

# HGXT<sup>2</sup>

4K HDMI & GIGABIT FIBEROPTIC EXTENDER



## User Manual

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# Thank you

Thank you for purchasing the HGXT<sup>2</sup> 4K HDMI & Gigabit FiberOptic Extender.

This user guide provides technical specifications, instructions for installation as well as operation (by qualified and professional technicians)

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# Safety and Notice

- Do not bend the power cord by force, or do not put heavy objects on the power cord to prevent breakdown. It can cause a fire.
- Do not touch the power plug with wet hands. You may be struck by electricity. Insert the power plug firmly to avoid shaking. If not inserted firmly, fire hazard may occur.
- Use mains power with correct voltage. Not doing so may result in unit damage.
- Do not insert metallic objects (hair pin or ironware) or combustible foreign objects (match, paper and so on) into the terminal hole, or drop the terminal. It may cause a fire and an injury by electrical shock.
- Don't put heavy objects on top of the product. It may cause malfunction.
- Do not disassemble, repair or modify. It can cause a fire and an injury by electrical shock due to abnormal operation.
- Place the product in an even and stable location. If the product falls down or is dropped, injury and/or malfunction may occur.
- Do not spray water on the product. It may cause a fire and an injury by electrical shock. Scrub the product surface softly with a dry towel.
- Do not twist or pull the optical cable by force. It can cause malfunction.
- Do not look directly at the light coming from the fiber optic connectors and cable as it is harmful to the eyes.
- Use the unit in environmental temperatures between 0°C and +50. Not doing so may result in unit malfunction.

Belram shall have no further obligation under the limited warranty (1 year) if the product has been damaged due to abuse, misuse, neglect, accident, unusual physical or electrical stress, unauthorized modifications, tampering, alterations, or service other than by Belram or its authorized agents, and causes other than from ordinary use or failure to properly use the product in the application for which the product is intended.

Belram underlines that the warranty only covers manufacturing defects.

# Overview

The HGXT<sup>2</sup> HDMI extender is a rugged, tour grade fiber optic extender for transmitting HDMI signals up to 4K @ 60Hz and Gigabit Ethernet (1000Base-T).

The bandwidth of 18Gbps allows for 4:4:4 color subsampling (uncompressed video) and HDR capability as well as automatic EDID management. It supports HDCP 1.4 and 2.2 content protection. The multi-color LED informs the user of transmission status at all time.

Power is provided through Neutrik powerCON TRUE1 connectors (mains power cables included with Type E Schuko plug).

The Neutrik HDMI connector is compatible with all current HDMI cables (we recommend using 18Gbps certified HDMI 2.0 cables not exceeding 1,5m on transmitter's and receiver's side to guarantee maximum resolution timing and color space).

The Neutrik etherCON CAT5E connector is compatible with standard RJ45 (we recommend using network cables fitted with etherCON cable carriers to ensure the strongest connection)

The HGXT<sup>2</sup> is fitted with Neutrik opticalCON DUO chassis for the optical link allowing for a robust connection between sender TX and receiver RX. Common LC duplex OM3/OM4 fiber may be used. However, we strongly recommend to use Neutrik opticalCON DUO for the fiber link.

## Contents

- 1 HGXT<sup>2</sup> Transmitter (TX)
- 1 HGXT<sup>2</sup> Receiver (RX)
- 2 Power cables with Neutrik powerCON TRUE1 Female <-> Belgian Plug (2m)
- 1 USB A Male to USB B Male cable for Firmware update (for HDMI functionality) (1m)

## Available accessories:

- Purelink ProSpeed PS3000 HDMI 18Gbps cables (1m/1,5m)
- Neutrik Locking HDMI cables (0,6m/1m)
- Belden 1305A CAT5E etherCON Link Cable (different lengths available)

# Features

- Ruggedized touring quality HDMI 2.0 extender over optical fiber
- UHD 4K @ 60Hz, 4:4:4 color sub sampling with HDR support
- 18Gbps bandwidth
- HDCP 2.2 compliant
- Gigabit Ethernet
- Suited for Neutrik opticalCON DUO or standard LC duplex multimode fiber
- Transmission length up to 300m
- Multi colored signal status LED
- Thread hole for stand or truss mounting

