



## SHUTTLE CONTROL FIRMWARE UPDATE

*[from CARGO v.1 to v.2 to v.3 to v4 and vice versa]*

### Why to update?

We continuously work on the new features and improvements as well as existing bug fixes. It is recommended to use the last firmware update with appropriate web-editor to obtain the latest features and flawless module's behavior.

It is also possible to downgrade to earlier firmware version back in case you find it better.

For update procedure scroll down. **Warning** – during update procedure you will lose your presets and calibration data. Read your calibration data before the update. You can even leave the calibrator window opened while updating and write that data again.

### FIRMWARE HISTORY AND DOWNLOAD *(as zip archive or uncompressed DFU file)*:

#### SHUTTLE CONTROL CARGO 4 V. 4.0 – 18.03.20 *(FOR OSX, WINDOWS AND DFU)*

[http://firmware.endorphin.es/Shuttle\\_v4\\_update.zip](http://firmware.endorphin.es/Shuttle_v4_update.zip)

- New Cargo4 editor: <https://www.endorphin.es/cargo4>. Use it to have access to all the latest features added.
- Standalone mode without a USB device (all Cargo4 updates by Xavier Galai):
  - Long pressing the UP button for 1 second activates tap tempo mode.
  - Tap the UP button 3 or more times to set the tempo of the internal clock.
  - Internal clock will be generated and applied to all clock based CV generators, arpeggiator, as well as sent over both USB host and device outputs
  - Any of the 'Synchronization' menu entries can be used to generate gates on tempo, random gates, random values, pulsers (decay envelopes) etc.
  - Long press of UP button stops the internal clock. Further tapping 3 or more times starts it again. DOWN button exits the standalone mode into preset select (standard) mode with the clock running in the background. Each new preset selection will immediately fetch the clock and generate CV events if there are any assigned.
- Tap tempo:
  - Use CC#29 on a button, and hit it 3 times to get a tempo clock generated by the Shuttle Control.
  - Internal clock will be generated the same way as in standalone mode above.
  - That clock will drive arpeggiator and all the sync features, without requiring an external MIDI clock.
- Arpeggiator update:
  - Arpeggiator is now 10 notes max instead of 8 (hey, we've born with 10 fingers).
  - Arpeggiator transmits MPE CC (CC#01, CC#74, aftertouch, pitch-bend) in real time – it stays fully expressive.
  - Arpeggiator's velocity added – can be used to control unique per note pulsers (envelopes). Hit hard and you'll have a long ring on the current note. Each time the arpeggiator plays this note, it fires the pulser with its own velocity. You can use that as accents on some arpeggiated notes.
  - Arpeggiator pressure pulser: same thing as velocity, but updated in real time, so you can change accents over the time even with multiple notes, CC#01, CC#74, aftertouch outputs for the arpeggiator, linked to the currently played note value.
  - Reverse pulsers (like before with velocity), 127-value, to allow different accents without requiring an attenuverter/polarizer.
  - Arpeggiator still reacts to shuffle CC#50 and sustain CC#64.
  - Arpeggiator can be paused with CC#28 (flip-flop action).
  - Arpeggiator related outputs will behave exactly like their non arpeggiator counter parts, i.e. pitch bends, pulsers, gates, triggers. This means that you don't need to decide in advance if you need a preset with arpeggiator, just use it, and switch it off if not needed to save CV outputs
- Synchronization update:
  - Synchronization menu has new and updated/renamed entries, all of which can be driven by any clock (internal tap or USB host/device).
  - Random source/stored/quantized 1/16 uni/bi tick as before with 1/16 time intervals and also functioning at 1/16th by default.
  - Added new entries (1/4 and 1/1) to have random values generated, and held for a longer time periods, allowing slower modulations.
  - All Synchronization based generators still react to divider control CC#12, which now can be used to control the following divider interval options: PPQN24 /3 /6 /12 /24 /48 /96.

- Probability outputs are synchronized to a 24PPQN clock (either tap tempo or MIDI driven one), probability outputs roll a dice to know if they will output something.
- That probability roll dice action above is reserved by momentary CC#35, to have denser or sparser gates/triggers.
- Synchronization gate/trigger outputs function the same way as the probability, but always aligned on either 1/4 or 1/16 clocks. In that case their feeling is much more musical and definitely behaves like a random rhythm generator. By default, 1/4 aligned events, generate 1/4th gates, same for 1/16 (i.e. Sync 1/16 Probability Gate).
- Sync 1/16 Probability Gate Random Duration is the same as probability, with random gates duration.
- Short: the gate for random duration by default can be fast, long, or decided by the internal source of uncertainty. Short outputs, always generate shorter random duration events, which are great for glitch music.
- Flip flop gates / special chef favorites: Sync 1/1 - 1/4 - 1/16 Flip-flop Gates - those ones, are going up and down, constantly, aligned on clocks. It's nothing more than a clock aligned square wave. The idea beyond this, is for "gating" the sound. Patch 1/4 into a filter or a wavefolder and then use your modules as usual. Ideally with the arpeggiator, or random gates indeed. You will then have this famous gating sound, with the filter (or folder) going from 5v to 0v on tempo, slower than notes (which are played 1/16). Then use 1/16 based events to modulate something else, e.g. FM index. You'll discover, that the duration 1/16 is not their duration, but the context in which they have to be used.
- Pulser is Easel like pulser which is basically an envelope with instant attack and a slow decay. Looking like a vactrol decay. It is very good for modulations, or driving a VCF/VCA. Its behavior is now inverted – lower velocity/pressure – shorter decay and vice versa.
- MIDI running status is now fully supported, not ignored any longer (thanks Nicolas Bougaieff for persistent request). This may cause skipped notes when notes overlap in applications that use MIDI running status such as Ableton Live, Max MSP, Elektron Octatrak. Overlapping the notes was required to generate the slides with Autolegato portamento mode.
- Auto-legato checkbox on-off. Now portamento may be achieved either with:
  - Auto-legato (checkbox on) with CC#5 when portamento happened only during notes overlap, or
  - Auto-legato off (checkbox off) with CC#5 always without the notes overlap.
- For better compatibility, all the triggers are now fixed to 10ms length (instead of previous optional 1ms or 10ms). That checkbox is not used to turn auto-legato on/off.
- Disable patch changes checkbox also prevents sending the sysex of the preset over MIDI out. That was crucial as if you daisy-chain Shuttle Controls and change presets on one, that caused presets change on other being in return MIDI feedback loop.
- Minor animation fixes and new startup animation :)
- "READ ALL PRESETS" button now deactivated but will be fixed soon
- New factory presets updated:
  - 1 – Beatstep Pro: MIDI ch 1/2 and 10 for drums,
  - 2 – Teenage Engineering OP-Z: all 8 channels and clock
  - 3 – Sensel Morph (with Thunder overlay) / Roli Seaboard: MPE mapping, use arpeggiator
  - 4 – Elektron Octatrak: MIDI channels 9-15 and sync
  - 5 – Synced-random CV generators self-generated patch
  - 6 – Rando- random CV generators self-generated patch

