CYUSB3KIT-004 EZ-USB™ SX3 explorer kit guide

About this document

Scope and purpose

This document is a user guide for the CYUSB3KIT-004 EZ-USB™ SX3 explorer kit. This kit enables you to stream video and audio directly from the onboard camera and microphones. You can refer to the relevant sections based on your requirement:

- **Introduction** – Provides basic information on the kits
- **Installing the kit software** – Explains the installation of software needed to program the kit
- **Kit hardware** – Explains the kit architecture and system design details
- **Kit programing** – Describes the procedure to program the kit
- **Kit operation** – Explains the procedure to operate the kit

Intended audience

This document is intended for users of the EZ-USB™ SX3 explorer kit.

Table of contents

About this document **1**
Table of contents **2**
1 Introduction **4**
1.1 Kit contents 4
1.2 Downloading kit documents and hardware design files 5
1.3 Board details 5
1.4 Kit features 6
1.5 Kit Removal 6
2 Installing the kit software **7**
2.1 Before you start 7
2.2 Install CYUSB3KIT-004 DVK software 7
2.3 Install Audacity software 8
3 EZ-USB™ SX3 explorer kit system design **9**
3.1 Top-level hardware design 9
3.2 CYUSB3KIT-004 baseboard design details 10
3.2.1 USB connector (J1) 10
3.2.2 Jumpers and switches 10
3.2.3 Baseboard power supply 11
3.2.3.1 5 V to 3.3 V regulator (U1) 11
3.2.3.2 5 V to 1.2 V regulator (U6) 11
3.2.3.3 5 V to 1.8 V / 3.3 V regulator (U8) 11
3.2.4 SX3 (U3) 11
3.2.5 SPI flash (U7) 11
3.2.6 Interface/GPIO connectors (J4, J5) 11
3.2.7 Crystal (Y1) 11
3.2.8 Reset switch (SW2) 12
3.2.9 LEDs (LED1, LED2, LED3) 12
3.3 CYUSB3KIT-004 camera add-on board design details 12
3.3.1 Add-on board power supply 12
3.3.1.1 3.3 V to 1.5 V regulator (U3) 12
3.3.1.2 3.3 V to 2.5 V regulator (U1) 12
3.3.1.3 3.3 V to 2.8 V regulator (U5) 12
3.3.2 Crosslink FPGA (U2) 12
3.3.3 Microphones (U6, U7) 13
3.3.4 Image sensor connector (J2) and onboard camera module (M1) 13
3.3.5 Crystal (Y1) 13
3.3.6 External camera module connector for Raspberry Pi (J3) 13
3.3.7 GPIO interface connectors (J4, J5) 13
4 Programming the EZ-USB™ CYUSB3KIT-004 SX3 controller **14**
5 Kit operation **19**
5.1 Booting from the SPI flash 19
5.2 Video streaming from the onboard camera 20
5.3 Audio streaming from the onboard microphones 22
5.4 Video streaming from the Raspberry Pi camera 23
6 Troubleshooting **26**
6.1 Programming test 26
6.1.1 No bootloader device detected 26

Table of contents

6.1.2 FX3 USB Bootloader device not detected in Windows Device Manager 26
6.2 Video streaming test 27
6.2.1 SX3 camera not displayed in the device manager 27
6.2.2 Black screen detected in the camera app 28
6.3 Audio streaming test 28
6.3.1 SX3 digital audio interface is not displayed in the device manager 28
6.3.2 SX3 digital audio interface is not displayed in audacity application 28
Related documents 29
Technical support 30
Revision history 31

1 Introduction

The CYUSB3KIT-004 EZ-USB™ SX3 explorer kit (DVK) is based on the SX3 product family of Infineon's configurable SuperSpeed USB controllers.

SX3 has a fully configurable general interface that can interface with any processor, ASIC, image sensor, or field-programmable gate array (FPGA). It provides easy and effortless connectivity to popular industry interfaces such as synchronous slave FIFO, asynchronous SRAM, asynchronous and synchronous address data multiplexed interfaces, and image sensor interfaces. The EZ-USB™ SX3 explorer kit combines hardware, software, and documentation that enable customers to evaluate the SX3 device. This user guide describes the steps to install the software required by the SX3 explorer kit and to operate the development board provided with the kit.

This DVK is intended to be a development kit for USB Type-C audio and video streaming applications.

See the device datasheets **[4]** to understand and compare the various features supported by the EZ-USB™ SX3 controllers.

The CYUSB3KIT-004 EZ-USB™ SX3 explorer kit support the following key features:

- Video streaming up to 1080p @30fps in YUV format from onboard image sensor module
- Audio stream from onboard L/R digital MEMS microphones
- USB bus-powered operation
- External off-the-shelf MIPI camera interface from Raspberry Pi
- Compatible with FX3 explorer kit interconnect boards
- Onboard regulators
- Firmware-controlled LED and user switch
- GPIO headers

To view the SX3 controller details, see the **webpage**.

1.1 Kit contents

The CYUSB3KIT-004 EZ-USB™ SX3 explorer DVK consists of the following:

Table 1 Kit contents

Item	Type	Comments
SX3 baseboard	Hardware	
Camera add-on board	Hardware	
SuperSpeed USB - C cable	Cable	
Hard copy of quick start guide	Documentation	
Kit casing	Package	
Foam	Package	To protect and maintain proper placement in the kit container.

The following items may be required for developing applications with this kit. Note that the following are not included in the kit:

- Off-the-shelf (OTS) MIPI camera module - MPN# 410-358 from Raspberry Pi
- 22-pin to 15-pin ribbon cable (CAB0306)
- FX3 explorer kit interconnect boards from Altera and Xilinx

1.2 Downloading kit documents and hardware design files

The documents and the hardware design files for CYUSB3KIT-004 EZ-USB™ SX3 explorer kit can be downloaded from the kit webpage [3]. The documents include a quick start guide, kit guide (this document), and release notes. The hardware design files include schematic, BoM, and layout files.

1.3 Board details

This section lists the key interfaces of the CYUSB3KIT-004 board.

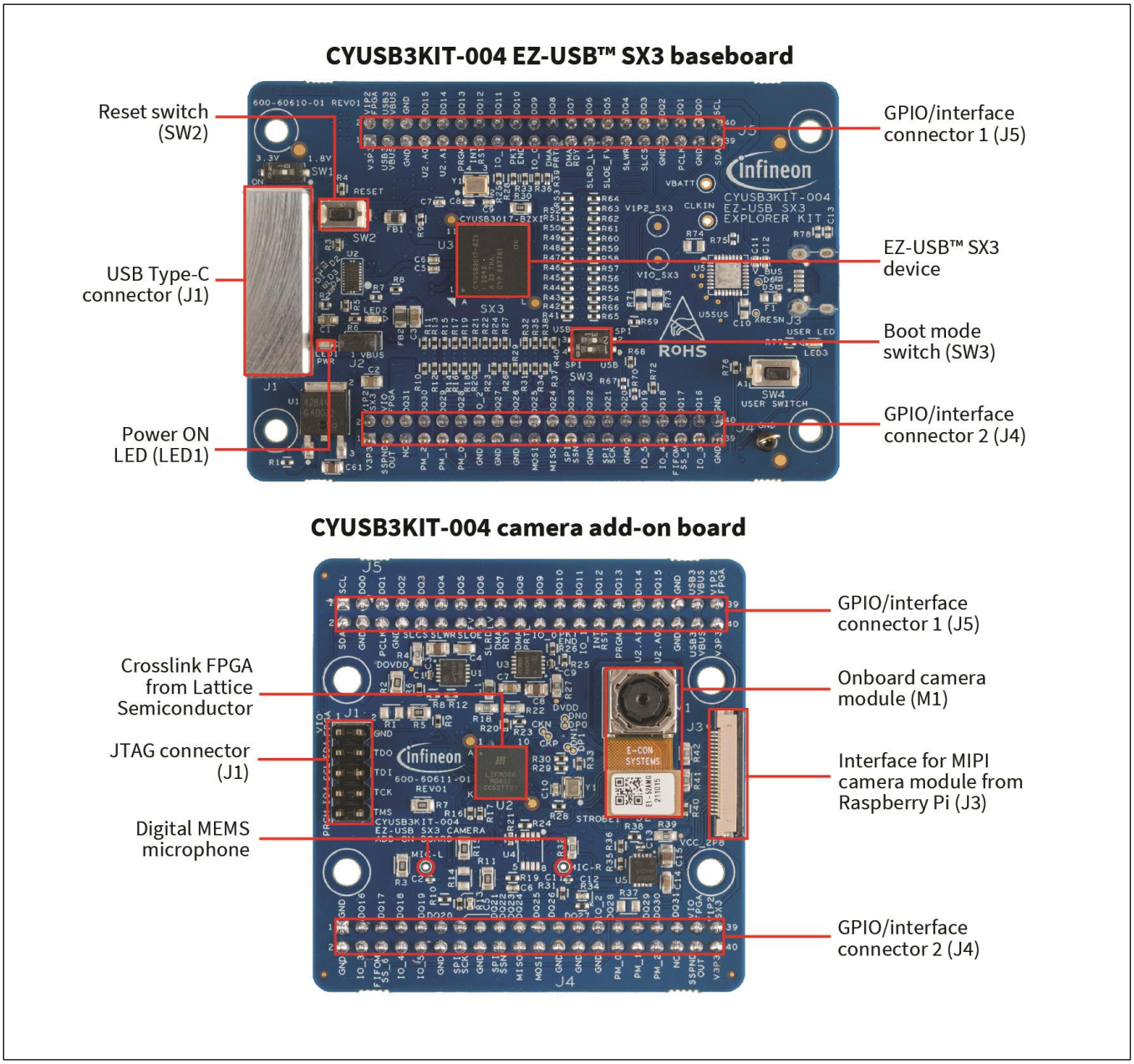


Figure 1 CYUSB3KIT-004 EZ-USB™ SX3 explorer kit

Note:

1. *Photos are taken without stand-offs.*
2. *The baseboard is mounted with the camera add-on board during manufacturing and delivered pre-mounted in this kit. The kit is also pre-programmed to stream from the onboard camera and microphones.*

1.4 Kit features

The kit features onboard camera and microphones that can be configured using the provided configuration to stream video and audio applications. Additionally, the CYUSB3KIT-004 kit provides an option to interface with external off-the-shelf MIPI camera module from Raspberry Pi for streaming video. This kit is designed keeping the compatibility of FX3 explorer kit interconnect boards in mind. See Kit operation for more details.

1.5 Kit Removal

The kit operation does not need user to detach the boards at any point in time. However, if user wants to interface the base board with other custom-made add-on boards, ensure to remove the boards using a rocking mechanism as shown below.

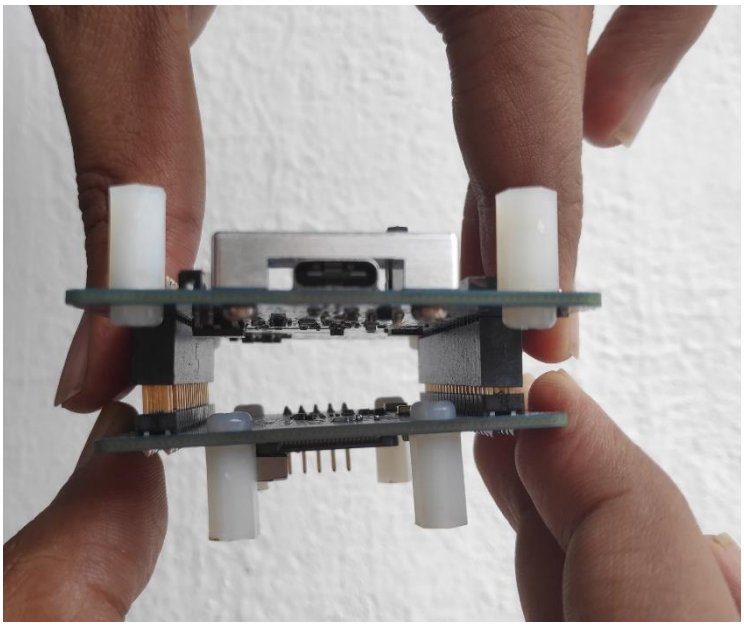


Figure 2 Detaching the boards

2 Installing the kit software

This chapter describes the procedure to install software for CYUSB3KIT-004 DVK.

