

USB 2.1 Loop Back Plug Users Guide

(Model PMUSB02)

Introduction

When used with the PassMark BurnInTest or USB2Test software, the USB 2.0 Loop Back Plug can be used to test that PC USB1.x or USB2.0 ports function correctly and provide the expected speed. It is possible to verify that:

- The USB port is powered.
- That a port is capable of High-Speed (480Mb/s) or Full-Speed (12 Mb/s). The maximum speed of the port can be benchmarked.
- That data can be sent and received from the port.
- That data can be transferred without error.
- The system remains stable under long periods of load.
- USB1.x/2.0 in Windows has been correctly installed.
- Low-level USB bus errors introduced by poor cabling, for example, are not occurring.

The USB 2.0 Loop Back Plug is software upgradeable.

General Notes

Compatibility

Windows 2000, XP and 2003 Server are supported. Windows 98, ME and NT4 are **not** supported. BurnInTest Pro V4 (or above) or USB2Test software is required.

USB Hubs

While the USB loopback plug will work when connected via a self-powered hub, direct connection is the preferred method of connection when testing a computer system. Having a direct connection eliminates the hub as a point of failure. If the aim of the testing is to test the hub hardware itself, then connection via a hub may be preferable.

Cabling

Select a quality captive, shielded, USB cable rated for High-Speed when testing. Some cheaper USB cables are not well shielded and are not recommended. The cable must be shorter than the 5m allowed in the USB standard. If a USB connection is required beyond 5m one or more hubs are required to extend a USB connection.

Multiple USB plugs

Multiple USB plugs can be connected and simultaneous loopback testing carried out.

It should be noted that maximum speed reduces as the number of USB devices are connected. To determine the maximum speed of a USB port, it is recommended only one plug to USB ports managed by a single USB host controller.

Each USB plug is unique and has its own serial number. For this reason the windows plug and play software will attempt to re-install the drivers every time a new Loop back plug is connected. If you are testing with a large number of plugs it can be easier to copy the contents of the device

driver floppy disk to your hard disk before installing the first plug. You can view the serial number and firmware version of each plug from within BurnInTest Professional.

Speed

On a well-configured USB2.0 port directly connected to the PC motherboard (not via a PCI card for example) speeds of greater than 300Mb/s can be expected on a system that is functioning correctly.

WindowsXP Installation

Un-install any previous version of the USB 2.0 Loop Back Plug device driver before installing a new version.

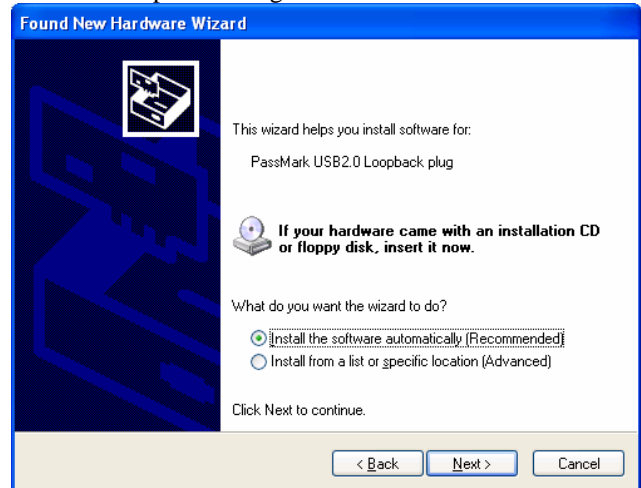
Step1

With the computer turned on and running, connect the USB 2.0 Loop Back Plug to the USB port on the computer to be tested. The central red power light on the USB plug should illuminate when connected. The Windows, "Found New Hardware", window should be displayed.



Step 2

The wizard window should be displayed after plugging in a USB 2.0 Loop Back Plug for the first time.



Make sure that you have either the USB 2.0 Loop Back Plug device driver floppy disk or drivers that you have downloaded from the PassMark web site available. Select "Next" in the window shown, then select "Search for a suitable driver" and then click on Next.

Step 3

Select Continue on the window shown below.

