

HDMI Quad 4x1 Picture in Picture Processor # 15196



Operation Manual

Introduction

The 4 x 1 HDMI Seamless Quad PIP Scaler is a high performance, high speed zooming/shrinking system that can be easily configure and control for quad or picture-in-picture video processing. Allowing 4 different input sources to be freely selected and arranged on one single display with supporting output resolution up to 1080p and audio up to 8CH 192kHz for both input and output. Screen setting hot keys with IR and RS-232 & Telnet allows instant control and switching on the output display.

Features

- Seamless switching between channels and windows
- Zoom and Shrink 4CH input image and or to overlay them
- Supports PIP, POP and multi-windows display
- Supports OSD, RS-232, Telnet, Remote and on-panel controls
- Fade-In-Out, Chromakey, Mirror and Rotation (90° left & right and 180° up & down) functions
- 8 Screen setting hot keys and extra 4 customized favorite screen setting
- Support individual channel size and position adjustment

Applications

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

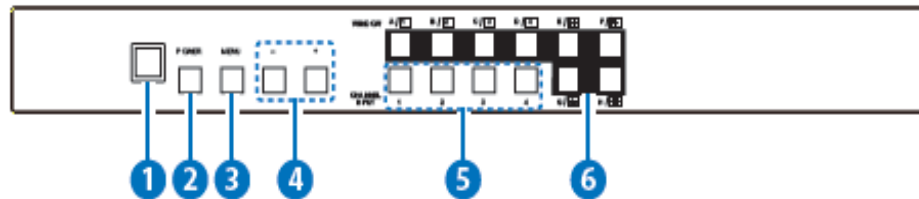
System Requirements

Input source equipments such as DVD/Blu-ray players and PC/NB devices and output HD TV/monitor.

Operation Controls and Functions

Front Panel

The following sections describe the hardware components of the unit.



1. IR Window

Accept IR signal from the device's remote control included in the package.

2. POWER

Press this button to power on the device or set it to standby mode.

3. MENU/EXIT

Press to enter MENU mode and press again to EXIT the menu or return to previous page.

4. - and +

Press to toggle through various control or setting values.

5. CHANNEL INPUT 1~4

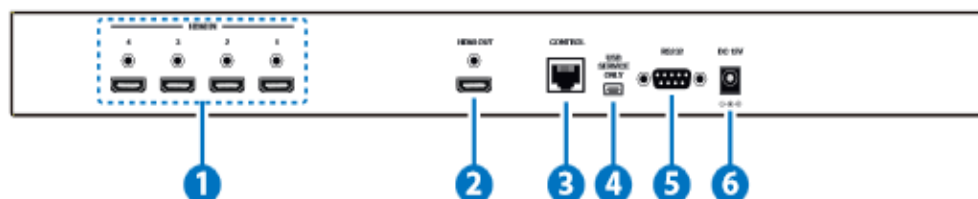
Press these buttons to rotate HDMI 1~4 input source on each channel to be display on screen. All channels can select the same input or each channel a different input.

6. WINDOW A~H

Press these hot keys to select the screen setting where A~D are display a full screen of each channel and E~H are a different combination of a full screen setting with all 4 channels. Windows A~D's channel input selection is corresponding to channel input no. 1~4. That is, to change window A's input channel must press channel input 1's button. Channel input 2~4's button will not activate under window A's selection. Windows E~H's size are adjustable through the OSD menu setting and only window G is PIP(Picture in Picture) where E,F & H are POP (Picture out Of picture) settings.

Under window E~H when the size setting is overlapping one another, channel display sequence is CH4 > CH3 > CH2 > CH1. That is, CH4 will cover CH3 and CH3 will cover CH2 and so on. Under some display the borderline may have interference, adjusting display's motion setting may resolve the interference issue.

Back Panel



1. HDMI IN

Connect with source equipments such as DVD/Blu-ray players and or PC/NB devices.

2. HDMI OUT

Connect with HD TV/monitor for output image display at 1080p.

3. CONTROL

Connect to an active network for Telnet control.

4.USB SERVICE ONLY

This slot is reserved for factory use only.

5. RS-232

Connect from PC/NB with D-Sub 15pin cable for RS-232 command sending.

6. DC 12V

Plug the 12V DC power supply into the unit and connect the adaptor to an AC outlet.

