# COPPER AVERAGING

## Bendable Multipoint Copper, Thermistor

The ACI Thermistor Copper Averaging Series features a copper sensing element with AWG Etched Teflon colored lead wires to differentiate the different sensor types. Each sensor is manufactured with 4 or 9 sensing points determined by the length of the sensing element. The averaging sensors provide a better average temperature of the air inside the duct when compared to a single point duct sensor. Each of the elements is sealed to prevent moisture intrusion and includes a foam pad to seal the duct and dampen vibrations. The benefits of using a copper sensing element is that it has improved thermal conductivity and higher corrosion resistance than similar aluminum style averaging sensors. Additionally, copper has been proven to have an antibacterial effect to many of the airborne contaminants, mold and bacteria found in duct systems. Our standard enclosures include the galvanized "-GD" or plastic duct enclosure with hinged cover "-PB". Each unit includes nylon wire ties and mounts with optional copper capillary and universal plastic mounting clips, NEMA/IP Rated Weather Proof enclosures and NIST certificates as referenced on the back of the product data sheet.

**Applications:** Air Handlers, Roof Top Units, Mixed Air/Discharge/Supply Air Temperature Monitoring, Data Centers, Hospitals

**The ACI Thermistor Copper Averaging Series 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.**

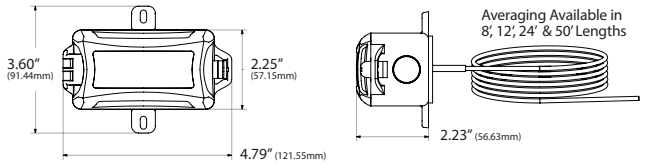
## PRODUCT SPECIFICATIONS

| | |
|---|---|
| **Sensor Type \| Sensor Curve:** | Thermistor \| Non-Linear, NTC (Negative Temperature Coefficient) |
| **Number Sensing Points \| Number Wires:** | **8' and 12' Lengths:** Four \| **24' and 50' Lengths:** Nine \| Two (Non-Polarity Sensitive) |
| **Sensor Series Output @ 25°C (77°F ) (Lead Wire Colors):** | **A/1.8K:** 1.8KΩ nominal \| (Red/Yellow)<br>**A/3K:** 3KΩ nominal \| (White/Brown)<br>**A/AN (Type III):** 10KΩ nominal \| (White/White)<br>**A/AN-BC:** 5.238KΩ nominal \| (White/Yellow)<br>**A/CP (Type II):** 10KΩ nominal \| (White/Green)<br>**A/CSI:** 10KΩ nominal \| (Green/Yellow)<br>**A/10KS:** 10KΩ nominal \| (White/Blue)<br>**A/10K-E1:** 10KΩ nominal \| (Orange/Gray)<br>**A/20K:** 20KΩ nominal \| (Brown/Blue)<br>**A/50K:** 50KΩ nominal \| (Brown/Yellow)<br>**A/100KS:** 100KΩ nominal \| (Black/Yellow) |
| **Accuracy 0-70°C (32-158°F):** | **8' & 12' Lengths:** +/-0.20°C (+/-0.36°F); **A/1.8K:** +/-1.00°C (+/-1.80°F); **A/10KS:** +/-0.60°C (+/-1.10°F)<br>**24' & 50' Lengths:** +/-0.20°C (+/-0.36°F); **A/1.8K:** +/-1.00°C (+/-1.80°F); **A/10KS:** +/-0.60°C (+/-1.10°F) |
| **Stability:** | Sensor Dependent; Contact ACI for more information on specific sensor |
| **Response Time (63% Step Change):** | 15 Seconds nominal |
| **Power Dissipation Constant:** | **8' and 12' Lengths:** 4 mW/°C except **A/1.8K Series** = 2 mW/°C \| **A/100KS Series:** 6 mW/°C<br>**24' & 50' Lengths:** 6 mW/°C except **A/1.8K Series** = 3 mW/°C \| **A/100KS Series:** 9 mW/°C |
| **Enclosure Specifications (Temperature, Flammability, NEMA/IP Ratings):** | **"-GD" Enclosure:** Galvanized Steel, -40 to 115°C (-40 to 239°F), NEMA 1 (IP10)<br>**"-PB" Enclosure:** ABS Plastic, -30 to 90°C (-22 to 194°F), UL94-HB, Plenum Rated<br>**"-BB" Enclosure:** Aluminum, -40 to 115°C (-40 to 239°F), NEMA 3R (IP 14);<br>**"-4X" Enclosure:** Polystyrene Plastic, -40 to 70°C (-40 to 158°F), UL94-V2, NEMA 4X (IP 66) |
| **Storage Temperature Range:** | -40 to 85°C (-40 to 185°F) |
| **Sensor Operation Temperature Range:** | -40 to 302°F (-40 to 150°C) |
| **Operating Humidity Range:** | 10 to 95% RH, non-condensing |
| **Sensor Material \| Sensor Diameter:** | Copper \| 0.210" (5.34 mm) nominal |
| **Fitting Material \| Flammability Rating:** | Polyamide 66 (High Performance Nylon) \| UL94-HB |
| **Foam Pad Material/Flammability Ratings:** | Neoprene/EPDM/SBR Polymer \| UL94-HBF; FMVSS-302; MIL-R-6130C |
| **Lead Length \| Conductor Size:** | 12" (30.5 cm) \| 26 AWG (0.40 mm) |
| **Lead Wire Insulation \| Wire Ratings:** | Etched Teflon (PTFE) Colored Leads \| MIL-W-16878/4 (Type E) |
| **Conductor Material:** | Silver Plated Copper |
| **Product Dimensions \| Product Weight:** | See table on back of Product Data sheet |
| **Agency Approvals:** | RoHS2, WEEE |

