




GEN4 PRO XTREME BigComm Pro System Menu User Manual

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HOW TO USE THE BIGCOMM PRO CONFIGURATION & CALIBRATION TOOL BAR SYSTEM MENU AND SUBMENUS TO CONFIGURE AND CALIBRATE PERTINENT PORTIONS OF THE OVERALL PROJECT

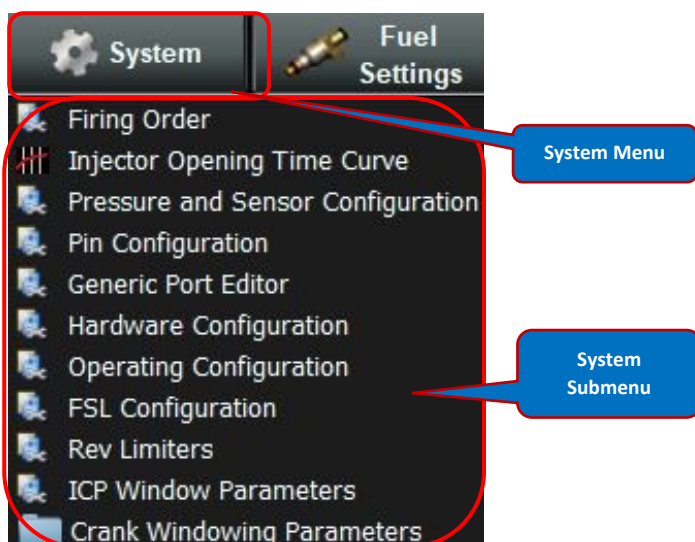
 The **System** menu is used to configure the GEN4 PRO XTREME ECU functionality to account for such things as engine type, firing order, injector size, sensor types, crank timing offsets, rev limiters, etc. Once the **System** menu related configurations are initially configured and calibrated, you should not have to subsequently change the **System** menu calibrations and configurations unless you alter your hardware.

***PRO-TIP:** When making changes to the System menu Generic Port Editor & Hardware Configuration submenus, the ignition switch needs to be switched off however long you have the Afterstart Warm Delay Time set for. This is in the Startup/Idle section / Afterstart Parameters Folder / Afterstart Parameters. If you create the logic offline in your project, you must download and also go through the same timed key cycle when connected to the GEN 4 PRO XTREME ECU for the changes to take effect.

Note: At this point, the instructions will primarily focus on how to configure and calibrate the **BigComm Pro Configuration and Calibration Tool Bar** menus and associated submenu's **Curve**, **Table** and **Parameter** windows. It is assumed you already understand the "mechanics" on how to navigate, configure, edit and save (Burn) the **Curve**, **Table** and **Parameter** windows, relative to Sections 11 thru 16 of these instructions.

How to configure & calibrate each of the System submenus


We will now explain how to configure and calibrate each of the **System** submenus. When you left mouse click on the **System** menu, the following **System** submenu will open. As you can see, there are (10) **Parameter**  windows to be configured and (1) **Curve**  window to be calibrated under the System menu.

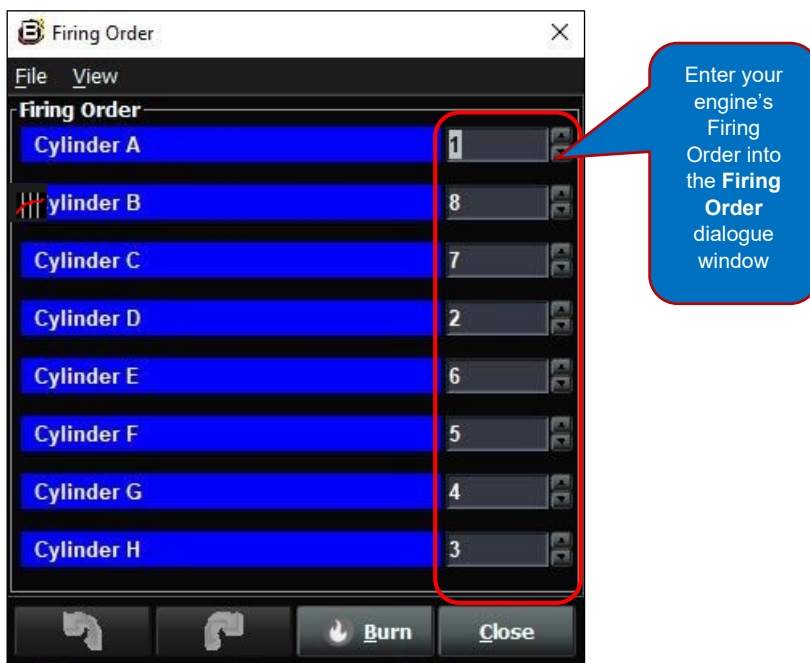


Firing Order

The **Firing Order** Parameter window allows you to configure your engine's firing order. The Cylinder A-H letters shown in the **Firing Order** window below, correspond to A-H letters on the main wire harness' and injector wire harness' 10-way connector. The A-H letters also correspond to the engine's 1-8 cylinders. See table below.

Firing Order window letter	Cylinder A	Cylinder B	Cylinder C	Cylinder D	Cylinder E	Cylinder F	Cylinder G	Cylinder H
Chevy 10-way Injector Harness Connector letter	A	B	C	D	E	F	G	H
Engine Cylinder	1	2	3	4	5	6	7	8
LS1 firing order entry into Firing Order window	1	8	7	2	6	5	4	3


Enter your engine's Firing Order values into the **Firing Order** dialogue window by left mouse clicking into each of the Cylinder A-H windows and then use the **up/down arrows** to adjust the values or type in the value (i.e. number). Once all the values have been entered, left mouse click on the **Burn**  button to save the changes.

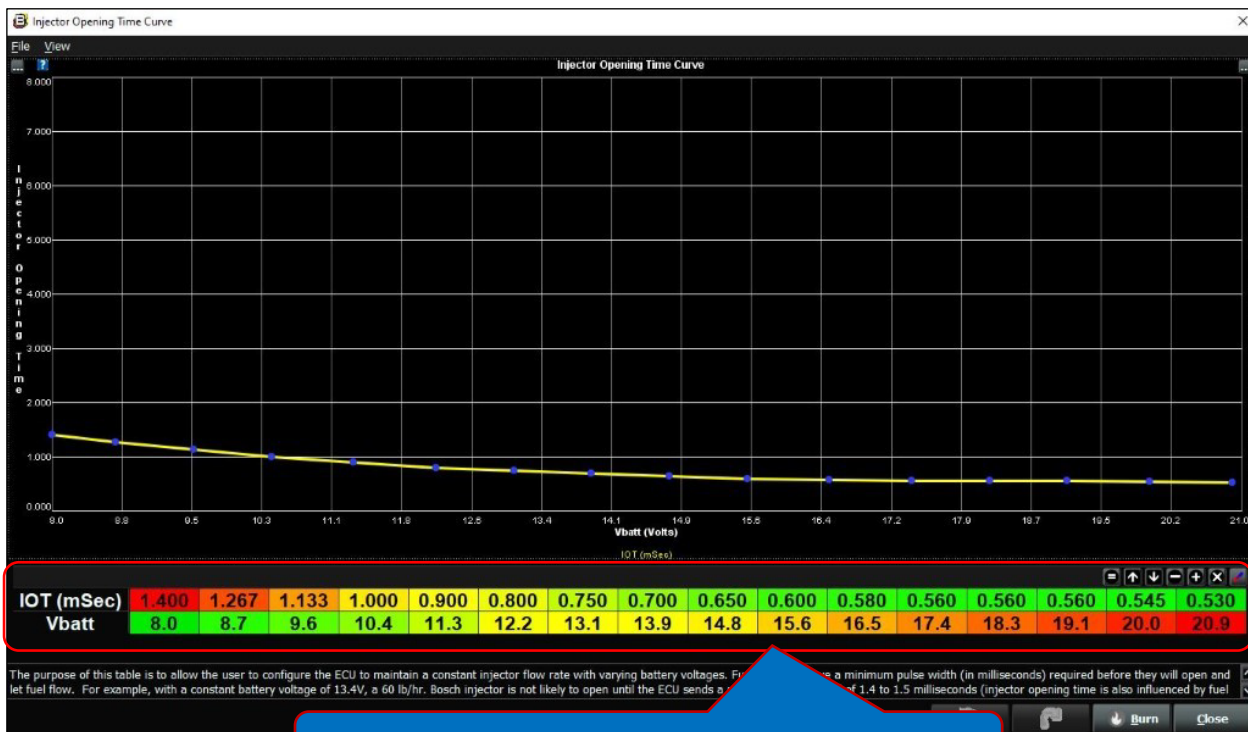


Injector Opening Time Curve

The **Injector Opening Time Curve** window allows you to fine tune injector opening times based on battery voltage. Every fuel injector requires an injector opening time curve based on battery operating voltage. The lower the battery voltage the greater the injector opening time in milli-Seconds (mS). Large low impedance injectors typically require 1 mS at 16v. Fuel injectors have a

minimum pulse width (in milliseconds) required before they will open and let fuel flow. For example, with a constant battery voltage of 13.4V, a 60 lb/hr Bosch injector will not open until the ECU sends a pulse width command of 1.4 to 1.5 milliseconds (injector opening time is also influenced by fuel pressure).

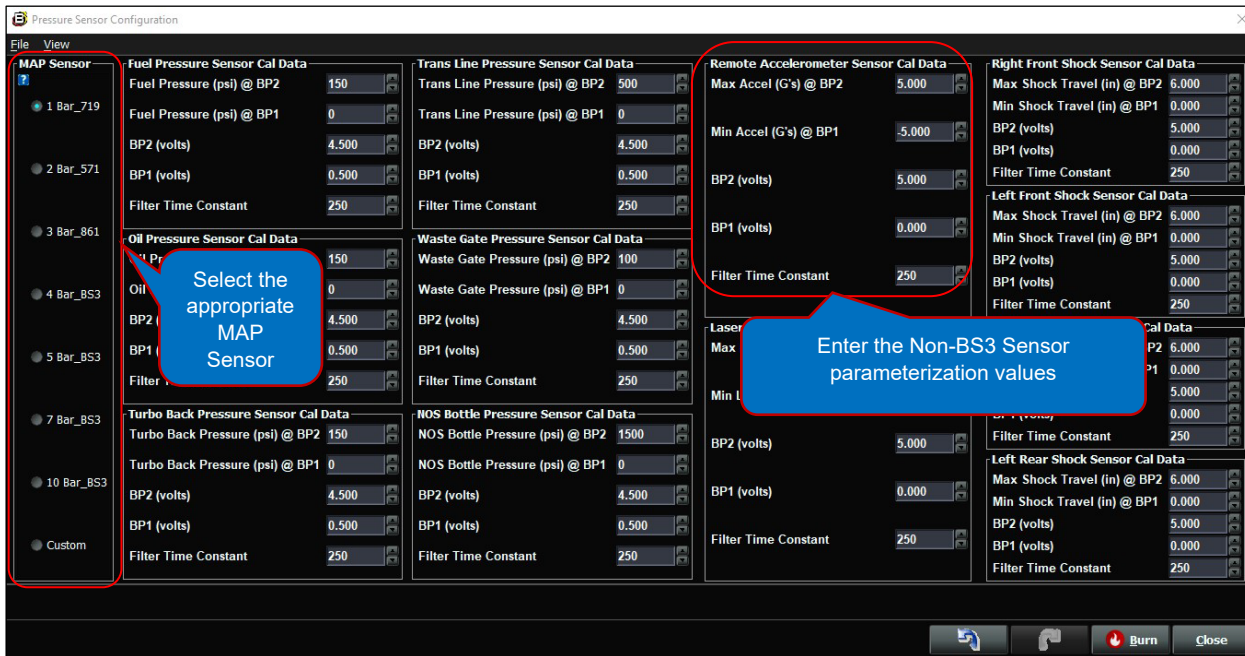
Please check with your injector manufacturer for the proper injector opening times based on battery voltage and enter the values into **Injector Opening Time Curve** window **Data Viewing and Editing table**. Once all the values have been entered, left mouse click on the **Burn**  button to save the changes.



Enter the injector opening times based on battery voltage values into the Injector Opening Time Curve window Data Viewing and Editing Table

Pressure Sensor Configuration

The **Pressure Sensor Configuration** Parameter window allows you to select and configure the various 0-5 VDC Pressure Sensors, (MAP, Fuel, Oil, Turbo Back, Trans Line, Waste Gate, NOS Bottle) Remote Accelerometer, Laser Height and Shock Sensors, being used with the GEN4 PRO XTREME System. If you are using BS3 GEN4 sensors, the values are already preconfigured and do not need to be adjusted. The sensor values only need to be adjusted if non-BS3 GEN4 sensors are used. No adjustments are necessary for sensors not being used.



Select the appropriate MAP sensor and enter the necessary sensor parameterization values for each of the Non-BS3 GEN4 sensors. Below, is an overview for the required Non-BS3 sensor parameterization values. Once all the values have been entered, left mouse click on the **Burn** button to save the changes.

