



# RH DUCT

## Relative Humidity, Duct, Thermistor

The ACI Relative Humidity with Thermistor 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. 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 without the need to replace the sensors in the field. Duct

configurations feature a weatherproof Euro style enclosure with a gasketed cover and conformally coated circuit boards for increased moisture resistance in high humidity environments. The sensor is protected by a stainless-steel sintered filter. Three and Five-point NIST Calibration Certificates are available and must be ordered separately when placing your order.

**Applications:** Humidification, Dehumidification, Supply / Discharge / Return Air, Economizers, Clean Rooms, Data Centers, Process Control, Schools, Hospitals, Office Buildings

**The ACI RH Thermistor Duct 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

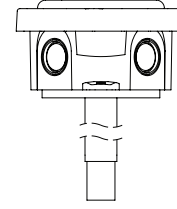
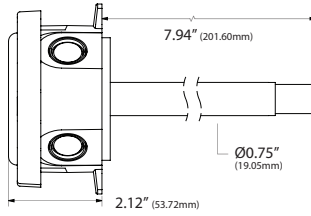
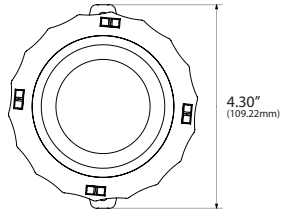
<b>RH Supply Voltage (Reverse Polarity Protected):</b>	<b>4-20 mA:</b> 250 Ohm Load: 15 - 40VDC / 18 - 28 VAC   <b>500 Ohm Load:</b> 18 - 40 VDC / 18 - 28 VAC
<b>RH Supply Current (VA):</b>	<b>0-5 VDC:</b> 12 - 40 VDC / 18 - 28 VAC   <b>0-10 VDC:</b> 18 - 40 VDC / 18 - 28 VAC
<b>RH Output Load Resistance:</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>Nominal Thermistor Resistive Output @ 77°F (25°C) (Lead Wire Colors) Non-Linear NTC (Negative Temperature Coefficient):</b>	<b>Default Test Points:</b> 3 Points (20%, 50% & 80%) or 5 Points (20%, 35%, 50%, 65% & 80%) <b>1% NIST Test Points:</b> 5 Points within selected 20% Range (ie. 30%-50% are 30, 35, 40, 45 & 50)
<b>Thermistor Accuracy 32-158°F (0-70°C):</b>	<b>RHx-1.8K Series:</b> 1.8KΩ (Red/Yellow)   <b>RHx-CSI Series:</b> 10KΩ (Green/Yellow) <b>RHx-3K Series:</b> 3KΩ (White/Brown)   <b>RHx-10KS Series:</b> 10KΩ (White/Blue) <b>RHx-AN Series (Type III):</b> 10KΩ (White/White)   <b>RHx-10K-E1 Series:</b> 10KΩ (Gray/Orange) <b>RHx-AN-BC Series:</b> 5.238KΩ (White/Yellow)   <b>RHx-20K Series:</b> 20KΩ (Brown/Blue) <b>RHx-CP Series (Type II):</b> 10KΩ (White/Green)   <b>RHx-100KS Series:</b> 100KΩ (Black/Yellow)
<b>Thermistor Power Dissipation Constant:</b>	+/- 0.36°F (0.2°C) except 10K-E1 Series: +/- 0.54°F (0.3°C)
<b>Thermistor Sensor Response Time (T63):</b>	<b>1.8K Series:</b> +/- 0.9°F (0.5°C) @ 77°F (25°C) & +/- 1.8°F (1.0°C) from 32 to 158°F (0 to 70°C)
<b>Lead Wire Length   Conductor Size:</b>	3 mW/°C except 1.8K Series: 1 mW/°C; 10K-E1 Series: 2 mW/°C
<b>Insulation   Rating:</b>	10 Seconds nominal
<b>Enclosure Specifications (Material, Flammability, Temperature, NEMA/IP Rating):</b>	14" (35.6 cm)   22 AWG (0.65 mm)
<b>Sensing Tube Material   Filter Material:</b>	Etched Teflon (PTFE) Colored Leads   Mil Spec 16878/4 Type E
<b>Sensing Tube Dimensions (Length x Diameter):</b>	<b>"-EH" Enclosure:</b> ABS Plastic; UL94-V0; -40 to 140°F (-40 to 60°C) <b>"-4X" Enclosure:</b> Polystyrene Plastic; UL94-V2; -40 to 158°F (-40 to 70°C); NEMA 4X (IP 66) <b>"EH" Enclosure:</b> 304 Series Stainless Steel   304 Series Stainless Steel <b>"-4X" Enclosure:</b> Schedule 40 PVC (White)   Slotted PVC without filter
<b>Product Dimensions (L x W x D):</b>	<b>"-EH" Models with Sintered Filters:</b> 7.75" (196.85 mm) x 0.75" (19.05 mm) <b>"-4X" Models:</b> 7.20" (182.88 mm) x 0.84" (21.34 mm)
<b>Product Weight:</b>	See drawings on back of data sheet
<b>Agency Approvals:</b>	<b>A/RHx-xx-D Series:</b> 1.22 lbs. (0.55 kg)   <b>A/RHx-xx-D-4X Series:</b> 0.50 lbs. (0.227 kg) CE, RoHS2, WEEE



