

Marshall

Broadcast A/V

CV420/ CV420Ne

Compact **UHD60**fps **ePTZ** Camera
(USB, IP & HDMI)



User Manual

Table of Contents

Chapter 1 Package Contents 2

Chapter 2 Function Introduction..... 3

2.1 I/O functions Introduction 3

2.2 Tally Lamp Function Description..... 3

Chapter 3 Instruction for installation..... 4

3.1 Basic Devices..... 4

Chapter 4 System diagram..... 5

Chapter 5 Remote Control and Setting Menu..... 6

5.1 Functions of remote control..... 6

5.2 Setting Menu 7

Chapter 6 Network Function Settings Description..... 13

6.1 Web System Requirements..... 13

6.2 Web Page Function Description 14

Chapter 7 Troubleshooting..... 27

Chapter 8 Safety Instructions 28

Warranty Information..... 29

CHAPTER 1: PACKAGE CONTENTS

CV420e/CV420Ne

Power Cord

Power Adapter







Remote

CVM-5 Stand

Warranty Card





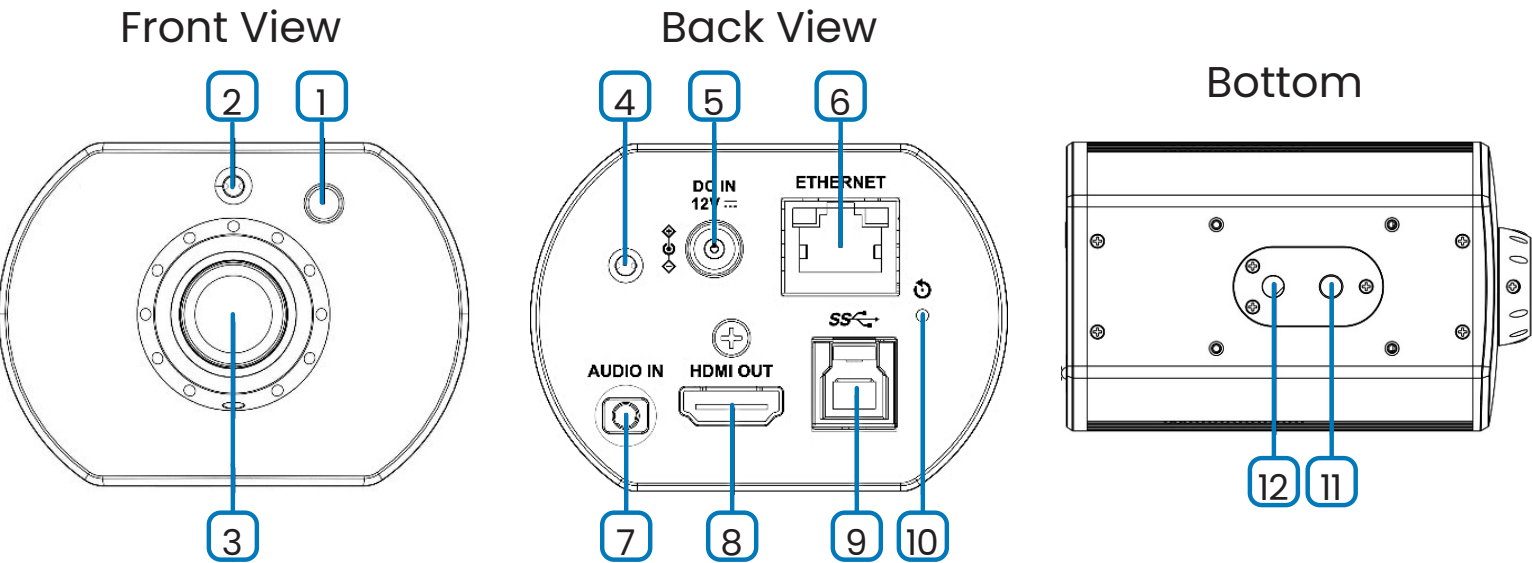




Unit: mm

CHAPTER 2: FUNCTION INTRODUCTION

2.1 I/O Functions Introduction



#	Item	Function Descriptions
1	IR receive	Support infrared remote control
2	Tally Lamp	Display the Tally Lamp status of the camera
3	Lens	HD camera lens
4	Power indicator	Display the status of the camera
5	DC 12 V power connector	AC power supply connecting port
6	Network port	Network cable port supports routers or hubs of IEEE802.3af with PoE power supply
7	Audio input	Support Line In/Mic In audio input
8	HDMI 2.0 output	Connect to HDMI output signal source
9	USB 3.0 Type-B port	Connect to the computer using a USB cable; capture images via the software
10	Reset button	Press and hold for 5 seconds to reset the machine
11	Tripod locating holes	Tripod locating holes
12	Tripod screw holes	Support 1/4", 20 UNC

2.2 Tally Lamp Function Description

2.2.1 The tally indicator light function may be enabled through the control of VISCA command. The setting method is as follows:

3

Tally Mode: 8x 01 7E 01 0A 01 0p FF

p = 0: **OFF**

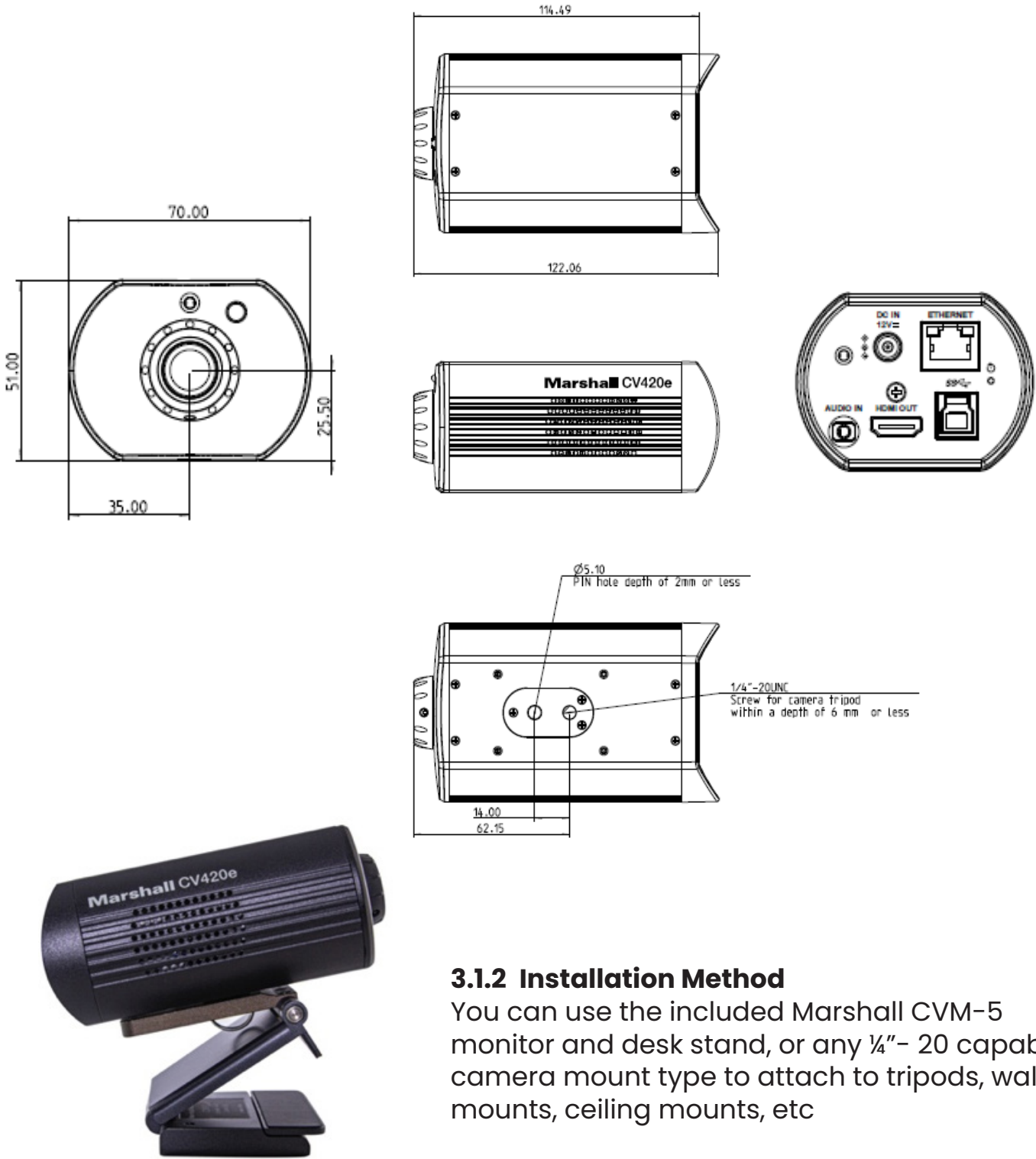
p = 4: **On** (half-brightness)

p = 5: **On** (full-brightness)

