

THOR Fiber



F-M1SDI-TR-ET

1-Bidirectional HD-SDI Optical Transceiver with RS485 and 10/100 Fast Ethernet

User Manual

2017

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Chapter 1. Introduction

1.1 Overview

The Thor Fiber F-M1SDI-TR-ET is a compact power house that will allow any user to transport one single channel of 1.485Gbps HD-SDI Serial Data Interface bi-directionally while simultaneously transmitting 10/100Mb/s Ethernet Data. Furthermore this Thor Fiber Kit of Transmitter and Receiver will send RS485 in reverse for easy control over the kit. This sturdy unit creates an easy drop environment for users that require HD-SDI and Fast Ethernet across application and even allows additional AUX Cards which can allow a plethora of other options such as RS232 and RS422, and even capable of carrying external analog audio instead of the SDI embedded audio. Thor Fiber has an excellent reputation for high quality and low cost products to help complete your project on time, in a loss free high quality kit that will ensure you stay under budget. Commonly used in security applications, live performance environments, video surveillance, SDI distribution and control in any environment.

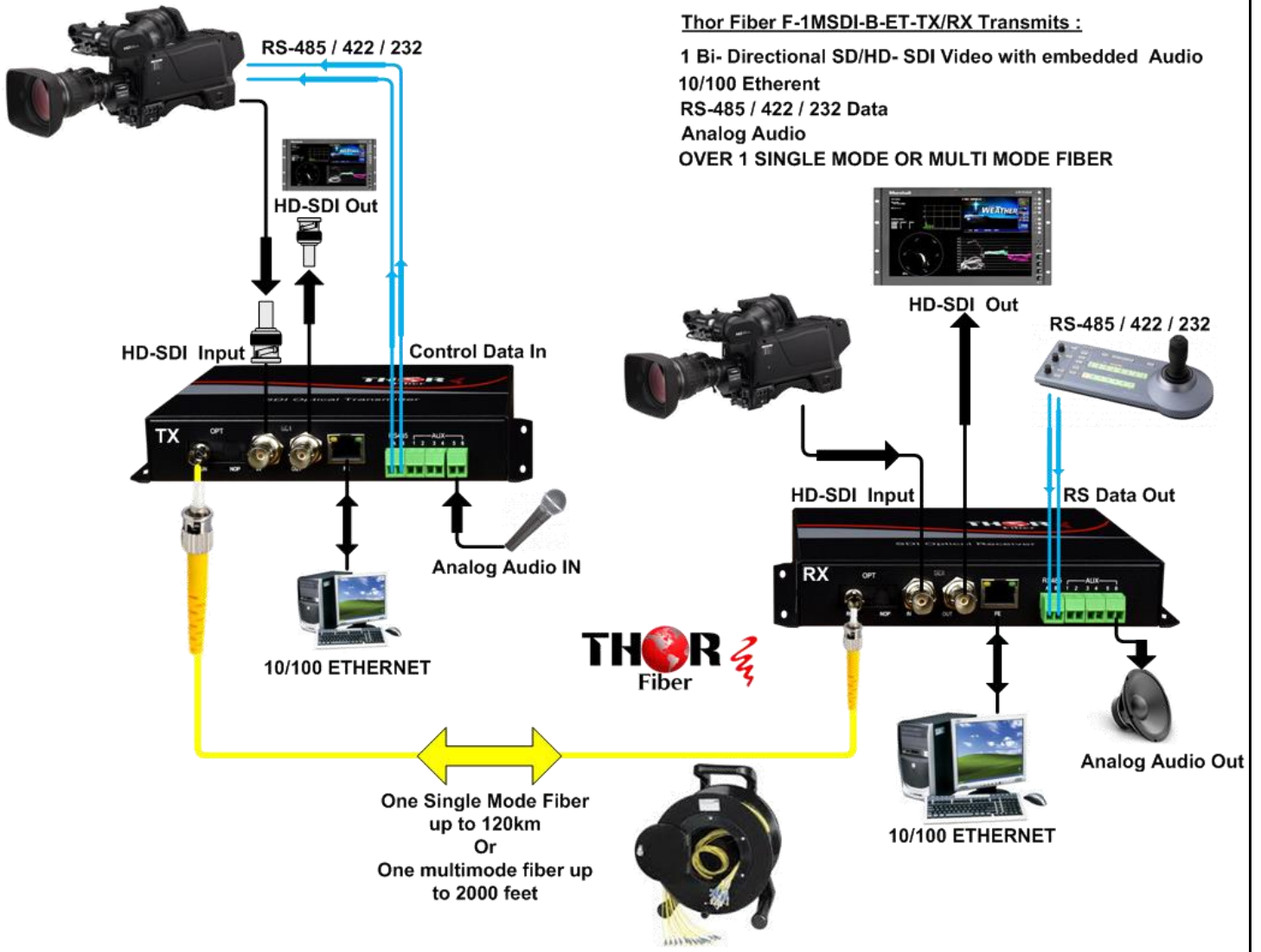
1.2 Feature

- SMPTE-292M HD-SDI standard, supports 1.485Gb/s
- One HD-SDI input (BNC), one HD-SDI output(BNC) and one fast Ethernet interface (10/100Mb/s)
- Broadcast level SDI applications
- Supports 1080P@29.97, 23.98、1080I@59.94、720P@59.94, 29.97, 23.98 format
- Integrated cable equalizer
- Embedded ESD and surge protection circuit to prevent damage from static and thunder
- NOP (No optical signal) alarm indications, output status indicator and input lock indicator
- APC circuit to perform stable optical power
- One bi-directional RS485 channel, half duplex, up to 115.2Kb/s baud rate
- One auxiliary channel, which can be 2-channel bi-directional audio, or 1-channel bi-directional RS422 channel, or 2-channel bi-directional RS232 channel

