

# iPORT CL-U3 External Frame Grabbers

Simple to integrate USB3 Vision video interface  
for Camera Link cameras

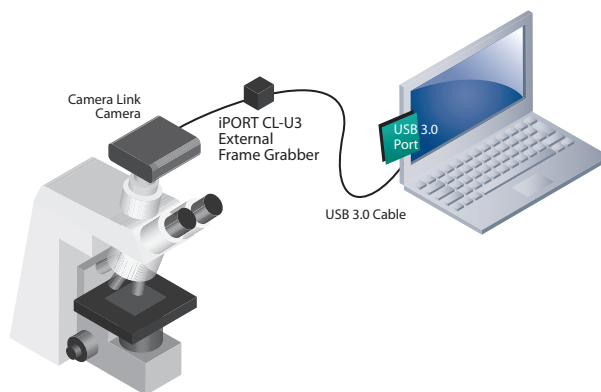
## Overview

Pleora's **iPORT™ CL-U3 External Frame Grabbers** provide systems manufacturers and integrators with cost and design flexibility advantages by converting Camera Link® cameras into native USB3 Vision™ cameras. With these external frame grabbers, Camera Link® cameras can transport high-speed imaging and video data over the widely available USB 3.0 bus. The cameras can also be used with a broader selection of smaller form factor, low-power computing platforms to help reduce system costs.

Based on a field-proven design, the CL-U3 delivers additional benefits including high bandwidth output, extended operating temperature range, and extensive GPIO functionality enabling real-time, low-jitter triggering of cameras, and synchronization of other vision system elements.

The CL-U3 transmits video from Base and Medium mode Camera Link cameras with low, predictable latency over a USB 3.0 link. The connection at the workstation is a standard USB 3.0 port, eliminating the need for a desktop computer with an available peripheral card slot for a traditional frame grabber. As a result, designers can reduce system size, cost, and power consumption by using computing platforms with smaller form factors, such as laptops, embedded computers, and single-board computers.

Pleora's CL-U3 External Frame Grabbers help systems manufacturers and integrators to leverage the performance attributes of USB 3.0, including high-bandwidth, power over cable, and plug-and-play usability. In addition, the frame grabbers support flexible configurations, allowing multiple cameras to be aggregated to a single USB 3.0 port, when using an off-the-shelf USB 3.0 hub. The CL-U3 complies fully with the USB3 Vision and GenICam™ standards, ensuring interoperability with third-party equipment in multi-vendor environments.



## Features

- Transmits video from Camera Link Base or Medium mode cameras over USB 3.0, with low, predictable latency
- Plugs into a wide range of computing platforms without needing a PCI/PCle frame grabber
- Compact and low power
- Available in mountable enclosure and OEM board set
- Line scan and area scan modes
- 120 MB frame buffer to accommodate multi-mega pixel sensor sizes
- Throughput approaching 3 Gb/s
- Record and playback functionality
- USB3 Vision and GenICam compatible
- Power, control, and video over the same USB 3.0 cable
- Power over Camera Link (PoCL) with models CL-U3B-IND and CL-U3M-IND (external power supply required)
- Sophisticated on-board programmable logic controller (PLC) allows users to precisely measure, synchronize, trigger, and control the operation of other vision system elements
- GenICam Integration Package (consisting of the iPORT AutoGen XML generation tool and a firmware reference design) makes it fast and easy to create a user-friendly GenICam interface (contact sales for pricing information on this integration package)s

# iPORT CL-U3 External Frame Grabbers

## Video Connectivity Solutions

iPORT External Frame Grabber	<ul style="list-style-type: none"> <li>Highly reliable, 3 Gb/s data transfer rate with low, end-to-end latency</li> <li>Surface-mountable enclosure</li> </ul>
USB3 Vision and GenICam	<ul style="list-style-type: none"> <li>Fully compatible firmware load</li> <li>Guarantees delivery of all packets</li> <li>Comprehensive data transfer diagnostics</li> </ul>

## Video Formats

Tap Support	<ul style="list-style-type: none"> <li>Base mode: 1 and 2 taps</li> <li>Medium mode: 1,2, and 4 taps</li> </ul>
Tap Geometry	1X_1Y, 1X, 1X2_1Y, 1X2, 1X4_1Y, 1X4
Video Modes	Mono, BayerGR, BayerRG, BayerGB, BayerBG, RGB, BGR, Sparse Color Filter pattern
Pixel Depth	8, 10, 12, 14, 16 bits, 24-bit RGB

## Features

Pixel Clock	20 MHz to 85 MHz
Frame Buffer	120 MB
USB 3.0-Based	<ul style="list-style-type: none"> <li>Connection to low-cost, easy-to-use equipment</li> <li>USB3 Vision 1.0 compliant</li> </ul>
Programmable Logic Controller	<ul style="list-style-type: none"> <li>Advanced image capture control</li> <li>Integrated with GPIO</li> </ul>
GPIO	<ul style="list-style-type: none"> <li>4 TTL/LVCMOS inputs</li> <li>3 TTL/LVCMOS outputs</li> </ul>
GPIO (CL-U3 industrial models only)	<ul style="list-style-type: none"> <li>2 LVDS/RS-422/HVTTL/±24V/±30V differential or single-ended inputs</li> <li>2 TTL/LVCMOS inputs</li> <li>3 TTL/LVCMOS outputs</li> </ul>

