

ASI/SD/HD/3G-SDI Video to Fiber Optical Converter



Overview

The Serial Digital Interface (SDI) is a digital video interface standard developed by the SMPTE organization. For example, the ITU-R, the BT.656, SMPTE. 259M defines a digital video interface for broadcast level; a famous HD serial digital interface standard (HD-SDI) that provides a data rate of 1.485 Gbit/s. A double-link HD-SDI standard is defined in the SMPTE 372M, the interface consists of a pair of SMPTE 292M links, capable of providing a 2.970 Gbit/s data transfer rate. The interface widely used in digital cinema or HDTV HDTV 1080P, it can have better fidelity and resolution than conventional HDTV. In the recent years, the interface 3G-SDI consisting of a single 2.970 Gbit/s serial link is defined in SMPTE 424M, which will replace the double-link HD-SDI.

These standards are used to transmit uncompressed, unencrypted digital video signals in broadcast television devices, which may also be added as necessary embedded audio and time code. Coaxial cable transmission, the distance is generally less than 300m. The fiber specification as defined by the SMPTE 297M can be long-distance transmission is limited to the maximum fiber length or repeater. Usually, SDI and HD-SDI are applied to professional vision only. In frequency devices, various license agreements limit unencrypted digital interfaces, banning them from using consumer devices such as Blu-Ray and individuals use in video CR.

SDI Standard List (colored as supported)

Standard	Name	Bit rate	Video format example
SMPTE 259M	SD-SDI	270 Mbit/s, 360 Mbit/s, 143 Mbit/s, and 177 Mbit/s	480i, 576i

MPTE 344M	ED-SDI	540 Mbit/s	480p, 576p
SMPTE 292M	HD-SDI	1.485 Gbit/s, and 1.485/1.001 Gbit/s	720p, 1080i
SMPTE 372M	Dual Link HD-SDI	2.970 Gbit/s, and 2.970/1.001 Gbit/s	1080p
SMPTE 424M	3G-SDI	2.970 Gbit/s, and 2.970/1.001 Gbit/s	1080p
TBA	6G UHD-SDI	6 Gbit/s	4K30Hz
TBA	12G UHD-SDI	12Gbit/s	4K60Hz

Advantages

It is a no compression, no delay of radio and television level optical terminal machine, pure hardware architecture, strong stability, high compatibility, anti-interference, support for pathological code module use;

It is highly flexible, on the basis of it can be based on different application scenarios, add video, independent audio, data, ethernet, telephone, contact closure and other functions. Plug and plug type board card design, can be mounted on a 2U chassis, convenient user unified management, maintenance;

It standard transmission distance can be up to 20KM, optical module single multi-mode compatibility, plug and plug optical module design, can be used according to the actual needs of the site can replace the optical module, it is simple to operate, plug and play, without debugging;

It is widely used in long-distance radio and television, medical surgery system, high-quality video and audio transmission system, remote multimedia teaching, video conference system, urban intelligent traffic monitoring system (ITS), safe city, military communication, military monitoring;

Picture

Function Configuration: 1 forward 3G-SDI video with loop out + 1 reverse RS485 data;



Features

1. Comply with DVB-ASI, SMPTE424M, SMPTE292M, and SMPTE259M (C) standards;
2. Use full digital processing technology, clear image, no color phase difference;

3. With APC circuit, constant output optical power, large dynamic range;
4. CWDM technology to achieve multi-channel signal transmission, large capacity, easy to upgrade;
5. The input has a cable balance to compensate for the loss of cable transmission;
6. With the output clock recovery reduction signal jitter circuit, it can handle the distortion signal very well;
7. Input / output cable transmission distance of up to 80m (BELDEN8281 cable);
8. Industrial grade design, modular design makes the equipment reliable and flexible;
9. Single multi-mode compatibility, no relay distance of up to 20 kilometers;
10. Wall-mounted, 1U rack type, plug-in card design, support 2U 16 slot chassis, double backup power supply;
11. Support for pathological signal (optional):
 PLL signal; to detect the locked state of the SDI phase-locked loop. Ensure that the phase-lock ring of the optical terminal can work normally without locking in any scene;
 Equalizer signal; it will truly reflect the design state of the equalizer. Effectively balance and process the coaxial cable signals of different distances within a certain range to ensure the integrity of the signals;
 SDI Matrix signal; synthesize the above two signals. No matter day or night, the images generated by any scene can ensure the effective transmission;
12. Plug and play, no setup required;
13. Devices are used in pair. note that devices are distinguished between transmitter and receive;

