CRLSXX

CRL

AA50

CE

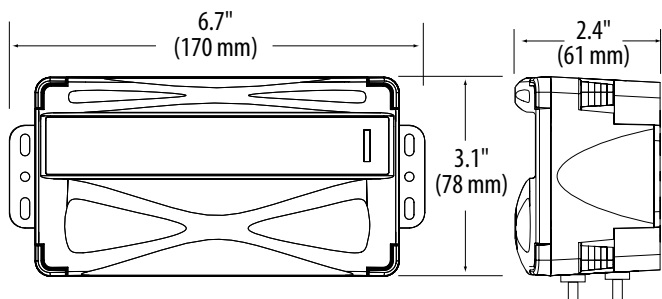# CRLSXX

Environmental CO$_2$ Remote Mount Sensor

NOTICE

- This product is not intended for life or safety applications.
- Do not install this product in hazardous or classified locations.
- Read and understand the instructions before installing this product.
- Turn off all power supplying equipment before working on it.
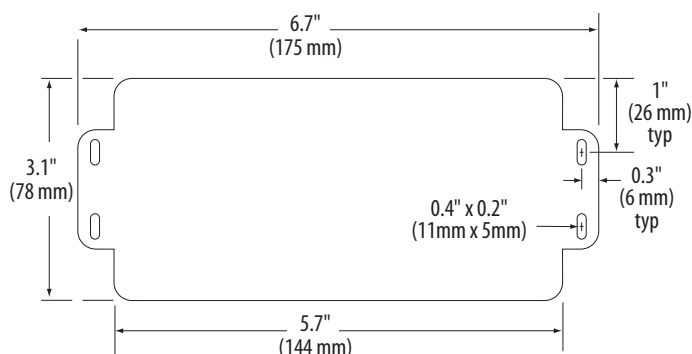- The installer is responsible for conformance to all applicable codes.

PRODUCT IDENTIFICATION

MODEL	DESCRIPTION
CRLSxx	CO$_2$ Based Remote Mount Sensor

DIMENSIONS

6.7" (170 mm)

2.4" (61 mm)

3.1" (78 mm)

MOUNTING DIAGRAM

6.7" (175 mm)

3.1" (78 mm)

1" (26 mm) typ

0.3" (6 mm) typ

0.4" x 0.2" (11mm x 5mm)

5.7" (144 mm)

Installer's Specifications

Input Voltage	20 to 30VDC, 24AC
Analog Output	4-20mA (clipped and capped)/0-5VDC/0-10VDC (selectable)
Sensor Current Draw	100mA max.
Operating Temperature Range	0° to 50°C (32° to 122°F)
Operating Humidity Range	0-95% (noncondensing)
Housing Material	High impact ABS plastic
CO$_2$ Transmitter:	
Sensor Type	Non-dispersive infrared (NDIR), diffusion sampling
Output Range	0-2000 ppm or 0-5000 ppm, user selectable
Accuracy	±30 ppm ±5% of measured value
Repeatability	±20 ppm ±1% of measured value
Response Time	<60 seconds for 90% step change when used with supplied 3 ft. sampling tube (AA50)
Relay Contacts:	
1 Form C	1A@30VDC, resistive; 30W max.

EMC Conformance: EN 61000-6-4:2001 Class B, EN 61000-6-1:2001
EMC Test Methods: CISPR 11:2004, IEC 61000-4-2:2001, IEC 61000-4-3:2002, IEC 61000-4-4:2004, IEC 61000-4-5:2001, IEC 61000-4-6:2004, IEC 61000-4-8:2001, IEC 61000-4-11:2004
EMC Special Note: Connect this product to a DC distribution network or an AC/DC power adaptor with proper surge protection (EN 61000-6-1:2001 specification requirements). When directly measuring outside air, ensure that the air temperature reaching the sensor is between 0° and 50°C.

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.

QUICK INSTALL

1. Mark and drill at least two mounting holes for the sensor.

2. Secure the sensor the the mounting surface.

3. Attach the provided pickup tubes, ensuring the supply line is connected to the front (high) port and the return line is connected to the back (low) port.

4. Wire the device. See the Wiring section for more information.

5. Power the device.

6. Follow Configuration procedure (page 3).

PICKUP TUBE CONNECTION

CRL, Side View

Front
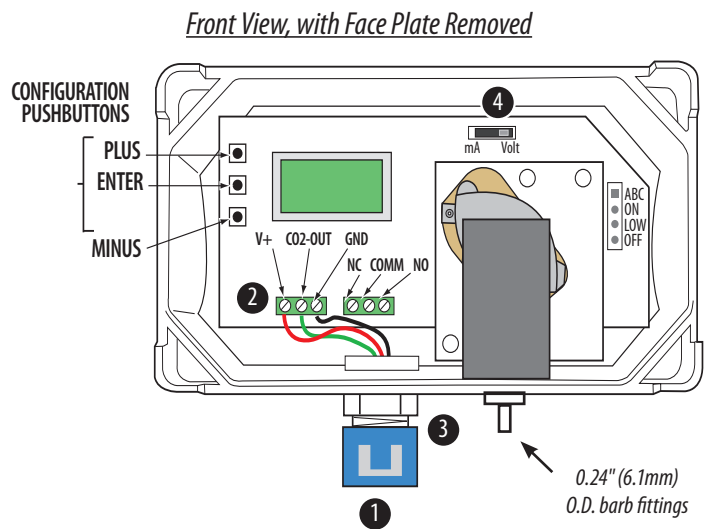
Back

Supply (High Port)

