VC-BC701P
Ultra HD Camera
(4K UHD Box Camera)

User Manual - English

Version VCAX105

[Important]

To download the latest version of Quick Start Guide, multilingual user manual, software, or driver, etc., please visit Lumens
http://www.MyLumens.com/support

Table of Contents

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Copyright Information

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Chapter 1 Safety Instructions

Always follow these safety instructions when setting up and using the product:

1 Operation

1.1 Please use the product in the recommended operating environment.

1.2 Do not place the product in tilted position.

1.3 Do not place the product on an unstable trolley, stand or table.

1.4 Do not use this product near water or source of heat.

1.5 Use attachments only as recommended.

1.6 Use the type of power source indicated on the product. If you are not sure of the type of power available, consult your distributor or local electricity company for advice.

1.7 Always take the following precautions when handling the plug. Failure to do so may result in sparks or fire:
  - Ensure the plug is free of dust before inserting it into a socket.
  - Ensure that the plug is inserted into the socket securely.

1.8 Do not overload wall sockets, extension cords or multi-way plug boards to avoid potential risks.

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

1.10 Except as specifically instructed in this User Manual, do not open or remove covers, otherwise it may expose you to dangerous voltages and other hazards. Refer all servicing to licensed service personnel.

1.11 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 Never push objects of any kind through cabinet slots. Never allow liquid of any kind to spill into the product.

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

3.4 Do not place this product or accessories on top of vibrating equipment or heated objects.

4 Cleaning

4.1 Unplug all the cables before cleaning. Use a damp cloth for cleaning. Do not use liquid or aerosol cleaners.

5 Remote control (if the accessories are equipped with remote control)

5.1 Using an incorrect battery type in the remote control may result in breakdown. Follow local instructions on how to dispose of used batteries.

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■ Precautions

Warning: To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture.

If the HD camera will not be used for an extended time, unplug it from the power socket.

	Caution Risk of Electric Shock Please do not open it by yours	
Caution: To reduce the risk of electric shock, do not remove cover (or back). No user-serviceable parts inside. Refer servicing to licensed service personnel.		
	This symbol indicates that this equipment may contain dangerous voltage which could cause electric shock.	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.

■ 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 Radiation) Warning

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

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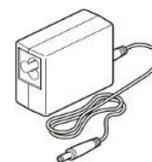# Chapter 2 Package Contents

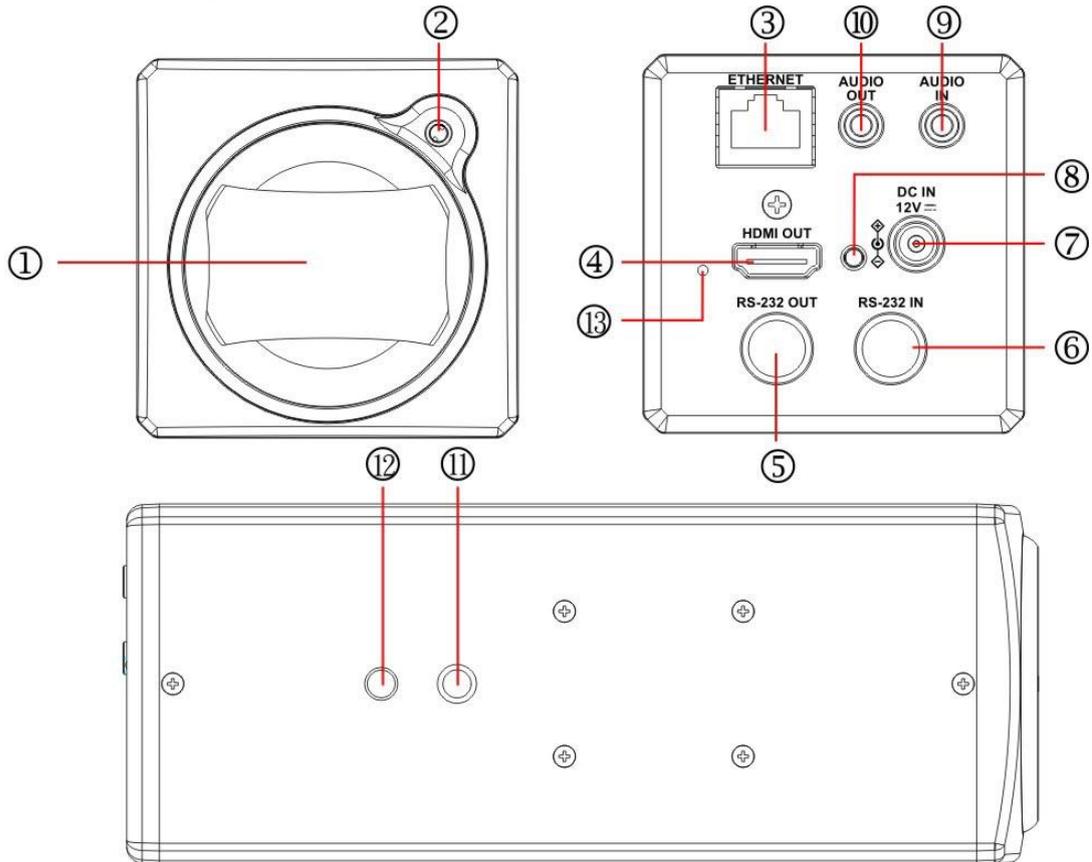| VC-BC701P	Power Cord	Power Adapter

Appearance may vary
depending on
country/region

Chapter 3 Function Introduction

3.1 I/O functions Introduction

NO.	Item	Function Descriptions
1.	Lens	30x HD camera lens
2.	Tally indicator light	Display the tally light status of the camera
3.	Network port	Network port. Support routers or hubs (IEEE 802.3 af) with PoE power supply support
4.	HDMI output	The factory output resolution is 4K/30. Please make sure that the connected display device supports 4K resolution
5.	RS232 output	RS232 output port. At most 7 cameras can be connected in a serial connection
6.	RS232 input	RS232 input port. At most 7 cameras can be connected in a serial connection
7.	DC 12 V power connector	AC power supply connecting port
8.	Power indicator light	After power is on, the indicator light will display in red
9.	Audio input	Support Line In / Mic In
10.	Audio output	Support 3.5 mm audio input
11.	Tripod screw holes	The camera is mounted on a (specification) 1/4", 20 UNC tripod deck or installed on VC-WM11 (optional)
12	Locating holes	Ø5; depth 2 mm
13	Reset button	Hold the button to reset the camera settings <Remark>Only units with serial number V99Dxxxxx or VA1Dxxxxx have a reset button.

3.2 Tally Indicator Light Function Description

3.2.1   The Tally light function may be enabled through the control of RS232 command.
Please refer to **VC-BC701P RS-232 command set** document

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Chapter 4. Instruction for installation
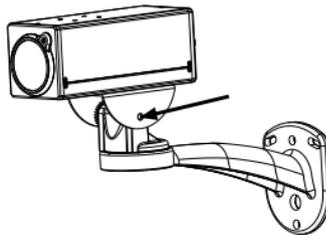
4.1 Basic Devices

