

**CONTROLLER REQUIRES THE USE OF OUTPUT DRIVERS TO
POWER THE SOLENOIDS**
DO NOT CONNECT SOLENOIDS DIRECTLY TO UNIT!

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Note: When connected to your AMS-2000, upgrade features that are not enabled on that unit will not be displayed.

File Menu

- **Load User Packet from AMS-2000** - Transfers the tune up (not the data log) FROM the AMS-2000 box to the software program.
 Note: This does not automatically save the data to disk.
- **Save User Packet to AMS-2000** - Transfer the current program you have loaded on the screen to the AMS-2000 Hardware.
- **Open User Packet File** - Opens a previously saved Packet Setup file from disk.
- **Save User Packet File** - Saves the current Packet setup you have loaded to disk.
- **Reset User Packet to Factory Default** - Use if you get way out in left field and need to start over from scratch. Restores controller to state it was out of the box from the factory.
- **Get Data Log from AMS-2000** - Transfers the last run's Data log from the AMS-2000 to your screen. Note: This does not automatically save the log data to disk.
- **Open Log File** - Load a previously saved data log file from disk.
- **Save Data Log File** - Saves the data log file from the program to disk.
- **Copy Encrypted Passwords to Clipboard** - Used for password reset from factory options.
- **Install Feature Upgrade** - [See page 36 Upgrading and Adding features.](#)
- **Load Firmware Update File** - [See page 35 Software and Firmware Updating](#)
- **Update AMS-2000 Firmware** - [See page 35 Software and Firmware Updating](#)
- **Exit** - Closes the program. If you've made an edit to a currently opened file, you will be prompted to save or discard your changes.

File	Options	Help
	Load User Packet from AMS-2000	
	Save User Packet to AMS-2000	
	Open User Packet File	
	Save User Packet File	
	Reset User Packet to Factory Default	
	Get Data Log from AMS-2000	
	Open Log File	
	Save Data Log File	
	Copy Encrypted Passwords to Clipboard	
	Install Feature Upgrade	
	Load Firmware Update File	
	Update AMS-2000 Firmware	
	Exit	

Note: It is important to understand that any changes you make within the Control Center Software are NOT saved automatically to disk, or to the AMS-2000 Controller. You have to save the User Packet Setup files to disk manually, and you have to send the User Packet Files to the AMS-2000 Controller manually using the File Menu functions. If you fail to send the data to the controller, your changes to your setup will not take place!

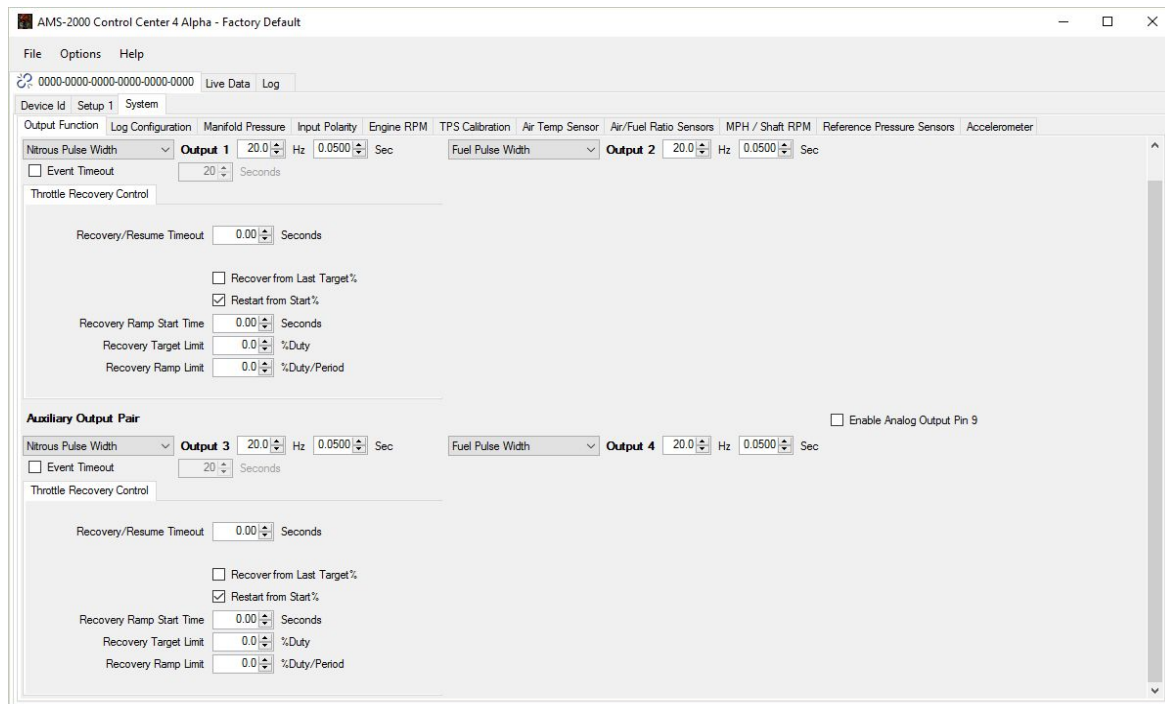
System Output Function Configuration Options

The AMS-2000 has the unique ability to drive up to 4 solid state driver outputs in the Pro Configuration. It also has the option for each output to function in different ways. For example each output can be configured for different functions. If Nitrous Control is selected 2 outputs are used (Nitrous and Fuel).

1. Disabled
2. Reference Pressure
3. Manifold Pressure
4. Nitrous Pulse Width (Progressive Operation)
5. Pulse Width (Generic Progressive Output)

The Auxiliary Output Pair has some different options

1. Disabled
2. Pressure
3. Relay Driver
4. Nitrous Pulse Width (Progressive Operation)
5. Pulse Width (Generic Progressive Output)
6. Staging Driver



Primary Output Pair - Nitrous & Fuel Single Stage Configuration Example

Event Timeout Option - Maximum Program Elapsed Time. If set at 7 seconds, the outputs will shut off 7 seconds from detection of the

primary activation signal. Used as a safety option for a stuck throttle situation or for index racing to slow the car down. If unchecked, timer is non-functional.

The screenshot shows a software interface with the following elements:
 - A dropdown menu labeled "Nitrous Pulse Width" with a downward arrow.
 - A label "Output 1" followed by a numeric input field containing "20.0" and a unit selector set to "Hz".
 - A numeric input field containing "0.0500" followed by a unit selector set to "Sec".
 - A checkbox labeled "Event Timeout" which is checked.
 - A numeric input field containing "7" followed by a unit selector set to "Seconds".
 - A label "Throttle Recovery Control" with a downward arrow.

Nitrous Pulse Width Output 1 Hz - Enter your chosen frequency setting for your Nitrous Solenoid between 3 to 1000 Hz. You may want to use around 12 or 15 Hz for Trash Can type solenoids and around 20 Hz for smaller solenoids. Consult your solenoid supplier for optimum frequency settings.

Fuel Pulse Width Output 1 Hz - Enter your chosen frequency setting for your Fuel Solenoid between 3 to 1000 Hz. You may want to use around 12 or 15 Hz for very large solenoids and around 20 Hz for smaller solenoids. Consult your solenoid supplier for optimum frequency settings.

Enable Analog Output Pin 30 Option - When this option is selected, the Brown Pin 30 Output will change from a sensor input function into a 0-5 Volt output signal that is proportional to the Nitrous Percentage Primary Output for external data logging or EFI purposes.

Throttle Recovery (Pedal) Control Options

The Throttle Recovery Functions of the AMS-2000 are extremely versatile allowing you many options should you have to pedal the car. These functions control how your power is reapplied in that situation. You should spend some time studying how these options function to clearly understand what will happen when you pedal the car. The settings apply to the pair of outputs - both Nitrous and Fuel outputs are controlled at the same time and same percentages.

The screenshot shows the 'Primary Output Pair' configuration window. Under the 'Throttle Recovery Control' tab, the following settings are visible: 'Recovery/Resume Timeout' is set to 2.00 seconds; 'Recover from Last Target%' is unchecked; 'Restart from Start%' is checked; 'Recovery Ramp Start Time' is set to 0.75 seconds; 'Recovery Target Limit' is set to 50.0 %Duty; and 'Recovery Ramp Limit' is set to 10.0 %Duty/Period. Above this tab, 'Nitrous Pulse Width' is set to 20.0 Hz and 'Event Timeout' is set to 7 seconds.

- Recovery / Resume Timeout Seconds -**
 Time limit for reactivation after activation signal interruption (Throttle lifted). If throttle signal reactivation occurs after this time value, the program doesn't restart. This setting can help avoid a situation where after you've spun and aborted the run, while driving down track after aborting the run accidentally retriggering the nitrous system. Suggested setting of 2 seconds or less. If you don't get back into the throttle to salvage the run within 2 seconds, it's probably not going to matter!
- Recover from Last Target / Restart from Start % (Toggle) -** If "Recover from Last Target" is selected program will recover at last point it was at on the primary ramp output %, If "Restart from Start %" is selected, the primary ramp will restart at the beginning. Regardless of selection, if you pedal after the Recovery Ramp Start time value has expired, the Recovery Ramp will be used when Activation Signal is reapplied.
- Recovery Ramp Start Time -** The Recovery Ramp will not be used until after this time value is reached. If the Value is set to 0, the Recovery Ramp will be used regardless of the setting on the "Recover from Last Target / Restart from Start %" checkboxes.

A) If "Recover from Last Target %" option IS selected and reactivation happens before this time value expires the program will recover at last primary ramp target where you lifted the throttle.

B) If "Restart from Start %" is selected and this delay time has not been reached, the program will restart primary ramp completely from the beginning.

C) If "0" is entered the program will use the Recovery Ramp regardless of when the activation signal (throttle lifted) occurred.

