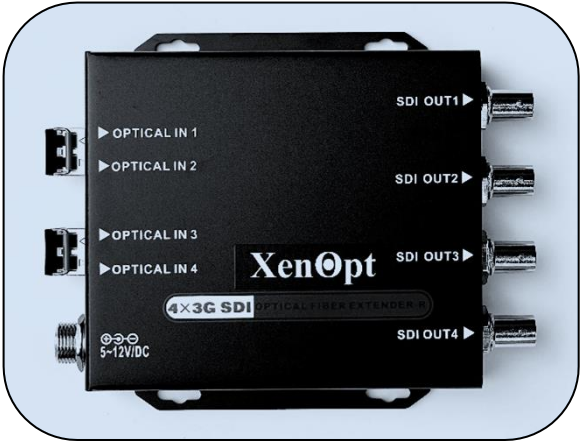




XT4V/XR4V

4x 3G-SDI Optical Extender

XT4V/XR4V 4x 3G-SDI Optical Extender



Applications

- Live Broadcast
- 4K Displays
- 4K Cameras
- Video Conferencing
- Security Monitoring

Features

- Extends SDI signals over fiber optics, ranging from 2 km to 80 km
- Supports a data rate of up to 3G per lane, delivering a total of 12G for 4K transmission
- Fully compliant with SMPTE-424M, SMPTE-292M, SMPTE-295M, SMPTE-297M, SMPTE-305M, SMPTE-310M, and DVB-ASI standards
- Plug-and-play functionality with no software installation required
- Uses longer, thinner cables with no EMI/RFI emissions
- Durable all-metal housing provides superior EMI protection
- RoHS compliant (lead-free)
- Standard operating temperature range: 0°C to +60°C

Description

The Xenopt 4x3G SDI Optical Extender is designed to extend the transmission distance between SDI source and sink devices, supporting distances of up to 80 km or more, depending on the optical modules used. The system consists of two main components: a 4-lane transmitter and a 4-lane receiver.

The transmitter features four standard BNC connectors that receive the SDI signal from the source. It includes a coaxial cable equalizer to restore SDI signal quality while converting the signal from SDI to SFP for transmission over fiber.

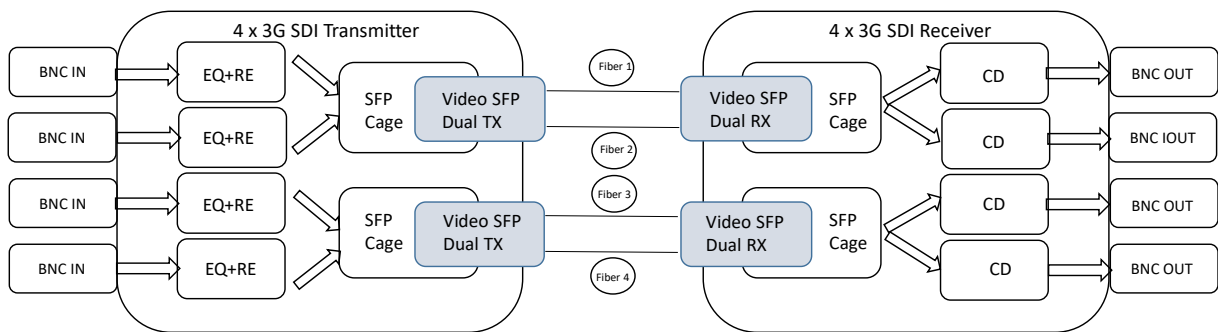
The receiver converts the SFP signal back to SDI and also features four BNC connectors to transmit the restored SDI signal to the sink. Additionally, it includes a coaxial cable driver to amplify the SDI signal for further transmission via cable.

As shown in Figure 1, the 4x3G SDI Optical Extender consists of two units: a 4x3G SDI Transmitter (left structure) and a 4x3G SDI Receiver (right structure).

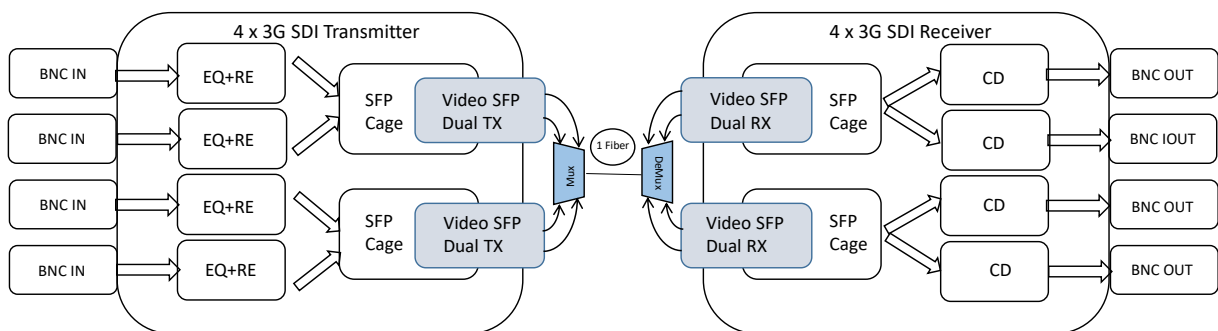
There are two ways to deploy the 4x3G SDI Extender:

Application 1 (Figure 1a): The extender uses four fibers to transmit a 12G SDI signal for 4K content. This setup requires four optical modules: two dual-transmitter SFPs and two dual-receiver SFPs.

