

## Part 1: Module Installation

# THUNDER MAX WAVE-TUNE

#309-464 2008-12 XR1200®

**“DISCLAIMER: NOT LEGAL FOR SALE OR USE IN CALIFORNIA ON ANY POLLUTION CONTROLLED MOTOR VEHICLES”** The user shall determine suitability of the product for his or her use. Installation and use on a pollution- controlled vehicle constitutes tampering under the U.S. EPA guidelines and can lead to substantial fines. Review your application and check your local laws before installing.  
\* CA Proposition 65 “known to the state of CA to cause [cancer] [birth defects or other reproductive harm]”  
see [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov) for details

**The Model number on ECM will be 309-460**  
(the instructions and communication pigtail are the only difference).



**Thank you for purchasing a ThunderMax ECM! Please read through the following instructions before beginning the installation procedure. Following these instructions will ensure that the ECM is installed and setup properly for optimal results. If you have any problems or questions, please refer to the TMax Tuner.pdf Manual. The manual can be found in the software (see part 2), under the Help button in the menu. Record serial number NOW, in the space below for later use registering your ECM.**

**Serial # TMRM \_\_\_\_\_**

### All Models - Oxygen Sensor Installation Tips

Your ThunderMax kit includes robust Wide-Band oxygen sensors that report data from every cylinder combustion event to the ThunderMax ECM for automatic air/fuel corrections. These sensors replace the factory supplied narrow-band sensors first used on 2006 Dyna® and in most cases are direct bolt-in replacements (2004-2005 Dyna® models will require the addition of 18mm sensor bungs to the exhaust header pipes). Installation of the wide band sensors into most bung-equipped headpipes presents no clearance problems; however, some pipe brands may require exhaust pipe modification or sensor bung relocation for interference-free installation. The sensors must mount freely without contacting surrounding components. **If this is not possible, do not attempt to bend or modify the sensor in any way as it is a sensitive electronic component and will be damaged if you do so.** Modify the pipe if required for clearance. Weld-in bungs are available for exhaust systems not equipped with bungs or if current bungs present clearance issues. Bungs should

be located no more than 3-4” from the head/pipe connection (for ideal location, refer to the 2007 factory location). Weld-in bungs are available in straight or angled style from many industry sources; see video installation link on page 9. After installation, route the sensor harness away from the engine and along the frame when possible, above the lowest frame point to avoid the possibility of dragging ground during operation.

**Avoid routing harnesses where engine movement or sharp edges can contact and cut into the harnesses or connector plugs.**

Tie the harnesses to the frame or existing component harnesses, taking care to avoid contact with any vibrating component that may chaff the sheathing or wires. Some disassembly of bike components may be required for best harness routing. **Remove any previously installed ancillary tuning device including oxygen sensor eliminators that may be plugged into the factory oxygen sensor harness.**

**All Models** - A packet of dielectric grease is included with your ThunderMax. After you have installed the Pigtail communication cable harness, before installing the ECM connector, apply the provided dielectric grease to the inside lip of the ThunderMax ECM to ensure the rubber weather seal does not bind during installation and across the clear case on the 36 pin ECM connector. Spread the grease across all of the female terminal openings, making sure the grease penetrates openings. This grease will help maintain vital conductivity between the ThunderMax and the 36 pin connector.



Also apply dielectric grease to the ThunderMax oxygen sensor harness connector terminals for to help maintain conductivity, and to the outer housing to prevent binding upon installation to the ECM.



## Module Installation – Sportster®

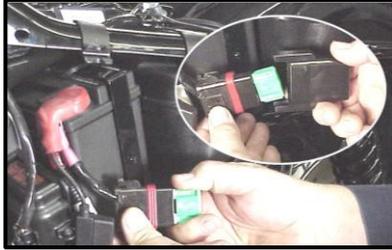
(Skip ahead for other models)

**Remove any previously installed ancillary tuning device including oxygen sensor eliminators that may be plugged into the factory oxygen sensor harness.**

**XL-A** Unplug and Remove the factory oxygen sensors. Rubber caps are included to cap off the factory oxygen harness connectors (see page 9).

**XL-B** Remove the left side cover to expose the battery and main fuse compartment.

Remove the main fuse cover, then the main fuse (Note: if equipped with optional security system, turn on ignition before you remove the fuse to avoid tripping the alarm).



**XL-C:** Remove the socket head screw and slide the ECM cover towards the left side of the bike to remove it (remove wires from ECM caddy cover channels).



**XL-D:** Remove the stock ECM out of the caddy, towards the primary side of the motorcycle. Lift tang on the top of the caddy to help release the unit.

