



4K Ultra HD 600 MHz 1:2 Scaler

w/ EDID Detective and Audio De-Embedder

EXT-UHD600A-12-DS



User Manual

Version A1

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

For the latest warranty coverage information, refer to the Warranty and Return Policy under the Connect section of the Gefen Web site at <http://www.gefen.com/connect/warranty-and-return-policy>

Contact Us

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Cable quality is critical when handling 600 MHz HDMI signals. We highly recommend 10-foot or shorter Gefen Locking HDMI cables. They have been designed and tested to work at 600 MHz and reliably transport the the full 18.2 Gbps throughput of HDMI 2.0.

The 1:2 Scaler ships with its EDID Selector set to “0”, which is 4K 600 MHz video with 2-Channel audio support. Please see the Manual before selecting other EDIDs via this switch. Selecting the External/Custom EDID mode when the sink/display has multichannel support may cause momentary noise in the analog L/R audio output. To prevent this from happening, disable multichannel audio on the source or select one of the built-in EDIDs that only supports 2 channels of audio.

In order for the Upscale function to work, the 1080p video input has to be 8-bit color. 10 and 12-bit color will only pass through as long as the Up-scaler is disabled.

This product has been specifically designed for use with the Gefen Syner-G™ Software Suite, available for download at www.gefen.com. When used with this product, Gefen Syner-G™ simplifies Scaler operation, EDID management, and firmware updates.

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.

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



This product uses UL-Listed power supplies



Features & Packing List

Features*

- Supports 18.2 Gbps bandwidth and 600 MHz TMDS clock
- Splits a 4K 600 MHz source to two displays, 4K 600 MHz or 1080p
- Supports resolutions up to 4K Cinema-DCI (4096 x 2160 to 60 Hz, 4:4:4), 4K Ultra HD (3860 x 2160 to 60 Hz, 4:4:4) with HDR, 1080p Full HD (60 Hz), and WUXGA (1920x1200 to 60 Hz)
- HDMI Features Supported:
 - * HDMI 2.0 (full bandwidth to 18.2 Gbps/600 MHz)
 - * HDR (High Dynamic Range) 10-bit color at 4K 60 Hz 4:2:0 and 4K 24 Hz 4:4:4
 - * Dolby Vision™ 12-bit color at 4K 60Hz 4:2:0 and 4K 24 Hz 4:4:4
 - * HDCP 2.2 and 1.4
 - * 12-bit Deep Color (at 1080p)
 - * Uncompressed LPCM digital audio (up to 7.1 channels) pass-through
 - * HBR (High Bit Rate) digital audio (up to 7.1 channels), including Dolby Atmos®, Dolby® TrueHD, DTS:X™, and DTS-HD Master Audio™, pass-through
 - * 3DTV pass-through
 - * CEC pass-through (HDMI Out 1 only)
 - * Lip Sync pass-through
- Supports the use of DVI sources and DVI displays up to 1080p Full HD and WUXGA (1920x1200), with Gefen CAB-DVI2HDMI-LCK DVI-to-HDMI cables (not included)
- Built-in Full-Featured 4K 600 MHz Advanced EDID Detective with Gefen Syner-G™ interface
- Two independent scalers allow upscaling from 1080p to 4K on one of the outputs and downscaling from 4K to 1080p on the other, maximizing compatibility in a mixed-resolution display system
- Built-in Audio De-Embedder breaks out 2 channel analog, 2 channel PCM, and up to 5.1 channels of Bitstream audio from the HDMI signal, allowing the audio content to be sent to an external amplifier for added impact.
- Field-updatable firmware via Gefen Syner-G™
- Locking power connector
- Surface-mountable
- Compact enclosure is easy to install and can be hidden away

