Multi-Function Hub
Installation Guide

Options

| Pressure input	Map Switch	Output	Gear/Speed Input
Allows the map to be trimmed based on pressure/boost input	Allows the user to change between 2 maps via a handlebar mount switch	Allows 2 relays to be activated based on RPM and throttle position	Allows the map to be trimmed based on gear position and/or display speed

Installation

FOR MODEL SPECIFIC INSTALLATION INSTRUCTIONS AND CONFIGURATION FILES GO TO WWW.POWERCOMMANDER.COM.

- This guide will give you a general overview to the use of the HUB and HUB accessories. Any combination of the HUB accessories can work in conjunction with each other. The HUB can be used with or without the Ignition Module.

- Connect the hub to the female expansion port of either the PCIII USB or the Ignition Module.

- For the Multi-Function Hub to operate properly with the PCIIIUSB you will need to update the PCIII USB to firmware version 2.1.2 and use software version 3.1.8 or higher.

- To determine your current firmware version go to VIEW - POWER COMMANDER INFO in the Control Center software. If your current firmware is version 1.0.0.20 or higher then you can update your firmware by going to POWER COMMANDER TOOLS - UPDATE FIRMWARE. The firmware needed for use with the Hub can be downloaded from the enclosed CD or our website, www.powercommander.com.

- If your firmware version is 1.0.0.19 or lower then you will need the firmware programmer to update your PCIII USB. This programmer can be found in some Ignition Modules or the HDREV kit. Follow the enclosed UPDATE instructions to perform this step.

- If you do not have one of the programmers and you cannot find a Tuning Center to update your PCIII USB the unit can be sent in to Dynojet to be updated. Please call 800-992-4993 for instructions. You can also purchase a programmer, part #PCPROG, which will allow you to update your PCIII USB and Ignition Module.

- If you are using an Ignition Module then you will need to use fimware 2.1.2 or newer in the Ignition Module. If your current firmware is lower than 2.1.2 use the programmer that came with the Ignition Module to update it. Follow the enclosed UPDATE instructions to perform this step.
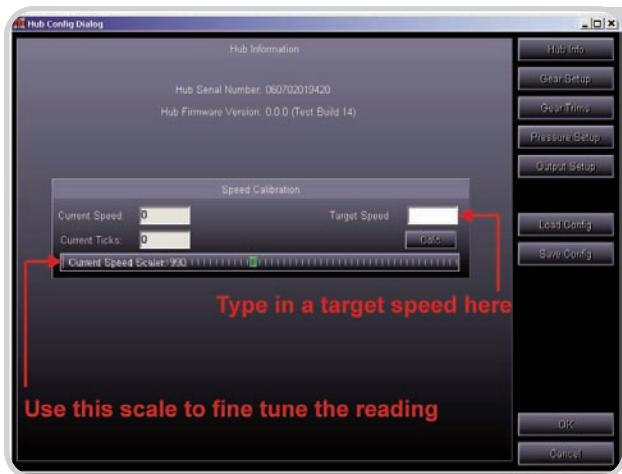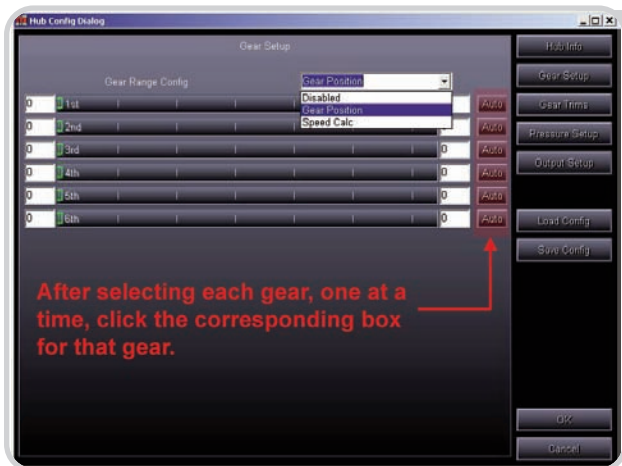
Speed Input
(harness #76950212)

Most modern fuel injected bikes use a transmission speed sensor. The Hub can be tapped into this sensor to display vehicle speed and also to be used as a gear position display for bikes that do not have a rotary type sensor

1   Locate the signal wire of the speed sensor (refer to the service manual, NOTE section of this guide, or www.powercommander.com).

