

Nuvoton

ISP-ICP Gang Programmer

User Manual

Revision 5.02, 2010/11/15

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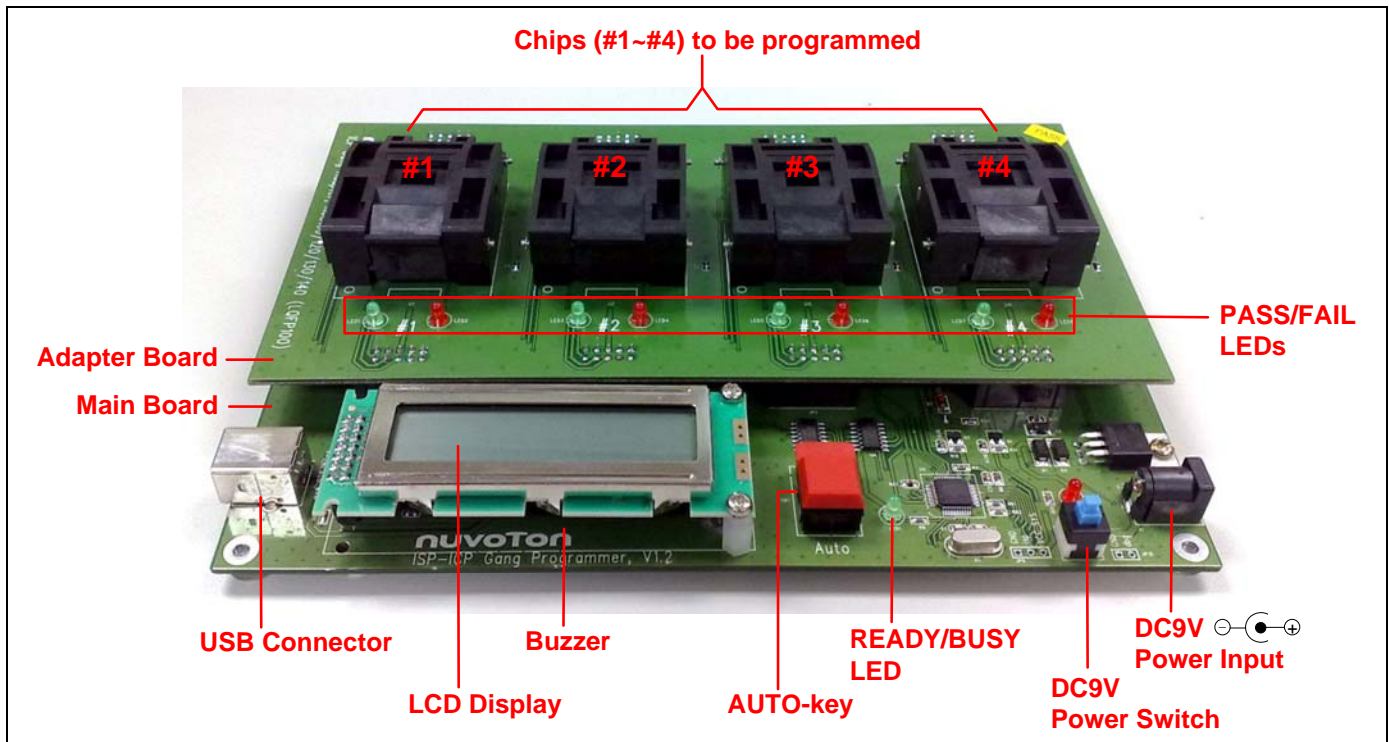
Revision History

Revision	Description	Date
v4.00	The first formal released version for the 'ISP-ICP Gang Programmer'.	2010/04/01
v4.01	Nothing is changed but document version number.	2010/04/30
v5.00	(1) Support ICP gang programming of NuMicro NUC100-series products. (2) Update the application program to v5.00. (The GUI display for "CONFIG Setting" becomes more user-friendly.)	2010/08/13
v5.02	(1) Support ICP gang programming of NuMicro M051-series products. (2) Fix the HEX-to-BIN conversion error when the hex input file has a binary code size more than 64K. (The application program is updated to v5.02.)	2010/11/15

1 Introduction

The Nuvoton proprietary "ISP-ICP Gang Programmer" provides four-chip gang programming function. It is specially designed for mass-production in the customer site. After on-line downloading the programming data into the Gang Programmer, the user may start the off-line gang programming operation.

The "ISP-ICP Gang Programmer"



Component Description

Main Board & Adapter Board:

The main board consists of the circuits for gang programming control while the adapter board just contains the sockets for the MCU chips to be programmed. Note that different chip package will have different adapter board.

USB Connector:

Connect to PC for on-line downloading of the programming data.

LCD Display:

Show the programmer's information and status.

Buzzer:

Show the programmer's status by a sound message.

AUTO-key:

Press this key to start gang programming operation.