### **OLDER VERSIONS OF THE FIRMWARE BELOW:**

#### **Shuttle Control Cargo 3 v. 3.9 R2 – 28.06.19 (for OSX, Windows and DFU)**

<http://firmware.endorphin.es/Shuttle v3 OSX update.zip>

##### **v.3.9 (28.06.2019) R2 beta:**

- Fixed USB initialization endpoints that enabled to make the Shuttle Control working with Sensel Morph (fix by Xavier Galai)

##### **v.3.9 (14.03.2019) R1:**

- Fixed ANY NOTE for Gate Note uni/bi: when a few notes were pressed together and one of them was depressed meanwhile that caused ANY NOTE off (thanks Nicolas Bougaieff for the hint)

##### **v.3.8 (24.12.2018) R9 beta:**

- Fixed 1v/oct + pitchbender mode: before pitchbender applied to already pressed note and all upcoming notes were not influenced to already set pitchbender state (thanks Nicolas Bougaieff for the hint)

##### **v.3.8 (23.12.2018) R8:**

- Fixed auto-legato (now pitch CV slides to another overlapped note fully at a constant speed even if first note already released (thanks Nicolas Bougaieff and Mario Schönhofer for the hint)
- 'Apply velocity to AD/AR envelopes (fw. v3.6+)' checkbox when ON doesn't influence on all types of PULSER envelopes anymore (thanks Nicolas Bougaieff for the hint)

##### **v.3.8 (20.11.2018) R6:**

- Fixed polyphony allocation when ANY VOICE generator added polyphony increased to maximum (thanks Beat Müller for the hint)
- On pressing physical preset buttons on the module, Shuttle Control sends Program Change with sysex preset information on MIDI channel 1 on both USB-MIDI outputs for integration with Shuttle editor for Lemur (thanks Nicolas Bougaieff for the hint)

##### **v.3.8 (19.10.2018) R5:**

- Gate re-triggering added in mono modes when notes played in legato/overlapped (thanks Louis Warynski for the hint)

#### **v.3.8 (28.06.2018) R4:**

- Fixed bug with CC messages when a few smooth CC outputs make module slow that also caused module to skip gates/triggers sometimes

#### **v.3.8 (13.01.2018) R2 final release:**

- Portamento/slew added for dynamic smoothing CC messages. CC#6 is reserved for slew amount. CC#6=0 or unchanged on power-up gives default smoothing (fast, but no steps). CC#6=127 gives maximum 2-3 seconds of smooth CC value change on a certain MIDI channel (thanks Iftah Gabbai for the hint, testing and video).
- Fixed monophonic notes allocation when mono and cycling poly setups occur in same preset (thanks Pauk for the hint)
- Fixed BPM clock: corrected to unipolar 0...+5V output (thanks Helmut Stant for the hint)

#### **v.3.8 (12.11.2017) R1 release:**

- MIDI clock delay eliminated. Initially that delay was set manually to a few extra samples to fit Machinedrum's audio output while MD's MIDI clock advanced ahead its audio out (thanks Alex Angst for the reminder)

#### **v.3.8 (07.11.2017) initial:**

- Increased dividers for MIDI Clock sync'd LFOs for more musical values (PPQN: /12, /24, /48, /96) so that LFO are slower (thanks Moritz Scharf for the hint)
- CC#14 is reserved for setting the amplitude of LFOs (tap, sync, cc based). By default (when no CC#14 is sent or CC#14 value is 127) is set to maximum (full amplitude). CC#14 value of 0 corresponds to silent output of certain LFO (thanks Greg Sullivan for the hint)
- Shuttle start-up animation updated. Shows current firmware version on power-up
- Only reserved CC#48 is accepted from MIDI Channel 10. All rest reserved CC numbers can be accepted from a certain set channel

#### **v.3.7R (30.09.17 non-public beta):**

- MPE implementation (thanks Roli team and Konstantin Hess especially)
- Auto-legato is always on. Same checkbox when on – enables all triggers set to 10ms instead to default 1ms. In v.3.5-3.6 works as auto-legato on-off (thanks Jon Simon for testing)

