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

User Manual

NYISP

NX1 In-System Programing

Version 1.3

May 29, 2025

Table of Contents

1 Introduction

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

Content:

1.1 What is *NYISP*

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

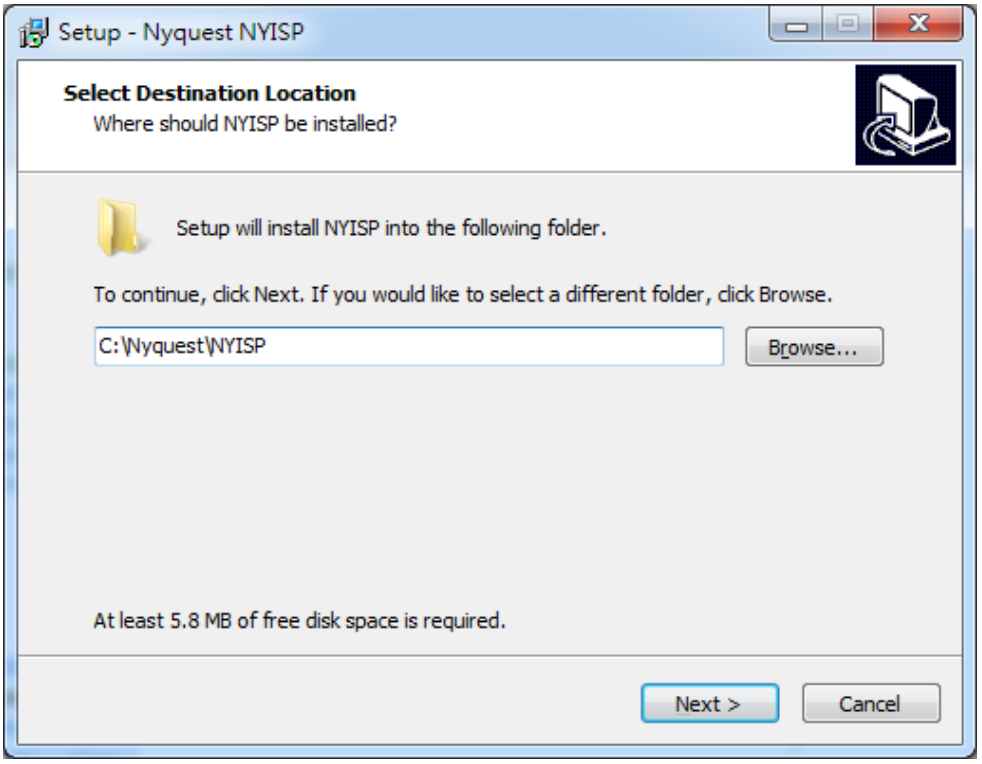
1.2 Installing *NYISP*

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.

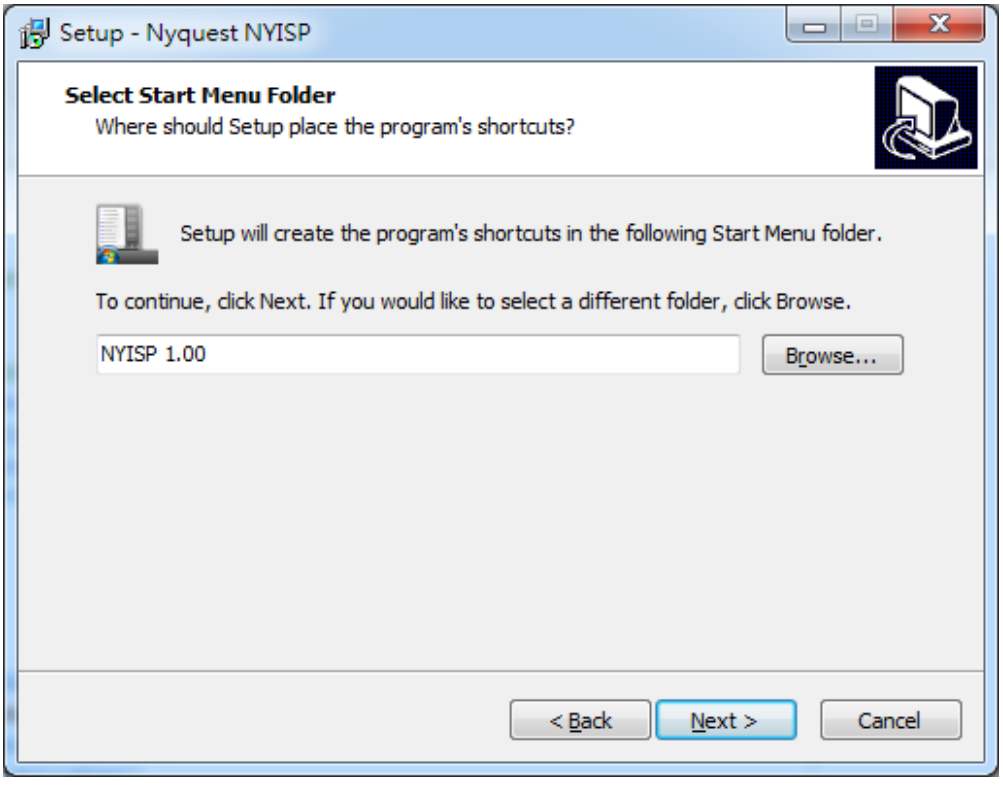
System requirement:

