

megawin

OCDM0Plus_MLink

User Manual

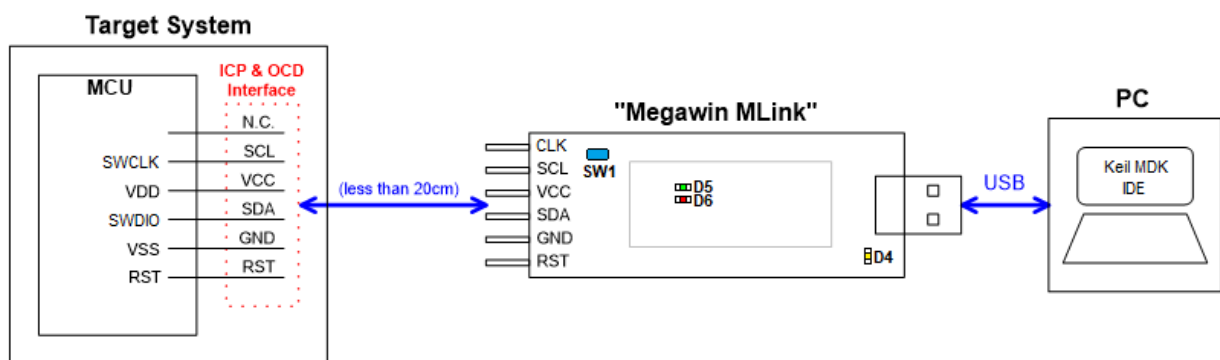
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1. Introduction

OCDM0Plus_MLink is an ICE tool used by megawin in Keil MDK. It supports only Cortex®-M0+ series chips of megawin. This development kit provides OCD (On-Chip-Debug) real-time debugging function. In addition, the "ICPM0Plus_Programmer.exe" provided in the package is a software designed for megawin's MLink. Users can update the application code under the software tool without removing the mounted MCU chip from the actual end product. In addition, because the programming data to be programmed to the target can be saved in the non-volatile storage of MLink, this stand-alone programmer is able to work without host (PC) intervention. This feature is especially useful in the field without a PC. Users only need to reserve 5 pins such as SWDIO, SWCLK, VCC, GND and RST to connect to MLink.

PS. The VCC pin of MLink does not provide power to the target board, the users need to provide the power by himself.



(Figure 1)

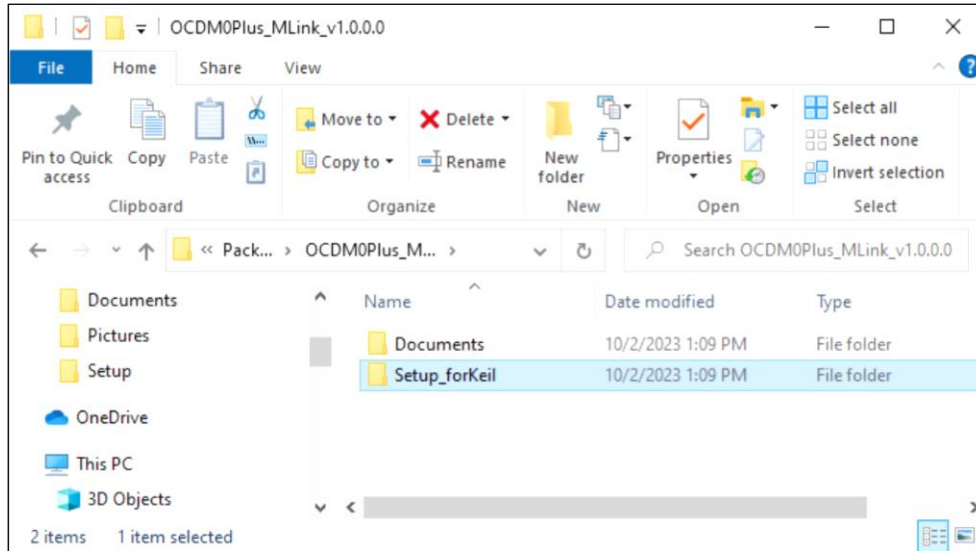
Light display	Always on	Always off	Flashing
D4	USB connection is normal	USB connection is not normal*1	
D5	1. Device initialization is normal 2. Programming the result is Pass		Programming in offline mode
D6	1. Device initialization is not normal*2 2. Programming the result is Fail		Programming in offline mode

PS1. When the USB connection is not normal, please check whether the power supply is normal and whether the system has recognized the device.

PS2. The device initialization is abnormal, indicating that the offline mode content is incorrect. Please set up the offline mode again.