4.1.1 VC-BC701P size

Length x Width x Height ： 169 x 67.0 x 67.0 mm

Weigh ： 0.5 Kg
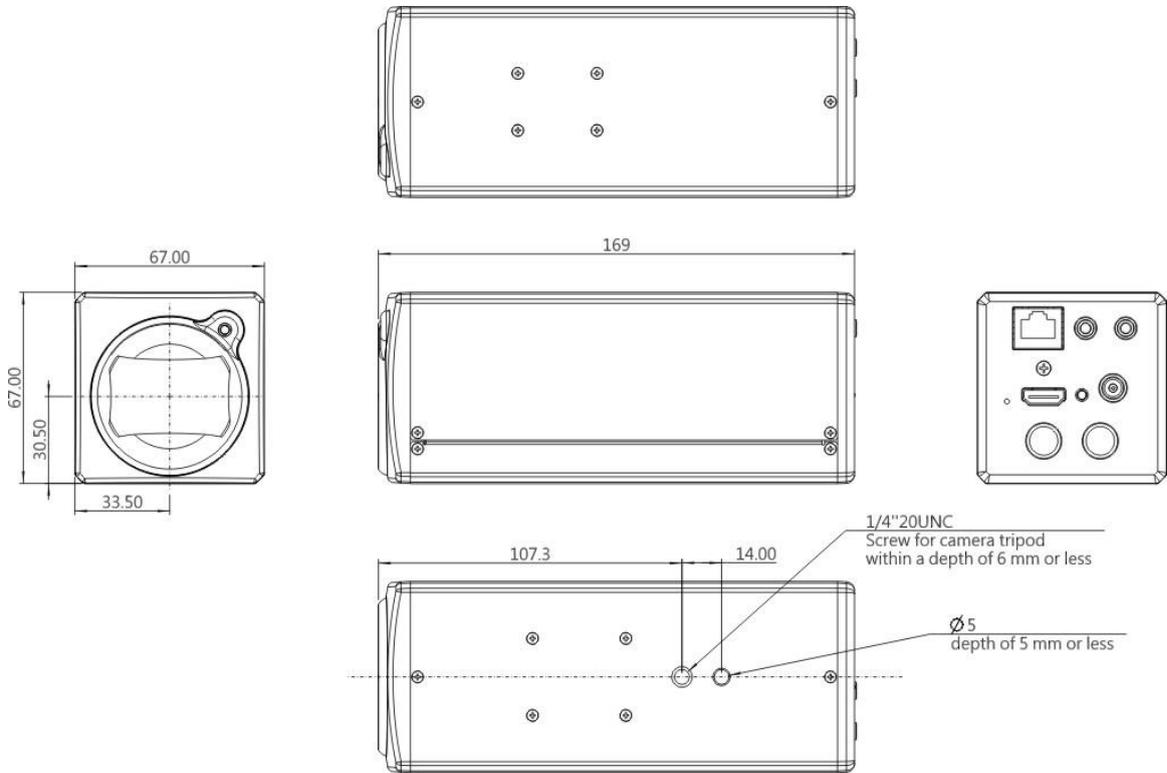
4.1.2 Installation method

4.1.2.1 Wall-mounted frame: The camera is installed on the wall, using Lumens VC-WM11 (optional) wall-mounted frame
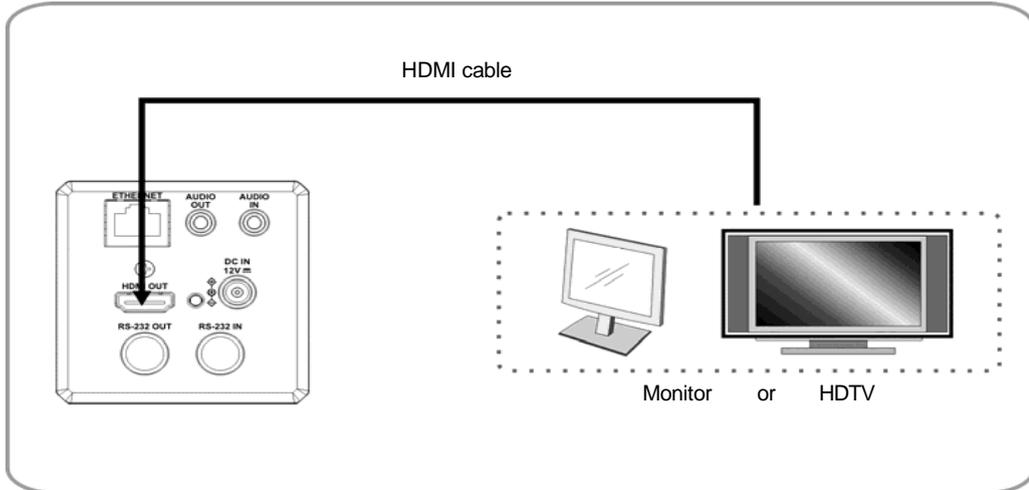

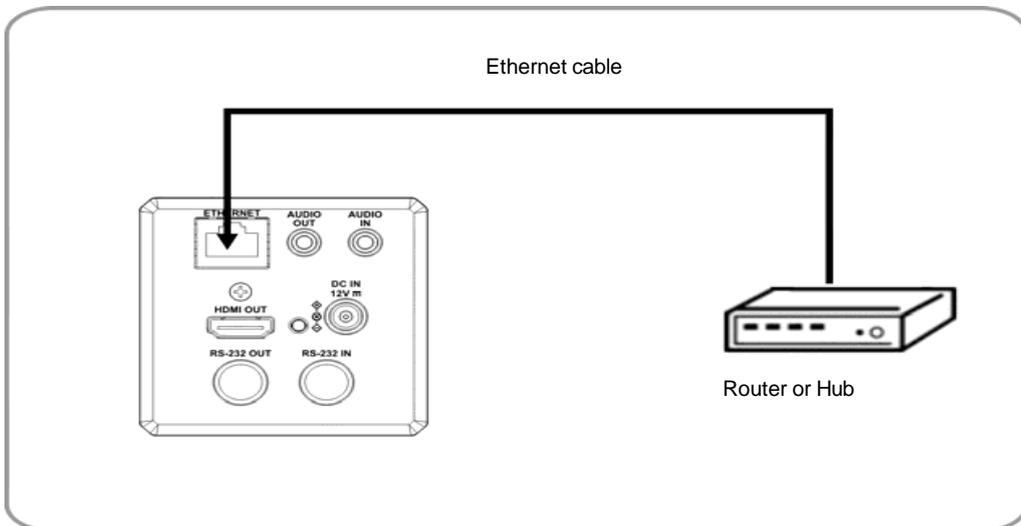4.1.2.2 Tripod: The camera is mounted on a 1/4", 20 UNC PTZ tripod deck

(Schematic diagram)
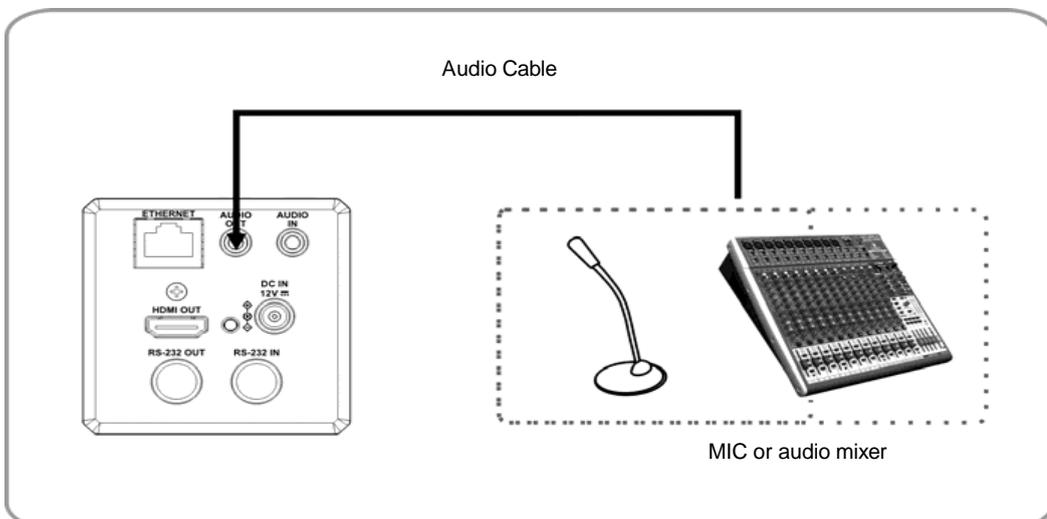
4.2 Connecting devices

4.2.1 HDMI connection to TV/display screen

4.2.2 Connecting to Internet

<Remark>   For details of web page connection setting and description, please refer to *Chapter 5 Network Function Settings Description*.

