

Auto-Tracking Camera

79068-Auto10 User Manual

4K PTZ Camera

Auto-Tracking Camera for Lecture Capture & Video Conferencing



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Version: 79068-Auto10_2020V1.1

www.tekvox.com

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Preface

Read this user manual carefully before using the product. Pictures shown in this manual are for reference only. Different product model specifications may vary.

This manual is only for operation instruction, please contact the local distributor for maintenance assistance. The functions described in this version were updated October, 2018. In order to continue improving the product, we reserve the right to make function or parameter changes without notice or obligation. Please refer to the dealers for the latest details.

FCC Statement

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. It has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial installation.

Operation of this equipment in a residential area is likely to cause interference, in which case the user at their own expense will be required to take whatever measures may be necessary to correct the interference.

Any changes or modifications not expressly approved by the manufacture would void the user's authority to operate the equipment.



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Preface

This manual describes the installation and operation of the camera. Prior to installation and usage, please read this manual thoroughly.

1. Warning

1. This product can be only used in specified range in order to avoid damage
2. Don't expose the camera to rain or moisture
3. Don't remove the cover to reduce the risk of electric shock. Refer servicing to qualified personnel.
4. Never operate the camera under unqualified temperature, humidity, and power supply
5. Please use the soft cloth to clean the camera. Use neuter cleanser if bad smeared. Don't use the strong or cleanser avoiding scuffing.

2. Electric Safety

Installation and operation must accord with electric safety standard.

3. Caution to transport

Avoid stress, vibration and soakage in transport, storage, and installation.

4. Polarity of Power Supply

This product uses DC 12V power supply.

5. Careful of installation

1. This series item must put on the smooth desk or platform, and it cannot be installed slant-ways.
2. Don't apply in corrosive liquid, gas, or solid environment to avoid the cover which is made up of organic material.
3. This product has a heating device inside, please keep ventilated.
4. Never power on before installation is completed.

6. Don't disassemble discretionarily

We are not responsible for any unauthorized modification or dismantling.

7. Attention

Electromagnetic field under certain rate may affect camera image!

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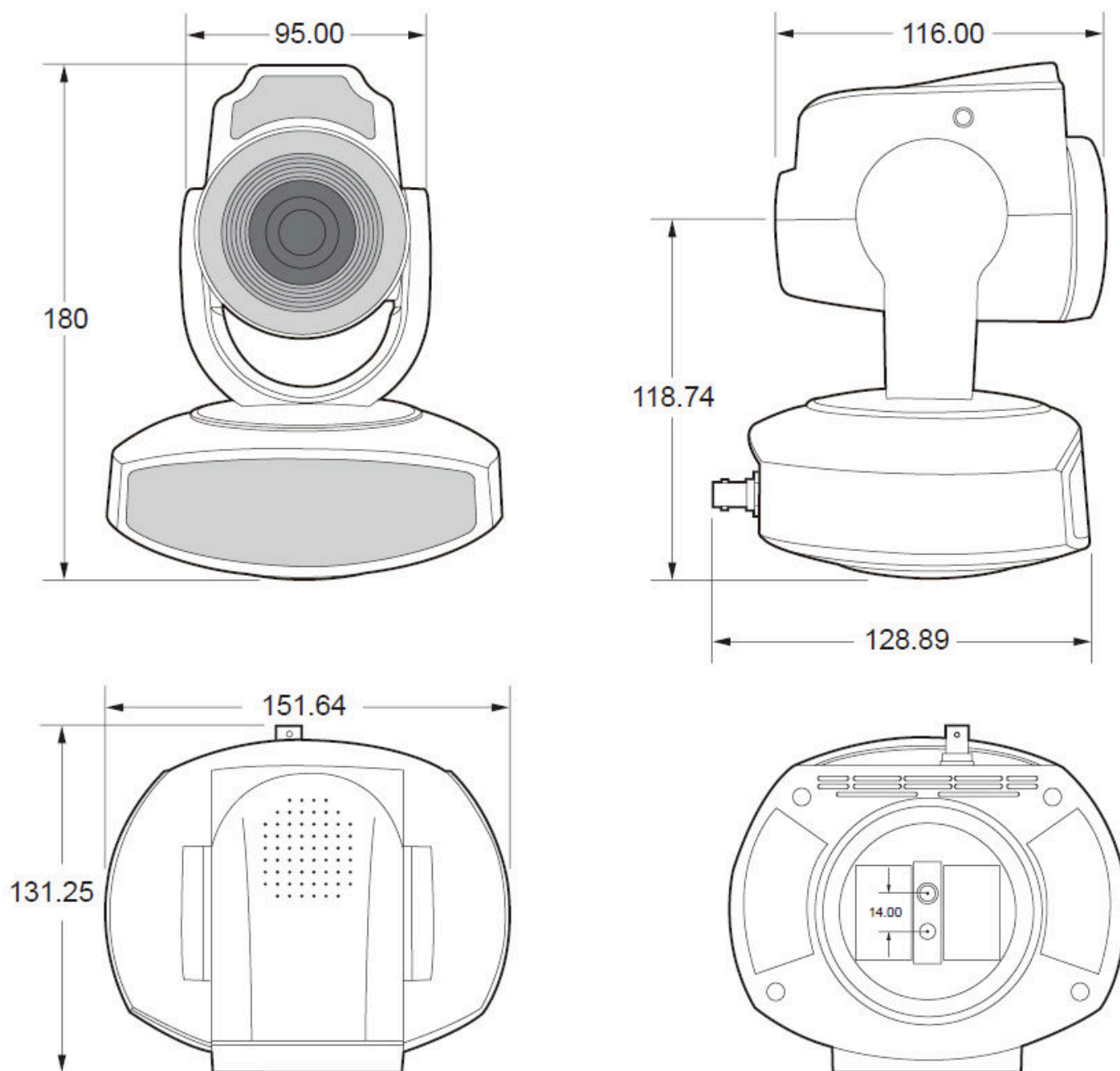
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1. Product Overview

The 79068-Auto10 Auto-Tracking PTZ Camera is a professional-grade high-quality PTZ camera that can track a moving presenter automatically while shooting video. Combining a high-performance pan/tilt/zoom camera, compact design, and excellent motion-sensitive tracking technology, the 79068-Auto10 is ideal for mid to large-size conference, huddle rooms, or lecture capture, bridging the feature and price gap between current webcam and professional PTZ cameras in the market.

1.1 Dimensions



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1.2 Accessories

No.	Accessory
1	Power Adaptor
2	RS-232 Cable
3	USB 3.0 Cable
4	Remote Controller
5	Auto-Tracking Positioning Pendant
6	2-in-1 RS-232 & Power Tracking Cable
7	3.5mm to USB PC Config Tool Setting Cable
8	Quick Installation Guide

1.3 Camera Performance

The camera offers intuitive functions, superior performance, and versatile interfaces. The features include advanced ISP processing algorithms to provide vivid images with a strong sense of depth, high resolution, and fantastic color rendition. It supports H.264/H.265 encoding, which makes video motion fluent and clear, even with less than ideal bandwidth conditions. By adopting a high accuracy step-driving motor mechanism, it works extremely quietly, and moves smoothly and very quickly to its designated position. The product works stably and reliably, and is easy to use, install, and maintain.

1.4 Technical Specifications

Camera Parameters	
Optical Zoom	10x f = 4.7 ~ 47mm
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 U3 video format (1) U3 : 1920X1080P60/50/30/25; 1280X720P60/50/30/25; 960X540P30; 640X360P30; 640X480P30; 352X288P30; 960X540P30 (2) U3 compatible with U2 : 960X540P30; 640X360P30; 1280X720P10/15; 720X576P50; 720X480P60; 640X480P30; 352X288P30.
View Angle	6.43° (tele) ~ 60.9° (wide)
Iris	F1.6 ~ F3.0

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Digital Zoom	5x
Minimum Illumination	0.5Lux (F1.8, AGC ON)
Digital Noise Reduction (DNR)	2D & 3D DNR
White Balance	Auto / Manual / One-Push / 3000K / 3500K / 4000K / 4500K / 5000K / 5500K / 6000K / 6500K / 7000K
Exposure	Auto / Manual / Shutter Automatic Exposure / Aperture Automatic Exposure / Brightness priority
Focus	Auto / Manual / One-Push
Aperture	Auto / Manual
Electronic Shutter	Auto / Manual
Backlight Compensation (BLC)	ON / OFF
Wide Dynamic Range (WDR)	OFF / Dynamic Level Adjustment
Video Adjustment	Brightness, Color, Saturation, Contrast, Sharpness, B/W mode, Gamma curve
Signal-to-Noise Ratio (SNR)	> 55dB
Input/Output Interfaces	
Video Interfaces	RS-232 (Input), LAN, HDMI, USB 3.0
Image Code Stream	Dual-stream output
Image Output Multiple Code Source	Dual Code Source output (SDI/HDMI/USB3.0, LAN)
Video Compression Format	H.264, H.265
Audio Input Interface	Double track 3.5mm linear input
Audio Output	SDI, HDMI, LAN output together with video
Audio Compression Format	AAC, MP3, G.711A
HD IP Interface	100M IP port (100Base-TX)
Network Protocol	RTSP / RTMP, ONVIF, GBT28181 Supports VISCA control protocol Distance update, distance restart, distance reset
Control Interface	RS-232
Control Protocol	VISCA / PELCO-D / PELCO-P Baud Rate: 115200/9600/4800/2400 bps
Power Interface	HEC3800 outlet (DC 12V)
Supply Adapter	110 ~ 220 VAC to DC 12V/2A
Input Voltage	DC 12V±10%
Input Current	2A (max)
Power Consumption	24W (max)

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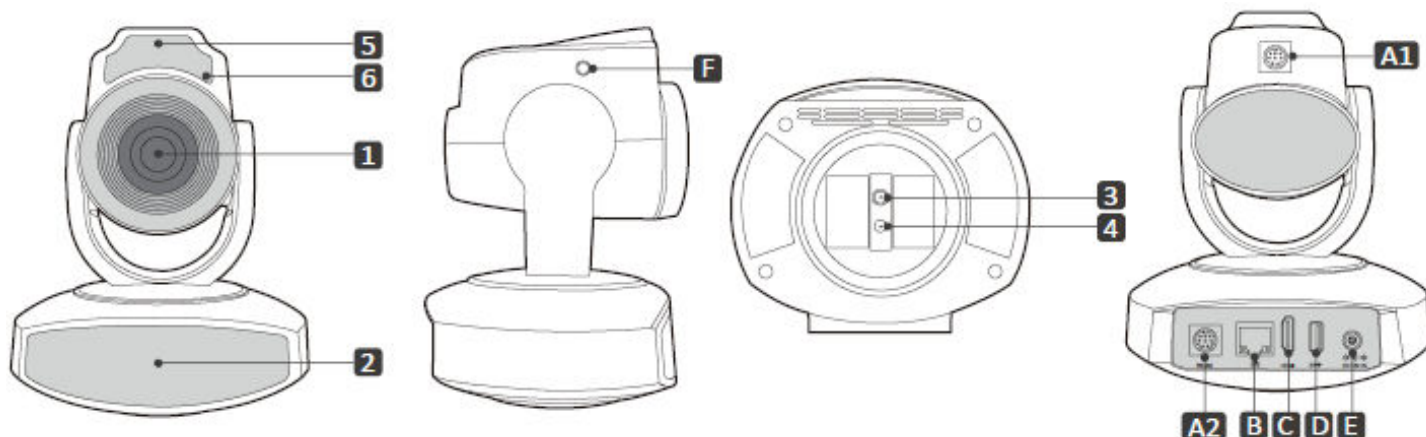
PTZ Parameters	
Pan Rotation	$\pm 135^{\circ}$
Tilt Rotation	$\pm 30^{\circ}$
Pan Control Speed	0.1 ~ 60° / sec
Tilt Control Speed	0.1 ~ 30° / sec
Preset Speed	Pan: 60° / sec Tilt: 30° / sec
Preset Number	255 presets (10 presets by remote controller)
Tracking Parameters	
Tracking Distance	3 ~ 10m
Battery Life of Positioning Pendant	Approximate continuous operating time: 4 hours
Other Parameters	
Storage Temperature	14 ~ 140°F (-10 ~ 60°C)
Storage Humidity	20 ~ 95%
Working Temperature	14 ~ 122°F (-10 ~ 50°C)
Working Humidity	20 ~ 80%
Product Dimensions	5.15" (131mm) x 5.94" (151mm) x 7.09" (180mm)
Weight	2.4 lbs. (1.1 kg)
Use Environment	Indoors

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2. Quick Installation Instructions

2.1 Camera Interface and Indicators Description



No.	Description
1	Camera Lens
2	Remote Controller Receiver
3	Tripod Screw Hole (1/4" UNC 20, 6.5mm depth)
4	Locating Hole (Ø5.5mm, 6.5mm depth)
5	Auto-Tracking Receiver
A1	RS-232 Control Interface (Output)
A2	RS-232 Control Interface (Input)
B	LAN Interface
C	HDMI Interface
D	USB 3.0 Interface
E	DC 12V Input Power Supply Socket
F	3.5mm phone jack (for PC Config Tool)

No.	LED Color	Glow Rule	Operation
2	Red/green dual-color light	Red light blinking	Power adaptor plug to socket
		Green light turns on	Power on
		Green light blinking	Receive remote controller signal
6	Red/green dual-color light	Green light flashes 1 sec.	Power adaptor plug to socket
		Light goes off	Auto-tracking ongoing
		Red light flashes	Auto-tracking error
		Red/green lights flicker alternately	Firmware update or setting of tracking parameters via PC config tool

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2.1.1 Power-On Initial Configuration

1. **Power on:** Connect the DC 12V power supply adapter to power
2. **Initial configuration:** When the camera powers on, the power indicator light turns on, the remote control receiver light starts blinking, the camera head moves from the bottom left to the right, and then goes to the HOME position (intermediate position of both horizontal and vertical), while the camera module stretches. When the remote control receiver light stops blinking, the self-check is finished.

