

# **megawin**

# **OCDM3\_MLink**

# **User Manual**

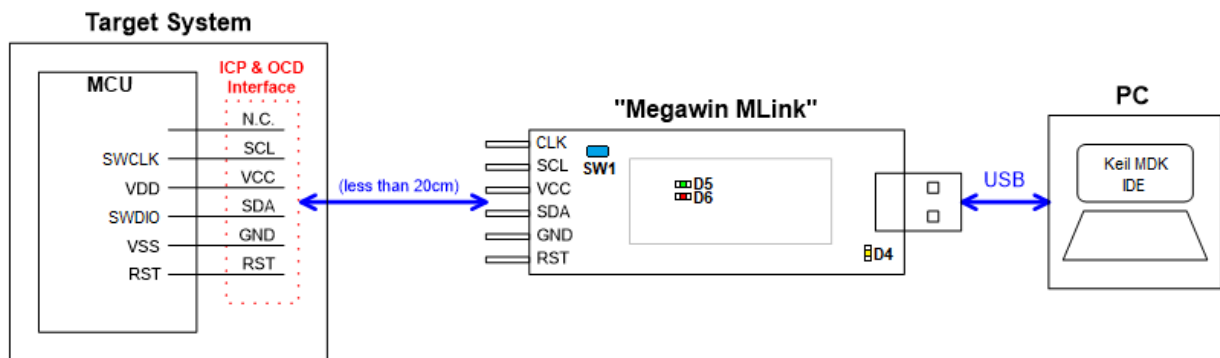
## Index

<b>Index</b> .....	2
1. Introduction .....	3
2. Setup MLink and Pack for Keil MDK.....	4
3. Update Programmer .....	10
4. Update Target .....	15
5. Revision History .....	16

## 1. Introduction

OCDM3\_MLink is an ICE tool used by megawin in Keil MDK. It supports only Cortex®-M3 series chips of megawin. This development kit provides OCD (On-Chip-Debug) real-time debugging function. In addition, the "ICPM3\_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)

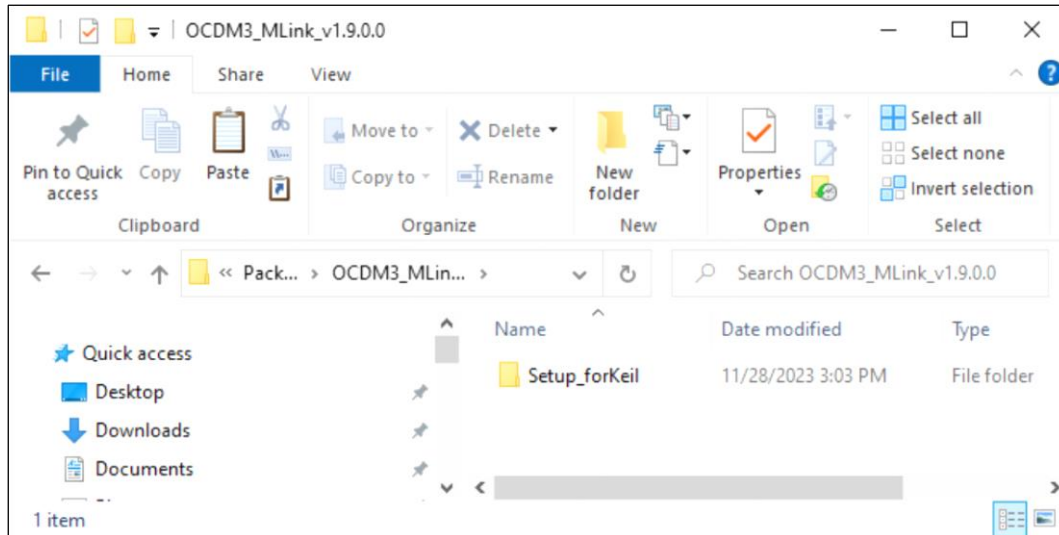
Light display	Always on	Always off	Flashing
<b>D4</b>	USB connection is normal	USB connection is not normal <sup>*1</sup>	
<b>D5</b>	1. Device initialization is normal 2. Programming the result is Pass		Programming in offline mode
<b>D6</b>	1. Device initialization is not normal <sup>*2</sup> 2. Programming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

