EVBUM2250/D

IT-CCD G2 Evaluation Hardware Quick Start Guide

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EVAL BOARD USER'S MANUAL

Before You Begin

Confirm that all of the required components are available:

- Evaluation Hardware and Supported Image Sensor.
  The Evaluation Hardware consists of an Imager board, an FPGA board, and a Lens Mount kit. A list of image sensors supported by the Evaluation Hardware can be found at www.onsemi.com. Note that different image sensors require the use of separate Imager Boards – please consult the information at the web page above to confirm that the appropriate imager board is matched to the sensor being evaluated.
- Sensor Studio Software.
  The most recent version can be downloaded at www.onsemi.com.
- Frame Grabber (optional).
  Evaluation kit supports USB2 but data rate is very slow and only single channel sensor operation is supported. For faster speed and multichannel operation two Camera Link Frame Grabbers are currently supported:
  1. Imperx FrameLink Express (Expresscard54), and
  2. Bitflow NOEN CLB (PCI Express 4x).
- Computer.
  Windows 7 and Windows 10 64 bit, 2+ GHz processor, 8 GB RAM, USB connection, available ExpressCard 54 (Laptop) or PCI Express slot (desktop).
- Power Supply.
  12 V DC, 2 A, with 2.1 mm center positive DC power jack.
- Cables.
  For Imperx Frame Grabber: Camera Link SDR to SDR cable. For Bitflow Frame Grabber: Camera Link SDR to MDR cable. 2 meter cable length is recommended.
- Lens.
  The Lens Mount kit is compatible with C, CS, and F mount lenses.
- Table−top Tripod. (Optional)

Install SensorStudio

Install Sensor Studio software by running the "setup.exe" file. During the installation process, software drivers can be selected. All installations should select the G2 USB2 driver for use with this Eval kit. USB is mandatory for firmware updates.

Install Frame Grabber (Optional)

Obtain frame grabber software from vendor and install per instructions from them. With the computer turned off, install the Frame Grabber hardware. When the computer is turned on, the new hardware will be detected. Since software drivers were loaded by vendor installers, the "default recommended location" can be used to complete the installation.

If using an Imperx frame grabber, run the file "FLExDvrManager.exe", and disable CameraLink status check for both CameraLink channels.

Assemble Evaluation Hardware

- Install Sensor onto Imager Board.
  Be careful to ensure that the sensor is correctly inserted into the socket. While the sensor (and socket) are keyed, it is still possible to shift placement laterally. More information on the proper handling of image sensors can be found in the application note 'Image Sensor Handling and Best Practices', available at www.onsemi.com.
- Assemble Optics.
  Follow the assembly instructions included with the Lens Mount Kit to secure the appropriate mount to the Imager Board, and then attach the lens.
- Assemble Boards.
  The FPGA and Imager boards connect via board−to−board style connectors located on the back of each board. Orient the boards so that the silkscreen or printing on both is right side up (readable), and then connect together. The entire assembly can now be secured to a tripod using the included tripod mount.
- Plug in power and camera link cables.
  With the Evaluation Kit powered off, insert the Camera Link cable into the frame grabber and into the base connector on the FPGA board. Insert the power plug into the receptacle on the FPGA board. Turn on the Power.

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Run Sensor Studio

- Launch Program.
  Double click the Sensor Studio II desktop icon (Figure 1) to launch the software. Once the interface loads, click the ‘G2’ button (Figure 2) at the top of the screen. An image display window and the control GUI will appear on the screen.

Figure 1.

Figure 2.

- Connect to Frame Grabber.
  Go to the control GUI and select the “Connection” tab. Select Camera Link or USB. If Camera Link then choose either the ImperxG2 or BitflowG2 option, depending on the Frame Grabber being used. Click the Connect to Hardware button. The red light will change to green indicating that a connection has been established. (Figure 3) If no connection can be established, confirm that the Frame Grabber has been properly recognized and installed by the system (as viewed in Device Manager), and then refer to the installation guide for the frame grabber.

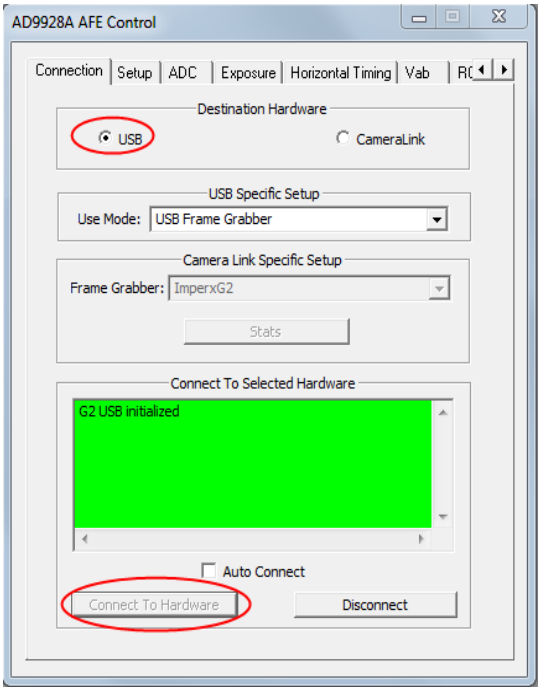

Figure 3.

- Initialize System.
  Select the “Setup” tab from the control GUI. Press the Initialize button to begin running the configuration script which will initialize the system. (Note that system initialization can take as long as 30 seconds depending on computer hardware.) See Figure 4. When initialization is complete, the system will default to live capture mode, and a live image will appear in the display window. Note that errors during initialization typically occur as a result of a bad Camera Link cable connection – be sure that connectors are screwed in at both ends of the cable.

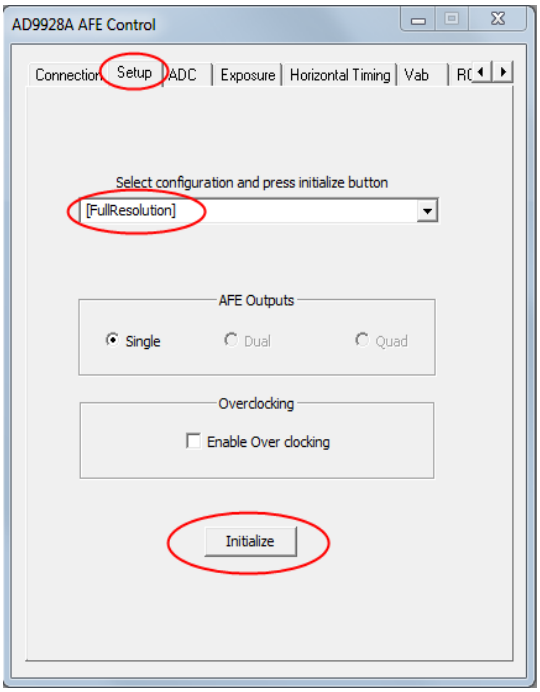

Figure 4.

Next Steps

Sensor Studio provides a number of controls to evaluate operation of the sensor, including image capture, processing, and characterization. Additional information on these controls is included in the Sensor Studio help system, which is available from the HELP menu by selecting “SS and Python Help”.

For additional help in system setup, please contact ON Semiconductor at www.onsemi.com/imagesensors or by e−mail at is−support@onsemi.com.

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