



HO Series

Outdoor Humidity Sensors 1%, or 2% NIST, or Standard 2%, 3%, or 5%

5 Year
Warranty

HO Series outdoor humidity transmitters provide outstanding installation savings, exceptional accuracy, long-term stability, and are the best in the industry for serviceability. The electronics are sealed inside the duct probe preventing failures resulting from condensation. The thin-film capacitive HS sensor elements are factory calibrated using NIST traceable calibration equipment, are field replaceable, and never require field calibration. Field replacement of the sensor element is a snap with the patented removable sensor.

Application Note:

Calculated dew point from combinaton RH/T sensor

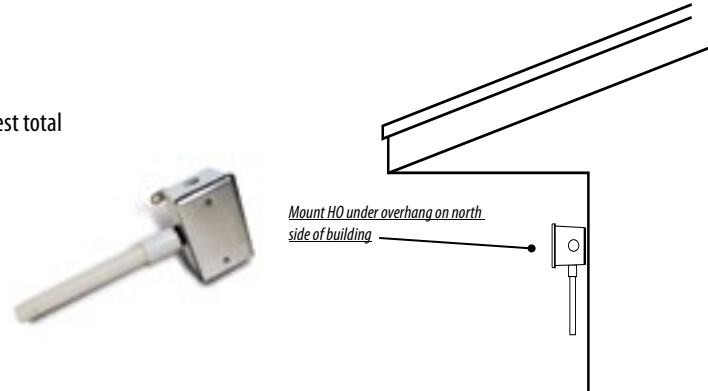
- Enthalpy control of outside air damper to allow only air with lowest total heat to enter cooling coil...saves energy
- Dew Point Calculation
 1. Convert temperature to °C
 $T^{\circ}C = 5/9 \times (T^{\circ}F - 32)$
 2. Compute saturation vapor pressure (Es)
 $Es = 6.11 \times 10 (7.5 \times T^{\circ}C / (237.7 + T^{\circ}C))$
 3. Compute actual vapor pressure (E)
 $E = (\%RH \times Es) / 100$
 4. Compute dewpoint
 $T^{\circ}C = (237.7 \times \ln(E) - 430.22) / (19.08 - \ln(E))$

APPLICATIONS

- Energy management systems
- HVAC economizer control
- RH/T combination sensor for calculated dew point

Calibration free...interchangeable digital HS element

- Replace digital sensor quickly without calibration...maintain accuracy and eliminate downtime
- Multi-point digital calibration to NIST standards
- Recovers from 100% saturation...no damage to sensor



ORDERING INFORMATION

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

Example:

HO

HO



Humidity Transmitter Combo

(Sensor Type)	(Range)	OPTION (Temp Cert)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A = Transmitter	1 = -58° - 122°F (-50° - 50°C) 2 = 32° - 122°F (0° - 50°C)	(blank = none) 1 = 1pt Cal 2 = 2pt Cal

Humidity RTD/Thermistor Combo

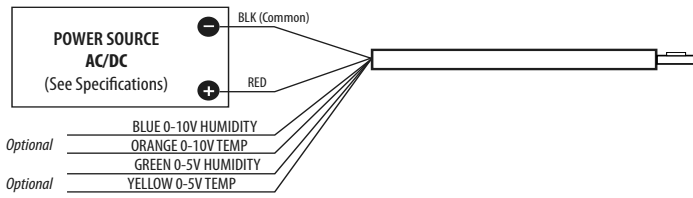
(Sensor Type)	OPTION (Temp Cert)
<input type="checkbox"/>	<input type="checkbox"/>
B = 100R Platinum, RTD C = 1k Platinum, RTD D = 10k T2, Thermistor E = 2.2k, Thermistor F = 3k, Thermistor G = 10k CPC, Thermistor H = 10k T3, Thermistor J = 10k Dale, Thermistor K = 10k w/11k with Shunt, Thermistor M = 20k NTC, Thermistor N = 1800 ohm TAC, Thermistor Q = 1uA/°C, Linitemp R = 10k US, Thermistor S = 10k 3A 221, Thermistor T = 100k, Thermistor	(blank = none) 1 = 1pt Cal 2 = 2pt Cal

ACCESSORIES

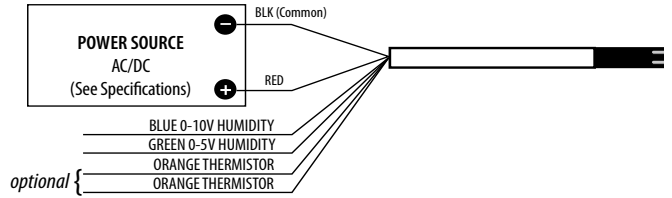
Water guard and other accessories, see page 234