- **Recovery Target Limit** - This is the Recovery Ramp Restart % IF the output is above this point in the Primary Ramp when the throttle was lifted (activation signal removed). If the Primary ramp percentage point where the throttle was lifted is lower than this setting, that percentage will be used. If the Primary ramp output was above this setting, the Output will drop to this % value, then recover back to your Primary ramp setting from where the throttle was lifted.

A setting of 100% or leaving the checkbox unchecked will disable the Recovery Ramp and the unit will resume output where it was deactivated at according to your Primary Ramp % Output. We suggest trying 20%Duty setting for the Recovery Ramp Target initially - test and see how this works for you.

Example A - You have the Recovery Target Limit setting at 50 %Duty and you pedal the car when your Primary Ramp was at 75%, when you reactivate the nitrous the Output Percentage will drop down to 50% then recover to your original ramp setting of 76% over a short time period.

Example B - You have the Recovery Target Limit setting at 50 %Duty and you pedal the car when your Primary Ramp was at 40%, in that situation, the Recovery Ramp value is ignored, when you reactivate the system your ramp will restart at the previous 40%.

Example C - You have the Recovery Target Limit setting at 50 % Duty and you pedal the car when your Primary Ramp was at 100%. In that situation, when the nitrous is reactivated your Recovery Ramp will be used and the output will be back at 50% and will progress quickly back to 100%. How quickly it returns to 100% is determined by the Recovery Ramp Limit setting.

- **Recovery Ramp Limit** - This is how fast the unit will attempt to catch back up to your previous Primary Ramp Percentage point where the throttle was lifted. How fast is determined by your solenoid frequency setting (Hz), the Recovery Target Limit, and at what Percentage Output the Primary Ramp was at when the car was pedaled.

We suggest experimenting with the recovery ramp limit to find what works best for you and your car. You might want to use 7-8% Duty/Period setting initially with a 20hz Solenoid setting.

Note the Recovery Ramp is based on your Primary Ramp for both Fuel and Nitrous Outputs. What we're doing here is dampening the output percentage so that when you pedal the car

ideally the tires don't go up in smoke. How MUCH power is reapplied at the reactivation point is what we are adjusting with the Recovery Target Limit.

The Nitrous and Fuel Recovery Ramps are tied together based on your Primary Ramp settings. The % output reduction for the fuel ramp and nitrous ramp will be based on the same percentage differences your Primary ramp had at the point the activation signal is reapplied. So if both your fuel and nitrous Primary Ramp percentage was at 60% when the Activation signal is reapplied, the resume ramp will output the same 60% for both. If you had a higher fuel percentage than nitrous at that point - that same % difference will be used for the resume ramp output.



**DON'T FORGET TO SAVE USER PACKET TO
AMS-2000 OR YOUR CHANGES WON'T BE
SAVED TO THE ECU!**

System Log Configuration

0000-0000-0000-0000-0000-0000 Live Data

Device Id Log Setup 1 System

Output Function Log Configuration Manifold Pressure Input Polarity Engine RPM TPS Calibration

Data Log Activation

☐ Activation Input Enable

☐ Engine RPM

☒ EFI Throttle or Carb data record switch

☐ Enable Log Overwrite

On at RPM >=

On RPM 2,000

On at Percent >=

On Percent 80.0

The internal data logger within the AMS-2000 must be configured to tell the program when to start recording data. If you select more than one option, each must be true before the log starts.

Activation Input Enable - Data log starts when the Purple (Pin 12) activation input is turned on.

Engine RPM - Data log starts when engine RPM is equal to or exceeds the “On at RPM” value setting..

Throttle - Data log starts when the White (Pin 32) TPS / Throttle value equals or exceeds the “On Percent” value setting. If using a 12 Volt input, set this for 80%.

Enable Log Overwrite - With this option checked, the log will record each time it is triggered overwriting any previous data. When it is unchecked, the log will record until the 512Kb memory is full then stop. We highly recommend leaving this unchecked. Just make sure to download, **AND** delete your log file after each pass.

EFI Applications

For EFI setups that use the TPS input as described in the AMS-2000 Wiring Guide. Configure the Log Configuration options as follows -

Device Id Log Setup 1 System

Output Function Log Configuration Manifold Pressure Input Polarity Engine RPM TPS Calibration

Data Log Activation

☒ Activation Input Enable

☐ Engine RPM

☒ EFI Throttle or Carb data record switch

☐ Enable Log Overwrite

On at RPM >=

On RPM 2,900

On at Percent >=

On Percent 40.0

1. Activation Input Enable box checked.
2. Engine RPM unchecked.
3. EFI Throttle or Carb data record switch checked.
4. Enable Log Overwrite unchecked.
5. Set the On at Percent \geq value at 40%.

The data logging will start as soon as the throttle goes above 40% AND the activation input is ON. At end of pass when you lift, the AMS-2000 will save the log to memory since one of the thresholds dropped off.

If you pedal the car during the run, the AMS-2000 will save the data up to the point you have lifted, write that data to the log file, then restart once the throttle position reaches the % point setting.

Carb Applications

There are numerous methods to start and turn off the data recording functions. We HIGHLY suggest using a simple method with a ON/OFF switch to control this function to avoid data loss. You can of course experiment with other options, but with others there is a chance for data loss under certain conditions which may not be clearly evident. This method is very simple to work with.

The screenshot shows the 'Log Configuration' tab in the software. Under 'Data Log Activation', the following settings are visible:

- ☐ Activation Input Enable
- ☒ Engine RPM
- ☒ EFI Throttle or Carb data record switch
- ☐ Enable Log Overwrite

On the right side of the tab, there are two input fields:

- 'On at RPM \geq ' with a value of 3,000
- 'On at Percent \geq ' with a value of 80.0

Configure the settings as follows -

1. Make sure the Activation Input Enable Option is unchecked.
2. Engine RPM Option checked.
3. Engine RPM On at RPM set to a value just below your stage RPM.
4. EFI Throttle or Carb data record switch checked.
5. Enable Log Overwrite unchecked.
6. On at Percent \geq On Percent set at 80.0

Connect a toggle switch to the PIN 32 TPS input wire and wire it to 12 Volts. This switch can be turned on and off by the driver, or a crew member. It's function is to start and stop the data logging recording function. As long as the switch is on and Engine RPM is about your setpoint the logger will be recording until the memory is full. When either the Engine RPM is below your setpoint, or you turn the logging switch off, the data log will be saved to memory for later download.

It is very important to turn this data logging switch off BEFORE turning off the power to the AMS-2000 so it can write the data to memory. If you turn the AMS-2000 main power off before turning off the PIN 32 Input/Data Logger Switch, you will lose your run data!



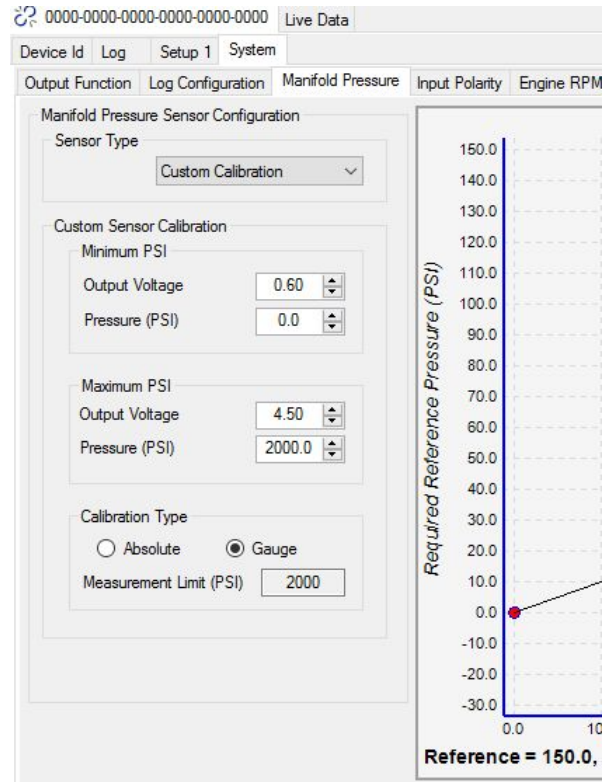
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System Manifold Pressure / Waste Gate Calibration

This is the configuration page for an optional pressure sensor, for example a Nitrous Pressure Sensor. You can choose one of the pressure sensor options or configure and scale a 0-5 Volt sensor on this page. This input is tied to PIN 31 Signal Input.

For Custom Calibration Sensors, you'll need the scaling data from the sensor supplier to input the correct voltages and pressure settings.

Disregard the Waste Gate Calibration chart, it is not used by the AMS-2000 Nitrous Controller.



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System Input Polarity Configuration Options

Five of the AMS-2000 electrical inputs can be triggered with either 12 volt Positive, or 12 Volt Negative signals, these are user selectable and the settings are saved in each User Packet File.

Anytime you create a new User Packet file from scratch, these values will revert back to all ground activation, you must set them in each new User Packet file you create.

Activation Input Polarity

Pin 12 Purple Activation Input

Scramble Input Polarity

Pin 11 Black Scramble Input

Reduce Input Polarity

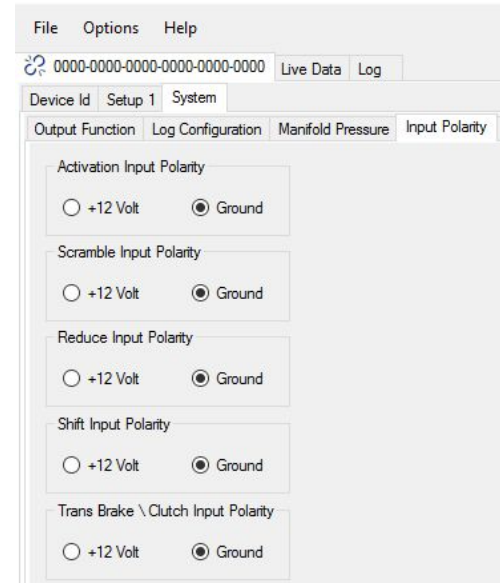
Pin 10 Green Reduce Input

Shift Input Polarity

Pin 22 Yellow Shift Indication Input

Trans Brake/Clutch Input Polarity

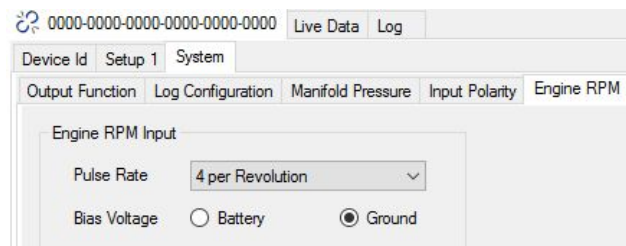
Pin 33 Blue Trans Brake / Clutch Signal



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System Engine RPM Configuration

The Engine RPM Tab settings configure how many pulses per revolution your signal will be generating and what type of signal you



are using on Pin 3 - Orange Engine RPM/Tach Input.

