Performing a Firmware Update

The *QuadLN_S* design incorporates a bootloader that permits the firmware to be updated in the field using JMRI. The bootloader portion of the firmware is protected and cannot be accidentally overwritten during the update process. Normally the *QuadLN_S* user settings are not affected by the firmware update process. However it is always best to ensure your *QuadLN_S* roster entry is up to date before performing a firmware update so that your settings can be easily restored later if required.
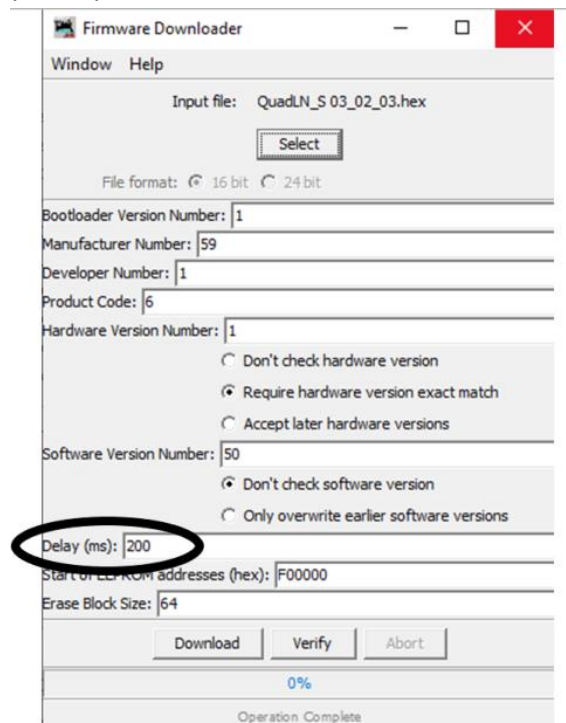
To perform a firmware update, follow the steps below.

1. Download the new *QuadLN_S* firmware update package from quadln.n3ix.com and place the ".hex" file in your JMRI User Files Location folder.
2. Select **Download Firmware** from the JMRI **LocoNet** menu.
3. For older versions of JMRI, the **File format** must be manually set by clicking the **16 bit** File format button if it isn't already selected. If you have a newer version of JMRI and the **File format** buttons are not selectable, just proceed to the next step.
4. Click the **Select** button and then open the firmware file you downloaded in Step 1.
5. For older versions of JMRI there will be a **Read file** button. If that button is present, click it to load the file into the downloader. If you have a newer version of JMRI and there is no **Read file** button, just proceed to the next step.
6. Connect the Remote Alignment Board to the *QuadLN_S*.
7. Simultaneously press and hold down all three buttons on the Remote Alignment Board.
8. After about 2 seconds when the **MSG LED** dims, release the buttons and the **MSG LED** should go dark. The *QuadLN_S* is now in bootloader mode.
9. In JMRI, click **Download** to begin downloading the file to the *QuadLN_S*. The **MSG LED** will toggle as each message is received. The **ACTV LED** will flash briefly as each block of memory is written.
10. If the download completes successfully, the *QuadLN_S* will resume normal operation.
11. If an error occurs, the **ACTV LED** will flash continuously about once/second. The **MSG LED** will indicate the error code.
    - **MSG LED** On = communication error - bad message received.
    - **MSG LED** Off = configuration error. This can be one of the following:
        - firmware file error - wrong manufacturer code or wrong product code. The file you are attempting to download is not for this product.
        - hardware version error – the firmware is not for this version of the board. Obtain the proper firmware file for the hardware version of your board.
    - **MSG LED** Flashing once/second = software version error – the firmware isn't newer than the existing firmware. The current firmware is as new or newer than the firmware you are attempting to download. If the download is still desired, select **Don't check software version** in the JMRI Firmware Downloader, cycle power to the board and repeat the process starting with step 7 above.

Notes:

The *QuadLN_S* software is overwritten as the download progresses. Once the download starts, if it is interrupted or if a communication error occurs then the *QuadLN_S* software will probably be corrupted. However the bootloader will be intact, so just click **Abort,** remove power to the board, press and hold the Select button then reapply power to the board. The **ACTV LED** should be lit and the **MSG LED** should be dark. Now repeat the download process starting with step 9 above.

The default **Delay (msec)** value is 200. Most systems can perform the download at a faster rate without any problems. You might want to try a setting 100 or even 50 and see if it works on your layout.

If a configuration error occurs, the *QuadLN_S* did not accept the download and the previous software is intact. If you still want to perform the update, resolve the issue and then repeat the download process. When errors occur repeatedly you may want to try increasing the **Delay** value as described in the previous paragraph.

Multiple *QuadLN_S* boards can be updated at the same time. It is recommended that one board be updated and tested first to be sure everything is working properly before updating the remaining boards.

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