2x Dual Link DVI Extender

EXT-2DVI-CATDL

User Manual

Release A4

Gefen®

Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this product near water.
6. Clean only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install or place this product near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. To reduce the risk of electric shock and/or damage to this product, never handle or touch this unit or power cord if your hands are wet or damp. Do not expose this product to rain or moisture.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. Batteries that may be included with this product and/or accessories should never be exposed to open flame or excessive heat. Always dispose of used batteries according to the instructions.

Warranty Information

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.

Contacting Gefen Technical Support

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Visit us on the Web: www.gefen.com

Technical Support Hours: 8:00 AM to 5:00 PM Monday - Friday, Pacific Time

2x Dual Link DVI Extender is a trademark of Gefen, LLC.

Important 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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Operating Notes

- The 2x Dual Link DVI Extender over CAT-6 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 terminating CAT-6a cables in the field, be sure to use the TIA/EIA-568-B specification. See Cable Termination for details.

- The 2x Dual Link DVI Extender over CAT-6 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 can expect a maximum extension range of 200 feet (60 meters) at 3840 x 2400 or 1080p resolution. Lower quality cabling or older standards such as CAT-5e cables will shorten the maximum achievable extension distance.

Features and Packing List

Features

- Extends two dual-link DVI sources to two dual-link DVI displays up to 200 feet (60 meters) over four CAT-6a cables
- Supports 1080p Full HD at 120Hz and dual-link resolutions up to 3840 x 2400 (WQUXGA)
- EDID management with Local and Pass-through modes
- EQ adjustment trim pots on Receiver equalize the signal to compensate for cable length and the quality/skew variances found among different CAT-6a cables
- Locking Power Supplies
- Rack mountable (rack ears included)

Packing List

The *2x Dual Link DVI Extender* ships with the items listed below. If any of these items are not present in the box when you first open it, immediately contact your dealer or Gefen.

- 1 x 2x Dual Link DVI Extender (Sender unit)
- 1 x 2x Dual Link DVI Extender (Receiver unit)
- 2 x 6 ft. Dual-Link DVI Cable (M-M)
- 2 x 5V DC Locking Power Supplies
- 2 x AC Power Cords
- 2 x Set of Rack Ears
- 1 x Quick-Start Guide

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2x Dual Link DVI Extender

01 Getting Started

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Receiver Unit Layout 4
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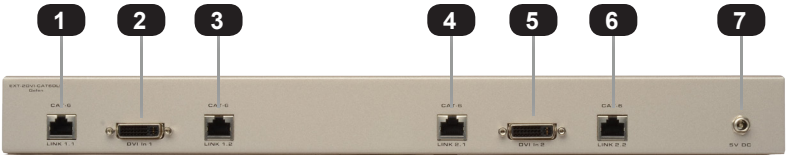
Sender Unit Layout

Front

ID	Name	Description
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 available electrical outlet.

Back



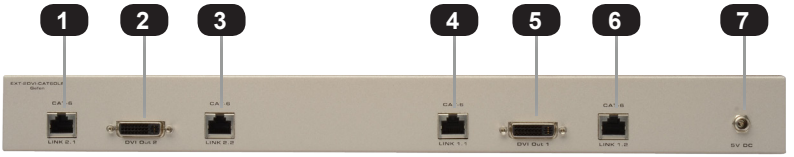
ID	Name	Description
1	Link 1.1	Connect a CAT-6a cable from this port to the **Link 1.1** port on the *Receiver* unit.
2	DVI In 1	Connect a dual-link DVI cable from this port to the a DVI (digital only) source.
3	Link 1.2	Connect a CAT-6a cable from this port to the **Link 1.2** port on the *Receiver* unit.
4	Link 2.1	Connect a CAT-6a cable from this port to the **Link 2.1** port on the *Receiver* unit.
5	DVI In 2	Connect a dual-link DVI cable from this port to the secondary DVI (digital only) source.
6	Link 2.2	Connect a CAT-6a cable from this port to the **Link 2.2** port on the *Receiver* unit.
7	5V DC	Connect the included 5V DC locking power supply to this receptacle.

Receiver Unit Layout

Front

ID	Name	Description
1	EQ 1	Use this EQ to adjust the output signal for DVI Out 1. See Adjusting the Signal Quality for details.
2	EQ 2	Use this EQ to adjust the output signal for DVI Out 2. See Adjusting the Signal Quality for details.
3	Power	This LED indicator will glow bright red once the included 5V DC locking power supply is properly connected between the unit and an available electrical outlet.

Back



ID	Name	Description
1	Link 2.1	Connect a CAT-6a cable from this port to the **Link 2.1** port on the *Sender* unit.
2	DVI Out 2	Connect a dual-link DVI cable from this port to the secondary DVI display.
3	Link 2.2	Connect a CAT-6a cable from this port to the **Link 2.2** port on the *Sender* unit.
4	Link 1.1	Connect a CAT-6a cable from this port to the **Link 1.1** port on the *Sender* unit.
5	DVI Out 1	Connect a dual-link DVI cable from this port to the primary DVI display.
6	Link 2.2	Connect a CAT-6a cable from this port to the **Link 2.2** port on the *Sender* unit.
7	5V DC	Connect the included 5V DC locking power supply to this receptacle.

