Deluxe Wall Humidity & Temperature Sensor, Protocol Communication

HW Protocol Series

SPECIFICATIONS

HWLP

Modbus and BACnet Protocol Communication

FEATURES

- Embedded BACnet and Modbus communication protocols... compatible with many existing control systems
- Configurable to many baud rates
- Humidity and temperature sensors in one device at one address...provides more information and maximizes system capacity
- Pushbutton override capability to the building control system...local control in individual rooms to maximize comfort
- Innovative self-calibration algorithm...maximizes performance
- Field calibratable
- Thin-film capacitive sensor element recovers from 100% saturation
- Fully interchangeable element to 1% or 2% accuracy... no calibration
- 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
- Replace element in the field...minimize field calibration downtime

DESCRIPTION

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.†

INPUT POWER	
Voltage Model	Class 2; 12 to 30VDC, 24VAC; 100mA 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	1-127
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 noncondensing
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 resettable

† The HS sensing element has a 1-year warranty. The element is not a part of the 5-year product warranty.

* Specified accuracy with 24VDC supplied power with rising humidity.

** Reset rate is the time required to recover to 50% RH after exposure to 90% RH for 24 hours.
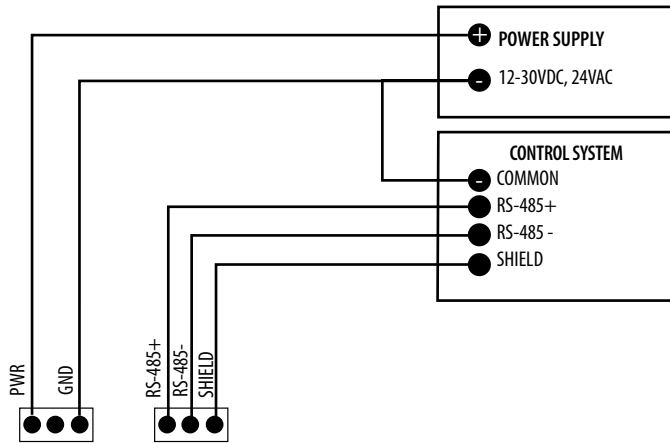Note: RTD/Thermistors in wall packages are not compensated for internal heating of product.
EMC Conformance: Low voltage directive 2006/95/EC & EMC directive 2004/108/EC.
EMC Special Note: Connect this product to a DC distribution network or an AC/DC power adaptor with proper surge protection (EN 61000-6-1 specification requirements)
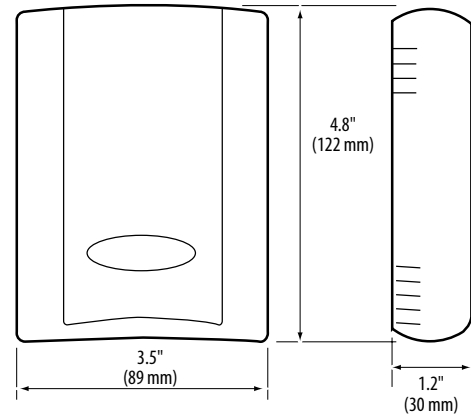
APPLICATIONS

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

WIRING DIAGRAM

POWER SUPPLY
12-30VDC, 24VAC

CONTROL SYSTEM
COMMON
RS-485+
RS-485 -
SHIELD

PWR GND RS-485+ RS-485- SHIELD

DIMENSIONAL DRAWING

4.8" (122 mm)

3.5" (89 mm)

1.2" (30 mm)

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 zero.
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

CE

Local Display	Protocol	RH Option	Temp. Option	Temp. Cal. Cert.	Option	Housing
HW ☐	P	☐	☐	☐	☐	☐

Local Display
L = LCD
X = No Display

Protocol
= Protocol

RH Option
1 = RH 1% NIST
2 = RH 2% NIST
H = RH 2%

Temp. Option
X = No temp.
T = Temp. transmitter

Temp. Cal. Cert.
X = None
1 = 1 pt. cal. cert.‡
2 = 2 pt. cal. cert.‡
3 = 3 pt. cal. cert.‡

Option
Blank = None
1 = Pushbutton override
2 = Set point slider
3 = Pushbutton override + set point slider

Housing
Blank = Cloud white
B = Black

‡ Only available if temperature option is selected.

Example:

HW	L	P	H	T	X	3

ACCESSORIES

Replacement humidity element (HS)
Handheld digital hygrometer/psychrometer (597C1)
Replacement covers for wall units (AA51, AA51B, AA52, AA52B)
Replacement cloud white wall housing (AA55)

597C1

HS

AA55

AA51/AA51B

AA52/AA52B