



# Software Update Instructions

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## NANORANGER

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**CAUTION!** The process of updating NanoRanger software involves several steps that require precise User inputs. Incorrect inputs can render NanoRanger inoperative and would require its return to Altonovus for software reinstallation. **Please follow the instructions closely and proceed with care at each step.** If you are unsure, email us for help at [support@altonovus.com](mailto:support@altonovus.com).



## 2 Software

To update the software on your NanoRanger, the following files will be needed:

- SAM-BA\_2.18
- NanoRanger\_Bootloader\_Files.zip
- LPM\_6\_201.zip which contains:
  - LPM\_6\_201\_A.bin
  - LPM\_6\_201\_B.bin
  - LPM\_6\_201\_C.bin

All files needed, with the exception of SAM-BA\_2.18, are available for download at [www.altonovus.com/nanoranger/updates](http://www.altonovus.com/nanoranger/updates).

### 2.1 SAM-BA\_2.18

The Bootloader relies on the Microchip™ SAM-BA In-System Programmer to download any updated software to the NanoRanger.

Proceed to: <https://www.microchip.com/developmenttools/ProductDetails/PartNO/SAM-BA%20In-system%20Programmer>

From the site, download SAM-BA\_2.18. Install it on your PC by running the application.

### 2.2 NanoRanger Update Files

To add the NanoRanger script files, download the NanoRanger\_Bootloader\_Files.zip

Then, extract and save the contents to your Desktop. Afterwards, copy or move the unzipped files and folders to the location at which you have installed SAM-BA\_2.18, under the tcl\_lib directory. *E.g. C:\Program Files (x86)\Atmel\sam-ba\_2.18\tcl\_lib*

When complete, under tcl\_lib you should now have a NanoRanger directory and an updated boards.tcl file. Then download and unzip LPM\_6\_201.zip, and save the three update files it contains to a handy location from which you can easily select them later (e.g. a temporary folder on your Desktop).. **Next, put your NanoRanger into Bootloader Mode (see 2.3 below) before initiating SAM\_BA.**

### 2.3 Putting the NanoRanger in Bootloader mode

To enable software updating, your NanoRanger needs to be put into **Bootloader Mode**. To place the NanoRanger in **Bootloader Mode**:

1. Ensure the NanoRanger unit is **Off**.
2. Press and hold the **ENTER** and **MENU** buttons at the same time, then press and release the **POWER** button.
3. Continue to press the **ENTER** and **MENU** buttons for 5 seconds.
4. Release the **ENTER** and **MENU** buttons and the NanoRanger should have a blank, lit screen.

NanoRanger is now ready to accept new software. The old software will remain until the software update procedure has erased the old software.



**Please Note:**

- To exit Bootloader mode, the batteries must be removed from NanoRanger and then re-inserted.
- If the NanoRanger has been in Bootloader for a long time, the screen may get discoloured. This is usual and it will return to normal soon after new software is run.
- The Bootloader takes an app from the SAM-BA and runs it in its memory.

## 2.4 Running SAM-BA\_2.18 and Connecting to NanoRanger

**Please Note: First, close any unnecessary programs and processes.** Then, having connected your NanoRanger to your PC via USB, **run** your installed copy of SAM-BA\_2.18.

Select the COM port that the NanoRanger is connected to (via USB), and ensure that the board type is selected as NanoRanger, as shown in Figure 1 below. Then press **Connect**.

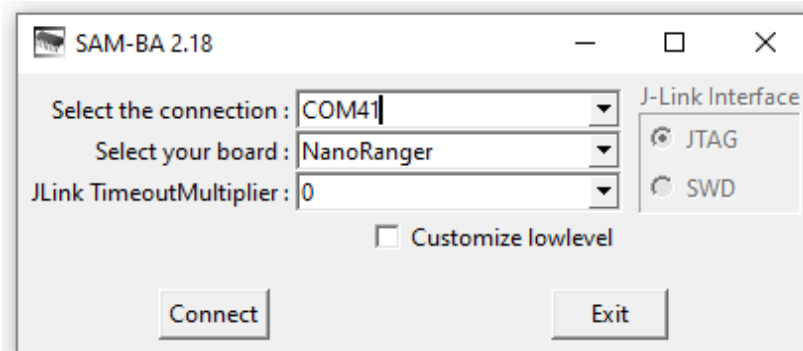


Figure 1 – Connecting to NanoRanger

If SAM-BA connects successfully, you will see the screen shown below:

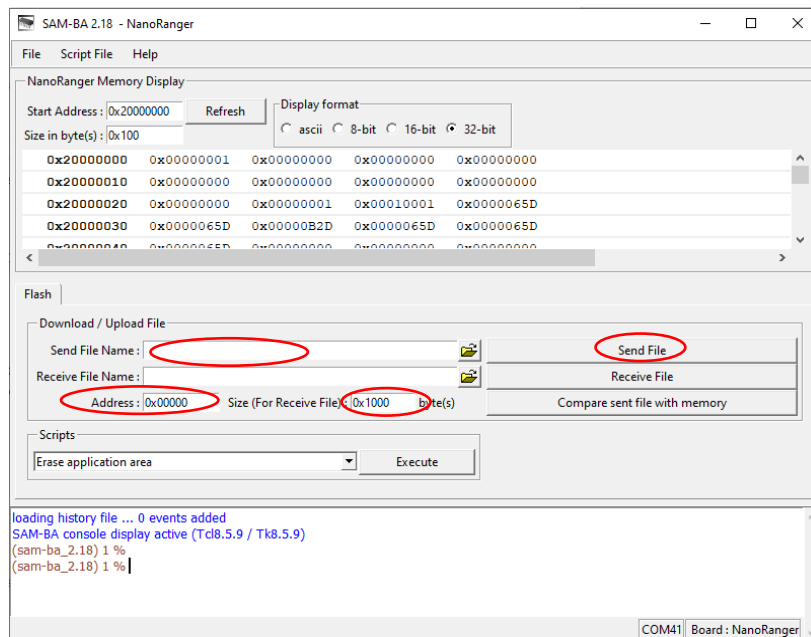


Figure 2 – Data Entry Screen



### 3 File Upload

You are now ready to begin installing the new software to NanoRanger. This requires the installation of **3 update files**, each with a specific destination address.

**WARNING!** Incorrect setting of the Address value during installation may result in the Bootloader being erased. This can only be rectified by returning your NanoRanger to AltoNovus. Please proceed with care at each step and if you are unsure, please email for help at [support@altonovus.com](mailto:support@altonovus.com).

#### Installing File 1

On the data entry screen shown at Figure 2 (at the bottom of the preceding page):

1. Set **Address** to 0x6000.
2. Set **Size (For Receive File)** to 0x6000.
3. At **Send File Name**, select the 'A' version of the software update e.g. LPM\_6\_201\_A.bin (you can use the folder icon at the end of the 'Send File Name' bar to navigate to where you have saved the three update files).

Check that the three values above are set correctly, then press **Send File**. The file will then upload over approximately 5 minutes. You should then see the screen shown at Figure 3 below:

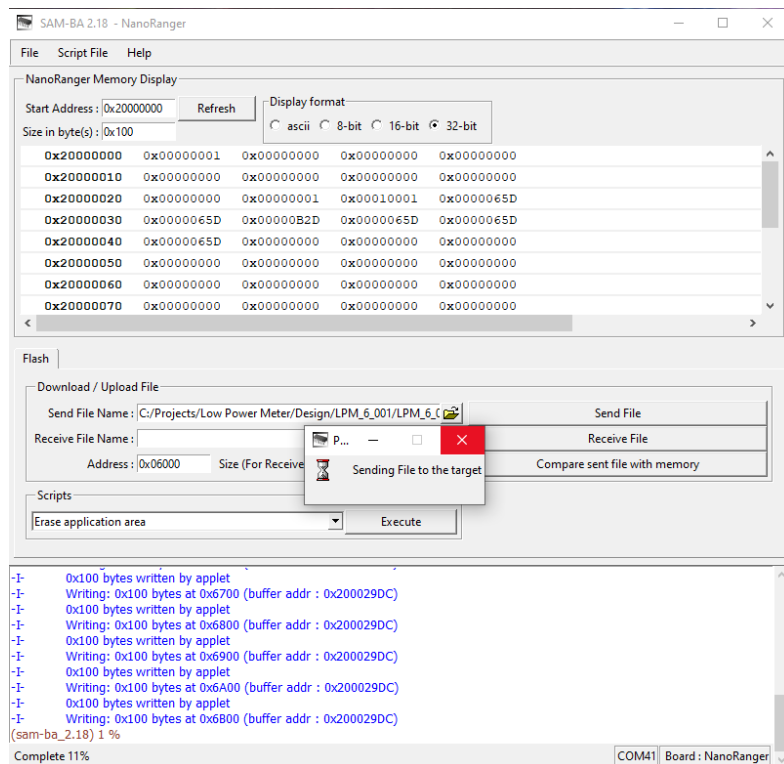


Figure 3 - Upload in Progress – Here at 11%

Once finished the complete indicator (e.g. 'Complete 11%') will disappear, as shown on the screen shown at Figure 4. **Please Note: If this, or a subsequent File installation fails to complete (i.e. 'hangs'), then repeat the whole process until it achieves 100% completion, before proceeding to the next step.**

