

# QUICK GUIDE



## FULL HD PTZ CAMERA

DL-USB-PTZ20-W

# PRODUCT OVERVIEW

Liberty's USB PTZ20 Camera is a fully featured, broadcast quality PTZ camera, featuring advanced ISP processing algorithms, offering vivid and high resolution video with a strong sense of depth and fantastic color rendition, and supporting simultaneous video outputs. It's designed to capture video for conferencing and other applications such as streaming, webinars, distance learning, lecture capture, and personal chatting. Easy plug-and-play; no driver is required when using software platforms such as Zoom, Teams, YouTube, Facetime, and other messaging applications. Full HD 1920x1080 video quality @ 60 fps.

- Supports all Zoom Room features and has been tested to conform with the latest Zoom Certification Program for the highest performance and ultra-reliability.
- Mounting: built in gravity sensor, supporting autoflip.
- Vivid and high resolution video with a strong sense of depth and fantastic color rendition.
- Full HD Resolution: 1/2.8 inch high quality CMOS sensor. Resolution up to 1920x1080 with frame rate up to 60 fps.
- Optical Zoom Lens: 20X optical zoom lens.
- Leading Auto Focus Technology: Fast, accurate, and stable auto focusing technology.
- Low Noise and High SNR: Super high SNR image is achieved with low noise CMOS. Advanced 2D/3D noise reduction technology further reduces the noise while ensuring high image clarity.
- Multiple video outputs: HDMI, 3G-SDI, CVBS, LAN. Simultaneously output audio and video signal via HDMI, SDI and LAN. SDI output can be sent up to 100M with 1080P@60fps.
- Multiple AV compression standards: Support H.264/H.265 video compression, up to 1920x1080 resolution 60 fps; support AAC, MP3 and G.711A audio compression, 8000,16000,32000,44100,48000 sampling frequency.
- Control Interface: RS485, RS232 (cascade connection)
- Multiple Control Protocol: Support VISCA, PELCO-D, PELCO-P protocols; support automatic identification protocols.
- Multiple Network Protocol: support ONVIF, GB/T28181, RTSP, RTMP protocols; Support RTMP push mode easy to be connected to streaming server (Wowza,FMS); Support RTP multicast mode; Support network full command VISCA control protocol.
- Quiet Pan / Tilt Movement: With high accuracy step driving motor, camera can pan / tilt extremely quiet and smooth.
- Multiple presets: Up to 255 presets (10 presets via remote control).
- Multiple Application: Online-education, lecture capture, webcasting, video conferencing, telemedicine, unified communication, emergency command and control systems, etc.
- Choose from multiple mounting options – provided wall mount, optional ceiling mount, or use a tripod with the included tripod thread insert.
- 5-year product warranty, including advanced replacement.

# PACKAGE CONTENTS



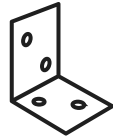
(x1) 1m  
USB Cable



(x1) Quick  
Start Guide



(x1) Power  
Supply



(x1) Wall  
Mount



(x1) Remote  
Control

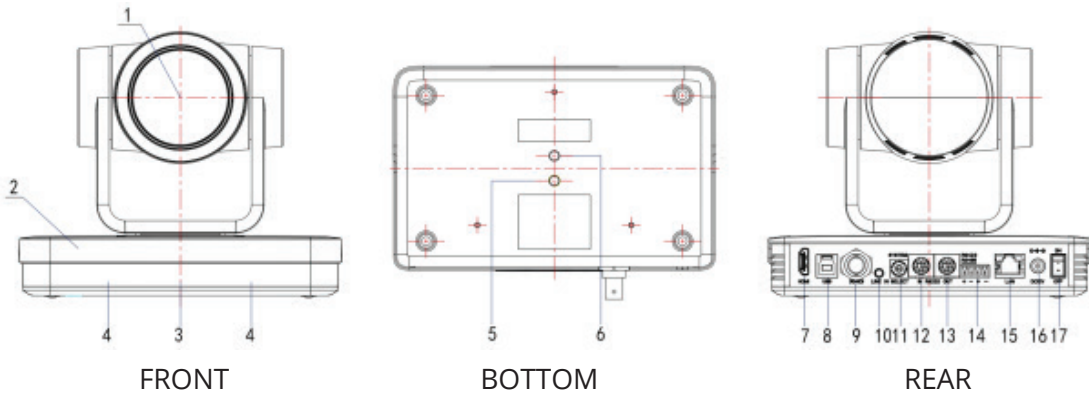


(x1) Control  
Cable



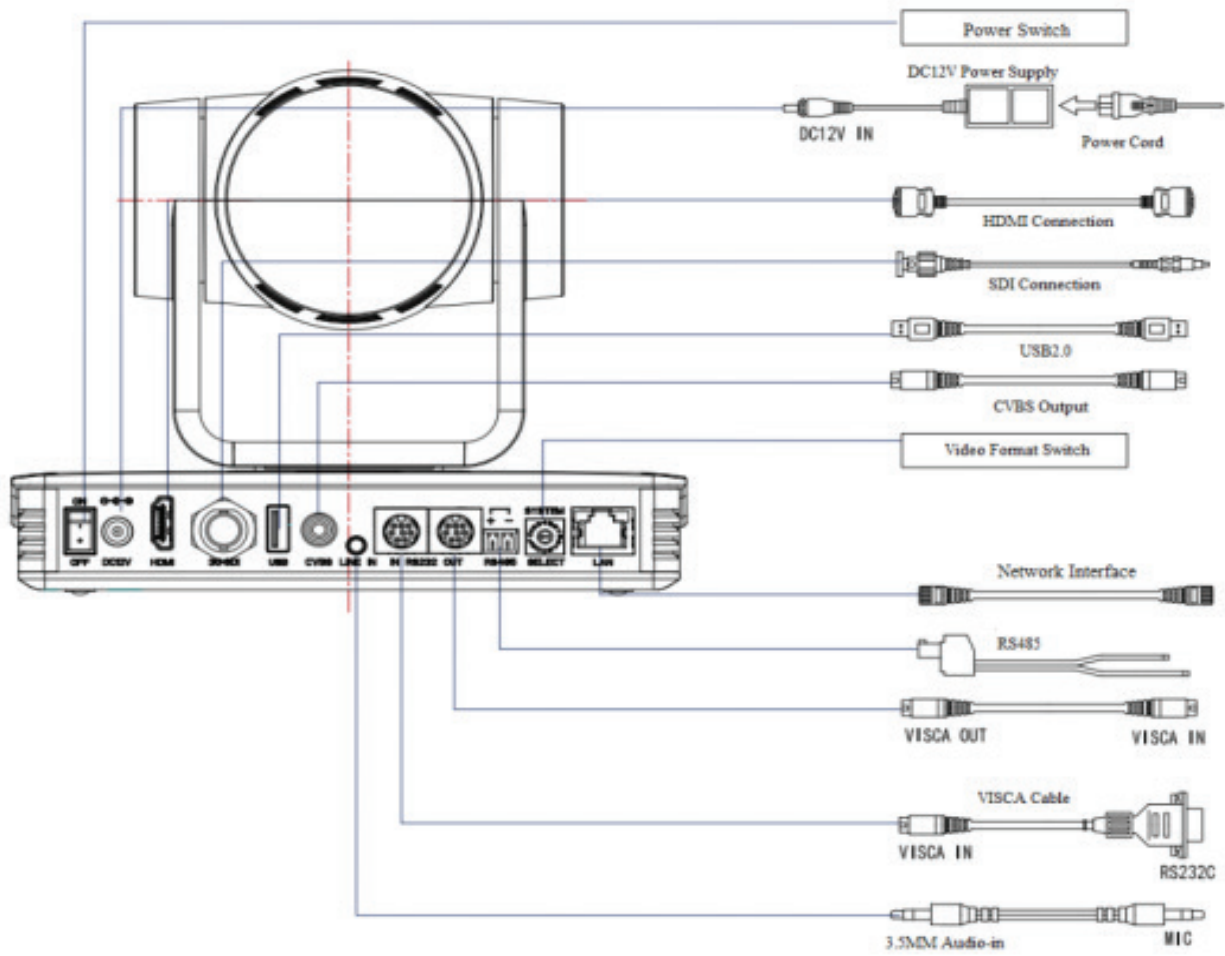
(x1)  
Camera

# PRODUCT BREAKDOWN



- |  |  |  |
|--|--|--|
| 1. Camera Lens                           | 7. HDM Output                          | 12. RS232 Control Interface (input)            |
| 2. Camera Base                           | 8. USB3.0 Output                       | 13. RS232 Control Interface (output)           |
| 3. Remote Control<br>Receiving Indicator | 9. SDI Output                          | 14. RS422 Interface<br>(Compatible with RS485) |
| 4. Infrared Receiver                     | 10. Audio Input Interface<br>(Line-in) | 15. Network Interface (LAN)                    |
| 5. Tripod Screw Hole                     | 11. Rotary DIP Switch                  | 16. DC12V Input Power Supply Socket            |
| 6. Screw Hole for Tripod                 |  | 17. Power Switch                               |

