

Megawin

USB DFU Library for VC

User Manual

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1. Introduction

This document explains how to use DFU DLL in the Visual C++ 6.0 environment for device firmware upgrade.

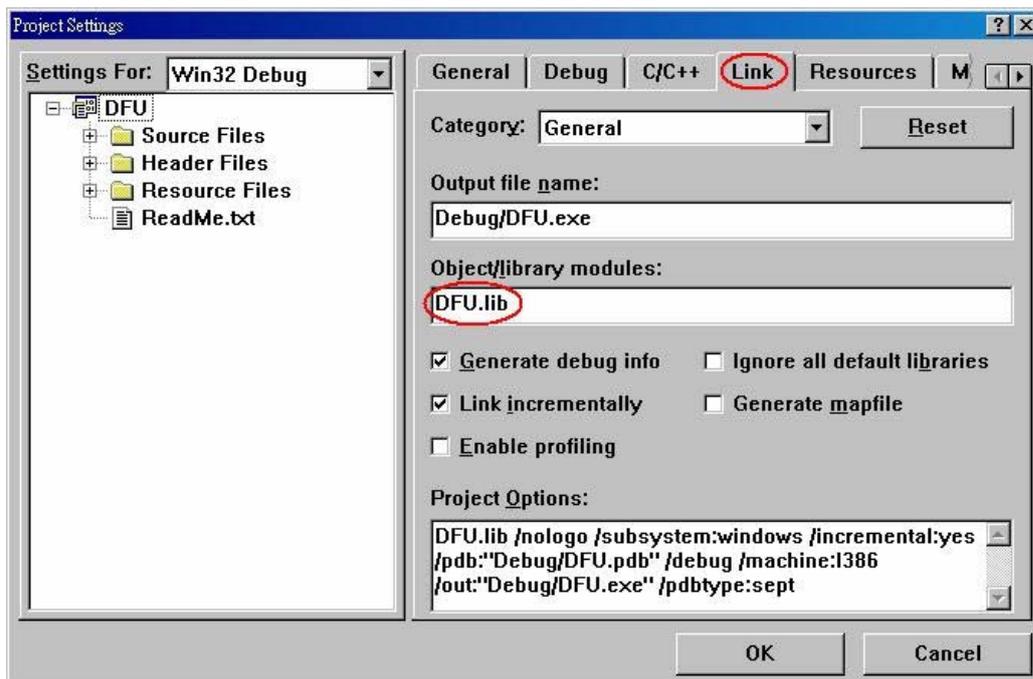
2. Files Needed

- 2.1. DFU.DLL
- 2.2. DFU.LIB
- 2.3. DFUDLL.H

3. How to Use EasyPOD DLL

Activate the Visual C++ (6.0) software for the development of the application program. Please follow the following steps:

- 3.1. Create a new project. Copy the files mentioned in #2(Files Needed Section) on to your project directory.
- 3.2. In your main source code, make sure that you write: #include "DFUDLL.H" as your first line.
- 3.3. The next step is to add export library. Go to Project Menu then choose settings. Choose the link menu as shown in the figure on following. Write down the library module: DFU.lib



4. How to use the Internal Built Function

The DLL functions are listed as following:

4.1. DFU_Reset_To_ISP

The function will trigger device to re-boot into ISP code from firmware AP region. Then, the device will execute USB DFU code in ISP region to receive new firmware to upgrade AP firmware code. This command is packaged through USB HID request. So, it can be applied for HID device, such as "Megawin EasyPOD", "USB Keyboard", or a USB composite device with HID interface. The function format is described as following:

Function : BOOL DFU_Reset_To_ISP (DWORD VID, DWORD PID);
Return : TRUE (1) means reset to ISP mode is successful. FALSE (0) means reset fails.
Parameter : VID, Vendor ID.
PID, Product ID.

If the device behaves without HID interface, it should need a user specific command to trigger device firmware AP to re-boot in ISP region and perform USB DFU progress.

4.1.1. Application with HID interface

This application can use DFU_Reset_To_ISP function call in this DLL. Host AP only call this function to trigger device to re-boot in ISP.

```
DFU_Reset_To_ISP(VID, PID) ;
```

For device side, firmware only execute following procedure to re-boot in ISP region.

```
Receive RESET command (0x44) /* data stage (RXDAT) in HID Set_Feature Request */  
/* RXDAT [0] =0x44, RXDAT [1] ~ RXDAT[n] = Don't care */  
Write ISPCR = 0x68; /* sfr ISPCR = 0xE7 that is define in "REG_MG84FL54.H" */
```

4.1.2. Application without HID interface

This application can not use DFU_Reset_To_ISP function call. User should define a specific vendor command (**RESET**) in host AP to inform device to re-boot into ISP region.

```
Handle = Create_Device();  
Set_Reset_Command( Handle . RESET,.. ); /* This function define by user... */  
Delay 5s; /* Wait device reset. */  
Close_Handle( Handle );
```

For device side, firmware only execute following procedure to re-boot in ISP region.

```
Receive RESET from PC side AP /*specific vendor command */  
Write ISPCR = 0x68; /* sfr ISPCR = 0xE7 that is define in "REG_MG84FL54.H" */
```

4.2. DFU_Reset_To_AP

If firmware AP upgrade has been finished, host DFU AP issue this command to trigger device re-boot into AP region. After this trigger, device will execute user firmware AP to perform new function.

Function : BOOL DFU_Reset_To_AP(void);
Return : TRUE (1) means reset to AP mode is successful. FALSE (0) means reset fails.
Parameter : None

4.3. DFU_Download

This function call will transmit new firmware code to device and upgrade to AP region.

Function : BOOL DFU_Download (BYTE *FW, DWORD Addr, DWORD Size, DWORD CheckSum);
Return : TRUE (1) means download is successful. FALSE (0) fails.
Parameter : FW, pointer to the buffer containing the data to download to the device.
Addr, the offset of start address.
Size, the size of buffer to be downloaded

Checksum, the checksum of the buffer. The checksum is calculated by summing the values of all bytes in the buffer modulo 65536.

4.4. DFU_Get_ProcessCount

This function call will return the percentage in download process.

Function : int DFU_Get_ProcessCount(void);

Return : An Integer value represent the percentage in download process.

Parameter : None.

5. Example

```
BYTE Buffer [0x1000];
DWORD dwResult, VID, PID;
DWORD Size,Addr;
Int Percentage;

VID = 0x0E6A;
PID = 0x0317;
Size = 0x1000;
Addr = 0;
Memset (Buffer,0,0x1000);
Percentage = DFU_Get_ProcessCount ();

dwResult = DFU_Reset_To_ISP (VID,PID);
if (dwResult == TRUE)
{
    dwResult = DFU_Download (Buffer, Addr, Size, 0x00);

    dwResult = DFU_Reset_To_AP();
}
Percentage = DFU_Get_ProcessCount();
```

6. Revision History

Revision	Description	Date
v1.00	Release version	2008/06/24
v1.01	Add new function of "DFU_Get_ProcessCount"	2008/11/14