Marshall Broadcast A/V Division

•CV320 •CV520

Compact IP and 3G-SDI POV Cameras

CV320



CS lens not included

CV520



M12 lens included

User Manual

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Chapter 1: Safety Instructions

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

1. Operation

1.1 Please use the product in the recommended operating environment where temperatures are between 0˚C ~ 50˚C, and humidity level is 70% or below.

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

1.3 Use attachments only as recommended.

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

1.5 Always take the following precautions when handling this connection as 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.

1.6 Do not overload the wall socket, extension cords, or multi-way plug boards as this may cause fire or electric shock.

1.7 Do not block the slots and openings in the case of this product as they are meant to provide Ventilation and prevent this product from overheating.

1.8 Except as specifically instructed in this User Manual, do not open or remove covers, Otherwise, you may be exposed to dangerous voltages and other hazards. Refer all servicing to licensed service personnel only.

1.9 Unplug this 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 purchased, is in line with UL or CE safety approbations and installed by a certified technician 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 damaging 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.

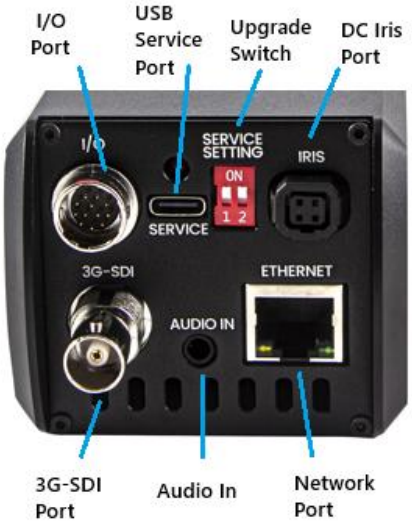
4. Cleaning

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

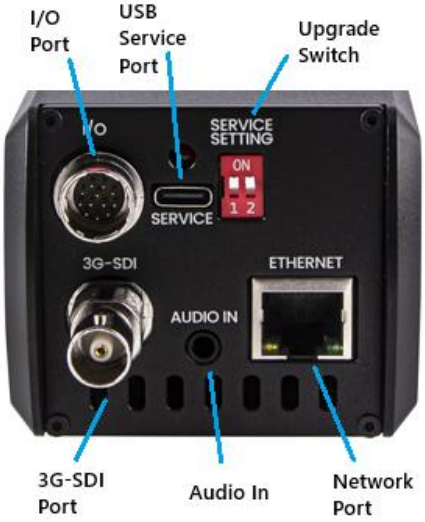
Chapter 2: Package Contents

Camera:

CV320



CV520



Accessories:

1. 12 Volt DC 2 Amp power adapter with 4 interchangeable plugs
2. I/O breakout cable (Power/RS485)
3. C-mount lens adapter (Included with CV320)



Chapter 3: On Screen Display Menu

Power the camera with DC12V plug or PoE+(IEEE 802.3at).
Use Up, Down, Right, Left, and Enter joystick from the I/O breakout cable:

Press **Enter** to access the menu and exit the menu from the main OSD.

Press **Up** to move up within the menu.

Press **Down** to move down within the menu.

Press **Right** to enter the sub menu or change the value.

Press **Left** to change the value.

OSD MENU			
SYSTEM	LANGUAGE	English	
	PROTOCOL	VISCA	For RS485 control via breakout cable
	ADDRESS	1 ~ 7	For RS485 control via breakout cable
	BAUD RATE	2400, 4800, 9600, 115200	For RS485 control via breakout cable
EXPOSURE	EXPOSURE MODE	AUTO / MANUAL	Exposure mode setting
	SHUTTER	1/30 - 1/10000	Shutter speed setting when Manual mode is used
	GAIN	0 - 30	Adjustable when Manual mode is used
	FLICK	OFF, 50Hz, 60Hz	Anti flicker setting when Auto mode is used
	BACKLIGHT	On/Off	Backlight compensation setting when Auto mode is used
	GAMMA	0 - 6	Gamma value setting
IMAGE	WB MODE	ATW	Auto tracking white balance mode (wider dynamic range)
		MANUAL	Manual mode
		CT	Color Temperature mode
		FLUORESCENT	Fluorescent light mode
		SODIUM	Sodium light mode
		AUTO	Auto WB mode
		INDOOR	Indoor mode
		OUTDOOR	Outdoor mode
		PUSH	One push trigger mode
	RED	1 - 255	Adjust red gain from Manual mode
	BLUE	1 - 255	Adjust blue gain from Manual mode
	COLOR TEMPERATURE	1800 K ~ 10000 K	Adjust color temperature for CT mode
	MIRROR	On/OFF	Enable/Disable mirror
	FLIP	On/OFF	Enable/Disable flip
	DAY/NIGHT		Insert/Remove IR cut filter
QUALITY	2DNR	On/Off	Enable/Disable 2D noise reduction
	3DNR	AUTO, 1 – 4, Off	Adjust 3D noise reduction
	SHARPNESS	0 - 15	Adjust sharpness value
	CONTRAST	0 - 15	Adjust contrast value
	SATURATION	0 - 15	Adjust saturation value
	BRIGHTNESS	0 - 15	Adjust brightness value
	WDR	OFF, 1 - 6	Enable/Disable Wide Dynamix Range

