



# USB 2.0 LR Extender

**EXT-USB2.0-LR**  
**User Manual**



[www.gefen.com](http://www.gefen.com)



## ASKING FOR ASSISTANCE

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### Notice

Gefen, LLC reserves the right to make changes in the hardware, packaging and any accompanying documentation without prior written notice.

**USB 2.0 LR Extender** is a trademark of Gefen, LLC

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# INTRODUCTION

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Congratulations on your purchase of the USB 2.0 LR Extender. Your complete satisfaction is very important to us.

## **Gefen**

Gefen delivers innovative, progressive computer and electronics add-on solutions that harness integration, extension, distribution and conversion technologies. Gefen's reliable, plug-and-play products supplement cross-platform computer systems, professional audio/video environments and HDTV systems of all sizes with hard-working solutions that are easy to implement and simple to operate.

## **The Gefen USB 2.0 LR Extender**

Gefen's USB 2.0 LR extends high-speed USB devices simply and reliably.

The compact USB 2.0 LR Sender/Receiver units install in minutes and fully support all USB versions (V1.1 and V2.0), at speeds of up to 480 mbps -- essential for high-performance applications such as digital imaging and interactive gaming.

The two-port USB 2.0 LR hub is ideal for remotely accessing laser printers, scanners, web cameras, external hard drives, CD/DVD burners, and flash drives. Additional applications include security, industrial control, digital signage, scientific data acquisition and much more due to the universal implementation of USB standards.

## **How It Works**

Gefen's USB 2.0 LR supports all major operating systems -- Windows, MacOS and Linux. No software drivers are required.

The combined length of all cables in the extension (including patch cables) can be up to 330 feet (100m).

A powered USB hub may be connected to the USB 2.0 Extender LR Receiver to allow more USB devices to be extended. A maximum of 14 USB devices (including hubs) may be connected to the USB 2.0 LR Receiver.

## OPERATION NOTES

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### READ THESE NOTES BEFORE INSTALLING OR OPERATING THE USB 2.0 LR EXTENDER

- Use industry standard CAT-5, CAT-5e or CAT-6. Gefen recommends using solid core cabling for maximum performance.
- The USB 2.0 LR Extender is USB 2.0/1.1 compliant
- The USB 2.0 LR Extender can extend USB a maximum of 330 ft (100m)
- Use only the AC adapter supplied with the USB 2.0 LR Extender. Use of substitute adapters may cause permanent damage to the system and will void the warranty.
- Gefen's USB 2.0 LR supports all major operating systems -- Windows, MacOS and Linux. No software drivers are required.
- A powered USB hub may be connected to the USB 2.0 Extender LR Receiver to allow more USB devices to be extended. A maximum of 14 USB devices (including hubs) may be connected to the USB 2.0 LR Receiver.

# FEATURES

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## Features

- Operate USB 2.0 peripherals up to 330ft (100m) from a computer
- Supports low and high-speed USB
- Uses industry-standard CAT5, CAT5e, or CAT6 cable
- Supports all major operating systems -- Windows, MacOS and Linux.
- True plug-and-play, 100% hardware solution with no drivers required
- Operates at full 480 Mbps speed when running in USB 2.0 mode
- Receiver supports up to 2 USB powered connections at 500 mA each

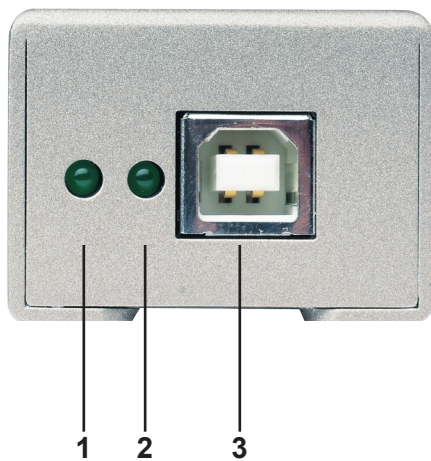
## Package Includes

- (1) Gefen USB 2.0 Extender over CAT5 LR Sender
- (1) Gefen USB 2.0 Extender over CAT5 LR Receiver
- (2) 5V DC Power Supplies
- (1) 6 ft. USB Cable
- (1) Quick-Start Guide

