

Gefen

®

Dual-Link DVI over 2CAT6 Extender

EXT-DVI-2CAT6DL

User Manual



www.gefen.com

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Notice

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INTRODUCTION

Congratulations on your purchase of the Dual-Link DVI over 2CAT6 Extender. Your complete satisfaction is very important to us.

Gefen

Gefen delivers innovative and 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 Dual-Link DVI over 2CAT6 Extender

The Dual-Link DVI over 2CAT6 extends any dual-link DVI source up to 200 feet (60 meters) using two CAT-6a cables or up to 150 feet (45 meters) using two CAT-5e cables, at resolutions up to 3840 x 2400. Extending dual-link resolutions over standard DVI cables have a limitation of 15 feet. Exceeding this distance normally requires additional repeaters and/or boosters. The Dual-Link DVI over 2CAT6 Extender provides an easy to install solution using CAT-6a cables. This product also extends RS-232 using the same CAT-6a cable, allowing access and control of devices using RS-232..

How It Works

Place the Dual-Link DVI over 2CAT6 Extender Sender unit next to the computer source. Use the included dual-link DVI cable to connect the computer to the Sender unit. Connect the Receiver unit to the display with dual-link DVI cable. Connect an RS-232 serial cable from the RS-232 port on the Sender unit to the RS-232 control device. Connect the RS-232 port on the Receiver unit to the RS-232 device. Use two CAT-6a cables, up to 200 feet (60 meters), to connect the Sender unit to the Receiver unit. Connect the included locking power supplies to the Sender and Receiver Unit, and then connect both power cables to available electrical outlets.

OPERATION NOTES

READ THESE NOTES BEFORE INSTALLING OR OPERATING THE DUAL-LINK DVI OVER 2CAT6 EXTENDER

- The Dual-Link DVI over 2CAT6 Extender was designed for use with high quality CAT-6a (augmented) cabling. This unit will either not perform to specification or refuse to operate completely if cabling other than CAT-6a is used.
- When field terminating CAT-6a cabling please adhere to the TIA/EIA-568-B specification shown on page 13.
- The Dual-Link DVI over 2CAT6 has a maximum distance rating based on the bandwidth (i.e. resolution and color) of the video being transmitted. When used with high quality CAT-6a cabling, you may expect a maximum extension range of 200 feet (60 meters) at 3840x2400 or 1080p resolution up to a 60Hz refresh rate. Lower quality cabling or older standards such as CAT-5 cables will shorten the maximum achievable extension distance.
- For CAT-5e cables, the maximum distance is 150 feet at 1080p Full HD or 2560 x 1600.

FEATURES

Features

- Extends dual link DVI and RS-232 up to 200 feet (60 meters) over two CAT-6a cables
- Supports 1080p Full HD at 120Hz and dual-link resolutions up to 3840 x 2400 or single-link resolutions up to 1920 x 1200
- Supports VESA resolutions up to 2560 x 1600
- EDID Management for Local and Pass-through modes
- HDCP pass-through for single link and dual link resolutions
- Locking Power Supplies
- Rack-mountable
- Compatible with the Gefen Modular General Purpose Racktray

Application

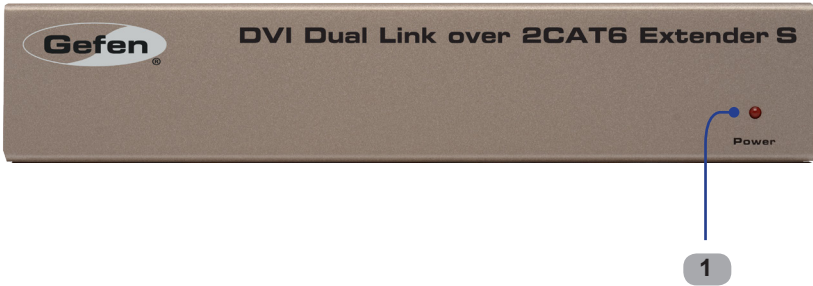
- Computer Extension over CAT-6 up to 2560 x 1600

