

# INSTALLATION INSTRUCTIONS

## CO-EC-D-A, CO Gas Monitor Duct-mount



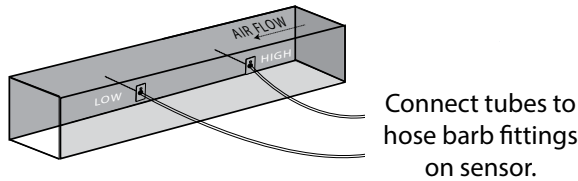
### IMPORTANT WARNINGS

- Only qualified trade installers should install this product
- This product is not intended for life-safety applications
- Do not install in hazardous or classified locations
- The installer is responsible for all applicable codes
- De-energize power supply prior to installation or service

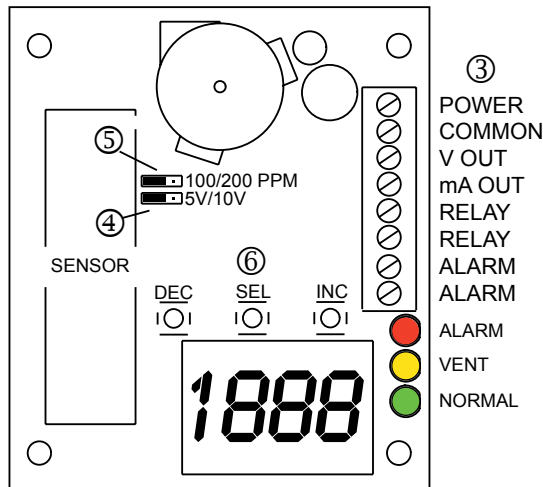
### INSTALLATION

① Mount sensor on or near duct and secure using holes inside enclosure, or using external mounting feet provided.

② Install and plumb pickup tubes as shown:



③ Wire sensor according to the product labeling. Terminal block is removeable for wiring convenience.



### PRODUCT APPLICATION LIMITATION:

Senva products are not designed for life or safety applications. Senva products are not intended for use in critical applications such as nuclear facilities, human implantable device or life support. Senva is not liable, in whole or in part, for any claims or damages arising from such uses.

### INSTALLATION (CONTINUED)

④ For voltage output operation, move jumper to 5v or 10v.



⑤ Select desired span range by moving jumper to 100 or 200ppm span position.



⑥ Power on sensor and follow setup menu guide to configure product options"

### SETUP MENU GUIDE

HOLD ▼ AND ▲ FOR 5-SECONDS TO ENTER SETUP MENU.

PRESS ▼ OR ▲ TO CHOOSE PARAMETER TO ADJUST.

SP Fan relay setpoint. 5/10/15/20/25/30/35/40/45ppm.  
Default = 25ppm

RP Alarm setpoint. 50/100ppm. Default = 100ppm

FC Fan Cycle minimum time. 1 to 10 minutes.  
Default time is 3 minutes.

CR Calibration. Factory set to supplied sensor element.  
For sensor replacement, enter new number printed on side of sensor (e.g. 1575)

RLN Exit setup mode - display actual CO ppm

PRESS **SELECT** TO EDIT SELECTED PARAMETER

PRESS ▼ OR ▲ TO CHANGE VALUE

PRESS **SELECT** TO RETURN TO PARAMETER MENU

WHEN SETUP IS COMPLETE, SELECT RLN, OR WAIT FOR SETUP MODE TO AUTOMATICALLY TIME-OUT AND REVERT TO RUN

⑦ Install enclosure cover using socket head screws provided.

Consult factory for test gas kit if verification is required.

### OPERATION

Status	LED	Fan Relay	Alarm Out	Siren
Off	-	Closed	Closed	Silent
Below Fan Setpoint	Green	Open	Open	Silent
Above Fan Setpoint	Yellow	Closed	Open	Silent
Above Alarm Setpoint for 30 minutes	Red	Closed	Closed	On

**Note:** Voltage output is internally equipped with series diode to permit parallel connection of multiple sensor voltage outputs. Resulting voltage will be the greater of all connected sensors. Unit internally compensates for diode voltage drop.

