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SCXI-1334

#### SPECIFICATIONS

## **NI SCXI-1129**

### 256-Crosspoint Relay Matrix

This document lists specifications for the NI SCXI-1129 matrix module. All specifications are subject to change without notice.

Topologies 2-wire  $16 \times 16$  matrix

2-wire 4 × 64 matrix 2-wire 8 × 32 matrix 2-wire quad 4 × 16 matrix 2-wire dual 4 × 32 matrix 2-wire dual 8 × 16 matrix



**Caution** The protection provided by the NI SCXI-1129 can be impaired if it is used in a manner not described in this document.

## Input Characteristics

All input characteristics are DC, AC<sub>rms</sub>, or a combination, unless otherwise specified.

Maximum switching voltage 150 V, CAT I (channel-to-channel and

channel-to-earth)



**Caution** This module is rated for Measurement Category I and intended to carry signal voltages no greater than 150 V. This module can withstand up to 800 V impulse voltage. Do not use this module for connection to signals or for measurements within Categories II, III, or IV. Do not connect to MAINS supply circuits (for example, wall outlets) of 115 or 230 VAC. Refer to the *Read Me First: Safety and Electromagnetic Compatibility* document for more information on measurement categories.

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.





**Caution** Do not connect the NI SCXI-1129 with DSUB 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 When hazardous voltages (>42.4 V<sub>pk</sub>/60 VDC) are present on any relay terminal, safety low-voltage (≤42.4 V<sub>pk</sub>/60 VDC) cannot be connected to any other relay terminal.



**Caution** Modules that can connect to a common high-voltage analog backplane derate to their lowest common voltage rating. Refer to the NI Switches Getting Started Guide for NI SCXI Switch Modules for more information.



**Caution** The maximum switching power is limited by the maximum switching current, the maximum voltage, and must not exceed 30 W, 37.5 VA.

Maximum switching power (per channel)	30 W, 37.5 VA
Maximum switching current (per channel)	1 A
Maximum carry current (per channel)	2 A
Maximum module current	5 A



**Caution** Switching inductive loads (for example, motors and solenoids) can produce high voltage transients in excess of the module's rated voltage. Without additional protection, these transients can interfere with module operation and impact relay life. For more information about transient suppression, visit ni.com/ info and enter the Info Code induct

DC path resistance		
Initial	<1 Ω	
End of life	≥2 Ω	

Path resistance is a combination of relay contact resistance and trace resistance. Contact resistance typically remains low for the life of a relay. At the end of relay life, the contact resistance rapidly rises above 1.0  $\Omega$ .

Thermal EMF	<9 μV	
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## RF Performance Characteristics

Typical channel-to-channel isolation (50 $\Omega$ termination)		
10 kHz	>80 dB	
100 kHz	>65 dB	
1 MHz	>50 dB	

## Dynamic Characteristics

4 ms maximum <sup>1</sup>
4 ms maximum
100 crosspoints/s
$5 \times 10^7$ cycles
1 × 10 <sup>5</sup> cycles (maximum load)



**Note** The relays used in the NI SCXI-1129 are field replaceable. Refer to the NI Switches Help for information about replacing a failed relay.

## **Trigger Characteristics**

Sources	SCXI trigger lines 0-7
	Rear connector
	Front panel
Minimum pulse width	150 ns
output trigger	
Destinations	SCXI trigger lines 0-7
	Front panel
Pulse width	1 μs

 $<sup>^{1}</sup>$  Certain applications may require additional time for proper settling. Refer to the NI Switches Help for information about including additional settling time.

## **Physical Characteristics**

Relay types	Electromechanical, latching and nonlatching
Relay contact material	Gold/gold-clad silver
Power requirement, including optional internal drive power	6.3 W at ±18.5 V 200 mW at 5 V
Dimensions (L $\times$ W $\times$ H)	$19.8 \times 3.0 \times 17.3$ cm $(7.8 \times 1.2 \times 6.8$ in.)
Weight	725 g (1 lb 10 oz)

## **Environment**

Maximum altitude	2,000 m (800 mbar) (at 25 °C ambient temperature)
Pollution Degree	2

Indoor use only.