#### **v.3.6R (03.08.17):**

- Fixed auto-legato (thanks Iftah Gabbai for hint)
- Fixed pitch CV Calibrator. In case you obtain wrong pitch CV tracking, just enter to Calibrator from web editor and press WRITE (even with default values: <https://www.endorphin.es/cargo3/calibration.php>) or reinstall v.3.6R firmware. Then 1 and 1.2 v/oct tracking becomes proper (thanks Quinn Djinn for report)
- Fixed web MIDI editor and Calibration test notes playback (bugs occurred probably because browser's new security updates. In case you experience long presets upload response with Chrome (under Windows 10), then enable that option: chrome://flags/#enable-midi-manager-dynamic-instantiation. If you experience Chrome hanging, we advice to close webMIDI browser tab earlier than switching off Shuttle Control from your computer (as a temporary solution)
- 1v/oct pitch CV merged with pitch bender of +/-2 semitones range added
- New pitch bender ranges [+/-2 semitones and +/-2 octaves (48 semitones) instead +/-2.5V, 0...+5V and inverted -5...0V unipolar (thanks Iftah Gabbai)
- AD envelope fixed (attack is finished to the end during note off) and sustain pedal works properly with ASR envelope
- All envelopes have expo-curves and apply velocity amplitude via velocity checkbox added (thanks James Holden for hint)
- Elektron Digitakt compatibility (thanks to Andrew Ostler from Expert Sleepers for hint and Hemi C. for testing)
- Sine wave oscillator that follows MIDI notes (thanks Iftah Gabbai). Two generators with root A at 440 hz and 432 hz added
- Added velocity trigger/gates based on voices (thanks Benjamin Kilchhofer). Before were only based on certain note only
- All polyphonic voices allocation rewritten. Now with 'keep voices' checkbox voices rotate each time the polyphony pressed is more than amount of allocated CV voices
- All iConnect+ devices compatibility is confirmed, just on every startup (interface + computer power-up) one have to load every MIDI/USB-MIDI device in iConnect's control panel (thanks Ove Holmqvist for test)
- MIDI clock reserved CC values #12 (divider), #13 (random distribution) and #48 (shuffle) are accepted exclusively from MIDI Channel 10. That is made to avoid issues with other devices, e.g. Octatrak whose CC#48 mapped on crossfader slider (thanks Leonardo Mirabal for hint)
- Checkbox added to disable Program change (presets switch) in Shuttle Control for a certain preset. If checkbox is enabled, then from that preset is impossible to switch to another preset or make preset dump (thanks Hemi C.)

#### **v.3.5:**

- Auto-legato SH-101 alike (thanks Christo Dessau). When checked for preset, then in all mono modes in current preset will be slide (with portamento amount defined by CC#5) only when you play legato (upcoming NOTE ON message comes earlier than previous NOTE OFF is received)
- Fixed 1v/oct pitch CV merged with pitch bender of +/-2 octaves range

#### **v.3.4:**

- LFO controlled by MIDI clock. Start/stop/continue doesn't influence the frequency, however after start/continue all LFOs are re-synchronized. Same as with random CV generators (controlled by MIDI clock), CC#12 is reserved for choosing the divider of incoming MIDI clock same as with random CV generators
- All notes off or 0xFF (system reset) commands (usually sent from DAW) don't reset pitch, CC and rest generators values at CV outputs

- 1v/oct pitch CV merged with pitch bender of +/-2 octaves range added

#### v.3.3:

- Arpeggiator. Tempo is continuously generated under incoming MIDI clock (Start/stop/continue do not work here). CC#11 is reserved for choosing the divider for incoming MIDI clock (By default 1/16 [PPQN/6]. If CC#11 is from 0 to 31, then 1/32 [PPQN/3]. If from 32 till 63, then 1/16 [PPQN/6]. If from 64 till 95, then 1/8 [PPQN/12], and if from 96 till 127, then 1/4 [PPQN/24]. CC#50 is reserved for arpeggiator's shuffle (no shuffle at startup or if no CC#50 value was sent). CC#64 is reserved for sustain pedal (for arpeggiator's triggers/gates as well as for pitch/notes sequencing)
- Bank/presets reverse retrieve from Shuttle Control right into Web editor
- Various random CV generators that are generated under incoming MIDI clock. Start/continue enables them to generate and Stop makes them pause. Same as with CC#11 in arpeggiator, CC#12 here reserved for choosing the divider for incoming MIDI clock (1/32 [PPQN/3], 1/16 [PPQN/6], 1/8 [PPQN/12], and 1/4 [PPQN/24]). CC#13 is reserved for random CV distribution (for quantized and stored voltage generators)
- Save/load from/to cloud buttons of Web-editor are hidden on mobile browsers. Minor cosmetic edits to Web-editor
- 'Any voice' added for polyphonic modes for CV/Gate
- Additional pitch CV mode added that combines 1v/oct pitch CV merged with pitch bender (range: +/-1oct)

#### v.3.2:

- fixed all clock outputs shuffle – zero shuffle by default or when CC48/49=0. Also minor fix with Tap clock.

#### v.3.1:

- PPQN/96 divider works properly divided by 96 (was 128 before)

#### v.3.0 (Cargo 3 release):

- all notes lists shifted: C notes correspond to integer voltage values in 1v/oct mode. C3 corresponds to middle note (zero volts). MIDI note numbers acceptance: 0-120
- all notes correspond exact octaves as in Steinberg Cubase or Ableton Live piano-rolls
- Liine Lemur/Max MSP integration in terms of presets editing
- reverse preset sysex dump
- 'program change' message changes the preset number
- pitch CV calibrator to eliminate DAC scaling error for every of 16 CV outputs
- consequent notes generator for oscillators 1v/oct tuning
- probability and velocity based trigger/gates
- envelope and pulser function generators for simple AD/ASR actions
- fixed clock output
- shuffle for all clock generators
- new Fibonacci sequence tap-based clock generator
- more noise generators (brown, pink, 808 inspired noise sources useful for drum synthesis)
- more PPQN dividers added incl. separate trigger events for certain transport commands (start, stop, continue)
- source of uncertainty inspired random voltage generators incl. stored, quantized and fluctuating randomness
- polyphonic notes allocation modes
- named as 'Shuttle Control v3' in the list of your MIDI devices
- new startup animation :)

### Shuttle Control v.2.0.16– 281215R

[http://firmware.endorphin.es/Shuttle Control v2.0.16 281215.zip](http://firmware.endorphin.es/Shuttle%20Control%20v2.0.16%20281215.zip)

[http://firmware.endorphin.es/Shuttle Control v2.0.16 281215.dfu](http://firmware.endorphin.es/Shuttle%20Control%20v2.0.16%20281215.dfu)

[http://firmware.endorphin.es/Shuttle Control v2 OSX v2.0.16.zip](http://firmware.endorphin.es/Shuttle%20Control%20v2%20OSX%20v2.0.16.zip) - for OSX

- MIDI Sync code re-written. Now all output MIDI Sync pulses from Shuttle Control are sample-to-sample accurately synchronized to incoming MIDI Sync. Fine-tuned to work perfect with Elektron® gear along with any native based DAWs. In case you obtain shifted clock output in relation to the notes played from the sequencer (e.g. 1/16 notes triggered with PPQN/6 MIDI Sync), simply press (send) STOP command on your sequencer/DAW in the beginning of your session and afterwards the clock will be synchronized.
- Shuttle Control now works with Elektron® TM-1 USB-MIDI interface out of the box (turbo mode is not supported).
- Polyphonic modes (for 2-8 voices) revised. Now the voices are allocated in cycling order thru the CV outputs in the manner as was introduced in first Oberheim and Sequential Circuits polyphonic synthesizers to avoid voices overlap and giving a natural polyphonic response. When new upcoming note comes in case all voices are busy (on), the place for this voice is taken (stolen) instead of the first pressed note and so on.

