CW2 PROTOCOL SERIES

Individual or 4-in-1 CO_2, VOC, RH & Temperature

CW2Txxxx   CW2Lxxxx   CW2Xxxxx

The CW2 Protocol Series of air quality sensors for living space is a flexible multi-sensor platform for use with BAS controllers designed to accept BACnet or Modbus outputs. CW2 Protocol Series sensors are available with three user interface options: touchscreen, LCD with three buttons and blank. CO_2 and temperature sensors are included with all CW2 Protocol Series air quality sensors. Models with VOC sensors and relative humidity sensors are also available.

Communicating

Embedded BACnet and Modbus communication protocols…easy systems integration

Self-calibrating

Innovative self-calibration algorithm…easy to maintain

Dual-beam NDIR CO_2 sensor

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

Configurable baud rates

Configurable to multiple baud rates…transfer data at the right speed for the system

Easy to install

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

Visual CO₂ indication

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

APPLICATIONS

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

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)
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

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

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

SETPOINTS

Temperature Setpoint	Scale: 10 to 35 °C (50 to 95 °F) / 0 to 50 °C (32 to 122 °F)
Humidity Setpoint	Scale: 0 to 100% RH
Fan Speed Setpoint	Off, Low, Medium, High

SPECIFICATIONS (CONT.)

OVERRIDE

Override Button	Display models feature momentary override button

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)

c(UL)us LISTED   CE   RCM

* Air Quality Index for VOC aligns with TVOC levels for IAQ as specified by the WHO (World Health Organization)
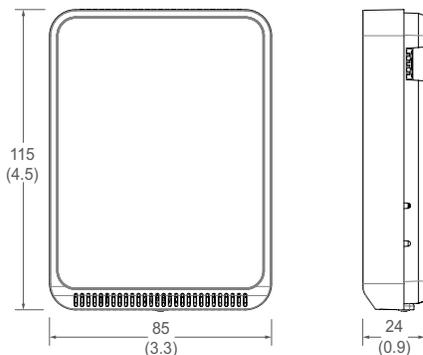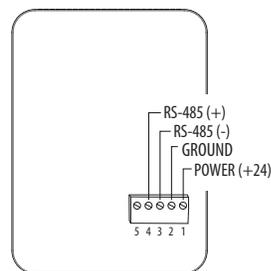
USER INTERFACE TYPES

Touchscreen   LCD with Buttons   Blank

DIMENSIONAL DRAWING

115 (4.5)

85 (3.3)

24 (0.9)

WIRING DIAGRAM

RS-485 (+)
RS-485 (-)
GROUND
POWER (+24)

5 4 3 2 1

ORDERING INFORMATION

	User Interface	Output	RH Accuracy*		VOC Sensor	
CW2	☐	☐	☐	A	☐	

T = Color touchscreen
L = 3-button LCD display
X = None***

P = BACnet/Modbus

2 = 2%
X = None

V = NDIR CO2 / VOC
= None

Example:

CW2	T	P	2	A	V

* Replaceable 1% with NIST certificate, 2% with NIST certificate and 2% elements available.

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%

Replaceable RH Element