Remote Control

1. Power

Press this button to switch on the device or press it again to set it to standby mode.

2. Info

Press this button to show the device's firmware version.

3. Input CH 1~4

Press these buttons to rotate HDMI 1~4 input source on each channel to be display on screen

4. WA~WH

Press these hot keys to select the screen setting where WA~WD are display a full screen of each channel and WE~WH are a different combination of a full screen setting with all 4 channels.

5. Mute

Press this button to mute the audio from HDMI output port.

6. ▲▼▶◀ & OK Buttons

Press this buttons to scroll through the OSD selection and press OK to enter and confirm the setting.

7. Menu

Press this button to enter into the OSD menu.

8. Exit

Press this button to exit the OSD menu or the OSD settings.

9. FAV. 1~4

Press these buttons to bring up the customized screen settings.

10. Fade-In-Out*

Press this button to switch on or off the Fade-in-out function.

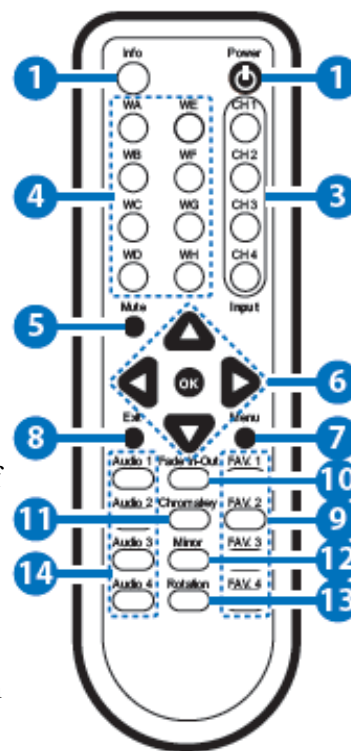
11. Chromakey*

Press this button to enter into Chroma function where CH 1 is the background and CH 2 is the top image.

12. Mirror*

Press this button to display the screen in mirror image.

13. Rotation*



Press this button to rotate the image 90° left and right or 180° upside down.

14. Audio 1~4

Press these buttons to select audio from HDMI input source 1~4.

- Functions only work under Window A to D. The system will force to switch to Window A when operate under Window E~H

RS-232 Protocol

Press once to reset current setting values back to factory default value

RS-232 IN			RS-232 OUT	
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: 115200 bps

Data bit: 8-bit

Parity: None

Stop Bit: 1

Flow Control: None

OSD Menu

Main Menu	1 st layer	2 nd layer	3 rd layer
I/O Setup	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/Off
		H Offset	0~20 (5)
		Voffset	0~20 (5)
		Timeout	Off~50
		Gain	0~10 (2)

		Menu Back	
	Menu Exit		
Image Adjust	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		
Window Setup	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	On/ Off
		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	On/ Off
		Priority	CH1→4,CH2→3, CH3→2,CH4→1
		Window Reset	

		Menu Exit	
	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	On/ Off
		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	On/ Off
		Priority	CH1→4,CH2→3, CH3→2,CH4→1
		Window Reset	
		Menu Exit	
	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/OFF/OK
		FAV 2 Store	ON/OFF/OK
		FAV 3 Store	ON/OFF/OK
		FAV 4 Store	ON/OFF/OK
		Menu Exit	
	Menu Exit		
Window Convert	Channel 1 Convert	Mirror	ON/OFF
		Fade In-Out	Off/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 2 Convert	Mirror	ON/OFF
		Fade In-Out	Off/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 3 Convert	Mirror	ON/OFF
		Fade In-Out	Off/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/OFF
		Fade In-Out	Off/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	
Chromakey Setup*	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/OFF
	Exit		
Ethernet Setup	IP Mode	Static/DHCP	
	Static Set	IP/Mask/Gate	
	Byte1 High	XXX 192 255 192	000~255

	Byte2	XXX 168 255 168	000~255
	Byte3	XXX 5 255 5	000~255
	Byte4 Low	XXX 159 0 254	000~255
	Re-link	No/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		
Information	Model xxxxxxxx Native xxxxxxxx F/V version		
Menu Exit			

Note: Bolditalic fonts and () figures are factory default setting figures.

* Chromakey Setup works only under CH1& CH2 where CH1 is the background and CH2 is the top layer.

