

# AcuHUM™ OA Series

Outdoor Air Relative Humidity  
& Temperature Sensor Datasheet



Advanced digital polymer sensing technology provides precise relative humidity (RH) measurement, the AcuHUM OA series outdoor air relative humidity sensor offers long-term stability, fast response time, and ability to recover from condensation. The RH sensor can be mounted onto a vertical surface for monitoring outdoor RH/temperature. With an IP65 rated enclosure, it is suitable for sheltered outdoor locations and protect against dust ingress and water. The AcuHUM OA sensor also features an optional thermistor, RTD, or transmitter to conveniently provide a temperature and RH measurement in a single device.

## Features

- IP65 enclosure protects RH sensor from ingress dust & water moisture, ideal for outdoor applications.
- $\pm 2\%$  high-accuracy RH measurement with optional temperature measurement up to  $0.2^{\circ}\text{C}$  ( $0.36^{\circ}\text{F}$ ) accuracy.
- Quick installation with push button terminal blocks and quick release screws.
- Fast response time of  $<10$  seconds & small humidity drift  $<\pm 0.5\%$  RH/year.
- 4-20mA and 0-10VDC output options are an ideal fit with various BAS controllers.
- 100 $\Omega$  Platinum, 1K $\Omega$  Platinum/Nickel RTDs & 10K $\Omega$  Type II/Type III, 20K $\Omega$  thermistors available.
- Optional custom configuration for temperature measurement.



## Specifications

### Relative Humidity Measurement

#### ELECTRICAL

|               |   |
|---------------|---|
| Voltage Power | 19.2~28.8VAC or VDC   |
| Current Power | 19.2~28.8VDC (RL=500 $\Omega$ );<br>8.5~35 VDC (RL=0 $\Omega$ ) |
| Output        | 4~20mA (2 Wires) or 0~10VDC (3 Wires)                           |

#### RELATIVE HUMIDITY PERFORMANCE

|                      |   |
|----------------------|---|
| RH Sensor Type       | Digital Polymer   |
| Accuracy             | $\pm 2\%$ ( $25^{\circ}\text{C}$ , 20~80%RH); $\pm 1\sim 3\%$ (0~95%RH) |
| Measurement RH Range | 0~100%  |
| Operating RH Range   | 0~95%RH (Non-Condensing)  |
| Hysteresis           | $<\pm 1\%$ RH   |
| Response Time        | $<10\text{s}$ ( $25^{\circ}\text{C}$ , in Slow Air)                     |
| Drift                | $<\pm 0.5\%$ RH/year  |

### Temperature Measurement

#### ELECTRICAL

|                           |  |
|---------------------------|--|
| Transmitter Voltage Power | 19.2~28.8 VAC or VDC   |
| Transmitter Current Power | 19.2~28.8 VDC (RL=500 $\Omega$ );<br>8.5~35 VDC (RL=0 $\Omega$ ) |
| Transmitter Output        | 4~20mA (2 Wires) or 0~10VDC (3 Wires)                            |
| Output Load               | $\leq 500\Omega$ (Current), $\geq 2\text{K}\Omega$ (Voltage)     |