Note:

1. The default address of the remote controller is #1
2. If you set preset 0, when the Power On self-test is completed, the camera automatically moves to the preset 0 position.

2.1.2 Video Output

Video Output from LAN

- **Network Cable Connection:** Connect the camera and your computer through network cable. Refer to Item B in §3.1 for details on the camera's LAN interface.
- **Webpage Login:** Open your browser and enter the camera's IP address in the address bar (factory default: 192.168.11.202). Press "Enter" to enter into the login page; click on "player is not installed, please download and install!" and follow the installation steps for installation. Then enter the username "admin" and password "admin" (factory default). Press Enter to enter into the preview page; users can carry out PTZ control, video recording, playback, configuration, and other operations. (**Note:** If you forget your username, password, or IP address, you can manually restore the default by the remote controller key combination * #)

HDMI Video Output

- HDMI Video Cable Connection: Refer to Item C in §3.1 for details
- Connect the camera and the monitor via HDMI video cable; video output is available after the camera self-test.

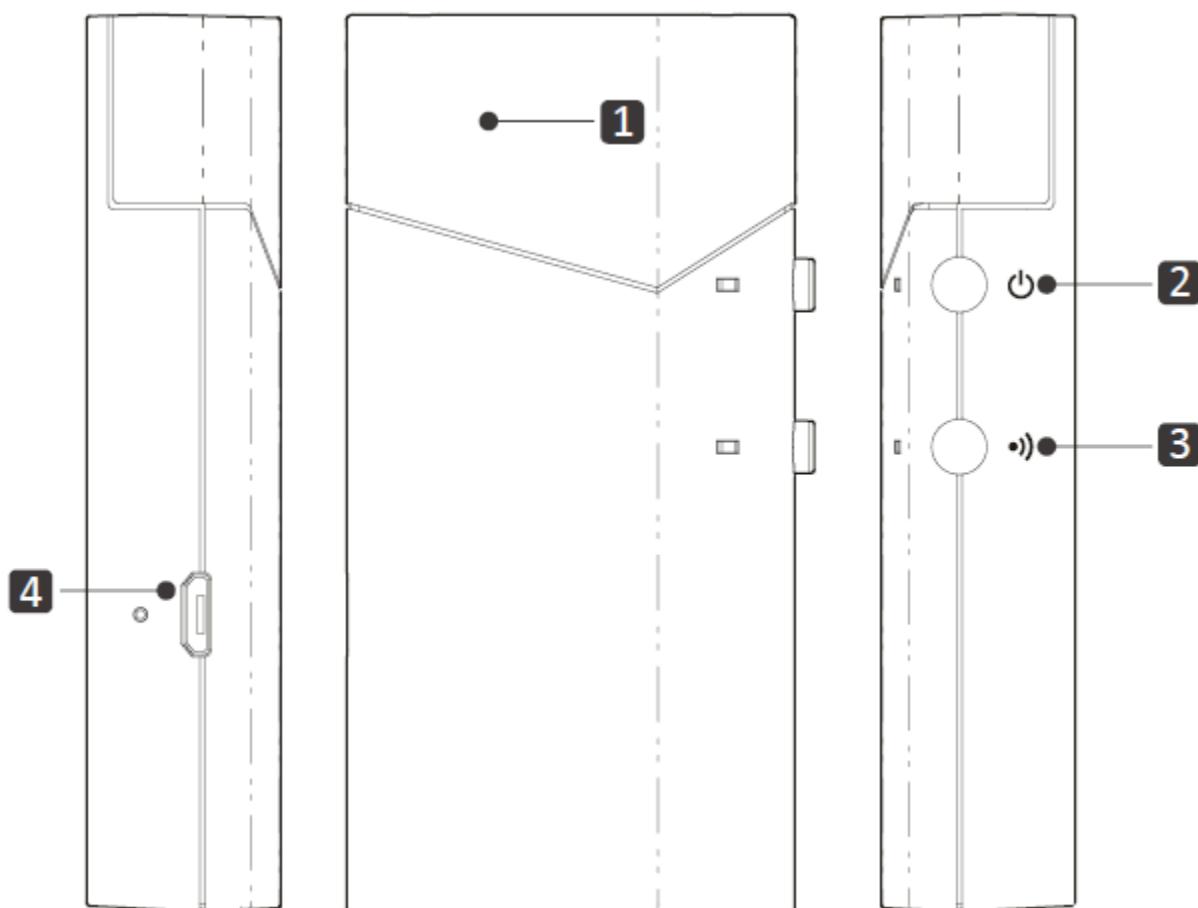
USB3.0 video output

- USB3.0 video cable connection: Refer to Item D in §3.1 for details
- Connect the camera and the monitor via USB3.0 video cable, open video display software, select image device, and then video output will be available.

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2.2 Auto-Tracking Positioning Pendant Interface and Indicators Description



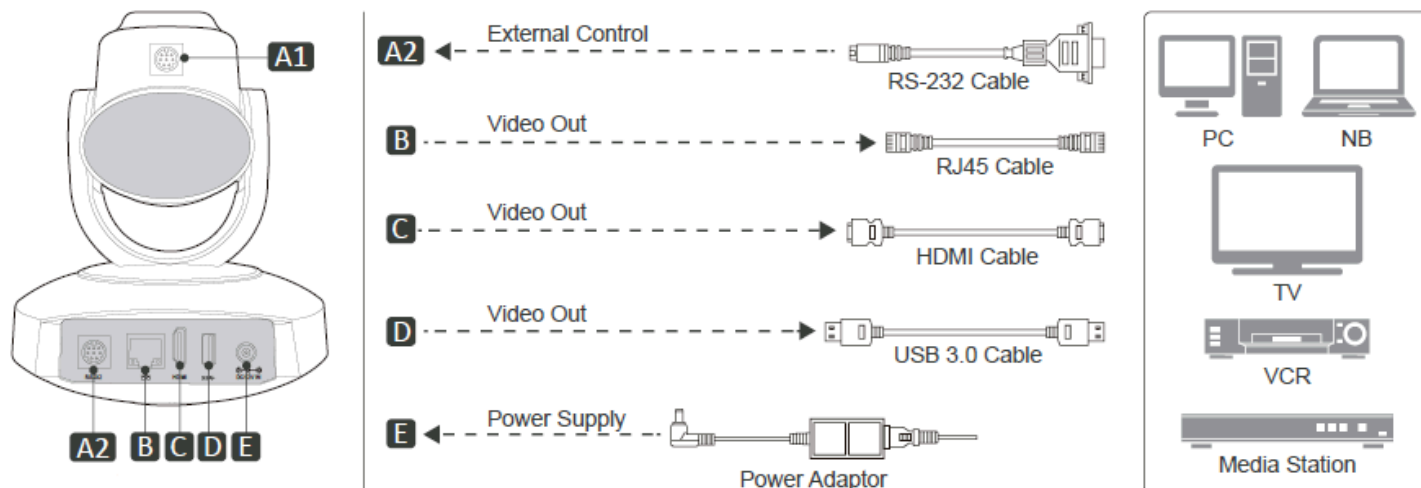
No.	Interface	Light Color	Glow Rule	Operation
1	Positioner	-	-	-
2	Power On/Off and Tracking Pause	Red/Green dual-color light	Green light turns on	Power ON
			Red light is on	Auto-tracking function suspended (Note: When the tracking function is paused, the camera will return to the full-view position)
			Red light flashes	Low power
			Red light flashes 1 sec	Press the button to power off
3	Microphone pairing/mute	-	-	Workable with AREC Media Station
4	Power Input (USB Micro Type-B port)	Green	Light is on	During power charging
			Light goes off	When the charging is complete
			Light flashes	Charging error

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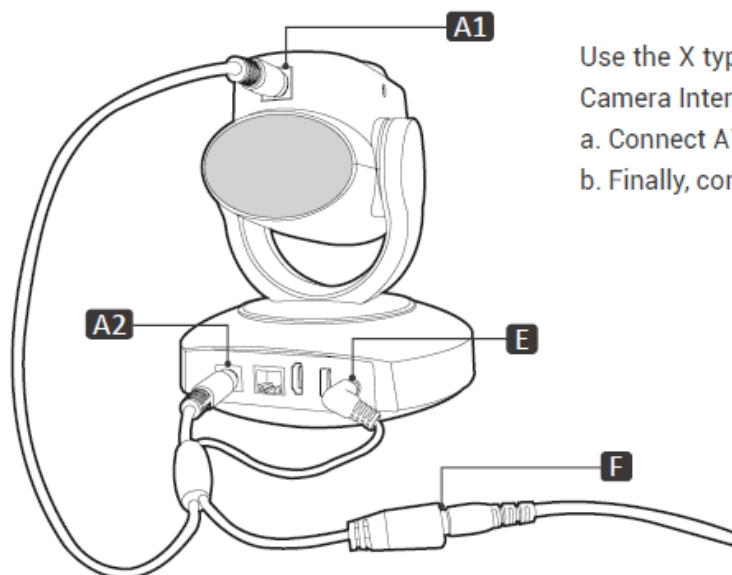
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3. Connection and Settings

3.1 Connection



3.2 Setup X-type 2-in-1 Tracking Cable



Use the X type 2 in 1 tracking cable connected to Tracking Camera, refer Camera Interface Instruction

a. Connect A1, A2, E in sequence

b. Finally, connect the camera power adapter to F

3.3 Tracking Camera Settings

The 79068-Auto10 uses the RS-232 control interface; the default parameters are below:

Note: The remote controller can setup the RS-232 parameters

Item	Tracking Parameters
Protocol	VISCA
VISCA Address	1
Baud Rate	9600

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3.4 Wear the Positioner

Fix your tracking pendant to the target person or object properly. For the best tracking performance, wear the positioner with the smooth and transparent side facing out. Turn on the tracking pendant to start auto-tracking.

Note: Be sure to wait until the tracking camera is powered on and reset to the initial position before powering on the tracking pendant.



3.5 Getting Started

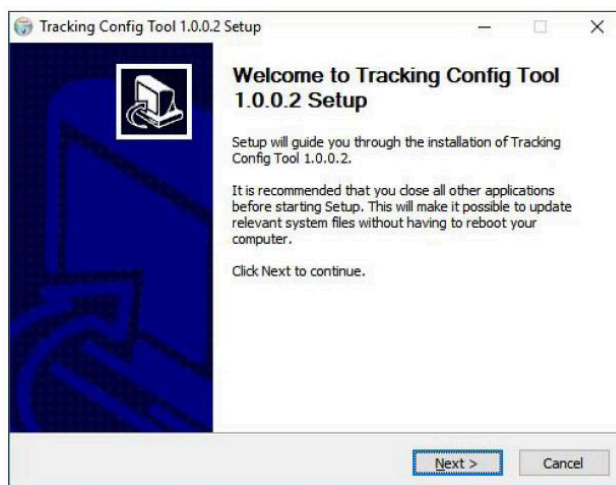
In order best to track the presenter's movement, the camera provides superior smooth tracking, even in situations where a presenter is writing on a whiteboard, or close-up shots, just like a professional cameraman does.