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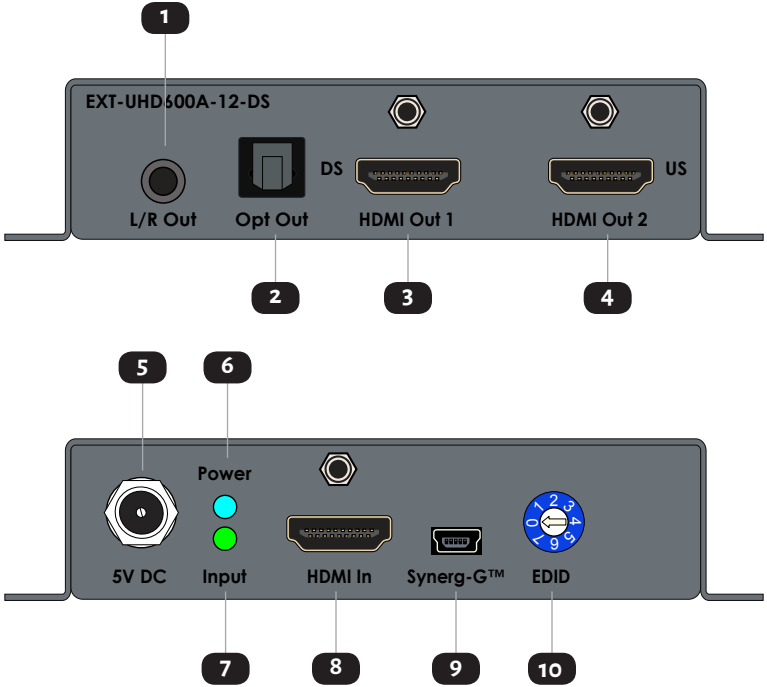
Packing List

The following items are included in each package of the EXT-UHD600A-12-DS. If any of these items are not present in the box when you first open it, please contact Gefen Technical Support as soon as possible.

- (1) 4K 600 MHz 1:2 Scaler w/ EDID Detective and Audio De-Embedder
- (1) HDMI-to-HDMI Male-to-Male Locking cable, 6 feet
- (1) 5V DC power supply with US/EU/UK/AU regional AC plugs (EXT-PS526AIP-LP-6)
- (1) Quick-Start Guide

Table of Contents

- Introduction..... 9**
- Installation 11**
 - Connection Instructions..... 11
 - Sample Wiring Diagram 12
- LED Status..... 13**
- EDID Modes 14**
- Using Gefen Syner-G™ 15**
 - Connecting to Gefen Syner-G™ 15
 - Control tab..... 15
 - Manage EDID tab 17
 - Update tab..... 19
- Specifications 21**



ID	Name	Description
1	L/R Out	Connect a 3.5mm mini-stereo cable from the port to an audio amplifier.
2	Opt Out	Connect a TOSLINK® optical audio cable from this port to an audio amplifier.
3	HDMI Out 1 / DS	Connect an HDMI cable from this port to a UHD/HD display. This is output is used for pass-thru or downscaling only.
4	HDMI Out 2 / US	Connect an HDMI cable from this port to a UHD/HD display. This is output is used for pass-thru or upscaling only.
5	5V DC	Connect the included 5V DC power supply to this power receptacle.

ID	Name	Description
6	Power	This LED indicator glows solid blue when the unit is powered. See LED Status (page 13) for more information.
7	Input	This LED indicator glows solid green when a source is connected to the HDMI In port. See LED Status (page 13) for more information.
8	HDMI In	Connect the included HDMI cable from an HDMI source to this port.
9	Syner-G™	When using the Gefen Syner-G™ software, connect a PC's USB port top this connector.
10	EDID	Adjust this rotary pot to set the EDID mode. See page 14 for more information.

Connection Instructions

► Video

1. Connect the included locking HDMI cable from an Ultra HD source to the **HDMI In** port on the Splitter.
2. Use Gefen locking HDMI cables (10 feet or shorter if passing 4K 600 MHz) to connect the two outputs of the 1:2 Scaler (**HDMI Out 1** and **HDMI Out 2**) to two displays. If one of the displays is 1080p Full HD, connect it to **HDMI Out 1** and make sure that the downscaling feature is active for this output.

