

NI SCXI™-1175 Specifications

196 × 1 Relay Multiplexer

This document lists specifications for the NI SCXI-1175 196 × 1 multiplexer relay module. All specifications are subject to change without notice. Visit ni.com/manuals for the most current specifications.

Configurations..... 196 × 1, 1-wire multiplexer
98 × 1, 2-wire multiplexer

Refer to the [Accessories](#) section for more information about the 98 × 1, 2-wire multiplexer topology.

The following specifications are typical at 23 °C unless otherwise specified.

Input Characteristics

All input characteristics are DC, AC_{rms}, or a combination unless otherwise specified.

Maximum switching voltage

Channel-to-channel 100 V

Channel-to-ground 100 V, CAT I



Caution This module is rated for Measurement Category I and intended to carry signal voltages no greater than 100 V. This module can withstand up to 500 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 Radio-Frequency Interference* document for more information about measurement categories.

When hazardous voltages ($>42.4 V_{pk}/60 VDC$) are present on any relay terminal, safety low-voltage ($<42.4 V_{pk}/60 VDC$) 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 more information.



Caution The switching power is limited by the maximum switching current, the maximum voltage, and must not exceed 60 W, 62.5 VA.

Maximum switching power60 W, 62.5 VA (DC to 60 Hz)
(per channel)

Maximum total current1 A
(switching or carry)



Note When routing signals through the SCXI High-Voltage Analog Backplane (HVAB), the maximum total current will be 0.5 A.

DC path resistance

Initial.....<0.5 Ω

End of life $\geq 1 \Omega$

DC path resistance typically remains low for the life of the relay. At the end of relay life, the path resistance rapidly rises above 1 Ω . Load ratings apply to relays used within the specification before the end of relay life.

Differential thermal EMF<12 μV

Bandwidth (–3 dB, 50 Ω termination)

1-wire.....>20 Mhz

2-wire.....>8 Mhz

Channel-to-channel isolation (50 Ω termination)

Each relay in the NI SCXI-1175 is shared by two channels. Refer to Table 4 for a list of channel pairings.

1-wire channels in different relays

10 kHz>90 dB

100 kHz>70 dB

1 MHz.....>50 dB

1-wire channels in the same relay

10 kHz>75 dB

100 kHz>55 dB

1 MHz.....>35 dB

2-wire channels

10 kHz>95 dB

100 kHz>75 dB

1 MHz.....>55 dB

Open channel isolation (50 Ω termination)

10 kHz.....	≥ 85 dB
100 kHz.....	≥ 65 dB
1 MHz.....	≥ 48 dB

Dynamic Characteristics

Maximum scan rate..... 140 channels/s

Relay operate time

Typical.....	1 ms
Maximum.....	3.4 ms



Note Certain applications may require additional time for proper settling. For information about including additional settling time, refer to the *NI Switches Help*.

Expected relay life

Mechanical.....	1×10^8 cycles
Electrical	
10 VDC,	
100 mADC resistive.....	2.5×10^6 cycles
10 VDC, 1 ADC resistive.....	1×10^6 cycles
30 VDC, 1 ADC resistive.....	5×10^5 cycles
60 VDC, 1 ADC resistive.....	1×10^5 cycles



Note The relays used in the NI SCXI-1175 are field replaceable. Refer to the *NI Switches Help* for information about replacing a failed relay.

Trigger Characteristics

Input trigger

Sources.....	SCXI trigger lines 0–7, Rear connector
Minimum pulse width.....	150 ns

Output trigger

Destinations.....	SCXI trigger lines 0–7, Rear connector
Pulse width.....	Programmable (1 μ s to 62 μ s)

Physical Characteristics

Relay type	Electromechanical, latching
Relay contact material	Palladium-ruthenium, gold covered
I/O connector	200 POS LFH Matrix 50, receptacle
SCXI power requirement	
+5 VDC	50 mA
+18.5 VDC to +25 VDC.....	170 mA
-18.5 VDC to -25 VDC	170 mA
Dimensions (W × H × D).....	3.0 cm × 17.3 cm × 19.8 cm (1.2 in. × 6.7 in. × 7.8 in.)
Weight	755 g (1 lb 11 oz)

Environment

The NI SCXI-1175 is intended for indoor use only.

Operating temperature0 °C to 50 °C

Storage temperature-20 °C to 70 °C

Relative humidity5% to 85%, noncondensing

Pollution Degree2

Approved at altitudes up to 2,000 m.

