TuneECU for Windows version 2.5

Warning: Use of this software solution under certain circumstance can invalidate your warranty.

Contents

This description was created for the Windows version of TuneECU and can be applied largely on the Android version. Deviations, please refer to the manual for the Android version and the online pages of TuneECU.

1 Introduction

TuneECU is software to program, diagnose, and test the Sagem, Keihin, Walbro & Marelli engine control units (ECU) that are used by some Aprilia, Triumph, Benelli, KTM & Ducati motorcycles. Ducati models are supported only by TuneECU for Android, version 2.2 or higher.

All provided information on the sides of TuneECU have been made in good faith,
but make no claim to completeness and correctness.

<u>Models</u> TuneECU use only on these models.	<u>Date of</u> <u>information</u>
Triumph Daytona 675, only up to VIN # 564947	**August 2014**
Triumph Daytona 675, from VIN # 564948 / *Bluetooth connection only with TuneECU for Android.	**August 2014**
Triumph Street Triple & Street Triple R, only up to VIN # 560476	**August 2014**
Triumph Street Triple & Street Triple R, from VIN # 560477 / *Bluetooth connection only with TuneECU for Android.	**August 2014**
Triumph Speed Triple models 885, 955, 1050 & 1050 R (including models 2014)	**August 2014**
Triumph Tiger models 800/800XC, 885 (900), 955, 1050 & Tiger Sport (including models 2014)	**August 2014**
Tiger Explorer *Bluetooth connection only with TuneECU for Android.	**August 2014**
Triumph 955 Sprint ST/RS models and 1050 Sprint ST/GT (including models 2013)	**August 2014**
Triumph Daytona models T595/955i Daytona (all models)	**August 2014**
Triumph Rocket III (including models 2014)	**August 2014**
Triumph Daytona 600, 650, Speed Four, TT600 (all models)	**August 2014**
Triumph 2 Cyl. EFI Models Thunderbird Big Bore(1600 & 1700 cc), except Commander and LT America, Bonneville, Scrambler, Speedmaster, Thruxton (including models 2014)	**August 2014**
KTM 990 LC8 & 1190 RC8 (including models 2012) **KTM 690 Duke (including models 2011) (except all Duke 4 models)** **KTM 690 SMC & Enduro/690 Supermoto (including models 2013)**	**August 2014**
Aprilia models Caponord and Futura RST	**August 2014**
Benelli Tornado, TNT & TREK models **(TNT & TREK models are only supported by TuneECU for Windows)**	**August 2014**
Ducati 848, 1098, 1198, Hypermotard 1100, Monster S2R 800 / 1000 (ECU 5AM) **Ducati models are supported only by TuneECU for Android, version 2.2 or higher.**	**Februar 2015**

* **With Bluetooth connection, the functions for reading and flashing of maps, are disabled in TuneECU.**

The manual, software and mapping files and other useful information are available here:
- http://www.box.net/shared/pusg6v7nyd
- http://www.tuneecu.com
- **The Android version of TuneECU is available on the Play Store Google.**

TuneECU <u>for Windows</u> is FREE
It can be given only FREELY

2 Installation

2.1 Required configuration

PC (Netbook, laptop, desktop) running Windows XP, Vista, Win7 or Win8/8.1 (32 or 64 bit) *except Windows8/8.1 RT*;
minimum screen resolution 1024x576
NET Frameworks 2.0 or greater USB/OBD cable with FTDI chipset and the driver FTDI D2XX CDM Driver:
PLEASE REFER TO www.tuneecu.com for the proper current driver to use.
For Aprilia, KTM & Benelli ECU's, additional components are required, please refer to www.tuneecu.com
For Walbro ECU:
only a serial cable RS232, a serial port on the computer, and AMP-Super-Seal-connector-6pin is required. Maybe you need nor a
USB/RS232-converter. This converter is required if your computer has no serial interface (RS232) has. Please refer to www.tuneecu.com

2.2 Installing NET FrameWorks 2.0 (XP only).

NET Frameworks 2.0 http://www.microsoft.com/en-us/download/details.aspx?id=1639 Execute dotnetfx.exe and follow the instructions.

2.3 Installing the Windows drivers

> **Windows 7/8/8.1 and Vista users: MAKE SURE YOU ARE *NOT* connected to the internet. Disconnect any WIFI or Ethernet cable.**
> **Otherwise Windows will download the latest driver automatically, which may not be compatible with TuneECU.**
> **Download the FTDI driver only of the TuneECU site. For safety, you waive on the version 2-12-00.**
> **With the FTDI driver version 2.12.00, the chips of cheap cables that have fake FTDI chips, made unusable by the current driver.**
> **Never allow Windows to install the driver, and disconnect the Internet connection before the first plugging of the cable. Use then always the same USB port.**

Driver's limitation for the USB-TuneBoy-cable:
The TuneBoy cable works only with the ancient FTDI driver from TuneBoy's own site. The hardware id of TuneBoy cable is different vs. a generic/TuneECU FTDI cable. So even though both cables have same chip, TuneBoy cable needs the matching driver.

1. Plug the cable into a USB Port.

2. The PC will open the Found New Hardware Wizard to install the USB/Serial driver:

3. Choose "**No, not this time**" for the connection to Windows Update.
4. Click **Next**. You see this screen:
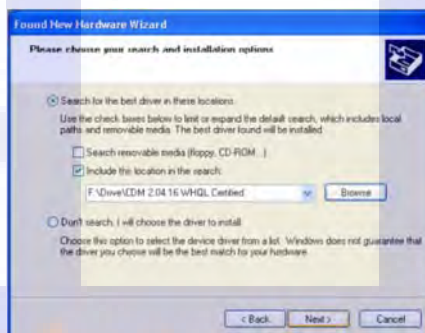
5. Under the checkbox for "**Include this location in the search…** ", select the path where you have downloaded and saved the drivers.
6. Click **Next**.
7. The USB driver is installed. Click **Finish** when complete.
8. Repeat the above steps for the serial driver.

Driver Installation of USB/RS232 converter, required if your computer has no serial interface (RS232) has (Benelli Walbro models).
Use the drivers that came with the cable.

