

Shoestring Astronomy

USB Modified Webcam
Control Interface
User Manual
Model LXUSB

Revision 1.1
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Introduction

The Shoestring Astronomy USB Modified Webcam Control Interface is designed to allow personal computers to control the additional electrical signals that result when a webcam is modified for long exposure use per the methods of Steve Chambers (www.pmdo.com) or similar methods. Because it is a USB device, it is very convenient to install, is compatible with many operating systems, and requires no additional power source.

Features

- Plugs directly into your computer's USB port.
- Receives its power from your computer via the USB port, so no external power source or battery is necessary.
- Uses the USB HID (Human Interface Device) class driver, which is included with most operating systems such as Windows 98 Second Edition, Windows 2000, and Windows XP. There is no need for a proprietary driver.
- Provides electrical isolation. This is important to avoid noise pickup and ground loops that may be difficult to troubleshoot.
- Red-green LED for software-dependent status indication.

Initial Device Installation

The first time you plug the LXUSB into a computer, it will automatically be identified as a new device. See the section below that applies to your operating system. Operating systems prior to Windows 98 Second Edition do not support USB and the HID class of devices.

After the first installation is complete, the next time you plug the LXUSB into your computer, it will remember that this device has already been installed once and will automatically recognize it.

To remove the LXUSB from your computer, simply unplug it from the USB port.

Installation under Windows XP or Windows 2000

Plug the device into a USB port. The red LED on the LXUSB should light immediately. A “Found New Hardware” balloon will pop up on your monitor. Wait a few moments and the text in the balloon should change to say “Your new hardware is installed and ready to use”. It really is that simple!

Installation under Windows 98 Second Edition

Win98SE installation is a little more work, but still pretty simple. Plug the device into a USB port. The red LED on the LXUSB should light immediately.

- 1) The “Add New Hardware Wizard” should open up. Click the “Next” button.
- 2) The wizard will then say “What do you want Windows to do?” Select “Search for the best driver...”, then click the “Next” button.
- 3) The wizard then says “Windows will search for new drivers...”. Uncheck all the boxes and click “Next”.
- 4) Next the wizard says “Windows driver file search for the device:”, and should show the location as C:\WINDOWS\INF\HIDDEV.INF. Just click the “Next” button.
- 5) At this point, you will probably be asked to insert the Windows 98 Second Edition CD-ROM. Do this, then click “OK”, then click “OK” again
- 6) Finally, click “Finish” and you should be done!

Device Operation Verification

Once you have completed the initial installation, you may want to verify that the LXUSB is working properly before you begin to use it with your imaging software. To do this, you can download and install LXUSBCheck from the Shoestring Astronomy website. This is simple software that allows you to turn the LED on and off, change the color of the LED from red to green, and to control the signals to your webcam. It is intended to allow you to verify that everything is working properly. Should you have trouble getting your third-party imaging software to work, using LXUSBCheck will also allow you to

troubleshoot your setup. In other words, if everything works with LXUSBCheck, then your problem most likely is with your third-party software.

Connecting the LXUSB to Your Webcam

If you already have a modified webcam that uses a serial port or parallel port connector as shown on the Steve Chambers website, you will need to modify it to use an RJ-12 connector. There are two choices on how to do this. One option is to put an RJ-12 jack on your webcam and use a RJ-12 modular cable to go from the webcam to the LXUSB. The other option is to put an attached RJ-12 cable on your webcam, one end with the modular RJ-12 connector, the other end split apart and soldered directly into your webcam. RJ-12 jacks and single ended RJ-12 cables are available from Shoestring Astronomy to support either option.

If you have not yet modified your webcam, then choose either the jack or singled ended cable option, and don't worry about a serial or parallel port connector.

If you choose to add the RJ-12 jack, connect it to your webcam as shown:

Pin 1 – No connection

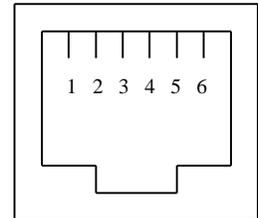
Pin 2 – Common

Pin 3 – Frame 2 Transfer

Pin 4 – CCD Amp

Pin 5 – Shutter

Pin 6 – Frame 1 Transfer (Frame Transfer for SC-1 mods)



If you choose to add the attached cable, wire it in by wire color as shown:

White (Pin 1) – No connection

Black (Pin 2) – Common

Red (Pin 3) – Frame 2 Transfer

Green (Pin 4) – CCD Amp

Yellow (Pin 5) – Shutter

Blue (Pin 6) – Frame 1 Transfer (Frame Transfer for SC-1 mods)

The function of these signals is discussed on Steve Chamber's webpages at www.pmdo.com. For the SC1 modification, only the Frame Transfer is used. For the SC2 modification, all four signals are used.

