HUMIDITY MONITORING

Veris Industries offers a complete line of sensors for commercial/industrial relative humidity monitoring applications. Our sensors include a factory-calibrated humidity sensing element, fully replaceable (on deluxe models) for long-term cost savings. All humidity sensors provide superior accuracy, excellent stability, and easy serviceability. Accuracy choices include 2%, 3%, and 5%, with 1% or 2% NIST traceability available on selected units. LCD displays are available on some models for easy viewing. Add temperature sensing for greater application flexibility.

MODEL	DESCRIPTION	PAGE
HD/HO	Deluxe Duct and Outdoor Humidity Sensors	131
HWL	Deluxe Wall Humidity Sensors	133
HWxP	Deluxe Wall Humidity and Temperature Sensors, Protocol Communication	135
HED	Standard Duct Humidity Sensors	137
HEW	Standard Wall Humidity Sensors	139
HN/HP	Specialty Humidity Sensors	141
HS	Replaceable Humidity Element	143

HUMIDITY SENSOR SELECTION GUIDE

	WALL MOUNT	DUCT MOUNT	OUTDOOR MOUNT	PROBE
Analog Output	HEW page 139	HD, HED pages 131, 137	HO page 131	HN/HP page 141
Protocol Communication	HWxP page 135			
NIST Traceable Accuracy Down to 1%	HWL page 133	HD page 131	HO page 131	HN/HP page 141
Resistive Temperature Sensing	HWL page 133	HD page 131	HO page 131	HN/HP page 141
LCD Display	HWL, HWLP pages 133, 135			

Maintain Ideal Environmental Conditions, Minimizing Energy Use

HD Duct Mount Humidity Sensor

Flexible System Compatibility
Polarity insensitive, two-wire 4-20 mA or 3-wire 0-5/0-10 Vdc.

No Calibration
Fully interchangeable element to 1%, 2%, 3%, or 5% accuracy.

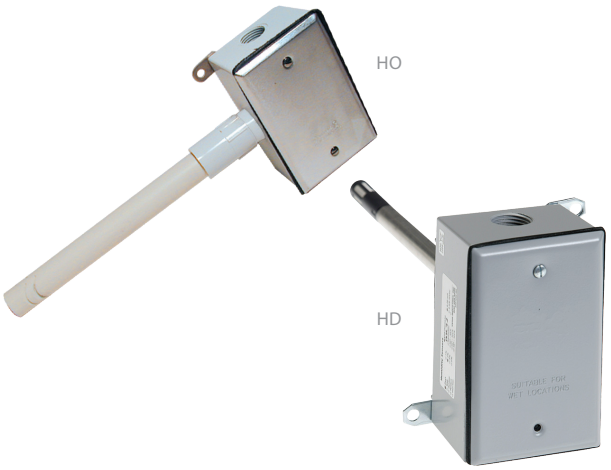
Replaceable Element
Sensor element can be serviced without disturbing conduit.

Interested in learning more about the innovative HD capablities and applications?
Contact a Humidity Sensors Specialist today: 800.354.8556 or at sales@veris.com
See Product Specifications on page 131

VERIS INDUSTRIES™

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.†

Sensor element

Thin-film capacitive sensor element recovers from 100% saturation

Easy servicing

Duct sensor element can be serviced without disturbing conduit

Accuracy

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

Potted circuitry

Prevents costly condensate shorts

Field replacable

Replace element in the field… maintain accuracy and minimize downtime

Flexibility

Polarity insensitive, two-wire 4 to 20 mA or 3-wire 0-5/0-10 Vdc versions…flexible systems compatibity…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

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: ±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	±0.1% RH/°C above or below 25 °C (typical)
Temperature Effect, Outdoor Model	4 to 20 mA version: (0.0013x%RHx(T°C-25)); 0-5V/0-10V versions: (0.0015x%RHx(T°C-25))–(%RHx0.0008xabs(T°C-25))
Scaling	0 to 100% RH
Hysteresis	1.5% typical
Linearity	Included in accuracy spec.
Reset Rate***	24 hours
Stability	±1%@20 °C (68 °F) annually, for two years
TEMPERATURE	
Optional Temp. Transmitter Output	Digital, 4 to 20 mA (clipped & capped) or 0-5/0-10 V output
HO Transmitter Accuracy	±1.3 °C (±2.3 °F) typical;
HD Transmitter Accuracy	±0.5 °C (1.0 °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 †

AGENCY APPROVALS

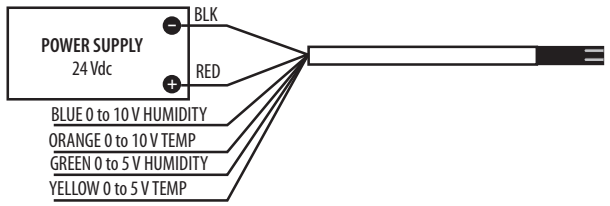
CE††

† 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 the Veris website at www.veris.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).

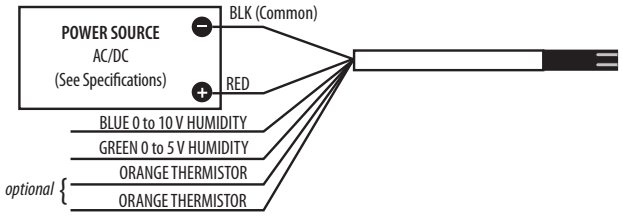
HD/HO (0-5V/0-10V TEMPERATURE TRANSMITTER VERSIONS)

Wiring Diagram



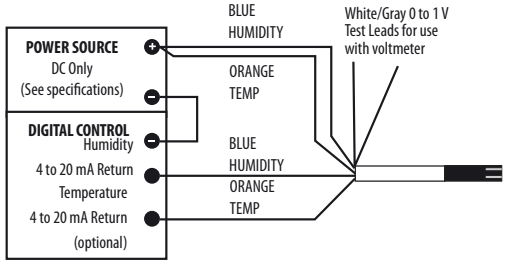
HO (0-5V/0-10V RESISTANCE VERSIONS)

