Laser Ride Height Sensor

Thank you for purchasing the most advanced laser ride height sensor on the market today! This quality USA made sensor from Loop Products will prevent a big wheelie to keep your race car moving forward and keeping your ET fast and consistent.

These instructions are to be used in addendum with the provided wheelie sensor specifications.

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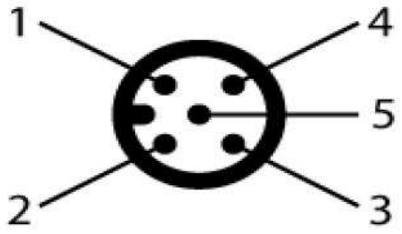
Installation Instructions

1. Install the wheelie sensor on the farthest point forward where it will be pointed at the ground with no obstructions of its sight. We recommend you move the sensor as far forward as possible to have the highest resolution with the sensor since our pivot point is the rear axle centerline. Install it away from high temperature areas such as very close to the exhaust system. Route the wiring back where the wires are protected from heat, metal chafing and any kind of EMF (Engine noise such as coil packs).

2. Wire the sensor for power, ground, and signal according to the following diagram:

Pinout as viewed from top of sensor:

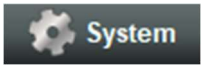


Pin # - Function – Wire color

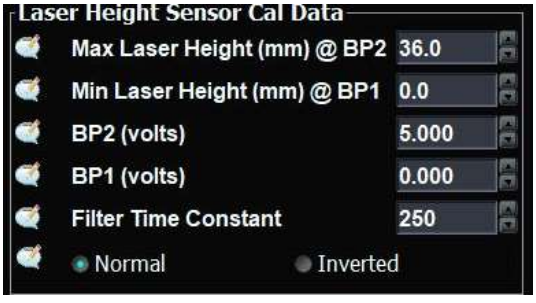
1 - Supply Voltage - Brown
2 - 0-5V Analog Out - White
3 - Ground - Blue
4 - Ground - Black
5 - 0-5V Analog Input - Green/Yellow

We recommend a switched 12vdc power such as the same ignition source as the **ECU** so it's only powered when the **ECU** is. The signal from the wheelie sensor will be plugged into **Header 2 Pin C2**. Ignore pins 4 and 5 on the wheelie sensor for now as that is for future releases.

Bigstuff3 GEN4 Programming Instructions

1. Open your current **Bigstuff3 GEN4** project your working in and navigate to the **System Button** 

and then choose the **Pressure and Sensor Configuration**. Once that window is open configure the **Laser Height Sensor Cal Data**:

