

## 4×3G-SDI Optical Extender

### FSE-4X3GT/FSE-4X3GR

#### Features

- Extend SDI signal up to 2km~80km over fiber optics.
- Data rate per lane up to 3G, total 12G for 4K.
- Compliant with SMPTE-424M、SMPTE-292M、SMPTE295M、SMPTE297M、

SMPTE305M、SMPTE310M and DVB-ASI.

- Plug and play, no software to be installed
- Longer, thinner cable without EMI/RFI emissions
- Operating case temperature: 0 to 60℃
- All-metal housing for superior EMI performance
- RoHS compliant (lead free)



#### Applications

- Live Broadcast
- 4K Screen
- 4K Camera
- Video Meeting
- Security Monitoring

#### Description

The FIBERSTAMP 4×3G SDI Extender is a kind of SDI extender for 4K used to extend the transmission distance between SDI Source and Sink devices. The transmission distance can be up to 80km or more. It is up to

what kind of optical module you insert into it. It includes two parts: one is 4 lanes Transmitter and another one is 4 lanes Receiver.

The Transmitter has four standard BNCs used to receive SDI signal from source and offers Co-axis cable equalizer to recovery SDI signal quality, at the same time, transforms SDI to SFP;

The Receiver firstly transforms SFP to SDI, and it also has four standard BNCs used to transmit recovered SDI signal to sink, at the same time, offers Co-axis cable driver to amplify SDI signal for cable.

As the picture 1 shows below, 4×3G SDI Extender is consisted of one 4×3G SDI Transmitter, its structure is showed left; the other one 4×3G SDI Receiver, its structure is showed right below.

There are two methods to apply 4×3G SDI Extender. Application 1 you can see Figure1 (a), it shows 4×3G SDI Extender uses four fibers to transmit 12G SDI for 4K, it needs four optical modules: two double transmitted SFPs and two double received SFPs. Application 2 you can see Figure1 (b), it shows 4×3G SDI Extender uses one fiber to transmit 12G SDI for 4K, it needs four optical modules: two double transmitted SFPs and two double received SFPs, but two double transmitted SFPs must be four different wavelengths, at the same time , one MUX and one DeMUX are required .