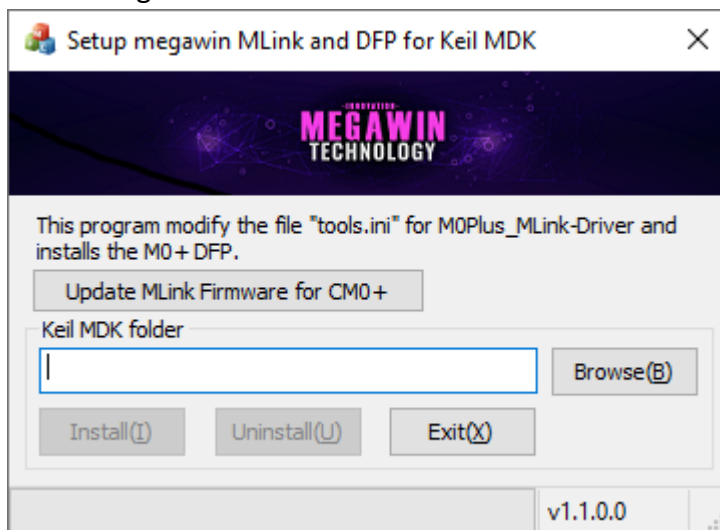
2. Setup MLink and Pack for Keil MDK

2.1. Install the package , there are some folders as figure 2.



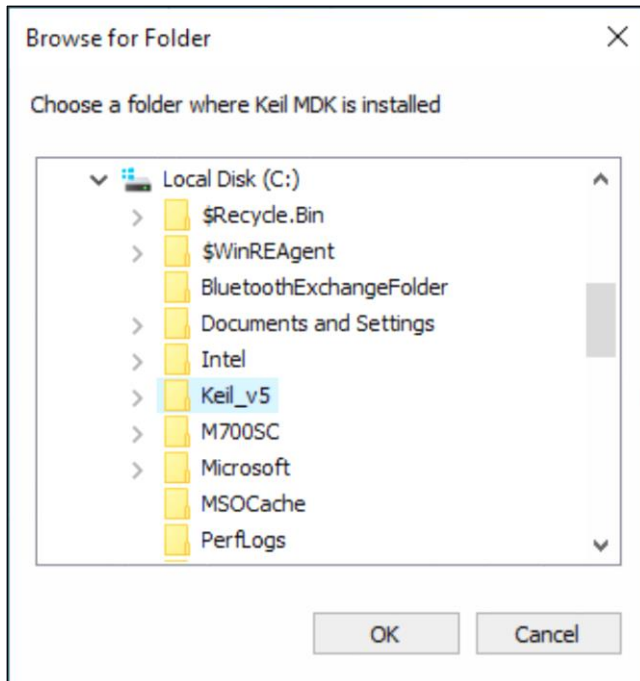
(Figure 2)

2.2. Please execute the “SetupMLinkforKeilMDK.exe” in “Setup_forKeil”, the program will show as figure 3.

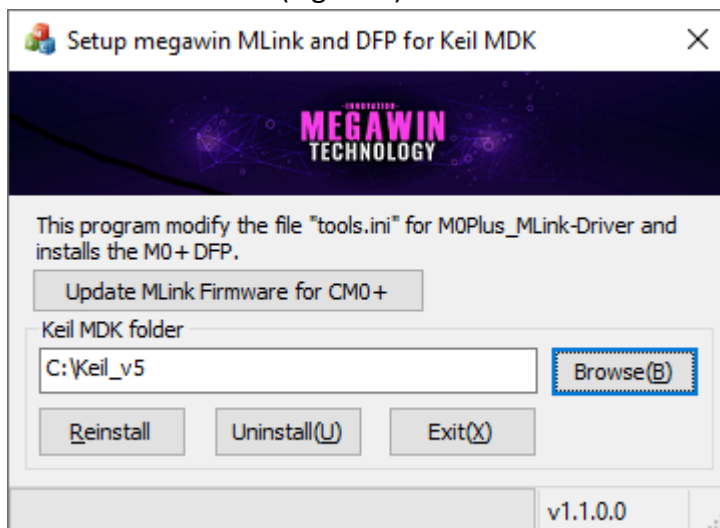


(Figure 3)

2.3. Click the **“Browse”** button to select the root directory of Keil MDK (only available for MDK4 and MDK5) as figure 4 and click **“OK”**, then it will be as figure 5.