Installation

Connecting the 2x Dual Link DVI Extender

1. Connect one of the included dual-link DVI cables between the primary DVI source and the **DVI In 1** port on the Sender unit.

2. Connect the other dual-link DVI cable (included) between the secondary DVI source and the **DVI In 2** port on the Sender unit.

3. Connect four CAT-6a cables between the Sender and Receiver units.

   Each RJ-45 connector on the Sender and Receiver unit is identified by **Link 1.1**, **Link 1.2**, **Link 2.1**, and **Link 2.2**. When connecting the CAT-6 cables, make sure that the connectors on the Sender unit are connected to the corresponding connectors on the Receiver unit (e.g. **Link 1.1** --> **Link 1.1**, **Link 1.2** -> **Link 1.2**, and so on).

> **NOTE:** When field-terminating CAT-6a cabling please adhere to the TIA/EIA-568-B specification. See Cable Termination for more information.

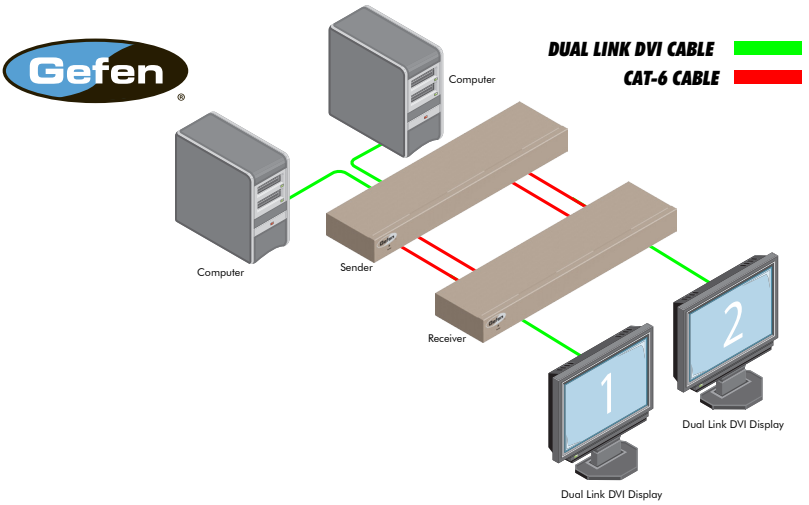
4. Connect a dual-link DVI cable between the primary DVI display and the **DVI Out 1** port on the Receiver unit.

5. Connect another dual-link DVI cable between the secondary DVI display and the **DVI Out 2** port on the Receiver unit.

6. Connect the included 5V DC power supplies (two are included) to the 5V DC power receptacles on the Sender and Receiver units.

7. Connect the AC power cord from each power supply to available electrical outlets.

Sample Wiring Diagram



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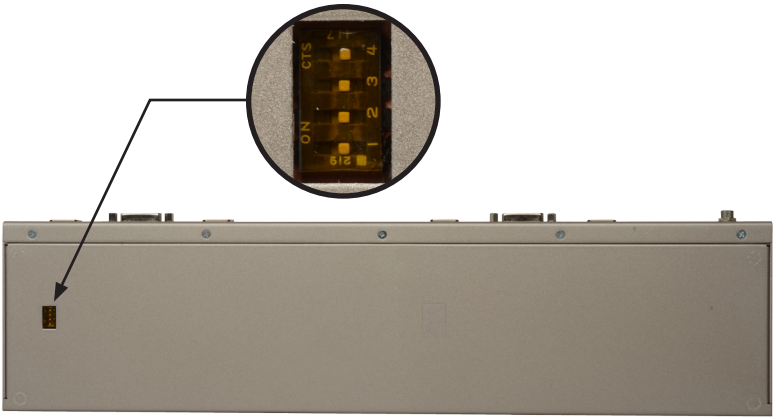
DIP Switch Configuration

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

The DIP switches on the Sender unit allow the management of EDID, fiber optic extenders, and HDCP. The DIP switches on the Receiver unit do not provide any function and reserved for future expansion.

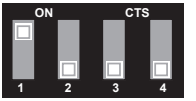
NOTE: DIP switch 4 is not used and is reserved for future expansion.



Sender unit

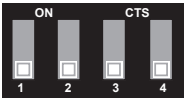
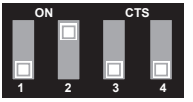
EDID Management

After changing DIP switch 1, the Sender unit must be power-cycled for changes to take effect.

DIP Switch 1	Description	Picture
OFF (default)	When Local EDID mode is used, the EDID will be assembled by copying all video and audio features of the connected output device.	
ON	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.	

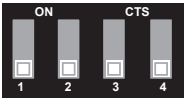
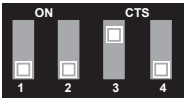
Fiber Optic Extender Control

WARNING: Use caution when applying power to inputs. If the source device supplies +5V on the input, then enabling the +5V may cause damage to the source and/or the 2x Dual Link DVI Extender.