Package Includes

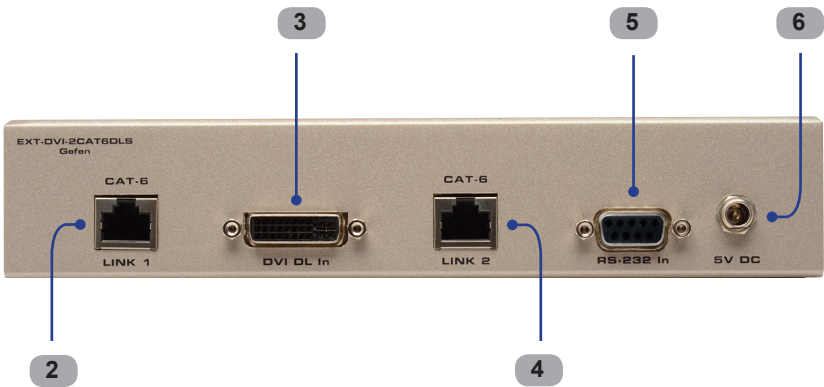
- (1) Dual-Link DVI over 2CAT6 - Sender unit
- (1) Dual-Link DVI over 2CAT6 - Receiver unit
- (1) 6 ft. Dual-Link DVI Cable (M-M)
- (2) 5V DC Power Supply
- (1) Quick-Start Guide

SENDER UNIT LAYOUT

Front Panel



Back Panel



SENDER PANEL DESCRIPTIONS

1 Power

This LED indicator will glow bright red once the included 5V DC locking power supply is properly connected between the unit and an open wall power socket.

2 Link 1

This port is used to connect the sending and receiving units together using a CAT-6a cable.

3 DVI DL In

This input will accept a dual-link DVI-D (digital only) source for extension. Attach the cable coming from your DVI source here.

4 Link 2

This port is used to connect the sending and receiving units together using a CAT-6a cable.

5 RS-232 Input

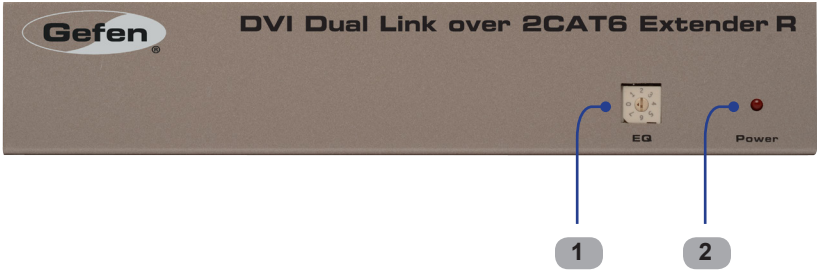
This port is used to connect an RS-232 Serial Cable from the RS-232 host device to this port.

6 5V DC

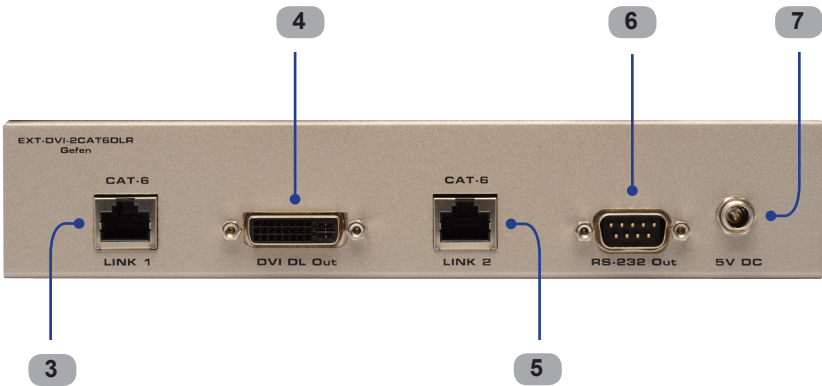
Connect the included 5V DC locking power supply to this receptacle.

