

NI PCI-DIO-32HS

High-Speed Digital I/O Device



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NI 6533/6534 Specifications

This document lists features and specifications for the NI 6533/6534 family of devices and the NI PCI/PXI-7030/6533. The NI 6533/6534 family includes the following devices:

- NI PCI-6534
- NI PXI-6534
- NI PCI-6533 (PCI-DIO-32HS)
- NI PXI-6533
- NI DAQCard-6533
- NI AT-DIO-32HS



Note All NI 6533/6534 devices can be programmed with NI-DAQmx or NI-DAQ Traditional (Legacy), except for the NI DAQCard-6533 and NI AT-DIO-32HS, which are only supported with NI-DAQ Traditional (Legacy).

Specifications are typical at 25 °C unless otherwise noted. Specifications are subject to change without notice. For the most recent version of the specifications, visit ni.com/manuals.

Digital I/O

Number of channels 32 input/output;
4 dedicated output and control;
4 dedicated input and status

Compatibility TTL/CMOS (standard or
open collector)

Hysteresis 500 mV

Digital logic levels

Level	Minimum	Maximum
Input low voltage	0 V	0.8 V
Input high voltage	2 V	5 V

Level	Minimum	Maximum
Input low current for data lines ($V_{in} = 0.4 \text{ V}$) DATA PULL [†] high DATA PULL low	— —	–70 μA –10 μA
Input high current for data lines ($V_{in} = 2.4 \text{ V}$) DATA PULL high DATA PULL low	— —	10 μA 40 μA
Input low current for control lines ($V_{in} = 0.4 \text{ V}$) CTRL PULL [‡] high CTRL PULL low	— —	–2.5 mA –200 μA
Input high current for control lines ($V_{in} = 2.4 \text{ V}$) CTRL PULL high CTRL PULL low	— —	200 μA 1.4 mA
Input low current for CTRL PULL/DATA PULL ($V_{in} = 0.4 \text{ V}$)	—	4 μA
Input high current for CTRL PULL/DATA PULL ($V_{in} = 2.4 \text{ V}$)	—	140 μA
Output low voltage ($I_{OL} = 24 \text{ mA}$)	—	0.4 V
Output high voltage ^{††} ($I_{OH} = 24 \text{ mA}$)	2.4 V	—
[†] DATA PULL is represented as the DPULL signal in Traditional NI-DAQ (Legacy). [‡] CTRL PULL is represented as the CPULL signal in Traditional NI-DAQ (Legacy). ^{††} When configured as active drive output terminals. Drivers configured for open-collector drive type are in the high-impedance state when at logic high level.		

Absolute maximum

input voltage range–0.3 to 5 V

Power-on state for output channelsHigh-impedance, pulled up
or down (selectable)

Pull-up/down resistors

CTRL PULL (for control lines).....2.2 k Ω

DATA PULL (for data lines)100 k Ω

Data transfers (all devices

except NI DAQCard-6533).....Interrupt, DMA

Memory

NI AT-DIO-32HS	16 S
NI DAQCard-6533 for PCMCIA.....	16 S
NI PCI/PXI-6534	64 MB, two 32 MB modules on each NI 6534
NI PCI/PXI-7030/6533	16 S
NI PCI-DIO-32HS	16 S
NI PXI-6533.....	16 S

Sample Timing Types

Sample Clock Timing¹

Direction.....	Input or output
Maximum sample rate (internally timed, for small transfers ²).....	20 MHz
Minimum sample rate (internal clock rate)	1 S/10 minutes

Change Detection

Change-detection resolution	150 ns
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Triggers

Start and Reference³ Triggers

Compatibility	TTL/CMOS
Trigger types	Rising or falling edge, or digital pattern
Minimum pulse width for edge triggers	10 ns

¹ Sample clock timing is described as Pattern I/O in NI-DAQ Traditional (Legacy).

² Small transfer size is the size of the FIFO.

³ Reference triggers are called Stop triggers in NI-DAQ Traditional (Legacy).

Pattern trigger detection capabilities	Detect pattern match or mismatch on user-selected data lines
Pattern trigger resolution	60 ns or one Sample clock ¹ period, depending on pattern I/O mode

RTSI Triggers (PCI, PXI, AT)

Trigger lines	7
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Bus Interfaces

NI PCI-DIO-32HS/PXI-6533/ PCI-6534/PXI-6534	PCI master and target with onboard linking (scatter-gather) DMA
AT-DIO-32HS type	AT slave with dual DMA
NI DAQCard-6533 for PCMCIA type ...	PCMCIA slave

Power

Power Requirements

+5 VDC ($\pm 5\%$) (with light output load)	
NI PCI-DIO-32HS, NI PXI-6533	1.3 A
NI PCI-6534 and NI PXI-6534	2.0 A
NI DAQCard-6533 for PCMCIA	500 mA

Power Available at I/O Connector

NI PCI-DIO-32HS, NI PXI-6533, NI AT-DIO-32HS, NI PCI-6534, and NI PXI-6534	+4.65 to +5.25 VDC at 1 A
NI DAQCard-6533 for PCMCIA	+4.65 to +5.25 VDC at 250 mA

¹ Sample clock is represented by the REQ signal in NI-DAQ Traditional (Legacy).

Physical

Dimensions, not including connectors

NI DAQCard-6533 for PCMCIA ... 8.6 by 5.3 cm
(3.4 by 2.1 in.)

NI AT-DIO-32HS/
PCI-6533/6534 17.5 by 10.7 cm
(6.9 by 4.2 in.)

NI PXI-6533/6534 16.3 by 9.9 cm
(6.4 by 3.9 in.)

I/O connector

NI PCI-DIO-32HS, NI PXI-6533,
NI AT-DIO-32HS, NI PCI-6534,
and NI PXI-6534 68-pin male SCSI-II type
NI DAQCard-6533 for PCMCIA ... 68-pin female PCMCIA
connector

Environment

Operating temperature 0 to 55 °C

Storage temperature –20 to 70 °C

Relative humidity 5 to 90% noncondensing

Functional shock MIL-T-28800 E Class 3
(per Section 4.5.5.4.1)
Half-sine shock pulse,
11 ms duration, 30 g peak,
30 shocks per face

Operational random vibration
(PXI only) 5 to 500 Hz, 0.31 g_{rms}, 3 axes

Nonoperational random vibration
(PXI only) 5 to 500 Hz, 2.5 g_{rms}, 3 axes



Note Random vibration profiles were developed in accordance with MIL-T-28800E and MIL-STD-810E Method 514. Test levels exceed those recommended in MIL-STD-810E for Category 1 (Basic Transportation, Figures 514.4-1 through 514.4-3).

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