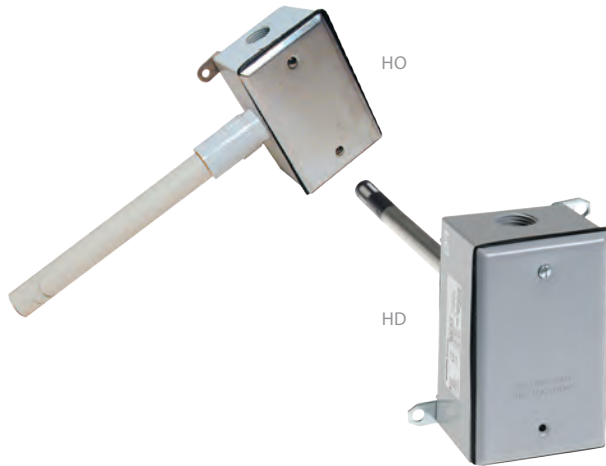


HD & HO SERIES

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



HD and 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.[†]

SPECIFICATIONS

INPUT POWER

Voltage Model*	Class 2; 12 to 30 Vdc/24 Vac, 15 mA max.
mA Model	Class 2; Loop powered 12 to 30 Vdc only, 30 mA max.

OUTPUT

Voltage Model	3-wire, observe polarity
mA Model	2-wire, not polarity sensitive (clipped and capped)

HUMIDITY

HS Element ^{††}	Digitally profiled thin-film capacitive (32-bit mathematics) U.S. Patent 5,844,138
Accuracy at 25°C from 10-80% RH** (Multi-point calibration, NIST traceable)	HD only: $\pm 1\%$ at 20 to 40% RH in mA output mode; (multi-point calibration, NIST traceable) All models: 2%, 3%, or 5% (specify)
Temperature Effect, Duct Model	$\pm 0.1\%$ RH/°C above or below 25 °C (typical)
Temperature Effect, Outdoor Model	4 to 20 mA version: $(0.0013 \times \%RH \times (T^{\circ}C - 25))$; 0-5V/0-10V versions: $(0.0015 \times \%RH \times (T^{\circ}C - 25)) - (\%RH \times 0.0008 \times \text{abs}(T^{\circ}C - 25))$
Scaling	0 to 100% RH
Hysteresis	1.5% typical
Linearity	Included in accuracy spec.
Reset Rate***	24 hours
Stability	$\pm 1\%$ @ 20 °C (68 °F) annually, for two years

Sensor element

Thin-film capacitive sensor element recovers from 100% saturation

Accuracy

Fully interchangeable element to 1%, 2%, 3%, or 5% accuracy...no calibration

Field replaceable

Replace element in the field... maintain accuracy and minimize downtime

Easy servicing

Duct sensor element can be serviced without disturbing conduit

Potted circuitry

Prevents costly condensate shorts

Flexibility

Polarity insensitive, two-wire 4 to 20 mA or 3-wire 0-5/0-10 Vdc versions...flexible systems compatibility...save time in the field, stock fewer devices

APPLICATIONS

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

TEMPERATURE

Optional Temp. Transmitter Output	Digital, 4 to 20 mA (clipped & capped) or 0-5/0-10 V output
HO Transmitter Accuracy	$\pm 1.3^{\circ}C$ ($\pm 2.3^{\circ}F$) typical;
HD Transmitter Accuracy	$\pm 0.5^{\circ}C$ ($1.0^{\circ}F$) typical

OPERATING ENVIRONMENT

Operating Humidity Range	0 to 100% RH non-condensing
Operating Temp. Range	-40 to 50 °C (-40 to 122 °F)

WARRANTY

Limited Warranty	5 years [†]
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AGENCY APPROVALS



[†] 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.

^{††} The CE mark indicates RoHS2 compliance. Please refer to the CE Declaration of Conformity for additional details.

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

** Specified accuracy with 24 Vdc supplied power with rising humidity. RTD/Thermistors are not compensated for internal heating of product.

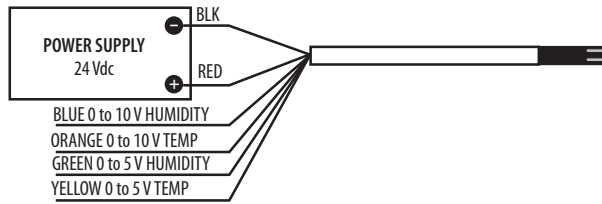
*** Reset Rate is the time required to recover to 50% RH after exposure to 90% RH for 24 hours.

