LessonCam™ Configuration Guide

Learn more at **www.boxlight.com**

frontrow™
by Boxlight®

General Safety Precautions

NOTE: There is a minimum USB 2.0 requirement to operate this camera using USB.

General Safety Precautions

- Disconnect power from Juno, ezRoom, or other electronics while installing camera.
- Connect all cables before powering on your camera.
- Never move the camera by hand, as this may damage the internal motors.
- Clean the camera lens with a clean, dry microfiber cloth.
- Clean camera with a soft dry cloth. If the camera is very dirty, clean it with diluted neutral detergent. Do not use any type of solvents, as they may damage the surface.
- The camera should be level when installed.
- Never operate the camera outside of the specified operating temperature range or humidity. Never operate the camera with any other power supply than the one originally provided with the camera.
- Do not install or use the camera near water or heat sources.
- Protect all cables from wear and damage from staples, foot traffic, doors, and other hazards.
- Only use accessories specified by FrontRow.
- Only refer installation and service to qualified personnel.
- Follow all safety guidelines when using ladders.
- Observe all applicable building, electrical, and fire codes when installing any electrical equipment.

NOTE: This is an FCC Class A Digital device. Unintentional electromagnetic radiation may affect the image quality of TV in a home environment.

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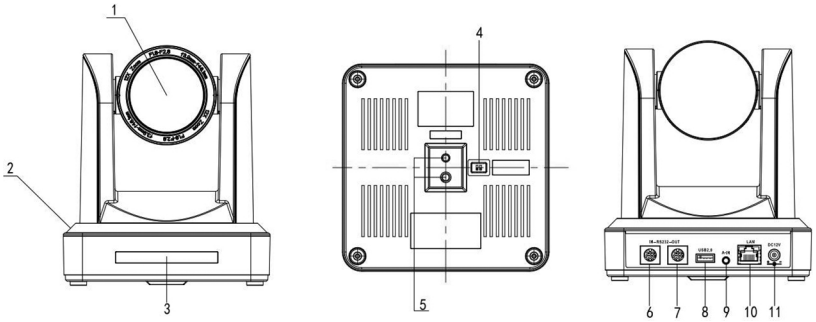
1. Fast Installation

Figure 1



1. Camera Lens
2. Camera Base
3. Remote Controller Receiver Light
4. Bottom Dial Switch
5. Tripod Screw Hole
6. RS232 Control Interface (input)
7. RS232 Control Interface (output)
8. USB2.0 Interface
9. Audio Input Interface
10. 10/100M Network Interface
11. DC12V Input Power Supply Socket

1.2. Power on Initial Configuration

1) Power on: Connect DC12V power supply.

2) Initial configuration: The camera will enter a self diagnostic mode upon power up, as indicated by a flashing light. The camera head will return to the HOME position (forward facing, level horizontally). The light will turn solid when the self diagnostic is complete.

NOTE: If the LessonCam app is running and if you set preset 0, when Power on self-test is completed, the camera will automatically move to the preset 0 position.

1.3 Video Output

This model features video output from both LAN and USB2.0.

1) Video Output from LAN

a. Network Cable Connection Port: See Number 10 in Figure 1.

b. To log in from the Internet, open your browser and enter "192.168.5.163" in the address bar (factory default). From the login page, click on the “player is not installed, please download and install” and follow the steps for installation.

Next, enter "admin" for both the user name and password (factory default), which brings you to the preview page. From here, users can carry out PTZ control, video recording, playback, configuration, and other operations.

2) USB2.0 video output

a. See Number 8 in Figure 1.

b. Connect the camera and the monitor via USB2.0 video cable, open the video display software, select the image device, and the video output will be available.

2. Product Overview

Product Introduction

There are four main series according to different video formats, lens optical zooms, output interfaces, and remote control modes.

Please refer to corresponding features in this manual.

NOTE: 5G WiFi is optional for ST (standard) series only.

2.1.1 Dimensions

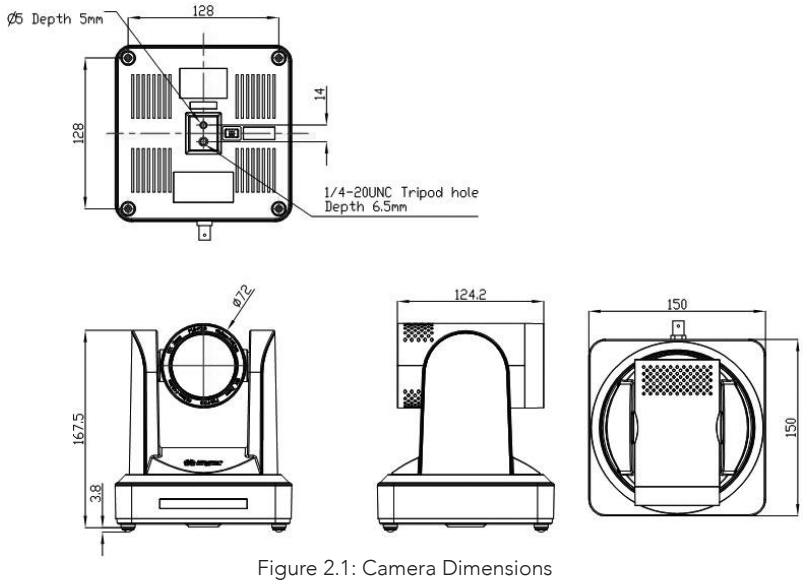


Figure 2.1: Camera Dimensions

2.1.2 Accessories

When you unpack your camera, make sure that all of the supplied accessories are included.

Accessory	Standard	Power Adapter: 1 piece
		USB2.0 cable: 1 piece
		User Manual: 1
		Double-side glue shim: 4pcs
		Warranty card: 1 piece
	Optional	IR Remote controller or wireless controller: 1 piece
		Wireless controller: 1 piece
		Wall mounting bracket (optional)
		Upside-down mounting bracket(optional)

USB2.0 Video cable: If you need a USB2.0 cable to provide power but not a power adapter, a USB2.0 Video cable with two ports is needed. The *red port* is for power supply, and the *black port* is for transmitting USB video signals. If you are using a power adapter, the general USB2.0 video cable without power supply function will work.

2.2 Main Features

2.2.1 Camera Performance

This camera offers perfect functions, superior performance, and rich interfaces. The features include advanced ISP processing algorithms to provide clear images with a strong sense of depth, high resolution, and fantastic color rendition. It supports H.265/H.264 encoding, which makes motion video fluent and clear even with less than ideal bandwidth conditions.

1. Superb High-definition Image: It employs a 1/2.8 inch high quality CMOS sensor. Resolution is up to 1920x1080, with frame rate up to 60 fps.
2. Various Optical Zoom Lens: It has an optical zoom lens for various distance options.
3. Leading Auto Focus Technology: The leading auto focus algorithm makes the lens fast, accurate, and stable when auto-focusing.
4. Low Noise and High SNR: Low Noise CMOS effectively ensures high SNR of camera video. Advanced 2D/3D noise reduction technology is also used to further reduce the noise, while ensuring image sharpness.
5. Quiet PTZ: By adopting a high-accuracy step driving motor mechanism, it operates extremely quietly, and moves smoothly and quickly to the designated position.
6. Video Outputs: Features USB and wired LAN.
7. Low-power Sleep Function: Features low-power sleep/wake up, and the consumption is lower than 500mW during sleep mode.
8. Supports Multiple Control Protocol: Supports VISCA, PELCO-D, and PELCO-P protocols, which can also be automatically recognized. Supports VISCA control protocol through IP port.
9. RS-232 Cascade Function: Supports RS-232 cascade function, which is convenient for installing.

2.2.2 Network Performance

1. Audio Input Interface: Supports 16,000, 32,000, 44,100, and 48,000 sampling frequency, as well as AAC, MP3, and PCM audio coding.
2. Multiple Audio/Video Compression: Supports H.264/H.265 video compression, AAC, MP3 and PCM audio compression. Supports compression of resolution up to 1920x1080 with frame up to 60 fps, and 2 channel 1920x1080p with 30 fps compression.
3. Multiple network protocol: Supports VISCA, ONVIF, RTSP, RTMP protocols and RTMP push mode. Easy to link streaming media server (Wowza, FMS).

