



Product Family: GS Drives and GSOF

Number: AN-GS-011

Subject: PID tuning with GSOF software PID utility

Date Issued: 08/01/03

Revision: Original

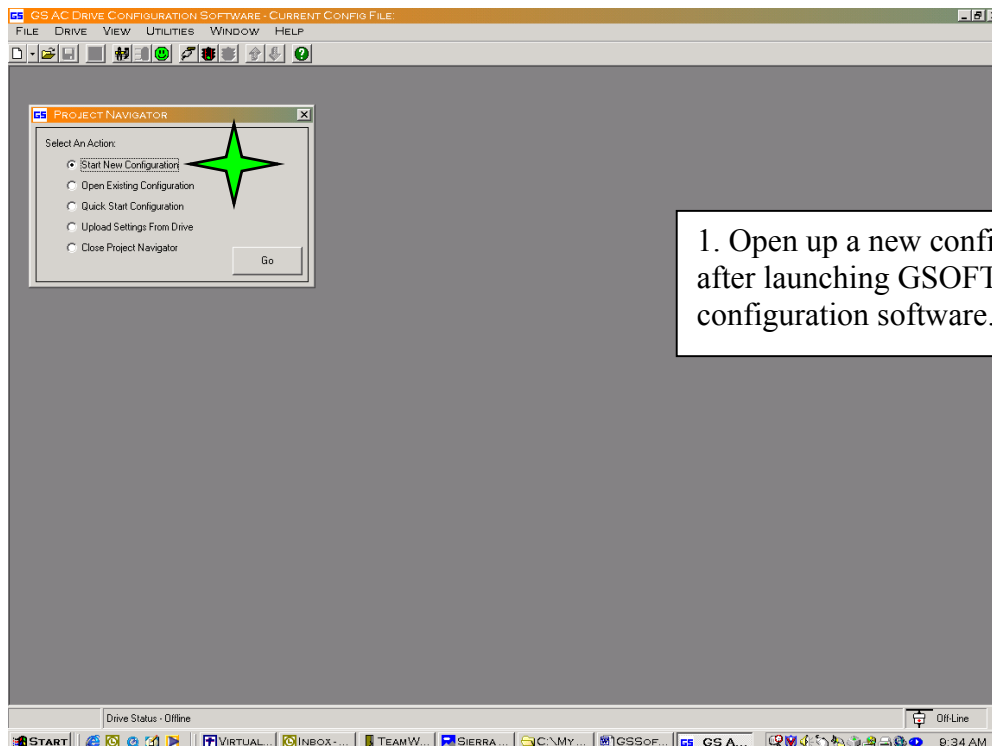
Specifications

Drive:	Various GS series
Software:	GSOF software
PC:	Standard PC
Cable:	GS-232CBL



Preliminary

The PID tuning utility on GSOF drive configuration software is very important for the proper tuning of PID loops utilizing the onboard PID control of the drive. In the past users would have to hook up an external chart recorder to tune a loop precisely. Today this approach, although viable, is cumbersome. With GSOF's PID tuning utility, you have the best of both worlds, precision and practicality.



1. Open up a new configuration after launching GSOF drive configuration software.



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The screenshot shows the GS AC Drive Configuration Software interface. The main window is titled "GS AC DRIVE CONFIGURATION SOFTWARE - CURRENT CONFIG FILE". A "PROJECT NAVIGATOR" dialog box is open, showing options: "Start New Configuration" (selected), "Open Existing Configuration", "Quick Start Configuration", "Upload Settings From Drive", and "Close Project Navigator". A "New Config" dialog box is also open, with "GS Series Drive" set to "GS2-22P0 (230 1ph/3ph 2.0 HP) rev. 103" and "New configuration name" set to "PID test set-up". The "Select a path to where you want to store your drive configuration:" section shows a file explorer view with "Config" selected. A green starburst points to the "New Config" dialog box. A text box on the right contains the text: "2. Select drive model and new configuration name." Below this, the "DETAILED CONFIG - CURRENT DRIVE MODEL = GS2-22P0" window is shown, displaying "MOTOR PARAMETERS" for P0.00 - P0.04. A "STATUS LIST" dialog box is also open, showing a log of file operations: "New File operation started 8/4/2003 9:38:07 AM", "File Save operation started 8/4/2003 9:38:10 AM", "File Save operation completed 8/4/2003 9:38:14 AM", and "New File operation completed 8/4/2003 9:38:15 AM".