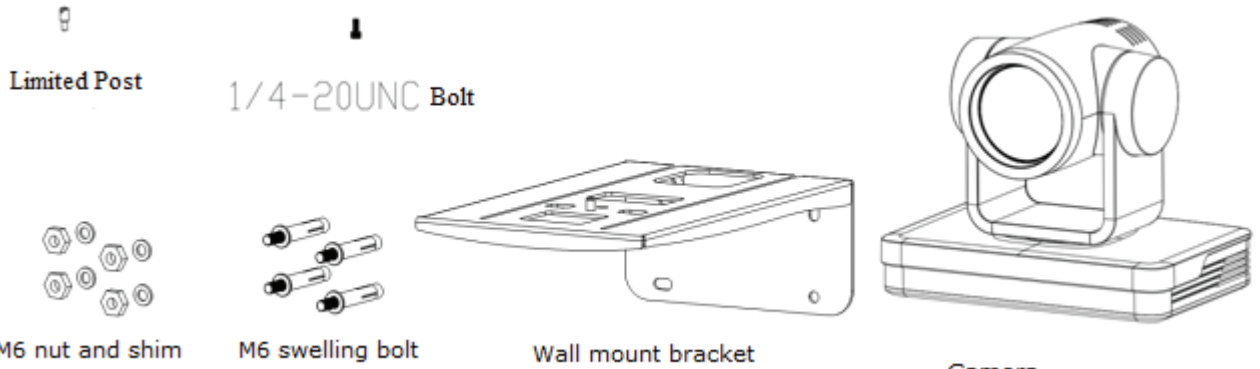
# WIRING DIAGRAM



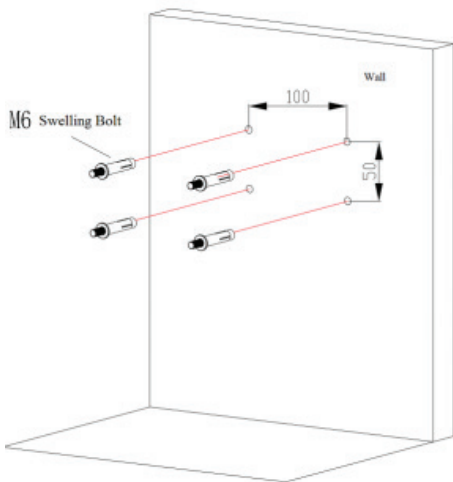
# MOUNTING OPTIONS

Wall mounting the camera using the provided wall mount or third party mount.

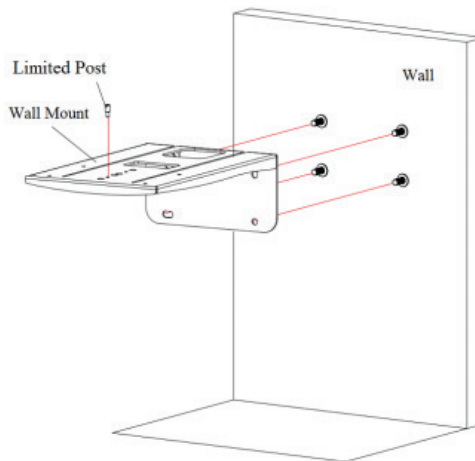
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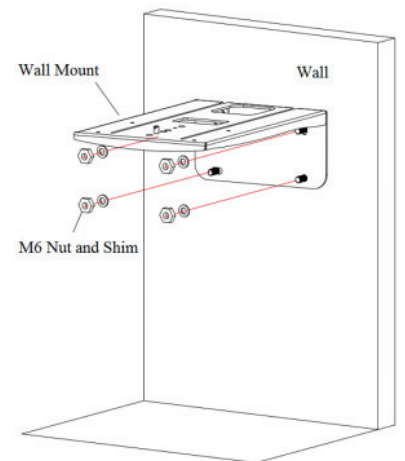
**STEP 1**



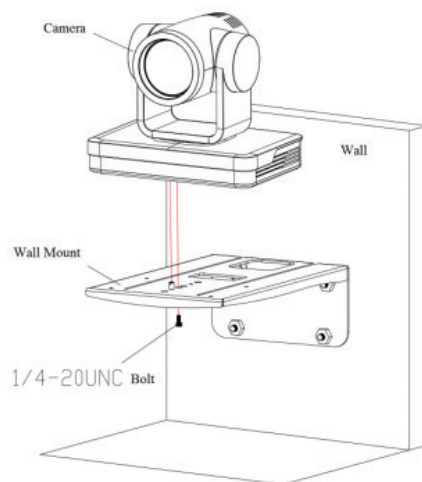
**STEP 2**



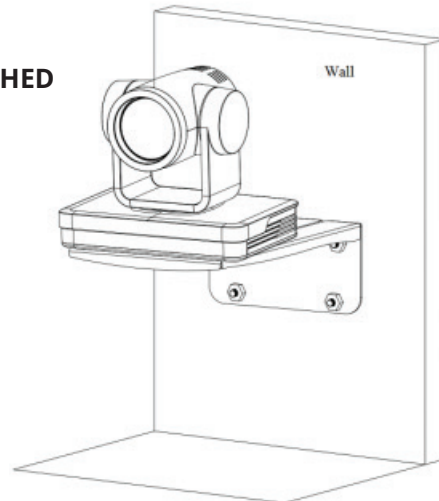
**STEP 3**



**STEP 4**



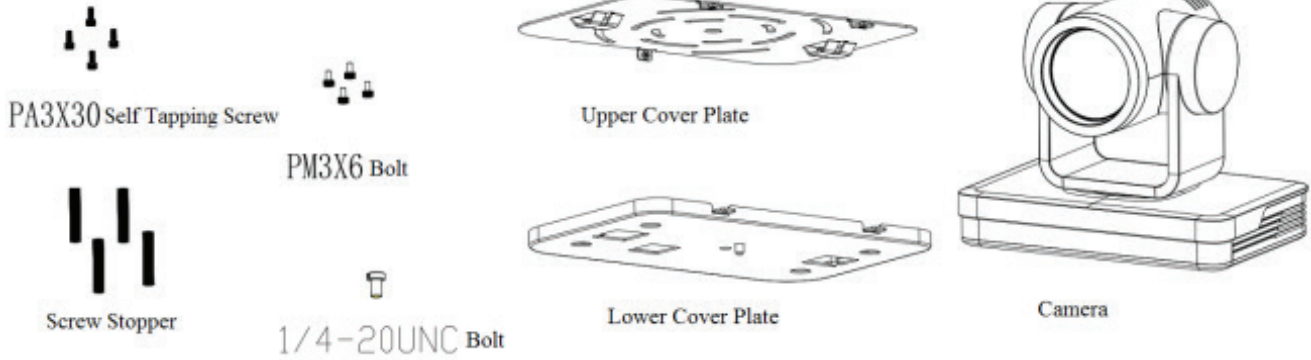
**FINISHED**



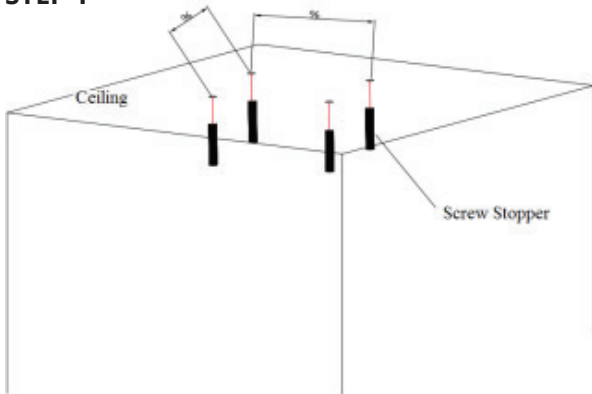
# MOUNTING OPTIONS

\*Optional Ceiling Mount

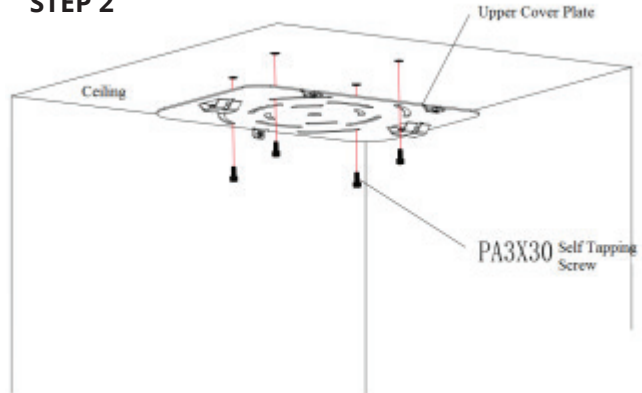
Included Items:



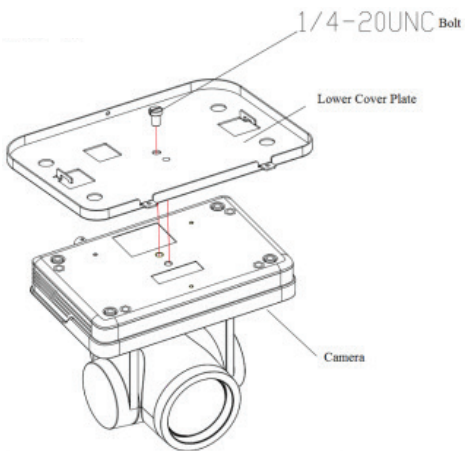
**STEP 1**



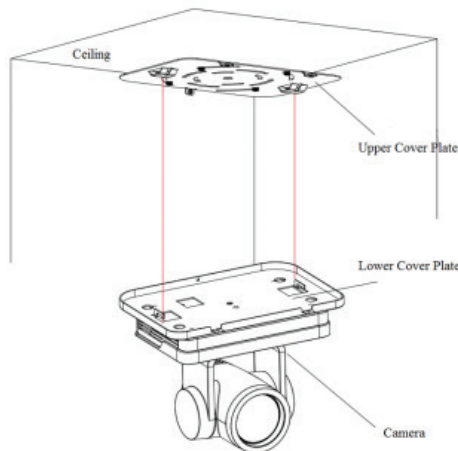
**STEP 2**



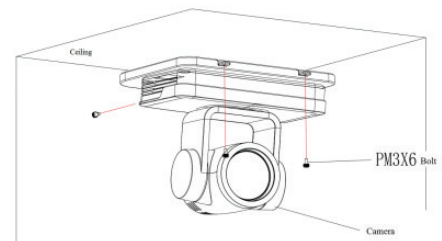
**STEP 3**



**STEP 4**



**FINISH**



# SETTING UP YOUR PTZ CAMERA

## Power-on

Connect the external power supply to the camera.

## USB 3.0 cable

The provided USB 3.0 cable can provides USB video to your computer. If the signal needs to be extended, it is recommended to use a 3.0 extender. Using 2.0 will downgrade the camera to USB 2.0 specifications.

## Initial Configuration

- The remote control receiving indicator will start to flash after the camera has been powered on.
- It will pan-tilt and then move to the HOME position (both the horizontal and vertical positions are in the middle). When the remote control's receiving indicator stops flashing, the self-checking is completed.
- After powering on and self-checking, the camera will automatically return to the defined preset 0.
- The default address for the IR remote control is 1#. If the menu has been restored to factory defaults, the remote control default address will restore to 1#.

Requirements - A computer with a USB connections.

Install the video conferencing desktop client (such as Zoom, Teams, Google Meet) onto the computer.

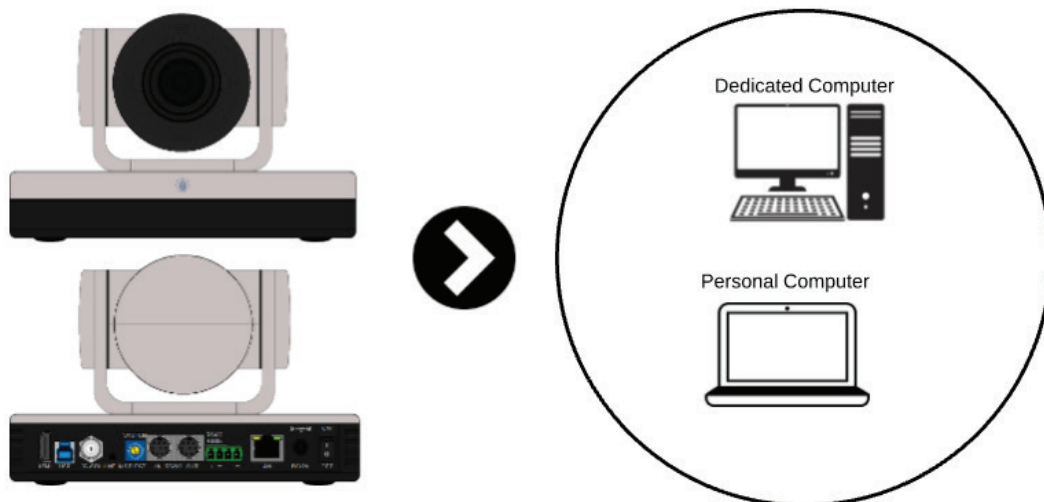
Note: Verify your preferred video calling application requirements.

Placement - Reference the mounting options and choose what best fits your needs.

Connectivity - Locate the Digitalinx PTZ Camera and provided USB cable. Plug the cable into the USB port of the computer and camera. If the length of the USB cable is not long enough, use a TYPE A USB 3.0 extension cable, 3.0 signal extender, or USB hub.

Navigation - Go to settings>privacy>camera (or similar) on your PC and turn on "let apps use my camera."

Close all other applications that may use the PTZ Camera.



# MAINTENANCE AND TROUBLESHOOTING

## Camera Maintenance

- Please power off the camera and disconnect the power adapter and socket, if it's not used for a long run.
- Use a soft cloth or tissue to clean the camera cover.
- Wipe it with a soft, dry cloth when cleaning the camera lens. Wipe it gently with a mild detergent, if needed. Do not use strong or corrosive detergents to avoid scratching the lens and affecting the video quality.

## Troubleshooting

### No video output

- a. Check whether the camera power supply is connected, the voltage is normal, and the power indicator is lit.
- b. Determine whether the machine could do a self-check after restarted.
- c. Check whether the bottom of the DIP switch is in normal operating mode.
- d. Check whether the video output cable or video display has been disconnected.

### No image sometimes

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

### Video dithering when zoom-in or zoom-out

- a. Check whether the camera installation position is solid.
- b. Determine whether there is shaking machine or objects around the camera.

### Remote control doesn't work

- a. Remote control address is set to 1. (If the machine is set back to the factory defaults, the remote control addresses need to be back to 1 too.)
- b. Check whether the battery is installed on the remote controller or low.
- c. Check the camera working mode is the normal operating mode (see Table 2.2 and Table 2.3).
- d. Check to ensure the menu is closed; camera control through remote controller is only available after exiting the menu. If the video output is from LAN, the menu will not be displayed. The menu will automatically exit after 30 seconds, and then it can be controlled by the remote.

### Serial port doesn't work

- a. Check whether the camera serial device protocol, baud rate, and address are consistent.
- b. Check whether the control cable is connected properly.
- c. Check whether the camera working mode is the normal operating mode.



