INSTALLATION INSTRUCTIONS

AQW Series Protocol Version

Room CO2/RH/T combo sensor with BACnet RS-485

IMPORTANT WARNINGS

- Only qualified trade installers should install this product
- This product is not intended for life-safety applications
- Do not install in hazardous or classified locations
- The installer is responsible for all applicable codes
- De-energize power supply prior to installation or service

PRODUCT APPLICATION LIMITATION:
Senva products are not designed for life or safety applications. Senva products are not intended for use in critical applications such as nuclear facilities, human implantable device or life support. Senva is not liable, in whole or in part, for any claims or damages arising from such uses.

PRODUCT IDENTIFICATION

	Output	CO2	RH	SLD	BTN	RTD/TH	Color
AQW -	B						

Output Type
A = Analog (0-5/10V)
B = BACnet RS-485

CO2 Sensor
A = None
B = CO2 Sensor

RH Sensor
A = None
B = 2% RH Sensor

Set-Point Slider
A = None
B = 1k (Not valid w/ BACnet)
C = 10k

Push Button
A = None
B = Override Button (Requires thermistor)
C = User Push Button

RTD/Thermistor*
A = None
C = 100Pt (385) RTD
D = 1000Pt (385) RTD
E = 10k type 2
F = 10k type 3
G = 10k w/11k
H = 3k
I = 2k2
J = 1k8
K = 20k

Color
1 = White
2 = Ivory
4 = Light Almond

*Add-on RTD/Thermistor not readable via BACnet; Temperature output is standard on AQW devices, Add-on RTD/Thermistor is option for Analog.

OPERATION

The AQW series design allows customization for a sensor that meets project requirements for monitoring temperature, CO2 and relative humidity. The product can be ordered as stand alone temperature, CO2/Temperature, RH/Temperature or all-in-one CO2/RH/Temperature with a 0-5/10V analog or BACnet RS485 output. This installation manual applies to the Protocol Version AQW sensor with BACnet RS-485.

To verify the features see the 'Product Identification' section of the installation manual. All versions come with temperature as a standard output. For CO2 and RH sensing, the option must be added at the factory.

INSTALLATION

1. IMPORTANT! Locate the device in an area away from ventilation sources and heat generating equipment and appliances. The device should be mounted at light switch height in a vertical orientation. Use insulating material behind the device to ensure reading accuracy.

NOTE: Do not install the device in multi-gang electrical boxes with line voltage or other electrical devices.

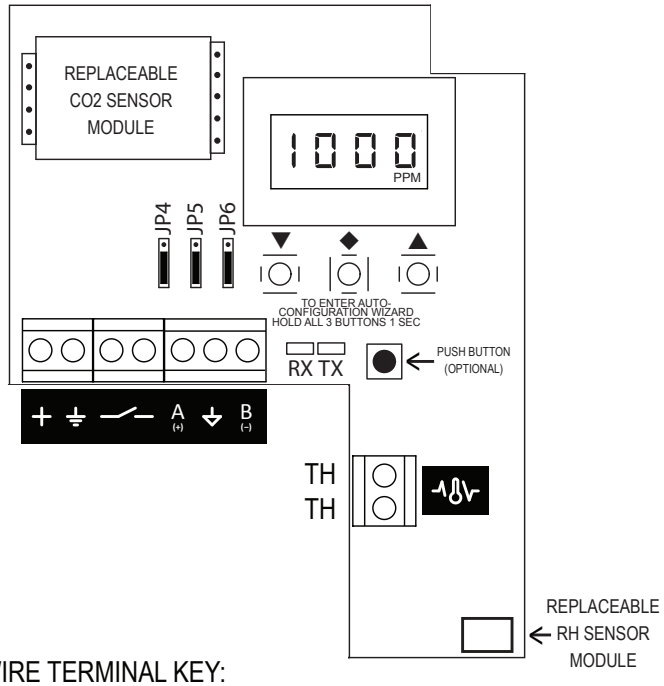
2. Install backplate to wall or j-box using screws provided.

3. Wire according to installation requirements (page 2).

4. Apply power.

5a. Run the *Auto Configuration Wizard* (page 2).
-or-
5b. Set the MAC address and baud rate in the *Setup Menu* (See 'Menu Options' Section, page 3.