OSD MENU			
FORMAT	SIZE	720p, 1080i, 1080p	Supported resolution
	FRAME RATE	23.98, 24, 25, 29.97, 30, 50, 59.94, 60	Available frame rates: **720p:** 25/29.97/30/50/59.94/60 **1080i:** 50/59.94/60 **1080p:** 23.98/24/25/29.97/30/50/59.94/60
Audio	AUDIO	On/Off	Enable/Disable audio (**Note: Audio only embeds to IP output**)
	SAMPLE RATE	22050,32000,44100,48000	Adjust audio sampling rate
	VOLUME	0 ~ 100	Adjust audio volume
	ENCODE MODE	AAC/LPCM	Adjust audio encoding mode
	BITRATE	32000,48000,64000,96000,128000	Adjust audio bitrate
NETWORK	DHCP	On/Off	Enable/Disable network DHCP mode
	IP ADDRESS		Display or manually set IP address
	NETMASK		Display or manually set Net Mask address
	GATEWAY		Display or manually set Gateway address
RESET	FACTORY RESET		Run factory reset
	USER SETTING		Save the current setting as USER
	USER RESET		Reset the camera to the USER saved setting
INFO	F/W VERSION		Display the firmware version
	ARM VERSION		Display the ARM version
	RELEASE DATE		Display the firmware release date
	ADDRESS		Display the current VISCA address
	BAUDRATE		Display the current baud rate
	IP ADDRESS		Display the current IP address
	GATEWAY		Display the current Gateway address

Chapter 4: Connect Camera to Network

CV320/520 cameras come with DHCP enabled by default.

If the camera is connected to a router or DHCP enabled network device, it will be assigned with an IP address automatically.

If the connected network does not support DHCP, the camera will take 30 seconds to assign the default IP address **192.168.100.150.**

If users want to assign their own static IP address, turn off DHCP mode in OSD menu, manually set IP address, subnet mask and gateway. Exit the menu and power cycle the camera to save the IP setting.

The computer that will access the camera must be connected to the same network and proper IP address, subnet mask, and default gateway must be assigned to the computer.

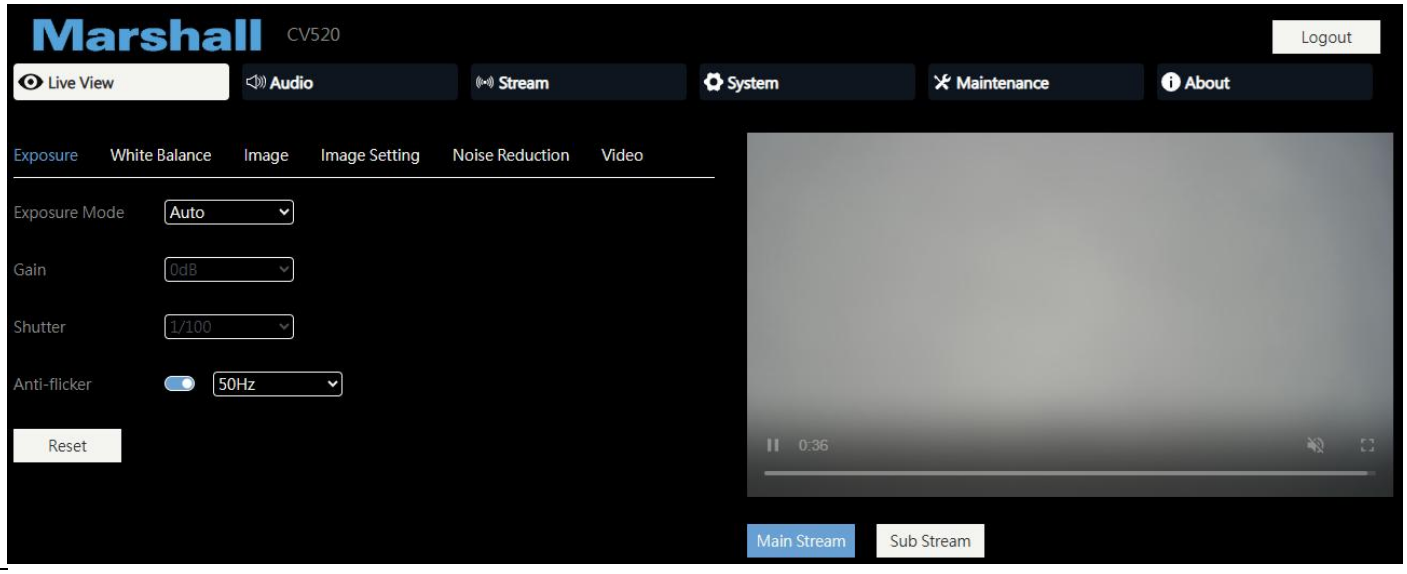
Open a web browser and enter the IP address of the camera.
http://192.168.100.150 (default IP address if DHCP is not used)