2.1 Before you start

The installation of SX3 configuration utility software and other Infineon softwares require administrator privilege. However, the privilege is not required to run the software once it is installed.

2.2 Install CYUSB3KIT-004 DVK software

Download and install the EZ-USB™ SX3 configuration utility from **https://www.cypress.com/documentation/software-and-drivers/ez-usb-sx3-configuration-utility** to configure and evaluate the example templates on the CYUSB3KIT-004 DVK.

Installable packages are available for Windows, Linux, and macOS.

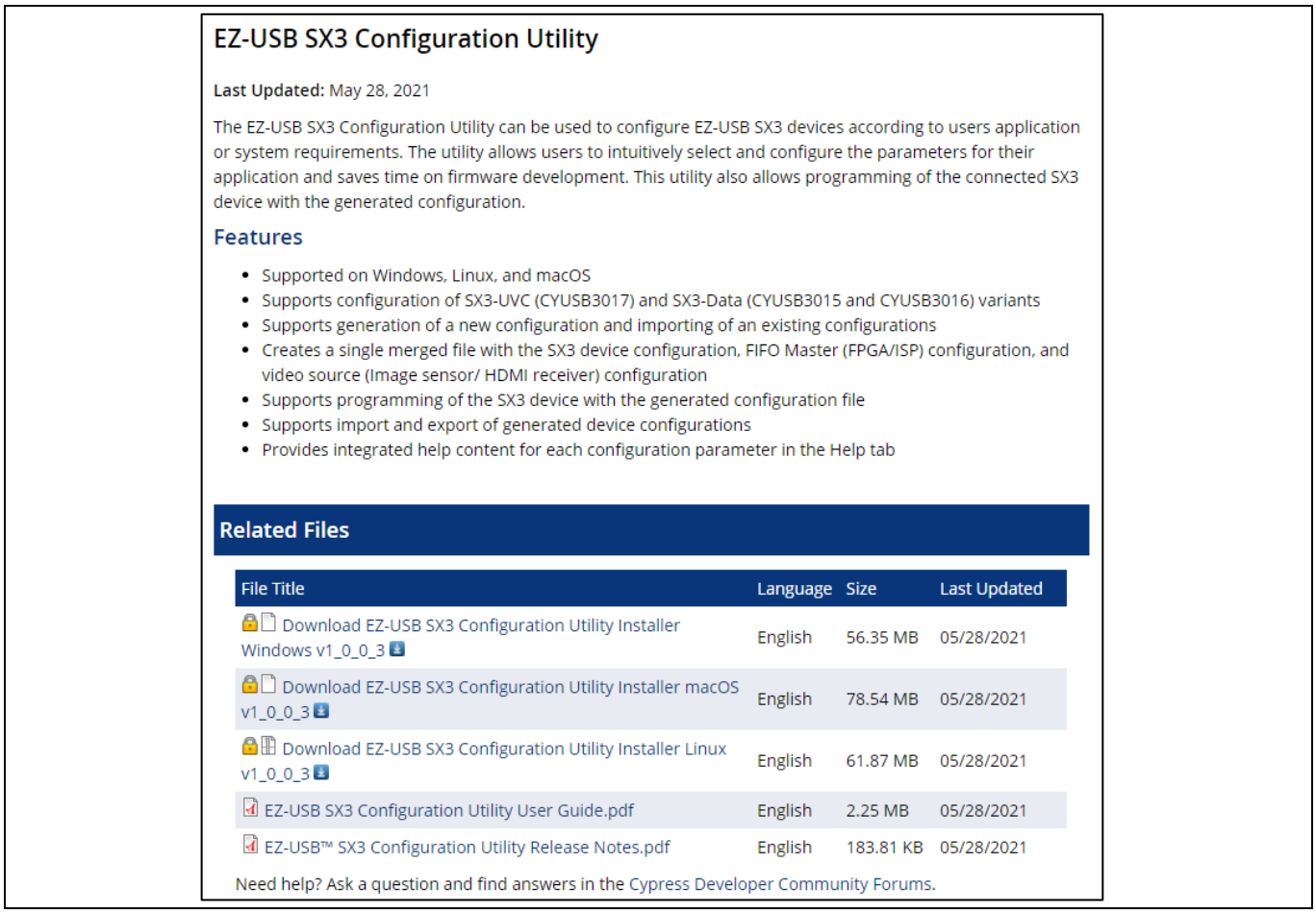


Figure 3 EZ-USB™ SX3 Configuration utility files

After installation is complete, the contents are available at *<Install Directory>\ EZ-USB SX3 Configuration Utility.*

Note:

1. *The default <Install Directory> is C:\Program Files(x86)\Cypress.*
2. *See **EZ-USB™ SX3 Configuration Utility user guide** for more details.*

2.3 Install Audacity software

Download and install the latest Audacity software from https://www.audacityteam.org/download/. This is needed to view the recording from DVK on-board microphones. Installable packages are available for Windows, Linux, and macOS.

3 EZ-USB™ SX3 explorer kit system design

This section provides details of the CYUSB3KIT-004 EZ-USB™ SX3 explorer DVK. The kit is bus-powered and supports USB Type-C to Type-C and Type-A to Type-C cables to connect to the PC.

3.1 Top-level hardware design

The CYUSB3KIT-004 EZ-USB™ SX3 explorer DVK consists of two boards:

- Baseboard: Consists of the SX3 device, an external SPI flash module, power supplies, USB Type - C connector, and interface connectors for add-on modules.
- Camera add-on board: Consists of the Crosslink FPGA from Lattice Semiconductor, onboard image sensor module, microphones, power supplies, and external interface connector for Raspberry Pi.

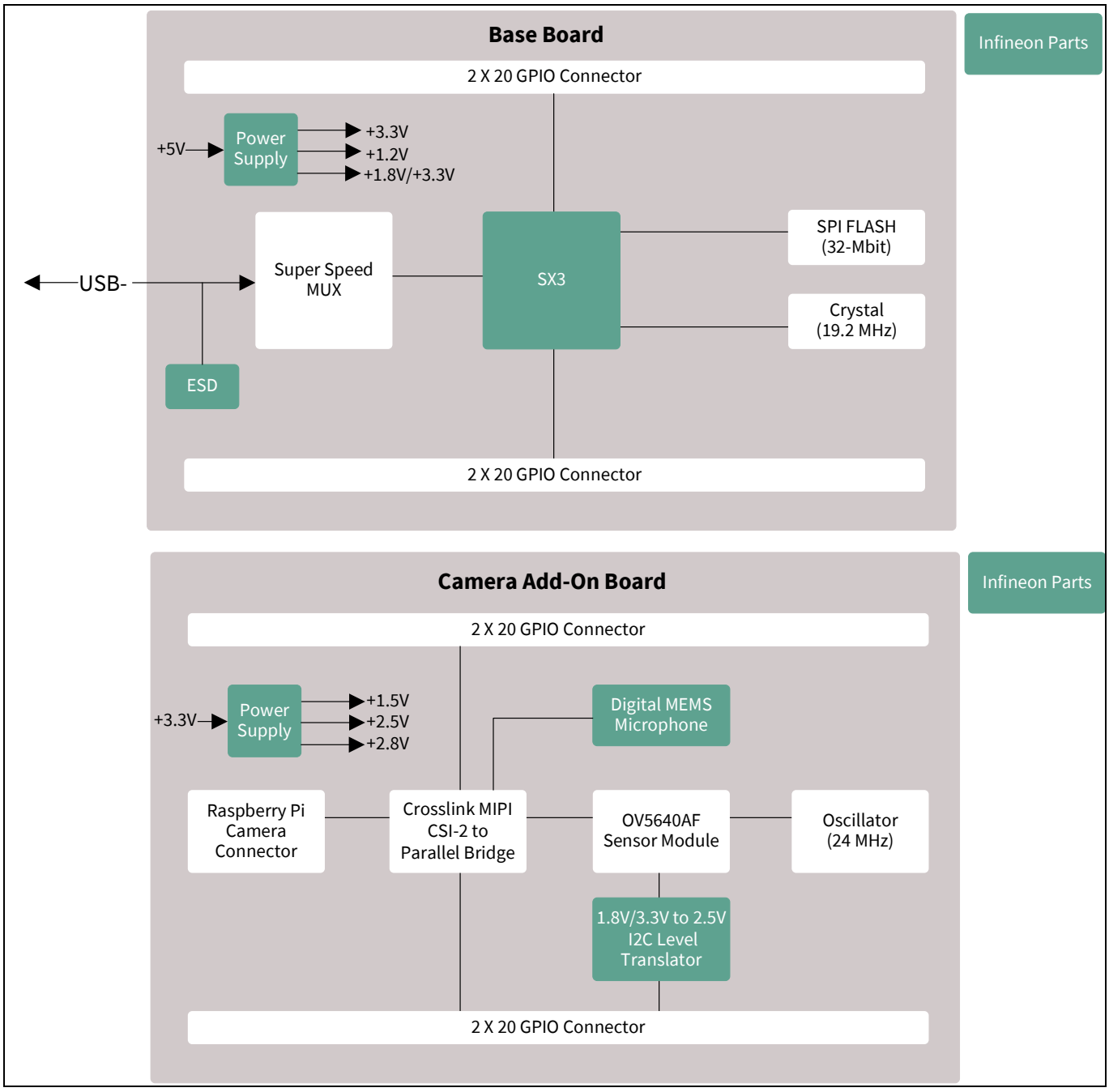


Figure 4 CYUSB3KIT-004 EZ-USB™ SX3 explorer DVK architecture

3.2 CYUSB3KIT-004 baseboard design details

The CYUSB3KIT-004 baseboard consists of the SX3 silicon (CYUSB3017-BZXI), USB Type-C connector, SuperSpeed MUX, and SPI flash. The board is bus-powered and uses a 19.2-MHz crystal for operation. The development board provides convenient access to SX3 interfaces, such as GPIOs, I2C, SPI, and JTAG. The two 40-pin headers (on the reverse PCB side in Figure 3) provide SX3 signals to connect to external boards using the GPIO interface. Note that for convenience, the headers have long pins that extend above the top side of the PCB for use as test points or attachment to mating connectors. All I/O signals, which include the 32-bit data bus, 13 control lines, and a 100-MHz clock, are available to connect to external devices such as FPGAs, CPLDs, image sensors, or microcontrollers.

The baseboard contains the following key components:

3.2.1 USB connector (J1)

The SX3 explorer kit development board provides one USB 3.0 Type-C receptacle that brings out SX3 USB signals. This receptacle accepts a Type-C connection, the other end of the cable connects to a USB host PC via either a Type-A or a Type-C port as well. A SuperSpeed USB - C cable is included in the kit. Use this port to test SX3 applications that communicate with a host PC. Using the Type-C interface allows access to SX3 debug interface using serial terminal messages.

3.2.2 Jumpers and switches

Jumper (J2): This is a power ON jumper. When closed, it allows USB VBUS for powering the board.

J2 close: Power ON (Default)

J2 open: Power OFF

Power switch (SW1): This is used to switch the add-on board power from 1.8 V to 3.3 V and vice-versa. This allows compatibility with SX3 explorer kit interconnect modules which typically requires 1.8 V. The camera add-on board supplied with this kit can operate at both 1.8 V and 3.3 V; however, to connect an external Raspberry Pi MIPI camera board, 3.3 V is required.

SW1 ON: 3.3 V (Default)

SW1 OFF: 1.8 V

Reset switch (SW2): Reboots the silicon. Press the switch and release to boot from the selected mode set by SW3.

Mode selection switch (SW3): Selects the mode in which SX3 has to boot upon reset or power ON. The SX3 explorer kit can boot in two modes based on position of this switch.