We highly recommend using this input as many of the AMS-2000's features can be controlled by Engine RPM.

Pulse Rate

How many pulses are generated for each full engine rotation. For example, a MSD Crank Trigger generates 4 pulses (it has 4 magnets) per engine revolution, you would set the Pulse Rate to FOUR.

Bias Voltage

When engine is not rotating, what voltage is present on the Engine RPM signal wire? If it's at ground potential (0 volts), select the Ground Option (Default). If at 12 volts, select Battery Voltage. The output from most ignitions such as MSD are *Ground Bias*, so use the Ground (default) option.

Verify your settings are correct by viewing the Engine RPM on the Live Data Screen, compare the value to your Tachometer.

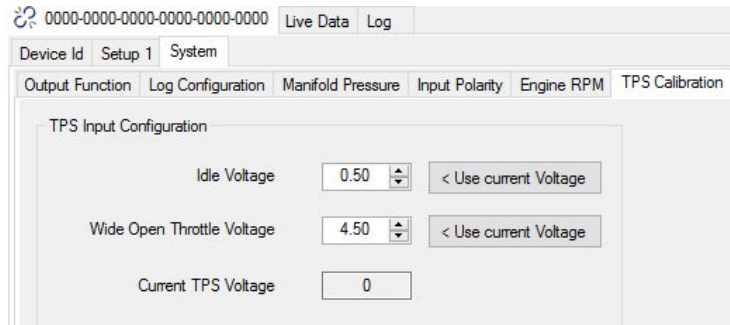


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System TPS Calibration Configuration

The AMS-2000 has the ability to connect to a Throttle Position Sensor (TPS) and is quite easy to configure this input. The White Pin 32 input reads a 0-5 volt signal from standard TPS devices.

Just enter the at idle voltage and your Full Throttle Voltage into the settings)



The screenshot shows the software interface with the following elements:

- Top bar: Device Id (0000-0000-0000-0000-0000-0000), Live Data, Log.
- Navigation tabs: Device Id, Setup 1, System.
- Sub-navigation tabs: Output Function, Log Configuration, Manifold Pressure, Input Polarity, Engine RPM, TPS Calibration (selected).
- TPS Input Configuration section:
 - Idle Voltage: 0.50 (with a dropdown arrow) and a button "< Use current Voltage".
 - Wide Open Throttle Voltage: 4.50 (with a dropdown arrow) and a button "< Use current Voltage".
 - Current TPS Voltage: 0 (in a text box).

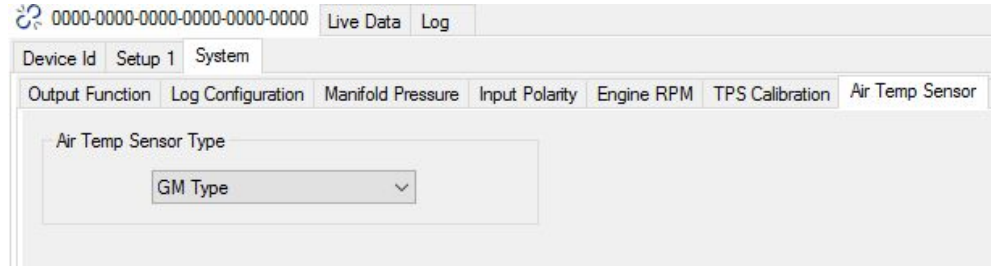
With the AMS-2000 connected to your computer, and the power turned on, the software will display the current TPS voltage. You can just click the "Use current Voltage" button at the two different throttle positions to easily enter the values.



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System Air Temperature Sensor Configuration

The AMS-2000 can read both the GM and Bosch brand air temperature sensors.



0000-0000-0000-0000-0000-0000 Live Data Log

Device Id Setup 1 System

Output Function Log Configuration Manifold Pressure Input Polarity Engine RPM TPS Calibration Air Temp Sensor

Air Temp Sensor Type

GM Type

The signal from the sensor is input to the unit on the Pin 7 for 0-5 volt Signal and Pin 6 Signal Ground from the Air Temp Sensor. Scaling is preconfigured for you based on the different sensor types.



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System Air/Fuel Ratio Sensors Configuration

The AMS-2000 has the capability to connect with two 0-5 volt AFR channels.

- AFR Channel 1 is Pin 8 Pink Input
- AFR Channel 2 is Pin 9 Tan Input

Configure the Min Voltage / Min AFR and Max Voltage / Max AFR for both sensors (if used) based on your AFR Sensor Calibration Sheet data.

Calibration Example - The Daytona Sensors WEGO III Series Wide Band Bosch O2 Sensor System has a Minimum AFR of 10.3 and Maximum 19.5 on Gasoline. Their instructions specify $V_{out} = (0.5 \times AFR) - 5$, therefore the settings will be Min Voltage .15, Min AFR 10.3 and Max Voltage 4.75, Max AFR 19.5. The Live Data screen of the AMS-2000 should be showing in this configuration about 19.5 AFR in free air after the sensors have warmed up.



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System MPH / Shaft RPM Configuration

The screenshot shows the 'System' tab with the 'MPH / Shaft RPM' sub-tab selected. The 'Shaft Input Sensor Type' section has two radio buttons: 'VR / Magnetic' (unselected) and 'Hall Effect/Square wave' (selected). A 'Divider' dropdown is set to '8'. The 'Primary Measurement' section has three radio buttons: 'MPH' (unselected), 'KPH' (unselected), and '16,000 RPM' (selected). There is also an unselected '180,000 RPM' option. The 'Velocity Calibration' section shows 'Shaft Revolutions Per Mile' set to '2.687' with 'Calibration Wizard' and 'Manual' buttons. The 'Shaft RPM Calibration' section shows 'Pulses Per Shaft Revolution' set to '8.00' with a 'Calculator' button.

Shaft Input Sensor Type

- **Variable Reluctance / Magnetic**
- **Hall Effect / Square Wave**

Primary Measurement Options

- **MPH** - Choose this option for MPH and then use the calibration wizard to manual setup. You will need a sensor on non-driven wheel.
- **16,000 RPM** - This option is for use with a drive shaft pinion speed sensor.
- **180,000 RPM** - This option is for use with a turbo shaft sensor.

Velocity Calibration (MPH Only)

Enter the number of pulses per mile

- Option 1 click the **Manual Button** to open the Wheel Speed Sensor Calculator, enter the Tire diameter, Sensor Pulses per Shaft Revolution and Gear Ratio, then Click Accept.

- Option 2 use the calibration wizard function.

The screenshot shows the 'MPH Manual Configuration' dialog box. It contains a 'Wheelspeed Sensor' section with three input fields: 'Tire Diameter' (28.0), 'Sensor Pulses per Shaft Revolution' (8.00), and 'Gear Ratio' (3.73). At the bottom, there is a 'Drive Revs Per Mile' field showing '2687' and two buttons: 'Accept' and 'Cancel'.

Shaft RPM Calibration (16,000 or 180,000 RPM Options)

Enter the number of pulses for each revolution of the drive shaft. For example, an 8 magnet pinion collar will generate 8 pulses per revolution.



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System Reference Pressure Sensors Configuration

The screenshot displays the 'Manifold Pressure' configuration tab in the AMS-2000 Nitrous Control Center 4 software. The interface is organized into two primary configuration areas: 'Primary Reference Sensor Configuration' and 'Aux Reference Sensor Configuration'. Each area includes a 'Sensor Type' dropdown menu, a 'Custom Sensor Calibration' section with 'Minimum PSI' and 'Maximum PSI' sub-sections, and a 'Calibration Type' section with 'Absolute' and 'Gauge' radio buttons. The 'Primary Reference Sensor Configuration' section shows 'NLR 100 PSI Gauge' selected, with 'Minimum PSI' set to 0.50 and 'Maximum PSI' set to 4.50. The 'Aux Reference Sensor Configuration' section shows 'Custom Calibration' selected, with 'Minimum PSI' set to 0.50 and 'Maximum PSI' set to 4.50. At the bottom, there is a 'Conversion Calculator' section with 'kPa' set to 6.895 and 'PSIA' set to 1.0.

Primary Reference Sensor Configuration

5 Volt sensor connected to the Pin 19 Primary Reference Sensor Signal Input (0-5 volt). You can connect the NLR 60 psi, NLR 100 psi, NLR 200 psi or a custom sensor to this input. If you use a custom sensor, you'll need to calibrate the Minimum & Maximum values based on the scaling information for the sensor in use.

System Aux Reference Sensor Configuration

5 Volt sensor connected to the Pin 18 Auxiliary Reference Sensor Signal Input (0-5 volt). You can connect the NLR 60 psi, NLR 100 psi, NLR 200 psi or a custom sensor to this input. If you use a custom sensor, you'll need to calibrate the Minimum & Maximum values based on the scaling information for the sensor in use.



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System Accelerometer Configuration

Place mouse over vehicle and click the mouse to change orientation of the AMS-2000 in relation to the front of the vehicle. The end result should be that the connector of the AMS-2000 should be pointed to the front, right, rear or left. Nowhere in between!

