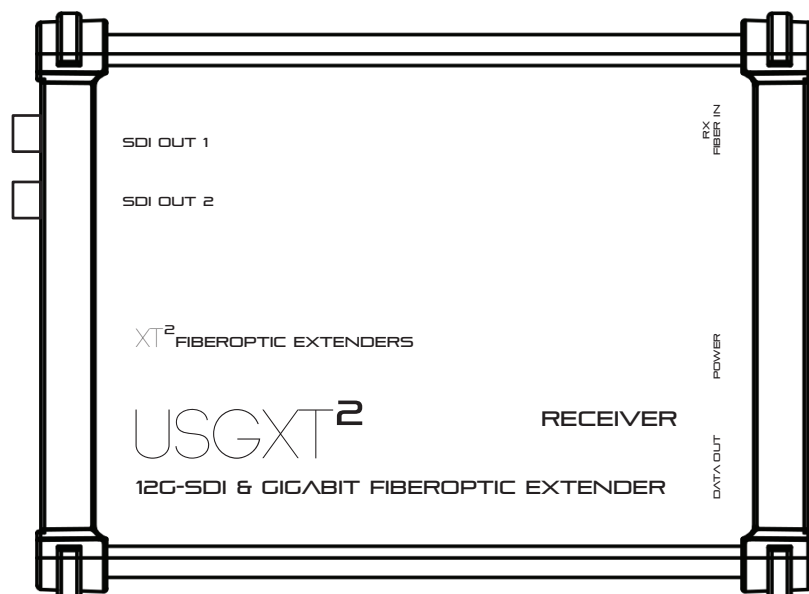
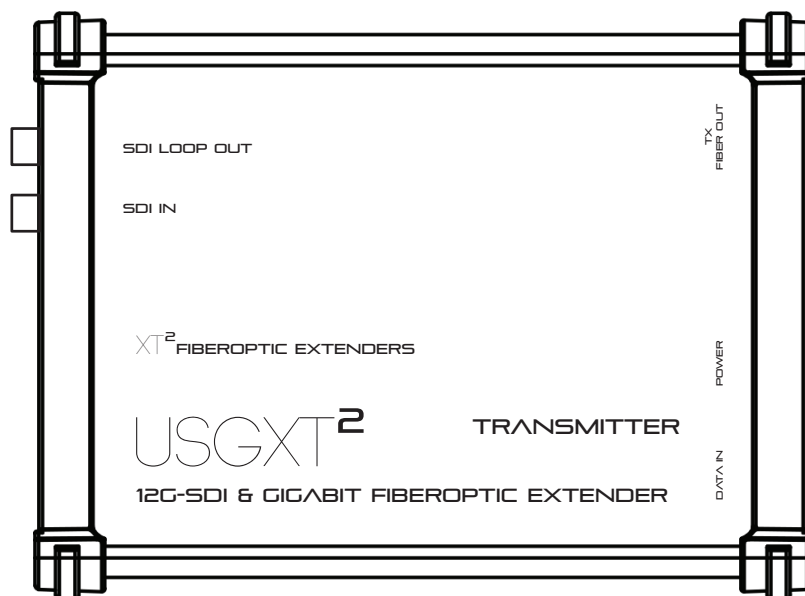


# USGXT<sup>2</sup>

12G-SDI & GIGABIT FIBEROPTIC EXTENDER



## User Manual

Visit us on [www.xt2-extenders.com](http://www.xt2-extenders.com)





# Thank you

Thank you for purchasing the USGXT<sup>2</sup> 12G-SDI & 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 USGXT<sup>2</sup> SDI extender is a rugged, tour grade fiber optic extender for transmitting 12G-SDI signals up to 4K @ 60Hz and Gigabit Ethernet (1000Base-T).

The bandwidth of 12G allows transmission of SDI signals up to SMPTE ST2082-2. It features a monitor loop out on transmitter and dual output on receiver's side.

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

The BNC connectors are standard and compatible with all standard 75 Ohm BNC connectors and SDI coax cable (we recommend using 12G certified coaxial cable to guarantee maximum resolution).

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 USGXT<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 singlemode fiber may be used. However, we strongly recommend to use Neutrik opticalCON DUO for the fiber link.

## Contents

- 1 USGXT<sup>2</sup> Transmitter (TX)
- 1 USGXT<sup>2</sup> Receiver (RX)
- 2 Power cables with Neutrik powerCON TRUE1 Female <-> Belgian Plug (2m)

## Available accessories:

- Belden 4855R 12G coax cable with Neutrik UHD BNC connectors (different lengths available)
- Belden 1305A CAT5E etherCON Link Cable (different lengths available)

# Features

- Ruggedized touring quality 12G-SDI extender over optical fiber
- UHD 4K60 according to SMPTE ST 2082
- Multirate SDI (SD, 1,5G-SDI, 3G-SDI, 6G-SDI, 12G-SDI)
- Automatic SDI Input switching
- Loop out on Transmitter
- Dual output on Receiver
- Gigabit Ethernet
- Suited for Neutrik opticalCON DUO or standard LC connectors
- Singlemode (10km)
- Multi colored signal status LED
- Threaded hole for clamp stand or truss mounting