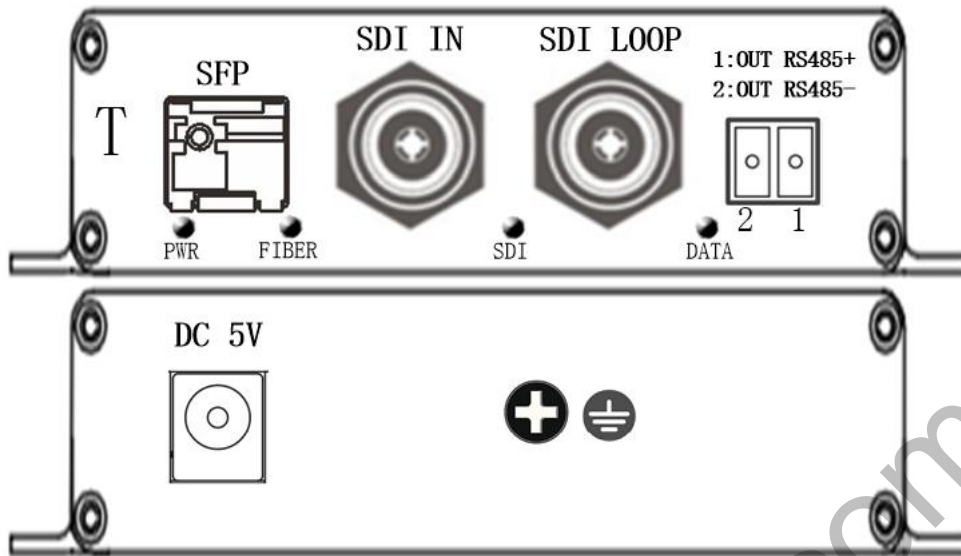
Technical Indexes

Fiber index	
Wavelength	1310/1550nm
Rate	3G bps
Tx power	> -6db
Rx sensitivity	> -14db
Fiber connector	LC
Video index	
Signal type	SMPTE 424M
Work standards	DVB-ASI、SMPTE259M-C、SMPTE292M、SMPTE424M
Bit rates	270 Mbps、1.485 Gbps、2.97Gbps
Video input / output	
Signal type	1 single-link DVB-ASI, SD-SDI, HD-SDI, 3G-SDI digital video with local loop out
Input impedance	75 Ohm
Enter the automatic cable equalization	>80m (1.485 Gbps@BELDEN8281 cable)
Clock recovery	270 Mbps, 1.485 Gbps, and 2.97Gbps are automatic, the others are bypass
Input level	800mVp-p±10%
Enter the echo loss	>10dB @ 2.97 Gbps

Output DC offset	<±0. 5V
Output echo loss	> 10dB @ 2. 97 Gbps
The biggest shake	<0. 1UI(1485Mbps)
Signal overshoot	<5% (1485Mbps)
Data index	
Transmission direction	1-channel reverse transmission
Standard	EIA RS-485
Work pattern	Half-duplex mode
Level type	RS485 (2-wire system)
Bit error rate	<10 ⁻⁹
Rate	0-400Kbps
Pull-up resistor /Pull-down resistor	4.7 kΩ, 4.7 kΩ
Terminating resistor	N/A, 120 Ω and 120 kΩ
Physical interface	Phoenix terminal/3.81mm
Equipment information	
The shell metal	Aluminium alloy
Way to install	Wall-mounted / card type
Product size (not include BNC)	104*103*28mm
Product net weight (unit: pair)	0.45KG
Product weight (including the outer packaging)	0.75KG
Packing size	275*219*54mm
Input voltage	100VAC~242VAC, 50-60Hz
Power supply	DC 5V
Power dissipation	<2W
Overload protection	provide
Over current protection	provide
Other indexes	
Operating temperature	-20°C ~75°C
Storage temperature	-40°C ~85°C
Relative humidity	From 5 to 95% (non-condensing)
Working life	> 100,000 hours

