



# EL-41 PIP

4-Way HDMI Switch with Integrated Picture-in-Picture (PIP) Technology

**OPERATION MANUAL**



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## SAFETY PRECAUTIONS

Please read all instructions before attempting to unpack, install or operate this equipment and before connecting the power supply.

Please keep the following in mind as you unpack and install this equipment:

- Always follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.
- Never spill liquid of any kind on or into this product.
- Never push an object of any kind into this product through any openings or empty slots in the unit, as you may damage parts inside the unit.
- Do not attach the power supply cabling to building surfaces.
- Use only the supplied power supply unit (PSU). Do not use the PSU if it is damaged.
- Do not allow anything to rest on the power cabling or allow any weight to be placed upon it or any person walk on it.
- To protect the unit from overheating, do not block any vents or openings in the unit housing that provide ventilation and allow for sufficient space for air to circulate around the unit.

## REVISION HISTORY

VERSION NO.	DATE	SUMMARY OF CHANGE
v1.00	29/01/13	First Release
v1.01	06/11/13	Added rack ears to contents
v1.02	21/08/14	Added Supported Resolutions Chart, Web GUI and updated RS-232 and OSD Sections
v1.03	02/03/15	Amended Cover Image/Front Panel Diagram

# CONTENTS

<b>1. Introduction</b> .....	<b>6</b>
<b>2. Applications</b> .....	<b>6</b>
<b>3. Package Contents</b> .....	<b>6</b>
<b>4. System Requirements</b> .....	<b>6</b>
<b>5. Features</b> .....	<b>7</b>
<b>6. Operation Controls and Functions</b> .....	<b>8</b>
6.1 Front Panel .....	8
6.2 Rear Panel.....	9
6.3 Remote Control .....	10
6.4 RS-232 Protocols .....	11
6.5 RS-232 and Telnet Commands.....	12
6.6 OSD Menu .....	18
6.7 Telnet Control.....	24
6.8 WebGUI Control .....	26
<b>7. Connection Diagram</b> .....	<b>30</b>
<b>8. Specifications</b> .....	<b>31</b>
8.1 Technical Specifications .....	31
8.2 Supported Resolutions.....	32
<b>9. Acronyms</b> .....	<b>33</b>

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## **1. INTRODUCTION**

The EL-41PIP is an advanced 4 Way HDMI switch with integrated Multi-view (Picture In Picture) technology. This plug and play solution offers advanced control and display options for the integration of 4 sources onto a single display. The EL-41PIP is the perfect cost effective solution for integrating CCTV or a combination of sources into any single display within any commercial or residential AV installation.

## **2. APPLICATIONS**

- ///** Broadcasting room and control
- ///** Surveillance room and control
- ///** Public advertisement and control
- ///** Digital Presentation

## **3. PACKAGE CONTENTS**

- ///** 1 x EL-41PIP Advanced 4 Way HDMI Switch
- ///** 1 x Remote Control (CR-124)
- ///** 1 x Rack Ears (Pair)
- ///** 1 x 12V/3A DC Power Adaptor
- ///** Operation Manual

## **4. SYSTEM REQUIREMENTS**

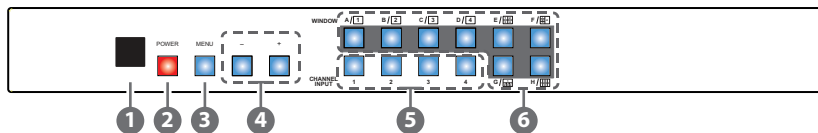
Source equipment such as DVD/Blu-ray player and PC/Laptop devices and output HD TV/monitor.

## 5. FEATURES

- /// Integration of up to 4 sources on a single display
- /// Multiple screen layout configurations
- /// Seamless switching of channels and on screen windows
- /// Fade in out display functionality
- /// Ability to mirror and rotate images
- /// Zoom & Shrink HDMI Video and/or Overlay
- /// Resolutions supported :
  - HDTV: 480i to 1080p plus 1080p24fps
  - PC: VGA to UXGA

## 6. OPERATION CONTROLS AND FUNCTIONS

### 6.1 Front Panel



- ① **IR WINDOW:** Accepts the IR signal from the supplied remote control.
- ② **POWER:** Press to turn the unit on or to put it into standby mode.
- ③ **MENU Button:** Press this button to bring up the On-screen Display (OSD) menu on screen.
- ④ **MINUS/PLUS (-/+):** Press these buttons to navigate down/up the OSD menu.
- ⑤ **CHANNEL INPUT 1~4:** Press to cycle through the four HDMI sources to be displayed in the corresponding window. All windows can display the same input or each channel can display a different input.
- ⑥ **WINDOW A~H:** Press these hot keys to select the required screen configuration. Windows A to D will display the selected channel in full screen. Windows E to H can simultaneously display a combination of channels on the same screen.

Windows A to D's source selection corresponds to channel inputs 1 to 4. To change the input channel for Window A, press the button for channel input 1. You will not be able to select the buttons for channel inputs 2 to 4 when window A is selected. The sizes for Windows E to H are adjustable through the OSD menu settings.

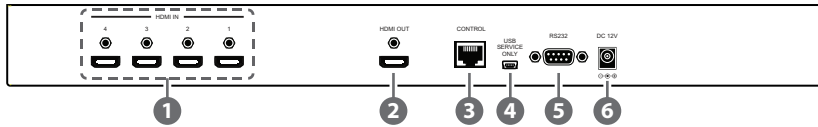
*Note: Only Window G is PIP (Picture-in-Picture) whereas E, F and H are POP (Picture-out-of-Picture) modes.*

The order of priority when windows overlap each other is Channel 4 > Channel 3 > Channel 2 > Channel 1 i.e Channel 4 will cover Channel 3, Channel 3 will cover Channel 2 and so on.

