Camera Solutions

Low-cost, low-power, small-footprint FPGAs from Lattice are ideally suited to implement various functions in a camera signal chain. Lattice has developed the HDR-60 Video Camera Development Kit and partnered with several CMOS image sensor vendors, ISP vendors and other partners to offer compelling camera solutions.

Aptina IMAGING

Texas Instruments

OmniVision

Panasonic

HISILICON

SONY

NXP

Camera Signal Chain Solutions

Our unique position in the ultra-low density FPGA market allows us to focus on numerous camera applications. With our technology partners and FPGA programmability, you will be able to quickly bring your camera to market.

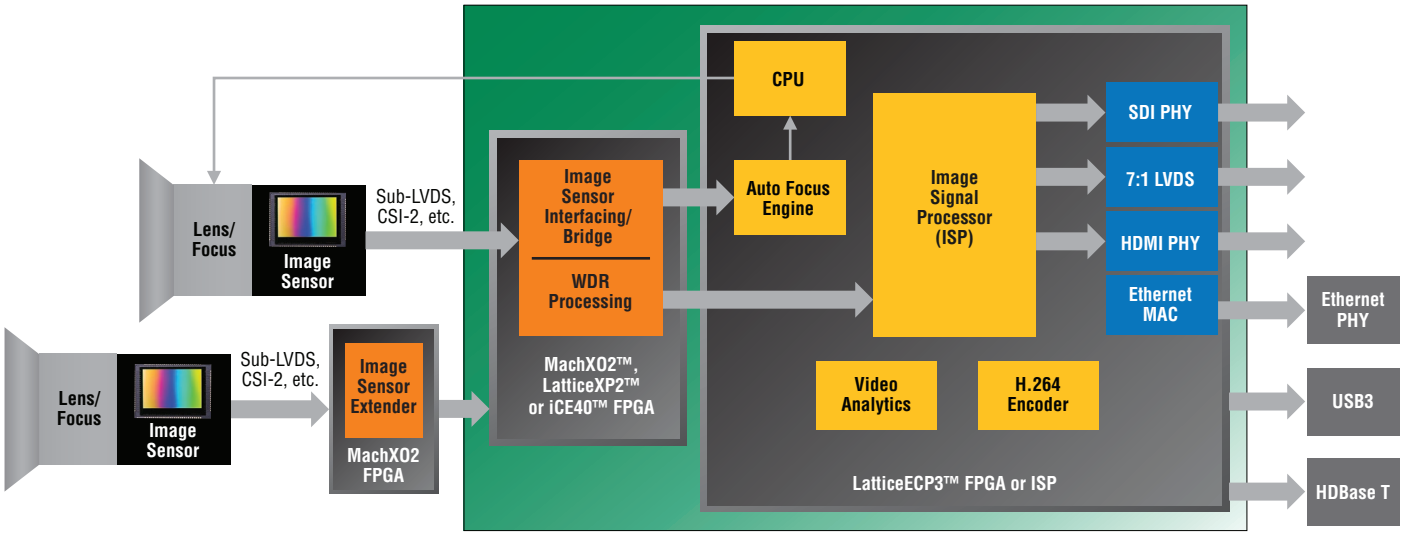


Image Sensor Interfaces

Image Sensor Bridge

- Required when an Image Signal Processor (ISP) cannot directly interface with an image sensor
- Connects to an ISP via a parallel CMOS bus or serial interface
- Up to 1080p120
- Available image sensor interfaces:
  - Aptina HiSPi
  - MIPI CSI-2
  - Panasonic sub-LVDS
  - Sony serial sub-LVDS
  - Sony parallel sub-LVDS

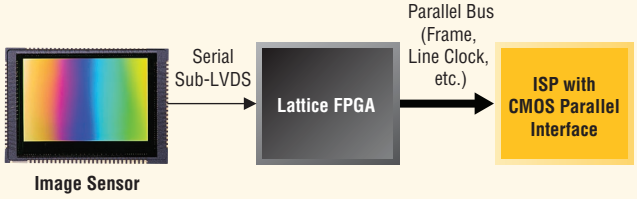
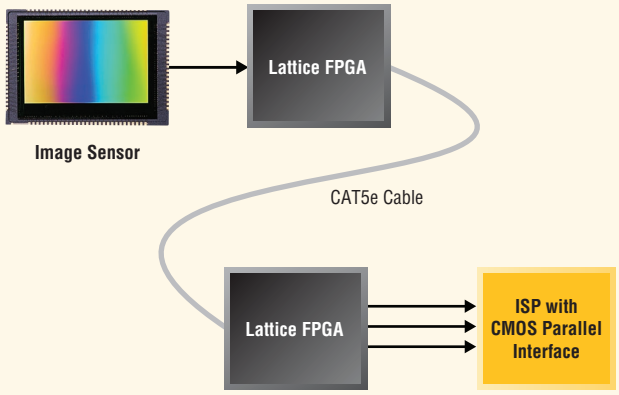