Chapter 5: Web Interface Settings



Default login user name is **admin**
Password is **9999**

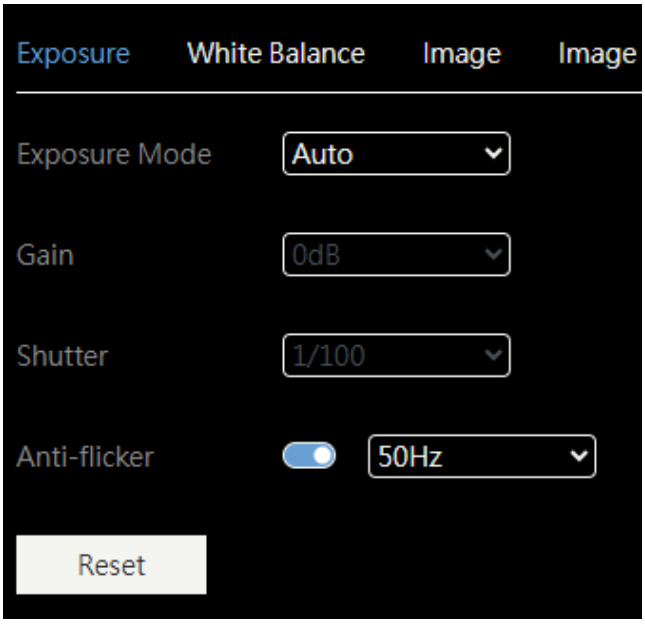
5.1 Live View





Main stream and sub stream buttons for live view image (within the web browser) stream quality set from **Stream Encoding menu**

5.1.1 Exposure



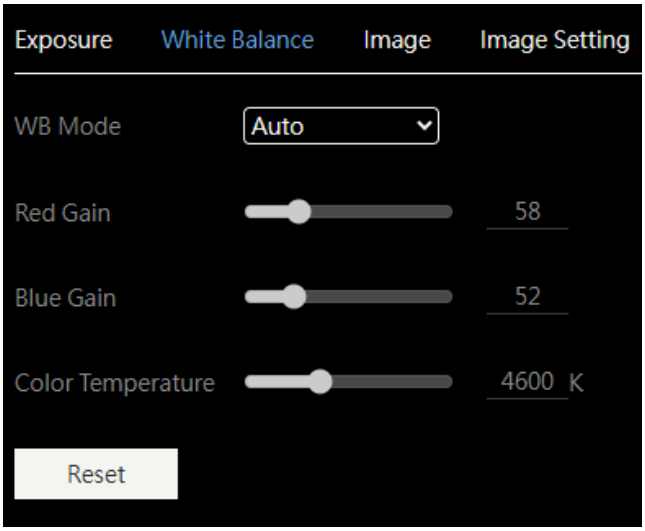
Exposure Mode: Select exposure mode (Auto, Manual)

Gain: Select gain level when Manual mode is selected (0 – 30dB)

Shutter: Select shutter speed value when Manual mode is selected (1/30 – 1/10000)

Anti-Flicker: Enable anti flicker when image flickers (50Hz, 60Hz)in Auto mode

5.1.2 White Balance



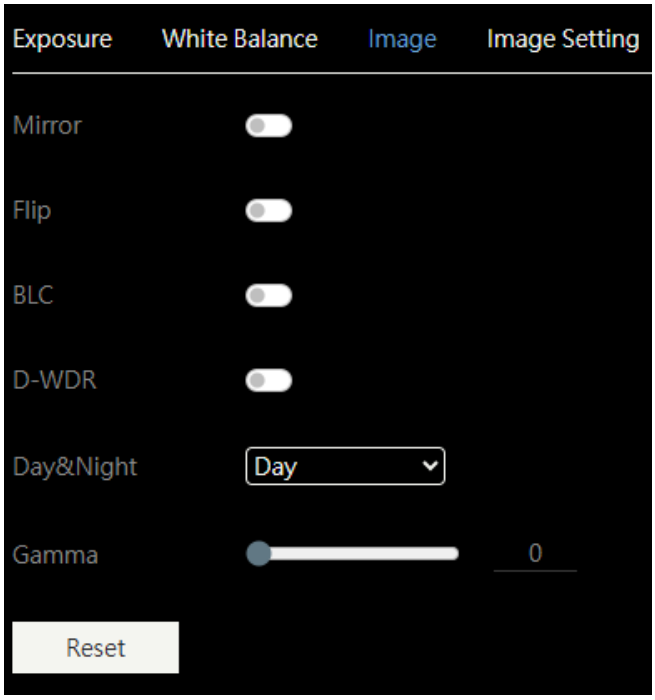
WB Mode: Select white balance mode (Auto, Indoor, Outdoor, One Push, ATW, Manual, Temperature)

Red Gain: Adjust red gain level when Manual mode is selected.

Blue Gain: Adjust blue gain level when Manual mode is selected.

Color Temperature: Select color temperature level when **Temperature Mode** is selected.

