



THSCU101 Firmware Update User Manual

Rev. 1.10

Table of contents

Table of contents	p.2
Firmware update with Windows PC	p.3
Win-step 1. Obtain required files	p.3
Win-step 2. Check the firmware version	p.4
Win-step 3. Delete firmware from THSCU101	p.5
Win-step 4. Program the firmware into THSCU101	p.6
Firmware update with Mac	p.7
Mac-step 1. Obtain required files	p.7
Mac-step 2. Check the firmware version	p.8
Mac-step 3. Delete firmware from THSCU101	p.9
Mac-step 4. Program the latest Firmware into THSCU101	p.10
Appendix	p.11
Installation “EZ-USB FX3 Software Development Kit”	p.12
Build the tool on Mac	p.13

Win-step 1. Obtain required files

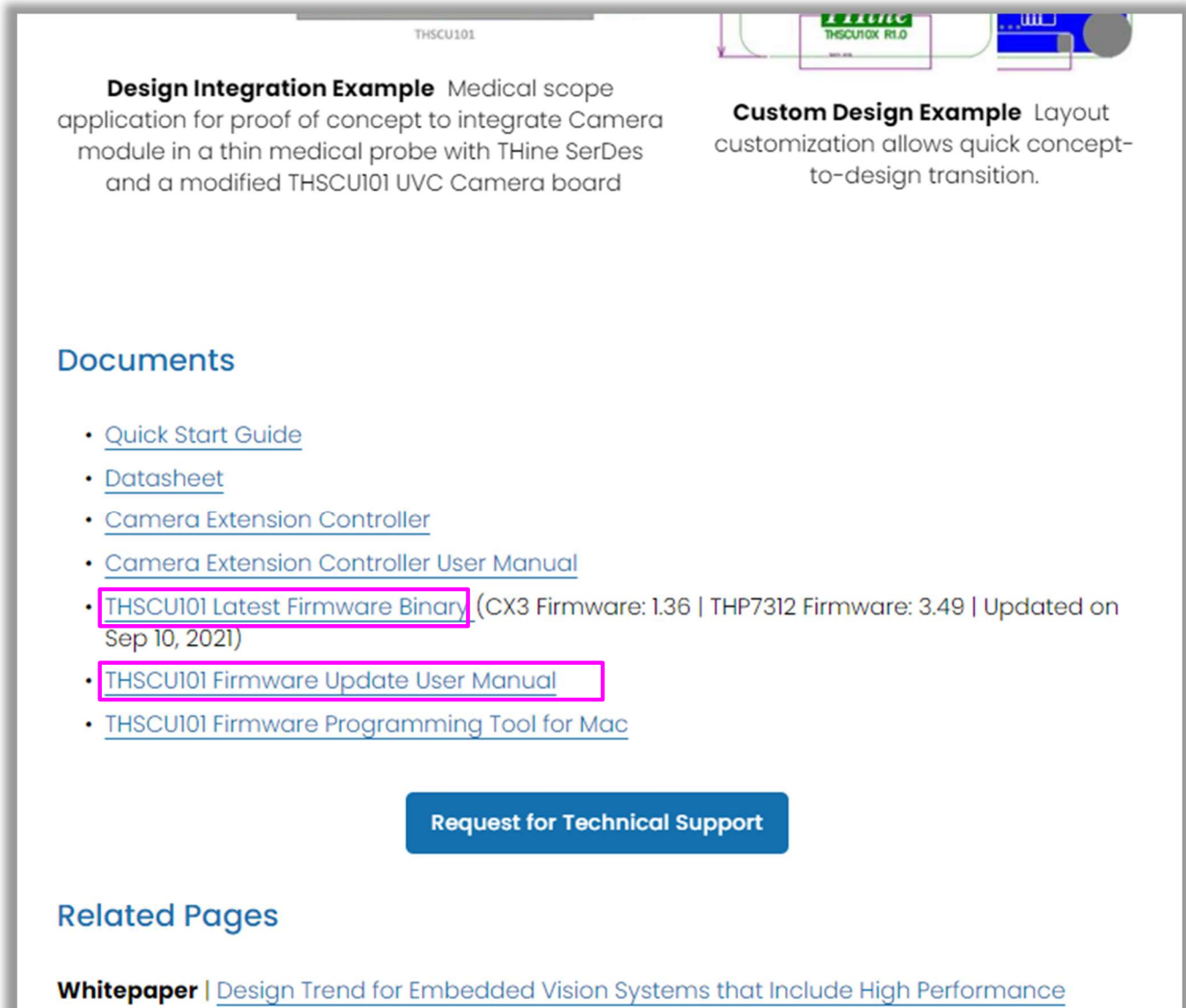
Following files are available in THine Solutions website. Visit <https://www.thinesolutions.com/13mp-pdaf-uvc-camera>

