# Gefen

# Extender for HDMI 1.3 over One Fiber with IR

**EXT-HDMI1.3-1FO**
**User Manual**



# www.gefen.com

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### Notice
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Congratulations on your purchase of the Extender for HDMI 1.3 Over One Fiber with IR. 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 Extender for HDMI 1.3 Over One Fiber with IR**

The Gefen Extender for HDMI 1.3 Over One Fiber with IR transmits 1080p Full HD in Deep Color and multi-channel digital audio up to 1000 feet (330 meters) over a single-strand SC fiber optic cable.  Extraordinary distances can be achieved using this feature-rich device.

1080p Full HD with Deep Color is instantaneously displayed at the remote location. This product also eliminates EMI (electromagnetic interference), picture cut-outs and screen distortions traditionally seen with copper-based HDMI extenders.

A multi-channel digital audio experience is delivered with Dolby TrueHD® and DTS-HD® Master Audio™.

A single-strand SC fiber cable carries the IR back channel and bidirectional RS-232, facilitating convenient local control of the video source devices.

**How It Works**

Connect the Sender Unit to the high definition source using the provided HDMI cable.  Connect the Receiver Unit to an HDTV display using another HDMI cable. Run a single strand of SC fiber optic cable from Sender Unit to the Receiver Unit. Power up both the Sender Unit and the Receiver Unit.  A clean and vibrant HDMI A/V signal will appear on the display along with clear and crisp digital audio.

Send IR commands from the IR Remote Control back to A/V source equipment via the IR back channel using the fiber optic cable connecting the Sender Unit to the Receiver Unit. The Sender Unit has an IR blaster port, enabling wide IR signal coverage in an A/V equipment room.

In addition, RS-232 commands from a home automation system or PC can be used to control the source device or any other RS-232 device using the ports on the Sender Unit and the Receiver Unit.

**READ THESE NOTES BEFORE INSTALLING OR
OPERATING THE EXTENDER FOR HDMI 1.3 OVER ONE FIBER WITH IR**

- IR data repeater functionality is single-directional. IR data can only be transmitted from the Receiving unit back to the Sending unit. IR data cannot be transmitted from the Sending unit to the Receiving unit.

- Use one SC-terminated multi-mode fiber optic cable to operate the HDMI 1.3 Over One Fiber with IR.

- 1080p video may be extended up to 1000 feet (300m), depending on the type of fiber optic cable used. The following maximum extension distances will be possible depending on the types of fiber optic cabling that are used:

  - 100m (330 ft) on 62.5/125 µm (OM1) multi-mode SC fiber

  - 300m (1000 ft) on 50/125 µm (OM3) multi-mode SC fiber

- RS-232 data is bi-directional for direct commands and echo function or status information.

**IMPORTANT CALIBRATION PROCEDURE**

These steps must be followed when setting up the **Gefen Extender for HDMI 1.3 over one Fiber with IR** for the first time.

- Connect the SC fiber optic cable between the Sender unit and the Receiver unit.

- Set DIP switch 3 on both the Sender unit and the Receiver unit to the OFF position.

- Apply power to the source and to both the Sender and Receiver units.  The LED indicators on both the Sender unit and Receiver unit will alternate from red to green during the calibration process.  The calibration process can take up to 120 seconds to complete.

- After the calibration process has finished, the LED indicators on both the Sender unit and the Receiver unit will be solid green.  Set DIP switch 3 to the ON position on both the Sender unit and the Receiver unit to lock the calibration settings.

**NOTE:** When changing fiber optic cables, the calibration procedure must be repeated.  See page 11 for details on the calibration procedure.

