SPECIFICATIONS

NI CVS-1457RT

GigE Vision Compact Vision System
with Reconfigurable I/O and Power over Ethernet

This document provides the specifications for the NI CVS-1457RT. Specifications are subject to change without notice. For the most recent NI CVS-1457RT specifications, visit `ni.com/manuals`.

Characteristics/Nominal Specifications describe basic functions and attributes of the device established by design.

Specifications

Physical Characteristics

Dimensions ..... 10.8 cm × 6.1 cm × 13.0 cm (L × W × H)

Weight ..... 936 g (2.06 lb)

Caution The protection provided by the NI CVS-1457RT can be impaired if the device is used in a manner not described in this document.

To clean the NI CVS-1457RT, wipe it with a dry towel.

Processor

Type ..... Intel Atom Processor N455

Frequency ..... 1.66 GHz

On-die L2 cache ..... 512 KB

Memory

System RAM

- Capacity ..... 1 GB
- Type ..... DDR3 SDRAM
- Speed ..... 667 MT/s

Nonvolatile storage

- Capacity ..... 2 GB

Reconfigurable FPGA

Type Spartan-6 LX25

Number of flip-flops 30,064

Number of 6-input LUTs 15,032

Number of DSP48A1 slices 38
(18 × 18 multipliers)

Number of RAM blocks ..... 52 (936 Kbits)

Primary Network Port

Standard ..... IEEE 802.3 Ethernet
10BASE-T, 100BASE-TX, 100BASE-T

Interface RJ45

Speed ..... 10, 100, 1000 Mbps

PoE-Capable Network Ports

Number of ports 2

Standards ..... IEEE 802.3 Ethernet
10BASE-T, 100BASE-TX, 100BASE-T
IEEE 802.3af (PoE) compatible

Interface RJ45

Speed ..... 10, 100, 1000 Mbps

Supported PoE power classes 0, 1, 2, 3

PoE power output (per port) ..... 15.4 W

USB Ports

Number of ports 2

Type ..... USB 2.0, Hi-Speed

Maximum data rate ..... 480 Mbit/s

Maximum current ..... 1 A, shared across both ports

RS-485/422/232 Serial Port

Interface RJ50

Maximum baud rate ..... 115,200 bps

Data bits 5, 6, 7, 8

Stop bits 1, 1.5, 2

Parity ..... Odd, Even, Mark, Space

Flow control..... None

Wire mode..... 4-wire, 2-wire, 2-wire auto

TTL Inputs/Outputs

Number of channels..... 8

Type ..... Bidirectional

Output 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 low voltage..... 0.59 V maximum
- Input high voltage..... 2.57 V minimum
- Output low voltage ..... 0.28 V maximum at 1.5 mA
- Output high voltage ..... 4.12 V minimum at 1.5 mA

Differential Inputs/Outputs

Number of channels..... 2

Types..... Bidirectional RS-422/RS-485 or single-ended input

Maximum pulse rate ..... 5 MHz, differential

Differential input threshold..... ±200 mV

Differential output voltage..... 2.0 V min. (R_{LOAD} = 100 Ω, RS-422)

Input voltage range ..... 0 V to 5.5 V

Single-ended logic levels..... TTL compatible

- Input low voltage..... 0.8 V
- Input high voltage..... 2.0 V

Isolated Inputs/Outputs

Isolated Inputs

Type ..... Current sinking

Number of channels..... 8

Input voltage range ..... 0 V to 24 V

- Input OFF voltage..... 0 V to 2.0 V
- Input ON voltage ..... 3.3 V to 24 V
- Turn-on current..... 2.5 mA

Maximum pulse rate ..... 100 kHz

Minimum pulse detected..... 100 µs

Input protection

- Reverse polarity protection..... Yes, -30 V
- Input voltage (channel to C_{ISO})..... 30 V maximum
- Input current..... 3.3 mA, internally limited

Isolated Outputs

Type..... Current sourcing

Number of channels 8

Supply voltage range (V_{ISO}) ..... 5 V to 24 V

- Over voltage protection ..... +30 V
- Reverse polarity protection..... Yes, -30 V

