

PXI Chassis with Integrated SCXI Signal Conditioning

NI PXI-1010, NI PXI-1052

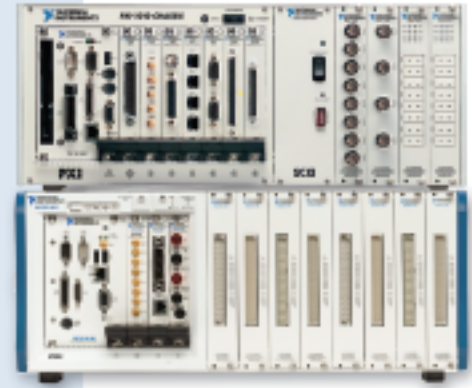
- Ideal for high-channel-count data acquisition applications
- Built-in SCXI slots offer internal cabling to PXI backplane
- HALT tested for increased reliability

PXI-1010

- 8 slots for 3U PXI modules
- 4 slots for SCXI modules
- Handles multiplexed and parallel operating modes for SCXI

PXI-1052

- 4 slots for 3U PXI modules
- 8 slots for SCXI modules
- Latest chassis technology
 - AUTO/HIGH fan-speed selector to optimize cooling and acoustic emissions
- Quieter operation, as low as 42 dBA
- Extended temperature range to 55 °C
- Multiplexed operating mode for SCXI
- Built-in SCXI high-voltage analog backplane



Model	Slots		SCXI Operation Mode	High-Voltage Analog Backplane
	PXI	SCXI		
PXI-1010	8	4	Multiplexed and Parallel	–
PXI-1052	4	8	Multiplexed	✓

Table 1. PXI-1010 and PXI-1052

Overview

National Instruments offers PXI chassis with integrated signal conditioning (SCXI) so you can have the benefits of SCXI and the PXI platform in a single PXI chassis. PXI offers a variety of modules such as multifunction I/O, digital I/O, switching, and modular instruments. You can expand the functionality of your system with SCXI modules for multiplexing, signal conditioning, filtering, isolation, amplification, switching, and more. The NI PXI and SCXI combination chassis offer a complete solution for a wide range of test and measurement applications. Visit the PXI/SCXI advisor at ni.com/pxiadvisor to view a complete list of SCXI modules and configure a PXI and SCXI system.

Acoustic Emissions

The NI PXI-1010 chassis combines eight PXI slots with four SCXI slots, while the PXI-1052 provides four PXI slots and eight SCXI slots. The PXI-1052 uses the latest chassis technology from NI and implements fan-speed control of the power supply and module fans to reduce acoustic emissions.

PXI-1052 Acoustic Emissions

Sound Pressure Level¹ (measured at operator position)	dBa
Auto Fan (25 °C ambient)	41.6
High Fan	51.5
Sound Power¹ (measured at operator position)	dBa
Auto Fan (25 °C ambient)	51.9
High Fan	60.0

¹Tested in accordance with ISO 7779

Table 2. PXI-1052 Acoustic Emissions

The PXI-1052 also includes an AUTO/HIGH fan-speed selector switch. When set to AUTO, the PXI-1052 optimizes cooling and acoustic emissions based on air intake temperature.

SCXI Operation Modes

NI PXI chassis with integrated SCXI provide a built-in digital and analog bus between the rightmost PXI slot and the SCXI subsystem so a DAQ or DMM module can control the SCXI subsystem in multiplexed mode without external cabling. With the PXI-1010, you can connect additional PXI DAQ modules to SCXI modules in parallel mode (requires additional cabling). In multiplexed mode, one DAQ module can control the entire SCXI subsystem and all measurements are multiplexed back to this one device. Users can create a cost-effective high-channel-count system. SCXI handles many types of sensor measurements, including voltages, resistances, thermocouples, strain gauges, accelerometers, RTDs, and LVDTs.

Software for Configuring your System

National Instruments is the leading supplier of integrated hardware and software for Test and Measurement applications. With software such as Measurement and Automation Explorer (MAX), you can easily configure your PXI/SCXI system. Using LabVIEW and NI-DAQ, you can quickly configure your measurement and begin acquiring signals. MAX automatically detects which PXI and SCXI modules are installed in your system so you can configure your measurements. In Figure 1, MAX is used to configure strain gauge settings.

