Fiber-optic Video Format Converters
DATA SHEET

Contents

♦ **Description**

Fiber-optic Video Format Converters

Description

Opticis provides high-end fiber-optic video format converters such as multi-format converter, OMVC-200 and single-format converters, DVDF-200, VGDF-200, SVDF-200 and CNDF-200 to manipulate from old fashioned to leading-edge video formats in a various video system applications. Both two (2) types of converter handle DVI, VGA, Component video, S-video and Composite video as an input and convert these signals to 1-fiber DVI. All signals can be transmitted up to 500m (1640ft) using 50μm multi-mode fiber at WUXGA (1920x1200) or 1080p, 60Hz. Especially, multi-format converter, OMVC-200 automatically detects the first incoming signal among various signals or decides a priority input by pre-programming as DVI, VGA, Component, Composite and S-Video in an order when all signals are connected and turned on.

The latest multi/single-format converters support all VESA resolutions up to WUXGA (1920x1200) at 60Hz, up to 1080p at 60Hz for Component and 480i, 576i for Composite and S-Video executing this SD signal input, NTSC/PAL (480i, 576i) to SXGA (1280x1024). The others are remained as same resolution.

The OMVC-200 can be mountable up to two (2) units and four (4) units for single-format converters in 19" 1RU rack and both two (2) types of converter installed in various places such as, a back side of display or frame by two (2) types of mounting bracket complying with VESA 75, 100 standards. The EDID in a display can be read and restored by just pressing EDID button in a front panel of OMVC-200, DVDF-200 and VGDF-200. 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 and EDID learning for DVI and VGA) on a front panel.

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

The line-up is composed of

1)   Multi-format converter, OMVC-200
2)   DVI to 1-fiber DVI converter, DVDF-200
3)   VGA to 1-fiber DVI converter, VGDF-200
4)   Component to 1-fiber DVI converter, CNDF-200
5)   S-video / Composite video to 1-fiber DVI, SVDF-200

All converters are constituted of three (3) parts as follows;
- One (1) Converter unit
- One (1) 5V/3A, AC/DC power adaptor with locking type outlet (Medical grade of certification)
- Two (2) types of mounting bracket (Optional);
 1) Type A has female screw holes to be fixed from the outside where there are VESA standard bare holes.
 2) Type B has a bare hole to fix from the inside to outside where three are VEAS standard female screw holes.

1. Fiber-optic Video Format Converters

1) Key Features

- Supports all VESA resolution up to WUXGA (1920x1200) at 60Hz for DVI and VGA,

    up to 1080p, 60Hz for Component video,

    480i and 576i 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 (OMVC-200, SVDF-200)
- Be scale-up 480i and 576i to SXGA (1280x1024) for S-Video/Composite video inputs (OMVC-200, SVDF-200).
- Except the case above, it maintains input and output resolutions.
- Transmits up to 500m using 50μm multi-mode fiber at WUXGA or 1080p, 60Hz
- 2 units or 4 units can be mountable in 19" 1RU rack (OMVC-200, Single-format converters)
- Provides mounting bracket complying with VESA 75, 100 standards to be attached on various places (Optional – OMVC-200, Single-format converters)
- Includes one (1) +5V DC 3A power adapter (Medical grade of certification)
- Certifies FCC and CE standards for EMI/RFI emission

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 (OMVC-200, DVDF/VGDF/SVDF/CNDF-200)

	Parameter	Specifications
Electrical	Input Signal Type	**DVI**: TMDS **VGA**: RGBHV, RGsB, RGBS **Composite & S-Video**: NTSC/PAL **Component**: YPbPr
	Input Connectors	**DVI**: 24pin DVI-I **VGA**: HD15, D-sub **Component**: 3 x RCA **S-video**: Mini-DIN **Composite**: RCA

23 May 2012

	Supporting Resolution	**DVI & VGA**: VGA to WUXGA (1920 x 1200), 60Hz **Component**: 480i to 1080p, 60Hz **S-video & Composite**: Up-scale 480i and 576i to SXGA (1280x1024), 60Hz
	Power Consumption	< 6W (Multi-format), <3W (Single-format)
	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)	Multi-format: 216 x 112 x 44mm
		Single-format: 104 x 112 x 28mm
Fiber	Optical Connector	Simplex SC connectors
	Recommended Fiber	50/125 um Multi-mode Glass Fiber

