



# OUTSIDE AIR

## Low Temperature Outside Air Sensor & Transmitters

The ACI Low Temperature Outside Air Series temperature sensors and transmitters are a single point sensor featuring a three wire RTD sensor assembly with a 316 Series stainless steel probe. The three wire sensors can be used with a two wire transmitter by connecting the two (Red) colored wires to one of the RTD terminal blocks with the 3rd wire (White) wire connected to the second RTD Terminal block. The purpose of the 3rd wire is to compensate for external lead wire resistance that will affect the accuracy of your sensor output when using with a three wire temperature transmitter or sensor configuration on your Building Management System or PLC (Programmable Logic Controller). ACI recommends the use of 18 AWG lead wires to reduce the external lead wire resistance when using the A/100/1K-3W-O style Platinum RTD series sensors without temperature transmitter. The operating specifications are for both the sensor and transmitter as designated in the specification table. The transmitter is mounted in the Galvanized junction and should be mounted inside your building with the sensor assembly

mounted in the Aluminum Bell Box for mounting outdoors due to the extreme temperatures. NIST Certificates are available for all of the configurations listed in the ordering grid on the back of the product data sheet. For best accuracy, ACI recommends the use of the TTM100 or TTM1K Series Matched transmitters with a 3 or 5 Point NIST Calibration Certificate since they include a second calibration step in which the RTD and transmitter are calibrated together as a system, which will remove most of the sensor error over the calibrated temperature span of the transmitter.

**Applications:** Freezers, Outside Air Temperature, Cold Storage Facilities, Manufacturing Facilities, Process Control

### PRODUCT SPECIFICATIONS

<b>Transmitter Supply Voltage   Supply Current:</b>	+8.5 to 32 VDC (Reverse Polarity Protected)   25 mA minimum
<b>Maximum Load Resistance:</b>	<b>250 Ohm Load (1-5 VDC):</b> +13.5 to 32 VDC   <b>500 Ohm Load (2-10 VDC):</b> +18.5 to 32 VDC (Terminal Voltage - 8.5 V)   0.020 A
<b>Output Signals:</b>	<b>Current:</b> 4-20 mA (2-Wire Loop Powered)   <b>Voltage:</b> 1-5 VDC or 2-10 VDC (3-Wires)
<b>Calibrated Transmitter Accuracy   Linearity:</b>	<b>Temp. Spans &lt; 500°F (260°C):</b> +/- 0.2%   <b>Temp. Spans &gt; 500°F (260°C):</b> +/- 0.5%
<b>Temperature Drift:</b>	<b>Temp. Spans &lt; 100°F (38°C):</b> +/- 0.04%/°F   <b>Temp. Spans &gt; 100°F (38°C):</b> +/- 0.02%
<b>Warm Up Time   Warm Up Drift:</b>	10 Minutes   +/- 0.1%
<b>Operating   Storage Temperature Range:</b>	-40°F (-40°C) to 185°F (85°C)
<b>Operating Humidity Range:</b>	0 to 90%, non-condensing
<b>Calibrated Temperature Spans:</b>	<b>Minimum Temp. Span:</b> 50°F (28°C)   <b>Maximum Temp. Span:</b> 800°F (426°C)
<b>Connections   Wire Size:</b>	Screw Terminal Blocks (Non-Polarity Sensitive)   16 AWG (1.31mm <sup>2</sup> ) to 26 AWG (0.129mm <sup>2</sup> )
<b>Terminal Block Torque Rating:</b>	0.5 Nm nominal
<b>Sensor Type   Sensor Curve   Sensing Points:</b>	Platinum RTD   PTC (Positive Temperature Coefficient)   One
<b>Number Wires:</b>	<b>A/100-3W-LT-O</b> and <b>A/1K-3W-LT-O:</b> Three (Two Red / White) Polarity Sensitive
<b>Sensor Output @ 0°C (32°F):</b>	<b>A/100-3W-LT-O:</b> 100 Ohms nominal   <b>A/1K-3W-LT-O:</b> 1000 Ohms nominal
<b>Sensor Tolerance Class   Accuracy:</b>	+/- 0.12% Class B   <b>Class B Tolerance Formula:</b> +/- °C = (0.30°C + (0.005 *  t ))
<b>Din Standard   Temperature Coefficient:</b>	DIN EN 60751 (IEC 751)   3850 ppm   °C
<b>Sensor Stability:</b>	< 0.04 % at 1000 hours at 400°C
<b>Response Time (63% Step Change):</b>	15 Seconds nominal
<b>Self-Heating   Maximum Operating Current:</b>	<b>100 Ohm RTD:</b> 7 mW   °C (Still Air)   5 mA <b>1K Ohm RTD:</b> 4 mW   °C (Still Air)   3 mA
<b>Sensor Operating Temperature Range:</b>	-10 to 395°C (-40 to 743°F)
<b>Enclosure Specifications (Operating Temperature Range, Material, Flammability, NEMA/IP Ratings):</b>	<b>“GD” Enclosure:</b> -40 to 199°C (-40 to 390°F); Galvanized Steel; NEMA 1 (IP10) <b>“BB” Enclosure:</b> -75 to 85°C (-103 to 185°F); Aluminum; NEMA 3R (IP 14)
<b>Storage Temperature Range:</b>	-40 to 85°C (-40 to 185°F)
<b>Operating Humidity Range:</b>	5 to 100% RH
<b>Probe Material   Probe Diameter:</b>	316 Stainless Steel   0.250" (6.35mm)
<b>Compression Fitting Material:</b>	316 Stainless Steel
<b>Lead Length   Conductor Size:</b>	8' (2.44 m)   22 AWG (0.25 mm <sup>2</sup> )
<b>Lead Wire Insulation   Conductor Material:</b>	Etched Teflon (PTFE)   Silver Plated Copper
<b>Product Dimensions   Product Weight:</b>	See table on back of Product Data sheet
<b>Agency Approvals:</b>	RoHS2, WEEE

