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## **YZ450F 23 VORTEX X10 ECU INSTALLATION & OPERATION INSTRUCTIONS**

Thankyou for purchasing your Vortex X10 ECU (Engine Control Unit). We hope you will enjoy the benefits of our product. Please read and follow the below mounting and operation instructions carefully.

**Step 1:** Remove the bikes Seat and Rear Side Panels.

**Step 2:** Undo the two battery box mounting bolts. Lift the battery box from the exhaust side to expose the standard ECU. Remove the standard ECU and it's rubber mount boot from the underside of the battery box. **CAREFULLY** unplug the 33Way connector on the ECU **Note: These connectors have a locking tab that needs to be pressed before carefully unplugging the connector. BE CAREFUL NOT TO PULL ON THE WIRING HARNESS WHEN UNPLUGGING THIS CONNECTOR.**

**Step 3:** Fit the Vortex Rubber Mounting boot supplied to the Vortex ECU. Plug the Vortex ECU into the main wiring connector. Slide the ECU with Rubber mounting boot onto the mounting tabs on the bottom of the battery box.

**Step 4:** Re position the battery box now with the ECU mounted into the subframe. Replace the two mounting bolts and rubber strap to the fuel tank.

**NOTE:** See below pictures for mounting and orientation reference.



**Step 5:** Secure the 4 way Programming cable and 8 Way Options cable coming from the Vortex ECU with the zip tie provided. **NOTE:** Do not over tighten zip ties on any wiring

**Step 6:** Replace the Plastic Shrouds and Seat. Installation of the Vortex X10 ECU is now **complete!**

**See next page for further operational instructions**

## ECU X10 MAP SELECTOR & FUEL TRIM Switch Operation:

The Vortex X10 ECU has 10 Pre-programmed Power settings from “Mild to Wild”. By changing the position of the X10 Switch on the ECU the user can change the type of power delivery for different rider styles or track conditions. See Map listing chart for explanation of the power type expected from each setting. In addition there are three **FUEL TRIM** switches which will modify the fuel supplied to the motor through the EFI system. These switches are divided as follows:

**LO:** 5-25% Throttle .....(Like a Pilot Jet on a Carby)

**MID:** 33-66% Throttle ....(Like a Needle Jet on a Carby)

**HI:** 75-100% Throttle .....(Like a Main Jet on a Carby)

Each switch position is either + or – fuel in 2.5% increments. The base position is “5,5,5” with position 6 through 0 adding fuel (richer) and position 4 through 1 is subtracting fuel (leaner) from the selected X10 Map. For example if a fuel trim switch is on position 6 then 2.5% fuel is added to the selected map in that throttle opening. If a fuel trim switch is in position 3 then 5% fuel is subtracted from the selected map throttle opening.

**NOTE:** The “LO”, “Mid” and “Hi” switches are fuel trim based on throttle opening and NOT RPM

**NOTE:** It is not advisable to go leaner on any setting unless you are an experienced engine tuner. Air / Fuel Ratios great than 15:1 can cause engine damage.

## MAP SELECTION VIA HANDLEBAR SWITCH:

The Handlebar switch will allow you to select two maps. MAP 1 and MAP “X” where “X” is the Map selected on the ECU X10 Switch. When you press the BLUE button (short press) this will toggle to the alternate map from the one you are currently on. Therefore each time to press the button it will change maps and flash the number of the MAP which is active on the BLUE LED. Note: When the engine is started the active map number will be flashed using the BLUE LED.

## LAUNCH CONTROL OPERATION (TIMER MODE):

The Vortex X10 ECU has a Launch Control algorithm and Mapping that can be operated using the Standard Mode Button. To activate Launch press and hold the Blue Mode button for 2 seconds or until the launch mode PURPLE LED flashes rapidly. Launch Mode is now active.

**Note: If after activation you wish to CANCEL Launch Mode then press and hold the same button for 3 seconds or until the Purple LED stops flashing rapidly. Launch mode is now disabled.**

The intended method for starting in Launch Mode is to have the bike in second gear and rev the engine to the REV LIMITER (Throttle must be between 45%-100%).

When the gate drops feed the clutch out as you normally would during a race start. When the ECU detects launch a timer will be activated and the ECU will help control power to the rear wheel for the time it takes to leave the start gate. When the pre-programmed time has expired normal operation will resume. See map listing for further details.

**Dynamic Traction Control (DTC)** can be activated **before** Launch Mode to combine the functions of Traction Control and Launch control together during Launch. NOTE: After the Launch Mode is completed DTC will switch off with the end of Launch Mode. See below details for activating DTC

**See next page for further operational instructions**

## DYNAMIC TRACTION CONTROL (DTC)

The Vortex X10 ECU also has Dynamic Traction Control (DTC) capability. When this DTC is turned on the ECU will monitor rear wheel acceleration and when the programmed acceleration is exceeded will change parameters of the engine control to reduce engine power and therefore wheel spin.

### **ACTIVATING DTC (Dynamic Traction Control)**

With the Engine Running – Press the STARTER Button once.

When DTC is active the PURPLE LAMP will display a fast flash with longer delay.

**Note:** This fast flash should not be confused with the Fault Flash Codes provided to indicate a faulty sensor. The Fault codes display as a slow flash with a long break between counts and use a AMBER coloured LAMP. See included Fault Flash Codes sheet for a description of these codes.

## TPS END-POINT SETTING

This Vortex X10 ECU can set the TPS (Throttle Position Sensor) endpoint voltages without the need for a PC or any other device. It may be necessary to set the TPS endpoints when you first install the ECU, after the ECU is re-programmed, or the TPS has been replaced. To set follow the following steps:-

1/ With the THROTTLE CLOSED :- PRESS and HOLD the KILL SWITCH then at the same time as press the STARTER BUTTON for 1 second. Release all and proceed to step 2.

2/ With the THROTTLE FULLY OPEN :- PRESS and HOLD the KILL SWITCH then at the same time as press the STARTER BUTTON for 1 second.

3/ TPS endpoints are now set. This process can be repeated at any time as required. Each time this operation is performed overrides the previous setting.

**NOTE:** This ECU does NOT cut the engine when the bike is tipped over.

### **INDEMNITY**

**Note:** This is a performance product and is designed for competition use only. The manufacturer or their distributor accepts no responsibility for damage or injury caused by this product. Because we cannot control the application or use of this product, the buyer assumes all risks of any and all damage that may occur to their self, their machinery or third party due to the use of this product. The product is guaranteed against manufacturing defects.