The Non-BS3 sensors must have 0-5 VDC outputs. The following sensor parameterization values must be entered into the **Pressure Sensor Configuration** Parameter window for each of the Non-BS3 sensors;

- **BP2 (Base Point 2)** = upper sensor value in psi for Pressure, in G's for Accelerometers, in mm for Laser Height, and inches for Shock Travel.
- **BP1 (Base Point 1)** = lower sensor value in psi for Pressure, in G's for Accelerometers, in mm for Laser Height, and inches for Shock Travel.
- **BP2 (volts)** = upper sensor voltage value in volts (VDC) (cannot exceed 5 VDC).
- **BP1 (volts)** = lower sensor voltage values in volts (VDC)
- **Filter Time Constant** = Sensor Filter Time Constant in mS (sensor output update frequency).

Pin Configuration

The **Pin Configuration** Parameter window allows you to reassign some of the default GEN4 ECU Digital and Analog Inputs & PWM and Digital Outputs I/O, currently assigned to the GEN4 PRO XTREME 4L60/80E transmission, 6-Stage NOS & DAE2 Optional Feature Upgrades I/O to the DAE3 Optional Feature Upgrade I/O and other optional I/O (inputs / outputs) configuration settings.

The Header (Hdr1 & Hdr2) and Pin references in the **Pin Configuration** Parameter window are associated with the GEN4 PRO XTREME ECU's (2) 60-way header connectors and corresponding Pin locations. Where, **Hdr1** refers to the GEN4 ECU ENGINE (A-K) 30-way connector & ENGINE (L-Y) 30-way header connectors and **Hdr2** refers to the GEN4 ECU SECONDARY (A-K) 30-way

connector & SECONDARY (L-Y) 30-way header connectors. The acronym LS stands for Low Side (Ground) and HS stands for High Side (12 VDC Positive).


The screenshot shows the 'Pin Configuration' window with the following sections:

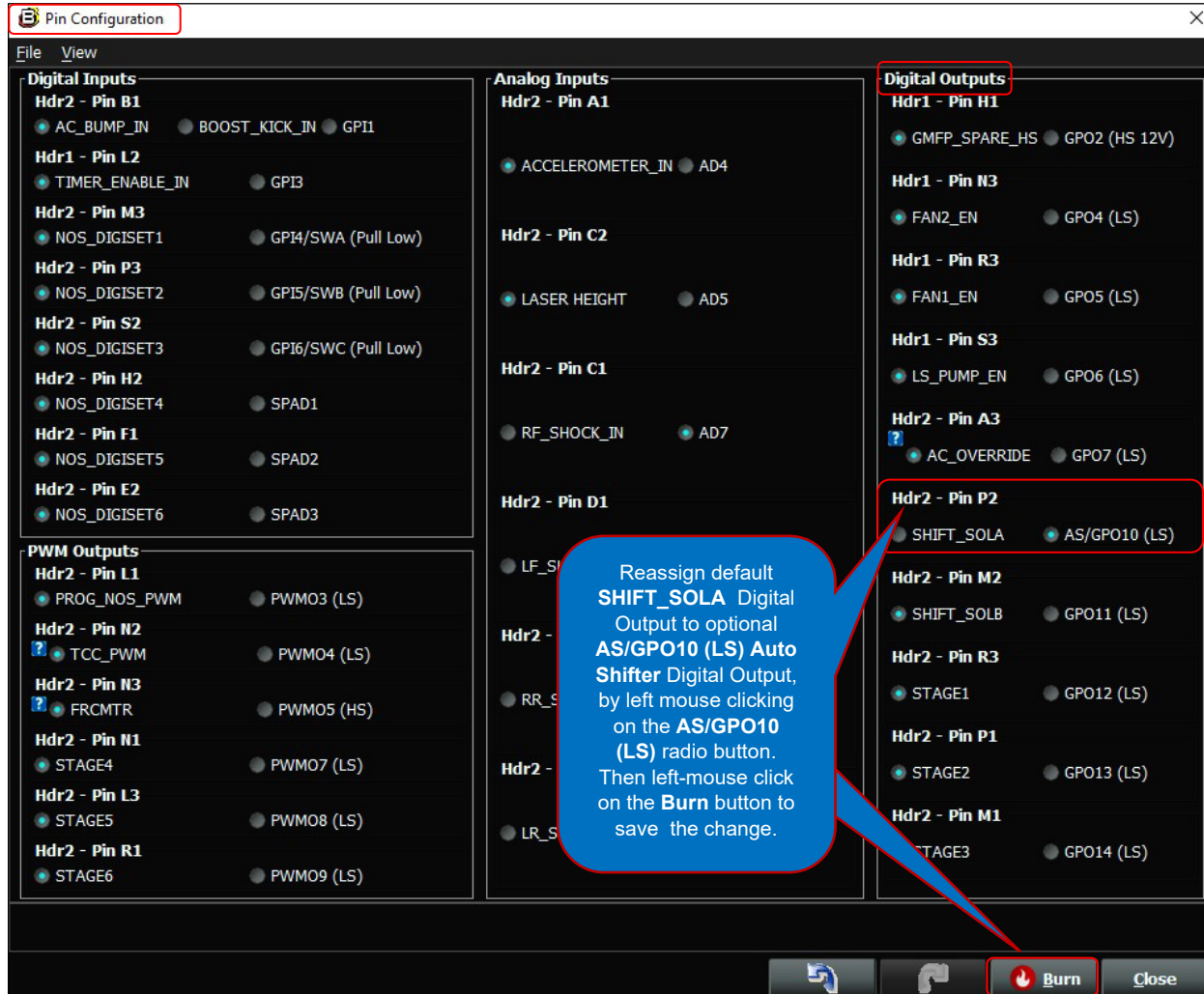
- Digital Inputs:**
 - Hdr2 - Pin B1: AC_BUMP_IN, BOOST_KICK_IN, GPI1
 - Hdr1 - Pin L2: TIMER_ENABLE_IN, GPI3
 - Hdr2 - Pin M3: NOS_DIGISET1, GPI4/SWA (Pull Low)
 - Hdr2 - Pin P3: NOS_DIGISET2, GPI5/SWB (Pull Low)
 - Hdr2 - Pin S2: NOS_DIGISET3, GPI6/SWC (Pull Low)
 - Hdr2 - Pin H2: NOS_DIGISET4, SPAD1
 - Hdr2 - Pin F1: NOS_DIGISET5, SPAD2
 - Hdr2 - Pin E2: NOS_DIGISET6, SPAD3
- PWM Outputs:**
 - Hdr2 - Pin L1: PROG_NOS_PWM, PWM03 (LS)
 - Hdr2 - Pin N2: TCC_PWM, PWM04 (LS)
 - Hdr2 - Pin N3: FRCMTR, PWM05 (HS)
 - Hdr2 - Pin N1: STAGE4, PWM07 (LS)
 - Hdr2 - Pin L3: STAGE5, PWM08 (LS)
 - Hdr2 - Pin R1: STAGE6, PWM09 (LS)
- Analog Inputs:**
 - Hdr2 - Pin A1: ACCELEROMETER_IN, AD4
 - Hdr2 - Pin C2: LASER HEIGHT, AD5
 - Hdr2 - Pin C1: RF_SHOCK_IN, AD7
 - Hdr2 - Pin D1: LF_SHOCK_IN, AD8
 - Hdr2 - Pin H3: RR_SHOCK_IN, AD9
 - Hdr2 - Pin H1: LR_SHOCK_IN, AD10
- Digital Outputs:**
 - Hdr1 - Pin H1: GMFP_SPARE_HS, GPO2 (HS 12V)
 - Hdr1 - Pin N3: FAN2_EN, GPO4 (LS)
 - Hdr1 - Pin R3: FAN1_EN, GPO5 (LS)
 - Hdr1 - Pin S3: LS_PUMP_EN, GPO6 (LS)
 - Hdr2 - Pin A3: AC_OVERRIDE, GPO7 (LS)
 - Hdr2 - Pin P2: SHIFT_SOLA, AS/GPO10 (LS)
 - Hdr2 - Pin M2: SHIFT_SOLB, GPO11 (LS)
 - Hdr2 - Pin R3: STAGE1, GPO12 (LS)
 - Hdr2 - Pin P1: STAGE2, GPO13 (LS)
 - Hdr2 - Pin M1: STAGE3, GPO14 (LS)

The GEN4 default I/O are shown in the (3) left-hand "red highlighted" columns of the Pin Configuration Parameter window

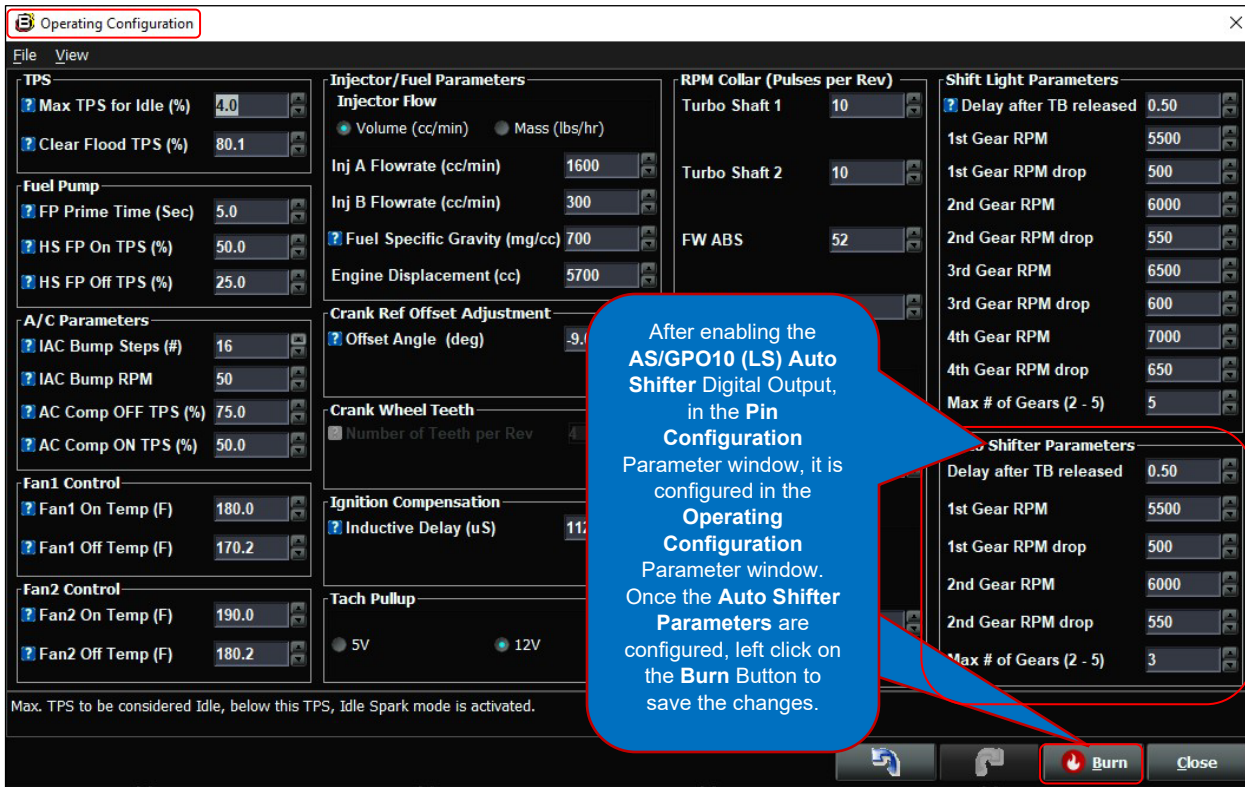
The GEN4 optional reassigned I/O are shown in the (3) right-hand "yellow highlighted" columns of the Pin Configuration Parameter window

For example, if your GEN4 system is not controlling a GM 4L80E transmission and you want to reassign the GEN4 ECU digital output(s) used for the GM 4L80E transmission to control some other digital output parameter(s), you can do so using the **Pin Configuration** Parameter window.

In particular, under the **Digital Outputs**, section of the **Pin Configuration** Parameter window, you can reassign the default the GM 4L60/80E HDR2 – Pin M2 digital output, for the SHIFT_SOLA (Shift Solenoid A) to an optional AS/GPIO10 (LS) digital output for the (Autoshifter/GPIO10). You do so by left mouse-clicking on the AS/GPIO10 (LS) radio button. Once selected, a blue circle will illuminate within the radio button, to indicate the AS/GPIO10 (LS) Digital Output is now enabled. Once enabled, left mouse click on the **Burn**  button to save the changes.



Once the AS/GPIO10 (LS) (Auto Shifter/GPIO10) is enabled, the next thing that needs to be considered is how to configure the AS/GPIO10 (LS) Auto Shifter settings. In this case, the **Auto Shifter Parameters** are configured under the **Operating Configuration** submenu, located under the **System** menu as shown below.



Below, is a table that provides details for each of the GEN4 ECU **Pin Configuration** Parameter window default and optional reassigned I/O channels to help identify what they are, how they're used and where they're configured in the BigComm Pro software.

