



九齊科技股份有限公司
Nyquest Technology Co., Ltd.

User Manual

NYISP

NX1 In-System Programming

Version 1.1

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Table of Contents

1 Introduction	4
1.1 What is <i>NYISP</i>	4
1.2 Installing <i>NYISP</i>	4
1.3 The Main Interface	7
1.4 Menu	8
1.4.1 <i>File</i>	8
1.4.2 <i>Function</i>	8
1.4.3 <i>Help</i>	9
2 Connection	10
2.1 Interface	10
2.2 Settings	10
2.2.1 <i>Port</i>	10
2.2.2 <i>Baud Rate</i>	10
2.2.3 <i>Parity</i>	10
2.2.4 <i>Data Bits</i>	10
2.2.5 <i>Stop Bits</i>	10
3 File	11
3.1 Path	11
3.2 Information	11
3.2.1 <i>File Size</i>	11
3.2.2 <i>Code Checksum</i>	11
3.2.3 <i>IC Body</i>	11
3.2.4 <i>Recommended</i>	11
4 Run Message	12
5 Action	13
5.1 Action Setting	13
5.2 Update	13
5.2.1 <i>All</i>	14
5.2.2 <i>Custom</i>	14
5.3 Run	14
5.4 Cancel	14
6 Custom Section Update Settings	15
6.1 Shortcut Keys	15
6.2 Right-Click Menu	15

6.3	The Eding Display Window	16
6.3.1	Sec.....	16
6.3.2	Section Type	16
6.3.3	Start Index.....	16
6.3.4	End Index.....	16
7	Progress	16
8	Revision History.....	17
Appendix A.	In-System Programming Indication	18
A.1	In-System Programming Flow for NX1 EF Series Using UART	18

1 Introduction

NYISP is the abbreviation of Nyquest In-System Programming, it is an in-system programming tool developed for NX1 series microcontrollers of Nyquest Technology Corporation.

Content:

[1.1 What is *NYISP*](#)

[1.2 Installing *NYISP*](#)

1.1 What is *NYISP*

NYISP is an in-system programming tool for IC. It contains connection setting, ISP program or content to IC.

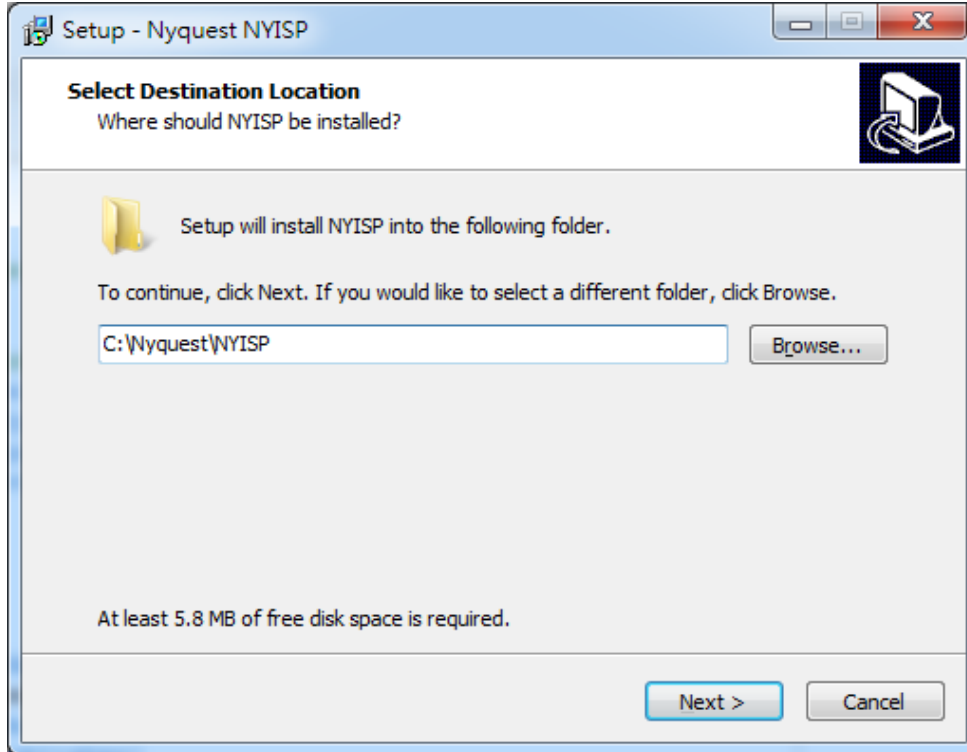
1.2 Installing *NYISP*

Please contact Nyquest to acquire the latest version of *NYISP*. To install *NYISP*, please unzip the .zip file to a specific folder and then double-click on the .exe file in the specific folder to start the installation. Follow the instructions of the installation wizard to complete the installation.

