



## Unbricking Taranis Radios with OpenTX Operating Systems

### Introduction

A 'bricked' radio is one that is seemingly dead. In most cases, a radio in a bricked state will not respond to the user at when trying to power on the radio. One indicator of a bricked radio is that the speaker will make a distinct 'pop' or 'click' when attempting to power on but does not boot up. Essentially, there is a software problem that is preventing the radio from starting up the operating system, OpenTX. And although OpenTX is a great system, it is still software and is susceptible to bugs, glitches, or corruption.

A question that a Taranis owner may ask is, "What would cause my radio to be bricked?". Well, the answer is, it can be a couple different things. One scenario is when the radio is plugged into a computer either for connection to OpenTX companion or for using simulators. It is important to take care any time a radio is connected to a computer, since the chance for data corruption and glitches increase in these circumstances. This means being aware of things such as having a good, working data-cable, making sure the batteries are charged, and properly ejecting the radio from the computer. Another scenario can be a bad flash of firmware. What we mean by this is that something occurred during the update process, the downloaded firmware files were corrupted, or simply that the wrong firmware was chosen by accident. But the good news is that, often, these problems can be fixed with the flashing process that is a part of using the Taranis radio systems.

The following tutorial is meant to assist users in diagnosing and attempting to rectify a bricked Taranis radio. There may be varying levels of how software issues may present themselves in your radio, ranging from small bugs to a dead radio. The steps in this guide may offer a solution to these issue and help customers avoid the inconvenience of having to send their radio in for service.

### Getting Started

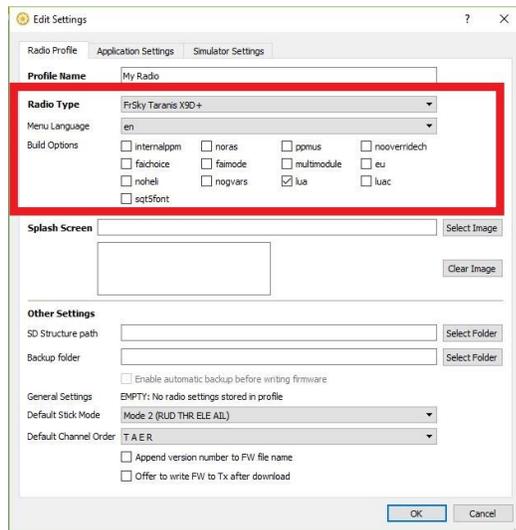
In this guide, the solution to bricked radios revolves around flashing the OpenTX operating system. There are couple different ways to accomplish this and they can be applied to different scenarios. So the first step is to figure out the extent of the radio's issues. For some, you may need to progress through all the methods and some may be fixed by just completing one. So let's take a look at the conditions that you may find your radio in.

1. The first condition applies when you the radio maintains some of its functionality. Some instances that would fall in this category: stuck on splash screen, glitches in the operating system, etc. The main requirement of this condition is access to the radio's 'Bootloader Mode'. If this applies to your radio proceed to '**Method 1**'.
2. The second condition assumes you have no functionality in the radio at all. The radio will not start up normally, nor will it start in Bootloader Mode. In this case proceed to '**Method 3**'.

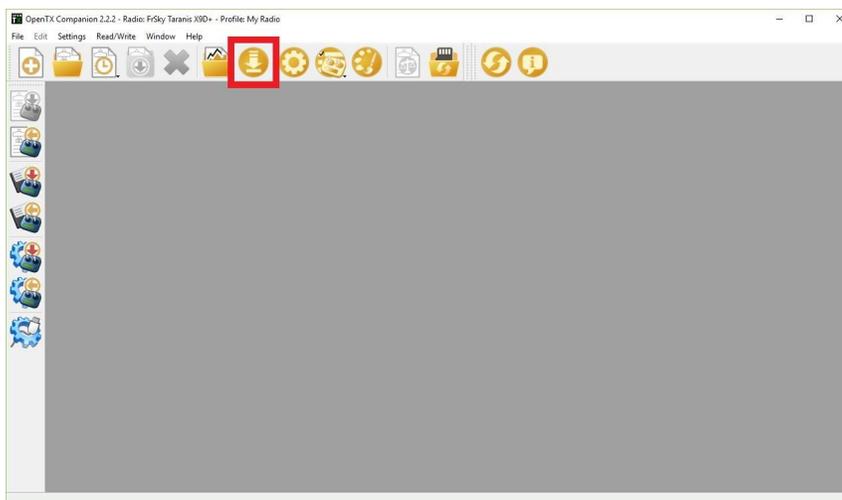
**\*\*Note: This guide assumes the user has familiarity with OpenTX and the flashing process associated with Taranis radios. For more information on the process, please visit the OpenTX website or view other resources that can be found online\*\***

