### **Chapter 1 Install Driver**

Before using lpc\_dfusec, it must install WinUSB correctly driver. Download this driver

from

http://www.lpcware.com/content/project/dfu-download-programming-utility-and-security-lp cdfusec-tool/winusb-driver-installat.

After download, unpack driver compression packet to D: \winusb\_drivers(or any other path, here as a show). And then begin installing driver, steps are as follows:

(1) Set start mode of LPC18XX/43XX board as USB boot (set DIP switches 1-4:

LHLH). Then connect board to computer by USB cable, and there will be a new USB device in Device Manager (LPC):



Figure 1-1

(2) Right click device, select "Update Driver Software", and then select "Browse my computer for driver software ":



Figure 1-2

(3) Select driver directory, here is D: \ winusb\_drivers, and then click Next:



Figure 1-3



(4) If pop-up security warnings, select "Install this driver software ":



Figure 1-4

(5) After finishing installation, if there will be a "LPC based USB device" device in

Device Manager, it means driver has been installed successfully:



Figure 1-5

### Chapter 2 lpc\_dfusec Download

After install driver, connect board to computer by USB cable, download image file to board by lpc\_dfusec tool.

Lpc\_defsec supports HDR / RAW mode and Program mode.

### 2.1 HDR/RAW Mode

In HDR/RAW mode, download and run executable image file by DFU /USB when chip is reset. Image file is downloaded to internal RAM and executed directly, it will be lost when chip reset or power off. Steps are as follows:

(1) Start lpc\_dfusec:

/RAW modes Program mode		
Binary: E:\new cd\lpc4357\02-Images\LPC435x\15_LCD\Lcd_I	LPCLink2 DFV/SECTool version 1.05	
─ Auto-boot mode when DFU device is detected ✓ Auto append header to the binary image		
Generate binary file with header		
	*	

Figure 2-1

(2) Select "HDR/RAW modes" in Mode tab, connect board to computer by USB cable,

"NO CONN" will become "HIGH SPEED USB" in status bar at the bottom of window.

ating mode Help		
RAW modes Program mode		
Binary: F:\jakebo\MYIR\MYD-LPC1850\Examples\ATIMER\Atim		
Auto-boot mode when DFU device is detected		
Auto-boot mode when Dro device is detected		
	-	
Generate binary file with header		
Auto-verify header on boot		
	Start	Clear text



(3) Choose .bin file downloaded in "Internal SRAM" in corresponding directory. If file already has file header, it doesn't need to select "Auto the append header to the binary image" option. Otherwise select option which is generally required to check default:

perating mode Help DR/RAW modes Program mode	Open		X
Binary:	C V V V V V V V V V V V V V V V V V V V	✓ 4y Search IFlash	
Auto-boot mode when DFU device is detected Auto append header to the binary image	1 Organize 👻 New folder	)III 🕶 🗖	0
Generate binary file with header	Name	Date modified	1
	Desktop	2013-03-31 13:58	ł
	Documents      Music		
	≥ Pictures		
	Videos		
	🖌 🌉 Computer		
	Image: Computer <td></td> <td></td>		
	<ul> <li>Local Disk (C:)</li> <li>Local Disk (D:)</li> </ul>		
	▷ 👝 Local Disk (C:) 🗉		
Auto-verify header on boot	<ul> <li>Local Disk (C:)</li> <li>Local Disk (D:)</li> </ul>		
	<ul> <li>&gt; Local Disk (C:)</li> <li>&gt; Local Disk (D:)</li> <li>▷ Local Disk (D:)</li> <li>▷ document (E:)</li> </ul>	m	
Auto-verify header on boot VRAW mode - HIGH SPEED USB	▷ Local Disk (C:)       ▷ Local Disk (D:)       ▷ document (E:)       ▷ <ul> <li>↓ Network</li> </ul>	"     "     bin/enc/hdr files (*.bin;*.enc;*.	1 -



(4) Click the "Start" button to download program. When download is complete, board will reset automatically and run. "HIGH SPEED USB" in the status bar will change to "NO CONN". Reset board or power on board, lpc\_dfusec will identify board:

Ipc_dfusec tool		
Operating mode Help		
HDR/RAW modes Program mode		
Binary: E:\new cd\lpc4357\02-Images\LFC435x\15_LCD\Lcd_] Auto-boot mode when DFU device is detected V Auto append header to the binary image	LPCLink2 DFU/SECTool version 1.05 RAY/DER mode: starting download of image. Appending a header to the image. File boot header is valid. Download complete.	·
Generate binary file with header		
		<b>v</b>
		r
Auto-verify header on boot	Start	Clear text
HDR/RAW mode 🔻 NO CONN		

Figure 2-4

Lpc\_dfusec also can give no file header files to add file header, click the "Generate binary file with header" button in original file directory, a same name file with an ".Hdr" will be generated.