Table 2 Boot modes

Boot mode	PMODE1	PMODE2
USB	SW3.2 ON	SW3.1 OFF
SPI	SW3.2 OFF	SW3.1 ON

To program the device, set SW3 in USB mode. After programing, setting the mode switch in SPI mode and rebooting the device allows SX3 to boot from the SPI flash.

User switch (SW4): Allows to achieve user-defined functions such as still capture. Pressing this switch sends an I2C command to SX3.

3.2.3 Baseboard power supply

The baseboard consists of three regulators. Each power rail has corresponsing test points on board for probing. Care should be taken to make sure no external voltages are applied at the test points as it may permanently damage the kit functionality.

3.2.3.1 5 V to 3.3 V regulator (U1)

This is an LDO that provides a 3.3 V output at 1 A. TLE4284DVATMA1 from Infineon Technologies is used on this board.

3.2.3.2 5 V to 1.2 V regulator (U6)

This is a buck regulator that provides 1.2 V for powering the SX3 core. It also power to the FPGA present on camera add-on board. IR3883MTRPBF from Infineon Technologies is used on board.

3.2.3.3 5 V to 1.8 V / 3.3 V regulator (U8)

This is an LDO that provides a 1.8 V or 3.3 V output at 1 A. This regulator features a switch SW1 that changes the output voltage based on switch status.

Mode 1: SW1 = OFF → V_{OUT} = 1.8 V

Mode 2: SW1 = ON → V_{OUT} = 3.3 V

TLE4284DVATMA1 from Infineon Technologies is used on this board.

3.2.4 SX3 (U3)

This is a USB 3.0 configurable SuperSpeed controller with a 32-bit ARM926EJ core CPU and 512-KB embedded SRAM. It supports UVC, UAC, and USB vendor class protocols. With a general configurable interface of 8-, 16-, 24-, and 32- bit data bus @ 100 MHz, SX3 supports slave FIFO and parallel camera interface features. It has dedicated interfaces for SPI flash and I2C. SX3 supports selectable clock input frequencies @ 19.2, 26, 38.4, and 52 MHz. Additionally, a dedicated 19.2-MHz crystal input support is also available.

3.2.5 SPI flash (U7)

The kit configuration is stored on the 32-Mbit SPI flash. After power ON, SX3 fetches the required details from the configuration image, stores it in its RAM and starts executing from it.

3.2.6 Interface/GPIO connectors (J4, J5)

The baseboard has two 20-pin interfaces/GPIO female connectors. All the signals required for interfacing SX3 with external add-on modules are routed to the connectors. Pin 5 of J4 in the connector is removed (i.e., cut) to polarise the connector to avoid connecting the add-on boards in incorrect orientation.

Note: *Do not connect any external voltage source to these pins as it may permanently damage the kit. The pins are available only for probing purpose.*

3.2.7 Crystal (Y1)

SX3 needs a 19.2-MHz crystal to generate the clock for its operation.

3.2.8 Reset switch (SW2)

The reset switch (SW2) is provided for debug purpose. The RC circuit provides a clean reset signal every time after power up. The RC circuit formed by R1 and C72 gives a 10-msec pulse width because it assumes the worst 3.3 V supply ramp up time and SX3 crystal POR reset time. On pressing SW2, SX3 starts rebooting based on the mode selection switch SW3.

3.2.9 LEDs (LED1, LED2, LED3)

- LED1 (power ON LED) is a GREEN color LED used for 3.3-V power supply indication
- LED2 is a RED color LED to indicate fault on VBUS
- LED3 is a BLUE color application-driven user LED connected to GPIO_4 of SX3

3.3 CYUSB3KIT-004 camera add-on board design details

3.3.1 Add-on board power supply

The camera add-on board consists of three regulators. Each power rail has corresponsing test points on board for probing. Care should be taken to make sure no external voltages are applied at the test points as it may permanently damage the kit functionality.

3.3.1.1 3.3 V to 1.5 V regulator (U3)

This is an LDO that generates 1.5 V from 3.3 V coming from the baseboard. AP7331-WG-7 from diodes incorporated is used on the board. It is rated to provide maximum current of 300 mA.

3.3.1.2 3.3 V to 2.5 V regulator (U1)

This is an LDO that generates 2.5 V from 3.3 V coming from the baseboard. AP7331-WG-7 from Diodes Incorporated is used on the board. It is rated to provide maximum current of 300 mA.

3.3.1.3 3.3 V to 2.8 V regulator (U5)

This is an LDO that generates 2.8 V from 3.3 V coming from the baseboard. AP7331-WG-7 from Diodes Incorporated is used on the board. It is rated to provide maximum current of 300 mA.

3.3.2 Crosslink FPGA (U2)

The camera add-on board uses CrossLink FPGA from Lattice Semiconductor. It is a programmable video bridging device that supports a variety of protocols and interfaces for mobile image sensors and displays. CrossLink supports video interfaces including MIPI DPI, MIPI DBI, CMOS camera and display interfaces, OpenLDI, FPD-Link, FLATLINK, MIPI D-PHY, MIPI CSI-2, MIPI DSI, SLVS200, subLVDS, HiSPi and more.

This DVK uses the two MIPI CSI-2 interface ports of the CrossLink FPGA to communicate with the onboard camera module and external camera module. The FPGA converts the received MIPI signals to 16-bit parallel interface thus allowing SX3 to communicate with the image sensors / camera module directly. This kit uses the 80-ball ctfBGA package with 37 I/Os.

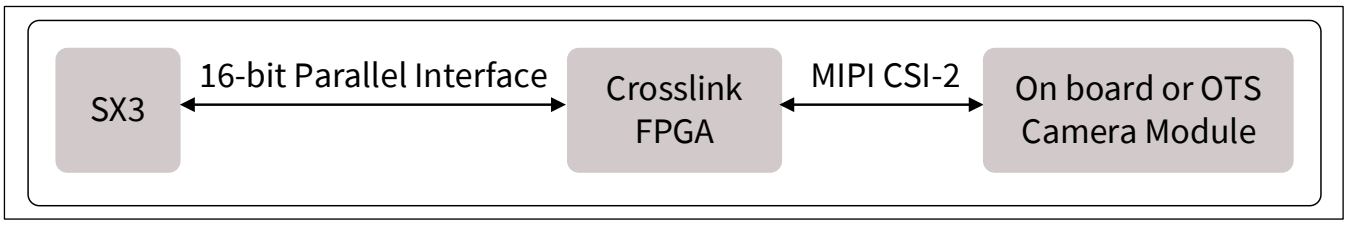


Figure 5 Crosslink FPGA interfaces

3.3.3 Microphones (U6, U7)

Two Infineon IM69D130V01XTSA1 MEMS microphones are used in this DVK camera add-on board. These microphones are configured as left and right microphones to provide stereo effect.

3.3.4 Image sensor connector (J2) and onboard camera module (M1)

The camera add-on board uses a 5-MP MIPI camera module, e-CAM52A_MI5640_MOD from E-Con Systems that features Omnivison OV5640 CMOS image sensor. This MIPI CSI camera module streams VGA @ 60 fps, HD (720p) @ 60 fps and full HD (1080p) @ 30 fps. It is an auto focus camera that provides output at YUV422 format. The camera module is mounted on the image sensor connector assembly present on the add-on board.

3.3.5 Crystal (Y1)

SG-210STF 24.0000ML0 is used to provide 24-MHz clock for the camera module.

3.3.6 External camera module connector for Raspberry Pi (J3)

The camera add-on board allows you to interface external off-the-shelf Raspberry Pi MIPI camera module such as PCAM-5C. This is a 22-pin FPC connector. You'd need a 22-pin to 15-pin flex cable (CAB0306) to connect the off-the-shelf Raspberry Pi MIPI camera module with the DVK camera add-on board.

3.3.7 GPIO interface connectors (J4, J5)

The camera add-on board also has two 20-pin mating interface/GPIO connectors to interface the camera add-on board with the SX3 baseboard.

Note: Do not connect any external voltage source to these pins as it may permanently damage the kit. The pins are available only for probing purpose.

4 Programming the EZ-USB™ CYUSB3KIT-004 SX3 controller

The EZ-USB™ SX3 controller on the CYUSB3KIT-004 EZ-USB™ SX3 explorer kit is pre-programmed with the latest configuration at the time of manufacturing. However, you should check the **CYUSB3KIT-004 EZ-USB™ SX3 explorer kit webpage** for the latest configuration.

CYUSB3KIT-004 DVK is pre-programed with the firmware to stream from the onboard camera and mic. Use the configuration utility only to change the program.

1. Open the EZ-USB™ SX3 configuration utility. If the application is not present on the desktop, browse to the SX3 SDK installation directory (*C:\Program Files (x86)\Cypress\EZ-USB SX3 Configuration Utility*).

