

# PowerBox Mini For the custom Sevcon Unit: For Twizy models produced after July 2016

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Made in Norway



With a Powerbox Mini you will get 3 tuning options

1. Light Tuning: (80Nm)
2. Medium Tuning: (90Nm)
3. MaxPower Tuning: (100Nm)

As standard, the Sevcon controller will be delivered with Medium Tuning and is ready for driving.  
Just mount the controller and plug in your Powerbox and have fun.

## **The Powerbox must always be connected.**

Powerbox's most important task is to make sure your Twizy will run. It sends important information on the CAN Bus that is not possible to configure the custom Sevcon controller to.

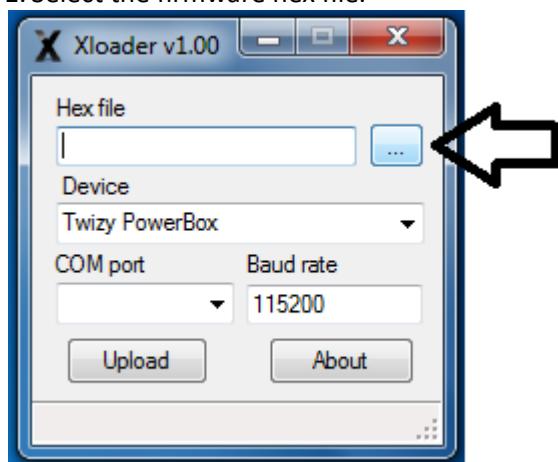
In addition, you can of course choose between 3 tuning levels and you also get 5 different regeneration levels which can be selected during driving.

	<p><b>How to change the Tuning level:</b></p> <p>Tuning level is selected with the D.N.R buttons.  D button = MaxPower Tuning (up to 100Nm torque)  D&amp;R button = Medium Tuning (up to 90Nm torque)  R button = Light Tuning (up to 80Nm torque)</p> <p>to select the tuning level do the following:</p> <ol style="list-style-type: none"> <li>1. Start the car</li> <li>2. Hold for an example D button for more than 5 seconds. The car will now beep and the SERV lamp will come on. It will now start the tuning process and when done the SERV lamp will disappear.</li> <li>3. Turn the ignition OFF and ON and you are ready.</li> </ol> <p><b>It is the same procedure on all 3 tuning choices. D&amp;R means you must hold both D and R at the same time</b></p>
	<p><b>Change the Regeneration Strength:</b></p> <p>This is also done with the DNR buttons.  this only works when the car is driving. You cannot change the regeneration level when the car is stationary.</p> <p>D = More regeneration  D&amp;R = return to the standard regeneration value  R = Less regeneration</p> <p>There are 5 predefined levels  Level 1 = 8% neutral regeneration and 10% foot brake regeneration.  Level 2 = 13% neutral regeneration and 15% foot brake regeneration.  Level 3 = 18% neutral regeneration and 23% foot brake regeneration.  Level 4 = 23% neutral regeneration and 25% foot brake regeneration.  Level 5 = 25% neutral regeneration and 28% foot brake regeneration.</p> <p>You will hear a PIP and R will flash on the screen when you change regeneration.</p> <p>To increase the level, briefly press the D button and you will hear a PIP signal. if you do not hear PIP it means you are in level 5  Same for level down, briefly press the R button and you will hear a PIP signal. if you do not hear PIP it means you are in level 1</p> <p>Pressing both will reset to the standard level which is the same as Level 2</p>

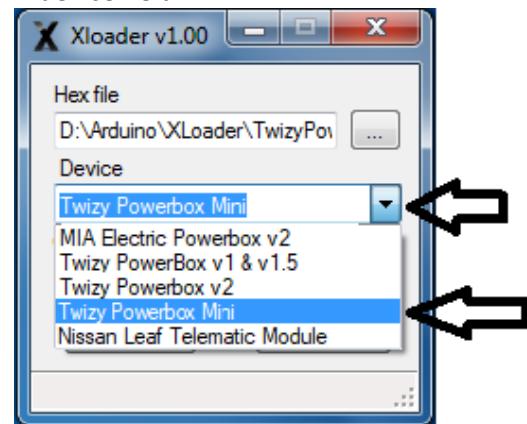
<p><b>Firmware update:</b></p> <p>To update the Powerbox Mini you need to install a driver that you can download <a href="#">here</a> or <a href="#">here</a>  You must also install XLoader Software that you can download <a href="#">here</a> or <a href="#">here</a>  Before going any further it may be wise to take a restart of your computer.</p>
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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.