*Note: Under some circumstances the window borders may show some interference, adjusting the display's motion setting may resolve this issue.*



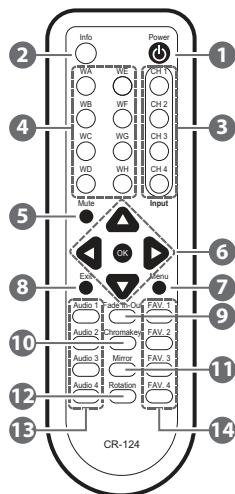
## 6.2 Rear Panel



- 1 HDMI IN 1~4:** Connect to up to four source HDMI equipped source devices such as DVD/Blu-ray players and or PC/Laptop devices.
- 2 HDMI OUT:** Connect to a HD TV/monitor or HDMI matrix for display of the image.
- 3 CONTROL:** Connect to an active network for Telnet control (refer to Section 6.5 for details on Telnet commands).  
**Warning: Please do not connect this port directly to the PC/Laptop as the Telnet function will not work.**
- 4 USB SERVICE ONLY:** Manufacturer use only.
- 5 RS-232:** Connect to a PC/Laptop or RS-232 control system to use RS-232 commands to control the device (refer to Section 6.5 for details on RS-232 commands).
- 6 DC 12V:** Connect the 12V DC power supply to the unit and plug the adaptor into an AC outlet.

## 6.3 Remote Control

- 1 **Power:** Press this button to switch the device on or to set it to standby mode.
- 2 **Info:** Press this button to display the device's firmware version.
- 3 **Input CH 1/2/3/4:** Press these buttons to cycle through the HDMI sources (1 to 4) for each channel to be displayed on screen.
- 4 **WA~WH:** Press these hot keys to select the screen setting where WA to WD display the selected channel in full screen and WE to WH display different combinations of all 4 channels on the same screen.
- 5 **Mute:** Press this button to mute the audio from the HDMI output.
- 6 **▲▼▶◀ and OK Buttons:** Press these buttons to navigate through the OSD menu and press OK to enter or confirm settings.
- 7 **Menu:** Press this button to enter into the OSD menu.
- 8 **Exit:** Press this button to exit the OSD menu or settings.
- 9 **Fade-In-Out\*:** Press this button to switch on or off the Fade in/out function.
- 10 **Chromakey\*:** Press this button to activate the Chroma key function where CH 1 is the background and CH 2 is the overlaid (top) image.
- 11 **Mirror\*:** Press this button to display the screen in mirror image.
- 12 **Rotation\*:** Press this button to rotate the image 90° left/right or 180° upside down.
- 13 **Audio 1/2/3/4:** Press these buttons to select the audio from HDMI input source 1 to 4.
- 14 **FAV. 1/2/3/4:** Press these buttons to bring up the previously stored customised screen settings.



*Note: The functions with an asterisk (\*) will only work when displaying Windows A to D. The system will revert to Window A if these functions are used when Windows E to H are displayed.*

## 6.4 RS-232 Protocols

UNIT		Remote Control	
PIN	Assignment	PIN	Assignment
1	NC	1	NC
2	Tx	2	Rx
3	Rx	3	Tx
4	NC	4	NC
5	GND	5	GND
6	NC	6	NC
7	NC	7	NC
8	NC	8	NC
9	NC	9	NC

Baud Rate: 115,200 bps

Data Bit: 8 bits

Parity: None

Flow Control: None

Stop Bit: 1

## 6.5 RS-232 and Telnet Commands

Command	Description
<b>RESO 0~18</b>	SET OUTPUT RESOLUTION (0) 480p, (1) 576p, (2) 720p 50Hz, (3) 720p 60Hz, (4) 1080p 24Hz, (5) 1080p 25Hz, (6) 1080p 30Hz, (7) 1080p 50Hz, (8) 1080p 60Hz, (9) 1024x768 60Hz, (10) 1280x800 60Hz, (11) 1280x1024 60Hz, (12) 1366x768 60Hz, (13) 1440x900 60Hz, (14) 1600x900 60Hz, (15) 1600x1200 60Hz, (16) 1680x1050 60Hz, (17) 1920x1200 60Hz, (18) Native
<b>OSDDIS 0/1</b>	ENABLE/DISABLE ONSCREEN DISPLAY (0) OFF, (1) ON
<b>OSDH 0~20</b>	OSD H OFFSET 0~20
<b>OSDV 0~20</b>	OSD V OFFSET 0~20
<b>OSDTIME 0~50</b>	OSD TIMEOUT 0~50
<b>OSDGAIN 0~10</b>	OSD GAIN VALUE 0~10
<b>BRI 0~4 0~100</b>	SET BRIGHTNESS VALUE FOR CHANNEL (0) All, (1~4) CHANNEL, (0~100) VALUE
<b>CON 0~4 0~100</b>	SET CONTRAST VALUE FOR CHANNEL PORT (0) All, (1~4) CHANNEL, (0~100) VALUE
<b>SAT 0~4 0~100</b>	SET SATURATION VALUE FOR CHANNEL PORT (0) All, (1~4) CHANNEL, (0~100) VALUE
<b>HUE 0~4 0~100</b>	SET HUE VALUE FOR CHANNEL PORT (0) All, (1~4) CHANNEL, (0~100) VALUE

