

# BESST Tool Section

# Content

- Tool Introduction
- Tool Section Operation Introduction
  - HMI
  - Controller
  - Battery
  - Sensor
  - Update

# BESST Tool

## BESST BOX



First version

Support UART system

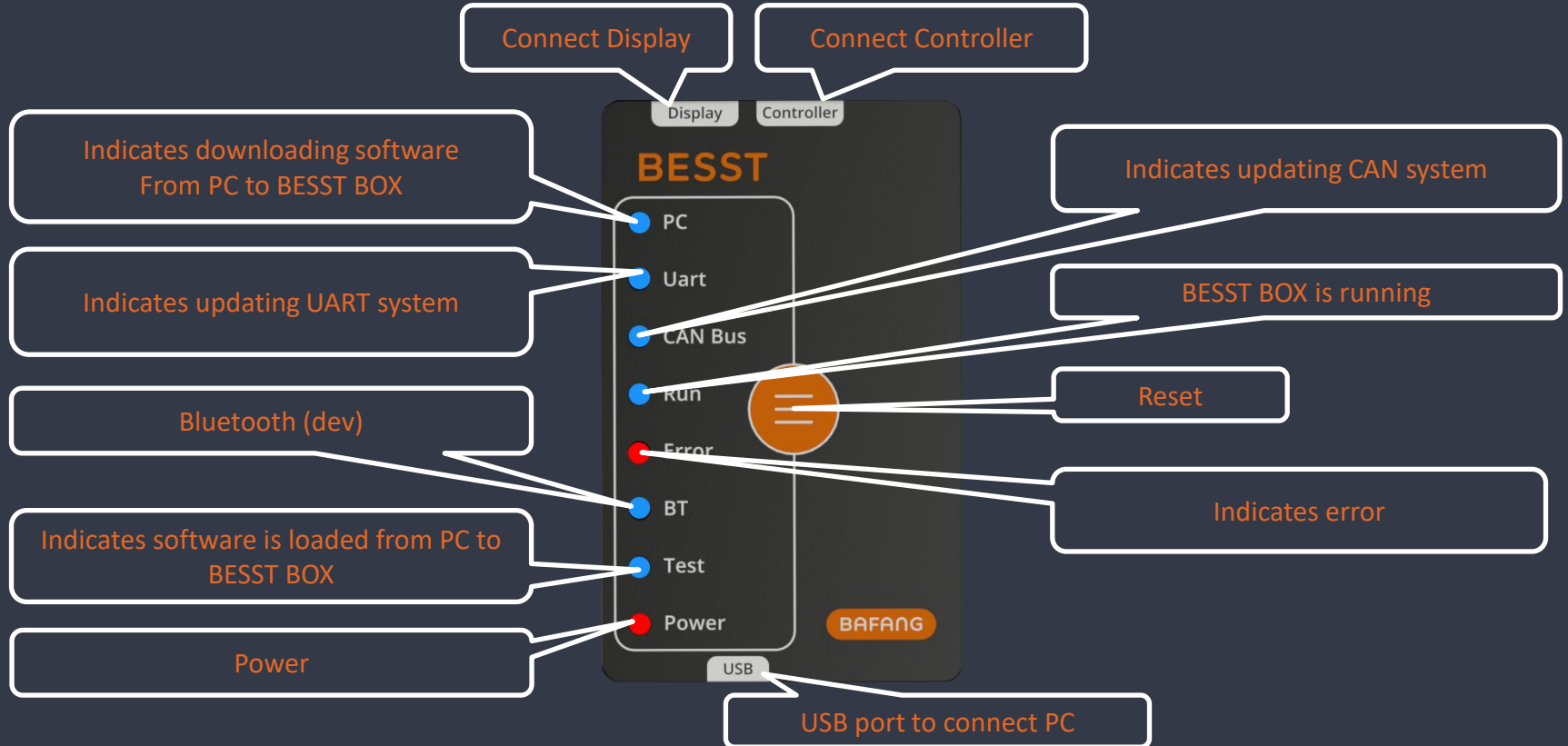


Third version

Support UART and CAN system

CAN system has high priority

### Explain the light and button of BESST BOX



## Tool Section to use BESST box to build the connection between components and PC.

	First version	Second version	Third version
Connect Method	Through COM port of computer	Through COM port of computer	Through USB port of computer
Connection	Connect manually	Connect manually	Connect automatically
Reset function	Clear status at every time	Clear status at every time	Clear status when read data. Disable when update.
Disconnection	Disconnect from PC	Disconnect from PC	Disconnect when plug HMI to read. Reset when read.
Update	Special Software	Through BESST	Through BESST
UART Light	Always turn on	Always turn on	Turn on when update UART system
Speaker	No	Yes	Yes