Shielded cabling is required for conformance to EMC standards. Technical information is available from the factory upon request or from www.calcert.com
EMC Conformance - CE Option: Low Voltage Directive 2014/35/EU and EMC Directive 2014/30/EU.

EMC 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).

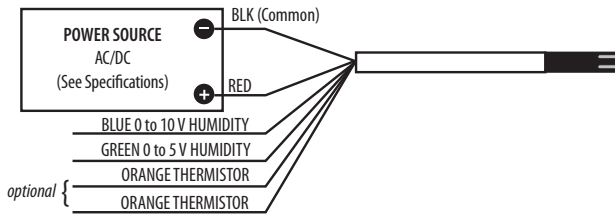
HD/HO (0-5V/0-10V TEMPERATURE TRANSMITTER VERSIONS)

Wiring Diagram



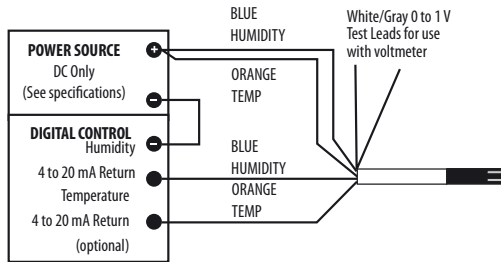
HO (0-5V/0-10V RESISTANCE VERSIONS)

Wiring Diagram



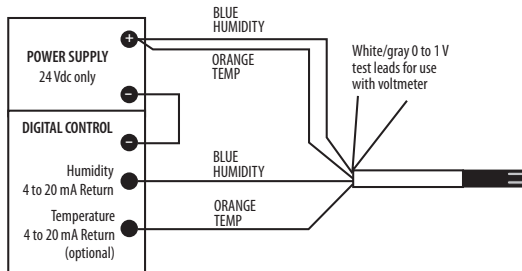
HD/HO (4-20 mA TEMPERATURE TRANSMITTER VERSIONS)

Wiring Diagram



HO (4-20 mA RESISTANCE VERSIONS)

Wiring Diagram



ORDERING INFORMATION

Enclosure	Accuracy	NIST	Output	US or EU	Temp.
H ☐	☐	☐	☐	☐	☐
D = RH Duct O = Outdoor	1 = 1%* 2 = 2% 3 = 3% 5 = 5%	N = NIST 1% & 2% only X = None 2%, 3%, 5% only	M = 4 to 20 mA V = 0-5V/0-10 Vdc	S = Standard C = CE	T = Temp X = No Temp (Stop here)

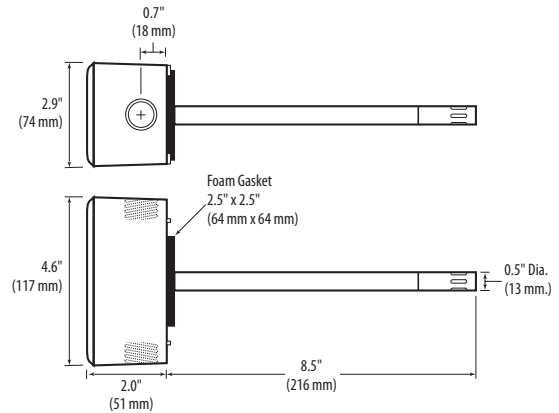
*1% not available on HO.

** Not available with W and Y high-accuracy thermistors.

Examples
Temp:
H ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
No Temp:
H ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

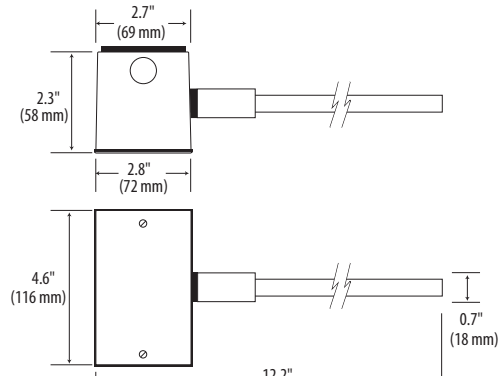
HD

Dimensional Drawing



HO

Dimensional Drawing



Humidity Transmitter Combination

Sensor Type	Range	OPTION Temp. Cert
☐ = Transmitter	1 = -40 to 50 °C (-40 to 122 °F) 2 = 0 to 50 °C (32 to 122 °F)	Blank = None 1 = 1pt cal 2 = 2pt cal

Humidity RTD/Thermistor Combination

Sensor Type	OPTION Temp. Cert
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 with 11k 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 U = 20k "D", Thermistor W = 10k T2 high accuracy, Thermistor Y = 10k T3 high accuracy, Thermistor	Blank = None 1 = 1pt cal** 2 = 2pt cal**