2.3 Technical Specifications

Model	12X
Camera Parameter	
Sensor	1/2.8 inch high quality HD CMOS sensor
Effective Panels	16:9 2.07 megapixel
Video Formats	U2 interface video format 176x144/320x240/320x180/352x288/640x480/720x576/640x360/800x600/960x540/ 1024x576/1024x768/1600x896/1920x1080/1280x720; P30/25/20/15/10/5
Optical Zoom	12X f=3.9~46.1mm
View Angle	6.3° (tele) 72.5°(wide)
AV	F1.8 – F2.4
Digital Zoom	10x
Minimum Illumination	0.5Lux (F1.8, AGC ON)
DNR	2D & 3D DNR
White Balance	Auto/Manual/One Push/ 3000K/4000K/5000K/6500K
Focus	Auto/Manual
Aperture	Auto/Manual
Electronic Shutter	Auto/Manual
BLC	ON/OFF
WDR	OFF/Dynamic level adjustment
Video adjustment	Brightness, Color, Saturation, Contrast, Sharpness, B/W mode, Gamma curve
SNR	>55dB
Input/Output Interface	
Video Interfaces	UV510A-05/10/12/20-U2 Model: USB2.0 (power supply available), LAN
Image code stream	Double streams outputs simultaneously
Video Compression Format	H.264, H.265
Control Signal Interface	RS-232 Ring through RS232 output, RS-485
Control Protocol	VISCA/Pelco-D/Pelco-P; Baud Rate: 115200/9600/4800/2400bps
Audio input Interface	Double track 3.5mm linear input;
Audio Compression Format	AAC/MP3/PMC Audio compression
HD IP Interface	100M IP port(100BASE-TX); 5G WiFi (optional), support IP Visca control protocol
Network Protocol	RTSP/RTMP, ONVIF, VISCA
Power Interface	HEC3800 outlet (DC12V)
PTZ Parameters	
Pan Rotation	±170°
Tilt Rotation	-30°~+90°
Pan Control Speed	0.1 -180°/sec
Tilt Control Speed	0.1-80°/sec
Preset Speed	Pan: 60°/sec, Tilt: 30°/sec

2.3 Technical Specifications (continued)

Model	12X
Other Parameters	
Supply Adapter	AC110V-AC220V to DC12V/2A
Input Voltage	DC12V±10%
Input Current	1A(Max)
Consumption	12W (Max)
Store Temperature	-10°C to +60°C
Store Humidity	20% - 95%
Working Temperature	-10°C to +50°C
Working Humidity	20%-80%
Dimensions	150mmx150mmx167.5mm
Weight	1.4KG
Working Environment	Indoor
Remote Operation (IP)	Remote Upgrade, Reboot, and Reset
Accessories	Power Supply, RS232 Control Cable, USB3.0 Cable, U3 Model, USB2.0 Cable, U2 Model, Remoter, Manual, Warranty card
Optional Accessories	Bracket

2.4 Interface Instructions

2.4.1 External interface: Audio Input, USB 2.0 Output, LAN, DC12V Power Interface.

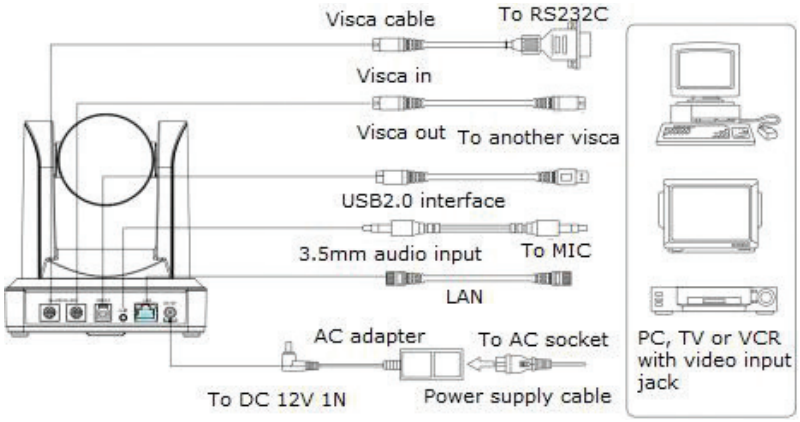


Figure 2.4.1 U2 model external interface diagram

2.4.2 Bottom Dial Switch

Bottom Dial Switch diagram shown in Figure 2.4.2:

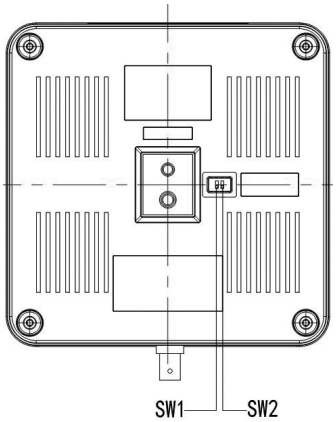


Figure 2.4.2 Bottom Dial Switch diagram

Two DIP switches are set to ON or OFF to select different modes of operation as shown in Table 2.2

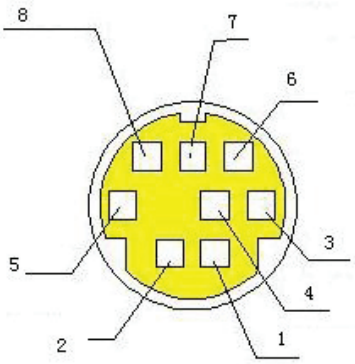
Table 2.2 Dial Switch Setting

Number	SW1	SW2	Explanation
1	OFF	ON	Working Mode
2	ON	OFF	Updating Mode

NOTE: Working mode can be applicable for web upgrade.

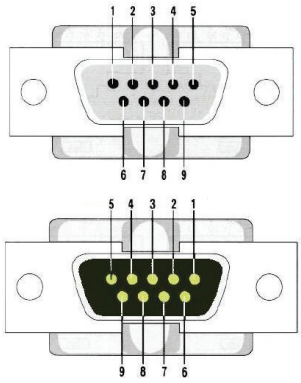
2.4.3 RS-232 Interface

1. RS-232 Mini-DIN 8-pin Port Definition

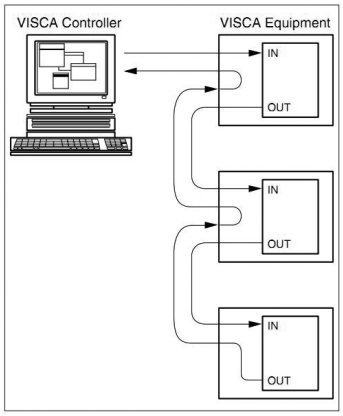


Number	Port	Definition
1	DTR	Data Terminal Ready
2	DSR	Data Set Ready
3	TXD	Transmit Data
4	GND	System Ground
5	RXD	Receive Data
6	GND	System Ground
7	IR OUT	IR Commander Signal
8	NC	No Connection

2. RS232 (DB9) Port Definition



Number	Port	Definition
1	DCD	Data Carrier Detect
2	RXD	Receive Data
3	TXD	Transmit Data
4	DTR	Data Terminal Ready
5	GND	System Ground
6	DSR	Data Set Ready
7	RTS	Request to Send
8	CTS	Clear to Send
9	RI	Ring Indicator



Camera 1	Camera 2
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. NC	8. OPEN

3. Application Instructions

3.1 Video Output

3.1.1 Power-On Initial Configuration

When connecting the power, the camera will have will enter a self diagnostic mode upon power up, as indicated by a flashing light. The camera head will return to the HOME position (forward facing, level horizontally). The light will turn solid when the self diagnostic is complete. If the preset 0 is set, camera will rotate to the 0 preset position after initial configuration.

3.1.2 Video Output

Connect to the USB 2.0 port for standard video output, including use with applications.

1) Network output: Connect this product and your computer through a network cable, then open the browser. Enter the camera IP address (factory default *192.168.5.163*) in the address bar. Upon login, input a user name and password (both are "admin" by default). Finally, enter the preview page, and the image will appear.

NOTE: If you forget your user name, password, or IP address, you can manually restore the default by the remote controller key combination * #).

4. Network Connection

4.1 Connecting mode

Direct connection: Connect the camera and computer using a network cable.

