



Thank you for choosing the Free Spirits Fuel Injection Module, the module1.

The module is **"ONLY"** usable for the following Harley Davidson models:

- 2007-2013 Sportster (all 883,1200 - XR 1200 models)

This is an Electronic Jet Kit. Like jet kits in the past, the more you modify, the more responsibility you take in getting your fuel curve right. Going to [www.freespirits.it](http://www.freespirits.it) will help you obtain better high horsepower tuning.

#### INSTALLATION PREP

- Install Time: 60 minutes
- Required Tools for:
  - ....Disconnecting the negative terminal of the battery.
  - .... Removing your seat
  - .... Loosening and propping up the fuel tank

**Some vehicle modifications with Techlusion Inc. products must not be used on public roads and in some cases may be restricted to close course competition. Those products not identified as US EPA legal are intended for off-road or marine applications only. Not intended for use on emission controlled vehicles.**

and remove the rear tank mounting bolt

## INSTALLATION

**(For any and all help during install or tuning please call us(8-5M.T. m-f), we can't help if you don't call)**

1. Before installing the module you must first disconnect the negative lead from the battery.
2. Determine a location for the Module unit. We suggest behind the Maxi fuse area next to left side battery or left side top of battery under the frame.
3. Make sure your motorcycle is cold, be sure to disconnect the fuel line using the quick disconnect feature on the fuel fitting, **(DO NOT UNSCREW THE FITTING)** and remove the rear tank mounting bolt and remove the rear tank mounting bolt (under the seat) loosen and lift up the fuel tank (make sure not to come in contact with the steering with the front of the fuel tank when propping it up). You will need something to hold the fuel tank up (block of wood or a towel) from the frame to gain access to the injectors.
4. Underneath the fuel tank you will locate the fuel injectors. (See the service manual for help if needed) The injectors are mounted in O rings. This allows them to be rotated in the throttle body without further disassembly. From the left side of the bike, rotate the injectors toward you enough to gain access to the locks on the injector connectors.
5. Disconnect the factory injector connectors from the fuel injectors and replace with the Module injector connectors from the Module unit. The stock rear injector lead is tagged with a label (REAR) and **MUST** connect, through the Module harness, back to the rear injector. When completed, rotate the injectors to locate the connectors to a rear verticle position, to provide clearance for the fuel hose. **IMPORTANT: It is a good idea to make sure there is a little slack in the harness to prevent engine vibration from damaging/breaking the wiring at the connectors.**
6. The front factory O2 connector is cable tied to the left front frame down tube near the oil filter area. Follow the lead from the O2 sensor in the front exhaust pipe. Disconnect the sensor and plug the Module O2 harness (long harness with pink/tan wires) inline with the factory O2 harness and secure. Cable tie the harness back to the frame tube as necessary  
**IMPORTANT: Make sure connection is firmly secure and allow a little slack at the connection to prevent engine vibration from damaging/breaking a wire on the harness.**
7. The rear factory O2 connector is located on the frame behind the rear cylinder. Again, follow the lead from the rear O2 sensor, disconnect the sensor and plug the Module O2 harness (short harness with purple wires) inline with the factory O2 harness then secure. Cable tie the harness back to the frame as necessary.  
**IMPORTANT: Make sure connection is firmly secure and allow a little slack at the connection to prevent engine vibration from damaging/breaking a wire on the harness.**
8. Replace the fuel tank. (Making sure that all bolts are in place and fuel connections are correct).
9. Use the Velcro provided to secure the TFI .
10. Connect the TFI ground lead to negative terminal of battery along with factory ground lead.
11. Re-assemble any removed parts to complete the installation.

## Final Installation

- After connecting the box, check all wire connections to ensure proper connection. Do this by pulling on the connection to make sure the connectors are properly locked in.
- Be sure to check the wire harnesses are not in direct contact with any sharp edges, exhaust and/or other objects, which could result in long term wear and/or damage.
- To program your controller the bike must be running.
- Always make sure your bike is at normal operating temperature when making tuning adjustments

## CONTROLLER FUNCTIONALITY

- The TFI controller can be adjusted “on the fly” to tune your vehicle. No computer or other external device is needed to make tuning adjustments. All that is required is for your vehicle to be running which provides power to the TFI controller.