Wiring Diagram



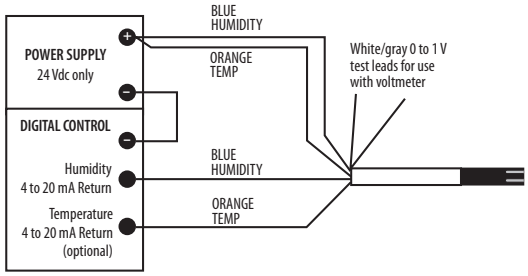
HD/HO (4-20 mA TEMPERATURE TRANSMITTER VERSIONS)

Wiring Diagram



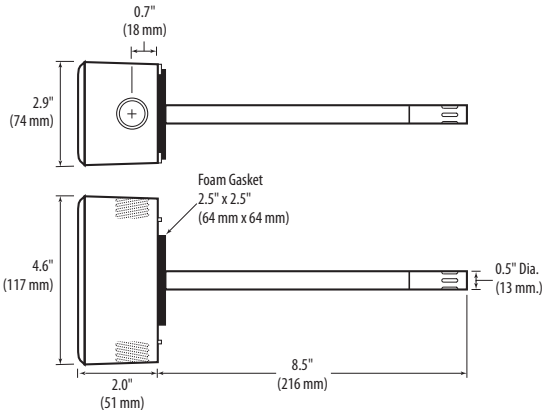
HO (4-20 mA RESISTANCE VERSIONS)

Wiring Diagram



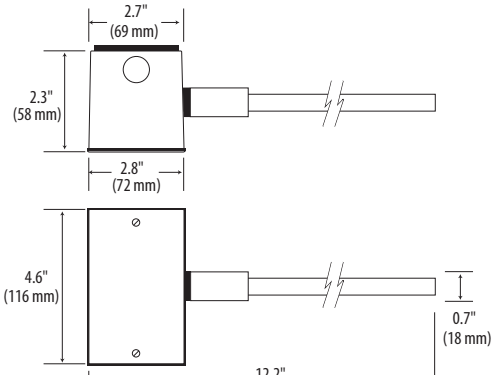
HD

Dimensional Drawing



HO

Dimensional Drawing



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	D	2	N	V	C	T	C	2

No Temp:

H	O	2	X	M	S	X

Humidity Transmitter Combination

Sensor Type	Range	OPTION Temp. Cert
A = 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**

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HW SERIES

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

HWL

HW Series deluxe humidity transmitters provide an ideal solution for measuring relative humidity in all 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 wall-mounted HW model features a low-profile housing with an optional LCD display for easy visibility. All Deluxe models come with a standard five-year warranty. †

Sensor element

Thin-film capacitive sensor element recovers from 100% saturation

Field replacable

Replace element in the field… maintain accuracy and minimize downtime

Interchangable element

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

On-board memory

HS element is microprocessor profiled with on-board non-volatile memory

Flexible

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

Calibration free

Calibration-free interchangeable NIST traceable HS element

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

SPECIFICATIONS

INPUT POWER	
4 to 20 mA Mode	Class 2; Loop powered 12 to 30 Vdc only, 30 mA max. (observe polarity)
0-5/0-10 V Mode*	Class 2; 12 to 30 Vdc/24 Vac, 15 mA max. (observe polarity)
HUMIDITY	
HS Element†	Digitally profiled thin-film capacitive (32-bit mathematics) U.S. Patent 5,844,138
Accuracy at 25 °C from 10 to 80% RH**	±1% at 20 to 40% RH in mA output mode; (multi-point calibration, NIST traceable) ±2%, 3%, or 5% models; ±1% at 12 to 60% RH in voltage output mode; ±1% at 12 to 60% RH in mA output mode with temp transmitter
Reset Rate***	24 hours
Stability	±1%@20 °C (68 °F) annually, for two years
Operating Humidity Range	0 to 100% RH non-condensing
Hysteresis	1.5% typical
Linearity	Included in accuracy spec.
Temperature Coefficient	±0.1% RH/°C above or below 25 °C (typical)
Analog Output	4 to 20 mA mode: 2-wire, not polarity sensitive (clipped and capped); 0-5/0-10 V mode: 3-wire, observe polarity
Scaling	0 to 100% RH
Operating Temp Range	10 to 35 °C (50 to 95 °F)
TEMPERATURE	
Temp Transmitter Option	Digital, 4 to 20 mA (clipped and capped) or 0-5/0-10 V output; accuracy ±0.5 °C (±1 °F) typical
Operating Temp Range	10 to 35 °C (50 to 95 °F and 0 to 50 °C (32 to 122 °F) (switchable)
WARRANTY	
Warranty	5 years †

AGENCY APPROVALS

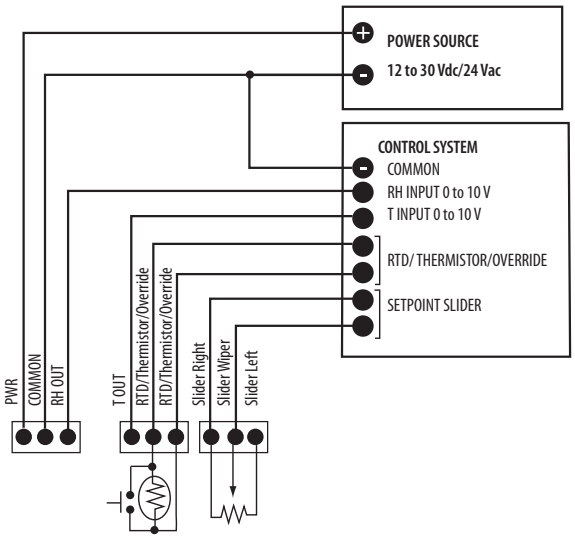
CE †† Available

† 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 24VDC 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 factory upon request or is available on our website: www.veris.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).