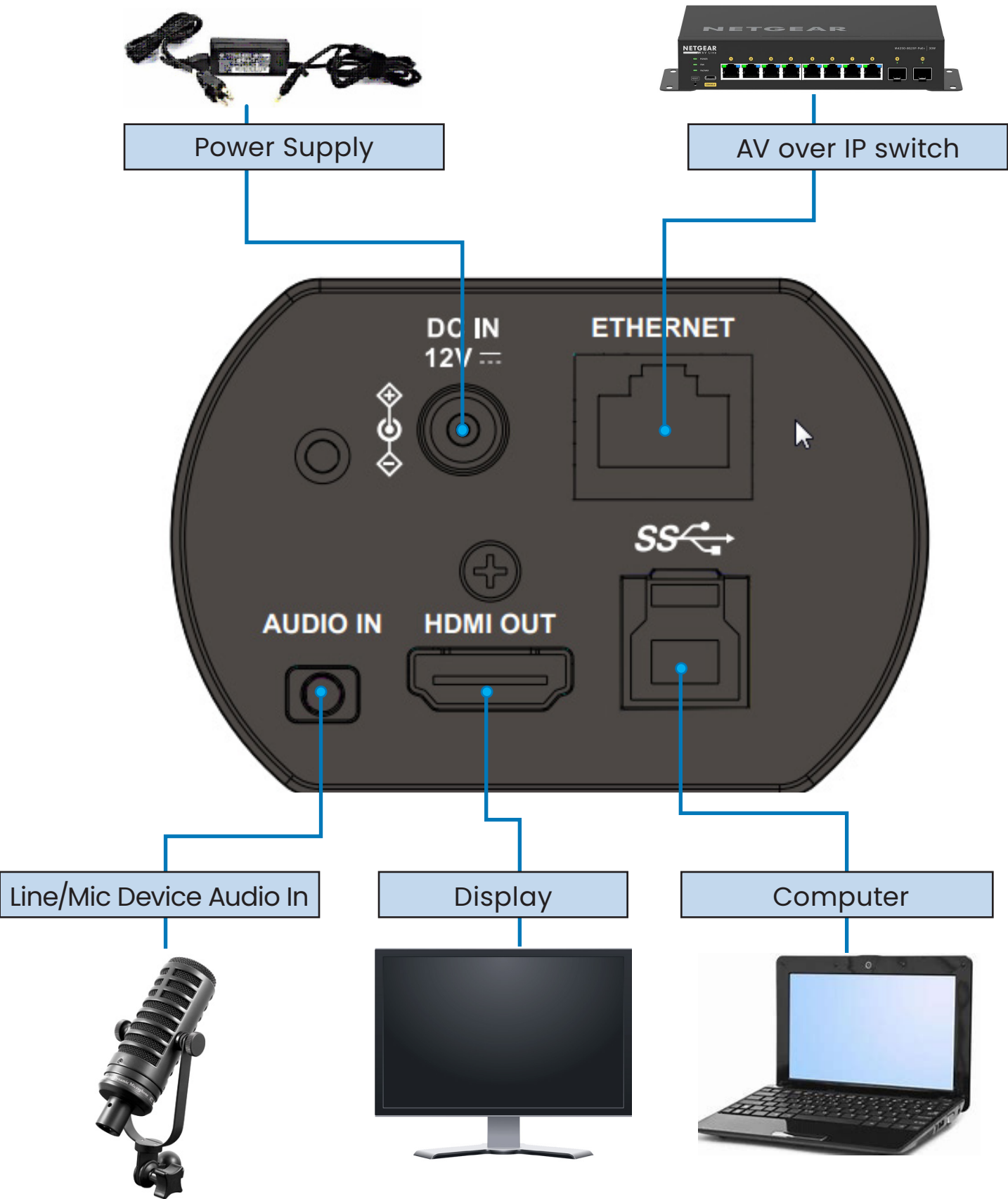
CHAPTER 3: INSTRUCTIONS FOR INSTALLATION

3.1 Basic Devices

3.1.1 Dimensions
Length x Width x Height: 122.06 x 70 x 51 mm Weight: 0.35 Kg



3.1.2 Installation Method
You can use the included Marshall CVM-5 monitor and desk stand, or any 1/4"- 20 capable camera mount type to attach to tripods, wall mounts, ceiling mounts, etc



5.1 Functions of Remote Control*

*IR remote included in this package

Item	Description
◀ ▶ ▲ ▼	Move the lens
Back Light	Turn on/off back light compensation
Camera select	Choose Camera ID 1~3
Focus- Manual /Far/Near	Reserved
Focus-Auto	Reserved
Freeze	Freeze the screen
Home-Enter	Go back to the main page / Execute
Info	Status information
L/R Direction Set	L/R Direction / Normal
Menu	Display OSD menu
Mirror	Rotate the image (OFF / Mirror / Flip / Rotate)
Pan/Tilt Reset	Clear the Pan / Tilt setting
Picture	Switch image effect (OFF / Neg / B&W)
Power	Power Switch
Preset	Appoint an ID (0~9) to save the current position data
Reset	Appoint an ID (0~9) to delete the current position data
Zoom-Fast	Adjust image size
Zoom-Slow	Fine-tune image size



5.2 Setting Menu

Press [Menu] on the remote control to enter the setting menu;
the **bold underlined** values in the following table are defaults.

1 st Level Major Items	2 nd Level Minor Items	3 rd Level Adjustment Values		Function Descriptions
Exposure	Mode	1. Full Auto 2. Shutter Pri 3. Manual		Exposure mode setting
	Exposure Comp.	On/ Off		AE Level
	Exposure Comp. Level	-5~ C ~5		The value can be adjusted after Exposure Comp. is activated
	Spot Light	On/ Off		
	Spot Light Position	X(0~6)Y(0~4)		The value can be adjusted after Spot Light is activated
	Shutter Pri	60/30 mode	50/25 mode	Adjustable when the Exposure mode is set to Shutter Pri
		1/10000	1/10000	
		1/5000	1/5000	
		1/3000	1/3000	
		1/2500	1/2500	
		1/2000	1/1750	
		1/1500	1/1250	
		1/1000	1/1000	
		1/725	1/600	
		1/500	1/425	
		1/350	1/300	
		1/250	1/215	
		1/180	1/150	
		1/120	1/120	
		1/100	1/100	
		1/90	1/75	
		1/60	1/50	
		1/30	1/25	
		1/15	1/12	
		1/8	1/6	
		1/4	1/3	
		1/2	1/2	
		1/1	1/1	

1 st Level Major Items	2 nd Level Minor Items	3 rd Level Adjustment Values		Function Descriptions
	Manual Gain	0dB / 3 dB/ 6 dB/ 9 dB/ 12 dB/ 15 dB/ 18 dB/ 21 dB/ 24 dB/ 27 dB/ 30 dB/ 33 dB/ 36 dB/ 39 dB/ 42 dB/ 45 dB		Adjustable when the Exposure mode is set to Manual
	Manual Speed	60/30 mode	50/25 mode	Manually set the shutter
		1/10000	1/10000	
		1/5000	1/5000	
		1/3000	1/3000	
		1/2500	1/2500	
		1/2000	1/1750	
		1/1500	1/1250	
		1/1000	1/1000	
		1/725	1/600	
		1/500	1/425	
		1/350	1/300	
		1/250	1/215	
		1/180	1/150	
		1/120	1/120	
		1/100	1/100	
		1/90	1/75	
		1/60	1/50	
		1/30	1/25	
		1/15	1/12	
		1/8	1/6	
		1/4	1/3	
		1/2	1/2	
		1/1	1/1	
	Gain Limit	9 dB/ 12 dB/ 15 dB/ 18 dB/ 21 dB/ 24 dB/ 27 dB/ 30 dB/ 33 dB/ 36 dB/ 39 dB/ 42 dB/ 45 dB		Max. limit value of electron gain
	WDR	1. Disable 2. 1 3. 2 4. 3		

1 st Level Major Items	2 nd Level Minor Items	3 rd Level Adjustment Values	Function Descriptions
White Balance	Mode	1. Auto 2. Indoor 3. Outdoor 4. One Push WB 5. ATW 6. Manual 7. Sodium Lamp	Select the color temperature mode 1. 4000k ~ 7000k 2. 3200k 3. 5800k 4. 1700k ~ 10000k 5. 1700k ~ 10000k 6. Custom 7. 2800k
	One Push Trigger	ENTER	One push trigger
	Manual Red	0~ C ~128	Adjustable when the white balance mode is set to Manual
	Manual Blue	0~ C ~128	Adjustable when the white balance mode is set to Manual
Picture	Picture effect	1. Disable 2. Neg 3. B & W	
	Sharpness	0~ A ~14	
	2D NR	1. Disable 2. 1 3. 2 4. 3	
	3D NR	1. Disable 2. Low 3. Typ 4. Max	
	Image Mode	1. Default 2. Custom	The user may customize his/her desired image mode
	Image Mode Load	ENTER	Adjustable when the Image mode is set to Custom . After selected, the corresponding Image mode parameters will be read and applied to Custom
	Brightness	0~ A ~15	Adjustable when the Image mode is set to Custom
	Hue	0~ A ~15	Adjustable when the Image mode is set to Custom
	Saturation	0~ A ~15	Adjustable when the Image mode is set to Custom
	Gamma	0~ A ~3	Adjustable when the Image mode is set to Custom
Pan Tilt Zoom	Pan Flip	On/ Off	Activate the reverse Pan direction
	Tilt Flip	On/ Off	Activate the reverse Tilt direction