Return (Low Port)
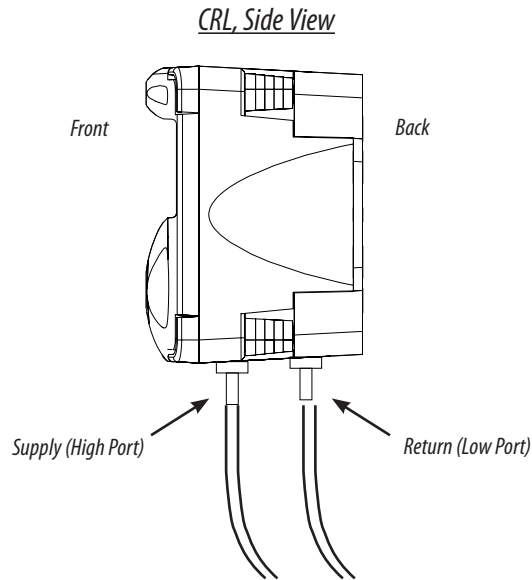
WIRING

1. Feed control wire through conduit adapter and grommeted compression fitting on the bottom of the housing.

2. Remove terminal blocks by pulling straight up on the green assemblies. Connect wires as shown at left, and push terminal blocks back in to black receptacles.

3. Tighten compression fitting around control wire until sealed. Snap conduit adapter onto compression fitting. Refer to specifications for power requirements and relay rating.

4. Select mA or Volt output using selector switch.

OPERATION

The CRLSxx remote mount CO_2 sensor ensures adequate ventilation using NDIR technology combined with a self-calibration algorithm. The device comes with a three-foot length of pickup tubing for easy installation. Output is field selectable (4-20mA/0-5VDC/0-10VDC).

To operate the CRL, install onto a vertical mounting surface. Then apply power and configure (page 3).

Front View, with Face Plate Removed

CONFIGURATION PUSHBUTTONS

PLUS
ENTER
MINUS

mA   Volt

V+   CO2-OUT   GND

NC   COMM   NO

ABC
ON
LOW
OFF

0.24" (6.1mm) O.D. barb fittings

CONFIGURATION

RUN MODE:

1	0	0	0		P	P	M
		*				C	0	2

CO₂ MODEL
*INDICATES RELAY STATUS

CONFIGURATION MODE:
PRESS [ENTER] FOR CONFIGURATION MODE.
PRESS PLUS OR MINUS TO CHANGE SETTING.

S	E	T	P	O	I	N	T
C	O	2			8	0	0

RANGE 500 TO 1500
50PPM INCREMENT

D	E	A	D	B	A	N	D
C	O	2			1	0	0

RANGE 10 TO 500
5 PPM INCREMENT

R	A	N	G	E			
C	O	2		X	X	X	X

OPTIONS ARE 2000 OR 5000

A	B	C		M	O	D	E
–		X	X	X			+

OPTIONS ARE ON, LOW, OFF
SEE NEXT PAGE FOR EXPLANATION

	O	U	T	P	U	T	
–	0	–	1	0	V		+

(VOLTAGE MODE ONLY)
OPTIONS: 0-10V OR 0-5V
DEFAULT IS 0-10V

	O	U	T	P	U	T	
	4	–	2	0	m	A	

(mA MODE ONLY)

CALIBRATION MODE:
PUSH AND HOLD PLUS AND MINUS FOR 5 SECONDS
TO ENTER MODE. PRESS ARROW TO CHANGE OPTION.
PUSH ENTER FOR NEXT SELECTION.

