

# **LLTek Introduces “PowerBox” Chip-Tuning Technology**

## **Fast Do it Yourself Installation With Stealth Technology**

### **Applications:**

- **for gas turbo or supercharged cars**
- **for diesel, turbo diesel or supercharged diesel – Common Rail or Pump Nozzle**

### **Highlights:**



#### **Good Performance and Control ☺**

Faster acceleration, safer overtaking, more direct response characteristics: Simply more driving pleasure! The 8-bit processor ST 62 made by ST Microelectronics is one of the most used micro-controllers for complex control tasks. It provides an increase of engine performance of up to 30 % with its 8 MHz clocking.



#### **Performance Increase Individually Adjustable ☺**

Your PowerBox is delivered with a basic setting optimized for your vehicle type. However, you can adjust your PowerBox individually to meet your requirements - easily, quickly and without automotive specialist knowledge.



#### **Fuel Saving with Eco-Tuning ☺**

Depending on your personal road behaviour you can save fuel by installing the PowerBox, up to 1 litre per 100 kilometres: and, with an increase of performance at the same time.



#### **Sub-D-Plug ☺**

Data connections need to be fast and safe. Therefore, we have equipped the PowerBox with Sub-D-plugs: which comply with the common standards for electronic plug connections. So you can be sure that all data flows without noticeable delay and no connections can come loose.

### **Major Benefits:**

1. **Plug and play and “do it Yourself” chip-tuning installation ☺**
2. **Easy to remove for those sensitive dealer visits. (5 minutes or less) ☺**
3. **Smooth and reliable horsepower gains with a plug in box ☺**
4. **A very stealth look and you can purchase and install the day after you buy your car ☺**
5. **Your dealer will be hard pressed to know you have a “PowerBox” on board ☺**

6. **Optimally pre-programmed but also fine tunable for those who like to tinker ☺**
7. **Fairly priced ☺**
8. **Quality and safety for you and your vehicle. The PowerBox units have been TÜV-certified (MOT) since 2009; and adhere to ISO 9001 standards.**

## **Overview**

Understanding Chip Tuning Philosophy:

- *Creation of additional driving pleasure derived from modifications to the vehicles' electronics to increase power and driving enjoyment.*

In modern vehicles, small computers control and monitor the engine. These computers, the control units (ECU's) are connected to the engine with various cables and plugs. These ECU's receives both analogue and digital signals and then calculate control commands for ignition, injection, emission control and other parameters. All of this effect performance. There is always more performance hidden by the manufacturer for a variety of reasons (marketing, emissions, insurance, other models, millage, etc.)

In today's modern engines, Chip tuning provides two possibilities to increase the performance of an engine; via an additional electronic control device or so-called OBD-tuning. LLTek's PowerBox is via the addition of al "plug and play" electronic control device that is installed into the vehicle. We do not endorse or recommend the OBD route as it lacks Stealth; can be over-written and/or erased, cannot be easily removed and can negatively affect warrantees.

## **Chiptuning via an additional control device (the LLTek PowerBox)**

For chip tuning via an additional control device, either you or a garage installs the additional electronic control device (the POWERBOX) which is plug connected to the engine management system. Your plug socket is sitting there begging for the PowerBox module. There are absolutely no modifications to the engine or the original ECU done by the PowerBox.

The installation is really simple: The electronics within the additional device (the PowerBox) modifies the signals sent to the vehicle's ECU in real time. This optimizes the ECU's internal maps several thousand times per second and thus creates a significant and directly noticeable power improvement. At the same time as a second benefit – when your road behaviour is "normal" – fuel consumption can be reduced by up to 1%☺.

With this kind of add on chip tuning technology, the original engine protection programs remain unchanged. There is no risk of overload to the original individual engine components. If a top speed limitation (V-Max) is factory pre-set for your vehicle, it will remain. Also the original software of the vehicle remains unchanged. Basically the PowerBox remaps signals in real time only when demanded by the driver.

## **PowerBox Module as additional control device**

The PowerBox module is designed as a DIY-installation, and normally only takes about 10 to 15 minutes; with no special tools needed. You only have to connect the module using a simple plug system to the engine, secure the unit, and that's it. Everything you need to install the unit is provided. ☺

All units come pre-set using the optimized settings for your vehicle. However, with PowerBox technology, you also have the ability to individually adjust the performance increase of your engine to your driving demands should you want to deviate from the optimized settings for your vehicle. You can adjust "maximum performance", "fuel-saving eco-tuning" or a combination of both. ☺

A major benefit of PowerBox technology is the quick (5 minutes or less) removal of the module when you want to sell your car or if you are returning leased vehicle or if you are returning to the dealer for warrantee service. PowerBox cannot be traced after removal under normal circumstances. Also, most units offer a "bypass" plug for partial quick removal when necessary. ☺

## **Chiptuning via OBD-Tuning also called Flash (not recommended)**

With OBD-Tuning or “Flash” tuning, the original manufacturer’s software for the vehicle is modified by cancelling the entire program and then inserting a new replacement program using a diagnostic interface, such as a PC or similar device; and uploading the modified program into the vehicles ECU again. Or, in some cases the original chip inside the ECU physically removed and is replaced by a modified chip. Both of these procedures are risky.

