DATA SHEET

4K HDMI IPKVM Extender

IPKVM-500-ED

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OPTICIS HQ

Headquarters

Opticis Co., Ltd.
16Fl, Kins Tower
8 Sungnam-daero, 331 beon-gil,
Bundang-gu,
Seongnam-si, Gyunggi-do, 463-844
South Korea
Te l: +82 (31) 719-8033
Fax: +82 (31) 719-8032

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■ **Description**

The OPTICIS 4K HDMI IPKVM Extender, IPKVM-500-ED is designed to distribute, control and access video with data (USB, RS-232, DIO and audio) anywhere over the standard IP Network.

The transmitter, IPKVM-500-E (Encoder) connected to a HDMI source, encodes the video with data and transmits it over Ethernet. The receiver, IPKVM-500-D (Decoder) connected to a display, receives the encoded signal over network and decodes it to regenerates the video and data for users.

The provided PC program makes the transmitters and receivers units in the network can be automatically or manually detected and configured to individual IP address and helps the any of receivers can be connected simultaneously to any transmitter within the network to create a virtual crosspoint matrix system of KVM as well as audio and video only system widely used in Pro-AV installation.

■ **Features**
- Extends HDMI/DVI, USB, RS-232, Audio, DIO over network
- Supports resolution up to 4K (3840x2160 at 30Hz) or full HD 1080p at 60Hz
- Any of transmitters in the network can be accessed by any receiver via provided PC program
- Supports Multi-cast 1 x N (up to 200 receivers)
- HDMI Loop out port on transmitter for local display
- Offers EDID read and write function
- Local, remote and console control switch on transmitter
- Fast switching time and Low video latency
- 1 x USB ports for local Keyboard / Mouse (transmitter) and 2 x USB ports for remote Keyboard / Mouse (Receiver)
- Easy to use OSD GUI program and PC program
- 1U rack (OPSCR-1U) mountable (a quarter width of 19")
- Mounting bracket (OPSCB) complying with VESA 75, 100

■ **Supporting Video Resolutions for Input / Output**

- HDMI 1.4 3840x2160p/24/25/30Hz
- HDMI 1.4/HDTV up to 1920x1280p60Hz
- VESA Digital up to 1920x1200p60Hz

Note: Some PC resolutions may not work properly.

■ **Applications**

· KVM for RCS / ROS / Video control room

· Video over IP for Digital signage, Video wall system and Control room system.
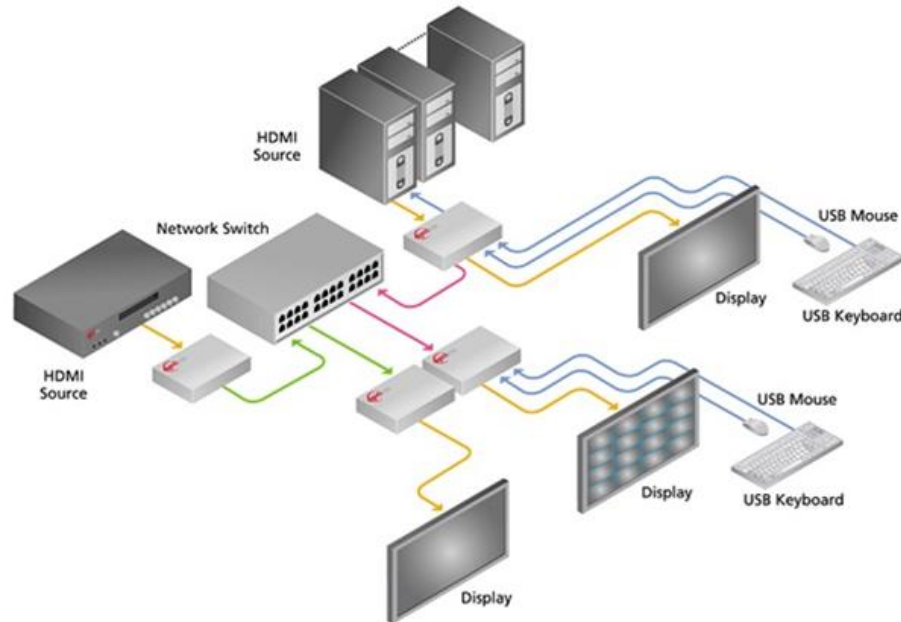
[Connection diagram]

