NPC-2006

Nitrous Power Controller

Induction Solutions

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Important Information - When using a conventional style ignition coil (Not Coil on Plug) you must use Static Suppression Ignition Wires with this Controller.

Caution - Do NOT submerge Controller in liquid or directly wash unit with liquid of any type! (Do NOT spray when washing vehicle!)

It is the responsibility of the purchaser to follow all guidelines and safety procedures supplied with this product and any other manufactures product used with this product. It is also the responsibility of the purchaser to determine compatibility of this device with the vehicle and other components.

Induction Solutions assumes no responsibility for damages resulting from accident, improper installation, misuse, abuse, improper operation, lack of reasonable care, or all previously stated reasons due to incompatibility with other manufacturer's products.

Induction Solutions assumes no responsibility or liability for damages incurred from the use of products manufactured or sold by Induction Solutions on vehicles used for competition racing. Induction Solutions neither recommends nor approves the use of products manufactured or sold by Induction Solutions on vehicles which may be driven on public highways or roads, and assumes no responsibility for damages incurred from such use.

It is the purchaser's responsibility to check the state and local laws pertaining to the use of Nitrous Oxide for racing applications. Induction Solutions does not recommend nor condone the use of its products for illegal street racing.

Warranty

Induction Solutions warrants to the original purchaser that the controller shall be free from defects in parts and workmanship under normal use for 180 days from the date of purchase.

Induction Solutions obligation under this warranty is limited to the repair or replacement of any component found to be defective when returned postpaid to Induction Solutions. The Controller must be returned with evidence of place and date of purchase or warranty will be void. The warranty will not apply if the controller has been installed incorrectly, repaired, damaged, or tampered with by misuse, negligence or accident.

Contents

System Requirements

Operating system

Windows XP Home or Professional with Service Pack 3 installed.

Information—if the text is not formatted or sized correctly with Windows XP operating system follow the instructions below to adjust the display dots per inch (dpi) setting.

For Windows XP the screen dpi setting must be set to default or 96 dpi.

1—Open Display in Control Panel.

2—On the Settings tab, click Advanced.

3—On the General tab, in the DPI setting list, click 96 dots per inch (dpi).

4—Restart your computer when prompted.

Windows Vista all versions.

Windows 7 all versions.

Windows 8.x all versions.

Windows 10 all versions.

Software Installation Steps

The Nitrous Power Controller software is located on the USB flash drive included with the NPC-2006 kit. Plug the USB flash drive into an available USB port on the computer.

Important—the software must be located and started manually from the USB flash drive. The auto run feature is not implemented to provide increased security. Please follow the steps below to locate the software installation program.

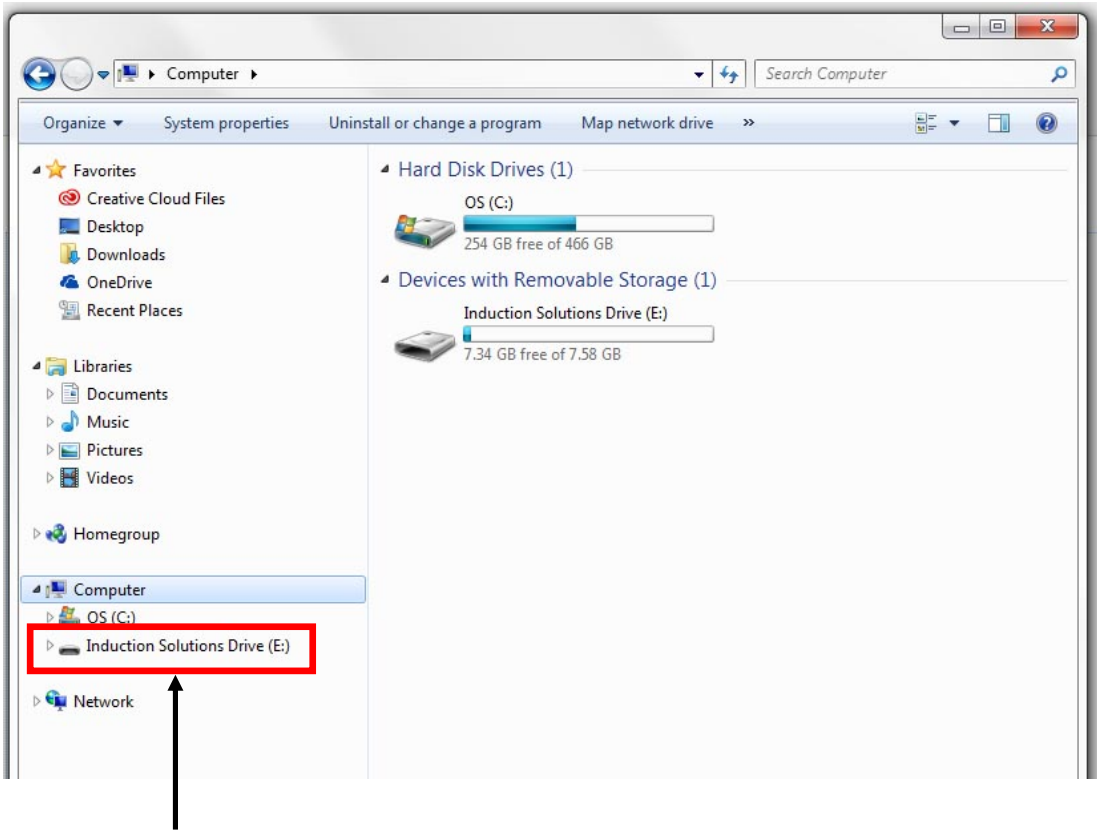Please use one of the following methods to open Windows file explorer.

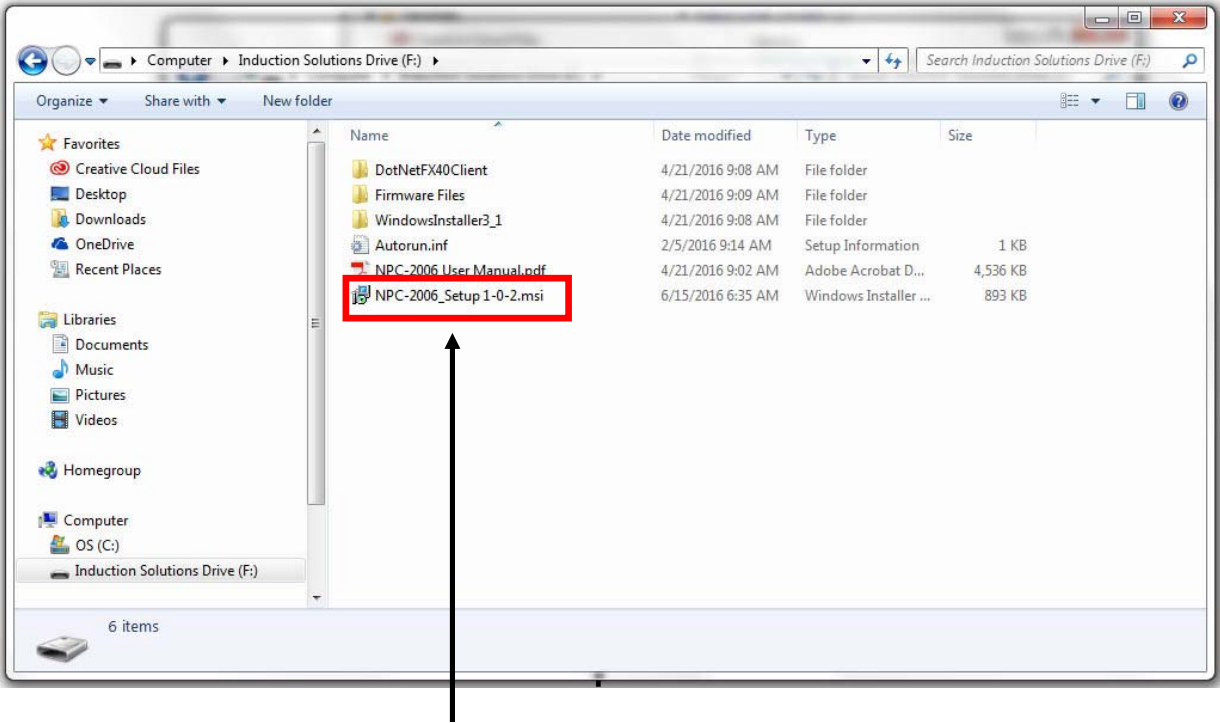1—Press the Windows logo key + e together.

2—click on the File Explorer icon in the task bar.

3—click **Start**, point to **All Programs**, point to **Accessories**, and then click **Windows Explorer**.

Left click on the Induction Solutions Drive.

Double click on NPC-2006_Setup

Click on the "Next" button and follow the installation wizard prompts as needed.

Important—Please allow the installation wizard to install the software in the default location when prompted.
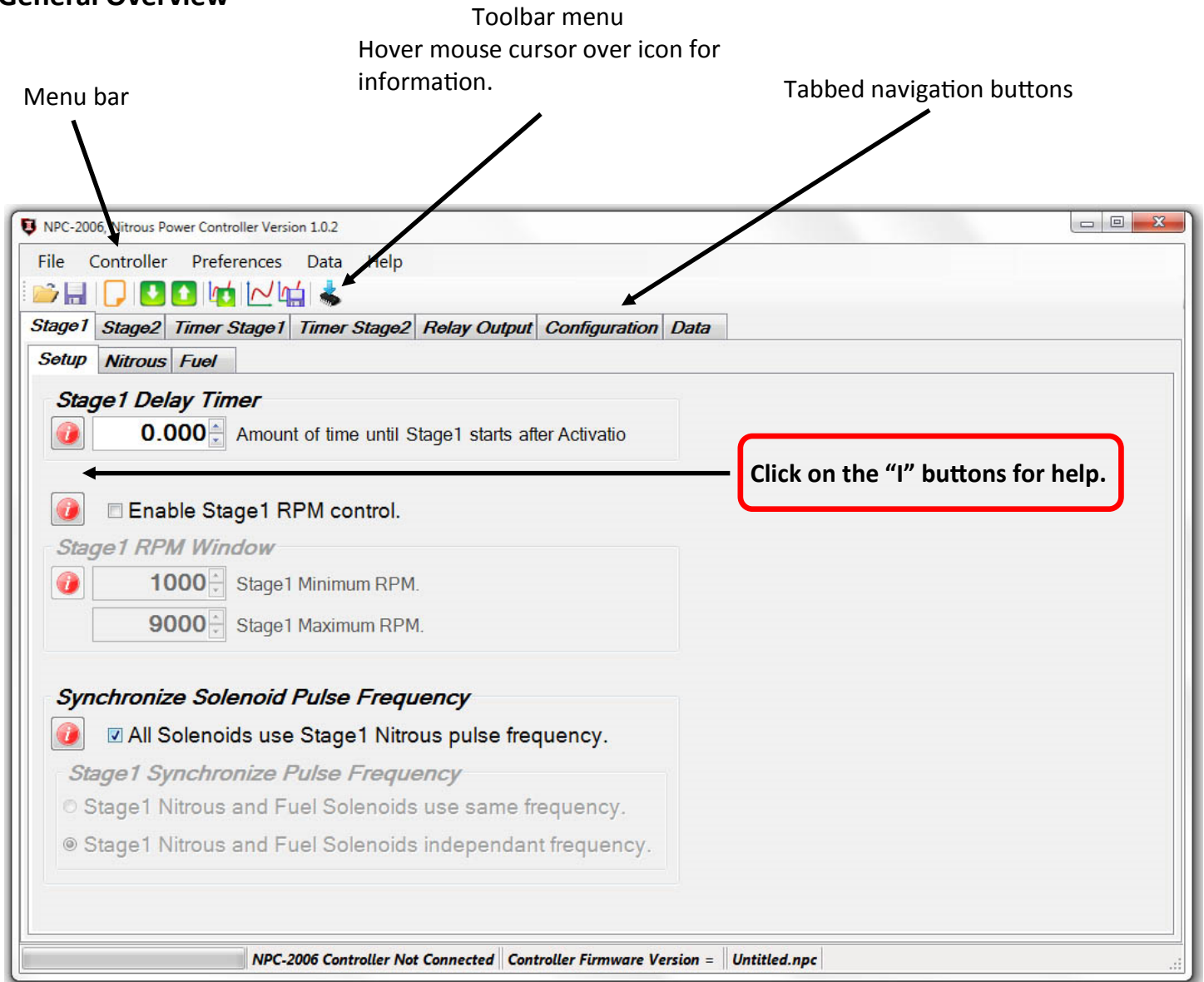
You may be prompted to allow installation from an unknown publisher, click on "Yes" to continue with installation.

