iPORT GEV-PCIe Frame Grabber



Maximize Host Processing Power for High-Bandwidth GigE Vision Applications

Overview

Pleora's **iPORT™ GEV-PCIe Frame Grabber** is a hardware-based receiver solution that optimizes CPU processing to avoid data or packet loss and ensures low latency and jitter for higher-speed GigE Vision-based imaging applications.

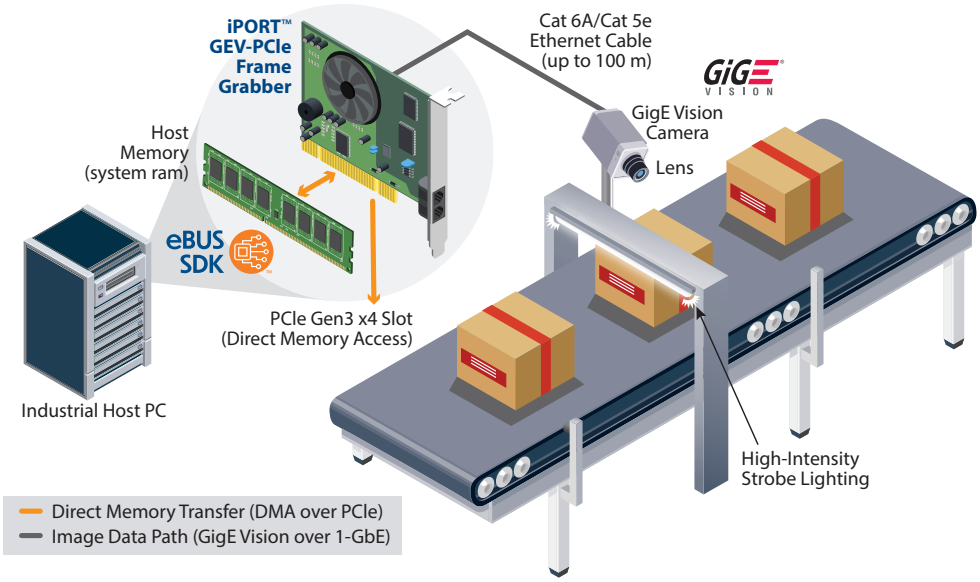
The iPORT GEV-PCIe Frame Grabber receives video from a GigE Vision® camera with low, deterministic latency over a standard Cat5e or Cat6A Ethernet cable and is designed to scale from a single channel to support up to four GigE Vision streams. The connection at the workstation is a standard PCIe Gen3 x 4 slot, with no additional hardware required. The built-in DMA (Direct Memory Access) engine acquires and copies full image data into memory of the host PC to lower CPU utilization, freeing valuable processing resources for application tasks, while simultaneously managing packet resend to reduce system latency and improve reliability.

With the iPORT GEV-PCIe, designers can retain the cabling flexibility, multicasting capabilities, and interoperability advantages of GigE Vision while offloading image reception from the CPU, freeing processing resources for AI, image analysis, visualization, and recording in demanding high-bandwidth imaging applications. The off-the-shelf receiver solution reduces system complexity for designers, particularly where inefficient network interface card (NIC) approaches limit performance of higher bandwidth GigE Vision devices while adding unnecessary integration and interoperability challenges.

The iPORT GEV-PCIe Frame Grabber is based on Pleora's field-proven GigE Vision connectivity solutions and is fully supported by the industry-leading eBUS™ SDK to ensure low CPU usage. The solution is fully interoperable with all GigE Vision compliant devices while providing full access to GenICam™ XML files for configuration, image reception statistics, and diagnostics. The flexible solution can auto-configure and set persistent IP addresses for GigE devices or provide manual configuration for applications requiring a higher level of security.