► Audio (optional for audio de-embedding)

Note

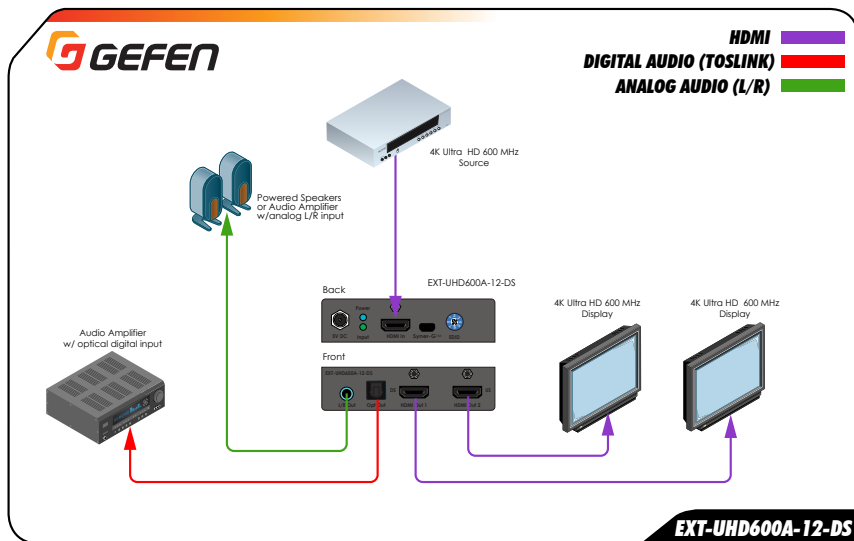
Note that selecting the External/Custom EDID mode when the sink/display has multichannel support may cause momentary noise in the analog L/R audio output. To prevent this from happening, disable multichannel audio on the source or select one of the built-in EDIDs that only supports 2 channels of audio.

3. Digital audio:
Connect a TOSLINK® optical audio cable from the **Opt Out** port to an audio amplifier. This port supports multichannel audio de-embedding. Note that HD audio (lossless) formats, such as Dolby Atmos®, Dolby® TrueHD, DTS:X™, and DTS-HD Master Audio™, are not supported.
4. Analog audio:
Connect a 3.5mm mini-stereo cable from the **L/R** port to an audio amplifier. This port only supports 2-channel audio.

► Power

5. Connect the included 5V power supply to the **5V DC** power receptacle.
6. Connect the AC plug of the power supply to an available electrical outlet.

Sample Wiring Diagram



LED Status

The **Power** and **Link** LED indicators on the EXT-UHD600A-12-DS provide basic information on the current unit status.

Power		Description
Solid blue		The unit is powered.
Off		No power; check the power supply is connected securely, and that the electrical outlet is active.

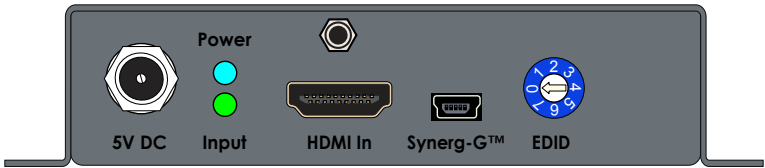
Input		Description
Solid green		An active source is connected to the EXT-UHD600A-12-DS.
Off		No source is connected, the source is off, or the HDMI cable between the source and the EXT-UHD600A-12-DS is faulty or not connected properly.

EDID Modes

The EXT-UHD600A-12-DS provides several built-in EDIDs. Adjust the rotary **EDID** switch, either clockwise or counterclockwise, to select the desired EDID. The table below provides a description of each EDID. The default position is 0.

4K upscaling will only work when 1080p signal is 8-bit color.

Downscaling is limited to 4K EDID modes only.