The AMS-2000 should be mounted as level as possible. Once you have the unit oriented properly and the direction set in relationship to the car above, click the two Auto-Correct Buttons, one at a time, to zero out the accelerometers and you're done...

Accelerometer Calibration

Step 1. Attach the AMS-2000 and Click the Automobile Below to Indicate the Installed Orientation



Step 2. With the Vehicle on a Flat Level Surface, Click Auto-Correct (Recommended)

Longitudinal Correction	<input type="text" value="0.00"/>	<input type="button" value="Auto-Correct"/>
Lateral Correction	<input type="text" value="0.00"/>	<input type="button" value="Auto-Correct"/>
Current Longitudinal Acceleration	<input type="text" value="0"/>	
Current Lateral Acceleration	<input type="text" value="0"/>	



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Live Data & Test Mode Operation



The Live Data screen allows you to view all the AMS-2000 input states and values in real time, it can be very handy for testing your system and troubleshooting purposes. In future versions of the software, we'll be updating this screen to be more Nitrous system oriented.

We highly recommend testing your input functions before running the car with the AMS-2000 Controller for the first time. By connecting your laptop to the controller, and activating different functions such as the Trans Brake, you'll be able to see the corresponding input light up on the Live Data Screen. Verify your functions are working correctly. You may discover you forgot to set the input polarity for an input correctly, or something is wired wrong - it's much better to catch these wiring problems before going to the track and attempt to troubleshoot them there.

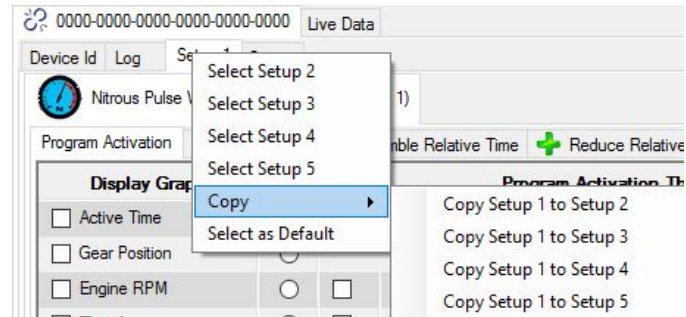
WARNING - TEST MODE ENABLE BUTTON

When you click the Test Mode Enable button, you can manipulate the output settings directly. When Test Mode is enabled, the two grey dials will turn to red indicating they are active. By moving the line on the dial with your mouse, you can manually fire the outputs. Note - both pair will fire when you do this. The left dial controls the Stage 1 primary output pair (Fuel and Nitrous) at the percentage selected. Using Test Mode can easily overheat your solenoids and melt the coils in a short time frame, it can flood your engine with Fuel, or Nitrous - in general spread havoc with your engine if used incorrectly, so do be careful using this test function. **If you're not absolutely certain what will happen when manually firing your solenoids using this method, DO NOT TOUCH THE TEST MODE ENABLE BUTTON!**

Create a Baseline Setup

The AMS-2000 offers 5 separate Setups that can be selected via the external selection switch, numbers on the switch correspond to which setup is active at that time.

We encourage you to program one setup fully, verify everything works as intended, then save it as a baseline User Packet .ams File . That way when you program additional setups and separate .ams User Packet Files, you can load that file and save it as a new one with different ramp rates, etc. And you'll have a baseline, working setup to build from.



To select different setups, right click on the setup tab to open the menu. You can also copy one setup to another here if you wish.

Setup Program Options (1-5)

0000-0000-0000-0000-0000-0000 Live Data

Device Id Log Setup 1 System

Nitrous Pulse Width (Primary Nitrous Output 1)

Program Activation ☒ Active Time ☒ Scramble Relative Time ☒ Reduce Relative Time

Display Graph	Abs	Use	Program Activation Thresholds	
<input checked="" type="checkbox"/> Active Time	<input checked="" type="radio"/>			
<input type="checkbox"/> Gear Position	<input type="radio"/>			
<input type="checkbox"/> Engine RPM	<input type="radio"/>	<input checked="" type="checkbox"/>	On at RPM >= 3,200	Off at RPM >= 8,300
<input type="checkbox"/> Throttle	<input type="radio"/>	<input type="checkbox"/>	On at Percent >= 0.0	Off at Percent < 0.0
<input type="checkbox"/> Voltage	<input type="radio"/>	<input type="checkbox"/>	On at Volts >= 0.00	Off at Volts < 0.00
<input type="checkbox"/> Air Temp	<input type="radio"/>	<input type="checkbox"/>	On at Degrees >= 0	Off at Degrees < 0
<input type="checkbox"/> Manifold	<input type="radio"/>	<input type="checkbox"/>	On at PSIG >= 0.0	Off at PSIG < 0.0
<input type="checkbox"/> AFR 1	<input type="radio"/>	<input type="checkbox"/>	On at Ratio >= 0.0	Off at Ratio < 0.0
<input type="checkbox"/> Shaft	<input type="radio"/>	<input type="checkbox"/>	On at RPM >= 0	Off at RPM < 0
<input type="checkbox"/> AFR 2	<input type="radio"/>	<input type="checkbox"/>	On at Ratio >= 0.0	Off at Ratio < 0.0
<input checked="" type="checkbox"/> Scramble Relative Time				
<input checked="" type="checkbox"/> Reduce Relative Time				

Target Limits

Minimum 0

Maximum 100

☐ Enable Launch Reset

Reset Delay 0.00

Launch Target 0.0

Relative Time Span

5 Seconds

Typical Single Stage Nitrous Configuration

Setup Program Activation Parameters

For the Outputs 1 & 2 and Optional Outputs 3 & 4, the AMS-2000 has multiple parameters to control the output functions. Nitrous Progressive Controllers are normally controlled relative to Time from Launch, however this system can be also controlled in many different ways, such as Gear Position, Engine RPM, Throttle %, Voltage, Air Temp, PSI, AFR Input 1, Shaft RPM, AFR Input 2 plus there are also optional power addition and reduction parameters called Scramble (increase) and Reduce (decrease).

The option selected as Abs (Absolute) is the primary control mode for the output. Any other additional options also checked will be considered offset controls and will allow additional thresholds that have to be met to activate the output.

When more than one option is chosen (the USE box is checked), each option must be met in order for the program to be activated. For example, if Active Time is selected as Abs (Absolute) and the USE box is checked for Engine RPM, the On at RPM and Off at RPM values must be within those ranges in order for the Output to be active.

When the Display Graph check box is selected, a corresponding Tab will be generated so you may work with a Graph for that value. Note in the above example, the Scramble Relative Time and Reduce Relative Time Parameter boxes are checked, so the software generates a tab for each of these so you can chart your adjustment graphs.

- **Active Time** - Time based output - when set as Abs (Absolute), the Nitrous/Fuel Output percentage will be based on Time from Launch.
- **Gear Position** - Allows up to 6 different progressive ramps, one for each gear.
- **Engine RPM** - Creates RPM Ramp By checking the USE option, you can also set at ON RPM and OFF RPM as a Nitrous Window Switch Control.
- **Throttle** - When set as ABS, the Throttle Percentage can control a Nitrous Ramp Output Percentage. When the USE function is checkmarked, it can also be an addition control that restrictions output when Engine RPM exceeds Parameters.
- **Voltage** - When set as ABS, input Voltage can control a Nitrous Ramp Output Percentage, this wouldn't typically be useful. This refers PIN 30 Analog 1 Input.
- **Air Temp** - When set as ABS, Air Temperature can control a Nitrous Ramp Output Percentage, this wouldn't typically be useful. However when set to USE voltage as a Program Activation Threshold, you can turn the output on and off when Temperature falls out of configured ranges.
- **Manifold PSI** - When set as ABS, Pressure can control a Nitrous Ramp Output Percentage, this wouldn't typically be useful. However when set to USE voltage as a Program Activation Threshold, you can turn the output on and off when Pressure falls out of configured ranges.
- **AFR 1** - When set as ABS, AFR can control a Nitrous Ramp Output Percentage, this wouldn't typically be useful. However when set to USE AFR as a Program Activation Threshold, you can turn the output on and off when AFR falls out of configured ranges.
- **Shaft** - When set as ABS, Shaft RPM can control a Nitrous Ramp Output Percentage, this wouldn't typically be useful for most drag racing situations. However when set to USE RPM as a Program Activation Threshold, you can turn the output on and off when AFR falls out of configured ranges.

- **AFR 2** - When set as ABS, AFR can control a Nitrous Ramp Output Percentage, this wouldn't typically be useful. However when set to USE AFR as a Program Activation Threshold, you can turn the output on and off when AFR falls out of configured ranges.
- **Scramble Relative Time** - Enable Scramble Relative Time Parameter to add a configurable increase to the Nitrous/Fuel pulse output. Choosing this Parameter will generate a new corresponding tab where you can adjust the about of percentage to be ADDED to the base ramp.
- **Reduce Relative Time** - Enable Reduce Relative Time Parameter to add a configurable increase to the Nitrous/Fuel pulse output. Choosing this Parameter will generate a new corresponding tab where you can adjust the about of percentage to be REMOVED to the base ramp.

Additional Activation Options

- **Target Limits** - Maximum % output allowed. Typically you would set this at 100% for most Nitrous Pulse Width applications. For additional output functions, for example an auxiliary pressure output function, you can choose a Minimum and Maximum Pressure output allowed.
- **Enable Launch Reset** - When checked the channel can re-enter the launch hold state after activation if a valid Trans Brake / Clutch input is reapplied after launch. Normally the Trans Brake / Clutch is ignored after launch.
- **Relative Time Span** - This setting controls how many seconds are displayed on the Active Time % Output Screen. Set to the lowest possible number that will display your entire run in order to make the graph easier to view.

