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**When and How To Update the Firmware
for the ShockWave® 3 Sound Module
using the MicroSD Card Bootloader**

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WHEN TO RE-FLASH THE FIRMWARE IN THE SHOCKWAVE 3 MODULE

There are only two occasions when you need to even consider re-flashing the firmware in the **ShockWave 3** sound module.

1. To upgrade the firmware to a more recent release than it was shipped with. The software release number is contained in the header of the label that is on the metallized anti-static bag that the module came in.
2. When instructed to by technical support at Model Sounds Inc. after you have discussed your problems with them and they tell you to.

The firmware inside the processor chip on the **ShockWave 3** sound module is extremely stable and robust. It cannot be damaged by anything the user does to the module in normal use, either when connected to a PC through its USB port or to a radio control receiver.

DO NOT automatically jump to re-flashing the firmware if you are having operational issues with it – it will not help because it will simply replace the firmware with the same version it was shipped to you with. Please contact technical support at contactus@modelsoundsinc.com for help.

HOW TO UPDATE THE FIRMWARE IN THE SHOCKWAVE 3 MODULE

Firmware is the program code that runs in the processor chip on the **ShockWave 3** module. The module features a **Bootloader** program that is a separate small program that runs in a special area of the microcontroller's FLASH program memory. This program is entered when you power up the **ShockWave 3 module while pressing BUTTON2 on the module.**

Follow these steps to upgrade the firmware in your ShockWave 3 sound module :

1. Remove the microSD card from the sound module and insert it into an SD card reader slot on your computer using the supplied microSD to standard SD adaptor. If you do not have an SD card reader on your computer then you can use either a USB microSD card reader or connect the sound module to the computer using a USB cable when it will appear as a removable hard drive with the name **SHOCKWAVE3.**
2. Rename the existing **ShockWave3Firmware.hex** file that is already in the root folder of the microSD card to something else, for example, **ShockWave3FirmwareBackup1.hex.**

3. Download the latest firmware (.hex) file from our [Downloads Web page here](#).
4. We recommend you create a folder on your hard disk whose name contains the release number so you can keep multiple versions, if necessary.
5. The downloaded firmware file is a ZIP file, so open it to extract the .hex file inside. Copy that hex file to the new folder you just created and rename the copied file to **ShockWave3Firmware.hex**.
6. Copy that **ShockWave3Firmware.hex** file to the root folder of the microSD card.
7. Remove the microSD card from the reader or SD card adapter and re-insert it into the sound module.
8. Now press **BUTTON2** on the module and hold it down at the same time as applying receiver power to the sound module or by plugging in the USB cable. In the case of the USB cable there is no USB communications used over the USB cable - it is used only to supply power to the sound module.
9. Once the blue, orange and red LEDs light up, the sound module is in bootloader mode and you can now release the **BUTTON2**. The ShockWave 3 module completes the entire firmware update process itself. This process can take up to 30 seconds. Please be patient. Take note of the LED meanings below. There is no need to do anything more. Next time you power up the sound module normally, it will have the new firmware installed and running.
10. If you have upgraded the firmware to a more recent release and you have already installed our Windows **ShockWave 3 PC** software application, you will need to install a new version with the same release number of it. Download the latest software from our [Downloads Web page here](#). This is a ZIP file so open it to extract the .exe file inside.
11. Uninstall the old **ShockWave 3 PC** Software and install the new software version from the .exe file you just obtained.



WHAT THE LEDS MEAN

During the bootloader firmware update process the LEDS will flash or be on steadily to indicate the progress and/or error conditions as follows :

<u>LEDs State</u>	<u>Meaning</u>
Blue/Orange LEDS on Steady	The ShockWave 3 sound module is in bootloader mode. The firmware updating is in process.
Red Solid	The microSD card is being initialized ready for the upgrade. This will take 3-4 seconds.
Green Flashing about twice per second	Firmware updating is in progress. This can take up to about 20 seconds. Please be patient.
Red Flashing about twice per second	The microSD card is not present or cannot be initialized.
Red Flashing about four times per second	The ShockWave3Firmware.hex firmware file is not present or cannot be opened.
Red/Green Flashing alternately about four times per second	Firmware updating has completed and the main sound module application has started to run.