4.2.3 Connecting AUDIO IN

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4.2.4 Connecting RS-232

■ RS-232 serial connection

With RS-232 in/out, at most 7 Lumens cameras can be connected.
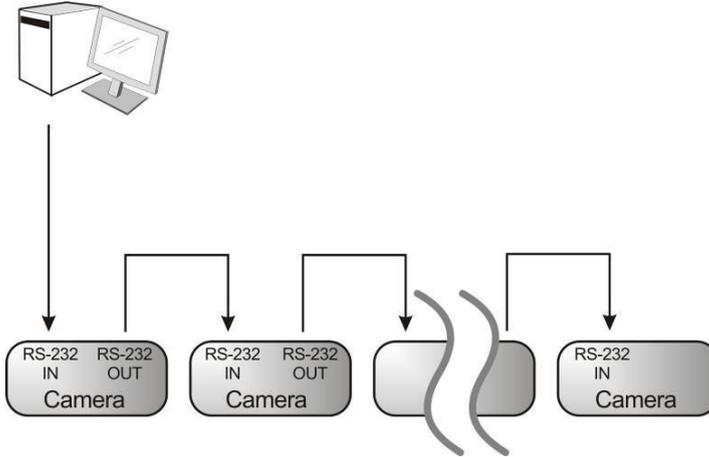
■ RS-232 pin definition description

▼ RS-232 IN Pins Instructions

NO	Pins	Signals
1	DTR	Data Transmission Reade
2	DSR	Data Set Reade
3	TXD	Transmit Data
4	GND	Ground
5	RXD	Receive Data
6	GND	Ground
7	IR OUT	IR Commander Signal
8	N.C.	No Connection
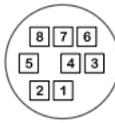
▼ RS-232 OUT Pins Instructions

NO	Pins	Signals
1	DTR	Data Transmission Reade
2	DSR	Data Set Reade
3	TXD	Transmit Data
4	GND	Ground
5	RXD	Receive Data
6	GND	Ground
7	OPEN	Reserved
8	OPEN	Reserved
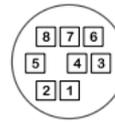
▼ RS-232 Connection Instructions

RS-232 IN of VC	RS-232 of PC
1. DTR	1. CD
2. DSR	2. RXD
3. TXD	3. TXD
4. GND	4. DTR
5. RXD	5. GND
6. GND	6. DSR
7. IR OUT	7. RTS
8. N.C.	8. CTS
	9. RI
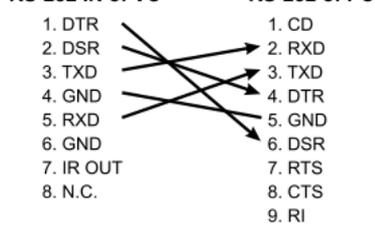
▼ RS-232 Connection Instructions

RS-232 IN of Next Camera	RS-232 OUT of Last Camera
1. DTR	1. DTR
2. DSR	2. DSR
3. TXD	3. TXD
4. GND	4. GND
5. RXD	5. RXD
6. GND	6. GND
7. IR OUT	7. OPEN
8. N.C.	8. OPEN

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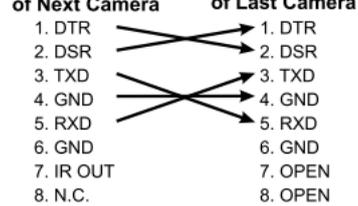
Chapter 5. Network Function Settings Description

5.1 Web System Requirements
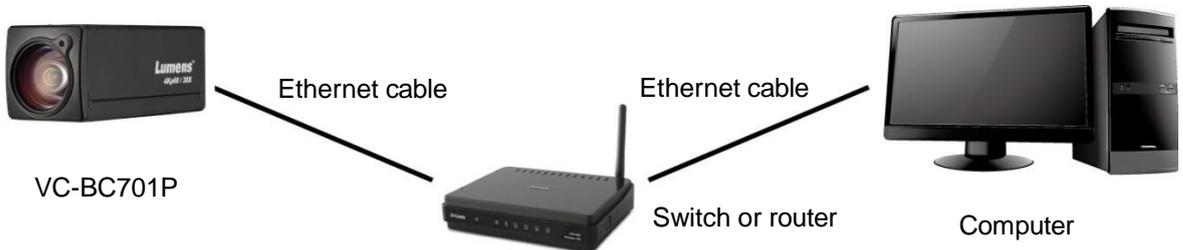
5.1.1 Web Browser:
- Internet Explorer 11 or above
- FireFox 66.0.3 or above
- Chrome 73 or above
- Edge 42.17134 or above
- Safari 12.1 or above

5.2 Connecting Camera to Network

5.2.1 Connecting to Internet

Two common connection methods are shown below

1. Connecting via switch or router

Ethernet cable   Ethernet cable

VC-BC701P

Switch or router   Computer

2. If the camera is connected to the computer directly, the computer IP address must be modified to have the same network segment as the camera

   For example, the factory-preset default IP address of VC-BC701P is 192.168.100.100. The computer IP address must be set with the same subnet, such as 192.168.100.101, so that the computer can be connected correctly with the camera

   ● Connection diagram

Ethernet cable

VC-BC701P

Computer
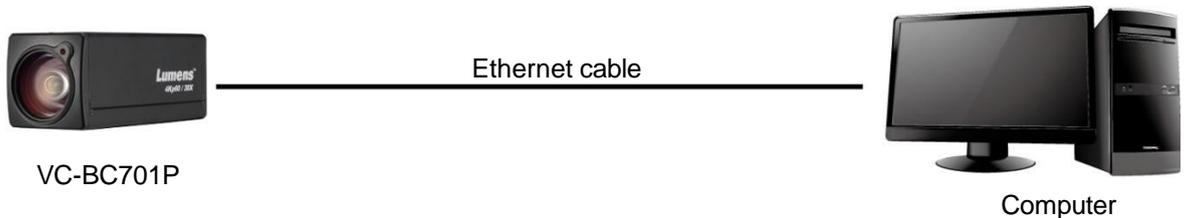
   ● Change network settings
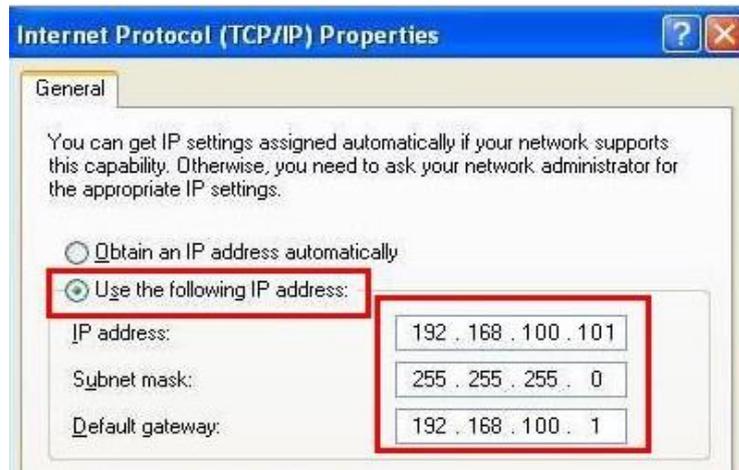
5.2.2 Using Lumens VMS Software to View the Images

- The VC-BC701P DHCP initial setting is ON. If VC-BC701P is connected to the local area network (LAN), the camera IP can be retrieved via the following methods
- Install Lumens VMS software (Please download from the Lumens official website, http://www.mylumens.com/support)
  - Open **LUMENS VMS** software

  - Search for the camera: Press [🔍] [automatically search for the device] button to locate the VC-BC701P camera
  - Click VC-BC701P in the list and start operation after connecting to network

  <Note> When using automatic search, the camera and computer must be in the same network segment, e.g.: 192.168.4.X
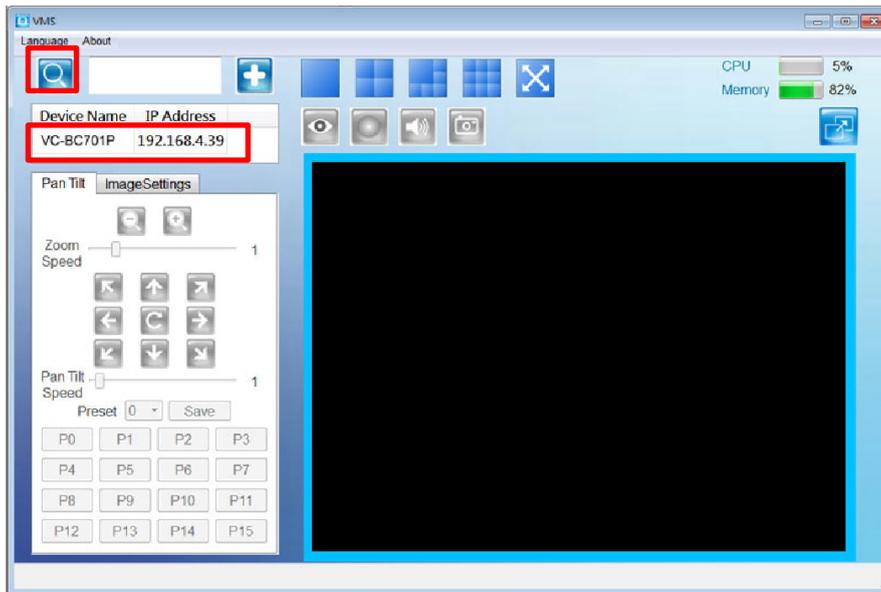
5.2.3 Using the Browser to View the Images

