PRECISION DIGITAL
NOVA PROCESS & TEMPERATURE CONTROLLERS

Frequently Asked Questions

Contents

Menu Navigation and Setup

How do I navigate the menus?

All setup parameters are contained in parameter groups. To enter the setup menu, hold the SET/ENT button for 3 seconds. Navigate through the groups with the up and down arrow buttons. To enter a group to access the parameters, or move to the next parameters, press the SET/ENT button. To change parameters, use the arrow buttons to change the value and press the SET/ENT key to confirm the new value. The parameter name, as referenced in the instruction manual, appears in the PV window and the value the parameter is set for in the SP window.

How to I navigate past the PWd screen in the group menus?

The PWd stands for PWD, or password. The default password is 0, so for initial setups just press the SET/ENT key to bypass the password and move on to additional setup groups.

What parameters should I set up first?

The first parameters that should be set up are the input parameters in the Input Group (G. In), such as input type, temperature units, or process input scaling. Changing these parameters later will result in many settings being lost, so always set up these before other parameters. Following the input, set up the output parameters as needed and any other settings required. For PID control units, only begin auto-tuning after the inputs, outputs, and a sample set point have been established.

Will PDC program my controllers for me?

Precision Digital offers setup and calibration services for all it's products, including Nova Controllers. For more information on how to order controllers programmed by the factory to meet your needs, or for order forms and pricing, please contact your Precision Digital Nova Controllers supplier.

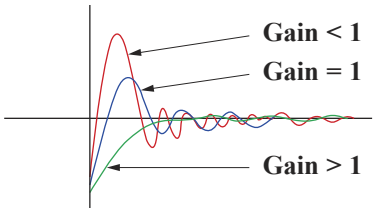
Auto-Tuning (PD540 and PD550 Series Only)

Why does the auto-tuning not work when I try to test it before installation?

The auto-tuning feature functions by calculating the PID values in the loop based on the system reactions to 0 and 100% output levels. To function properly, the setup must be a part of a feedback loop. As a result, you will not be able to accurately test the controllers capabilities unless the input and output are part of the same control loop. Simply providing and input and measuring the output levels will not allow the control to auto-tune properly.

After auto-tuning in the system, how can I reduce the overshoot?

The amount of overshoot in the system and the reaction time can be adjusted after auto-tuning with the Gain function. This function can be adjusted in the auto-tuning setup group with the parameter At-G. Increasing the Gain will reduce overshoot and slow the system reaction to small changes in the PV. Lowering the gain will increase the system reaction speed, but also increase overshoot.



PV Reactions to SP Change Based on Gain

Applications and Features

How do I set up my controller...

For quick automatic/manual switching?

To set up a PD540 series controller for quick and simple automatic to manual switching, use the US1 and US2 parameters to make this parameter easily accessible from the front panel with just a few easy keystrokes. To set up this feature, enter G.CtrL (the Control Group) and set parameter US1 or US2 (User Screens) to value 105, the memory address of the Auto (Auto/Manual) parameter from the D-Registers in the back of the instruction manual. By doing this, the automatic/manual switching parameter can be accessed by pressing the SET/ENT button twice from the normal operating screen. For more information on the features or setup of this application, please visit the online auto/manual switching application note.

To accept a 4-20 mA input?

To accept a 4-20 mA input, select the 0.4 to 2.0 V input range. To select this, enter G. In (Input Group) and at parameter In-t select 2V. Wire the 4-20 mA input signal to the positive and negative voltage input terminals, and wire a 100 Ω resistor between the two input terminals. In the input group, set parameter In.dP to position to the decimal point location, In.SH as the value to be displayed at 20 mA (default of 100.0), and In.SL as the value to be displayed at 4 mA (default 0.0). Precision Digital offers a 100 Ω precision resistor as part number PDX-RES1.

For a 4-20 mA PID controlled output?

To set up an analog output on a PD540 or PD550 series controller to be used as a 4-20 mA PID controlled output, enter the parameter group menus and select G.oUt (output group). Set the specific output you want the signal to be transmitted from (oUt2 or oUt3) to HEAt for standard PID control. For a heating and cooling model PD540 series controller, set HEAt for the output that will increase the process variable, and set CooL for the output to lower it. The next parameter in the output group will be HEAt or CooL. To make the output just set to HEAt or CooL transmit a 4-20 mA PID controlled signal, set this HEAt or CooL parameter to SCr.

To have a transmitting loop power supply?

Nova Controllers can transmit a 14 to 18 VDC @ 20 mA power supply signal for use in powering a transmitter instead of providing a retransmitting output. In Gout (Output Group) select the analog output to be used as the power supply (out2 or out3), and set that parameter to rEt. Next, enter the retransmitting group (GrEt) and set the first parameter in the group, rEt (retransmit type), to LPS (loop power supply). Up to two analog outputs may be set to rEt in this manner and used as loop power supplies.

For Modbus communication?

In GCon (Communications Group), set parameter ConP (Communications Protocol) to nbSA for Modbus ASCII or nbSr for Modbus RTU. Set all other communications group parameters as required for use in the modbus system the Nova is communicating with (see instruction manual for more details on each communications group parameter). The Table of D-Registers in the back of the instruction manual defines the data register locations for each parameter, as well as read only registers for data acquisition.

To operate as a manually controlled 4-20 mA output source?

To set up an analog output to function as a manually controlled 4-20 mA output on a PD540 series controller, enter the control group (GCtL) and set the ArM parameter to nAn. The view will reset to show the process variable in the PV window and the percent output in the control window. This output percentage is the percent full scale of the 4-20 mA output. Any analog output set to HEAt or CooL and programmed as a SCr (4-20 mA) output will now transmit 4 mA at 0%, and 20 mA at 100%. For additional details on how to set up this application, please visit the online application notes available at www.predig.com.

For On/Off control without using PID?

To use a PD540 series controller as a simple On/Off controller (controlled output on/off levels only), enter the control group (GCtL) and set parameter onoF to on. In this mode, the OUT1 relay will automatically work as a control relay. Set the hysteresis parameters in the output group (Gout). HYSH sets the level above the set point for the output to turn off. HYSL sets the level below the set point for the output to turn on. In a heating and cooling model, both hysteresis levels are set in the Gout parameter HYS. For more information, please visit the online On/Off control application note.

General Questions

How do I contact Technical Support?

Technical support can be contacted at:

Call: (800) 610-5239 or (508) 655-7300
Fax: (508) 655-8990
E-mail: support@predig.com

Can I get proof of calibration?

Certificates of Calibration are available from Precision Digital. Calibrations are performed in accordance with the Precision Digital Corporation Quality Management System and comply with the requirements of ISO 9001:2000 and ANSI/NCSL Z540-1-1994. All standards are traceable to NIST. Calibration Certificates are provided by our ISO 9001:2000 calibration laboratory. For more information on Certificates of Calibration or our calibration and setup services, please contact Precision Digital or your Nova supplier.

What accessories may be needed with my Nova Controller?

The following accessories may be useful during the setup and operation of your Nova Controller. Contact Precision Digital or your Nova supplier for details.

PDX-RES1	Precision 100 Ω Resistor Used with a 4-20 mA Input Signal
PDA8485-I	USB to RS-422/485 Isolated Converter
PDA8485-N	USB to RS-422/485 Non-Isolated Converter
PDA7485-I	RS-232 to RS-422/485 Isolated Converter
PDA7485-N	RS-232 to RS-422/485 Non-Isolated Converter
LIM540, LIM550, LIM560, LIM570	Printed Nova Controller Instruction Manuals

Custom setups, Calibration, and Extended Warranties are also available.

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