

# PowerBox Mini:

## For Twizy models produced before August 2016

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Made in Norway



With a Powerbox Mini you will get 4 tuning options

1. Light Tuning: (can be run without the Power Box connected)
2. Medium Tuning: (It is strongly recommended that the Power Box is always connected)
3. MaxPower Tuning: (It is strongly recommended that the Power Box is always connected)
4. Original Tuning:

All 4 tuning options are separate firmware files and you need to update it with the desired tuning options.

As standard, the Powerbox will be delivered with Medium Tuning firmware and is ready for tuning. Just plug it into your Twizy and your Twizy will be automatically tuned.

### **Why should the Powerbox be connected all the time with Medium and MaxPower Tuning:**

This is because it is the Powerbox that monitors your car and adjust the power if something gets too hot. Without it you will lose your security and risk damaging your Twizy. Only with Light Tuning it is safe to drive without the Powerbox connected.

If you have a Twizy 45 other rules apply. Here you can safely drive without the Powerbox connected with all the tuning options.

### **Tuning the Twizy for the first time:**

Turn the ignition key to the ON position, then plug the Powerbox into diagnostic port which can be found in left glove compartment.

The Powerbox Mini will now automatically search if your Twizy is tuned or in its original state. It will also check if this is a T45 or a T80 then it will automatically tunes your Twizy. During the actual tuning process, the STOP lamp will light and you will get some PIP sounds. When the stop lamp stops lighting then your Twizy is ready ☺

### **Reset your Twizy back to original state:**

In order to return it to its original state, you must first replace the firmware on the Powerbox with the "Mini\_original\_Tuning.hex" firmware.

The tuning process will then be the same as with the Power Tuning above:

Turn the ignition key to the ON position, then plug the Powerbox connector into diagnostic port which can be found in left glove compartment.

The Powerbox Mini will now automatically search if your Twizy is tuned or in its original state. It will also check if this is a T45 or a T80 then it automatically reset your Twizy. During the actual tuning process, the STOP lamp will light and you will get some PIP sounds. When the stop lamp stops lighting then your Twizy is ready and you can remove the Powerbox 😊

#### Firmware update:

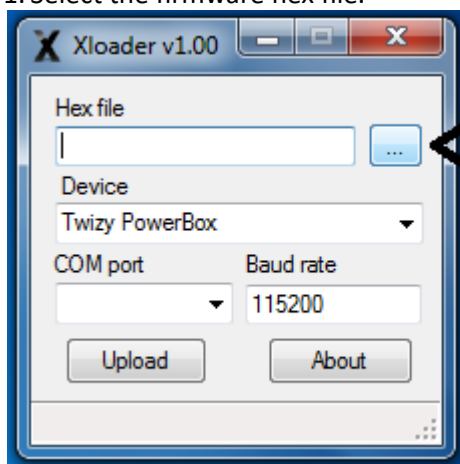
To update the Powerbox Mini you need to install a driver that you can download [here](#) or [here](#)

You must also install XLoader Software that you can download [here](#) or [here](#)

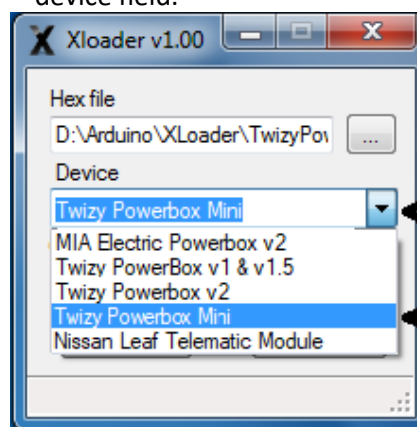
Before going any further it may be wise to take a restart of your computer.

Afterwards you can connect the PowerBox to your computer with a Mini USB cable. Your computer will search and install it automatically and assign it a COM port number. Once the installations completes, start the X-Loader application.