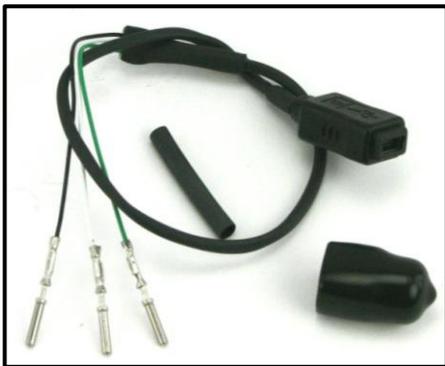


**XL-E:** Fully depress connector tab and disconnect the stock ECM from the 36 pin connector.

**XL-F:** Install ThunderMax Pigtail connector # 309-424 to 36 pin harness connector per connector instructions. Run the communication cable straight up inside the caddy towards

the left side of the motorcycle, between the module area and the frame back bone, coming out above the battery. Use a wire tie on the connector to the main harness

above the battery for easy access under left side cover.



the ECM caddy opening (it's a tight fit, you may have to push the plastic caddy forward while working the plug into the opening at the caddy bottom). Pull the



**XL-H:** Insert the greased oxygen harness connector into the ECM with the imprinted "ThunderMax" logo facing up. Using a long Phillips screwdriver inserted through the frame from right to left, tighten the (2) Phillips connector screws.

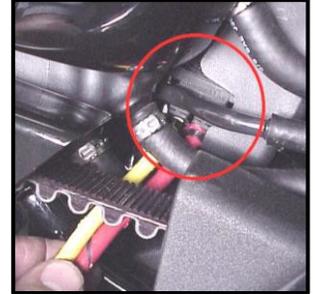


the bike to reduce slack. Verify that the harnesses are clear of the drive belt.

**XL-I:** Starting from under the chassis between the rear engine mount and rear frame cross member, feed the oxygen sensor for the

**XL-G:** Route the oxygen sensor harness into the ECM caddy. Starting from under the chassis between the rear engine mount and rear frame cross member, behind the belt, tight to the engine case. Feed the ECM plug between the bottom two oil tank hoses

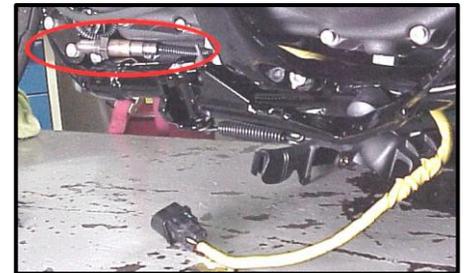
into the ECM caddy opening (it's a tight fit, you may have to push the plastic caddy forward while working the plug into the opening at the caddy bottom). Pull the



harness through the caddy to the left side of the engine above the primary cover, being mindful that the rear oxygen sensor connector will limit how far the harness can pull up.



Connect the greased 36-pin ECM connector to the ThunderMax ECM. Install the ThunderMax ECM into the ECM caddy while gently pulling the oxygen sensor harnesses down from under



front cylinder towards the front of the engine between the left frame tube and the engine (a tight fit that may require some patience).



Install the rear sensor the same way, except once it's through the frame, loop the sensor and harness over the footpeg bracket towards the rear of the bike.



**XL-J:** Route the un-tied front and rear sensors to the exhaust pipes and install them into the pipes (leave all leads loose to allow them to rotate during tightening).

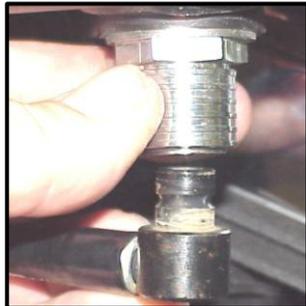
Plug oxygen sensors into Thundermax ECM sensor harness under transmission. Securely tie all harnesses to the frame and/or other harnesses with supplied wire ties. Avoid sharp turns while routing harnesses and avoid areas where engine movement, sharp edges, exhaust systems or hot engine components can contact and cut into the harnesses or connector plugs. Bundle excess harness together under transmission and secure so that they will not drop below frame rails or be contacted by engine movement.



**XL-K:** Re-install main fuse. Advance to Step 3.

### Module Installation – Dyna® Models

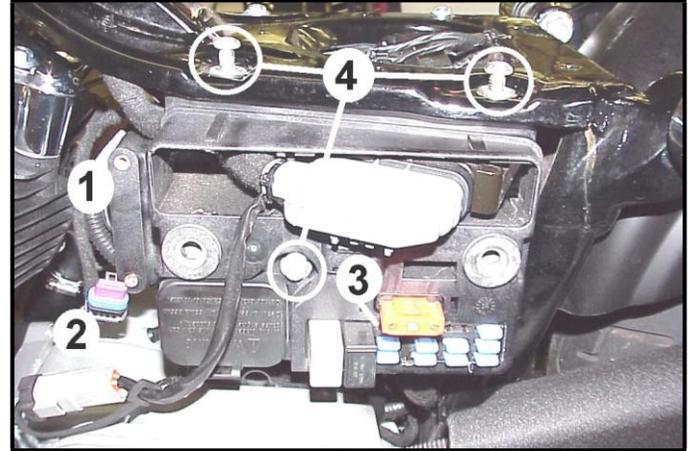
**FXD-A:** Remove seat. Disconnect fuel line from fuel tank by carefully pushing up the ribbed quick disconnect ring on the tank fitting while gently pulling the fuel line down. Loosen front fuel tank mounting bolt; remove rear mounting bolt, prop up tank rear 4-5" with a wood block.



