CamSim

CoaXPress & Camera Link Camera Simulators

Key Features

- Simulates all CoaXPress image formats, including Raw, Mono, Planar, Planar Raw, Bayer, RGB, RGBA, YUV, YCbCr601, YCbCr709
- Simulates all camera link v2.0 configurations (base /medium /full/80-bit (DECA))
- Supplies machine simulator capability by adding user IOs
- Supports BMP, RAW input image files
- Pattern generator for transmitting color and grayscale test patterns
- Fully programmable image timing and data parameter configuration via user-friendly GUI
- API methods for developing user simulator applications
- User-configurable Camera Control (CC) lines for triggering options
- Camera Link throughput capabilities of 1-10 pixels simultaneously at 7,000-85,000 KHz. Pixel bit depth varies from 8 to 36 bits per pixel
- Software and FPGA customization for extended machine simulation and/or custom logic/processes
- Up to 16 GB image buffer
- 4x HD BNC connectors for simulating up to 4x 12.5 Gb/s cXp links
- Two SDR-26 connectors for simulating all camera link modes

Target Applications

- Vision Algorithms Development
- Image Processing Application Testing
- Vision System Reliability Testing
- Debugging Rare Bugs

The Gidel **CamSim™** is a flexible high-performance camera simulator that generates CoaXPress and camera link video stream and test patterns for testing frame grabbers or vision/imaging systems. The system supports all CoaXPress and Camera Link™ v2.0 configurations.

The CamSim enables most development to be done in a low-cost lab environment. Thus, the CamSim significantly improves productivity and reduces the overall expense of developing vision and imaging systems. Gidel's CamSim data flow repetition capability ensures that algorithms are validated and work as expected with pertinent input. Moreover, once the rare bug is detected, its respective data flow can be accurately reconstructed to locate the bug and quickly fix it.

The CamSim suite includes:

Application Software: An intuitive GUI enabling full control of the image simulation, including: transmitting image from user files or pattern generator files and configuring the camera link and timing parameters.

API Methods: A set of CamSim API methods that can be used to develop a customized user application.

Gidel Board: A PCIe FPGA board incorporating Gidel CamSim firmware for transmitting the image data.

