Max Extreme X2 User Instructions

Mounting

The Max Extreme should be installed as far from any ignition components or other sources of potential electrical interference as possible. It should also be securely mounted away from being subjected to ingress of water and dust. Keep in mind the position of the wires and where they will be routed when deciding on the best location. Care should be taken not to severely kink or trap any wires during installation. The unit should also be mounted within reach of the driver from the driving position, so that adjustments can easily be made.

Wiring

Always connect the ground before connecting +12 Volts.
The Max has **2 'load'** ground terminals **(Nos. L7 & L8).**
Both terminals should be connected to ground when more than a pair of Pulsoids is being used.
It's also essential to connect the system ground (No. R2)

Suitable wire colour reference guide;

Black	-	0 Volts – Ground - Negative
Orange	-	12 Volts (switched on arming)
Yellow	-	Output 1 (0 Volts – Ground - Negative)
Grey	-	Output 2 (0 Volts – Ground - Negative)
Blue	-	Nitrous Output (0 Volts – Ground - Negative)
Red	-	Fuel Output (0 Volts – Ground - Negative)
Red/White	-	Regulated 6 Volt output.
White	-	Throttle input **positive**.
Green/Red	-	Fuel pressure transducer input (0-5 Volts)
Black/Orange	-	Nitrous pressure transducer input (0-5 Volts)
White/Black	-	RPM input (any engine speed related pulse signal, i.e. coil negative, crank sensor, rev counter input etc.)

Transducers

Nitrous Transducer:	0-1500 PSI range		
	Input Voltage	-	10 – 30 VDC
	Output Voltage	-	0 – 5 VDC
Wiring:	Red	-	+ 12 VDC
	Black	-	0 V (Ground)
	Black/Orange	-	Signal out

The nitrous transducer should be connected either at the bottle or in line with the connection to the solenoid, preferably mounted nearer the bottle.

Fuel Transducer:	0-150 PSI Range		
	Input Voltage	-	10 – 30 VDC
	Output Voltage	-	0 – 5 VDC
Wiring:	Red	-	+ 12 VDC
	Black	-	0 V (Ground)
	Green/Red	-	Signal out

The fuel transducer should be connected to the high pressure side of the fuel system, preferably near the fuel solenoid.

Transducer Adjustment

If either the nitrous and/or fuel transducers need to be adjusted, this can be done in the Calibrations Menu – See page 10 – **Input Calibrations Menu.**

Using the Max Extreme

The Operation Key Layout

The Operation Keys have been arranged in the following way:
<UP>
<ENTER>
<EXIT>
<DOWN>

The appropriate use of the keys is described in the following instructions but in most instances <UP> and <DOWN> will move the cursor between options in a menu, whilst <ENTER> will access it. However, in some cases it has been necessary to use <ENTER> to scroll between options and <UP> & <DOWN> to change values.

Initial Setup

The Max Extreme is supplied with factory default settings, some of which may not suit your application. Unfortunately due to the changes in different versions of the software, it's impossible to say which settings may or may not need alteration.
If these values are not set correctly the unit will sound an alarm and prevent the system functioning.
Before you test the unit you should check the following settings to ensure full functionality:

In the **RPM menu**, the Min (minimum) RPM is set to 0000, unless you have your RPM link connected and working correctly.

In the **Alarms menu** check the nitrous pressure is set to approx. 1,000 psi. If you have a nitrous transducer connected make sure the actual nitrous pressure is below this value or the unit will not function correctly, instead you will receive an alarm warning you that your nitrous pressure is too high and the unit will shut down the system.

Also in the **Alarms menu** check the fuel pressure is set to zero unless you have a fuel transducer connected. If you have a fuel pressure transducer connected, set this value to your minimum acceptable working pressure. If the actual fuel pressure drops below this value at any time, an alarm will sound warning you of this and the unit will shut down the system.

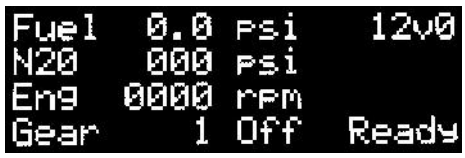
In the **Throttle menu**, with the throttle connected correctly, the ignition on and the throttle pedal pressed towards the floor, check that the 'Full Throttle' activation value is set slightly lower than the value indicated at full throttle and that the bottom of the screen reads 'Higher than = ON'. Note: this can be reversed to suit the few applications which use a reverse voltage (5-0 Volts) for the throttle position sensor.
If you choose to trigger the system with a Micro switch (instead of a throttle position sensor) it is essential to select 'Trigger Load' 'ON' in the INPUTS menu (Menu > System > Inputs).

