



Ω OMEGA® User's Guide

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Platinum Configurator



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Change History

| Revision | Description | Date |
|----------|--|-----------|
| 1.6 | Revised to match configurator version 1.4.0 | 7/1/2016 |
| 1.5 | Updated screens, added virtual device section | 10/2/2015 |
| 1.4 | Updated per features found in release 1.2.0.7 | 5/28/15 |
| 1.3 | Clean up / edit, updated screen for Charting and Configuration | 4/14/15 |
| 1.2 | Updated Transaction Monitor Screen for Ethernet support | 04/08/15 |
| 1.1 | Change name to Platinum Configurator Updated Transaction Monitor screen | 04/02/15 |
| 1.0 | Initial Release | 03/27/15 |

1 Introduction

1.1 Purpose

The Platinum Configurator software has been developed to provide a PC (Windows) based configuration and monitoring support package. These software tools were originally developed for internal engineering support to specifically test the functionality of the Platinum product. The tools provide a 'grass roots' interface and expose all internal functionality of the Platinum product.

As an engineering tool the Platinum Configurator will continue to grow as new features and capabilities are added to the Platinum family.

The Platinum Configurator operates over one of the communication channels provided on Platinum based products. All Platinum products are provided with a USB channel that is configured to operate as a Virtual Com device (slave to HOST device).

Many products are offered with an optional serial port (RS232, RS485 etc.). These communication channels are supported, although in most instances the PC interface will rely on a USB to Serial adaptor, suggesting that the native USB connection is the most straight forward solution.

Other communication channel support may be provided in future releases.

The Platinum Configurator may be run in a 'Virtual Device' mode with no physical device connected. A 'Virtual Device' configuration may be loaded using the File/Load option, the configuration screens may be modified and the resulting configuration may be then saved. The file format used by the Load and Save command is compatible that used by the Platinum controller, allowing configurations to be updated offline.

The Platinum Configurator uses the Modbus protocol (ASCII or RTU) and has been developed and tested using Visual Studio operating under Windows 7.



No support is provided to users of the Platinum Configurator software.

1.2 Definition of Terms and Acronyms

| | | | |
|-----------------------|--|--------------------|---|
| I2C | 2-wire serial interface | ADC | Analog to Digital Converter |
| Base Device | Device connected to slave device | DAC | Digital to Analog Converter |
| Smart Input | Device supporting 1 or more Input sensors | RS485 | Electrical signals used for serial communications |
| Smart Output | Device supporting 1 or more Output Elements | RS232 | Electrical signals used for serial communications |
| Sensor Element | One of the physical sensing elements on a Smart Output | CSV | Comma Separated Values |
| AC | Alternating Current | COTS | Commercially-Off-The-Shelf |
| DC | Direct Current | ESD | Electro Static Discharge |
| CS | Chip Select | FW | Firmware |
| RS232 | Electrical signals used for serial communications | HW | Hardware |
| CSV | Comma Separated Values | I/O | Input/output |
| COTS | Commercially-Off-The-Shelf | LED | Light Emitting Diode |
| ESD | Electro Static Discharge | Hexadecimal | Values expressed using base 16 (24) |

1.3 Applicable Documents

| Doc. # | Name / Description | Rev. # |
|--------------|---|--------|
| M5458 | Platinum Modbus Interface | 1.0 |
| M5457 | Platinum Load and Save File Format | 1.0 |
| AP-8 | Platinum Ramp and Soak Processing | 1.0 |
| M5452 | Serial Communication Protocol Specification | V1.1b3 |
| | | |
| | | |

2 Installation

The Installation of the Platinum Configurator on a Windows based platform consists of two components, a 'device interface' which allows the Window application to communicate with the Platinum device and the Platinum Configurator application program.

2.1 Device Interface

The Platinum Configurator application supports three 'com channel' device interfaces: USB, Ethernet and Serial. Within the Windows operating system serial and Virtual Com devices are treated equivalently although the Serial channel requires establishing specific baud rate, parity, start bits and stop bit information.

2.1.1 USB Virtual Com

When using the native USB Device interface under Windows 7/8/10, a Device Driver 'INF' file (OmegaVCP.inf) must be installed to enable the Windows Operating system to correctly identify and enumerate the Platinum USB Device.

The file OmegaVCP.inf is included in the Platinum Configurator release software or may be downloaded from www.Omega.com . The file must be copied to the c: /Windows/inf folder.



Administrator rights may be required to copy this file.

After installing OmegaVCP.inf the system should automatically detect and enumerate the Platinum product when connected via a USB cable.

The OmegaVCP.inf file contains the following key parameters.

| Parameter | Value | Description |
|-----------|--------|---|
| VID | 0x2a72 | Omega Engineering USB Vendor ID |
| PID | 0x0400 | Product Identification indicating the device is operating as a Virtual COM device |

When installed, the Platinum device will appear as an enumerated com device and is assigned a name such as COMxx, where xx is assigned by the operating system.

2.1.2 RS232/RS485

Windows 7/8/10 has native RS232 and RS485 device driver interfaces and no additional driver is required. The hardware (or external USB serial converters) will be assigned a name such as COMxx, where xx is assigned by the operating system.

A wide variety of USB to Serial Adaptors are available. To use a serial channel the Platinum Configurator must use the same communication parameter settings as the Platinum device. The Platinum configuration settings may be set using the front panel menu: INIT/COMM/SER/C.PAR.

| Parameter | Options | Description |
|--------------|---|---|
| bUS.F | 232C 485 | Selects between RS232 and RS485. RS485 required for multi-drop and longer distance. |
| bAUD | 1200, 2400, 4800, 9600, 19.2, 57.6, 115.2 | Data rate |
| PRty | Even, Odd, None | Parity Bit, inserted for data verification. |
| dAtA | 7, 8 | Number of data bits. Note that Modbus/RTU requires 8 bits. |
| StoP | 1, 2 | Number of stop bits. |

2.1.3 Ethernet

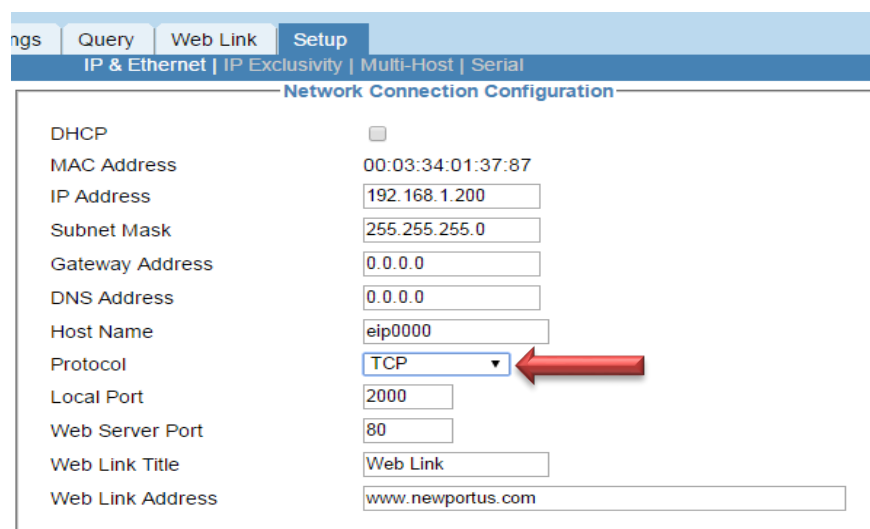
The Platinum Ethernet channel supports 10 and 100 Mbit data rates and is provided with an internal web accessible configuration page that allows setting the Ethernet channel communication parameters.

2.1.3.1 Ethernet TCP (Modbus ASCII)

When used in TCP mode the interface supports Modbus/ASCII formats.

The Platinum Ethernet connection configuration may be done thru the built in web pages of the device. Using a PC internet browser (Explorer, Chrome etc.) connection to web page: 192.168.1.200 (Platinum default IP Address).

The following settings are required. The Platinum device must have the ETHN channel configured to accept Modbus ASCII data.



The screenshot displays the 'Network Connection Configuration' web page. At the top, there are tabs for 'ngs', 'Query', 'Web Link', and 'Setup'. Below these, a navigation bar shows 'IP & Ethernet | IP Exclusivity | Multi-Host | Serial'. The main content area is titled 'Network Connection Configuration' and contains the following fields:

- DHCP: ☐
- MAC Address: 00:03:34:01:37:87
- IP Address: 192.168.1.200
- Subnet Mask: 255.255.255.0
- Gateway Address: 0.0.0.0
- DNS Address: 0.0.0.0
- Host Name: eip0000
- Protocol: TCP (indicated by a red arrow)
- Local Port: 2000
- Web Server Port: 80
- Web Link Title: Web Link
- Web Link Address: www.newportus.com

In Ethernet serial interface must also be configured to support Modbus/ASCII data, which uses a CR+LF to Serial Data Packing Techniques and must be changed from the default settings, as shown below.

The screenshot displays the 'Setup' tab for the 'Serial' interface. The 'Platinum Interface Settings' section includes: Serial Type (RS232), Baud Rate (115200), Data Bits (8), Parity (None), Stop Bit (1), and Flow Control (None). The 'Serial Data Packing Techniques' section includes: End Character (0x0A), Forward End Character (checked), Buffering Time (1 msec, highlighted with a red arrow), and Packet Length (0). The 'Connection Control' section includes: Number of Network Connections (5), Disconnect After Data Sent (unchecked), and Network Inactivity Timeout (0). The 'Serial Data Propagation' section includes: Propagation Type (Multicast selected, Unicast unselected).

2.1.3.2 Ethernet Modbus/TCPIP

When used in Modbus/TCPIP mode, the following Ethernet options are required. The Platinum device must have the **ETHN** channel configured to accept Modbus RTU data.