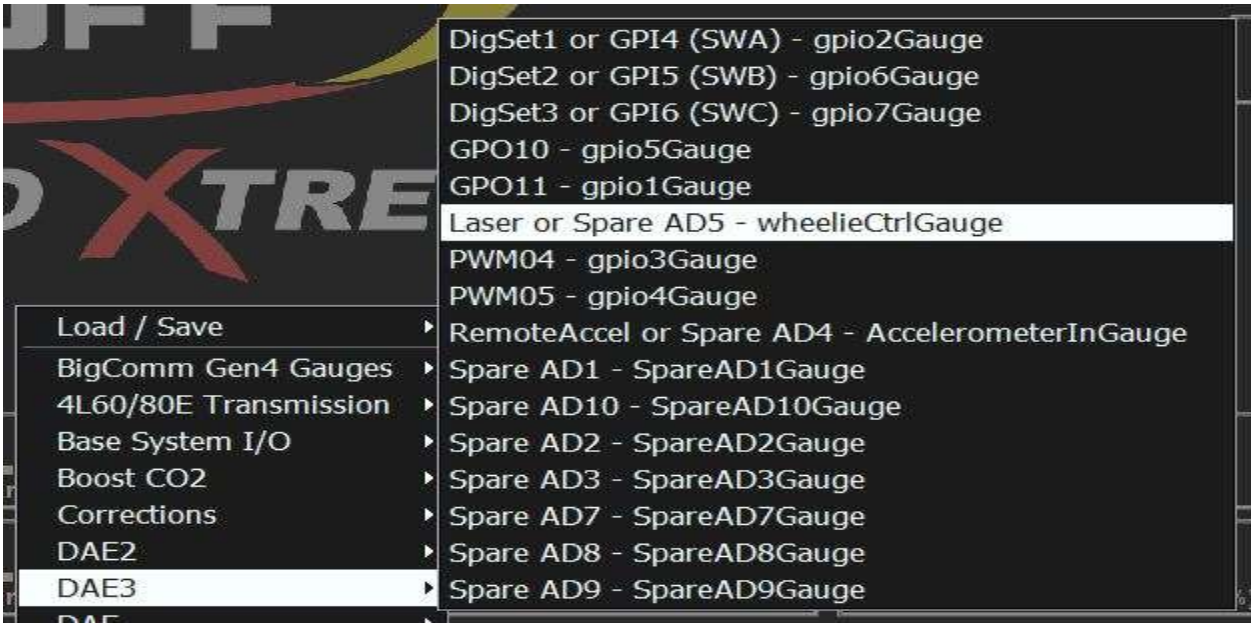


Now that the sensor is programmed, please check to see its reading correctly. Go online with your **ECU** if you have been making changes in your offline project. You will need to send the offline changes and burn the new programming for the wheelie sensor if you programmed the wheelie sensor parameters offline. If you programmed the

values while online with **ECU** make sure to click **BURN** 

for the new setting to take effect. Once the **Bigcommpro GEN4** software default page opens and your sensor values are displayed, hover over a point you do not want to see anymore. (For example, hover over the ethanol% value if you're not running a flex fuel sensor.) Right click on the box using your mouse and navigate to **DAE3 -> Laser or Spare AD5** and then left click.

See the pic below:



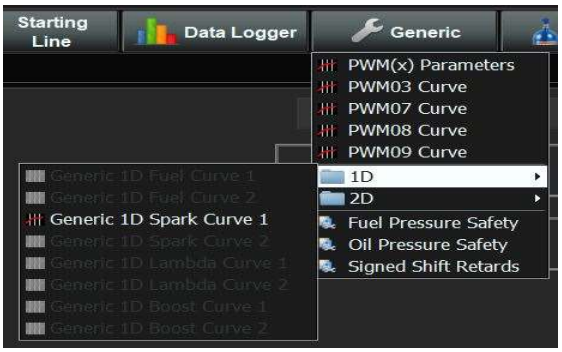
Your sensor reading will be displayed if it's wired correctly, powered up, and facing the ground. You can place the wheelie sensor value anywhere in the software by following these instructions.

2. Now that your sensor is programmed, go to the **Ignition Settings** 

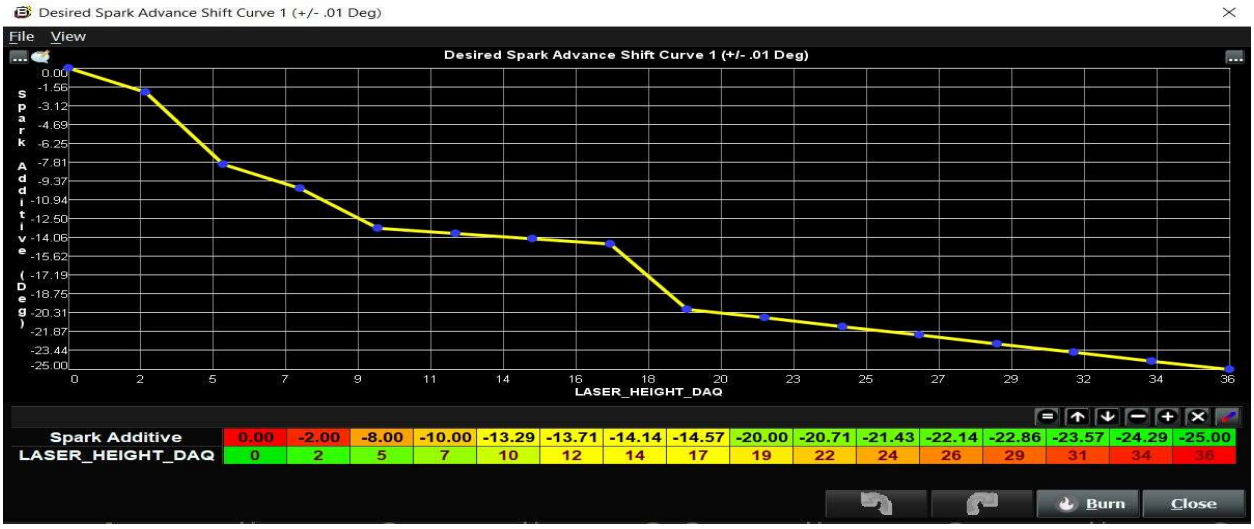
section and select the **Spark Modifier Selection** on the pulldown menu. Next enable the **Generic 1D Spark Curve1** and select **LASER_HEIGHT_DAQ** in the pulldown menu. This will now expose the spark curve you will use to adjust how much timing is pulled for how high the wheelie goes.

