

# Specifications for the NI PXI-2501

## 24-Channel FET Multiplexer/Matrix

This document lists specifications for the NI PXI-2501 multiplexer/matrix module. All specifications are subject to change without notice. Visit [ni.com/manuals](http://ni.com/manuals) for the most current specifications.

Configurations..... 48x1 1-wire multiplexer  
24x1 2-wire multiplexer  
12x1 4-wire multiplexer  
Dual 12x1 2-wire multiplexers  
Quad 6x1 2-wire multiplexers  
4x6 2-wire matrix



**Note** The 48x1 1-wire and the 24x1 2-wire multiplexer configurations can enable a unity gain amplifier to reduce FET settling time. Refer to the *NI Switches Help* for more information.

## Input Characteristics

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

Maximum switching voltage .....  $\pm 10$  V  
(channel-to-ground)

Overvoltage protection

Signals CH<0–23>, COM<0–3>

Powered on or off .....  $\pm 25$  VDC

Signals AB<0–1>

Powered on .....  $\pm 25$  VDC

Powered off.....  $\pm 15$  VDC

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FET switch on resistance	
Typical .....	50 $\Omega$
Maximum at 25 °C .....	85 $\Omega$
Maximum at 85 °C .....	100 $\Omega$
Total path resistance	
Channel-to-analog bus	
Typical.....	1650 $\Omega$
Maximum .....	1900 $\Omega$
Channel-to-COM	
Typical.....	1900 $\Omega$
Maximum .....	2150 $\Omega$
Offset voltage	
Channel amplifier (differential).....	$\leq 1.2$ mV
Cold-junction sensor	
channel amplifier .....	$\leq 60$ $\mu$ V

## RF Performance Characteristics

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Typical bandwidth (50 W source, 1 MW 25 pF load)	
-3 dB .....	400 kHz
-10 dB .....	1 MHz

## Dynamic Characteristics

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Maximum scan speed .....	250,000 cycles/s
Typical scan speed .....	25,000 cycles/s
Settling Time (+5 V to -5 V Step) 6 in. AB connector to PXI-MIO	
0.012% Accuracy	
With amplifier .....	8.5 $\mu$ s
Without amplifier .....	9.0 $\mu$ s
0.006% Accuracy	
With amplifier .....	10 $\mu$ s
Without amplifier .....	11.5 $\mu$ s
0.0015% Accuracy	
With amplifier .....	16 $\mu$ s
Without amplifier .....	18 $\mu$ s

Settling Time (+5 V to -5 V Step) 3 m cable to PXI-MIO

0.012% Accuracy

With amplifier..... 21  $\mu$ s

Without amplifier ..... 45  $\mu$ s

0.006% Accuracy

With amplifier..... 30  $\mu$ s

Without amplifier ..... 60  $\mu$ s

0.0015% Accuracy

With amplifier..... 80  $\mu$ s

Without amplifier ..... 160  $\mu$ s



**Note** Settling time is greatly affected by the external wiring to the switch card. You can improve the settling time by minimizing the wiring from the analog bus connection to the measurement device.

## Trigger Characteristics

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Input trigger

Sources..... PXI trigger lines 0-7 and STAR,  
Front panel

Minimum pulse width

PXI trigger lines and STAR..... 70 ns

Front panel..... 500 ns

Output trigger

Destinations ..... PXI trigger lines 0-7,  
Front panel

Pulse width..... 1  $\mu$ s

## Physical Characteristics

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Relay type ..... FET switch

I/O connector..... 68-pin male SCSI

Dimensions (W  $\times$  H  $\times$  D)..... 3 cm  $\times$  10 cm  $\times$  16 cm  
(0.8 in.  $\times$  3.9 in.  $\times$  6.3 in.)

Weight..... 175 g  
(6.5 oz)

