USER GUIDE
NI USB-6001/6002/6003 OEM

This document provides information about the dimensions, pinouts, connectors, LEDs, and mounting holes of the National Instruments USB-6001/6002/6003 OEM device.

For more information about the device, refer to the *NI USB-6001/6002/6003 User Guide* and *NI USB-6001 Specifications*, *NI USB-6002 Specifications*, and *NI USB-6003 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-6001/6002/6003 OEM devices.

The NI USB-6001/6002/6003 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.

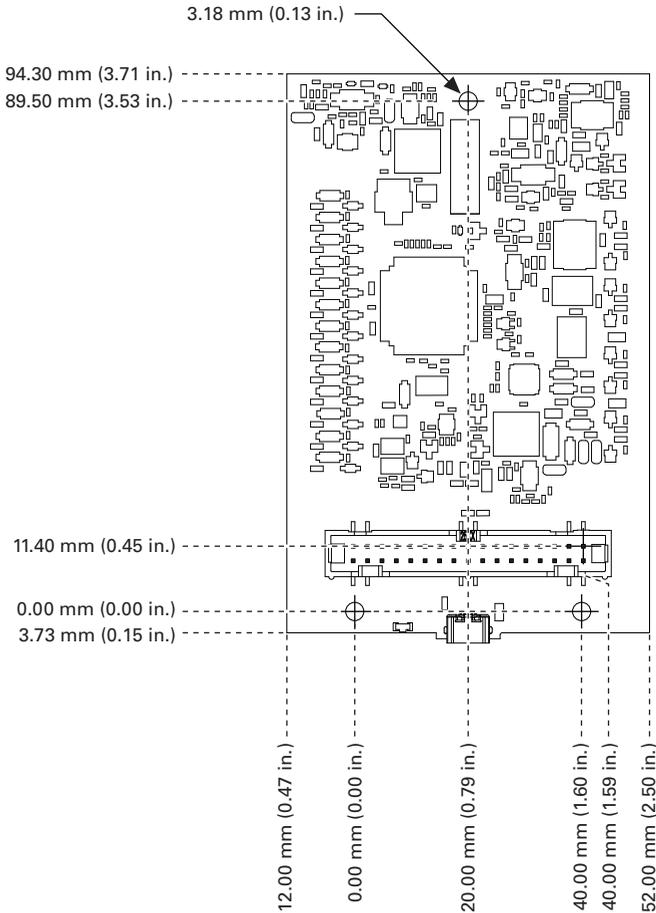**Figure 1.** USB-6001/6002/6003 OEM Device

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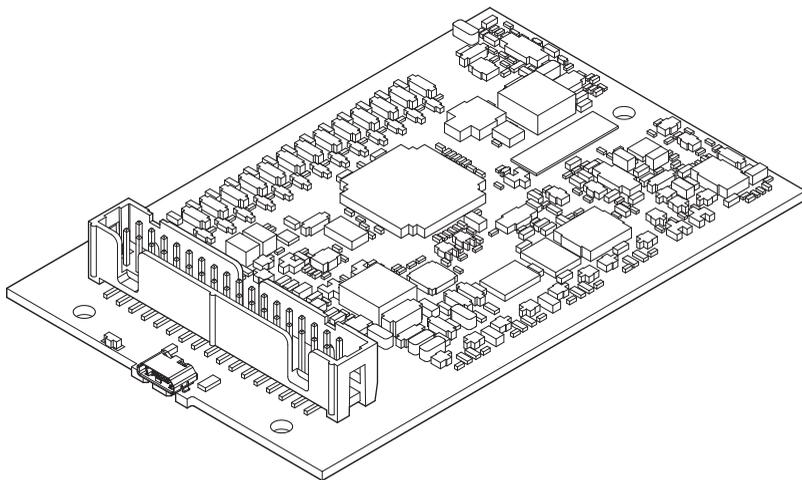
USB-6001/6002/6003 OEM Device Specifications

Most specifications of the USB-6001/6002/6003 OEM device are listed in the *NI USB-6001, NI USB-6002, NI USB-6003 Specifications* documents on `ni.com/manuals`. The following sections contain exceptions to the main specifications.

Physical Characteristics

Weight .... 31 g (1.10 oz)

Dimensions .... 98 mm × 64 mm × 12 mm
(3.90 in. × 2.50 in. × 0.50 in.)

Figure 2. USB-6001/6002/6003 OEM Device Dimensions

I/O Connector Pinouts

Figure 3 shows the USB-6001/6002/6003 OEM device I/O connector pinouts.

Figure 3. USB-6001/6002/6003 OEM Terminal Assignments

+5 V	34	33	P2.0/PFI 0
D GND	32	31	P1.3
P1.2	30	29	P1.1/PFI 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	AO GND
AO1	2	1	AO0

Signal Descriptions

Most of the signals available on the I/O connector are described in the *NI USB-6001/6002/6003 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-6001/6002/6003 OEM device can be mounted to a motherboard using the 34-pin connector, as shown in Figures 4 and 5.

