OCEAN MATRIX®

Instruction Manual

Thank you for purchasing an Ocean Matrix component. This unit is designed to give you years of trouble free professional operation for your most demanding applications. It is our goal to develop long term partnerships with our customers through our commitment to exceed their expectations.

OMX-4370xl

For Repair Information and to view the entire Ocean Matrix product line, please visit our web site.

www.oceanmatrix.com

Contents

Figures

Tables

1 Introduction

Congratulations on purchasing your **OMX-4370xl** *Presentation Switcher / Scaler*. This product is ideal for the following typical applications:

- Projection systems in conference rooms, boardrooms, hotels and churches
- Home theater up-scaling

The package includes the following items:

- **OMX-4370xl** *Presentation Switcher / Scaler*
- Infrared remote control transmitter, power cord,[1] null-modem adapter and this user manual

2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual

3 Overview

The **OMX-4370xl** is a high quality presentation switcher and scaler. It accepts one of seven inputs: two component video[2] on RCA connectors, computer graphics on a 15-pin HD connector, composite video on an RCA connector, s-Video on a 4-pin connector and two HDMI signals. It scales the video, embeds the audio, and outputs the signal to the HDMI output as well as to a computer graphics output, an RGBHV video output together with a digital audio output and an analog stereo audio output.

The **OMX-4370xl** is HDTV compatible and the resolution can be up- or down-scaled as follows: Native, VGA, SVGA, XGA, SXGA, UXGA, 480i, 480p, 576i, 576p, 720p[3], 1080i[3], 1080p[3], WXGA, WSXGA, WUXGA, 1280x800, 1440x900, 1400x1050

The **OMX-4370xl** *Presentation Switcher / Scaler*:

- Has analog audio inputs and digital (S/PDIF) and analog stereo audio outputs
- Automatically detects and selects the audio source for the HDMI input. Default selection is HDMI – if this is not present, then the machine uses the audio from the analog input
- Comes with an On-Screen Display (OSD) for easy setup and adjustment,

---

1 We recommend that you use only the power cord that is supplied with this machine

2 Also known as Y, Pb, Pr, Y, Cb, Cr and YUV; compatible with both SD and HD component

3 At 50Hz and 60Hz

accessible via the IR remote control and via the front-panel buttons

- Has a non-volatile memory that retains the last settings used
- Supports firmware upgrade via RS-232

Control your **OMX-4370xl**:

- Directly, via the front panel push buttons
- By RS-232 serial commands transmitted by a touch screen system, PC, or other serial controller
- Remotely, from the infrared remote control transmitter
- Via the Ethernet

The **OMX-4370xl** is housed in a 19" 1U rack mountable enclosure, with rack "ears" included, and is fed from a 100-240 VAC universal switching power supply.

3.1 About HDMI

High-Definition Multimedia Interface (HDMI) is an uncompressed all-digital[1] audio/video interface, widely supported in the entertainment and home cinema industry. It delivers the maximum high-definition image and sound quality in use today. In particular, HDMI[2]:

- Provides a simple[3] interface between any audio/video source, such as a set-top box, DVD player, or A/V receiver and video monitor, such as a digital flat LCD / plasma television (DTV), over a single lengthy[4] cable
- Supports standard, enhanced, high-definition video, and multi-channel digital audio[5] on a single cable
- Transmits all ATSC HDTV standards and supports 8-channel digital audio, with bandwidth to spare to accommodate future enhancements and requirements
- Benefits consumers by providing superior, uncompressed digital video quality via a single cable[6], and user-friendly connector
- Is backward-compatible with DVI (Digital Visual Interface)

---

1 Ensuring an all-digital rendering of video without the losses associated with analog interfaces and their unnecessary digital-to-analog conversions

2 HDMI, the HDMI logo and High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI licensing LLC

3 With video and multi-channel audio combined into a single cable, the cost, complexity, and confusion of multiple cables currently used in A/V systems is reduced

4 HDMI technology has been designed to use standard copper cable construction at up to 15m

5 HDMI supports multiple audio formats, from standard stereo to multi-channel surround-sound. HDMI has the capacity to support Dolby 5.1 audio and high-resolution audio formats

6 HDMI provides the quality and functionality of a digital interface while also supporting uncompressed video formats in a simple, cost-effective manner

- Supports two-way communication between the video source (such as a DVD player) and the digital television, enabling new functionality such as automatic configuration and one-button play

- Has the capacity to support existing high-definition video formats (720p, 1080i, and 1080p/60), standard definition formats such as NTSC or PAL, as well as 480p and 576p

3.2 Recommendations for Best Performance

To achieve the best performance:

- Connect only good quality connection cables, thus avoiding interference, deterioration in signal quality due to poor matching, and elevated noise-levels (often associated with low quality cables)

- Avoid interference from neighboring electrical appliances and position your **OMX-4370xl** away from moisture, excessive sunlight and dust

4 Your OMX-4370xl Presentation Switcher / Scaler

Figure 1 illustrates the **OMX-4370xl**, and Table 1 and Table 2 define the front and rear panels of the **OMX-4370xl**, respectively.