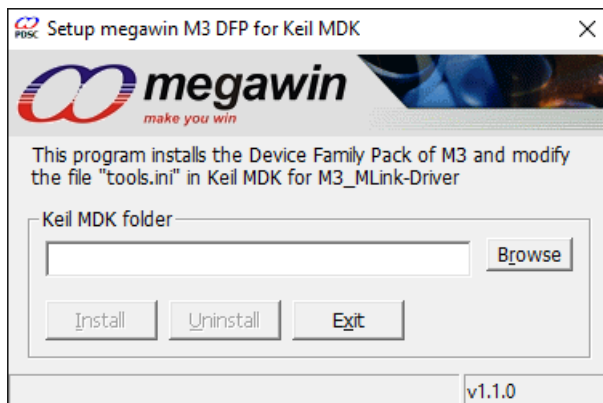
## 2. Setup MLink and Pack for Keil MDK

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



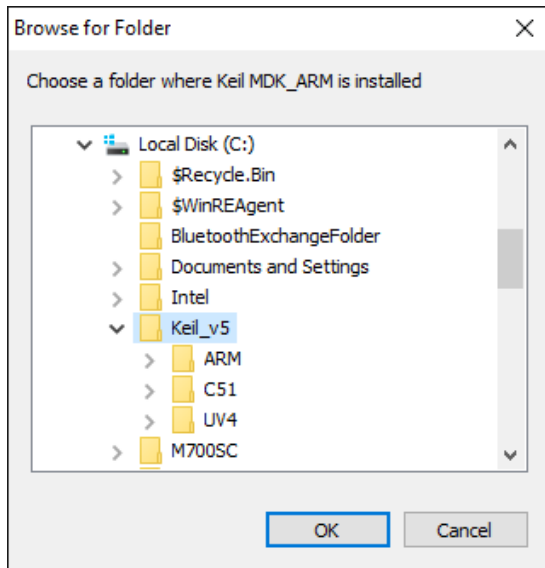
(Figure 2)

2.2. Please execute the “**SetupOCD\_forKeil\_wlCPM3.exe**” in “**Setup\_forKeil**”, the program will show as figure 3.

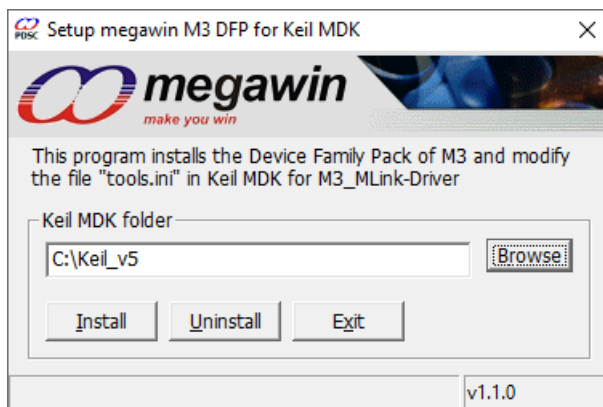


(Figure 3)

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.

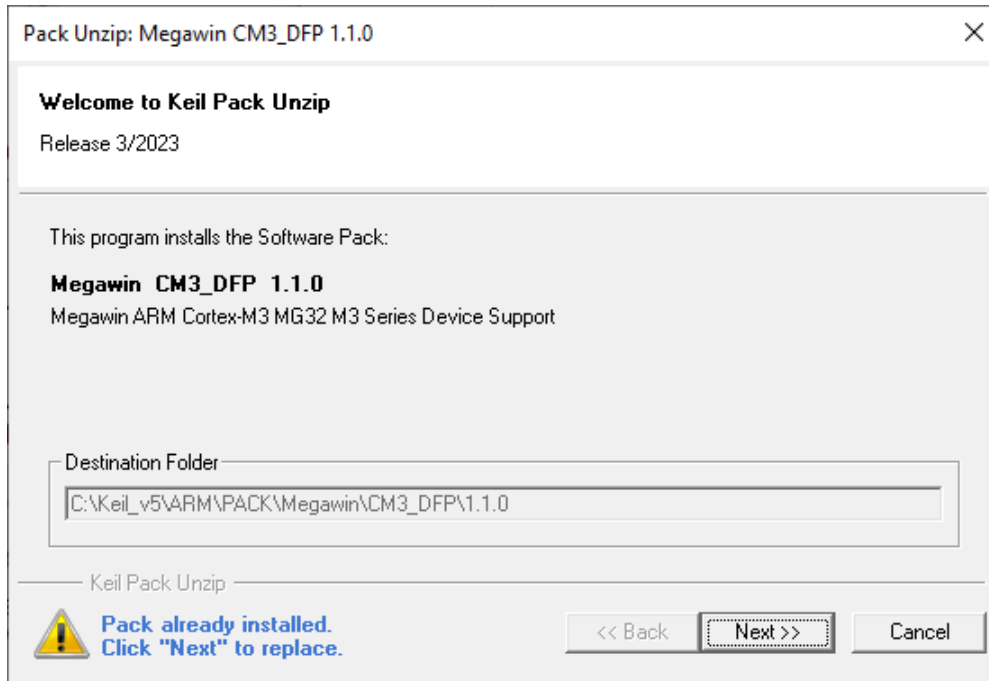


(Figure4)