WIRING CONFIGURATIONS



WIRE TERMINAL KEY:

+	POWER V_{IN}
⏚	GND/COMMON
	N.O. RELAY
	N.O. RELAY
A (+)	RS-485 +
⏚	ISOLATED GND
B (-)	RS-485 -

THERMISTOR (OPTION)

JUMPER CONFIGURATIONS

JUMPER POSITIONING

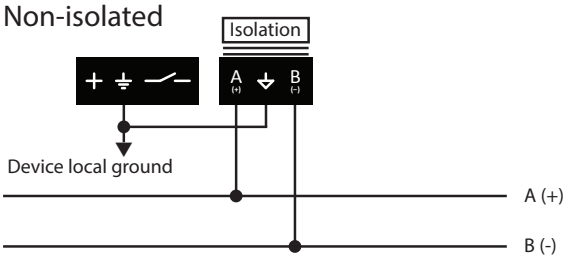
DISABLED

ENABLED

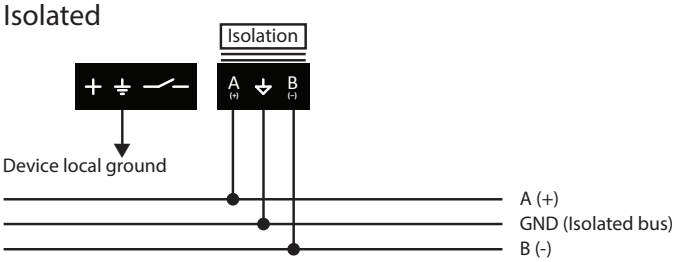
JP4 : 510Ω PULLUP BIAS RESISTOR
JP5 : 120Ω BUS TERMINATION RESISTOR
JP6 : 510Ω PULLDOWN BIAS RESISTOR

RS485 BUS CONNECTIONS

Non-isolated



Isolated



AUTO CONFIGURATION WIZARD

IMPORTANT: The device will not activate the BACnet interface until the baud rate and the MS/TP MAC address are configured. If an active RS485 network is not available, configure the device using the *Setup Menu* (documented in the 'AQ Series User's Guide').

Access the auto configuration wizard by removing the front cover and pressing the ▼, ◆, and ▲ buttons for one second. After the wizard activates, the display will show CFG.

The wizard automatically advances between each step after a few seconds. Pressing the ◆ button also advances the wizard.

bn The baud rate value can usually be detected from existing network activity. If no baud rate could be detected, the display will show ??. If necessary, use ▼ and ▲ to change the baud rate before advancing.

Adn The device detects the smallest free MAC address on the local MS/TP subnet from existing network activity. If the installation requires a specific MAC address, use ▼ and ▲ to override the detected address. If the wizard detects that the selected MAC address conflicts with another device, it automatically advances to the next smallest free MAC address.

After the wizard completes, the device saves the baud rate and MS/TP MAC address. Additionally, the device adds 665000 to the selected MAC address and saves the resulting sum as the device object ID. If the object ID conflicts with another device, use id.1, id.2, and id.3 in the *Setup Menu* to set a unique object ID.

The BACnet interface becomes active immediately after the wizard completes. To reconfigure the baud rate and MAC address, use the *Setup Menu* or run the wizard again.

HOME SCREEN

By default, the device displays one measurement at a time, rotating between measurements every 10 seconds if multiple sensor options are installed.

To change which measurements are displayed on the LCD, access the *Setup Menu* (See 'Menu Options' section below) or configure the device through the BACnet interface.

VISUAL INDICATORS

The baud rate and MAC address must be configured before the device begins transmitting.

The RX light (receiving indicator) will flash while data is being received. If the RX light is not blinking, verify the wiring configuration and wiring connections.

The TX light (transmitting indicator) will flash while data is being transmitted.

OBJECT LIST MANUAL

For further reading access the object list and conformance statement 'AQ Series BACnet Protocol Guide' found online at www.senvainc.com/download_center.asp

The 'AQ Series BACnet Protocol Guide' includes:

- -Protocol Implementation Conformance Statement
- -Supported Objects
- -Supported Properties

MENU OPTIONS

To access the menu options use the 'AQ Series User's Guide' found online at www.senvainc.com/download_center.asp

The 'AQ Series User's Guide' includes:

- -User Menu
- -Quick Start Menu
- -Setup Menu
- -Diagnostics

TROUBLESHOOTING

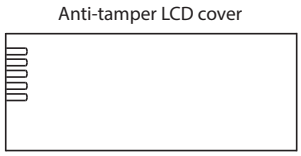
Symptom	Solution
No output	Check wiring. Ensure power supply meets requirements.
Reading error	Verify unit is located away from hot/ cold sources.
	Verify control panel software is configured correctly.
	Verify accuracy of test instrument.
	Install insulation behind sensor to prevent air flow from inside wall.

