SPECIFICATIONS

NI cRIO-9082

Reconfigurable Embedded Chassis with Integrated Intelligent Real-Time Controller for CompactRIO

This document lists the specifications for the NI cRIO-9082. The following specifications are typical for the -40 °C to 70 °C operating temperature range unless otherwise noted.

Caution Do not operate the cRIO-9082 in a manner not specified in this document. Product misuse can result in a hazard. You can compromise the safety protection built into the product if the product is damaged in any way. If the product is damaged, return it to NI for repair.

Processor

CPU	Intel Core i7-660UE
Number of cores	2
CPU frequency	1.33 GHz (base); 2.4 GHz (single-core Turbo mode)
On-die L2 cache	256 KB x2 (256 KB/core)
On-die L3 cache	4 MB (shared)

Operating System

Note For minimum software support information, visit *ni.com/info* and enter the Info Code `swsupport`.

Supported operating system	Windows Embedded Standard 7 Runtime (WES7)

Software requirements	
Application software	
LabVIEW	LabVIEW 2011 or later, LabVIEW Real-Time Module 2011 or later[1], LabVIEW FPGA Module 2011 or later[2]
Driver software	NI CompactRIO Device Drivers 4.0 or later

Network/Ethernet Port

Number of ports	2
Network interface	10Base-T, 100Base-TX, and 1000Base-T Ethernet
Compatibility	IEEE 802.3
Communication rates	10 Mbit/s, 100 Mbit/s, 1000 Mbit/s auto-negotiated
Maximum cabling distance	100 m/segment

RS-232 Serial Port

Maximum baud rate	115,200 bps
Data bits	5, 6, 7, 8
Stop bits	1, 2
Parity	Odd, even, mark, space
Flow control	RTS/CTS, XON/XOFF, DTR/DSR
RI wake maximum low level	0.8 V
RI wake minimum high level	2.4 V
RI overvoltage tolerance	±24 V

RS-485/422 (DTE) Serial Port

Maximum baud rate	230,400 bps
Data bits	5, 6, 7, 8
Stop bits	1, 1.5, 2

[1] LabVIEW Real-Time Module is only required when using a Real-Time cRIO-9082.
[2] LabVIEW FPGA Module is not required when using Scan Interface mode. To program the user-accessible FPGA on the cRIO-9082, LabVIEW FPGA Module is required.

Parity	Odd, Even, Mark, Space
Flow control	XON/XOFF
Wire mode	4-wire, 2-wire, 2-wire auto
Isolation voltage, port to earth ground	
Continuous	60 VDC, Measurement Category I
Withstand	1,000 Vrms, verified by a 5 s dielectric withstand test

MXI-Express Port

Communication rate	2.5 Gbps
Maximum cabling distance	7 m

USB Ports

Number of ports	4

Note The USB device port is intended for use in device configuration, application deployment, debugging, and maintenance.

USB interface	USB 2.0, Hi-Speed
Maximum data rate	480 Mb/s per port
Maximum current	500 mA

Video Port (VGA)

Maximum resolution	1600 × 1200 at 60 Hz

Memory

Nonvolatile	32 GB minimum
DDR3 system memory	2 GB minimum

Note Visit *ni.com/info* and enter the Info Code `ssdbp` for information about the life span of the nonvolatile memory and about best practices for using nonvolatile memory.

Reconfigurable FPGA

FPGA type	Xilinx Spartan-6 LX150
Number of flip-flops	184,304
Number of 6-input LUTs	92,152
Number of DSP slices (18 × 25 multipliers)	180
Available block RAM	4,824 kbit
Number of DMA channels	3
Number of logical interrupts	32

Internal Real-Time Clock

Accuracy	200 ppm; 35 ppm at 25 °C

CMOS Battery

Typical battery life with power applied to power connector	10 years
Typical battery life when stored at temperatures up to 55 °C	5.7 years
Typical battery life when stored at temperatures up to 85 °C	5.3 years

Power Requirements

Caution You must use a UL Listed ITE power supply marked **LPS** with the cRIO-9082.

Note Some C Series modules have additional power requirements. For more information about C Series module power requirements, refer to the C Series module(s) documentation.

Voltage input range (measured at the cRIO-9082 power connector)	
V1	9 V to 30 V
V2	9 V to 30 V
Maximum power consumption	75 W

Note The maximum power consumption specification is based on a fully populated system running a high-stress application at elevated ambient temperature and with all C Series modules and USB devices consuming the maximum allowed power.

Typical standby power consumption at 25 °C	2 W
Recommended power supply	100 W, 24 VDC
Typical leakage current from secondary power input (V2) while system is powered from primary power input (V1)	
At 9 V	0.5 mA
At 30 V	2.7 mA

Caution Do not connect V2 to a DC mains supply or to any supply that requires a connecting cable longer than 3 m (10 ft). A DC mains supply is a local DC electricity supply network in the infrastructure of a site or building.

EMC ratings for inputs as described in IEC 61000	
V1	Short lines, long lines, and DC distributed networks
V2	Short lines only
Power input connector	4-position, 3.5 mm pitch, pluggable screw terminal with screw locks, Sauro CTF04BV8-AN000A

Physical Characteristics

If you need to clean the cRIO-9082, wipe it with a dry towel.