Allow the installation program to complete.

On the Windows desktop you will find a "Nitrous Power Controller" icon.

Double click to start the software.

General Overview

Toolbar menu
Hover mouse cursor over icon for
information.

Menu bar

Tabbed navigation buttons

**Click on the "I" buttons for help.**

Progress bar– this provides visual feedback for read and write operations to the controller through the USB interface.

USB connection status– this indicates a valid USB connection has been established with the controller.

Firmware version—this indicates the current firmware installed in the controller.

Current setup file in use.

File Menu
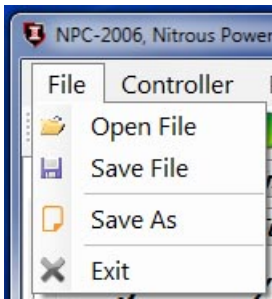
Open File—open setup file that has been previously saved to the computer.

Save File—save current setup file to computer. This option saves the current setup data from the Nitrous Power Controller software. It does not save the setup data from the controller to the computer.

Save As—save current setup file to computer with the option to save as a copy with a different name.

Exit—Exit and close the Nitrous Power Controller software.

Controller Menu
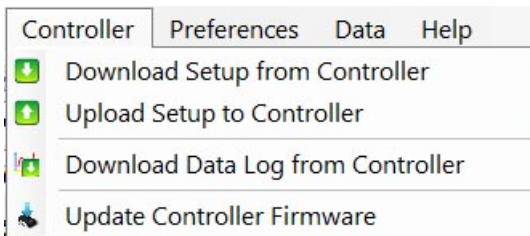
Important—the controller must be connected to the computer with the USB cable and the controller must be powered up to use the following menu selections. Only the Switched +12V power (key on) needs to be on for USB communication, the arming switch should be in the off position.

Always allow the progress bar in the lower left corner to complete after starting a download or upload to the controller.

Download Setup from Controller—read setup data from the controller to the Nitrous Power Controller software. Note—after downloading the setup data from the controller you may use the File Menu, Save File selection to save the setup data to a file on the computer.

Upload Setup to Controller—write current setup data from the Nitrous Power Controller software to the controller. Note—to load a saved setup file from the computer to the controller, first use File Menu, Open File to load the file. After opening the file use this selection to write the setup to the controller.

Download Data Log from Controller—read data log information from the controller. This selection will read the most recent data log information from the controller. Note—the controller will retain the last data logged even if the controller is powered off.

Update Controller Firmware—load a new firmware image file into the controller. The firmware is the operating system for the controller. When a new and/or updated version is released that has additional features, or a fix for an unforeseen issue, this selection is used to apply the update to the controller.

Preferences Menu
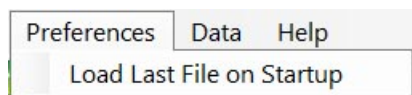
Load Last File on Startup—if the option is selected (checkmark present) the most recent setup file will be automatically opened when the Nitrous Power Controller software is launched. Note—if the file does not exist or has been moved to a new location the default setup will opened.

Data Menu
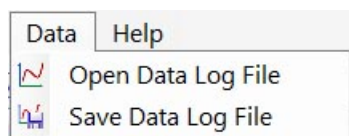
Open Data Log File—open a data log file that has been previously saved to the computer.

Save Data Log File—save data log information to a file on the computer. To save data log information from the controller to a file. First use Controller Menu, Download Data Log from Controller and then use this selection to save the data log information to the computer.
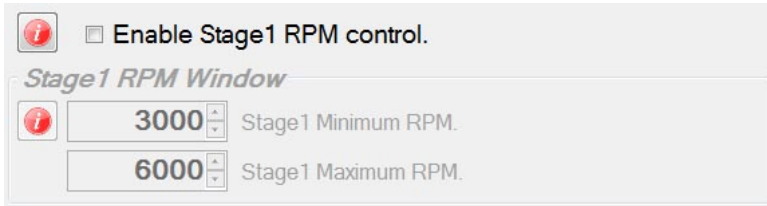
Help Menu

About—this selection displays a small window with software version information.

Stage1 Tab—Setup
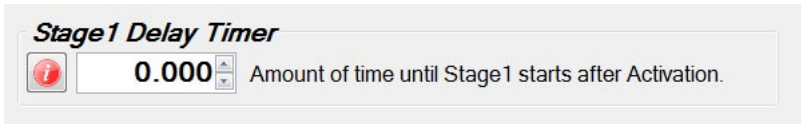
Stage1 Delay Timer - this setting sets the delay time in seconds before Stage1 starts after Activation.

Valid range - 0.000 to 10.000 in .001 second increments.

Note—If the RPM window feature is enabled and the engine is not running the solenoids can be dry fired for testing. Once an RPM signal is present the solenoids will only fire at the desired RPM range.

Enable Stage1 RPM control - this setting enables a RPM Window function for Stage1.

Stage1 Minimum RPM - this setting controls the minimum engine RPM that must be achieved before Stage1 will turn On. A setting of 0 will disable the Minimum RPM function and the Maximum RPM setting will be used to turn off Stage1 if the engine RPM exceeds the setting.

Valid range - 0 to 15,900 RPM in 10 RPM Increments.

Stage1 Maximum RPM - this setting controls the maximum engine RPM that Stage1 remains On. When the engine RPM exceeds this setting Stage1 will be turned Off. The Maximum RPM must be at least 100 RPM greater than the Minimum RPM setting.

Valid range - 1000 to 16,000 RPM in 10 RPM increments.
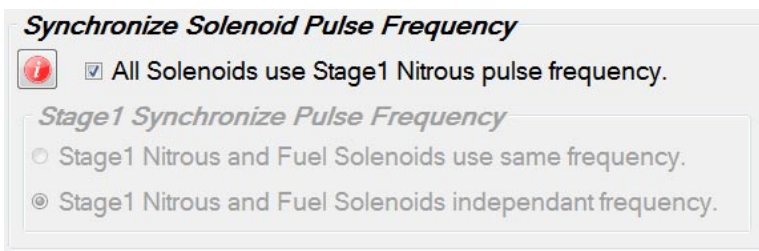
Synchronize Solenoid Pulse Frequency

All Solenoids use Stage1 Nitrous pulse frequency (hertz) - this setting forces all solenoid outputs to operate at the Stage1 Nitrous Solenoid Pulse Frequency setting. The controls to adjust individual solenoid output frequencies will be disabled when this setting is On.

Stage1 Synchronize Pulse Frequency - the Stage1 nitrous and fuel solenoids can be configured to function at the nitrous solenoid frequency only (both Stage1 outputs synchronized). Or the Stage1 nitrous and fuel solenoid output frequencies may be set independently.
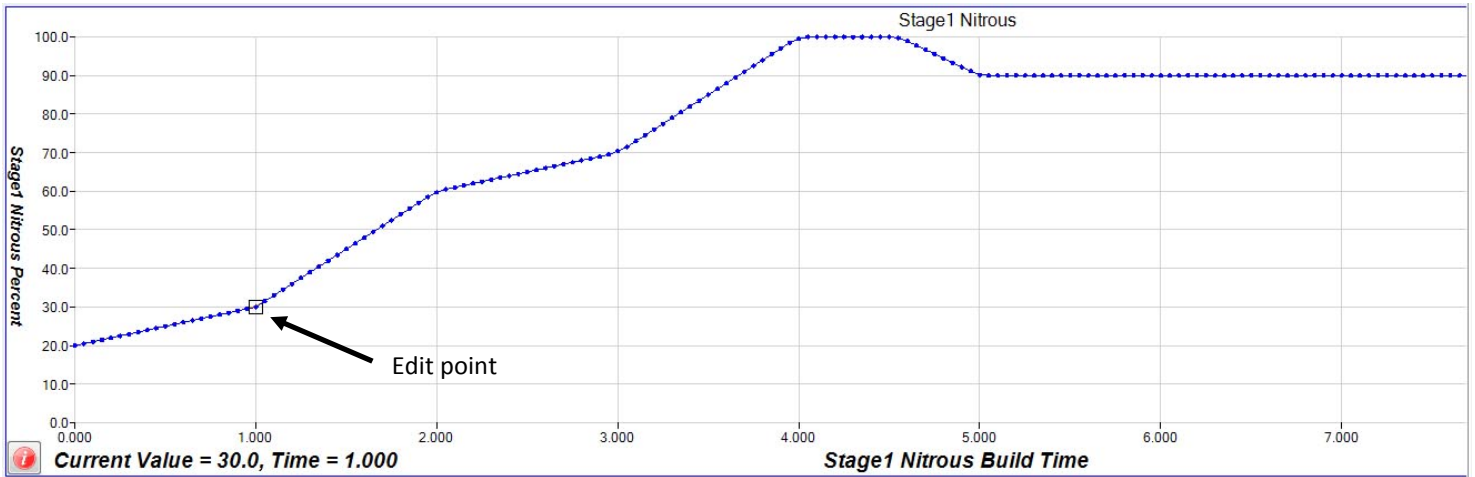
IMPORTANT - if you choose to operate the nitrous and fuel solenoids at different frequencies (hertz) you MUST insure that both solenoids operate as desired in the delivery of nitrous and fuel to the engine!

Information - the solenoid pulse frequency (hertz) is how many times per second the solenoids open and close when not at 0 or 100 percent operation. Example - pulse frequency set to 10 hertz and 50 percent, the solenoids would open and close 10 times per second. Total time for each pulse = 1 / 10 = .1 second, total time solenoid would be on = .1 * .50% = .05 second.

There are many different styles of solenoids available and they will react differently to changes in the operating frequency. It is up to the user to verify that the solenoids are opening properly with the settings used for operation

As a general rule a lower frequency setting will allow a solenoid to open properly when a high nitrous pressure is used and a low starting percentage. This is just a general rule, test your settings!

Stage1 Tab—Nitrous Graph

Graph Control Editing

Left click on a data point to enable editing for that data point. Left click and drag to adjust the value of the selected data point. Click on the graph or another data point to disable the current edit point.

Double left click on a data point to set an anchor point, once the anchor point is set left click on another data point and when the value is changed the graph will auto fill between the anchor point and the current edit point. Click on the anchor point or anywhere in the graph to clear the anchor point.

Once the graph is the active control (click on graph) the keyboard may also be used to edit the data points.

CTRL+S - set edit point to center of graph data.

Left and Right keys - move the current edit point left or right.

Up Arrow and Down Arrow - adjust current data point up or down in 1% increments.

CTRL + Up Arrow and CTRL + Down Arrow - adjust current data point up or down in .1% increments.

ENTER - set anchor point at current edit point. No action if there is no current edit point.

ESC - clear edit and anchor point(s).

Note—the Stage1 Fuel graph ramp will appear in the background to provide a visual reference.
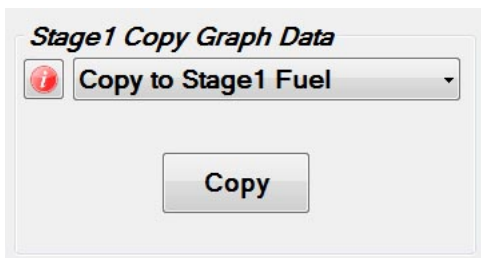
Use this feature to Copy the contents of the graph control to other graph controls.

