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Find the *National Instruments PCI-6601* at our website: *Click HERE*

NI 660*x* Specifications

This document lists the specifications for the NI 660*x* family of devices. Specifications listed below are typical at 25 °C unless otherwise noted. Refer to the *NI 660x User Manual* for more information about NI 660*x* devices.

The NI 660*x* family includes the following devices:

- NI PCI-6601
- NI PCI-6602
- NI PXI-6602
- NI PXI-6608

Power

Power requirement ..... 5 VDC (±5%)
- NI 6601 ..... 0.4 A to 0.75 A
- NI 6602 ..... 0.5 A to 1.5 A
- NI 6608 ..... 1 A to 2.5 A (with 1 m shielded cable as load) varies with application and OCXO warm-up period, does not include I/O power supplied through I/O connector

Available at I/O connector 4.65 to 5.25 VDC, 1 A (maximum)

I/O Characteristics

Compatibility ..... TTL/CMOS

Power-on state ..... Input (high-Z) with weak pull-downs

Pull-down current ..... 10 µA min to 200 µA max

Input impedance ..... 25 kΩ to 500 kΩ

Output impedance ..... 75 kΩ (56 kΩ from an onboard resistor and 19 Ω from the TIO ASIC)

Hysteresis ..... 300 mV Schmitt triggers

Digital logic levels on P0.<0..7>

Level	Min	Max
Input low voltage	–0.3 V	0.8 V
Input high voltage	2.0 V	Supply +0.3 V
Input low current (V_{in} = 0 V)	—	–10 µA
Input high current (V_{in} = 5 V) –0.3 V	—	200 µA
Output low voltage (I_{OL} = 24 mA	—	0.4 V
Output high voltage (I_{OH} = –13 mA)	2.4 V	—

Digital I/O

Number of channels 32

Data transfer ..... Static

Handshaking ..... None

Timing I/O

Number of channels
- NI 6601 ..... 4 up/down counter/timers
- NI 6602 ..... 8 up/down counter/timers
- NI 6608 ..... 8 up/down counter/timers

Resolution ..... 32 bits

Maximum count 4,294,967,295

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Rollover times

100 kHz timebase.....11.93 h

20 MHz timebase .....214.74 s

80 MHz timebase .....53.69 s

Prescalers.....X8 or X2 prescaler for each counter

Baseclocks available

NI 6601 .....100 kHz and 20 MHz

NI 6602 .....100 kHz, 20 MHz, and 80 MHz

NI 6608 .....100 kHz, 20 MHz, and 80 MHz

Baseclock accuracy

Device	Baseclock Accuracy
PCI-6601	100 ppm (±0.01%) over temperature
PCI-6602	100 ppm (±0.01%) over temperature

Device	Baseclock Accuracy	
	PXI Chassis	cPCI Chassis
PXI-6602	Takes on Baseclock Accuracy of PXI CLK 10 signal	200 ppm (±0.02%) over temperature
PXI-6608	Takes on Baseclock Accuracy of PXI CLK 10 signal[1]	200 ppm (±0.02%) over temperature

[1] 75 ppb in Slot 2. For more information, refer to the *OCXO (NI 6608 Only)* section of this document. For more information about the OCXO 10 MHz clock, refer to the *NI 660x User Manual*, which is available for download at `ni.com/manuals`.

Maximum source frequency

NI 6601

Without prescaling .....20 MHz

With prescaling.....60 MHz

NI 6602

Without prescaling .....80 MHz

With prescaling.....125 MHz

NI 6608

Without prescaling..... 80 MHz

With prescaling..... 125 MHz

Minimum edge separation (for two edge separation measurement)..... s2/maximum timebase

Data transfers

NI 6601..... DMA (1 channel), interrupts

NI 6602..... DMA (up to 3 channels), interrupts

NI 6608..... DMA (up to 3 channels), interrupts

DMA modes..... Scatter-gather

OCXO (NI 6608 Only)

Frequency..... 10.000000 MHz

Warm-up time..... 5 minutes (to within 20 ppb of operating frequency, power-off duration < 1 hour)

Frequency stability versus supply voltage change (±5%) ..... ±5 ppb

Temperature stability (0 to 50 °C) ..... ±5 ppb, reference to 25 °C

Drift in frequency..... ±0.45 ppb/day; ±45 ppb/year

Allowed frequency adjustment (to correct for drift in frequency).... ±500 ppb, typical

RTSI Trigger Lines (PCI Only)

Trigger lines <0..6> 7

RTSI clock 1

Minimum pulse width for Z index on position measurement

NI 6601..... 200 ns

NI 6602..... 50 ns

PXI Trigger Bus (PXI Only)

Trigger lines <0..5> 6

Star trigger 1

Clock..... 1

Bus Interface

All devices ..... Master, slave

Physical

Dimensions

PCI ..... 17.5 cm × 9.9 cm (6.9 in. × 3.9 in.)

PXI ..... 16.0 cm × 10.0 cm (6.3 in. × 3.9 in.)

I/O connector ..... 68-pin female, SCSI-II type

Maximum Working Voltage

Maximum working voltage refers to the signal voltage plus the common-mode voltage.

Channel-to-earth ..... ±11 V, Measurement Category I

Channel-to-channel ..... ±22 V, Measurement Category I

Caution Do not use this module for connection to signals or for measurements within Categories II, III, or IV. Refer to the Safety Information topic for more information categories.

Environment

NI 660*x* devices are intended for indoor use only.

Maximum altitude ..... 2,000 meters (at 25 °C ambient temperature)

Pollution Degree 2

Operating Environment

Ambient temperature range ..... 0 to 55 °C (Tested in accordance with IEC-60068-2-1 and IEC-60068-2-2.)