This special function is designed for picture overlap video such as news reporter, weather forecast or educational video taping. CH2 the top layer's background color is usually a single color which can be easy for remove. RGB's setting is for 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.

When input 1 or 2 has no source connection a warning message will appear on OSD.

RS-232 & Telnet Commands

Command	Description
RESO 0~18	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

<i>OSDDIS 0/1</i>	<i>ENABLE/DISABLE ONSCREEN DISPLAY (0) OFF, (1) ON</i>
<i>OSDH 0~20</i>	<i>OSD H OFFSET 0~20</i>
<i>OSDV 0~20</i>	<i>OSD V OFFSET 0~20</i>
<i>OSDTIME 0~50</i>	<i>OSD TIMEOUT 0~50</i>
<i>OSDGAIN 0~10</i>	<i>OSD GAIN VALUE 0~10</i>
<i>BRI 0~4 0~100</i>	<i>SET BRIGHTNESS VALUE FOR CHANNEL (0) All, (1~4) CHANNEL, (0~100) VALUE</i>
<i>CON 0~4 0~100</i>	<i>SET CONTRAST VALUE FOR CHANNEL PORT (0) All, (1~4) CHANNEL, (0~100) VALUE</i>
<i>SAT 0~4 0~100</i>	<i>SET SATURATION VALUE FOR CHANNEL PORT (0) All, (1~4) CHANNEL, (0~100) VALUE</i>
<i>HUE 0~4 0~100</i>	<i>SET HUE VALUE FOR CHANNEL PORT (0) All, (1~4) CHANNEL, (0~100) VALUE</i>
<i>HSIZE 1~4 0~X</i>	<i>SET IMAGE HORIZONTAL SIZE (1~4) CHANNEL, (0~X) X=HORIZONTAL PIXEL FOR CURRENT RESOLUTION</i>
<i>VSIZE 1~4 0~X</i>	<i>SET IMAGE VERTICAL SIZE (1~4) CHANNEL, (0~X) X=VERTICAL PIXEL FOR CURRENT RESOLUTION</i>
<i>HPOS 1~4 0~X</i>	<i>SET HORIZONTAL POSITION OF SPECIFIED CHANNEL (1~4) CHANNEL, (0~X) X=HORIZONTAL PIXEL FOR CURRENT RESOLUTION</i>
<i>VPOS 1~4 0~X</i>	<i>SET VERTICAL POSITION OF SPECIFIED CHANNEL (1~4) CHANNEL, (0~X) X=VERTICAL PIXEL FOR CURRENT RESOLUTION</i>

<i>IMAGE 1~4 0~1</i>	<i>CHANNEL(S) OUTPUT ON/OFF (1~4) CHANNEL, (0/1) OFF/ON</i>
<i>PRI 1~4 1~4</i>	<i>SET CHANNEL PRIORITY (1~4) CHANNEL, (1~4) PRIORITY</i>
<i>LABEL 1~4 XXX</i>	<i>ASSIGN A VIDEO NAME (1~4) VIDEO, (XXX) ABCDEFGH...</i>
<i>STORE 1~4</i>	<i>SAVE THE CURRENT WINDOW STATE TO FAV. (1~4) FAV</i>
<i>RECALL 1~12</i>	<i>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</i>
MIRROR 0/1	ENABLE/DISABLE MIRROR EFFECT (0/1) OFF/ON
FADE 0~21	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
ROTATE 0~3	SET VIDEO ROTATION VIDEO TO PRESET POSITIONS (0) ROTATE OFF, (1) R90, (2) L90, (3) 180
CHRC R/G/B MIN/MAX 0~255	SET THE RGB COLOR RANGE FOR THE CHROMA KEY (R/G/B) COLOR CHANNEL (MIN/MAX) COLOR VALUE (0~15) SET PRESENT VALUE 0~255 RGB 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
CHRSW 0/1	SET THE CHROMA KEY ON/OFF (0) OFF, (1) ON
IPMODE 0/1	SET IP MODE TO DHCP OR STATIC (0) DHCP, (1) STATIC