Stage1 Nitrous Pulse Frequency
20 — Solenoid pulse per second

Important—if the "All Solenoids use Stage1 Nitrous pulse frequency." option is checked this setting will control all nitrous and fuel solenoid frequency (hertz). See Stage1 Setup and Stage2 Setup for more information.

The solenoid pulse frequency (or also known as Hertz) is how many times the solenoids open and close when not at 0 or 100 percent operation. Example - pulse frequency set to 10 hertz and 50 percent, the solenoids would open and close 10 times per second. Total time for each pulse = 1 / 10 = .1 second, total time solenoid would be on = .1 * .50% = .05 second.

Stage1 Nitrous Resume Ramp
35.0 — Nitrous resume percentage
10.0 — Percent per Pulse

Resume Start Percent - This setting determines the percent the Stage1 Nitrous resumes at if the user has to lift the throttle during Activation. This setting is only valid if the Hold And Wait option is ON. This setting is used with the Resume Percent per Pulse setting to build a Resume Ramp. If the Resume Start Percent is greater than the current output percent the resume ramp is ignored.

Valid range - 10% to 100% in .1% increments. A setting of 100% disables this feature.

Resume Percent per Pulse - This setting determines the rate at which the Nitrous Resumes if the user lifts the throttle during Activation. This setting is used with the Resume Start Percent to build a Resume Ramp. This allows the user to adjust how quick the nitrous comes back on if the Activation signal is removed.

Example - 10% per pulse would increase the rate 10% for each pulse starting at the Resume Start Percent setting. 35% Resume and then each pulse of the solenoid would increment 10% until the setting in the ramp is is achieved. After the resume ramp is completed the normal build time ramp is followed.

Valid range - 10% to 50% in .1% increments.

Stage1 Quick Ramp Builder
20.0 — Start Percentage
100.0 — Final Percentage
4.0 — Build Time   **Accept**

Quick Ramp Builder - Use this selection to do quick progressive setups. This feature allows the nitrous to be setup using a Start Percentage, Final Percentage, and a Build Time.

Start Percentage - This setting determines the ramp Starting Percentage. The Start Percent can be less than or greater than the Final Percent setting. If the Start Percent is greater than the Final Percent the ramp will progress backwards.

Valid range - 0% to 100% in .1% increments.

Final Percent - This setting determines the ramp Final Percentage. The Final Percent can be less than or greater than the Start Percent setting. If the Start Percent is greater than the Final Percent the ramp will progress backwards.

Valid range - 0% to 100% in .1% increments.

Build Time - This setting determines the time it takes for the nitrous to ramp from the Start Percent to the Final Percent settings. A short Build Time will make the nitrous ramp more aggressive and a longer Build Time will make it less aggressive.

Valid range - .200 to 9.900 seconds in .1 second increments.

Stage1 Tab—Fuel Graph

Graph Control Editing

Left click on a data point to enable editing for that data point. Left click and drag to adjust the value of the selected data point. Click on the graph or another data point to disable the current edit point.

Double left click on a data point to set an anchor point, once the anchor point is set left click on another data point and when the value is changed the graph will auto fill between the anchor point and the current edit point. Click on the anchor point or anywhere in the graph to clear the anchor point.

Once the graph is the active control (click on graph) the keyboard may also be used to edit the data points.

CTRL+S - set edit point to center of graph data.

Left and Right keys - move the current edit point left or right.

Up Arrow and Down Arrow - adjust current data point up or down in 1% increments.

CTRL+Up Arrow and CTRL+Down Arrow - adjust current data point up or down in .1% increments.

ENTER - set anchor point at current edit point. No action if there is no current edit point.

ESC - clear edit and anchor point(s).

Note—the Stage1 Nitrous graph ramp will appear in the background to provide a visual reference.
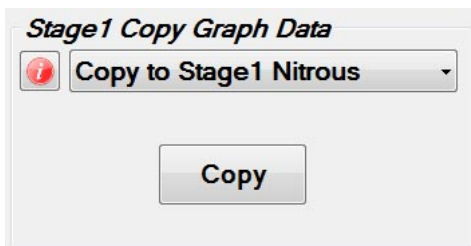

Use this feature to Copy the contents of the graph control to other graph controls.

Stage1 Fuel Pulse Frequency

🔴 20 ⇕ Solenoid pulse per second

Important—the "All Solenoids use Stage1 Nitrous pulse frequency." option must be un-checked (off) When this feature is enable the Stage2 solenoid frequency (hertz) can be adjusted independently of the Stage1 frequency (hertz).

The solenoid pulse frequency (or also known as Hertz) is how many times the solenoids open and close when not at 0 or 100 percent operation. Example - pulse frequency set to 10 hertz and 50 percent, the solenoids would open and close 10 times per second. Total time for each pulse = 1 / 10 = .1 second, total time solenoid would be on = .1 * .50% = .05 second.

Stage1 Fuel Resume Ramp

🔴 35.0 ⇕ Fuel resume percentage
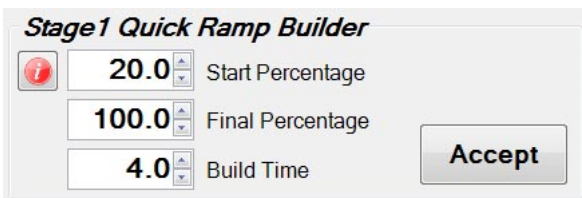
10.0 ⇕ Percent per Pulse
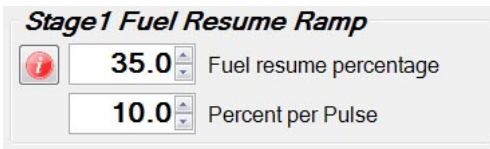
Resume Start Percent - This setting determines the percent the Stage1 Fuel resumes at if the user has to lift the throttle during Activation. This setting is only valid if the Hold And Wait option is ON. This setting is used with the Resume Percent per Pulse setting to build a Resume Ramp. If the Resume Start Percent is greater than the current output percent the Resume Ramp is ignored.

Valid range - 10% to 100% in .1% increments. A setting of 100% disables this feature.

Resume Percent per Pulse - This setting determines the rate at which the Fuel Resumes if the user lifts the throttle during Activation. This setting is used with the Resume Start Percent to build a Resume Ramp. This allows the user to adjust how quick the fuel comes back on if the Activation signal is removed.

Example - 10% per pulse would increase the rate 10% for each pulse starting at the Resume Start Percent setting. 35% Resume and then each pulse of the solenoid would increment 10% until the setting in the ramp is is achieved. After the resume ramp is completed the normal build time ramp is followed.

Valid range - 10% to 50% in .1% increments.

Stage1 Quick Ramp Builder

🔴 20.0 ⇕ Start Percentage

100.0 ⇕ Final Percentage   **Accept**

4.0 ⇕ Build Time

Quick Ramp Builder - Use this selection to do quick progressive setups. This feature allows the fuel to be setup using a Start Percentage, Final Percentage, and a Build Time.

Start Percentage - This setting determines the ramp Starting Percentage. The Start Percent can be less than or greater than the Final Percent setting. If the Start Percent is greater than the Final Percent the ramp will progress backwards.

Valid range - 0% to 100% in .1% increments.

Final Percent - This setting determines the ramp Final Percentage. The Final Percent can be less than or greater than the Start Percent setting. If the Start Percent is greater than the Final Percent the ramp will progress backwards.

Valid range - 0% to 100% in .1% increments.

Build Time - This setting determines the time it takes for the fuel to ramp from the Start Percent to the Final Percent settings. A short Build Time will make the fuel ramp more aggressive and a longer Build Time will make it less aggressive.

Valid range - .200 to 9.900 seconds in .1 second increments.

Stage2 Tab—Setup

Stage2 Delay Timer

> ⓘ **0.000** ⌃⌄ Amount of time until Stage2 starts after Activation.

Stage2 Delay Timer - this setting sets the delay time in seconds before Stage2 starts after Activation.

Valid range - 0.000 to 10.000 in .001 second increments.

> ⓘ ☐ Enable Stage2 RPM control.
>
> **Stage2 RPM Window**
>
> ⓘ **1000** ⌃⌄ Stage2 Minimum RPM.
>
>   **9000** ⌃⌄ Stage2 Maximum RPM.

Note—If the RPM window feature is enabled and the engine is not running the solenoids can be dry fired for testing. Once an RPM signal is present the solenoids will only operate at the desired RPM range.

Enable Stage2 RPM control - this setting enables a RPM Window function for Stage2.

Stage2 Minimum RPM - this setting controls the minimum engine RPM that must be achieved before Stage2 will turn On. A setting of 0 will disable the Minimum RPM function and the Maximum RPM setting will be used to turn off Stage2 if the engine RPM exceeds the setting.

Valid range - 0 to 15,900 RPM in 10 RPM Increments.

Stage2 Maximum RPM - this setting controls the maximum engine RPM that Stage2 remains On. When the engine RPM exceeds this setting Stage2 will be turned Off. The Maximum RPM must be at least 100 RPM greater than the Minimum RPM setting.

Valid range - 1000 to 16,000 RPM in 10 RPM increments.

> **Syncrhonize Solenoid Pulse Frequency**
>
> ⓘ
>
> **Stage2 Synchronize Pulse Frequency**
>
> ○ Stage2 Nitrous and Fuel Solenoids use same frequency.
>
> ◉ Stage2 Nitrous and Fuel Solenoids independant frequency.

Stage2 Synchronize Pulse Frequency - the Stage2 nitrous and fuel solenoids can be configured to function at the nitrous solenoid frequency (hertz) only (both Stage2 outputs synchronized). Or the Stage2 nitrous and fuel solenoid output frequencies (hertz) may be set independently.

Note—this option is only available if the **All Solenoids use Stage1 Nitrous pulse frequency** is enabled in the Stage1 Setup.
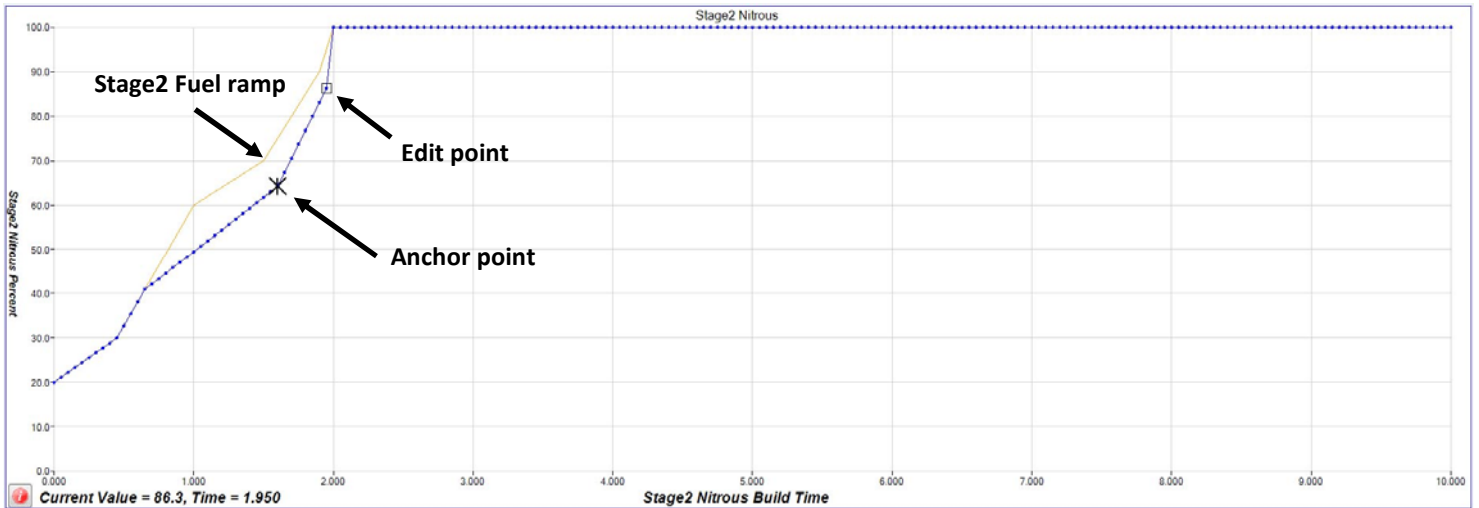
IMPORTANT - if you choose to operate the nitrous and fuel solenoids at different frequencies (hertz) you MUST insure that both solenoids operate as desired in the delivery of nitrous and fuel to the engine!

