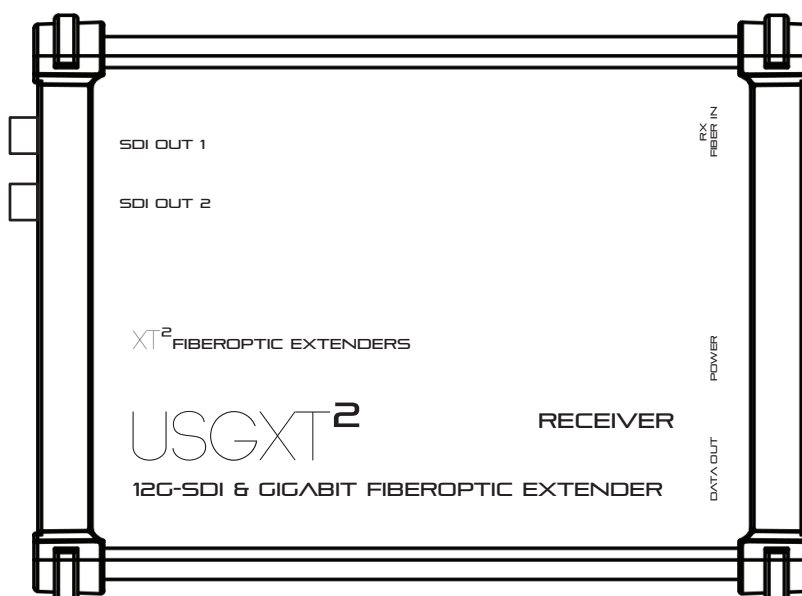
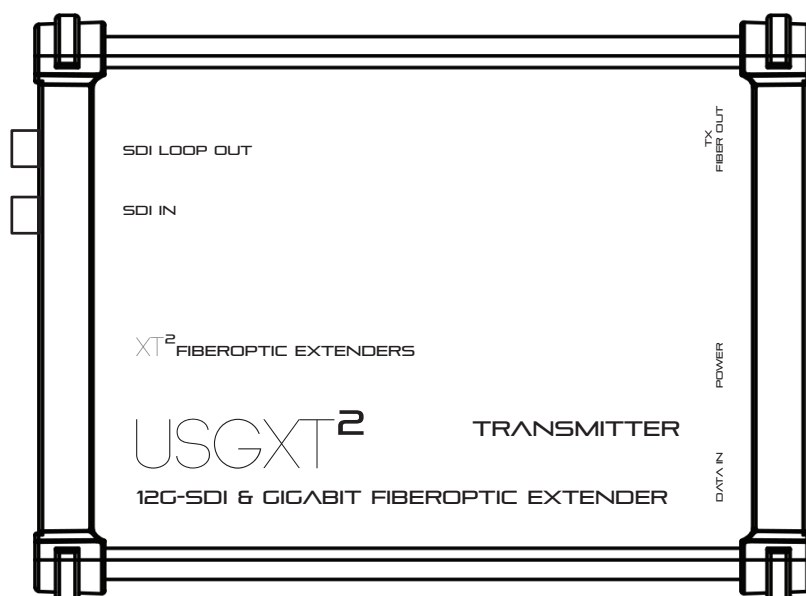


# USGXT<sup>2</sup>

12G-SDI & GIGABIT FIBEROPTIC EXTENDER



## User Manual



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# 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)

## Table of Contents

Overview & Contents	04
Features & Technical Specifications	05
Setup	06
Maintenance	08
Safety and Notice	10

# 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:

- Heavy Duty Carrying Case
- Belden 4855R 12G-SDI Patch Cable w/ Neutrik UHD BNC (0,5m/1m/2m/3m/5m/10m)
- 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)
- Cleaning Kit

# 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>	1,3kg per unit (2,6kg total)
<b>Device I/O</b>	Video: TX: 1x 75Ω BNC SDI Input + Loop Output RX: 2x 75Ω BNC SDI Output Optical: 1x Neutrik opticalCON DUO Network: 1x Neutrik etherCON CAT5E female Power: 1x 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>	2,5W
<b>Power Rating</b>	100-240V AC
<b>Suited for outdoor</b>	Yes, if not exposed to water (unit must be covered) Avoid exposure to direct sun light to avoid overheating
<b>Miscellaneous</b>	Threaded hole for truss or stand mounting 5-color status LED Anti-slip corners

# 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 HUGXT<sup>2</sup> optical chassis connector(s)

### Required tooling:



Dry Cleaner 1,25mm



Neutrik FOCD-STC

### Instructions:

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

# Maintenance (continued)

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

### Required tooling:



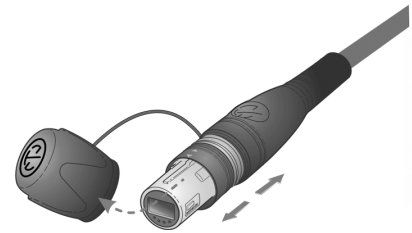
Neutrik FOCD-STD  
(for Neutrik opticalCON DUO)