- 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. ◦

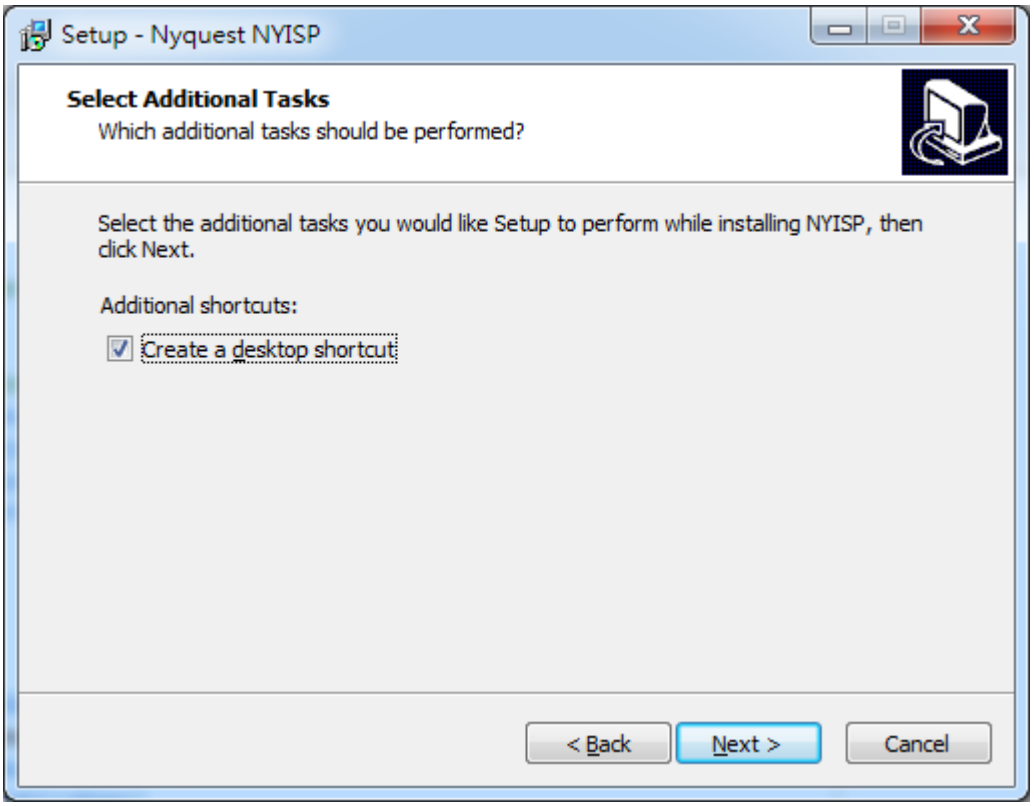
Step 1: Step 1: Click on the installation file of *NYISP* for getting start. . Or press “Browse...” to select a different installation folder.



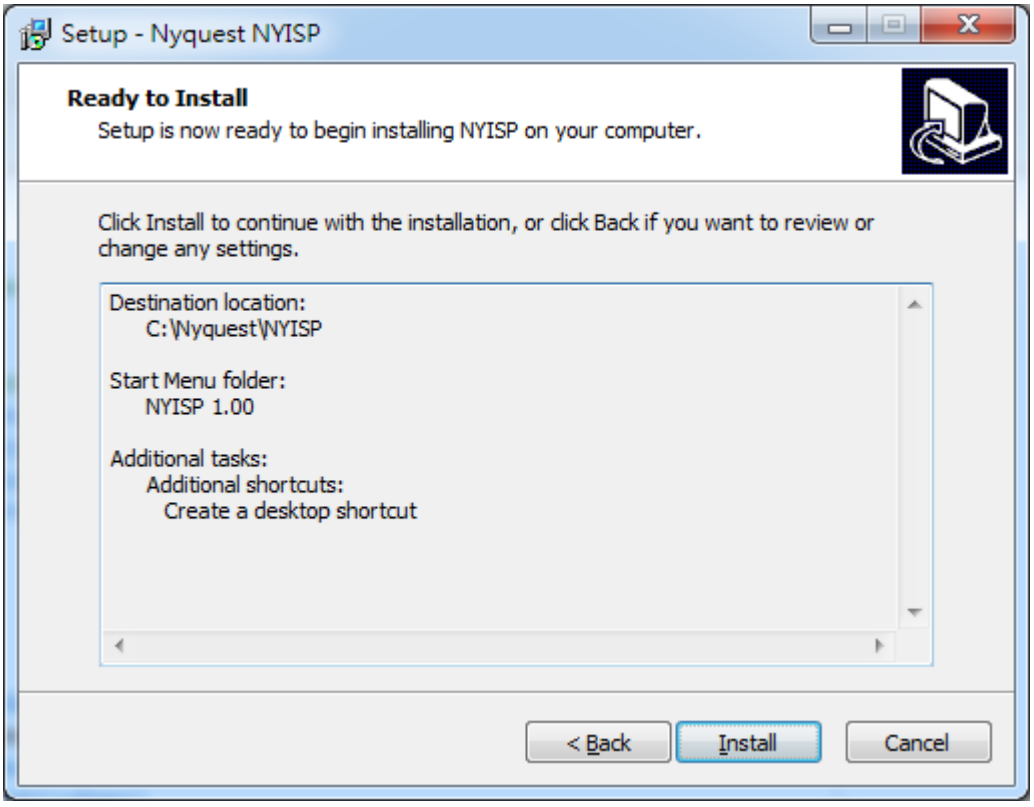
Step 2: The default destination location. If user wants to change location, please press Browse to select a different folder. Then press Next