1 st Level Major Items	2 nd Level Minor Items	3 rd Level Adjustment Values	Function Descriptions
	Zoom Mode	Clear Image Zoom/Digital Zoom	
D-Effect	Mirror	1. Disable 2. Mirror 3. Flip 4. Mirror + Flip	Set the mode at which the image is mirror or flipped
Ethernet	DHCP	On /Off	Enable/Disable DHCP setting using left and right arrow keys and press [ENTER] to apply setting.
	IP Address	192.168.100.100	Press [ENTER] to be in modify mode; select the item to be modified using the up and down keys, and modify the value using the left and right keys or the numeric keys.
	Subnet Mask	255.255.255.0	Press [ENTER] to be in modify mode; select the item to be modified using the up and down keys, and modify the value using the left and right keys or the numeric keys.
	Gateway	192.168.100.254	Press [ENTER] to be in modify mode; select the item to be modified using the up and down keys, and modify the value using the left and right keys or the numeric keys.
Audio	Audio In	Line In /Mic In	Set Audio In
	Audio Enable	On/ Off	Turn on/off audio output
	Audio Volume	0~ A ~10	Audio Volume Setting
	Audio Delay	On/ Off	When the audio is not synchronized with the video, enable this function to set the audio delay time
	Audio Delay Time (ms)	-1~-500ms	Set audio delay time
	Encode Type	1. AAC 2. G.711	Set audio encode type

1 st Level Major Items	2 nd Level Minor Items	3 rd Level Adjustment Values	Function Descriptions
	Encode Sample Rate	1. <u>48 KHz(AAC)</u> 2. 44.1 KHz(AAC) 3. 16 KHz(AAC) 4. 16 KHz(G.711) 5. 8 KHz(G.711)	Set the encode type and sample rate
System	Prompt	On/ <u>Off</u>	Turn on/off the prompt information on the display
	IR Receive	<u>On</u> /Off	When it is Off, the remote control will not be able to control the camera. At this moment, turn off and then turn on the power to restore control of the remote control.
	Tally Lamp	<u>On</u> /Off	Enable/ disable Tally Lamp function.
	Tally CMMD Mode	Normal/Link	Set if the Tally lamp is linked with RS232 command ▪ Normal (non-linked): The tally lamp and the mode need to be set separately. - Tally lamp On: default mode is no light, need to send command to set the lamp mode - Tally lamp Off: when set the mode, it will not be triggered to enable the tally lamp function.. ▪ Link: - Tally lamp On: the default lamp mode is red light. - Tally lamp Off: when set the mode, it will trigger to enable the tally lamp function.
	Language	<u>English</u> /Chinese	
	Initial Position	<u>Last MEM</u> / 1st Preset	Select the camera lens to return to the last operated position or the first preset position after POWER ON

1 st Level Major Items	2 nd Level Minor Items	3 rd Level Adjustment Values	Function Descriptions
		1. 3840x2160/60p 2. 3840x2160/59.94p 3. 3840x2160/50p 4. 3840x2160/30p 5. 3840x2160/29.97p 6. 3840x2160/25p 7. 1080p/60 8. 1080p/59.94 9. 1080p/50 10. 1080p/30 11. 1080p/29.97 12. 1080p/25 13. 720p/60 14. 720p/59.94 15. 720p/50 16. 720p/30 17. 720p/29.97 18. 720p/25 19. 1080i/60 20. 1080i/59.94 21. 1080i/50	Choose the output resolution
	Output Source	HDMI+Streaming (IP) HDMI+UVC (USB)	
	Factory Reset	On/ <u>Off</u>	Resume the factory default setting
Status			Display the current setting status

CHAPTER 6: NETWORK FUNCTION SETTING DESCRIPTION

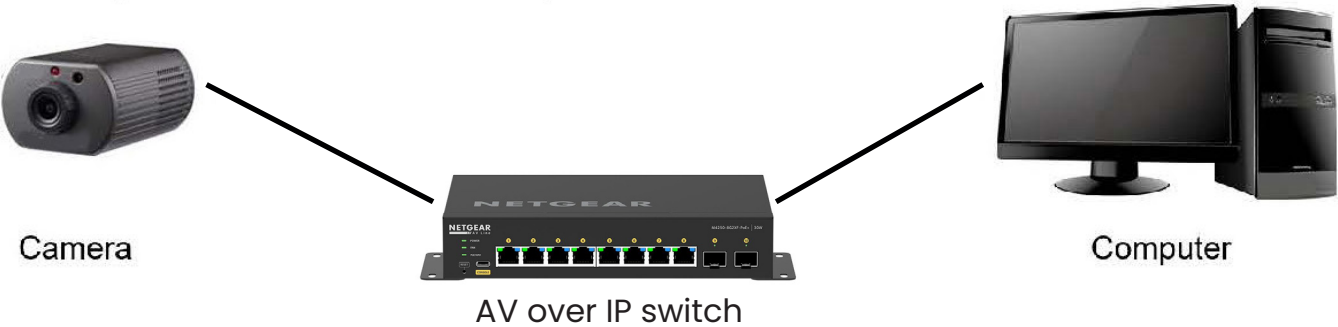
6.1 Web System Requirements

Operating System	Version	Browser
Windows	7 (64 bits) and above	FireFox
		Chrome
	10 (64 bits) and above	Edge
		FireFox
Mac	10.14 and above	Chrome
		Safari
		FireFox

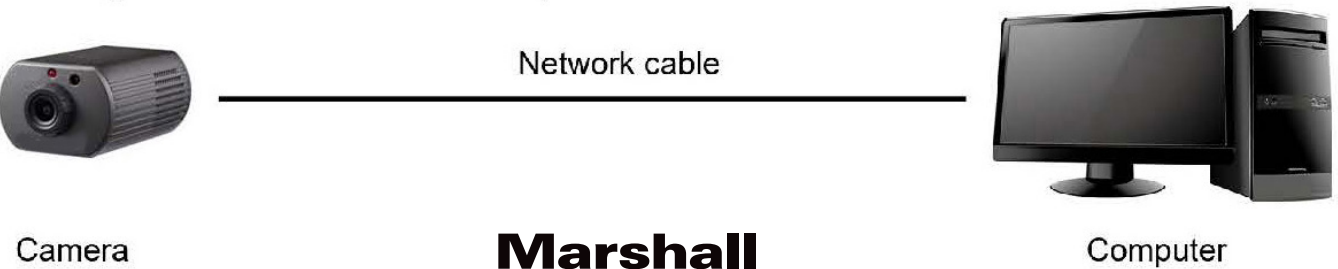
6.2 Connecting Camera to Network

Two common connection methods are shown below

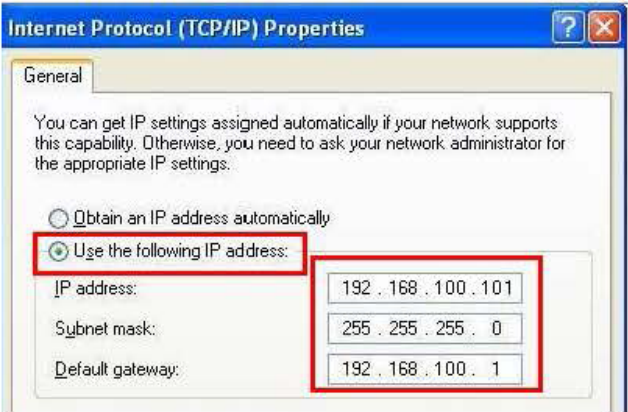
1. Connecting via switch or router



2. To connect directly through network cable, the IP address of the computer should be changed so that it is on the same network segment as the camera
 E.g.: The factory-preset default IP address of the camera is 192.168.100.100. The computer IP address must be set with the same network segment, such as 192.168.100.101, so that the computer can be connected correctly with the camera

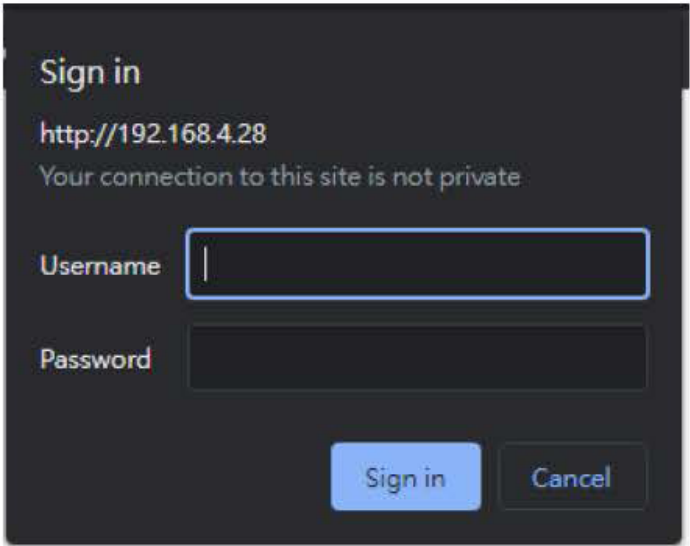


Change network settings



6.2.2 Using the Browser to View the Images

- Open the browser, and enter the IP address of the camera in the address bar
 E.g.: <http://192.168.100.100> (default IP address)
- Enter administrator's account and password



Network Camera

- Account: admin
- Password: 9999 (Default)

6.2.3 Using RTSP Player to View the Images

Free software can be used for RTSP connection, such as VLC, Quick Time and PotPlayer

RTSP connection address formats are as follows:

- RTSP Sub1 Streaming => <rtsp://camera IP:8557/h264>
- RTSP Sub2 Streaming => <rtsp://camera IP:8556/h264>

