EZ-USB SX3 Configuration Utility User Guide

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1.INTRODUCTION

Thank you for your interest in the EZ-USB SX3 Configuration Utility.

1.1 System Requirement and Pre-requisites

Windows OS: Windows 7 and above
Linux: Ubuntu 10
macOS: Cocoa

The SX3 Configuration Utility will work of earlier versions of Linux and macOS provided if Java 1.8 JDK installed and supported in the respective OS versions.

Pre-requisites:

We need to install Java 1.8 JDK before installing the Utility…

Download the Java 1.8 JDK for all the OS (Windows, Linux and MacOS) from the following Link:

https://www.oracle.com/in/java/technologies/javase/javase-jdk8-downloads.html

Installation guide for the 1.8 JDK (All Operating Systems):

https://docs.oracle.com/javase/8/docs/technotes/guides/install/install_overview.html

1.2 Getting Started

This user guide describes the features of the EZ-USB SX3 Configuration Utility and how to use it. The EZ-USB SX3 Configuration Utility section explains how to use the tool.

1.3 Additional Learning Resources

Go the following link for the additional information about the SuperSpeed Explorer Kit User Guide

https://www.cypress.com/file/133836/download

1.4 Technical Support

For assistance, go to www.cypress.com/go/support or contact our live customer support at +1 (800) 858-1810 (in the U.S.) or +1 (408) 943-2600 (international) and follow the voice prompt.

Abbreviations

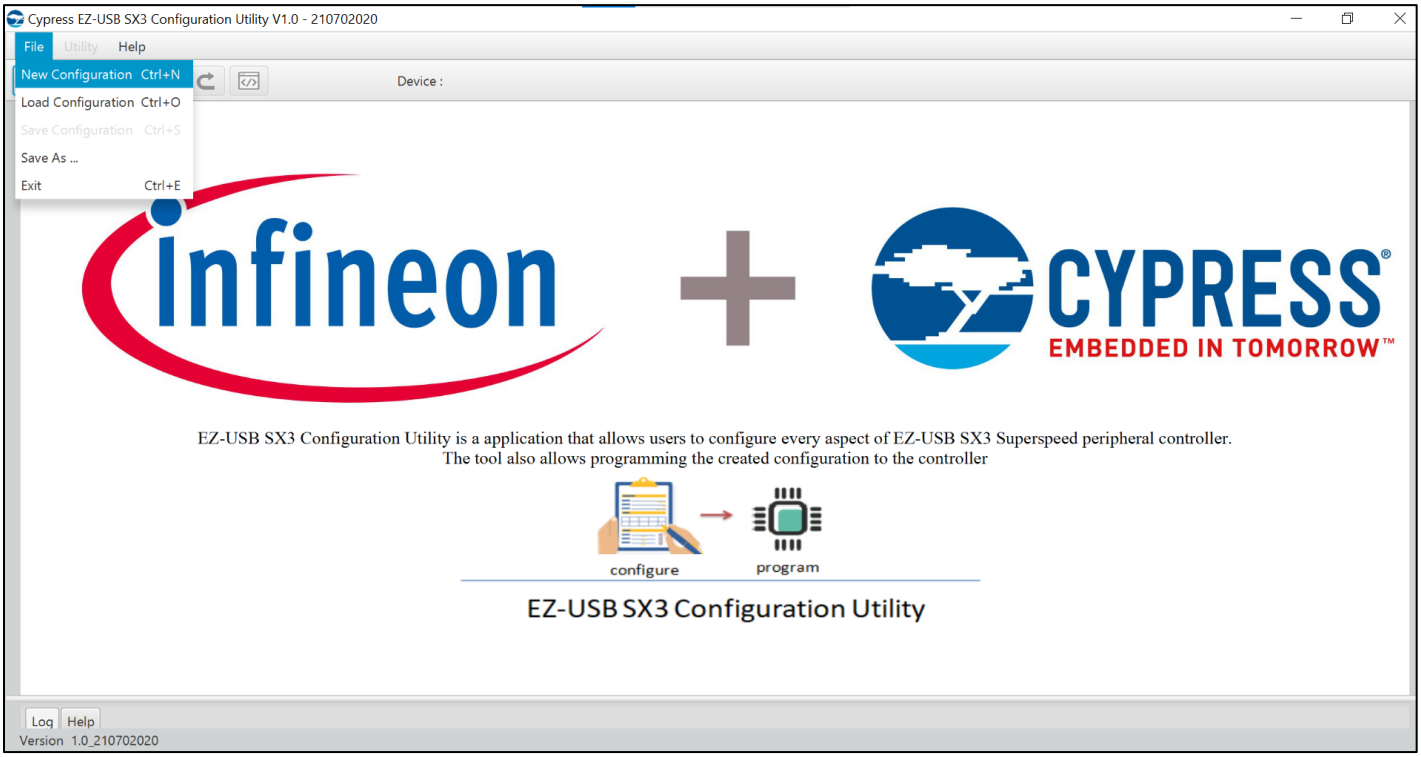
List of Abbreviations

Abbreviation	Meaning
GUI	Graphical User Interface
USB	Universal Serial Bus
UAC	USB Audio Control
UVC	USB Video Control
OS	Operating System

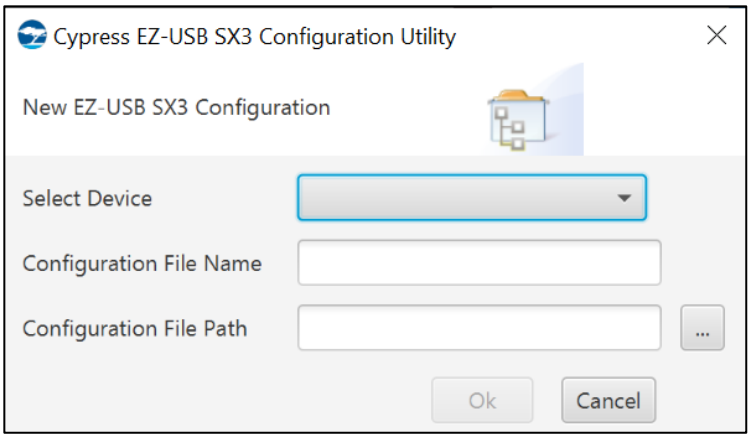
2. EZ-USB SX3 Configuration Utility

2.1 EZ-USB SX3 Configuration Utility GUI

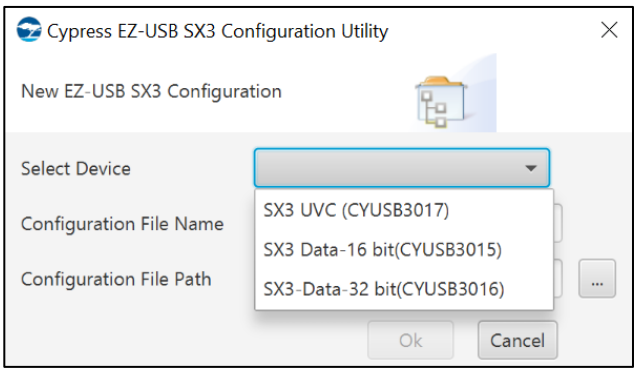
In Windows OS, start the EZ-USB SX3 Configuration Utility from **Start** >**All Programs** >Cypress >**SX3 Configuration Utility**.



a) We can either load an existing configuration file or we can create a new configuration file. Press New Configuration Button

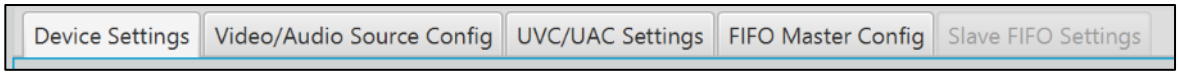


b) In Select Device, 3 options will be listed. Please select as per your requirement.

