



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

The ACI Low Temperature Outside Air Sensors and Transmitters are 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.

PRODUCT SPECIFICATIONS

| | |
|---|--|
| Transmitter Supply Voltage Supply Current: | +8.5 to 32 VDC (Reverse Polarity Protected) 25 mA minimum |
| Maximum Load Resistance: | 250 Ohm Load (1-5 VDC): +13.5 to 32 VDC 500 Ohm Load (2-10 VDC): +18.5 to 32 VDC (Terminal Voltage - 8.5 V) 0.020 A |
| Output Signals: | Current: 4-20 mA (2-Wire Loop Powered) Voltage: 1-5 VDC or 2-10 VDC (3-Wires) |
| Calibrated Transmitter Accuracy Linearity: | Temp. Spans < 500°F (260°C): +/- 0.2% Temp. Spans > 500°F (260°C): +/- 0.5% |
| Temperature Drift: | Temp. Spans < 100°F (38°C): +/- 0.04%/°F Temp. Spans > 100°F (38°C): +/- 0.02% |
| Warm Up Time Warm Up Drift: | 10 Minutes +/- 0.1% |
| Operating Storage Temperature Range: | -40°F (-40°C) to 185°F (85°C) |
| Operating Humidity Range: | 0 to 90%, non-condensing |
| Calibrated Temperature Spans¹: | Minimum Temp. Span: 50°F (28°C) Maximum Temp. Span: 700°F (370°C) |
| Connections Wire Size: | Screw Terminal Blocks (Non-Polarity Sensitive) 16 AWG (1.31 mm ²) to 26 AWG (0.129 mm ²) |
| Terminal Block Torque Rating: | 0.5 Nm nominal |
| Sensor Type Sensor Curve Sensing Points: | Platinum RTD PTC (Positive Temperature Coefficient) One |
| Number Wires: | A/100-3W-LT-O and A/1K-3W-LT-O: Three (Two Red / White) Polarity Sensitive |
| Sensor Output @ 0°C (32°F): | A/100-3W-LT-O: 100 Ohms nominal A/1K-3W-LT-O: 1000 Ohms nominal |
| Sensor Tolerance Class Accuracy²: | +/- 0.12% Class B Class B Tolerance Formula: +/- °C = (0.30°C + (0.005 * t)) |
| Din Standard Temperature Coefficient: | DIN EN 60751 (IEC 751) 3850 ppm / °C |
| Sensor Stability: | < 0.04 % at 1000 hours at 400°C |
| Self-Heating Maximum Operating Current: | 100 Ohm RTD: 7 mW °C (Still Air) 5 mA 1K Ohm RTD: 4 mW °C (Still Air) 3 mA |
| Sensor Operating Temperature Range: | -198 to 150°C (-324 to 302°F) |
| Enclosure Specifications (Operating Temperature Range, Material, Flammability, NEMA/IP Ratings): | "-GD" Enclosure: -40 to 199°C (-40 to 390°F); Galvanized Steel; NEMA 1 (IP10) |
| Storage Temperature Range: | "-BB" Enclosure: Aluminum, -40 to 121°C (-40 to 250°F), NEMA 3R -40 to 85°C (-40 to 185°F) |
| Operating Humidity Range: | 5 to 100% RH |
| Probe Material Probe Diameter: | 316 Stainless Steel 0.250" (6.35mm) |
| Compression Fitting Material: | 316 Stainless Steel |
| Lead Length Conductor Size: | 8' (2.44 m) 22 AWG (0.25 mm ²) |
| Lead Wire Insulation Conductor Material: | Etched Teflon (PTFE) Silver Plated Copper |
| Product Dimensions Product Weight: | See table on back of Product Data sheet |
| Agency Approvals: | RoHS2, WEEE |

Note¹: Transmitter's calibrated at 71°F (22°C) nominal | **Note²:** 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

| 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 |
|-------------------------|--------|---|
| A/100-3W-LT-O-BB | 142523 | 100 Ohm RTD, 3-Wire, Outside Air Sensor, Aluminum Weather Proof Enclosure, 8 Foot Leads |
| A/1K-3W-LT-O-BB | 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.

| Option | Description | MODEL # |
|---|---|-----------|
| A. Sensor Series No Selection Required | A/ _____ | A/ |
| B. Model Series Select One (1) | 100 = 100 Ohm Platinum RTD only 1K = 1K Ohm Platinum RTD only | |
| C. Number of Wires No Selection Required | 3W = Three Wires (Specify for 100 and 1K RTD Sensors only) _____ | 3W |
| D. Low Temperature No Selection Required | LT = Low Temperature Series _____ | LT |
| E. Configuration No Selection Required | O = Outside Air _____ | O |
| F. Enclosure No Selection Required | BB = Cast Aluminum Weather Proof Enclosure _____ | BB |
| G. NIST Select One (1) | ---- = No NIST Certificate NIST = NIST Certificate (3 Points) | |

CUSTOM ORDERING | LOW TEMPERATURE OUTSIDE AIR TRANSMITTERS

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

| Option | Description | MODEL # |
|---|---|-----------|
| A. Sensor Series No Selection Required | A/ _____ | A/ |
| B. Model Series Select One (1) | TT100 = Unmatched Temperature Transmitter & 100 Ohm RTD TT1K = Unmatched Temperature Transmitter & 1K RTD TTM100 = Matched 100 Ohm Temperature Transmitter/Sensor TTM1K = Matched 1K Ohm Temperature Transmitter/Sensor (Must specify 3 or 5 Point NIST Certificates for all TTM100 and TTM1K Transmitters) | |
| C. Low Temperature No Selection Required | LT = Low Temperature Series _____ | LT |
| D. Configuration No Selection Required | O = Outside Air _____ | O |
| E. Analog Output Select One (1) | 1 = 1 to 5 VDC 2 = 2 to 10 VDC 4 = 4 to 20 mA | |
| F. Enclosure No Selection Required | BB = Cast Aluminum Weather Proof Enclosure _____ | BB |
| G. Calibrated Span | Specify Span in °F or °C (Best Accuracy in 100°F Increments) | |

Note: There are two enclosures included with configurations involving Temperature Transmitters. A secondary GD (Galvanized) enclosure contains the transmitter board to protect it from the extreme temperatures exposed to the sensing element