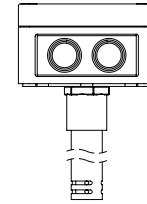
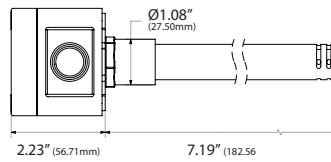
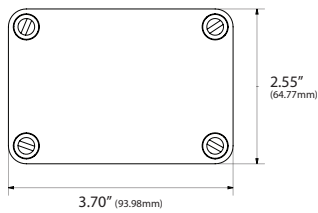


**DIMENSIONAL DRAWING**

**Euro Enclosure [EH]**



**NEMA 4X Enclosure [4X]**



Front View

Right View

Top View

**CUSTOM ORDERING**

Model # Example: **A/** **RH2** **CP** **D** **010** **NIST**

**MODEL #**

<b>A. Sensor Series</b> <i>No Selection Required</i>	A/ <span style="border-bottom: 1px solid black; display: inline-block; width: 150px;"></span> <b>→</b>
<b>B. Accuracy</b> <i>Select One (1)</i>	<b>RH1</b> = +/--1% (Specify a 20% Range between 20 to 90% RH) <b>RH2</b> = +/--2%   <b>RH3</b> = +/--3%   <b>RH5</b> = +/--5%
<b>C. Temperature Sensor</b> <i>Select One (1)</i>	<b>1.8K</b>   <b>3K</b>   <b>10KS</b>   <b>AN</b> (Type III)   <b>AN-BC</b>   <b>CP</b> (Type II)   <b>CSI</b>   <b>10K-E1</b>   <b>20K</b>   <b>100KS</b>
<b>D. Configuration</b> <i>Select One (1)</i>	<b>D</b> = Duct (Euro Enclosure)   <b>D-4X</b> (NEMA 4X Enclosure)
<b>E. Output Signal</b> <i>Select One (1)</i>	<b>----</b> = 4 to 20 mA (Default)   <b>010</b> = 0 to 10 VDC   <b>05</b> = 0 to 5 VDC
<b>F. NIST (Temperature)</b> <i>Select One (1)</i>	<b>----</b> = No NIST Certificate   <b>NIST</b> = NIST Certificate (Must Specify 1, 3 or 5 Points)

**Note:** Outputs are field selectable between 4-20 mA, 0-5 VDC & 0-10 VDC

**ACCESSORIES ORDERING**

Model # Example: **A/SINTERED FILTER**

Model #	Item #	Description
<b>A/SINTERED FILTER</b>	143433	3/8" Sintered Filter for RH Duct/Stainless Plate/Remote Probe

**ACCESSORIES ORDERING (NIST)**

Model # Example: **NIST RH CERT**

Model #	Description
<b>NIST RH CERT</b>	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-xx-D Model Number

