

QUESTTEL

Broadcast Systems

HD/SD-SDI Over Fiber Transmitter and Receiver Extender Kit

User Manual

L-1SDI-NFE-TX/RX



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⊙ Notes for Safe Use

In order to prevent any damage to your or others' property, please follow the manual for safe use, although this equipment is designed reliably and safely.

1. Please read this manual carefully and keep it for your further information.
2. Please place the equipment where it will not be subjected to extreme temperature or humidity.
3. Do not try to knot the cables of power supply or put anything on them, and place the equipment where it will not be touched easily.
4. Please make sure the connections between power plug and other devices are fully valid.
5. Please follow the marks on the equipment when connecting the power supply, and the power supply should meet the following requirements:

① Input AC: AC100-240V

Input DC: -48V, -24V, -12V

② Output DC: 5V@ 2A/ 3A/ 6A/16A/20A optional

(Remark: this equipment can be used with standard power adaptor only.)

6. Please shut off the power supply immediately and contact us or your authorized reseller when the below-mentioned happen:
 - ① The equipment is drowned in water or other kind of liquid.
 - ② The equipment or its shell is broken.
 - ③ The equipment works improperly.
 - ④ The equipment smells or emits noises or smoke.
7. Do not try to maintain the equipment by yourself, unless there are clear instructions in this manual.
8. Please install special devices to prevent damages caused by lightning when the equipment is used outdoors.
9. When the equipment is energized, please don't see optical emission port with the naked eye.
10. While not using the machine, please wear a dust cover to protect optical interface.

☉ Product Overview

QuestTel L-1SDI-NFE-TX/RX is a HD/SD-SDI over singlemode or multimode fiber transmitter and receiver extender kit. This unit provides optical transmission of one HD/SD-SDI signal with embedded audio signal and has reversed RS485 data channel for camera control also loop-out connectors on the transmitter & receiver for monitoring. The system support signals accord with standards of SMPTE292M, SMPTE259M, SMPTE297M, SMPTE310, SMPTE305 and support digital TV signals like DVB-ASI meeting the industrial requirements of audio and video equipment with high performance and reliability. The plug-and-play design makes the installation convenient and easy, the LED indicator design helps the user to know the working status easily, and there is no need for on-site adjustment. Signal Bit Rate from 270 Mbps to 1.5Gbps. Fiber optical transmission excludes electromagnetic noise factor, it makes this product a perfect solution for efficient, reliable and secured HD/SD-SDI signal transport.

☉ Product Characteristics

HD/SD-SDI digital code and non-compressed HD video transmission

HD-SDI Input HD/SD-SDI, DVB-ASI - up to 1.5 Gbps Serial Digital Signal

Bandwidth ranges from 270 Mbps to 1.5Gbps

Transmitter Outputs 1SDI Loop-Out

Integrated HD-SDI reclocker and cable equalizer

Embedded Audio channels

Input Signals SMPTE292M, SMPTE259M, SMPTE297M, SMPTE310, SMPTE305, DVB-ASI

LED indicators - POWER, OPTIC, SDI & RS-485 DATA

Network management function (optional)

Receiver features 2 re-clocked SDI outputs

Reverse RS485 Data (Bidirectional RS485 data and RS232 are optional)

Standalone (19U Standard 3U,4U,5.5U racks are optional)

HD-SDI video signals

In the absence of input signal, automatically shut down the laser head to extend laser life 5V

DC power supply 5V DC

⊙ **Technical Parameters:**

Serial Video Signal BNC Input

| | |
|---------------------|---|
| TV Signal Standards | SMPTE292M,SMPTE259M,SMPTE297M, SMPTE310, SMPTE305(SDTI), DVB-ASI(EN50083-9) |
| Input | 1 channel |
| Return Loss | >15DB |
| Connector | 75Ω BNC |

Serial Video Signal BNC Output

| | |
|----------------|--|
| Output | Transmitter :1-ch Receiver: 1-ch (2-ch loop output optional); |
| Signal level | 800mV nominal |
| Rise/fall time | 200ps nominal |
| Return Loss | > 15dB |
| Shake | < 0.2UI |
| Connector | 75Ω BNC |

