SECTION BOOKLET

5 Advanced Features

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Each guide keeps its own page numbers and version stamp. The newest versions are always online.

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Launch Control / 2-Step On Impact ECU

TunerStudio: Advanced → Launch Control/2 Step · Applies to Kansas 9.13 (LTS) and Lima 9.13 (Beta) firmware

Launch Control (also called 2-Step) is a second, lower rev limiter that holds the engine at a set RPM while you are staged at a stop, so you leave the line at the same RPM every time. The ECU holds **Launch RPM** by cutting ignition, and can also change timing and add fuel for a harder, more consistent launch. Let the clutch out and the engine goes straight back to normal operation.

Launch Control is only active when all four of these are true:

1. Clutch pulled in	**2.** Speed below "Speed Threshold"	**3.** Throttle above "TPS Threshold"	**4.** RPM above Launch RPM − Window

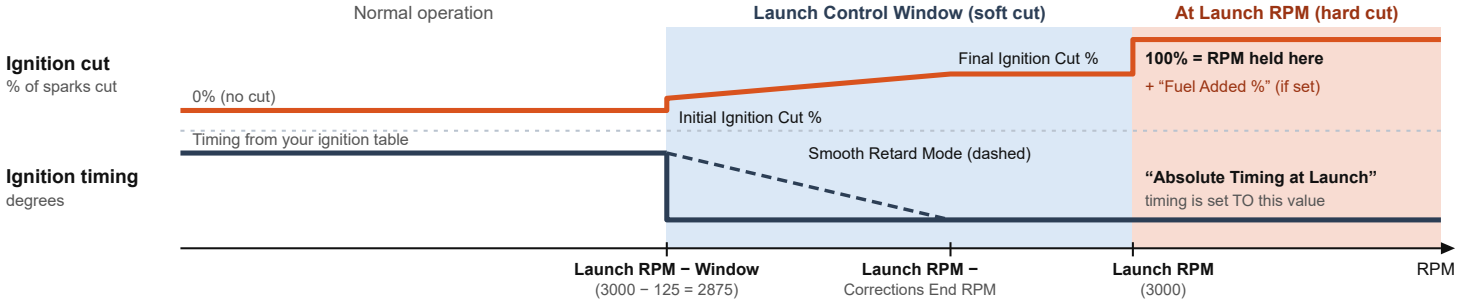


Figure 1 – What the ECU does as RPM climbs with the clutch in, throttle open and the bike stopped (Impact base-map numbers).

Setting It Up

1. **Open TunerStudio:** connect to your ECU and click "Advanced" —> "Launch Control/2 Step".
2. **Launch Control:** set to "enabled".
3. **Activation Mode:** what arms launch.
   - **Clutch Down Switch** (Impact default): the bike's stock clutch switch, read over CAN. No wiring needed.
   - **Launch Button**: a switch wired to an Aux input. Pick it in "Launch Button" and set "Launch Button mode".
   - **Brake Pedal**, **Speed Based** and **Lua** are for special setups.
4. **Speed Threshold:** launch turns off above this speed. **Base: 10 km/h (~6 mph)**
5. **Launch RPM:** the RPM held on the line. Lower it if the tire spins. **Base: 3000**
6. **Launch Control Window:** how far below Launch RPM the soft cut and timing change start. **Base: 125**
7. **TPS Threshold:** throttle must be open past this % to activate. **Base: 45%**
8. **Use Absolute Timing at Launch / Absolute Timing at Launch:** sets timing **to** this value (it is not subtracted from your map). "Smooth Retard Mode" ramps into it. **Base: yes, 5°**
9. **Ignition Cut:** "yes". "Initial" / "Final Ignition Cut %" set the soft cut in the window; at Launch RPM ignition is fully cut. **Base: 5% / 5%**
10. **Fuel Added % / Fuel Cut:** extra fuel only while at Launch RPM. Leave "Fuel Cut" on "no". **Base: 0%, no**
11. **Burn:** click "Burn" (Ctrl+B) to save the settings to the ECU.