5.1.3 Image



Mirror: Enable or disable image mirror

Flip: Enable or disable image flip

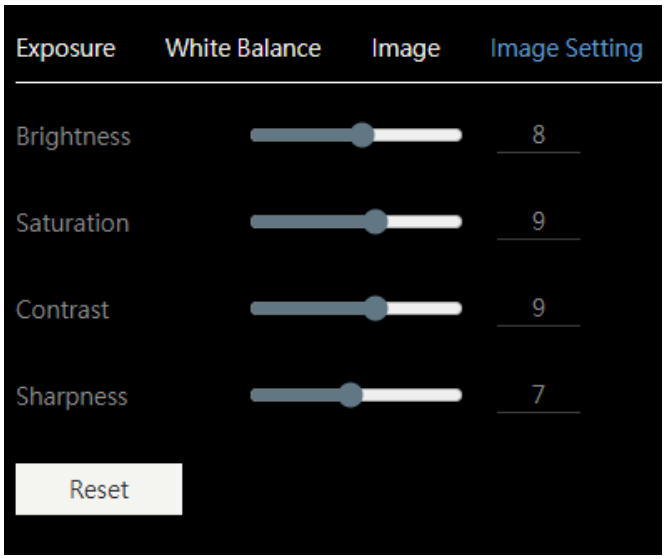
BLC: Enable or disable backlight compensation.

D-WDR: Enable or disable Digital Wide Dynamic Range

Day&Night: Insert or remove IR Cut filter. Filter removed during the night mode.

Gamma: Adjust gamma level (0 – 6)

5.1.4 Image Setting



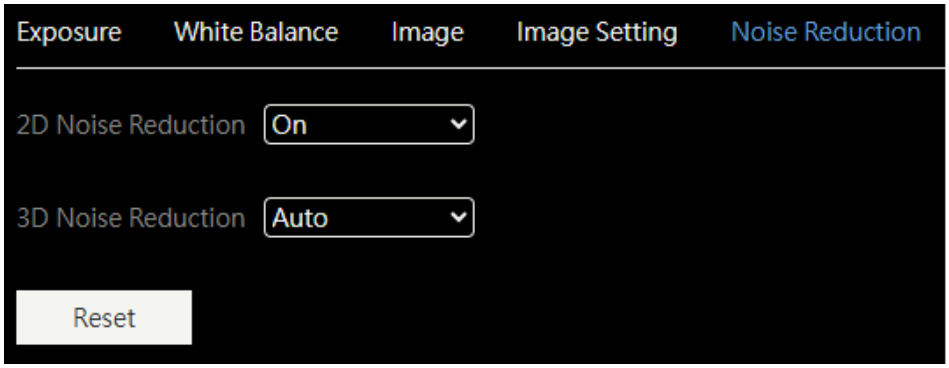
Brightness:
Adjust brightness level (0 – 15)

Saturation:
Adjust saturation level (0 – 15)

Contrast:
Adjust contrast level (0 – 15)

Sharpness:
Adjust sharpness level (0 – 15)

5.1.5 Noise Reduction



2D Noise Reduction: Enable or disable 2D noise reduction.

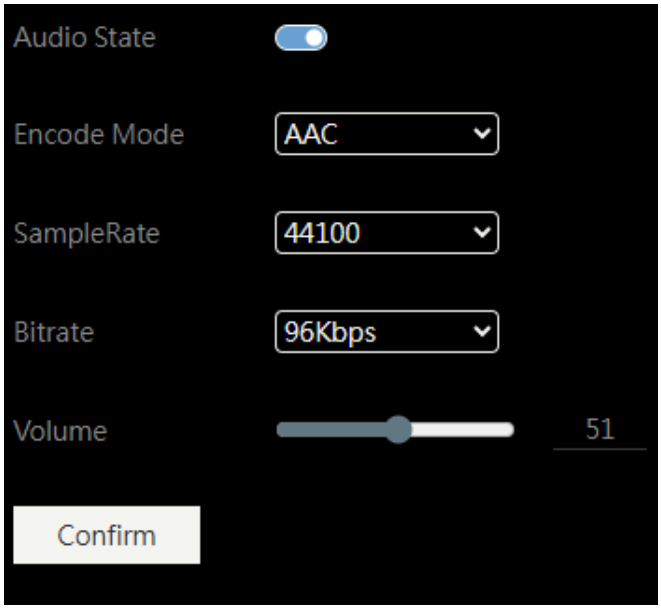
3D Noise Reduction: Select 3D noise reduction level (Auto, 1 – 4, Off)

5.1.6 Video



SDI Output: Select SDI output format.
720p25, 29.97, 30, 50, 59.94, 60
1080i50, 59.94, 60
1080p23.98, 24, 25, 29.97, 30, 50, 59.94, 60

5.2 Audio



Audio State: Enable or disable embedded audio.