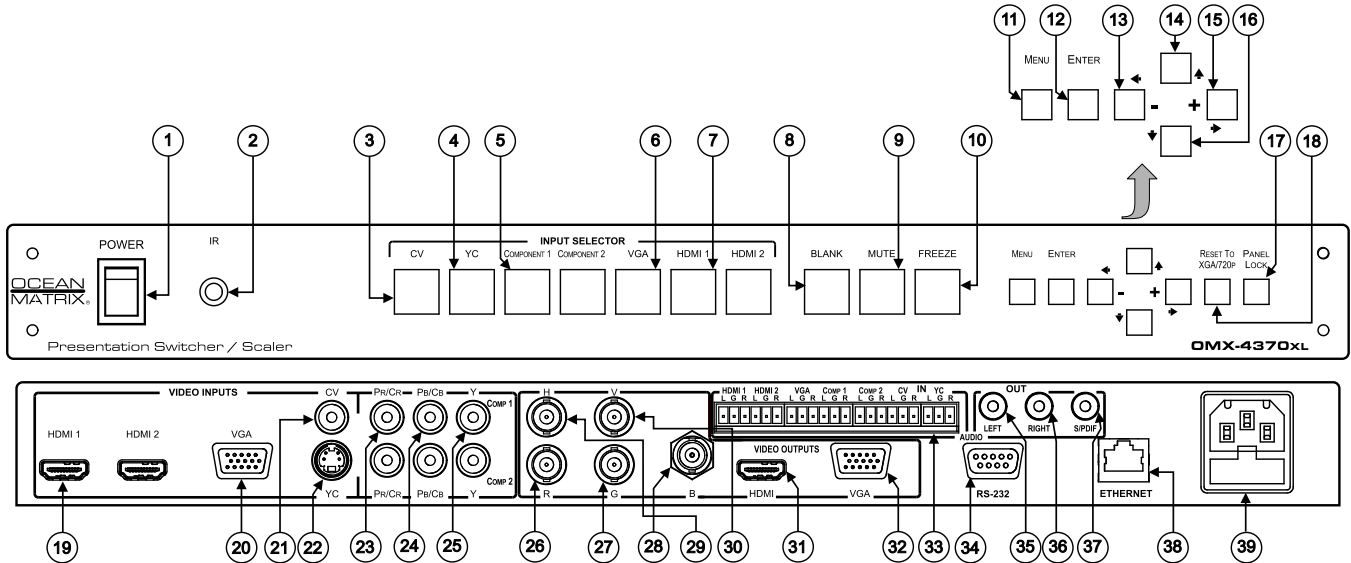*Figure 1: OMX-4370xl Presentation Switcher / Scaler*

Table 1: OMX-4370xl Presentation Switcher / Scaler Front Panel Features

#	Feature		Function
1	*POWER* Switch		Illuminated switch for turning the unit ON or OFF
2	*IR* Receiver		Receives signals from the remote control transmitter
3	*INPUT SELECTOR* Buttons	*CV*	Press to select the composite video input
4		*YC*	Press to select the s-Video input
5		*COMPONENT*	Press to select the component video input (from 1 to 2)
6		*VGA*	Press to select the computer graphics input
7		*HDMI*	Press to select the HDMI input (from 1 to 2)
8	*BLANK* Button		Press to toggle between a blank screen (blue or black screen) and the display[1]
9	*MUTE* Button		Press to toggle between muting (blocking out the sound) and enabling the audio output
10	*FREEZE* Button		Press to freeze/unfreeze the output video image[1]
11	*MENU* Button		Displays the OSD menu (see section 7.2)
12	*ENTER* Button		Press to accept changes and change the SETUP parameters[2]
13	- ← Button		Press to decrease numerical values or select from several definitions. For convenience and speed—when not working in the OSD—press to reduce volume
14	↑ Button		Press to move up the menu list values[2]
15	+ → Button		Press to increase numerical values or select from several definitions. For convenience and speed—when not working in the OSD—press to increase volume
16	↓ Button		Press to move down the menu list[2]
17	*PANEL LOCK* Button		Press and hold[3] to lock/unlock the front panel buttons
18	*RESET TO XGA/720p* Button		Press to reset the video resolution to XGA or 720p[4]