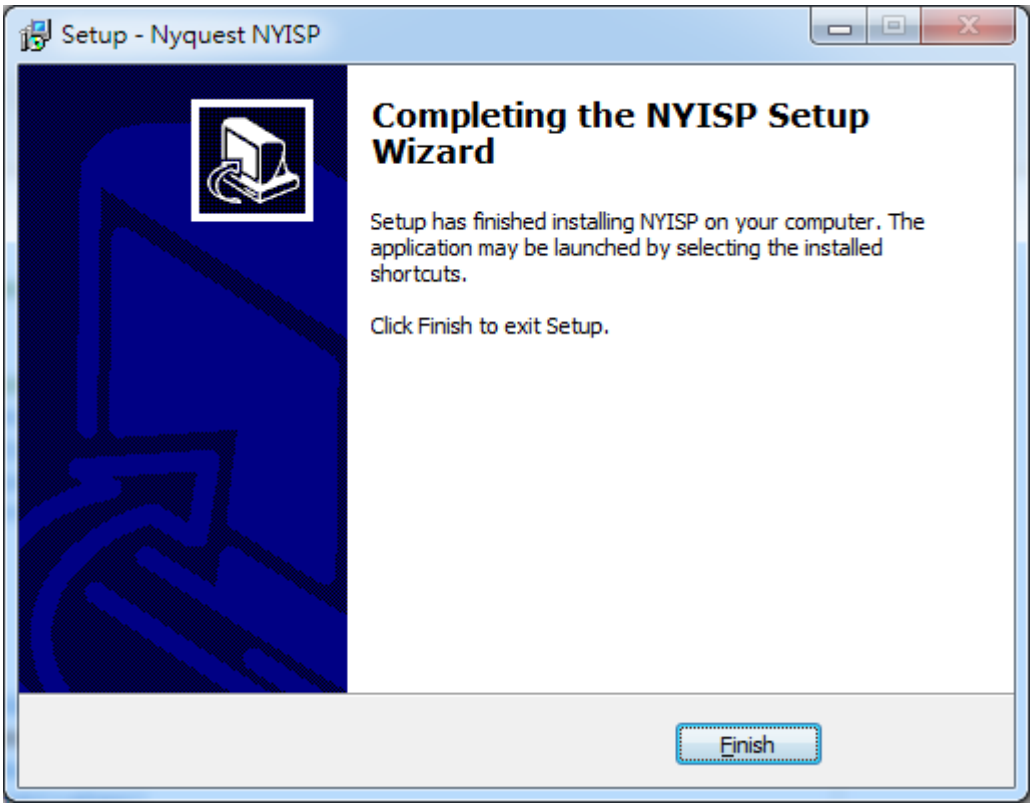
Step 3: Tick to build a shortcut on desktop or not. Then press Next.



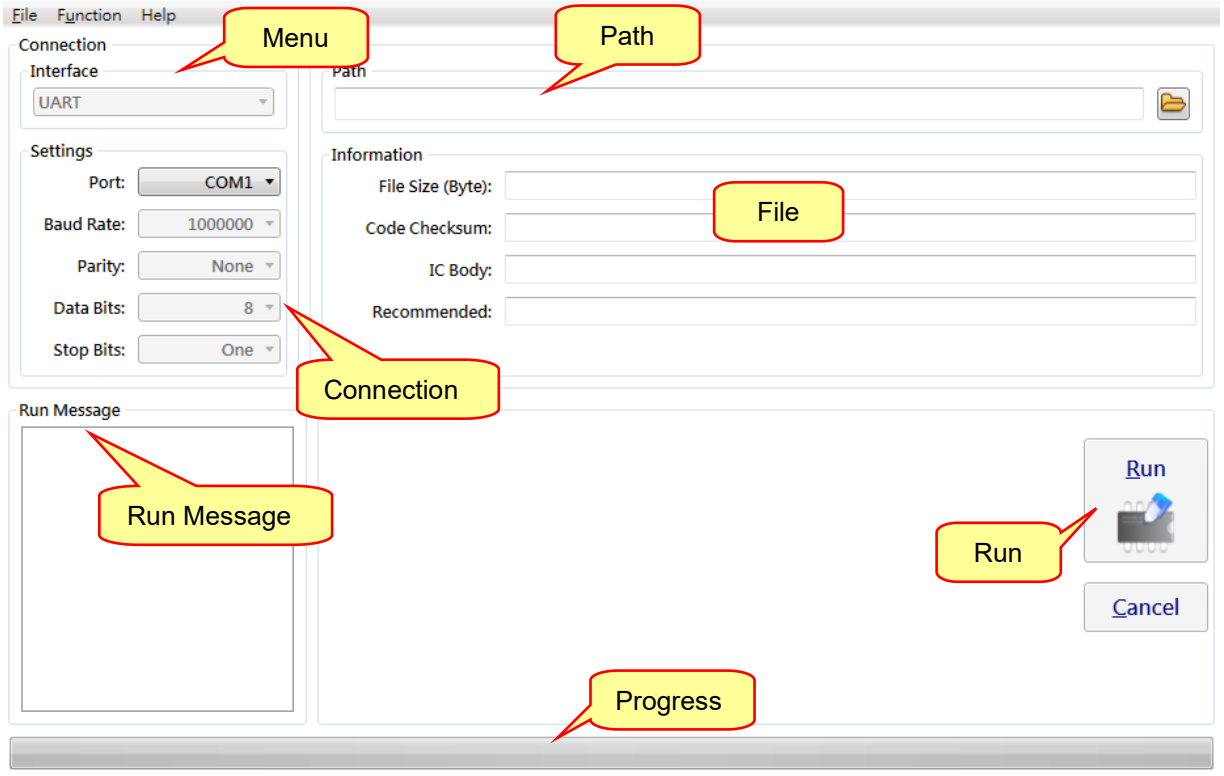
Step 4: The setup wizard will show the installation settings. If the settings are correct, please click on Install for getting started.