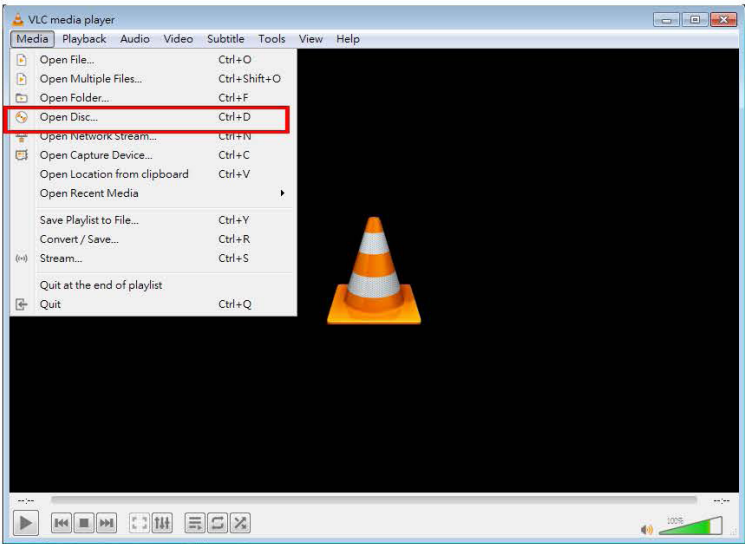
If password authentication is enabled, the RTSP connection address is as follows:

- <rtsp://Username:Password@VC IP address:port/h264>

Example:

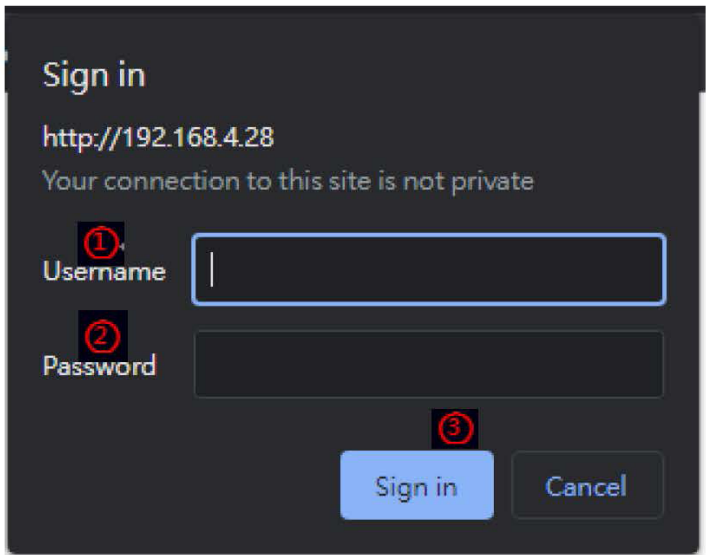
Open the VLC software, click [Open Network Streaming], and enter the URL:

<rtsp://192.168.100.100:8557/h264>



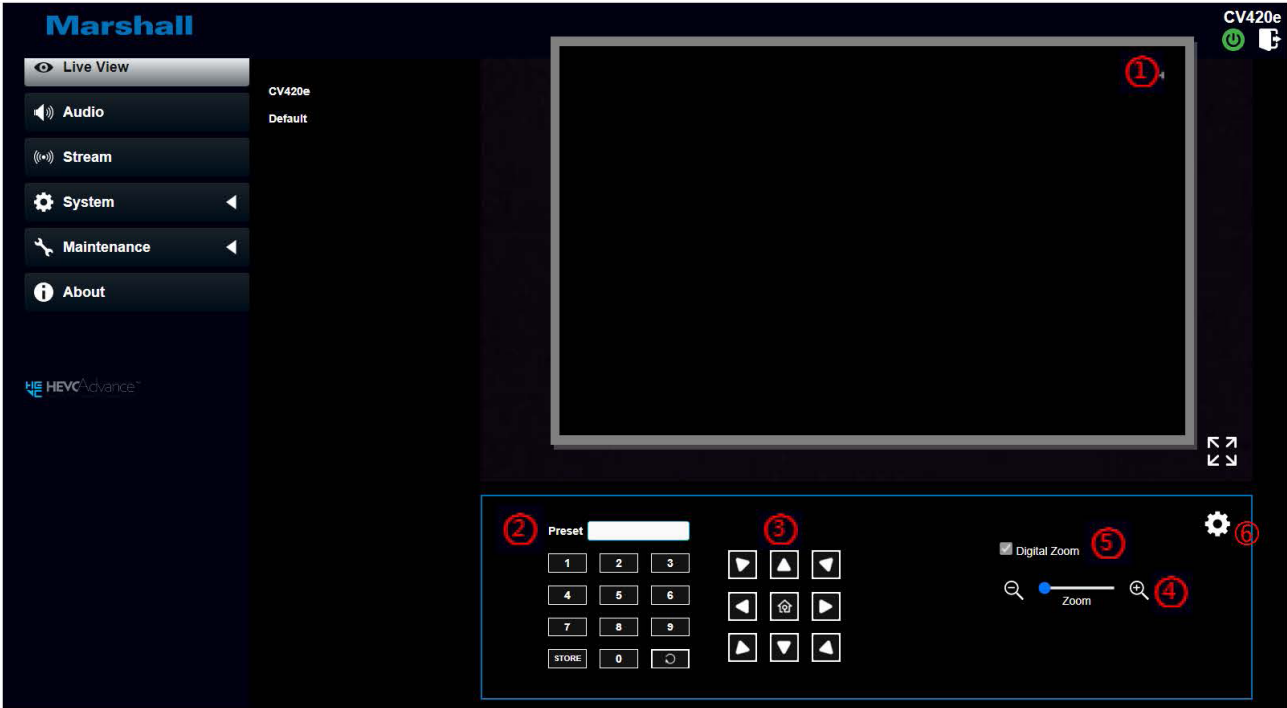
6.3 Web Page Menu Function Description

6.3.1 Login Screen



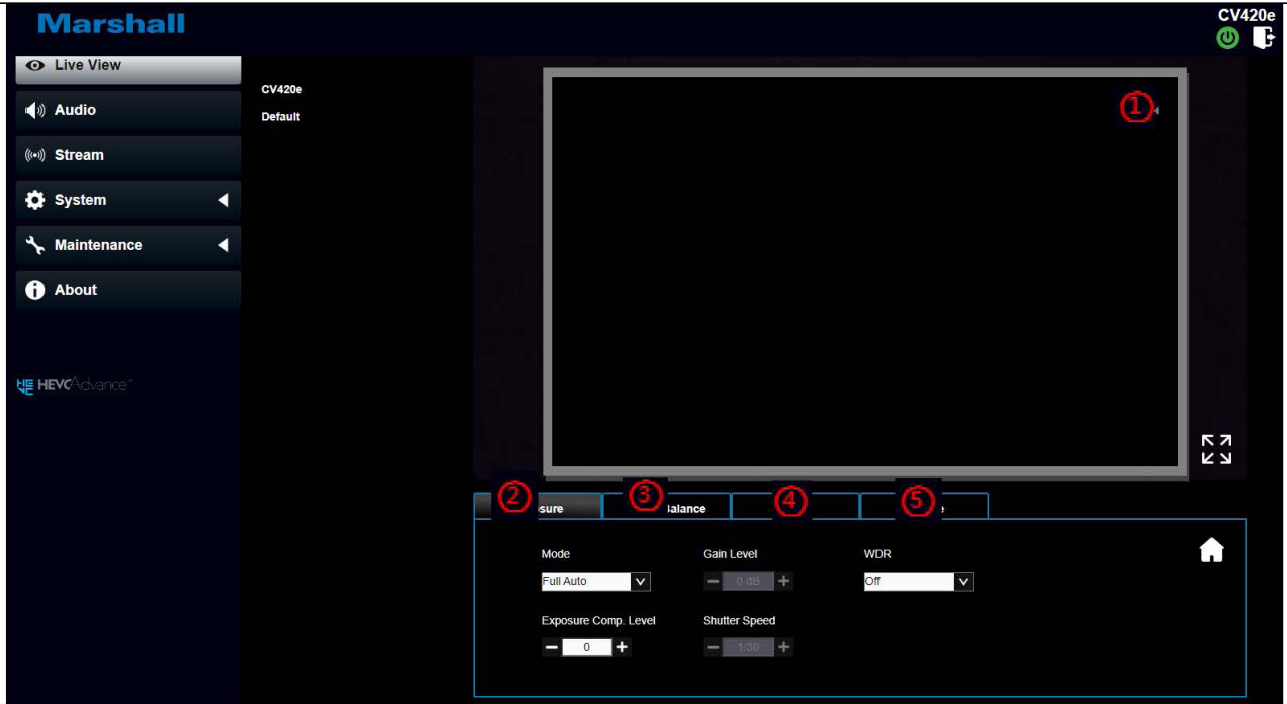
No	Item	Function Descriptions
1	Username	Enter user login account (default: admin)
2	Password	Enter user password (default: 9999)
3	Sign in	Sign in the administrator screen on the website