Problems with the driver installation?
For example, Windows reports: cannot find driver software for this device please read this post: http://www.triumphrat.net/2155147-post685.html
Another source for help is the FTDI-support.
If you have any problems with the installation of the FTDI driver, please use the support of FTDI under
http://www.ftdichip.com/Support/Documents/InstallGuides.htm, there are support documents, the selection of documents must correspond your used operating system.

2.4 Installing TuneECU for Windows

1. Download TuneECU from TuneECU.com and extract the ZIP file.

2. Copy TuneECU.exe and TuneLibrary.dll into a directory on your hard drive. For example C:\TuneECU.

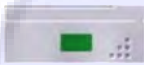3. Download the appropriate (.hex) map files for your bike from TuneECU.com.

3 Using the Software

3.1 Languages
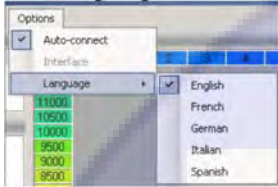
The software is available in French, English, German, Italian, Portuguese and Spanish.
The default language is set based on your windows system language.
You can change it using the **Language** submenu under **Options**.

3.2 Connecting

For Sagem & Keihin models:
Connect the USB/OBD cable to the ECU connector on the motorcycle, and the USB side to the computer. Turn the key to the ON position and the ignition kill switch to the RUN position, but do not start the engine. Start TuneECU and wait for the connection to be established. You can monitor the connection with the indicator at the bottom-right corner of the screen.
This change from red to flashing orange and then flashing green.

- Red – not connected
- Orange – connecting
- Green – connected

Connection to the Walbro ECU:
- Connect the serial cable with the diagnostic socket of the bike, TuneECU start.
- Select the assigned COM port in the menu "Options-serial-interface"
  the software must still be offline at this time, not connected with the bike, auto-connection
  must be menu "Options" deselected).
- Turn on the ignition
- Now select the menu "ECU" <Connect>

3.3 Manually connecting to the ECU
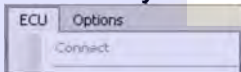
If the connection to the ECU is not automatic,
select **Connect** from the **ECU** menu.

3.4 Selecting a Mode
TuneECU has 3 modes:
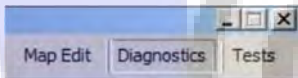
- ***Map Edit***: Editing and programming ECU maps
- ***Diagnostics***: Checking the sensors for engine management
- ***Tests***: Adjustment and testing of certain component of the motorcycle

The mode selection is done by clicking the proper button

4 Diagnostics

Triumph	Aprilia

KTM

Benelli

4.1.1 Dashboard

This screen will have a slightly different presentation between Sagem and Keihin ECUs.
The analog gauge displays the following indicators.
(Note, not all sensors are available on all bikes.)

	Cooling fan On/Off
	Malfunction in the MIL system (EFI light on Caponord/Futura)
	Fall-over sensor
	Neutral (N) & Side stand (S)
	Button "Power Control" (Benelli 1130)
	Speed indicator
	Engaged gear number
	Engine RPM

3 dial (Analogue/Digital)

Throttle position sensor in %	
MAP (manifold air pressure) in hPa (Keihin) Ignition advance (Sagem)	Keihin Sagem
Engine temperature in °C.	

4.1.2 Sensors

The values, state, or voltage (V) of all other sensors are listed on the left side of the display. Move your mouse over the value and a highlighted text will give you a definition of the value.

Triumph	KTM	Aprilia	Benelli
Sensors	**Sensors**	**Sensors**	**Sensors**
Injection Pulse 0,000 0,000 0,000	Injection Pulse	Injection Pulse 1.078 1.091	Injection Pulse
Ignition Timing 0,0 0,0 0,0	O2 Sensor	Ignition Coil 0.634 0.531 0.634 0.635	Ignition Coil
Temperature -25 °C 5,00 V 5,00 V	Manifold Pressure	Throttle 10.6 0.20 V	Throttle
O2 Sensor 1,275 V 0 % 0 % 0 %	Ignition	O2 Sensor 0.470 V 0.0	O2 Sensor
Idle 1350 tr/min 0 % 0 0	Throttle	Idle 1620 0 50.8 % 55	Idle
Throttle 16,9 0,04 V	Idle	Long Term Fuel Trim -1.2 %	Long Term Fuel Trim
Exhaust Valve 0 % 2,54 V	Temperature	Temperature 18 °C 2.96 V 2.98 V	Temperature
Barometric 1013 hPa 5,06 V 0,15 V	Barometric	Barometric 1035 hPa	Barometric
Engine Load 0 %	Engine Load	Engine Load 29 %	Engine Load
Fuel Level 2,37 V	Security	Fuel Level	Fuel Level
Other ☐ Clutch ■ SAI ☐ Fuel Pump ■ Main Relay ☐ Start Reay ☐ Start Switch ☐ Air Flap ☐ O2 Sensor	Other ☐ Clutch ☐ SAI ☐ Fuel Pump ☐ Main Relay ☐ Start Relay ☐ Start Switch ☐ O2 Sensor ☐ O2 Sensor (2)	Other ☐ Clutch ☐ SAI ☐ Fuel Pump ☐ Main Relay ☐ Start Relay ☐ Start Switch ☐ O2 Sensor	Other ☐ Clutch ☐ SAI ☐ Fuel Pump ☐ Main Relay ☐ Start Relay ☐ Start Switch ☐ O2 Sensor

Note:

To hide a sensor display, click the – sign 🗖. The icon will become a **+**. Click the **+** to re-enable the sensor readings.
The display will refresh faster when fewer sensors are displayed.

4.1.3 Error Codes

Error Codes	Description
P0031	Oxygen sensor heater short circuit to ground or open circuit

Lists the error code(s) currently stored in the ECU and a short description of each.

4.1.4 Status Bar

The status bar at the bottom of the screen shows some general information.