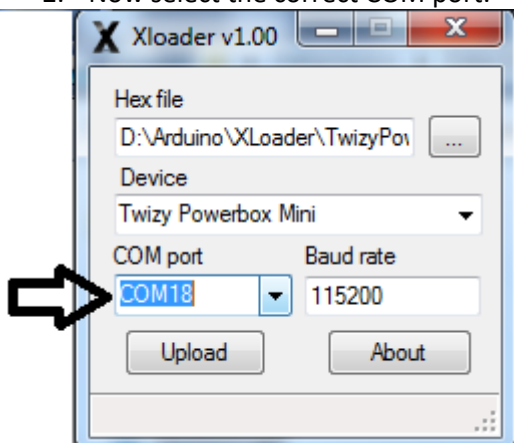
1. Select the firmware hex file.



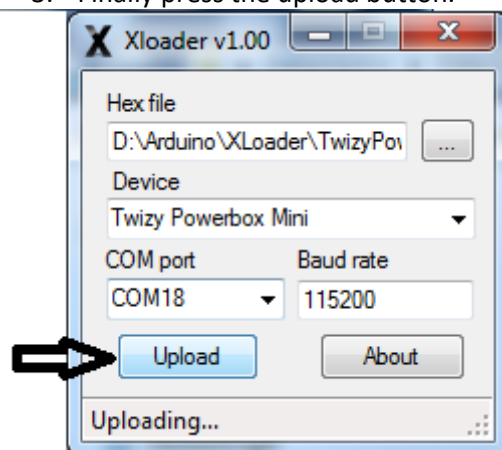
1. Next select Twizy PowerBox Mini in the device field.