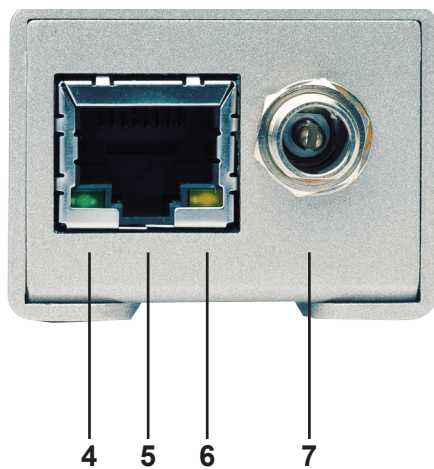
# SENDER PANEL LAYOUT

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## Front Panel



## Back Panel





## SENDER PANEL DESCRIPTIONS

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**1 Power LED Indicator**

This LED will become active once the host computer is connected to the sender unit.

**2 Host Connection LED Indicator**

This LED will become active once a valid connection is made by the host source and the USB 2.0 LR Extender.

**3 USB "B" Input Connector**

Connect the USB source to this input.

**4 Link LED Indicator**

This LED will become active once a valid connection is between the sender and receiver units.

**5 RJ-45 Connector Port**

Connect a CAT-5, CAT-5e or CAT-6 cable between this port and the RJ45 connector port on the receiving unit.

**6 Activity LED Indicator**

This LED will be active when traffic is passing between the sending and receiving units.

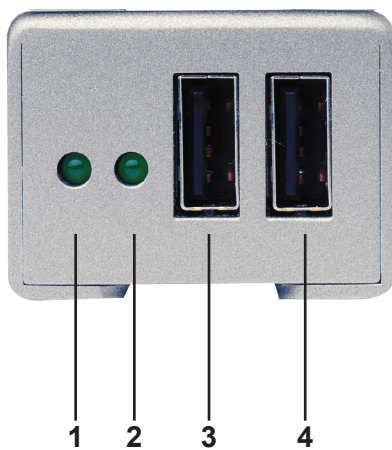
**7 5V DC Locking Power Receptacle**

Connect the included locking 5V DC power supply between this port and an open wall power socket.

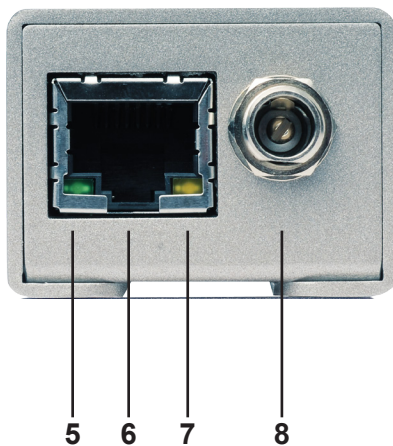
# RECEIVER PANEL LAYOUT

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## Front Panel



## Back Panel



## RECEIVER PANEL DESCRIPTIONS

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**1 Power LED Indicator**

This LED will become active once a valid connection is made between the included 5V DC power supply and an open wall power socket.

**2 Host Connection LED Indicator**

This LED will become active once a valid connection is made by the host source and the USB 2.0 LR Extender.

**3 USB "A" Input Connector 1**

Connect the USB device to this input.

**4 USB "A" Input Connector 2**

Connect the USB device to this input.

**5 Link LED Indicator**

This LED will become active once a valid connection is between the sender and receiver units.

**6 RJ-45 Connection Port**

Connect a CAT-5, CAT-5e or CAT-6 cable between this port and the RJ45 connection port on the sending unit.

**7 Activity LED Indicator**

This LED will be active when traffic is passing between the sending and receiving units.

**8 5V DC Locking Power Receptacle**

Connect the included locking 5V DC power supply between this port and an open wall power socket.

# **CONNECTING AND OPERATING THE USB 2.0 LR EXTENDER**

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## **How to Connect the USB 2.0 LR Extender**

1. Connect the USB source to the USB 2.0 LR Extender sender unit using the supplied USB A to B cable.
2. Connect up to two USB peripherals to the USB 2.0 LR Extender receiver using user supplied USB cables.

**NOTE:** Powered USB hubs may be connected to these ports up to a maximum connection of 14 USB peripherals (including hubs). Overall speed and power is divided among the active devices.

3. Connect the USB 2.0 LR Extender sender and receiver units together with a user supplied CAT-5, CAT-5e or CAT-6 cable.

**NOTE:** If field terminating CAT-5 cables, please adhere to the TIA/EIA-568-B specification. Please see the NETWORK CABLE WIRING DIAGRAM on page 10 for more details.