RECEIVER UNIT LAYOUT

Front Panel



Back Panel



RECEIVER PANEL DESCRIPTIONS

1 EQ

The EQ adjustment or Trim Pot is used to equalize the signal to compensate for the extension distance and the quality/skew variances that are found in different CAT-6a cabling brands.

2 Power

The LED power indicator will become active once the included 5V DC power supply is properly connected between the unit and an open wall power socket.

3 Link 1

This port is used to connect the DVI Extender Sender and Receiver units together using CAT-6a cable.

4 DVI DL Out

This connector hooks up the Receiver to a DVI-D compliant monitor at the remote destination.

5 Link 2

This port is used to connect the DVI Extender Sender and Receiver units together using CAT-6a cable.

6 RS-232 Input

This port is used to connect an RS-232 Serial Cable from the RS-232 host device to this port

7 5V DC

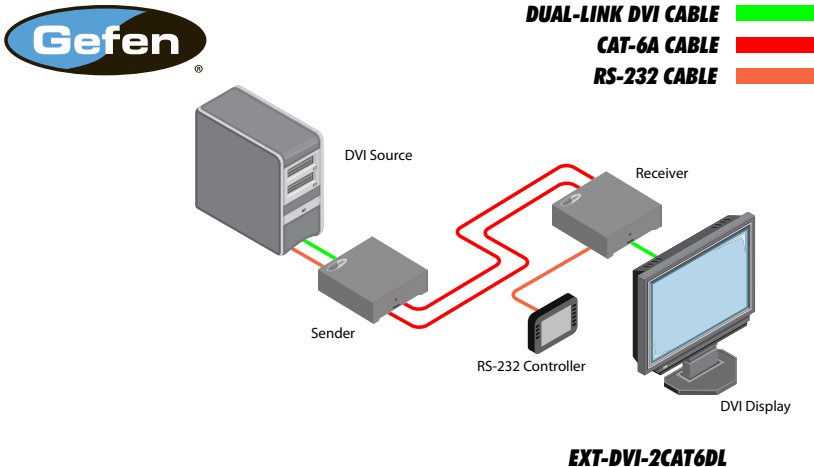
Connect the included 5V DC power supply between this input and an open wall power socket.

CONNECTING THE DUAL-LINK DVI OVER 2CAT6 EXTENDER

How to Connect the Dual-Link DVI over 2CAT6 Extender

1. Connect a dual-link DVI cable (one is supplied) between the DVI output on a source device and the DVI input connector on the *Dual-Link DVI over 2CAT6 Extender Sender unit*
2. Connect two CAT-6a cables between the Sender and Receiver units.
NOTE: When field-terminating CAT-6a cabling please adhere to the TIA/EIA-568-B specification. Please see page 13 for more information.
3. Connect a dual-link DVI cable (user-supplied) between the DVI input on a DVI-compliant output device (i.e. computer display) and the DVI output on the *Dual-Link DVI over 2CAT6 Extender Receiver unit*.
4. Connect the included 5V DC power supplies (two are included) to the Sender and Receiver units.
5. Power up the DVI output device (i.e. DVI computer monitor) first and the DVI source device (i.e. computer) last.