READY/BUSY LED:

Show the programmer's status: 'always on' means READY while 'blinking' means BUSY.

DC9V Power Switch:

Press this switch to turn on the programmer when it is powered by a DC 9V power supply.
(Note the programmer will be always powered on when connected to PC's USB port.)

DC9V Input:

DC 9V power supply input for off-line gang programming operation.

PASS/FAIL LEDs:

Show the individual programming result for chips #1 to #4: 'green' means PASS while 'red' means FAIL.

Why Called “ISP-ICP Gang Programmer”?

Because this programmer can function either as an *ISP Gang Programmer* or as an *ICP Gang Programmer*, it is called *ISP-ICP Gang Programmer*. It is designed for gang programming of the Nuvoton MCU products which are equipped with ISP function or ICP function.

The user can directly program the MCU chips with ICP function by this programmer. However, for the MCU chips with ISP function, the chips should have the ‘*Nuvoton standard ISP code*’ pre-programmed in the LDROM before they can be programmed by this programmer.

2 Driver and Application Program

2.1 Install the Driver

This ISP-ICP Gang Programmer has the USB-to-Serial bridge chip (PL-2303) built inside. When connected to host, it will appear as a *USB-to-Serial COM port* in the System\Hardware\Device Manager. Before starting to use this programmer, the user needs to install the driver in the host if the PL-2303 driver has never been installed in this host. The user can also find this driver in the folder [(1) Driver].

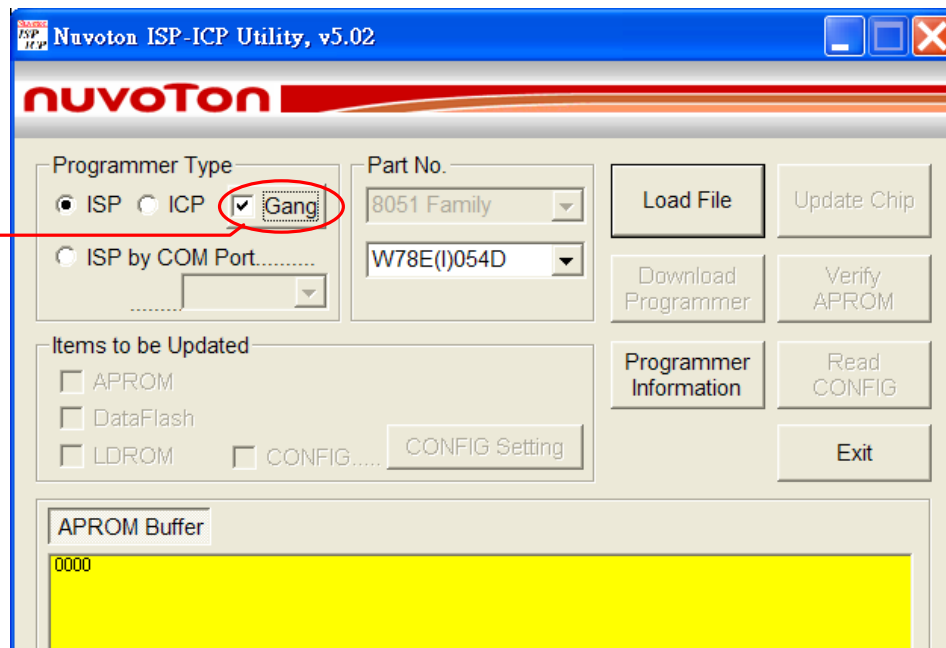
2.2 Install the Application Program

The setup file for the application program is included in the folder [(2) Application Program]. Doubly click it to install the application program. Using the default installation setting, you will find a new item "Nuvoton Tools \ ISP-ICP Utility, v?.??" appearing in the Windows START-menu after the installation is successfully finished.

2.3 Activate 'Gang' Mode

When the application program is opened, please activate '**Gang**' mode for the ISP-ICP Gang Programmer, as shown below. You can operate it as if you operate the *ISP Programmer* or *ICP Programmer* except you cannot directly update the MCU chips under control of the application program's GUI. The gang programming operation is triggered by pressing the AUTO-key on the programmer after you download the programming data into the programmer.

