

## COMPREHENSIVE SERVICES

We offer competitive repair and calibration services, as well as easily accessible documentation and free downloadable resources.

## SELL YOUR SURPLUS

We buy new, used, decommissioned, and surplus parts from every NI series. We work out the best solution to suit your individual needs.

 Sell For Cash  Get Credit  Receive a Trade-In Deal

## OBSOLETE NI HARDWARE IN STOCK & READY TO SHIP

We stock **New**, **New Surplus**, **Refurbished**, and **Reconditioned** NI Hardware.



*Bridging the gap between the manufacturer and your legacy test system.*

 1-800-915-6216

 [www.apexwaves.com](http://www.apexwaves.com)

 [sales@apexwaves.com](mailto:sales@apexwaves.com)

*All trademarks, brands, and brand names are the property of their respective owners.*

**Request a Quote**

 **CLICK HERE**

**USB-6000**

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

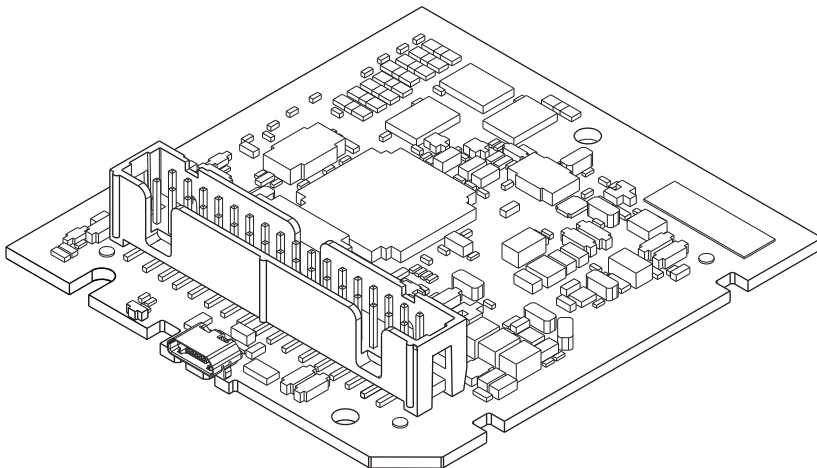


**Caution** There are no product safety, electromagnetic compatibility (EMC), or CE marking compliance claims made for the NI USB-6000 OEM devices.

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

---



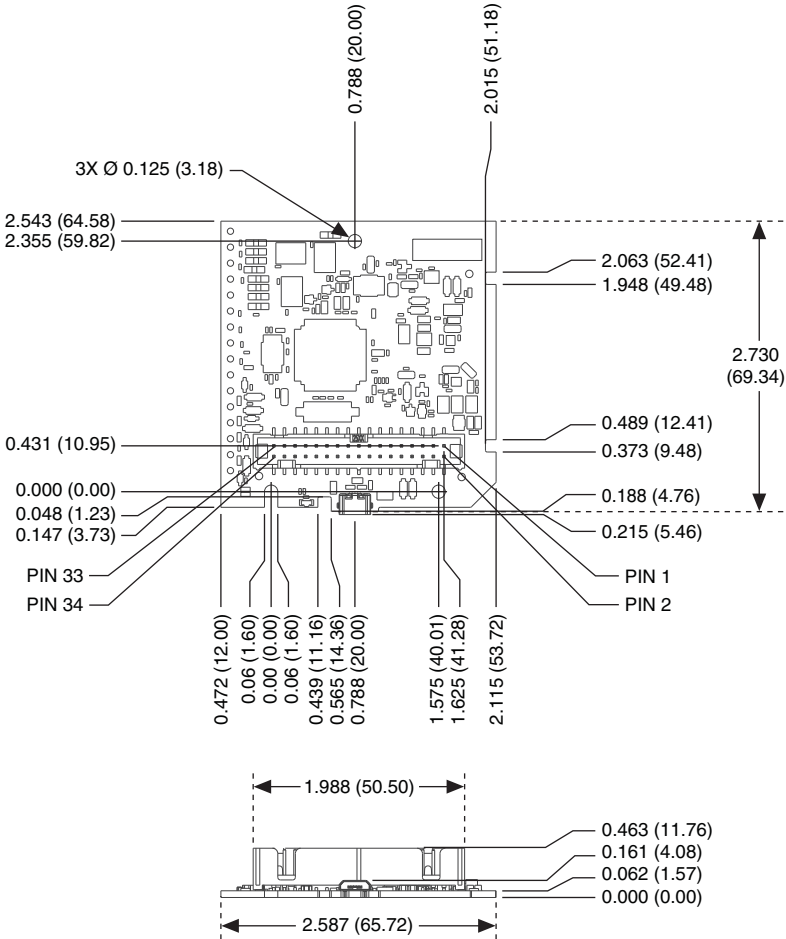
# USB-6000 OEM Device Specifications

Most specifications of the USB-6000 OEM device are listed in the *NI USB-6000 Specifications* document on [ni.com/manuals](http://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](http://ni.com/manuals). Table 1 describes additional signals on the I/O connector of the OEM device.