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The 'CONNECTION SETTINGS' dialog box contains the following fields and buttons:

- Node Address Of Drive:
- PC Com Port:
- Baud Rate:
- Protocol:
- Buttons: Connect, Disconnect, Close

3. Connect to drive over serial interface.

The 'DETAILED CONFIG - CURRENT DRIVE MODEL = GS2-22P0' dialog box shows the 'MOTOR PARAMETERS' section with the following settings:

Parameter	Value
P0.00 - Motor Nameplate Voltage	230
P0.01 - Motor Nameplate Amps	7
P0.02 - Motor Base Frequency	60
P0.03 - Motor Base RPM	1750
P0.04 - Motor Maximum RPM	2000

Red label indicates value different from Parameter's default.

4.0 Configure drive parameters to application needs. Refer to chapter 4 of GS2 manual.

Done



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GS DETAILED CONFIG - CURRENT DRIVE MODEL = GS2-22P0

P 0.xx P 1.xx P 2.xx P 3.xx P 4.xx P 5.xx P 6.xx P 7.xx P 8.xx P 9.xx

RAMPS

P1.00 - P1.11 P1.12 - P1.22

P1.00 - Stop Methods	01: Coast To Stop
P1.01 - Acceleration Time 1	40
P1.02 - Deceleration Time 1	40
P1.03 - Accel S-curve	0
P1.04 - Decel S-curve	0
P1.05 - Acceleration Time 2	10
P1.06 - Deceleration Time 2	30
P1.07 - Method For 2nd Acc/Decel	00: RMP2 From Terminal
P1.08 - Accel 1 To Accel 2 Frequency Transition	0
P1.09 - Decel 1 To Decel 2 Frequency Transition	0
P1.10 - Skip Frequency 1	0
P1.11 - Skip Frequency 2	0

Red label indicates value different from Parameter's default.

Done

4.1 In this application a coast to stop is acceptable. Also note the increased acceleration and deceleration times of 40 + seconds.

GS DETAILED CONFIG - CURRENT DRIVE MODEL = GS2-22P0

P 0.xx P 1.xx P 2.xx P 3.xx P 4.xx P 5.xx P 6.xx P 7.xx P 8.xx P 9.xx

VOLTS / HERTZ SETTINGS

P2.00 - P2.08

P2.00 - Volts / Hertz Settings	00: General Purpose
P2.01 - Slip Compensation	0
P2.02 - Auto-Torque Boost	6
P2.03 - Not used for selected drive/rev.	
P2.04 - Mid-Point Frequency	1.5
P2.05 - Mid-Point Voltage	10
P2.06 - Min. Output Frequency	1.5
P2.07 - Min. Output Voltage	10
P2.08 - PWM Carrier Frequency	12

Red label indicates value different from Parameter's default.

Done

4.2 It is advisable to use a general-purpose volts/hertz set-up to start with. It will accommodate the majority of applications for both constant and variable torque.



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GS DETAILED CONFIG - CURRENT DRIVE MODEL = GS2-22P0

P 0.xx P 1.xx P 2.xx P 3.xx **P 4.xx** P 5.xx P 6.xx P 7.xx P 8.xx P 9.xx

ANALOG PARAMETERS

P4.00 - P4.12

P4.00 - Source Of Frequency Command	00: Keypad Potentiometer
P4.01 - Analog Input Offset Polarity	00: No Offset
P4.02 - Analog Input Offset	0
P4.03 - Analog Input Gain	100
P4.04 - Analog Input Reverse Motion Enable	00: Forward Motion Only
P4.05 - Loss Of ACI Signal	00: Decelerate to 0Hz
P4.06 - Not used for selected drive/rev.	
P4.07 - Not used for selected drive/rev.	
P4.08 - Not used for selected drive/rev.	
P4.09 - Not used for selected drive/rev.	
P4.10 - Not used for selected drive/rev.	
P4.11 - Analog Output Signal	00: Frequency Hz
P4.12 - Analog Output Gain	100

Red label indicates value different from Parameter's default.