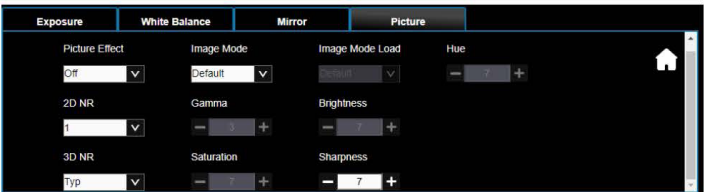
6.3.2 Live Video – PTZ Control



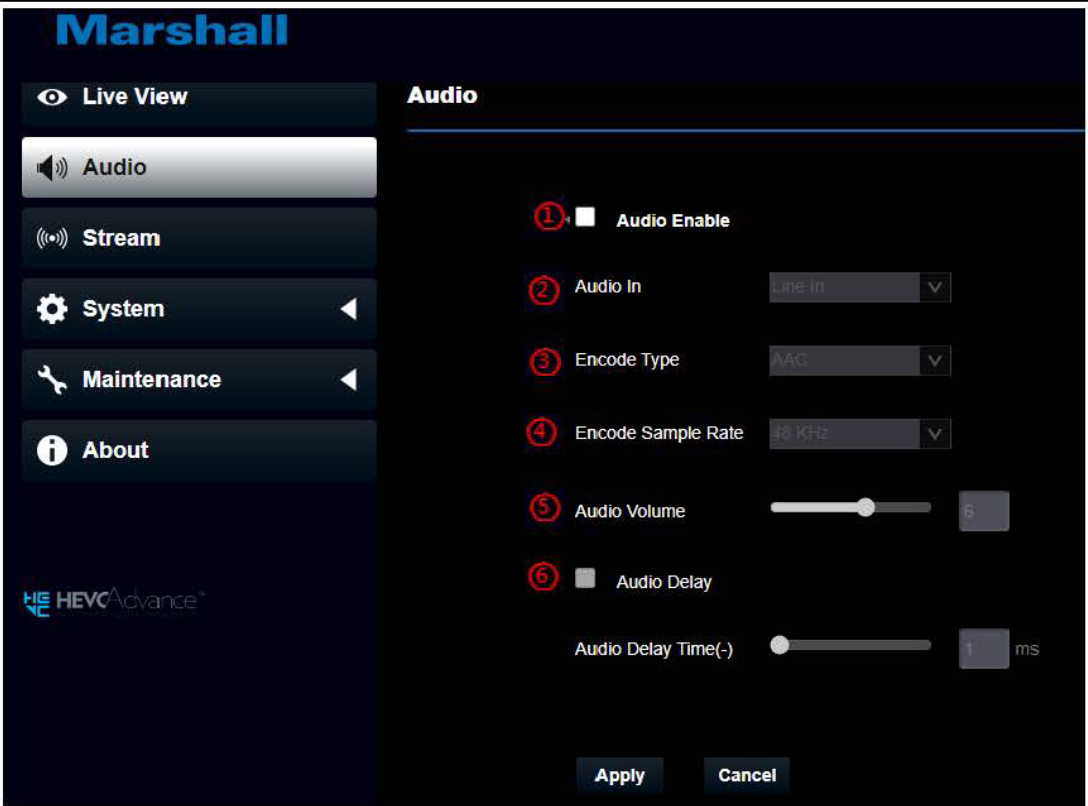
No	Item	Function Descriptions
1	Preview window	Display the screen currently captured by the camera
2	Preset setting	Select the number first and then select SAVE or LOAD
3	Pan / Tilt setting	Adjust the Pan/Tilt position of the camera screen
4	Zoom	Zoom In/Zoom Out ratio
5	Digital Zoom	Enable/ disable digital zoom
6	Camera Setting	Switch to camera setting page

6.3.3 Live Video – Camera

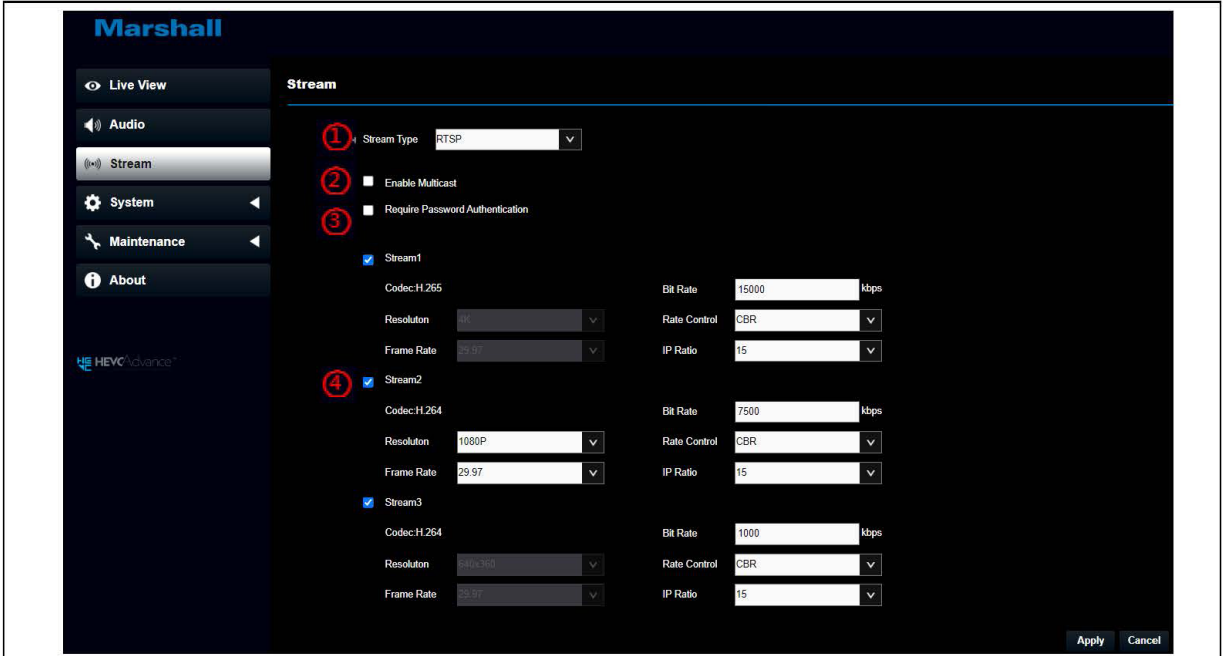


No	Item	Function Descriptions
1	Preview window	Display the screen currently captured by the camera
2	Exposure	<ul style="list-style-type: none">■ Mode: Select exposure mode (Full Auto/Shutter Pri/Iris Pri/Manual/ White Board)■ Gain Limit: Adjust he gain limit (adjustable only under the “Manual”)■ Exposure Comp. Level: Select exposure compensation level■ WDR: Set the level of wide dynamic range (WDR) in order to obtain better images■ Shutter Speed: Adjust the shutter speed (adjustable only under the “Manual” or “Shutter Priority”)
3	White Balance	<div></div> <ul style="list-style-type: none">■ Mode: Select the color temperature mode■ Open Push WB: Single color temperature execution adjustment (adjustable only under the “One Push WB”)■ Manual Red/Blue: Manually adjust blue/red color temperature
4	Mirror	<div></div> <ul style="list-style-type: none">■ Mirror: Set the automatic flip mode (OFF / Mirror / Flip / Mirror + Flip)
5	Picture	<div></div> <ul style="list-style-type: none">■ Picture effect :Set picture effect, Off/Neg/Black and White■ 2D NR: 2D noise reduction settings■ 3D NR: 3D noise reduction settings■ Image mode: The user may customize his/her desired image mode■ Image mode Load: Default Mode■ Gamma: Gamma Level adjustment; Adjustable when the image mode is set to Custom■ Brightness: Brightness adjustment of the image; Adjustable when the image mode is set to Custom■ Saturation: Saturation adjustment of the image; Adjustable when the image mode is set to Custom■ Sharpness: Sharpness adjustment of the image■ Hue: Adjustable when the Image mode is set to Custom

6.3.4 Audio



No	Item	Function Descriptions
1	Audio Enable	Turn on/off sound
2	Audio In	Set MIC In/Line In
3	Encode Type	AAC / G.711
4	Encode sample rate	Set encode sample rate <ul style="list-style-type: none">■ 48 KHz (AAC)■ 44.1 KHz (AAC)■ 16 KHz (AAC)■ 16 KHz(G.711)■ 8 KHz(G.711)
5	Audio Volume	Adjust Audio Volume
6	Audio Delay	After checking the box, set the audio delay time (1 ~ -500 ms)