GEN4 Default I/O Channel Description	Configured under BCP menu / submenu	GEN4 Optional Reassigned I/O Channel Description	Configured Under BCP menu / submenu	Optional Reassigned I/O Channel Used for	I/O type	ECU Hdr / Pin location
AC_Bump_IN	System / Operating Configuration	BOOST_KICK_IN	Boost CO2 / Boost Parameters	Generic Input	12vdc Digital Input	Hdr2 / B1
TIMER_ENABLE_IN	System / Pin Configuration	GPI3 (General Purpose Input 3)	Stand Alone Input	Generic Input	12vdc Digital Input	Hdr1 / L2
NOS_DIGISET1	System / Pin Configuration	GPI4/SWA (Pull Low) (General Purpose Input 4)	NOS	Generic Input / Trans Mode A	Ground Digital Input	Hdr2 / M3
NOS_DIGISET2	System / Pin Configuration	GPI5/SWB (Pull Low)	NOS	Generic Input / Trans Mode B	Ground Digital Input	Hdr2 / P3
NOS_DIGISET3	System / Pin Configuration	GPI6/SWC (Pull Low)	NOS	Generic Input / Trans Mode C	Ground Digital Input	Hdr2 / S2
NOS_DIGISET3	System / Pin Configuration	GPI6/SWC (Pull Low)	NOS	Generic Input / Trans Mode C	Ground Digital Input	Hdr2 / S2
NOS_DIGISET4	System / Pin Configuration	SPAD1 (Spare A/D1)	NOS	Generic Input	Ground Digital Input	Hdr2 / H2
NOS_DIGISET5	System / Pin Configuration	SPAD2 (Spare A/D2)	NOS	Generic Input	Ground Digital Input	Hdr2 / F1
NOS_DIGISET6	System / Pin Configuration	SPAD3 (Spare A/D3)	NOS	Generic Input	Digital Input	Hdr2 / E2

BS3 GEN4 PRO XTREME

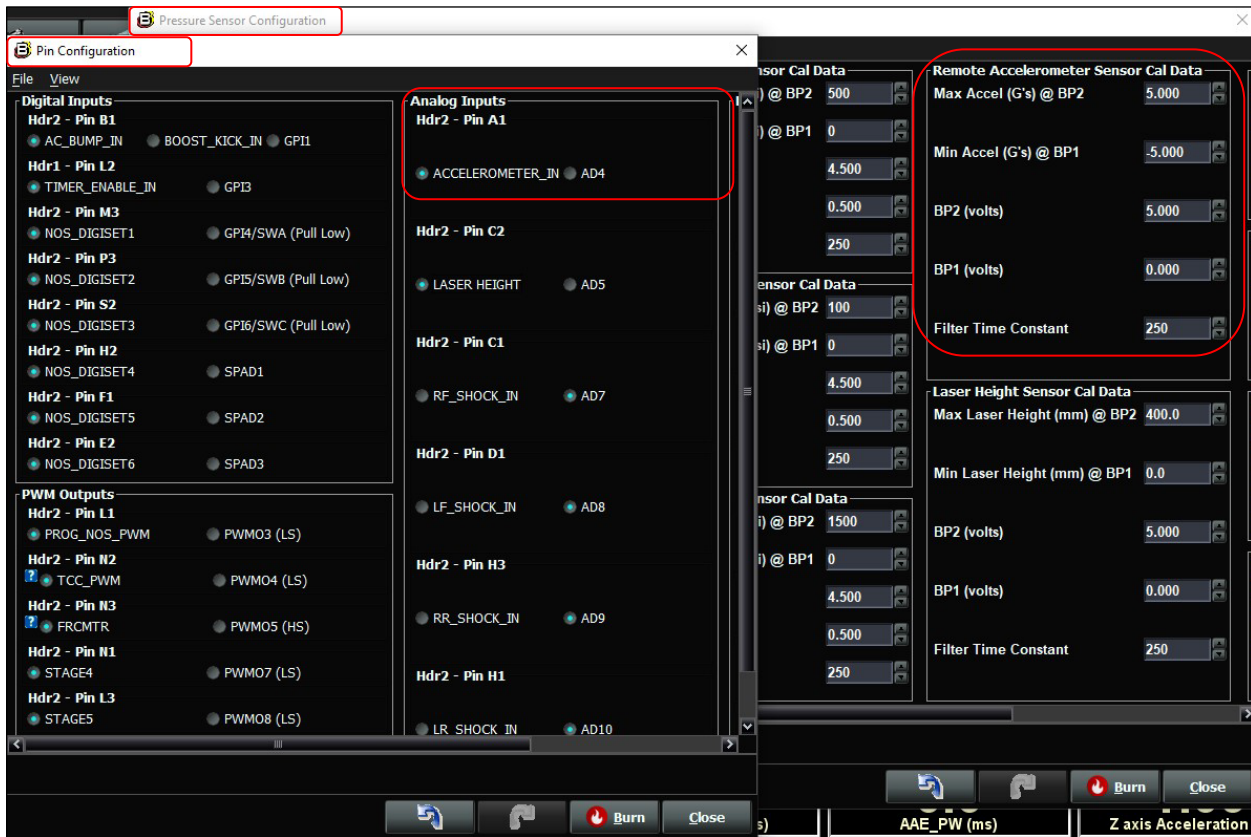
PROG_NOS_PWM	System / Pin Configuration	PWM03	System / Generic Port Editor	Solid state relays to control electric fans, nitrous solenoids, transmission dump valves	Ground PWM Output	Hdr2 / L1
TCC_PWM	Transmission / Torque Convertor Control	PWM04	Transmission Configuration		Ground PWM Output	Hdr2 / N2
FRCMTR	Transmission / Line Pressure	PWM05 / TB Bump Output	Transmission Configuration		12vdc PWM Output	Hdr2 / N3
STAGE4	NOS	PWM07	System / Generic Port Editor		Ground PWM Output	Hdr2 / N1
STAGE5	NOS	PWM08	System / Generic Port Editor		Ground PWM Output	Hdr2 / L3
STAGE6	NOS	PWM09	System / Generic Port Editor		Ground PWM Output	Hdr2 / R1
ACCELEROMETER_IN	System / Pressure Sensor Configuration / Remote Accelerometer Sensor Cal Data	AD4	System / Pressure Sensor Configuration / Generic AD4 Cal Data	0-5 VDC sensor	Analog Input	Hdr2 / A1
LASER HEIGHT	System / Pressure Sensor Configuration / Laser Height Sensor Cal Data	AD5	System / Pressure Sensor Configuration / Generic AD5 Cal Data	0-5 VDC	Analog Input	Hdr2 / C2
RF_SHOCK_IN	System / Pressure Sensor Configuration / Right Front Shock Sensor Cal DataAD7	AD7	System / Pressure Sensor Configuration / Generic AD7 Cal Data	0-5 VDC	Analog Input	Hdr2 / C1
GEN4 Default I/O Channel Description	Configured under BCP menu / submenu	GEN4 Optional Reassigned I/O Channel Description	Configured Under BCP menu / submenu	Optional Reassigned I/O Channel Used for	I/O type	ECU Hdr / Pin location
LF_SHOCK_IN	System / Pressure Sensor Configuration / Left Front Shock Sensor Cal Data	AD8	System / Pressure Sensor Configuration / Generic AD8 Cal Data	0-5 VDC	Analog Input	Hdr2 / D1
RR_SHOCK_IN	System / Pressure Sensor Configuration / Right Rear Shock Sensor Cal DataAD7	AD9	System / Pressure Sensor Configuration / Generic AD9 Cal Data	0-5 VDC	Analog Input	Hdr2 / H3
LR_SHOCK_IN	System / Pressure Sensor Configuration / Left Rear Shock Sensor Cal DataAD7	AD10	System / Pressure Sensor Configuration / Generic AD10 Cal Data	0-5 VDC	Analog Input	Hdr2 / H1
GMFP_SPARE_HS	System / Operating Configuration / Fuel Pump	GPO2 (HS 12V)	System / Pin Configuration	HS 12 VDC	12vdc Digital Output	Hdr1 / H1

FAN2_EN	System / Operating Configuration / Fan2 Control	GPO4 (LS)	System / Pin Configuration	Generic Output	Ground Digital Output	Hdr1 / N3
FAN1_EN	System / Operating Configuration / Fan1 Control	GPO4 (LS)	System / Pin Configuration	Generic Output	Ground Digital Output	Hdr1 / R3
LS_PUMP_EN	System / Operating Configuration / Fuel Pump	GPO5 (LS)	System / Pin Configuration	Generic Output	Ground Digital Output	Hdr1 / S3
AC_OVERRIDE	System / Operating Configuration / A/C Parameters	GPO7 (LS)	System / Pin Configuration	Generic Output	Ground Digital Output	Hdr2 / A3
SHIFT_SOLA	Transmission	AS/GPO10 (Auto Shifter) (LS)	System / Operating Configuration / Auto Shifter Parameters	Generic Output	Ground Digital Output	Hdr2 / P2
SHIFT_SOLB	Transmission	GPO11 (LS)	System / Pin Configuration	Generic Output	Ground Digital Output	Hdr2 / P2
STAGE1	NOS	GPO12 (LS)	System / Pin Configuration	Generic Output	Ground Digital Output	Hdr2 / R3
STAGE2	NOS	GPO13 (LS)	System / Pin Configuration	Generic Output	Ground Digital Output	Hdr2 / P1
STAGE3	NOS	GPO14 (LS)	System / Pin Configuration	Generic Output	Ground Digital Output	Hdr2 / M1

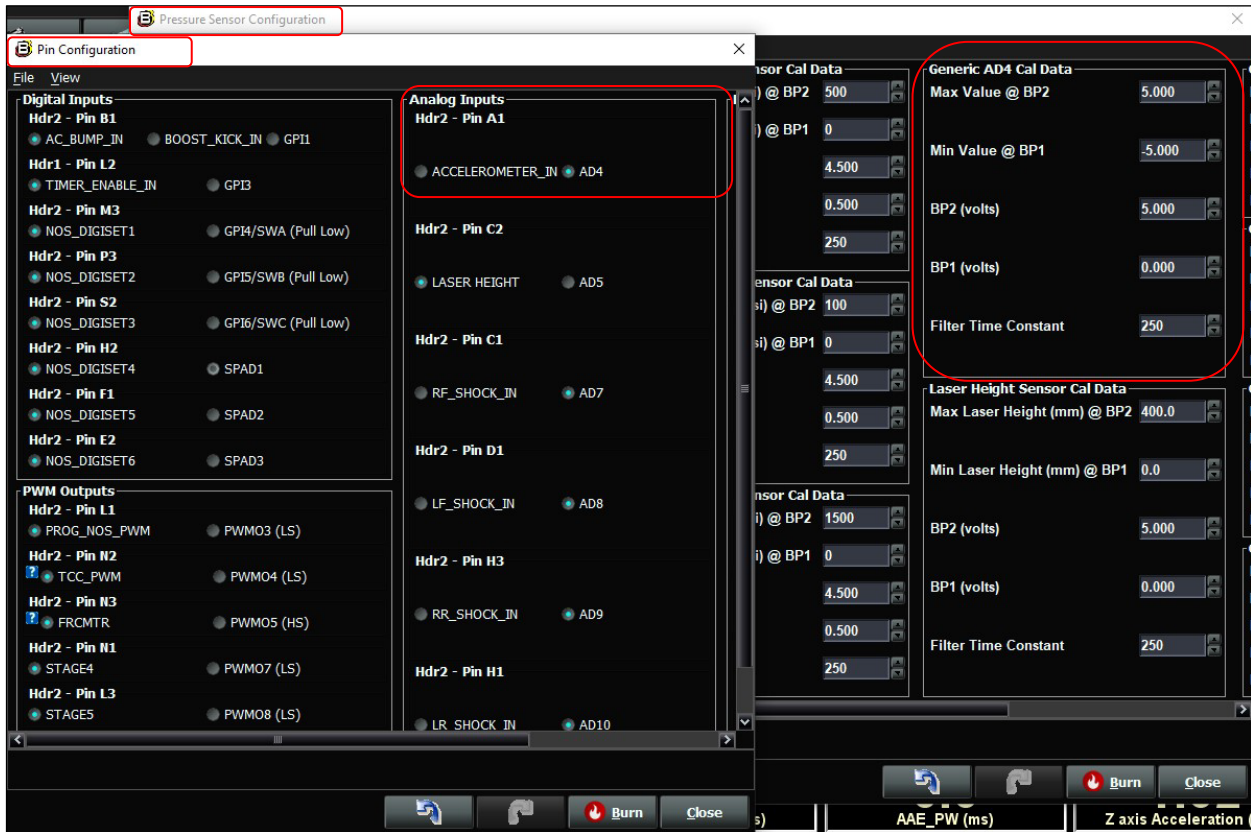
Keep in mind when the default I/O channel(s) are reassigned to optional I/O channel(s), the default I/O channel(s) will no longer be available to configure. Only the newly assigned I/O channel(s) will be available to configure. See the example below.