Transmitter panel printed / indicator description

Transmitter



Indicator status

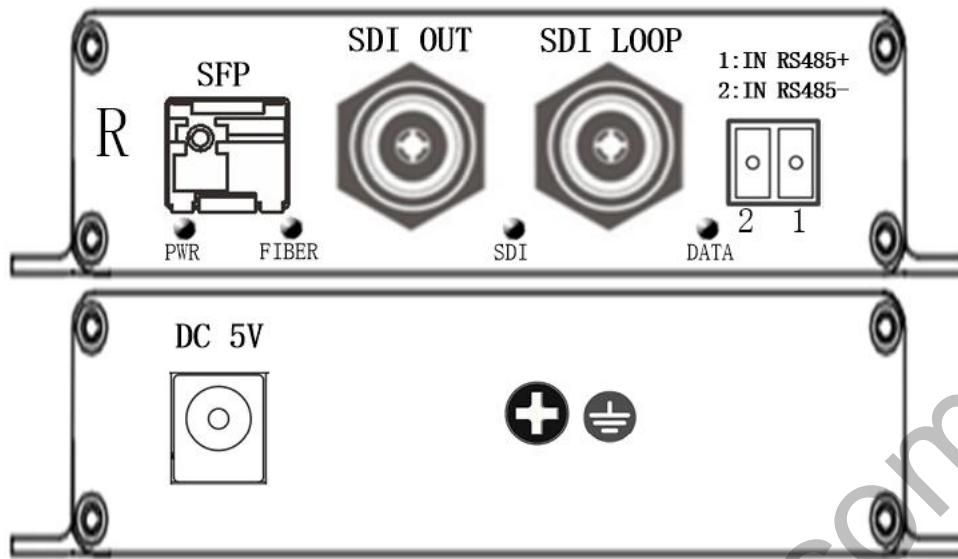
PWR	On: the device is powered on Off: the device is power off
FIBER	Light on : fiber signal Light off : no fiber signal
SDI	Light on : video signal Light off : no video signal
DATA	Blinking: data signal Off : no data signal

Panel printed description

SFP	3G SFP fiber module
SDI IN	Video input
SDI LOOP	Video loop out
RS485+ OUT	Data output
RS485- OUT	Data output
DC 5V	5V power supply

Receiver panel printed / indicator description

Receiver



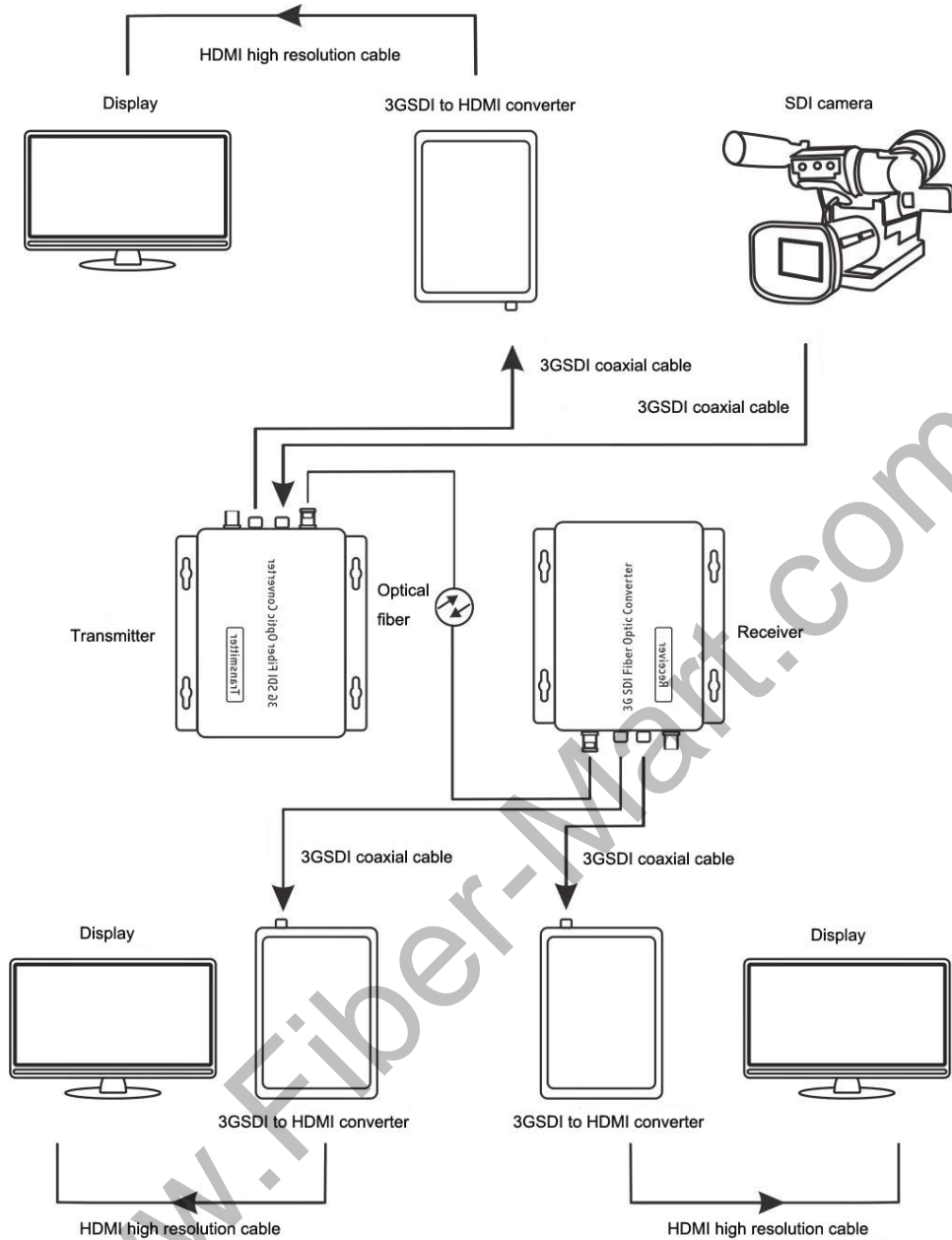
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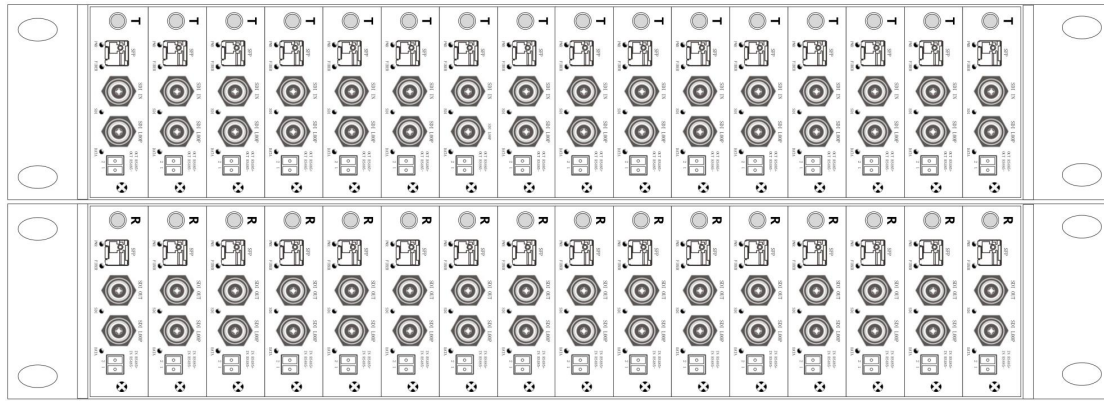
SFP	3G SFP fiber module
SDI OUT	Video output
SDI LOOP	Video loop out
RS485+ IN	Data input
RS485- IN	Data input
DC 5V	5V power supply