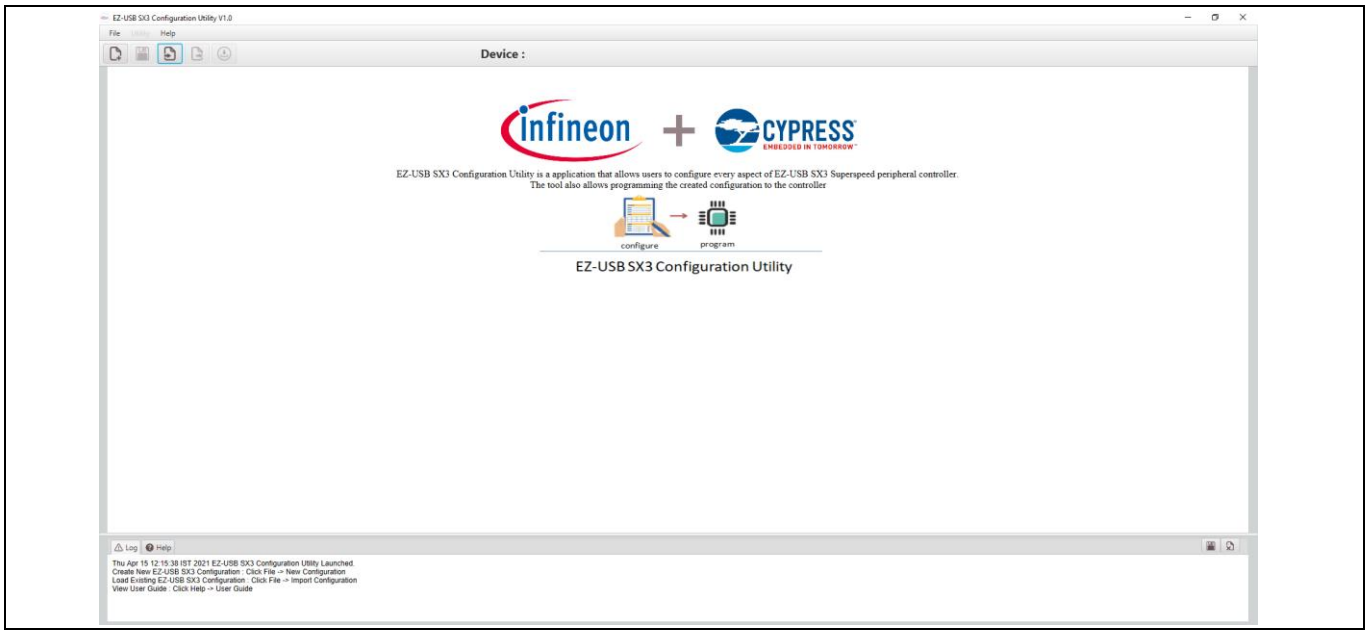


Figure 6 SX3 configuration utility home screen

2. Click **Import**. Select **SX3 Template Project** and click (…).

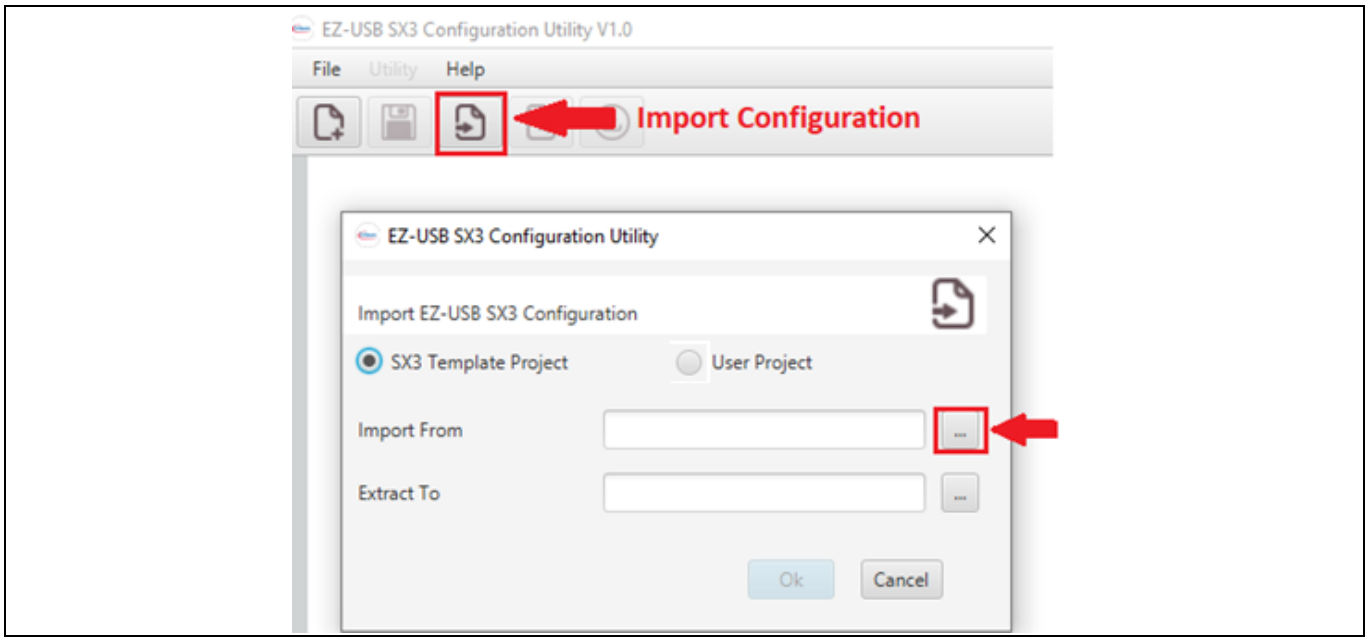


Figure 7 Import configuration screen

Programming the EZ-USB™ CYUSB3KIT-004 SX3 controller

3. Browse to import the following configuration from the local folder based on the module planned for streaming and click **Open**.

Table 3 Project files

Streaming module	Import file
Onboard camera	*sx3_explorer_kit_uvc_uac_crosslink_slavefifo.zip*
Raspberry Pi MIPI camera (PCAM 5C – MPN# 410-358)	*sx3_explorer_kit_uvc_uac_crosslink_rpi.zip*

An example window is shown below:

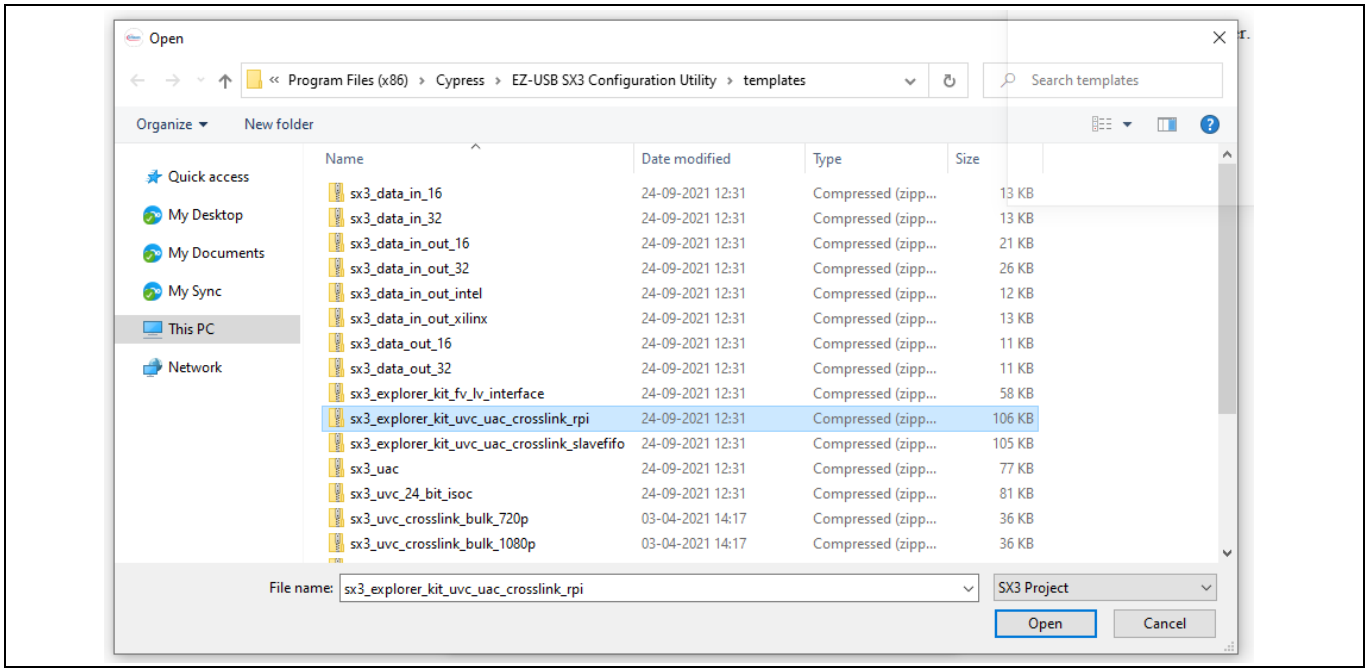


Figure 8 Project import screen

4. On the **Extract To** field, select the local folder, and click **OK**.

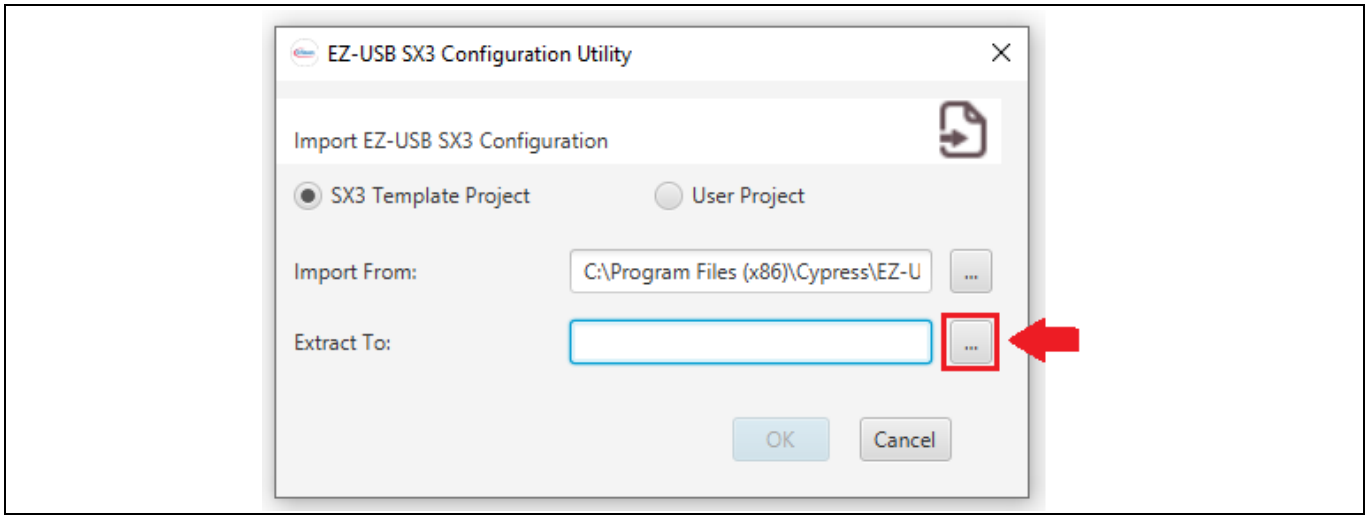


Figure 9 Project extract screen

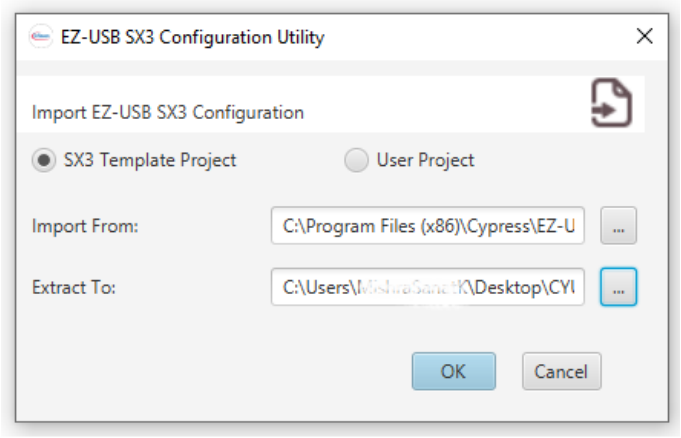


Figure 10 Selected folder

5. Set the mode switch SW3 setting to USB by moving the SW3 pin 1 to OFF and pin 2 to ON position.

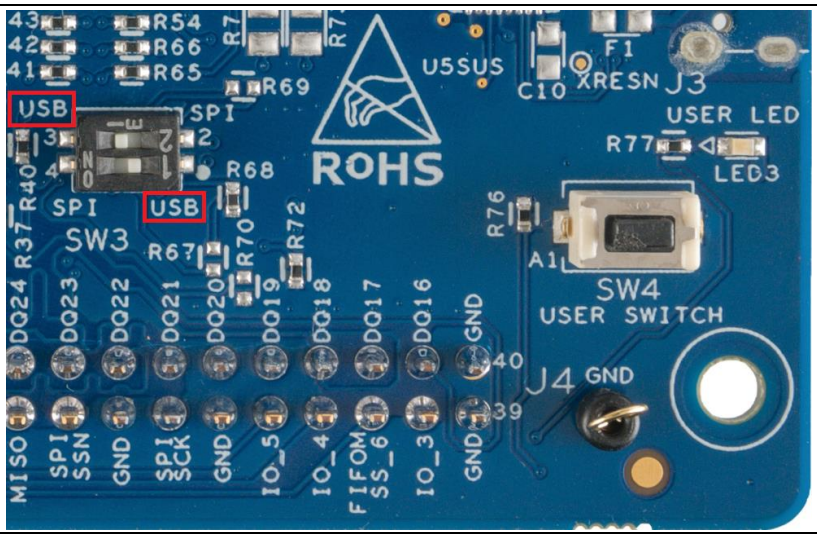


Figure 11 Mode switch setting to USB mode

6. Ensure that the jumper is mounted on J2.
7. Take the SuperSpeed USB - C cable and connect the explorer kit board to the PC as shown in figure below:

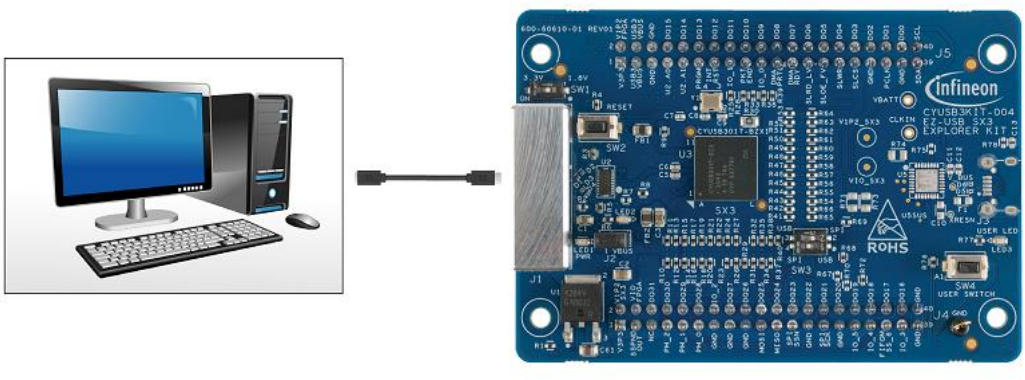


Figure 12 Connecting the kit with PC

8. **Cypress FX3 BootLoader Device** appears in **Device Manager > Universal Serial Bus controllers**.