Maximum output voltage drop

- V_{ISO} = 5 V ..... 1.08 V at 35 mA
- V_{ISO} = 24 V ..... 1.18 V at 80 mA

Output current

- V_{ISO} = 5 V ..... 35 mA, maximum
- V_{ISO} = 24 V ..... 80 mA, maximum

Maximum current limit..... 345 mA

Minimum pulse rate ..... 2.5 kHz (load of 100 kΩ, 300 pF)

Maximum pulse rate ..... 20 kHz (load of 10 kΩ, 300 pF)

Minimum pulse generated ..... 400 µs

Note The isolated outputs have a current limit which will turn off the outputs in case the limit is exceeded. The circuit resets when the output is turned off. Do not draw more than 100 mA from any 24 V isolated output. Do not draw more than 50 mA from any 5 V isolated output. Do not draw more than 640 mA combined from the V_{ISO} pins on the 44-pin D-SUB connector.

Environmental

Indoor use only.

Operating temperature ..... 0 °C to 55 °C

Storage temperature ..... -20 °C to 85 °C

Relative humidity..... 10% to 90%, noncondensing

Pollution Degree 2

Maximum Altitude..... 2,000 m

Operating Shock (IEC 60068-2-27) ..... 50 g, 3 ms half sine, 3 shocks per side
30 g, 11 ms half sine, 3 shocks per side

Operating vibration

Random (IEC 60068-2-34)..... 10 to 500 Hz, 5 G_{rms}

Swept Sine (IEC 60068-2-6) ..... 10 to 500 Hz, 5 g

Safety

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

- IEC 61010-1, EN 61010-1
- UL 61010-1, CSA 61010-1

Note For UL and other safety considerations, refer to the product label, or visit `ni.com/certification`, search by model number or product line, and click the appropriate link in the Certification column.

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
- EN 55022 (CISPR 22): Class A emissions
- EN 55024 (CISPR 24): Immunity
- AS/NZS CISPR 11: Group 1, Class A emissions
- AS/NZS CISPR 22: 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.

CE Compliance CE

This product meets the essential requirements of applicable European Directives, as amended for CE marking, as follows:

- 2004/108/EC; Electromagnetic Compatibility Directive
- 73/23/EEC; Low-Voltage Directive (safety)
- 89/336/EEC; Electromagnetic Compatibility Directive (EMC)

Note Refer to the Declaration of Conformity (DoC) for this product for any additional regulatory compliance information. To obtain 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 products *must* be sent to a WEEE recycling center. For more information about WEEE recycling centers, National Instruments WEEE initiatives, and compliance with WEEE Directive 2002/96/EC on Waste and Electronic Equipment, visit `ni.com/environment/weee`.

电子信息产品污染控制管理办法 （中国 RoHS）

中国客户 National Instruments 符合中国电子信息产品中限制使用某些有害物质指令 (RoHS)。关于 National Instruments 中国 RoHS 合规性信息，请登录 `ni.com/environment/rohs_china`。 (For information about China RoHS compliance, go to `ni.com/environment/rohs_china`.)

Battery Replacement and Disposal

Battery Directive This device contains a long-life coin cell battery. If you need to replace it, use the Return Material Authorization (RMA) process or contact an authorized National Instruments service representative. For more information about compliance with the EU Battery Directive 2006/66/EC about Batteries and Accumulators and Waste Batteries and Accumulators, visit `ni.com/environment/batterydirective`.

Where to Go Next

The following documents and resources contain information you may find helpful as you use the NI CVS-1457RT in an application. Refer to the National Instruments Product Manuals Library at `ni.com/manuals` for the most recent versions of product documentation.

- *NI CVS-1457RT Getting Started Guide*—Explains how to install and configure the NI CVS-1457RT.
- *NI CVS-1457RT User Manual*—Contains connector pinouts, configuration information, mounting information, and answers to common troubleshooting questions.
- *NI CVS I/O Accessory User Manual*—Contains installation and operation instructions for the CVS I/O Accessory.

Where to Go for Support

The National Instruments website is your complete resource for technical support. At `ni.com/support` you have access to everything from troubleshooting and application development self-help resources to email and phone assistance from NI Application Engineers.

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`.

National Instruments corporate headquarters is located at 11500 North Mopac Expressway, Austin, Texas, 78759-3504. National Instruments also has offices located around the world. For telephone support in the United States, create your service request at `ni.com/support` or dial 512 795 8248. For telephone 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, support phone numbers, email addresses, and current events.

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