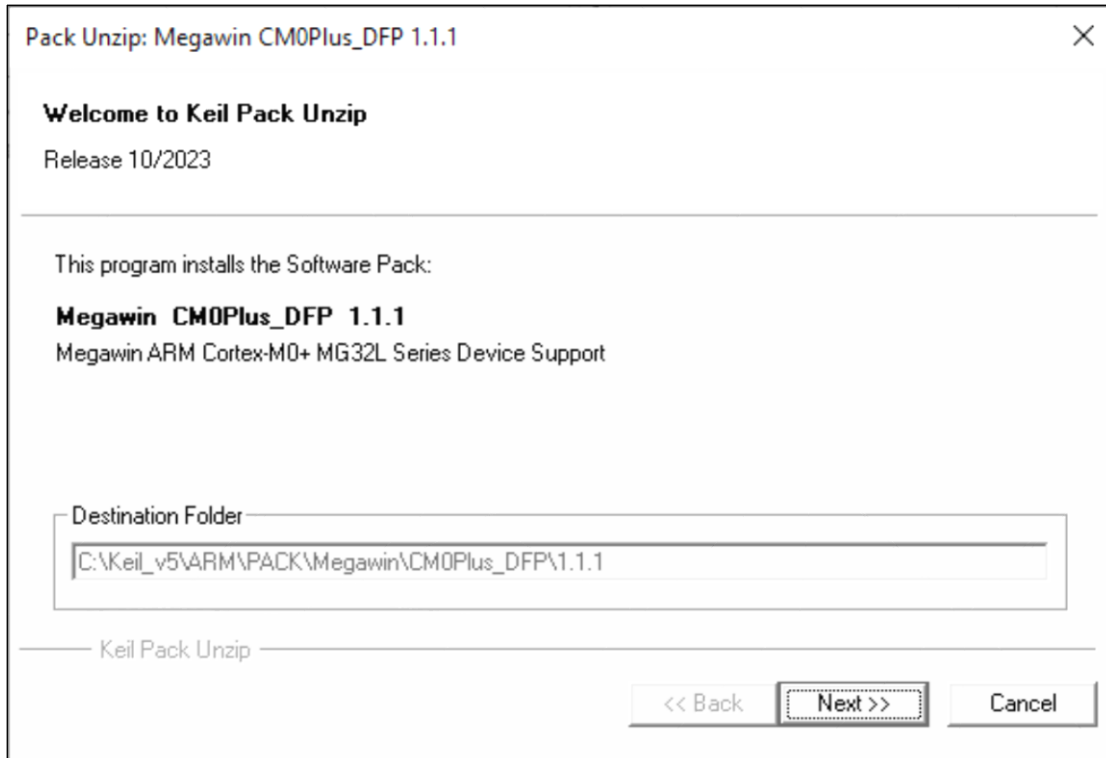


(Figure 4)



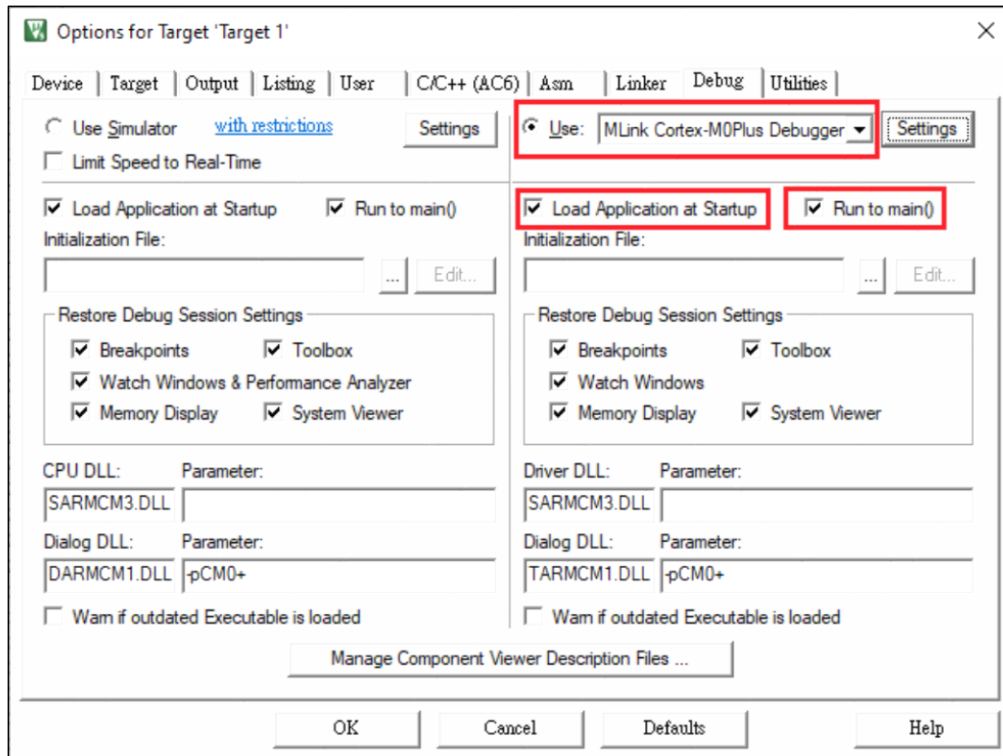
(Figure 5)

2.4. Click **“Install”** button, the application will add configuration in the file of **“tools.ini”** and trigger the **“Packunzip.exe”** to install the pack file as figure 6.



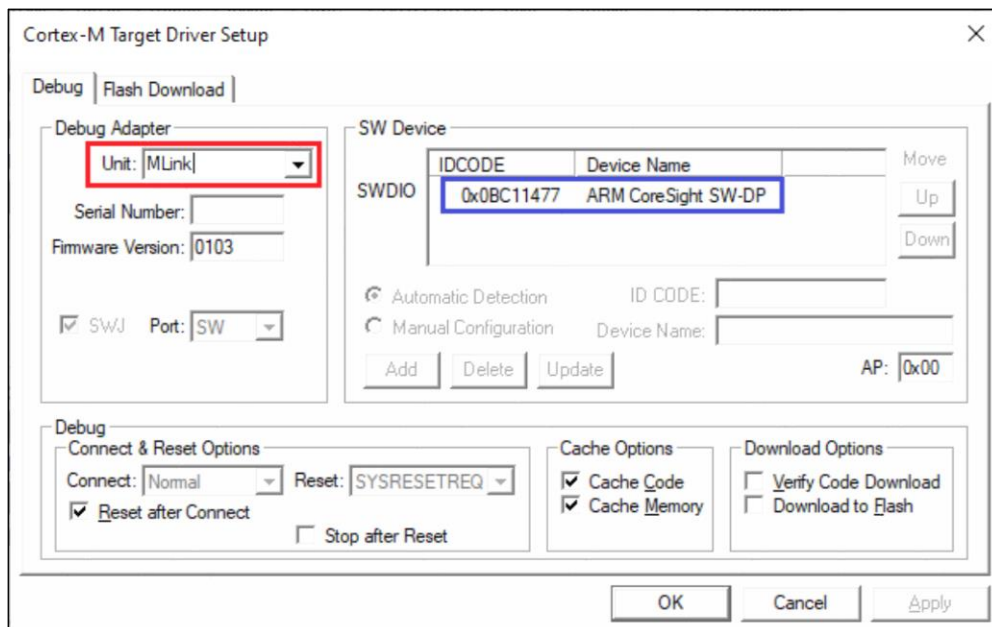
(Figure 6)

