

USER GUIDE

NI USB-6000 OEM

This document provides information about the dimensions, pinouts, and other information about the connectors, switch, LEDs, and mounting holes of the National Instruments USB-6000 OEM device.

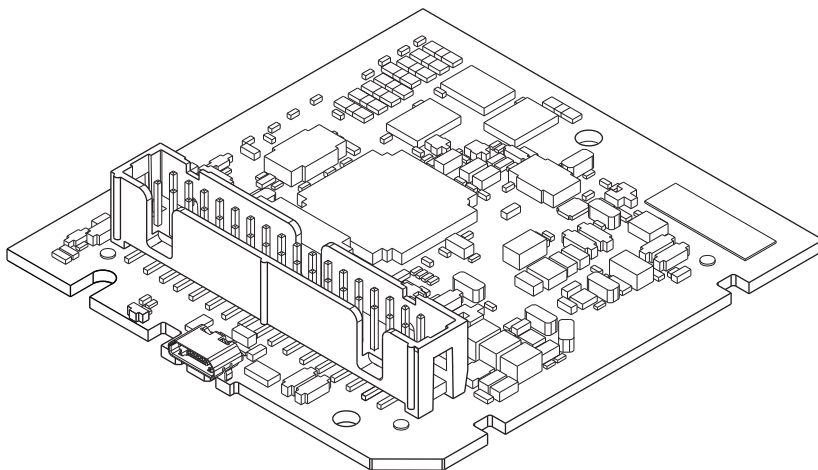
For more information about the device, refer to the *NI USB-6000 User Guide* and *NI USB-6000 Specifications* documents available at ni.com/manuals.



Caution There are no product safety, electromagnetic compatibility (EMC), or CE marking compliance claims made for the NI USB-6000 OEM devices.

The NI USB-6000 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-6000 OEM Device



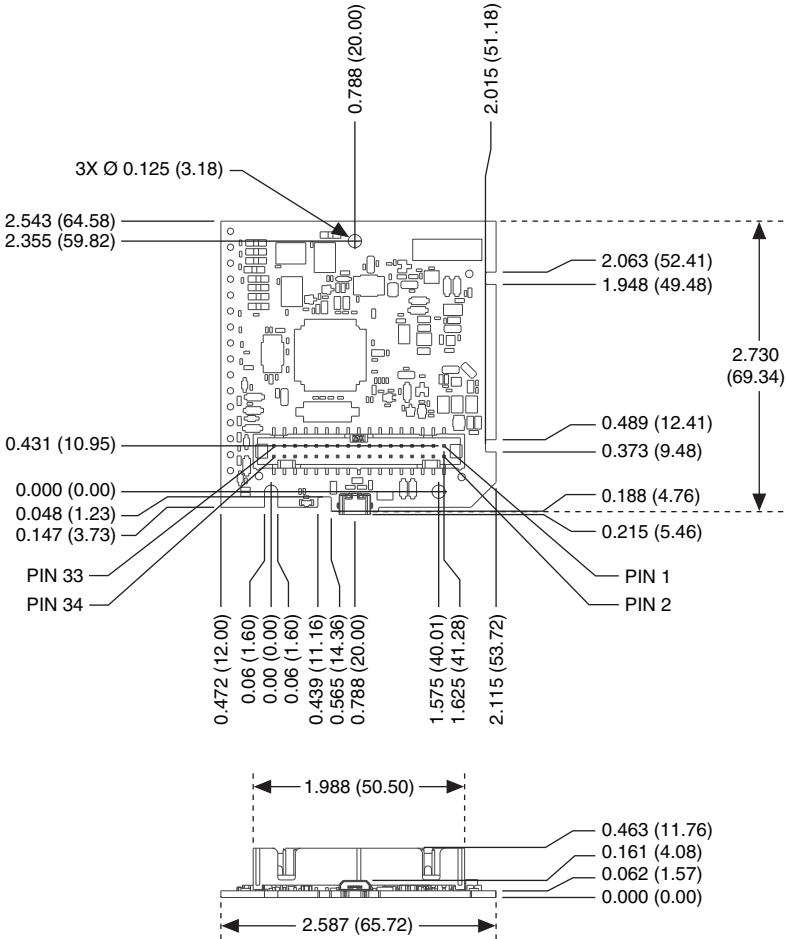
USB-6000 OEM Device Specifications

Most specifications of the USB-6000 OEM device are listed in the *NI USB-6000 Specifications* document on ni.com/manuals. The following sections contain exceptions to the main specifications.

