C SERIES
Individual or 3-in-1 CO_2, RH and Temperature

CWL

CDL

CDL/CWL carbon dioxide (CO_2) sensors maximize energy savings, while helping optimize ventilation. These sensors allow ventilation systems to be controlled by the amount of CO_2 present in a space. The CWL/CDL Series detect fluctuations in CO_2 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.

Microprocessor based

Microprocessor-based design increases accuracy and reduces installation time

Self-calibrating

Innovative self-calibration algorithm…easy to maintain

NDIR

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

Snap-on faceplate

Snap-on faceplate…no screws required, making installation and service easy

Field-selectable

Field-selectable outputs for operation flexibility

Integrated probe

Integrated transducer and probe…eliminates the need to install a separate pick-up tube

APPLICATIONS

- Controlling ventilation in response to occupancy
- ASHRAE 62.1 air quality standard compliance

- Office buildings, conference rooms, schools, retail stores, etc.

SPECIFICATIONS

Input Power	Class 2; 20 to 30 Vdc/24 Vac 50/60 Hz; 100 mA max.
Analog Output	4 to 20 mA (clipped and capped)/0 to 5 Vdc/ 0 to 10 Vdc (selectable)
Operating Temp Range: CDL CWL	0 to 50 °C (32 to 122 °F) 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
Terminal Block Torque: CDL CWL	0.2 N-m (2.0 in-lbf) max. 0.22 N-m (2.0 in-lbf) max.
Terminal Block Wire Size: CDL CWL	28 to 14 AWG (0.5 to 1.5mm^2) 30 to 18 AWG (0.08 to 0.5mm^2)

CO_2 TRANSMITTER

Sensor Type	Non-dispersive infrared (NDIR), diffusion sampling
Output Range	0 to 2000/5000 ppm (programmable)
Accuracy	±30 ppm ±2% of measured value*
Repeatability	±20 ppm ±1% of measured value
Response Time	<60 seconds for 90% step change

RH TRANSMITTER OPTION

HS Sensor	Fully replaceable, digitally profiled thin-film capacitive (32-bit mathematics) U.S. Patent 5,844,138
Accuracy	±2% from 10 to 80% RH @ 25 °C; NIST traceable multi-point calibration

Hysteresis	1.5% typical
Stability	±1% @ 20 °C (68 °F) annually for two years
Output Range	0 to 100% RH
Temperature Coefficient	±0.1% RH/°C above or below 25 °C (typical)

TEMPERATURE TRANSMITTER OPTION

Sensor Type	Solid-state, integrated circuit
Accuracy	±0.5 °C (±1 °F) typical
Resolution	0.1 °C (0.2 °F)
Output Range	10 to 35°C (50 to 95°F)

RELAY CONTACTS

1 Form C (SPDT) (on wall models, relay is only available in units without the setpoint slider option)	1 A@30 Vdc, resistive; 30 W max.

WARRANTY

Limited Warranty	5 years

AGENCY APPROVALS

CE **

RTD/Thermistors in wall packages are not compensated for internal heating of product. 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 specification requirements).
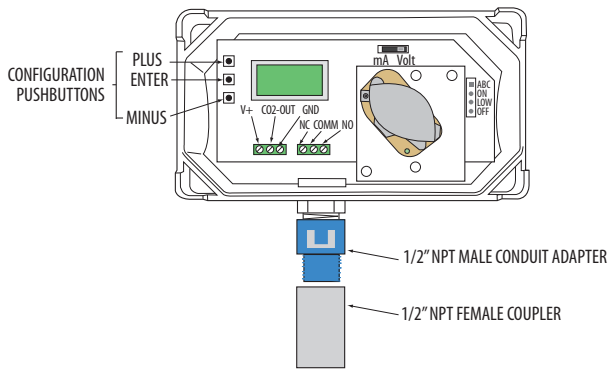* Measured at NTP.
**The CE mark indicates RoHS2 compliance. Please refer to the CE Declaration of Conformity for additional details.
Note: Rough handling and transportation may cause a temporary reduction of CO_2 sensor accuracy. With time, the ABC function will tune the readings back to the correct accuracy range. The default tuning speed is limited to 30 ppm per week.
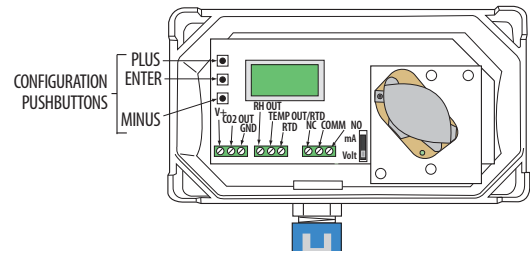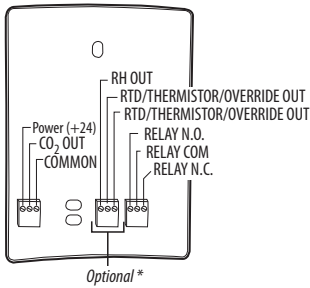
CDL (CO₂ ONLY)
Wiring Diagram