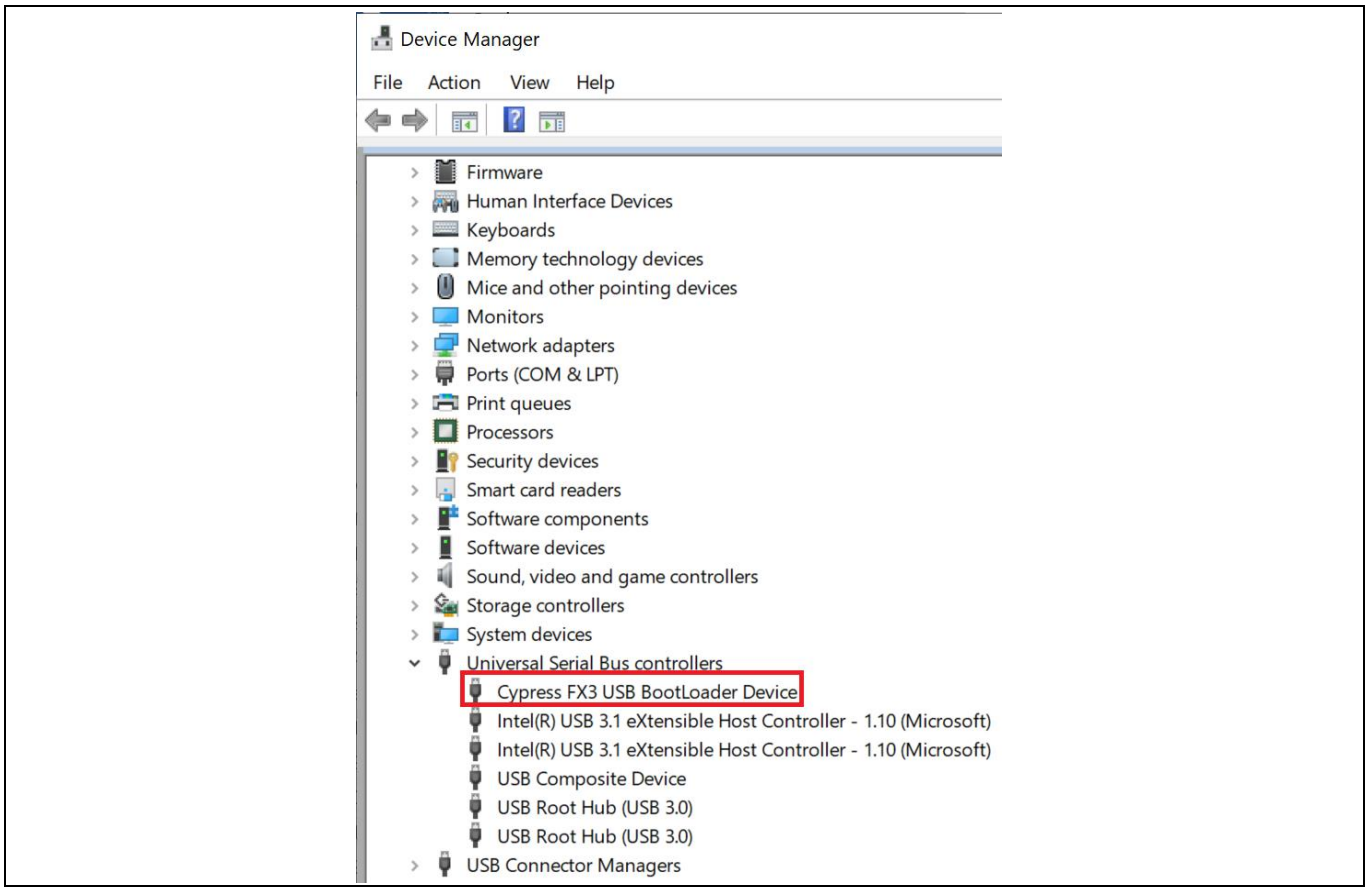
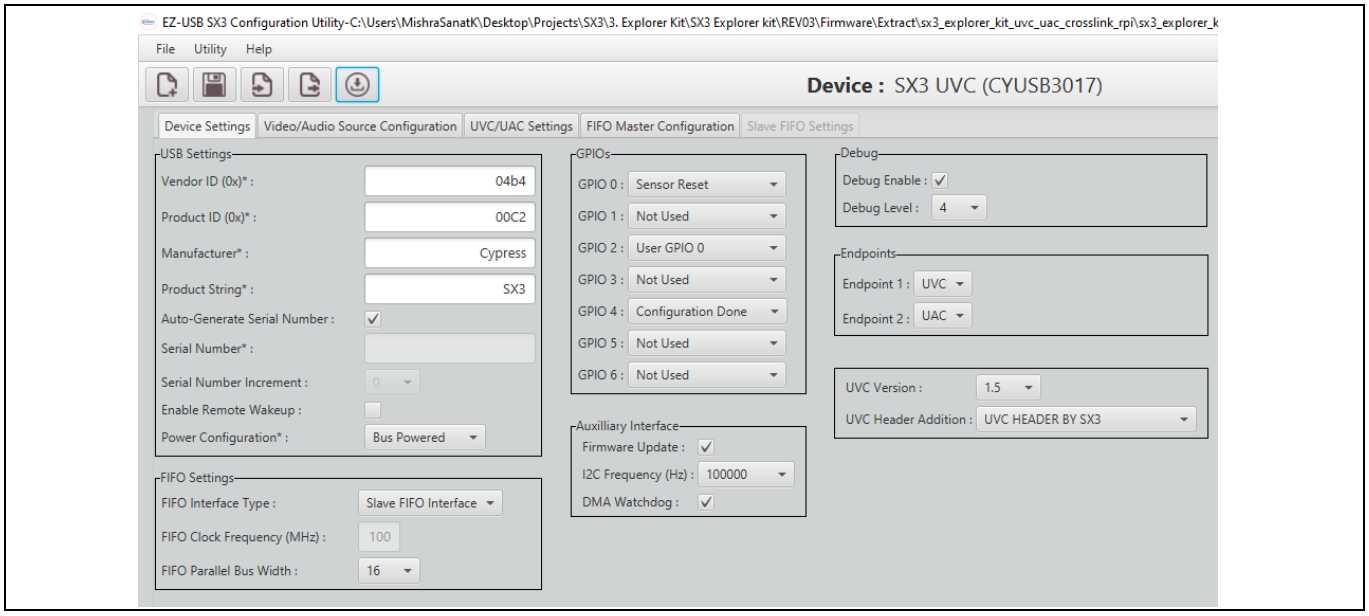


Figure 13 FX3 bootloader device appearing in device manager

Note: If the device is detected as 'Westbridge', it means the cyusb3 driver is not installed. For more details on how to install cyusb3 driver, see Toubleshooting section 6.1.2.

9. Click the **Program config** button, and click **Program device**.



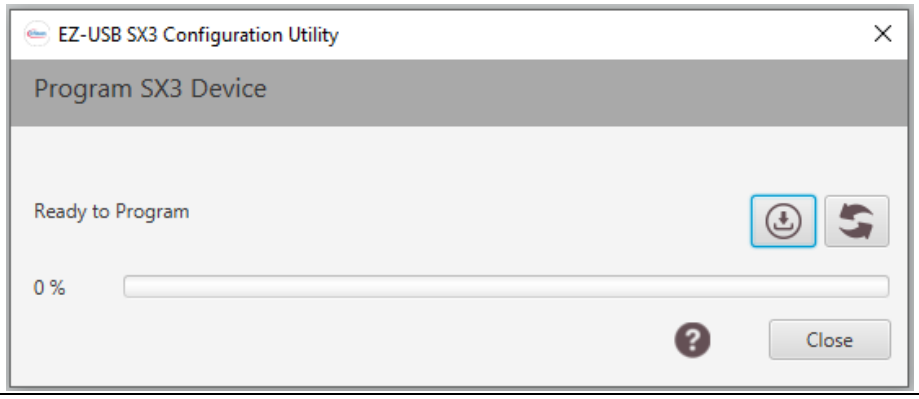


Figure 14 Program download

10. Wait for the programming to complete, and when done, click **Close**.

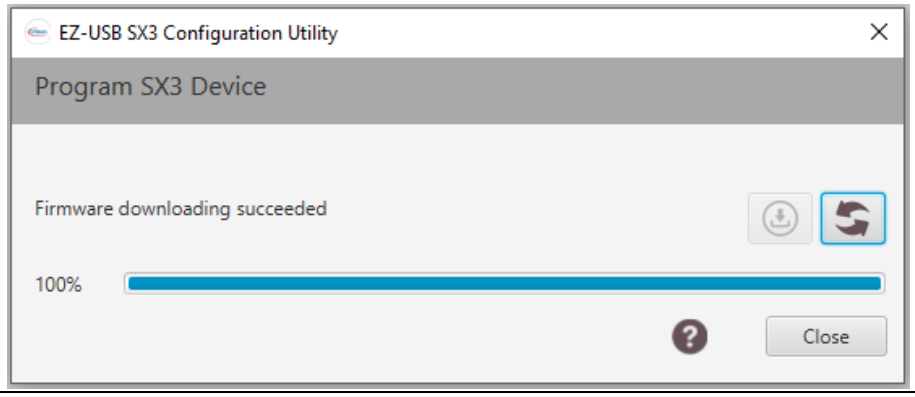


Figure 15 Programming successful

5 Kit operation

This chapter describes how to boot the SX3 device after successful programming to demonstrate the kit functionality by streaming video and audio. Two separate demonstrations are covered:

- Streaming video from the onboard camera while recording audio from onboard microphones
- Streaming video from the off-the-shelf Raspberry Pi MIPI camera while recording audio from onboard microphones

Important Note: Before starting the demo, make sure that the DVK is loaded with the appropriate configuration per Table 3.

5.1 Booting from the SPI flash

1. Set the switch SW3 setting to SPI position as the following:

Move SW3 pin 1 to ON position and pin 2 to OFF position.

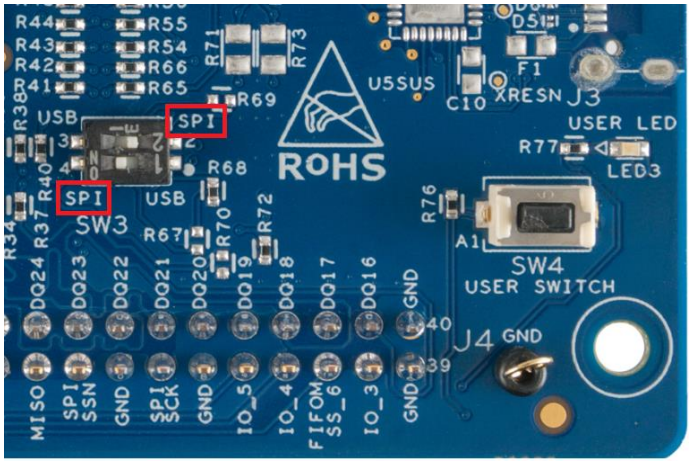


Figure 16 Mode switch setting to SPI mode

2. Press the RESET switch (SW2) and check for SX3 in the audio and camera section of the device manager as shown below:

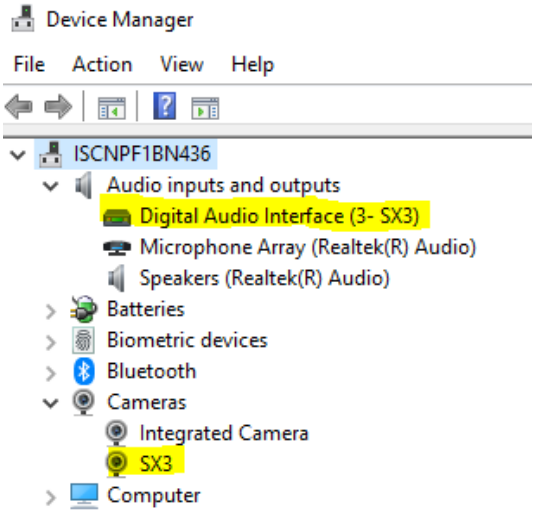


Figure 17 SX3 in device manager (Note: In 3-SX3, the number "3" will change depending on the PC configuration)

5.2 Video streaming from the onboard camera

1. Make sure that the kit is programmed with **sx3_explorer_kit_uvc_uac_crosslink_slavefifo.zip** project.
2. Remove the sticker from the onboard camera (M1).