Encode Mode: Select audio encoding method (AAC, LPCM)

Sample Rate: Select audio sampling rate (22,050, 32,000, 44,100, 48,000 Hz)

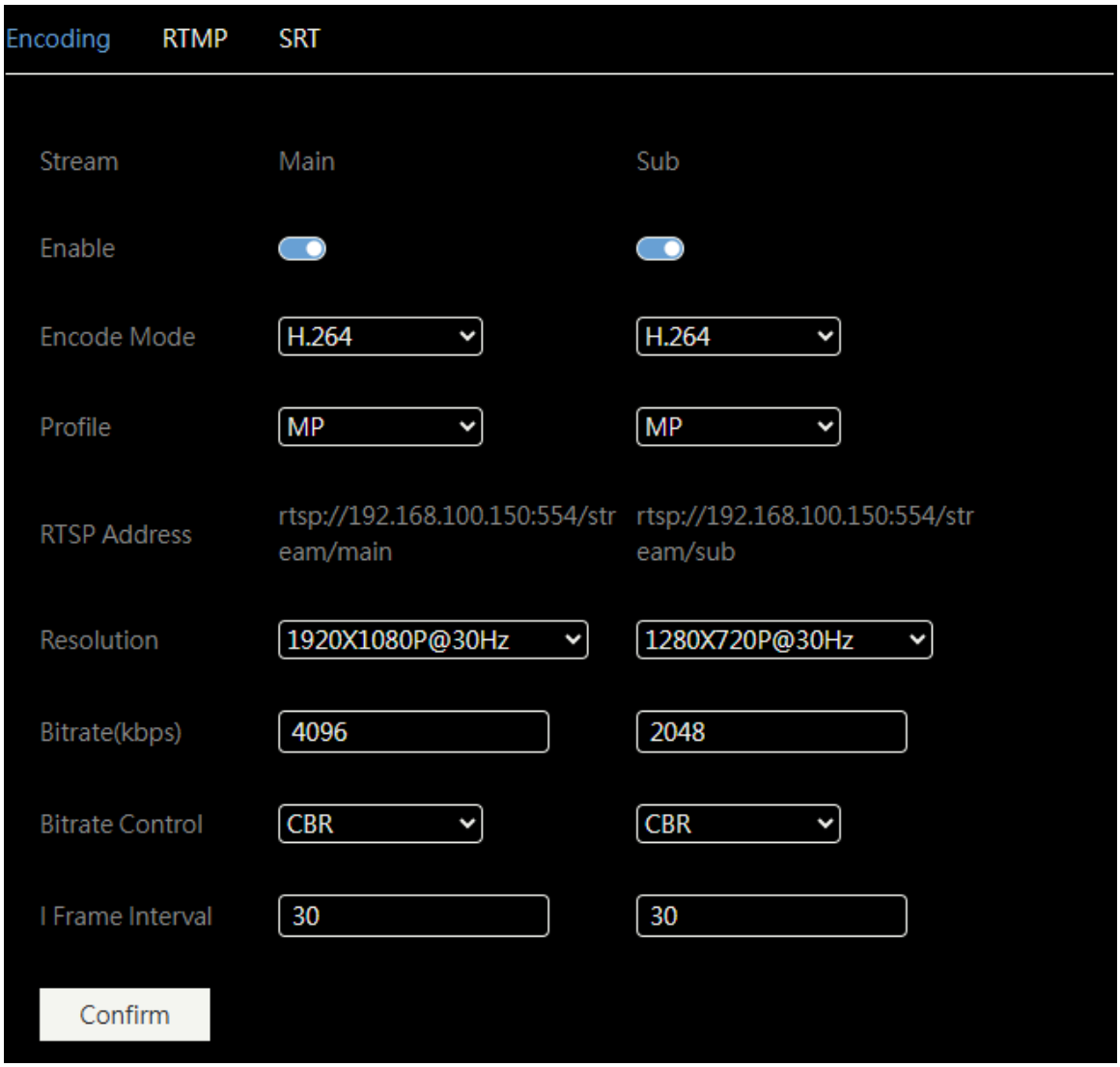
Bitrate: Select audio bitrate (32,000, 48,000, 64,000, 96,000, 128,000 bits per second)

Volume: Adjust audio volume level (0 – 100)
Confirm: When audio settings are changed, press confirm to apply changes

5.3 Stream

Encoding setting of the camera and video over IP protocols can be configured from this menu.

5.3.1 Encoding



Stream has **Main** and **Sub Stream** settings.

Encode Mode: Select encoding compression (H.264, H.265)

Profile: Select encoding profile (MP, HP)

RTSP Address: Displays the RTSP address of the camera.

Resolution: Select desired stream format. (Note: SDI and Stream formats are working independently)

