

## C Series



### Individual or 3-in-1 CO<sub>2</sub>, RH, and Temperature

#### FEATURES

- Microprocessor-based design increases accuracy and reduces installation time
- Non-dispersive infrared technology (NDIR) repeatable to  $\pm 20$  ppm  $\pm 1\%$  of measured value...high accuracy measurement
- Innovative self-calibration algorithm...easy to maintain
- 5-year calibration interval (recommended)
- Field-selectable outputs for operation flexibility
- Integrated transducer and probe...eliminates the need to install a separate pick-up tube
- Snap-on faceplate...no screws required, making installation and service easy
- CO<sub>2</sub>, humidity, and temperature sensing all in one compact device...fewer units to buy and install

#### DESCRIPTION

CDL/CWL carbon dioxide sensors maximize energy savings, while helping optimize ventilation. These sensors allow ventilation systems to be controlled by the amount of CO<sub>2</sub> present in a space. The CWL/CDL Series detect fluctuations in CO<sub>2</sub> levels and signal ventilation systems to provide an inlet of fresh air optimal for the space at a given time saving energy and increasing tenant comfort.

#### SPECIFICATIONS

<b>Input Power</b>	Class 2; 20 to 30VDC/24VAC 50/60Hz; 100mA max.
<b>Analog Output</b>	4-20mA (clipped & capped)/0-5VDC/0-10VDC (selectable)
<b>Operating Temp Range</b>	CDL 0° to 50°C (32° to 122°F) CWL No humidity option: 0° to 50°C (32° to 122°F); With humidity option: 10° to 35°C (50° to 95°F)
<b>Operating Humidity Range</b>	0 to 95% RH noncondensing
<b>Housing Material</b>	High impact ABS plastic
<b>Terminal Block Torque</b>	CDL 0.2N-m (2.0 in-lbf) max. CWL 0.22N-m (2.0 in-lbf) max.
<b>Terminal Block Wire Size</b>	CDL 28-14 AWG (0.5-1.5mm <sup>2</sup> ) CWL 30-18 AWG (0.08-0.5mm <sup>2</sup> )
<b>CO<sub>2</sub> TRANSMITTER</b>	
<b>Sensor Type</b>	Non-dispersive infrared (NDIR), diffusion sampling
<b>Output Range</b>	0-2000/5000 ppm (programmable)
<b>Accuracy</b>	$\pm 30$ ppm $\pm 2\%$ of measured value*
<b>Repeatability</b>	$\pm 20$ ppm $\pm 1\%$ of measured value
<b>Response Time</b>	<60 seconds for 90% step change
<b>RH TRANSMITTER</b>	
<b>HS Sensor</b>	Fully replaceable, digitally profiled thin-film capacitive (32-bit mathematics) U.S. Patent 5,844,138
<b>Accuracy</b>	$\pm 2\%$ from 10 to 80% RH @ 25°C; NIST traceable multi-point calibration
<b>Hysteresis</b>	1.5% typical
<b>Stability</b>	$\pm 1\%$ @ 20°C (68°F) annually for two years
<b>Output Range</b>	0-100% RH
<b>Temperature Coefficient</b>	$\pm 0.1\%$ RH/°C above or below 25°C (typical)
<b>TEMPERATURE TRANSMITTER</b>	
<b>Sensor Type</b>	Solid-state, integrated circuit
<b>Accuracy</b>	$\pm 0.5^\circ\text{C}$ ( $\pm 1^\circ\text{F}$ ) typical
<b>Resolution</b>	0.1°C (0.2°F)
<b>Output Range</b>	10° to 35°C (50° to 95°F)
<b>RELAY CONTACTS</b>	
<b>1 Form C (SPDT) (on wall models, relay is only available in units without the setpoint slider option)</b>	1A@30VDC, resistive; 30W max.

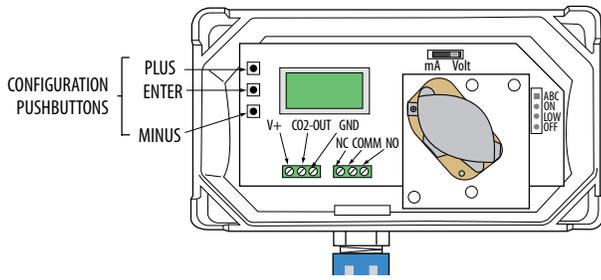
RTD/Thermistors in wall packages are not compensated for internal heating of product.  
EMC Conformance: Low voltage directive 2006/95/EC & EMC directive 2004/108/EC.  
EMC Special Note: Connect this product to a DC distribution network or an AC DC power adaptor with proper surge protection (EN 61000-6-1:2007 specification requirements).  
\* Measured at NTP

Note: Rough handling and transportation may cause a temporary reduction of CO<sub>2</sub> 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.

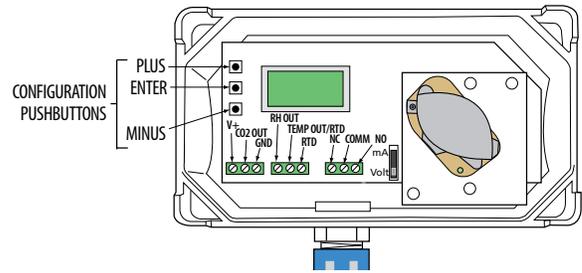
#### APPLICATIONS

- Controlling ventilation in response to occupancy
- Facilitating compliance with ASHRAE 62.1 standard for air quality
- Office buildings, conference rooms, schools, retail stores, etc.

