



# User Manual



## F-M2SDI

2 Ch Tx & Rx

HD-SDI Fiber Optic  
Link with RS-485 & Aux

User Manual

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## Chapter 1. System Introduction

### 1.1 Overview

The F-M2SDI transmitter and receiver kit by Thor is designed to extend the range of high definition HD-SDI digital video by transmitting the data over fiber cable. Two full HD-SDI channels are transmitted over a single fiber with no latency or added delay in the video with respect to timing. In addition to HD-SDI video, the link also transports a single channel of one-directional RS-485 control data from the receiver back to the transmitter. This is useful for controlling equipment such as video switches or PTZ camera controllers. Link alarms are provided on both units that indicate when there is a fiber fault or an optical link is not established. These units are suitable for all applications involving HD-SDI, SD-SDI, or DVB-ASI broadcast type digital video. Optional upgrades for the auxiliary include bi-directional RS-232/422 data, bi-directional analog audio, or contact closure. Supported options are indicated by model numbers.

### 1.2 Features

- Fully complies with the SMPTE-292M HD-SDI standard
- F-M2SDI-Tx: 2 HD-SDI inputs on BNC
- F-M2SDI-Rx: 2 HD-SDI outputs on BNC
- Supports two embedded audio per SDI channel
- Serial Data RS-485 (default) with options for RS-242 or RS-422 (Model Specific)
- Multiple options for auxiliary channel including audio, contact closure, RS-232, or RS-422
- Supports resolutions at 1080P@30,25,24 and 720P@60,50,30,25,24
- Output reclocking ensures clean digital output signal
- Surge protection circuit to prevent damage from static electricity or power surges
- Optical link alarm NOP (No optical signal) indicates link status from both units
- High quality external switching type power supply

### 1.3 Application

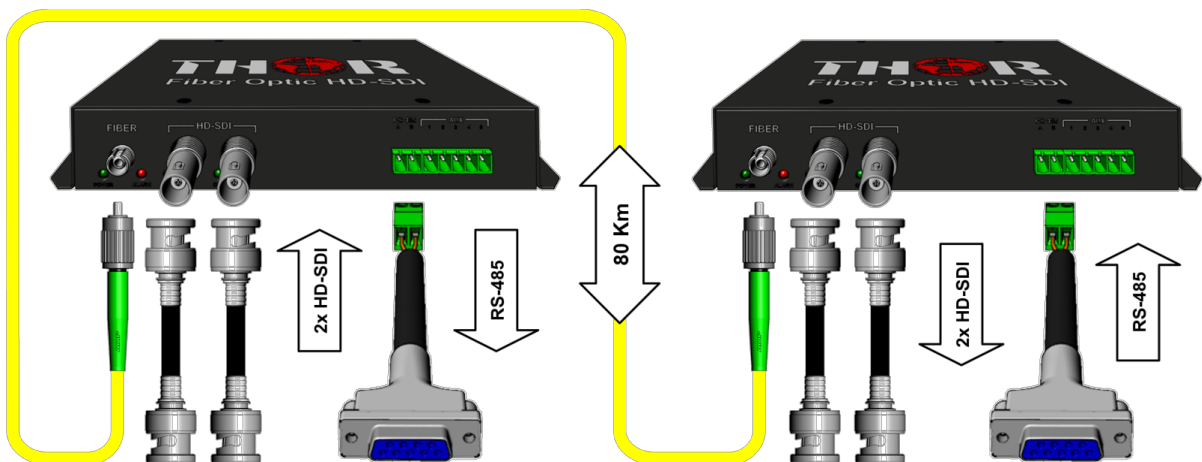


Figure1-3-1 Application for F-2MSDI System

## Chapter 2. F-M2SDI Enclosures

### 2.1 Front Panel



Figure 2-1-1 F-M2SDI-Tx Front Panel



Figure 2-1-2 F-M2SDI-Rx Front Panel

Table 2-1-1 Interfaces

Name	Description	
FIBER (OPT)	Optical Fiber Interface, FC Type	
HD-SDI	IN Ch 1, Ch 2	HD-SDI input 1-2
	OUT Ch 1, Ch 2	HD-SDI output 1-2
RS-485	RS485 Serial Data, Terminal Block	A: RS485 positive terminal B: RS485 negative terminal
AUX	<p><b>Available Options</b></p> <ul style="list-style-type: none"> <li>- 2-channel bi-directional audio</li> <li>- 2-channel unidirectional audio</li> <li>- 2-channel contact closure input/output</li> <li>- 1-channel bi-directional RS422</li> <li>- 2-channel bi-directional RS232 channel</li> </ul>	<p>Refer to table 2-1-3 for more.</p> <p><i>Note: if the auxiliary channel is used as the audio channel, the embedded audio channel in the HD-SDI signal will be unavailable.</i></p>