Automatic Code Generation

With LabVIEW and NI-DAQ 7.0, you can use NI-DAQ Express VIs to configure your measurement type, as shown in Figure 1, and then automatically generate the code necessary to acquire that measurement. With the flexibility of PXI, the benefits of SCXI, and easy-to-use software such as MAX and LabVIEW 7.0, you can take full advantage of NI's flexible hardware and software, to develop robust applications that will meet your measurement needs.

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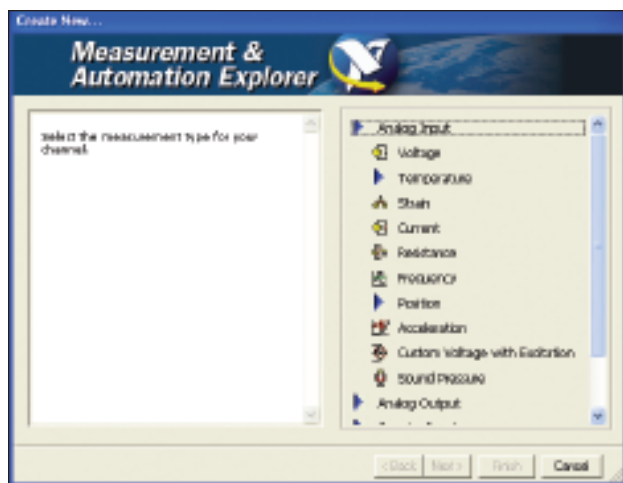


Figure 1. Using MAX to Select Your Measurement Type

Installation

The PXI-1010 and PXI-1052 have differentiated designs that make them ideally suited for different environments. For benchtop use, the PXI-1052 has supporting feet that easily tilt up. You can also set the feet to level the chassis with the bench-top, or completely remove them. The PXI-1010 comes with removable rubber feet for benchtop applications. Both chassis offer mounting points located on each side of the chassis, to which you can attach the optional rack-mount kits. You can also use them to recess the PXI-1010 or PXI-1052 chassis in your instrument cabinet. The PXI-1052 is well suited for portable applications, with a built-in carrying handle. It also has the SCXI high-voltage analog back plane (HVAB) built in. All of these configurations can be assembled or disassembled without accessing the interior of the chassis.

Ordering Information

Step 1. Select your chassis.

NI PXI-1010 with power cord	
U.S. 120 AC	777570-01
Swiss 220 AC	777570-02
Australian 240 VAC	777570-03
Universal Euro 240 VAC	777570-04
North American 240 VAC	777570-05
United Kingdom 240 VAC	777570-06
Japan 100 VAC	777570-07
NI-PXI-1052	778693-01

Step 2. For the PXI-1052 select one or more power cords.

U.S. 120 AC	763000-01
Japan 100 VAC	763000-01
United Kingdom 240 VAC	763064-01
Swiss 220 VAC	763065-01
Australian 240 VAC	763066-01
Universal Euro 240 VAC	763067-01
North American 240 VAC	763068-01

Step 3. Select additional accessories.

SCXI-1370 rack mount kit for the SCXI-1001	
or PXI-1010 Chassis	776577-70
SCXI-1360 front filler panel	776576-60
SCXI-1361 rear filler panel	776576-61

SCXI-1374 Handle Kit for PXI-1010 ¹	776577-74
NI PXI-1052 Front rack-mount kit (for 19 in. rack)	778931-01
NI PXI-1052 Rear rack-mount kit (for 19 in. rack)	778931-02

EMC filler panels (6 single-slot)	778700-01
Filler panels (3 double-slot and 3 single-slot) ²	778679-01
Slot blockers (2 single-slot) ³	778678-01

¹Every PXI-1052 comes standard with handle and feet kit.

²Every PXI-1052 chassis comes with 2 single-slot filler panels.

³Slot blockers are optional for improved thermal performance of your NI PXI-1052 system.