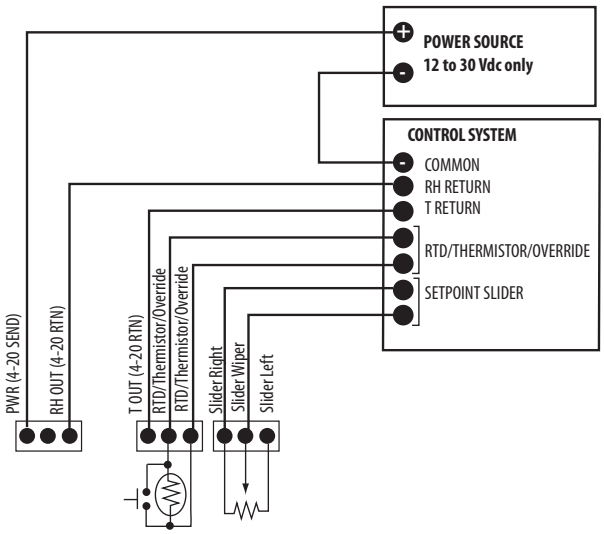
HW VOLTAGE OUTPUT (3-WIRE, 0-5V/0-10V)

Wiring Diagram



HW CURRENT OUTPUT (2-WIRE, 4 TO 20 mA)

Wiring Diagram



ORDERING INFORMATION

HW [ ] [ ] [ ] [ ] [ ] [ ]

Display	Accuracy	NIST	US or EU	Temp	Sensor Type
L = LCD	1 = 1% 2 = 2% 3 = 3% 5 = 5%	N = NIST (1% & 2% only) X = No (2%, 3%, & 5% only)	S = Standard C = CE	T = Temp‡ X = No Temp (Stop here)	A = Transmitter: 10 to 35 °C (50 to 95 °F) & 0 to 50 °C (32 to 122 °F) (switchable) 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 T = 100k, Thermistor U = 20k "D", Thermistor W = 10k T2 high accuracy, Thermistor Y = 10k T3 high accuracy, Thermistor

Options Available

Temp Cal Cert	Option	Value	Housing
X = No cert 1 = 1pt cal* 2 = 2pt cal*	1 = Push Button Override 2 = Set Point Slider 3 = Push Button Override and Set Point Slider	A = 1k F = 10k G = 20k K = 50k M =100k	Blank = Cloud white B = Black

HW [ ] [ ] [ ] [ ] [ ] [ ]

Display	Accuracy	NIST	US or EU	Temp.	Sensor Type
L = LCD	1 = 1% 2 = 2% 3 = 3% 5 = 5%	N = NIST (1% & 2% only) X = No (2%, 3%, & 5% only)	S = Standard C = CE	T = Temp‡ TA = Transmitter only D = Transmitter & resistive element X = No Temp (Stop here)	None = Select for TA temp option only 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 T = 100k, Thermistor U = 20k "D", Thermistor W = 10k T2 high accuracy, Thermistor Y = 10k T3 high accuracy, Thermistor

Options Available

Temp Cal Cert	Option	Value	Housing
X = No cert 1 = 1pt cal* 2 = 2pt cal*	1 = Push Button Override 2 = Set Point Slider 3 = Push Button Override and Set Point Slider	A = 1k F = 10k G = 20k K = 50k M =100k	Blank = Cloud white B = Black

‡ In order for unit to display both temp and RH, use the TA or D temp selection.
Temp displayed on LCD is read from temperature transmitter, not resistive element. If only the resistive output is selected for temp. output, LCD will not display temp.
* Not available with W and Y high-accuracy thermistors.

Examples:

HW	L	2	N	C	T	A	Stop Here		
HW	L	2	N	C	T	C	2	2	F
HW	X	5	X	S	X	Stop Here			

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HW PROTOCOL SERIES

Modbus and BACnet Protocol Communication

HWLP

HW Protocol Series Deluxe humidity transmitters provide an ideal solution for measuring relative humidity in all 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.

The HWLP features embedded BACnet and Modbus communication protocols with humidity and temperature sensing capability. The setpoint slider and pushbutton override options offer additional local control.

The wall-mounted HWLP features a low-profile housing with an LCD display for local indication. All models come with a standard five-year warranty. †

SPECIFICATIONS

INPUT POWER	
Voltage Model	Class 2; 12 to 30 Vdc, 24 Vac; 100 mA max.
Housing	
Material	High-impact ABS plastic , UL 94 VO
COMMUNICATION	
Protocol	BACnet or Modbus (selectable)
Connection	2-wire RS-485
Data Rate	9600, 19200, 38400, 57600 (Modbus), bps (selectable); 9600, 19200, 38400, 76800 (BACnet), bps (selectable)
Parity	None/Odd/Even (selectable-Modbus); None (BACnet)
Address Range	1 to 127
HUMIDITY	
HS Element*	Replaceable digitally profiled thin-film capacitive; (32-bit mathematics); U.S. Patent 5,844,138
Accuracy**	±2% from 10 to 80% RH; NIST traceable multi-point calibration
Reset Rate***	24 hours
Stability	±1% @20°C (68°F) annually for two years
Hysteresis	1.5% typical
Operating Humidity Range	0 to 100% RH non-condensing
Operating Temp. Range	10 to 35 °C (50 to 95 °F)
Temperature Coefficient	±0.1% RH/°C above or below 25 °C (typical)
OPERATING ENVIRONMENT	
Operating Temp. Range	10 to 35 °C (50 to 95 °F)
TEMPERATURE TRANSMITTER OPTION	
Sensor Type	Solid-state, integrated circuit
Accuracy	±0.5 °C (±0.9 °F) typical
Resolution	0.1 °C (0.2 °F)
Range	10 to 35 °C (50 to 95 °F)
Setpoint Slider Resolution Option	1% full scale
Override Button Option	Remotely readable and resetable
WARRANTY	
Limited Warranty	5 years †
AGENCY APPROVALS	

CE ††

BACnet & Modbus

Embedded BACnet and Modbus communication protocols… compatible with many existing control systems

Local control

Pushbutton override capability to the building control system… local control in individual rooms to maximize comfort

RH & temperature

Humidity and temperature sensors in one device at one address… provides more information and maximizes system capacity

Self-calibration algorithm

Innovative self-calibration algorithm…maximizes performance. Field calibratable.