Battery Voltage *Note: At least on Caponord/Futura, the displayed voltage is about 0.5v more than at the battery. This difference is also present on other tuning software.*	🔋 12,3 V
O2 Sensor (Closed or Open Loop) If the bike has an O2 Sensor, this icon will show if the system is operating in closed-loop or open-loop mode.	
TPS (Throttle Position Sensor)	TPS
Connection Status (Red-Orange-Green)	
Name of the open map (Tune)	\20154Map.hex

5 Tests & Adjustments

5.1.1 Keihin Mode

In this mode, only 3 small dials of the dashboard are active, providing the value of the vacuum intake (Manifold Absolute Pressure) of the corresponding cylinder (Keihin only), thus providing reference values for synchronizing butterfly valve (throttle) opening.

5.1.2 Tests Not all tests are available on all motorcycles. Test components of the motorcycle. Each test lasts around 10 seconds:

Test	Description	Triumph	KTM	Aprilia	Benelli Sagem
Tachometer	Turn on sequentially all lights, engine temperature chart, speed to 100km/h, tachometer to 7500rpm	Keihin	Yes Only Tacho To 7500 rpm	Yes Only Tacho To 5000 rpm	No
Cooling Fan	Starts the cooling fan – listen for the fan noise	Yes	No	Yes	Yes
Fuel Pump	Prime the fuel pump – listen for the fuel pump noise	Yes	Yes	Yes	Yes
Idle Stepper	Cycle through the idle stepper – listen for a very quiet ticking noise	Yes	Yes	Yes	Yes
Purge Control Valve	(Only bikes with charcoal canister) Activate the purge valve – listen for a very quiet noise	Yes	Yes	Yes	No
SAI	Secondary air injection system	Yes	Yes	No	No
Sonde O2	O2 probe heater - see in Diagnostics	No	Yes	No	No
Air Flap	Air flap (675 Daytona) located in the air intake towards the front	Yes	No	No	No
Exhaust Valve	Exhaust valve (675 Daytona) located in the exhaust	Yes	No	No	No
Adjust EXBV	Adjust the exhaust valve – when you change the cable	Yes	No	No	No
Adjust ISCV /TPS	**Keihin** (except KTM) It is done in several steps. Read the workshop manual. The third dial shows the voltage (V), allowing the adjustment of the position and adjustment of the controller.	Keihin	No	No	No
Reset Adaption	See the procedure in the "Resetting the Throttle Position Sensor (TPS)" section for Keihin.	Keihin	No	No	?
Ignition Coil	Excitation of the coils -- hear or see if sparks will appear at the spark plugs. ***	No	Yes	No	No
Injectors	Several triggers ---- hear the function	No	Yes	No	No
2nd Throttle	Test the 2nd throttle function only (Triumph Rocket & KTM)	Yes	Yes	No	No
Reset TPS	**Sagem**: Recalibrate the throttle position sensor, Double-click the Reset TPS button	Sagem	No	Yes	Yes
Idle Fuel Trim (CO)	Adjust the idle fuel trim (Triumph without O²-Sensor only)	Sagem	No	Yes	Yes
Adjust IACV (Stepper Motor)	**Triumph Sagem** Double-click to IACV. It is possible to reset these two last parameters by right-clicking the arrows active during the adjustment.	Sagem	No	Yes	?
Long Term Fuel Trim	Adjust the long term fuel trim (Sagem) Triumph models with O²-Sensor only	Sagem	No	Yes	No
Adjusting the throttle cable	The idle speed control stepper motor will be completely retracted and the throttle valves completely closed. Switch the ignition switch off, WITHOUT exiting or disconnecting the software, and adjust the throttle cable clearance.	No	Yes	No	No

*** Warning: the metal body of the spark plug must be earthed/grounded to the bike otherwise the coil may be destroyed.

5.1.3 Adjustments (Keihin except KTM)

Adjust the exhaust valve: Refer to the workshop manual. The third dial displays the position of the valve in % during this adjustment.

Reinitialisation of the idle stepper motor: It is done in three steps. Read the workshop manual. The third dial shows the voltage (V), allowing the adjustment of the position and adjustment of the controller.

Reset Adaption (Reset TPS): See the procedure in the "Resetting the Throttle Position Sensor (TPS)" section.

KTM only

Adjusting the throttle cable: The idle speed control stepper motor will be completely retracted and the throttle valves completely closed. Switch the ignition switch off, WITHOUT exiting or disconnecting the software and adjust the throttle cable clearance.

5.1.4 Adjustments (Sagem)

Reset TPS: Recalibrates the closed throttle position to a zero reading. After the reset, restart the engine and idle for at least 30 seconds.

Idle Fuel (CO): Double-click to access this adjustment. Allows adjustment of the fuel trim at idle.

Long Term Fuel Trim: Double-click to adjust the parameter.

Adjust Stepper Motor: Double-click to adjust the position of the idle stepper motor.

It is possible to reset these two last parameters by right-clicking the arrows active during the adjustment.

5.1.5 Walbro ECU settings (Benelli TNT, Tornado 1130 & TREK)
- **Reset TPS:** resets the closed position of the throttle.
- **Idle Fuel Trim (CO):** (double click on the line to access this setting) lets you adjust the fuel richness at idle.
- **Global.Injection correction:** Double click on "Global.Inj.correction" and adjust the parameters.
 (Recording in the ECU will be effective only after the value turns gray.

