DSO138 oscilloscope program upgrade method

Applicable models: 13801K, 13802K

Program upgrade Principle

The DSO138 is a SCM STM32F103C8 internal oscilloscope that is preinstalled with a flash bootloader, which is a small program that can assist in flashing the firmware of your DSO138. After connecting serial communication with the PC, a new program can be written to the chip program memory. The program upgrade process is to enter this boot loader via PC communication to complete upgrade process.

1. **Tools required -** To complete the scope of the program to upgrade DSO138 you need three things:

   - **Serial converter connected to the PC –** The 138 oscilloscope is 3.3V TTL device and is not directly compatible with the PC USB port. In order to connect to the device, you must utilize a TTL - USB or Uart - USB converter. These products are simira to model 11901, shown in Figure 1, the specific details of the converter can be found at www.wp.jyetech.com .
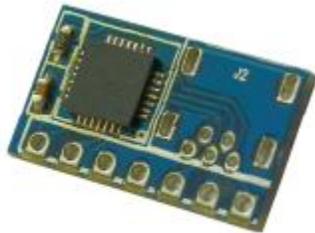
Fig. 1

   - **Control Bootloader PC software -** This is the software on the PC, which is responsible for control of the microcontroller. The bootloader software called is FlashBootloader Demonstrator and is provided by the ST company. You can download at the following links:http://www.st.com/web/en/catalog/tools/PF257525#

   - **Program code (HEX file) –** this can be located on our website under the boot loader section. Make sure to download the firmware for your device.

2. **Connection Method -** Figure 2 shows the schematic for the oscilloscope and the TTL USB device connected to the PC. FIG. 3 is the use of this small 119 converter showingphysical connections. The DSO138 serial has three lines, TXD, RXD and GND, which is the output TXD, RXD input, GND. Connect the ground when using other converters, before you connect a signal line Please
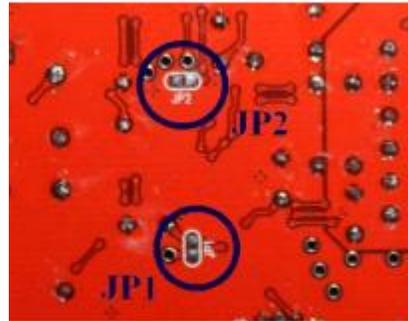
Fig. 4

ensure your connections are not wrong.

Fig. 2
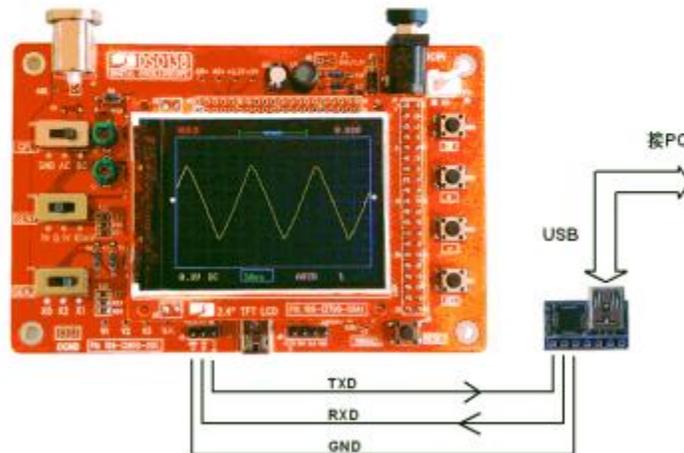
Fig. 3

3. **Upgrade steps**
   1) First, on the back of the main circuit board (see Figure 4) short JP1 and JP2. When the unit is powered, the chip will enter the boot loader program allowing for reprogramming.
   2) Connect the PC and the serial converter device together

3) Start the ST Micro Flash Bootloader Demonstrator on your PC (show in figure 5 with the relevant parameters)

Note: Please identify the serial port the UART device has been mounted on and use these settings for the ST Micro application. If you do not see the device, please ensure the drivers for your device have been loaded properly. Once the settings have been made, click the "Next" button to proceed.
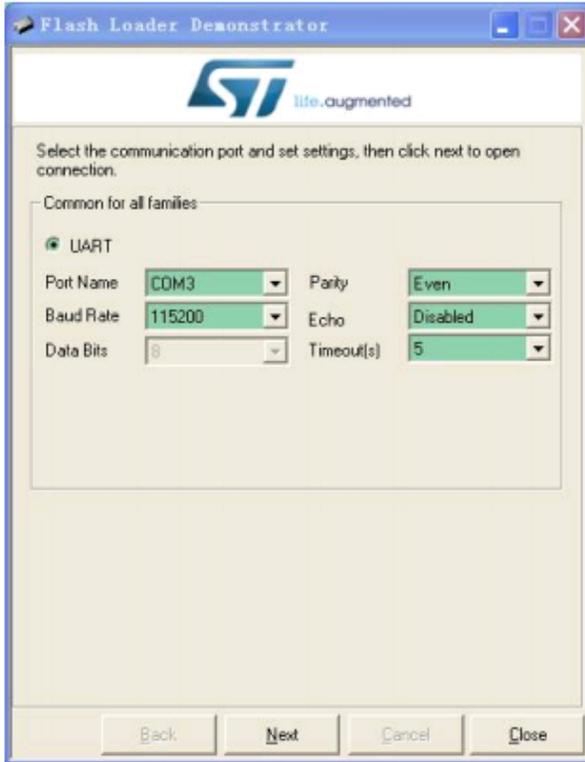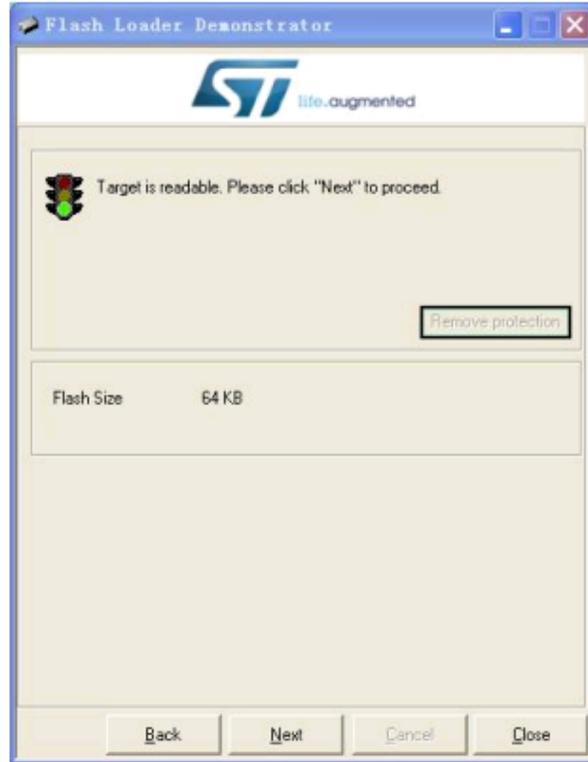
Fig. 5   Fig. 6

