UFX Quick Manual

Ref 1.1

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UFX, also known as “LSU2”, is the new replacement unit for old LSU (Laser Service Unit). It basically has the same functional range. This document is a short guide to the new functionality the UFX has in addition to the old LSU.

Contents

1. Software support

- UFX with new AOM calibration method (see 5.1: “AOM calibration”) is supported since bestIMAGE 5.70/**15** and above.

- UFX in “Legacy mode” (see 7.3: “Force legacy”) is supported since bestIMAGE 4.50/**17** and above. AOM calibration will work as with old LSU (see 5.2: “AOM calibration”).

2. Quick troubleshoot

- AOM calibration not working with sensor connected through UFX “SENSOR” plug (new method):
  You can try using old LSU method by switching to “Legacy mode”. This means sensor MUST NOT be connected to UFX. Connect sensor through MAB instead.
  (see 7.3: “Force legacy”).
  Unplug and re-plug UFX and restart bestIMAGE after switching to “Legacy mode”.

- A power value (PExt) other than 0 is displayed even if nothing should be measured (laser off, or shutter closed):
  Try to calibrate power sensor value
  (see 7.2: “Pext 0-calib”).

- Settings in UFX configuration menu (e.g.: Brightness or Legacy mode) cannot be saved and an error “Saving to flash memory failed” is displayed:
  Power cycle (unplug and re-plug) UFX and then try to change the settings again.

- Display is showing “Laser enable Monitoring error!”:
  Voltage drop across cable might be too high. Try replacing the cable.

3. Buttons

3.1 AOM

If button is pushed, AOM is enabled as long as set in menu (ON-Time).
Push the button for at least 3 seconds to enable AOM permanently.
Permanent enable will time out after 2 hours (see 4: "Permanent enable timeout")

3.2 Laser

If button is pushed, laser is enabled as long as set in menu (ON-Time).
Push the button for at least 3 seconds to enable laser permanently.
Permanent enable will time out after 2 hours (see 4: "Permanent enable timeout")

3.3 Arrow up

Push to navigate up in menu or to decrease value.

3.4 Arrow down

Push to navigate down in menu or to decrease value.

3.5 ESC

Push to return to previous menu level.

3.6 ENTER

Push to select mode or menu level.

4. Permanent enable timeout

Due to security reasons, there is a two-hour timeout period for permanent enable. After two hours, permanent enable will be switched off automatically.
At the end of the timeout period there is a 1 minute chance to extend the time for another two hours.

Beginning with firmware revision **'Rev 5.80 09/07/2018'** and later, it is possible to re-trigger the timeout to have another 2 hours by pushing and holding "ENTER" and then (while still holding "ENTER") pushing Laser or AOM button.

After 1 hour and 59 minutes, UFX will start beeping and a message will be displayed. During this minute, permanent enable can be extended by pushing the "**ENTER**" button.
*If you need more time, **do not push** the Laser or AOM button, as this would **disable** Laser or AOM **immediately**.*

5. AOM calibration

5.1 Normal operation (default)

Connect external power sensor directly to UFX “SENSOR” plug (no MAB needed). Start bestIMAGE, go to “SETTINGS” → “AOM CALIBRATION” and follow the instructions on the screen.

5.2 “Legacy” mode

This mode is only intended as fallback or for downward compatibility with older bestIMAGE software (below 5.70/**15**). It can be enabled through UFX configuration (see 7.3: “Force legacy”). Connect external power sensor to UCB via MAB board, start bestIMAGE, go to “SETTINGS” → “AOM CALIBRATION” and follow the instructions on the screen.

6. UFX firmware upgrade

6.1 Requirements

- PC or Notebook
- UFX
- Latest firmware update tool (LSU2.exe)
- Micro USB cable

6.2 Usage

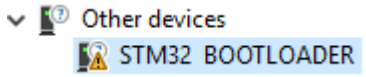
- Connect your PC through Micro USB cable to UFX “PRG” plug.

UFX will power up and waiting for connection.

- Press and hold “ENTER” button and then press “RST” (keep holding “ENTER”). As soon as display turns black, you may release the buttons.

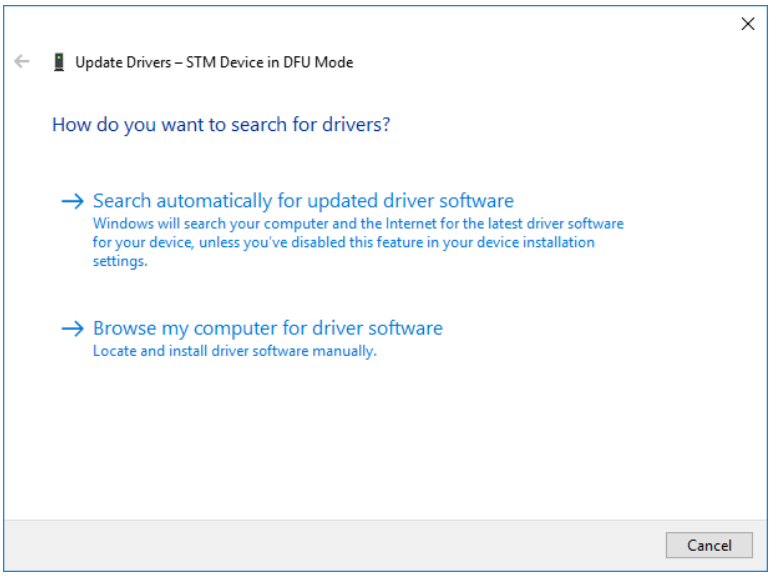
UFX is now in configuration mode (display is off)

- Check if driver is installed by opening Windows “Device Manager”.