4. Applications

4.1 Setup Tracking Parameters

4.1.1 Install Config Tool

The request for installing will appear if it's the first time you have installed the tool. In the pop-up "User Account Control" warning window, click "Yes" to start downloading the software on the PC. Click "Next" to setup the Config Tool. Before you use the tool, please ensure your antivirus software does not block the application.



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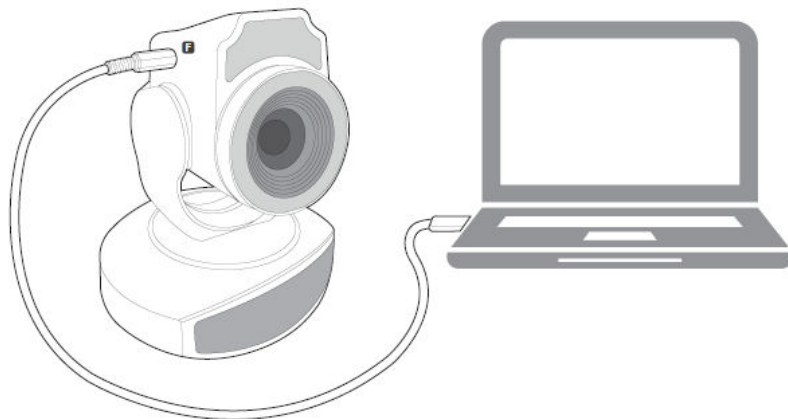
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4.1.2 Setup 3.5mm Phone Jack to USB Cable

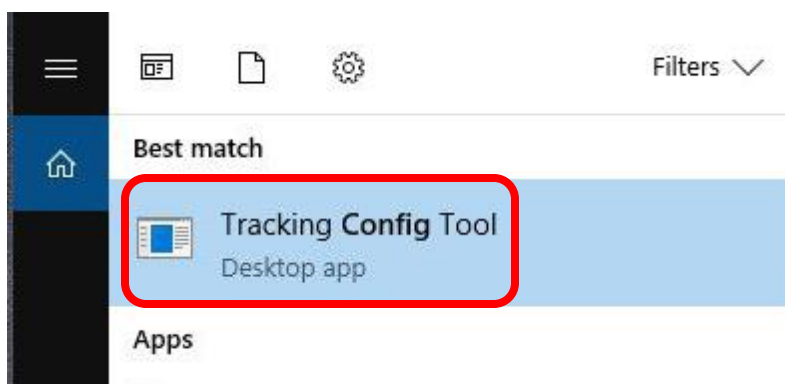
The cable is designed to setup the tracking configurations through the USB interface from a PC.

Use the cable connected to the Tracking Camera

- Connect phone jack to F
- Connect USB Connector to PC



4.1.3 Open Tool & Setting Tracking Parameter



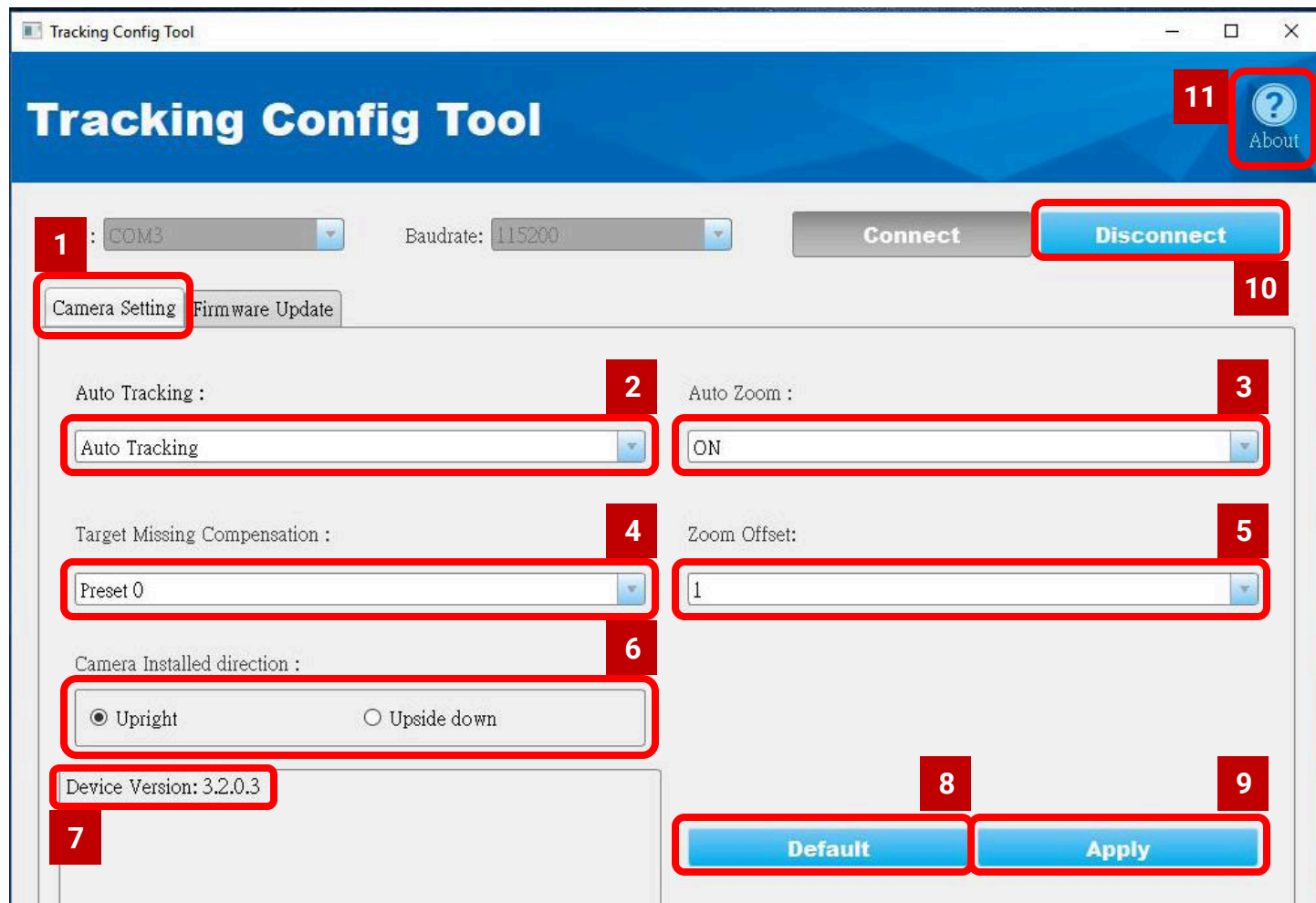
4.1.3.1 Connecting



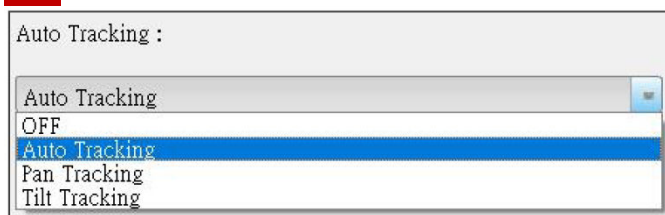
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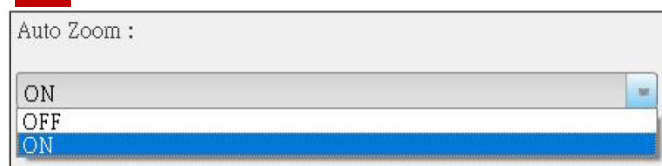
4.1.3.2 Camera Settings Page



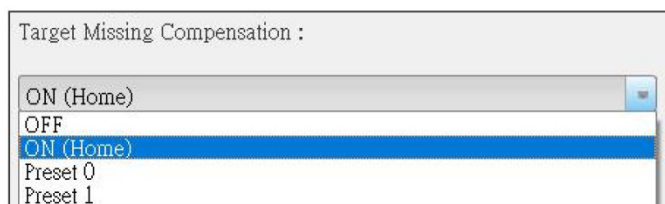
2 Set up "Auto Tracking" mode



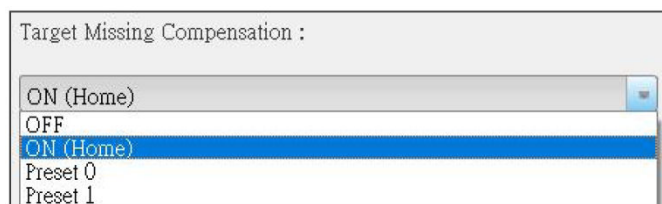
3 Set up "Auto Zoom" On/Off



4 Set up "Target Miss Compensation" for when auto tracking fails



5 Set up "Zoom Offset"



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6 Set up "Camera Install Direction"

Camera Installed direction :

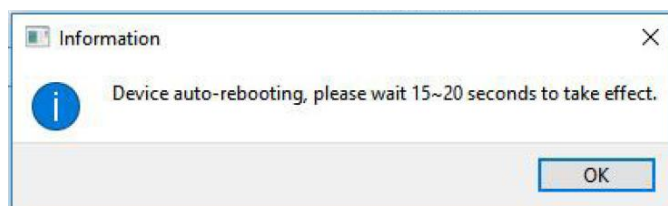
☒ Upright ☐ Upside down

7 Tracking Module firmware version

Device Version: 3.2.0.3

8 Restore Tracking Module firmware to default

9 Apply changes to Auto Tracking Mode, Auto Zoom On/Off, Target Miss Compensation, Zoom Offset & Camera Install Direction



10 Disconnect Tracking Module

11 Tracking Config Tool Version

4.1.3.3 Firmware Update Page

Port : COM3 Baudrate: 115200 Connect Disconnect

Camera Setting **Firmware Update**

Step 1:

Choose file

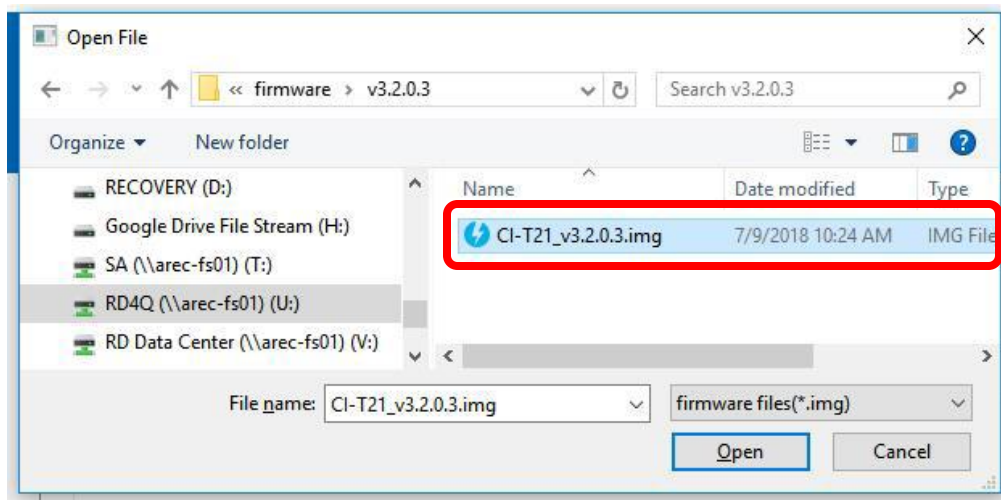
Step 2:

Upgrade

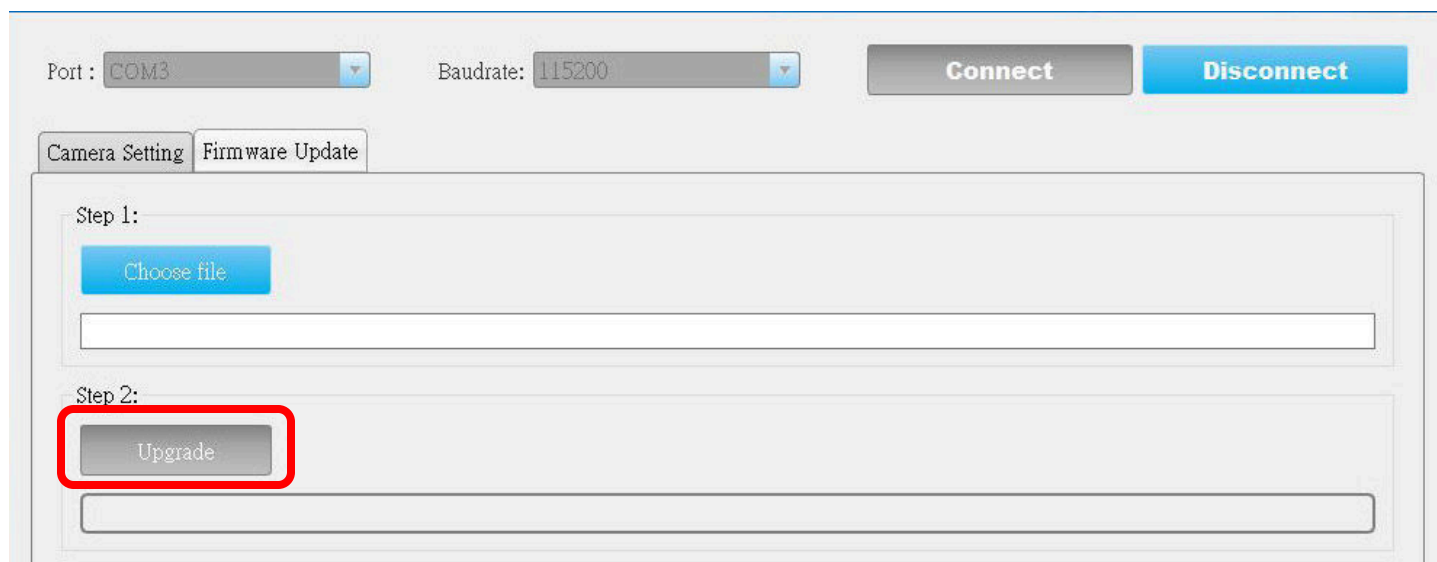
Click the "Choose File" button, then open the "...img" firmware file.

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Click the “Upgrade” button. Once the update process is complete, the status window will show “Update is complete. Device auto-rebooting.”



Note: Error Code – “Connection fail!”

Check that the camera is still connected to power, and that the 3.5mm phone jack is plugged in

Note: Error Code – “The System cannot find the path specified.”

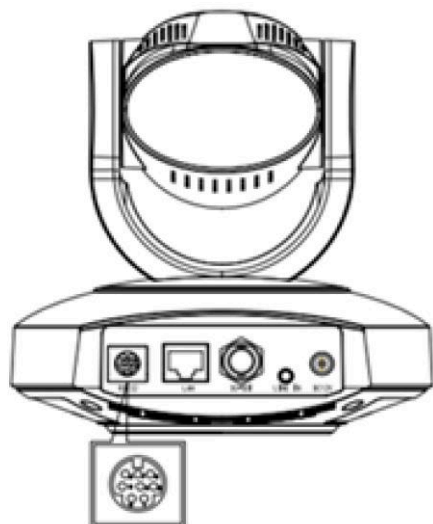
Check that the USB cable is plugged in correctly

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4.2 RS-232 Interface

4.2.1 RS-232C Interface

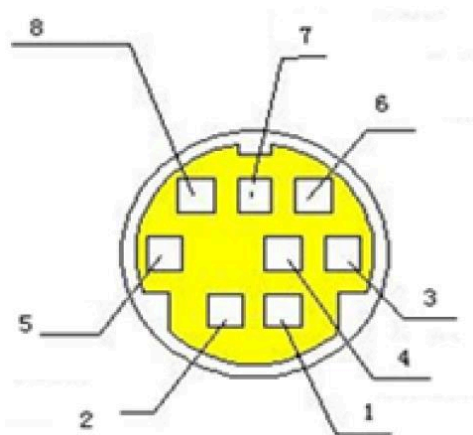


Computer/Keyboard & Camera Connection Method	
Camera	Windows (DB-9)
1. DTR	1. DCD
2. DSR	2. RXD
3. TXD	3. TXD
4. GND	4. DTR
5. RXD	5. GND
6. GND	6. DSR
7. IR OUT	7. RTS
8. NC	8. CTS
	9. RI

RS232 IN
port on
camera



4.2.2 RS-232 Mini-Din 8-pin Port Definition

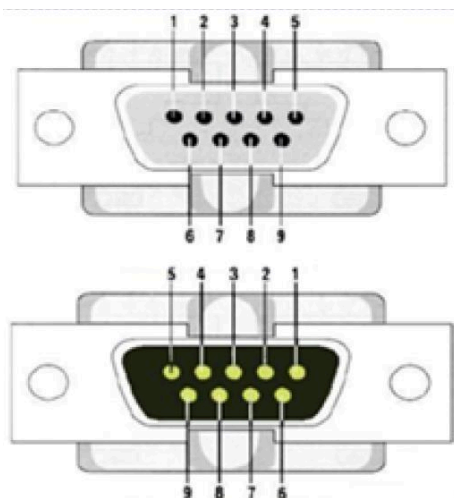


No.	Port	Definition
1	DTR	Data Terminal Ready
2	DSR	Data Set Ready
3	TXD	Transmit Data
4	GND	System Ground
5	RXD	Receive Data
6	GND	System Ground
7	IR OUT	IR Commander Signal
8	NC	No Connection

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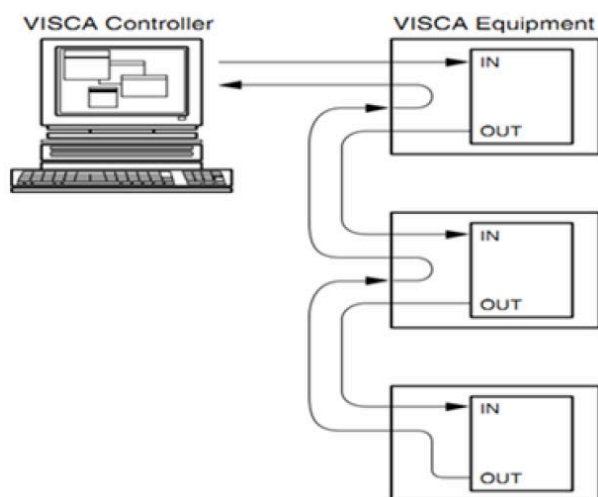
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4.2.3 RS-232 (DB-9) Port Definition



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

4.2.4 VISCA Networking



Camera Cascade Connection Method	
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

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4.3 Serial Communication Control

Under common working conditions, the camera can be controlled through the RS-232/RS-485 interface (VISCA). RS-232C serial parameters 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 will first go left, then back to the middle position. Self-test is finished after the zoom has moved to the farthest, and then back to the nearest, position. If Preset 0 has been saved before, it will move to that position after initialization. At this point, the user can control the camera using the serial commands.

4.3.1 VISCA Protocol List

Ack/Completion Message		
Description	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

Ack/Completion Message		
Description	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 while in auto-focus mode.

Camera Control Commands			
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	
	Tele (Standard)	8x 01 04 07 02 FF	

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	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	
	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 CAM_RGain	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	
	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 Exposure 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

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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: ExpComp Position
CAM_Back Light CAM_WDR_Strength CAM_NR(2D)	On	8x 01 04 33 02 FF	Back Light Compensation WDR Level Setting p: WDR Level Position
	Off	8x 01 04 33 03 FF	
	Reset	8x 01 04 21 00 FF	
	Up	8x 01 04 21 02 FF	
	Down	8x 01 04 21 03 FF	
	Direct	8x 01 04 51 00 00 00 0p FF	
		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 CAM_Aperture	Off	8x 01 04 23 00 FF	Off
	50HZ	8x 01 04 23 01 FF	50 Hz
	60HZ	8x 01 04 23 02 FF	60 Hz
	Reset	8x 01 04 02 00 FF	Aperture Control

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	Up	8x 01 04 02 02 FF	
	Down	8x 01 04 02 03 FF	
	Direct	8x 01 04 42 00 00 0p 0q FF	
CAM_Memory	Reset	8x 01 04 3F 00 pq FF	pq: Aperture Gain 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 F	pqrs: Camera ID (=0000 to FFFF)
SYS_Menu IR_Receive IR_ReceiveReturn CAM_SettingReset	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
	ON	8x 01 06 08 02 FF	IR (Remote Control) Receive On/Off IR (Remote Control) Receive message via the VISCA communication ON/OFF Reset Factory Setting
	OFF	8x 01 06 08 03 FF	
	On	8x 01 7D 01 03 00 00 FF	
	Off	8x 01 7D 01 13 00 00 FF	
	Reset	8x 01 04 A0 10 FF	
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 resolution	8x 01 06 35 00 0p FF	p : 0~E Video format 0: 1080P60 1: 1080P50 2: 1080i60 3: 1080i50 4: 720P60 5: 720P50

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			6: 1080P30 7: 1080P25 8: 720P30 9: 720P25 A: 1080P59.94 B: 1080i59.94 C: 720P59.94 D: 1080P29.97 E: 720P29.97
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 01 FF	
	Left	8x 01 06 01 VV WW 01 03 FF	
	Right	8x 01 06 01 VV WW 01 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	
	Absolute Position	8x 01 06 02 VV WW 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	
	Relative Position	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	
Pan-tiltLimitSet	Set	8x 01 06 07 00 0 W 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 0 W 07 0F 0F 0F 07 0F 0F 0F FF	

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Inquiry Commands			
Command	Function	Command Packet	Notes
CAM_PowerInq	8x 09 04 00 FF	y0 50 02 FF	On
		y0 50 03 FF	Off (Standby)
CAM_Zoom_PosInq	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
CAM_FocusPosInq	8x 09 04 48 FF	y0 50 0p 0q 0r 0s FF	pqrs: Focus Position
CAM_WBModelInq	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
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_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 Position
CAM_BrightPosInq	8x 09 04 4D FF	y0 50 00 00 0p 0q FF	pq: Bright Position
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: 2D NR Level

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CAM_NRLevel(3D) Inq	8x 09 04 54 FF	y0 50 0p FF	p: 3D NR Level
CAM_FlickerModelInq	8x 09 04 55 F	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 0 (60%) ~ E (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	Auto Focus 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 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
CAM_VersionInq	8x 09 00 02 FF	y0 50 ab cd mn pq rs tu vw FF	abcd: vender ID (0220) mnpq: model ID ST (0950), U3 (3950) rstu: ARM Version vw: reserve

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VideoSystemInq	8x 09 06 23 FF	y0 50 0p FF	p: 0 ~ E Video format 0: 1080P60 1: 1080P50 2: 1080i60 3: 1080i50 4: 720P60 5: 720P50 6: 1080P30 7: 1080P25 8: 720P30 9: 720P25 A: 1080P59.94 B: 1080i59.94 C: 720P59.94 D: 1080P29.97 E: 720P29.97
Pan-tiltMaxSpeedInq	8x 09 06 11 FF	y0 50 ww zz FF	ww: Pan Max Speed zz: Tilt Max
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 tables indicates the camera address to be operated
 [y] = [x + 8]

4.3.2 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	0x00	0x00	SUM

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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

4.3.3 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	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

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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

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5. Remote Control

5.1 Keys Instruction

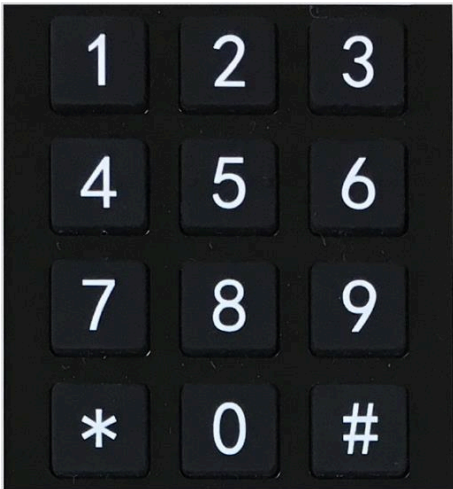
After finishing initialization, the camera can receive and execute IR commands. Press the remote control button until the indicator light flashes; release the button, and the indicator light will stop flashing. Users can control the pan/tilt/zoom, and setting & running preset positions, via the IR remote controller.