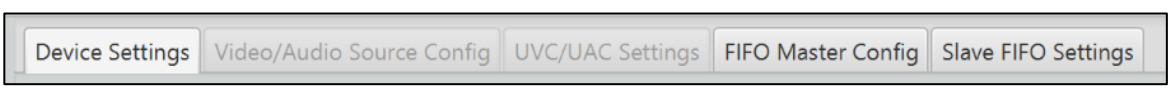


c) Update the Configuration File Name and browse the path in your local system to save the Configuration File…

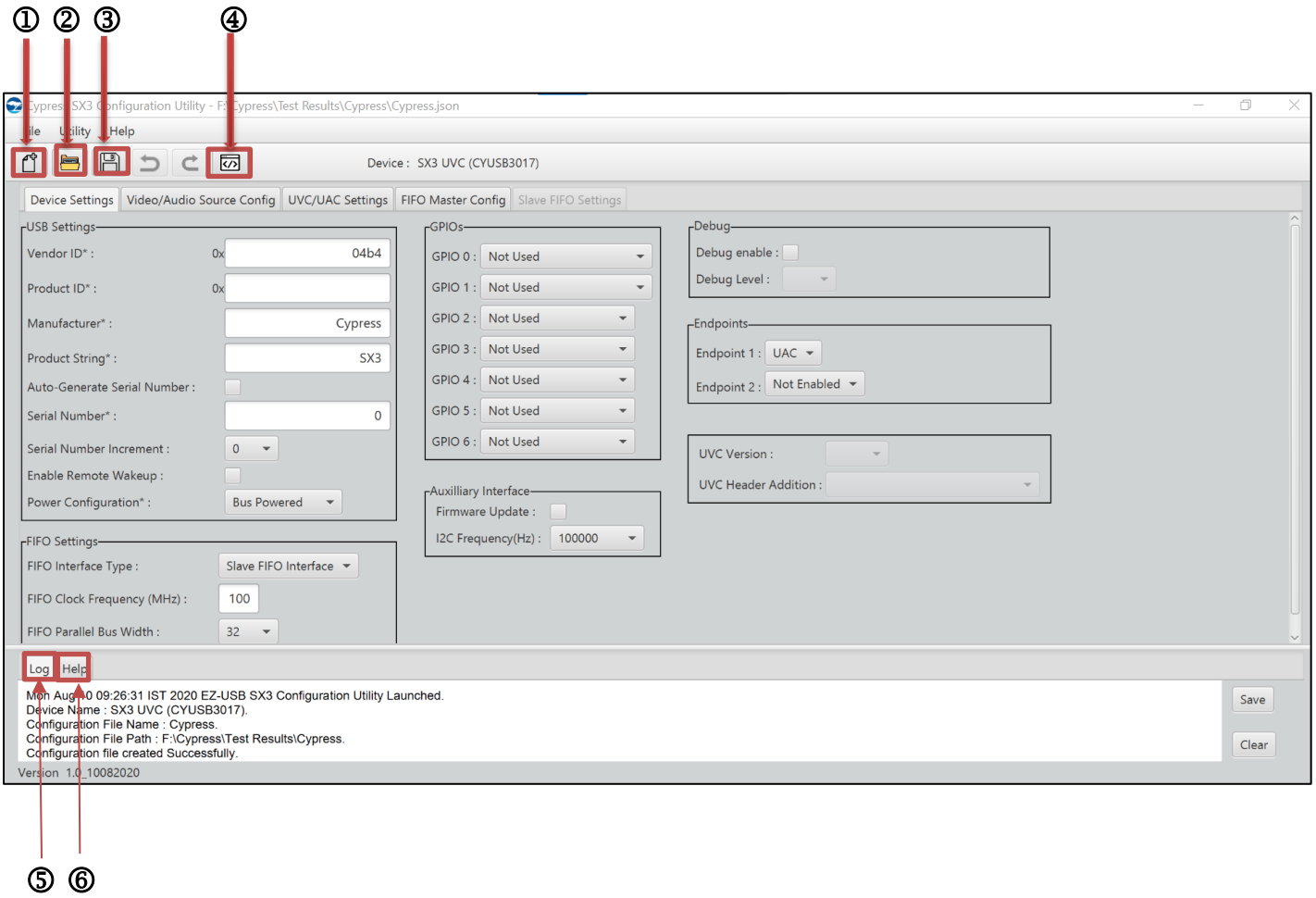
1) Selecting Device as “SX3 UVC(CYUSB3017)” will enable the following tabs in GUI



2) Selecting Device as “SX3 Data-16 bit (CYUSB3015)” or “SX3 Data-32 bit (CYUSB3016)” will enable the following tabs in GUI

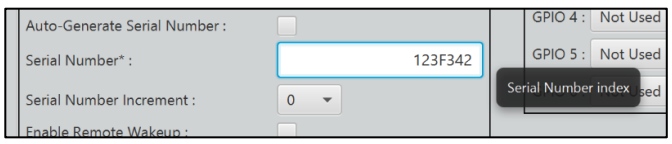


Default View of the Configuration Utility



① To create a new configuration file
② To load configuration from a file
③ Save a configuration.
④ Program the configuration file to a device.
⑤ Register all the changes in the Utility
⑥ Displays help content and description of each configuration.

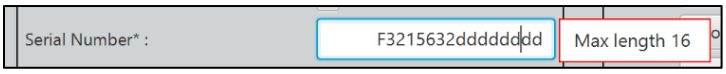
Tool Tip (Will be Automatically pop up near Each Tab's entry)



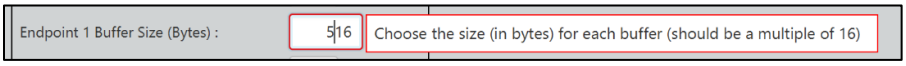
Error Messages

An Error message will be popped up in RED color near the text field where we are entering the values

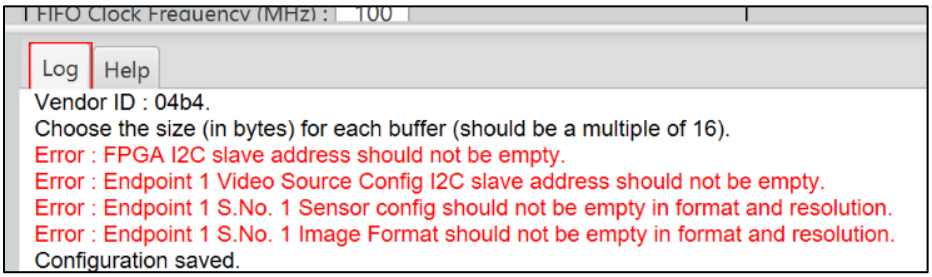
If the Field Width exceeds the defined value



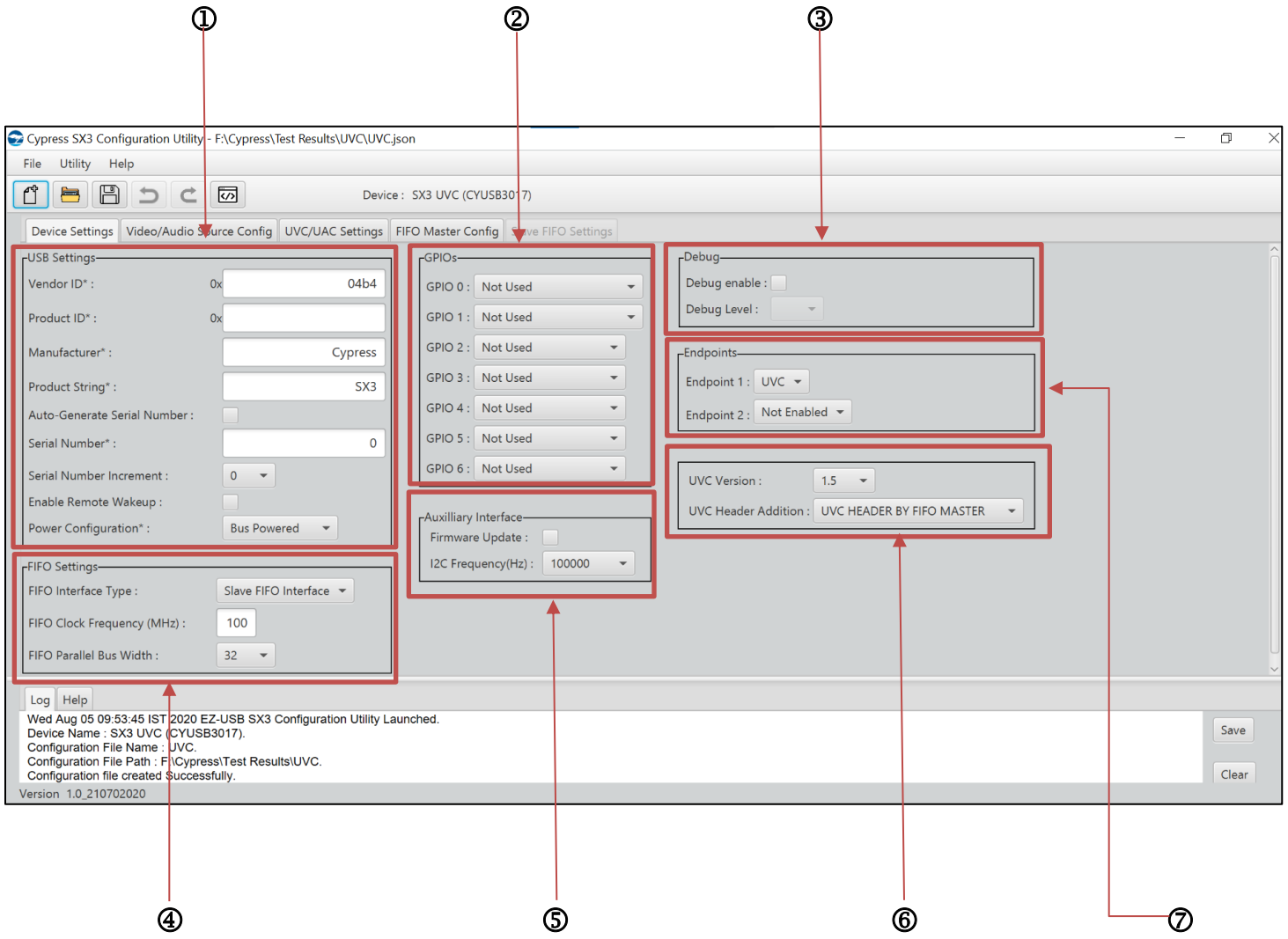
If the non-defined values are entered as input



