

NI 9144/9145/9146/9147/ 9148/9149

NI 9144: 8-Slot, Spartan-3 2M FPGA, EtherCAT CompactRIO Chassis

NI 9145: 8-Slot, Zynq-7020 FPGA, EtherCAT CompactRIO Chassis

NI 9146: 4-Slot, Spartan-6 LX45 FPGA, Ethernet CompactRIO Chassis

NI 9147: 4-Slot, Zynq-7020 FPGA, Ethernet CompactRIO Chassis

NI 9148: 8-Slot, Spartan-3 FPGA, Ethernet CompactRIO Chassis

NI 9149: 8-Slot, Zynq-7020 FPGA, Ethernet CompactRIO Chassis

Physical Characteristics

Weight

NI 9144	906 g (32.7 oz)
NI 9145	980 g (34.6 oz)
NI 9146	643 g (22.7 oz)
NI 9147	680 g (23.98 oz)
NI 9148	929 g (32.7 oz)
NI 9149	1,048 g (36.97 oz)

Dimensions

Visit ni.com/dimensions and search by model number.

Power Connector

Screw-terminal wiring

Gauge	0.2 mm ² to 2.1 mm ² (24 AWG to 14 AWG) copper conductor wire
Wire strip length	6 mm (0.24 in.) of insulation stripped from the end
Temperature rating	85 °C



Torque for screw terminals	0.20 N · m to 0.25 N · m (1.8 lb · in. to 2.2 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.)

Environmental

Temperature

Operating	-40 °C to 70 °C
Storage	-40 °C to 85 °C



Notice Failure to follow the mounting instructions in the user manual can cause temperature derating.

Ingress protection	IP40
Operating humidity	10% RH to 90% RH, noncondensing
Storage humidity	5% RH to 95% RH, noncondensing
Pollution degree	2
Maximum altitude	
NI 9144	5,000 m
NI 9145	5,000 m
NI 9146	2,000 m
NI 9147	5,000 m
NI 9148	2,000 m
NI 9149	5,000 m

Indoor use only.

Hazardous Locations

Explosive atmospheres rating	Ex nA IIC T4 Gc
CCC certificate number	2021312310000310

Safety Guidelines

Operate the product only as described in this document.



Caution This icon denotes a caution, which advises you to consult documentation where this symbol is marked.



Caution Do not operate this product 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.

Safety Guidelines for Hazardous Locations

These products have been evaluated as Ex nA IIC T4 Gc equipment and are CCC certified. Each product is suitable for use within ambient temperatures of $-40\text{ }^{\circ}\text{C} \leq T_a \leq 70\text{ }^{\circ}\text{C}$ in either nonhazardous locations or Zone 2 hazardous locations.

Follow these guidelines if you are installing the product in a potentially explosive environment. Not following these guidelines may result in serious injury or death.



Caution Do not disconnect the power supply wires and connectors from the product unless power has been switched off.



Caution Do not disconnect I/O-side wires or connectors unless power has been switched off or the area is known to be nonhazardous.



Caution Do not remove modules unless power has been switched off or the area is known to be nonhazardous.



Caution Substitution of components may impair suitability for Zone 2.



Caution You must make sure that transient disturbances do not exceed 140% of the rated voltage.



Caution The system shall only be used in an area of not more than Pollution Degree 2, as defined in IEC/EN 60664-1.



Caution The system shall be mounted in a CCC-certified enclosure with a minimum ingress protection rating of at least IP54 as defined in GB3836.1.



Caution The enclosure must have a door or cover accessible only by the use of a tool.



Caution (NI 9147/NI 9149) The USB device port requires NI locking USB cable, NI part number 157788-01. The cable must be used in a conduit or cable gland to wire to a nonhazardous location. Do not disconnect the cable unless the product is powered off or the area is known to be nonhazardous.

Safety Voltages

NI 9144, NI 9145, NI 9146

Connect only voltages that are below these limits.

V terminal to C terminal	30 V maximum, Measurement Category I
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Caution Do not connect the product to signals or use for measurements within Measurement Categories II, III, or IV.

NI 9147, NI 9149

Connect only voltages that are below these limits.

V terminal to C terminal	30 V DC maximum, Measurement Category I
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Caution Do not connect the product to signals or use for measurements within Measurement Categories II, III, or IV.

NI 9148

Connect only voltages that are below these limits.

V terminal to C terminal	35 V maximum, Measurement Category I
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Caution Do not connect the product to signals or use for measurements within Measurement Categories II, III, or IV.

Power Requirements

NI 9144

Recommended power supply	48 W, 24 V DC
Power consumption	20 W maximum
Chassis input range	9 V to 30 V

NI 9145

Recommended power supply	20 W, 24 V DC
Power consumption	16 W maximum
Voltage input range	9 V to 30 V

NI 9146

Recommended power supply	24 W, 24 V DC
Power consumption	15 W maximum
Power supply input range	9 V to 30 V

NI 9147

Voltage input range	9 V DC to 30 V DC
Reverse-voltage protection	30 V DC maximum
Maximum power input, with four C Series modules	11 W
Maximum power input, without C Series modules	7 W

NI 9148

Voltage input range	19 V to 30 V
Maximum power input	20 W maximum
Maximum power consumption	20 W maximum

NI 9149

Voltage input range	9 V DC to 30 V DC
Reverse-voltage protection	30 V DC maximum
Maximum power input, with four C Series modules	19 W
Maximum power input, without C Series modules	11 W

Installing C Series Modules

Verify that power is not connected to the I/O connector(s) on the C Series module.

Removing C Series Modules

Verify that power is not connected to the I/O connector(s) on the C Series module before you remove a module from the chassis.

Product Certifications and Declarations

To obtain product certifications and the DoC for NI products, visit ni.com/product-certifications, search by model number, and click the appropriate link.

Worldwide Support and Services

NI corporate headquarters is located at 11500 North Mopac Expressway, Austin, Texas, 78759-3504, USA.

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