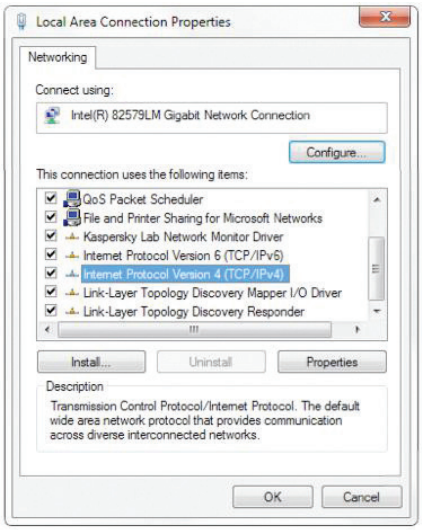
Internet connection mode: Connect the camera to the Internet using router or switch, and user can log in to the device via the browser.

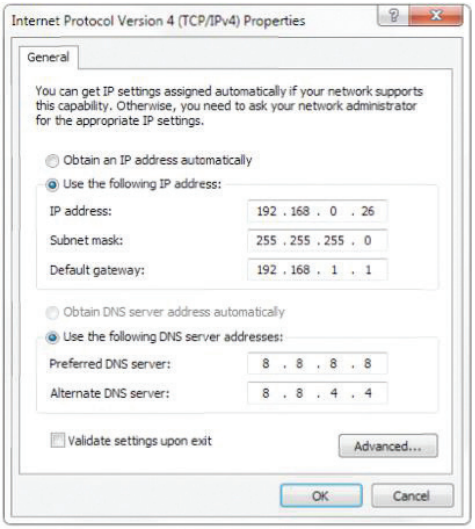
NOTE: Please do not put the power and network cable in places where can be easily touched. This prevents lower-quality video due to poor cable contact.

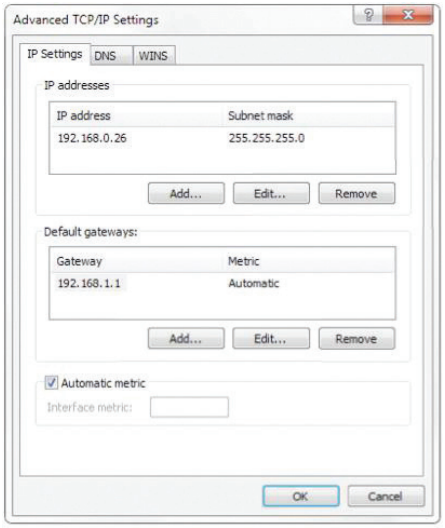
The computer must have the network segment where the camera IP address belongs. The device will not be accessible without the segment. The camera default IP address is 192.168.5.163, then segment 5 must be added into the computer.

Here are the specific steps:

First, open the window of Local Area Connection Properties on a computer. Select the "Internet protocol version 4 (TCP/IPv4)" as shown by picture on the left. Double click or click the property "Internet" protocol version 4 (TCP/IPv4) to enter into the Internet Protocol Version 4 (TCP/IPv4) Properties window. Select "Advanced" and add IP and subnet mask in the IP browser as shown below. Click "Confirm" to finish adding the IP segment. The user can add the corresponding network segment according to the revised IP address of the camera.



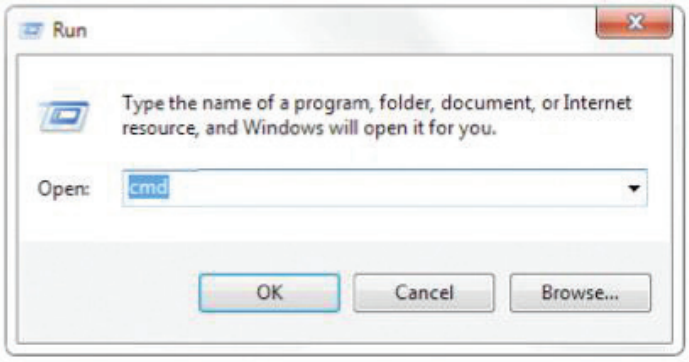




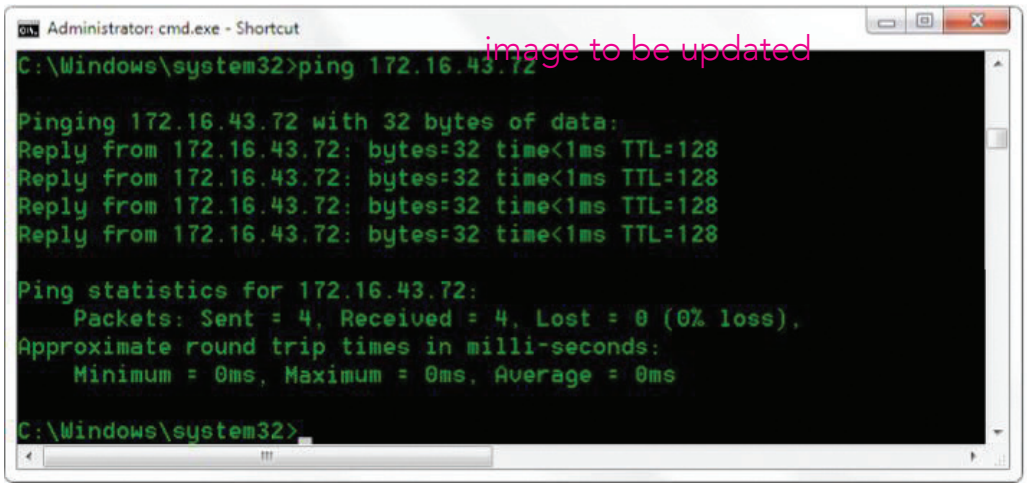
NOTE: The IP address to be added cannot be same as that of other computers or devices. The existence of this IP address needs to be verified before adding.

4.1 Connecting mode (continued)

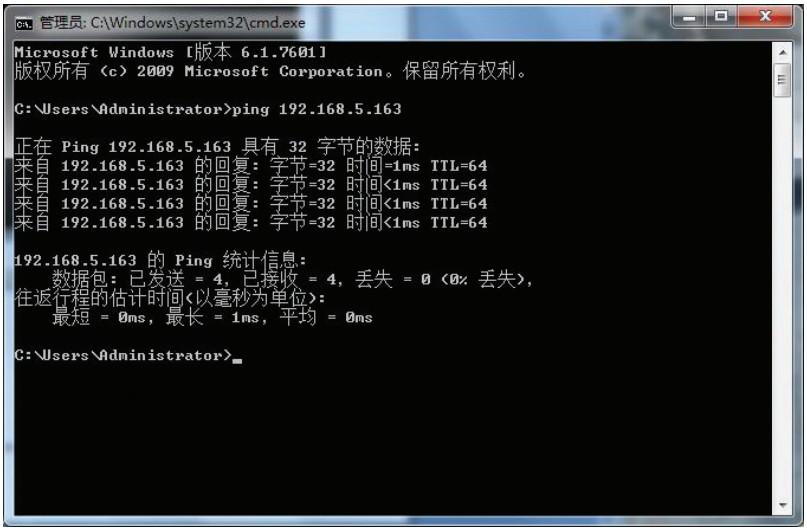
Click "Start" and select "Operation" to input cmd as in the picture below to verify if the network segment has been successfully added.



Click "OK" and open the DOS command window. Input ping *192.168.5.163* and press Enter. It will show results similar to those below, which means that the network segment adding is successful and the camera is accessible.



The user can also to verify network connection as the steps above mentioned after finishing the camera self-check. If IP is the default, open the DOS command window and input *192.168.5.163*, then press Enter key. This will trigger the message below: which the means that the network connection is normal.



4.2 Browser Login

4.2.1 Web client

1) Web client Log In

Input the IP address "192.168.5.163" of the device in the address field of your browser and click Enter to enter into Web Client login page. The user can log in as an administrator and normal user. If logged in as an administrator (Default User name/Password: admin), users can preview, playback, configuration and cancel in the Web Client. If logged in as normal user (Default User name/Password: user1 or user2), users can only preview, playback and cancel. There is no option for configuration.

NOTE: Web access supported browsers: Most conventional browsers.

2) Download/Install Plug in

When first using the browser to access the web conferencing camera, the login page may appear "Playback plug-in is not installed, please download and install!". Click on this message, download and install MRWebXinstall.exe, according to information prompts.

After installing the plugin, enter user name and password. Click and sign (initial default user name and password: "admin".) Users can change the user name and password on their own after entering into the Web client management interface.