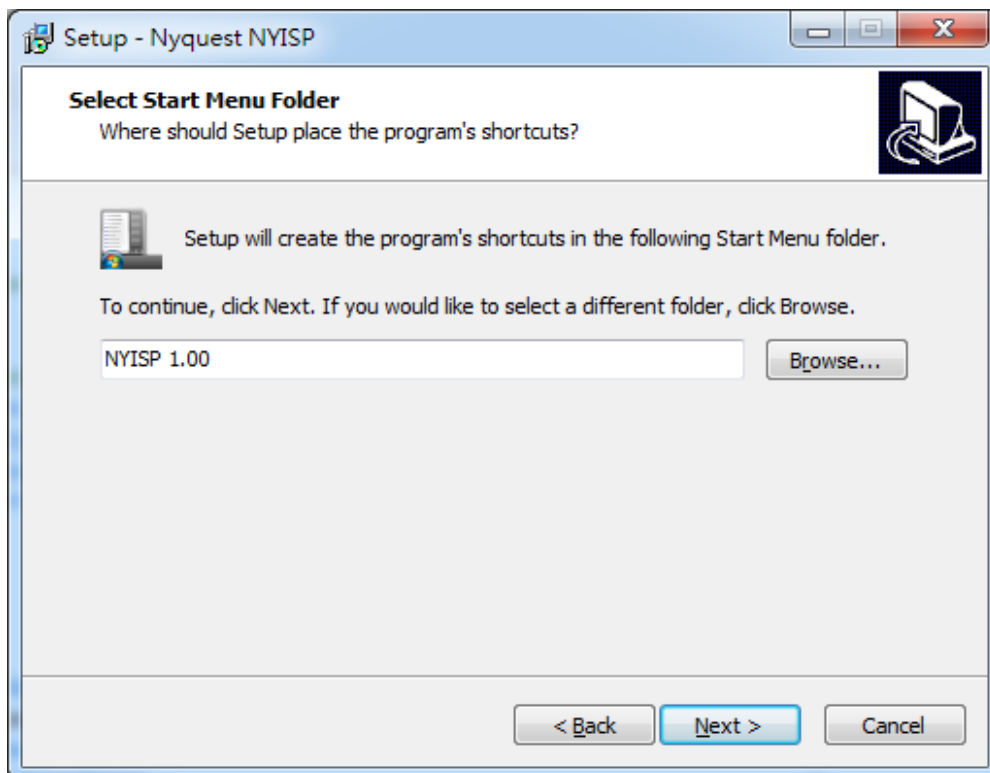
System requirement:

- ◆ Pentium 1.3GMHz CPU or above, Microsoft Windows operating system (7, 8, 10, 11).
- ◆ At least 1G of RAM.
- ◆ At least 2G free space on hard disk.
- ◆ A display card and monitor with resolution of 1440x768 or higher. ◦

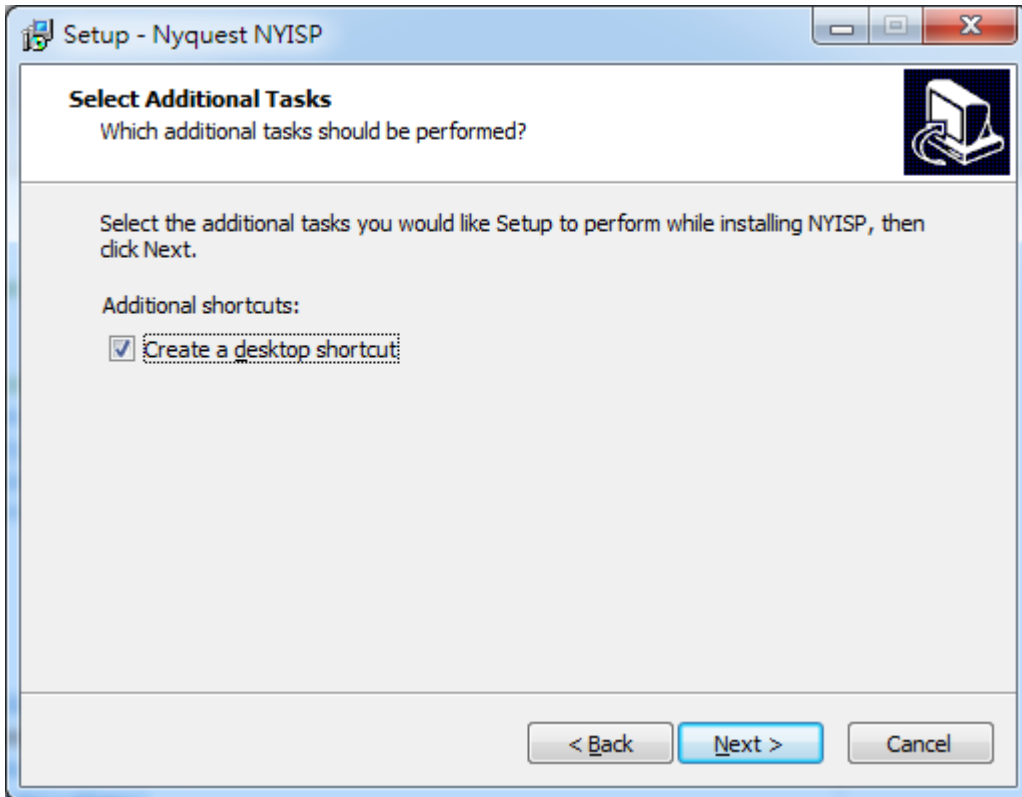
Step 1: Step 1: Click on the installation file of *NYISP* for getting start. . Or press “Browse...” to select a different installation folder.



