

iPORT GEV-TB External Frame Grabber

Optimizes CPU Usage, Reduces System Costs and Simplifies Connectivity for High-Bandwidth GigE Vision Imaging Applications

Overview

Pleora's **iPORT™ GEV-TB External Frame Grabber** solves critical performance and system cost challenges for high-bandwidth GigE Vision imaging applications by enabling video transmission to a wider range of computing options for processing, analysis, display, and recording.

The external frame grabber converts GigE Vision cameras into PCIe-compatible devices and transmits high bandwidth (up to 22.5 Gbps) imaging and video data with low latency and jitter over a standard Cat5e or Cat6A Ethernet cable directly to a Thunderbolt 3/4 (USB-C) port.

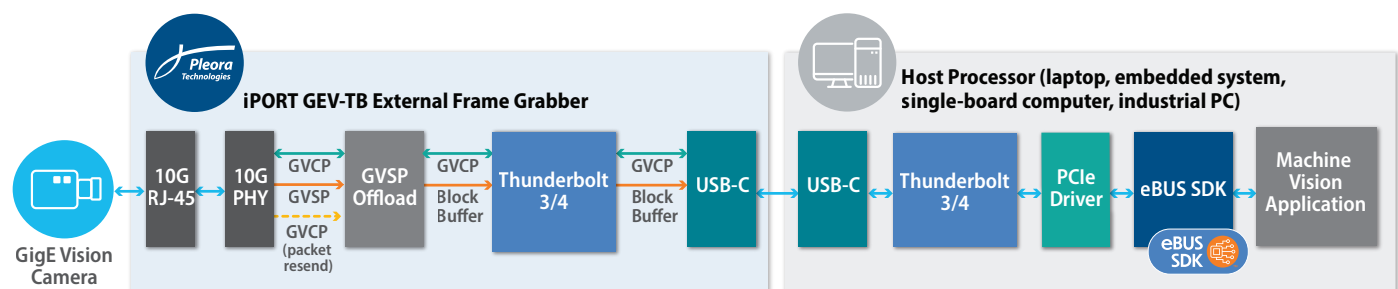
This eliminates the need for a PCIe slot or internal frame grabber, allowing system designers to leverage compact, cost-effective computing platforms – including laptops, embedded systems, and single-board computers – ideal for portable and space-constrained systems. Its fanless design reduces power consumption and eliminates moving parts, ensuring performance longevity. Video can also be transmitted directly to Thunderbolt/USB-C ports on industrial PCs.

The iPORT GEV-TB External Frame Grabber features a built-in DMA (Direct Memory Access) engine that acquires and copies full image data into host PC memory, with integrated packet resend management. This feature offloads processing from the host system, freeing resources for application-specific tasks. In comparison, competing approaches often require specialized drivers to manage packet reception, image assembly, and data copying to memory, which burdens system resources and limits performance.

The external frame grabber is supported by Pleora's feature-rich eBUS™ SDK application tool kit. This software suite allows designers to quickly prototype and deploy production-ready software to support video transmission over GigE, 10GigE, USB 3.2 Gen1 and Thunderbolt 3/4 (or PCIe over Thunderbolt 3/4) using the same application programming interface (API). The iPORT GEV-TB External Frame Grabber family includes a range of solutions to meet specific system needs.

Features

- Transmit up to 22.5 Gb/s of data from GigE Vision cameras with low, predictable latency directly to a Thunderbolt 3/4 USB-C port on the host processor over a Cat5e or Cat6A Ethernet cable
- External frame grabber enables the use of compact, cost-effective computing platforms, including laptops, embedded systems, and single-board computers
- Built-in DMA (Direct Memory Access) engine offloads processing from the host system, freeing resources for application-specific tasks
- 1 GB frame buffer (per input channel) to accommodate for multi-megapixel sensor sizes and hardware-enabled packet resend, which ensures all image data is available for processing
- Available as off-the-shelf mountable enclosure and OEM board set to reduce integration complexity
- GigE Vision and GenICam compatible



iPORT GEV-TB External Frame Grabber

Video Connectivity Solutions

External Frame Grabber	<ul style="list-style-type: none"> Highly reliable, up to 22.5Gbps bandwidth with low, end-to-end latency Surface-mountable enclosure
GigE Vision	<ul style="list-style-type: none"> GigE Vision 2.2 Compliant GigE Vision 2.1, 2.0, 1.2, 1.1 and 1.0 compatible Speeds up to 10Gbps
GenICam	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Image with Extended Chunk Mode Multi-Part¹ GenDC¹
De-compression	De-compress incoming data from Pleora's RapidPIX lossless compression enabled hardware ¹
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)
USB4-Based	Connection to low-cost, easy-to-use equipment
Camera Discovery	<ul style="list-style-type: none"> 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 passed through to host PC software for full control of any connected GigE Vision camera
Pre-processing	<ul style="list-style-type: none"> Bayer Decode Unpacking of packed pixel formats Bayer pattern to RGB decode

Connectors

Video Input	Single GigE Vision (10Gbps / 5Gbps / 2.5Gbps / 1Gbps) (1x RJ-45 connection, with locking screws ²)
Video Output	USB-C receptacle with locking screw connectors ²
Power In	Locking barrel connector

Characteristics

Size (L x W x H)	220.5mm _T x 94mm x 45.7mm (T = length with mounting brackets, NOTE: length without mounting brackets is 184.5mm)
Operating Temperature	<ul style="list-style-type: none"> Enclosed: 0°C to 45°C OEM board sets³
External Power Supply	12V
Power Consumption	Approximately 15W

Ordering Information

912-0001	iPORT GEV-TB External Frame Grabber Single 10Gbps GigE Vision Input to Thunderbolt 3 or Thunderbolt 4 OEM board set without enclosure. ⁴
912-0002	iPORT GEV-TB External Frame Grabber Single 10Gbps GigE Vision Input to Thunderbolt 3 or Thunderbolt 4 in mountable enclosure. ⁴
912-0007	iPORT GEV-TB Single Input Enclosed Kit including 912-0002, external power supply, and Thunderbolt 4 cable.
912-0003	iPORT GEV-TB Single Input Development Kit including 912-0002, external power supply, Cat 6A ethernet cable, Thunderbolt 4 cable, desktop Thunderbolt controller card, and eBUS SDK USB stick. ⁵

Future variants, including dual- and quad-channel solutions and IEEE 1588 and Power Over Ethernet (PoE / PoE+) support, are planned. These are:

- dual channel base functionality
- quad channel base functionality
- single channel extended functionality (with PoE+ and 1588)
- dual channel extended functionality (with PoE+ and 1588)
- quad channel extended functionality (with PoE+ and 1588)

- Future product addition, contact Pleora sales for additional information.
- Locking connectors are only available for enclosed variants.
- Case and junction temperature limits vary by IC device. Please refer to User Guide for specific IC operating temperature specifications and thermal management information.
- An external power supply is required.
- The eBUS SDK provided on the USB stick is unsupported, without access to maintenance releases, and does not provide any runtime licenses for your workstations. If any of these items are needed, we recommend the purchase of the eBUS SDK Seat License.