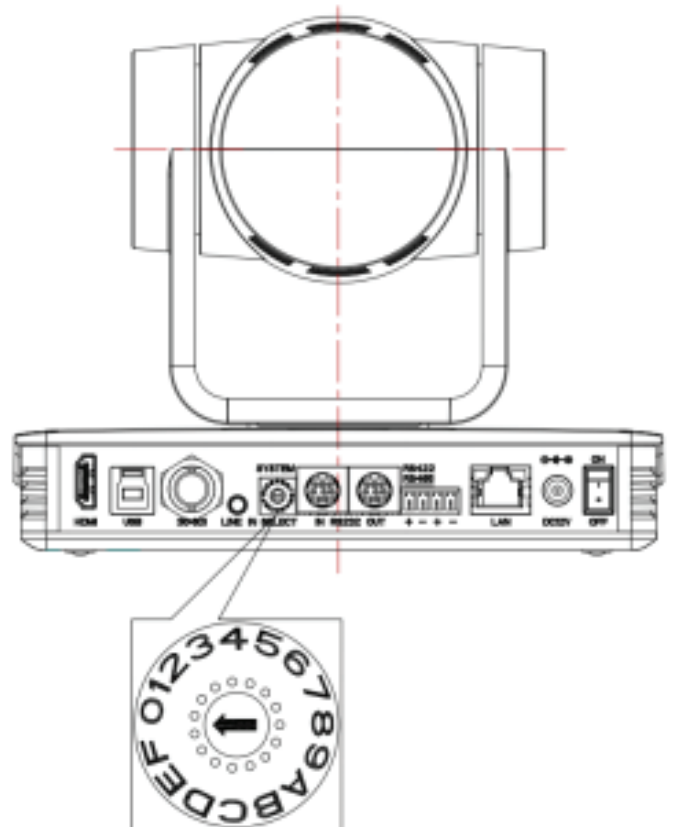
# MAINTENANCE AND TROUBLESHOOTING

## Web pages cannot log in

- Check if the camera outputs video normally by connecting directly to the screen.
- Check whether the network cable is connected properly. (Ethernet port yellow light will flash to indicate a normal network cable connection.)
- Check whether your computer is added to the segment and the segment is consistent with the IP address of the camera.
- Click "Start," 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 the Enter key when you see the message: Description network connection is normal

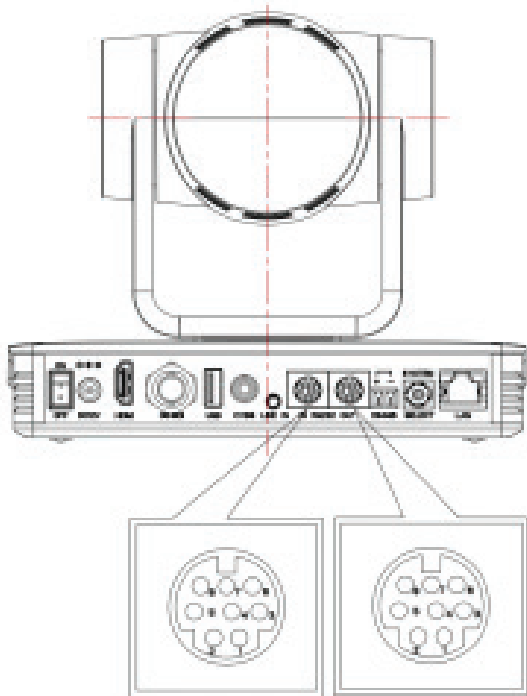
## DIP SWITCH SETTINGS

Dial-up	video format	Dial-up	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	F	video format to be set on the menu



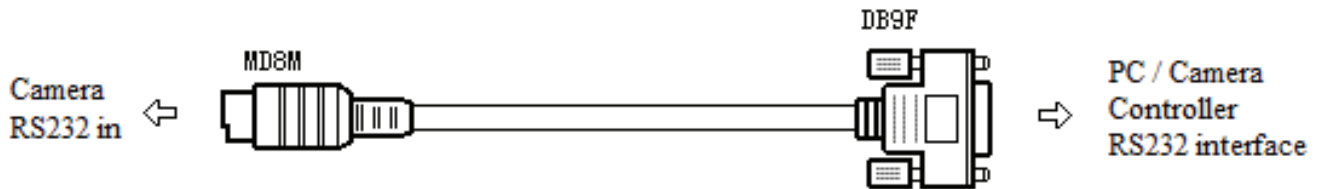
# CONTROL INTERFACE PIN-OUTS

## RS-232 Interface

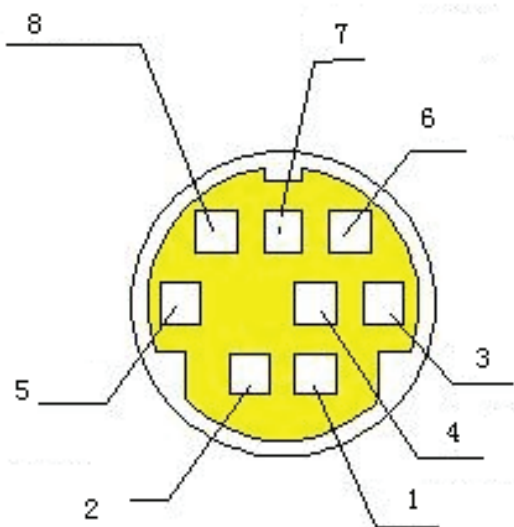


Connection to PC or Camera Controller

Camera	WindowsDB-9
1. DTR	1. DCD
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. NC	8. CTS
	9. RI



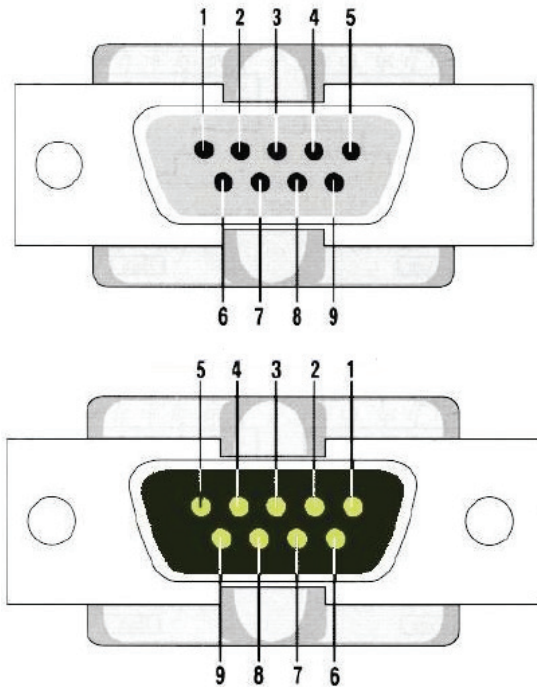
## RS-232 Mini-DIN 8-pin



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

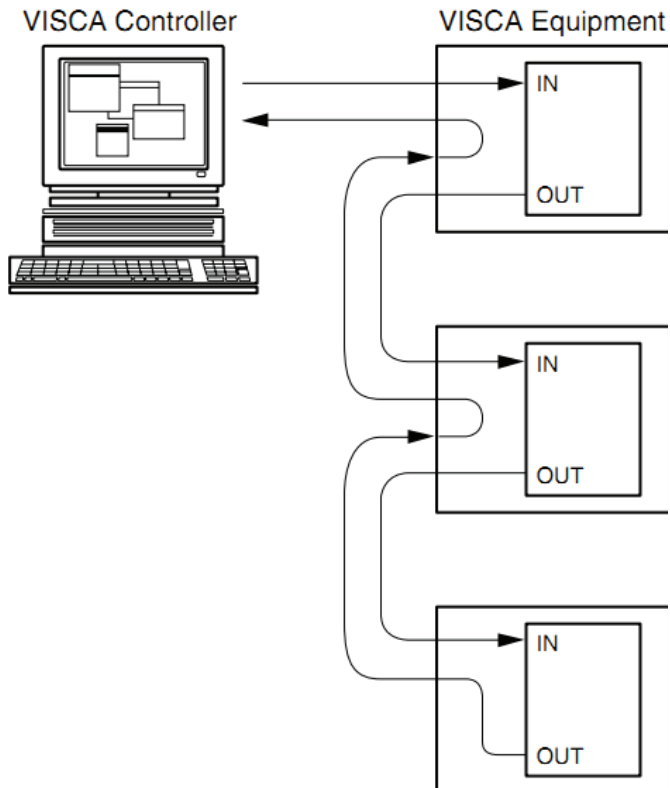
# CONTROL INTERFACE PIN-OUTS

## RS232(DB9) Port

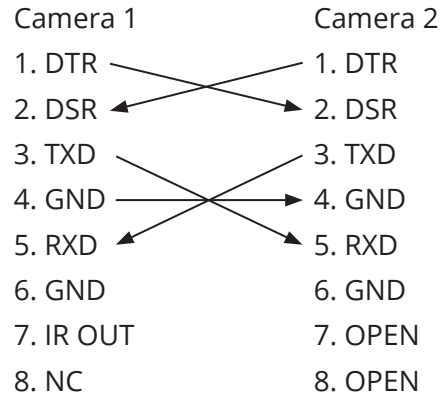


No.	Port	Definition
1	DCD	Data Carrier Detect
2	RXD	Receive Data
3	TXD	Transmit Data
4	DTR	Data Terminal Ready
5	GND	System Ground
6	DSR	Data Set Ready
7	RTS	Request to Send
8	CTS	Clear to Send
9	RI	Ring Indicator

## VISCA



### Cascading Cameras



# USING THE REMOTE CONTROL



## Match Code for Wireless Remote Control

**One to One Code Matching:** Press the "set" and "\*" keys combined for 3 seconds until the LED indicator starts flashing. Camera will receive the signal and power on. The LED indicator will go off if the code matches successfully. The camera can be controlled by this wireless remote control only after one to one code pairing. Otherwise, please clear the code matching of this remote control, or use other remote control to pair with the camera again.