In these instructions, “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.

No.	Key Name	Brief Instruction
1	Standby	After a 3s long press, the camera will go into standby mode. Long press 3s again, and the camera will self-test again and go back to HOME position. (Note: If power-on mode is turned on and Preset 0 is set, and there is no operation within 12s, it will automatically point to the specified preset position.
2	Camera Address Selection	Select the camera address to control
3	Number Keys	Set or run presets 0-9
4	* / # Keys	Key combination use
5	Focus Controls	Auto Focus: Enter into auto focus mode. Manual Focus: Enter into manual focus mode Switch the camera focus mode to manual focus by pressing [focus +] or [focus -] to adjust. Press and hold the key, and the focus will continue to change, and stops as soon as the key is released.
6	Zoom Controls	Zoom+: Lens near Zoom-: Lens far Press and hold the key, and the camera will keep zooming in or zooming out, and stops as soon as the key is released.
7	Set / Clear Preset	Set Preset: “Set preset” key + 0-9 number key: Clear Preset: “Clear preset” key + 0-9 number key
8	Pan/Tilt Controls	Press Key: Up Press Key: Down Press Key: Left Press Key: Right “HOME” Key: Return to the middle position or enter into the next level menu Press and hold the up/down/left/right key, and the pan/tilt will keep running, from slow to fast, until it runs to the endpoint; the pan/tilt stops running as soon as the key is released.
9	BLC Control	BLC ON / OFF: Turn the back light on or off
10	Menu Setting	Open or close the OSD menu Enter / exit the OSD menu, or return to the previous menu.

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Key Name	Brief Instruction
	1. Setting Presets: To set a preset position, press the “[SET PRESET]” key first and then press a number key 0-9 to set a relative preset, Note: 10 preset positions in total are available by remote control. 2. Running Presets: Press a number key 0-9 directly to run a relative preset. Note: Pressing a number key will have no effect if the corresponding preset has not been set. 3. Clearing Presets: To clear a preset position, the user can press the “[CLEAR PRESET]” key first and then press the number key 0-9 to clear the relative preset. Note: Press the “[#]” key three times continually to cancel all the presets.

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

Setting Camera IR Remote Control Address	
Command	Description
[*] + [#] + [F1]	Camera Address No. 1
[*] + [#] + [F2]	Camera Address No. 2
[*] + [#] + [F3]	Camera Address No. 3
[*] + [#] + [F4]	Camera Address No. 4

Key Combinations	
Command	Description
[#] + [#] + [#]	Clear all presets
[*] + [#] + [6]	Restore factory default settings
[*] + [#] + [9]	Flip switch
[*] + [#] + [Auto]	Enter Aging Mode
[*] + [#] + [3]	Set menu language to Chinese
[*] + [#] + [4]	Set menu language to English
[*] + [#] + [Manual]	Restore the default username, password, and IP address
[#] + [#] + [0]	Switch the video resolution to 1080P60
[#] + [#] + [1]	Switch the video resolution to 1080P50
[#] + [#] + [2]	Switch the video resolution to 1080I60
[#] + [#] + [3]	Switch the video resolution to 1080I50
[#] + [#] + [4]	Switch the video resolution to 720P60
[#] + [#] + [5]	Switch the video resolution to 720P50
[#] + [#] + [6]	Switch the video resolution to 1080P30

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[#] + [#] + [7]	Switch the video resolution to 1080P25
[#] + [#] + [8]	Switch the video resolution to 720P30
[#] + [#] + [9]	Switch the video resolution to 720P25

5.2 Menu Settings

5.2.1 Main Menu

In normal working mode, press [MENU] key to display the menu, using scroll arrow to point at or highlight the selected items.

```
MENU
=====
Language                English
(Setup)
(Camera)
(P/T/Z)
(Video Format)
(Version)
(Restore Default)
[ ↑ ↓ ] Select    [ ← → ] Change Value
[ Menu ] Back    [ Home ] OK
```

Language: Language setting, Chinese / English

Setup: System settings

Camera: Camera settings

P/T/Z: Pan/tilt settings

Video Format: Set video output resolution

Version: Camera version information

Restore Default: Restore factory default settings

[↑ ↓] **Select:** Select menu item

[← →] **Change Value:** Modify parameters

[MENU] Back: Press [MENU] to return

[Home] OK: Press [Home] to confirm

5.2.2 System Settings

```
SETUP
=====
Protocol                Auto
Visca Address           1
Visca Address Fix       OFF
PELCO-P Address         1
PELCO-D Address         1
Baudrate                9600
[ ↑ ↓ ] Select    [ ← → ] Change Value
[ Menu ] Back
```

Protocol: VISCA/Pelco-P/Pelco-D/Auto

Visca Address: VISCA = 1 ~ 7

Visca Address Fix: On/Off

PELCO-P Address = 1 ~ 255

PELCO-D Address = 1 ~ 255

Baud rate: 2400/4800/9600/115200

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5.2.3 Camera Settings

```
CAMERA
=====
(Exposure)
(Color)
(Image)
(Focus)
(Noise Reduction)
Style                               Default
[↑ ↓] Select      [← →] Change Value
Back              ok
```

Exposure: Enter into the Exposure Settings sub-menu

Color: Enter into the Color Settings sub-menu

Image: Enter into the Image Settings sub-menu

Focus: Enter into the Focus Settings sub-menu

Noise Reduction: Enter into the Noise Reduction sub-menu

5.2.3.1 Exposure Settings

```
EXPOSURE
=====
Mode                Auto
EV                  OFF
BLC                 OFF
Flicker             50Hz
G.Limit             4
DRC                 4
[↑ ↓] Select      [← →] Change Value
[ Menu ] Back
```

Mode: Auto, Manual, Shutter priority, Iris priority and Brightness priority.

EV (Exposure Value): On/Off (*only available in auto mode*)

Compensation Level: -7~7 (*only available in auto mode when EV is ON*)

BLC: ON/OFF for options (*only available in auto mode*)

Flicker: OFF/50Hz/60Hz for options (*only available in Auto/Iris priority/Brightness priority modes*)

G. Limit (Gain Limit): 0 ~ 15 (*only available in Auto / Iris priority / Brightness priority mode*)

WDR (Wide Dynamic Range): Off, 1 ~ 8

Shutter Priority: 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 (*only available in Manual and Shutter priority mode*)

Iris Priority: OFF, F11.0, F9.6, F8.0, F6.8, F5.6, F4.8, F4.0, F3.4, F2.8, F2.4, F2.0, F1.8 (*only available in Manual and Iris priority mode*)

Brightness: 0 ~ 23 (*only available in Brightness priority mode*)

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5.2.3.2 Color Settings

COLOR

=====

WB Mode	Auto
RG Tuning	0
BG Tuning	0
Saturation	100%
Hue	7
AWB Sensitivity	High

[↑ ↓] Select [← →] Change Value
[Menu] Back

WB Mode: Auto, 3000K, 3500K, 4000K, 4500K, 5000K, 5500K, 6000K, 6500K, 7000K, Manual, One Push

RG Tuning: -10 ~ 10 (only available in Manual mode)

BG Tuning: -10 ~ 10 (only available in Manual mode)

Red Gain: 0 ~ 255 (only available in Manual mode)

Blue Gain: 0 ~ 255 (only available in Manual mode)

Saturation: 60%, 70%, 80%, 90%, 100%, 110%, 120%, 130%, 140%, 150%, 160%, 170%, 180%, 190%, 200%

Hue: 0 ~ 14

AWB Sensitivity: high/middle/low

5.2.3.3 Image Settings

IMAGE

=====

Brightness	7
Contrast	7
Sharpness	6
Flip-H	OFF
Flip-V	OFF
B&W-Mode	Color
Gamma	Default
DZoom	OFF
DCI	Close

[↑ ↓] Select [← →] Change Value
[Menu] Back

Brightness: 0 ~ 14

Contrast: 0 ~ 14

Sharpness: 0 ~ 15

Flip-H: On/Off

Flip-V: On/Off

B&W Mode: Color, Black/White

Gamma: Default, 0.45, 0.50, 0.55, 0.63

DZoom (Digital Zoom Options): On/Off

DCI (Dynamic Contrast): Off, 1 ~ 8

5.2.3.4 Focus Settings

FOCUS

=====

Focus Mode	Auto
AF-Zone	Center
AF-Sensitivity	Low

[↑ ↓] Select [← →] Change Value
[Menu] Back

Focus Mode: Auto, Manual, One-push

AF-Zone: Up, Middle, Down, Overall

AF-Sensitivity: High, Middle, Low

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5.2.3.5 Noise Reduction Settings

```
NOISE REDUCTION
=====
NR-2D                      3
NR-3D                      3
Dynamic Hot Pixel          OFF
[ ↑ ↓ ] Select      [ ← → ] Change Value
[ Menu ] Back
```

2D Noise Reduction: Auto, Close, 1 ~ 7

3D Noise Reduction: Close, 1 ~ 8

Dynamic Hot Pixel: Close, 1 ~ 5

5.2.4 P/T/Z Settings

```
P/T/Z
=====
Speed by Zoom              ON
Zoom speed                 8
Image Freezing             OFF
Acc Curve                  Slow
[ ↑ ↓ ] Select      [ ← → ] Change Value
```

Speed by Zoom (Only effective for remote controller): On/ Off
When zooming in, the PT control speed via remote will become slow

Zoom Speed: Zoom speed for remote control, 1 ~ 8

Image Freezing: On/Off

Accelerating Curve: Fast/Slow

5.2.5 Video Format Settings

```
VIDEO FORMAT
=====
1080P60      1080P50
1080I60      1080I50
1080P30      1080P25
720P60       720P50
720P30       720P25
1080P59.94   1080I59.94
1080P29.97   720P59.94
720P29.97
[ ↑ ↓ ] Select      [ Menu ] Back
[ Home ] OK
```

Notes:

1. **S:** 1080P60 Downward Compatibility
M: 1080P30 Downward Compatibility

2. Exit the menu after modifying a parameter to save it
(otherwise the change will not be saved, and the parameter will default to its previous value when the camera is power cycled)

5.2.6 Version Information

```
VERSION
=====
MCU Version    2.0.0.15  2015-12-18
Camera Version 2.0.0.13  2015-12-18
AF Version     2.0.0.6   2015-12-11
Lens           5X(10X)
[ Menu ] Back
```

MCU Version: Display MCU version information

Camera Version: Display camera version information

AF Version: Display the focus version information

Lens: Display the lens zoom

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5.2.7 Restore Defaults

RESTORE DEFAULT

=====

Restore Default? NO
[↑ ↓] Select [← →] Change Value
[Menu] Back [Home] OK

Restore Default: Yes/No

After restoring defaults, the video format won't be restored

Note: The corresponding camera address will restore to 1 when all parameters or system parameters are restored. If the address of the remote control is not set to 1 (i.e. 2/3/4), the user should change the remote address to 1 (See §5.1 Keys Instruction) to return the camera to normal operation.

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6. Network Connection

You can connect your camera to a PC or notebook with a standard network cable then enter the management site via your Internet browser, or connect your camera to a router or DHCP server. See below for details.

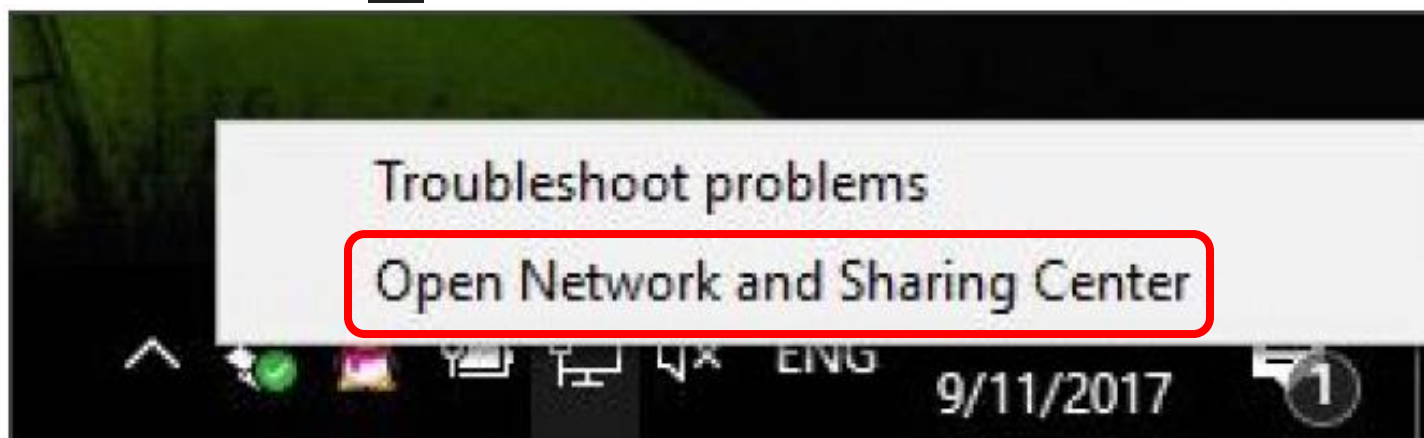


6.1 Direct Connection

To access the camera for the first time, connect the camera and computer via a network cable.

