

## 4× 3G-SDI Optical Extender



### 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°C
- ◆ All-metal housing for superior EMI performance
- ◆ RoHS compliant (lead free)

### Applications

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

### Description

The GIGALIGHT 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

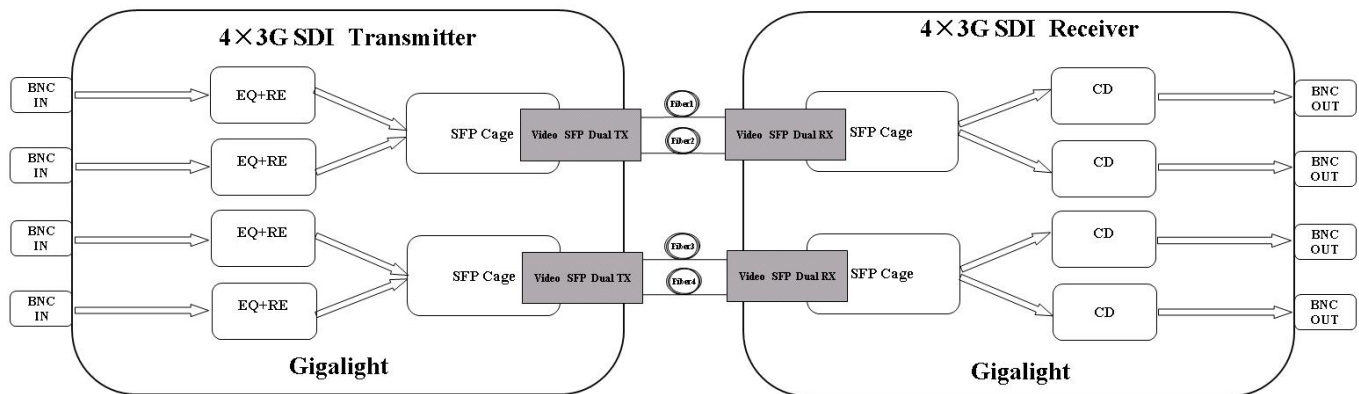
what kind of optical module you insert into it. It includes two parts: one is 4 lanes Transmitter and another one is 4 lanes Receiver.

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;

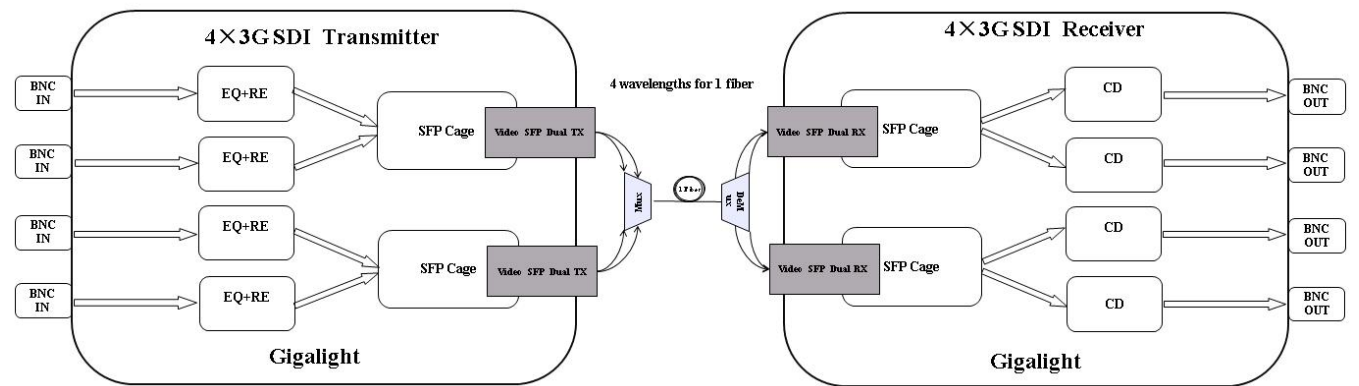
The Receiver firstly transforms SFP to SDI, and it also has four standard BNCs used to transmit recovered SDI signal to sink, at the same time, offers Co-axis cable driver to amplify SDI signal for cable.

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 .



(a) Application 1



(b) Application 2

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.

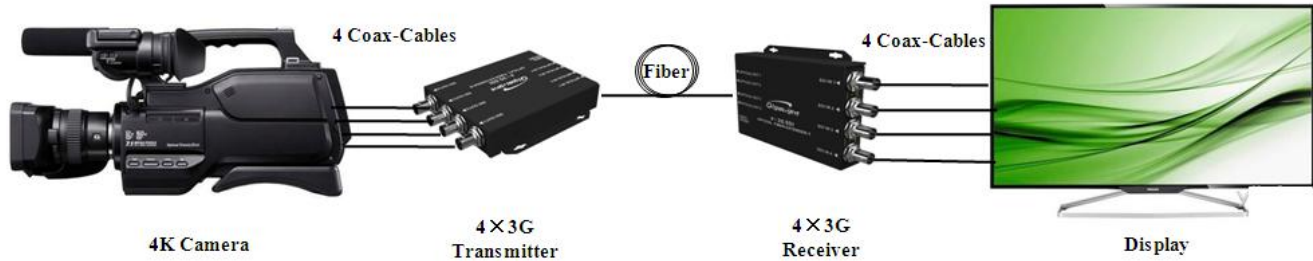


Figure2. The application filed of 4×3G SDI Extender

## 4×3G SDI Extender Specifications

### Absolute Maximum Ratings

Parameter	Symbol	Description	Unit
Storage temperature	Ts	-10~70	°C
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	°C
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
Impedence 1	R <sub>BNC</sub>	75Ω for single end
Interface for module	/	SFP Connector
Impedence 2	R <sub>M</sub>	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	V <sub>ipp</sub>	600~1000mV
Auto Equalizer	/	100m for Belden 1694A

