



User Manual



SD/HD/3G/12G + Analog Audio + RS Data + Tally Fiber Optic

F-12G-A-D-T/R-TX/RX

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Overview

12G-SDI UHD multi-function fiber optic transmitter and receiver sets are now combining multiple effective inputs and outputs to follow client demand of the market. Through a single optical fiber these units can transmit one channel of bidirectional 12G-SDI video, bidirectional 3.5 stereo audio, and bidirectional RS232/485/422 serial port data/bidirectional tally signal with CWDM technology, All this is completed with zero delay and no compression, of high-quality signal extension of 10km.

Easy to use plug and play devices. The set comes with the transmitter, receiver, and both power supplies. ST/PC connectors are standard. Effective in both hot and cold weather and of course electromagnetic averse.

Application

1. SMPTE compatible SDI for easy distribution of video with audio/RS Data/Tally
2. UHDTV/4K/8K/HDTV/SDTV video
3. Stadium, education, house of worship, private, military

Ordering information

S.no	Product Configuration	Fiber Connector
1	1 channel bidirectional 12GSDI video with loop output;1 channel bidirectional 3.5 audio;1 channel bidirectional tally;1 channel bidirectional RS485 data (half-duplex) ;1 channel bidirectional RS232 data (full-duplex)	LC
2	1 channel bidirectional 12GSDI video with loop output;1 channel bidirectional 3.5 audio;1 channel bidirectional tally;2 channel bidirectional RS485 data (half-duplex)	LC
3	1 channel bidirectional 12GSDI video with loop output;1 channel bidirectional 3.5 audio;1 channel bidirectional tally;1 channel bidirectional RS422 data (full-duplex)	LC
4	1 channel bidirectional 12GSDI video with loop output;1 channel bidirectional 3.5 audio;1 channel bidirectional tally;2 channel bidirectional RS232 data (full-duplex)	LC

Features

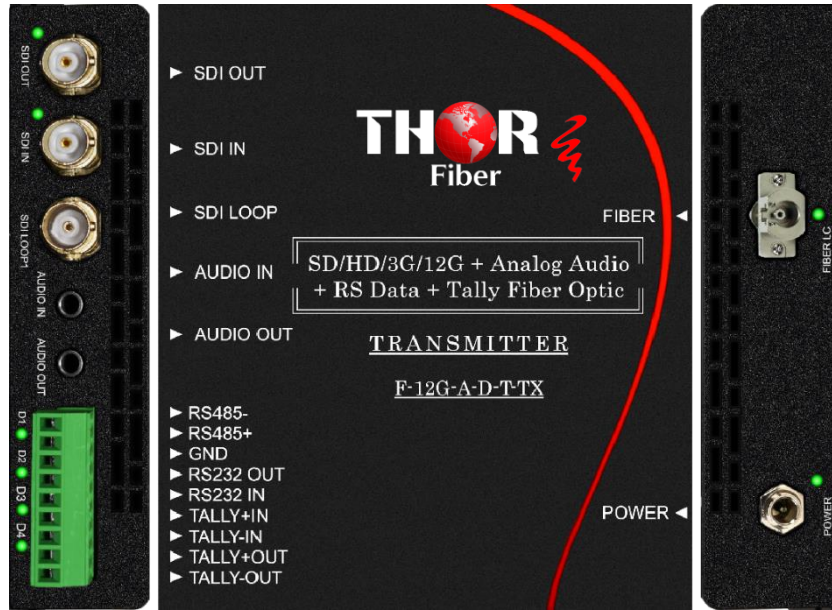
1. One channel bidirectional 12G-SDI video transmission, transmitter has video loop-out HD audio and video.
2. SDI Video: ST-2082-1 (12G),ST-2081-1 (6G),ST-424 (3G),ST-292 (HD) and ST-259 (SD);compatible with DVB-ASI and AES10 (MADI)

3. Both transmitter and receiver have reclock functionality
4. Signal input has automatic cable equalization (EQ) function, output has drive (CD) function;
5. One channel bidirectional 3.5 stereo audio independent transmission.
6. RS232/485/422 serial port data transparent transmission.
7. One channel bidirectional tally signal
8. Single mode Fiber 10km transmission distance.
9. Plug and play, without debugging; power supplies included