#### 2.2 Program Mode

In this mode, it should program image files into the on-chip or off-chip non-volatile memory. Pre-built algorithms are provided, they are the Internal Flash algorithm, 32MB/64MB SPI Flash algorithm and IRAM based algorithm, corresponding algorithm file is as shown in table 2-1:

Storage medium	Download the algorithm file
Internal Flash	dfusecp_iflash_18xx43xx.bin.hdr
SPIFI 128MB	dfusecp_spiflash_18xx43xx.bin.hdr
IRAM	dfusecp_emiram.bin.hdr

Table 2-1

In program mode, steps are as follows:

(1) Start lpc\_dfusec:

erating mode Help X/RAW modes Program mode		
	LPCLink2 DFU/SECTool version 1.05	
Step 0 Add Step Clear		
Algo F:\jakebo\MYIR\MYD-LPC435X-LPC185X\dfusec_v1.05'		
File F:\jakebo\MYIR\MYD-LPC1850\Examples\ADC\Adc_Bur:		
Address 0x80000000		
Size 0x00100000		
Param 0x00000000		
V Erase region before programming		
Erase full device		
Compute/Insert checksum in image before programming		
200 - 200 -		
HostSt		
BoardSt	.4	1
	Start	Clear text

Figure 2-5

(2) Select "Program mode" in Mode table and connect board to computer by USB cable. "NO CONN" will become" HIGH SPEED USB" in status bar at the bottom of window:

	odes Program mode		
Step Algo File Addres Size	0 Add Step Clear F:\jakebo\WIIR\WID-LFC435X-LFC185X\dfusec_v1.05' F:\jakebo\WIIR\WID-LFC1850\Examples\ADC\Adc_Bur: s0x80000000 0x00100000	[LFCLink2 DFU/SECTool version 1.05	
Param	0x00000000		
HostSt			



(3) Fill in the necessary items in "Program mode" tab panel.

Now, if want to download image files to SPI FLASH, select the corresponding SPI Flash algorithm files and SPIFI binary files (bin file in the project directory SPIFI 128MB file folder). Then set starting address: 0X8000000, size: 0X00100000.

If want to download image files to Internal Flash (Note: only MYD-LPC1857/4357 have Internal Flash), select corresponding Internal Flash algorithm file and IFlash binary file (bin file in the project directory IFlash file folder). Set starting address: 0X1A000000, size: 0X00040000.



Panel identification is as shown below:

erating mode Help		
i/RAW modes Program mode		
Step 0 Add Step Clear	LPCLink2 DFU/SECTool version 1.05	
Algo F:\jakebo\MYIR\MYD-LPC435X-LPC185X\dfusec_v1.05'		
File F:\jakebo\MYIR\MYD-LPC4350\Examples\ATIMER\AtimE		
Address 0x80000000 F		
Size 0x00100000 G		
Param 0x00000000 H		
📝 Erase region before programming T		
Erase full device		
📃 Compute/Insert checksum in image before programmingK		
HostSt		
BoardSt M	4	
N	Start ()	Clear text

Figure 2-7

Parameter Description Mark name Indicates the number of steps of A programming sequence. At the beginning Step number of each step, step number will be passed to programming algorithm and be used by algorithm when needing. Button will add a new step to column at Step add the end of programming sequence. Use В button up down buttons to select step and only add up to 10 steps at most. Click the button will clear all subsequence steps after this step. E.g. a sequence of С Step(s) clear six steps (0-5), currently select 2, when button clicking the button, 3 -5 steps will be cleared. Only two steps left Programming Current step programming algorithm file is algorithm file a binary file that can be run on the target D

Figure description is as shown below:

	board, mainly used to identify target	
	device, and execute programming	
	operation DFUSec tools issued.	
	A programming image file is in current	
Image to	step. Each step has a unique image file, a	E
program	unique burning address and a unique	
	programming algorithm.	
	The address is appointed beginning	_
	address for burning or erasing. Please	F
Program/erase	note different requirements for address	
region address	alignment and sizes between burning and	
	erasing operations. This is a hexadecimal	
	number.	
	The value specifies erasable area size.	0
Program/erase	Only used in conjunction with erase flag.	G
region size	This is a hexadecimal number.	
	Optional parameters can pass a value to	
Optional	programming algorithms. Internal FLASH	н
parameter	SPI FLASH algorithm doesn't need it.	
	This is a hexadecimal value.	
	If check box is checked, the area, its	
Region erase	beginning address and size specified by	I
flag	program/erase region size, will be erased	
	before programming.	
Full device	If check this box, entire device will be	
erase flag	erased before programming.	J
Compute/Insert	Checksum calculated and appended into	
checksum in	binary file, can be used to check data	к
image before	integrity after download.	
	I	

programming		
Host	Box shows last host information, such as	I
operational	can be used by DFUSec to diagnose	L
status	problems according to program cycle.	
Device	Box shows last board information, such	М
operational	information and program cycles on target	IVI
status	board can be used to diagnose problems.	
	Progress bar is filled according to	
Progress bar	download progress, it is reset at the	N
FIOGLESS Dal	beginning of each step and is filled when	
	download finished.	
	If support device is detected, press button	
Start/download	to start programming cycle. When	0
button	problems occur or button is not active, it	
	can try to reset or to re-power board.	

Table 2-1

(4) Click the "Start" button to start program, when finished, result is shown in figure

#### 2-8.

	mode Help odes Program mode		
Step Algo File Addres: Size	0	**Attempting to process programming step 0*** Download complete. Waiting up to 4s for device detection after initial download Device detected: Starting programming AFI Target program buffer size = 256 bytes Size of image to send = 12308 bytes Waiting up to 4s for device re-anumeration after reset **Attempting to process programming step 1*** Download complete. Waiting up to 4s for device detection after initial download Device detected: Starting programming AFI Target program buffer size = 256 bytes	
	Erase region before programming     Erase full device     Compute/Insert checksum in image before programming     Programming operation successful		
HostSt	Erase region before programming     Erase full device     Compute/Insert checksum in image before programming		

Figure 2-8

(5) Select startup mode after programming is finished, reset board to start programs.

Note: If Internal Flash has had burned effective programs, programs will be executed automatically when restarting board, and BOOT set will be ignored. Internal Flash use, please refer to user manual pdf in 3.4.2 MDK Internal Flash to use in the CD-ROM directory 01-Documents/UserManual/Chinese/MYD-LPC435x-185x.