All TFI controllers come pre-programmed to the recommended base light settings which represents a typical stage 1 (air filter + exhaust) vehicle modification.

**It is recommended to install the TFI controller and take a test ride first before making any mode adjustments.**

- If at anytime you stay in an adjusting mode for longer than 4 seconds without pressing any buttons, the controller will exit adjusting mode and will return to the ready state.

- Start the bike up, the lights inside the module will energize and become visible.

With a proper installation, the module will have a continuous lighting sequence where green lights come on from left to right and then back again. (Page 4) Sequence repeats until the bike is fully warmed up.

It will then stop scrolling the lights and go to a steady green light to the far left.

If the number 1 LED is flashing green and the number 8 LED is flashing red at indicates a connection issue. Re-check the wires from the EFI and make sure they are connected to the proper wire of your bike's stock harness. The TFI unit only needs power and a proper ground to show this error display. To start then you will also need to recheck the wiring. If you have not connected the ground wire to the negative post of the battery then make sure you have attached the wire to a proper grounding source on the frame.

(The flashing green and flashing red lights is common for a proper installation during deceleration because the stock fuel map shuts off the fuel injectors during this process.)

- At this point you are ready to adjust the module to the base settings supplied with the unit.

The unit comes with pre-programmed base settings which should match the recommended starting settings on pag. 7.

Checking that the 5 programmable features are available.

5 modes are available to make adjustments. You enter the adjustment mode by pressing the MODE button. Correctly entering the adjustment mode will display flashing LEDs on the LED display.

Pressing the MODE button repetitively will move you through all the modes.

Take note that the MODE button is sensitive and will at times skip a mode.

Pressing the MODE button at the last mode will bring you back to the first mode.

If each mode is present then the proper code exists and you are ready for making manual adjustments. See the first (page 4,5,6).

If you failed to enter a mode, try going through the sequence again and be sure to only press the MODE button once for step.

To exit the adjustment mode and return to operation mode you just wait several seconds until the LED display reverts back to solid LED colors.

**It is recommended to install the TFI controller and take a test ride first before making any mode adjustments**

## CONTROLLER FUNCTIONALITY (Continued)

- You are now ready to manually program each mode. Consult the base settings supplied with the unit or you can look up the most up-to-date settings by going to [www.dobeckperformance.com](http://www.dobeckperformance.com). The 5 modes available are distinguished by an LED color combination. The 5 modes in respective order are as follows: Green, Yellow, Red, Yellow-Blue, and Red-Blue.

All six modes have 15 possible light settings. The settings are adjusted by pressing the PLUS (+) and MINUS (-) buttons.

For easy reference the LEDs are numbered 1 through 8.

However, the LEDs can be adjusted to the following positions: 0.5, 1, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5, 6, 6.5, 7, 7.5, 8.

For example, in a particular mode, if LED 4 is flashing then the LED display is set to 4 in that mode.

If the PLUS (+) button is pressed once then LEDs 4 and 5 will flash simultaneously and the LED display is set to 4.5.

If the PLUS (+) button is pressed once again, only LED 5 will flash and the LED display is set to 5.

The LED display can also be set to 0.5 by pressing the MINUS (-) button and scrolling the colored LED to position 1 and then pressing the (-) button once more until the LED in position 1 is flashing twice as fast as normal.

Modes 4 and 5 are distinguished by the 8th LED also blinking blue.

- Every mode represents an adjustable feature within your vehicle's drive cycle.

Reference the Example Drive Cycle diagram to gain a visual understanding (Page 6).

Each mode can be defined as either a FUELING mode GREEN/YELLOW/RED (Modify the fuel amount levels.)

or a SWITCH POINT mode Yellow-Blue/Red-Blue (Determine the transition point between two corresponding zones.)

The higher the light setting the longer it takes for a zone to engage.

The lower the light setting the faster a zone will engage.

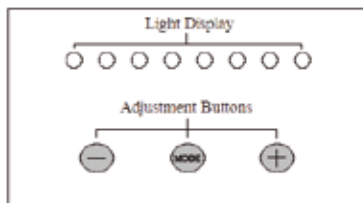
Note: Switch point modes do not have to be adjusted that frequently.