In the **Input Cal menu,** calibrations of the following options (Fuel Cal, N2O Cal, Battery Cal, Gear Cal, Power Cal, AFR Cal, Max RPM) can be made to optimise readings by means of push button adjustment.
See page 10.

Menu Screens

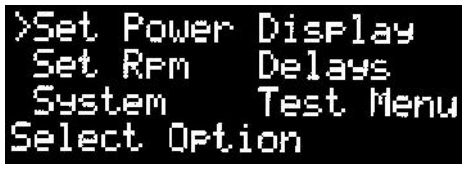
Screen 1 – Start up Screen

On start up the Max automatically progresses from Screen 1 to Screen 2



Screen 2 – System Ready Screen

Briefly press ANY key to progress to the Main Menu Screen



Screen 3 – Main Menu Screen

Use the <UP> and/or <DOWN> keys to move to any of the options listed:
Set Power - Display - Set RPM - Delays – System - Test Menu

When the cursor aligns with the feature you want to adjust, Press <ENTER> or to return to Ready screen Press <EXIT>

Adjusting the Power Settings

From the Main Menu Screen select 'Set Power' using the <UP> and/or <DOWN> keys, then press <ENTER>. The 'Power' screen will be displayed with the cursor alongside the top line on the screen.

Screen 3/1/1 – The Power menu

The top line indicates the number of the current selected gear and the Max has the capacity for up to 6 gears, with the settings for each gear individually adjustable and independent of the others.

Press <ENTER> to select the current gear option or Press <UP> and/or <DOWN> keys to move between gears.

Pressing <ENTER> moves the cursor (arrow) down to the second line [Point 1] and the percentage level for that point can now be adjusted by pressing the <UP> and/or <DOWN> keys and the changes will be indicated in the numerical display to the right and the graphical display on the left.

Point 1 is normally the start power percentage level, meaning this is the percentage of power delivered to the engine when the nitrous system is first activated.
When Point 1 has been set at the preferred level, press <ENTER> and the display will change to show Point 2.

You can now repeat the adjustment process for this point and repeat the whole process through to point 5 (the final power for that gear).

After Point 5 has been set press <ENTER> and the cursor will move to the 'Build Time' (represented as Build T). This is the total time taken for the power to rise from Point 1 (the start power) to Point 5 (the final power for that gear) and by using the <UP> and/or <DOWN> keys, it can be adjusted to any level between 0.1 and 9.9 secs.
When Gear 1 'Build Time' has been set, press <ENTER> and the cursor will move to 'Delay Time (represented as Delay T), which can be adjusted as required, using <UP> and/or <DOWN> keys.
As supplied from the factory, the 'Delay T' feature is only available in first gear and doesn't show on subsequent gear screens but if a delay is required in all gears, this can be activated in the appropriate menu.

When all the Gear 1 parameters have been adjusted Press <ENTER> and the cursor will move back to the top line (to the gear number) and by pressing the <UP> key Gear 2 will be displayed.

Repeat the above process (excluding Delay Time) for the remaining gears

Screen 3/1/2 – The Power menu

Screen 3/1/3 – The Power menu

Screen 3/1/4 – The Power menu

Screen 3/1/5 – The Power menu

Screen 3/1/6 – The Power menu

If your vehicle has less than 6 gears the surplus gears should all be set the same as the last gear settings that you intend to use.
When all the gear options have been adjusted press <EXIT> to return to the Main menu screen and this will automatically save the adjustments you've made.

RPM Window Switch

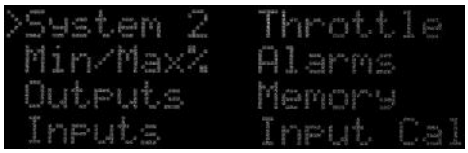
From the Main Menu use the <UP> or <DOWN> keys to select 'Set RPM' and press <ENTER> to move to the RPM screen. An RPM 'window' within which the system will work can now be selected and adjusted.

