications where dust, dirt, oils and common environmental chemicals are found. The RH duct sensors include on board DIP switches which allow the user to select the desired output signal and can be powered by AC or DC power sources. Single point field calibration can be performed by using the increment and decrement calibration DIP switches to adjust your curve up or down in +/- 0.5% increments with each toggle of the corresponding switches. These enhancements provide increased flexibility and outstanding long-term reliability without the need to replace the sensors in the field. Duct configurations feature a weatherproof IP66/NEMA 4X style enclosure with a gasketed cover and conformally coated circuit boards for increased moisture resistance in high humidity environments. NIST Calibration Certificates are available for all RH TTM part series.

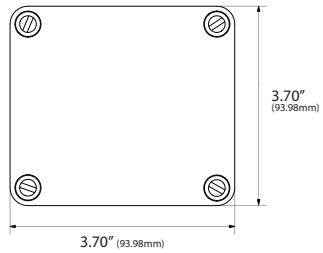
Applications: Humidification, Dehumidification, Supply and Return RH sensors, Economizers, Clean Rooms, Data Centers, Process Control

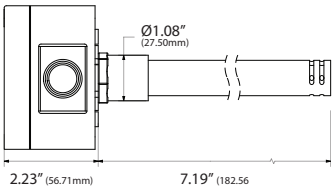
PRODUCT SPECIFICATIONS

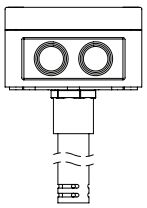
RH Supply Voltage (Reverse Polarity Protected):	**4-20 mA:** 250 Ohm Load: 15 - 40 VDC / 18 - 28 VAC | **500 Ohm Load:** 18 - 40 VDC / 18 - 28 VAC **0-5 VDC:** 12 - 40 VDC / 18 - 28 VAC | **0-10 VDC:** 18 - 40 VDC / 18 - 28 VAC
RH Supply Current (VA):	**Voltage Output:** 8 mA maximum (0.32 VA) | **Current Output:** 24 mA maximum (0.83 VA)
RH Output Load Resistance:	**4-20 mA:** 700 Ohms maximum | **0-5 VDC or 0-10 VDC:** 4K Ohms Minimum
RH Output Signal:	**2-wire:** 4 - 20 mA (Factory Default) | **3-wire:** 0-5 or 0-10 VDC & 4 - 20 mA (Field Selectable)
RH Accuracy @ 77°F (25°C):	+/- 1% over 20% RH Range between 20 to 90% | +/- 2%, 3%, or 5% from 10 to 95%
RH Measurement Range:	0-100%
Operating RH Range:	0 to 95% RH, non-condensing (Conformally Coated PCB's)
Operating Temperature Range:	-40 to 140°F (-40 to 60°C)
Storage Temperature Range:	-40 to 149°F (-40 to 65°C)
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) | 16 (1.31 mm^2) to 26 AWG (0.129 mm^2)
RH Terminal Block Torque Rating:	4.43 to 5.31 lb-in (0.5 to 0.6 Nm)
RH NIST Test Points:	**Default Test Points:** 3 Points (20%, 50% & 80%) or 5 Points (20%, 35%, 50%, 65% & 80%) **1% NIST Test Points:** 5 Points within selected 20% Range (ie. 30%-50% are 30, 35, 40, 45 & 50)
TT Supply Voltage:	+8.5 to 32 VDC (Reverse Polarity Protected)
Supply Current:	25 mA minimum **250 Ohm Load:** +13.5 to 32 VDC | **500 Ohm Load:** +18.5 to 32 VDC
TT Maximum Load Resistance:	(Terminal Voltage – 8.5 V) | 0.020 A
TT Output Signals:	**Current Output:** 4-20 mA (2-Wire Loop Powered) | **Voltage Output:** 1-5 VDC/2-10 VDC (3-Wire)
TT Calibrated Accuracy | Linearity [1]:	**Temperature Spans < 500°F (260°C):** +/- 0.2% | Temp Spans > 500°F (260°C): +/- 0.5%
TT Temperature Drift [2]:	**Temperature Spans < 100°F (38°C):** +/- 0.04%/°F | Temp Spans > 100°F (38°C): +/- 0.02%/°F
TTM100/TTM1K Certification Points:	**3 Point NIST:** 20%, 50%, 80% of span | **5 Point NIST:** 10%, 20%, 50%, 80%, 90% of span
TT Warm Up Time:	10 Minutes | +/- 0.1%
Warm Up Drift:	-40 to 185°F (-40 to 85°C)
Transmitter Operating Temperature/RH Range:	0 to 90% RH, non-condensing
Platinum RTD (PTC) Number Wires | Wire Colors:	Two | **A/TT100/TTM100 Series:** Brown/Brown | **A/TT1K/TTM1K Series:** Black/Black
Platinum RTD Sensor Output @ 32°F (0°C):	**A/TT100/TTM100 Series:** 100 Ohms Nominal | **A/TT1K/TTM1K Series:** 1000 Ohms Nominal
Platinum RTD Tolerance Class | Accuracy:	+/- 0.06% Class A | **Tolerance Formula:** +/- °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 @ 572°F (300°C)
Platinum RTD Response Time (63% Step Change):	8 Seconds nominal
Enclosure Specifications (Material, Flammability, Temperature, NEMA/IP Rating):	**"-4X" Enclosure:** Polystyrene Plastic; UL94-V2; -40 to 158°F (-40 to 70°C); NEMA 4X (IP 66)
Sensing Tube Dimensions:	7.20" (182.88 mm) x 0.840" (21.34 mm)
Tube Material:	Slotted PVC without filter
Product Dimensions (L x W x D):	See drawings on back of data sheet
Product Weight:	**A/RHx-TT-D-4X Series:** 0.58 lbs. (0.263 kg)
Agency Approvals:	RoHS2, WEEE

Note [1]: A Transmitter is calibrated at 71ºF (22ºC) Nominal | **Note [2]:** Temperature Drift is referenced to 71ºF nominal calibration temperature

DIMENSIONAL DRAWING







Front View | **Right View** | **Top View**

CUSTOM ORDERING

Model # Example: A/ (A.) | RH2 (B.) | TT1K (C.) | D-4X (D.) | 2 (E.) | 0-200°F (F.)

		MODEL #
A. Sensor Series *No Selection Required*	**A/** →	**A/**
B. Accuracy *Select One (1)*	**RH1** = +/-1% (Specify a 20% Range between 20 to 90% RH) **RH2** = +/-2% | **RH3** = +/-3% | **RH5** = +/-5%	
C. Model Series *Select One (1)*	**TT100** = 100 Ohms | **TTM100** = Matched 100 Ohms (Specifiy 3 or 5 Point NIST) **TT1K** = 1K Ohms | **TTM1K** = Matched 1K Ohms (Specifiy 3 or 5 Point NIST)	
D. Configuration *No Selection Required*	**D-4X** = Duct (NEMA 4X Enclosure) →	**D-4X**
E. Transmitter Output *Select One (1)*	**4** = 4 to 20 mA | **1** = 1 to 5 VDC* | **2** = 2 to 10 VDC*	
F. Calibrated Span	**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: NIST RH CERT

Model #	Description
---- (Default)	TTM Calibration Certificate (3 Point NIST = 20, 50 & 80% of Span)
NIST TTM CERT - 5PT.	TTM Calibration Certificate (5 Point NIST = 0, 20, 50, 80 & 100% of Span)
NIST RH CERT	RH 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-D Model Number