## SPECIFICATIONS

Power supply		15-30vdc/24vac <sup>(1)</sup> , 100mA max.
Outputs	Dual analog	3-wire 4-20mA and 0-5v <sup>(2)</sup> /0-10v (jumper)
Output scaling	Selectable	0-100ppm (default), 0-200ppm (jumper)
Setpoint contact output	Programmable (5~45ppm)	Form B, 5A@30VAC/DC
Alarm relay output	Programmable (50/100ppm)	Form B, 1A@30VAC/DC
Display	3-1/2 digit LCD	Indicates CO ppm, setup menu features
LED's	Green, Yellow, Red	Green = Normal, Yellow = Relay, Red = Alarm
Audible exposure alarm	90dB Piezo transducer	30 minutes above 100ppm per UL2034
Sensor Performance	Type	Long-life Electrochemical
	Reproducibility	+/-2% (same day)
	Response time	60 seconds to 90% reading
	Certifications	UL2034 recognized (sensor only)
	Long term stability	<+/-5% per year
LCD Menu Setup	Life expectancy	5 years
	SP, Setpoint (Relay ON)	5/10/15/20/25/30/35/40/45ppm selectable (25ppm default)
	RP, Setpoint (Exposure alarm ON)	50/100ppm selectable (100ppm default)
	FC, Fan cycle time (minimum)	1 to 10 minutes (3 minutes default)
	CAL, Calibration	Sensor calibration value (printed on sensor)
Operating Environment	RUN, Run mode	Displays CO in ppm
	Temperature	-10 to 60°C continuous -40 to 70°C intermittent
	Humidity	5-99%RH, non-condensing
Enclosure	Material	Polycarbonate
	Dimensions	4.53"h x 3.55"w x 2.3"d

(1) One side of transformer secondary is connected to signal common. Dedicated transformer is recommended.

(2) 12-30vdc/24vac power supply permissible for 0-5v output.

## TROUBLESHOOTING

Symptom	Solution
No output	Check wiring. Ensure power supply meets requirements.
CO reading error	Verify control panel software is configured for correct output scaling.
	Verify test gas concentration. Use only factory supplied test gas. Observe proper test procedures
	Sensor contaminated or at end of 5-year life. Replace sensor.
Relay not opening	Verify setpoint. Verify test gas concentration. Cover sensor to prevent drafts and dilution during test.

## SENSOR CALIBRATION/REPLACEMENT

Senva CO sensors are factory calibrated to controlled test gasses. No field calibration is necessary or recommended. However, to facilitate compliance with job requirements and commissioning procedures, a test gas verification kit is available. Sensor elements may also be replaced in the field.

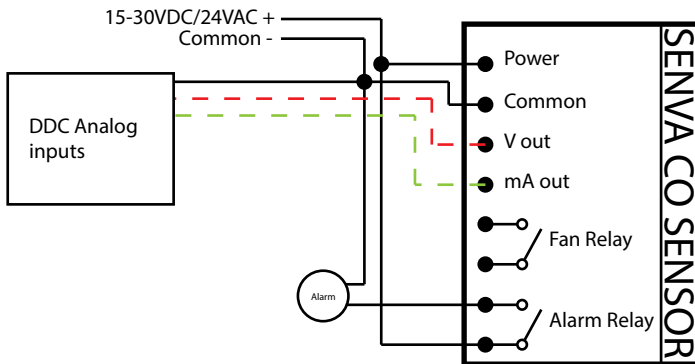
Sensor replacement procedure:

1. Disconnect power.
2. Remove sensor from battery holder.
3. Note 4-digit number on new sensor. (e.g. 1571)
4. Install new sensor in battery holder. Observe polarity. Button end (+) should face up.
5. Cut away metal ribbon from sensor.
6. Follow SETUP MENU GUIDE to enter 4-digit CAL number from sensor.
7. Apply power and allow several minutes warm-up time.

# INSTALLATION WIRING INSTRUCTIONS

## ONE SENSOR PER CONTROL LOOP

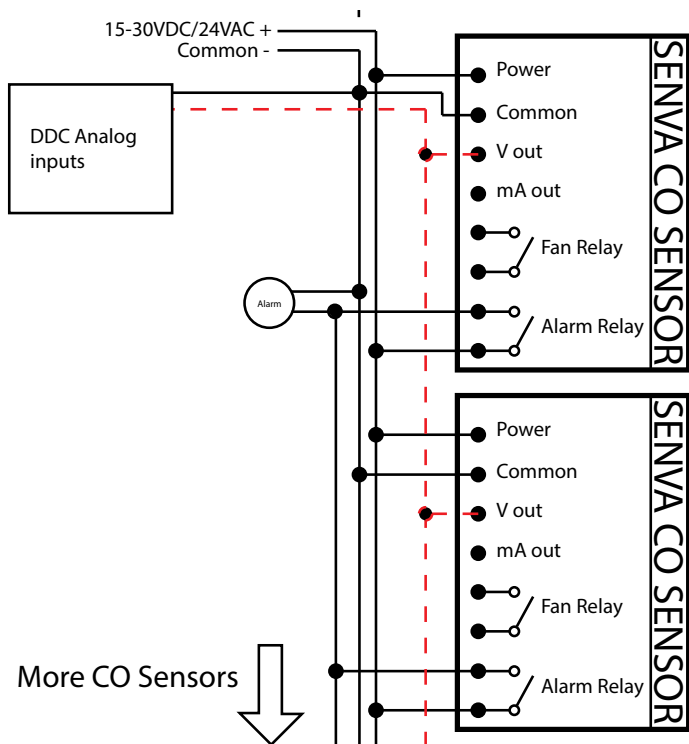
Diagram shows connection between a single CO sensor, alarm, and controller. Installer needs to choose either VDC or mA output (DO NOT WIRE BOTH OUTPUTS). For multiple sensors installed in a parallel sequence, please refer to examples below.



