HOW TO OPTIMIZE YOUR LEVO/KENEVO WITH BLEvo

NOTE ABOUT THE SMARTPHONE OPERATING SYSTEM

This guide presents and details functions that can be accessed with a smartphone running Android. Some of these features are not accessible with a smartphone running iOS but there are the same concept with easier user interface..

PRELIMINARY NOTICE REGARDING BLUETOOTH CONNECTION

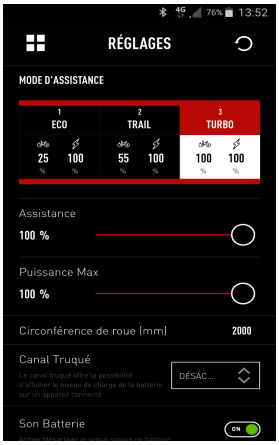
BLEvo requires the continuous operation of the application in order to maintain the dialogue between Levo and BLEvo via Bluetooth. As a result, it is not possible to use another application at the same time that requires the same connection with the Levo like: Mission Control.

THE BIKE SETUP

The values support (percentage of assistance) and power peaks (PP) can be initially taken from Mission Control.

For example: Eco 25% Trail 55% Turbo 100%, all PP 100%.

In case of break of the connection Bluetooth (smartphone battery failure for example), the assistance works according to these parameters support and PP (the Smart Power is no longer active).

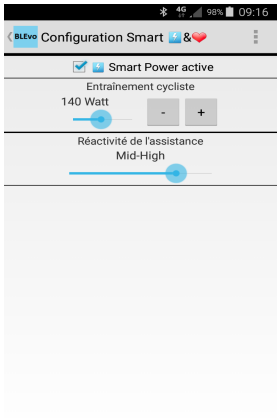


THE SMART POWER (AUTOMATIC INCREMENTATION AND DECREMENTATION OF THE POWER OF ASSISTANCE IN FUNCTION OF YOUR LEGS POWER)

The choice between the simple mode and the expert mode is done from the menu Configure Smart, by checking or not Modalità esperti (access this option by clicking on the 3 points at the top right of the screen). Due to its limited interest, the mode simple Smart Power is not specifically developed in this guide.

The parameter responsiveness of the assistance

Experience shows that the setting Mid-High is best suited.



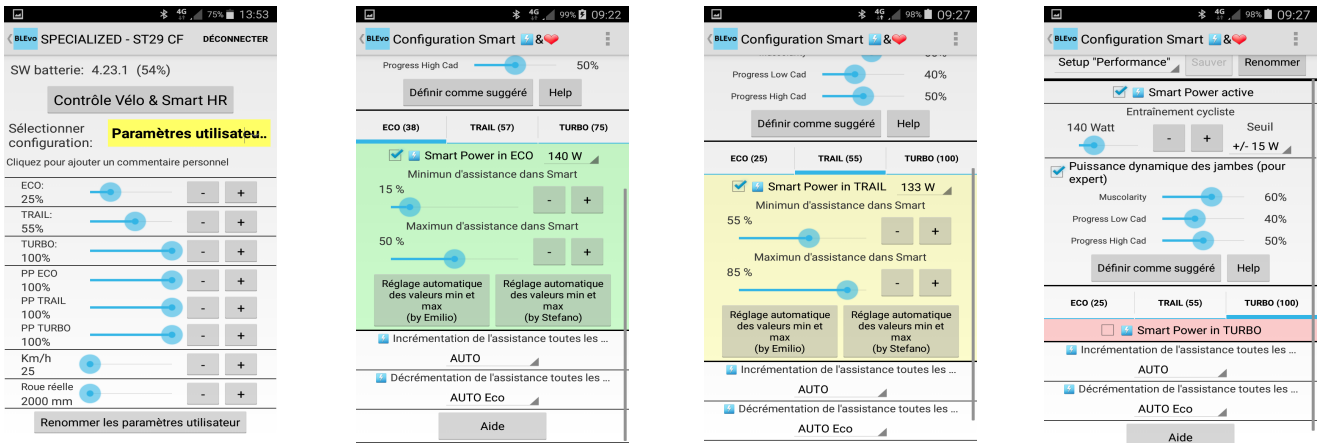
The assistance values Eco - Trail - Turbo in the mode Smart Power expert

The values support and PP recorded in the bike setup is not used in mode. Smart Power expert. The assist values used (low values and high values) are those set for each of the three modes Eco - Trail - Turbo from the menu Configure smart.

