

SPECIFICATIONS

SLSC-12202

32 Channel, 5 V to 60 V, Digital Input/Output

SLSC module design specification version	1.6
SLSC compatibility level	1
Rear I/O compatibility category	[N4] (Digital input/output up to 32 channels)
Recommended RTI	RTI-12308
Earliest driver version	NI-SLSC 18.5

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	$\pm 100\text{ V}$
Channel-disconnect switch impedance (disconnected)	$>10\text{ M}\Omega$
Synchronization jitter	$\pm 12.5\text{ ns}$
External supply voltage (Vsup) ¹	5 V DC to 60 V DC Undervoltage lockout at 4 V
Power-on configuration	Software-configurable (factory default is channel disconnect)

¹ The external supply voltage is protected up to $\pm 100\text{ V}$.



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
Digital sourcing input pull-up resistor	Per channel
Digital output type	Per channel
Channel-disconnect switch	Per channel

Digital Input

Input type	Sinking or sourcing
Input voltage range	0 V to 5 V 0 V to 60 V
Threshold voltage settling time	20 ms
Minimum pulse width	150 ns
Maximum signal frequency	100 kHz
Propagation delay	200 ns
Sourcing input pull-up resistor	24 k Ω

	5 V Range Enabled	60 V Range Enabled
Hysteresis	0.4 V	4.4 V
Input threshold setting (low to high)	0.5 V to 5.1 V	4.9 V to 49.6 V
Input threshold setting resolution	4.6 mV	44.2 mV
Input impedance (sinking input)	211 k Ω	138 k Ω

Digital Output

Output type	Sourcing, sinking, or push-pull
Continuous output current	150 mA maximum
Output impedance sourcing	13.0 Ω
Output impedance sinking	8.3 Ω

Short-circuit protection	Hiccup mode, with 1 s automatic-retry time
Overcurrent fault ²	10 channels simultaneous fault
Minimum pulse width	150 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

Connector XJ2 connects to an NI digital input/digital output device supporting 5 V TTL or 3.3 V LVTTL signaling.

Power Requirements

Module thermal dissipation	< 50 W
Module power consumption from backplane	12.0 W maximum
External power supply (V _{sup}) ³	
Voltage range	5 V DC to 60 V DC
Maximum output current capability	1.0 A + 150 mA × Number of output channels
Power consumption under no load	20.0 W maximum

Physical Characteristics

SLSC slots	1
Dimensions	175 mm × 31 mm × 336 mm (6.89 in. × 1.19 in. × 13.21 in.)
Weight	380 g (13.4 oz)
Front I/O connectors	2x female 48-pin DIN 41612 Connector
Rear I/O connectors to the RTI-12308	1x 110-pin Hard Metric type A. 1x 6-blade Universal Power Module (UPM)

² Overcurrent fault is defined as running continuous output current greater than 150 mA for each digital output channel before the short-circuit protection is activated.

³ The external power supply (V_{sup}) used must be a certified SELV power supply.

Safety Voltages

Connect only voltages that are below these limits.

Maximum input voltage	60 V peak
Isolation	
Channel-to-channel	None
Channel-to-earth	
Maximum working voltage ⁴	100 V peak
Transient overvoltage ⁵	920 V peak
Overvoltage protection ⁶	±100 V peak, at the front I/O and Vsup connectors



Caution If you are using the SLSC-12202 with voltages greater than 30 V RMS, 42 V peak, or 60 V DC, the SLSC chassis must be panel mounted in a closed rack to prevent user access to the rear of the device.



Attention Si vous utilisez le SLSC-12202 avec des tensions supérieures à 30 V RMS, 42 V peak, ou 60 V DC, le châssis SLSC doit être sécurisé contre les contacts. Pour cela, il est nécessaire de le monter sur panneau dans un rack fermé pour empêcher l'utilisateur d'accéder à l'arrière de l'appareil.

These test and measurement circuits are rated for measurements performed on circuits not directly connected to the electrical distribution system referred to as MAINS.

MAINS is a hazardous live electrical supply system to which equipment is designed to be connected to for the purpose of powering equipment. This product is rated 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.

Safety Compliance Standards

This product is designed to meet the requirements of the following electrical equipment safety standards for measurement, control, and laboratory use:

⁴ Working voltage rating is the highest RMS value of the AC or DC voltage across the insulation that can continuously occur when the equipment is supplied at rated voltage.
⁵ The short duration overvoltage of a few milliseconds or less, oscillatory or non-oscillatory, usually highly damped.
⁶ Temporary overvoltage rating is the overvoltage of relatively long duration.

- IEC 61010-1, EN 61010-1
- Conforms to UL Standard 61010-1 and UL Standard 61010-2-030
- Certified to CSA Standard C22.2 # 61010-1 and CSA Standard C22.2 # 61010-2-030



Note For safety certifications, refer to the product label or the [Product Certifications and Declarations](#) section.

Electromagnetic Compatibility Standards

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
- AS/NZS CISPR 11: Group 1, Class A emissions



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.

Environmental Characteristics

Temperature and Humidity

Operating temperature	0 °C to 40 °C ⁷
Storage temperature range	-40 °C to 85 °C
Operating relative humidity range	10% to 90%, noncondensing
Storage relative humidity range	5% to 95%, noncondensing
Pollution Degree	2
Maximum altitude	2,000 m (800 mbar) (at 25 °C ambient)

Shock and Vibration

Operating shock	30 g peak, half-sine, 11 ms pulse
Operating vibration, random	5 Hz to 500 Hz, 0.3 g _{rms}
Non-operating vibration, random	5 Hz to 500 Hz, 2.4 g _{rms}

⁷ The chassis internal ambient temperature may reach 85 °C with all slots at the maximum allowed power dissipation. In the SLSC-12001 chassis this corresponds to an external ambient of 40 °C.

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)
- 2015/863/EU; Restriction of Hazardous Substances (RoHS)

Product Certifications and Declarations

Refer to the product Declaration of Conformity (DoC) for additional regulatory compliance information. To obtain product certifications and the DoC for NI products, visit ni.com/product-certifications, search by model number, and click the appropriate link.

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