If one to one code matching fails, the red LED light flashes for 20 seconds and then goes off. The camera will stop code match and turn on sleep mode. Press any key to wake up the camera and re-match code.

Note: After code matching successfully, please select the camera address to control it.

**Clear Code:** Press the "set" and "\*" keys combined for 3 seconds until the LED indicator starts flashing. Camera will power off and on. The LED indicator will go off if the code clears successfully.

**Sleep Mode and Wake Up:** Press any key to wake up the camera from sleep mode.

In this manual, "press the key" means a click rather than a long-press, and a special note will be given if a long-press for more than one second is required.

When a key-combination is required, do it in sequence. For example, "[\*]+[#]+[F1]" means press "[\*]" first and then press "[#]" and last press "[F1]."

## Standby Key

The camera enters standby mode if there's a long-press for 3 second on the standby key.

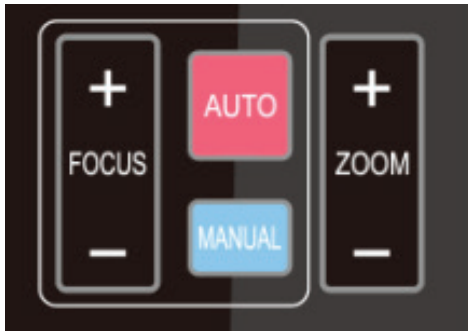
Long - press for 3 seconds again on the standby key. The camera will self-check again and return to HOME position. (If preset 0 position is set, the camera will return to preset 0 position).

## Camera Selection



Select the camera address you want to control.

## Focus Control



Auto: auto focus mode

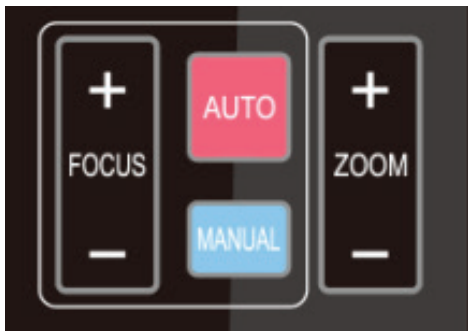
Manual: manual focus mode

Focus + (near): Press [FOCUS +] key  
(Valid only in manual focus mode)

Focus - (far): Press [FOCUS -] key  
(Valid only in manual focus mode)

Press and hold the keys. The action of focus will continue and will stop as soon as the key is released.

## Zoom Control



Press [Zoom +] key to zoom in.

Press [Zoom -] key to zoom out.

Press and hold the keys. The action of focus will continue and will stop as soon as the key is released.

## Set and Clear Presets



**Set Preset:** Press [SET PRESET] button, and then press the number key from 0-9 to set preset positions.

**Note:** Ten presets via remote control.

**Call Preset:** Press a number key from 0-9 to call a preset position.

**Clear Preset:** Press [CLEAR PRESET] button, and then press a number key from 0-9 to clear preset positions.

**Note:** Press the [#] key 3x continually to clear all presets.



## Pan/Tilt Control



Up: Press ▲      Down: Press ▼  
Left: Press ◀      Right: Press ▶  
Back to middle position: Press "[HOME]"

Press and hold the up/down/left/right key, the pan/tilt movements will keep running, from slow to fast, until it runs to the endpoint. Stop as soon as the key is released.

## Menu Settings



[MENU]: Open / close the OSD menu

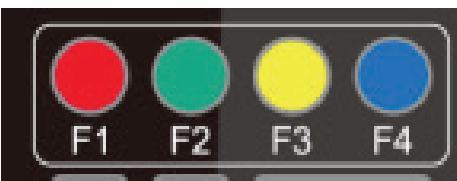
[HOME]: Camera lens goes back to the middle position;  
Confirm button; Enter next menu

[▲] [▼]: Choose item

[◀] [▶]: Modify values

[BLC ON/OFF]: Turn on or off the back light compensation

## Camera Remote Control Address Setting



[\*] + [#] + [F1]: Camera Address No.1

[\*] + [#] + [F2]: Camera Address No. 2

[\*] + [#] + [F3]: Camera Address No. 3

[\*] + [#] + [F4]: Camera Address No. 4

## Key Combination



- 1) [#]+[#]+[#]: Clear all presets
- 2) [\*]+[#]+[6]: Restore factory defaults
- 3) [\*]+[#]+[3]: Menu set to Chinese
- 4) [\*]+[#]+[4]: Menu set to English
- 5) [\*]+[#]+[9]: Flip switch
- 6) [\*]+[#]+Auto: Enter aging mode
- 7) [#]+[\*]+Auto: Exit aging mode
- 8) [\*]+[#]+Manual: Restore the default user name, password, and IP address
- 9) [#]+[#]+[0]: Switch the video format to 1080P60
- 10) [#]+[#]+[1]: Switch the video format to 1080P50
- 11) [#]+[#]+[2]: Switch the video format to 1080I60
- 12) [#]+[#]+[3]: Switch the video format to 1080I50
- 13) [#]+[#]+[4]: Switch the video format to 720P60
- 14) [#]+[#]+[5]: Switch the video format to 720P50
- 15) [#]+[#]+[6]: Switch the video format to 1080P30
- 16) [#]+[#]+[7]: Switch the video format to 1080P25
- 17) [#]+[#]+[8]: Switch the video format to 720P30
- 18) [#]+[#]+[9]: Switch the video format to 720P25

Note: If the address of the former remote control is not address 1 (instead it's 2, 3, or 4), the corresponding camera address will restore to address 1 when all parameters are restored to factory default. User should change the remote control address to address 1.

## Menu Introduction

Note: The modification is valid only if you exit the menu before you save and power off.

