

# High-Current General-Purpose Relays

High-Current General-Purpose Relays

## NI PXI-2566, NI SCXI-1166

- Independent SPDT relays
  - 16 channels in PXI
  - 32 channels in SCXI
- Nonlatching relays
- Switching capacity
  - 2 A switching, 5 A carry
  - 150 VDC/125 VAC
- 32,000-step scan list for deterministic scanning
- Fully software programmable
- 115 operations/s

### Operating Systems

- Windows 2000/NT/XP

### Recommended Software

- LabVIEW
- LabVIEW Real-Time Module
- LabWindows/CVI
- Measurement Studio
- NI Switch Executive

### Other Compatible Software

- Visual Basic
- C/C++

### Driver Software (included)

- NI-SWITCH

### Compliance

- CE

NEW



## Overview and Applications

The National Instruments PXI-2566 and SCXI-1166 are general purpose 16 and 32-channel switch modules, respectively. These switch modules have independent SPDT (Form C) nonlatching electromechanical relays with very low on-resistance and low thermal offsets. They can switch up to 2 A at 30 VAC/30 VDC and can carry 5 A per channel. Hence, these switch modules are ideal for switching and routing high-current signals. Each relay channel has a normally closed (NC), normally open (NO), and common (COM) terminal.

## Extended Features and Specifications

National Instruments switch modules are built with a number of core features that are covered in detail in the Switch Overview section.

*For additional information about the PXI-2566 and SCXI-1166, including software, certifications and compliance, relay control, etc., please see page 20. For detailed specifications, please see page 506.*

## Ordering Information

NI PXI-2566 .....	778572-66
NI SCXI-1166 .....	776572-66
Includes switch module and NI SWITCH driver software.	

### Accessories

SCXI-1366 terminal block .....	777687-66
TB-2666 PXI terminal block .....	778717-66
Connector and back-shell kit (safety-keyed) .....	778720-01
PCI-4021 switch controller .....	778277-01
PXI-4021 switch controller .....	778278-01

## BUY ONLINE!

Visit [ni.com/products](http://ni.com/products) and enter pxi2566 and/or scxi1166.

Switches

# Switch Specifications

## Specifications (continued)

### Physical

Dimensions ..... 17.2 by 20.3 by 3.0 cm (6.8 by 8.0 by 1.2 in.)

### Environment

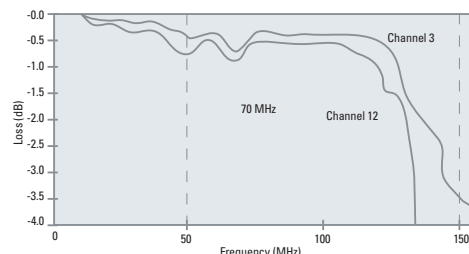
Operating temperature ..... 0 to 50 °C  
Storage temperature ..... -20 to 70 °C  
Relative humidity ..... 5 to 90% noncondensing

<sup>1</sup>Transfer rate depends largely on the computer and software. These tests were made using an AT-MIO-16E-2 installed in a 450 MHz Pentium III computer running LabVIEW and Windows NT.

## PXI-2566, SCXI-1166

### Input Characteristics

Maximum switching voltage ..... 150 VDC, 125 VAC, CAT I  
Channel-to-channel ..... 150 VDC, 125 VAC, CAT I  
Channel-to-ground ..... 150 VDC, 125 VAC, CAT I  
Simultaneous channels at maximum switching current ( $\leq 25$  °C)  
PXI-2566 ..... 16  
SCXI-1166 ..... 32  
Maximum carry current ..... 5 ADC, 5 AAC (per channel)  
Simultaneous channels at maximum carry current ( $\leq 25$  °C)  
PXI-2566 ..... 9  
SCXI-1166 ..... 8  
Maximum switching power ..... 60 W, 62.5 VA (DC to 60 Hz) (per channel)  
DC path resistance  
Initial .....  $<1.0 \Omega$   
End of life .....  $\geq 1.0 \Omega$   
Thermal EMF .....  $<9 \mu\text{V}$  (typical at 23 °C)  
Minimum switching capacity ..... 10  $\mu\text{A}$  at 10 mVDC  
Bandwidth (-3 dB) .....  $\geq 70$  MHz



