TW2TPXx

TW2LPXx

TW2XPXx

TW2 Protocol Series

Wall Mount Temperature Sensors

Product Overview

The TW2 Protocol Series of temperature sensors for living space is a versatile sensor platform for use with BAS controllers designed to accept BACnet or Modbus outputs. TW2 Protocol Series sensors are available with three user interface options: touchscreen, LCD with three buttons and blank.

NOTICE

- **This product is not intended for life or safety applications.**
- **Do not install this product in hazardous or classified locations.**
- **Read and understand the instructions before installing this product.**
- **Turn off all power supplying equipment before working on it.**
- **The installer is responsible for conformance to all applicable codes.**

If this product is used in a manner not specified by the manufacturer, the protection provided by the product may be impaired. No responsibility is assumed by the manufacturer for any consequences arising out of the use of this material.

Product Identification

Model	User Interface	Setpoint	Override	Temperature Sensor
TW2TPXA	Touchscreen	X	X	Temp. transmitter
TW2LPXA	LCD / 3 Buttons	X	X	Temp. transmitter
TW2XPXA	Blank			Temp. transmitter

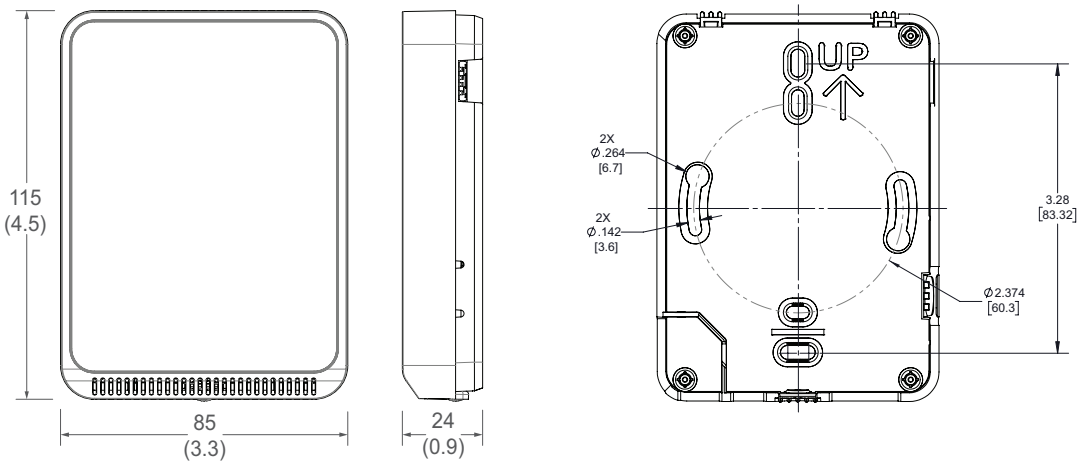
Specifications

OPERATING ENVIRONMENT	
Input Power	Class 2; 20 to 30 Vdc, 24 Vac, 50 to 60 Hz
Protocol Output	BACnet or Modbus via RS-485, selectable
Operating Temp. Range	0 to 50 °C (32 to 122 °F)
Housing Material	High-impact ABS plastic
Terminal Block Torque	0.5 to 0.6 N-m (0.37 to 0.44 in-lbf)
IP Rating	IP 30
Mounting Location	For indoor use only. Not suitable for wet locations.
Surface Mount	The device can be surface mounted on Single Gang J-Box, British Standard and CE60 wall boxes
TEMPERATURE TRANSMITTER	
Sensor Type	Solid state, integrated circuit
Accuracy	±0.2 °C (±0.4 °F) typical
Resolution	0.1 °C (0.1 °F)
Range	0 to 50 °C (32 to 122 °F)
DISPLAY MODELS	
Touchscreen	61 mm (2.4 in), color, backlit, capacitive, 240x300 px Setpoint: Temperature or fan speed selectable Timeout override: Display timeout Lockout override: Touchscreen/button lockout
LCD	52mm (2.05 in), segmented with 3 buttons Setpoint: Temperature or fan speed selectable Timeout override: Display timeout Lockout override: Touchscreen/button lockout
SETPOINTS	
Temperature Setpoint	Scale: 0 to 50 °C (32 to 122 °F) or 10 to 35 °C (50 to 95 °F) max., adjustable span
Fan Speed Setpoint	Off, Low, Medium, High, Auto
OVERRIDE	
Override Button	Display models feature a momentary override button

Specifications (cont.)

