Flash external QSPI

Overview

The STM32F769I-DISCO audio FW uses background images (as BMP) for the LCD display and touch control features. The FW does not use any GUI library (the touch control is hard-coded).

The external QSPI flash on this DISCO board has to be flashed with a bin file, e.g. "*DISCO769I_QSPI_noDIGI.bin*", which contains the LCD background images.

Remark:
The first QSPI page/section is used to store the system configuration. The LCD pages start at dedicated start addresses (used in MemoryMapped mode, base address for external QSPI flash: 0x9000_0000).

Following the procedure to flash the external QSPI on DISCO board.

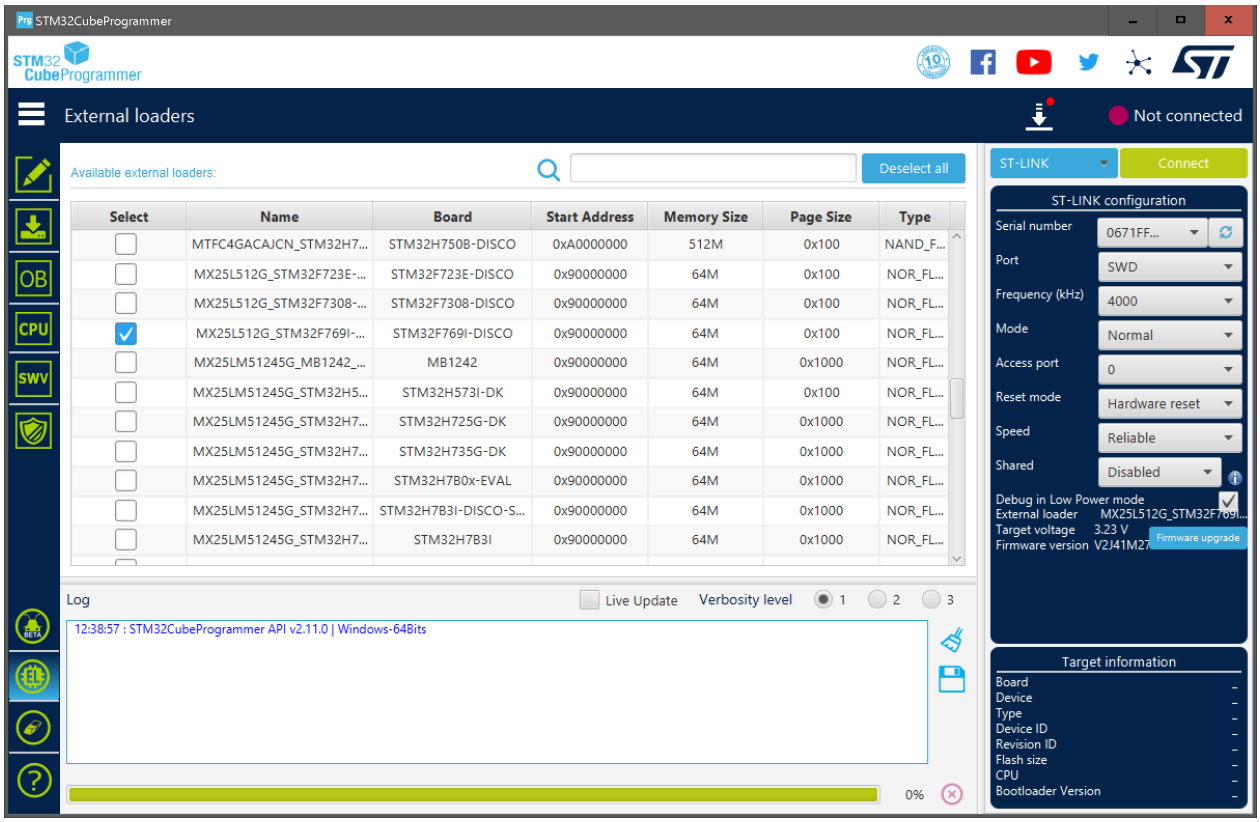
Tool needed

Use the "STM32CubeProgrammer" (the newer version). Alternatively, the older "STM32 ST-LINK Utility" could be used as well.

Install the tool.
You need the debug USB port connected to the PC (needed anyway for board power).

