

## SPECIFICATIONS

# SLSC-12201

32 Channel, 5 V to 33 V, Digital Input/Output

SLSC module design specification version	1.0
SLSC compatibility level	1
Rear I/O compatibility category	[01] (digital input/output up to 32 channels)
Recommended RTI	RTI-12301

## Front I/O Characteristics



**Note** The 32 front I/O channels are organized into two banks consisting of two ports with eight channels per port. Port0 and Port1 are in Bank0; Port2 and Port3 are in Bank1. At least one Vsup must be present and routed to the banks. Each bank can be powered by either Vsup\_0 or Vsup\_1.



**Note** The mapping between the 32 rear I/O channels and the 32 front I/O channels is one-to-one. DIO0 maps to P0.0, and DIO31 maps to P3.7.

Number of channels	32 bidirectional channels
Overvoltage protection	$\pm 60$ V
Synchronization jitter	$\pm 12.5$ ns
External supply voltage (Vsup)	5 V DC to 33 V DC Undervoltage lockout at 4 V
Power-on configuration	Software configurable (factory default is sinking digital input)

**Table 1.** Feature Configurability

Feature	Configurability
Channel direction	Per channel
External power supply (Vsup)	Per bank
Digital input range	Per bank
Digital input threshold	Per bank

**Table 1. Feature Configurability (Continued)**

Feature	Configurability
Digital sourcing input pull-up resistor	Per bank
Digital output type	Per channel

## Digital Input

Input type	Sinking or sourcing
Input voltage range	0 V to 5 V 0 V to 33 V
Threshold voltage settling time	20 ms
Minimum pulse width	100 ns
Maximum signal frequency	100 kHz
Propagation delay	200 ns
Sourcing input pull-up resistor	24 k $\Omega$

	5 V Range Enabled	33 V Range Enabled
Hysteresis	0.7 V	3.7 V
Input threshold setting (low to high)	0.74 V to 5.2 V	4.0 V to 27.5 V
Input threshold setting resolution	4.4 mV	23.3 mV
Input impedance (sinking input)	200 k $\Omega$	110.4 k $\Omega$

## Digital Output

Output type	Sourcing, sinking, or push-pull
Continuous output current	50 mA maximum
Output impedance sourcing	30 $\Omega$
Output impedance sinking	20 $\Omega$
Short circuit protection	10 channels simultaneous fault
Minimum pulse width	100 ns
Maximum signal frequency	100 kHz
Propagation delay	300 ns
Rise/fall time	25 ns (push-pull configuration)
Maximum load capacitance	1 nF maximum

# Rear I/O Characteristics

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Connector XJ3 connects to an NI digital input/digital output device supporting 5 V TTL or 3.3 V LVTTTL signaling.

# Power Requirements

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Power consumption from backplane	4.1 W maximum
Power consumption from Vsup under no load	5.7 W maximum
Minimum Vsup power supply output current capability	$1.0\text{ A} + 50\text{ mA} \times \text{Number of output channels}$
Thermal dissipation	< 50 W

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# Physical Characteristics

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SLSC slots	1
Dimensions	175 mm × 31 mm × 336 mm (6.89 in. × 1.19 in. × 13.21 in.)
Weight	581 g (20.5 oz)
Front I/O connectors	2x 44-pin high-density D-SUB
Rear I/O connectors	1x 110-pin Hard Metric type A. 1x 8-blade Universal Power Module (UPM), capable of implementing Fully Compatible Rear I/O

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# Safety Voltages

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Measurement category	O
Isolation	
Channel-to-channel	None
Channel-to-earth ground	None

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**Caution** Do not connect the SLSC-12201 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.



**Caution** Do not operate the SLSC-12201 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

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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 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

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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; Basic 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

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)

## Environmental

Module operating temperature	0 °C to 85 °C <sup>1</sup> (Tested in accordance with IEC 60068-2-1 and IEC 60068-2-2)
Storage temperature range	-40 °C to 85 °C (Tested in accordance with IEC 60068-2-1 and IEC 60068-2-2.)
Relative humidity range, operating	10% to 90%, noncondensing (Tested in accordance with IEC-60068-2-78.)
Relative humidity range, storage	5% to 95%, noncondensing (Tested in accordance with IEC-60068-2-78.)
Pollution degree	2
Maximum altitude	2,000 m (800 mbar)(at 25 °C ambient)

Indoor use only.

## Shock and Vibration

Operating shock	30 g peak, half-sine, 11 ms pulse (Tested in accordance with IEC-60068-2-27. Meets MIL-PRF-28800F Class 2 limits)
Operating vibration, random	5 to 500 Hz, 0.3 g <sub>rms</sub> (Tested in accordance with IEC-60068-2-64)
Non-operating vibration, random	5 to 500 Hz, 2.4 g <sub>rms</sub> (Tested in accordance with IEC-60068-2-64. Non-operating test profile exceeds the requirements of MIL-PRF-28800F Class 3.)

<sup>1</sup> The chassis internal ambient temperature may reach 85 °C with all slots at the maximum allowed power dissipation.

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

## Worldwide Support and Services

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

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

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