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SPECIFICATIONS

NI PCIe-1437

Base, Medium, Full, and Extended Configuration Camera Link Frame Grabber

The following specifications are typical at 25 °C unless otherwise noted.

Caution The protection provided by the NI PCIe-1437 can be impaired if it is used in a manner not described in the user documentation.

Attention La protection apportée par le NI PCIe-1437 risque d'être endommagée s'il est utilisé d'une autre façon que celle décrite dans la documentation utilisateur.

Definitions

Warranted specifications describe the performance of a model under stated operating conditions and are covered by the model warranty.

The following characteristic specifications describe values that are relevant to the use of the model under stated operating conditions but are not covered by the model warranty.

- *Typical* specifications describe the performance met by a majority of models.
- *Nominal* specifications describe an attribute that is based on design, conformance testing, or supplemental testing.

Specifications are *Typical* unless otherwise noted.

Features

Supported camera standard	Camera Link 2.1
Supported configurations	Lite, Base, Medium, Full, 72-bit, 80-bit
Camera connectors	Two 26-pin SDR
General-purpose digital I/O connectors	One 15-pin high-density female D-SUB
Pixel clock	20 MHz to 85 MHz

Camera power	Dual Power over Camera Link (PoCL) with SafePower
Supported pixel formats	8-bit, 10-bit, 12-bit, 14-bit, and 16-bit monochrome or Bayer (with on-board Bayer decoding); packed 24-bit and 48-bit RGB

Bus Interface

Form factor	x8 PCIe, specification v2.0 compliant
Slot compatibility	x8, and x16 PCIe slots
Up-plugging availability	x16



Note Some system devices limit data transfer rates for plug-in devices in an up-plugging configuration. Refer to the documentation provided by the computer manufacturer to determine if your computer will support a x8 plug-in device at a x8 data rate in a larger slot.

TTL I/O

Number of channels	6
Type	Bidirectional
Voltage range	0 V to 5 V
Maximum pulse rate	2 MHz
Minimum pulse detected	500 ns
Power-on state	Input (high-impedance), 10 kΩ pull-up to 5 V
Logic levels	
Input high voltage	2.57 V, minimum
Input low voltage	0.59 V, maximum
Output high voltage	4.12 V, minimum at 1.5 mA source
Output low voltage	0.37 V, maximum at 1.5 mA sink

Isolated Input

Number of channels	2
Type	Current sinking
Input voltage range	0 V to 30 V
Input ON voltage	3.5 V to 30 V

Input OFF voltage	0 V to 2 V
Turn-on current	7.1 mA; 14 mA, maximum
Maximum pulse rate	100 kHz
Minimum pulse detected	10 µs
Reverse polarity protection	Yes, -30 V

Quadrature Encoder

Number of supported quadrature encoders	1
Number of channels	2 (per quadrature encoder)
Type	Differential (RS-422) or single-ended
Voltage range	0 V DC to 5.5 V DC
Logic levels	
Differential input threshold	±0.2 V, maximum, RS-422 compatible
Single-ended input threshold	TTL compatible
Input high voltage	2.0 V
Input low voltage	0.8 V
Maximum quadrature count rate	5 MHz

On-board Memory Buffer

Type	DDR3 SDRAM
Capacity	512 MB

Clocks

Pixel clock frequency range	20 MHz to 85 MHz[1]

Note The Camera Link specification requires cameras to transmit at a minimum of 20 MHz.

[1] This value corresponds to the serialized Camera Link cable transmission rate of 140 to 595 MHz.

Serial Interface

Baud rates supported	9.6 kb/s, 19.2 kb/s, 38.4 kb/s, 57.6 kb/s, 115.2 kb/s, 230.4 kb/s, 460.8 kb/s, or 921.6 kb/s

RTSI

Number of channels	8

Camera Link I/O Extension

This extension I/O is available with the addition of the Camera Link I/O Extension Board (e.g., part number 780869-01 for PCIe or 779352-01 for PCI). See the appropriate *Camera Link I/O Extension Board User Guide* on *ni.com/manuals* for additional details and specifications.

Extension supported	Yes
TTL I/O	8
Isolated inputs	3
Isolated outputs	3
Quadrature encoder inputs	1 (two RS-422 or single-ended inputs)

Note While all the other I/O can be used concurrently, only one of the quadrature encoder inputs can be used at a time, whether it be on the NI PCIe-1437 D-SUB or on the Camera Link I/O Extension Board.