EDID mode	Description
0	4K 600 2-channel audio (supports HDR)
1	4K 600 Multichannel audio (supports HDR)
2	4K 300 Multichannel (supports 4K @ 60Hz 4:2:0 and 4K @ 30Hz 4:4:4)
3	1080p 2-channel audio (limited to 8-bit color)
4	1080p Multichannel audio (limited to 8-bit color)
5	Copies the EDID from HDMI Out 1
6	Copies the EDID from HDMI Out 2
7	User-Defined

Using Gefen Syner-G™

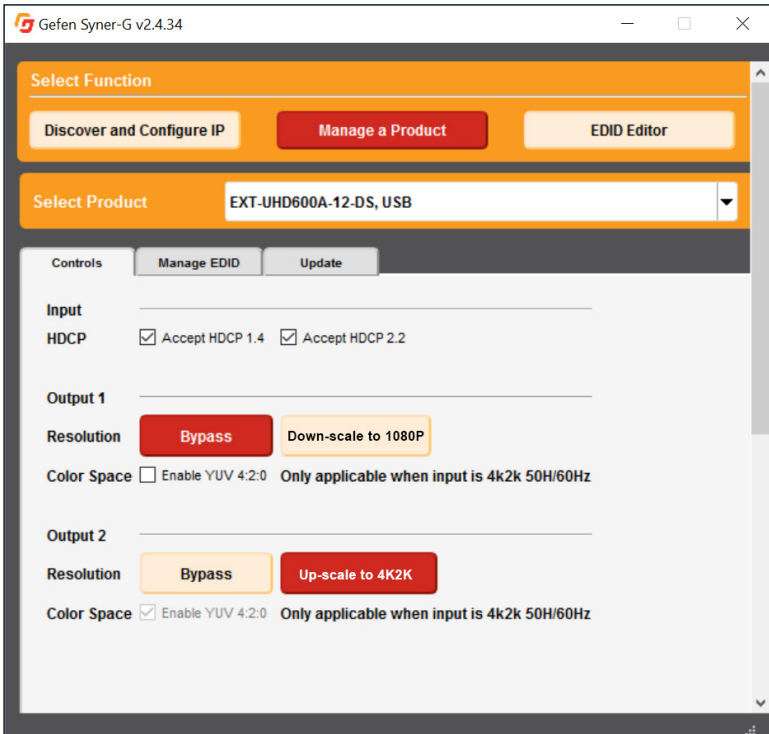
Gefen Syner-G™ provides an easy and intuitive way to configure the EXT-UHD600A-12-DS. The following section provides information on the available features.

Connecting to Gefen Syner-G™

1. Download and install Gefen Syner-G™ on a Windows PC. Gefen Syner-G™ is available from the Gefen website at <http://www.gefen.com/technology/gefen-syner-g-software>.
2. Connect a USB A-to-mini-B cable from the computer running the Gefen Syner-G™ software to the **Syner-G™** port on the EXT-UHD600A-12-DS.
3. Launch the Gefen Syner-G™ software.
4. Select **EXT-UHD600A-12-DS** from the **Select Product** drop-down list.

Control tab

1. Click the **Controls** tab in the Gefen Syner-G™ software.



HDCP (Input)

- **Accept HDCP 1.4**
Click this checkbox to accept HDCP 1.4 content. Uncheck this box to block HDCP 1.4 content.
- **Accept HDCP 2.2**
Click this checkbox to accept HDCP 2.2 content. Uncheck this box to block HDCP 2.2 content.

Both checkboxes can be either enabled or disabled at the same time:

If both Accept HDCP 1.4 and Accept 2.2 are checked, then both versions of HDCP are accepted. If both are unchecked, then all HDCP content is blocked.