Command	Description
<b>HSIZE 1~4 0~X**</b>	SET IMAGE HORIZONTAL SIZE (1~4) CHANNEL, (0~X) X=HORIZONTAL PIXEL FOR CURRENT RESOLUTION
<b>VSIZE 1~4 0~X**</b>	SET IMAGE VERTICAL SIZE (1~4) CHANNEL, (0~X) X=VERTICAL PIXEL FOR CURRENT RESOLUTION
<b>HPOS 1~4 0~X**</b>	SET HORIZONTAL POSITION OF SPECIFIED CHANNEL (1~4) CHANNEL, (0~X) X=HORIZONTAL PIXEL FOR CURRENT RESOLUTION
<b>VPOS 1~4 0~X**</b>	SET VERTICAL POSITION OF SPECIFIED CHANNEL (1~4) CHANNEL, (0~X) X=VERTICAL PIXEL FOR CURRENT RESOLUTION
<b>IMAGE 1~4 0~1**</b>	CHANNEL(S) OUTPUT ON/OFF (1~4) CHANNEL, (0/1) OFF/ON
<b>PRI 1~4 1~4**</b>	SET CHANNEL PRIORITY (1~4) CHANNEL, (1~4) PRIORITY
<b>LABEL 1~4 XXX**</b>	ASSIGN A VIDEO NAME (1~4) VIDEO, (XXX) ABCDEFGH..
<b>STORE 1~4**</b>	SAVE THE CURRENT WINDOW STATE TO FAV. (1~4) FAV.
<b>RECALL 1~12</b>	RECALL A WINDOW STATE (1) WINDOW A, (2) WINDOW B, (3) WINDOW C, (4) WINDOW D, (5) WINDOW E, (6) WINDOW F, (7) WINDOW G, (8) WINDOW H, (9) WINDOW FAV. 1, (10) WINDOW FAV. 2, (11) WINDOW FAV. 3, (12) WINDOW FAV. 4
<b>MIRROR 0/1*</b>	ENABLE/DISABLE MIRROR EFFECT (0/1) OFF/ON
<b>FADE 0~21*</b>	ENABLE/DISABLE FADE EFFECTS (0) OFF, (1) 1.0 s, (2) 1.1 s, (3) 1.2 s, (4) 1.3 s, (5) 1.4 s, (5) 1.5 s, (6) 1.6 s, (7) 1.7 s, (8) 1.8 s, (9) 1.9 s, (10) 2.0 s, (11) 2.1 s, (12) 2.2 s, (13) 2.3 s, (14) 2.4 s, (15) 2.5 s, (16) 2.6 s, (17) 2.7 s, (18) 2.8 s, (19) 2.9 s, (20) 3.0 s

Command	Description
<b>ROTATE 0~3*</b>	SET VIDEO ROTATION VIDEO TO PRESET POSITIONS (0) ROTATE OFF, (1) R90, (2) L90, (3) 180
<b>CHRC R/G/B MIN/ MAX 0~255*</b>	SET THE RGB COLOUR RANGE FOR THE CHROMA KEY (R/G/B) COLOUR CHANNEL (MIN/MAX) COLOUR VALUE ++(0~15) SET PRESENT VALUE 0~255  RBG MAX  (0)15, (1)31, (2)47, (3)63, (4)79, (5)95, (6)111, (7)127, (8)143, (9)159, (10)175, (11)191, (12)207, (13)223, (14)239, (15)255  RGB MIN  (0)00, (1)16, (2)32, (3)48, (4)64, (5)80, (6)96, (7)112, (8)128, (9)144, (10)160, (11)176, (12)192, (13)208, (14)224, (15)240
<b>CHRSW 0/1*</b>	SET THE CHROMA KEY ON/OFF (0) OFF, (1) ON
<b>WND001</b>	Change to Window A
<b>WND002</b>	Change to Window B
<b>WND003</b>	Change to Window C
<b>WND004</b>	Change to Window D
<b>WND005</b>	Change to Window E
<b>WND006</b>	Change to Window F
<b>WND007</b>	Change to Window G
<b>WND008</b>	Change to Window H
<b>CH1001</b>	Change CH1 to Source 1
<b>CH1002</b>	Change CH1 to Source 2
<b>CH1003</b>	Change CH1 to Source 3
<b>CH1004</b>	Change CH1 to Source 4
<b>CH2001</b>	Change CH2 to Source 1
<b>CH2002</b>	Change CH2 to Source 2
<b>CH2003</b>	Change CH2 to Source 3

<b>Command</b>	<b>Description</b>
<b>CH2004</b>	Change CH2 to Source 4
<b>CH3001</b>	Change CH3 to Source 1
<b>CH3002</b>	Change CH3 to Source 2
<b>CH3003</b>	Change CH3 to Source 3
<b>CH3004</b>	Change CH3 to Source 4
<b>CH4001</b>	Change CH4 to Source 1
<b>CH4002</b>	Change CH4 to Source 2
<b>CH4003</b>	Change CH4 to Source 3
<b>CH4004</b>	Change CH4 to Source 4
<b>IO1000**</b>	CH1 Image OFF
<b>IO1001**</b>	CH1 Image ON
<b>IO2000**</b>	CH2 Image OFF
<b>IO2001**</b>	CH2 Image ON
<b>IO3000</b>	CH3 Image OFF
<b>IO3001</b>	CH3 Image ON
<b>IO4000</b>	CH4 Image OFF
<b>IO4001</b>	CH4 Image ON
<b>MUT000</b>	Mute Off
<b>MUT001</b>	Mute On
<b>AUD001</b>	Change Output Audio to Source 1
<b>AUD002</b>	Change Output Audio to Source 2
<b>AUD003</b>	Change Output Audio to Source 3
<b>AUD004</b>	Change Output Audio to Source 4
<b>FAD000*</b>	Fade In-Out Off
<b>FAD001*</b>	Fade In-Out On
<b>CHR000*</b>	Chroma-key Function Off
<b>CHR001*</b>	Chroma-key Function On
<b>MIR000*</b>	Mirror Function Off
<b>MIR001*</b>	Mirror Function On
<b>ROT000*</b>	Rotation Function Off