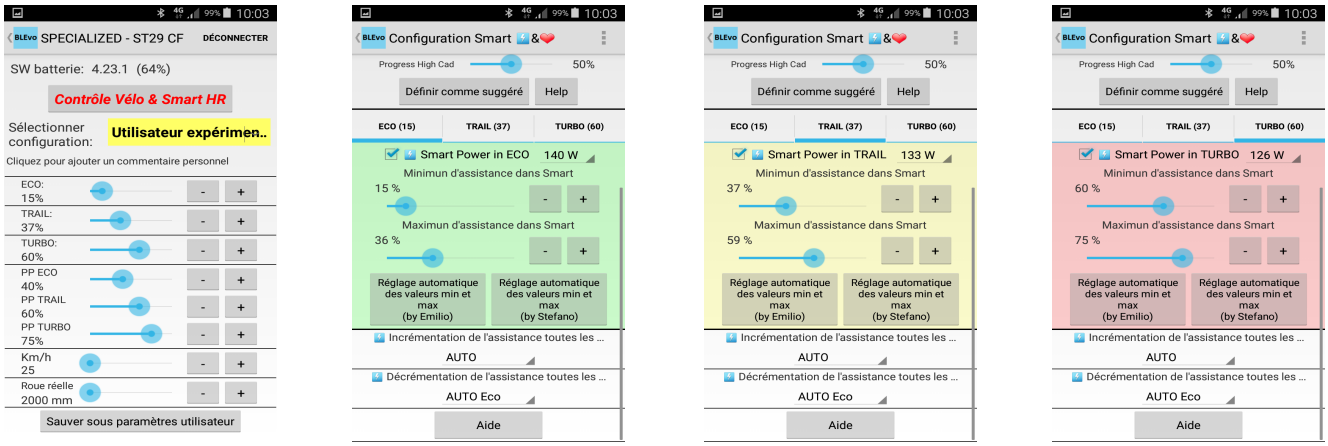
The use of Smart Power expert is selective. One mode may not use this function, for example mode Turbo for which the value can be set support to 100 with a PP set to 100 as well. This strategy ensures immediate and sure access to maximum support power.

The high values of assistance condition for each mode the maximum ratio in the mode between the instantaneous power supplied by the cyclist and the instantaneous power delivered by the engine.
The maximum multiplier coefficient is 3.6 with the Brose S 1.3 engine and the spring 2018 update: X.23 battery (X.17 in hexadecimal) and 5.0.4 engine. The maximum power of the engine is limited to 530 W.

With the experiment, the values of assistance will be chosen according to the tour or the expectations of the cyclist (stroll or sporting exit or long-distance tour, etc.).



Example of a "Performance" setup



Example of an "Eco" setup

The parameters of incrementation / decrementation of the assistance inmode Smart Power expert

They determine how to manage the change in assistance more or less. The preferred setting is "AUTO Eco" increasing and "AUTO" decreasing.

The automatic increase also includes a Boost function that allows, when in a very short time a large increase in cycling power is detected (for example crossing an obstacle), to immediately reach a high assistance power without crossing one by one all the steps incremental (system reactivity). So if you see a big slope in front of you, press strong on the pedals before the slope and the assistance will be increased in order to run the slope with more assistance.

The parameter cyclist legs power

It determines the value from which the function Smart Power expert increments or decrements the assist power in each mode, within the range of the mode assist values.
A tolerance is added so that the system does not "resonate" when the applied cycling power corresponds exactly to the power cyclist legs power parameterized. In general, a value of 140 or 150 + - 15% is suitable for most cyclists.
If we increase the value, the effort to provide to change the level of assistance will be greater, for the benefit of autonomy and the prejudice of comfort. And conversely if we lower it.
If the tolerance interval is decreased, the assistance step change is more reactive, but in this case the number of step changes increases, which negatively affects the consumption. And conversely if we increase it.

Experience has shown that a degressive adjustment of the value of the parameter cyclist legs power for the 3 modes optimizes the comfort of use of the function Smart Power expert (the progressivity of the system). For example: 140 W in Eco, 133W in Trail and 126 W in Turbo.

PARAMETERS OF MUSCULARITY (DYNAMIC POWER OF THE LEGS)

Muscolarity (muscular adaptability)
This parameter has been added to limit two unwanted effects noted by some users Smart Power expert.
When assistance becomes important, one has the sensation of pedaling almost empty (moped effect), even if one provides pedaling power in relation to the power of assistance. This feeling is a physiological factor, because when assistance is important, the pedal stroke becomes much rounder and seems easier.
Moreover, since the system favors pedaling at constant power, if the slope increases, the typical sensation of hardening of the pedaling force felt with a muscle bike is partially erased, which encourages the ratio to be increased. transmission (gear). In the end, we can end up with a transmission ratio too long and therefore an insufficient pedaling frequency, which has the effect of increasing the power consumption.

