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

User Manual

Hardware Developing Tool

Tool for Project Developing

Version 5.0
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1 Development Tools Introduction

To enable customers to more quickly and easily use Nyquest IC, Nyquest Technology provides various types of hardware developing tools for NY1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9T / 9U & NX1 series MaskROM IC, including FDB, OTP, ICE and related writers, and so on. Cooperating with related software tools, they can accommodate to different working conditions for engineers and end-users to conveniently develop and verify IC functions.

1.1 Flash Type Developing Tool

Flash memory can be electrically erased and programmed, and it can keep the programmed data without power, it's similar with EEPROM. Combining EV Chips (Evaluation Chip or Kernel Chip) with external flash memory (two chip solution) can easily demonstrate IC's function through software and hardware writer to write data in flash. Available Flash supports: 2M-bit, 4M-bit, 8M-bit, 16M-bit and 32M-bit.

Advantage: The programmed data can be erased and programmed repeatedly. Users can update program constantly. (MTP, Multi-Time Programmable)

Disadvantage: 1. Price is much higher than OTP.
2. Programming time is longer than SRAM type.
3. Limited to Flash electrical characteristics, MaskROM IC current and voltage range can't be presented completely.

1.1.1 FDB (Flash Demo Board)

Flash Demo Board is abbreviated as FDB, and it's provided to demonstrate the function of MaskROM IC. FDB is assembled by related EV chip and Flash in one PCB. It can be written, read and erased constantly. User can select the appropriate FDB according to IC body. For more detail about Flash capacity selection, please refer to 6.1 FDB ROM and IC Pin Mapping Table.

1.1.2 Q-FDB_Writer

Q-FDB_Writer is a hardware writer that provides the functionality for FDB programming. It supports the programming of NY1 / 2 / 3 / 4 / 5 / 7 / 9T & NX1 series FDB. (Need to cooperate with *Q-Writer* software)

1.1.3 Target Board

Target Board is used to connect with the FDB. It's multi-purpose board designed to attach to different mechanical and electronic components for convenient demonstration. The slot on the target board is reserved for FDB to be directly plugged in. For different MaskROM IC series, we provide related Target Boards. It includes five parts: NYx_FDB slot, Input Key, Output Port, VDD/GND power, and PWM output. (There is no PWM output for NY1 Target Board)

1.2 OTP Type Developing Tool

OTP (One Time Programmable) is single-chip IC with built-in EPROM, which can be programmed and can keep the programmed data without power. Its programmed data can be erased by UV, but once packaged, the data cannot be erased by UV anymore. Namely, OTP IC is one-time programmable.

Advantage: 1. Price is close to MaskROM IC, and it is single-chip and suitable for mass production.
2. OTP can be programmed and delivered immediately to shorten the lead-time.
3. Electrical characters are very closed to MaskROM IC.

Disadvantage: OTP cannot be erased or programmed again once data was written.

1.2.1 OTP

Eight series of OTP are currently available: NY1P207A, NY2P010A, NY3P, NY4P, NY5P, NY7P, NY8P and NY9U series OTP. There are several shipping types of bare die, COB (Chip On Board) and package IC. The COB is to put die on PCB by wire bonding and epoxy coating to a circuit board. User can attach components like power, switches and speaker to demonstrate functions conveniently. The COB form of OTP is divided into two types: golden finger and squeeze box application. In NY3P, both types are available, but NY1P207A, NY2P010A, NY4P, NY5P and NY7P have golden finger type only.

1.2.2 NY8-OTP_Writer (Ver. B)

NY8-OTP_Writer (Ver. B) supports the programming of NY8 series, the rolling code function and the OTP_Writing-Times function. (Need to cooperate with *Q-Writer* software).

1.2.3 NX_Programmer (Ver. A)

NX_Programmer (Ver. A) is a 32-bit chips multi-function integrated development tool for the NX1 series. It features ICE emulation and supports FDB download and OTP programming. (Need to cooperate with *Q-Writer, NYIDE, Q-Code, Q-Audio* or *SPI_Encoder* software.)

1.2.4 Smart_Writer Ver. A

Smart_Writer Ver. A supports the programming of NY1/2/3/4/5/6/7/9, NX1 and SPI Flash. It also supports the rolling code function, the writing-times function, and socket for different OTP IC series config cards. (Need to cooperate with *Q-Writer* software)

1.2.5 MCU_Writer Ver.A

MCU_Writer Ver. A supports the programming of NY8A and NY8LP. It also supports the rolling code function, the writing-times function, and socket for different OTP IC series config cards. (Need to cooperate with *Q-Writer* software)

1.3 MTP Type Developing Tool

MTP type IC is a microcontrol chip with multiple-time programmable memory, and the written data will not disappear even if power is lost. To demo the IC functions, just program the code to the memory of MTP IC through software and hardware tool. (The programmed data can be changed electronically even after the chip is encapsulated or packaged.)

Advantage: 1. Price is between Flash and OTP IC. It is a microcontroller and ready for mass production.
2. With multiple-time programmable ability, even if the program is failed, it can be re-programmed.
3. MTP can store the related application parameters repeatedly, data will not disappear even if power is lost.

1.3.1 MTP IC

Currently, Nyquest provides the following MTP ICs, for 8-bit: NY8AE51D, NY8BM series, NY8BE series and NY8TM series; for32-bit: NX1xFS series. The ordering type includes packaged IC and Dice.

1.3.2 Q-Link (Ver. B)

Q-Link (Ver. B) is a multi-function integrated development tool for NY8 8-bit MTP IC with OCD (On chip Debugger), it equips the ICE simulation and MTP programming function. It also supports online real IC simulation and programming.

1.3.3 NY-Link (Ver. A)

NY-Link (Ver. A) is a multi-function integrated development tool for NY8 8-bit MTP IC with OCD (On chip Debugger), it equips the ICE simulation and MTP programming function. It also supports online real IC simulation and programming.

1.3.4 NY8-OTP_Writer (Ver. B)

NY8-OTP_Writer (Ver. B) supports the programming of NY8 series, the rolling code function and the OTP_Writing-Times function. (Need to cooperate with *Q-Writer* software)

1.3.5 MCU_Writer Ver. A

MCU_Writer Ver. A supports the programming of NY8A and NY8T. It also supports the rolling code function, the writing-times function, and socket for different MTP IC series config cards. (Need to cooperate with Q-Writer software)

1.3.6 NX_Programmer (Ver. A)

NX_Programmer (Ver. A) is a multi-function integrated development tool for NX1xFS series. It equips ICE simulation function and supports MTP programming function that can execute online real IC simulation and programming.

1.4 SRAM Type Developing Tool

SRAM is Static Random Access Memory, which data can be written or erased quickly and repeatedly, but data is eventually lost when the system is not powered. Combining EV Chips with external SRAM and related writing circuitry can easily demonstrate IC's function through software writer to write data in SRAM.

Advantage: Fast programming to increase the working efficiency. It's very suitable for engineer in developing program.

Disadvantage: 1. Data can't be saved after power disconnected, need to re-write.
2. Operating voltage is limited to 3.3V.

1.4.1 ICE

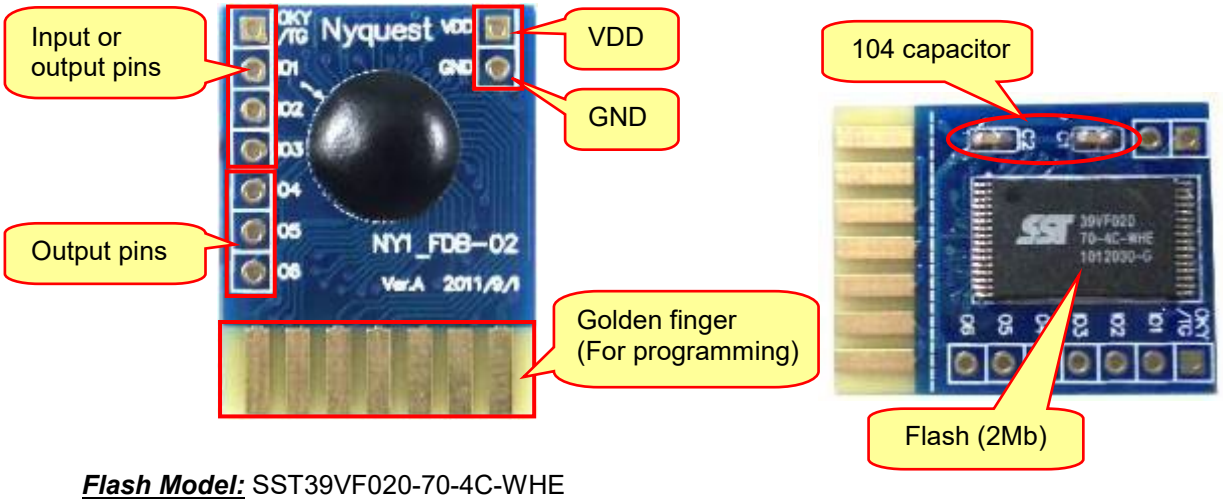
ICE is divided into four categories according to different product categories. There are Emulators for NY 4 / 5 / 6 / 7 / 8 / 9T series, NY8 ICE of NY8A / NY8B series, NY8L_ICE of NY8L series and NX1_ICE of NX1 series. These tools have SRAM type development tools developed and equipped with analog functions. Use Emulator or ICE connected to PC with USB connection, and then through *NYIDE* or *Q-Code* software, users can download the program into Emulator or the ICE to emulate the IC function. Emulator can cooperate with different series evaluation board (NY4 / 5 / 6 / 7_COB / 9T_COB).

2 Flash Type Developing Tool

2.1 NY1_FDB & NY1 Target Board

2.1.1 NY1_FDB

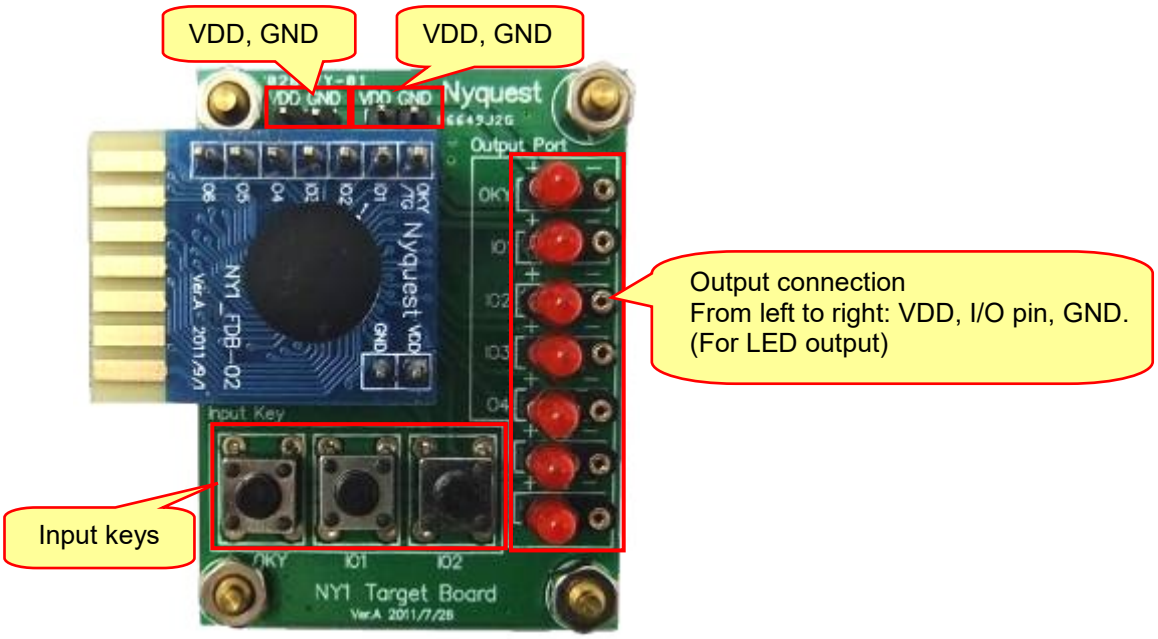
NY1_FDB is the flash demo board for NY1 demonstration. User can make .bin files by *Q-Light* software and download it to NY1_FDB to verify functions. The appearance of NY1_FDB is shown below.



Flash Model: SST39VF020-70-4C-WHE

2.1.2 NY1 Target Board

NY1 Target Board is cooperated with the NY1_FDB. User can demo functions by attaching mechanical and electronic components easily. The connection of NY1_FDB and Target Board is shown below.

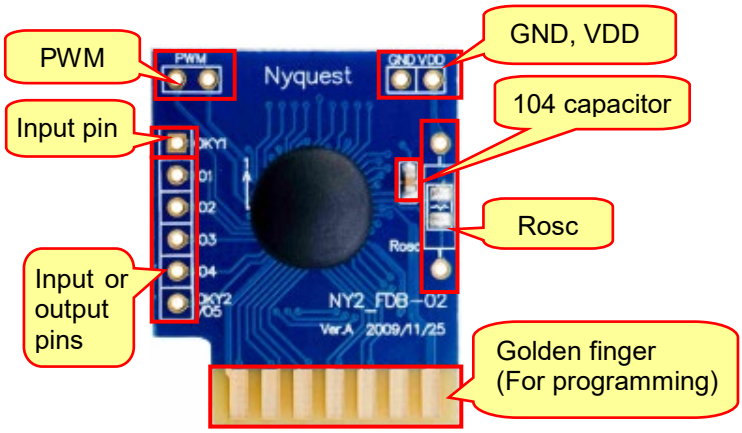


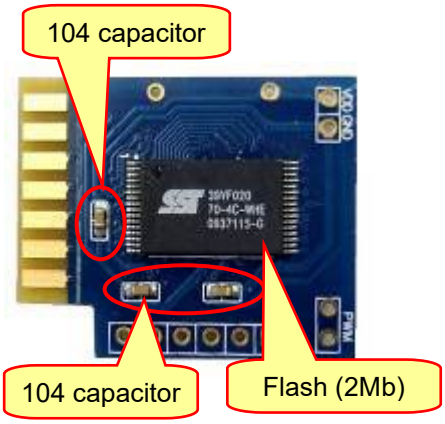
LED Connection: When LED anode is connected to VDD(+), cathode to I/O, it's Sink connection.
When LED anode is connected to I/O, cathode to GND(-), it's Drive connection.

2.2 NY2_FDB & NY2 Target Board

2.2.1 NY2_FDB

NY2_FDB is the flash demo board for NY2 demonstration. User can make .bin files by *Q-Tone* software and download it to NY2_FDB to verify functions. The appearance of NY2_FDB is shown below.



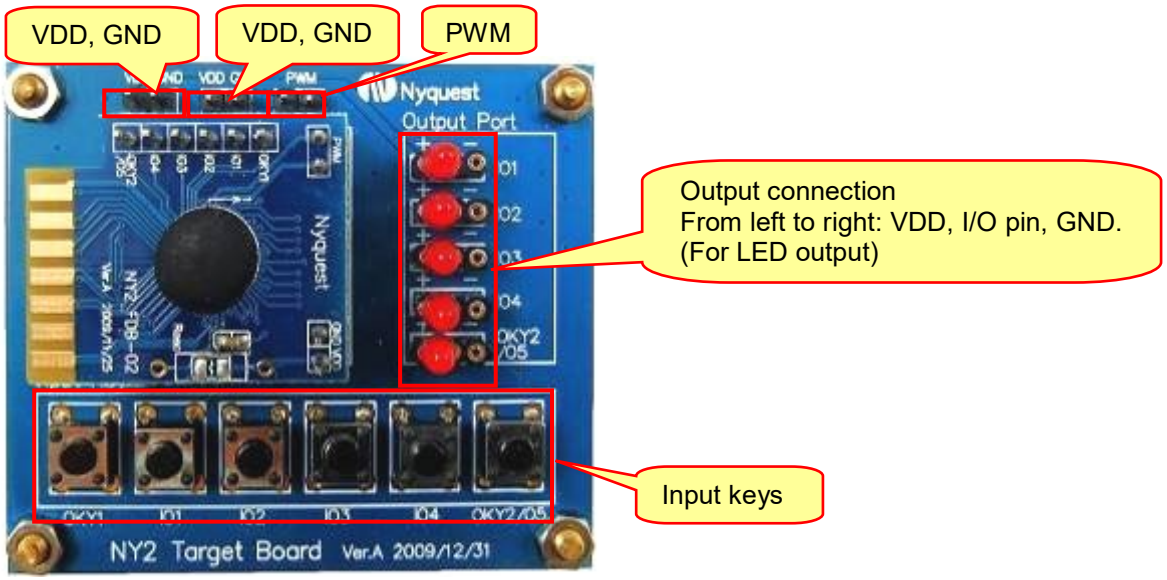


Rosc: NY2 is State Machine architecture and its playback speed is fixed to limited options, not flexible like MCU, but user could apply external resistor to fine tune OSC (MaskROM IC has not external resistor to adjust OSC, but it can be trimmed by wafer test.). If external Rosc is not used when power is on, it will be auto-detected to use internal resistor for FDB.

Flash Model: SST39VF020-70-4C-WHE

2.2.2 NY2 Target Board

NY2 Target Board is cooperated with the NY2_FDB. User can demo functions by attaching mechanical and electronic components easily. The connection of NY2_FDB and Target Board is shown below.



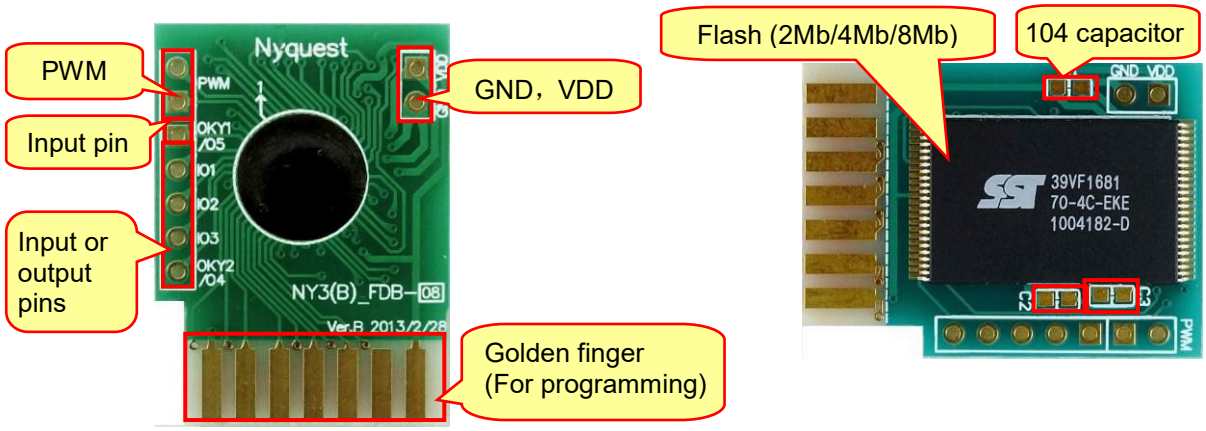
LED Connection: When LED anode is connected to VDD(+), cathode to I/O, it's Sink connection.
When LED anode is connected to I/O, cathode to GND(-), it's Drive connection.

2.3 NY3 Series FDB & Target Board

2.3.1 NY3 series FDB

(1) NY3_FDB

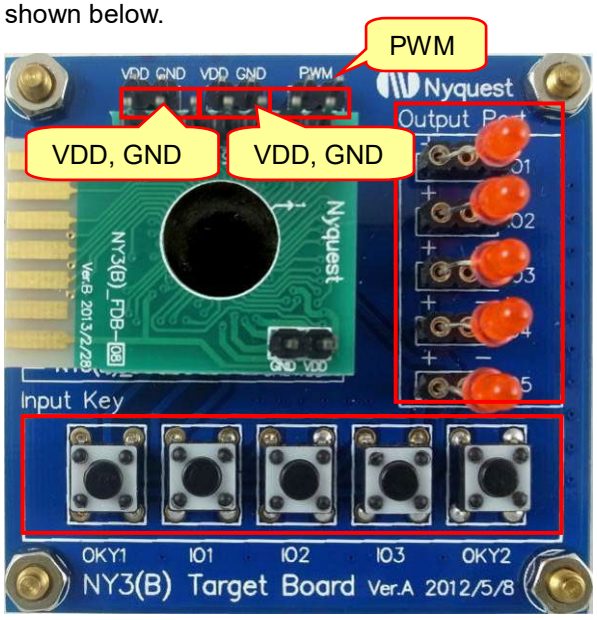
NY3(B)_FDB is the flash demo board for NY3(B) demonstration. User can make .bin files by *Q-Speech* software and download it to NY3(B)_FDB to verify functions. The appearance of NY3(B)_FDB is shown below.



***Flash Model*:** SST39VF020-70-4C-WHE / SST39VF040-70-4C-WHE / SST39VF1681-70-4C-EKE

2.3.2 NY3(B) Target Board

NY3(B) Target Board is cooperated with the NY3(B)_FDB. User can demo functions by attaching mechanical and electronic components easily. The connection of NY3(B)_FDB and Target Board is shown below.

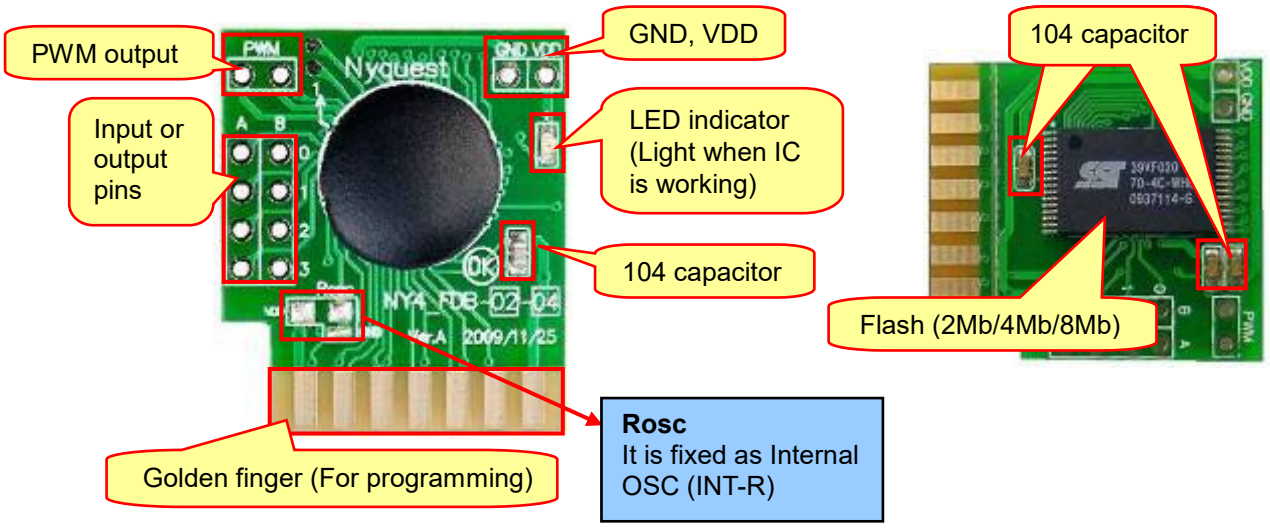


LED Connection: When LED anode is connected to VDD(+), cathode to I/O, it's Sink connection.
When LED anode is connected to I/O, cathode to GND(-), it's Drive connection.

2.4 NY4_FDB & NY4 Target Board

2.4.1 NY4_FDB

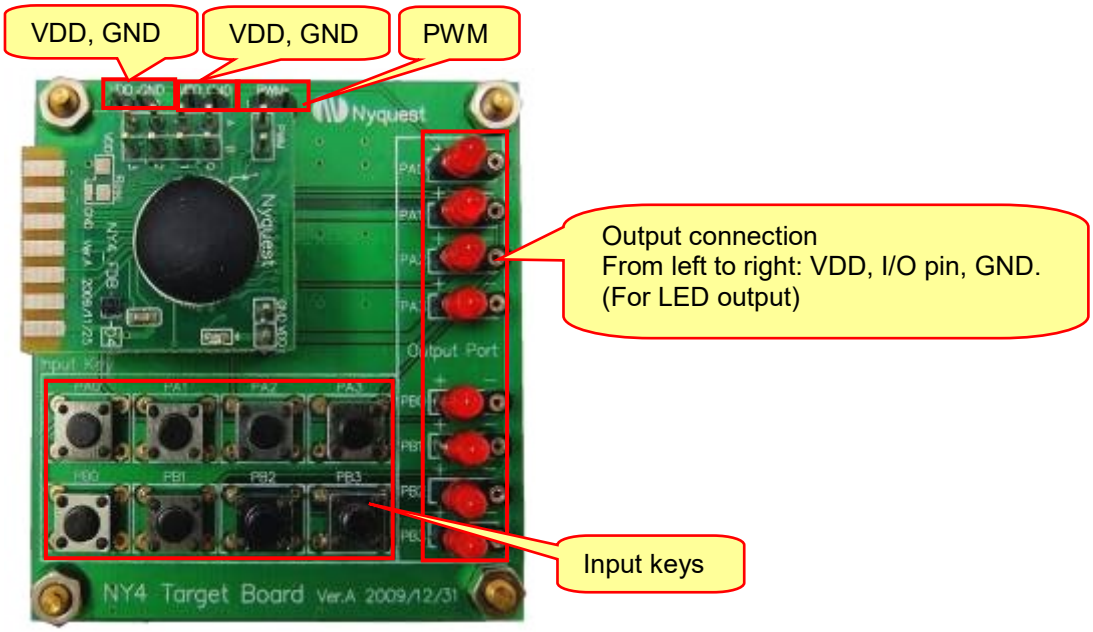
NY4_FDB is the flash demo board for NY4 demonstration. User can make .bin files by *NYIDE* or *Q-Code* software and download it to NY4_FDB to verify functions. The appearance of NY4_FDB is shown below.



Flash Model: SST39VF020-70-4C-WHE / SST39VF040-70-4C-WHE/ SST39VF1681-70-4C-EKE(8Mb)

2.4.2 NY4 Target Board

NY4 Target Board is cooperated with the NY4_FDB. User can demo functions by attaching mechanical and electronic components easily. The connection of NY4_FDB and Target Board is shown below.

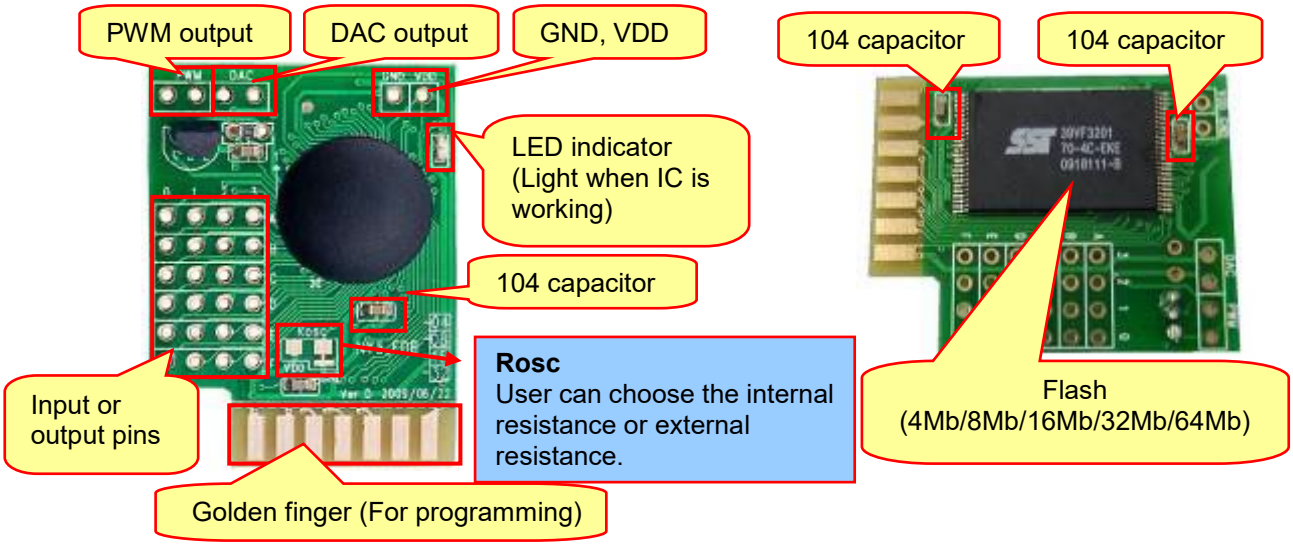


LED Connection: When LED anode is connected to VDD(+), cathode to I/O, it's Sink connection.
When LED anode is connected to I/O, cathode to GND(-), it's Drive connection.

2.5 NY5_FDB & NY5 Target Board

2.5.1 NY5_FDB

NY5_FDB is the flash demo board for NY5A/NY5B/NY5C/NY5P series demonstration. User can make .bin files by *NYIDE* or *Q-Code* software and download it to NY5_FDB to verify functions. The appearance of NY5_FDB is shown below.



Flash Model 1: SST39VF400A-70-4C-EKE / SST39VF800A-70-4C-EKE / SST39VF1601-70-4C-EKE / SST39VF3201-70-4C-EKE / SST39VF6401-70-4C-EKE

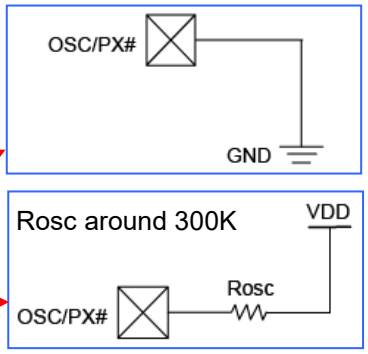
Flash Model 2: MX29LV400CTTC-70G / MX29LV800CTTC-70G / MX29LV160CTTC-70G / MX29LV320CTTC-70G / MX29SL800CTTI-90G

2.5.1.1 NY5_FDB Oscillator Setting

Internal OSC Only: When OSC/PX# pin is set as I/O rather than OSC in program, there is only Int-OSC available on NY5_FDB. *(Q-Code default: Int-OSC)*

Internal OSC & External OSC: When OSC/PX# pin is set as OSC in program, option of using Int-OSC or Ext-OSC is available on NY5_FDB. The option setting is detected and takes effect only at the moment power is turned on. Please refer to the following descriptions for setting OSC option.

OSC circuits on FDB	VDD, OSC, GND
Int-OSC *(Default)*	OSC --> GND
Ext-OSC	1. Cut the connection between OSC and GND. 2. VDD --> Rosc --> OSC



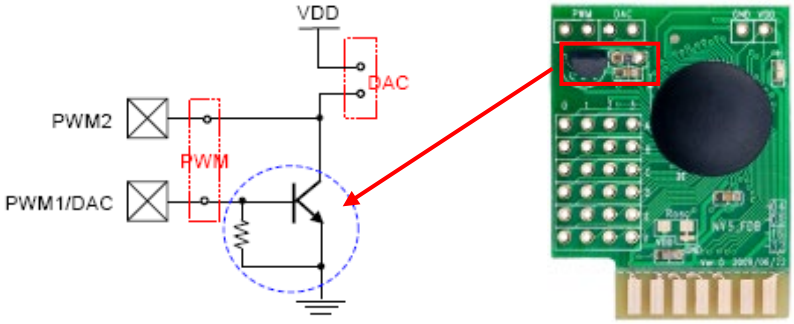
Note: When using Ext-OSC, the connection between OSC and GND must be cut, as "X" of above picture.

2.5.1.2 NY5_FDB Audio Output

PWM & DAC Output: Connect the speaker to PWM or DAC, and then supply the power, the audio output will be auto detected as PWM or DAC. It takes the electric potential of PWM2 to judge audio output when power is turned on, so it must be powered again while switching audio output.

PWM2 Electric Potential	Voice Output
Floating	PWM output
VDD	DAC output

(Q-Code Default: PWM + DAC)

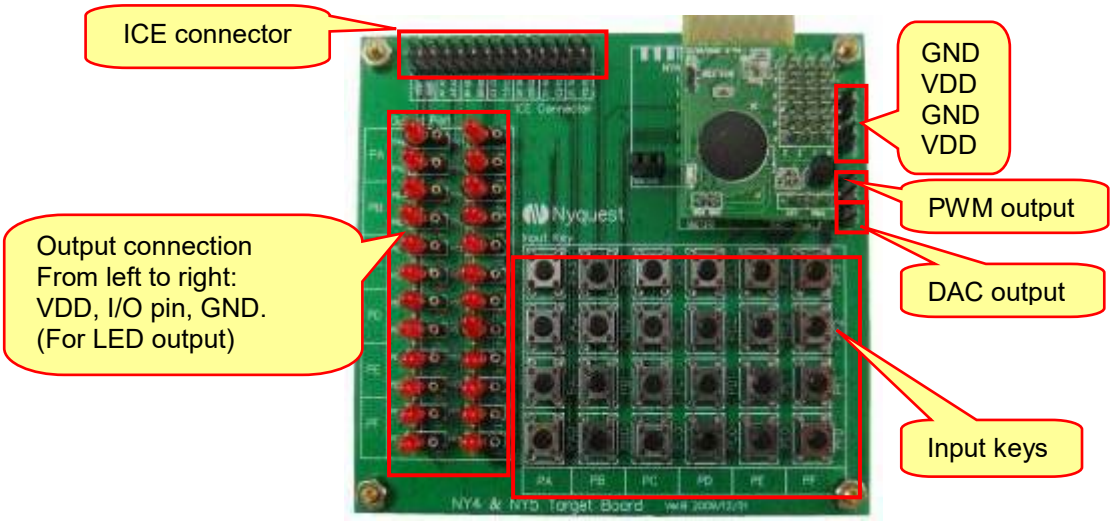


DAC Output Circuit: When using DAC output, a transistor and a resistor are attached to amplify and adjust the current. The transistor on NY5_FDB is 8050D, and the value of R_{bias} here is 750Ω.

I_{DAC} (DAC Output current)	3.0V	1.4mA
	4.5V	1.7mA

2.5.2 NY5 Target Board

NY5 Target Board is cooperated with the NY5_FDB. User can demo functions by attaching mechanical and electronic components easily. The connection of NY5_FDB and Target Board is shown below.