4) Absolute Maximum Ratings (OMVC-200, DVDF/VGDF/SVDF/CNDF-200)

Parameter	Symbol	Minimum	Maximum	Units
Supply Voltage	V_{CC}	-	+ 6.0	V
Operating Temperature	T_{op}	0	50	°C
Storage Temperature	T_s	- 30	+ 70	°C
Storage Relative Humidity	H_s	10	95	%RH

5) Operating Conditions

i) DVI Input (OMVC-200, DVDF-200)

	Parameter	Symbol	Minimum	Typical	Maximum	Units
Power Supply	Supply Voltage	Vcc	-	5.0	5.5	V
	Supply Current	I_{TCC}	-	1110	1200	mA
	Power Dissipation	P_{TX}	-	5.55	6.6	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.

23 May 2012

ii) VGA Input (OMVC-200, VGDF-200)

	Parameter	Symbol	Minimum	Typical	Maximum	Units
Power Supply	Supply Voltage	Vcc	-	5.0	5.5	V
	Supply Current	I_{TCC}	-	890	950	mA
	Power Dissipation	P_{TX}	-	4.45	5.22	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) Component Input (OMVC-200, CNDF-200)

	Parameter	Symbol	Minimum	Typical	Maximum	Units
Power Supply	Supply Voltage	Vcc	-	5.0	5.5	V
	Supply Current	I_{TCC}	-	810	850	mA
	Power Dissipation	P_{TX}	-	4.05	4.68	W
	Power Supply Rejection	PSR		50		mV_{p-p}
Video Input	Data Input Load	R_{LD}		75		Ω
	Input Signal Level	Y		1		V_{p-p}
		PbPr		0.7		V_{p-p}
	Resolution range	-	480i@60	-	1080p@60	-

iv) S-Video/Composite Input (OMVC-200, SVDF-200)

	Parameter	Symbol	Minimum	Typical	Maximum	Units
Power Supply	Supply Voltage	Vcc	-	5.0	5.5	V
	Supply Current	I_{TCC}	-	850	900	mA
	Power Dissipation	P_{TX}	-	4.25	4.95	W
	Power Supply Rejection	PSR		50		mV_{p-p}
Video Input	Data Input Load	R_{LD}		75		Ω
	Resolution range (Note4)	-	NTSC, PAL			-

Note4. Output Resolution: 1280x1024@60Hz

v) Optical DVI Output (OMVC-200, DVDF/VGDF/SVDF/CNDF-200)

23 May 2012

	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		50μm 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 – 1640ft (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 OMVC-200 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, Component, Composite and S-Video when all signals are connected at the same time.
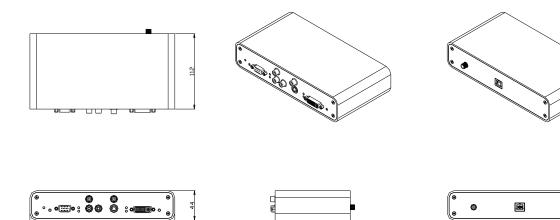
iii) Upscale NTSC/PAL to SXGA

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.

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8) Drawing Dimension [mm]
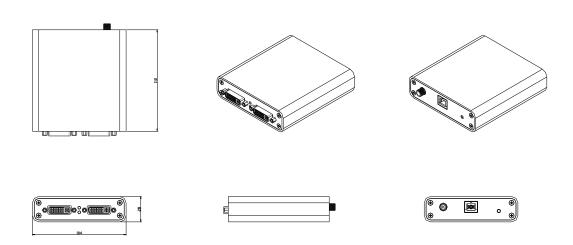
i) Multi-format converter, OMVC-200

(WDH) = 216 x 112 x 44mm

ii) Single-format converter, DVDF-200, VGDF-200, CNDF-200, SVDF-200

(WDH) = 104 x 112 x 28mm

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9) Connection Diagram

The diagram shows the connection of single-format converter (VGDF-200) and 1-fiber DVI extender (Receiver; DVFX-100-RX) by one (1) SC multi-mode fiber.

VGDF-200

One (1) Optical Fiber

Up to WUXGA

VGA Source

VGA Display

DVI Display

DVFX-100
Rx

23 May 2012