Command	Description
<b>ROT001*</b>	Rotation Function R
<b>ROT002*</b>	Rotation Function L
<b>ROT003*</b>	Rotation Function Up-Side Down
<b>SFA001**</b>	Store window format to FAV 1
<b>SFA002**</b>	Store window format to FAV 2
<b>SFA003**</b>	Store window format to FAV 2
<b>SFA004**</b>	Store window format to FAV 4
<b>RFA001**</b>	Recall window from FAV 1
<b>RFA002**</b>	Recall window from FAV 2
<b>RFA003*</b>	Recall window from FAV 3
<b>RFA004*</b>	Recall window from FAV 4
<b>POW000</b>	OFF
<b>POW001</b>	ON
<b>IPMODE 0/1</b>	SET IP MODE TO DHCP OR STATIC (0) DHCP, (1) STATIC
<b>IPADD XXX.XXX. XXX.XXX</b>	SET IP ADDRESS (XXX) 0~255
<b>MAADD XXX.XXX. XXX.XXX</b>	SET SUBNET ADDRESS (XXX) 0~255
<b>GAADD XXX.XXX. XXX.XXX</b>	SET GATEWAY ADDRESS (XXX) 0~255
<b>ETHTIME 0~6</b>	ETHERNET TIMEOUT (0) OFF, (1) 10 MINUTE, (2) 20 MINUTE, (3) 30 MINUTE, (4) 40 MINUTE, (5) 50 MINUTE, (6) 60 MINUTE
<b>RELINK</b>	RELINK THE UNIT IN 2 SECONDS
<b>DEFAULT</b>	RESET THE UNIT TO FACTORY DEFAULTS
<b>VICH 1~4 0~4</b>	VIDEO CHANNEL COMMAND (1~4) VIDEO, (0) ALL CHANNEL OUTPUTS, (1~4) CHANNEL OUTPUTS
<b>MUTE 0/1</b>	MUTE AUDIO (0) OFF, (1) ON



Command	Description
<b>POW 0/1</b>	POWER THE UNIT ON/OFF (0) OFF, (1) ON
<b>AUDIO 1~4</b>	CHANGE OUTPUT AUDIO TO SPECIFIED SOURCE (1~4) AUDIO SOURCE
<b>IMRE B/C/S/H</b>	RESET THE IMAGE TO FACTORY DEFAULTS (B) BRIGHTNESS, (C) CONTRAST, (S) SATURATION, (H) HUE
<b>PIRE</b>	RESET THE UNIT PICTURE SETTINGS TO FACTORY DEFAULTS
<b>CHRE 0~4**</b>	RESET THE WINDOWS SETTINGS TO FACTORY DEFAULTS (0) ALL CHANNEL OUTPUTS, (1~4) CHANNEL OUTPUTS
<b>WICORE*</b>	RESET THE WINDOW CONVERT TO FACTORY DEFAULTS
<b>RIPM</b>	SHOW CURRENT IP MODE
<b>IPCONFIG</b>	SHOW IP CONFIGURATION
<b>HELP</b>	PRINTS ALL AVAILABLE RS-232/TELNET COMMANDS TO THE SCREEN
<b>?</b>	PRINTS ALL AVAILABLE RS-232/TELNET COMMANDS TO THE SCREEN

*Note:*

1. *Commands with two asterisks (\*\*)* will function under Windows E to H and FAV. 1 to 4.
2. *Commands with one asterisk (\*)* will function under Windows A to D.

## 6.6 OSD Menu

Main Menu	1 <sup>st</sup> Layer	2 <sup>nd</sup> Layer	3 <sup>rd</sup> Layer		
<b>I/O Setup</b>	Output Resolution	480P, 579P, 720P50/60, 1080P24/25/30/50/60, 1024x768, 1280x800, 1280x1024, 1366x768, 1440x900, 1600x900, 1600x1200, 1680x1050, 1920x1200, NATIVE			
		Menu Back			
	OSD Settings	Info Display	On/ <b>Off</b>		
		H Offset	0~20 (5)		
		V Offset	0~20 (5)		
		Timeout	<b>Off</b> -50		
		Gain	0~10 (2)		
Menu Back					
Menu Exit					
<b>Image Adjust</b>	Brightness Adjust	CH 1	0~100 (50)		
		CH 2	0~100 (50)		
		CH 3	0~100 (50)		
		CH 4	0~100 (50)		
		Value Reset			
		Menu Exit			
	Contrast Adjust	CH 1	0~100 (50)		
		CH 2	0~100 (50)		
		CH 3	0~100 (50)		
		CH 4	0~100 (50)		
		Value Reset			
		Menu Exit			
	Hue Adjust	CH 1	0~100 (50)		
		CH 2	0~100 (50)		
		CH 3	0~100 (50)		
		CH 4	0~100 (50)		
		Value Reset			
		Menu Exit			
	Saturation	CH 1	0~100 (50)		
		CH 2	0~100 (50)		
		CH 3	0~100 (50)		
		CH 4	0~100 (50)		
		Value Reset			
		Menu Exit			
	Picture Reset				
	Menu Exit				

Main Menu	1 <sup>st</sup> Layer	2 <sup>nd</sup> Layer	3 <sup>rd</sup> Layer
<b>Window Setup</b>	Channel 1 Select	Size	CH1 Wxxx Hxxx
			Width Unit
			Width Ten
			Width Hundred
			Height Unit
			Height Ten
			Height Hundred
		Position	CH1 Hxxx Vxxx
			Horizontal Unit
			Horizontal Ten
			Horizontal Hundred
			Vertical Unit
			Vertical Ten
			Vertical Hundred
	Image Output	<b>On/Off</b>	
	Priority	CH1→4,CH2→3, CH3→2,CH4→1	
	Window Reset		
	Menu Exit		
	Channel 2 Select	Size	CH2 Wxxx Hxxx
			Width Unit
			Width Ten
			Width Hundred
			Height Unit
			Height Ten
			Height Hundred
		Position	CH2 Hxxx Vxxx
			Horizontal Unit
			Horizontal Ten
Horizontal Hundred			
Vertical Unit			
Vertical Ten			
Vertical Hundred			
Image Output	<b>On/Off</b>		
Priority	CH1→4,CH2→3, CH3→2,CH4→1		
Window Reset			
Menu Exit			