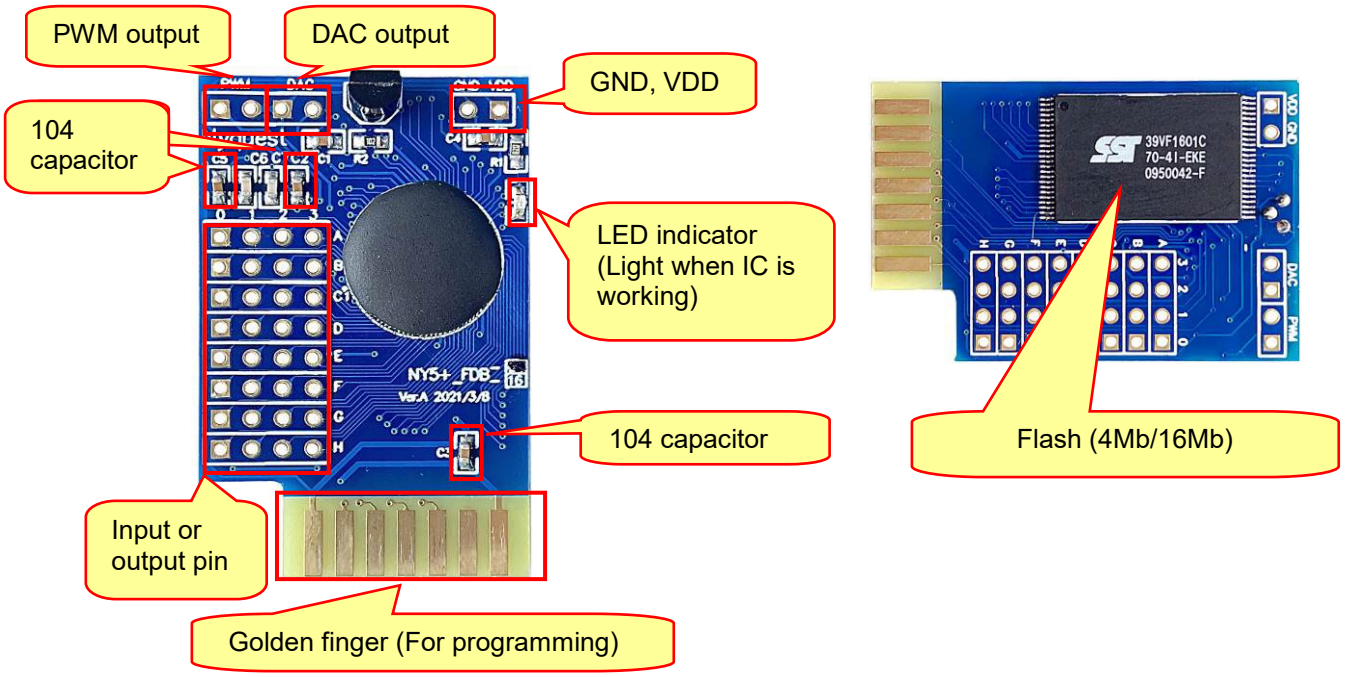


LED Connection: When LED anode is connected to VDD(+), cathode to I/O, it's Sink connection.
When LED anode is connected to I/O, cathode to GND(-), it's Drive connection.

2.6 NY5+_FDB & NY5+ Target Board

2.6.1 NY5+ FDB

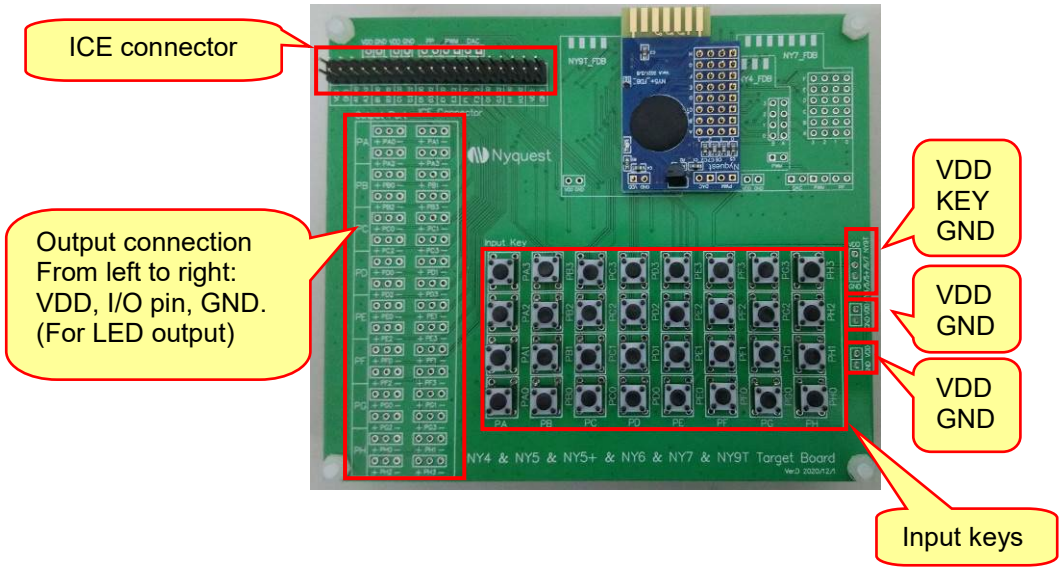
NY5+_FDB is the flash demo board for NY5D/NY5E/NY5F/NY5Q series demonstration. User can make .bin files by *NYIDE* or *Q-Code* software and download it to NY5_FDB to verify functions. The appearance of NY5+_FDB is shown below.



Flash Type: SST39VF400A-70-4C-EKE / SST39VF1601-70-4C-EKE

2.6.2 NY5+ Target Board

NY5+ Target Board is cooperated with the NY5+_FDB. User can demo functions by attaching mechanical and electronic components easily. The connection of NY5+_FDB and Target Board is shown below.

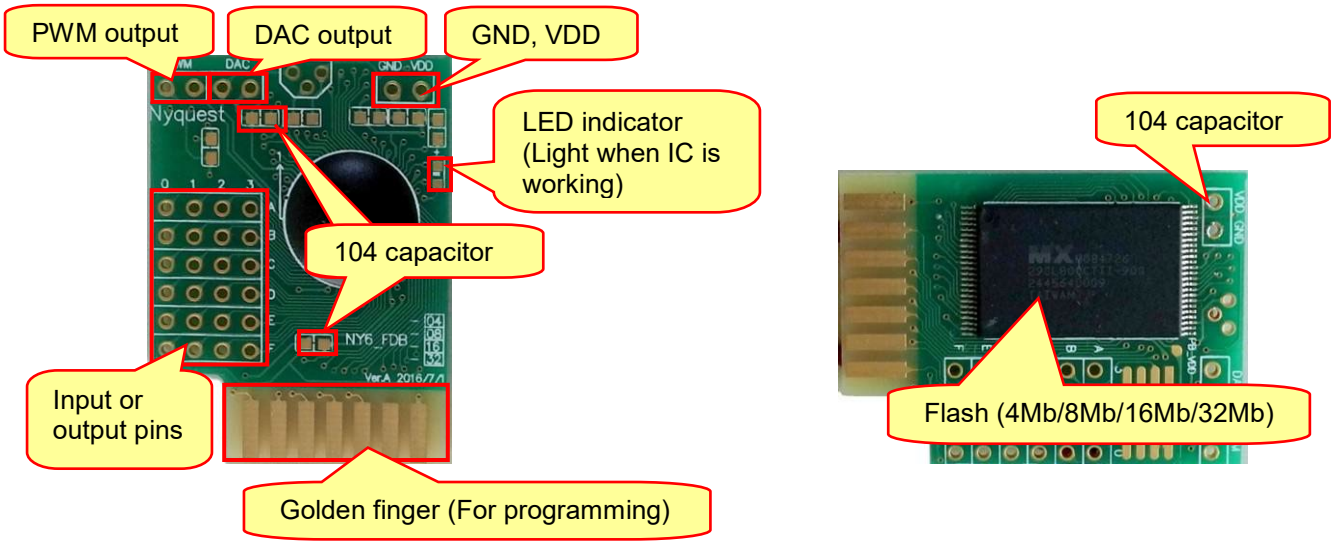


LED Connection: When LED anode is connected to VDD(+), cathode to I/O, it's Sink connection.
When LED anode is connected to I/O, cathode to GND(-), it's Drive connection.

2.7 NY6_FDB

2.7.1 NY6_FDB

NY6_FDB is the flash demo board for NY6 demonstration. User can make .bin files by *NYIDE* or *Q-Code* software and download it to NY6_FDB to verify functions. The appearance of NY6_FDB is shown below.



Flash Model 1: SST39VF400A-70-4C-EKE / SST39VF800A-70-4C-EKE / SST39VF1601-70-4C-EKE / SST39VF3201-70-4C-EKE

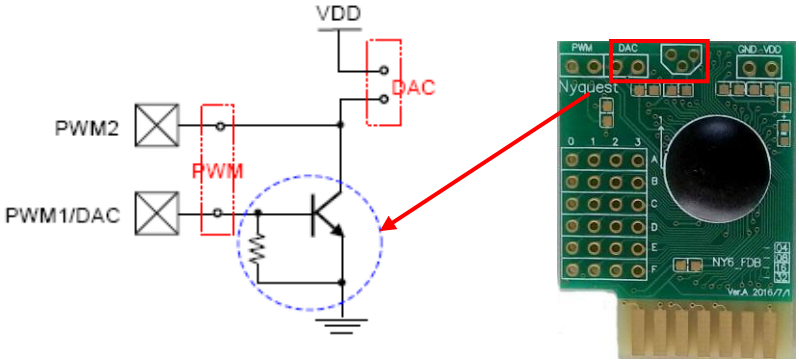
Flash Model 2: MX29LV400CTTC-70G / MX29LV800CTTC-70G / MX29LV160CTTC-70G / MX29LV320CTTC-70G / MX29SL800CTTI-90G

2.7.2 NY6_FDB Audio Output

PWM & DAC Output: Connect the speaker to PWM or DAC, and then supply the power, the audio output will be auto detected as PWM or DAC. It takes the electric potential of PWM2 to judge audio output when power is turned on, so it must be powered again while switching audio output.

PWM2 Electric Potential	Voice Output
Floating	PWM output
VDD	DAC output

(Q-Code default: PWM + DAC)



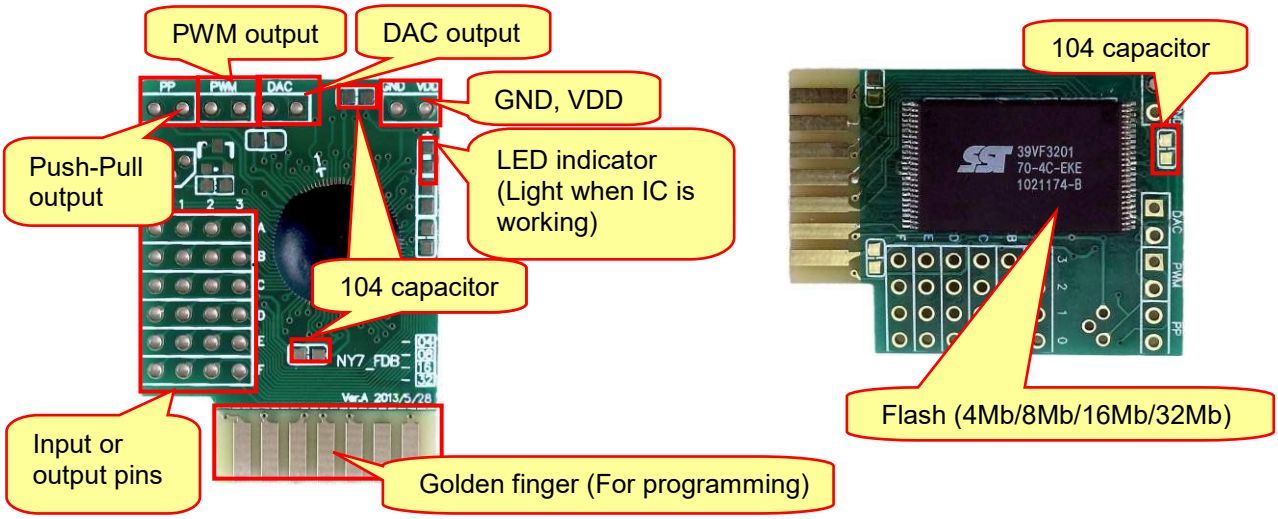
DAC Output Circuit: When using DAC output, a transistor and a resistor are attached to amplify and adjust the current. The transistor on NY6_FDB is 8050D, and the value of R_{bias} here is 750Ω.

I_{DAC} (DAC Output current)	3.0V	1.4mA
	4.5V	1.6mA

2.8 NY7_FDB & NY7 Target Board

2.8.1 NY7_FDB

NY7_FDB is the flash demo board for NY7 demonstration. User can make .bin files by *NYIDE* or *Q-Code* software and download it to NY7_FDB to verify functions. The appearance of NY7_FDB is shown below.



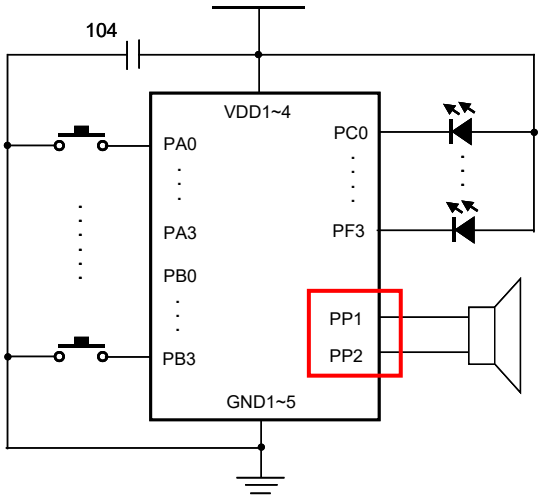
Flash Model 1: SST39VF400A-70-4C-EKE / SST39VF800A-70-4C-EKE / SST39VF1601-70-4C-EKE / SST39VF3201-70-4C-EKE

Flash Model 2: MX29LV400CTTC-70G / MX29LV800CTTC-70G / MX29LV160CTTC-70G / MX29LV320CTTC-70G / MX29SL800CTTI-90G

2.8.1.1 NY7 Audio Output

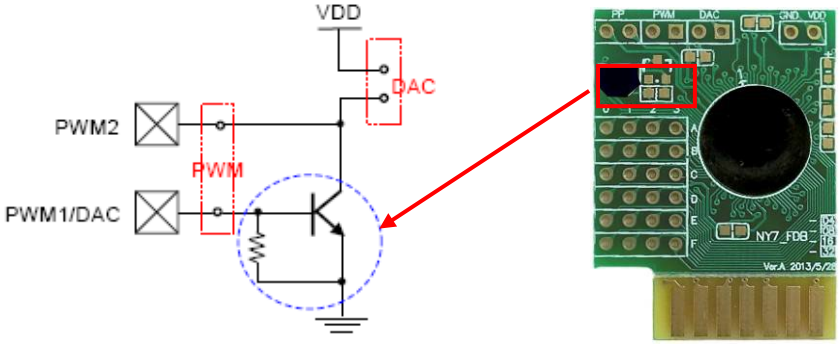
IC series	Output options	Default Output
7A	PWM or DAC output	PWM & DAC output
7B, 7C	Push-Pull or DAC output	Push-Pull output

Push-Pull Output: Connect both ends of the speaker to PP1 and PP2 for using Push-Pull output.



PWM & DAC Output: Connect the speaker to PWM or DAC, and then supply the power, the audio output will be auto detected as PWM or DAC. It takes the electric potential of PWM2 to judge audio output when power is turned on, so it must be powered again while switching audio output.

PWM2 Electric Potential	Audio Output
Floating	PWM output
VDD	DAC output

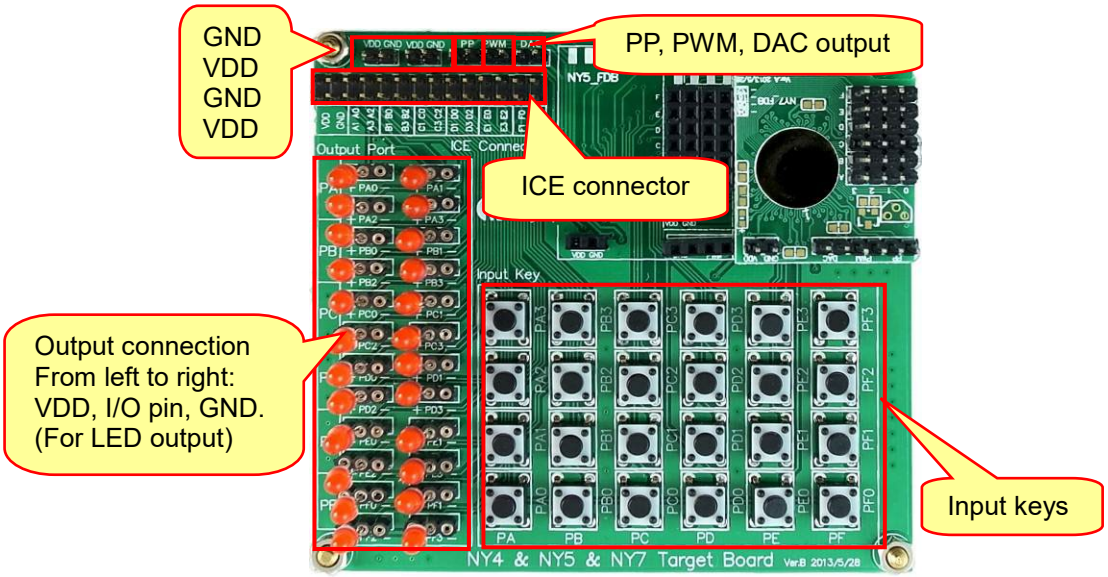


DAC Output Circuit: When using DAC output, a transistor and a resistor are attached to amplify and adjust the current. The transistor on NY7_FDB is 8050D, and the value of R_{bias} here is 750Ω.

I_{DAC} (DAC Output current)	3.0V	1.4mA
	4.5V	1.6mA

2.8.2 NY7 Target Board

NY7 Target Board is cooperated with the NY7_FDB. User can demo functions by attaching mechanical and electronic components easily. The connection of NY7_FDB and Target Board is shown below.

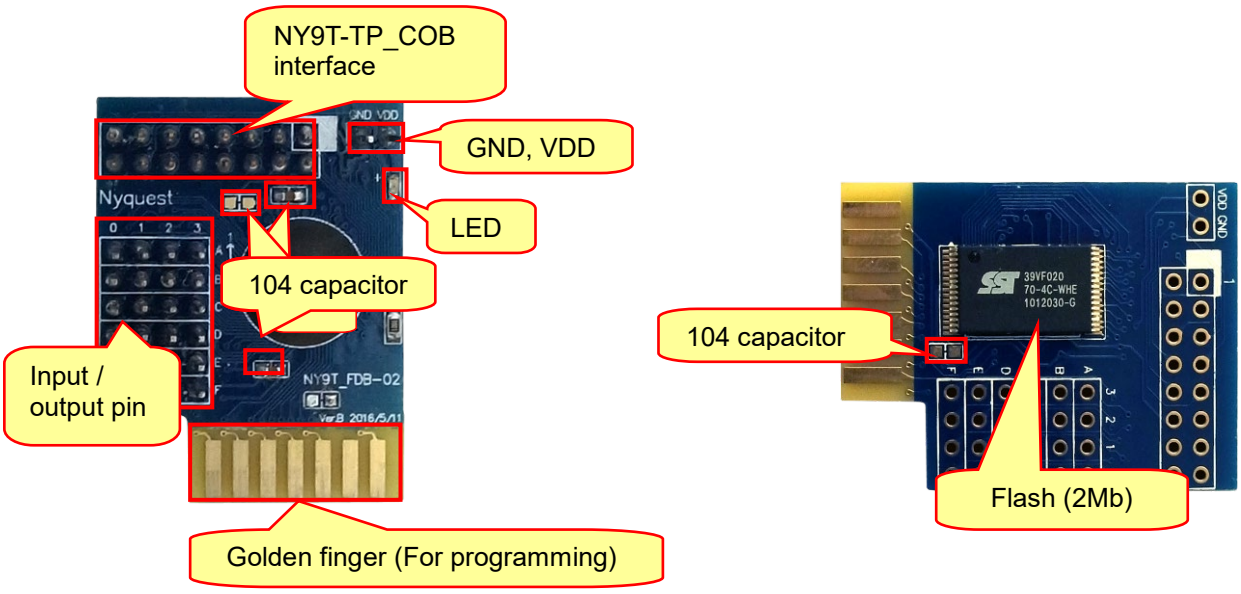


LED Connection: When LED anode is connected to VDD(+), cathode to I/O, it's Sink connection.
When LED anode is connected to I/O, cathode to GND(-), it's Drive connection.

2.9 NY9T_FDB

2.9.1 NY9T_FDB

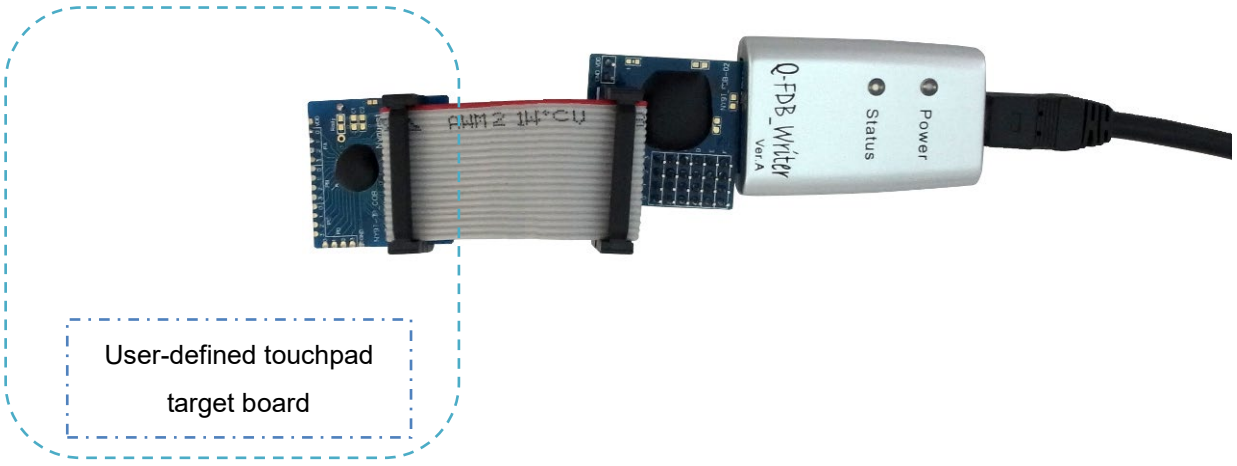
NY9T_FDB is the flash demo board for NY9T demonstration. User can make .bin files by *NYIDE* or *Q-Code* software and download it to NY9T_FDB to verify functions. The appearance of NY9T_FDB is shown below.



Flash Mode: SST39VF020-70-4C-WHE

2.9.2 NY9T_FDB & NY9T-TP_COB

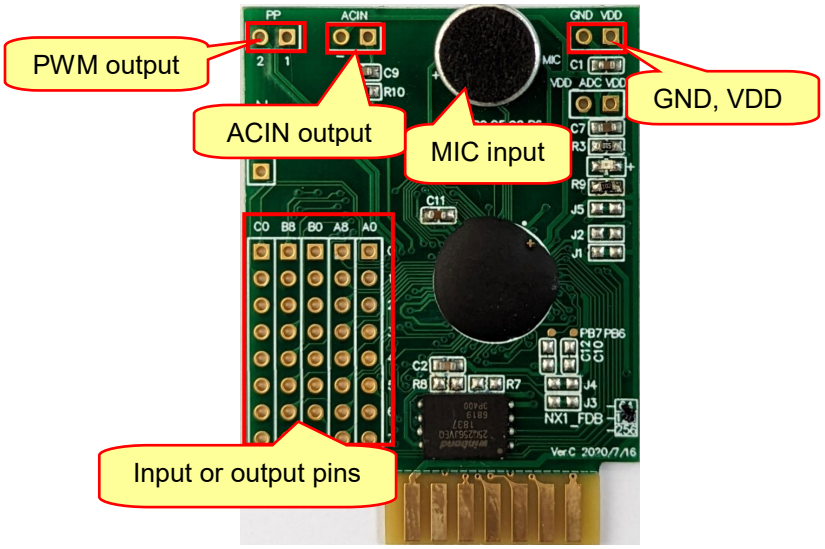
NY9T_FDB supports the use of NY9T-TP COB. Users can download files to NY9T_FDB via Q-FDB_Writer, then connect to NY9T-TP_COB which is jointed with the user-defined target board according to the pin map position. Users can demo the Touch-Keys functions immediately. For the detailed pin map, please refer to 5.4 NY9T_ICE & NY9T-TP_COB. The diagrammatic view of NY9T_FDB and NY9T-TP_COB is shown below.



2.10 NX1_FDB

2.10.1 NX1_FDB

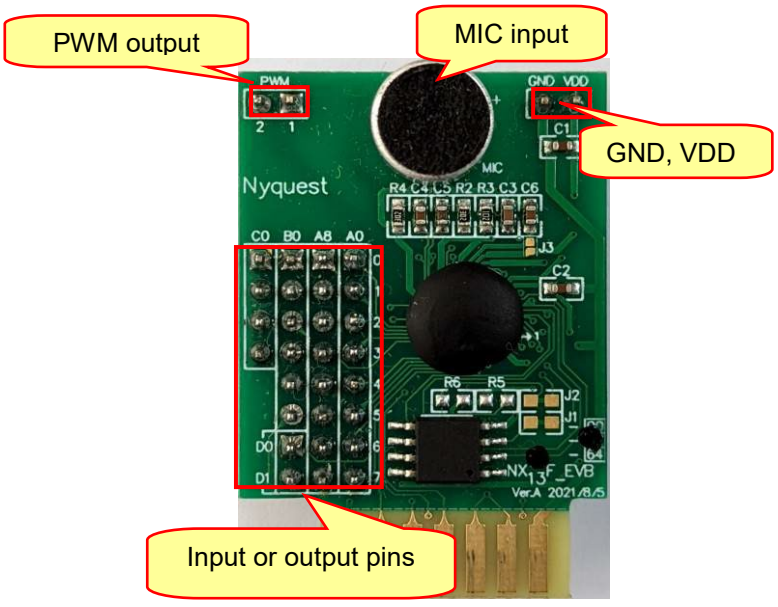
NX1_FDB is the flash demo board for NX1 demonstration. User can build .bin files using *NYIDE* or *Q-Code* software and download it to NX1_FDB to verify functions. The appearance of NX1_FDB is shown below.



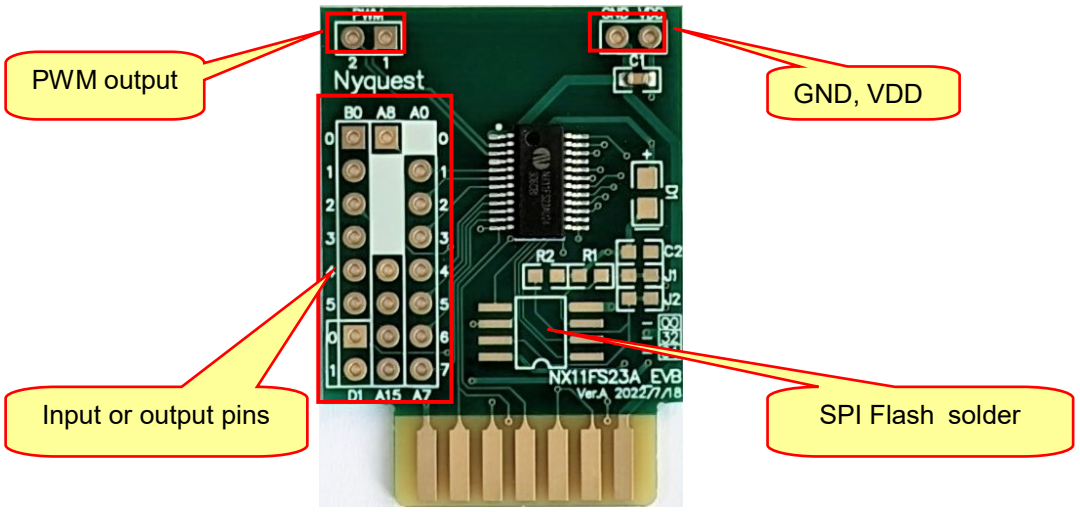
Flash Mode: 25Q64 (64Mbit) / N25Q128 (128Mbit) / W25J256 (256Mbit)

2.10.1 NX11/NX12/13FSxxA _EVB & NX12FMxxA_EVB

NX11/NX12/13FSxxA_EVB and NX12FMxxA_EVB are the flash demo board for NX1 demonstration. User can build .bin files using *NYIDE* or *Q-Code* software and download it to NX11/NX12/13FSxxA_EVB and NX12FMxxA_EVB to verify functions.

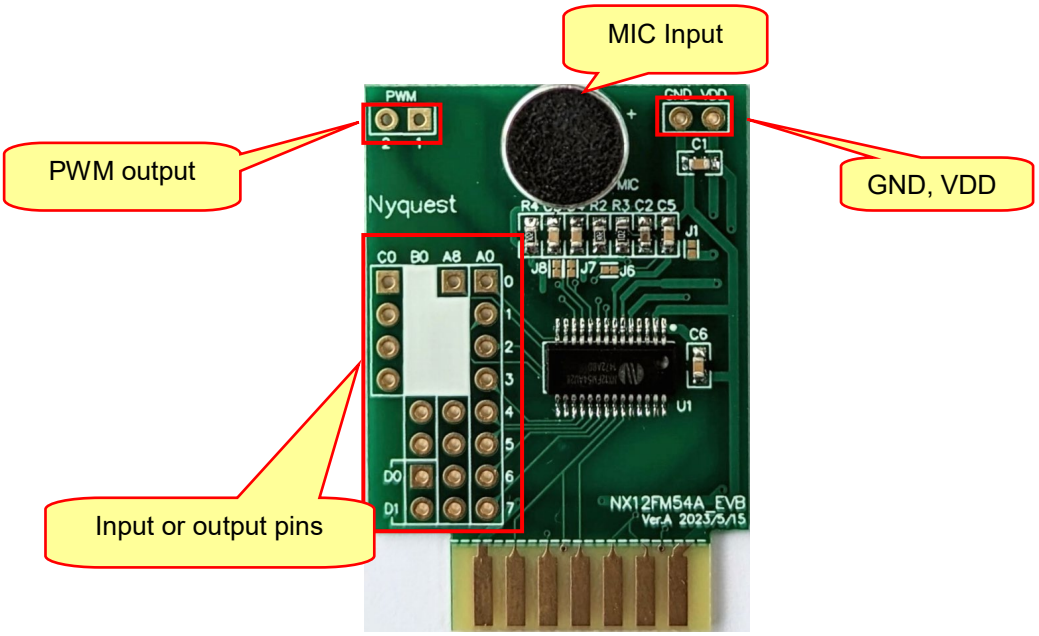


EVB Mode: NX12FS61A_EVB-64 Ver.A



EVB Mode: NX11FS23A_EVB-00 Ver.A

Note: Please connect D1 with 1N4148 diode, C2 with 1uF capacitance for equipping with SPI Flash (SOP8 package).



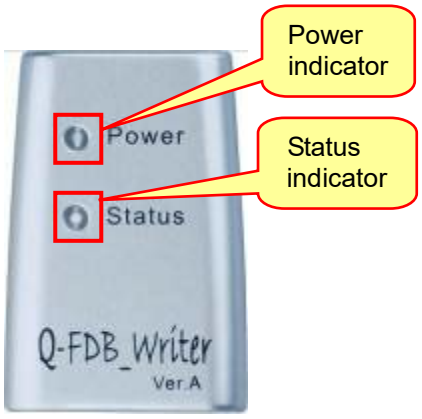
EVB Mode: NX12FM54A_EVB Ver.A

2.11 Q-FDB_Writer

2.11.1 Q-FDB_Writer

Q-FDB_Writer provides the functionality for programming FDB (Flash Demo Board) with more portability. It must work with *Q-Writer* software for programming.

The appearance of Q-FDB_Writer is shown below.



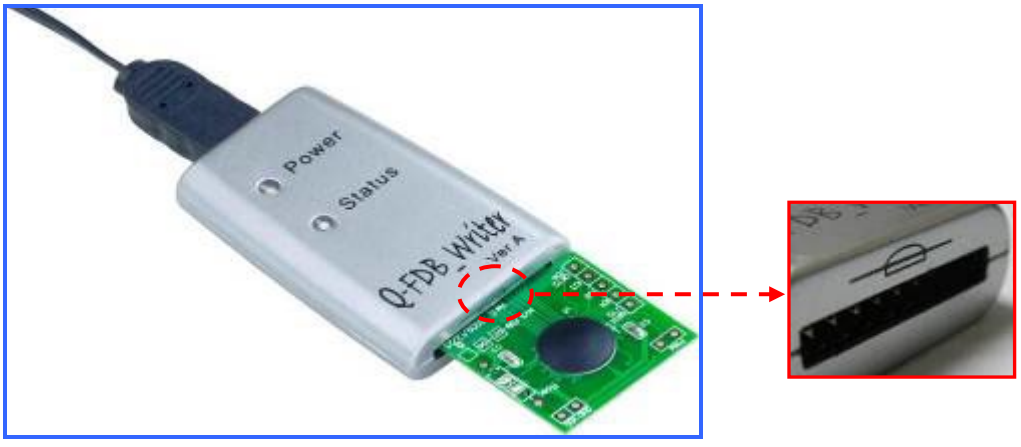
Q-FDB_Writer (Front)

Q-FDB_Writer (Back)

1.Power indicator: Displaying power status. When the power inputs, this red indicator will light constantly. (Output voltage is at 3.3V)

2.Status indicator: This green indicator will turn on when the result of operation or programming action is correct. Otherwise, the red indicator will turn on.

After connecting Q-FDB_Writer, insert the Flash Demo Board as shown below.



Note: Please orient the FDB correctly according to the diagram shown on Q-FDB_Writer hardware. The epoxy is in the front of FDB and the Flash Memory IC is in the back.

2.12 How to Use *Q-Writer*

Q-FDB_Writer programming must work with Nyquest *Q-Writer* software. The following is a brief introduction of *Q-Writer* operation. For details, please see *Q-Writer* user manual.

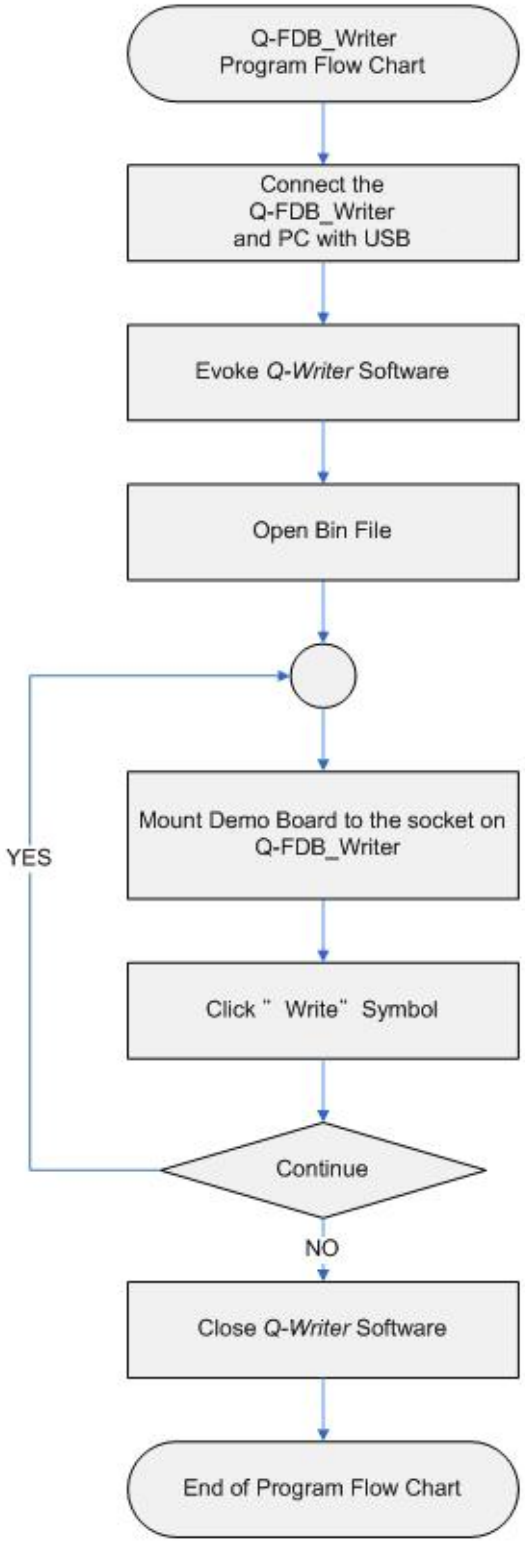
2.13.1 *Q-Writer* Interface

When *Q-Writer* detects the connection of Q-FDB_Writer, it shows the image of the Q-FDB_Writer.

