X64 Xcelera-CL PX4 Full
PCI Express x4 Frame Grabbers

Key Features

- Half-length PCI Express x4 Board
- Acquires images from one Base, Medium or Full Camera Link® camera
- Rapid image acquisition rates up to 1GB/s and high-speed image transfer to host memory at 1GB/s
- Supports Camera Link operations up to 85MHz
- Extended feature set supports non-Camera Link pixel/tap configurations
- Windows Vista and XP Professional (32/64-bit) compatible
- ROHS compliant
- On-board FPGA based real-time Bayer decoding and shading correction of each input
- Power Over CameraLink (PoCL) Compliant

Advanced PCIe x4 image acquisition

Building on the field proven technology and performance of DALSA's X64 frame grabbers the new X64 Xcelera Series leverages the PCI Express (PCIe) platform to bring traditional image acquisition and processing technology to new levels of performance and flexibility.

The PCIe host interface is a point-to-point host interface allowing simultaneous image acquisition and transfer without loading the system bus and involving little intervention from the host CPU. Designed with the requirements of the machine vision OEMs in mind, the Xcelera Series will range from entry level frame grabbers, to high-performance image acquisition boards, to embedded vision processors.

Addressing the emerging needs of bandwidth-hungry machine vision applications, DALSA's Xcelera Series is defining next generation frame grabber capabilities with the ability to deliver bandwidth of 1GB/sec over multiple-lane PCI Express implementations with room to grow.

The X64 Xcelera-CL PX4 Full is a Camera Link frame grabber that is based on the PCI Express x4 interface. Compatible with a Base, Medium or Full Camera Link® camera, the X64 Xcelera-CL PX4 Full supports a wide variety of multi-tap area and line scan colour and monochrome cameras. For greater versatility, the X64 Xcelera-CL PX4 Full board can interface with camera pixel depths and tap configurations not covered by the Camera Link standard. For example, the Xcelera-CL PX4 Full can support 10-taps or higher with 8-bits per tap.

The X64 Xcelera-CL PX4 Full has been built within DALSA's Trigger-to-Image Reliability technology framework. Trigger-to-Image Reliability leverages DALSA's hardware and software innovations to control, monitor and correct the image acquisition process from the time that an external trigger event occurs to the moment the data is sent to the host, providing traceability when errors do occur and permitting recovery from those errors.

Software Support

All of the frame grabbers in the Xcelera series are supported by DALSA's Sapera Essential software package. Sapera Essential, is a cost-effective machine vision software toolkit that bundles board level acquisition and control with advanced image processing capability, featuring a value added, all new geometric search tool.

Sapera Essential is designed to deliver the critical functionality needed to design, develop and deploy high-performance machine vision applications while at the same time significantly lowering deployment costs.

TRIGGER-TO-IMAGE
RELIABILITY

DALSA

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Specifications

Function	Description	Function	Description
Board	Camera Link Specifications Rev 1.10 compliant Half length PCI Express 1.0a x4 compliant ROHS Compliant	**Controls**	Comprehensive event notification includes end/start-of-field/frame/transfer Camera control signals for external event synchronization Optically isolated TTL/LVDS trigger inputs programmable as active high or low (edge or level trigger) TTL Strobes outputs PC independent serial communications ports provide support 9600 to 11500K baud Appear as system serial ports enabling seamless interface to host applications
Acquisition	Supports one Base, Medium or Full Camera Link area and line scan camera Acquisition pixel clock rates up to 85MHz		
Resolution	Horizontal Size (min/max): 8 byte/256K bytes Vertical Size (min/max): 1 line/infinite lines for line-scan cameras 1 line/16million lines/frame for area-scan cameras Variable length frame size from 1 to 16 million lines for area-scan cameras 128MB onboard frame buffer memory Integrated advanced tap reversal engine allows independent tap formatting	Shaft-Encoder Input	Optically isolated quadrature (AB) shaft-encoder inputs for external web synchronization Supports up/down scaling
Pixel Format and Tap configuration	Supports Camera Link tap configurations for 8, 10, or 12-bit mono, and RGB: For Base cameras in any of the following combinations: 3x8-bit/tap, 2x10-bits/tap, 2x12-bit/tap, 1x14-bit/tap, 1x16-bits/tap, & 1x24-bit/RGB For Medium camera - 4x8-bit/tap, 4x10-bits/tap, 4x12-bit/tap, 1x30-bit/RGB, & 1x36-bits/tap For Full—8x 8-bit/tap Camera Link ; 10x8-bit non-Camera Link configuration	**On-board I/Os**[1]	4-optically general purpose inputs tolerate 5V and 24V DC signals 4 general purpose outputs
		Power Output	PoCL Compliant (4W max) Power-on-reset fused +12V output @ 1.5A +5V DC output at 1.5A
		Software	Device driver supports: Microsoft Windows XP and Vista compliant Supports Microsoft Windows Vista and XP Professional 64-bit[2] Full support of DALSA DIGITAL IMAGING's Sapera Essential, Sapera LT and Sapera Processing software libraries Application development using C++ DLLs and ActiveX controls with Microsoft Visual Studio
Transfers	Real-time transfers to system memory Intelligent Data-Transfer-Engine automatically loads scatter-gather and tap description tables from the host memory without CPU intervention		
On-board Processing		**System Requirements**	PCI Express 1.0a compliant with one x4 slot system with 64MB or higher system memory
Bayer Mosaic Filter	Hardware Bayer Engine supports one CameraLink Base 8, 10 or 12-bit Bayer Bayer output format supports 8 or 10-bit RGB/pixel Zero host CPU utilization for Bayer conversion	**Dimensions**	6.375" (16.1cm) Length X 4.20" (10.7 cm) Height
Shading Correction	On the fly Flat-line and Flat-field correction with dead-pixel replacement Supports Camera Link Base, Medium or Full cameras User programmable calibration gain/offset maps	**Temperature**	0°C (32° F) to 55° C (131° F) Relative Humidity: up to 95% (non-condensing)
Output Lookup Tables		**Markings**	FCC Class B—Approved CE—Approved
Monochrome	Each input port has one 256x8-bit, 1024x10-bit, 1024x8-bit, 4096x12-bit, 4096x10-bit or 4096x8-bit OLUTs		
Colour	Each input port has one 8-bit in/out, 10-bit in 8 or 10-bit out, 12-bit in 12, 10 or 8-bit/out Lookup table		

[1] Requires a separate slot for the bracket assembly
[2] Contact DALSA sales for more details.

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