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**USB-6009**

## USER GUIDE

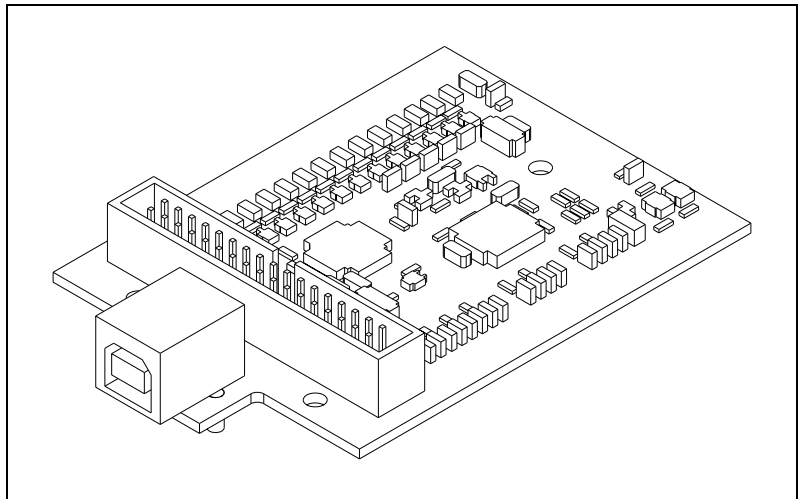
# NI USB-6008/6009 OEM

This document provides information about the dimensions, connectors, and other components of the National Instruments USB-6008/6009 OEM device. For more information about the device, refer to the *USB-6008/6009 User Guide and Specifications* document available at [ni.com/manuals](http://ni.com/manuals).



**Caution** There are no product safety, electromagnetic compatibility (EMC), or CE marking compliance claims made for the NI USB-6008/6009 OEM devices.

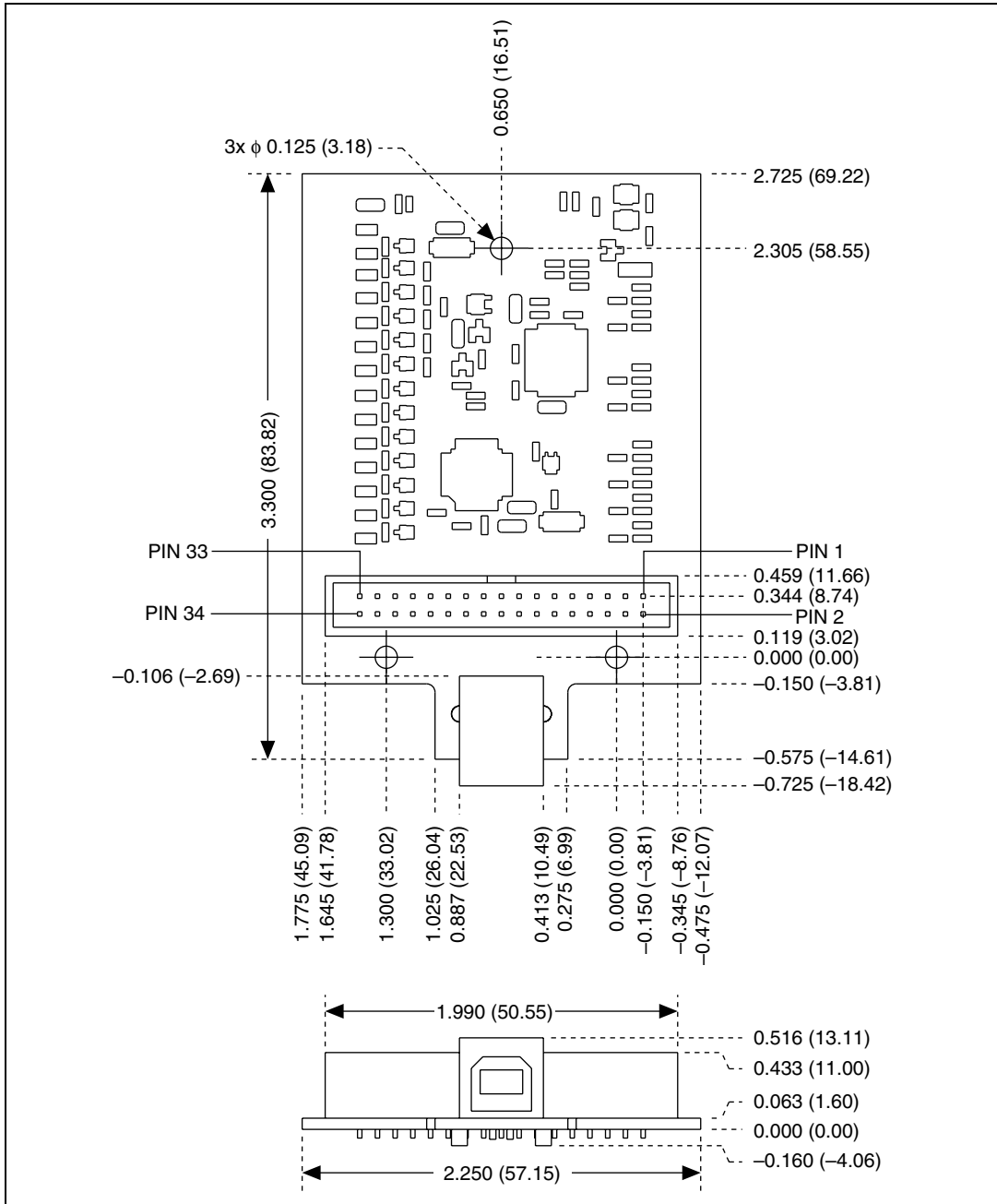
The NI USB-6008/6009 OEM device is intended to be used as a component of a larger system. National Instruments can help developers meet their compliance requirements. The end product supplier, however, is responsible for conforming to any and all compliance requirements.