To program FDB, apply corresponding FDB of NY1 / 2 / 3 / 4 / 5 / 6 / 7 / 9T or NX1 on Q-FDB_Writer and open the .bin file which will be programmed to FDB in *Q-Writer* software system, then proceed in accordance with *Q-Writer* operation.

2.13.2 Q-FDB_Writer Operation Flow Chart

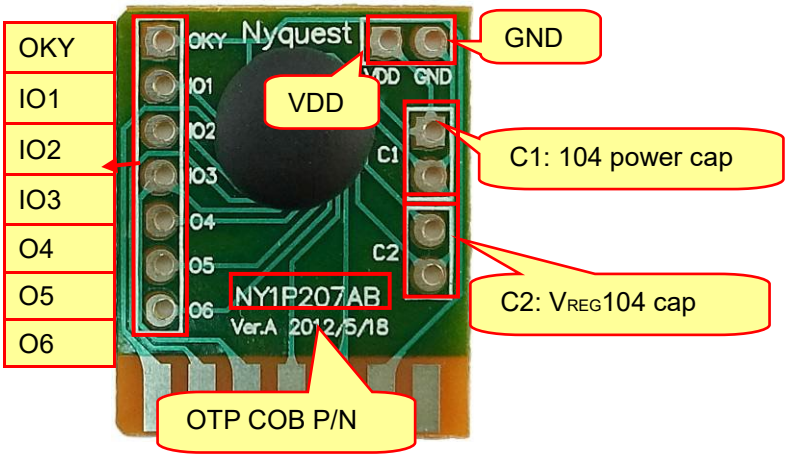
Q-FDB_Writer operation flow chart:



3 OTP Type Developing Tool

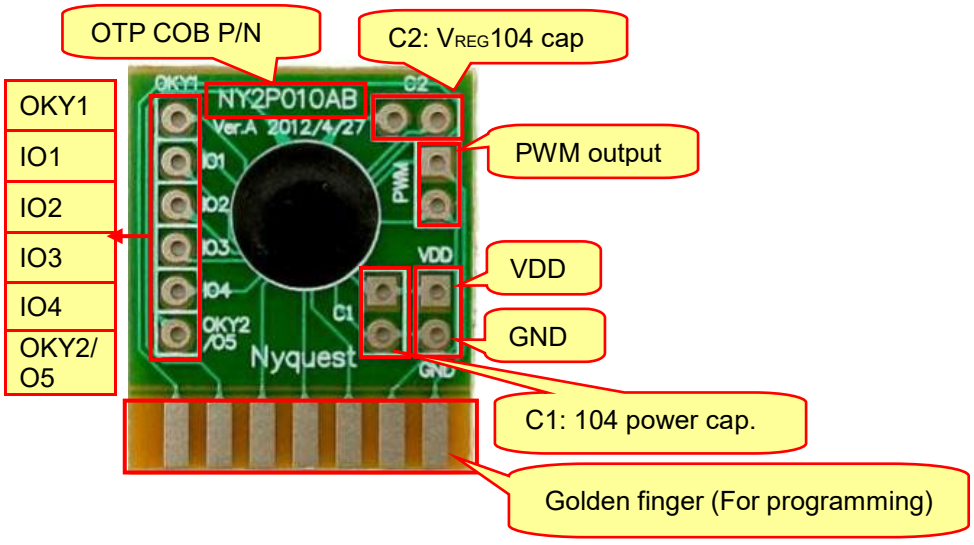
3.1 NY1PxxxAB

The NY1P series are single-chip LED Control and Drive synthesizing CMOS IC. It's OTP IC with embedded EPROM architecture, which is designed to support NY1AxxxA and NY1BxxxA MaskROM products. Currently there is only one body: NY1P207A.



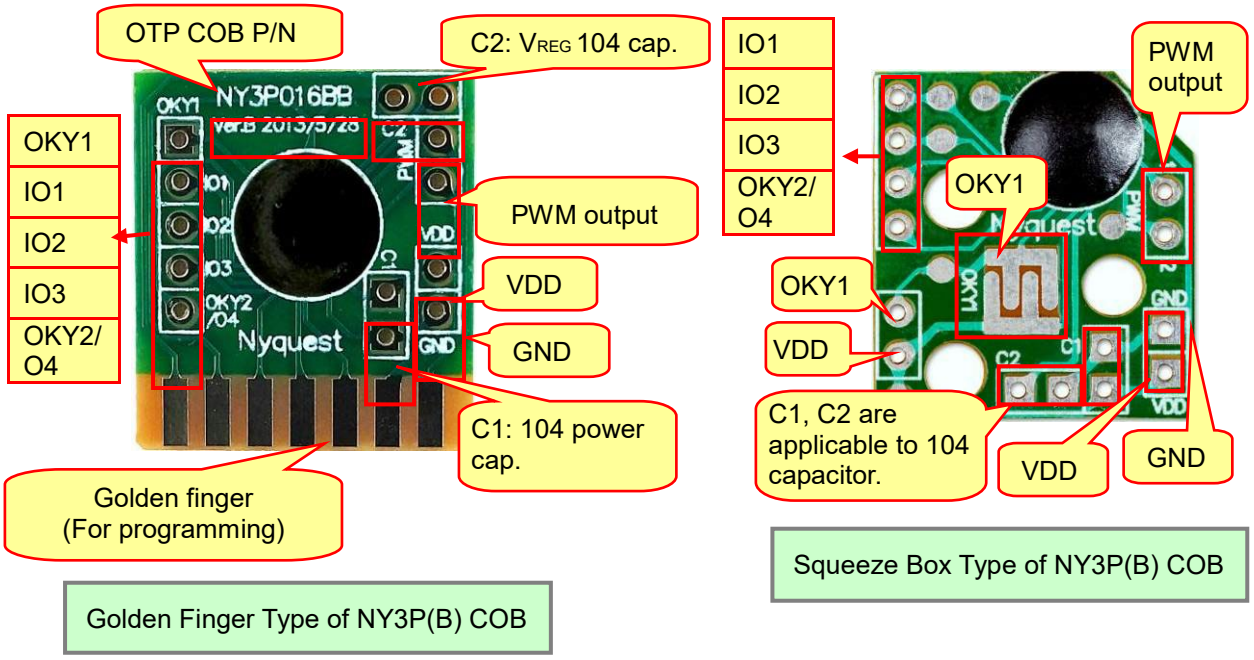
3.2 NY2PxxxAB

The NY2P series is single-chip dual-tone melody or 1-ch voice synthesizing CMOS IC. There is an OTP IC with embedded EPROM architecture, and designed to support NY2AxxxA, NY2BxxxA and NY2CxxxA MaskROM products. NY2P010A is the only body. The appearance of NY2P010A COB is shown below:



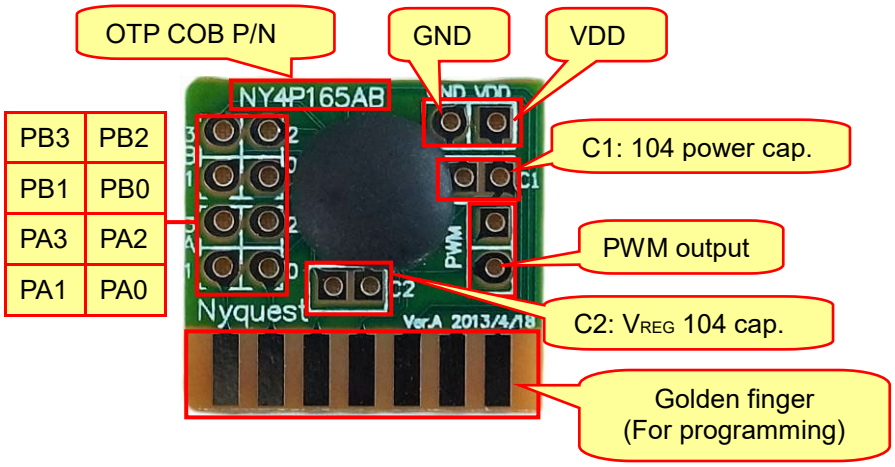
3.3 NY3P(B)xxxBB, xxxJB

The NY3PxxxB series is single-chip voice synthesizing CMOS IC. They are OTP ICs with embedded EPROM architecture, and OTPIC that are designed to support NY3AxxxB, NY3AxxxC, NY3AxxxD, NY3BxxxB, NY3CxxxB and NY3DxxxB MaskROM products. There are 7 bodies: NY3P005B / 010B / 016B / 035B / 065B / 087B / 115B. The appearance of NY3P(B) COB is shown below.



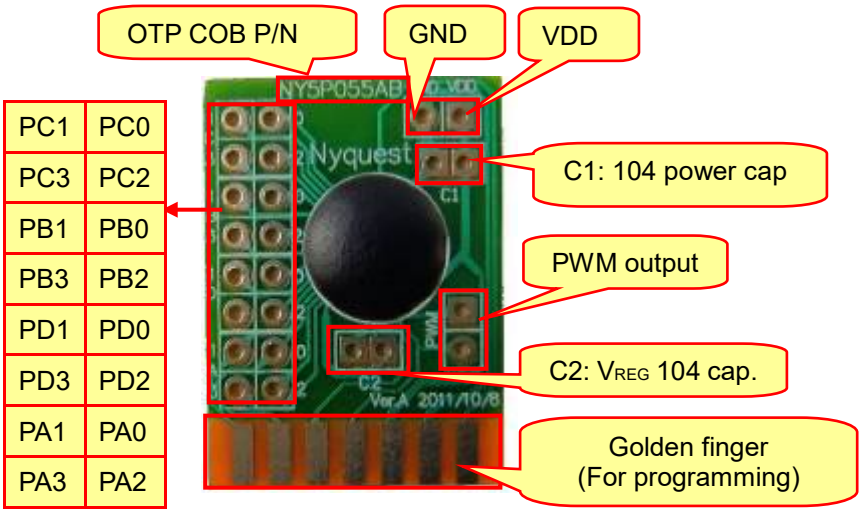
3.4 NY4PxxxAB, xxxJB

The NY4P series IC is a 4-bit MCU based sound processor. They are OTP ICs with embedded EPROM architecture, and designed to support NY4A and NY4B MaskROM products. There is only 1-channel speech with high quality PWM output. There are 7 bodies: NY4P005A / 018A / 045A / 065B / 085A / 105A / 165A. The appearance of NY4P COB is shown below.



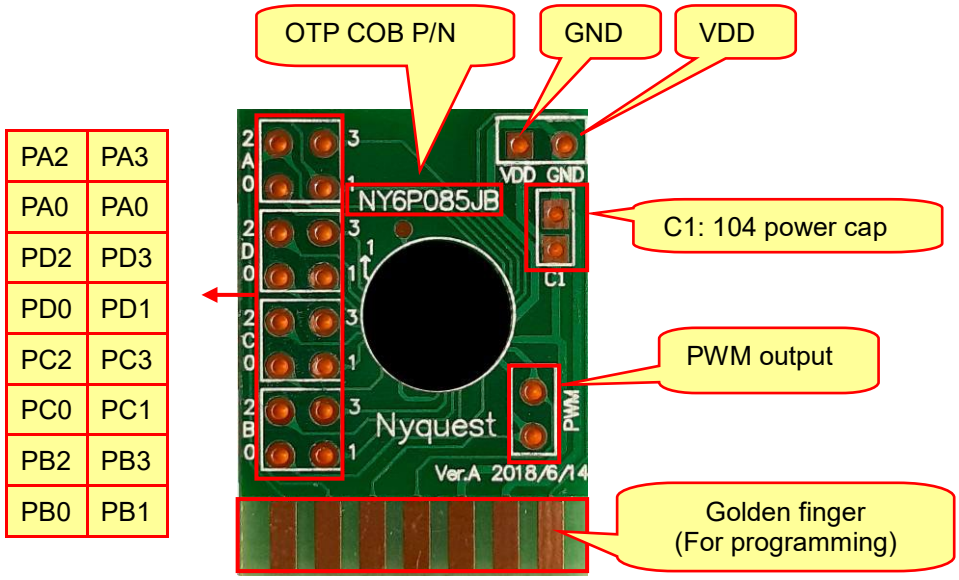
3.5 NY5PxxxAB, xxxJB

The NY5P series IC is a powerful 4-bit MCU based sound processor. They are OTP ICs with embedded EPROM architecture, and designed to support NY5A, NY5B and NY5C MaskROM products. There are 4 channels that are configured as speech, tone or midi. By using the high fidelity ADPCM speech synthesis algorithm, it can produce up to 44.1kHz sampling (near CD quality) voices, and 16 volume levels are supported. It is also equipped two kinds of audio outputs: PWM and DAC. There are 7 bodies: NY5P025A / 055A / 085A / 185A / 345A / 520A / 720A. The appearance of NY5P COB is shown below.



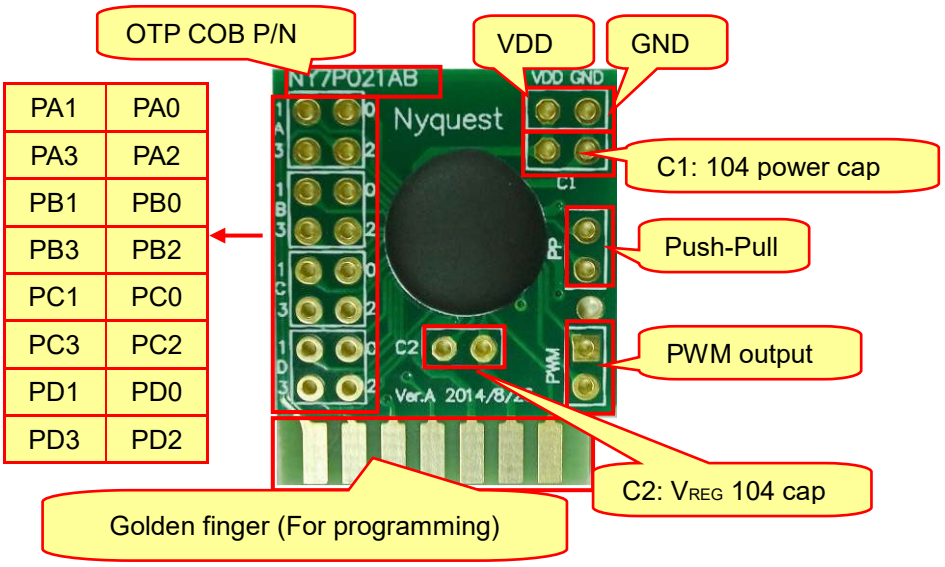
3.6 NY6PxxxJB

The NY6P series IC is a powerful 4-bit MCU based sound processor. They are OTP ICs with embedded EPROM architecture, and designed to support NY6A, NY6B and NY6C MaskROM products. There are 6 channels that are configured as speech or midi. By using the high fidelity ADPCM speech synthesis algorithm or PCM, it can produce up to 44.1kHz sampling (near CD quality) voices, and 16 volume levels are supported. It is also equipped two kinds of audio outputs: PWM and DAC. There is only 1 body: NY6P085J. The appearance of NY6P COB is shown below.



3.7 NY7PxxxAB

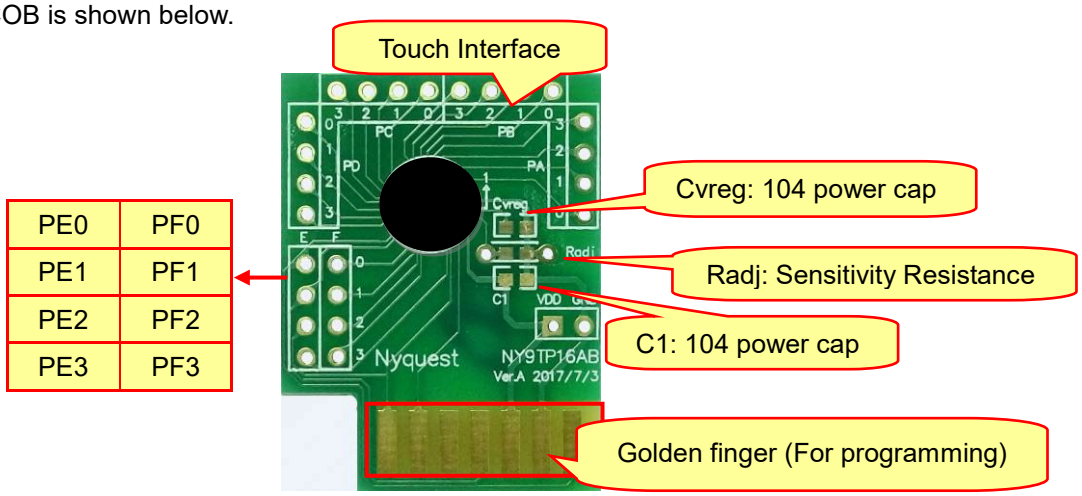
The NY7P series IC is a powerful 4-bit micro-controller based sound processor. There are 8 channels that are configured as speech or MIDI, and all of these 8 channels or part of them can be played with speech or MIDI simultaneously. By using the high fidelity 6-bit ADPCM synthesis algorithm for both speech and MIDI timbre with up to 44.1KHz sample rate, NY7P can produce near-CD quality voices. Therefore NY7P melody quality is very close to real instrument. There are six bodies: NY7P021A / 065A / 087A / 170A / 345A / 520A. The appearance of NY7P COB is shown below.



PA1	PA0
PA3	PA2
PB1	PB0
PB3	PB2
PC1	PC0
PC3	PC2
PD1	PD0
PD3	PD2

3.8 NY9TPxxAB

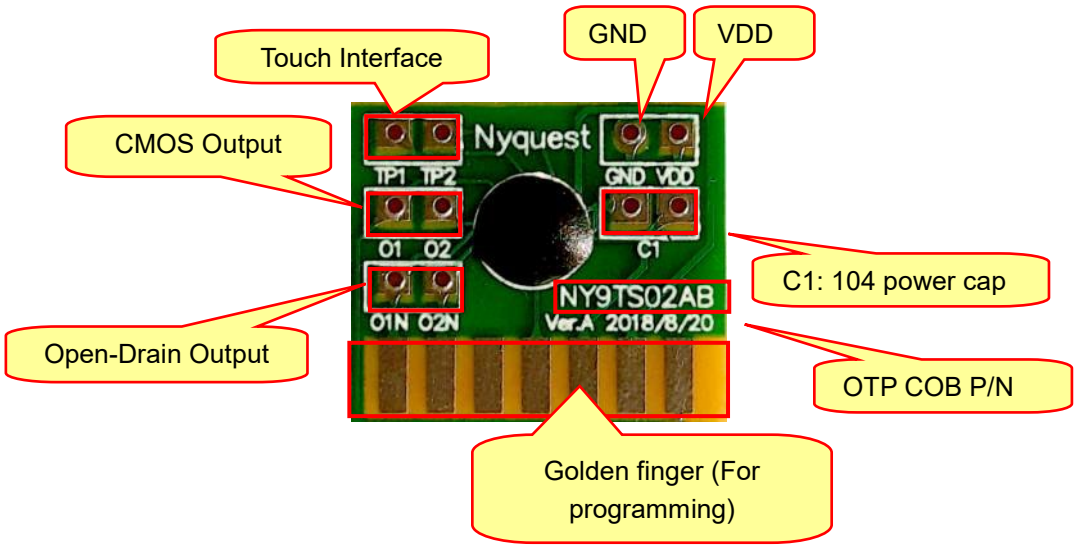
The NY9TP16A series IC is a powerful 4-bit micro-controller based LED control processor with capacitive touch sensing function. It is embedded EPROM architecture, and the OTP (One Time Programmable) IC that is designed to support NY9T MaskROM products. The RISC MCU architecture is very easy to program and control, and various applications can be easily implemented. There are total 45 instructions, and most of them are executed in one cycle. Through the accurate 400kHz internal oscillation of +/- 1% tolerance, an external resister is not required. Furthermore, a RC16K mode is designed to save power consumption and a HALT is to minimize the power. There is only 1 body: NY9TP16A. The appearance of NY9TP COB is shown below.



PE0	PF0
PE1	PF1
PE2	PF2
PE3	PF3

3.9 NY9TSxxAB

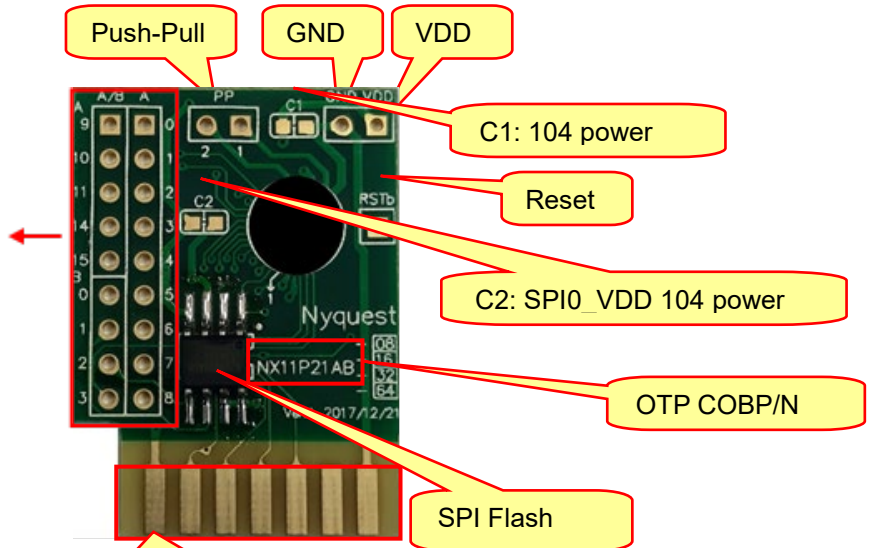
The NY9TS02A is a single-chip capacitive-touch CMOS IC. It is an embedded OTP (One Time Programmable) architecture with 2 touch keys, 2 CMOS output and 2 open-drain output pins. To meet the different application needs of customers, there are 2 kinds of Touch-Key option, 4 kinds of output type, touch sensitivity, auto-judge calibration and Touch-Key scan cooperating with embedded OTP fuse option. The appearance of NY9TS COB is shown below.

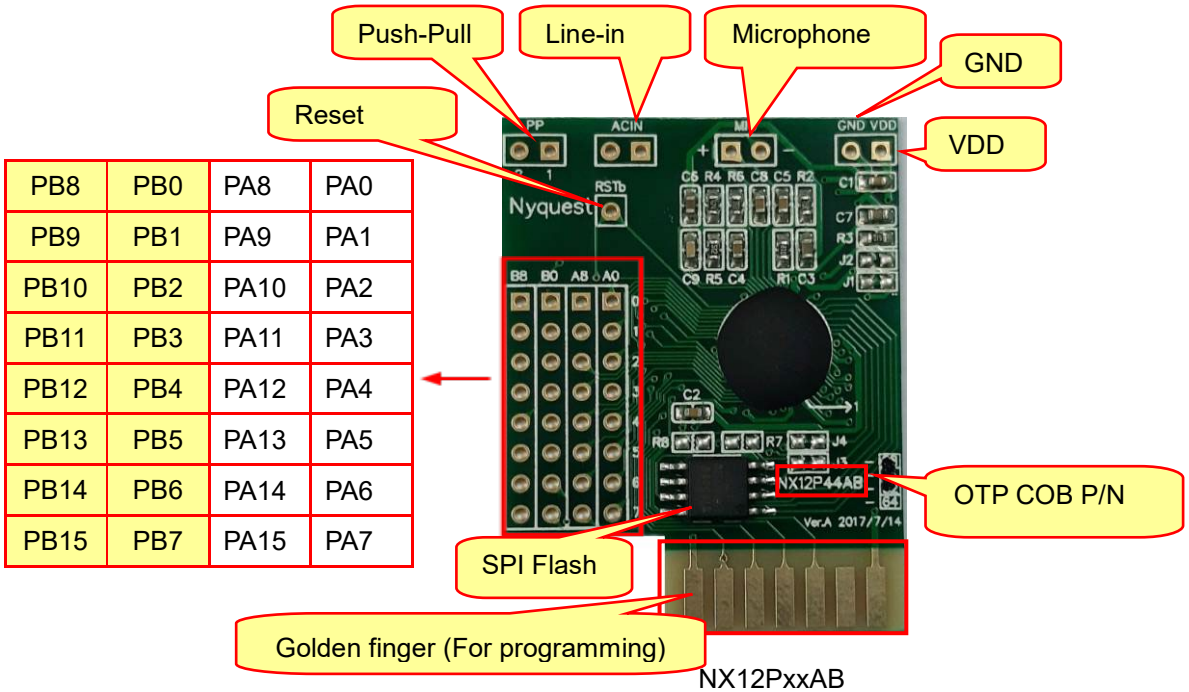


3.10 NX1xPxxxAB

The NX1 series is a 32-bit MCU based high-quality speech/MIDI processor, which is specially designed for customers to innovate with advanced DSP power. It is embedded with OTP (One Time PROM) for mass production, such that no mask is required while MOQ / Lead Time are kept minimized. The appearance of NX44P and NX12P is shown below.

PA9	PA0
PA10	PA1
PA11	PA2
PA14	PA3
PA15	PA4
PB0	PA5
PB1	PA6
PB2	PA7
PB3	PA8

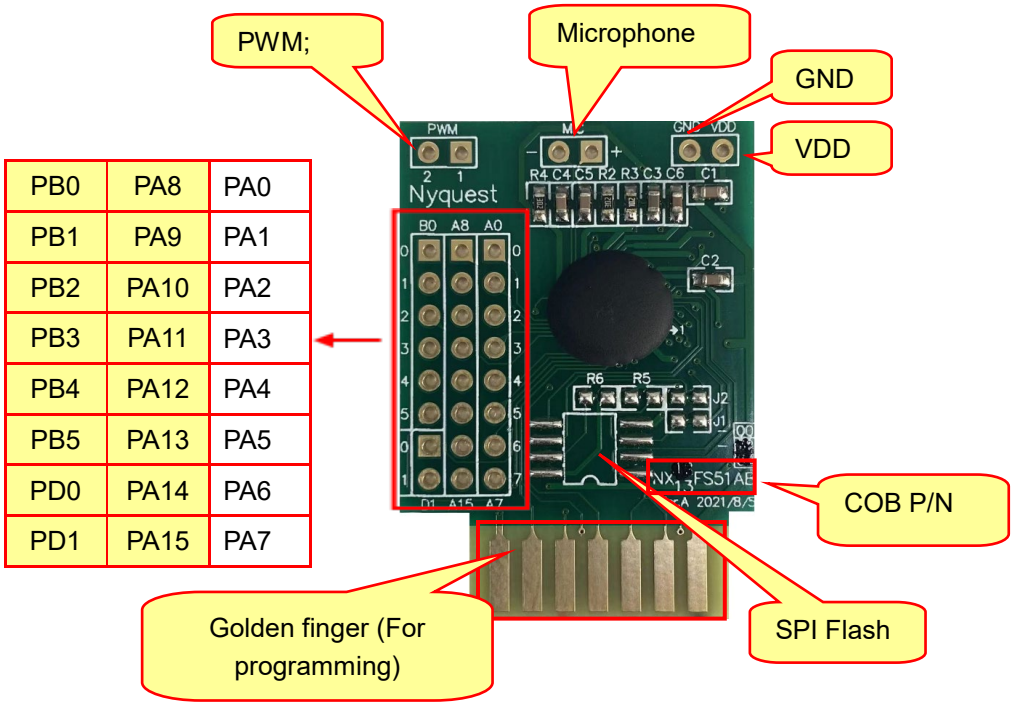




NX12PxxAB

3.11 NX1xFSxxAB

The NX1 series is a 32-bit MCU based high-quality speech/MIDI processor, which is specially designed for customers to innovate with advanced DSP power. It is a new generation of Flash version, which makes up for the shortage of one-time OTP, and integrates the ICE debug function directly into the mass-produced chips, making the development process more simplified and smooth, letting the MOQ and delivery have more advantages.The appearance of NX13FS51 is shown below.



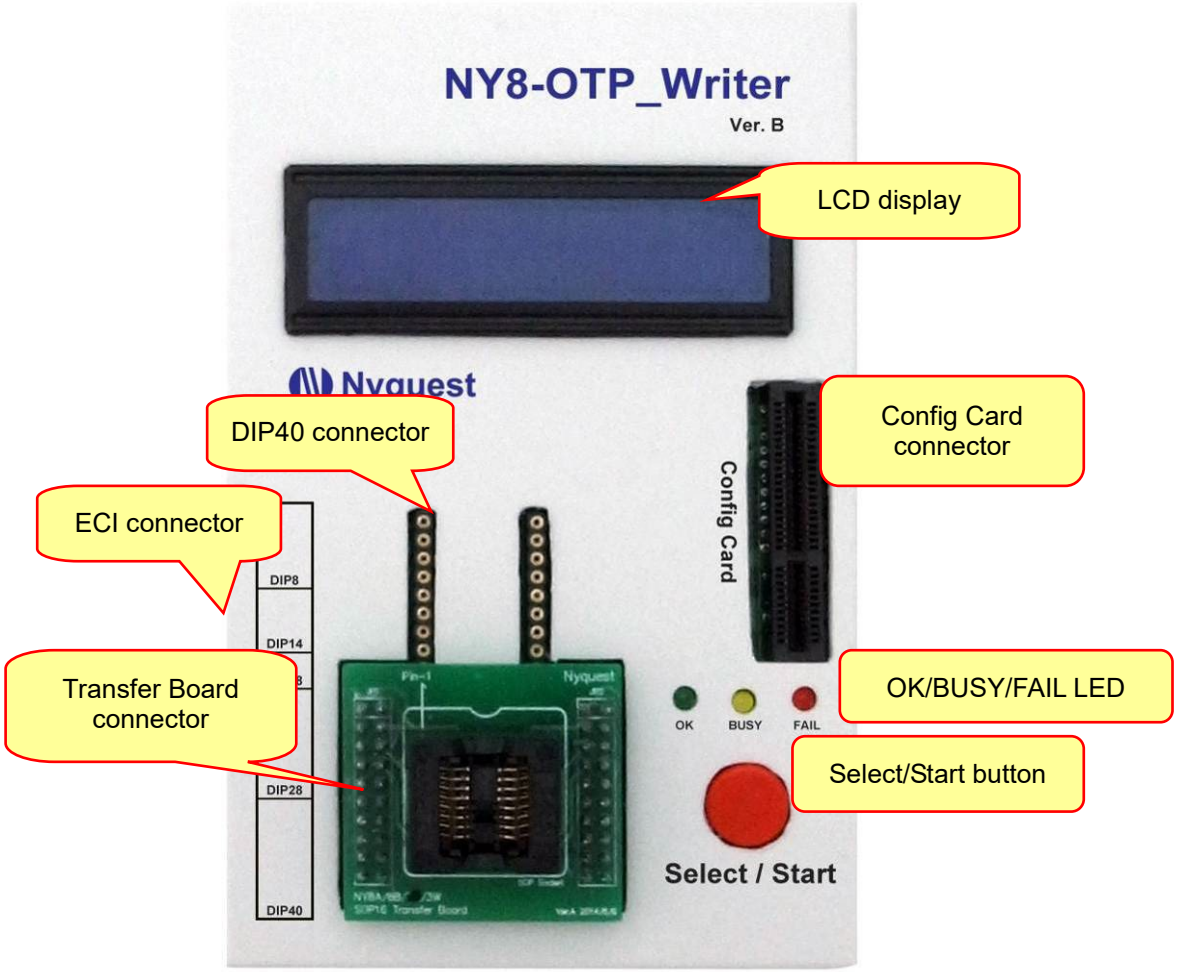
3.12 OTP_Writer & Transfer Board

3.12.1 NY8-OTP_Writer (Ver. B)

NY8-OTP_Writer (Ver. B) provides the functionality for programming NY8 OTP / MTP IC. It must work with *Q-Writer* software for programming. It equips with LCD display which is easier to set up functions, and provides more and clear information.

3.12.1.1 NY8-OTP_Writer (Ver. B)

The appearance of NY8-OTP_Writer (Ver. B) is shown below.

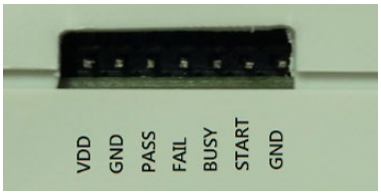


1. Mini USB connector: The connector of USB. Please use suitable Mini-B type USB cable to connect to PC or connect to USB Adaptor.
2. Buzzer switch: Use Jumper to setup the Bi sound of buzzer as on or off.
3. Config card connector: Please insert the corresponding config card according to the packaging type of IC to be programmed.
4. Transfer board connector: Please insert the corresponding transfer board according to the packaging type of IC to be programmed.
5. DIP40 connector: Using standard DIP40 Text tool to program various kinds of DIP package IC

or directly connect to programming device via cable.

6. Select/Start button: Press and hold the button for 2 seconds to enter selection mode. The LCD screen will display "Select Mode:" and the current selected operation. Press the button again to select between the operations sequentially until the desired operation is displayed. Hold the button for 3 seconds to leave the selection mode and enter operation mode, the LCD will then display "Operation Mode:". If the selection mode is left unattended for a certain amount of time, it will automatically switch to operation mode. (For stand-alone mode only)
7. LCD display: The LCD display provides an interaction interface, please refer to NY8-OTP_Writer (Ver. B) Operation Code.
8. BUSY indicator: This yellow indicator will light when the programming is processing. (e.g. Select/Start pressed)
9. OK indicator: This green indicator will light when the result of operation is correct.
10. FAIL indicator: This red indicator will light if any operation is incorrect.
11. ECI connector: Connect with a handler to form an automatic programming system.

3.12.1.2 ECI and Programming Connector Pin Definition

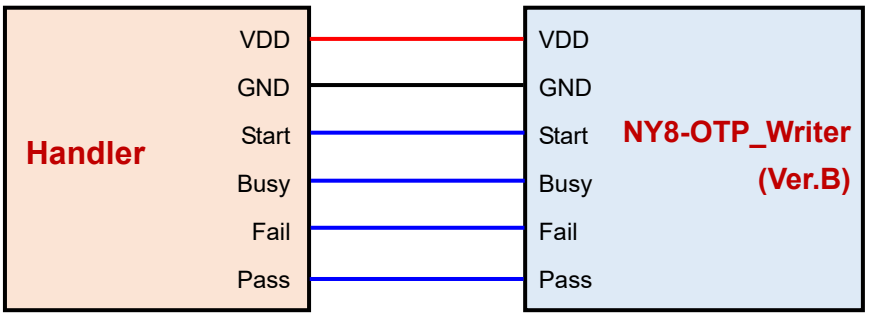


ECI pin definition table:

Function	Direction	Description
VDD		Provide DC +5.0V output voltage. It is not recommend to supply to a device over 100mA.
GND		Connect external handler or controller GND.
Start	input	Activation signals from external connecting handler or controller to NY8-OTP_Writer (Ver. B). This is an Input Low Active signal, and the range of input voltage is 0V~3.3V and the maximum input voltage can be up to 12V.
Busy Flag	output	The Low Active signal is output when task is executing after start. It is an open drain output.
Fail Flag	output	The Low Active signal is output when executing task is fail. It is an open drain output.
Pass Flag	output	The Low Active signal is output when executing task is successful. It is an open drain output.