IPADD XXX.XXX. XXX.XXX	SET IP ADDRESS (XXX) 0~255
MAADD XXX. XXX.XXX.XXX	SET SUBNET ADDRESS (XXX) 0~255
GAADD XXX. XXX.XXX.XXX	SET GATEWAY ADDRESS (XXX) 0~255
ETHTIME 0~6	ETHERNET TIMEOUT (0) OFF, (1) 10 MINUTE, (2) 20 MINUTE, (3) 30 MINUTE, (4) 40 MINUTE, (5) 50 MINUTE, (6) 60 MINUTE
RELINK	RELINK THE UNIT IN 2 SECONDS
DEFAULT	RESET THE UNIT TO FACTORY DEFAULTS
VICH 1~4 0~4	VIDEO CHANNEL COMMAND (1~4) VIDEO, (0) ALL CHANNEL OUTPUTS, (1~4) CHANNEL OUTPUTS
MUTE 0/1	MUTE AUDIO (0) OFF, (1) ON
POW 0/1	POWER THE UNIT ON/OFF (0) OFF, (1) ON
AUDIO 1~4	CHANGE OUTPUT AUDIO TO SPECIFIED SOURCE (1~4) AUDIO SOURCE
IMRE B/C/S/H	RESET THE IMAGE TO FACTORY DEFAULTS (B) BRIGHTNESS, (C) CONTRAST, (S) SATURATION, (H) HUE
PIRE	RESET THE UNIT PICTURE SETTINGS TO FACTORY DEFAULTS
CHRE 0~4	RESET THE WINDOWS SETTINGS TO FACTORY DEFAULTS (0) ALL CHANNEL OUTPUTS, (1~4) CHANNEL OUTPUTS
WICORE	RESET THE WINDOW CONVERT TO FACTORY DEFAULTS
RIPM	SHOW CURRENT IP MODE
IPCONFIG	SHOW IP CONFIGURATION
HELP	PRINTS ALL AVAILABLE RS-232/TELNET COMMANDS TO THE SCREEN
?	PRINTS ALL AVAILABLE RS-232/TELNET COMMANDS TO THE SCREEN

Commands with Italic fonts are only functioning under Window E~H and FAV.1~4

Commands with Bold fonts are only functioning under Window A~D

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.

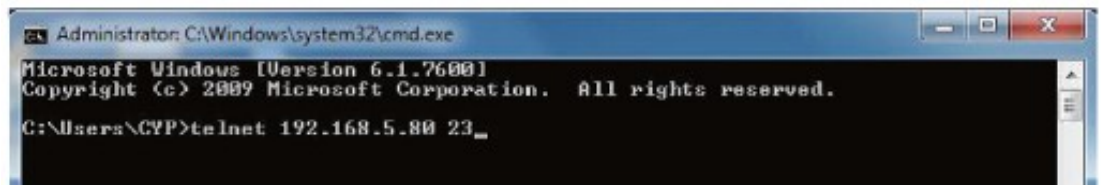
Under Mac OS X, go to Go→Applications→Utilities→Terminal

See below for reference.

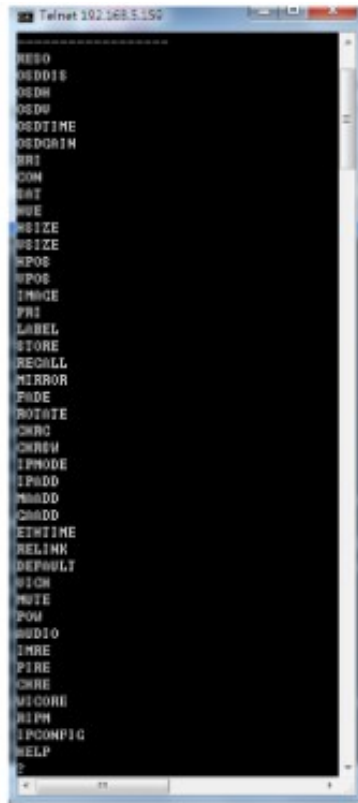


Once in the command line interface (CLI) type "telnet", then the IP address of the unit and hit enter.

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.

