

## 4x4 HDMI Matrix Switch w/ Picture-and-Picture – 1080p

VS424HDPIP



\*actual product may vary from photos

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This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by StarTech.com could void the user's authority to operate the equipment.

## Industry Canada Statement

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe [B] est conforme à la norme NMB-003 du Canada.

CAN ICES-3 (B)/NMB-3(B)

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# Table of Contents

<b>Introduction</b> .....	<b>1</b>
Packaging Contents .....	1
System Requirements.....	1
<b>Product Diagram</b> .....	<b>2</b>
Front View .....	2
Rear View.....	2
<b>Hardware Installation</b> .....	<b>3</b>
<b>Hardware Operation</b> .....	<b>3</b>
Matrix Operation .....	3
Dual Mode Operation.....	3
TV Wall Mode Operation .....	4
On Screen Display Menu .....	4
IR Remote Control Operation .....	8
RS232 Serial Operation .....	10
IP Operation Using Web Browser .....	13
<b>Technical Support</b> .....	<b>18</b>
<b>Warranty Information</b> .....	<b>18</b>

# Introduction

## Packaging Contents

- 1 x HDMI Matrix Switch (VS424HDPIP)
- 1 x Remote control
- 1 x Mounting brackets
- 1 x Universal Power Adapter (NA/UK/EU/AUS)
- 1 x Quick Install Guide

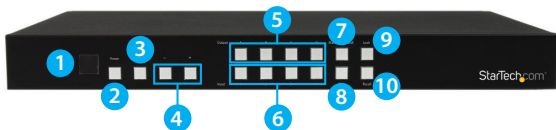
## System Requirements

- Up to 4 x HDMI-enabled Video Source Devices (i.e. computer, Blu-ray Player)
- Up to 4 x HDMI-enabled Display Devices (i.e. television, projector)
- Up to 8 x M/M HDMI cables for displays and video sources

# Product Diagram

## Front View

1. IR Sensor
2. Power Button / LED
3. Menu Button / LED
4. Menu Operation Buttons / LEDs
5. Output Selection Buttons / LEDs
6. Input Selection Buttons / LEDs
7. Mode Selection Button / LEDs
8. Save Button / LED
9. Lock Button / LED
10. Recall Button



## Rear View

1. HDMI Input Ports
2. HDMI Output Ports
3. LAN Port
4. USB Service Port
5. RS232 Serial Port
6. Power Adapter Port



# Hardware Installation

- 1.
2. Connect up to four HDMI cables (not included) from each of your HDMI video source devices (i.e. computers, Blu-ray Players) to each of the HDMI input ports on the matrix switch.
3. Connect up to 4 HDMI cables (not included) from each HDMI output port on the matrix switch to the HDMI input ports on your display devices (i.e. televisions, projectors).
4. Connect the power adapter from an available power outlet to the Power adapter port the Matrix switch.
5. (Optional) If you would like to control your Matrix Switch with RS232, connect a DB-9 pin serial cable (not included) from the RS232 serial port on the matrix switch to your RS232 serial port on your computer system.
6. (Optional) If you would like to control your Matrix Switch over your network, connect a network cable (not included) from the LAN port on the matrix switch to an available LAN port on your network device.

# Hardware Operation

## Matrix Operation

1. Press the Mode button repeatedly until the Mode LED is solid to indicate Matrix Mode.
2. Press the Output select button (that corresponds with the lettered output display) you wish to select.
3. Press the input select button (that corresponds with the numbered input display) you wish to output on your selected output display.
4. Your selected video input will now be displayed on your selected video output. Repeat steps 2- 3 for each video output you wish to adjust. Each output setting must be made individually.

## Dual Mode Operation

1. Press the Mode button repeatedly until the Mode LED is unilluminated to indicate Dual Mode.
2. Press output A/B and then press corresponding input 1/2.

**For example:** If you press output A then press input 1, output A will display the input 1 image on the left side. If you then press output B followed by input 2, output A will display the input 2 image on the right side. Both output A and B will have an identical image.

**Note:** Dual A group are output A and B, Dual B group are output C and D. Each group will output the same image simultaneously.