3.12.1.3 Fast Connection Method with Handler

Connect the 6 pins (VDD, GND, Pass, Busy, Fail and Start) from NY8-OTP_Writer (Ver. B) to Handler.



3.12.1.4 The Notice of Using Writer

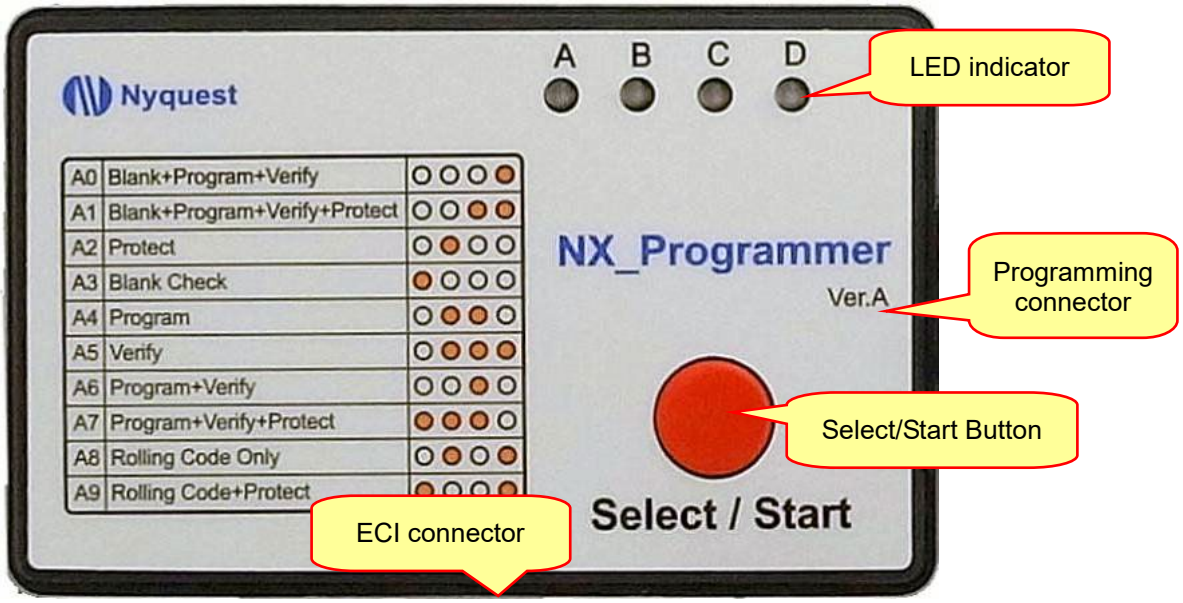
1. NY8-OTP_Writer (Ver.B) can provide 3.0V~5.0V voltage range for IC VDD pin, and the max current is 200mA. Pleae note the total current consumption required by VDD on the PCB to avoid programming instability. The total capacitance value of the VDD pin of the NY8 series IC cannot exceed 47uF, while the total capacitance value of the VDD pin on the PCB of the NY8 MTP IC series cannot exceed 470uF.
2. Please notice that VPP pin **CANNOT connect to I/O peripheral devices that is over +7.0V** for avoiding burning peripheral devices during the process of programming IC.
3. **The pin of VPP or VDD cannot connect to GND otherwise NY8-OTP_Writer will burn out.**
4. **When programming on a PCB with a battery system, the battery power must be turned of. IC cannot be programmed when the PCB has an external power supply, it can cause the IC programmed abnormally, and the most serious problem will be to burn the Writer.**
5. The capacitor of SDO / (SDI/SDA) / (CLK/SCL) must be under 680pF, the external Pull-High resistor must exceed 100Kohm, but the external pull-Down resistor must be under 1.8Kohm and cannot connect with any resistor to avoid problems such as IC not found or data trim failed by unstable programming.

3.12.2 NX_Programmer (Ver. A)

NX_Programmer (Ver. A) is an integrated development tool for NX1 32-bit chip Series with ICE emulator function. It also supports FDB downloading and IC programming.

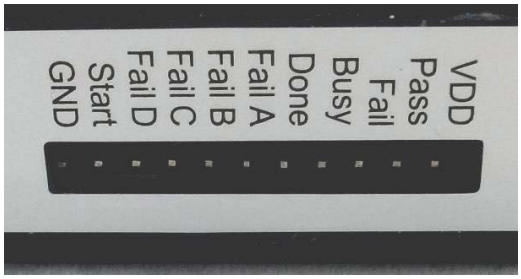
3.12.2.1 NX_Programmer (Ver. A) Appearance and Description

The appearance of NX_Programmer (Ver. A) is shown below.



1. Mini USB connector: The connector of USB. Please use suitable Mini-B type USB cable to connect to PC or connect to USB Adaptor.
2. Programming connector: According to the use of the environment, it can be directly connected to a handler fixture by cable.
3. Select/Start button: Press and hold the button for 2 seconds to enter setting mode. The LED indicator will flash in orange indicating the current selected function. User can press the button again to select between the functions sequentially. After the selection is done, user can leave the setting mode by waiting the orange LED stops flashing or holding the button for 3 seconds. (For stand-alone mode only)
4. Compound indicator: According to different conditions, the indicator will display different LED colors. Please refer to NX_Programmer (Ver. A) Operation Code.
   a. Orange indicator: Function selected.
   b. Red indicator: Programming fail or abnormal status.
   c. Green indicator: Programming completed and OK.
5. ECI connector: Connect with a handler to form an automatic programming system.

3.12.2.2 ECI and Programming Connector Pin Definition



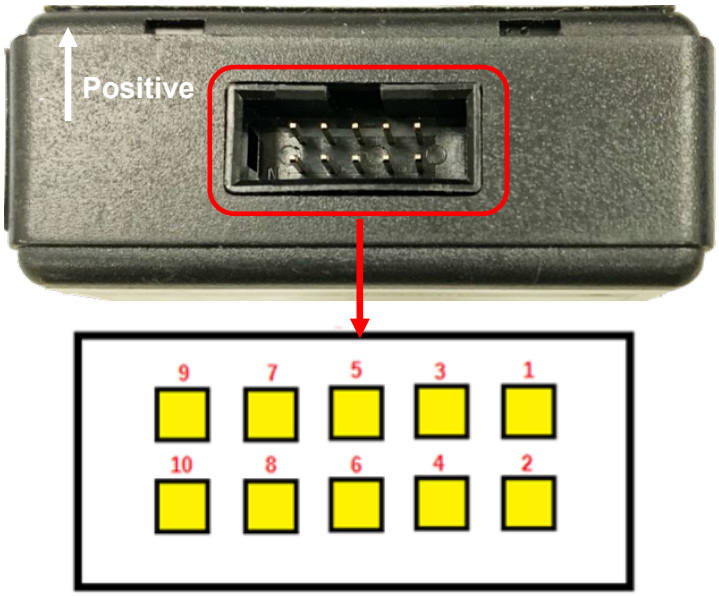
ECI pin definition table:

Function	Direction	Description	
GND		Connect external handler or controller GND.	
Start	input	Activation signals from external connecting handler or controller to NX_Programmer (Ver. A). This is an Input Low Active signal, and the range of input voltage is 0V~3.3V and the maximum input voltage can be up to 12V.	
Fail Status	output	Fail D	If any error occurs after start, Fail status signal will be output. This is a Low Active output signal. Output voltage is 0V~3.3V. The Fail Status please refer to the following Error Table.
		Fail C	
		Fail B	
		Fail A	
Done Flag	output	This signal is output after task complete. It is a Low Active output signal. Output voltage is 0V~3.3V.	
Busy Flag	output	This signal is output when task is executing after start. It is a Low Active output signal. Output voltage is 0V~3.3V.	
Fail Flag	output	This signal is output when executing task is fail. It is a Low Active output signal. Output voltage is 0V~3.3V.	
Pass Flag	output	This signal is output when executing task is successful. It is a Low Active output signal. Output voltage=0V~3.3V.	

	Error Table			
	Fail D	Fail C	Fail B	Fail A
Blank Check Error	H	H	H	L
Program Error	H	H	L	H
Verify Error	H	H	L	L
IC Is Protected	H	L	H	H
IC Not Found	H	L	H	L
No code	H	L	L	H
Invalid Code	H	L	L	L
Error IC Package	L	H	H	H

Different IC Version	L	H	H	L
Trim Failed	L	H	L	H
Trim Data Error	L	H	L	L
Rolling Code Error	L	L	H	H

Programming Connector pin definition:



PIN No.	Definition	PIN No.	Definition
1	VDD	6	BMODE
2	EDMRESET	7	PGM_MOSI
3	EDMTMS	8	PGM_SCK
4	EDMTCK	9	PGM_MISO
5	N.C	10	GND

3.12.2.3 Corresponding Table of NX_Programmer and IC Programming Interface

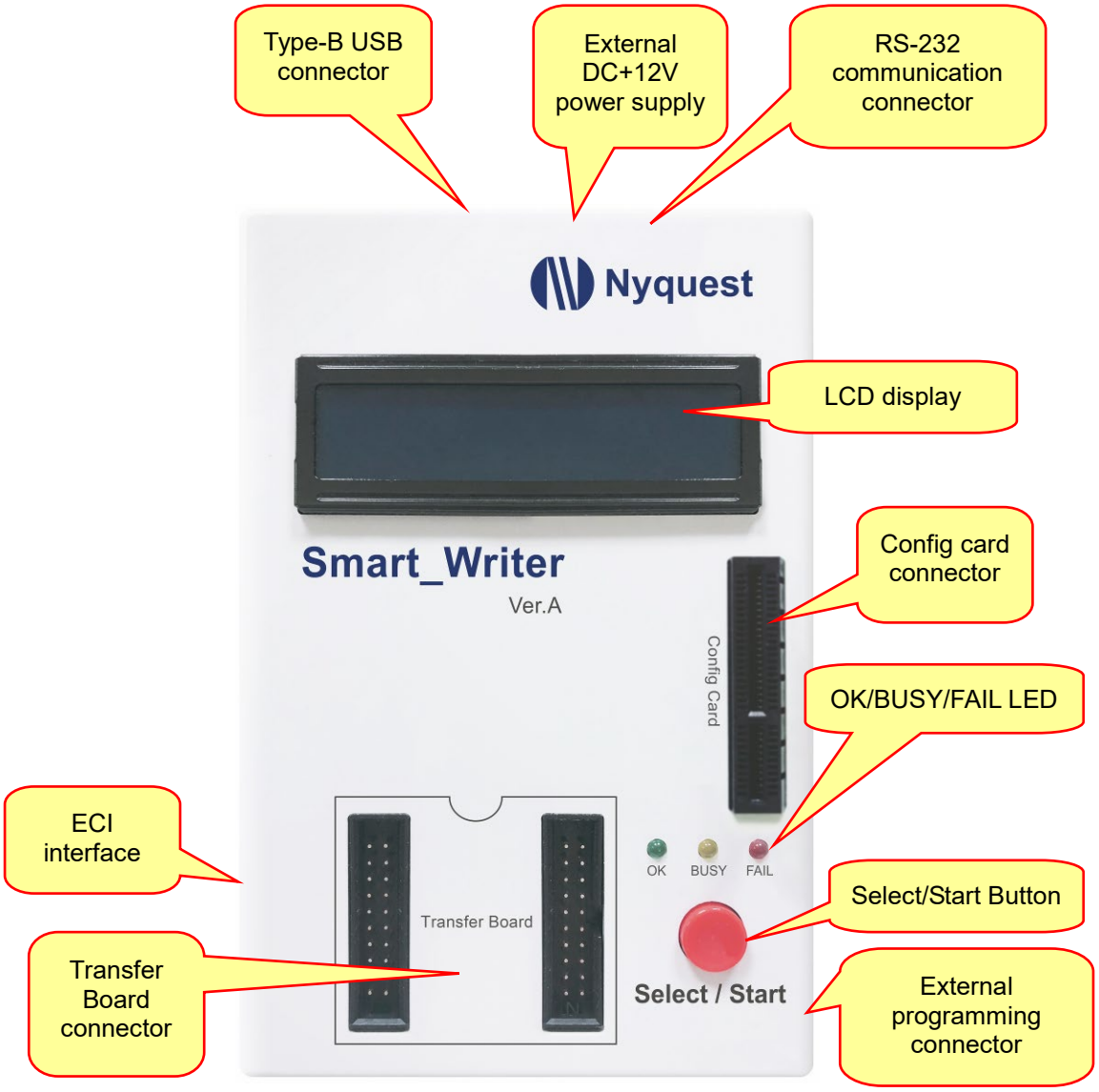
	Pin Name	Pin Name	Pin Name	Pin Name	Pin Name	Pin Name	Pin Name	Pin Name	Pin Name	Pin Name
NX_Programmer	VDD	EDMRESET/VPP	EDMTMS	EDMTCK	N.C	BMODE	PGM_MOSI	PGM_SCK	PGM_MISO	GND
NX1_FDB	VDD	**RESET**	TMSC	TCKC	--	BMODE	PA4	PA3	PA5	GND
NX11P21	VDD	**PA2**	--	--	--	--	PA4	PA3	PA5	GND
NX11P22	VDD	**RESET**	--	--	--	--	PA4	PA3	PA5	GND
NX12P44	VDD	**RESET**	--	--	--	--	PA4	PA3	PA5	GND
NX13P44	VDD	**RESET**	--	--	--	--	PA4	PA3	PA5	GND
NX12P64	VDD	**PA15**	--	--	--	--	PA4	PA3	PA5	GND
NX13P64	VDD	**PA15**	--	--	--	--	PA4	PA3	PA5	GND
NX11M	VDD	**PA2**	--	--	--	--	PA4	PA3	PA5	GND
NX12M	VDD	**PA15**	--	--	--	--	PA4	PA3	PA5	GND
NX13M	VDD	**PA15**	--	--	--	--	PA4	PA3	PA5	GND
NX1xFSxx	VDD	**PA8**	PD1	PD0	--	--	PD1	PD0	PA12	GND
NX1xFMxx	VDD	**PA8**	PD1	PD0	--	--	PD1	PD0	PA12	GND
NX12FSxx	VDD	**PA8**	PD1	PD0	--	--	PD1	PD0	PA12	GND
NX13FSxx	VDD	**PA8**	PD1	PD0	--	--	PD1	PD0	PA12	GND
NX12FMxx	VDD	**PA8**	PD1	PD0	--	--	PD1	PD0	PA12	GND
NX13FMxx	VDD	**PA8**	PD1	PD0	--	--	PD1	PD0	PA12	GND

3.12.3 Smart_Writer Ver. A

Smart_Writer Ver. A provides the functionality for programming NY1/2/3/4/5/6/7/9 and NX1 series OTP IC. It must work with *Q-Writer* software for programming. It equips with LCD display which is easier to set up functions, and provides more and clear information.

3.12.3.1 Smart_Writer Ver. A Appearance and Description

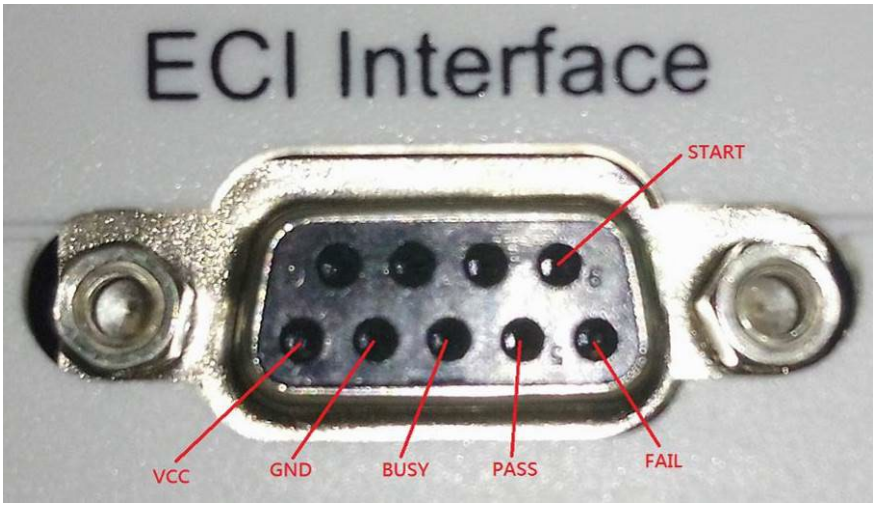
The appearance of Smart_Writer Ver. A is shown below.



1. Type-B USB connector: The connector of USB. Please use type–B USB cable to connect to PC. (It is strongly suggested that do not use usb as the power source when programming IC, use external +12V power supply instead.)
2. External +12V power supply: Please use external +12V Power_Adaptor with Stand-Alone mode or when power shortage.

3. Buzzer switch: Use Jumper to set the Bi sound of buzzer as on or off
4. Config Card connector: Insert the corresponding config card according to the package type of IC to be programmed.
5. Transfer Board connector: Insert the corresponding transfer board according to the packaging type of IC to be programmed.
6. Select/Start button: A long press to enter selection mode, or a short press to start proceeding the assigned operation mode.
7. LCD display: Provide human-machine interactive display interface, please refer to Smart_Writer Ver. A Operation Code.
8. BUSY LED indicator: This yellow indicator will turn on when the system is working. (e.g. system activated or the Select/Start button is pressed)
9. OK LED indicator: This green indicator will turn on when the result of operation or programming action is done without any errors.
10. FAIL LED indicator: This red indicator will turn on if any operations go wrong.
11. ECI interface: Connect with a handler to form an automatic programming system.
12. External Programming connector: Directly connected pins for programming without a config card, (the transmission line is recommended to use the shield wire.)

3.12.3.2 ECI Interface and the pin definition

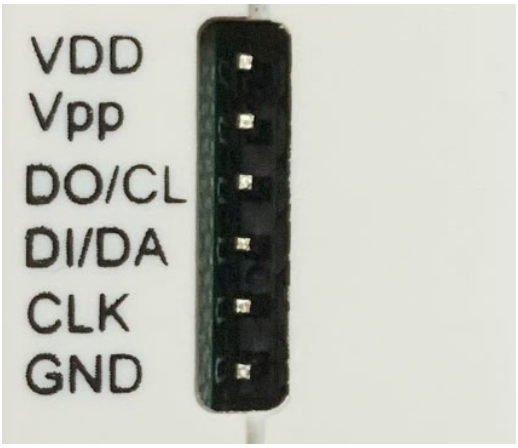


ECI Interface Definition

Definition	Input/Output	Description
VCC	-	Provide output DC +5.0V voltage. It is not recommended to supply for over 100mA load device.
GND	-	Connect to Handler or the GND of external controller.

Definition	Input/Output	Description
START	Input	The external Handler or controller sends a start signal to Smart_Writer Ver. A. This is an Active Low input pin. The input voltage range is 0V~5.0V, and the maximum input voltage is 12V.
BUSY	Output	After starting execution, the Writer sends the status of busy signals. The output is Low Active.
FAIL	Output	After execution, the Writer sends the status of fail signals. The output is Active Low.
PASS	Output	After finishing execution, the Writer sends the status of pass signals. The output is Active Low.

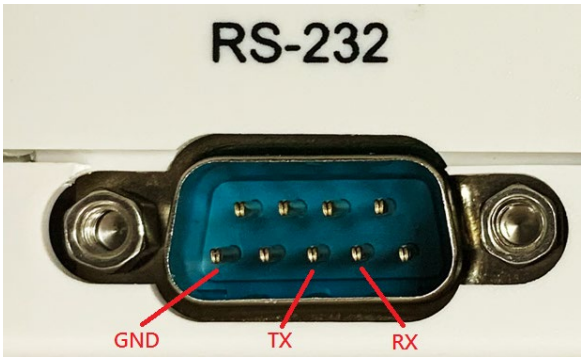
3.12.3.3 External programming connector and the pin definition



Definition	Input/Output	Description
VDD	Output	The power connector for programming Nyquest IC(DC1.5V~5.5V / 500mA).
V_{PP}	Output	The power connector for programming Nyquest IC(DC6.0V~10.0V / 500mA).
DO/CL	Input/Output	The communication DO/CL pin to program Nyquest IC.
DI/DA	Input/Output	The communication DI/DA pin to program Nyquest IC.
CLK	Output	The communication CLK pin to program Nyquest IC.
GND	-	The GND of Nyquest IC

	Pin Name	Pin Name	Pin Name	Pin Name	Pin Name	Pin Name
Smart-Writer	VDD	VPP	DO/CL	DI/DA	CLK	GND
NY1PxxxA	VDD	**VPP**	OKY	IO4	IO3	GND
NY2PxxxA	VDD	**OKY1**	PWM2	IO1	IO2	GND
NY3PxxxB	VDD	**OKY1**	PWM2	IO1	IO2	GND
NY3PxxxJ	VDD	**OKY1**	PWM2	IO1	IO2	GND
NY3PxxxE	VDD	**OKY**	PWM2	IO2	PWM1	GND
NY4PxxxA	VDD	**VPP**	PWM2	PA0	PA1	GND
NY4PxxxJ	VDD	**PB2**	PWM2	PA0	PA1	GND
NY5PxxxA	VDD	**VPP**	PWM2	PA0	PA1	GND
NY5PxxxJ	VDD	**PB0**	PWM2	PA1	PA0	GND
NY5QxxxA	VDD	**PB0**	PWM2	PA2	PA1	GND
NY6PxxxA	VDD	**PA0**	PWM2	PA2	PA1	GND
NY7PxxxA	VDD	**VPP**	PA1	PA3	PA2	GND
NY9TpxxA	VDD	**PE0**	PE1	RADJ	PE2	GND
NY9TsxxA	VDD	**O1**	O2	O2N	O1N	GND
NX11P21	VDD	**PA2**	PA5	PA4	PA3	GND
NX11P22	VDD	**RESET**	PA5	PA4	PA3	GND
NX12P64/NX13P64	VDD	**PA15**	PA5	PA4	PA3	GND
NX11M	VDD	**PA2**	PA5	PA4	PA3	GND
NX12M/NX13M	VDD	**PA15**	PA5	PA4	PA3	GND
NX11FS/NX12FS/NX13FS	VDD	**PA8**	PA12	PD1	PD0	GND
NX11FM/NX12FM/NX13FM	VDD	**PA8**	PA12	PD1	PD0	GND
N25Q	VDD	**CS**	SDO	SDI	SCLK	GND

3.12.3.4 RS-232 connecter pin definition



Definition	Input/Output	Description
RX	Input	Standard RS-232 input pin.
TX	Output	Standard RS-232 output pin.
GND		The GND of external controller.

3.12.3.5 The Notice of Using Writer

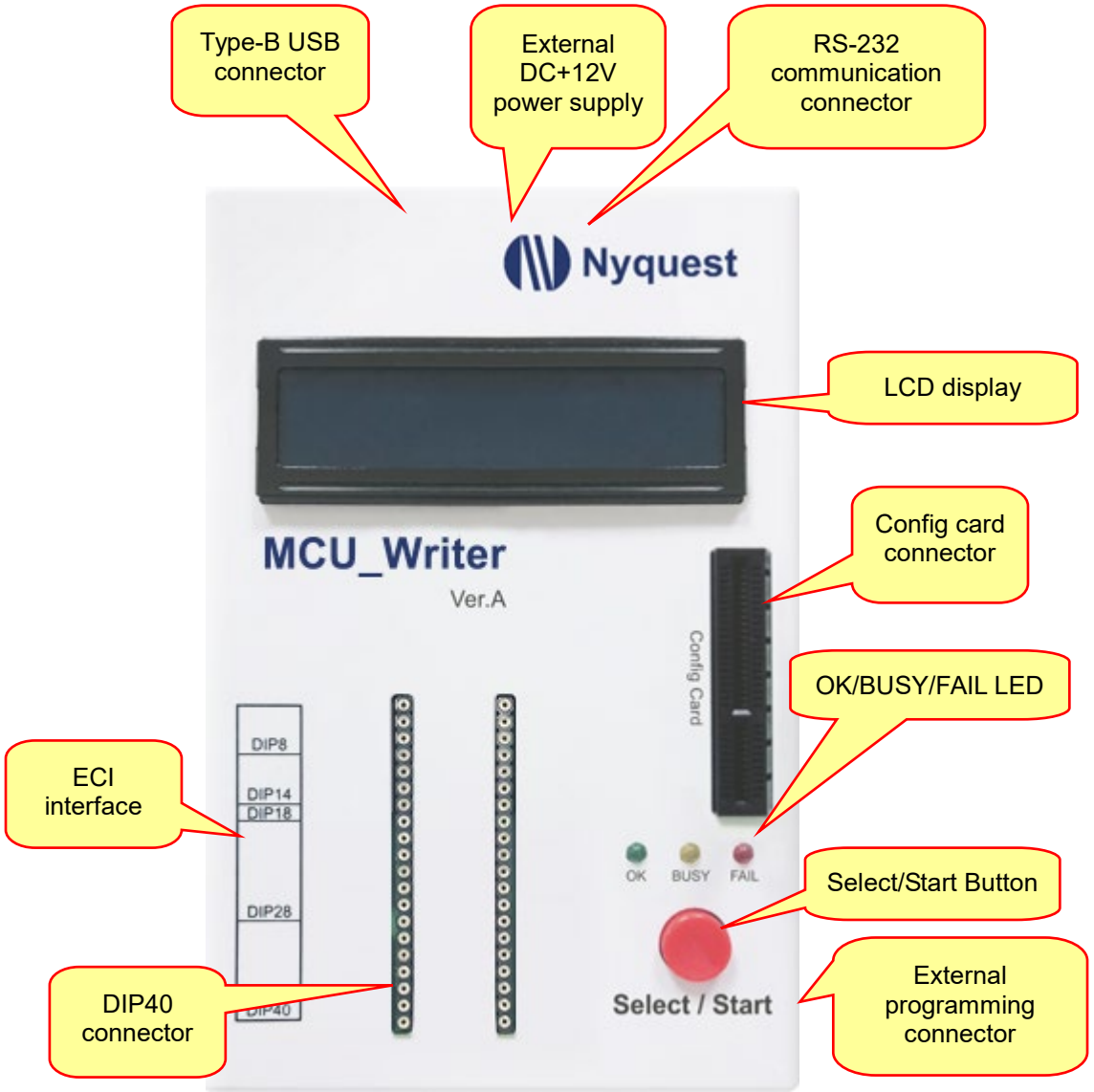
1. Smart_Writer Ver.A can provide 1.5V~5.5V voltage range for IC VDD pin, and the max current is 200mA. Pleae note the total current consumption required by VDD on the PCB to avoid programming instability. The total capacitance value of the VDD pin of the NY8 series IC cannot exceed 47uF, while the total capacitance value of the VDD pin on the PCB of Flash series IC cannot exceed 470uF.
2. Please notice that VPP pin **CANNOT connect to I/O peripheral devices that is over +7.0V** for avoiding burning peripheral devices during the process of programming IC.
3. **The pin of VPP or VDD cannot connect to GND otherwise NY8-OTP_Writer will burn out.**
4. **When programming on a PCB with a battery system, the battery power must be turned of. IC cannot be programmed when the PCB has an external power supply, it can cause the IC programmed abnormally, and the most serious problem will be to burn the Writer.**
5. The capacitor of SDO / (SDI/SDA) / (CLK/SCL) must be under 680pF, the external Pull-High resistor must exceed 100Kohm, but the external pull-Down resistor must be under 1.8Kohm and cannot connect with any resistor to avoid problems such as IC not found or data trim failed by unstable programming.

3.12.4 MCU_Writer Ver. A

MCU_Writer Ver. A provides the functionality for programming NY8 series IC. It must work with *Q-Writer* software for programming. It equips with LCD display which is easier to set up functions, and provides more and clear information.

3.12.4.1 MCU_Writer Ver. A Appearance and Description

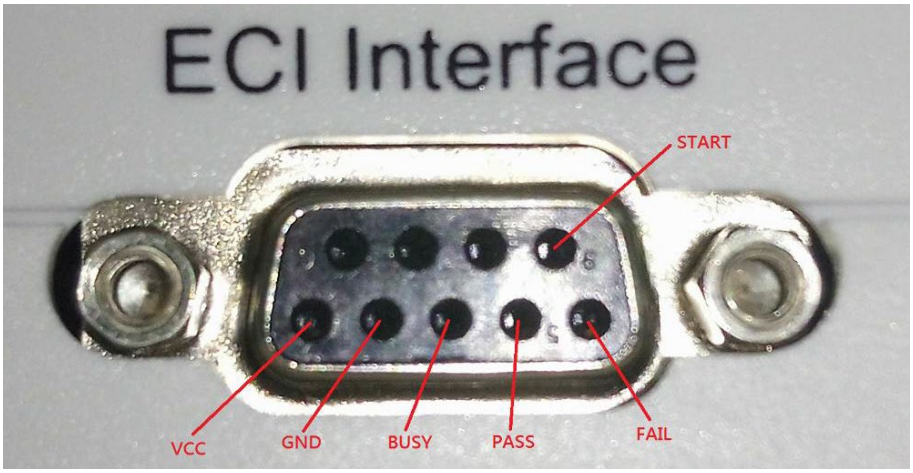
The appearance of MCU_Writer Ver. A is shown below.



1. Type-B USB connector: The connector of USB. Please use type–B USB cable to connect to PC. (It is strongly suggested that do not use usb as the power source when programming IC, use external +12V power supply instead.)
2. External +12V power supply: Please use external +12V Power_Adaptor with Stand-Alone mode or when power shortage.

3. Buzzer switch: Use Jumper to set the Bi sound of buzzer as on or off
4. Config Card connector: Insert the corresponding config card according to the package type of IC to be programmed.
5. Transfer Board connector: Insert the corresponding transfer board according to the packaging type of IC to be programmed.
6. Select/Start button: A long press to enter selection mode, or a short press to start proceeding the assigned operation mode.
7. LCD display: Provide human-machine interactive display interface, please refer to MCU_Writer Ver..A Operation Code.
8. BUSY LED indicator: This yellow indicator will turn on when the system is working. (e.g. system activated or the Select/Start button is pressed)
9. OK LED indicator: This green indicator will turn on when the result of operation or programming action is done without any errors.
10. FAIL LED indicator: This red indicator will turn on if any operations go wrong.
11. ECI interface: Connect with a handler to form an automatic programming system.
12. External Programming connector: Directly connected pins for programming without a config card, (the transmission line is recommended to use the shield wire.)

3.12.4.2 ECI ECI Interface and the pin definition



ECI Interface Definition

Definition	Input/Output	Description
VCC	-	Provide output DC +5.0V voltage. It is not recommended to supply for over 100mA load device.
GND	-	Connect to Handler or the GND of external controller.

Definition	Input/Output	Description
START	Input	The external Handler or controller sends a start signal to MCUt_Writer Ver. A. This is an Active Low input pin. The input voltage range is 0V~5.0V, and the maximum input voltage is 12V.
BUSY	Output	After starting execution, the Writer sends the status of busy signals. The output is Low Active.
FAIL	Output	After execution, the Writer sends the status of fail signals. The output is Active Low.
PASS	Output	After finishing execution, the Writer sends the status of pass signals. The output is Active Low.

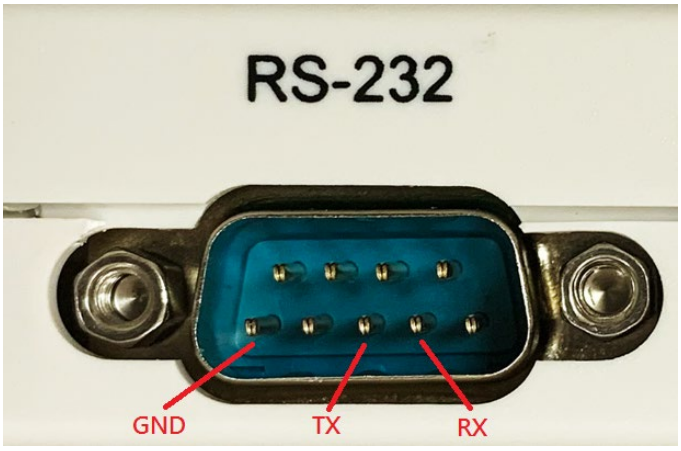
3.12.4.3 External programming connector and the pin definition

Definition	Input/Output	Description
VDD	Output	The power connector for programming Nyquest IC(DC1.5V~5.5V / 100mA).
V_{PP}	Output	The power connector for programming Nyquest IC(DC6.0V~10.0V / 100mA).
DI/DA	Input/Output	The communication DI/DA pin to program Nyquest IC.
DO/CL	Input/Output	The communication DO/CL pin to program Nyquest IC.
CLK	Output	The communication CLK pin to program Nyquest IC.
GND	-	The GND of Nyquest IC.

	Pin Name	Pin Name	Pin Name	Pin Name	Pin Name	Pin Name
MCU-Writer	VDD	VPP	DI/DA	DO/CL	CLK	GND
NY8A0xxx	VDD	**VPP**	SDI	SDO	CLK	GND
NY8B0xxx	VDD	**VPP**	SDI	SDO	CLK	GND
NY8BMxxx	VDD	**VPP**	SDA	--	CLK	GND
NY8AExxx **NY8BExxx**	VDD	**--**	SDA	--	CLK	GND
NY8TExxx	VDD	**--**	SDA	--	CLK	GND
NY8LPxxx	VDD	**VPP**	MODE	SDA	CLK	GND

Note: The SDA pin and MODE pin of NY8LPxxx are different.

3.12.4.4 RS-232 connecter pin definition



Definition	Input/Output	Description
RX	Input	Standard RS-232 input pin.
TX	Output	Standard RS-232 output pin.
GND		The GND of external controller.

3.12.4.5 The Notice of Using Writer

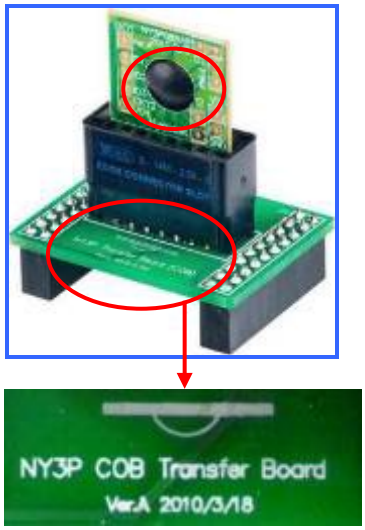
1. MCU_Writer (Ver.A) can provide 1.5V~5.5V voltage range for IC VDD pin, and the max current is 200mA. Pleae note the total current consumption required by VDD on the PCB to avoid programming instability. The total capacitance value of the VDD pin of the NY8 series OTP IC cannot exceed 47uF, while the total capacitance value of the VDD pin on the PCB of the NY8

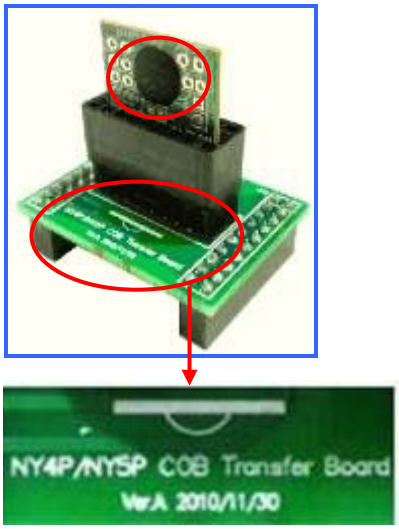
MTP IC series cannot exceed 470uF.