CONFIGURATION PUSHBUTTONS
PLUS
ENTER
MINUS

V+ CO2-OUT GND   NC COMM NO

mA Volt

ABC
ON
LOW
OFF

1/2" NPT MALE CONDUIT ADAPTER

1/2" NPT FEMALE COUPLER

CDL (TEMP AND/OR RH OPTIONS)
Wiring Diagram

CONFIGURATION PUSHBUTTONS
PLUS
ENTER
MINUS

V+ CO2 OUT RH OUT TEMP OUT/RTD
GND RTD NC COMM NO
mA Volt

CWL
CO₂, RH, Thermistor, Pushbutton Override, and Relay Options

RH OUT
RTD/THERMISTOR/OVERRIDE OUT
RTD/THERMISTOR/OVERRIDE OUT
Power (+24)
CO₂ OUT
COMMON
RELAY N.O.
RELAY COM
RELAY N.C.

*Optional ***

CWL
CO₂, RH, Thermistor, Pushbutton Overrde, and Setpoint Slider Options

RH OUT
RTD/THERMISTOR/OVERRIDE OUT
RTD/THERMISTOR/OVERRIDE OUT
Power (+24)
CO₂ OUT
COMMON
SLIDER RIGHT
SLIDER WIPER
SLIDER LEFT
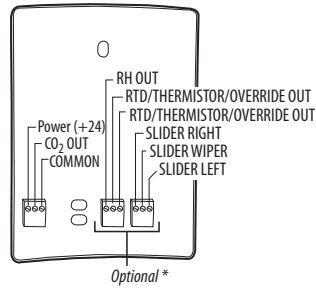
*Optional ***

CWL
CO₂, RH, Temperature Transmitter Options, and Relay Options

RH OUT
T OUT
Power (+24)
CO₂ OUT
COMMON
RELAY N.O.
RELAY COM
RELAY N.C.
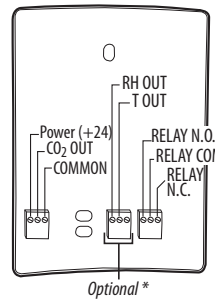
*Optional ***

CWL
CO₂, RH, Temperature Transmitter, and Setpoint Slider Options

RH OUT
T OUT
Power (+24)
CO₂ OUT
COMMON
SLIDER RIGHT
SLIDER WIPER
SLIDER LEFT
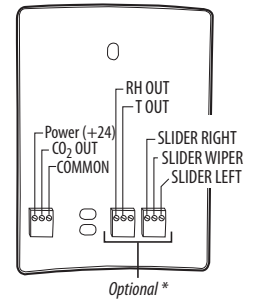
*Optional ***

*Connector blocks and headers for optional features are not included with non-option models.

CWL WALL MOUNT
Dimensional Drawing

4.8"
(122 mm)

3.5"
(89 mm)

1.2"
(30 mm)
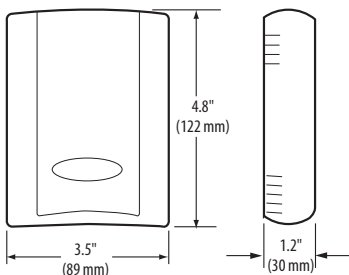
CDL DUCT MOUNT
Dimensional Drawing

6.7"
(170 mm)

10.2"
(258 mm)

3.1"
(78 mm)

2.4"
(61 mm)

7.8"
(198 mm)
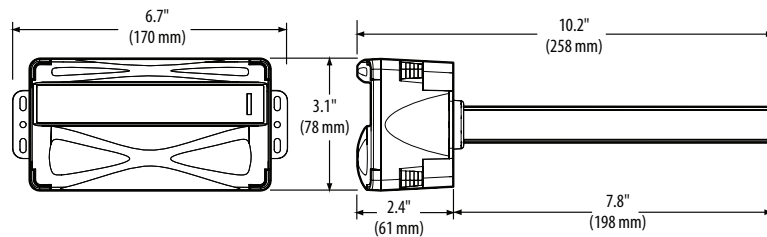
ORDERING INFORMATION

Duct Mount

	RH Option	Temp	Sensor Type	Optional Cal Cert
CDLS	☐	☐	☐	☐

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

Blank = None
1 = 1 pt Temp Cert**
2 = 2 pt Temp Cert**

Example:

CDLS	H	T	B	2

Wall Mount

Available Options

	RH Option	Temp.	Sensor Type	Temp Cal Cert	Option	Setpoint Slider Value	Housing
CWLS	☐	☐	☐	☐	☐	☐	☐

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
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S = 10k 3A221, Thermistor
T = 100k, Thermistor
U = 20k "D", Thermistor
W = 10k T2 high accuracy, Thermistor
Y = 10k T3 high accuracy, 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

Example:

Options

CWLS	H	T	C	2	2	A
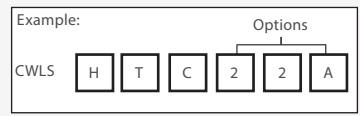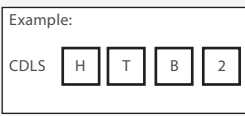
*The Push Button Override feature is not available with temperature transmitter models. Only resistive temperature models qualify for this feature.
**Not available with W and Y high accuracy thermistors.