3. To switch the audio source between output A or B, Press button A or B for 3 seconds.
4. To switch the audio source between output C or D, Press button C or D for 3 seconds.

## TV Wall Mode Operation

1. Press the Mode button repeatedly until the LED is blinking to indicate TV Wall Mode.
2. Press the input select button (that corresponds with the numbered input display) you wish to output on all displays.

**Note:** Audio will Output on the device connected to Video Output A only

## On Screen Display Menu

The OSD menu gives you access to advanced functionality. The below table lists each OSD menu option. The description field outlines the functionality of each menu selection.

Main Menu	Sub Menu	Adjustments	Default	Description	
PICUTRE	ALL	CONTRAST	0 ~ 100	50	<i>Enables you to adjust the specified attributes for your desired picture quality.</i>
		BRIGHTNESS	0 ~ 100	50	
		SATURATION	0 ~ 100	50	
		HUE	0 ~ 100	50	<b>Note: In Matrix mode, four pictures adjust simultaneously.</b> <i>In Dual/TV Wall mode, each picture can adjust individual and support individual last memory feature.</i>

	DUAL	DUAL AL	<i>Enables you to select Dual mode with your desired video outputs selected.</i>
		DUAL AR	
		DUAL BL	
		DUAL BR	
	TVWALL	OUT A	<i>Enables you to select TV WALL mode with your desired video output.</i>
		OUT B	
		OUT C	
		OUT D	
	D/T	RESET	<i>Restores default output settings.</i>
	ALL	RESET ALL	
EXIT		<i>Returns to Main Menu.</i>	
OUTPUT RESOLUTION	480p, 576p, 720p50, 720p60, 1080i50, 1080i60, 1080p24, 1080p50, 1080p60, 1024x768, 1280x800, 1280x1024, 1366x768, 1440x900, 1600x900, 1600x1200, 1680x1050, 1920x1200	720p60	<i>Enables you to select your desired output resolution.</i>  <b>Note:</b> <b>1080i@50/60 are supported in Matrix mode only.</b>
	EXIT	<i>Returns to Main Menu.</i>	



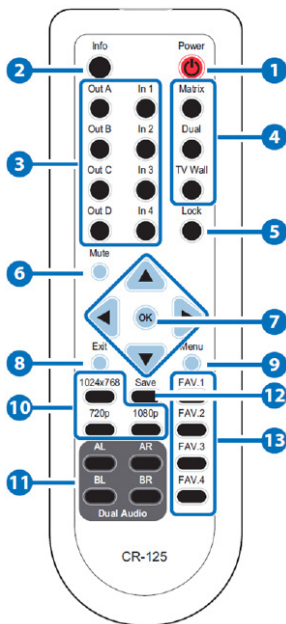
AUDIO EDID	LPCM 2CH, LPCM, 6CH, LPCM 8CH, BIT-STREAM, HD		LPCM 2CH	<p>Enables you to define your available audio specification to your audio source device.</p> <p><b>Note:</b> <b>Whichever is selected will limit the audio distributed by your source device.</b></p>
	EXIT			Returns to Main Menu.
OSD SETTINGS	POSITION	LEFT T, RIGHT T, LEFT B, RIGHT B	LEFT T	<p>Enables you to adjust the specified attributes in relation to the On the Screen display positioning and operation.</p> <p><b>Note: TIMEOUT =OFF means MENU and INFO will continue showing on the screen</b></p>
	H OFFSET	0 ~ 20	10	
	V OFFSET	0 ~ 20	10	
	TRANSPARENCY	0 ~ 9	4	
	MENU TIMEOUT	5 ~ 50 OFF	8	
	INFO.TIMEOUT	5 ~ 50 OFF	8	
	INFO.DISPLAY	ON, OFF	ON	
	BRIEF INFO	ON, OFF	OFF	
EXIT			Returns to Main Menu.	