#### TEMPERATURE PERFORMANCE

|   |  |
|---|--|
| Temperature Sensor Type                   | RTD or Thermistor, See Ordering Information  |
| Transmitter Accuracy (If Applicable)      | $<\pm 0.3^{\circ}\text{C}$ @ $5\sim 60^{\circ}\text{C}$ ( $<\pm 0.54^{\circ}\text{F}$ @ $41\sim 140^{\circ}\text{F}$ )   |
| Thermistor Accuracy (If Applicable)       | 10K $\Omega$ , Type III - $\pm 0.3^{\circ}\text{C}$ @ $25^{\circ}\text{C}$ ( $0.54^{\circ}\text{F}$ @ $77^{\circ}\text{F}$ )<br>10K $\Omega$ , Type II - $\pm 0.2^{\circ}\text{C}$ @ $25^{\circ}\text{C}$ ( $0.36^{\circ}\text{F}$ @ $77^{\circ}\text{F}$ )<br>20K $\Omega$ - $\pm 0.2^{\circ}\text{C}$ @ $25^{\circ}\text{C}$ ( $0.36^{\circ}\text{F}$ @ $77^{\circ}\text{F}$ )     |
| RTD Accuracy (If Applicable)              | 1K $\Omega$ Platinum - $\pm 0.2^{\circ}\text{C}$ @ $25^{\circ}\text{C}$ ( $0.36^{\circ}\text{F}$ @ $77^{\circ}\text{F}$ )<br>100 $\Omega$ Platinum - $\pm 0.2^{\circ}\text{C}$ @ $25^{\circ}\text{C}$ ( $0.36^{\circ}\text{F}$ @ $77^{\circ}\text{F}$ )<br>1K Ni $\Omega$ Nickel - $\pm 0.5^{\circ}\text{C}$ @ $25^{\circ}\text{C}$ ( $0.9^{\circ}\text{F}$ @ $77^{\circ}\text{F}$ ) |
| Temperature Transmitter Measurement Range | $-40\sim 60^{\circ}\text{C}$ ( $-40\sim 140^{\circ}\text{F}$ )   |
| Response Time                             | $<10\text{s}$  |

#### ENVIRONMENTAL

|                             |  |
|-----------------------------|--|
| Operating Temperature Range | $-20\sim 70^{\circ}\text{C}$ ( $-4\sim 158^{\circ}\text{F}$ )  |
| Storage Temperature         | $-30\sim 80^{\circ}\text{C}$ ( $-22\sim 176^{\circ}\text{F}$ ) |

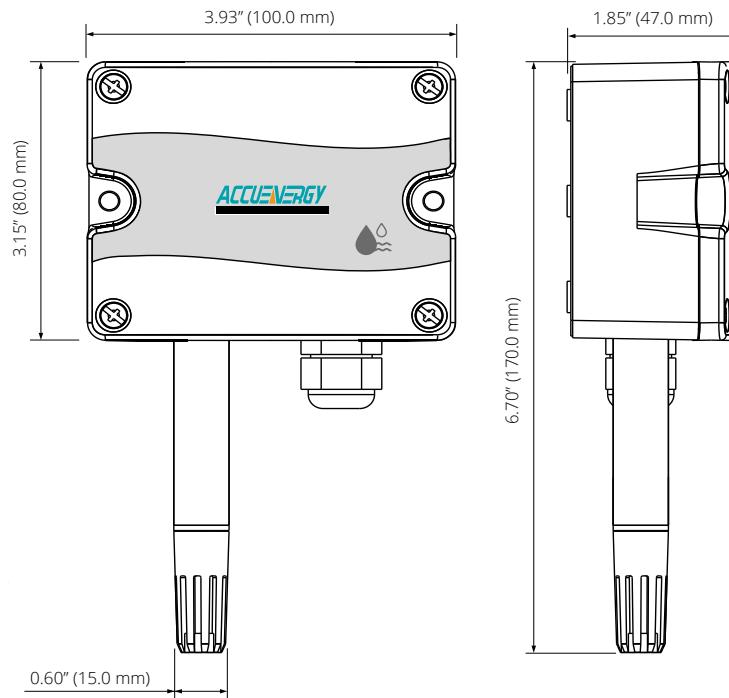
#### MECHANICAL

|                   |                             |
|-------------------|-----------------------------|
| Mounting          | Screw Surface Mount         |
| Wiring Connection | Push Button Terminal Blocks |
| Weight            | 240g (0.53 lbs)             |

#### CERTIFICATIONS/WARRANTY

|                    |                                      |
|--------------------|--------------------------------------|
| Enclosure Material | Fire Retardant Polycarbonate UL94V-0 |
| Protection         | IP65                                 |
| Agency Approvals   | CE                                   |
| Warranty           | 5 Years                              |