- Open the browser, and enter the URL of VC-BC701P in the IP address bar e.g.: http://192.168.100.100 (default IP address)
- Enter administrator's account and password Account: admin (Default)
  Password: 9999 (Default)
  <Remark> For a first-time login, please refer to ***5.3.3 Account Management*** to change the default password

5.2.4   Using RTSP Player to View the Images

Besides the browser and VMS, other free software also can be used for RTSP connection,such

as VLC、Quick Time、PotPlayer and other free software

RTSP connection address formats are as follows:

- RTSP Stream 1 => rtsp://camera IP:8554/hevc
- RTSP Stream 2 => rtsp://camera IP:8557/h264
- RTSP Stream 3=> rtsp://camera IP:8556/h264

If password authentication is enabled, the RTSP connection address is as follows:
- RTSP Stream 1

    rtsp://Username:Password@VC IP address:port/hevc

- RTSP Sub1/ Sub2 Streaming

    rtsp://Username:Password@VC IP address:port/h264

- To enable password authentication function, please refer to *5.3.9 Setting-Network*

Example: Open VLC software and input the URL: rtsp://192.168.100.150:8557/h264
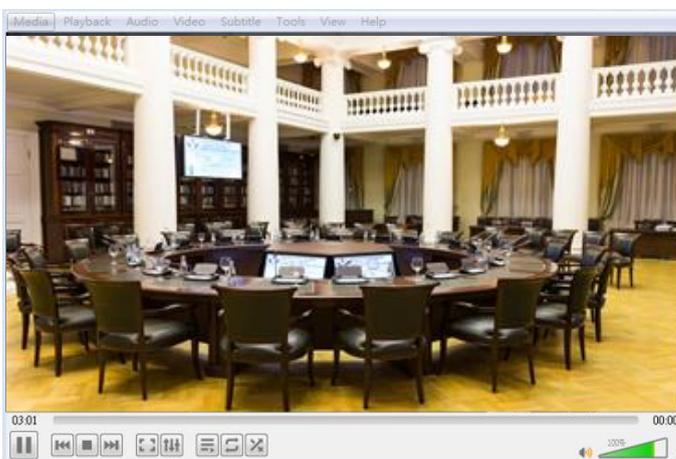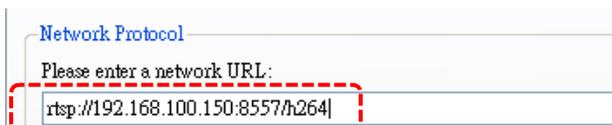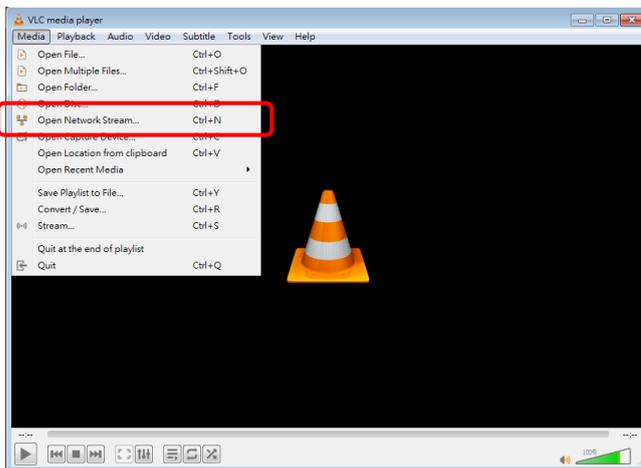
5.3 Web Page Function Description
5.3.1 Login Screen

No	Item	Function Descriptions
1	Username	Enter user account name (default: admin)
2	Password	Enter user password (default: 9999) **<Remark>** For a first-time login, please refer to ***5.3.3 Account Management*** to change the default password
3	Language selection	Currently, the system supports English, Traditional Chinese and Simplified Chinese
4	Remember password	Save user account name and password to the browser. When you log in next time, there is no need to re-enter them
5	Login	Log into the administrator screen on the website

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5.3.2 Viewing In Real Time
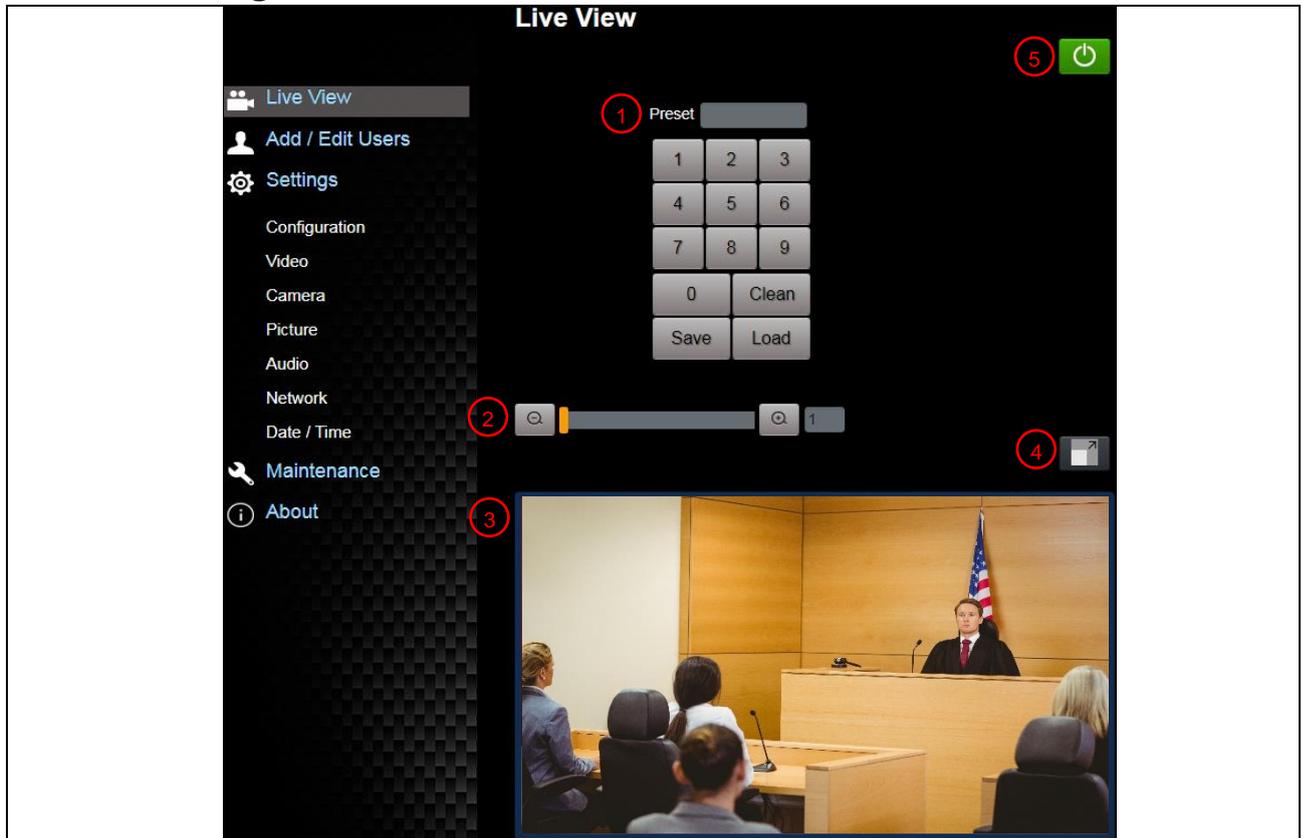
No	Item	Function Descriptions
1	Preset setting	Select the number first and then select SAVE or LOAD
2	Zoom ratio	Adjust the zoom-in or zoom-out ratio via scroll bar
3	Preview window	Display the screen currently captured by the camera
4	Switch to Full Screen	Switch the preview window to full screen
5	Power button	Turn on or turn off the camera power