Relative humidity range ..... 0 to 90%, noncondensing (Tested in accordance with IEC-60068-2-56.)

Storage Environment

Ambient temperature range ..... –20 to 70 °C (Tested in accordance with IEC-60068-2-1 and IEC-60068-2-2.)

Relative humidity range ..... 5 to 95%, noncondensing (Tested in accordance with IEC-60068-2-56.)

Shock and Vibration (PXI Only)

Operational shock ..... 30 g peak, half-sine, 11 ms pulse (Tested in accordance with IEC-60068-2-27. Test profile developed in accordance with MIL-PRF-28800F.)

Random vibration

Operating ..... 5 to 500 Hz, 0.3 grms

Nonoperating ..... 5 to 500 Hz, 2.4 grms (Tested in accordance with IEC-60068-2-64. Nonoperating test profile exceeds the requirements of MIL-PRF-28800F, Class 3.)

Note Clean the device with a soft, non-metallic brush. Make sure that the device is completely dry and free from contaminants before returning it to service.

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, CSA 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

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

- EN 61326 EMC requirements; Minimum Immunity
- EN 55011 Emissions; Group 1, Class A
- CE, C-Tick, ICES, and FCC Part 15 Emissions; Class A

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:

- 73/23/EEC; Low-Voltage Directive (safety)
- 89/336/EEC; Electromagnetic Compatibility Directive (EMC)

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.

Waste Electrical and Electronic Equipment (WEEE)

EU Customers At the end of their life cycle, all products *must* be sent to a WEEE recycling center. For more information about WEEE recycling centers and National Instruments WEEE initiatives, visit `ni.com/environment/weee.htm`.

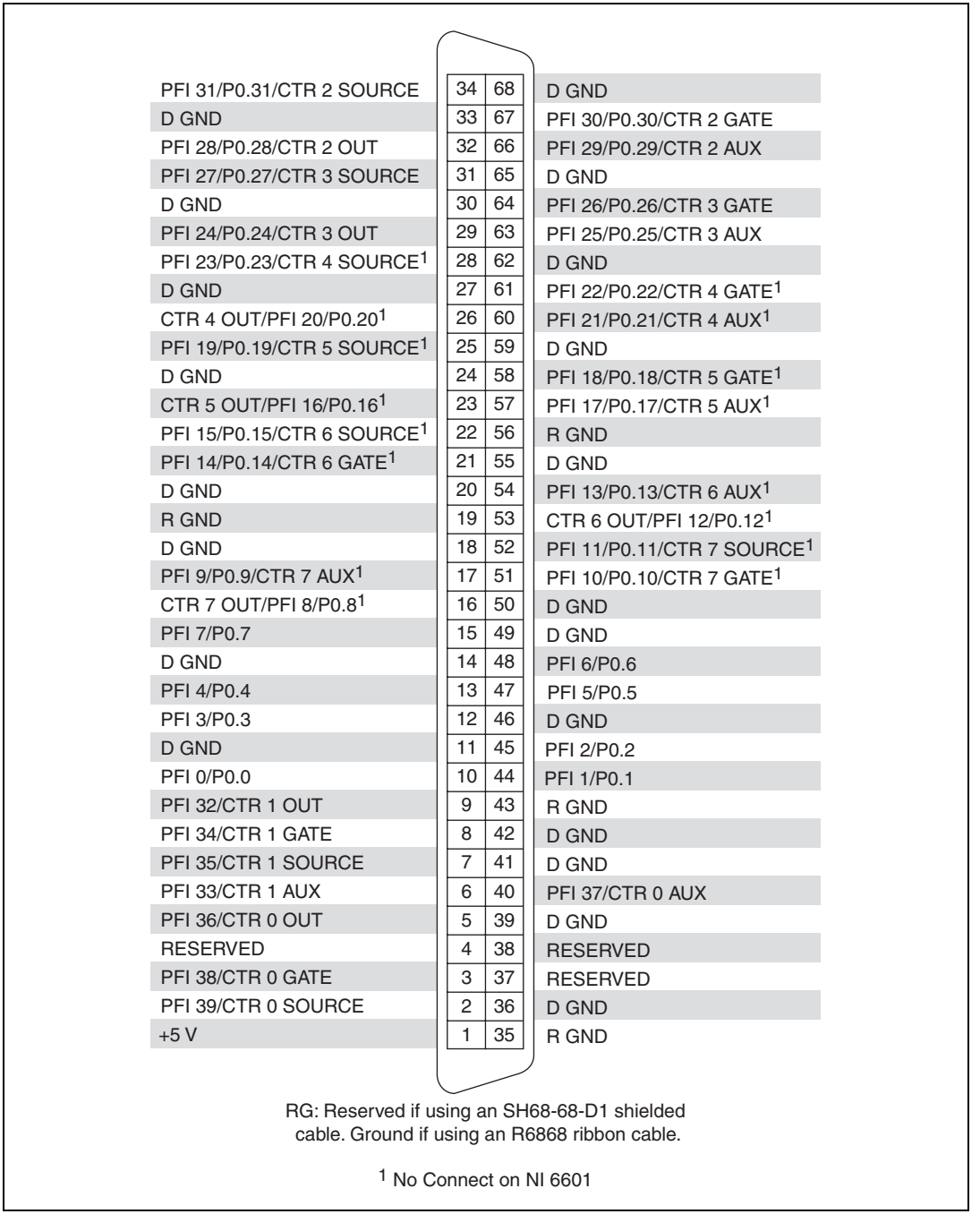


Figure 1. NI 660*x* Pin Assignments

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