6 Maps
(Not available in the Lite Version.)

Fuel/Ignition maps of file type ".hex" are generated by reading the ECU, and available on the website (www.tuneecu.com).
You must select a map that corresponds to your model of motorcycle and its configuration (type of exhaust for example).
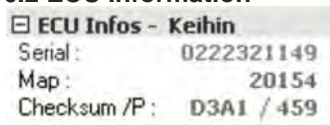From the **Display** menu, choose **Map Infos** to see comments and the basis of the map (in parentheses).
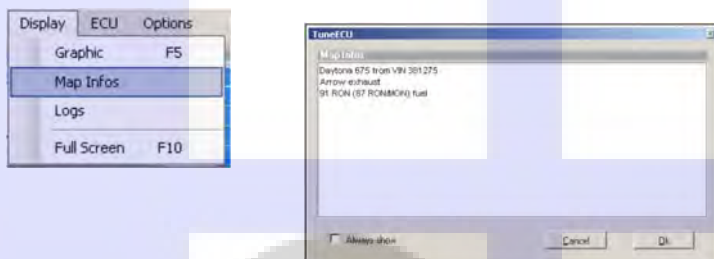
6.1 Selecting a Map
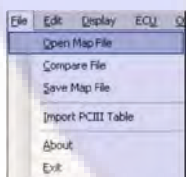
From the **File** menu, select **Open Map File**. The map's data appears in a grid.
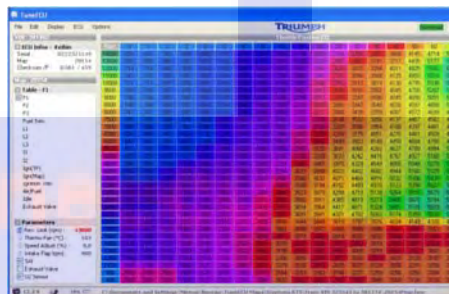
6.2 ECU Information

Serial number
Map ID
Checksum and a counter how many times the ECU was reprogrammed.
Click in this field to see information from the second ECU (KTM 690).

6.3 Map Tables

F1 F2 F3 F4	F1 – F4: main fuel table for cylinder 1 to 4 / RPM & butterfly opening or F3-1 corresponding to the position of the mapping switch on the KTM 690. For Benelli models, see below under this box..
Fuel Trim	Fuel Trim: Adjustment for the Fuel table F (in %), or Right click on a F table if not visible.
L1 L2 L3 L4	L1-4: Fuel table for the small butterfly opening / RPMs & air pressure or L3-1 for KTM690
I1 I2 I3 I4	I: Ignition advance table I3-1 and I LOF (Low Octane Fuel) for KTM690 I-Tables Daytona 675, at these model, are the I-tables depending on the selected gear. I (1st) = 1. Gear, I (2 - 5th) = 2. - 5. Gear, I (6th) = 6. Gear and I (N) = Neutral For Benelli models, see below under this box.
Ignition Trim	Correction tables "Ignition advance I (°) or right-click on a table if I is not visible, e.g. KTM 690
A/F Table	Air/fuel Air/fuel ratio (AFR)
Idle	Idle Engine Idle by temperature
Exhaust Valve	Exhaust Valve (Daytona 675) Position of the exhaust valve / RPM.
Second Throttle	Butterflies (Rocket III & KTM) Position of the secondary butterflies
F-L Table	Transition F – L F to L transition and inversely / RPM and throttle opening

For Benelli models: TnT Sports, TNT CR, TreK1130, TnT standard (05/06) and TNT R160.
For the models, TnT Sport, TnT CR, and TnT TreK1130 standard (05/06), Map1 (I & F) the maps is for
reduced fuel consumption = reduced performance. Map0 (I &F) is for open performance and maximum torque.
For the TNT R160, Map1 (I&F) is for use with DB-killer, and Map0 the map is for operating WITHOUT DB-Killer, Map0 (I&F) is not
suitable for use with DB killer. (Source http://www.benelli-info.de)

6.4 Map Parameters

Not all parameters are available on all bikes.

⊟ **Parameters** Rev. Limit (rpm) : 13800 Thermo Fan (°C) : 103 Speed Adjust (%) : 0,0 Intake Flap (rpm) : 900 ☑ SAI ☐ Exhaust Valve ☑ O2 Sensor	RPM rev limiter, temperature trigger (fan), Road speed reading correction (range of 0% to -6% correction), Limiting speed (Rocket III), Air Flap & Exhaust Valve Daytona 675, cutoff time Quick Shifter (Daytona675 from model 2009), injector flow rate and A / F target (Sagem). The status bar displays the battery voltage, condition of the injection system (operating in closed or open loop), adaptation state for the TPS (Keihin), storage drive location and filename of the loaded map. The parameters for the two **Benelli 1130 Map's** (Map 0 and Map 1) can be changed separately, select the table 0 or 1 (F or I), so you can access to the appropriate parameters. The display "parameter" changes to automatically depending on the chosen F or I map, "parameter (Map 0)" or "parameter (Map1)".

NOTE: Unlike some other tuning software, TuneECU lets you only change one value for Rev Limit and Thermo Fan. That is, you cannot specify both ends of an on/off range for these settings. The range is fixed, but you can adjust the trigger point, changing the RPM or temperature at which the fixed range of values applies.

For example:
Thermo Fan = 106. The fan will come on at 106. It will shut off again at 100. (The range of six degrees cannot be changed, but the start point of 106 can be.)
Similarly, the RevLimit setting has accompanying on/off parameters that cannot be changed, although the main limit setting can.

- Rev Limit = 10,000 RPM
- Restart Normal Fuel -50 RPM = 9950 RPM
- Increase Fuel Cut +100 RPM = 10,100 RPM
- Kill All Fuel +200 RPM = 10,200 RPM

6.5 Reading Maps

For a Keihin ECU, this operation may take 20 minutes. You must remove the headlight fuse to prevent the discharge of the battery. Your battery must be fully charged before doing any mapping work -- ideally connected to a battery tender.
You must have a map loaded from a .hex file for TuneECU to allow you to read a map from your ECU.
Follow the direction in "Selecting a Map". **KTM 690 on select maps to play (FI or EP).**

Choose **Read Map** from the **ECU** menu.
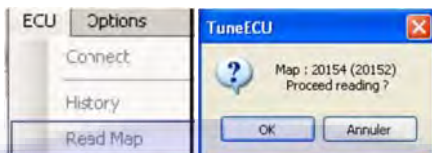
This reads and displays the map in the ECU. Before doing anything else, save this map.

Be sure to save the map to your hard drive.

Reading time may be significantly reduced if a map with the same base is already open in the program. The base is indicated in parentheses.

Reading progress is visible in the status bar in the bottom

The operation can be canceled by clicking on the **Close** button. <u>The map must be saved in order to reprogram the ECU.</u>

6.6 Changing Values and Settings in a Table (advanced use)

It is not recommended to change tables of Fuel or Fix F & I. The map is already optimized depending on your basic configuration. However, if you have a dynamometer, it is always possible to adjust the values for a better performance of your particular engine. Other tables can be modified according to your preferences: idle, valve exhaust, and air/fuel, knowing that better power is obtained with an AFR value of 12.8, and lower fuel consumption achieved at 14.7.

