



# **GEN4 PRO XTREME BigComm Pro SR2 Traction Control User Manual**

[www.BigStuff3EFI.com](http://www.BigStuff3EFI.com)

## HOW TO USE THE BIGCOMM PRO CONFIGURATION & CALIBRATION TOOL BAR SR2/ETM MENU AND SUBMENU



The **SR2 / ETM** Menu is where the Traction Control power management is configured. This option must be enabled on the GEN4 ECU and if not contact BigStuff3 for more details on adding it to your ECU. If the desired power management comes from a driveshaft sensor you will need a SR2 driveshaft sensor kit. If the desired power management is the engine RPM no auxiliary hardware is necessary. This section also is home for the RevLimiter Error Table and the Roll Race Error Curve which will covered later in this section. The SR2 / ETM feature is optional and if you would like to purchase it, please contact BigStuff3 for more details.

**SR2 Power Management** is used by adding or subtracting timing based on prepopulated user created curves to control from. The SR2 curves consist of up to (9) 1<sup>st</sup> gear timing retard curves and 3 timing based curves.

**ETM or Engine Torque Management** is a power reduction strategy which removes engine torque as a function of a rev limiter to remove power from the engine. This does not take much ETM reduction to accomplish the goal of slowing the engine down. ETM full power is 31 and it's recommended to go no lower than 28 in the ETM Driveshaft Error Table. This should be a secondary power reduction strategy and only used after the SR2 timing curves have been used first.

**NOTE:** SR2 Map Curves (1-3) will align with it's associated 1<sup>st</sup> gear timing curve, SR2 Timing Curve and ETM Power Reduction Curve. Since the 1<sup>st</sup> gear timing curve will allow up to (9) curves once you choose SR2 map (4-9) the SR2 / ETM Map will always use the #3 Map.

**To enable the SR2 / ETM power management curves the process is the following:**

1. In the SR2 selection table the SR2 must be enabled.
2. The TPS and RPM thresholds must be met in order for the power management to start.
3. The SR2 / ETM system is triggered by the 12vdc 3-Step Input found on the main engine harness on Header 2 W1. This needs to be a **CLEAN** 12vdc signal that does not share a heavy load such as a transbrake solenoid. We typically recommend having a relay provide the 12vdc signal from the same transbrake input.
4. Once all of the SR2 criteria is met on the **RELEASE** of the 3 step input the SR2 Timer will activate and start the power management control tables. The SR2 Timer will stay active for however long the SR2 time is configured for on the SR2 / ETM tables.

For example, on a turbo car with an automatic transmission and transbrake the following needs to happen to start the SR2 / ETM Traction Control tables:

1. Configure the SR2 selection table with the SR2 enabled, ETM select rpm chosen, desired Map, and minimum RPM and TPS values.
2. Pull up to the starting line and press the 3 Step Input and floor the car. Immediately once you go past the RPM and TPS thresholds the SR2 Timer is on standby ready to activate the tables. If the GEN4 is being used as the rev-limiter you will be on it building boost.
3. Once you are ready to go the 3-Step Input which is shared with the transbrake will be released and the SR2 Timer will start and activate the 1<sup>st</sup> Gear Timing Curve, SR2 Curve and ETM Curve. Depending on if you are using the engine or driveshaft as the power control strategy the tables are active providing power management.
4. As the vehicle is accelerating down the track the 1<sup>st</sup> gear retard will be either adding or subtracting timing based on the programmed curve. If the tire or engine RPM starts to go over the programmed SR2/ETM curves timing will start to be removed first and then the ETM curve will start to pull power if the timing retard value is not enough. The ETM curve should **ALWAYS** be above the SR2 timing-based curve and provide the secondary layer of protection.
5. Once the run is over, review the SR2 data to make the necessary adjustments to improve your launch and traction control strategies.

Now we will go into configuring all of the necessary tables and curves.