---

1 Can be programmed to follow MUTE (see section 7.2.3)

2 See section 7.2

3 For about 2 seconds

4 Press and hold for about 2 seconds to reset to XGA; or press and hold for about 5 seconds to reset to 720p

Table 2: OMX-4370xl Presentation Switcher / Scaler Rear Panel Features

#	Feature		Function
19	*VIDEO INPUTS*	*HDMI* Connector	Connect to the HDMI source (from 1 to 2)
20		*VGA* 15-pin HD Connector	Connect to the computer graphics source
21		*CV* RCA Connector	Connect to the composite video source
22		*YC* 4-pin Connector	Connect to the s-Video source
23		*PR/CR* RCA Connector	Connect to the component video source[1] (from 1 to 2)
24		*PB/CB* RCA Connector	
25		*Y* RCA Connector	
26	*VIDEO OUTPUTS*	*R* BNC Connector	Connect to the RGBHV video acceptor
27		*G* BNC Connector	
28		*B* BNC Connector	
29		*H* BNC Connector	
30		*V* BNC Connector	
31		*HDMI* Connector	Connect to the HDMI acceptor
32		*VGA* 15-pin HD Connector	Connect to a VGA acceptor
33	*AUDIO IN* Unbalanced Stereo Terminal Block Connectors	*HDMI*	Connect to the analog audio HDMI source (from 1 to 2)
		VGA	Connect to the analog audio computer graphics source
		COMP	Connect to the analog audio component video source (from 1 to 2)
		CV	Connect to the analog audio composite video source
		YC	Connect to the analog audio s-Video source
34	*RS-232* 9-pin D-sub Port		Connect to the PC or the remote controller
35	*OUT* RCA Connectors	*LEFT*	Connect to the left stereo analog audio acceptor
36		*RIGHT*	Connect to the right stereo analog audio acceptor
37		*S/PDIF*	Connect to a digital audio acceptor
38	*ETHERNET* Connector		Connects to the PC or other Serial Controller through computer networking
39	Power Connector with Fuse		AC connector, enabling power supply to the unit

---

1 For component video, connect all three connectors: Y, Pr/Cr, Pb/Cb (also known as YUV)

5   Installing in a Rack

This section describes what to do before installing in a rack and how to rack mount.

Before Installing in a Rack

Before installing in a rack, be sure that the environment is within the recommended range:	
Operating temperature range	+5º to +45º C (41º to 113º F)
Operating humidity range	10 to 90% RHL, non-condensing
Storage temperature range	-20º to +70º C (-4º to 158º F)
Storage humidity range	5 to 95% RHL, non-condensing

⚠️**CAUTION!!**

When installing on a 19" rack, avoid hazards by taking care that:

1. It is located within the recommended environmental conditions, as the operating ambient temperature of a closed or multi unit rack assembly may exceed the room ambient temperature.
2. Once rack mounted, enough air will still flow around the machine.
3. The machine is placed straight in the correct horizontal position.
4. You do not overload the circuit(s). When connecting the machine to the supply circuit, overloading the circuits might have a detrimental effect on overcurrent protection and supply wiring. Refer to the appropriate nameplate ratings for information. For example, for fuse replacement, see the value printed on the product label.
5. The machine is earthed (grounded) in a reliable way and is connected only to an electricity socket with grounding. Pay particular attention to situations where electricity is supplied indirectly (when the power cord is not plugged directly into the socket in the wall), for example, when using an extension cable or a power strip, and that you use only the power cord that is supplied with the machine.

How to Rack Mount

To rack-mount a machine:

1. Attach both ear brackets to the machine. To do so, remove the screws from each side of the machine (3 on each side), and replace those screws through the ear brackets.
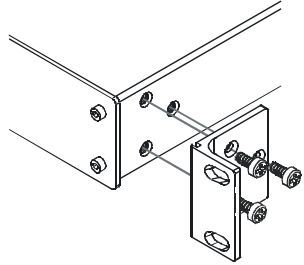
2. Place the ears of the machine against the rack rails, and insert the proper screws (not provided) through each of the four holes in the rack ears.