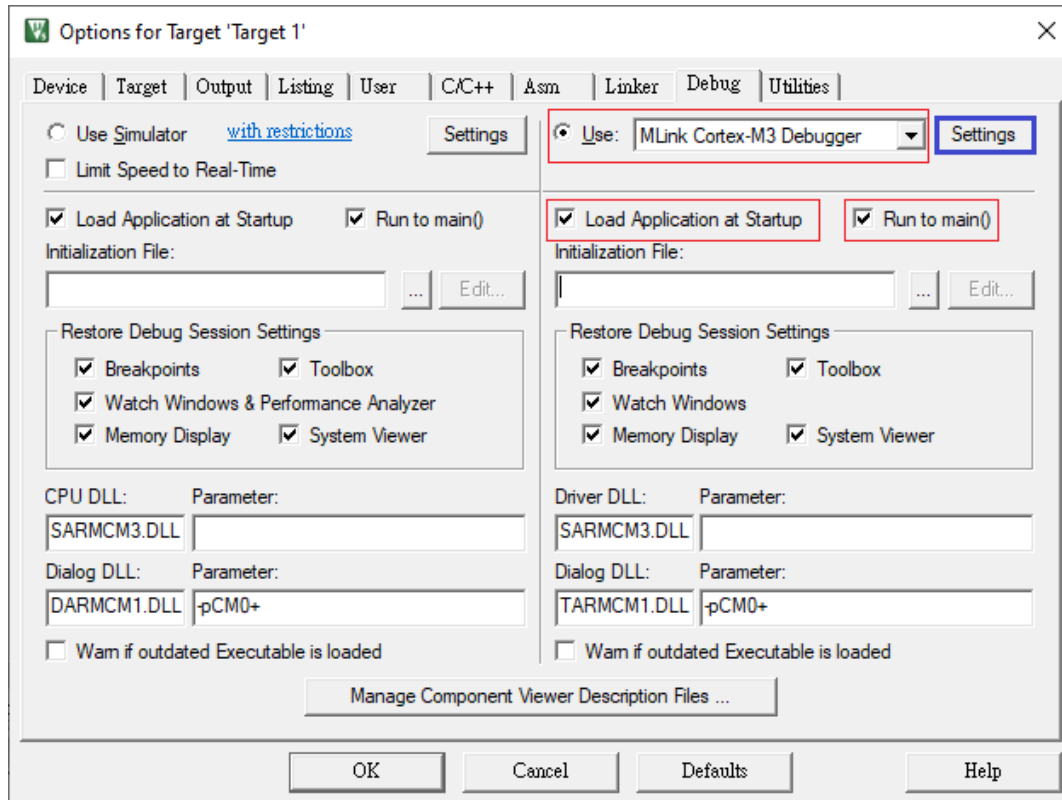
(Figure 5)

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.



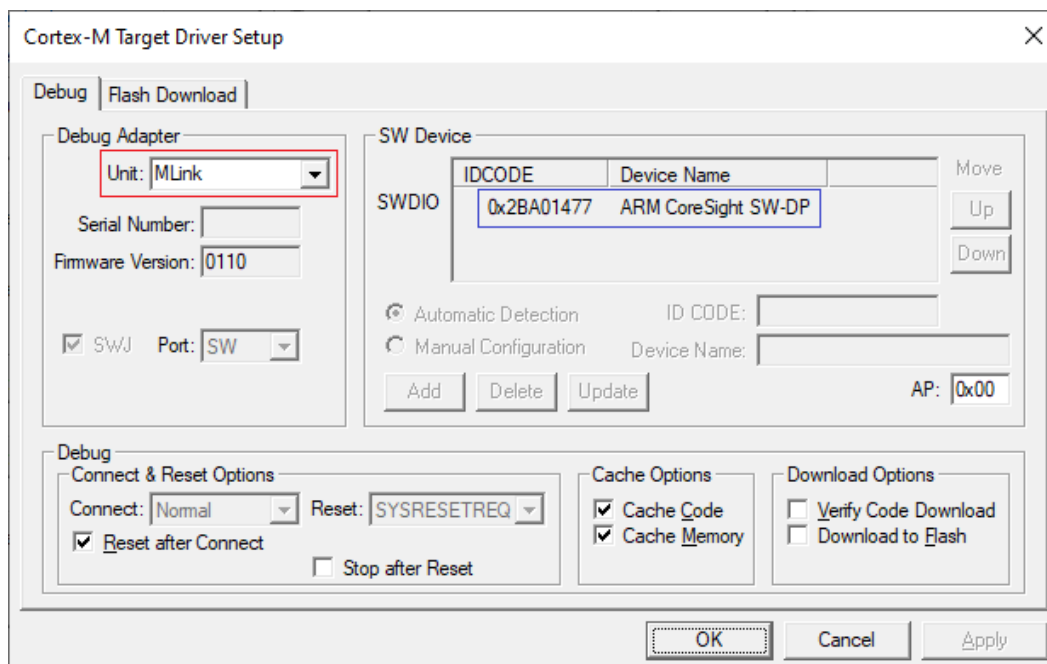
(Figure 6)

- 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-M3 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.



