

LAN Firmware Update Procedure for SanDevices E68X series controllers

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This document explains the procedure for updating the firmware on a SanDevices E68X series pixel controller. This is a revised procedure as of 05/2013 and uses an executable loader program that does not require the installation of Python on the PC used for the update.

This is NOT the procedure to use if you are installing a hardware upgrade module, this procedure is to upgrade the firmware without a hardware change.

The firmware file you load should have a name prefix that matches your hardware. For an E682 it will be E682 or E682-6, for a non-upgraded E680 or E681 it will be E680 or, E681. Firmware for previously upgraded E680s and E681s will have names that begin with E680-6 or E681-6, or E680_UPGRADED or E681_UPGRADED. For the E6804 the prefix will be E6804.

The version number will be of the form x.nnn, there may or may not be a -01 or -02 suffix, and the file type will always be .eeprom. Please note that the current firmware version on your controller must be greater than 2.006 in order to use this procedure. Version 2.006 boards must be updated by another method.

Version 3 firmware was never released other than for beta testing and has now been replaced by version 4. In almost all cases the current firmware will be version 2.049 thru 2.051, or version 4.026 or higher (as of 05/22/2013). Version 2.x firmware is the old command-line interface, version 4 is the newer graphical interface.

The firmware update process involves running a firmware sender program called fwloader_1_0 on a PC, and at the same time giving the E68x controller a command to tell it to begin looking for the new firmware.

The firmware sender is a small self-contained executable program (fwloader_1_0.exe) that sends the firmware file to all of the E68X controllers on your LAN (only controllers that have been instructed to do so (see step 7) will actually load the new firmware. It is possible to update firmware on more than 1 controller at a time.

Please follow these steps to do a firmware update:

- 1) If you have not already done so, download the SanDevices firmware loader program, **fwloader_1_0.exe**, from the SanDevices web site. This only needs to be done one time. Remember where you download it because the firmware file will have to go in the same folder.
- 2) Download the new firmware file from the sandevices.com web site, or if this is an email it will be attached. This will be a file with the type ".eeprom". The latest firmware versions for each device will be on the web site. **Make sure you download the proper file for your controller**: Download the firmware file to the same folder that you downloaded thefwloader_1_0.exe file to.
- 3) **Important: Rename the firmware file to: *firmware.eeprom***.
- 4) Some items to check before proceeding:
If you have more than one network connection to your PC (say you use a wireless connection for internet access, but a wired Ethernet connection to the E68X), you will need to disable all network connections other than the one to the E68X.
Make sure that no SACN/E1.31 'senders' are running on your network.
Make sure that Test Patterns are turned OFF on the E68X.
- 5) Bring up the web configuration page for the controller that you are updating. If you have not changed the as-shipped default IP address, you would access the controller by typing 192.168.1.206 in the address bar of your web browser.

- 6) Double-click **fwloader_1_0.exe**. This should open up a black window with the text “**Firmware File: firmware.eeprom found**”. If the black window disappears immediately it means that the firmware file has not been properly renamed (to firmware.eeprom). or has not been placed in the same folder as fwloader_1_0.exe.
- 7) Start the firmware update process on the controller. This procedure will vary according to the firmware version presently on the controller. Do this within 10-15 seconds of step #6:
 - For existing firmware versions 2.xxx enter the command **GF** (then press enter)
 - For existing firmware versions 3.xxx enter the command **FI** (then press enter).
 - For existing firmware versions 4.xxx click the **Update Firmware** button.
- 8) If the existing firmware is version 2 or version 3, you will not see any change on the controller screen. If the controller is running version 4, you will see a new screen appear with the message: **Firmware Update In Progress, Waiting for block 0, wait 2 Minutes Then Refresh**.
- 9) After about 90-120 seconds you should see the controller restart (possible preceded by rapid flashing of the red and green LEDs, depending on the current firmware version), and you will see the normal start-up sequence of the LEDs. If you don't see the LEDs do the start-up sequence, just wait at least 3 minutes before proceeding. The black command window for the updater will close automatically after about 90 seconds.
- 10) Try to refresh the configuration page of the E68X. **IMPORTANT: You MUST refresh the page by typing an actual command in the command box, either a legitimate command or a dummy command such as XX. If you refresh using F5 or your browser's "refresh" button, you will actually send another Get Firmware command and that will start a new firmware update attempt which will wipe out the result status of the last one.**

For version 4 firmware use the **Refresh Page** button to refresh the page.

If the firmware update was successful you will see the new firmware version number when the page loads. If the firmware update failed, the reason for the failure should be indicated on the page as “Last Firmware Update Status”.

If the first attempt fails, try again. If you see the same failure status after another attempt, these are the most likely causes:

If the status says “Timed Out” and If the “black window” appears only very briefly then disappears, it means you have not placed the firmware file in the folder with fwloader_1_0.exe, or you have not properly renamed it as “firmware.eeprom”.

If the black window stays active for more than a minute, and the status is “Timed Out”, check that you have checked the items listed in step 4.

If you see a different failure status, or if you can't determine the cause of the failure, please contact SanDevices by email.

If you're having trouble getting the firmware update to complete successfully, check the following:

You need to start the firmware update process on the controller within 10-15 seconds or so of starting the updater. If you wait too long, the fwloader_1_0 program will timeout before the controller has received the entire firmware file.

The following status messages may be displayed for “Last Firmware Update Status”:

None Tried	no firmware update has been attempted since the last controller restart.
Timed Out	<p>the update operation timed out before receiving the complete firmware file. This can be caused by a number of reasons:</p> <p>The firmware file isn't being sent (the black windows should stay open for more than a minute).</p> <p>Another SACN sender (LOR, Madrix, Sacnview, etc) is active on the network.</p> <p>The controller has a test pattern enabled.</p> <p>You have more than one network connection on your PC, and fwloader_1_0 is sending upgrade firmware to the wrong one.</p> <p>You waited too long before typing the GF command.</p>
Not For Me	the firmware file being sent is not compatible with this hardware. Contact SanDevices.
>1 Senders	more than one instance of the updater program was sending a firmware file at the same time.
Bad CRC	the received file was not valid
Running	a firmware update is currently in progress (note that repeatedly refreshing the web page while a firmware update is running may cause it to time out).

The firmware update process involves several steps. First the firmware file is downloaded to the controller. Next it is checked to make sure that it is a valid firmware file. Finally the new firmware file is written to the non-volatile memory on the E68x, and then the E68x restarts.

It is important to not interrupt power to the E68x controller, or reset it, during the time that the new file is written to the eeprom. WAIT until you see the "start-up" sequence on the LEDs, or wait a minimum of 3 minutes after typing the GF command.