



MINI 2-STAGE PROGRESSIVE NITROUS CONTROLLER 25973NOS & 25974NOS INSTALLATION AND OPERATION QUICK START GUIDE

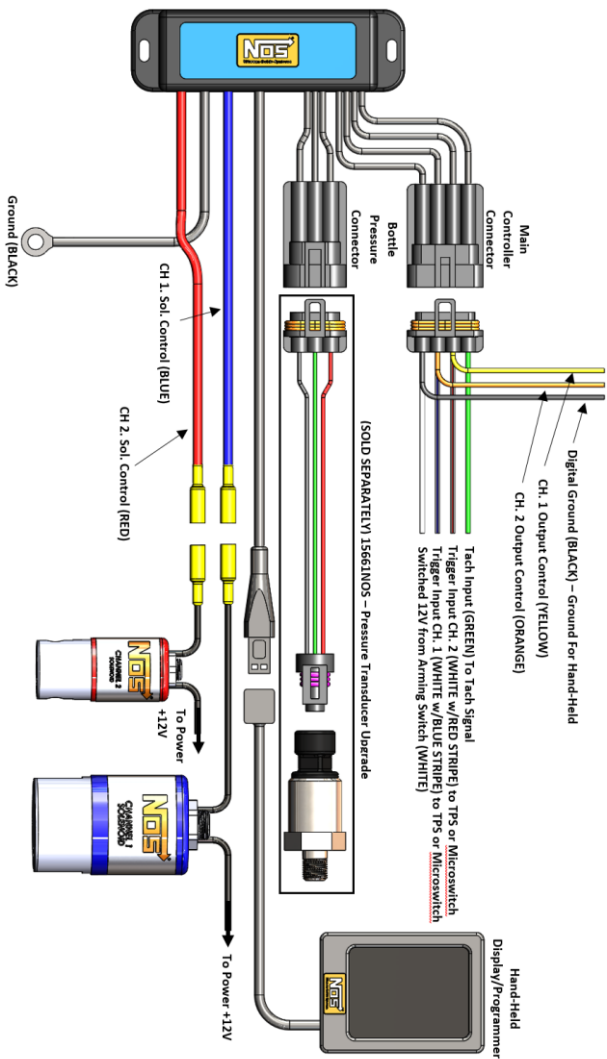
FEATURES:

The NOS Mini 2-Stage Progressive Nitrous Controller is a fully featured progressive nitrous controller offering control of up to 2 individual stages and can be fully programmed via a handheld LCD touch screen display. An SD (Secure Digital) memory card reader is built-in on the handheld controller to store and upload tunes and is used for updates.

Solenoid operation can be controlled based on time, RPM, and/or TPS input and can shut nitrous off at a programmed RPM ceiling. The configurable nitrous and fuel ramps can be programmed in any curve shape or with the built-in ramp builder app.

The controller housing is designed and constructed in a manner to endure the typical harsh conditions found in a racing environment. The controller can be mounted in the engine or passenger's compartment. It is advisable to keep the controller away from direct heat and severe vibration. Although not required, it is beneficial to use rubber isolators when mounting the controller on applications that may see severe tire shake, etc.

CONTROLLER INSTALLATION & WIRING:



The NOS Mini 2-Stage Progressive Nitrous Controller accepts most tach signals, including low-voltage and irregular signals, such as those found on many V-10s. Each channel will drive a fuel or nitrous solenoid progressively. The Throttle Position Activation Switch (TPAS) accepts all analog throttle position sensor signals as well as a “hot” or “grounded” wide-open-throttle (WOT) switch. Both channels have their own programmable parameters, as well as their own control output for triggering extra functions, such as ignition retard. Each channel’s internal TPAS can be configured to prevent it from activating, unless you are at WOT. Solenoid pulse frequency is also adjustable to allow the use of different types of solenoids. Proper grounding is essential to a microprocessor controlled progressive nitrous controller. The controller has two ground wires that need to be connected. Proper practice is as follows:

Ground #1 – 12 AWG black ground cable – Install this to a good chassis ground that is grounded securely to the battery as well.

Ground #2 – 18 AWG black ground wire – Install this to a “CLEAN” ground point in the vehicle.