**Figure 1.** USB-6008/6009 OEM Device

# Dimensions

Figure 2 shows the USB-6008/6009 OEM device dimensions.



**Figure 2.** USB-6008/6009 OEM Device Dimensions in Inches (Millimeters)

# I/O Connector

Figure 3 shows the USB-6008/6009 OEM device I/O connector pinout. AI signal names are shown in single-ended mode. Differential mode signal names are in parentheses.

+5 V	34	33	PFI 0
D GND	32	31	P1.3
P1.2	30	29	P1.1
P1.0	28	27	P0.7
P0.6	26	25	P0.5
P0.4	24	23	P0.3
P0.2	22	21	P0.1
P0.0	20	19	D GND
LED	18	17	D+
VBUS	16	15	D-
AI GND	14	13	AI GND
AI 4 (AI 0-)	12	11	AI 0 (AI 0+)
AI 5 (AI 1-)	10	9	AI 1 (AI 1+)
AI 6 (AI 2-)	8	7	AI 2 (AI 2+)
AI 7 (AI 3-)	6	5	AI 3 (AI 3+)
AI GND	4	3	AI GND
AO 1	2	1	AO 0

**Figure 3.** USB-6008/6009 OEM Terminal Assignments

# Signal Descriptions

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Most of the signals available on the I/O connector are described in the *USB-6008/6009 User Guide and Specifications* document available for download at [ni.com/manuals](http://ni.com/manuals). Table 1 describes additional signals on the I/O connector of the OEM devices.



**Note** The +2.5 V signal is not available on the USB-6008/6009 OEM device.

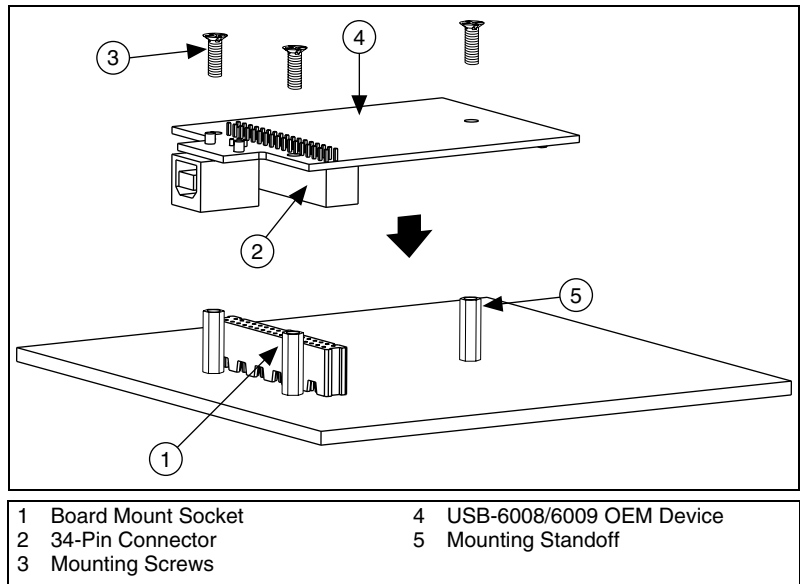
**Table 1.** Signal Descriptions

Signal Name	Reference	Direction	Description
VBUS	GND	Input	USB Power
D+, D-	GND	Input/Output	USB Data Lines
LED	GND	Output	Status LED Driver

For more information about USB signals, refer to the *Universal Serial Bus Specification* accessible at [www.usb.org](http://www.usb.org).

