

# Deluxe Duct & Outdoor Humidity Sensors

## HD & HO Series



**1% or 2% NIST, or Standard  
2%, 3%, or 5%**

### FEATURES

- Thin-film capacitive sensor element recovers from 100% saturation
- Fully interchangeable element to 1%, 2%, 3%, or 5% accuracy...no calibration (1% not available on HO models<sup>††</sup>)
- Replace element in the field...maintain accuracy and minimize downtime
- Duct sensor element can be serviced without disturbing conduit
- Polarity insensitive two-wire 4-20mA or 3-wire 0-5V/0-10VDC versions...flexible systems compatibility
- Potted circuitry prevents costly condensate shorts
- Calibration-free interchangeable NIST traceable HS element
- HS element is microprocessor profiled with on-board nonvolatile memory
- Multi-point digital calibration to NIST standards
- NIST certification available
- Minimizes field calibration downtime

### DESCRIPTION

**HD & HO Series** Deluxe humidity transmitters provide an ideal solution for measuring relative humidity in a wide range of conditions. All devices are equipped with a thin-film capacitive sensor that is easily replaceable in the field. These sensors are calibrated to NIST standards, with certificates available (see Ordering Information; choose "N" in NIST block). Temperature sensing options are also available. The duct mounted HD is encased in a die cast metal housing for extra strength. The outdoor HO housing is completely weather proof – the most rugged sensor available. All Deluxe HD and HO models come with a standard five-year warranty.<sup>†</sup>

### SPECIFICATIONS

**5 Year  
Warranty**

INPUT POWER	
<b>Voltage Model*</b>	12-30VDC/24VAC, 15mA max.
<b>mA Model*</b>	Loop powered 12-30VDC only, 30mA max.
OUTPUT POWER	
<b>Voltage Model</b>	3-wire, observe polarity
<b>mA Model</b>	2-wire, not polarity sensitive (clipped and capped)
HUMIDITY	
<b>HS Element</b>	Digitally profiled thin-film capacitive (32 bit mathematics) U.S. Patent 5,844,138†
<b>Accuracy at 25°C from 10-80% RH** (Multi-point calibration, NIST traceable)</b>	HD only: ±1% at 20-40% RH in mA output mode; (multi-point calibration, NIST traceable) all models: 2%, 3%, or 5% (specify)
<b>Temperature Effect, Duct Model</b>	±0.1% RH/°C above or below 25°C (typical)
<b>Temperature Effect, Outdoor Model</b>	4-20mA version: (0.0013x% RHx(T°C-25)); 0-5 V/0-10V versions: (0.0015x% RHx(T°C-25)) – (%RHx0.0008xabs(T°C-25))
<b>Scaling</b>	0-100% RH
<b>Hysteresis</b>	1.5% typical
<b>Linearity</b>	Included in accuracy spec.
<b>Reset Rate***</b>	24 hours
<b>Stability</b>	±1%@20°C (68°F) annually, for two years
TEMPERATURE	
<b>Optional Temp Transmitter Output</b>	Digital, 4-20mA (clipped & capped) or 0-5V/0-10V output
<b>HO Transmitter Accuracy</b>	±1.3°C (±2.3°F) typical;
<b>HD Transmitter Accuracy</b>	±0.5°C (1.0°F) typical
OPERATING ENVIRONMENT	
<b>Operating Humidity Range</b>	0 to 100% RH noncondensing
<b>Operating Temp Range</b>	-40° to 50°C (-40° to 122°F)

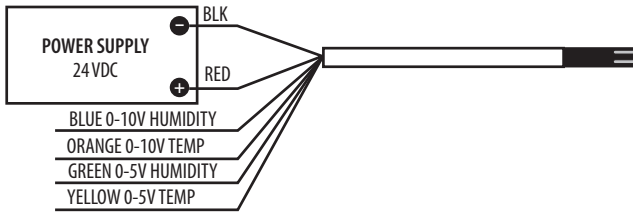
<sup>†</sup> All Deluxe models come with a standard five-year warranty. The HS sensing element has a 1-year warranty. The element is not a part of the 5-year product warranty.  
<sup>\*</sup> One side of transformer secondary is connected to signal common, so an Isolation transformer or dedicated power supply may be required.  
<sup>\*\*</sup> Specified accuracy with 24VDC supplied power with rising humidity. RTD/ Thermistors are not compensated for internal heating of product.  
<sup>\*\*\*</sup> Reset Rate is the time required to recover to 50% RH after exposure to 90% RH for 24 hours.  
 Shielded cabling is required for conformance to EMC standards. Technical information is available from factory upon request or is available on our website: [www.veris.com](http://www.veris.com).  
 EMC Conformance - CE Option: Low Voltage Directive 2006/95/EC and EMC Directive 2004/108/EC.  
 EMC Special Note: Connect this product to a DC distribution network or an AC/DC power adaptor with proper surge protection (EN 61000-6-1 specification requirements).