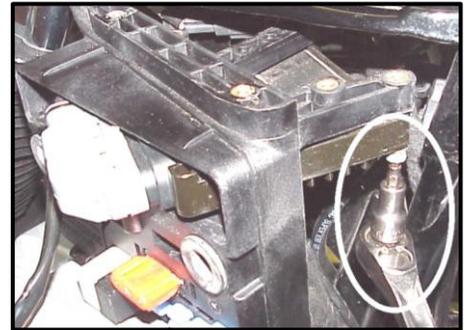
**Remove any previously installed ancillary tuning device including oxygen sensor eliminators that may be plugged into the factory oxygen sensor harness.**

**FXD-B:** Remove the factory oxygen sensors (if equipped) and install supplied Wide-Band sensors into exhaust pipes. Rubber caps are included to cap off the factory oxygen harness connectors on 2006-up models (see page 9).

**FXD-C:** Remove left side cover to expose electrical caddy. (1) Unplug and remove coil assembly from caddy. (2) Slide diagnostic plug forward to remove from caddy. (3) Remove ECM fuse (top left blue fuse. (4) Remove 3 caddy mounting bolts.



**FXD-D:** Gently pull caddy from chassis far enough to access the two stock ECM mounting bolts. Once ECM is unbolted from caddy, depress tang on main 36-pin ECM connector plug and remove ECM from plug. Install the included #309-424 USB pigtail harness to 36-pin connector as per instruction sheet.



**FXD-E:** Insert the greased oxygen harness connector into the ThunderMax ECM with the imprinted "ThunderMax" logo facing up; tighten the (2) Phillips connector screws. Feed the oxygen sensor harnesses through the ECM caddy towards the front of the bike as shown and install the T-Max ECM to the ECM caddy with original screws.



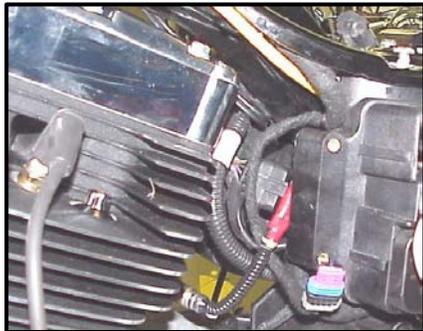
**FXD-F:** Reattach the caddy to the chassis with the two top frame bolts, taking care not to pinch any harnesses behind it in the process. Connect the greased 36-pin ECM connector to the ThunderMax ECM. Route pigtail harness for convenient access under cover as shown.



**FXD-G:** Route front ECM sensor lead along left frame backbone under gas tank; position sensor plug just forward of engine mount top link. Route front oxygen sensor lead up left frame tube to connector as shown. Check that connector position does not interfere with gas tank when in position before securing with wire ties.



**FXD-H:** For the rear cylinder, connect the oxygen sensor; coil the excess harness and tie it in the pocket behind the ECM caddy in front of the frame backbone.



**FXD-I:** Securely tie all harnesses to the frame and/or other harnesses with supplied wire ties. Avoid sharp turns while routing harnesses and avoid areas where engine movement, sharp edges, exhaust systems or hot engine components can contact and cut into the harnesses or connector plugs. **Re-install the ECM fuse,** ignition coil assembly, gas tank, fuel line and seat. Advance to step 3.

## Rocker® & FXSTSSE<sup>2</sup> Models

**Remove any previously installed ancillary tuning device including oxygen sensor eliminators that may be plugged into the factory oxygen sensor harness.**

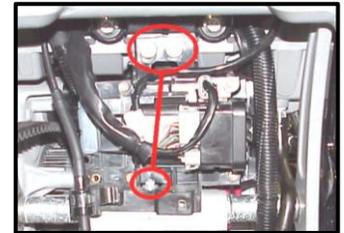
**ST-A:** Unplug and remove the factory oxygen sensors use supplied caps to cover factory bike O2 harness connectors (see page 9).



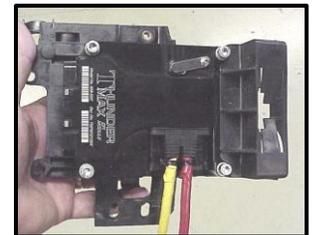
Thread the supplied front sensor up from the bottom through the gap between the engine and kickstand mount in front of inner primary cover; install into front pipe. Install sensor in rear exhaust pipe; route sensor lead under oil tank to right rear of transmission. Leave leads loose for connection after ECM installation.



**ST-B:** Locate and remove the ECM fuse. Remove rear fender assembly and rear wheel to access ECM mounting caddy. Remove the plastic shield, then the ECM caddy mounting bolts.



