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# Application Note

## TG Field Calibration



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Applies To: Senva TG Series

Description: Recommendations for field calibration of the CO and NO2 sensors.

### OVERVIEW

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Electrochemical sensors may drift over time, with a typical drift around -20%/year. The TG series products provide adjustment fields for CO and NO2 sensors to accommodate sensor drift. These adjustment fields may be accessed from within the menu system as well as the BACnet/Modbus protocol interface. If during periodic testing the sensor shows measurement drift, the following procedure adjusts the sensor back within its specified range.

### ADJUSTMENT PERCENTAGE PROCEDURE

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Open TG cover and connect the gas cylinder hose to the appropriate gas shroud for the gas element to be calibrated.

Turn on the gas by opening the valve to the gas cylinder and allow a flowrate between 0.25L/min to 0.5L/min.

Continue to allow gas to flow until the gas reading stabilizes on the TG sensor (may take up to 5 minutes).

While still applying gas and when the gas reading has stabilized, note the PPM value that the device showed (*Device PPM*) and the value of the PPM of gas being applied (*Gas PPM*).

Next, divide the *Device PPM* by the *Gas PPM* to get a *Ratio*.

$$\text{Device PPM} / \text{Gas PPM} = \text{Ratio}$$

Then multiply the *Present NA* field by the *Ratio*.

$$\text{Present NA} * \text{Ratio} = \text{Corrected NA}$$

Finally, apply the *Corrected NA* value to the NA field of the device.

Example: Device showed 8 PPM, while the gas being applied is 10 PPM gas:

$$8 \text{ PPM} / 10 \text{ PPM} = 0.8$$

Assuming the NA field presently shows 40.0:

$$40.0 * 0.8 = 32.0$$

You will then adjust the NA field to be 32.0 using one of the following procedures.

## MENU SYSTEM PROCEDURE

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- 1) Access the *Setup Menu* by holding the **◆** and **▲** buttons down simultaneously for one second.
- 2) If adjusting the CO sensor's sensitivity:
  - a. Scroll down to CO using the **▼** button and press **◆**
- 3) If adjusting the NO2 sensor's sensitivity:
  - a. Scroll down to NO2 using the **▼** button and press **◆**
- 4) Scroll down to NA using the **▼** button and press **◆**
- 5) Adjust the present value using the percentage calculated in the *Adjustment Percentage* procedure
- 6) Use the **▲** or **▼** buttons to adjust the sensitivity and then press **◆**
  - a. Using the previous example, to adjust 40.0 to 32.0 you would press the **▼** button until the NA field shows 32.0

## BACNET/MODBUS PROCEDURE

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- 1) If adjusting the CO sensor's sensitivity:
  - a. Read the present NA field from AV156 (BACnet) or R156 (Modbus)
  - b. Adjust the value using the percentage calculated in the *Adjustment Percentage Discovery* procedure
  - c. Write the adjust value to the NA field at AV156 (BACnet) or R156 (Modbus)
- 2) If adjusting the NO2 sensor's sensitivity:
  - a. Read the present NA field from AV166 (BACnet) or R166 (Modbus)
  - b. Adjust the value using the percentage calculated in the *Adjustment Percentage Discovery* procedure
  - c. Write the adjust value to the NA field at AV166 (BACnet) or R166 (Modbus)