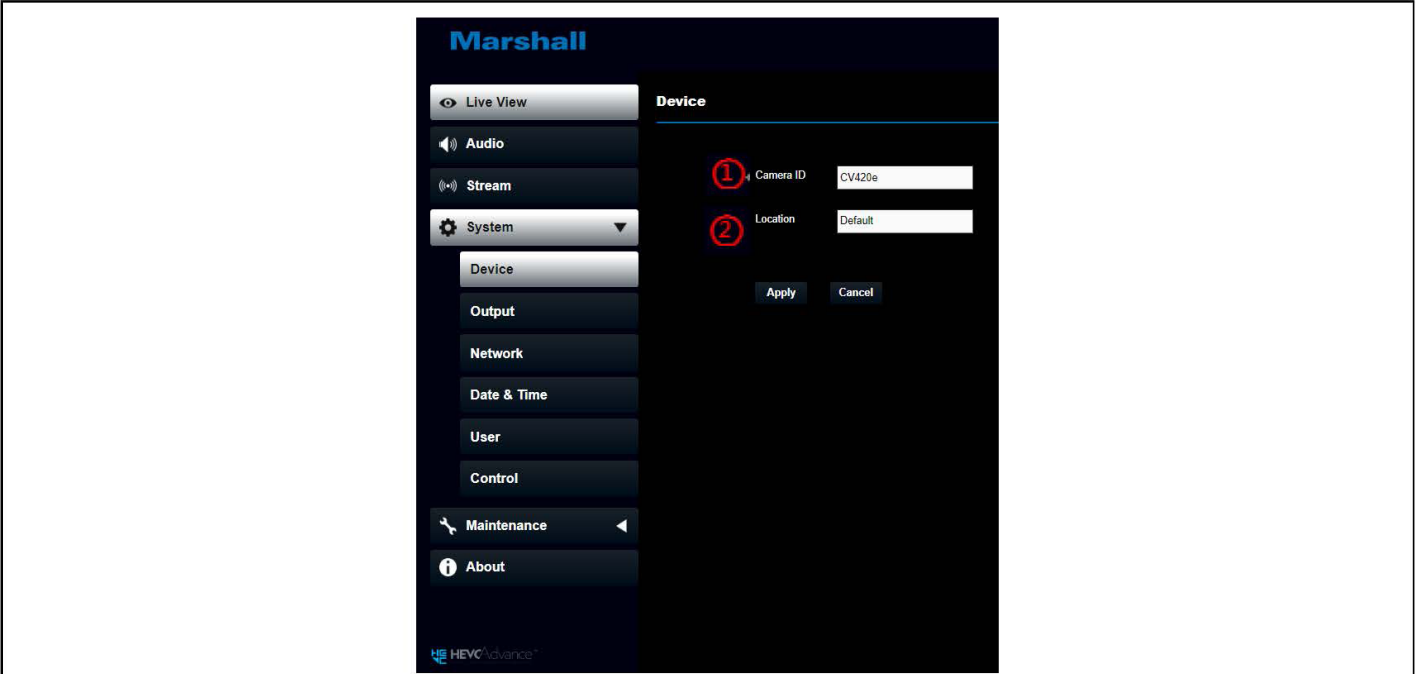


No	Item	Function Descriptions
1	Streaming types	Supporting RTSP/RTMP/RTMPS/MPEG-TS/SRT
2	Enable Multicast	Enable/Disable Multicast It is suggested to enable Multicast when the number of users online watching the live image simultaneously is more than 4
3	Authentication	Enable/Disable Password Authentication <ul style="list-style-type: none">RTSP connection format can be found in 6.2.3 Using RTSP Player to View the ImagesThe username/password is the same as the web login password of the camera
4	Streaming 1 Streaming 2 Streaming 3	Supporting 3-way streaming output

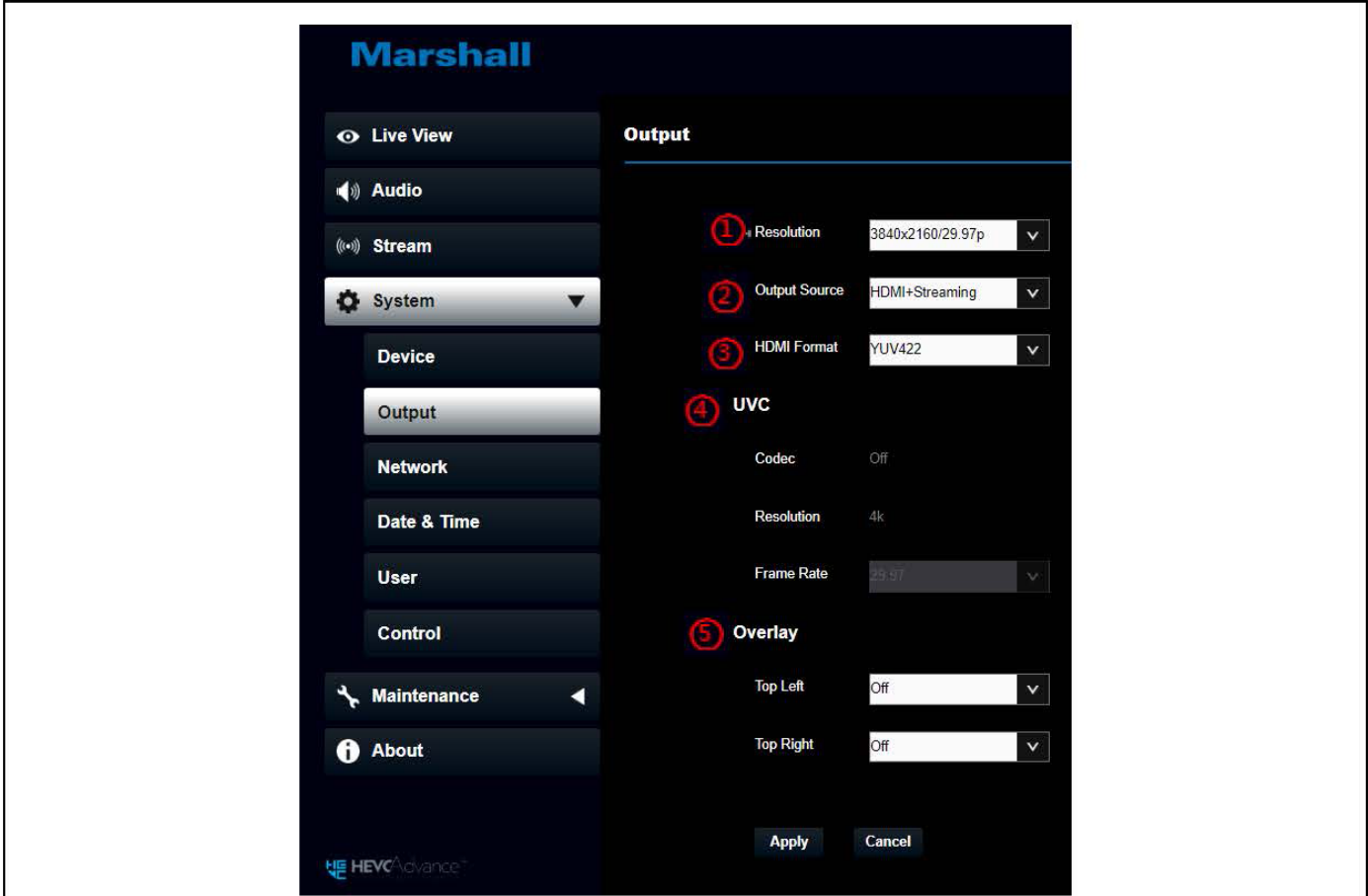
Streaming parameter setting

Function		Streaming 1	Streaming 2	Streaming 3
Encode Format		H.265	H.264	
Resolution		4K	1080P / 720P / 1080i/ 640x360	640x360
Frame Rate		Setting according to the supported resolution <Remark> Only 59.94 / 50 are supported when the resolution of Streaming 2 is 1080i		
Bit Rate(kbps)	Range	2,000~20,000	2,000~20,000	512~5,000
	Factory Default	15,000	7,500	1,000
Rate Control		CBR / VBR		
IP Ratio		Setting according to the supported resolution		