Screen 3/2 – RPM Engine Speed Menu – RPM Window Switch

Press the <UP> key to select the start RPM settings, then press <ENTER> to move the cursor to the next line. Use the <UP> and/or <DOWN> keys to adjust the 'Finish' rpm setting, then press <ENTER> to move the cursor to the last line. Use the <UP> and/or <DOWN> keys to adjust the 'No Cylinders' option (if required), to match the number of cylinders of your vehicle then press <EXIT> to return to the main Menu screen.
Setting the rpm start level to 0000 rpm will disable the rpm feature and remove the rpm display from the Ready screen.
Note; Some vehicles may need an alternative setting for the 'No Cylinders' option depending on the type of ignition system being used.

System Menu

From the Main Menu Screen use the <UP> and/or <DOWN> keys to select 'System' and press <ENTER> to move to the System screen.



Screen 3/3 – System menu

In the 'System' menu (above screen) use the <UP> and/or <DOWN> keys to select 'System 2' and press <ENTER> to move to System 2 screen.

Screen 3/3/1 – System 2 menu

Dynamic Variable Frequency (DFV)

From the 'System 2' menu (above screen) use the <UP> and/or <DOWN> keys to select 'Set Freq' and press <ENTER> to move to the 'Set Freq' screen.

Screen 3/3/1/1 – Solenoid Frequency menu

The cursor will be aligned with 'Main Frequency' which can be adjusted to the desired setting using the <UP> or <DOWN> keys.

Press<ENTER> to move to 'Min Freq' and adjust to the desired setting using the <UP> or <DOWN> keys.

Press the <EXIT> key to return to the previous menu or 3 presses to return to the 'Ready' screen

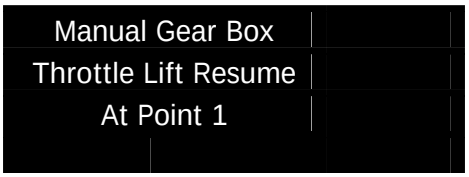
Note; The Main Frequency should never be set above 35 Hz

Auto / Manual G/box mode (Start Screen – Menu – System – System 2 – Man/Auto)

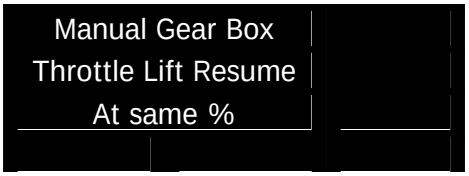
From the 'System 2' menu align the cursor with the 'Man/Auto' option by pressing the <DOWN> key, then press the <ENTER> key to move to 'Man/Auto' screen.

Screen 3/3/1/2/1 – Gearbox menu

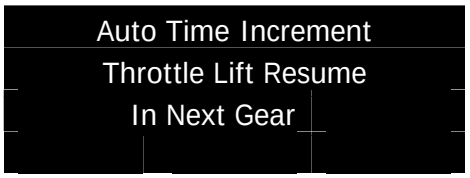
Use the <UP> and/or <DOWN> keys to scroll through the options ('Manual Gear Box' – 'Auto Time Increment' – 'Auto rpm Drop'). If you choose 'Auto rpm Drop' you will need to repeatedly press the <UP> key to increase the rpm setting to the level you wish to use.
Press <ENTER> to make a selection and the cursor will automatically move to the 'Throttle Lift Resume' options. Using the <UP> and/or <DOWN> keys scroll through the options ('In Next Gear' – 'At Point 1' – 'At Same %'), to find the required option.