Connection Diagram



The connection diagram is for reference only

2U 16Slots index



No.	Name	Description
1	Structure	2U Rack Chassis
2	Slot number	16 piece
3	Power	Redundant power supply, with warning function
4	Power input	AC110~265V, 50/60Hz
5	Power output	DC5V 12A
6	Max power	80W
7	Sheet thickness	Left and right plates 2.0mm, up and down 1.0mm

Product Types

S/no	Product Configuration	Size	Power Supply	Remarks
1	2 channel forward 3GSDI video	192*167*28mm	DC 5V	Can increase the loop out, RS485 data function
2	4 channel forward 3GSDI video	192*167*45mm	DC 5V	Can increase the loop out, RS485 data function
3	8 channel forward 3GSDI video	445*220*45mm	A C100-240V	Can increase the loop out, RS485 data function
4	16 channel forward 3GSDI video	445*220*45mm	A C100-240V	Can increase the loop out, RS485 data function
5	1 channel bidirectional 3GSDI video	192*167*28mm	DC 5V	Can increase the loop out, RS485 data function
6	2 channel bidirectional 3GSDI video	192*167*45mm	DC 5V	Can increase the loop out, RS485 data function

7	4 channel bidirectional 3GSDI video	445*220*45mm	A C100-240V	Can increase the loop out, RS485 data function
8	8 channel bidirectional 3GSDI video	445*220*45mm	A C100-240V	Can increase the loop out, RS485 data function

Attention

Lightning protection, static electricity and grounding:

It is recommended that when install the device, consideration should be given to the impact of grounding by lightning, and take prevention measures. Strong static electricity will damage the optical device and data chip in the equipment. It is recommended that when plug/unplug the data port of the optical converter, please disconnect the power supply of the optical converter first.

Fiber and optical components:

Be careful when plugging the optical fiber as optical components of the optical converter is very fragile, and it should avoid causing damage to the optical components. It should be noted that the light source produced by the optical components of the optical converter will be harmful to eyes, so do not have direct eye contact with the optical components of optical converter. If you need to detect the optical power of the optical converter, please use the optical power meter.

Equipment and installation procedures:

- 1.Optical fiber installation: please carefully insert the optical fiber into the optical fiber interface of the optical terminal after confirming that the optical fiber link meets the installation requirements.
- 2.Equipment installation: The equipment can be distinguished between transmitter and receiver, and it is stated clearly on the label and printed on the chassis of the equipment.