

Stellar Video Processing Performance with Lattice ECP3™ FPGA

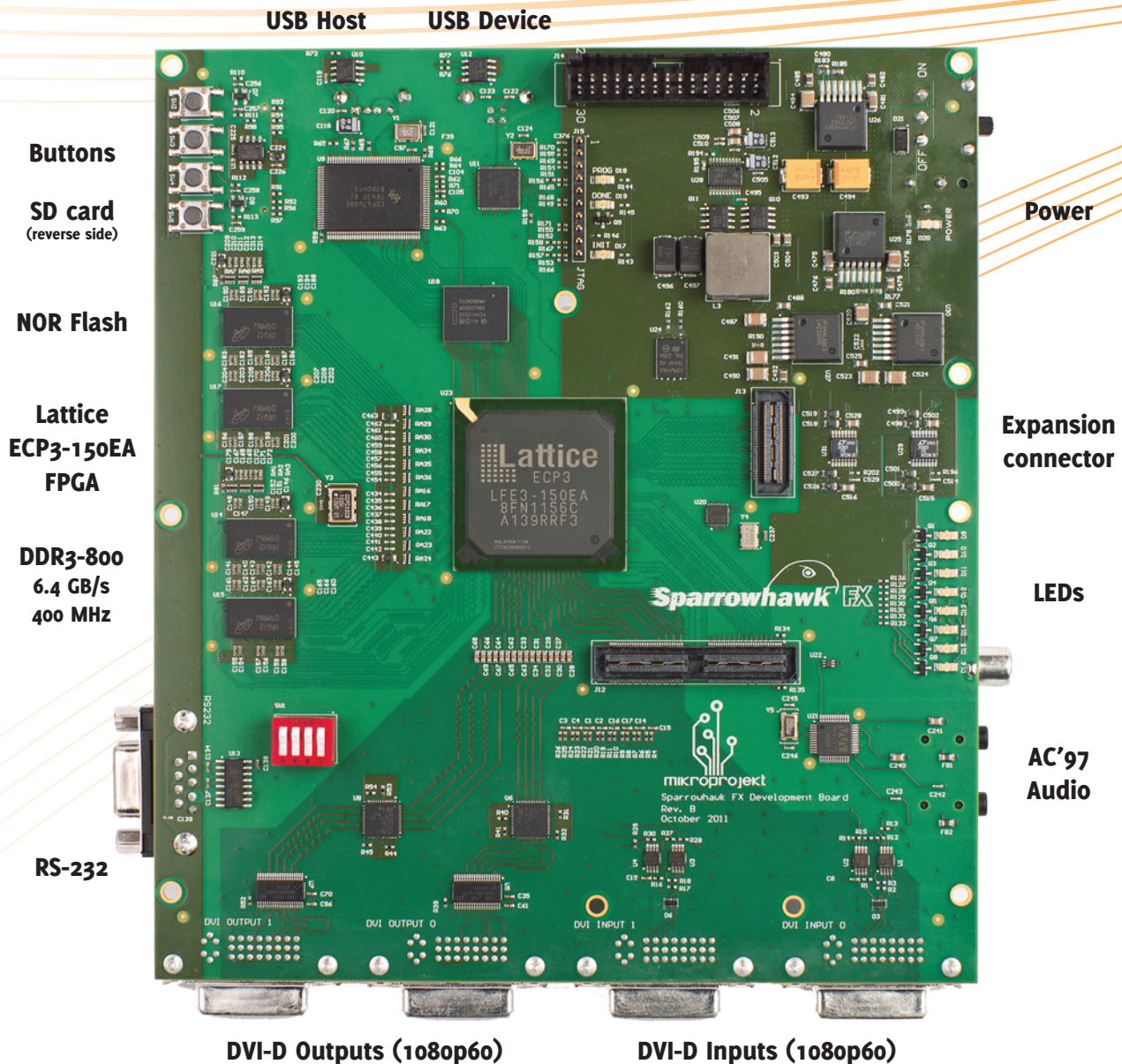


Sparrowhawk FX Video Development Board



www.mikroprojekt.hr





Discover a new dimension of video processing applications with the Sparrowhawk FX Development board

Designed to support acquisition, processing, and output of multiple high definition video streams, the Sparrowhawk FX is an advanced FPGA development board targeted for video acquisition, processing, and display applications, based on the award-winning LatticeECP3™ FPGA.