4.2.2 Preview

After successful login to the management interface, it enters the video preview interface. In the preview screen, users can control PTZ, zoom, focus, video capture, sound, focus, full screen, and set the preset position, run, delete and other operations.

Video can be saved on the computer locally.

1) Login as administrator

Default user name/password: admin.

PTZ controls can be carried out: zoom, focus, video capture, sound, zoom, full screen and set the preset position, run, and delete. You can preview, playback, configuration, and log off.

2) Login as normal user

Default user name/password: user1 or user2.

PTZ controls can be carried out: zoom, focus, video capture, sound, zoom, full screen and set the preset position, run, and delete. You can preview, playback, and log off.

NOTE: There is no configuration right for normal user login.

4.2.3 Playback

1) Playback video files

First, record, snapshot and save the file when previewing. Click "Playback" to access the recording files playback page, and then select "Video File". Click "Search", and search for the video file. Click "Play" to play the video file.

2) Playback picture files

First, record, snapshot and save the file when previewing. Click "Playback" to access picture files playback page, and then select "Image File". Click "Search", and search out the image file, click "Play" to play the image file.

4.2.4 Configuration

Click "Configuration" to enter into the device parameters setting page. Choose one of the following options: Local configuration, audio configuration, video configuration, network configuration, PTZ configuration, Internet access configuration, and system configuration. Detailed description is in the following table.

Menu	Explanation
Local configuration	Including video preview mode, record video packing time, record video storage route settings, etc.
Audio configuration	Including audio compressing format, sampling frequency, sampling precision, compressing code rate settings, etc.
Video configuration	Including video encoding, video parameters, character-overlapping, character size, video output setting, etc.
Network configuration	Including basic parameters, Ethernet, DNS, wireless network setting, GB28181, etc.
System configuration	Including equipment property, system time, user management, version update, Reset, Reboot device settings, etc.

1) Local Configuration

Video Preview Mode: For video preview, the user can choose between either real-time or fluency priority. Real time priority mode features less delay, while fluency priority mode features cleaner fluency. Set this based on your needs (Default values are: real time normal (2), real time best (1), fluency normal (3), fluency good (4) and fluency best (5)).

Recording packing time (in minutes): Set the recording video packing time (default is 10, range is from 1~120 minutes).

Recording/Snapshot file storage route: Set the local recording video/snapshot file storage route. (Default D:\MyIPCam\)

Click the Save button to make settings effective.

2) Audio Configuration

Switch: Choose to enable the audio or not.

Compressing Format: Set the audio compressing format, and the device will reboot automatically after change (default MP3, PCM, AAC options)

Sampling Frequency: Set the sampling frequency, and the device will reboot automatically after change (default 44100, 16000, 32000, and 48000 options).

Sampling Precision: Set sampling precision (default 16bits)

Compressing Code Rate: Set the audio compressing code rate (default 64bits, 32, 48, 96, 128bits optional)

NOTE: Click “Save”. It will remind you that "Enable has changed. Restart the device to take effect after the success of the save.” Then please reboot the camera to make new settings take effect.

4.2.5 Video Configuration

1) Video encoding

Code Stream: Stream: For different video output mode settings, use different streams. (Main stream or secondary stream).

Compression Format: Set the video compression format, then save and reboot for it to take effect (primary/secondary stream default: H.264, H.265 optional).

Profile: Profile Mode Setting (Default HP, BP, MP options).

Video Size: Set the video image resolution, then save and reboot for it to take effect (main stream default 1920x1080 or 1280x720 options; default secondary stream 640x320, 320x180, 1280x720, 1920x1080 options).

Stream Rate control: Set the rate control mode, save and reboot for it to take effect (Primary/secondary stream default variable bit rate, fixed rate options).

Image Quality: Set the image quality. Image quality can be changed only when rate control is variable bit rate (the main stream default features the best quality, while secondary stream default is not as clear. Options are best, better, good, bad, worse, and worst).

Rate (Kb/s): Set the video bit rate (main stream default 4096Kb/s, 64-12288Kb/s options; secondary stream default 1024Kb/s, 64-10240Kb/s options).

Frame Rate (F/S): Set the video frame rate (primary/secondary stream default 25F/S, primary stream 5-60F/S option, secondary stream 5-30F/S option).

Key Frame Interval: Set the key frame interval (primary/secondary stream default 75F, primary/stream 1-300F option, secondary stream 1-150F optional).

Stream Name: When streaming via rtsp or rtmp, user can modify the stream name. Main Stream (live/av0), sub stream (live/av1).

Click the "Save" button to display the "saved successfully" message, and then the settings will take effect.

2) Stream Release

Switch: To turn On/Off the main/secondary stream.

Protocol: Primary/secondary stream applies RTMP protocol.

Host Port: Server port number (default 1935, 0-65535 optional).

Host Address: Server IP addresses (default 192.168.5.163).

Stream Name: choose a different stream name (live/av0, live/av1 options).

User: Set the user name.

Password: Set the password.

Click on the "Save" button to display the "Save successful" message, then the settings take effect.

Method of obtaining RTSP: rtsp://device IP address: 554/live/av0 (av0 main stream; av1 secondary stream)

3) RTP Broadcasting

Main/Sub Stream: On/Off

Protocol: RTP or TS

Address: Default 224.1.2.3. This can be edited.

Port: Main Stream Default Port: 4000, Sub Stream Default Port: 4002

Visit: Address comes up after setting. Eg; rtp://224.1.2.3:4000; udp://@224.1.2.3:4000

4) Video Parameters

a: Focus: Focus mode, focus range, focus sensitivity can be set.

Focus Mode: Set the focus mode (auto, manual options).

Focus Range: Set the focus range (middle, the upper and lower options).

Focus Sensitivity: Set the focus sensitivity (low, high, medium options).

b: Exposure: Exposure mode, exposure compensation, back light compensation, anti-flicker, gain limit, wide dynamic, shutter speed, aperture value, and brightness can be set.

Exposure Mode: Set the exposure mode (automatic, manual, shutter priority, aperture priority, brightness priority options).

Exposure Compensation: Exposure compensation setting is active when it is in auto status (default is off).

Exposure Compensation Value: Set the exposure compensation value, valid when it is set for auto (default is 0, -7 to 7 options).

BLC: Set back light compensation, valid when it in auto status (default is off).

Anti-flicker: Set up anti-flicker mode, valid when status of automatic, aperture or brightness priority (default 50Hz, closed, 60Hz options).

Gain Limit: Set the gain limits, auto, active when it is status of aperture or brightness priority (default 3, 0-15 options).

Dynamic Range: Set the dynamic range (default 5, 0-8 options).

Shutter Speed: Active when in status of manual or shutter-priority (default 1/100, 1/25, 1/30, 1/50, 1/60, 1/90, 1/100, 1/120, 1/180, 1/250, 1/350, 1/500, 1/1000, 1/2000, 1/3000, 1/4000, 1/6000, 1/10000 options).

Aperture Value: Set the aperture value, active when it is status of manual or aperture-priority (default F1.8, closed, F11, F9.6, F8.0, F6.8, F5.6, F4.8, F4.0, F3.4, F2 .8, F2.4, F2.0, F1.8 options).

Brightness: Set the brightness value, active when it is a state of brightness priority (default 7, 0-23 options).

c: Color: White balance, saturation, color, white balance, sensitivity, color temperature, gain red and blue gain can be set.

White Balance Modes: Set the white balance mode (the default automatic, 3000K, 4000K, 5000K, 6500K, manual, one-push options). Note: Click the "Correction" button when selecting the One-push white balance mode.

Saturation: Set the saturation (default 80%, 60%, 70%, 80%, 90%, 100%, 110%, 120%, 130%, options).

Auto White Balance Sensitivity: Sensitivity Auto white balance settings (default is low, high, medium options).

Chroma: Set the chrome (default 7, 0-14 options).

Color Temperature: Set color temperature (Default setting: High, with low, middle for options)

Red Gain: Set the red gain, effective when it is in manual mode (default 255, 0-255 options).

Blue Gain: Sets the Blue gain, effective when it is in manual mode (default 199, 0-255 options).

d: Image: Brightness, contrast, sharpness, black and white mode, the gamma curve, Horizontal Flip and Vertical Flip can be set.

Brightness: Set the brightness (default 6, 0-14 options).

Contrast: Set the contrast (default 8, 0-14 options).

Sharpness: Set the sharpness value (default 7, 0-15 options).