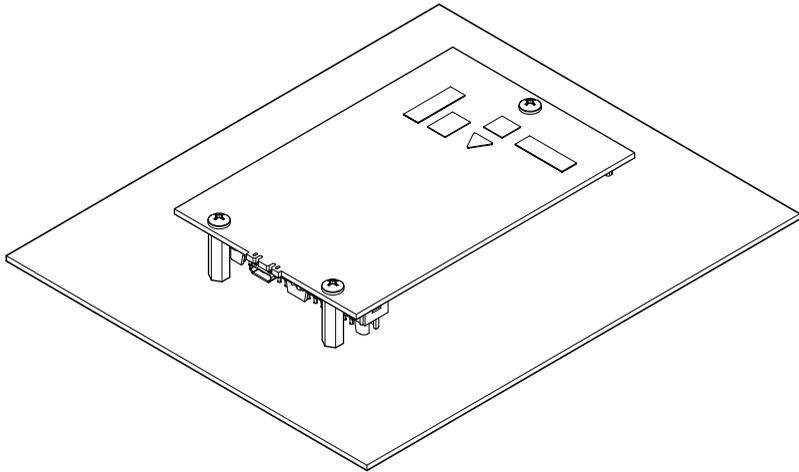**Figure 4.** Mounting Using a 34-Pin Connector
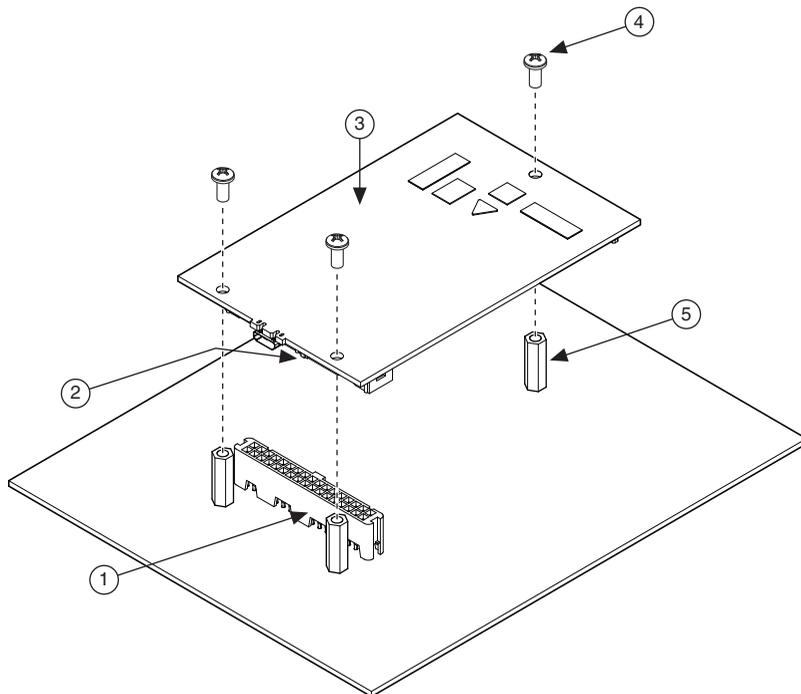
1	Board Mount Socket	4	Mounting Screw
2	34-Pin Connector	5	Mounting Standoff
3	USB-6001/6002/6003 OEM Device		

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-6001/6002/6003 OEM device to connect to the USB host. In this case, leave the D+ and D- signals and VBUS (on the 34-pin connector) unconnected.

You can also use a USB connector on your motherboard to connect the USB-6001/6002/6003 OEM device to the USB host through the 34-pin connector. In this case, do not connect to the USB connector on the USB-6001/6002/6003 OEM device.

Using the Status LED Driver

The LED signal indicates the device status as listed in the *NI USB-6001/6002/6003 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.
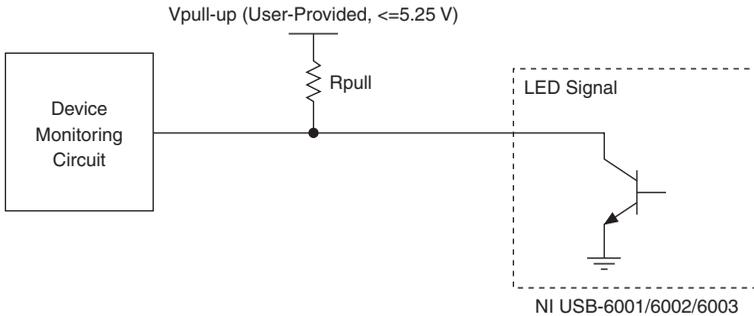
To drive a status LED, refer to the circuit as shown in Figure 6.

Figure 6. To Drive a Status LED
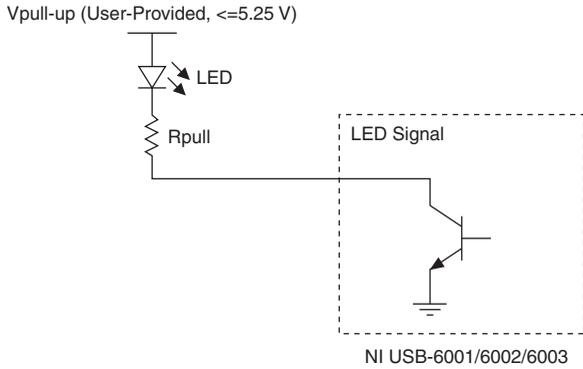
To use the LED signal to monitor the device state, refer to the circuit as shown in Figure 7.

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	$I_{OL} = 8$ mA	—	0.4 V
	$I_{OL} = 18$ 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-6001/6002/6003 OEM device.

Table 3. NI USB-6001/6002/6003 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

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