# HMI Information and configuration

## 1. Update HMI configuration

1.1 You need connect BESST box to computer and plug the HMI. Connect and read data.

### Use USB Connection - UART

The screenshot displays the HMI configuration interface. On the left, there are input fields for SN, Model, Software Ver., Hardware Ver., and Total Mileage (with a 'Km' unit). Below these are dropdown menus for Wheel Size (set to 26) and Speed Limit (set to 20). At the bottom left, there is a 'Remove Maintenance Warning' section with a 'Clear' button. On the right, the 'USB HID' section is active, showing a 'Connect' button and three buttons: 'Read', 'Reset', and 'Test'. Below this are input fields for Wheel Size, Speed Limit (with a 'Km/h' unit), and Total Level. A green 'Write' button is highlighted with a red box at the bottom right of the configuration area.

Please read first then write  
Wheel Size and Speed Limit.

For dealer and assembler,  
If the read value of speed Limit  
is 25km/h, then the maximum  
speed limit is 25km/h.  
If the read value of speed limit  
is above 25km/h, the maximum  
is what read from HMI.

## Use USB Connection - CAN

The screenshot displays the BAFANG HMI interface with a dark theme. At the top left, there is a yellow circle with a gear icon and the text 'HMI'. At the top right, there is a question mark icon. The interface is divided into two main columns of data fields. The left column contains: SN, Model, Software Ver., Hardware Ver., Total Mileage (with a 'Km' unit indicator), Single Mileage (with a 'Km' unit indicator), Clear Single mileage, Max. Speed (with a 'Km/h' unit indicator), Average Speed (with a 'Km/h' unit indicator), and Remove Maintenance Warning (with a 'Km' unit indicator). The right column contains: USB HID (with a green dot and a 'Connect' button), Total Level, Current level, Mode, BOOST mode, Shutdown time, Head Light, and '+-' key status. Below the 'Remove Maintenance Warning' field, there is a 'Clear' button. In the top right area of the interface, there are 'Read' and 'Reset' buttons.

More Information to show.  
You could do some test like  
“Head Light”

Remove Maintenance  
Warning is available when  
the value is above 5000km.  
There is an wrench icon on  
display screen.

