KEITHLEY

Model KUSB-488B USB to GPIB Converter

Quick Start Guide

KUSB-488B-903-01 Rev. A / March 2010

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A G R E A T E R M E A S U R E O F C O N F I D E N C E

Model KUSB-488B
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Welcome to Keithley Instruments product ownership

We would like to thank you for choosing Keithley Instruments products for your electronic test and measurement needs.

If you have any questions after reviewing this information, please contact your local Keithley Instruments representative or call Keithley Instruments corporate headquarters (toll-free inside the U.S. and Canada only) at 1-888-KEITHLEY (1-888-534-8453), or from outside the U.S. at +1-440-248-0400. For worldwide contact numbers, visit our website at www.keithley.com.

Model KUSB-488B features

The Model KUSB-488B USB to GPIB Converter (see Figure 1) has the following advanced features:

- IEEE-488.1 and IEEE-488.2 standards compatible
- Plug and play interface (attached 2 m (78.74 in.) cable; USB 2.0 compatible)
- Up to 1.2 MB per second data transfer rates
- Built-in 32 KB first-in first-out (FIFO) buffer for read/write operations
- No external power required
- Device drivers for Microsoft Windows® XP/2000/Vista operating systems
- An interactive utility for testing and diagnostics
- Command-compatible driver APIs (application program interfaces) for use with Keithley Instruments, National Instruments™ (NI)[1], and VISA (Virtual Instrument Software Architecture) libraries

Figure 1: KUSB-488B USB to GPIB Converter

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1. National Instruments™ and NI™ are trademarks of the National Instruments Corporation.

NOTE   For LabVIEW™ and LabWindows/CVI™ support, Keithley Instruments recommends that you install the NI command-compatible driver; for LabVIEW programming, you can also install the LabVIEW GPIB virtual instruments (VIs) that are optimized for use with the Model KUSB-488B.

Unpacking and inspection

CAUTION   *The Model KUSB-488B contains electrostatic-sensitive components that can be easily damaged by static electricity. Handle the module on a grounded antistatic mat while wearing an antistatic wristband (grounded at the same point as the antistatic mat).*

Inspection for damage

The Model KUSB-488B was carefully inspected electrically and mechanically before shipment. After unpacking all items from the shipping carton, check for any obvious signs of physical damage that may have occurred during transit. Report any damage to the shipping agent immediately. Save the original packing carton for possible future shipment.

Shipment contents

The following items are included with every Model KUSB-488B order:

- Model KUSB-488B USB to GPIB Controller
- Product Information CD-ROM (part number KI488-950-01), which contains the following software and manuals:
  - **Drivers and control software**
  - **Quick Start Guide (part number KUSB-488B-903-01):** Describes the steps needed to unpack, install, and configure your Model KUSB-488B software and hardware.
  - **Reference Manual (part number KI488-901-01):** This manual, which contains information for both the Models KUSB-488B and KPCI-488LPA, provides programming information for Keithley command-compatible functions, NI command-compatible functions (syntax and examples in Visual C/C++, Visual Basic, and so on), and industry-standard VISA libraries.

NOTE   To view the Reference Manual on the Product Information CD-ROM without installing the software, open the root directory of the CD-ROM and double-click the `KI488-901-01 (A - Mar 2010).pdf` file.

You can also check the Keithley Instruments website (www.keithley.com) for the latest revisions of the manuals, specifications, and drivers for this product.

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Repacking for return shipment

If you need to return the Model KUSB-488B for repair, carefully pack the unit in its original packing carton (or equivalent), and follow these instructions:

- Request a Return Material Authorization (RMA) number either by calling the Keithley Instruments U.S. Service Center (toll-free in the U.S. or Canada only at 1-800-552-1115), or by submitting a request through the Keithley Instruments website at www.keithley.com/company/rma_number. Contact information for worldwide offices is available at www.keithley.com.
- Identify the warranty status of the Model KUSB-488B.
- Write "ATTENTION REPAIR DEPARTMENT" and the RMA number on the shipping label.

Software and hardware installation

CAUTION	*Please read through all installation instructions before installing the Model KUSB-488B; you must perform the following procedures in a specific order to avoid possible system problems.*

Important installation requirements

You must complete Model KUSB-488B installation in this order:

Step 1: Driver installation

Step 2: Hardware installation

NOTE	**Review the following list of important requirements that must be noted before you install the Model KUSB-488B:**

- The Model KUSB-488B is not compatible with Dynamic Link Libraries (DLL) from other IEEE interface board suppliers.