## **Operating Environment**

0 °C to 55 °C (Tested in accordance with
IEC 60068-2-1 and IEC 60068-2-2. Meets
MIL-PRF-28800F Class 3 low temperature
limit and MIL-PRF-28800F Class 2 high
temperature limit.)
10% to 90%, noncondensing (Tested in accordance with IEC 60068-2-56.)

## Storage Environment

Ambient temperature range	-40 °C to 71 °C (Tested in accordance with IEC 60068-2-1 and IEC 60068-2-2. Meets MIL-PRF-28800F Class 3 limits.)
Relative humidity range	5% to 95%, noncondensing (Tested in accordance with IEC 60068-2-56.)

## 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.)
	MIL-PRF-28800F Class 2 limits.)

#### Random vibration

Operating	5 Hz to 500 Hz, $0.3~g_{rms}$ (Tested in accordance with IEC 60068-2-64.)
Nonoperating	5 Hz to 500 Hz, 2.4 g <sub>rms</sub> (Tested in accordance with IEC 60068-2-64. Test profile exceeds the requirements of MIL-PRF-28800F, Class 3.)

## Compliance and Certifications

## 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; 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, 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)

#### 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.

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### Reference

Visit ni.com for more information about the following accessories.

Table 1. Accessories Available for the NI SCXI-1129

Accessory	Part Number
NI SCXI-1333 terminal block (quad 4 × 16, 2-wire matrix)	777687-33
NI SCXI-1334 terminal block (4 × 64, 2-wire matrix)	777687-34
NI SCXI-1335 terminal block (8 × 32, 2-wire matrix)	777687-35
NI SCXI-1336 terminal block (16 $\times$ 16, 2-wire matrix) (dual 8 $\times$ 16, 2-wire matrix)	777687-36
NI SCXI-1337 terminal block (dual 4 × 32, 2-wire matrix)	777687-37
NI SCXI-1339 terminal block	777687-39
Matrix expansion plug	778364-01
0.40 m matrix expansion cable	185440-0R4
0.75 m matrix expansion cable	185440-0R75



**Caution** You must install mating connectors according to local safety codes and standards and according to the specifications provided by the connector manufacturer. You are responsible for verifying safety compliance of third-party connectors and their usage according to the relevant standard(s), including UL and CSA in North America and IEC and VDE in Europe.

Accessory	Manufacturer	Part Number
180-pin HDI mating front panel connector, right-angle <sup>2</sup>	AMP	532903-6
180-pin HDI connector key and ears	AMP	530341-7

<sup>&</sup>lt;sup>2</sup> PCB mount, additional cover or enclosure required. See previous safety caution.

b1c0 b1c1 b1c15 b1c0 b1c1 • • • b1c15 (B1C0H, B1C0L) (B1C1H, B1C1L) (B1C15H, B1C15L) b1r0 ab0 (B1R0H, B1R0L) \_ (AB0+, AB0-) b1r1 ab1 com1 (B1R1H, B1R1L) (AB1+, AB1-) b1r2 com2 ab2 (B1R2H, B1R2L) (AB2+, AB2-) b1r3 com3 ab3 (B1R3H, B1R3L) (AB3+, AB3-) b2c0 b2c15 b2c1 (B2C0H, B2C0L) (B2C1H, B2C1L) (B2C15H, B2C15L) b2r0 (B2R0H, B2R0L) b2r1 (B2R1H, B2R1L) b2r2 (B2R2H, B2R2L) b2r3 (B2R3H, B2R3L) b3c0 b3c1 b3c15 (B3C15H, B3C15L) (B3C0H, B3C0L) (B3C1H, B3C1L) b3r0 (B3R0H, B3R0L) b3r1 (B3R1H, B3R1L) b3r2 (B3R2H, B3R2L) b3r3 (B3R3H, B3R3L) b4c0 b4c1 b4c15 (B4C15H, B4C15L) (B4C0H, B4C0L) (B4C1H, B4C1L) b4r0 (B4R0H, B4R0L) b4r1 (B4R1H, B4R1L) b4r2 (B4R2H, B4R2L) b4r3 (B4R3H, B4R3L) (B4C1L) (B4R2H) (B4R2L)

Figure 1. NI SCXI-1129 Quad 2-Wire 4 x 16 Matrix Topology

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