# Using the 34-Pin Connector with a Board Mount Socket

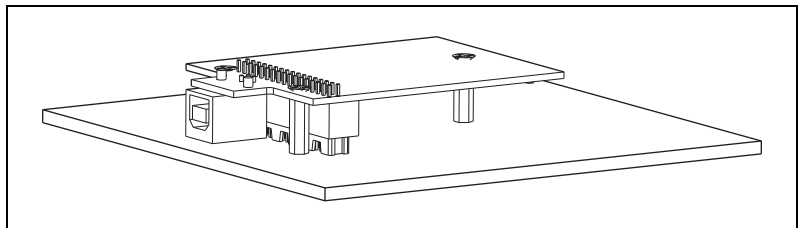
The USB-6008/6009 OEM device can be mounted to a motherboard using the 34-pin connector, as shown in Figure 4 and Figure 5.



**Figure 4.** Mounting Using a 34-Pin Connector



**Note** Refer to the [Device Components](#) section for more information about mounting components.



**Figure 5.** USB Device Installed on Motherboard

# Connecting to USB

You can use the USB connector on the USB-6008/6009 OEM device to connect to the USB host. In this case, leave the D+ and D– signals (on the 34-pin connector) and VBUS unconnected. If +5 V is needed, supply it from the 34-pin connector.

You can also use a USB connector on your motherboard to connect the USB-6008/6009 OEM device to the USB host through the 34-pin connector. In this case, do not connect to the USB connector on the USB-6008/6009 OEM device.

## Using the Status LED Driver

The LED signal indicates the device status as described in Table 2. An open collector driver drives the LED signal. For applications that use the LED signal, connect a 4.7 k $\Omega$  resistor from the LED signal to the +5 V signal.

**Table 2.** Device Status/LED Signal Behavior

Device Status	LED Signal Behavior
USB device enumerated, configured and not suspended	Square wave with frequency of 2 Hz
USB device is not enumerated, not configured, or is suspended	Not driven (pulled up)

Two possible uses of the LED signal are as follows:

- To drive an LED to give a visual indication that the device is active.
- To drive a watchdog timer circuit that monitors the device state.

## Electrical Characteristics

Table 3 lists the LED electrical characteristics.

**Table 3.** Electrical Characteristics

Parameter	Conditions	Min	Typ	Max
LED Output Low Voltage	$I_{OL} = 8.5 \text{ mA}$	—	—	0.6 V
	$I_{OL} = 10 \text{ }\mu\text{A}$	—	—	0.1 V
	$I_{OL} = 25 \text{ mA}$	—	1.0 V	—

# Device Components

Table 4 lists the components used for interfacing and interacting with the USB-6008/6009 OEM device.

**Table 4.** NI USB-6008/6009 OEM Device Components

Component		Reference Designator(s) on PCB	Manufacturer	Manufacturer Part Number	Part Specifications
USB connector		J002	AMP	787780-1	—
USB cable, 2 m		—	NI	184125-02	—
34-pin connector		J004	3M	N2534-6002RB	—
34-pin mating connector		—	3M	8534-4500JL (or equivalent)	—
Mounting Standoff *	Using 34-pin board mount socket	—	NI	745798-01	3/16 in. HEX female-to-female, 14 mm long
	Using ribbon cable	—	NI	745830-01	3/16 in. HEX female-to-female, 1/4 in. long
Screw		—	—	—	M3 × 0.5, 4–40 mm

\* To order, contact NI.



# USB-6008/6009 OEM Device Specifications

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Most specifications of the USB-6008/6009 OEM device are listed in the *USB-6008/6009 User Guide and Specifications* document on [ni.com/manuals](http://ni.com/manuals). The following sections contain exceptions to the main specifications:

## External Voltage



**Note** 2.5 V output is not available.

## Physical Characteristics

Dimensions .....	8.76 cm × 5.72 cm × 1.55 cm (3.45 in. × 2.25 in. × 0.610 in.)
I/O connector .....	3M, 4-wall header (part number: N2534-6002RB)
Weight .....	1 oz

# Where to Go for Support

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The National Instruments Web site is your complete resource for technical support. At [ni.com/support](http://ni.com/support) you have access to everything from troubleshooting and application development self-help resources to email and phone assistance from NI Application Engineers.

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