### Shuttle Control v.2.0.2– 241115R

[http://firmware.endorphin.es/Shuttle Control v2.0.2 241115.zip](http://firmware.endorphin.es/Shuttle%20Control%20v2.0.2%20241115.zip)

[http://firmware.endorphin.es/Shuttle Control v2.0.2 241115.dfu](http://firmware.endorphin.es/Shuttle%20Control%20v2.0.2%20241115.dfu)

- New editor with new features. V.2 editor isn't compatible with v.1 module's hardware and vice versa.
- Bi-directional host>device, device>host and host>host (host loopback) MIDI data transfer (incl. MIDI sync). You may play notes from USB-MIDI keyboard and besides outputting CV you may send all MIDI signal (or sync) into your DAW (PC/MAC/iOS) or vice versa. You may also return all sent MIDI signals from your MIDI keyboard to same MIDI output that acts as a midi thru to chain other MIDI devices. Shuttle module may become a bit warmer than earlier when using that feature.
- Tap LFO generators added. All the waveforms are same as LFO CC generators but controlled/synced from a three and more taps of a certain MIDI note.

- Fixed MIDI sync stability. All dividers are now properly synced to the main MIDI sync source to ensure stable precise synchronization from a sequencer or other MIDI devices (especially after multiple times of playback/restart commands etc).
- Start and Stop behavior change. MIDI clock outputs pulse triggers only after start (play/continue) is pressed and shuts off when stop is pressed nevertheless sends MIDI DAW MIDI sync continuously when stopped or no.
- More divisions for synchronization and Tap clock added.
- Velocity note added to obtain velocity from a certain MIDI note. That type of event is useful for making drum mappings with velocity/accent.
- All gate/trigger events now may be either uni-polar (0&+5v as before) but also bi-polar (-5v at 'off' and +5V at 'on' state). That may be useful when you need to have 10Vpp pulse signals, which you may offset afterwards.
- CC messages now can be either 'smoothed' (interpolated to 12-bit values without audible steps) or 'stepped' (direct 7-bit CC values).
- CC#0 is replaced with 'any CC' in all lists where output CV is based on certain CC number/value.
- 'Any note' added in any list where event is based on a certain MIDI note.
- Portamento control in monophonic mode fixed. It is smooth now over the whole range of CC#5. Maximal sweep to note time extended.
- Original PID/VID of Shuttle Control licensed by USB-IF.
- Factory presets are loaded at web-editor startup by default. Clear factory presets button added.
- Fixed issue with SysEx dumps upload via USB CoreMIDI at Mac OS X.
- Shuttle Control now identifies as 'Shuttle Control v2' in MIDI devices and hardware list:

### **Shuttle Control v.1.0.1 – 150615R**

[http://firmware.endorphin.es/Shuttle\\_Control\\_v1.0.1\\_150615.zip](http://firmware.endorphin.es/Shuttle_Control_v1.0.1_150615.zip)

[http://firmware.endorphin.es/Shuttle\\_Control\\_v1.0.1\\_150615.dfu](http://firmware.endorphin.es/Shuttle_Control_v1.0.1_150615.dfu)

- Fixed trigger note response output messages for proper drum mapping.

### **v.1.0.**

- Initial launch.

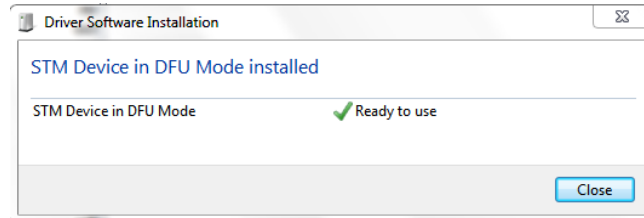
# UPDATE PROCEDURE UNDER WINDOWS USING DFU UTIL.

## **PREFERRED OPTION. FOR MAC OS X UPDATE SCROLL DOWN.**

**WARNING:** after the update procedure all your presets and calibration data will be lost – you have to re-generate them with the new Cargo4 editor. You can leave calibration window open to flash back calibration data.