[1] Camera Extension Controller Application (PC Software)

THSCU101_UVC_Cam_Ext_Ctrl_v_1_2.exe as of Oct. 5, 2021

[2] THSCU101 Latest Firmware Binary

THSCU101_CX3_1_36_ISPFW_03_49.img as of Sep. 10, 2021



THSCU101

Design Integration Example Medical scope application for proof of concept to integrate Camera module in a thin medical probe with THine SerDes and a modified THSCU101 UVC Camera board

Custom Design Example Layout customization allows quick concept-to-design transition.

Documents

- [Quick Start Guide](#)
- [Datasheet](#)
- [Camera Extension Controller](#)
- [Camera Extension Controller User Manual](#)
- [THSCU101 Latest Firmware Binary](#) (CX3 Firmware: 1.36 | THP7312 Firmware: 3.49 | Updated on Sep 10, 2021)
- [THSCU101 Firmware Update User Manual](#)
- [THSCU101 Firmware Programming Tool for Mac](#)

[Request for Technical Support](#)

Related Pages

Whitepaper | [Design Trend for Embedded Vision Systems that Include High Performance](#)

Win-step 2. Check the firmware version

1. Connect the THSCU101 to your PC with USB cable
2. Launch Windows Camera App
3. Click “Change camera” icon in Windows Camera App to select CX3-UVC. Then THSCU101 starts to stream images.



4. Launch Camera Extension Controller
Double click Camera Extension Controller Application

5. Enter “40”

```
Found CX3_HID Device #2: VID: 0x04B4 PID: 0x00C3
THSCU101 UVC Camera Extension Controller menu: Select the number
```

```
40 : Get CX3/ISP firmware versions
```

```
99 : Exit
```

```
40
```

6. CX3 and THP7312 firmware versions are displayed

```
40
CX3 Firmware Version = 1.36           CX3 firmware version of your THSCU101
CX3 Build Date (Year/Month/Date) = 2021/8/24
THP7312 Firmware version = 3.49      THP7312 firmware version of your THSCU101
THSCU101 UVC Cam Ext Ctrl version = 1.2
```

7. Check the versions are identical to ones on the following page.

<https://www.thinesolutions.com/13mp-pdaf-uv-c-camera>

See Documents section. The following is the example as of Oct. 5, 2021.

Documents

- [Quick Start Guide](#)
- [Datasheet](#)
- [Camera Extension Controller](#)
- [Camera Extension Controller User Manual](#) See the latest CX3 firmware version
- [THSCU101 Latest Firmware Binary](#) (CX3 Firmware: 1.36 | THP7312 Firmware: 3.49)
Updated on Sep 10, 2021 See the latest THP7312 firmware version
- [THSCU101 Firmware Update User Manual](#)

8. Follow the next 2 pages if the THSCU101 has older firmware.

Win-step 3. Delete the firmware from THSCU101

1. Launch Windows Camera App
2. Stream images from THSCU101
3. Launch Camera Extension Controller
4. Enter "77"

```
Found CX3 HID Device #2: VID: 0x04B4 PID: 0x00C3
THSCU101 UVC Camera Extension Controller menu: Select the number
77 : Erase firmware (DO NOT USE IF NOT HAVING FIRMWARE)
00 : Exit
77
```

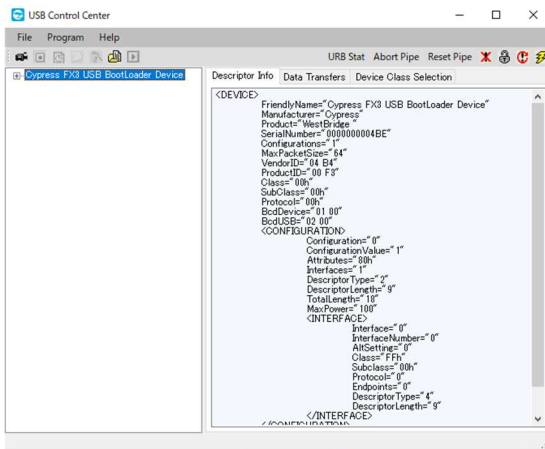
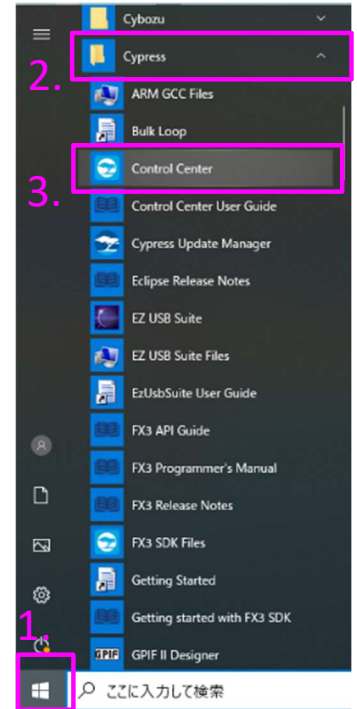
5. Enter "77" again.

```
After erasing, you have to program the firmware binary into Flash ROM.
Are you sure to erase firmware from Flash ROM ?
0 : Return to TOP menu, 77 : Excecute Erasing Selectable settings
77
```

