

CW2 ANALOG SERIES

Individual or 4-in-1 CO₂, VOC, RH & Temperature



The CW2 Series of air quality sensors for living space is a flexible multi-sensor platform for use with BAS controllers designed to accept 4 to 20mA, 0 to 5Vdc or 0 to 10Vdc outputs. CW2 Series sensors are available with three user interface options: touchscreen, LCD with three buttons and blank. CO₂ and temperature sensors are included with all CW2 Series air quality sensors. Models with VOC sensors and relative humidity sensors are also available.

SPECIFICATIONS

OPERATING ENVIRONMENT

Input Power	Class 2; 20 to 30 Vdc, 24 Vac, 50 to 60 Hz
Analog Output	Selectable 4 to 20 mA, 0 to 5 V, 0 to 10 V
Operating Temp. Range	0 to 50 °C (32 to 122 °F)
Operating Humidity Range	0 to 95% RH non-condensing
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

CO₂ TRANSMITTER

Sensor Type	Non-dispersive infrared (NDIR), diffusion sampling
Output Range	0 to 2000/5000 ppm (selectable)
Accuracy	±30 ppm ±3% of measured value
Repeatability	±20 ppm ±1% of measured value
Response Time	<60 seconds for 90% step change

VOC TRANSMITTER OPTION

Sensor Type	Solid state
Output Range	0 to 100% AQI for VOC
Accuracy	±15% of measured value
Output Scale	0 to 1,000 ppb of total VOC (TVOC)

	LEVEL	VENTILATION RECOMMENDATION	TVOC (ppb)
AQI Table*	>61%	Greatly increased	>610
	20 to 61%	Significantly increased	200 to 610
	10 to 20%	Slightly increased	100 to 200
	5 to 10%	Average	50 to 100
	0 to 5%	Target value	0 to 50

Microprocessor based

Microprocessor controlled for excellent stability

Self-calibrating

Innovative self-calibration algorithm...easy to maintain

Dual-beam NDIR CO₂ sensor

Dual-beam, non-dispersive infrared technology (NDIR) repeatable to ±20 ppm ±1% of measured value...high accuracy measurement

APPLICATIONS

- Controlling ventilation in response to accuracy
- ASHRAE 62.1 compliant
- Office buildings, conference rooms, schools, retail stores, etc.

Easy to install

Large wiring terminals on baseplate and snap-on covers with security screw simplify installation and service

Field selectable

Field-selectable outputs for operation flexibility

Visual CO₂ indication

Stoplight feature for visual indication at user-configurable CO₂ threshold levels (touchscreen models only)

RH TRANSMITTER OPTION

HS Sensor	Solid state capacitive, replaceable
Accuracy (Includes Hysteresis)**	±3.8% RH from 10 to 60% RH @ 25°C (77 °F) ±4.8% RH from 60 to 80% RH @ 25°C (77 °F) ±5.8% RH from 80 to 100% RH @ 25°C (77 °F)
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 TRANSMITTER OPTION

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: 0-10Vdc. Temperature, humidity or fan speed selectable Timeout override: Display timeout*** Lockout override: Touchscreen/button lockout***
LCD	52mm (2.05 in), segmented with 3 buttons Setpoint: 0-10Vdc. Temperature, humidity or fan speed selectable Timeout override: Display timeout*** Lockout override: Touchscreen/button lockout***

SETPOINTS****

Temperature Setpoint	0 to 10V output Scale: 10 to 35 °C (50 to 95 °F) / 0 to 50 °C (32 to 122 °F)
Humidity Setpoint	0 to 10V output Scale: 0 to 100% RH
Fan Speed Setpoint	0 to 10V output Off 0V, Auto 1.5V, Low 3.3V, Med. 6.7V, High 10.0V

SPECIFICATIONS (CONT.)