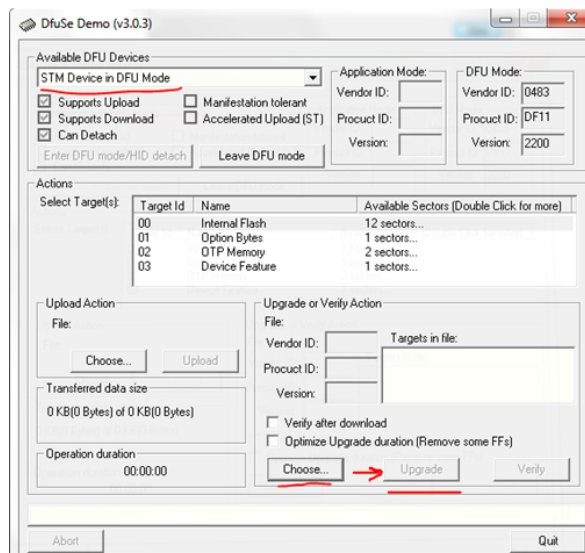
### UPDATE PROCEDURE ALGORITHM

- 1) Download and install free **DfuSe** USB device firmware upgrade STMicroelectronics extension (STSW-STM32080) from official STMicroelectronics web-site:  
<http://www.st.com/web/en/catalog/tools/FM147/CL1794/SC961/SS1533/PF257916>  
Current version is 3.0.3 (3.0.5). No SMS or registration required to download the installer. It is recommended to have Windows XP or later version of operating system.
- 2) Download the latest Shuttle Control firmware update file (see download links above).
- 3) Turn off your Shuttle Control (or the whole modular rack in case Shuttle is powered from its busboard). Connect your Shuttle Control module to your PC via **to device** connector with supplied USB cable.
- 4) Power-on the Shuttle Control (or modular system where Shuttle powers from busboard) **while holding UP button** on the Shuttle Module. Hold the button up to 5 seconds after powered on and then release. Shuttle will be loaded into **DFU** (Direct Firmware Update) mode – no animation is started, the display will not light up and some of LEDs will randomly light up, however Windows will detect some new plug-n-play generic USB device which will be appear in your Windows Devices list (**STM32 Device in DFU Mode / STM32 BOOTLOADER**). Wait for a while until Windows installs driver for it – the usual procedure just like you insert ordinary USB-flash drive first time in your computer.



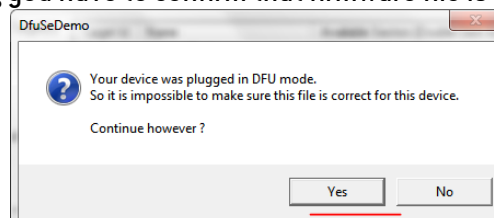
Don't afraid to see Shuttle Control being in DFU mode – any time you can exit it by turning Shuttle off and on again.

- 5) After Windows successfully installs drivers for new devices (they should be installed automatically after you installed DfuSe software) you may go to: **Start > All Programs > STMicroelectronics > DfuSe > DfuSe Demonstration**. You will see **STM Device in DFU Mode** in the available DFU Devices list:



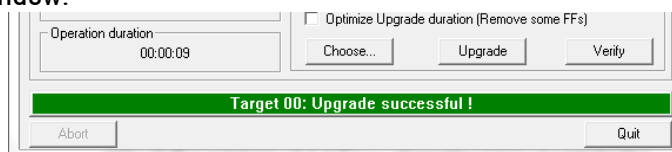
If your Shuttle still does not appear in the available DFU devices list, go to Control panel > Device Manager and find there STM32BOOTLOADER device marked with '!' sign. That means drivers were not automatically installed for it. Simply double click on that device and press **Update driver > Choose manually** and choose the folder where you have installed DfuSe before (usually it is located at *C:\Program Files (x86)\STMicroelectronics\Software\DfuSe v3.0.5*). Afterwards the driver will be installed and you may repeat that step 5) again.

- 6) After your Shuttle appeared in available DFU devices list, press **ChooseE** from **Upgrade or Verify Action** part of the window and after the new window will open – choose new firmware file (DFU) you've downloaded (see the links with firmware above).
- 7) Afterwards press **Upgrade** and wait until the operation will be finished (usually up to 10 seconds). Before updating you have to confirm that firmware file is correct for that device.



**Don't disconnect or turn off the Shuttle during that procedure!**

- 8) After upgrade operation is finished you will see successful green upgrade message in the bottom of DfuSe window:



You may now quit DfuSe Demo and turn your Shuttle Control off and on again. If it's powered with own PSU – just turn the switch off and on. If it's powered from your powered busboard – simply turn the power of your modular rack off and on again

- 9) Your Shuttle is ready for take-off. At start-up you will see some updated loading animation showing the firmware version. You may use new v.4 editor <https://www.endorphin.es/cargo4/> with all new listed above features. You will see your Shuttle now as Shuttle Control v4 in your MIDI devices list.
- 10) After the update Shuttle needs your presets to be loaded. You should re-generate them (or make own custom) with new editor at <https://www.endorphin.es/cargo4/> (green button **SAVE ALL PRESETS** to get all factory ones to start with).
- 11) For **downgrade** (installing v3 or v2 or vice versa) – simply follow the same procedure just uploading other firmware file. You may upgrade or downgrade as many time you wish.

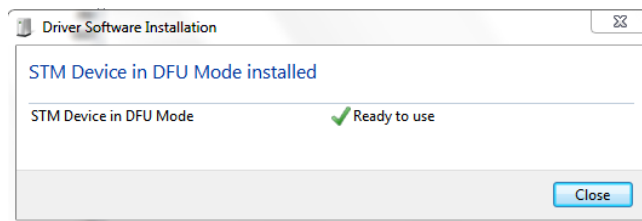
# ALTERNATIVE UPDATE PROCEDURE UNDER WINDOWS USING STM32CUBE PROGRAMMER.

## FOR MAC OS X UPDATE SCROLL DOWN.

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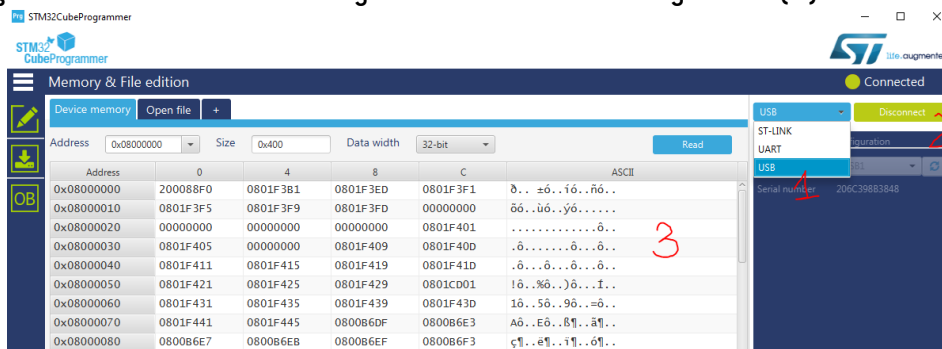
### UPDATE PROCEDURE ALGORITHM

