Quad Operator 1.0.4 Update Instructions

This update is recommended for all users!

***Note to Algo users*:** when firmware updating, it's also possible you may lose your saved modulation presets, so proceed with caution if you have not made note of those preset settings elsewhere!

How to Update

Mac Users

The only method available is the Update Script method. It requires you only to download our update .zip and requires no additional downloads.

Windows Users

There are two methods for updating! Each is a bit of a pain in its own right, but have some important differences:

> Method A. The DfuSe Demo method is recommended for users who are able to install software on their computers and are okay giving their email address to ST, the makers of the DfuSe program.
>
> Method B. The Update Script method is also available, but involves more steps. It does rely on an additional 3rd party program called Zadig, which is open source and requires only a download and no install.

Revision History

1.0.4

- Reduce tracking error in 1 volt per octave tracking of "1v / oct" as well as "ratio 1", "ratio 2", "ratio 3", "ratio 4" inputs in free mode.
- Prevent VCA leaking by setting an operator's VCA gain to true 0 for any input voltage below 50 mV on it's "Gain X" CV input

- Slightly widen “Detune” knobs virtual detents

1.0.3

update instructions (hosted on dropbox)

- Fixes the behavior of the “LF FM” input to that specified in the manual, which was not properly implemented previously

1.0.2

update instructions (hosted on dropbox)

- Resolves issues of input CV bleed across various CV inputs by properly allowing analog-to-digital conversion circuits more time to settle to the correct value. Not all users experienced this issue.

1.0.1

This update was flawed, and so is not recommended. We have removed access to this version of the firmware.

- This firmware update contained a bug and is NOT recommend

Update Script Method (Mac and Windows)

1. Download the latest firmware update .zip file and unzip it: https://cdn.shopify.com/s/files/1/0251/2506/0674/files/Quad_Operator_v1.0.4_update.zip?v=1590105600
2. Attach the Quad Operator to your computer with a micro USB cable. Some micro USB cables are power-only (and will not work to transfer data in this case) and are not well marked to indicate that, so I suggest one that you have used for transferring data to a phone or other device previously to be sure.
3. Please ensure your Quad Operator is attached to the power bus as in normal operation (the micro USB cable will not power the module). Algo expander users may have their Algo attached or unattached to the Quad Operator, it makes no difference to the firmware update.

4. Restart the Quad Operator in SYSBOOT mode so that it will accept firmware updates:
    - Press and hold the SYSBOOT and RESET buttons on the back of the module.
    - While holding the SYSBOOT button for a moment longer, release the RESET button.
5. Windows users—if you have not previously done so for the purposes of a firmware update, you must download https://zadig.akeo.ie/ to reinstall the USB driver for "STM32 BOOTLOADER":
    - This video (from another project, you can skip to 5:02) shows you how to perform all the right clicks in Zadig: https://www.youtube.com/watch?v=WzTq5ZWdhRM&feature=youtu.be&t=302
6. Run the update command file for your OS. Within the folder created when unzipping the update .zip file, there is a subfolder for each of Windows and Mac OS. To run the update…
    - For Windows—double click the .cmd file or copy-paste its contents into the command line.
    - For Mac OS—in the MAC_OS_X folder, double click the *update_quadop_v1.0.4.command* file
    - For Linux or other Unix-like—the command presented in the Mac OS .command file can be used with a proper dfu-util install for your OS (your OS's package manager may already have a build of dfu-util available)
7. Once you've run the command update you should
8. Press the RESET button on the back of the module to restart the device with the new firmware
9. Check whether the operator outputs stay in tune when controlled via "1v / oct" in lock mode, and "ratio x" in free mode. You may need to re-run the calibration procedure after some firmware updates.

Understanding the Update Script Transcript

When you run the update script, the printed output is often long and confusing to understand. It may reference errors that occurred and other misleading information. Here's an example below.

In **bold**, you'll see the key piece of information to look for in that transcript, particularly the words "**File downloaded successfully**". Despite what else you might see in the transcript (including various errors), your firmware update has succeeded if you see "**File downloaded successfully**" toward the end.

Here's an example of the update script output:

```
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
/0x08000000/04032Kg,01128Kg,07*256Kg"
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 = 120056
…
File downloaded successfully
Transitioning to dfuMANIFEST state
Error during download get_status
```

DfuSe Demo Update Method (Windows Only)

Please note this method requires you to provide an email address to a third party to download a utility program.

1. Download the latest firmware update .dfu file: https://cdn.shopify.com/s/files/1/0251/2506/0674/files/quadop_v1.0.4.dfu?v=1589302939
2. Attach the Quad Operator to your computer with a micro USB cable. Some micro USB cables are power-only (and will not work to transfer data in this case) and are not well marked to indicate that, so I suggest one that you have used for transferring data to a phone or other device previously to be sure.
3. Download and install the DfuSe Demo program from ST (the makers of the computer chips we use in the Quad Operator):
    - Visit the DfuSe Demo download page, scroll the section titled “Get Software” and click Download.
    - This will require you to give ST your email address and you will receive the download link via email
    - The download will be named *en.stsw-stm32080.zip*. Unzip it, inside you will find an .EXE file such as *DfuSe_Demo_V3.0.6_Setup.exe* (the version number may differ)

- Run *DfuSe_Demo_V3.0.6_Setup.exe* inside the folder *en.stsw-stm32080* after unzipping the .zip file, which will install the DfuSe Demo program on your computer.

4. Restart the Quad Operator in SYSBOOT mode so that it will accept firmware updates:
    - Press and hold the SYSBOOT and RESET buttons on the back of the module.
    - While holding the SYSBOOT button for a moment longer, release the RESET button. You can release the SYSBOOT button after 1 second.
5. Run DfuSeDemo (if you just installed it, it will show in the “Recently Added” Section of the Windows menu. This video walks you through the steps below: https://www.youtube.com/watch?v=Ljb7HQxVSM4
    - Right Under the “Available DFU Devices” section heading, the dropdown menu should list “STM Device in DFU Mode” if the Quad Operator is properly attached via USB and has been properly started in SYSBOOT mode. If you are not seeing this, check the USB connection again (or try a different USB cable). Sometimes the cable connector needs to be fiddled with a little. Retry the step above to run the device in SYSBOOT mode
    - Under the “Upgrade of Verify Action” of the DfuSe Demo screen, click “Choose..” and navigate to the quadop_v1.0.4.dfu file, select it and then click “Open” (note that the video did not properly capture the File dialog pop for this step, which you’ll see when you click “Choose…”)
    - Under the “Upgrade of Verify Action” of the DfuSe Demo screen, click “Upgrade” to begin installing the firmware on the Quad Operator
    - This video shows you how to run DfuSe Demo program and update the Quad Operator:
6. Press the RESET button on the back of the module to restart the device with the new firmware
7. Check whether the operator outputs stay in tune when controlled via “1v / oct” in lock mode, and “ratio x” in free mode. You may need to re-run the calibration procedure after some firmware updates.