

ARM[®] Cortex[®]-M
32-bit Microcontroller

NuMicro[®] ISP Programming Tool
User Manual

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1 OVERVIEW

The “ISP” (In-System Programming) tool allows the embedded Flash memory to be reprogrammed under software control through the firmware using on-chip connectivity interface, such as UART and USB, without removing any microcontroller from the system.

For NuMicro® Family microcontroller (MCU) products, the on-chip Flash memory is partitioned into three blocks: APROM, Data Flash and LDROM. The APROM saves the user application program developed for a specific application; the Data Flash provides storage for nonvolatile application data; and the LDROM saves the ISP code for MCU to update its APROM/Data Flash/CONFIG. User can update the APROM, Data Flash, and User Configuration bits with ISP.

User can update the MCU’s APROM, Data Flash, and User Configuration bits with Nuvoton standard ISP code programmed in LDROM easily by using the ISP function.

2 NUVOTON STANDARD ISP CODE

The Nuvoton standard ISP code for NuMicro[®] MCUs is included in the folder [(2) Nuvoton Standard ISP Code]. User can program the ISP code into LDROM by using a universal programmer or Nuvoton's NuMicro[®] ICP Programming Tool, and the User Configuration bit 'CBS' configured as Boot from LDROM.

Note: The image file for standard ISP code with BSP version higher than 3.0 has the naming rule as "MCUParts_Function_Interface_PIN.bin".

3 USING THE ISP PROGRAMMING TOOL IN WINDOWS

The ISP Programming Tool is contained in the folder [(1) Application Program].

3.1 Connecting Interface Selection

User needs to select the ISP connection interface before using the ISP function. The selection must match the interface used by the standard isp code.