2   Crimp the supplied wire tap to this wire.

3   Connect the BROWN wire from the HUB harness to the wire tap.

4   If there is not a configuration file for your bike then you will need to calculate the speed input manually. Go to POWER COMMANDER TOOLS - HUB CONFIGURATION. Type in a target speed (20-40mph). The bike will need to be put in gear and held at the target speed. Once the speed is stable click on CALC. The current speed should now read the same as the dash. For the most accurate results this is best done on a dynamometer although this can be achieved with the bike on a rear stand.

   • The Speed Scaler can be used to fine tune the speedometer reading in the PCIII software or the LCD display. If you were using a GPS you could move the scale until the LCD display coincided with the GPS display.
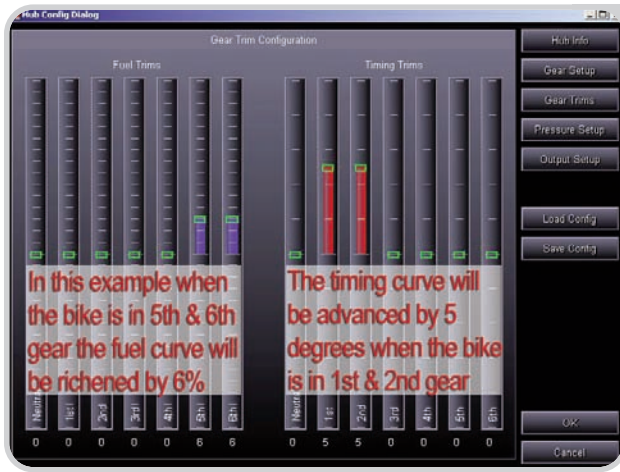

Gear Position
(harness #76950212)

Gear Position can be calibrated on bikes that have a rotary switch and/or a transmission speed sensor.

If desired both the speed input and gear input could be used simultaneously

1   If your bike has a rotary gear position sensor then you will need to determine which wire from the sensor is the signal (refer to the service manual, NOTE section of this guide or www.powercommander.com). Most Kawasakis and Suzukis use a rotary type sensor.

2   Crimp the supplied wire tap to this wire.

3   Connect the GREY wire from the Gear Position Hub harness to the wire tap. If your bike does NOT have a rotary type sensor then the GREY wire will not be used.

4   To setup the Gear Position Input go to POWER COMMANDER TOOLS - HUB CONFIGURATION - GEAR SETUP. Click on the drop menu at the top, center of the screen. Choose Gear Position if you are connected to a rotary type sensor.

5   Put the bike in first gear and click on the "Auto" box for first gear. Repeat this step for each gear. This is best performed on a dyno but can also be done with the bike on a rear stand. The Green slider bar should be at different ranges of the scale for each gear. If the slider bar does not move then you may not have a good connection at the rotary switch/speed sensor. Click OK when done.

6   If you are using the speed input for calculating gear position then choose Speed calc from the drop down menu. Repeat step 5. Make sure you have calibrated your speed input before performing this step.

7   After the gear position has been calibrated the main screen of the software will show current gear position. If the HUB is connected to the Dynojet LCD display gear position will also be shown.

Gear Position Trim Feature

• After you have setup the gear position either via the rotary sensor or speed input the software will allow you to trim the base map for both fuel and ignition (if the Ignition Module is installed).

• Go to POWER COMMANDER TOOLS - HUB CONFIGURATION - GEAR TRIMS.

• The software will allow you to trim your base map +/- 50% of fuel and +/- 10 degrees of timing per gear. The software will only allow you a total of +10 degrees of timing so if your base map has a value of 10 in any cell the gear trim will not allow you to advance any further.

In this example when the bike is in 5th & 6th gear the fuel curve will be richened by 6%

The timing curve will be advanced by 5 degrees when the bike is in 1st & 2nd gear

If you had a +5 anywhere in your base timing map and you tried to move one of the gear trims for the timing to more than +5 the software would limit you also.

• Click on the slider bar and drag to the desired setting for each gear. The offset value will be shown underneath each scale. Click OK when done.