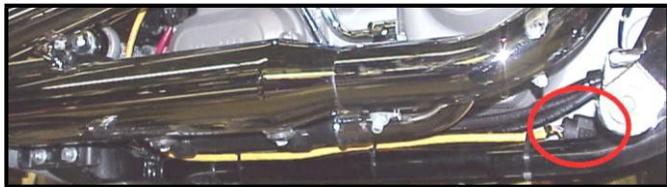
**ST-C:** Remove the caddy from the chassis, then remove the factory ECM from the caddy. Mount the T-Max ECM using two mounting bolts and insert the greased oxygen harness connector into the ECM with the imprinted "ThunderMax" logo facing up; tighten the (2) Phillips connector screws.



**ST-D:** Install USB Pigtail Communication Harness to 36-pin ECM plug as per included instructions. Connect the greased 36-pin ECM connector to the ThunderMax ECM. Re-install the ECM caddy with the oxygen sensor harnesses routed over the top of the swingarm pivot bolt; connect the rear sensor and coil the excess harness for the rear sensor (shown red) and tie it up under the transmission housing, clear of the suspension and any other moving parts.



**ST-E:** Route the front sensor lead along the right frame rail, position connector as shown behind brake pedal.



**ST-F:** Securely tie all harnesses to the frame and/or other harnesses with supplied wire ties. Avoid sharp turns while routing harnesses and avoid areas where sharp edges, exhaust system or hot engine components can contact and cut into the harnesses or connector plugs. **Replace the ECM fuse,** position the pigtail for convenient access and re-install the rear wheel & fender assembly; move to step 3.



### XR1200®

**XR-A:** Remove the seat and seat pan assembly. Remove the left side cover, exposing the main fuse panel. Remove the main fuse.



**XR-B:** Remove the (3) bolts that attach the steel frame bracket to the frame, exposing the factory ECM.

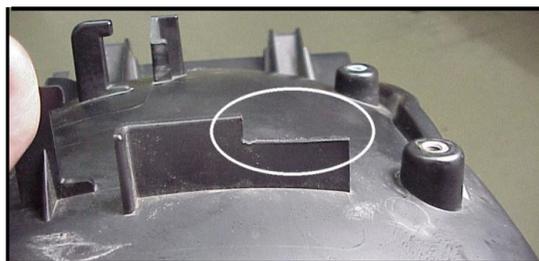


**XR-C:** Remove the lower inner fender bolt and allow the inner fender to rest on the rear tire. Unplug and remove the factory ECM from the inner fender.



**XR-D:** Install included ThunderMax Pigtail connector 309-424 to 36 pin ECM connector per instructions included in package with connector.

**XR-E:** Remove the inner fender and trim the plastic as shown to provide clearance for the ThunderMax oxygen sensor harness.



**XR-F:** Unplug and remove factory O<sub>2</sub> sensors; use supplied caps to cover factory bike O<sub>2</sub> harness connectors (see page 9). Route ThunderMax front oxygen sensor harness through gap between swingarm and frame. It's a tight fit; turn connector so that locking tab boss faces forward and open plug area faces to left side of bike and it will slide through. Feed connector under transmission.



**XR-G:** Route front O<sub>2</sub> sensor from under transmission through gap between lower frame rail and primary cover, along frame rail to front exhaust pipe. Carefully wind O<sub>2</sub> sensor harness 3-4 turns counterclockwise before installing into exhaust pipe; turn clockwise while installing to unwind harness. Connect harness plug under transmission.



**XR-H:** Route ThunderMax rear O<sub>2</sub> sensor between left frame rail and oil tank. Install O<sub>2</sub> sensor into rear exhaust pipe and connect plug.



**XR-I** Position ThunderMax O2 harness plug to approximate ECM location. After applying dielectric grease to connector, install harness to ECM with imprinted "ThunderMax" logo facing up. Tighten the (2) Phillips connector screws.



**XR-J:** After applying dielectric grease, carefully connect ThunderMax ECM to the 36 pin harness plug, ensuring that the harness plug weather seal does not roll out or get pinched during assembly; firmly press the plug and ECM together until latched completely. Install the ThunderMax ECM to the inner fender; tie oxygen sensor harnesses to the frame or existing component harnesses, taking care to avoid contact with any vibrating component that may chaff the sheathing or wires. Route the pigtail connector plug to gap just forward of the right shock absorber for access to the communication cable. Re-install the steel frame bracket.

**Re-install main fuse,** seat and seat pan/fender assembly.



### IMPORTANT STEP BEFORE STARTING

#### Initialization Procedure

This procedure allows the ThunderMax to "learn" the "home" position for the Idle Air Control (IAC) motor. This is the only setting within the system that is not retained during 12 volt power interruption. It is required only for new module installation, or when interruption of 12v power takes place. Example: battery change, removal of maxi fuse, etc. Turn the ignition switch on and the handlebar rocker switch to run (without starting the engine) for 30 seconds, uninterrupted. Cycle the ignition switch off for 30 seconds (time it) and then back on for 30 seconds. Repeat the 30 on / 30 off cycles three times; after the 3<sup>rd</sup> off cycle, start the engine. Let the motorcycle idle on its own for 15 seconds. Cycle the ignition off, then restart the motorcycle; normal idle speed should be attained depending on engine temperature. Warm-up cycle will have slightly elevated idle speed (approximately 1200 rpm) until engine reaches operating temperature. To disconnect from the PC, click the Unlink button (turns to red), remove the USB cable. Use provided rubber dust cap to protect the open end of the mini USB Pigtail while not in use.