**HDMI 1.3 Features**

- 225 MHz (up to 12 bit YUV 444 @ 1080p)
- Deep Color
- Dolby TrueHD and DTS-HD Master Audio
- Lip-Sync
- CEC Protocol Pass-Through

**Features**

- Supports video resolutions up to 1080p,1920 x 1200 and 2K

- 3DTV Pass-Through

- Delivers highest quality signal of any HDMI extension method

- EDID Detection/Adjustment for rapid integration of source and displays

- Extends HDMI and RS-232 up to 1000 feet (300m)

- Uses widely available single-strand multi-mode SC fiber optic cable

- Immune to electromagnetic interference (EMI)

- HDCP Compliant

**Package Includes**
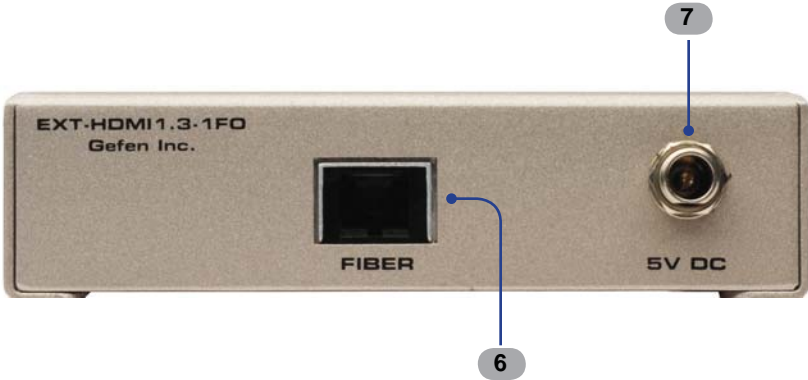
(1) Extender for HDMI 1.3 Over One Fiber with IR - Sender unit
(1) Extender for HDMI 1.3 Over One Fiber with IR - Receiver unit
(2) Mounting Plates
(1) 6 ft HDMI Cable (M-M)
(1) 6 ft DB9 Serial Cable (M-F)
(2) 5V DC Locking Power Supplies
(1) User Manual

**Front**
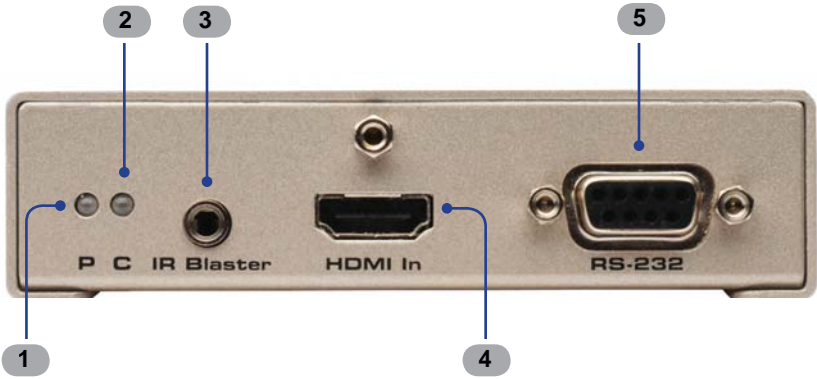


**Back**

*1* ***Power Indicator***
This two-color LED will turn bright red once the included 5V DC locking power supply has been properly connected to the unit and the locking power supply has been connected to an available wall outlet.  This LED will turn bright green once the Sender unit and Receiver unit are communicating correctly.

*2* ***Calibration Indicator***
This LED will alternate from red to green during the calibration procedure.  The LED will turn solid green once the calibration procedure has been completed.

*3* ***IR Blaster Port***
Connect an IR Blaster cable (Gefen part # EXT-2IREMIT) to this port.

*4* ***Locking HDMI Input Port***
Connect a Hi-Def source to this HDMI port.

*5* ***RS-232 Input Port***
Connect the controlling device to this port.