The board is delivered pre-loaded with Mikroprojekt's "IQ-Video" video processing IP suite, and works out of the box as a video combiner solution, demonstrating the capabilities of combining two video streams in combination with static or dynamic graphics.

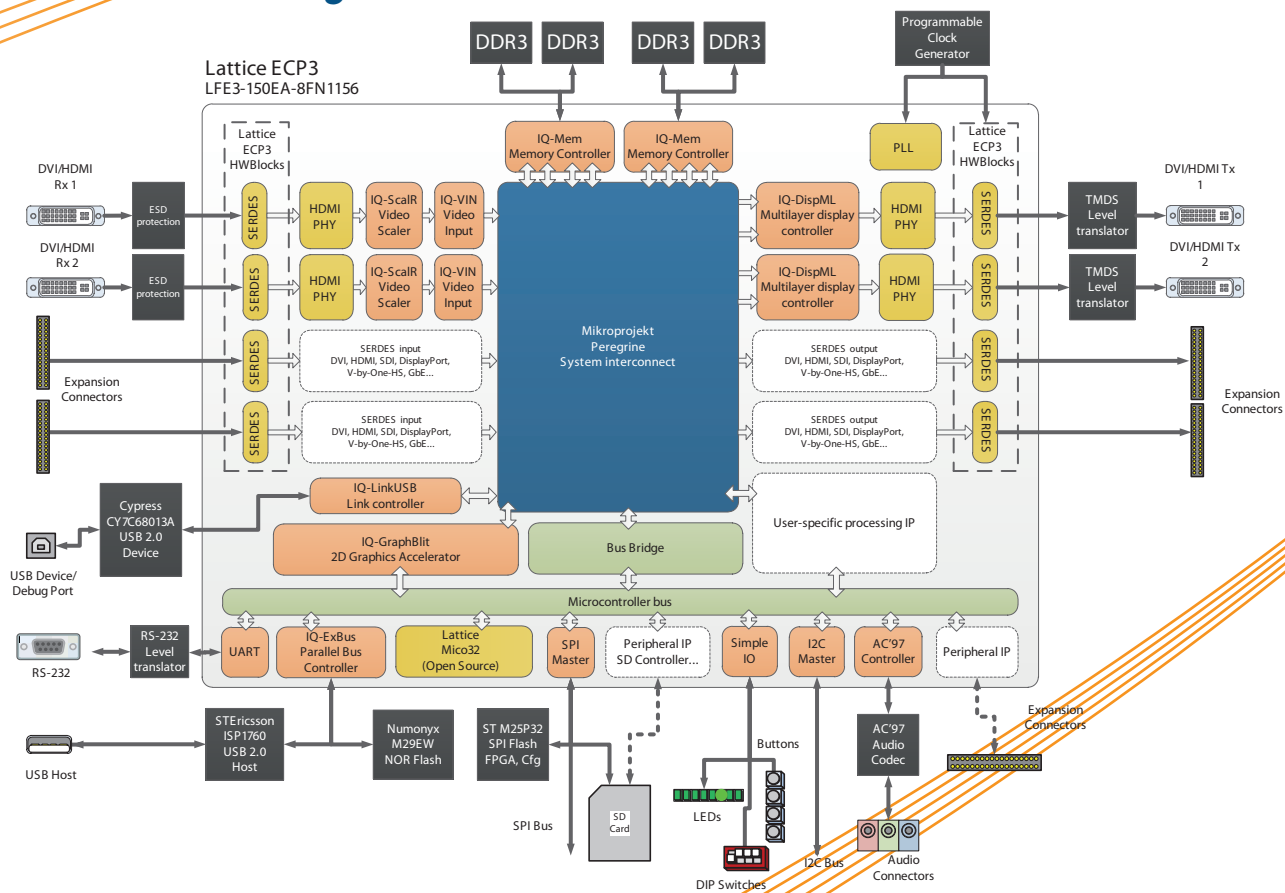
Two banks of DDR3-800 memory are provided for frame buffering, delivering up to 6.4 GB/s in total, supporting up to four simultaneous 1080p60 video input and output streams over the two input and two output DVI-D connectors (single link), with additional 8 SERDES input and output differential pairs available for expansion as DVI-D, SDI, or other video interfaces.