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



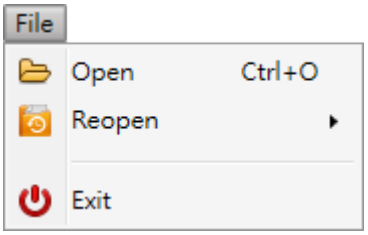
1.4 Menu

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

Content:

1.4.1 File

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

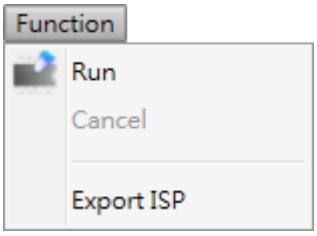


The items and description of [File] are below.

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.

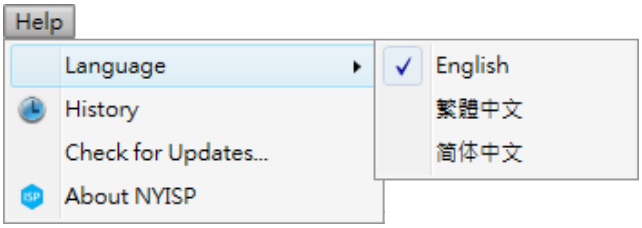


The items and description of [Function] are below.

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.

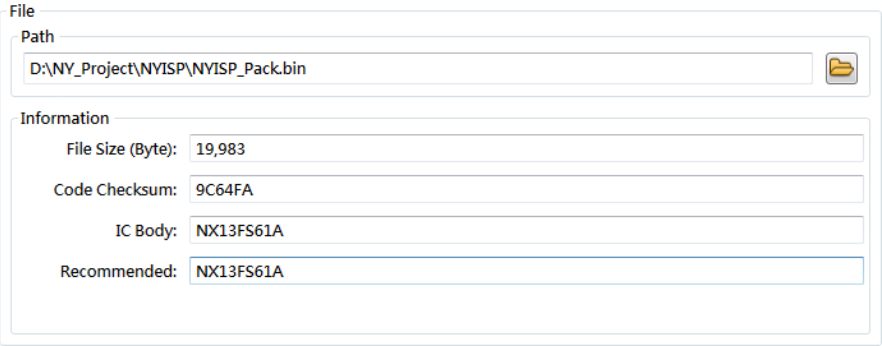


The items and description of [Help] are below.

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

2 File

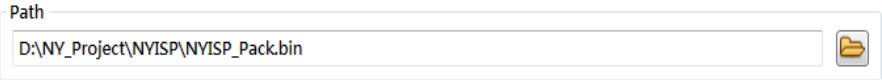
Select and execute the file path and information of the In-System programming bin file.



2.1 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.



2.2 Information

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

2.2.1 File Size

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

2.2.2 Code Checksum

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

2.2.3 IC Body

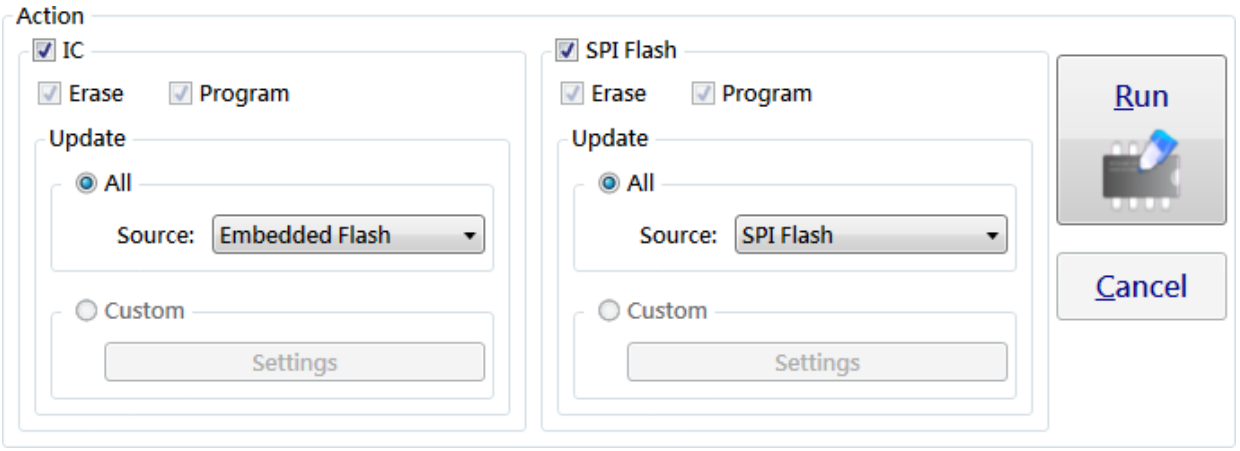
The IC body for bin file.

2.2.4 Recommended

The recommended IC to be applied.