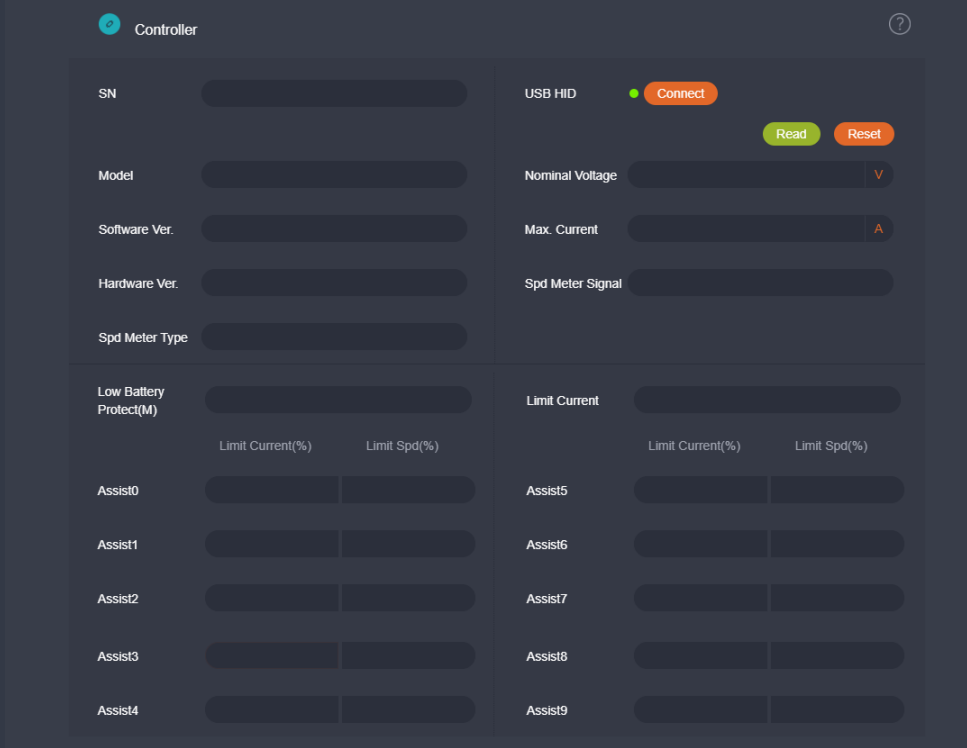


# Controller Information and configuration

## 2. Update Controller configuration

2.1 You need connect BESST box to computer and plug the Controller. Click connect and read data.

### Use USB Connection - UART



The screenshot shows a configuration interface for a controller. It is divided into several sections:

- Controller:** Includes fields for SN, Model, Software Ver., Hardware Ver., and Spd Meter Type.
- USB HID:** Features a 'Connect' button, a 'Read' button, and a 'Reset' button.
- Parameters:** Includes 'Nominal Voltage' (with a 'V' unit selector), 'Max. Current' (with an 'A' unit selector), and 'Spd Meter Signal'.
- Low Battery Protect(M):** A section with a header field and two columns: 'Limit Current(%)' and 'Limit Spd(%)'. It contains rows for Assist0 through Assist4.
- Limit Current:** A section with a header field and two columns: 'Limit Current(%)' and 'Limit Spd(%)'. It contains rows for Assist5 through Assist9.

More detail of assist level.

Controller

SN

Model

Software Ver.

