USB 400 FO

EXT-USB-400FON

User Manual

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.

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INTRODUCTION

Congratulations on your purchase of the USB-400FO. 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-400FO

This new USB Extender supports all USB 2.0 devices, extending to 1640 feet (500 meters) away from the USB source. The receiver end is also a four USB 2.0 hub.

By using fiber optic cables, the new USB-400FO extends a long distance from the location of a computer. It provides an EMI interference-free solution for using USB at remote locations.

How It Works

The USB-400FO sender unit is connected to the source using the supplied USB short cable. The USB peripheral(s) are connected to the receiver unit at the remote end. Two LC-terminated multimode fiber optic cables are used to link the sender to the receiver. The Receiver unit must be powered by a 5V DC power supply. The Sender unit is powered by the USB bus.

Applications

The USB-400FO is invaluable for applications where complete control of devices is necessary when using USB when placing in restricted areas, such as medical facilities and oil rigs. The USB-400FO will connect with any USB-compliant peripheral in all operating systems supporting USB 2.0.

READ THESE NOTES BEFORE INSTALLING OR OPERATING THE USB-400FO

This equipment is a new version replacing the existing part number, EXT-USB-400FO, and can provide outstanding extension facilities for any device or USB application that requires a peripheral connection over a distance, such as a USB camera or USB hard drive, keyboard and mouse.

The USB-400FO works like a USB hub with extension capabilities over a distance of up to 1,640 feet. This means, for example, that a remote USB sensor can be placed at a safe distance from the sender unit in situations that demand this type of security.

The USB-400FO signal controls the keyboard, mouse, trackball and other USB peripherals using send and receive units. The USB signal is extended by using multimode fiber optic cabling.

- The USB-400FO units are housed in a metal box for better RF shielding.
- The USB-400FO uses dual multi-mode LC fiber optic cables to connect the sender and receiver units.
- The USB-400FO units were designed to operate on any type of computer where USB is used for peripherals.
- Use the computer's USB port when using a local keyboard/mouse that is not part of the extensions used with the USB-400FO sender unit.
- In order to operate the product properly, the USB-400FO Sender and USB-400FO Receiver units must be connected, powered up, and fiber optic cables installed between both units.

Requirements:

To complete the installation, you will also require the following items that are not included with the product:

- USB 1.1 or 2.0 Compatible computer (host computer) with a USB compliant operating system
- USB 1.1 or 2.0 Compatible device
- 2-strand fiber optic cable with Duplex LC connectors (if using surface cabling) OR, 2-strand fiber optic cabling with two information outlets and two 2-strand fiber optic patch cords with Duplex LC connectors (if using premise cabling)

Note: The maximum length of the multimode fiber optic cable (MMF) supported by the USB-400FO system, including patch cords, is 500m on 50/125µm MMF or 275m on 62.5/125µm MMF.

FEATURES

Features

- “Extreme USB” technology is used to extend the range of USB 2.0 devices up to 1640 feet (500 meters) using fiber-optic cables
- Receiver unit is also a USB 2.0 four-port hub
- Provides support for both low-speed and high-speed USB devices
- Fully backward-compliant with USB 1.1 and USB 2.0 specifications as certified by the USB Implementer’s Forum
- Number of USB devices can be expanded using standard USB hubs
- Supports all operating systems including Windows®, Mac OS®, and Linux®
- Supports other USB peripherals and are used in devices such as PlayStation and WII.
- A very secure method of USB control in areas where environmental conditions prohibit access by people
- Ideal as optical isolation from over-voltage and static electricity
- Supports High Speed devices up to 480mb/s