6.6.1 Editing Table Values

Select the value by a single click. Multi select is possible.
Change the value with the up/down button. Use the arrow keys from the keyboard, you can jumping from version 1.8.5 from a single selected cell in the adjacent cell. The change can be absolute or in % on the F & L table. F4 key allows to switch between modes. Le value before modification can be display using the F6 key.

One or Multiple cell can be copy/pasted, after selection – right click to access the copy/paste menu

Select the first cell or multi select the value to be pasted and Right click.

Note: The values that have changed in the table, are shown in white color. (Version 1.8.5)

### 6.6.2 Editing Map Parameters and turning on or off from devices

Double-click the desired parameter and change it according to your wishes. Use the Esc key to undo the changes to make. Otherwise, the new values will be automatically used as default values. The revised map must be saved in spite of this and can then be uploaded to the ECU.

For turning on or off a device (eg, the SAI) with the left mouse button on the Device make a double-click or click the device with the right mouse button and select "Enable" or "Disable".

The parameters for the two Benelli 1130 Map's (Map 0 and Map 1) can be changed separately, select the table 0 or 1 (F or I), so you can access to the appropriate parameters.
The display "parameter" changes automatically depending on the chosen F or I map, to "parameter (Map 0)" or "parameter (Map1)".

Caution: Do not disable the secondary butterflies (KTM) only if the butterflies or the secondary system (motor PAP and second GST (TPS) are removed.

6.6.3 Modification in graphical mode
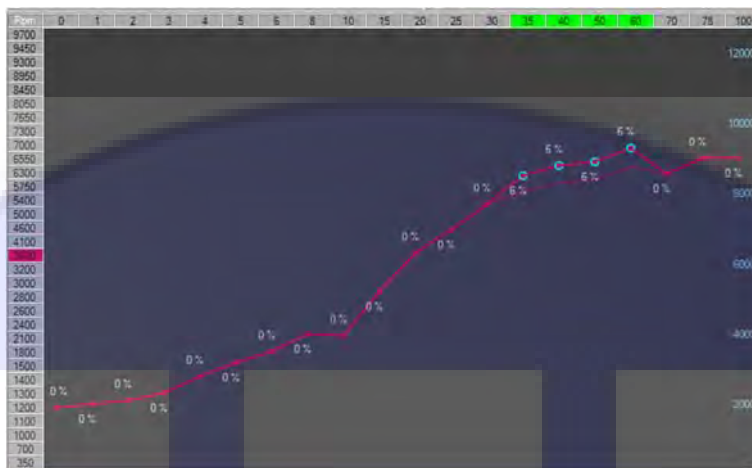
Select the rpm curve to modify with a right click on a rpm axis value, then select (or deselect) the TPS points to modify with a click on a TPS axis value. The selected points can be now move with the mouse.
Save the modifications with a right click on an another rpm curve to modify or with the 'Enter' key, press the 'ESC' key to quit the modification mode without saving.
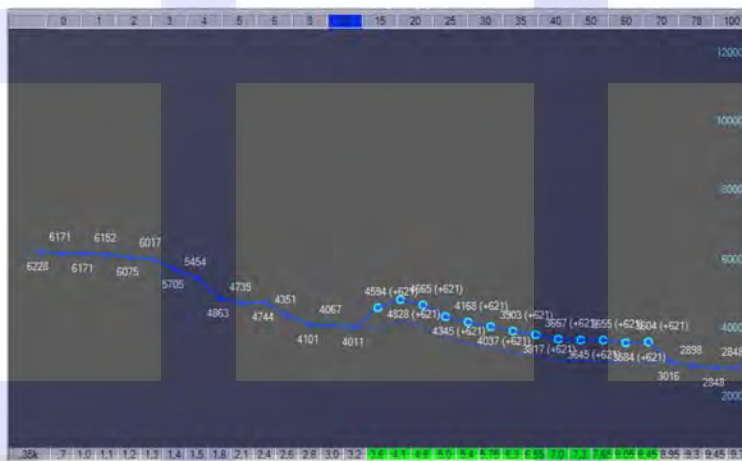
You can also modify a TPS curve with a right click on a TPS axis value, then select the rpm point to modify at the bottom of the graph. To select or deselect a area of points, click on the first value and shift-click on the last.
The F curves can be move in % or absolutes values, the 'F4' key allow you to toggle between this 2 modes.
By holding the shift key pressed while you move the curve with the mouse (or the wheel), the absolutes values are increased (or decreased) by 10. (values multiplied by 1000, eg 4.6 = 4600 rpm)

6.6.4 Comparing Maps
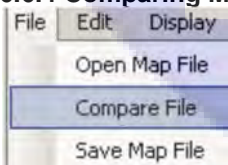
From the **File** menu, select **Compare File**.

Select a different map for comparison. Pressing the <F6> key to view the values.
If you press the F6 key again, you return to the current loaded map.

The compared map that was opened to compare the values, you can copy values and then paste in the other map (currently loaded map).

To exit the comparison mode, select this menu again and to cancel the selection of the file.

6.6.5 Reprogramming the ECU

Your battery must be fully charged before doing any mapping work -- ideally connected to a battery tender,
better yet a second 12 volt battery from a car Your laptop must be connected to the power supply.
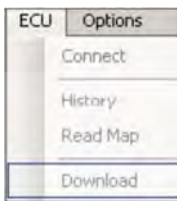
From the **ECU** menu, select **Download**. Or click the green **Download** button.
This action prompts for confirmation. A verification of compatibility between the ECU and the map is done.

Attention! For KTM 690: The FI and EP mapping must match on a KTM 690.
For the KTM 690 both cards are always required (FI and EP-Map)

FI is a acronym for **EFI** = **E**lectronic **F**uel **I**njection   **EP** is a acronym for **EPT** = **E**lectronic **P**ower **T**hrottle

Walbro ECU: follow strictly the instructions on the screen to keep it the 2-pin connector ready and connect this,
when the program tells you to.

