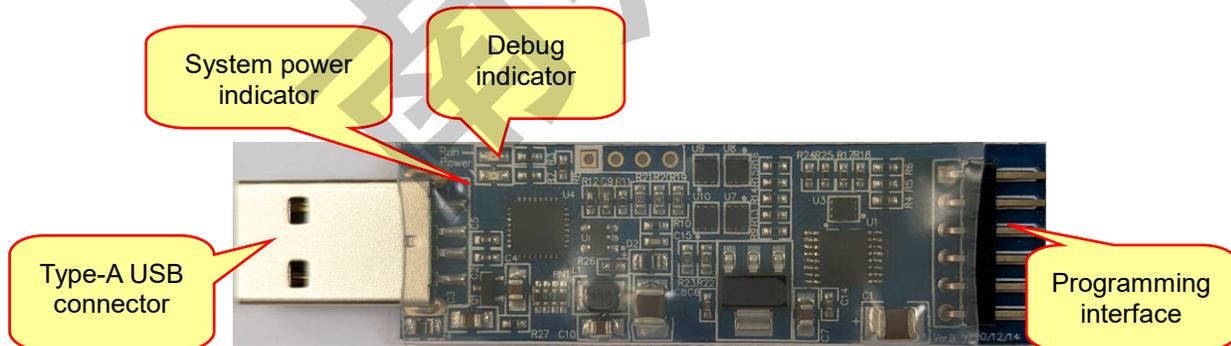


4 MTP Type Developing Tool

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.

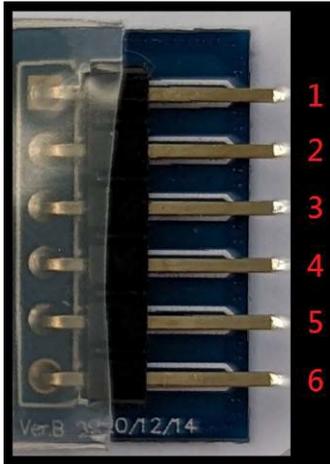
4.1 Q-Link

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



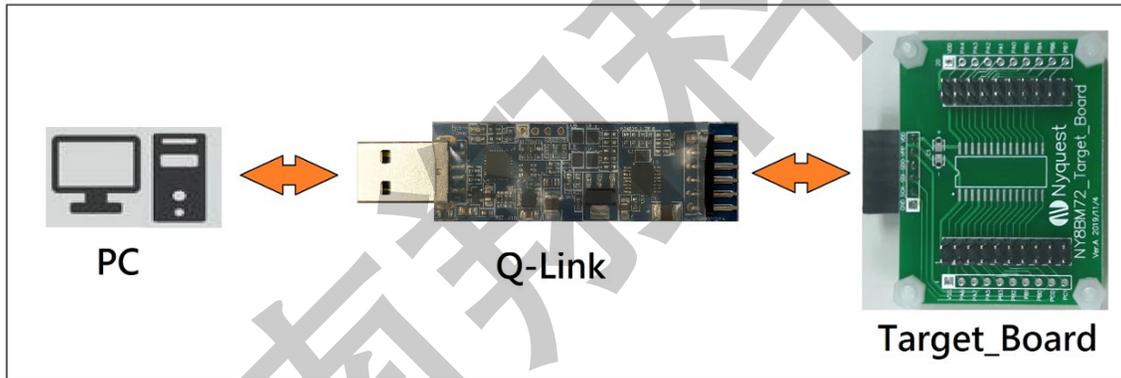
Q-Link Programming Pin Map

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:

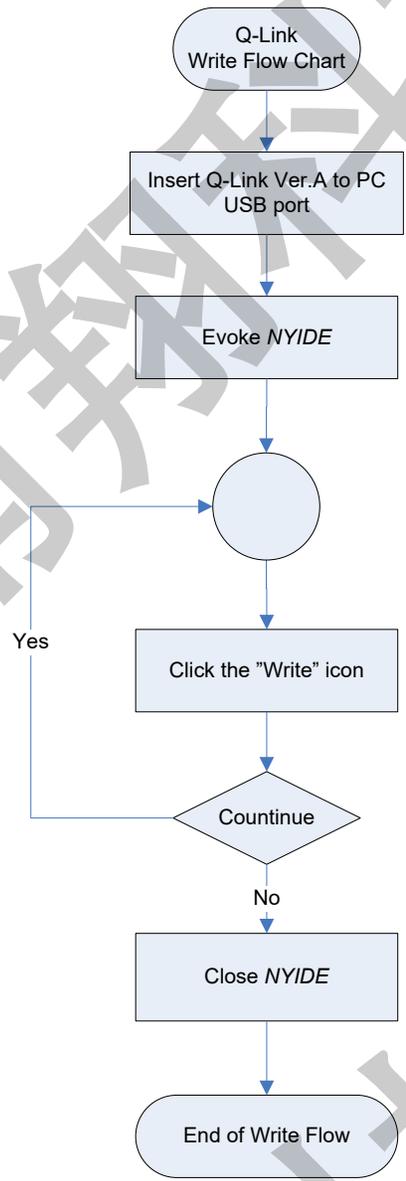
Step 1. Connect Q-Link to a computer via USB