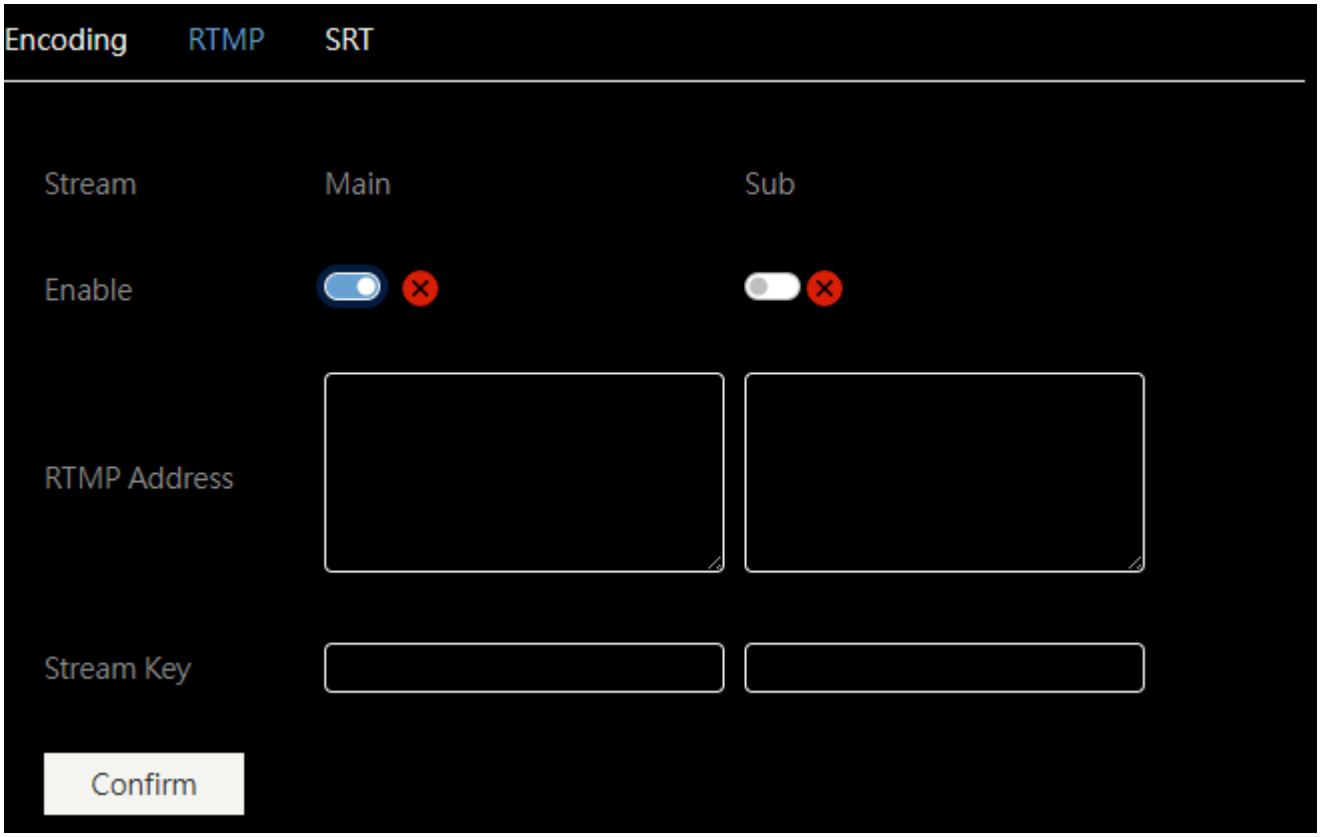
Bitrate: Select desired stream bitrate (1024 – 16,384)

Bitrate Control: Select bitrate control method (CBR, VBR)

I Frame Interval: Select desired i frame interval (3 – 120)

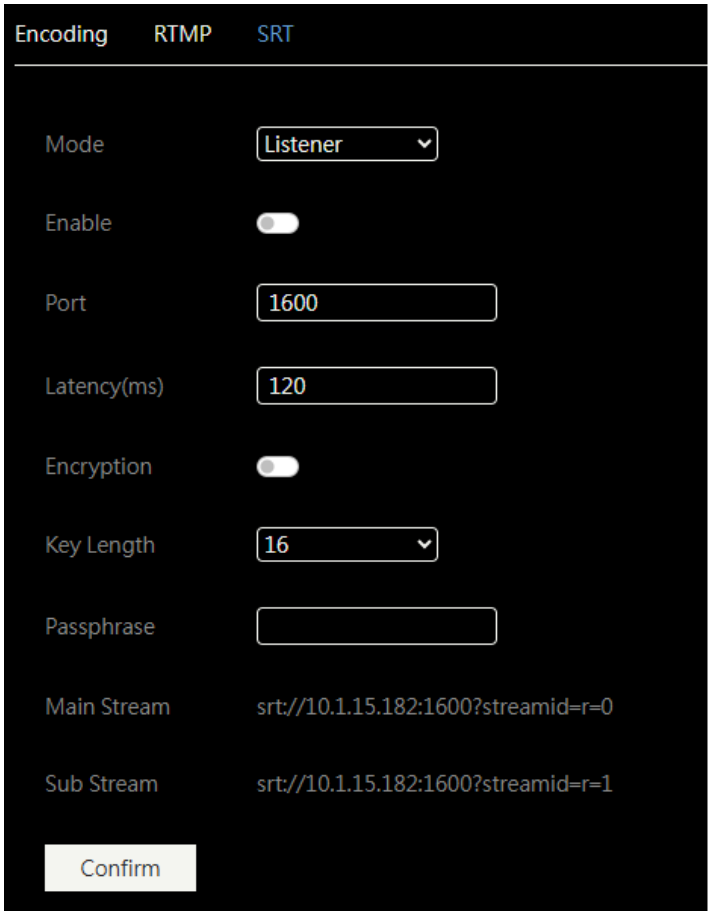
Confirm: When encoding settings are changed, press confirm to apply changes