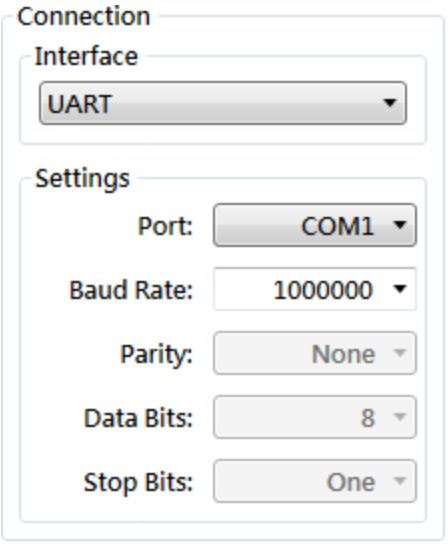
3 NX1 / NX1EF Series Function Interface

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



3.1 Connection

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



3.1.1 Interface

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

3.1.2 Settings

Set the Interface attributes.

3.1.3 Port

Set the port of UART.

3.1.4 Baud Rate

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

3.1.5 Parity

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

3.1.6 Data Bits

Data bits which currently only supports 8-bits.

3.1.7 Stop Bits

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

3.1.8 Paired Device

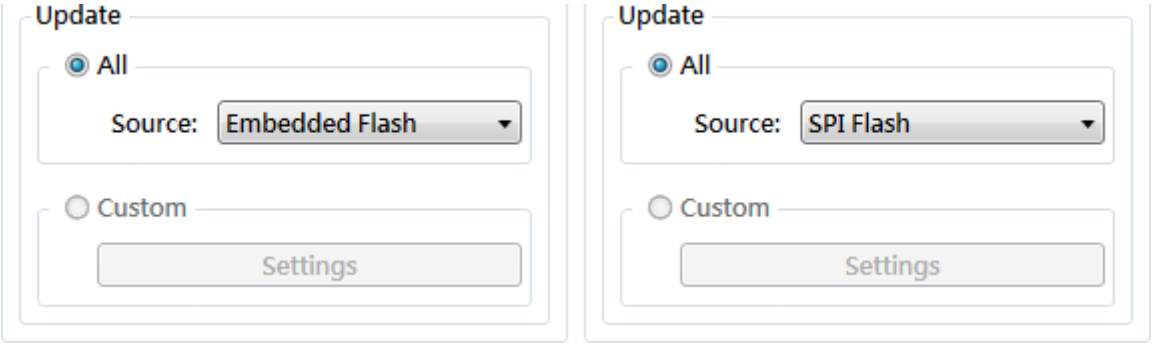
The Bluetooth is the paired device.

3.2 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.

3.3 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.



3.3.1 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

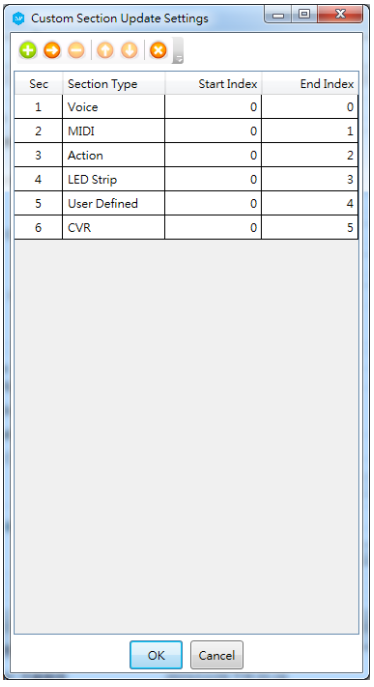
3.3.2 Custom

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.

3.4 Custom Section Update Settings

3.4.1 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.***

3.4.2 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.

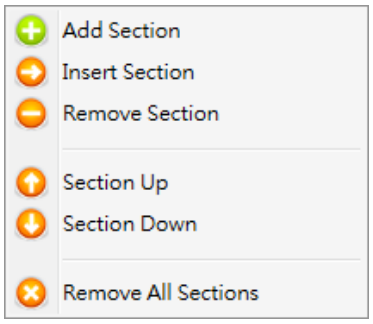
Section Up: Move the selected section upward.

Section Down: Move the selected section downward.

Remove All Section: Remove all sections.

3.4.3 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

3.4.4 The Eding Display Window

3.4.4.1 Sec.

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

3.4.4.2 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.

3.4.4.3 Start Index

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

3.4.4.4 End Index

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

3.4.5 Run

Please refer to 1.4.2 Function for details.

3.4.6 Progress

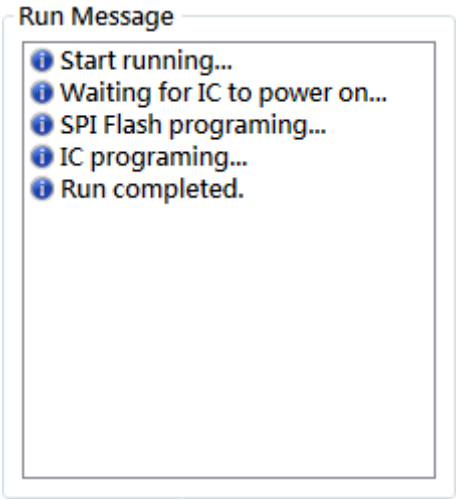
The progress of executing In-System programming.

3.4.7 Cancel

Please refer to 1.4.2 Function for details.

3.4.8 Run Message

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

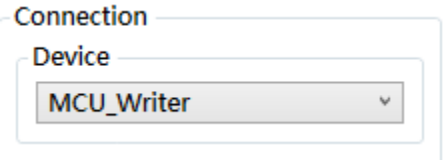


4 NY8 Series Function Interface

User can choose functions by setting actions, executing Run, or cancel the programming.