Hardware Ver.

Speed Limit Km/h

Wheel Size

Circumference mm

Speed Km/h

Current mA

Voltage mV

USB HID Connect

Read Reset

Remaining capacity %

Single trip mileage Km

Remaining mileage Km

Cadence RPM

Torque output voltage mV

Calories Kcal

Walk-assist status

Controller temperature °C

Motor temperature °C

Speed Limit 20

Wheel Size Select

Circumference Select

Write

Please read first then write Wheel Size, Circumference and Speed Limit.

For dealer and assembler, if the read speed Limit is 25km/h, then the maximum speed limit is 25km/h. If the read speed limit is above 25km/h, the maximum is what read from Controller.

You could also type the circumference you need and then write

## The support wheel size and circumference value range

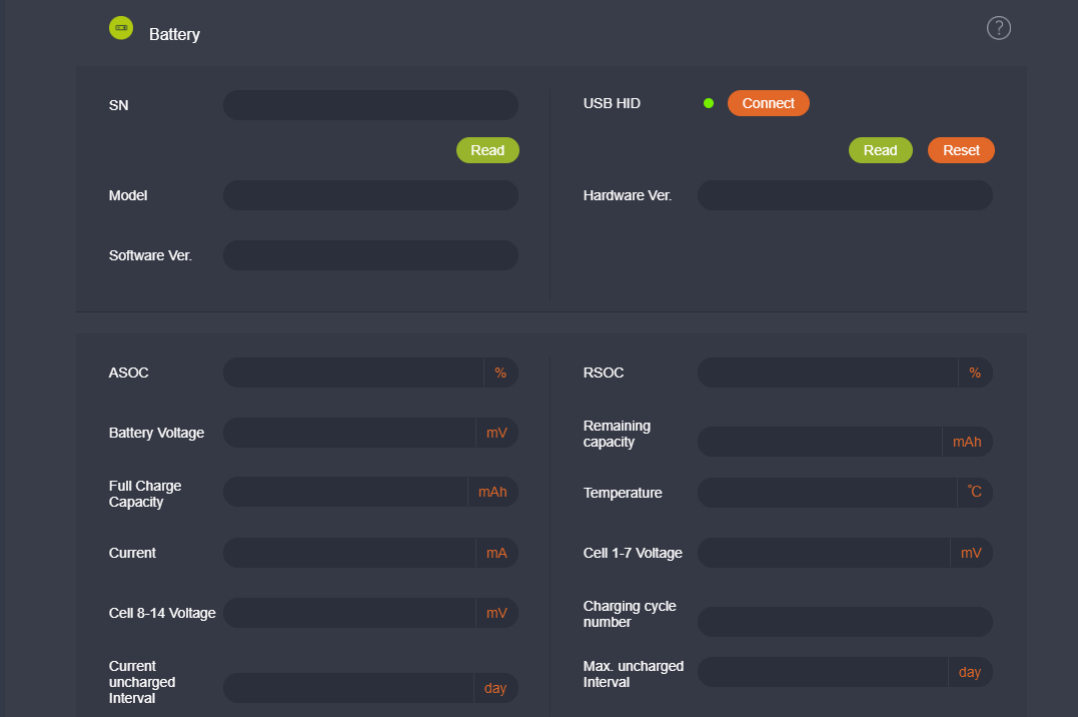
Wheel Size	Max Circumference (mm)	Min Circumference(mm)
7 - 10	590	520
12-14	1300	910
16-18	1600	1208
20-23	1880	1290
24	2200	1290
25	2200	1880
26-29	2510	1880
32	2652	2200
27.5	2510	1880
400	1600	1208
450	1600	1208
600	2200	1600
650	2200	1600
700	2510	1880