EFI Program Activation Example

The screenshot shows the 'Program Activation' tab in the software. The 'Active Time' checkbox is checked. The 'Display Graph' column lists various parameters: Active Time, Gear Position, Engine RPM, Throttle, Voltage, Air Temp, Manifold, AFR 1, Speed, AFR 2, Scramble Relative Time, and Reduce Relative Time. The 'Abs' column has radio buttons, and the 'Use' column has checkboxes. The 'Program Activation Thresholds' table shows settings for Engine RPM (On at 3,200, Off at 8,200) and Throttle (On at 90.0%, Off at 89.0%). The 'Target Limits' section shows Minimum at 0 and Maximum at 100. The 'Enable Launch Reset' checkbox is unchecked, with a Reset Delay of 0.00 and a Launch Target of 0.0. The 'Relative Time Span' is set to 5 Seconds.

Display Graph	Abs	Use	Program Activation Thresholds	
<input checked="" type="checkbox"/> Active Time	<input checked="" type="radio"/>			
<input type="checkbox"/> Gear Position	<input type="radio"/>			
<input type="checkbox"/> Engine RPM	<input type="radio"/>	<input checked="" type="checkbox"/>	On at RPM >= 3,200	Off at RPM >= 8,200
<input type="checkbox"/> Throttle	<input type="radio"/>	<input checked="" type="checkbox"/>	On at Percent >= 90.0	Off at Percent < 89.0
<input type="checkbox"/> Voltage	<input type="radio"/>	<input type="checkbox"/>	On at Volts >= 0.00	Off at Volts < 0.00
<input type="checkbox"/> Air Temp	<input type="radio"/>	<input type="checkbox"/>	On at Degrees >= 0	Off at Degrees < 0
<input type="checkbox"/> Manifold	<input type="radio"/>	<input type="checkbox"/>	On at PSIG >= 0.0	Off at PSIG < 0.0
<input type="checkbox"/> AFR 1	<input type="radio"/>	<input type="checkbox"/>	On at Ratio >= 0.0	Off at Ratio < 0.0
<input type="checkbox"/> Speed	<input type="radio"/>	<input type="checkbox"/>	On at MPH >= 0	Off at MPH < 0
<input type="checkbox"/> AFR 2	<input type="radio"/>	<input type="checkbox"/>	On at Ratio >= 0.0	Off at Ratio < 0.0
<input type="checkbox"/> Scramble Relative Time				
<input type="checkbox"/> Reduce Relative Time				

Target Limits
 Minimum: 0
 Maximum: 100

☐ **Enable Launch Reset**
 Reset Delay: 0.00
 Launch Target: 0.0

Relative Time Span
 5 Seconds

1. Toggle the Active Time ABS Button ON
2. Check the Engine RPM USE check box to make use of the built in window switch.
3. Set the Engine RPM On at RPM value above your staging RPM.
4. Set the Engine RPM Off at RPM value a couple hundred RPM below your Max Rev Limit Setting in your Ignition Box (so the nitrous turns off before the rev limiter hits).
5. NOTE: The Engine RPM System setup Tab values have to be setup and verified to be working correctly! You should test from proper Engine RPM reading using the live data screen.
6. Check the USE Checkbox for Throttle,, set the On at Percent value to 90%, and the Off at Percent Value to 89%.

Staging Procedure with EFI Example settings

After your burnout, turn the activation switch ON once you are ready to take the first bulb. The AMS-2000 will not activate as it is waiting for the throttle position to reach 90 or higher. If you're using a Trans Brake, that interrupt signal will also prevent the unit from activation (if the tps is over 90%). Once the Trans Brake signal is removed and the throttle is still over 90%, the ramp output will begin.

Carb Program Activation Example

The screenshot shows the 'Program Activation' tab in the software. The 'Active Time' parameter is selected with a radio button. The 'Engine RPM' parameter is checked under the 'Use' column. The 'Program Activation Thresholds' table shows the following settings:

Display Graph	Abs	Use	Program Activation Thresholds
<input checked="" type="checkbox"/> Active Time	<input checked="" type="radio"/>		
<input type="checkbox"/> Gear Position	<input type="radio"/>		
<input type="checkbox"/> Engine RPM	<input type="radio"/>	<input checked="" type="checkbox"/>	On at RPM >= 3,200 Off at RPM >= 8,300
<input type="checkbox"/> Throttle	<input type="radio"/>	<input type="checkbox"/>	On at Percent >= 0.0 Off at Percent < 0.0
<input type="checkbox"/> Voltage	<input type="radio"/>	<input type="checkbox"/>	On at Volts >= 0.00 Off at Volts < 0.00
<input type="checkbox"/> Air Temp	<input type="radio"/>	<input type="checkbox"/>	On at Degrees >= 0 Off at Degrees < 0
<input type="checkbox"/> Manifold	<input type="radio"/>	<input type="checkbox"/>	On at PSIG >= 0.0 Off at PSIG < 0.0
<input type="checkbox"/> AFR 1	<input type="radio"/>	<input type="checkbox"/>	On at Ratio >= 0.0 Off at Ratio < 0.0
<input type="checkbox"/> Speed	<input type="radio"/>	<input type="checkbox"/>	On at MPH >= 0 Off at MPH < 0
<input type="checkbox"/> AFR 2	<input type="radio"/>	<input type="checkbox"/>	On at Ratio >= 0.0 Off at Ratio < 0.0
<input type="checkbox"/> Scramble Relative Time			
<input type="checkbox"/> Reduce Relative Time			

On the right side, the 'Target Limits' section shows 'Minimum' set to 0 and 'Maximum' set to 100. The 'Enable Launch Reset' checkbox is unchecked. The 'Reset Delay' is set to 0.00 and the 'Launch Target' is set to 0.0. The 'Relative Time Span' is set to 5 Seconds.

1. Select Active Time Parameter check box and ABS button ON.
2. Select the Engine RPM check box USE Checkbox.
3. NOTE: The Engine RPM System setup Tab values have to be setup and verified to be working correctly! You should test from proper Engine RPM reading using the live data screen.
4. Set the Engine RPM On at RPM Value at a value above your Launch Rev Limit setting, or at the minimum set it above the Engine RPM you will be at while Pre-Staging. Note the output will not energize until Engine RPM is above that point and the carb switch (Purple Pin 12 Activation Input) are both active.
5. Set the Engine Off at RPM a few hundred RPM below your Max Rev Limit so the unit will shut the nitrous off before hitting your Max Rev Limit setting.

Example Carb Staging Procedure

After your burnout, power up the AMS-2000 using your master arming power switch. The unit will now activate anytime the Trans Brake is OFF AND the Engine RPM is above 3200 RPM (using above example setting) AND your carb switch (Activation Input Purple Pin 12) is ON. We HIGHLY recommend hooking up the Trans Brake input so the nitrous will not fire when

you're staged and on the Trans Brake with the throttle floored. Once the Trans Brake signal is removed and the carb switch is ON, the ramp output will begin.



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AMS-2000 OR YOUR CHANGES WON'T BE
SAVED TO THE ECU!**

Setup Active Time Graph

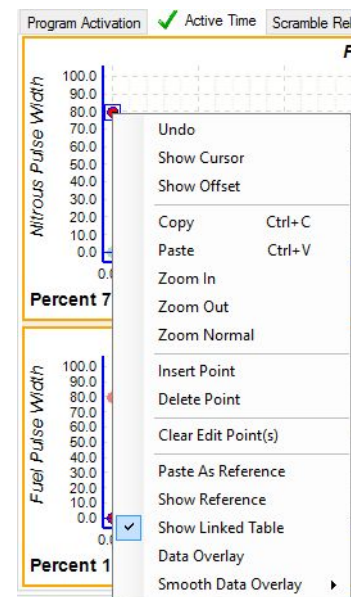
Tip: Please see the Keyboard Cheat Sheet at the end of this document, several of those keyboard commands make editing the ramps much easier!

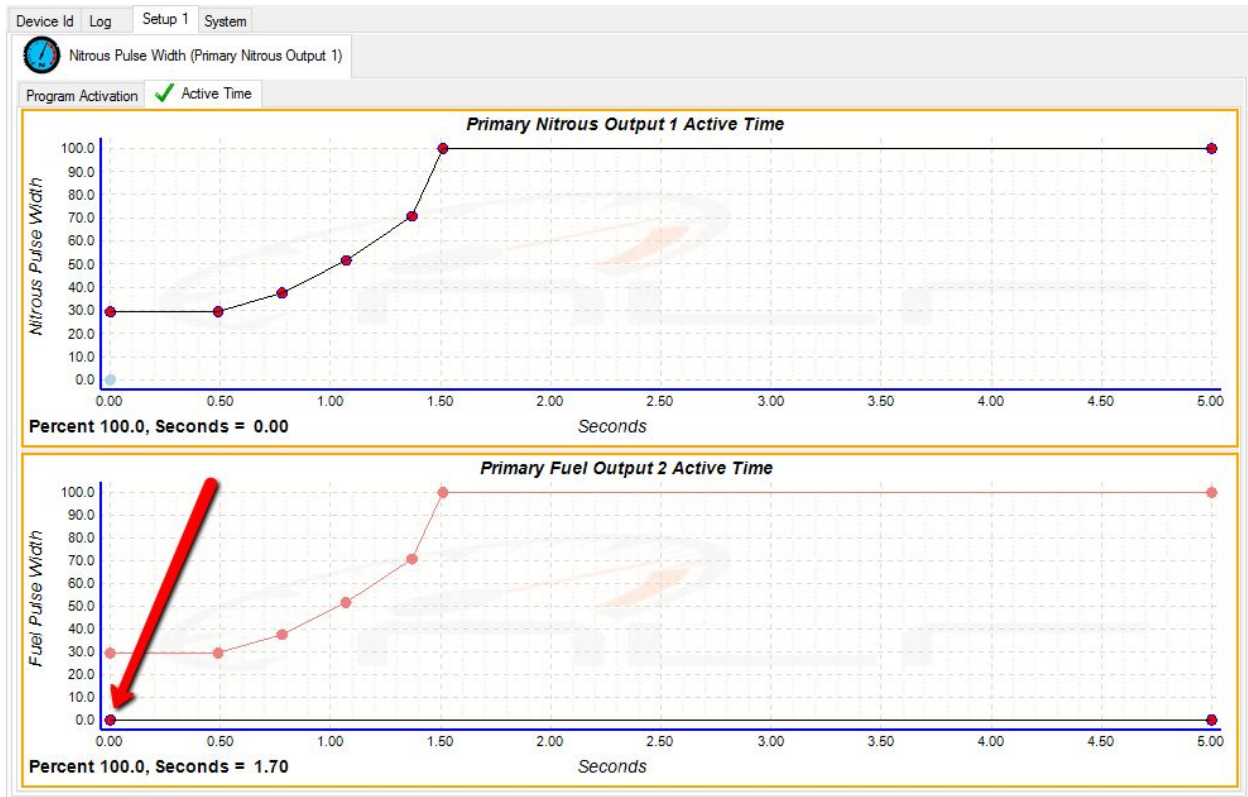


The active time graph is easy to work with once you experiment with it some. To move a dot, just select it (a small blue box will show when the dot your editing is selected), then drag it with your mouse. Alternatively, once selected you can make it go up and down, right and left with the keyboard arrows.