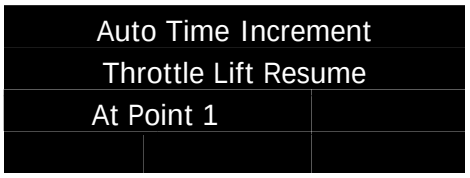
Screen 3/3/1/2/2 – Gearbox menu



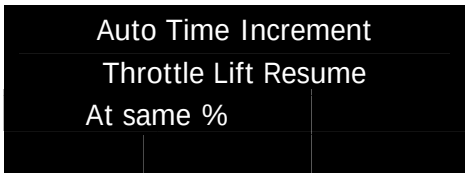
Screen 3/3/1/2/3 – Gearbox menu



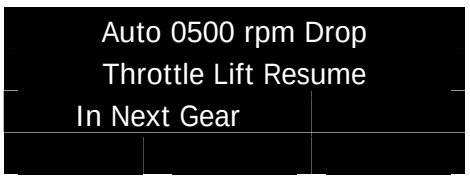
Screen 3/3/1/2/1/1



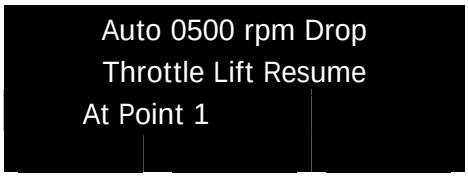
Screen 3/3/1/2/1/2



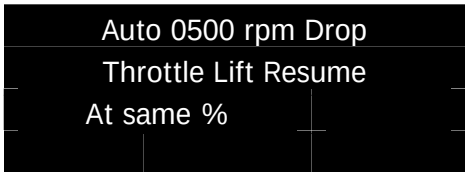
Screen 3/3/1/2/1/3



Screen 3/3/1/2/2/1



Screen 3/3/1/2/2/2

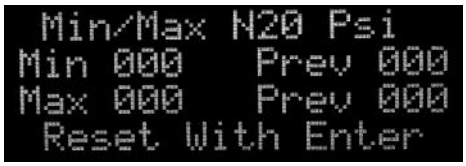


Screen 3/3/1/2/2/3

Important: Before viewing any logs AVOID pressing the <ENTER> button **twice**, as this will reset the log.

Dual Data Logs

From the 'System 2' menu press the <DOWN> key to align the cursor with 'N2O Log' then press <ENTER>

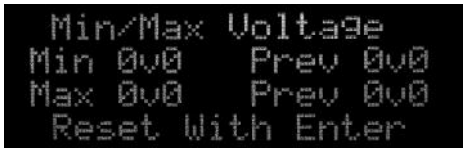


Screen 3/3/1/3

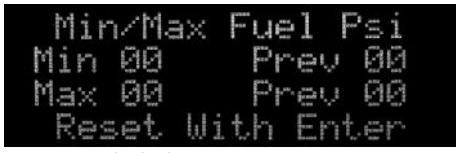
Once the log is viewed either press <ENTER> to reset the log to zero, followed by one press of the <EXIT> key to return to the previous menu or 3 presses to return to the 'Ready' screen.

Repeat this process for the other 4 logs (Volts, Fuel pressure, RPM and Mixture Trim)

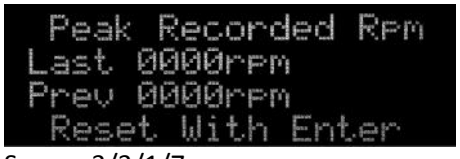
Screen 3/3/1/4



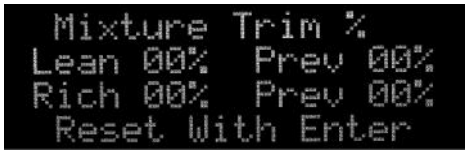
Screen 3/3/1/5



Screen 3/3/1/6



Screen 3/3/1/7

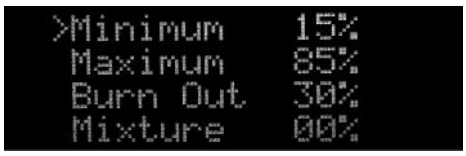


Screen 3/3/1/8

When you've completed viewing the logs and reverted to the 'System 2' screen press <EXIT> to return to the 'System' menu screen.

Min, Max and Mixture Menu

From the 'System' menu, use the <DOWN> key to select the 'Min/Max%' option and press the <ENTER> key to move to the adjustment screen.



Screen 3/3/2 – Min & Max settings

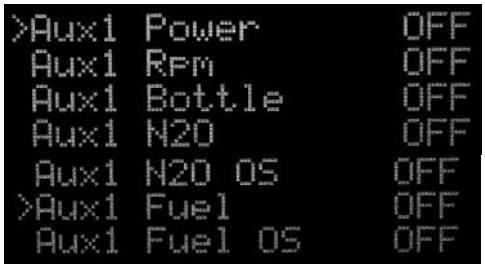
Adjust the 'Minimum' percentage by pressing the <UP> and/or <DOWN> keys. When adjusted press <ENTER> to move to 'Maximum' percentage and repeat the adjustment process.
You can repeat this process for 'Burn out' percentage and/or 'mixture' percentage.
When all the required adjustments have been made, press <EXIT> to move back to the 'System' menu.

