



# OEM Humidity Sensor

## Unit Mount

RoHS

### Model HU-921



- Ultra fast response cross-linked bulk polymer capacitive sensing element
- Proprietary hydrophobic and oleophobic ePTFE filter to protect the sensing element from wind-driven rain, snow, salt spray and other contaminants.
- Conformal coated and moisture sealed electronics
- Rugged 20% glass-filled low smoke UL-95-V-0 polycarbonate enclosure with external mounting bracket to accommodate uneven mounting surface
- NIST traceable  $\pm 3\%$  RH calibration accuracy
- Two temperature compensated output versions, 4-20 mA 2-wire or 0-10 VDC
- Conforms to EMC and RoHS standards

HU-921 is designed for humidification/dehumidification and economizer control on packaged roof-top air handlers. Humidity sensors are calibrated over 0 to 100%RH and offer  $\pm 3\%$  accuracy over 30 to 70%RH and are temperature compensated from  $-30^{\circ}\text{F}$  to  $130^{\circ}\text{F}$ . By limiting the accuracy over the useable range for controls, significant cost reductions can be provided to OEM manufacturers.

HU-921 humidity sensor is designed to handle 100% condensing humidity. The electronics are moisture sealed with an acrylic coating, and the sensing element is protected with an ePTFE (expanded Teflon) filter media. The sensor is designed to be factory or field installed in fresh air hoods, discharge or return air ducts of air handlers.

Rugged 20% glass-filled low smoke UL-95-V-0 polycarbonate enclosure, external mounting bracket to accommodate uneven mounting surface, and 1/4" quick disconnect terminals for wire harnesses are some of the features which make the HU-921 a reliable and cost-effective solution for OEM humidity and economizer controls.

HU-921 is available with more than 15 types of interchangeable NTC thermistors, precision platinum, nickel or balco RTDs for universal compatibility.



8189 Century Boulevard • Minneapolis, MN 55317-8002 • USA  
800-843-5116 • 952-556-4900 • Fax 952-556-4997  
sales@mamacsys.com • www.mamacsys.com

4200 Waterside Centre  
Solihull Parkway  
Birmingham • West Midlands  
B37 7YN • United Kingdom  
01384-271113 • Fax 01384-271114

1 Fullerton Road #02-01  
One Fullerton  
Singapore • 049213  
65-31581826 • Fax 65-31581826

4 Armiger Court, Unit 2  
Adelaide • S.A.  
5088 • Australia  
08-8395-4333 • Fax 08-8395-4433

675 Cochrane Drive  
East Tower • 6th Floor  
Toronto • Ontario  
L3R 0B8 • Canada  
905-474-9215 • Fax 905-474-0876

# HU-921

## HUMIDITY TRANSDUCER SPECIFICATIONS:

**Accuracy\*:**  $\pm 3\%$  RH (30% to 70% RH)  
**Range:** 0-100% RH  
**Hysteresis:**  $\pm 1\%$   
**Supply Voltage:** 12-40 VDC  
12-35 VAC (VDC output units only)  
**Compensated Temp Range:** -30°F to 130°F  
(-35°C to 55°C)  
**Load Impedance:** 1.5K ohms max. at 40 VDC  
(mA output units)  
1K ohms min.  
(VDC output units)

\* Includes non-linearity and non-repeatability

## PLATINUM RTD SENSOR SPECIFICATIONS:

**Accuracy:** 0.12% at 0°C  
**Resistance:** 100 or 1,000 ohm at 0°C  
**Standard:** DIN 43760  
**Heat Dissipation:** 3.0 mW/°C  
**R/T Characteristics:** Refer to TI.700-11  
(See Temperature Sensor section)  
**Operating Temp Range:** -30°F to 130°F  
(-35°C to 55°C)

## THERMISTOR SENSOR SPECIFICATIONS:

**Interchangeability:**  $\pm 0.2^\circ\text{C}$   
**Heat Dissipation:** 3.0 mW/°C  
**R/T Characteristics:** Refer to TI.700-11  
(See Temperature Sensor section)  
**Operating Temp Range:** -30°F to 130°F  
(-35°C to 55°C)

## GENERAL SPECIFICATIONS:

**Environmental:** 10-100%RH  
**Enclosure:** 20% glass filled polycarbonate  
**Bracket:** 18 Ga galvanized steel  
**Termination:** 1/4" quick disconnect terminals  
**Wire Size:** 12 Ga maximum  
**Weight:** 0.5 lbs. (.20 kg)

## CONFORMANCE & TESTING:

**RoHS Compliant**  
**EMC Testing:**  
BS EN 55022:1998, BS EN 55024:1998,  
EN 61000-3-3, EN 61000-4-2, EN 61000-4-3,  
EN 61000-4-4, EN 61000-4-5, EN 61000-4-6,  
EN 61000-4-11