Activate 'Gang' mode for the ISP-ICP Gang Programmer



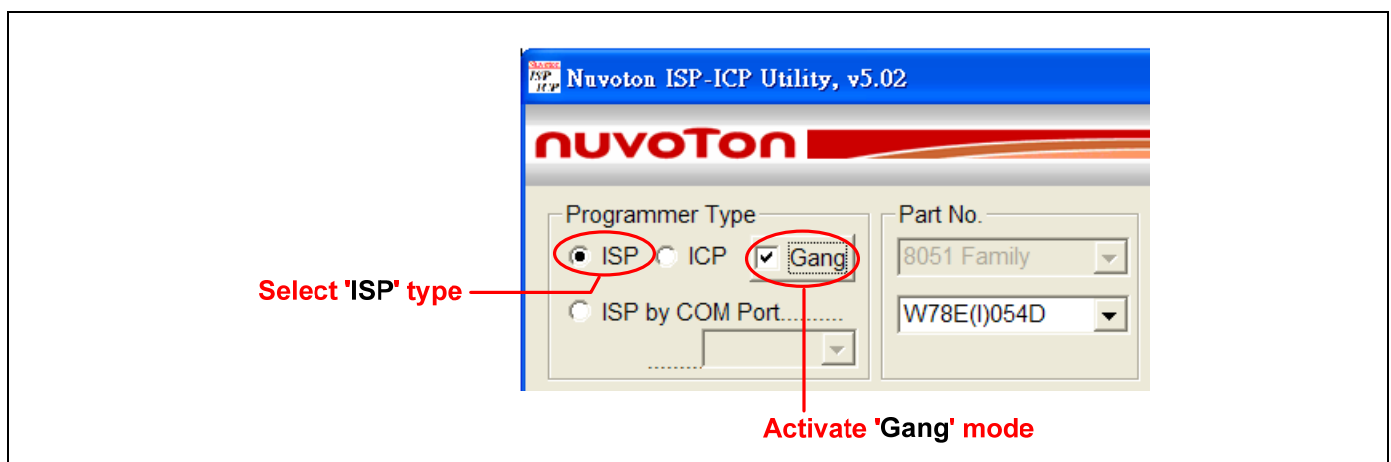
3 Start to Use the Gang Programmer

The Gang Programmer can be configured as an 'ISP Gang Programmer' or an 'ICP Gang Programmer' through the application program.

3.1 As an 'ISP Gang Programmer'

For the MCU chips with ISP function, to use the Gang Programmer, please select the programmer type as 'ISP' with 'Gang' mode activated on the application program, as shown below. The following operation is fully like you operate the ISP Programmer except you cannot directly update the MCU chips. You can press the AUTO-key to start programming operation after finishing 'Download Programmer'.

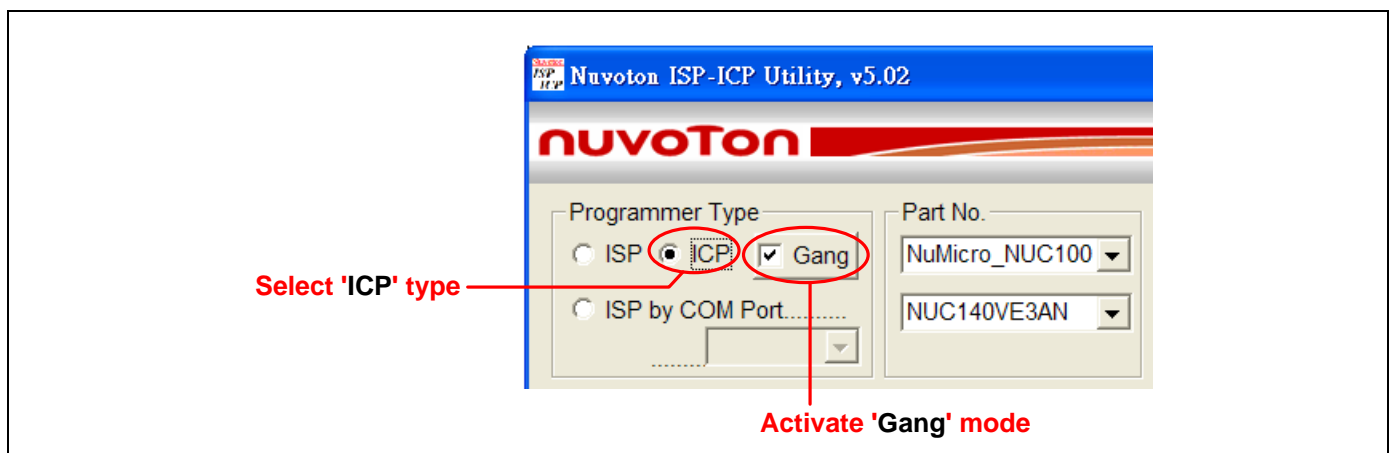
Note the MCU chips should have the 'Nuvoton standard ISP code' pre-programmed in LDROM and the CONFIG bits properly configured before they can be programmed by the ISP Gang Programmer.



3.2 As an 'ICP Gang Programmer'

For the MCU chips with ICP function, to use the Gang Programmer, please select the programmer type as 'ICP' with 'Gang' mode activated on the application program, as shown below. The following operation is fully like you operate the ICP Programmer except you cannot directly update the MCU chips. You can press the AUTO-key to start programming operation after finishing 'Download Programmer'.

Note there is no need to pre-program any code in the MCU chip and no need to pre-configure the CONFIG bits before using the ICP Gang Programmer.



3.3 Operation Examples

Example-1: W78E054D (Using ISP Gang Programmer)

To do the ISP gang programming for W78E054D, please follow the steps listed below.

