

CoaXPress Multi-Device Multi-Stream Host IP

Xilinx 7 Series FPGA Core IP

CoaXPress Host IP from EASii-IC enables the connection of 1 to 8 CoaXPress devices, each transmitting multiple high-speed video streams of 1 or more cameras over coaxial cables. The CoaXPress standard enables the transmission of video-streams over 40 meters at a maximum transfer rate of 25 Gbps per device or over 200 meters at a maximum transfer rate of 5 Gbps per device. Each coaxial cable provides a high-speed downlink connection video transfer rate from 1.25 Gbps to 6.25 Gbps and a low-speed uplink connection at 20.83 Mbps for communication and control.

ABOUT COAXPRESS

CoaxPress standard defines a cost effective and easy interfacing between video devices and acquisition hardware over RG59 and RG6 coaxial cables. It enables hot-plug of devices and 24V power-over-cable with up to 13 Watts per cable.

A device can support multiple cameras of many video stream formats. Video streams are sent to a host at a selectable high-speed downlink connection rate from 1.25 Gbps to 6.25 Gbps per cable, with up to 4 cables per device to increase the total bandwidth to 25 Gbps.

Device and cameras can be controlled from a host through the uplink connection at 20.83 Mbps. The standard also provides a low latency, accurate trigger interface between device and host.

CoaXPress supports GenICam international standard, providing a generic programming interface for all kinds of cameras regardless of the interface technology.

APPLICATIONS AND DOMAINS

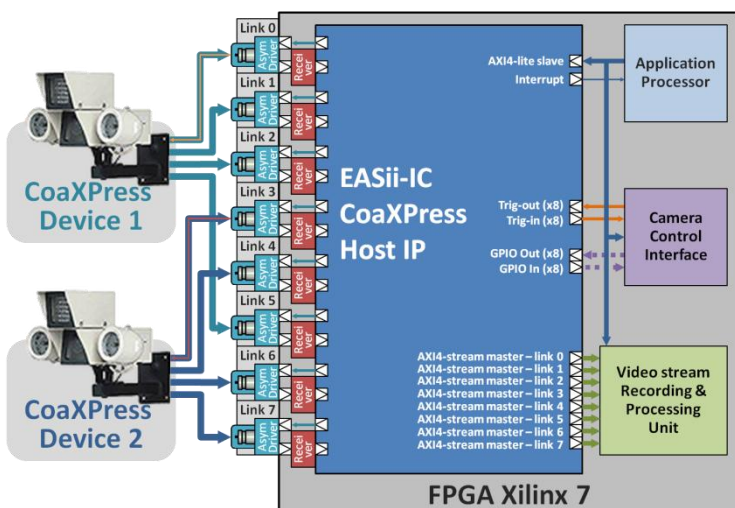
Vision systems requiring

- High-resolution and high-speed digital cameras
- Real-time image acquisition
- Pixels on target
- Long distance cables with excellent EMI/EMC performance

Domains

- Machine vision
- Military and aerospace
- Aerial mapping and traffic management
- Security

TYPICAL USE CASE



EASII IC CXP DEVICE CORE IP FEATURES

- **JIAA CXP-001-2013 CoaXPress 1.1** compliant
- **Hardware-based Automatic Discovery** with software interface enabling manual link configuration
- **Independent downlink connection rates**, from 1.25 Gbps to 6.25 Gbps
- **Up to 8 coaxial connections per Host IP**, enabling all connection topologies, from 1 to 8 devices of 1 to 8 connections each
- **Supports multiple video-streams per device**, for a total of up to 256 independent stream IDs per Host IP
- **Supports all GenICam compliant image formats**: rectangular and arbitrary shaped, area and line scan, single and multi tap, multiple regions of interest, all standard pixel formats
- **Hardware-based video-stream management**: automated error detection and recovery at image-level
- **AXI4-stream interface per downlink for video streams** running at up to 200 MHz
- **Trigger in/out interface** with uplink latency of 3.4µs
- **Optional 8in/8out GPIO interface** compliant with JIAA NIF-001-2010 CoaXPress 1.0 standard
- **Slave AXI4-lite processor interface** for application specific control between host and cameras
- **Xilinx7 series and UltraScale compatible, IP-XACT support**