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■ Technical Specification

- General Specification

Item	Description	
Network	100/1000 Base-T Ethernet: TCP/IP based wired network with CAT5e/ CAT6 Cables	
Resolution	Up to 3840x2160@30Hz or 1080p@60Hz	
Video Interface Standard	HDMI 1.4 and DVI1.0	
HDCP	HDCP 1.4 and 2.2	
Multicast streaming	1 to N (up to 200 RXs)	
Video latency	< 1 frame	
TX Video Interface	Input: 1 HDMI/DVI Input Output: 1 HDMI/DVI Output (Loop-Through)	
RX Video Interface	Output: 1 HDMI/DVI Output	
Keyboard/Mouse (TX)	1 x mini USB B type to PC	1 x USB A type (for Local HID Keyboard/Mouse)
Keyboard /Mouse (RX)	2 x USB A type (for Remote HID Keyboard/Mouse)	
LAN Port	RJ-45 (TX/RX 1 port)	
Audio Input (TX)	HDMI Audio or Analog Line-in	
Audio Output (RX)	HDMI Audio and Analog Line-Out (Dual output)	
RS- 232 Port (optional)	3 Pin Terminal Block for Knob & alarm interface	
3 Stage Slide Switch(TX)	Local/Remote/Console for Control Authority	
Digital I/O Port (optional)	3 Pin Terminal block for Control Authority (Externally)	
External Console Switch (TX, Optional)	Terminal Block for Console Switch or Console Indicator	
Reset Switch	SW reset & Factory reset	
Configuration access	OSD GUI via Mouse/Keyboard for Connection & Status monitoring PC Program (Remote Manager) for device setting, mode setting & etc	
EDID	Built-in EDID & EDID Read/Write	
Dimension	TX: 112 x 28 x 104mm (WHD), RX: 112 x 28 x 104mm (WHD)	
Power	100-240VAC, 50-60Hz	
	5V/2A Adaptor	
Power Consumption (TBD)	TX < 5W	RX < 5W
Operating Temperature	0 ~ 50°C	
Storage Temperature	-20 ~ 60°C	
Certification	FCC, CE	

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- Electrical Characteristics

	Parameter		Symbol	Minimum	Typical	Maximum	Units
Power Supply	Supply Voltage, Temp 25°C		VCC	+ 4.75	+ 5.0	+ 5.25	V
	Supply Current	Tx	ITCC	-	2	-	A
		Rx	IRCC	-	2	-	A
	Power Dissipation	Tx	PTX	5.5	6.5	7.5	W
		Rx	PRX	5	6	7	W
TMDS	Data Output Load		RLD		50		Ω
	Graphic Supply Voltage		GVCC	+ 3.15	+ 3.3	+ 3.45	V
	Single-Ended High Level Input Voltage		GVIH	GVCC - 0.01	GVCC	GVCC + 0.01	V
	Single-Ended Low Level Input Voltage		GVIL	GVCC - 0.6	-	GVCC - 0.4	V
	Single-Ended Input Swing Voltage		GVISWING	0.2	-	0.75	V
Ethernet Link	Maximum Bit rate				40		Mbps
	Network Speed				100/1000		Mbps
	RGMII/GMII			-0.2		2.8		V

(T_A = 0 °C to +50 °C, unless otherwise noted)

- HDMI Pin Description

Pin	Symbol	Functional Description
1	CH2+	TMDS Data Signal Channel 2 Positive
2	GND	TMDS Data Signal Channel 2 Shield
3	Ch2-	TMDS Data Signal Channel 2 Negative
4	CH1+	TMDS Data Signal Channel 1 Positive
5	GND	TMDS Data Signal Channel 1 Shield
6	CH1-	TMDS Data Signal Channel 1 Negative
7	CH0+	TMDS Data Signal Channel 0 Positive
8	GND	TMDS Data Signal Channel 0 Shield
9	CH0-	TMDS Data Signal Channel 0 Negative
10	CLK+	TMDS Clock Channel Positive
11	GND	TMDS Clock Signal Shield
12	CLK-	TMDS Clock Channel Negative
13	CEC	Consumer Electronics Control
14	Reserved	Not used
15	SCL	HDCP/DDC communication clock
16	SDA	HDCP/DDC communication data
17	GND	DDC/CEC shield
18	5V	5 V Input for Transmitter from Host
		5 V Output for Monitor from Receiver
19	Hot plug Detect	Signal is driven by monitor to enable the system to identify the presence of a monitor

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- Absolute Maximum Ratings

Parameter	Symbol	Minimum	Maximum	Units
Supply Adaptor Voltage, Temp=25°C	VCC	-0.3	+5.25	V
Operating Temperature	Top	0	50	°C
Operating Relative Humidity	RHop	5	80*	%RH
Storage Temperature	Tsto	- 30	+ 70	°C
Storage Relative Humidity	RHsto	10	95*	%RH

- Recommended Operating Conditions

Parameter	Symbol	Minimum	Typical	Maximum	Units
Ambient Operating Temperature	TA	0		+ 50	°C
Data Output Load (HDMI)	RLD		50		Ω
Power Supply Rejection (Note1)	PSR		100		mVp-p
Supply Voltage	VCC	+ 4.75	+ 5.0	+ 5.25	V

■ EMC Test

- EMI: Meet *FCC class A or B* (ICES-003) and *CE class A or B*

| STANDARDS		CONDITIONS
EN 55 022 (CISPR22) FCC; PART 15 SUBPART B	CE (Conducted Emission) & RE (Radiated Emission)	Meet Class A or B
EN 61000-3-2 (IEC 61000-3-2)	Harmonics	Meet Class A or B
EN 61000-3-3 (IEC 61000-3-3)	Flickers	Meet Class A or B