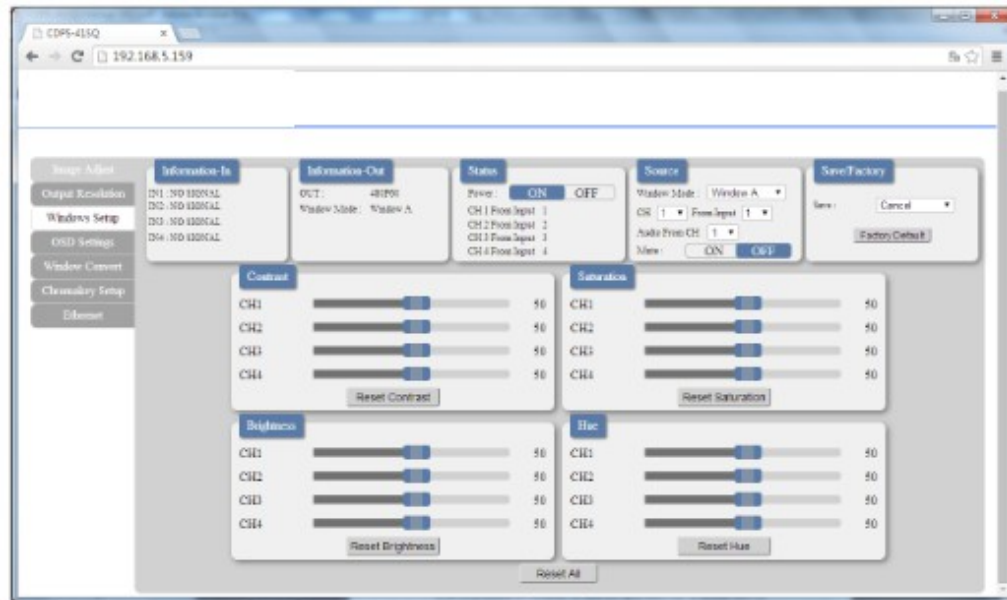


Type “IPCONFIG” To show all IP configurations. To reset the IP, type “IPMODE” to set static IP/DHCP (For a full list of commands, see Section on **RS-232 & Telnet Commands**).

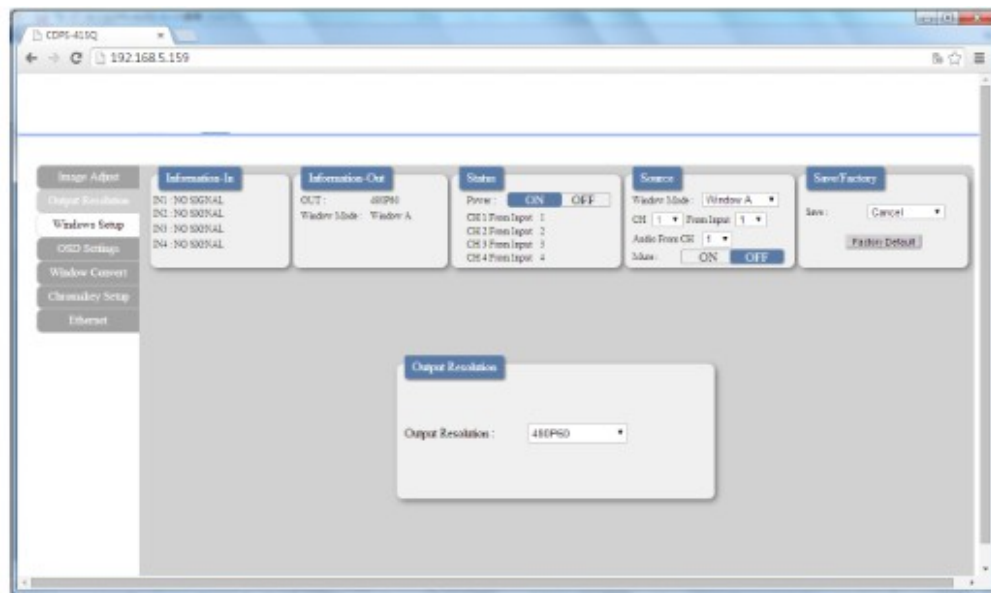
Note: All the commands will be not executed unless followed by a carriage return. Commands are case-insensitive. If the IP is changed then the IP Address required for Telnet access will also need to be change accordingly. A power relink is also required for every IP change.