### 1. Menu Control

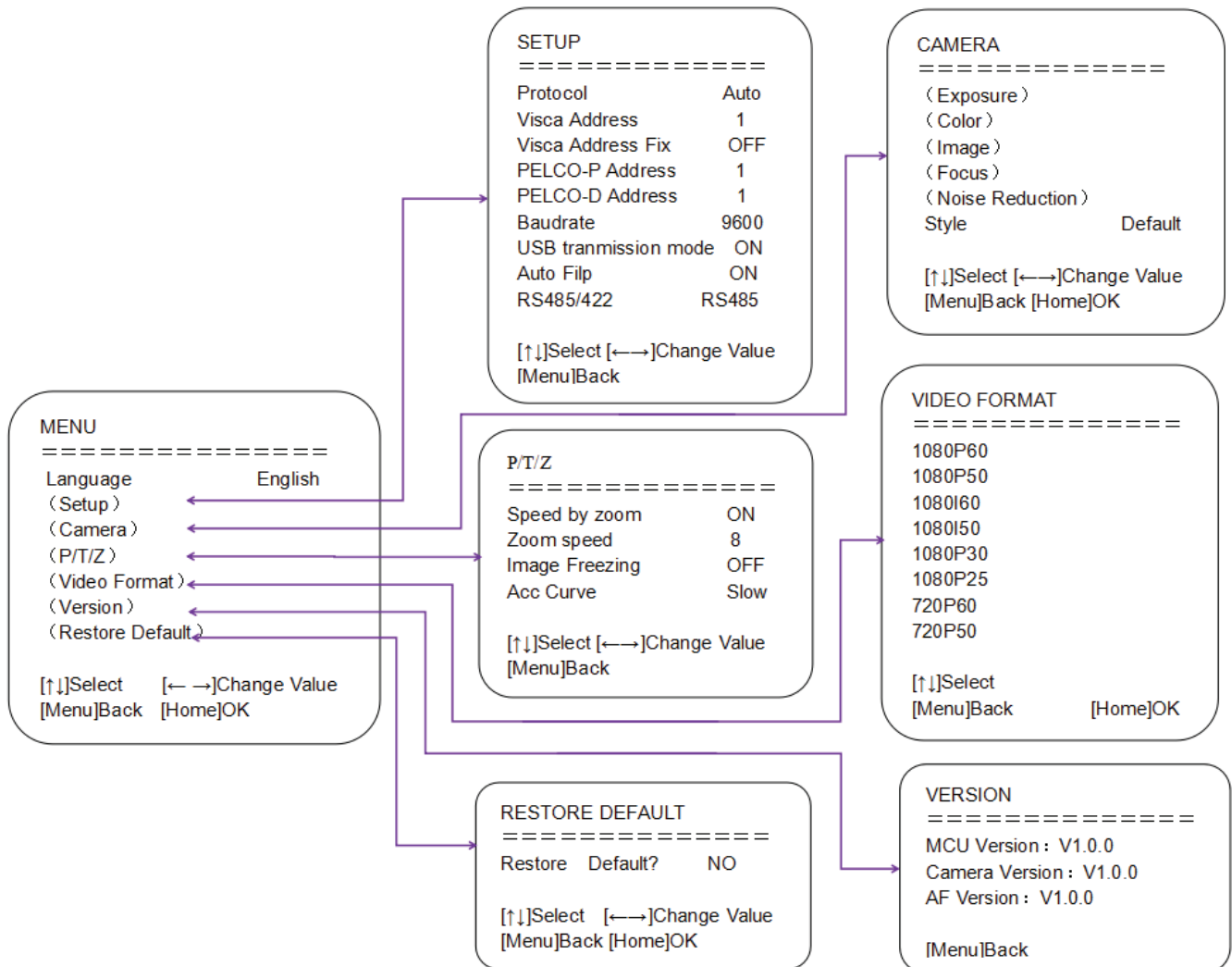
[MENU]: Enter / exit the OSD menu or return to the previous menu

[HOME]: Enter next menu

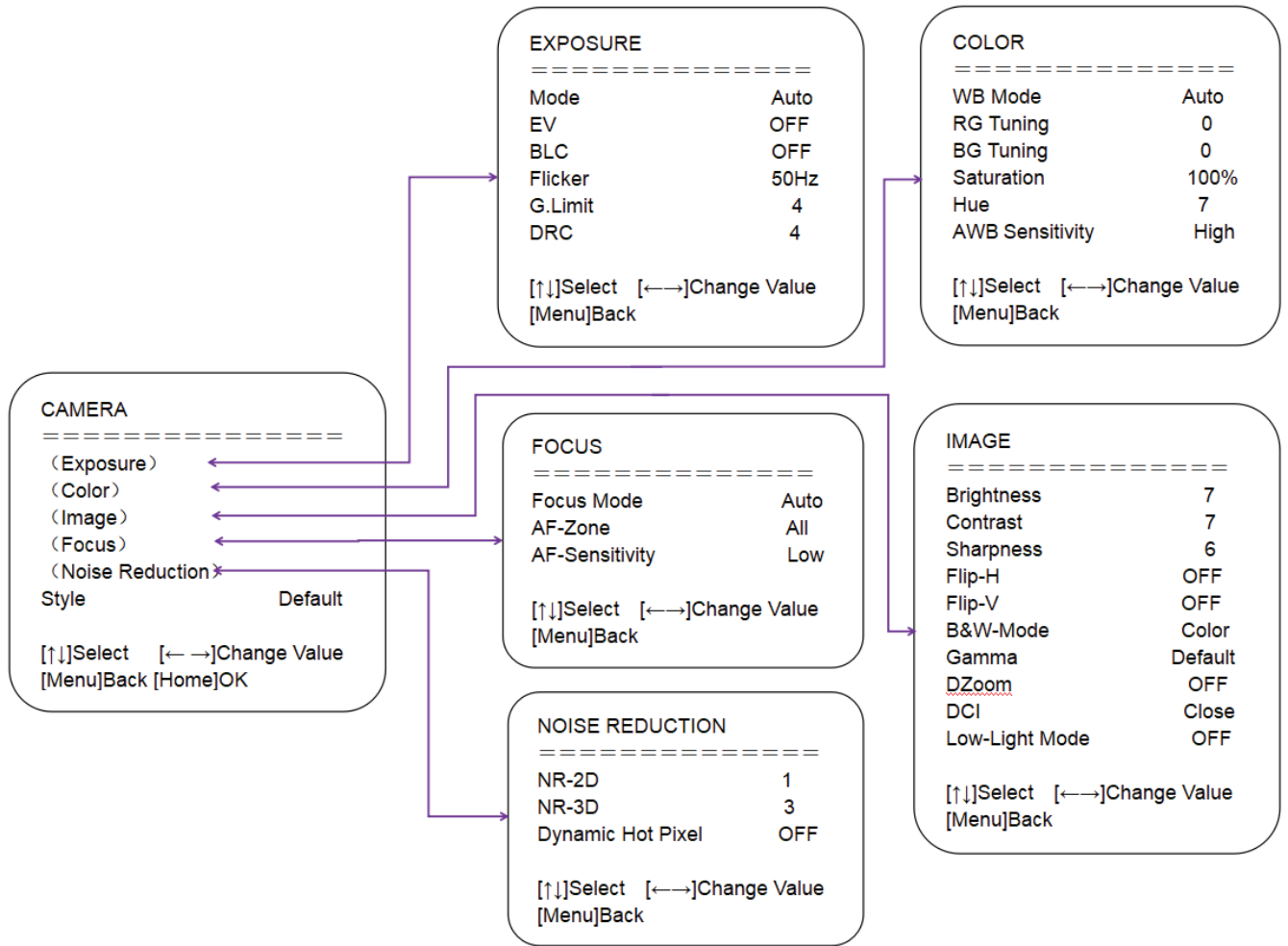
[↑] [↓]: Choose item

[←] [→]: Modify values

### 2. English Menu







# SERIAL PORT COMMUNICATION AND CONTROL

The camera could be controlled through RS232/RS485 interface; 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.

## VISCA Protocol 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.

## VISCA Protocol Control Command

Command	Function	Command packet	Note
AddressSet	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	p = 0(low) - F(high) pqrs: Zoom Position
	Tele(Standard)	8x 01 04 07 02 FF	
	Wide(Standard)	8x 01 04 07 03 FF	
	Tele(Variable)	8x 01 04 07 2p FF	
	Wide(Variable)	8x 01 04 07 3p FF	
	Direct	8x 01 04 47 0p 0q 0r 0s FF	

Command	Function	Command packet	Note
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	
	Manual Focus	8x 01 04 38 03 FF	
One Push mode	8x 01 04 38 04 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_AFSensitivity	High	8x 01 04 58 01 FF	Focus Sensitivity Setting
	Normal	8x 01 04 58 02 FF	
	Low	8x 01 04 58 03 FF	
CAM_AFZone	Top	8x 01 04 AA 00 FF	Focus Region Setting
	Center	8x 01 04 AA 01 FF	
	Bottom	8x 01 04 AA 02 FF	
	ALL	8x1 01 04 AA 03 FF	
CAM_WB	One Push mode	8x 01 04 35 03 FF	
	One Push Trigger	8x 01 04 10 05 FF	One Push WB Trigger(Enabled during One Push WB mode)
	CAM_WB Mode	8x 01 04 35 pq FF	pq = 00--33 WBMode
CAM_AWBSensitivity	Low	8x 01 04 A9 00 FF	WB Sensitivity Setting
	Normal	8x 01 04 A9 01 FF	
	High	8x 01 04 A9 02 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

Command	Function	Command packet	Note
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	Reset	8x 01 04 0C 00 FF	Gain Limit Setting
	Up	8x 01 04 0C 02 FF	
	Down	8x 01 04 0C 03 FF	
	Gain Limit	8x 01 04 2C 0p FF	
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 Positon
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: ExpComp 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 Positon