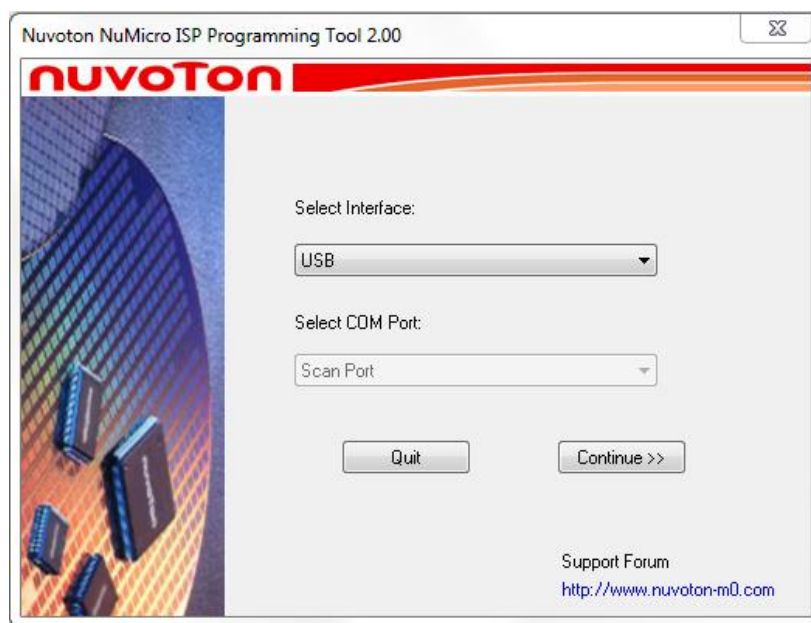


Figure 3-1 Connection via USB Interface

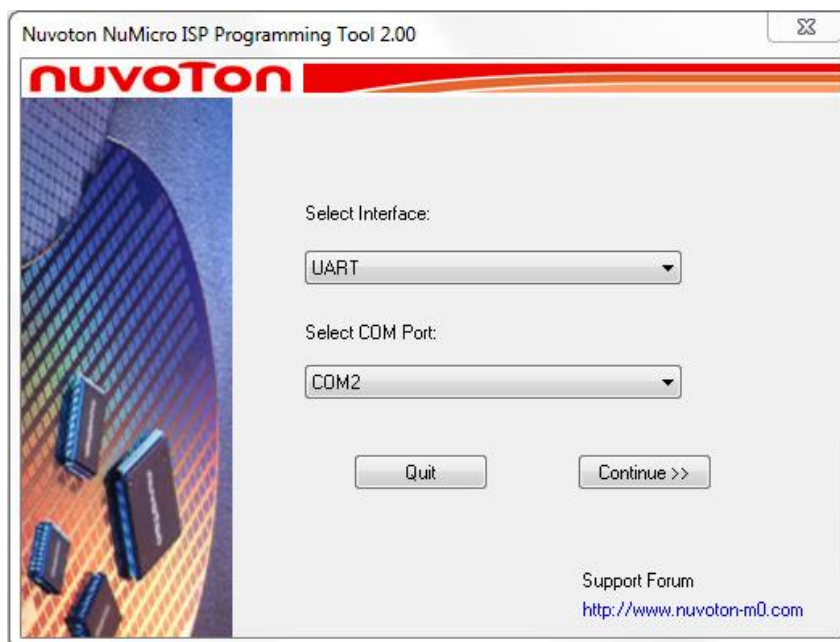


Figure 3-2 Connection via UART Interface using specific COM port

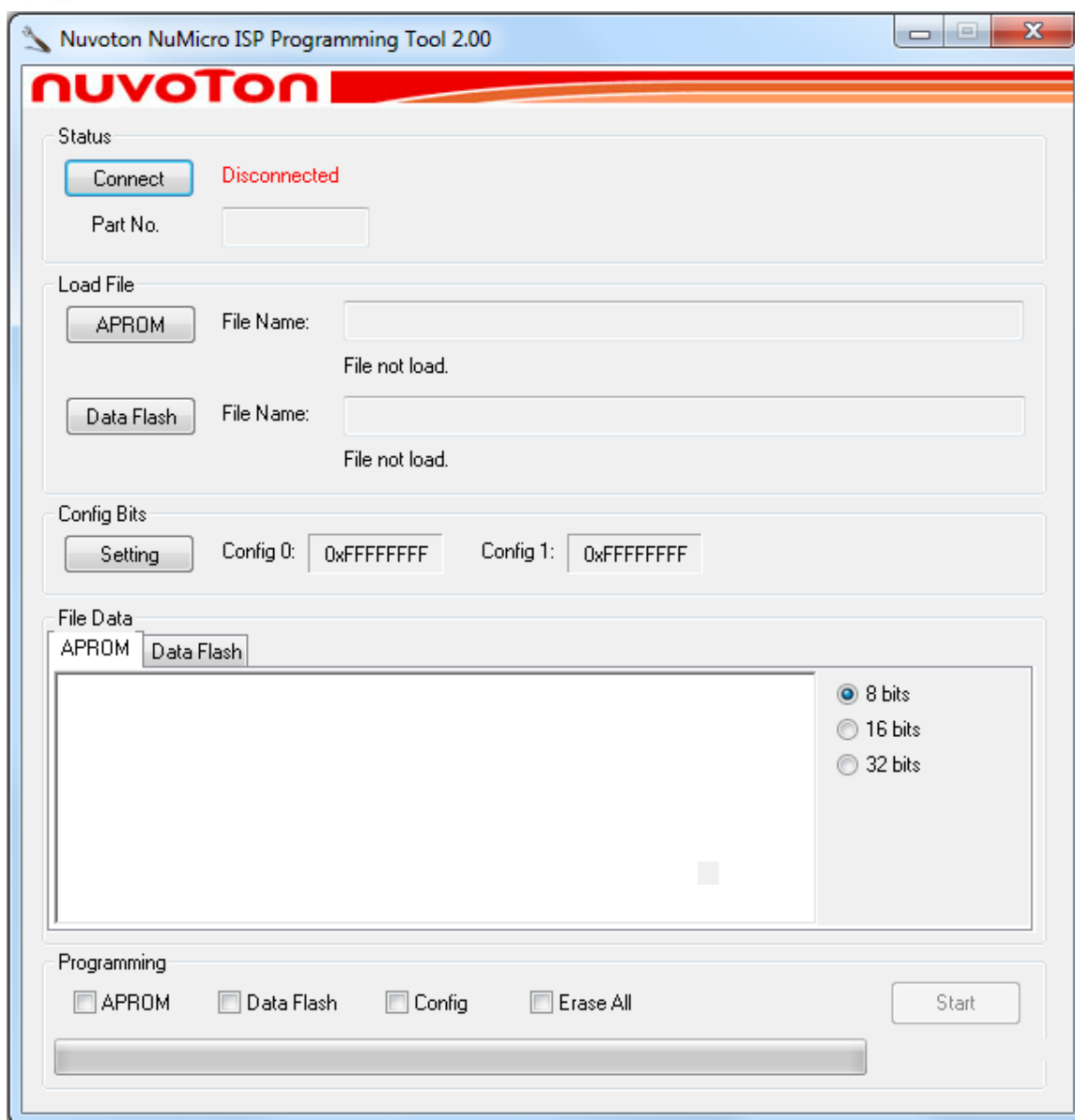


Figure 3-3 Main Dialog

3.2 Connecting to the target chip

After clicking the “**Connect**” button, the ISP tool will keep trying to connect to a target board every 30 ms until the target board is successfully connected or the “**Stop**” button is clicked. If there is no response from the target board during connection, please reset the MCU to execute the ISP code.

3.3 Load File

Click the “**APROM**” or “**Data Flash**” button to select the image from the pop-up window. Or using drag & drop function from Windows Explorer to select the image file.