Package Includes

(1) USB-400FO Sender

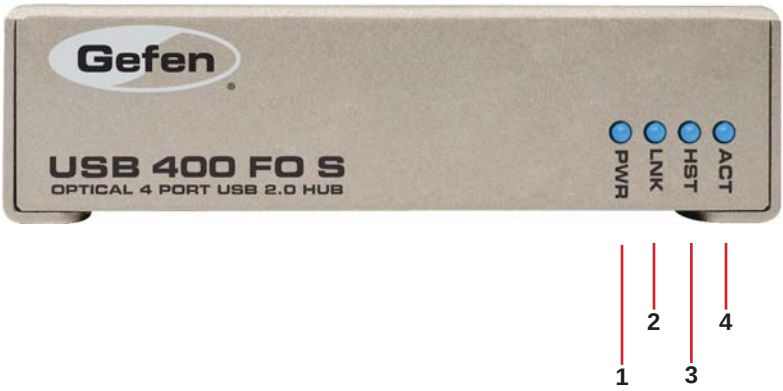
(1) USB-400FO Receiver

(1) USB Cable

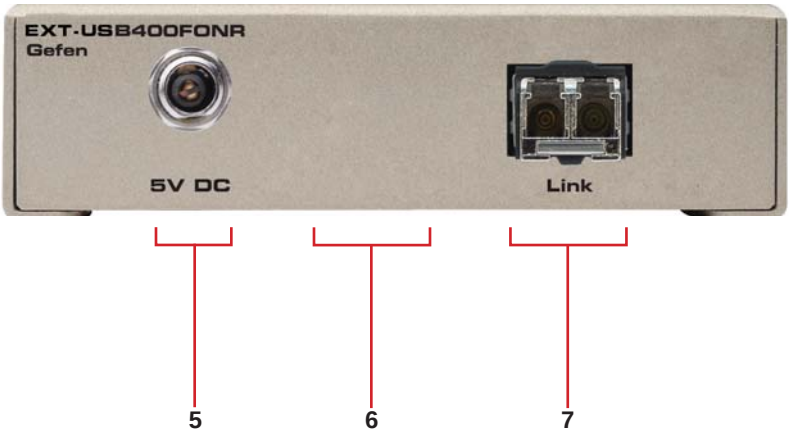
(1) 5V DC Power Supply

(1) User’s Manual

Front Panel



Back Panel



SENDER UNIT PANEL DESCRIPTIONS

1 Power LED (Blue)
LED turns on when power is supplied. Off when no power is supplied.

2 Link LED (Green)
Indicates a valid ExtremeUSB® link is established between the Sender and Receiver

3 Host LED (Green)
Indicates that the system is properly enumerated on the host PC. LED blinks when in suspend state.

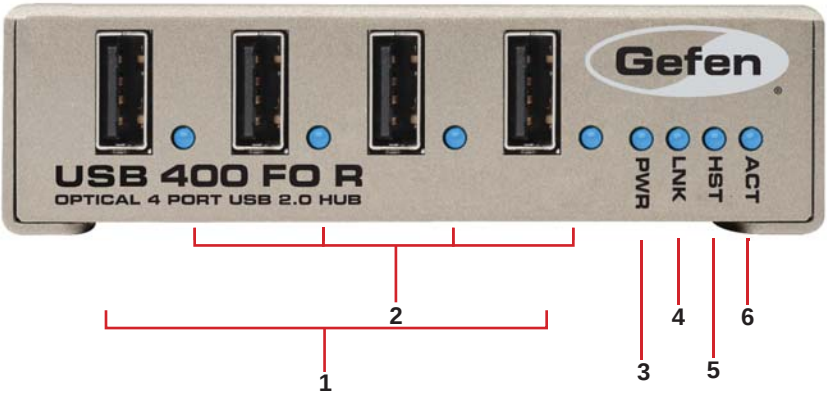
4 Activity LED (Amber)
Indicates activity when data transmission is active between Sender and Receiver. LED blinks intermittently with or without a USB device connected. When the Sender and Receiver are in suspend mode, the LED is off.

5 Power port
An optional 5V power supply can be connected to the Sender unit to provide power if the USB port on the host PC is not capable of delivering 500mA to the unit.

6 USB Type B connector
Used to connect the Sender unit to the host computer.

7 Link Port (Duplex LC)
Extension link Duplex LC fiber optic transceiver port.

Front Panel



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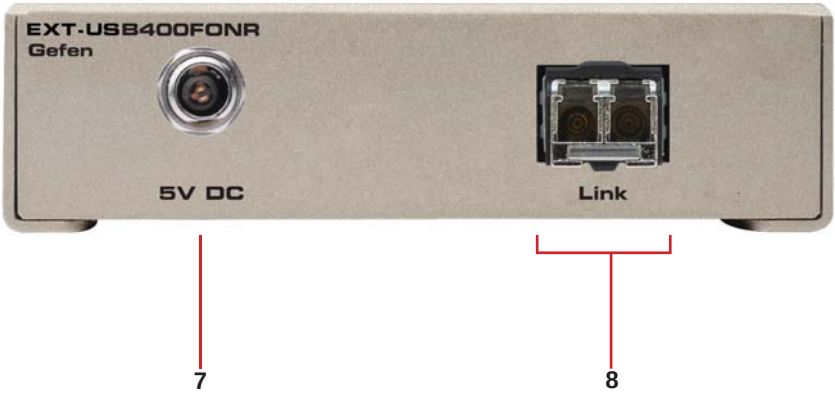

RECEIVER UNIT PANEL DESCRIPTIONS

1 Port (USB Type A)
USB device input port

2 Device LED (Green/Orange)
Indicates when a USB device is connected to the Device Port. Solid green when device is plugged in and active. Off when device is in a suspend mode or Receiver unit is powered off. Orange when the Receiver unit detects an overcurrent condition, or if the attached USB device attempts to draw more than the 500mA current.