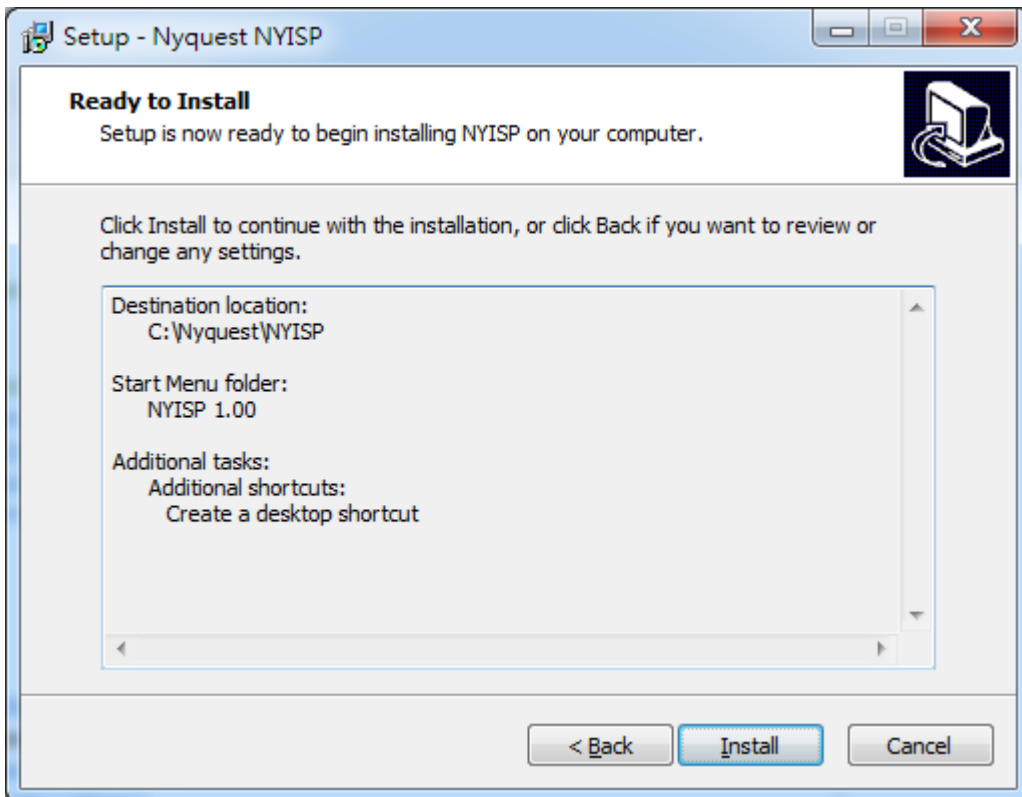
Step 2: The default destination location. If user wants to change location, please press Browse to select a different folder. Then press Next



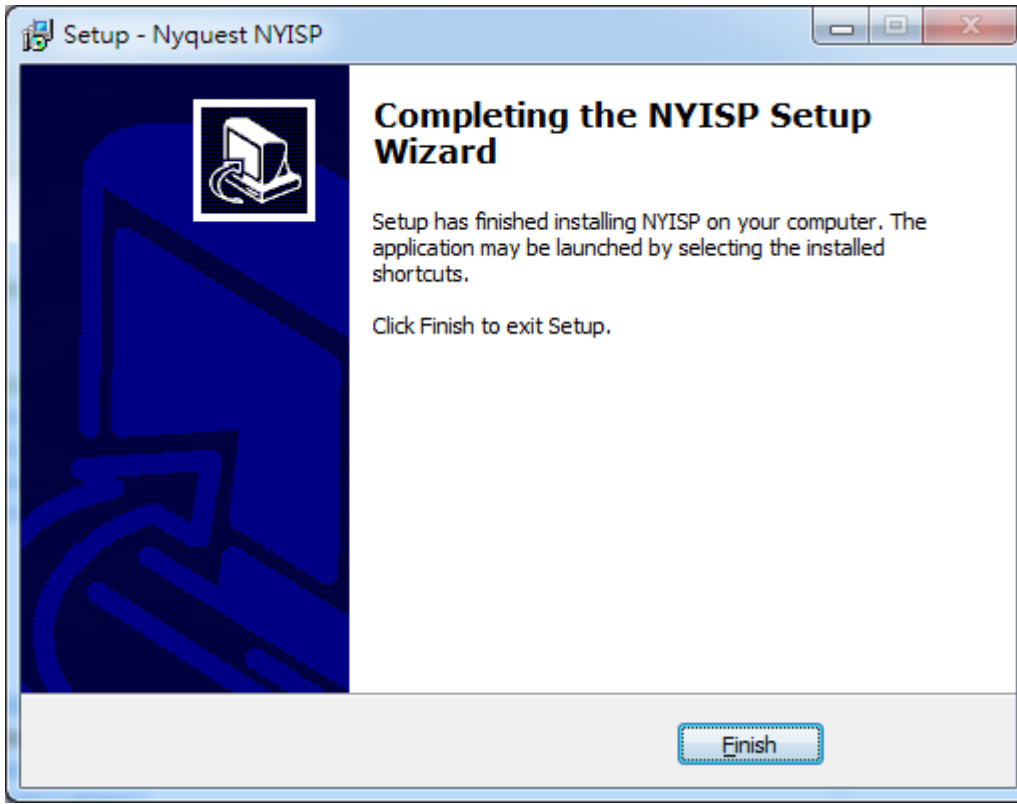
Step 3: Tick to build a shortcut on desktop or not. Then press Next.



