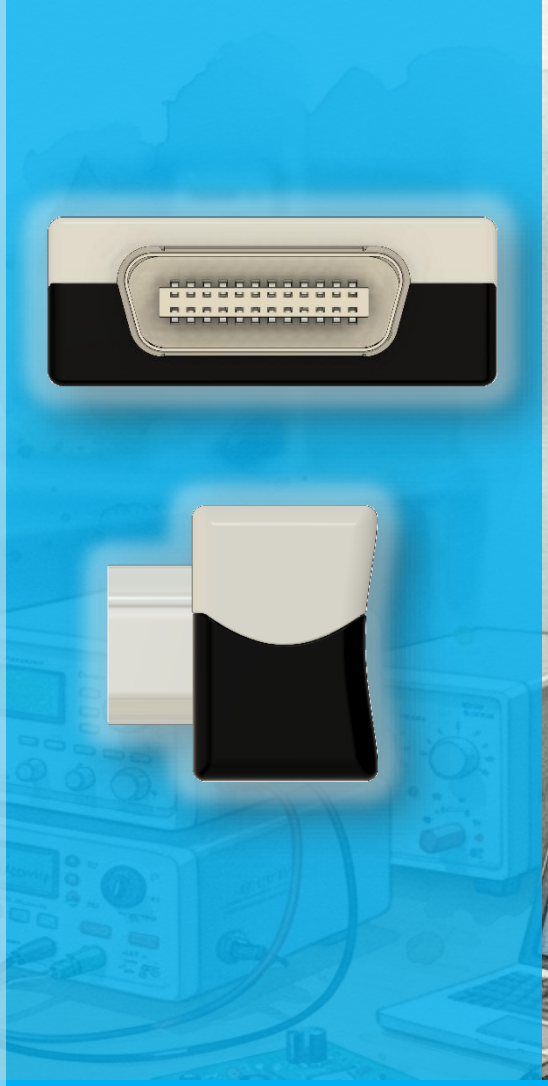
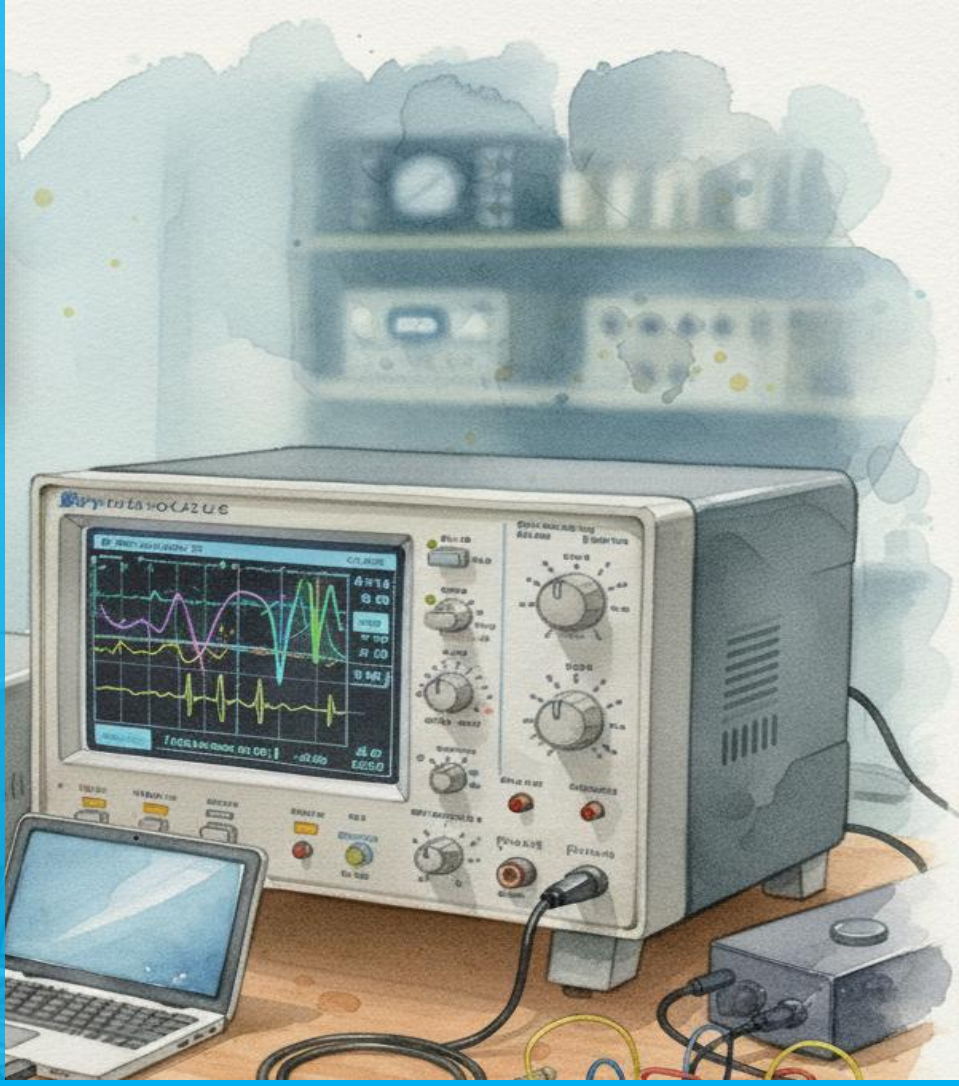
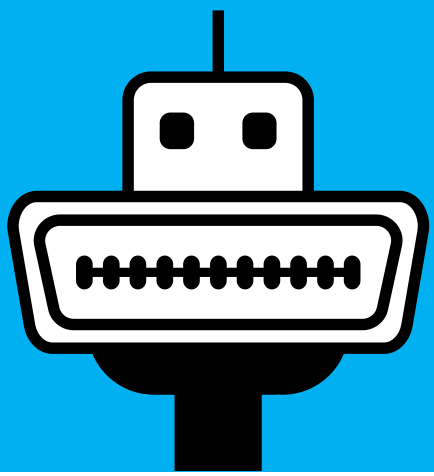