2. Please notice that VPP pin **CANNOT connect to I/O peripheral devices that is over +7.0V** for avoiding burning peripheral devices during the process of programming IC.
3. **The pin of VPP or VDD cannot connect to GND otherwise NY8-OTP_Writer will burn out.**
4. **When programming on a PCB with a battery system, the battery power must be turned of. IC cannot be programmed when the PCB has an external power supply, it can cause the IC programmed abnormally, and the most serious problem will be to burn the Writer.**
5. The capacitor of SDO / (SDI/SDA) / (CLK/SCL) must be under 680pF, the external Pull-High resistor must exceed 100Kohm, but the external pull-Down resistor must be under 1.8Kohm and cannot connect with any resistor to avoid problems such as IC not found or data trim failed by unstable programming.

3.12.5 Transfer Board

Nyquest Writers hardware cooperates various types of transfer boards to program different packaging type of OTP products. Please note the COB direction while inserting COB onto transfer board, as shown below.





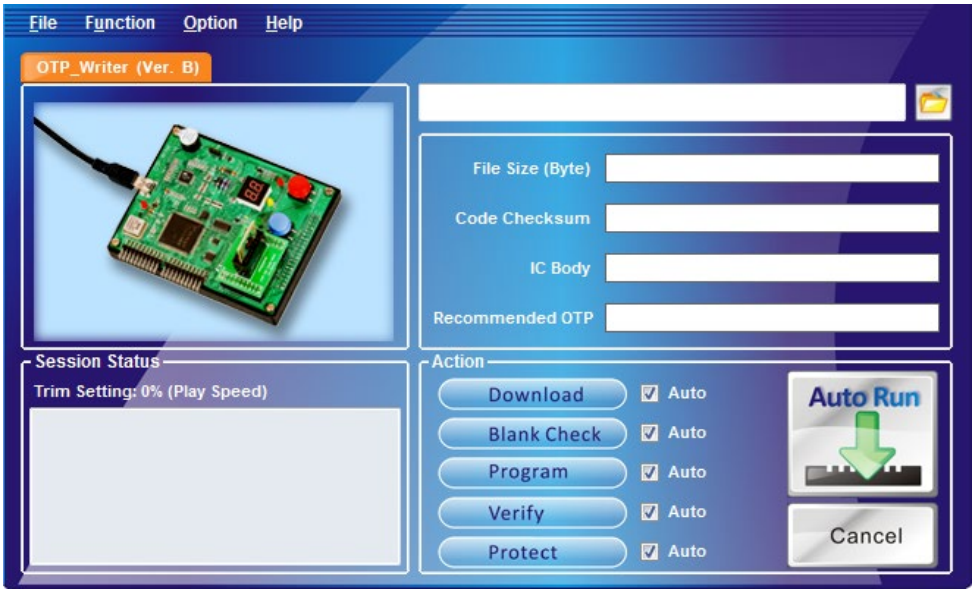
Note: Please use the corresponding COB transfer board according to the COB OTP series.

3.13 How to Use *Q-Writer*

OTP_Writer programming must work with Nyquest *Q-Writer* software. The following is a brief introduction of *Q-Writer* operation. For details, please see *Q-Writer* user manual.

3.13.1 *Q-Writer* Interface

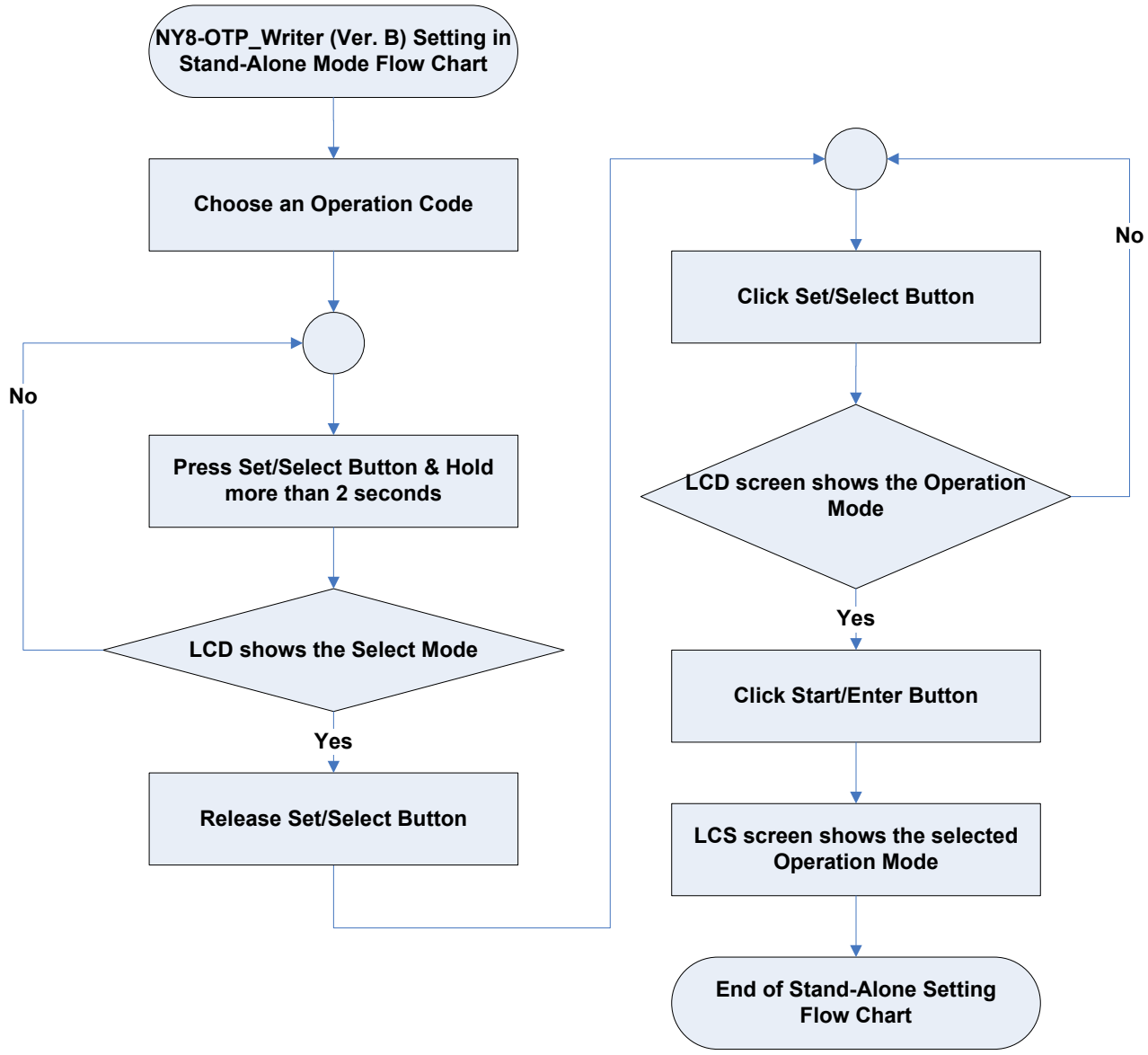
When *Q-Writer* detects the connection of Smart_Writer Ver.A / NY8-OTP_Writer (ver.B), it shows the image of the OTP_Writer.



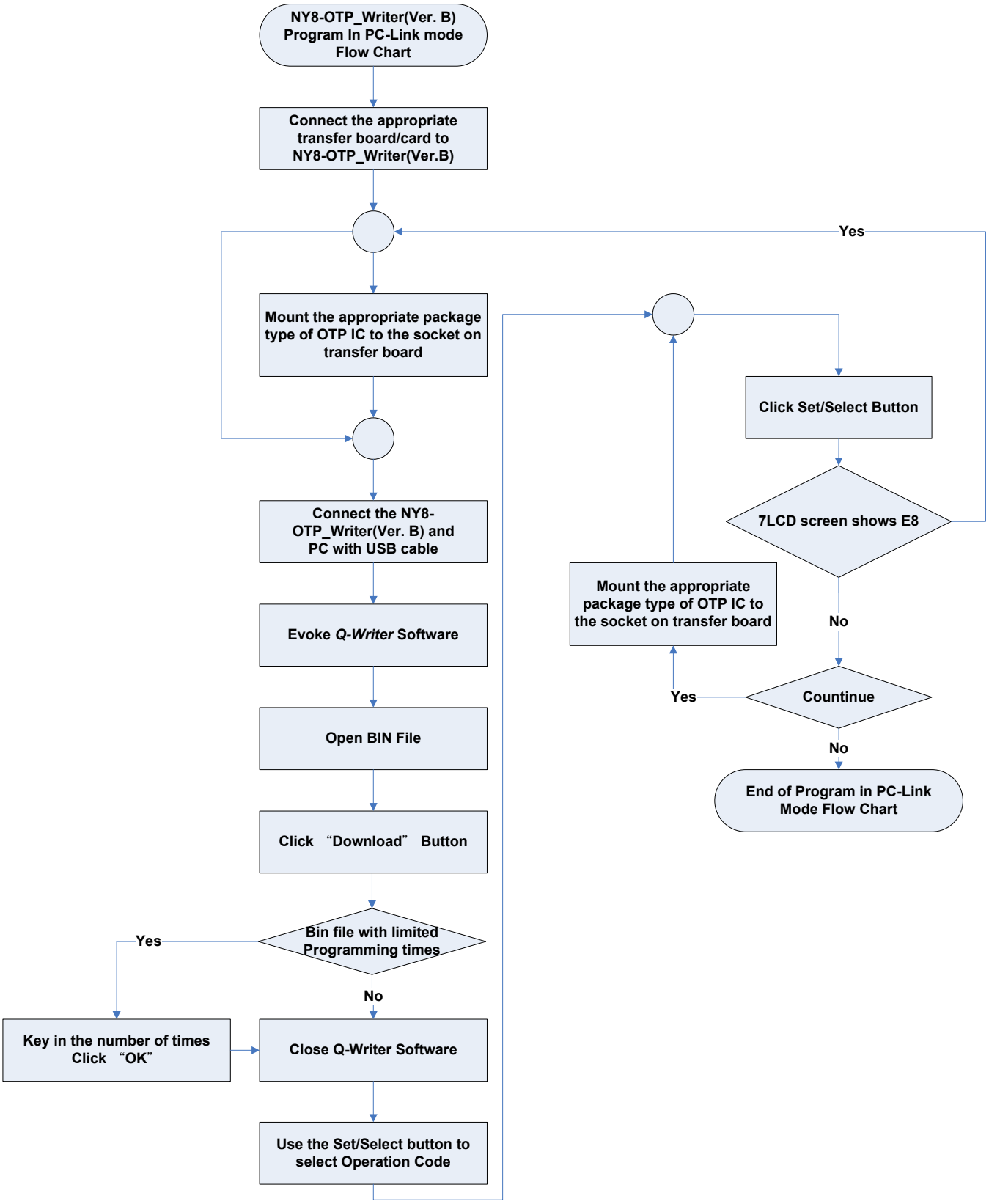
To program OTP, MTP or Flash, please connect corresponding transfer board of NY2P, NY3P, NY4P, NY5P, NY5Q, NY6P, NY7P, NY8A/B, NY8LP, NY9UP, NY9TP or NX1 to the connector on Nyquest Writer tools and open the .bin file which will be programmed to IC in *Q-Writer* software system, then proceed in accordance with *Q-Writer* operation.

3.13.2 NY8-OTP_Writer (Ver.B) Operation Flow Chart

Stand-Alone mode:

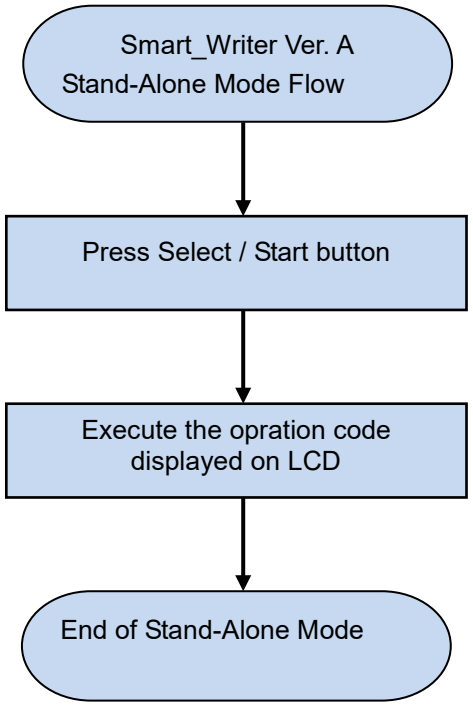


PC-Link mode:

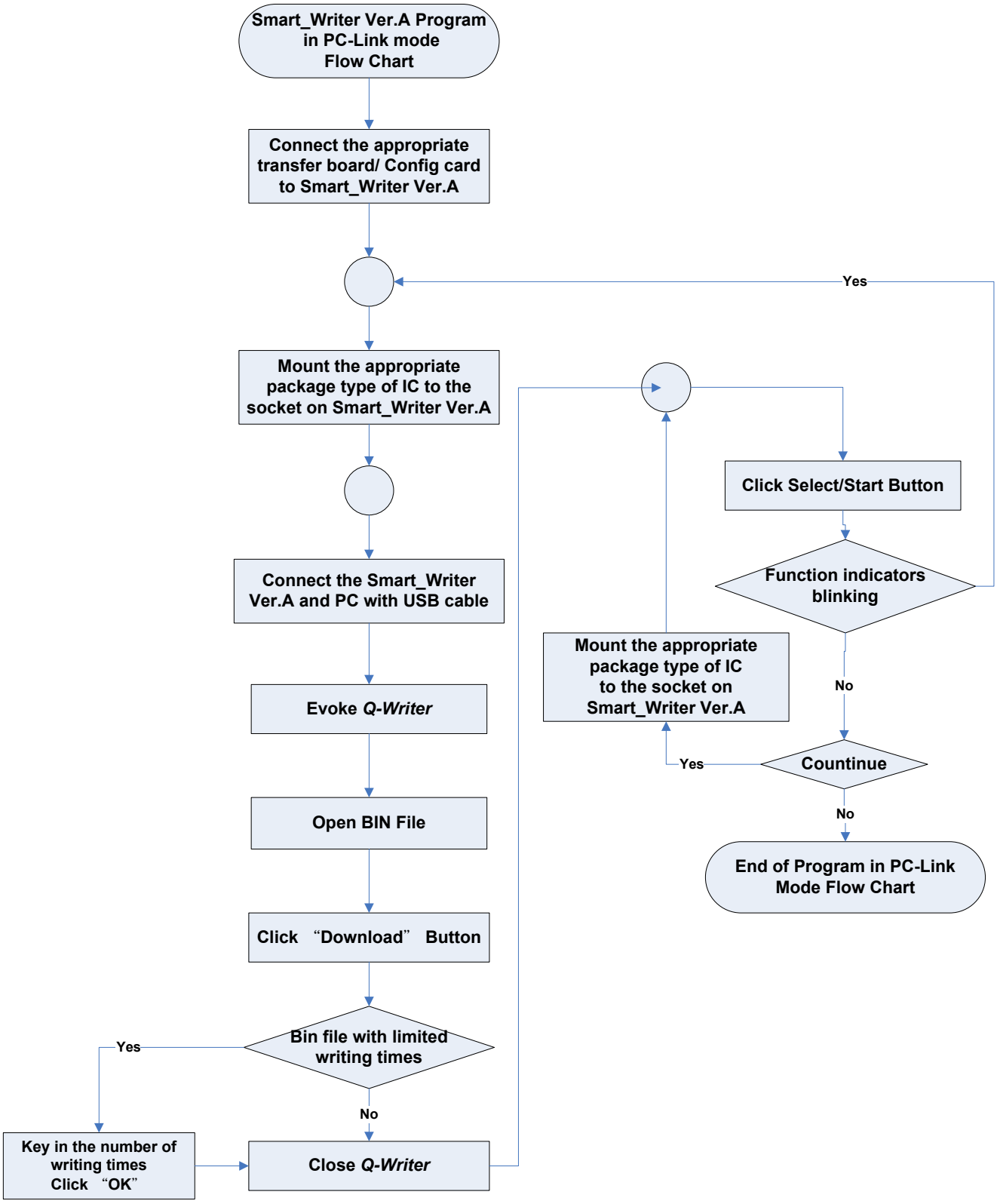

NY8-OTP_Writer(Ver. B) Program In PC-Link mode Flow Chart
Connect the appropriate transfer board/card to NY8-OTP_Writer(Ver.B)
Mount the appropriate package type of OTP IC to the socket on transfer board
Connect the NY8-OTP_Writer(Ver. B) and PC with USB cable
Evoke Q-Writer Software
Open BIN File
Click "Download" Button
Bin file with limited Programming times
Yes
No
Key in the number of times Click "OK"
Close Q-Writer Software
Use the Set/Select button to select Operation Code
Click Set/Select Button
7LCD screen shows E8
Yes
No
Mount the appropriate package type of OTP IC to the socket on transfer board
Countinue
Yes
No
End of Program in PC-Link Mode Flow Chart

3.13.3 Smart_Writer Ver. A Operation Flow Chart

Stand-Alone mode:

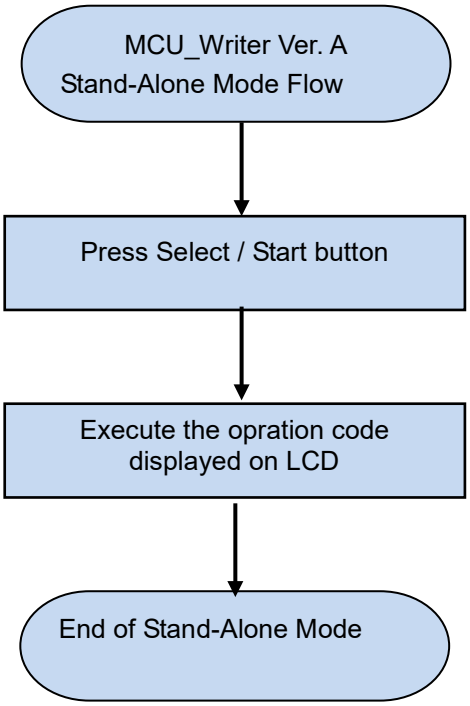


PC-Link mode:

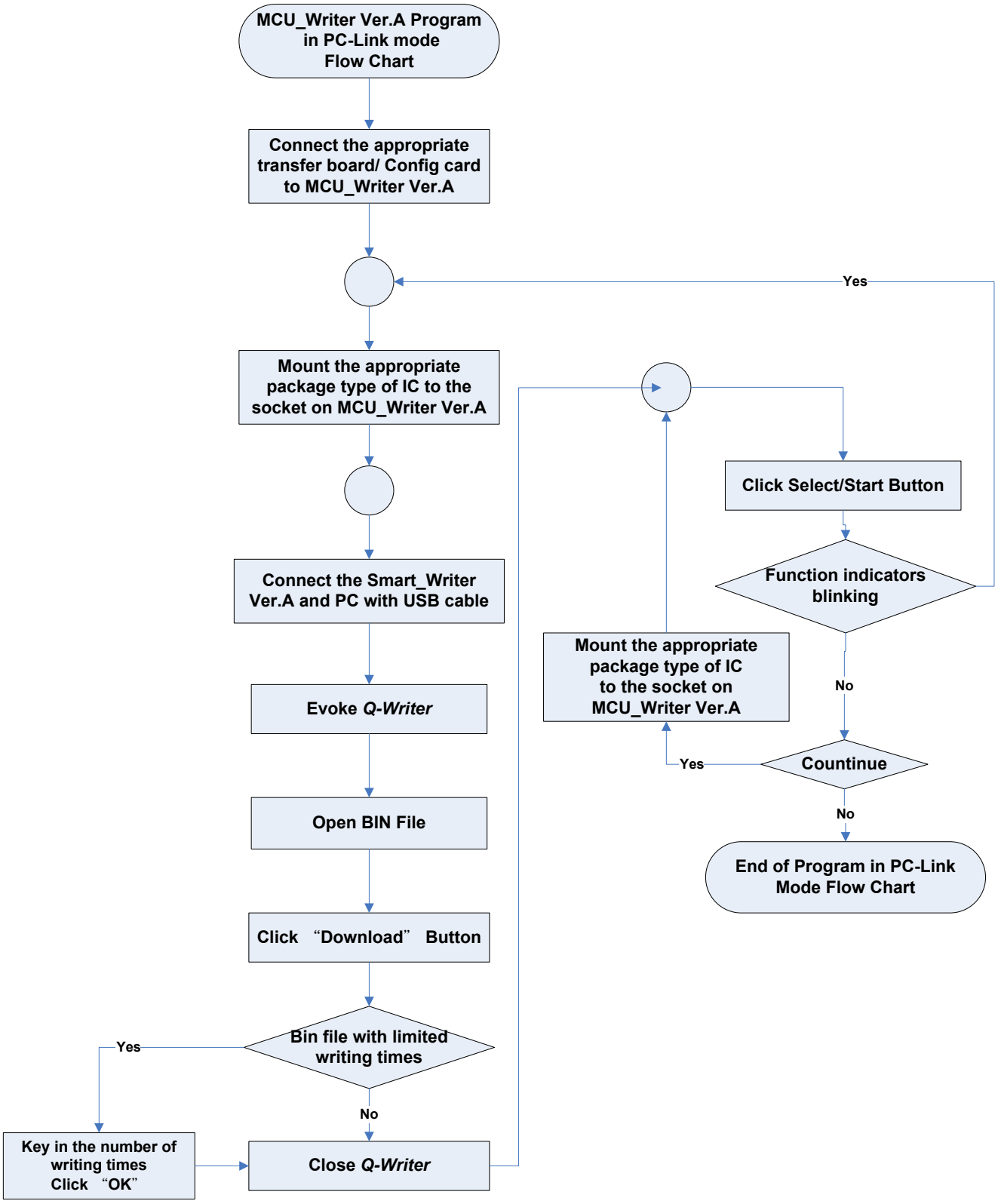

Smart_Writer Ver.A Program in PC-Link mode Flow Chart
Connect the appropriate transfer board/ Config card to Smart_Writer Ver.A
Mount the appropriate package type of IC to the socket on Smart_Writer Ver.A
Connect the Smart_Writer Ver.A and PC with USB cable
Evoke Q-Writer
Open BIN File
Click "Download" Button
Bin file with limited writing times
Yes
No
Key in the number of writing times Click "OK"
Close Q-Writer
Click Select/Start Button
Function indicators blinking
Yes
No
Countinue
Yes
No
Mount the appropriate package type of IC to the socket on Smart_Writer Ver.A
End of Program in PC-Link Mode Flow Chart

3.13.4 MCU_Writer Ver.A Operation Flow Chart

Stand-Alone Mode Operation Flow:



PC-Link Mode Operation Flow:



3.13.5 PC-Link Mode

Please download and install Q-Writer before working in PC-Link Mode. When connecting NY8-OTP_Writer (Ver.B), NX_Programmer (Ver. A), Smart_Writer (Ver. A), MCU_Writer (ver. A) and PC with USB cable, the power light on the writer will be on. When any OTP operation is issued by Q-Writer, Writer will first perform connection test (Connection test is executed automatically each time when *Q-Writer* performs OTP operations). If OTP_Writer connection test succeeds, the buzzer on NY8-OTP_Writer (Ver.B), NX_Programmer (Ver. A) and Smart_Writer (Ver. A), and MCU_Writer (Ver. A) will issue a long “Bi” sound once. Q-Writer will disconnect OTP_Writer automatically after the operation ends, and the writer/programmer will resume back to Stand-Alone Mode.

For more details, please refer to *Q-Writer* User Manual.

3.13.6 Stand-Alone Mode

Stand-Alone mode is developed for portable convenience and mass production need. In stand-alone mode, there are two methods for obtaining power: (1) Connect OTP_Writer to the USB adaptor provided, and powered by power outlet. (2) Connect OTP_Writer to USB connector on PC, and powered by the PC. As OTP_Writer enters standby mode, the subsequent to be introduced could commence.

Note: For stand-alone mode with power provided through USB connector of the PC, user does not need to install OTP_Writer driver and Q-Writer software system on PC.

NY8-OTP_Writer (Ver.B) using “Select/Start” button

1. Refer to “Operation Code Table” and select the operation code to be executed.
2. Press Set/Select button for more than two seconds, the buzzer will issue two long ”Bi” sounds, and LED will flash operation code indicating OTP_Writer has entered the setting mode.
3. Press and release Select/Start button to circulate and select the operation code intended to setup.
4. Long-press Select/Start button more than 3 seconds to leave setup mode.
5. Press Select/Start button to execute the function of the selected operation code.

When system is in operation and BUSY LED is on, START/Enter and Set/Select are deactivated.

NX_Programmer (Ver. A) and Smart_Writer (Ver. A) using “Select/Start” button

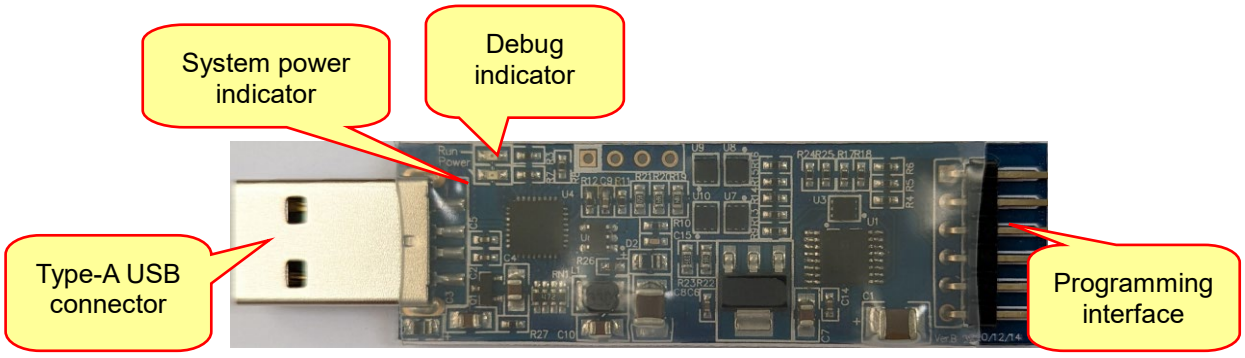
1. Press the Select/Start button to execute the selected operation code.

4 MTP Type Developing Tool

Q-Link / NY-Link are development tools that support online and real-time debugging on target IC. User can connect 8-bit MCU IC which equips OCD (On Chip Debugger) with these hardware devices directly. This section will introduce how to use the development tools.

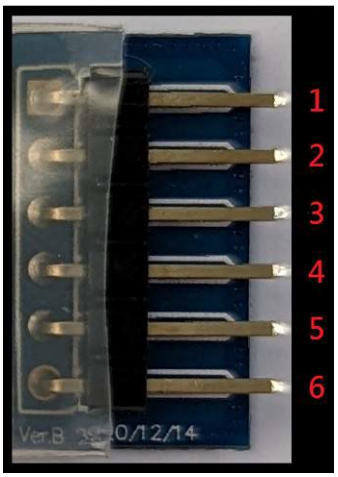
4.1 Q-Link

Q-Link (Ver. B) is a multi-function integrated development tool for NY8-bit MTP IC with OCD (On chip Debugger), it equips the ICE simulation and MTP programming function. It also supports online real IC simulation and programming.



1. Type-A USB connector: The USB connector can insert into the USB port of PC directly. Use an USB Type-A extension cable if needed.
2. Debug indicator: When user is in the process of developing program and NYIDE executes the RUN function, the Debug indicator will light up and which means the connected MTP IC is in operation.
3. System power indicator: When the system power is normal, this light will be on.
4. Programming interface: This interface provides VDD / VPP / SDO / (SDI/SDA) / (CLK/SCL) / GND of power and IC programming pins. User can connect the corresponding pins of the IC with Dupont lines or Target Board for programming or simulating program. The pin definitions are described below.

4.1.1 Definition and Description of Programming Interface



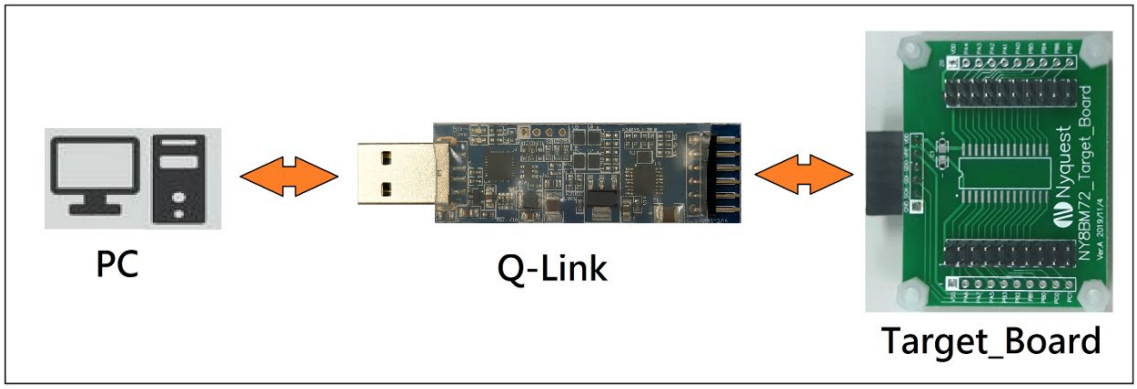
Q-Link Programming Pin Map

Table 4.1.1

PIN no.	Definition	Direction	Description
1	VDD	Input	Connect the VDD on IC.
2	VPP	Output	Provide the programming voltage for IC
3	SDO	Input	The data signals of IC communication
4	SDI/SDA	Input / Output	The data signals of IC communication
5	SCK/SCL	Output	The clock source signals of IC communication (Q-Link output)
6	GND		Provide GND for IC

4.1.2 Rapid Development

User can mount MTP IC which equips OCD function to Target_Board or place Nyquest NY8A/8B SOP18/28 Transfer Board onto Target_Board for developing programs, and then use the external power supply to simulate IC. (Q-Link Ver. B no longer provides internal power)



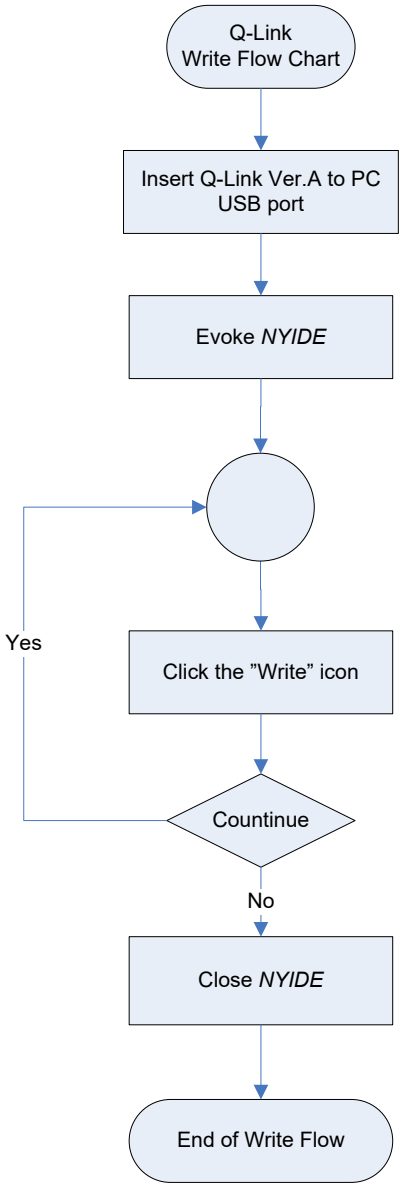
Connection method for Rapid development

4.1.3 The Notice of Using Power for Development

1. The VDD pin of Q-Link can provide a bidirectional function of internal power output and external power input. When using external power output, Q-Link will not provide power output, to avoid Q-Link or IC burn out, the input power supply is recommended not to exceed the maximum voltage that the IC can withstand.
2. Please notice that VPP pin **CANNOT connect to I/O peripheral devices that is over +7.0V** for avoiding burning peripheral devices during the process of programming NY8BM.
3. **The pin of VPP or VDD cannot connect to GND otherwise Q-Link will burn out.**
4. The VDD capacitor of circuit board or VPP pin is suggested under 1000uF, and the capacitor of SDO / (SDI/SDA) / (CLK/SCL) must be under 680pF to avoid problems such as unstable and crashed *NYIDE* caused by unstable programming.
5. When Q-Link is power-on via a USB wire, it will detect the external power to decide whether to supply power. If there is external power from the target board, Q-Link will stop supply power. To switch the power supplement of the target board, user must plug and unplug Q-Link and power on again.

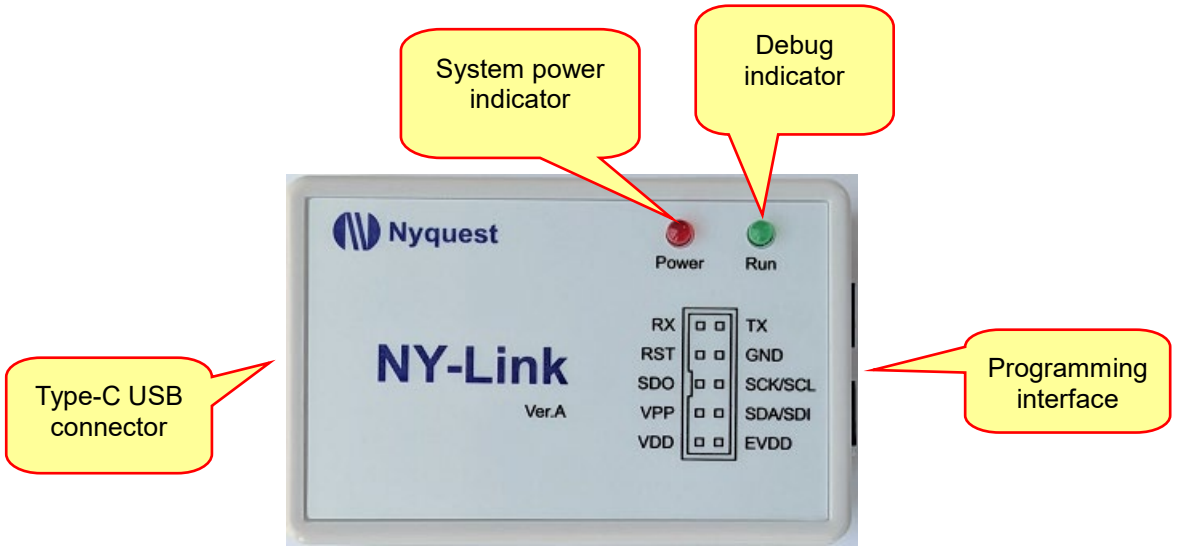
   External power supply:
   Step 1. Connect Q-Link to a computer via USB
   Step 2. Connect the Q-Link to the target board and then feed the external power to the target board
   Step 3. Open NYIDE development program and download
6. The current supplied by Q-Link is about 70mA. When the IC has an external circuit, the entire current consumption should not be too large, which will cause the voltage to be pulled down and cause NYIDE to display the VDD power supply abnormal message.

4.1.4 Q-Link Flow Chart



4.2 NY-Link

NY-Link (Ver. A) is a multi-function integrated development tool for NY8-bit MTP IC with OCD (On chip Debugger), it equips the ICE simulation and MTP programming function. It also supports online real IC simulation and programming.



1. Type-C USB connector: It can be connected to the USB port of PC via a USB cable.
2. Debug indicator: When user is in the process of developing program and NYIDE executes the RUN function, the Debug indicator will light up and which means the connected MTP IC is in operation.
3. System power indicator: This indicator is on if the system is power up.
4. Programming interface: This interface provides VDD / EVDD / VPP / (SDI/SDA) / SDO / (SCK/SCL) / RST / GND / RX / TX of power, IC programming and communication pins. User can connect the corresponding pins of the IC with Dupont lines or Target Board for programming or simulating program. The pin definitions are described below.

