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1 Gang-sized Multi-format video to Optical DVI Converter, MVDF

DATA SHEET

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♦ **Description**

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Description

Opticis provides 1 gang-sized multi-format video to optical DVI wall-plate converter, MVDF, to manipulate from old fashioned to leading-edge video formats in a various video system applications. The MVDF handles DVI, VGA, S-video and Composite video as an input and converts these signals to 1-fiber DVI. All signals can be transmitted up to 500m (1,640ft) using 62.5μm multi-mode fiber at WUXGA (1920x1200) or SXGA (1280x1024) at 60Hz. It also automatically detects the first incoming signal among various signals or decides a priority input by pre-programming as DVI, VGA, Composite and S-Video in an order when all signals are connected and turned on.

The MVDF wall-plate converter supports all VESA resolutions up to WUXGA (1920x1200) at 60Hz, up to SXGA (1280x1024) at 60Hz for NTSC/PAL (480i, 576i). The others are remained as same resolution.

The MVDF can be installed in various 1 gang-sized places such as, wall or medical boom system with two (2) mounting screws. The EDID in a display can be read and restored by just pressing EDID button in a front panel of MVDF. This EDID programming feature makes the installation more easy and flexile at any variable resolution of display systems. The LED indicators are equipped for Power-on and Status (signal transmission for all signals and EDID learning for DVI and VGA) on a front panel.

Opticis MVDF is used for long haul video applications and special places where the optimal signal quality and electrical isolation are required. Opticis 1-fiber DVI receiver, DVFX-100-R, is used as a pair to execute optical to electrical DVI conversion.

1) Key Features

- Supports all VESA resolution up to WUXGA (1920x1200) at 60Hz for DVI and VGA,
  SXGA (1280x1024) at 60Hz for Composite video and S-Video
- Automatically detects the first incoming signal among various video sources and converts it into one (1) optical DVI output with SC termination
- Be scale-up 480i and 576i to SXGA (1280x1024) at 60Hz for S-Video/Composite video inputs
- Except the case above, it maintains input and output resolutions.
- Transmits optical signal up to 500m (1,640feet) over SC terminated 1 core multi-mode fiber (62.5μm)
- Provides Self-EDID for DVI and VGA
- Operated by DC 8~15V
- Equips two (2) LEDs for power and video input status

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2) Applications

- Medical equipment
- Control room
- Conference room / Education
- Various application requiring long haul video applications and special place where the optimal signal quality and electrical isolation are needed

3) Technical Specifications

i) General Specifications

	Parameter	Specifications
Electrical	Input Signal Type	**DVI**: TMDS **VGA**: RGBHV, RGsB, RGBS **Composite & S-Video**: NTSC/PAL
	Input Connectors	**DVI**: 24pin DVI-I **VGA**: HD15, D-sub **S-video**: Mini-DIN **Composite**: BNC
	Supporting Resolution	**DVI & VGA**: VGA to WUXGA (1920 x 1200), 60Hz **S-video & Composite**: Up-scale 480i and 576i to SXGA (1280x1024), 60Hz
	Power Consumption	< 0.5W
	Max. Bit rate	Max. 1.65Gbps
Optical	Output Optical Connector	SC
	Laser Diodes in Output	Multi-mode VCSEL (Vertical Cavity Surface Emitting Laser)
	Output Optical Power	< 1 dBm
Mechanical	Dimension (WDH)	70 x 78 x 115mm
Fiber	Optical Connector	Simplex SC connectors
	Recommended Fiber	62.5 um Multi-mode Glass Fiber

4) Absolute Maximum Ratings

Parameter	Symbol	Minimum	Maximum	Units
Supply Voltage	V_{CC}	+7.0	+ 16.0	V
Operating Temperature	T_{op}	0	50	°C
Storage Temperature	T_s	- 30	+ 70	°C
Storage Relative Humidity	H_s	10	95	%RH

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5) Operating Conditions

i) DVI Input

	Parameter	Symbol	Minimum	Typical	Maximum	Units
Power Supply	Supply Voltage	Vcc	8.0	12.0	15.0	V
	Supply Current	I_{TCC}	230	280	330	mA
	Power Dissipation	P_{TX}	-	3.36	4.95	W
	Power Supply Rejection (Note1)	PSR		50		mV_{p-p}
TMDS	Data Input Load	R_{LD}		50		Ω
	Graphic Supply Voltage (Note2)	GV_{CC}	+ 3.1	+ 3.3	+ 3.5	V
	Single-Ended High Level Input Voltage	GV_{IH}	GV_{CC} - 0.01	GV_{CC}	GV_{CC} + 0.01	V
	Single-Ended Low Level Input Voltage	GV_{IL}	GV_{CC} - 0.6	-	GV_{CC} - 0.4	V
	Single-Ended Input Swing Voltage	GV_{ISWING}	0.4	-	0.6	V
	Resolution range	-	640x480	-	1920x1200	-