3. Next go the **Generic Section** 

, navigate to the **1D folder,** and select the **Generic 1D Spark Curve 1** as seen below:



4. Now we will program the Wheelie Sensor Retard Curve:

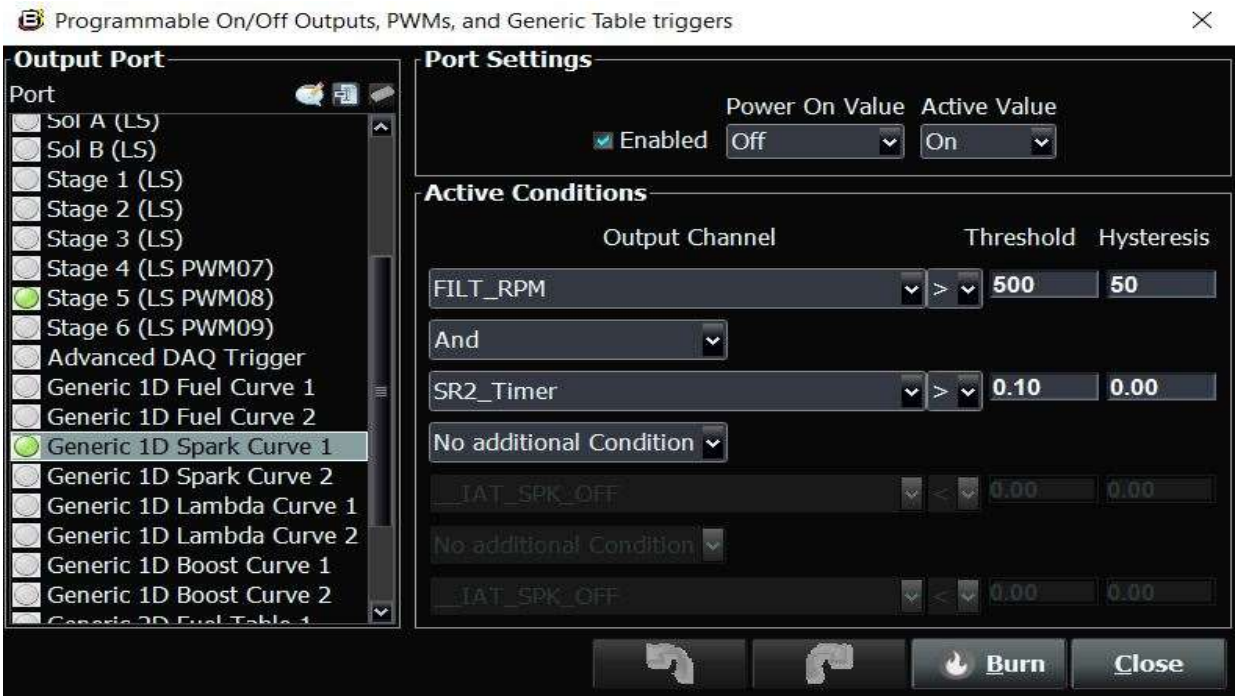


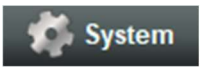
You will now program the amount of timing retard the wheelie sensor will pull depending on how much distance it's reading. If the lower rows of **Spark Additive** and **LASER_HEIGHT_DAQ** are not displayed, left click on the top right box with the 3 dots in the current window and the rows will be exposed. It's recommended to be online with **ECU** so you can see the blue ellipse in real time showing the sensor values compared to the timing retard.

Slowly raise the front of the car and look at the ellipse changing in real time based on the wheelie sensor looking at the ground. As the wheelie sensor starts to read a higher value, the ellipse will start moving to the right which will start to pull timing. The values above are a baseline and will vary extremely from car to car based on how high the wheelie sensor is installed in the chassis. ***Be sure to enter a negative number in the Spark Additive section in order for the timing to be pulled and NOT added***. You can also left click on any dots in the curve to make adjustments to the timing numbers. Most combinations will need a fair amount of spark retard to pull the engine down fast

enough so the nose will come back down. A couple of passes down the track will help establish the number to enter in this curve.