• The Gear Position Trim values will be added to the base map values and will be displayed under fuel change and/or timing on the main software screen.
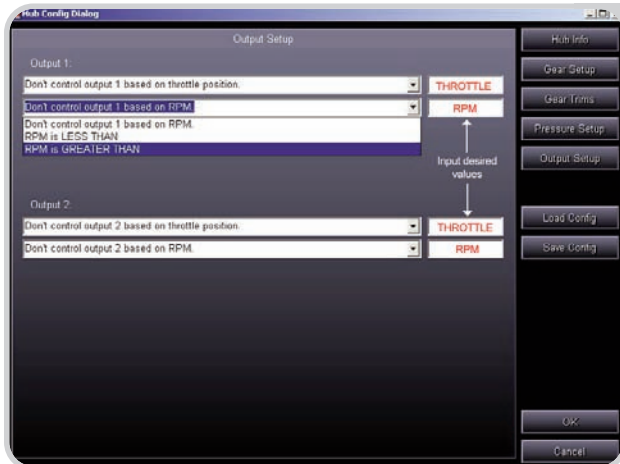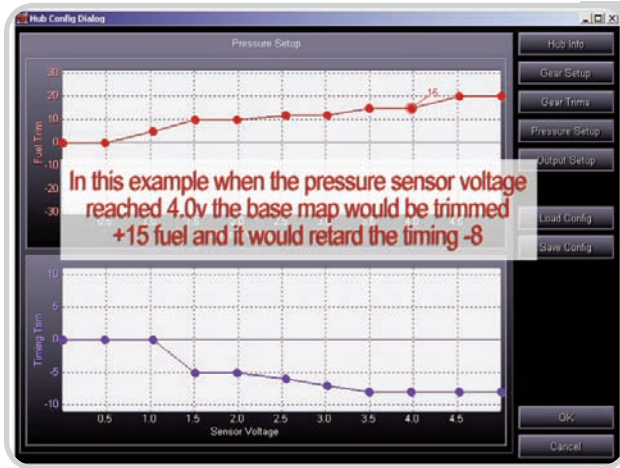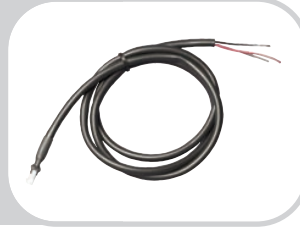

Relay Trigger
(harness #76950506)

The Hub can trigger up to 2 output signals such as an indicator light, Nitrous relay, or shift light.

1   Locate the ground wire of the device you want to trigger.

2   Attach the ground from the device to the HUB harness.

3   Attach the WHITE/YELLOW wire from the Hub harness to trigger Output Channel 1.

4   Attach the WHITE/GREEN wire from the Hub harness to trigger Output Channel 2 (if needed).

5   Attach the BLACK wire from the Hub harness to a chassis ground or the negative side of the battery.

6   Go to POWER COMMANDER TOOLS - HUB CONFIGURATION - OUTPUT SETUP. The trigger can be activated based on Throttle Position and/or RPM. For example; you could trigger a NOS relay to only be activated above 80% throttle and above 7000rpm. Click OK when setup is done.

   • **The current limit for each channel is 3 amps.**

In this example when the pressure sensor voltage reached 4.0v the base map would be trimmed +15 fuel and it would retard the timing -8

Pressure Input
(harness #76950012)

The Pressure input harness allows you to trim the base fuel/timing map based on a 0-5v input signal line. In most cases this will be used to offset the fuel curve for a turbo application.

• The pressure harness has 3 wires. YELLOW = signal (0-5 volt),BLACK/WHITE = ground, WHITE/RED = (5 volt).

• You will first need to determine the parameters of the pressure sensor that you are using. If the sensor reads a maximum of 10lbs of pressure then you will need to determine what the voltages correspond to at 0lbs and at 10lbs (relative pressure). Every point in between should be a linear reading. Refer to the notes section for readings of specific sensors.

• Once you have determined the parameters of your sensor you can alter the HUB settings accordingly. For example, if you wanted the HUB to add 10% of fuel at 5lbs of boost then move the scale to +10% fuel to the voltage that you determined your sensor would be at when it read 5lbs of boost.

• You can also trim the ignition timing according to a pressure input if desired.

• The HUB will allow you +/- 50% of fuel and +/-10 degrees of timing on top of your base map. The software will only allow you a total of +10 degrees of timing so if your base map has a value of 10 in any cell the pressure trim will not allow you to advance any further.

• The raw voltage of this sensor will be displayed on the main software screen under Trim Voltage.