- 2.5. Click **“Next”** button, when it is completed, click **“Finish”** to close the dialog.
- 2.6. Click **“Exit”** to finish the install procedure.
- 2.7. Execute **“UV4.exe”** and open the sample project **“GPIO_IOToggle”**
- 2.8. Click the menu of **“Project”** and select **“Options for Target ‘Target 1’...”**.
- 2.9. Select the **“Debug”** tag as figure 7.
 - 2.9.1. Select **“MLink Cortex-M0Plus Debugger”**
 - 2.9.2. Check **“Load Application at Startup”**.
 - 2.9.3. Check **“Run to main()”**.



(Figure 7)

2.10. Reference to figure 7, click the “**Setting**” button, another dialog will show as figure 8. Configure the debug adapter as figure 8. If the hardware are working, there will be a SW Device shows in list control on the right side of the dialog.



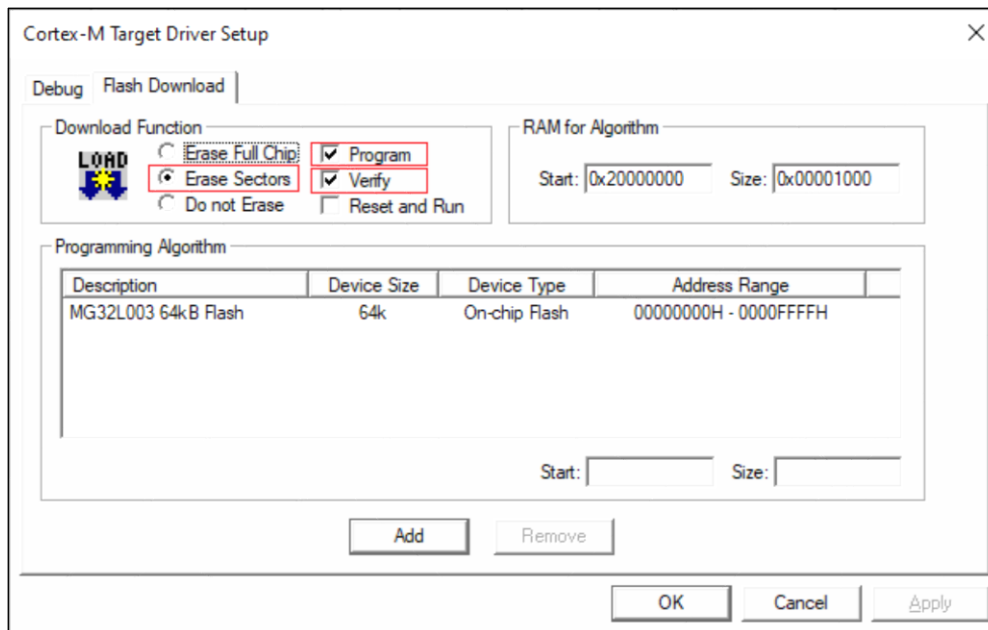
(Figure 8)

2.11. Click the tag of “Flash Download” as figure 9.

2.11.1. Click “Erase Sectors”

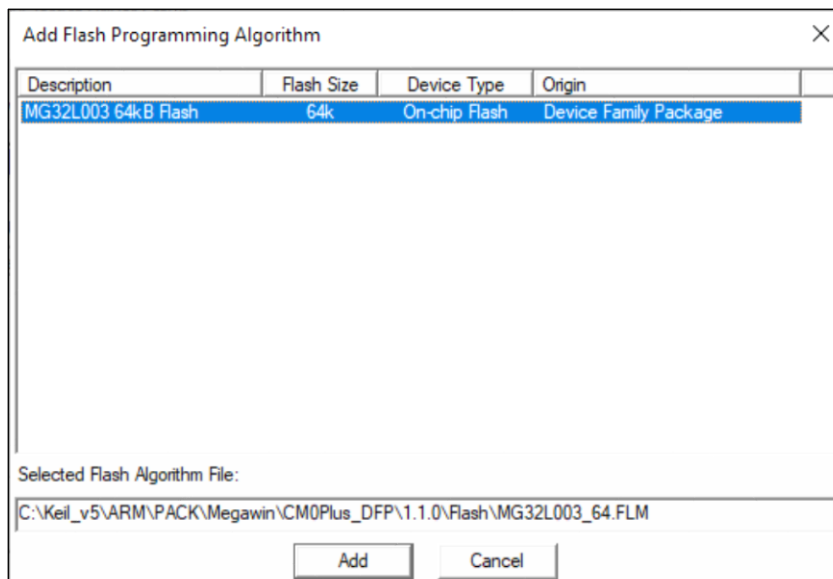
2.11.2. Check “Program” and “Verify”

2.11.3. Click “OK” button



(Figure 9)

If program algorithm is not showed as figure 9, please click “Add” to select the flash programming algorithm as figure 10



(Figure 10)

