



PolarFire® Video and Imaging Kit Quickstart Card

Introduction

Microchip's PolarFire Video Kit offers high-performance evaluation of 4K image processing and rendering using dual camera sensors as well as numerous display interfaces. The kit is purpose built for effortless prototyping of popular imaging and video protocols including MIPI CSI-2 TX, MIPI CSI-2 RX, HDMI 1.4 TX, HDMI 2.0, DSI and HD/3G SDI. With a 300K logic element (LE) PolarFire FPGA with DDR4 and SPI-flash, the kit is ideally suited for mid-bandwidth imaging and video applications. The PolarFire device on-board optimizes input/outputs (I/Os), transceiver rates, look-up table (LUT4) architecture, memories, and DSPs for mid-density/mid-bandwidth ranges to deliver a superior solution at much lower power and lower total cost of ownership.

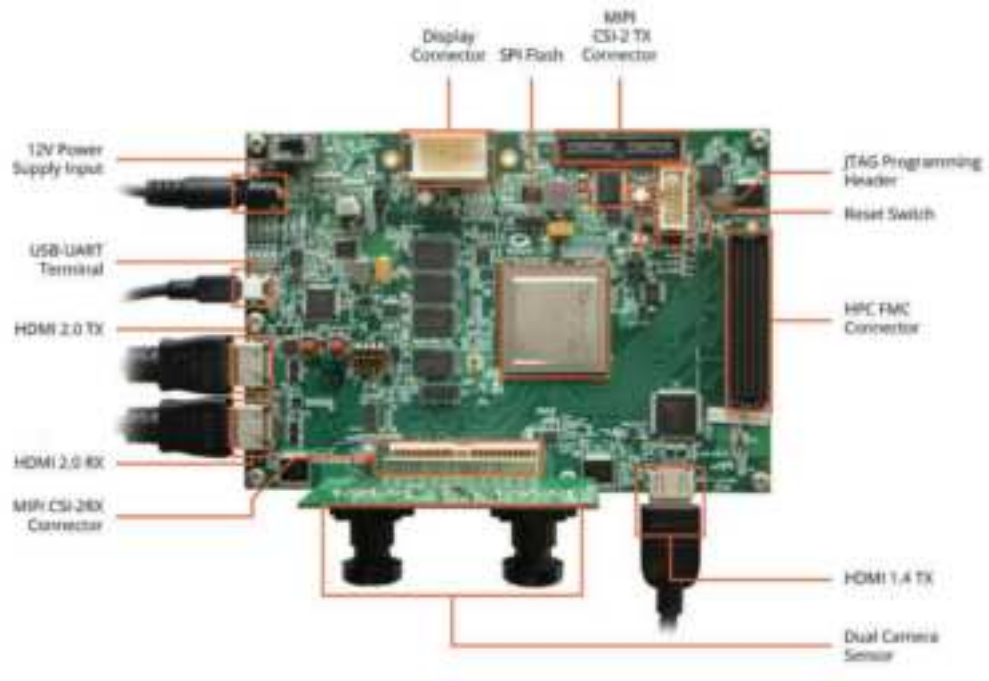
This kit enables easy design of applications that can include:

- Machine vision
- Displays (Protocol conversion)
- Medical imaging
- Surveillance
- Stereo vision (Depth estimation)

Table 1. Kit Contents MPF300-VIDEO-KIT-NS

Quantity	Description
1	PolarFire FPGA with 300K MPF300T-1FCG1152I Board
1	Dual Camera Sensor board (VIDEO-DC-DUALCAM)
1	HDMI cable
1	USB 2.0A to Mini-B cable
1	12V, 5A AC power adapter and cord
1	Quickstart card

Figure 1. PolarFire Video Kit



Hardware Features

- 300K LE PolarFire FPGA in an FCG1152 Package
- Sony Dual Camera Sensor (IMX334) over Amphenol FCI connector (CSI-2 RX)
- HPC FMC Connector
- 4 GB DDR4 x64
- Power Management Unit for 1 or 1.05V PolarFire FPGA core voltage
- USB to UART Interface
- Embedded programming and debugging using SPI and JTAG
- 1x1 GB SPI Flash Memory
- HDMI 2.0 RX and TX
- HDMI 1.4 TX
- DSI Connector
- CSI-2 TX Connector

Programming

Microchip's PolarFire Video Kit provides feasible programmability using an on-board embedded FlashPro5 programmer. The board can also be programmed with standalone FlashPro4/5 hardware. IAP programming and debug support is also provided on the board. For more information about programming procedures, see [Documentation Resources](#).

Jumper Settings

Table 2. Jumper Settings

Jumper	Default Setting
J19, J28, and J36	1-2
J24	2-4
J25	5-6

Note: For full details about jumper settings, see [Documentation Resources](#).

Running the Demo

The PolarFire Video Board comes with a preprogrammed picture in picture demonstrative design. Images captured from the camera over MIPI CSI-2 are processed by the dedicated ISP engine in the PolarFire fabric and displayed over HDMI. To run the demo, set up the board as outlined in the following steps. For detailed instructions, see *DG0849: PolarFire Dual Camera Video Kit Demo Guide*.

1. Insert the Dual camera module into **J38** on the PolarFire Video kit. Ensure to remove the camera lens caps.
2. Connect the 12V power supply to connector **J20** and the USB mini cable to connector **J12**.
3. Connect a HDMI cable from **J2** to **J35**. Connect another HDMI cable between the HDMI port of a display and **J1**. If only one HDMI cable is available, connect a HDMI cable between the HDMI port of the display and **J2**.
4. Power ON the board by sliding **SW4** to the ON position.
5. The display becomes **active** and a camera feed can be observed on the monitor; a picture in picture demonstration with a smaller inset image moving on the screen.

We recommend using a display device with a HDMI port. Avoid using HDMI adapters for optimal results.

Software and Licensing

Libero® SoC PolarFire Design Suite offers high productivity with its comprehensive, easy-to-learn, and easy-to-adopt development tools for designing with Microchip's PolarFire FPGAs. The suite integrates industry standard Synopsys Synplify Pro synthesis and Mentor Graphics ModelSim simulation with best-in-class constraints management and debug capabilities.

Download the latest Libero SoC PolarFire release from [Microchip website](#). Generate your free silver license at [Microchip portal](#).

Documentation Resources

For more information about the PolarFire Video Kit, including schematics and user's guides, see the documentation at [MPF300-VIDEO-KIT-NS](#).

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