# Battery Information

### 3. Update Battery configuration

3.1 You need connect BESST box to computer and plug the Battery. Connect and read data.

#### Use USB Connection – UART/ CAN



If it is CAN system, there is real time information

# Sensor Information

## 4. Sensor configuration

4.1 You need connect BESST box to computer and plug the Sensor. Connect and read data.

### Use USB Connection –CAN

The screenshot displays a software interface for sensor configuration. At the top left, there is a green circle with 'ES' and the text 'Sensor Can'. A question mark icon is in the top right. The interface is divided into two columns. The left column contains four input fields: 'SN', 'Model', 'Software Ver.', and 'Hardware Ver.'. The right column contains a 'USB HID' section with a green dot and a 'Connect' button, followed by 'Read' and 'Reset' buttons. Below this are two rows: 'Torque Value' with a unit 'mV' and 'Cadence' with a unit 'RPM'.

SN	<input type="text"/>	USB HID	<input type="button" value="Connect"/>	<input type="button" value="Read"/>	<input type="button" value="Reset"/>
Model	<input type="text"/>	Torque Value	<input type="text"/>	mV	
Software Ver.	<input type="text"/>	Cadence	<input type="text"/>	RPM	
Hardware Ver.	<input type="text"/>				



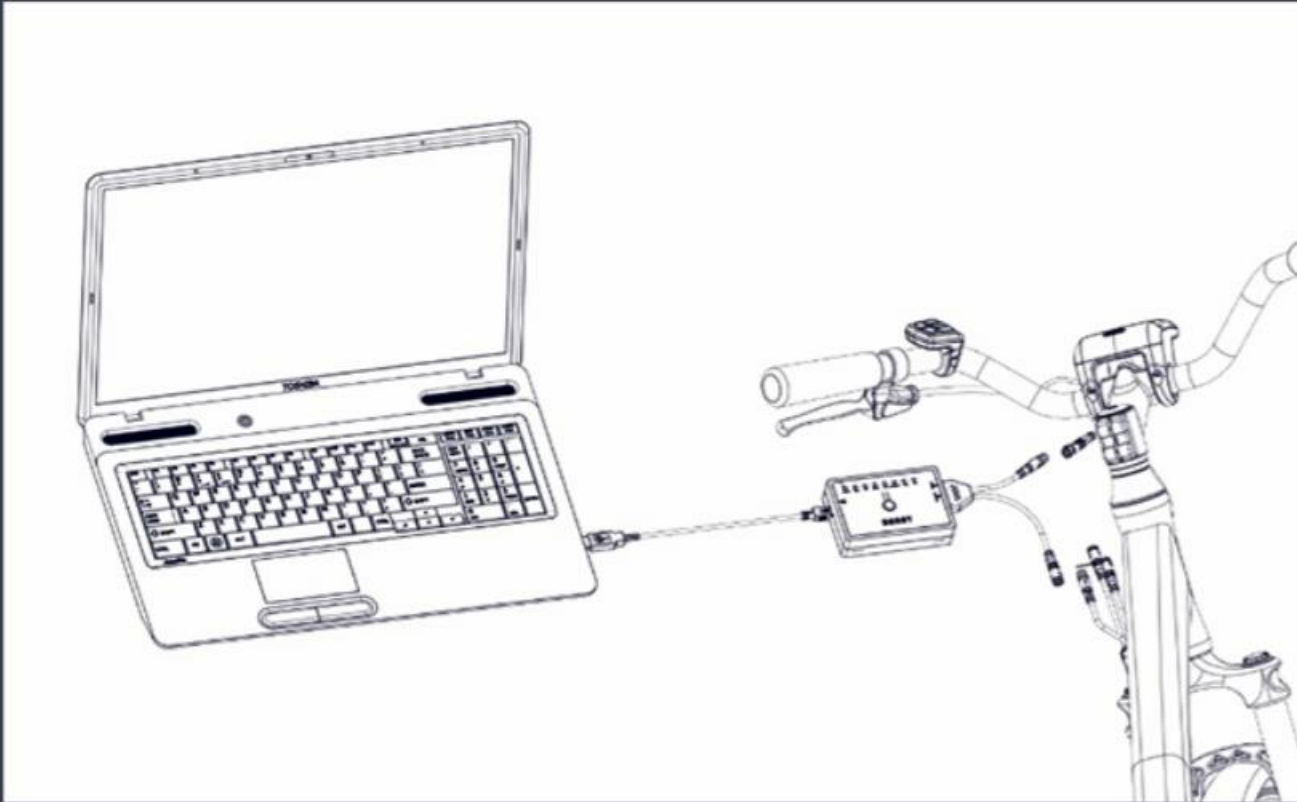
# BESST Update Instruction

## Two Steps:

1. Download software form BESST Software on PC to BESST Box
2. BESST BOX updates software(firmware) to components or BESST Box itself

## 5. Update HMI Software

5.1 You need connect the BESST Box to the computer. And plug the HMI now.



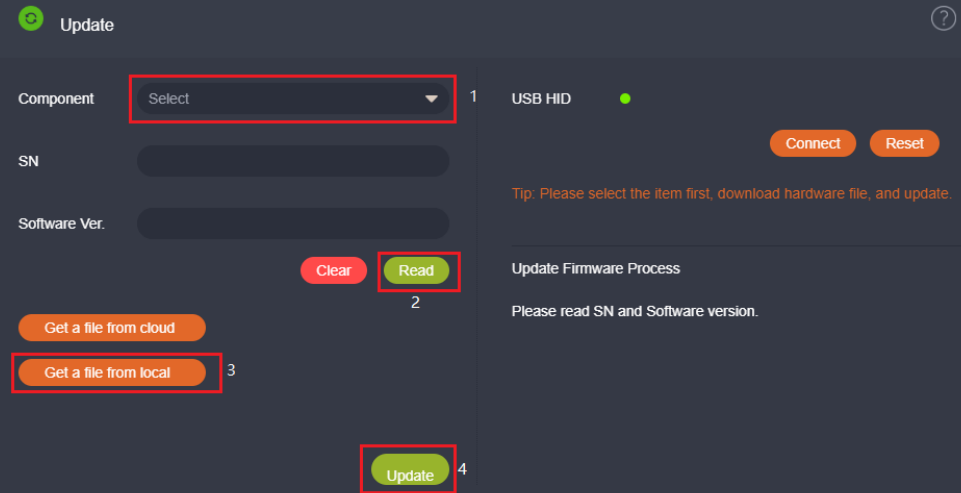
## 5.2 Go to "Update" section on BESST.

Step 1, Select Component as HMI

Step 2, Turn on display,, then click read to get SN, turn off the display;

Step 3, Select the new software file ended with "bin" from local if no version from cloud;