Done

GS DETAILED CONFIG - CURRENT DRIVE MODEL = GS2-22P0

P 0.xx P 1.xx P 2.xx P 3.xx P 4.xx P 5.xx P 6.xx **P 7.xx** P 8.xx P 9.xx

PID

P7.00 - P7.11 P7.12 - P7.23 P7.24 - P7.27

P7.00 - Input Terminal For PID Feedback	02: Input Neg PID Feedback, PV From ACI
P7.01 - PV 100% Value	100
P7.02 - PID Setpoint Source	00: Keypad
P7.03 - Not used for selected drive/rev.	
P7.04 - Not used for selected drive/rev.	
P7.05 - Not used for selected drive/rev.	
P7.06 - Not used for selected drive/rev.	
P7.07 - Not used for selected drive/rev.	
P7.08 - Not used for selected drive/rev.	
P7.09 - Not used for selected drive/rev.	
P7.10 - Keypad PID Setpoint	0
P7.11 - PID Multi-Setpoint 1	0

Red label indicates value different from Parameter's default.

Done

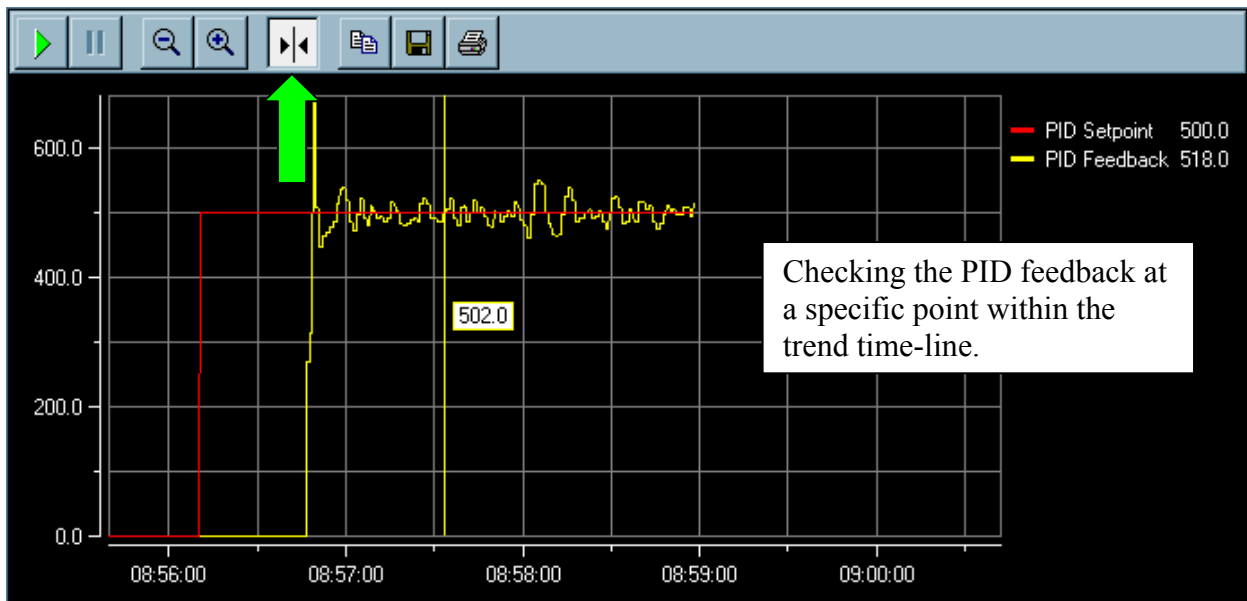
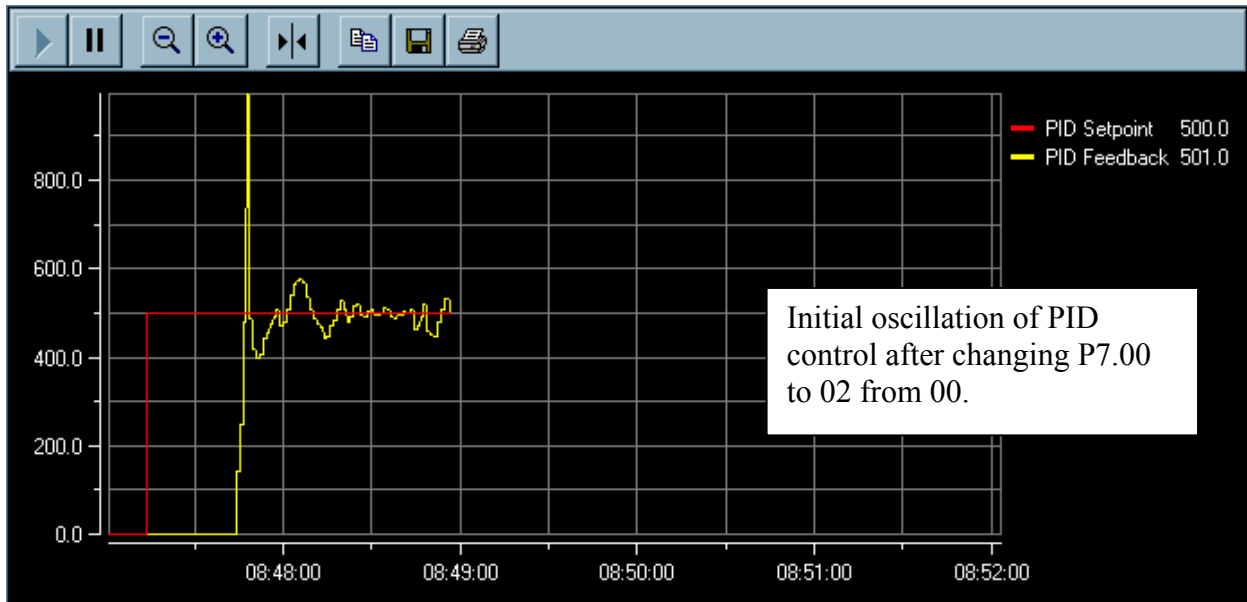
4.3 To run in PID mode P7.00 must be in 01 or 02. However, to run the PID tuning utility, P7.00 must initially be set to 00 until the utility is launched. Then the parameter must be changed to 01 or 02 manually or through the download feature.