Accessories

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

Table 1. NI Accessories for the NI SCXI-1175

Accessory	Part Number
SH200LFH-4xDB50F-S, 1 m cable assembly to 4 × 50-pin female D-SUB	779038-03
SH200LFH-BARE WIRE, 2 m cable assembly to bare wire	779038-01



Note When using either the SH200LFH-4xDB50F-S or SH200LFH-BARE WIRE cable with the NI SCXI-1175 in the 98 × 1, 2-wire topology, CH95, CH96, and CH97 will have lower RF performance than the other 95 channels because they are not in twisted pairs in the cable. To avoid using these channels, NI-SWITCH has support for a 95 × 1, 2-wire topology that does not include CH95, CH96, and CH97.

Table 2. Third-Party Accessories for the NI SCXI-1175

Accessory	Manufacturer	Part Number
Terminal pin rows (four required per module)	Molex	71715-4002
Plug connector subassembly	Molex	71719-3000
Backshell only	Jevons	JDC200B-832
Mass interconnect cable assembly, 20 in.	Virginia Panel	540105010105
Mass interconnect cable assembly, 36 in.	Virginia Panel	540105010205
Mating ITA module (one required per module)	Virginia Panel	510108131
Mating ITA PC (198 required per module)	Virginia Panel	720101101

Table 3. Third-Party Accessories for the SH200LFH-4xDB50F-S Cable

Accessory	Manufacturer	Part Number
VARIOFACE module, with screw connection and 50 position D-Subminiature pin strip	Phoenix Contact	FLK-D50 SUB/S
VARIOFACE module, with screw connection and 50 position D-Subminiature pin strip	Phoenix Contact	FLKM-D50 SUB/S
VARIOFACE module, with screw connection and 50 position D-Subminiature pin strip	Phoenix Contact	FLKMS-D50 SUB/S
VARIOFACE module, with screw connection and 50 position D-Subminiature pin strip, with LED indicators	Phoenix Contact	FLKM-D50 SUB/S/LA

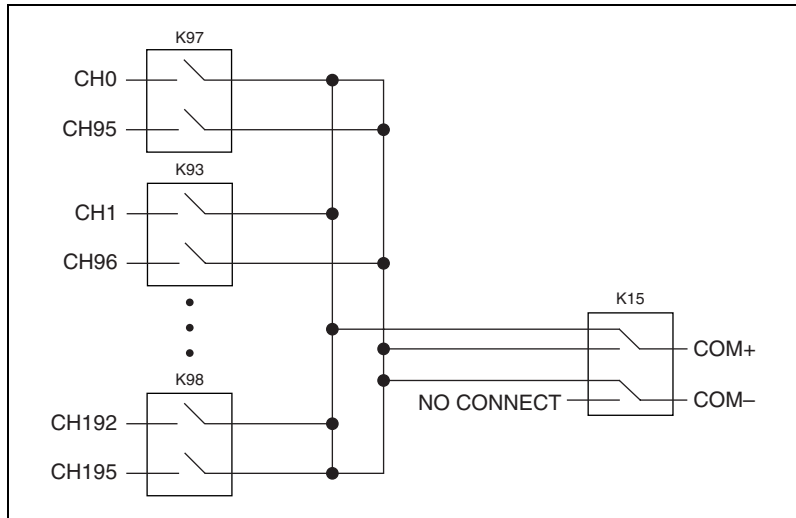


Figure 1. NI SCXI-1175 Configuration (Relay Shown in Power-On State)

Table 4. NI SCXI-1175 Channel Pairs

Channel Pair	Channel Pair	Channel Pair	Channel Pair	Channel Pair	Channel Pair
CH0, CH95	CH17, CH112	CH34, CH129	CH51, CH146	CH68, CH163	CH85, CH180
CH1, CH96	CH18, CH113	CH35, CH130	CH52, CH147	CH69, CH164	CH86, CH181
CH2, CH97	CH19, CH114	CH36, CH131	CH53, CH148	CH70, CH165	CH87, CH182
CH3, CH98	CH20, CH115	CH37, CH132	CH54, CH149	CH71, CH166	CH88, CH183
CH4, CH99	CH21, CH116	CH38, CH133	CH55, CH150	CH72, CH167	CH89, CH184
CH5, CH100	CH22, CH117	CH39, CH134	CH56, CH151	CH73, CH168	CH90, CH185
CH6, CH101	CH23, CH118	CH40, CH135	CH57, CH152	CH74, CH169	CH91, CH186
CH7, CH102	CH24, CH119	CH41, CH136	CH58, CH153	CH75, CH170	CH92, CH187
CH8, CH103	CH25, CH120	CH42, CH137	CH59, CH154	CH76, CH171	CH93, CH188
CH9, CH104	CH26, CH121	CH43, CH138	CH60, CH155	CH77, CH172	CH94, CH189
CH10, CH105	CH27, CH122	CH44, CH139	CH61, CH156	CH78, CH173	CH190, CH193
CH11, CH106	CH28, CH123	CH45, CH140	CH62, CH157	CH79, CH174	CH191, CH194
CH12, CH107	CH29, CH124	CH46, CH141	CH63, CH158	CH80, CH175	CH192, CH195
CH13, CH108	CH30, CH125	CH47, CH142	CH64, CH159	CH81, CH176	—
CH14, CH109	CH31, CH126	CH48, CH143	CH65, CH160	CH82, CH177	—
CH15, CH110	CH32, CH127	CH49, CH144	CH66, CH161	CH83, CH178	—
CH16, CH111	CH33, CH128	CH50, CH145	CH67, CH162	CH84, CH179	—

