FASTVISION

FastCamera40 USB2.0

The FastCamera40 is a high-speed megapixel digital camera system, based on a CMOS imager with an electronic shutter. This camera has a high-speed, scalable, integrated FPGA and memory subsystem which enable stand-alone high speed in-camera image processing. Also the firware provides in-camera ring buffer memeory of up to one GB which is software compatible by a user friendly windows based GUI. Trigger and free running modes are supported. Also the USB2.0 interface can be used simultaneously as a streeming video interface for real-time viewing.

FastCamera40 Key Features:

- The FastCamera 40 is a 2352H x 1728V (megapixel) CMOS digital image sensor capable of 240 frames/second operation at full resolution
- 2352H x 1728V image resolution
- 7-micron-square active-pixel photodiodes
- 240+ frames per second, progressive-scan at full resolution, frame rate can go up to 400,000 fps at 1 x 2K pixels
- Sixteen (16) parallel output ports
- On-chip 10-bit analog-to-digital converters
- FPGA and memory-based configurable interface formats and onboard processing
- Supported by a full range of software tools, including fully optimized microcoded signal and image processing libraries
- Binning in order to achieve increased sensitivity at full frame rates
- Optional additional DDRAM and increased FPGA size for additional processing capability
- Trigger-able electronic shutter
- C mount lens (F with adaptor)

SMART CAMERAS FOR IMAGING

Modes of operation:

The system supports a wide range of custom user selected ROIs and operating modes. For example, full resolution 2352x1728 frames at 240 fps with smaller ROI speeds of up to 100x100 pixels at 4000 fps , 1X 2352 pixels at 400,000 fps.
The system can be provided with dedicated software to perform gauging, tooling and pattern matching in the camera. Thus providing a stand-alone system for real-time, flexible measurement and pattern analysis applications.

Application:

The FastCamera40 is a complete system for capturing complex high-speed events for traditional machine vision applications as well as high speed imaging events that need analysis through slow motion playback. The system has easy configuration with plug and play features that offer expanded recording time of up to several seconds at full rate of 900 MB/sec using on-board memory. Iso using available compression IP, a user can use the USB2.0 for lossless or lossy increase in memory capacity on-camera or lossy real-time data collection to the computer .
This intelligent camera system is optimal for production line machine inspection, production line fast real-time event detection, laboratory microscopy, corporate and military research.

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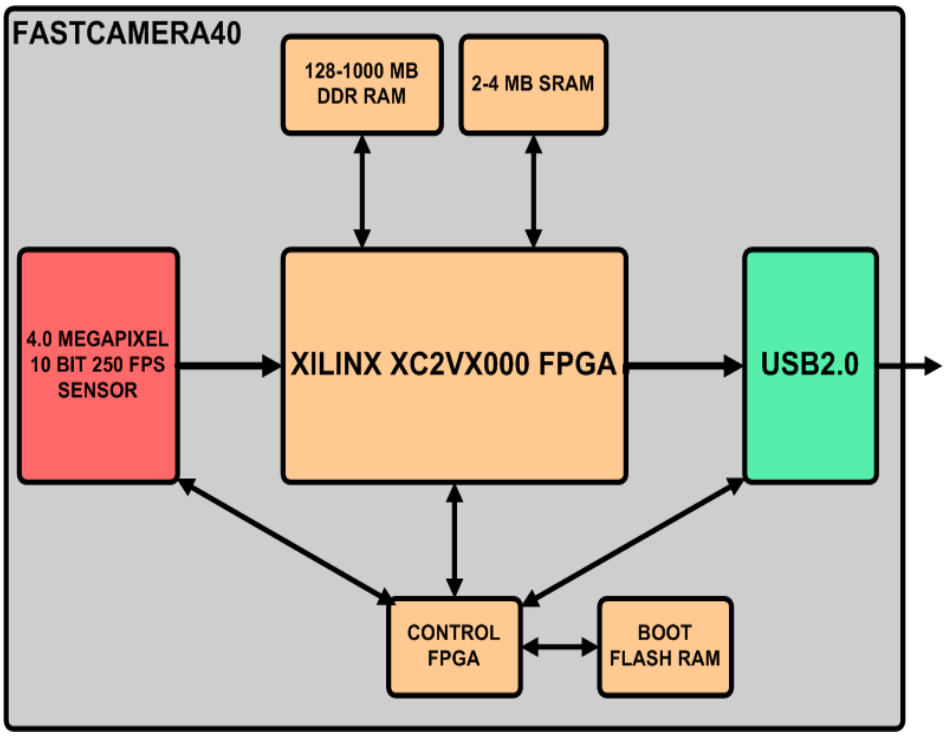

IMAGING SPECIFICATIONS

- 2352 x 1728 x 8 bits @ 240 fps (10 bits 240 fps)
- 15.36 mm x 12.29 mm active area
- 7-micron square active pixels
- 40% Fill Factor
- Monochrome or color (Bayer Pattern)
- On-chip Noise Cancellation
- Dynamic range 59 db
- Monochrome: 2500 bits per lux-second @ 550 nm
- Shutter 99.9% efficiency
- Noise 58 db (10 bit mode lowest sensor gain setting, nominal pixel of 512 counts)

IN-CAMERA PROCESSING OPTIONS

- Image storage up to 250 full size frames at full speed (more for partial scanned images)
- Image averaging
- By pixel gain and offset calibration
- Programmable ROI (via serial port)
- Image sub-sampling
- Convolution filtering
- Binarization with dynamic threshold
- VHDL customizable processing

OUTPUT SPECIFICATIONS

- USB2.0 for output or display

PHYSICAL SPECIFICATIONS

- Power supply +5 Volts
- 12 Pin Hirose Power Connector
- External Trigger In and Out
- 0 to 50 Degree C operating
- Weight < 600 grams

PARTIAL SCAN FRAME RATES 8 BIT PIXELS

- In every case row time is approximately 2.3 microseconds
- 1 row in frame: ~400,000 frames/ sec.
- 10 rows in frame: ~40,000 frames/ sec.
- 108 rows in frame: ~4,000 frames/ sec.
- 216 rows in frame: ~2,000 frames/ sec.
- 432 rows in frame: ~1,000 frames/ sec.
- 864 rows in frame: ~500 frames/ sec.
- 1,728 rows in frame: ~250 frames/ sec.

FPGA AND MEMORY OPTIONS

- FPGA size options from one to eight million gates
- 128-1000 MB 64-bit DDR memory at 266 MHz
- 2-4 MB SRAM

CAMERA CONTROL INTERFACE

- USB2.0 control interface with Windows GUI

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