Information - the solenoid pulse frequency (hertz) is how many times per second the solenoids open and close when not at 0 or 100 percent operation. Example - pulse frequency set to 10 hertz and 50 percent, the solenoids would open and close 10 times per second. Total time for each pulse = 1 / 10 = .1 second, total time solenoid would be on = .1 * .50% = .05 second.

There are many different styles of solenoids available and they will react differently to changes in the operating frequency. It is up to the user to verify that the solenoids are opening properly with the settings used for operation

As a general rule a lower frequency setting will allow a solenoid to open properly when a high nitrous pressure is used and a low starting percentage. This is just a general rule, test your settings!

Stage2 Tab—Nitrous Graph

Graph Control Editing

Left click on a data point to enable editing for that data point. Left click and drag to adjust the value of the selected data point. Click on the graph or another data point to disable the current edit point.

Double left click on a data point to set an anchor point, once the anchor point is set left click on another data point and when the value is changed the graph will auto fill between the anchor point and the current edit point. Click on the anchor point or anywhere in the graph to clear the anchor point.

Once the graph is the active control (click on graph) the keyboard may also be used to edit the data points.

CTRL+S - set edit point to center of graph data.

Left and Right keys - move the current edit point left or right.

Up Arrow and Down Arrow - adjust current data point up or down in 1% increments.

CTRL+Up Arrow and CTRL+Down Arrow - adjust current data point up or down in .1% increments.

ENTER - set anchor point at current edit point. No action if there is no current edit point.

ESC - clear edit and anchor point(s).

Note—the Stage2 Fuel graph ramp will appear in the background to provide a visual reference.
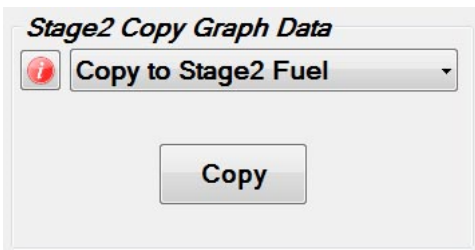

Use this feature to Copy the contents of the graph control to other graph controls.

Stage2 Nitrous Pulse Frequency

20 Solenoid pulse per second

Important—the "All Solenoids use Stage1 Nitrous pulse frequency." option must be un-checked (off) and the "Stage1 Nitrous and Fuel Solenoids independent frequency." must be selected for the feature to enabled. When this feature is enable the fuel solenoid frequency (hertz) can be adjusted independently of the nitrous frequency (hertz).

The solenoid pulse frequency (or also known as Hertz) is how many times the solenoids open and close when not at 0 or 100 percent operation. Example - pulse frequency set to 10 hertz and 50 percent, the solenoids would open and close 10 times per second. Total time for each pulse = 1 / 10 = .1 second, total time solenoid would be on = .1 * .50% = .05 second.

Stage2 Nitrous Resume Ramp

35.0 Nitrous resume percentage
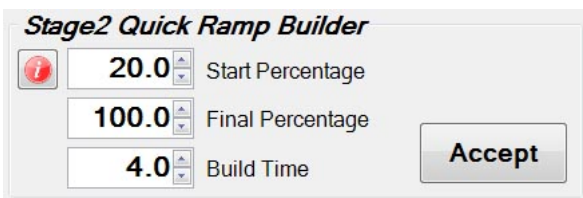
10.0 Percent per Pulse
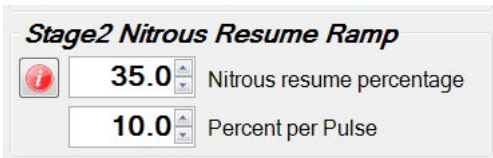
Resume Start Percent - This setting determines the percent the Stage2 Nitrous resumes at if the user has to lift the throttle during Activation. This setting is only valid if the Hold And Wait option is ON. This setting is used with the Resume Percent per Pulse setting to build a Resume Ramp. If the Resume Start Percent is greater than the current output percent the Resume Ramp is ignored.

Valid range - 10% to 100% in .1% increments. A setting of 100% disables this feature.

Resume Percent per Pulse - This setting determines the rate at which the Nitrous Resumes if the user lifts the throttle during Activation. This setting is used with the Resume Start Percent to build a Resume Ramp. This allows the user to adjust how quick the nitrous comes back on if the Activation signal is removed.

Example - 10% per pulse would increase the rate 10% for each pulse starting at the Resume Start Percent setting. 35% Resume and then each pulse of the solenoid would increment 10% until the setting in the ramp is is achieved. After the resume ramp is completed the normal build time ramp is followed.

Valid range - 10% to 50% in .1% increments.

Stage2 Quick Ramp Builder

20.0 Start Percentage

100.0 Final Percentage   **Accept**

4.0 Build Time

Quick Ramp Builder - Use this selection to do Quick Progressive setups. This feature allows the nitrous to be setup using a Start Percentage, Final Percentage, and a Build Time.

Start Percentage - This setting determines the ramp Starting Percentage. The Start Percent can be less than or greater than the Final Percent setting. If the Start Percent is greater than the Final Percent the ramp will progress backwards.
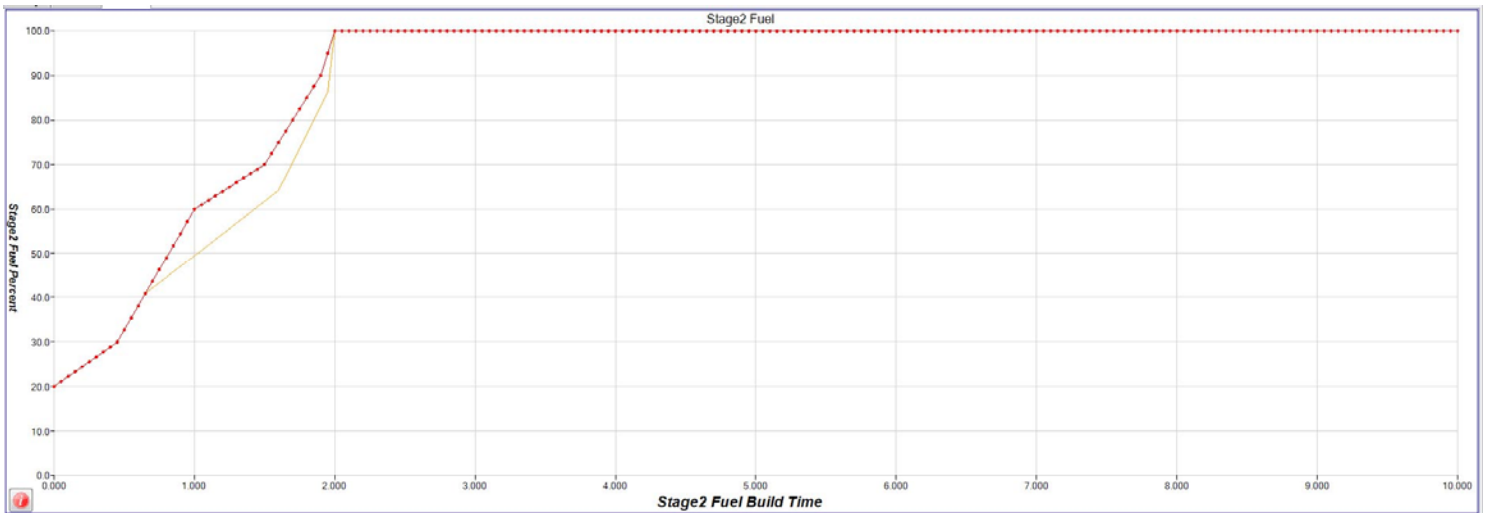
Valid range - 0% to 100% in .1% increments.

Final Percent - This setting determines the ramp Final Percentage. The Final Percent can be less than or greater than the Start Percent setting. If the Start Percent is greater than the Final Percent the ramp will progress backwards.

Valid range - 0% to 100% in .1% increments.

Build Time - This setting determines the time it takes for the nitrous to ramp from the Start Percent to the Final Percent settings. A short Build Time will make the nitrous ramp more aggressive and a longer Build Time will make it less aggressive.

Valid range - .200 to 9.900 seconds in .1 second increments.

Stage2 Tab—Fuel Graph

Graph Control Editing

Left click on a data point to enable editing for that data point. Left click and drag to adjust the value of the selected data point. Click on the graph or another data point to disable the current edit point.

Double left click on a data point to set an anchor point, once the anchor point is set left click on another data point and when the value is changed the graph will auto fill between the anchor point and the current edit point. Click on the anchor point or anywhere in the graph to clear the anchor point.

Once the graph is the active control (click on graph) the keyboard may also be used to edit the data points.

CTRL+S - set edit point to center of graph data.

Left and Right keys - move the current edit point left or right.

Up Arrow and Down Arrow - adjust current data point up or down in 1% increments.

CTRL + Up Arrow and CTRL + Down Arrow - adjust current data point up or down in .1% increments.

ENTER - set anchor point at current edit point. No action if there is no current edit point.

ESC - clear edit and anchor point(s).

Note—the Stage2 Nitrous graph ramp will appear in the background to provide a visual reference.
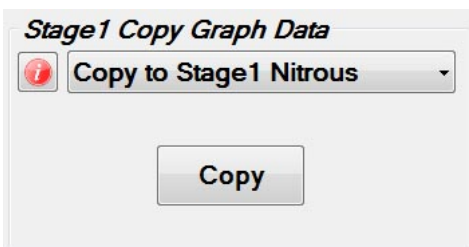
Use this feature to Copy the contents of the graph control to other graph controls.

Stage2 Fuel Pulse Frequency

20 Solenoid pulse per second

Important—the "All Solenoids use Stage1 Nitrous pulse frequency." option must be un-checked (off) and the "Stage2 Nitrous and Fuel Solenoids independent frequency." must be selected for the feature to enabled. When this feature is enable the fuel solenoid frequency (hertz) can be adjusted independently of the nitrous frequency (hertz).

The solenoid pulse frequency (or also known as Hertz) is how many times the solenoids open and close when not at 0 or 100 percent operation. Example - pulse frequency set to 10 hertz and 50 percent, the solenoids would open and close 10 times per second. Total time for each pulse = 1 / 10 = .1 second, total time solenoid would be on = .1 * .50% = .05 second.

Stage2 Fuel Resume Ramp

35.0 Fuel resume percentage

10.0 Percent per Pulse

Resume Start Percent - This setting determines the percent the Stage2 Fuel resumes at if the user has to lift the throttle during Activation. This setting is only valid if the Hold And Wait option is ON. This setting is used with the Resume Percent per Pulse setting to build a Resume Ramp. If the Resume Start Percent is greater than the current output percent the Resume Ramp is ignored.

Valid range - 10% to 100% in .1% increments. A setting of 100% disables this feature.

Resume Percent per Pulse - This setting determines the rate at which the Nitrous Resumes if the user lifts the throttle during Activation. This setting is used with the Resume Start Percent to build a Resume Ramp. This allows the user to adjust how quick the fuel comes back on if the Activation signal is removed.

Example - 10% per pulse would increase the rate 10% for each pulse starting at the Resume Start Percent setting. 35% Resume and then each pulse of the solenoid would increment 10% until the setting in the ramp is is achieved. After the resume ramp is completed the normal build time ramp is followed.

Valid range - 10% to 50% in .1% increments.

Stage2 Quick Ramp Builder

20.0 Start Percentage

100.0 Final Percentage

4.0 Build Time   **Accept**

Quick Ramp Builder - Use this selection to do quick progressive setups. This feature allows the fuel to be setup using a Start Percentage, Final Percentage, and a Build Time.