### APPLICATIONS

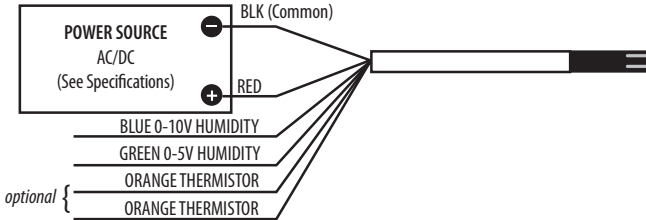
- Controlling HVAC systems for improved comfort & energy savings
- Museums, schools, printing shops, and other locations requiring humidity control
- Facilitating compliance with ASHRAE standards for environmental control and indoor air quality

**WIRING DIAGRAMS**

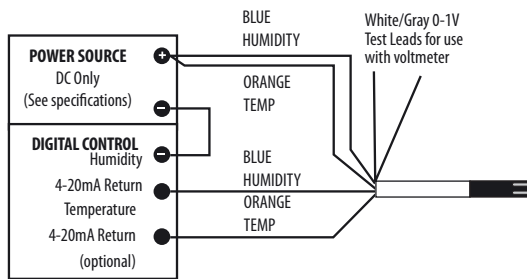
*HD/HO 0-5V/0-10V Temperature Transmitter Versions*



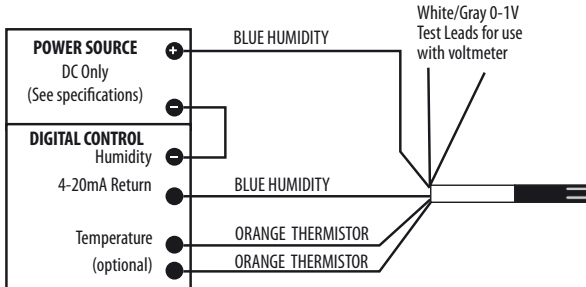
*HO (0-5V/0-10V Resistance Versions)*



*HD/HO 4-20mA Temperature Transmitter Versions*

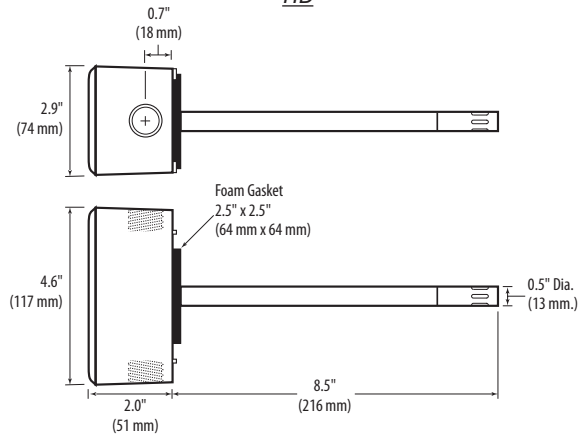


*HO 4-20mA Resistance Versions*

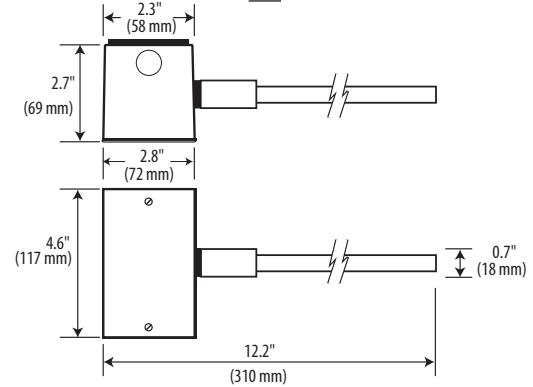


**DIMENSIONAL DRAWINGS**

*HD*



*HO*



**Humidity Transmitter Combination**

Sensor Type	Range	OPTION Temp Cert
<b>A</b> = Transmitter	<b>1</b> = -40° to 50°C (-40° to 122°F) <b>2</b> = 0° to 50°C (32° to 122°F)	<b>Blank</b> = None <b>1</b> = 1pt Cal <b>2</b> = 2pt Cal

**Humidity RTD/Thermistor Combination**

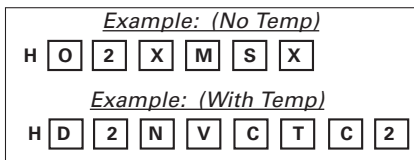
Sensor Type	OPTION Temp Cert
<b>B</b> = 100R Platinum, RTD <b>C</b> = 1k Platinum, RTD <b>D</b> = 10k T2, Thermistor <b>E</b> = 2.2k, Thermistor <b>F</b> = 3k, Thermistor <b>G</b> = 10k CPC, Thermistor <b>H</b> = 10k T3, Thermistor <b>J</b> = 10k Dale, Thermistor <b>K</b> = 10k with 11k shunt, Thermistor <b>M</b> = 20k NTC, Thermistor <b>N</b> = 1800 ohm TAC, Thermistor <b>Q</b> = 1uA/C, Linitemp <b>R</b> = 10k US, Thermistor <b>S</b> = 10k 3A 221, Thermistor <b>T</b> = 100k, Thermistor <b>U</b> = 20k "D", Thermistor <b>W</b> = 10k T2 high accuracy, Thermistor <b>Y</b> = 10k T3 high accuracy, Thermistor <b>Z</b> = 10k E1, Thermistor	<b>Blank</b> = None <b>1</b> = 1pt Cal <b>2</b> = 2pt Cal

**ORDERING INFORMATION**



Enclosure	Accuracy	NIST	Output	US or EU	Temp.
<b>H</b> <input type="checkbox"/>	<b>1</b> = 1%* <b>2</b> = 2% <b>3</b> = 3% <b>5</b> = 5%	<b>N</b> = NIST 1% & 2% only <b>X</b> = None 2%, 3%, 5% only	<b>M</b> = 4-20mA <b>V</b> = 0-5V/0-10VDC	<b>S</b> = Standard <b>C</b> = CE	<b>T</b> = Temp <b>X</b> = No Temp (Stop here)

\*1% not available on HO



**ACCESSORIES**

Water guard (AA42)

Replacement humidity element (HS)