4. Connect the included 5V DC locking power supplies to both the Sender and Receiver unit. Do not overtighten the screw assembly of the locking connectors.
5. Connect each power supply to an available electrical outlet.

## **Checking the Installation**

On the sending and receiving units, check that the Power, Host and Link LEDs are on and that the Activity LED is blinking. If the Link LED and Activity LED are permanently off then the cabling between the sending and receiving units are not installed properly or is defective.

For Windows users (2000, XP, or Vista) open Device Manager to confirm that the USB 2.0 LR Extender has installed correctly. Expand the entry for Universal Serial Bus controllers by clicking the + sign. If the USB 2.0 LR Extender has been installed correctly you should find it listed as a Generic USB Hub.

For Mac OS X users open the System Profiler to confirm that the USB 2.0 LR Extender has installed correctly. In the left hand column under Hardware, select "USB" and inspect the right hand panel. If the USB 2.0 LR Extender has been installed correctly you should find it listed as a Hub under the USB High-Speed Bus/USB Bus.

## TROUBLESHOOTING

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### *Using the LED Indicators to Troubleshoot Issues*

#### **Power LED**

The power LED indicators should be active once the included 5V DC power supply has been properly connected between the receiving unit and an open wall power socket. A non-active LED can indicate a power problem. Please check that the power cable is properly connected and locked to the receiver unit. If the power LED on the sender unit is unstable or not active, the host computer may not be supplying the required 5V for operation. In that case, a separate 5V DC power adapter must be purchased and connected to the sender unit.

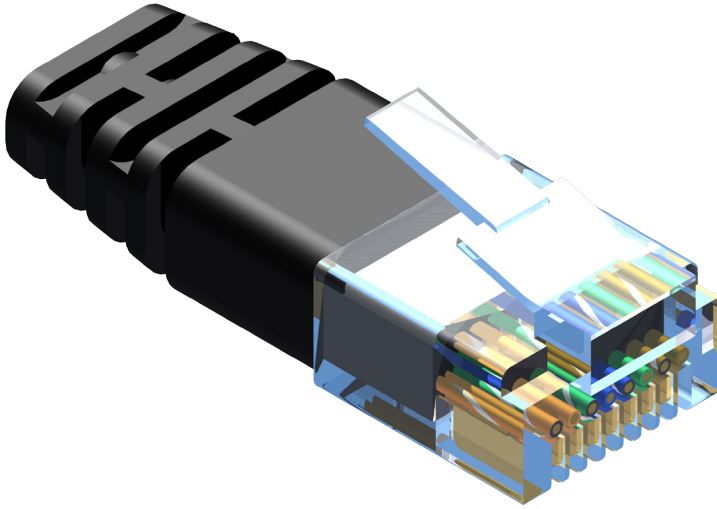
#### **Host LED**

The host LED indicators should be active once a valid USB source/output device has been properly connected to the sending/receiving unit. On the sender, the LED indicator will only be active once the source device is on. A non-active LED may indicate that the source device is not on or properly connected. On the receiver, the LED indicator will only be active when a USB device is properly connected and is recognized by the source. A non-active LED may indicate that a USB device is not properly connected or recognized by the source. Please check all USB cables and install the proper drivers for the connected USB device. Devices requiring more power such as hard drives and cameras may require a powered USB hub.

#### **Link LED**

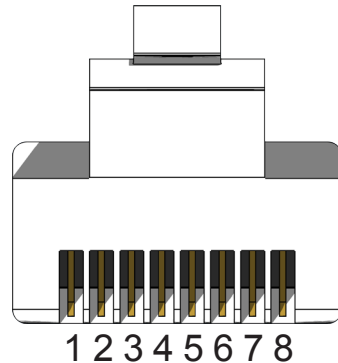
The link LED indicators should be active once a valid connection has been made between the sending and receiving units. A non-active LED may indicate a problem with the CAT-5 cabling. Please check terminations, patch panels, and cables. Use other CAT-5 cables and test the units without using any patch panels.

# NETWORK CABLE WIRING DIAGRAM



Gefen has specifically engineered their products to work with the TIA/EIA-568-B specification. Please adhere to the table below when field terminating cable for use with Gefen products. Failure to do so may produce unexpected results and reduced performance.