Sensor element

Thin-film capacitive sensor element recovers from 100% saturation

Multiple baud rates

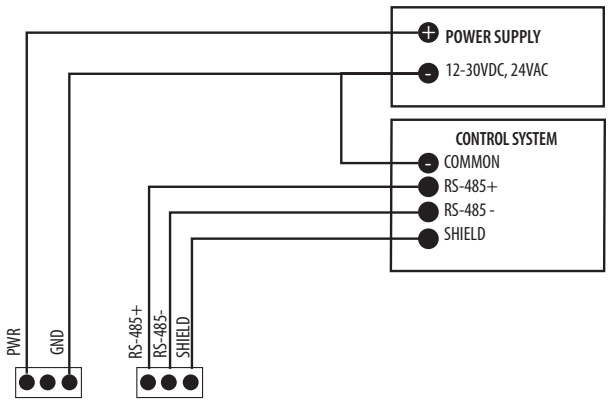
Configurable to many baud rates

APPLICATIONS

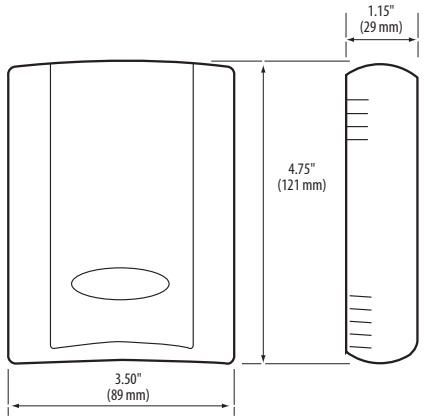
- Office buildings, schools, or other systems utilizing BACnet or Modbus protocol

† 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.
*The HS sensing element has a 1-year warranty. The element is not a part of the 5-year product warranty.
** Specified accuracy with 24 Vdc supplied power with rising humidity.
*** Reset rate is the time required to recover to 50% RH after exposure to 90% RH for 24 hours.
Note: RTD/Thermistors in wall packages are not compensated for internal heating of product.
EMC Conformance: Low voltage directive 2014/35/EU & EMC directive 2014/30/EU.
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)

WIRING DIAGRAM



DIMENSIONAL DRAWING



BACNET DESCRIPTIONS

Standard Object Types Supported

OBJECT TYPE	SUPPORTED OPTIONAL PROPERTIES	WRITABLE PROPERTIES
Analog Input -- AI	Description,† Reliability	
Analog Value -- AV	Description†	Present_Value
Binary Value – BV	Description†	Present_Value
Device -- DEV	Description,† Location	APDU_Timeout, Description, Location, Max_Master, Object_Identifier, Object_Name

† Description is the same as the Object_Identifier. Reliability is "No Sensor" if no sensor is installed (applies to humidity, temperature, and slider).

Device Objects Table

OBJECT NAME	TYPE & INSTANCE	OBJECT PROPERTY	DESCRIPTION
HWxPxxx	Device 133nnn	Object_Identifier (R/W)	Unique value where nnn initially is MS/TP
		Object_Name (R/W)	Unique name, initially a combination of model and serial number. Maximum length is 64 characters
		APDU_Timeout	Default is 3000, maximum value is 60000
		Max_Master	Default is 127
		Description	Maximum length is 64 characters
		Location	Maximum length is 64 characters

Objects Table

OBJECT NAME	TYPE & INSTANCE	DESCRIPTION OF PRESENT_VALUE PROPERTY
Humidity	AI 1	Humidity in percent
Temperature	AI 2	Temperature in Fahrenheit or Celsius
Slider	AI 3	Slider position in percent.
Device_Instance	AV 1	Alternative way to change object_identifier property of device. A negative value will restore the default device instance (133nnn). Fractional values are truncated.
Temp_Offset	AV 2	Temperature offset. Value rounded to nearest tenth of a degree. Units are current units. Initial value is 0.
RH_Offset	AV 3	Relative Humidity offset. Value rounded to the nearest tenth of a percent. Initial value is zero.
Fahrenheit	BV 1	1 if temperature in Fahrenheit, 0 if in Celsius. Initially 1.
Override	BV 2	1 if override button pressed. Store 0 to reset. Initially 0. Volatile.

ORDERING INFORMATION

	Local Display	Protocol	RH Option	Temp. Option	Temp. Cal. Cert.	Option	Housing
HW	☐	P	☐	☐	☐	☐	☐
	L = LCD X = No Display	= Protocol	1 = RH 1% NIST 2 = RH 2% NIST H = RH 2%	X = No temp. T = Temp. transmitter	X = None 1 = 1 pt. cal. cert.‡ 2 = 2 pt. cal. cert.‡	Blank = None 1 = Pushbutton override 2 = Set point slider 3 = Pushbutton override + set point slider	Blank = Cloud white B = Black

Example:

HW	L	P	H	T	X	3

‡ Only available if temperature option is selected.

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HED SERIES

2%, 3%, and 5% Accuracies

HED

RH & temperature

Monitor humidity and temperature with a single device… reduces installation costs

Easy hook-up

Large cage clamp terminal blocks…easy hook-up with no wire nuts

Sensor options

Semiconductor temperature transmitter, or popular thermistor/RTD sensors available

Embedded circuitry

Circuitry is embedded in the probe for durability and protection

No lost screws

Tool-less gasketed entry lid

HED Standard Series duct mount humidity transmitters offer high performance in an easy to install housing at an affordable price. The thin-film capacitive sensor element provides high accuracy and performance, great long-term stability, and full recovery from saturation. Temperature sensing options are also available.

The duct-mounted HED includes a rugged all plastic housing with a tool-less gasketed entry lid, large cage clamp terminal blocks, and sturdy ABS material. All Standard models come with a standard one-year warranty.

APPLICATIONS

- HVAC economizer control
- Managing energy systems
- Facilitating ASHRAE standards for environmental control