## Connectors

Video	SDR-26 (Mini CL) for Camera Link
USB	10-pin USB 3.0 micro-B Receptacle with locking screw connectors
GPIO	12-pin circular connector
Power In	<ul style="list-style-type: none"> <li>Power over USB cable</li> <li>GPIO Connector (CL-U3 industrial models only)</li> </ul>
Power Out (CL-U3 industrial models only)	<ul style="list-style-type: none"> <li>PoCL</li> <li>SDR-26 Connector</li> </ul>

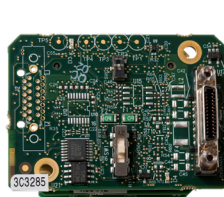
## Characteristics

Size (L x W x H)	38 mm X 83 mm X 51 mm
Weight	<ul style="list-style-type: none"> <li>Enclosed: up to 137 grams</li> <li>OEM board set: up to 42 grams</li> </ul>
Operating Temperature	CL-U3B and CL-U3M models: <ul style="list-style-type: none"> <li>0°C to 45°C</li> <li>Enclosed with PoCL off: -40°C to 60°C</li> <li>Enclosed with PoCL on: -40°C to 58°C</li> </ul> CL-U3B-IND and CL-U3M-IND industrial use models: OEM board sets, see note*.
Storage Temperature	-40°C to 85°C
External Power Supply	11.6V to 13.0V (CL-U3 industrial models only)
Power Consumption	3.5 W maximum for all models
MTBF @ 40°C	<ul style="list-style-type: none"> <li>1 135 333 hours</li> <li>958 332 hours (CL-U3 industrial models only)</li> </ul>
ECCN	EAR99

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

## Ordering Information

903-0007	iPORT CL-U3B External Frame Grabber in mountable enclosure for Camera Link Base mode.
903-0011	iPORT CL-U3B Development Kit including 903-0007, USB 3.0 cable, and eBUS USB stick.
903-0009	iPORT CL-U3B-IND External Frame Grabber (industrial use) in mountable enclosure for Camera Link Base mode, extended operating temperature range, extensive GPIO, and power over Camera Link (PoCL).
903-0019	iPORT CL-U3B-IND External Frame Grabber (industrial use) OEM board set without enclosure for Camera Link Base mode with extended operating temperature range, extensive GPIO, and power over Camera Link (PoCL).
903-0013	iPORT CL-U3B-IND Development Kit including 903-0009, power supply, USB 3.0 cable, and eBUS SDK USB stick.
903-0008	iPORT CL-U3M External Frame Grabber in mountable enclosure for Camera Link Medium mode.
903-0012	iPORT CL-U3M Development Kit including 903-0008, USB 3.0 cable, and eBUS SDK USB stick.
903-0010	iPORT CL-U3M-IND External Frame Grabber (industrial use) in mountable enclosure for Camera Link Medium mode, extended operating temperature range, extensive GPIO, and power over Camera Link (PoCL).
903-0020	iPORT CL-U3M-IND External Frame Grabber (industrial use) OEM board set <i>without</i> enclosure for Camera Link Medium mode with extended operating temperature range, extensive GPIO, and power over Camera Link (PoCL).
903-0014	iPORT CL-U3M-IND Development Kit including 903-0010, power supply, USB 3.0 cable, and eBUS SDK USB stick.
903-0030	iPORT CL-U3B Developer Bundle including iPORT CL-U3B External Frame Grabber in mountable enclosure for Camera Link Base mode (903-0007), USB 3.0 cable, eBUS SDK USB stick, and one year of eBUS SDK Developer Annual Maintenance and Support.
903-0031	iPORT CL-U3M Developer Bundle including iPORT CL-U3M External Frame Grabber in mountable enclosure for Camera Link Medium mode (903-0008) USB 3.0 cable, eBUS SDK USB stick, and one year of eBUS SDK Developer Annual Maintenance and Support.
903-0032	iPORT CL-U3B-IND Developer Bundle including Industrial-use External Frame Grabber in mountable enclosure for Camera Link Base mode (903-0009), power supply, USB 3.0 cable, and one year of eBUS SDK Developer Annual Maintenance and Support.
903-0033	iPORT CL-U3M-IND Developer Bundle including iPORT CL-U3M-IND Industrial-use External Frame Grabber in mountable enclosure for Camera Link Medium mode (903-0010), power supply, USB 3.0 cable, and one year of eBUS SDK Developer Annual Maintenance and Support.



iPORT CL-U3B-IND External Frame Grabber OEM Board Set (903-0019) for Camera Link Base Mode



External Frame Grabber OEM Board Set for Camera Link Base and Medium Mode