Additionally, nonvolatile storage, USB host and device interfaces, AC'97 audio, SD card, and other standard features such as LEDs and keys are provided for purposes of prototyping and application development.

The Sparrowhawk FX development board offers unprecedented bandwidth and processing capabilities to video system designers. The preloaded IQ-Video IP library solution allows easy evaluation of high definition video processing operations, including frame by frame video scaling, video overlay with alpha transparency, mixing and overlay of static and dynamic graphics, smooth scrolling and panning.

The IQ-Video IP solution is fully supported and can be licensed directly from Mikroprojekt.

Reference FPGA design



1080p60 Full HD screen

Picture in picture

Sparrowhawk FX

Target applications

- Digital signage
 - Video walls
 - Visual installations
- 3D display systems
 - Stereo projection systems
 - Autostereoscopic displays
- DVRs
- Real-time video processors
- Machine vision
- Video scalers/frame rate converters

Design utilization

LUT4	REG	EBRs	MULs	PIOs
51234	36240	111	152	225
*34%	32%	30%	24%	38%

*Percentages valid for the mounted device: ECP3-150EA-8FN1156

Sparrowhawk FX board running the IQ-Video Demo

Hardware features



FPGA	Lattice ECP3 • LFE3-150EA-8FN1156 • 149.000 LUTs • 372 Block RAMs • 320 18x18 Multipliers • 586 IO pins • 16 SERDES channels (In/out) • 400 MHz DDR3 Memory Support • 10 PLLs, 2 DLLs	Expansion ports	Expansion Connectors (3) • 1x Low Cost Expansion 2.54mm 30-pin header (22 GPIOs) • 1x Samtec QSH-060 Expansion Connector (48 GPIOs, 8 SERDES In, 8 SERDES Out, 1 dedicated clock input) • 1x Samtec QSH-030 Expansion Connector (44 GPIOs, 2 dedicated clock inputs) 114 GPIO pins in total
Video Memory	DDR3-800 • 4x Micron MT41J64M16JT-15E • 400 MHz Clock • Dual 32-bit channel (2x2 chips) • 6.4 GB/s (theoretical maximum) • 512 MB total memory (factory expandable to 1024 MB)	Communication Interfaces	Cypress CY7C68013A USB 2.0 Device STEricsson ISP1760 USB 2.0 Host RS-232 Interface I2C Bus (On all expansion connectors)
Video interfaces	DVI-D/HDMI • 2x DVI/HDMI Input (DVI-D connector) • 2x DVI/HDMI Output (DVI-D connector) • DDC Supported on all in/out connectors	Other peripherals	Push-buttons (4) DIP Switches (4) LEDs (8)
Nonvolatile storage	Numonyx M29EW Parallel NOR Flash • 512Mbits (64MB) factory expandable to 2Gbits (256 MB) ST M25P32 SPI Flash (FPGA Configuration) • 64 Mbits (8 MB) Secure Digital Card slot • SPI and SD interfaces connected to FPGA	Power Supply	12V DC Input Power switch Onboard power supplies • 5V, 3V3 switching power supplies • 1V5 DDR3 switching power supply • FPGA 1V2 Core switching power supply • SERDES 1V5 voltage linear regulator
Audio Interfaces	Wolfson WM9707 AC'97 2.1 Audio Codec Stereo Line Out Stereo Line In S/PDIF Out	Clocking	Onboard 100MHz Oscillator Onboard Programmable Clock Generator for SERDES/Video Interfaces – SiLabs Si5338

Ordering information

Product	Description	Order code
Sparrowhawk FX Video Development Board Kit	• Sparrowhawk FX Development board • 12V power supply • Quick start guide	HW-SHFX



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Mikroprojekt is a Lattice Semiconductor LatticeCore Connection IP partner and a member of LEADER, the Lattice Exclusive Alliance of Design Engineering Resources.

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