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

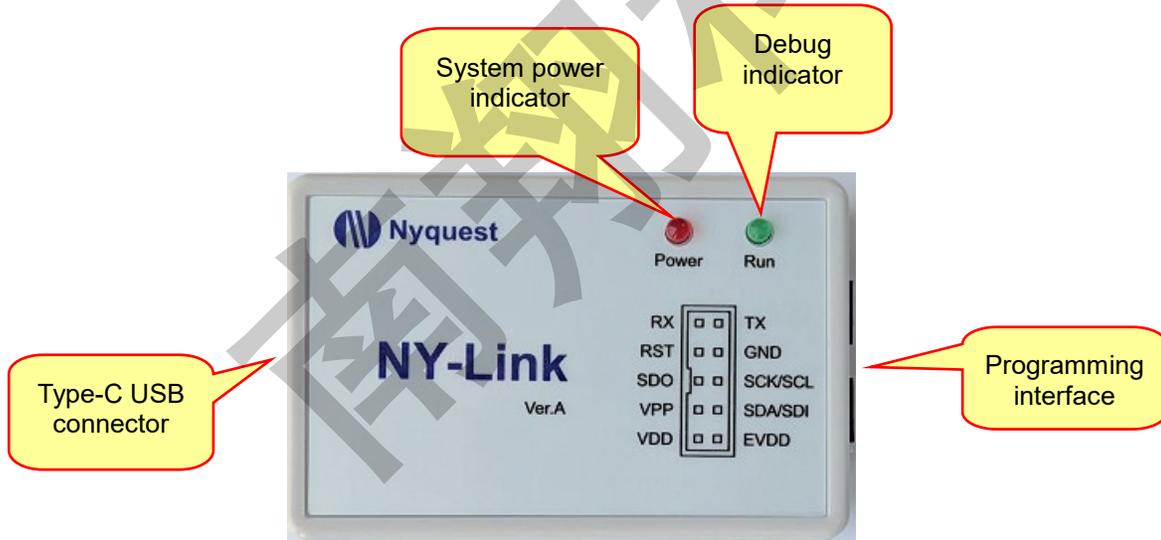
6. The current supplied by Q-Link is about 70mA. When the IC has an external circuit, the entire current consumption should not be too large, which will cause the voltage to be pulled down and cause NYIDE to display the VDD power supply abnormal message.

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.

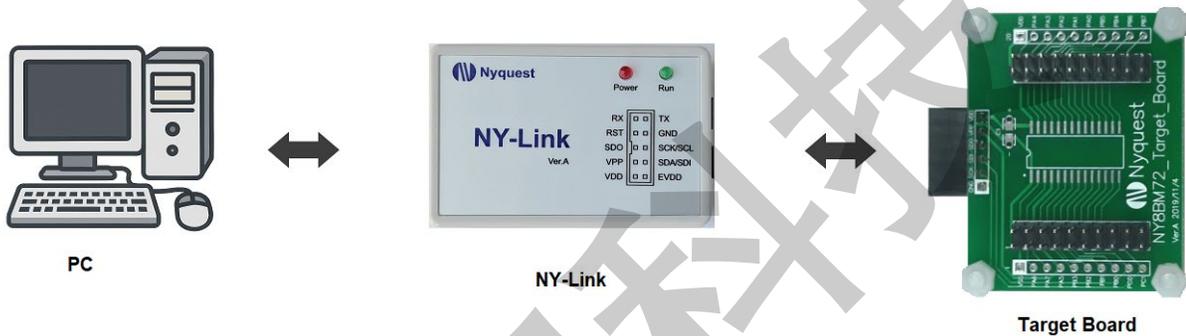
4.2.1 Definition and Description of Programming Interface



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

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 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.
3. **The pin of VPP or VDD cannot connect to GND otherwise NY-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 unstable programming that causes NYIDE to display error messages such as IC not found or data verification failed.
5. 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