Command	Function	Command packet	Note
CAM_NR	2D	8x 01 04 53 0p FF	P=0-7 0:OFF
	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 1:0.45 2:0.50 3:0.55 4:0.63
CAM_Low-Light Mode	ON	8x 01 04 2D 01 FF	Low-Light Mode Setting
	OFF	8x 01 04 2D 00 FF	
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_Picture Effect	B&W-Mode	8x 01 04 63 04 FF	Picture Effect Setting
	OFF	8x 01 04 63 00 FF	
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-E 0:60% 1:70% 2:80% 3:90% 4:100% 5:110% 6:120% 7:130% 8:140% 9:150% 10:160% 11:160% 12:180% 13:190% 14:200%
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) receive 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

Command	Function	Command packet	Note
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      5:720P50 1:1080P50      6:1080P30 2:1080i60      7:1080P25 3:1080i50      8:720P30 4:720P60      9:720P25
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 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	
	RelativePosition	8x 01 06 03 VV WW 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	
	Home	8x 01 06 04 FF	
Reset	8x 01 06 05 FF		

Command	Function	Command packet	Note
Pan-tiltLimitSet	Set	8x 01 06 07 00 0W 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	W:1 UpRight 0:DownLeft YYYY: Pan Limit Position(TBD) ZZZZ: Tilt Limit Position(TBD)
	Clear	8x 01 06 07 01 0W 07 0F 0F 0F 07 0F 0F 0F FF	

### VISCA Protocol Inquiry Command

Command	Command Packet	Return 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_FocusAFModelInq	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_AFSensitivityInq	8x 09 04 58 FF	y0 50 01 FF	High
		y0 50 02 FF	Normal
		y0 50 03 FF	Low
CAM_AFZoneInq	8x 09 04 AA FF	y0 01 04 AA 00 FF	Top
		y0 01 04 AA 01 FF	Center
		y0 01 04 AA 02 FF	Bottom
		y0 01 04 AA 03 FF	All
CAM_WBModelInq	8x 09 04 35 FF	y0 50 00 FF	Auto
			pq =WBMode
CAM_AWBSensitivityInq	8x 09 04 A9 FF	y0 50 00 FF	Low
		y0 50 01 FF	Normal
		y0 50 02 FF	High
CAM_RGainInq	8x 09 04 43 FF	y0 50 0B FF	7000K
CAM_BGainInq	8x 09 04 44 FF	y0 50 00 00 0p 0q FF	pq: B Gain
CAM_AEModelInq	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 Positon
CAM_BrightPosInq	8x 09 04 4D FF	y0 50 00 00 0p 0q FF	pq: Bright Position

Command	Command Packet	Return Packet	Note
CAM_ExpCompModelInq	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_BacklightModelInq	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: 2DNRLLevel
CAM_NRLevel(3D) Inq	8x 09 04 54 FF	y0 50 0p FF	p: 3D NRLevel
CAM_FlickerModelInq	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_PictureEffectModelInq	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
CAM_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 _Memery
		y0 07 7D 01 06 01 FF	Pan_titleDriver
CAM_BrightnessInq	8x 09 04 A1 FF	y0 50 00 00 0p 0q FF	pq: Brightness Position
CAM_ContrastInq	8x 09 04 A2 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



Command	Command Packet	Return Packet	Note
CAM_Low-LightModelInq	8x 09 04 2D FF	y0 50 00 FF	OFF
		y0 50 01 FF	ON
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 rs tu : ARM Version vw : reserve
VideoSystemInq	8x 09 06 23 FF	y0 50 0p FF	P: 0~E Video format 0:1080P60    5:720P50 1:1080P50    6:1080P30 2:1080i60    7:1080P25 3:1080i50    8:720P30 4:720P60    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	www: Pan Position    zzzz: Tilt Position

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

## Pelco-D Protocol Command List

Function	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7
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
Stop	0xFF	Address	0x00	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	0x00	0x00	SUM

Function	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7
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

## Pelco-P Protocol Command List

Function	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	Byte8
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
Stop	0xA0	Address	0x00	0x00	0x00	0x00	0xAF	XOR
Focus Far	0xA0	Address	0x01	0x00	0x00	0x00	0xAF	XOR
Focus Near	0xA0	Address	0x02	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	0x00	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

# NETWORK CONFIGURATION

## **Direct connection:**

Connect the camera and computer by network connecting cable.

Internet connection mode: Connect the camera to the internet by Router or Switcher and then log into the device via a browser or web page.

Note: Please do not put the power cable and network cable in places where they can be easily touched to prevent an unstable video signal transmission due to contact with the cables.

The computer must have the network segment with the camera's IP address. The device will not be accessible without the segment.

The camera default IP address is 192.168.5.163, segment 5 must be added via the computer.

First, open "Local Area Connection Properties" on the computer. Next, select the "Internet protocol version 4(TCP/IPv4)." Select the "Internet" protocol version 4 (TCP/IPv4) to open the Internet Protocol Version 4(TCP/IPv4) Properties window. Select "Advanced" to open the Advanced TCP/IP Settings and add the IP and subnet mask. Click "Confirm" to finish adding the IP segment. 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 any other computers or devices. The existence of this IP address needs to be verified before adding.

To verify whether the network segment has been successfully added, click "Start" and select "Operation" to input cmd. Then click CONFIRM and open a DOS command window, ping 192.168.5.26, and press the Enter key to display information as shown below:

After the camera powers on and performs a self-check, follow the steps above to verify network connection.

Open a DOS command window, ping 192.168.5.163, and press the Enter key.

## **Web Page Login**

Input the default IP address 192.168.5.163 in the browser and click Enter to open the Web Client login page. User can login as administrator and normal user. If logging in as administrator (Default User Name/Password: admin), users can preview, playback, and set configuration in the Web Client. If logging in as a normal user (Default User Name/Password:user1 or user2), users can only preview, playback, and logout. There is no option for configuration.

Note: Web access supports IE-based browsers, 360 browsers, etc.

Chrome login is available after a firmware update, but it will only support basic configurations and previewing of videos. There will be no functionality to record video, voice volume, video capture, or playback.

Download and Install Plug In for IE login

For first-time logins via IE browser, the login page will prompt: "Playback plug-in is not installed. Please download and install!" Click on this message. Download and install MRWebXinstall.exe according to the prompt.

Enter user name and password (default user name and password: "admin").

Users can manage and change user name, password, and etc.

# STREAMING CONFIGURATION

## Video Stream Capture

Configurations -> Video Configure-> Video Encode

**Configurations**

- Audio Configure
- Video Configure
  - Video Encode
  - Stream Publish
  - RTP Multicast
  - Video Parameters
  - Video OSD
  - OSD Font Size
  - Video Out
- NetWork Configure
  - Network Port
  - Ethernet
  - DNS
- System Configure
  - SystAttr
  - SysTime
  - SysUser
  - Update
  - Default
  - Reboot

**Video Encode**

	Main Stream	Sub Stream
Stream		
Compressed Format	H.264	H.264
Profile	HP	HP
Image Size	1920*1080	320*180
Rate Control	CBR	CBR
Image Quality	Best	Better
Bit Rate(Kb/S)	4096	512
Frame Rate(F/S)	25	25
I Frame Interval	75	75
I Frame Min QP	20	20
Stream Name	live/av0	live/av1

Save

Configure the parameters according to the network environment.

Note: stream name live/av0 (live/ XXX)

For example:

The default IP address of the camera is 192.168.5.163. The way to obtain the RTSP video stream is as below:

rtsp://192.168.5.163:554/live/av0 (av0 main stream)

rtsp://192.168.5.163:554/live/av1 (av1 sub stream)

The default IP address of the camera is 192.168.5.163. the way to obtain RTMP video stream is as below:

rtmp://192.168.5.163:1935/live/av0 (av0 main stream)

rtmp://192.168.5.163:1935/live/av1 (av1 sub stream)

# STREAMING CONFIGURATION

## Push Video Stream

Configurations -> Video Configure-> Stream Publish

	Main Stream	Sub Stream
Stream		
Enable	<input type="checkbox"/>	<input type="checkbox"/>
Protol Type	RTMP	RTMP
Host Address	192.168.5.11	192.168.5.11
Host Port	1935	1935
Stream Name	live/av0	live/av1
User Name		1
Password		

Push the RTMP stream to the public network server. The stream camera must be on the public network; otherwise, it will fail to connect to server.