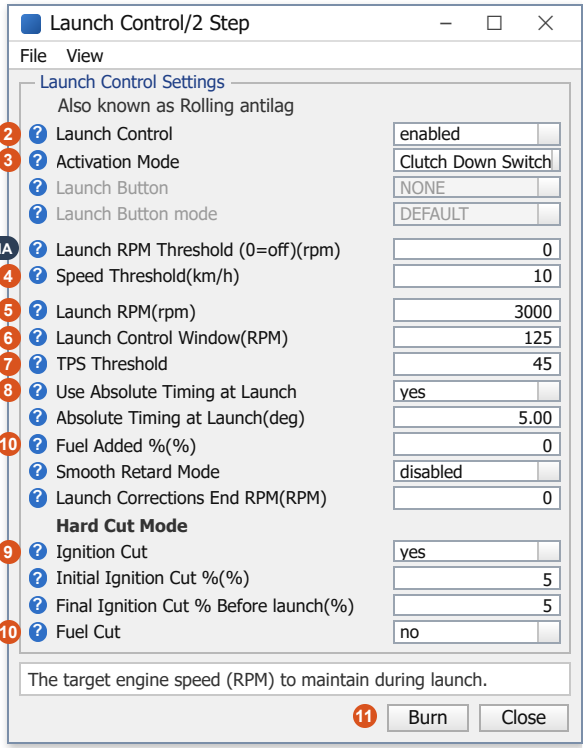


Figure 2 – Launch Control/2 Step with Impact base-map values (Lima 9.13 layout). Numbers match the steps.

Test It

- Key on, pull the clutch in: the "Clutch down" indicator should light.
- Bike stopped, clutch in, throttle past the TPS Threshold: RPM should hold at Launch RPM and the indicator should read "Ign cut: launch control".
- Launch Button only works when released? Set "Launch Button mode" to its "INVERTED" version.

Kansas (LTS) vs. Lima (Beta) Firmware

- Kansas names the timing fields "Use Ignition Retard" / "Ignition Retard". Same function: the value is the timing at launch.
- Lima adds "Launch RPM Threshold (0=off)": launch only arms if the clutch is pulled in at or below this RPM, then stays armed while held. Leave at 0 unless you need it.
- On Lima, TPS Threshold can't go below 20%.

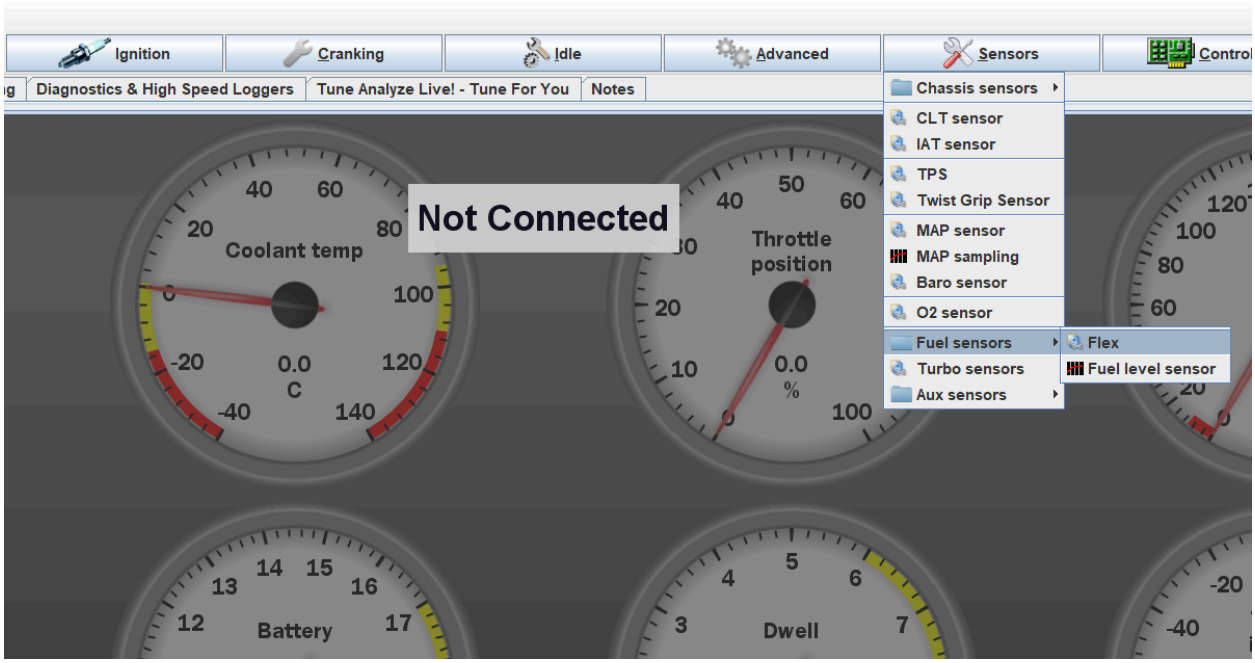
Important

- **"Ignition Cut" or "Fuel Cut" must be "yes".** Otherwise the engine is not held at Launch RPM.
- **"Launch Corrections End RPM" is an offset, not an RPM.** It is how far below Launch RPM the ramps finish (0–1000): 50 with a 3000 Launch RPM finishes at 2950. Entering 3250 here is a common mistake.
- **"Fuel Added %" only applies at Launch RPM**, not inside the window.
- **Never use "Speed Based" with Speed Threshold at 0.** Launch would limit RPM whenever the throttle is past the TPS Threshold, even while riding.
- Ignition cut sends unburned fuel into the exhaust (pops, flames, heat). Don't sit on the limiter longer than needed.

