

# DATA SHEET

## Optical VGA/Audio/RS-232 Extender AVFX-100

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## **Description**

AVFX-100 enables integrated extension of Analog RGB video, audio and serial interface up to 2 km (6,560feet) over two (2) single-mode / 300m (985feet) over two(2) multi-mode fibers of LC connector. Designed for high resolution performance, it uses zero compression technology to deliver perfect graphic data transmission up to UXGA (1600x1200) at 60Hz refresh rate. It is designed to multiplex and de-multiplex RGB video, stereo audio, Display Data Channel (DDC) command interface and serial data so as to be linked over two (2) single-mode LC fibers. It is compatible with DDC2B up to 100 kHz clock speed.

AVFX-100 supports connecting serial data communication interfaces RS-232. Serial interface offers device-to-device and device-to-controller connections to build up control system for A/V integration. It also includes integrator-friendly features such as an output for local monitoring, rack-mount capability and real time system monitoring.

It gives benefits of all-glass fiber transmission medium, data security, long distance extension up to 2km, easy plug-and-go installation and no RFI/EMI effects.

The AVFX-100 consists of an Uplink (or transmitter; Tx) and a Downlink (or receiver; Rx), connected by two duplex LC terminated single or multi-mode patch cords between them, which offers electrical perfect isolation. Each link module is driven by +5V/3A DC power adaptor.

The shipping group is as follows;

- Tx and Rx boxes: One (1) Transmitter module & One (1) Receiver module.
- AC/DC power adapter: Two (2) +5V/3A units
- User's Manual
- Option: Duplex LC Patch Cord (Single or Multi mode glass fiber).

## **Features**

AVFX-100-TR Analog Video/Audio and Serial I/O Optical Extender

Extends VGA, Audio and RS-232 with both single and multi-mode fiber.

(1) up to 2km (6,560feet) over two (2) single-mode fibers.

(2) up to 300m (985feet) over two (2) multi-mode fibers.

Maintains high resolution of 1600 x 1200, 24bits colors with zero compression technology.

Support Auto Tuning mode to refine display quality.

Complies with DDC2B up to 100kHz of clock speed.

Provides loop through output in transmitter for a local monitoring.

Supports RS-232.

Supports analog stereo (3.5mm) standard jack.

Offers LED indicators for status (Power, Video, Audio, Data) and Link Error.

1U half rack mountable

Dimensions: 220mm / 140mm / 40mm (W/D/H)

Weight: 0.46kg for each of Transmitter and Receiver.

## **Environmental Specifications**

Operating temperature: 0°C to 50°C

Storage temperature: - 30°C to 70°C

Humidity: 10% to 85%

Power Adapter

Power Output: +5V, 3.0 A SMPS DC-power Adapter

## **Applications**

- ◆ Digital display system integration for medical, military, aerospace, factory automation, and traffic control platforms. Digital FPD, PDP and projector installation in conference rooms, auditoriums and for kiosk systems
- ◆ LED signboards for large scale information display and stadiums

## Absolute Maximum Ratings

Parameter	Symbol	Minimum	Maximum	Units
Storage Temperature	$T_{stg}$	- 30	+ 70	°C
Supply Voltage	$V_{CC}$	4.5	5.5	V

## Recommended Operating Conditions

Parameter	Symbol	Minimum	Typical	Maximum	Units
Ambient Operating Temperature	$T_A$	0		+ 50	°C
Data Output Load	$R_{LD}$		75		$\Omega$
Power Supply Rejection (Note1)	PSR		50		mV <sub>p-p</sub>
Supply Voltage	$V_{CC}$	+ 4.5	+ 5	+ 5.5	V

Note1. Tested with a 50mV<sub>p-p</sub> sinusoidal signal in the frequency range from 500 Hz to 500 MHz on the  $V_{CC}$  supply with the recommended power supply filter in place. Typically less than a 0.25 dB change in sensitivity is experienced.