- 1) Download and install free **STM32CubeProgrammer software for all STM32** (STM32CubeProg) from official STMicroelectronics web-site: <https://www.st.com/en/development-tools/stm32cubeprog.html>  
Current version is 2.3.0 It is recommended to have Windows 10 or later version of operating system.
- 2) Download the latest Shuttle Control firmware update file (see download links above).
- 3) Turn off your Shuttle Control (or the whole modular rack in case Shuttle is powered from its busboard). Connect your Shuttle Control module to your PC via **to device** connector with supplied USB cable.
- 4) Power-on the Shuttle Control (or modular system where Shuttle powers from buss board) **while holding UP button** on the Shuttle Module. Hold the button up to 5 seconds after powered on and then release. Shuttle will be loaded into **DFU** (Direct Firmware Update) mode – no animation is started, the display will not light up and some of LEDs will randomly light up, however Windows will detect some new plug-n-play generic USB device which will be appear in your Windows Devices list (**STM32 Device in DFU Mode / STM32 BOOTLOADER**). Wait for a while until Windows installs driver for it – the usual procedure just like you insert ordinary USB-flash drive first time in your computer.



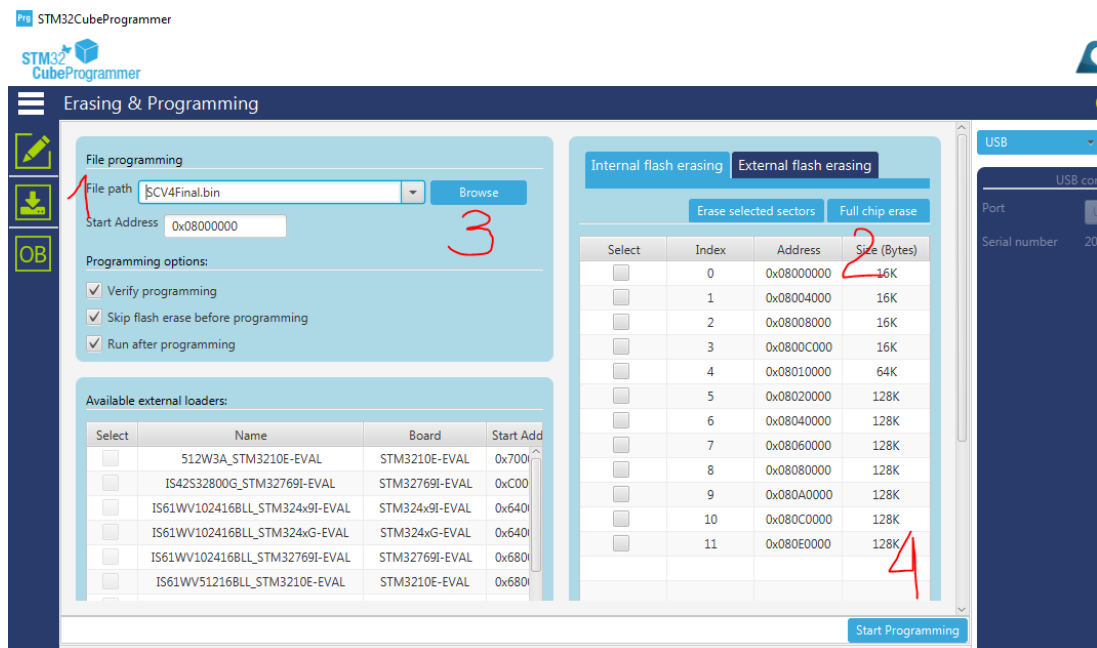
Don't afraid to see Shuttle Control being in DFU mode – any time you can exit it by turning Shuttle off and on again.

- 5) After Windows successfully installs drivers for new you may launch **Start > All Programs > STM32CubeProgrammer**. In the top right list select **USB** (1) and press green **CONNECT** button (2) right to it. In the center window you will see device memory loaded (3):





- 6) After successful step 5) above, press **ERASING & PROGRAMMING** button in the left column with the down arrow (1):



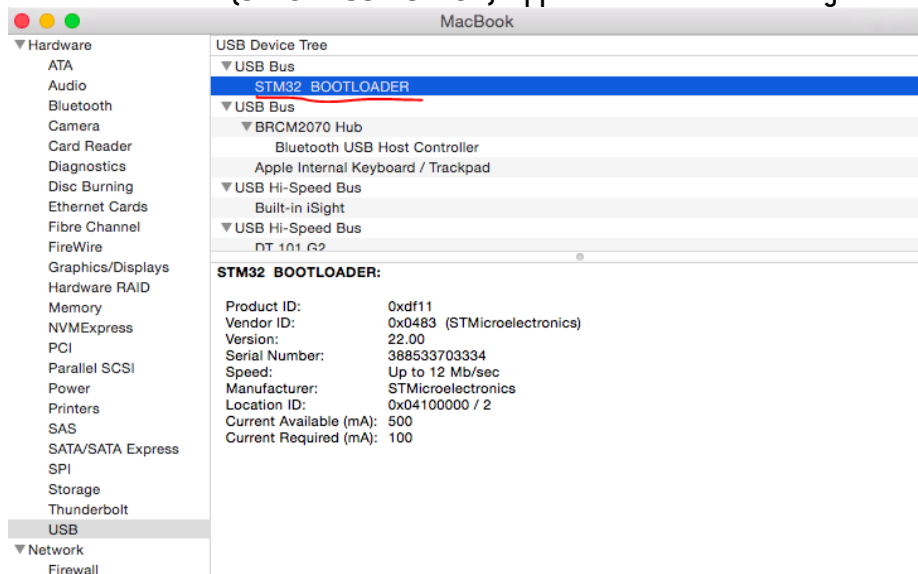
- 7) Press **FULL CHIP ERASE** (2) and wait for 10-20 seconds until the chip will be fully erased.
- 8) Press **BROWSE** (3) button and select the path of the binary file from the archive the latest firmware you've downloaded. You can select either binary, hex or DFU file.
- 9) Press **START PROGRAMMING** (4) and after 5-7 seconds your Shuttle Control will reboot with the new firmware. You may now press a few times OK to the appeared windows and close Cube Programmer.
- 10) Your Shuttle is ready for take-off. At start-up you will see some updated loading animation showing the firmware version. You may use new v.4 editor <https://www.endorphin.es/cargo4/> with all new listed above features. You will see your Shuttle now as **Shuttle Control v4** in your MIDI devices list.
- 11) After the update Shuttle needs your presets to be loaded. You should re-generate them (or make own custom) with new editor at <https://www.endorphin.es/cargo4/> (green button **SAVE ALL PRESETS** to get all factory ones to start with).
- 12) For **downgrade** (installing v3 or v2 or vice versa) – simply follow the same procedure just uploading other firmware file. You may upgrade or downgrade as many time you wish.