Resolution (Output 1)

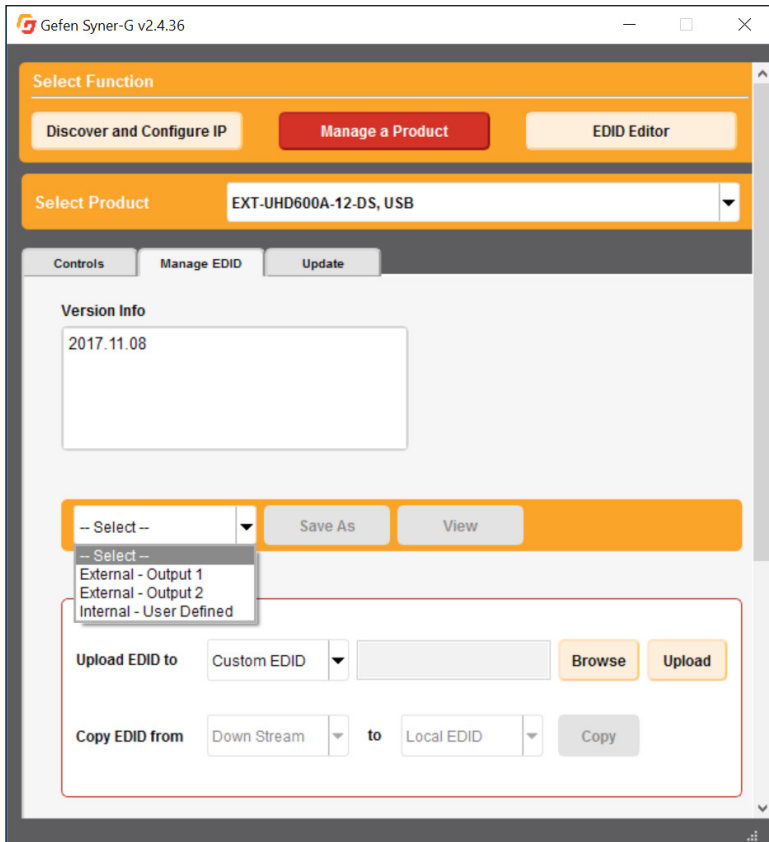
- **Bypass**
Click this button to pass full bandwidth 4K60 4:4:4 with HDR. If this option is enabled, then the button will be red.
- **Down-scale to 1080P**
Click this button to accept 4K resolutions and downscale to 1080p 4:4:4. If this option is enabled, then the button will be red.
- **Color Space**
Clicking the **Enable YUV 4:2:0** checkbox will affect only 4K 60/50 resolutions in **Bypass** mode. It does not apply to downscaling. Unchecking the **Enable YUV 4:2:0** box will disable 4:2:0 on the output. This is the default setting. Color subsampling is passed through.

Resolution (Output 2)

- **Bypass**
Click this button to pass full bandwidth 4K 60 4:4:4 with HDR. If this option is enabled, then the button will be red.
- **Up-scale to 4K2K**
Click this button to accept 1080p resolution and upscale content to 4K 4:4:4. If this option is enabled, then the button will be red.
- **Color Space**
Clicking the **Enable YUV 4:2:0** checkbox will force 4:2:0 on either **Bypass** or **Up-scale to 4K2K** mode. Enabling this option is used when the source is 4K 60Hz 4:4:4 and the sink is only 4K 60Hz 4:2:0 capable. Unchecking the **Enable YUV 4:2:0** box will disable 4:2:0 on the output. This is the default setting. Color subsampling is passed through.

Manage EDID tab

1. Click the **Manage EDID** tab in the Gefen Syner-G™ software.



External - Output 1

Reads the EDID of the device connected to **HDMI Out 1**.

External - Output 2

Reads the EDID of the device connected to **HDMI Out 2**.

Internal - User Defined

Reads the user-specified EDID that is selected using the rotary EDID switch.

Save As

Saves the selected EDID, in the drop-down list, as a .bin file.

View

Opens the selected EDID in the EDID Editor so that the it can be modified as needed.