## Electrical Power Supply Characteristics

( $T_A = 0\text{ }^{\circ}\text{C}$  to  $+50\text{ }^{\circ}\text{C}$ , unless otherwise noted)

Parameter	Symbol	Minimum	Typical	Maximum	Units	
Supply Voltage	$V_{CC}$	4.5	5	5.5	V	
Supply Current	TX	$I_{TCC}$	2375	2500	2675	mA
	RX	$I_{RCC}$	2375	2500	2375	mA
Power Dissipation	TX	$P_{TX}$	11.875	12.5	13.125	W
	RX	$P_{RX}$	11.875	12.5	13.125	W

**Optical & Electrical Characteristics**

(T<sub>op</sub> = 25°C)

Parameters		Symbol	Condition	Unit	Min.	Typ.	Max.	Remark
Data Bit Rate	1310/1550 Tx		PRBS 2 <sup>23</sup> -1,NRZ	Mbps		2500/2500		
	1310 Rx					155		
	1310/1550 Rx		PRBS 2 <sup>23</sup> -1,NRZ	Mbps		2500/2500		
	1310 Tx					155		
Fiber Length 9μm core SMF			10 <sup>-10</sup> BER, 155Mbps/2.5Gbps	km			1	
<b>TRANSMITTER</b>								
Average Power Output		P <sub>OUT</sub>	I <sub>f</sub> =I <sub>BIAS</sub> + I <sub>mod</sub> /2	dBm	-12 -15	-9 -10	-6 -8	
Extinction Ratio		ER		dB	7		11	
Center Wavelength		c	CW, @ P <sub>OUT</sub>	nm	1270 1500	1310 1550	1355 1600	@1.31 μm @1.55 μm
Spectral Width			RMS Width	nm			5.0	
RIN				dB/Hz			-120	
Optical Rise/Fall Time		t <sub>r</sub> /t <sub>f</sub>	20 – 80%	nsec			0.15	
<b>RECEIVER</b>								
Sensitivity (Average Input Power)		P <sub>IN,MIN</sub>	PRBS 2 <sup>23</sup> -1, 10 <sup>-10</sup> BER	dBm	-25 -19			155M Rx 2.5G Rx
Wavelength	1310 1550			nm	1260 1480	1310 1550	1360 1620	
Receiver Overload		P <sub>IN,MAX</sub>		dBm	-3.0			
Signal Detect Threshold Decreasing light input Increasing light input		P <sub>D</sub> P <sub>A</sub>		dBm dBm		P <sub>IN,MIN</sub> -3 P <sub>IN,MIN</sub> -2		
Signal Detect Hysteresis		P <sub>A</sub> - P <sub>D</sub>		dB	0.5			
Parameters		Symbol	Condition	Unit	Min.	Typ.	Max.	Remark
<b>Audio (Analog)</b>								
Analog Sample Rate		F <sub>audio_a</sub>		kHz		48		
Input level		A <sub>in</sub>		V <sub>pp</sub>		0.56V <sub>ss</sub>		
output level		A <sub>out</sub>	V <sub>pp</sub> =3.3V/Analog	V <sub>pp</sub>		0.65		
Input Impedance				kΩ		25		
Output Impedance				Ω		100		
<b>Video (Analog)</b>								
Input impedance			RGB video	Ohm		75		
Input Level			RGB video	mV <sub>pp</sub>		714		
			H sync, V sync	V	3		5	
H Sync Frequency Range				kHz	31.5		85	
V Sync Frequency Range				Hz	30		85	

## VGA Pin Description

Pin	Symbol	Functional Description
1	<b>RED</b> Video	RED Video
2	<b>GREEN</b> Video	GREEN Video
3	<b>BLUE</b> Video	BLUE Video
4	<b>ID2</b>	No pin installed
5	<b>GND</b>	Ground
6	<b>R GND</b>	RED Ground
7	<b>G GND</b>	GREEN Ground
8	<b>B GND</b>	BLUE Ground
9	<b>KEY</b>	No pin installed
10	<b>SGND</b>	Sync Ground
11	<b>ID0</b>	No pin installed
12	<b>ID1</b>	DDC Data
13	<b>HSYNC</b>	Horizontal Sync
14	<b>VSNC</b>	Vertical Sync
15	<b>ID3</b>	DDC Clock

## RS232C Pin Description

Pin	Symbol	Functional Description
1	Received Line Signal Detector	Connected with Pin4 & Pin6 in module
2	<b>RD</b>	Data Receive: Uplink $\leftrightarrow$ Downlink
3	<b>TD</b>	Data Transmit: Uplink $\leftrightarrow$ Downlink
4	Data Terminal Ready	Connected with Pin1 & Pin6 in module
5	<b>GND</b>	Signal Ground
6	Data Set Ready	Connected with Pin1 & Pin4 in module
7	Request To Send	Connected with Pin8 in module
8	Clear To Send	Connected with Pin7 in module
9	NC	

Connection tips:

- 1) Connection of PC-to-PC: Cross connection of pins 2 and 3 between two PCs.
- 2) Connection of PC-to-Device: Straight connection of pin 2:2 and pin 3:3

### Connection Diagram