If the values are left empty then it will be listed in Log while saving the configuration



Device Settings



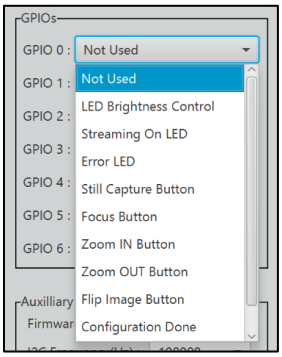
① **USB Settings** (All Fields marks in * are mandatory).

The Description of all the fields will be displayed in the Help Tab.

Vendor ID---Vendor ID (assigned by USB---IF)
Product ID---Product ID (assigned by the manufacturer)
Manufacturer---Index of string descriptor describing manufacturer
Product String---Index of string descriptor describing product
Auto Generate Serial Number---Auto generates unique serial number
Serial Number---Index of string descriptor describing the device's serial number
Serial Number Increment By---Select increment value. The serial number increments by the chosen value every time the user clicks "Program" button
Enable Remote Wakeup---Enable remote wakeup option (Enable/Disable)
Power Configuration---Choose power configuration of the device (Self Powered/Bus Powered)

② **GPIOs** configurations…

Update the GPIO from 0 to 6 as per your requirements using the drop-down menu...



③ **Debug**

Debug enable---Enable Debug via USB COM port
Debug Level---Range from 0 to 4, 0 = Only important messages and 4 = All messages

④ **FIFO Settings**

FIFO Bus width---Select your FIFO Bus Width from the dropdown Menu. Max value of 32 for SX3 UVC and SX3 Data (32 Bit) and Max value of 16 for SX3 Data (16 Bit)
FIFO Clock Frequency (MHz)---Update the FIFO Clock Frequency...Max value is 100 MHz

⑤ **Auxiliary Interface Settings**

Firmware Update---Check Box. Enable for Firmware update over HID interface
I2C Frequency---Drop down Box to select I2C Clock frequency

⑥ **UVC Version and UVC Header Addition (**Option should be shown if atleast one endpoint type is UVC)

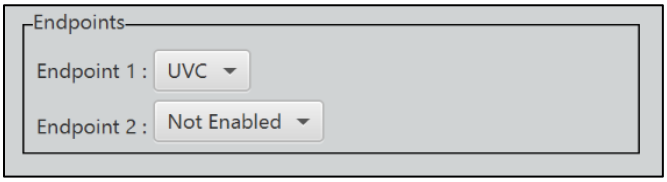
UVC Version---From drop down, Select the UVC Version
UVC Header Addition---From drop down, choose whether UVC header needs to be added by SX3 or FIFO Master

⑦ Endpoints

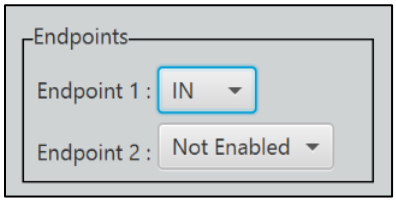
Select your Endpoints as per your requirement. We have two Endpoints and the option can be chosen from drop down menu for Both UVC and Data Devices.

Device Type	Field	Options	Description
SX3 UVC	Endpoint 1	UVC UAC	Choose USB Video Class (UVC) for Video Choose USB Audio Class (UAC) for Audio
SX3 UVC	Endpoint 2	UVC UAC	Choose USB Video Class (UVC) for Video Choose USB Audio Class (UAC) for Audio
SX3 DATA	Endpoint 1	IN OUT	Choose Endpoint Direction
SX3 DATA	Endpoint 2	IN OUT	Choose Endpoint Direction

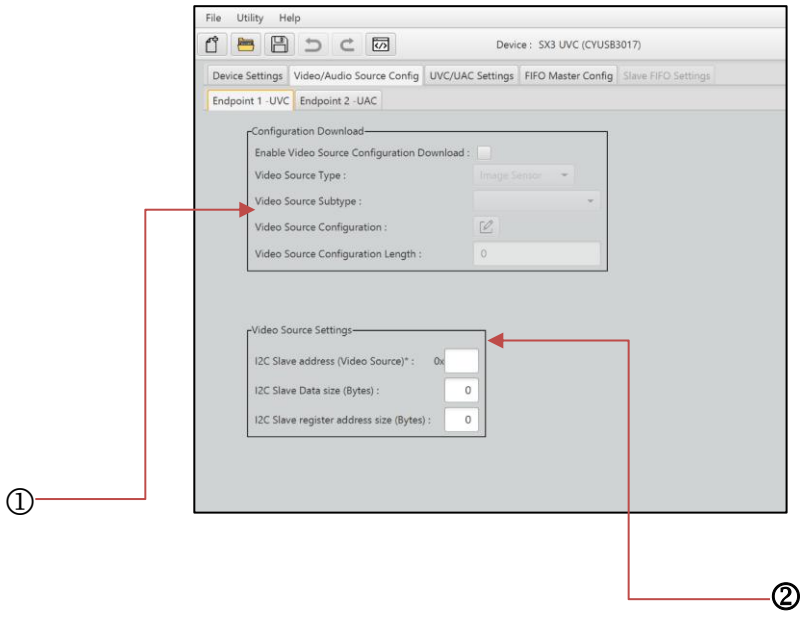
UVC Device



Data Devices



Video/Audio Source Config (For SX3 UVC Only)