Main Menu	1 <sup>st</sup> Layer	2 <sup>nd</sup> Layer	3 <sup>rd</sup> Layer
<b>Window Setup (Cont.)</b>	Channel 3 Select	Size	CH3 Wxxx Hxxx
			Width Unit
			Width Ten
			Width Hundred
			Height Unit
			Height Ten
			Height Hundred
		Position	CH3 Hxxx Vxxx
			Horizontal Unit
			Horizontal Ten
			Horizontal Hundred
			Vertical Unit
			Vertical Ten
			Vertical Hundred
	Image Output	<b>On/Off</b>	
	Priority	CH1→4,CH2→3, CH3→2,CH4→1	
	Window Reset		
	Menu Exit		
	Channel 4 Select	Size	CH4 Wxxx Hxxx
			Width Unit
			Width Ten
			Width Hundred
			Height Unit
			Height Ten
			Height Hundred
		Position	CH4 Hxxx Vxxx
			Horizontal Unit
			Horizontal Ten
Horizontal Hundred			
Vertical Unit			
Vertical Ten			
Vertical Hundred			
Image Output	<b>On/Off</b>		
Priority	CH1→4,CH2→3, CH3→2,CH4→1		
Window Reset			
Menu Exit			

Main Menu	1 <sup>st</sup> Layer	2 <sup>nd</sup> Layer	3 <sup>rd</sup> Layer	
<b>Window Setup (Cont.)</b>	Label Select	VIDEO 1	VIDEO 1/2/3/4	
		VIDEO 2	VIDEO 1/2/3/4	
		VIDEO 3	VIDEO 1/2/3/4	
		VIDEO 4	VIDEO 1/2/3/4	
		Menu Exit		
	Favours Store	FAV 1 Store	ON/ <b>OFF</b> /OK	
		FAV 2 Store	ON/ <b>OFF</b> /OK	
		FAV 3 Store	ON/ <b>OFF</b> /OK	
		FAV 4 Store	ON/ <b>OFF</b> /OK	
		Menu Exit		
	Menu Exit			
	<b>Window Convert</b>	Channel 1 Convert	Mirror	On/ <b>Off</b>
			Fade In-Out	<b>Off</b> /1.0/1.1/1.2 Convert /1.3/1.4/1.5/1.6/1.7/1.8/1.9/2.0/2.1/2.2/ .2/ 2.3/2.4/2.5/2.6/ 2.7/2.8/2.9/3.0
Rotation			R90/L90/Up-Side Down180/ <b>Off</b>	
Window Reset				
Menu Exit				
Channel 2 Convert			Mirror	On/ <b>Off</b>
		Fade In-Out	<b>Off</b> /1.0/1.1/1.2 Convert /1.3/1.4/1.5/1.6/1.7/1.8/1.9/2.0/2.1/2.2/ .2/ 2.3/2.4/2.5/2.6/ 2.7/2.8/2.9/3.0	
		Rotation	R90/L90/Up-Side Down180/Off	
		Window Reset		
		Menu Exit		

Main Menu	1 <sup>st</sup> Layer	2 <sup>nd</sup> Layer	3 <sup>rd</sup> Layer	
<b>Window Convert (Cont.)</b>	Channel 3 Convert	Mirror	On/ <b>Off</b>	
		Fade In-Out	<b>Off</b> /1.0/1.1/1.2 Convert /1.3/1.4/1.5/1. 6/1.7/1.8/1.9/2.0/2.1/2 .2/ 2.3/2.4/2.5/2.6/ 2.7/2.8/2.9/3.0	
		Rotation	R90/L90/Up-Side Down180/Off	
		Window Reset		
		Menu Exit		
		Channel 4 Convert	Mirror	On/ <b>Off</b>
	Fade In-Out	<b>Off</b> /1.0/1.1/1.2 Convert /1.3/1.4/1.5/1. 6/1.7/1.8/1.9/2.0/2.1/2 .2/ 2.3/2.4/2.5/2.6/ 2.7/2.8/2.9/3.0		
	Rotation	R90/L90/Up-Side Down180/Off		
	Window Reset			
	Menu Exit			
	<b>Chromakey Setup*</b>	Minimum For R	000~255(0)	
		Maximum For R	000~255(15)	
Minimum For G		000~255(0)		
Maximum For G		000~255(15)		
Minimum For B		000~255(0)		
Maximum For B		000~255(15)		
Switch		ON/ <b>OFF</b>		
Exit				

Main Menu	1 <sup>st</sup> Layer	2 <sup>nd</sup> Layer	3 <sup>rd</sup> Layer
<b>Ethernet Setup</b>	IP Mode	Static/ <b>DHCP</b>	
	Static Set	IP/Mask/Gate	
	Byte1 High	XXX <b>192 255 192</b>	000~255
	Byte2	XXX <b>168 255 168</b>	000~255
	Byte3	XXX <b>5 255 5</b>	000~255
	Byte4 Low	XXX <b>159 0 254</b>	000~255
	Re-Link	<b>No</b> /Yes	
	Exit		
	Static/DHCP IP	LINKED/NOT LINKED	
	IP	IP/Mask/Gate	
	Mask	XXX.XXX.XXX.XXX	
	Gate	XXX.XXX.XXX.XXX	
	Mac	XXX.XXX.XXX.XXX	
	Sink HDMI /DVI		
	<b>Information Menu Exit</b>	Model xxxxxxxx	
Native xxxxxxxx			
F/V version			

**Note:**

1. Chromakey Setup only works when CH 1 and CH 2 are selected. CH 1 is the background and CH 2 is the top layer to be overlaid.
2. The Chromakey function is designed for overlapping two video images (such as news reports, weather forecasts or educational videos). The background colour of CH 2 is usually a single, solid, colour which can be easily removed. The RGB setting is for the CH2 video where the minimum setting figures cannot be greater than the maximum figures and the maximum figures cannot be lower than the minimum setting figures.
3. When input 1 or 2 has no source connected a warning message will appear on the OSD.
4. Figures in **BOLD** are default settings.

