



# 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 manufacturers and integrators leverage the high-bandwidth output and simplified cabling of USB 3.0 to lower system costs and design complexity. Following initial set-up, the external frame grabbers provide end-users with a straightforward plug-and-play USB interface to receive and display video over a wide range of computing platforms.

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/PCIe 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
- Bundled with Pleora's feature-rich eBUS™ SDK application toolkit



GEN*i*CAM

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## Video Connectivity Solutions

<b>iPORT External Frame Grabber</b>	<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>
<b>eBUS SDK</b>	<ul style="list-style-type: none"> <li>eBUS Universal Pro driver</li> <li>Sample applications and documentation</li> <li>Support for CLProtocol</li> </ul>
<b>USB3 Vision and GenICam</b>	<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

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

## Features

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

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

## Characteristics

<b>Size (L x W x H)</b>	<ul style="list-style-type: none"> <li>38 mm X 83 mm X 51 mm</li> </ul>
<b>Weight</b>	<ul style="list-style-type: none"> <li>Up to 132 g</li> </ul>
<b>Operating Temperature</b>	<ul style="list-style-type: none"> <li>0°C to 45°C</li> <li>-40°C to 60°C (CL-U3 industrial models only)</li> <li>-40°C to 85°C* (CL-U3 OEM board set, industrial models only)</li> </ul>
<b>Storage Temperature</b>	<ul style="list-style-type: none"> <li>-40°C to 85°C</li> </ul>
<b>External Power Supply</b>	<ul style="list-style-type: none"> <li>11.6V to 13.0V (CL-U3 industrial models only)</li> </ul>
<b>Power Consumption</b>	<ul style="list-style-type: none"> <li>3.5 W maximum for all models</li> </ul>
<b>MTBF @ 40°C</b>	<ul style="list-style-type: none"> <li>1 135 333 hours</li> <li>958 332 hours (CL-U3 industrial models only)</li> </ul>

\*The product is specified for operation within the stated ambient and case temperature range of its components.



## iPORT CL-U3 External Frame Grabbers

### Ordering Information

903-0007*	<ul style="list-style-type: none"> <li>iPORT CL-U3B External Frame Grabber <b>in mountable enclosure</b> for Camera Link Base mode.</li> </ul>
903-0011*	<ul style="list-style-type: none"> <li>iPORT CL-U3B Development Kit including 903-0007, USB 3.0 cable, and eBUS SDK USB stick.</li> </ul>
903-0009**	<ul style="list-style-type: none"> <li>iPORT CL-U3B-IND External Frame Grabber (industrial use) <b>in mountable enclosure</b> for Camera Link Base mode, extended operating temperature range, extensive GPIO, and power over Camera Link (PoCL).</li> </ul>
903-0019**	<ul style="list-style-type: none"> <li>iPORT CL-U3B-IND External Frame Grabber (industrial use) <b>OEM board set</b> without enclosure for Camera Link Base mode with extended operating temperature range, extensive GPIO, and power over Camera Link (PoCL).</li> </ul>
903-0013	<ul style="list-style-type: none"> <li>iPORT CL-U3B-IND Development Kit including 903-0009, <b>power supply</b>, USB 3.0 cable, and eBUS SDK USB stick.</li> </ul>
903-0008*	<ul style="list-style-type: none"> <li>iPORT CL-U3M External Frame Grabber <b>in mountable enclosure</b> for Camera Link Medium mode.</li> </ul>
903-0012*	<ul style="list-style-type: none"> <li>iPORT CL-U3M Development Kit including 903-0008, USB 3.0 cable, and eBUS SDK USB stick.</li> </ul>
903-0010**	<ul style="list-style-type: none"> <li>iPORT CL-U3M-IND External Frame Grabber (industrial use) <b>in mountable enclosure</b> for Camera Link Medium mode, extended operating temperature range, extensive GPIO, and power over Camera Link (PoCL).</li> </ul>
903-0020**	<ul style="list-style-type: none"> <li>iPORT CL-U3M-IND External Frame Grabber (industrial use) <b>OEM board set</b> without enclosure for Camera Link Medium mode with extended operating temperature range, extensive GPIO, and power over Camera Link (PoCL).</li> </ul>
903-0014	<ul style="list-style-type: none"> <li>iPORT CL-U3M-IND Development Kit including 903-0010, <b>power supply</b>, USB 3.0 cable, and eBUS SDK USB stick.</li> </ul>



iPORT CL-U3-IND external Frame Grabber  
Oem Board Set (903-0019)  
for Camera Link Base Mode



iPORT CL-U3-IND external Frame Grabber  
Oem Board Set (903-0020)  
for Camera Link Medium Mode



iPORT CL-U3-IND external Frame Grabber Oem Board Set  
for Camera Link Base and Medium Mode