WIRING TERMINALS	
Terminal Blocks	Screw terminals, 18-24 AWG
Screw Terminal Torque	0.2 N-m (2.0 in-lbF) max.
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 B, REACH, RoHS, RCM (Australia), ICES-003 (Canada)

Dimensions



Functions

The TW2 Protocol Series sensor measures temperature in a room and provides protocol outputs to a controller.

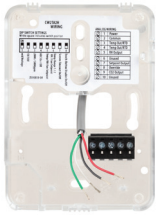
Installation

1. Remove the cover from the base at the bottom of the device.

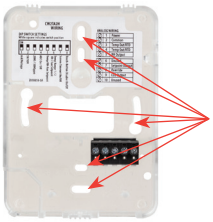
2. Position the sensor base vertically on the wall 1.35 m (4.5 ft.) above the floor with the "UP" arrow facing upward. Locate away from windows, vents and other sources of draft. If possible, do not mount on an external wall, as this may cause inaccurate temperature readings.

Installation (cont.)

3. Pull 18 or 22 AWG cable(s) through the hole in the backplate.

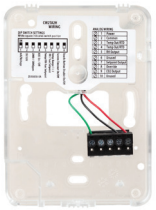


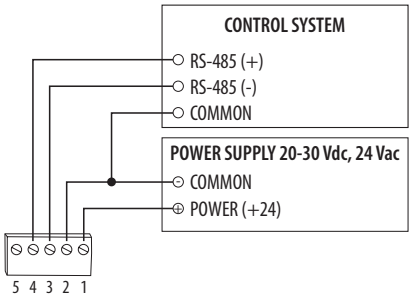
4. Mount the backplate onto the wall using the screws provided.



Six screw holes available. Use a minimum of two for secure mounting.

5. Connect the wires to the screw terminals. Do not over-tighten the screws.



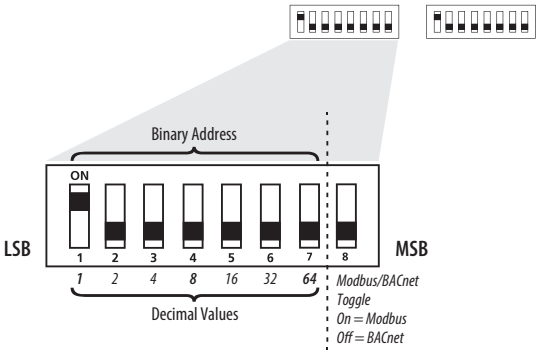


Installation (cont.)

6. Configure the device.

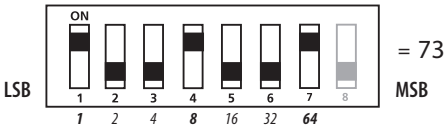
Address Configuration:
Each device on a single network must have a unique address. Set the DIP switch labeled "ADDRESS" to assign a unique address before the device is connected to the network. If an address is selected that conflicts with another device, neither device will be able to communicate.

Address the device as any whole number between and including 1 to 127. Note that zero is not a valid address for Modbus; zero is a valid address for BACnet. Positions 1 through 7 of the "ADDRESS" DIP switch designate the address. Position 8 toggles between the Modbus and BACnet communication protocols, as shown in the diagram below. This is the left bank of DIP switches on the sensor.



To set an address using the DIP switch, simply add the values of any switches that are in the ON position.

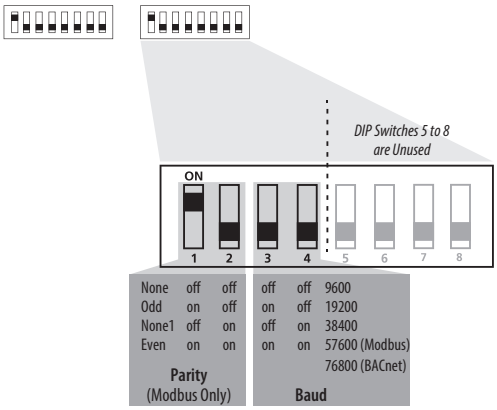
For example, an address of 73 is set as shown in the diagram below.



Position number 1 has an ON value of 1, position number 4 has an ON value of 8 and position number 7 has an ON value of 64 (1 + 8 + 64 = 73).