### Crosstalk (Typical at 23 °C)

Channel-to-channel  
10 kHz .....  $\leq -75$  dB  
100 kHz .....  $\leq -65$  dB  
1 MHz .....  $\leq -45$  dB  
10 MHz .....  $\leq -25$  dB

### Isolation (Typical at 23 °C)

Open channel  
100 kHz .....  $\geq 65$  dB  
1 MHz .....  $\geq 45$  dB  
10 MHz .....  $\geq 25$  dB

### Dynamic Characteristics

Maximum speed ..... 115 operations/s  
Relay operate time  
Typical ..... 2 ms  
Maximum ..... 4.4 ms  
Expected relay life  
Mechanical .....  $10^8$  operations  
Electrical  
30 VDC, 1 A resistive .....  $5 \times 10^5$  operations  
30 VDC, 2 A resistive .....  $10^5$  operations  
125 VAC, 0.2 A resistive .....  $3 \times 10^5$  operations  
125 VAC, 0.5 A resistive .....  $10^5$  operations

### Physical Characteristics

Relay type ..... Electromechanical, nonlatching  
Relay contact material ..... Gold clad silver alloy  
I/O connectors ..... Two 62-pin D-Sub  
Dimensions  
PXI-2566 ..... 10 by 16 cm (3.9 by 6.3 in.)  
SCXI-1166 ..... 3.0 by 17.3 by 19.6 cm (1.2 by 6.7 by 7.6 in.)

### Environment

Operating temperature ..... 0 to 50 °C  
Storage temperature ..... -20 to 70 °C  
Relative humidity ..... 5 to 85% noncondensing  
Pollution degree ..... 2  
Approved at altitudes up to 2,000 m

### 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

### 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

## SCXI-1160, SCXI-1161

### Input Characteristics

Number of relays  
SCXI-1160 ..... 16  
SCXI-1161 ..... 8  
Relay type  
SCXI-1160 ..... SPDT (Form C), latching  
SCXI-1161 ..... SPDT (Form C), nonlatching  
Maximum input voltage  
Channel-to-channel ..... 250 VDC, 250  $V_{\text{rms}}$   
Channel-to-ground ..... 250 VDC, 250  $V_{\text{rms}}$   
Maximum switching voltage  
SCXI-1160 ..... 250 VDC, 250  $V_{\text{rms}}$   
SCXI-1161 ..... 250 VDC, 250  $V_{\text{rms}}$   
Maximum switching capacity  
SCXI-1160 ..... 2 A at 250  $V_{\text{rms}}$ , 0.6 A at 48 VDC, 2 A at 30 VDC  
SCXI-1161 ..... 8 A at 125  $V_{\text{rms}}$ , 6 A at 250  $V_{\text{rms}}$ , 5 A at 30 VDC  
Minimum current load  
SCXI-1160 ..... 100  $\mu\text{A}$   
SCXI-1161 ..... 100 mA  
Channel on resistance  
SCXI-1160 (includes terminal block) ..... 75  $\text{m}\Omega$  (initially)  
SCXI-1161 ..... 175  $\text{m}\Omega$  (initially)  
Contact material  
SCXI-1160 ..... Gold-clad silver alloy  
SCXI-1161 ..... Silver alloy  
Thermal offset  
SCXI-1160 ..... 3  $\mu\text{V}$

### Dynamic Characteristics

Relay operate time  
SCXI-1160 ..... 10 ms  
SCXI-1161 ..... 15 ms  
Relay release time  
SCXI-1160 ..... 10 ms  
SCXI-1161 ..... 15 ms  
Maximum switching rate  
SCXI-1160 ..... 50 operations/s  
SCXI-1161 ..... 3 operations/s