

EX-36KRS

12G/6G/3G/HD/SD-SDI Fiber Extender
with Bi-Directional RS232/422/485

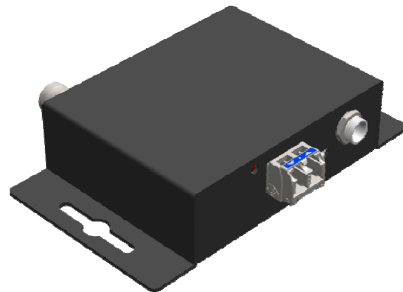
User Manual

TABLE OF CONTENTS

| | |
|--------------------------|---|
| INTRODUCTION | 1 |
| FEATURES | 1 |
| PACKAGE CONTENTS | 2 |
| SPECIFICATIONS | 3 |
| PANEL DESCRIPTIONS | 4 |
| CONNECTION DIAGRAM | 6 |
| WARRANTY | 8 |



Transmitting



Receiving

INTRODUCTION

The **EX-36KRS 12G/6G/3G/HD/SD-SDI Fiber Extender with Bi-Directional RS232/422/485** is an ideal and cost-effective solution designed for transmission of multi-rate SDI video, with embedded audio and metadata over a single-mode fiber optic cable. The transmitter module receives one 12G/6G/3G/HD/SDI electrical input, perfectly converts SMPTE 292M, SMPTE 259M, SMPTE 424M, SMPTE 2082 or DVB-ASI electrical SDI signal to single-mode optical SDI signals. The receiver module receives the corresponding optical signals through input SFP connector, and then perfectly converts it back to electrical signals. EX-36KRS passes the pathological pattern (SMPTE RP-198) test without introducing any flickers, and this feature further guarantees the transmission quality over optical fibers.

Both transmitter and receiver provide equalizing and re-clocking at input unit in order to re-construct the signals and keep the integrity of signal quality. The EX-36KRS is perfect for today's broadcast or surveillance applications, including super long ranged A/V & serial control transmission, video production, video editing, studio to studio and studio to CATV head end. EX-36KRS is equipped with bi-directional RS-232/422/485 serial port control. This bonus feature allows users to boost RS-232/422/485 control distance up to 10km (32800ft) through optical fiber cables. In addition, since the optical transmission is inherently secure and immune to the outside electrical interferences, the potential applications are particularly favored in government, military, and medical environments.

FEATURES

- Enable transmission of digital video signal over optical fiber*
 - > up to 10 km (6.25 miles)
- Standard SFP-type fiber optic connector
- Supports following protocols:
 - > SMPTE 259M (270Mbps)
 - > SMPTE 292M / HDTV (1.485Gbps and 1.485/1.001Gbps)
 - > SMPTE 424M / HDTV (2.97Gbps and 2.97/1.001Gbps)
 - > SMPTE 2082-1 / HDTV (5.94Gbps and 5.94/1.001Gbps)
 - > SMPTE 2082-2 / HDTV (11.88Gbps and 11.88/1.001Gbps)
 - > DVB ASI (270Mbps)
- Immune to RP-198 pathological patterns
- Automatic re-clocking
- Supports one SDI loop through
- 12G/6G/3G/HD/SDI Input signal detection LED
- Full Duplex RS-232/422/485 control up to 921,600 bps through connector

| | EX-36KRS |
|-------------------------------|----------|
| SDI Loop-Out | ● |
| Fiber Loop-Out | |
| DVB Support | ● |
| Immune to RP-198 ¹ | ● |
| 12G/HD/SD Detection | ● |
| Re-clocking | ● |
| Cable EQ | ● |
| Jitter (<0.2 UI) | ● |
| Bandwidth(12Gbps) | ● |
| Fiber Type ² | S |
| Optics type | SFP |
| Transmission ³ | ~10km |



1. RP-198 is the Pathological Patterns.
2. Fiber type: M = multi-mode; S = single-mode.
3. Maximum transmission length is depended upon the optics module.