If for example, in the **Pin Configuration** window, you reassign the default **ACCELEROMETER_IN** analog input to an optional **AD4** analog input, the default **ACCELEROMETER_IN** analog input will no longer be available to configure in the **Pressure Sensor Configuration** Parameter window, only the reassigned **AD4** analog input will be available to configure in the **Pressure Sensor Configuration** Parameter window.

Below is the “Baseline default” **ACCELEROMETER_IN** analog input enabled in the **Pin Configuration** Parameter window with the associated **Remote Accelerometer Sensor Cal Data** parameter configuration settings.



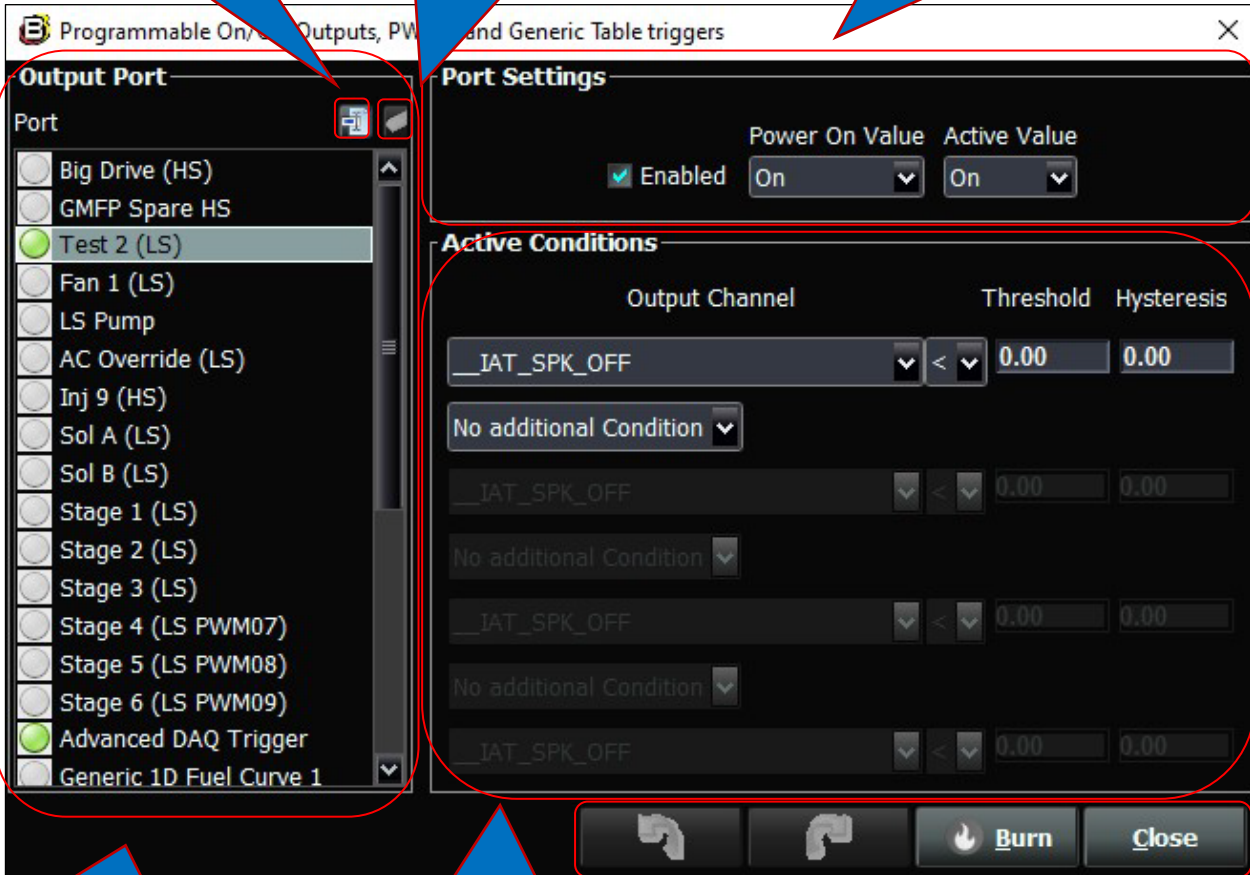
Below is the “Newly reassigned” **AD4** analog input enabled in the **Pin Configuration** Parameter window with the associated **Sensor Cal Data** configuration parameters in the **Pressure Sensor Configuration Parameter** window. Notice the **Generic AD4 Cal Data** parameter configuration settings replace the **Remote Accelerometer Sensor Cal Data** parameter configuration settings.



Generic Port Editor

The Generic Port Editor is a very powerful tool that allows you to unlock the GEN4 ECU custom programming capabilities! The Generic Port Editor uses existing Outputs, generic Curves and Tables to customize their control functionality.

Below is the Generic Port Editor configuration window with some high-level detail.



The screenshot shows the 'Generic Port Editor' window with the following sections and callouts:

- Output Port List:** A list of ports including 'Big Drive (HS)', 'GMFP Spare HS', 'Test 2 (LS)', 'Fan 1 (LS)', 'LS Pump', 'AC Override (LS)', 'Inj 9 (HS)', 'Sol A (LS)', 'Sol B (LS)', 'Stage 1 (LS)', 'Stage 2 (LS)', 'Stage 3 (LS)', 'Stage 4 (LS PWM07)', 'Stage 5 (LS PWM08)', 'Stage 6 (LS PWM09)', 'Advanced DAQ Trigger', and 'Generic 1D Fuel Curve 1'. A callout points to the 'Test 2 (LS)' port.
- Port Settings:** Includes an 'Enabled' checkbox, 'Power On Value' (set to 'On'), and 'Active Value' (set to 'On'). A callout explains that the 'Power On Value' and 'Active Value' settings are used to enable selected Output Port and set Power On and Active Value conditions.
- Active Conditions:** A table for configuring enable conditions.

Output Channel	Threshold	Hysteresis
__IAT_SPK_OFF	<	0.00 0.00
No additional Condition		
__IAT_SPK_OFF	<	0.00 0.00
No additional Condition		
__IAT_SPK_OFF	<	0.00 0.00
No additional Condition		
__IAT_SPK_OFF	<	0.00 0.00

 A callout points to this section, stating it is used to configure Output Port enable conditions.
- Tool Bar:** Contains 'Undo', 'Redo', 'Burn', and 'Close' buttons. A callout explains that these buttons are used for Undo, Redo, Burn, and Close actions.
- General Note:** A callout at the bottom left states: 'The GEN4 Generic Output Ports, Curves & Tables that can be reconfigured. Output Port's Green LED(s) will illuminate when enabled.'

***PRO-TIP:** When the Generic Port Editor is used to reassign an available Output Port, the newly assigned Output Port will disregard the default settings and only rely on the Generic Port Editor's Port Settings and Active Conditions enable conditions. For example, if you want to reassign the Electric Fan 2 Output in the Generic Port Editor, the Electric Fan 2 Output enable conditions found under the Operating Configuration window will no longer be used by the GEN4 ECU to control the Fan 2 output. Once enabled, the newly assigned Output Port will now only rely on the Generic Port Editor's Port Settings and Active Conditions enable conditions.

***PRO-TIP:** You MUST cycle the 12VDC ignition for however long you have the Afterstart Warm Delay Time set for. This is located in the Startup/Idle section / Afterstart Parameters Folder / Afterstart Parameters.

Below is an example of how to use the Generic Port Editor to reassign how the **Fan 2** Output Port can be reconfigured to be enabled using your own conditions versus the default settings found under the Operating Configuration window.

For this example, the Fan 2 Output Port will enable a second fan output to ground a relay based on the following conditions; Battery Voltage is **EQUAL** to 14V AND TPS% is **GREATER THAN** 50% **OR** the Coolant Temperature is **LESS THAN** 200°F . Below explains how to use the Generic Port Editor to configure the Fan 2 Output Port to achieve the new enable conditions.

Step 1: Highlight the **Fan 2 (LS)** selection under Output Port and check the **Enabled** box under Port Settings

Step 2: Set the Power On Value to **Off** & Active Value to **On** using the drop down selection boxes under Port Settings

Step 3: Configure the Active Conditions Output Channels logic conditions and Threshold & Hysteresis values

Output Channel	Logic	Threshold	Hysteresis
BATTERY_VOLTAGE	=	14.000	1.000
And			
TPS_FILTER	>	50.0	5.0
Or			
CLT_TEMP_AN_RAW	<	200	10
No additional Condition			
_IAT_SPK_OFF	<	0.00	0.00

Step 1: Highlight the **Fan 2 (LS)** (LS = Output port will be pulled to ground) selection under Output Port and check the **Enabled** box under Port Settings. Once the enabled box is checked, the green LED adjacent to **Fan 2 (LS)** will illuminate to indicate the Fan 2 (LS) is enabled and will become active once the Port Settings and Active Conditions are met.

Step 2: Set the Power On Value to **Off** & Active Value to **On** using the drop down selection boxes under Port Settings.

Below is a quick explanation for the **Power on Value** and **Active Value** On / Off logic;

Power On Value

- On** If the Power on Value selection is **On**, that means the Output Port selection is enabled as soon as the GEN4 ECU is powered up and the Active Conditions are disregarded.
- Off** If the Power on Value selection is **Off**, that means the Output Port selection is initially off and will only be enabled after the Active Conditions are met and the Active Value is selected as **On**.

Active Value

- On** If the Active Value selection is On, that means the Output Port selection will be enabled after the Active Conditions are met. It typically works in conjunction with an Output Port selection that has an **Off** Power on Value that becomes enabled after the Active Conditions are met.
- Off** If the Active Value selection is Off, that means the Output Port selection will be disabled after the Active Conditions are met. It typically works in conjunction with an Output Port selection that has an **On** Power on Value that becomes disabled after the Active Conditions are met.

Step 3: Configure the Active Conditions Output Channels logic conditions and Threshold & Hysteresis values as shown above. For this example, the **And** condition between the Battery Voltage and TPS Output Channel conditions and the **Or** condition between the TPS and Coolant Temp conditions means the Battery Voltage and/or the TPS or the Coolant Temp Output Channel conditions must be met to enable the Output Port selection.

Below is a quick explanation for the Active Conditions Output Channel logic conditions and Threshold and Hysteresis values.

The Output Channel selections are the GEN4 ECU variables that can be used to create logic condition(s). The variable(s) can be selected using the dropdown selection boxes. Once selected, the **Output Channel** variable values can be set to > (greater than), < (less than) or = (equal to) to **Threshold** value(s) to enable or disable the Output Port selection. A **Hysteresis** value is required to ensure the Threshold value condition does not create an enable or disable issue.

The Hysteresis value is typically 5-10% of the Threshold value, and depending on how the Output Channel (<, >, or =) conditions are configured will determine the effect of the Hysteresis.

For this example, the Hysteresis value is set to 1, relative to the Battery Voltage Threshold value = (equal to) to 14. What this mean is the Battery Voltage Threshold value will be true (enabled) when the Battery Voltage reaches 14 volts and will be false (disabled) when the battery voltage reaches 13 volts or 15 volts.

For an Output Channel = (**equal to**) condition, the Hysteresis transition point will be +/- of the Threshold value.



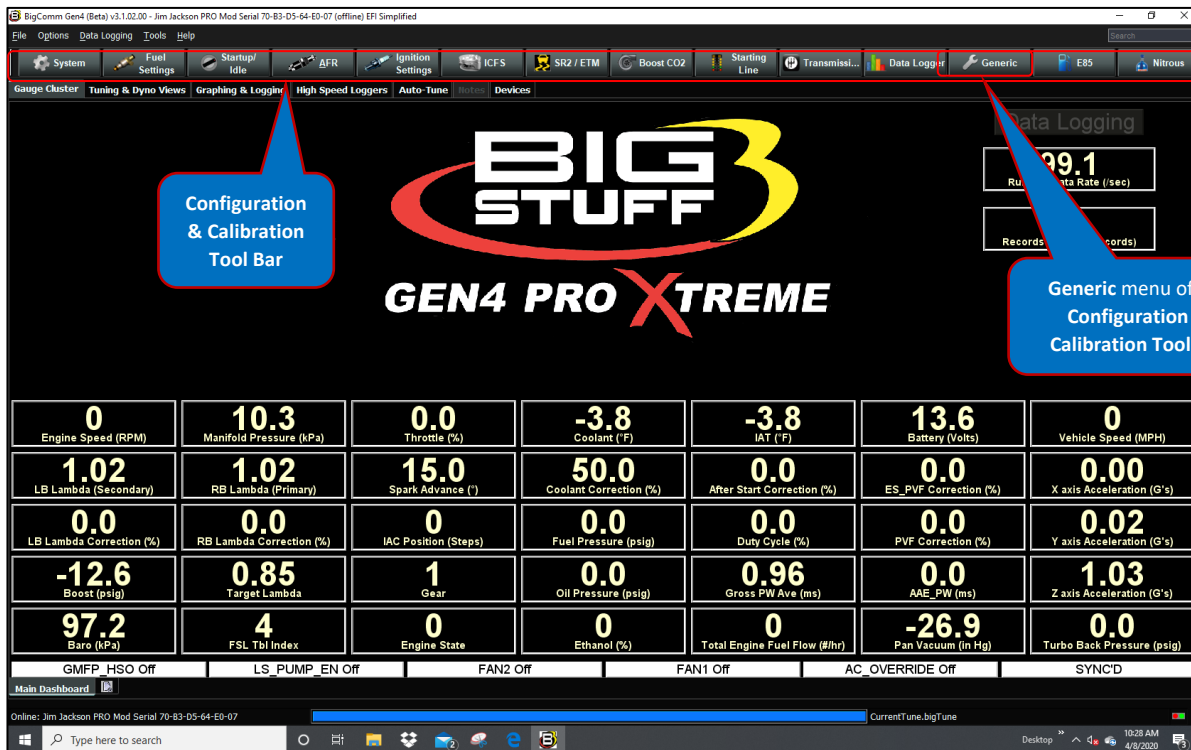
For an Output Channel > **(greater than)** condition, the Hysteresis transition point will be – (negative) of the Threshold value. For this example, The TPS Threshold Value is > (greater than) 50 and the Hysteresis Value is 5. Therefore, when the TPS is > (greater than) 50% the value will become true (enabled) and will be false (disabled) when the TPS goes below 45%.