The computer must have access to the network segment the camera's IP address belongs to. The device will not be accessible without the segment. If the camera's IP address is 192.168.11.202 (default), then segment 11 must be added in the computer. Specific steps are below:

- Right-click on the  icon in the Taskbar, then click "Open Network and Sharing Center"



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- Click “Change adapter options,” then right-click on the computer’s network connection and select “Properties”

Advanced network settings



Change adapter options

View network adapters and change connection settings.



Disable

Status

Diagnose



Bridge Connections

Create Shortcut



Delete

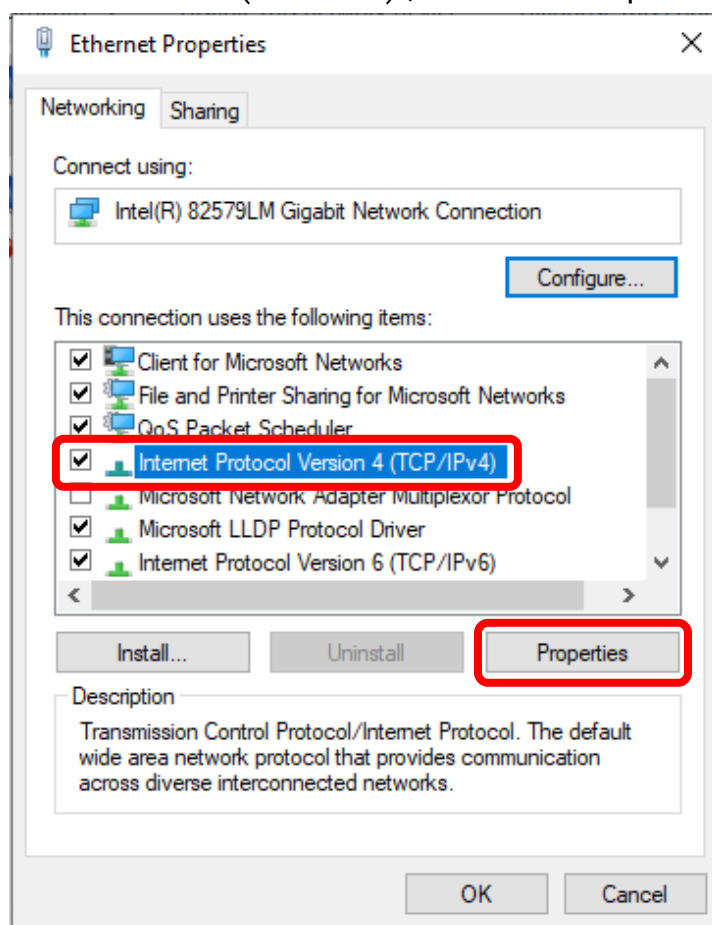


Rename



Properties

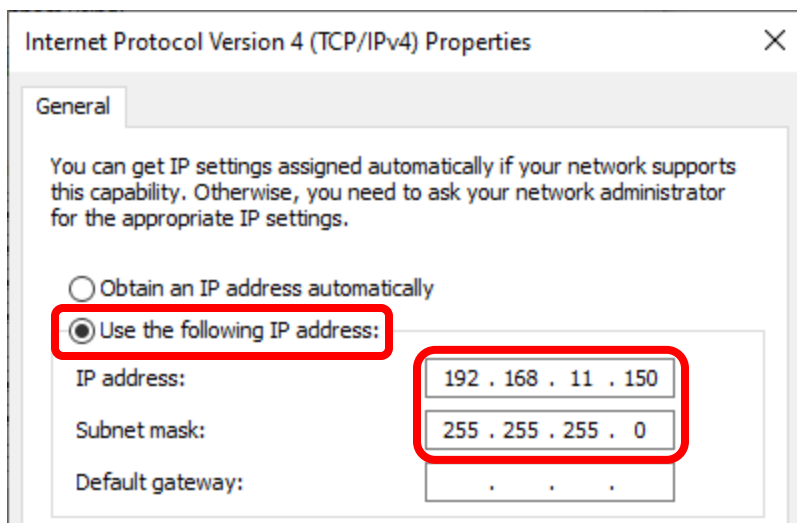
- Select “Internet Protocol Version 4 (TCP/IPv4)”, then click “Properties”



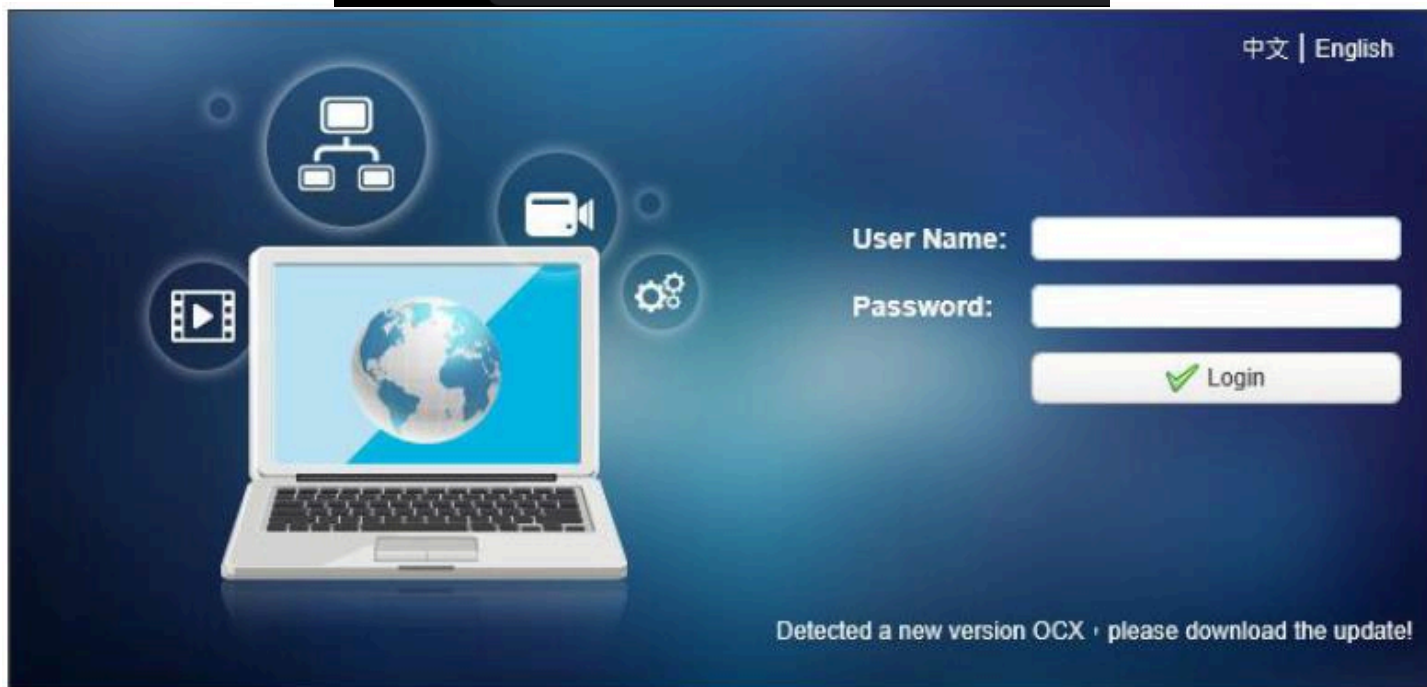
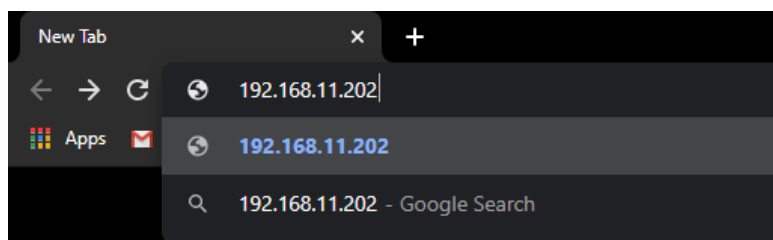
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- Select “Use the following IP address”, then type “192.168.11.1XX” (where “XX” can be any two numbers) into the “IP address” field, and “255.255.255.0” into the “Subnet mask” field.



- Enter the static IP of your camera (Default: 192.168.11.202) in your browser's search bar. If this is your first time logging in, the management login page will prompt the user for an account ID/password (Default: admin/admin).



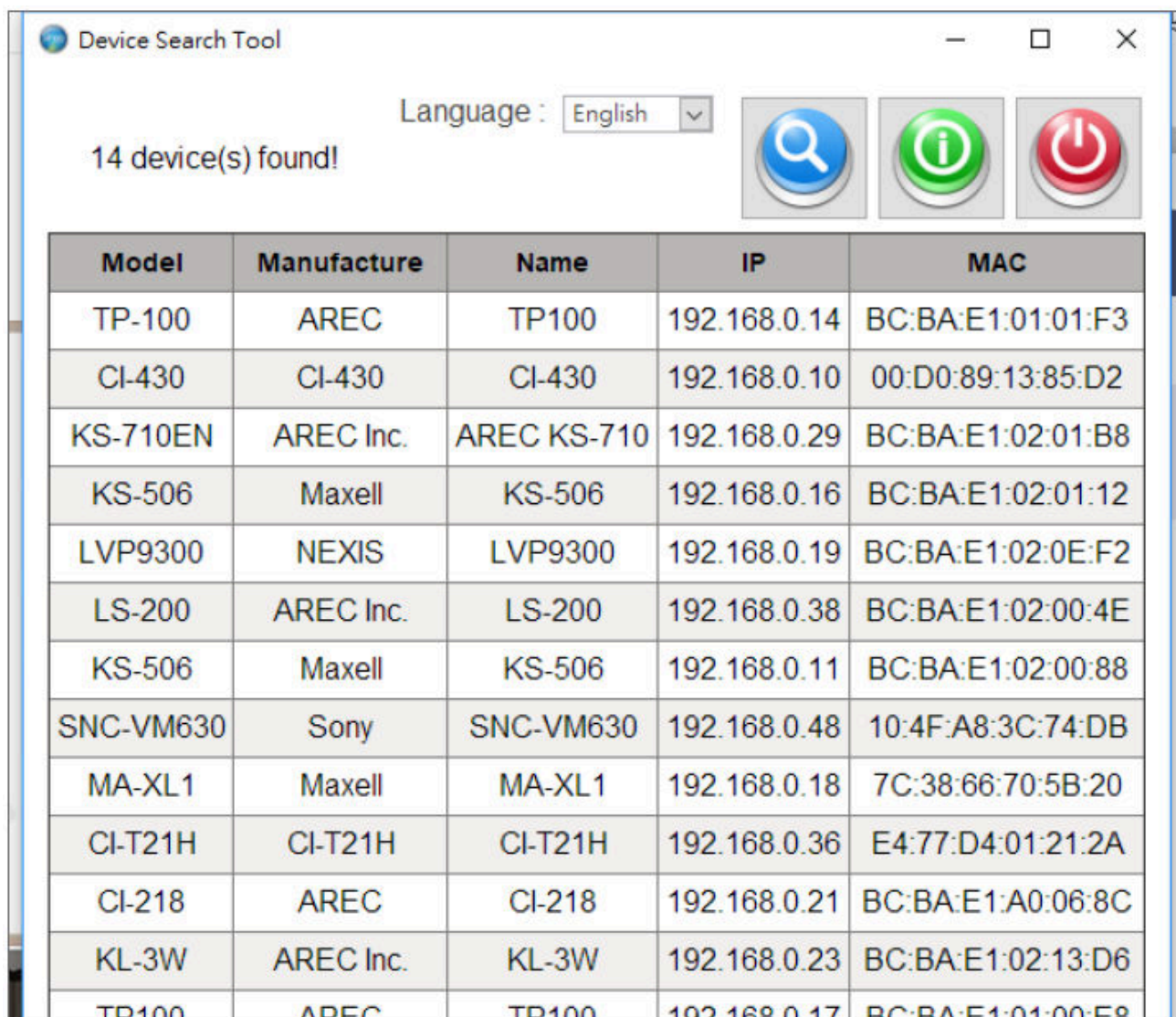
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6.2 Internet Connection Mode

IP is assigned by a router or DHCP server. To log in to the administration site, connect the camera and your PC / Notebook to a router or a DHCP server, then follow the below steps:

- Run the "Device Search Tool" utility, and click [] button.
- The tool should find the CI-T21H/CI-T21S and show detailed information. Double click on the found camera.
- (c) An access window will pop-up and ask for username and password. (Enter account ID and password admin/admin for the first time.)