PACKAGE CONTENTS

- 1 x EX-36KRS [TX & RX]
- 1x12G SDI Single Mode CSFP fiber module [TX & RX]
- 2x 5-Pin Terminal Block Connector
- 2x 12V power adapter
- 1x User Manual

SPECIFICATIONS

| Model Name | EX-36KRS | |
|------------------------------|--|---------------------|
| Technical | EX-36KRS-TX | EX-36KRS-RX |
| Role of usage | Transmitter [TX] | Receiver [RX] |
| SDI standards | SD-SDI/ HD-SDI/ 3G-SDI/ 6G-SDI/12G-SDI | |
| Auto HD/SD-SDI detection | Yes | |
| Supported protocols | SMPTE 259M (270Mbps), DVB ASI (270Mbps) | |
| | SMPTE 292M / HDTV (1.485Gbps and 1.485/1.001Gbps) | |
| | SMPTE 424M / HDTV (2.97Gbps and 2.97/1.001Gbps) | |
| | SMPTE 2081 / HDTV (5.94Gbps and 5.94/1.001Gbps) | |
| Video bandwidth | SMPTE 2082 / HDTV (11.88Gbps and 11.88/1.001Gbps) | |
| | [11.88Gpbs & 11.88/1.001Gbps] | |
| Video support | 720p50/59.94/60, 1035i50/59.94/60, 1080i50/59.94/60, | |
| | 1080p24/30,1080p60,1080p59.94, 4K2K29.97, 4K2K30, 4K2K59.94, 4K2K60 NTSC@59.94Hz, PAL@50Hz | |
| SDI signal type | SMPTE 2081, SMPTE 2082, SMPTE-424M, SMPTE-292M, SMPTE-259M, DVB-ASI | |
| Output impedance | 75Ω | |
| Auto reclocker mode | 270Mbps / 1.483Gbps / 1.485Gbps / 2.97Gbps / 2.967Gbps / 5.94Gbps / 5.934Gbps / 11880Gbps / 11868Gbps | |
| Fiber Transmission | 10km (6.25mi) | |
| Audio support | Yes | |
| RS-232/422/485 support | Yes | |
| RP-198 pathological patterns | Immune | |
| PCB Stack-up | 4-layer board [impedance control — differential 100Ω; single 50Ω] | |
| Input | 1x SDI | 1x Optical LC (SFP) |
| Output | 1x Optical SFP [SDI] 1x SDI (Loopout) | 1x SDI |
| BNC connector | 75Ω inter-locked socket | |
| Optical fiber connector | SFP-type | |
| Mechanical | Metal case | |
| Housing | Metal case | |
| Dimensions [L x W x H] | Model | |
| | Package | |
| | Carton | |
| Weight | Model | |
| | Package | 610g [1.3 lbs] |
| Fixedness | Inter-locked power supply | |
| Power supply | 12V | |
| Power consumption | Watts [max] | Watts [max] |
| Operation temperature | 0~40°C [32~104°F] | |
| Storage temperature | -20~60°C [-4~140°F] | |
| Relative humidity | 20~90% RH [no condensation] | |

PANEL DESCRIPTIONS

Transmitting unit ▶ EX-36KRS-TX



1. **Dip Switch PIN#1 LED:** LED is bright when pin#1 switches to RS-422/485 mode[↓]

2. **2-PIN Dip Switch**

| DIP Switch Position | | Description |
|---------------------|---------|-------------------------------------|
| PIN#1 | ON [↓] | RS-422/485 mode |
| | OFF [↑] | RS-232 mode |
| PIN#2 | ON [↓] | Full Duplex mode for RS-232/422/485 |
| | OFF [↑] | Half Duplex mode for RS-485 |

3. **Dip Switch PIN#2 LED:** LED is bright when pin#1 switches to Full Duplex mode[↓]

4. **RS-232/422/485 LED indicator (Red):** When RS-232/422/485 transmit the signal, the LED is bright

