



Gang-Writer32-8 User's Guide

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1 General Overview

1.1 Gang-Writer32-8

The Gang-Writer32-8 main components are the G-ICPM32040 and G-ICPB00040. The G-ICPM32040 is also known as the programming module, is based on the e-Link32 Pro and integrates 4 e-link32 Pro ICP functions, namely ICP1~ICP4. The programming module is used together with the G-ICPB00040 which is the Base Board. They can implement a powerful function that programming 8 HT32 MCUs in parallel to meet the high efficiency requirements of mass production.

1.2 Main Features

- Compatible with the e-Link32 Pro ICP function
- Supports 8 sites parallel programming
- Support internal/external programming voltage
- Internal programming voltage: 3.3V default

1.3 Hardware Introduction

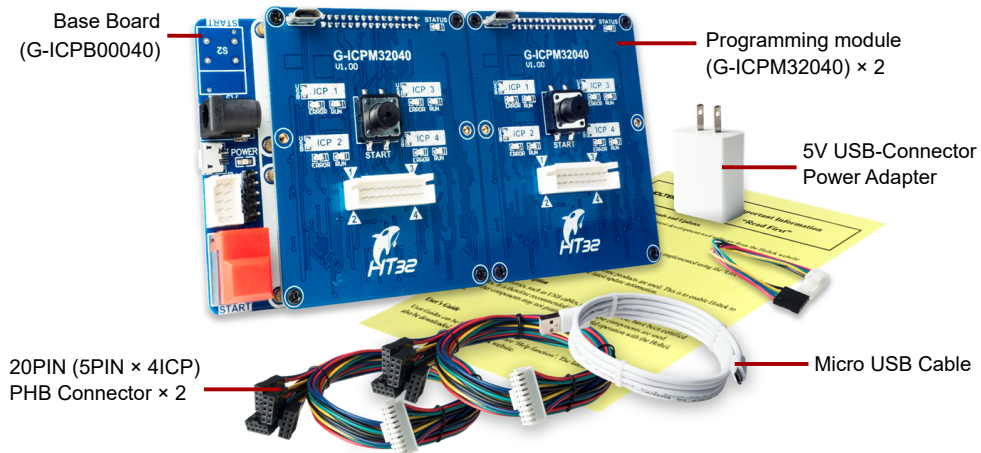


Figure 1 Gang-Writer32-8 Monolithic Components

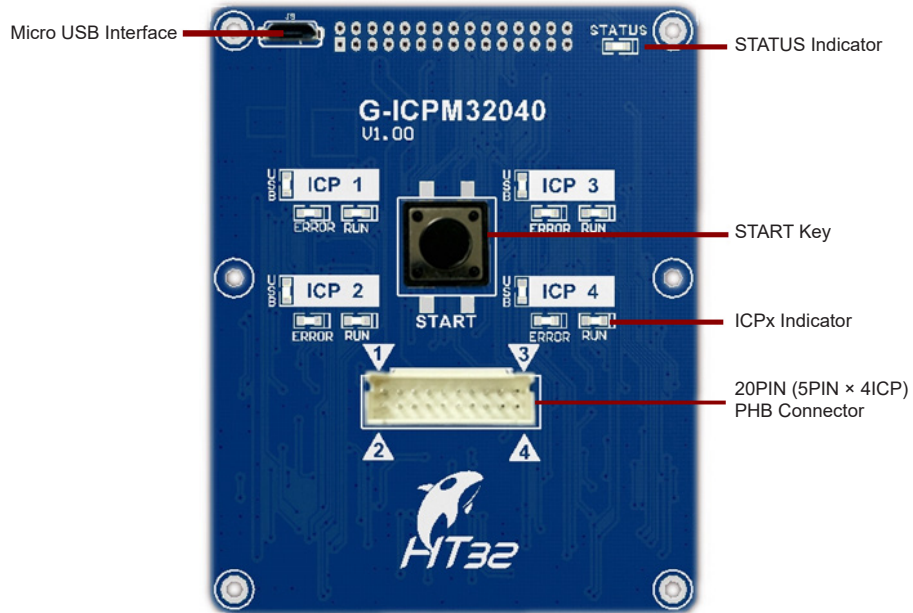


Figure 2 G-ICPM32040 – Programming Module

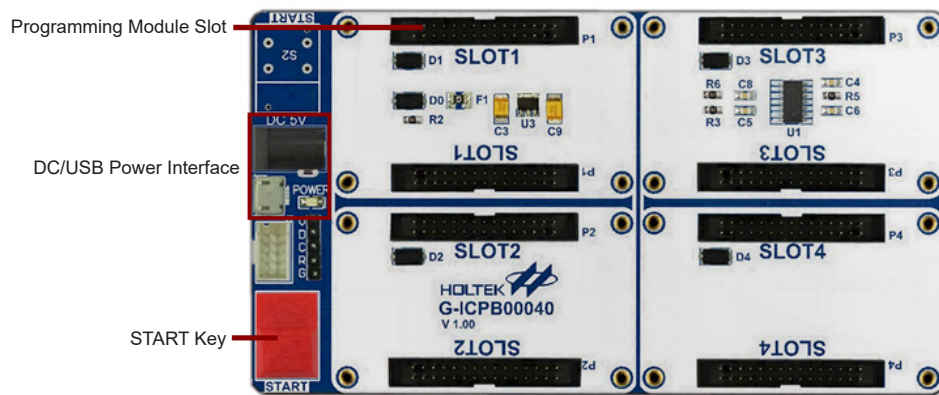


Figure 3 G-ICPB00040 (Base Board)