Application 2 (Figure 1b): The extender uses a single fiber to transmit a 12G SDI signal for 4K content. This configuration also requires four optical modules: two dual-transmitter SFPs and two dual-receiver SFPs. However, the two dual-transmitter SFPs must operate on four different wavelengths. Additionally, a multiplexer (MUX) and demultiplexer (DeMUX) are required.



(a) Application 1



(b) Application 2

Figure1. 4x3G SDI Set-up diagram: (a) Application 1; (b) Application 2.

Figure 2 illustrates an example application scenario. A 4K camera captures SDI video and processes it, then outputs the video through four standard BNC connectors. The four SDI signals are transmitted via coaxial cables to the 4×3G SDI Transmitter, where they are converted into optical signals for transmission over fiber.

At the remote end, the 4×3G SDI Receiver converts the optical signals back into four SDI signals, which are then ready for display.

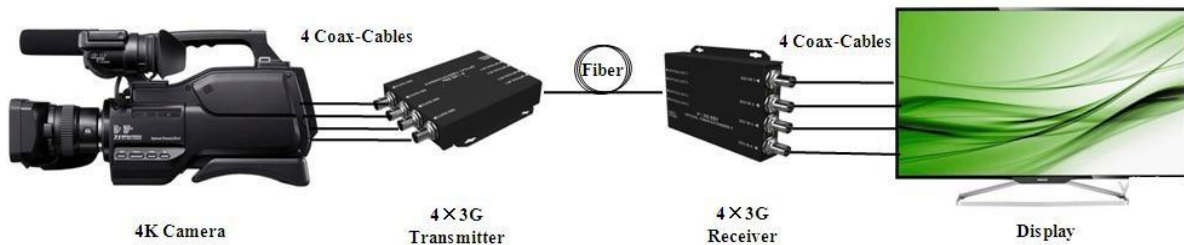


Figure2. The application filed of 4×3G SDI Extender

Absolute Maximum Ratings

Parameter	Symbol	Description	Unit
Supply Voltage	Vcc	-0.5~6	V
Storage Temperature	Ts	-10~70	°C
Operating Humidity	H	5~80	%

Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Unit
Operation Temperature	T	0	45	60	°C
Operation Voltage	Vcc	4.5	5	5.5	V
Supply Current	Icc	/	TBD	/	A

4x3G Transmitters

Parameter	Symbol	Description
Channel numbers	N	Four lanes, SDI signal input
Interface for cable	/	Standard BNC
Impedance 1	R_{BNC}	75 Ω for single end
Interface for module	/	SFP Connector
Impedance 2	R_M	100 Ω for differential pair
Tx Data Rate per lane	3G-SDI	2.97 Gbps (SMPTE-424)
	HD-SDI	1.485 Gbps (SMPTE-292)
	SD-SDI	270 Mbps (DVB-ASI)
Input Swing	V_{ipp}	600~1000 mV
Auto Equalizer	/	100 m for Belden 1694 A
Rise/fall time	t	<135 ps
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 10 km, 20 km, 40 km, 80 km
4. The number of fibers is 1 or 4

4x3G Receivers

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

Ordering information¹

Part number	Product Description
XT4V	Four lanes 3G-SDI Transmitters, 0°C ~ +60°C
XR4V	Four lanes 3G-SDI Receivers, 0°C ~ +60°C

Notes

- 3G SDI Extender is compatible backward, if you need 1.5G SDI Extender or low, you can also choose these
- For accurate order specification please contact XenOpt reseller before placing an order. The content of this document is subject to change without notice. XenOpt does not guarantee errorless or outdated information. Please specify any compatibility requirements at time of ordering. Standard MSA compatible pluggable components may not work or some function of these components may not be available in devices that require customized compatible devices. Pluggable components compatible with one type of communications equipment may not work in other type of communications equipment.
- 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
XVCxx3-40LY	Dual Tx, 3G-SDI, CWDM 1270 nm ~1610 nm, 40 km SFP, x,x: 0 – 1270 nm, 1 – 1290 nm, 2 – 1310 nm, 3 – 1330 nm, 4 – 1350n m, 5 – 1370 nm, 6 – 1390 nm, 7 – 1410 nm, 8 – 1430 nm, 9 – 1450 nm, A – 1470 nm, B – 1490 nm, C – 1510 nm, D- 1530 nm, E – 1550 nm, F – 1570 nm, G – 1590 nm, H – 1610 nm
XV6553-40LY	Dual Tx, 3G-SDI, 1550 nm, 40 km SFP
XV6333-40LY	Dual Tx, 3G-SDI, 1310 nm, 40 km SFP
XV6333-20LY	Dual Tx, 3G-SDI, 1310 nm, 20 km SFP
XV6333-02LY	Dual Tx, 3G-SDI, 1310 nm, 2 km SFP
XV7113-40LY	Dual Receivers, 3G-SDI, up to 40 km SFP

Important Notice

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

The product image is only for reference purpose

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