4.1 Connection

From the dropdown menu, select the type of the using programmer. Supported devices include Q-Link Ver.B, NY-Link, and MCU_Writer. Among these, Q-Link Ver.B and NY-Link are in-circuit programmers and only support download functionality. MCU_Writer supports offline programming.



4.2 Action Setting

- **Download:** Download the programmed data to the device, If the device is Q-Link Ver.B or NY-Link, the data will be downloaded to IC.
- **Program:** Program data to IC. (MCU_Writer only supported)
- **Protect:** Check this option to protect the IC after programming, preventing unauthorized reading or modification. For specific protection mechanisms, please refer to the datasheet of the NY8 series ICs. (MCU_Writer only supported)

4.3 Run

Please refer to 1.4.2 Function .

4.4 Progress

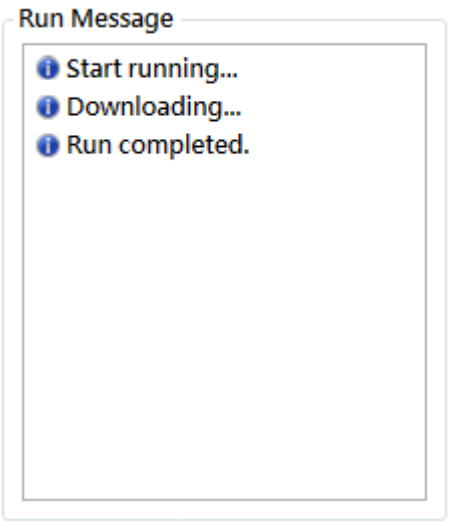
It shows the process while executing the programming.

4.5 Cancel

Please refer to 1.4.2 Function.

4.6 Run Message

The Run Message displays the status and messages after the programming action.



5 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. 2. Add Custom Section Update Settings.	10 15
1.2	2024/05/15	1. Add Bluetooth connection interface. 2. Add the descriptions of Paired Device.	10 10
1.3	2025/05/29	Add the chapter of NY8 series interface.	16

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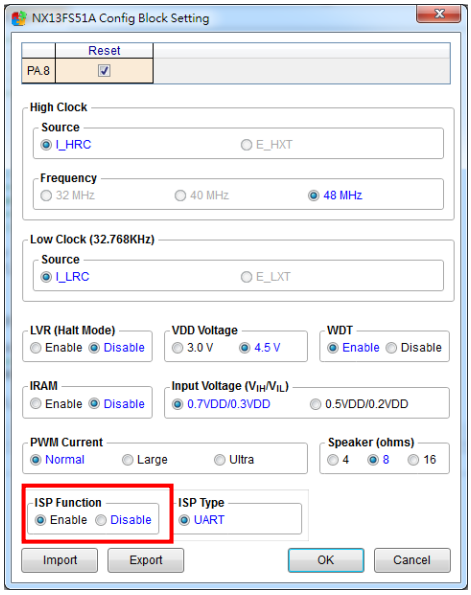
Appendix A. In-System Programming Indication

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)

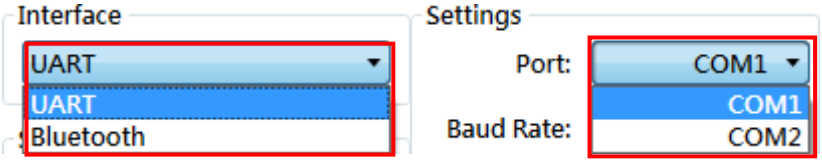
IC pin	UART pin
GND	GND
PA8(Reset)	Switch GND
PD0(TX)	RXD
PD1(RX)	TXD

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

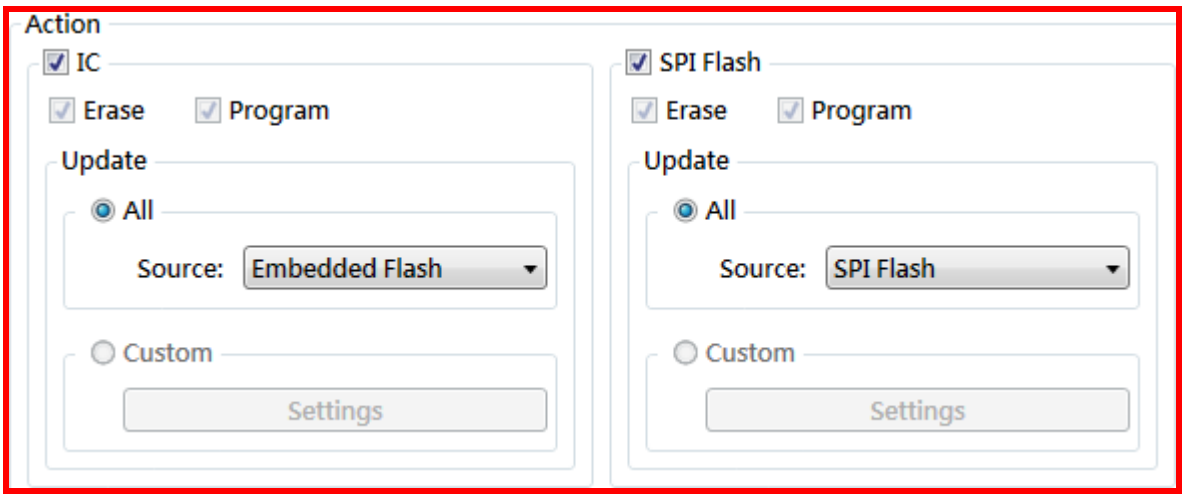
Note: The program code of the target IC must contain the ISP function.