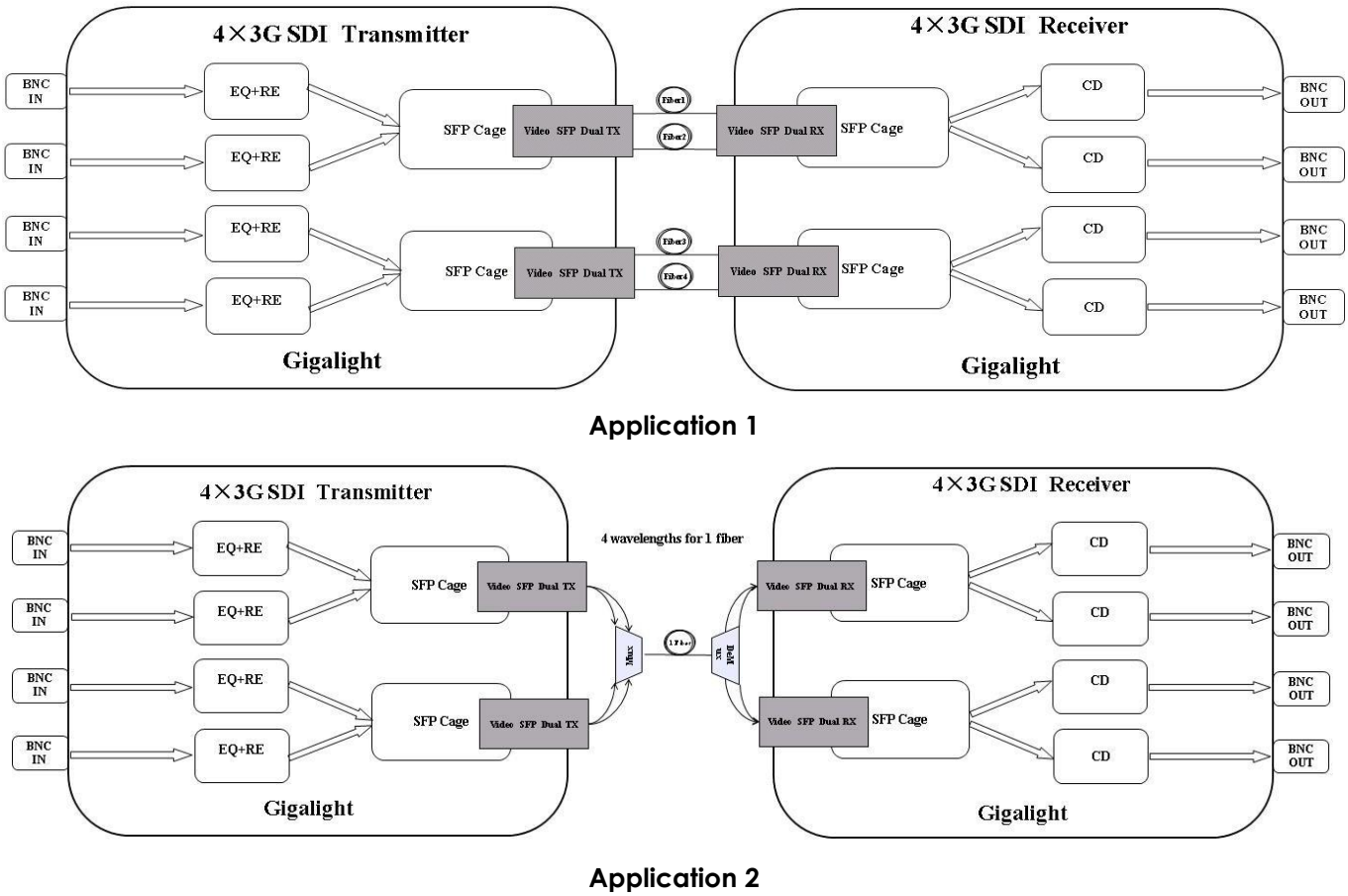


Figure1. 4×3G SDI Set-up diagram: (a) Application 1; (b) Application 2.

Figure2 below is one of application scenarios. A 4K Camera collects SDI video from somewhere and disposes well, after that outputs from four standard BNCs. Four SDI signals transmit to four co-axis cables into the 4×3G SDI Transmitter, and then are transformed into optical signals over fiber. On the remote end, the 4×3G SDI Receiver receives optical signals and transforms into four SDI signals for display.

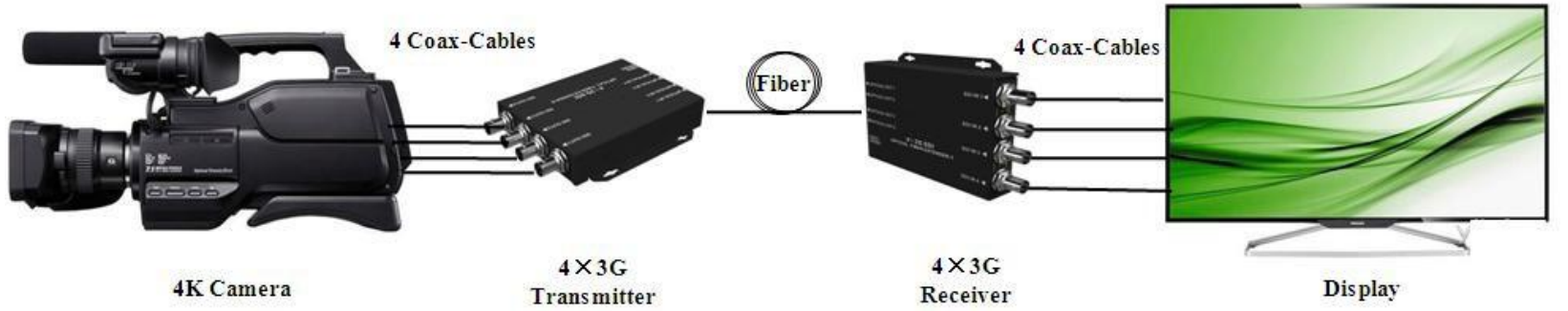


Figure2. The application filed of 4×3G SDI Extender

4×3G SDI Extender Specifications

Absolute Maximum Ratings

| Parameter           | Symbol | Description | Unit |
|---------------------|--------|-------------|------|
| Storage temperature | Ts     | -10~70      | ℃    |
| Operating Humidity  | H      | 5~80        | %    |
| Supply Voltage      | Vcc    | -0.5~6V     | V    |

