
GPIB-USB Interfaces Getting Started



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**Ihr Ansprechpartner /
Your Partner:**

dataTec AG

E-Mail: info@datatec.eu

>>> www.datatec.eu



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Contents

Overview..... 3

 Installation..... 3

 LED Signaling 5

 GPIB Pinout..... 6

Overview

The GPIB-USB-HS and The GPIB-USB-HS+ are IEEE 488 controller devices for computers with USB slots. The GPIB-USB-HS and The GPIB-USB-HS+ achieve maximum IEEE 488.2 performance and are completely IEEE 488.2 compatible. With no GPIB cable required for instrument connection, you can use the Hi-Speed USB port to control up to 14 programmable GPIB instruments. The device includes a license for the NI-488.2 driver software, providing maximum reliability for connecting to third-party instruments with GPIB.

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Installation



Notice Ground loops create an electric shock hazard and can cause damage to your GPIB-USB hardware, your computer, and other system components. A ground loop can occur when your computer and one or more connected instruments do not share the same ground potential.

To prevent damage to your GPIB-USB hardware and other system components, do any of the following:

- Ensure that your system and all instruments connected to it share the same ground potential. This eliminates the possibility of voltage differential running through your system.
- Use a GPIB-120B Bus Isolator/Expander to isolate GPIB systems and expand the GPIB interface up to 28 devices.
- Use a pair of GPIB-140A High-Speed Fiber-Optic Bus Extenders. This transforms the GPIB signals at each end into fiber optic signals, allowing each unit to reside at a

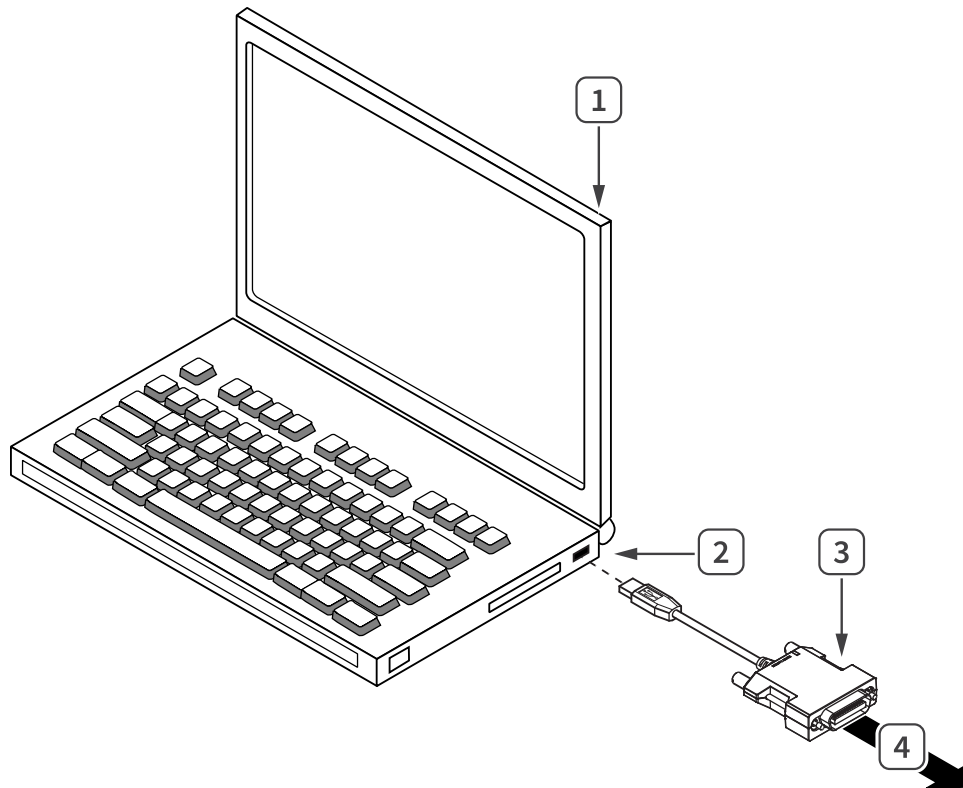
different ground potential.