5.3.2 RTMP



RTMP Address: Copy and paste the RTMP destination address in the box.
Stream Key: Copy and paste the stream key provided by the RTMP host.
Enable and Confirm: Click on Enable button and press confirm to enable RTMP stream.
When RTMP stream is properly setup, check mark indicator will appear as shown 
Note: ***When RTMP stream is used on YouTube, audio (from section 5.2) needs to be enabled.***

5.3.3 SRT



Mode: Select SRT mode (Listener, Caller, Rendezvous)

Enable: Enable or disable SRT

Port: Type the port number used in SRT. Default is 1600

Latency(ms): Set SRT latency in milli seconds

Encryption: Enable or disable stream encryption

Key Length: Select key length (16, 24, 32)

Passphrase: Set passphrase parameter

Main Stream: Displays SRT main stream URL

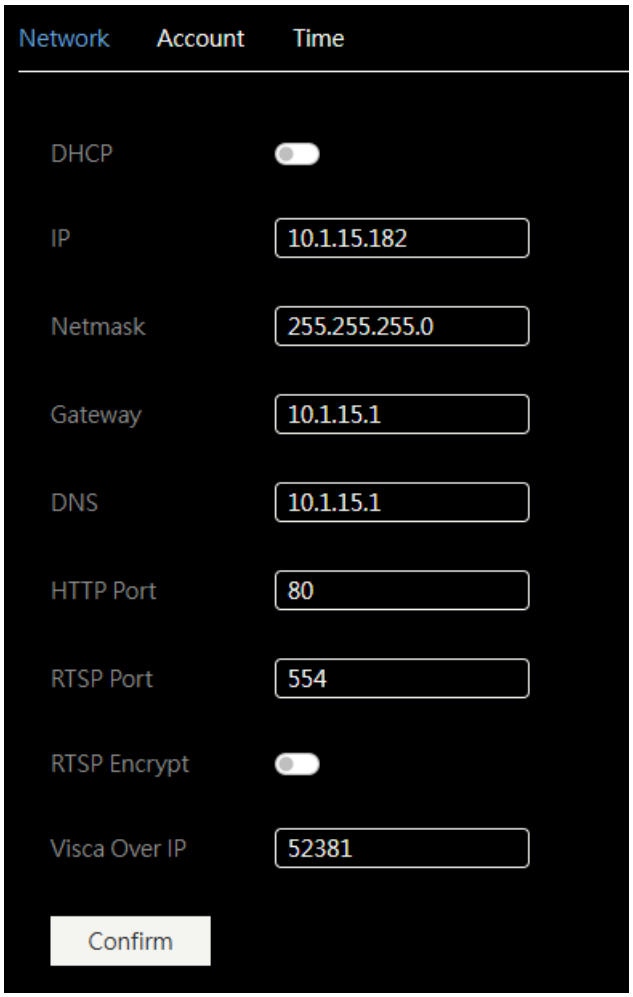
Sub Stream: Displays SRT sub stream URL

Confirm: When SRT settings are changed, press confirm to apply changes

5.4 System

System menu includes network configuration of the camera, account setting, and NTP

5.4.1 Network



By default, DHCP is enabled. If the network does not support DHCP, 192.168.100.150 will be assigned to the camera 30 seconds after the initial boot up.

DHCP: Select DHCP or Static IP address

IP: Type desired IP address if static IP is used

Netmask: Type subnet mask address if static IP is used

Gateway: Type gateway address if static IP is used

DNS: Type DNS address if static IP is used

HTTP Port: Modify HTTP port number. Default is **80**

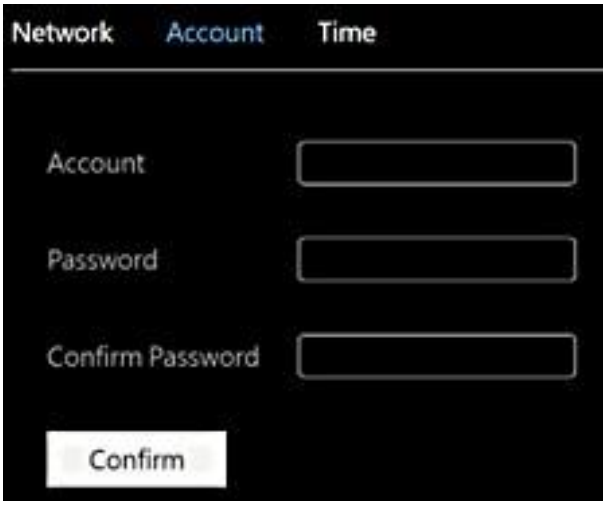
RTSP Port: Modify RTSP port number. Default is **554**

RTSP Encrypt: Enable or disable RTSP encryption

VISCA over IP: Modify VISCA over IP port number. Default is **52381**

Confirm: When network settings are changed, press **confirm** to apply changes and reboot the camera