5.3.3 Account Management

No	Item	Function Descriptions
1	Add user account	Enter a user name and password to add a new user
2	Permission setting	Set the new account management permissions | User Type	Admin	Operator	Viewer
---	---	---	---
View images	Y	Y	Y
Settings	Y	Y	N
Account management	Y	N	N	
3	Applying setting	Add the newly created user to the account list
4	List of accounts	Edit: Modify the user password and permissions Delete: Delete the user account

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5.3.4 Setting-System Setting

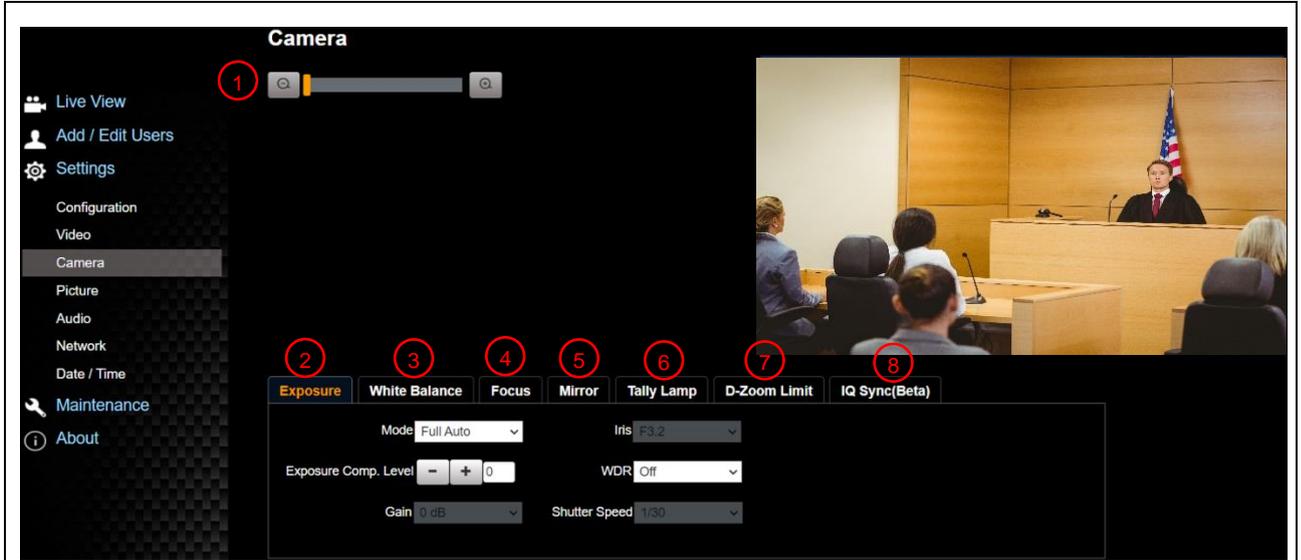| No	Item	Function Descriptions
1	Resolution	Set the resolution of the camera. Resolutions supported by the camera are as follows: 3840x2160P 60/ 59.94/ 50/ 30/ 29.97/ 25 fps 1080P 60/ 59.94/ 50/ 30/ 29.97/ 25 fps 720P 60/ 59.94/ 50/ 30/ 29.97/ 25 fps 1080i 60/ 59.94/ 50 fps After switching to the resolution, the camera will restart. Please refresh the browser
2	Output signal	According to the output resolution, selections are available for HDMI output, streaming output, or HDMI + streaming output. For output signals supported by different resolution, please refer to the following table: <table><tr><td>Resolution</td><td>Available output modes</td></tr><tr><td>3840x2160 60/ 59.94/ 50</td><td>HDMI or streaming single output</td></tr><tr><td>3840x2160 30/ 29.97/ 25</td><td rowspan="4">Simultaneous HDMI and streaming outputs</td></tr><tr><td>1080p 60/ 59.94/ 50/ 30/ 29.97/ 25</td></tr><tr><td>720p 60/ 59.94/ 50/ 30/ 29.97/ 25</td></tr><tr><td>1080i 60/ 59.94/ 50</td></tr></table>
3	HDMI Format	Select YUV422, YUV420 or RGB **<Remark>**YUV420 is only available for these two resolutions, 3840x2160/ 59.94p and 3840x2160/ 50p and remains in display mode for all other resolutions
4	Overlay	Set the stream to display **"date and time"** or **"custom content"** and to display **"location"** **<Remark>"Custom Content"** supports up to 30 characters

5.3.5 Setting-Video

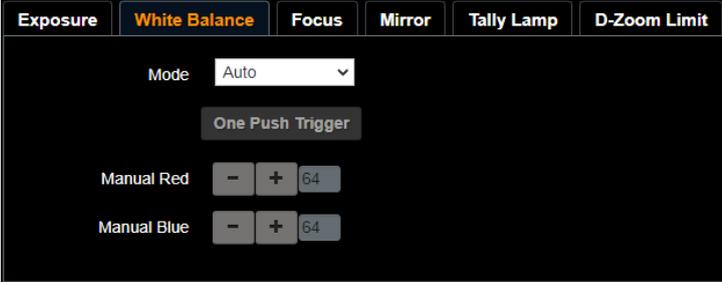| No	Item	Function Descriptions
1	Camera ID	Modify the camera name ■ Camera names are limited to 1-12 characters ■ Please use a camera name by mixing uppercase and lowercase letters and numbers. Do not use "/" and "space" or special symbols **<Note>** Modifying this field will modify the Onvif device name synchronously
2	Location	Modify the location of the camera, such as Meeting Room 1 ■ Camera locations are limited to 1-11 characters ■ Please use a camera name by mixing uppercase and lowercase letters and numbers. Do not use "/" and "space" or special symbols **<Note>** Modifying this field will modify the Onvif device location synchronously
3	Streaming 1 / Streaming 2 / Streaming 3	VC-BC701P supports 3 streaming outputs. Please refer to **_5.3.5.1 Streaming Parameter Setting_** for relevant settings
4	Open streaming	Confirm the streaming function

5.3.5.1   Streaming parameter setting

Function	Streaming 1	Streaming 2	Streaming 3
Encode Format	H.265	H.264	
Resolution	4K /1080P / 720P	1080P / 720P/ 1080i	D1
Frame rate	Setting according to the supported resolution **<Remark>** Only supports 59.94/ 50 when the stream 2's resolution is 1080i		

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| 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		VBR / CBR		
IP ratio		Setting according to the supported resolution **<Remark>** Only supports 15 / 25 when the resolution is 1080i		

5.3.6 Setting-Camera

No	Item	Function Descriptions
1	Zoom ratio	Adjust the zoom-in or zoom-out ratio via scroll bar
2	Exposure	 ■ **Mode:** Select exposure mode (Automatic/Shutter Priority/Aperture Priority/Manual) ■ **Exposure Comp. Level:** Select exposure compensation level ■ **Gain:** The gain limit is adjustable when the exposure mode is set to "Manual" ■ **Iris:** The size of aperture is adjustable when the exposure mode is set to "Manual" or "Aperture Priority" ■ **WDR:** Set the level of wide dynamic range (WDR) in order to obtain better images ■ **Shutter Speed:** The shutter speed is adjustable when the exposure mode is set to "Manual" or "Shutter Priority"
3	White balance	

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6		■ **Mode:** Select the color temperature mode 　• Auto 　• Indoor 　• Outdoor 　• One Push WB 　• ATW 　• Manual 　• Sodium Lamp 　• 3000K/ 4300K/ 5000K/ 6500K/ 8000K ■ **Open Push Trigger:** One push color temperature is adjustable when the white balance mode is set to "One Push Trigger" ■ **Manual Red/Blue:** Manually adjust blue/red color temperature
4	Focus	 ■ **Mode: Select manual/automatic focus** ■ **Focus Range:** The focusing range is adjustable when the focus mode is set to "Manual" ■ **AF Sensitivity:** Set automatic focus sensitivity ■ **AF Frame:** Set automatic focus range ■ **Zoom Tracking:** The focus can be set during lens zooming in Manual Focus mode ■ **Smart AF:** Turn on this function and AF will mainly focus on the face ■ **Preset AF:** Set whether to perform auto focus after Preset ■ **One Push AF:** When the manual focus mode is on, click the button to perform one auto focus
5	Mirror	 ■ **Mirror:** Set automatic flip mode 　• Off 　• Mirror 　• Flip 　• Mirror + Flip
6	Tally Light	