Once the individual Active Conditions Output Channels logic conditions and Threshold & Hysteresis values are configured, you can then “string together” additional logic conditions using the **And** and **Or** dropdown selections between the Output Channels to create extensive logic criteria to enable or disable Output Port control functionality.

Once you have completed creating the Output Port channel configurations, don’t forget to left click on the **Burn** button the save your changes.

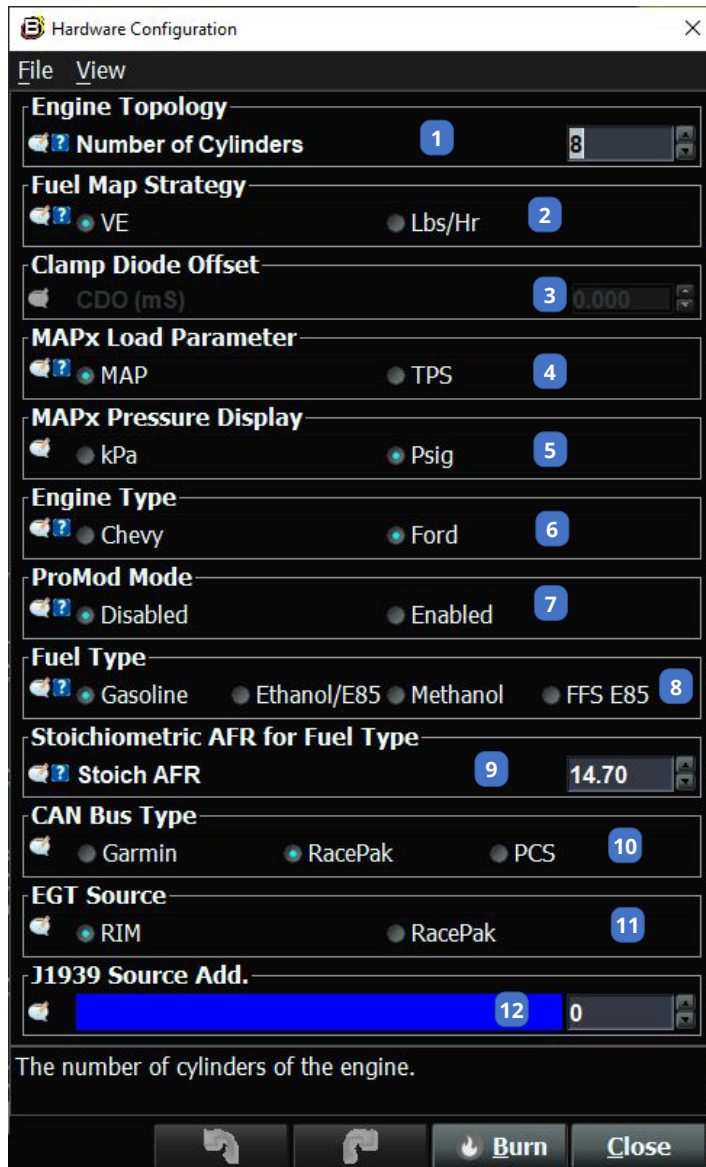
***PRO-TIP:** You **MUST** cycle the 12VDC ignition for however long you have the Afterstart Warm Delay Time set for. This is located in the Startup/Idle section / Afterstart Parameters Folder / Afterstart Parameters.

The Generic Port Editor **must be used** to enable the Generic Curves & Tables in your project under the Generic menu of the BigComm Pro Configuration & Calibration Tool Bar Section. The Generic Port Editor must be used to enable the specific generic Curve(s) & Table(s) prior to configuring/calibrating the generic Curve(s) & Table(s) under the **Generic** menu of the Configuration & Calibration Tool Bar. The Generic Curve(s) & Table(s) can be enabled the same way as the Output Port channels as outlined above.



• **HARDWARE CONFIGURATION**

The Hardware Configuration Section is where you configure how the engine will be controlled.



- (1) Enter the number of Cylinders
- (2) Enter the Fuel Map Strategy. VE is **Volumetric** Efficiency which is a fuel calculation based on the air density and RPM of the engine. Lbs/Hr is a direct map lookup of TPS% and RPM of the engine.
- (3) Clamp Diode Offset – Only used in Alpha-N Calibrations for fuel injector offsets.
- (4) MAPx Load Parameter lets you choose from a MAP (KPA/PSI) or TPS (%) for the Maps Y Axis
- (5) When in the MAP Load Mode configure kPa or Psig to be displayed
- (6) Choose a Chevy or Ford Engine Type. This configures your engine bank to be either a Chevy 1,3,5,7 or Ford 1,2,3,4
- (7) ProMod Mode forces the coolant and air temp sensors to always read 100°F. This is important as it takes the coolant and air temperature sensors out of the fuel calculation. This is mainly used for a drag race application. The air and coolant temperature sensors are still available for use. Click [HERE](#) to go to the ProMod Mode setup.
- (8) Fuel type in the tank. Gasoline, Methanol, Ethanol/E85 is E98 or straight

E85, FFS E85 is for flex fuel sensor with E10 - E85

9) Enter the Stoichiometric AFR for a given fuel type... i.e. Methanol = 6.45, Ethanol(E98) = 9.01, E85 = 9.77, Pure gas = 14.69, E10 = 14.08

(10) Back, Forward, Burn and Close Window Options

Once all changes are complete left click on to save the changes.

• **OPERATING CONFIGURATION**

The Operating Configuration Section is where you configure various idle, fueling, and cooling parameters. Once all changes are complete left click on to save the changes.



(1) TPS

MAX TPS for idle (%) – This value sets the max TPS% for idle. Below this number idle spark can turn on.

Clear Flood TPS (%) – This value will turn off cranking fuel when starting the engine.

(2) Fuel Pump

FP Prime Time (Sec) – Length of time the low side fuel pump is allowed to prime the engine with a .1 second resolution.

HS FP On TPS (%) – Above this TPS% the second fuel pump will turn on. The engine must be running and it's a 12VDC Output on Header 1 Pin H1.

HS FP Off TPS (%) – Below this TPS% the second fuel pump will turn off. The engine must be running and it's a 12VDC Output on Header 1 Pin H1.

(3) A/C Parameters

IAC Bump Steps (#) – Pin configuration digital input Header 2 Pin B1 must be set for AC_BUMP_IN for this option to work. These are the additional opening steps the IAC is allowed once the AC Input is turned on.

IAC Bump RPM – Pin configuration digital input Header 2 Pin B1 must be set for AC_BUMP_IN for this option to work. This is the RPM increase when the AC Input is turned on.

AC Comp OFF TPS (%) – Above this TPS the AC compressor output is turned Off.

AC Comp ON TPS (%) – Below this TPS the AC compressor output is turned Off.

(4) Fan1 Control

Fan1 On Temp (F) – Above this CLT the fan1 will turn on, engine must be running.

Fan1 Off Temp (F) – Below this CLT the fan1 will turn off, engine must be running.

(5) Fan2 Control

Fan2 On Temp (F) – Above this CLT the fan2 will turn on, engine must be running.

Fan2 Off Temp (F) – Below this CLT the fan2 will turn off, engine must be running.

(6) Injector/Fuel Parameters

Choose your Injectors values to be in Volume (CC/Min) or Mass (Lbs/Hr) BS3 recommends running the injectors in (CC/Min). When in VE mode use CC/Min and when in AlphaN use (Lbs/Hr)

Inj A Flowrate – Enter your injectors flow rating

Inj B Flowrate – Enter your injectors flow rating. This is for when using 16 injectors.

Fuel Specific Gravity (Mg/CC) – Gen4 assumes 730, E10 is 739, E85 is 787 @ 64F, consult fuel spec sheet for relative values of the fuel you're using.

Engine Displacement – Enter this value in cc's and 1 in³ is 16.387 cc's.

(7) Crank Ref Offset Adjustment

Offset Angle (deg) – Used to adjust/synchronize the engine/computer ignition timing (.01 deg resolution). For 4X & 24X COP applications, assumes the first crank tooth after the cam edge is TDC #1. For 4X Distributor, assumes the first crank tooth after the cam edge is 45 deg BTDC #1.

(8) Crank Wheel Teeth

Number of Teeth Per Rev – The number of crank teeth per revolution in a COP application. This option will not be available when a distributor is being used.

(9) Ignition Compensation

Inductive Delay (uS) – The number of uS delay through the system. With COP and 16 Amp IGBT coils it's 112uS, with an MSD box, 10uS.

(10) Tach Pullup

Choose a 5V or 12v Tachometer signal

(11) RPM Collar (Pulses per Rev)

Turbo Shaft 1 – Enter the number of pulses per revolution of the turbo. The turbo must have a tooth provisioned into the turbine shaft for this to work.

Turbo Shaft 2 – Enter the number of pulses per revolution of the turbo. The turbo must have a tooth provisioned into the turbine shaft for this to work.

FW ABS – Front Wheel Anti-lock brake sensor number of pickups

RW ABS – Rear Wheel Anti-lock brake sensor number of pickups

(12) Output Drivetrain Sensors

TOSS/Driveshaft Sensor Type – Transmission Output Shaft Speed sensor or standard driveshaft sensor number of pickups. This sensor can be either a 2-Wire VR or 3-Wire HED sensor. See the BigStuff3 GEN4 install manual for wiring details.



(13) Input Drivetrain Sensors

TISS/Input Sensor Type – Transmission Input Shaft Speed sensor or standard input sensor number of pickups. This sensor can be either a 2-Wire VR or 3-Wire HED sensor. See the BigStuff3 GEN4 install manual for wiring details.

(14) Vehicle Speed Parameters

This section is used to calculate Miles Per Hour.

Rear Gear Ratio (x.xx:1) – Enter the rear end gear ratio being used

Rear Tire Diameter (In) – Enter the tire diameter in inches

(15) Shift Light Parameters

Used to activate a shift light based on the number of gears and RPM drop of the motor.

Delay after Transbrake is released – This value is the amount of time before the ECU evaluates the engine RPM on the release of the Transbrake. The shift light is Header 2 Pin C3 and is a 12VDC output.

(X) Gear RPM – Set the RPM the shift light turns on

(X) Gear RPM drop – Set the amount of engine RPM drop on the gearshift

Max # of Gears (2-5) – Set the amount of gears going down the track

(16) Auto Shifter Parameters

Used to activate a shift output based on the number of gears and RPM drop of the motor. In the Pin Configuration section this is the alternate of Header 2 Pin 2 and is a ground/earth output.

Delay after Transbrake is released – This value is the amount of time before the ECU evaluates the engine RPM on the release of the Transbrake.

