

Please take a moment to read this information below. What I suggest that you start with is adjusting Parameters **2202 Acceleration Time 1** and **2203 Deceleration time 1** to **30 seconds** each. This will normally correct instability issues. If that does not work I then would follow the procedure below. One thing to keep in mind is watch the feedback signal as you are making these adjustments and the unit is running in Auto. If the feedback still remains unstable it will be very difficult to get a stable PI control loop.

**4001 GAIN Range is 0.1...100.0 Resolution is 0.1 Default is 2.5**

Defines the PID Controller's gain.

- The setting range is 0.1... 100.
- At 0.1, the PID Controller output changes one-tenth as much as the error value. (Default value is 2.5 which is 2.5 times as much as error value or 250% of error value)
- At 100, the PID Controller output changes one hundred times as much as the error value.

Use the proportional gain and integration time values to adjust the responsiveness of the system.

- **A low value for proportional gain and a high value for integral time ensures stable operation, but provides sluggish response.**

If the proportional gain value is too large or the integral time too short, the system can become unstable.

**Procedure:**

- Initially, set:
- 4001 GAIN = 0.1.
- 4002 INTEGRATION TIME = 20 seconds.
- Start the system and see if it reaches the set point quickly while maintaining stable operation. If not, increase GAIN (4001) until the actual signal (or drive speed) oscillates constantly. It may be necessary to start and stop the drive to induce this oscillation.
- Reduce GAIN (4001) until the oscillation stops.
- Set GAIN (4001) to 0.4 to 0.6 times the above value.
- Decrease the INTEGRATION TIME (4002) until the feedback signal (or drive speed) oscillates constantly. It may be necessary to start and stop the drive to induce this oscillation.
- Increase INTEGRATION TIME (4002) until the oscillation stops.
- Set INTEGRATION TIME (4002) to 1.15 to 1.5 times the above value.
- If the feedback signal contains high frequency noise, increase the value of Parameter 1303 FILTER AI1 or 1306 FILTER AI2 until the noise is filtered from the signal.

**4002 INTEGRATION TIME Range is 0.0...3600.0 s Resolution is 0.1 s Default is 3.0 s**

Defines the PID Controller's integration time.

Integration time is, by definition, is the time required to increase the output by the error value:

- Error value is constant and 100%.
- Gain = 1.
- Integration time of 1 second denotes that a 100% change is achieved in 1 second.

0.0 = NOT SEL – Disables integration (I-part of controller).

0.1...3600.0 = Integration time (seconds).

See 4001 for adjustment procedure.