1.4 Software Introduction

- The e-Link32 Pro ICP tool download link is as follows:

<http://www.holtek.com/ice-software>

HT32 IAR Support Package (New release V1.10Beta06)	Integrated IAR development environment software for HT32 series MCUs		Supports : The earlier version of IAR EWARM
e-Link32 Pro ICP Tool (New release V0.22)	Programming software of e-Link32 Pro stand alone ICP tool	e-Link32 Pro	This tool includes firmware upgrade function. Supported Hardware: e-Link32 Pro e-Link32 Lite (Starter Kit on board ICE)
HT32 Virtual COM Driver (New release V1.10)	HT32 USB Virtual COM Driver setup program	e-Link32 Pro	The driver for e-Link32 Pro's Virtual COM and Firmware Library USB virtual COM example code ("\\example\USB\VirtualL_COM")

Figure 4 SW Download

- The “HT32_ICP_ToolUserManualv020” user manual path is as follows:

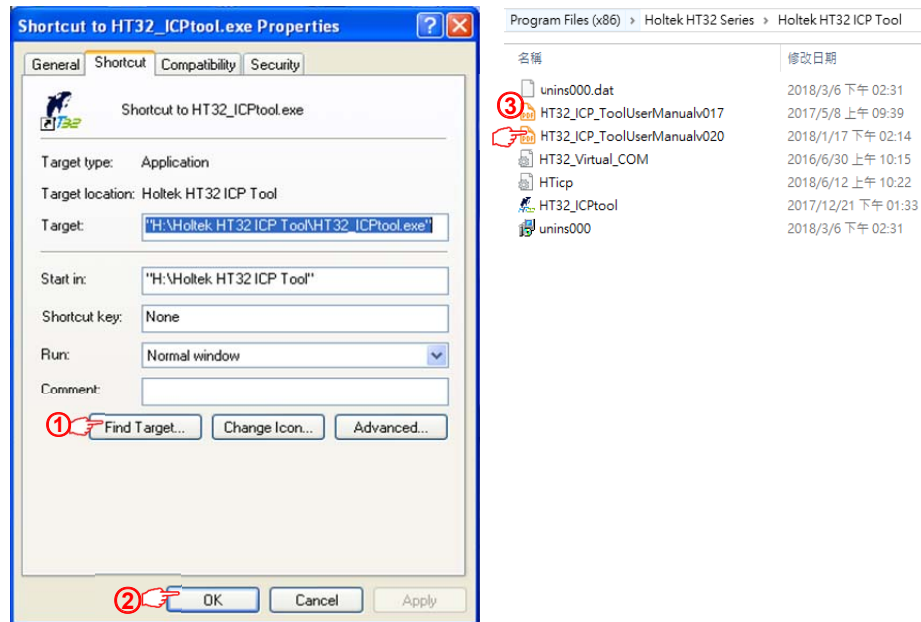


Figure 5 User Manual Path

2 Programming Module Independent Operation

2.1 Online Programming Mode

In this mode, each ICP1~ICP4 can be used as an independent e-link32 Pro. The corresponding USB LED for the selected ICPx will be illuminated, as shown in the following figure.

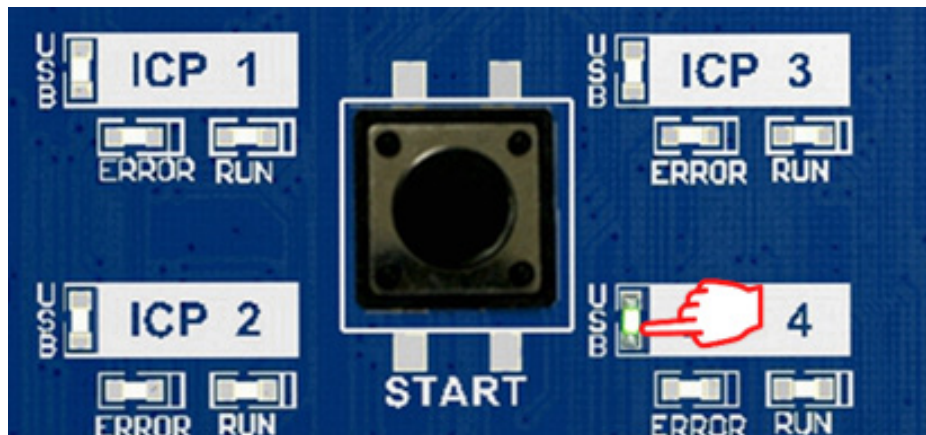


Figure 6 Select ICP4

The operation methods and usage are the same as the e-link32 Pro. Refer to the “HT32_ICP_ToolUserManualv020” for more details.