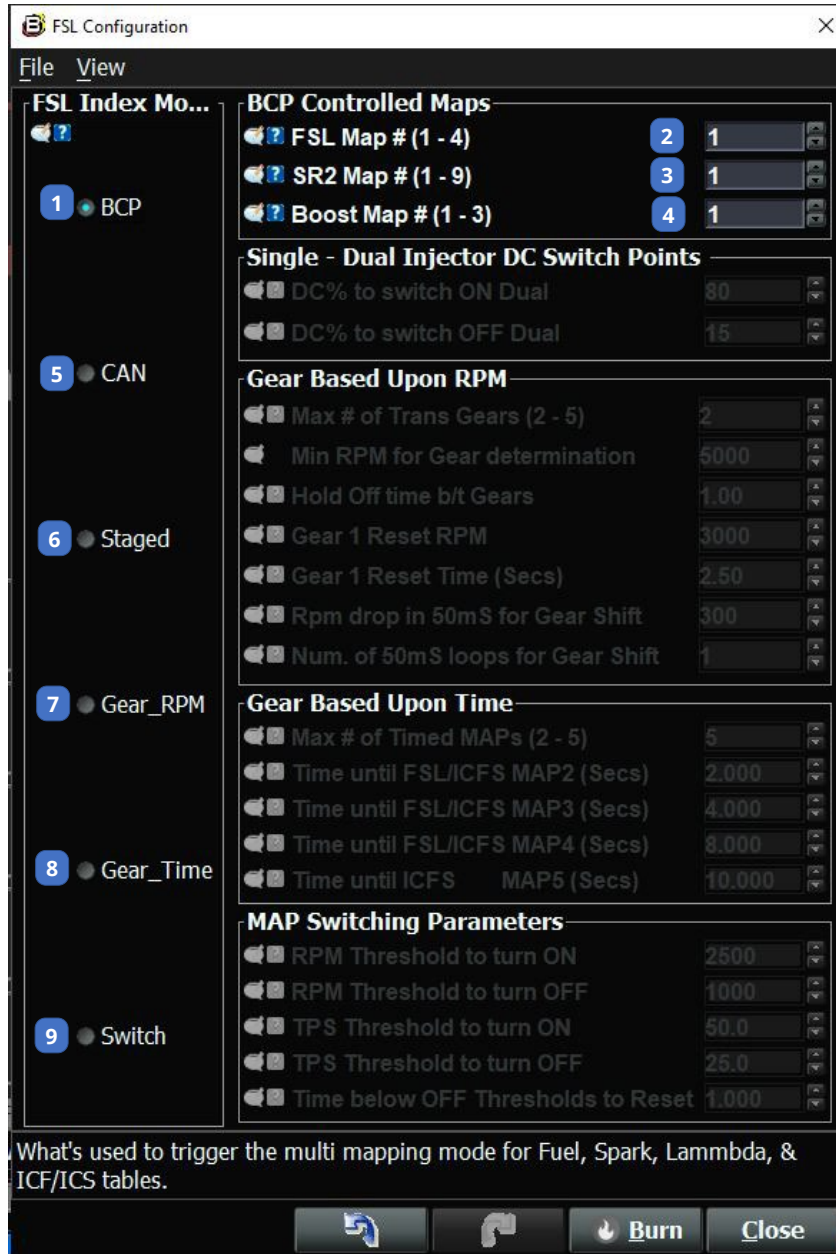
(X) Gear RPM – Set the RPM the Auto Shifter turns on

(X) Gear RPM drop – Set the amount of engine RPM drop on the gearshift

Max # of Gears (2-5) – Set the amount of gears going down the track

• FUEL/SPARK/LAMBDA CONFIGURATION

The FSL section is designed to configure how the power management is applied going down the



racetrack. Depending on which FSL Index Mode you have chosen will apply that power management mode. Once all changes are complete left click on Burn to save the changes.

(1) BCP Mode – When BCP mode is chosen the **BCP Controlled Maps** section is available for use. You can enter which maps you want to run based on the programmed criteria you have configured in those maps.

(2) FSL Map # (1-4) – What Fuel/Spark/Lambda map(1-4) is selected manually, (i.e. without touch screen dash). The Fuel/Spark/Lambda maps all work in conjunction together. If you decide that you want to run FSL Map 3 then that will change all 3 maps to map 3. If you go back to Map 1 then all 3 Maps will go back to Map 1.

(3) SR2 Map # (1-3) – The SR2 maps that you have configured in

the section can be selected here. There are up to 3 SR2/ETM maps and 9 1st gear retards available. If you choose SR2 map 4-9 you will be choosing the associated gear retard map. This means that the SR2/ETM map will be run with any of those 1st gear retard maps.

(4) Boost Map # (1-3) – What Boost map (1-3) is selected manually, (i.e. without touch screen dash)

(5)CAN Mode

INFO COMING SOON

(6) Staged Fuel Injectors Mode

When 16 Injectors is chosen in the dealer configuration settings the single to dual injectors switch points are enabled to bring in the 2nd set of injectors. The fuel injector switch point is determined by the primary fuel injector duty cycle. At any time when the engine is running if the DC% meets the setpoint the 2nd set of fuel injectors are triggered. See the Configuring 16 Injectors Section by clicking [HERE](#).

DC% to Switch ON Dual – The primary injector duty cycle that will trigger the 2nd set of fuel injectors to turn ON.

DC% to Switch OFF Dual – The primary injector duty cycle that will trigger the 2nd set of fuel injectors to turn OFF.

***PRO-TIP:** In a drag race application when using 16 injectors all 16 injectors should be running when you are on the transbrake or clutch RPM rev limiters. This ensures that you will not be transitioning fuel tables while going down the track which can upset the Air fuel Ratio.

(7) Gear Based Upon RPM

When the Gear_RPM FSL Index Mode is chosen you can have up to (4) Fuel, Spark, and Lambda Maps. This will offer precise control and resolution like never before on your engine.

For example, if we entered Max # of Trans Gears = 4 we will now have these maps exposed for our Fuel/AFR/Spark tables under each of their respective sections in the project.

You would then go and start editing each map based on the Fuel/AFR/Spark curves for your engine. See the **How to edit all Table Windows** section to learn how to edit these.

(1) Max # of Trans Gears (2-5) – Maximum number of gears the ECU will calculate are in the transmission

(2) Min RPM for Gear Determination – The minimum engine RPM before the ECU starts to calculate which gear it's in

(3) Hold Off Time Between Gears – The time between when the ECU calculates which gear the transmission is in

(4) Gear 1 Reset RPM – Below this rpm for Gear 1 Reset Time (secs), will reset it back to 1st gear

(5) Gear 1 Reset Time – The amount of time when below the gear 1 reset rpm the ECU will go back to 1st gear

(6) RPM drop in 50 mS for Gear Shift – The minimum rpm drop in 50mS to be considered a gear shift

(7) Number of 50 mS loops for Gear Shift - The number of consecutive 50mS loops that the min rpm drop must exceed to allow a gear shift

(8) Gear Based Upon Time

When the Gear RPM FSL Index Mode is chosen, the Fuel/AFR/Spark maps are triggered by **time** and having engine **RPM** and **TPS%** thresholds met. The SR2 timer when running is what the Gear Based Upon Time works from. The SR2 timer will start running when all the 3-Step parameters are enabled and when the 3-Step is **RELEASED** indicating you are going down the

track. Just as in the Gear Based Upon RPM setting above there will be 4 exposed Fuel/AFR/Spark maps exposed to edit based on your combination. See the **How to edit all Table Windows** section to learn how to edit these.

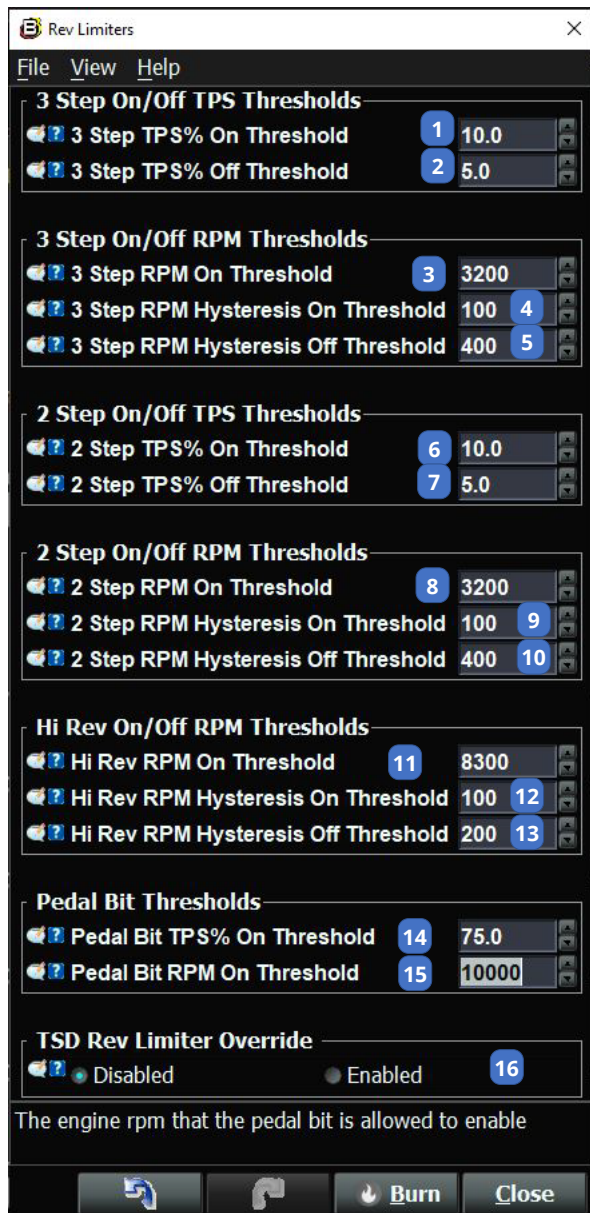
- (1) Max # of Timed Maps (2-5)** – Maximum number of gear maps based upon time
- (2) Time until FSL/ICFS MAP 2 (Secs)** – Time until the FSL/ICFS map 2 is enabled upon gear 1 activation
- (3) Time until FSL/ICFS MAP 3 (Secs)** – Time until the FSL/ICFS map 3 is enabled upon gear 1 activation
- (4) Time until FSL/ICFS MAP 4 (Secs)** – Time until the FSL/ICFS map 4 is enabled upon gear 1 activation
- (5) RPM Threshold to turn ON** – Must exceed this RPM with 3 step energized in order for SR2 to activate upon its' release.
- (6) RPM Threshold to turn OFF** – The engine rpm at which rpm map threshold will turn off
- (7) TPS Threshold to turn ON** - Must exceed this TPS with 3 step energized in order for SR2 to activate upon its' release
- (8) TPS Threshold to turn OFF** - The TPS% at which rpm map threshold will turn off
- (9) Time below OFF Thresholds to Reset** - The amount of time both engine rpm and TPS% must be below the thresholds to deactivate the gear based upon time maps

(9)Switch

INFO COMING SOON

Rev Limiters

The Rev Limiters section is where you configure the Rev Limiter settings for the two step, three step, and max engine RPM. For COP systems these will work out of the box. For Distributor based systems you will need an ETM module for these to work properly. The Pedal Bit Thresholds are settings so that your SR2 Timer, Boost Controller, NOS, etc. don't reactivate going down track once the 3 Step is released. Once all changes are complete left click on to save the changes.



***PRO-TIP:** Set the Pedal Bit Thresholds for 75% TPS and RPM 500 less than your 3-Step RPM Rev Limiter when you do not want the SR2 timers to accidentally reset going down the racetrack. If you will be commanding the 3-step multiple times before your pass set the RPM to 10,000 so that every time you enable the SR2 timer by activating the 3-step you will NOT be locked out and unable to start the SR2 timers again unless you go over 10,000 RPM. An example would be a turbo car that may need to start your burnout off the transbrake instead of the linelock due to poor air quality.

(1) Above the TPS% at which the 3 step is allowed to enable

(2) Below the TPS% at which the 3 step is allowed to disable

(3) The engine rpm at which the 3 step is allowed to enable

(4) The engine rpm at which the 3 step on rpm is allowed to start based on this hysteresis. For example, the 3 Step Threshold minus the 3 Step RPM Hysteresis equals the RevLimiter is enabled. So, 3 Step On of 3200rpm minus 100rpm Hysteresis On threshold equals 3100rpm. This is adjusted based on the engine rpm going passed the 3 Step setpoint too far when the engine goes WOT.

(5) The engine rpm at which the 3 step is disabled

(6) The TPS% at which the 2 step is allowed to

enable

(7) The TPS% at which the 2 step is allowed to disable

(8) The engine rpm at which the 2 step is allowed to enable

(9) The engine rpm at which the 2 step on rpm is allowed to start based on this hysteresis. For example, the 2 Step Threshold minus the 2 Step RPM Hysteresis equals the RevLimiter is

enabled. So, 2 Step On of 3200rpm minus 100rpm Hysteresis On threshold equals 3100rpm. This is adjusted based on the engine rpm going passed the 2 Step setpoint too far when the engine goes WOT.

(10) The engine rpm at which the 2 step is disabled

(11) The max engine rpm allowed at all times when the engine is running

(12) The max engine rpm at which the high rev limiter is allowed to go down to without disabling the max engine rpm rev limiter

(13) The engine rpm at which the high side rev limiter is disabled

(14) The TPS% that the pedal bit is allowed to enable

(15) The engine rpm that the pedal bit is allowed to enable

(16) When enabled ignores the Rev Limiter settings from the Touch Screen Dash (TSD).

Window Start Angle

The Window start angle helps maximize fuel efficiency and transient fuel response. The setting is the start of the fuel injection event at BTDC. Looking at the cam card with the specifics of the cam shaft will give you a good starting point to work with. Once all changes are complete left click on the burn button to save the changes.



• CRANK WINDOWING PARAMETERS

The last section under System is the Crank Windowing Parameters. Depending on the crank pickup style the engine is running these parameters may need adjustments. These settings keep the crank pickup signal clean and should only be adjusted after talking with your BigStuff3 Dealer. These values typically don't need adjustments.

The below pictures represent the default BigStuff3 recommended settings:



34. FREQUENTLY ASKED QUESTIONS

[Back to Table of Contents](#)

- **What does working "On line" vs. "Off line" mean?**

-Working "Off-line" = The BigStuff3 ECU is not powered up (PC Only). Working "On-line" = The BigStuff3 ECU is powered on, the communication is connected between the GEN4 ECU and a PC, and the two are communicating with each other

- **Should I use the camshaft position input (cam sync) with my distributor based GEN4 system?**

-Without the camshaft position input (cam input connector in the main wire harness) hooked up, the GEN4 system still provides sequential fuel injection and individual fuel control per cylinder, but injector phasing (where the fuel is injected) and individual spark control will not function.