Recommended Operating Conditions

| Parameter             | Symbol | Min | Typ | Max | Unit |
|-----------------------|--------|-----|-----|-----|------|
| Operation Voltage     | Vcc    | 4.5 | 5   | 5.5 | V    |
| Operation temperature | T      | 0   | 45  | 60  | ℃    |
| Supply current        | Icc    | /   | TBD | /   | A    |

**Note:** TBD means the operation current is up to the module used in the box.

4×3G Transmitters

| Parameter             | Symbol | Description                           |
|-----------------------|--------|---------------------------------------|
| Channel numbers       | N      | Four lanes, SDI signal input          |
| Interface for cable   | /      | Standard BNC                          |
| Impendence 1          | RBNC   | 75Ω for single end                    |
| Interface for module  | /      | SFP Connector                         |
| Impendence 2          | RM     | 100Ω for differential pair            |
| Tx Data Rate per lane | 3G-SDI | 2.97Gbps（SMPTE-424）                   |
|                       | HD-SDI | 1.485Gbps（SMPTE-292）                  |
|                       | SD-SDI | 270Mbps（DVB-ASI）                      |
| Input Swing           | Vipp   | 600~1000mV                            |
| Auto Equalizer        | /      | 100m for Belden 1694A                 |
| Rise/fall time        | t      | <135ps                                |
| LED Indication        | /      | Power Indicator, SDI Signal Indicator |

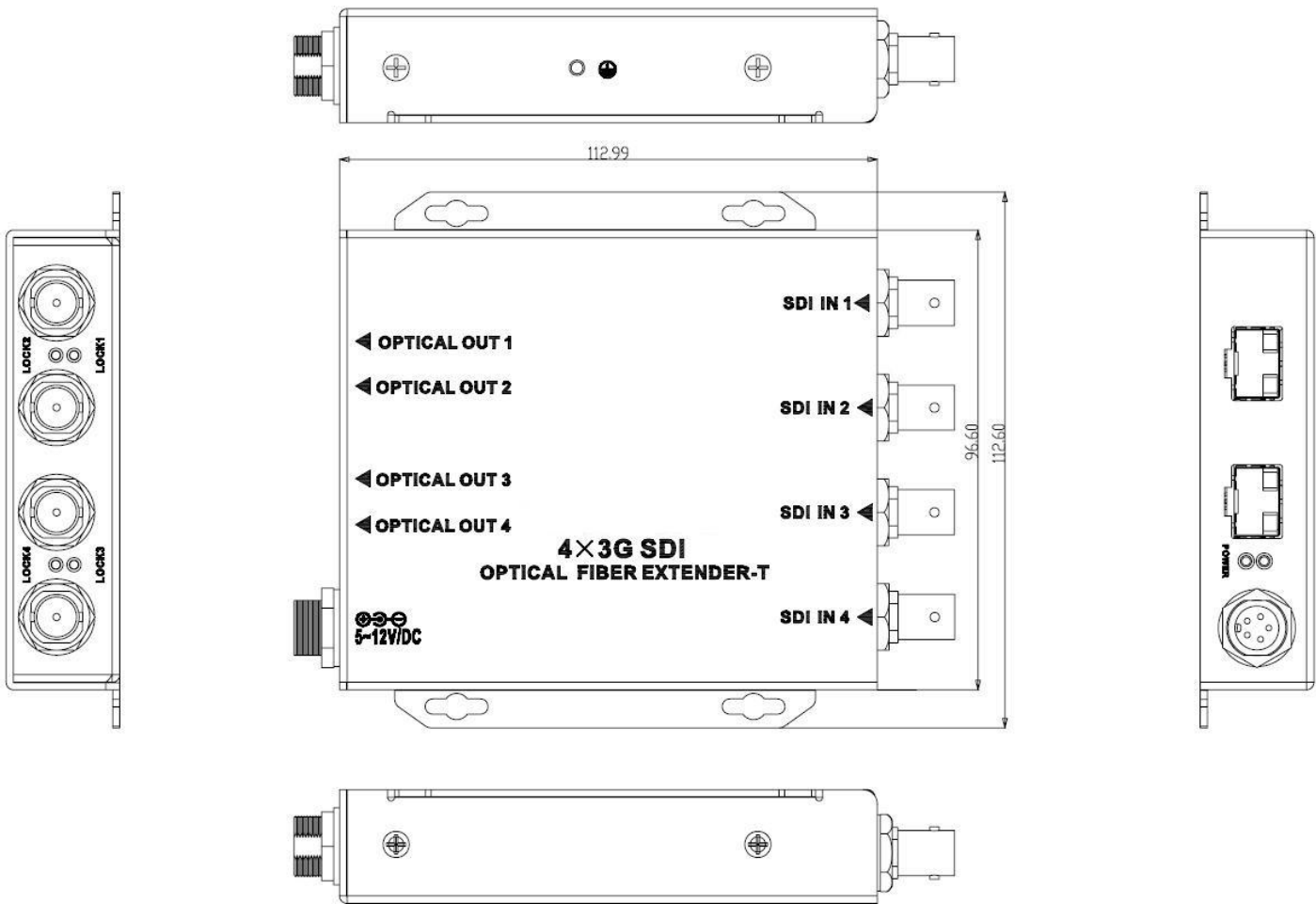
- Note:**
- The optical modules are optional up to what distance you need.
  - LC is recommended for fiber connector
  - The distance you can get includes 10km、20km、40km、80km.
  - The number of fibers is 1 or 4.