Enabling Flex Fuel On Impact ECU

Open TunerStudio:
Launch the TunerStudio software and establish a connection to your ECU. Ensure that the ECU is properly powered and communicating with TunerStudio.

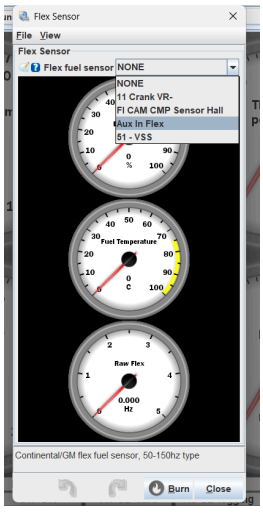
1. **Navigate to Flex Sensor Settings**:



   - In the TunerStudio menu, click on **"Sensors"**.
   - From the dropdown, navigate to **"Fuel Sensors"**.
   - Locate the **"Flex Sensor"** option in the list.

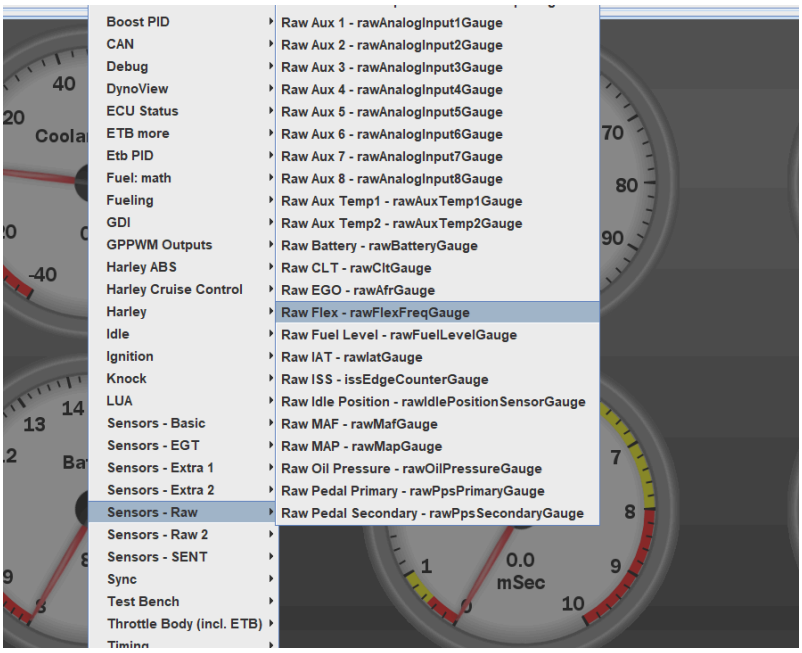
2. **Assign the Correct Input**:

   - Set the **"Flex Sensor"** field to **“AUX In Flex”**



Test the Flex Sensor:

- To verify that the flex sensor is functioning correctly, right-click any gauge on the dashboard in TunerStudio.
- Choose **"Raw Flex"** from the **"Sensors Raw"** menu.
- Observe the frequency being displayed:
  - With standard gasoline, the reading should be approximately **50 Hz**.
  - With E70 (70% ethanol), the reading should increase to around **120 Hz**.



3. **Define Stoichiometric Ratios For Both Pump Gas And Ethanol**:



- In TunerStudio, click on the **"Fuel"** button in the top menu and select **"Injection Configuration"**.
- Under the **"Fuel Characteristics"** section:
  - Set the **"Stoichiometric Ratio"** field to the stoichiometric ratio for when the flex sensor reads **0% ethanol** (standard petroleum-based fuel, typically **14.7:1**).
  - Set the **"E100 Stoichiometric Ratio"** field to the stoichiometric ratio for pure ethanol (typically **9.0:1**).
- These values will allow the ECU to correctly interpolate fuel mixtures between gasoline and ethanol based on the flex sensor reading

Flex Fuel Cranking Table

1. Next navigate to **“Cranking Menu —> Cranking Settings”**
2. Enable **“Use Flex Fuel Cranking Fuel Table”**
3. Now under **“Cranking Menu”** you will notice a new sub-menu item will appear, named **“Cranking Fuel Multiplier (Flex Fuel)”**