Communications Configuration:
See the Product Diagram section for the location of the DIP switch labeled "CONFIG". The following parameters are configurable:

- Parity (Modbus only): None, Odd, None1 (one stop bit), Even
- Baud rate: 9600, 19200, 38400, 57600 (Modbus), 76800 (BACnet)



Installation (cont.)

Example: No Parity, 19200 Baud

1	2	3	4	5	6	7	8
off	off	on	off	off	off	off	off
None		19200 Baud		Unused			

Modbus Point Map

Function Codes:

Function Code	Function
03	Read holding (RW) registers
04	Read input (RO) registers
06	Write single register*
16	Write multiple registers
01	Read coils
05	Write single coil
15	Write multiple coils

** Not supported.*

All of these values correspond to BACnet objects with the same name. See the BACnet Conformance Statement for their definitions.

Note that an attempt to write to "read only" holding registers will give an error and the entire write command will not be executed even if writing to read/write locations were also requested. Exception code 2 is given in this case. "Preserved" means the values is maintained through power outages.

32-Bit Input Registers (Read Only):

Register	Description
1	Temperature reading in IEEE 32-bit floating point
9	Model (numeric representation of ASCII characters)
42	Serial number (numeric representation of ASCII characters)

32-Bit Holding Registers (Read/Write):

Register	Description
1	Temperature setpoint
5	Screen color set
7	Device name
40	Fan speed

Note: All holding registers are preserved during power outages.

Coils (Read/Write):

Register	Description
3*	Touchbutton disable
5*	Temperature (°C)
6	Occupancy override
7*	Touch timeout
12*	Display shows temperature setpoint on main screen

**Preserved during power outages.*

Installation (cont.)

BACnet Descriptions

Note: In the tables below, all properties are read-only unless otherwise noted. "Preserved" means the value is maintained through power outages.

Present_Value Range Restrictions:

Object Name	Minimum Value	Maximum Value
DEV - Object_Name	1 Character	65 Characters
Temperature Setpoint Min_Pres_Value Max_Pres_Value	Min_Pres_Value 0 Min_Pres_Value +1	Max_Pres_Value Max_Pres_Value -1 50
Screen Color	1	4
Fan Speed	1	5
Device_Instance	0	4,194,302

Standard Object Types Supported:

Object Type	Supported Optional Properties	Writable Properties
Analog Input - AI	Reliability	None
Analog Value - AV	Min_Pres_Value Max_Pres_Value	Min_Pres_Value Max_Pres_Value Present_Value
Binary Value - BV	None	Present Value
Multistate Value - MSV	None	Present Value
Device - DEV	Max Info Frames Max_Master	APDU_Timeout Max_Master Object_Name

Objects Table:

Object Name	Object Identifier	Object Property
Room Temperature	AI 1	Temperature in Room
Temperature Setpoint*	AV 1	Setpoint Value for Temperature
Touch Disable*	BV2	ACTIVE disables Touch Response INACTIVE enables Touch Response
Temperature Units*	BV4	ACTIVE displays temperature in Fahrenhiet INACTIVE displays temperature in Celsius
Occupancy Override	BV5	ACTIVE means room is not occupied INACTIVE means room is occupied
Screen Timeout*	BV 6	ACTIVE enables Screen Timeout INACTIVE disables Screen Timeout
Display Setpoint*	BV11	ACTIVE displays temperature setpoint on main screen INACTIVE displays temperature setpoint in upper left corner and current temperature on main screen
Screen Color Set*	MSV 1	Selection for Screen Color Theme
Fan Speed*	MSV 2	Fan Speed Selection

** Preserved during power outages.*

Device Objects Table:

Object Name	Object Identifier	Object Property	Description
Living Space Room Unit XXXXXXX	Vendor_ID + nnn	Object _Identifer (R/W)	Unique value where nnn initially is the MS/TP address

Installation (cont.)