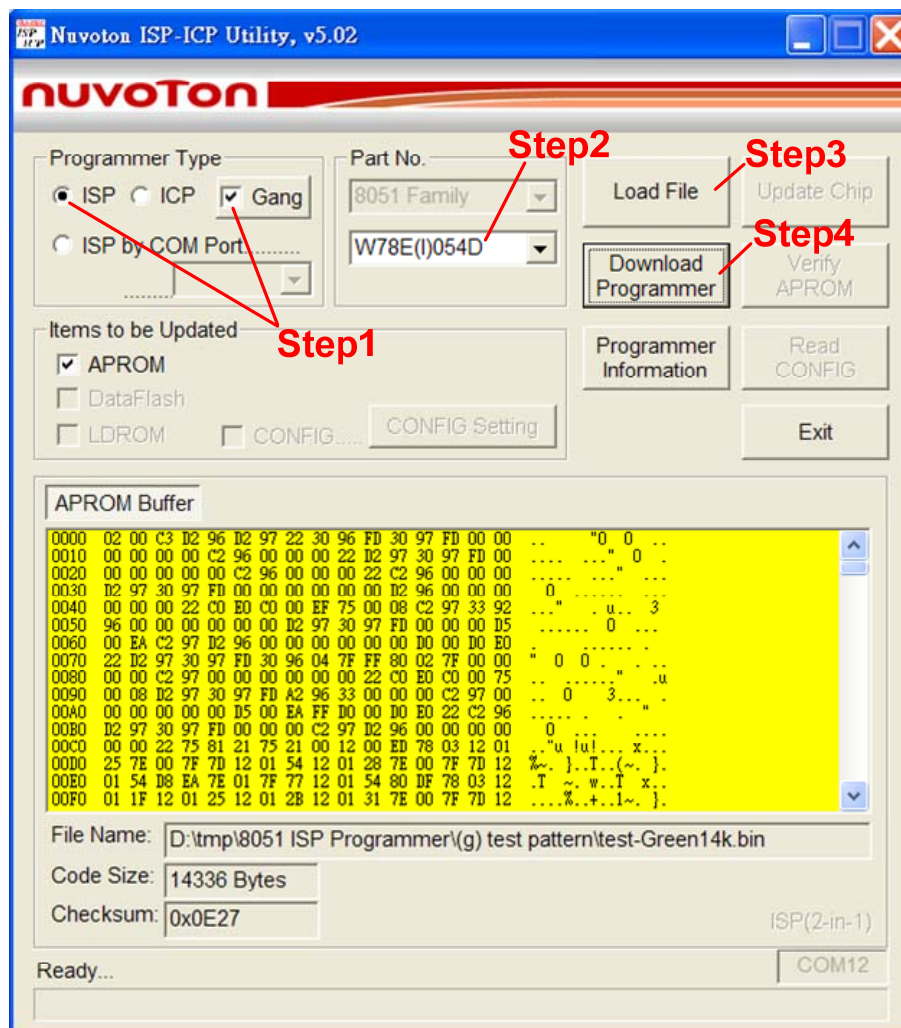
Step1: Set the programmer type to be '**ISP Gang Programmer**'.

Step2: Select the wanted part no., W78E054D.

Step3: Load the programming data into APROM buffer.

Step4: Download the buffer's data into the Gang Programmer.

Step5: Now, you can press the AUTO-key to start the ISP gang programming in on-line mode or off-line mode.



Example-2: N78E517A (Using ISP Gang Programmer)

To do the ISP gang programming for N78E517A, please follow the steps listed below.

Step1: Set the programmer type to be '**ISP Gang Programmer**'.

