

NI 6624 Specifications

This document lists the specifications for the NI PCI/PXI-6624 device. These specifications are typical at 25 °C unless otherwise noted. Refer to the *NI 6624 User Manual* for more information about NI 6624 devices.

Power

Power requirement 0.75 A from +5 V rail;
0.15 A from +3.3 V rail

Isolated Inputs

Number of input channels 26 (3 per counter
and 2 extra PFIs)

Input type Driven reference to
either supply or ground
(two terminals per input)

Maximum input frequency 400 kHz

Minimum input pulse width 1 μ s

Input waveform types Any

Voltage

Voltage range Up to 48 VDC

Typical ON voltage 2.5 V

Guaranteed ON voltage 4 V

Guaranteed OFF voltage 0.8 V

Current

ON state current 2.2 mA min,
6 mA typ,
10 mA max

OFF state current 0.1 mA max

Protection

Current limit 10 mA max
(over operating
temperature range)

Reverse and overvoltage \pm 60 VDC

Isolation voltage (verified by a dielectric withstand test,
1 min max)

Input channels
to backplane (bus) 400 Vrms

Input channels to ground 400 Vrms

Input channel to channel 330 Vrms

Propagation Delays (for a 5 V Input Signal)

LOW to HIGH 350 ns typ

HIGH to LOW 220 ns typ

Isolated Outputs

Number of output channels 8

Output type Sinking (low-side switch)

Output power requirement 5 to 48 VDC
(10 mA per channel,
typical at 400 KHz)

Load voltage range 5 to 48 VDC

Switching current 100 mA per channel, max

Inrush current 600 mA per channel, max

Maximum output frequency 400 kHz

Minimum output pulse width 1 μ s

Typical switching times (with a 5 V, 100 Ω load)

Turn on 500 ns

Turn off 150 ns

Output low maximum voltage
(with SH100-100-S2 cable) 0.47 V at 10 mA;
0.75 V at 100 mA

Output leakage
current when OFF 60 μ A max

Protection

Short circuit (on output pins).....0.6 A min, 1.1 A max
(stays off after detecting a short circuit and retries to operate every 250 ms, and then automatically recovers after removing the short)

Reverse and overvoltage
(on output and Vdd pins).....±60 VDC

Functionality with transient spikes (on Vdd pins).....Up to 80 V peak

Timing I/O

Number of counters8 up/down

Resolution.....32 bits

Maximum count4,294,967,295

Rollover times

100 kHz timebase.....11.93 h

20 MHz timebase214.74 s

Baseclocks available.....100 kHz and 20 MHz

Baseclock accuracy50 ppm (±0.005%)
over temperature

Maximum source frequency20 MHz

Data transferDMA (up to 3 channels),
interrupts

RTSI Trigger Lines (PCI Only)

Trigger lines <0..6>7

RTSI clock.....1

Minimum pulse width
for trigger and clock50 ns

PXI Trigger Bus (PXI Only)

Trigger lines <0..5>6

Star trigger.....1

Clock1

Physical

Dimensions

PCI17.5 cm × 10.7 cm
(6.9 in. × 4.2 in.)

PXI16.0 cm × 10.0 cm
(6.3 in. × 3.9 in.)

I/O connector100-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.

Environment

NI 6624 devices are intended for indoor use only.

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

Pollution Degree2

Operating Environment

Ambient temperature range0 to 55 °C (Tested
in accordance with
IEC-60068-2-1 and
IEC-60068-2-2.)

Relative humidity range.....10 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 shock30 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.