Note; Burn-Out Mode

After using the above instructions to set the desired Burn-out power level, activation of the Burn-out feature is as follows;
Enter 'Burn-out' mode from the Ready screen, by holding down <ENTER>. Once in this mode whenever full throttle is reached (and providing other parameters such as RPM etc are within their range) the unit will give a continuous 'non-progressive' power delivery previously set in the menu above.
Once the burn-out is complete the unit will automatically return to race ready mode after 5 seconds (provided full throttle isn't re-applied in that time), press any button briefly to immediately exit back to race ready mode.

Auxiliary Outputs Menu

The Max Extreme has 2 additional outputs which can be used for almost anything (please note they give a ground [0 V] output). These outputs can be activated by different parameters (such as RPM, % power output or nitrous pressure) and are adjusted in this menu.
From the 'System' menu press <DOWN> twice followed by <ENTER> to select 'Outputs'.



Screen 3/3/3
Scroll between the following 7 options for Aux output 1 (followed by a further 7 for Aux output 2), by pressing the <ENTER> key;

Aux 1 **Power** – will make the output active when the selected percentage power level has been reached. Press <UP> to activate, followed by <UP> and/or <DOWN> to change the value.

Aux 1 **Rpm** – Will trigger an output when the selected RPM is reached or exceeded.
Press <UP> to activate, followed by <UP> and/or <DOWN> to change the value.
NOTE – RPM input must be connected and working for this option.

Aux 1 **Bottle** – Will switch ON an output when nitrous pressure is BELOW the set value.
Press <UP> to activate, followed by <UP> and/or <DOWN> to change the value.
NOTE – If nitrous pressure is BELOW 400 psi then the output will NOT come on so empty / low bottles are not heated. A nitrous pressure transducer must be connected to use this option.

Aux 1 **N2O** – Will 'copy' the nitrous output, allowing multiple nitrous solenoids to be operated.
Press <UP> to switch on this feature, or <DOWN> to switch it off.

Aux 1 **N2O OS** – Will 'copy' the nitrous output but with a time shift to pulse 'out of phase', allowing multiple nitrous solenoids to be pulsed alternately.
Press <UP> to switch on this feature, or <DOWN> to switch it off.

Aux 1 **Fuel** – An option which allows the auxiliary output to 'copy' the fuel output, allowing multiple fuel solenoids to be used.
Press <UP> to switch on this feature, or <DOWN> to switch it off.

Aux 1 **Fuel OS** – Will 'copy' the fuel output but with a time shift to pulse 'out of phase', allowing multiple fuel solenoids to be pulsed alternately.
Press <UP> to switch on this feature, or <DOWN> to switch it off.

The same options are available for Aux 2.
Once set the selected output will switch on at the set point. For example, if Output 1 is set to 65% power, it will only switch on when the power output from the unit reaches 65% and remain on above that level.
If Output 2 is then set to 5,500 RPM, then that output will only operate when the engine speed reaches 5,500 RPM and remain on above that level.
When the selected options have been adjusted, press <EXIT> to move back to the 'System' menu.

Additional Output wiring only
<u>0-5 Volt Output</u>
When connected to terminal R8 the unit will give out a 0 to 5 Volt analogue signal, proportional to the pulse width signal sent to the solenoids or REVOs. This output will always work while the unit is active.

<u>Inputs menu</u>

From the 'System' menu, use the <UP> and/or <DOWN> keys to move the cursor to the appropriate line, followed by pressing the <ENTER> key to select 'Inputs'.
Move to the appropriate option by pressing the <ENTER> key and change the settings using the <UP> and/or <DOWN> keys.

AFR Alarm Del	OFF
Bottle PSI Trim	OFF
Gear Input	OFF
Power Control	OFF
AFR Mixture	OFF
PWM Control	OFF
Trigger Load	OFF
THR Power Trim	OFF
RPM Power Trim	OFF
Launch Control	OFF

Screen 3/3/4 – Inputs menu
AFR Alarm Delay – Pressing the <UP> key will switch on this feature and allow a time delay to be selected. Press <ENTER> to move to the next option in the list.

Bottle PSI Trim – Pressing the <UP> key will switch on this feature and allow a % trim to be selected. Press <ENTER> to move to the next option in the list.

Gear Input – Pressing the <UP> key will switch on this feature and allow you to select between 'Gear Select Input' and 'Gear Change Input' by pressing <UP> a second time. When you've made your choice press <ENTER> to move to the next option in the list.