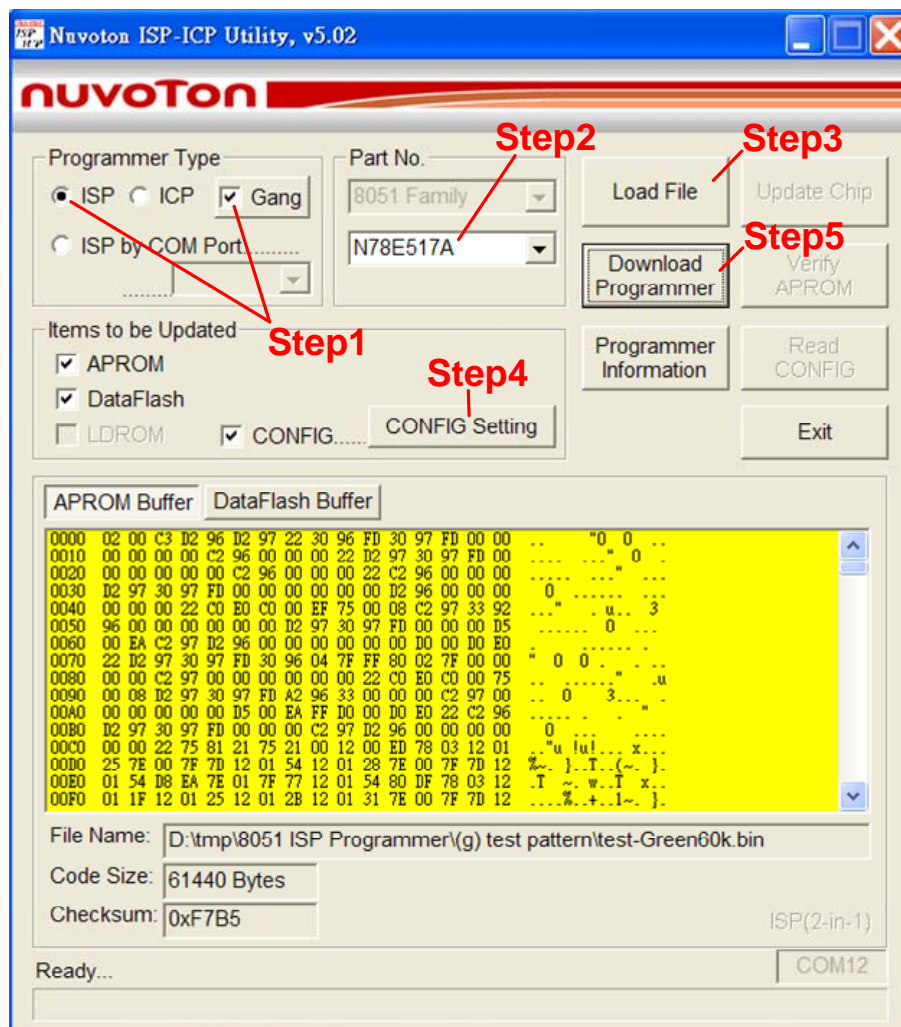
Step2: Select the wanted part no., N78E517A.

Step3: Load the programming data into APROM/DataFlash buffers by clicking '**APROM Buffer then Load File**' and '**DataFlash Buffer then Load File**', respectively.

Step4: Set the CONFIG bits.

Step5: Download the buffers' data and CONFIG setting into the Gang Programmer.

Step6: Now, you can press the AUTO-key to start the ISP gang programming in on-line mode or off-line mode.



Example-3: W79E825A (Using ICP Gang Programmer)

To do the ICP gang programming for W79E825A, please follow the steps listed below.

Step1: Set the programmer type to be '**ICP Gang Programmer**'.

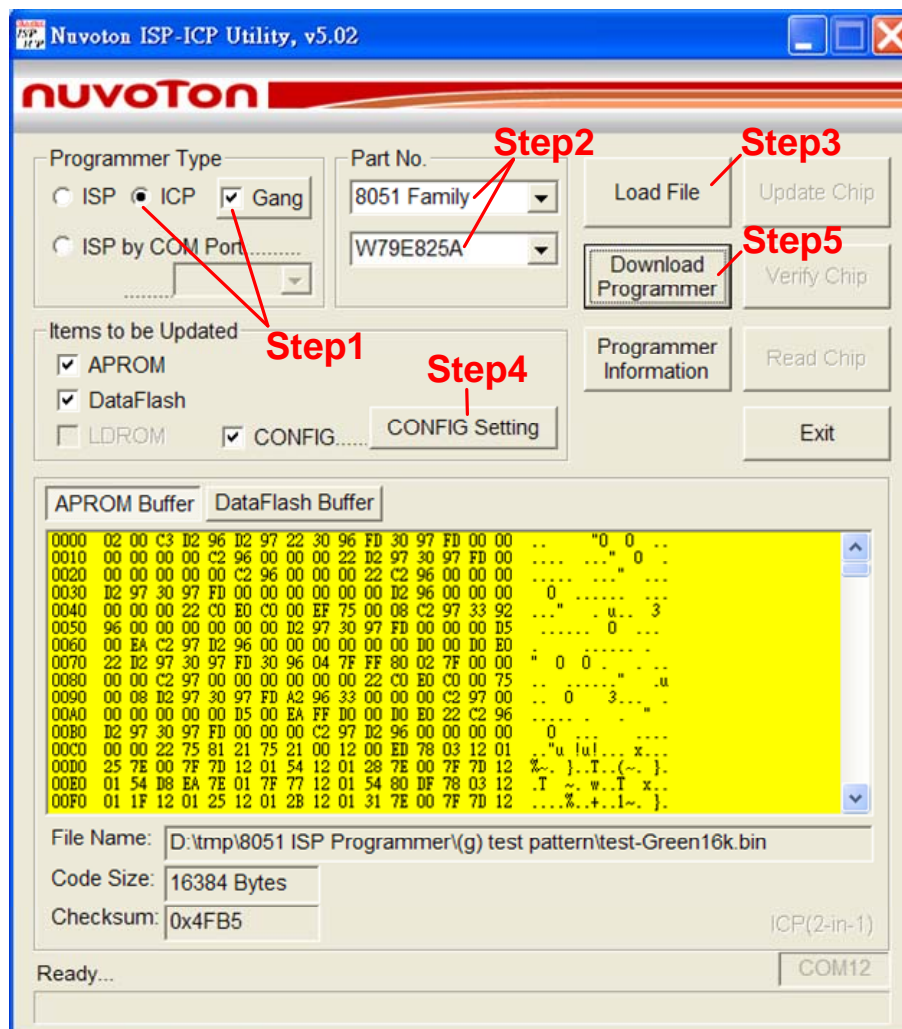
Step2: Select the wanted part no., W79E825A.