SPECIFICATIONS

INPUT POWER	
Voltage Version	Class 2; 12 to 24 Vdc or 24 Vac
mA Version	Class 2; 12 to 24 Vdc
AC Voltage Tolerance	±10%
AC Frequency	50/60 Hz
Max. Inrush Current after 1 msec (mA version)	25 mA
OUTPUT	
mA Output	4 to 20 mA, 2-wire, not polarity sensitive
mA Max. Loop Resistance	500 Ω at 24 Vdc input voltage; 250 Ω at 12 Vdc input voltage
Voltage Output	0 to 5 V or 0 to 10 V (jumper selectable), observe polarity
Voltage Min. Load Resistance	5 kΩ
Voltage Min. Sinking Current	0.2 mA
HUMIDITY	
RH Element	Digitally profiled thin-film capacitive, non-removable
Accuracy	±2%, 3%, or 5% (10 to 90% RH, 20 to 30 °C)
Temp Effect (Outside 20° to 30°C)	≤0.1% RH per °C
Response Time (to 90% change at 20°C)	110 sec
Annual Drift	≤1%
Output Scaling	0 to 100% RH
TEMPERATURE OPTION	
Active Output Accuracy	±0.5 °C (±.9 °F)
Active Output Temperature Scaling	Type 1: -40 to 50 °C (-40 to 122 °F); Type 2: 0 to 50 °C (32 to 122 °F)
Self-Heating Error (Resistive Temperature Only)	≤±0.5 °C at 20 to 30 °C (68 to 86 °F); ≤±0.75 °C outside of 20 to 30 °C (68 to 86 °F)
OPERATING ENVIRONMENT	
Operating Temperature	-40 to 50 °C (-40 to 122 °F)
Operating Humidity	0 to 100% RH non-condensing (unit will recover from saturation)
HOUSING	
Material	ABS plastic with UL V-0 5 VA Flame Class
WARRANTY	
Limited Warranty	1 year

AGENCY APPROVALS

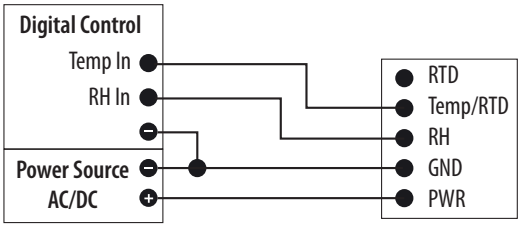
CE*

*The CE mark indicates RoHS2 compliance. Please refer to the CE Declaration of Conformity for additional details.

EMC Conformance: Low Voltage Directive 2014/35/EU and EMC Directive 2014/30/EU. Meets UL requirements for plenum rating.

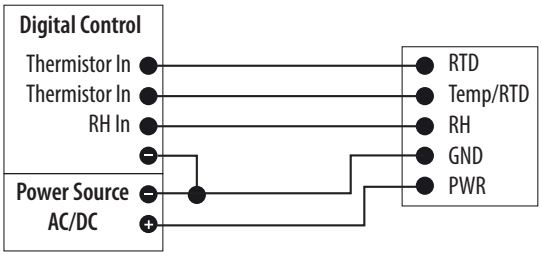
0-5V/0-10V MODELS, TEMPERATURE TRANSMITTER

Wiring Diagram



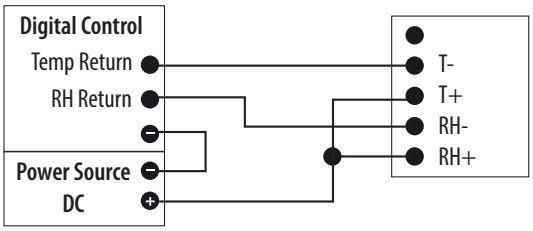
0-5V/0-10V MODELS, THERMISTOR

Wiring Diagram

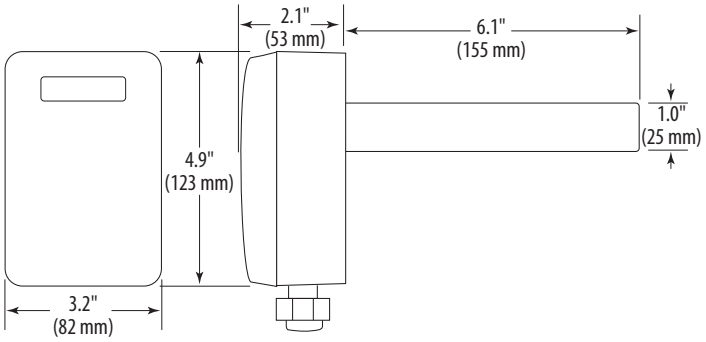


4-20 mA MODELS, TEMPERATURE TRANSMITTER

Wiring Diagram

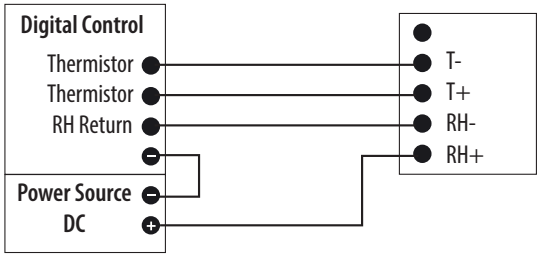


DIMENSIONAL DRAWING



4-20 mA MODELS, THERMISTOR

Wiring Diagram



ORDERING INFORMATION

HED [Accuracy] [Output] [US or EU] [Temp.]

Accuracy
2 = 2%
3 = 3%
5 = 5%

Output
M = 4 to 20 mA
V = 0-5/0-10 Vdc

US or EU
S = Standard

Temp.
T = Temp
X = No Temp (Stop here)

Sensor Type [A]
= Temp. transmitter

Temp Range
1 = -40 to 50 °C (-40 to 122 °F)
2 = 0 to 50 °C (32 to 122 °F)

Temp Cert
Blank = None
1 = 1 pt cal
2 = 2 pt cal

Sensor Type
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
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

Temp Cert
Blank = None
1 = 1 pt cal*
2 = 2 pt cal*

Examples:

HED	3	M	S	T	C
HED	3	V	S	X	

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

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HEW SERIES

2%, 3%, and 5% Accuracies

HEW

HEW Standard Series wall mount humidity transmitters offer high performance in an easy to install housing at an affordable price. The thin-film capacitive sensor element provides high accuracy and performance, great long-term stability, and full recovery from saturation. Temperature sensing options are also available.

The wall housing was created using sophisticated thermal analysis techniques for optimum airflow. It is ideal for schools and other applications requiring exceptional durability and a discrete appearance. All Standard models come with a standard one-year warranty.