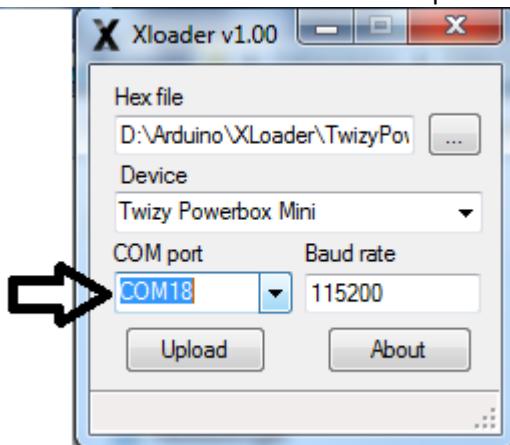
1. Select the firmware hex file.



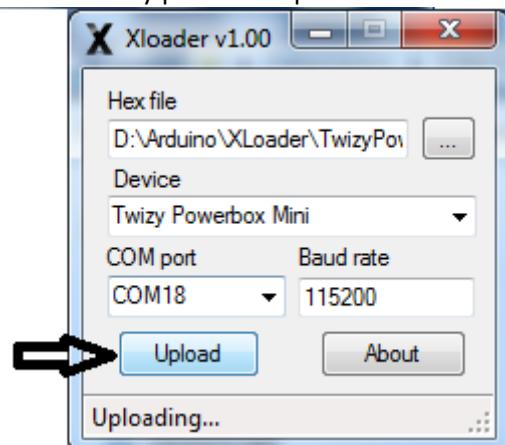
1. Next select Twizy PowerBox Mini in the device field.



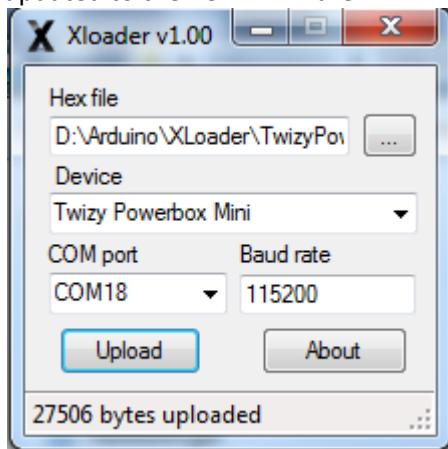
2. Now select the correct COM port.



3. Finally press the upload button.



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



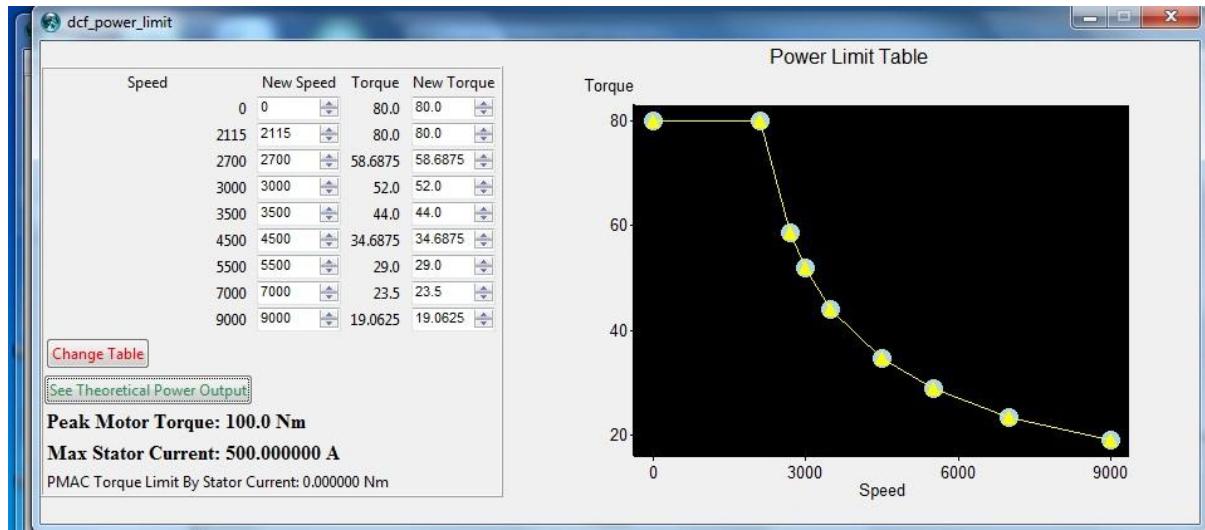
6. You can now disconnect your PowerBox from your computer.