Browse

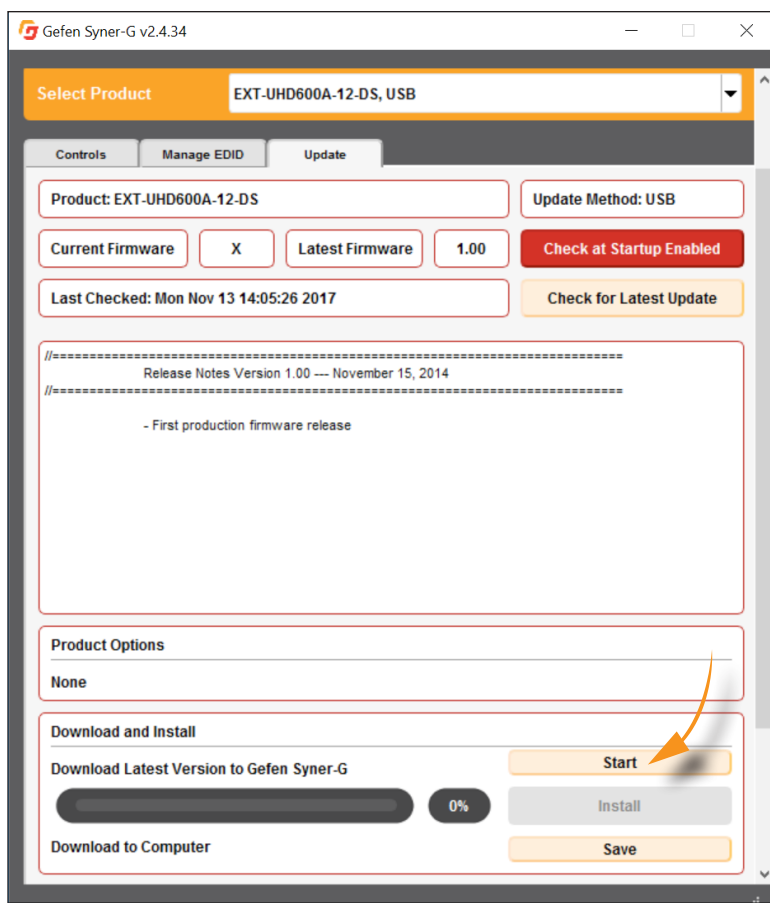
Click this button to select the desired EDID to be uploaded. The EDID must be a .bin file.

Upload

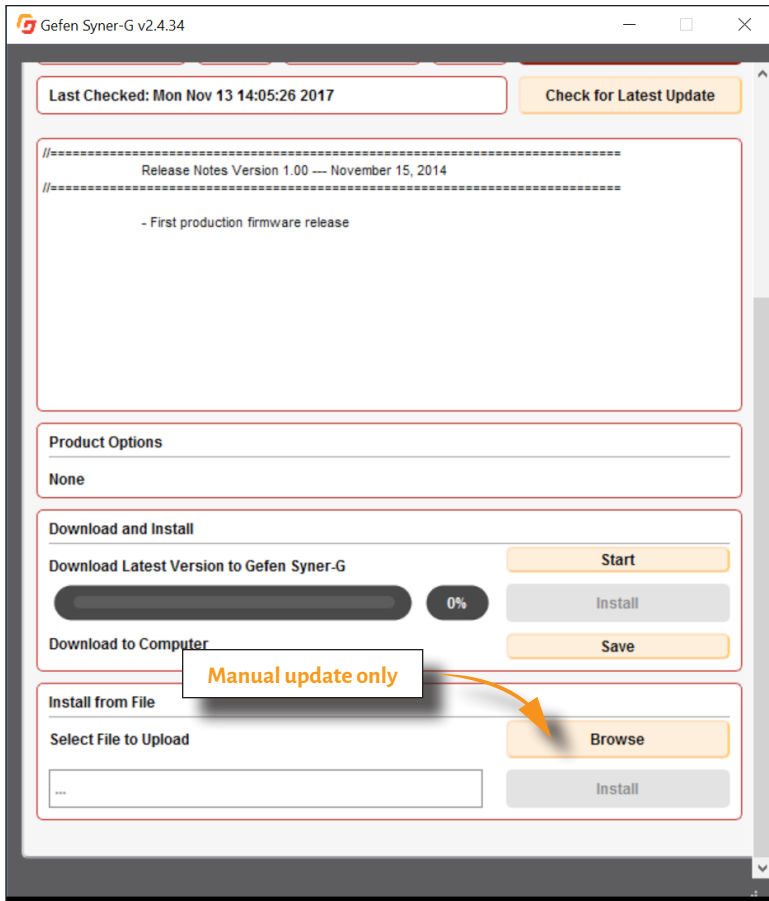
Cick this button to upload the selected EDID. Before uploading the EDID, the EDID rotary switch must be set to the “7” position.