Specifications

Fiber parameter	
Wavelength	1270/1330/1470/1490nm
Fiber type	9/125um single-mode
Transmitter power	0~-3dB
Receiver sensitivity	>-10dB
Fiber connector	LC
Optical module parameter	Single fiber single mode 10km
Video parameter	
Protocol standard	SMPTE ST-2082
SMPTE rate	270Mbit/s, 1.48Gbit/s, 2.97Gbit/s, 5.94Gbit/s, 11.88Gbit/s
Support standard (digital video format)	SMPIE 259M SD-SDI 480i, 576i
	SMPIE 344M ED-SDI 480P, 576P
	SMPIE 292M HD-SDI 720P, 1080i
	SMPIE 424M 3G-SDI 1080P60Hz
	SMPIE ST-2081 6G-SDI 2160P30Hz
	SMPIE ST-2082 12G-SDI 2160P60Hz
EQ mode cable transmission distance	11.88Gbps at 75m
	5.94Gbps at 120m
	2.97Gbps at 200m
	1.485Gbps at 300m
	270Mbps at 600m
Signal amplitude	800mV±10%
Impedance	75Ω
Connector	The BNC meet the IEC169-8 standard
Audio parameter	
Sampling frequency	48K
Sampling depth	24bit
Dynamic bandwidth	96db
Total harmonic distortion (THD)	-88db

Signal to noise ratio (SNR)	96db
Audio input/output impedance	600Ω
Signal level	VPP 3.5V
Physical interface	3.5mm stereo audio socket
Signal type	Stereo audio
Data parameter	
Standard	Compliance with the EIA RS-232,RS-485,RS-422 standard
Physical interface	Industrial terminal/3.81mm
Baud rate	50bps to 115200 kbps (support non-standard baud rates)
RS232	3-wire(RXD,TXD,GND),full-duplex, point to point communication
RS485	2-wire (A, B), half-duplex, point to multi-master-slave communication
RS422	4-wire,full-duplex
RS485 circuit parameter	
RS-485 pull-up resistance/pull-down resistance	4.7 kΩ,4.7 kΩ
RS-485 terminal resistance	N/A,120 Ω and 120 kΩ
Tally signal parameter	
Level type	TTL (5V) /LVTTTL(3.3V)
Input level range	3.3V~12V
Output level parameter	0V or 3.3V
Default state	No-voltage output (0V)
Physical interface	Industrial terminal / 3.81mm
Mechanical parameter	
The shell metal	Aluminum alloy
Product size	116*128*30mm
Installation method	Desktop type
Environment	
Working temperature	-20°C ~+75°C
Storage temperature	-40°C ~+85°C
Relative humidity	5 to 95% (non-condensing)
MTBF	> 10,0000 hours



SDI OUT	12G SDI signal output	
SDI IN	12G SDI signal input	
SDI LOOP	12G SDI signal loop out	
AUDIO IN	3.5mm audio input	
AUDIO OUT	3.5mm audio output	
RS232	1 GND	Ground wire
	2 RS232 IN	Input
	3 RS232 OUT	Output
PC	Host USB	