2.12. Rebuild the sample project “GPIO_IOToggle”

2.13. Click the menu of “Flash” and select “Download”.

2.14. Start to debug the project.

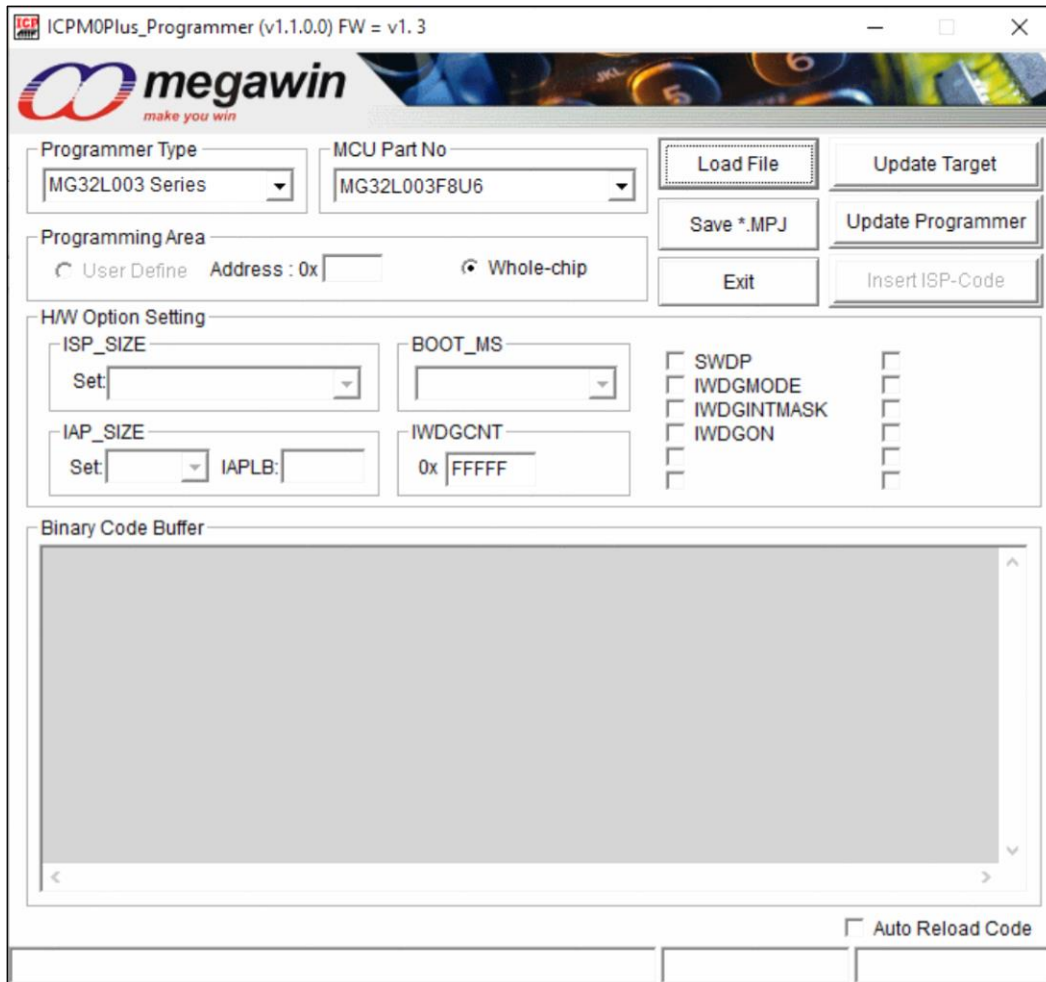
Note 1 : Before using MLink at the first time. Please execute “**ICPM0Plus_Programmer.exe**” to update the firmware of MLink

Note 2 : When the chip is locked, we can’t run in debug mode with MLink in Keil IDE. Please execute “**ICPM0Plus_Programmer.exe**” and click “**Update Target**” to unlock the chip.