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 Interface and Port.

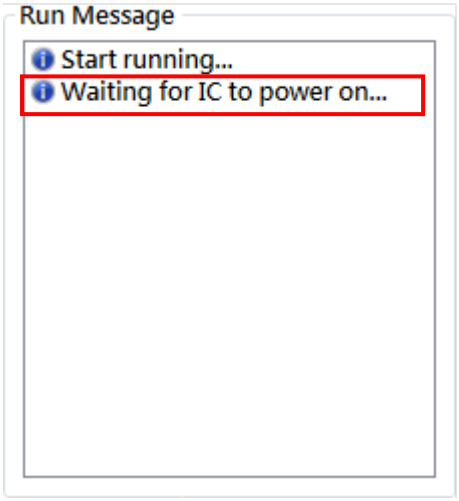


Step 5: Set the programming Actions.

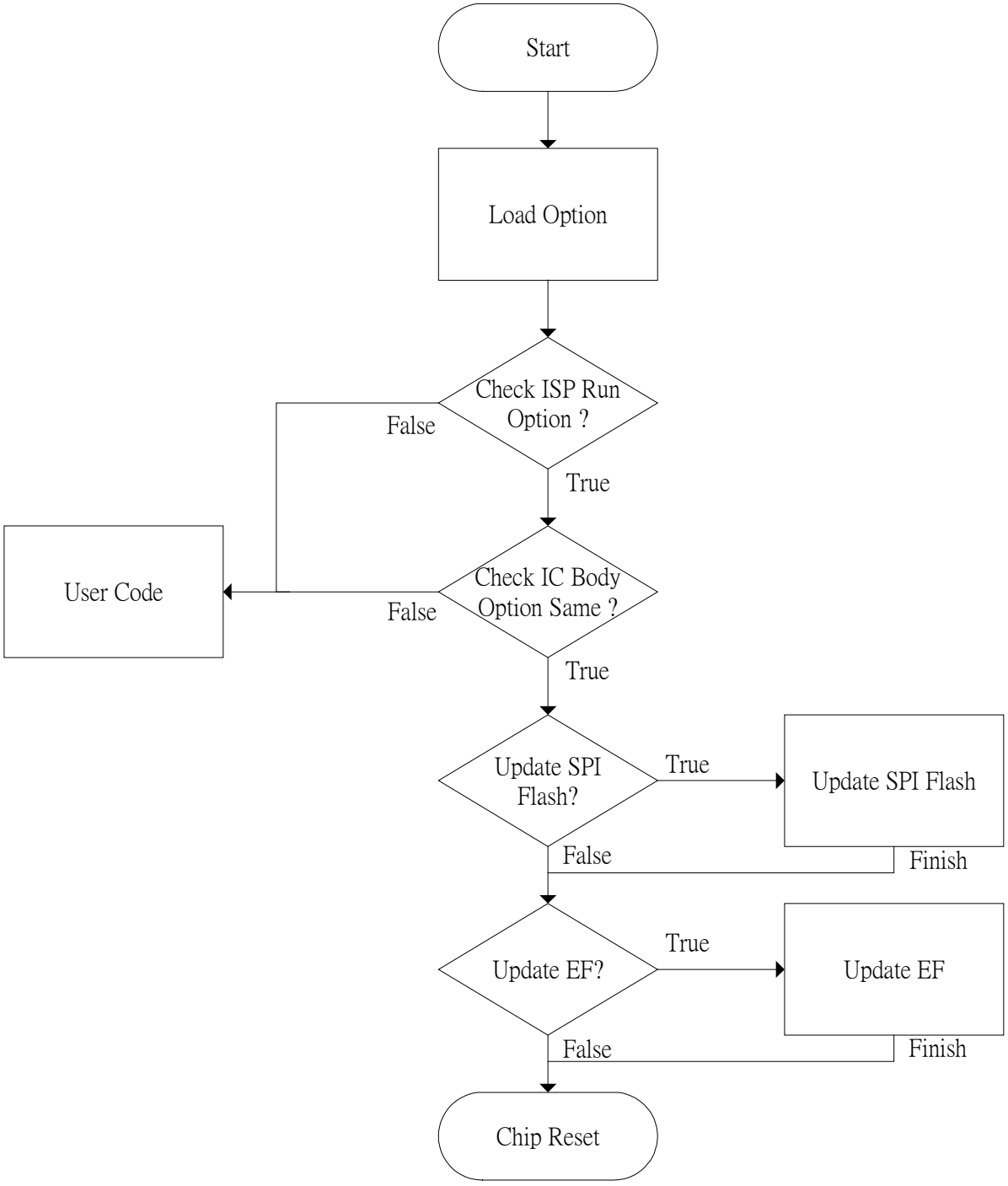


Step 6: Click the Run button.

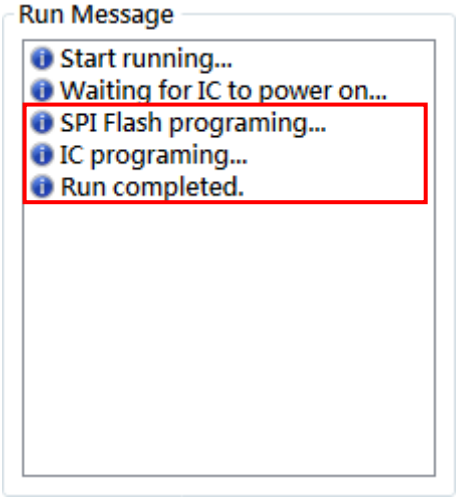
Step 7: According to the info of Run Message, execute the IC reset action to start the in-system programming. The Progress will show the programming progress.