Black and White Mode: Set black and white mode (default color, black/white options).

Gamma: Gamma value setting (default, 0.45, 0.50, 0.52, 0.55 options).

Flip Horizontal: Set Flip Horizontal (default Off, On options).

Flip Vertical: Set vertical flip (default Off, On options).

e: Noise Reduction: 2D noise reduction, 3D noise reduction and dynamic dead pixel correction available.

2D Noise Reduction: Set 2D noise reduction level (default Auto, 1-7 and Off options).

3D Noise Reduction: Set 3D noise reduction level (default 5, 1-8 and Off options).

Dynamic Dead Pixel Correction: Set Dynamic dead pixel correction (default Off, 1-8 options).

NOTE: Click “Refresh” to make revisions of any video parameters of a, b, c, d, e effective.

5) Character-Overlapping

Display Date And Time: Set whether to display the time and date (default display).

Display Title: Set whether to display the title (default display).

Font Color of Time: Set font color of time and date (default white, black, yellow, red, blue options).

Font Color of Title: Set font color of title (default white, black, yellow, red, blue options).

Moving Characters: Set the display position of moving date, time and title , click on the "up, down, left, right" buttons to move the corresponding character position.

Title Content: Set title content (default CAMERA1).

Time Content: Set time content (default 1970/01/10 05:36:00)

Click on the "Save" button and display the "Save successful" message, then valid

6) Character Size

Main Stream Character Size: Set the character size of the display, and the device will restart automatically after changed and saved (default 24, 24, 16 options)

Secondary Stream Character Size: Set the secondary stream character size of the display, and the device will restart automatically after changed and saved (default 16, 24, 16 options)

Click on the "Save" button to display "Parameter saved successfully" message, and the change will to take effect.

7) Video output

Output Format: Set the video output format (default 1080P60, 1080P50, 1080P30, 1080P25, 1080I60, 1080I50, 720P60, 720P50, 720P30, 720P25, 1080P59.94, 1080I59.94, 1080P29.97, 720P59. 94, 720P29.97 optional).

NOTE: Only ST and HD model have this item, U3 and U2 do not have this feature.

Click on the "Save" button. It will be valid when the display indicates "Save successful".

8) USB subtitle

Display subtitles: Check the box (after checking, USB video output is displayed on the screen caption content).

Font Color: Default white, black. Yellow, red, blue options.

Subtitle: Users can fill in their own subtitles.

Ticker: The user can select, down, left and right to move the display position of the subtitles.

NOTE: Only ST and HD model have this item, U3 and U2 do not have this feature.

4.2.6 Network configuration

1) Network port

Data Port: Set the Data port. The device will restart automatically after changed (default 3000, 0-65535 optional).

Web Port: Set the Web port. The device will restart automatically after changed (default is 80, 0-65535 is optional).

Onvif Port: Set the Onvif port. The device will restart automatically after changed (default 2000, 0-65535 optional).

Soap Port: Set the Soap port (default 1936, 0-65535 optional).

RTMP Port: Set the RTMP port (default 1935, 0-65535 optional).

RTSP Port: Set the RTSP port. The device will restart automatically after changed (default 554, 0-65535 optional).

Visca Port: Set the Visca port. The device will restart automatically after changed (default 3001, 0-65535 optional).

Click on the "Save" button. It will be valid when the display indicates "Save successful".

RTMP access: RTMP://equipment IP address: 1935/live/av0 (av0 main stream; av1 second stream)

2) Ethernet parameters

DHCP: Obtain IP automatically can be enabled or disabled. Save changes and reboot, and the device will take effect (default: OFF).

IP Address: Set the IP address. Save changes and reboot, and the device will take effect (default 192.168.5.163).

Note: This IP address is the same with the one used to login to the Web page.

Subnet Mask: Set the Subnet Mask (default 255.255.255.0).

Default Gateway: Set the Default Gateway (default 0.0.0.0).

Physical Address: Set the Physical Address. The parameter is read-only and cannot be modified.

Click on the "Save" button, and it will be valid when display indicates "Save successful".

3) DNS parameters

Preferred DNS server: Set the preferred DNS server. (Default 0.0.0.0).

Alternate DNS server: Alternate DNS server settings. (Default 0.0.0.0).

Click on the "Save" button, and it will be valid when display indicates "Save successful".

4) GB28181

Switch: Set whether or not to open GB28181.

Time Synchronization: you can check whether synchronization time is set.

Stream Type: Stream Type setting (the default main stream, secondary stream options).

Sign Effective Time (in seconds): 3600 Range 5-65535.

Heartbeat Time (seconds): 60 Range 1-65535.

Register ID: 34020000001320000001.

Register User Name: IPC.

Register Password: 12345678.

Equipment Ownership: Users can add this on their own.

Administrative Regions: Users can add this on their own.

Alarm Zone: Users can add this on their own.

Equipment Installation Address: Users can add this on their own.

Local SIP Port: 5060 Range 0-65535.

GB28181 Server Address: IP address of the computer.

Server SIP Port: 5060 Range 0-65535.

Server ID: 34020000002000000001.

Click on the "Save" button, and it will be valid when the display indicates "Save successful".

4.2.7 System configuration

1) Device Properties

Device Name: Set the Device Name (the default Camera1, user can add their own).

Device ID: Set the Device ID (default 1, read-only).

System Language: Set the system language (default Simplified Chinese, English is an option). You need to login again after modifying to save the setting.

Click on the "Save" button, and it will be valid when display indicates "Save successful".

2) System Time

Date Format: Set the Date Format (YYYY-MM-DD default, and different options are available).

Date Separator: Set the Date Separator (default '/', and different options are available).

Time Zone: Set the Time Zone (default East eight districts, and different options are available).

Time Type: Set the Time Type (default 24 hours, optional 12 hours).

Time Setting: Set Time Mode (to choose the computer time synchronization, NTP server time synchronization, or set manually).

Computer Time: Set the computer time synchronization.

Update Interval: Set the NTP server automatically-updated time interval (default one day, 2-10 days options). Valid after setting NTP server synchronization.

NTP Server Address or Domain Name: Set NTP server address or domain name (default time.nits.gov). Valid after setting NTP server synchronization.

NTP Server Port: Sets the NTP server port (default 123). Valid after setting NTP server synchronization.

Set the time manually. It will be effective when set manually.

Click on the "Save" button, and it will be valid when display indicates "Save successful".

3) User Management

Select users: Set the User Type (the default administrator, Common User 1, Common User 2 options)

User Name: Set the User Name (Select User Administrator default admin; select a common user1 default user1; to select a common user 2 default user2; user can modify their own)

Password: Set a Password (Select User Administrator default admin; select a common user1 default user1; to select a common user 2 default user2; user can modify their own).

Password Confirmation: Confirm the input passwords are the same or not.

Click on the "Save" button to display the "Save successfully" message, then the set is to take effect.

NOTE: Please note the case-sensitivity of the user name and password.

If login page by a common user's name and password, one does not have configuration privileges but can only operate to preview, playback, logoff.

4) Version upgrade

MCU version V2.0.0.16 2015-12-18

Camera version V2.0.0.16 2015-12-18

Focus version V2.0.0.6 2015-12-11

Users only read the version information above, which is consistent with the menu version but cannot be modified. Different types of the machine have different information.

Update file:

Click "Browse..." installation, and select the upgrade file in the pop-up window.

Click on the "Upgrade" button and the upgrade dialog will appear. The device will reboot automatically after update successfully.

(**NOTE:** make sure the power and network is keeping connected during the process or the upgrade will fail)

NOTE: After the version upgrade is complete, you need to restore factory defaults either through the web to restore the factory default configuration, through the recovery menu, or use the remote control shortcut (*, #6).

Choose one of the above three ways. If you chose a, the IP accounts and passwords also need to be restored to the default.

5) Restore factory setting

Click on pop-up "Restore Factory Defaults" button, choose "yes" or "no", then the device will restart automatically and restore factory settings.

6) Reboot

Click on the pop-up "Reboot" button, choose "yes" or "no", then the device will restart automatically.

4.2.8 Logout

Point "Logout" pop-up "Confirmation" dialog, select "yes" or "no", and choose “yes” to exit the current page and return to the user login interface again.