Start Percentage - This setting determines the ramp Starting Percentage. The Start Percent can be less than or greater than the Final Percent setting. If the Start Percent is greater than the Final Percent the ramp will progress backwards.

Valid range - 0% to 100% in .1% increments.

Final Percent - This setting determines the ramp Final Percentage. The Final Percent can be less than or greater than the Start Percent setting. If the Start Percent is greater than the Final Percent the ramp will progress backwards.

Valid range - 0% to 100% in .1% increments.

Build Time - This setting determines the time it takes for the fuel to ramp from the Start Percent to the Final Percent settings. A short Build Time will make the fuel ramp more aggressive and a longer Build Time will make it less aggressive.

Valid range - .200 to 9.900 seconds in .1 second increments.

Timer Stage1 Tab

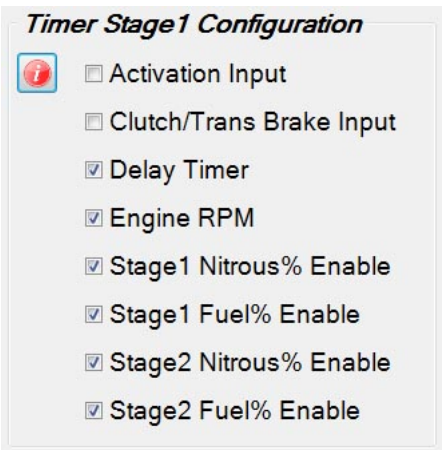**Timer Stage1 Configuration**

☑ Timing Retard Control

Stage1 Timer, Timing Retard Control - this setting configures the Stage1 Timer, +12V output to be On whenever Stage1 Nitrous is On (Solenoids functioning). Check to enable.

If this setting is Off then the Timer1 output can be configured by selecting which control parameters are used to turn On the output. When more than one control parameter has been selected all must meet the conditions as configured before the output will function.

Example - Activation Input Enabled and RPM Enabled, RPM On = 2000 and RPM Off = 4000, the Timer1 output will only be on when the Activation Input is active and the engine rpm is between 2000 and 4000 rpm.

This output supplies +12V when On.

This output may be used to drive an external relay with a load of no more than 1 amp. The relay can then be used to control another stage of nitrous with no progressive ramp.

Timer Stage1 Configuration

☐ Activation Input
☐ Clutch/Trans Brake Input
☑ Delay Timer
☑ Engine RPM
☑ Stage1 Nitrous% Enable
☑ Stage1 Fuel% Enable
☑ Stage2 Nitrous% Enable
☑ Stage2 Fuel% Enable

Note—the "Timing Retard Control" must be un-checked (off) for these features to be enabled.

Timer Stage1 Configuration - check to enable which control parameters are used to determine when the Stage1 Timer +12V output will be On. This output supplies +12V when On. Any options that are selected are combined to determine if the output should be on or off.

Delay Timer - these settings control the Delay time and On time for the Timer output.

Valid range - 0.000 to 10.000 in .001 Second increments.

Engine RPM - these settings control the output based on Engine RPM.

Valid range - 0 to 16000 in 10 RPM increments.

Delay Timer

1.000 ON Delay
4.000 OFF Delay

RPM

800 ON RPM
9500 OFF RPM

Stage1 Nitrous Percent - these settings control the output based on Stage1 Nitrous Percent.

Valid range - 0.0 to 100.0 in .1 Percent increments.

Stage1 Nitrous Percent

0.0 ON Percent
0.0 OFF Percent

Stage1 Fuel Percent

0.0 ON Percent
0.0 OFF Percent

Stage1 Fuel Percent - these settings control the output based on Stage1 Fuel Percent.

Valid range - 0.0 to 100.0 in .1 Percent increments.

Stage2 Nitrous Percent

0.0 ON Percent
0.0 OFF Percent

Stage2 Fuel Percent

0.0 ON Percent
0.0 OFF Percent

Stage2 Nitrous Percent - these settings control the output based on Stage2 Nitrous Percent.

Valid range - 0.0 to 100.0 in .1 Percent increments.

Stage2 Fuel Percent - these settings control the output based on Stage2 Fuel Percent.

Valid range - 0.0 to 100.0 in .1 Percent increments.

Timer Stage2 Tab

Timer Stage2 Configuration
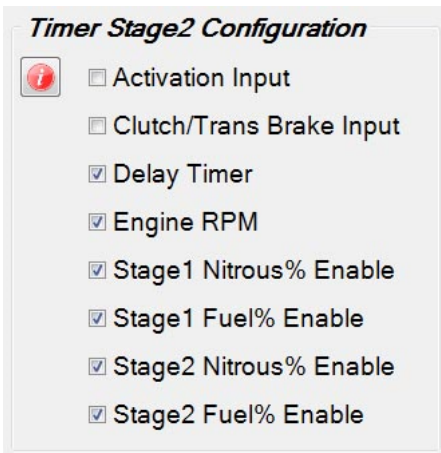
i ☐ Timing Retard Control

Stage2 Timer, Timing Retard Control - this setting configures the Stage2 Timer, +12V output to be On whenever Stage2 Nitrous is On (Solenoids functioning). Check to enable.

If this setting is Off then the Timer2 output can be configured by selecting which control parameters are used to turn On the output. When more than one control parameter has been selected all must meet the conditions as configured before the output will function.

Example - Activation Input Enabled and RPM Enabled, RPM On = 2000 and RPM Off = 4000, the Timer2 output will only be on when the Activation Input is active and the engine rpm is between 2000 and 4000 rpm.

This output supplies +12V when On.

This output may be used to drive an external relay with a load of no more than 1 amp. The relay can then be used to control another stage of nitrous with no progressive ramp.
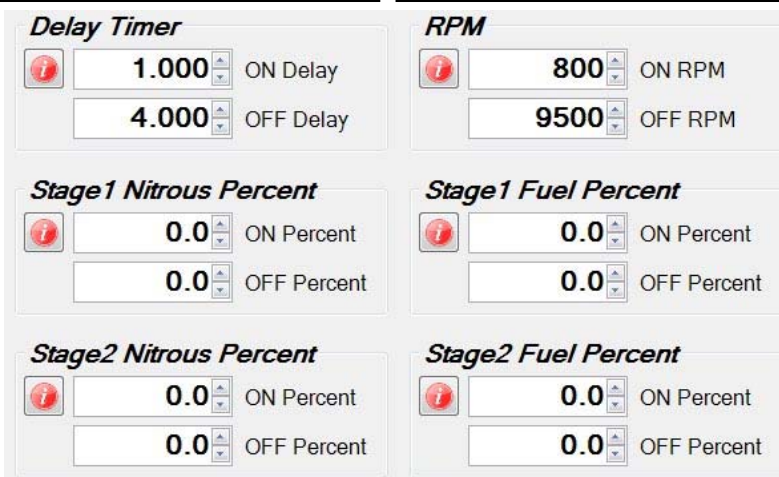
Timer Stage2 Configuration

i ☐ Activation Input
☐ Clutch/Trans Brake Input
☑ Delay Timer
☑ Engine RPM
☑ Stage1 Nitrous% Enable
☑ Stage1 Fuel% Enable
☑ Stage2 Nitrous% Enable
☑ Stage2 Fuel% Enable

Note—the "Timing Retard Control" must be un-checked (off) for these features to be enabled.

Timer Stage1 Configuration - check to enable which control parameters are used to determine when the Stage1 Timer +12V output will be On. This output supplies +12V when On. Any options that are selected are combined to determine if the output should be on or off.

Delay Timer - these settings control the Delay time and On time for the Timer output.

Valid range - 0.000 to 10.000 in .001 Second increments.

Engine RPM - these settings control the output based on Engine RPM.

Valid range - 0 to 16000 in 10 RPM increments.

Delay Timer

i 1.000 ON Delay
4.000 OFF Delay

RPM

i 800 ON RPM
9500 OFF RPM

Stage1 Nitrous Percent - these settings control the output based on Stage1 Nitrous Percent.

Valid range - 0.0 to 100.0 in .1 Percent increments.

Stage1 Nitrous Percent

i 0.0 ON Percent
0.0 OFF Percent

Stage1 Fuel Percent

i 0.0 ON Percent
0.0 OFF Percent

Stage1 Fuel Percent - these settings control the output based on Stage1 Fuel Percent.

Valid range - 0.0 to 100.0 in .1 Percent increments.

Stage2 Nitrous Percent

i 0.0 ON Percent
0.0 OFF Percent

Stage2 Fuel Percent

i 0.0 ON Percent
0.0 OFF Percent

Stage2 Nitrous Percent - these settings control the output based on Stage2 Nitrous Percent.

Valid range - 0.0 to 100.0 in .1 Percent increments.

Stage2 Fuel Percent - these settings control the output based on Stage2 Fuel Percent.

Valid range - 0.0 to 100.0 in .1 Percent increments.

Relay Output Tab

Relay Output Configuration

- ☐ Activation Input
- ☐ Clutch/Trans Brake Input
- ☑ Delay Timer
- ☑ Engine RPM
- ☑ Stage1 Nitrous% Enable
- ☑ Stage1 Fuel% Enable
- ☑ Stage2 Nitrous% Enable
- ☑ Stage2 Fuel% Enable

Relay Output Configuration - check to enable which control parameters are used to determine when the Relay output will be On.

This output provides a Ground when it is On.

Maximum current draw is 1 amp.

Delay Timer - these settings control the Delay time and On time for the Relay output.

Valid range - 0.000 to 10.000 in .001 Second increments.

Engine RPM - these settings control the output based on Engine RPM.

Valid range - 0 to 16000 in 10 RPM increments.

Delay Timer
- 1.000 ON Delay
- 4.000 OFF Delay

RPM
- 800 ON RPM
- 9500 OFF RPM

Stage1 Nitrous Percent - these settings control the output based on Stage1 Nitrous Percent.

Valid range - 0.0 to 100.0 in .1 Percent increments.

Stage1 Nitrous Percent
- 0.0 ON Percent
- 0.0 OFF Percent

Stage1 Fuel Percent
- 0.0 ON Percent
- 0.0 OFF Percent

Stage1 Fuel Percent - these settings control the output based on Stage1 Fuel Percent.

Valid range - 0.0 to 100.0 in .1 Percent increments.

Stage2 Nitrous Percent
- 0.0 ON Percent
- 0.0 OFF Percent

Stage2 Fuel Percent
- 0.0 ON Percent
- 0.0 OFF Percent

Stage2 Nitrous Percent - these settings control the output based on Stage2 Nitrous Percent.

Valid range - 0.0 to 100.0 in .1 Percent increments.

Stage2 Fuel Percent - these settings control the output based on Stage2 Fuel Percent.

Valid range - 0.0 to 100.0 in .1 Percent increments.

Configuration Tab

Main Timer

20 This controls the maximum time the outputs are active before the controller Resets.

Main Timer - This setting controls the Main Timer period. This controls the total time elapsed before a System Timeout occurs. This limits the total amount of time the solenoids can be On if the Activation signal is never removed.

Once the Main Timer has timed out the Activation signal must be removed before the controller may be activated again.

Valid range - 20 to 300 in 1 second increments.

Hold and Wait

○ Hold and Wait when Activation signal is removed. (ON)

○ Reset controller when Activation signal is removed. (OFF)

Hold & Wait - This setting allows the Progressive system to Hold & Wait when the Activation signal is removed.

Example - the throttle is lifted due to wheel spin (Activation signal removed). If Hold & Wait is ON the Progressive system will resume at the point where the throttle was lifted. See Nitrous and Fuel Resume Ramp for additional resume features.

If this option is OFF the Progressive system and All Timers will reset each time the Activation is removed.

Clutch/Trans Brake Input Delay Timer

0.000 Controls the amount of time input is ON before it is recognized after controller is Activated.

Clutch/Trans Brake Input Delay Timer - this setting controls how long the Clutch/Trans Brake input must be On before accepting the signal. The clutch input hold delay setting is ignored until the controller is Activated.

Before the controller is Activated the clutch input is recognized in real time with no delay.