Power Control – Pressing the <UP> key will switch on this feature and pressing a second time allows you to select the INVerse alternative if required. Press <ENTER> to move to the next option in the list.

AFR Mixture – Pressing the <UP> key will switch on this feature and allow you to adjust the target AFR mixture you want the Max to maintain. Press <ENTER> to move to the next option in the list.

PWM Control – Pressing the <UP> key will switch on this feature and pressing a second time allows you to select the INVerse alternative if required. Press <ENTER> to move to the next option in the list.

Trigger Load – Pressing the <UP> key will switch on this feature and pressing the <DOWN> will switch it off. Press <ENTER> to move to the next option in the list.

THRottle **Power Trim** – Pressing <UP> will switch on this feature and allow a % trim to be selected. Press <ENTER> to move to the next option in the list.

RPM Power Trim – Pressing <UP> will switch on this feature and allow a % trim to be selected. Press <ENTER> to move to the next option in the list.

Launch Control – Pressing the <UP> key will switch on this feature and pressing the <DOWN> will switch it off. Press <ENTER> to move to the next option in the list.

When the selected options have been adjusted, press <EXIT> to move back to the 'System' menu.

<u>Throttle Menu</u>

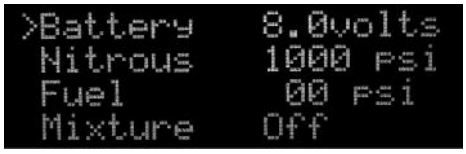
From the 'System' menu, use the <UP> and/or <DOWN> keys to move the cursor to the appropriate line, followed by <ENTER> key to select 'Throttle'.

Screen 3/3/5 –Throttle menu

Use the <UP> or <DOWN> keys to adjust the 'Full Throttle' setting, followed by <ENTER> to move to 'Part Throttle'. Use the <UP> or <DOWN> keys to make adjustments, followed by <ENTER> to move to 'Rising Voltage' and use the <UP> or <DOWN> keys to select between 'Rising' & 'Falling' Voltage options. When all adjustments are complete, press the <EXIT> key once to return to the previous menu or 3 times to return to the 'Ready' screen.
The status of the throttle position is indicated in the bottom right of the screen by either 'OFF' or 'ON', to indicate when the selected settings would active the system.

<u>Alarms Menu</u>

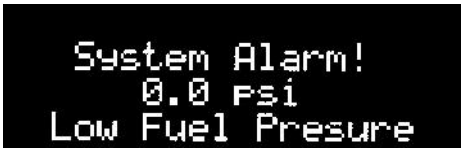
The 'alarm' function stops the system being used under dangerous conditions such as a low fuel pressure. From the 'System' menu, press <DOWN> key four times followed by the <ENTER> key to select 'Alarms'.



Screen 3/3/6 – Alarms Menu

Using the <UP> or <DOWN> keys adjust the 'Battery' Voltage to the desired setting.
Use the <ENTER> key to move to the 'Nitrous' pressure option and use the <UP> or <DOWN> keys to adjust the setting as required.
Use the <ENTER> key to move to 'Fuel' pressure and use the <UP> or <DOWN> keys to adjust as required.
Press <ENTER> to move to 'Mixture' and use the <UP> or <DOWN> keys to adjust as required.

When all adjustments are complete, press the <EXIT> key once to return to the previous menu or 3 times to return to the 'Ready' screen.



Screen 3/3/6/1 – Alarm warning screen

Memory Menu

From the 'System' menu press <DOWN> four times followed by <ENTER> to select 'Memory'.

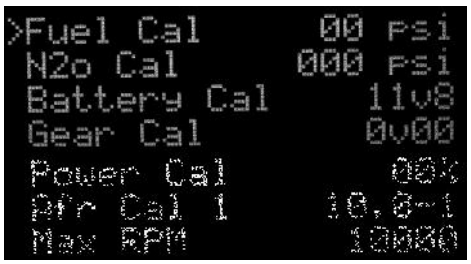
Screen 3/3/7/1 – Load/Save menu

Using the <UP> or <DOWN> keys select the file number required to be loaded, followed by <EXIT>.
Alternatively if a saved program **(saving changes is an automatic function, by exiting from any menu to the Ready screen)** is to be copied and saved for future recall at a later date, press <ENTER> a second time and use the <UP> or <DOWN> keys to select the next available file number to store in.

