Embedded Vision
**D E V E L O P M E N T   K I T**

![LATTICE SEMICONDUCTOR]

This document provides a brief introduction and instructions to install and demonstrate the Embedded Vision Development Kit.

This kit is pre-programmed to demonstrate the Dual CSI-2 to HDMI demo. The dual camera inputs are received by the CrossLink FPGA, which merges into a single video stream fed to the ECP5 FPGA. The ECP5 converts the incoming image into parallel data and also performs basic image processing, and then passes it to the HDMI VIP Output Bridge Board which converts the data to HDMI format. The output can be observed on a standard HDMI monitor.

1 Check the Kit Contents

The Embedded Vision Development Kit contains the following items
- Three-board connected kit consisting of:
  - Crosslink VIP Bridge Board
  - ECP5 VIP Processor Board
  - HDMI VIP Output Bridge Board
- USB mini cable for programming
- 12V AC adaptor Power Supply
- QuickStart Guide
- Lattice Diamond software license request letter with unique serial number.
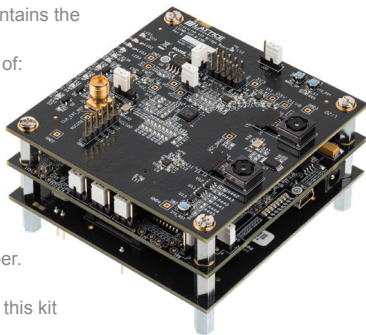
The following hardware is not included with this kit but required to complete this demo
- HDMI-capable monitor
- HDMI cable

Static electricity can shorten the lifespan of electronic components. Please observe these tips to prevent any damage that could occur from electro-static discharge:
- Use anti-static precautions such as operating on an anti-static mat and wearing an anti-static wristband.
- Store the board in anti-static packaging.
- Touch the metal housing to equalize voltage potential between you and the board.
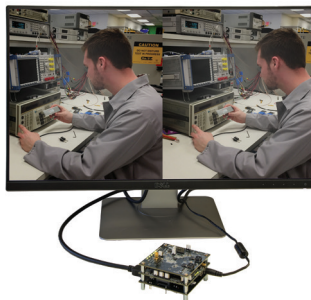
2 Run the Demonstration

- Verify the boards are properly connected. Mount the Crosslink VIP Input Bridge Board on top of ECP5 VIP Processor Board. The connectors J10 and J11 of ECP5 VIP processor board should be connected to J3 and J1 connectors of Crosslink VIP Bridge Board. The HDMI VIP Output Bridge Board connects to the bottom of the ECP5 VIP Processor Board. Be sure to secure the boards with the supplied stand-offs and screws to ensure the boards remain connected.
- Connect 12V adapter to the ECP5 VIP Processor Board. This supplies power to the entire kit when all boards are properly connected.
- Check the following jumper settings:

CrossLink Jumper Settings	
Jumper	Pins to Connect
J2	1-2
J4	1-2
J30	1-2
All other headers should be kept open	

ECP5 Jumper Settings	
Jumper	Pins to Connect
J6	1-2
J9	1-2
J5	1-2
J51	1-2
J52	2-3
J7	1-2
J53	1-2
J55	1-2
J50	1-2, 3-5
J3	1-2, 5-6
All other headers should be kept open	

- Connect the HDMI cable between the HDMI VIP Output Board and monitor.
- Set power switch SW2 on the ECP5 VIP Processor Board to ON.
- The output of the dual cameras will be observed on the monitor as a single video stream.

3 Done!

Congratulations! You have successfully demonstrated the Dual CSI-2 to HDMI demo on the Embedded Vision Development Kit. This demo is intended to show basic functionality of the kit as shipped. This kit can be reprogrammed and/or connected to additional hardware (available separately) to demonstrate a number of bridging solutions. To learn more about these solutions and download full documentation for this kit, including schematics for all the boards, visit the Lattice website at: www.latticesemi.com/evdkit.

Development with the Lattice CrossLink FPGA and ECP5 FPGA is supported by the Lattice Diamond software. You can learn more and download the latest version from the Lattice website at www.latticesemi.com/diamond.

Access to design with the ECP5 FPGA requires a subscription license to the Diamond software. If you do not have a Diamond software subscription license, follow the instructions on the letter included in this kit to request a license.

The CrossLink and ECP5 devices can be programmed using Diamond Programmer software. This is included with the Diamond software, or can be downloaded as a stand-alone tool from the Lattice website at www.latticesemi.com/programmer.

Technical Support

www.latticesemi.com