5.4.2 Account



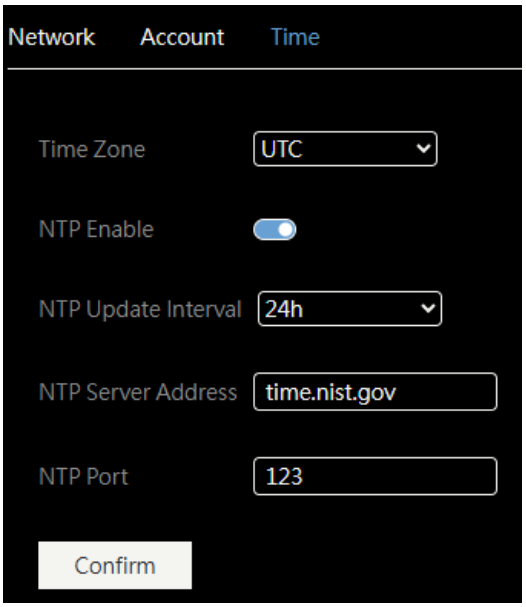
Account: Change username of the camera. Default is admin

Password: Change password of the camera. Default is 9999

Confirm Password: Retype the new password for confirmation

Confirm: When account settings are changed, press **confirm** to apply changes

5.4.3 Time



Time Zone: Select the time zone of the location

NTP Enable: Enable or disable the NTP

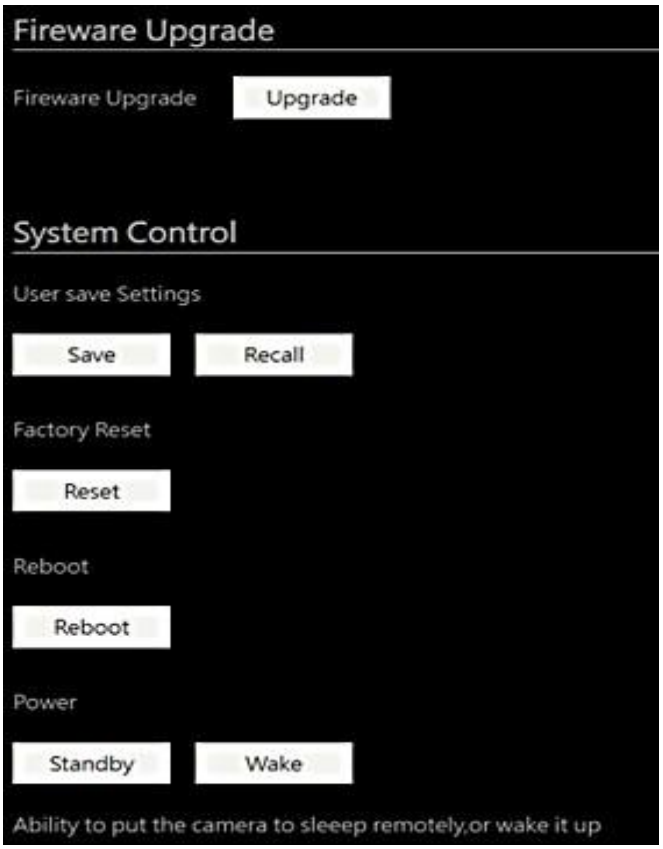
NTP Update Interval: Select the interval of NTP update (30m – 24h)

NTP Server Address: Modify the NTP server. Default server is time.nist.gov

NTP Port: Modify NTP port number. **Default is 123**

Confirm: When NTP settings are changed, press **confirm** to apply changes

5.5 Maintenance



Firmware Upgrade: Click the upgrade button to open the file browser and locate the firmware file. Select the file and click Open to start the upgrade process. Do not turn off the camera or browser while an upgrade is in progress.

User Save Settings:

Save: Save the current camera settings to a **config.txt file**

Recall: Recall the saved user settings to the camera

Factory Reset: Reset the camera settings to the factory default settings

Reboot: Reboot the camera to apply major changes

Power:

Standby: Put camera to the standby mode

Wake: Operate the camera from Standby mode

5.6 About

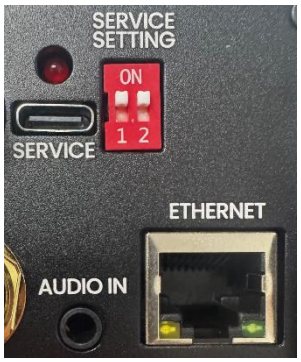
About page displays the current camera version information

Chapter 6: Upgrade

CV320/CV520 have two types of upgrades required.

When ISP update is needed, an upgrade can be performed from the Maintenance menu under the web interface.

When major update is required, camera ARM process can be updated via USB connection.



1. Flip dip switch 1 to OFF and dip switch 2 to ON position on the back of the camera.
2. Connect the USB C cable to the service port of the camera and connect it to the computer.
3. Upgrade software called "NZDownloadTool" is needed to upgrade the ARM processor.
4. Please consult with Marshall Electronics for software and upgrade file.
5. When upgrade is completed, set both dip switches back to ON position.

Warranty

For Warranty information please refer to Marshall website page:
https:marshall-usa.com/company/warranty.php