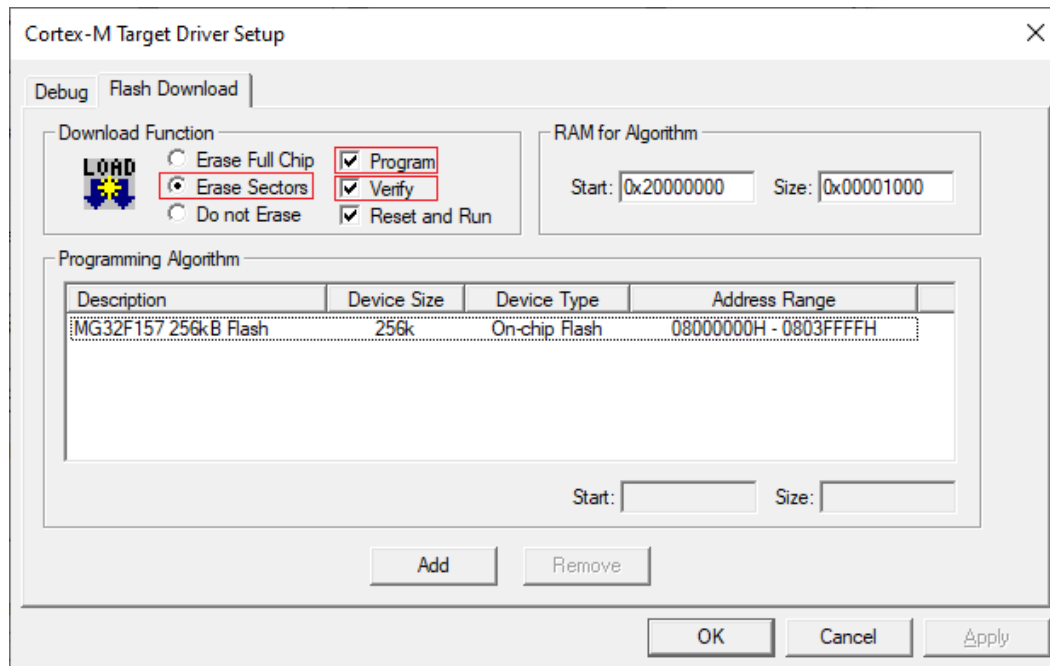
(Figure 8)

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

2.11.1. Click “Erase Sectors”

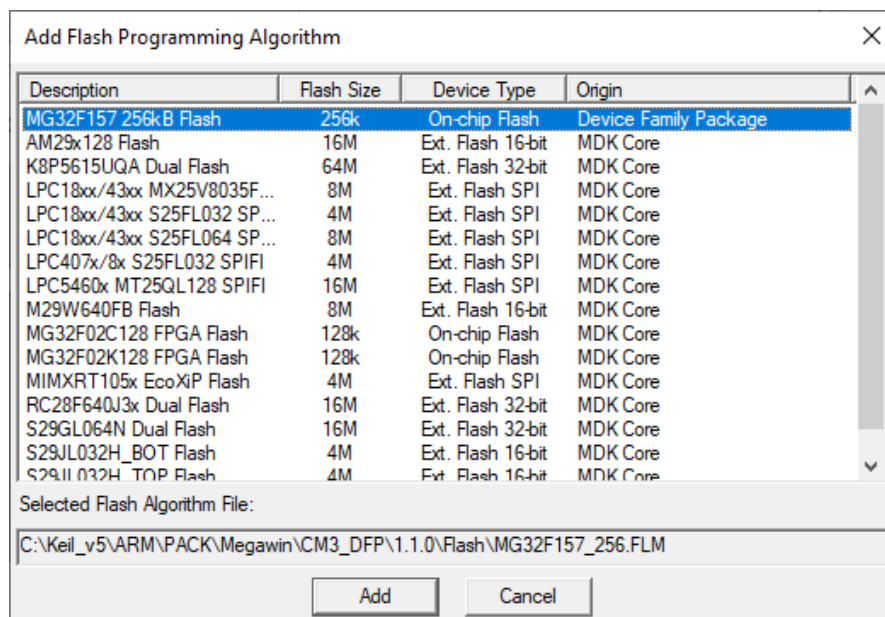
2.11.2. Check “Program” and “Verify”

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.