# UPDATE PROCEDURE UNDER MAC OS X. FOR WINDOWS UPDATE SCROLL UP.

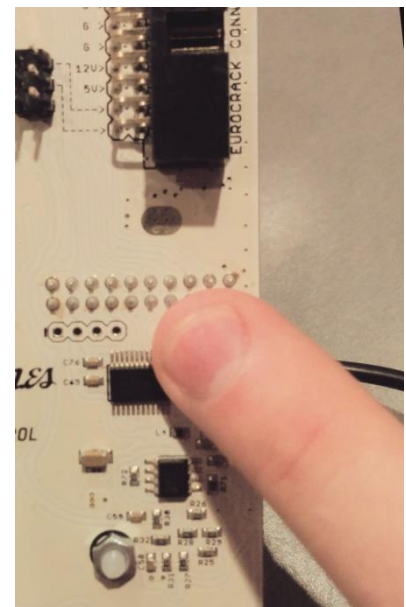
**THAT METHOD WORKS ON ALL MAX OS X VERSIONS EXCEPT LATEST CATALINA.**

**WARNING:** after the update procedure all your presets and calibration data will be lost – you have to re-generate them with the new Cargo4 editor. You can leave calibration window open to flash back calibration data.

- 1) Download and unpack the recent firmware archives from the history above into one folder.
- 2) Turn off your Shuttle Control (or complete modular rack in case Shuttle is powered from your rack's bus-board). Connect your Shuttle Control module to your MAC via **to device** connector with supplied USB cable.
- 3) Power-on the Shuttle Control (or modular system where Shuttle powers from bus-board) **while holding UP button** on the Shuttle Module. Hold the button up to 5-7 seconds after powered on and then release. Shuttle should be loaded into **DFU** (Direct Firmware Update) mode – no animation is started, the display will not light up and some of LEDs will randomly light up, however MAC OS X should detect new plug-n-play generic USB device which will be appear in your Hardware>USB list (**STM32 BOOTLOADER**): Applications > Utilities > System Information:



Sometimes when you release the UP button the Shuttle starts to play animation – it means it's not put in DFU mode. There is a simple however a bit weird solution we found out: while turning the Shuttle on with UP button pressed try to put the finger on the backside area of the Shuttle as shown on the photo:



- 4) After you ensure the **STM32 BOOTLOADER** is present in your hardware list, navigate to 'Shuttle\_v1\_v2\_MAC\_OSX\_update' folder you unpacked before.
- 5) To load v2 firmware on your Shuttle – simply double click on the following command file: **Shuttle\_v1\_v2\_MAC\_OSX\_update\update\_shuttle\_v2.cmd.command**  
After clicking the command you may receive the message that you are not allowed to launch third party apps on your MAC. Simply follow [that instruction](https://rampagedev.wordpress.com/os-x-tweaks/app-cant-be-opened-because-it-was-not-downloaded-from-the-mac-app-store-fix-2/) to enable that:  
<https://rampagedev.wordpress.com/os-x-tweaks/app-cant-be-opened-because-it-was-not-downloaded-from-the-mac-app-store-fix-2/> and next time and launch the command simply confirm when launching it.
- 6) The Terminal window will be opened with the update process:



```

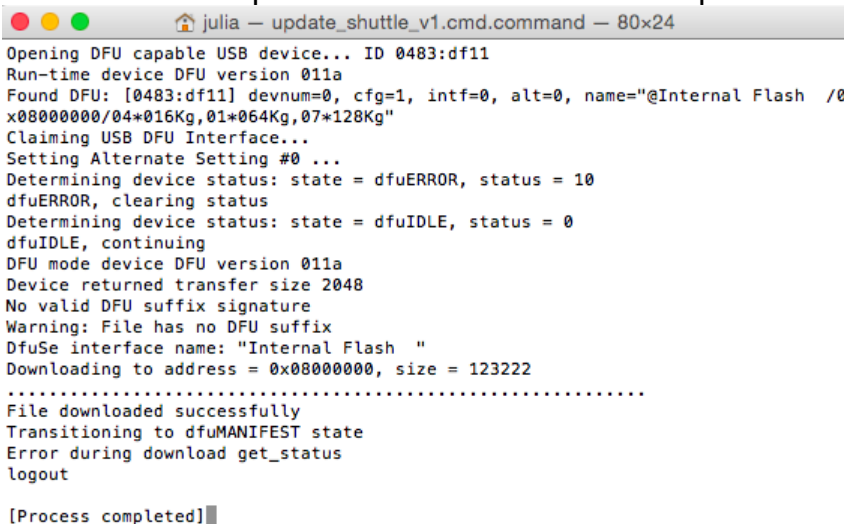
julia — update_shuttle_v1.cmd.command — dfu-util — 80x24

Copyright 2005–2008 Weston Schmidt, Harald Welte and OpenMoko Inc.
Copyright 2010–2012 Tormod Volden and Stefan Schmidt
This program is Free Software and has ABSOLUTELY NO WARRANTY
Please report bugs to dfu-util@lists.gnumonks.org

Filter on vendor = 0x0000 product = 0xdf11
Opening DFU capable USB device... ID 0483:df11
Run-time device DFU version 011a
Found DFU: [0483:df11] devnum=0, cfg=1, intf=0, alt=0, name="@Internal Flash /0
x08000000/04*016Kg,01*064Kg,07*128Kg"
Claiming USB DFU Interface...
Setting Alternate Setting #0 ...
Determining device status: state = dfuERROR, status = 10
dfuERROR, clearing status
Determining device status: state = dfuIDLE, status = 0
dfuIDLE, continuing
DFU mode device DFU version 011a
Device returned transfer size 2048
No valid DFU suffix signature
Warning: File has no DFU suffix
DfuSe interface name: "Internal Flash "
Downloading to address = 0x08000000, size = 123222
.....