## Dimensions



## Ordering Information

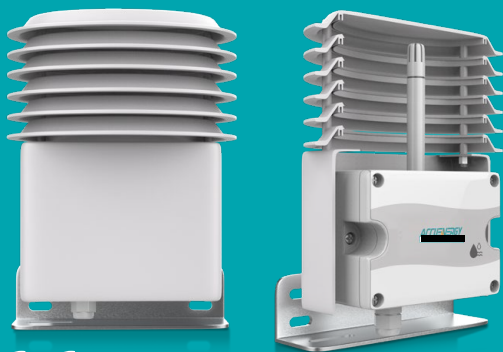
| Model                                     | - RH Analog Output             | - Temperature Analog Output    | - Temperature Sensor                            |
|---|--------------------------------|--------------------------------|---|
| AcuHUM-OA                                 | A: 4-20 mA Transmitter         | A: Resistive Thermistor or RTD | 01: 10KΩ, Type III Thermistor                   |
|   |                                |                                | 02: 10KΩ, Type II Thermistor                    |
|   | 03: 20KΩ Thermistor            |                                |   |
|   | 04: 1KΩ Platinum RTD, 2 Wires  |                                |   |
|   | 05: 100Ω Platinum RTD, 2 Wires |                                |   |
|   | 06: 1KΩ Nickel RTD, 2 Wires    |                                |   |
|   | A: 4-20 mA Transmitter         | B: 4-20mA Transmitter          | 07: XMTR, 1KΩ Platinum RTD -40-60°C (-40-140°F) |
|   |                                |                                | 08: XMTR, 1KΩ Platinum RTD Special Order †      |
|   | B: 0-10VDC Transmitter         | C: 0-10VDC Transmitter         | 07: XMTR, 1KΩ Platinum RTD -40-60°C (-40-140°F) |
|   |                                |                                | 08: XMTR, 1KΩ Platinum RTD Special Order †      |
| A: 4-20mA Transmitter                     | D: No Temperature Output       | 00: No Temperature Output      |   |
|   |                                |                                | B: 0-10VDC Transmitter                          |
| <b>Ordering Example: AcuHUM-OA-B-C-07</b> |                                |                                |   |

† **Important:** Special Order Span will increase lead times and may be subject to minimum order requirements.

Note: Selecting the "08 XMTR, 1KΩ RTD Other Span" temperature sensor option allows the transmitter to be calibrated within a -40°C to +100°C (-40°F to 212°F) measurement range. The custom range must be specified at the time of ordering.

# AcuHUM™ OAW Series

Outdoor Air Relative Humidity & Temperature  
Sensor with Weather Shield Datasheet



The AcuHUM OAW outdoor air humidity and temperature sensors is IP65 rated and reinforced with a weather shield to protect against harsh weather exposure for more accurate readings. The six-layered weather shield features natural ventilation, reducing the thermal effect of UV radiation, snow, and rain, improving response time, and producing accurate measurement for long-term outdoor conditions. The AcuHUM OAW sensors offer optional thermistor, RTD, or transmitter to provide temperature and RH readings in a single device.

## Features

- Weather shield for enhanced humidity sensor protection from harsh environmental conditions while directing air flow for more accurate measurements.
- IP65 enclosure protects RH sensor from ingress dust & water moisture, ideal for outdoor applications.
- $\pm 2\%$  (25°C, 20~80% RH) high-accuracy relative humidity measurement with optional temperature measurement up to 0.2°C (0.36°F) accuracy.
- Fast response of <10 seconds, and small humidity drift  $\leq \pm 0.5\%$  RH/year.
- 4-20mA and 0-10VDC output transmitter options ideal for different BAS controllers.
- 100Ω Platinum, 1KΩ Platinum/Nickel RTDs & 10KΩ Type II/Type III, 20KΩ thermistors available.
- Optional custom configuration for temperature measurement.