5. **RS-232/422/485 LED indicator (Green):** When RS-232/422/485 receive the signal, the LED is bright

6. **RS-232/422/485 (terminal block format):** The order of RS-232/422/485 pin are RX-, RX+, TX-, TX+, GND (from the left side to the right)

7. **SDI loopout:** Connect to a 12G/6G/3G/HD/SD-SDI display

8. **SDI input:** Connect to a 12G/6G/3G/HD/SD-SDI source

9. **LED indicator:**

[Blinking green & Blinking red] No SDI in signal & no RS-232/422/485 link

[Solid green & Blinking red] Receive the SDI in signal & no RS-232/422/485 link

[Solid red & Blinking green] RS-232/422/485 link & no SDI in signal

[Solid green] Both receive the SDI in signal & RS-232/422/485 link

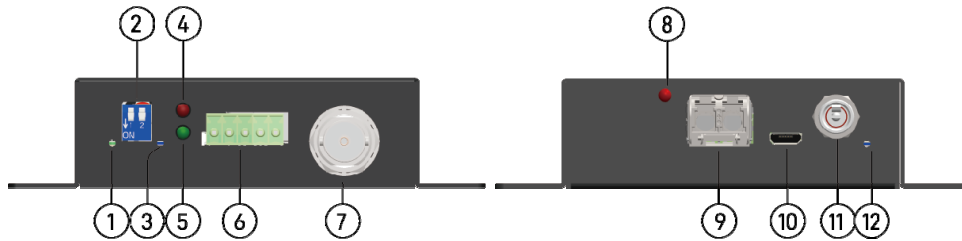
10. **Optical:** Link to the receiving unit EX-36KRS-RX (Module: [Left] SDI; [Right] RS-232/422/485)

11. **Micro USB:** F/W update

12. **Power jack:** 12V DC power

13. **Power LED indicator**

Receiving unit ▶ EX-36KRS-RX



- Dip Switch PIN#1 LED:** LED is bright when pin#1 switches to RS-422/485 mode[↓]
- 2-PIN Dip Switch**

| DIP Switch Position | | Description |
|---------------------|---------|-------------------------------------|
| PIN#1 | ON [↓] | RS-422/485 mode |
| | OFF [↑] | RS-232 mode |
| PIN#2 | ON [↓] | Full Duplex mode for RS-232/422/485 |
| | OFF [↑] | Half Duplex mode for RS-485 |

- Dip Switch PIN#2 LED:** LED is bright when pin#1 switches to Full Duplex mode[↓]
- RS-232/422/485 LED indicator (Red):** When RS-232/422/485 transmit the signal, the LED is bright
- RS-232/422/485 LED indicator (Green):** When RS-232/422/485 receive the signal, the LED is bright
- RS-232/422/485 (terminal block format):** The order of RS-232/422/485 pin are RX-, RX+, TX-, TX+, GND (from the left side to the right)
- SDI output:** Connect to a 12G/6G/3G/HD/SD-SDI display
- LED indicator:**
 [Blinking green & Blinking red] No SDI link signal & no RS-232/422/485 link
 [Solid green & Blinking red] Receive the SDI link signal & no RS-232/422/485 link
 [Solid red & Blinking green] RS-232/422/485 link & no SDI link signal
 [Solid green] Both receive the SDI link signal & RS-232/422/485 link
- Optical:** Link to the transmitting unit EX-36KRS-TX (Module: [Left] SDI; [Right] RS-232/422/485)
- Micro USB:** F/W update
- Power jack:** 12V DC power
- Power LED indicator**