1) If the connection is correct, you'll see the screen shown in Figure 6. This transition screen is telling you the MCU can be read. If you do not see this, then press the reset button on the DSO138 and verify your connections. Also verify your JP1 and JP2 are shorted properly, If you cannot enter this screen, you can try to press the reset (Reset) on the motherboard oscilloscope switch. If you still cannot enter the screen, verify JP1 and JP2 are properly soldered.

2) Figure 7 indicates the chip and flash memory type. Please verify that the target is properly selected. Once properly configured to the right chip and memory type, click next to proceed

3) In Figure 8, select "Download to device" and click on the ellipsis next to the field. Select your hex file for the proper device. Verify the rest of your settings are properly configured according to figure 8 and select the "Next" button to start writing.

4) In figure 9, you can see the progress of the flash. After writing is completed, you will see in Figure 10 and the new program has been written to your DSO138 oscilloscope.

5) Disconnect the power supply and the oscilloscope 138 serial converter. Remove the short from the back of the board on JP1 and JP2. Power the DSO138 and check the boot screen display program version. You should now see the upgraded version, if you do not then the process did not succeed.
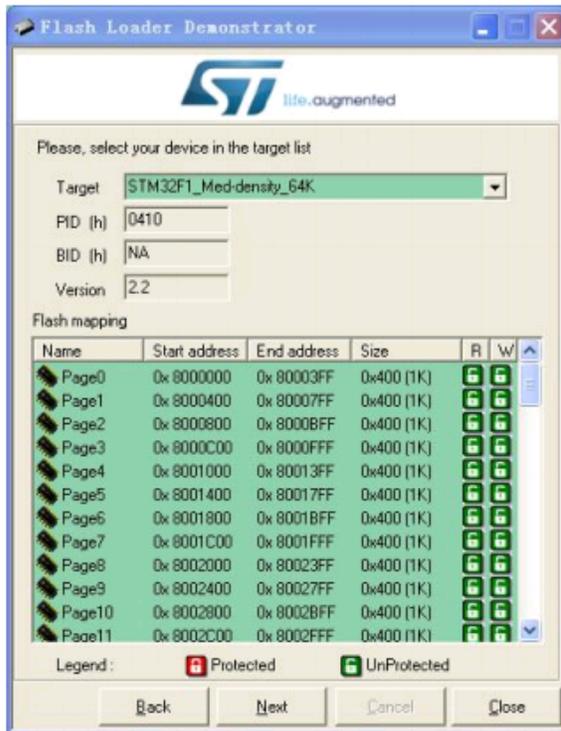
Fig. 7
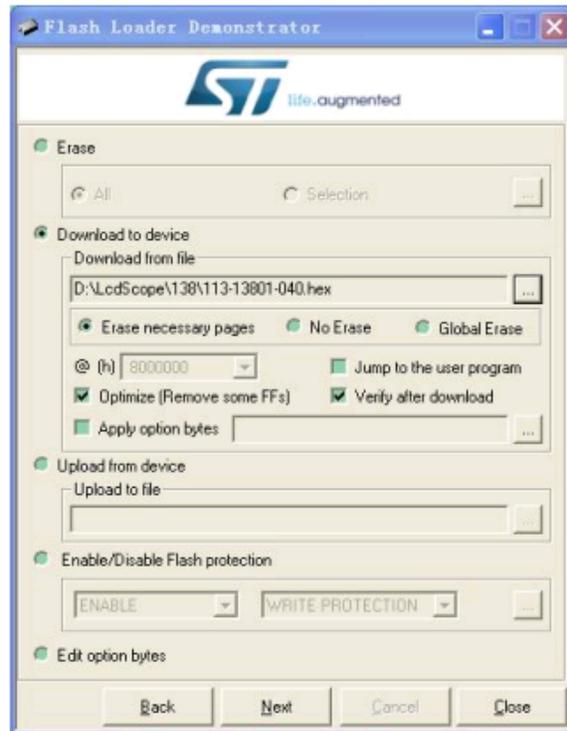
Fig. 8

Fig. 9

Fig. 10

版本	日期	摘要
v01	2015.03.09	第一稿
V02(English)	2015.04.28	Sean Rice (HNGamers)