Verification of compatibility between the ECU and mapping is done. The progress of the download is displayed in the status bar (Fig. 11).

At the end of the download, a message is displayed if the transfer completed successfully.
ATTENTION! **Walbro ECU:** Remove the 2-pin connector before turning off the ignition.
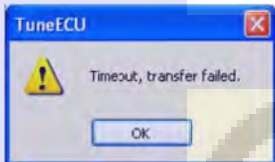
Download progress is visible in the status bar.
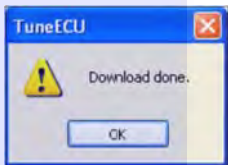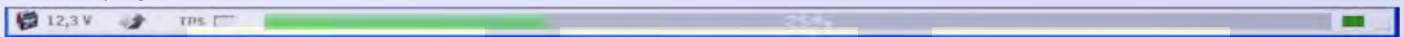
At the end of the download, a message is displayed if the transfer completed successfully.
ATTENTION!! **Walbro ECU:** Remove the 2-pin connector before turning off the ignition.

6.6.5.1 Failure to Download

1. Click OK.
2. Do not disconnect the cable.
3. Turn off the ignition.
4. Turn on the ignition.
5. Wait for TuneECU to connect to the ECU.
6. If the Download button is green, start the download again. If not, wait for the recovery option to appear.
Note: For this process, in TuneECU must a suitable map to be open, at the best an OEM map.

6.6.5.2 Recovering from a Download Failure (Sagem Keihin)
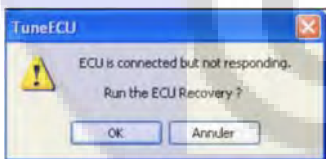
The recovery option should start automatically. If it does not, go to the **ECU** menu, and select **Recovery**.
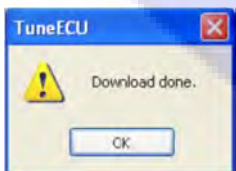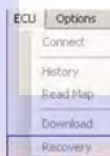
At the end of the download, a message confirms that the operation was successful.

6.6.5.3 Recovering from a Download Failure (Walbro)
- Wait for the message "ECU not responding ..." and select **Cancel**
- Select menu "ECU" <Recovery>
- Always follow the instructions on the screen.
On the final process, the final message "ECU fully restored" Confirm by clicking "OK"

6.6.6 Importing a PCIII or PC-V Table (PowerCommander 3 or 5)
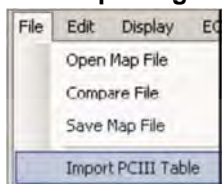
<Menu> File-Import PC Table (.djm table or .pvm table):
Applies ***F-corrections*** from a PCIII or a PC-V table in the "F-Trim" table.
If available the****** Ignition table****** will be imported into the I Trim table.

>   ***** includes support of "cylinder Advanced" feature, but not the "Gear Advanced", in
>   this case you must choose the "Gear" table to import.
> ****** Only the first Ignition table will be imported.

For Sagem User:
Unfortunately, there is a small problem, TuneECU can probably import "cylinder-selective PC-Files" to a Sagem-map, but from these "PC-Files", **only the first trim table in the main table (F-table) it is transferred**. This means that before importing such a PC file, this PC file from "selective cylinder file" to "BASIC file" must be converted. This conversion can be performed with the Power Commander software.
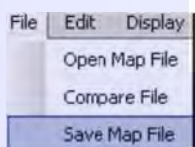
For KTM User:
TuneECU follows the KTM convention, and commits the Trim 1 to F1 (F1 in TuneECU = rear cylinder).
PowerCommander not follows the KTM convention, in the cyl. selective PCIII- or PC-V map the table1
is the front cylinder. You must change the values in the PCIII- or PC-V Map before you import the cyl. selective PCIII or PC-V map with TuneECU.
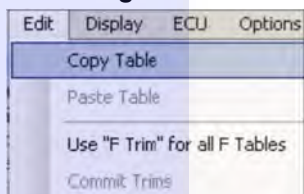
6.6.7 Saving a Map

From the **File** menu, select **Save Map File**

The modified map is saved as a .hex Map file.

6.7 Editing Tables

When working with map tables, the **Edit** menu contains these choices for moving blocks of table data among maps:

**Copy Table**: Copies the table selected in the Clipboard.

Export Table: Exports the selected table to a text file.

**Paste Table**: Replaces the table selected by the one in the clipboard if same type.

Use "F Trim" for all F Tables: For all F tables, change in whole tables F or separately.

Commit Trims: Corrects F fuel tables in %, and I ignition tables in °, according to the correction tables F & I, then puts zero values.

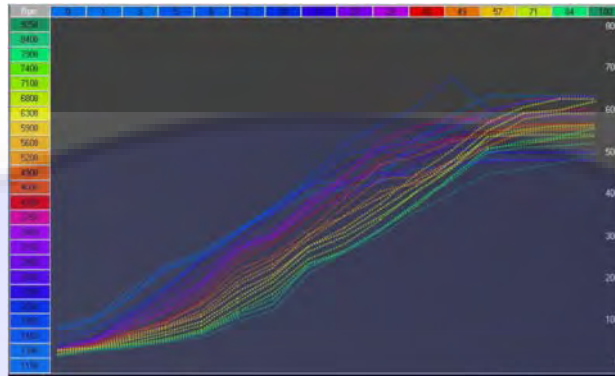### *6.8 Displaying Maps Graphically*
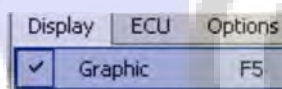
To see a graphic representation of the table, select Graphic from the Display menu, or press <F5>.
F7 key shows the curves representing the values of the table for each opening throttle.
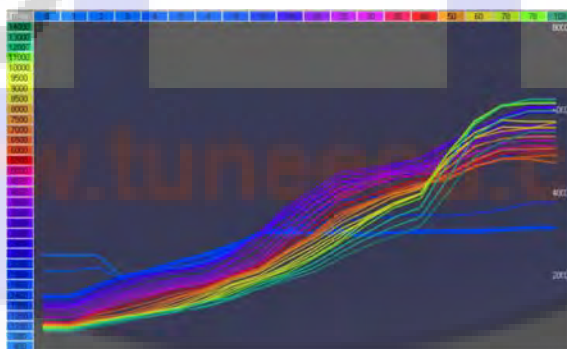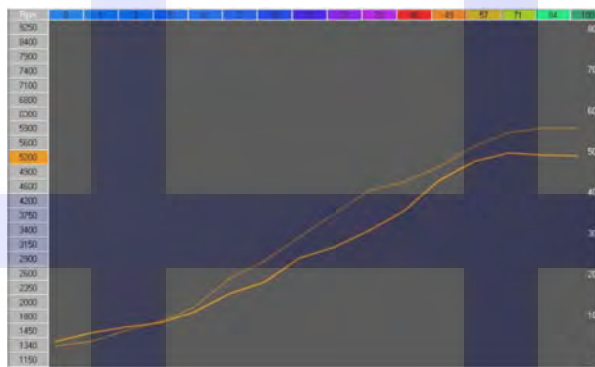
6.8.1 Comparing Maps Graphically