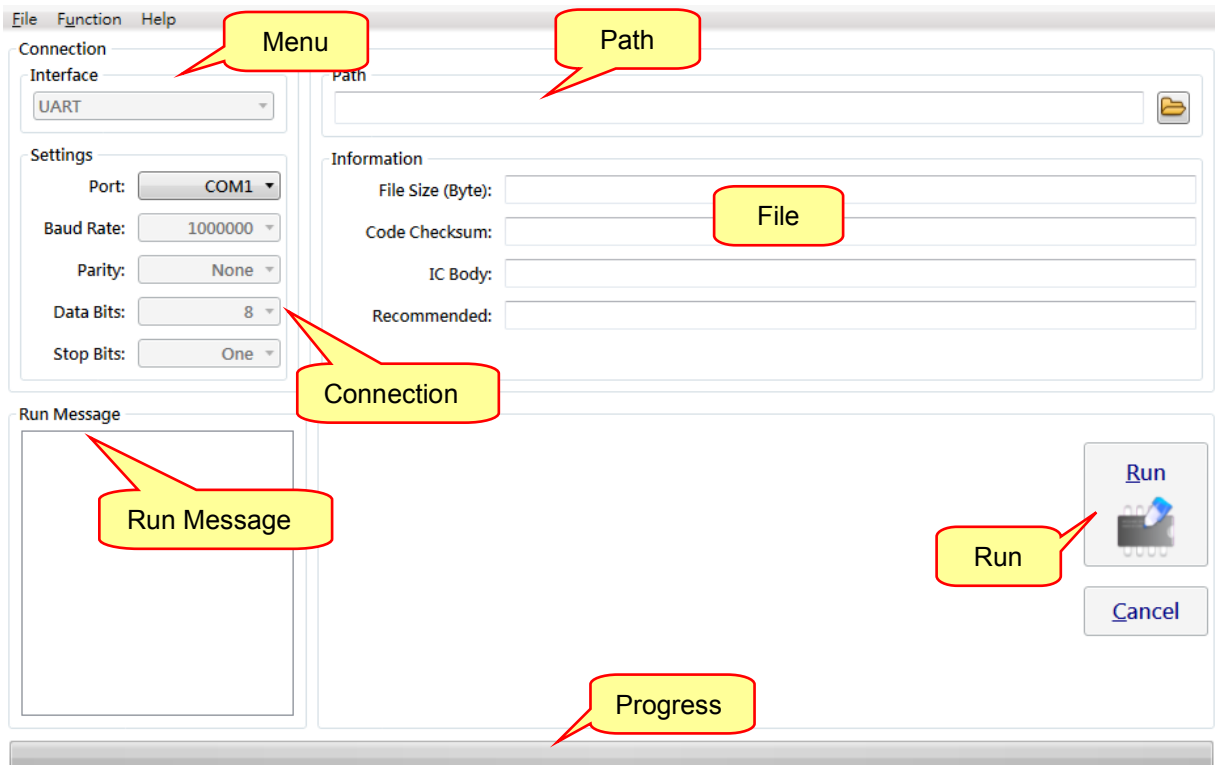
Step 4: The setup wizard will show the installation settings. If the settings are correct, please click on Install for getting started.



Step 5: After completing the installation, a pop-up dialogue will be shown to inform user. Please press Finish to exit setup.



1.3 The Main Interface



1.4 Menu

The Menu provides 3 commands, includes File, Function and Help.

Content:

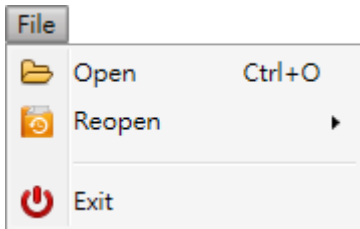
[1.4.1 File](#)

[1.4.2 Function](#)

[1.4.3 Help](#)

1.4.1 File

Click [File] on Menu Bar, and the menu is shown below.

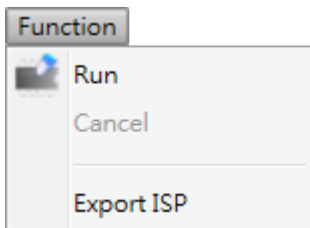


The items and description of [File] are below.

Item	Description
Open...	Open an existing .bin file.
Reopen	List the recently opened .bin files, from which one can be chosen.
Exit	Close and exit NYISP.

1.4.2 Function

Click [Function] on Menu Bar, and the menu is shown below.

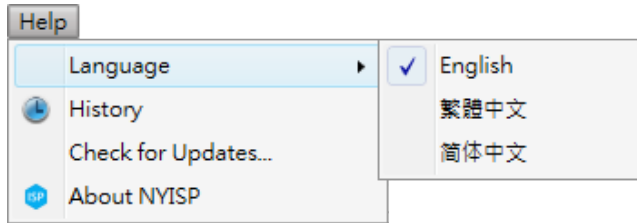


The items and description of [Function] are below.

Item	Description
Run	Batch run selected function.
Cancel	Cancel actions.
Export ISP	Export current ISP to a new file.

1.4.3 Help

Click [Help] on Menu Bar, and the menu is shown below.



The items and description of [Help] are below.