• If you are using a Wide Band Commander you can input the 0-5v signal from it (see page 10 of the WBC install) and display this in the Power Commander Control Center software or on the LCD display. This voltage correlates to Petrol air/fuel ratio. Refer to the chart in notes section. This will allow you to read real time air/fuel ratio and be able to log this data in the LCD Display. The BLACK/WHITE wire and the WHITE/RED wire does NOT need to be connected when inputting the 0-5v signal from the WBC.

If you are using the optional map switch then go to Power Commander tools - Set Num maps - and select 2

What map the switch is currently set to will be shown here

Map Switch
(harness #76950320)

*Map switch is shown mounted to the handlebar via our optional map switch bracket part #61329304
Note: Bracket is for 7/8" bars.*

• The map switch will allow you to toggle back and forth between two maps that are stored within the Power Commander.

• To enable this feature go to POWER COMMANDER TOOLS - SET NUM MAPS - 2 MAPS.

• When this feature is enabled when you click on Send Map or Get Map you will be prompted as to what map you want to send or receive. The map that is currently active in the Power Commander will be displayed on the right hand side of the software.

• When first connecting to the software it will automatically retrieve the map that the switch correlates to.

• When tuning the PCIII USB and using either INSERT (on keyboard) or SEND TABLE and you are viewing the map that is NOT current you will be prompted that you are about to alter the incorrect map. Follow the instructions shown on the screen to continue.

LOAD/SAVE config

- Under Power Commander Tools - Hub Configuration, you will see you have the option of either LOAD or SAVE config files. We have compiled the setup information needed for various models which saves you setup time when using the SPEED and/or GEAR input harnesses.

  These configuration files can be found at www.powercommander.com or on the enclosed CD. Download these files to your computer and when you click on LOAD config from the HUB setup it will prompt you to find this file. Once the file is loaded the necessary settings will be filled in under SPEED and GEAR input. These settings can be loaded even if you are not using these harnesses though no data will be displayed.

- We will be constantly adding new models to the list so keep an eye on the website for new updates.

GEAR/SPEED input

- Most of the Suzuki and Kawasaki models have a rotary style gear position indicator. This sensor can be located on the shift drum inside the transmission which outputs different voltages in each gear. When connecting the Gear input harness from the HUB to this style of sensor it will give you a very stable gear reading. This sensor will normally have 3 wires. One wire is Ground, one wire is constant 5 volts, and the wire you need to connect to will have variable voltage when the bike is running and you shift thru the gears.

- If you are using a timing retard device that connects to the gear position you will need to base the HUB gear position on the speed input.

- The speed output sensor will normally have 3 wires. One wire is Ground, one wire is constant 5 volts and the one you need to connect to will have variable 0-5volts when the bike is running and the rear wheel is spinning.

- Here is a list of the location of these wires on some models. **Check the website for a more updated list**.

Model	Speed Input	Gear Input
Honda CBR1000RR 05-06	Pink wire on ECU R.H side	N/A
Honda F4i	Pink wire - Left rear of engine PINK/GRN/BLK	
Honda RC51	PINK-GREEN wire under seat on R.H side Sensor is on rear right hand side of engine	N/A
Kawasaki ZX6R 07	PINK wire from sensor on c/s cover PINK/YELLOW/BLACK	GRN-RED wire on black 6 pin connector - R.H side of bike under tank
Kawasaki ZX10 04-05	Yellow wire of black 3 pin connector YELLOW/PINK/BLK	GRN-RED wire underneath throttle bodies on left side - GREEN 4 pin connector
Kawasaki ZX10 06	BLUE-YELLOW wire of black 3 pin conn near the c/s sprocket BLU/BLU-YEL/BLK-YEL	GRN-RED wire on 10 pin grey connector under fuel tank
Suzuki GSXR 01-06	Pink wire on black 3 pin connector BLK-RED/BLK-WHT/PINK	Pink wire on white 3 pin connector BLU/PINK/BLK-WHT
Suzuki SV650	Pink wire - connector is located in front of the airbox - comes from frt wheel	Pink wire on white 3 pin connector under fuel tank BLU/PINK/BLK-WHT
Yamaha R6 03-06	Pink wire from sensor on center rear of engine PINK/ORANGE/BLK-WHT	N/A
Yamaha R1 2007	Pink wire on white 3 pin connector under fuel tank PINK/OR-RED/BLK-WHT	N/A
Harley Softail 01-06	White wire - R.H side of trans WHT/RED/BLK	N/A