3. Update Programmer

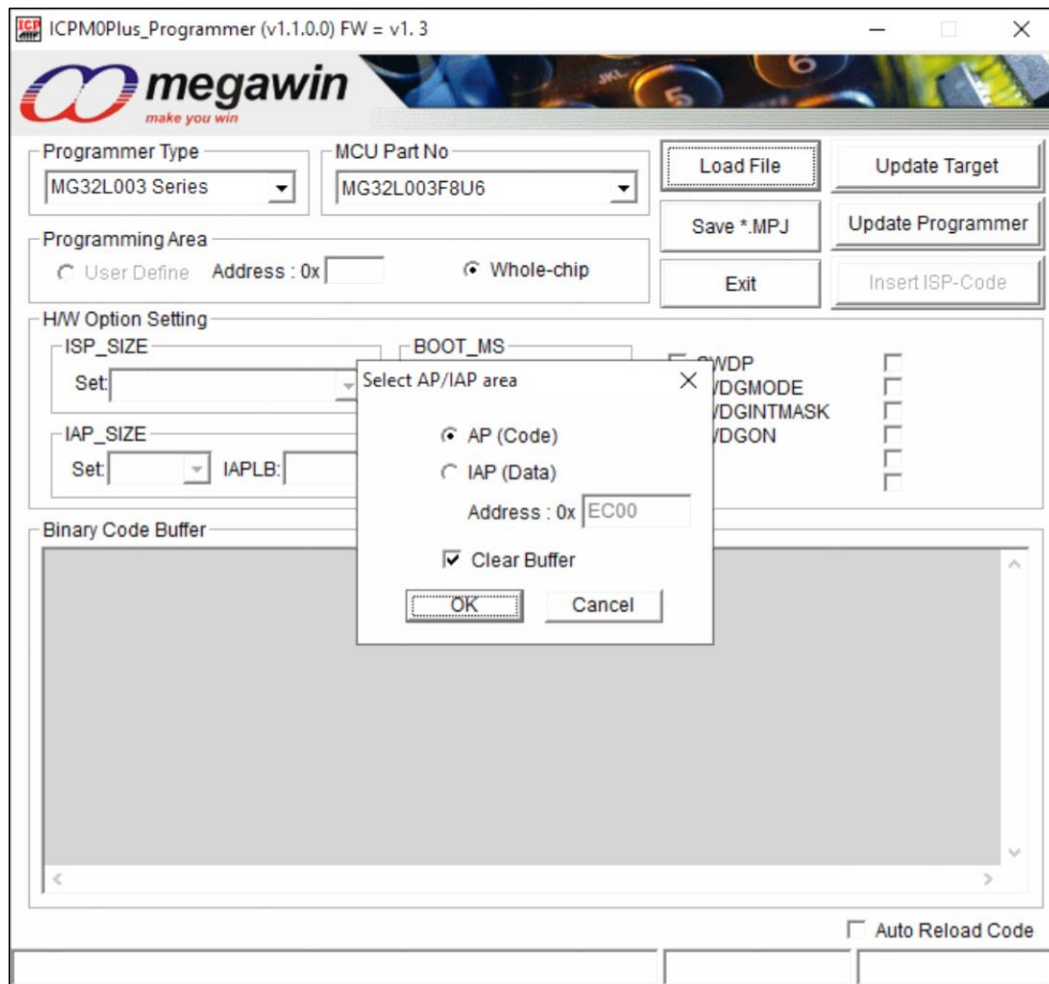
The following figure shows the graphic user interface of the PC-site application program. The following sections will demonstrate how this tool can be used very easily.

Step 1: Choose a “MCU Part No”.



(Figure 11)

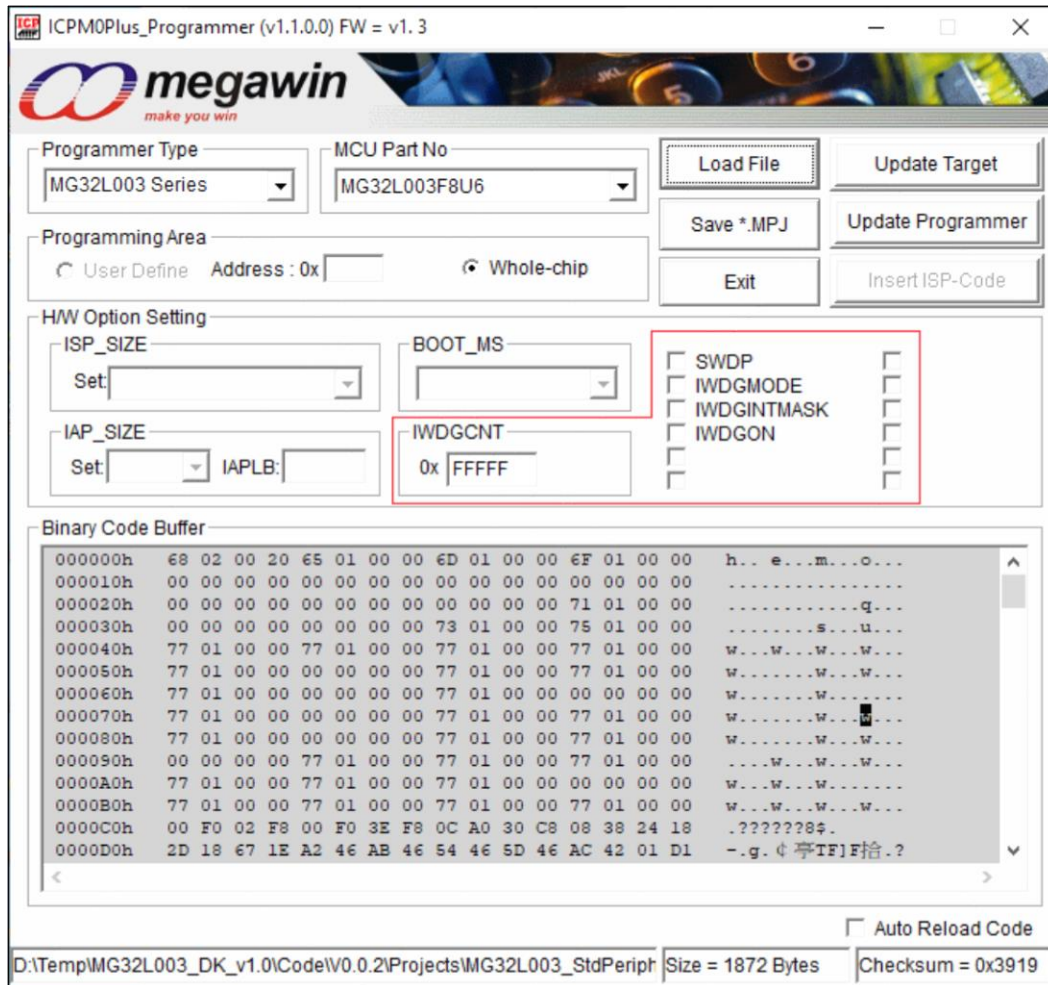
Step 2 : Click “Load File” and choose loading AP(Code) or IAP(Data). “Load File” can be clicked repeatedly to load different files. While loading IAP(Data), user have to key in address. HEX and BIN data formats are supported for file loading.