When you edit the Nitrous Output, you'll see a faint ghost trace line move at the same time below in the Fuel Graph, that's just for reference to help setup the Fuel Output.

Right Click on the dots or output line to bring up the menu, here you can delete, insert, clear edit points and much more.





Warning about Reference Traces

DON'T FORGET TO SETUP YOUR FUEL OUTPUT RAMP!!!

IMPORTANT - After you program a Nitrous Ramp, it may look like you have a fuel ramp showing also, **WRONG!** That light orange ramp is just a ghost / reference trace showing in the above screenshot - it's just a reference showing where the nitrous ramp output is at. The arrow in the above image is actually pointing at the beginning of the actual Fuel ramp!

You **MUST** create a corresponding Fuel ramp for each Nitrous ramp. This applies to not only the Active Time Ramp, but also additional ramps such as Scramble Relative Time and Reduce Relative Time Ramps and also your Recovery Ramp.

Note in the above screen shot, the arrow is pointing at the fuel ramp which is set for a flat ZERO % for the entire run!

Ghost or Reference traces are light color, and you can not select their dots to modify them.

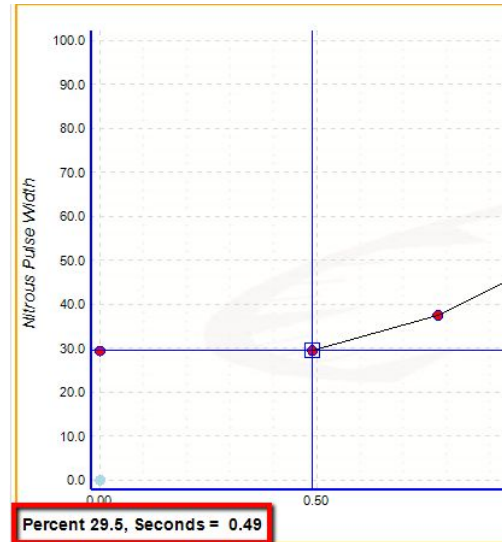
Adding a Dot

You can add a dot to your curve by double clicking on the curve, or by right clicking and choosing “insert point”. If you put one in the wrong place, you can hit CNTL-Z to undo your last edit, or right click and chose “Undo”.

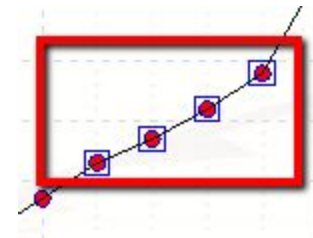
Dot Location Editing

Just below the ramp your cursor's current position in seconds and output percentage is displayed (see arrow in image).

If you have a dot selected, that dot's current percentage and time location is displayed instead of the cursor location. Watch this value when moving your dots for precise adjustment.



- Arrow Right / Arrow Left = Coarse (.2s) time adjustment when dot selected.
- Arrow Up / Down = Coarse (2%) percentage adjustment when dot selected.
- CNTL+Arrow Right / Arrow Left = Fine (.01s) time adjustment when dot selected.
- CNTL+Arrow Up / Down = Fine (.1%) percentage adjustment when dot selected.
- CNTL and left click to draw a box around a group of dots to select them, then you can move them as a group using arrow keys or mouse..



How to Copy a Ramp

To copy your nitrous ramp and use it for your fuel ramp, left click a nitrous ramp dot, then right click, choose “Copy”. Then go down to the Fuel Output Graph and right click - Paste. BOOM, there's a copy of your nitrous ramp. You can copy and trace like this from different setups too!



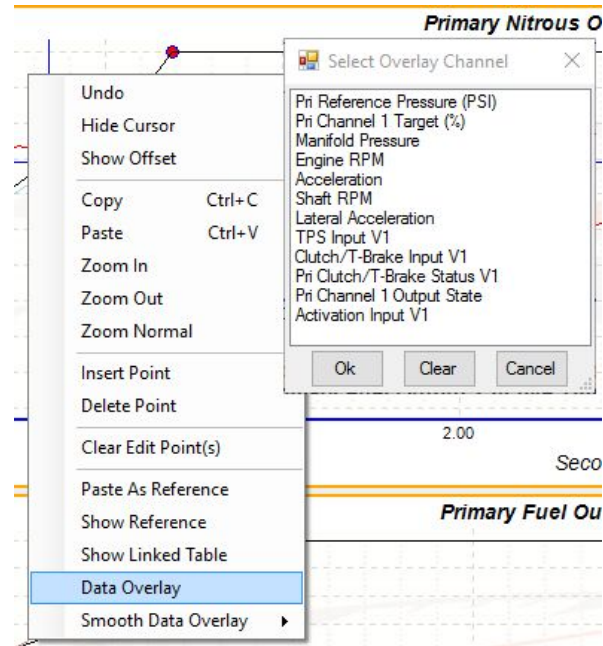
**DON'T FORGET TO SAVE USER PACKET TO
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How to Overlay G-Force or Other Log Data

Begin by setting your start and end points in the displayed data log, we suggest using the Trans Brake signal input for the start point so the displayed log start time matches up with your Active Time Graph.

Next, right click on your Active Time Graph, then choose Data Overlay. A list of channels will pop up that you can choose from to display on the Active Time Graph.

Note: If you use the “Smooth Data Overlay” function, however there is no undo function after you have smoothed out a trace. You can however close the program and reload the log file to again see the unsmoothed version.



Note: It is necessary to set a Start Run Point in the Data Log View Screen in order to set the reference point you want used in this overlay. If you don't select a Start Run Point, your overlaid data in the Active Time Graph won't likely be positioned at the start of the run.

Setup Scramble Relative Time Graph

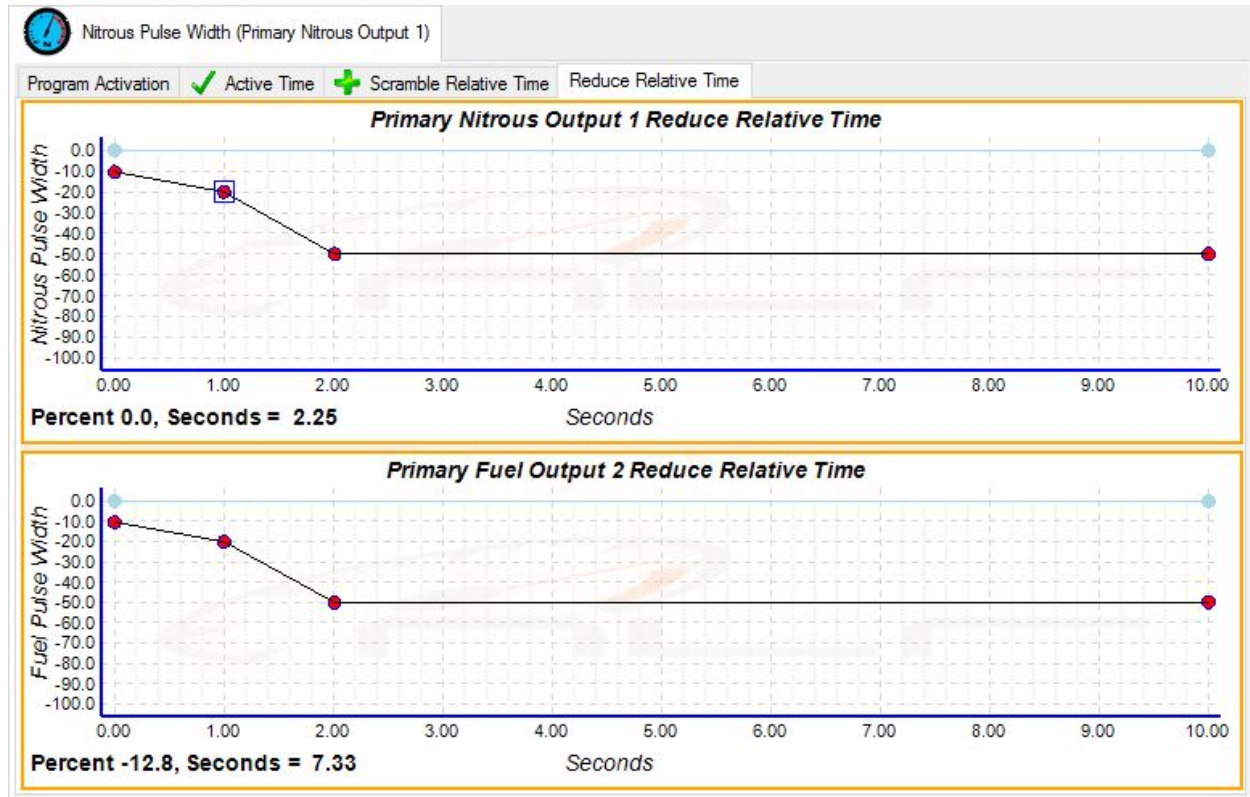


This function ADDS additional percentage to your current active time graph ramp when the Scramble Input is active. In the screenshot above when the Scramble input is ON, the program will ADD 30% initially then ramp up to 60% additional after .5s for both the Nitrous and Fuel Ramps. The time indicated is relative to the point the scramble input is triggered and held on. It is independent of the Active Time Graph curve. When the scramble input goes off, your output percentage returns to where it should be on the Primary Active Time Graph curve.



