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Find the *National Instruments SCXI-1581* at our website: *Click HERE*

SCXI 32-Channel Current Excitation Module

NI SCXI-1581

- Use with SCXI-1102 module for high-channel-count RTD and thermistor measurements
- 32 channels of 100 µA current excitation sources
- ±0.05% accuracy per channel current source
- ±5 ppm/°C maximum temperature drift
- Screw terminal, BNC connector, and solder pin connectivity options
- NI-DAQ driver simplifies configuration and measurement

Operating Systems
- Windows 2000/NT/XP

Recommended Software
- LabVIEW
- LabWindows/CVI
- Measurement Studio
- VI Logger

Driver Software
- NI-DAQ 7



Overview

The National Instruments SCXI-1581 provides 32 channels of 100 µA current excitation. The high accuracy and stability of these current sources make them especially well suited for measuring resistance with a high degree of accuracy. The module is ideal in any application that requires a 100 µA fixed current excitation, such as RTDs and thermistors. You can combine the NI SCXI-1581 with the SCXI-1102 to create a high-channel-count RTD measurement system.

Description

The 32 current sources on the SCXI-1581 are activated whenever the SCXI chassis is powered-on. The current sources on the SCXI-1581 are designed for ±0.05% accuracy of the specified value, with a maximum ±5 ppm/°C temperature drift.

Terminal Block	Part Number	Type	Cable	Special Functions	Info Code*	Page
SCXI-1300	777687-00	Screw terminals Front-mount	–	–	scxi1300	328
BNC-2095	777508-01	BNC connectors Rack-mount	–	Prewired ground referencing	bnc2095	330
TBX-96	777264-01	Screw terminals DIN-rail mount	SH96-96 or R96-96	3 terminals per channel	tbx96	331
SCXI-1310	777687-10	Solder pins Front-mount	–	–	scxi1310	328

*For more information about any of these products, please visit ***ni.com/info*** and enter the info code provided.

Table 1. Terminal Block Options for SCXI-1581

Signal Connection

Signals from each channel of the SCXI-1581 connect to screw terminals located in the SCXI-1300 terminal block. The SCXI-1300 plugs directly into the front of the module. Alternatively, you can use the TBX-96, a DIN-rail mountable terminal block that you connect to the SCXI-1581 with the SH96-96 cable. A general-purpose 96-pin connector and shell, the SCXI-1310, is available as a low-cost alternative for custom cabling. Finally, you can select the BNC-2095, a rack-mounted accessory, for BNC applications.

Ordering Information

NI SCXI-1581 777966-81

For information on extended warranty and value-added services, see page 20.

BUY ONLINE!

Visit ni.com/info and enter scxi1581.

See page 276 to configure your complete SCXI system.

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SCXI 32-Channel Isolated Analog Output and Current Excitation Specifications

Specifications

These specifications are typical for 25 °C unless otherwise noted.

SCXI-1124

Analog Output – Output Characteristics

Number of channels ..... 6 voltage or current
Resolution ..... 12 bits, 1 in 4,096
Common-mode isolation ..... 250 V_{rms} between channels and channel to earth ground
Maximum update rate[1]
  Single channel ..... 555 S/s
  All six channels ..... 125 S/s (per channel rate)

Transfer Characteristics

Relative accuracy (INL) ..... ±0.5 LSB maximum
Absolute accuracy
  Voltage outputs ..... ±0.05% FSR maximum
  Current output ..... ±0.1% FSR maximum
DNL ..... ±1 LSB maximum
Monotonicity ..... Guaranteed over temperature

Voltage Output

Ranges ..... 0-1 V, 0-5 V, 0-10 V, ±1 V, ±5 V, ±10 V, software selectable
Output coupling ..... DC
Output impedance ..... 0.1 maximum
Current drive ..... ±5 mA maximum
Load impedance ..... 10,000 pf maximum
Protection ..... Short-circuit to ground
Power-on state ..... -10 mV

Current Output

Range ..... 0 to 20 mA
Type, (external power not required) ..... Current sink with internal loop supply,
Output impedance ..... 1 G minimum
Current loop supply
  Internal ..... 15 to 21 V[2]
  External ..... 3 to 42 V[2]
Protection ..... Short-circuit and open-circuit
Power-on state ..... 0 µA

Dynamic Characteristics

	Output Range					
	0 to 1 V	0 to 5 V	0 to 10 V	±1 V	±5 V	±10 V
Settling time[3]	270 µs	115 µs	100 µs	135 µs	65 µs	85 µs
Slew rate	0.015 V/µs	0.075 V/µs	0.15 V/µs	0.03 V/µs	0.15 V/µs	0.15 V/µs

Slew rate (current outputs) ..... 0.3 mA/µs
Noise
  Voltage outputs ..... 1 mV°, 0 to 20 MHz
  Current outputs ..... 10 μA_{rms}, 0 to 20 MHz

Stability

Offset temperature coefficient
  Unipolar range ..... ±1 ppm/°C
  Bipolar range ..... ±6 ppm/°C
Gain temperature coefficient ..... ±20 ppm/°C

[1]Update rate depends largely on the computer and software. These tests were made using a PCI-6032E installed in a 500 MHz PIII computer running NI LabVIEW and Windows NT; Not for Waveform Generation.
[2]Refer to the SCXI-1124 User Manual for more information.
[3]Setting time is to ±0.012% (±0.5 LSB) accuracy for a full scale step.

SCXI-1581

Excitation

Number of channels ..... 32 single-ended outputs
Current output ..... 100 µA
Accuracy ..... ±0.05%
Temperature drift ..... ±5 ppm/°C
Maximum resistive load ..... 100 k
Overvoltage protection ..... ±40 V
Power-on state ..... 100 µA (nonprogrammble)

Certification and Compliance

SCXI-1124 ..... 250 V, Cat II working voltage
European Compliance CE
EMC ..... EN 61326 Group I Class A, 10 m,
Table Immunity
  Safety ..... EN 61010-1
North American Compliance
EMC ..... FCC Part 15 Class A using CISPR ICSES003 via harmonization to FCC Part 15
Safety ..... UL Listed to UL 3111-1
CAN/CSA C22.2 No. 1010.1
Australian and New Zealand Compliance
EMC ..... AS/NZS 2064.1/2 (CISPR-11)

For a definition of specific terms, please visit *ni.com/glossary*

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