4.2.9 Wireless network

If the user's equipment has a wireless network module, the Web page "Network Configuration" has a "Wireless Network" configuration page. The specific configuration is as follows:

1) Network settings

Wireless network configuration:

Network Interface Enable: Can be checked to set the following items after checked.

DHCP: Can be checked. If checked, IP can be obtained automatically.

IP Address: Set wireless WiFi IP (default 192.168.1.250. If DHCP is checked, IP can be assigned automatically)

NOTE: Wireless IP address cannot be in the same segment with wired IP address.

Subnet Mask: Set the wireless IP subnet mask (default 255.255.255.0).

Default Gateway: Set the wireless IP default gateway (default 192.168.1.1).

SSID: The user can modify their own (the default test).

Encryption: Can be checked, and the password can be set after checked.

Password: User can set the password, and the password can be changed only if encryption is checked.

Click on the "Save" button to display "Parameter saved successfully" message. Set to take effect.

NOTE: SSID and password should be filled in correctly. Otherwise, if restarted after powered off, the wireless WiFi connection will not be successful.

2) WiFi hot link

Click on the “search” button to search for a Wifi hotspot.

Double-click the dialog box after searched user Wifi hotspot, and then input password to connect to Wifi. It is connected successfully after seeing the “successful connect” window.

3) Wireless WiFi login page

If you do not check the above configuration DHCP (automatically obtain IP), then open the browser and enter the wireless network IP address in the address bar (default 192.168.1.250). Press Enter to log construction. If you checked DHCP, then you can obtain IP automatically. Just log in to specific router or switch user interface settings to view the allocation of IP address.

5. Serial Communication Control

Under common working conditions, the camera could be controlled through the RS232/RS485 interface (VISCA). RS232C serial parameter are as follows:

Baud rate: 2400/4800/9600/115200 bits/sec; Start bit: 1; data bits: 8; Stop bit: 1; Parity: None.

After powering on, the camera first goes left, then back to the middle position. The self-test is finished after the zoom has moved to the farthest and then back to the nearest position. If the camera saved 0 presets before, it will go back to that position after initialization. At this point, the user can control the camera by the serial commands.

5.1 VISCA Protocol List

5.1.1 Camera Return Command

Ack/Completion Message		
	Command Packet	Note
Ack	z0 41 FF	Returned when the command is accepted.
Completion	z0 51 FF	Returned when the command has been executed.

z=camera address +8

Error Messages		
	Command Packet	Note
Syntax Error	z0 60 02 FF	Returned when the command format is different, or when a command with illegal command parameters is accepted.
Command Not Executable	z0 61 41 FF	Returned when a command cannot be executed due to current conditions. For example, when commands controlling the focus manually are received during auto focus.

5.1.2 Camera Control Command

Command	Function	Command Packet	Note
Address Set	Broadcast	88 30 0p FF	p: Address Setting
IF_Clear	Broadcast	88 01 00 01 FF	I/F Clear
CommandCancel		8x 21 FF	
CAM_Power	On	8x 01 04 00 02 FF	Power ON/OFF
	Off	8x 01 04 00 03 FF	
CAM_Zoom	Stop	8x 01 04 07 00 FF	
	Tele (Standard)	8x 01 04 07 02 FF	
	Wide (Standard)	8x 01 04 07 03 FF	
	Tele (Variable)	8x 01 04 07 2p FF	p=0 (low) - F (high)
	Wide (Variable)	8x 01 04 07 3p FF	
	Direct	8x 01 04 47 0p 0q 0r 0s FF	pqrs: Zoom Position
CAM_Focus	Stop	8x 01 04 08 00 FF	
	Far (Standard)	8x 01 04 08 02 FF	
	Near (Standard)	8x 01 04 08 03 FF	
	Far (Variable)	8x 01 04 08 2p FF	p=0 (low) - F (high)
	Near (Variable)	8x 01 04 08 3p FF	
	Direct	8x 01 04 48 0p 0q 0r 0s FF	pqrs: Focus Position
	Auto Focus	8x 01 04 38 02 FF	
	One Push Mode	8x 01 04 38 04 FF	
	Manual Focus	8x 01 04 38 03 FF	
Cam_Zoom Focus	Direct	8x 01 04 47 0p 0q 0r 0s 0t 0u 0v 0w FF	pqrs: Zoom Position tuvw: Focus Position

Cam_WB	Auto	8x 01 04 35 00 FF	
	3000K	8x 01 04 35 01 FF	
	4000k	8x 01 04 35 02 FF	
	One Push mode	8x 01 04 35 03 FF	
	5000k	8x 01 04 35 04 FF	
	Manual	8x 01 04 35 05 FF	
	6500k	8x 01 04 35 06 FF	
	3500K	8x 01 04 35 07 FF	
	4500K	8x 01 04 35 08 FF	
	5500K	8x 01 04 35 09 FF	
	6000K	8x 01 04 35 0A FF	
	7000K	8x 01 04 35 0B FF	
Cam_RGain	Reset	8x 01 04 03 00 FF	Manual Control of R Gain
	Up	8x 01 04 03 02 FF	
	Down	8x 01 04 03 03 FF	
	Direct	8x 01 04 43 00 00 0p 0q FF	pq: R Gain
Cam_BGain	Reset	8x 01 04 04 00 FF	Manual Control of B Gain
	Up	8x 01 04 04 02 FF	
	Down	8x 01 04 04 03 FF	
	Direct	8x 01 04 44 00 00 0p 0q FF	pq: B Gain
CAM_AE	Full Auto	8x 01 04 39 00 FF	Automatic Exposure mode
	Manual	8x 01 04 39 03 FF	Manual Control mode
	Shutter priority	8x 01 04 39 0A FF	Shutter Priority Automatic Exposure mode
	Iris priority	8x 01 04 39 0B FF	Iris Priority Automatic Exposure mode
	Bright	8x 01 04 39 0D FF	Bright mode
Cam_Shutter	Reset	8x 01 04 0A 00 FF	Shutter Setting
	Up	8x 01 04 0A 02 FF	
	Down	8x 01 04 0A 03 FF	
	Direct	8x 01 04 4A 00 00 0p 0q FF	pq: Shutter Position
CAM_Iris	Reset	8x 01 04 0B 00 FF	Iris Setting
	Up	8x 01 04 0B 02 FF	
	Down	8x 01 04 0B 03 FF	
	Direct	8x 01 04 4B 00 00 0p 0q FF	pq: Iris Position
CAM_Gain Limit	Gain Limit	8x 01 04 2C 0p FF	p: Gain Position
CAM_Bright	Reset	8x 01 04 0D 00 FF	Bright Setting
	Up	8x 01 04 0D 02 FF	
	Down	8x 01 04 0D 03 FF	
	Direct	8x 01 04 4D 00 00 0p 0q FF	pq: Bright Position
CAM_ExpComp	On	8x 01 04 3E 02 FF	Exposure Compensation ON/ OFF
	Off	8x 01 04 3E 03 FF	
	Reset	8x 01 04 0E 00 FF	Exposure Compensation Amount Setting
	Up	8x 01 04 0E 02 FF	
	Down	8x 01 04 0E 03 FF	
	Direct	8x 01 04 4E 00 00 0p 0q FF	pq: ExComp Position
CAM_Back Light	On	8x 01 04 33 02 FF	Back Light Compensation
	Off	8x 01 04 33 03 FF	