When ModbusTCP is selected, the Local Port automatically switches to 502, the port designated by Modbus for use with TCPIP and the 'Serial Data Packing Techniques' options are disabled.

ngs Query Web Link **Setup**

IP & Ethernet | IP Exclusivity | Multi-Host | Serial

Network Connection Configuration

DHCP ☐

MAC Address 00:03:34:01:37:87


IP Address 192.168.1.200

Subnet Mask 255.255.255.0

Gateway Address 0.0.0.0

DNS Address 0.0.0.0

Host Name eip0000

Protocol ModbusTCP 

Local Port 502

Web Server Port 80

Web Link Title Web Link

Web Link Address www.newportus.com

Ethernet Port

Auto-Negotiation ☐

Speed ☐ 100 Mbps ☒ 10 Mbps

Duplex ☐ Full ☒ Half

2.2 Installing Platinum Configurator Software

The Platinum Configurator is a self-extracting executable program which may be downloaded and installed on a Windows 7 based system.

1. Download the Platinum_Configurator.zip file.
2. Copy the OmegaVCP.inf file from the downloaded file to the c:/windows/inf/ folder.
3. Click on the **setup.exe** file. The program will install and a shortcut icon will be created on the desktop.



| Release 01020000 | | | |
|----------------------|----------------------|----------------------|--------|
| Name | Date modified | Type | Size |
| Application Files | 4/14/2015 4:15 PM | File folder | |
| OmegaVCP.inf | 3/10/2015 10:25 A... | Setup Information | 2 KB |
| Platinum.application | 4/14/2015 4:06 PM | ClickOnce Applica... | 16 KB |
| setup.exe | 4/14/2015 4:06 PM | Application | 423 KB |

3 Connect to Platinum

3.1 Disabled Options

Fields which are disabled or not applicable will be shown greyed out.

3.2 Screens

The Platinum Configurator has been implemented as a series of 'screens', entered by selecting drop down options from the main screen tool bar or by clicking on any of the control buttons appearing on the main screen.

When a screen is loaded the device is read and all screen specific data is refreshed.

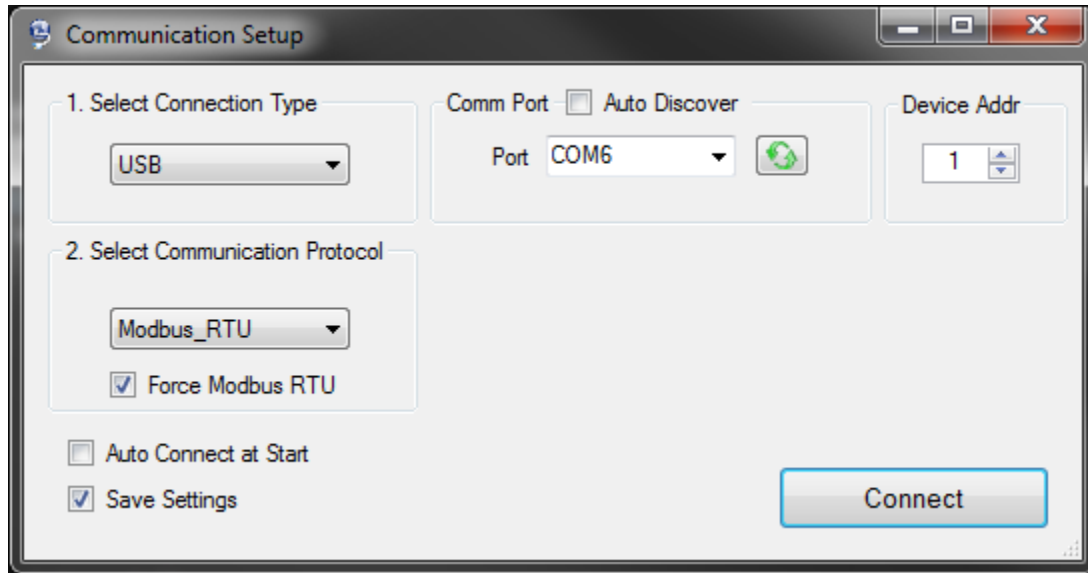
A manual 'Refresh' button is provided on each screen to allow updating screens where information may have changed due to configuration of unrelated data.

There is no specific 'close' option on each of the sub-screens. The screens may be collapsed or expanded to full screen mode using the standard window options. To close a screen select the 'X' option.



3.3 Connect to Platinum Controller

To connect the Platinum, the very first step is to setup communication between the configurator and the Platinum device. The communication interface is shown below.



On this interface, please follow 1, 2, and 3 in sequence:

1. **Select connection type:** Available options are USB, Serial, TCP, and Offline. Other parameters will be updated to adapt to the option that you selected.
2. **Selection Communication Protocol:** Only Modbus is supported. You can check Modbus RTU to force the platinum to use Modbus RTU.

There are a few options that help you to use the configurator.

- **Auto Connect at Start:** once this box is checked, configurator will try to use previous saved parameters to connect to controller.
- **Save Settings:** once this box is checked, all communication parameters will be saved once the connection is succeed.
- **Auto Discover:** only applies to USB or serial connection.

3.3.1 Offline mode

The offline connection mode is to use “Platinum Configurator” to set platinum parameters without physically connecting to a platinum controller. Perform all functions supported by the Platinum Configurator such as adjust runtime parameters, turn on off features, etc. Users can also save configuration parameters to a file. This file can be then loaded into platinum controller or its software.

3.3.2 Modbus Format

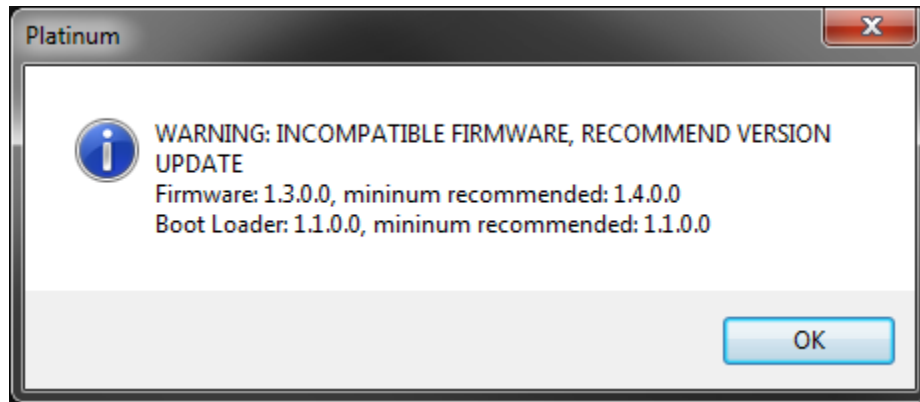
The available Modbus formats are determined by the Platinum Channel selected.

If Ethernet / TCP/IP is selected the USB and Serial options will be disabled. To select one of these channels first select Ethernet/ASCII, which re-enables all three channel types.

| Channel | ASCII | RTU | TCP/IP |
|----------------|-------|-----|--------|
| USB | X | X | |
| Serial | X | X | |
| Ethernet | | | X |
| Virtual Device | N/A | N/A | N/A |

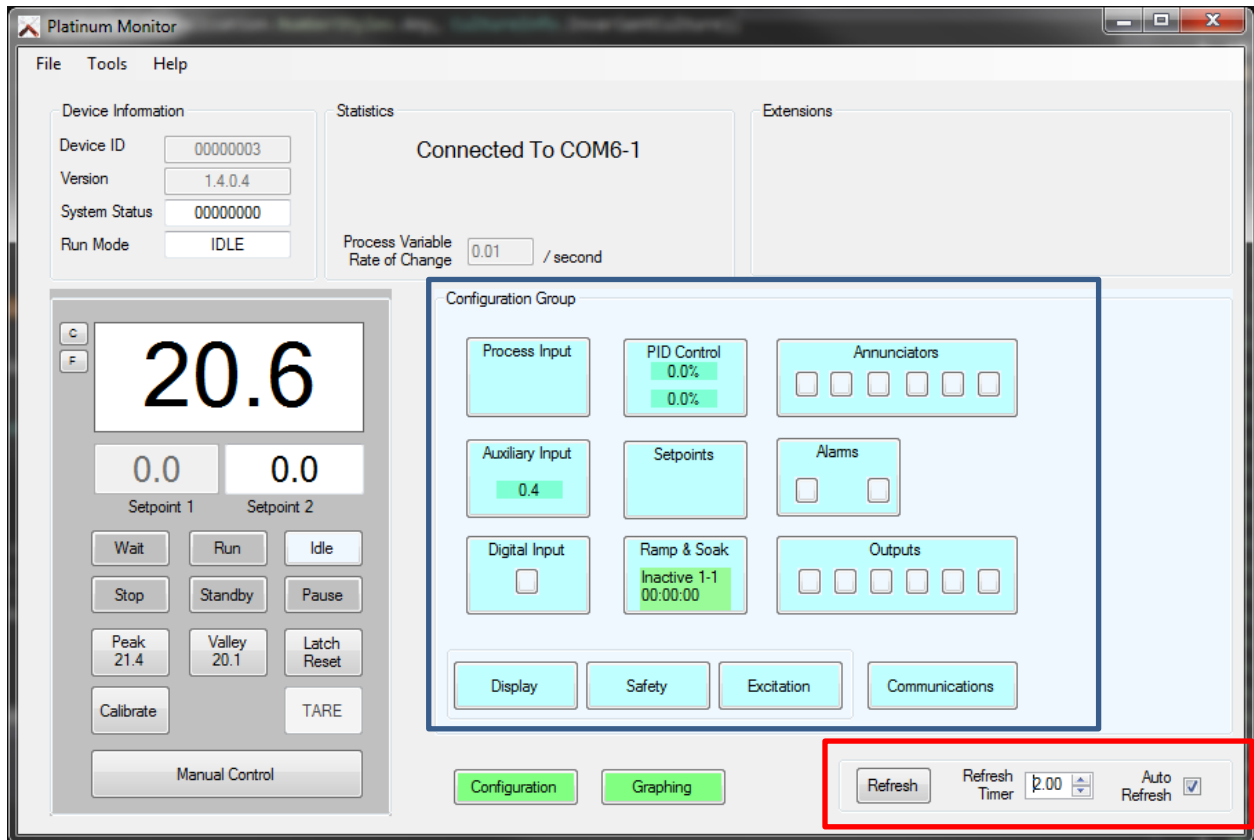
3.3.3 Version Verification

If the Application or Bootloader firmware of the device requires upgrading, this warning message displays. Operation may continue, but errors may occur.



