

Copy files to root directory of microSD card (filesystem FAT32), insert into On-board computer (contacts on top) and run the update process.



**Do not downgrade firmware that was installed by the manufacturer! You may get a brick**

Each device has its own firmware and is updated separately from different menus. It does not matter in what order you update the firmware of the devices. If you have older firmware, you can install the latest firmware at once, without having to install the firmware one by one.

1. [Description](#) of the On-Board Computer update menu.
2. [Description](#) of the Controller update menu.
3. [Description](#) of the uLight update menu.

To check the current firmware version, go to the **Device Information** menu, each device has a separate menu.

1. [Information](#) about the firmware version of the On-Board Computer.
2. [Information](#) about the firmware version of the Controller.
3. [Information](#) about the firmware version of the uLight.

The list of actual firmware to be downloaded:

## 31 August 2020

Use configuration export before update, reset defaults after update and import configuration.

**Display v0.60B**



Fixed throttle drop.  
Small menu fixes.  
LEVCAN updated.  
Button setup simplified, by default all set to CAN mode.  
Added exFAT support (but display still can be updated only from FAT32).  
Added charge screen.  
Added fast statistics type selection.  
Added wider event window.  
Mph stats fixed.

**Controller v0.7.18**



Experimental logger added.  
Fixed many charger glitches, however still have few.  
Added soft start to charger and more safe phase detect.  
Completely reworked field weakening, now should not have any hard braking after release.  
Added minimum speed reference for speed PID.

Added RC PWM control on P1 port (throttle/brake).  
Added more logger parameters.  
Few important FOC control fixes, DC current should be calculated better under field weakening.  
Fixed one weird ultra-rare bug in square mode.  
LEVCAN operates on queues now, log time 2x faster when display updated.  
Decreased DCi Ki default from 500 to 200.  
Slightly decreased FW start point.  
Added full debug info export.  
Added logger mode selection and tuned logger start.  
Removed first line from log for easy datazap upload.  
Throttle / brake curves added (8 point configuration) with presets.  
PAS extra scale added for additional modes.  
Soft acceleration for cruise added, more shutdown triggers.  
Cruise logic updated - phase current limited by selected mode, not throttle position.  
Minimum cruise speed - limits cruise activation.  
Cruise increment/decrement - control cruise speed with buttons ( port = CR+/CR-)  
Cruise restore - recovery last saved cruise speed with button, activated only above min cruise speed.  
(port = CRr)  
Power limit added to modes and battery configuration. 0 = power limit disabled.  
Small menu fixes.  
CAN inputs increased to 16.  
Parameters export / import fixes.  
12V shutdown fix.

## 18 March 2020

**Display v0.59B** 

HOTFIX for display speed sensor

## 11 March 2020

**Display v0.58B** 

Fixed 0V throttle issue.  
Fixed charge statistics reset.  
Added kmh/mpg switch.  
Added more parameters to info. lines on main screen.  
Added hotkey mode for compatibility with controller speed functions.  
Fixed contrast setting.  
Added driving range, calculated from WH usage.  
A lot of tiny fixes.

## Controller v0.7.12

Torque PAS fixes  
Fixed configuration import for advanced modes  
Added configuration selector from 1 to 9  
Import will show first line of configuration, you can put a comment here  
Fixed N mode  
Fixed motor wiggle at charger mode  
Added more debug information

## 21 Nov 2019

HOTFIX, fixed NaN error for analog inputs.

## Controller v0.7.9

## 20 Nov 2019

Export configuration (or make screenshots), after controller update do "Erase data storage" and reboot. Configuration will not be imported fully, some values will need to enter manually.

## Display v0.57B

CAN buttons setup  
Inverted inputs setup  
Statistics reworked  
Added filters for analog inputs

## Controller v0.7.8

Big menu update  
Control logic completely reworked for future compatibility with BMS  
New default values for PIDs  
DC-DC low voltage difference charge fixed  
Inverted brake input added  
Specific setup for 3 positional speed switch added (can work now as 1-2-3)  
Button/switch select for usual speed select input  
Save CRC calculation fixed  
New speed mode - neutral  
Speed increment and decrement added

Added t-sensor NTC 10k B:3380

Reboot command added

Fixed field weakening over 126%

Fixed VBUS measuring, now it is at PWM frequency, significantly improved overvoltage protection

Added median VBUS filter

Added averaging of N-X ADC samples filter for throttle and brake

Fixed brake glitches

Current measuring fixes for better measuring on 6F board

When enable button configured controller will not turn-on anymore when power applied

Autodetect improved, more informative, short-circuit detect added and timeout fixed

Added lock-at-turn-on, will lock throttle untill password on-screen is entered

Voltage on phases detect added, will lock controls

UVLO added

Added "Advanced modes" menu with more specific options per mode

Personal throttle protection lock for CAN source or local

Motor temperature limit for charger (DC-DC)

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