2.2 Offline Programming Mode

When the programming module downloads the offline programming data, users must download the ICP1~ICP4 offline data in one time. Refer to the “HT32_ICP_ToolUserManualv020” for the download operation details.

Detailed steps for downloading the offline programming data.

1. Connect the G-ICPM32040 to a PC via a USB cable. When the ICP1 USB indicator is on, ICP1 is in a downloadable state, as shown in the following figure.

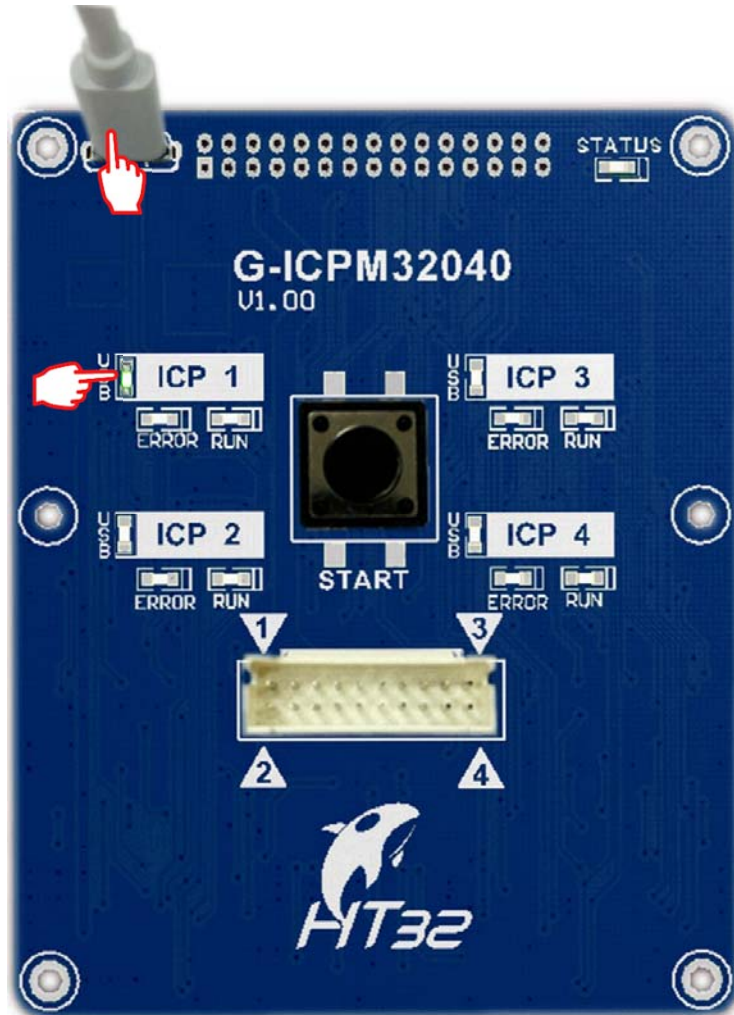


Figure 7

- Execute the HT32_ICP_Tool settings and click “Start”. A successful prompt will be generated at the lower left when the ICP1 offline data download has completed, as shown in the following figures.