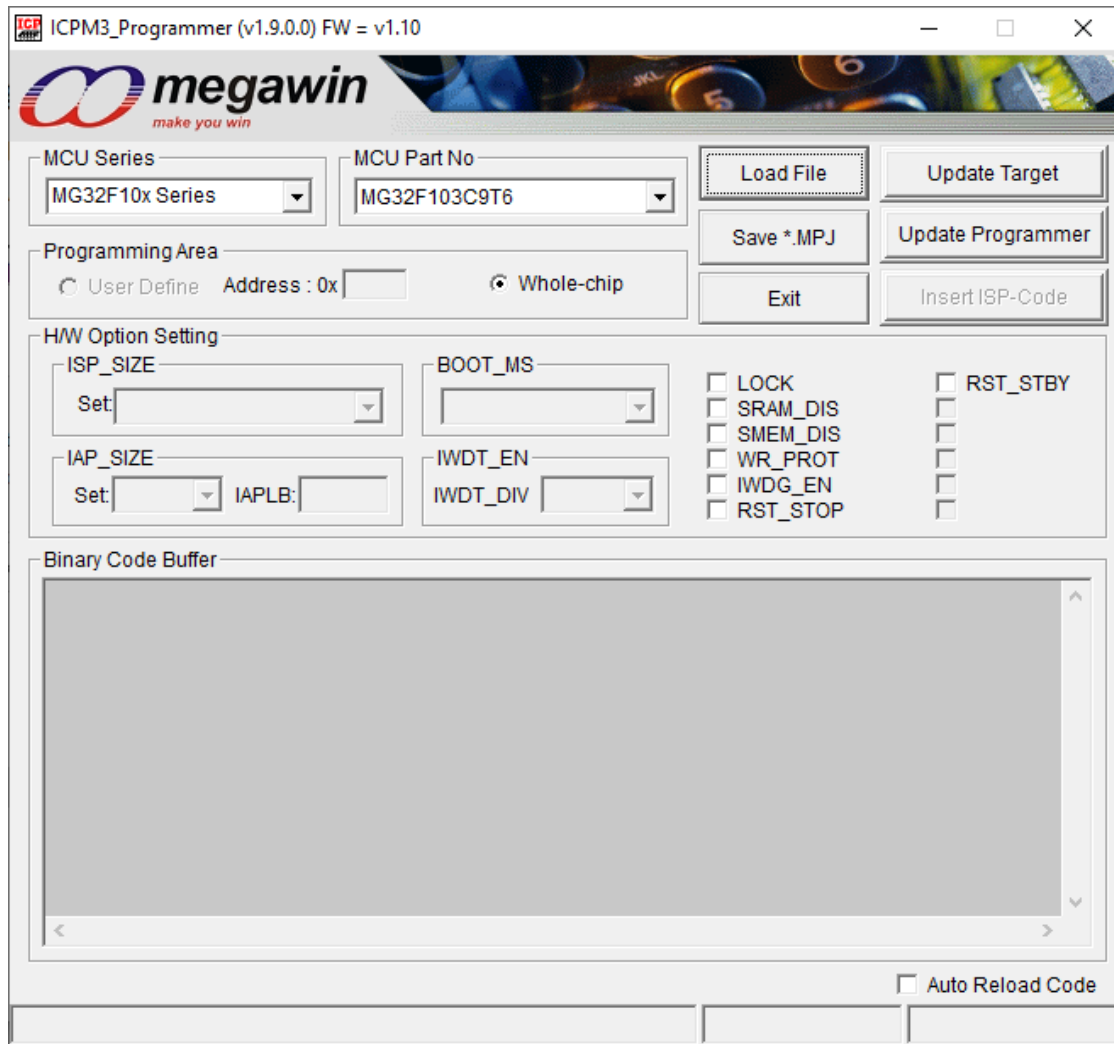
Note 1 : Before using MLink at the first time. Please execute “**ICPM3\_Programmer.exe**” to update the firmware of MLink

Note 2 : When the chip is locked, we can’t run in debug mode with MLink in Keil IDE.  
Please execute “**ICPM3\_Programmer.exe**” and click “**Update Target**” to unlock the chip.

### 3. Update Programmer

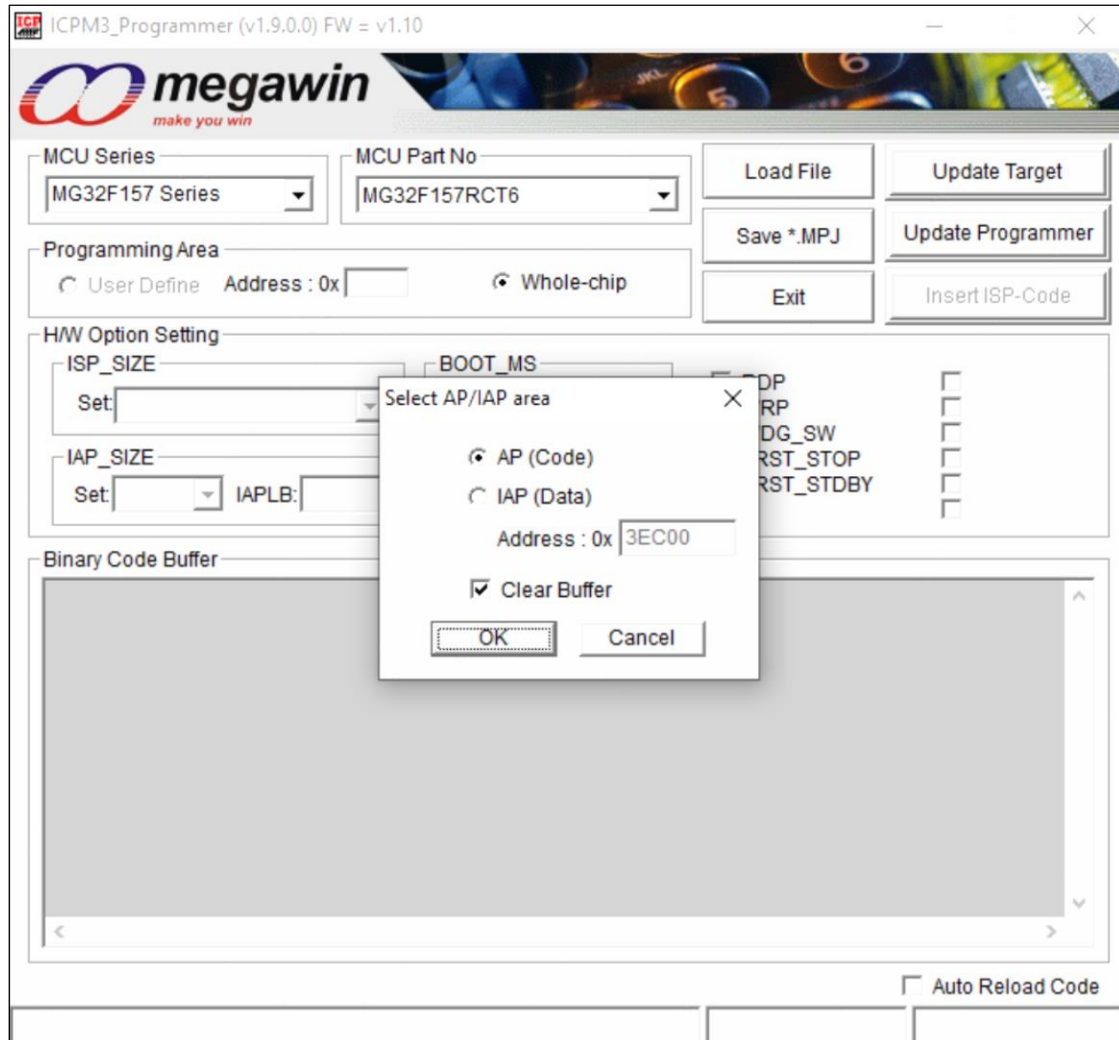
The following figure shows the graphic user interface of the PC-site application program. The following sections will demonstrate how this tool can be used very easily.