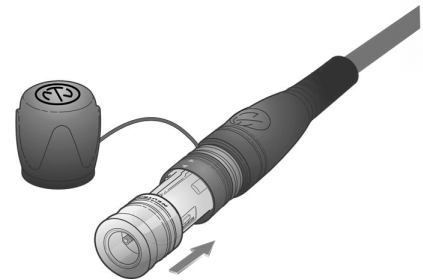
Dry Cleaner 1,25mm

### Instructions:

1. Remove protective cap from the opticalCON DUO connector.



2. Click the FOCD-STD onto the connector.

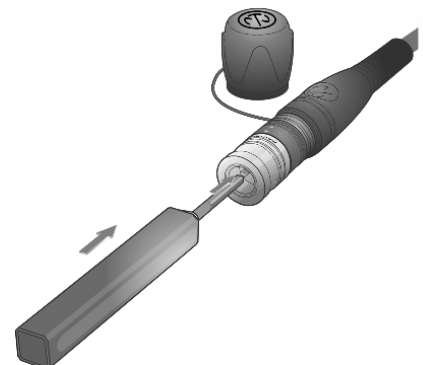


3. Insert the Dry Cleaner's tip into the ferrule hole of the FOCD-STD.

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.



# Safety and Notice

## 1. General Safety Instructions

- **Compliance with Local Laws:** Users must comply with all relevant local, regional, and national safety regulations and standards for installation and operation. The manufacturer assumes no responsibility for improper use or operation in non-compliance with the law.
- **Qualified Personnel:** Installation, operation, and maintenance must only be performed by qualified, licensed professionals. The company disclaims all responsibility for any damages resulting from improper installation or handling by unqualified individuals.
- **Environment:** This product is not designed for unprotected outdoor use or hazardous environments. Avoid exposure to moisture, extreme temperatures, and corrosive environments.

## 2. Electrical Safety

- **Correct Power Supply:** Use only the specified power supply with correct voltage ratings. Failure to use the recommended power source may result in product malfunction, damage, or fire hazards. The manufacturer is not liable for damage caused by incorrect voltage usage or third-party power supplies.
- **Power Cord Handling:** Do not bend, modify, or forcefully handle the power cord. Any damage to the cord may lead to electrical shocks, fires, or injury. Users are fully responsible for inspecting and ensuring the integrity of all electrical connections.
- **Wet Conditions:** Never touch the device or power plug with wet hands or operate the device in a humid or wet environment. Failure to comply may result in electric shock or fire. The manufacturer disclaims liability for damages resulting from water or moisture exposure.

## 3. Product Use and Operation

- **Intended Use:** This product is designed strictly for use as specified in this manual. Any other application or modification of the product may result in injury, damage, or voiding of the warranty. Unauthorized uses or third-party alterations are strictly prohibited, and any resulting damages will not be covered by the manufacturer.
- **Third-Party Modifications:** Do not disassemble, repair, or modify the product without explicit written consent from the manufacturer. Unauthorized repairs or modifications will void all warranties and may result in fire, electrical shock, or malfunction.
- **External Devices:** When connecting external devices to the product, ensure compatibility. The manufacturer takes no responsibility for damage caused by third-party equipment or accessories.

# Safety and Notice

## 4. Installation and Maintenance

- **Location:** Install the device on a stable, level surface. Do not place the product in unstable or high-vibration locations. Falling or tipping of the product may lead to malfunction or personal injury, for which the manufacturer is not liable.
- **Heavy Objects:** Do not place heavy objects on top of the device. Doing so can cause the device to malfunction, overheat, or become damaged. The manufacturer assumes no responsibility for damage due to improper storage or stacking of objects.
- **Cabling:** Do not twist, pull, or place stress on any cables or fiber optic connections. Improper handling may lead to connectivity issues, equipment damage, or degraded performance, for which the manufacturer cannot be held liable.

## 5. Warranty and Liability

### 5.1 Limited Warranty (1 Year for Professional Use):

This product is warranted to be free from manufacturing defects in materials and workmanship for one (1) year from the date of original purchase, under normal professional use and service. This warranty is provided exclusively to the original purchaser and is non-transferable. Warranty coverage applies only when the product is used in strict accordance with this manual and all installation, operation, and maintenance instructions provided.