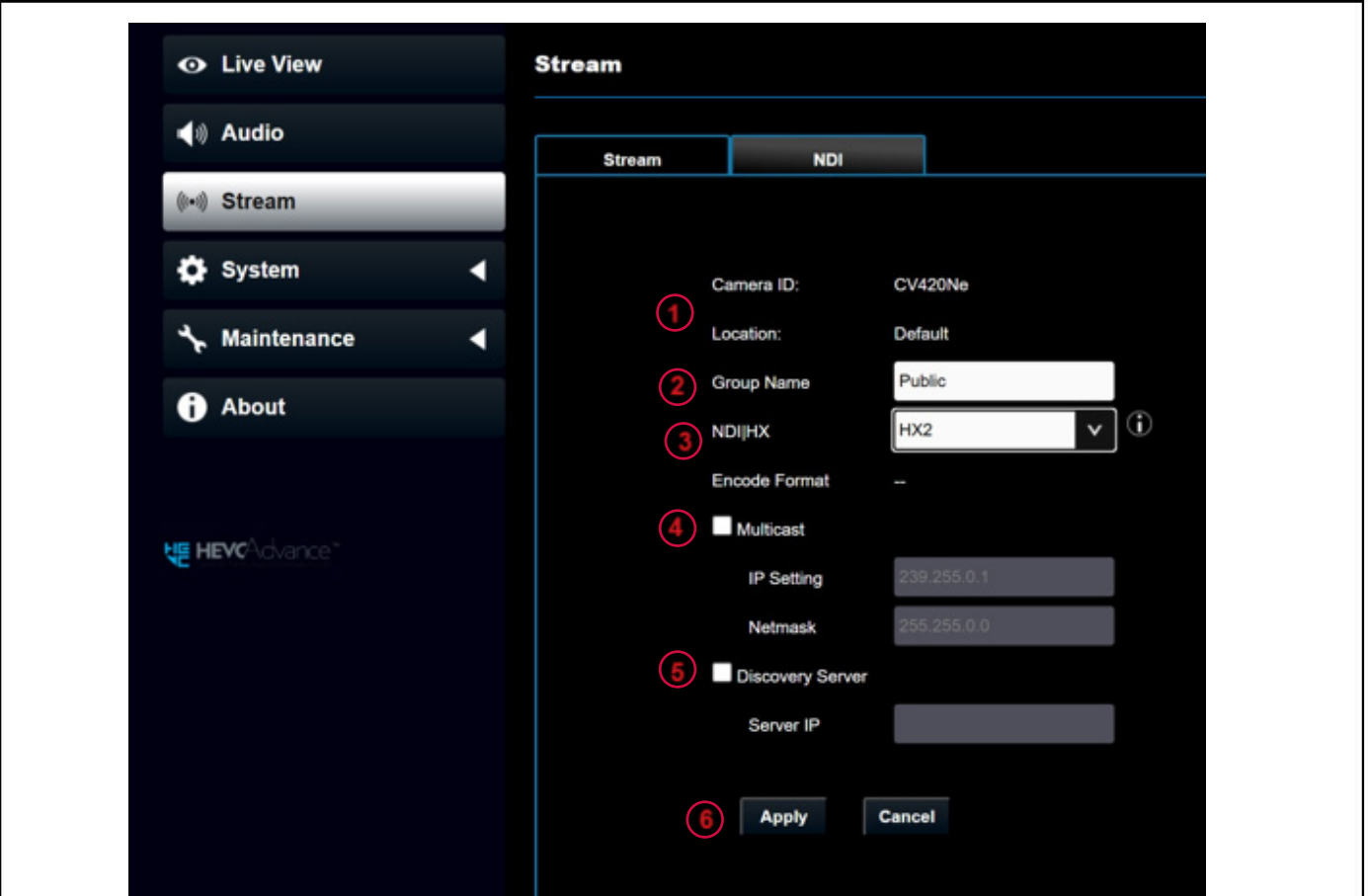
6.3.6 Setting - Device Setting



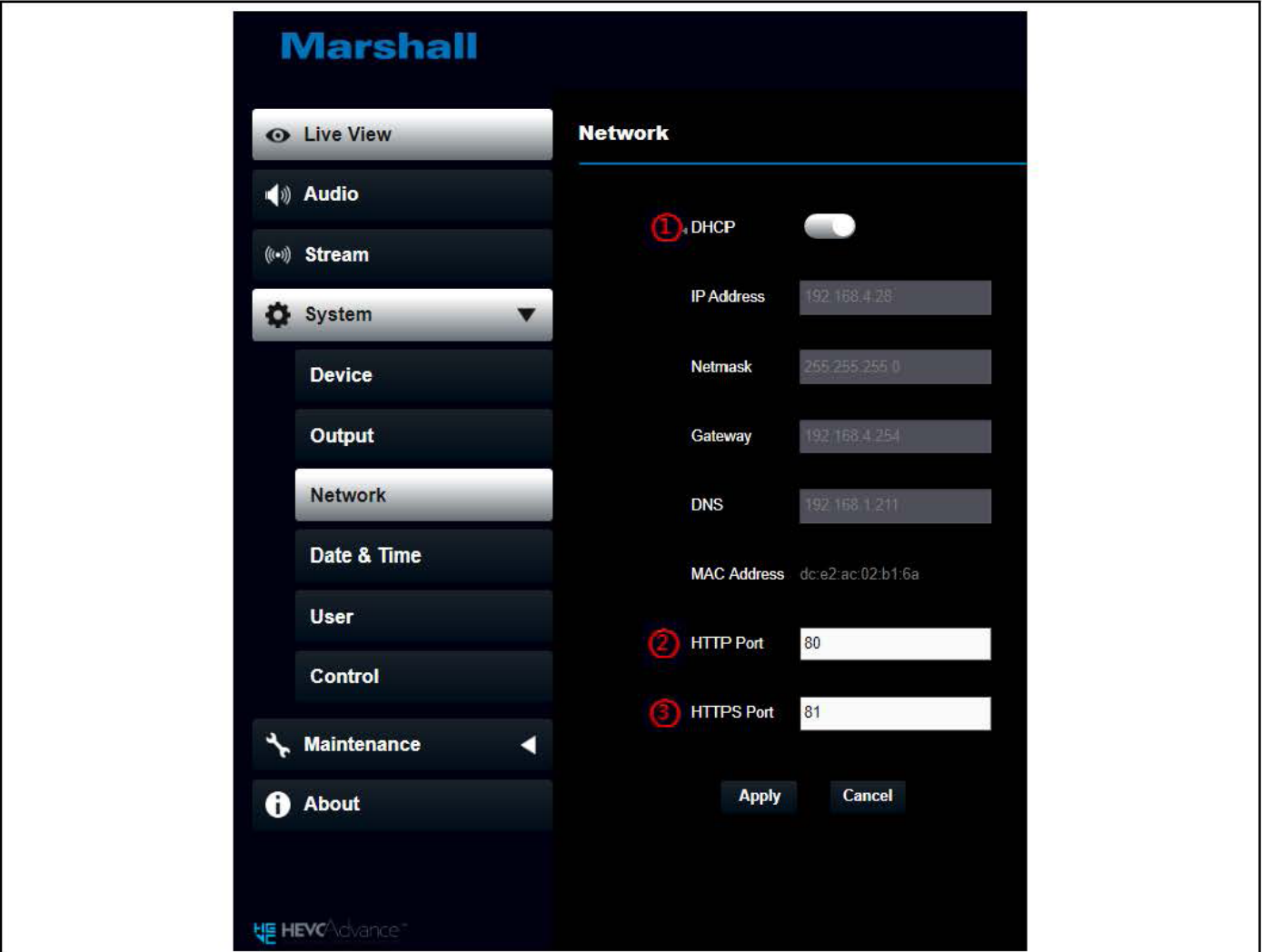
No	Item	Function Descriptions
1	Camera name	Change camera name here <ul style="list-style-type: none">Supporting 1 - 12 characters for the camera namePlease mix uppercase and lowercase letters or numbers for characters. Special symbols such as “/” and “space” cannot be used
2	Camera Location	Modify the location of the camera, such as Room 1 <ul style="list-style-type: none">Supporting 1 - 11 characters for the camera locationPlease mix uppercase and lowercase letters or numbers for characters. Special symbols such as “/” and “space” cannot be used



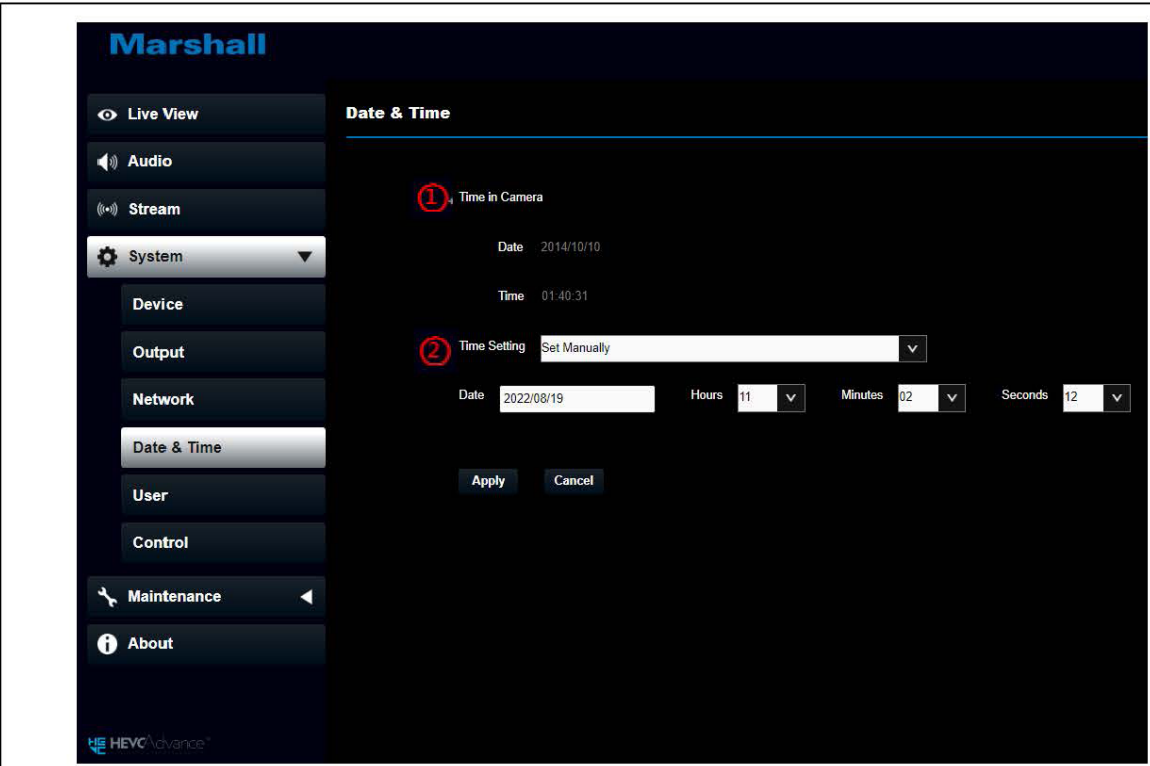
No	Item	Function Descriptions
1	Resolution	Set the resolution of the camera After switching the resolution, the camera will restart. Please refresh the browser
2	Output Source	According to output resolution, you can select different output source.
3	HDMI format	Select YUV422/ YUV420 /RGB <Remark> When it is set to YUV420, 3840 x 2160 59.94p and 3840 x 2160 50p resolutions are supported
4	UVC	This can be seen when System - Output is set to HDMI + UVC <ul style="list-style-type: none">■ Encode Format:<ul style="list-style-type: none">➢3840x2160 / 29.97 / 25 : H.264➢Less than 1080p (inclusive): H.264/MJPEG■ Resolution: It is shown based on Resolution Frame Rate: 3840x2160 can only select the highest 29.97
5	Overlay	User can select to display the “Date/Time” or “Text” when streaming



No	Item	Function Descriptions
1	Resolution	Set the resolution of the camera After switching the resolution, the camera will restart. Please refresh the browser
2	Output Source	According to output resolution, you can select different output source.
3	HDMI format	Select YUV422/ YUV420 /RGB <Remark> When it is set to YUV420, 3840 x 2160 59.94p and 3840 x 2160 50p resolutions are supported
4	UVC	This can be seen when System - Output is set to HDMI + UVC <ul style="list-style-type: none">■ Encode Format:<ul style="list-style-type: none">➢3840x2160 / 29.97 / 25 : H.264➢Less than 1080p (inclusive): H.264/MJPEG■ Resolution: It is shown based on Resolution Frame Rate: 3840x2160 can only select the highest 29.97
5	Overlay	User can select to display the “Date/Time” or “Text” when streaming