Optical parameters

| | |
|-------------------------------|--|
| Optical output | -5 ~ -10dBm (more optical power available) |
| Wave length | 1310nm /1550nm |
| Optical Connector | ST (Optional FC / LC) |
| Optical Receiving Sensitivity | Better than -26dBm |
| Return Loss | > 14dB |
| Shake | < 0.2UI |
| Fiber core number | 1 core |

Data Parameter

| | |
|--------------------|---------------------------------------|
| Physical Interface | Terminal Block of Industrial Standard |
| RS485 | Transmission rate 0-400 Kbps |
| Data Rate | 0-400Kbps |
| Bit Error Rate | $<10^{-12}$ |

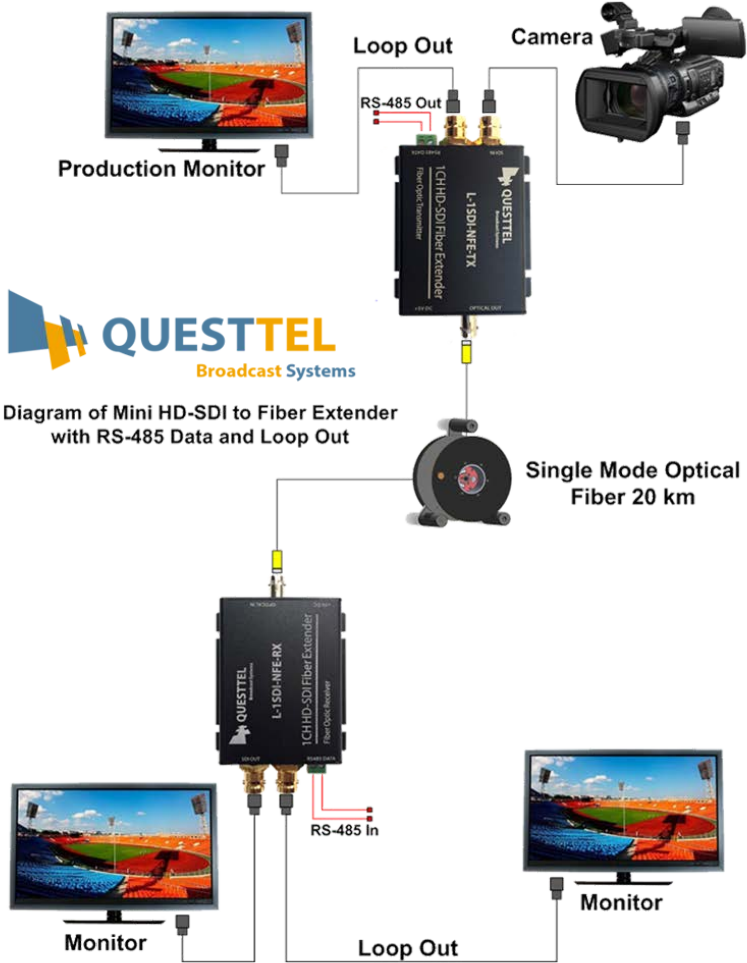
General Parameter

| | |
|----------------------------|---|
| Operating Temperature | -15°C ~ +50°C |
| Storage Temperature | -40~85°C |
| Operating Humidity | 5-95%(non-condensing) |
| Storage Humidity | 0-95%(non-condensing) |
| External size | 114mm×60mm×30mm (Standalone) |
| | 70mm*100mm*30mm(19" 4U Rack) |
| Mean Time Between Failures | ≥100,000 hours |
| EMI/RFI | Accord with FCC Part 15 Class A, EU EMC standards |

⊙ Applications

1. Broadcast Applications
2. Connection of Sub-network for Surveillance Center
3. Public Security Surveillance
4. Highway & Toll Station Surveillance
5. Industrial Closed Circuit Television Surveillance
6. Live Events

© Application Drawing



☉ Panel of Optical Transmitter and Receiver

On the front and back panel there are Led indicators, Fiber Interfaces, Video Interfaces (BNC), Terminal Block, Power interface.



Standard Transmission Distance: Single mode=20km; Multi mode=2km



Warning!

Active fiber-optic cables emit radiation invisible to the human eye. Do not look directly at the end of an active fiber-optic cable or the fiber connector!

© **LED Indicators:**

The difference between Optical Transmitter and Receiver is that the LED indicators of Transmitter with Red Lights, and the LED indicators of Receiver with Green Lights.