IMPORTANT! A “clean” ground is a ground point that does not have “dirty” ground attached directly to that point. “Dirty” ground items consist of any ignition product as well as the 12 AWG black ground cable from the controller. “Clean” grounds are grounds that go to sensors or other microprocessor controlled devices. Do NOT “stack” clean grounds to the same stud/ground point that you attach “dirty” ground wires to. It is acceptable to run a single ground cable from the battery to a ground buss bar (multiple ground studs). Stack “dirty” grounds to one point/stud and attach “clean” grounds to a separate point/stud.

1. Connect the main **8-pin wiring harness** to the controller.
2. Connect the **WHITE** wire to a +12V fused switched power source. You should install this to a circuit that has a 5A fuse and

- can supply two amps to the unit. If this is not available, you should install a fuse holder.
3. Connect the **GREEN** wire to the RPM pickup point. You will define the proper RPM conversion in the software setup. This wire can go to the typical “tach out” output found on most ignition boxes and some distributors (12V square wave). For Coil-on-plug equipped vehicles, it can be connected to one of the individual coil signal wires, which is typically a ground trigger. For specific applications, consult a factory service manual.
 4. The **WHITE/BLUE** wire is the “Input 1 Control” wire. This is the trigger wire used to activate Stage 1. Connect to either a switched 12V or ground microswitch output. Or, it can be connected to the signal output wire on a TPS with either a rising or falling voltage. The signal type is selected in the software configuration. If you are not sure which wire this is, consult a factory service manual.
 5. The **WHITE/RED** wire is the “Input 2 Control” wire. This is the trigger wire used to activate Stage 2. Connect to either a switched 12V or ground microswitch output. Or, it can be connected to the signal output wire on a TPS with either a rising or falling voltage. The signal type is selected in the software configuration. If you are not sure which wire this is, consult a factory service manual.
 - a. **NOTE:** CH. 1 & CH. 2 trigger input wires can be used together or separate on the TPS sensor.
 6. The **YELLOW & ORANGE** wires are General Purpose Outputs (GPO’s) that are programmable in the software for various purposes such as activating a timing retard, etc. These have different programmable output that can be set within the Controllers settings. The **YELLOW** = Stage 1 Output and the **ORANGE** = Stage 2 Output. **If these wires will not be used, heat shrink the end and secure it tightly out of the way.** **NOTE:** These are low current ground outputs. If using to trigger a high current device (over 1 Amp), use them to trigger a relay.
 7. The **12 AWG BLUE & RED** wires are the solenoid ground outputs. The system works by providing a ground to the solenoids. These wires are to be connected directly to the

solenoids. Power must be supplied separately to the solenoids by utilizing an appropriate relay. BLUE = Stage 1 Solenoid Ground Output and RED = Stage 2 Solenoid Ground Output.

NOTE: These channels have a max current rating of 40 AMPS.

8. The **3-pin connector** on the main controller is for an optional nitrous pressure transducer input P/N 15661NOS. This kit includes the pressure sensor transducer and cable and is sold separately. Install the sensor at the bottle and plug into the harness.
9. The **4-pin connector** is for the handheld display. This is a simple plug and play connection. If you are going to permanently leave the handheld in the vehicle, you will need to find a factory grommet in your firewall to pass the Display CAN bus connect through and secure the excess wire away from hazards. If no factory grommets can be utilized, we recommend installing one purchased online or from your local auto parts store.

HANDHELD

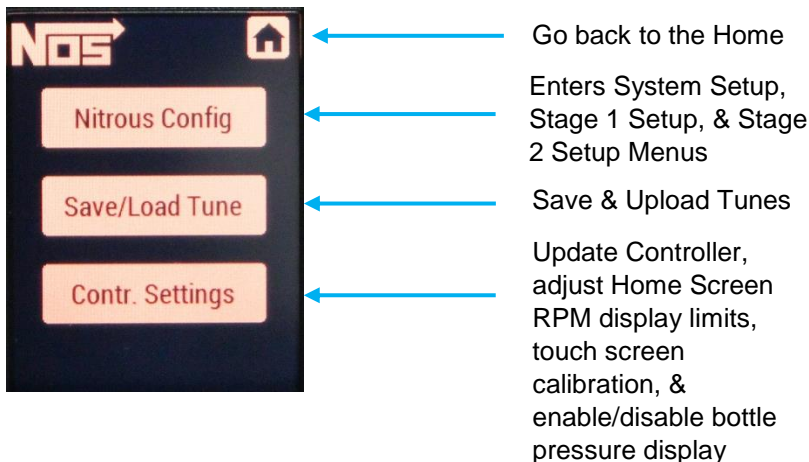
The main screen of the NOS Mini 2-Stage Progressive Nitrous Controller displays: engine RPM, Bottle Pressure (bottle pressure display can be turned on or off in the dash setup menu), Stage 1 & Stage 2 activation RPM via colored bars (Blue = Stage 1, Yellow = Stage 2), Stage 1 & Stage 2 ON/OFF display (ON is only displayed when the solenoids are actively being triggered). By selecting the gear



icon at the top right corner, you will be directed to the main menu screen. Here you can select from the menu items. Selecting





the icon will take you back to the home screen.