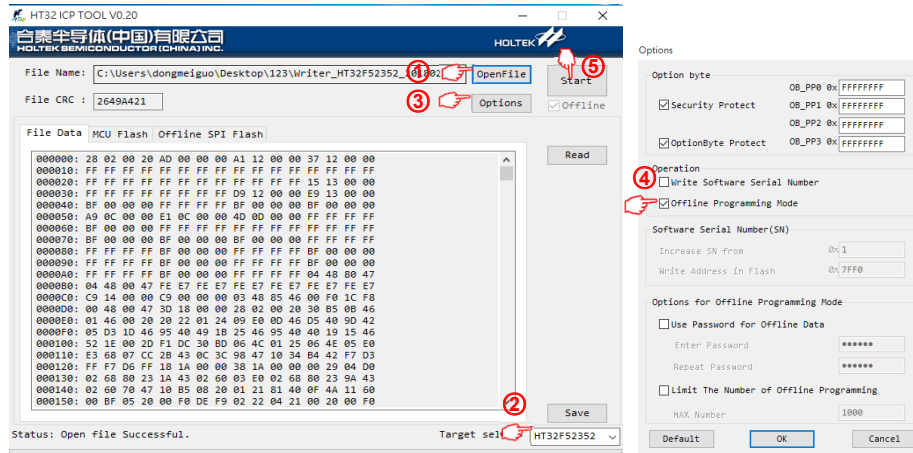


Figure 8

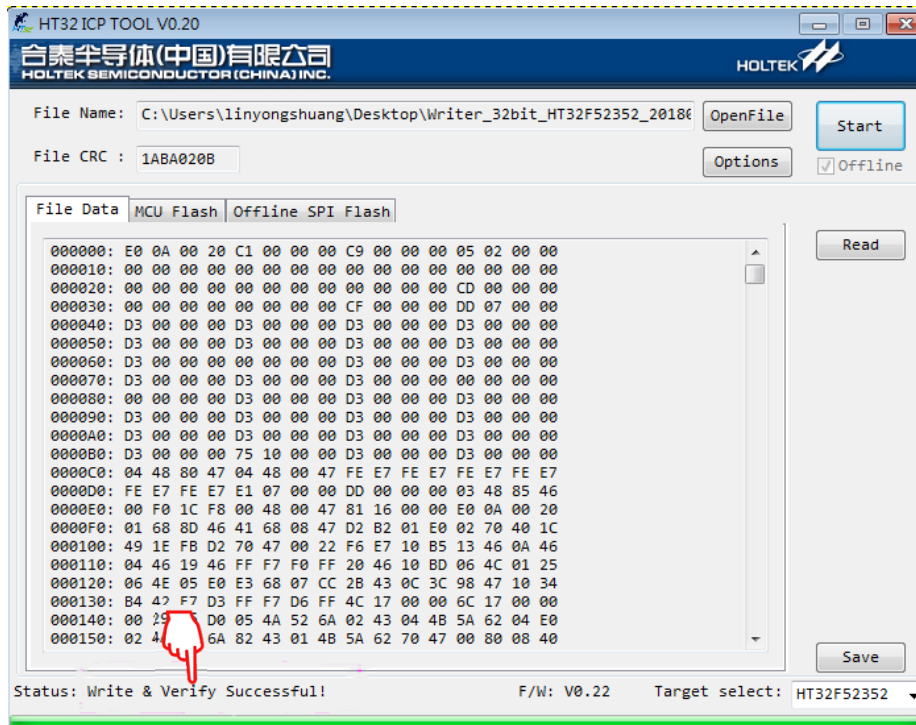


Figure 9

3. Press the START key on the board to switch to ICP2. ICP2 will be in a downloadable state when the ICP2 USB indicator is on, as shown in the following figure.

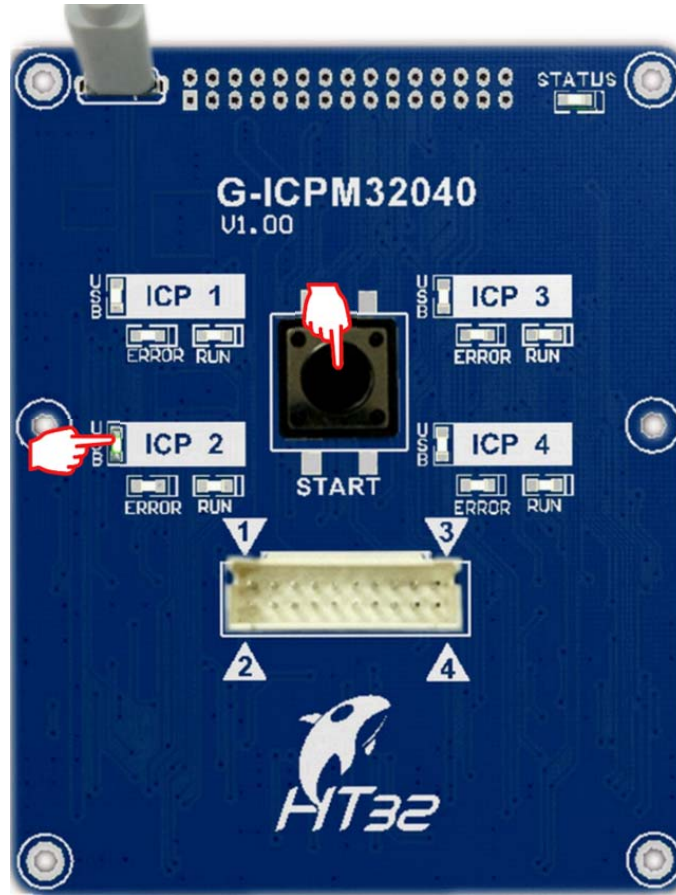


Figure 10

4. Repeat the above steps 2 and 3 until the ICP1~ICP4 offline data downloads are completed. In step 2, execute the software “Start” action only. The download has completed when the STATUS indicator on the board is on, as shown in the following figure.