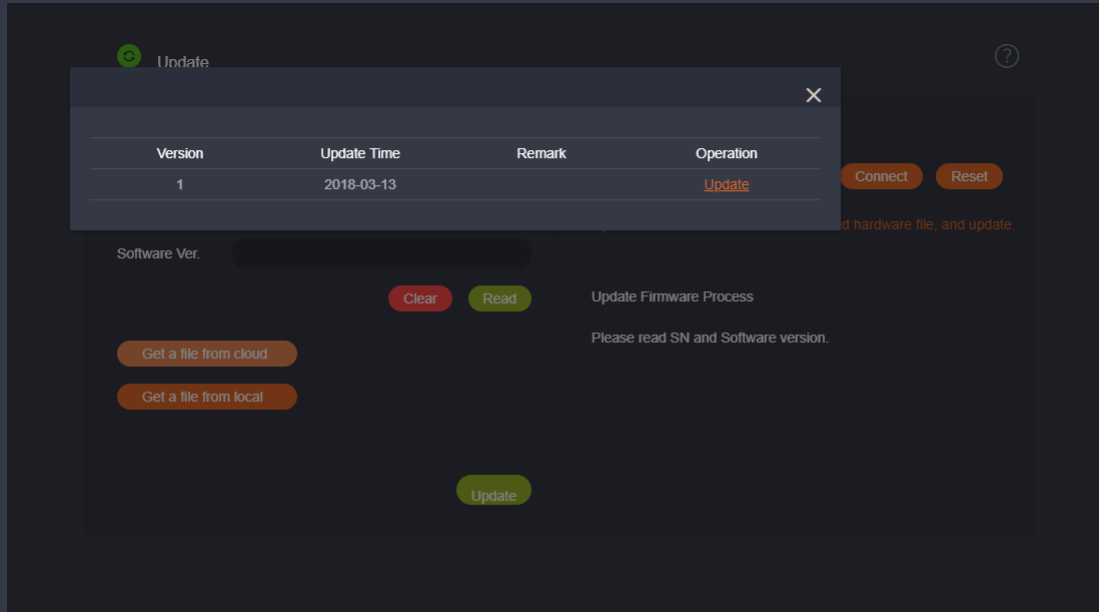
Step 4, Click "Update" button to proceed. Then you will see a progress bar. If success, there is a note about that.



### The Update Firmware Process:

1. Please read SN and Software version;
2. Please select bin file from local or get file online;
3. Wait for plugging component;
4. BESST box update HMI; Update is finished.

During Step 2, if there is a history list, click "Update" button to download the software you need. Then you will see progress bar. If success, there is a note about that.



During the process, you will see BESST box "PC" LED blinking. After writing successfully, you will see PC LED turns off. Please wait to do next step until PC LED turns off.



For Third Version BESST box, Uart LED would not be on always.

5.3, Turn on the HMI, you will see Uart LED blinks. It means that BESST box are writing software to HMI. After Uart LED stops blinking , HMI has been updated with new Software. And Test LED on BESST box will turn on. The writing state would continue until you click "reset " button or reset on BOX.



For third version BESST box, the reset button on BOX is disabled while you update software.

During this process, LCD HMI and LED HMI have different display behavior.  
For LCD HMI, the screen will be on until update success.



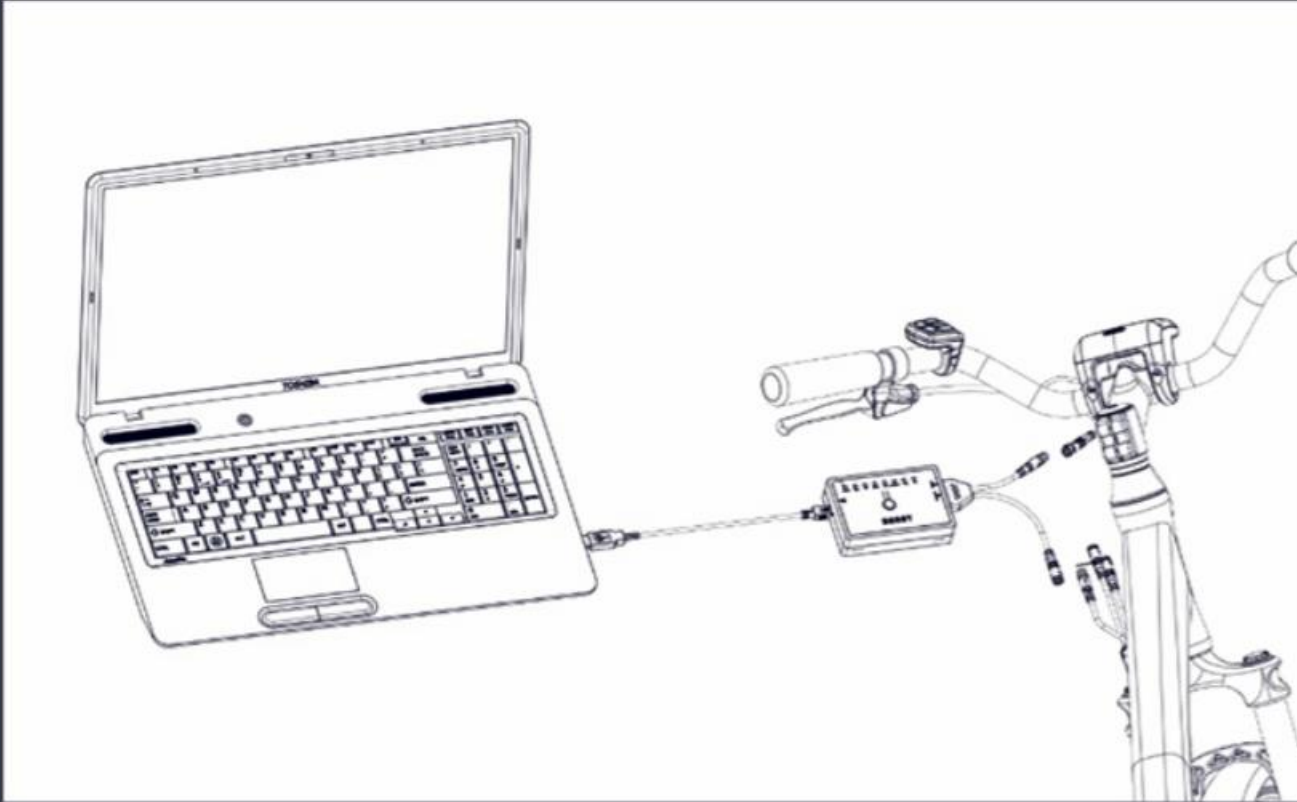
For LED HMI, the first level LED turns on and the second level LED blinks. If update success, these two LEDs would turn off.