4.2.1 Definition and Description of Programming Interface

PIN no.	Definition	Direction	Description
1	RX	Input	UART Communication pin
2	TX	Output	UART Communication pin
3	RST	Output	System reset (Reserved for future use)
4	GND		Provide GND for IC
5	SDO	Input	The data signals of IC communication
6	SCK/SCL	Output	The clock source signals
7	VPP	Output	Provide the programming voltage for IC
8	SDI/SDA	Input / Output	The data signals of IC communication
9	VDD	Output	Connect to the VDD of IC. Power provided by NY-Link.
10	EVDD	Input	Connect to the VDD of IC. Power provided by an external Power Source.

When connecting the IC using a rainbow cable, please note that the wires are arranged from pin 1 to pin 10 in a top-to-bottom order. That is, the topmost wire is RX, the second wire is TX, the third is RST, the fourth is GND, and so on.

4.2.2 Rapid Development

Connect Type-C port of NY-Link to the computer via a USB cable, and connect the programming/simulation pins to the MTP IC with OCD function using a Dupont cable or a flat cable. User can also mount MTP IC to the Target_Board or use a Transfer Board mounted onto Target_Board for developing programs.

Connection method for Rapid development

4.2.3 Precautions of Using NY-Link for Development

1. The VDD of NY-Link can be selected to be powered by NY-Link (connect IC VDD to VDD) or by an external power supply (external power supply connected to EVDD). The input power supply cannot exceed the maximum voltage that the IC can withstand, and the VDD pin cannot be connected to an external power supply to avoid burning of the NY-Link or the IC.
2. Please note that VPP pin **CANNOT connect to I/O peripheral devices that is over +7.0V** for avoiding burning peripheral devices during the process of programming.
3. Please note that VDD (powered by NY-Link) and EVDD (powered externally) can only be used alternatively, not simultaneously. Otherwise, the NY-Link may be damaged.
4. The pin of VPP or VDD cannot connect to GND otherwise NY-Link may be damaged.
5. Please note that the Type-C USB cable must only be connected to a computer. Do not connect it to a charger or fast charger (quick charge adapter), as doing so may damage or permanently burn out the NY-Link device.
6. Please ensure that the Type-C USB cable supports data transfer. Some commercially available cables are designed for charging only and do not support communication. We recommend using the original cable provided to ensure proper connection and device safety.
7. The VDD capacitor of circuit board or VPP pin is suggested under 1000uF, and the capacitor of SDO / (SDI/SDA) / (CLK/SCL) must be under 680pF to avoid unstable programming that causes NYIDE to display error messages such as IC not found or data verification failed.
8. When using external power supply, please note that NY-Link will only detect the external power and enter ICE Debug mode at power-on. Failure to follow the correct sequence may result in the NY-Link failing to detect the target IC or, in extreme cases, cause damage to the NY-Link itself. To ensure proper detection and avoid potential issues, please strictly follow the connection sequence below:

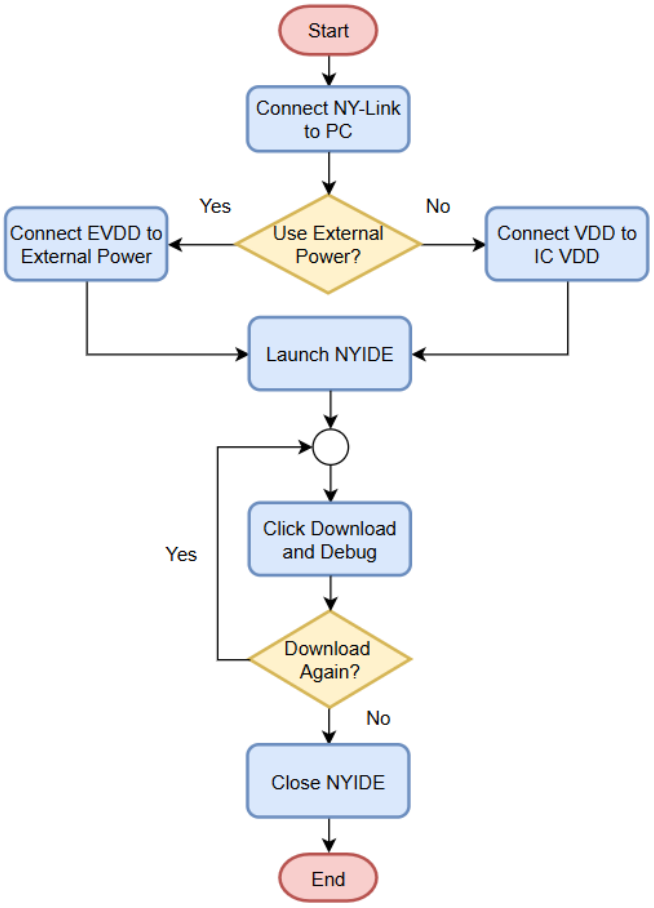
   External power supply connection sequence:

   Step 1. Connect the NY-Link to your computer via a USB cable.

Step 2. Connect the NY-Link to the target board, then supply the external power to the target board.

Step 3. Launch the NYIDE development program and proceed with download operation.

4.2.4 NY-Link Flow Chart



5 SRAM Type Developing Tool

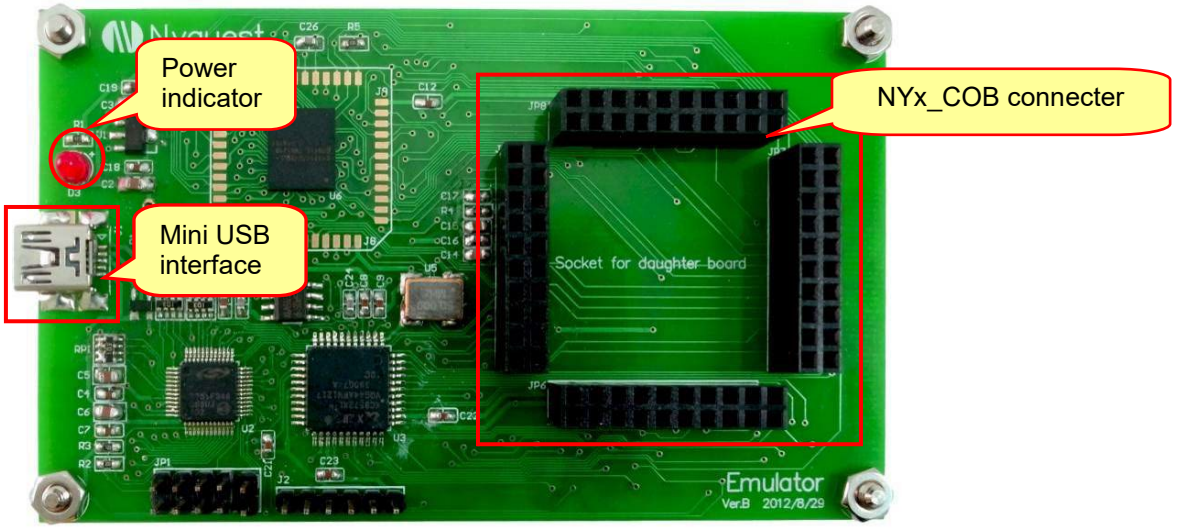
NY_ICE is hardware developing tools using SRAM as memory. They will be introduced respectively in this chapter.

5.1 Emulator

Emulator is an emulator that is used to debug program for NY4 / 5 / 6 / 7 / 9T MCU series. It can be simply connected to PC with USB connection, then through *NYIDE* or *Q-Code* software, users can download the program into the Emulator to emulate the IC function.

Emulator is only available for NY4 / 5 / 6 / 7 / 9T series. It must cooperate with NY4 / 5 / 6 / 7 / 9T series evaluation board. (NY4 / 6 / 7_COB is green and NY5 / NY9T_COB is blue)

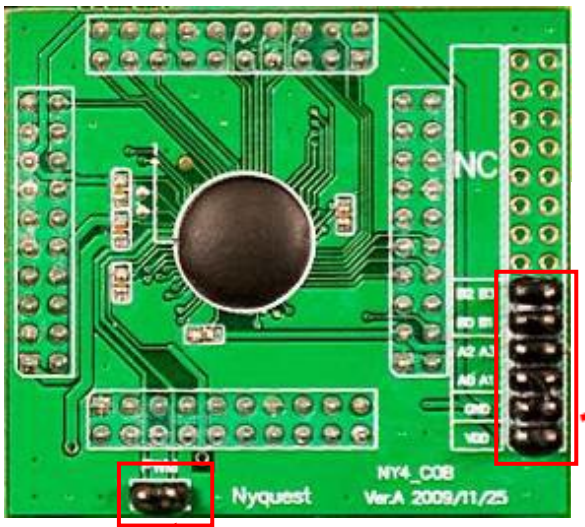
The appearance of Emulator without NYx_COB is shown below.



5.2.1 NYx_COB

NYx_COB must work with Emulator simultaneously. Through Emulator to download program, user can emulate IC function. The connection with Emulator is shown below.

NY4_COB:

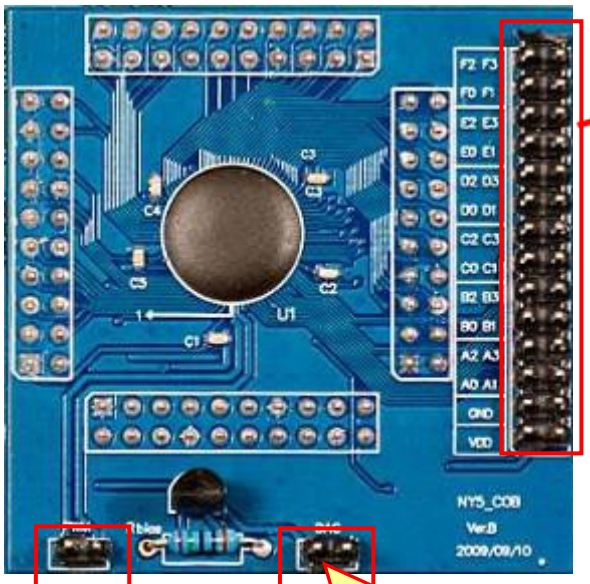


PWM output

IO PIN MAP

1	PB2	2	PB3
3	PB0	4	PB1
5	PA2	6	PA3
7	PA0	8	PA1
9	GND		
10	VDD		

NY5_COB:



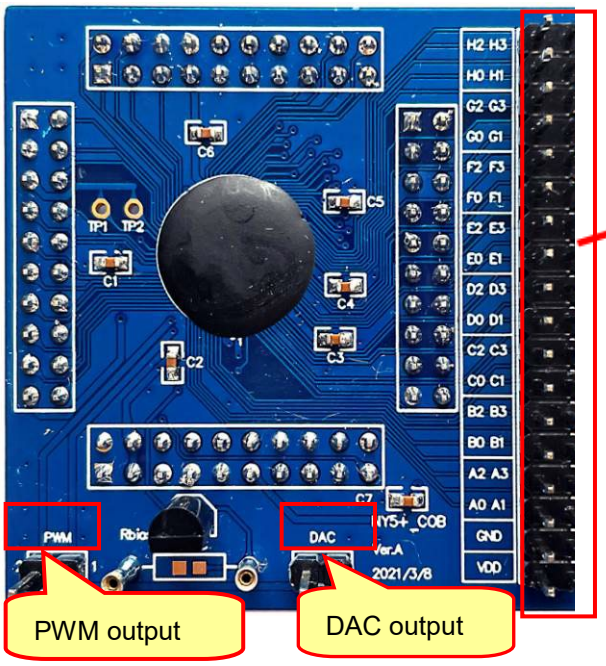
PWM output

DAC output

IO PIN MAP

1	PF2	2	PF3
3	PF0	4	PF1
5	PE2	6	PE3
7	PE0	8	PE1
9	PD2	10	PD3
11	PD0	12	PD1
13	PC2	14	PC3
15	PC0	16	PC1
17	PB2	18	PB3
19	PB0	20	PB1
21	PA2	22	PA3
23	PA0	24	PA1
25	GND		
26	VDD		

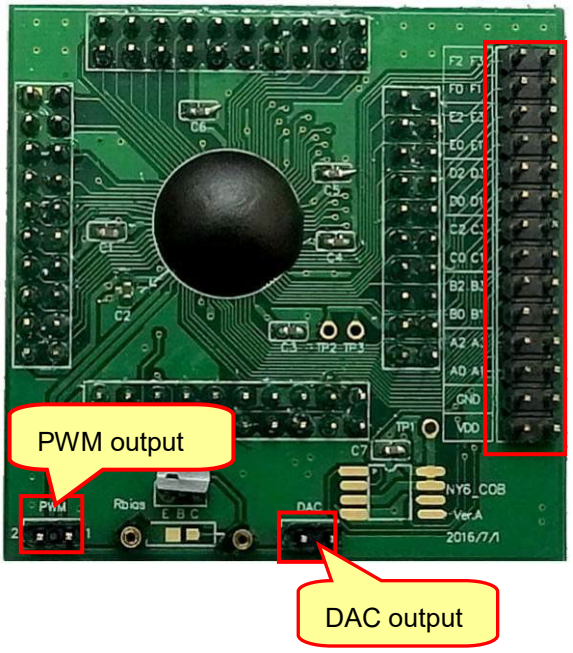
NY5+_COB:



IO PIN MAP

1	PH2	2	PH3
3	PH0	4	PH1
5	PG2	6	PG3
7	PG0	8	PG1
9	PF2	10	PF3
11	PF0	12	PF1
13	PE2	14	PE3
15	PE0	16	PE1
17	PD2	18	PD3
19	PD0	20	PD1
21	PC2	22	PC3
23	PC0	24	PC1
25	PB2	26	PB3
27	PB0	28	PB1
29	PA2	30	PA3
31	PA0	34	PA1
33	GND		
34	VDD		

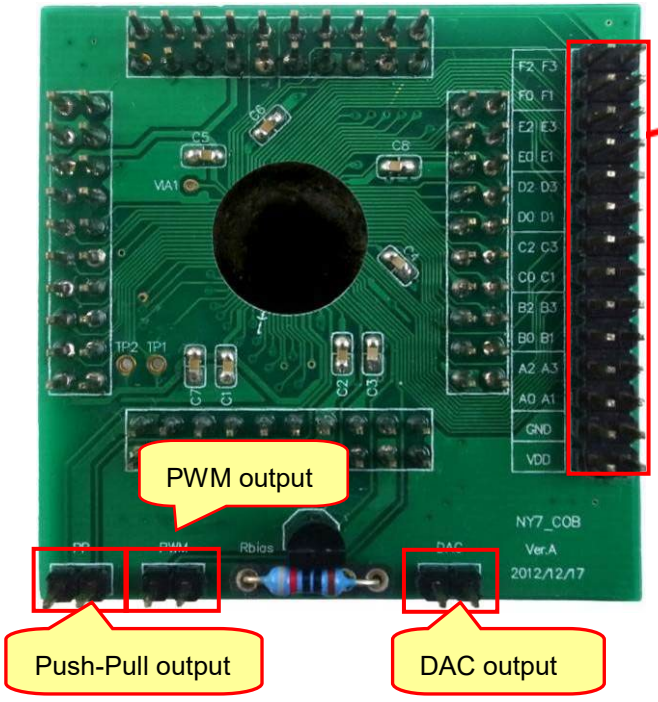
NY6_COB:



IO PIN MAP

1	PF2	2	PF3
3	PF0	4	PF1
5	PE2	6	PE3
7	PE0	8	PE1
9	PD2	10	PD3
11	PD0	12	PD1
13	PC2	14	PC3
15	PC0	16	PC1
17	PB2	18	PB3
19	PB0	20	PB1
21	PA2	22	PA3
23	PA0	24	PA1
25	GND		
26	VDD		

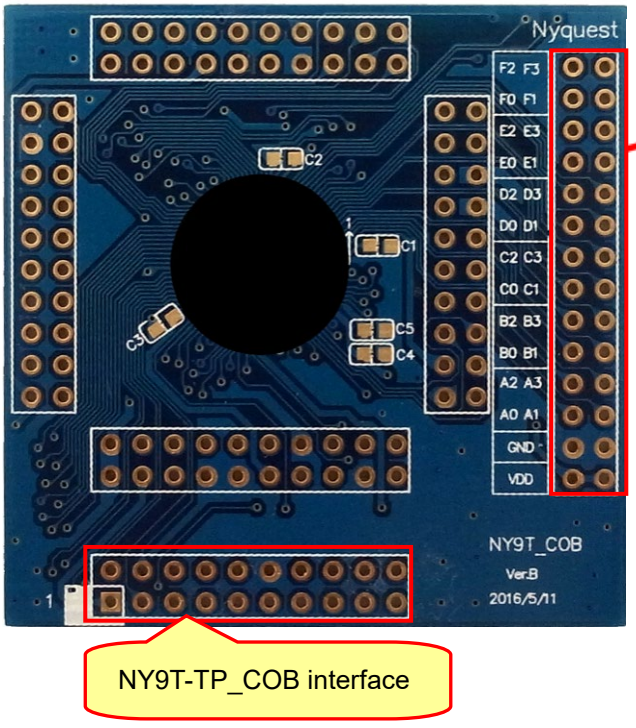
NY7_COB:



IO PIN MAP

1	PF2	2	PF3
3	PF0	4	PF1
5	PE2	6	PE3
7	PE0	8	PE1
9	PD2	10	PD3
11	PD0	12	PD1
13	PC2	14	PC3
15	PC0	16	PC1
17	PB2	18	PB3
19	PB0	20	PB1
21	PA2	22	PA3
23	PA0	24	PA1
25	GND		
26	VDD		

NY9T_COB:



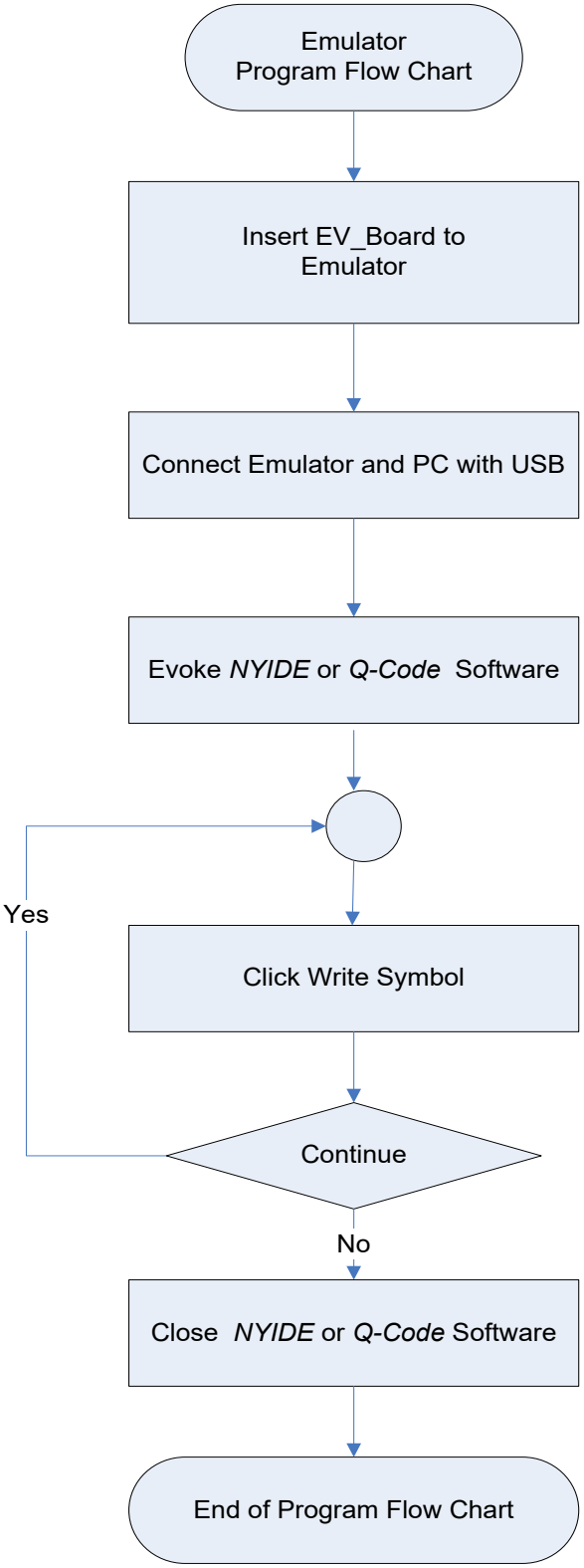
IO PIN MAP

1	PF2	2	PF3
3	PF0	4	PF1
5	PE2	6	PE3
7	PE0	8	PE1
9	PD2	10	PD3
11	PD0	12	PD1
13	PC2	14	PC3
15	PC0	16	PC1
17	PB2	18	PB3
19	PB0	20	PB1
21	PA2	22	PA3
23	PA0	24	PA1
25	GND		
26	VDD		

NX1_COB:

5.2.2 Emulator Operation Flow Chart

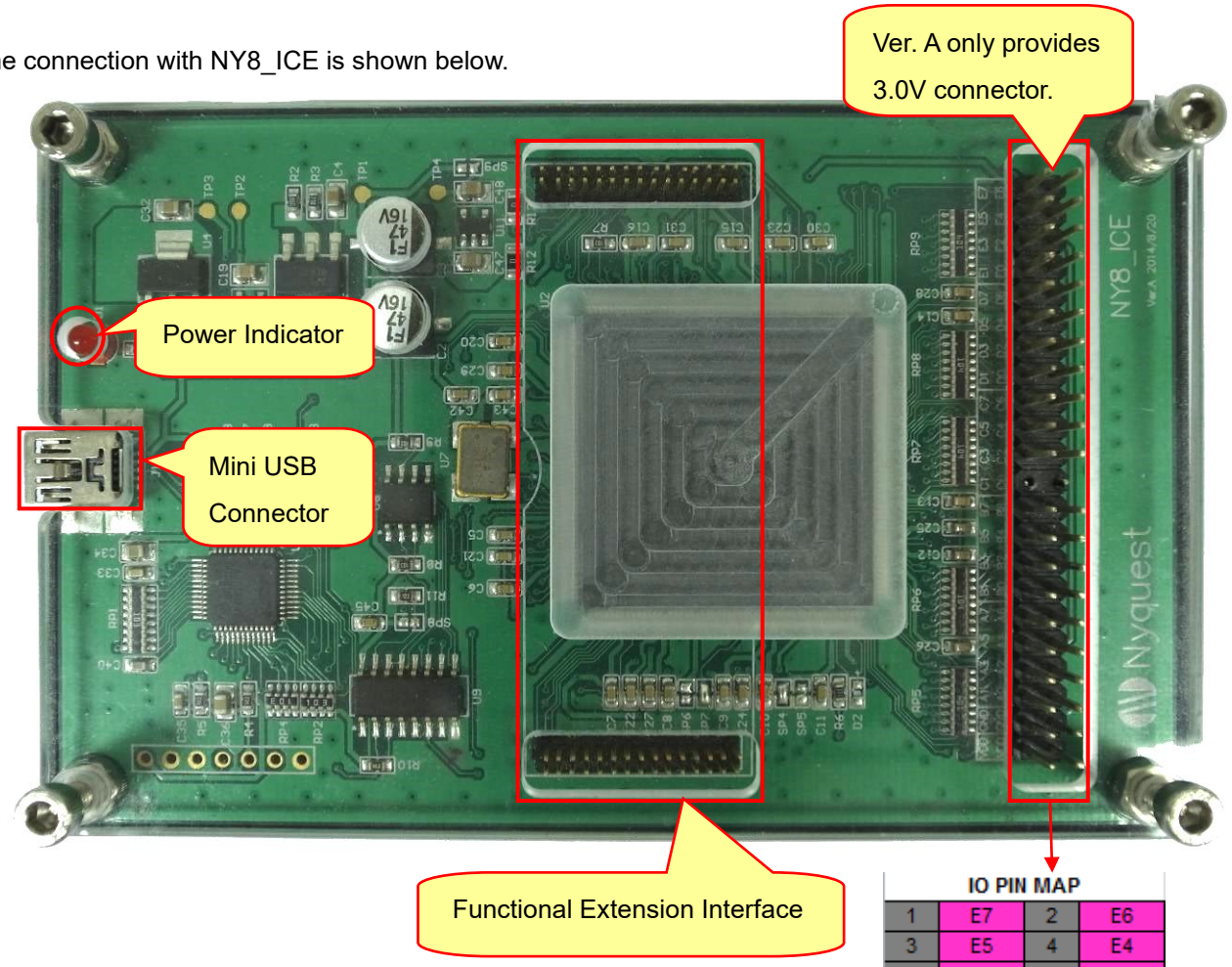
Emulator operation flow chart:



5.2 NY8_ICE

NY8_ICE is only available for NY8 series MCU. It can be simply connected to PC with USB connection, then through *NYIDE* software, users can download the program into the ICE to emulate the IC function.

The connection with NY8_ICE is shown below.

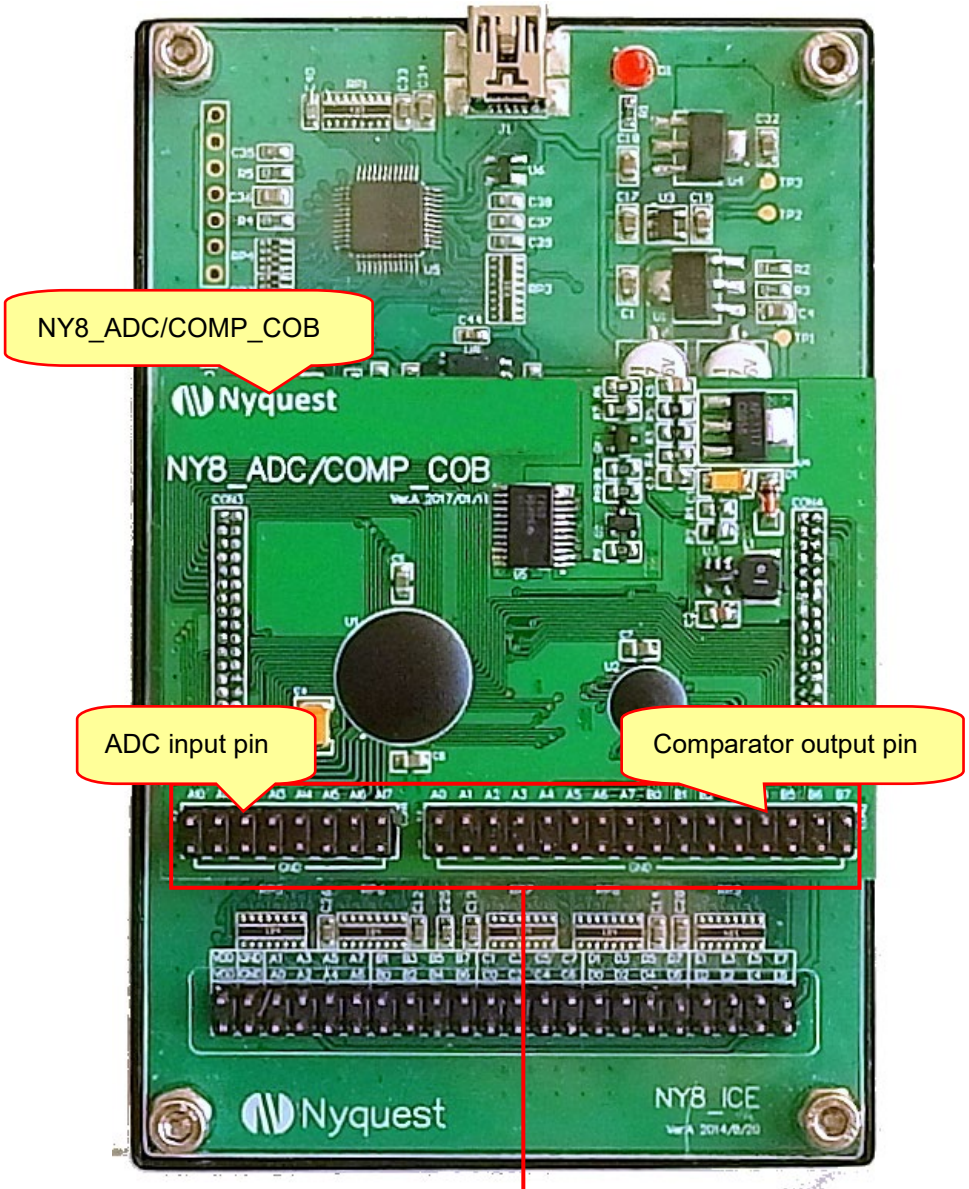


IO PIN MAP			
1	E7	2	E6
3	E5	4	E4
5	E3	6	E2
7	E1	8	E0
9	D7	10	D6
11	D5	12	D4
13	D3	14	D2
15	D1	16	D0
17	C7	18	C6
19	C5	20	C4
21	C3	22	C2
23	C1	24	C0
25	B7	26	B6
27	B5	28	B4
29	B3	30	B2
31	B1	32	B0
33	A7	34	A6
35	A5	36	A4
37	A3	38	A2
39	A1	40	A0
41	GND		
42	VDD		

5.3.1 NY8_ADC/COMP_COB

NY8_ADC/COMP_COB is an extension board that is used for emulating the analog function on NY8_ICE. To emulate the ADC and Comparator function of NY8, users need to connect NY8_ADC/COMP_COB to the extended socket of N8_ICE first.

NY8_ADC/COMP_COB connected to NY8_ICE is shown below.

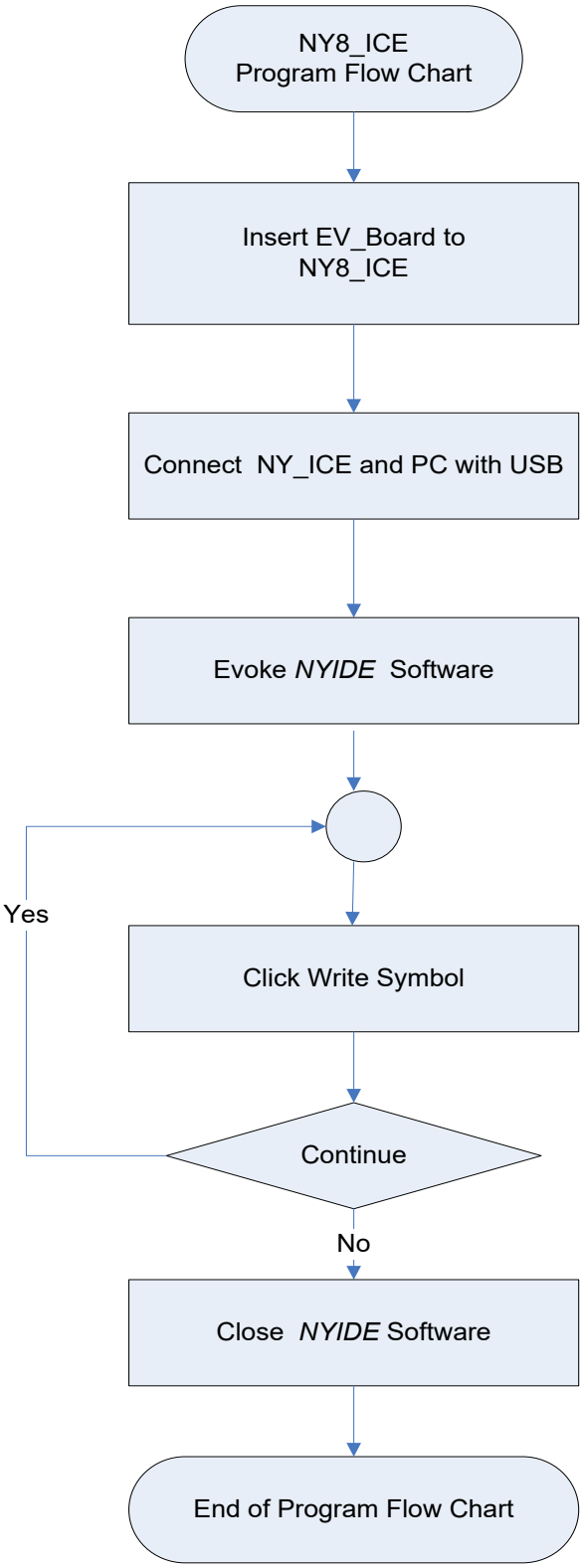


1	2	3	4	5	6	7	8
AIN0	AIN1	AIN2	AIN3	AIN4	AIN5	AIN6	AIN7
GND							

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
A0	A1	A2	A3	A4	A5	A6	A7	B0	B1	B2	B3	B4	B5	B6	B7
GND															

5.3.2 NY8_ICE Operation Flow Chart

NY8_ICE operation flow chart:

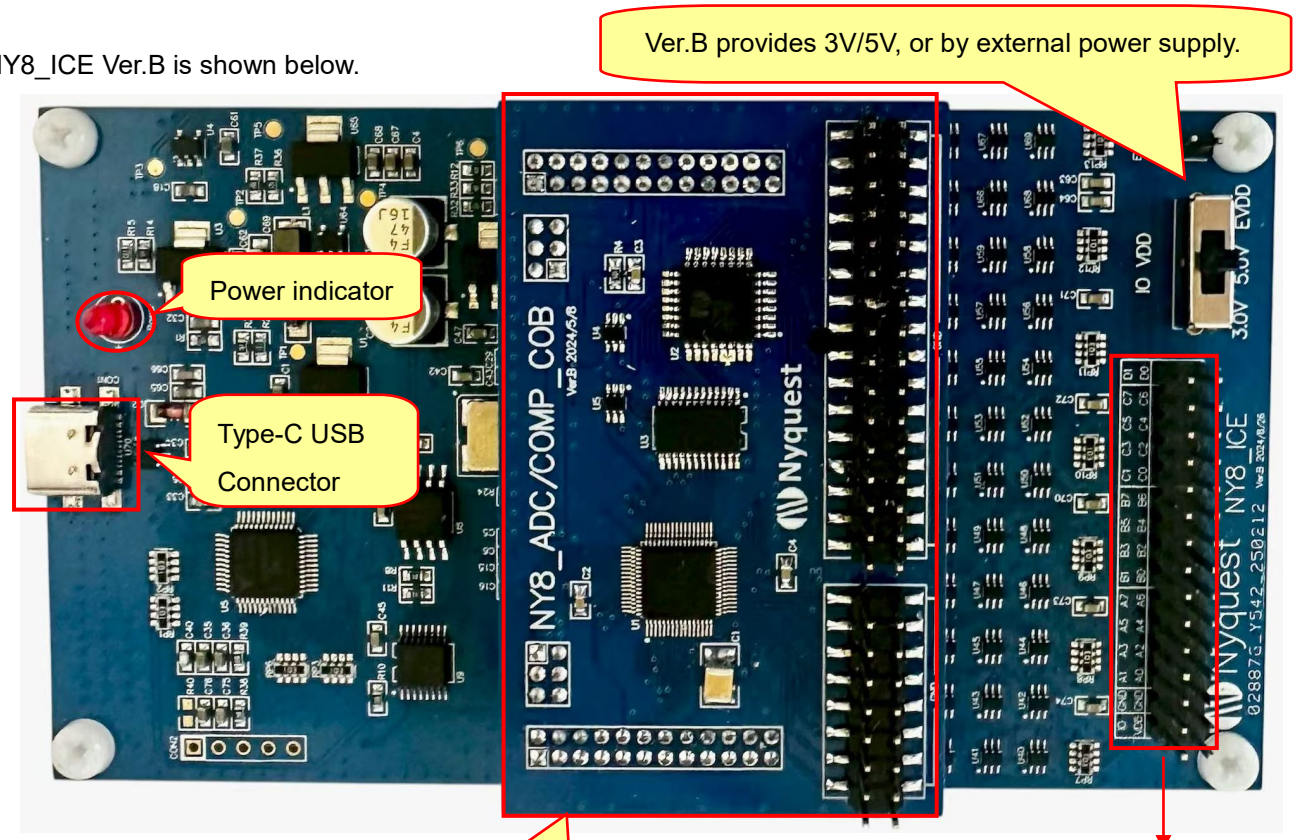


5.1 NY8_ICE Ver.B

NY8_ICE Ver. B is only available for NY8 series MCU. It can be simply connected to PC with USB connection, then through *NYIDE* software, users can download the program into the ICE to emulate the IC functions.

