# CW PROTOCOL SERIES

Individual or 3-in-1 with Modbus or BACnet Protocol

CWLP

CWXP

CW Protocol Series is a non-dispersive infrared (NDIR) sensor designed for measuring $CO_2$ concentration in ventilation systems and indoor living spaces. Its measurement range of 0 to 5000 ppm makes it the premier solution for meeting ASHRAE and other ventilation efficiency standards.

CW Protocol devices feature embedded BACnet and Modbus communication protocols, as well as optional temperature and humidity sensors. An adjustable setpoint relay is provided for direct control and alarm applications, and the optional setpoint slider and pushbutton override offer additional local input.

## Communicating

Embedded BACnet and Modbus communication protocols…easy systems integration

## Configurable baud rates

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

## CO₂, RH, temp

$CO_2$, humidity, and temperature sensors in one device at one address…provides more information and maximizes system capacity

## Feature override

Local feature override capability from the building control system…added control and flexibility

## Self-calibrating

Innovative self-calibration algorithm…maximizes performance. Field calibratable… minimizes downtime.

## NIST or standard

Available with 2% NIST or 2% standard RH

## APPLICATIONS

- Controlling ventilation in response to occupancy
- Office buildings, conference rooms, schools, retail stores, etc.

## SPECIFICATIONS

| | |
|---|---|
| Input Power | Class 2; 12 to 30 Vdc, 24 Vac 50/60 Hz; 100 mA max. |
| Operating Temp Range | No humidity option: 0 to 50 °C (32 to 122 °F); With humidity option: 10 to 35 °C (50 to 95 °F) |
| Operating Humidity Range | 0 to 95% RH non-condensing |
| Housing Material | High impact ABS plastic, UL 94 V0 |
| Terminal Block Torque | 0.22 N-m (2.0 in-lbf) max. |
| Terminal Block Wire Size | 30 to 18 AWG (0.08-0.5mm²) |
| Protocol | BACnet or Modbus (selectable) |
| Connection | 2-wire RS-485 |
| Data Rate | 9600, 19200, 38400, 57600 (Modbus), bps (selectable); 9600, 19200, 38400, 76800 (BACnet), bps (selectable) |
| Parity | None/Odd/Even (selectable-Modbus); None (BACnet) |
| Address Range | 1 to 127 |
| Setpoint Slider Resolution Option | 1% full scale |
| Override Button Option | Remotely readable and resettable |

### CO₂ TRANSMITTER

| | |
|---|---|
| Sensor Type | Non-dispersive infrared (NDIR) diffusion sampling |
| Measurement Range | 0 to 5000 ppm |
| Accuracy* | ±30 ppm ±2% of measured value |
| Repeatability | ±20 ppm ±1% of measured value |

### RH TRANSMITTER OPTION

| | |
|---|---|
| HS Sensor | Replaceable digitally profiled thin-film capacitive ; (32-bit mathematics); U.S. Patent 5,844,138 |
| Accuracy** | ±1% from 12 to 60% RH; ±2% from 10 to 80% RH; NIST traceable multi-point calibration |
| Reset Rate*** | 24 hours |
| Stability | ±1%@ 20 °C (68 °F) annually for two years |
| Hysteresis | 1.5% typical |
| Temperature Coefficient | ±0.1% RH/°C above/below 25 °C (typical) |

### TEMPERATURE TRANSMITTER OPTION

| | |
|---|---|
| Sensor Type | Solid-state, integrated circuit |
| Accuracy | ±0.5 °C (±1 °F) typical |

## SPECIFICATIONS, CONT.

| | |
|---|---|
| Resolution | 0.1 °C (0.2 °F) |
| Range | 10 to 35 °C (50 to 95 °F) |

**RELAY CONTACTS**

| | |
|---|---|
| 1 Form C (SPDT) | 1 A@30 Vdc, resistive; 30 W max. |

**WARRANTY**

| | |
|---|---|
| Limited Warranty | 5 years |

**AGENCY APPROVALS**

$C\epsilon$ †

EMC Conformance: Low voltage directive 2014/35/EU and EMC directive 2014/30/EU.
EMC Special Note: Connect this product to a DC distribution network or an AC/DC power adaptor with proper surge protection (EN 61000-6-1:2007 specification requirements)
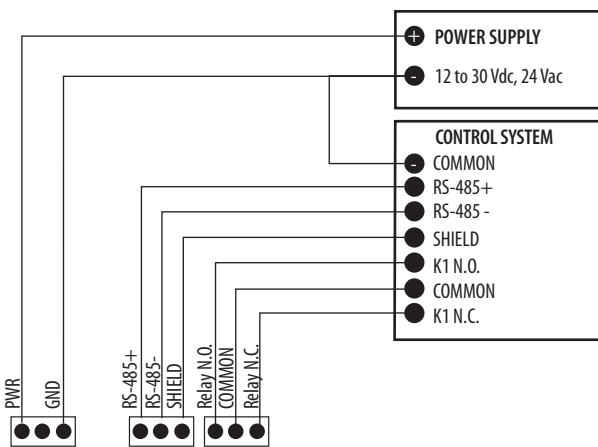* Measured at NTP
** Specified accuracy with 24 Vdc supplied power with rising humidity.
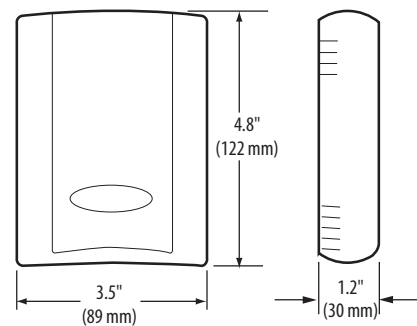*** Reset rate is the time required to recover to 50% RH after exposure to 90% RH for 24 hours.
† The CE mark indicates RoHS2 compliance. Please refer to the CE Declaration of Conformity for additional details.
Note: Rough handling and transportation may cause a temporary reduction of $CO_2$ sensor accuracy. With time, the ABC function will tune the readings back to the correct accuracy range. The default tuning speed is limited to 30 ppm per week.

## WIRING DIAGRAM



## DIMENSIONAL DRAWING



## ORDERING INFORMATION



| | Local Display | Protocol | RH Option | Temp. Option | Temp Cal. Cert. | Option | Housing |
|---|---|---|---|---|---|---|---|
| CW | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

L = LCD
X = No Display

P= Protocol

X = No RH
2 = RH 2% NIST
H = RH 2%

X = No Temp
T = Temp Transmitter

X = None
1 = 1 pt. cal. cert.*
2 = 2 pt. cal. cert.*

Blank = None
1 = Pushbutton override
2 = Set point slider
3 = Pushbutton override
   + setpoint slider

Blank = Cloud white
B = Black

Example:

| CW | L | P | H | T | X | 3 |
|---|---|---|---|---|---|---|

*Only available if temperature option is selected.