- **How can the GEN4 system provide sequential fuel injection and individual fuel control per cylinder without the cam camshaft position input hooked up?**

-When the engine starts cranking over, the GEN4 ECU begins firing the injector drivers, assigned to each injector, in the firing order inputted into the software. What the GEN3 system cannot do without the cam camshaft position input hooked up is to determine where to inject fuel (the position in crankshaft degrees, relative to TDC, for each cylinder).

• **At what injector duty cycle % are my injectors considered out of control, or static?**

-Loss of injector control does not occur at 100% duty cycle, but at approximately 85% duty cycle. At 85% duty cycle the injectors are most likely not opening and closing in a controlled fashion.

-This condition is termed "static" (vs. dynamic) control. An example why this condition is undesirable is if the GEN4 ECU demands more fuel (demanding a larger pulse width) and the injector is already static. The only way to move more fuel through the injector would be to increase the fuel pressure. Increasing the fuel pressure at the 1/8th mile marker is not possible, so things go bad quickly.

-Also, teetering on and off at the static point is also undesirable. Lastly, running the injectors drivers static for long periods of time can damage them.

• **How do I set up my ignition system with the GEN4 system?**

-For more information on ignition system setups, beyond what is available in this manual, go to the How To/Help section on the BigStuff3 website, and then Ignition System Setup Tutorial. The link is: <http://bigstuff3.com/pdf/Ignition%20Guide%20rev%201.2.pdf>. There are nine (9) ignition system setups outlined. There is also information on the setting up the Ford TFI, GM HEI, GM Opti-spark & MSD8 ignition systems in the How To/Help section of the website.

• **Where can I find wiring harness information on the BS3 power-train system and optional systems?**

-Information on most of our wiring harnesses is available on our website at www.bigstuff3.com.
-Go to the GEN4 section on the website and under the GEN4 PRO XTREME menu will be more information. The link is: <http://bigstuff3.com/gen4/>

• **My engine will not start. What should I check?**

-Make sure the harness side header connectors, interfacing with the GEN4 ECU, are attached and tightened to no more than 15 – 20 inch lbs.

-Make sure the battery voltage is at, or above, 12V during cranking. Low battery voltage conditions must be fixed before trying to start the engine. Battery voltage (especially during cranking) is even more important with coil-on-plug applications.

-Make sure you can see an RPM signal in the software or dash. While turning the engine over, you should see at least 100 – 150 RPM. If no RPM signal is present, check that the crank input (crank trigger or distributor) signal wire is connected to the red wire in the BS3 "Crank" connector. Swap the 2 wires and try again.

-For distributor ignition based applications, make sure the BS3 points wire is connected to the ignition system points input terminal/wire. Applying 12V directly to the BS3 points wire will immediately damage the GEN4 ECU!!

-For COP engines (LSx and other standalone COP engine) the cam input cannot occur at the

same time as the crank input!!! If this is the case, the engine will not start. The cam synch pulse must occur before a crank pulse. Ideally, 10* before the crank pulse.

-For more information on ignition system setups, go to the How To/Help section on the BS3 website, then to Ignition System Setup Tutorial.

-With all coil-on-plug engines, make sure the coil ground eyelet is securely fastened to the cylinder head or engine block. No other grounds locations should be used.

-The ECU may be in Clear flood Mode. Make sure the TPS sensor reads near 1-2% when the throttle is closed and near 100% when fully opened. If it reads near 100% when closed, the ECU is in clear flood mode and is not injecting fuel. Swap TPS pins A & C in the TPS connector.

Make sure the crank sensor is connected.

-The LS1 Cam sensor connections are: **• A - Signal • B - Ground • C - 12V •**

The LS2 cam sensor connections must be (terminals A & C are swapped): **• A - 12V • B - Ground • C - Signal**

• My engine timing does seem right, what should I check.

-Make sure the firing order is correct.

-Both the BS3 GEN4 main wiring harness and the MSD ignition system must be connected directly to the battery!! If not, ground loop issues are likely to occur.

-Make sure your pulses per rev in the Operating Configuration table is correct for your application. For example, a four (4) magnet MSD crank trigger setup should have a value of 4.

• I can't get my LSx engine started.

-I'm using an LS2 sensor in the front of the engine.

-Swap pins A & C in the cam input connector around. My TPS sensor reads 100% when the throttle is closed and 0% when the throttle is fully opened. Swap the wires A & C in the TPS connector. The engine may not start since the ECU senses that the Clear flood Mode has been invoked

• If I am tuning in Alpha/N mode (Hardware Configuration, then Control Algorithm) can I use my 1 Bar MAP sensor for barometric compensation?

-Yes, the automatic barometric compensation is hard-coded in the ECU. Leave the MAP sensor vacuum port exposed to the atmosphere. Do not plug the MAP vacuum port to the intake manifold.

• What do I need to do to make sure my 3 step works correctly?

-A clean 12VDC must be applied to Header 2 W1 meaning a relay with only 12vdc. Do not use the same 12VDC feeding the transbrake solenoid as flyback voltage from the transbrake releasing can damage the ECU!

-Confirm the 3 Step settings in the System Menu / RevLimiters are configured correctly. The TPS% On threshold must be higher than the Off threshold.

• I do not think my injectors are pulsing. What can I check?

-Make sure the BS3 and MSD systems are grounded directly to the battery.

-Plug a “noid” light into each injector position in the injector wire harness. Turn the engine over and see if the light pulses for each injector location.

• **I do not think my COP coils are firing. What can I check?**

-Make sure the BS3 main wire harness ground is wired directly to the battery.
 -Make sure the coil ground wire is grounded to the engine block or cylinder head. No other ground location will work!

• **Can I use a 5 Bar MAP sensor?**

-Yes, choose 5 Bar MAP sensor in the System Menu / Pressure and Sensor Configuration section.
 -Be sure to cycle the 12VDC ignition on the ECU and you will need to recalibrate the fuel/afr/spark tables on this or any MAP sensor change.
 - Note: The 4 BAR MAP sensor sold by BigStuff3 is good to 52 PSI.

• **How do I know if my Bosch LSU4.9 WBO2 sensor is bad?**

-First make sure the sensor to main wire harness connection is good.

• **How can I check if my NTK WBO2 Methanol sensor is working?**

-First check the control circuitry by disconnecting the sensor from the harness. Turn the ignition to the BS3 ECU on. With the engine off its best to move the O2 sensor out of the exhaust and have it hang in the air. Go online with the ECU and navigate to the Gauge Cluster tab and go to the NTKWBO2 tab on the bottom the screen. In the upper right hand corner of the page will be LB%O2 and RB%O2 readings. Go to the AFR Menu and click on the O2 and EGT Parameters section. In the lower right hand corner turn the “Perform NTKO2 WBO2 Air Cal” to “Yes”.

WARNING! Do not hold the O2 sensor as it will start to heat up and you can get severely burned. You will see the O2% readings start to update and after about 5 minutes you should be reading about 18%-22% on either sensor. If you do not read that more than likely the sensor is defective and needs to be replaced. Contact Bigstuff3 for more details at this point. If the sensor reads fine turn the Air Cal to “Off” and turn the ignition off. Wait for the sensor to cool down and reinstall in the exhaust and you are ready to go.

• **What caused my O2 sensor to fail?**

-Being dropped
 -Running leaded fuel
 -Running rich at idle

• **Does the GEN4 ECU offer an auto-shift feature?**

Yes, BigStuff3 offers an optional transmission auto-shift feature. The system will shift up to five (5) speeds with independent shift RPM and Hysteresis points. Once the system is configured for the auto-shift feature, a wire from ECU Header 2 location, P2 must be run to the ground side of the relay.

• **What dwell times should be used with the LS1 coils sold with my system?**



With a 12V charging system from idle to approximately 4,000 RPM use about 3.0 milliseconds near idle and no more than about 4.0 milliseconds at approximately 4,000 RPM. From approximately 4,100 - Max RPM use no more than about 6 milliseconds of total dwell time at max RPM. With a 16V charging system from idle to approximately 4,000 RPM use about 2.0 milliseconds near idle and no more than about 3.0 milliseconds at approximately 4,000 RPM. From approximately 4,100 - Max RPM use no more than about 4.5 milliseconds of total dwell time at max RPM.

DATALOGGER ACRONYMS

Point Definitions are displayed in alphabetical order and are the same for either laptop based datalogging or pulling the data from the on board SD card.

A

AC_BUMP_ON – Air Conditioning Engine RPM increase active condition

ACCEL_X – Accelerometer X Axis

ACCEL_Y – Accelerometer Y Axis

ACCEL_Z – Accelerometer Z Axis

ACCEL_ENG – Acceleration Engine value

ACT_IAC_POS – Current Idle Air Control Motor Position

AFR_TARGET – Air Fuel Ratio Target

AFR_L_BANK – Air Fuel Ratio Left Bank

AFR_R_BANK – Air Fuel Ratio Right Bank

AFR_CYL_1 – Air Fuel Ratio Cylinder 1

AFR_CYL_2 – Air Fuel Ratio Cylinder 2

AFR_CYL_3 – Air Fuel Ratio Cylinder 3

AFR_CYL_4 – Air Fuel Ratio Cylinder 4

AFR_CYL_5 – Air Fuel Ratio Cylinder 5

AFR_CYL_6 – Air Fuel Ratio Cylinder 6

AFR_CYL_7 – Air Fuel Ratio Cylinder 7

AFR_CYL_8 – Air Fuel Ratio Cylinder 8

B

BARO – Outside Barometric Pressure

BATTERY_VOLTAGE – Battery voltage

BC_SENSOR_ERROR – Boost Controller Sensor Input Error

BOOST_PSI – Intake Manifold Pressure

BOOST_CL_DC – GN Boost Controller Duty Cycle Output %

Boost_Inc PIDTerm – GN Boost Controller PID Increase %

C

CLT – Coolant Temperature
CORR_AIR – Fuel Percentage Air Temperature Correction
CORR_AFTST – Afterstart Fuel Percentage Correction
CORR_BARO – Barometric Fuel Percentage Correction
CORR_CLT – Coolant Warm Up Temperature Fuel Percentage Correction
CORR_E85 – E85 Fuel Percentage Correction
CORR_ES_PVFC – Extended Source Power Valve Fuel Correction Percentage
CORR_FP_COMP – Fuel Pressure Correction
CORR_PVF – Power Valve Fuel Correction
CORR_SLT – Start Line Fuel Percentage Correction

D

DAE_INPUT – DAE 12vdc Input true or false
DSRD_BOOST_MAP – Desired Boost Map
DSRD_SR2_MAP – Desired SR2 Map
DUTY_CYCLE_BOOST_INC – Boost Controller Duty Cycle Output Increase %
DUTY_CYCLE_BOOST_DEC – Boost Controller Duty Cycle Output Decrease %
DUTY_CYCLE_PWM07 – Duty Cycle Output Pulse Width Modulation 07
DUTY_CYCLE_PWM08 – Duty Cycle Output Pulse Width Modulation 08
DUTY_CYCLE_PWM09 – Duty Cycle Output Pulse Width Modulation 09
DUTY_CYCLE_NOS_PRG – Progressive Nitrous Duty Cycle Control Output Percentage
DUTY_CYCLE_CYL1 – Fuel Injector Duty Cycle Percentage Cylinder 1
DUTY_CYCLE_CYL2 – Fuel Injector Duty Cycle Percentage Cylinder 2
DUTY_CYCLE_CYL3 – Fuel Injector Duty Cycle Percentage Cylinder 3
DUTY_CYCLE_CYL4 – Fuel Injector Duty Cycle Percentage Cylinder 4
DUTY_CYCLE_CYL5 – Fuel Injector Duty Cycle Percentage Cylinder 5
DUTY_CYCLE_CYL6 – Fuel Injector Duty Cycle Percentage Cylinder 6
DUTY_CYCLE_CYL7 – Fuel Injector Duty Cycle Percentage Cylinder 7
DUTY_CYCLE_CYL8 – Fuel Injector Duty Cycle Percentage Cylinder 8
DUTY_CYCLE_FRCMTR – Duty Cycle Force Motor Output Percentage (Used with 4L60E/80E)
DUTY_CYCLE_TCC – Duty Cycle Torque Converter Clutch Output (Used with 4L60E/80E)
DWELL_TIME – Ignition Coil Dwell Time

E

E85_SPARK_OFFSET – E85 Spark Offset
ECM_RB_EC – NTK O2 Sensor Right Bank Error Code
ECU_SYNC – Current ECU Synchronization Status
EGT_CYL1 – Exhaust Gas Temperature Cylinder 1
EGT_CYL2 – Exhaust Gas Temperature Cylinder 2

