

Using Your IAQ Sensor for Local PID Control

NEW PID FEATURE

Running wires is expensive and time consuming. We've included PID functionality into the TotalSense so you can eliminate the need for additional wiring to central controllers or additional stats. Program an analog output on the TotalSense to regulate to your CO2 or temperature setpoint. Locally control valves or damper actuators and save wire runs!

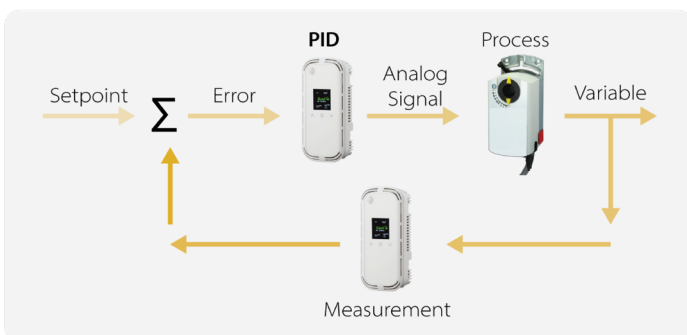
Using a slider version? You can allow the user to choose a temperature setpoint using the slider too.

Want to use local PID but need to communicate to your central controller or automation system as well? We now offer a Modbus/BACnet PLUS analog version.

APPLICATIONS

PID means Proportional, Integral, Derivative which are the functions used behind-the-scenes to make adjustments to a system to maintain a setpoint. The device measures the current **measurement** and compares it to a pre-programmed **setpoint**. Based on how large the difference is between the two values (**error**), it will either increase or decrease the **analog signal** based on the P, I, and D settings.

This analog signal can be used to modulate a damper actuator for cooling or fresh air delivery, it can be used to modulate a heat valve for temperature control, it can control an EC motor or VFD, or any number of applications.



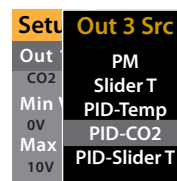
In the example shown above, the PID signal is used to modulate a damper actuator (**process**) to cool an environment (temperature is the **variable**). The TotalSense would then provide a measurement of the temperature and the control process would continue.

SETUP - DISPLAY

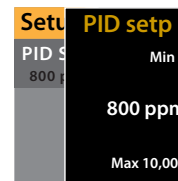
1. Navigate to Settings> Analog Out 1 or 3 > Source

Set any analog out source parameter to one of the following:

- **PID-Temp:** to control based on a programmable temperature setpoint
Program your Temp setpoint in Temp Settings>PID Setpoint
- **PID-CO2:** to control based on a programmable CO2 setpoint



Program your CO2 setpoint in CO2 Settings>PID Setpoint



- **PID-Slider:** to control based on the position of the temperature slider (if one is present)

No setpoint programming is necessary. However, if you choose to show the setpoint on the display, you may program the minimum and maximum values in Slider settings > Analog out min or max.



Scan here to see the TotalSense web page



Scan here to see the TotalSense manual



7 year limited warranty

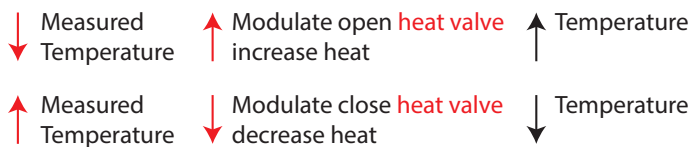
New Feature Announcement

2. Choose inverted or non-inverted in Settings > Analog Out 1 or 3 > PID invert.

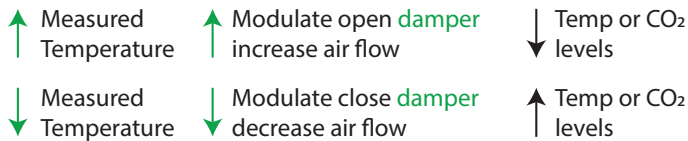
Do not enable PID inverse for a cooling process or CO2 setpoint. These applications require more cooling or air flow when the temperature or CO2 level increases and vice versa so no inversion is necessary.

Enable PID inverse if you need the analog signal to decrease when your measurement increases and vice-versa. For example, a heating process would need to increase the amount of heat when the temperature decreases.

Inverted PID



Non-inverted PID



3. Set your PID coefficients.

- Adjust P to change the system sensitivity. A low P will be slower to adjust towards the setpoint, but setting it too high may cause oscillations due to overcorrection.
- Adjust I to change how quickly the output responds. Adjust this value higher to increase the amount of time the response takes to reach the setpoint.
- Most systems in the HVAC industry will not require a D coefficient.

Is your system responding too slowly? You can try decreasing the I value or increasing P.

Is your system oscillating too much? Try decreasing your P value or increasing I.

4. Set your analog output scaling Settings > Analog Out 1 or 3 > Min V, Max V, Min A, Max A. These settings will default to a 0-10V and 4-20mA output signal, but you can adjust them if you need, for example, 2-10V or 0-20mA.

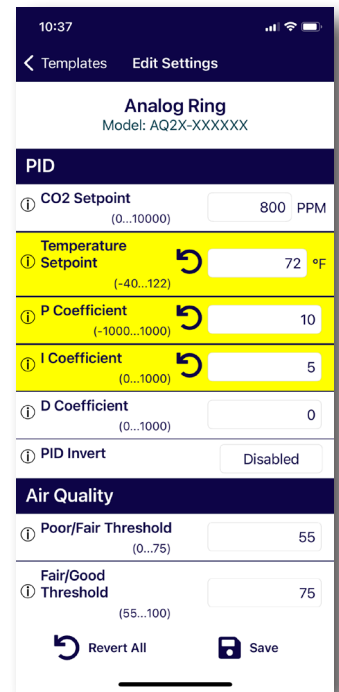
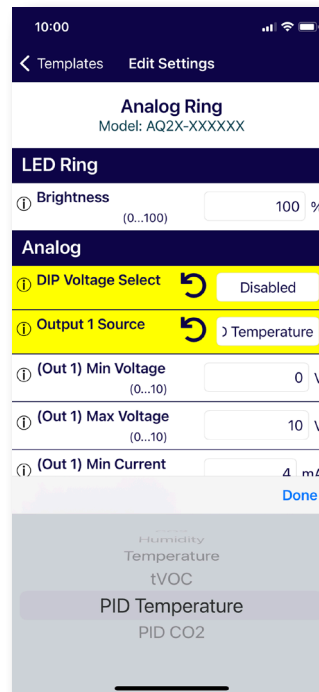
SETUP - APP

Speed up the process with our new Senva Sync App. Senva Sync uses Near Field Communications (NFC) to quickly scan and configure your device, **even without power!**

1. SCAN



2. SET



3. LOAD



7 year limited warranty

Warning: Application notes contain installation ideas and tips. Although developed by engineers and installers, Senva disclaims any liability for injury or losses due to information provided. This information does not supersede codes and/or ordinances or regulatory standards. Application notes do not comprehensively cover safety procedures for working with live electrical equipment. Refer to installation instructions that accompany products and heed all safety instructions. Copyright © 2022 by Senva Inc. All rights reserved.