Item	Description
Language	<i>NYISP</i> is available in English, Traditional Chinese or Simplified Chinese.
History	Revision history of <i>NYISP</i> .
Check for Updates...	Check for the latest version of <i>NYISP</i> . This function will connect to the Internet.
About <i>NYISP</i>	Display the information of <i>NYISP</i> including its version.

2 Connection

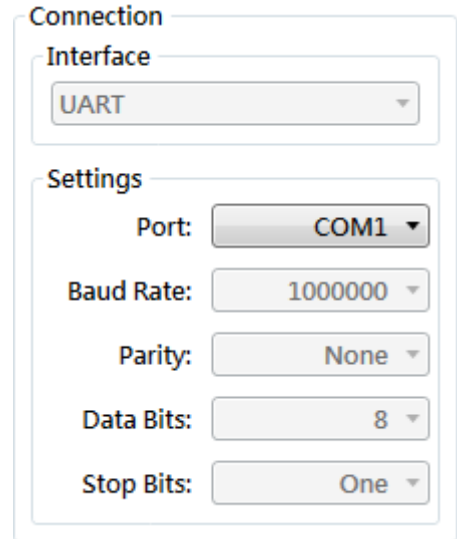
In-System Programming could collaborate with applications by using Connection (UART or Bluetooth).

2.1 Interface

Select the connection option for In-System Programming which currently only supports UART.

2.2 Settings

Set the Interface attributes.



Connection

Interface

UART

Settings

Port: COM1

Baud Rate: 1000000

Parity: None

Data Bits: 8

Stop Bits: One

2.2.1 Port

Set the port of UART.

2.2.2 Baud Rate

Set the Baud amounts that can be transmitted per second. Currently 9,600 ~ 1,000,000 are supported.

2.2.3 Parity

Parity check of data. Currently only supports no parity check (None).

2.2.4 Data Bits

Data bits which currently only supports 8-bits.

2.2.5 Stop Bits


The stop bit means that this group of data units ends here. Currently only one stop bit (One) is supported.

3 File

Select and execute the file path and information of the In-System programming bin file.

File

Path

D:\NY_Project\NYISP\NYISP_Pack.bin 

Information


File Size (Byte): 19,983

Code Checksum: 9C64FA

IC Body: NX13FS61A


Recommended: NX13FS61A

3.1 Path

Click on  to open the targeted bin file to execute the programming.

The completed file path and filename will be displayed after opening the file.

Path

D:\NY_Project\NYISP\NYISP_Pack.bin 

3.2 Information

After opening a bin file, the relevant information of the bin file will be displayed in the file information column.

3.2.1 File Size

File size in bytes. It can be checked with the file size in the Check List.

3.2.2 Code Checksum

Code checksum. It can be checked with the check code in the Check List.

3.2.3 IC Body

The IC body for bin file.

3.2.4 Recommended

The recommended IC to be applied.

4 Run Message

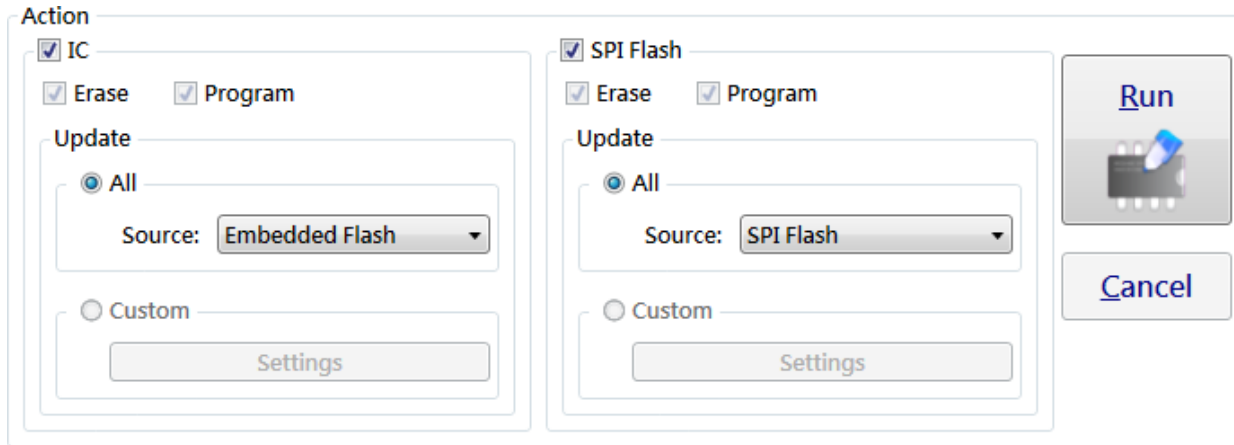
The Run Message display the status and message after executing the programming action.

Run Message

- ① Start running...
- ① Waiting for IC to power on...
- ① SPI Flash programing...
- ① IC programing...
- ① Run completed.