CAM_WDRStrength	Reset	8x 01 04 21 00 FF	WDR Level Setting
	Up	8x 01 04 21 02 FF	
	Down	8x 01 04 21 03 FF	
	Direct	8x 01 04 51 00 00 00 0p FF	p: WDR Level Position
CAM_NR (2D)		8x 01 04 53 0p FF	P=0-7 0:OFF
CAM_NR (3D)		8x 01 04 54 0p FF	P=0-8 0:OFF
CAM_Gamma		8x 01 04 5B 0p FF	p = 0 – 4, 0:Default, 1:0.47, 2:0.50, 3:0.52, 4:0.55
CAM_Flicker	OFF	8x 01 04 23 00 FF	OFF
	50HZ	8x 01 04 23 01 FF	50HZ
	60HZ	8x 01 04 23 02 FF	60HZ
CAM_Aperture	Reset	8x 01 04 02 00 FF	Aperture Control
	Up	8x 01 04 02 02 FF	
	Down	8x 01 04 02 03 FF	
	Direct	8x 01 04 42 00 00 0p 0q FF	pq: Aperture Gain
CAM_Memory	Reset	8x 01 04 3F 00 pq FF	pq: Memory Number (=0 to 254) Corresponds to 0 to 9 on the Remote Commander
	Set	8x 01 04 3F 01 pq FF	
	Recall	8x 01 04 3F 02 pq FF	
CAM_LR_Reverse	On	8x 01 04 61 02 FF	Image Flip Horizontal ON/OFF
	Off	8x 01 04 61 03 FF	
CAM_PictureFlip	On	8x 01 04 66 02 FF	Image Flip Vertical ON/OFF
	Off	8x 01 04 66 03 FF	
CAM_ColorSaturation	Direct	8x 01 04 49 00 00 00 0p FF	P=0-7 0:60%, 1:70%, 2:80%, 3:90%, 4:100%, 5:110%, 6:120%, 7:130%
CAM_IDWrite		8x 01 04 22 0p 0q 0r 0s FF	pqrs: Camera ID (=0000 to FFFF)
SYS_Menu	ON	8x 01 04 06 06 02 FF	Turn on the menu screen
	OFF	8x 01 04 06 06 03 FF	Turn off the menu screen
IR_Receive	ON	8x 01 06 08 02 FF	IR(remote commander)receive On/Off
	OFF	8x 01 06 08 03 FF	
IR_ReceiveReturn	On	8x 01 7D 01 03 00 00 FF	IR (remote commander) receives message via the VISCA communication ON/OFF
	Off	8x 01 7D 01 13 00 00 FF	
CAM_SettingReset	Reset	8x 01 04 A0 10 FF	Reset Factory Setting
CAM_Brightness	Direct	8x 01 04 A1 00 00 0p 0q FF	pq: Brightness Position
CAM_Contrast	Direct	8x 01 04 A2 00 00 0p 0q FF	pq: Contrast Position
CAM_Flip	OFF	8x 01 04 A4 00 FF	Single Command For Video Flip
	Flip-H	8x 01 04 A4 01 FF	
	Flip-V	8x 01 04 A4 02 FF	
	Flip-HV	8x 01 04 A4 03 FF	

CAM_VideoSystem	Set camera video system	8x 01 06 35 00 0p FF	P: 0~E Video format 0: 1080P60 8: 720P30 1: 1080P50 9: 720P25 2: 1080i60 A: 1080P59.94 3: 1080i50 B: 1080i59.94 4: 720P60 C: 720P59.94 5: 720P50 D: 1080P29.97 6: 1080P30 E: 720P29.97 7: 1080P25
Pan_tiltDrive	Up	8x 01 06 01 VV WW 03 01 FF	VV: Pan speed 0x01 (low speed) to 0x18 (high speed) WW: Tilt speed 0x01 (low speed) to 0x14 (high speed) YYYY: Pan Position ZZZZ: Tilt Position
	Down	8x 01 06 01 VV WW 03 02 FF	
	Left	8x 01 06 01 VV WW 01 03 FF	
	Right	8x 01 06 01 VV WW 02 03 FF	
	Upleft	8x 01 06 01 VV WW 01 01 FF	
	Upright	8x 01 06 01 VV WW 02 01 FF	
	DownLeft	8x 01 06 01 VV WW 01 02 FF	
	DownRight	8x 01 06 01 VV WW 02 02 FF	
	Stop	8x 01 06 01 VV WW 03 03 FF	
	AbsolutePosition	8x 01 06 02 VV WW	
	RelativePosition	0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	
	Home	8x 01 06 03 VV WW	
	Reset	0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	
Pan-TiltLimitSet	Set	8x 01 06 04 FF	W:1 UpRight 0:DownLeft YYYY: Pan Limit Position(TBD) ZZZZ: Tilt Limit Position(TBD)
	Clear	8x 01 06 05 FF	

5.1.3: Inquiry command

Command	Function	Command Packet	Note
CAM_PowerInq	8x 09 04 00 FF	y0 50 02 FF	On
		y0 50 03 FF	Off (Standby)
CAM_ZoomPosInq	8x 09 04 47 FF	y0 50 0p 0q 0r 0s FF	pqrs: Zoom Position
CAM_FocusAFModeInq	8x 09 04 38 FF	y0 50 02 FF	Auto Focus
		y0 50 03 FF	Manual Focus
		y0 50 04 FF	One Push mode
CAM_FocusPosInq	8x 09 04 48 FF	y0 50 0p 0q 0r 0s FF	pqrs: Focus Position
CAM_WBModeInq	8x 09 04 35 FF	y0 50 00 FF	Auto
		y0 50 01 FF	3000K
		y0 50 02 FF	4000K
		y0 50 03 FF	One Push Mode
		y0 50 04 FF	5000K
		y0 50 05 FF	Manual
		y0 50 00 FF	6500K
		y0 50 06 FF	6500K
		y0 50 07 FF	3500K
		y0 50 08 FF	4500K
		y0 50 09 FF	5500K
		y0 50 0A FF	6000K
		y0 50 0B FF	7000K
CAM_RGaininq	8x 09 04 43 FF	y0 50 00 00 0p 0q FF	pq: R Gain

CAM_BGaininq	8x 09 04 44 FF	y0 50 00 00 0p 0q FF	pq: B Gain
CAM_AEModeInq	8x 09 04 39 FF	y0 50 00 FF	Full Auto
		y0 50 03 FF	Manual
		y0 50 0A FF	Shutter priority
		y0 50 0B FF	Iris priority
		y0 50 0D FF	Bright
CAM_ShutterPosinq	8x 09 04 4A FF	y0 50 00 00 0p 0q FF	pq: Shutter Position
CAM_IrisPosinq	8x 09 04 4B FF	y0 50 00 00 0p 0q FF	pq: Iris Position
CAM_Gain Limitinq	8x 09 04 2C FF	y0 50 0p FF	p: Gain Position
CAM_BrightPosInq	8x 09 04 4D FF	y0 50 00 00 0p 0q FF	pq: Bright Position
CAM_ ExpCompModeInq	8x 09 04 3E FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_ExpCompPosInq	8x 09 04 4E FF	y0 50 00 00 0p 0q FF	pq: ExpComp Position
CAM_BacklightModeInq	8x 09 04 33 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_WDRStrengthInq	8x 09 04 51 FF	y0 50 00 00 00 0p FF	p: WDR Strength
CAM_NRLevel(2D) Inq	8x 09 04 53 FF	y0 50 0p FF	P: 2DNRLevel
CAM_NRLevel(3D) Inq	8x 09 04 54 FF	y0 50 0p FF	P:3D NRLevel
CAM_FlickerModeInq	8x 09 04 55 FF	y0 50 0p FF	p: Flicker Settings (0: OFF, 1: 50Hz, 2:60Hz)
CAM_ApertureInq	8x 09 04 42 FF	y0 50 00 00 0p 0q FF	pq: Aperture Gain
CAM_PictureEffectModeInq	8x 09 04 63 FF	y0 50 00 FF	Off
		y0 50 04 FF	B&W
CAM_MemoryInq	8x 09 04 3F FF	y0 50 0p FF	p: Memory number last operated.
SYS_MenuModelInq	8x 09 06 06 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_LR_ReverseInq	8x 09 04 61 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAMP_PictureFlipInq	8x 09 04 66 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_ColorSaturationInq	8x 09 04 49 FF	y0 50 00 00 00 0p FF	p: Color Gain setting 0h (60%) to Eh (130%)
CAM_IDInq	8x 09 04 22 FF	y0 50 0p FF	p: Gamma ID
IR_ReceiveInq	8x 09 06 08 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
IR_ReceiveReturn		y0 07 7D 01 04 00 FF	Power ON/OFF
		y0 07 7D 01 04 07 FF	Zoom tele/wide
		y0 07 7D 01 04 38 FF	AF ON/OFF
		y0 07 7D 01 04 33 FF	Camera _Backlight
		y0 07 7D 01 04 3F FF	Camera _Memory
		y0 07 7D 01 06 01 FF	Pan_titleDriver
CAM_BrightnessInq	8x 09 01 A4 FF	y0 50 00 00 0p 0q FF	pq: Brightness Position
CAM_ContrastInq	8x 09 02 A4 FF	y0 50 00 00 0p 0q FF	pq: Contrast Position
CAM_FlipInq	8x 09 04 A4 FF	y0 50 00 FF	Off
		y0 50 01 FF	Flip-H
		y0 50 02 FF	Flip-V
		y0 50 03 FF	Flip-HV