HDCP	INPUT	ACCEPT, NOT ACCEPT	ACCEPT	<i>Enables you to turn HDCP support on and off.</i>
	OUTPUT	FOLLOW INPUT, ALWAYS ON	FOLLOW INPUT	
	EXIT			<i>Returns to Main Menu.</i>
BEZEL CORRECTION	CORRECTION	ON, OFF	OFF	<i>Enables you to define image compensation for the bezel size of your monitors for when the switch is in TV WALL mode.</i>
	H CORRECTION	0~ by output resolution	0	
	V CORRECTION	0~ by output resolution	0	
	EXIT			<i>Returns to Main Menu.</i>
RECALL / SAVE	RECALL	CANCEL, FAV .1 ~ 4	CANCEL	<i>Enables you to access the save and recall features from the OSD menu.</i>
	SAVE	CANCEL, FAV .1 ~ 4	CANCEL	
	EXIT			<i>Returns to Main Menu.</i>

ETHERNET	IP MODE	DHCP, STATIC	DHCP	<i>Enables you to define Network communication protocols for remote operation.</i>
	STATIC SET	IP, MASK, GATE	IP	
	BYTE1		192	
	BYTE2		168	
	BYTE3		5	
	BYTE4		155	
	RE-LINK			
	TIMEOUT (Min.)	5~60, OFF	10	
EXIT				<i>Returns to Main Menu.</i>
OTHERS	IR ADDRESS	0~3	0	<i>Enables you to specify up to three different IR modes for the use of multiple switches with multiple remote controls.</i>
	EXIT			<i>Returns to Main Menu.</i>
INFORMATION	IN/OUT RESOLUTION			<i>Enables you to view the technical specifications of the specified attributes.</i>
	SOURCE HDCP/AUDIO			
	OUT MODE, FIRMWARE VER			
	EXIT			<i>Returns to Main Menu.</i>
EXIT				<i>Closes OSD Menu.</i>

## IR Remote Control Operation

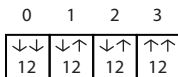
An IR remote control is included with the VS424HDPIP for hassle-free remote operation. Please review the legend below for a detailed description of each remote control function.



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. **Out A~D and In 1~4:** Press output A~D and then press input 1~4 to select display input. For example: press Out A then press In 1, output A will display input 1's image.
4. **MATRIX/DUAL/WALL:** Press to switch between Matrix mode, Dual mode and TV Wall mode.
5. **Lock:** Press once to lock the keypad and remote control, press 3 second again to release the lock function.
6. **Mute:** Press this button to mute the audio from HDMI output port.
7. **▲/▼/←/→/OK:** Press these buttons to scroll through the OSD selection and press OK to enter and confirm the setting.
8. **Exit:** Press this button to exit the OSD menu or the OSD settings.
9. **Menu:** Press this button to enter into the OSD menu.
10. **1024x768/720p/1080p:** Press these hot keys to switch between each resolution.
11. **AL/AR/BL/BR:** When in Dual mode, press these hot keys to switch the audio channel in Left or Right side for Dual A and Dual B group.
12. **SAVE:** To save the customized input and output corresponding settings.
  - i. Press "Matrix/Dual/Wall" button to select mode status.
  - ii. Press each output channel A~D and then press corresponding input channel 1~4.
  - iii. Press "SAVE", then input 1~4's LED will illuminate at the same time, then press remote control FAV.1~FAV.4 to save to the system memory.
13. **FAV.1~FAV.4:** Press favorite hot keys 1~4 to bring up the customized screen save settings.

#### IR Remote Control Dip Switch

If you're using multiple switches in the same location you can configure up to three remote controls on different IR addressing to avoid interference with each other. To adjust the remote control, open the Remote control back cover and adjust the dip-switch ON/OFF to match IR address setting in the OSD menu. Factory default setting is 0.



You must then adjust the switch itself using the OSD menu, to the specific number you've set your remote control to. To adjust the IR addressing of the switch itself please access the below setting in the OSD menu.