- Your module should now be properly programmed and you are now ready to tune your bike.

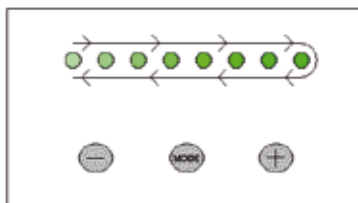
Always make sure your bike is at normal operating temperature when making tuning adjustments.

- Additional Notes: The TFI controller can be set to a stock fueling without uninstalling the unit.

General Layout



Start-Up Light Sequence



**TUNING ADJUSTMENT**

**IMPORTANT: Your TFI controller already comes pre-programmed with our recommended stage 1 settings. We highly suggest installing the controller and going for a test ride before making any adjustments**

Mode 1 - **GREEN** - Fuel addition during cruise/steady throttle.(functions like a fuel mixture screw on a carburetor)

Adjusts for the motorcycle's fuel requirements during light load operation, from idle through legal highway cruising speeds and steady throttle. We have found that manufacturers have generally leaned out the fuel mixtures for emissions to a specific rpm (see below). To set this **GREEN** LED functions, make sure the motorcycle is up to a full operating temperature, then while in neutral, pick a fast idle that is not easy to hold a steady rpm (V-twins 1800-2200 rpm and multiple cylinders 2500-3000 rpm), hold the throttle at that spot and increase green **GREEN** LED from its minimum setting, while listening to the exhaust sound. You should hear the exhaust sound change from an irregular and uneven sound to an even and smooth one. You may also see an increase in rpm as you increase fuel, and if you continue to increase fuel past this point to where the revs start to fall back away, then you can stop and decrease **GREEN** LED to a point half way between where the exhaust note first smoothed out and the point where the highest rpm starts to fall away. When the LED display shows solid **GREEN** lights then the GREEN zone is active and fuel is modified by this mode. Mode has the largest affect on fuel mileage.

Mode 2 – **YELLOW** - Fuel addition during acceleration.(functions like an accelerator pump)

Tuning for this mode depends greatly upon your individual bike and can vary widely from the base setting. After market high flow exhaust systems and high flow air filters “MAY” cause you to tune differently from the base settings. This combination could have a setting difference as great as three **YELLOW** LED's. Note that this adjustment is only for hard acceleration. This fuel adjustment adds fuel into the fuel map whenever the throttle is opened rapidly. This function needs to be adjusted from test riding, by performing brisk roll-ons in a specific gear, and by always starting at the exact same rpm. Try one position increases **YELLOW** LED between roll-on tests until you can't feel any more improvement, and then go back to the last setting that improvement was noticed.

When the LED display shows solid **YELLOW** lights then the YELLOW zone is active and fuel is modified by this mode.

Mode 3 **RED** - Fuel addition during full throttle. (functions like a main jet on a carburetor)

This adjustment deals with adding fuel for primarily 4000 RPM and up to red line, is generally required when either air intake or quality exhaust system. Similar to the road test procedure listed above in yellow fuel. For example, running to red line in 1st shifting, running to red line in 2nd shifting, and continuing this all the way through the gear range,you would have been engaging the red zone all the time. This mode could vary widely from the base settings depending on the set up of your bike and could have a difference as great as three **RED** LED's or more. When the LED display shows solid **RED** lights then the RED zone is active and fuel is modified by this mode. Mode has the largest affect on tuning for the vehicle's top horsepower value.

### TUNING ADJUSTMENT (Continued)

Mode 5 **YELLOW** / **BLUE** - Acceleration switch point/ Adjustment for when the yellow zone of the tachometer.

Represents transition between GREEN and YELLOW fuel zones which relates to cruising and accelerating conditions. This mode "MAY" vary from the base settings depending on the set up of your bike. The lowest LED setting (1) represents the lightest load to switch on the yellow fuel zone and the highest LED setting (8) represents the heaviest load to switch on the yellow fuel zone. A flashing **YELLOW** LED should appear somewhere on the display along with a solid **BLUE** LED on the right.