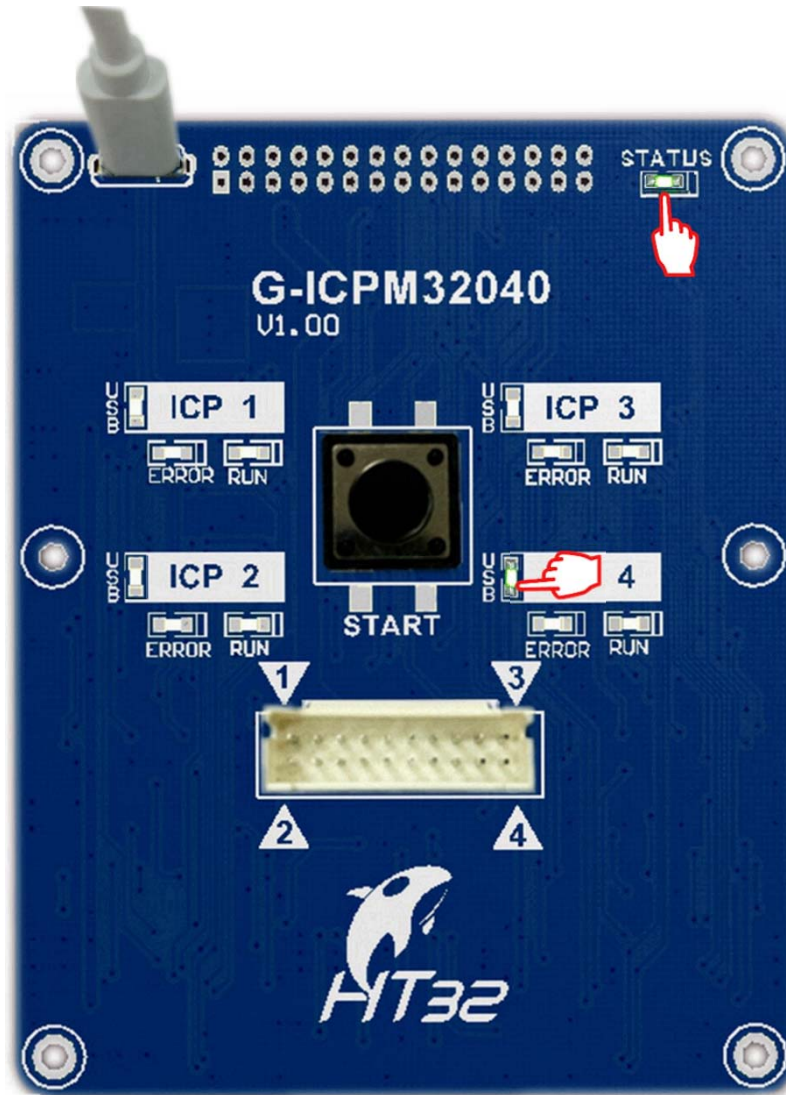


Figure 11

Offline Programming

Press the START key to implement several ICPs programming in parallel. The programming states can be observed by the corresponding LEDs. The LED state is the same as the e-Link32 Pro. Refer to the “HT32_ICP_ToolUserManualv020” for more details.

Either 2 or 4 sites parallel programming can be selected using the OPTION S/W settings according to the actual requirements, as shown in the following figure:

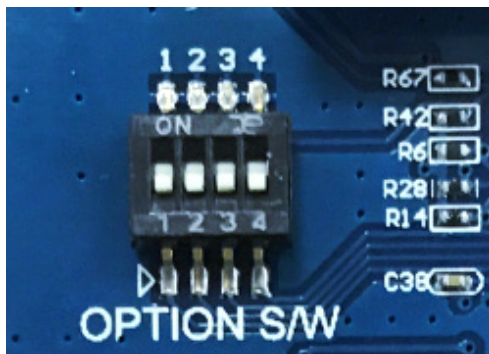


Figure 12 OPTION S/W

Switch1	Switch2	Site Settings
OFF	OFF	Enable the ICP1~ICP4 programming – factory default
ON	OFF	Enable the ICP1 and ICP2 programming
OFF	ON	Enable the ICP3 and ICP4 programming
ON	ON	Enable the ICP1 and ICP3 programming

Table 1 OPTION S/W Site Settings

2.3 Programming Power

- In offline programming, the USB power which is provided through a micro USB interface cannot have a D+/D- function. Otherwise, it will be recognized as downloading the offline programming data.
- In offline programming, the programming power can select as the internal power supply or the target board's own power supply, as shown in the following figure:

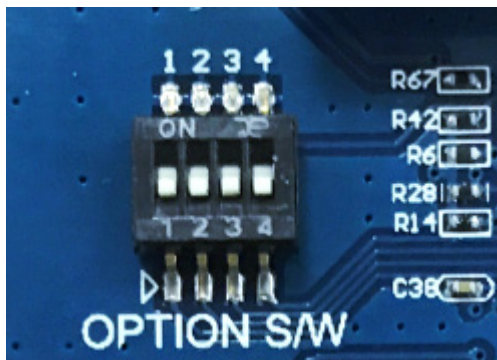


Figure 13 OPTION S/W

Switch3	Power Supply Way
OFF	Internal power supply, voltage is 3.3V – factory default
ON	Target board's own power supply

Table 2 Power Supply Setting

- On the programming module, the ICP1~ICP4 programming power are connected together. When the power supply is provided by the target board, the ICP1~ICP4 power supply voltage must be consistent.