4 Monitor and Control Platinum

4.1 Main Interface



The main interface of Platinum configurator shows controller system information, process values, and status. It provides functions for controlling the controller. The Main screen can be automatically refreshed at a user selectable 'rate'. It is recommended that a minimum of 2 second refresh timing be used. (See red box above.)

The Main Screen provides a Device Information summary, a pseudo image of what appears on the Platinum display, individual 'buttons' within the "Configuration Group" that allow programming and configuring the functional parameters of the device. (See blue box above.)

On the pseudo image of the Platinum device both Setpoint 1 and Setpoint 2 values are shown. If these parameters are configured as absolute values (see setpoint configuration) they may be changed by entering a new value.

- If Setpoint 1 is configured as a Remote Setpoint, or if Ramp and Soak is active the Setpoint 1 value will be displayed but cannot be updated.
- If Setpoint 2 is configured as a Deviation Setpoint the effective Setpoint 2 value will be displayed but cannot be updated.

Where appropriate the Configuration Group buttons show current 'values' of the primary underlying parameters. Digital (ON/OFF) parameters are shown as small 'display' lights that change to GREEN when active.

4.2 Reading and Control

4.2.1 Operating Modes

The 6 control buttons (Wait, Run, Idle, Stop, Standby and Pause) may be selected to change the operating mode of the device.

4.2.2 Run Mode Options

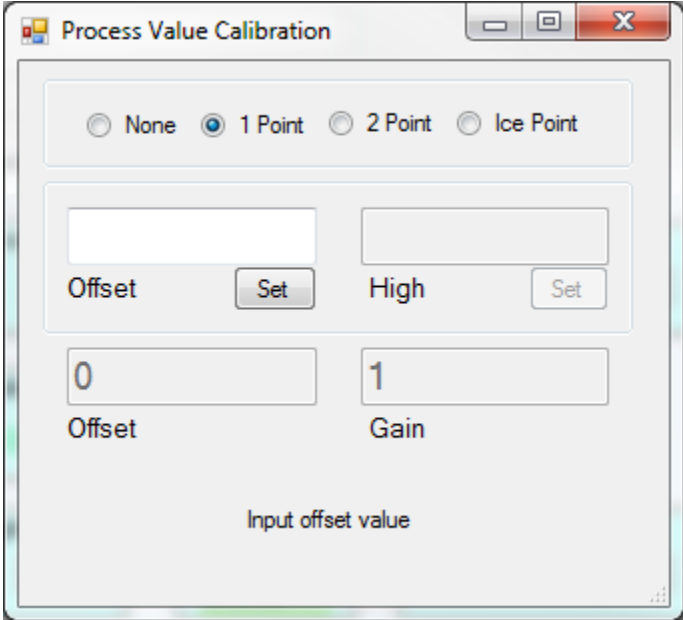
The Run Mode option buttons (Peak, Valley, and Latch Clear) mimic the functionality found in the Platinum Run Mode.

The Peak and Valley buttons include the current Peak/Valley values. Pressing either will clear the current value.

Clicking the Latch Reset button allows clearing latched alarms.

4.2.3 Calibrate

Calibrate button allows user to set user calibration mode and calibration parameters.



The image shows a software window titled "Process Value Calibration". At the top, there are four radio buttons: "None", "1 Point" (which is selected), "2 Point", and "Ice Point". Below these, there are two input fields. The first is labeled "Offset" and contains the value "0"; it has a "Set" button next to it. The second is labeled "High" and contains the value "1"; it also has a "Set" button next to it. Below the "Offset" field, the text "Input offset value" is displayed. The "Gain" label is positioned below the "High" field. The window has standard Windows-style window controls (minimize, maximize, close) in the top right corner.

4.2.4 TARE

TARE button is only enabled when input is process. Click TARE button will set the current weight reading to 0.

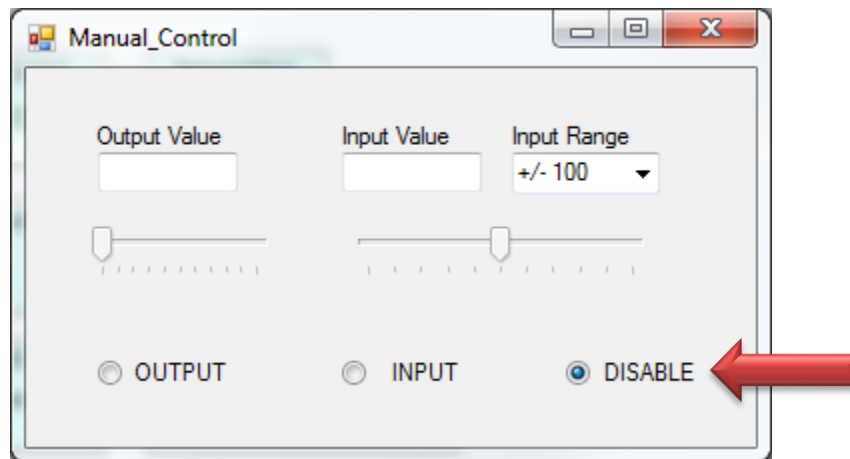
4.2.5 Manual Control

The “Manual Control” button operates like the OPER/MANL option on the Platinum Controller. Selecting this button will open a separate window for manually setting the Input value or Control Value; the unit will be placed into IDLE mode.

Selecting the Output option sets the Control Output; and any outputs configured as PID may be set from 0 – 100% of full power.

Selecting the Input Option allows generating a ‘pseudo input’ within the range defined by the Input Range value.

The Disable option disables both the Input and Output function.



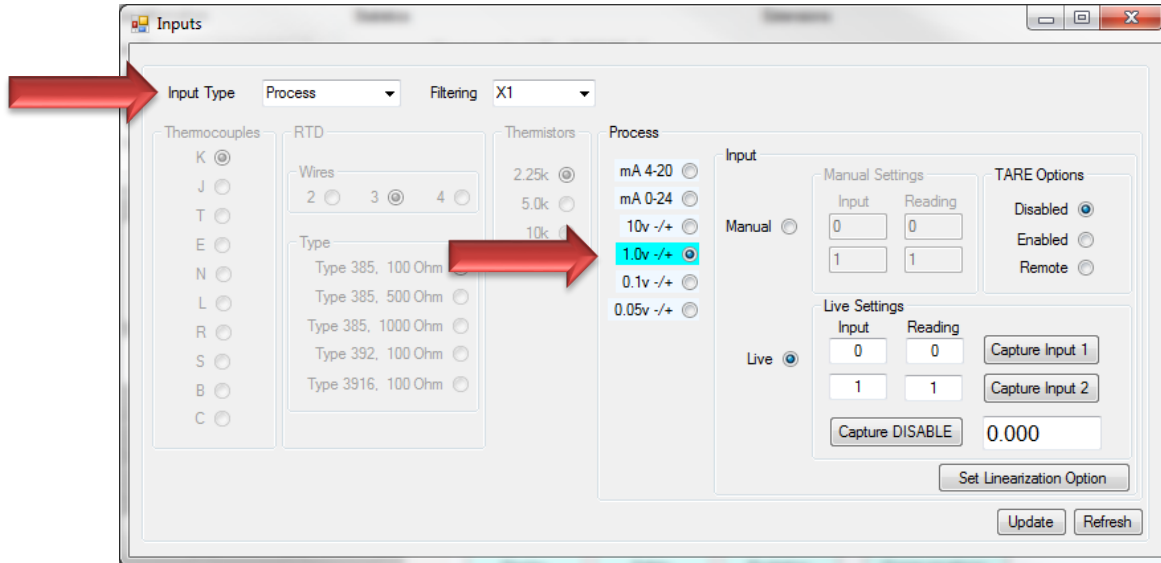
4.3 System Configuration

The “System Configuration” screens are for configuring each of the internal control blocks of the Platinum Controller.

When entered, the current configuration information is read and used to build the screen.

- If a change is made to the current configuration the ‘Update’ button will appear, allowing the selection to be recorded.

4.3.1 Input Configuration



The “Input Configuration” screen configures all of the Input parameters. The “Input Type” ‘drop-down’ menu will enable the selected options. (See Red Arrow.)

The Process Range selection configures the Process Voltage/Current input as 4-20 mA, 0-24 mA, +/-10 Vdc, +/- 1 Vdc, +/- 0.1 Vdc, and +/- 0.05Vdc. Each input range has unique scaling parameters for input values to be scaled in engineering units.

The “View Settings” under the “Process” Input selection. The ‘aqua’ colored highlight moves to view each of the different input scaling options without changing the input range. The radio buttons select different input ranges.

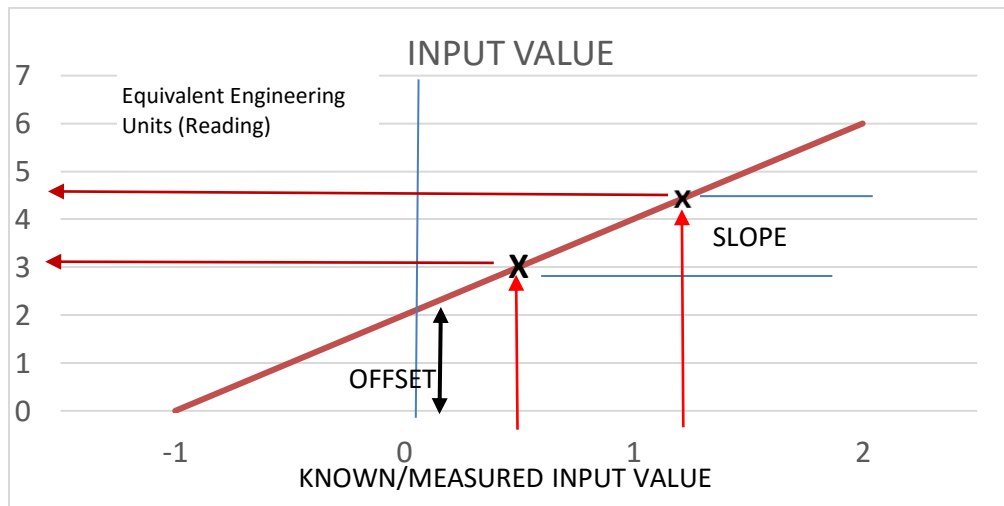
4.3.1.1 Input / Output Scaling

Scaling operations translate source (input) signals to scaled output signal using a linear translation defined by a SLOPE (or gain) and an OFFSET. As shown below, (X1, Y1) and (X2, Y2) define two points on a line with a certain SLOPE and OFFSET. Knowing the SLOPE and OFFSET determines the OUTPUT value for any given INPUT value using this equation:

Output = Input X SLOPE + OFFSET, where

GAIN = $(Y2 - Y1) / (X2 - X1)$

OFFSET = $Y1 - (GAIN * X1)$.