DIP Switch 2	Description	Picture
OFF (default)	Disables +5V for Fiber Optic DVI Extenders (not included)	
ON	Enables +5V for Fiber Optic DVI Extenders (not included)	

DVI Support

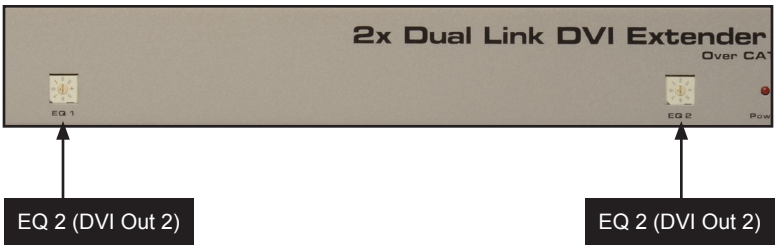
DIP switch 3 is only functional when DIP switch 1 is set to OFF (Local EDID). After changing DIP switch 3, the Sender unit must be power-cycled for changes to take effect.

DIP Switch 3	Description	Picture
OFF (default)	If using an HDMI source, set DIP 3 in the OFF position.	
ON	If a DVI connection is used, set DIP 3 to the ON position. DVI is supported by disabling HDCP pass-through.	

Adjusting the Signal Quality

The 2x Dual Link DVI Extender over CAT-6 Receiver unit has two trim pots to compensate for the extension distance and the quality/skew variances that are found in different CAT-6a cabling brands. EQ1 adjusts the output signal for DVI 1 and EQ2 adjusts the output signal for DVI 2. If there is no output video or if output video contains video artifacts and/or video noise such as snow, use the steps below to adjust the trim pot.

1. Insert a small flat-headed tool into each of the trim pots on the front panel of the Receiver unit.
2. Each trim pot has 8 set positions. Turn the trim pot in a clockwise fashion until it clicks to the next position.
3. Check the image.
4. If necessary, continue adjusting the rotary switch until the issue is resolved.



NOTE: Any time a cable is changed-out or replaced, the trim pots on the Receiver unit will need to be adjusted.

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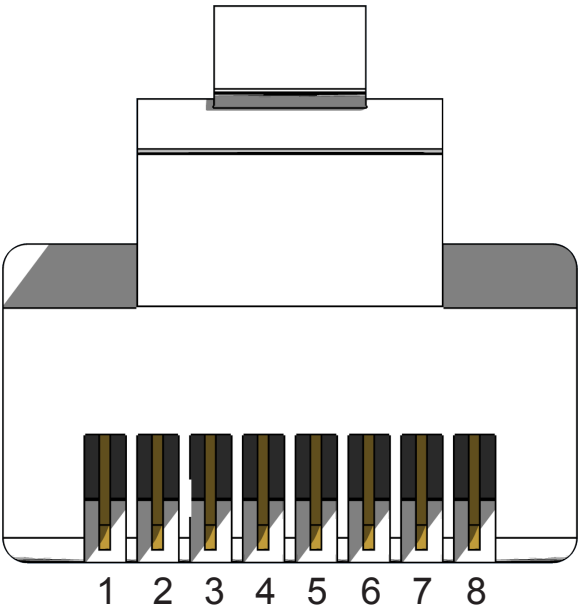
Cable Termination

Front of RJ-45 Connector



Gefen recommends the TIA/EIA-568-B wiring option. Use the table below when field-terminating cable for use with Gefen products.

Pin	Color	Description
1	Orange / White	TD+ (Transmit Data, positive differential signal)
2	Orange	TD- (Transmit Data, negative differential signal)
3	Green / White	RD+ (Receive Data, positive differential signal)
4	Blue	Unused
5	Blue / White	Unused
6	Green	RD- (Receive Data, negative differential signal)
7	Brown / White	Unused
8	Brown / White	Unused

It is recommended to use one continuous run from one end to the other. Patch cable is not recommended.

Specifications

Supported Formats	
Resolutions (max.)	• 1080p Full HD (@120 Hz) • 3840 x 2400 (WQUXGA)

Electrical	
Maximum Pixel Clock	• 2 x 165 MHz
Input Video Signal	• 1.2V p-p
Input DDC Signal	• 5V p-p (TTL)
Power Indicator (Sender / Receiver)	• 1 x LED, red

Connectors	
Video Input (Sender)	• 2 x DVI-I, 29-pin, female (digital only)
Video Output (Receiver)	• 2 x DVI-I, 29-pin, female (digital only)
Link (Sender / Receiver)	• 2 x RJ-45, shielded
Power	• 1 x 5V DC, locking

Operational	
Power Consumption	• 20W per unit (max.)
Operating Temperature	• +32 to +104 °F (0 to +40 °C)

Physical	
Dimensions (W x H x D) (Sender / Receiver)	• 17.5” x 1.7” x 4.3” (435mm x 45mm x 110mm)
Unit Weight (Sender / Receiver)	• 1.6 lb (0.7 kg)

Stretch it. Switch it. Split it. Gefen's got it. ®

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This product uses UL listed or CE compliant power supplies.