Note that:

- **In some models, the front panel may feature built-in rack ears**
- Detachable rack ears can be removed for desktop use
- Always mount the machine in the rack before you attach any cables or connect the machine to the power

6 Connecting the OMX-4370xl Presentation Switcher / Scaler

To connect[1] your **OMX-4370xl**, as illustrated in the example in Figure 2, do the following:

1. Connect an HDMI source (for example, a DVD player) to the HDMI 1 VIDEO INPUT connector[2].

2. Connect a computer graphics source to the VGA 15-pin HD VIDEO INPUT connector.

3. Connect a composite video source (for example, a composite video player) to the CV VIDEO INPUT RCA connector.

4. Connect an s-Video source (for example, an s-Video player) to the YC 4-pin VIDEO INPUT connector.

5. Connect a component video source (for example, a component video player) to the COMP 1 P_R, P_B and Y, VIDEO INPUT RCA connectors.

6. Connect the audio input signals to the AUDIO IN terminal block connectors, as required (not shown in Figure 2).

7. Connect the RGBHV VIDEO OUTPUT BNC connectors to an RGBHV acceptor (for example, an RGBHV display).

8. Connect the HDMI VIDEO OUTPUT connector to an HDMI acceptor (for example, a plasma display).

9. Connect the VGA VIDEO OUTPUT 15-pin HD connector to a VGA acceptor (for example, a projector).

10. Connect the audio output signals to the OUT stereo analog audio acceptor and/or the digital audio acceptor, as required (not shown in Figure 2).

11. Connect the power cord[3] (not shown in Figure 2).

---

1 You do not have to connect all the inputs and outputs, connect only those that are required

2 Alternatively, you can connect the DVI connector on the DVD player to the HDMI connector on the OMX-4370xl via a DVI-HDMI adapter. When using this adapter, you can connect the audio signal via the terminal block connector

3 We recommend that you use only the power cord that is supplied with this machine

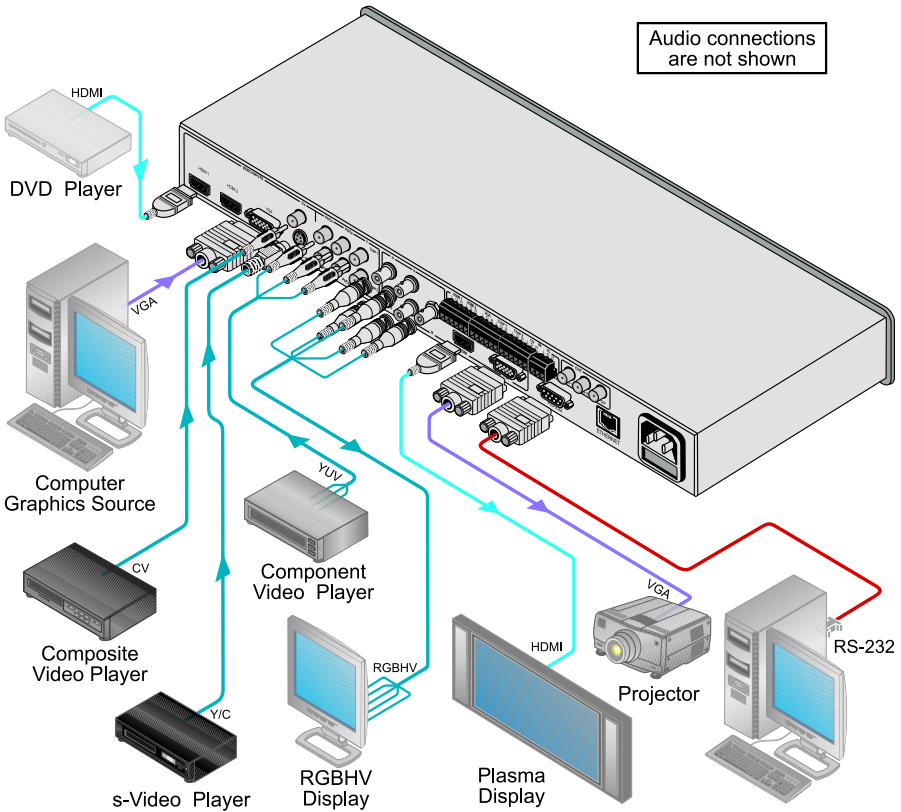*Figure 2: Connecting the OMX-4370xl Presentation Switcher / Scaler*

7   Controlling the OMX-4370xl

The **OMX-4370xl** can be controlled via:

- The front panel buttons (see section 7.1)
- The OSD menu (see section 7.2)
- RS-232 serial commands transmitted by a touch screen system, PC, or other serial controller (see section 7.3)
- The ETHERNET
- The infrared remote control transmitter (see section 7.4)

7.1 Controlling via the Front Panel Buttons

The **OMX-4370xl** includes the following front panel buttons:

- Input selector buttons for selecting the required input: CV, YC, COMPONENT (1 and 2), VGA or HDMI (1 and 2)
- BLANK, MUTE, FREEZE buttons, and MENU, ENTER, and arrow (up, down, left and right) buttons, as well as a RESET TO XGA/720p and PANEL LOCK buttons

7.2 Using the OSD Menu

The control buttons let you control the **OMX-4370xl** via the OSD menu. Press the MENU button to enter the menu (default timeout is set to 10 seconds), the ENTER button to accept changes and to change the menu settings, and the Arrow buttons to move through the OSD menu. On the OSD menu, select EXIT to exit the menu.

7.2.1 The MAIN MENU

Table 3 defines the MAIN MENU features and functions.

Table 3: The MAIN MENU Features

Mode	Function			
CONTRAST	Set the contrast (0 to 100, default 48)			
BRIGHTNESS	Set the brightness (0 to 100, default 35)			
FINETUNE	Set the hue, saturation, sharpness and noise reduction (see section 7.2.2)			
COLOR	Set the red, green and blue shades (0 to 100, default 48, 48 and 52 respectively)			
SIZE[1]	Select the size of the display: FULL, OVERSCAN, UNDER1, UNDER2, LETTER BOX, PANSCAN (default, FULL)			
SOURCE	Select the source: (default VGA)			
	Appears as:	Source input	Appears as:	Source input
	CVBS[2]	CV	PC	VGA
	SVIDEO	YC	HDMI1	HDMI 1
	YPBPR1	COMP 1	HDMI2	HDMI 2
	YPBPR2	COMP 2		
OUTPUT	Select the output resolution from the menu (default 720P60):			
	Appears as:	Output resolution:	Appears as:	Output resolution:
	1080I60	1080i @60Hz	SXGA+	1400x1050
	1080P60	1080p @60Hz	WXGA	1366x768
	576I	576i	NATIVE[3]	
	576P	576p	VGA	640x480
	720P50	720p @50Hz	SVGA	800x600

---

1 UNDER1 refers to an underscan of 6% and UNDER2 refers to an underscan of 9%

2 CVBS means Composite Video Baseband Signal

3 Select "NATIVE" to select the output resolution from the EDID of the connected HDMI monitor

	1080I50	1080i @50Hz	XGA	1024x768
	1080P50	1080p @50Hz	SXGA	1280x1024
	1280x800	1280x800	UXGA	1600x1200
	WSXGA	1680x1050	480I	480i
	WUXGA	1920x1200	480P	480p
	WSXGA+	1440x900	720P60	720p @50Hz
AUDIO	See section 7.2.3			
OSD	Set the OSD parameters: H POSITION, V POSITION, TIMER, BACKGROUND and DISPLAY (see section 7.2.4)			
FACTORY RESET	Resets to the default parameters (resolution is set to XGA or 720p[1])			
INFORMATION	Displays the source, the input resolution, the output resolution and the software version			
EXIT	Select to exit the menu			

7.2.2 The FINETUNE Menu

Table 4 defines the FINETUNE menu:

Table 4: The FINETUNE Menu Features

Parameter	Function	Default Value
HUE	Set the hue (from 0 to 100)	50
SATURATION	Set the saturation (from 0 to 100)	53
SHARPNESS	Set the sharpness (from 0 to 100)	48
NOISE REDUCTION	Select the noise reduction: OFF, HI, LOW and MID (middle)	MID

7.2.3 The AUDIO Menu

Table 5 defines the AUDIO menu.