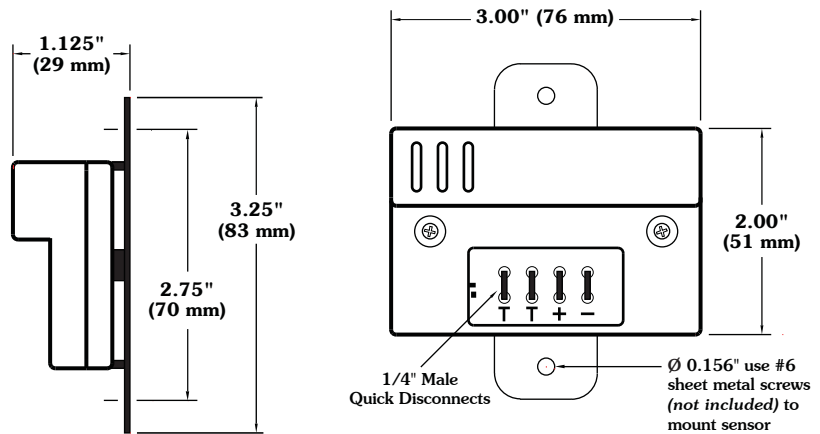
## ORDERING INFORMATION: HU-921-

Output	Sensor
<b>mA</b> (4-20 mA 2-wire)	<b>1</b> 100 ohm Platinum RTD
<b>VDC</b> (0-10 VDC)	<b>2</b> 1,000 ohm Nickel RTD (5000 PPM)
	<b>3</b> 1,000 ohm Platinum RTD
	<b>4</b> 1,000 ohm Nickel RTD (6000 PPM)
	<b>5</b> 1,000 ohm Balco RTD
	<b>7</b> 10,000 ohm NTC Thermistor (Type III)
	<b>8</b> 10,000 ohm NTC Thermistor (Carel)
	<b>10</b> 3,000 ohm NTC Thermistor
	<b>12</b> 10,000 ohm NTC Thermistor (Type II)
	<b>13</b> 5,000 ohm NTC Thermistor
	<b>14</b> 1,035 ohm Silicon PTC
	<b>15</b> 100,000 ohm NTC Thermistor
	<b>17</b> 20,000 ohm NTC Thermistor
	<b>18</b> 2,252 ohm NTC Thermistor
	<b>21</b> 1,800 ohm NTC Thermistor

**Example: HU-921-mA-3:** OEM Humidity Sensor  
(Unit Mount) with 4-20 mA output and 1,000 ohm  
Platinum RTD.

For **Resistance vs. Temperature Tables**, please refer  
to TI.700-11.

# HU-921



**WARRANTY:** MAMAC Systems, Inc. warrants its products to be free of defects in material and workmanship for a period of two (2) years from date of shipment. If a unit is malfunctioning, it must be returned to the factory for evaluation. A return authorization number (RMA) will be issued by the customer service department and this number must be written or prominently displayed on the shipping boxes and all related documents. The defective part should be shipped freight pre-paid to the factory. Upon examination by MAMAC Systems, Inc., if the unit is found to be defective, it will be repaired or replaced at no charge to the customer. However, this warranty is void if the unit shows evidence of being tampered with, damaged during installation, misapplied, misused, or used in any other operating condition outside of the unit's published specifications.

**MAMAC Systems, Inc. makes no other warranties or representations of any kind whatsoever, expressed or implied, except that of title. All implied warranties including any warranty of merchantability and fitness for a particular purpose are hereby disclaimed. User is responsible to determine suitability for intended use.**

**LIMITATIONS OF LIABILITY:** The remedies of buyer set forth herein are exclusive and the total liability of MAMAC Systems, Inc. with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the product upon which liability is based. **In no event shall MAMAC Systems, Inc. be liable for consequential, incidental or special damages.** MAMAC Systems, Inc. reserves the right to change any specifications without notice to improve performance, reliability, or function of our products.

Every precaution for accuracy has been taken in the preparation of this manual, however, MAMAC Systems, Inc. neither assumes responsibility for any omissions or errors that may appear nor assumes liability for any damages that result from the use of the product in accordance with the information contained in the manual.



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4 Armiger Court, Unit 2  
Adelaide • S.A.  
5088 • Australia  
08-8395-4333 • Fax 08-8395-4433

675 Cochrane Drive  
East Tower • 6th Floor  
Toronto • Ontario  
L3R 0B8 • Canada  
905-474-9215 • Fax 905-474-0876