Step3: Load the programming data into APROM/DataFlash buffers by clicking '**APROM Buffer then Load File**' and '**DataFlash Buffer then Load File**', respectively.

Step4: Set the CONFIG bits.

Step5: Download the buffers' data and CONFIG setting into the Gang Programmer.

Step6: Now, you can press the AUTO-key to start the ICP gang programming in on-line mode or off-line mode.



Example-4: NUC140VE3AN (Using ICP Gang Programmer)

To do the ICP gang programming for NUC140VE3AN, please follow the steps listed below.

Step1: Set the programmer type to be '**ICP Gang Programmer**'.

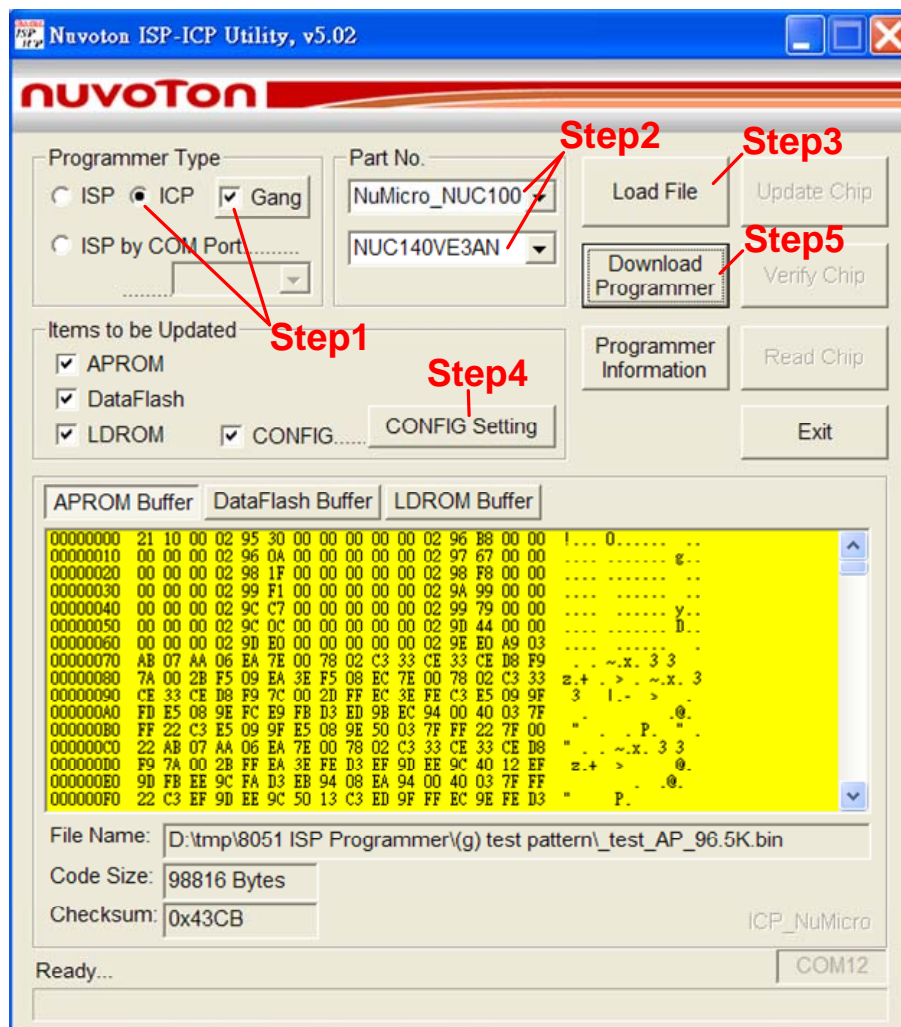
Step2: Select the wanted part no., NUC140VE3AN.

Step3: Load the programming data into APROM/DataFlash/LDROM buffers by clicking '**APROM Buffer then Load File**', '**DataFlash Buffer then Load File**' and '**LDROM Buffer then Load File**', respectively.

Step4: Set the CONFIG bits.

Step5: Download the buffers' data and CONFIG setting into the Gang Programmer.

Step6: Now, you can press the AUTO-key to start the ICP gang programming in on-line mode or off-line mode.