XyphroLabs UsbGpib V2

Manual



Last Update: 23th November 2025

Contents

Introduction

The UsbGpib V2 is a compact, high-performance USB-to-GPIB adapter engineered from the ground up for seamless integration with modern and legacy test equipment.

Unlike clone devices, UsbGpib V2 delivers robust IEEE-488.1 and IEEE-488.2 compatibility, stable USBTMC operation, and a unique device identifier that ensures consistent VISA resource naming across systems - eliminating the need for manual remapping or COM port assignments.

Designed to match the physical footprint and cable path of traditional GPIB connectors, the adapter fits into all existing lab setups while offering significant advantages in space efficiency, cable management, and cross-platform support. Whether you're automating instrument control on Windows, macOS, Linux, or FreeBSD, UsbGpib V2 provides plug-and-play reliability without proprietary drivers.

With firmware upgradability, protocol-aware communication, and a focus on user-friendly integration, UsbGpib V2 is the ideal choice for engineers, researchers, and developers seeking a dependable GPIB interface that just works.

Advantages of UsbGpib V2 adapter

- **Modern Connectivity:** Bridges USB and IEEE-488 (GPIB) with full USBTMC protocol compliance
- **Slim Design:** Minimal depth of just **1.5 cm** allows instruments to be placed closer to walls or rack panels
- **Cable Efficiency:** Uses thin USB cables instead of bulky “garden hose” GPIB cables, reducing clutter and improving portability
- **Multi-Adapter Support:** Unique identifier per unit enables multiple adapters to be connected and operated reliably on the same PC
- **No COM Ports:** Avoids serial port mapping issues; Each adapter is consistently accessible with the same name across multiple PCs
- **Transparent Operation:** Plug into your instruments GPIB port and it behaves like a modern USB measurement device, including proper USB port deactivation when the instrument is powered off
- **Controller Role:** Optimized as a dedicated GPIB controller for **one instrument per adapter**, ensuring robust one-to-one communication and optimized cable management.
- **Standards Compliance:** Implements full IEEE-488.1 IEEE-488.2 controller support via USBTMC, including status byte reading, triggering, service requests, and termination settings
- **Software Compatibility:** Works seamlessly with all standard VISA providers (**NI VISA, Rohde & Schwarz VISA, Keysight VISA**)
- **Tool Integration:** Fully compatible with **LabVIEW, MATLAB, PyVISA, and PyVISA-py** for established and modern automation workflows
- **Cross-Platform Support:** Operation across **Windows, macOS, FreeBSD, and Linux**
- **German Engineering:** Designed and developed in Germany over **six years**, extensively tested for robustness and compatibility with instruments from new to decades-old

- **Reliability:** Built to ensure long automated measurement sequences complete without interruption
- **Future-Proof:** Firmware is **field-upgradable and actively maintained**, providing ongoing improvements and compatibility updates

Safety Precautions

To ensure reliable operation and long-term durability of the UsbGpib V2 adapter, please observe the following environmental and handling Guidelines

Operating Conditions

Temperature Range:	0°C to +50°C
Humidity:	10% to 90% RH, non-condensing
Altitude:	Up to 2000m above sea level

