

## DEVICE SPECIFICATIONS

# IC-3120

Industrial Controller

## Definitions

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*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 expected performance met by a majority of the models.
- *Nominal* specifications describe parameters and attributes that may be useful in operation.

Specifications are *Characteristics* unless otherwise noted.

## Conditions

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

## Physical Characteristics

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**Caution** You can impair the protection provided by the IC-3120 if you use it in a manner not described in this document.

To clean the IC-3120, wipe it with a dry towel.

Dimensions	10.8 cm × 6.1 cm × 13.0 cm (4.3 in × 2.4 in × 5.1 in)
Weight	911 g (2.01 lb)

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## Processor

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Type	Quad Core Intel Atom Processor E3845
Frequency	1.91 GHz
On-die L2 cache	2 MB

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## Operating System

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Supported Operating Systems	NI Linux Real-Time 64-bit Windows Embedded Standard 7 64-bit
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## Memory

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### System RAM

Capacity	4 GB
Type	DDR3L
Speed	1333 MT/s

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### Nonvolatile storage

Capacity	2 GB
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## Power Requirements

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**Note** Supply voltages are measured at the IC-3120 power connectors.

### System Power (V)

Supply voltage	10.8 to 26.4 VDC
Maximum power input	24 W

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### Isolated Output Power ( $V_{ISO}$ )

Supply voltage	4.5 to 30 VDC
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### PoE Power ( $V_{PoE}$ )

Supply voltage	48 VDC +10%/-5%
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## Reconfigurable FPGA

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Type	Spartan-6 LX25
Number of flip-flops	30,064
Number of 6-input LUTs	15,032
Number of DSP48A1 slices (18 × 18 multipliers)	38
Number of RAM blocks	52 (936 Kbits)

## Network Port

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Standard	IEEE 802.3 Ethernet, 10BASE-T, 100BASE-TX, 1000BASE-T
Interface	RJ45
Speed	10, 100, 1000 Mbps

## PoE-Capable Network Ports

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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 2.0 Ports

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Number of ports	2
Type	USB 2.0, Hi-Speed
Speed	480 Mbit/s
Maximum current	1 A, shared across both ports

# VGA Port

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Maximum resolution	1920 × 1200 at 60 Hz
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## TTL Inputs/Outputs

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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 k $\Omega$ pull-up to 5 V
Logic levels	
Input low voltage	0.59 V maximum
Input high voltage	2.57 V minimum
Output low voltage	0.38 V maximum at 1.5 mA
Output high voltage	4.12 V minimum at 1.5 mA

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## Differential Inputs/Outputs

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Number of channels	2
Types	Bidirectional RS-422/RS-485 or single-ended input
Maximum pulse rate	5 MHz, differential
Differential input threshold	$\pm 200$ mV
Differential output voltage	2.0 V min ( $R_{LOAD} = 100 \Omega$ , RS-422)
Input voltage range	0 V to 5.5 V
TTL-compatible single-ended logic levels	
Input low voltage	0.8 V
Input high voltage	2.0 V

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## Isolated Inputs

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Type	Current sinking
Number of channels	8

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## Input voltage

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	10 $\mu$ s
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 ( $V_{ISO}$ )	
Supply voltage range ( $V_{ISO}$ )	4.5 to 30 VDC
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
Maximum output current	
$V_{ISO} = 5$ V	35 mA
$V_{ISO} = 24$ V	80 mA
Maximum current limit	345 mA
Minimum pulse rate	2.5 kHz (load of 100 k $\Omega$ , 300 pF)
Maximum pulse rate	20 kHz (load of 10 k $\Omega$ , 300 pF)
Minimum pulse generated	400 $\mu$ s



**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

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Indoor use only.

Ingress protection (IEC 60529)	IP40
Temperature (IEC 60068-2-1 and IEC 60068-2-2)	
Operating	0 °C to 55 °C
Storage	-20 °C to 85 °C
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
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 60068-2-64)	10 to 500 Hz, 5 g <sub>rms</sub>
Swept Sine (IEC 60068-2-6)	10 to 500 Hz, 5 g

# Safety

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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 61010-1



**Note** For UL and other safety certifications, refer to the product label or the [Online Product Certification](#) section.

# Electromagnetic Compatibility

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This product meets the requirements of the following EMC standards for electrical equipment for measurement, control, and laboratory use; for radio equipment; and for telecommunication terminal equipment:

- EN 61326-1 (IEC 61326-1): Class A emissions; Industrial 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.



**Note** For EMC declarations and certifications, and additional information, refer to the [Online Product Certification](#) section.

## CE Compliance

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This product meets the essential requirements of applicable European Directives, as follows:

- 2006/95/EC; Low-Voltage Directive (safety)
- 2004/108/EC; Electromagnetic Compatibility Directive (EMC)

## Online Product Certification

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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](https://ni.com/certification), search by model number or product line, and click the appropriate link in the Certification column.

## Environmental Management

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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](https://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)

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**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](https://ni.com/environment/weee).

## Battery Replacement and Disposal

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**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/batterdirective](https://ni.com/environment/batterdirective).

## 电子信息产品污染控制管理办法（中国 RoHS）

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**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](https://ni.com/environment/rohs_china)。(For information about China RoHS compliance, go to [ni.com/environment/rohs\\_china](https://ni.com/environment/rohs_china).)

## Where to Go Next

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The following documents and resources contain information you may find helpful as you use the IC-3120 in an application. Refer to the National Instruments Product Manuals Library at [ni.com/manuals](https://ni.com/manuals) for the most recent versions of product documentation.

- *IC-3120 Getting Started Guide*—Explains how to install and configure the device.
- *IC-3120 User Manual*—Contains connector pinouts, configuration information, and mounting information.

## Worldwide Support and Services

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The NI website is your complete resource for technical support. At [ni.com/support](https://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](https://ni.com/services) for NI Factory Installation Services, repairs, extended warranty, and other services.



Visit [ni.com/register](https://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](https://ni.com/certification). If your product supports calibration, you can obtain the calibration certificate for your product at [ni.com/calibration](https://ni.com/calibration).

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