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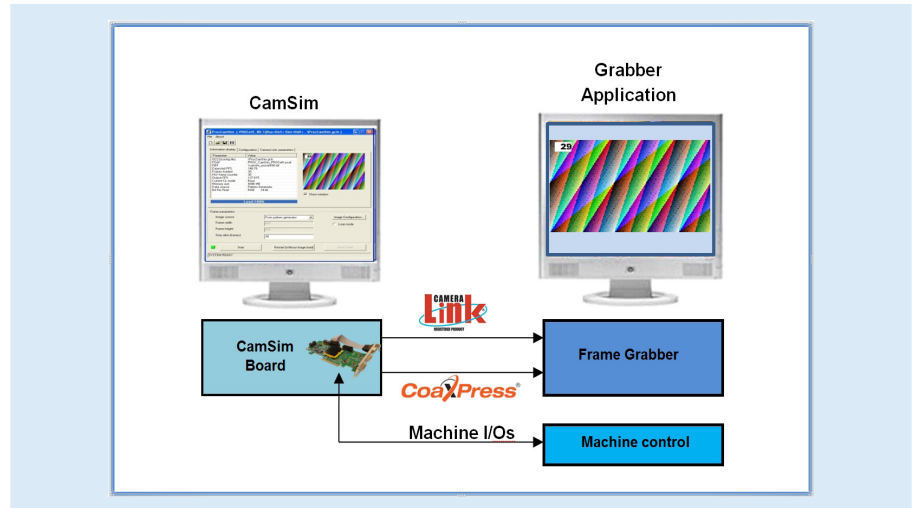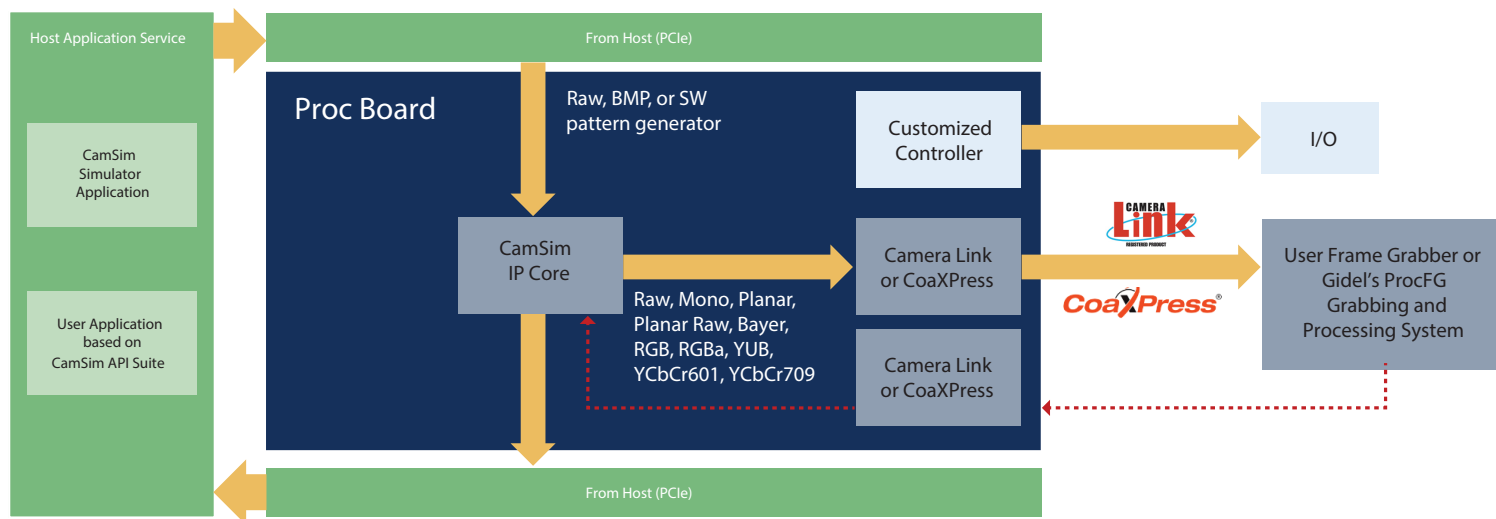
CamSim CoaXPress & Camera Link Camera Simulators

FEATURE	SPECIFICATIONS
CoaXPress Link Modes	Up to 4x 12.5 Gb/s links, up to 500MB/s for a single link, and up to 1 GB/s aggregate for 2-4 links
Camera Link Modes	1 80-bit (Deca), Full, Medium or Base Camera Link with option for PoCL
Pixel Formats	Raw, Mono, Bayer, RGBA (8, 10, 12, 14 and 16 bits/color), RGB (8, 10 and 12 bits/color), YUV, YCbCr601, YCbCr709
Max. Resolution	Horizontal: 16 K pixels (24-bit) Vertical: 65 K lines (16-bit) or infinite in Line scan simulation
Camera Link Tap Configurations	All configurations as defined by the Camera Link standard, including 80-bit (Deca): 10 taps/8bits, 8bits/10taps.
Camera Link Pixel Clock	Up to 85 MHz
Connectors	4x HD BNC (CoaXPress) 2x SDR26 (mini Camera Link) VGA15-pin I/O
Frame Buffer	1-16 GB

FEATURE	SPECIFICATIONS
Host Bus	PCIe x8 Gen. 3
Host Throughput	Up to 64 Gb/s
Form Factor	PCIe low-profile
Camera Types	Area and Line
GPIO	RS422, opto-coupler, LVTTL and 30V at 0.9A
Software Support	CamSim GUI, API and examples. For open FPGA grabber version enabling customization, ProcWizard Development tool
OS Support	Win 10 and 11, and Linux (kernel 2.6.x- 5.19. Linux version doesn't support GUI, only API.
Certifications	RoHS, Conflict Minerals, ISO
Operating Ambient Temperature	0 – 54 C, relative humidity up to 90% (non-condensing)
MTBF	> million hours

CamSim System Overview