**Others -> IR addressing**

## RS232 Serial Operation

### RS232 Pin Assignment

VS424HDPIP	
PIN	Assignment
1	NC
2	TxD
3	RxD
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC

Serial Controller (PC)	
PIN	Definition
1	NC
2	TxD
3	RxD
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC

### RS232 Protocols

**Baud Rate: 115200bps**

**Data Bit: 8 bits**

**Parity: None**

**Flow Control: None**

**Stop Bit: 1**

## RS232 Telnet Commands

**Note: All commands will be not executed unless followed with a carriage return (0x0D) and commands are case-sensitive.**

Command	Action	Return
AUA001	Dual A Audio channel in Left side	AUA001
AUA002	Dual A Audio channel in Right side	AUA002
AUA999	Check Dual A audio channel status	AUA???
AUB001	Dual B Audio channel in Left side	AUB001
AUB002	Dual B Audio channel in Right side	AUB002
AUB999	Check Dual B audio channel status	AUB???
AUD000	Audio output Off	AUD000
AUD001	Audio output On	AUD001
AUD999	Check audio on/off status	AUD???
AUE000	Audio edid is LPCM 2CH	AUE000
AUE001	Audio edid is LPCM 6CH	AUE001
AUE002	Audio edid is LPCM 8CH	AUE002
AUE003	Audio edid is BITSTREAM	AUE003
AUE004	Audio edid is HD	AUE004
AUE999	Check audio edid setting	AUE???
BEZ000	Bezel Correction OFF	BEZ000
BEZ001	Bezel Correction ON	BEZ001
BEZ999	Check bezel correction on/off status	BEZ???

BEH???	Horizontal (H) Bezel correction???=000 ~ Maximum	BEH???
BEH998	Check the current Horizontal(H) Bezel correction Maximum value	BEH???
BEH999	Check the current Horizontal(H) Bezel correction setting value	BEH???
BEV???	Vertical (V) Bezel correction???=000 ~ Maximum	BEV???
BEV998	Check the current Vertical(V) Bezel correction Maximum value	BEV???
BEV999	Check the current Vertical(V) Bezel correction setting value	BEV???
BRI???	Setting Brightness	No response
	???=000~100 for matrix mode	
	???=(000~100)+200*(OUT No.-1) for dual/tv wall mode	
	For example: OUT B set the Brightness value to 57 =(57)+200*(2-1) = 257	
BRI99?	Check current Brightness value	BRI???
	99?=999 for matrix mode	
	99?=991~994=OUT1~4 for dual/tv wall mode	
CAL???	RECALL FAV. ???=001~004=FAV.1~4	CAL???
CON???	Settings Contrast	No Response
CON999	Command Setting same as Brightness	CON???
DUL001	Sets Dual mode to PoP	DUL001



DUL002	Sets Dual mode to PiP	DUL002
DUL003	Checks Dual mode status	DUL999
EGW999	RS232 only, checks the current Ethernet gateway address	aaa.bbb.ccc.ddd
EIP999	RS232 only, check the current Ethernet IP address	aaa.bbb.ccc.ddd
EMK999	RS232 only, checks the current Ethernet Subnet mask address	aaa.bbb.ccc.ddd
HLP999	Shows the command list	Command List
HPI0xy	HDCP Input setting x=1~4=IN 1~4, y=0=On, y=1=Off	HPI0xy
HPI99?	Check HDCP INPUT setting ?=1~4 = IN 1~4	HPI0xy
HPO0xy	HDCP Output setting x=1~4=OUT A~D, y=0=Follow Input, y=1=Follow Output	HPI0xy
HPO99?	Check HDCPOUTPUT setting ?=1~4 = OUT A~D	HPO0xy
HUE??	Setting HUE	No response
HUE999	Command setting same as Brightness (BRI)	HUE???
INP???	INPUT selection ??? = 001~004 = IN 1 ~ 4	INP???
	Execute OUT???	
INP999	Check current INPUT	INP???
LAB000	Set Input label off	LAB000

LAB001	Set Input label on	LAB001
LAB999	Check current Input label on/off	LAB???
LAIxyyyyyy	Set Input label name x = 1 - 4 = IN 1 - 4, yyyyyyyyyyyy max. 12 characters	LAIxyy
LAI99?	Check Input label character ? = 1 - 4 = IN 1 - 4	LAIxyy
LCK000	Unlock	LCK000
LCK001	Lock	LCK001
LCK999	Check current Lock/Unlock status	LCK???
MNE001	OSD Menu EXIT	No response
MND001	OSD Menu DOWN	No response
MNL001	OSD Menu LEFT (-)	No response
MNO001	OSD Menu OK	No response
MNR001	OSD Menu RIGHT (+)	No response
MNU001	OSD Menu UP	No response
MNX001	OSD menu	No response
MOD001	Matrix mode	MOD001
MOD002	Dual PoP mode	MOD002
MOD003	TV Wall mode	MOD003
MOD004	Dual PiP mode	MOD004
MOD005	Quad mode	MOD005
MOD999	Check current output mode status	MOD???
OUT???	OUTPUT selection ??? = 001 - 004 = OUT A - D	OUT???
OUT999	Check current OUTPUT	OUT???