		■ Enable/ Disable Tally Light ■ **Tally CMMD Mode: Set whether the indicator light is linked with RS232 command** 　• General (Not linked): The indicator light switch and mode shall be set separately. 　　-When the indicator light is on and the default mode is off, additional command is required to set the indicator light mode 　　-Setting the indicator light mode when the indicator light is off will not trigger the indicator light 　• Link: 　　-When the indicator light is on, the default mode is red light 　　-Setting the indicator light mode when the indicator light is off will turn on the indicator light
7	D-Zoom Limit	Set the D-Zoom Limit, x1-x12
8	IQ Sync	Set IQ main synchronized device Available when "Exposure" and "White Balance" is set to "Auto" mode (Currently it's the beta version. Please refer to Web Page Firmware Update Information for the official version release schedule.)

5.3.7 Setting-Picture
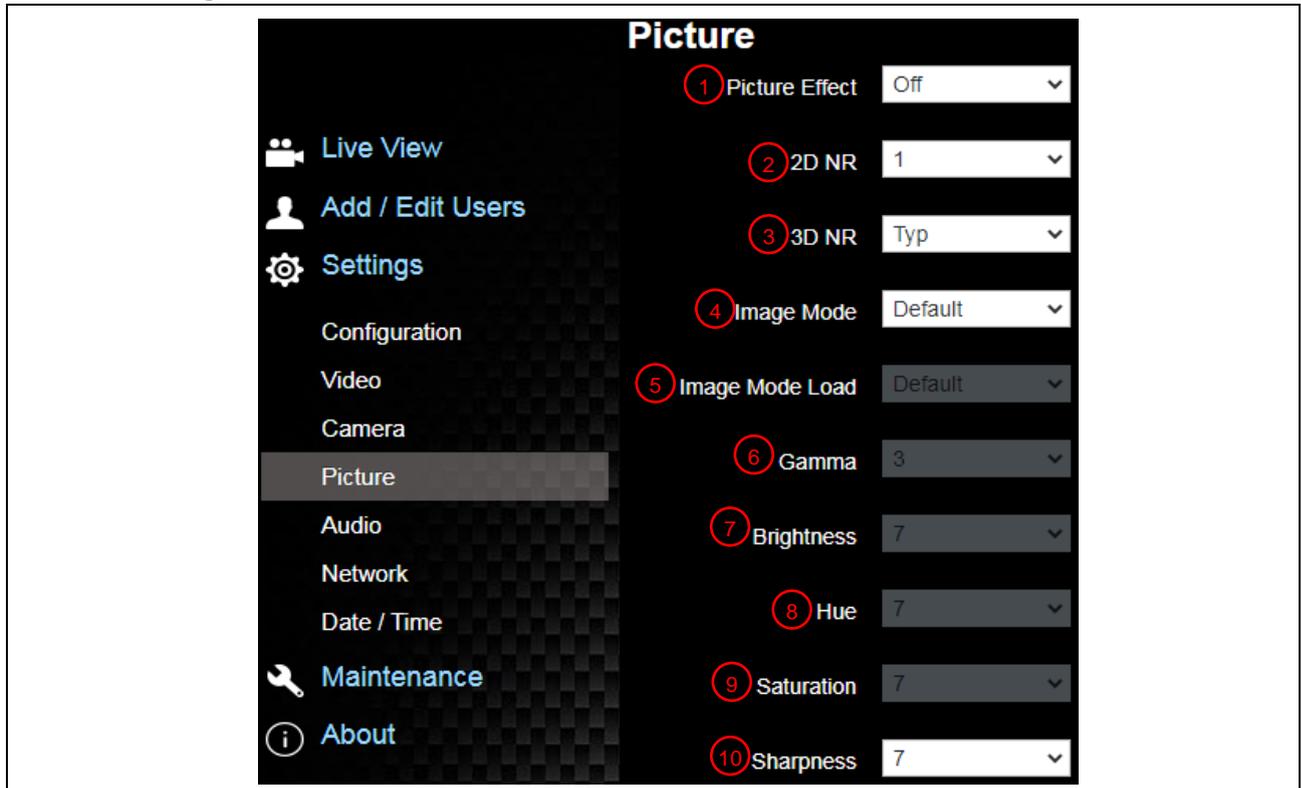
No	Item	Function Descriptions
1	Picture effect	Set picture effect, Off / Film / Black and White
2	2D noise reduction settings	2D noise reduction settings
3	3D noise reduction settings	3D noise reduction settings
4	Image mode	The user may customize his/her desired image mode
5	Image mode load	When no custom setting is needed, reset the picture parameters back to the factory default by selecting this item
6	Gamma	Gamma Level adjustment; Adjustable when the image mode is set to Custom
7	Brightness	Brightness adjustment; Adjustable when the image mode is set to Custom
8	Contrast	Contrast adjustment; Adjustable when the image mode is set to Custom
9	Saturation	Saturation adjustment; Adjustable when the image mode is set to Custom
10	Sharpness	Adjust the sharpness of the image

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5.3.8 Setting-Audio
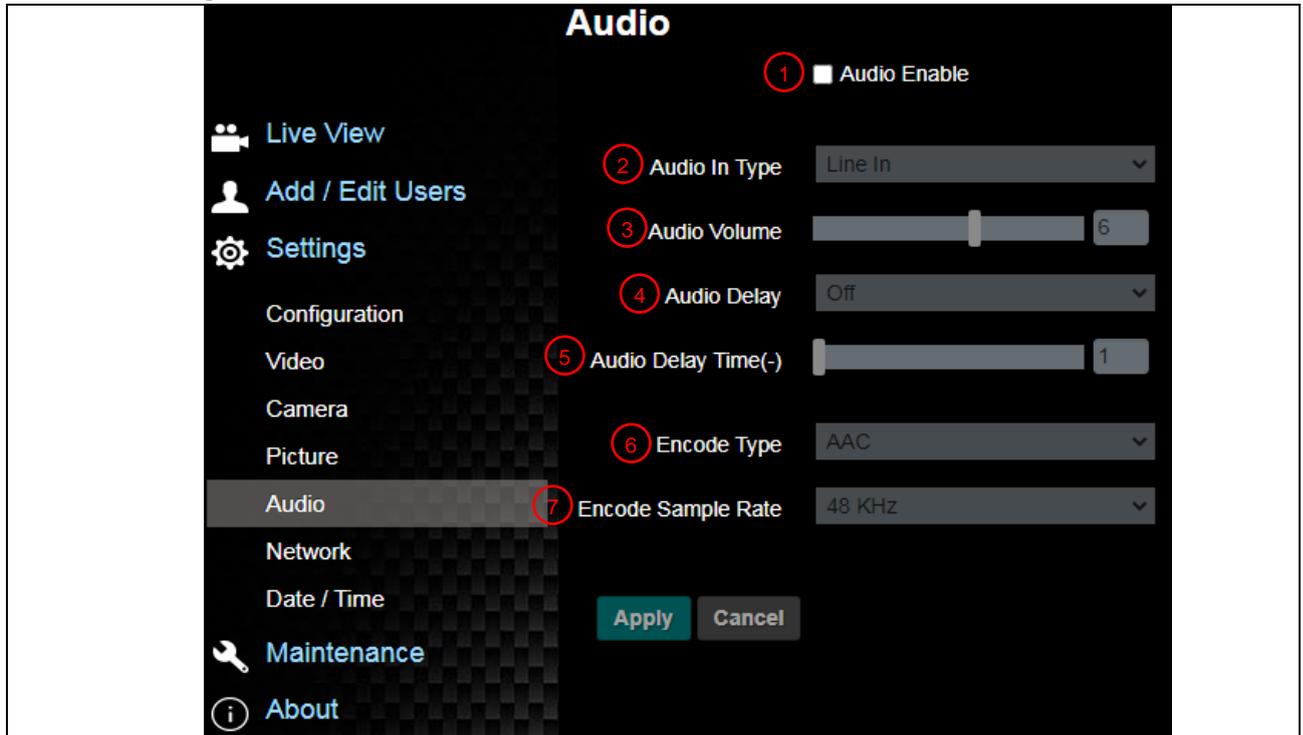
No	Item	Function Descriptions
1	Open audio	Turn on / off sound
2	Audio In Type	Set MIC In / Line In
3	Audio Volume	Adjust Volume
4	Audio Delay	Turn on / off Audio Delay
5	Audio Delay Time	Set the audio delay time (-1~-500ms)
6	Encode Type	AAC / G.711
7	Encode Sample Rate	Set Encode sample rate • 48 KHz(AAC) • 44.1 KHz(AAC) • 16 KHz(AAC) • 16 KHz(G.711) • 8 KHz(G.711)