6. Firmware deleted.

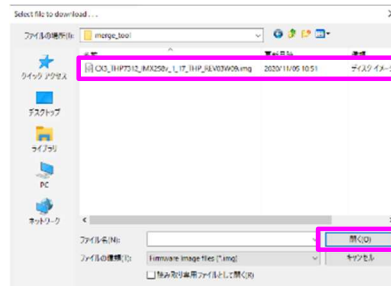
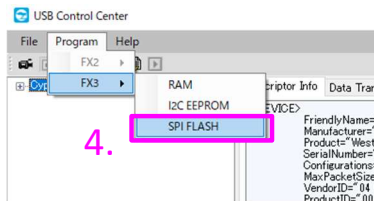
Win-step 4. Program the firmware into THSCU101

1. Click “Start”
2. Click “Cypress” to show pull down menu.
 - Please see Appendix “[EZ-USB FX3 SDK Installation](#)” if EZ-USB FX3 SDK is not installed.
3. Click “Control Center” to launch “Control Center”

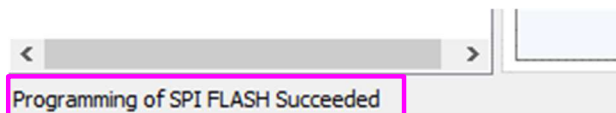


Control Center

4. Click Program→FX3→SPI Flash
5. Select the latest firmware binary, then click open.



6. Confirm “Programming of SPI FLASH Succeeded” is displayed on the bottom left corner of “Control Center”.



7. Disconnect and reconnect THSCU101.
 - THSCU101 boots up with the new firmware.

Mac-step 1. Obtain required files

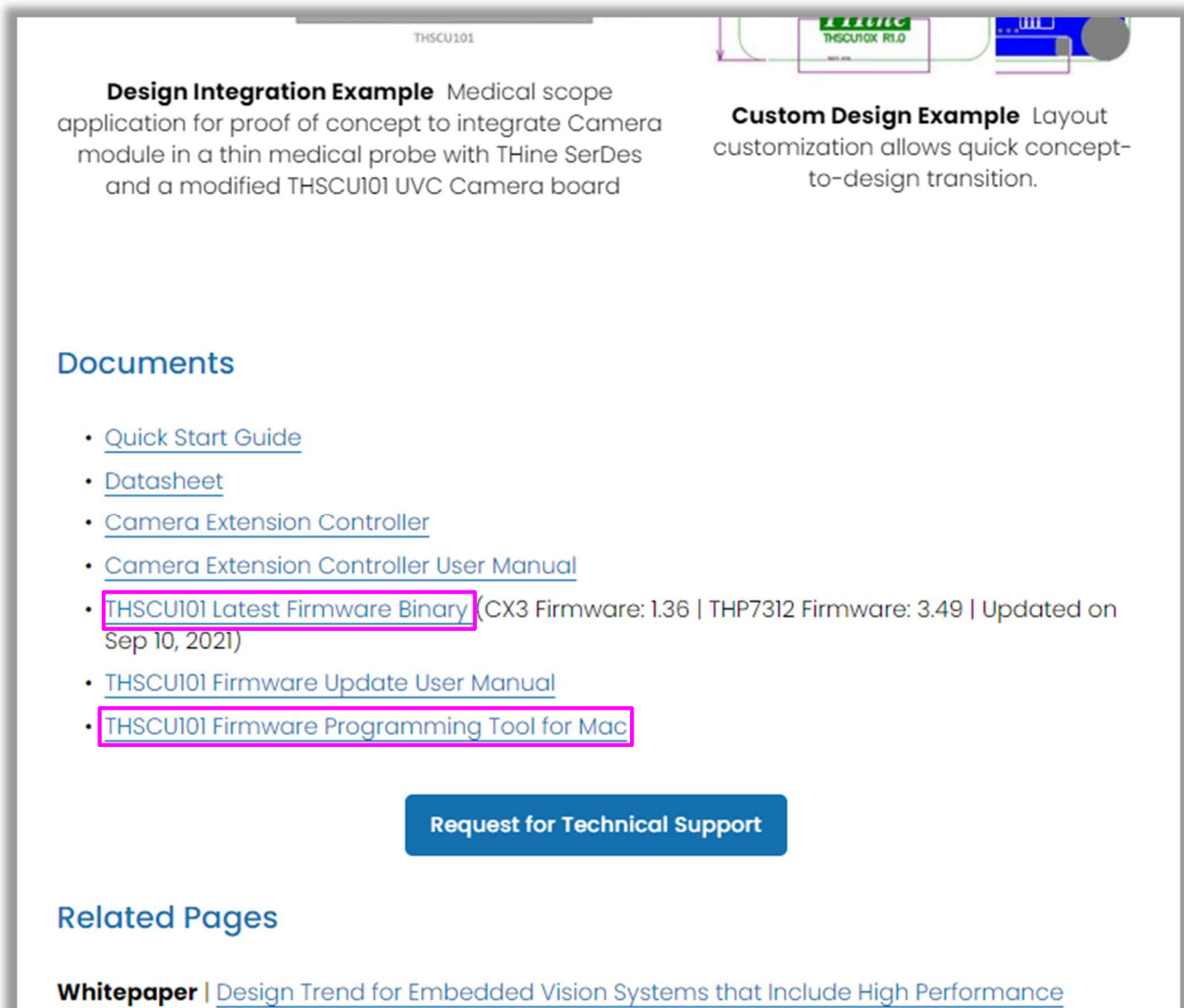
Following files are available in THine Solutions website. Visit <https://www.thinesolutions.com/13mp-pdaf-uvc-camera>

[1] Programming tool on Mac

The tool to program firmware into THSCU101 on Mac
ProgrammingTool.zip

[2] THSCU101 Latest Firmware Binary

THSCU101_CX3_1_36_ISPFW_03_49.img as of Sep. 10, 2021



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Mac-step 2. Check the firmware version

You need a Windows PC to confirm the firmware version of THSCU101

- Follow the instruction of "[Win-step 2. Check the firmware version](#)"

You can skip this step and proceed to following steps if it is difficult to use a Windows PC (*).

(* Firmware updates must be done with a Windows PC unless the firmware version is "CX3 Firmware: 1.36 and THP7312 Firmware: 3.49" or later.