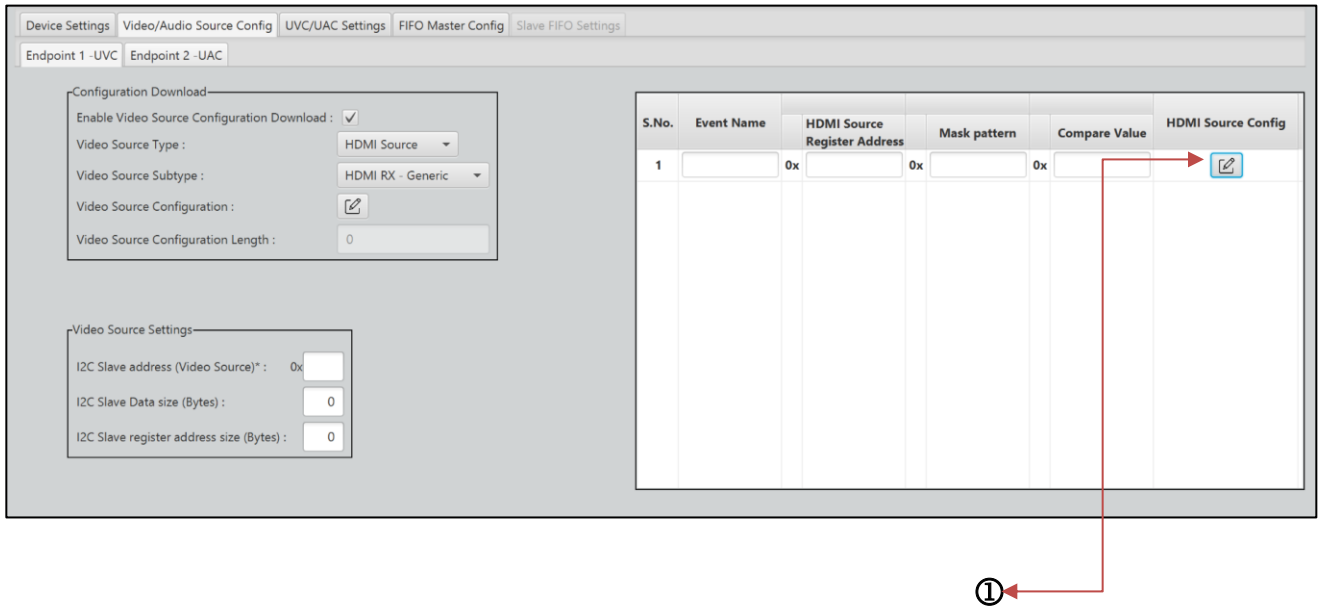
① Configuration Download

Enable/Disable for Video Source Configuration download ---Check box to Enable Video Source Configuration
Video Source Type---Select Video Source Type from the option Image Sensor/ HDMI Source
Video Source Subtype---Drop down Will be enabled if Video Source Type is selected as HDMI Source. Select from the option HDMI RX --- ITE6801/HDMI RX --- Generic
Video Source Configuration Download---Will show sensor config entry GUI with button to browse to .txt file.
Video Source Configuration Length---Length of Video Source Configuration file in bytes

② Video Source Settings

I2C Slave address (Video Source) ---Enter the I2C Slave address for Video Source
I2C Slave Data size (Bytes)---Enter the Data Size for I2C Registers in Video Source
I2C Slave register address size (Bytes)---Enter the Register Address size for I2C Registers in Video Source

HDMI Source Configuration Table (Only enabled if Video Source Subtype is "HDMI RX - Generic")

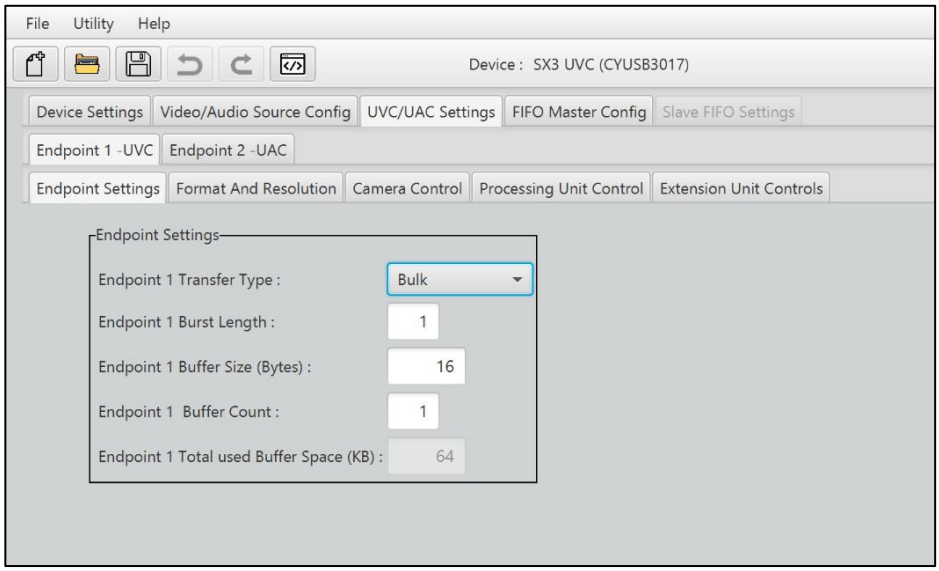


Update the Event Name, HDMI Source Register Address, Mask Value and Compare Value in the respective tabs.

① Each entry should consist a list of Register Address (2Bytes), Register Value (4Bytes) and Slave Address (2 bytes). Max 30 entries Allowed in this table.

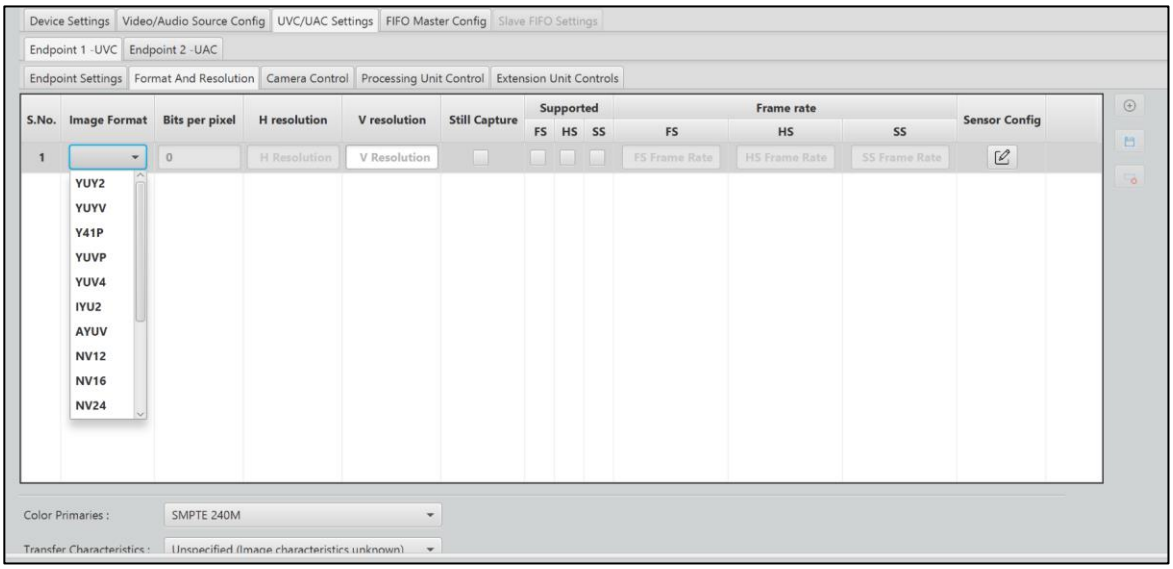
UVC/UAC Settings

UVC-Endpoint Settings



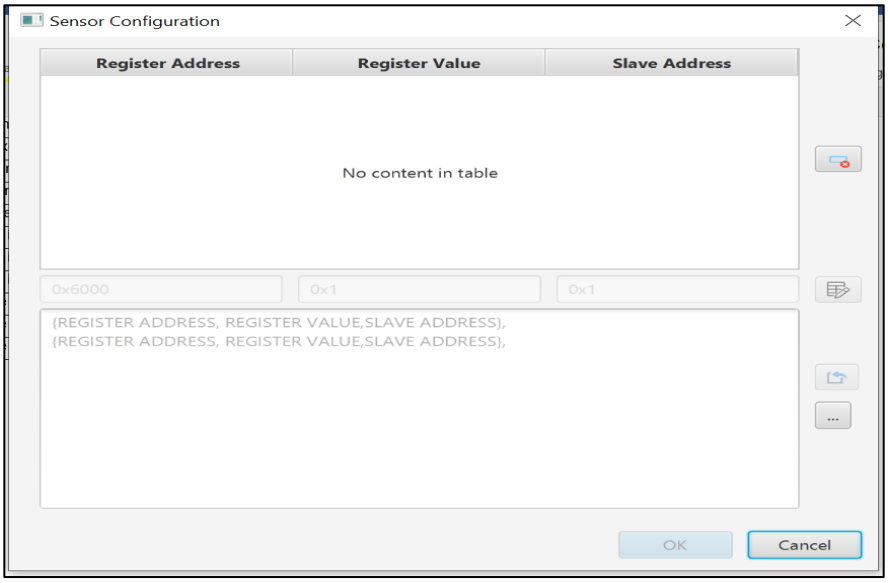
Endpoint Transfer Type---Type of endpoint (Bulk/ISOC)
Burst Length---Choose the number of bursts per transfer
Buffer Size (Bytes) ---Choose the size (in bytes) for each buffer (should be a multiple of 16)
Buffer Count ---Choose the number of buffers per endpoint
Total used Buffer Space (KB)---Amount of buffer size used by active endpoints

Format and Resolution



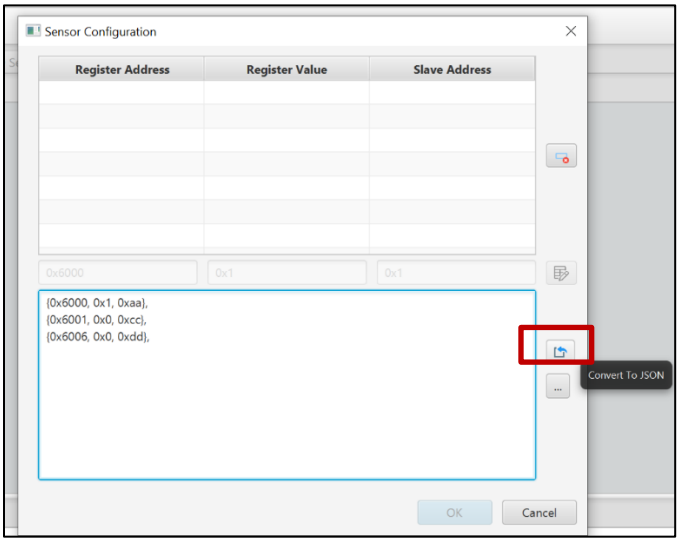
The Description of all the fields will be displayed in the Help Tab.