1) HD/SD-SDI Transmitter (Red Led Lights)

| Name | No light | Light on | Light flashes |
|-------------------------------------|---|-----------------------|-------------------------|
| POWER | Power is off, or in short circuit | Power is on | — |
| OPTIC | Normal working | Optical barrier | — |
| ASYNC (Normal Optical condition) | Effective video signals detected | Invalid video signals | — |
| DATA (Normal Optical condition) | No data detected, or data signal in high electrical level | — | Effective data detected |

2) HD/SD-SDI Receiver (Green Led Lights)

| Name | No light | Light on | Light flashes |
|-------------------------------------|---|-----------------------|-------------------------|
| POWER | Power is off, or in short circuit | Power is on | – |
| OPTIC | – | – | – |
| ASYNC (Normal Optical condition) | Effective video signals detected | Invalid video signals | – |
| DATA (Normal Optical condition) | No data detected, or data signal in high electrical level | – | Effective data detected |

LED indicators will carry different meanings for DATA/EXT while for customized configurations. In that case, please follow the Led Indicator Instructions.

© Installation Instructions

1. Notes before Installation

- ① Five items in package, including: 1 Transmitter, 1 Receiver, Users' Manual, 2 power Adaptors (without power adaptors when the Users self-provide Power Supply). Please contact your seller if any one of them is missed.
- ② Please read this manual carefully for safe use before installation.
- ③ Do not dismantle the device without authorization from us.
- ④ Please check the labels on the outside of devices (Transmitter or Receiver).
- ⑤ The optical transmitter is used to change video signals, data signals etc. into optical signals and transmit them with optical fiber. This device can be connected to PTZ camera.
- ⑥ The receiver is used to receive optical signals and change them into video signals, data signals etc..This equipment should be connected to monitors, DVRs or matrix.
- ⑦ The video signals out from the transmitter and into the receiver should be in correspondence with each other, so the interfaces on the transmitter and the receiver should be connected correspondingly.

2. Installation Procedure

- ① Connect the video source (camera) to the video input BNC connector on Transmitter using coaxial cable.
- ② Connect the video output BNC connector on Receiver to the video monitor using coaxial cable.
- ③ Connect Transmitter and Receiver with the optic fiber and apply power supply both to Transmitter and Receiver.

© Responsibility Note:

- ① The manufacturer will not be responsible for the damage caused to the devices in transportation when they are returned for repair.
- ② Please contact the authorized seller if damages are caused to the functions or appearances of the devices in transportation.
- ③ If the Power Supply is self-provided, please make sure it can meet the requirements stated in this manual, or the manufacturer will not be responsible for the damages caused by User's using unqualified power supply.
- ④ Users must follow this manual in using the Power Supply.
- ⑤ This manual or any part of it shall not be reproduced or transmitted in any form or by any means without the manufacturer's authorization.
- ⑥ The manufacturer will not be responsible for any malfunction caused to the devices or other devices or for any effect caused to human health by modifying the devices or the User's Manual by any means.
- ⑦ All the packaging materials comply with the environment protection laws and should be recycled.

Read before operating equipment.

1. **Cleaning** - Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
2. **Power Sources** - Use supplied or equivalent UL/CSA approved low voltage DC plug-in transformer.
3. **Outdoor Antenna Grounding** - If you connect an outside antenna or cable system to the product, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges. Section 810 of the National Electrical Code, ANSI/NFPA No. 70, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.
4. **Lightning** - Avoid installation or reconfiguration of wiring during lightning activity.
5. **Power Lines** - Do not locate an outside antenna system near overhead power lines or other electric light or power circuits or where it can fall into such power lines or circuits. When installing an outside antenna system, refrain from touching such power lines or circuits, as contact with them might be fatal.
6. **Overloading** - Do not overload wall outlets and extension cords as this can result in a risk of fire or electric shock.
7. **Object and Liquid Entry** - Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short out parts, resulting in a fire or electric shock. Never spill liquid of any kind on the product.
8. **Servicing** - Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
9. **Damage Requiring Service** - Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
 - When the power supply cord or plug is damaged.
 - If liquid spills or objects fall into the product.
 - If the product is exposed to rain or water.
 - If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions. An improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
 - If the video product is dropped or the cabinet is damaged.
 - When the video product exhibits a distinct change in performance, this indicates a need for service.