RH & temperature

Monitor humidity and temperature with a single device… reduces installation costs

Low profile

Housing is low-profile…perfect for schools and museums

Sensor options

Semiconductor temperature transmitter, or popular thermistor/RTD sensors available

APPLICATIONS

- HVAC economizer control
- Managing energy systems
- Facilitating ASHRAE standards for environmental control

SPECIFICATIONS

INPUT POWER	
Voltage Model	Class 2; 12 to 24 Vdc or 24 Vac
mA Model	Class 2; 12 to 24 Vdc
AC Voltage Tolerance	±10%
AC Frequency	50/60 Hz
Max. Inrush Current after 1 msec (mA version)	25 mA
OUTPUT	
mA Output	4 to 20mA, 2-wire, not polarity sensitive
mA Max. Loop Resistance	500 Ω at 24 Vdc input voltage; 250 Ω at 12 Vdc input voltage
Voltage Output	0 to 5 V or 0 to 10 V (jumper selectable)
Voltage Min. Load Resistance	5 kΩ
Voltage Min. Sinking Current	0.2 mA
HUMIDITY	
RH Element	Digitally profiled thin-film capacitive, non-removable
Accuracy	±2%, 3%, or 5% (10 to 90% RH, 20 to 30 °C)
Temperature Effect (Outside 20° to 30°C)	≤0.1% RH per °C
Response Time (to 90% change at 20°C)	110 sec
Annual Drift	≤1%
Output Scaling	0 to 100% RH

TEMPERATURE OPTION	
Active Output Accuracy	±0.5 °C (±.9 °F)
Active Output Temp Scaling	10 to 35 °C (50 to 95 °F)
Self-Heating Error (Resistive temperature only)	≤±0.5 °C at 20 to 30 °C (68 to 86 °F); ≤±0.75 °C outside of 20 to 30 °C (68 to 86 °F)
OPERATING ENVIRONMENT	
Operating Temperature	0 to 50 °C (32 to 122 °F)
Operating Humidity	0 to 100% RH non-condensing (Unit will recover from saturation)
HOUSING	
Material	ABS plastic with UL V-0 5VB Flame Class
Mounting Holes	US and European junction box
WARRANTY	
Limited Warranty	1 year

AGENCY APPROVALS

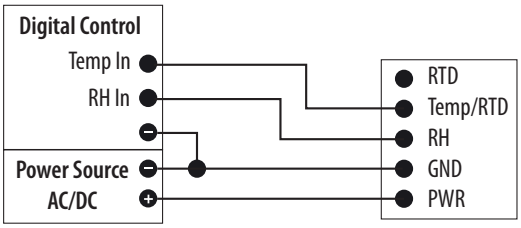
CE*

*The CE mark indicates RoHS2 compliance. Please refer to the CE Declaration of Conformity for additional details.

EMC Conformance: Low Voltage Directive 2014/35/EU and EMC Directive 2014/30/EU.

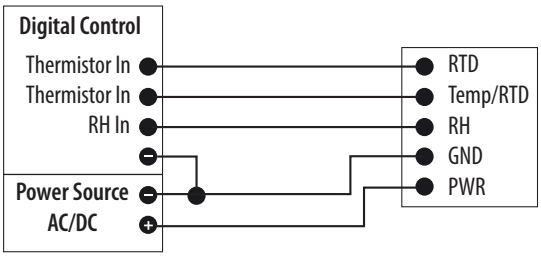
0-5V/0-10V MODELS, TEMPERATURE TRANSMITTER

Wiring Diagram



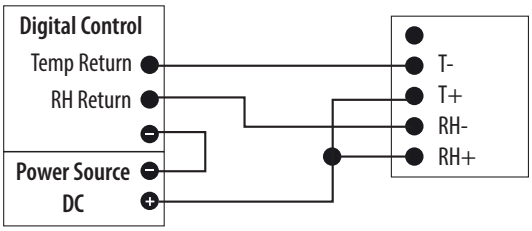
0-5V/0-10V MODELS, TEMPERATURE TRANSMITTER

Wiring Diagram



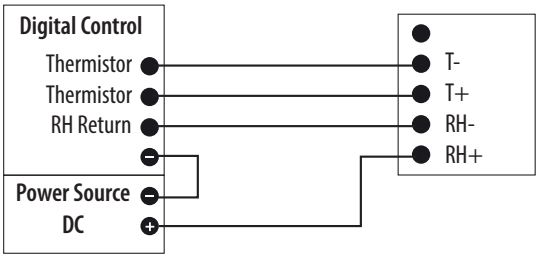
4-20 mA MODELS, TEMPERATURE TRANSMITTER

Wiring Diagram

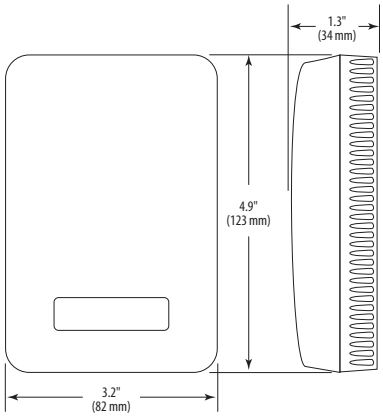


4-20 mA MODELS, THERMISTOR

Wiring Diagram



DIMENSIONAL DRAWING



ORDERING INFORMATION

HEW [Accuracy] [Output] [US or EU] [Temp.] [Sensor Type] [Temp Cert]

Accuracy
2 = 2%
3 = 3%
5 = 5%

Output
M = 4-20mA
V = 0-5 Vdc/0-10 Vdc

US or EU
S = Standard

Temp.
T = Temp
X = No Temp (Stop here)

Sensor Type
A = Temp. Transmitter
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
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

Temp Cert
Blank = None
1 = 1 pt cal*
2 = 2 pt cal*

Examples:

With Temp:
HEW 3 M S T C

Without Temp:
HEW 3 V S X Stop Here

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

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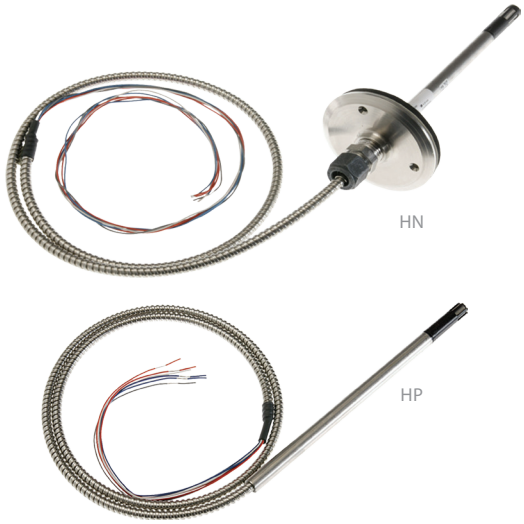
HN & HP SERIES