4×3G Receivers

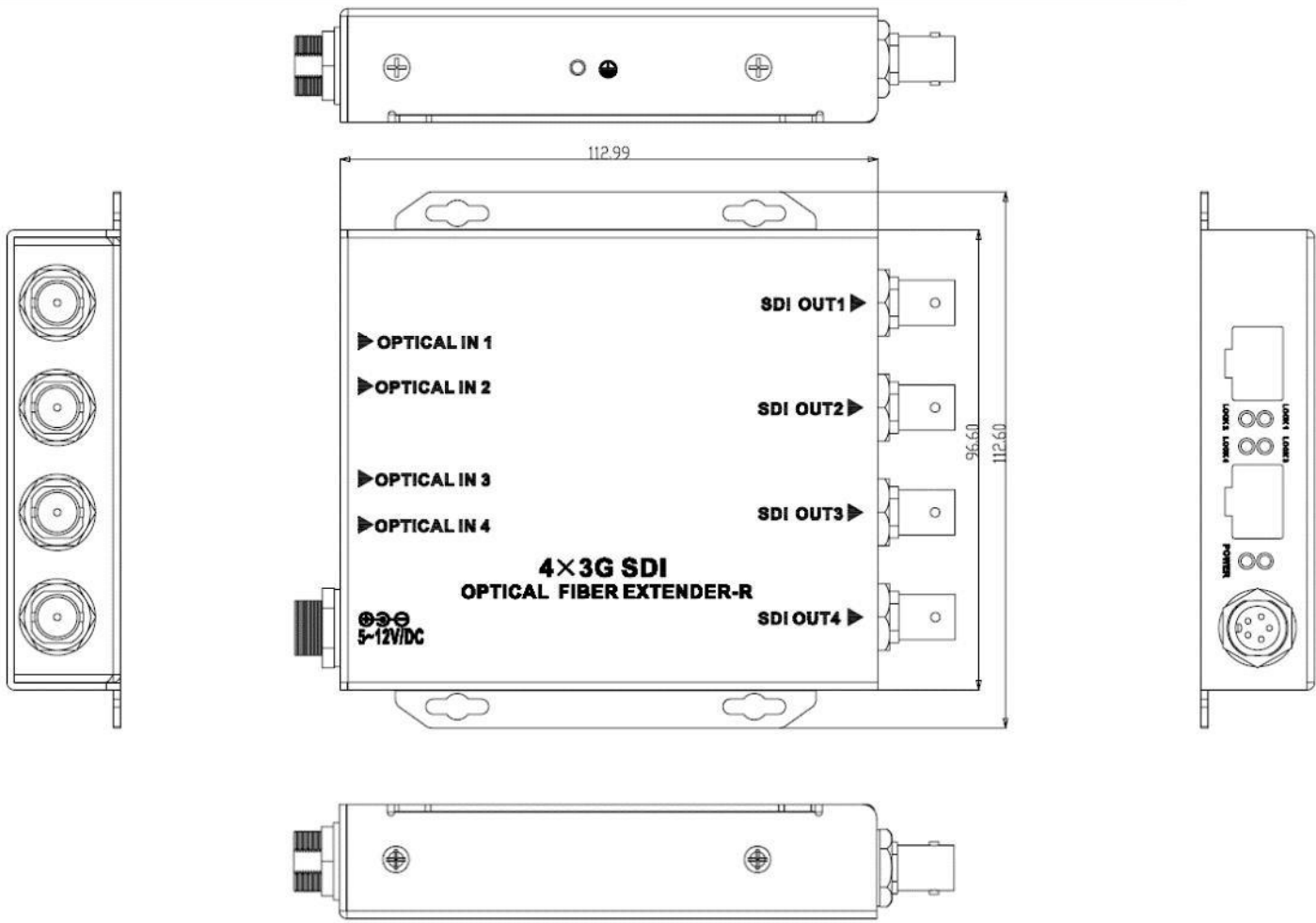
| Parameter             | Symbol | Description                           |
|-----------------------|--------|---------------------------------------|
| Channel numbers       | N      | Four lanes, SDI signal output         |
| Interface for cable   | /      | Standard BNC                          |
| Impendence 1          | RBNC   | 75Ω for single end                    |
| Interface for module  | /      | SFP Connector                         |
| Impendence 2          | RM     | 100Ω for differential pair            |
| Rx Data Rate per lane | 3G-SDI | 2.97Gbps（SMPTE-424）                   |
|                       | HD-SDI | 1.485Gbps（SMPTE-292）                  |
|                       | SD-SDI | 270Mbps（DVB-ASI）                      |
| Output Swing          | Vopp   | 800mV                                 |
| Overshoot             | /      | <10%                                  |
| Output Jitter         | Jp     | <0.2UI for 10Hz                       |
| Return Loss           | RL     | >15dB                                 |
| Cable Driver          | /      | Belden 1694A for recommend            |
| Rise/fall time        | t      | <135ps                                |
| LED Indication        | /      | Power Indicator, SDI Signal Indicator |
| Each channel Skew     | Skew   | <10ns                                 |