Mac-step 3. Delete firmware from THSCU101

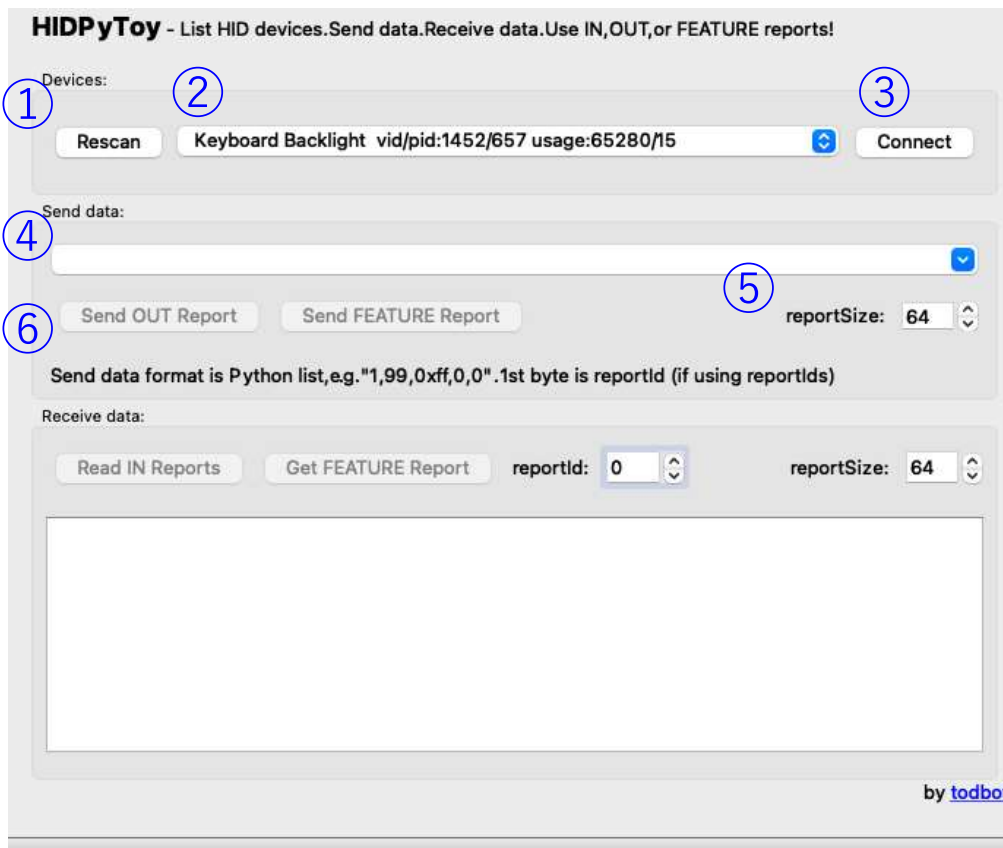
1. Connect THSCU101 to Mac

2. Launch HIDPyToy

- Download from following URL if you do not have <https://github.com/todbot/hidpytoy/releases/tag/v0.1>

3. Set following

- ① Click Rescan
- ② Click if “Cypress CX3-UVC ...” is listed in drop down
- ③ Click Connect
- ④ Type 0,3,0x4D in Send data filed
- ⑤ Change reportSize 3
- ⑥ Click Send OUT Report



4. Confirm “Sending 3-byte OUT report:[0,3,77]” is displayed on the bottom left corner of HIDPyToy if the firmware is deleted.

Mac-step 4. Program firmware into THSCU101

[Preparation]

1. Build `download_usb` which programs the firmware into THSCU101 according to the guide in Appendix “[Build the tool on Mac](#)”. (Required only at the first time)
2. Put the latest firmware binary into the same folder with the tool, `download_usb`.

[Program the firmware into THSCU101]

1. Connect THSCU101 to Mac via USB cable
2. Launch Terminal
3. Change the directory to the one where the tool and the firmware are in.
4. Program the firmware into THSCU101 with following command












```
./download_usb -t "SPI" -i THSCU101_CX3_1_36_ISPFW_03_49.img
```
5. Confirm “Firmware programming to SPI completed” is displayed on Terminal if the firmware programming is done.

Appendix

- EZ-USB FX3 SDK Installation
- Build the tool for Mac

EZ-USB FX3 SDK Installation

1. Download “EZ-USB FX3 Software Development Kit” for windows from Cypress
 - <https://www.cypress.com/documentation/software-and-drivers/ez-usb-fx3-software-development-kit>