This setting could be used to ignore shifts with a manual transmission (1 second) or a very low setting would act as noise filter to ignore spurious signals (.005 second).

If a clutch input signal is recieved and accepted after the controller is activated the system will turn off the progressive system and timers. This would allow the nitrous to be turned Off during a shift and resumed when the clutch is released.

Valid range - 0.000 to 1.000 in .001 second increments. (0.000 turns this function OFF)

Tach Input Pulse Per Revolution

4 Pulse per Revolution ▾ Number of tach signal pulse per revolution of crankshaft.

Tach Input Pulse Per Revolution - this setting determines the number of Tach Pulses per revolution of the crankshaft.

Example - if the Tach Signal input is connected to a common V8 engine multi-spark ignition controller a setting of 4 Pulse per Revolution would be used.

Common settings are,

1 Pulse per Two Revolutions = modern coil on plug systems with white wire connected to single coil wire.

1 Pulse per Revolution = single cylinder engine and some twin cylinder motorcycle engines.

2 Pulse per Revolution = 4 cylinder car and motorcycle engines.

3 Pulse per Revolution = 6 cylinder engines.

4 Pulse per Revolution = 8 cylinder engines.

5 Pulse per Revolution = 10 cylinder engines.

Data Tab – Data Setup

Data Log Activation - these settings determine when the controller begins recording data.

If more than one option is selected ALL conditions must be met before a new data log will start.

Example - Activation input and Clutch/Trans Brake input both selected, a new data log will begin recording when both inputs are active. This would be a typical setup when making a pass at the track. Once staged the Clutch/Trans Brake would be on, then when the wide open throttle switch goes active the controller would begin a new data log..

Example if on a chassis dyno and the Clutch/Trans Brake input is not being used you would want to have only Activation input selected to start a new data log..

RPM - this setting determines the Engine RPM when the controller begins recording data.

Valid range - 1,000 to 10,000 in 10 RPM increments.

Data Tab – Data Chart

Click title to turn on/off   **Drag chart height here to adjust title display**
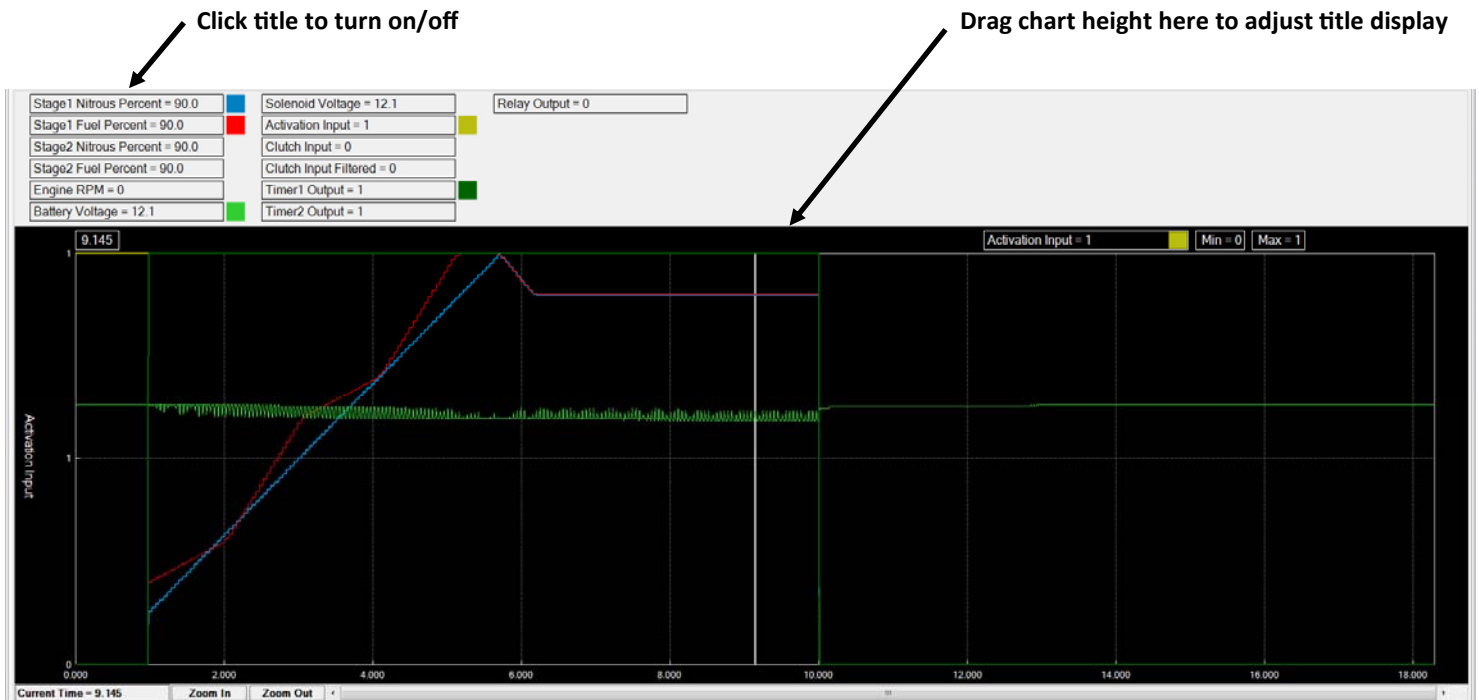
Data Log Navaigation and keyboard shortcut keys.

Right and Left arrow keys - pan cursor right and left, use SHIFT + Right/Left and CTRL + Right/Left keys to pan by small increments.

I - Zoom in, O - Zoom out.

Left click on chart title at top of window to turn chart ON/OFF in the graph.

Right click on chart title at top of window to set chart options.

Left click on current chart title (top right side of graph) to select next chart.

Right click on graph to set run start and end time.

To change the grouping of chart titles, hover mouse over top of graph and when the cursor changes, left click and drag graph height up or down as desired.

The graph settings will be saved when the program is closed and reloaded when the program is launched.

Wiring Diagram
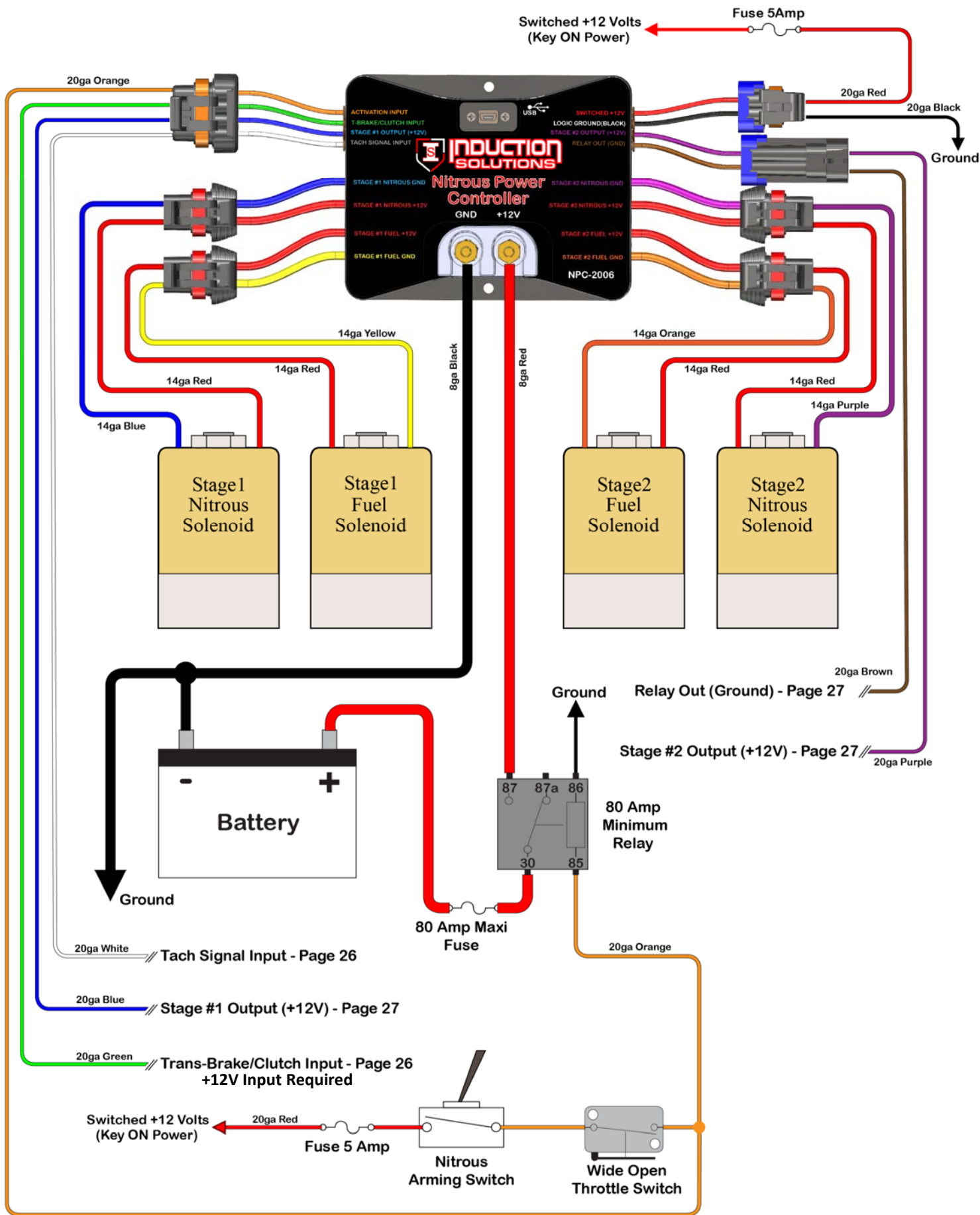
Transmission Brake/Clutch Input Wiring

Important Information—when then Trans-Brake/Clutch input is ON the Activation input will be ignored until the transmission brake or clutch is released. This keeps the nitrous OFF when the Trans-Brake/Clutch input is ON and the throttle is wide open.
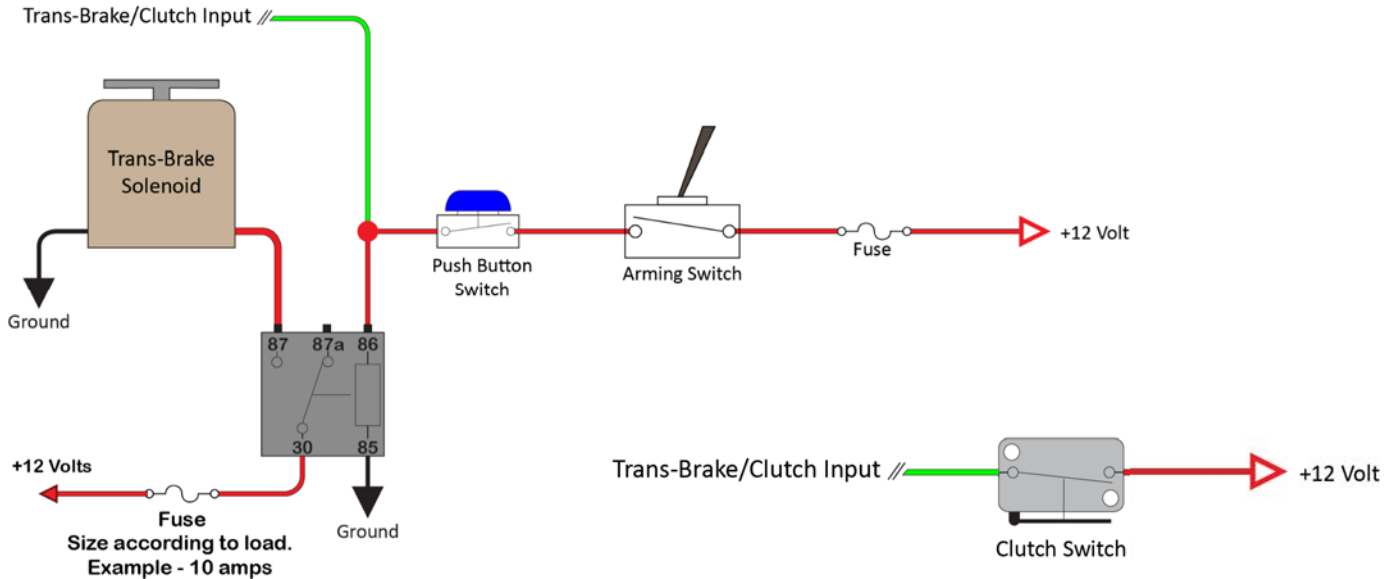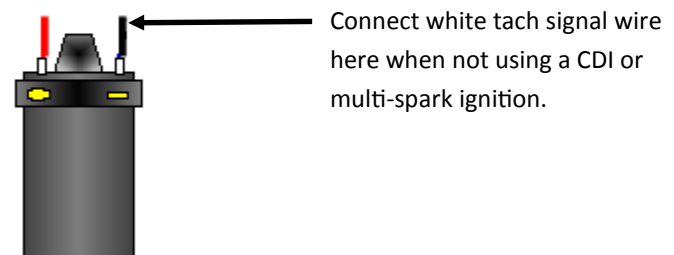

RPM/Tachometer Input Wiring

Typical aftermarket CDI ignition tachometer wiring. See ignition manufacturer instructions for more information.

