



Cypress EZ-USB® CX3 RDK

Quick start guide



Introduction:

Cypress EZ-USB® CX3 is a USB 3.0 camera controller that enables developers to add USB 3.0 connectivity to any image sensors compliant with Mobile Industry Processor Interface (MIPI®) Camera Serial Interface Type 2 (CSI-2) standard. CX3 comes with four MIPI® CSI Lanes, each lane supports up to 1Gbps data rate. It is ideally suited for high-definition (HD), high-speed image-capturing applications. Based on the proven EZ-USB® FX3 Platform, CX3 comes with an ARM9 CPU and 512KB SRAM that provides 200 MIPS of computational power. CX3 supports multiple peripheral interfaces such as I2C, SPI, I2S and UART which can be used for interfacing various peripherals.

e-con systems has developed a reference design kit (RDK) for EZ-USB® CX3 that enables customers to evaluate the CX3 device. The CX3 RDK is internally code named as DENEbola.

Kit Content:

The e-con Systems' Cypress CX3 RDK kit pack includes

1. CX3 RDK base board with OmniVision® OV5640 Image sensor daughter board
2. USB 3.0 Type-A to Micro B cable
3. Quick start guide (This document)

Software tools and documentation:

The software tools and documentation are available for download in

<http://www.e-consystems.com/CX3-Reference-Design-Kit.asp>

Please visit the above link to register and download the following software tools and documents

1. CX3 RDK base board and OV5640 Daughter Board Schematics
2. Quick Start Guide
3. Hardware User Manual
4. e-CAMView Application Installer [A DirectShow Video Viewer application]
5. e-CAMView Installation Manual
6. e-CAMView Application User Manual
7. Firmware Build Manual
8. Firmware source code



Cypress EZ-USB® CX3 RDK

Quick start guide



CX3 RDK- OmniVision® OV5640 CMOS MIPI® CSI-2 Sensor Interface:

This section provides details about hardware, software, and documentation that demonstrates CX3 RDK for 5MP MIPI® CSI-2 camera application using OmniVision®'s OV5640 image sensor based camera module from e-con Systems. This CX3 RDK demonstrates streaming of 1080p 30fps, 720p 60fps video from OV5640 sensor through USB3.0. The e-CAMView or any Directshow player application can be used to view this video on PC.

Customers can use this reference design kit along with Cypress CX3 SDK to build their own USB 3.0 camera using any Image Sensor with MIPI® CSI-2 interface.

DENEBOLA kit consists of two boards to demonstrate the CX3- 5MP MIPI® CSI-2 Camera Demo:

- CX3 Reference Design Kit (RDK) Base Board
- OV5640 sensor daughter board

CX3 RDK base board:

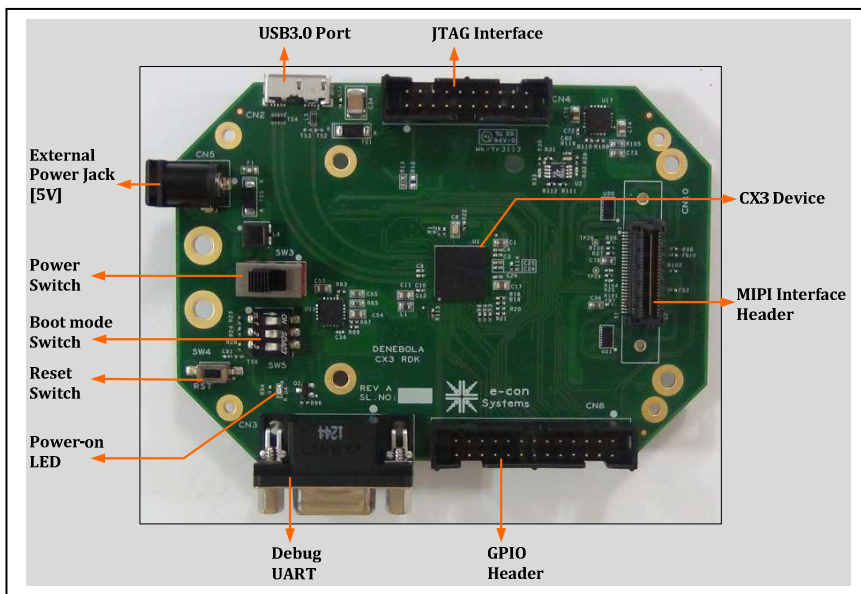


Fig 1: CX3 RDK base board – Top view



Cypress EZ-USB® CX3 RDK

Quick start guide



Hardware Setup and Installation:

CX3 RDK baseboard with OmniVision OV5640 image sensor daughter board:

The CX3 RDK by default comes with OV5640 daughter board fixed on CX3 RDK base board. The CX3 RDK setup is shown in below Fig 2.