## 6, Update Controller – Battery - Sensor Software

6.1 You need connect the BESST Box to the computer. And plug the controller now.



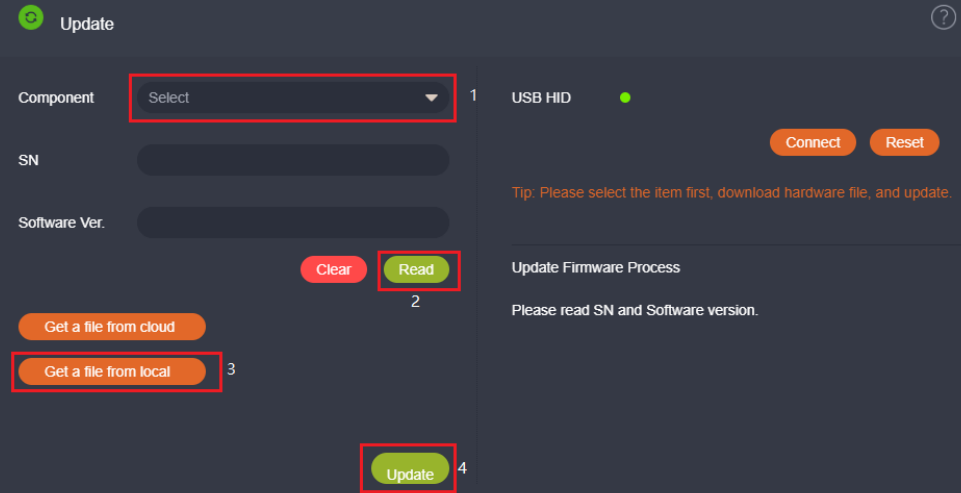
## 6.2 Go to "Update" section on BESST.

Step 1, Select Component as Controller;

Step 2, Read SN, unplug the controller;

Step 3, Select the new software file ended with "bin" from local if no version from cloud;