- **Covered Items:** This warranty covers repair or replacement (at the manufacturer's discretion) of parts proven to be defective due to manufacturing or material flaws within the 1-year period.
- **Excluded Items:** This warranty does not cover damages or defects resulting from:
  - \* Improper installation, use, or maintenance, including failure to follow guidelines outlined in this manual.
  - \* Unauthorized modifications, alterations, or repairs performed by anyone other than an authorized technician.
  - \* Environmental exposure beyond specified limits, including excessive heat, cold, humidity, or exposure to liquids or corrosive substances.
  - \* Electrical issues arising from improper power sources, voltage fluctuations, or surges.
  - \* Physical damage resulting from accidents, abuse, misuse, neglect, or any other act beyond the manufacturer's control.
  - \* Damage from shipping or transportation after the product has been delivered to the user.
  - \* Normal wear and tear, cosmetic damage (e.g., scratches, dents), or expendable parts (e.g., cables, batteries) unless proven to be a manufacturing defect.

# Safety and Notice

## 5.2 Warranty Voiding Conditions

The following actions will void all warranties:

- Any repairs, alterations, or adjustments performed by unauthorized personnel.
- Operation outside specified environmental, electrical, or operational limits.
- Use of non-recommended, third-party accessories, parts, or software updates.
- Installation of the device in environments that do not meet the specifications listed in this manual, such as exposure to direct sunlight, high humidity, or extreme temperatures.

## 5.3 Limitation of Liability

The manufacturer's liability is strictly limited to the repair or replacement of the product as specified in this warranty. Under no circumstances shall the manufacturer be liable for:

- **Incidental, Indirect, or Consequential Damages:** This includes but is not limited to losses arising from loss of profits, data, revenue, or business, or from damage to other equipment or property. The manufacturer disclaims all liability for indirect, incidental, or consequential damages resulting from any breach of warranty or condition, negligence, strict liability, or any other legal theory.
- **Personal Injury or Property Damage:** The manufacturer is not liable for any injury, damage, or loss resulting from the installation, use, or maintenance of this product, except as required by law.
- **Product Downtime or Loss of Service:** The manufacturer disclaims responsibility for any product downtime, business interruptions, or loss of service that may occur due to product malfunction, defect, or unavailability during warranty service.

## 5.4 Software and Firmware Updates

Only authorized firmware or software updates should be used with this product. Any issues or damage resulting from unauthorized updates, modifications, or the use of third-party software will not be covered under warranty and may result in voiding the warranty entirely.

## 5.5 Conditions Beyond the Manufacturer's Control

The manufacturer is not responsible for delays, interruptions, or damages due to conditions beyond its control, including but not limited to natural disasters (earthquakes, floods, etc.), acts of government, labor strikes, or supply chain disruptions. The warranty coverage does not extend to damage caused by such force majeure events.

# Safety and Notice

## 5.6 Exclusive Remedy

This warranty provides the purchaser's sole and exclusive remedy and supersedes any other representations or warranties, whether written, verbal, express, or implied. The manufacturer makes no other warranties, including any implied warranties of merchantability or fitness for a particular purpose.

## 5.7 Jurisdiction and Governing Law

Any disputes arising from this warranty or related to product liability shall be governed by the laws of the jurisdiction in which the manufacturer is located. The purchaser agrees to resolve any legal disputes exclusively through courts located within the manufacturer's jurisdiction.

## 6. Firmware and Software Updates

- **Authorized Updates Only:** Only perform firmware and software updates provided by the manufacturer or authorized partners. Any issues arising from unauthorized updates or third-party software are not covered by warranty, and the manufacturer disclaims all responsibility.
- **Responsibility of User:** It is the user's responsibility to ensure that they are operating the latest approved firmware or software for the device. The manufacturer is not liable for malfunctions or security vulnerabilities caused by outdated or unsupported software.

## 7. Product Disposal and Recycling

- **Proper Disposal:** Dispose of the product in accordance with local electronic recycling laws and regulations. Improper disposal of electronic devices may lead to environmental harm or penalties for which the manufacturer is not responsible.

## 8. Force Majeure

- **Uncontrollable Events:** The manufacturer is not liable for any delays, interruptions, or damages caused by events beyond its control, including but not limited to natural disasters, government actions, labor strikes, or supply chain disruptions.

# Safety and Notice

## 9. User Responsibility

- **Proper Usage Monitoring:** The user is responsible for periodically inspecting the product to ensure that it operates in accordance with this manual. Any signs of wear, malfunction, or unusual operation must be reported to an authorized service center immediately. The manufacturer disclaims liability for continued use of a defective or damaged product.
- **Vague Misuse:** Any vague or unforeseen misuse of the product, including but not limited to failure to adhere to instructions, unforeseen modifications, or operation outside of specified environmental conditions, will not be covered by warranty or liability claims. It is the user's responsibility to ensure the product is used in accordance with the intended purpose and all safety standards.

**DIREKTRONIK**