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Setup Reduce Relative Time Graph



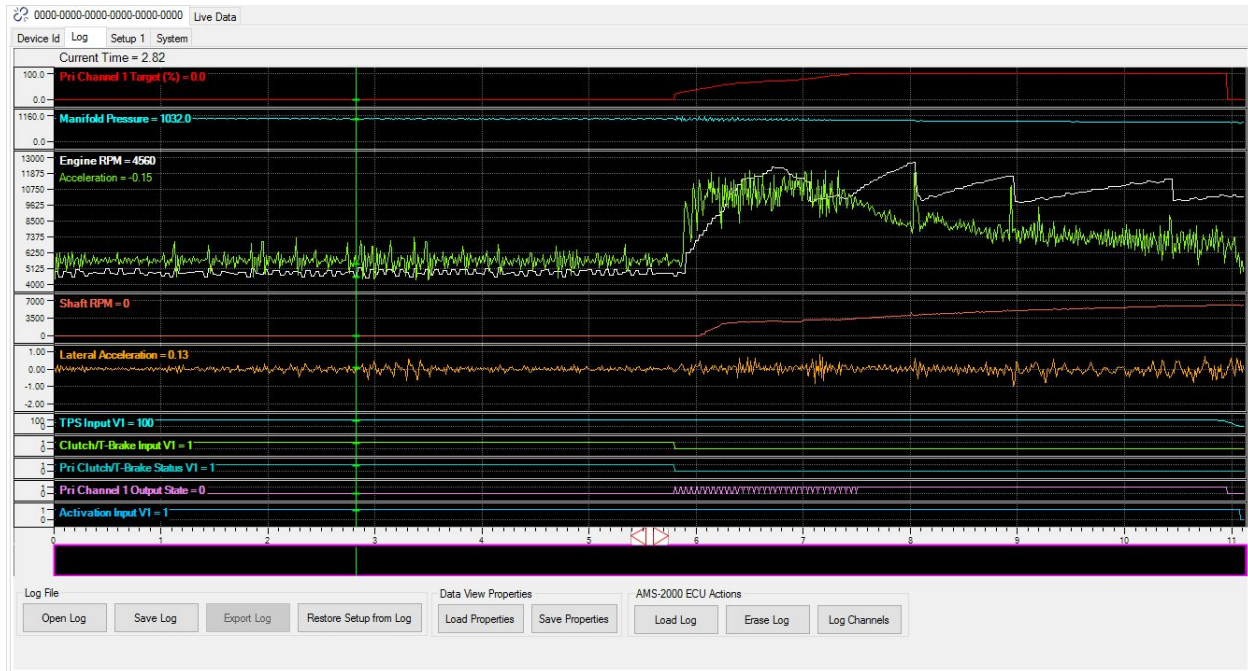
This function REMOVES indicated percentage from your current active time graph ramp when the Scramble Input is active. THINK about what will happen here and when it will happen in relationship to your primary ramps. In this example, when the REDUCE input is active we're going to take out 10% initially, then 20% at 1.0 second and 50% at 2.0 seconds.

The time indicated is relative to the point the reduce input is triggered and held on. It is independent of the Active Time Graph curve. When the reduce input goes off, your output percentage returns to where it should be on the Primary Active Time Graph curve.



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Data Log Display



Log File Functions

- **Open Log File** - Opens a log file from disk.
- **Save Log** - Save log file to disk, useful for making a copy with a different file name. The default file name used will be in this format 160926-1906-Datalog.adl.

160926-1906-Datalog.adl
 ↑ ↑ ↑ ↑
 YEAR MONTH DATE 24HR-TIME

- **Export Log** - Non-Functional
- **Restore Setup from Log** - Each log file saves the active setup configuration that was loaded while the log file was recorded. This can be very useful when sharing data with a tuner, troubleshooting what settings were loaded at the time the vehicle ran that pass, etc.

Data View Properties

- **Load Properties** - Loads a saved log view screen configuration. This can save time viewing only the channels you want to look at.

- **Save Properties** - Saves the current log view screen configuration, such as what channels are displayed. You can save a view that only shows for example G-Force, T-Brake Input, Engine RPM and Target %, then when you load those properties on a later data log, you won't have to go through the process of turning channels off.

AMS-2000 ECU Actions

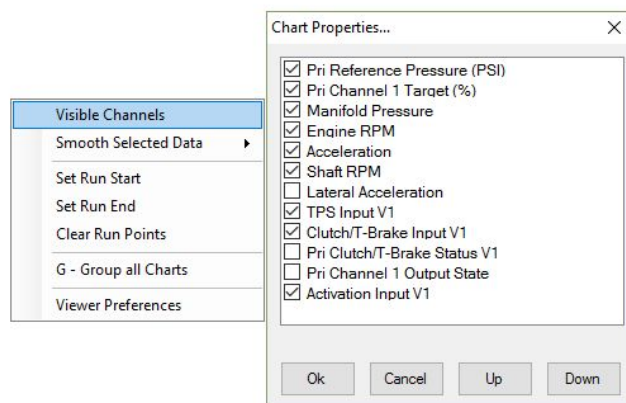
- **Load Log** - Transfers the log file data from the AMS-2000 to your Laptop's memory, it is not saved to disk with this function. After loading the log data, you should use the Save Log Data function to save it to disk for future reference.
- **Erase Log** - Removes log data from AMS-2000, you should do this after transferring log data from AMS-2000 and saving it to disk.
- **Log Channels** - Depending on the controller configuration, this function allows you to choose what data is data logged. Choose which channels you wish to log, then click SEND to configure the AMS-2000.

Data Log Viewer Keyboard Commands

- Hit Keyboard "G" to Group and Ungroup Data Log Display Channels
 (you may need to click on graph 1st to enable)
- Hit Keyboard "I" to Zoom In
- Hit Keyboard "O" to Zoom Out
- Use Mouse Wheel to Zoom In/Out

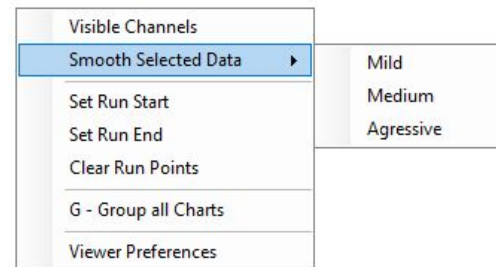
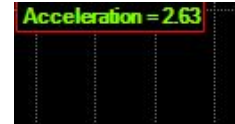
Data Log Graph Right Click Functions

Visible Channels - You can choose as many, or as few channels to see on the screen. Right click on the screen, choose "Visible Channels" then select which channels you want visible.



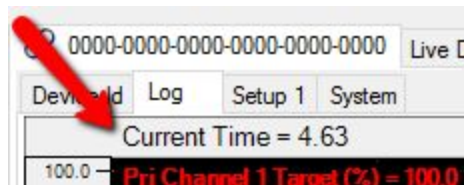
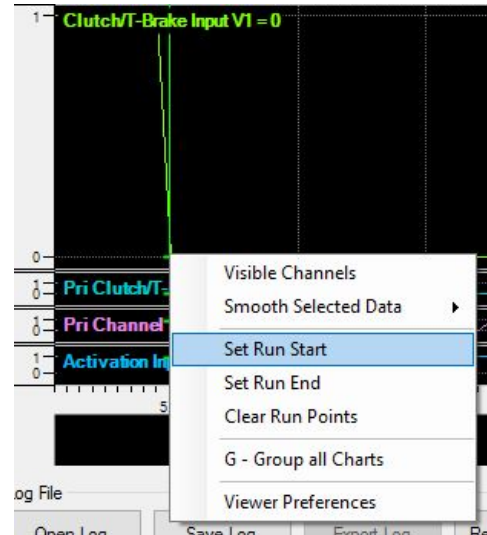
Smooth Selected Data - You can smooth any trace which will give you a better average idea of what the data is representing. By right clicking on the Channel Text Label (a red box will be shown around label when selected), then choosing Smooth Selected Data, you can apply Mild, Medium or Aggressive smoothing. If necessary, you can do this several times, each time you Smooth the channel, the graph will be become even less detailed.

If you use the “Smooth Data Overlay” function, there is no “undo” function after you have smoothed out a trace. You can however close the program and reload the log file to again see the unsmoothed version. Smoothing a trace does not alter the data in the log file permanently.



Set Run Start - To aid in run time reference, you can set the Run Time Start and Run Time End points. Chose what channel you wish to use as a reference point for start of the run, such as the T-Brake Input Signal going low. Left Click that point, then Right Click to bring up the menu. Next, click Set Run Start. You should see a red reference line after setting the Start Point.

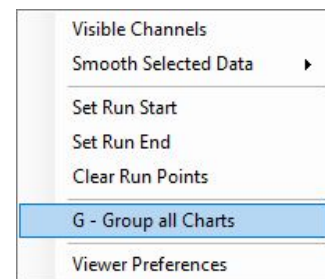
Next, find the end point of the run, for example where you lifted the throttle and click that point. Or, if you want it at a specific point, such as your ET, look up at the Current Time Reference. That value is the amount of time from the Start Point you set earlier, and where your cursor is at. Next, right click and choose Set Run End.