Pendant and Insertion



Sensor element

Thin-film capacitive sensor element recovers from 100% saturation

Flexibile

Pendant and insertion versions for application flexibility

Corrosion resistant

Electronics are encapsulated in stainless steel probe to resist corrosion

Compatibility

Polarity insensitive two-wire 4 to 20 mA or 3-wire 0-5/0-10 Vdc versions…flexible systems compatibity

Interchangable

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

Calibration free

Calibration-free interchangeable NIST traceable HS element

HN and HP Series probe type humidity transmitters are easy to install and exceptionally accurate. Their long-term stability and trouble-free serviceability make them among the best in the industry. The electronics are embedded inside the probe, protecting them from condensation-related failures. The thin-film capacitive HS sensor elements are factory calibrated using NIST traceable calibration equipment, eliminating the need for field calibration. Field replacement of the sensor element is a snap with the patented removable sensor, lowering costs and reducing downtime.

APPLICATIONS

- HVAC control 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

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 & capped)
HUMIDITY	
HS Element†	Digitally profiled thin-film capacitive (32-bit mathematics) U.S. Patent 5,844,138
Accuracy @ 25°C**	±1%, 2%, 3%, or 5% (specify)@10 to 80% RH; Multi-point calibration, NIST traceable
Reset Rate***	24 hours
Stability	±1%@20 °C (68 °F) annually, for two years
Hysteresis	1.5% typical
Linearity	Included in accuracy spec.
Temperature Coefficient	±0.1% RH/°C above or below 25 °C (typical)
Scaling	0 to 100% RH
TEMPERATURE OPTION	
Optional Temperature Transmitter Output	Digital, 4 to 20 mA (clipped & capped) or 0-5/ 0-10 V output; accuracy ±0.5 °C (±1 °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 †

AGENCY APPROVALS

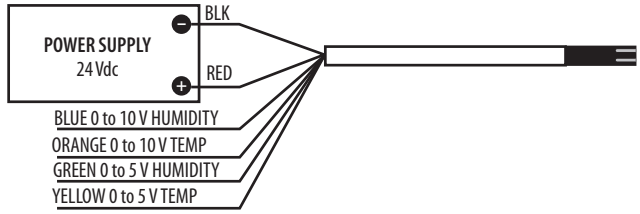
CE †† Available

† 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 factory upon request or is available on our website: www.veris.com.
EMC Conformance - CE Option: Low Voltage Directive 2014/35/EU and EMC Directive 2014/30/EU.
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).

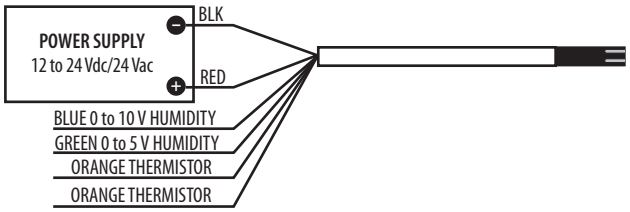
HN/HP (0-5V/0-10V VERSIONS)

Wiring Diagram



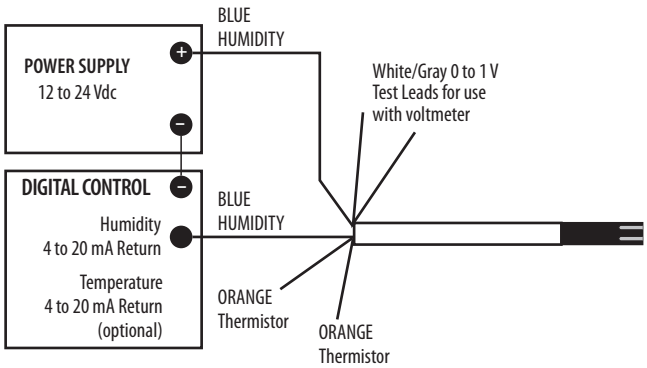
HN/HP WITH RTD/THERMISTOR (0-5V/0-10V VERSIONS)

Wiring Diagram



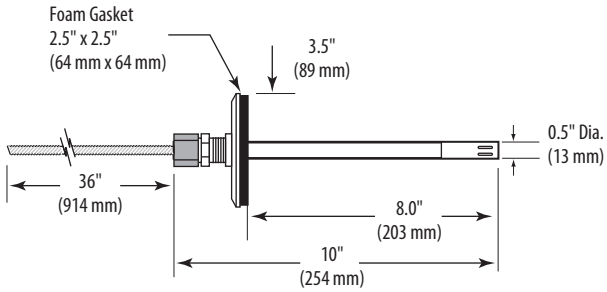
HN/HP WITH RTD/THERMISTOR (4-20 mA VERSIONS)

Wiring Diagram



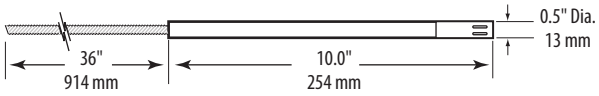
HN SERIES

Dimensional Drawing



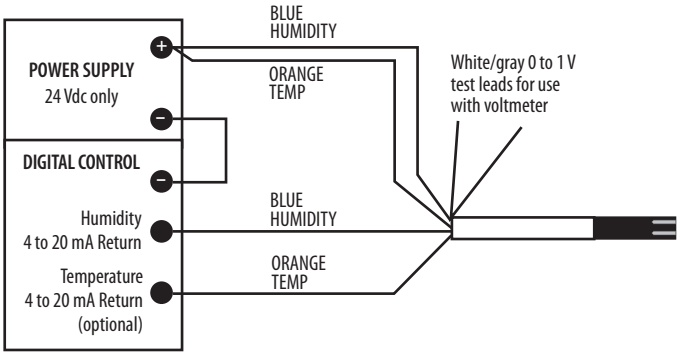
HP SERIES

Dimensional Drawing



HN/HP (4-20 mA VERSIONS)

Dimensional Drawing



ORDERING INFORMATION

Humidity Transmitter Combination

Sensor Type	Range	OPTION Temp Cert
A = Transmitter	1 = -40 to 122 °F (-40 to 50 °C) 2 = 32 to 122 °F (0 to 50 °C)	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*