Mode 6 **RED** / **BLUE** - Adjustment for when the full throttle fuel engages.(Full throttle switch point)

Represents transition between YELLOW and RED zones which relates to accelerating and full throttle. The base setting for this mode will rarely have to be changed. The **RED** LED should be engaged during the full throttle period. The lowest LED setting (1) represents the lightest full throttle load to switch on the red fuel zone and the highest LED setting (8) represents the heaviest full throttle load to switch on the red fuel zone. A flashing **RED** LED should appear somewhere on the display along with a solid **BLUE** LED on the right.

(The flashing green and flashing red lights is common for a proper installation during deceleration because the stock fuel map shuts off the fuel injectors during this process.)

### Adjustment Modes

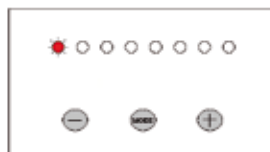
Mode 1 – Green



Mode 2 – Yellow



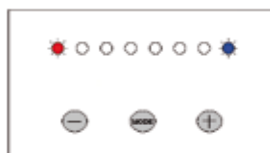
Mode 3 – Red



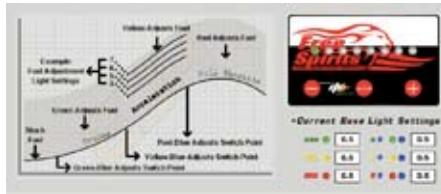
Mode 5 – Yellow/Blue



Mode 6 - Red/Blue

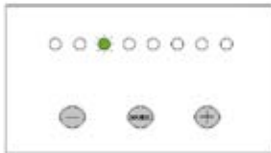


Before setting "Fuel Stock"



Stage 1 Settings

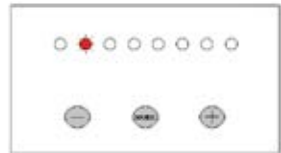
Mode 1 - Green 3



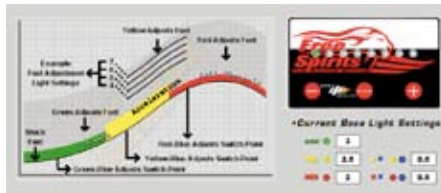
Mode 2 - Yellow 2,5



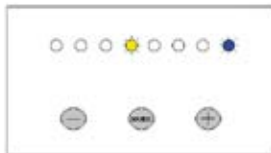
Mode 3 Red 2



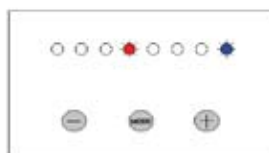
after the first 3 settings



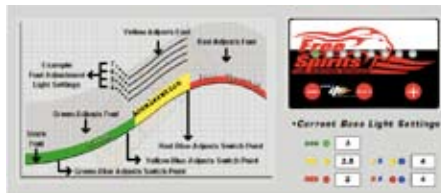
Mode 5 - Yellow/blue 4



Mode 6 - Red/blue 4

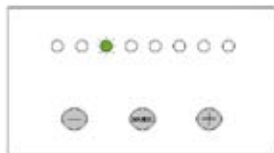


Settings Complete

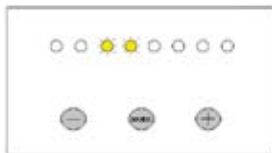


### Stage 2 Settings

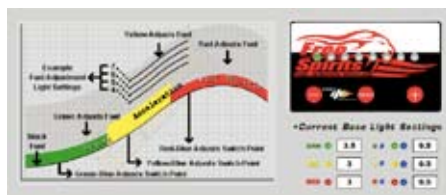
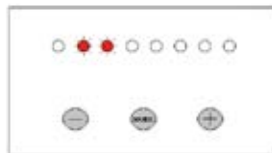
Mode 1 - Green 3



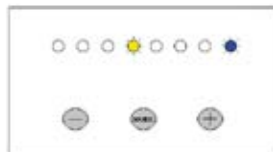
Mode 2 - Yellow 3,5



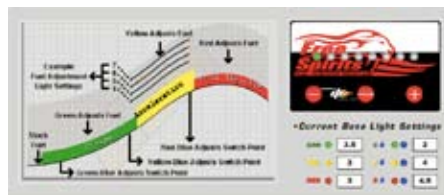
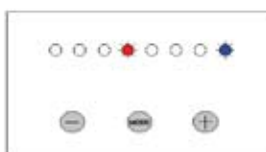
Mode 3 Red 2,5