Note1. Tested with a 50mVp-p sinusoidal signal in the frequency range from 500 Hz to 500 MHz on the VCC supply with the recommended power supply filter in place. Typically less than a 0.25 dB change in sensitivity is experienced.
Note2. Graphic Supply Voltage is regulated reference voltage for signal processing in modules.

ii) VGA Input

	Parameter	Symbol	Minimum	Typical	Maximum	Units
Power Supply	Supply Voltage	Vcc	8.0	12.0	15.0	V
	Supply Current	I_{TCC}	240	290	330	mA
	Power Dissipation	P_{TX}	-	3.48	4.95	W
	Power Supply Rejection	PSR		50		mV_{p-p}
Video Input	Data Output Load	R_{LD}		75		Ω
	Input Signal Level	RGB		0.7		V_{p-p}
	Horizontal Frequency	HF	30	-	91	KHz
	Vertical Frequency	VH	50	-	85	KHz
	Resolution range (Note3)	-	640x480	-	1920x1200	-

Note3. Only the reduced blanking version of the 1920x1200 resolution is sampled at full bit rate.

iii) S-Video/Composite Input

	Parameter	Symbol	Minimum	Typical	Maximum	Units
Power Supply	Supply Voltage	Vcc	8.0	12.0	15.0	V
	Supply Current	I_{TCC}	210	260	310	mA
	Power Dissipation	P_{TX}	-	3.12	4.65	W
	Power Supply Rejection	PSR		50		mV_{p-p}
o	Data Input Load	R_{LD}		75		Ω

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	Parameter		Minimum		Maximum	
	Resolution range (Note4)	-		NTSC, PAL		-

Note4. Output Resolution: 1280x1024@60Hz

v) Optical DVI Output

	Parameter	Symbol	Minimum	Typical	Maximum	Units
Optical Output	Output Optical Power	P_o			1	dBm
	Wavelength	λ	850		990	nm
	Spectral width in RMS	$\Delta\lambda$			3	nm
	Relative Intensity of Noise	RIN		-20		dB/Hz
	Extinction Ratio	Ext	4			dB
	Rising/Falling Time	T_{rise}/T_{fall}			260	ps
	Jitter in p-p value	T_{jitter}			260	ps

6) Recommended Specifications of Fiber-Optic Cable

Parameters	Conditions	Specifications
Fiber Type		62.5μm Multi-mode Graded Index Glass Fiber
Modal Bandwidth	λ = 850nm	Min. 500 MHz km
Fiber Cable Attenuation	λ = 850nm	Max. 2.5dB/km
Extension Distance		10 – 1,640ft (500 meters)
No. of Ferrules	SC	1 ferrule
Skew		Max. 0.4ns
Insertion Attenuation		Max. 0.5dB
Total Optical Attenuation	In 330 ft (100 meter) extension	Max. 1.5dB

7) Functions

i) Self-EDID Function (DVI and VGA)

The EDID in a display can be read and restored by just pressing EDID button on front panel. This Self-EDID programming feature makes the installation of MVDF more easy and flexile at any variable resolution display systems.

ii) Auto Signal Detection

It automatically detects the first incoming signal among various signals or decides a priority by pre-programming in an order of DVI, VGA, S-Video and Composite when all signals are connected at the same time.

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iii) Upscale NTSC/PAL to SXGA

It also executes an upscale NTSC/PAL (480i, 576i) to SXGA (1280x1024) for S-Video/Composite video input. The others are remained as same resolution.

8) Drawing Dimension [mm]

Size (WDH): 70 x 78 x 115mm
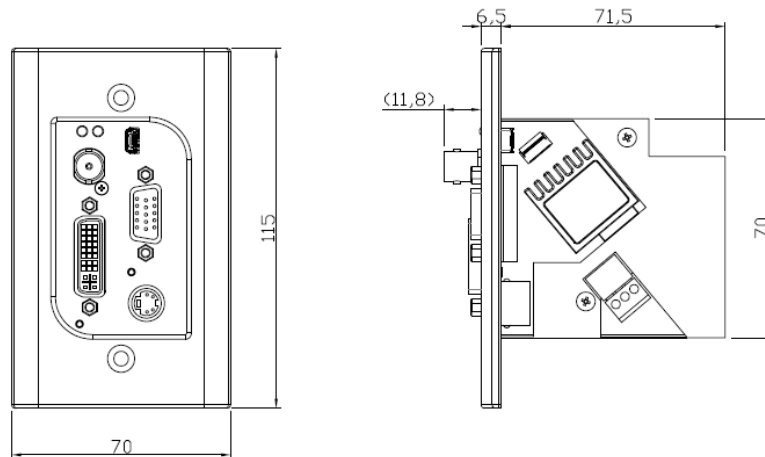
9) Connection Diagram

The diagram shows the connection of MVDF and 1-fiber DVI extender (Receiver; DVFX-100-RX) by one (1) SC multi-mode fiber.

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