## 6.7 Telnet Control

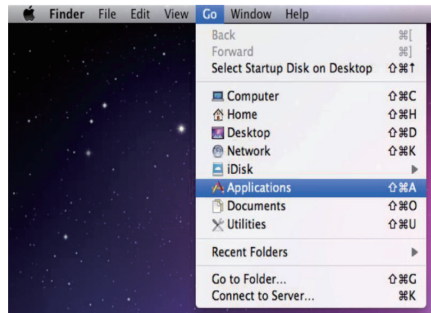
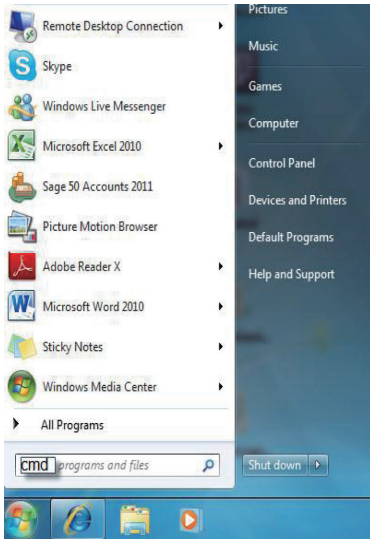
Before attempting to use the telnet control, please ensure that both the Scaler (via the 'CONTROL' port) and the PC/Laptop are connected to the active networks.

To access the telnet control in Windows 7, click on the 'Start' menu and type "cmd" in the Search field then press enter

Under Windows XP go to the 'Start' menu and click on "Run", type "cmd" with then press enter.

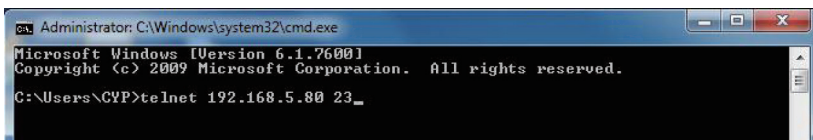
Under Mac OS X, go to Go→Applications→Utilities→Terminal

See below for reference.



Once in the command line interface (CLI) type "telnet", then the IP address of the unit and hit enter.

*Note: The IP address of the Scaler can be found under Ethernet Setup on the device's OSD menu.*





This will bring us into the device which we wish to control. Type "?" to lists all the available commands.



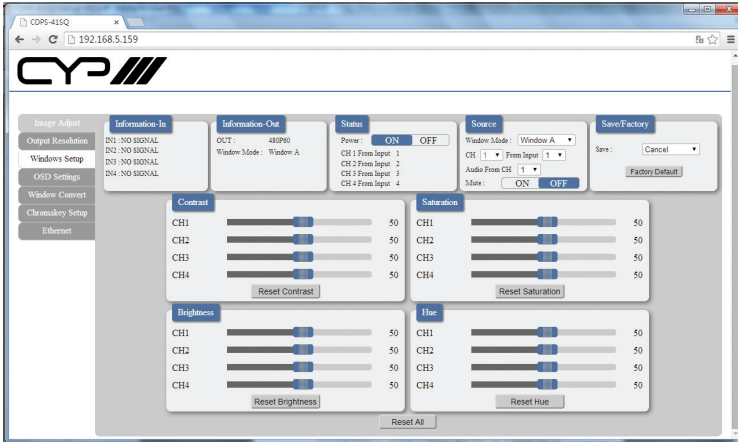
```
Telnet 192.168.5.159
?
RESO
OSDDIS
OSDH
OSDU
OSDTIME
OSDGRIM
BRI
CON
SAT
HUE
HSIZE
USIZE
HPOS
UPOS
IMAGE
PI
LABEL
STORE
RECALL
MIRROR
MODE
ROTATE
CHRC
CHRSU
IPMODE
IPADD
MADD
GADD
ETHTIME
RELINK
DEFAULT
UICH
MUTE
POW
AUDIO
TIME
PTRE
CHRE
MICORE
RIPM
ITSCONFIG
HELP
?
```

Type "IPCONFIG" To show all IP configurations. To reset the IP, type "IPMODE" to set static IP/DHCP (For a full list of commands, see Section 6.6).

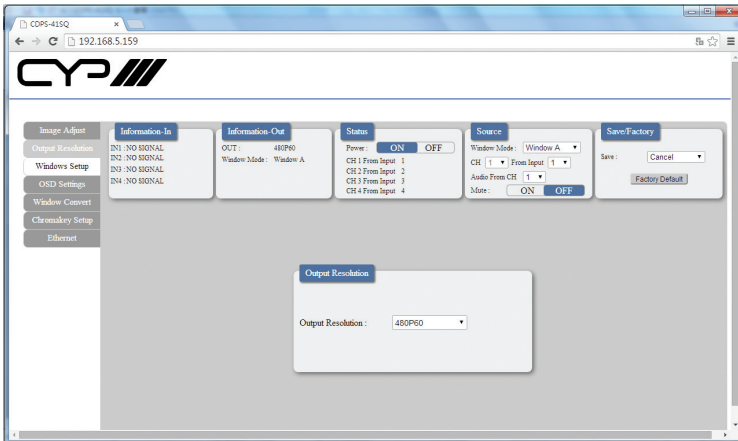
*Note: Commands will be not executed unless followed with a carriage return. Commands are not case-sensitive. If the IP is changed then the IP Address required for Telnet access will also need to be changed accordingly. A power cycle is also required for every IP change.*

## 6.8 WebGUI Control

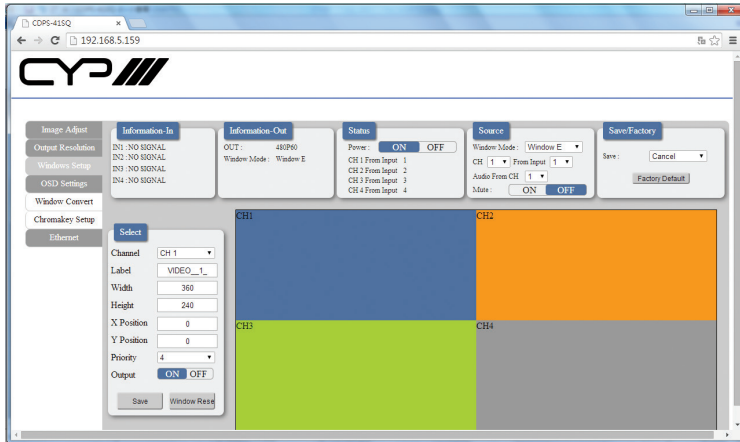
On a PC/Laptop that is connected to the same active network as the Scaler, open a web browser and type the device's IP address on the web address entry bar. The browser will display the device's Image Adjust, Output Resolution, etc.



