HD2 PROTOCOL SERIES
Duct Mount Humidity Sensors

HD2

HD2 Series Protocol Humidity Sensors provide an ideal solution for measuring relative humidity in a wide range of conditions. All models are equipped with a thin-film capacitive humidity sensor that is easy to replace in the field. A solid state temperature sensor provides high accuracy measurements.

HD2 is an all-in-one device combining humidity and temperature sensing. Intended for duct mount applications, the device ensures a building's optimum temperature and humidity levels, resulting in greater energy efficiency.

Each device is an active sensor that converts a humidity or temperature measurement into BACnet MS/TP or Modbus RTU.

Different models are available based on application requirements for lower-cost installations.

HD2 is available with an LCD display option on select models (see Ordering Information).

BACnet & Modbus

Embedded BACnet and Modbus communication protocols…easy systems integration

Sensor element

Thin-film capacitive sensor element recovers from 100% saturation

Calibration free

Fully interchangeable element to 1% or 2% accuracy with NIST calibration certificate…no calibration

Field replaceable

Replace RH element and temp transmitter in the field… maintain accuracy and minimize downtime and cost

Easy to install

Latch-on sensor cover and screwless terminal block wiring with spring actuator

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
- Key component for the LEED green building program and WELL Building Standard*

*Leadership in Energy and Environmental Design (LEED) is a registered trademark of the US Green Building Council. The WELL Building Standard is a trademark of the International WELL Building Institute in the United States and other countries..

SPECIFICATIONS

OPERATING & STORAGE ENVIRONMENT

Operating Temp. Range	-35 to 60 °C (-31 to 140 °F)*
Operating Humidity Range	0 to 95% RH (non-condensing)*
Storage Temperature	-35 to 70 °C (-31 to 158 °F)*
Storage Humidity Range	0 to 95% RH (non-condensing)*
Power Supply	20 to 30 Vdc, 24 Vac, 50 to 60 Hz
Output	BACnet MS/TP, Modbus RTU
Power Consumption	See Maximum Power Consumption table, next page
Tube Length	200 mm
Medium	Neutral gas, air
Housing Material	Polycarbonate; flammability rating UL 94 V0
Mounting Location	For indoor use only. Not suitable for wet locations.
IP Rating	IP 65
Protection Class	Class III

RH SENSOR

HS Sensor	Thin-film capacitive, replaceable
Accuracy**	±2% from 10 to 80% RH @ 25 °C (77 °F) ±1%, ±2% NIST and 2% replaceable option
Hysteresis	1.5% typical

Linearity	Included in accuracy specification
Stability	±1% @ 20°C (68 °F) annually for 2 years
Output Range	0 to 100% RH
Temperature Coefficient	±0.1% RH/°C above or below 25 °C (77 °F) typical

TEMPERATURE SENSOR

User Configuration	°C or °F
Sensor Transmitter Type	Solid state, integrated circuit
Time Constant	Air velocity 1.5 m/s. approx. 72 s; Air velocity 3.0 m/s. approx. 52 s
Accuracy***	±0.2 °C (±0.4 °F) typical @ 25 °C
Resolution	0.1 °C (0.1 °F)
Range	-35 to 60 °C (-31 to 140 °F)*

DISPLAY MODELS

LCD Type	Positive display with backlight
Measurement Values Displayed	Temperature: °C or °F Humidity: % RH
Display Resolution	Temperature: 0.1 °C or °F Humidity: 0.1% RH

WIRING TERMINALS

Terminal Blocks	Screwless terminal block with spring actuator, 16-24 AWG

SPECIFICATIONS, CONT.