OVERRIDE

Override Button	Display models feature momentary-to-ground override button
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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
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COMPLIANCE INFORMATION

Agency Approvals	UL 916, European Conformance CE: EN 60730-1, EN 60730-2-9, EN 60730-2-13, EN 61000-6-2, EN 61000-6-3, EN 61000 Series - Industrial Immunity, EN 61326-1 FCC Part 15 Class B, REACH, RoHS, RCM (Australia), ICES-003 (Canada), UKCA (UK)
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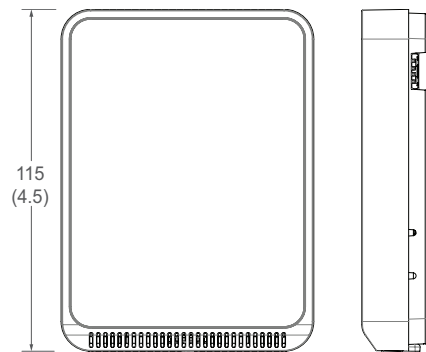
* Air Quality Index for VOC aligns with TVOC levels for IAQ as specified by the WHO (World Health Organization).

** Humidity sensor overall accuracy should include: accuracy, temperature coefficient and stability. Humidity accuracy is shown as an absolute value, so if testing accuracy with a hand-held device, you must check for deviation in its readings instead of calculating the percentual deviation. Additionally, you must consider the overall accuracy of the hand-held device in the comparison.

***DIP switch selectable.

**** One setpoint type is selectable via DIP switch on display models only.

DIMENSIONAL DRAWING



USER INTERFACE TYPES



Touchscreen



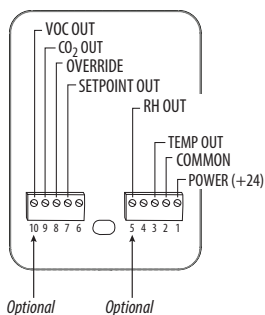
LCD with Buttons



Blank

CW2L/CW2T
DISPLAY MODELS
WITH TEMP
TRANSMITTER

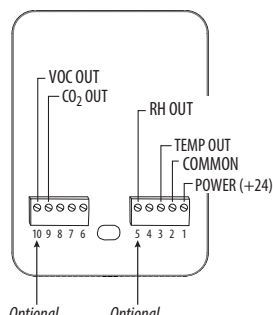
Wiring Diagram



Optional

CW2X WITH
TEMP TRANSMITTER

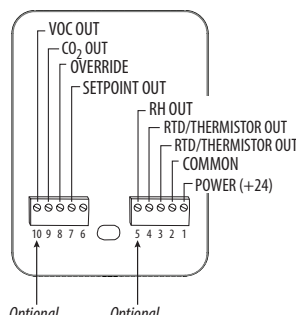
Wiring Diagram



Optional

CW2L/CW2T
DISPLAY MODELS
WITH RTD/THERMISTOR

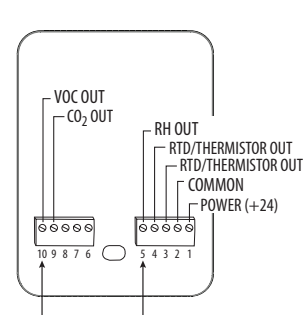
Wiring Diagram



Optional

CW2X WITH
RTD/THERMISTOR

Wiring Diagram



Optional

ORDERING INFORMATION

User Interface	Output	RH Accuracy ¹	Temperature	VOC Sensor	Example:
CW2	A	2	A	V	CW2 T A 2 A V
T = Color touchscreen L = 3-button LCD display X = None ²	A = Analog output	2 = 2% X = None ²	A = Transmitter C = 1000 PT RTD D = 10K T2 thermistor H = 10K T3 thermistor K = 10K curve G/11K shunt M = 20K NTC thermistor N = 1.8K TAC thermistor	V = NDIR CO2 / VOC ³ None	

1. Replaceable RH module available to be ordered separately per table below.
2. For analog non-display, non-RH models with RTD/thermistor, order from the CWE2 line.
3. VOC only available with temperature transmitter option.

REPLACEABLE RH ELEMENTS

MODEL	DESCRIPTION	TEMP. CALIBRATION	RH CALIBRATION
HS1N	Replaceable RH sensor, 1% with NIST certificate	N/A	2-point calibration
HS2N	Replaceable RH sensor, 2% with NIST certificate	N/A	2-point calibration
HS2X	Replaceable RH sensor, 2%	N/A	2-point calibration



Replaceable RH Element