Click on the 'image Adjust' tab to control power, Window Mode and the window setting.

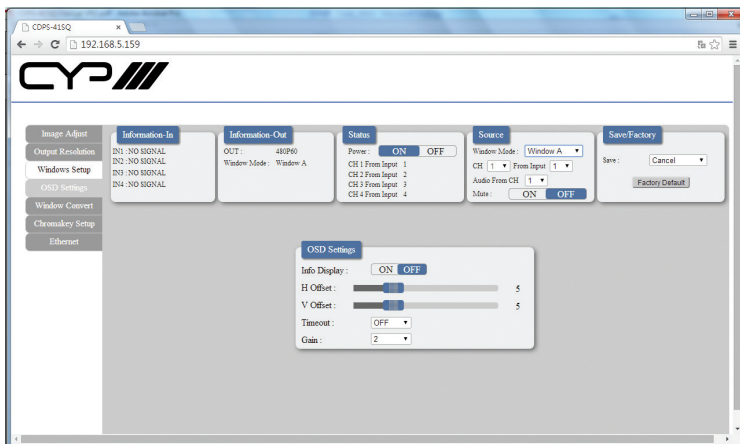


Clicking on the 'Output Resolution' tab to set the output display resolution.

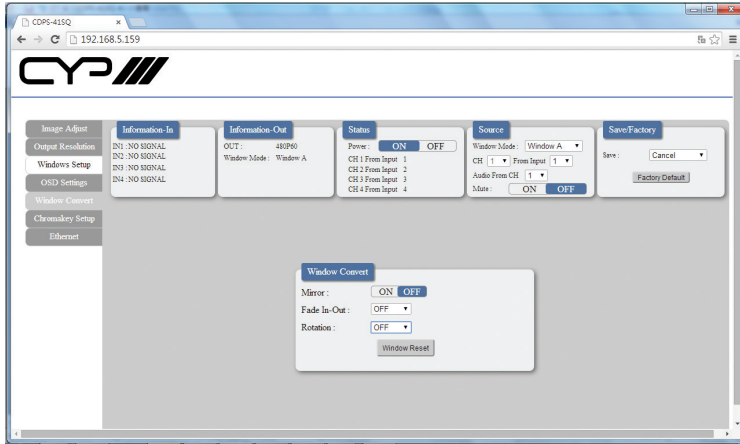


Click on the 'Windows Setup' tab to set the output display format.

*Note: This function is only available under window E~H.*

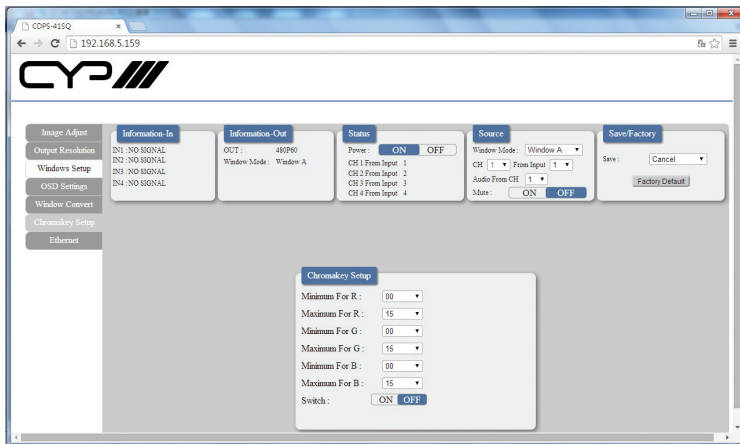


Click on the 'OSD Settings' tab to set the OSD function and position.



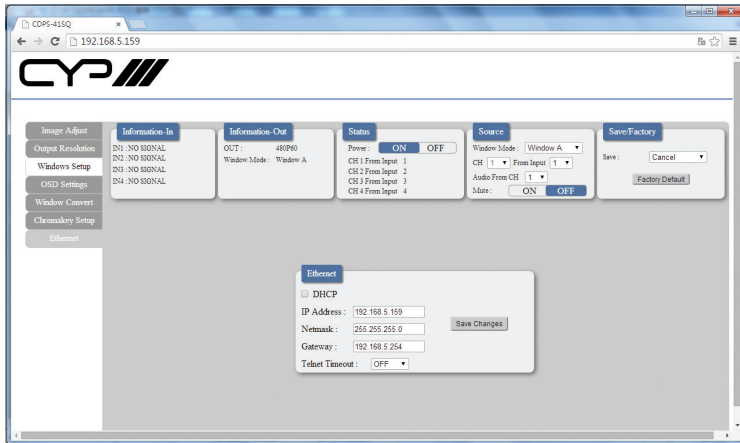
Click on the 'Window Convert' tab to set the output display angle.

*Note: This function is only available under window A~D.*



Click on the 'ChromaKey Setup' tab to set the output display colour.