Table 2-1-2 Indicators

Name	Description
ALARM (NOP)	Optical signal loss alarm indicator, red. ON: Optical signal loss is detected at the port. OFF: the optical port receive normal signal.
POWER (RUN)	Running indicator LED is green. Blinks when operating normally OFF: Indicates a problem
IN [1 : 2]	The HD-SDI input lock indicator, green. ON: video input normally. OFF: video input abnormally.
OUT[1 : 2]	The SD/HD-SDI output status indicator LED is green. ON: Indicates signal output is normal OFF: Indicates there is no output signal
ACT	RS485 link indicator LED is green. Blinking: Indicates serial data activity OFF: No serial data is being sent or received

Table 2-1-3 AUX interface

AUX interface	Pin	Name	Description
2-Ch bi-directional audio <b>F-M2SDI-2BA-Tx/Rx</b>	1	AOUT1	Audio channel: 1 output
	2	AOUT2	Audio channel: 2 output
	3	G	Ground
	4	AIN1	Audio channel: 1 input
	5	AIN2	Audio channel: 2 input
2-Ch unidirectional audio <b>F-M2SDI-2A-Tx</b>	1	AIN1	Audio channel: 1 input
	2	AIN2	Audio channel: 2 output
	3	G	Ground
	4	--	Not Used
	5	--	Not Used
<b>F-M2SDI-2A-Rx</b>	1	AOUT1	Audio channel: 1 output
	2	AOUT2	Audio channel: 2 output
	3	G	Ground
	4	--	Not Used
	5	--	Not Used

2-ch contact closure output <b>F-M2SDI-2CC-Tx</b>	1	NC0	The first channel contact closure output No alarm: the contact is normally-closed (NC) Alarm: the contact is open
	2	COM0	Command contact of the first channel contact closure
	3	NC1	The second channel contact closure output No alarm: the contact is normally-closed (NC) Alarm: the contact is open
	4	COM1	Command contact of the first channel contact closure
	5	--	--
2-ch contact closure input <b>F-M2SDI-2CC-Rx</b>	1	K0	The first channel contact closure input
	2	COM0	Command contact of the first channel contact closure
	3	K1	The second channel contact closure input
	4	COM1	Command contact of the second channel contact closure
	5	--	--
1-ch Bi-Directional RS232 <b>F-M2SDI-1S32</b>	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
2-ch Bi-Directional RS232 <b>F-M2SDI-2S32</b>	1	TX1	RS232 signal output 1
	2	RX1	RS232 signal input 1
	3	G	Ground
	4	TX2	RS232 signal output 2
	5	RX2	RS232 signal input 2


Note1: The AUX interface of F-M2SDI-Tx and F-M2SDI-Rx are used in pairs, If using a transmitter with an AUX option then the receiver must also have this option for the AUX connection to work properly.

## 2.2 Rear Panel



Figure 2-2-1 F-M2SDI Rear Panel

Table 2-2-1 F-M2SDI Rear Panel

Name	Description
DC12V	DC 12V power input interface Requires the included 12V power supply
	Protective ground (PGND) screw

## Chapter 3. Technical Specifications

Table 4-1 Technical Specifications

Item	Typical value
<b>HD-SDI Interface</b>	
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
<b>Audio Interface (Optional)</b>	
Connector	Terminal Block connector
Impedance	Input high-impedance, output 600Ω
Quantization grade	24 bits
Sample frequency	48KHz
Audio input/output voltage	2VP-P
Bandwidth	20Hz~20KHz
Total Harmonic Distortion	0.1%
<b>RS485 Interface</b>	
Connector	Terminal Block connector
Baud rate	0 ~ 115.2Kb/s
Bit error ratio	<10 <sup>-9</sup>
Duplex	Half-duplex
<b>Power and Consumption for desktop Model</b>	
Power supply	DC 12V
DC input voltage range	8V~14V
Power consumption	3W±10%
<b>Environment Requirements</b>	
Working temperature	-30 ~ 60°C
Relative Humidity	≤95% , no condensation
Storage temperature	-40 ~ 85°C
<b>Equipment dimension</b>	
Desktop Enclosure Dimensions	180mm x 123mm x 30mm