- In order to maintain the Model KUSB-488B converter's command compatibility with National Instruments™ and Capital Equipment Corporation (CEC), the installation program for the Model KUSB-488B will install a DLL that has the same name as those provided by National Instruments (GPIB-32.DLL), CEC, and earlier Keithley Instruments interfaces (IEEE_32M.DLL).

- For proper installation of the Model KUSB-488B hardware and software, you must remove any existing GPIB interfaces from your computer and uninstall any currently installed GPIB drivers.

- Failure to uninstall any existing GPIB drivers before installing the Model KUSB-488B command-compatible drivers may cause system problems.

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Step 1: Driver installation

To install the GPIB driver package on your computer:

1. Insert the Keithley Instruments Product Information CD-ROM.
2. Allow the CD-ROM to autorun and begin the setup program. If setup does not start, open the CD-ROM using Microsoft Windows Explorer and double-click **setup.exe** to launch the setup program. When setup executes, the KI-488 Driver CD installation screen opens (see Figure 2).

Figure 2: KI-488 Driver CD installation screen

3. Follow the prompts to complete the setup procedure.
4. You may choose to install the Keithley command-compatible driver or the NI command-compatible driver. Refer to Models KPCI-488LPA and KUSB-488B Reference Manual (part number KI488-901-01) for available functions of either compatible driver.
5. When setup finishes, click **Yes** to restart your system (see Figure 3).

Figure 3: Restart system

Step 2: Hardware installation

CAUTION   *You must install the KUSB-488B software **before** installing the hardware (refer to Driver installation above). Failure to install the software first may result in damage to equipment.*

Hardware installation procedure

To install the Model KUSB-488B USB to GPIB Converter:

1. Connect the Model KUSB-488B to the GPIB connector on the rear panel of the instrument.
2. Plug the Model KUSB-488B USB cable into a USB port on your computer. The Found New Hardware dialog box will display on your computer screen.
3. Select **No, not at this time**, and then click **Next** (see Figure 4).

Figure 4: Found New Hardware Wizard dialog box

4. Select **Install the software automatically** to initiate installation of the KUSB-488B Loader software, and then click **Next** (see Figure 5).

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Figure 5: Select automatic installation of KUSB-488B Loader software

5. When the KUSB-488B Loader software installation is complete, the Completing the Found New Hardware Wizard dialog box displays. Click **Finish** to complete the installation (see Figure 6).

Figure 6: Completing KUSB-488B Loader software installation

6. The Found New Hardware Wizard will display again to initiate installation of the KUSB-488B software. Select **No, not at this time**, and then click **Next** (see Figure 7).

Figure 7: Found New Hardware Wizard dialog box

7. Select **Install the software automatically** to initiate installation of the KUSB-488B software, and then click **Next** (see Figure 8).

Figure 8: Select automatic installation of KUSB-488B software

8. When the KUSB-488B software installation is complete, the Completing the Found New Hardware Wizard dialog box displays. Click **Finish** to complete the installation (see Figure 9).

Figure 9: Completing KUSB-488B software installation

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Troubleshooting

If your system does not display the Found New Hardware Wizard after you plug the Model KUSB-488B cable into a USB port on your computer, unplug the cable and plug it into a different USB port (or plug it into the same port again).

If the Found New Hardware Wizard does not start after you have reconnected the USB connector to your computer, you can initiate the wizard manually.

To manually initiate the Found New Hardware Wizard:

1. Select **Start > Settings > Control Panel**, and then double-click **Add Hardware**. The Add Hardware Wizard dialog box displays (see Figure 10).

Figure 10: Add Hardware Wizard dialog box

2. Click **Next**. The wizard then searches for any new hardware that has not yet been installed.
   - **If the wizard finds new hardware:** The Found New Hardware wizard will display. Click **Next** and follow the prompts (instructions are also listed in the Hardware installation procedure above).
   - **If the wizard does not find any new hardware:** Turn your computer off, and then turn it on again. Once it has rebooted, the Found New Hardware wizard should launch.

Using the Keithley GPIB Configuration Utility

The Keithley GPIB Configuration Utility, which is part of the KI-488 driver package, allows you to configure the following settings:

- KUSB-488B bus address
- Bus timing
- I/O timeout
- Set the KUSB-488B to be a system controller
- Enable autopolling

To launch the configuration utility:

1. From Microsoft Windows, select **Start > All Programs**.
2. From the programs selection, select **Keithley Instruments > KI-488 > KI-488 Configuration Utility**. The Keithley GPIB Configuration Utility window will open (see Figure 11).

Figure 11: Keithley GPIB Configuration Utility

3. Double-click the interface icon (for example, **GPIB0** in Figure 11) to open the GPIB Interface and Bus Setting dialog box (see Figure 12).