	GM 2bar	GM 3bar
Volts	Pressure	Pressure
0	0	0
0.25	1.465	2.2925
0.5	2.93	4.585
0.75	4.395	6.8775
1	5.86	9.17
1.25	7.325	11.4625
1.5	8.79	13.755
1.75	10.255	16.0475
2	11.72	18.34
2.25	13.185	20.6325
2.5	14.65	22.925
2.75	16.115	25.2175
3	17.58	27.51
3.25	19.631	29.8025
3.5	20.51	32.095
3.75	21.975	34.3875
4	23.44	36.68
4.25	24.905	38.9725
4.5	26.37	41.265
4.75	27835	43.5575
5	29.3	45.85

Pressure Sensors

- The Trim Voltage can be based on various 0-5 volt input sensors. Most sensors should come with a spec sheet that shows you the breakdown of the output of the sensor at various voltages. The HUB has a resolution of .25v from 0-5 volts.

- To help you setup this feature here is the breakdown for the GM sensors. This chart shows absolute pressure.

WBC Volts	Petrol AFR		WBC Volts	Petrol AFR
0	10		2.5	14
0.0625	10.1		2.5625	14.1
0.125	10.2		2.625	14.2
0.1875	10.3		2.6875	14.3
0.25	10.4		2.75	14.4
0.3125	10.5		2.8125	14.5
0.375	10.6		2.875	14.6
0.4375	10.7		2.9375	14.7
0.5	10.8		3	14.8
0.5625	10.9		3.0625	14.9
0.625	11		3.125	15
0.6875	11.1		3.1875	15.1
0.75	11.2		3.25	15.2
0.8125	11.3		3.3125	15.3
0.875	11.4		3.375	15.4
0.9375	11.5		3.4375	15.5
1	11.6		3.5	15.6
1.0625	11.7		3.5625	15.7
1.125	11.8		3.625	15.8
1.1875	11.9		3.6875	15.9
1.25	12		3.75	16
1.3125	12.1		3.8125	16.1
1.375	12.2		3.875	16.2
1.4375	12.3		3.9375	16.3
1.5	12.4		4	16.4
1.5625	12.5		4.0625	16.5
1.625	12.6		4.1875	16.7
1.6875	12.7		4.25	16.8
1.75	12.8		4.3125	16.9
1.8125	12.9		4.375	17
1.875	13		4.4375	17.1
1.9375	13.1		4.5	17.2
2	13.2		4.5625	17.3
2.0625	13.3		4.625	17.4
2.125	13.4		4.6875	17.5
2.1875	13.5		4.75	17.6
2.25	13.6		4.8125	17.7
2.3125	13.7		4.875	17.8
2.375	13.8		4.9375	17.9
2.4375	13.9		5	18

WBC voltages

- If you are using a Wide Band Commander you can input the 0-5v signal from it and display this in the Power Commander Control Center software or on the LCD display. This voltage correlates to Petrol air/fuel ratio. This will allow you to read real time air/fuel ratio and be able to log this data in the LCD Display.

- Connect the WHITE/YELLOW wire from the WBC to the YELLOW wire of the HUB pressure harness. Connect the WHITE/GREEN wire and BLACK/WHITE wire from the WBC together and attach them to a good chassis ground. If you use this configuration you will NOT be able to input a pressure signal and offset the map at the same time.

- Once you have the Trim Voltage displaying the output from the WBC use this chart to reference Petrol air/fuel ratio.

In order for your new HUB to operate you MAY have to update your Power Commander and/or Ignition Module.

- **If your PCIII USB firmware is 1.0.0.19 or lower then follow these instructions.**
- **If your Ignition Module firmware is 2.1.1 or lower then follow these instructions**

TO START:
Insert the provided CD into your computer. This program will start automatically. Click on Power Commander firmware update. This will bring up a screen that will step you thru the update of your PCIII. If you have a Harley Davidson click on Harley Davidson firmware update.

To update your Ignition Module click on Ignition Module Firmware Update.

NOTE:
It is necessary to have the latest Control Center software in order to communicate to the Power Commander. To update the software, click on Power Commander Software Update.