Wiring Diagram for the Dual Link DVI over 2CAT6 Extender



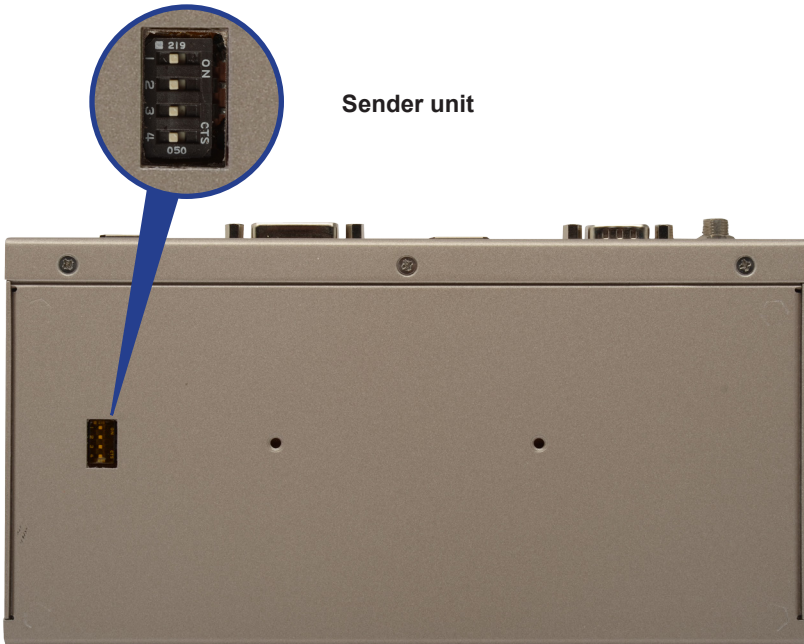
WARNING: This product should always be connected to a grounded electrical socket.

DIP SWITCH CONFIGURATION

DIP Switch Location

On the bottom of both the Sender unit and Receiver unit is a bank four (4) DIP switches.

The DIP switches allow the management of EDID, fiber optic extenders, HDCP, and RS-232 programming. On the Receiver unit, only DIP switch 3 and 4 are functional. DIP switch 1 and 2 are reserved for future expansion.



DIP Switch 1 - EDID Management

- ***ON - Pass Through EDID***

DDC and HPD are passed through. Both the connection status and the full video capabilities of the monitor. All audio and video features of the connected devices are passed to the source device.

- ***OFF (default) - Local EDID***

When Local EDID mode is used, the EDID will be assembled by copying all video and audio features of the connected output device.

DIP SWITCH CONFIGURATION

Sender Unit

DIP Switch 2: +5V for Fiber Optic Extenders

- **ON - Enable +5V**

Enable +5V for DVI fiber optic extenders.

- **OFF (default) - Disable +5V**

Disable +5V for DVI fiber optic extenders.

DIP Switch 3: DVI Support*

- **ON - DVI Mode**

If a DVI connection is used, set DIP 3 to the ON position. DVI is supported by disabling HDCP pass-through.

- **OFF (default) - HDCP Pass-Through**

If HDMI is connected, set DIP 3 in the OFF position.

**DIP switch is only functional when DIP switch 1 is set to OFF (Local EDID).*

DIP Switch 3 + 4: Field Upgrade Mode

- **ON - Enable Field Upgrade Mode**

Allows the firmware to be upgraded on the Receiver unit. If DIP switch 3 and 4 is in the ON position, RS-232 cannot be extended. See page 14 for details on upgrading the firmware.

- **OFF (default) - RS-232 Pass-Through**

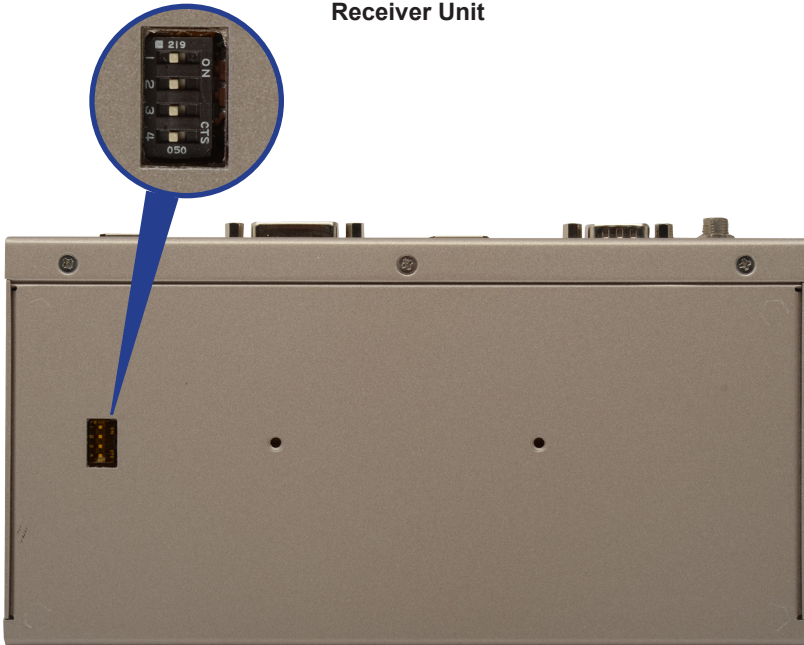
Use when extending RS-232 between the Sender unit and the Receiver unit. DIP switch 3 and 4 must be set to the OFF position for normal operation of the Dual-Link DVI 2CAT6 Extender.