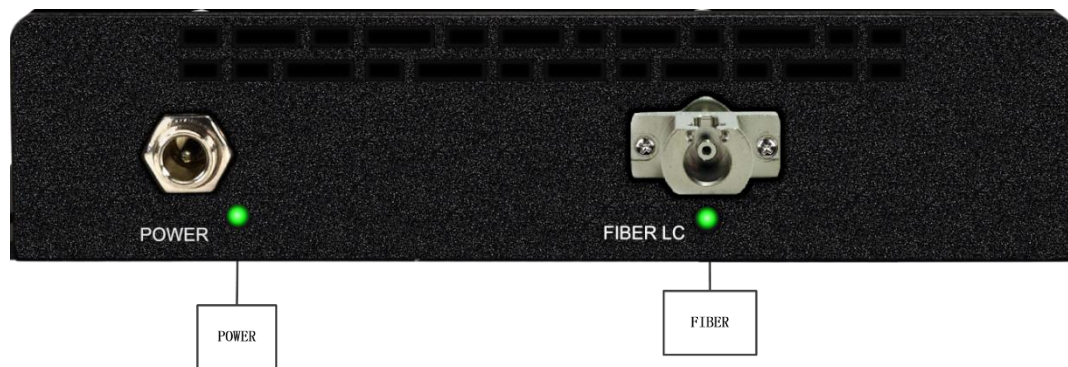
Front panel



Indicator status

Name	Analysis	Status Description
SDI OUT	12G-SDI signal output	Light on: video signal Light off: no video signal
SDI IN	12G-SDI signal input	Light on: video signal Light off: no video signal
D1	DATA 1	Blinking: data signal Off: no data signal
D2	DATA 2	Blinking: data signal Off: no data signal
D3	TALLY 1	Blinking: data signal Off: no data signal
D4	TALLY 2	Blinking: data signal Off: no data signal

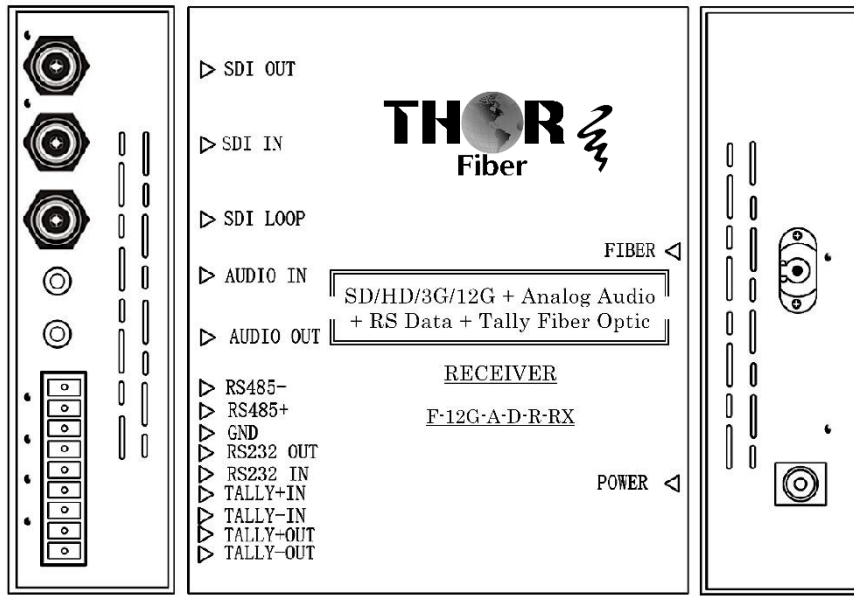
Back panel



Indicator status

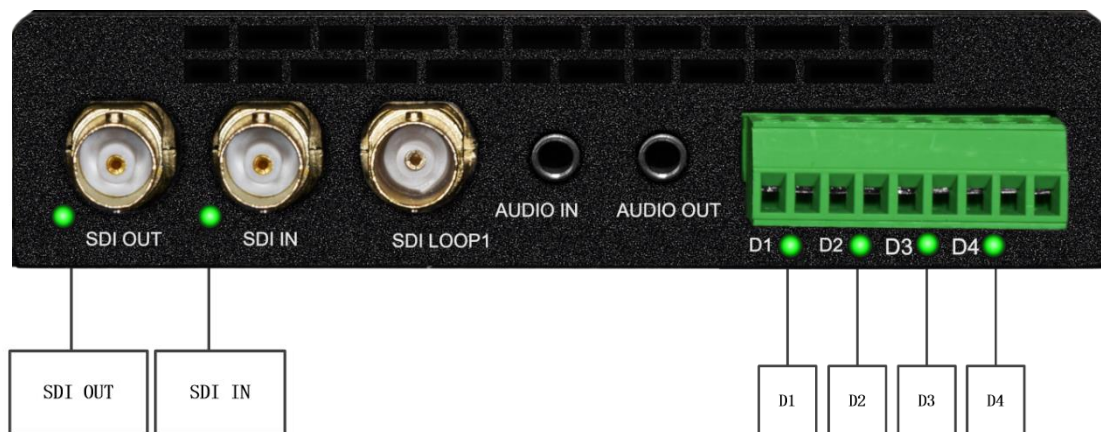
Name	Analysis	Status Description
POWER	Power	On: The device is powered on Off: The device is powered off
FIBER	Fiber	Light on: fiber signal Light off: no fiber signal