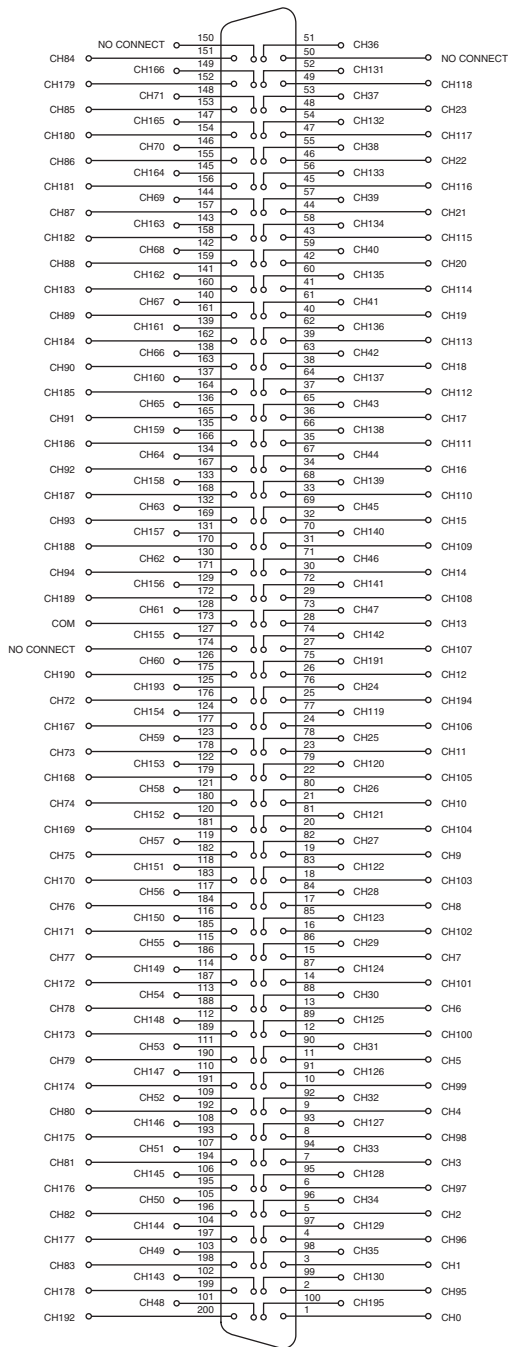


Figure 2. NI SCXI-1175 Pinout for the Default 196 × 1, 1-Wire Topology

Compliance and Certifications

Safety

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

- IEC 61010-1, EN 61010-1
- UL 61010-1
- CAN/CSA-C22.2 No. 61010-1



Note For UL and other safety certifications, refer to the product label or visit ni.com/certification, search by model number or product line, and click the appropriate link in the Certification column.

Electromagnetic Compatibility

EmissionsEN 55011 Class A at 10 m
FCC Part 15A above 1 GHz

ImmunityEN 61326:1997 + A2:2001,
Table 1

EMC/EMICE, C-Tick, and FCC Part 15
(Class A) Compliant



Note For EMC compliance, you *must* operate this device with shielded cabling. This device may experience self-recovering data interruption in the presence of electrostatic discharge events of 4 kV or greater (ref. EN 61000-4-2).

CE Compliance

This product meets the essential requirements of applicable European Directives, as amended for CE marking, as follows:

Low-Voltage Directive (safety).....73/23/EEC

Electromagnetic Compatibility
Directive (EMC)89/336/EEC



Note Refer to the Declaration of Conformity (DoC) for this product for any additional regulatory compliance information. To obtain 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.

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