Step 1: Choose “MCU Series” and “MCU Part No”.



(Figure 11)

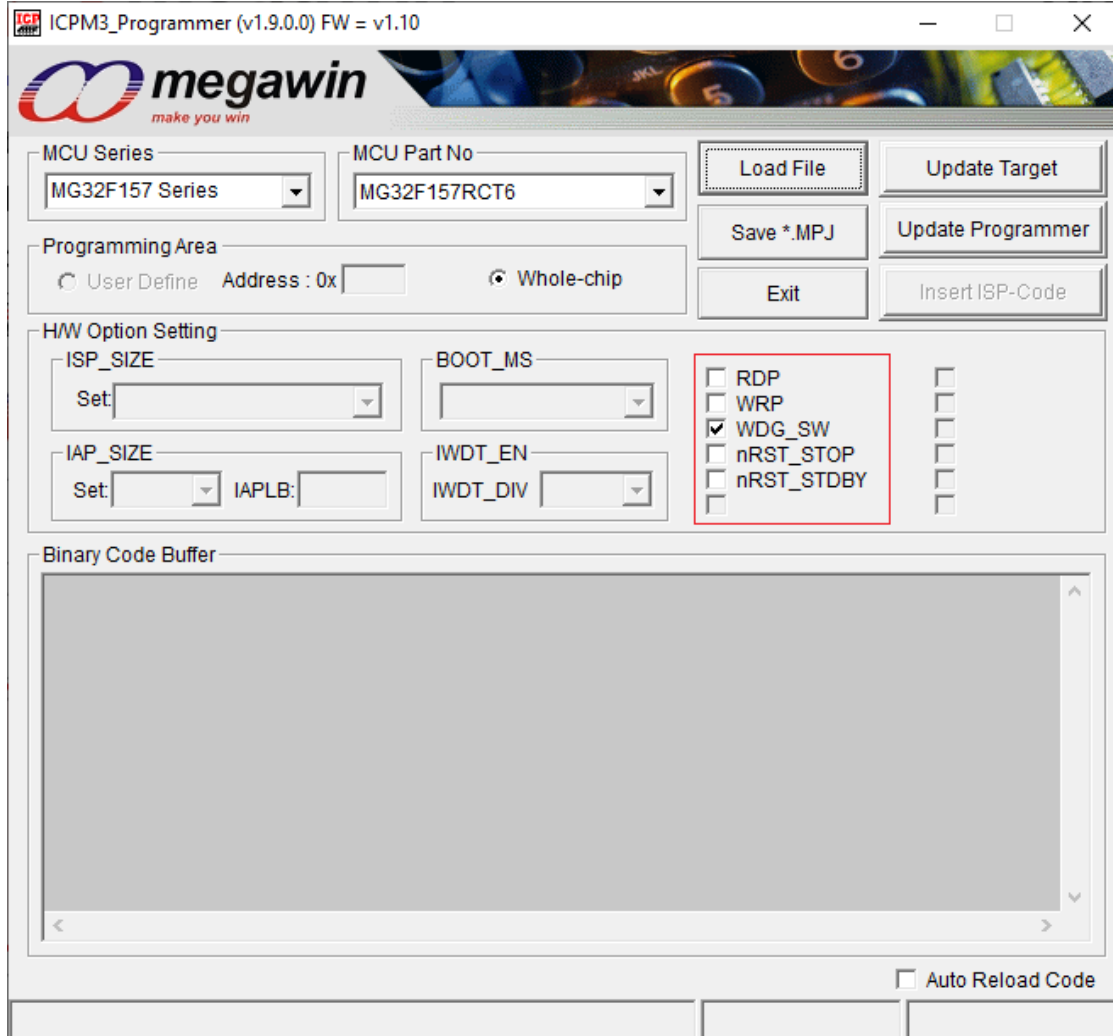
Step 2 : Click “Load File” and choose loading AP(Code) or IAP(Data). “Load File” can be clicked repeatedly to load different files. While loading IAP(Data), user have to key in address. HEX and BIN data formats are supported for file loading.