Table 5: The AUDIO Menu Features

Parameter	Function	Default Value
OUTPUT VOLUME	Set the output volume (from 0 to 100)	100
INPUT VOLUME	Set the input volume (from 0 to 100)	100
DELAY	Select the audio delay time: OFF, 40ms, 110ms and 150ms	OFF
SOUND	Select the sound options: ON, MUTE	ON
MUTE FOLLOWS	Select the action that will be followed by mute: INDEPENDENT[2], FREEZE, BLANK, FREEZE/BLANK[3]	INDEPENDENT
HDMI AUDIO IN[4]	Select AUTOMATIC[5], EMBEDDED[6] or ANALOG[7]	AUTOMATIC

---

1 If you cannot see the display after factory reset, use the front panel Res. button to set the correct resolution: press continuously for 2 seconds to reset to XGA, or continuously for 5 seconds to reset to 720p

2 INDEPENDENT means that the audio muting is independent of the FREEZE and BLANK functions

3 FREEZE/BLANK means that when you FREEZE or BLANK the video, then the audio will be muted (the MUTE function follows the FREEZE and the BLANK functions)

4 Enabled only when one of the HDMI inputs is selected

5 In this case, the embedded audio on the HDMI input is selected for an HDMI signal, or the analog audio input is selected if the input is not HDMI (for example, for a DVI input signal)

6 In this case, the embedded audio in the HDMI signal is selected

7 In this case, the analog audio input is selected

7.2.4   The OSD Menu

Table 6 defines the OSD menu.

Table 6: The OSD Menu Features

Parameter	Function	Default Value
H POSITION	Set the horizontal position of the OSD (from 0 to 100)	10
V POSITION	Set the vertical position of the OSD (from 0 to 100)	90
TIMER	Set the timeout period in seconds (from 5 to 100)	10
BACKGROUND	Set the OSD background between 0 (solid black) and 8 (transparent)	5
DISPLAY	Select[1] between INFO, ON, OFF	INFO

7.3 Connecting a PC

You can connect a PC (or other controller) to the **OMX-4370xl** via the RS-232 port.

To connect using the Null-modem adapter provided with the machine (recommended method):

Connect the RS-232 9-pin D-sub rear panel port on the **OMX-4370xl** to the Null-modem adapter and connect the Null-modem adapter with a 9-wire flat cable to the RS-232 9-pin D-sub port on your PC

To connect without using a Null-modem adapter:

Connect the RS-232 9-pin D-sub port on your PC to the RS-232 9-pin D-sub rear panel port on the **OMX-4370xl**, as Figure 3 illustrates
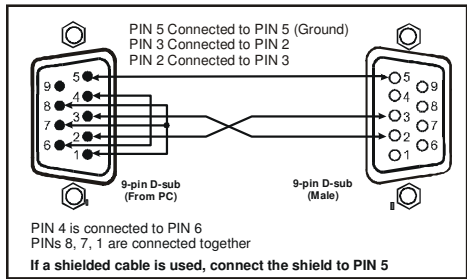

Figure 3: Connecting a PC without using a Null-modem Adapter

---

1 Select the information shown on the screen during operation The information is shown permanently when set to ON; it is not shown when set to OFF, and it is shown for a few seconds when set to INFO

7.4 Controlling via the Infrared Remote Control Transmitter

You can control the **OMX-4370xl** from the infrared remote control transmitter, as Figure 4 and Table 7 define:
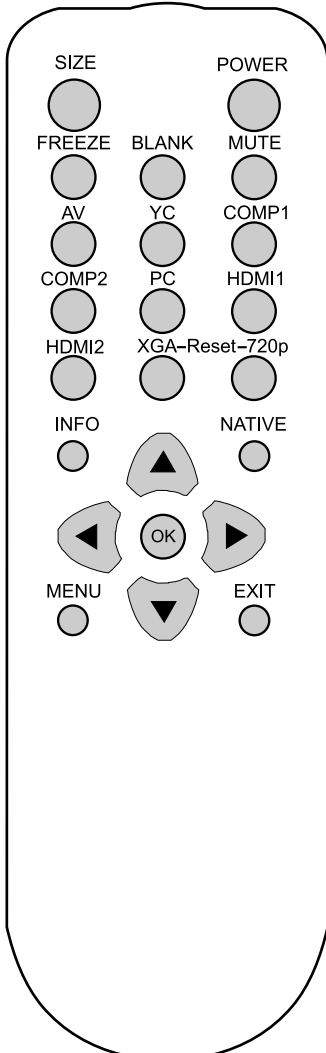
Table 7: Infrared Remote Control Transmitter Functions