The system voltage of NY8_ICE Ver. B can be set to **3V**, **5V**, or determined by an **external power supply**. Users may select the appropriate option according to the requirements of the actual debugging environment.

NY8_ICE Ver.B is shown below.

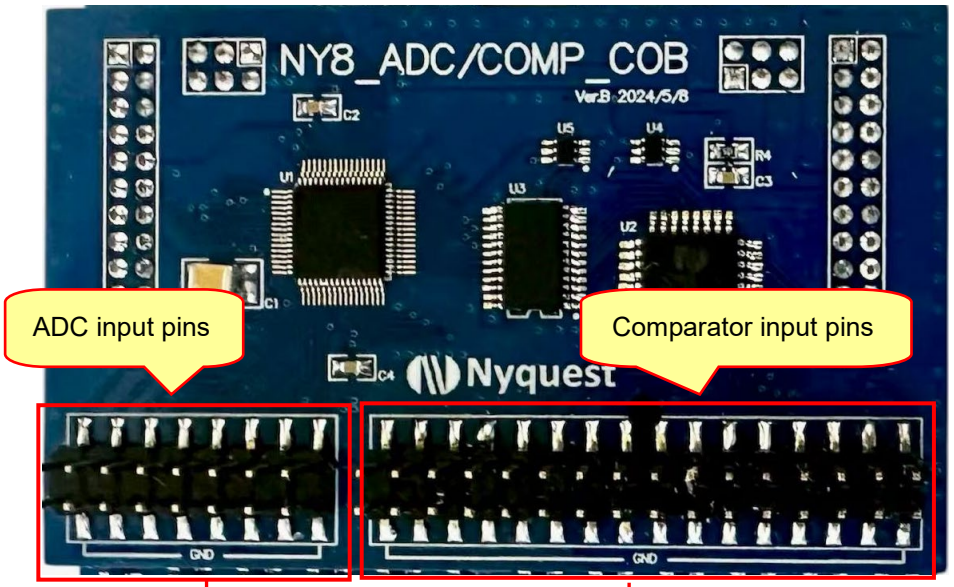


IO PIN MAP			
1	D1	2	D0
3	C7	4	C6
5	C5	6	C4
7	C3	8	C2
9	C1	10	C0
11	B7	12	B6
13	B5	14	B4
15	B3	16	B2
17	B1	18	B0
19	A7	20	A6
21	A5	22	A4
23	A3	24	A2
25	A1	26	A0
27	GND	28	GND
29	VDD	30	VDD

5.3.1 NY8_ADC/COMP_COB Ver.B

NY8_ADC/COMP_COB Ver.B is an extension board that is used for emulating the analog function on NY8_ICE Ver.B. To emulate the ADC and Comparator function of NY8, users need to connect NY8_ADC/COMP_COB Ver.B to the extended socket of N8_ICE Ver.B first.

NY8_ADC/COMP_COB is shown below.



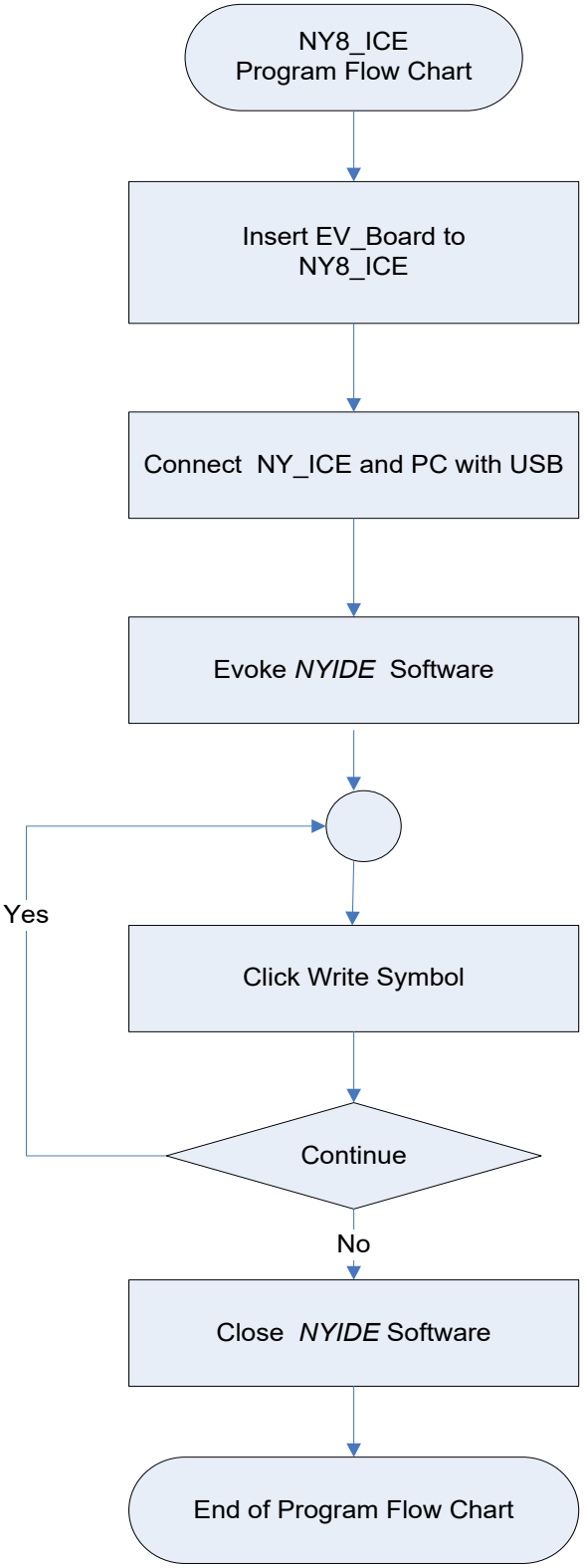
1	2	3	4	5	6	7	8
AIN0	AIN1	AIN2	AIN3	AIN4	AIN5	AIN6	AIN7
GND							

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
A0	A1	A2	A3	A4	A5	A6	A7	B0	B1	B2	B3	B4	B5	B6	B7
GND															

Please note: Due to differences in power design, different versions of the NY8_ADC/COMP_COB and the mainboard cannot be used interchangeably. NY8_ADC/COMP_COB Ver. B must be used with NY8_ICE Ver. B; NY8_ADC/COMP_COB Ver. A must be used with NY8_ICE Ver. A.

5.3.2 NY8_ICE Ver.B Operation Flow Chart

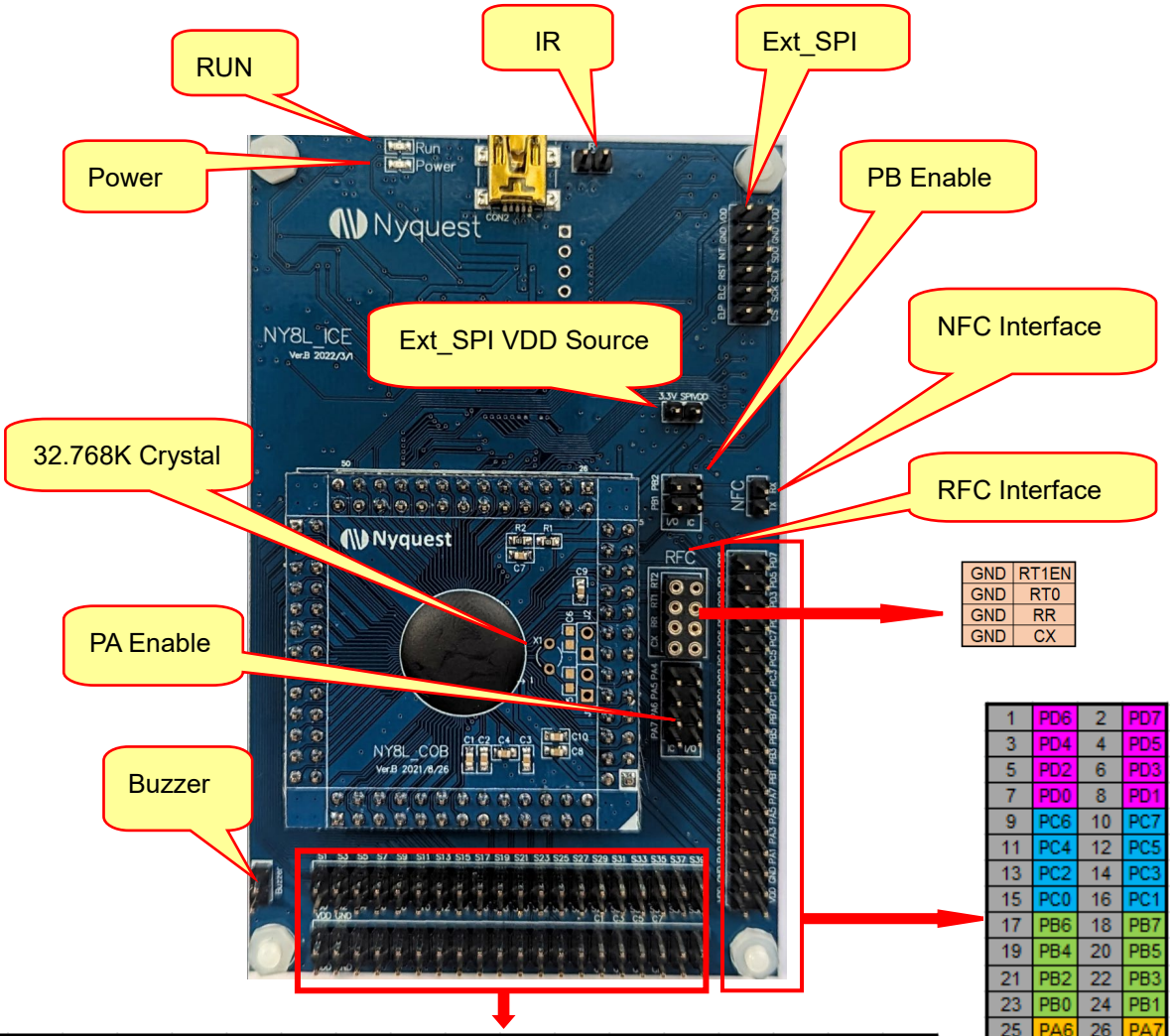
NY8_ICE Ver.B operation flow chart：



5.3 NY8L_ICE

NY8L_ICE is only available for NY8L series IC. It can be simply connected to PC with USB connection, then through *NYIDE* or *Q-LCD* software, users can download the program into the ICE to emulate the IC function

The appearance of NY8L_ICE is hown below.



GND	RT1EN
GND	RT0
GND	RR
GND	CX

1	PD6	2	PD7
3	PD4	4	PD5
5	PD2	6	PD3
7	PD0	8	PD1
9	PC6	10	PC7
11	PC4	12	PC5
13	PC2	14	PC3
15	PC0	16	PC1
17	PB6	18	PB7
19	PB4	20	PB5
21	PB2	22	PB3
23	PB0	24	PB1
25	PA6	26	PA7
27	PA4	28	PA5
29	PA2	30	PA3
31	PA0	32	PA1
33	GND	34	GND
35	VDD	36	VDD

1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35	37	39
S1	S3	S5	S7	S9	S11	S13	S15	S17	S19	S21	S23	S25	S27	S29	S31	S33	S35	S37	S39
2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
S0	S2	S4	S6	S8	S10	S12	S14	S16	S18	S20	S22	S24	S26	S28	S30	S32	S34	S36	S38

1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35	37	39
VDD	GND													C1	C3	C5	C7		
2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
VDD	GND													C0	C2	C4	C6		

The function definitions:

RUN: Execute the free run via ICE.

Power: ICE power supply indicator.

IR: The IR LED connector.

Ext_SPI: The NY8L Ext_SPI Master connector. If the U3 is connected with SPI Flash on the back of NY8L_ICE, please remove the SPI Flash and execute the connection. (The default is U3 not connected with components)

Ext_SPI VDD Source: The NY8L Ext_SPI Master connector for VDD power selection.

Short: The Ext_SPI VDD is 3.3V。(Default)

Open: Provide1.5V~3.3V external power by connecting Ext_SPI VDD with SPIVDD.

PB_Enable: User can set PB1 or PB2 to output signals to the right side of NY8L_ICE I/O Port.

Short: PB1 or PB2 outputs signals to the right side of NY8L_ICE I/O Port. (Default)

Open: No effect for PB1 or PB2.

PA_Enable: User can set PA4, PA5, PA6, or PA7 to output signals to the right side of NY8L_ICE I/O Port.

Short: PA4, PA5, PA6, or PA7 outputs signals to the right side of NY8L_ICE I/O Port. (Default)

Open: No effect for PA4, PA5, PA6, or PA7.

NFC Interface: Connect with NFC.

RFC Interface: Connect with RFC. Please refer to NY8L_UM for for circuit application.

32.768K: Connect with 32.768K Crystal.

Buzzer: Connect with the passive buzzer.

S1~S39: LCD Segment Interface.

C1~C7: LCD Com Interface.

PA0~PA7: I/O Port for development.

PB0~PB7: I/O Port for development.

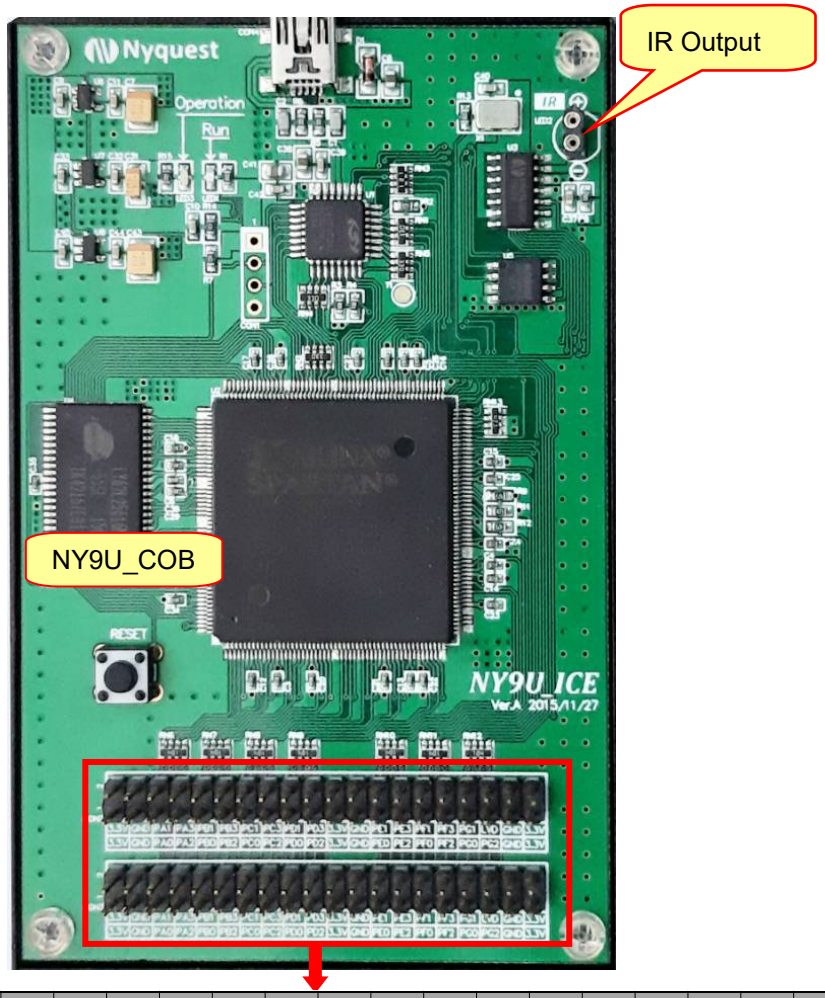
PC0~PC7: I/O Port for development.

PD0~PD7: I/O Port for development.

5.4 NY9U_ICE

NY9U_ICEis only available for NY9U Universal / Remote Controller series MCU. It can be simply connected to PC with USB connection, then through *NYIDE* or *Q-Remote* software, users can download the program into the ICE to emulate the IC function.

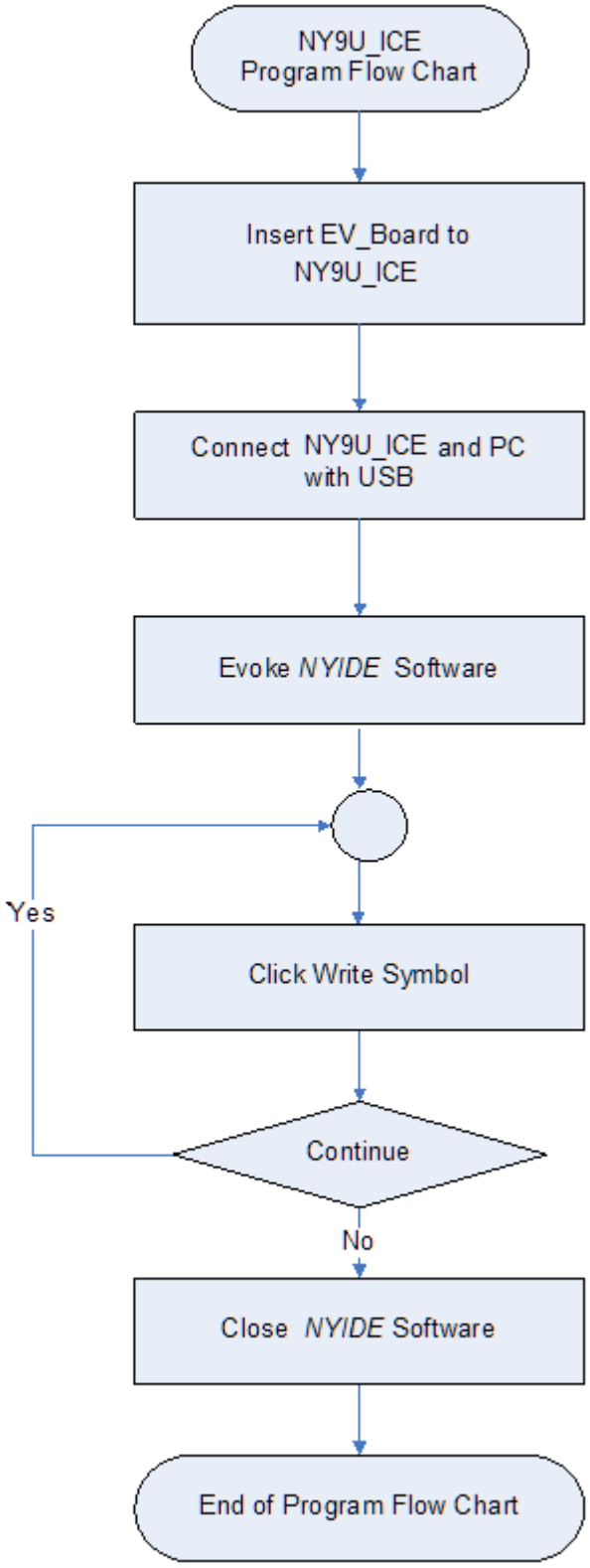
The connection with NY9U_ICE is shown below.



1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35	37	39
VDD	GND	PA1	PA3	PB1	PB3	PC1	PC3	PD1	PD3	VDD	GND	PE1	PE3	PF1	PF3	PG1	PG3	GND	VDD
2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
VDD	GND	PA0	PA2	PB0	PB2	PC0	PC2	PD0	PD2	VDD	GND	PE0	PE2	PF0	PF2	PG0	PG2	GND	VDD

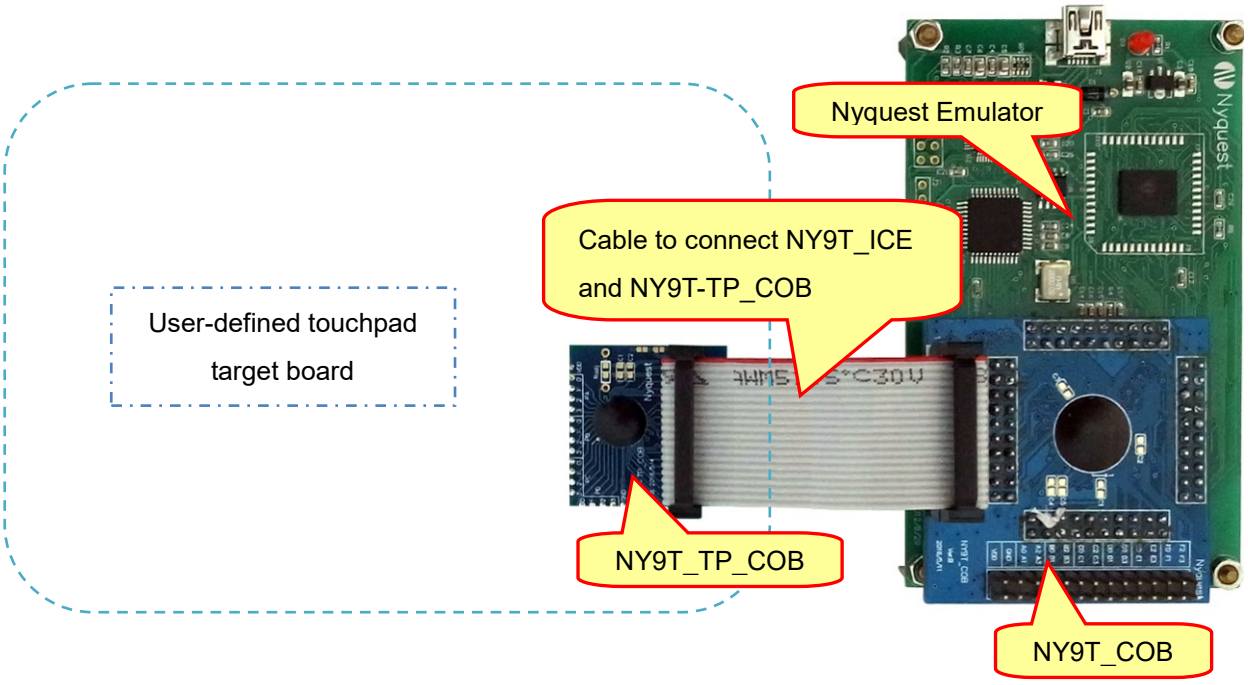
1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35	37	39
VDD	GND	PA1	PA3	PB1	PB3	PC1	PC3	PD1	PD3	VDD	GND	PE1	PE3	PF1	PF3	PG1	PG3	GND	VDD
2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
VDD	GND	PA0	PA2	PB0	PB2	PC0	PC2	PD0	PD2	VDD	GND	PE0	PE2	PF0	PF2	PG0	PG2	GND	VDD

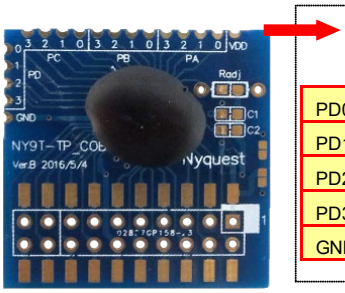
5.4.1 NY9U_ICE Operation Flow Chart



5.5 NY9T_ICE & NY9T-TP_COB

NY9T-TP_COB is analog front end connect to NY9T_FDB or NY9T_ICE for emulation or verify. The connection between NY9T_FDB or NY9T_ICE is standard 20pin 2.54mm pitch cable for digital interface. There are 2 power and 16 Touch inputs on PCB edge. Please notice that touch inputs should be placed at same location as final customer's NY9T IC on PCB for correct parameter. The diagrammatic view of NY9T_ICE and NY9T-TP_COB is shown below.





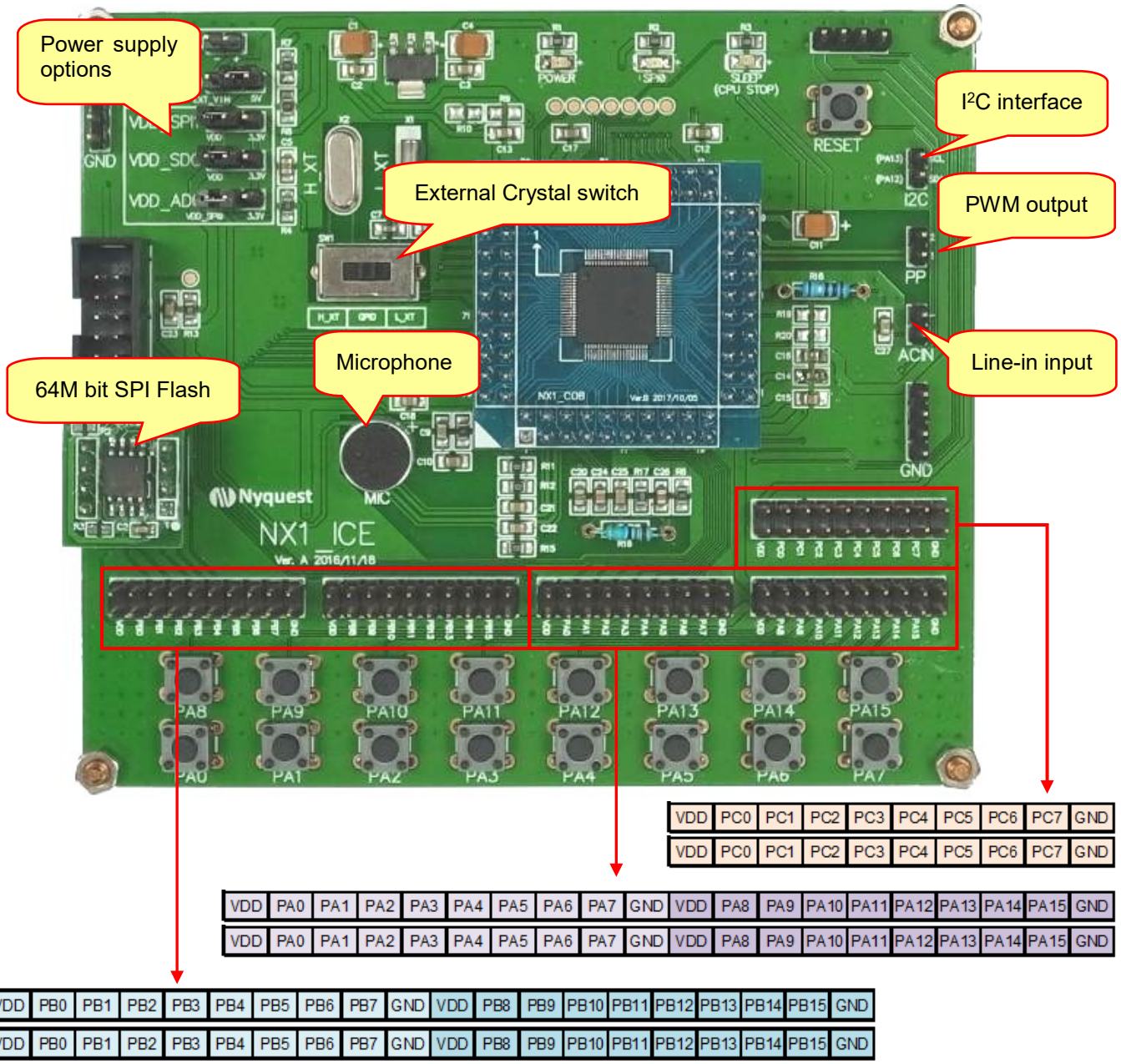
NY9T-TP_COB PIN MAP

	PC3	PC2	PC1	PC0	PB3	PB2	PB1	PB0	PA3	PA2	PA1	PA0	VDD
PD0													
PD1													
PD2													
PD3													
GND													

5.6 NX1_ICE

NX1_ICE is an emulator development tool for NX1 MCU series, and it also provides 64M bit SPI Flash. It can be simply connected to PC with USB connection, then users can download the program through *NYIDE* or *Q-Code* software into the ICE to emulate the function.

NX1_ICE is shown below.



6 Appendix

6.1 FDB ROM and IC Pin Mapping Table

6.1.1 NY1_FDB

There is one kind of Flash Demo Board: NY1_FDB-02.

The maximum demo voice duration.

FDB	*NY1_FDB-02*
NY1A(3IO) (Max. body)	NY1A103x
NY1B(5IO) (Max. body)	NY1B105x
NY1B(7IO) (Max. body)	NY1B207x

I/O pin mapping for different series IC.

IC Series / FDB	*NY1A(3IO)*	*NY1B(5IO)*	*NY1B(7IO)*
OKY/TG	TG	OKY	OKY
IO1	O1	IO1	IO1
IO2	O2	O2	IO2
IO3	-	IO3	IO3
O4	-	O4	O4
O5	-	-	O5
O6	-	-	O6

6.1.2 NY2_FDB

There is one kind of Flash Demo Board: NY2_FDB-02.

The maximum demo voice duration.

FDB	*NY2_FDB-02*
NY2A (Max. body)	NY2A001x
NY2B (Max. body)	NY2B007x
NY2C (Max. body)	NY2C010x

I/O pin mapping for different series IC.

IC Series / FDB	NY2A	NY2B	NY2C
OKY1	OKY	OKY	OKY1
IO1	IO1	IO1	IO1
IO2	-	IO2	IO2
IO3	-	-	IO3
IO4	-	-	IO4
OKY2/O5	-	-	OKY2/O5

6.1.3 NY3 Series FDB

(1) NY3(B)_FDB

There are three kinds of Flash Demo Board: NY3(B)_FDB-02, NY3(B)_FDB-04 and NY3(B)_FDB-08.

The maximum demo voice duration of different Flash ROM Size:

FDB	NY3(B)_FDB-02	NY3(B)_FDB-04	NY3(B)_FDB-08
NY3A(D) (Max. body) NY3A(E) (Max. body)	NY3A006D NY3A012E	NY3A006D NY3A012E	NY3A006D NY3A012E
NY3B(B) (Max. body)	NY3B021B	NY3B021B	NY3B021B
NY3C(B) (Max. body)	NY3C043B	NY3C065B	NY3C065B
NY3D(B) (Max. body)	NY3D043B	NY3D087B	NY3D115B

I/O pin mapping for different series IC.

IC Series / FDB	NY3A	NY3B	NY3C	NY3D
OKY1/O5	OKY	OKY	OKY/O3	OKY1/O5
IO1	-	IO1	IO1	IO1
IO2	-	-	IO2	IO2
IO3	-	-	-	IO3
OKY2/O4	-	-	-	OKY2/O4

6.1.4 NY4_FDB

There are three kinds of Flash Demo Board: NY4_FDB-02, NY4_FDB-04 and NY4_FDB-08.

The maximum demo voice duration of different Flash ROM Size:

FDB	NY4_FDB-02	NY4_FDB-04	NY4_FDB-08
NY4A (Max. body)	NY4A011x	NY4A011x	NY4A011x
NY4B (Max. body)	NY4B045x	NY4B105x	NY4B165x

I/O pin mapping for different series IC.

IC Series / FDB	NY4A	NY4B
A0, A1, A2, A3	PA0, PA1, PA2, PA3	PA0, PA1, PA2, PA3
B0, B1, B2, B3	-	PB0, PB1, PB2, PB3

6.1.5 NY5_FDB

There are 4 kinds of Flash Demo Board: NY5_FDB-04, NY5_FDB-08, NY5_FDB-16 and NY5_FDB-32.

The maximum demo voice duration of different Flash ROM Size:

FDB	NY5_FDB-04	NY5_FDB-08	NY5_FDB-16	NY5_FDB-32
NY5A (Max. body)	NY5A065x	NY5A065x	NY5A065x	NY5A065x
NY5B (Max. body)	NY5B085x	NY5B085x	NY5B085x	NY5B085x
NY5C (Max. body)	-	NY5C185x	NY5C345x	NY5C720x

I/O pin mapping for different series IC.

IC Series / FDB	NY5A	NY5B
A0, A1, A2, A3	PA0, PA1, PA2, PA3	PA0, PA1, PA2, PA3
B0, B1, B2, B3	PB0, PB1, PB2, PB3	PB0, PB1, PB2, PB3
C0, C1, C2, C3	-	PC0, PC1, PC2, PC3
D0, D1, D2, D3	-	PD0, PD1, PD2
E0, E1, E2, E3	-	-
F0, F1, F2, F3	-	-
IC Series / FDB	NY5C: (112 sec ~345 sec)	NY5C: (450 sec~720 sec)
A0, A1, A2, A3	PA0, PA1, PA2, PA3	PA0, PA1, PA2, PA3
B0, B1, B2, B3	PB0, PB1, PB2, PB3	PB0, PB1, PB2, PB3
C0, C1, C2, C3	PC0, PC1, PC2, PC3	PC0, PC1, PC2, PC3
D0, D1, D2, D3	PD0, PD1, PD2, PD3	PD0, PD1, PD2, PD3
E0, E1, E2, E3	PE0, PE1, PE2, PE3	PE0, PE1, PE2, PE3
F0, F1, F2, F3	-	PF0, PF1, PF2, PF3

6.1.6 NY6_FDB

There are 4 kinds of Flash Demo Board: NY6_FDB-04, NY6_FDB-08, NY6_FDB-16, NY6_FDB-32.

The maximum demo voice duration of different Flash ROM Size:

FDB	*NY6_FDB-04*	*NY6_FDB-08*	*NY6_FDB-16*	*NY6_FDB-32*
NY6A (Max. body)	NY6A065x	NY6A065x	NY6A065x	NY6A065x
NY6B (Max. body)	NY6B085x	NY6B085x	NY6B085x	NY6B085x
NY6C (Max. body)	-	NY6C185x	NY6C345x	NY6C720x

I/O pin mapping for different series IC.

IC Series / FDB	*NY6A*	*NY6B*	*NY6C*
A0, A1, A2, A3	PA0, PA1, PA2, PA3	PA0, PA1, PA2, PA3	PA0, PA1, PA2, PA3
B0, B1, B2, B3	PB0, PB1, PB2, PB3	PB0, PB1, PB2, PB3	PB0, PB1, PB2, PB3
C0, C1, C2, C3	-	PC0, PC1, PC2, PC3	PC0, PC1, PC2, PC3
D0, D1, D2, D3	-	PD0, PD1, PD2, PD3	PD0, PD1, PD2, PD3
E0, E1, E2, E3	-	-	PE0, PE1, PE2, PE3
F0, F1, F2, F3	-	-	PF0, PF1, PF2, PF3

6.1.7 NY7_FDB

There are four kinds of Flash Demo Board: NY7_FDB-04, NY7_FDB-08, NY7_FDB-16 and NY7_FDB-32.

The maximum demo voice duration of different Flash ROM Size:

FDB	*NY7_FDB-04*	*NY7_FDB-08*	*NY7_FDB-16*	*NY7_FDB-32*
NY7A (Max. body)	NY7A065x	NY7A065x	NY7A065x	NY7A065x
NY7B (Max. body)	NY7B087x	NY7B087x	NY7B087x	NY7B087x
NY7C (Max. body)	NY7C087x	NY7C170x	NY7C345x	NY7C520x

I/O pin mapping for different series IC.