5. The last step is to establish when the wheelie sensor will be used to pull power. ***ANY*** **Generic Curve** in the **GEN4 ECU** will need to be enabled using the Generic Port Editor or it will **NOT** function. With the **GEN4 ECU** the **SR2 Timer** is what we typically use to indicate the car is making a pass down the track. We will configure the **Generic Port Editor** so that when the **SR2 Timer** is greater than .1 seconds and the engine RPM the generic curve will be allowed to be used.



To access the Generic Port Editor click on the System Button 

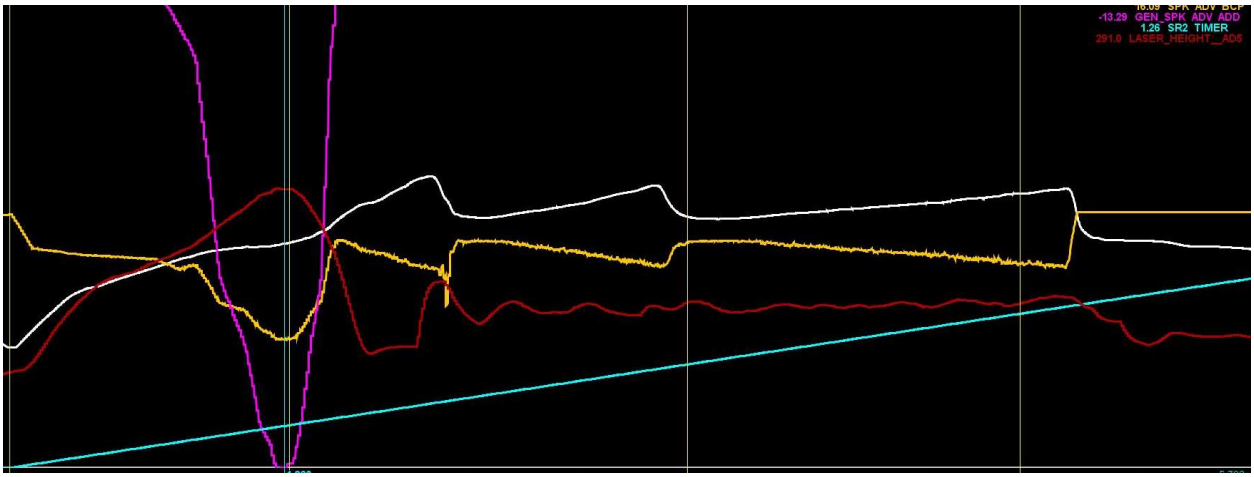
and scroll down and left click on the Generic Port Editor. Left click on the **Generic 1D Spark Curve 1** in the **Generic Port Editor**. Now click on the check box on the right to enable the curve. Select the “Power On” value to be OFF and the “Active Value” to be ON. In the active conditions section left click on the first output channel and choose “**FILT_RPM”** which is engine RPM. Left click on the pulldown next to the Output Channel and choose the Greater than Symbol “>”. Make the Threshold value 500rpm and the hysteresis 50rpm. Next left click on the “**No Additional Condition**” under the first output channel and left click on “**And**”. Now below the **“And”** left click on the next output channel and choose “**SR2 Timer**”. Left click on the pulldown next to the Output Channel and choose the Greater than Symbol “>”. Enter .10 seconds with no hysteresis value. Left click on the BURN 

button which will save the changes. Now you

will need to turn the ignition off to save these changes. Once your **Bigcommpro GEN4** software has gone offline that changes have taken effect. You are now ready to use the wheelie sensor based on the programming entered.

Bigstuff3 GEN4 Wheelie Sensor Datalog

Now that you have made a pass and have uploaded a replay let's look at what points to work with.



On this particular datalog we are looking at:
ENGINE RPM in White
SPK ADV BCP in Yellow
GEN_SPK ADV ADD in Purple
SR2 TIMER in Teal
LASER_HEIGHT_AD5 in Red

You will note that at 1.26 seconds into the run the wheelie sensor retard curve is pulling over 13* of timing from the base spark map setting for a total of 16* spark advance. The wheelie sensor hit a peak of 291mm resulting in a little over 13* of timing retard applied. The nose came back down from the power reduction and the driver never lifted on the pass.

Thank you for your purchase and please email support@bigstuff3efi.com with any questions.