DATA SHEET

Two (2) PCs Switchable Dual-head DVI Optical KVM Extender, KVMX-100-TR

Contents

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Dual-head DVI Optical KVM Extender, KVMX-100-TR

Description

New Dual-head DVI optical KVM extender, KVMX-100-TR is designed to extend Dual DVI outputs with keyboard, mouse and bi-directional audio. But the key feature of **2:1 KVM switch function** inside KVMX-100-TR enables users to select one PC between two (2) PCs as a host.

KVMX-100-TR transmits DVI, USB HID, RS232 and bi-directional stereo audio signal up to 1**.0km (3280feet)** over two (2) duplex LC single-mode fibers or **300m (985feet)** over two (2) duplex LC multi-mode fibers.

Designed for high resolution performance, it guarantees lossless image quality and no frame dropping to deliver perfect graphic data transmission up to **WUXGA (1,920x1,200)** at 60Hz.

It provides **Auto-mix EDID programing** feature that reads EDID information from both local and remote side displays and then determines the lowest resolution of them. It makes the installation of KVMX-100-TR easy and flexible at any variable resolutions.

Optionally, we could include convenient remote console switch for selecting local control or remote control.

The shipping group is as follows;

1) One (1) pair of Transmitter and Receiver
2) Two (2) +12V/3A power adaptors
3) User Manual

Options

1) Remote console switch
2) 19” 1RU mounting rack, mounting bracket
3) Duplex LC Patch Cord (Single or Multi mode glass fiber)

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Features

- Switch and Control Two (2) PCs **– 2:1 KVM switch function**
- Transmits DVI, USB HID, RS232 and audio signal up to 1km (3280feet) over two (2) duplex LC optical fibers.
- Supports **two (2) single-link DVI displays** up to **WUXGA (1,920x1,200)** resolution at 60Hz.
- Operates with both single and multi-mode optical fibers.
  - Up to **1.0km (3280feet)** with two (2) duplex LC single-mode fibers.
  - Up to **300m (985feet)** with two (2) duplex LC multi-mode fibers.
- **Auto-mix EDID** features
- Saves cost & installation space.
- Offers DVI, USB ports for Local two (2) displays and Keyboard/Mouse.
- Supports bi-directional stereo audio.
- Lossless Image Quality with no Frame Dropping.
- USB HID ports for keyboard and mouse
- Provides Serial Control Data: RS232C through 9 pin D-sub connector.
- Offers optional remote console switch (option)
- 19” 1RU mounting rack, mounting bracket (option)
- Size (WDH): 216mm x 112mm x 44mm
- Power supplying: +12V, 3A power adapter
- Certifications: CE / FCC

Applications

- Keyboard, mouse and video extension and routing system related with servers or PCs control.
- 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

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Absolute Maximum Ratings

Parameter	Symbol	Minimum	Maximum	Units
Storage Temperature	T_{stg}	- 30	+ 70	°C
Supply Voltage	V_{CC}	10	14	V
Transmitter Differential Input Voltage	V_d	-	1	V
Operating Humidity	RH	10	85	%
Lead Soldering Temperature & Time	-	-		260°C, 10 sec

Recommended Operating Conditions

Parameter	Symbol	Minimum	Typical	Maximum	Units
Ambient Operating Temperature	T_A	0		+ 50	°C
Data Output Load	R_{LD}		50		Ω
Power Supply Rejection (Note1)	PSR		50		mV_{p-p}
Supply Voltage	V_{CC}	+ 11.4	+ 12.0	+ 12.6	V

Note1. Tested with a 50mV_{p-p} 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 °C to +50 °C, unless otherwise noted)

Parameter		Symbol	Minimum	Typical	Maximum	Units
Supply Voltage		V_{CC}	9.0	12	14.0	V
Supply Current	TX	I_{TCC}	980	1160	1200	mA
	RX	I_{RCC}	850	880	910	mA
Power Dissipation	TX	P_{TX}	11.8	13.9	14.4	W
	RX	P_{RX}	10.2	10.6	10.9	W