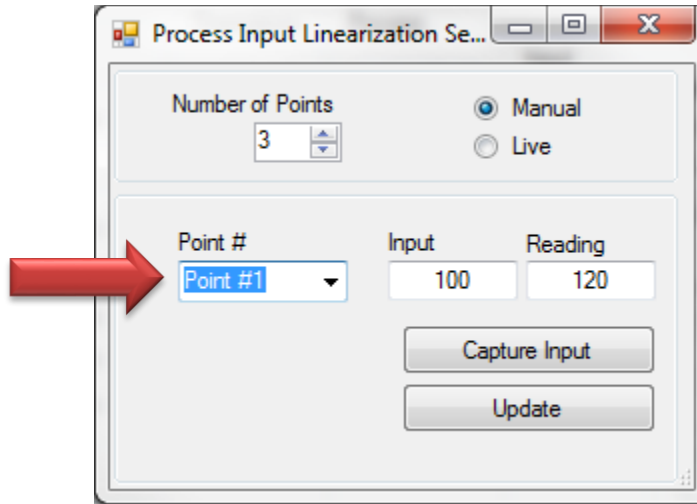


- If $(X2 - X1) == 0$, the GAIN is set to 1 and the OFFSET is set to 0.

For MANUAL scaling the two points are entered directly, as values, in the “Manual Settings” screen area.

4.3.1.2 Linearization

Platinum supports 10-Point Linearization in process input. The 10-point linearization enters up to 10 Reading/Input value pairs, and is used to internally calculate 10 gain/offset parameters. Select combo box on the UI to change point.

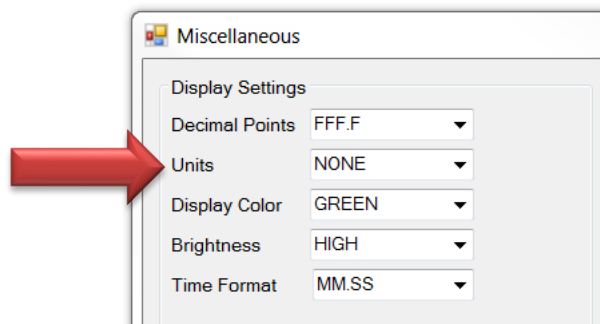


4.3.1.3 Live Scaling

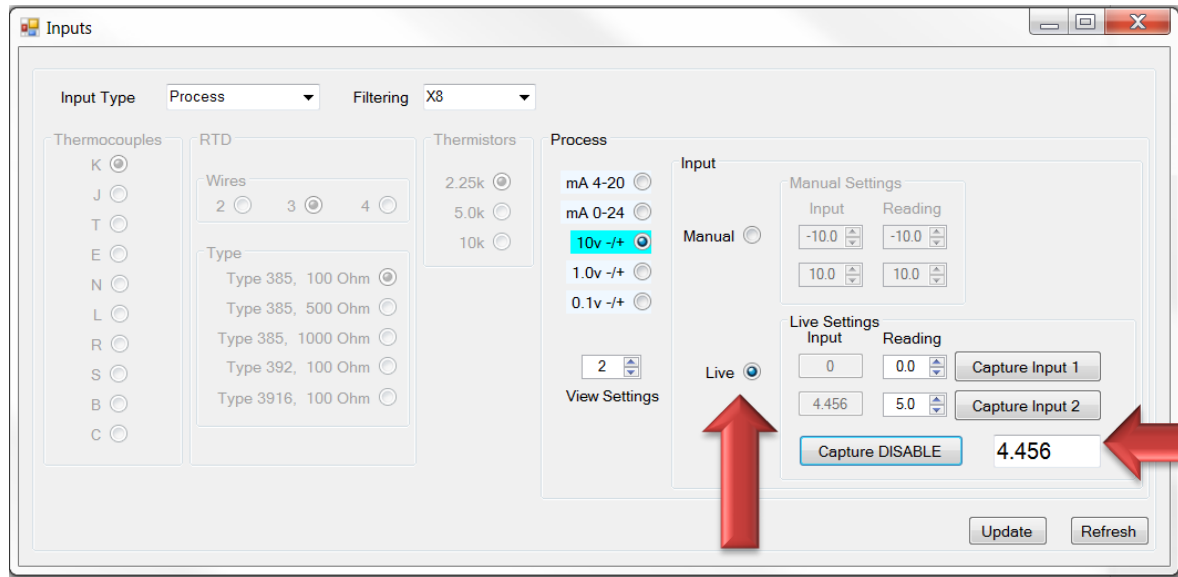
For LIVE scaling, the Reading values for point 1 and 2 are directly entered, and the corresponding process input levels are 'captured' from the measured value.

The following steps are recommended:

1. Disable the unit conversion using the Display (Miscellaneous) screen and set unit to IDLE mode (NONE).

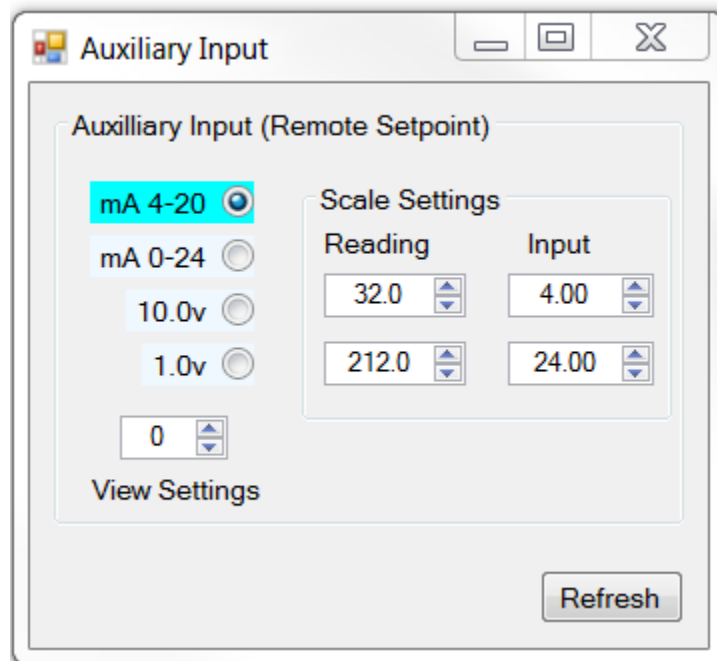


2. Set the scaling mode to LIVE and enable the “Capture ENABLE” button. The “Capture Disable value is displayed, and when the function is turned off, the current unscaled input value is displayed.



3. Adjust the input value that will define data point 1 and click the “Capture Input 1” button. The current input value will be transferred to the Live Settings Input 1 display.
4. Type in the corresponding Reading value for data point 1.
5. Repeat steps 3 & 4 for the data point 2 values and press Update. The values will be transferred to the unit.
6. Press the “Capture Disable” button to re-enable the scaling function.
7. Restore, “Refresh” the desired Units.

4.3.2 Auxiliary Input



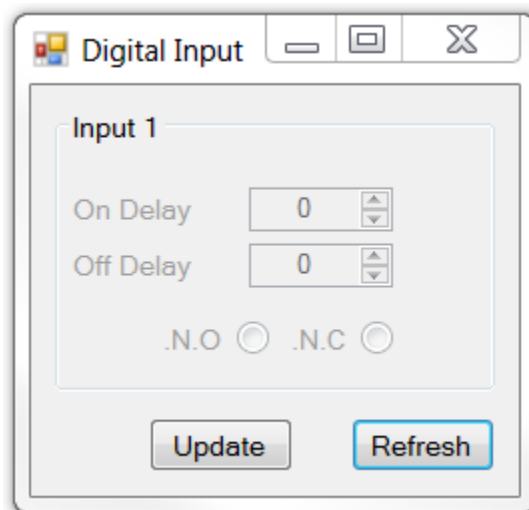
The screenshot shows a window titled "Auxiliary Input" with standard window controls (minimize, maximize, close). Inside, the title "Auxiliary Input (Remote Setpoint)" is displayed. On the left, there are four radio buttons for input ranges: "mA 4-20" (selected and highlighted in blue), "mA 0-24", "10.0v", and "1.0v". Below these is a numeric input field containing "0". A "View Settings" button is located below the input field. To the right, a "Scale Settings" box contains two columns of numeric input fields. The "Reading" column has values "32.0" and "212.0". The "Input" column has values "4.00" and "24.00". At the bottom right of the window is a "Refresh" button.

The Auxiliary Input Configuration screen (also referred to as Remote Setpoint) configures all of the Auxiliary Input parameters.

The radio buttons select different input ranges, while the "View Settings" moves the 'aqua' colored highlight to view each of the different input scaling options without changing the input range.

The input value is shown on the main screen.

4.3.3 Digital Input



The screenshot shows a window titled "Digital Input" with standard window controls. Inside, the title "Input 1" is displayed. Below it are two numeric input fields: "On Delay" with a value of "0" and "Off Delay" with a value of "0". Below these are two radio buttons: ".N.O" and ".N.C". At the bottom are two buttons: "Update" and "Refresh".

The Platinum Configurator includes (disabled) parameters, but are not currently offered in the Platinum controller digital input.