Host address: server address, which can be either a domain name or an IP address

Host port: server default port number

Stream name: live/test (live/ XXX)

Username and password: the username and password set by the server, or leave it empty

Access url: rtmp://host domain name: host port/live/xxx

Or (rtmp://host IP address: host port/live/xxx)

# TECHNICAL SPECIFICATIONS

Optical Zoom	20X 5.2-98mm
Sensor	1/2.8 inch high quality HD CMOS sensor
Effective Pixels	16:9, 2.07 megapixel
Video Format	HDMI/SDI video format 1080P60/50/30/25/59.94/29.97, 1080I60/50/59.94, 720P60/50/30/25/59.94/29.97  CVBS output: 570i 480i  USB3.0 interface video format:  Main Stream: YUY2/MJPEG/NV12/H.264/H.265: 1920×1080P30,1280×720P30,1024×576P30,960×540P30,800×448P30,720 ×480P30,640×360P30, 640×480P30,320×176P30  Sub Stream: YUY2/NV12: 640×360P30,640×480P30,320×176P30 MJPEG/H.264/H.265: 1920×1080P30,1280×720P30, 1024×576P30,960×540P30,800×448P30,720×480P30,640×360P30, 640×480P30,320×176P30
View Angle	55.8° (W) 3.2°(T)
AV	F1.5 - F3.0
Digital Zoom	10X
Minimum Illumination	0.5Lux (F1.8, AGC ON)
DNR	2D & 3D DNR
White Balance	Auto / Manual/ One Push/ Specify color temperature (range: 2400k-7100k)
Focus/Aperture/ Electronic Shutter	Auto/Manual/One Push Focus
Iris	Auto/Manual
Shutter	Auto/Manual
BLC	ON/OFF
WDR	OFF/ Dynamic level adjustment
Video Adjustment	Brightness, Color, Saturation, Contrast, Sharpness, B/W mode, Gamma curve
SNR	>50dB

# TECHNICAL SPECIFICATIONS

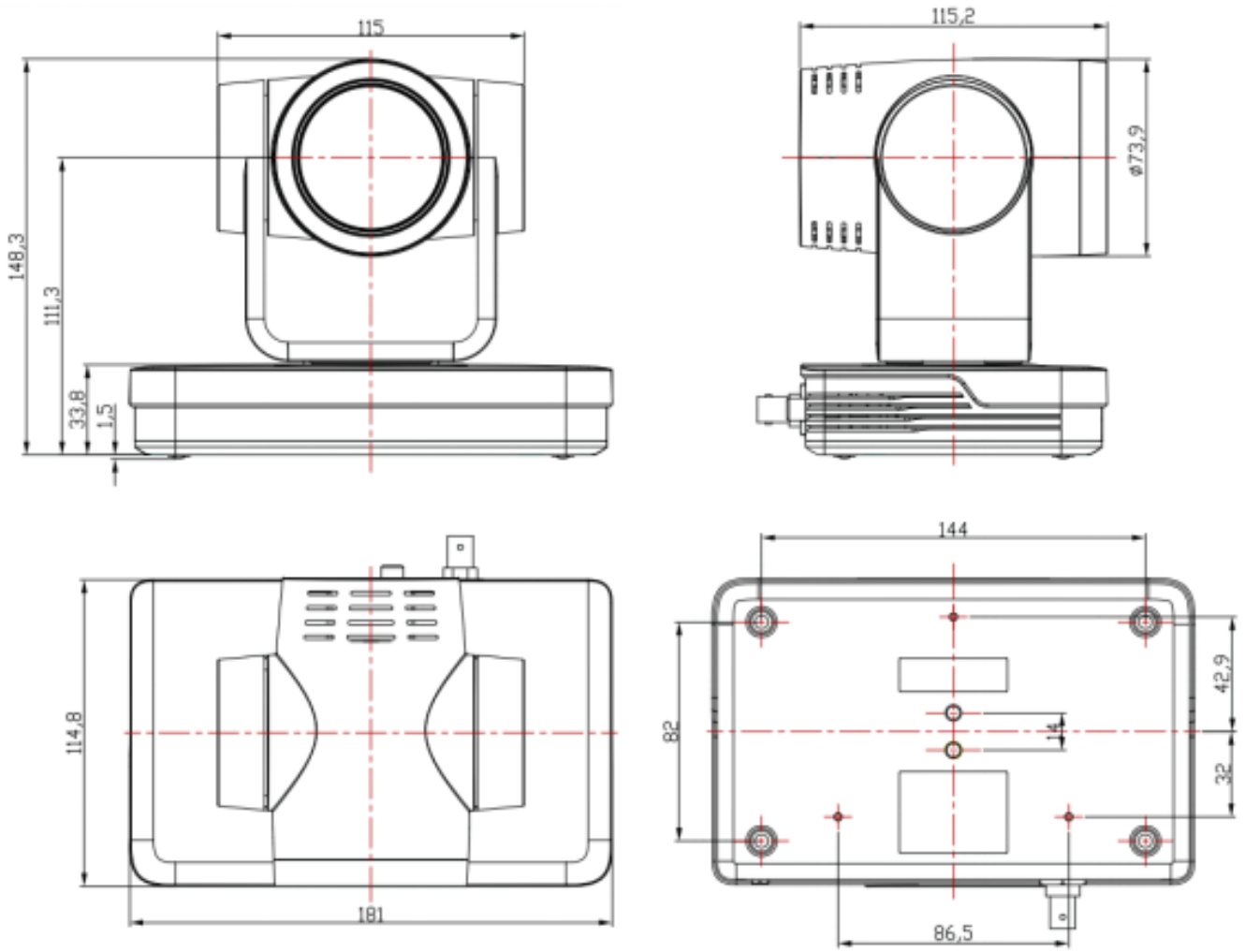
<b>Input/output Interface</b>	
Video Interfaces	HDMI, SDI, LAN, CVBS, RS232-IN/OUT, RS485, A-IN, USB2.0(USB Disk Storage), rotary DIP switch, DC 12V port, power switch
Video Output	HDMI, SDI, LAN, USB3.0, CVBS
Video Stream	Dual stream output
Video Compression Format	LAN Interface: H.265, H.264, Dual stream output USB3.0 Interface: YUY2, MJPEG, H.264, NV12, H.265
Audio Input Interface	Double track 3.5mm linear input
Audio Output Interface	HDMI, SDI, LAN, USB3.0
Audio Compression Format	AAC/MP3/G.711A
Control Interface	RS232, RS485
Control Protocol	VISCA/Pelco-D/Pelco-P, Baud Rate: 115200/9600/4800/2400bps
Power Interface	HEC3800 outlet (DC12V)
Input Voltage	DC12V±10%
Input Electric Current	Maximum: 1A
Power Consumption	Maximum: 12W
Network Protocols	TCP/IP,RTSP,RTMP,ONVIF,GB/T28181; Network VISCA control protocol; Support remote upgrade, reboot and reset
USB Communication	UVC (Video), UAC (UAC)
<b>PTZ Parameter</b>	
Pan/Tilt Rotation	±170°, -30°~+90°
Pan Control Speed	0.1 - 60°/sec
Tilt Control Speed	0.1- 30°/sec
Preset Speed	Pan: 60°/sec, Tilt: 30°/sec
Preset Number	255 presets (10 presets via remote control)



# TECHNICAL SPECIFICATIONS

<b>Other Parameter</b>	
Stored Temperature	-10°C~+60°C
Storage Humidity	20%~95%
Working Temperature	-10°C~+50°C
Working Humidity	20%~80%
Dimension	178mmX115.5mmX150.9mm
Weight	1.38KG
<b>Attachment</b>	
Package	12V/1.5A Power supply, RS232 control cable, USB3.0 cable, IR Remote Control, Wall mount, User Manual
Optional Accessories	Ceiling mount

# PRODUCT DIMENSIONS



Measurements are in millimeters.

**Thank you for your purchase.**

For Technical Support please call our  
toll-free number at 800-530-8998  
or email us at [supportlibav@libav.com](mailto:supportlibav@libav.com)



[www.libav.com](http://www.libav.com) 800-530-8998