WIRING DIAGRAMS

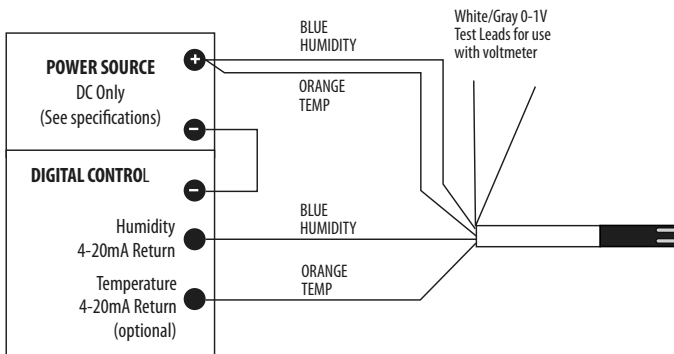
HO Series Outside Air (0–5V/0–10V Temperature Transmitter Versions)



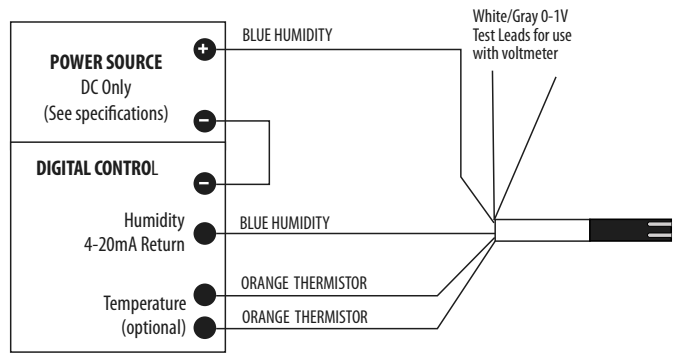
HO Series Outside Air (0–5V/0–10V Resistance Versions)



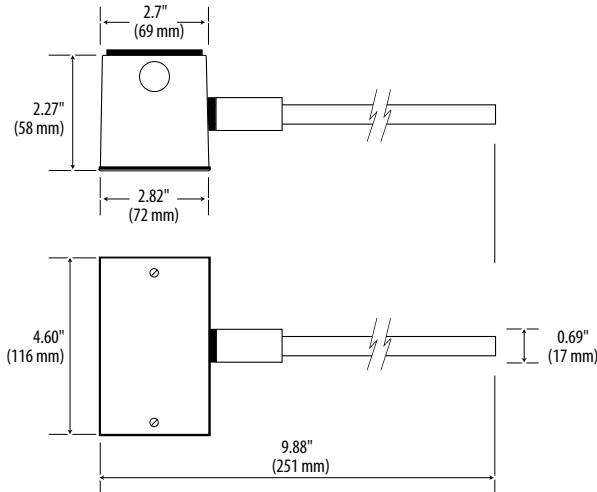
HO Series Outside Air (4-20mA Temperature Transmitter Versions)



HO Series Outside Air (4-20mA Resistance Versions)



DIMENSIONAL DRAWINGS



SPECIFICATIONS

HS Element	Digitally profiled thin-film capacitive (32-bit mathematics) U.S. Patent No. 5,844,138
Accuracy	±1%, ±2%, ±3%, or ±5% respectively @ 0 to 90% RH% ; Multi-point calibration, NIST traceable (±5% 2-point cal)
Reset Rate*	24 hours
Stability	±1% @ 20°C (68°F) annually, for two years
Operating Humidity Range	0 to 100% RH
Temperature Coefficient	+0.15% RH/°C below 25°C; -0.15% RH/°C above 25°C (77°F), Typical
Analog Output	4-20mA version; 2-wire, polarity insensitive, (clipped and capped); 0-5V/0-10V versions; 3-wire, observe polarity
Scaling	0–100% RH
Input Power	4-20mA version; loop powered 12-30VDC only, 30mA max.; 0-5V/0-10V versions; 12 (15 for 0-10V)-30VDC/24VAC, 15mA max.
Optional Temperature Transmitter Output	Digital, 4-20mA or 0-5V/0-10V output; accuracy ±0.5°C (± 1°F)

*Reset Rate is the time required to recover to 50% RH after exposure to 90% RH for 24 hours.

One side of transformer secondary is connected to signal common, so an Isolation transformer or dedicated power supply may be required. 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