5 Action

The action settings, execution, and cancellation of In-System programming can be performed in the Action block



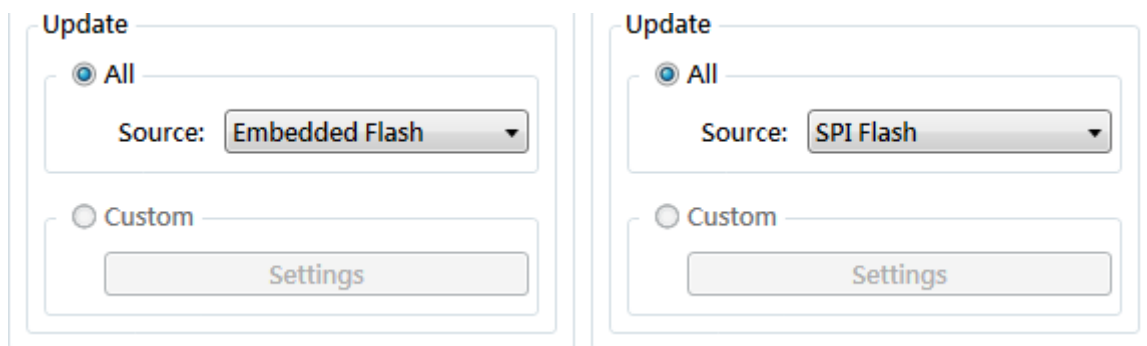
5.1 Action Setting

According to the opened bin file, user can set IC or SPI Flash to execute the In-System programming which provides the Erase and Program options.



5.2 Update

According to the opened bin file, user can set the In-System programming IC or SPI Flash block. For NX1 series, there are two options: All and Custom.



5.2.1 All

Update all blocks from the Source setting. For NX1 series, the available options are below.

IC Option	Description
Embedded Flash	All content of NX1 EF series IC.
Updateable Resources	The updateable resources content of NX1 EF series IC

SPI Flash Option	Description
SPI Flash	All content of SPI Flash
XIP	The XIP content of SPI Flash

5.2.2 Custom

Update the block of Custom setting. Press the [Settings] to open the Custom Section Update interface, please refer to [6 Custom Section Update Settings](#) for the detailed descriptions.

5.3 Run

Please refer to [1.4.2 Function](#) for details.

5.4 Cancel

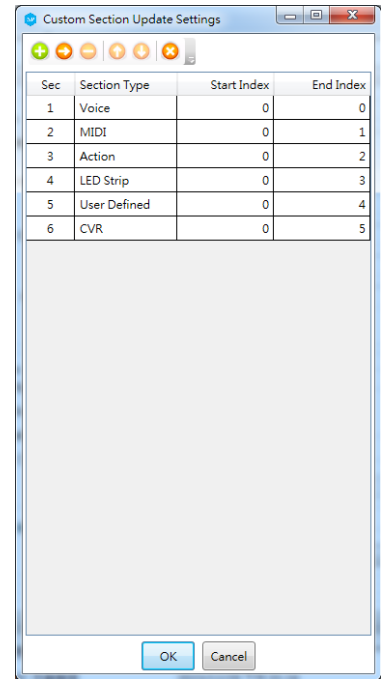
Please refer to [1.4.2 Function](#) for details.

6 Custom Section Update Settings

User can set up the specified sections by using the Custom Section Update Settings interface.

Note:

1. *The user-defined section must contains the BIN files and target section.*
2. *The initial position of IC or SPI Flash section aligns with the minimum erasing unit. For IC, it's 512Byte. For SPI Flash is 4,096 Bytes.*
3. *The length of IC or SPI Flash section must be greater than or equal to the length of BIN file.*
4. *When the user executes the IC Erase or SPI Erase to erase the last section, NYISP will start the erase from its starting position to the end.*



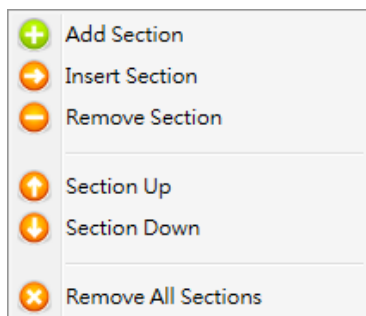
6.1 Shortcut Keys

The shortcut keys are located on the upper editing display window. Just click on the target key to execute the function directly.

- Add Section:** Add a section at the end of all sections.
- Insert Section:** Insert a section before the selected section.
- Remove Section:** Remove the selected section.
- Section Up:** Move the selected section upward.
- Section Down:** Move the selected section downward.
- Remove All Section:** Remove all sections.

6.2 Right-Click Menu

Just right-click on the editing display window list, the right click menu will pop up.



Option	Description
Add Section	Add a section at the end of all sections.
Insert Section	Insert a section before the selected section.
Remove Section	Remove the selected section.
Section Up	Move the selected section upward.
Section Down	Move the selected section downward.
Remove All Sections	Remove all sections

6.3 The Eding Display Window

6.3.1 Sec.

The column of Sec. shows the serial numbers. The range of serial numbers is 1~50 (total 50 sections).

6.3.2 Section Type

The column of Section Type can set the type of target section. Fox NX1 series, the available types are listed below.

Section Type	Description
Voice	The voice section.
MIDI	The MIDI section.
Action	The action section.
LED Strip	The LED strip section.
User Defined	The user defined section.
CVR	The Cyberon section.

6.3.3 Start Index

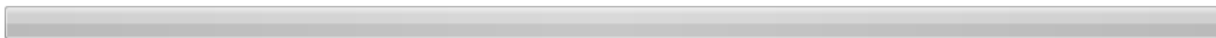
User can set the index serial number to start sections to be updated by the column of Start Index.

6.3.4 End Index

User can set the last index serial number to update the section by the column of End Index.