WebGUI Control

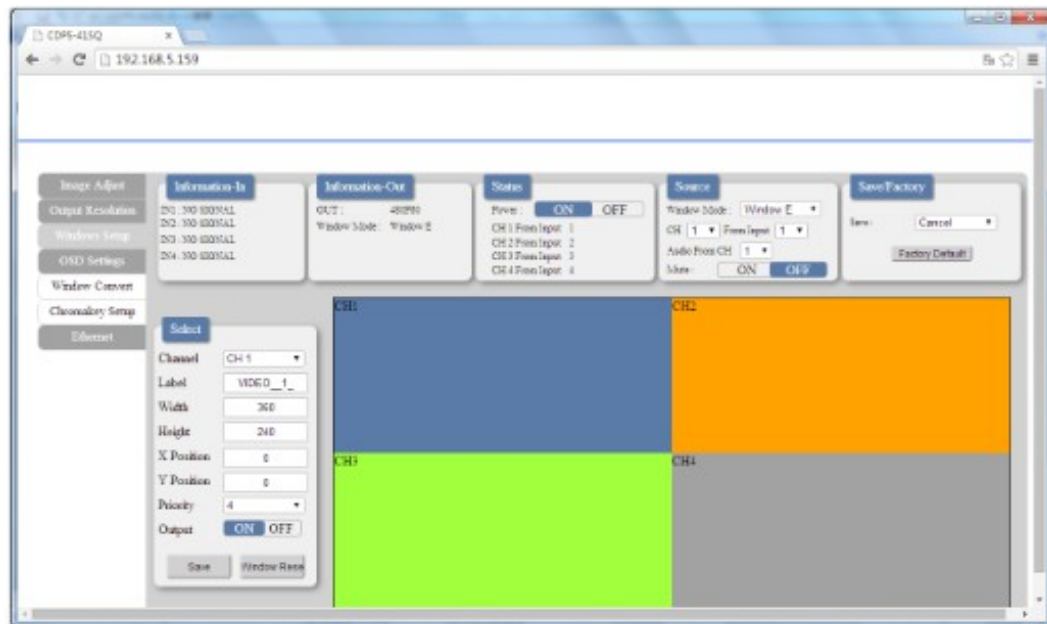
On a PC/Laptop that is connected to an active network as the Scaler, open a web browser and type device’s IP address on the web address entry bar. The browser will display the device’s Image Adjust, Output Resolution, and ... etc



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

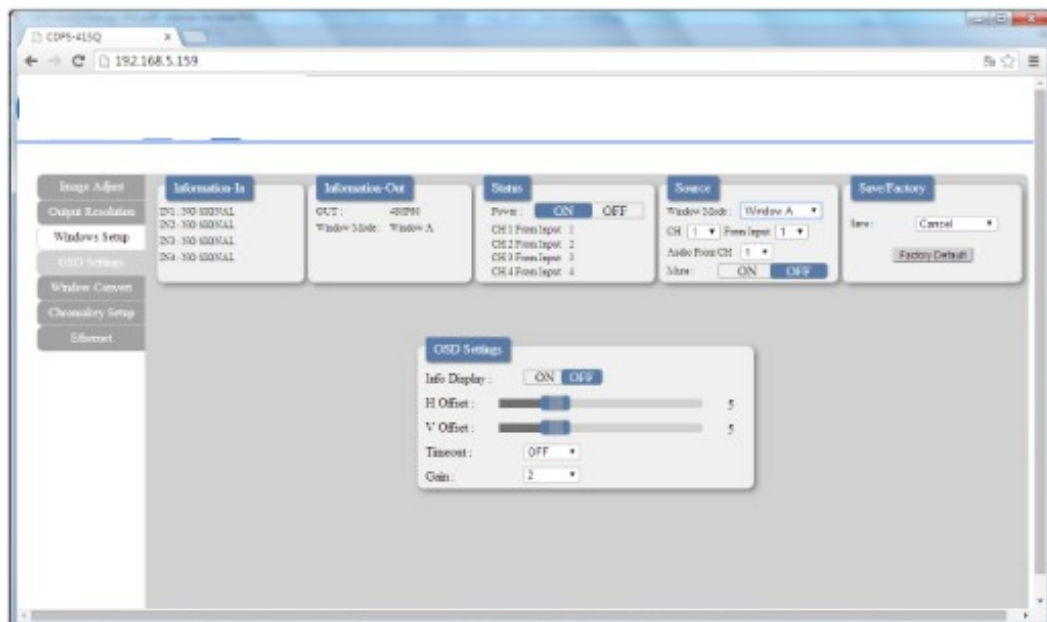


Clicking on the 'Output Resolution' tab to set the output display resolution.