Selecting <EXIT> will save to that file number and load it.

Input Calibration Menu

From the 'System' menu, press the <UP> key followed by the <ENTER> key to select 'Input Cal'.



Screen 3/3/8 – Input calibration menu

Move to the appropriate option by pressing the <ENTER> key as often as required. When the appropriate feature is highlighted adjust the setting using the <UP> or <DOWN> keys.

Fuel Calibration – Press <ENTER> to move to the next option in the list.

N2o Calibration – Press <ENTER> to move to the next option in the list.

Battery Calibration – Press <ENTER> to move to the next option in the list.

Gear Calibration – Press <ENTER> to move to the next option in the list.

Power Calibration – Press <ENTER> to move to the next option in the list.

AFR Calibration – To switch between alternative types of Lambda sensor with different AFR input signals, 'hold down' the <ENTER> key whilst AFR is selected.
Press <ENTER> to move to the next option in the list.

Max RPM – Press <ENTER> to move to the next option in the list.
The maximum RPM setting is adjustable to suit your vehicle in 5000 rpm increments. This setting must be adjusted to the closest level above the engines maximum RPM, for example; if the engines max RPM (red line) is 7,500, set the Max RPM to 10,000. When finished, press the <EXIT> key once to return to the previous menu or 3 times to return to the 'Ready' screen.

Display Menu

In the Main Menu press the <DOWN> key until the cursor aligns with the 'Display' option and then press <ENTER> to move to the Display screen.

Screen 3/4 – Display menu

Scroll through the 6 options ('Fuel' – 'N2o' – 'Rpm' – 'V/Bot' – 'Aux' – 'Mem'), using the <ENTER> key and use <UP> and/or <DOWN> to switch between 'On' or 'Off'.

When upgraded with the bottle contents feature, the 'Bottle Settings' function is available in this Menu. To make adjustments to this menu, highlight it by using the <ENTER> key as described above, then press either <UP> and/or <DOWN> to enter the menu. Adjust the bottle capacity using <UP> or <DOWN> keys and press the <ENTER> key to scroll down the jet size then adjust the setting with the <UP> and/or <DOWN> keys. Finally press the <ENTER> key to reset the current content back to 100% (after a fill for example).

Delays Menu

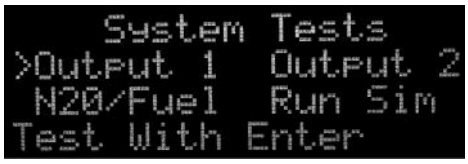
In the Main Menu select 'Delays' using the <UP> or <DOWN> keys, then press <ENTER>.

Screen 3/5 – Delays menu

Scroll through the delay options starting with 'Gear Reset' which is the time the unit takes after the throttle has been shut off, before the unit resets to be ready for the start of another run.
The remaining delay features, Delay' – 'Fuel Delay' – 'Burn-out Delay' – 'Delay 1st Gear' to 'Delay 6th Gear' (which do not include the Initial Delay feature, which is adjustable in the 'power menu'), can be selected and/or adjusted by using the <ENTER> key and pressing the <UP> or <DOWN> keys to adjust or switch between 'on' or 'off'.

System Tests Menu

In the Main Menu press the <UP> key to select ‘Test Menu’ then press <ENTER>.



Screen 3/6 – System tests menu

In this menu, each of the four outputs (‘Output 1’ – ‘Output 2’ – ‘N2O’ – ‘Fuel’) can be activated and tested. Scroll through the options using the <UP> and/or <DOWN> keys. When the arrow points to the appropriate output, the test is ready to be carried out.

Note; Make sure that appropriate pipes have been disconnected and appropriate safety checks have been carried out before continuing.

To carry out the test press and hold down the <ENTER> key (for as long as the test is to be carried out), then release and the test will end. Selecting ‘Run Sim’ and holding down the <ENTER> key,will cause the Max to power the solenoids in the manner set up in the first gear program, as the system will actually function.

The Static Test

The ‘Run Sim’ features, allows a Static Test to be performed very simply without having to get to awkward to access throttle switches, etc. Remember it’s always a good idea to test for fuel and nitrous flow to atmosphere, followed by testing the fuel only in to the engine, before injecting both fuel & nitrous in to the engine, in an attempt to carry out a static test.