```

- 7) After roundabout 10 seconds the process will be finished. Don't interrupt it.



```

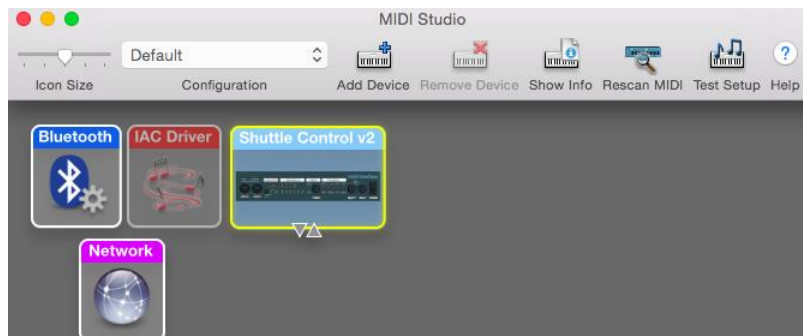
julia — update_shuttle_v1.cmd.command — 80x24

Opening DFU capable USB device... ID 0483:df11
Run-time device DFU version 011a
Found DFU: [0483:df11] devnum=0, cfg=1, intf=0, alt=0, name="@Internal Flash /0
x08000000/04*016Kg,01*064Kg,07*128Kg"
Claiming USB DFU Interface...
Setting Alternate Setting #0 ...
Determining device status: state = dfuERROR, status = 10
dfuERROR, clearing status
Determining device status: state = dfuIDLE, status = 0
dfuIDLE, continuing
DFU mode device DFU version 011a
Device returned transfer size 2048
No valid DFU suffix signature
Warning: File has no DFU suffix
DfuSe interface name: "Internal Flash "
Downloading to address = 0x08000000, size = 123222
.....
File downloaded successfully
Transitioning to dfuMANIFEST state
Error during download get_status
logout

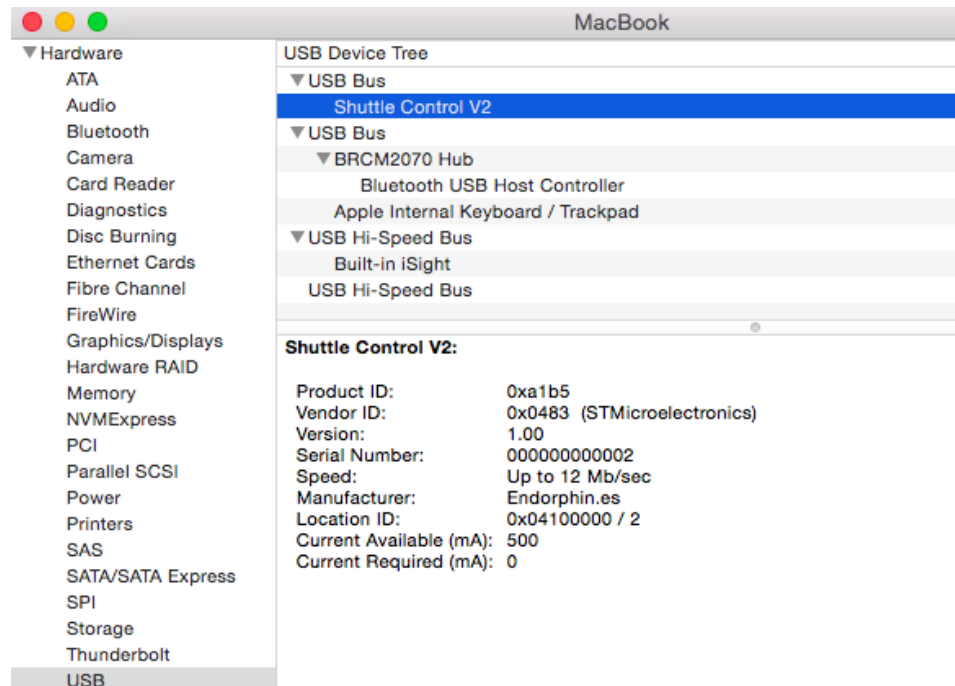
[Process completed]

```

- 8) Once the process has completed, Shuttle will reboot with the new V2 firmware.  
NOTE: you may have 'Error during download get\_status' message at the end of the upgrade procedure. This is normal. Close the Terminal window afterwards.
- 9) Your Shuttle is ready for take-off. At start-up you will see some updated loading animation. You may use Cargo2 editor with all new listed above features. You will see your Shuttle now as 'Shuttle Control v2' in your MIDI Studio (Applications > Utilities > Audio MIDI Setup > CMD+2 (Show MIDI studio):



and in Hardware > USB list:



- 10) Your Shuttle is ready for take-off. At start-up you will see some updated loading animation showing the firmware version. You may use new v.4 editor <https://www.endorphin.es/cargo4/> with all new listed above features. You will see your Shuttle now as Shuttle Control v4 in your MIDI devices list.
- 11) After the update Shuttle needs your presets to be loaded. You should re-generate them (or make own custom) with new editor at <https://www.endorphin.es/cargo4/> (green button **SAVE ALL PRESETS** to get all factory ones to start with).
- 12) For downgrade (installing v1 from v2) – simply follow the same procedure from the beginning just clicking on ***Shuttle\_v1\_v2\_MAC\_OSX\_update\update\_shuttle\_v1.cmd.command*** command file on the step 5). You may upgrade or downgrade as many time you wish.

Special thanks go to Samuel Montassier from Audiothingies (<http://www.audiothingies.com>) for MAC OS X firmware update script.