No	Item	Function Descriptions
1	DHCP	Network setting of camera. Change of setting is available when DHCP function is closed
2	HTTP port	Set HTTP port. The default Port value is 80 × Change of setting is available only when DHCP function of camera is closed
3	HTTPS port	Set HTTPS port. The default Port value is 81 × Change of setting is available only when DHCP function of camera is closed

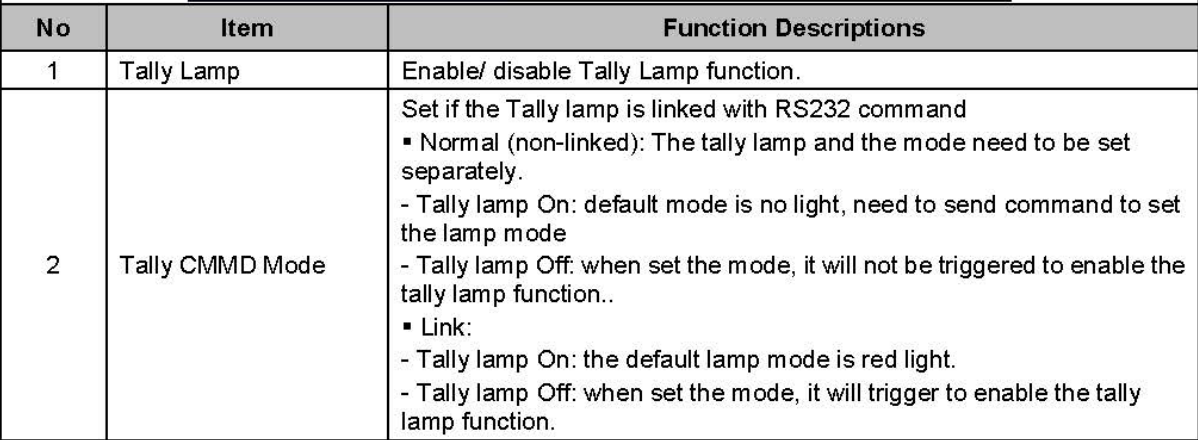


No	Item	Function Descriptions
1	Time in Camera	Display the date and time of the camera
2	Time Setting	<ul style="list-style-type: none">Manual Configuration: Set time manuallySynchronize with computer time: Set the camera time according to the computer timeSynchronize with SNTP server: Set the camera time synchronously with the SNTP server

6.3.10 Setting - User



6.3.11 System - Control



The screenshot displays the Marshall HEVC Advance web interface. On the left is a dark sidebar with a vertical list of menu items: 'Live View' (with an eye icon), 'Audio' (with a speaker icon), 'Stream' (with a double-slash icon), 'System' (with a gear icon), 'Maintenance' (with a wrench icon and a dropdown arrow, currently selected), 'Reboot' (with a circular arrow icon), and 'About' (with an information icon). The main content area has a dark background with the title 'Maintenance' at the top. Below the title, there are four numbered items in red circles: 1. 'Firmware Update' with a text input field and an 'Upgrade' button; 2. 'Factory Reset' with a 'Reset' button; 3. 'Setting Profile' with 'Save' and 'Load' buttons; 4. 'Error Log' with a text area showing multiple lines of '00 00 00 00 00 00 00 00' and a 'Clean' button. The HEVC Advance logo is located in the bottom left corner of the interface.

www.marshall-usa.com

Marshall

Live View

Audio

Stream

System

Maintenance

Reboot

About

HEVCAdvance™

Reboot

1. Reboot

2. Disable

3. Enable

Daily Reboot Time : 00:00

Apply

Cancel

No	Item	Function Descriptions
1	Reboot	Reboot immediately
2	Disable	Disable/ Enable the reboot settings
3	Daily reboot	Set the daily reboot time; Adjustable when the Enable is set to opened.

6.3.14 About

Marshall

Live View

Audio

Stream

System

Maintenance

About

HEVCAdvance™

Company : Marshall Electronics Inc.

Model Name : CV420e

Firmware Ver. : V01.03.00.06

Device Information : V01.03.00.06_V01.03.00.06_V01.03.00.06

WVC Address : 80a2e022b16a

Serial Number : WVCN2014

Uptime : 1.56

Get Help ?



www.marshall-usa.com

Copyright © Marshall Electronics, Inc. All rights reserved.

Function Descriptions
Display the firmware version, serial number, and other related information of the camera For technical support, please scan the QRcode at the bottom right.

Chapter 1 Troubleshooting

This chapter describes common trouble shooting methods you may find useful while using CV420e. If you have questions, please refer to related chapters and follow all the suggested solutions. If the problem persists, please contact your distributor or Marshall service center.

No.	Problems	Solutions
1.	Boot without power signal	1. Make sure you have plugged in the power cord. 2. When using a PoE connection, ensure that the power supply supports IEEE 802.3af hubs
2.	There is no image output from CV420e/CV420Ne	1. Check the power supply or PoE supply functions. 2. Confirm the output signals are in streaming output. 3. If the camera is connected to a monitor, confirm the monitor equipment supports 4K output. 4. Replace the cables and make sure they are not faulty.
3.	CV420e/CV420Ne image is severely delayed.	1. Please use 4K, 1080p or 720p 60/50 Hz signals rather than 25/30 Hz signals.
4.	RS-232 over IP cannot be controlled.	1. Please make sure the port number (52381) is set correctly 2. For related command settings, please download the Command Set Manual from Marshall official website
5.	The ONVIF software cannot find the machine	Please make sure that [Setting]> [Video]> [Camera ID]/[Location] in the webpage uses only English letters or numbers. The ONVIF software cannot find the machine if you use special characters and space.

CHAPTER 8: SAFETY INSTRUCTIONS

Always follow these safety instructions when setting up and using the CV420e/CV420Ne

- 1 Operation

1.1 Please use the product in the recommended operating environment, away from water or source of heat.

1.2 Do not place the product on a tilted or unstable trolley, stand or table.

1.3 Please clean the dust on the power plug prior to usage. Do not insert the product's power plug into a multiplug to prevent sparks or a fire.

1.4 Do not block the slots and openings in the case of the product. They provide ventilation and prevent the product from overheating.

1.5 Do not open or remove covers, otherwise it may expose you to dangerous voltages and other hazards. Refer all servicing to licensed service personnel.

1.6 Unplug the product from the wall outlet and refer servicing to licensed service personnel when the following situations happen:

If the power cords are damaged or frayed.

If liquid is spilled into the product or the product has been exposed to rain or water.
- 2 Installation

2.1 For security considerations, please make sure the standard hanging rack you bought is in line with UL or CE safety approbations and installed by technician personnel approved by agents.
- 3 Storage

3.1 Do not place the product where the cord can be stepped on as this may result in fraying or damage to the lead or the plug.

3.2 Unplug this product during thunderstorms or if it is not going to be used for an extended period.



3.3 Do not place this product or accessories on top of vibrating equipment or heated objects.
- 4 Cleaning

4.1 Disconnect all the cables prior to cleaning and wipe the surface with a dry cloth. Do not use alcohol or volatile solvents for cleaning.
- 5 Batteries (for products or accessories with batteries)

5.1 When replacing batteries, please only use similar or the same type of batteries.

5.2 When disposing of batteries or products, please adhere to the relevant instructions in your country or region for disposing of batteries or products.

■ Precautions

	This symbol indicates that this equipment may contain dangerous voltage which could cause electric shock. Do not remove the cover (or back). No user-serviceable parts inside. Refer servicing to licensed service personnel.		This symbol indicates that there are important operating and maintenance instructions in this User Manual with this unit.
---	---	---	---

■ FCC Warning

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

Notice :
The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

■ IC Warning

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled "Digital Apparatus," ICES-003 of Industry Canada.

Cet appareil numerique respecte les limites de bruits radioelectriques applicables aux appareils numeriques de Classe A prescrites dans la norme sur le material brouilleur: "Appareils Numeriques," NMB-003 edictee par l'Industrie.

■ EN55032 CE Warning

Operation of this equipment in a residential environment could cause radio interference.
Warning: Operation of this equipment in a residential environment may cause radio interference.

Warranty

Marshall Electronics warranties to the first consumer that this device will, under normal use, be free from defects in workmanship and materials, when received in its original container, for a period of two years from the purchase date. This warranty is extended to the first consumer only, and proof of purchase is necessary to honor the warranty. If there is no proof of purchase provided with a warranty claim, Marshall Electronics reserves the right not to honor the warranty set forth above. Therefore, labor and parts may be charged to the consumer. This warranty does not apply to the product exterior or cosmetics. Misuse, abnormal handling, alterations or modifications in design or construction void this warranty. No sales personnel of the seller or any other person is authorized to make any warranties other than those described above, or to extend the duration of any warranties on behalf of Marshall Electronics, beyond the time period described above.

Due to constant effort to improve products and product features, specifications may change without notice.

Marshall

20608 Madrona Avenue, Torrance, CA 90503

Tel: (800) 800-6608 / (310) 333-0606 • Fax: 310-333-0688

www.marshall-usa.com

support@marshall-usa.com