The screenshot shows the 'Device Search Tool' window. At the top, it says 'Language : English' and '14 device(s) found!'. Below this is a table with 5 columns: Model, Manufacture, Name, IP, and MAC. The table lists 14 devices. The last row is partially obscured by a blue selection bar.

Model	Manufacture	Name	IP	MAC
TP-100	AREC	TP100	192.168.0.14	BC:BA:E1:01:01:F3
CI-430	CI-430	CI-430	192.168.0.10	00:D0:89:13:85:D2
KS-710EN	AREC Inc.	AREC KS-710	192.168.0.29	BC:BA:E1:02:01:B8
KS-506	Maxell	KS-506	192.168.0.16	BC:BA:E1:02:01:12
LVP9300	NEXIS	LVP9300	192.168.0.19	BC:BA:E1:02:0E:F2
LS-200	AREC Inc.	LS-200	192.168.0.38	BC:BA:E1:02:00:4E
KS-506	Maxell	KS-506	192.168.0.11	BC:BA:E1:02:00:88
SNC-VM630	Sony	SNC-VM630	192.168.0.48	10:4F:A8:3C:74:DB
MA-XL1	Maxell	MA-XL1	192.168.0.18	7C:38:66:70:5B:20
CI-T21H	CI-T21H	CI-T21H	192.168.0.36	E4:77:D4:01:21:2A
CI-218	AREC	CI-218	192.168.0.21	BC:BA:E1:A0:06:8C
KL-3W	AREC Inc.	KL-3W	192.168.0.23	BC:BA:E1:02:13:D6
TP100	AREC	TP100	192.168.0.17	BC:BA:E1:01:00:E8

Note: To log in to the administration site by DHCP, please follow the instructions in §6.1 Direct Connection to log in first and change the relevant settings. See §7.3.4.1 Network Configuration for more details.

Note: In order to prevent low video quality & unstable signal transmission, do not put the power and network cables in places where they can be easily touched.

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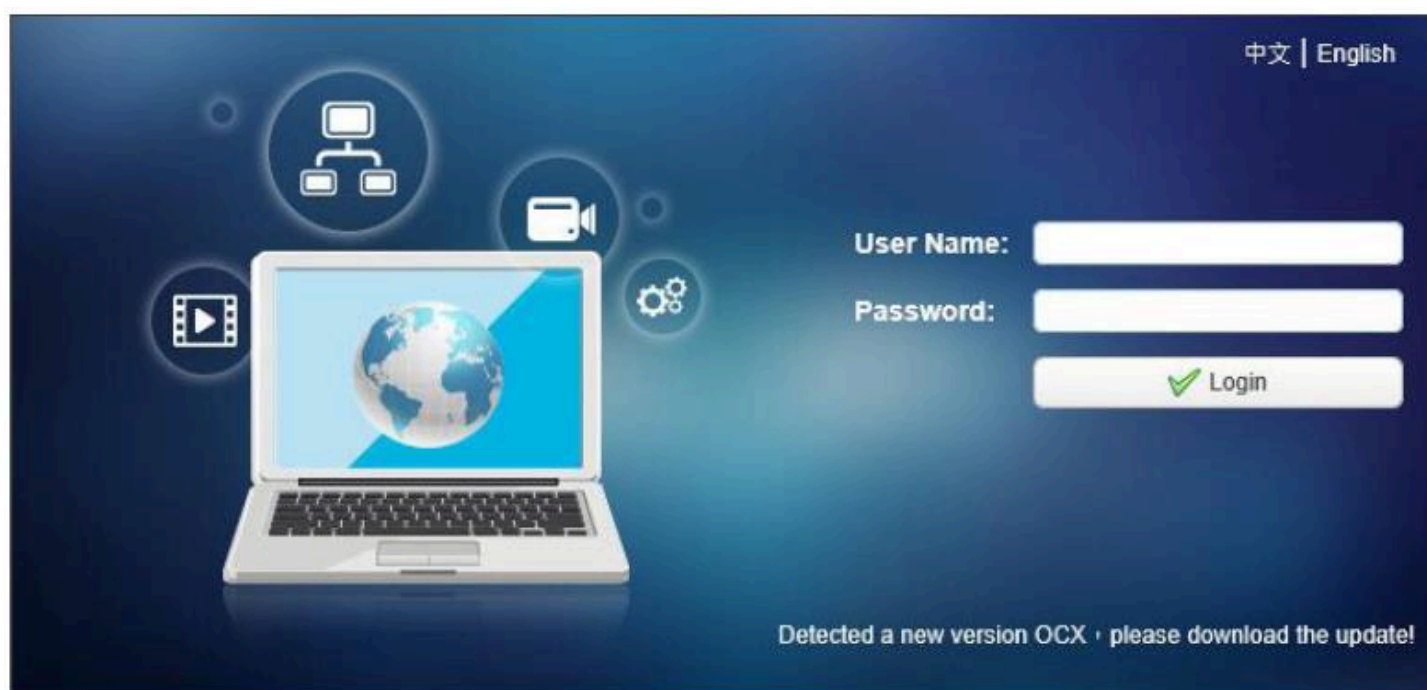
7. Overview of the Web Interface

Web Client: Input the IP address of the camera (Default: 192.168.11.202) in the address field of your browser and click Enter to enter into the Web Client login page.

Note: Web access supports all modern browsers

Download / Install Plug in: When first using a web browser to access the web conferencing camera, the login page will show "Playback plug-in is not installed, please download and install!". Click on this message to download & install "MRWebXinstall.exe" according to the information prompts.

Language selection: In the login interface, the upper right corner shows "Chinese | English"; click to select the web interface language.



Input the username and password after the plug in is installed. You can choose to log in as an administrator or login in as normal user:

1. Log in as administrator

The default username and password are both "admin"

After successfully logging in, enter the Administrator webpages. Administrators can access the preview, playback, configuration, and logout pages.

2. Log in as a default user

The default username and password are both "user1" or "user2"

After logging in successfully, enter the Administrator webpages. Users can access preview, playback, and logout pages. (**Note:** Normal Users do not have permission to access the configuration page)

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Menu	Description
Preview	Control PTZ camera's pan/tilt, zoom, focus, snapshot, audio, fullscreen, local recording, preset settings, etc.
Playback	Playback video and picture files that are stored in a local PC
Configuration	Includes local configuration, audio configuration, video configuration, network configuration, system configuration, etc. Note: Normal Users do not have access to the configuration menu
Logout	Log out of the management interface

7.1 Preview Page

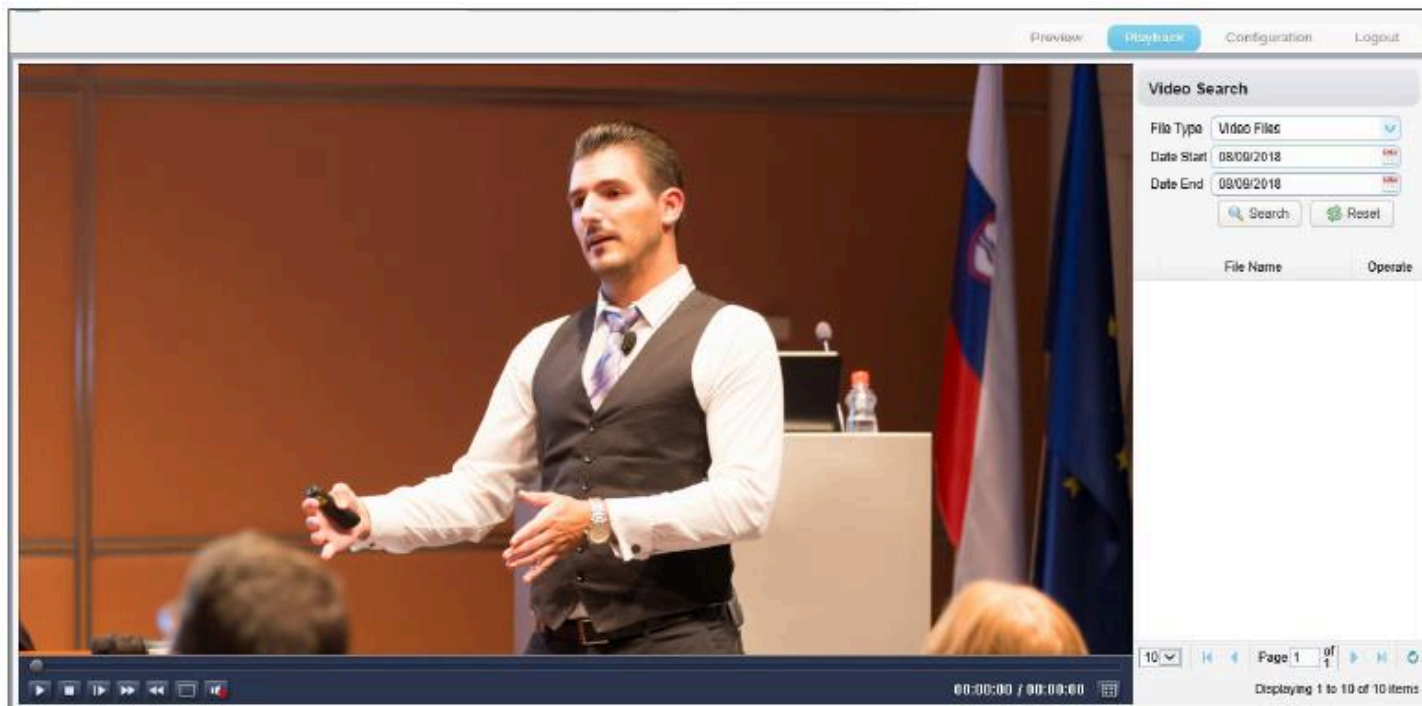
After logging in successfully, enter the Administrator webpages. By default, the page shows the Preview interface. This interface allows users to control the PTZ camera's pan/tilt, zoom, focus, snapshot, audio, fullscreen, local recording, SD card recording, preset settings, etc.



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7.2 Playback Page



1. Playback a recorded video file

First record and save the file when previewing. Click "Playback" to enter the video/picture file playback page.

- File Type:** Select "Video Files"
- Date Start/End:** Set date range of the search
- Search:** Search local files according to specified file type & date range
- Play:** Playback the selected video file

2. Playback a recorded picture file

First snapshot and save the file when previewing. Click "Playback" to enter the video/picture file playback page.

- File Type:** Select "Picture Files"
- Date Start/End:** Set date range of the search
- Search:** Search local files according to specified file type & date range
- Play:** Playback the selected picture file

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7.3 Configuration Page

Click "Configuration" to enter into the Device Parameter Settings page.

Options: Local configuration, Audio configuration, Video configuration, Network configuration, and System configuration.

Menu	Description
Local Configuration	Video stream preview mode, video packaging time, video file packaging type, etc.
Audio Configuration	Audio compression format, sampling frequency, sampling precision, compression code rate, etc.
Video Configuration	Video encoding, video parameters, character overlapping, character size, video output, etc.
Network Configuration	Basic parameters, Ethernet, DNS, Wireless network, etc.
System Configuration	Equipment properties, system time, user management, version update, Reset, Reboot, etc.