The first section to configure is the **SR2 Selection** menu:

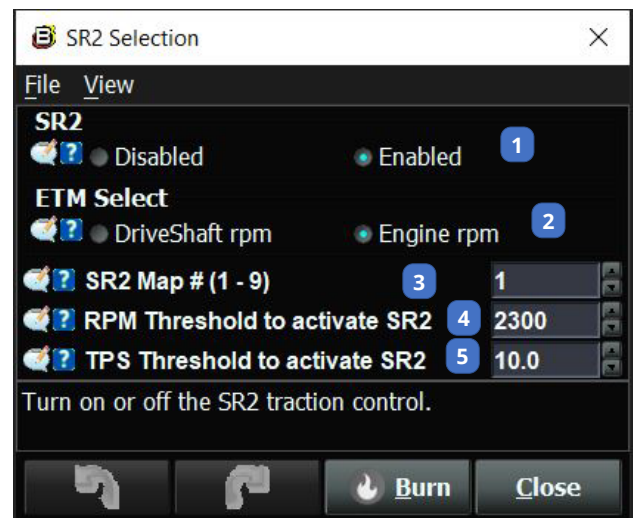
**(1) SR2** – Disable or Enable the SR2 traction control curves

**(2) ETM Select** – Choose on either of your motor or driveshaft plots the ability to control from the driveshaft or engine RPM

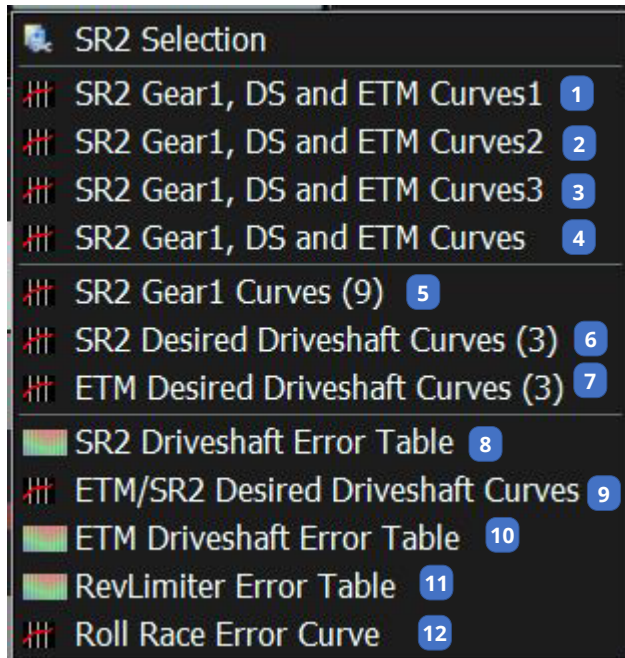
**(3) SR2 Map# (1-9)** – There are 3 SR2/ETM maps available and 9 total 1<sup>st</sup> gear retard timing curves available at all time. If SR2 Map #1 is selected then its associated SR2/ETM will be selected. Once SR2 Map (4-9) is selected then the GEN4 will only use the SR2/ETM curve 3.

**(4) RPM Threshold to activate SR2** – Minimum RPM necessary to arm the SR2 TC

**(5) TPS% Threshold to activate SR2** – Minimum TPS% necessary to arm the SR2 TC



## • **SR2 / ETM MENU**



SR2 Selection	
SR2 Gear1, DS and ETM Curves1	1
SR2 Gear1, DS and ETM Curves2	2
SR2 Gear1, DS and ETM Curves3	3
SR2 Gear1, DS and ETM Curves	4
SR2 Gear1 Curves (9)	5
SR2 Desired Driveshaft Curves (3)	6
ETM Desired Driveshaft Curves (3)	7
SR2 Driveshaft Error Table	8
ETM/SR2 Desired Driveshaft Curves (9)	9
ETM Driveshaft Error Table	10
RevLimiter Error Table	11
Roll Race Error Curve	12

**(1) SR2 Gear1, DS and ETM Curves 1** – This groups the Gear 1 retard curve and driveshaft and ETM curves together on 1 table. The two separate pictures in figure will be shown as one table in the GEN4 software. See **Figure 1** below.