Clear Run Points - Erases any Run Point settings from the screen.

NOTE: If you don't select a Start Run Point, when you overlay data in the Active Time Graph, it will not shown be in the position to use it.

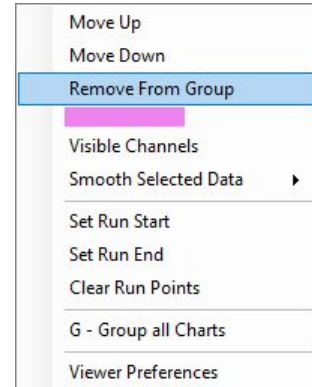
Group All Charts - By right clicking on the screen, and choosing "Group All Charts" you can overlay all displayed traces on top of each other. You can also do this on the keyboard by hitting the "G" button.



Selectively Grouping Charts - You can also group individual chart traces together, for example the T-Brake and the Engine RPM traces. Just select the Trace Label Text with your mouse, hold down and drag the label to the other trace you want to combine it with.

This grouping can be saved using the Data View Properties Function as well.

To Ungroup a chart trace, right click on the Trace Label Text, then choose “Remove From Group” and it will return to it’s own listing.



Viewer Preferences - Allows you to control the colors used for the traces, text, background, etc.

Keyboard Command Cheat Sheet

The AMS-2000 software has a number of keyboard shortcuts that can help make your graph editing easier. These are typical windows shortcuts, however everyone may not know about them. These can come in very handy when working without a mouse!

- CNTL+ Mouse Wheel = Graph Zoom in / Zoom Out
- Left Click then drag to create a Zoom in box.
- CNTL - LEFT Click on the Mouse to make a select box to select multiple dots at the same time.
- CNTL+Z = Undo Last Command, can undo if you keep clicking all the way back to last file save point.
- Arrow Right / Arrow Left = Coarse (.2s) time adjustment when dot selected.
- Arrow Up / Down = Coarse (2%) percentage adjustment when dot selected.
- CNTL+Arrow Right / Arrow Left = Fine (.01s) time adjustment when dot selected.
- CNTL+Arrow Up / Down = Fine (.1%) percentage adjustment when dot selected.
- You CAN select more than one dot at a time and move them as a group, select the first dot, then hold the CNTL key down and select the additional dots you want. Now your edits apply to all selected dots.
- ALT+TAB = Cycle through tab options.
- CNTL+C = Copy Trace
- CNTL+V = Paste Trace
- ALT-F = Select File Menu Options
- G = Group and Ungroup Data Log Display Channels (may need to click on graph 1st)
- I = Zoom in on Log File Display
- O = Zoom Out on Log File Display
- Mouse wheel = Zoom In/Zoom Out on Log File Displayii

Software and Firmware Updating

PC Software Updates - The AMS-2000 Nitrous PC Control Center Software Updates can be found on our website at www.nlrsystems.com. Go to the Nitrous Controllers Section and click the AMS-2000 link on the front page and you will see a AMS-2000 Nitrous Downloads Section. Find the Windows Software, click the link and save to your computer. Click the link to download the .zip file containing the Software file. You'll need to extract the software files from the .zip archive and save it to a location on your computer where you can easily find it, like the desktop. This should extract a new folder containing the software.

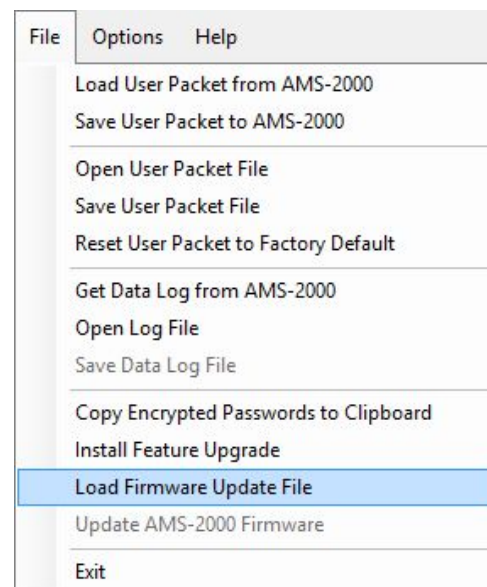
Next, in order to put new software on your computer you must first erase the existing AMS-2000 software by going to your control panel and apps (or programs), find the AMS-2000 program and uninstall it. Note: This will not remove files saved in your c:\ProgramData\NLR, LLC\AMS-2000 Control Center 4\ directory where the program defaults to.

Next navigate back to your downloaded files, Open the directory and click the setup.exe file and it will automatically install the program for you.

Firmware Updates - The firmware update is a little different but still pretty easy. Firmware updates are posted on our web site at www.nlrsystems.com, navigate to the Nitrous Controller Section, then chose AMS-2000. There will be a link for a Firmware Update listing the last version. Click the link to download the .zip file containing the Firmware file. You'll need to extract the .bin file from the .zip archive and save it to a location on your computer where you can easily find it, like the desktop.

Next, open the AMS-2000 software, click File to open the Master Menu. Click Load Firmware Update File. A file dialog box will open - navigate to the location of the new firmware file, then click the file name so it loads into the file name window and click ok. The window will close .

Click file in the upper left hand corner again and navigate to Update AMS-2000 Firmware and then click. It will now update the AMS-2000, you will see a File transfer indicator at the top right of the screen as the file uploads. **THE USB CABLE NEEDS TO BE CONNECTED IN ORDER TO TRANSFER THE FIRMWARE TO THE AMS-2000 CONTROLLER.**

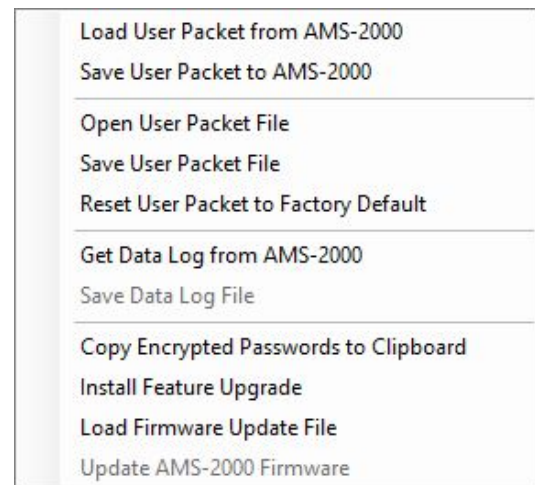
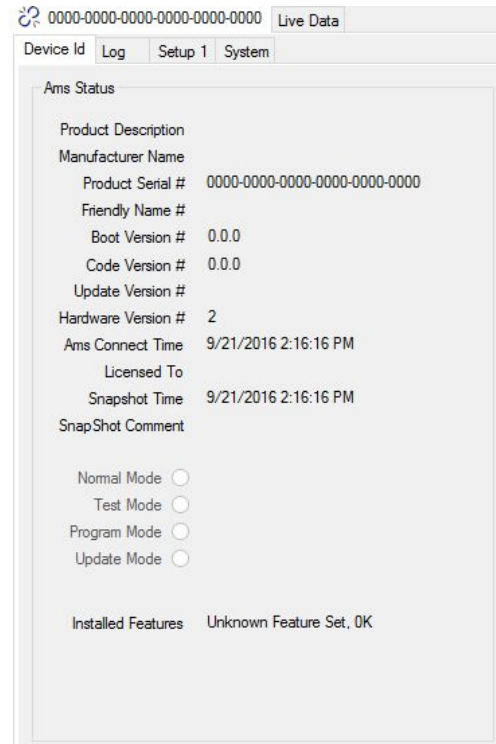


Upgrading / Adding Features

Upgrading from BASIC to PRO Upgrading to a pro unit from a basic just requires a code which can be purchased from NLR.

Follow the steps below to upgrade your unit.

1. Copy the **Product Serial #** as shown on the status screen when the USB Cable is connected to the AMS-2000.
2. Send us your Product Serial # via email or call with this information to purchase the upgrade.
3. We will email you the feature code to enable the update.
4. Right Click the Serial Number Tab, then choose "Install Feature Upgrade".
5. Copy and Paste the code we sent you in the Install Feature Code pop-up window, then click "Send".



Important Racer Notes

- Follow all recommended safety guidelines from this and other manufactures installation guides.
- Caution - Do NOT submerge Controller in liquid or directly wash unit with liquid of any type! (Do NOT spray when washing vehicle!)
- The datalogger function has 512k of memory and will record one pass at a time, you must download the AMS-2000 log data after each pass it will NOT be overwritten on the next run.
- Memory and user settings are retained in unit for up to 20 years with no power applied. No back up batteries needed.
- Make sure you configure the input polarity for the (shift, clutch, scramble, reduce) before you connect your wires. If you have it configured for the wrong polarity the input will go on and stay on. If this has happened removed the wire and go in and change the input polarity and reconnect the wire.

Warranty

NLR, LLC warrants to the original purchaser that the AMS-2000 shall be free from defects in parts and workmanship under normal use for 90 days from the date of purchase.

NLR, LLC obligation under this warranty is limited to the repair or replacement of any component found to be defective when returned postpaid to NLR, LLC. 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 AMS-2000 has been installed incorrectly, repaired, damaged, or tampered with by misuse, negligence or accident.

Product Disclaimers

It is the responsibility of the purchaser to follow all guidelines and safety procedures supplied with this product and any other manufacturer's product used with the AMS-2000. It is also the responsibility of the purchaser to determine compatibility of the AMS-2000 with the vehicle and other components.

NLR, LLC 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.

NLR, LLC assumes no responsibility or liability for damages incurred from the use of products manufactured or sold by NLR, LLC on vehicles used for competition racing.

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

NLR, LLC does not recommend nor condone the use of its products for illegal street racing.

Document Revision History

Version	Revision Date	Revision Description
1.0	9/29/16	Original Released Document
1.1	9/30/16	Added Revision History, Corrected Pin #'s for reference pressure sensor inputs.