5.3.9 Setting-Network

No	Item	Function Descriptions
1	Network	Network setting of camera. Change of setting is available only when DHCP function is closed.
2	RTMP Setting	Copy the RTMP web address provided by the RTMP service platform and paste it to the RTMP connection address to publish the camera images on the RTMP service platform **\<Remark\>**To upload to YouTube for live streaming, please see *5.3.8 Setting - Audio* to turn on the audio function first
3	RTSP Setting	■ **Enable/Disable Multicast.** 　 It is suggested to enable Multicast when the number of users online watching the live image simultaneously is more than 4 ■ **Enable/Disable Password Authentication** 　• RTSP connection format can be found in *5.2.4 Using RTSP Player to View the Images* 　• The username/password is the same as the web login password of the camera, please refer to *5.3.3 Account Management* to add/modify account information
4	MPEG-TS Setting	The port number must be set in the range above 1024 with a maximum value of 9999 **\<Remark\>** The following port has been used by the camera. Setting of the port may not connect correctly 8554, 8556, 8557, 8080, 9090, 1935
5	SRT Setting	1. Set the field of SRT and then check the item to open SRT streaming 　 After the SRT streaming is opened, it will be connected automatically upon startup 2. The port number must be set in the range above 1024 with a maximum value of 9999 　 The following port number has been used by the camera. Setting of the port number may not connect correctly 　 8554/ 8557/ 8556/ 8555/ 1935 3. Delay time is for 20 to 8,000 microseconds. The default value is 120 microseconds

| 6 | SNTP / Port Setting | ■ SNTP Setting: Set SNTP Server IP
■ Port Setting: Set HTTP port. The default Port value is 80
Port Setting: Set HTTP port. The default Port value is 81

SNTP **Port Setting**
HTTP Port [80] HTTPS Port [81]
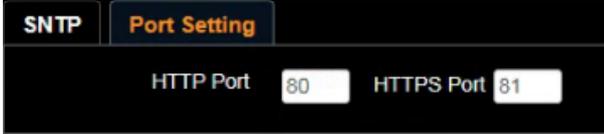
\<Remark\> Change of setting is available only when DHCP function of camera is closed |

5.3.10 Setting-Time

No	Item	Function Descriptions
1	Camera Time	Display the date and time of the camera
2	Set the Time	■ Set Manually: Set time manually ■ Synchronize with computer time: Set the camera time according to the computer time ■ Synchronize with SNTP server: Set the camera time synchronously with the SNTP server **\<Remark\>** SNTP server address: Please change in network setting

5.3.11 Setting-Maintenance - Upgrading Firmware

No	Item	Function Descriptions
1	Firmware Update	The camera firmware may be upgraded via web page. For the upgrade method, please download the FW upgrade manual from Lumens website

5.3.12 Setting-Maintenance - Incident Log

No	Item	Function Descriptions
1	Event Logs	If the camera encounters errors, an error code log will be established **<Remark>** When an error code appears, the user may try to clear and confirm if the error will repeat itself

5.3.13 Setting-Maintenance - Security
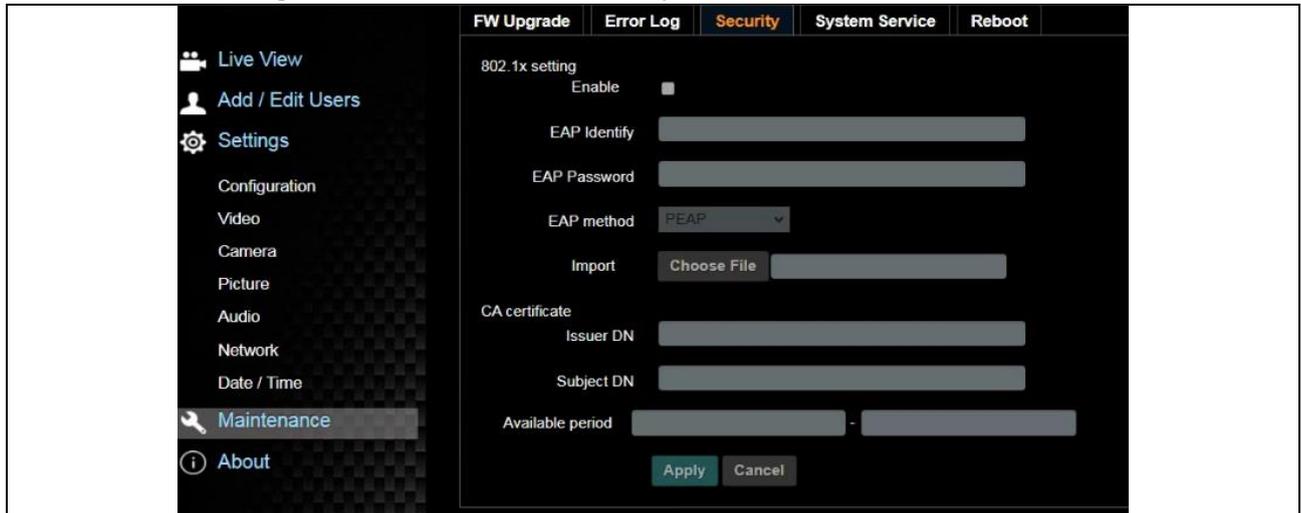
No	Item	Function Descriptions
1	802.1x Setting	Enable/ disable 802.1x protocol, and configure settings when enabled **\<Remark\>** The router must support 802.1x protocol to enable this feature

5.3.14 Setting-Maintenance - System Service
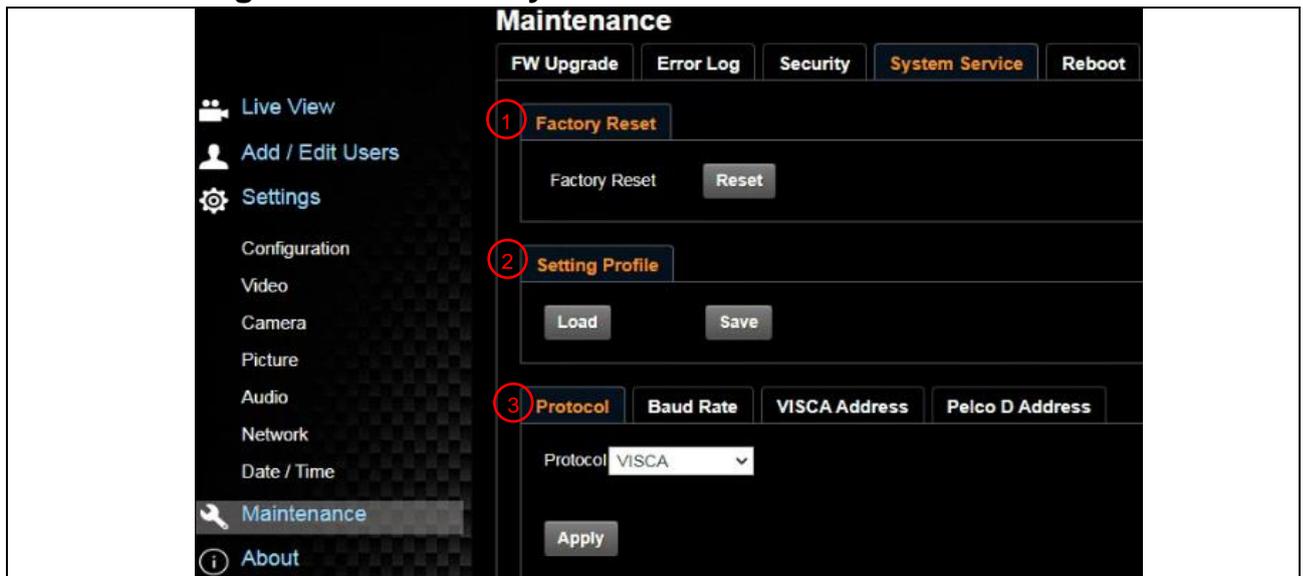
No	Item	Function Descriptions
1	Reset to the default value	Select the reset button to resume the factory default setting as the web page setting
2	Setting File	The web page setting parameters can be exported from the computer and imported/applied to another camera
3	Communication protocol related settings	Communication protocol related settings for the use of connecting RS-232/ RS-422 communication