Please refer to National Instruments KnowledgeBase entry on slot blocker usage criteria on ni.com/support for additional information on this optional system feature.

Step 4. Select system setup and installation services.

If you are ordering this chassis as part of a system, select NI Factory Installation Services to have your hardware/software installed and receive your new PXI system ready to use right out of the box.

NI Factory Installation Services – PXI Systems	960596-01
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BUY ONLINE!

Visit ni.com/info and enter *pxi1010* or *pxi1052*.

PXI Chassis with Integrated SCXI Signal Conditioning

Specifications – PXI-1010

Complies with PXI specification
Accepts modules compliant with CompactPCI, 2.0 PICMG specification

Power Supply

Input voltage range	100 to 240 VAC
Operating voltage range	90 to 264 VAC
Input frequency	50/60 Hz
Operating frequency range	47 to 63 Hz
Efficiency	70% typical
Output Power	
Maximum usable power	300 W
DC Output – Available Power Per Rail	

Voltage (V)	I _{MP} (steady-state current) (A)
+3.3	30
+5	20
+12	4
-12	2

Maximum Ripple and Noise

Voltage (V)	Maximum Ripple and Noise (mV _{pp})
+3.3	50
+12	120
+5	50
-12	120

Cooling

Fans	2 @ 69 cfm, 1 @ 19 cfm, with filters
Total capacity	300 W
Module cooling intake	Bottom rear of chassis
Module cooling exhaust	Top sides of chassis
Power supply cooling system	Forced air circulation from integrated fan
Power supply cooling intake	Rear of chassis
Power supply cooling exhaust	Sides of chassis

Physical

Number of PXI slots	8 (1 controller, 7 peripheral)
Number of controller expansion slots	3 (left of controller)
Number of SCXI slots	4
Dimensions	41.3 by 43.8 by 16.2 cm [16.2 by 17.3 by 7.0 in.]
Height for rack-mount installation	4U
Weight	13 kg [29 lb]

Mean Time Between

Failures (MTBF)	110,000 hours
(Predictions performed in accordance with Belcore methods)	

Operating Environment

Ambient temperature	0 to 50 °C (meets IEC 60068-2-1 and IEC 60068-2-2.)
Relative humidity	10 to 90%, noncondensing (meets IEC 60068-2-56.)

Storage Environment

Ambient temperature	-20 to 70 °C (meets IEC 60068-2-1 and IEC 60068-2-2.)
Relative humidity	5 to 95%, noncondensing (meets IEC 60068-2-56.)

Shock and Vibration

Functional shock	30 g peak, half-sine, 11 ms pulse (meets IEC 60068-2-27. Test profile developed in accordance with MIL-T-28800E.)
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Random vibration

Operating	5 to 500 Hz, 0.3 g _{rms}
Nonoperating	5 to 500 Hz, 2.4 g _{rms} (meets IEC 60068-2-64. nonoperating test profile developed in accordance with MIL-T-28800E and MIL-STD-810E Method 514.)

Safety and EMC/EMI Compliance

Safety	EN 61010-1:1993
EMC/EMI	CE, C-Tick, and FCC Part 15
Electrical Emissions	EN 55011 Class A at 10 meters, and FCC Part 15 Class A above 1 GHz
Electrical Immunity	EN 61326:1998, Table 1

PXI Chassis with Integrated SCXI Signal Conditioning

Specifications – PXI-1052

Complies with PXI Specification, Rev 2.1
Complies with CompactPCI, PICMG 2.0 R3.0

Power Supply

Input voltage range	100 to 240 VAC
Operating voltage range	90 to 264 VAC
Input frequency	50/60 Hz
Maximum usable Power (PXI)	290 W
Maximum usable Power (SCXI)	160 W

DC Output – Available Power

Voltage (V)	I _{MP} (steady-state current) (A)	
	0 to 50 °C	50 to 55 °C
+3.3	12	12
+5	17	17
+12	2	2
-12	1	1
+20	1.36	1.16
-20	1.36	1.16

Maximum ripple and noise (20 MHz bandwidth)

Voltage (V)	Maximum Ripple and Noise (mV _{pp})
+3.3	50
+5	50
+12	120
-12	120
+20	200
-20	200

