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**PCI-DIO-32HS**

# 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](http://ni.com/manuals).

## Digital I/O

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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 <sup>†</sup> high DATA PULL low	— —	$-70\ \mu\text{A}$ $-10\ \mu\text{A}$
Input high current for data lines ( $V_{in} = 2.4\text{ V}$ ) DATA PULL high DATA PULL low	— —	$10\ \mu\text{A}$ $40\ \mu\text{A}$
Input low current for control lines ( $V_{in} = 0.4\text{ V}$ ) CTRL PULL <sup>‡</sup> high CTRL PULL low	— —	$-2.5\text{ mA}$ $-200\ \mu\text{A}$
Input high current for control lines ( $V_{in} = 2.4\text{ V}$ ) CTRL PULL high CTRL PULL low	— —	$200\ \mu\text{A}$ $1.4\text{ mA}$
Input low current for CTRL PULL/DATA PULL ( $V_{in} = 0.4\text{ V}$ )	—	$4\ \mu\text{A}$
Input high current for CTRL PULL/DATA PULL ( $V_{in} = 2.4\text{ V}$ )	—	$140\ \mu\text{A}$
Output low voltage ( $I_{OL} = 24\text{ mA}$ )	—	$0.4\text{ V}$
Output high voltage <sup>††</sup> ( $I_{OH} = 24\text{ mA}$ )	$2.4\text{ V}$	—
<sup>†</sup> DATA PULL is represented as the DPULL signal in Traditional NI-DAQ (Legacy). <sup>‡</sup> CTRL PULL is represented as the CPULL signal in Traditional NI-DAQ (Legacy). <sup>††</sup> 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  $5\text{ V}$

Power-on state for output channels .....High-impedance, pulled up  
or down (selectable)

Pull-up/down resistors

CTRL PULL (for control lines)..... $2.2\text{ k}\Omega$

DATA PULL (for data lines) ..... $100\text{ k}\Omega$

Data transfers (all devices

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

# Memory

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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

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## Sample Clock Timing<sup>1</sup>

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

## Change Detection

Change-detection resolution .....	150 ns
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# Triggers

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## Start and Reference<sup>3</sup> Triggers

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

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

<sup>2</sup> Small transfer size is the size of the FIFO.

<sup>3</sup> 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 <sup>1</sup> period, depending on pattern I/O mode

## RTSI Triggers (PCI, PXI, AT)

Trigger lines.....	7
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## Bus Interfaces

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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

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### 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

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

# Physical

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## 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

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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 <sub>rms</sub> , 3 axes
Nonoperational random vibration (PXI only) .....	5 to 500 Hz, 2.5 g <sub>rms</sub> , 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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