## MULTIPLE SENSORS ON SINGLE ZONE

Using VDC outputs in parallel, the highest reading from any one sensor in the zone will be read at the controller or motor control.

Diagram shows connection between multiple CO devices wired in a parallel sequence to a controller using analog outputs and alarm setpoint relay. For multiple sensors in a parallel sequence, only use the 0-5/0-10VDC output. <sup>(3)</sup> The 4-20mA output cannot be used in a daisy chain.



Notes:

① Power and common are wired from the last device in the chain to the next device in parallel sequence (daisy chain).

## MULTIPLE SENSORS ON SINGLE ZONE

Notes (Continued):

② The analog outputs are wired in the same sequence as the power and common. (Note: each CO sensor needs to be setup for the same analog output. For voltage output verify jumper positioning)

5V 10V

③ Alarm relay terminals are wired in the same sequence as power and output wires. The alarm relay parameter is adjusted on each CO sensor's LCD setup menu.

④ It is recommended that the output scaling (100/200ppm) is uniform between all devices in sequence.

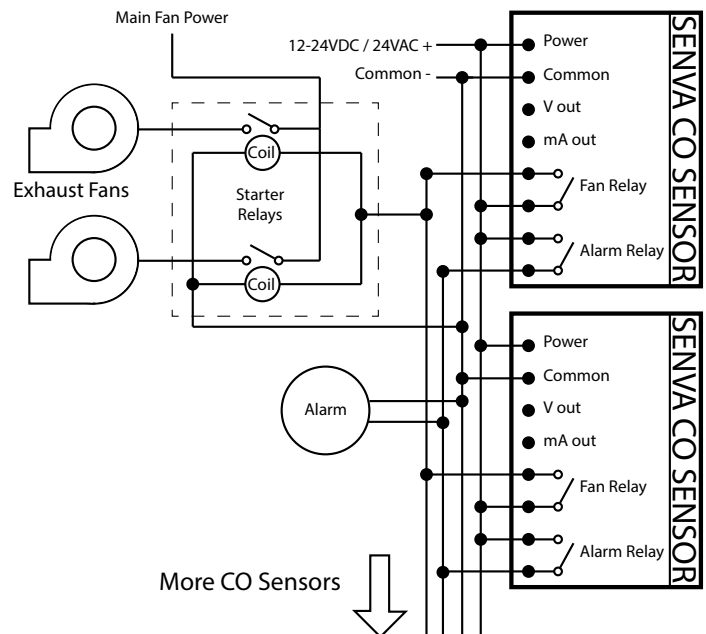
⑤ There is no limit to the number of sensors that can be connected in a sequence (daisy chain). <sup>(4)</sup>

<sup>(3)</sup> There is no limit to the number of CO sensors that can be connected in a parallel sequence. Can only use V out when installing in parallel sequence.

<sup>(4)</sup> Voltage drop may occur for extended wire runs exceeding 200 feet. Varies based on wire gauge, etc.

## DIRECT CONTROL OF EXHAUST FAN

Diagram shows connection between one or multiple CO devices wired to exhaust fan and alarm using the fan setpoint and alarm setpoint relays respectively. This function can be performed by a single CO sensor or a sequence of multiple devices wired in parallel. <sup>(3)</sup>



Notes:

① Power and common are wired from the last device in the chain to the next device in parallel sequence (daisy chain).