Receiver printed / indicator description



SDI OUT	12G SDI signal output	
SDI IN	12G SDI signal input	
SDI LOOP	12G SDI signal loop out	
AUDIO IN	3.5mm audio input	
AUDIO OUT	3.5mm audio output	
RS232	1 GND	Ground wire
	2 RS232 IN	Input
	3 RS232 OUT	Output
PC	Host USB	

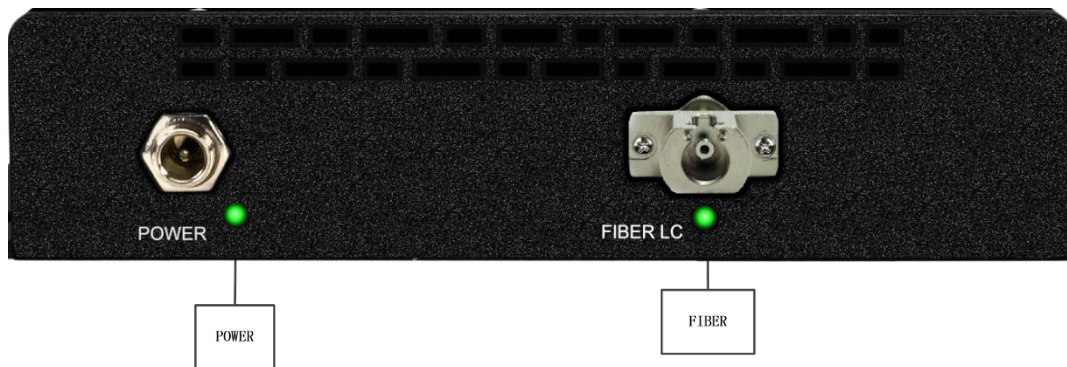
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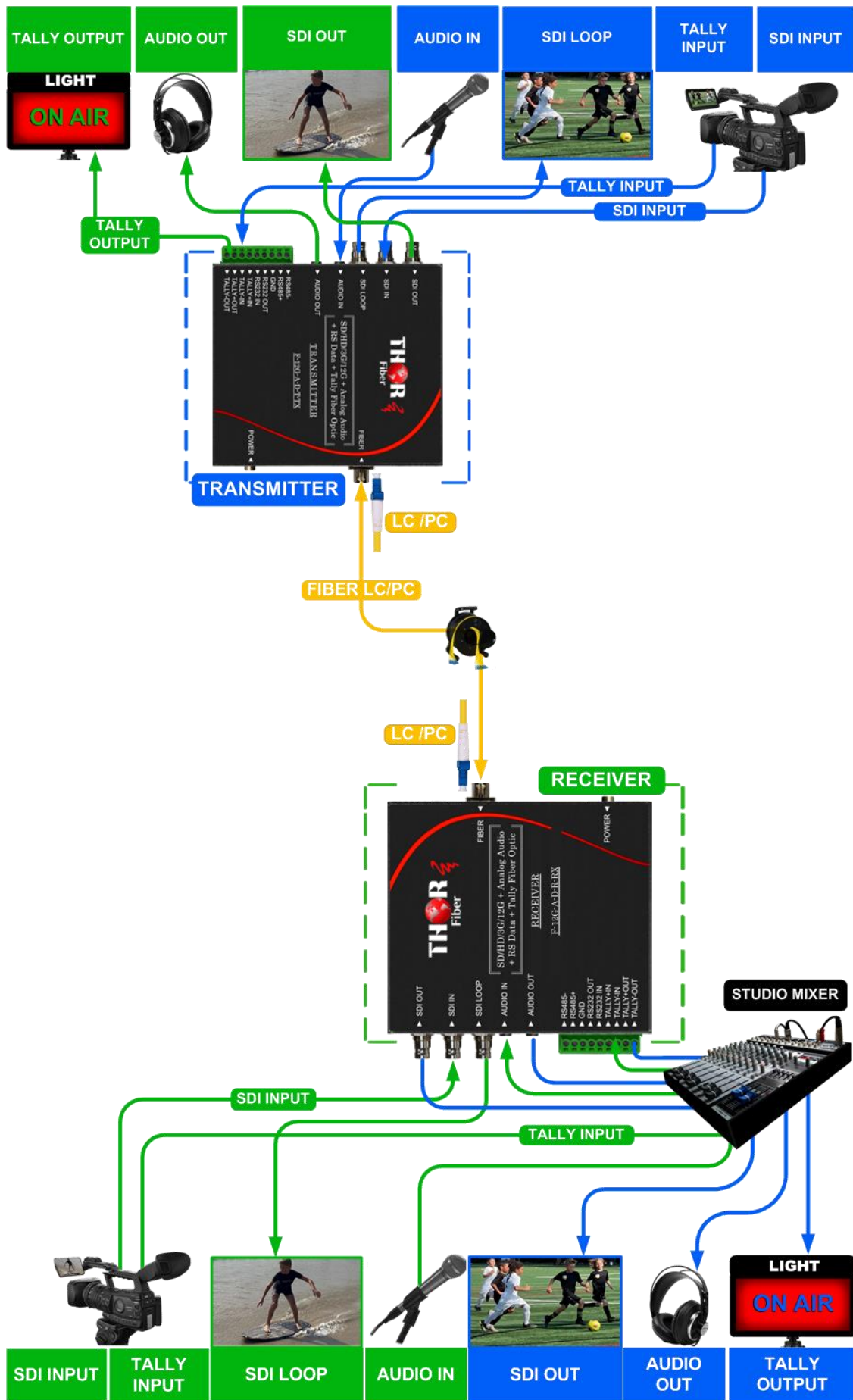
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Packing List