BACnet Protocol Implementation Conformance Statement
Vendor Name: Veris Industries
Product Name: Living Space Room Unit
Product Model: TW2XXXX
BACnet Protocol Version : 1
BACnet Protocol Revision: 16
Product Description: Environmental Sensor
BACnet Standardized Device Profile (AnnexL):
BACnet Application Specific Controller (B-ASC)
List All BACnet Interoperatvility Building Blocks Supported(Annex K):
DS-RP-B, DS-WP-B, DM-DDB-B, DM-DOB-B, DM-DCC-B
Data Link Layer Options: MS/TP (Clause 9), baud rates, 9600, 19200, 38400, 76800
Device Address Binding: Static Device binding is not supported.
Networking Options: None
Character Sets supported: ISO 10646 (UTF-8)

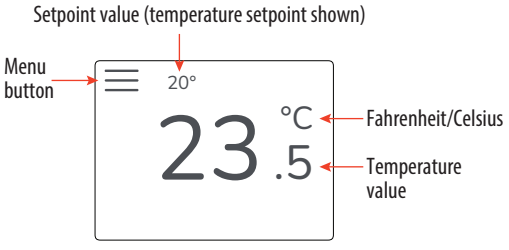
7. With sensor base fully installed, align top of cover to mounting tabs on top of sensor base. Swing cover downward until it latches at the bottom.

8. Install locking screw to secure cover in closed position.

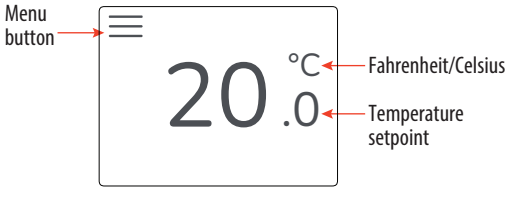
Touchscreen Operation

Main Screen

The touchscreen user interface displays applicable temperature sensor output values, setpoint value and menu button.



Room Temperature Display Option

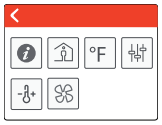


Temperature Setpoint Display Option

Touchscreen Operation (cont.)

Menu Screen

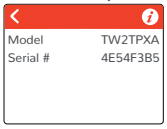
The menu screen opens when pressing the Menu button on the main screen. Integrator's submenu, occupancy/override, Fahrenheit/Celsius, settings and setpoint submenu (temp and fan) buttons are displayed on the menu screen.



Menu Button Functions

Integrator's Submenu
Press this icon to access the Integrator's menu.

Submenu Only



Occupied Override Button
Press this icon to provide momentary signal output to the controller

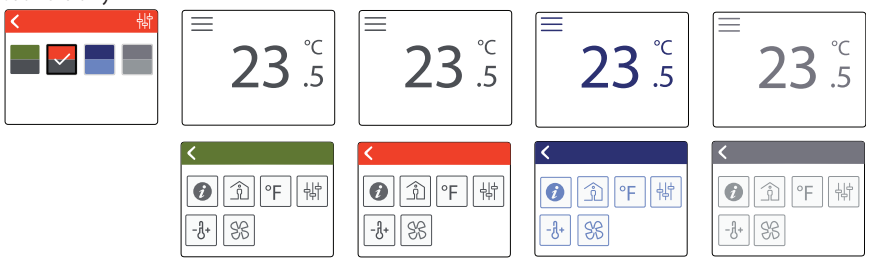
Single Press Only
Signals occupied/override call to controller.

Fahrenheit/Celsius Switch
Press this icon to display either °C or °F.

Single Press Only
°F Changes units to Fahrenheit when pressed.
°C Changes units to Celsius when pressed.

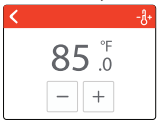
Settings
This icon provides the ability to change the color scheme of the display.

Submenu Only



Temp Setpoint Adjustment
Click this icon to access the setpoint change menu.

Submenu Only

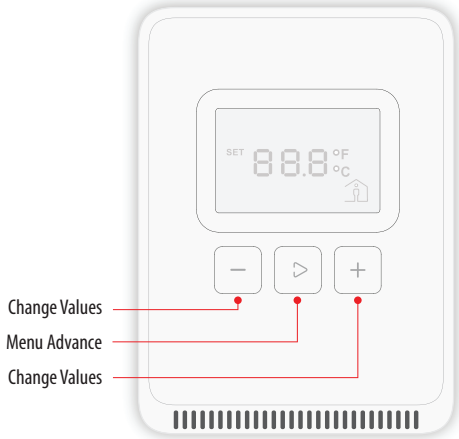


Fan Speed
Click this icon to access the fan speed menu.