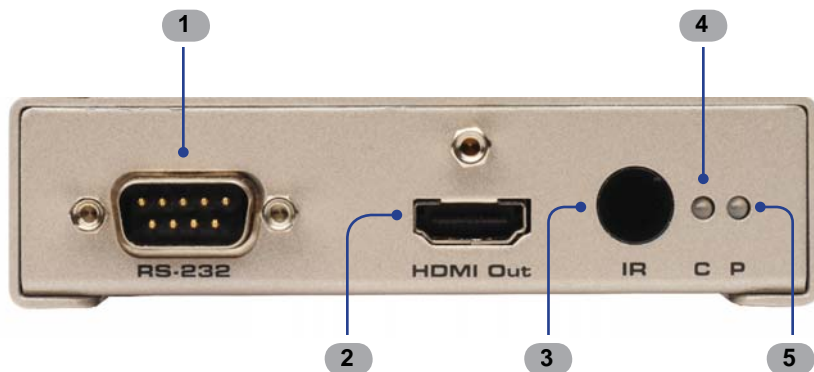*6* ***Fiber Optic Connector (SC-Type)***
This connector accepts 1 strand of SC-terminated fiber optic cable that will link the Sender Unit and Receiver Unit together. The Gefen Extender for HDMI 1.3 Over One Fiber with IR will only accept multi-mode fiber optic cabling.
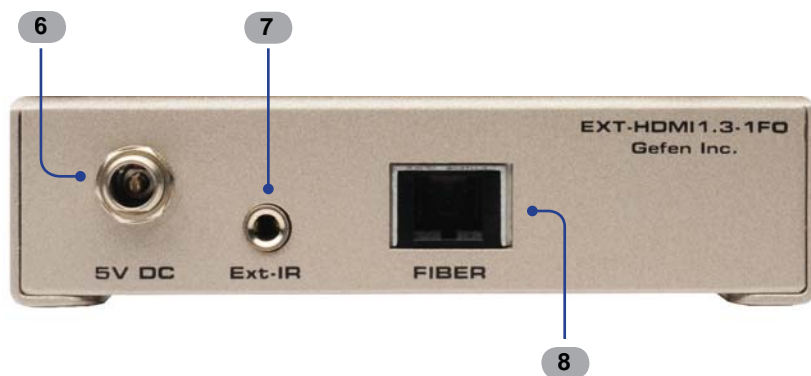
*7* ***5V DC Locking Power Connector***
Connect the included 5V DC Locking Power Supply to this receptacle.

**Front**



**Back**

**1**    ***RS-232 Output Port***
Connect a controlling device to this port.

**2**    ***Locking HDMI Output Port***
Connect a HDTV display to this HDMI port

**3**    ***IR Window***
Receives signals from the Hi-Def source IR remote control unit.  The IR signals are sent back to the source device, when using an IR Blaster.

**4**    ***Calibration Indicator***
This LED will alternate from red to green during the calibration procedure.  The LED will turn solid green once the calibration procedure has been completed.

**5**    ***Power Indicator***
This two-color LED will turn bright red once the included 5V DC locking power supply has been properly connected to the unit and the locking power supply has been connected to an available wall outlet.  This LED will turn bright green once the Sender unit and Receiver unit are communicating correctly.

**6**    ***5V DC Locking Power Connector***
Connect the included 5V DC Locking Power Supply to this receptacle.

**7**    ***IR Extender Port***
Connect an IR Extender cable (Gefen part # EXT-RMT-EXTIR) to this port.

**8**    ***Fiber Optic Connector (SC-Type)***
This connector accepts 1 strand of SC-terminated fiber optic cable that will link the Sender Unit and Receiver Unit together. The Gefen Extender for HDMI 1.3 Over One Fiber with IR will only accept multi-mode fiber optic cabling.

**How to Connect the Extender for HDMI 1.3 over One Fiber with IR**

1.  Connect a Hi-Def source to the Sender Unit using the included Locking HDMI cable.  Connect the HDTV display to the Receiver Unit with a user-supplied HDMI cable.

2.  Connect an SC-terminated fiber optic cable to the Sender Unit.  Connect the opposite end of the fiber cable to the Receiver Unit.

3.  OPTIONAL: Connect an RS-232 cable from the RS-232 serial port on the controlling device to the RS-232 port on the Sender Unit.  Connect another RS-232 serial cable from the RS-232 port on the Receiver Unit to the RS-232 port of the RS-232 device.

4.  I**MPORTANT**: Before connecting the power supplies to the Sender Unit and the Receiver Unit, see page 11 for information on calibrating the Sender Unit and Receiver Unit.

After the Sender Unit and Receiver Unit have been properly calibrated, a vibrant HDTV HD picture will be seen, along with multichannel digital audio (if the display supports audio).