## Technical Specifications

|                                   |   |
|-----------------------------------|---|
| <b>Video Signal</b>               | HDMI 2.x ; HDMI 1.x   |
| <b>Optical Connection</b>         | Neutrik opticalCON DUO Multimode  |
| <b>Max. Resolution</b>            | 4K UHD (4096x2160@60Hz; 3840x2160@60Hz)   |
| <b>Color subsampling</b>          | 4:4:4 (RGB and YUV)   |
| <b>Supported bitrates</b>         | 8bit, 10bit, 12bit, 16bit   |
| <b>Video Bandwidth</b>            | 18 Gbps   |
| <b>Ethernet Bandwidth</b>         | 1 Gbps  |
| <b>HDR</b>                        | HDR10, HDR12, HLG, PQ, Dolby Vision   |
| <b>EDID</b>                       | Fully automatic   |
| <b>HDCP Content Protection</b>    | Off/1.4/2.2   |
| <b>Max. Transmission Distance</b> | 300m (OM3 multimode fiber)  |
| <b>Enclosure</b>                  | Lightweight aluminum housing  |
| <b>Dimension</b>                  | TX and RX unit (L x H x W): 200mm x 61mm x 151mm  |
| <b>Weight</b>                     | 1100g per unit (2200g total)  |
| <b>Device I/O</b>                 | Video: Neutrik HDMI A female<br>Network: Neutrik etherCON CAT5E female<br>Optical: Neutrik opticalCON DUO (Multimode)<br>Power: Neutrik powerCON TRUE1 TOP<br>Firmware Update: Neutrik USB B female (for HDMI only) |
| <b>Operating temperature</b>      | 0°C to 50°C   |
| <b>Storing temperature</b>        | -20°C to 70°C   |
| <b>Power Consumption</b>          | 2,1W (TX) / 1,3W (RX)   |
| <b>Power Rating</b>               | 100-240V AC   |
| <b>Suited for outdoor</b>         | Yes, if not exposed to water (unit must be covered)   |
| <b>Miscellaneous</b>              | Thread hole for truss or stand mounting<br>5-color status LED (for HDMI)<br>Anti-slip corners   |

# Setup

1. Connect the HDMI source to the HGXT<sup>2</sup> Transmitter unit ("HDMI IN").

**Note:**

For highest resolution, timing, bitrate and color space (2160p60, 8bit, 4:4:4) use 18Gbps certified HDMI cables not exceeding 1,5m in length.



2. Connect the CAT5E cable to the HGXT<sup>2</sup> Transmitter's unit ("DATA IN").



3. Plug the power cable in the HGXT<sup>2</sup> Transmitter's powerCON TRUE1 TOP chassis ("POWER").



4. Connect the fiber cable to the HGXT<sup>2</sup> Transmitter's Neutrik opticalCON DUO chassis ("FIBER OUT").

**Note:**

Multimode OM3 or OM4 is required.



You can also use opticalCON LITE DUO or standard Duplex LC Multimode OM3/OM4 optical fiber.

# Setup (continued)

4. Connect your HDMI display to the HGXT<sup>2</sup> Receiver unit ("**HDMI OUT**").

**Note:**

For highest resolution, timing, bitrate and color space (2160p60, 8bit, 4:4:4) use 18Gbps certified HDMI cables not exceeding 1,5m in length.

5. Connect the CAT5E cable to the HGXT<sup>2</sup> Receiver unit ("**DATA OUT**").

6. Plug the power cable in the HGXT<sup>2</sup> Receiver's powerCON TRUE1 TOP chassis ("**POWER**").

7. Connect the fiber cable to the HGXT<sup>2</sup> Receiver's Neutrik opticalCON DUO chassis ("**FIBER IN**").

**Note:**

Multimode OM3 or OM4 is required.