Example-5: M052LAN (Using ICP Gang Programmer)

To do the ICP gang programming for M052LAN, please follow the steps listed below.

Step1: Set the programmer type to be '**ICP Gang Programmer**'.

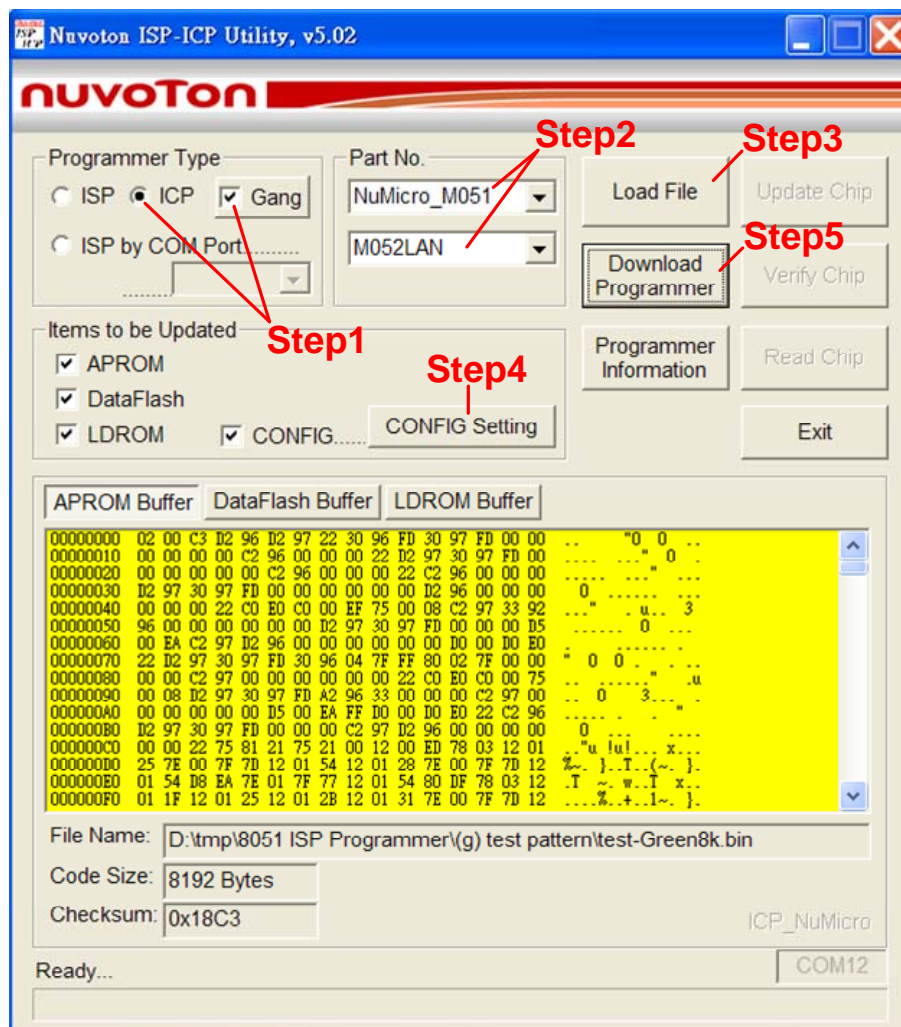
Step2: Select the wanted part no., M052LAN.

Step3: Load the programming data into APROM/DataFlash/LDROM buffers by clicking '**APROM Buffer then Load File**', '**DataFlash Buffer then Load File**' and '**LDROM Buffer then Load File**', respectively.

Step4: Set the CONFIG bits.

Step5: Download the buffers' data and CONFIG setting into the Gang Programmer.

Step6: Now, you can press the AUTO-key to start the ICP gang programming in on-line mode or off-line mode.