**Wiring Diagram for the Extender for HDMI 1.3 over One Fiber with IR**



EXT-HDMI1.3-1FO
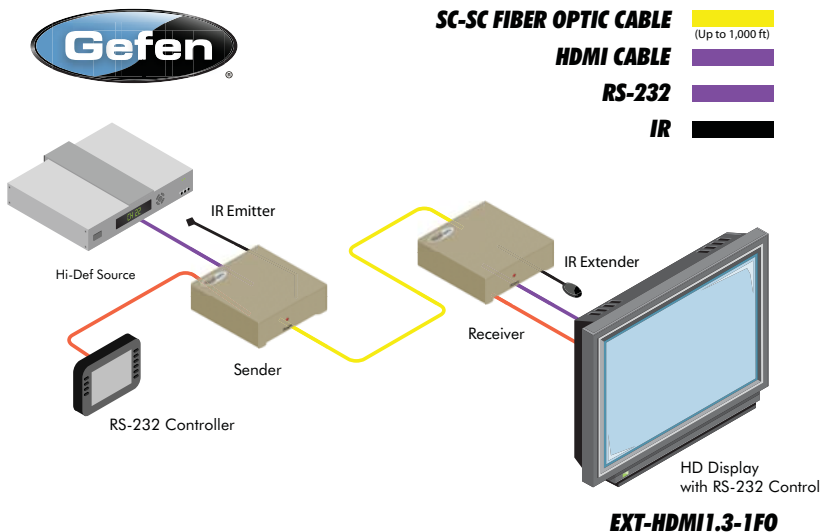
### DIP Switches

On the bottom of the Sender Unit and Receiver Unit are a bank of four (4) DIP switches. These DIP switches provide control over EDID, Deep Color, and unit Calibration.

Remove the strip of tape to expose the DIP switches. To change the DIP switch settings, move the appropriate DIP switch to its ON or OFF position using a small pointed object. The DIP switches and their functions are shown below.
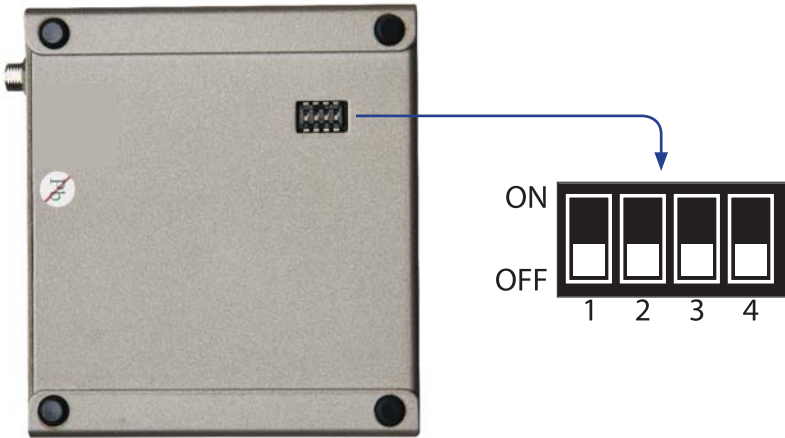


**Sender Unit DIP switches**

| DIP Switch | Function |
| --- | --- |
| 1 | EDID Mode: Local (OFF) or External (ON) |
| 2 | Deep Color Mode: 12-bit (OFF) or 8-bit (ON) |
| 3 | Calibration Mode: On (OFF) or Lock (ON) |
| 4 | NOT USED |

**Receiver Unit DIP switches**

| DIP Switch | Function |
| --- | --- |
| 1 | NOT USED |
| 2 | NOT USED |
| 3 | Calibration Mode: On (OFF) or Lock (ON) |
| 4 | NOT USED |

**DIP 1 - EDID Mode**

- *OFF - Local EDID*

    When Local EDID mode is used, the EDID will be assembled by copying
    all video and audio features of the connected device.  Deep Color support
    will be manually controlled:  If Deep Color is supported by the display(s),
    DIP 2 should be set to the ON position (see DIP 2 - Deep Color, below).  By
    default, the unit is shipped with DIP 1 in the OFF position.

- *ON - Pass-Through EDID*

    Allows all video and audio features of the connected devices to be passed to
    the source device without control over Deep Color.