The parameter Muscolarity is adjustable from 0 to 100. By setting it to zero, the system works by giving priority to constant power pedaling (all versions of BLEvo prior to 2.19 worked on this principle). By increasing this parameter, one has a pedaling sensation closer to that which one has with a muscular bicycle, which makes it possible on the one hand to erase the feeling of pedaling almost empty when the power of assistance increases strongly, and on the other hand to have a good return on slope variations via the pedaling power to provide.

Recommended value: 50

Progress Low Cad (progressive increase in pedaling power when cadence drops)
Some users Smart Power expert deplored an increase in the pedaling power to be provided when their cadence was lower than the cadence average held previously. Here, the question is to return to the laws of physics, since, by decreasing the rate, we must provide a greater pedaling effort to maintain constant pedaling power.

The parameter Progress low cad is adjustable from 0 to 100. By setting it to zero, the system works normally by linking the pedaling rate and the effort to be supplied inversely proportional (all versions of BLEvo prior to version 2.19 were working on this principle).

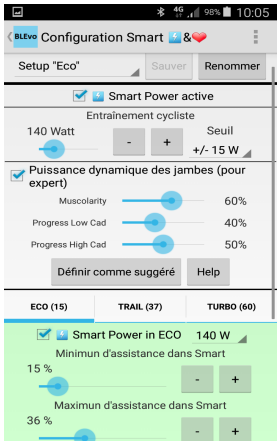
As the value of this parameter increases, the system more and more compensates for dampening the increase in pedaling effort when the cadence rate decreases compared to the average rate previously held.

This compensation is activated only in transitional phase between two periods of pedaling at a steady rate. When this parameter is set to 100, the pedaling force is kept constant when the pedaling rate decreases with respect to the average rate previously held.
High values can be interesting for rework after difficult passages.

Recommended value: 50

Progress High Cad (progressiveness of the decrease of the pedaling power when the cadence increases)
Some users Smart Power expert deplored a lightening of the pedaling power to be provided when their rate rose compared to the average rate previously held.
Here too, the question is to bring back to the laws of physics, since, by increasing the rate, one must provide a pedaling effort less important to maintain constant pedaling power.
The parameter Progress high cad is adjustable from 0 to 100. By setting it to zero, the system works normally by linking the pedaling rate and the effort to be supplied inversely proportional (all versions of BLEvo prior to 2.19 were working on this principle).
As the value of this parameter increases, the system compensates more and more for damping the decrease in pedaling force when the pedaling rate increases with respect to the average rate previously held. This compensation is activated only in transitional phase between two periods of pedaling at a steady rate. When this parameter is set to 100, the pedaling force is kept constant when the pedaling rate increases with respect to the average rate previously held.

Recommended value: 50



Example of setting the parameters of Muscularity

THE EFFICIENCY MOTOR (PARAMETER DISPLAYED IN THE DATA SHEET OF A TOUR)

Modeling of this parameter (by taking again the labels of the form)

Motor efficiency = Wh total of the motor / Wh consumed battery
Wh consumed battery = Wh average consumption / km X total kilometers
Engine efficiency engine = Wh total / Wh average consumption / km X total kilometers

Use of this parameter for optimization of hybrid system performance

Experience shows that that the parameter motor efficiency is an excellent energy index of the hybrid system. In fact, it should have been called the efficiency of the hybrid system.

In terms of optimizing the performance of the hybrid system, the rider has the hand to vary this indicator by adapting his sporting behavior.

To obtain a good motor efficiency, and finally a good performance of the hybrid system, it is necessary that the cyclist seeks to optimize the data Wh average consumption / km, adapting for that to the hybrid system. It is not a question of "forcing more to have more" (!), But it is a question of respecting the laws which govern the system.
Thus, for the Brose S 1.3 engine, with the battery update X.23 (X.17 in hexadecimal) and engine 5.0.4:

- the average cadence rate should be around 60 - 70 RPM, so that the engine is certainly working in his maximum torque zone, and can thus achieve in the best conditions its maximum efficiency,
- cadences of 40 RPM and less should be avoided,
- the cyclist must apply to have a "round" pedaling; micro-accelerations generate incessant changes in engine torque that degrade power consumption.

An engine efficiency higher than 90% reflects a good adaptation of the cyclist to the hybrid system, and therefore a measured power consumption while ensuring a feeling of comfort.