7 Progress

The progress of executing In-System programming.



8 Revision History

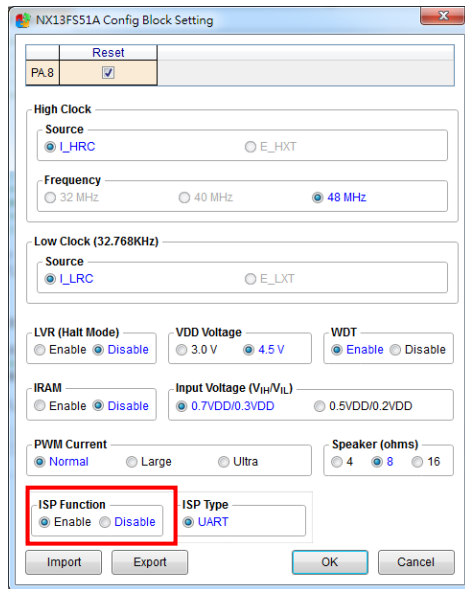
Version	Date	Description	Modified Page
1.0	2023/06/16	New release.	-
1.1	2024/02/23	1. Update the descriptions of Baud Rate.	10
		2. Add Custom Section Update Settings.	15

Appendix A. In-System Programming Indication

A.1 In-System Programming Flow for NX1 EF Series Using UART

Step1: Execute the bin file which contains ISP function and is generated by Q-Code or NYIDE.

- ◆ Open the Config Block Setting of NYIDE project, tick ISP Function as Enable.



- ◆ Execute the Build function and generate a bin file.

Note:

- 1. When the ISP function is enabled, the system will wait 800ms to execute ISP detection after the IC is powered on. If the ISP signal is not received within the timeout, the program will leave the ISP detection and start to execute the user program.**
- 2. The ISP program will check the bin file and the IC options. Only when the options are consistent will the ISP program be executed. The options of Config Block Setting and the file of nx1_config.h will affect the options of NX1 EF series.**

Step2: There are 2 ways to connect IC pins with UART pins.


- ◆ Power on IC and update ISP (IC power supply is provided by UART).

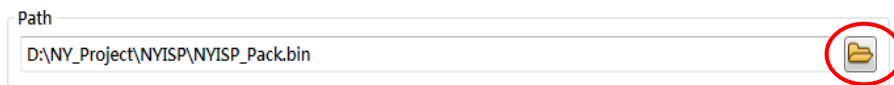
IC pin	UART pin
VDD	VDD
GND	GND
PD0(TX)	RXD
PD1(RX)	TXD

Note: ISP will be updated after IC is powered on. Four pins must connect with IC and UART at the same time, then power on IC. If only connecting VDD to execute the IC power-on, it will cause IC PD1 pin to have charge backflow, let IC leave ISP detection early, and start to execute the user program.

- ◆ IC Reset and update ISP (IC power supply is provided by external device)

IC pin	UART pin
GND	GND
PA8(Reset)	Switch GND
PD0(TX)	RXD
PD1(RX)	TXD

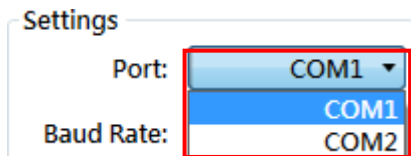
Step 3: Click on  to open the target bin file.



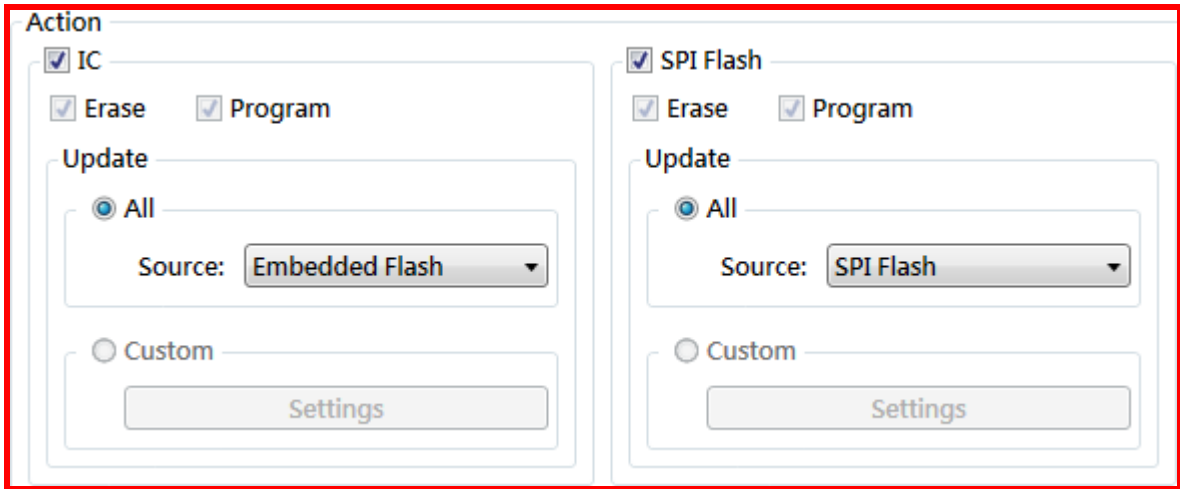
Note: The program code of the target IC must contain the ISP function.