WARRANTY

Limited Warranty	5 years

COMPLIANCE INFORMATION

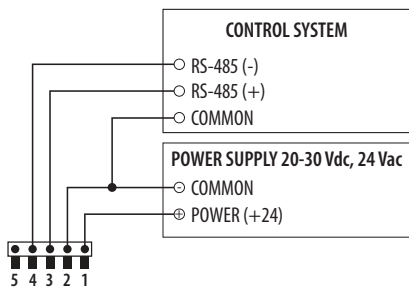|	

Agency Approvals	UL 916, European conformance CE:
	    EN61000-6-2
	    EN61000-6-3
	    EN61000 Series - industrial immunity
	    EN 61326-1
	FCC Part 15 Class A
	REACH, RoHS, RoHS 2 (China), RCM (Australis),
	ICES-003 (Canada), UKCA (UK)

*Duct mount model with temperature and humidity only. LCD operation from -10 to 60 °C (14 to 140 °F).
** Humidity sensor measurement uncertainty should include: accuracy, hysteresis, temperature coefficient and stability.
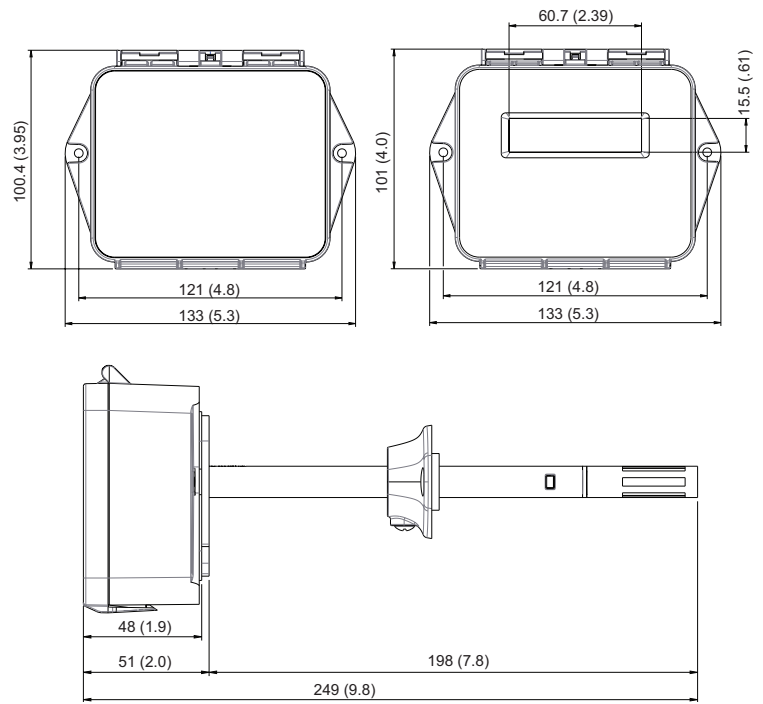***±0.5 °C over full operating range.

MAXIMUM POWER CONSUMPTION

SERIES	LCD	TEMP/RH	MAX. POWER
HD2 Protocol	Yes	Yes	1.5VA @ 24VAC
	No	Yes	0.8VA @ 24VAC

WIRING DIAGRAM

CONTROL SYSTEM
- RS-485 (-)
- RS-485 (+)
- COMMON

POWER SUPPLY 20-30 Vdc, 24 Vac
- COMMON
- POWER (+24)

5 4 3 2 1

DIMENSIONAL DRAWING
mm (in.)

60.7 (2.39)
100.4 (3.95)
101 (4.0)
15.5 (.61)
121 (4.8)
133 (5.3)
121 (4.8)
133 (5.3)
48 (1.9)
51 (2.0)
198 (7.8)
249 (9.8)

ORDERING INFORMATION

	User Interface	Output	RH Accuracy	Temperature
HD2	☐	P	2	A
	L = LCD Display X = None	P = BACnet/Modbus	2 = 2%	A = Transmitter Only

Example:

HD2 | L | P | 2 | A

Note: Replaceable RH and temperature modules available to be ordered separately per table below.

REPLACEABLE RH ELEMENTS & TEMPERATURE AND HUMIDITY CALIBRATION MODULES

PART NUMBER	DESCRIPTION
HS1N	Replaceable RH Sensor, 1% with NIST certificate
HS2N	Replaceable RH sensor, 2% with NIST certificate
HS2X	Replaceable RH sensor, 2%
TS2*	Replaceable temperature module with 2-point calibration certificate
THS2*	Replaceable temperature and humidity module with 2-point calibration certificate

*For temperature transmitter models only.

Replaceable RH and Temperature Module