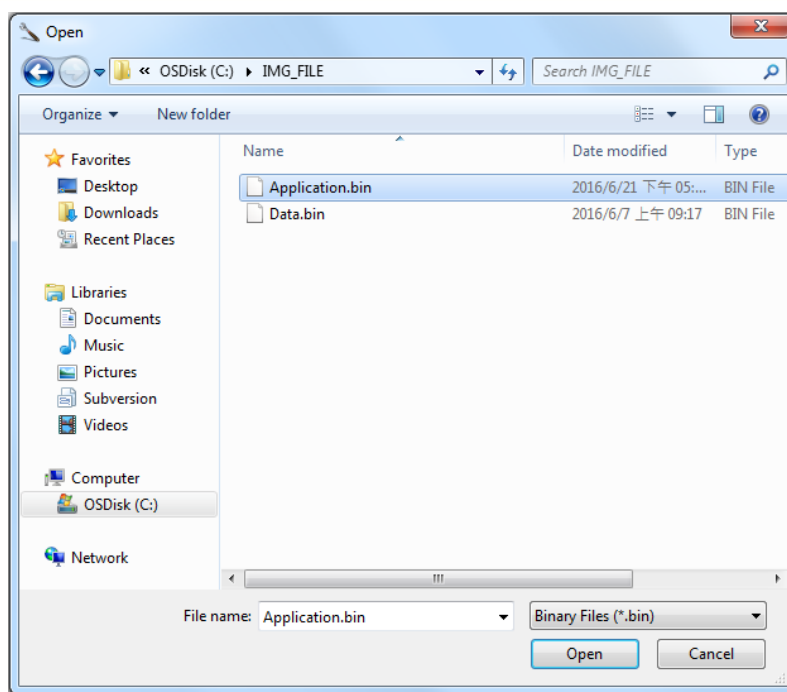


Figure 3-4 Click Button to Load Image file

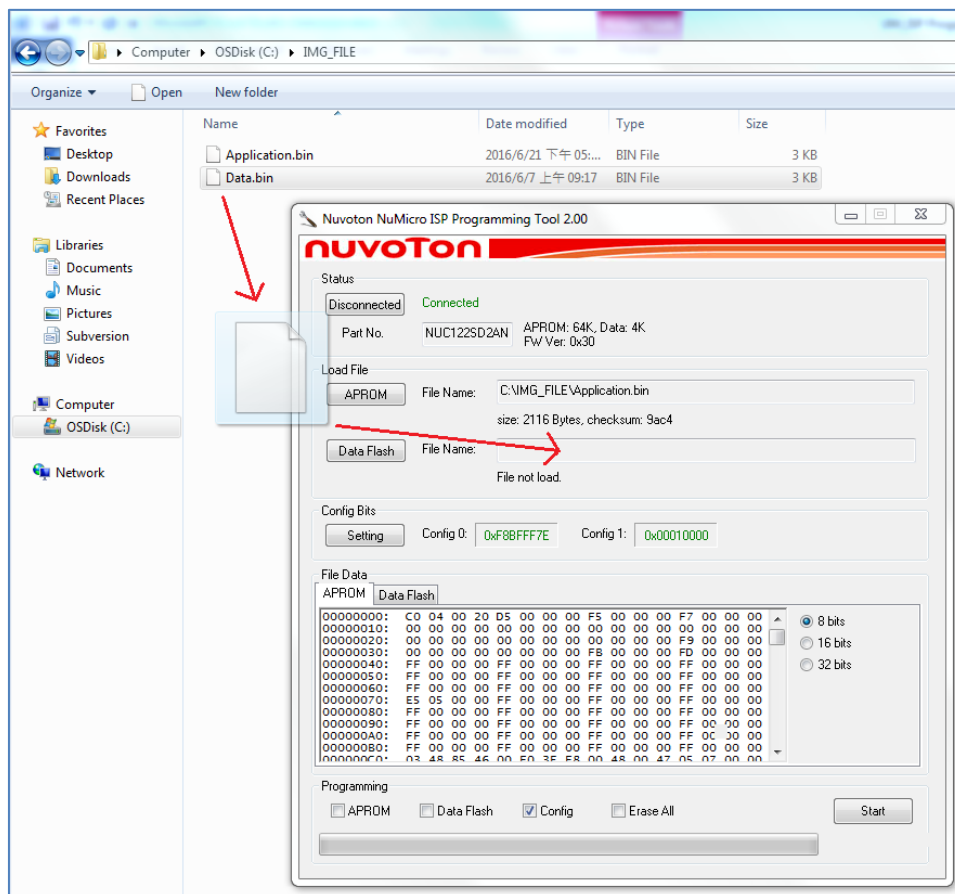


Figure 3-5 Drag image file from explorer window

3.4 Setting the User Configuration Bits

After clicking the “Setting” button, a “User Configuration” dialog will open to display all User Configuration settings. The corresponding “User Configuration” dialog will be displayed according to the MCU currently connected. Figure 3- shows the “User Configuration” setting of the NUC122 series MCU.

The ISP tool does not allow user to modify target board boot selection, either. The “Boot Select” shown in the User Configuration form is for informative purpose only. This setting can be updated with Nuvoton’s NuMicro® ICP Programming Tool.

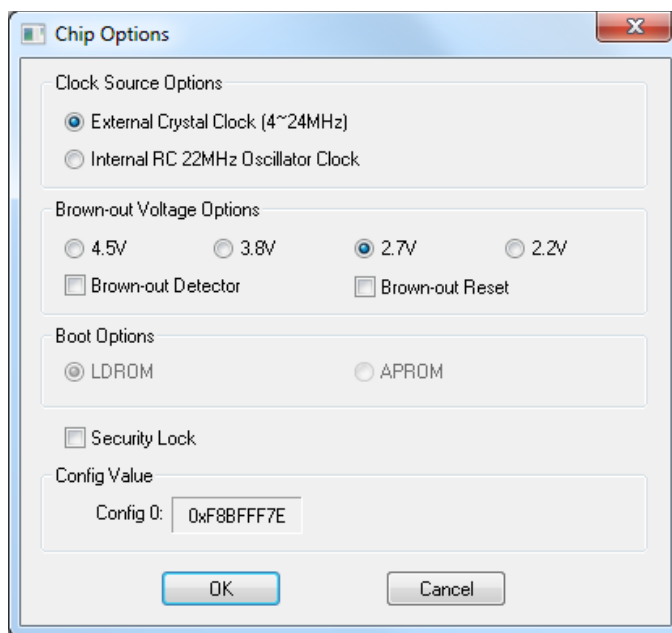


Figure 3-6 User Configuration Dialog

3.5 Programming Options

The following table lists the ISP actions for different programming options.

Programming Options	ISP Actions
APROM	APROM will be updated.
Data Flash	Data Flash will be updated.
Config	User Configuration will be updated while target chip is not in write protected mode.. 1. User Configuration is in write protected mode when security lock is enabled. 2. Program APROM or Erase All option can remove write protection of User Configuration.
Erase All	APROM and Data Flash will be erased. The Security Lock in User Configuration will be disabled.

Table 3-7 ISP Programming Options

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