Image Sensor Bridge

Sensor Extender Card

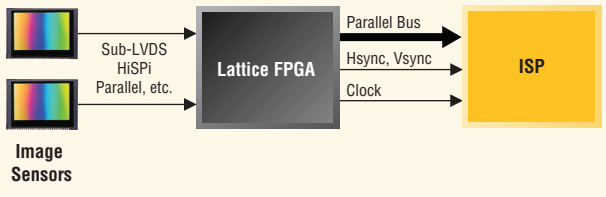
- Allows image sensor to be located far from the ISP
- Utilizes inexpensive CAT5E cable to support 1080p
- Can be used in both single and dual camera applications



Sensor Extender Card

Dual Image Sensor Bridge

- Allows a single ISP to interface with more than one image sensor
- Applicable for 3D video, gesture recognition, and black box car recorders
- Top/bottom or side-by-side image arrangement
- Texas Instruments based cameras that use MachXO2 ultra-low density FPGA are also available

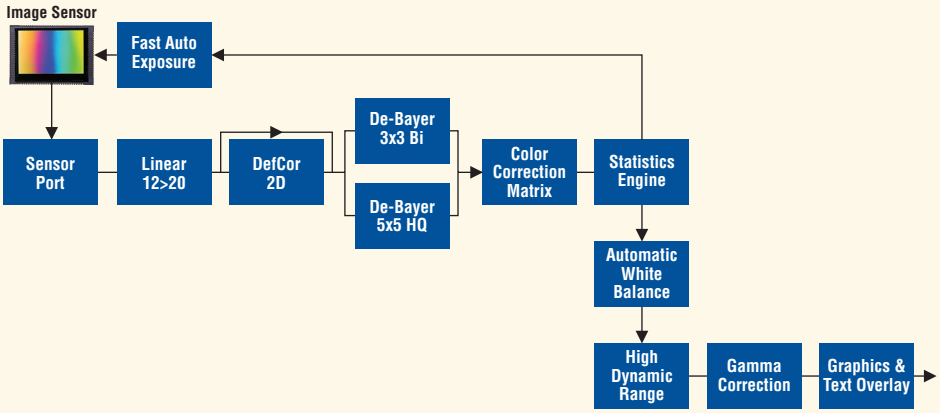


Dual Image Sensor Bridge

Image Signal Processing

ISP Intellectual Property

- From third-party IP partner Helion
- LatticeECP3-based ISP available for:
  - Aptina 720p HDR (9MTM024)
  - Aptina 1080p HDR (AR0331)
  - Panasonic 1080p (MN34041)
  - Sony IMX136/104



Helion IONOS Image Signal Processing Pipeline

HDR (WDR)

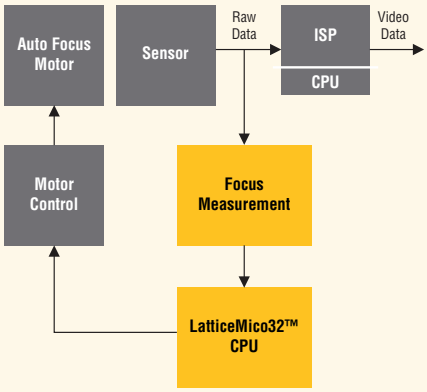
- Improves the dynamic range between the lightest and darkest areas of an image
- Solutions for Aptina, Panasonic and NIT sensors

H.264 Encoder

- Scalable H.264 encoder from Enciris Technologies
  - Both H.264 and VC-1 can be demonstrated via the LT-125 evaluation board

Auto Focus

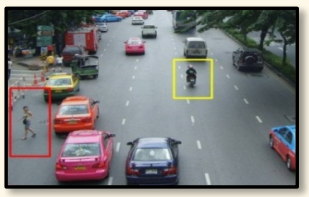
- Stand-alone auto focus algorithm
- Use with an external ISP or the HDR-60 Video Camera Development Kit's LatticeECP3-based ISP