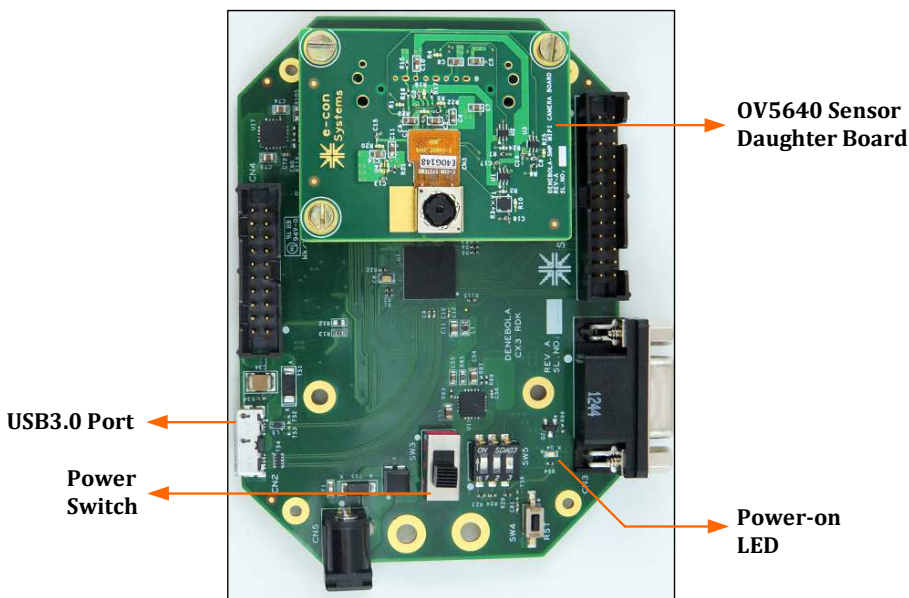


Fig 2: CX3 RDK with OmniVision OV5640 Camera module

e-CAMView Software Installation:

Download the “e-CAMView” application from the “e-CAMView Installer” link in the “Software” section in web page <http://www.e-consystems.com/CX3-Reference-Design-Kit.asp>

Install “e-CAMView” application in a Windows 7 PC by following the steps in the automatic installer.

Any UVC player application like AMCAP, VLC Player or Virtual dub can also be used to view the video.



Cypress EZ-USB® CX3 RDK

Quick start guide



Power the Board and see the video preview:

1. Connect the RDK to USB 3.0 port in the PC using the USB3.0 Cable provided with the kit. Make sure the Power Switch (SW3) is set to Pos.1 ('Bus power').
2. Then the Power-ON "Green LED" (D4) glows and the demo binary image for OmniVision® OV5640 sensor loaded in the SPI flash will start executing.
3. You can see the "Imaging Devices" class in "Device Manager". (Note: The automatic driver installation from web will take few minutes)

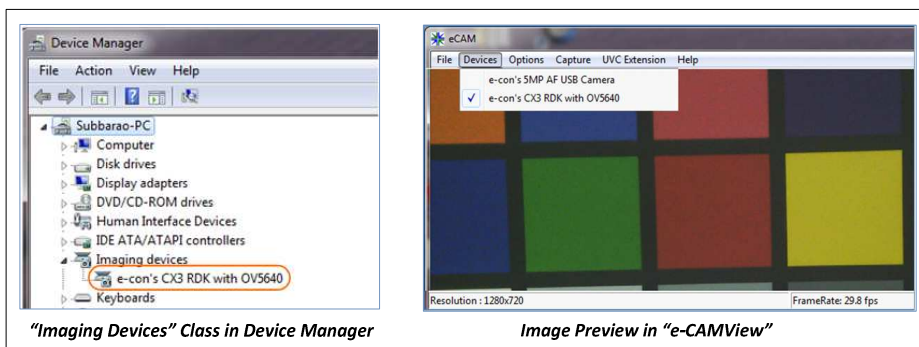


Fig.3: "Imaging Devices" Class in "Device Manager" and preview in "e-CAMView"

4. Run "e-CAMView" Application and choose appropriate device "e-con's CX3 RDK with OV5640" and see the preview.
5. Refer "CX3_RDK_SW_Windows_UserManual.pdf" to change the Preview resolution, still capture and supported controls available in e-CAMView.

Additional Learning Resources:

- Visit www.cypress.com/cx3 for additional learning resources in the form of data sheets, technical reference manual and application notes. For custom CX3 Firmware development, please download latest FX3 SDK V1.3 from <http://www.cypress.com/?rID=57990> which supports CX3 device.
- Visit <http://www.e-consystems.com/CX3-Reference-Design-Kit.asp> for the latest information about this kit and its documentation and about "e-CAMView" Application