**(2) SR2 Gear1, DS and ETM Curves 2** – This groups the Gear 2 retard curve and driveshaft and ETM curves together on 1 table. The two separate pictures in figure will be shown as one table in the GEN4 software. See **Figure 2** below.

**(3) SR2 Gear1, DS and ETM Curves 3** – This groups the Gear 3 retard curve and driveshaft and ETM curves together on 1 table. The two separate pictures in figure will be shown as one table in the GEN4 software. See **Figure 3** below.

**(4) SR2 Gear1, DS and ETM Curves** – This groups

all the Gear 1 retard curve and driveshaft and ETM curves together on table. See **Figure 4** below.

**(5) SR2 Gear 1 Curves (9)** – This table is where all of the (9) 1<sup>st</sup> gear retards are curves are created. This table can add or subtract timing based on the needs of the tuner. See **Figure 5** below.

**(6) SR2 Desired Driveshaft Curves (3)** – This is where all 3 of the timing based SR2 maps are configured. If the user does not want a certain curve to be used set a map desired row to 10,000 RPM or a number well above the driveshaft or engine RPM your combination uses. This will ensure that no timing is added or subtracted based on the curves configured. See **Figure 6** below.

**(7) ETM Desired Driveshaft Curves (3)** – This is where all 3 of the ETM based maps are configured. This curve is to be used only as a secondary layer of protection as the SR2 timing curve should be used primarily for the power reduction. See **Figure 7** below.

**(8) SR2 Driveshaft Error Table** – The SR2 driveshaft error table is used to populate how much timing to add or subtract based on where either the engine or driveshaft RPM is in relation to the programmed curve. This table takes into account the actual engine or driveshaft and creates an error number based on where the desired programmed curve is. The column on the left indicates an error value and the column down below is the SR2 Timer. A positive error value on the left column indicates that the actual engine or driveshaft is **BELOW** the programmed curve. A negative error value on the left column indicates the actual engine or driveshaft rpm is **ABOVE** the programmed curve. See **Figure 8** below.

**(9) ETM/SR2 Desired Driveshaft Curves** – This table is used to group Maps (1-3) of the ETM/SR2 curves in one table. See **Figure 9** below.

**(10) ETM Driveshaft Error Table** – ETM or Engine Torque Management uses 31 levels of power control for an engine. 31 represents full power and as you decrease each level of power by one its about a 5% reduction in engine power. It does not take much ETM to slow an engine down



enough to gain traction if the engine or driveshaft RPM is going over the desired curve. We do not recommend going lower than a 20 for the ETM value. See **Figure 10** below.

**(11) RevLimiter Error Table** – This table is used to adjust how hard the GEN4 ECU RevLimiters will work on the engine combination. This can be compared to an adjustable hard or soft spark cut but with infinite adjustability. The lower the value the harder the rev limiter will be allowed to hit and pull torque from the engine.

The column on the left is the engine rpm error from the current Revlimiting setpoint and the lower horizontal row is the acceleration rate of the engine. The acceleration rate of the engine is a calculation of engine speed over time.

The engine RPM error column has a positive and negative value associated with it. The positive numbers are the engine currently going over the current engine rpm Revlimiting setpoint. The negative numbers are the engine RPM going lower than the current engine RPM setpoint.

The acceleration rate row has a positive and negative value associated with it. The negative numbers represent the engine rpm rate falling and the positive numbers represent the engine rpm rate rising.

The table will compare the engine acceleration and engine rpm error to the current Revlimiting setpoint. The RevLimiting setpoint can either be the Two Step, Three Step, or Engine Max RPM as seen in the RevLimiters section under the System Menu. We recommend on the top most positive engine rpm error row the lowest value to be 17 and on the lowest row where the highest negative number is a 31. This way if the engine rpm is below the current setpoint the engine will have a 31 indicating full engine torque is being produced. See **Figure 11** below.