DVI Electrical Characteristics

Transmitter						
Parameter		**Symbol**	**Minimum**	**Typical**	**Maximum**	**Units**
TMDS	Data Output 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
Receiver						
Parameter		**Symbol**	**Minimum**	**Typical**	**Maximum**	**Units**
TMDS	Data Input Load	R_{LD}		50		Ω
	Graphic Supply Voltage (Note2)	GV_{CC}	+ 3.1	+ 3.3	+ 3.5	V
	Single-Ended Output Swing Voltage (Note3)	GV_{ISWING}	0.2	-	0.4	V

Note2. Graphic Supply Voltage is regulated reference voltage for signal processing in modules
Note3. TMDS outputs are coupled in AC

Optical & Electrical Characteristics

(T_{op} = 25℃)

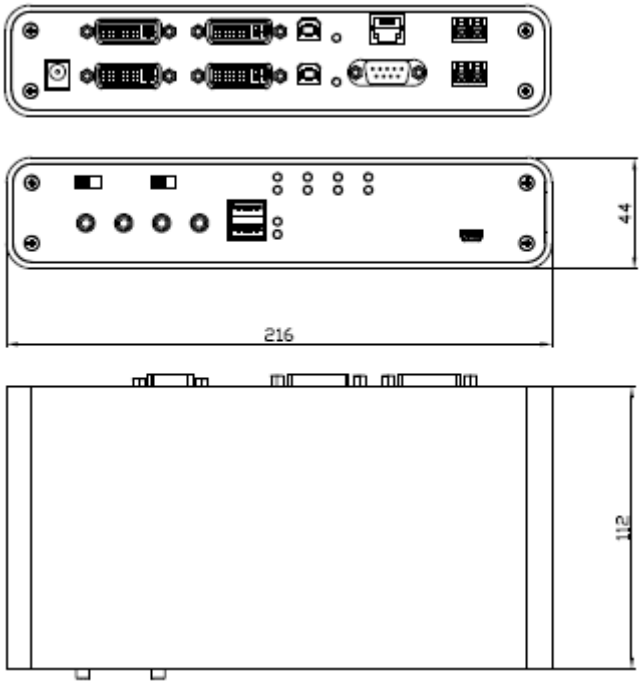
Parameters		Symbol	Condition	Unit	Min.	Typ.	Max.	Remark
Data Bit Rate	1310 Tx		PRBS 2^{23}-1,NRZ	Mbps		1250		
	1550 Rx					155.52		
	1550 Tx		PRBS 2^{23}-1,NRZ	Mbps		155.52		
	1310 Rx					1250		
Fiber Length 9μum core SMF			10^{-10} BER, 155Mbps/1.62Gbps	km	1			
TRANSMITTER								
Average Launched Power		P_O	$I_f=I_{BIAS}+I_{mod}/2$	dBm	-10		0	
Extinction Ratio		ER		dB	6 4			@1.65Gbps @3Gbps
Center Wavelength		c	CW, @ P_{OUT}	nm	1260 1480	1310 1550	1360 1580	@1.31 μm @1.55 μm
Spectral Width			RMS Width	nm			2.0	RMS(-20dB)
Data Input Diff Voltage		V_{IN}		mV	200		1600	
Optical Rise/Fall Time		t_r/t_f	20 – 80%	nsec			0.26 0.26	
RECEIVER								
Sensitivity		P_S		dBm			-17 -20	@3Gbps @1.65Gbps
Wavelength	1310 1550			nm	1260 1480	1310 1550	1360 1580	
Maximum Input Power		P_{IN}		dBm	0			
Data Output Diff Swing		P_{OUT}		dBm	600		1000	CML Output
LOS Hysteresis				dB	1			
Audio/MIC (Analog)								
Analog Sample Rate		F_{audio_a}		kHz		48		
Input level		Ain		Vpp		0.56Vss		
Output level		Aout	Vpp=3.3V/Analog	Vpp		0.65		
Input Impedance				kΩ		25		
Output Impedance				Ω		100		