Caution—never connect the white tach signal wire directly to the coil negative wire with a multi-spark ignition.

Connect white tach signal wire here when not using a CDI or multi-spark ignition.
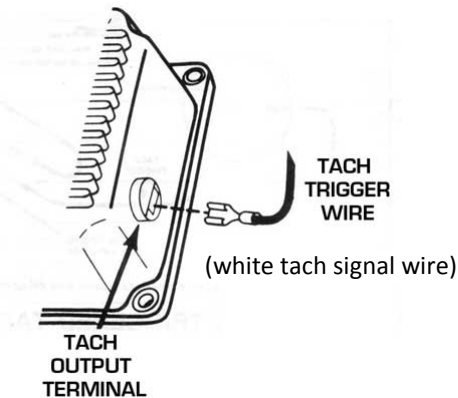
The tach input signal can also be connected to a +5 volt or +12 volt square wave signal on newer fuel injected vehicles. You will need to research the vehicle in question and check to see if the ECM provides a tach (rpm) signal. You may also purchase an aftermarket tach signal adapter if needed.

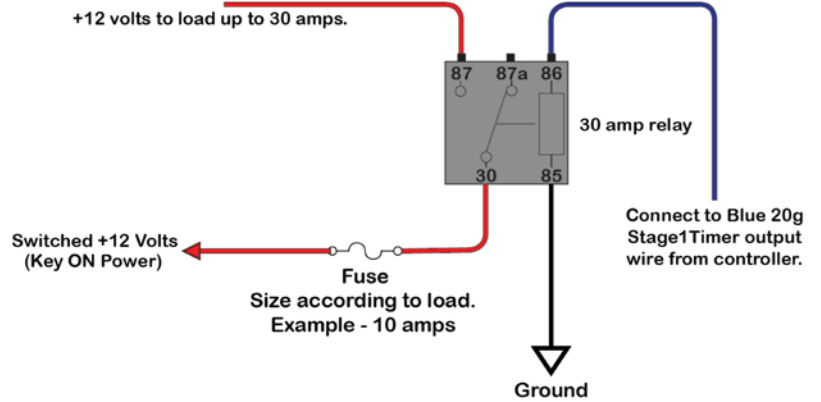
Connect white tach signal wire here.
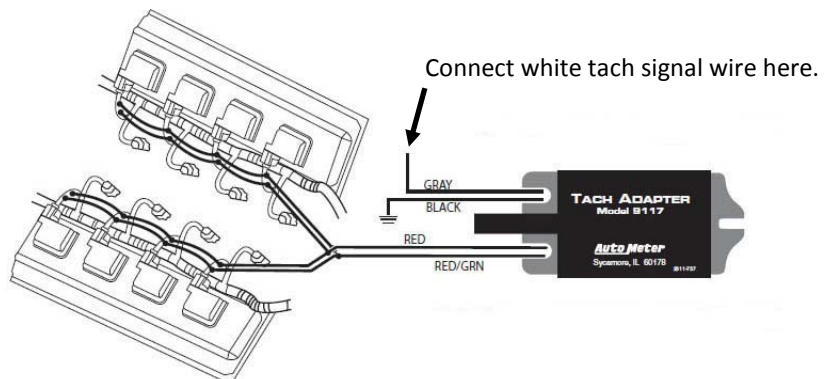
Stage1 +12 Volt Timer Output Wiring

This output provides +12 volt at 1 amp maximum, there is an internal 1k ohm resistor to ground so the output is not floating when in the off state. If your ignition and/or ignition timing controller is activated by a +12 volt signal the 20ga **Blue** Stage1 Output wire can be connected directly to retard activation.

Important—always test for proper timing retard operation before spraying nitrous! You can use a timing light or a data logger if it is equipped to log ignition timing. Do a dry test (engine running, solenoids unplugged) to confirm proper timing retard.

To control a load greater than 1 amp a relay will need to be wired into the system as outlined to the right.

+12 volts to load up to 30 amps.

87   87a   86

30 amp relay

30   85

Switched +12 Volts
(Key ON Power)

Fuse
Size according to load.
Example - 10 amps

Connect to Blue 20g
Stage1Timer output
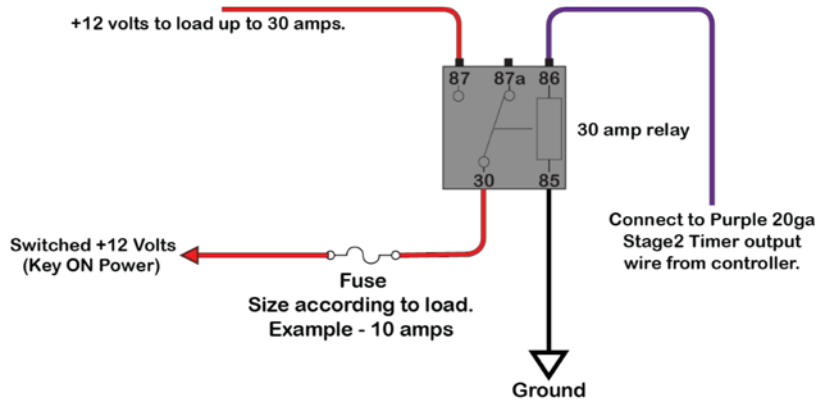wire from controller.

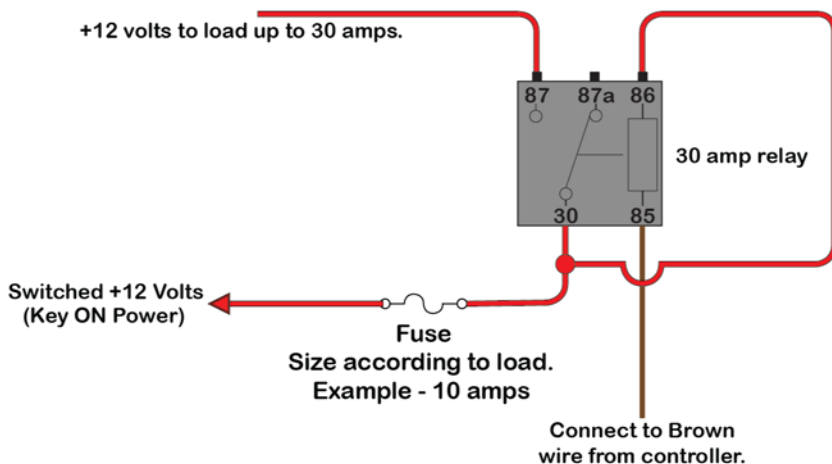Ground

Stage2 +12 Volt Timer Output Wiring

This output provides +12 volt at 1 amp maximum, there is an internal 1k ohm resistor to ground so the output is not floating when in the off state. If your ignition and/or ignition timing controller is activated by a +12 volt signal the 20ga **Purple** Stage2 Output wire can be connected directly to retard activation.

Important—always test for proper timing retard operation before spraying nitrous! You can use a timing light or a data logger if it is equipped to log ignition timing. Do a dry test (engine running, solenoids unplugged) to confirm proper timing retard.

To control a load greater than 1 amp a relay will need to be wired into the system as outlined to the right.

+12 volts to load up to 30 amps.

87   87a   86

30 amp relay

30   85

Switched +12 Volts
(Key ON Power)

Fuse
Size according to load.
Example - 10 amps

Connect to Purple 20ga
Stage2 Timer output
wire from controller.

Ground

Relay Ground Output Wiring

+12 volts to load up to 30 amps.

87   87a   86

30 amp relay

30   85

Switched +12 Volts
(Key ON Power)

Fuse
Size according to load.
Example - 10 amps

Connect to Brown
wire from controller.

This output provides a ground with a 1 amp maximum load.

If you are driving an LED shift light and it draws less than 1 amp of current it can be connected directly to the Brown wire with no relay needed.

If the load is over 1 amp a relay must be used.

Controller Firmware Update

The NPC-2006 controller can be updated using the USB interface. An update installs new firmware (software) into the controller.

The firmware update file should be copied to C:\My Documents\Nitrous Power Controller\Firmware Updates so it can be located easily during the update process.
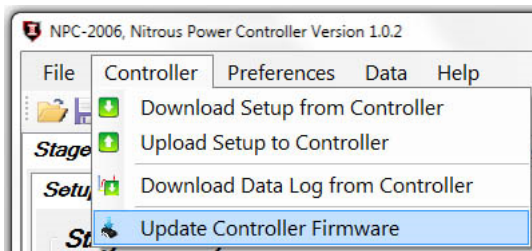
When the controller enters update mode a copy of the current installed firmware will be made and placed into the update file directory automatically. If an identical firmware file already exists no second backup copy will be made.

Important—do not turn off power to the controller or unplug the USB cable during the update process. If this does occur the controller will remain in update mode and when the USB connection is established again the update process must be completed from the beginning.
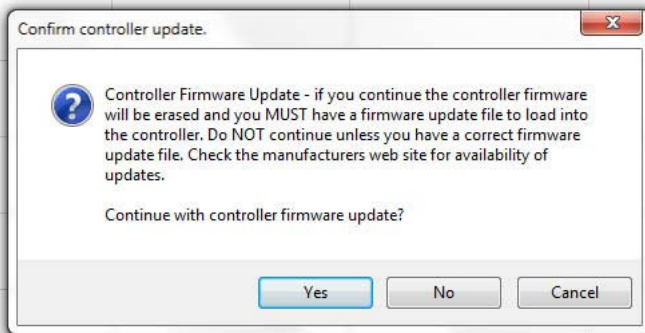
Important—make sure the nitrous arming switch is off during the firmware update process.

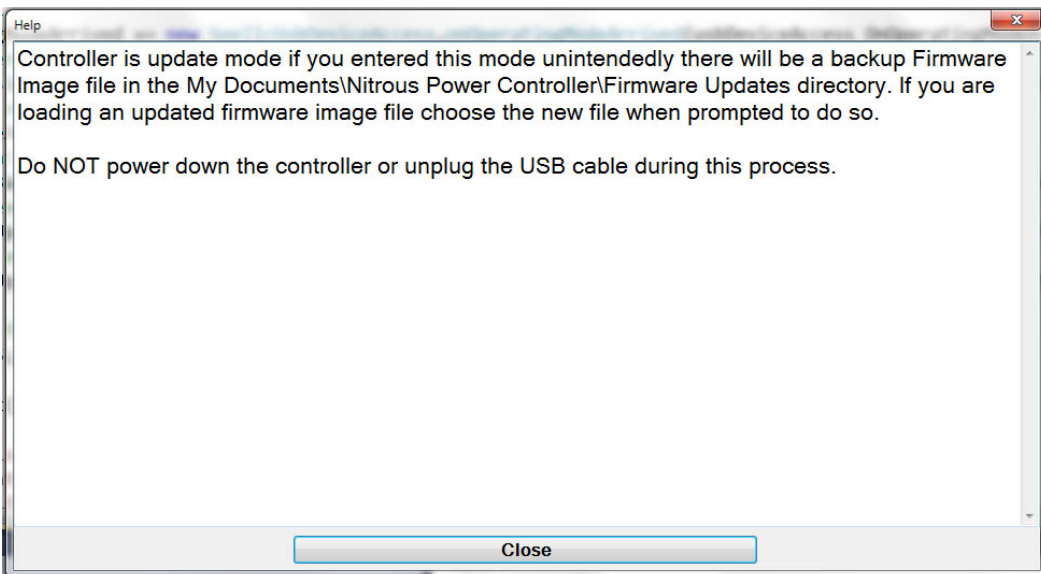1—turn power on to the controller and connect the USB cable. Launch the PC software.