**(12) Roll Race Error Curve** – If your GEN4 ECU has the roll race option installed you can use front wheel speed on your Front ABS wheel sensor input and compare it to the driveshaft or rear ABS sensor input. This table will pull timing based on the amount of error measured between the two inputs. See **Figure 12** below.

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Figure 6

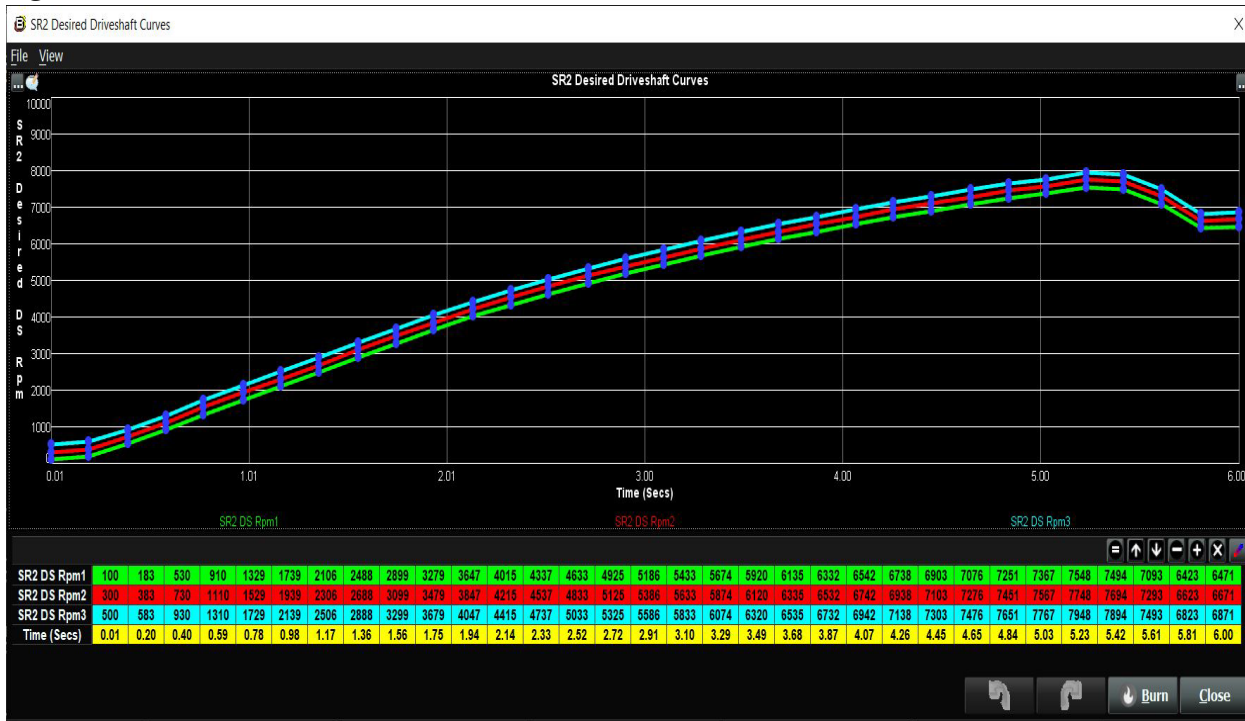


Figure 7

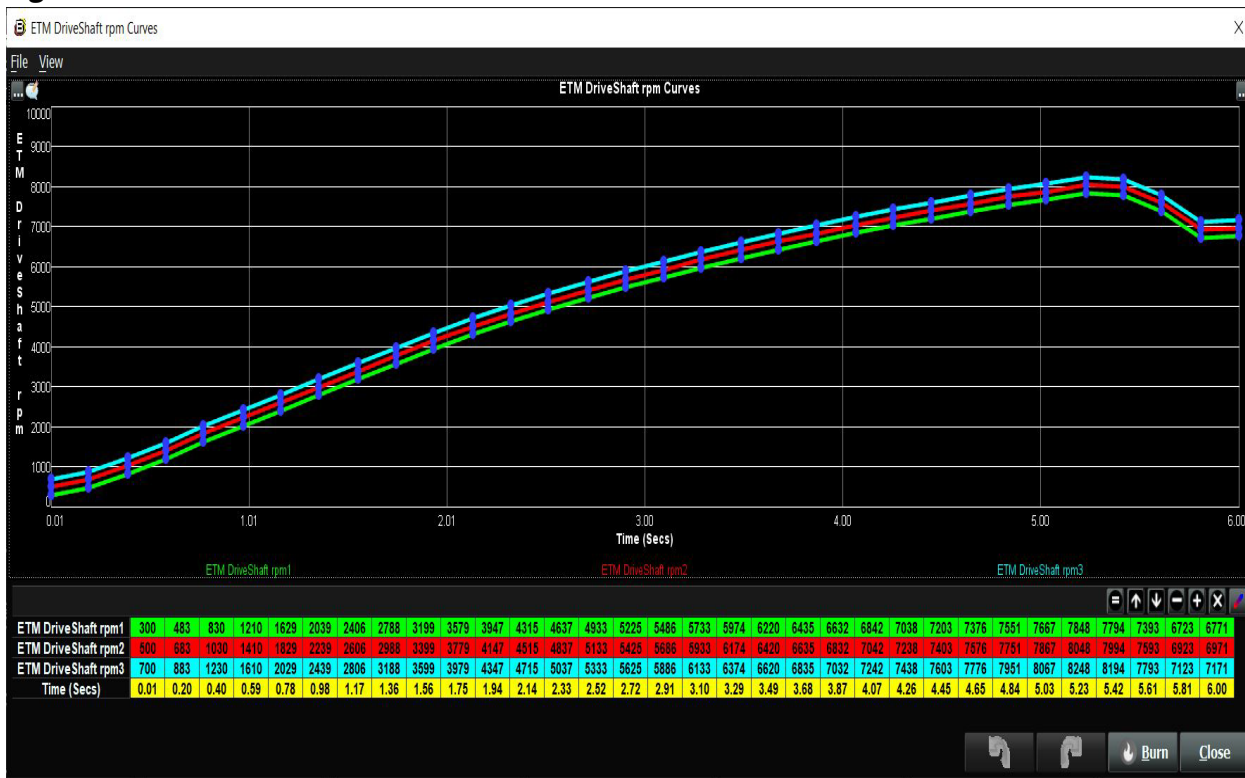






Figure 10



Figure 11

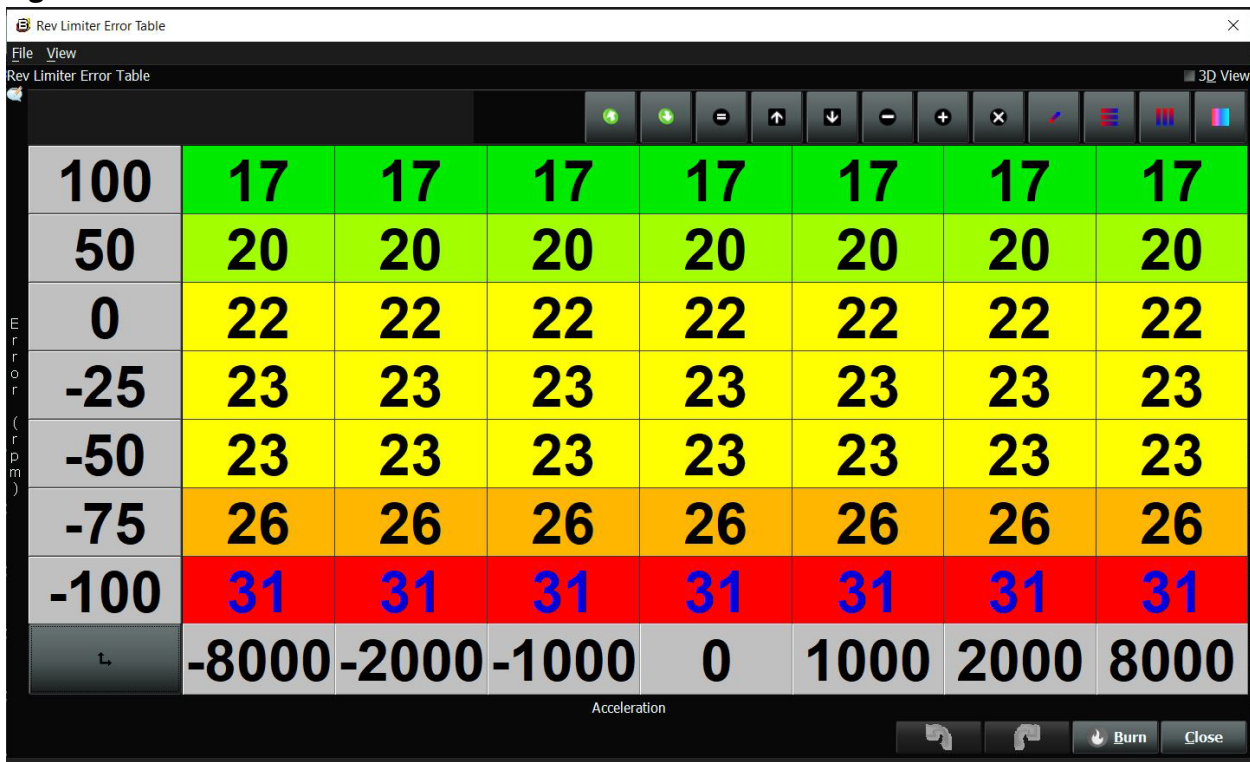
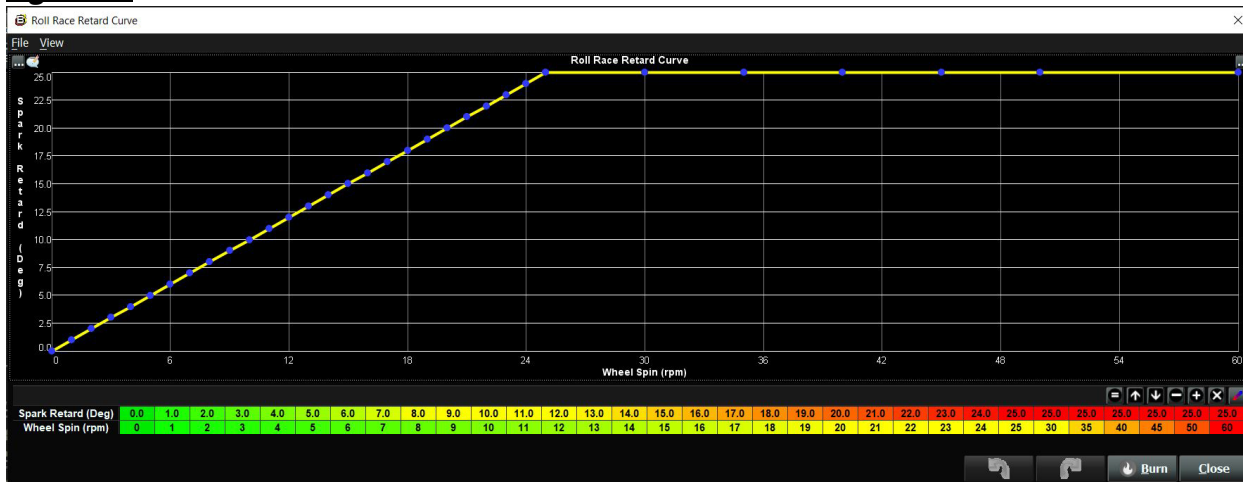


Figure 12



## FREQUENTLY ASKED QUESTIONS

### • 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).

The Base Spark Table(s) are edited as soon in the Bigstuff3 GEN4 ECU Full Software Manual located on our website. Click on this link to navigate and download.

### • 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](http://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/af/r/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\_DSRD** – 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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