Tip For two-dimensional drawings and three-dimensional models of the cRIO-9082, visit *ni.com/dimensions* and search by module number.

Weight (unloaded)	3.1 kg (6.7 lb)
Dimensions (unloaded)	403.7 mm (15.89 in.) × 88.1 mm (3.43 in.) × 121.9 mm (4.80 in.)
Screw-terminal wiring	
Gauge	2.0 mm^2 to 3.0 mm^2 (14 AWG to 12 AWG) copper conductor wire
Wire strip length	7 mm (0.28 in.) of insulation stripped from the end
Temperature rating	85 °C

Torque for screw terminals	0.5 N · m to 0.6 N · m (4.4 lb · in. to 5.3 lb · in.)
Wires per screw terminal	One wire per screw terminal
Connector securement	
Securement type	Screw flanges provided
Torque for screw flanges	0.3 N · m to 0.4 N · m (2.7 lb · in. to 3.5 lb · in.)

Safety Voltages

Connect only voltages that are below these limits.

V1 terminal to C terminal	30 VDC maximum, Measurement Category I
V2 terminal to C terminal	30 VDC maximum, Measurement Category I
Chassis ground to C terminal	30 VDC maximum, Measurement Category I

Measurement Category I is for measurements performed on circuits not directly connected to the electrical distribution system referred to as *MAINS* voltage. MAINS is a hazardous live electrical supply system that powers equipment. This category is for measurements of voltages from specially protected secondary circuits. Such voltage measurements include signal levels, special equipment, limited-energy parts of equipment, circuits powered by regulated low-voltage sources, and electronics.

Caution Do not connect the cRIO-9082 to signals or use for measurements within Measurement Categories II, III, or IV.

Note Measurement Categories CAT I and CAT O are equivalent. These test and measurement circuits are for other circuits not intended for direct connection to the MAINS building installations of Measurement Categories CAT II, CAT III, or CAT IV.

Environmental

Temperature (IEC-60068-2-1 and IEC-60068-2-2)	
Operating	0 °C to 45 °C
Operating temperature with NI panel mount kit	0 °C to 55 °C
Storage	-40 °C to 85 °C

Caution Failure to follow the mounting instructions in the user manual can cause temperature derating. Visit *ni.com/info* and enter Info Code `criomounting` for more information about mounting configurations and temperature derating.

Ingress protection	IP20
Operating humidity (IEC 60068-2-56)	10% RH to 90% RH, noncondensing
Storage humidity (IEC 60068-2-56)	5% RH to 95% RH, noncondensing
Pollution Degree (IEC 60664)	2
Maximum altitude	2,000 m

Indoor use only.

Hazardous Locations

U.S. (UL)	Class I, Division 2, Groups A, B, C, D, T4; Class I, Zone 2, AEx nA IIC T4
Canada (C-UL)	Class I, Division 2, Groups A, B, C, D, T4; Class I, Zone 2, Ex nA IIC T4
Europe (ATEX) and International (IECEx)	Ex nA IIC T4 Gc

Shock and Vibration

To meet these specifications, you must mount the cRIO-9082 system directly on a flat, rigid surface as described in the user manual, affix ferrules to the ends of the terminal wires, install an SD card cover (SD Door Kit, 783660-01), and use retention accessories for the USB host ports (NI Industrial USB Extender Cable, 152166-xx), USB device port (NI Locking USB Cable, 157788-01), and mini DisplayPort connector (NI Retention Accessory for Mini DisplayPort, 156866-01). All cabling should be strain-relieved near input connectors. Take care to not directionally bias cable connectors within input connectors when applying strain relief.

Operating vibration	
Random (IEC 60068-2-64)	5 g_{rms}, 10 Hz to 500 Hz
Sinusoidal (IEC 60068-2-6)	5 g, 10 Hz to 500 Hz
Operating shock (IEC 60068-2-27)	30 g, 11 ms half sine; 50 g, 3 ms half sine; 18 shocks at 6 orientations

Safety and Hazardous Locations Standards

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
- EN 60079-0:2012, EN 60079-15:2010
- IEC 60079-0: Ed 6, IEC 60079-15; Ed 4
- UL 60079-0; Ed 5, UL 60079-15; Ed 3
- CSA 60079-0:2011, CSA 60079-15:2012

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 EMC requirements; Industrial Immunity
- EN 55011 Emissions; Group 1, Class A
- CE, C-Tick, ICES, and FCC Part 15 Emissions; Class A

Note For EMC compliance, operate this device according to product documentation.

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)
- 94/9/EC; Potentially Explosive Atmospheres (ATEX)

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*.

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*.

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`.)

Worldwide Support and Services

The NI 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.

Visit *ni.com/services* for NI Factory Installation Services, repairs, extended warranty, and other services.

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*.

NI corporate headquarters is located at 11500 North Mopac Expressway, Austin, Texas, 78759-3504. NI also has offices located around the world. For telephone support in the United States, create your service request at *ni.com/support* or dial 1 866 ASK MYNI (275 6964). 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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