	S	E	R	I	A	L	
X	X	X	X	X	X	X	X

DISPLAYS SERIAL NUMBER

	X	X	X			
X	X	X	X	X		

DISPLAYS MODEL NUMBER

C	O	2		C	A	L	?
–			X	X	X		+

OPTIONS ARE YES, NO

C	A	L		G	A	S	?
–			X	X	X	X	+

OPTIONS ARE NONE, 0, 400

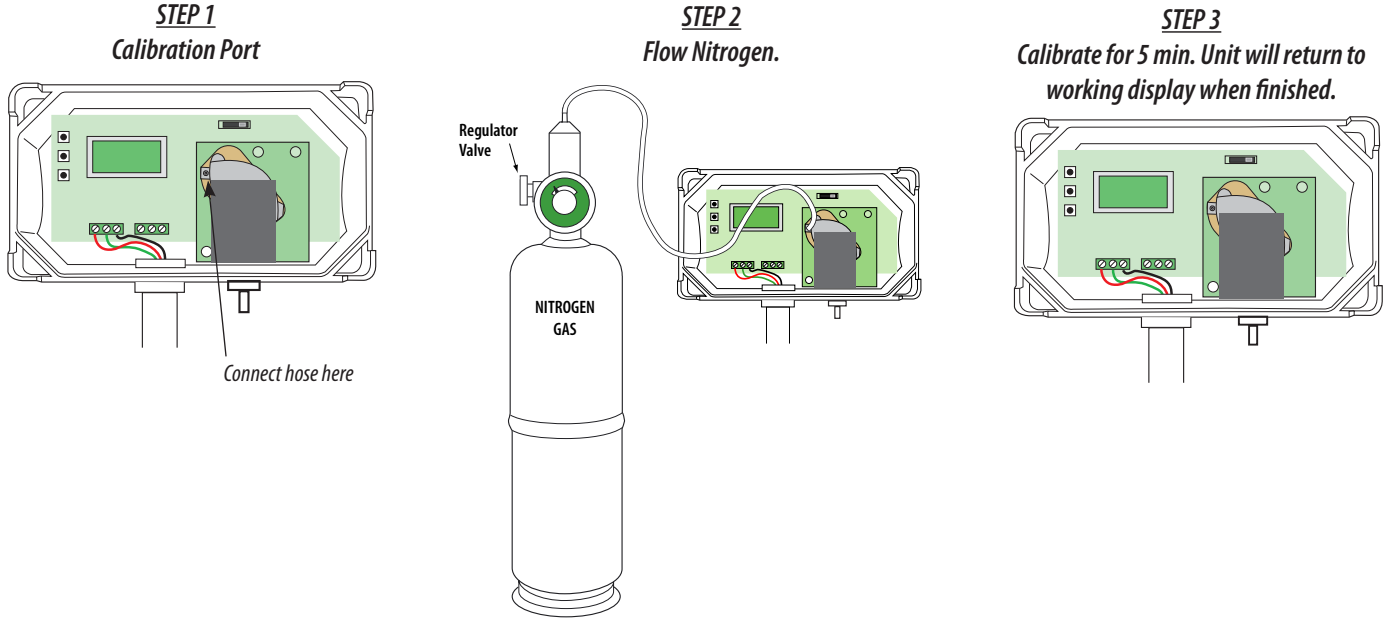| W	O	R	K	I	N	G	
	*			5	:	0	0

Unit will automatically return to run mode
when calibration is complete.

NOTE: This product is factory calibrated. The typical CO₂ sensor calibration interval is 5 years, depending on specific site installation factors. As of the date of this document, compliance with ANSI/ASHRAE 62-2001 requires minimum on-site accuracy verification intervals of 6 months, or per the building operation and maintenance manual. Accuracy verification should be performed using either a comparison to a known reference or a CO₂ gas calibration kit available from Veris Industries (model AA01).

WARNING: CO₂ sensor calibration requires gas calibration kit. Performing calibration without gas kit will cause erroneous readings. Consult factory for calibration kit.

CALIBRATION PROCESS

1. Connect hose to plastic port located on sensing module.

2. Start flowing nitrogen gas (0 ppm CO_2 only).

3. Enter Calibration mode as described on page 3.

STEP 1
Calibration Port

Connect hose here

STEP 2
Flow Nitrogen.

Regulator Valve

NITROGEN GAS

STEP 3
Calibrate for 5 min. Unit will return to working display when finished.

ABC CALIBRATION ALGORITHM

ABC (Automatic Baseline Calibration) is a patented self-calibration feature that automatically adjusts the CO_2 sensor to compensate for drift. When ABC is enabled, the lowest reading within every 24-hour period is recorded and analyzed over a running 7 day or 28-day period. If a statistically significant amount of drift is detected, an automatic correction factor is applied. This enables the sensor to operate within specifications for the 5-year calibration interval.

NOTE: After changing the ABC settings, the unit will need to be power cycled for the changes to take effect.

OUTPUT SCALING

Output scaling: 0-2000ppm

	CO_2 ppm	0-5 Volt Output	0-10 Volt Output	mA Output
Outside	300-500	0.75 to 1.25	1.5 to 2.5	6.4 to 8
Over Ventilated	Under 600	under 1.5	Under 3	Under 8.8
Ideal Ventilation	600-900	1.5 to 2.25	3 to 4.5	8.8 to 11.2
Under Ventilated	Over 900	over 2.25	Over 4.5	Over 11.2