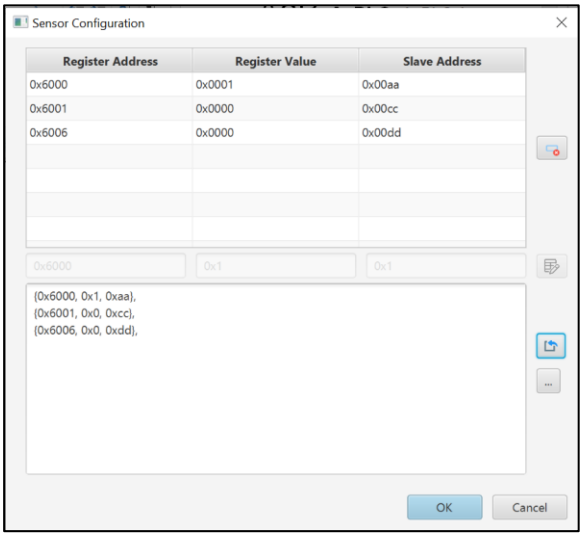
Sensor Configuration File:



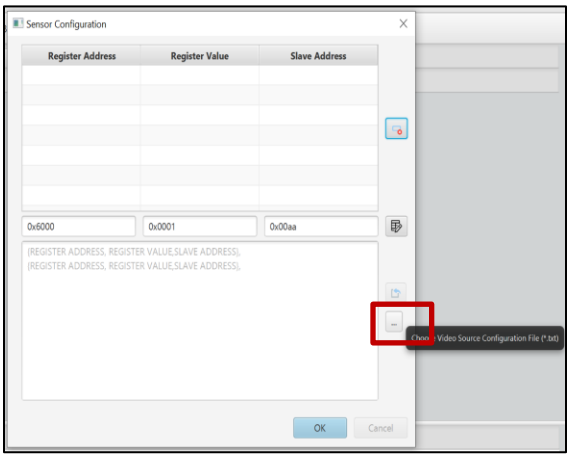
Example for configuring the Sensor Configuration file:

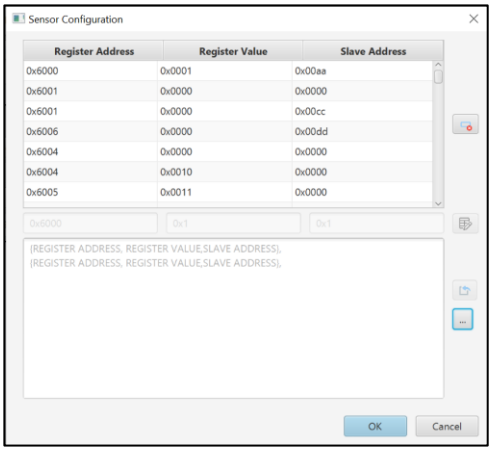
1) User can enter comma separated values into this table. Enter the Register Address, Register Value and Slave Address (Max 80 rows). Press the Convert to JSON button highlighted in the below screen shot…The following value will be converted in JSON accordingly.



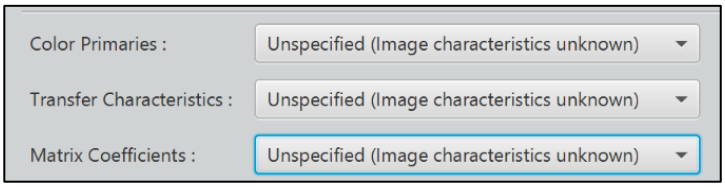


2) We can also choose the data from a text file by selecting the *.txt from the below button.

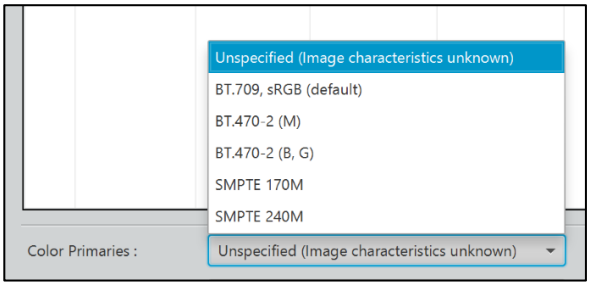




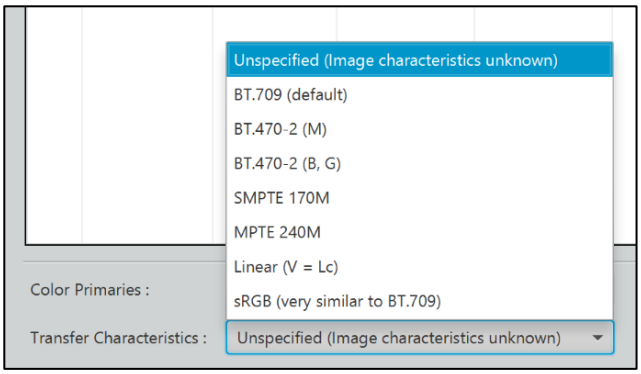
Color Matching Descriptor:



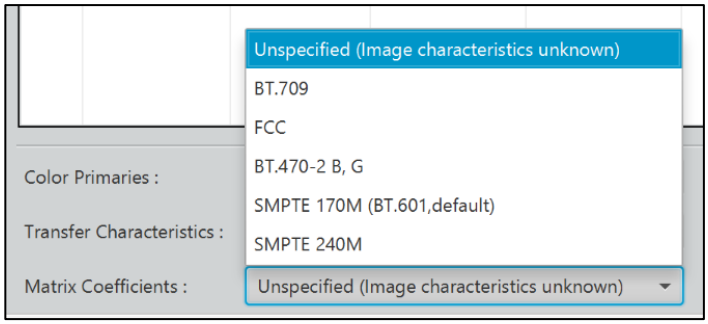
Select the ColorPrimaries for the color matching descriptors from the drop-down menu…



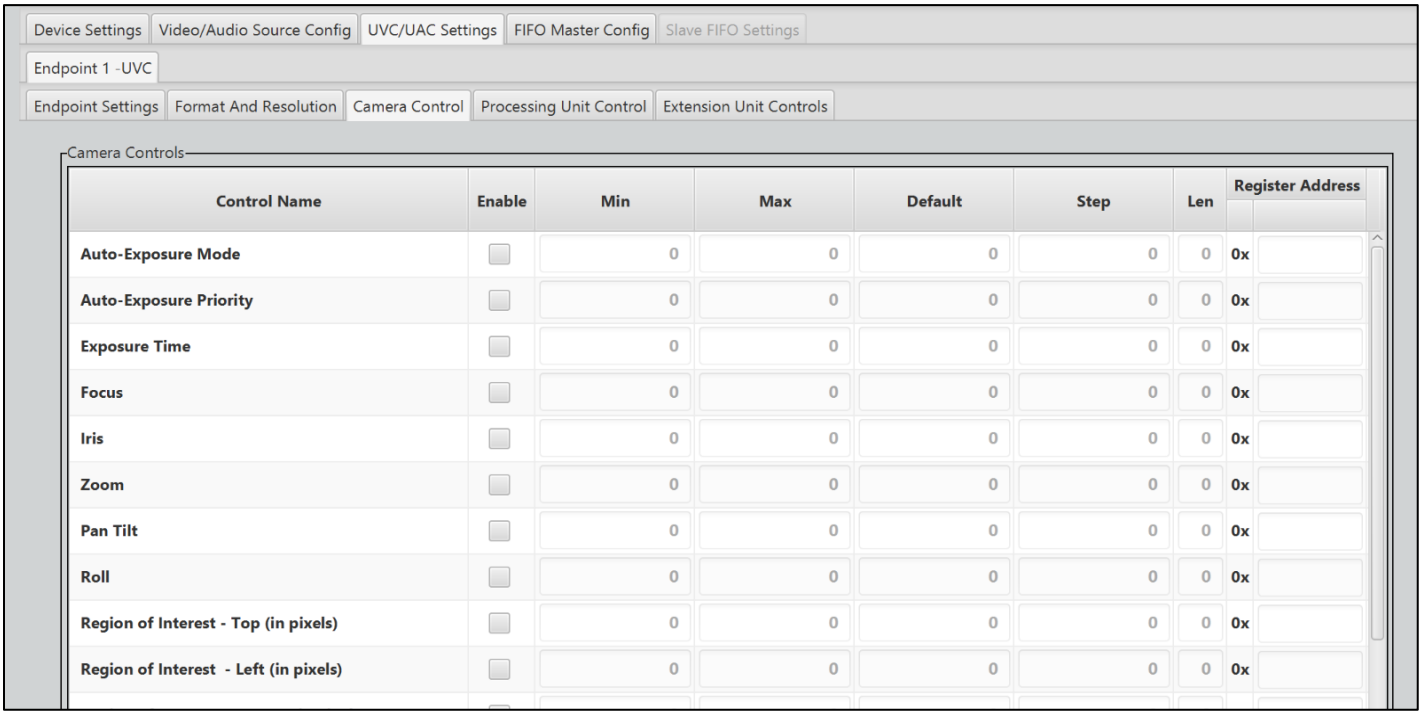
Select the Transfer Characteristics for color matching descriptor from the drop-down menu