While comparing maps, press **<F6>** to see the comparison graph, represented with dotted lines
Press the **<F4>** to switch to mono or multi curves.

6.8.2 Comparing Maps Graphically for a Given RPM

Click on any RPM to see a comparison between the two maps. Drag the mouse up and down the RPM range to see the display change in response.

6.8.3 Comparing Maps Graphically for a Given Throttle Position

Click on any throttle position to see a comparison between the two maps. Drag the mouse up and down the throttle range to see the graph change in response.
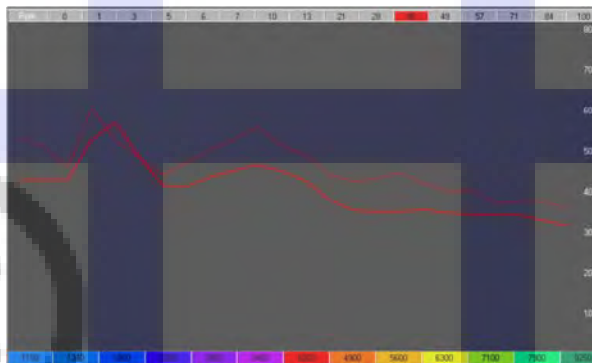
7 Viewing Information Logs
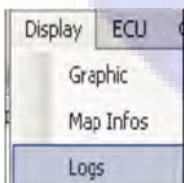
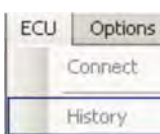Select **Logs** from the **Display** menu to see an overview of the dialogue between the software and the ECU.
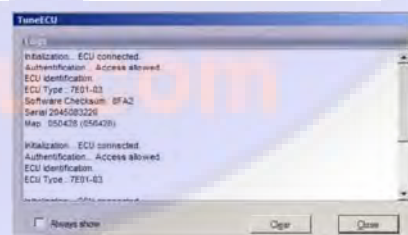
8 Viewing History (Sagem)

From the **ECU** menu, select **History**.
You see a windows with the logs of the latest maps loaded into the ECU

9 Resetting Adaption (Keihin ~~& Sagem-Lambda models~~) or Throttle Position Sensor (TPS) Sagem

9.1 Keihin Triumph

After each download, a "reset Adaption" is needed.
> 1. Turn the ignition off and back on again.
> 2. Wait 10 seconds and turn the ignition off again.
> 3. Turn the ignition on and select **Reset Adaption** from the **ECU** menu.
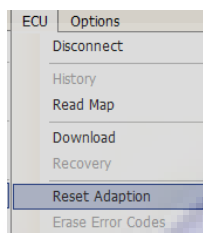
Start the engine and let it idle until the TPS light in the status bar becomes green – around 15 to 20 minutes.

At this process, **don't** touch the throttle. If the TPS light doesn't turn green after twenty minutes, don't worry and turn the engine off anyway as sometimes it doesn't trigger, and in our experience the job is done anyway.

The manufacturer of Triumph motorcycles describes the way of the standard adaptation as follows:

1. Ensure the transmission is in neutral.
2. Ensure the ECM has no stored faults (DTCs).
3. WITHOUT TOUCHING THE THROTTLE, start the engine and allow it to warm up to 90°C (60°C on Bonneville, Scrambler, Thruxton, America, and Speedmaster models).
4. Leave the engine to idle for a further 12 minutes.

Note:

• If during an adaption cycle the conditions are no longer met, for example if the motorcycle is ridden, the motorcycle may not be fully adapted. The adaption process will continue each time the conditions are met again, and the engine has idled for longer than 3 seconds.

Following the description for the fast adaptation method with the Triumph Diagnostic Tool:

To start a fast adaption:

1. Connect the diagnostic tool, select ADJUST TUNE (Map) and select RESET ADAPTIONS. This will force a fast adaption routine to take place in around 5 seconds. For this to happen, the engine **must** be running, it must be at normal operating temperature **and in closed loop control mode**. Under any other conditions (such as with the engine not running) fast adaption will not take place and may cause default values to be loaded, which may then require a normal 12 minute adaption routine to be run. The fast adaptation method is feasible even with TuneECU.

Note:

• Using the fast adaption method above with the engine off and the ignition on will reset the adaptions to their default (not adapted) factory settings. A full 12 minute adaption routine will then be required.
• Both methods only adapt the idle area - the off idle area can only be adapted when the motorcycle is ridden under load, i.e. on the road.
• The off idle adaption area covers cruise sites from 30 to 90 mph (50 to 145 km/h), so the motorcycle must be ridden in this area to adapt. As it is not always possible for dealers to adapt motorcycles in this way, it is not a problem, then the motorcycle will perform continue adapting during normal use.

9.2 KTM

After downloading a FI-map, start the engine and run at idle (without touching the throttle) for 15 minutes and then the engine turn off.

990cc models SD, SM, and Adventure:

The 990s must be on the center stand, and are thus stand vertically.