Keys	Function
SIZE	Set the size of the image displayed
POWER	Turn the **OMX-4370xl** ON or OFF[1]
FREEZE	Freeze/unfreeze the output video image
BLANK	Toggle between a blank screen (blue or black screen) and the display
MUTE	Toggle between muting (blocking out the sound) and enabling the audio output
AV	Select the composite video input
YC	Select the s-Video input
COMP1	Select the component video 1 input
COMP2	Select the component video 2 input
PC	Select the UXGA input
HDMI1	Select the HDMI1 input
HDMI2	Select the HDMI2 input
XGA Reset	Reset the resolution to XGA
720p Reset	Reset the resolution to 720p
INFO	Displays the selected input, the input and output resolutions and the firmware versions on the OSD
NATIVE	Select the output resolution via the EDID of the connected HDMI monitor
	Four navigation keys
OK	Press to accept changes
MENU	Enter the OSD menu
EXIT	EXIT the menu

Figure 4: Infrared Remote Control Transmitter

---

1 OFF in this case means that the outputs and the front-panel are disabled

8   Technical Specifications

Table 8: Technical Specifications[1] of the OMX-4370xl Presentation Switcher /Scaler

INPUTS:	2 HDMI connectors (HDMI version 1.2, HDCP version 1.1) 1 VGA on a 15-pin HD connector 1 composite video on an RCA connector 1 YC on a 4-pin connector 2 component video each on 3 RCA connectors 2 HDMI, 1 VGA, 2 COMP, 1 CV, 1 YC unbalanced stereo audio on 7 3-pin terminal block connectors
OUTPUT:	1 RGBHV on 5 BNC connectors 1 HDMI connector (HDMI version 1.2, HDCP version 1.1) 1 VGA on a 15-pin HD connector 1 S/PDIF on an RCA connector 1 analog stereo audio on RCA connectors
H FREQUENCY:	15.63-90kHz
V FREQUENCY:	50-100kHz
RGB SYNCS:	H and V TTL separated syncs
RGB LEVEL:	1.2Vpp max, 75Ω load
XGA OUT LEVEL:	1.2Vpp max, 75Ω load
S/PDIF OUT LEVEL:	0.55Vpp constant
POWER SOURCE:	143mA AC x 230VAC
OUTPUT RESOLUTIONS:	Native, VGA, SVGA, XGA, SXGA, UXGA, 480i, 480p, 576i, 576p, 720p, 1080i, 1080p, WXGA, WSXGA, WUXGA, 1280x800, 1440x900, 1400x1050
OUTPUT REFRESH RATE:	60Hz for computer graphics resolutions, 50/60Hz for HDTV resolutions
CONTROLS:	CV, YC, component 1, component 2, VGA, HDMI 1, HDMI 2, input selector buttons; blank, mute, freeze buttons; menu, enter, menu arrows, reset to XGA/720p, lock buttons, RS-232, Ethernet, IR
POWER SOURCE:	100-240V AC, 33VA max.
DIMENSIONS:	19-inch (W), 7-inch(D) 1U (H) rack mountable
WEIGHT:	2.7kg (6lbs) approx.
ACCESSORIES:	Power cord, Null-modem adapter, rack ears

Table 9: Input Resolutions

Resolution/Refresh Rate	CV/s-Video	Component	VGA	HDMI
480I/576I(NTSC/PAL)	Yes (480i30x2 / 576i25x2)	Yes	No	No
480P/576P	No	Yes	Yes	Yes
720P @(60/50)	No	Yes	Yes	Yes
1080I @(60/50)	No	Yes	No	Yes
1080P @(60/50)	No	Yes	Yes	Yes
1080P @(24/30)	No	Yes	No	Yes
VGA @(60/72/75/85)	No	No	Yes	Yes
SVGA @(56/60/72/75/85)	No	No	Yes	Yes
XGA @(60/70/75/85)	No	No	Yes	Yes
SXGA @(60/75/85)	No	No	Yes	Yes
UXGA @60	No	No	Yes	Yes
WXGA@60(1366x768)	No	No	Yes	Yes
WSXGA@60(1680x1050)	No	No	Yes	Yes
WUXGA@60(1920x1200)	No	No	Yes	Yes

---

1 Specifications are subject to change without notice

9 RS-232 Communication Protocol

The following is the COM port setting:

Baud Rate: 9600bps
Parity: None
Data Bits: 8bits
Stop Bits: 1bit
Set CTS Mode: Off
Set XON/XOFF: Off

Set and get command

Set Command

Type in : Y■Control_Type■Function■Param■CR

Reply: Z■Control_Type■Function■Param■CRDone>CR

Get Command:

Type in : Y■Control_Type■Function■CR

Reply: Z■Control_Type■Function■Param■CR

Example:

1. "Y■1■16■32△CR" -> set Contrast value as 32

"Z■1■16■32■CR>" --> Reply value

"DoneCR" --> command setting succeeded

2. "Y■4■21■CR" -> get current output resolution

"Z■4■21■2■CR>" -> current resolution is 1024x768

Table 10: RS-232 Protocol

Control Type	Function	Param (for Set)	Function Description	Comment
0	0	N/A	SIZE button on remote control	
0	1	N/A	POWER button on remote control	
0	2	N/A	FREEZE button on remote control	
0	3	N/A	480p button on remote control	
0	4	N/A	576p button on remote control	
0	5	N/A	720p button on remote control	
0	6	N/A	1080i button on remote control	
0	7	N/A	1080p button on remote control	
0	8	N/A	VGA button on remote control	
0	9	N/A	SVGA button on remote control	
0	10	N/A	XGA button on remote control	

Control Type	Function	Param (for Set)	Function Description	Comment
0	11	N/A	SXGA button on remote control	
0	12	N/A	WXGA button on remote control	
0	13	N/A	UXGA button on remote control	
0	14	N/A	INFO button on remote control	
0	15	N/A	UP button on remote control	
0	16	N/A	NATIVE button on remote control	
0	17	N/A	LEFT button on remote control	
0	18	N/A	OK button on remote control	
0	19	N/A	RIGHT button on remote control	
0	20	N/A	MENU button on remote control	
0	21	N/A	DOWN button on remote control	
0	22	N/A	EXIT button on remote control	
0	23	N/A	AV button on remote control	
0	24	N/A	YC button on remote control	
0	25	N/A	COMP1 button on remote control	
0	26	N/A	HDMI1 button on remote control	
0	27	N/A	HDMI2 button on remote control	
0	28	N/A	COMP2 button on remote control	
0	29	N/A	VGA button on remote control	
0	30	N/A	BLANK button on remote control	
0	31	N/A	MUTE button on remote control	
1: Set 2: Get	4	0~100	Color: Red	
1: Set 2: Get	5	0~100	Color: Green	
1: Set 2: Get	6	0~100	Color: Blue	
1: Set 2: Get	16	0~100	Brightness	
1: Set 2: Get	17	0~100	Contrast	
1: Set 2: Get	25	0~100	Hue	
1: Set 2: Get	26	0~100	Sharpness	
1: Set 2: Get	29	0~100	Saturation	
1: Set 2: Get	33	0~100	Output volume setting	
1: Set 2: Get	34	0~100	Input volume setting	
0: Set	35	N/A	Volume down	
0: Set	37	N/A	Volume up	
1: Set 2: Get	41	0~100	OSD Setting :H-Position	
1: Set 2: Get	42	0~100	OSD Setting: V-Position	

Control Type	Function	Param (for Set)	Function Description	Comment
1: Set 2: Get	43	0~100	OSD Timeout	
1: Set 2: Get	44	0~8	OSD Background	
1: Set 2: Get	50	0~3	NR (Noise Reduction)	0: Off 1: Low 2: Mid 3: High
1: Set 2: Get	51	0~3	Audio delay	0: Off 1: 40ms 2: 110ms 3: 150ms
1: Set 2: Get	52	0~2	HDMI AUDIO IN	0 : AUTOMATIC 1 : EMBEDDED 2 : ANALOG
3: Set 4: Get	0	1~7	Select Input Source	1: AV 2: YC 3: COMP1 4: COMP2 5: VGA 6: HDMI1 7: HDMI2
3: Set 4: Get	1	0~5	Size	0: Full 1: Panscan 2: Overscan 3: Underscan 4: Letterbox
3: Set 4: Get	21	0~18	Output Resolution	0: Native 1: VGA 2: SVGA 3: XGA 4: SXGA 5: UXGA 6: 480i 7: 480p 8: 720p60 9: 1080i60 10: 1080p60 11: 576i 12: 576p 13: 720p50 14: 1080i50 15: 1080p50 16: WXGA 17: WSXGA 18: WUXGA 19: 1280x800, 20: WXGA+ (1440X900) 21: SXGA+ (1400X1050)
3: Set	23	1	Factory Reset	
6: Set 7: Get	0	0~1	Power	0: Power Down 1: Power On

Control Type	Function	Param (for Set)	Function Description	Comment
6: Set 7: Get	1	0~1	Freeze	0: Off 1: On
6: Set 7: Get	2	0~1	Blank	0: Off 1: On
6: Set 7: Get	3	0~1	Mute	0: Off 1: On
6: Set 7: Get	4	0~1	Key lock	0: Off 1: On