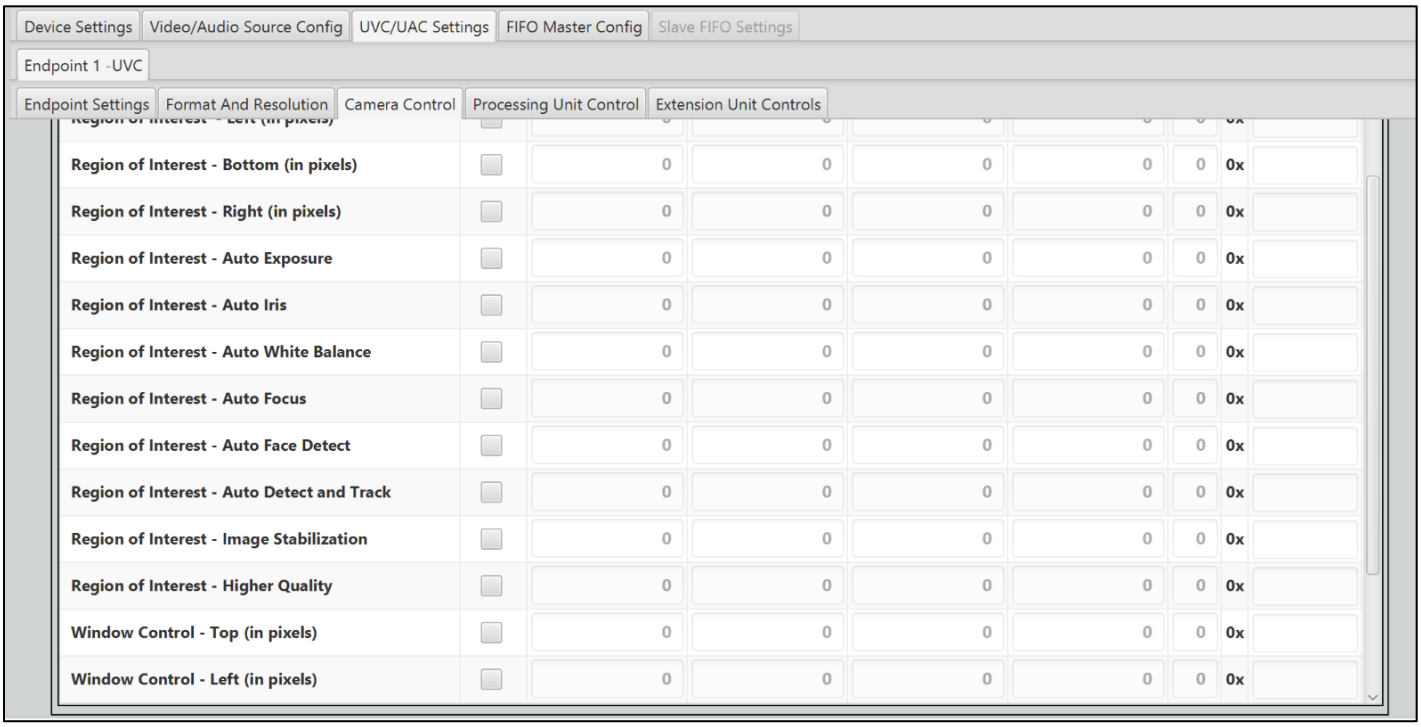


Select the Matrix Coefficients for the color matching descriptor



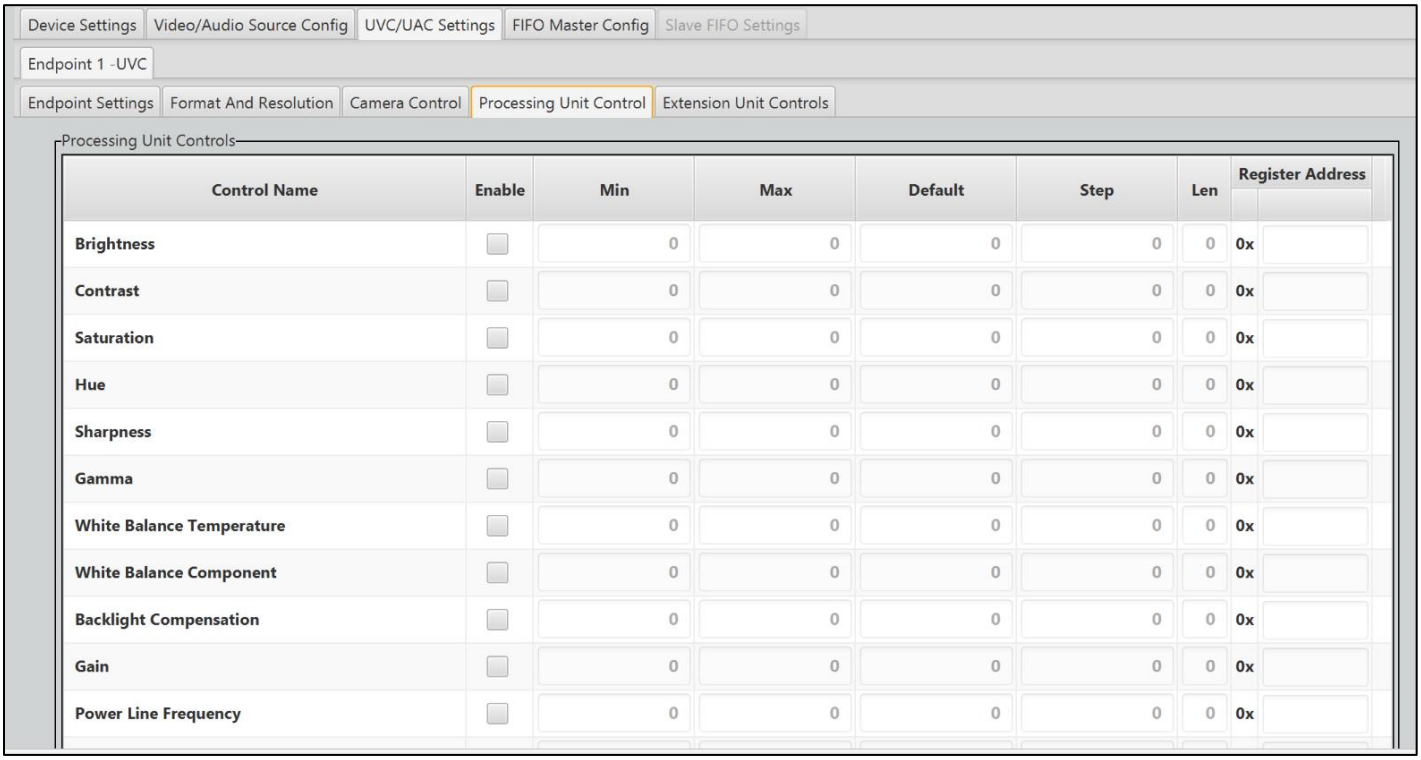
Camera Control



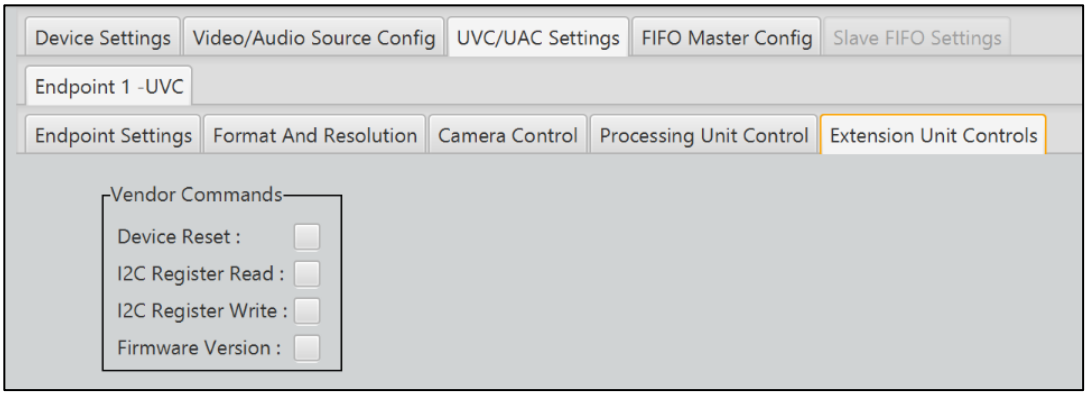


The Description of all the fields will be displayed in the Help Tab.

Processing Unit Control



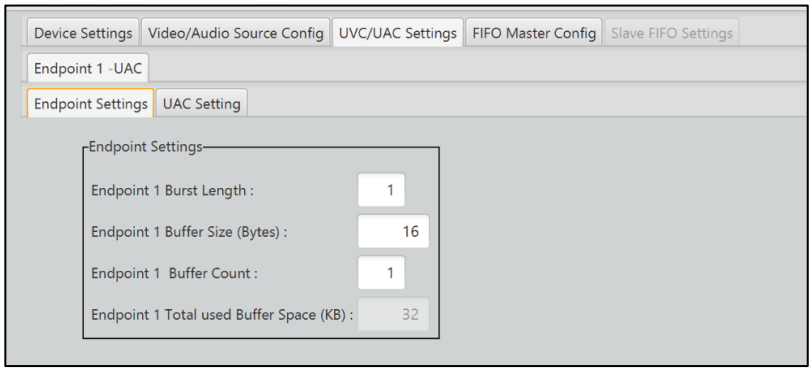
Extension Unit Controls (Check Boxes)



Device Reset---Checkbox to Support vendor command for Device Reset
I2C Register Read---Checkbox to Support vendor command for I2C Register Read
I2C Register Write---Checkbox to Support vendor command for I2C Register Write