Physical Characteristics

Weight 23 g (0.811 oz)
 Dimensions 693 mm × 658 mm × 117 mm
 (2.73 in. × 2.59 in. × 0.46 in.)

Figure 2. USB-6000 OEM Device Dimensions in Inches (Millimeters)



I/O Connector Pinouts

Figure 3 shows the USB-6000 OEM device I/O connector pinouts.

Figure 3. USB-6000 OEM Terminal Assignments

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

NC = No Connect

Signal Descriptions

Most of the signals available on the I/O connector are described in the *NI USB-6000 User Guide* document available for download at ni.com/manuals. Table 1 describes additional signals on the I/O connector of the OEM device.

Table 1. Additional Signal Descriptions

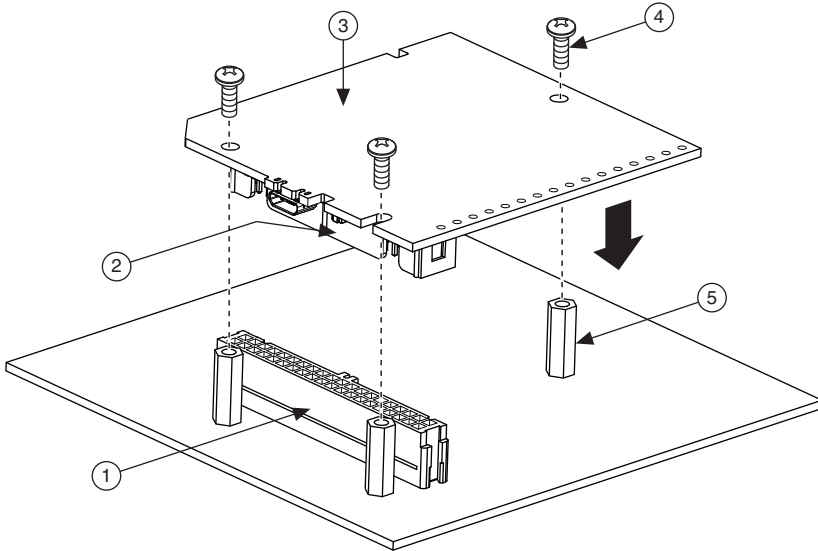
Signal Name	Reference	Direction	Description
VBUS	D GND	Input	USB Power
D+, D-	D GND	Input/Output	USB Data Lines
LED	D GND	Output	Status LED Driver

For more information about USB signals, refer to the *Universal Serial Bus Specification* accessible at www.usb.org.

Using the 34-Pin Connector with a Board Mount Socket

The USB-6000 OEM device can be mounted to a motherboard using the 34-pin connector, as shown in Figures 4 and 5.

Figure 4. Mounting Using a 34-Pin Connector

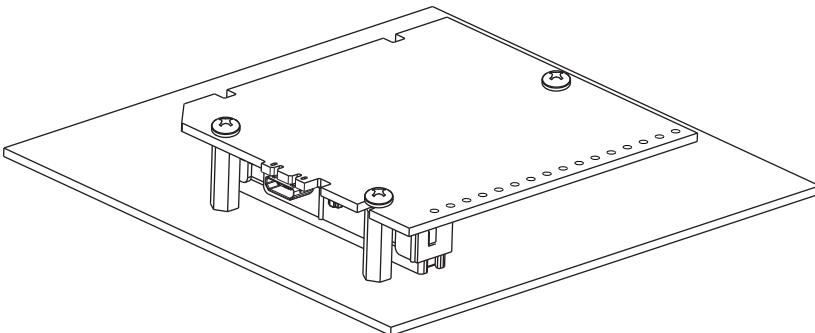


- | | |
|-----------------------|---------------------|
| 1 Board Mount Socket | 4 Mounting Screw |
| 2 34-Pin Connector | 5 Mounting Standoff |
| 3 USB-6000 OEM Device | |



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-6000 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.