IMPORTANT: After changing DIP switch 1, 3, or 4, the Sender unit must be power-cycled for the changes to take effect

DIP SWITCH CONFIGURATION

Receiver Unit



DIP Switch 1 - Not used

- Reserved for future expansion.

DIP Switch 2 - Not used

- Reserved for future expansion.

DIP Switch 3 + 4: Field Upgrade Mode

- **ON - Enable Field Upgrade Mode**

Allows the firmware to be upgraded on the Receiver unit. If DIP switch 3 and 4 is in the ON position, RS-232 cannot be extended.

- **OFF (default) - RS-232 Pass-Through**

Use when extending RS-232 between the Sender unit and the Receiver unit. DIP switch 3 and 4 must be set to the OFF position for normal operation of the Dual-Link DVI 2CAT6 Extender.



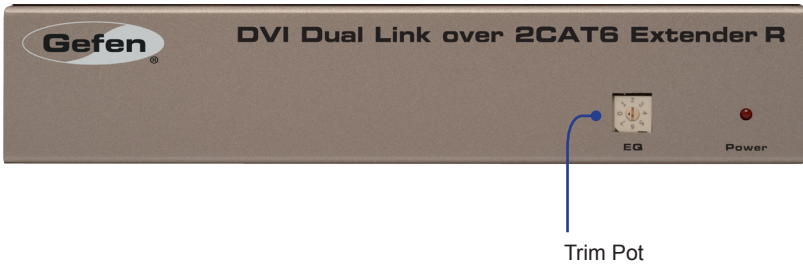
IMPORTANT: After changing DIP switch 3 and 4, the Receiver unit must be power-cycled for the changes to take effect.

ADJUSTING THE SIGNAL QUALITY

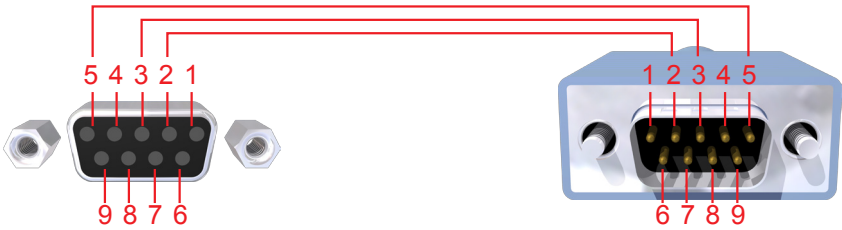
Adjusting the Signal Quality

The Dual-Link DVI over 2CAT6 Receiver unit has a equalization device called a Trim Pot (trim potentiometer) to compensate for the extension distance and the quality/skew variances that are found in different CAT-6a cabling brands. If there is no output video or if output video contains video artifacts and/or video noise such as snow, please use the steps below to adjust the Trim Pot.

1. Insert a small flat-headed tool into the Trim Pot on the front panel of the Receiver unit.
2. The Trim Pot has 8 set positions. Turn the Trim Pot in a clockwise fashion until it clicks into the next position. Continue adjusting the Trim Pot by trying all 8 positions until the issue is resolved.
3. Carefully remove the adjustment tool.