3 Using the Programming Module together with the Base Board

In offline programming mode, using the programming module together with the base board can implement the programming of 8 HT32 MCUs in parallel. They can be combined freely according to the programming requirements as shown in the following figure:

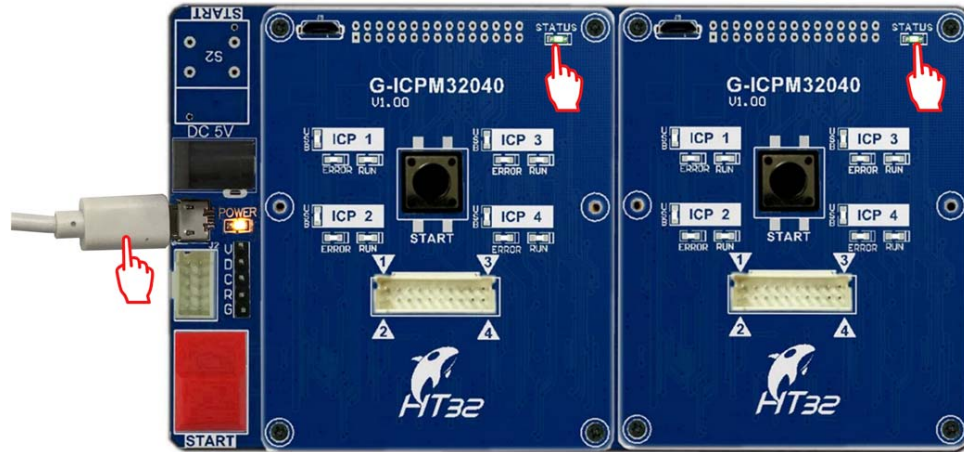


Figure 14 Program 8 HT32 MCUs in Parallel

For the programming module downloading the offline data, connect the programming module to the PC through a USB cable directly. It is not necessary to remove it from the base board, as shown in Figure 15. The download method is the same as “Detailed steps to download the offline programming data” in chapter 2.2.

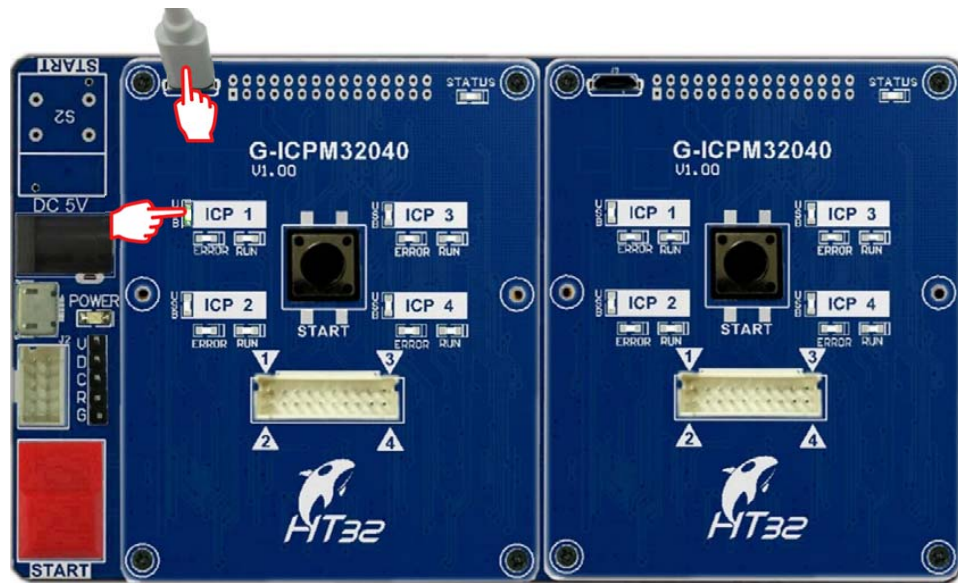


Figure 15

3.1 Offline Programming Voltage Setting

In the same way as an independent programming module, the offline programming voltage can be selected as an internal power supply or the target board's own power supply according to the actual requirements. Refer to Table 2 for more details.

3.2 Offline Programming

The programming module which has downloaded the offline programming data will be connected to the base board. After the power has been connected it can be observed that the STATUS indicator of each programming module will be on. At this point, the corresponding programming module is in the enable state.