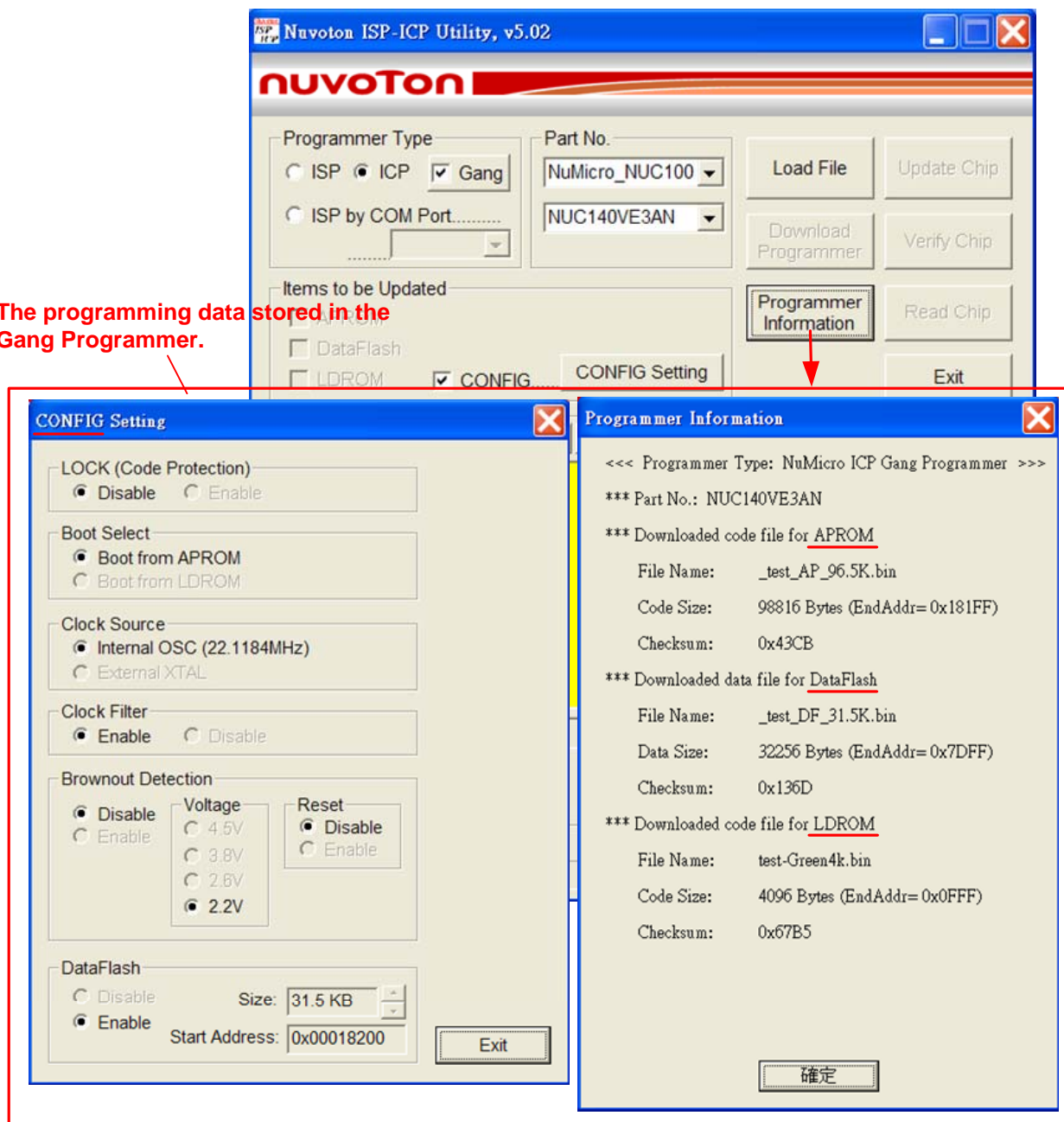


4 Check the Programmer Information

4.1 Through the Application Program

To check the information of the programming data previously downloaded in the programmer, connect it to host and then click the 'Programmer Information' button. Now, a dialog box of Programmer Information will pop out, as shown below, to show the information of previous downloaded data.

The programming data stored in the Gang Programmer.

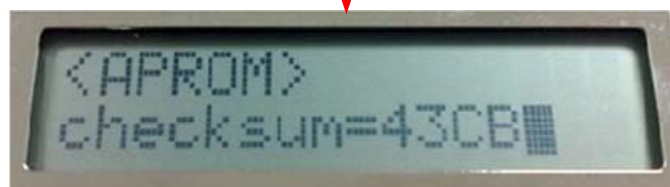


4.2 Through the LCD Display

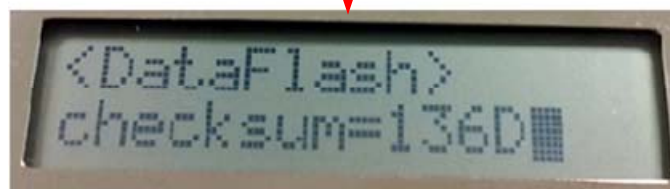
Every time the programmer is just powered on, the LCD module will sequentially display the information of the programming data previously downloaded, as shown below.



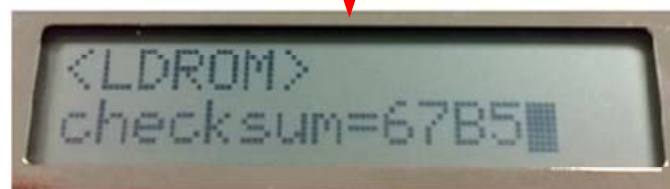
The part number.



When APROM is selected to be programmed, the checksum of the downloaded data is shown.



When DataFlash is selected to be programmed, the checksum of the downloaded data is shown.



When LDROM is selected to be programmed, the checksum of the downloaded data is shown.



When CONFIG is selected to be programmed, the checksum of the downloaded configuration setting is shown.



Programmer ready.
Now, the user may press the AUTO-key for gang programming.