EGT_CYL3 – Exhaust Gas Temperature Cylinder 3
EGT_CYL4 – Exhaust Gas Temperature Cylinder 4
EGT_CYL5 – Exhaust Gas Temperature Cylinder 5
EGT_CYL6 – Exhaust Gas Temperature Cylinder 6
EGT_CYL7 – Exhaust Gas Temperature Cylinder 7
EGT_CYL8 – Exhaust Gas Temperature Cylinder 8
ENG_STATE – Engine State (1-Engine Cranking, 4-Engine Running Steady, 5-Engine Accelerating, 6-Engine Decelerating, 7-Deceleration Fuel Cutoff)
EGT_SHUTDOWN_ACTIVE – Exhaust Gas Temperature Shutdown Active Condition
ETM_TORQ_STG – Engine Torque Management Torque Stage Current Value
ETM_DS_ENG_ERROR – ETM Driveshaft or Engine RPM Error
ETM_DS_ENG_DSIRD – ETM Driveshaft or Engine RPM Desired

F

FP_SENSOR_ERROR – Fuel Pressure Sensor Input Error
FP_WARNING_ACTIVE – Fuel Pressure Warning Active Condition
FSL_TBL_INDEX – Fuel Spark Lambda current map enabled
FUEL_FLOW_CYL1 – Calculated Fuel flow in lbs/hr for Cylinder 1
FUEL_FLOW_CYL2 – Calculated Fuel flow in lbs/hr for Cylinder 2
FUEL_FLOW_CYL3 – Calculated Fuel flow in lbs/hr for Cylinder 3
FUEL_FLOW_CYL4 – Calculated Fuel flow in lbs/hr for Cylinder 4
FUEL_FLOW_CYL5 – Calculated Fuel flow in lbs/hr for Cylinder 5
FUEL_FLOW_CYL6 – Calculated Fuel flow in lbs/hr for Cylinder 6
FUEL_FLOW_CYL7 – Calculated Fuel flow in lbs/hr for Cylinder 7
FUEL_FLOW_CYL8 – Calculated Fuel flow in lbs/hr for Cylinder 8
FUEL_FLOW_TOTAL – Total Calculated Fuel Flow of cylinders 1-8 in lbs/hr

G

GEAR – Current Gear position calculated by engine rpm drop
GEN_BOOST_ADD – Generic Boost Tables Additional Boost Pressure
GEN_FUEL_LBSHR_ADD – Generic Fuel Lbs/hr adder
GEN_FUEL_MULT – Generic Fuel Multiplier Percentage Adder
GEN_LAMBDA_ADD – Generic Lambda Fuel Adder
GEN_LAMBDA_MULT – Generic Lambda Fuel Multiplier
GEN_SPK_ADV_ADD – Generic Spark Advance Adder
GS_ACCEL – Gear Speed Acceleration
GYRO_X – Gyrometer X Axis
GYRO_Y – Gyrometer Y Axis
GYRO_Z – Gyrometer Z Axis

H

HEAD_TEMP_RB – Head Temperature Right Bank. When in Pro Mod Mode located in the System->Hardware Configuration section this sensor is enabled for use. Pro Mod Mode sets the water and air sensors to 100* in the software so that they have no bearing on the overall VE fuel calculation. This is the GM Water Temperature Sensor.

HEAD_TEMP_LB – Head Temperature Left Bank. When in Pro Mod Mode located in the System->Hardware Configuration section this sensor is enabled for use. Pro Mod Mode sets the water and air sensors to 100* in the software so that they have no bearing on the overall VE fuel calculation. This is the GM Air Temperature Sensor.

I

IAT – Intake Air Temperature

ICF_CORR_CYL1 – Individual Cylinder Fuel Percentage Correction Cylinder 1

ICF_CORR_CYL2 – Individual Cylinder Fuel Percentage Correction Cylinder 2

ICF_CORR_CYL3 – Individual Cylinder Fuel Percentage Correction Cylinder 3

ICF_CORR_CYL4 – Individual Cylinder Fuel Percentage Correction Cylinder 4

ICF_CORR_CYL5 – Individual Cylinder Fuel Percentage Correction Cylinder 5

ICF_CORR_CYL6 – Individual Cylinder Fuel Percentage Correction Cylinder 6

ICF_CORR_CYL7 – Individual Cylinder Fuel Percentage Correction Cylinder 7

ICF_CORR_CYL8 – Individual Cylinder Fuel Percentage Correction Cylinder 8

ICS_CORR_CYL1 – Individual Cylinder Spark Correction Cylinder 1

ICS_CORR_CYL2 – Individual Cylinder Spark Correction Cylinder 2

ICS_CORR_CYL3 – Individual Cylinder Spark Correction Cylinder 3

ICS_CORR_CYL4 – Individual Cylinder Spark Correction Cylinder 4

ICS_CORR_CYL5 – Individual Cylinder Spark Correction Cylinder 5

ICS_CORR_CYL6 – Individual Cylinder Spark Correction Cylinder 6

ICS_CORR_CYL7 – Individual Cylinder Spark Correction Cylinder 7

ICS_CORR_CYL8 – Individual Cylinder Spark Correction Cylinder 8

INJ_GPW_AVE – Fuel Injector Gross Pulse Width Average

INJ_PHASE_ANGLE – Fuel Injector Injection Event Phase Angle

IOT – Fuel Injector Opening Tim

L

LAMBDA_CYL1 – Lambda Value Cylinder 1

LAMBDA_CYL2 – Lambda Value Cylinder 2

LAMBDA_CYL3 – Lambda Value Cylinder 3

LAMBDA_CYL4 – Lambda Value Cylinder 4

LAMBDA_CYL5 – Lambda Value Cylinder 5

LAMBDA_CYL6 – Lambda Value Cylinder 6

LAMBDA_CYL7 – Lambda Value Cylinder 7



LAMBDA_CYL8 – Lambda Value Cylinder 8
LAMBDA_L_BANK – Lambda Reading Left Bank
LAMBDA_R_BANK – Lambda Reading Right Bank
LAMBDA_TARGET – Lambda Reading Left Bank
LAMBDA_RB_UA – Lambda Right Bank NTK O2 Error Code
LASER_HEIGHT_AD5 – Laser Height Sensor Reading

M

MAP – Engine Intake Manifold Pressure
MPH – Miles Per Hour

N

NERNST_CYL1 – Resistance value of the Cylinder 1 Bosch O2 sensor. Normal value is around 300. **NERNST_CYL2** – Resistance value of the Cylinder 2 Bosch O2 sensor. Normal value is around 300.
NERNST_CYL3 – Resistance value of the Cylinder 3 Bosch O2 sensor. Normal value is around 300.
NERNST_CYL4 – Resistance value of the Cylinder 4 Bosch O2 sensor. Normal value is around 300.
NERNST_CYL5 – Resistance value of the Cylinder 5 Bosch O2 sensor. Normal value is around 300.
NERNST_CYL6 – Resistance value of the Cylinder 6 Bosch O2 sensor. Normal value is around 300.
NERNST_CYL7 – Resistance value of the Cylinder 7 Bosch O2 sensor. Normal value is around 300.
NERNST_CYL8 – Resistance value of the Cylinder 8 Bosch O2 sensor. Normal value is around 300.
NOS_STAGE – Current NOS Stage
NOS_BOOST_ENABLE – Nitrous or Boost Enable Arm Switch
NOS_TIMER – When activated is the Nitrous Run Time
NOS_ICS_CORR_CYL1 – Nitrous Individual Cylinder Spark Correction Cylinder 1
NOS_ICS_CORR_CYL2 – Nitrous Individual Cylinder Spark Correction Cylinder 2
NOS_ICS_CORR_CYL3 – Nitrous Individual Cylinder Spark Correction Cylinder 3
NOS_ICS_CORR_CYL4 – Nitrous Individual Cylinder Spark Correction Cylinder 4
NOS_ICS_CORR_CYL5 – Nitrous Individual Cylinder Spark Correction Cylinder 5
NOS_ICS_CORR_CYL6 – Nitrous Individual Cylinder Spark Correction Cylinder 6
NOS_ICS_CORR_CYL7 – Nitrous Individual Cylinder Spark Correction Cylinder 7
NOS_ICS_CORR_CYL8 – Nitrous Individual Cylinder Spark Correction Cylinder 8

O

O2_CORR_CYL1 – Closed Loop O2 AFR Fuel Correction Cylinder 1
O2_CORR_CYL2 – Closed Loop O2 AFR Fuel Correction Cylinder 2
O2_CORR_CYL3 – Closed Loop O2 AFR Fuel Correction Cylinder 3
O2_CORR_CYL4 – Closed Loop O2 AFR Fuel Correction Cylinder 4
O2_CORR_CYL5 – Closed Loop O2 AFR Fuel Correction Cylinder 5
O2_CORR_CYL6 – Closed Loop O2 AFR Fuel Correction Cylinder 6
O2_CORR_CYL7 – Closed Loop O2 AFR Fuel Correction Cylinder 7
O2_CORR_CYL8 – Closed Loop O2 AFR Fuel Correction Cylinder 8
O2_CORR_L_BANK – Closed Loop O2 AFR Fuel Correction Left Bank
O2_CORR_R_BANK – Closed Loop O2 AFR Fuel Correction Right Bank

P

PCT_ETHANOL – Percentage of Ethanol in fuel (Need sensor to read properly)
PEDAL_BIT_MODE – Pedal Bit Mode Current Condition
PCT_TCC_SLIP – Percentage of Torque Converter Clutch Slippage (Used with 4L60E/80E)
PRESS_FUEL – Fuel Pressure Reading
PRESS_OIL – Oil Pressure Reading
PRESS_TURBO – Turbocharger Pressure Reading
PRESS_WG – Wastegate Pressure Reading
PRESS_NOS – Nitrous Pressure Reading
PRESS_PV – Pan Vacuum Reading
PRESS_TL – Transmission Line Pressure Reading
PRESS_DSRD_WG – CO2 Desired Wastegate
PRNDL – Park / Reverse / Neutral / Drive / Low (Used with 4L60E/80E)

R

RACE_FUEL_LBS_HR – NOS Mode Race Fuel Lbs/hr fuel adder
REV_LIMITER – Current condition of any active rev limiters
RPM_ENGINE – Engine RPM
RPM_TSS1_LB – Turbocharger Shaft Speed RPM Left Bank
RPM_TSS2_RB – Turbocharger Shaft Speed RPM Right Bank
RPM_ABS_FW – RPM Front Wheel Speed Sensor
RPM_ABS_RW – RPM Rear Wheel Speed Sensor
RPM_TOSS – RPM Transmission Output Speed Sensor or Driveshaft Sensor
RPM_TISS – RPM Transmission Input Speed Sensor

S

SLT_MODE – Start Line Timing Mode Current Condition

SHOCK_RF_AD7 – Right Front Shock Reading
SHOCK_LF_AD8 – Left Front Shock Reading
SHOCK_RR_AD9 – Right Rear Shock Reading
SHOCK_LR_AD10 – Left Rear Shock Reading
SPK_ADV_BCP – Base Spark Advance
SPK_ADV_CYL1 – Spark Advance Cylinder 1
SPK_ADV_CYL2 – Spark Advance Cylinder 2
SPK_ADV_CYL3 – Spark Advance Cylinder 3
SPK_ADV_CYL4 – Spark Advance Cylinder 4
SPK_ADV_CYL5 – Spark Advance Cylinder 5
SPK_ADV_CYL6 – Spark Advance Cylinder 6
SPK_ADV_CYL7 – Spark Advance Cylinder 7
SPK_ADV_CYL8 – Spark Advance Cylinder 8
SR2_TIMER – Current Race time after the release of the three step
SR2_GEAR1_SPK_OFFSET – SR2 Gear 1 Spark Offset
SR2_DS_SPK_OFFSET – SR2 Driveshaft or Engine Spark Offset
SR2_DS_ERROR – SR2 Driveshaft or Engine RPM Error
SR2_DS_DSRD – SR2 Driveshaft or Engine RPM Desired
SS_SPK_NOS_RTD – Street Strip Nitrous Spark Retard
SS_NOS_FUEL_ADD – Street Strip Nitrous Fuel Adder
SS_NOS_LAMBDA_OFFSET – Street Strip Nitrous Lambda Target Offset

T

TPS – Throttle Position Sensor Percentage
TOT – Transmission Oil Temperature Reading
THREE_STEP_INPUT – Three Step Input 12vdc true or false
THREE_STEP_MODE – Three Step Active Condition
TRANS_GEAR_RATIO – Current Transmission Gear Ratio (Used with 4L60E/80E)
TSD_GEAR1_OFFSET – Touch Screen Dash Gear 1 Offset
TSD_SR2_DS_OFFSET – Touchscreen Dash SR2 Driveshaft or Engine RPM Offset
TSD_ETM_DS_OFFSET – Touchscreen Dash ETM Driveshaft or Engine RPM Offset
TWO_STEP_INPUT – Two Step Input 12vdc true or false
TWO_STEP_ACTIVE – Two Step Active Condition
TWO_STEP_MODE – Two Step Active Condition

V

VE -Volumetric Efficiency number calculated from the base fuel map

W

WHEEL SPIN – Calculated wheel speed based off differential from either the rear wheel speed sensor or driveshaft sensor compared to the front wheel speed sensor.

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