**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.



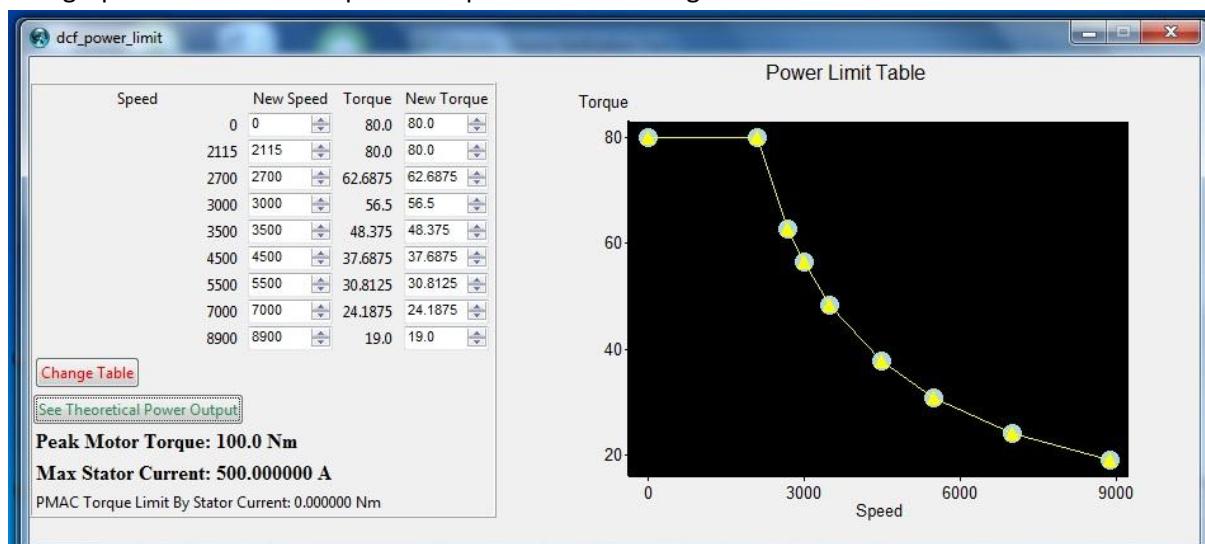
### Medium Tuning Power Map:

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

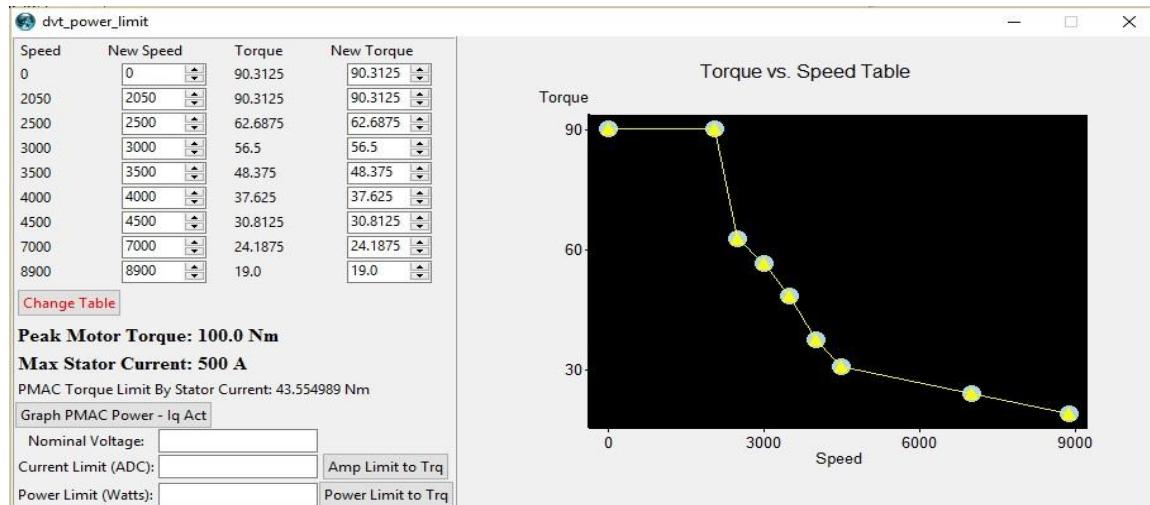
With this setup you may occasionally get a STOP notification on your Twizy screen from the BMS controller included in the battery pack. This will happen when the engine starts to get a little warm, but not dangerously warm.