Power Requirements

Voltage	+3.3 V (2.7 A); +12 V (2.1 A)

Power Over Camera Link (PoCL)

Powered connectors	2
Voltage	12 V nominal
Power output	4 W, maximum (per connector)
SafePower	Supported

Physical Characteristics

Printed Circuit Board (PCB) dimensions	16.8 cm × 11.2 cm (6.6 in. × 4.4 in.)
Weight	180 g (6.35 oz)

Environment

The NI PCIe-1437 is intended for indoor use only.

Note Clean the device with a soft, non-metallic brush. Make sure the device is completely dry and free from contaminants before returning it to service.

Operating Environment

Operating temperature, local[2]	0 °C to 55 °C (IEC 60068-2-1 and IEC 60068-2-2)
Operating humidity	10% to 90% RH, noncondensing (IEC 60068-2-78)
System slot airflow	0.4 m/s (80 LFM)
Maximum altitude	2,000 m (800 mbar) (at 25 °C ambient temperature)
Pollution degree	2

Storage Environment

Ambient temperature range	-20 °C to 70 °C (IEC 60068-2-1 and IEC 60068-2-2)
Relative humidity range	5% to 95% RH, noncondensing (IEC 60068-2-78)

[2] For PCI Express adapter cards with integrated air movers, NI defines the local operational ambient environment to be at the fan inlet. For cards without integrated air movers, NI defines the local operational ambient environment to be 25 mm (1 in.) upstream of the leading edge of the card. For more information about the local operational ambient environment definition for PCI Express adapter cards, visit *ni.com/info* and enter the Info Code `pcielocalambient`.

Safety

This product is designed to meet the requirements of the following electrical equipment safety standards for measurement, control, and laboratory use:

- IEC 61010-1, EN 61010-1
- UL 61010-1, CSA C22.2 No. 61010-1

Note For UL and other safety certifications, refer to the product label or the *Online Product Certification* section.

Electromagnetic Compatibility

This product meets the requirements of the following EMC standards for electrical equipment for measurement, control, and laboratory use:

- EN 61326-1 (IEC 61326-1): Class A emissions; Basic immunity
- EN 55011 (CISPR 11): Group 1, Class A emissions
- AS/NZS CISPR 11: Group 1, Class A emissions
- FCC 47 CFR Part 15B: Class A emissions
- ICES-001: Class A emissions

Note In the United States (per FCC 47 CFR), Class A equipment is intended for use in commercial, light-industrial, and heavy-industrial locations. In Europe, Canada, Australia and New Zealand (per CISPR 11) Class A equipment is intended for use only in heavy-industrial locations.

Note Group 1 equipment (per CISPR 11) is any industrial, scientific, or medical equipment that does not intentionally generate radio frequency energy for the treatment of material or inspection/analysis purposes.

Note For EMC declarations and certifications, and additional information, refer to the *Online Product Certification* section.

CE Compliance CE

This product meets the essential requirements of applicable European Directives, as follows:

- 2014/35/EU; Low-Voltage Directive (safety)
- 2014/30/EU; Electromagnetic Compatibility Directive (EMC)

Online Product Certification

Refer to the product Declaration of Conformity (DoC) for additional regulatory compliance information. To obtain product certifications and the DoC for this product, visit *ni.com/*

certification, search by model number or product line, and click the appropriate link in the Certification column.

Environmental Management

NI is committed to designing and manufacturing products in an environmentally responsible manner. NI recognizes that eliminating certain hazardous substances from our products is beneficial to the environment and to NI customers.

For additional environmental information, refer to the *Minimize Our Environmental Impact* web page at *ni.com/environment*. This page contains the environmental regulations and directives with which NI complies, as well as other environmental information not included in this document.

Waste Electrical and Electronic Equipment (WEEE)

EU Customers At the end of the product life cycle, all NI products must be disposed of according to local laws and regulations. For more information about how to recycle NI products in your region, visit *ni.com/environment/weee*.

电子信息产品污染控制管理办法（中国 RoHS）

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Visit *ni.com/register* to register your NI product. Product registration facilitates technical support and ensures that you receive important information updates from NI.

A Declaration of Conformity (DoC) is our claim of compliance with the Council of the European Communities using the manufacturer's declaration of conformity. This system affords the user protection for electromagnetic compatibility (EMC) and product safety. You can obtain the DoC for your product by visiting *ni.com/certification*. If your product supports calibration, you can obtain the calibration certificate for your product at *ni.com/calibration*.

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create your service request at *ni.com/support* or dial 1 866 ASK MYNI (275 6964). For support outside the United States, visit the *Worldwide Offices* section of *ni.com/niglobal* to access the branch office websites, which provide up-to-date contact information.

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