PFI 39 +/CTR 0 SOURCE +	1	51	PFI 23 +/CTR 4 SOURCE +
PFI 39 -/CTR 0 SOURCE -	2	52	PFI 23 -/CTR 4 SOURCE -
PFI 38 +/CTR 0 GATE +	3	53	PFI 22 +/CTR 4 GATE +
PFI 38 -/CTR 0 GATE -	4	54	PFI 22 -/CTR 4 GATE -
PFI 37 +/CTR 0 AUX+	5	55	PFI 21 +/CTR 4 AUX +
PFI 37 -/CTR 0 AUX-	6	56	PFI 21 -/CTR 4 AUX -
PFI 36 Vdd/CTR 0 Vdd	7	57	PFI 20 Vdd/CTR 4 Vdd
PFI 36/CTR 0 Vss	8	58	PFI 20 Vss/CTR 4 Vss
PFI 36/CTR 0 OUT	9	59	PFI 20/CTR 4 OUT
PFI 36/CTR 0 Vss	10	60	PFI 20 Vss/CTR 4 Vss
PFI 35 +/CTR 1 SOURCE +	11	61	PFI 19 +/CTR 5 SOURCE +
PFI 35 -/CTR 1 SOURCE -	12	62	PFI 19 -/CTR 5 SOURCE -
PFI 34 +/CTR 1 GATE +	13	63	PFI 18 +/CTR 5 GATE +
PFI 34 -/CTR 1 GATE -	14	64	PFI 18 -/CTR 5 GATE -
PFI 33 +/CTR 1 AUX +	15	65	PFI 17 +/CTR 5 AUX +
PFI 33 -/CTR 1 AUX -	16	66	PFI 17 -/CTR 5 AUX -
PFI 32 Vdd/CTR 1 Vdd	17	67	PFI 16 Vdd/CTR 5 Vdd
PFI 32 Vss/CTR 1 Vss	18	68	PFI 16 Vss/CTR 5 Vss
PFI 32/CTR 1 OUT	19	69	PFI 16/CTR 5 OUT
PFI 32 Vss/CTR 1 Vss	20	70	PFI 16 Vss/CTR 5 Vss
PFI 31 +/CTR 2 SOURCE +	21	71	PFI 15 +/CTR 6 SOURCE +
PFI 31 -/CTR 2 SOURCE -	22	72	PFI 15 -/CTR 6 SOURCE -
PFI 30 +/CTR 2 GATE +	23	73	PFI 14 +/CTR 6 GATE +
PFI 30 -/CTR 2 GATE -	24	74	PFI 14 -/CTR 6 GATE -
PFI 29 +/CTR 2 AUX +	25	75	PFI 13 +/CTR 6 AUX +
PFI 29 -/CTR 2 AUX -	26	76	PFI 13 -/CTR 6 AUX -
PFI 28 Vdd/CTR 2 Vdd	27	77	PFI 12 Vdd/CTR 6 Vdd
PFI 28 Vss/CTR 2 Vss	28	78	PFI 12 Vss/CTR 6 Vss
PFI 28/CTR 2 OUT	29	79	PFI 12/CTR 6 OUT
PFI 28 Vss/CTR 2 Vss	30	80	PFI 12 Vss/CTR 6 Vss
PFI 27 +/CTR 3 SOURCE +	31	81	PFI 11 +/CTR 7 SOURCE +
PFI 27 -/CTR 3 SOURCE -	32	82	PFI 11 -/CTR 7 SOURCE -
PFI 26 +/CTR 3 GATE +	33	83	PFI 10 +/CTR 7 GATE +
PFI 26 -/CTR 3 GATE -	34	84	PFI 10 -/CTR 7 GATE -
PFI 25 +/CTR 3 AUX +	35	85	PFI 9 +/CTR 7 AUX +
PFI 25 -/CTR 3 AUX -	36	86	PFI 9 -/CTR 7 AUX -
PFI 24 Vdd/CTR 3 Vdd	37	87	PFI 8 Vdd/CTR 7 Vdd
PFI 24 Vss/CTR 3 Vss	38	88	PFI 8 Vss/CTR 7 Vss
PFI 24/CTR 3 OUT	39	89	PFI 8/CTR 7 OUT
PFI 24 Vss/CTR 3 Vss	40	90	PFI 8 Vss/CTR 7 Vss
PFI 0 +	41	91	PFI 4 +
PFI 0 -	42	92	PFI 4 -
NC	43	93	NC
NC	44	94	NC
NC	45	95	NC
NC	46	96	NC
NC	47	97	NC
NC	48	98	NC
NC	49	99	NC
NC	50	100	NC

NC = No Connect

Figure 1. NI 6624 Pin Assignments

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