SPECIFICATIONS

ISC-1780

0.3 MP, 1.58 GHz Processor, Monochrome/Color Smart Camera

These specifications apply to the monochrome and color ISC-1780.

⚠️ **Caution** Observe all instructions and cautions in the user documentation. Using the ISC-1780 in a manner not specified can damage the model and compromise the built-in safety protection. Return damaged models to NI for repair.

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

Specifications are *Typical* unless otherwise noted.

Conditions

Specifications are valid at 23 °C unless otherwise noted.

To maintain IP67 conformity, all unused connectors on the ISC-1780 must be capped and the IP lens cover must be screwed firmly into place.

Physical Characteristics

To clean the ISC-1780, wipe it with a dry towel.

Weight	460 g (16.2 oz)
Lens Mount	C-mount
Smart Camera Length (including the connectors)	91 mm (3.58 in.)

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Smart Camera Height (without lens cover)	54 mm (2.13 in.)
Smart Camera Height (including lens cover)	118 mm (4.65 in.)
Smart Camera Width	75 mm (2.95 in.)
Lens Cover Length (interior from the mounting flange to inside the clear top)	59.5 mm (2.34 in)
Lens Cover Maximum Lens Internal Clearance	
Length	59 mm (2.32 in)
Diameter	18 mm (0.71 in)
Connectors	
Network	8-pin female X-coded M12
VGA/USB	12-pin male M12
Power and Digital I/O	12-pin female M12

Power Requirements

Power consumption	10.8 W or 450 mA at 24 VDC
Rated current	0.6 A
Supply voltage	24 VDC ± 10%

⚠️ **Caution** --- The ISC-1780 can only be powered using a 24 VDC power source.

Processor

Type	Dual-Core Intel Celeron N2807
Frequency	1.58 GHz
Burst frequency (enabled by default)	2.16 GHz

Memory

System RAM	
Capacity	2 GB
Type	DDR3L SDRAM
Nonvolatile storage	
Capacity	32 GB

Operating System

Supported Operating Systems	NI Linux Real-Time 64-bit
	Windows 10 Enterprise 2016 LTSB 64-bit

Network Port

Speed	100/1000 Mbps
Standard	IEEE 802.3 Ethernet, 100Base-TX, and 1000Base-T

Digital Inputs

Number of channels	**(NI Linux Real-Time)** 3 general purpose inputs and 1 reserved input for safe mode **(Windows)** 4 general purpose inputs
Type	Current sinking or current sourcing
Input current (sink or source)	3.5 mA maximum
Input voltage	
Input voltage range	0 V to 24 V
Input voltage protection	26 V maximum
Input OFF voltage	0 to 4 V
Input ON voltage	11 to 24 V
OFF to ON response	6 μs
ON to OFF response	80 μs

Digital Outputs

Number of channels	3
Type	Current sinking
Operating voltage	24 V
Sink current	50 mA maximum
Leakage current	1 μA at 24 V maximum
	1 mA at 26 V maximum

ON voltage	0.4 V at 2 mA
	1.1 V at 25 mA
	1.5 V at 50 mA
OFF to ON response	2 µs to reach 4 V, with 1 kΩ pull-up to 24 V
ON to OFF response	50 µs to reach 11 V, with 1 kΩ pull-up to 24 V
Output protection	
Operating voltage	26 V maximum
Protection type	PTC automatically resetting fuse
Time to trip	1 sec at 0.5 A

Analog Output

| Type | 0 to 10 V analog control output signal for lighting control (non-isolated), referenced to system power common (< 1 mA) |

Image Sensor

Make and model	ON Semiconductor - Python family (NOIP1SN or NOIP1SE)
Type	CMOS
Optical format	1/4 in.
Resolution	640 x 480 (0.3 MP)
Frame rate	
Monochrome	Up to 292 fps
Color	Up to 147 fps
Pixel size	4.8 x 4.8 µm
Gain	0 to 19.4 dB
Shutter speed	50 µs to 4.2 s
External trigger latency	7.1 µs
External trigger to strobe output delay	9.1 µs

Environmental

Indoor use only.

Operating temperature	0 °C to 50 °C
Storage temperature	-20 °C to 85 °C
Relative humidity	10% to 90%, noncondensing
Pollution Degree	2
Overvoltage category	I
Maximum Altitude	2,000 m
Ingress protection	IP67
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 60068-2-34)	10 to 500 Hz, 5 G_{rms}
Swept Sine (IEC 60068-2-6)	10 to 500 Hz, 5 g

Safety

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

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 61326-1 (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 C E

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)
- 2011/65/EU; Restriction of Hazardous Substances (RoHS)

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*.

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.）

Where to Go Next

The following documents and resources contain information you may find helpful as you use the ISC-1780 in an application. Refer to the National Instruments Product Manuals Library at *ni.com/manuals* for the most recent versions of product documentation.

- *ISC-178x Getting Started Guide*—Explains how to install and configure the software necessary to use the ISC-178x, and how to get started using the hardware.
- *Power and I/O Accessory for ISC-178x Smart Cameras User Manual*—Contains installation and operation instructions for the Power and I/O Accessory for ISC-178x Smart Cameras.
- *ISC-178x User Manual*—Contains detailed electrical and mechanical information about the ISC-178x.

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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