Update tab

1. Connect a USB A-to-mini-B cable from the computer running the Gefen Syner-G™ software to the **Syner-G™** port on the EXT-UHD600A-12-DS.
2. Launch the Gefen Syner-G™ software.
3. Select **EXT-UHD600A-12-DS** from the **Select Product** drop-down list.
4. Click the **Update** tab.



5. Scroll down toward the bottom of the screen.
6. Click the **Start** button to begin downloading the firmware from the Gefen website.



7. Click the **Install** button to begin the upgrade process. Note that the **Install** button will only be enabled if the firmware has been downloaded.
8. After the firmware update is complete, the firmware can be saved locally by clicking the **Save** button.

If the unit is being updated manually, click the **Browse** button under the **Install from File** section, then click the **Install** button to begin the update process.

Supported Formats	
Maximum Video Resolutions/Timing	Pass-thru: • 4096 x 2160 up to 60 Hz, up to 4:4:4, 8-bit • 3860 x 2160 up to 60 Hz, up to 4:4:4, 8-bit • 1080p up to 60 Hz, up to 4:4:4, up to 12-bit • 1920 x 1200 (WUXGA) up to 60 Hz Scalers operational: • 3860 x 2160 up to 60 Hz, up to 4:4:4, 8-bit • 1080p up to 60 Hz, up to 4:4:4, 8-bit
Audio	• HDMI pass-thru: Up to 8 channels of HBR, Bitstream, & LPCM • Analog Out: 2 ch (from PCM) • Digital Out: 2 ch PCM & up to 5.1 ch Bitstream
Connectors & Indicators	
Input	• 1 x HDMI Type A 19-pin, female, locking
Output	• 2 x HDMI Type A 19-pin, female, locking
Digital Audio Output	• 1 x TOSLINK® optical
Analog L/R Audio Output	• 1 x 3.5mm mini-stereo
Gefen Syner-G™	• 1 x USB mini-B, female
EDID Selector	• 1 x Rotary, 8-position
Power	• 1 x 5V DC, locking, 5.5mm barrel/2.5mm pin
Power LED	• 1 x LED, blue
Input LED	• 1 x LED, green
Operational	
TMDs Clock	• 600 MHz
Video Bandwidth	• 18.2 Gbps
Power Consumption	• 4 W (max.)
Operating Temperature	• +32 to +122 °F (0 to +50 °C)
Operating Humidity	• 5% to 90% RH, non-condensing
Storage Temperature	• -4 to +185 °F (-20 to +85 °C)
Storage Humidity (RH)	• 0% to 95% RH, non-condensing
MTBF	• 50000 hours
Physical	
Dimensions (W x H x D) (Sender/Receiver)	• 3.7" x 1" x 3.2" (94 mm x 25 mm x 82 mm) not including connectors
Net Weight (Sender / Receiver)	• 0.3 lbs. (0.14 kg)
Shipping Weight	• 1.4 lbs (0.63 kg)



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