Rise/fall time	t	<135ps
LED Indication	/	Power Indicator, SDI Signal Indicator

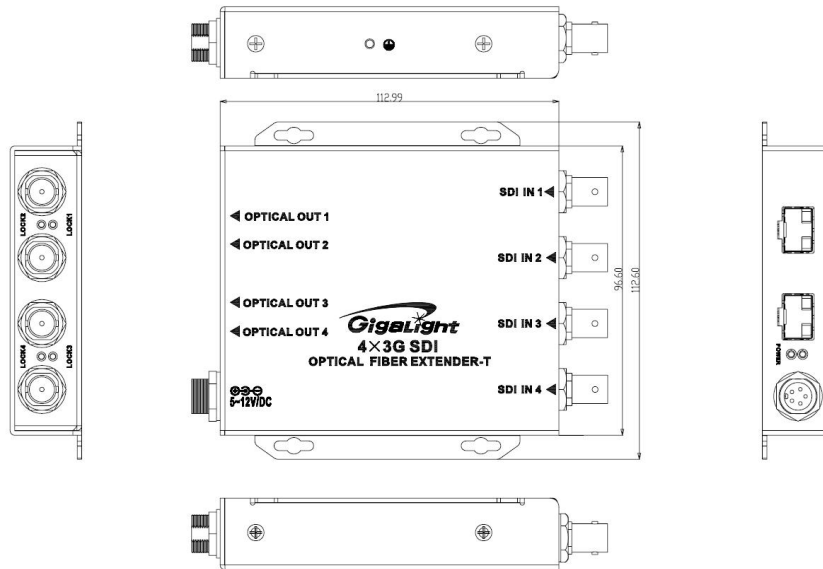
Note:

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

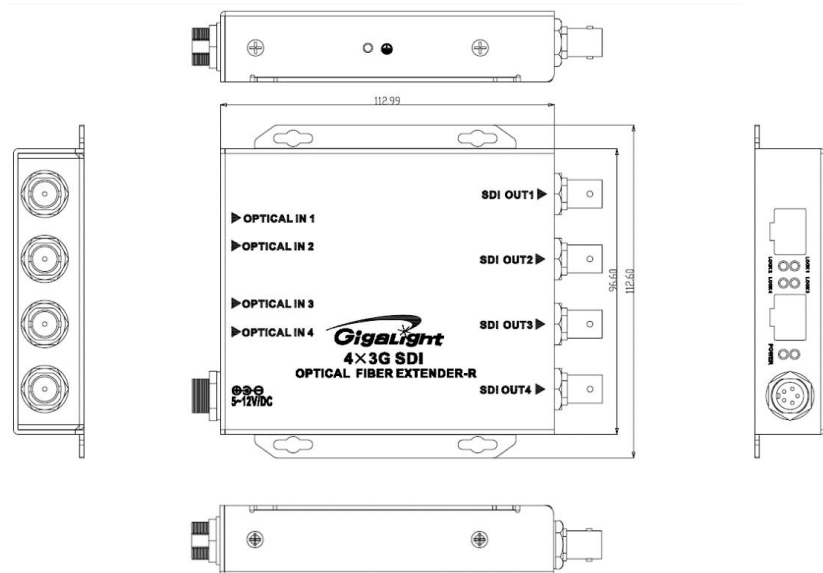
#### 4×3G Receivers

Parameter	Symbol	Description
Channel numbers	N	Four lanes, SDI signal output
Interface for cable	/	Standard BNC
Impedence 1	$R_{BNC}$	75Ω for single end
Interface for module	/	SFP Connector
Impedence 2	$R_M$	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	$V_{opp}$	800mV
Overshoot	/	<10%
Output Jitter	$J_p$	<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 4×3G Transmitters



(b) The structure of 4×3G Receivers



**Figure3. Mechanical Specifications of 4×3G SDI Extender: (a) 4×3G Transmitters; (b) 4×3G Receivers**

Note: The unit of those mechanical specifications is mm.

**Important Notice**

Performance figures, data and any illustrative material provided in this data sheet are typical and must be specifically confirmed in writing by GIGALIGHT before they become applicable to any particular order or contract. In accordance with the GIGALIGHT policy of continuous improvement specifications may change without notice.

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**Ordering information**

**4× 3G-SDI optical Extender:**

Part Number	Product Description
G-SDI-E-4*3G-Tx	Four lanes 3G-SDI Transmitters
G-SDI-E-4*3G-Rx	Four lanes 3G-SDI Receivers

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
GTTC-XXXX3G-L4xD	Dual Tx, 3G-SDI, CWDM 1270nm ~1610nm, 40km SFP
GTT-553G-L4xD	Dual Tx, 3G-SDI, 1550nm, 40km SFP
GTT-31313G-L4xD	Dual Tx, 3G-SDI, 1310nm, 40km SFP
GTT-31313G-L2xD	Dual Tx, 3G-SDI, 1310nm, 20km SFP
GTT-31313G-02xD	Dual Tx, 3G-SDI, 1310nm, 2km SFP
GRR-3G-xxxD	Dual Receivers, 3G-SDI, up to 40km SFP

Note:

- 1、 xx stands for wavelength, such as 31(1310nm)、 55(1550nm) and CWDM Wavelength.
- 2、 yy means different distances, including 2km、 10km、 20km、 40km、 80km:

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