The state of the digital input (ON/OFF) is shown on the main screen.

4.3.4 PID Control

The screenshot shows a software window titled "PID_Control" with two main sections for "PID 1" and "PID 2". Each section contains a "Bounds" area with five input fields: "Minimum Low (%)" set to -100.0, "Maximum High (%)" set to 100.0, "Control Offset (%)" set to 0.0, "Deadband (")" set to 0.0, and "Relative Cool Gain" set to 1.0. To the right of these is an "Action" area with three radio buttons: "Reverse" (selected), "Direct", and "Reverse/Direct". Below the bounds is a checkbox for "Adaptive Control Enable" which is checked. The "Tuning" section for each PID has five input fields: "Proportional Gain (P)" (125.655 for PID 1, 1.000 for PID 2), "Integral Gain (I)" (31.414 for PID 1, 0.000 for PID 2), "Derivative Gain (D)" (125.655 for PID 1, 0.000 for PID 2), "Max Rate (/min)" (28.650 for PID 1, 0.000 for PID 2), and "Autotune Timeout (s)" (300 for both). Each tuning section includes an "Auto Tune" button and a "Clear Integral" button. At the bottom of the window, there are "Refresh" buttons for each PID section.

The PID configuration screen sets the PID control parameters and initiates an Autotune cycle. User can use this dialog to adjust PID parameters for both PID 1 and PID 2.

- If the Auto Tune button is selected the system will start an AUTOTUNE cycle and the status / input value is shown on the main screen. At the completion of the cycle the REFRESH button may be used to review the calculated P, I and D values.

The calculated PID Output power is shown on the main screen. Following an Autotune cycle select the Refresh button to update the new P, I and D parameters.



Before initiating an Autotune cycle, ensure that the appropriate output has been configured for PID control.

4.3.5 Setpoints

The screenshot shows a window titled "Setpoints" with standard window controls (minimize, maximize, close) in the top right. The window contains two main configuration sections: "Setpoint 1" and "Setpoint 2".

Setpoint 1: Features a "Setpoint" label followed by a numeric input field containing "80.0" with up and down arrow buttons. To the right are three radio button options: "Absolute" (which is selected), "Remote", and "Ramp & Soak".

Setpoint 2: Features two rows of controls. The first row has the label "Absolute" followed by a numeric input field containing "32.0" with up and down arrow buttons, and a selected "Absolute" radio button. The second row has the label "Deviation +/-" followed by a numeric input field containing "0.0" with up and down arrow buttons, and an unselected "Deviation" radio button.

A "Refresh" button is located at the bottom right of the window.

The Setpoint configuration screen sets the mode for Setpoint 1 and Setpoint 2.

On the Platinum Configurator, the setpoint mode may be easily set. Setpoint 1 mode on the Platinum is set by enabling the Ramp & Soak or Remote Setpoint functions.

Setpoint 2 mode may be set to either Absolute or a Deviation (+/-) from setpoint 1. The value displayed on the pseudo device image of the main screen will be the effective value.

Example: (Setpoint 2 Deviation mode)

Setpoint 1 = 100.0

Setpoint 2 Deviation value = 5

Effective Setpoint 2 value = 105

4.3.6 Ramp & Soak

The Platinum controller supports up to 99 Ramp and Soak profiles each supporting up to 8 ramp/soak segments. The ramp and soak profiles may be daisy-chained together using a profile LINKING option.

The Ramp & Soak Control section programs the overall Ramp and Soak control, including enabling the Ramp & Soak mode. Start the profile to use the tracking mode, and a number of segments in each specific profile; and the action to be taken at the end of the profile.

The Profile select control selects which profile data is to be displayed.

The time format is maintained and displayed as hours:minutes:seconds. The time values may be adjusted using the Up/Down scroll buttons or enter the time value manually into the "Ramp Time" field. Note that when entering time values: spaces, commas, and periods or semi-colons are used to separate the hour, minute and second fields. (See Red Box below.)

Manually entered time values will be normalized when entered. For example, 01:63:67 will be converted to 02:04:07. Leading zeros are not required.

Ramp and Soak

Ramp - Soak Control

R&S Control NO

Start Profile 1

Profile

Tracking Mode RAMP

Number of Segments (In Profile) 1

End of Profile Action STOP

No Linking 0

Refresh

Segment 1

Ramp Time 05:10:00 RE ☒ Setpoint 200.0 Soak Time 01:30:00 SE ☐ Update

Segment 2

Ramp Time 00:40:00 RE ☒ Setpoint 225.0 Soak Time 00:25:00 SE ☒ Update

Segment 3

Ramp Time 00:10:00 RE ☐ Setpoint 32.0 Soak Time 00:10:00 SE ☐

Segment 4

Ramp Time 00:10:00 RE ☐ Setpoint 32.0 Soak Time 00:10:00 SE ☐

Segment 5

Ramp Time 00:10:00 RE ☐ Setpoint 32.0 Soak Time 00:10:00 SE ☐

Segment 6

Ramp Time 00:10:00 RE ☐ Setpoint 32.0 Soak Time 00:10:00 SE ☐

Segment 7

Ramp Time 00:10:00 RE ☐ Setpoint 32.0 Soak Time 00:10:00 SE ☐

Segment 8

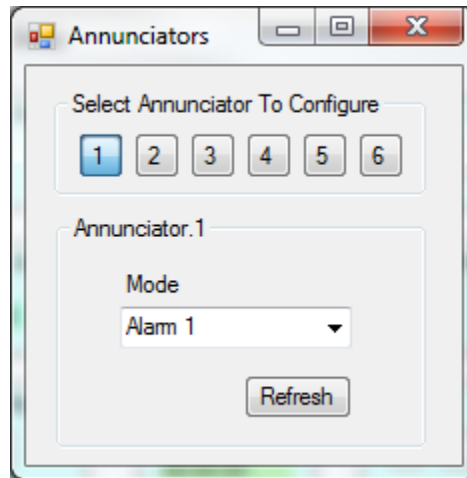
Ramp Time 00:10:00 RE ☐ Setpoint 32.0 Soak Time 00:10:00 SE ☐

Profile

Select Profile 1

The RE and SE checkboxes enable the annunciators and outputs based on the Ramp and Soak states.

4.3.7 Annunciators



Platinum annunciators appear on the front display and are activated based on the state of the Alarms and Outputs. Total 6 annunciators are supported by the controller. User can select annunciator number to change annunciator mode.

The Platinum Configurator extends the annunciator options to trigger the annunciator based on individual RE.ON or SE.ON states including 'any RAMP' or 'any SOAK' status.

Available Annunciator Modes:

- Disabled – Annunciator is disabled
- Alarm1 – Annunciator is linked to Alarm1
- Alarm2 – Annunciator is linked to Alarm2
- SPST Relay1 – Annunciator is linked to SPST Relay1
- DCPulse1 – Annunciator is linked to DCPulse1
- Isol DCPulse1 – Annunciator is linked to isolated DCPulse 1
- Isol DCPulse2 – Annunciator is linked to isolated DCPulse 2
- RE.ON – Annunciator is linked to RE.ON state
- SE.ON – Annunciator is linked to SE.ON state
- Ramping – Annunciator is active when PID control is in ramping stage
- Soaking – Annunciator is active when PID control is in soaking stage
- Sensor Error – Annunciator is active when sensor is in fault state
- Output Error – Annunciator is active when output is in fault state

4.3.8 Alarms

The screenshot shows a software window titled "Alarms" with two side-by-side panels for "Alarm.1" and "Alarm.2". Each panel contains the following settings:

- Alarm Mode:** A dropdown menu. For Alarm.1, it is set to "ABOVE"; for Alarm.2, it is set to "BELOW".
- Absolute/Deviation:** Radio buttons for "Absolute" and "Deviation". For both alarms, "Absolute" is selected.
- Deviation From:** Radio buttons for "SP1", "SP2", and "C. SPT". For both alarms, "SP1" is selected.
- Alarm Limits:** A sub-panel with two columns: "Absolute" and "Deviation". Each column has "Low" and "High" values with up/down arrows, and a "High-High" value with an "Enable" checkbox.
 - Alarm.1:** Absolute Low: 0.0, Absolute High: 0.0, Absolute High-High: 0.0 (checked); Deviation Low: 1.0, Deviation High: 10.0, Deviation High-High: 0.0 (checked).
 - Alarm.2:** Absolute Low: 0.0, Absolute High: 0.0, Absolute High-High: 0.0 (checked); Deviation Low: 5.0, Deviation High: 0.0, Deviation High-High: 0.0 (checked).
- Alarm Color:** Radio buttons for "No Change", "Red", "Green", and "Amber". For Alarm.1, "Red" is selected; for Alarm.2, "Amber" is selected.
- Activation Control:** Radio buttons for "On Delay" and "Off Delay", each with a numeric input field.
 - Alarm.1:** On Delay: 0.0, Off Delay: 0.0.
 - Alarm.2:** On Delay: 0.3, Off Delay: 0.0.
- Output:** Radio buttons for "Activate" and "Deactivate". For both alarms, "Activate" is selected.
- Power On Behavior:** Radio buttons for "Active" and "Inactive". For both alarms, "Inactive" is selected.
- Latch Options:** Radio buttons for "No Latching", "Either Clear", "Panel Clear", and "Remote Clear". For both alarms, "No Latching" is selected.
- Buttons:** A "Refresh" button is located at the bottom right of each panel.

The Platinum controller supports 2 alarm control blocks. The state of each alarm is shown on the main screen. User can change alarm mode and set alarm parameters/options using the alarm dialog.

4.3.9 Outputs

The screenshot shows a software interface for configuring six outputs. Each output panel includes a 'Mode' dropdown menu, a 'Value' input field, and several sub-sections for configuration: 'Output Action' with radio buttons for Reverse, Direct, and Reverse Direct; 'On-Off Options' with radio buttons for Setpoint, Setpoint 1, and Setpoint 2; a 'Deadband' numeric input; 'Digital Options' with a 'Cycle Time' numeric input; 'Retransmission Scaling' with 'Reading' and 'Output' numeric inputs; and 'Analog Options' with an 'Output Range' dropdown. A 'Refresh' button is located at the bottom of each panel.