Hardware Installation



The software you are installing for this hardware:

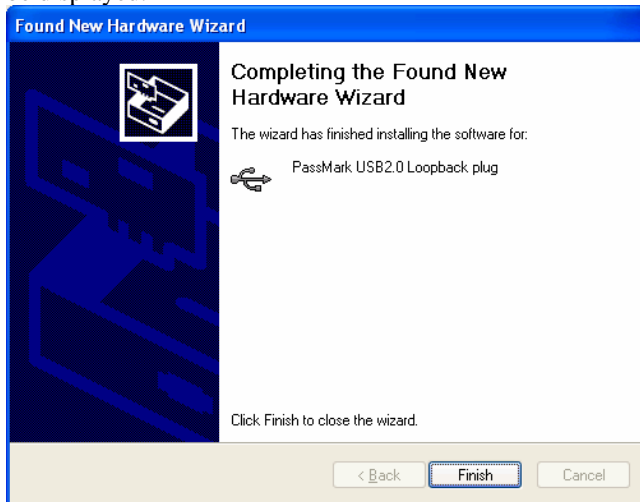
PassMark USB2.0 Loopback plug

has not passed Windows Logo testing to verify its compatibility with Windows XP. [\[Tell me why this testing is important.\]](#)

Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.

Step 4

After successful installation the following window should be displayed.



The Device will step through all of its LEDs to indicate that the hardware has successfully initialized.

Step 5

Copy the USB2Test application from the floppy disk to a directory on your hard disk, such as C:\Program Files\USB2Test. To run the test application, browse to this directory and double click on "USB2Test.exe".

Uninstalling in Windows XP

To remove the device driver because you no longer wish to use the plug on a particular PC, or you are about to upgrade the device driver, then from the Windows "Start", select "Control Panel", "System", "Hardware", "Device Manger", and from the "Universal Serial Bus controllers" branch of the device tree, select the "PassMark USB2.0 Loopback plug" device, and from the menu select "Action", "Uninstall".

Windows 2000 Installation

The Windows 2000 install follows the same steps as the Windows XP install above. Even though the appearance of some of the windows is slightly different, the same selections need to be made.

Trouble shooting

Symptom: No red power light on USB plug

The USB connection from the computer should provide a 5 Volt power supply to the device. There is most likely a fault with the computer.

Symptom: Power but no Found New Hardware window

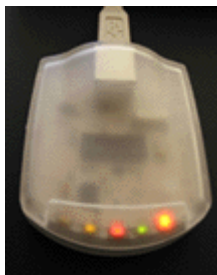
The basic USB device enumeration process could not be completed. This could be a fault in the Windows O/S installation or with the USB hardware in the computer.

Symptom: Slow transfer speed or errors

Again, this could be the USB hardware in the computer or be also caused by external interference, a poorly shielded cable or cable that is too long.

Technical Specifications

USB standard:	2.0 (but is backward compatible with USB 1.1 Full-Speed, 12Mb/s)
Plug and play:	Compliant
Physical connector:	4 wire. (2 x Balanced Signal, 1 Voltage, 1 Ground)
USB Transfer modes:	Bulk
Voltage:	4.4V – 5.25V
Current:	500mA (Max. High-Speed operation)
Clock speed:	24.000Mhz input to x2 multiplier
Device buffer:	480Mb/s (High-Speed): 512 bytes 12Mb/s (Full-Speed): 64 bytes
Case:	High impact MABS plastic
Size:	65mm x 50mm x 20mm (2.5 x 2.0 x 0.8 inches)
Weight:	30.5g (1.1oz)
EMC standards:	AS/NZS 3548:1995, EC
Storage Temperature:	-20 °C to + 70 °C
Usage Temperature:	0 °C to + 50 °C



From Left to Right:

Red LED = USB Bus Error

Yellow LED = Receive data

Red LED = Power

Green LED = Transmit data

Orange LED = 480mb/s (Hi-Speed)

Notes

There are a number of issues with different configurations of Operating Systems and USB2 Host Controllers. It is important to ensure that you have the latest device drivers contained in the latest Microsoft Service Pack.

If a USB port has insufficient power to start the USB2Test device in High-Speed mode you will receive a HID device driver error message "This device cannot start (code 10)". Disconnect other devices from the same USB root hub.

Benchmark tests should be stopped prior to placing a PC in a Sleep state.