S.no	Name	Unit	Quantity
1	Transmitter	PCS	1
2	Receiver	PCS	1
3	9-pin phoenix terminal male (fixed to the device)	PCS	2
4	User's manual	PCS	1
5	Warranty card	PCS	1
6	Certificate of quality	PCS	1

Connection Diagram



The connection diagram is for reference only!

Attention

It is recommended to use the short optical fiber link for the first time to ensure that all the functions of the equipment are normal, and then connect longer distance fiber.

The signal of fiber optic converter can be output to a power amplifier, but the audio source of the power amplifier can't output the audio source signal to the fiber optic converter, otherwise the equipment will be terminated.

Troubleshooting indicators

1: Power indicator is abnormal (POWER);

Answer: Check whether the power adapter meets the equipment requirements or the power adapter fails

Whether the socket is not tight or loose

2: Fiber indicator is abnormal (FIBER);

Answer: Check whether the optical fiber interface is loose and not plugged in

Check whether the optical fiber is too much attenuated

3: Video indicator is abnormal (VIDEO);

Answer: Check the signal source

Replace the video cable

4. Data indicator is abnormal (DATA);

Answer: Check the COM port, whether the baud rate is consistent

Check whether the serial port cable is connected backwards

Attention

Lightning protection, static electricity and grounding:

It is recommended that when install the device, YOU MUST GROUND THE UNITS.

Strong static electricity will damage the optical device and data chip in the equipment. It is recommended that when you plug/unplug the data port of the optical converter, please disconnect the power supply of the optical converter first.

Fiber and optic components:

Be careful when plugging the optical fiber in as optical components of the optical converter are very fragile, and you 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 DAMAGE your eyes, so do not have direct eye contact with the optical components of the optical converter. If you need to detect the optical power of the optical converter, please use an 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) Power amplified audio signal cannot be directly given to the transmitter, which will lead to the burning machine out.