SENVA TECHNICAL SUPPORT

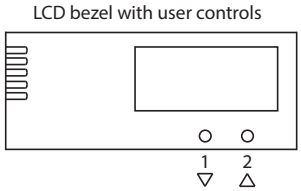
Need futher assistance? Call our toll-free number for live technical support: (866) 660-8864 or feel free to email us at support@senvainc.com

INSTALLING MENU BUTTON COVER

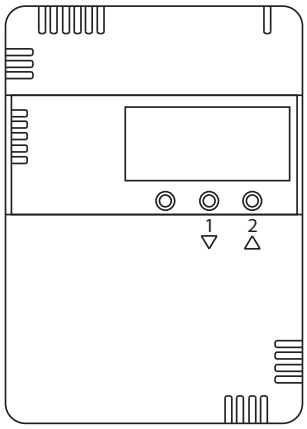
The AQW installation kit offers two cover options:

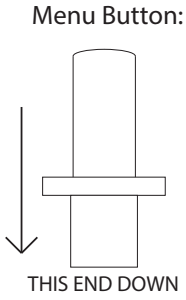


If the anti-tamper cover is used, discard the buttons.



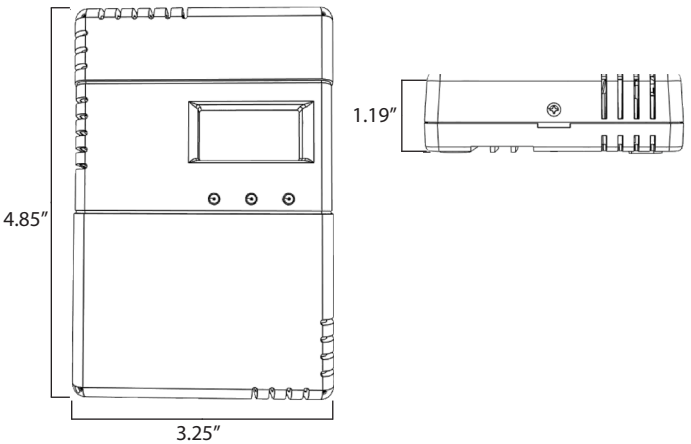
When using the LCD bezel, place the two buttons provided in locations 1 and 2 with the rounded end up/outward.





Snap on the LCD bezel once the buttons have been placed in positions 1 and 2.

DIMENSIONS



SPECIFICATIONS

Power Supply		12-30VDC/24VAC(1), 100mA max.
Protocol Output	Protocol	BACnet
	Connection	3-wire RS-485, with isolated ground
	Data Rate	Locally set baud rate up to 115200 (9600, 19200, 28800, 38400, 57600, 76800, 115200)
	Address Range	0-127
	Bus Load	1/8th unit (256 nodes maximum on bus)
Protocol Relay Set-point	Programmable	Solid-state output, 1A @ 30VAC/DC, N.O. Source selectable: CO2, RH, Temperature
CO2	Type	Non-dispersive Infrared (NDIR)
	Accuracy	±40ppm, ±3% of reading (400-2000ppm)
	Range	10,000ppm
	Response time	60 seconds to 90% reading
	Sample rate	3 seconds
Relative Humidity	Type	Digital CMOS
	Accuracy	2% models, +/-2% over 10 to 90%RH range
	Resolution	0.05%RH
	Hysteresis	+/-1%RH
	Temperature coefficient	Compensated on-board
	Response time (2)	30s
	Sample rate	3s
	Operating range	0 to 100%RH (non-condensing)
	Long term drift	<0.5%RH per year
	Operating conditions (3)	-20° C to 60° C @ RH>90% -20° C to 80° C @ RH=50%
Temperature (with RH option)	Type	Silicon Bandgap
	Nominal Accuracy	+/-0.3° C (operating range)
	Maximal Accuracy	+/-0.5° C (at 25° C), +/-1.0° C (operating range)
	Resolution	0.01° C
	Repeatability	+/-0.1° C
	Response time (2)	30s
	Sample rate	3s
Temperature (without RH option)	Type	NTC Thermistor
	Nominal Accuracy	+/-0.5° C (operating range)
	Maximal Accuracy	+/-1.0° C (at 25° C), +/-2.0° C (operating range)
	Resolution	0.05° C
	Repeatability	+/-0.2° C
	Sample Rate	100 milliseconds
Operating Environment	Temperature	32 to 122F (0 to 50C)
	Humidity	0-95% non-condensing
Enclosure	Material	ABS Plastic
	Dimensions	4.85”h x 3.25”w x 1.19”d

(1) One side of transformer, secondary is connected to signal common. Dedicated transformer is recommended.
(2) Time for reaching 63% of reading at 25° C and 1 m/s airflow
(3) Long term exposures to conditions outside normal range at high humidity may temporarily offset the RH reading (+3%RH after 60 hours.)

Revised 10/13/2014 Document #152-0160-0A