## Specifications

### Relative Humidity Measurement

#### ELECTRICAL

|               |  |
|---------------|--|
| Voltage Power | 19.2~28.8VAC or VDC                          |
| Current Power | 19.2~28.8VDC (RL=500Ω);<br>8.5~35VDC (RL=0Ω) |
| Output        | 4~20mA (2 Wires) or 0~10VDC (3 Wires)        |

#### RELATIVE HUMIDITY PERFORMANCE

|                      |   |
|----------------------|---|
| RH Sensor Type       | Digital Polymer                         |
| Accuracy             | +/-2% (25°C, 20~80%RH); +/-3% (0~95%RH) |
| Measurement RH Range | 0~100%                                  |
| Operating RH Range   | 0~95%RH (Non Condensing)                |
| Hysteresis           | <±1%RH                                  |
| Response Time        | <10s (25°C, in Slow Air)                |
| Drift                | <±0.5%RH/year                           |

### Temperature Measurement

#### ELECTRICAL

|                           |   |
|---------------------------|---|
| Transmitter Voltage Power | 19.2~28.8VAC or VDC                           |
| Transmitter Current Power | 19.2~28.8VDC (RL=500Ω);<br>8.5~35 VDC (RL=0Ω) |
| Transmitter Output        | 4~20mA (2 Wires) or 0~10VDC (3 Wires)         |
| Output Load               | ≤500Ω (Current), ≥2KΩ (Voltage)               |

#### TEMPERATURE PERFORMANCE

|  |  |
|--|--|
| Temperature Sensor Type                      | RTD or Thermistor, See Ordering Information  |
| Transmitter Accuracy<br>(If Applicable)      | <±0.4°C @ 5~60°C (<±0.72°F @ 41~140°F)   |
| Thermistor Accuracy<br>(If Applicable)       | 10KΩ, Type III - ±0.3°C@25°C (0.54°F @ 77°F)<br>10KΩ, Type II - ±0.2°C @ 25°C (0.36°F @ 77°F)<br>20KΩ - ±0.2°C @ 25°C (0.36°F @ 77°F)      |
| RTD Accuracy<br>(If Applicable)              | 1KΩ Platinum - ±0.2°C @ 25°C (0.36°F @ 77°F)<br>100Ω Platinum - ±0.2°C @ 25°C (0.36°F @ 77°F)<br>1KΩ Nickel - ±0.5°C @ 25°C (0.9°F @ 77°F) |
| Temperature Transmitter<br>Measurement Range | -40~60°C (-40~140°F)   |
| Response Time                                | <10s   |

#### ENVIRONMENTAL

|                                |                      |
|--------------------------------|----------------------|
| Operating Temperature<br>Range | -20~70°C (-4~158°F)  |
| Storage Temperature            | -30~80°C (-22~176°F) |