RS-232 SERIAL CONTROL



Only Pins 2 (RX), 3 (TX), and 5 (Ground) are used on the RS-232 serial interface

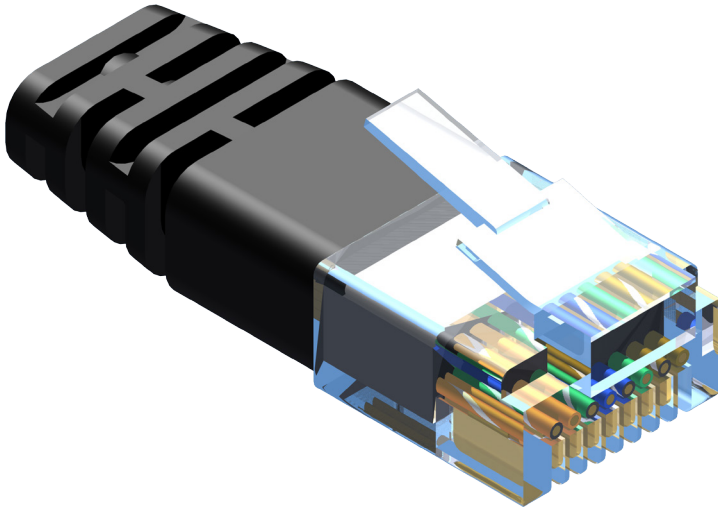
RS-232 Settings

Bits per second	19200
Data bits	8
Parity	None
Stop bits	1
Flow Control	None



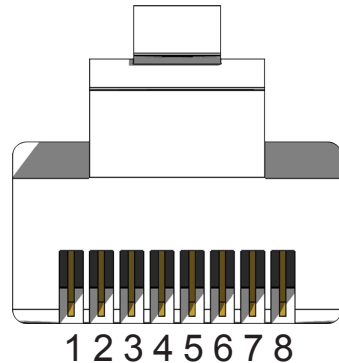
NOTE: Do not use a null modem cable when connecting the Dual-Link DVI over 2CAT6 to an RS-232 device. Null modem cables will not transmit the correct data.

NETWORK CABLE WIRING DIAGRAM



Gefen has specifically engineered products to work with the TIA/EIA-568-B specification. Please follow 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



This product was designed for use with CAT-6a (augmented) cabling only. This unit will either not perform to specification or refuse to operate completely if cabling other than CAT-6a is used.

Each cable run must consist of a single undivided segment of CAT-6a cabling from Sender to Receiver. Punch-down blocks or splices will not work.

FIRMWARE UPDATE

Firmware Update Procedure

1. Disconnect power from the Sender unit.
2. Set DIP switch 3 and 4 to the ON position (see page 10).
3. Connect power to the Sender unit.
4. Connect an RS-232 cable between the DB-9 connector on the Sender unit and the computer with the firmware. (See page 13 for RS-232 settings.)

A message will appear in Hyperterminal:

```
===== Main Menu =====  
  
Download new program ----- 1  
Cancel ----- 2  
  
=====
```

6. Press [1] on the computer keyboard to begin downloading program to the temporary memory.
7. In Hyperterminal, click Transfer > Send File...
8. Click Browse... and select the .BIN file you wish to upload.
9. Select Ymodem for the protocol.
10. Press Send on the Send File dialog box.
11. Wait until the download process is finished.
12. Once the update process is complete, repeat the same procedure for the Receiver unit.

SPECIFICATIONS

Maximum Pixel Clock	2 x 165 MHz
Input DDC Signal	5V p-p (TTL)
Input Video Signal	1.2V p-p
DVI Connector (Sender / Receiver)	(1) DVI-I, 29-pin, female (digital only)
RS-232 Connector (Sender).....	(1) DB-9, female
RS-232 Connector (Receiver).....	(1) DB-9, male
Link Connector (Sender / Receiver)	(2) RJ-45, Shielded
Power Supply	5V DC
Power Consumption	10 Watts (max. per unit)
Dimensions	8.4" W x 1.7" H x 4.3" D
Shipping Weight	4 lbs.

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, 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.



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This product uses UL listed power supplies.