## DIMENSIONAL DRAWING, WEIGHTS

**xx** = Sensor Type | **yy** = Insertion Length

### Plastic Box Enclosure [PB]

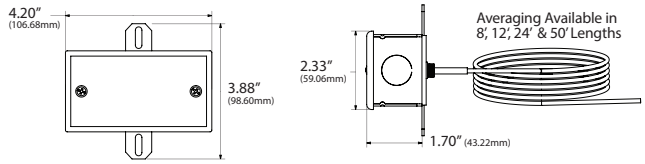



**Plastic Box Enclosure [PB] Weights**

| ACI Model # | 8' (Probe Length) | 12' (Probe Length) |
|---|---|---|
| A/xx-A-yy-PB | 0.72 lbs. (0.327 kg) | 0.96 lbs. (0.435 kg) |

| ACI Model # | 24' (Probe Length) | 50' (Probe Length) |
|---|---|---|
| A/xx-A-yy-PB | 1.70 lbs. (0.771 kg) | 3.28 lbs. (1.488 kg) |

### Galvanized Enclosure [GD]

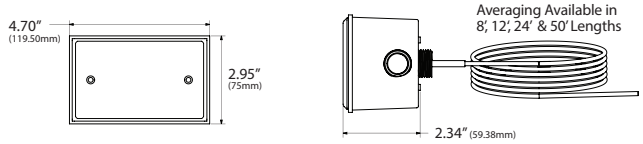



**Galvanized Enclosure [GD] Weights**

| ACI Model # | 8' (Probe Length) | 12' (Probe Length) |
|---|---|---|
| A/xx-A-yy-GD | 1.16 lbs. (0.526 kg) | 1.40 lbs. (0.635 kg) |

| ACI Model # | 24' (Probe Length) | 50' (Probe Length) |
|---|---|---|
| A/xx-A-yy-GD | 2.20 lbs. (0.998 kg) | 3.78 lbs. (1.715 kg) |

### Bell Box Enclosure [BB]

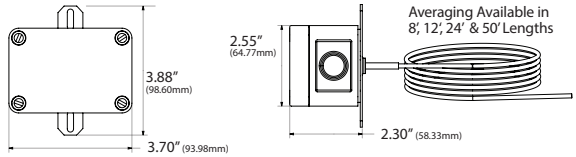



**Bell Box Enclosure [BB] Weights**

| ACI Model # | 8' (Probe Length) | 12' (Probe Length) |
|---|---|---|
| A/xx-A-yy-BB | 1.22 lbs. (0.553 kg) | 1.44 lbs. (0.653 kg) |

| ACI Model # | 24' (Probe Length) | 50' (Probe Length) |
|---|---|---|
| A/xx-A-yy-BB | 2.18 lbs. (0.988 kg) | 3.74 lbs. (1.696 kg) |

### NEMA 4X Enclosure [4X]




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

| ACI Model # | 8' (Probe Length) | 12' (Probe Length) |
|---|---|---|
| A/xx-A-yy-4X | 0.84 lbs. (0.381 kg) | 1.06 lbs. (0.481 kg) |

| ACI Model # | 24' (Probe Length) | 50' (Probe Length) |
|---|---|---|
| A/xx-A-yy-4X | 1.80 lbs. (0.816 kg) | 3.36 lbs. (1.696 kg) |

**Standard Views** | **Product Weights**

## CUSTOM ORDERING

Model # Example: A/ (A.) 1.8K (B.) A (C.) 12' (D.) GD (E.) NIST (F.)

| | | MODEL # |
|---|---|---|
| **A. Sensor Series** *No Selection Required* | **A/** → | **A/** |
| **B. Model Series** *Select One (1)* | **1.8K** \| **3K** \| **AN** \| **AN-BC** \| **CP** \| **CSI** \| **10KS** \| **10K-E1** \| **20K** \| **50K** \| **100KS** | |
| **C. Configuration** *No Selection Required* | **A** = Bendable Copper Averaging → | **A** |
| **D. Probe Length** *Select One (1)* | **8'** = 8' Sensor \| **12'**= 12' Sensor \| **24'** = 24' Sensor \| **50'** = 50' Sensor | |
| **E. Enclosure** *Select One (1)* | **GD** = Galvanized \| **PB** = Plastic \| **BB** = Aluminum, NEMA 3R \| **4X** = NEMA 4X | |
| **F. NIST** *Select One (1)* | **----** = No NIST Certificate \| **NIST** = NIST Certificate (3 Points) | |

## ACCESSORIES ORDERING

Model # Example: A/CAPILLARY CLIP QTY:1 -OR- 130525

| Model # | Item # | Description |
|---|---|---|
| **A/CAPILLARY CLIP QTY: 1** | 130525 | Capillary Mounting Clip, Copper, Quantity: 1 |
| **UNIVERSAL CLIP 50** | 145430 | Capillary Mounting Clip, Plastic, Quantity: 50/Bag |
| **UNIVERSAL CLIP 6** | 145421 | Universal Mounting Clip, Plastic, Quantity: 6/Bag |