## TIPS AND GENERAL INFORMATION

**Special Note for International Model Bikes with Active Exhaust Enabled:** If your bike is equipped with a working Active Exhaust Valve, you must unplug the active exhaust harness before linking to the module, as the AEV circuitry conflicts with the communication stream. You can re-connect the harness after unlinking. If the stock exhaust has been changed, disregard this step. ThunderMax does not support active exhaust.

Please find the enclosed caps to block off the bike side of the stock oxygen sensor connector. There are 2 large caps for all motorcycles that come stock with the smaller 12mm oxygen sensors. Install per the picture to the left.



**International (non-US) model notes –** ThunderMax does not support active intake/exhaust functions.

**Nitrous –** When adding a Nitrous system, plan to use a relay to control the activation of the system. This will keep from overloading the circuit and causing damage to the ECM.

**Interrupting 12v power** to the module (battery service/replacement) requires system to be re-initialized (see setup part 2 step 7) . Check battery terminal tightness as part of routine service (like during oil changes); avoid stacking accessory power leads onto main battery cables. If equipped with dual battery post ports, connect accessories separately.

**In-Tank Fuel Filters** should be inspected as a part of routine maintenance. The filter is small and one bad load of fuel can compromise it. The factory recommended service interval is 25K miles.

**Fuel Pressure Should Be Checked** during periodic service; this is also the first thing to check should you experience sudden or gradual decreasing performance. For any EFI system to operate properly, your fuel system should build and maintain 55-62 PSI of fuel pressure; your dealer can perform this simple test quickly.

**Oxygen Sensor Care:** Items that can damage or shorten the life of your sensors: Leaded fuel-racing fuel, oil deposits from oil consumption problems, excessive moisture, Excessive (Extreme heat) heat. There is no warranty on sensors (part # 309-355).

**You are ready to proceed to part 2 setup of your system.**

# Part 2: Software Setup Guide



## #309-XXX ThunderMax Tuner Software setup / map loading

Thank you for purchasing a ThunderMax ECM! Please read through the following instructions before beginning the installation procedure. Following these instructions will ensure that the ECM setup properly for optimal results. If you have any problems or questions, please refer to the TMax Tuner.pdf Manual, in the software (under the Help Menu).

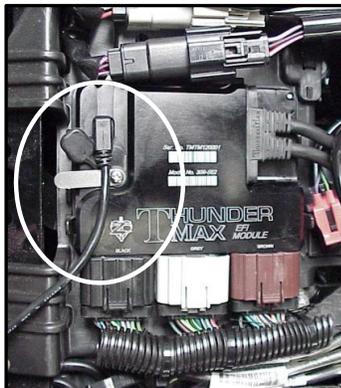
### Step 1: Download Software and install software



Go to [www.thunder-max.com](http://www.thunder-max.com), click on support tab, then software tab, now click TMax Tuner (yellow/top disc) Click save file and then ok, the file will start to download. When completed locate and open the file folder and double click on the setup (Application file or .exe file depends on Windows version). The Install Shield Wizard will automatically open and guide you through installing the software on your computer. After installing and opening the software the first time, you will be prompted to install the driver for the USB connection. The TMax Tuner software is designed to run on computers using Microsoft® Windows 2000™, XP™, Vista™ and 7, 8 & 10 operating systems. Your computer must have an adequate amount of free space on the hard drive for proper operation. TMax Tuner is approx. 140MB when installed. TMax Tuner is not compatible with any other operating systems.

### Step 2: Linking and Installing a Map

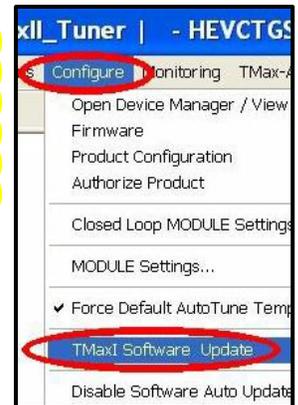
The TMax Tuner software for the ThunderMax EFI systems contains the correct drivers required for USB interface with the ECM. Connect the USB cable to the specific port on your PC that the driver will be configured to and the ThunderMax



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\* CA Proposition 65 “known to the state of CA to cause [cancer] [birth defects or other reproductive harm]” see [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov) for details

ECM communication connection located under the retainer plate (loosen retainer screw, rotate retainer plate and open rubber weather seal). Open the TMax Tuner software and turn the bike’s ignition and handlebar switches to the on/run positions. Follow the prompt instructions for installing the driver. Turn off ignition when finished.

(There is no need to be linked to the module at this time). This section is only to ensure you are working with the latest version of TMax Tuner software and have the most up-to-date selection of base maps. It is suggested that you establish an Internet connection and click [Configure] on the tool bar, then [TMaxI Software Update] and follow prompts.