**Note:** Transmitter's calibrated at 71°F (22°C) nominal | **Note:** Where |t| is the absolute value of temperature above or below 0°C in Centigrade)





### DIMENSIONAL DRAWING. WEIGHTS

**Front View**

**Right View**

xx = Sensor Type

**Top View, Product Weight**

Bell Box Enclosure [BB] Weight	
ACI Model #	Weight
A/xx-3W-LT-O-BB	0.94 lbs. (0.252 kg)

### STANDARD ORDERING

Model # Example: **A/1K-3W-LT-O-BB** -OR- **125205**

Model #	Item #	Description
<b>A/100-3W-LT-O-BB</b>	142523	100 Ohm RTD, 3-Wire, Outside Air Sensor, Aluminum Weather Proof Enclosure, 8 Foot Leads
<b>A/1K-3W-LT-O-BB</b>	125205	1K Ohm RTD, 3-Wire, Outside Air Sensor, Aluminum Weather Proof Enclosure, 8 Foot Leads

### CUSTOM ORDERING | LOW TEMPERATURE OUTSIDE AIR

Model # Example: **A/** **1K** **3W** **LT** **O** **BB** **NIST**  
A. B. C. D. E. F. G.

CUSTOM ORDERING	MODEL #
<b>A. Sensor Series</b> <i>No Selection Required</i>	<b>A/</b> <input style="width: 80%;" type="text"/>
<b>B. Model Series</b> <i>Select One (1)</i>	<b>100</b> = 100 Ohm Platinum RTD only   <b>1K</b> = 1K Ohm Platinum RTD only
<b>C. Number of Wires</b> <i>No Selection Required</i>	<b>3W</b> = Three Wires (Specify for 100 and 1K RTD Sensors only) <input style="width: 80%;" type="text"/>
<b>D. Low Temperature</b> <i>No Selection Required</i>	<b>LT</b> = Low Temperature Series <input style="width: 80%;" type="text"/>
<b>E. Configuration</b> <i>No Selection Required</i>	<b>O</b> = Outside Air <input style="width: 80%;" type="text"/>
<b>F. Enclosure</b> <i>No Selection Required</i>	<b>BB</b> = Cast Aluminum Weather Proof Enclosure <input style="width: 80%;" type="text"/>
<b>G. NIST</b> <i>Select One (1)</i>	<b>----</b> = No NIST Certificate   <b>NIST</b> = NIST Certificate (Must Specify 1, 3 or 5 Points)

### CUSTOM ORDERING | LOW TEMPERATURE OUTSIDE AIR TRANSMITTERS

Model # Example: **A/** **TT100** **LT** **O** **2** **BB**  
A. B. C. D. E. F. G.

CUSTOM ORDERING	MODEL #
<b>A. Sensor Series</b> <i>No Selection Required</i>	<b>A/</b> <input style="width: 80%;" type="text"/>
<b>B. Model Series</b> <i>Select One (1)</i>	<b>TT100</b> = Unmatched Temperature Transmitter & 100 Ohm RTD <b>TT1K</b> = Unmatched Temperature Transmitter & 1K RTD <b>TTM100</b> = Matched 100 Ohm Temperature Transmitter/Sensor <b>TTM1K</b> = Matched 1K Ohm Temperature Transmitter/Sensor (Must specify 3 or 5 Point NIST Certificates for all TTM100 and TTM1K Transmitters)
<b>C. Low Temperature</b> <i>No Selection Required</i>	<b>LT</b> = Low Temperature Series <input style="width: 80%;" type="text"/>
<b>D. Configuration</b> <i>No Selection Required</i>	<b>O</b> = Outside Air <input style="width: 80%;" type="text"/>
<b>E. Analog Output</b> <i>Select One (1)</i>	<b>1</b> = 1 to 5 VDC   <b>2</b> = 2 to 10 VDC   <b>4</b> = 4 to 20 mA
<b>F. Enclosure</b> <i>No Selection Required</i>	<b>BB</b> = Cast Aluminum Weather Proof Enclosure <input style="width: 80%;" type="text"/>
<b>G. Calibrated Span</b>	<b>Specify Span in °F or °C (Best Accuracy in 100°F Increments)</b>

