

CW2 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

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

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

RH TRANSMITTER OPTION

HS Sensor	Thin-film capacitive, replaceable
Accuracy	±2% from 10 to 80% RH @ 25 °C (77 °F)
Hysteresis	1.5% typical
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



SPECIFICATIONS (CONT.)

Fan Speed	0 to 10V output
Setpoint	Off 0V, Low 3.3V, Med. 6.7V, High 10.0V

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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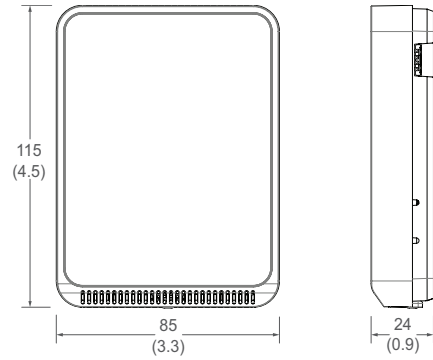
COMPLIANCE INFORMATION

Agency Approvals	UL 916, European conformance CE: 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)
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* Air Quality Index for VOC aligns with TVOC levels for IAQ as specified by the WHO (World Health Organization).
**DIP switch selectable.
*** One setpoint type is selectable via DIP switch on display models only.

DIMENSIONAL DRAWING

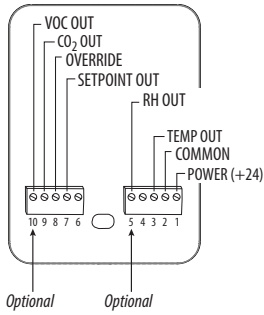


USER INTERFACE TYPES



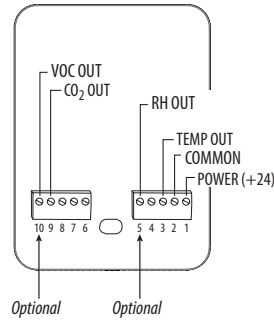
CW2L/CW2T DISPLAY MODELS WITH TEMP TRANSMITTER

Wiring Diagram



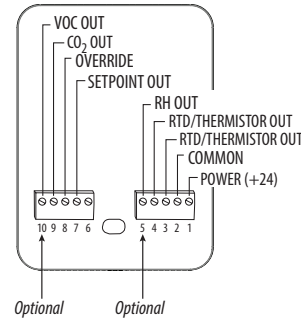
CW2X WITH TEMP TRANSMITTER

Wiring Diagram



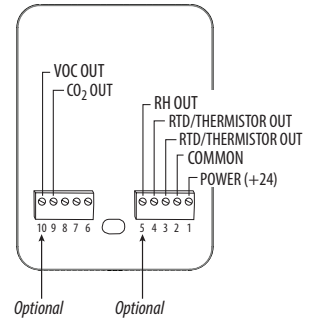
CW2L/CW2T DISPLAY MODELS WITH RTD/THERMISTOR

Wiring Diagram



CW2X WITH RTD/THERMISTOR

Wiring Diagram



ORDERING INFORMATION

User Interface	Output	RH Accuracy*	Temperature	VOC Sensor
CW2 T = Color touchscreen L = 3-button LCD display X = None***	A = Analog output	2 = 2% X = None***	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** = None

Example: CW2 T A 2 A V

* Replaceable 1% with NIST certificate, 2% with NIST certificate and 2% elements available.
** VOC only available with temperature transmitter option
*** For analog non-display, non-RH, models with RTD/thermistor order from CWE2 line.

REPLACEABLE RH ELEMENTS

MODEL	RH ACCURACY	CALIBRATION CERTIFICATE	DESCRIPTION
HS1N	±1%	X	Replaceable RH sensor, 1% with NIST certification
HS2N	±2%	X	Replaceable RH sensor, 2% with NIST certification
HS2X	±2%		Replaceable RH sensor, 2%