Over-current protection	All outputs protected from short circuit and overload
Over-voltage protection	115 to 140% above nominal output voltage

PXI Subsystem Cooling

Fans	1 @ 115 cfm, with filters
Per slot cooling capacity	25 W with fan speed set to HIGH
Slot airflow direction	P1 to P2, bottom of module to top of module

Module Cooling

System	Forced air circulation (positive pressurization) fan with Auto/High fan speed selector
Exhaust	Along both sides and top of chassis

Power supply cooling

System	Forced air circulation through integrated fan
Intake	Right side of chassis
Exhaust	Left side of chassis

Sound Pressure Level (at operator position)

(Tested in accordance with ISO 7779)

Auto Fan (at 25 °C ambient temperature)	41.6 dBA
High Fan	51.5 dBA

Sound Power

(Tested in accordance with ISO 7779)

Auto Fan (at 25 °C ambient temperature)	51.9 dBA
High Fan	60.0 dBA

Environment

Altitude	2,000 m
Installation Category	II
Pollution Degree	2

(Indoor use only)

Operating Environment

Ambient temperature	0 to 55 °C (tested in accordance with IEC-60068-2-1 and IEC-60068-2-2.)
Relative humidity	10% to 90% (tested in accordance with IEC-60068-2-56.)

Storage Environment

Ambient temperature	-20 to 70 °C (tested in accordance with IEC-60068-2-1 and IEC-60068-2-2.)
Relative humidity	5% to 95% noncondensing (tested in accordance with IEC-60068-2-56.)

10 MHz System Reference Clock (PXI CLK10)

Maximum clock skew between slots	250 ps
Built-in 10 MHz clock	
Accuracy	±25 ppm (guaranteed over the operating temperature range)
Maximum jitter	5 ps _{rms} in 10 Hz to 1 MHz range
External clock sources	
Connectors	BNC on rear of chassis (ground referenced) or Slot 2 J2
Input frequency	10 MHz ±100 ppm or better
Input amplitude	
Rear connector	200 mV _{pp} to 5 V _{pp} , 10 MHz squarewave or sinewave
Slot 2	5 or 3.3 V, 10 MHz TTL signal
Input impedance	50 ± 5 Ω (rear connector)
Maximum jitter introduced by backplane circuitry	1 ps _{rms} in 10 Hz to 1 MHz range

Shock and Vibration

Functional shock	30 g peak, half-sine, 11 ms pulse (Tested in accordance with IEC 60068-2-27. Test profile developed in accordance with MIL-T-28800E.)
Random Vibration	
Operating	5 to 500 Hz, 0.31 g _{rms}
Nonoperating	5 to 500 Hz, 2.46 g _{rms} (Tested in accordance with IEC 60068-2-64)

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

Electromagnetic Compatibility

Emissions	EN 55011 Class A at 10 m. FCC Part 15A above 1 GHz
Immunity	EN 61326-1:1997 + A1:1998, Table 1

CE, C-Tick and FCC Part 15 (Class A) Compliant

NOTE: For EMC compliance, operate this device with shielded cabling.

CE Compliance

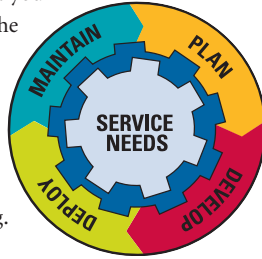
This product meets the essential requirements of applicable European Directives, as amended for CE Marking, as follows:

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/

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Hardware Services

NI Factory Installation Services

NI Factory Installation Services (FIS) is the fastest and easiest way to use your PXI or PXI/SCXI™ combination systems right out of the box. Trained NI technicians install the software and hardware and configure the system to your specifications. NI extends the standard warranty by one year on hardware components (controllers, chassis, modules) purchased with FIS. To use FIS, simply configure your system online with ni.com/pxiadvisor.

Calibration Services

NI recognizes the need to maintain properly calibrated devices for high-accuracy measurements. We provide manual calibration procedures, services to recalibrate your products, and automated calibration software specifically designed for use by metrology laboratories. Visit ni.com/calibration.

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