PPO0xy	Dual PiP/Sub Position x=1~2=PiP A~B y=0=Upper left, 1=Upper right, 2=Lower right, 3= Lower left	PPO0xy
PPO99?	Check PiP/Sub Position status ?=1~2=PiP A~B	PPO0xy
PSW001	Dual PiP A(Main) image swap with Sub	PSW001
PSW002	Dual PiP B(Sub) image swap with Main	PSW002
PSZ0xy	Dual PiP/Sub Size x=1~2=PiP A~B y=0=Large, 1=Medium, 2=Small, 3= Off	PSZ0xy
PWR000	Power Off(Standby)	PWR000
PWR001	Power On	PWR001
PWR999	Check current power status	PWR???
RES???	Output resolution ??? =001~ ...corresponding osd menu list	RES???
RES999	Check current output resolution	RES???
RST001	Factory Reset	RST001
RST002	Picture Reset	RST002
SAT???	Setting Saturation	No response
SAT999	Command setting same as Brightness (BRI)	SAT???
SAV???	SAVE FAV. ??? =001~004=FAV.1~4	SAV???

VER999	Check firmware version	VER ??? Example: VER110=V1.1
VR2999	Check customer's firmware version	VR2 ???

# IP Operation Using Web Browser

## Before you begin:

- Power Status must be set to on, and source status must be unlocked
- Ensure step 5. of hardware Setup has been completed.
- Obtain the IP address of the VS424HDPIP using the OSD menu. Access the following sub menu:

ETHERNET -> IP

Your IP address will be displayed next to IP.

**Note:** The switch supports DHCP and it is activated by default. As a result if you connect it to a piece of network equipment that supports DHCP your IP address will automatically change. If your network equipment does not support DHCP your default IP address will be 192.168.5.155

## Access IP Operation Web GUI

1. Open your web browser.
2. In the address bar type the IP address obtained from your OSD menu, and press enter.
3. The VS424HDPIP web GUI is now displayed.

## Operate your VS424HDPIP using the Web GUI

The web GUI enables you to remotely operate your VS424HDPIP with basic and advanced functionality. The below sections outline the features and navigation of the Web GUI.

### Operation Pane

The operation pane gives you a high level overview as well as access to basic switch operation. The Operation pane is always visible at the top of every page in the Web GUI.



The **Information-in** and **information-out** sections gives you an overview of the current connected video source and display devices.

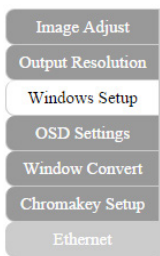
The **Status** section enables you to power off the device.

The **Source** section enables you to select your desired mode as well as define which video source devices will be shown on each display.

The **Save/Factory** section enables you to save and action the customized input and output corresponding settings.

## Advanced Menu

The Advanced menu is available on the left hand side of the GUI, and enables you to navigate between advanced sections of operation.

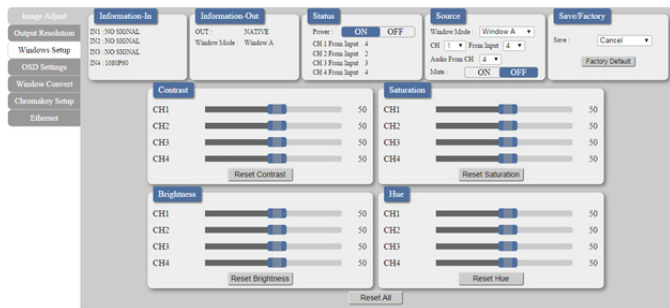


Descriptions outlining navigation as well as the available functionality for each tab are listed below.

### Image Adjust

By default, the **Image Adjust** tab is the first window displayed when the web GUI is opened. If you would like to access the **Image Adjust** tab, and have navigated away from the Window, click **Image Adjust** tab from the side menu.

