



# RH OUTSIDE AIR

## Relative Humidity , Outside Air, Thermistors

The ACI Relative Humidity with Thermistor Outside Air Series utilizes a thermoset polymer capacitive sensing element with factory applied hygroscopic filter to deliver a proportional analog current or voltage output signal. The hygroscopic 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 also 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. Outside Air

configurations feature a weatherproof Euro style enclosure with gasketed cover and conformally coated circuit boards for added moisture and chemical resistance. Three point NIST Calibration Certificates are available.

**Applications:** Monitoring Outdoor Air Humidity, Economizer Control, Psychrometric calculations such as Enthalpy and Dew point, Wash down Applications

The ACI RH Thermistor 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, [workaci.com](http://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>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 and 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)	
<b>Nominal Thermistor Resistive Output @ 77°F (25°C) (Lead Wire Colors):</b>	<b>RHx-1.8K Series:</b> 1.8KΩ (Red/Yellow) <b>RHx-3K Series:</b> 3KΩ (White/Brown) <b>RHx-AN Series (Type III):</b> 10KΩ (White/White) <b>RHx-AN-BC Series:</b> 5.238KΩ (White/Yellow) <b>RHx-CP Series (Type II):</b> 10KΩ (White/Green) <b>RHx-CSI Series:</b> 10KΩ (Green/Yellow)	<b>RHx-10KS Series:</b> 10KΩ (White/Blue) <b>RHx-10K-E1 Series:</b> 10KΩ (Gray/Orange) <b>RHx-20K Series:</b> 20KΩ (Brown/Blue) <b>RHx-50K Series:</b> 50KΩ nominal (Brown/Yellow) <b>RHx-100KS Series:</b> 100KΩ (Black/Yellow)
<b>Thermistor Accuracy 32-158°F (0-70°C):</b>	+/- 0.36°F (0.2°C) except <b>10K-E1 Series:</b> +/- 0.54°F (0.3°C) <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>Thermistor Power Dissipation Constant:</b>	3 mW/°C except 1.8K Series: 1 mW/°C; 10K-E1 Series: 2 mW/°C	
<b>Thermistor Sensor Response Time (T63):</b>	10 Seconds nominal	
<b>Lead Wire Length   Conductor Size:</b>	14" (35.6 cm)   22 AWG (0.65 mm)	
<b>Insulation   Rating:</b>	Etched Teflon (PTFE) Colored Leads   Mil Spec 16878/4 Type E	
<b>Enclosure Specifications (Material, Flammability, Temperature, NEMA/IP Rating):</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>Sensing Tube Dimensions (Length x Diameter):</b>	<b>"-EH" Models:</b> 3.00" (76.20 mm) x 1.125" (28.75 mm) <b>"-4X" Models:</b> 4.73" (120.14 mm) x 0.845" (21.46mm)	
<b>Product Dimensions (L x W x D):</b>	See drawings on back of data sheet	
<b>Product Weight:</b>	<b>A/RHx-xx-O Series:</b> 0.59 lbs. (0.27 kg)   <b>A/RHx-xx-O-4X Series:</b> 0.45 lbs. (0.204 kg)	
<b>Agency Approvals:</b>	CE, UKCA, RoHS, WEEE	



DIMENSIONAL DRAWING		
<p><b>Euro Enclosure [EH]</b></p> <p>4.30" (109.22mm)</p>	<p>2.12" (53.72mm)</p>	<p>6.52" (165.67mm)</p>
<p><b>NEMA 4X Enclosure [4X]</b></p> <p>2.55" (64.77mm)</p>	<p>2.23" (56.71mm)</p>	<p>3.70" (93.98mm) 4.73" (120.14mm)</p>
<b>Front View</b>	<b>Right View</b>	<b>Top View</b>

CUSTOM ORDERING		MODEL #
Model # Example: <b>A/</b> <b>RH2</b> <b>CP</b> <b>O</b> <b>NIST</b>		
	<span style="margin: 0 5px;">A.</span> <span style="margin: 0 5px;">B.</span> <span style="margin: 0 5px;">C.</span> <span style="margin: 0 5px;">D.</span> <span style="margin: 0 5px;">E.</span> <span style="margin: 0 5px;">F.</span>	
<b>A. Sensor Series</b> No Selection Required	A/ <span style="font-size: 2em;">▶</span>	A/
<b>B. Accuracy</b> Select One (1)	RH1 = +/-1% (Specify a 20% Range between 20 to 90% RH)   RH2 = +/-2%   RH3 = +/-3%	
<b>C. Temperature Sensor</b> Select One (1)	1.8K   3K   10KS   AN (Type III)   AN-BC   CP (Type II)   CSI   10K-E1   20K   50K   100KS	
<b>D. Configuration</b> Select One (1)	O = Outside Air (Euro Enclosure)   O-4X = Outside Air (NEMA 4X Enclosure)	
<b>E. Output Signal</b> Select One (1)	---- = 4 to 20 mA (Default)   0 to 10 VDC (Field Selectable)   0 to 5 VDC (Field Selectable)	
<b>F. NIST (Temperature &amp; RH)</b> Select One (1)	---- = No NIST Certificate   NIST = NIST Certificate (3 Points)	

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