Storage Conditions

Temperature Range:	-20°C to +70°C
Humidity:	5% to 95% RH, non-condensing

Moisture & Contaminants

- Avoid exposure to liquids, vapors or corrosive substances
- Do not operate in environments with condensation, high dust levels or chemical fumes

Electric Safety

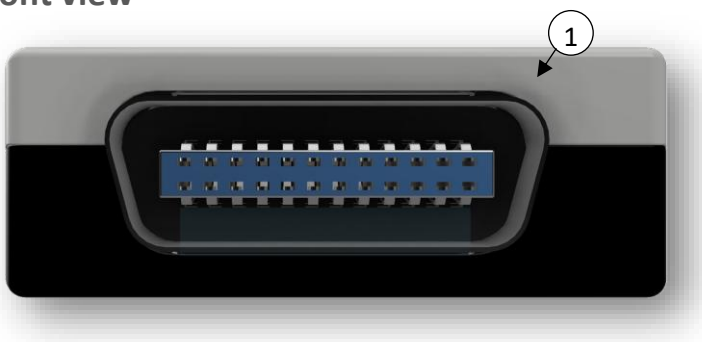
- Do not expose to voltage levels above 6V
- Do not short circuit or connect to non IEEE488 / non-USB compliant ports
- Ensure proper grounding of connected instruments

Handling & Installation

- Do not bend or stress the USB or GPIB connectors during installation
- Avoid excessive force when plugging/unplugging
- Avoid direct sunlight
- Keep away from electrostatic discharge (ESD) sources; use ESD-safe handling procedures

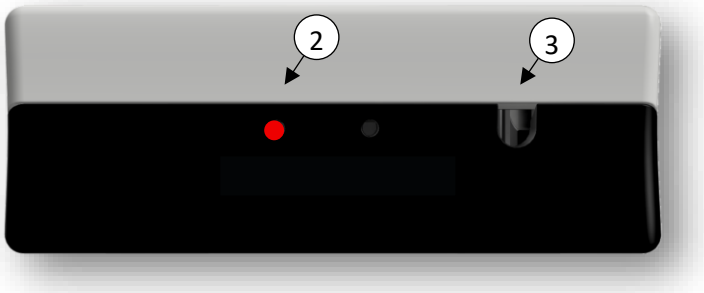
Overview

Front view



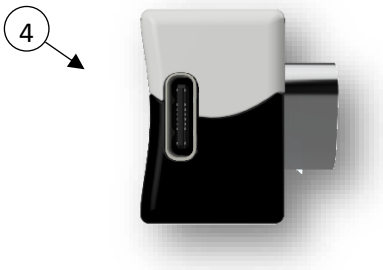
(1) GPIB connector – Plugs directly into your measurement equipments GPIB port. The 24 pin connector uses a standard IEEE-488 pinout.

Back view



(2) Status LED
(3) Firmware update button

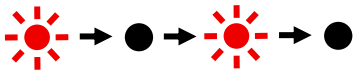
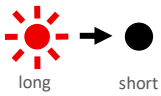
Side view



(4) USB-Type C connector – plug it with either a USB Type C to USB type A or USB type C to type C cable into your PC.

LED

The LED has multiple purposes as summarized in the table below.

Led blinking with a frequency of about 2 Hz. 	The Adapter is connected to a USB port, but no GPIB device is found. Connect a GPIB measurement device to the GPIB port and ensure that GPIB is enabled in the instrument.
LED is continuously on 	The GPIB device was identified, but no GPIB communication is executed from PC,
LED is flickering (mostly on, but sometimes off for short periods)  	Every time GPIB data is transferred from the PC or to the PC, the LED will be turned off for short periods of time. This indicates data exchange = activity.
LED is always off 	The USB port is not connected to the PC, the PC powered off or the USB cable defect.

Using the adapter

To use the adapter, connect the USB-C connector with a USB cable to a PC.

The GPIB connector can be plugged directly into the measurement instrument, which you want to control. It can also connect via a GPIB cable if required due to setup constraints.

When the measurement equipment is turned on and if the GPIB port is enabled in the instrument, the adapter will enumerate on the PC as USBTMC class device.

Operating system specific instructions & tutorials are available under this link:

https://github.com/xyphro/UsbGpib/blob/master/Tutorials/README.md

Those tutorials explain how to ensure that a USB driver is installed and guide through the first setup up to the point where you can talk with the instrument.