For SD / SM models use a Paddock Stands or the side stand with a piece of wood underneath.

The engine must be cold.

There should be the coolest possible air temperature outside, this can be very helpful for a lower fuel consumption.

Start the engine and let it run at idle for 15 minutes. During these 15 minutes, not use the throttle or any other functions.

The 15 minutes need to be strictly adhered to, and must not fall below.

The time can only be exceeded by a maximum of one minute.

Should the engine go out, then re-start ONLY, do not begin 15 minutes again. (Source: KTM Forum)

New in TuneECU version 2.3.5 for KTM 990 & 1190

Reset ECU after replacing or repairing the engine.

CAUTION: To adapt the ECU to the change of parameters after replacement or repair with the replacement of the engine pistons, cylinders or cylinder heads, a reset of the ECU must be performed.

If you omit this step, the engine can have a dysfunction at idle for a long period.

- Connect the diagnostic cable, run the program and turn ignition ON.

- Wait until connection is established.

- Go to the tab "Tests" and double-click "Reset Adaptation".

- Wait for the message "Reset Adaptation done", exit the program and disconnect the diagnostic cable.

- Run the engine at idle for 15 minutes without touching the throttle, check the coolant temperature, stop the engine in case of overheating.

690cc models:

After downloading a FI-map, start the engine and let running it idle (without touching accelerator) for 15 minutes,
then turn it off.
After downloading a EP-map, Following a mapping download into the ECU, turn off the ignition (key) , turn on the ignition, slowly
rotate the Throttle until full throttle then slowly close the throttle, turn off the ignition.

9.3 Reset TPS Aprilia, Benelli & Triumph Sagem models

1. In the Test mode, double-click **Reset TPS**. ☐ Reset TPS
2. Turn off the ignition.
3. Turn on the ignition.
4. Start the engine and let it idle for one minute <u>without touching the throttle.</u>

9.3.1 Reset Adaption Triumph-Sagem-Lambda-models
The manufacturer of Triumph motorcycles describes this process as follows:

<u>Fuel System Adaption — e.g. Daytona 955i, Sprint ST, Sprint RS, Tiger, TT600 and Speed Triple</u>
<u>(only Sagem models with Lambda)</u>
The fuel system fitted to the above models is adaptive. This means that the engine management system will self-adjust air fuel ratio
(i.e. the mixture setting) to its optimum level in order to ensure differing running conditions do not result in poor running.

During an adaption, the engine management system examines the air--fuel ratio as measured by the oxygen sensor in the exhaust
system and, if necessary, makes an adjustment. In some cases, a single adaption may be sufficient but in others, more adaptions will
be necessary.

An adaption take place when all the following conditions are met:

- Gearbox in neutral, clutch engaged.
- Coolant temperature 80 -- 100 °C
- Airbox temperature 21°C minimum
- Engine idling for 10 -- 30 seconds

Once adaption has taken place, the settings are retained ensuring that adaption is not necessary every time the engine is started.

Particularly for new bikes, where the engine has not been run-in, it may be necessary for dealers to ensure adaption has taken place
before handing the motorcycle over to the customer. This can, of course, apply at any other times as well.

To force adaption to take place, start the engine and warm it up until the above conditions aremet, adaption takes place automatically.
Blip the throttle every 30 seconds to start another adaption cycle. When coolant or airbox temperatures are above or below adaption
thresholds, allow the engine to cool or warm-up before continuing.
To check that adaption has been completed, scroll the Triumph diagnostic tool to DIAGNOSTICS—CURRENT DATA--LAMBDA FUEL.
in a correctly adapted bike, the lambda fuel reading should show 0.0% (though operators should note that the figure will continue to
change during engine operation but will settle at 0% briefly but regularly. If reading higher than +3% or --3% are seen continuously,
adaption is necessary and can be brought about in the conditions mentioned earlier (remembering that more than one adaption will be
needed on occasions). If a stationary LAMBDA FUEL figure of --19.6% is seen, download the correct tune for the model in question
and begin the adaption process as described.
Finally, use of the SET LONG TERM FUEL TRIM adjustment in the Triumph diagnostic tool should be reserved solely for when
replacement ECMs are newly fitted (or are transferred from another bike).

<u>In clarification, the following described process should be not so correct.</u>

1. ~~Ensure bike is seeing a closed throttle position (CTP)~~

2. ~~Bike in Neutral~~

3. ~~Coolant temperature between 80-96°C~~

4. ~~Minimum air box temperature of 21°C~~

5. ~~Now with clutch pulled, blip the throttle to 3000 RPM and let it drop back to idle for at least 30 seconds, all with the clutch lever
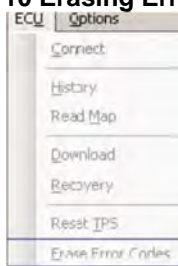pulled in.~~

~~Check bike is adapted by viewing Lambda Fuel. Figures should be "toggling" +4 to -4~~

~~Don't forgot to check IACV steps are 20 - 35~~

9.4 Reset TPS Benelli Walbro ECU (TNT, Tornado 1130 and TREK models)
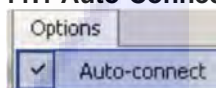
In testing mode, double-click "Reset TPS"

10 Erasing Error Codes

You can clear stored error codes from the ECU by choosing **Erase Error Codes** from the **ECU** menu while in Diagnostics or Tests modes. The issues that caused these codes must have been corrected, or the error code will reappear.

## 11 Options

11.1 Auto-Connect

The **Auto-connect** option is found on the **Options** menu.
If this option is checked and the cable connected, the program automatically connects to ECU.
By default, the auto-connect setting is enabled

11.2 Interface

From the **Options** menu, select **Interface** to see the interface used to connect to the ECU. Connect only a single interface cable.
Attention New in version 2.3! Select the correct interface, for Keihin and Sagem select "USB" and for Walbro select "Serial"- and then the correct COM port.

12 Exiting the Program
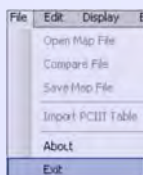
To close TuneECU, select **Exit** from the **File** menu.
This action is not possible if a download is in progress.