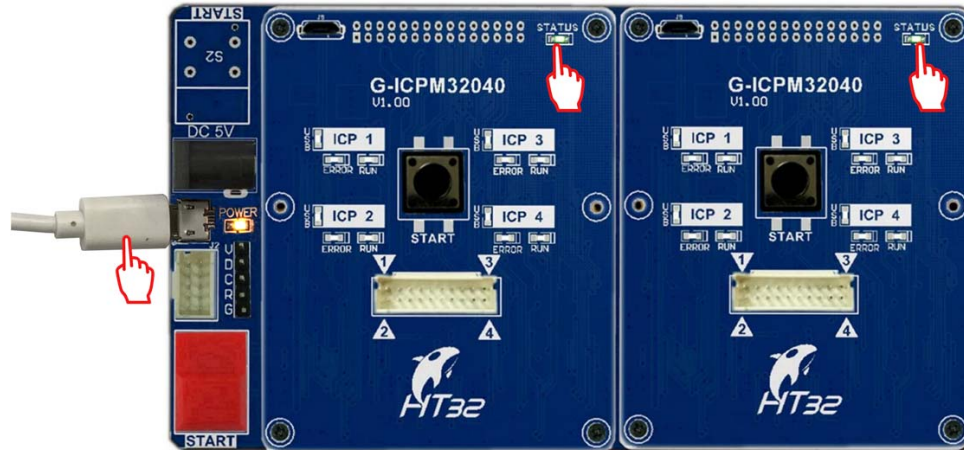


Figure 16 Ready Status

Press the red START key of the base board to perform single key programming. The programming results can be obtained by observing the ICPx LEDs on the corresponding programming module.

4 Extended Function

In the offline programming mode, the base board works together with 4 programming modules. Therefore up to 16 HT32 MCUs can be programmed in parallel as shown in Figure 17.

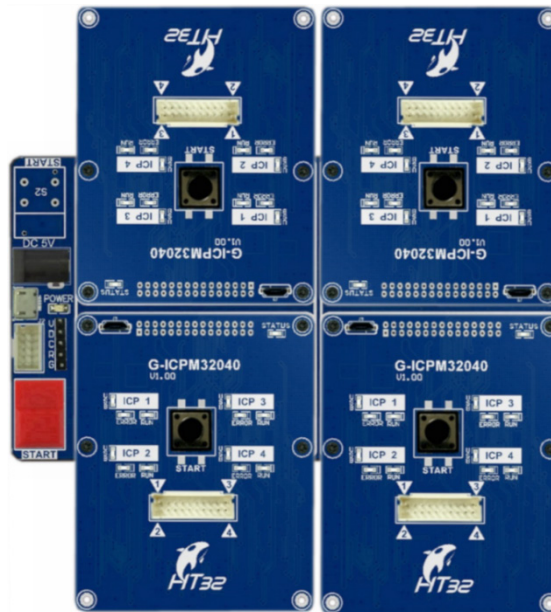


Figure 17 Programming 16 HT32 MCUs in Parallel

5 Considerations

- In the offline programming mode, it should be noted that the HT32 ICP Tool software must be set to be in the Offline Programming Mode when downloading the offline programming data.

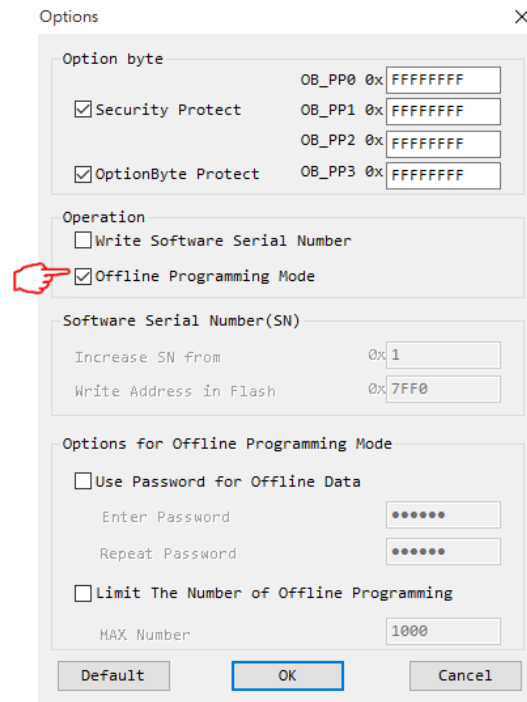


Figure 18 Software HT32 ICP Tool Option Setting

- During the offline programming data downloading, if the HT32 ICP Tool generates a prompt to update the firmware, users should update the ICP1~ICP4 firmware first. They must be updated at one time, after which the programming data can be downloaded.

Appendix A ICPx ERROR LED Flashing

ICPx ERROR LED flashing indicates that the offline programming failed, the error may result from the following factors:

- Downloading the offline programming data failed.
- During the offline programming data downloading, the selected MCU is not consistent with the current target board MCU.
- A poor contact or connection error occurred between the target board and the ICPx. Refer to Table 5 for the 20PIN (5PIN×4 ICP) PHB connector pin definitions.
- The OPTION S/W Switch3 of programming module is set to select an external power supply but no external power supply is provided to the target board.