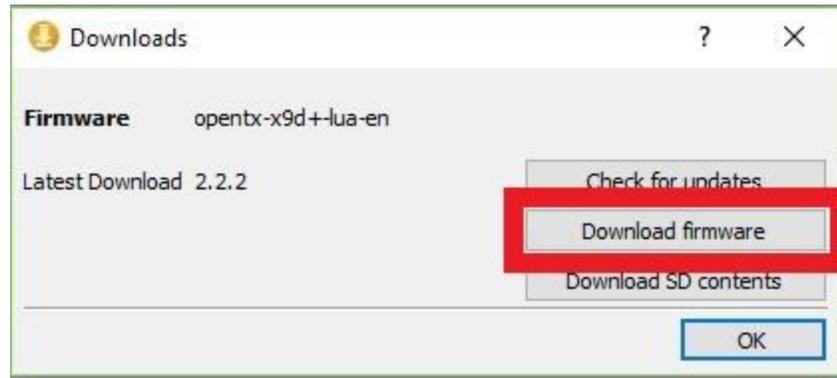
### **Method 1: OpenTX Companion**

1. Download the latest OpenTX Companion application if you have not already done so. You can download the software here: <https://www.open-tx.org/downloads>
2. Start OpenTX Companion
3. In Companion, make sure to check that the applications settings match the radio you are trying to flash to.

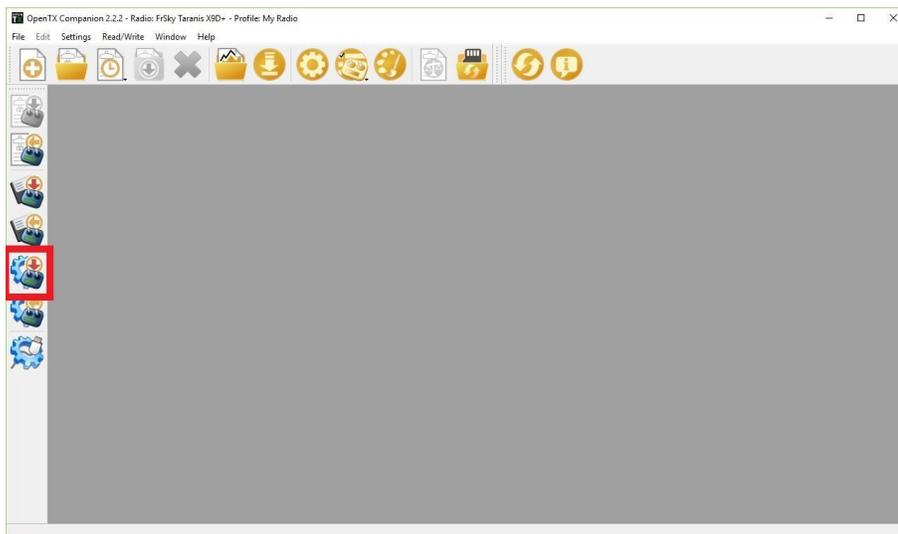


4. Download the latest firmware through the Companion app or by visiting the downloads page of your radio on the FrSky Website.





5. Access bootloader mode on your radio. For the X9D and QX7 radios, you can do this by holding the two horizontal trim tabs inward and powering on the radio (for the QX7, just tap the power button). On the X-Lite, hold down the D-pad (right in the center) and power on the radio.
6. Once in Bootloader mode, connect your radio to you computer. The radio should be picked up as 'FrSky Taranis'. \*Note: Be sure to use a good, data-rated USB cable when connecting\*
7. From the left hand column of icons, choose 'Write Firmware to Radio'. In the pop-up dialogue box choose the correct firmware for your radio.

