

# Quick Reference Guide

## DE-3000 PROPORTIONAL INTEGRAL DERIVATIVE

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### TIPS AND HINTS TO ASSIST WITH INSTALLATION AND/OR OPERATION

## Quick Description

A Proportional-Integral-Derivative (PID) controller is a control loop feedback system commonly used for controlling motor valves, including suction, recirculation (make-up), and back pressure valves. A PID controller continuously calculates an error value as the difference between a desired set point and a measured process variable. It applies a correction based on proportional, integral and derivative.

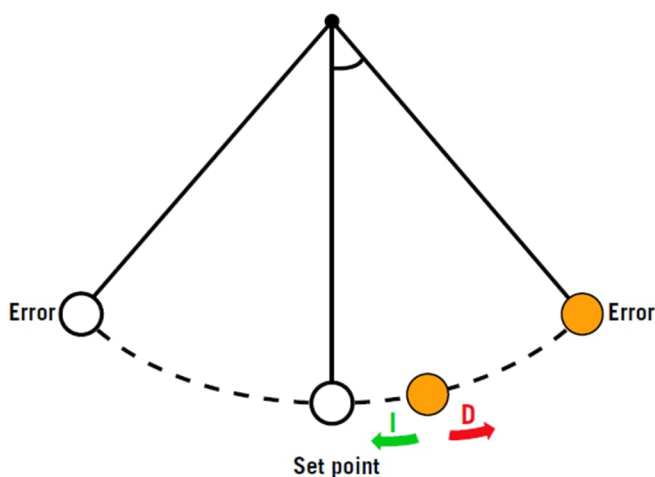
**P** Accounts for preset present values of the error. For example, if the error is large and positive, the control output will be large and positive. The default value is 120%. The lower this number moves, the faster the control output will react.

**I** Accounts for past values of the error. For example, if the current output is not sufficiently strong, the integral of the error will accumulate over time, and the controller will respond by applying a stronger action. The default value is 20 seconds. The lower the number, the shorter the time before correction.

**D** Accounts for possible future trends of the error based on its current rate of change. For example, if the rate of the current output is changing rapidly and approaching the set point, the derivative can slow the rate to prevent the system from passing the set point. The default value is 999 minutes. The higher the number, the more responsive this feature is.

This guide provides clarification and additional information to the Installation and Operating Manual, Form DE-3000 IOI 2-17.

Altronic literature can be found at: [www.altronic-llc.com](http://www.altronic-llc.com) in the Technical Library.

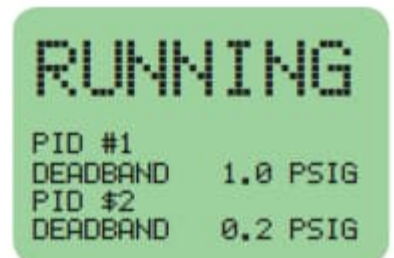
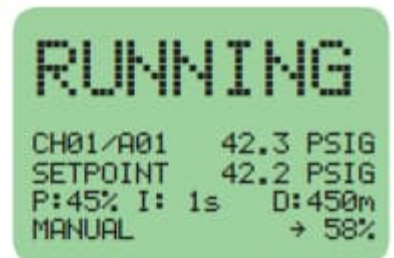
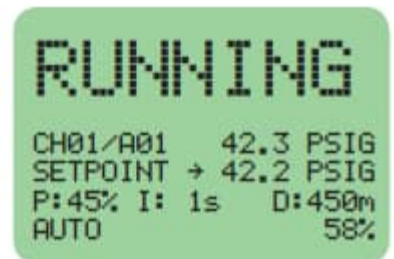
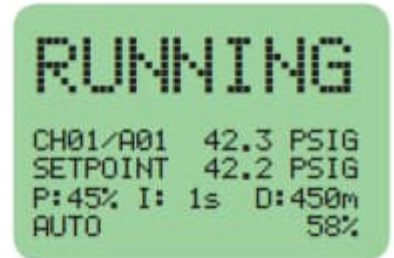


In this example the error is represented by the orange circle. As the proportional moves the correction to the set point, the derivative can attempt to slow the correction down to prevent an overcorrection. Should the correction stop short of the set point, the integral will move the correction slowly, over time, to the final set point.

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## Edit and Changes

1. Press NEXT
2. Press ENTER to confirm correct password (default is 1)
3. Press NEXT to continue
4. Use NEXT key to move to one of the following screens:
  - A01
  - A02
  - A03
  - A04
5. Once at the screen you wish to adjust press the ENTER key to move the Cursor to the value you wish to adjust.
6. Adjustable options are:
  - Set Point (target)
  - P (Proportional)
  - I (Integral)
  - D (Derivative)
7. Use the up down arrows to change the values.
8. Recommended adjustment procedure is to adjust the **P** first followed by the **I** and then the **D**.
9. You can also place the output of the analog channel into Manual control for testing purposes by pressing F1
10. Use the up/down UNIT arrows to increase or decrease the output value in percent.
11. The Dead band can be adjusted under the MENU system under CONTROLS under EDIT PID DEADBAND. The Dead Band is the value of no response on each side of the set point. Example: If the set point is at 20 PSIG and the Dead Band is set to 1 PSIG, the correction will not react when the pressure is between 19 and 21 PSIG.



*Refer to the unit-specific drawing for identification of what is being controlled by the analog channel.*

*Example:*

- A01 = Suction Valve
- A02 = Speed Control
- A03 = Recycle Valve
- A04 = Back Pressure Valve

**NOTE:** Channel A02 is usually reserved for Linear ramp speed control. Please refer to Linear Ramp document for additional information.