In the Nitrous Configuration menu, you will be presented with a choice of three menus – System Setup, Stage 1, & Stage 2. NOTE: The controller will come pre-programmed with default values. These are only placeholders and will need to be configured.

STAGE SET UP PROCESS

1. Enter **Nitrous Config**. Menu and select **Stage 1**.
2. Enable the stage and input the activation and deactivation RPM using the slider or manual entry by pressing the number.
3. Run the **Ramp Builder App**.
4. **Enter the Start %, End %, Delay Time, Ramp Time, & Stage Duration**. When satisfied with your inputs press the save button  to configure the Stage 1 Ramp.
5. Go back to the **Stage 1 Menu** by pressing the back button .
6. **(OPTIONAL)** The Graph menu will show a visual representation of what the Ramp Builder created. This curve can be adjusted and fine-tuned to your preference. Select the desired point by using the left and right arrows found at the bottom of the screen. The red highlighted point will show you which point is active. Move the

point up or down to the desired location. In the lower right-hand corner of the graph you will see a time and percentage display. This will change with the selected point and is used as a reference to aid you in dialing in the curve. If further fine tuning is required, simply double tap on the "Stage 1 or Stage 2" title of the graph to enter a fine tune menu. When satisfied with your curve, press the save button to save the graph or the back button to exit without saving the changes.

7. Back on the **Stage 1 Menu** select the **configuration button**.

Within the menu you will set up the following:

- a. **PWM Frequency** - NOS Recommends 20 Hz for most of our solenoids.
 - b. **Ramp/Pause Mode** – This allows the controller to either reset or resume the progressive ramp that has been programmed once the trigger is deactivated and then reapplied.
 - c. **TPAS Mode** - Throttle position activation switch mode. Changes the type of throttle input.
 - d. **Control Output Type** - Changes the output type for the stage.
 - e. **Control Output Delay** - The time (in seconds) the controller waits before tuning on the control output.
8. **Perform steps 2-7 for Stage 2 if required.**
 9. Go back to the **Nitrous Config.** menu and select **system setup**. Setup your RPM input type. Use 2-12 cylinders when the tach wire is connected to the tach from the ECU or distributor – (e.g. CD ignition box or conventional coil/distributor system). If you selected TPS to 90% in the TPAS mode, run the TPS autaset app at this time. Enter the menu with the vehicle ignition switched on but without the engine running. Observe the resting voltage. Press start on the handheld and press the accelerator pedal to the floor. Watch as the TPS voltage changes, you should see a max and min TPS voltage displayed on the handheld. When complete, press SET. Note: Your resting TPS voltage may be higher than the WOT voltage. The controller will account for this and configure the activation threshold automatically.

10. Press the **home button**  to return to the home screen. Your NOS Mini 2-Stage Progressive Nitrous Controller is now configured and ready to use.

SAVE/LOAD TUNE

The NOS Mini 2-Stage Progressive Nitrous Controller has the ability to store and upload tunes. In the main menu you will see the Save/Load Tune menu. Here you can save your current tune, upload a previous tune, or upload one of our NOS tunes that have been calibrated for various vehicle specific nitrous kits. Tunes can be found here:

https://www.holley.com/support/nitrous_oxide_systems/

OTHER OPTIONS

Navigate to the menu screen and press the Contr. Settings button. Within this menu, you can perform the touch calibration if you run into issues with the touch screen, view and update the controller firmware, and adjust the home screen display. With the Dash Setup menu, you can change the min and max tach display and activate or deactivate the nitrous bottle pressure display (by default bottle pressure display is disabled).

AN INDEPTH INSTALLATION GUIDE IS AVAILABLE HERE:

<https://documents.holley.com/199r11937.pdf>

199R11949

Date: 8-28-19