3 Power LED (Blue)
LED turns on when power is supplied. Off when no power is supplied.

4 Link LED (Green)
Indicates a valid ExtremeUSB® link is established between the Sender and Receiver

5 Host LED (Green)
Indicates that the USB-400FO system is properly enumerated on the host PC. LED blinks when in suspend mode.

6 Activity LED (Amber)
Indicates activity when data transmission is active between the Sender and Receiver. LED blinks intermittently with or without a USB device plugged in. When the Sender and Receiver are in a suspend mode, the LED is off.

7 Grounding point
Optional Earth Ground connection to housing of unit.
Accepts an M2 type screw.

8 Power port
Connects to the 5V DC power supply.
Required for proper operation.

9 Link Port (Duplex LC)
Extension link Duplex LC fiber optic transceiver port.

How to Operate the USB-400FO:

The Sender and Receiver units are interconnected by up to 500 meters of fiber optic cabling. Two strands of 50/125µm (500m) MMF or 62.5/125µm (275m) MMF cabling are required. The cabling subsystem **must provide a duplex connection with crossover,** and must be terminated with Duplex LC connectors at both ends.Installing the USB-400FO Sender unit:

1. Place the Sender unit near the computer source.

2. Install the supplied short USB cable between the Sender and USB 2.0 port on the host computer.

Installing the USB-400FO Receiver unit:

1. Place the USB device(s) in the USB-400FO Receiver unit.

2. Plug the 5V DC power supply into the USB-400FO unit and a suitable AC outlet.

3. Connect the power supply to the USB-400FO Receiver unit.

4. Connect USB devices.

Read These Notes Before Installing Or Operating the USB-400FO:

FCC Radio Frequency Interference Statement Warning

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.

Checking the Installation on any PC or Macintosh Computers:

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

2. For Windows users (2000, XP, Vista, Windows 7), open the Device Manager to confirm that the USB-400FO has installed correctly. Expand the entry for Universal Serial Bus controllers by clicking the + sign. If the USB-400FO has been installed correctly, you should find it listed as a “Generic USB Hub”.

3. For Mac OS X users, open the System Profiler to confirm that the USB-400FO has installed correctly. In the left hand column under Hardware, select “USB” and inspect the right hand panel. If the USB-400FO has been installed correctly, you should find it listed as a “Hub” under the USB high-Speed Bus/USB Bus.

Troubleshooting:

The following table provides troubleshooting tips. The topics are arranged in the order in which they should be executed in most situations. If you are unable to resolve the problem after following these instructions, please contact technical support for further assistance.

PROBLEM	CAUSE	SOLUTION
All LEDs on Sender unit are off.	The Sender unit is not receiving power from the USB port or the optional) Sender 5VDC power supply.	1. Ensure that the USB connection between the Sender and host computer is properly installed. 2. Move the USB connector to another USB port on the host computer.
All LEDs on Receiver unit are off.	The Receiver unit is not receiving power from the 5VDC power supply.	1. Ensure that the 5VDC power supply is properly connected to the Receiver unit. 2. Check that the 5VDC power supply is connected to a live source of electrical power. Check that the Receiver power LED is illuminated.
Link LEDs on Sender unit and Receiver unit are off.	There is no connection between the Sender unit and Receiver unit.	1. Ensure that a multimode fiber optic cable with crossover is connected between the Sender and Receiver units. 2. Connect a fiber optic crossover patch cord between the Sender and Receiver units. Recheck operation of the system.