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:

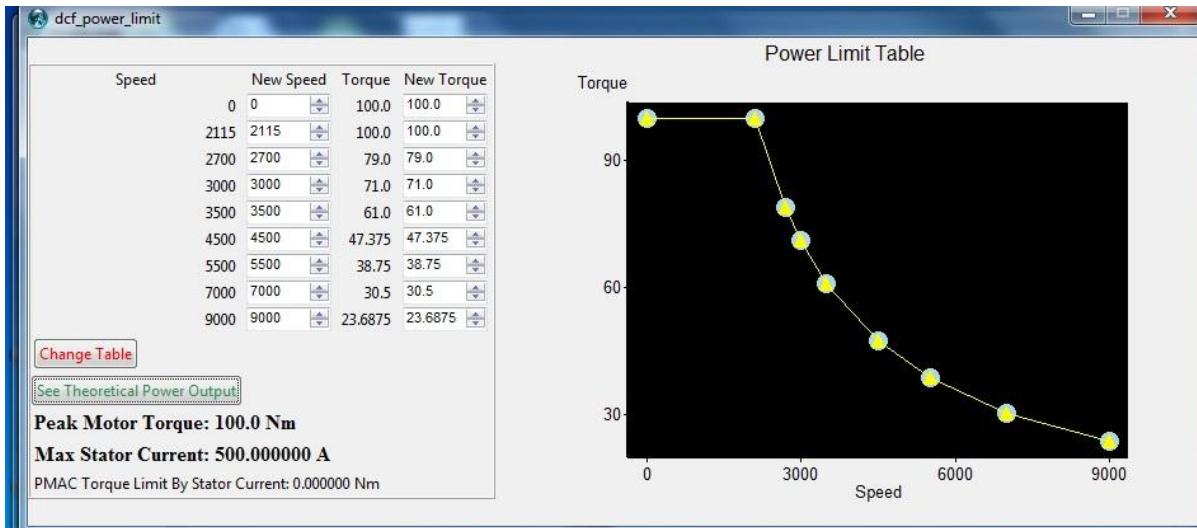


### Max Power Tuning Power Map:

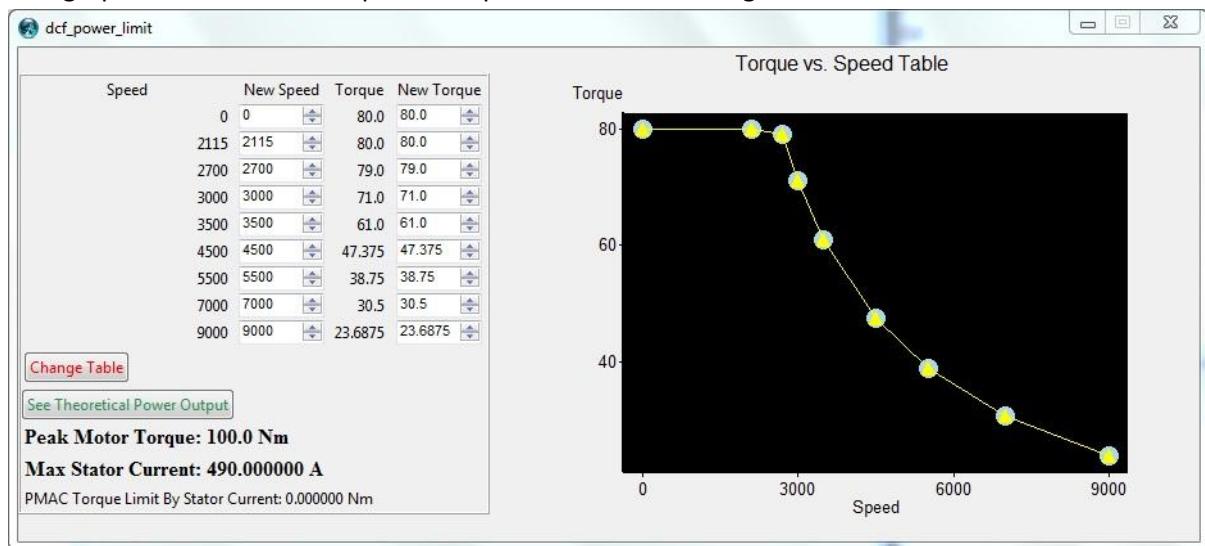
In the Max Power tuning mode the maximum torque is 100Nm, so you will always get a STOP alert when you give full throttle from standstill or low rpm. The Twizy uses all the power it has got and the motor can easily reach 90 degrees. Watch the temperature and drive carefully when it switches down to the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