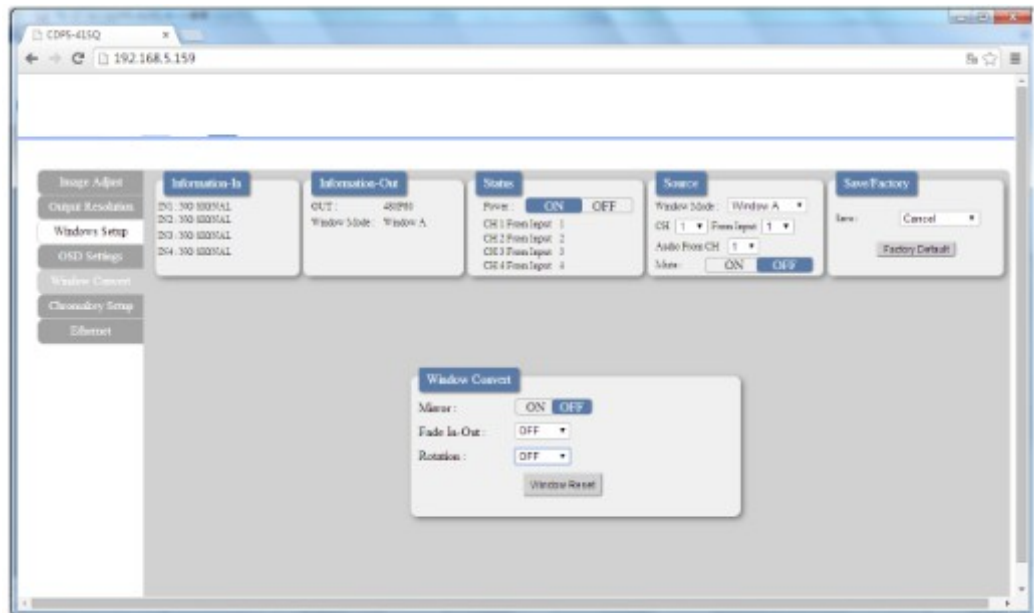


Clicking on the 'Windows Setup' tab to set the output display format.