CONNECTION DIAGRAM

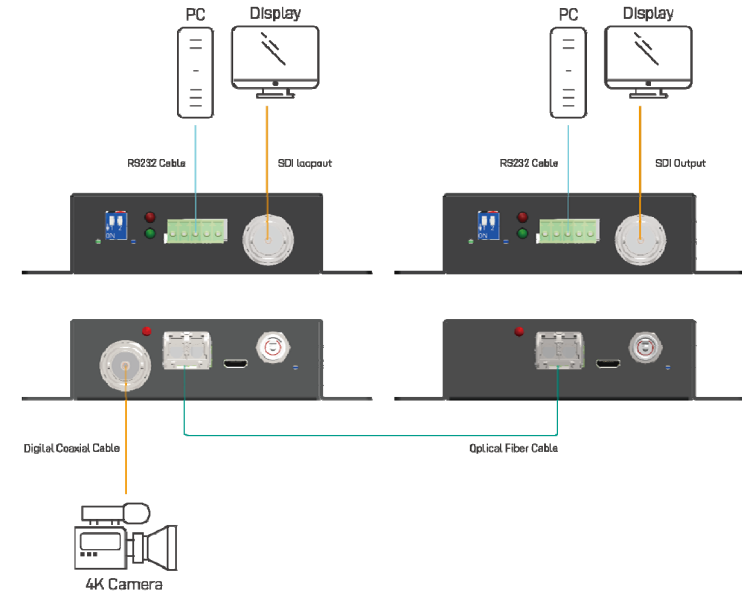


Table 1: RS-422/485 Full Duplex(4-Wire)

| Dip Switch | |
|------------|--------|
| PIN#1 | PIN#2 |
| ON [↓] | ON [↓] |

| | | | | | |
|---------------------------|-----|-----|-----|-----|-----|
| RS-422/485 Signal | RX- | RX+ | TX- | TX+ | GND |
| Third Party Device Signal | TX- | TX+ | RX- | RX+ | GND |

Table 2: RS-485 Half Duplex(2-Wire)

| Dip Switch | |
|------------|---------|
| PIN#1 | PIN#2 |
| ON [↓] | OFF [↑] |

| | | | | | |
|---------------------------|-------|-------|--|--|-----|
| RS-485 Signal | RX- | RX+ | | | GND |
| Third Party Device Signal | Data- | Data+ | | | GND |

Table 3: RS-232

| Dip Switch | |
|------------|--------|
| PIN#1 | PIN#2 |
| OFF [↑] | ON [↓] |

| | | | | | |
|---------------------------|-----|--|-----|--|-----|
| RS-232 Signal | RX- | | TX- | | GND |
| Third Party Device Signal | TX- | | RX- | | GND |

WARRANTY

The SELLER warrants the **EX-36KRS 12G/6G/3G/HD/SD-SDI Fiber Extender with Bi-Directional RS232/422/485** to be free from defects in the material and workmanship for 1 year from the date of purchase from the SELLER or an authorized dealer. Should this product fail to be in good working order within 1 year warranty period, The SELLER, at its option, repair or replace the unit, provided that the unit has not been subjected to accident, disaster, abuse or any unauthorized modifications including static discharge and power surges.

Unit that fails under conditions other than those covered will be repaired at the current price of parts and labor in effect at the time of repair. Such repairs are warranted for 90 days from the day of reshipment to the BUYER. If the unit is delivered by mail, customers agree to insure the unit or assume the risk of loss or damage in transit. Under no circumstances will a unit be accepted without a return authorization number.

The warranty is in lieu of all other warranties expressed or implied, including without limitations, any other implied warranty or fitness or merchantability for any particular purpose, all of which are expressly disclaimed.

Proof of sale may be required in order to claim warranty. Customers outside Taiwan are responsible for shipping charges to and from the SELLER. Cables are limited to a 30 day warranty and cable must be free from any markings, scratches, and neatly coiled.

The content of this manual has been carefully checked and is believed to be accurate. However, The SELLER assumes no responsibility for any inaccuracies that may be contained in this manual. The SELLER will NOT be liable for direct, indirect, incidental, special, or consequential damages resulting from any defect or omission in this manual, even if advised of the possibility of such damages. **Also, the technical information contained herein regarding the EX-36KRS features and specifications is subject to change without further notice.**