The Platinum controller supports 6 outputs (future products may expand this capability), and each output configuration may be refreshed or updated independently.

The “Output Mode” selection assigns the output to a specific mode of operation, and defines which parameters apply and enables the corresponding control blocks.

The state of each output is shown on the main screen.

Available outputs modes are:

- OFF - output is turned off
- PID – output is set to output PID control value
- ON.OFF – output is set to On or Off based on set point value
- ALARM1 – output is linked to alarm1
- ALARM2 – output is linked to alarm2
- RAMP ON – output is linked to PID control ramping stage
- SOAK ON – output is linked to PID control soaking stage
- PID 2 – output is set to output PID 2 control value.
- SENSOR ERROR – output is turned on if there is sensor fault
- OPEN LOOP – output is set on when the control loop is open



NOTE: that only valid parameters/options for selected mode will be enabled when user switch output mode.

4.3.10 Display, Safety, Excitation

The “Display, Safety and Excitation” control screens have been grouped into one miscellaneous control screen.

Note that several control values, such as Time Format have been grouped within the miscellaneous screen due to common functionality, and may appear in alternate menu positions on the actual device.

Each of the sub-groups may be individually refreshed or updated.

The screenshot shows a software interface titled "Miscellaneous" with three main sections: Display Settings, Safety, and Excitation.

Display Settings: Includes dropdown menus for Decimal Points (FFF.F), Units (CELCIUS), Display Color (GREEN), Brightness (HIGH), and Time Format (MM.SS). A "Refresh" button is located below these settings.

Safety: Contains sub-sections for Power On Mode (Power On Resume selected, Power On Run and Power On Wait unselected), Oper Run Mode (Return to Wait selected, Return to Run unselected), Setpoint Limits (Low Limit: -1000.0, High Limit: 2000.0), and Sensor Loop Break (Break Detect unselected, Break Timeout: 60.0). It also has checkboxes for Open Detect (checked) and Latch Sensor Error (checked). At the bottom, there are checkboxes for Sensor Status and Output Status, and an Auto Refresh Status dropdown set to 5.00.

Excitation: Includes a Voltage dropdown menu set to 5 and a "Refresh" button.

Output Break Detect: A table with columns: Output, Mode, Enable, Deviation (°), and Timeout (min).

| Output | Mode | Enable | Deviation (°) | Timeout (min) |
|--------|------|-------------------------------------|---------------|---------------|
| STR1 | OFF | <input type="checkbox"/> | 10.0 | 10.0 |
| DC1 | OFF | <input type="checkbox"/> | 10.0 | 10.0 |
| AN1 | OFF | <input type="checkbox"/> | 10.0 | 10.0 |
| IDC1 | OFF | <input type="checkbox"/> | 10.0 | 10.0 |
| IDC2 | PID | <input checked="" type="checkbox"/> | 10.0 | 10.0 |
| IAN1 | OFF | <input type="checkbox"/> | 10.0 | 10.0 |

A "Latch Output Error" checkbox is checked at the bottom right of the Output Break Detect section.

Output break detection could be enable if the output is set to non OFF mode. Once the break detection is enabled, the deviation and timeout parameters will be used for detection. User can turn on latch output error option if he/she wants to has the output error stay on when there is an error occurred.

4.3.11 Communications

The Platinum product supports 3 COMM channels: USB, Ethernet and Serial. USB is standard on all products.

Each COMM channel supports either Omega or Modbus protocol. Within the Omega protocol there are a variety of options. Within the Modbus protocol both Modbus RTU and Modbus ASCII formats are supported.

The serial channel supports a variety of data formats and transmission speeds. The configuration options group will be disabled if the module is not supported or is the module that is currently connected.



The channel used by the Platinum Configurator must be configured for Modbus RTU, Modbus TCP/IP or Modbus ASCII. Following a Factory Default (F.DFT) selection the device will revert to Omega Protocol.



The Serial channel has additional parameters allowing the setting of baud rate, parity, stop and start bits. Changing these values while connected thru a serial channel will result in a loss of communications.

When connecting to the device, if the Platinum Configurator is connected using a USB connection and the USB/MODBUS RTU options are selected the device USB configuration will be automatically reconfigured. For all other connection options the device must be set to match the Platinum Configurator connection options.

The screenshot shows the 'Comms' configuration window with three main sections: USB Comm Options, Ethernet Comm Options, and Serial Comm Options. The Serial Comm Options section is expanded, showing a 'Serial Parameters' sub-section. A red arrow points to the 'Serial Parameters' section, which includes a warning icon. The 'Serial Parameters' section contains the following settings:

- RS485: ☐
- RS232: ☒
- Baud Rate: 19200
- Parity: ODD
- Data Bits: 7 Bits
- Stop Bits: 1 Stop
- Refresh button

The 'Serial Comm Options' section also includes the following settings:

- Protocol: ☒ Omega, ☐ Modbus
- Modbus Mode: ☐ ASCII, ☒ RTU
- Cont. Record Rate: 1.0
- Status: ☐
- Reading: ☒
- Peak: ☐
- Valley: ☐
- Units: ☐
- Mode: ☐ Cont, ☒ Cmd
- Terminator: ☒ CR+LF, ☐ CR
- Field Separator: ☐ CR between fields, ☒ SPACE between fields
- Address: 1
- Refresh button

4.4 Controller Configuration

The Configuration screen reviews the current device configuration, order part numbers and versions of the device firmware. The user can upgrade firmware for optional modules.

When the Refresh button is clicked, the current device configuration is read and displayed. Alternate part numbers may be reviewed by selecting different options.



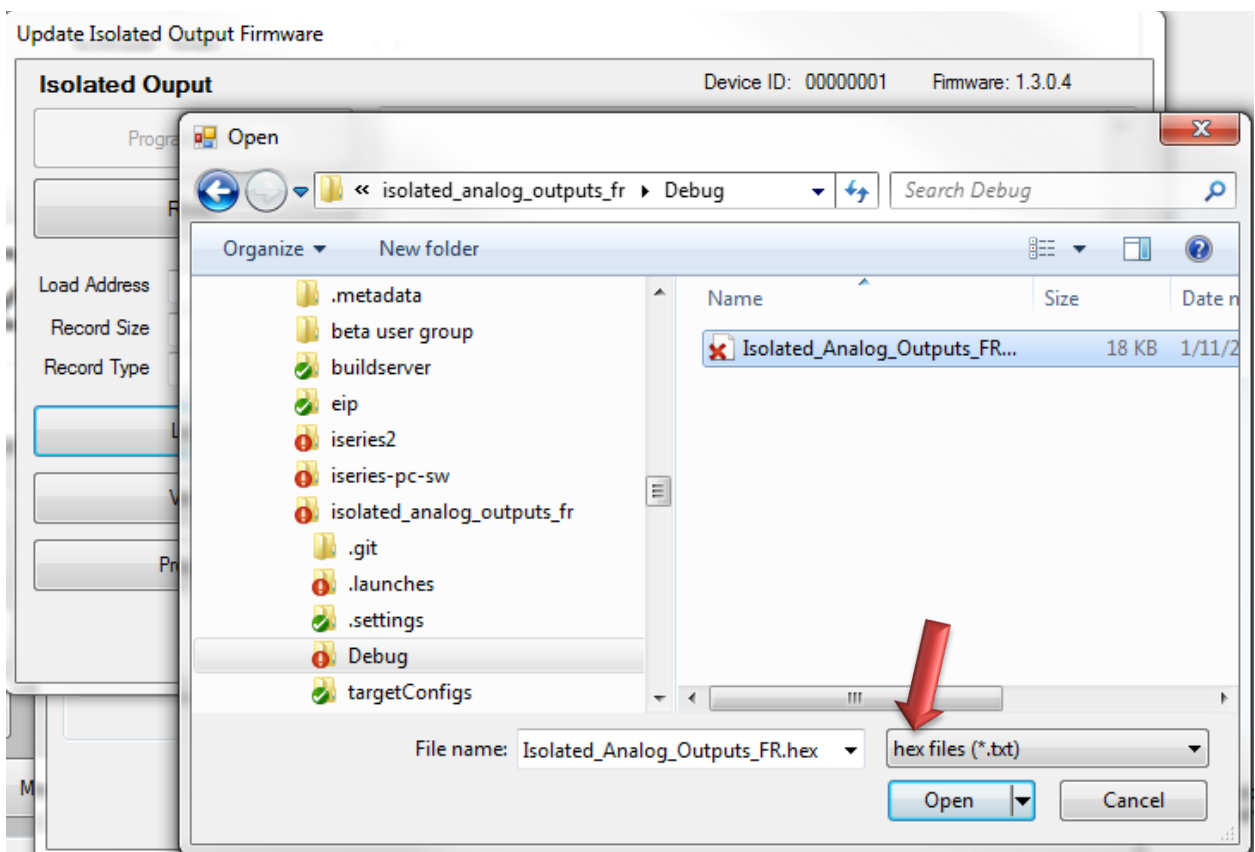
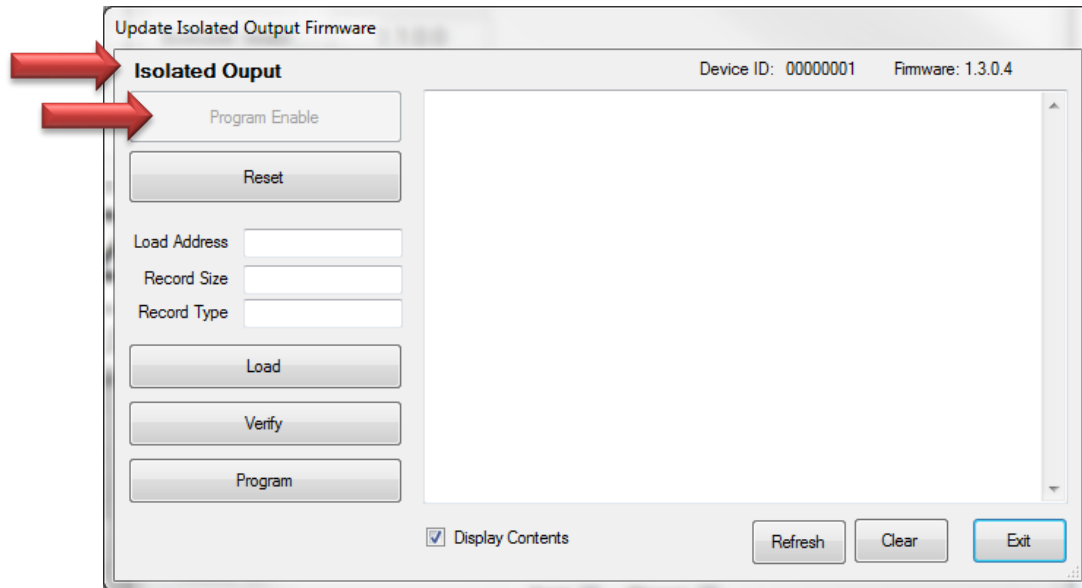
No changes are made to the actual device.

