

Camera Link Image Acquisition

PCI-1428

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High-resolution and high-speed image acquisition for Camera Link cameras from PULNiX, Dalsa, Basler, and others
Simple, small cabling
NI-IMAQ driver software included at no charge
Onboard processing
Onboard programmable region of interest
Pixel decimation and image scaling
Four 256 by-8 bit LUTs
Up to two Camera Link data streams from one camera
16 MB of onboard memory
Triggering
4 external triggers (digital I/O lines)
RTSI synchronization bus for data acquisition and motion
Camera control with EIA-644 differential output or asynchronous serial control

Driver Software

NI-IMAQ for
Windows 2000/NT/Me/9x

Application Software

LabVIEW
Measurement Studio
LabWindows/CVI
Visual Basic
Visual C++
Vision Development Module
IMAQ Vision
IMAQ Vision Builder

NEW!



Overview

For machine vision and scientific imaging developers who need very high-resolution digital imaging with simple cabling, the National Instruments NI PCI-1428 is an image acquisition board for Camera Link cameras. PULNiX, Dalsa, Basler, and other camera manufacturers offer Camera Link cameras.

Camera Link

Camera Link is a new, industrial, high-speed serial data and cabling standard developed by National Instruments, camera vendors, and other image acquisition companies. Camera Link, created for easy connectivity between the PC and camera, provides simple, flexible cabling for high-speed, high-resolution digital cameras. A Camera Link cable is a slim 26-pin cable with 24-bit data, clock, and enables, as well as control signals. You can control camera functionality by asynchronous serial control or EIA-644 differential lines through a Camera Link cable. Camera Link offers future data rate capabilities up to 2.3 gigabits per second. You can interchange Camera Link digital cameras from multiple vendors with Camera Link image acquisition hardware.

Onboard Memory

The PCI-1428 comes with 16 MB of onboard high-speed synchronous dynamic RAM (SDRAM). Use the onboard memory as a FIFO buffer for high-speed image acquisition.

Serial Interface

Use the serial interface on the Camera Link connector to easily configure and control the camera with NI-IMAQ and Measurement & Automation Explorer software.

Advanced Triggering


The 1428 includes National Instruments triggering – a counter/timer ASIC generates real-time control signals. You can use the advanced triggering to send strobe pulses and pulse trains.

Synchronize Motion and Vision

Onboard trigger control and mapping circuitry route, monitor, and drive the external RTSI bus trigger lines. Using the RTSI bus, you can develop applications where motion, vision, and measurements are tightly integrated. You can use the RTSI bus to route an incoming trigger on your IMAQ hardware to an NI measurement device to synchronize data acquisition.

NI-IMAQ and Interchangeable Cameras

NI-IMAQ driver software for image acquisition can scale between many types of cameras and acquisition methods. Using NI-IMAQ, you can begin by using a low-cost, RS-170 camera and image acquisition board and then upgrade to a faster, higher-resolution digital camera and board with minimal software changes. To start using a new camera, you configure the new board and camera in the Measurement & Application Explorer; then, you can immediately reuse your software. Because NI-IMAQ driver software uses one set of function calls, it works for a wide variety of cameras; and there is no need to rewrite your software.

 **EXPRESS CODES**

For information or to buy products online, visit ni.com/catalog and enter:

pci1428

BUY ONLINE!

Vision

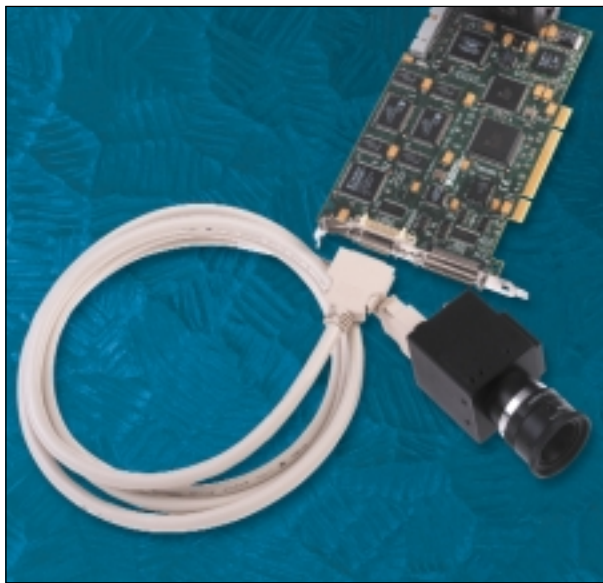
High-Speed Camera Link Image Acquisition

Camera Compatibility

The IMAQ PCI-1428 board works with Camera Link capabilities from PULNiX, Basler, Dalsa, and other camera manufacturers.

I/O Connector

The PCI-1428 features a small 26-pin connector compatible with all Camera Link video inputs, camera control outputs, and the serial interface. The PCI-1428 68-pin SCSI connector connects to the external trigger signals.



TECH TIP

Camera Advisor

National Instruments Camera Advisor™, ni.com/cameras, is a one-stop Web resource for engineers and scientists to select an imaging camera. Use Camera Advisor to help you locate the right camera for your application. Compare and contrast camera features for more than one hundred cameras.

For more information, visit ni.com/cameras

PCI-1428

Ordering Information

PCI-1428778315-01

Includes PCI-1428 board and NI-IMAQ software for Windows 2000/NT/Me/9x

Cables

Camera Link Cable (2 m)187676-01

Digital Trigger Accessory (1 m).....187663-01

Specifications

Typical at 25° C, unless otherwise stated.

External Connections

Trigger sense	TTL
Trigger level	Programmable (rising or falling)
Pixel clock	Camera Link compatible
Enables	Camera Link compatible
Control signal	Camera Link compatible
Video data	Camera Link compatible

Clocks

Pixel clock frequency range..... 500 kHz - 50 MHz

PCI Interface

PCI initiator capability	Master
PCI target capability	Slave
Data path	32 bits
Card type.....	32-bit half-size card
Parity generation/checking, error reporting ...	Supported
Target decode speed	Medium (1 clock)
Target fast back-to-back capability	Supported
Resource locking.....	Master and slave
PCI Interrupts	Interrupts passed on INTA# signal
Base address registers	BAR0 (16 KB) BAR1 (64 KB)

Expansion ROM	4 KB
PCI master performance	
Ideal	133 Mbytes/s
Sustained	100 Mbytes/s

Power Requirements

Voltage.....	+5 VDC - 2 ADC +12 VAC - 24 mA -12 VDC - 20 mA
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Physical

Dimensions.....	10.7 by 17.5 cm (4.2 by 6.9 in.)
Weight.....	127 g (4.5 oz.)

Environment

Operating temperature.....	0 to 55° C
Storage temperature.....	-20 to 70° C
Relative humidity	5-90%, noncondensing
MTBF	544,562 h at 25° C
Emissions	EN 55011:1991 Group 1 Class A at 10 m FCC Class A at 10 m

Vision