(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.



ICPM3\_Programmer (v1.9.0.0) FW = v1.10

**megawin**  
make you win

MCU Series: MG32F157 Series  
 MCU Part No: MG32F157RCT6

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:

IWDT\_EN  
 IWDT\_DIV

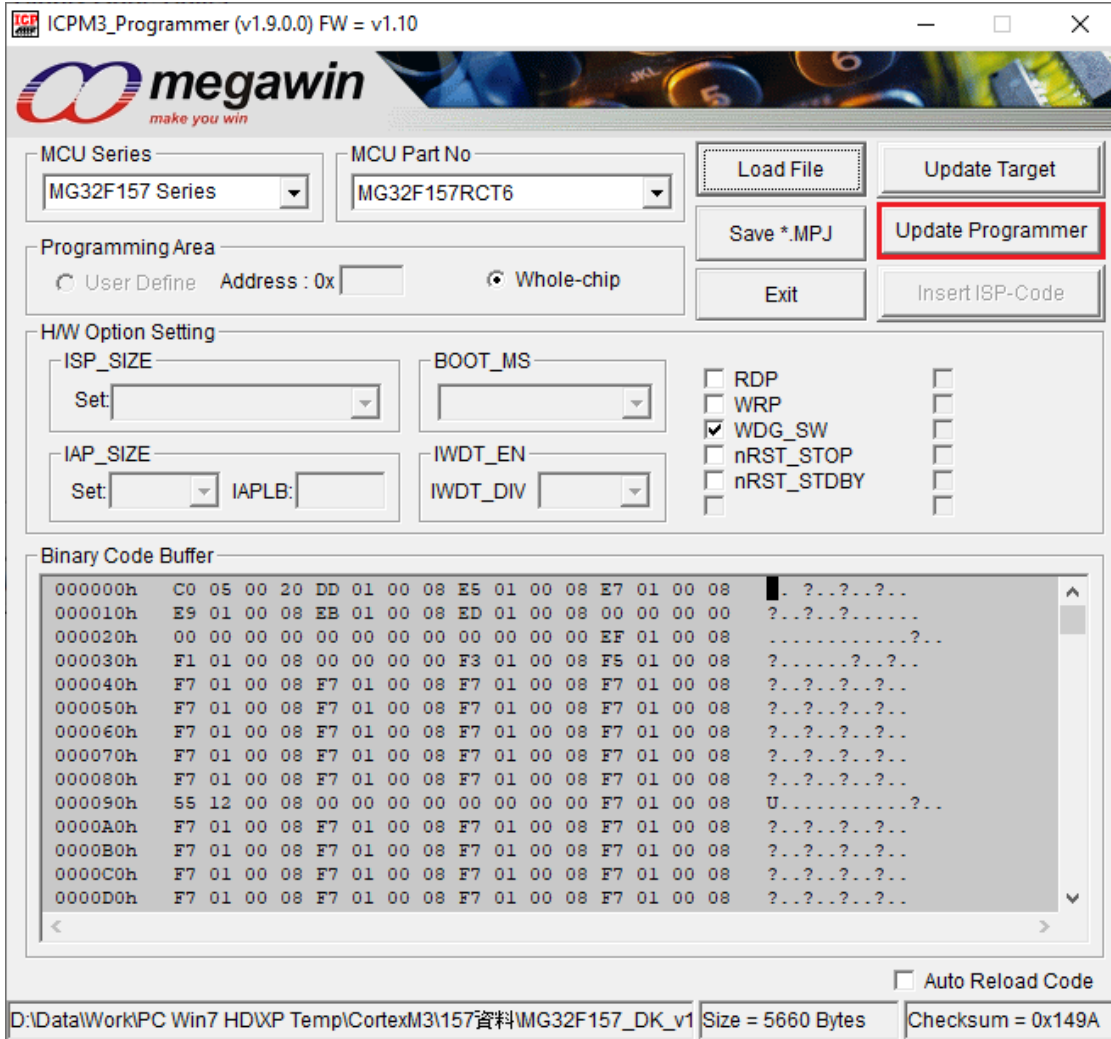
☐ RDP  
☐ WRP  
☒ WDG\_SW  
☐ nRST\_STOP  
☐ nRST\_STDBY

Binary Code Buffer

☐ Auto Reload Code

(Figure 13)

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



ICPM3\_Programmer (v1.9.0.0) FW = v1.10

**megawin**  
make you win

MCU Series: MG32F157 Series  
 MCU Part No: MG32F157RCT6

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:   
 IWDT\_EN   
 IWDT\_DIV   
☐ RDP   
☐ WRP   
☒ WDG\_SW   
☐ nRST\_STOP   
☐ nRST\_STDBY