8. Check the status LED (engraved on top side of TX and RX):  
If everything is connected correctly, the LED will show the HDMI signal status:

- White        -> No HDCP
- Green        -> HDCP 1.x
- Blue         -> HDCP 2.x



# Maintenance

Optical fiber connections are capable of transmitting very high bandwidths but are prone to dust and dirt. Therefore we strongly recommend a good maintenance after every use. There are a couple of simple and cost effective ways to easily clean both the cables and connectors on the XT<sup>2</sup> extenders. These cleaning tools are available through Belram.

## Cleaning the HGXT<sup>2</sup> optical connector(s)

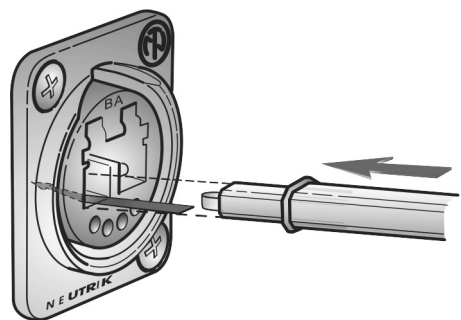
### Required tooling:

- Dry Cleaner 1,25mm



### Instructions:

1. Remove protective cap from Dry Cleaner.
2. Insert the tip of the Dry Cleaner in LC slot "a".
3. Push down on the Dry Cleaner 4 - 5 times.
4. Remove Dry Cleaner and repeat for LC slot "b".
5. The optical connector has been cleaned.
6. Repeat above steps if necessary.



## Cleaning the optical fiber cables (opticalCON DUO, standard LC)

### Required tooling:



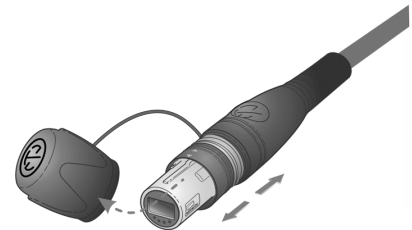
Neutrik FOCD-STD  
(for Neutrik opticalCON DUO)



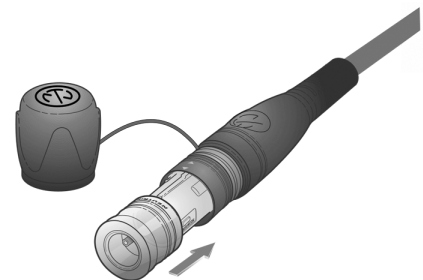
Dry Cleaner 1,25mm

### Instructions:

1. Remove protective cap from the opticalCON DUO connector.



2. Click the FOCD-STD onto the connector.

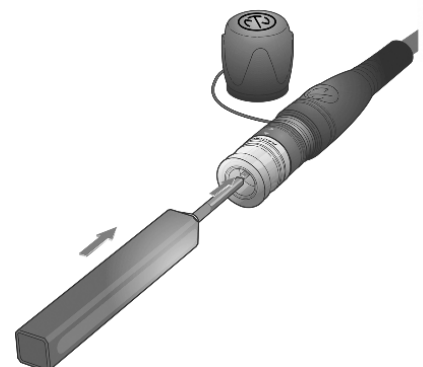


3. Insert the Dry Cleaner's tip into the ferrule hole of the FOCD-STD.

4. Push down on the Dry Cleaner 4 - 5 times.

5. Repeat for the remaining ferrule hole of the FOCD-STD.

6. Repeat above steps if necessary.



# Troubleshooting

**HDMI Status LED flashing yellow**  
**-> No HDMI signal detected**

- Make sure that the input HDMI cable is connected correctly to the HDMI source and the output HDMI cable is connected correctly to the display.
- When using high resolutions and timings, verify the HDMI cable's length, shorten down if possible {typical max. length for 2160p 4:4:4 8bit is± 1,5m with a copper HDMI 2.0 cable}.
- When transmitting 4K 60Hz, be sure to use an HDMI 2.0 cable (Premium HDMI - 18Gbps).

**HDMI Status LED flashing "Red"**  
**-> No optical connection detected**

- Verify the correct connection of the optical cable on both Transmitter and Receiver side.
- Verify if the Receiver unit is connected to a working power source.
- Clean the fiber optic cables.
- Clean the optical chassis connectors of the HGXT<sup>2</sup>.

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[www.belram.be](http://www.belram.be)