RS-232C Electrical Characteristics

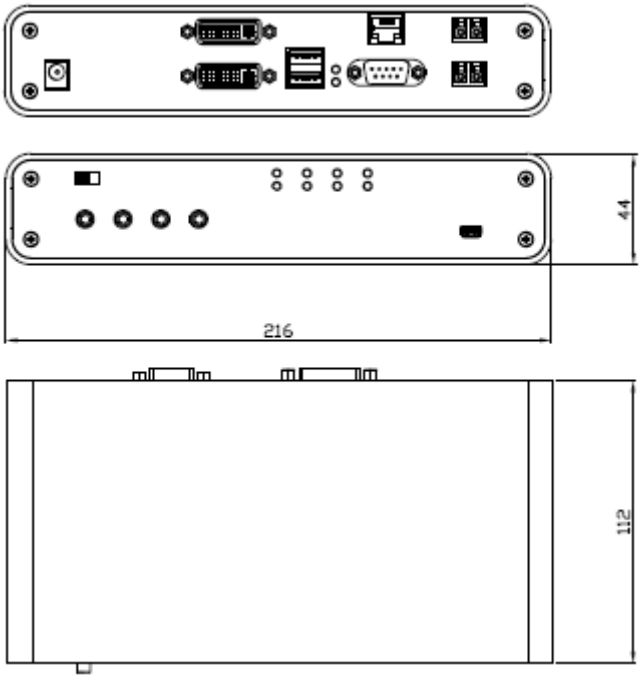
Parameter	Symbol	Minimum	Typical	Maximum	Units
Data rate				250	kbps
Input voltage	Rin	-25		25	V
Output voltage	Tout		±15		V

Drawing of transmitter and receiver

Dimension [mm]



Transmitter



Receiver

DVI Pin Description

Pin	Symbol	Functional Description
1	**CH2-**	TMDS Data Signal Channel 2 Negative
2	**CH2+**	TMDS Data Signal Channel 2 Positive
3	**GND**	TMDS Data Signal Channel 2 Shield
4		
5		
6	**DDC Clock**	DDC Clock line for DDC2B communication
7	**DDC Data**	DDC Data line for DDC2B communication
8	**N.C.**	
9	**CH1-**	TMDS Data Signal Channel 1 Negative
10	**CH1+**	TMDS Data Signal Channel 1 Positive
11	**GND**	TMDS Data Signal Channel 1 Shield
12		
13		
14	**5 V**	5 V Input for Transmitter from Host 5 V Output for Monitor from Receiver
15	**GND**	Ground
16	**Hot plug Detect**	Signal is driven by monitor to enable the system to identify the presence of a monitor
17	**CH0-**	TMDS Data Signal Channel 0 Negative
18	**CH0+**	TMDS Data Signal Channel 0 Positive
19	**GND**	TMDS Data Signal Channel 0 Shield
20		
21		
22	**GND**	TMDS Clock Signal Shield
23	**CLK+**	TMDS Clock Channel Positive
24	**CLK-**	TMDS Clock Channel Negative

Note: Channels 3, 4 and 5 dual-link data signal pins are not used

RS-232C Pin Description

Pin	Symbol	Functional Description
1	Received Line Signal Detector	Connected with Pin4 & Pin6 in module
2	**RD**	Data Receive: Uplink ←→ Downlink
3	**TD**	Data Transmit: Uplink ←→ Downlink
4	Data Terminal Ready	Connected with Pin1 & Pin6 in module
5	**GND**	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

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Reliability Test

Opticis utilizes three types of test criteria for a reduction of variability and a continuous improvement of the process by its FEMA (Failure Mode and Effective Analysis) program.

1) Mechanical test (vibration, shock)
2) Temperature & humidity tests
3) EMI test (*CE*)

Temperature & Humidity Test Data

Heading	Test	Conditions	Duration	Sample Size	Failure	Remarks
Operating Test	Operating at each Temperature (See Note)	* 0 ~ 50 ˚C (Interval: 10 ˚C)	30 Min (Each Temperature)	n =3	0	**Note:** Visual Test on the Display
Storage Test	**Low Temperature**	* T_S = -30 ˚C	96 HR	n=3	0	1. TS: Storage Temperature
	High Temperature	* T_S = 70 ˚C	96 HR	n=3	0	2. RH: Relative Humidity
	High Humidity High Temperature	* T_S: 40 ˚C * RH: 95%	96 HR	n=3	0	

EMI Test Data

EMI: Meet *CE class A*

STANDARDS		*CONDITIONS*
EN 55 022 (CISPR22)	CE (Conducted Emission) & RE (Radiated Emission)	Meet Class A