2. Now select the correct COM port.

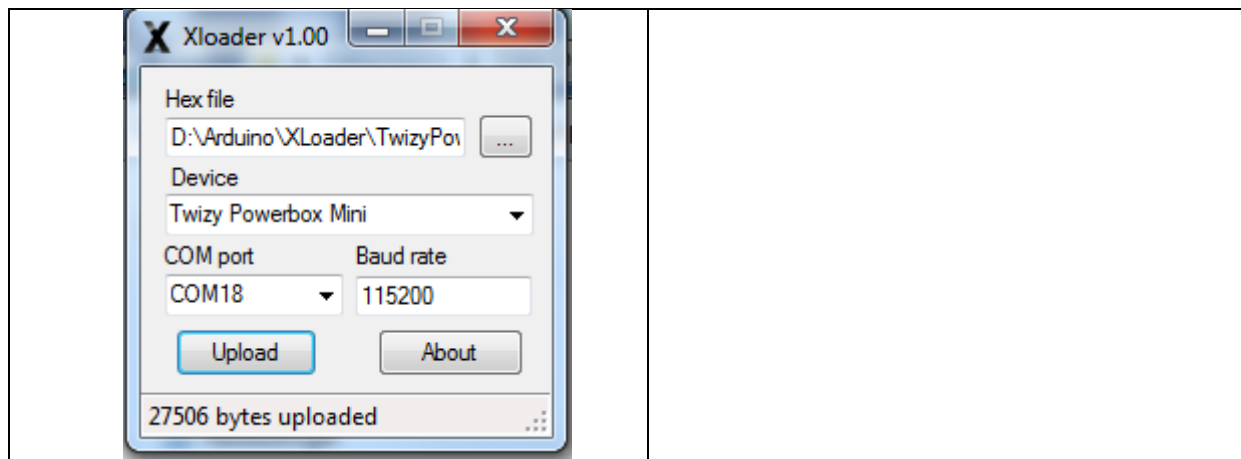


3. Finally press the upload button.



5. After a few seconds, your PowerBox is updated to the new firmware.

6. You can now disconnect your PowerBox from your computer.

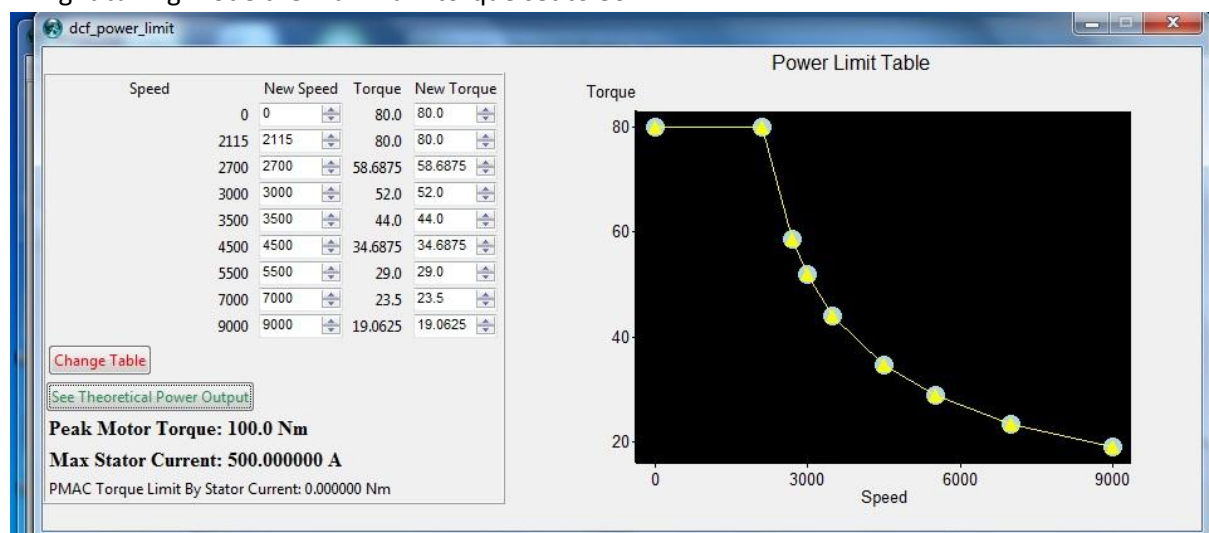


### So what is the difference between the three tuning options Light, Medium and Max Power tuning?

The biggest difference between the three tuning options is the torque (Nm) from 0-70 km/h. Above 70 km/h they are all the same and they all have a top speed of max 115 km/h. On flat roads, a realistic speed is between 95 to 105km/h depending on the wind force and direction.

### Light Tuning Power Map:

In Light tuning mode the maximum torque set to 80Nm.



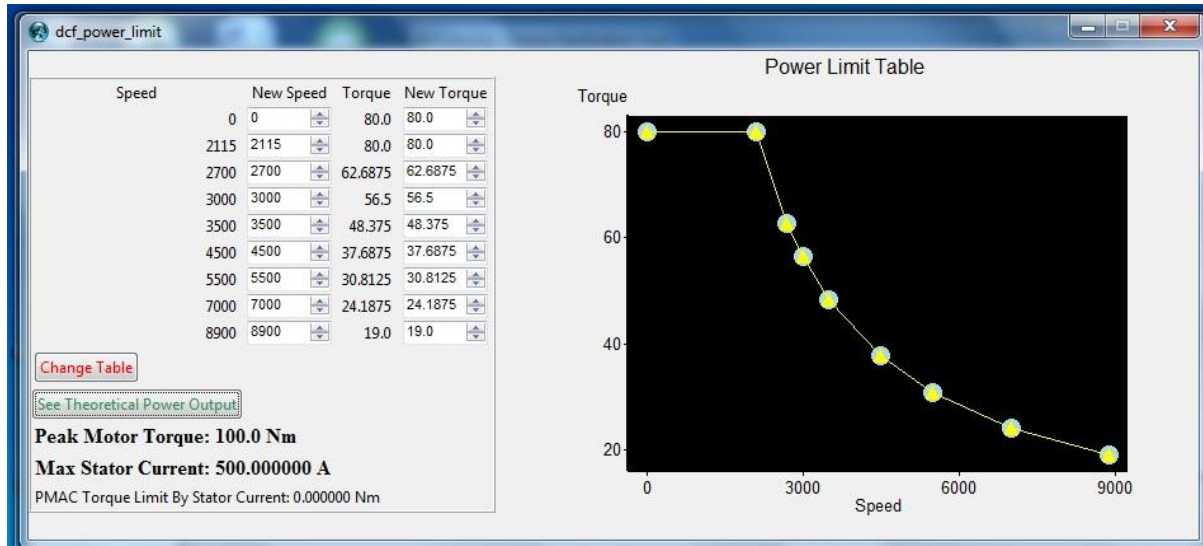
### Medium Tuning Power Map:

In Medium tuning mode the maximum torque set to 90Nm.