TROUBLESHOOTING THE USB-400FO EXTENDER

PROBLEM	CAUSE	SOLUTION
All LEDs on Sender unit are off.	The Sender unit is not receiving power from the USB port or the (optional) Sender 5VDC power supply.	1. Ensure that the USB connection between the Sender and host computer is properly installed. 2. Move the USB connector to another USB port on the host computer.
All LEDs on Receiver unit are off.	The Receiver unit is not receiving power from the 5VDC power supply.	1. Ensure that the 5VDC power supply is properly connected to the Receiver unit. 2. Check that the 5VDC power supply is connected to a live source of electrical power. Check that the Receiver power LED is illuminated.
Link LEDs on Sender unit and Receiver unit are off.	There is no connection between the Sender unit and Receiver unit.	1. Ensure that a multimode fiber optic cable with crossover is connected between the Sender and Receiver units. 2. Connect a fiber optic crossover patch cord between the Sender and Receiver units. Recheck operation of the system.
Link LED on Sender / Receiver units are on, Host LED on Sender/ Receiver units are off.	The host computer is not powered on. The Sender unit is not connected to the computer (when used with the optional Sender 5VDC power supply). The computer does not support USB hubs.	1. Disconnect all USB devices from the Receiver unit. 2. Disconnect the Sender unit from the computer. 3. Disconnect the Receiver unit from the 5VDC power supply. 4. Reconnect the Sender unit to the computer

PROBLEM	CAUSE	SOLUTION
Link LED on Sender /Receiver units are on, Host LED on Sender/ Receiver units are off. (continued)	The USB-400FO is malfunctioning.	5. Reconnect the Receiver unit to the 5VDC power supply. 6. In the Universal Serial Bus controllers section of Device Manager, check that the USB-400FO is recognized as a “Generic USB Hub”.
USB-400FO units were working, but the Host LED on Sender/ Receiver units are suddenly blinking	The Receiver unit is in suspend mode. The operating system may put the USB-400FO in suspend mode when the computer is put into a Suspend/Standby state or when no USB devices are attached.	1. Recover/Resume the operating system from Suspend/Standby mode (see your operating system’s documentation). 2. Attach a USB device to the USB-400FO.
All LEDs on both the Sender unit and Receiver unit are on but the USB device does not operate correctly, or is detected as an “Unknown Device” in the operating system.	The USB device is malfunctioning. The computer does not recognize the USB device. The application software for the device is not operating.	1. Disconnect the USB-400FO from the computer. 2. Connect the USB device directly to the USB port on the computer. 3. If the device does not operate properly, consult the user documentation for the device. 4. Update your system BIOS, chipset, or USB Host controller drivers from your System/Mother board manufacturer’s website. 5. If the device operates properly when directly connected to the computer, connect another device (of a different type) to the USB-400FO. Connect the USB-400FO to the computer.

PROBLEM	CAUSE	SOLUTION
All LEDs on both the Sender unit and Receiver unit are on but the USB device does not operate correctly, or is detected as an “Unknown Device” in the operating system. (continued)	The USB-400FO is malfunctioning. The computer does not recognize the USB device. The application software for the device is not operating.	6. If the second device does not operate, the USB-400FO may be malfunctioning. Contact technical support for assistance. 7. If the second device does operate properly, the first device may not be compatible with the USB-400FO.
USB device is attached to Receiver USB port but Receiver device LED is off	A USB device must have the appropriate driver installed on the computer operating system	1. Install the required USB device driver on the computer operating system prior to attaching the USB device to the Receiver unit. Please see your USB device manufacturer’s website for details. 2. Consult your USB device documentation and power your USB device with the additional, USB device manufacturer supplied, power supply (if available).

TROUBLESHOOTING THE USB-400FO EXTENDER

PROBLEM	CAUSE	SOLUTION
Device LED is orange and units are no longer functioning.	Overcurrent condition has occurred because USB device draws more power than can be supplied per USB specification (500mA).	1. Power cycle Receiver.
LED Host and LINK LEDs on Sender/Receiver units blink intermittently.	Firmware mismatch between the Sender and Receiver.	1. Use a different Sender/ Receiver pair which have the same firmware revision. 2. Upgrade the Sender/ Receiver firmware, contact technical support for assistance.

SPECIFICATIONS

USB 2.0 device support.....480Mbps

USB Input Connector.....Type B

USB Output Connector.....Type A

Link Connector.....(2) LC

Power Supply.....5V DC

Dimensions (Sender).....4”Wx3”Dx1.25”H

Dimensions (Receiver).....4”Wx3”Dx1.25”H

Shipping Weight.....2 lbs

Operating temperature range.....0°C to 50°C

Range.....1640ft (500m) over 50/125µm Multi-Mode Fiber optic cable

WARRANTY

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, please visit Gefen's Warranty web page at http://www.gefen.com/kvm/aboutus/warranty.jsp

PRODUCT REGISTRATION

Please register your product online by visiting Gefen's web site at http://www.gefen.com/kvm/Registry/Registration.jsp

Rev A3

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