- EMS: Meet *CE standards (EN 55024) and CISPR24 equivalents*

STANDARDS		CONDITIONS
EN 61 000-4-2:1995	Electrostatic Discharge Immunity (Air: 8kv, Contact: 4kv)	Meet Criterion A or B
EN 61 000-4-3:1996	Radiated RF E-Field (80~1000 MHz) 3V/m (AM 80%, 1kHz)	Meet Criterion A or B
EN 61 000-4-4:1995	Fast Transients (5kHz, 60Seconds)	Meet Criterion A or B
EN 61 000-4-5:1995	Surge Transients	Meet Criterion A or B
EN 61 000-4-6:1996	Conducted Susceptibility (CS) Radiated Susceptibility (RS)	Meet Criterion A or B
EN 61 000-4-11:1994	Voltage Dips, Interruption & Variation	Meet Criterion A or B, and C

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■ **Block Diagram**

Transmitter, IPKVM-500E: Internal schematic circuit diagram & I/O port

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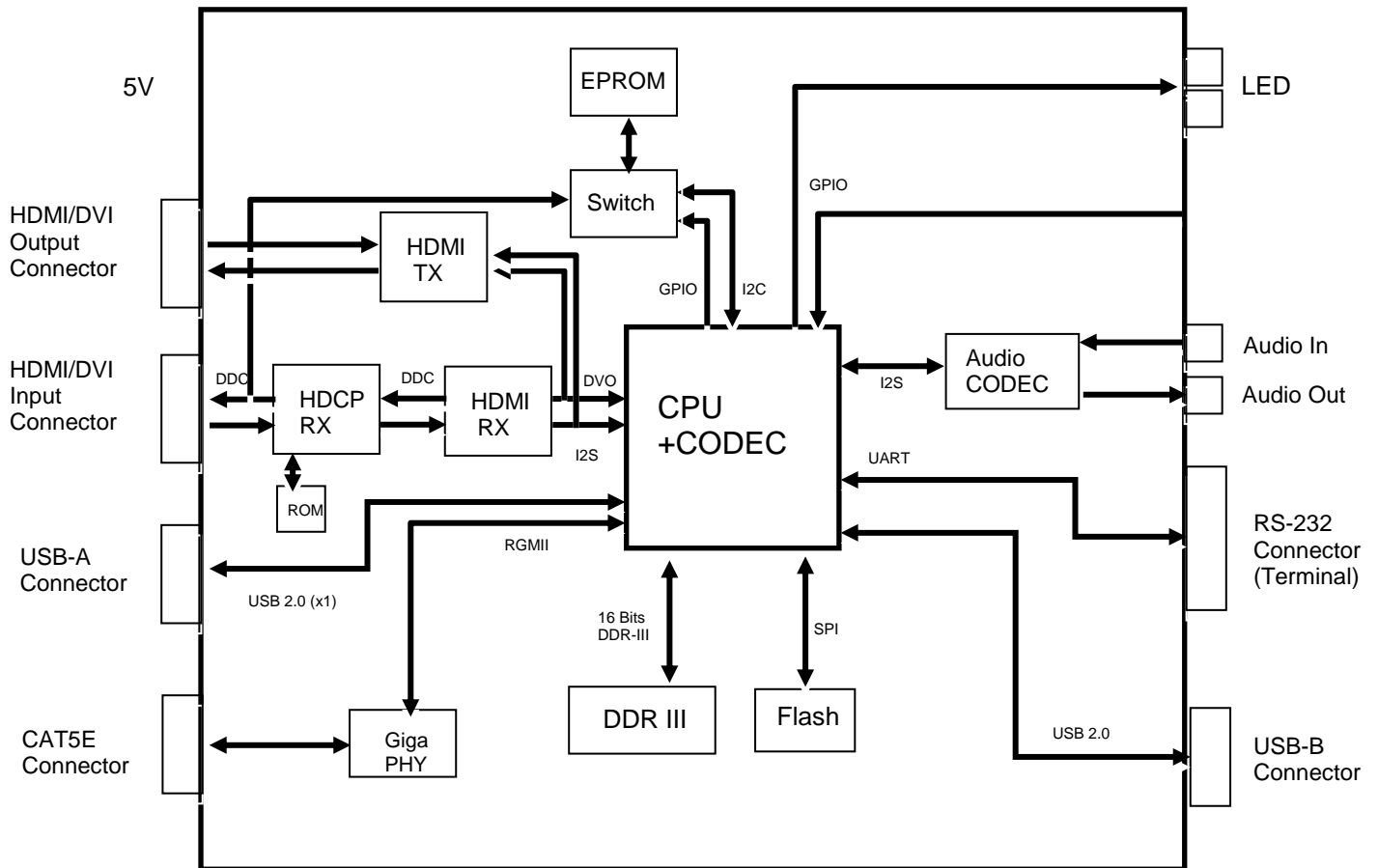
Receiver, IPKVM-310D : Internal schematic circuit diagram & I/O port

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