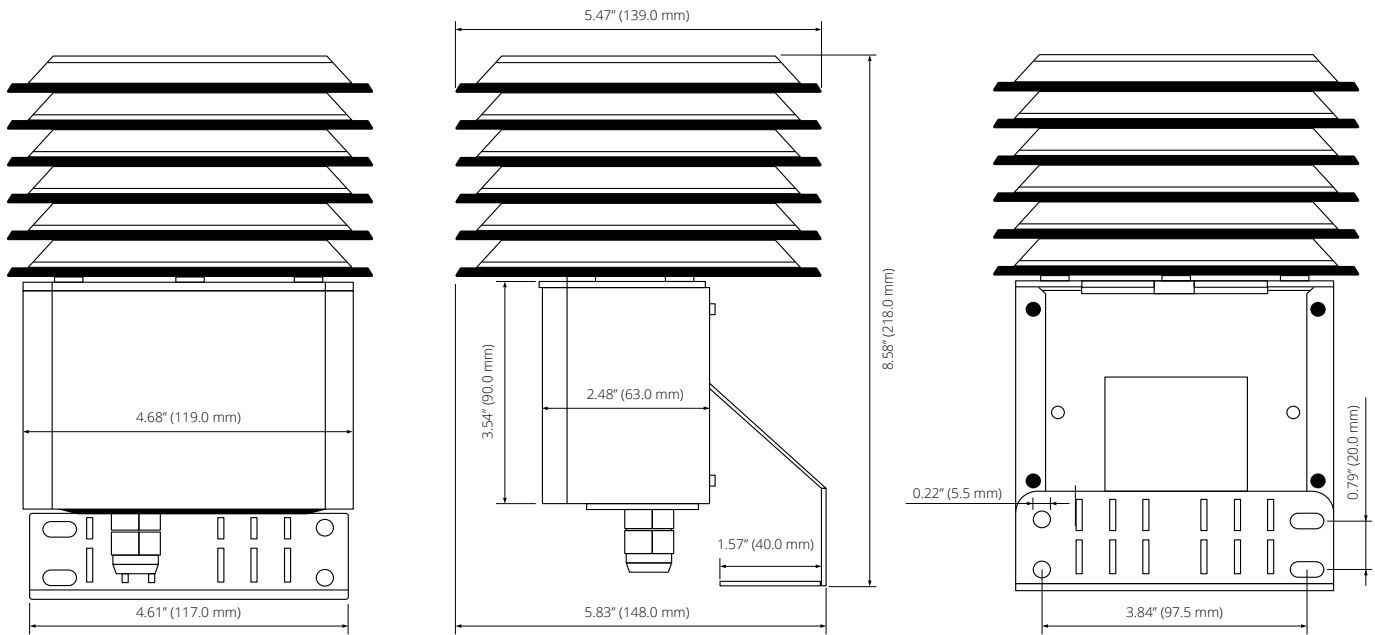
#### MECHANICAL

|                   |   |
|-------------------|---|
| Mounting          | 4-Screw L-Shape bracket for surface installation on vertical wall, flat roof, or round column with worm gear clamps (gear clamps not provided). |
| Wiring Connection | Push Button Terminal Blocks   |
| Weight            | 910g (2.00lbs)  |

#### CERTIFICATIONS/WARRANTY

|                    |   |
|--------------------|---|
| Enclosure Material | 6-layer anti-radiation weather shield: flame retardant, anti-ultraviolet, anti-oxidation PC+ABS UL94V-0 |
| Protection         | IP65  |
| Agency Approvals   | CE  |
| Warranty           | 5 Years   |

## Dimensions



## Ordering Information

| Model      | - RH Analog Output      | - Temperature Output           | - Temperature Sensor                   |
|------------|-------------------------|--------------------------------|--|
| AcuHUM-OAW | A: 4-20 mA Transmitter  | A: Resistive Thermistor or RTD | 01: 10KΩ, Type III Thermistor          |
|            | B: 0-10 VDC Transmitter |                                | 02: 10KΩ, Type II Thermistor           |
|            |                         |                                | 03: 20KΩ Thermistor                    |
|            |                         |                                | 04: 1KΩ Platinum RTD, 2 Wires          |
|            |                         |                                | 05: 100Ω Platinum RTD, 2 Wires         |
|            |                         |                                | 06: 1KΩ Nickel RTD, 2 Wires            |
|            | A: 4-20 mA Transmitter  | B: 4-20mA Transmitter          | 07: XMTR, 1KΩ RTD -40-60°C (-40-140°F) |
|            |                         |                                | 08: XMTR, 1KΩ RTD Special Order †      |
|            | B: 0-10VDC Transmitter  | C: 0-10VDC Transmitter         | 07: XMTR, 1KΩ RTD -40-60°C (-40-140°F) |
|            |                         |                                | 08: XMTR, 1KΩ RTD Special Order †      |
|            | A: 4-20mA Transmitter   | D: No Temperature Output       | 00: No Temperature Output              |
|            | B: 0-10VDC Transmitter  |                                |  |

**Ordering Example:** AcuHUM-OAW-A-A-02

† **Important:** Special Order Span will increase lead times and may be subject to minimum order requirements.

**Note:** Selecting the "08 XMTR, 1KΩ RTD Other Span" temperature sensor option allows the transmitter to be calibrated within a -40°C to +100°C (-40°F to 212°F) measurement range. The custom range must be specified at the time of ordering.