1.3 Application Drawing

Thor Fiber F-1MSDI-B-ET-TX/RX Transmits :

- 1 Bi- Directional SD/HD- SDI Video with embedded Audio
- 10/100 Ethernet
- RS-485 / 422 / 232 Data
- Analog Audio
- OVER 1 SINGLE MODE OR MULTI MODE FIBER



Chapter 2. F-M1SDI-TR-ET Panels

2.1 Front Panel



Figure 2-1-1 F-M1SDI-TR-ET Front Panel

Table 2-1-1 Interface on F-M1SDI-TR-ET Front Panel

Name	Description	
OPT	Optical interface, bi-directional, ST/PC Connector	
SDI	IN	HD-SDI input
	OUT	HD-SDI output
FE	Copper Fast Ethernet port, RJ45 connector, uses CAT-5 cross-over or straight-through cable.	
	LINK/ACT	Ethernet link indicator, green. ON: Normal link but no data transmit or receive; Blink: Normal link and there are data transmitting and receiving; OFF: No link or the interface is damaged
	SPD	FE speed indicator, yellow. ON: operating with 100M; OFF: operating with 10M
RS485	RS485 interface, adopts PHOENIX connector	
	A	RS485 differential signal A
	B	RS485 differential signal B
AUX	One auxiliary channel, which can be 2-channel bi-directional audio, or 2-channel unidirectional audio, or 1-channel bi-directional RS422 or 2-channel RS232 channel. Refer to table 2-1-3 for more. Note: if the auxiliary channel is used as the audio channel, the embedded audio channel in the HD-SDI signal will be unavailable.	

Table 2-1-2 Indicators on F-M1SDI-TR-ET

Name	Description
NOP	Optical signal loss alarm indicator, red. ON: Optical signal loss is detected at the port. OFF: the optical port receive normal signal.
RUN	Running indicator, green. Normal blink: works normally OFF: Abnormal.
IN	The HD-SDI input lock indicator, green. ON: video input normally. OFF: video input abnormally.
OUT	The HD-SDI output status indicator, green. ON: output normally. OFF: output abnormally.
ACT	RS485 link indicator, green. Blink: There are data transmitting and receiving; OFF: No data transmit or receive;

Table 2-1-3 AUX interface

AUX interface	No.	Name	Description
2-channel bi-directional audio	1	AOUT1	Audio channel output1
	2	AOUT2	Audio channel output2
	3	G	Ground
	4	AIN1	Audio channel input1
	5	AIN2	Audio channel input2
	6	G	Ground
1-channel bi-directional RS422	1	TXA	RS422 differential signal A output
	2	TXB	RS422 differential signal B output
	3	RXA	RS422 differential signal A input
	4	RXB	RS422 differential signal B input
	5	G	Ground
	6	G	Ground
2-channel bi-directional RS232	1	TX1	RS232 signal output1
	2	RX1	RS232 signal input1
	3	G	Ground
	4	TX2	RS232 signal output2
	5	RX2	RS232 signal input2
	6	G	Ground

2.2 Rear Panel



Figure 2-2-1 F-M1SDI-TR-ET Rear Panel

Table 2-2-1 F-M1SDI-TR-ET Rear Panel

Name	Description
DC12V	DC 12V power input interface Adopts AC220V/DC12V power adapter, provides 12V power supply
⊕	Protective Ground (PGND) screw, connect with the chassis.

□

Chapter 3. Technical Specifications

Table 3-1 Technical Specification

Item	Typical value
Video Interface	
Connector	BNC
Bit rate	1.485Gb/s
Impedance	75Ω
Return loss	>15dB
Output level	800mVp-p ± 10%
Rise and fall time (HD-SDI)	≤270ps
HD-SDI Alignment jitter (100KHz)	≤0.2UI
HD-SDI Timing jitter (10Hz)	<1.0UI
Standard	Comply to SMPTE-292M HD-SDI standard
Audio Interface (Optional)	
Connector	PHOENIX connector
Impedance	Input high-impedance, output 600Ω
Quantization grade	20 bits
Sample frequency	48KHz
Audio input/output voltage	2VP-P
Bandwidth	20Hz~20KHz
Total Harmonic Distortion	0.1%
Impedance	600Ω
FE Interface	
Connector	RJ45
Frame length	From 64 bytes to 1552/1536 bytes
Working mode	Auto-negation by default
Bit rate	10/100Mb/s
Duplex	Half/full duplex
Flow Control	Default settings: open
Standard	IEEE802.3u 100Base-TX/ IEEE802.3 10Base-T
RS485 Interface	
Connector	PHOENIX connector
Baud rate	0~115.2Kb/s
Bit error ratio	<10 ⁻⁹
Duplex	Half-duplex
CONSOLE Interface	
Connector	RJ45
Baud rate	19200

bits	8
Stop bit	1
parity check	None
EMU/EMU-EX Interface	
Connector	RJ45
Bit rate	10Mb/s or 100Mb/s auto adaptive
Power and Consumption	
Power supply	DC 12V
DC input voltage range	8V~14V
Power consumption	3W±10%
Environment Requirements	
Working temperature	-30~60℃
Relative Humidity	≤95%, no condensation
Storage temperature	-40~85℃
Equipment dimension	
equipment dimension	180mm x 123mm x 30mm

Note: The optical module is optional for users, the default is 20Km on single mode fiber, other long distance needs to be declared when ordering.