Once you have the proper modifications made to your webcam, connecting the LXUSB Guide Port Adapter to your webcam is quite simple. If you added the attached cable, simply plug it in to the LXUSB. If you decided to add the RJ-12 jack to your webcam, make sure that the cable you use is properly constructed. You can buy one from Shoestring Astronomy, you can make your own, or buy them elsewhere, but be sure that the wires connect straight through, i.e. pin 1 to pin 1, etc. Some cables reverse the order of the pins and this will not work properly.

Limited Warranty

In no event shall Shoestring Astronomy be liable for any claim for incidental or consequential damage arising out of or in connection, manufacture, delivery or use of any product offered on this website or by information received by US mail, E-mail, data files or fax. All products are guaranteed to the original purchaser to be free from defects in material and workmanship for a period of one year from the date of purchase. At its option, Shoestring Astronomy will repair or replace the defective product. Shoestring Astronomy is not responsible for damage caused by the freight carrier, i.e.: UPS, FED EX, etc., to our product. A claim to repair or replace the product must be initiated by the recipient. Warranty coverage excludes normal wear and tear, or damage caused by improper installation, any modification, abuse, misuse, improper maintenance, and unauthorized repairs or modifications to the original product. Warranty does not cover those parts prone to failure under normal wear and tear. Any product repair request must be submitted and approved before shipment to Shoestring Astronomy. Shipper is responsible for proper packaging, shipping and insurance on approved repair items. Shoestring Astronomy will package, insure and return ship at no cost to the customer.

Return Policy

Merchandise may be returned in new (mint) condition within 30 days of receipt for exchange or a full refund. (less shipping/handling). If you'd like to apply your return credit to a new order, we'd be happy to do that. Please include this information with your return. We must receive the returned merchandise within 30 days of the date you received it. All items must be in new (mint) condition. Returned items cannot show evidence of use or wear, dirt, or blemishes of any kind. Merchandise must be returned in its original packaging and should include all supplied materials, instructions, warranty cards, original accessories, hardware, and any software provided. Shoestring Astronomy is not responsible for lost or damaged packages. Return shipping costs are the responsibility of the customer.

Shoestring Astronomy

LXUSB Cabling

Revision 1.0

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DISCLAIMER

This document is intended to be a guideline only. Shoestring Astronomy will not be held responsible for any direct or consequential damage that may result while or from making this modification. This work will be done completely at the owner's risk.

Adding a Jack to Your Webcam

If you already have a modified webcam that uses a serial port or parallel port connector as shown on the Steve Chambers website, you will need to modify it to use an RJ-12 connector. There are two choices on how to do this. One option is to put an RJ-12 jack on your webcam and use a RJ-12 modular cable to go from the webcam to the LXUSB. The other option is to put an attached RJ-12 cable on your webcam, one end with the modular RJ-12 connector, the other end split apart and soldered directly into your webcam. RJ-12 jacks (LXJACK) and single ended RJ-12 cables with couplers (LXKIT1) are available from Shoestring Astronomy to support either option.

If you have not yet modified your webcam, then choose either the jack or singled ended cable option, and don't worry about a serial or parallel port connector.

If you choose to add the RJ-12 jack, connect it to your webcam as shown:

Pin 1: Usually not connected, but this may be power pin on some mounts

Pin 2: Common (ground)

Pin 3: Frame 2 Transfer

Pin 4: CCD Amp

Pin 5: Shutter

Pin 6: Frame 1 Transfer (Frame Transfer for SC-1 mods)

If you choose to add the attached cable, wire it in by wire color as shown:

White (Pin 1) – No connection

Black (Pin 2) – Common

Red (Pin 3) – Frame 2 Transfer

Green (Pin 4) – CCD Amp

Yellow (Pin 5) – Shutter

Blue (Pin 6) – Frame 1 Transfer (Frame Transfer for SC-1 mods)

The function of these signals is discussed on Steve Chamber's webpages at www.pmdo.com. For the SC1 modification, only the Frame Transfer is used. For the SC2 modification, all four signals are used.

Cabling Between the LXUSB and the Webcam Jack

With RJ-12 cables, the six wires are colored white, black, red, green, yellow, and blue. Because the cable is flat, the modular connector can be crimped onto the cable in two ways, white to pin one or blue to pin one. Furthermore, when connectors are placed at both ends of a cable, it can be done with pin 1 to pin 1, or pin 1 to pin 6.

If you build or buy a cable to work with the Shoestring Astronomy modified webcam interface products, you must be absolutely sure that it has pin 1 connected to pin 1, pin 2 to pin 2, etc. Otherwise, you risk the possibility of unpredictable operation and possibly damage to your webcam and your Shoestring adapter.

If you build/buy a cable, please make sure that **both** ends of the cable are wired as shown in the picture at the right. This view is with the connector lock tab facing away from you. Note carefully the color and order of the six wires.

