



FastCamera CCD

The FastCamera-CCD is a series high-speed smart cameras based on the newest Kodak Interline KAI CCD based imagers with an global electronic shutter. These cameras have GigE, analog, and Camera Link outputs. These cameras have a high-speed, scaleable, integrated FPGA and processor subsystem with memory to enable stand-alone high speed in-camera image processing. When integrated with a camera link framegrabber/coprocessor board, the resulting system capabilities can be expanded by adding processors and memory on the board according to the needs of the user. The table below outlines the camera models released or near to release in this family. Programming tools allow this camera to be a customizable stand-alone image processing system for complex applications including object recognition, defect classification and customer imaging algorithms.



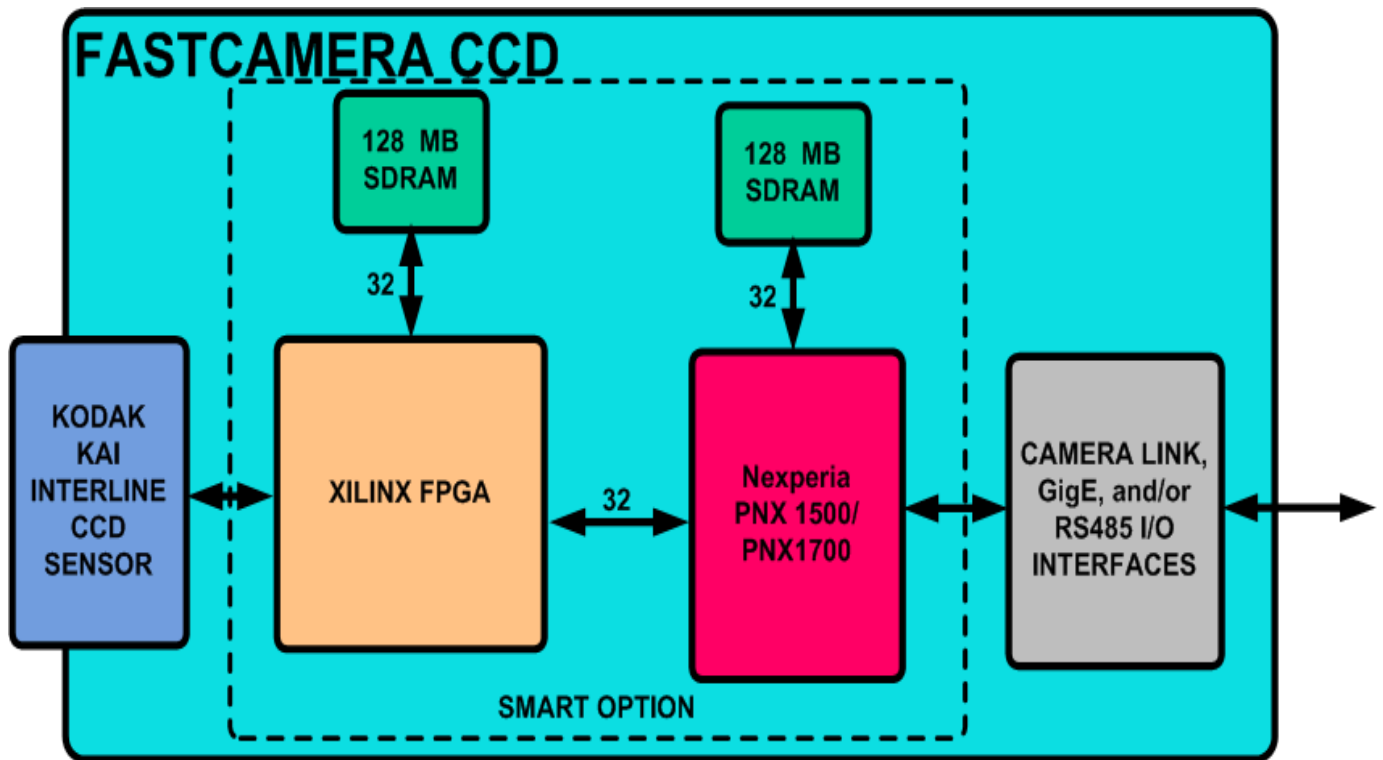
Modes of operation:
 Hardware ROI. 40 MHz pixel clock, or 20 MHz pixel clock . Asynchronous or synchronous trigger and also free running. 85 MHz Camera Link interface with fixed exposure, external exposure control, or internal auto exposure control
 The system can be provided with dedicated software 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.

FastCamera CCD Key Features:

| CAMERA | FC34 | FC105 | FC205 | FC215 | FC405 |
|------------|--------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| Sensor | KAI-0340 | KAI-01050 | KAI-02050 | KAI-02150 | KAI-04050 |
| Pixel Size | 7.4um square | 5um square | 5um square | 5um square | 5um square |
| Resolution | 640x480 | 1080 x 1064 | 1600 x 1200 | 1920 x 1080 | 2336 x 1752 |
| Max FPS | 210 | 120 | 68 | 64 | 32 |

SMART CAMERAS FOR IMAGING

FastCamera CCD



PHYSICAL SPECIFICATIONS

- 63 mm x 63 mm x 42 mm or 50 mm with processor
- 12 Pin Hirose Power Connector
- Camera Link output
- GigE Vision output
- Analog output
- External Trigger In and Out (sync/async modes)
- 0 to 50 Degree C operating
- Weight 200-260 grams
- Power < 6 Watts and <10 watts with processing
- C Mount Lens

SENSOR SPECIFICATIONS

- Interline Transfer CCD
- Output Sensitivity 30 uV/e
- Antiblooming x100
- Vertical smear 80 db typical
- Charge transfer efficiency 99.999%
- Dark Current at Photodiode < 200 eps
- Photometric Sensitivity: Mono 3.61 V/lux-sec, Color 1.17(B), 1.54(G), 0.65(R) V/lux-sec
- Charge Capacity @ 40 MHz - 20,000 electrons and @ 20 MHz - 40,000 electrons
- Readout Noise @ 40 MHz - 16 electrons and @ 20 MHz - 14 electrons
- Dynamic Range @ 40 MHz - 62 dB (10.3 bits) and @ 20 MHz - 69 dB (11.5 bits)
- Maximum Pixel Clock Speed 40MHz
- 12 bit ADC

IN-CAMERA PROCESSING OPTIONS

- Nexperia PNX1502/PNX1702 @ 300/500 MHz
- Xilinx user programmable Spartan FPGA
- FPGA memory
- Customer Programmable (C/C++)
- Image averaging (32 bit)
- By pixel gain and offset calibration
- Programmable ROI (via serial port)
- Image sub-sampling
- Convolution filtering
- Binarization with dynamic threshold
- VHDL customizable processing
- Processor provides Programmable Logic Controller Functions
- Super Framing for expanded dynamic range
- Blobs
- Real time image JPEG compression . Real time loss-less compression

OUTPUT SPECIFICATIONS

- 85 MHz Camera Link output
- 2 TTL Outputs
- 1 TTL trigger input
- Multiple user definable RS422/RS485 channels