9v adapter connection

Programmer

USB cable

STEP 1
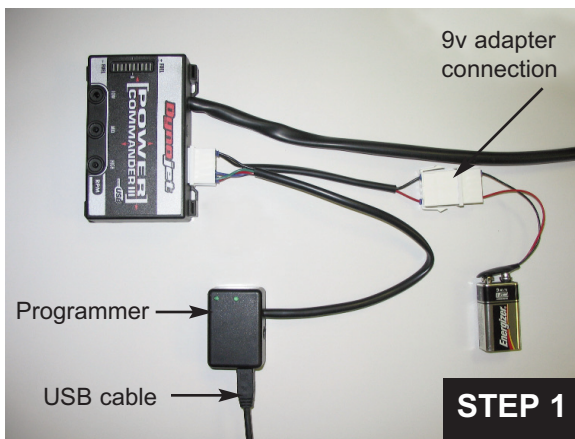
1   Connect your USB cable to your computer and then to the programmer.

Connect the 9v battery adapter to the programmer.

Connect the white, male connector from the programmer to the PCIII expansion port. If you have hooked everything up in the correct sequence the light on the PCIII will either NOT be lit or you will have 1 light at the top of the scale and one at the bottom.

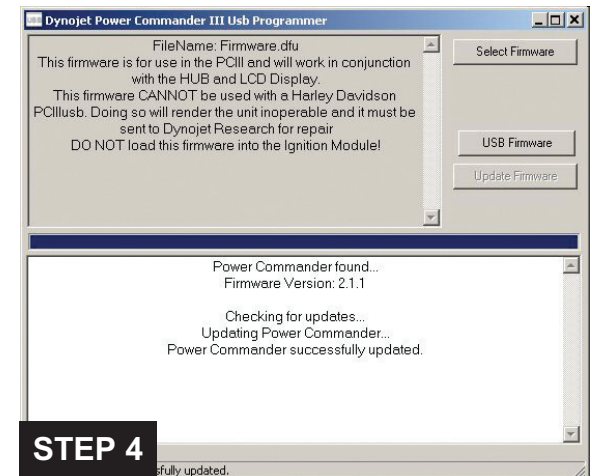DO NOT have the Ignition Module connected to the PCIII at this time.

Click here

STEP 2
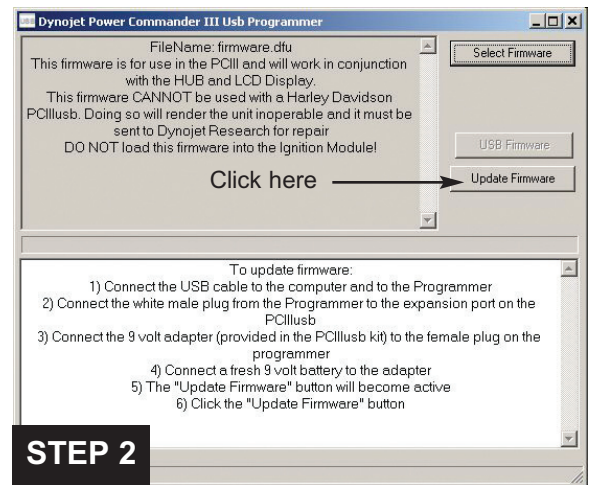
2   The "Update Firmware" button will now be active. Click on this button and a blue scroll bar will start. Wait until done.

If you should get a communication error 8001 then click on Update Firmware again until the update finishes.

Click here

STEP 3
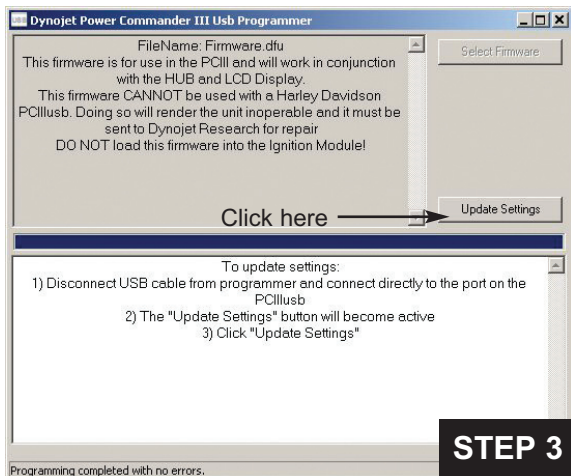
3   Unplug the USB cable from the programmer and plug it directly into the USB port of the Power Commander.

The "Update Settings" button will now become active. Click on this button and wait until done.

STEP 4

4   When the unit has been updated you will get a confirmation of "Power Commander successfully updated". You can now disconnect the programmer.

5   Follow steps 1& 2 for the Ignition Module if needed. Make sure that the programmer is connected to the Ignition Module and that the Ignition Module is NOT connected to the PCIII.