**DIP 2\* - Deep Color**

**NOTE:** *DIP switch 2 is only functional when DIP switch 1 is set to the OFF posi-
tion.*

- *OFF - Enables Deep Color support (12-bit color)*

    Enables Deep Color support.  In Pass-through EDID Mode, setting DIP2 =
    OFF has no effect since all EDID information is passed through.

- *ON - Forces 8-bit Color*

    Disables Deep Color in the EDID.  Deep Color management is only available
    when Local EDID is being used.

**DIP 3 - Calibration Mode**

- *OFF - Enables Calibration Mode*

    Enables Calibration Mode.  Make sure to set DIP switch 3 on both the
    Sender Unit and Receiver Unit when calibrating the Extenders.  See page 11
    for details.

- *ON - Calibration Mode Lock*

    Locks the calibration settings.  Set DIP switch 3 on both the Sender Unit and
    Receiver Unit to the ON position after the calibration process has completed.
    See page 11 for details on the calibration process.

# DIP SWITCH CONFIGURATION

**Calibrating the Sender Unit and Receiver Unit**

**IMPORTANT**: Before beginning the calibration process, make sure that the Sender Unit and Receiver are not powered.

1.  Make sure DIP switch 3 on both the Sender Unit and the Receiver Unit are in the OFF position (see page 9).

2.  Connect one end of the fiber cable to the Sender Unit.  Connect the other end of the fiber cable to the Receiver Unit.

3.  Make sure DIP switch 3 on both the Sender Unit and the Receiver Unit are in the OFF position (see page 9).

4.  Connect the 5V DC Locking Power Supplies to the Sender Unit and the Receiver Unit.  Do not overtighten the locking connectors.  Plug the power cord into an available electrical outlet.

The LED indicators on both the Sender Unit and Receiver Unit will alternate from red to green during the calibration process.  The calibration process can take up to 120 seconds to complete.

After the calibration process has finished, the LED indicators on both the Sender unit and the Receiver unit will turn solid green.  Set DIP switch 3 to the ON position on both the Sender Unit and the Receiver Unit to lock the calibration settings.

**NOTE**: If the fiber optic cable is changed, repeat the calibration procedure.

**Troubleshooting Procedure**

•   If the Sender Unit and Receiver Unit did not complete the calibration process, the indicator LEDs on both Sender Unit and Receiver Unit will be red.  Check the fiber connections carefully and cycle the power on both the Sender Unit and the Receiver Unit and repeat the calibration procedure.

•   When the indicator LED at one unit is GREEN and the other is RED, cycle power on the unit with the RED indicator.  It is also recommended to cycle power on both the Sender Unit and the Receiver Unit to perform a full calibration.

•   If the calibration procedure continues to fail, contact Gefen Technical Support under the **Asking For Assistance** section at the beginning of this manual.

# SPECIFICATIONS

Video Amplifier Bandwidth ........................................................................ 225 MHz

Maximum Resolutions Supported: ...................................1080p60, 1920x1200, 2K

Input Video Signal ............................................................................... 1.2 Volts p-p

Input DDC Signal .......................................................................... 5 Volts p-p (TTL)

HDMI Input/Output Connector ........................................................ Type A, 19-pin

RS-232 Input/Output Connector........................................................................DB9

RS-232 Data Transmission Rate ...........................................115,200 kbps (max.)

LED Indicator (Power ON/OFF) .....................................2-color LED (red / green)

LED Indicator (Fiber Calibration) ....................................2-color LED (red / green)

IR Modulation Frequency: ..........................................................................38 KHz

IR Blaster: ................................................................................3.5mm Mini-Stereo

Link Connector ............................................................... SC Fiber Optic x 1 cable

Power Supply ............................................................................................. 5V DC

Power Consumption .................................................................. 10W per unit (max)

Dimensions ........................................................................ 4.2"W x 1.2"H x 3.8"D

Shipping Weight ......................................................................................... 5 lbs.

Compliancy:    RoHS and CE Certified; Complies with US/EU Standards
HDMI 1.3, HDMI 1.2, HDCP 1.1 and DVI 1.0 Compliant.
UL-Certified Power Supply.

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.

## PRODUCT REGISTRATION

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

*MA-HDMI1.3-1F0*

This product uses UL listed power supplies.