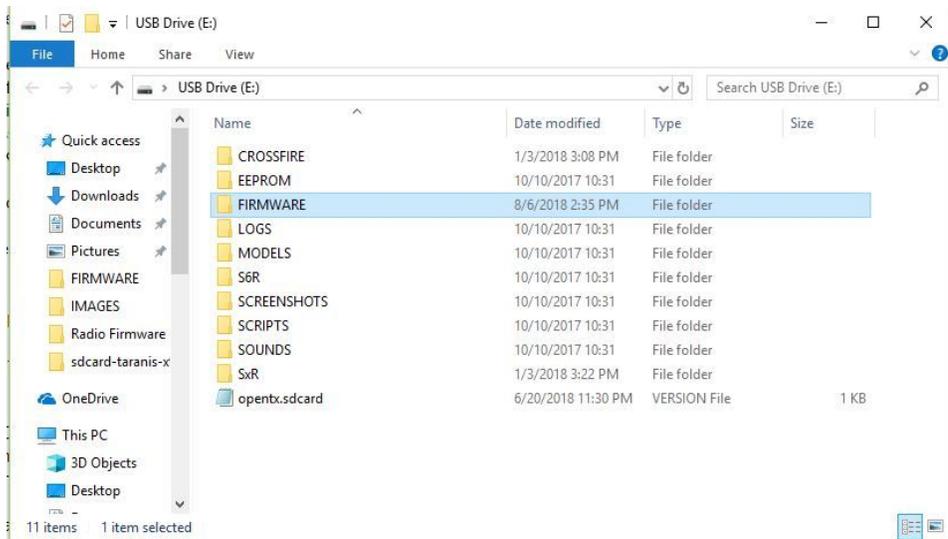


8. Click 'Write to TX'. Wait until the pop-up window says 'Flashing Done' as the progress bar my indicate 100% although the process is not fully completed.
9. Once the flash is complete, close Open TX.
10. 'Eject' the radio from your computer.
11. Unplug the radio and test to see if the radio boots up and confirm that the problem has been resolved.
12. If the radio is still experiencing some issue, proceed to **Method 2**.



## **Method 2: Internal Flash Using an SD Card**

1. Turn the radio on in bootloader mode and plug it into your computer.
2. Open the SD card drive. (It will be the one not named 'FrSky Taranis')
3. In a separate window, locate the firmware file that you downloaded from either Companion or the FrSky Website.
4. Copy and paste that firmware file onto the SD card in the 'FIRMWARE' folder (may be called 'FIRMWARES' in older versions of OpenTX).



5. Eject both drives from the computer and then unplug the radio from the computer.
6. The radio should return to the bootloader menu. Choose 'Write Firmware' to start the flash process.
7. Once completed, select Exit and check that the radio boots up.

## **Alternate Option: Using an SD Card reader**

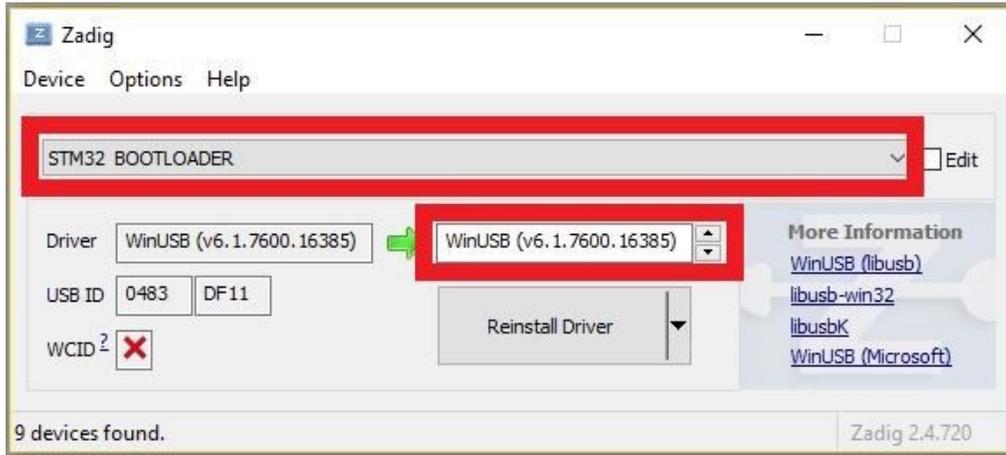
1. Insert SD Card into card reader and plug it into a computer.
2. Follow Steps 2-5 from above.
3. Insert SD card back into radio and turn on bootloader mode.
4. Follow Step 6 and 7 from above