Binary Code Buffer

000000h	C0 05 00 20 DD 01 00 08 E5 01 00 08 E7 01 00 08	...
000010h	E9 01 00 08 EB 01 00 08 ED 01 00 08 00 00 00 00	...
000020h	00 00 00 00 00 00 00 00 00 00 00 00 EF 01 00 08	...
000030h	F1 01 00 08 00 00 00 00 F3 01 00 08 F5 01 00 08	...
000040h	F7 01 00 08 F7 01 00 08 F7 01 00 08 F7 01 00 08	...
000050h	F7 01 00 08 F7 01 00 08 F7 01 00 08 F7 01 00 08	...
000060h	F7 01 00 08 F7 01 00 08 F7 01 00 08 F7 01 00 08	...
000070h	F7 01 00 08 F7 01 00 08 F7 01 00 08 F7 01 00 08	...
000080h	F7 01 00 08 F7 01 00 08 F7 01 00 08 F7 01 00 08	...
000090h	55 12 00 08 00 00 00 00 00 00 00 00 F7 01 00 08	U.....?
0000A0h	F7 01 00 08 F7 01 00 08 F7 01 00 08 F7 01 00 08	...
0000B0h	F7 01 00 08 F7 01 00 08 F7 01 00 08 F7 01 00 08	...
0000C0h	F7 01 00 08 F7 01 00 08 F7 01 00 08 F7 01 00 08	...
0000D0h	F7 01 00 08 F7 01 00 08 F7 01 00 08 F7 01 00 08	...

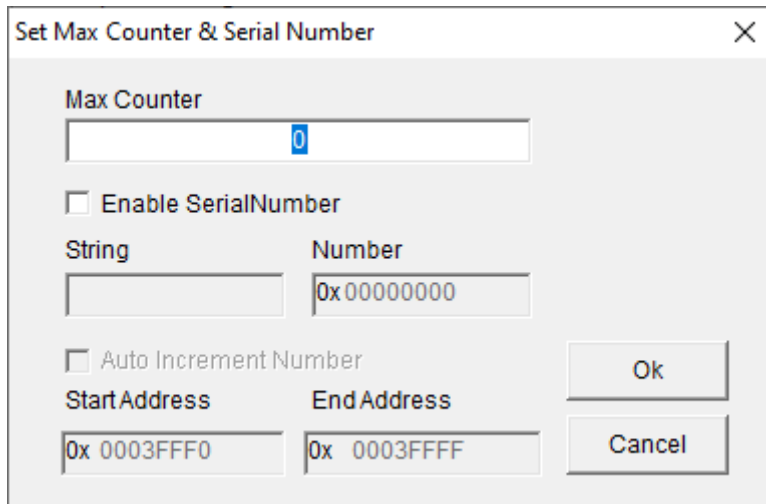
☐ Auto Reload Code

D:\Data\Work\PC Win7 HDXP Temp\CortexM3\157资料\MG32F157\_DK\_v1 Size = 5660 Bytes Checksum = 0x149A

(Figure 14)

Step 6: 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.

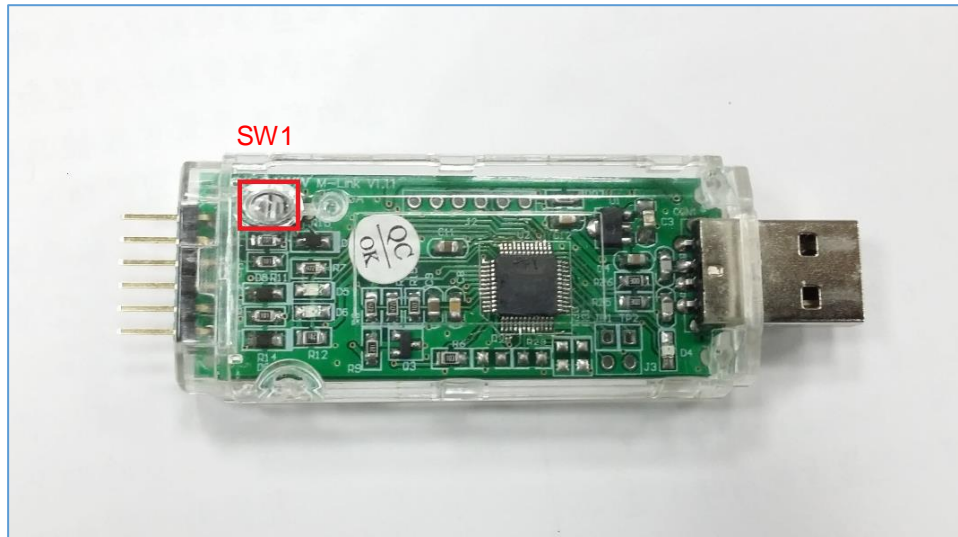
## 4. Update Target

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.



(Figure 16)

## 5. Revision History

Revision	Description	Date
v1.00	Release version	2023/11/29
v1.01	Fixed the problem of incorrect version comparison when checking for update.	2024/03/08