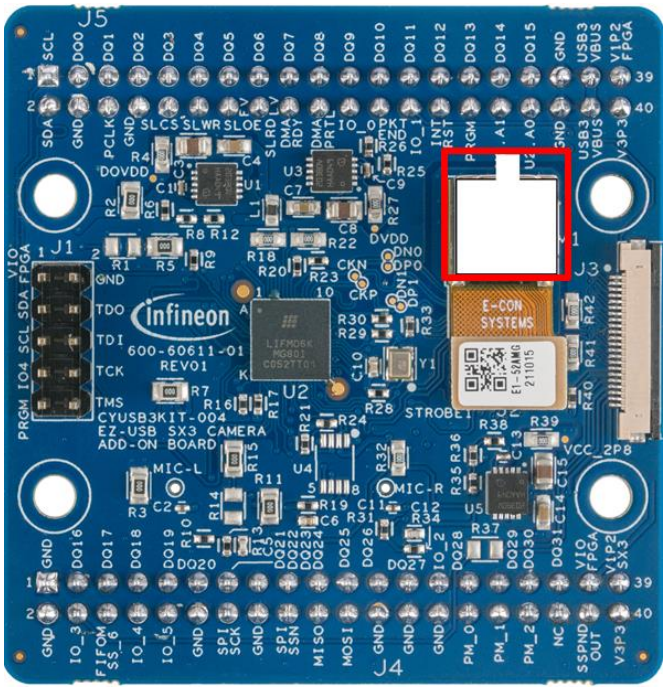


Figure 18 Camera board with on board camera module

3. Make sure that the board is placed as shown below and the camera is pointing to the object of interest:

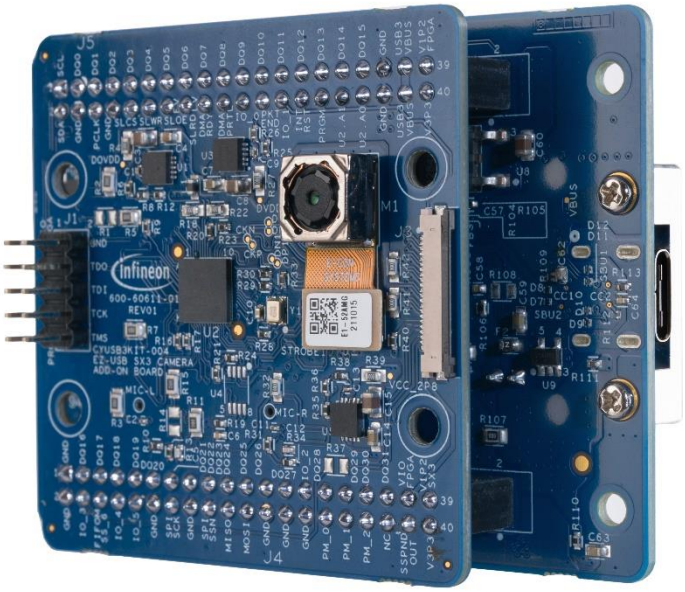


Figure 19 Board placement

4. Open the Microsoft Windows camera app ( ) and press the flip/reverse camera button in the application to select the SX3 camera.

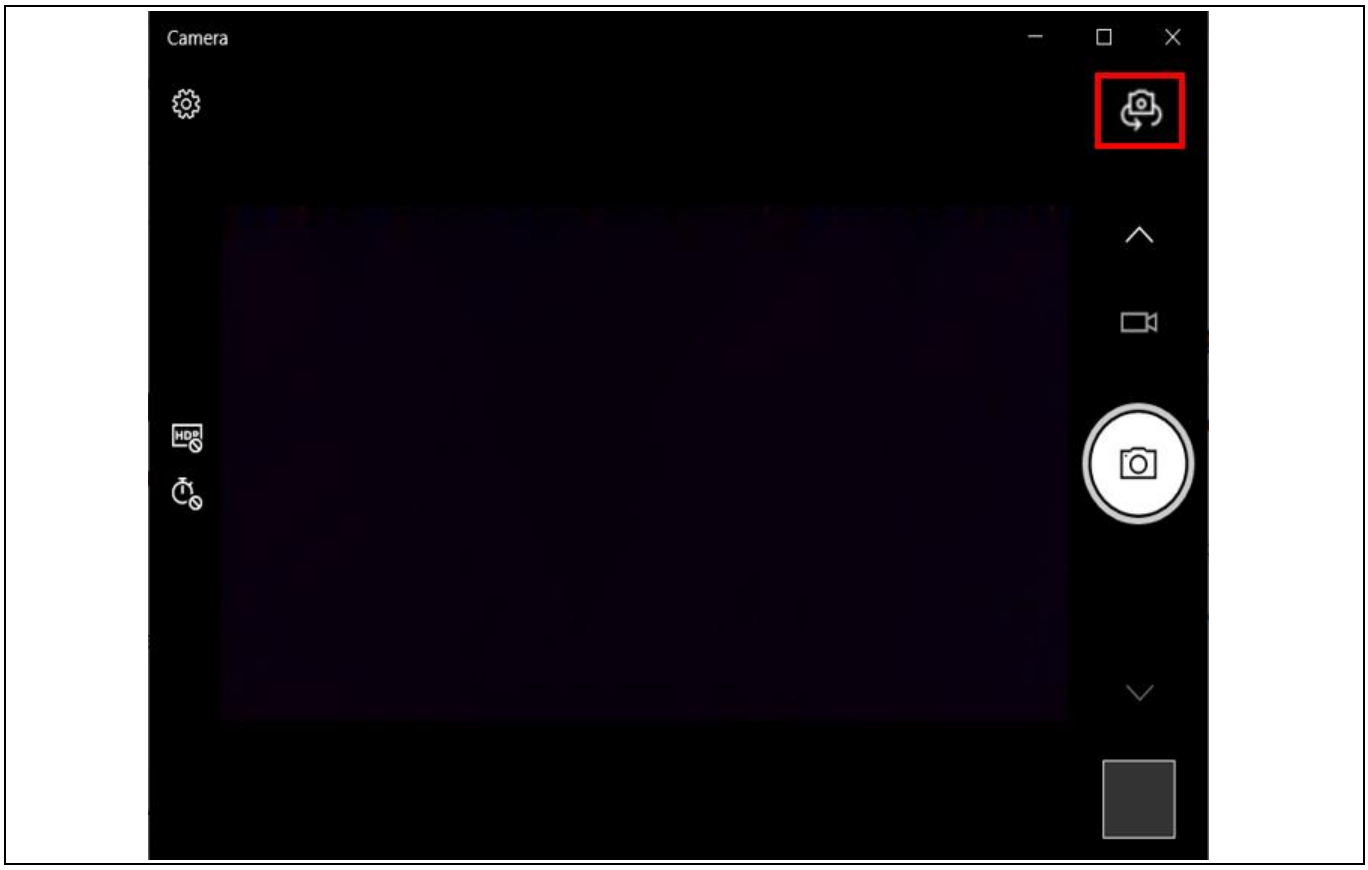


Figure 20 Microsoft camera app

5. Check the camera app for video streaming from the onboard camera.
6. Check the camera settings for picture quality. It should display the quality as 1920 X 1080.

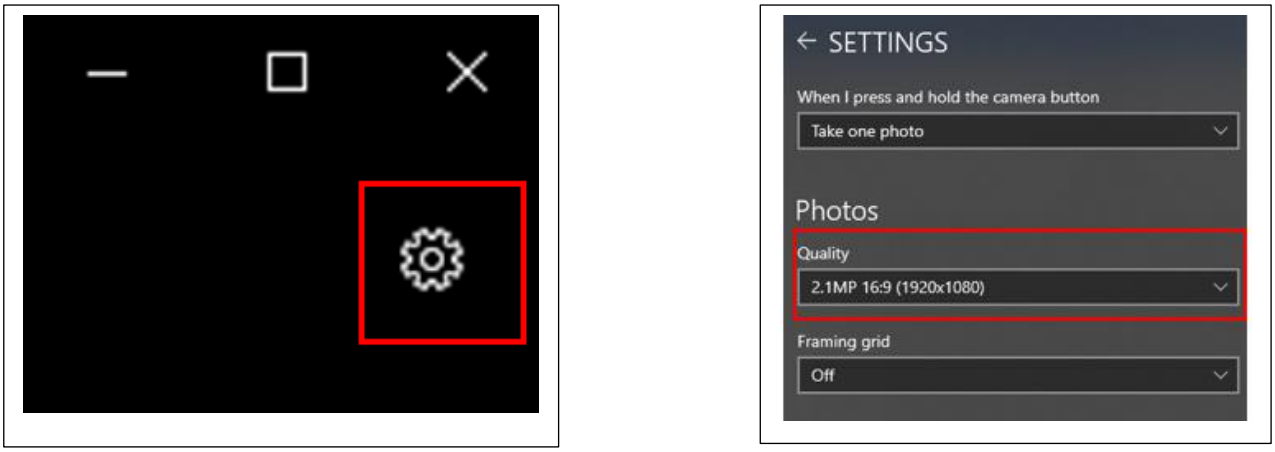


Figure 21 Camera setting and picture quality

- For streaming at 720p, select **Camera settings** > **Photos.** From the **Quality** drop-down list, select 1280 X 720 and check the streaming.
- For streaming at VGA, select **Camera settings** > **Photos**. From the **Quality** drop-down list, select 640 X 480 and check the streaming.

5.3 Audio streaming from the onboard microphones

1. Open the Audacity application.
2. Ensure that the **Recording device** is set to SX3. You can start a rescan: Select **Transport** > **Rescan audio devices**.

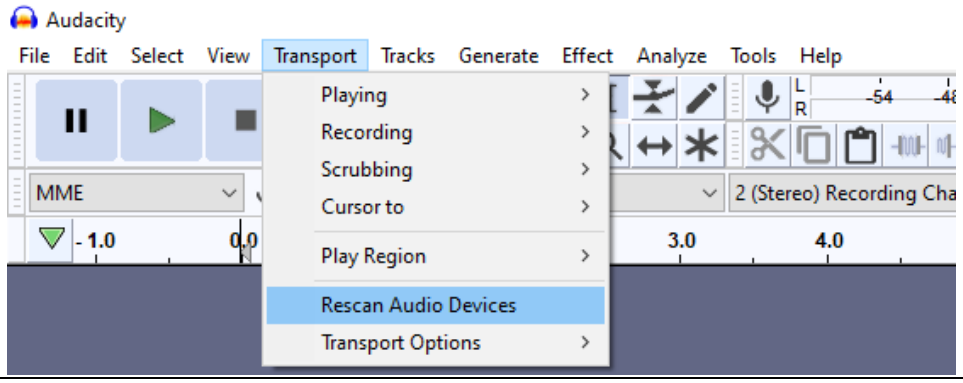


Figure 22 Rescan audio devices to select SX3

3. Set the Digital audio interface to SX3. (Note: The number “3” in “3-SX3” may vary.)

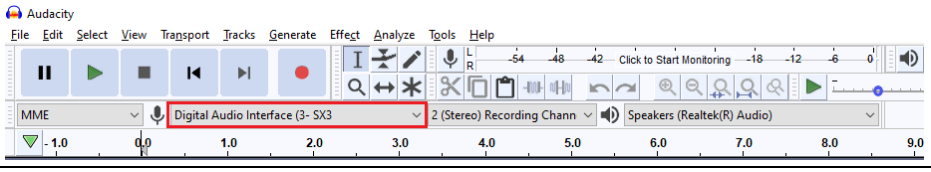


Figure 23 Audio device set as SX3

4. Press the record button in the Audacity app and play a tune (e.g., 1 kHz sine wave) from a YouTube video near the DUT microphones.