\*If Method 2 still does not resolve the problem, continue to Method 3.\*

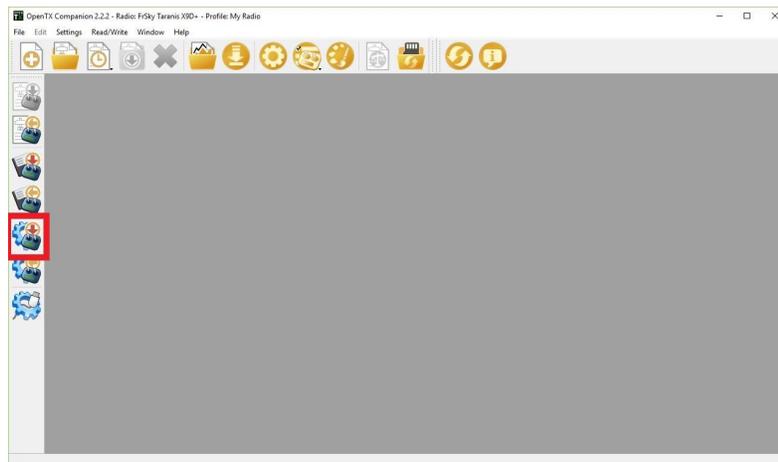
## **Method 3: DFU (Radio off)**

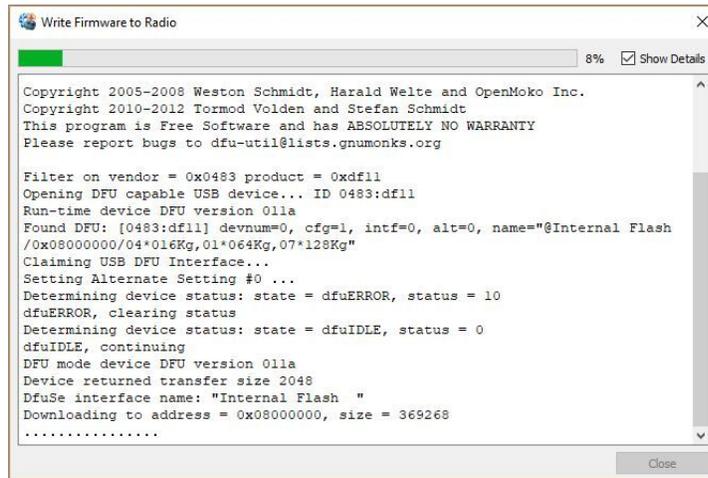
1. Start by plugging the radio into a computer via USB while it is off (we also recommend unplugging the battery for this process). The computer should recognize the device as 'STM32 Bootloader'. If it does not, you may need to install the STM32 bootloader drivers for the device to be recognized.
2. Once you can see the device, start the program Zadig. You can download it from the following link: <https://zadig.akeo.ie/>
3. In Zadig, click 'Options' and then 'List All Devices'.

4. From the drop down menu select 'STM32 Bootloader'



5. Set the target driver to WinUSB.
6. Select 'Change Driver'. Once the program finishes you may now close Zadig.
7. Open the OpenTX Companion application. The latest versions will be able to flash radios in this state so be sure to have the current version of OpenTX.
8. Flash the radio as you would normally, as if the radio was in bootloader mode. You should see that the Companion dialogue box for the writing progress will open up the debug log by default. This lets you know that Companion is flashing using the DFU method. (if the STM32 Bootloader is not detected, check that the driver change in Zadig worked. If not, try again from step 3).





```
Write Firmware to Radio
8% [x] Show Details

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

Filter on vendor = 0x0483 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
/0x08000000/04*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
DfuSe interface name: "Internal Flash "
Downloading to address = 0x08000000, size = 369268
.....

Close
```

9. Once writing is complete, close Companion and eject the STM32 Bootloader device. Reinstall batteries and test radio.

\*Most linux distributions will be able to recognize the STM32 Bootloader. Usually, the 'dfu-util' is also already included in most distributions, but may still need to be installed.\*

\*The latest versions of OpenTX for Mac should also include the 'dfu-util' that is needed for flashing in this method.

**\*If your radio still does not respond to these methods, please contact your nearest FrSky Service center and they can assist you. Visit the FrSky website for information on our service centers.\***