***Note:** The UsbGpib Adapter does not enumerate on the PC, if it is not connected to a GPIB measurement device, which is powered and GPIB enabled.*

Firmware update procedure

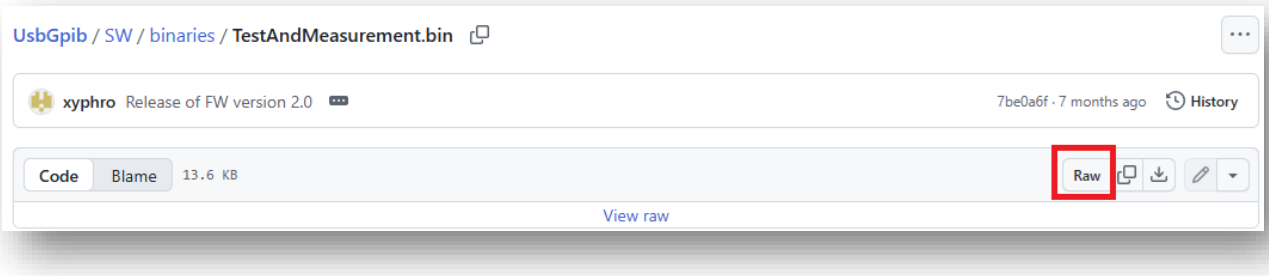
The UsbGpib V2 adapter comes preinstalled with a firmware. But as the firmware is actively maintained you might want to update the adapters firmware sooner or later.

The UsbGpib V2 adapter allows for firmware updates. It requires the bootloader mode to be entered, followed by programming the firmware and power cycling the adapter.

Firmware images are distributed via GitHub:

https://github.com/xyphro/UsbGpib/tree/master/SW/binaries

to download, left-click on “TestAndMeasurement.bin” file. After the new page loads, click on the RAW button on the top right side:

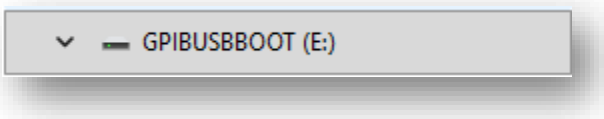


After downloading the file, rename it to FLASH.BIN. Ensure to use capital letters for the full filename during rename. Filenames with lowercase letters like “Flash.bin”, “flash.bin”, “FLASH.bin” will result in the firmware update procedure not to work (but it won’t break the adapter).

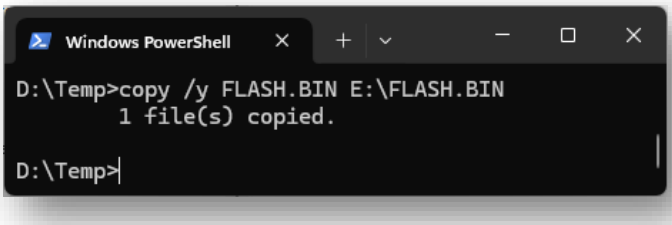
After downloading the file, enter the bootloader:

- Connect the adapter to a PC via USB. The GPIB side can be left unconnected.
- Hold the button (3) down for a few seconds (use e.g. a pencil to push it), until the PC recognizes a memory stick device (USB flash or mass storage device).

A new drive appears on the PC:



Then open a command line and enter a command like the following:



Adjust the file paths and drive letters to your actual system.

When no error is shown, you can unplug USB (and GPIB) and reconnect to power cycle the adapter and use the new firmware.

> ***Note:*** *Drag and drop operation e.g. from Windows explorer does will work. Ensure you use the command line method as described.*

Technical specifications

Item	Specification
USB power requirements	• 5V supply voltage nominal • Valid supply voltage range: 4.5V to 5.5V • 100mA current consumption
USB standard	• USB 1.1, USB2.0, USB3 and higher are supported with full speed mode
USB connector	• USB Type-C connector • Compatible with USB-A by using a USB Type C to USB Type A cable • Compatible with USB Type C to USB Type C cable.
Supported IEEE-488 features	• IEEE-488.1, IEEE-488.2, HPIB, GPIB compatible • Service request (reported using interrupt transfers) • Device Clearing • Trigger • Status Byte read • GPIB write, read and queries (supports talker only, listener only and talker+listener instruments) • Full timeout support for reliable operation • All GPIB features are exposed using the exact USBTMC equivalents for good compatibility
Supported IEEE-488 device roles	• Device controller
Operating Systems	• Windows • Linux, FreeBSD • Mac-OS
Dimensions	• Excluding GPIB connector: ~ 60mm x 23mm x 15mm (Width + Height * Depth) • Including GPIB connector: ~ 60mm x 23mm x 22mm (Width + Height * Depth)
Weight	• ~30g

References

Issue report and support	https://github.com/xyphro/UsbGpib/issues
Technical support contact and feature requests	xyphro@gmail.com
Firmware download	https://github.com/xyphro/UsbGpib/blob/master/SW/binaries/TestAndMeasurement.bin
Tutorials	https://github.com/xyphro/UsbGpib/blob/master/Tutorials/README.md