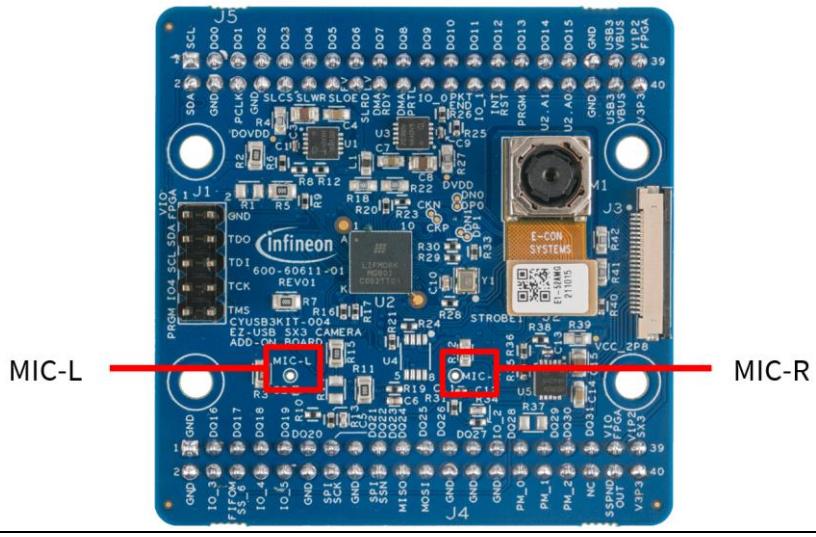


Figure 24 L and R microhphones location on camera board

5. Pause the recording and the YouTube video. Check if sine wave is getting displayed in L and R channels on Audacity (zoom in the app to see the following waveform) and play the recorded audio to check if the tune is recorded.

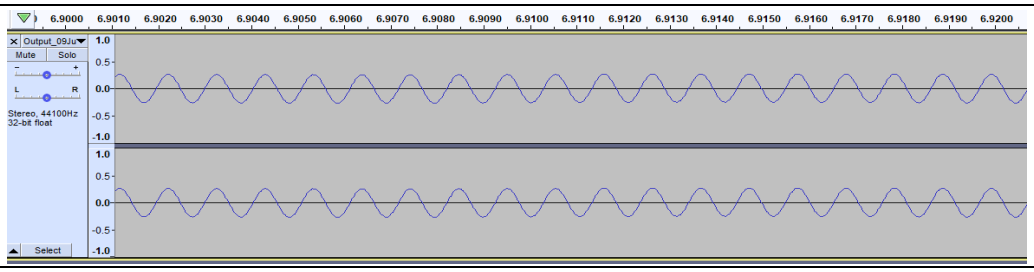


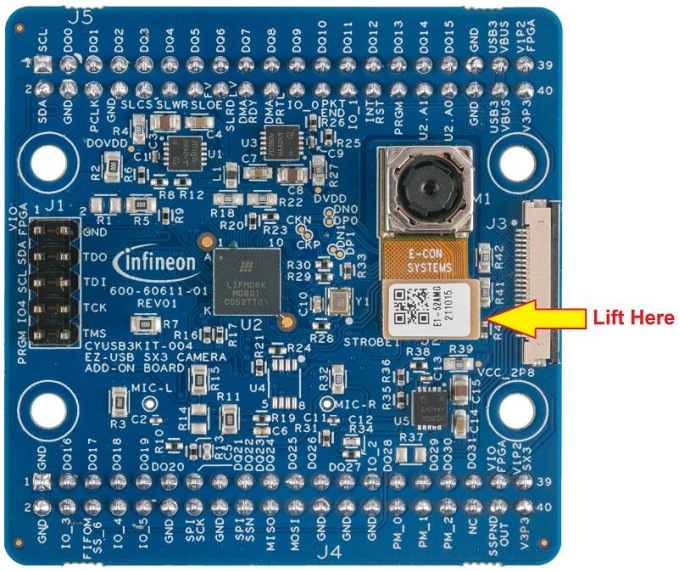
Figure 25 Audio recorded

Note: The amplitude of sine wave may vary depending on the distance of audio source from the microphones.

5.4 Video streaming from the Raspberry Pi camera

1. Make sure that the kit is programmed with sx3_explorer_kit_uvc_uac_crosslink_rpi.zip project.
2. Disconnect the board from the PC.
3. Disconnect the onboard camera module by lifting the image sensor flex cable connector from J2. Make sure after lifting, the flex cable does not touch J2.

Note: Make sure to lift flex cable slowly in such a way that M1 does not come out of the board. Lift the flex cable such that it only gets disconnected from J2.



4. Connect the Raspberry Pi OV5640 camera module (part# 410-358) to connector J3 on the camera board using a 15- to 22-pin Raspberry Pi zero camera cable part# CAB0306 as shown below.

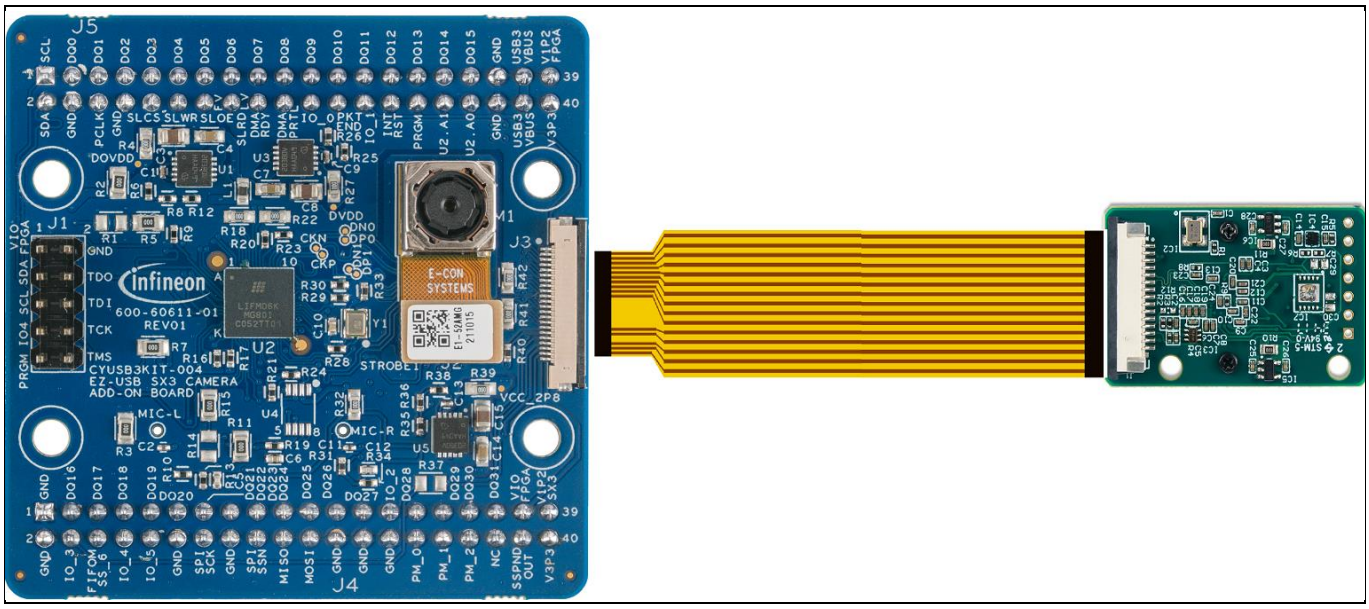


Figure 26 Raspeberry Pi camera module interface with image sensor board

Note: Cable and Raspberry Pi camera modules are not part of the kit. Users can buy this directly from the manufacturer. Cable P/N: CAB0306. Raspberry Pi camera module P/N: 410-358 or equivalent.

5. Move the switch SW1 (1.8 / 3.3 V selector switch) on the baseboard to ON position (3.3 V) and plug in the SuperSpeed USB – C cable to the PC.
6. Wait for the SX3 device to appear in the device manager, (Note: “3” in “3-SX3” may vary).

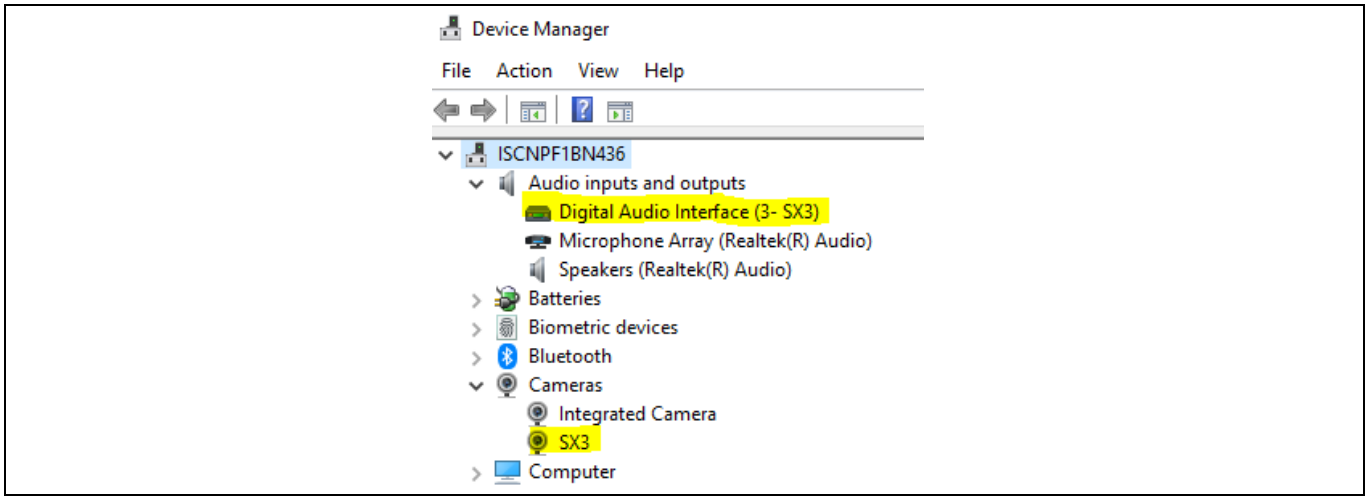


Figure 27 Camera setting and picture quality

7. Open the Microsoft Windows camera app ( ) and press the flip/reverse camera button in the application to select the SX3 camera.

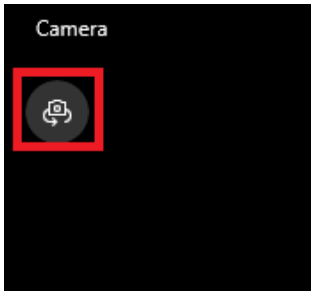


Figure 28 Flip camera in Microsoft camera app

8. Move the Raspberry Pi board to check video streaming on the camera app. Check the camera setting for picture quality. It should display quality as 1920 X 1080. You can also set the quality as 720 p and VGA.