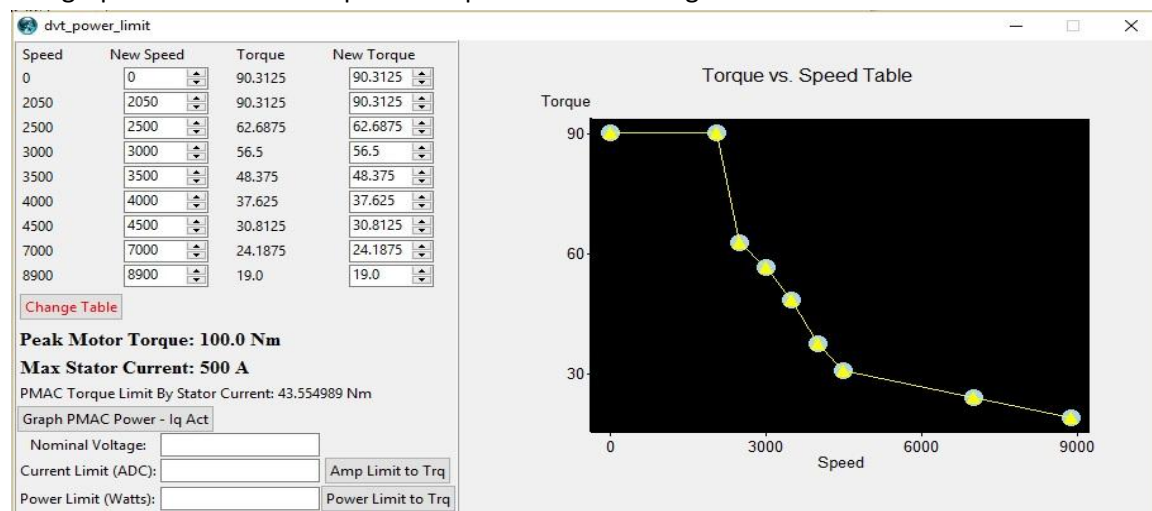
With this setup you may occasionally get a STOP notification on your Twizy screen from the BMS controller included in the battery pack. This will happen when the engine starts to get a little warm, but not dangerously warm.

When the motor temperature rises above 70 degrees, you will be able to draw almost 500 Amp in this tuning mode and because the battery has to deliver more than 450 Amp, it sends out a STOP alert. You can safely ignore this warning.

This graph shows the 80Nm power map in Medium tuning:



This graph shows the 90Nm power map in Medium tuning:

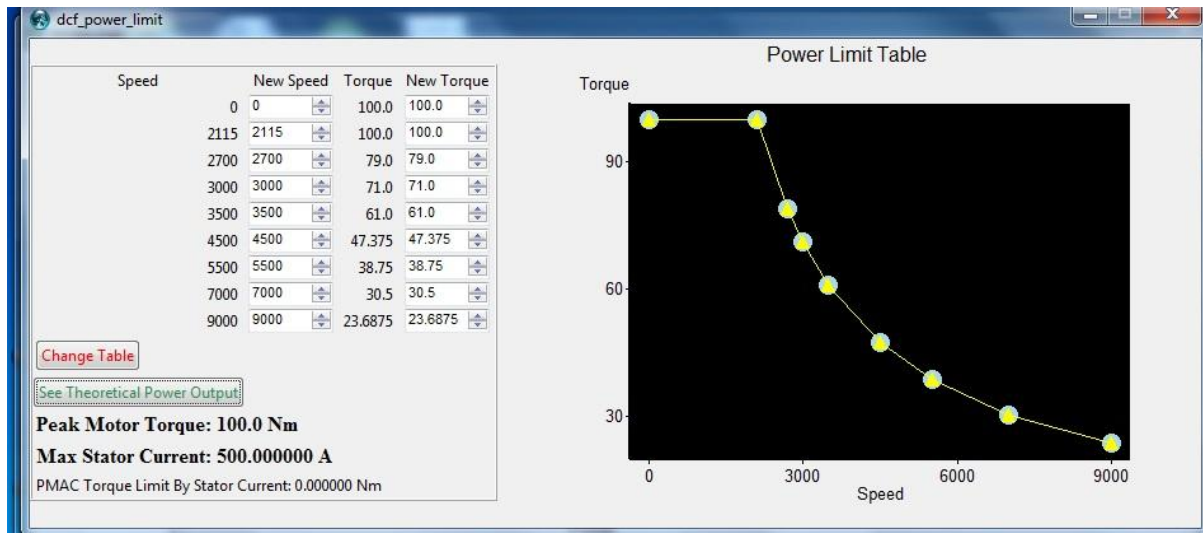


### Max Power Tuning Power Map:

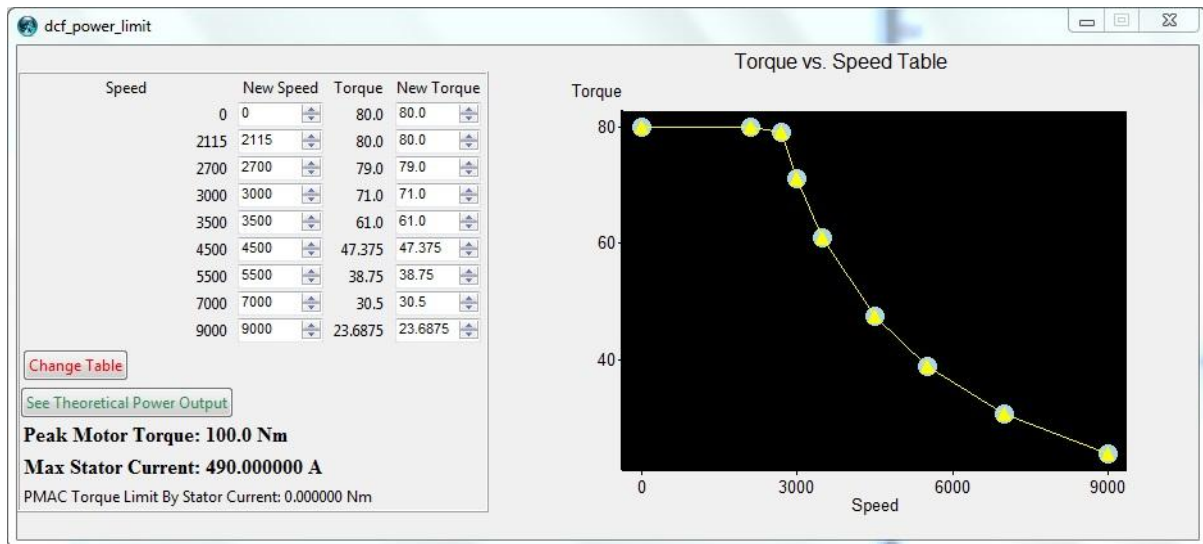
In the Max Power tuning mode the maximum torque is 100Nm, so you will always get a STOP alert when you give full throttle from standstill or low rpm. The Twizy uses all the power it has got and the motor can easily reach 90 degrees. Watch the temperature and drive carefully when it switches down to the Normal profile.

The Normal profile in this tuning mode is more powerful than the one in the Medium and Light mode, so you can easily drive the motor up to 100 degrees, in which case the PowerBox will switch back to the ECO profile.

This graph shows the Sport power map in Max Power tuning.



This graph shows the Normal power map in Max Power Tuning.



### What is ECO, Normal and Sport profiles?

These are driving profiles that are automatically selected by the Power Box based on the temperature of the motor and battery. With a Powerbox Mini you have no way to choose these driving profiles yourself. Powerbox Mini always chooses the best profile for you :-))))

Only with Powerbox V1, V2 and BT models, the user can choose these driving profiles + many more options 😊