IC Series / FDB	*NY7A*	*NY7B*	*NY7C*
A0, A1, A2, A3	PA0, PA1, PA2, PA3	PA0, PA1, PA2, PA3	PA0, PA1, PA2, PA3
B0, B1, B2, B3	PB0, PB1, PB2, PB3	PB0, PB1, PB2, PB3	PB0, PB1, PB2, PB3
C0, C1, C2, C3	-	PC0, PC1, PC2, PC3	PC0, PC1, PC2, PC3
D0, D1, D2, D3	-	PD0, PD1, PD2, PD3	PD0, PD1, PD2, PD3
E0, E1, E2, E3	-	-	PE0, PE1, PE2, PE3
F0, F1, F2, F3	-	-	PF0, PF1, PF2, PF3

6.1.8 NY9T_FDB

There is one kind of Flash Demo Board: NY9T_FDB-02.

The maximum demo voice duration of different Flash ROM Size:

FDB	*NY9T_FDB-02*
NY9T (Max. body)	NY9T016A

I/O pin mapping for different series IC.

IC Series / FDB	*NY9T*
A0, A1, A2, A3	PA0, PA1, PA2, PA3
B0, B1, B2, B3	PB0, PB1, PB2, PB3
C0, C1, C2, C3	PC0, PC1, PC2, PC3
D0, D1, D2, D3	PD0, PD1, PD2, PD3
E0, E1, E2, E3	PE0, PE1, PE2, PE3
F0, F1, F2, F3	PF0, PF1, PF2, PF3

When NY9T_FDB operates with target board, the number of keys is different from the customers' needs which will cause the different pin correspondences. User can select or define the number of touch keys but must set the touch keys from PA0 in ascending.

6.1.9 NX1_FDB

There is 4 kinds of Flash Demo Board: NX1_FDB-08, NX1_FDB-16, NX1_FDB-32 and NX1_FDB-64.

I/O pin mapping for different series IC.

IC Series / FDB	*NX1*
A0, A1, A2, A3, A4, A5, A6, A7	PA0, PA1, PA2, PA3, PA4, PA5, PA6, PA7
A8, A9, A10, A11, A12, A13, A14, A15	PA8, PA9, PA10, PA11, PA12, PA13, PA14, PA15
B0, B1, B2, B3, B4, B5, B6, B7	PB0, PB1, PB2, PB3, PB4, PB5, PB6, PB7
B8, B9, B10, B11, B12, B13, B14, B15	PB8, PB9, PB10, PB11, PB12, PB13, PB14, PB15
C0, C1, C2, C3, C4, C5, C6, C7	PC0, PC1, PC2, PC3, PC4, PC5, PC6, PC7

6.2 EVB ROM and IC Pin Mapping Table

6.2.1 NX13FS_EVB

There is 3 kinds of Flash Demo Board: NX13FS_EVB-00, NX13FS_EVB-32, and NX13FS_EVB-64.

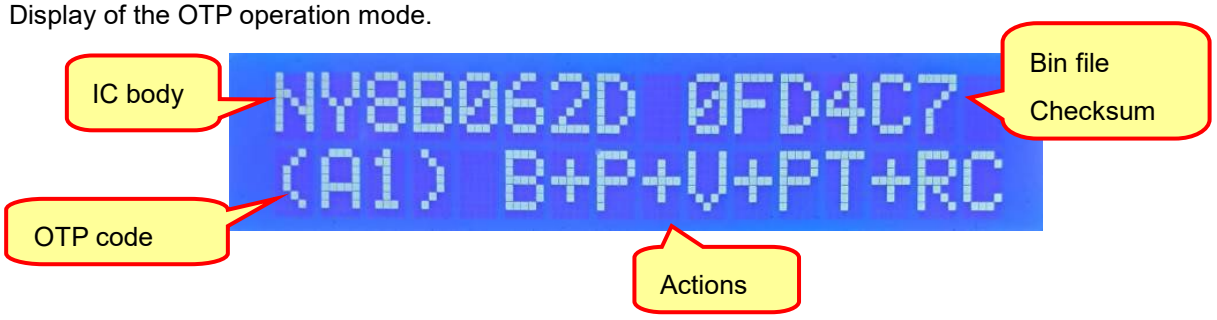
I/O pin mapping for different series IC.

IC Series / EVB	*NX13FS*
A0, A1, A2, A3, A4, A5, A6, A7	PA0, PA1, PA2, PA3, PA4, PA5, PA6, PA7

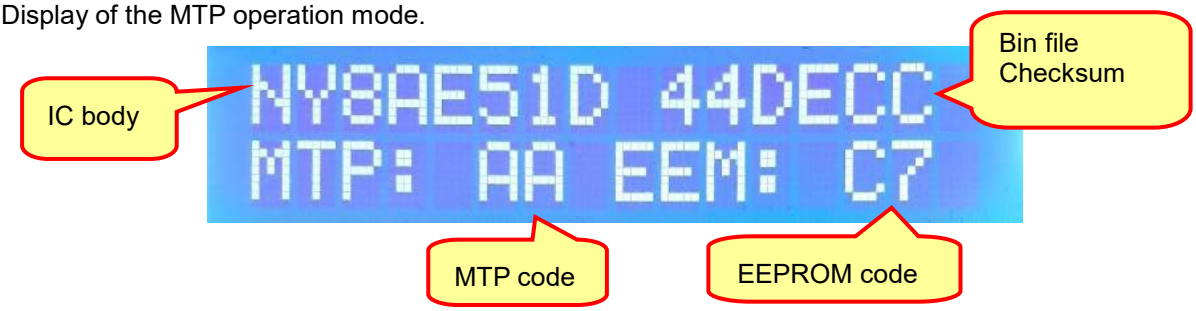
A8, A9, A10, A11, A12, A13, A14, A15	PA8, PA9, PA10, PA11, PA12, PA13, PA14, PA15
B0, B1, B2, B3, B4, B5, D0, D1	PB0, PB1, PB2, PB3, PB4, PB5, PD0, PD1
C0, C1, C2, C3	PC0, PC1, PC2, PC3

6.3 NY8-OTP_Writer (Ver. B) Operation Code

Display of the OTP operation mode.



Display of the MTP operation mode.



Mode	Message
Operation Mode:	Short press the Select / Start button to start programming.
Select Mode:	Short press the Select / Start button to switch different operation mode.
NY8A056A 58542	The left shows the programmed IC Body. The right shows Bin file Checksum.

OTP / MTP Operation Code Table:

Item	Sound	Action
1.	(A0)	Blank + Program + Verify
2.	(A1)	Blank + Program + Verify + Protect (unreadable).
3.	(A2)	Protect (unreadable).
4.	(A3)	Blanking.
5.	(A4)	Program.
6.	(A5)	Verify.
7.	(A6)	Program + Verify.
8.	(A7)	Program + Verify + Protect (unreadable).

Item	Sound	Action
9.	(A8)	Program Rolling Code
10.	(A9)	Program Rolling Code + Protect (unreadable).
11	(AA)	Erase + Program + Verify (***Only MTP***)
12	(AB)	Erase + Program + Verify + Protect (unreadable) (***Only MTP***)
13	(AC)	Erase (***Only MTP***)
14	(AD)	Erase + Blank ***(Only MTP)***
15	(AE)	Erase + Blank +Program + Compare ***(Only MTP)***
16	(AF)	Erase + Blank +Program + Compare + Protect ***(Only MTP)***
17	(AG)	Compare checksum
18	(AH)	Protect (unreadable)
19	(AI)	Compare checksum + Protect (unreadable)

OTP Action Code Table:

Item	Sound	Action
1.	B	Blank Check
2.	E	Erase
3.	P	Program OTP
4.	V	Verify
5.	PT	Protect (unreadable)
6.	RC	Program Rolling Code
7	_	NIL

EEPROM Action Code Table:

Item	Sound	Action
1	(C0)	Blank Check + Program + Verify
2	(C1)	Erase + Blank Check + Program + Verify
3	(C2)	Erase
4	(C3)	Blank Check
5	(C4)	Program
6	(C5)	Verify
7	(C6)	Program + Verify
8	(C7)	Erase + Program + Verify
9	(C8)	Erase + Program

Error Message:

Message	Descriptions
	The memory of NY8-OTP_Write (Ver. B) has no data. For blank check only.
	The data of NY8-OTP_Write (Ver. B) is missing. Please re-download the .bin file to writer.

Error Code Definition:

Error Code Table 1:

Code	Message
	Blank Check Error.
	Program and Protect OTP data Error.
	The data of OTP IC is inconsistent from the memory of Writer.
	IC is protected and unreadable.
	NY8-OTP_Writer (Ver. B) cannot find IC.
	The memory of NY8-OTP_Write (Ver. B) has no data.
	The memory data of NY8-OTP_Writer (Ver. B) is incorrect.
	OTP IC Package error.
	Different IC version.
	Trim Fail.
	Trimmed Data Error.
	Over than the limited Writing Times.
	Rolling Code Error.
	This OTP has no LVD and LVR Trim value.
	This OTP/MTP IC is not protected.（Prohibit accessing）
	OTP/MTP IC checksum comparison error.

Error Code Table 2:

Code	Message
(F0)	Blank Check error.
(F1)	Program EEPROM data error.
(F2)	The data of EEPROM is inconsistent from the memory of Writer.
(F3)	Clean EEPROM data error.
(F4)	N/A
(F5)	N/A
(F6)	IC defect.
(F7)	CP Data Error.
(F8)	N/A
(F9)	N/A
(FA)	Poor Contact.
(FB)	N/A
(FC)	N/A
(FD)	N/A
(FE)	N/A

Buzzer Sound Message Table:

Item	Sound	Action
1.	“Bi” once	Operation success.
2.	“Bi” twice	NY8-OTP_Writer (Ver. B) enters setting mode.
3.	“Bi” 3 times	Operation fails.

6.4 NX_Programmer (Ver. A) Operation Code

Code	Message	Signal Display
A0	Blanking + Program + Verify	● ● ● ●
A1	Blanking + Program + Verify + Protect (unreadable).	● ● ● ●
A2	Protect (unreadable).	● ● ● ●
A3	Blanking.	● ● ● ●
A4	Program.	● ● ● ●
A5	Verify.	● ● ● ●
A6	Program + Verify.	● ● ● ●
A7	Program + Verify + Protect (unreadable).	● ● ● ●
A8	Program Rolling Code	● ● ● ●
A9	Program Rolling Code + Protect (unreadable).	● ● ● ●
CX	Composite programming function. Please refer to the *Q-Writer* function screen for displaying the currently selected function.	● ● ● ●

Error code table:

Code	Message	Signal Display
E0	Blank Check Error.	● ● ● ●
E1	Program OTP Error.	● ● ● ●
E2	The data of OTP IC is inconsistent from the memory of Writer.	● ● ● ●
E3	IC is Protected and unreadable.	● ● ● ●
E4	NX_Programmer (Ver. A) cannot find OTP IC.	● ● ● ●
E5	The memory of NX_Programmer (Ver. A) has no programmed data.	● ● ● ●
E6	The memory programmed data of NX_Programmer (Ver. A) is incorrect.	● ● ● ●
E7	Package Insert error.	● ● ● ●
E8	Different IC version.	● ● ● ●
E9	The trimmed frequency is out of spec.	● ● ● ●
EA	NX_Programmer (Ver. A) cannot find SPI Flash.	● ● ● ●
EB	Program SPI Flash fail.	● ● ● ●
EC	Trim fail.	● ● ● ●
ED	Abnormal memory access.	● ● ● ●
EE	The .bin file has not been downloaded to NX_Programmer.	● ● ● ●

Completing code table:

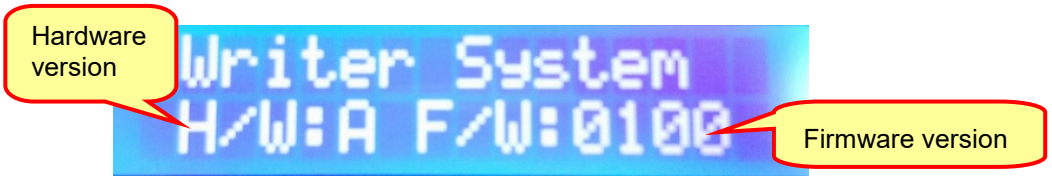
Code	Message	Signal Display
-	Program completed.	● ● ● ●

Buzzer sound message table:

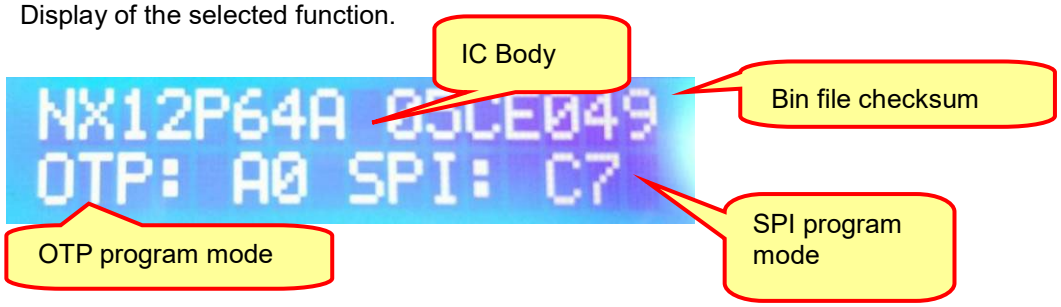
Item	Sound	Action
1.	“Bi” once	Operation success.
2.	“Bi” twice	NX_Programmer (Ver. A) enters setting mode.
3.	“Bi” 3 times	Operation fail.

6.5 Smart_Writer Ver. A Operation Code

Display of the hardware version.



Display of the selected function.



System information display:

Mode	Message
bin checksum Checksum:000000	The .bin file Checksum.
Writing time: 0000000000000000	The remaining number of writing times.
Rolling code: 0000000000000000	The current rolling code.
SPI Function: QE bit Enable	The SPI Flash QE bit is enabled.

System error display:

Error display	Message
	Self-test mode and no .bin file
	Self-test mode, the VPP of hardware is abnormality. It is recommended to return to the original factory for repair.
	Self-test mode, the VDD of hardware is abnormality. It is recommended to return to the original factory for repair
	Self-test mode, the configure failed. It is recommended to return to the original factory for repair.
	Lost the .bin file, please download the .bin file again.
	The memory of hardware failed. It is recommended to return to the original factory for repair.

OTP IC Operation Code

Operation code table:

Item	Code	Message
1	(A0)	Blanking + Program + Verify.
2	(A1)	Blanking + Program + Verify + Protect.
3	(A2)	Protect.
4	(A3)	Blanking.
5	(A4)	Program.
6	(A5)	Verify.
7	(A6)	Program + Verify.
8	(A7)	Program + Verify + Protect.
9	(A8)	Program Rolling Code.
10	(A9)	Program Rolling Code + Protect.
11	(AA)	Erase + Program + Compare. ***(Only MTP)***
12	(AB)	Erase + Program + Compare + Protect (unreadable. ***(Only MTP)***

Item	Code	Message
13	(AC)	Erase ***(Only MTP)***
14	(AD)	Erase + Blank. ***(Only MTP)***
15	(AE)	Erase + Blank + Program + Compare. ***(Only MTP)***
16	(AF)	Erase + Blank + Program + Compare + Protect. ***(Only MTP)***

SPI Flash Operation Code

SPI Flash operation code table:

Item	Code	Message
1	(C0)	Blanking + Program + Verify.
2	(C1)	Erase + Blanking + Program + Verify.
3	(C2)	Erase.
4	(C3)	Blanking.
5	(C4)	Program.
6	(C5)	Verify.
7	(C6)	Program + Verify.
8	(C7)	Erase + Program + Verify.

OTP IC + SPI Flash Code

When downloading the IC and SPI Flash data at the same time, the operation code is the combination of OTP and SPI Flash operation code. After downloaded to the Smart_Writer Ver. A, the operation code will be locked and cannot be switched.

For example: OTP operation code is “A1”, SPI Flash operation code is “C0”, the combined operation code will be shown “A1C0” in the display screen of Smart_Writer Ver. A.

Error Code Definition

Error Code Table 1:

Code	Message
(E0)	Blanking Error (for OTP) / Memory cleanup failure (for MTP)
(E1)	Program Error.
(E2)	Verify Error.
(E3)	IC is Protected.
(E4)	IC isn’t found.
(E5)	Reach the number of writing times.
(E6)	Initialize OTP failed.

Code	Message
(E7)	Download data error.
(E8)	Different IC version.
(E9)	Trim Fail.
(EA)	Fixture abnormal.
(EB)	Execution command error / programming file error.
(EC)	Write Trim Clock data error.
(ED)	Read OTP data error.
(EE)	Rolling Code failed.
(EF)	The programming interface is shorted.

Error Code Table 2:

Code	Message
(F0)	Blanking the SPI Flash memory error.
(F1)	Program SPI Flash data error.
(F2)	The **data** of SPI Flash is different from the data stored in Writer's memory.
(F3)	SPI Flash data cleanup failed.
(F4)	Cannot find SPI Flash.
(F5)	Enable SPI Flash QE Bit failed.
(F6)	IC defect.
(F7)	IC SRAM Failed.
(F8)	Different Nyquest N25Q series SPI Flash. Please check the SPI Flash.
(F9)	N/A.
(FA)	N/A.
(FB)	N/A.
(FC)	Abnormal programming power.
(FD)	IC frequency exceeds spec.
(FE)	Check IC frequency failed.

Message for buzzer sound

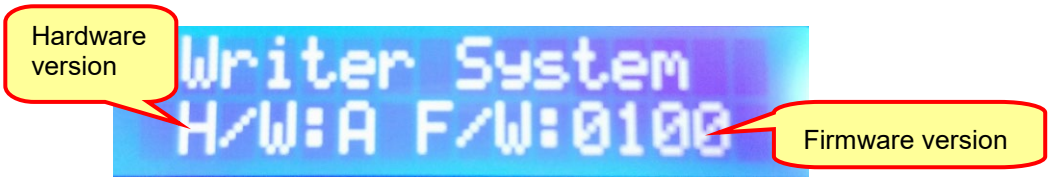
Buzzer sound message table:

Item	Code	Message
1	"Bi" once	Operation success.

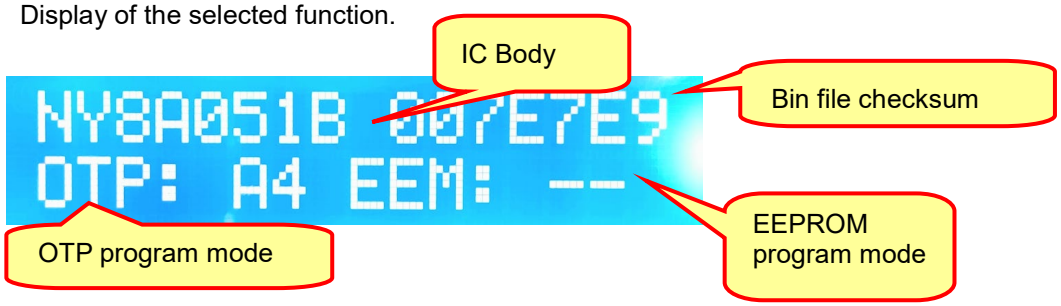
Note: **NX_Programmer / Smart_Writer Ver. A Transfer Board / Converter Board and Config Card information has been moved to the Hardware Tool (Appendix) file.**

6.6 MCU_Writer Ver.A Operation Code

Display of the hardware version.



Display of the selected function.



System information display:

Mode	Message
	The .bin file Checksum.
	The remaining number of writing times.
	The current rolling code.
	The VDD/VPP voltage calibration

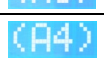
System error display:

Error display	Message
	Self-test mode and no .bin file
	Self-test mode, the VPP of hardware is abnormality. It is recommended to return to the original factory for repair.

Error display	Message
	Self-test mode, the VDD of hardware is abnormality. It is recommended to return to the original factory for repair
	Self-test mode, the configure failed. It is recommended to return to the original factory for repair.
	Lost the .bin file, please download the .bin file again.
	The memory of hardware failed. It is recommended to return to the original factory for repair.
	1. If the external DC12V voltage is lower than 10.8V, it is recommended to check whether the transformer is normal. 2. If the power control system is abnormal, it is recommended to return it to the original factory for maintenance.

OTP / MTP Operation Code

Operation code table:

Item	Code	Message
1		Blanking + Program + Verify.
2		Blanking + Program + Verify + Protect.
3		Protect.
4		Blanking.
5		Program.
6		Verify.
7		Program + Verify.
8		Program + Verify + Protect.
9		Program Rolling Code.
10		Program Rolling Code + Protect.
11		Erase + Program + Compare. ***(Only MTP)***
12		Erase + Program + Compare + Protect (unreadable. ***(Only MTP)***
13		Erase ***(Only MTP)***
14		Erase + Blank. ***(Only MTP)***

Item	Code	Message
15	(AE)	Erase + Blank + Program + Compare. ***(Only MTP)***
16	(AF)	Erase + Blank + Program + Compare + Protect. ***(Only MTP)***

EEPROM Operation Code

EEPROM operation code table:

Item	Code	Message
1	(C0)	Blanking + Program + Verify.
2	(C1)	Erase + Blanking + Program + Verify.
3	(C2)	Erase.
4	(C3)	Blanking.
5	(C4)	Program.
6	(C5)	Verify.
7	(C6)	Program + Verify.
8	(C7)	Erase + Program + Verify.
9	(C8)	Erase + Verify

OTP + EEPROM Operation Code

When downloading the IC and EEPROM data at the same time, the operation code is the combination of OTP and EEPROM operation code. After downloaded to the MCU_Writer Ver. A, the operation code will be locked and cannot be switched.

For example: OTP operation code is “A1”, EEPROM operation code is “C0”, the combined operation code will be shown “A1C0” in the display screen of MCU_Writer Ver. A.

Error Code Definition:

Error Code Table 1:

Code	Message
(E0)	Blanking Error (for OTP) / Memory cleanup failure (for MTP)
(E1)	Program Error.
(E2)	Verify Error.
(E3)	IC is Protected.
(E4)	IC isn’t found.
(E5)	Reach the number of writing times.
(E6)	Initialize OTP failed.
(E7)	Download data error.
(E8)	Different IC version.

Code	Message
(E9)	Trim Fail.
(EA)	Fixture abnormal.
(EB)	Execution command error / programming file error.
(EC)	Write Trim Clock data error.
(ED)	IC defect.
(EE)	Rolling Code failed.
(EF)	The programming interface is shorted.

Error Code Table 2:

Code	Message
(F0)	Blanking the EEPROM memory error.
(F1)	Program EEPROM data error.
(F2)	The **data** of EEPROM is different from the data stored in Writer's memory.
(F3)	EEPROM data cleanup failed.
(F4)	Cannot find EEPROM.
(F5)	Enable EEPROM QE Bit failed.
(F6)	IC defect.
(F7)	CP Data Error.
(F8)	Different Nyquest N25Q series EEPROM. Please check the EEPROM.
(F9)	Abnormal VDD Voltage.
(FA)	Poor Contact.
(FB)	N/A.
(FC)	Abnormal programming power.
(FD)	IC frequency exceeds spec.
(FE)	Check IC frequency failed.

Message for buzzer sound

Buzzer sound message table:

Item	Code	Message
1	"Bi" once	Operation success.
	"Bi" 3 times	Failed operation.

Note: NX_Programmer / Smart_Writer Ver. A / MCU_Writer / Transfer Board / Converter Board and Config Card information have been moved to the Hardware Tool (Appendix) file

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7 Revision History

Revision History

Version	Date	Description	Page
1.0	2012/02/13	The first version.	-
1.1	2012/05/23	1. Add NY3(B) Flash Demo Board and Target Board. 2. Add NY3(B) FDB ROM and IC Pin Mapping Table. 3. Add LQFP64 Transfer Board.	10, 11 40 44
1.2	2012/08/15	1. Add NY2P OTP IC. 2. Modify description of PC-Link Mode.	7, 24 36
1.3	2012/11/19	1. Modify the maximum demo voice duration of NY3(B)_FDB. 2. Add SOP28 Transfer Board for NY5P345/520 SOP ICs.	59 66
1.4	2013/06/26	1. Modify the illustrations of NY3(B)_FDB. 2. Add NY4_FDB-08. 3. Add NY7_FDB. 4. Add COB Type OTP: NY4P165AB. 5. Add NY3(B)_EV_board and NY7_EV_Board. 6. Add NY7_COB.	11, 13 14, 60 17, 62 26 44 50
1.5	2013/08/30	Add NY1P and NY3P(B) OTP COB.	24, 25
1.6	2014/08/30	1. Add OTP Writer (Ver. C). 2. Add Multi-OTP_Writer. 3. Add NY3L_Romter. 4. Add NY8_ICE. 5. Add NY3M_FDB and NY3W_FDB. 6. Add OTP_Writer (Ver.C) and Multi-OTP_Writer Operation Code. 7. Add OTP_Writer (Ver. C) Config. Cards.	9, 31, 47 10, 44, 55 61 69 77 83 94
1.7	2015/05/29	1. Add the description of NY9T_FDB. 2. Add NY9T_COB. 3. Add the description of NY9T_ICE and NY9T-TP_COB. 4. Add NY9T_ FDB ROM and IC Pin Mapping Table.	21 67 72 81
1.8	2015/08/28	Update NY8_ICE picture and prompt the 3.0V connector.	69

Version	Date	Description	Page
1.9	2015/11/30	Add the descriptions of NY8_OTP-Writer.	8, 32, 78
2.0	2016/08/30	1. Add NY6_FDB and its description. 2. Add NY6_EV. 3. Add NY6_ICE. 4. Update NY8-OTP_Writer (Ver. A) Indicator Definition. 5. Add NY8A056A Config Card.	18, 80 60 66 84 94
2.1	2016/11/30	1. Add NY8-OTP_Writer (Ver.B)。 2. Add NX1_FDB (Ver. A)。 3. Add NX_Programmer (Ver. A)。 4. Add NY9UP01A1 / 01A2 SOP16 and NX1 COB Config Card。 5. Add The Corresponding Table of OTP IC, Transfer Board and Config Card.	9, 37, 86 22, 81, 88 39 94 96
2.2	2017/02/24	1. Add NY8_ADC/COMP_COB. 2. Add NX1_ICE.	70 73
2.3	2016/05/26	1. Add NX1_Voice_Collector. 2. Modify OTP_Writer (Ver. C) / Multi-OTP_Writer operation code. 3. Add NY8-OTP_Writer (Ver..B) operation code. 4. Add blue NY8A/8B DIP18/28 Transfer Board. 5. Add blue NY8A/8B SOP18/28 Transfer Board. 6. Add blue NY8A/8B SSOP20/28 Transfer Board. 7. Add NY8B071 DIP/SOP14、NY8B071 SOP8、NY8A056 DIP/SOP18 /SSOP20 Config Card.	74 83 86 89 90 92 94, 96
2.4	2017/08/31	1. Add NY9TP OTP. 2. Add the description and flowchart of NY8L_ICE. 3. Update NX_Programmer (Ver. A) Operation code. 4. Add LQFP48 Transfer Boards. 5. Add NX11P22 LQFP48, NY8A054 DIP/SOP, NY9TP16 SOP8, NY9TP16 SOP16/SOP28/SSOP24, NX12P34/44/54/64 LQFP32, NX12P34/44/54/64 LQFP64 Config Card. 6. Update The Corresponding Table of OTP IC, Transfer Board and Config Card.	30 74, 74 91 97 - - -

Version	Date	Description	Page
2.5	2017/11/24	1. Update NY8L_ICE 2. Update NX_Programmer (Ver. A) Operation Code. 3. Update DIP8/DIP14/DIP18/DIP28 Transfer Board. 4. Update SOP8/SOP14/SOP16/SOP18/SOP24/SOP28 Transfer Board. 5. Update SSOP20/SSOP24/SSOP28 Transfer Board. 6. Add LQFP32 Transfer Board. 7. Update LQFP64 Transfer Board. 8. Update OTP_Writer (Ver. C) Config Card 9. Update The Corresponding Table of OTP IC, Transfer Board and Config Card and add NY8-OTP_Writer (Ver.B) Hardware Corresponding Table.	74 92 94 95 97 97 98 100 102, 104
2.6	2018/02/27	1. Update the error code table of NY8-OTP_Writer (Ver. B). 2. Update NX_Programmer (Ver. A) Operation Code. 3. Add SPI_Flash Converter Board. 4. Add NX11P21 SOP16 and SSOP24 config cards. 5. Add NY8B062x and NX1xPxx series to The Corresponding Table of OTP IC, Transfer Board and Config Card.	91 92 100 102 103
2.7	2018/05/31	1. Add NX1_VR_Test_Kit. 2. Add the description of NX_Programmer (Ver. A). 3. Update the description of ICE. 4. Add the description of NX1_Voice_Collector. 5. Add NY8L_FDB. 6. Modify NYx_ICE as Emulator. 7. Add NX1 Converter Board. 8. Add NX11M2x SOP8 and SOP16 config cards. 9. Add NX_Programmer (Ver. A) + NX1_Converter_Board (Ver. A) Hardware Corresponding Table.	10, 27 11 11 12 24, 90 71, 75 105 108 112
2.8	2018/08/30	1. Update NX1_FDB picture. 2. Add Multi-NX_Programmer_Writer. 3. Add NX1_COB. 4. Update NX1_ICE picture. 5. Update NX1_Voice_Collector picture. 6. Add NY9TS02 SOP8, NY8B072 DIP/SOP20, NX12P34/54/64 SSOP24 and NX12P34/54/64 LQFP48 config cards. 7. Update the Corresponding Table of OTP IC, Transfer Board and Config Card.	27 52 76 84 85 110 111

Version	Date	Description	Page
2.9	2018/12/07	1. Add NY6PxxxJB and NY9TSxxAB OTP COB. 2. Add the description of NX11M SPI Handler Board. 3. Update NX12P34/54/64 SSOP24 config cad and add NY6P085J SOP24, and NY5P085J SOP24 config card. 4. Update the Corresponding Table of OTP IC, Transfer Board and Config Card.	32, 34 103 109 110
3.0	2019/02/27	Add NY9UP08A SOP16 config card.	109
3.1	2019/05/31	1. Add NY5P186J SOP28 and NX12M5xA SOP16 config card. 2. Update the Corresponding Table of OTP IC, Transfer Board and Config Card.	112 112
3.2	2019/08/31	1. Add the descriptions and operation codes of Smart_Writer Ver. A. 2. Add NX12M5x SSOP24 config card, NY5P1K2/720/520J LQFP48 config card, NY6P345/185J SOP28 config card.	9, 48, 64 118, 125
3.3	2019/11/29	1. Add the description of Q-Link (Ver. A). 2. Add NY8BM72 SOP20 Config Card. 3. Update the Corresponding Table of OTP IC, Transfer Board and Config Card.	10, 74, 128 129
3.4	2020/03/26	1. Add operation code EF, FD and FE to Smart-Writer Ver. A. 2. Add Uni-Transfer Board column to OTP-Writer Ver.C Hardware Corresponding Table. 3. Add Uni-Transfer Board column to NY8-OTP_Writer Ver.B Hardware Corresponding Table. 4. Add Uni-Transfer Board column to NX_Programmer Ver. A Hardware Corresponding Table. 5. Add Uni-Transfer Board column to Smart-Writer Ver. A Hardware Corresponding Table.	11394 129 132 134 135
3.5	2020/06/05	1. Add Corresponding Table of NX_Programmer and IC Programming Interface. 2. Modify NY8-OTP_Writer Ver.B Operation Code. 3. Add NY8BM72 SOP16 Config Card. 4. Update and add NY8BM72 SOP16, NX13PxxAB Config Card to the Corresponding Table of OTP IC, Transfer Board and Config Card.	50 111 127 131

Version	Date	Description	Page
-	-	The Hardware Tool Appendix file was the separated chapter 6.8 from "Hardware Developing Tool user manual v3.6"	
3.6	2020/09/04	1. OTP_Writer (Ver. B) / OTP_Writer (Ver. C) / Multi-OTP_Writer / NX_Programmer / Smart_Writer Ver. A Transfer Board / Converter Board and Config Card information has been moved to the Hardware Tool (Appendix) file. 2. Add NY6P025A SOP14 Config Card (Please refer to the Hardware Tool (Appendix).	- -
3.7	2020/12/02	1. Remove the Ver. A and add Ver.B of Q-Link 2. Add E EPRON Error Code of NY8-OTP_Writer (Ver.B)	9, 69 104
3.8	2021/06/04	Add NY5+_FDB and its relevant description. Add the Pin function and IC series table.	17 50
3.9	2021/09/30	1. Modify typos. 2. Modify the descriptions of Table of NX_Programmer and IC Programming Interface 3. Add the pin definition of NX13FS_EVB. 4. Add operation code of NY8-OTP_Writer Ver.B. 5. Add operation error code of Smart_Writer Ver. A.	- 51 109 113 108
4.0	2022/03/08	1. Modify the of Smart_Writer Ver. A 2. Update the operation code of NY8-OTP_Writer Ver.B. 3. Update the operation code of Smart_Writer Ver. A.	54 113 138
4.1	2022/05/31	1. Update the picure of NX1_FDB Ver.C. 2. Add the descriptions of NX12/NX13FS51A_EVB. 3. Update the Pin function and IC series table of NX_Programmer Ver. A. 4. Update the Pin function and IC series table of Smart_Writer Ver. A. 5. Modify the Notice of Using Power for Development of Q-Link Ver.B. 6. Modify EPRON Error Code of NY8-OTP_Writer Ver.B.	27 27 51 54 79 116

Version	Date	Description	Page
4.2	2022/08/31	1. Reomve NY3M, NY3W, NY8L FDB 2. Remove OTP_Writer(B), OTP_Writer(C), 3. Remove NY8_OTP_Writer(A), Multi-OTP_Writer, Remove NY3L_Romter, NY8L_ICE(Old version) 4. Add the function definition and descriptions of MCU_Writer. 5. Modify the notice of using power for Q-Link Ver.B	- - - 45, 56, 71 61
4.3	2022/11/30	1. Add OTP/MTP type developing tool. 2. Add NX1xFSxxAB COB. 3. Add the notice of using writer for NY8-OTP_Writer Ver.B. 4. Add the notice of using writer for Smart_Writer Ver.A. 5. Add the notice of using writer for MCU_Writer Ver.A. 6. Update the error code table of NY8-OTP_Writer Ver.B, Smart-Writer Ver.A and MCU_Writer Ver.A.	7, 8 34 37 46 50 92, 97, 101
4.4	2023/05/31	1. Remove NY-Romter. 2. Remove NX1_VR_Test_Kit. 3. Remove Multi-NX_Programmer_Writer. 4. Remove NY3M_FDB. 5. Remove NY3W_FDB. 6. Add NX11FS23_EVB and NX12FMxx_EVB.	- - - - - 22
4.5	2023/08/31	Add the illustration and descriptions of NY8L_ICE.	77
4.6	2023/11/29	Update the description of NX11FS23A_EVB.	22
4.7	2024/08/26	1. Update the external programming connector and the pin definition of MCU_Writer. 2. Update the Q-Link power supply descriptions. 3. Add the descriptions of NY8L_ICE RFC pin.	48 60 77
4.8	2024/11/29	1. Update the external programming connector and the pin definition of Smart_Writer. 2. Update the external programming connector and the pin definition of MCU_Writer.	43 48
4.9	2025/05/23	Add pictures and function descriptions of NY-Link.	8, 62

Version	Date	Description	Page
5.0	2025/08/27	1. Modify serial of pin definition, and cable connection of NY-Link. 2. Add the illustration and descriptions of NY8_ICE Ver.B.	62 72