**Table 1.** Additional Signal Descriptions

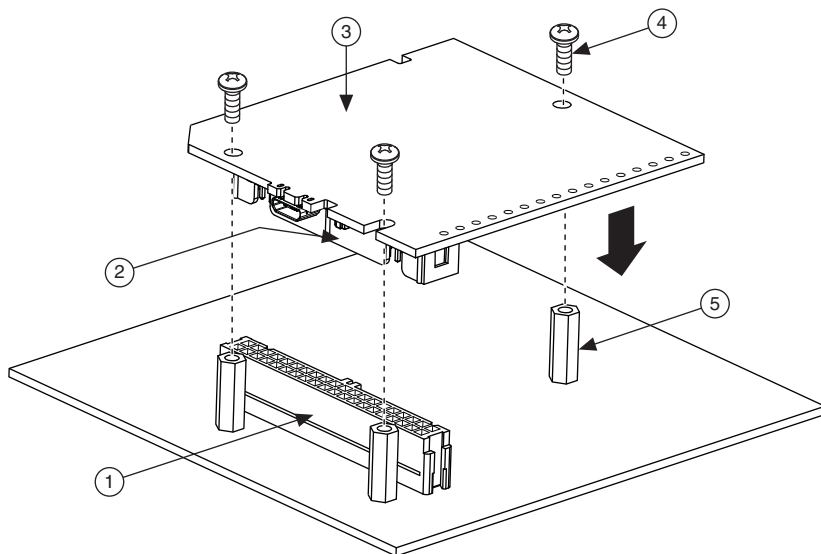
| Signal Name | Reference | Direction    | Description       |
|-------------|-----------|--------------|-------------------|
| VBUS        | D GND     | Input        | USB Power         |
| D+, D-      | D GND     | Input/Output | USB Data Lines    |
| LED         | D GND     | Output       | Status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

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



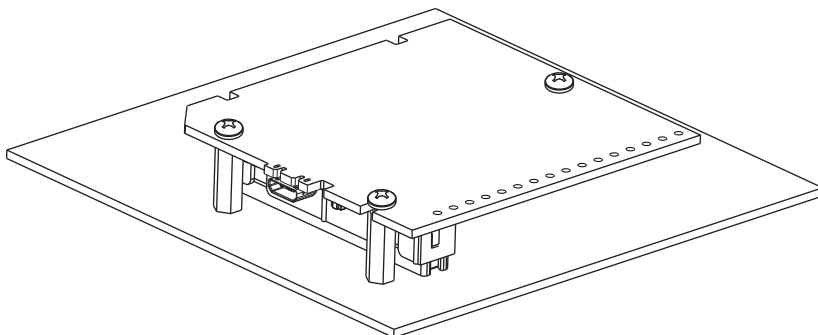
- 1 Board Mount Socket
- 2 34-Pin Connector
- 3 USB-6000 OEM Device

- 4 Mounting Screw
- 5 Mounting Standoff



**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.

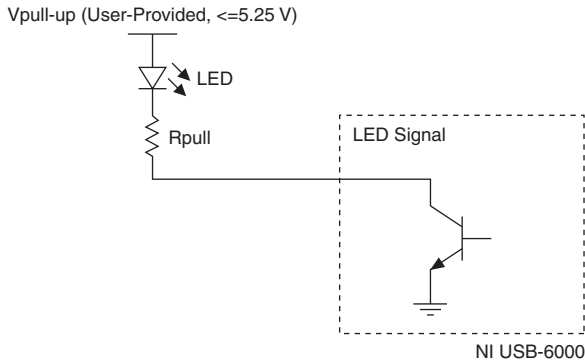
You can also use a USB connector on your motherboard to connect the USB-6000 OEM device to the USB host through the 34-pin connector. In this case, do not connect to the USB connector on the USB-6000 OEM device.

## 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](http://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.

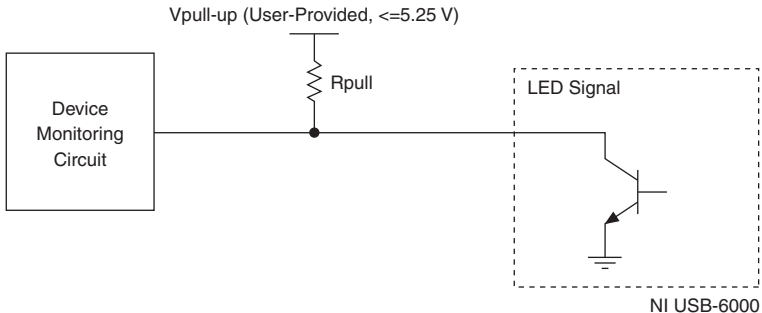
To drive a status LED, refer to the circuit as shown in Figure 6.

**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](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.

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](http://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](http://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.

Refer to the *NI Trademarks and Logo Guidelines* at [ni.com/trademarks](http://ni.com/trademarks) for more information on National Instruments trademarks. Other product and company names mentioned herein are trademarks or trade names of their respective companies. For patents covering National Instruments products/technology, refer to the appropriate location: **Help»Patents** in your software, the `patents.txt` file on your media, or the *National Instruments Patents Notice* at [ni.com/patents](http://ni.com/patents). You can find information about end-user license agreements (EULAs) and third-party legal notices in the readme file for your NI product. Refer to the *Export Compliance Information* at [ni.com/legal/export-compliance](http://ni.com/legal/export-compliance) for the National Instruments global trade compliance policy and how to obtain relevant HTS codes, ECCNs, and other import/export data.

© 2013 National Instruments. All rights reserved.