Enclosure	Accuracy	NIST	Output	US or EU	Temp.
H					
N = RH Insertion P = RH Pendant	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)

Example: (No Temp)

H	P	2	X	V	S	X	Stop Here

Example: (With Temp)

H	N	2	X	V	S	T	C	2

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

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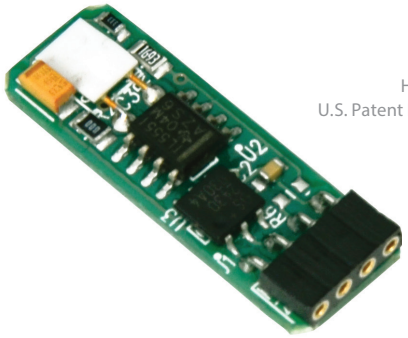
HS SERIES

Easy Field Replacement for Veris Deluxe Humidity Sensors



HS
U.S. Patent No. 5,844,138

The HS replaceable humidity element is designed to lower costs and reduce downtime. It features thin-film capacitive technology for superior accuracy and exceptional resistance to contaminants. It is compatible with all Veris deluxe sensors, making replacement quick and easy. No need to install a new humidity sensing device, just insert a new element into the unit and resume operation.

These humidity elements are calibrated in a high accuracy, NIST traceable, humidity generator. Each sensor is digitally calibrated at four different relative humidity levels over an eight-hour period. Calibration data is programmed into the replaceable sensing element. This computer-controlled digital calibration eliminates errors associated with manual "trimming." A certificate of calibration is provided with NIST versions of the HS.

Veris' calibration system produces known humidity values using the fundamental principle of the "two pressure" generator developed by NIST (H-4622). The two-pressure method involves saturating air with water vapor at a given pressure and temperature. Saturated gas then flows through an expansion valve where it is isothermally reduced to chamber pressure. Gas temperature is held constant during pressure reduction, so relative humidity at chamber pressure is calculated as the ratio of two absolute pressures.

Temperature uniformity in the chamber is maintained by circulating a temperature controlled fluid through a shell surrounding the test space. Highly accurate pressure measurements are made using NIST traceable piezoresistive transducers. The resulting system accuracy is better than 0.5% RH over all ranges and temperatures.

This system is capable of continuously supplying accurate humidity values for instrument calibration, evaluation, and verification.

ORDERING INFORMATION

	Accuracy	NIST	
HS	☐	☐	X
	1 = 1%*	N = NIST (1% & 2% models only)	
	2 = 2%	X = None (2%, 3%, & 5% models only)	
	3 = 3%		
	5 = 5%		

Example:

HS	5	X	X

*1% HS sensors used in outdoor applications are limited by the device to 2% accuracy.

Note: 1-year limited warranty.

Certificate of Performance

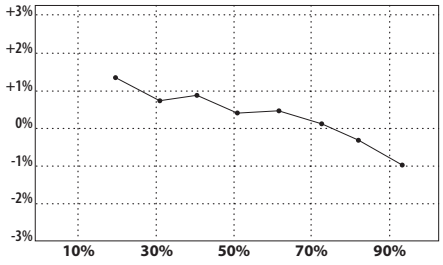
HS Digital Humidity Sensor

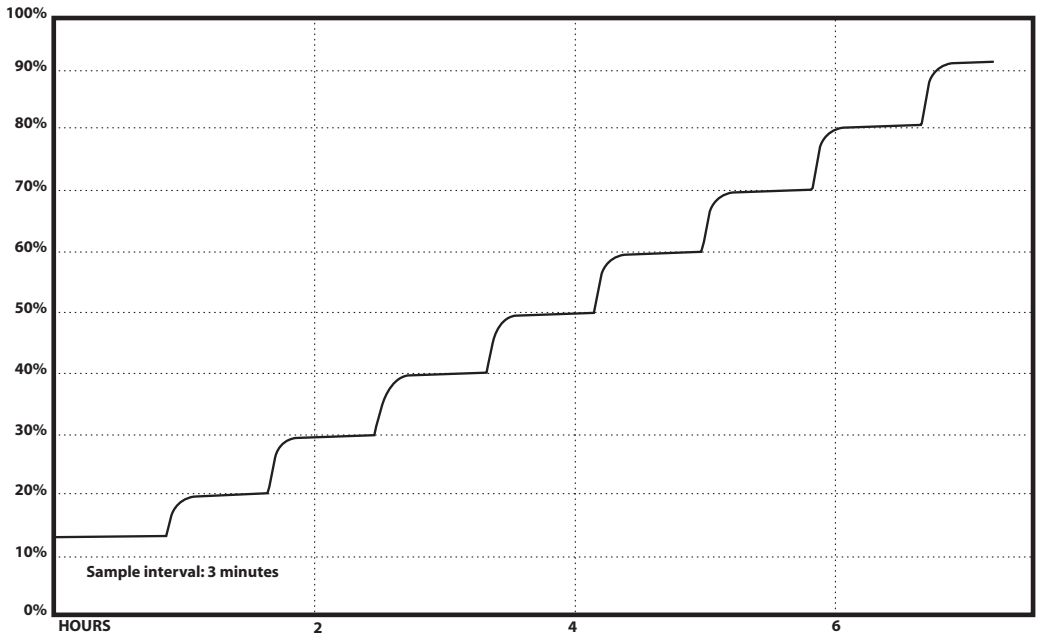
Serial Number: SAMPLE **Date:** _____ **Accepted by:** _____

This digital sensor has been computer profiled and calibrated at multiple relative humidity levels using standards traceable to the National Institute of Standards and Technology through test #H-4622.

The humidity standard produces an atmosphere of known humidity based on the "two-pressure" principal which is to saturate an air stream with water vapor at a given pressure and temperature. The saturated air stream is then reduced to test pressure. The humidity at test pressure is then the ratio of the two absolute pressures, corrected for vapor pressure and enhancement factor ratios.

Reference	Reading	Difference
12.0%	12.53%	+0.53%
20.0%	20.44%	+0.44%
30.0%	29.94%	+0.06%
40.0%	40.12%	+0.12%
50.0%	49.80%	+0.20%
60.0%	59.98%	-0.02%
70.0%	69.84%	-0.16%
80.0%	79.43%	-0.57%
90.0%	88.80%	-1.20%





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