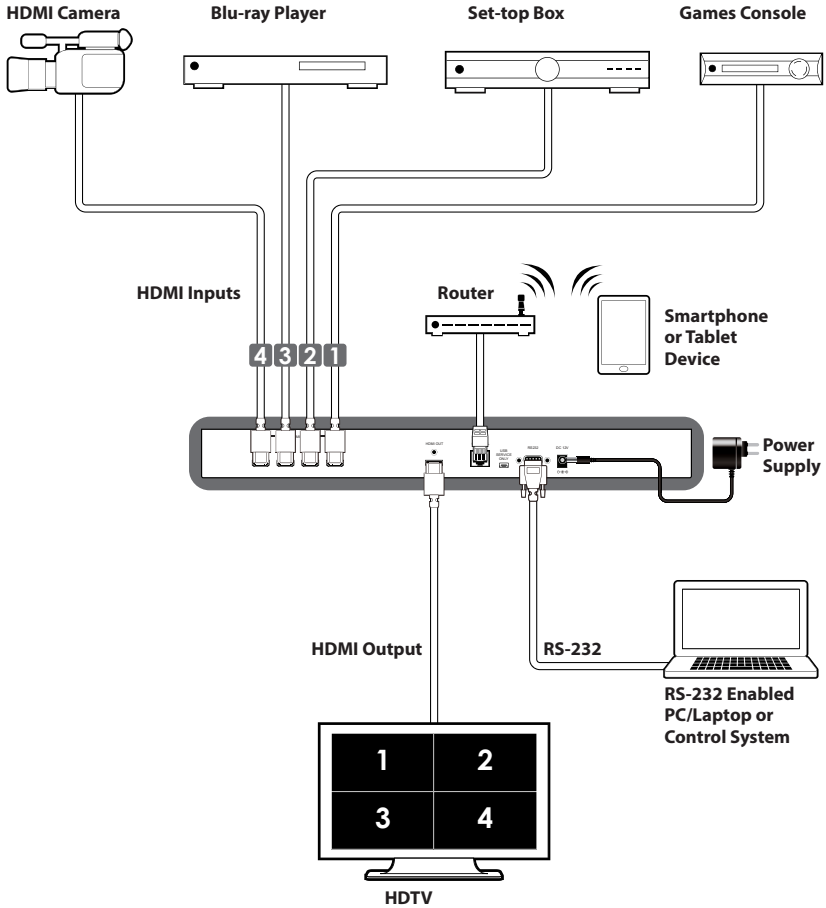
*Note: This function is only available under window E~H.*



Click on the 'Ethernet' tab to reset the IP configuration. The system will ask for a reboot of the device when any of these settings are changed. The IP address needed to access the Web GUI control will also need to be changed accordingly on the web address entry bar.

*Note: Commands will be not executed unless followed with a carriage return  
Commands are not case-sensitive.*

## 7. CONNECTION DIAGRAM



### Screen Configurations:



## 8. SPECIFICATIONS

### 8.1 Technical Specifications

<b>Video Bandwidth</b>	225 MHz/6.75 Gbps
<b>Input Ports</b>	4× HDMI
<b>Output Port</b>	1× HDMI
<b>Supported Input Resolutions</b>	PC:VGA~WUXGA, HD: 480i~1080p
<b>Supported Output Resolutions</b>	1080p@60
<b>HDMI Input Cable Distance</b>	Up to 15m/1080p@12 bits
<b>HDMI Output Cable Distance</b>	Up to 15m/1080p@8 bits
<b>Supports Sampling Rate</b>	32~192 kHz
<b>ESD Protection</b>	Human body model: ±8kV (air-gap discharge) ±4kV (contact-gap discharge)
<b>Power Supply</b>	12V/3A DC (US/EU standards, CE/FCC/UL certified)
<b>Dimensions</b>	436mm(W) × 247mm(D) × 44mm(H)
<b>Weight</b>	2200 g
<b>Chassis Material</b>	Aluminum
<b>Colour</b>	Black
<b>Operating Temperature</b>	0 °C ~ 40 °C / 32 °F ~ 104 °F
<b>Storage Temperature</b>	-20°C ~ 60 °C / -4 °F ~ 140 °F
<b>Relative Humidity</b>	20 ~ 90 % RH (non-condensing)
<b>Power Consumption</b>	18W

## 8.2 Supported Resolutions

HDMI RESOLUTIONS	INPUT	OUTPUT
<b>640x480@60/72/75/85</b>	✓	-
<b>800x600@56/60/72/75/85</b>	✓	-
<b>1024x768@60/70/75/85</b>	✓	1024x768@60
<b>1360x768@60</b>	✓	-
<b>1280x768@60/75</b>	✓	-
<b>1280x800@60</b>	-	✓
<b>1280x1024@60/75</b>	✓	1280x1024@60
<b>1366x768@60</b>	✓	✓
<b>1440x900@60</b>	-	✓
<b>1600x900@60</b>	-	✓
<b>1600x1200@60</b>	✓	✓
<b>1680x1050@60</b>	-	✓
<b>1920x1200@60</b>	✓	✓
<b>480i60</b>	✓	-
<b>576i50</b>	✓	-
<b>480p60</b>	✓	✓
<b>576p50</b>	✓	✓
<b>720p50</b>	✓	✓
<b>720p60</b>	✓	✓
<b>1080i50</b>	✓	-
<b>1080i60</b>	✓	-
<b>1080p24</b>	✓	✓
<b>1080p25</b>	-	✓
<b>1080p30</b>	-	✓
<b>1080p50</b>	✓	✓
<b>1080p60</b>	✓	✓



## 9. ACRONYMS

ACRONYM	COMPLETE TERM
<b>CEC</b>	Consumer Electronics Control
<b>DVI</b>	Digital Visual Interface
<b>HDCP</b>	High-bandwidth Digital Content Protection
<b>HDMI</b>	High Definition Multimedia Interface
<b>PIP</b>	Picture-in-Picture
<b>POP</b>	Picture out of picture
<b>IR</b>	Infrared







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CYP (UK) Ltd., Unit 7, Shepperton Business Park, Govett Avenue, Shepperton,  
Middlesex, TW17 8BA

Tel: +44 (0) 20 3137 9180 | Fax: +44 (0) 20 3137 6279

Email: [sales@cypeurope.com](mailto:sales@cypeurope.com)

[www.cypeurope.com](http://www.cypeurope.com)

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