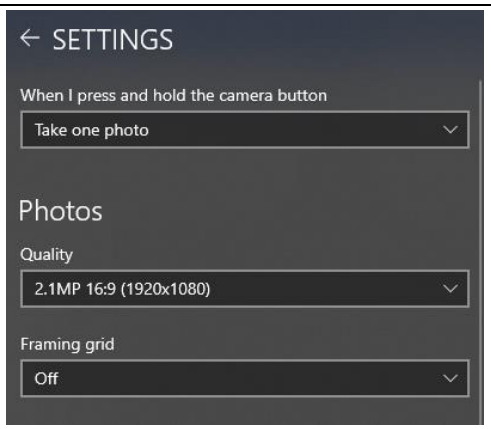


Figure 29 Check picture quality

9. Disconnect the board from PC.
10. Remove the Raspberry Pi camera module and cable (CAB0306) from J3 and connect the onboard camera module (M1) by pressing the image sensor flex cable connector on J2 till a click sound is heard.

6 Troubleshooting

6.1 Programming test

6.1.1 No bootloader device detected

If “No Bootloader Device Detected” message appears during programming from the SX3 configuration utility, verify that the PMODE switch (SW3) is in the “USB” state.

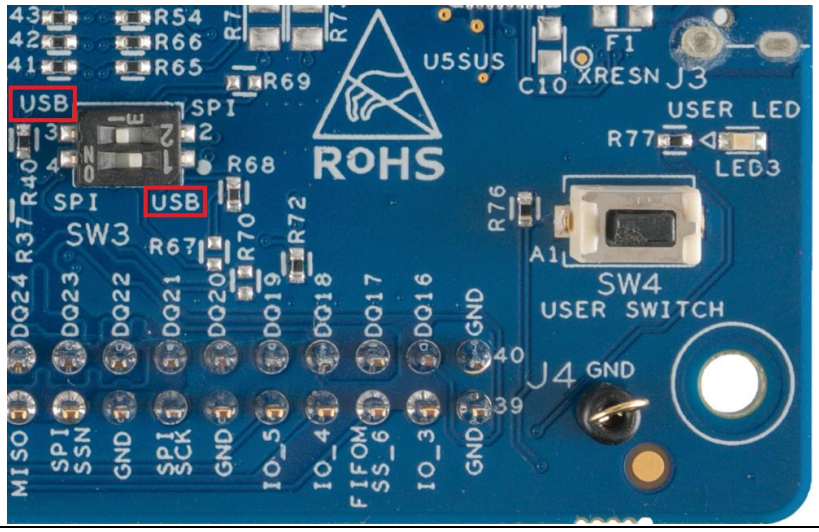


Figure 30 Mode switch setting to USB mode

6.1.2 FX3 USB Bootloader device not detected in Windows Device Manager

If the connected device is detected as “WestBridge” in Windows Device Manager, user should install the cyusb3 driver. Navigate to ***<SX3 Configuration Utility Installation Path>\drivers\Win10\x64*** and install cyusb3 as shown below.

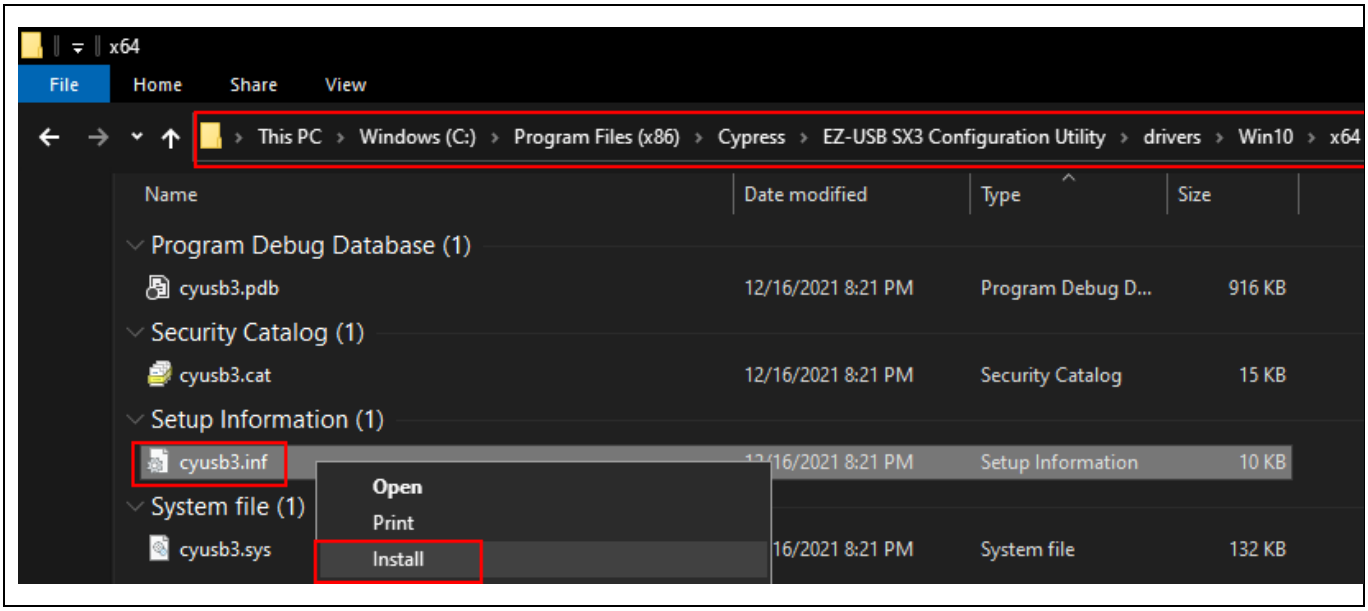


Figure 31 Install cyusb3 driver

Troubleshooting

Device will enumerate as FX3 USB Bootloader device after successful installation.

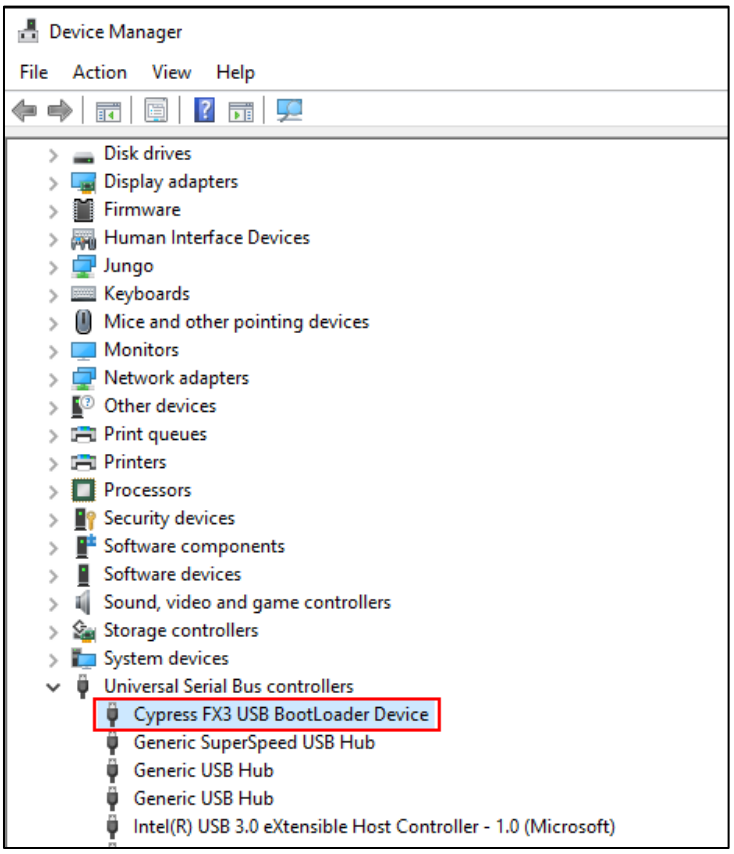


Figure 32 Device enumerated as Bootloader device

6.2 Video streaming test

6.2.1 SX3 camera not displayed in the device manager

Verify that the PMODE switch (SW3) is in the SPI position.

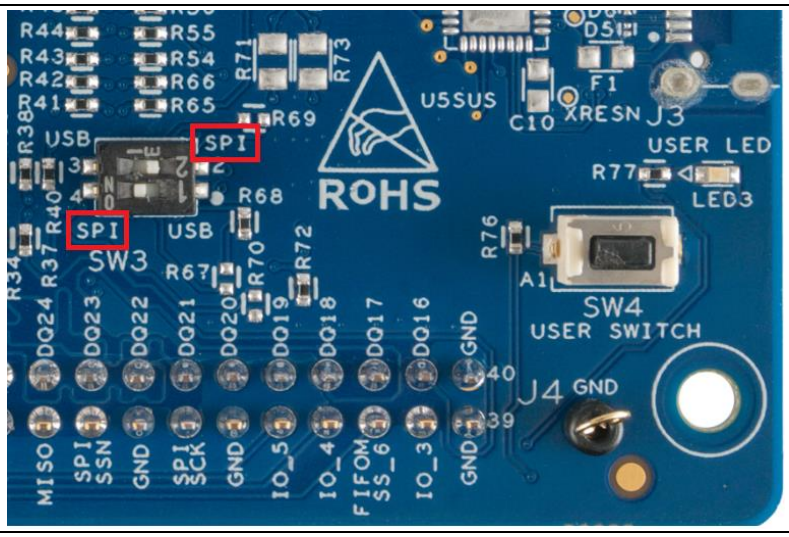


Figure 33 Mode switch setting to SPI mode

6.2.2 Black screen detected in the camera app

Do the following:

1. Check whether the image sensor (M1) is connected correctly.
2. Check whether the **GPIO_4** pin (Config.done) in **Jumper J1** on the add-on board is **HIGH**. If GPIO_4 is HIGH, the Crosslink FPGA configuration is done.
3. Check the debug logs:
   a) Open Tera Term.
   b) Connect to the COM port associated with the SX3 device.
   c) Check if any error messages are displayed.

6.3 Audio streaming test

6.3.1 SX3 digital audio interface is not displayed in the device manager

Verify that the PMODE switch (SW3) is in the SPI state.

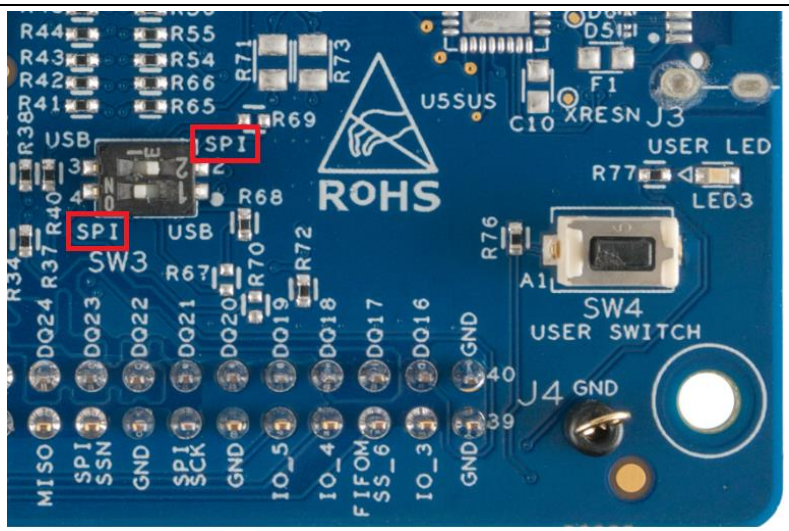


Figure 34 Mode switch setting to SPI mode

6.3.2 SX3 digital audio interface is not displayed in audacity application

In the Audacity app, select **Transport** > **Rescan audio devices** and check whether SX3 appears in the **Recording devices** drop-down list.

Note: *If the above-mentioned troubleshooting steps do not resolve the problem, please visit Infineon **Technical Support** page.*

Related documents

[1] Overview: **Infineon USB controller roadmap**

[2] Product webpage: **EZ-USB™ SX3 webpage**

[3] Kit webpages: **CYUSB3KIT-004**

[4] Datasheets: **EZ-USB™ SX3 datasheet**

[5] **AN231295 - Getting started with EZ-USB™ SX3 software**

Technical support

If you have any questions, create a support request on the Infineon **Technical Support** page.

Revision history

Document version	Date of release	Description of changes
**	2021-11-17	Initial release.
*A	2021-12-17	Added manual binding steps in troubleshooting section 6.1.2 for FX3 bootloader detection

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