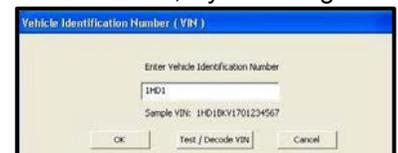


After uploading latest software (if found), next click [EFI Maps] [EFI Map Listings (Throttle By Wire)], double-click any map; when the Base Map Name Encoding window appears, click the [Check Internet For Updates] button and follow the prompts. Close window after updating.



### Step 3: Enter VIN Number and Product Registration

With the communication cable connected to your computer and the ThunderMax ECM, cycle the ignition switch to the 'on' Position (be sure kill switch is in the run position) and linking to the ThunderMax



will occur automatically. (Red **[Link]** button turns green).

You will be prompted to enter the bike serial number (VIN); answer **[OK]** and enter your motorcycle's serial number (CAPITAL LETTERS ONLY), click **[OK]** then **[Close]**.



Now click **[Yes]** when the product registration prompt appears. When the product registration window opens, fill in the requested fields then click **[Close]**. Unlink (click green



**[Link]** button) and turn off ignition when finished. Once your software and map databases are verified as up-to-date and your module is registered, move to selecting and loading your base map.

### Selecting A Base Map File from the Database

*If you purchased a pre-mapped system, you may skip the map installation process.*

The TMax Tuner EFI Map Database will help you choose a Base Map for your application. To open the Map Database, select from the toolbar **[EFI Maps]** then your application (**Throttle by Wire**), (**Throttle Cable**) or (**VRod**).



Available base maps will be shown (if the **[Show All Maps]** button at the lower left of the screen is highlighted, click it to clear any filtered maps so all maps will be shown).

ItemID	Manufacturer	EngineType	Family
288	Harley Davidson	103	TwinCam TBW
286	Harley Davidson	103	TwinCam TBW
279	HD-Trike	103	TwinCam TBW
273	Harley Davidson	103	TwinCam TBW
271	Harley Davidson	103	TwinCam TBW
267	Harley Davidson	103	TwinCam TBW
266	Harley Davidson	103	TwinCam TBW
265	Harley Davidson	103	TwinCam TBW
264	Harley Davidson	103	TwinCam TBW
259	Harley Davidson	103	TwinCam TBW
243	HD-Trike	103	TwinCam TBW
241	Harley Davidson	103	TwinCam TBW
240	Harley Davidson	103	TwinCam TBW
239	Harley Davidson	103	TwinCam TBW
197	Harley Davidson	103	TwinCam TBW
196	Harley Davidson	103	TwinCam TBW
195	Harley Davidson	103	TwinCam TBW
194	Harley Davidson	103	TwinCam TBW
188	Harley Davidson	103	TwinCam TBW
187	Harley Davidson	103	TwinCam TBW
186	Harley Davidson	103	TwinCam TBW
185	Harley Davidson	103	TwinCam TBW
184	Harley Davidson	103	TwinCam TBW
183	Harley Davidson	103	TwinCam TBW
182	Harley Davidson	103	TwinCam TBW

You will now be able to select the closest Base Map for your engine combination. Please read the following section on Key Elements, this will help you quickly narrow down the selection of available Base Maps and find the right one for your application.

### Base Map “Key Elements”

The reason for selecting a Base Map by “Key Elements” is to find the closest Base Map match available for your combination, identified by the most critical components. These include:

**Engine Size.** A correct match to the engine's stroke is more important than an exact match of engine displacement. Stroke and cam timing influence engine pumping pressures. The correct shape of spark curves in the base map will be best matched by engine stroke.

**Throttle Body / Injector Size.** Choose the throttle body and injectors being used for your application (most applications will be “stock” unless performance parts have been installed).

**Camshaft.** Many popular short duration aftermarket cams (less than 240° intake duration) perform well when using a stock-cam base map. With broader timing cams (more than 240° intake duration) you may find that choosing a base map calibration developed for an aftermarket cam to be a better choice.

**Exhaust System Design.** There is no need for concern if an exact *brand* match does not appear in the Base Map library. Simply select the Base Map with the closest *style* of exhaust system (Slip-ons, 2:1, True Duals). Choosing the closest style will yield excellent results. Group your exhaust system in one of the following three categories:

**Factory Head Pipe with Crossover:** Dual exhaust systems with a cross over pipe that connects the front and rear exhaust pipes (includes 'X' pipes). Typically used with accessory slip-on mufflers. **Bikes with catalyst-equipped mufflers or headpipes require maps designed for use with catalyst-equipped systems or damage to the catalyst can result.** ThunderMax maps for use with 96, 103 and 110” internally stock engines are catalyst-safe maps.