Firmware Version---Checkbox to Support vendor command for Firmware Version

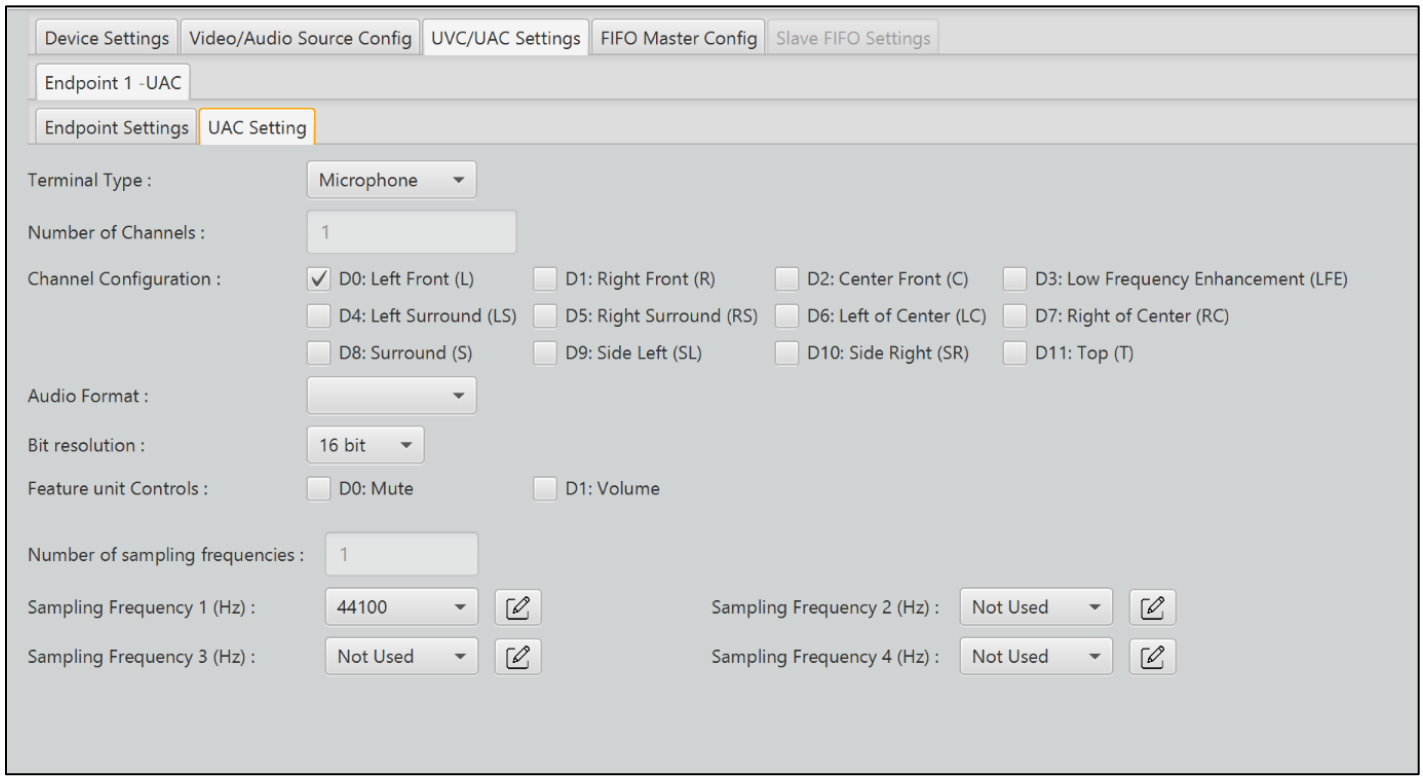
UAC Settings

UAC -End point Settings

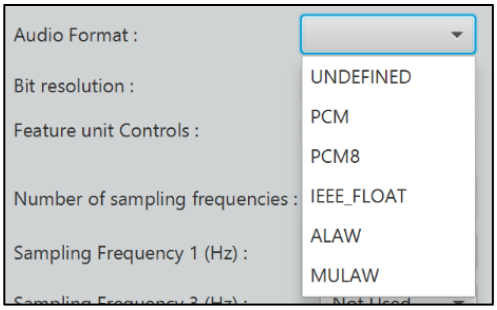


Burst Length---Choose the number of bursts per transfer
Buffer Count---Choose the number of buffers per endpoint
Buffer Size (Bytes)---Choose the size (in bytes) for each buffer
Total used Buffer Space (KB)---Amount of buffer size used by active endpoints

UAC Settings

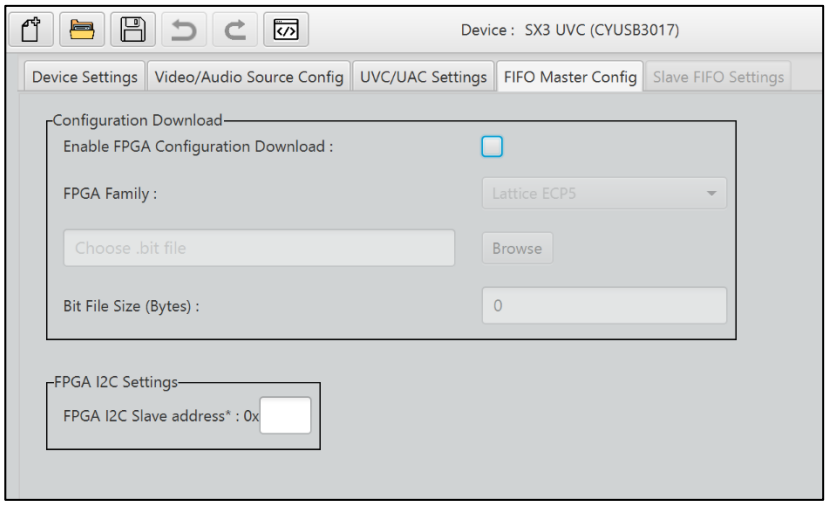


Audio Format drop down menu….