- 1. The program code of IC must contain ISP function.**
- 2. NYISP does not support the bin files that contain OTP_Writing-Times.**
- 3. When NYISP executes SPI Flash update, it does not support SPI.bin and SPI_NY.bin files. But the option settings of _Pack.bin file must be consistent with the option settings of IC.**

Step 4: Select the Port.

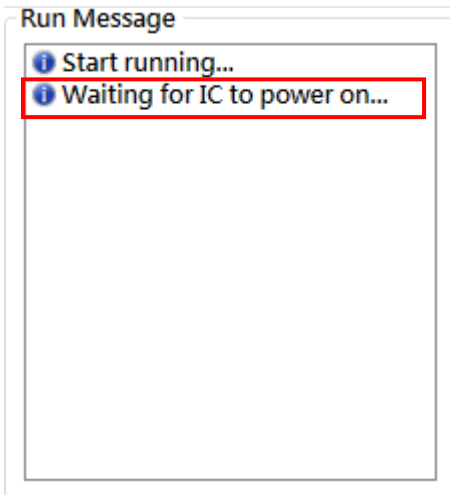


Step 5: Set the programming Actions.

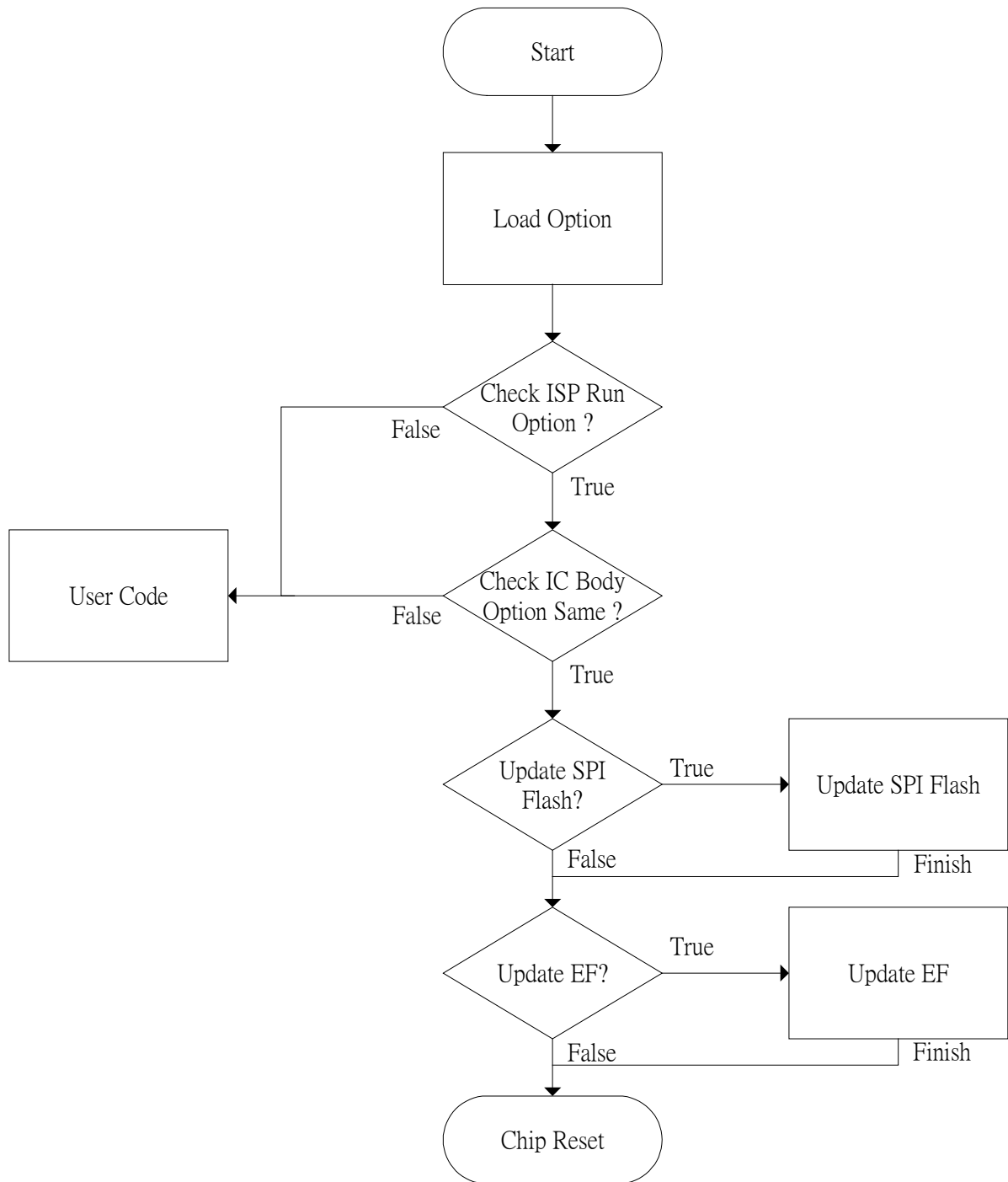


Step 6: Click the Run button.

Step 7: According to the info of Run Message, execute the IC reset action to start the in-system programming. The Progress will show the programming progress.



Step 8: IC ISP Operating Flow



Step 9: If the programming is completed, the Run Message will show the following message.