Submenu Only

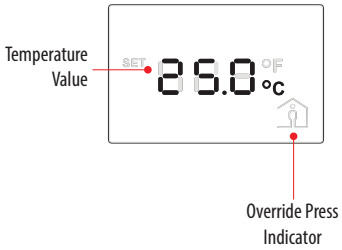
LCD Display Operation

Button Functions



Display Icons

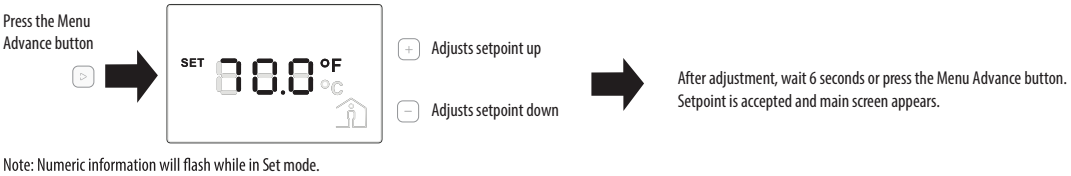
The main screen displays sensor values for room temperature or temperature setpoint and Celsius/Fahrenheit.



Setpoint Function

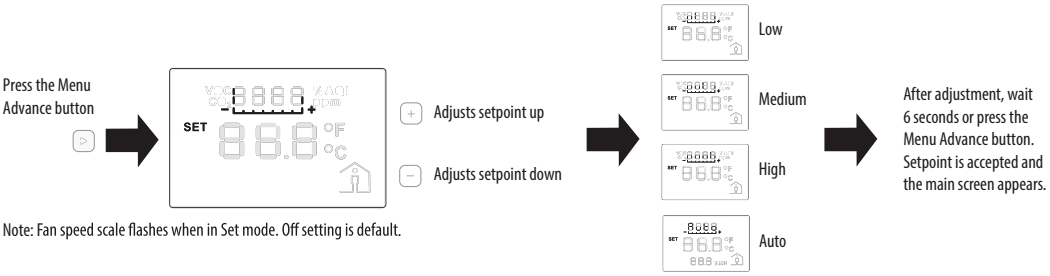
The Menu Advance button cycles between Temperature, Fan Speed setpoints and Celsius/Fahrenheit adjustment screens in order.

Temperature Setpoint Adjustment



Note: Numeric information will flash while in Set mode.

Fan Speed Setpoint Adjustment

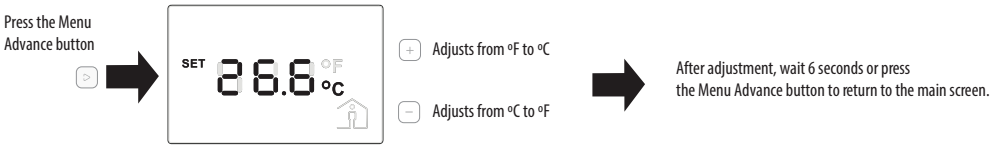


Note: Fan speed scale flashes when in Set mode. Off setting is default.

Setpoint Function (cont.)

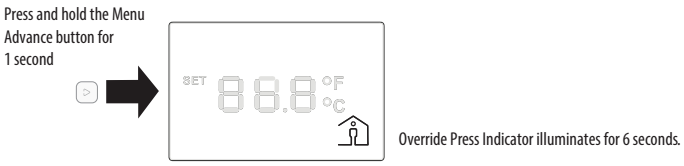
Changing Celsius and Fahrenheit Scales

The Menu Advance button cycles between Temperature, Fan Speed setpoints and Celsius/Fahrenheit adjustment screens in order.



Note: °F or °C text will flash while in Set mode.

Occupied/Override Button



China RoHS Compliance Information

Environment-Friendly Use Period (EFUP) Table

部件名称	有害物质 - Hazardous Substances					
Part Name	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr (VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
电子件 Electronic	X	O	O	O	O	O

本表格依据SJ/T11364的规定编制。
O: 表示该有害物质在该部件所有均质材料中的含量均在GB/T 26572规定的限量要求以下。
X: 表示该有害物质至少在该部件的某一均质材料中的含量超出GB/T 26572规定的限量要求。
（企业可在此处，根据实际情况对上表中打 "X" 的技术原因进行进一步说明。）

This table is made according to SJ/T 11364.
O: indicates that the concentration of hazardous substance in all of the homogeneous materials for this part is below the limit as stipulated in GB/T 26572.
X: indicates that concentration of hazardous substance in at least one of the homogeneous materials used for this part is above the limit as stipulated in GB/T 26572

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