(Figure 12)

Step 3: H/W Option setting

The hardware option defines the chip default behavior those are not volatile after power off. For details of the hardware options, please refer to user guide.



ICPM0Plus_Programmer (v1.1.0.0) FW = v1.3

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Programmer Type: MG32L003 Series
MCU Part No: MG32L003F8U6

Load File
Update Target
Save *.MPJ
Update Programmer
Exit
Insert ISP-Code

Programming Area
User Define Address: 0x
Whole-chip

H/W Option Setting

ISP_SIZE: Set
BOOT_MS:
IAP_SIZE: Set
IAPLB:
IWDGCNT: 0x FFFF

SWDP
IWDGMODE
IWDGINTMASK
IWDGON

Binary Code Buffer

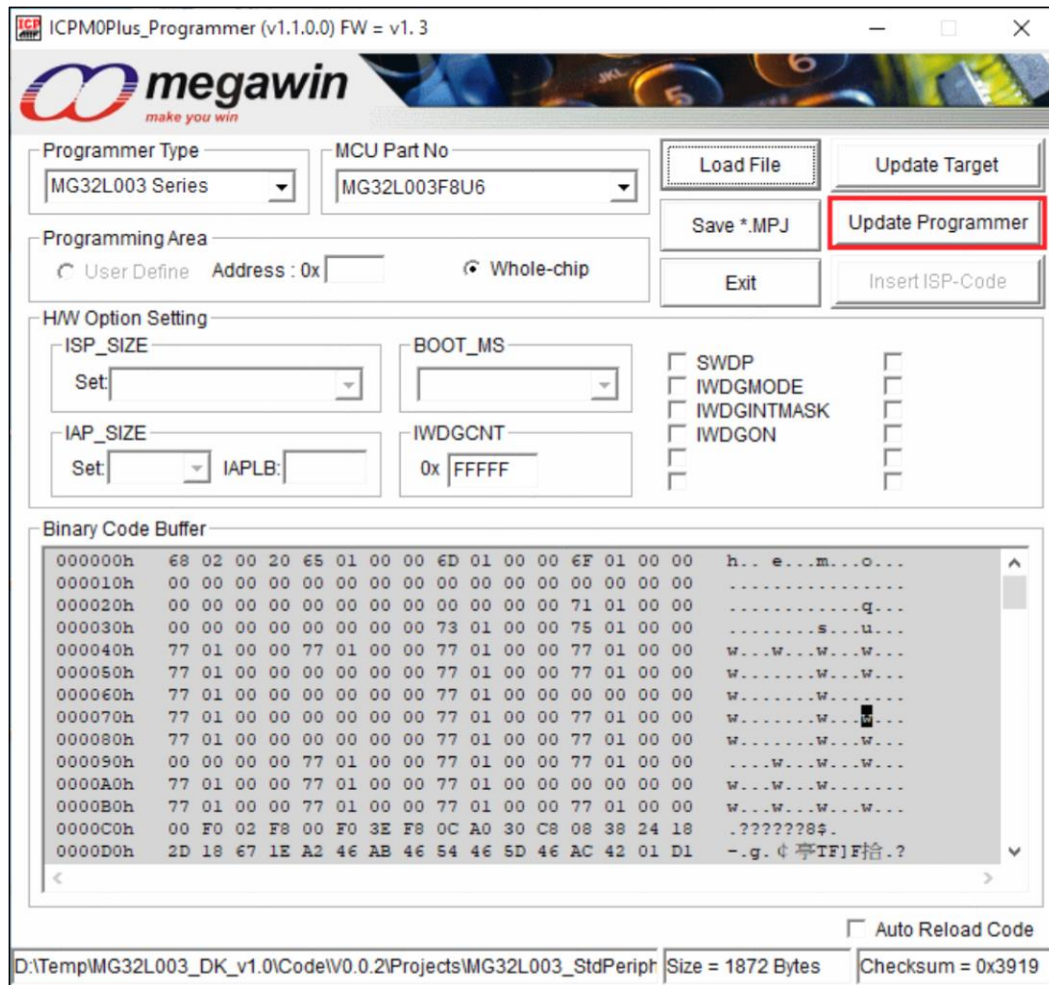
000000h	68 02 00 20 65 01 00 00 6D 01 00 00 6F 01 00 00	h..e...m...o...
000010h	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000020h	00 00 00 00 00 00 00 00 00 00 00 00 71 01 00 00q...
000030h	00 00 00 00 00 00 00 00 73 01 00 00 75 01 00 00s...u...
000040h	77 01 00 00 77 01 00 00 77 01 00 00 77 01 00 00	w...w...w...w...
000050h	77 01 00 00 00 00 00 00 77 01 00 00 77 01 00 00	w.....w...w...
000060h	77 01 00 00 00 00 00 00 77 01 00 00 00 00 00 00	w.....w.....
000070h	77 01 00 00 00 00 00 00 77 01 00 00 77 01 00 00	w.....w...[]...
000080h	77 01 00 00 00 00 00 00 77 01 00 00 77 01 00 00	w.....w...w...
000090h	00 00 00 00 77 01 00 00 77 01 00 00 77 01 00 00	...w...w...w...
0000A0h	77 01 00 00 77 01 00 00 77 01 00 00 00 00 00 00	w...w...w.....
0000B0h	77 01 00 00 77 01 00 00 77 01 00 00 77 01 00 00	w...w...w...w...
0000C0h	00 F0 02 F8 00 F0 3E F8 0C A0 30 C8 08 38 24 18	.??????8\$.
0000D0h	2D 18 67 1E A2 46 AB 46 54 46 5D 46 AC 42 01 D1	-.g. [] 亭TF]F拾.?