4. Make any desired changes to the configuration, then click **OK**.

Figure 12: **GPIB interface and bus configuration**

5. Save these configuration changes by selecting **Setting > Save Configuration** in the Keithley GPIB Configuration Utility window.
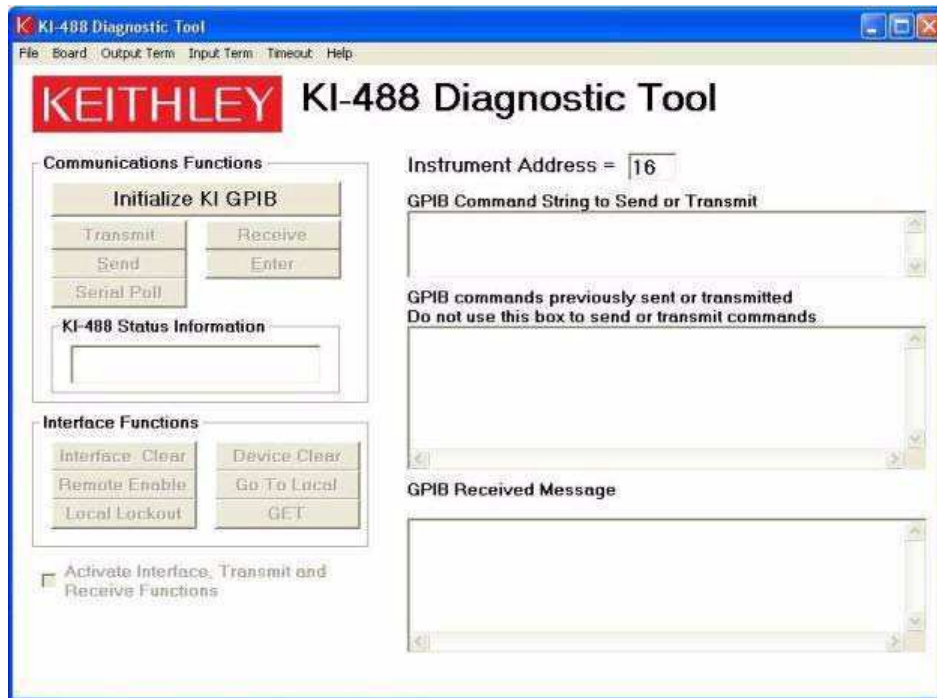
Using the Keithley Instruments KI-488 Diagnostic Tool

The KI-488 Diagnostic Tool lets you communicate with any GPIB instrument by writing command strings to your instrument and reading the results.

To launch the diagnostic tool:

1. From Microsoft Windows, select **Start > All Programs**.
2. From the programs selection, select **Keithley Instruments > KI-488 > KI-488 Diagnostic Tool**. The KI-488 Diagnostic Tool window will open (see Figure 13).

Figure 13: KI-488 Diagnostic Tool

3. Click the **Initialize KI GPIB** button; this will enable the feature buttons and allow you to set the required parameters.

NOTE You must click the **Initialize KI GPIB** button before communicating with your instrument using the KI-488 Diagnostic Tool.

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4. Type any command strings that you want to send to your instrument into the **GPIB Command String to Send or Transmit** box.

NOTE For detailed information about using command strings with the Model KUSB-488B, refer to the KPCI-488LPA/KUSB-488B Reference Manual (part number KI488-901-01) on the Product Information CD-ROM that came with your product.

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5. Start the desired communications function by clicking one of the buttons in the Communications Functions area of the KI-488 Diagnostic Tool window (see Figure 13). Data returned from the instrument is displayed in the GPIB Received Message box. All data strings that you send to instruments are logged in the GPIB commands previously sent or transmitted box.

Next steps

For detailed information about using the Model KUSB-488B USB to GPIB Converter in test and measurement applications, review the additional product documentation that is available on the Product Information CD-ROM that came with your Model KUSB-488B.

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WARRANTY

Keithley Instruments, Inc. warrants this product to be free from defects in material and workmanship for a period of one (1) year from date of shipment.

Keithley Instruments, Inc. warrants the following items for 90 days from the date of shipment: probes, cables, software, rechargeable batteries, diskettes, and documentation.

During the warranty period, Keithley Instruments will, at its option, either repair or replace any product that proves to be defective.

To exercise this warranty, write or call your local Keithley Instruments representative, or contact Keithley Instruments headquarters in Cleveland, Ohio. You will be given prompt assistance and return instructions. Send the product, transportation prepaid, to the indicated service facility. Repairs will be made and the product returned, transportation prepaid. Repaired or replaced products are warranted for the balance of the original warranty period, or at least 90 days.

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