The Description of all the fields will be displayed in the Help Tab.

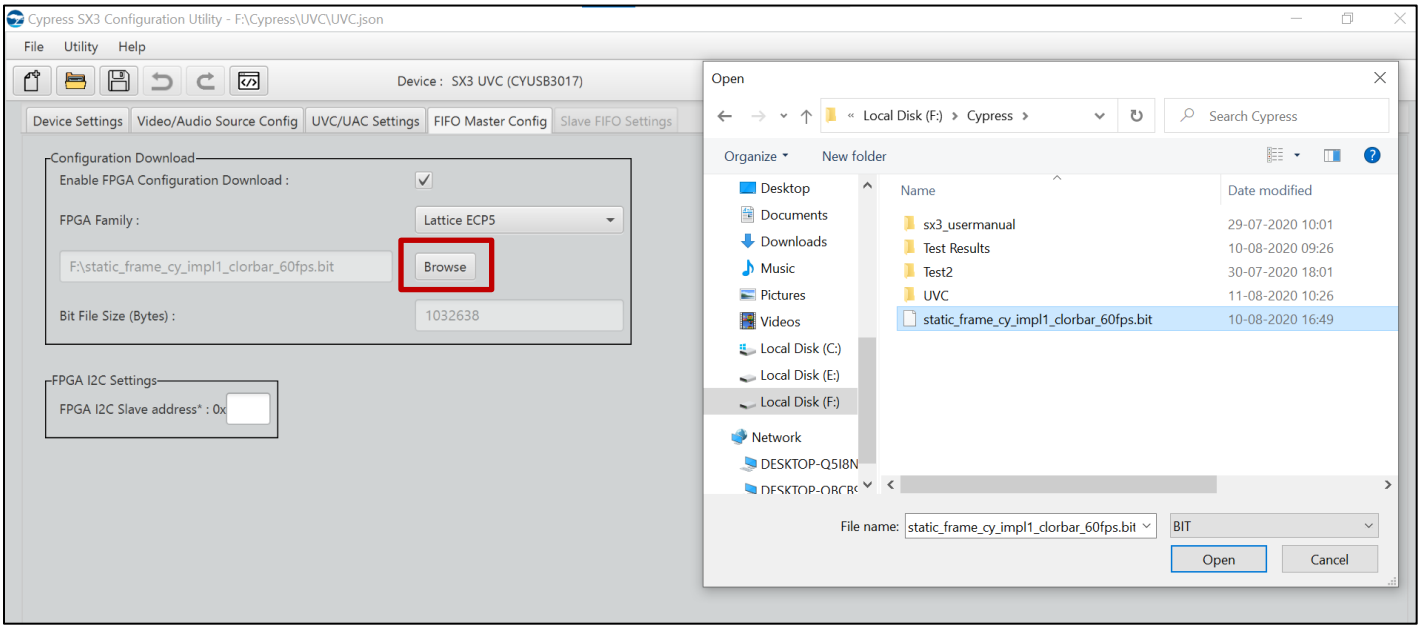
FIFO Master Config



FIFO Master Configuration Download

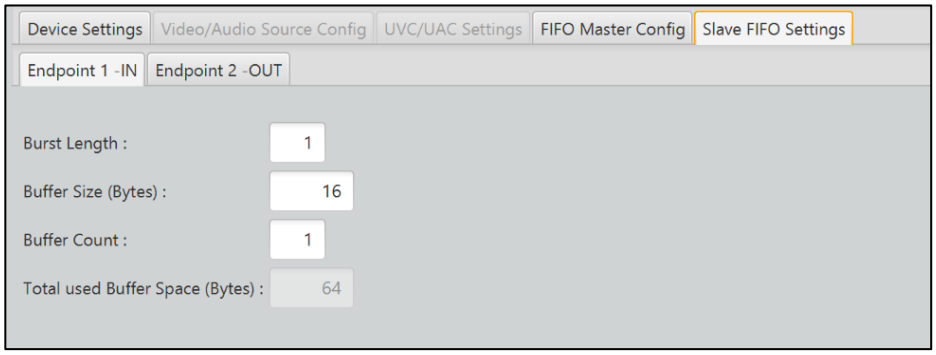
Enable FIFO Master Configuration Download---Check box to Enable FIFO master configuration from SX3
Choose .bit file ---File picker to select the *.bit format
FPGA Family---To handle FPGA configuration procedure differences between the FPGA families in the SX3 firmware
I2C Slave Address---Enter the I2C Slave address
Bit File Size---File size of the chosen bit file
I2C Slave Address---Enter the I2C Slave address for the FIFO Master

FPGA Configuration with an Example



Select the “Browse” button and choose your *.bit file. It will also display the size of the Bit file you chosen in **Bit File Size** Tab

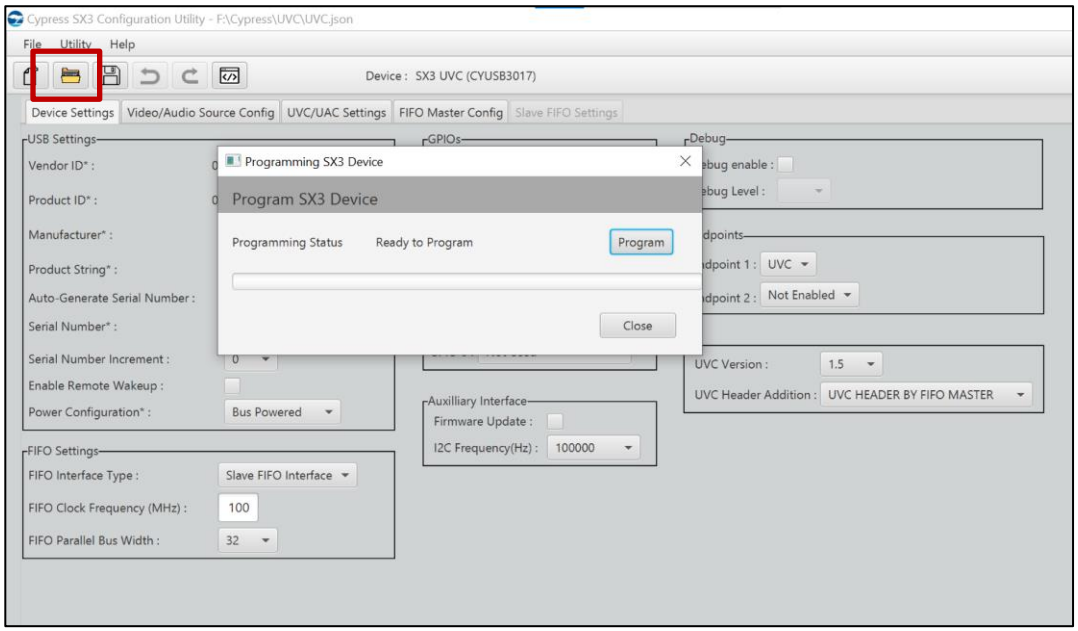
Slave FIFO Settings



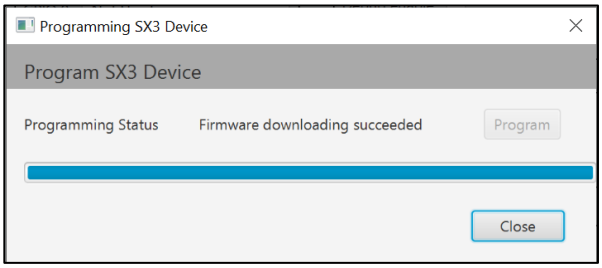
Burst Length-Choose the number of bursts per transfer
Buffer Count-Choose the number of buffers per endpoint
Buffer Size (Bytes)-Choose the size (in bytes) for each buffer
Total used Buffer Space (KB)-Amount of buffer size used by active endpoints

PROGRAM the Configuration Device

After the required configurations are done, select the “Program Button” Highlighted below. Make sure you connected the SuperSpeed Explorer Kit connected with a Type C USB Cable to your System with proper drivers installed.



Click on the “Program” button in the Pop-up window…



One the successful completion, the device will be programmed as per your requirements…

Document Revision History

Document Title: Cypress EZ-USB SX3 Configuration Utility User Guide			
Revision	**Issue Date**	**Origin of Change**	**Description of Change**
**	12/08/2020		Initial revision
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