**2 into 1:** Both head pipes converge into one collector.

**(True) Dual Exhaust:** 100% separate exhaust pipes. ThunderMax's AutoTune system allows you to choose a Base Map that isn't an exact match of components and still have excellent results. Even if your combination isn't listed, select the closest Map match and let the AutoTune create your custom Base Map while you ride. The closer match that the Base Map is to your combination, the faster the system will achieve the desired AFR Targets. This simply means less time to establish and maintain a great tune. Once you have allowed the system to establish custom AFR fuel-flow adjustments, you can use the AutoMap function to create an all-new Base Map based upon the Auto Tuned learned adjustments. To use the AutoMap feature, see the tuning manual for the procedure on how to create your custom base map using AutoMap.

## Base Map File Browsing / Selection

With your Base Map Definitions window open, you may begin narrowing down the list of maps for your application. To sort the map files by a particular key element, left-click on the column heading to arrange the column in alpha/numeric order. All of the columns can be sorted in this manner for filtering purposes. Filter the maps to identify the base map that best matches your application by following these easy steps:

**First** (in order of importance) place your cursor over the **'Family'** heading and left-click to change the sort order of that column. Scroll down the list and place your mouse pointer over you bike's family match and right-click to filter out no-match applications from the list.

Itemid	Manufacturer	EngineType	Family	Throttle	Exhaust
182	Harley Davidson	103	TwinCam TBW	Stock (Stock 4.22 Inj)	Stock 09'-12' FL Head Pipe (With Cats)
183	Harley Davidson	103	TwinCam TBW	Stock (Stock 4.22 Inj)	Vance & Hines Power Duals (No Cats)

**Tip** - After any filtering, notice that the **[Show All Maps]** button at the bottom left is now selectable. At any time if you want to return to the complete library listing, left-click the **[Show All Maps]** button and you will start over with all Base Map Files in the library displayed.

**Second**, right-click the engine size under **'Engine Type'** that matches your engine. All maps that do not match your selection will be filtered from the screen.

Itemid	Manufacturer	EngineType	Family	Throttle	Exhaust
182	Harley Davidson	103	TwinCam TBW	Stock (Stock 4.22 Inj)	Stock 09'-12' FL Head Pipe (With Cats)
183	Harley Davidson	103	TwinCam TBW	Stock (Stock 4.22 Inj)	Vance & Hines Power Duals (No Cats)

**Third**, place your cursor over the **'Throttle'** column and right click your match (injector size is more important than throttle body size if you have to choose).

Itemid	Manufacturer	EngineType	Family	Throttle	Exhaust
182	Harley Davidson	103	TwinCam TBW	Stock (Stock 4.22 Inj)	Stock 09'-12' FL Head Pipe (With Cats)
183	Harley Davidson	103	TwinCam TBW	Stock (Stock 4.22 Inj)	Vance & Hines Power Duals (No Cats)

**Fourth**, right-click the **'Cam'** that closest matches your application.

Muffler	AirCleaner	Cam	CylinderHead	Piston	Modifications
Slip Ons - (All others)	Hi Flow Air Cleaner	Stock	Stock	Stock	None
(Exhaust Includes Muffler)	Hi Flow Air Cleaner	Stock	Stock	Stock	None

**Fifth**, right click the **'Exhaust'** that closest matches your application.

Itemid	Manufacturer	EngineType	Family	Throttle	Exhaust	Muffler
182	Harley Davidson	103	TwinCam TBW	Stock (Stock 4.22 Inj)	Stock 09'-12' FL Head Pipe (With Cats)	Slip Ons - (All other
183	Harley Davidson	103	TwinCam TBW	Stock (Stock 4.22 Inj)	Vance & Hines Power Duals (No Cats)	(Exhaust Includes Muff

Keep right-clicking the application columns until you have located the best map match (in the case of identical maps, choose the latest date). Highlight the map you've chosen (left-click; blue bar indicates selected map) and click the **[Close]** button.

**Step 4:** This brings you to the 'Base Map Name Encoding' page, from which you can review the map parameters. Once verified, click the **[Load BaseMap]** button to load the map into the software.

*Note - If you're still unsure of which Base Map to select, please email the specifications of your Key Elements to Support@Thunder-Max.com. Please title the email "Base Map Selection" for a faster response.*

**Step 5:** Next, go to the **[Tuning Maps]** Tree and click the **[+]** sign next to **[Module Configuration]** to reveal the **[Basic Settings]** tab. Open the Basic Settings window and click the **[Speedo Cal]** button (list window appears).

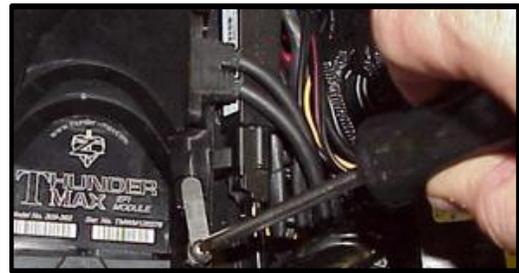
Verify that the Speedometer Calibration is set for your year motorcycle based on the chart. If it is, click **[Cancel]**; if it is not, enter the correct value and click **[OK]**, then **[Close]** the Basic Settings window. **If your bike doesn't have Automatic Compression Releases (ACR'S) toggle the Compression Release Control to 0 to Deactivate. If this isn't toggled you will get a "1655 ACR low code". Unless it is a CVO model, most bikes prior to 2011 models do not have "ACR's". (Normally on 103" & up)**

