

# AQW Series CO<sub>2</sub>/Humidity/Temp



Available with analog outputs or protocol for BACnet RS-485  
Integrated set-point relay  
Optional field replaceable NDIR CO<sub>2</sub> and RH elements

## DESCRIPTION

The AQW series design allows customization for a sensor that meets project requirements for monitoring temperature, CO<sub>2</sub> and relative humidity. The sensor can be ordered as stand alone temperature, CO<sub>2</sub>/Temp, RH/Temp or all-in-one CO<sub>2</sub>/RH/Temp with a 0-5/10V analog or BACnet RS485 output. Lower material costs and installation time by combining multiple sensors into a single sensor housing with standard LCD and optional add-on features.

## APPLICATIONS

- Controlling ventilation in response to occupancy
- Facilitates compliance with ASHRAE 62.1 standard for air quality
- Offices, conference rooms, and public assembly areas

## FEATURES

### Customize to meet project requirements

- Standard LCD and temperature on each device
- Options to add CO<sub>2</sub> and/or RH sensing elements
- Field replaceable elements for RH
- Available with 0-5/10V Analog or BACnet protocol communication

### Protocol Version

- BACnet RS-485 ready
- Auto-configuration wizard detects baud rate and MAC address
- Adjustable set-point using button menu or optional 10k slider

### Analog Version

- LCD for easy setup of all parameters (concealment cover included)
- Programmable set-points for complete control
- Provision to offset CO<sub>2</sub> reading
- Optional thermistors, sliders and override button

### High performance NDIR CO<sub>2</sub> element

- Selectable auto-calibration mode returns sensor to baseline values

### 2% RH field replaceable sensor

- On-board temperature compensation for RH eliminates temp coefficient errors achieving excellent measurement accuracy, high repeatability and offset stability.
- State of the art testing facilities. 8-point NIST traceable certification available—consult factory

### Quality

- Industry leading 7-year limited warranty/ 2-year RH element, 3-year CO<sub>2</sub> element limited warranties

## ORDERING INFORMATION

Output	CO <sub>2</sub>	RH	SLD	BTN	RTD/TH	Color
<b>AQW -</b>						
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Output Type</b>						
A = Analog (0-5/10V)						
B = BACnet RS-485						
<b>CO<sub>2</sub> Sensor</b>						
A = None						
B = CO <sub>2</sub> Sensor						
<b>RH Sensor</b>						
A = None						
B = 2% RH Sensor						
<b>Set-Point Slider</b>						
A = None						
B = 1k (Not valid w/ BACnet)						
C = 10k						
M = 6-26k (Not valid w/ BACnet)						
T = 200-900 Ω (Not valid w/ BACnet)						
<b>Push Button</b>						
A = None						
B = Override Button (Requires thermistor)						
C = User Push Button						
<b>RTD/Thermistor*</b>						
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						
<b>Color</b>						
1 = White						
6 = Black						

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

Output	CO <sub>2</sub>	RH	SLD	BTN	RTD/TH	Color
<b>Example</b>						
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>B</b>	<b>B</b>	<b>B</b>	<b>A</b>	<b>A</b>	<b>A</b>	<b>1</b>

(AQW sensor with BACnet RS-485, Temp, CO<sub>2</sub>, 2% RH, no set-point slide, no user push button, no RTD/thermistor, white color)

## SPECIFICATIONS

Power Supply		12-30VDC/24VAC <sup>(1)</sup> , 100mA max.
Analog Outputs	Temperature	0--5/10V standard, Scaling 50°F to 95°F (10°C to 35°C); thermistor/RTD values optional
	CO2 and RH	0-5/10V
	Update Rate	Continuous
	Programmable Relay	Solid-state output, 1A @ 30VAC/DC, N.O. Source Selectable: CO2, RH, Temperature
Analog LCD Menu Parameters <sup>(2)</sup>	SPt, Set point, Hi (On)	Sets relay turn-on threshold (800ppm default)
	SPh, Set point, hysteresis (Off)	Sets the relay turn-off hysteresis (100ppm default)
	SCl, Scaling	0-2000ppm or 0-5000ppm (2000ppm default)
	Adj, Adjustment	CO2 Offset adjustment +/-250ppm (0 default)
	CAL, Auto Calibration Period	Off, 7 days, 14 days, 30 days, 60 days (14 days default)
	FC, Displayed Temp Unit	F degrees fahrenheit (default), C degrees celsius
	LOL Analog Output Scale	5V 5.0V full scale, 10V 10.0V full scale (default)
Protocol Output	Protocol	BACnet (Isolated)
	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
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	±(30ppm + 3% of reading) (400-2000ppm), -10-50°C, 0-85%RH ±(50ppm + 5% of reading) (2000-5000ppm), -10-50°C, 0-85%RH <5000ppm consult factory
	Range	0-2000/5000ppm; Programmable up to 10,000ppm
	Response time	60 seconds to 90% reading
	Sample rate	1s
	Resolution	1 ppm (Screen resolution 50 ppm above 2000 ppm)
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 <sup>(3)</sup>	30s
	Sample rate	3s
	Operating range/Output Scale	0 to 100%RH (non-condensing)
Long term drift	<0.5%RH per year	
Operating conditions <sup>(4)</sup>	-4 to 140°F (-20 to 60° C) @ RH>90%; -4 to 176°F (-20 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 <sup>(3)</sup>	30s
Temperature	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 122°F (0 to 50°C)
	Humidity	0-95% non-condensing
Enclosure	Material	ABS Plastic
	Dimensions	4.85"h x 3.25"w x 1.19"d

<sup>(1)</sup> One side of transformer, secondary is connected to signal common. Dedicated transformer is recommended.

<sup>(2)</sup> Quick Start Menu parameters shown, for additional capabilities see installation manual.

<sup>(3)</sup> Time for reaching 63% of reading at 25° C and 1 m/s airflow

<sup>(4)</sup> Long term exposures to conditions outside normal range at high humidity may temporarily offset the RH reading (+3%RH after 60 hours.)

BACnet® is a registered trademark of ASHRAE.