2—Click on "Update Controller Firmware" from the Controller menu.

```
NPC-2006, Nitrous Power Controller Version 1.0.2

File   Controller   Preferences   Data   Help
          Download Setup from Controller
Stage     Upload Setup to Controller
Setu      Download Data Log from Controller
  St      Update Controller Firmware
```

3—click on Yes to continue and put the controller into update mode.

```
Confirm controller update.                                    X

  ?   Controller Firmware Update - if you continue the controller firmware
      will be erased and you MUST have a firmware update file to load into
      the controller. Do NOT continue unless you have a correct firmware
      update file. Check the manufacturers web site for availability of
      updates.

      Continue with controller firmware update?

                          Yes        No        Cancel
```
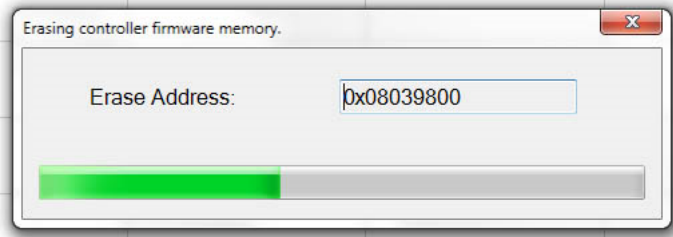
4—once the controller reboots in update mode click on the "Close" button to continue the firmware update process.

```
Help                                                          X

Controller is update mode if you entered this mode unintendedly there will be a backup Firmware
Image file in the My Documents\Nitrous Power Controller\Firmware Updates directory. If you are
loading an updated firmware image file choose the new file when prompted to do so.

Do NOT power down the controller or unplug the USB cable during this process.




                              Close
```
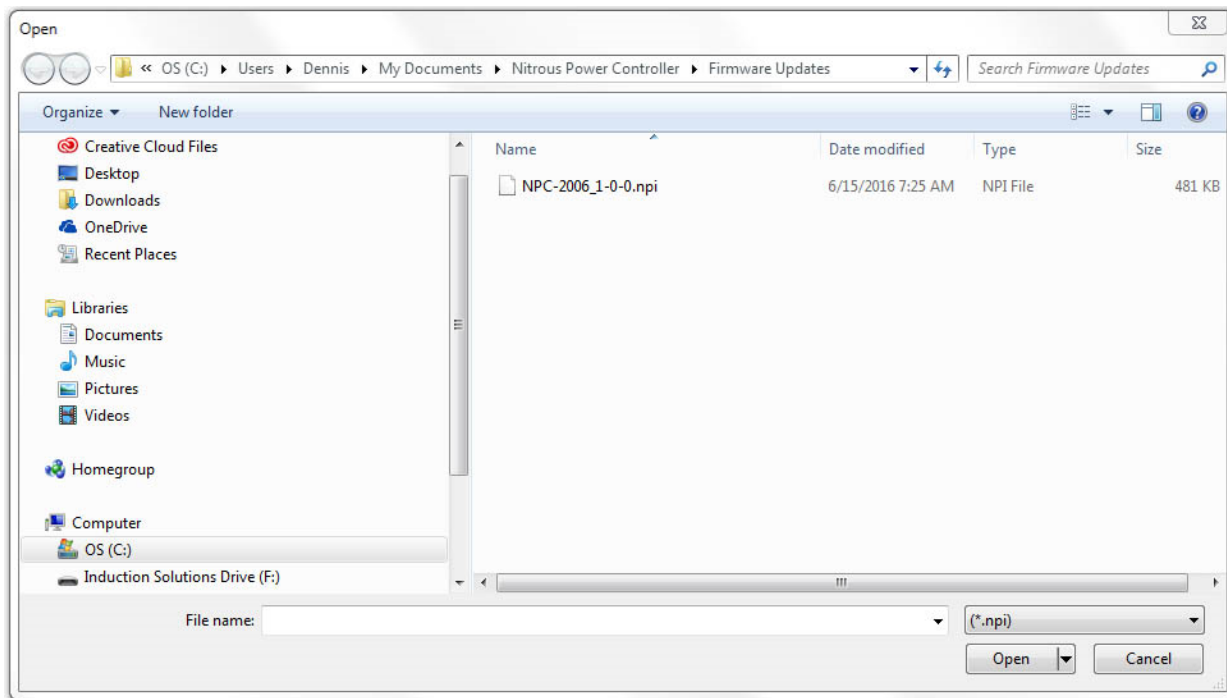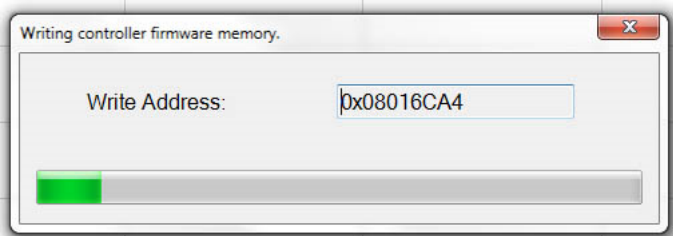
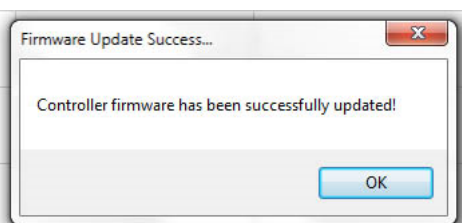5—please be patient while the controller update continues.

6—when prompted select the new firmware file to load and click on "Open"

7—please be patient while the controller update continues.

8—when the firmware update process is complete click on "Ok".

Appendix A—Setting up the controller for a run

1—Creating and saving a user setup file to the PC.

A—Launch the Nitrous Power Controller software.

Note—if you have the "Preferences->Load Last File on Startup" option checked the setup file that was open the last time the software was used will automatically be opened when you launch the software. If this option is not selected a default setup will be opened.

B—Edit the setup as desired.

C—Save the setup to the PC using "File->Save File" or optionally click on the Save File icon   on the toolbar. If the setup is being saved for the first time you will be prompted to enter a filename before saving.

Note—if you want to save the setup file with a new name use "File->Save As" or optionally click on the Save As icon   on the toolbar.

**2—Upload a user setup to the controller from a saved file.**

A—Open a setup file from the PC by using "File->Open File" or optionally click on the Open File icon   on the toolbar.

B—Connect the USB cable to the controller and the PC. Make sure the controller is powered up.

Note—you can look at the status bar at the bottom of the software window to see if the controller is connected.

C—Upload the setup to the controller using "Controller->Upload Setup to Controller" or optionally click on the Upload Setup to Controller icon   on the toolbar.

D—Watch the progress bar in the lower left corner to confirm upload progress.   NPC-2006 Controller Connected
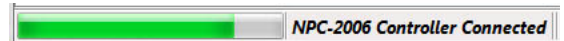
E—Click on "OK" when the upload complete message is displayed.

Note—the PC is used to save many setup files, only one setup can be uploaded to the controller at a time.

F—The controller is now ready to use with the setup that was saved to the PC.

3—Modifying a setup from the controller.

A—Connect the USB cable to the controller and the PC. Make sure the controller is powered up.

Note—you can look at the status bar at the bottom of the software window to see if the controller is connected.

B—Download the setup to the PC using "Controller->Download Setup to Controller" or optionally click on the Download Setup to Controller icon   on the toolbar.

C—Watch the progress bar in the lower left corner to confirm download progress.   NPC-2006 Controller Connected
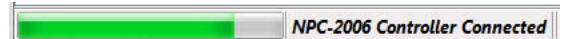
D—Click on "OK" when the download complete message is displayed.

E—Edit the setup as desired.

F—The setup may be saved to the PC using "File->Save File" or optionally click on the Save File icon   on the toolbar.

G—Upload the setup to the controller using "Controller->Upload Setup to Controller" or optionally click on the Upload Setup to Controller icon   on the toolbar.

D—Watch the progress bar in the lower left corner to confirm upload progress.   NPC-2006 Controller Connected
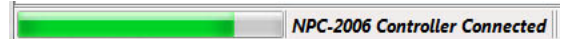
E—Click on "OK" when the upload complete message is displayed.

Appendix B—Typical procedure when making a run

A—Edit and upload a setup to the controller.

Important—it is the responsibility of the user to create a proper setup for their application!

B—Perform any usual pre-race preparations, clean tires, purge nitrous system, etc.

C—Make sure nitrous arming switch is on.

D—When the T-Brake/Clutch Input is on the Activation Input will be ignored until you release the trans brake or clutch.

Note—as long as the T-Brake/Clutch Input is on you can go wide open for the launch without the progressive nitrous system starting.

Important—if you are using the T-Brake/Clutch Input Delay Timer the T-Brake/Clutch Input will be ignored after the initial launch for the amount of delay time set for this feature.

E—Stage the vehicle and launch.

F—The data log will begin recording once the data recording activation conditions are met.

    1—the default setting for data recording activation is the Activation Input only.

    2—you may configure the controller to only begin recording when the Activation Input and the T-Brake/Clutch are both on.

    3—you may also configure the controller to begin recording based on engine rpm.

    Please see the "Data Setup" tab for these options.

G—After the run you may turn the power off to the controller. The data log will be saved in the controller even with no power for several years.

Note—if you start another run before downloading the data log it will be over written!

H—See "Appendix C—Retrieving data log after a run" for more information.

Appendix C—Retrieving data log after a run

**1—Download data log after a run.**

A—Launch the Nitrous Power Controller software.

B—Connect the USB cable to the controller and the PC. Make sure the controller is powered up.

Note—you can look at the status bar at the bottom of the software window to see if the controller is connected.

C—Download the data log to the controller using "Controller->Download Data Log from Controller" or optionally click on the Download Data Log from Controller icon on the toolbar.

D—Watch the progress bar in the lower left corner to confirm upload progress.
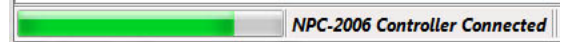
E—When the download is complete a message box will inform you if the current setup in the controller was used when the data was logged (same setup used for run). Click OK to continue.

> 1—If the setup has changed from the time when the run data log was created it will not be saved with the data log to the PC.

> 2—If the setup was used when the run data was recorded it will be saved with the data log to the PC.

Note—the setup can be loaded from the data log at a later date. For example you return to a track and want the same setup that was used on a previous run. See below for instructions to retrieve the setup from a data log file.

Important—always download the data log before making any changes to the setup if you wish to have the setup saved with the data log.

F—The save data log window will now open and prompt you to save with the automatically generated file name or you may alter the filename before saving.

G—After saving the data log to a PC file the data graph will open and you can view the run data.

H—Click on the "Data Graph Help" button for help with the data graph functions.

2—Retrieving setup from data log file saved to PC.

A—Launch the Nitrous Power Controller software.

B—Open a data log file from the PC by using "Data->Open Data Log File" or optionally click on the Open Data Log File icon on the toolbar.

C—Click on the "Load Setup from Data Log" button.

> 1—If a valid setup was saved with the data log it will be loaded and you can view, edit, save, and/or upload to the controller.

> 2—If the setup was not saved with the data log you will not be able to retrieve it and a message box will appear indicating this.