**Step 6:** Now that the Base Map is loaded into the TMax Tuner software; you must **'Write'** (transfer) the Base Map to your ThunderMax ECM. With the communication cable connected, linking to the module is now automatically performed with the TMax Tuner software when the handle bar and key switch are in the on/run positions. Turn the ignition switch on; the red **[Link]** button will turn green to indicate a successful link. Once linked, from the toolbar click **[File] [Write Module Maps and Settings]**, answer **[OK]** to the 'To Running Position' command in the 'Module Configuration Write Options' window that opens. When the system recognizes your motorcycle model through the VIN number entered earlier, you will receive

## Step 7: Initialization Procedure

### IMPORTANT STEP BEFORE STARTING

This step is required for new module installation, or when interruption of 12v power to the ECM takes place. Example: battery change, removal of battery, ECM or maxi fuse, etc. Turn the ignition switch on with the handlebar rocker switch to the run position for 20 seconds, uninterrupted. After 20 seconds, cycle the ignition switch off, repeat 3 times. Then turn ignition on and start the engine. Let the motorcycle idle on its own for 15 seconds. Cycle the ignition off and restart the motorcycle; normal idle speed should be attained depending on engine temperature. Warm-up cycle will have slightly elevated idle speed (approximately 1200 rpm) until engine reaches operating temperature. To disconnect from the PC, click the Unlink button (turns to red), remove the USB cable and snap the weather seal plug into the USB cable port. Position the retainer plate over the weather seal and tighten the retainer plate screw.

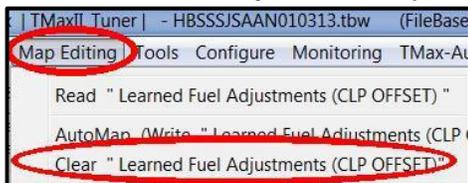


a prompt that the chosen map has settings applied for either an air or liquid cooled engine; only if the system does not recognize your model through the VIN, the following window will appear: Choose the correct application and click **[OK]**.



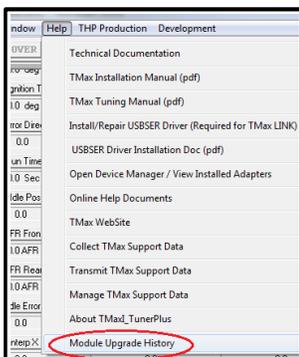
The transfer bar then appears during the map load. Once the Base Map has been written to the module, clear any active Diagnostic Code readings and Learned Fuel Adjustments that may have been created during the live module testing session that each ThunderMax module must pass. While linked, from the Tuning Tree select **[Module Configuration] [Diagnostic Codes]**. When the Diagnostic Codes window appears, select **[Clear Diagnostic Codes]**. After completing this step, proceed to **[Map Editing]** menu on the tool bar and select **[Clear "Learned Fuel Adjustments (CLP OFFSET)"]**.

These steps ensure you will be starting with a "clean slate" Base Map.

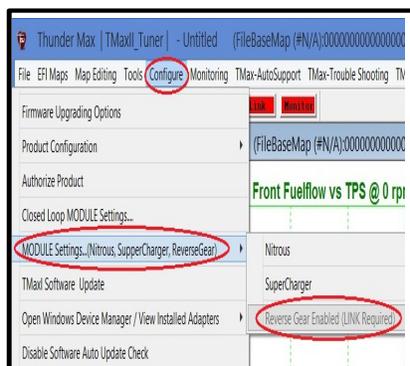


### Step 6a: Skip if not a trike or Freewheeler or if your Firmware is version 5.12 or higher (Reverse is controlled by the VIN with newer firmware).

Link to verify firmware version click Help then Module Upgrade History. For reverse; go to the **[Configure]** Tree and then click **[Module Settings, Nitrous, Super Charger, Reverse Gear]** tab to reveal the listed options to choose. While linked (Link button is green) click Reverse Gear enabled option.



Verify firmware version



Toggle on reverse

### Congratulations!

You have successfully installed and set up your ThunderMax ECM. Now it's time to ride the bike and let ThunderMax optimize your EFI system! Several riding sessions that allow the engine to reach normal operating temperature should be completed with as much variation in terrain and RPM as possible. Your ThunderMax customizes your map based on your engine, ambient conditions and your riding habits. For an automatic evaluation of your systems tuning, after several sessions have been logged, you can link to your ThunderMax and select **[TMax Module Control Center]** for a complete analysis of the ***Air Fuel Ratio*** adjustments that have been made. If more optimization is suggested just follow prompts to complete the process.

### Need Help?

We have included many easy-to-use features for supporting and enriching your ThunderMax experience. A full tuning manual, links to online support documents and sites as well as the ability for you to easily attach a map or recorded engine monitoring log to an email directly to our support department are found here. In the future to assist with tech support help, please follow the instructions on performing a data collection to send to our tech support staff via email. This information is valuable to help diagnose any issue.

