DeviceNet Master Interfaces for Control

NI PCI-8532, NI PXI-8532

- Master (scanner) for complete control of DeviceNet network
- High-level software API for easily managing the DeviceNet network and its devices
- Based on Allen-Bradley's Master Toolkit for optimal reliability
- 500 V galvanically isolated physical layer
- Use two or more 1-port interfaces in the same system

Operating Systems

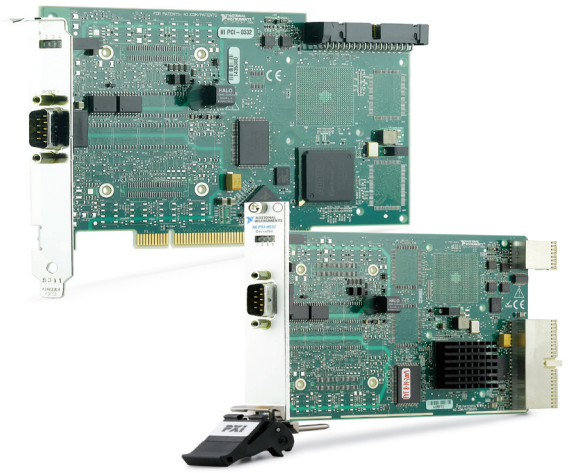
- Windows Vista (32- and 64-bit)/XP
- Pharlap Real-Time

Recommended Software

- LabVIEW
- LabVIEW Real-Time

Driver Software (included)

- NI-Industrial Communications for DeviceNet



Overview and Applications

The NI PCI-8532 and PXI-8532 are DeviceNet interfaces for high-performance master (scanner) control of the DeviceNet network. These interfaces are specifically made for master (scanner) applications that involve managing and programming other DeviceNet devices on the network. Applications for NI DeviceNet master interfaces include PC-based control, embedded control systems, PC-based human machine interfaces, and DeviceNet network management utilities.

The PCI-8532 complies with the PCI Local Bus Specification, so you can use PCs with PCI Local Bus slots to communicate with and control DeviceNet devices. The PXI-8532 3U module is compatible with PXI modular instrumentation and complies with the CompactPCI industrial computer standard. They feature the Philips PCA82C251 high-speed CAN transceiver, which is fully compatible with the ISO 11898 standard and supports all the DeviceNet baud rates (125 kbits/s, 250 kbits/s, and 500 kbits/s). These interfaces also protect your equipment from being damaged by high-voltage spikes on the target bus. All bus ports are galvanically isolated up to 500 VDC (2 seconds maximum withstand) channel-to-channel and channel-to-bus.

DeviceNet Software

The DeviceNet master interfaces are shipped with the NI-Industrial Communications for DeviceNet software, which provides a high-level API for easily managing the DeviceNet network and its devices. This full 32-bit driver is designed for use on Windows Vista/XP targets and LabVIEW Real-Time targets such as PXI and NI industrial controllers. Configuration tools are integrated into the LabVIEW project to provide online access to the network, master, and slave device parameters. Plus, DeviceNet device signals are automatically detected and mapped to drag-and-drop I/O variables, so you can easily read and write from the device I/O without in-depth knowledge of the DeviceNet protocol.

To quickly take advantage of DeviceNet explicit messaging, use the DeviceNet Explicit Message Function Block to simplify and streamline explicit message operations. With this asynchronous function block, you can send any request from the master interface to the remote slave device as well as receive the associated explicit message response.

Note: NI-Industrial Communications for DeviceNet does not support NI DeviceNet for Test products (PCI-DNET, PCMCIA-DNET, and PXI-8461/D). These interfaces work with the NI-DNET 1.x software driver.

Ordering Information

DeviceNet Master Interfaces for Control

NI PCI-8532, DeviceNet interface, 1 port 781062-01

NI PXI-8532, DeviceNet interface, 1 port 781063-01

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For complete product specifications, pricing, and accessory information, call 800 813 3693 (U.S.) or go to **ni.com/info** and enter **devicenet**.

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Specifications

These specifications are typical at 25 °C, unless otherwise stated.

Physical

Dimensions

PCI ..... 10.7 by 17.5 cm (4.2 by 6.9 in.)

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

Cabling

Cabling Requirements

Cables should meet the requirements of the DeviceNet cable specification defined in the DeviceNet Specification. The Belden cable (3084A) meets all of those requirements and should be suitable for most applications.

Cable Length

The allowable cable length is affected by the characteristics of the cabling and the desired bit transmission rates. Find detailed cable length requirements in the DeviceNet Specification. Table 1 lists the DeviceNet cable length specifications.

Baud Rate	Trunk Length	Drop Length Maximum	Drop Length Cumulative
500 kbits/s	100 m (382 ft)	6 m (20 ft)	39 m (128 ft)
250 kbits/s	250 m (820 ft)	6 m (20 ft)	78 m (256 ft)
125 kbits/s	500 m (1640 ft)	6 m (20 ft)	156 m (512 ft)

Table 1. DeviceNet Cable Length Specifications

Maximum Number of Devices

The maximum number of devices that you can connect to a DeviceNet port depends on the electrical characteristics of the devices on the network. If all of the devices on the network meet the DeviceNet specifications, you may connect 64 devices to the network.

I/O Connections..... D-Sub terminal connector

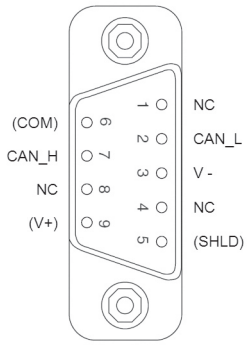

Figure 1. D-Sub Pinout

Pin	Signal	Description
1	NC	No connection
2	CAN_L	CAN_L bus line
3	V_	CAN reference ground
4	NC	No connection
5	(SHLD)	Optional CAN shield
6	(COM)	Optional CAN reference ground
7	CAN_H	CAN_H bus line
8	NC	No connection
9	(V+)	Also called as Ext_Vbat, optional CAN power supply if bus power/external VBAT is required

Table 2. D-Sub Pinout

Power Requirements

For all of the supported DeviceNet products, the physical layer is completely powered internally, so there is no need to supply the bus power using V+ and V-. Table 3 shows the power requirements. You should take these requirements into account when determining the requirements of the bus power supply for the system.

Characteristic	Specification
Voltage Requirement	10 to 30 VDC
Current Requirement	40 mA typical, 100 mA maximum

Table 3. Power Requirements for DeviceNet Products

Termination

The pair of signal wires (CAN_H and CAN_L) constitutes a transmission line. If the transmission line is not terminated, each signal change on the line causes reflections that may cause communication failures. Because communication flows both ways on the DeviceNet bus, DeviceNet requires that both ends of the cable be terminated. However, this requirement does not mean that every device should have a termination resistor. If multiple devices are placed along the cable, only the devices on the ends of the cable should have termination resistors.

The termination resistors on a cable should match the nominal impedance of the cable. DeviceNet requires a cable with a nominal impedance of 120 Ω; therefore, you should use a 120 Ω resistor at each end of the cable. Each termination resistor should be able to dissipate at least 0.25 W of power.

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