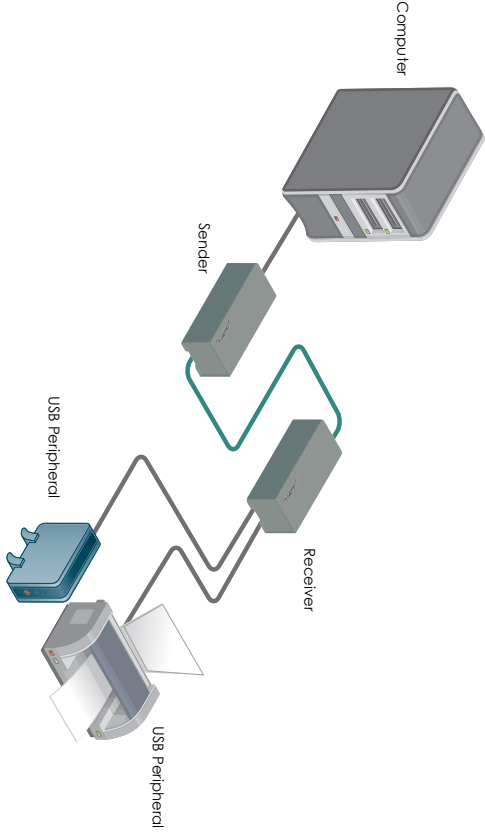
Pin	Color
1	Orange / White
2	Orange
3	Green / White
4	Blue
5	Blue / White
6	Green
7	Brown / White
8	Brown



CAT-5, CAT-5e, and CAT-6 cabling comes in stranded and solid core types. Gefen recommends using solid core cabling. CAT-6 cable is also recommended for best results.

Each cable run must be one continuous run from one end to the other. Splices or punch-down blocks are not advised due to signal interruption.

# WIRING DIAGRAM



**CAT-5E CABLE**  
**USB CABLE**  
(Up To 330 FT.)

**EXT-USB2.0-LR**

## SPECIFICATIONS

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USB 2.0 Speed.....	480 Mbps
Link Connector (Sender/Receiver).....	RJ-45 Shielded
USB Connector (Sender):.....	(1) USB type B
USB Connectors (Receiver).....	(2) USB type A
Two 500 mA DC powered USB ports at Receiver	
Power Supply (Sender / Receiver).....	5V DC, locking
Power Consumption (Sender / Receiver).....	2.5W/10W (maximum)
Operating Temperature.....	+32°F to +122°F (0°C to +50°C)
Storage Temperature.....	-4°F to 158°F (-20°C to 70°C)
Operating Humidity.....	20% to 80% relative humidity, non-condensing
Storage Humidity.....	10% to 90% relative humidity, non-condensing
Dimensions (W x H x D) (Sender / Receiver):.....	3.7" x 1.4" x 1.8" (94mm x 36mm x 46mm)
Shipping Weight: .....	2 lbs. (0.9 kg)



## WARRANTY

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Gefen warrants the equipment it manufactures to be free from defects in material and workmanship.

If equipment fails because of such defects and Gefen is notified within two (2) years from the date of shipment, Gefen will, at its option, repair or replace the equipment, provided that the equipment has not been subjected to mechanical, electrical, or other abuse or modifications. Equipment that fails under conditions other than those covered will be repaired at the current price of parts and labor in effect at the time of repair. Such repairs are warranted for ninety (90) days from the day of reshipment to the Buyer.

This warranty is in lieu of all other warranties expressed or implied, including without limitation, any implied warranty or merchantability or fitness for any particular purpose, all of which are expressly disclaimed.

1. Proof of sale may be required in order to claim warranty.
2. Customers outside the US are responsible for shipping charges to and from Gefen.
3. Copper cables are limited to a 30 day warranty and cables must be in their original condition.

The information in this manual has been carefully checked and is believed to be accurate. However, Gefen assumes no responsibility for any inaccuracies that may be contained in this manual. In no event will Gefen be liable for direct, indirect, special, incidental, or consequential damages resulting from any defect or omission in this manual, even if advised of the possibility of such damages. The technical information contained herein regarding the features and specifications is subject to change without notice.

For the latest warranty coverage information, refer to the Warranty and Return Policy under the Support section of the Gefen Web site at [www.gefen.com](http://www.gefen.com).

### PRODUCT REGISTRATION

**Please register your product online by visiting the Register Product page under the Support section of the Gefen Web site.**



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This product uses UL listed power supplies.