*The Image Adjust tab enables you to define the specific attributes listed for optimal picture quality based on the requirements of your application.*



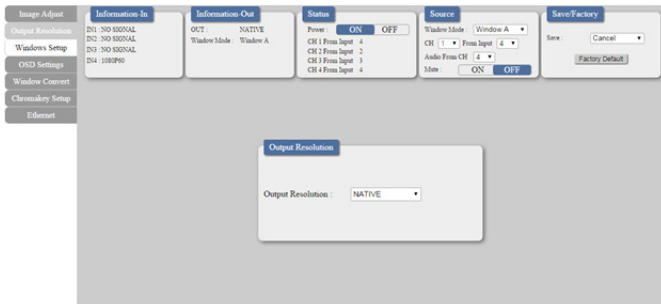
**Note:** In Matrix mode, all four pictures adjust simultaneously.

In Dual/TV Wall mode, each picture can adjust individual and support individual last memory feature.

## Output Resolution

To access the **Output Resolution** tab, click **Output Resolution** on the side menu.

The **Output Resolution** tab enables you to set your desired output resolution from the available drop down menu.



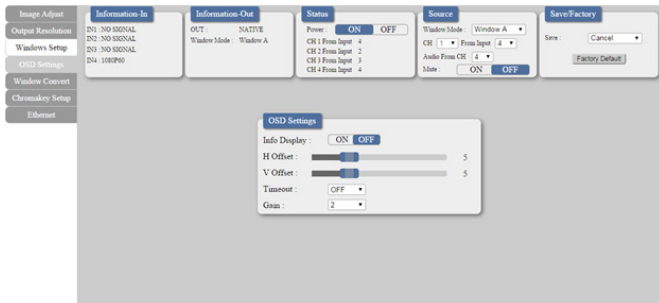
### Notes:

- 1080i@50/60 are supported in Matrix mode only.
- Selecting NATIVE enables the VS424HDPIIP to use EDID to determine the best output resolution automatically.

## OSD Settings

To access the **OSD settings** tab, click **OSD Settings** on the side menu.

The **OSD settings** tab enables you to adjust the specified attributes in relation to the On the Screen display positioning and operation.

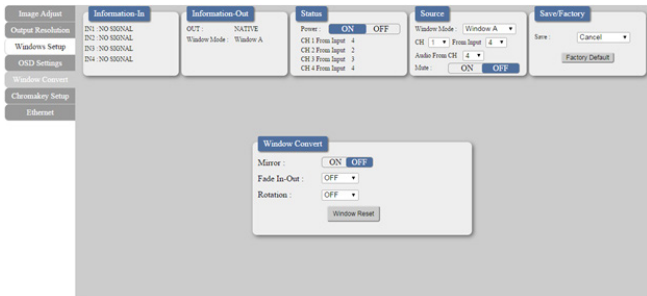


**Note:** TIMEOUT =OFF means MENU and INFO will continue showing on the Screen.

## Window Convert

To access the **Window Convert** tab, click **Window Convert** on the side menu.

The **Window Convert** tab enables you to implement transition effects while switching between video sources.



## Chromakey Setup

To access the **Chromakey Setup** tab, click **Chromakey setup** on the side menu.

The Chromakey Setup section enables you to isolate a particular color for chroma keying special effects.

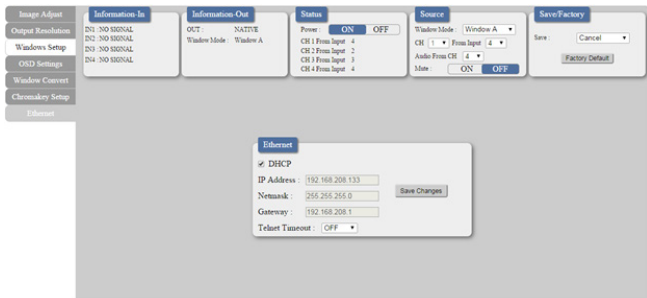




## Ethernet

To access the **Ethernet** tab, click **Ethernet** on the side menu.

The **Ethernet** section enables you to define Network communication protocols for remote operation.



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