## Environment

Operating temperature .....0 °C to 50 °C

Storage temperature .....–20 °C to 70 °C

Relative humidity .....5% to 85% noncondensing

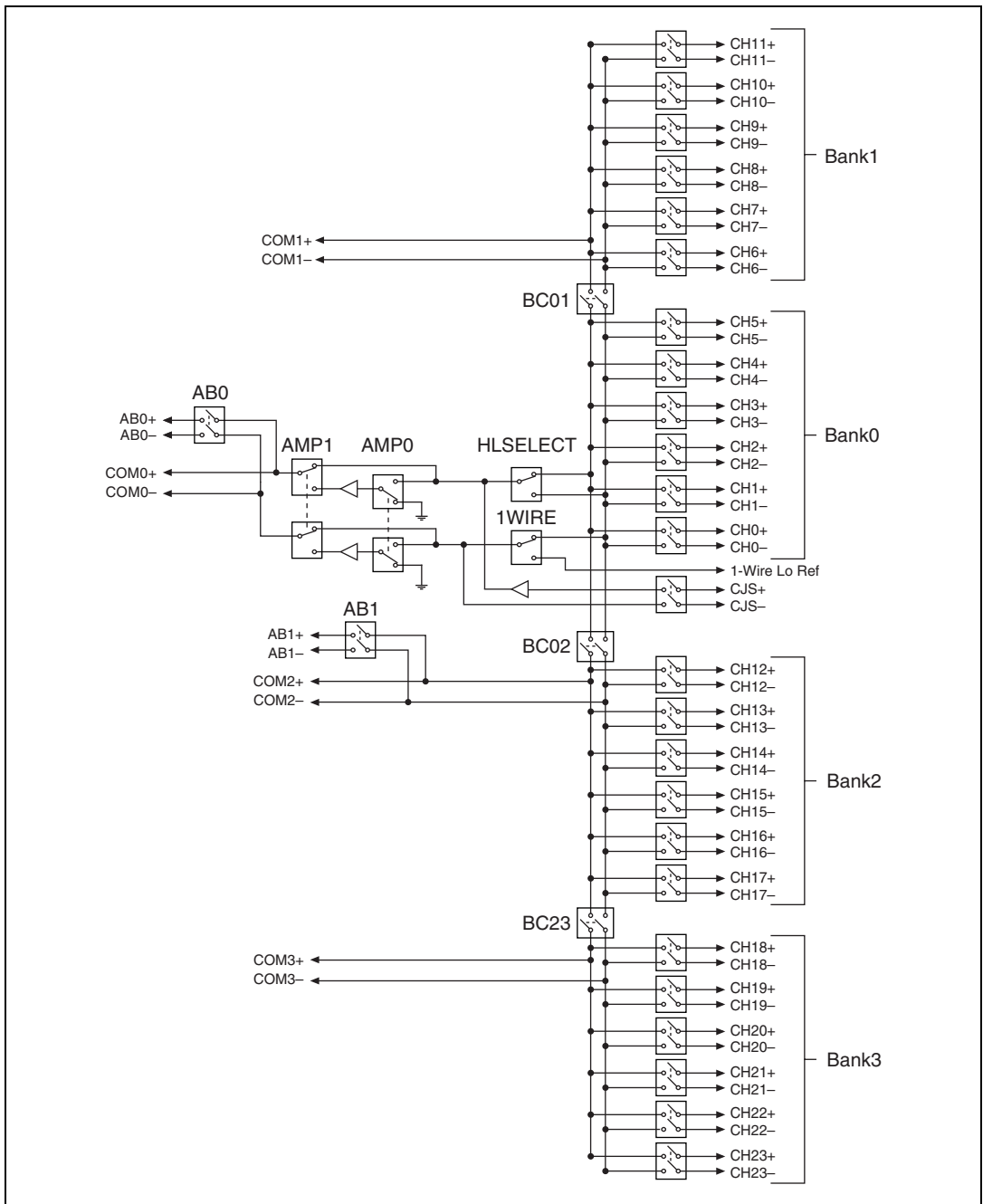
Pollution Degree .....2

## Accessories

Visit [ni.com](http://ni.com) for more information about the following accessories.

**Table 1.** Accessories Available for the NI PXI-2501

<b>Accessory</b>	<b>Part Number</b>
NI TB-2605 terminal block (48x1 1-wire multiplexer) (24x1 2-wire multiplexer) (12x1 4-wire multiplexer)	777878-01
NI TB-2606 terminal block (4x6 2-wire matrix)	777879-01
TBX-68S terminal block with cold-junction sensor	777716-01
CB-68LB screw terminal block	777145-01
1 m SH68-68S shielded cable	185262-01
2 m SH68-68S shielded cable	185262-02
5 m SH68-68S shielded cable	185262-05



**Figure 1.** NI PXI-2501

# Compliance and Certifications

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## 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 3111-1, UL 61010B-1
- CAN/CSA C22.2 No. 1010.1



**Note** For UL and other safety certifications, refer to the product label or to [ni.com](http://ni.com).

## Electromagnetic Compatibility

Emissions .....	EN 55011 Class A at 10 meters. FCC Part 15A above 1 GHz
Immunity .....	EN 61326:1997 + A2:2001, Table 1
EMC/EMI .....	CE, C-Tick and FCC Part 15 (Class A) Compliant



**Note** For EMC compliance, you *must* operate this device with shielded cabling.

## 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, click **Declarations of Conformity Information** at [ni.com/hardref.nsf/](http://ni.com/hardref.nsf/).