Auto Reload Code

D:\Temp\MG32L003_DK_v1.0\Code\W0.0.2\Projects\MG32L003_StdPeriph Size = 1872 Bytes Checksum = 0x3919

(Figure 13)

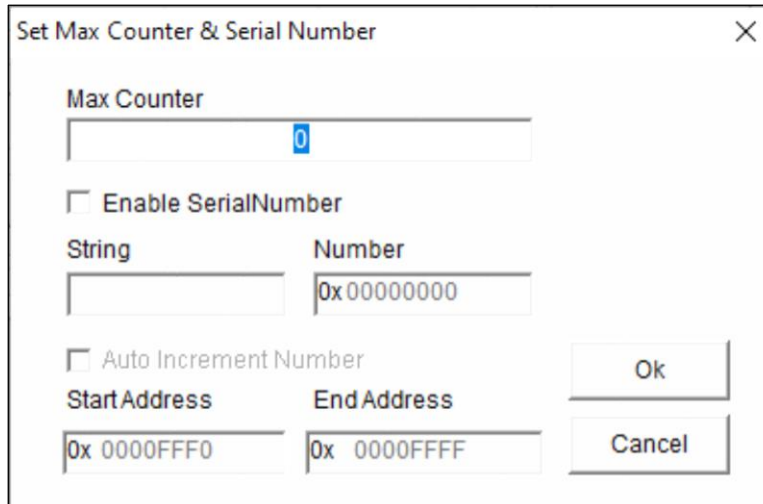
Step 4: Click “Update Programmer” to download programming data to the MLink.



(Figure 14)

Step 5: Setup “Max Counter” and “Serial Number”.

The “Max Counter” will be used to limit the number of off-line programming. The “Serial Number” will be programmed along with the code. If the function is not needed, just press “OK” to update the MLink.



(Figure 15)

How to user the Serial Number:

- (1) Enable the Serial Number function and totally 16 bytes. (12 bytes for **String** and 4 bytes for **Number**) will be used.
- (2) Totally 12 bytes for the **String** and it could be used for manufactory or product string
- (3) Totally 4 bytes for the **Number** and the value could be from 0x00000000 to 0xFFFFFFFF.
- (4) The Number (as set in step 3) will be automatically added one when finish the “Download”.
- (5) **Start Address** for the Serial Number. It is limited from the chip size minus sixteen, please make sure this range from start to end is unused.

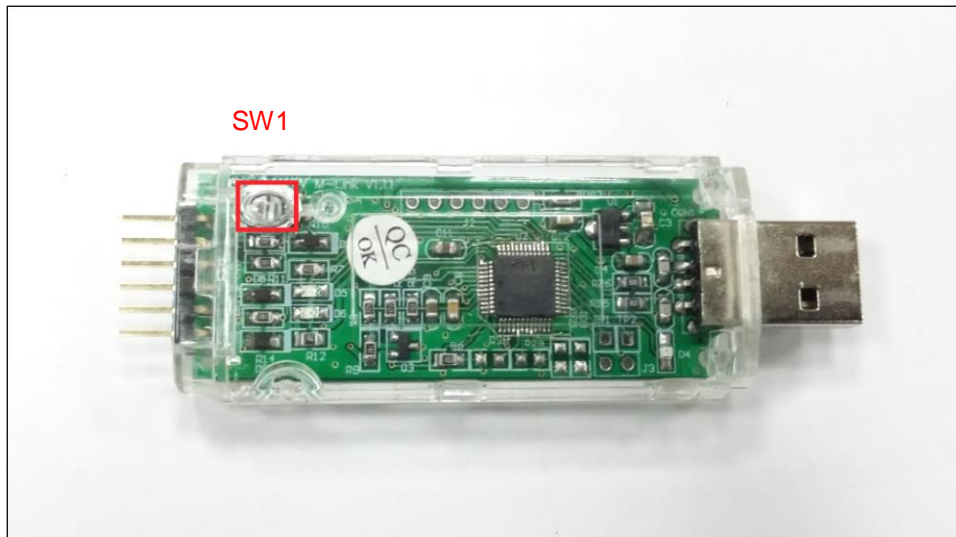
4. Update Target

How to update the target? User may:

4.1. Click “Update Target” to program on-line update, referring to steps 1 through 4 of 3.

Update Programmer, or

4.2. Click “SW1” of MLink to program off-line update, referring to 3. Update Programmer.



5. Revision History

Revision	Description	Date
v1.00	Release version	2023/10/02
v1.01	Modify content in Introduction section	2023/11/29