There are several well-known disadvantages of OBD-Tuning. First and most important is that engine damage cannot be excluded, as OBD-Tuning can switch off OEM engine protection functions. Second, during service the tuned vehicle might be impossible to diagnose due to the permanent replacement tuning software. Third, your dealer or garage could read out error codes calling for repairs which may not be able to be executed properly. Also it’s not possible to adjust the tuning by yourself; only the person on site doing the tuning can do so. With PowerBox you can create your own next stage level of performance if you want. And finally a modified ECU means the dealer can detect the changes which can negatively influence dealer warrantee and service.

A minor advantage of OBD-Tuning is that the V-Max (top speed limiter) can be removed. However, this is not considered a major benefit because these limitations are pre-programmed by the manufacturer for good reasons (and not just safety reasons). Over revving is a major level of concern and importance that remains under OBD chip tuning. V Max mods eliminate this protection. With PowerBox your protection remains.

LLTek strongly believes that the advantage of chip tuning using an additional supplemental control device is the best and only way to go. The PowerBox is deliberately designed for chip tuning by means of an additional control system. Why? Because the original vehicle software is completely maintained; and thus all the engine protection programs built into the vehicle are maintained as well. And again, for emphasis; The PowerBox is removable in minutes. So a drive into a dealership for warrantee work is not an issue. ☺

## **Overview of Basic PowerBox Technical Specifications**

The increases in performance, torque and fuel savings are shown below: and are generally the maximum achievable values. However, they can vary depending on the vehicle and the quality of gasoline or diesel fuel used. The use of premium fuels will give premium results and is always recommended. Specifications for performance gains are available for all vehicles that can use the PowerBox.

Specification	PowerBox
Horsepower Increase	up to 30%
Torque Increase	up to 20%
Fuel Reduction	up to 1.0 L / 100 km
Processor	STM8 (24Mhz)
Core Size:	8 bit
Characteristic processing	24 million/sec
Plug Adapters	FCI Automotive
Casing	Aluminum or Fibre-glass reinforced plastic, heat resistant, waterproof

## **Testing of PowerBox Modules**

During manufacturing, all PowerBox modules are subject to rigorous test methods. It’s a level of quality control that is important for every car and driver.

- A. Temperature resistance: Modules are exposed to extreme temperature fluctuations prior to release simulating real time driving operation. Each PowerBox is guaranteed to perform as developed between -20°C (-4° F) and + 135°C (275° F).
- B. Shock resistance: Drop tests are done on every box to certify and prove that even hard and sudden impacts (up to 500/min) do not affect the functionality of the module.

- C. Winter performance: Road salt can dramatically affect electronic equipment. It can even destroy electronic devices. All current PowerBox modules are protected against road salt, so that damage to the electronic equipment inside the unit is prevented. During testing, aggressive salt is sprayed on the modules for ten consecutive days. Only after the module batch has successfully passed this rigorous test, can it be delivered as certified for “ready to use”.
- D. EMC E13 Testing method is used to ensure the electromagnetic compatibility of the module in road traffic.
- E. CE-Marking: The CE-marking stamp appears on all modules, which confirms to you that all safety requirements of the EU have been completely observed during the development, testing and production of the PowerBox unit.



## **Example Installation of a PowerBox Module - So easy.**

Installation of a PowerBox module is very easy. It should only take you about 10 – 15 minutes, without any special tools and without any engine vehicle knowledge. You just have to connect the PowerBox module to the engine management system using the special wiring harness provided. Then secure the unit with the supplied cable ties. Your enhanced driving pleasure can then start immediately! ☺

## **Installation Manual and Pictures**

With your PowerBox module you will receive the corresponding installation instructions. Depending on the type of engine utilized in your car your instructions will be for GAS (supercharged or turbo-charged) or for Diesel or Turbo-Diesel.

## **Installation in Only a few Steps**

- Sample instructions are shown below and will differ slightly from car to car.

## **Before Installing the Module - Critical but Simple.**

1. Turn off the motor.
2. Close all doors and open the engine hood or bonnet.
3. Lock your vehicle (all doors including trunk).
4. Wait for about 10 minutes to guarantee there are no lights on within or outside the vehicle (especially any mini lights under the open hood/bonnet).
5. After this 10 minute wait is done and you can proceed with the installation of the unit.

## **EXAMPLE: Installation in 6 Easy Steps**

1



#### 1st Step

Loosen and remove engine cover if applicable.

2



#### 2nd Step

Identify the connection plugs (individually specified in the instruction version provided).

3



### 3rd Step

Disconnect the original plug.

Connect the matching input PowerBox plug from the newly supplied cable harness to the original plug. And the original plug will be attached to another plug on the wiring harness.

4



### 4th Step

Verify the integrity of the connections to the cable by means of the supplied control/bypass plug.



5



#### 5th Step

Connect the PowerBox module to the matching plug on the cable harness.

6



#### 6th Step

Securely attach the cable harness and the PowerBox using the supplied cable ties in the engine compartment.

NOTE: This is an installation instruction in brief. A detailed one comes with your unit! But this is how it's done. It could not be more simpler.



**Call Toll-Free 1 888 465 5835**

**LLTeK business hours are 8:30 AM – 5:00 PM Monday through Friday (EST)**

**[www.LLTEK.com/audigate/html/audi-plug-n-play-chip-tuning.htm](http://www.LLTEK.com/audigate/html/audi-plug-n-play-chip-tuning.htm)**