 - FX3SDKSetup_1.3.4.exe is downloaded.

Related Files				
File Title	Language	Size	Last Updated	
 FX3 Programmers Manual.pdf	English	1.41 MB	06/24/2020	
 FX3 Release Notes.pdf	English	474.63 KB	06/22/2020	
 Cypress USBSuite Release Notes.pdf	English	335.58 KB	06/22/2020	
 Cypress USBSuite Application Development Guide.pdf	English	582.23 KB	06/08/2020	
 Download CyUSB3_USB_Suite_Source.zip	English	18.82 MB	05/30/2018	
 Download EZ-USB FX3 SDK 1.3.4 for Windows 	English	374.92 MB	05/30/2018	
 Download EZ-USB FX3 SDK 1.3.4 for Linux 	English	430.22 MB	05/30/2018	
 Download EZ-USB FX3 SDK 1.3.4 for MacOS 	English	311.03 MB	05/30/2018	

2. Install “EZ-USB FX3 Software Development Kit” to your PC.
 - Double click FX3SDKSetup_1.3.4.exe to launch installer.
 - Install “EZ-USB FX3 Software Development Kit” according to installer instruction.
 - Select installation type “Typical”.

Build the tool for Mac

1. Unzip ProgrammingTool.zip, ProgrammingTool folder is generated.
2. Launch Terminal
3. Install homebrew from <https://brew.sh/>
4. Install libusb with following command in Terminal

```
brew install libusb
```

5. Change the directory of Terminal to ProgrammingTool.
6. Build the tool (download_usb) to program the firmware into THSCU101 with following command.

```
gcc -I /opt/homebrew/include/ -o download_usb  
download_usb.c -L /opt/homebrew/lib/ -l usb-1.0
```

Set the library path to the gcc options according your Mac folder structure.

7. Check download_usb is generated in ProgrammingTool folder.