## DIRECT CONTROL OF EXHAUST FAN

Notes (Continued):

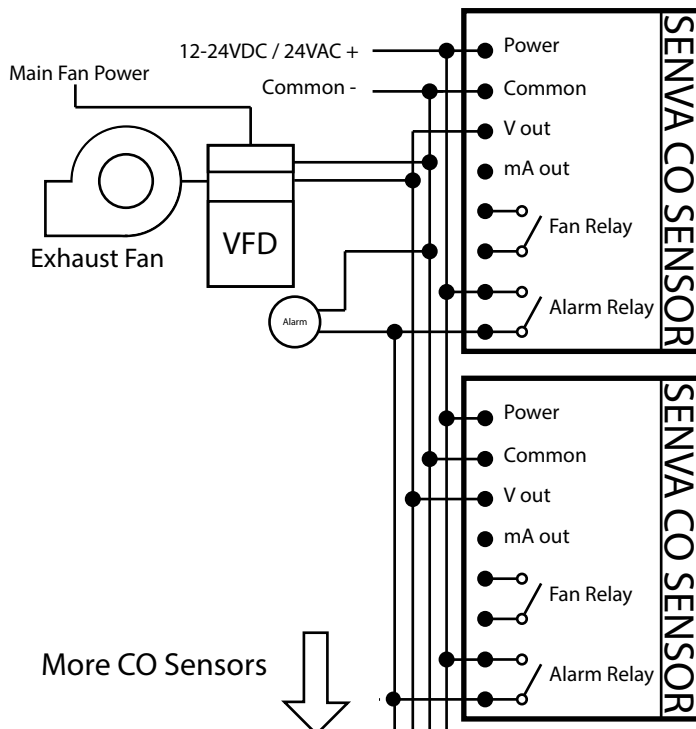
- ② The fan setpoint relays are wired in the same sequence as the power and common. The fan setpoint relay parameter is adjusted on each CO sensor's LCD menu.
- ③ Alarm relay terminals are wired in the same sequence as power and output wires. The alarm relay parameter is adjusted on each CO sensor's LCD setup menu.
- ④ It is recommended that the output scaling (100/200ppm) is uniform between all devices in sequence.
- ⑤ There is no limit to the number of sensors that can be connected in a sequence (daisy chain).<sup>(4)</sup>

(3) There is no limit to the number of CO sensors that can be connected in a parallel sequence. Can only use V out when installing in parallel sequence.

(4) Voltage drop may occur for extended wire runs exceeding 200 feet. Varies based on wire gauge, etc.

## DIRECT CONTROL OF VFD

Diagram shows connection between one or multiple multiple CO devices wired to a variable frequency drive (VFD) and alarm using the analog outputs and alarm relays respectively. This function can be performed by a single CO sensor or a sequence of multiple devices wired in parallel.<sup>(3)</sup>



Notes:

- ① Power and common are wired from the last device in the chain to the next device in parallel sequence (daisy chain).

## DIRECT CONTROL OF VFD

Notes (Continued):

- ② The analog outputs are wired in the same sequence as the power and common. (Note: each CO sensor needs to be setup for the same analog output. For voltage output verify jumper positioning)

5V  10V

- ③ Alarm relay terminals are wired in the same sequence as power and output wires. The alarm relay parameter is adjusted on each CO sensor's LCD setup menu.
- ④ It is recommended that the output scaling (100/200ppm) is uniform between all devices in sequence.
- ⑤ There is no limit to the number of sensors that can be connected in a sequence (daisy chain).<sup>(4)</sup>

(3) There is no limit to the number of CO sensors that can be connected in a parallel sequence. Can only use V out when installing in parallel sequence.

(4) Voltage drop may occur for extended wire runs exceeding 200 feet. Varies based on wire gauge, etc.

## REQUIREMENTS & RECOMMENDATIONS FOR PARALLEL SEQUENCE

### Analog Outputs

The analog outputs (0-5V/0-10V) must be uniform on each CO sensor in the parallel sequence (daisy chain). Verify voltage output jumper is uniform on each unit prior to powering on the sensors. The 4-20mA output cannot be daisy chained.

### Sensing Span Range

The span range is recommended to be uniform between all devices in the parallel sequence (100 or 200ppm). Verify span range jumper is uniform on each CO sensor prior to powering on the sensors.

### Fan Relay Setpoints

Each fan relay setpoint is recommended to be uniform for every device when installed in a parallel sequence. Installer can adjust from the default of 25ppm according to desired setpoint for each individual sensor in sequence.

### Alarm Relay Setpoints

Each alarm relay setpoint is recommended to be uniform for every device when installed in a parallel sequence. Installer can adjust from the default of 100ppm according to desired setpoint (50/100ppm) for each individual sensor in sequence using the LCD setup menu.

### Wiring Runs

Recommended cable type is twisted shielded pair with minimum 24 AWG. For runs over 200 feet it is suggested to use twisted shielded pair with minimum 22 AWG.