Step 8: IC ISP Operating Flow



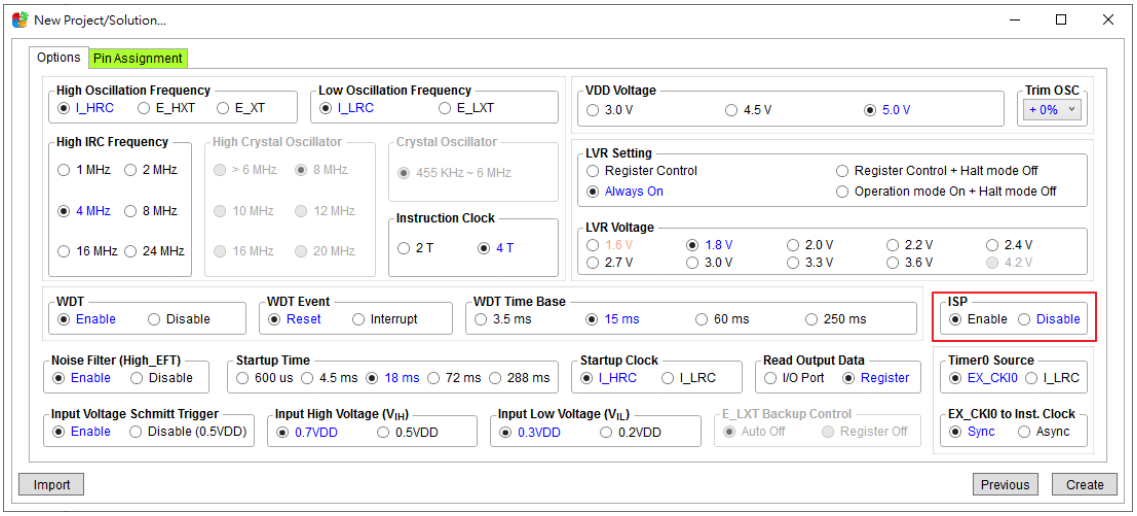
Step 9: If the programming is completed, the Run Message will show the following message.



A.2 In-System Programming Flow for NY8 Series

Step 1: Execute the bin file which contains ISP function and is generated by *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. Ensure the programming device is correctly connected to the target IC.

2. The .bin file must be in a format that supports ISP for the NY8 series.

3. Do not remove the cables during the programming process to prevent failure or chip damage.

Step 2: Connect NY8BM84A pins with the programmer pins.

◆ Q-Link Ver.B / NY-Link ISP Pin Connection

IC Pin	Programmer Pin
VDD	VDD
GND	GND
PC0	SDA/SDI
PC1	SCK/SCL
VPP	VPP

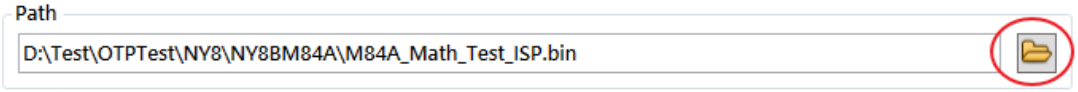
Note: It requires external power supply to the IC, with a voltage range of 3.5V to 5.5V. If using external power and the voltage is below 3.5V, the programming process will not be executed.

◆ MCU_Writer Pin Connection

IC Pin	UART Pin
VDD	VDD
GND	GND
PC0	DI/DA
PC1	SCLK
VPP	VPP

Note: If using external power, the programming process will not be executed if the voltage is below 3.5V.

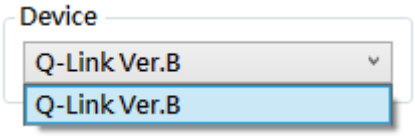
Step3: Click on  to open the target bin file.



Note:

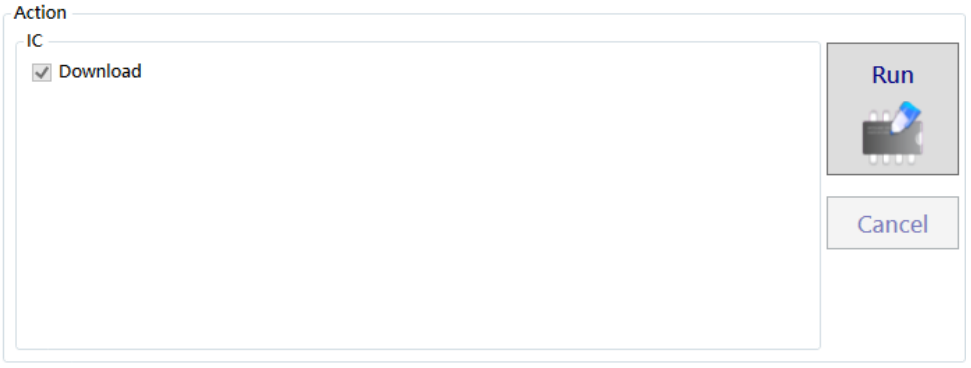
1. ***The code within the IC must contain ISP functionality.***
2. ***NYISP does not support BIN files that contain OTP_Writing-Times.***

Step 4: Select the device.



Step 5: After completing settings, click the Run button.

Q-Link Ver.B / NY-Link action setting:



For MCU_Writer Action settings, there are 3 available options: "Program", "Protect", and “Protect”.

Step 6: If the programming is completed, the Run Message will show the following message.