Features

- Optimized hardware solution offloads image reception from GigE Vision cameras over PCIe with low, predictable latency and minimal CPU consumption
- Built-in DMA (Direct Memory Access) engine offloads processing from the host system, freeing resources for application-specific tasks
- Off-the-shelf OEM board set eliminates system component complexity
- Line scan and area scan modes
- 1GB frame buffer (per input channel) accommodates multi-mega pixel sensor sizes and provides hardware-enabled packet resend support to ensure all image data is available for application processing needs
- GigE Vision and GenICam compatible
- Full access to connected GigE Vision devices GenICam XML files for full camera control



GiGE VISION GENICAM

Pleora Technologies

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VIDEO CONNECTIVITY SOLUTIONS

Frame Grabber	GigE Vision to PCIe frame grabber with low end-to-end latency
GigE Vision	• GigE Vision 2.2 compliant, with backward compatibility to versions 1.0–2.1 • Speeds up to 10Gbps
GenICam	• Fully compatible firmware load • Comprehensive data reception diagnostics and image statistics

VIDEO FORMATS

Scan Modes	Area Scan and Line Scan
Tap Support	Up to 10 taps
Tap Geometries (GenICam SFNC)	1X_1Y, 1X2_1Y, 1X, 1X2, 1X4_1Y, 1X4, 2X2E, 1X8_1Y, 1X8, 1X10_1Y, 1X10
Image Width	Up to 32,760 pixels
Image Height	Up to 32,767 pixels
Payload Types	• Image with Extended Chunk Mode • Multi-Part* • GenDC*
De-compression	De-compress incoming data from Pleora's RapidPIX lossless compression enabled hardware*
Pixel Formats	Mono, Bayer, RGB, BGR, YCbCr, YUV
Pixel Depth	8, 10, 12, 14, 16, 24, 30, 32 and 36 bits

FEATURES

Data Reliability	Supports and manages packet resends in hardware
Frame Buffer	1GB (per input channel)
Camera Discovery	• Automatic discovery and connection for GigE Vision devices • Simple IP Configuration interface to persist IP configuration • Manual IP configuration possible via eBUS SDK
Camera Control	Camera GenICam XML's files mirrored through to host PC software for full control of any connected GigE Vision camera
Pre-processing	• Bayer Decode • Unpacking of packed pixel formats • Bayer pattern to RGB decode

CONNECTORS

Video Input	• Single GigE Vision (10Gbps / 5Gbps / 2.5Gbps / 1 Gbps) (1x RJ-45 connection, with locking screws) • Dual GigE Vision (10Gbps / 5Gbps / 2.5Gbps / 1 Gbps) (2x RJ-45 connections, with locking screws), future release
Video Output	PCIe Gen3 x4 slot
Power In	Power from PCIe slot

CHARACTERISTICS

Size (L x W x H)	179.5mm x 20.3mm x 68.9mm
Operating Temperature	0° to 55°C ambient temp (air temperature in the PC enclosure**)
External Power Supply	power via the motherboard
Power Consumption	<13W estimated (including fan at max speed)

PRODUCTS

Single GigE Vision Connection	1x GigE Vision (10Gbps / 5Gbps / 2.5Gbps / 1Gbps) to PCIe Gen3 x4
Dual GigE Vision Connections (Future Release)	2x GigE Vision (10Gbps / 5Gbps / 2.5Gbps / 1Gbps) to PCIe Gen3 x4

ORDERING INFORMATION

912-0009	**iPORT GEV-PCIe Single Channel Frame Grabber Kit** Contains iPORT GEV-PCIe Single Channel Frame Grabber boardset with standard-profile (full-height) bracket, heatsink and fan assembly installed, and a separate low-profile (half-height) bracket.
912-0010	**iPORT GEV-PCIe Single Channel Frame Grabber Development Kit** Contains iPORT GEV-PCIe Single Channel Frame Grabber boardset with standard-profile (full-height) bracket, heatsink and fan assembly installed, and separate low-profile (half-height) bracket, Cat6A cable and eBUS SDK 7.0 (or higher) USB Stick.
912-0011	**iPORT GEV-PCIe Single Channel Frame Grabber Development Bundle** Contains iPORT GEV-PCIe Single Channel Frame Grabber Boardset with standard-profile (full-height) bracket, heatsink and fan assembly installed, and separate low-profile (half-height) bracket, Cat6A cable, eBUS SDK 7.0 (or higher) USB Stick, and 1 year of eBUS SDK Developer Annual Maintenance and Support.

Future variants, including IEEE 1588 and Power Over Ethernet (PoE / PoE+) support, are planned.

* For future product additions, contact Pleora sales for additional information.

** Case and junction temperature limits vary by IC device. Please refer to User Guide for specific IC operating temperature specifications and thermal management information.

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