CAM_GammaInq	8x 09 04 5B FF	y0 50 0p FF	p: Gamma setting
CAM_VersionInq	8x 09 00 02 FF	y0 50 ab cd mn pq rs tu vw FF	ab cd: vender ID (0220) mn pq: model ID ST (0950) U3 (3950) rs tu: ARM Version vw: reserve
VideoSystemInq	8x 09 06 23 FF	y0 50 0p FF	P: 0~E Video format 0: 1080P60 1: 1080P50 2: 1080i60 A: 1080P59.94 3: 1080i50 B: 1080i59.94 4: 720P60 C: 720P59.94 5: 720P50 D: 1080P29.97 6: 1080P30 E: 720P29.97 7: 1080P25 8: 720P30 9: 720P25
Pan-tiltMaxSpeedInq	8x 09 06 11 FF	y0 50 ww zz FF	ww: Pan Max Speed zz: Tilt Max Speed
Pan-tiltPosInq	8x 09 06 12 FF	y0 50 0w 0w 0w 0w 0z 0z 0z 0z FF	wwww: Pan Position zzzz: Tilt Position

Note: [X] in the above table indicates the camera address to be operated, [y]=[x + 8].

5.2: Pelco-D protocol command list

Function	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
Up	0xFF	Address	0x00	0x08	Pan Speed	Tilt Speed	SUM
Down	0xFF	Address	0x00	0x10	Pan Speed	Tilt Speed	SUM
Left	0xFF	Address	0x00	0x04	Pan Speed	Tilt Speed	SUM
Right	0xFF	Address	0x00	0x02	Pan Speed	Tilt Speed	SUM
Upleft	0xFF	Address	0x00	0x0C	Pan Speed	Tilt Speed	SUM
Upright	0xFF	Address	0x00	0x0A	Pan Speed	Tilt Speed	SUM
DownLeft	0xFF	Address	0x00	0x14	Pan Speed	Tilt Speed	SUM
DownRight	0xFF	Address	0x00	0x12	Pan Speed	Tilt Speed	SUM
Zoom In	0xFF	Address	0x00	0x20	0x00	0x00	SUM
Zoom Out	0xFF	Address	0x00	0x40	0x00	0x00	SUM
Focus Far	0xFF	Address	0x00	0x80	0x00	0x00	SUM
Focus Near	0xFF	Address	0x01	0x00	0x00	0x00	SUM
Set Preset	0xFF	Address	0x00	0x03	0x00	Preset ID	SUM
Clear Preset	0xFF	Address	0x00	0x05	0x00	Preset ID	SUM
Call Preset	0xFF	Address	0x00	0x07	0x00	Preset ID	SUM
Query Pan Position	0xFF	Address	0x00	0x51	0.00	0x00	SUM
Query Pan Position Response	0xFF	Address	0x00	0x59	Value High Byte	Value Low Byte	SUM
Query Tilt Position	0xFF	Address	0x00	0x53	0x00	0x00	SUM
Query Tilt Position Response	0xFF	Address	0x00	0x5B	Value High Byte	Value Low Byte	SUM
Query Zoom Position	0xFF	Address	0x00	0x55	0x00	0x00	SUM
Query Zoom Position Response	0xFF	Address	0x00	0x5D	Value High Byte	Value Low Byte	SUM

5.3: Pelco-P protocol command list

Function	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
Up	0xA0	Address	0x00	0x08	Pan Speed	Tilt Speed	0xAF	XOR
Down	0xA0	Address	0x00	0x10	Pan Speed	Tilt Speed	0xAF	XOR
Left	0xA0	Address	0x00	0x04	Pan Speed	Tilt Speed	0xAF	XOR
Right	0xA0	Address	0x00	0x02	Pan Speed	Tilt Speed	0xAF	XOR
Upleft	0xA0	Address	0x00	0x0C	Pan Speed	Tilt Speed	0xAF	XOR
Upright	0xA0	Address	0x00	0x0A	Pan Speed	Tilt Speed	0xAF	XOR
DownLeft	0xA0	Address	0x00	0x14	Pan Speed	Tilt Speed	0xAF	XOR
DownRight	0xA0	Address	0x00	0x12	Pan Speed	Tilt Speed	0xAF	XOR
Zoom In	0xA0	Address	0x00	0x20	0x00	0x00	0xAF	XOR
Zoom Out	0xA0	Address	0x00	0x40	0x00	0x00	0xAF	XOR
Focus Far	0xA0	Address	0x00	0x00	0x00	0x00	0xAF	XOR
Focus Near	0xA0	Address	0x01	0x00	0x00	0x00	0xAF	XOR
Set Preset	0xA0	Address	0x00	0x03	0x00	Preset ID	0xAF	XOR
Clear Preset	0xA0	Address	0x00	0x05	0x00	Preset ID	0xAF	XOR
Call Preset	0xA0	Address	0x00	0x07	0x00	Preset ID	0xAF	XOR
Query Pan Position	0xA0	Address	0x00	0x51	0.00	0x00	0xAF	XOR
Query Pan Position Response	0xA0	Address	0x00	0x59	Value High Byte	Value Low Byte	0xAF	XOR
Query Tilt Position	0xA0	Address	0x00	0x53	0x00	0x00	0xAF	XOR
Query Tilt Position Response	0xA0	Address	0x00	0x5B	Value High Byte	Value Low Byte	0xAF	XOR
Query Zoom Position	0xA0	Address	0x00	0x55	0x00	0x00	0xAF	XOR
Query Zoom Position Response	0xA0	Address	0x00	0x5D	Value High Byte	Value Low Byte	0xAF	XOR

6. Camera Maintenance and Troubleshooting

6.1 Camera Maintenance

1) If camera is not being used for long time, please turn off the power adapter switch and the AC plug.

2) Use a soft cloth or tissue to clean the camera cover.

3) Use a soft cloth to clean the lens. Use natural cleanser if the lens is badly smeared. To avoid scuffing, do not use strong or corrosive cleanser.

6.2 Troubleshooting

1) No video output

a. Check whether the camera power supply is connected, the voltage is normal, and the power indicator is lit.

b. Check whether the machine could do self-inspection after restarting.

c. Check whether the bottom of the DIP switch is in the normal operating mode (see Table 2.2).

d. Check whether the video output cable or video display is normal.

2) No image sometimes

a. Check whether the video output cable or video display is normal.

3) Image dithering when zoom-in or zoom-out

a. Check whether the camera installation position is solid.

b. Check whether there is a shaking machine or objects around the camera.

4) Serial port does not work.

a. Check whether the camera serial device protocol, baud rate, and address is consistent.

b. Check whether the control cable is connected properly.

c. Check whether the camera working mode is the normal operating mode (see Table 2.2 and Table 2.3).

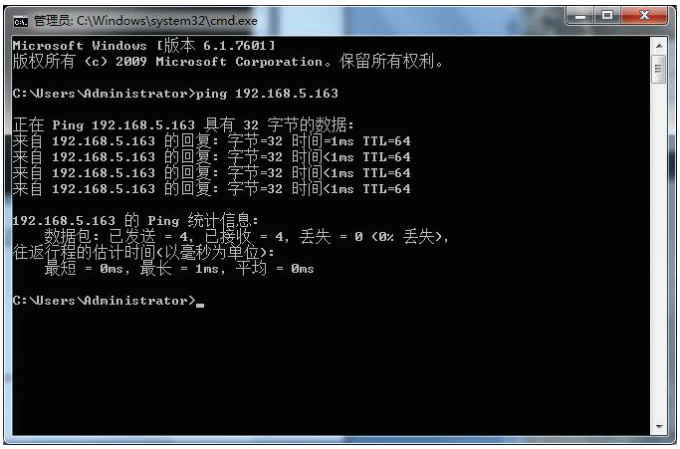
5) Web pages can not log in

a. Check whether the camera is showing normally.

b. Check whether the network cable is connected properly (Ethernet port light flashes yellow to indicate a normal network cable connection).

c. Check whether your computer is added, and that the segment is consistent with the IP address of the camera.

d. Click "Start" and select "Run", and then type “cmd” in the computer. Click "OK", then turn on a DOS command window to enter ping: 192.168.5.163. Press Enter to display the following message: Description network connection is normal.



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