cRIO-9081 Specifications

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This document lists the specifications for the NI cRIO-9081.

Processor

CPU	Intel Celeron U3405
Number of cores	2
CPU frequency	1.06 GHz
On-die L2 cache	256 KB x2 (256 KB/core)
On-die L3 cache	2 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 Mb/s, 100 Mb/s, 1,000 Mb/s auto-negotiated
Maximum cabling distance	100 m/segment

RS-232 Serial Port

Maximum baud rate	115,200 b/s
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
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	16 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 LX75
Number of flip-flops	93,296
Number of 6-input LUTs	46,648
Number of DSP slices (18 × 25 multipliers)	132
Available block RAM	3,096 kbits

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-9081.

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-9081 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

Tip For two-dimensional drawings and three-dimensional models of the cRIO-9081, 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 V DC maximum, Measurement Category I
V2 terminal to C terminal	30 V DC maximum, Measurement Category I
Chassis ground to C terminal	30 V DC maximum, Measurement Category I

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 Gc
Canada (C-UL)	Class I, Division 2, Groups A, B, C, D, T4; Ex nA IIC T4 Gc
Europe (ATEX) and International (IECEx)	Ex nA IIC T4 Gc DEMKO 07 ATEX 0626664X IECEx UL 14.0089X

Shock and Vibration

To meet these specifications, you must mount the cRIO-9081 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	5 g RMS, 10 Hz to 500 Hz
Sinusoidal	5 g, 10 Hz to 500 Hz
Operating shock	30 g, 11 ms half sine; 50 g, 3 ms half sine; 18 shocks at 6 orientations

Safety Compliance 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, EN 60079-7
- IEC 60079-0, IEC 60079-7
- UL 60079-0, UL 60079-7
- CSA C22.2 No. 60079-0, CSA C22.2 No. 60079-7

Note For safety certifications, refer to the product label or the Product Certifications and Declarations section.

Electromagnetic Compatibility

- 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

- 2014/34/EU; Potentially Explosive Atmospheres (ATEX)

Product Certifications and Declarations

Refer to the product Declaration of Conformity (DoC) for additional regulatory compliance information. To obtain product certifications and the DoC for NI products, visit ni.com/product-certifications, search by model number, and click the appropriate link.

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 ***Engineering a Healthy Planet*** 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.

EU and UK Customers

- **Waste Electrical and Electronic Equipment (WEEE)**—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 product contains a long-life coin cell battery. If you need to replace it, use the Return Material Authorization (RMA) process or contact an authorized NI 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RoHS**— NI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NI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`.)

NI Services

Visit ni.com/support to find support resources including documentation, downloads, and troubleshooting and application development self-help such as tutorials and examples.

Visit ni.com/services to learn about NI service offerings such as calibration options, repair, and replacement.

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

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