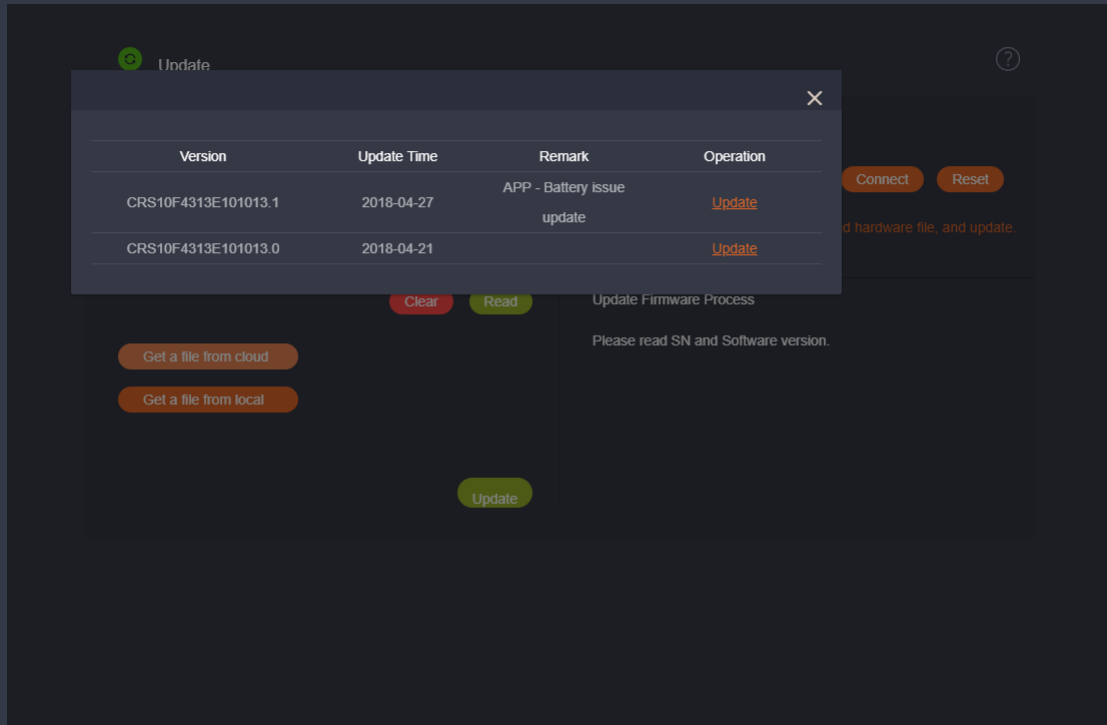
Step 4, Click "Update" button to proceed. Then you will see progress bar. If success, there is a note about that.



The Update Firmware Process:

1. Please read SN and Software version;
2. Please select bin file from local or get file online;
3. Wait for plugging component;
4. BESST box update Controller; Update is finished.

During Step 2, if there is a history list, click "Update" button to download the software you need. Then you will see progress bar. If success, there will be a note about that.



During the process, you will see BESST box "PC" light blinking. After write successfully, you will see PC LED off.



For Third Version BESST box, Uart led would not be on always.

6.3 Now you need plug the Controller to BESST box. Then you see Uart LED blinks. It means that BESST box are writing software to Controller. After Uart LED stops blinking , Controller has been updated with new Software. And Test LED on BESST box turns on.

The writing state would continue until you click "reset " button or reset on BOX.



For third version BESST box, the reset button on BOX is disabled while you update software.

## 7.1 Record

Component SN Operation Record 2019-04-22

SN	Vehicle	Operator	Account	Time	Type	Data
CRS105.250.SN.U1.0F21E1S9281207		DEALER	dealer1@bafang-e.com	2018-11-30 18:16:47	Update	CRS1053615E010011.9_s
CRS105.250.SN.U1.0F21E1S9281207		DEALER	dealer1@bafang-e.com	2018-11-30 18:16:08	Update	CRS1053615E010011.9_s
CRS105.250.SN.U1.0F21E1S9281207		DEALER	dealer1@bafang-e.com	2018-11-30 18:14:14	Update	CRS1053615E010011.9_s
CRS105.250.SN.U1.0F21E1S9281207		DEALER	dealer1@bafang-e.com	2018-11-30 18:13:25	Update	CRS1053615E010011.9_s
CRS105.250.SN.U1.0F21E1S9281207		DEALER	dealer1@bafang-e.com	2018-11-30 18:06:10	Update	CRS1053615E010011.9_s
CRS105.250.SN.U1.0F21E1S9281207		DEALER	dealer1@bafang-e.com	2018-11-30 17:48:49	Update	CRS1053615E010011.9_s
CRS105.250.SN.U1.0F21E1S9281207		DEALER	dealer1@bafang-e.com	2018-11-30 17:42:13	Update	CRS1053615E010011.9_s

Powered by

1 2 > Total: 11

All the component operation is recorded in BESST.

## 8. New Version Updates.

Update

Component:

SN:

Software Ver.:

USB HID ●

*Tip: Please select the item first, download hardware file, and update.*

Update Firmware Process

DPE06 - S88243P1230.bin

Update starting...



Tip

Please select bin file from local or get file onl

Update

Component:

SN:

Software Ver.:

DPE06 - S88243P1230.bin

Progress bar indicates the process of Box update components



USB HID ●

*Tip: Please select the item first, download hardware file, and update.*

Update Firmware Process

BESST box update HMI

95%

## 8.1 CAN Controller notes

After updating the software of controller, please detach the battery to power off the controller and repower again.