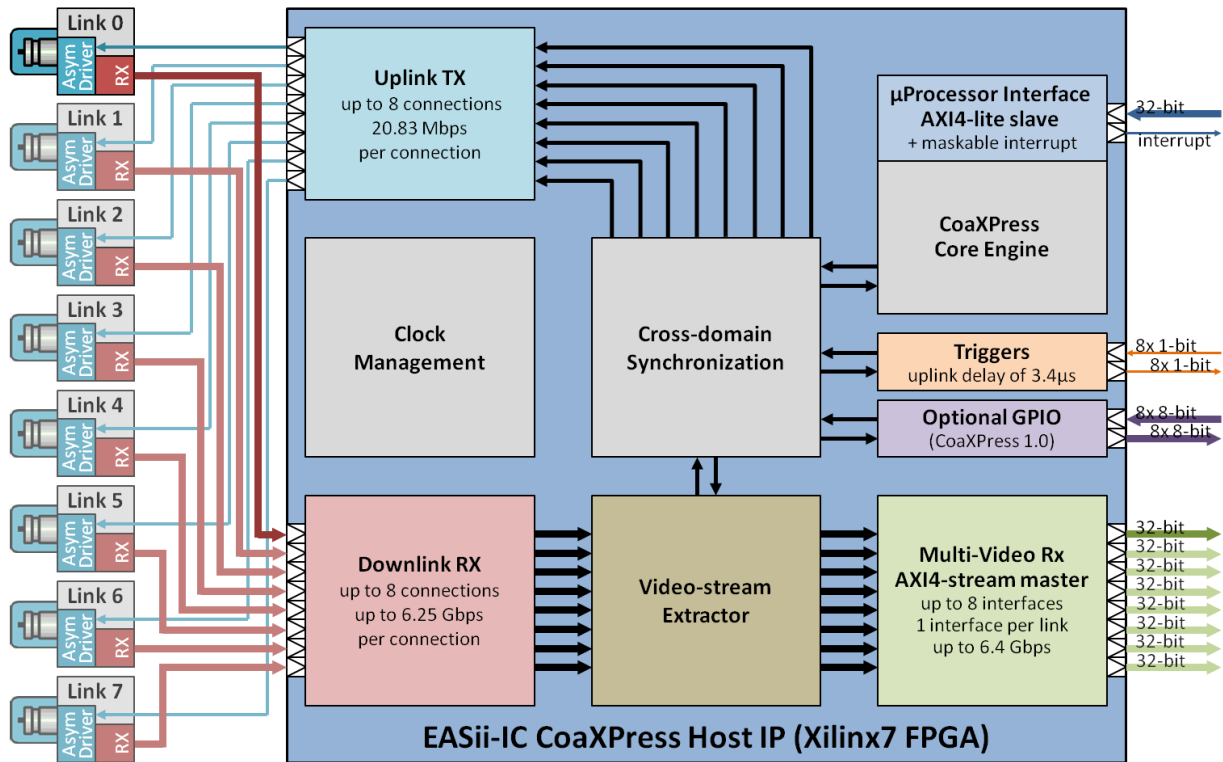
PRODUCT DETAILS

- Free connexion topology of 1 to 8 devices, of 1 to 8 coaxial cables each for a total of 8 coaxial cables, with independent downlink bit-rate per device
- Dynamic device connection reconfiguration
- Embedded CRC management and error correction
- Video-stream data packet size up to 4096 bytes
- Video-stream interface AXI4-stream master 32-bit
- Embedded video-stream management: image-level error detection and interface for image format monitoring
- Embedded management of triggers and optional GPIOs per device
- µProcessor interface AXI4-lite slave 32-bit

DELIVERABLES

- Single or multi-use license, encrypted source code or netlist
- Encrypted source code: VHDL RTL with synthesis scripts for Vivado
- Netlist: EDIF or Verilog
- Comprehensive documentation package: specification, integration, IP-XACT component, etc.
- Integration test-suite

CORE IP ARCHITECTURE



CORE IP RESOURCES

Core IP Resources on 7-series

	1 link	2 links	4 links	8 links
Number of coaxial links	1 link	2 links	4 links	8 links
Flip-flops	6346	11386	21626	42718
LUT	6105	10714	19688	40122
BRAM36Kb	15.5	25.5	45.5	85.5
Clock trees	3	4	6	10
DSP48	2	3	4	9

CONTACT US

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