NI-9159 Specifications

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Contents

NI-9159 Specifications

Definitions

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

Characteristics 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.

Conditions

Specifications are valid for the range 0 °C to 55 °C unless otherwise noted.

MXI-Express

Maximum cable length	7 m

Reconfigurable FPGA

FPGA type	Virtex-5 LX110
Number of flip-flops	69,120

Number of 6-input LUTs	69,120
Number of DSP48 slices (25 x 18 multipliers)	64
Embedded block RAM	4,608 kbits
Timebases	40 MHz, 80 MHz, 120 MHz, 160 MHz, or 200 MHz
Accuracy	±100 ppm (maximum)
Frequency dependent on jitter (peak-to-peak)	
40 MHz	250 ps
80 MHz	422 ps
120 MHz	422 ps
160 MHz	402 ps
200 MHz	402 ps

Safety Voltages

Connect only voltages that are within the following limits:

V terminal 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.

Notice Do not connect the NI-9159 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 Characteristics

Temperature	
Operating	0 °C to 55 °C
Storage	-40 °C to 85 °C
Humidity	
Operating	10% RH to 90% RH, noncondensing
Storage	5% RH to 95% RH, noncondensing

Ingress protection	IP40
Pollution Degree	2
Maximum altitude	2,000 m
Shock and Vibration	
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

To meet these shock and vibration specifications, you must panel mount the system.

Power Requirements

Voltage input range	9 V to 30 V
Maximum power input	55 W, 30 VDC maximum
Maximum power consumption	
With no I/O modules	16.25 W, maximum
With 14 I/O modules	32.7 W, maximum

Note The power consumption specifications in this document are maximum values for a LabVIEW FPGA application compiled at 80 MHz. Your application power requirements may be different. To calculate the power requirements of the NI-9159, add the power consumption/dissipation for the chassis and the I/O modules you are using. Keep in mind that the resulting total power consumption is a maximum value and that the NI-9159 may require less power in your application. For more information about the I/O module power requirements, refer to the module operating instructions.

Physical Characteristics

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.)
Weight	2,231 g (78.7 oz)