## Technical Specifications

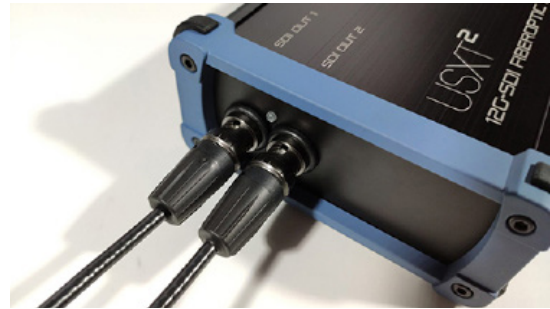
<b>Video Signal</b>	12G-SDI (SMPTE ST 2082)
<b>Optical Connection</b>	Neutrik opticalCON DUO (LC compatible)
<b>Max. Resolution</b>	4K UHD (2160p@60Hz)
<b>SDI Color Space</b>	YUV, RGB
<b>Video Bandwidth</b>	12 Gbps
<b>SDI EQ and Re-Clocking</b>	Yes, SDI input and output support up to 30m for 12G-SDI
<b>SDI Compliance</b>	SMPTE ST-2081, SMPTE ST-2082, SMPTE 259M, SMPTE 292M, SMPTE 296M, SMPTE 424M-B, ITU-R BT.656, ITU-R BT.601, SMPTE 274M, SMPTE 425M
<b>Optical Fiber Compliance</b>	SMPTE 297M
<b>Max. Transmission Distance</b>	10km (Singlemode fiber) - 500m for Gigabit
<b>Enclosure</b>	Lightweight anodized aluminum housing
<b>Dimension</b>	TX and RX unit (L x H x W): 176mm x 56mm x 116mm
<b>Weight</b>	600g per unit (1,2kg total)
<b>Device I/O</b>	Video: TX: 75Ω BNC SDI Input + Loop Output RX: 75Ω BNC SDI Output (x2) Optical: Neutrik opticalCON DUO Network: Neutrik etherCON CAT5E female Power: Neutrik powerCON TRUE1 TOP
<b>Operating temperature</b>	-20°C to 60°C
<b>Storing temperature</b>	-30°C to 70°C
<b>Power Consumption</b>	1,5W
<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>	Threaded hole for truss or stand mounting 5-color status LED Corner Protection

# Setup

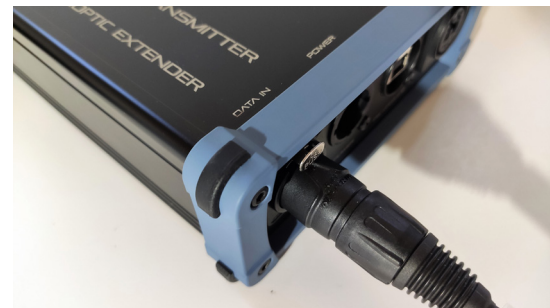
1. Connect the SDI source to the USGXT<sup>2</sup> Transmitter unit ("**SDI IN**").

**Note:**

You may connect a local monitor display on the "Loop Out" connector.



2. Connect the CAT5E cable to the USGXT<sup>2</sup> transmitter unit ("**DATA IN**").



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



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



You can also use opticalCON LITE DUO or standard LC optical fiber.

# Setup (continued)

4. Connect your SDI display to the USGXT<sup>2</sup> Receiver unit ("**SDI OUT 1**").

**Note:**

You can connect a secondary display to the "SDI OUT 2" output.

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

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

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

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

- Off            -> No Input
- Red           -> SD-SDI
- Green       -> HD-SDI
- Blue         -> 3G-SDI
- Yellow      -> 6G-SDI
- Purple      -> 12G-SDI



# 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 USGXT<sup>2</sup> optical connector(s)

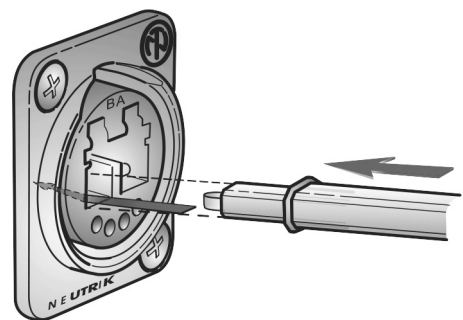
### Required tooling:

- 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:



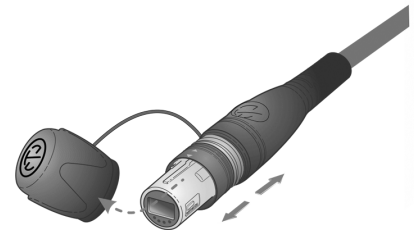
Neutrik FOCD-STD  
(for Neutrik opticalCON DUO)



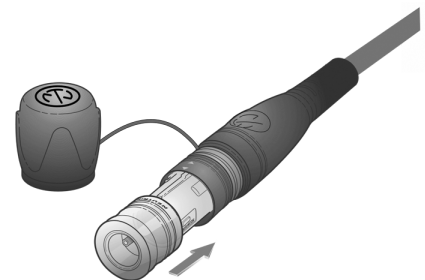
Dry Cleaner 1,25mm

### Instructions:

1. Remove protective cap from the opticalCON DUO connector.



2. Click the FOCD-STD onto the connector.

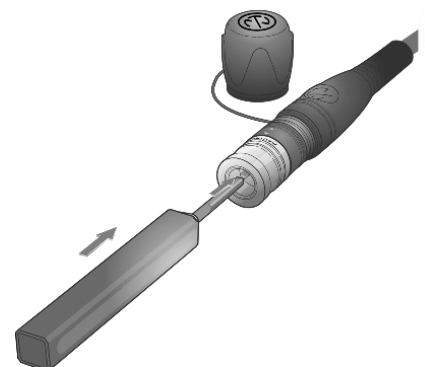


3. Insert the Dry Cleaner's tip into the ferrule hole of the FOCD-STD.

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.



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