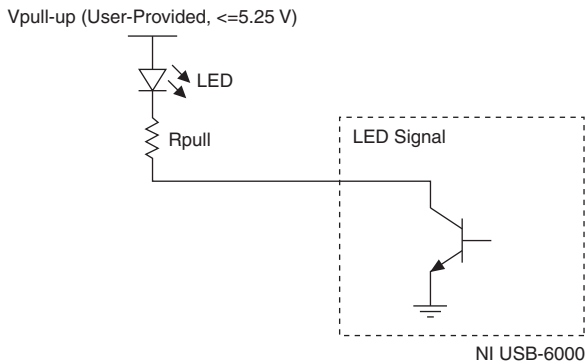
You can also use a USB connector on your motherboard to connect the USB-6000 OEM device to the USB host through the 34-pin connector. In this case, do not connect to the USB connector on the USB-6000 OEM device.

Using the Status LED Driver

The LED signal indicates the device status as listed in the *NI USB-6000 User Guide* document on ni.com/manuals. An open collector output drives the LED signal. For applications that use the LED signal, connect an external pull-up resistor from the LED signal to an external voltage.

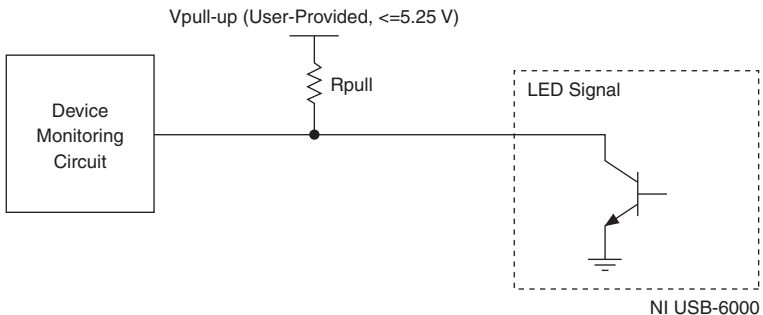
To drive a status LED, refer to the circuit as shown in Figure 6.

Figure 6. To Drive a Status LED



To use the LED signal to monitor the device state, refer to the circuit as shown in Figure 7.

Figure 7. To Monitor Device State Through the LED Signal



Electrical Characteristics

Table 2 lists the LED electrical characteristics.

Table 2. LED Electrical Characteristics

Parameter	Condition	Typical	Maximum
Output Low Voltage	$I_{OL} = 8 \text{ mA}$	—	0.4 V
	$I_{OL} = 18 \text{ mA}$	1.2 V	—
External Pull-up Voltage	—	—	5.25 V
Maximum Sinking Current	—	—	18 mA

Device Components

Table 3 lists the components used for interfacing and interacting with the USB-6000 OEM device.

Table 3. NI USB-6000 OEM Device Components

Component	Reference Designator(s) on PCB	Manufacturer	Manufacturer Part Number	Part Specifications
Micro USB connector	J001	Molex	105164-0001	—
Hi-Speed USB cable, A to Micro-B, 1 m	—	NI	782909-01	—
Hi-Speed USB cable, A to Micro-B, 2 m	—	NI	782909-02	—
34-pin connector	J002	3M	N2534-6V0C-RB-WF	—
34-pin mating connector	—	3M	8534-4500PL (or equivalent)	—
Mounting Standoff	Using 34-pin board mount socket	—	—	4.76 mm (3/16 in.) HEX female-to-female, 15 mm (0.59 in.) long
	Using ribbon cable	—	—	4.76 mm (3/16 in.) HEX female-to-female, 6.35 mm (1/4 in.) long
Screw	—	—	—	M3 × 0.5, 4-40 UNC

Where to Go for Support

The National Instruments Web site is your complete resource for technical support. At 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.

National Instruments corporate headquarters is located at 11500 North Mopac Expressway, Austin, Texas, 78759-3504. National Instruments also has offices located around the world to help address your support needs. For telephone support in the United States, create your service request at ni.com/support and follow the calling instructions or dial 512 795 8248. For telephone support outside the United States, visit the Worldwide Offices section of ni.com/global to access the branch office Web sites, which provide up-to-date contact information, support phone numbers, email addresses, and current events.

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