Mode 5 - Yellow/blue 4



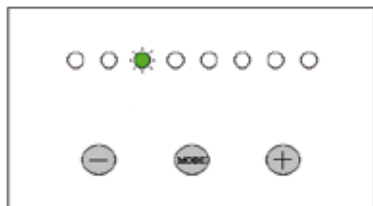
Mode 6 - Red/blue 4



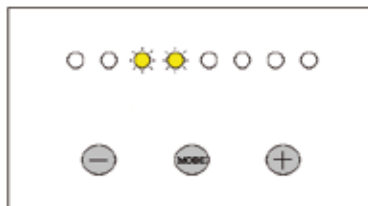


Sportster Stage 3 Settings  
For XR 1200 models with Racing exhaust & filter

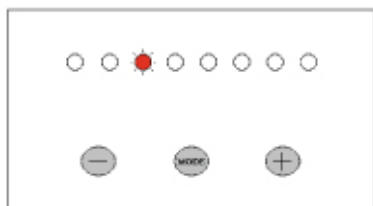
Mode 1



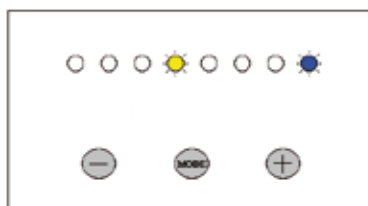
Mode 2



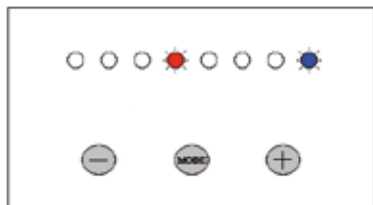
Mode 3



Mode 4



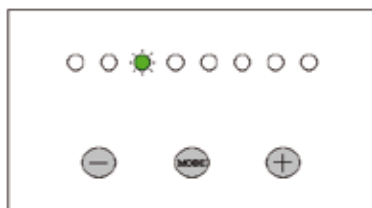
Mode 5



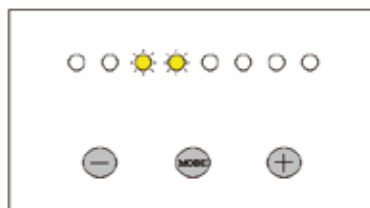
### Sportster Stage 4 Settings

For XR 1200 models with Racing exhaust & filter 204010

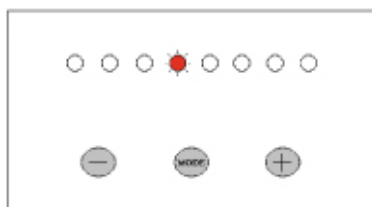
Mode 1



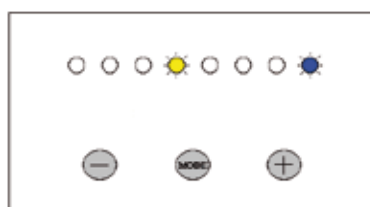
Mode 2



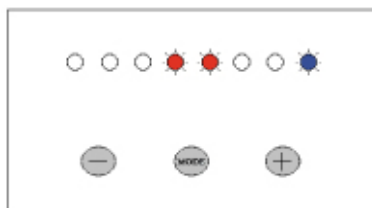
Mode 3



Mode 4



Mode 5





**2-Year Unlimited Mileage Warranty**

Technision warrants that this product carries a warranty for 2 years from date of purchase against original defects in materials and workmanship. Should this product fail to perform for either of the above reasons, Technision will repair or replace it with an equivalent product at no charge, except for postage, to the original retail purchaser.

**\* \* Important \* \* Important \* \***

To obtain the benefits of this warranty, the retail purchaser must send the product with proof of purchase and postage prepaid to:

Dobeck Performance  
401 Jackrabbit Lane Belgrade, MT 59714

Phone 877-764-3337 or email [info@technision.com](mailto:info@technision.com)

**Free Spirits**

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