A screenshot of a software configuration window titled "Configuration". The window has a standard Windows-style title bar with minimize, maximize, and close buttons. The main content area is divided into several sections. On the left, there are input fields for "Device ID" (containing "FFFFFFFA"), "Version" (containing "1.3.0.14"), "Bootloader Version" (containing "1.1.0.0"), "Base Output Version" (containing "1.0.0.0"), "Smart Output Version" (containing "1.5.0.0"), and "Isolated Output Version" (containing "1.3.0.4"). Below these are "Order Options" including "Brand" (radio buttons for "Omega" and "Newport", with "Newport" selected), "Case Size" (radio buttons for "1/32 DIN", "1/16 DIN", and "1/8 DIN", with "1/8 DIN" selected), "Power" (radio buttons for "AC" and "DC"), "Primary Display" (radio buttons for "Small", "Large", and "6 Char", with "Large" selected), and "Second Display" (a checkbox labeled "Installed" which is unchecked). On the right, the "Configuration: PT8-145-700-C24-EIP" is displayed. Below this is a "Model" section with radio buttons for "Controller" (selected) and "Meter". The "Output Options" section contains three dropdown menus: "Base Board Outputs" (showing "(14-) SPST Relay, DC Pulse"), "Smart Outputs" (showing "(~5) Isolated DC Pulse"), and "Isolated Outputs" (showing "(776) Isolated DC Pulse, DC Pulse, Analog"). Each dropdown menu has an "Upgrade Firmware" button below it. A red arrow points to the "Upgrade Firmware" button for the "Smart Outputs" dropdown. At the top right of the configuration area is a "Factory Reset" button. At the bottom right is a "Refresh" button. The "Communications" section at the bottom has checkboxes for "Serial" and "Ethernet", both of which are checked.

4.4.1 Firmware Update

Use the “Update” function to update optional modules. In Configuration interface, click the Update button to bring up firmware update UI. The default selection is “Isolated Output”; and on the top right side is the current device ID and firmware version of selected device.

To program the device, click “Program Enable” button to enable function. This button will also select image files in “hex” format, and program the hex file to the device.



Once the file is selected, the program process starts and the interface shows the progress of the firmware update.

Update Isolated Output Firmware

Isolated Output

Device ID: 00000001 Firmware: 1.3.0.4

Program Enable

Reset

Load Address &h0000

Record Size &h00

Record Type &h01

Load

Verify

Program

:204400005A152183C14D0000C60C07436A464F4A5F4F085E3FF0F0FF3F90510014343F90AD

:204420005000A2240F9302208000A6483F8010000220800092483F8020007D253F8010009

:2044400033258000AA483F80600041243F802000022080008C483F8010000220800086487A

:204460003F80100002248000AA485F425A1CEF41821C82935E1C28344F4A3F800900172469

:204480003F80670005243F80400018248000AA4839404000495A79900300062C4949D249D9

:2044A0001090821C8000AA48374000FEFE3D82935E1CFB359242821C0890F73D7A5038009D

:2044C000D24A1490821CF13D37400088EE3D4C4A3C8040003D402000B012C05A494C699288

:2044E000402CCF0944184F5F4A8F7A8048004C4A4F4944180F5F5F4F41803FF007005D4F0A

:204500002A5FB012AC5CC24E5A1C5F425A1CEF41821C4F4944180F5F5F4F41803FF00700D6

:204520005F4F2A5F1F835E425A1C0E9FBE214C4A4F4944180F5F5F4F41803FF007005D4FB7

:204540002A5FB012AC5C4D4C494959021C496A1C4D4D3D500F003E40821CB012285

☒ Display Contents

Refresh

Clear

Exit

4.5 Graphing

The Graphing option opens a data charting function. Save data to csv file at any time during the graphing.

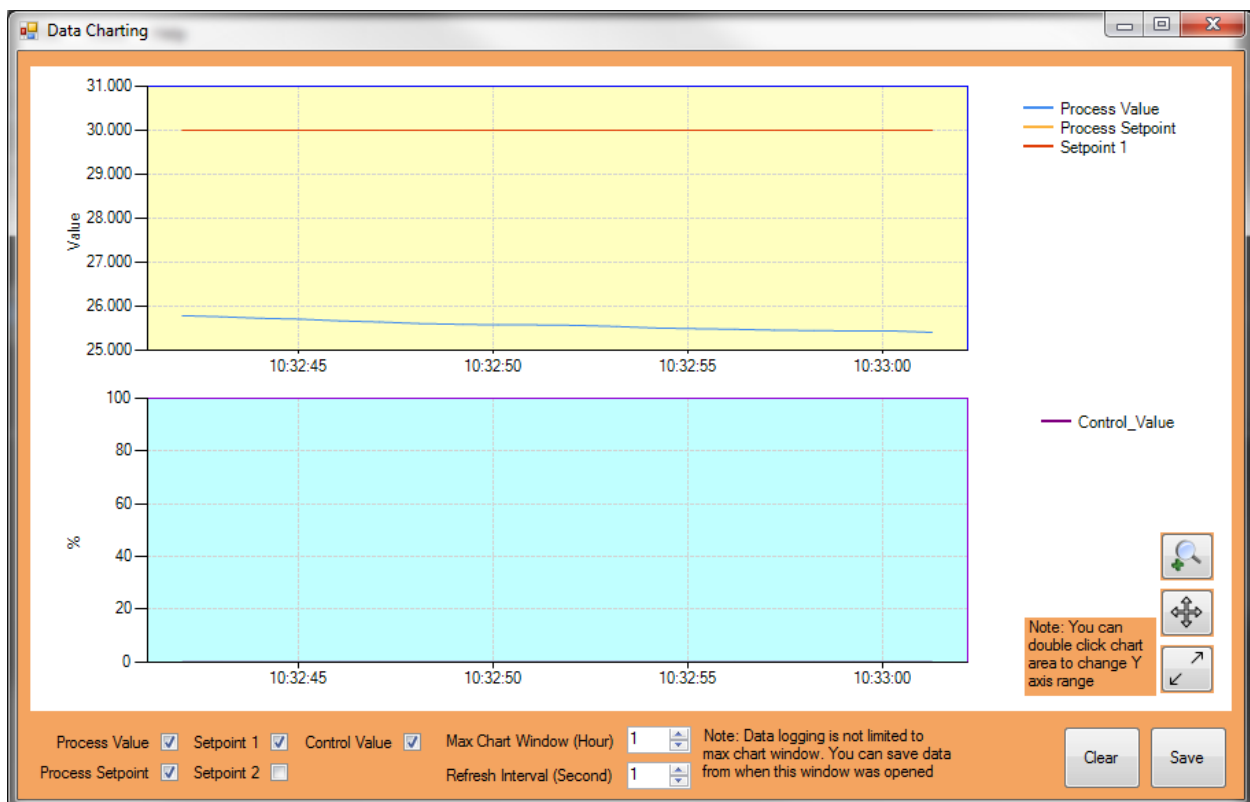
- The “Graphing” screen provides two line graphs, the upper graph showing process variable/setpoint information, and the lower graph showing the PID control output.
- The “process” graph shows the process value, the process setpoint, which is calculated during Ramp and Soak cycles, Setpoint 1 and Setpoint 2. The associated checkboxes disable the display of any or all of the variables.
- The “control output” graph shows the current PID control parameter that display values between 0 – 100%.

Disabling all of the variables for a particular graph will cause the graph to be hidden, allowing the second graph to fill the entire graph area.

The X axis shows the sample count. Operating the auto-refresh at 1 second intervals results in the X axis showing 1 second intervals.

Use zoom, pan and fit to view charts. Both charts are synchronized on X axis.

Adjust maximum charting window. It is the max data windows can be shown on the screen.



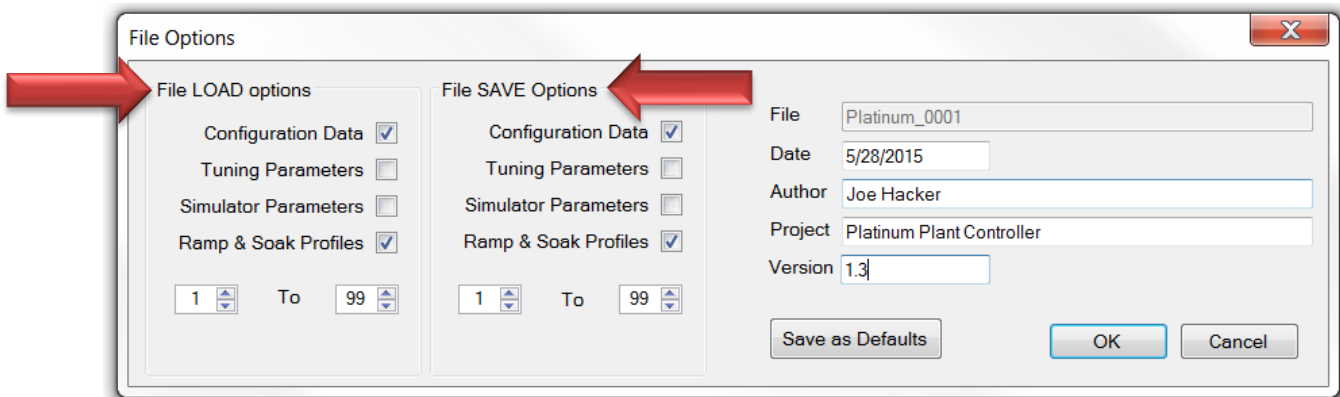
5 Main Menu Functions

5.1 Configuration Files

Configuration data for a device may be saved or loaded as standard “.txt” files using file formats compatible to those used by the Platinum Controller LOAD/SAVE commands. The Platinum Configurator can read a previously saved configuration file from a Platinum device on a USB thumb drive or modify the configuration, and then SAVE the updated configuration to a USB Memory stick to be reloaded to the device.