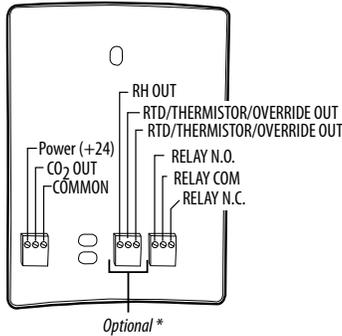
CDL: CO<sub>2</sub> Only



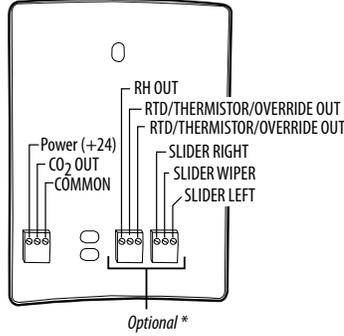
CDL: Temp and/or RH Options



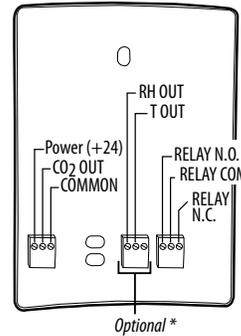
CWL: CO<sub>2</sub>, RH, Thermistor, Pushbutton Override, and Relay Options



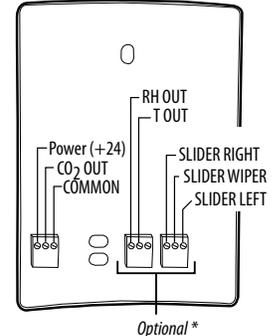
CWL: CO<sub>2</sub>, RH, Thermistor, Pushbutton Override, and Setpoint Slider Options



CWL: CO<sub>2</sub>, RH, Temperature Transmitter Options, and Relay Options



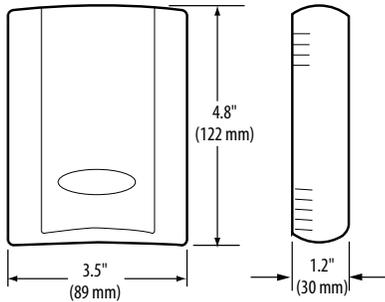
CWL: CO<sub>2</sub>, RH, Temperature Transmitter, and Setpoint Slider Options



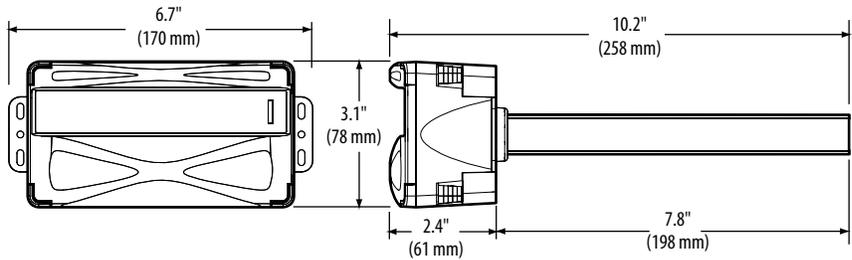
\* Note: Connector blocks & headers for optional features are not included with non-option models.

**DIMENSIONAL DRAWINGS**

CWL Wall Mount



CDL Duct Mount



**ORDERING INFORMATION**



Duct Mount				Wall Mount			Available Options			
RH Option	Temp	Sensor Type	Optional Cal Cert	RH Option	Temp	Sensor Type	Temp Cal Cert	Option	Setpoint Slider Value	Housing
CDLS <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	CWLS <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H = RH2% X = No RH	T = Temp X = No Temp (Stop here)	A = Transmitter B = 100R Platinum, RTD C = 1k Platinum, RTD D = 10k T2, Thermistor E = 2.2k, Thermistor F = 3k, Thermistor G = 10k CPC, Thermistor H = 10k T3, Thermistor J = 10k Dale, Thermistor K = 10k w/11k shunt, Thermistor M = 20k NTC, Thermistor N = 1800 ohm, Thermistor R = 10k US, Thermistor S = 10k 3A221, Thermistor T = 100k, Thermistor U = 20k "D", Thermistor W = 10k T2 high accuracy, Thermistor Y = 10k T3 high accuracy, Thermistor Z = 10k E1, Thermistor	Blank = None 1 = 1 pt Temp Cert 2 = 2 pt Temp Cert	H = RH 2% X = No RH	T = Temp X = No (stop here)	A = Transmitter B = 100R Platinum, RTD C = 1k Platinum, RTD D = 10k T2, Thermistor E = 2.2k, Thermistor F = 3k, Thermistor G = 10k CPC, Thermistor H = 10k T3, Thermistor J = 10k Dale, Thermistor K = 10k w/11k shunt, Thermistor M = 20k NTC, Thermistor N = 1800 ohm, Thermistor R = 10k US, Thermistor S = 10k 3A221, Thermistor T = 100k, Thermistor U = 20k "D", Thermistor W = 10k T2 high accuracy, Thermistor Y = 10k T3 high accuracy, Thermistor Z = 10k E1, Thermistor	X = No 1 = 1pt Temp Cert 2 = 2pt Temp Cert	1 = Push Button Override * 2 = Set Point Slider 3 = Push Button Override*+Set Point Slider	A = 1k F = 10k G = 20k K = 50k M = 100k	Blank = Cloud white B = Black

**ACCESSORIES**

Calibration kits & gases (AA01, AA26, AA27, AA28, AA29)  
Handheld air quality testers (1010, 1008, 770)  
Replacement covers and housing for wall units (AA52, AA55)

**Example:** CWLS  H  T  C  2  2  A

\* The Push Button Override feature is not available with temperature transmitter models. Only resistive temperature models qualify for this feature.

**Example:**  
CDLS  H  T  B  2