Appendix B STATUS Indicator Status

Programming Mode	STATUS Indicator	Description
Online Programming	STATUS indicator is on	ICP1~ICP4 are programmed successfully
Offline Programming	STATUS indicator is on	1. Offline programming can be implemented 2. Offline programming is successful
	Flash once, off, flash once, off,	(cycle repeated) ICP1~ICP4 offline data downloads have not been completed in one time
	Flash twice, off, flash twice, off,	(cycle repeated) An internal power failure or a power supply conflict occurred
	Flash 3 times, off, flash 3 times, off,	(cycle repeated) Offline programming failed

Table 4 STATUS Indicator

Appendix C 20PIN (5PIN×4ICP) PHB Connector



Figure 19 20PIN (5PIN×4ICP) PHB Connector





	VDD1	SWDIO1	SWCLK1	RST1	GND1	GND3	RST3	SWCLK3	SWDIO3	VDD3	
	VDD2	SWDIO2	SWCLK2	RST2	GND2	GND4	RST4	SWCLK4	SWDIO4	VDD4	

Table 5 20PIN (5PIN×4ICP) PHB Connector

Appendix D G-ICPB00040 (Base Board) External Keys

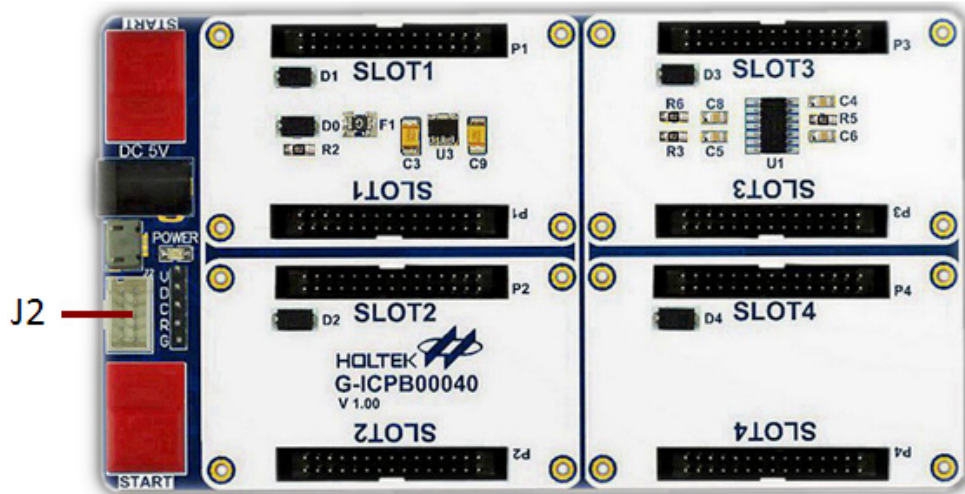


Figure 20 J2 Explanatory Chart

PIN1: GND	PIN2: The external key can enable the SLOT1~SLOT4 programming at the same time
PIN3: GND	PIN4: The external key can enable the SLOT1 and SLOT3 programming at the same time
PIN5: GND	PIN6: The external key can enable the SLOT1 and SLOT3 programming at the same time
PIN7: GND	PIN8: The external key can enable the SLOT2 and SLOT4 programming at the same time
PIN9: GND	PIN10: The external key can enable the SLOT2 and SLOT4 programming at the same time

Table 6 J2 Pins

Appendix E Single Board PCB or SOCKET Package Programming Application Diagram

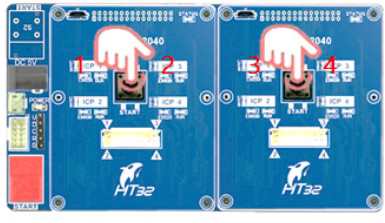




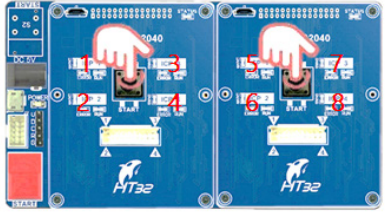








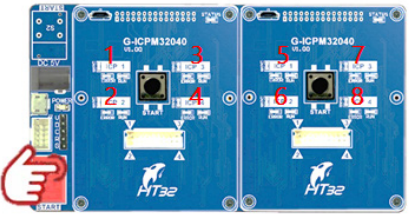








	Single Board PCB or SOCKET Package Programming Application Diagram	Programming Method Combination		Programming Method
Two keys operation		 	 	2-site in parallel
Two keys operation		 	     	4-site in parallel
One key operation		 	     	8-site in parallel

Figure 21 Application Explanatory Chart

Appendix F Merge Board PCB Programming Applications

Merge Board Programming Application Diagram		Merge Board Type		Programming Method
One row merge board			1×4	4-site in parallel
Two rows merge board			2×3	6-site in parallel
			2×4	8-site in parallel
Four rows merge board			4×3	12-site in parallel
			4×4	16-site in parallel

Figure 22 Application Explanatory Chart

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