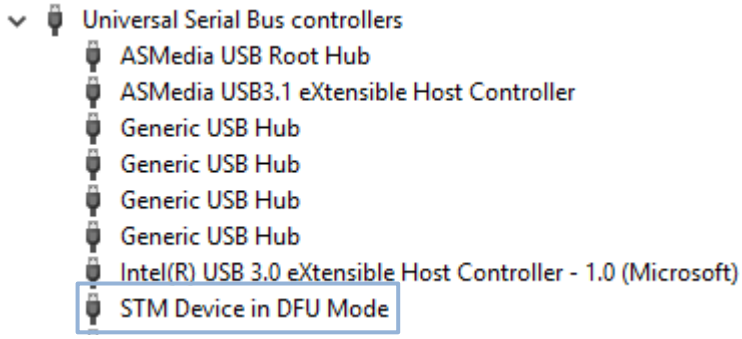
If “STM32 BOOTLOADER” is listed in “Other devices” (picture on the left), you will need to install driver first!

Right click on device “STM32 BOOTLOADER” and select “Update driver” and “Search automatically for updated driver software” *(ATTENTION: Internet connection required)*:

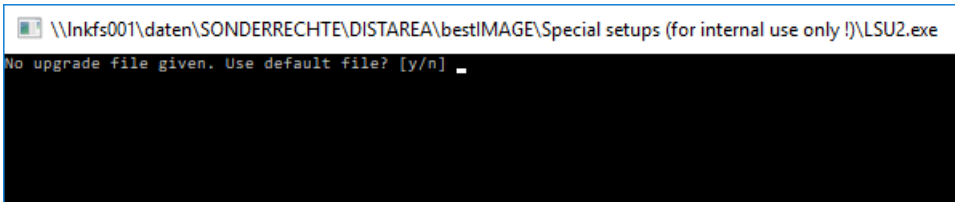


After installation (even in case it fails with “Access is denied.”), reboot your computer!

- Check again if device is now listed correctly in “Device Manager”:

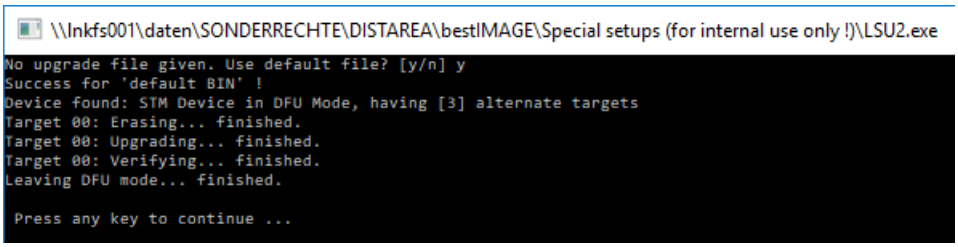


- Now run LSU2.exe



- Hit the “y” key to start programming new firmware.
  UFX will now be erased and programmed.

- If firmware upgrade is finished, UFX will reboot and wait for connection. But you should power cycle the UFX, before changing any settings in configuration menu (otherwise settings will not be saved)



UFX is now ready to use. Unplug USB cable and connect to UCB/UCX.

7. UFX configuration menu

If UFX is waiting for connection (or if UFX is connected to UCB/UCX in top level menu), the internal configuration menu can be entered through pressing and holding “ESC” for at least 3 seconds.
Each menu entry can be entered through “ENTER” button. Pushing “ESC” will exit current submenu. The “+” and “-“ buttons are used to move inside the menu.

7.1 Show LSU info

Displays current firmware revision and internal operating system.

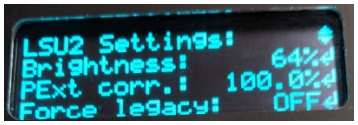
7.2 Show analog data

Displays supply and laser enable voltages and an additional analog input value.
Supply voltage should be above 4,2V
Enable voltage should be above 1,5V

Also displays current sensor measurements (sensor plugged in at “SENSOR” plug).

Pext 0-Calib allows 0-point calibration of sensor

7.3 Settings



Brightness: adjust display brightness of UFX
Pushing "ENTER" will allow to change the value with "+" and "-" buttons.

PExt corr.: correction factor of PExt measurement (DO NOT change!)
Pushing "ENTER" will allow to change the value with "+" and "-" buttons.

Force legacy
Pushing "ENTER" will change the mode.
***ATTENTION:** this will change AOM calibration behaviour. With this mode switched "ON" the power sensor MUST NOT be connected to UFX. You will need MAB for AOM calibration (old "LSU" method).*
Unplug and re-plug UFX and restart bestIMAGE after switching ON.