- Use an isolated USB hub.

Complete the following steps to install your interface:

1. Connect the USB connector from the GPIB-USB interface to an available USB Type A port on your computer.
2. Before connecting the GPIB-USB interface to GPIB devices, ensure that the computer and the GPIB devices are at the same ground potential. The GPIB-USB interface connects directly to most GPIB devices without requiring a GPIB cable.
3. If your computer is already running, the operating system automatically detects the GPIB interface. Otherwise, the GPIB interface is detected when you start your computer.

Figure 1. Installing the GPIB-USB Interface



1 Computer	2 USB Connector	3 GPIB-USB Interface	4 To GPIB Devices
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The GPIB hardware installation is now complete.

LED Signaling

The GPIB-USB-HS controller uses two LEDs to indicate status and activity.

When you connect the GPIB-USB-HS controller, the READY LED lights either green or amber once the driver is installed and detected. The following table summarizes the functionality of the LEDs on the GPIB-USB-HS hardware.

Table 1. GPIB-USB-HS LED Descriptions

LED	Description
READY	Green indicates that the GPIB-USB-HS is plugged into a USB full-speed (USB 1.1) port.
	Amber indicates that the GPIB-USB-HS is plugged into a USB Hi-Speed (USB 2.0) port.
ACTIVE	Indicates activity on the GPIB bus.

The GPIB-USB-HS+ controller uses a multicolored LED to indicate status and activity. The following table summarizes the functionality of the LEDs on the GPIB-USB-HS+ hardware.

Table 2. GPIB-USB-HS+ LED Descriptions

LED	Description
Alternating Amber/ Green	The GPIB-USB-HS+ is not ready to use. You must install (or re-install) the NI-488.2 driver before using the GPIB-USB-HS+. <p>Note: Windows 8 and later suspend power to a USB device that does not have a driver attached. If the LED does not light, try reinstalling the NI-488.2 driver.</p>
Steady Green	Indicates that the GPIB-USB-HS+ is plugged into a USB full-speed (USB 1.1) port.
Steady Amber	Indicates that the GPIB-USB-HS+ is plugged into a USB Hi-Speed (USB 2.0) port.
Blinking Amber or Green	Indicates activity on the GPIB bus or that the GPIB Analyzer is capturing.

GPIB Pinout

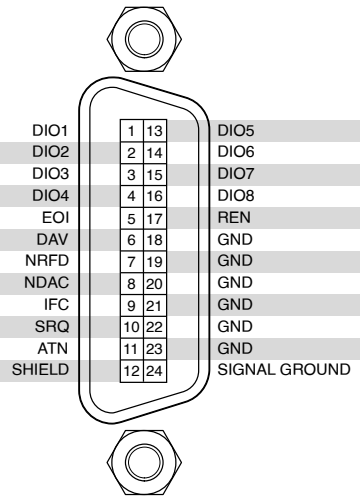


Table 3. Signal Descriptions

Signal	Terminal	Description
DIO1	1	Data Input/Output Bit.
DIO2	2	Data Input/Output Bit.
DIO3	3	Data Input/Output Bit.
DIO4	4	Data Input/Output Bit.
EOI	5	End-Or-Identify.
DAV	6	Data Valid.
NRFD	7	Not Ready For Data.
NDAC	8	Not Data Accepted.
IFC	9	Interface Clear.
SRQ	10	Service Request.
ATN	11	Attention.
SHIELD	12	Shield.
DIO5	13	Data Input/Output Bit.
DIO6	14	Data Input/Output Bit.

Signal	Terminal	Description
DIO7	15	Data Input/Output Bit.
DIO8	16	Data Input/Output Bit.
REN	17	Remote Enable.
GND	18	Ground—Wire twisted with DAV.
GND	19	Ground—Wire twisted with NRFD.
GND	20	Ground—Wire twisted with NDAC.
GND	21	Ground—Wire twisted with IFC.
GND	22	Ground—Wire twisted with SRQ.
GND	23	Ground—Wire twisted with ATN.
SIGNAL GROUND	24	Logic Ground.