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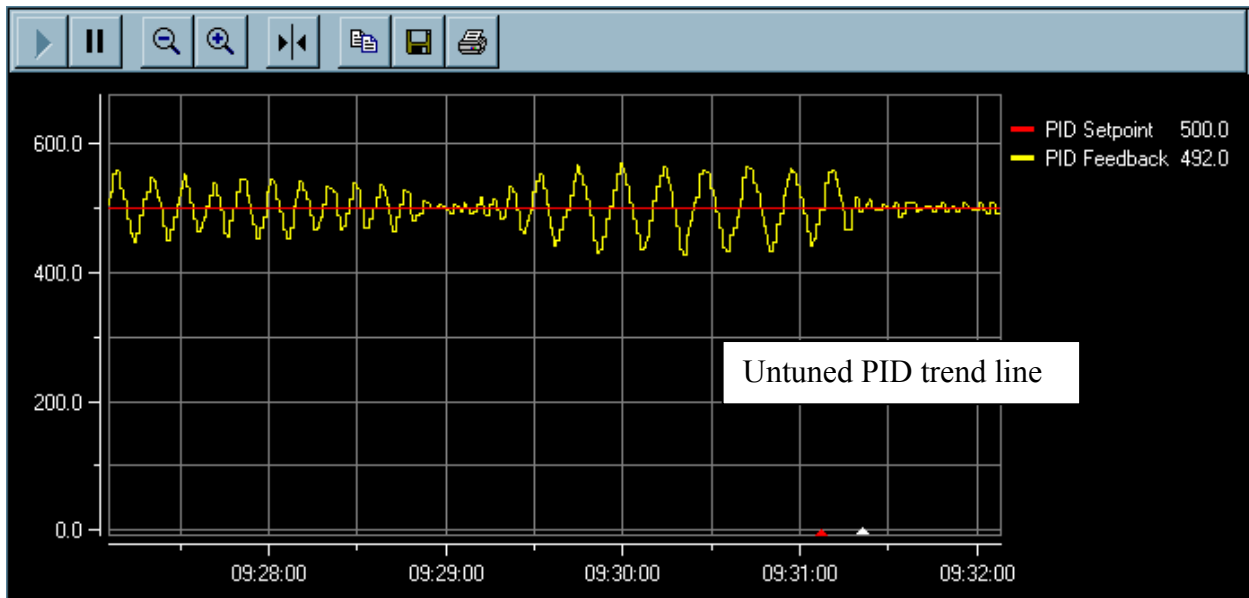
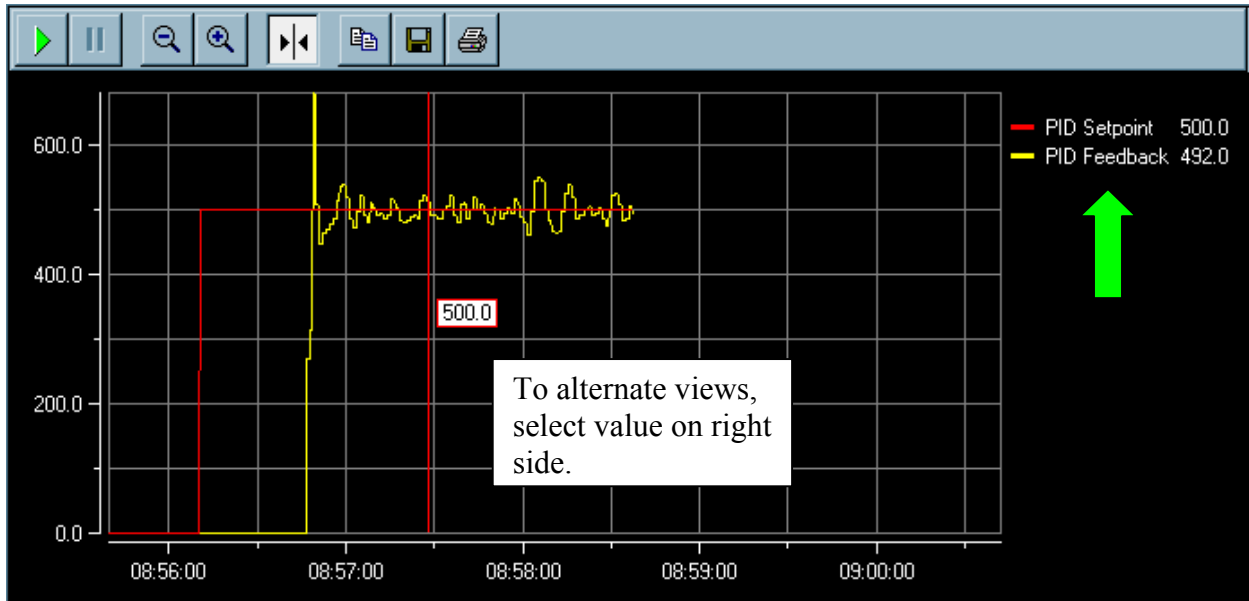
PID tuning utility window:





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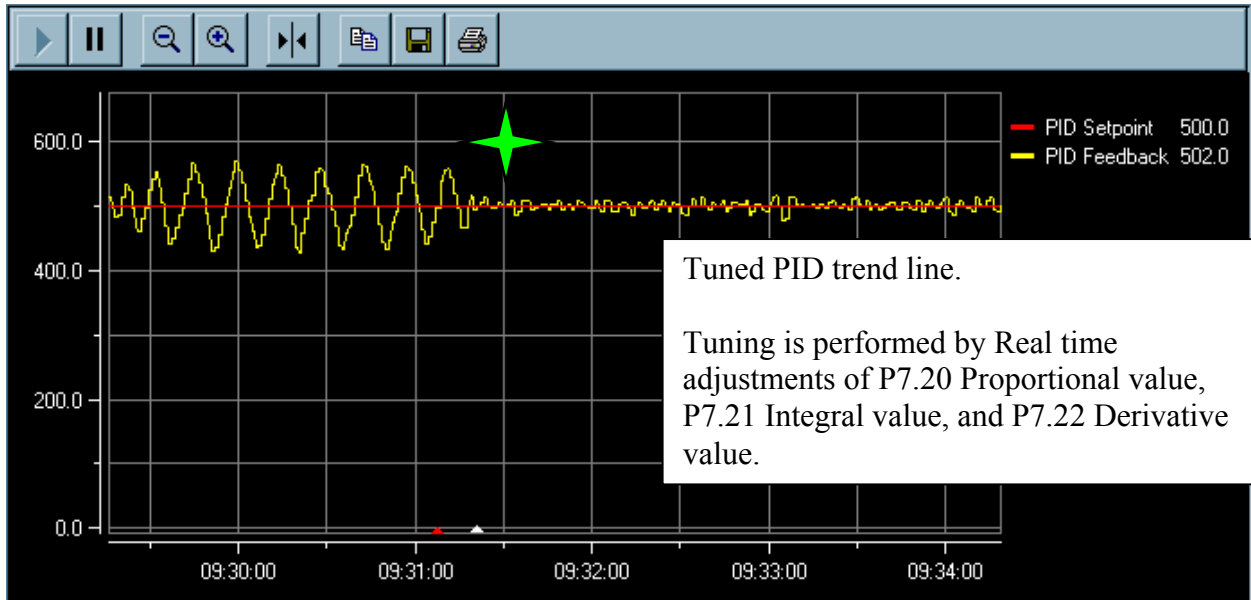
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Technical

Assistance: If you have questions regarding this Application Note, please contact us at 770-844-4200 for further assistance.