Mechanical Specifications



(a) The structure of 4x3G Transmitters



The structure of 4x3G Receivers



Figure3. Mechanical Specifications of 4x3G SDI Extender: (a) 4x3G Transmitters; (b) 4x3G Receivers

Note: The unit of those mechanical specifications is mm.

Ordering information

4× 3G-SDI optical Extender:

| Part Number | Product Description                                                 |
|-------------|---------------------------------------------------------------------|
| FSE-4X3G-T  | 3G-SDI Optical Extender, 4x3G-SDI transmitters, 2 SFP Ports, 4 BNCs |
| FSE-4X3G-R  | 3G-SDI Optical Extender, 4x3G-SDI receivers, 2 SFP Ports, 4 BNCs    |

Note:

- 1、 3G SDI Extender is compatible backward, if you need 1.5G SDI Extender or low, you can also choose these.
- 2、 We also offer the 3G SDI SFP to work with these SDI Extender. Please check from the table below.

3G-SDI SFP:

| Part Number      | Product Description                               |
|------------------|---------------------------------------------------|
| FSDT-3G-3102N    | 3G-SDI SFP 2Tx, 1310nm, 2km, Non-MSA              |
| FSDT-3G-3120N    | 3G-SDI SFP 2Tx, 1310nm, 20km, Non-MSA             |
| FSDT-3G-3140N    | 3G-SDI SFP 2Tx, 1310nm, 40km, Non-MSA             |
| FSDT-3G-5540N    | 3G-SDI SFP 2Tx, 1550nm, 40km, Non-MSA             |
| FSDT-3G-xxyyC40N | 3G-SDI CWDM SFP 2Tx, 1270nm-1610nm, 40km, Non-MSA |
| FSDR-3G-02N      | 3G-SDI SFP 2Rx, 2km, Non-MSA                      |
| FSDR-3G-20N      | 3G-SDI SFP 2Rx, 20km, Non-MSA                     |
| FSDR-3G-40N      | 3G-SDI SFP 2Rx, 40km, Non-MSA                     |

Important Notice

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