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

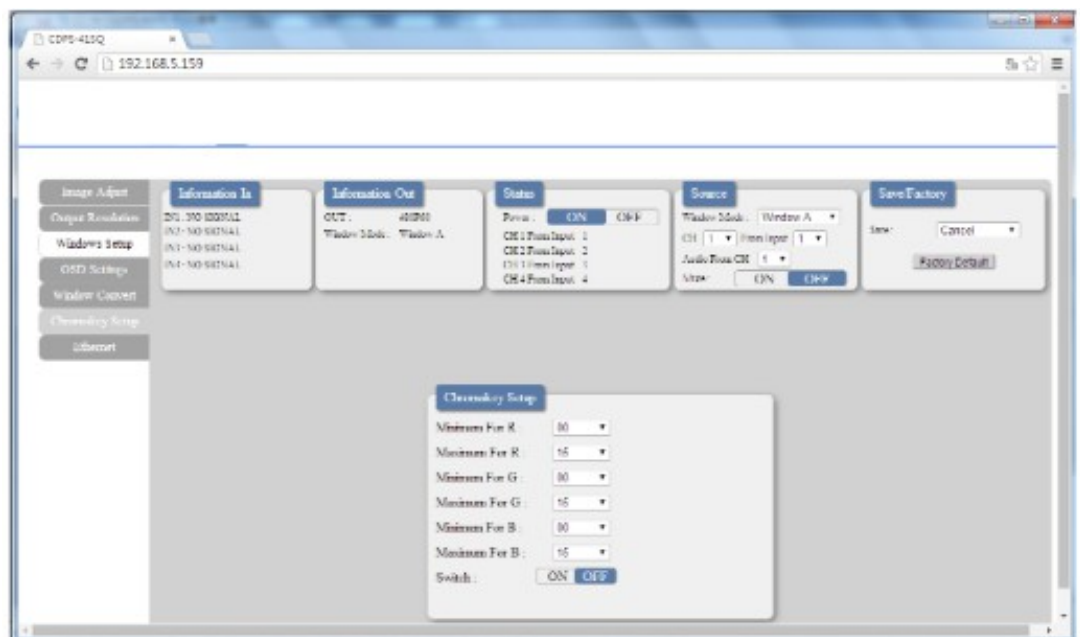


Clicking on the 'OSD Settings' tab to set the OSD function and position



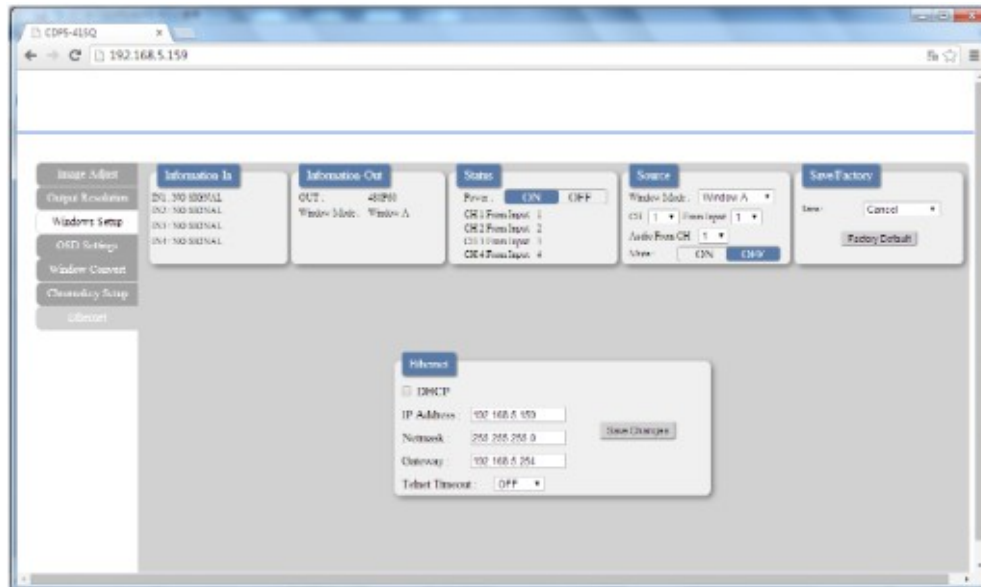
Clicking on the 'Window Convert' tab to set the output display angle.

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



Clicking on the 'Chromakey Setup' tab to set the output display color.

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



Clicking on the 'Ethernet' tab to reset the IP configuration. The system will ask for a reboot of the device every time when any of the settings is 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: All command will be not executed unless followed with a carriage return and commands are case-insensitive

Specifications

Video Bandwidth:	225Mhz / 6.75Gbps
Input Ports:	4 x HDMI
Output Ports:	1 x HDMI
Supports Input Resolution	PC:VGA~WUXGA, HD: 480i~1080p
Supports Output Resolution	1080p@60
HDMI Input Cable Distance	Up to 15M/1080p@12 bits
HDMI Output Cable Distance	Up to 15M/1080p@8 bits
Supports Sampling Rate	32~192kHz
ESD Protection	Human Body Model ±8kV (air-gap discharge) ±4kV (contact-gap discharge)
Power Supply:	12V/3A DC (US/EU standards, CE/FCC/UL certified)
Dimensions :	436mm(W) x 247mm(D) x 44mm(H)
Weight (kg's):	2.2kg
Chassis Material	Aluminium
Silkscreen Color	Black
Operating Temperature	0℃ ~ 40℃ / 32℉ ~ 104℉
Storage Temperature	-20℃ ~ 60℃ / -4℉ ~ 140℉
Relative Humidity	20 ~ 90% RH (non-condensing)
Power Consumption	18W

HDMI Supported Resolutions	Input	Output
640x480@60,72,75,85	V	
800x600@56,60,72,75,85	V	
1024x768@60,70,75,85	V	V@60
1360x768@60	V	
1280x768@60,75	V	
1280x800@60		V
1280x1024@60,75	V	V@60
1366x768@60	V	V
1440x900@60		V
1600x900@60		V
1600x1200@60	V	V
1680x1050@60		V
1920x1200@60	V	V
480i60	V	
576i50	V	
480p60	V	V
576p50	V	V
720p50	V	V
720p60	V	V
1080i50	V	
1080i60	V	
1080p24	V	V
1080p25		V
1080p30		V
1080p50	V	V
1080p60	V	V

Connection Diagram