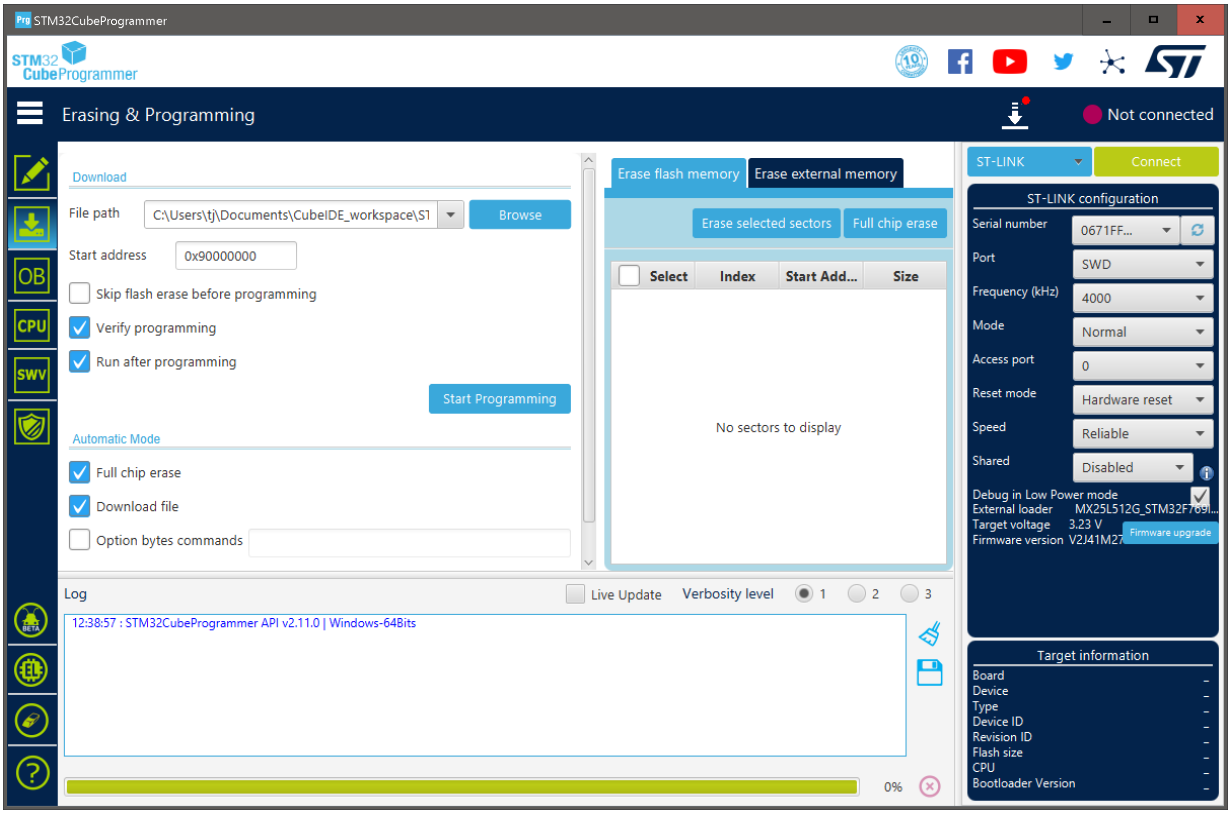
Steps to flash external QSPI

1. Enable the External Loader (see icon "EL") for this board



Set the check box for this board (only one checkbox at a time).

2. Load the "*DISCO769I_QSPI_noDIGI.bin*" file (located in the "obj" directory of the STM32CubeIDE" project)
   select this page via the "Download" icon (second from top on the left panel)
3. Set the "Start address" to **0x90000000**



4. Click on "Start Programming"
   You have to "Connect" first to the board (see green button on the top right corner).

This has to be done <u>just once</u> or again if the LCD background images has been changed.

ATTENTION:
Changing the LCD background images (BMP files) needs another tool, e.g. GIMP, CorelDraw etc. to design, modify and export these files (as BMP).
These BMP files have to merged with a Hex Editor to a single BIN file, whereby the first page is reserved for the system configuration (the BMP files must be located at dedicated offset addresses, see the address locations/offsets in MCU FW source code).

Afterwards, the MCU code flash (internal) can be flashed, e.g. via regular debug session.

When the MCU FW is running – it loads the related BMP image from external QSPI, displays it on LCD. If the QSPI flash is not programmed – you cannot see anything, potentially not possible to use the LCD touch.

Any new FW version does not need to flash and does not affect the external QSPI LCD images. Just the system configuration (e.g. which options enabled) is stored in a non-volatile way in QSPI flash (so, the config setting page displays the last save configuration).

BTW: The config page is displayed when you click on the very small icon on LCD main page at the left top corner (looking like a gear).