5.3.15 Setting-Maintenance - Reboot
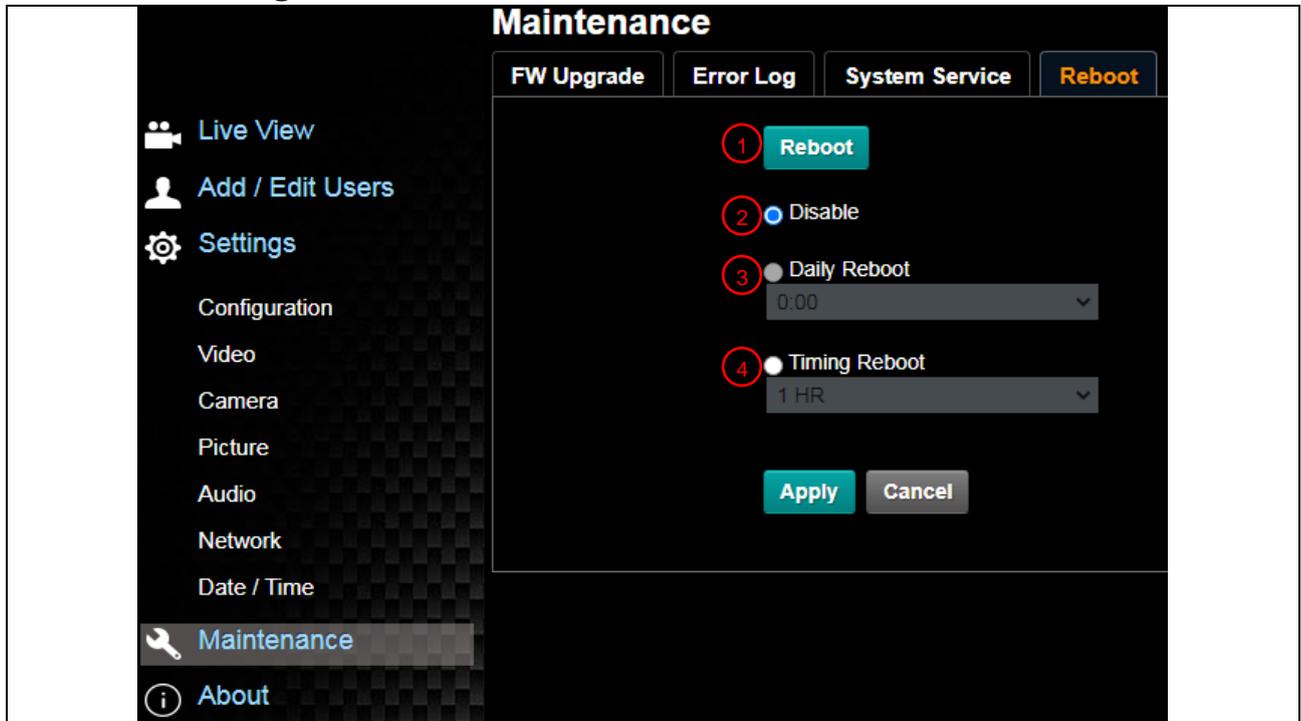
No	Item	Function Descriptions
1	Reboot	Reboot immediately
2	Disable	Disable the reboot settings
3	Daily Reboot	Set the daily reboot time **<Remark>** Please go to Setting - Time to complete the SNTP server synchronization to set daily reboot
4	Timing Reboot	Set the timing reboot time

5.3.16 About
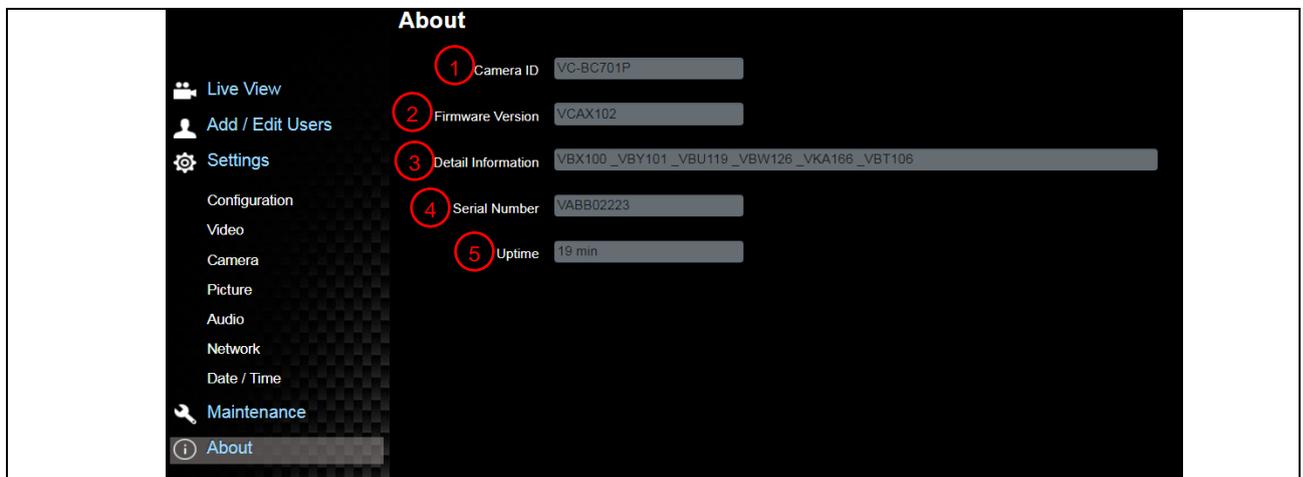
No	Item	Function Descriptions
1	Camera ID	Display the camera name
2	Firmware Version	Display the firmware version of the camera
3	Detail Information	Display firmware version-related information
4	Serial Number	Display the camera serial No.
5	Uptime	Displaying the running time of the camera (the timing of standby continues; the time will be reset when the camera is rebooted or turned off)

Chapter 6. Troubleshooting

This chapter describes problems you may encounter while using VC-BC701P. If you have questions, please refer to related chapters and follow all the suggested solutions. If the problem still occurred, please contact your distributor or the 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 VC-BC701P**	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.	**VC-BC701P image is severely delayed**	Please use 4K, 1080p or 720p 60/50 Hz signals rather than 25/30 Hz signals.
4.	**RS-232 cannot be controlled**	1. Confirm the connection is correct (RS-232 Input / Output) 2. Please make sure the Baud rate setting is the same as the control equipment
5.	**Whether the Internet can be used for operation**	Please refer to **_Chapter 5 Network Function Description_** for the Internet usage
6	**The ONVIF software cannot find the machine**	Please go to **Setting - Video - Camera Location** in the webpage and make sure that the ID is only made up of English letters or numbers. The ONVIF software cannot find the machine if you use special characters and space.
7	**Tally light is not working when applying RS232 setting**	Please go to **Setting - Camera - Tally Light** in the webpage to check if the function is on.

Lumens®

Supplier's Declaration of Conformity
47 CFR § 2.1077 Compliance Information

Manufacturer：**Lumens Digital Optics Inc.**

Product Name：**VC-BC701P**

Model Number：**UHD Box Camera**

Responsible Party – U.S. Contact Information

Supplier：Lumens Integration, Inc.

4116 Clipper Court, Fremont, CA 94538, United States

e-mail   : support@mylumens.com

FCC Compliance Statement

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.