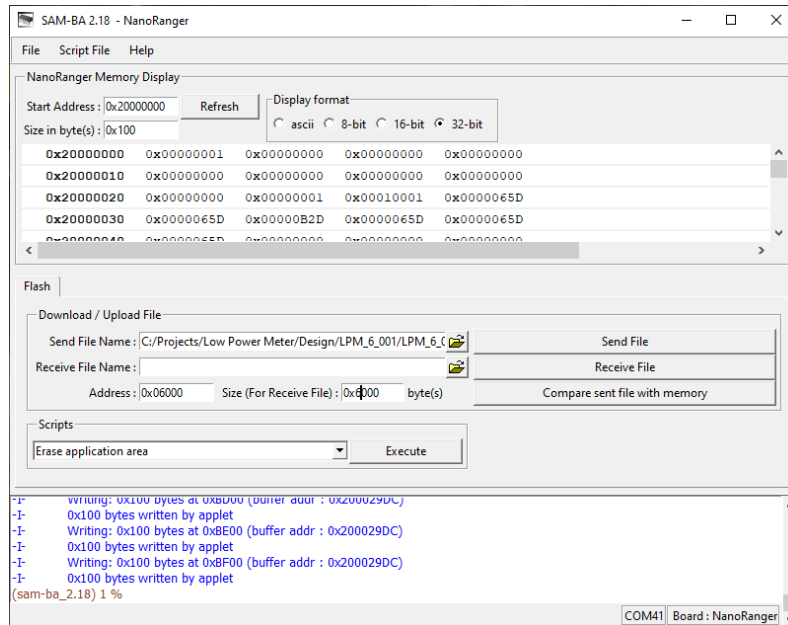


Figure 4 - Upload Complete

Because the application limits the file size to be sent, the procedure must now be repeated with the 2 remaining update files. The sequence is essentially the same, **but each Address and File for installation are different.**

## Installing File 2

To prepare for the installation of File 2:

1. Close SAM-BA.
2. Remove battery from NanoRanger.
3. Restart NanoRanger. When re-inserting a battery the NanoRanger may **power up** straight away. Be sure to be holding down the **MENU** and **ENTER** buttons while inserting the battery.
4. Restart SAM-BA and connect to NanoRanger as above (see Figure 1).

To install File 2, on SAM-BA:

1. Set the **Address** to 0xC000.
2. Set **Size (For Receive File)** to 0x6000.
3. At **Send File Name** select the '**B**' version of the software update, e.g. LPM\_6\_201\_B.bin

Check your data entry is correct, then press **Send File**.

Again, *the file will then upload over approximately 5 minutes* and the 'Complete %' indicator will disappear once finished.



### Installing File 3

To prepare for the installation of the last update, File 3:

1. Close SAM-BA.
2. Remove battery from NanoRanger.
3. Restart NanoRanger. When re-inserting a battery the NanoRanger may **power up** straight away. Be sure to be holding down the **MENU** and **ENTER** buttons while inserting the battery.
4. Restart SAM-BA and connect to NanoRanger as above (see Figure 1).

To install File 3 on SAM-BA

1. Set the **Address** to 0x12000.
2. Set **Size (For Receive File)** to 0x6000.
3. At **Send File Name**, select the '**C**' version of the software update e.g..LPM\_6\_201\_C.bin

Check your data entry is correct, then press **Send File**

As with both previous instances, *the file will then upload over approximately 5 minutes*, with the 'Complete %' indicator disappearing once upload is complete.

### 4 Completing the Update Process

With all 3 files uploaded, to complete the update process:

1. Remove and re-insert battery from NanoRanger.
2. Restart NanoRanger by pressing the **Power** button.

If your software installation has been successful, your NanoRanger should now restart with the updated software. The new software version (in this case 2.01) will display on the loading screen as shown in Fig. 5 below. The long number that follows is the unique NR-01 serial number.

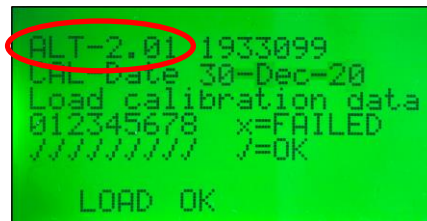


Figure 5 - Update Success Confirmation

### 5 File Data Summary

Upload No.	File Name*	Destination Address	Size
1	LPM_6_xxx_A.bin	0x6000	0x6000
2	LPM_6_xxx_B.bin	0xC000	0x6000
3	LPM_6_xxx_C.bin	0x12000	0x6000

\* - Where 'xxx' in File Name denotes software release number.