5.1.1 File Options Dialog

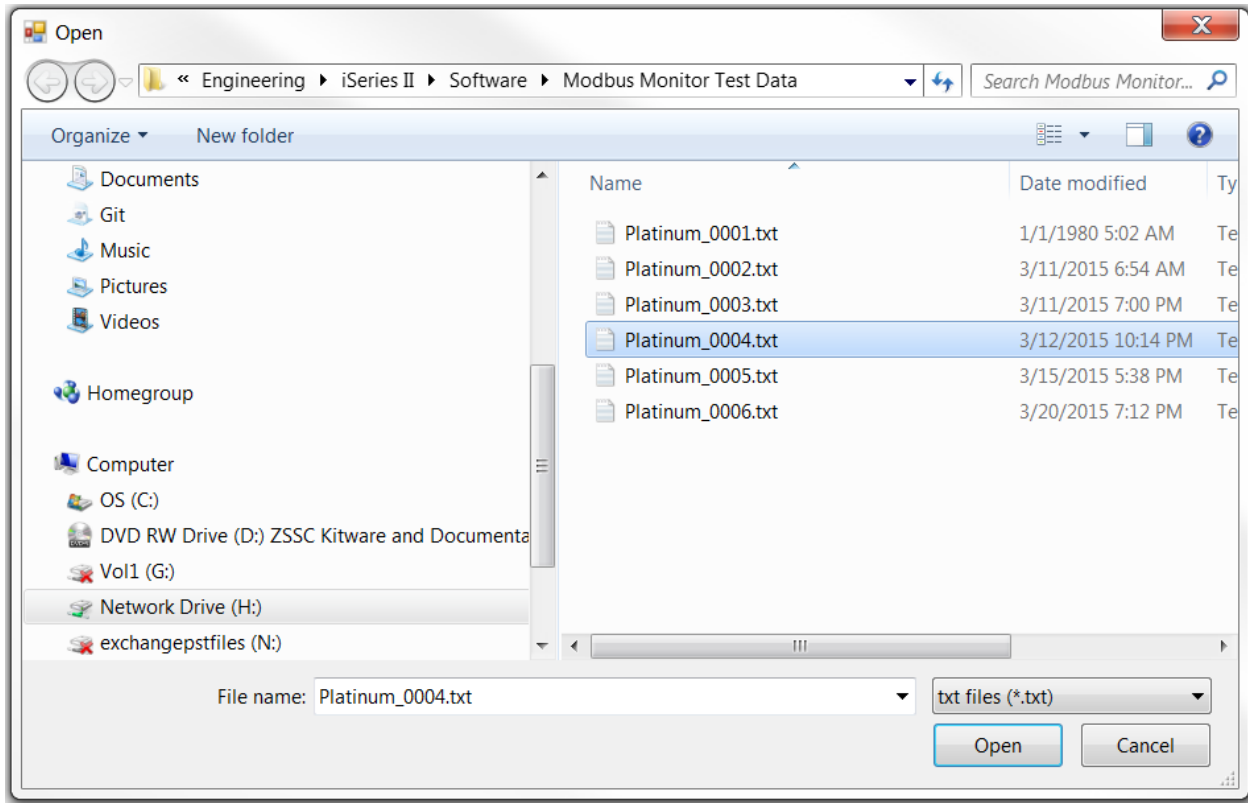
The File Options dialog may be opened under the “Tools/Options” or the “File/Options” menu selections.



- The File Options screen adds additional ‘meta data’ to the file. This information is retained in the file but is not used by the Platinum device.
- The File name will be updated when the file is SAVED and recovered when the file is LOADED.
- The LOAD and SAVE option blocks select what data is to be transferred from a file.

5.1.2 File LOAD / SAVE

The File LOAD and File SAVE option opens a standard Windows dialog to select a specific file.



5.1.3 Load Parameters/Save Parameters/Apply

The file load parameters, save parameters and apply functions, apply to offline mode. This set of function is different from the File Load and Save. File load and save creates a shadow copy of the Modbus registers values. Load parameters/save parameters/apply only to records or changed parameters.

Load Parameters – Load previous saved parameters

Save Parameters – Save changed parameters

Apply – Apply parameters to controller

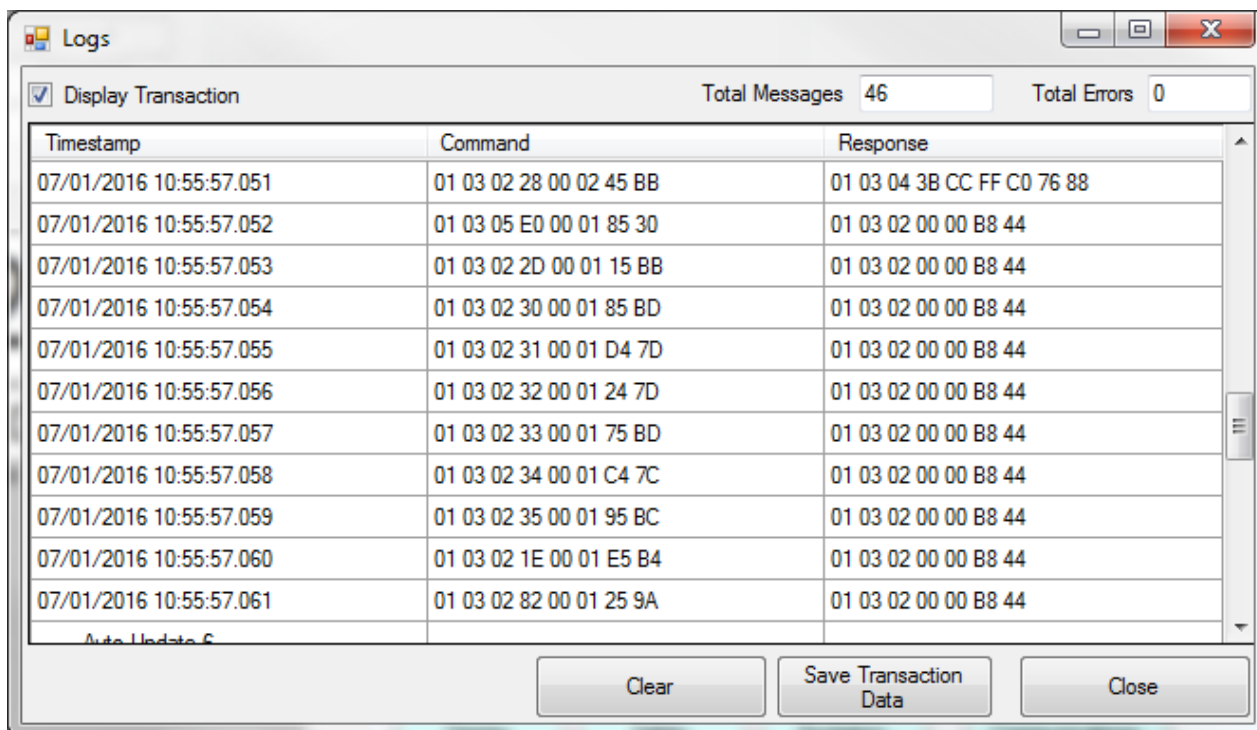
5.2 Tools

5.2.1 Set Connection

The ‘Set Connection’ function switches to different connections, used for switching connected controllers or switching communication type.

5.2.2 View Transactions

The “View Transactions” option checks the Modbus traffic between the configurator and the connected controller. This function helps to diagnose and troubleshoot the Controller.



| Timestamp | Command | Response |
|-------------------------|-------------------------|----------------------------|
| 07/01/2016 10:55:57.051 | 01 03 02 28 00 02 45 BB | 01 03 04 3B CC FF C0 76 88 |
| 07/01/2016 10:55:57.052 | 01 03 05 E0 00 01 85 30 | 01 03 02 00 00 B8 44 |
| 07/01/2016 10:55:57.053 | 01 03 02 2D 00 01 15 BB | 01 03 02 00 00 B8 44 |
| 07/01/2016 10:55:57.054 | 01 03 02 30 00 01 85 BD | 01 03 02 00 00 B8 44 |
| 07/01/2016 10:55:57.055 | 01 03 02 31 00 01 D4 7D | 01 03 02 00 00 B8 44 |
| 07/01/2016 10:55:57.056 | 01 03 02 32 00 01 24 7D | 01 03 02 00 00 B8 44 |
| 07/01/2016 10:55:57.057 | 01 03 02 33 00 01 75 BD | 01 03 02 00 00 B8 44 |
| 07/01/2016 10:55:57.058 | 01 03 02 34 00 01 C4 7C | 01 03 02 00 00 B8 44 |
| 07/01/2016 10:55:57.059 | 01 03 02 35 00 01 95 BC | 01 03 02 00 00 B8 44 |
| 07/01/2016 10:55:57.060 | 01 03 02 1E 00 01 E5 B4 | 01 03 02 00 00 B8 44 |
| 07/01/2016 10:55:57.061 | 01 03 02 82 00 01 25 9A | 01 03 02 00 00 B8 44 |

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- ☑ Signal Conditioners
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- ☑ Cartridge & Strip Heaters
- ☑ Immersion & Band Heaters
- ☑ Flexible Heaters
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- ☑ pH, Conductivity & Dissolved Oxygen Instruments