Auto Focus Block Diagram

Video Analytics

- Intellivision and Rhonda software provide people counting, intrusion detection, object detection and camera tampering
- Based on the LatticeECP3 FPGA
- Demos available on the HDR-60 Video Camera Development Kit



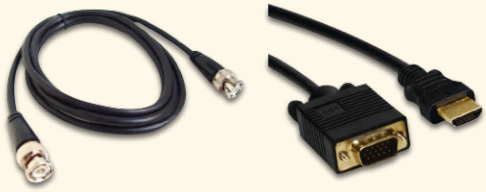
Video Outputs

SDI IP and Camera

- Lattice Tri-Rate SDI PHY IP core available
- Complete SDI PHY interface supporting SD/HD/3G SDI
- Texas Instruments DM368-based SDI camera with the LatticeECP3-17 FPGA
- Acamar Imaging SDI camera with excellent low light performance

USB 3.0 Solution

- HDL reference design for Cypress EZ-USB FX3 USB 3.0 peripheral controller
- Capable of 3.2 Gbps over USB 3.0



HDMI & 7:1 LVDS

- LatticeECP3 HDMI Tx and Rx reference designs available
- HDR-60 Video Camera Development Kit utilizes the HDMI Tx core
- 7:1 LVDS reference designs for embedded displays available for LatticeECP3 & LatticeMachXO2

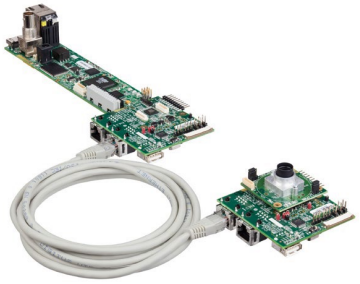
Demonstration Kits and Boards

Lattice Camera Hardware

Product	Description	Ordering Part Number
HDR-60 Video Camera Development Kit	• LatticeECP3-based camera development system • Allows demonstration of image sensor bridge or dual image sensor bridge • HDMI and Ethernet ports • Choose from Aptina MT9M024/AR0331, Panasonic MN34041, Sony or NIT sensors	LFE3-70EA-HDR60-DKN
CSI2-to-Parallel Bridge	• Convert from MIPI CSI-2 to parallel CMOS. Hardware uses Sony IMX169.	LF-C2P-EVN
Sensor Extender Card	• Unique Lattice-developed solution allows for remote image sensor location.	LCMXO2-4000HE-SEC-EVN
MachXO2 Dual Sensor Interface Board	• Interface board to two image sensors • Output is a combined bus for the HDR-60 Base Board or Texas Instruments IP camera	LCMXO2-4000HE-DSIB-EVN
NanoVesta Sensors	• 720p and 1080p sensors • Plugs into the HDR-60 Base Board or MachXO2 Dual Sensor Interface Board	LF-AR0331NV-EVN (AR0331 NanoVesta) LF-PNV-EVN (MN34041 NanoVesta) LF-9MT024NV-EVN (MT9024 NanoVesta)

HDR-60 Video Camera Development Kit

CSI-2-to-Parallel Bridge



Sensor Extender Card

Third-Party Camera Hardware

- **Texas Instruments (TI) Solutions**
  - SDI camera with LatticeECP3 FPGA
  - Dual sensor camera
  - Panasonic sensor bridge
  - Aptina sensor bridge
  - CSI-2 bridge with OVT
- **Other Partner Solutions**
  - Hisilicon ISP with Aptina and Panasonic bridges
  - CSR dual sensor using iCE40 ultra-low density FPGA and OVT sensor
  - Sony IMX136 for HDR-60 Video Camera Development Kit
  - NXP ISP with Panasonic bridge
  - NIT NSC1005C for HDR-60 Video Camera Development Kit

TI/Leopard Imaging Dual Image Sensor Camera

TI/Leopard Imaging Sensor using MachXO2 Sensor Bridge

TI/Leopard Imaging HD-SDI camera utilizing LatticeECP3

Applications Support
1-800-LATTICE (528-8423)
503-268-8001
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April 2013
Order #: I0232 Online Version

单击下面可查看定价，库存，交付和生命周期等信息

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