7.3.1 Local Configuration

The screenshot shows the 'Configuration' page of the Auto-Tracking Camera web interface. At the top, there are tabs for 'Preview', 'Playback', 'Configuration' (which is active), and 'Logout'. On the left side, there is a 'Configurations' menu with five items: 'Local Configure' (highlighted with a yellow background), 'Audio Configure', 'Video Configure', 'NetWork Configure', and 'System Configure'. Each item has a green gear icon. The main area is titled 'Local Configure' and contains four configuration items: 'Video Stream Preview Mode' with a dropdown menu showing 'Real Time Generally(2)', 'Video Packaging Time(Minutes)' with a text input field containing '10', 'Video File Packaging Type' with a dropdown menu showing 'MP4', and 'Videos/Pictures Storage Directory' with a text input field containing 'D:\MyIPCam\'. Below these fields is a 'Save' button with a blue floppy disk icon.

Video Stream Preview Mode: User can choose real-time priority or fluency priority: The delay will be small when under real-time priority mode, and fluency will be good when under fluency priority mode. [Real-time best (1), real-time normal (2, Default), fluency normal (3), fluency good (4), and fluency best (5)].

Video Packaging Time (Minutes): Set recording video packaging time (1 ~ 120; Default: 10).

Video File Packaging Type: Set recording video file packaging type (MP4, TS; Default: MP4)

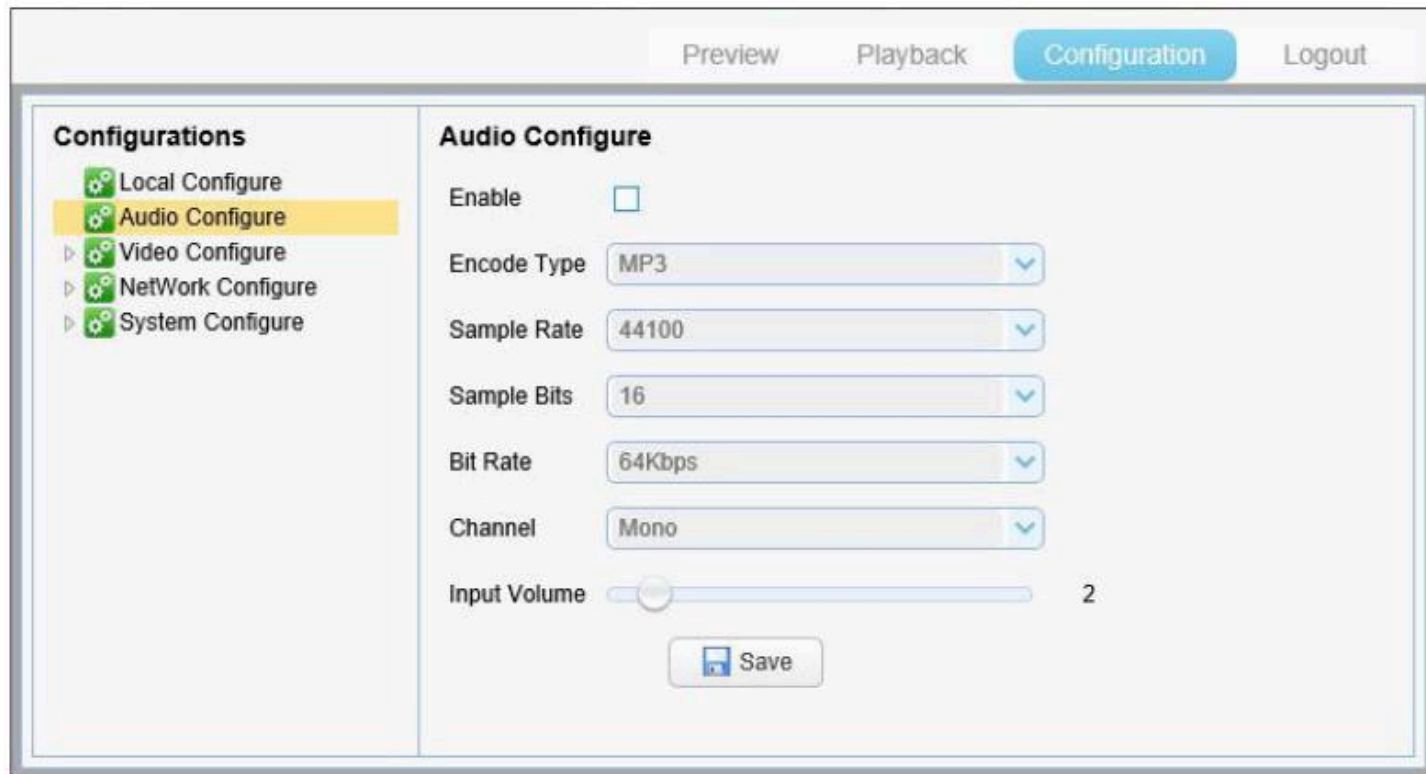
Videos/Pictures Storage Directory: Set videos/pictures storage directory (default D:\MyIPCam\).

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Click the Save button to make settings effective.

7.3.2 Audio Configuration



The screenshot shows a web interface for configuring an Auto-Tracking Camera. At the top, there are four tabs: 'Preview', 'Playback', 'Configuration' (which is active and highlighted in blue), and 'Logout'. On the left side, under the heading 'Configurations', there is a list of configuration options: 'Local Configure', 'Audio Configure' (which is highlighted in yellow), 'Video Configure', 'NetWork Configure', and 'System Configure'. The main area is titled 'Audio Configure' and contains the following settings:

- Enable:** A checkbox that is currently unchecked.
- Encode Type:** A dropdown menu set to 'MP3'.
- Sample Rate:** A dropdown menu set to '44100'.
- Sample Bits:** A dropdown menu set to '16'.
- Bit Rate:** A dropdown menu set to '64Kbps'.
- Channel:** A dropdown menu set to 'Mono'.
- Input Volume:** A slider control with a circular knob positioned at approximately one-third of the range. The number '2' is displayed to the right of the slider.

At the bottom of the configuration area, there is a 'Save' button with a floppy disk icon.

Switch: Choose to enable the audio or not.

Encode Type: Set audio compression format (MP3, AA; Default: MP3)

Sample Rate: Set sampling frequency (Default: 44100).

Sample Bit: Set sampling precision (default 16 bits).

Bit rate: Set audio compressing bit rate (32kbps, 48 kbps, 64 kbps, 96 kbps, 128; Default: 64)

Click "Save" button and the settings become effective. When noting "Open audio or change another parameters need to restart.", restart the device to make settings effective.

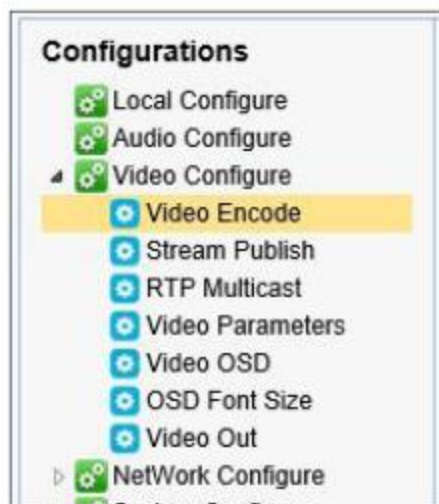
Note: Device will reboot automatically after changing Encode Type or Sample Rate settings

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7.3.3 Video Configuration

Options: Video Encode, Stream Publish, RTP Multicast, Video Parameters, Video OSD, OSD Font Size and Video Out.



Menu	Description
Video Encode	Set the video output format of the Main stream and Sub-stream
Stream Publish	Turn the Main stream & Sub-stream on or off, and make changes to relevant settings
RTP Multicast	Turn off the RTP Multicast of the Main stream or Sub-stream, and make changes to relevant settings
Video Parameters	Adjust the focus, exposure, color, image, noise reduction, style, and other parameters
Video OSD	Select whether to display the date & time and title, and adjust the font color & position
OSD Font Size	Modify the Master / Slave stream font size
Video Out	Select the video output format

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7.3.3.1 Video Encode

Stream	Main Stream	Sub Stream
Compressed Format	H.264	H.264
Profile	HP	HP
Image Size	1920*1080	640*360
Rate Control	CBR	CBR
Image Quality	Best	Best
Bit Rate(Kb/S)	4096	800
Frame Rate(F/S)	30	30
I Frame Interval	75	75
I Frame Min QP	10	10
Stream Name	h264	h264_2

1. **Code stream:** It will call different code stream when setting different video output format. (Main stream and Sub stream)
2. **Compressed Format:** Set video compressing format (H.264, H.26; Default: H264)
3. **Profile:** Set H.264 / H.265 encode format (H.264 encode format default HP, H.265 encode format default BP, BP, MP, HP optional).
4. **Image Size:** Set resolution (Main stream: 1920*1080, 1280*720, 640*480; Default:1920*1080. Sub stream: 640*360, 320*240, 640*480, 320*180, 1280*720; Default: 640*360)
5. **Rate control:** Set rate control mode (CBR, fixed rate; Default: CBR)
6. **Image quality:** Set image quality (Best, better, good, bad, worse, worst; Default: Best)
7. **Bit Rate (Kbps):** Set the video bit rate (Main stream: 64-40960 Kbp, Default: 4096; Sub stream: 64-20480 Kbps, Default: 800).
8. **Frame Rate (FPS):** Set the video frame rate (30F/S, 5-30F/S; Default: 30F/S)
9. **I-Frame Interval:** Set the key frame interval. (1 ~ 150F; Default: 75F)
10. **I-Frame Min QP:** Set the key frame min QP. (10 ~ 51; Default: 10)
11. **Stream Name:** Set the stream name (Main stream default h264, Sub stream default h264_2)

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Click on the "Save" button to save and apply changes to Video Encode settings

Note: Camera will reboot automatically after changing Compressed Format, Profile, Image Size, or Rate Control settings

7.3.3.2 Stream Publish

Stream	Main Stream	Sub Stream
Enable	☐	☐
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		
Password		

Save

1. **Enable:** Turn the Main & Sub-streams on or off
2. **Protocol Type:** Both Main & Sub-streams use the RTMP protocol
3. **Host Address:** Server IP addresses
4. **Host Port:** Server port number (0 ~ 65535; Default: 1935)
5. **Stream Name:** Set the stream names (live/av0, live/av1)
6. **User Name:** Set the username
7. **Password:** Set the password

Click the "Save" button to put changes into effect. Page will display "Save successful" message.

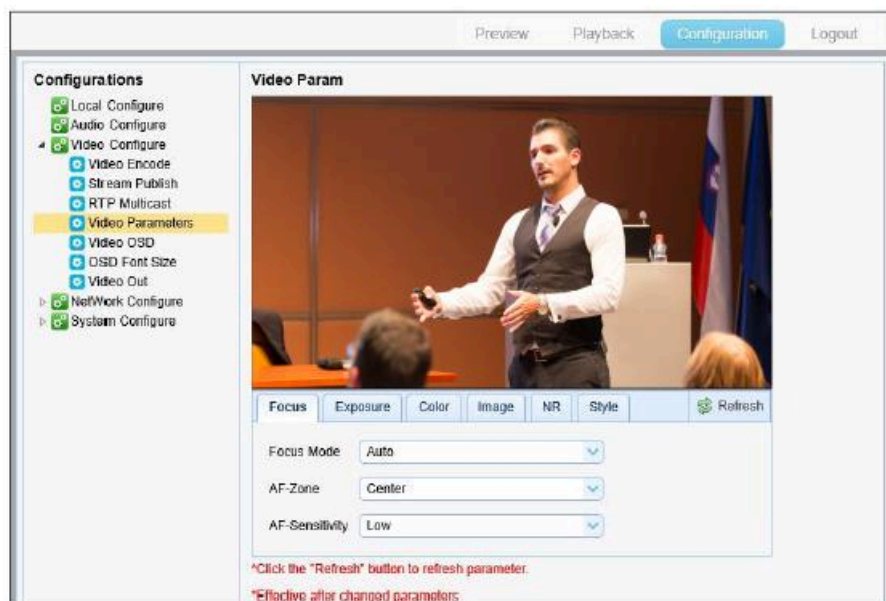
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7.3.3.3 Video Parameters

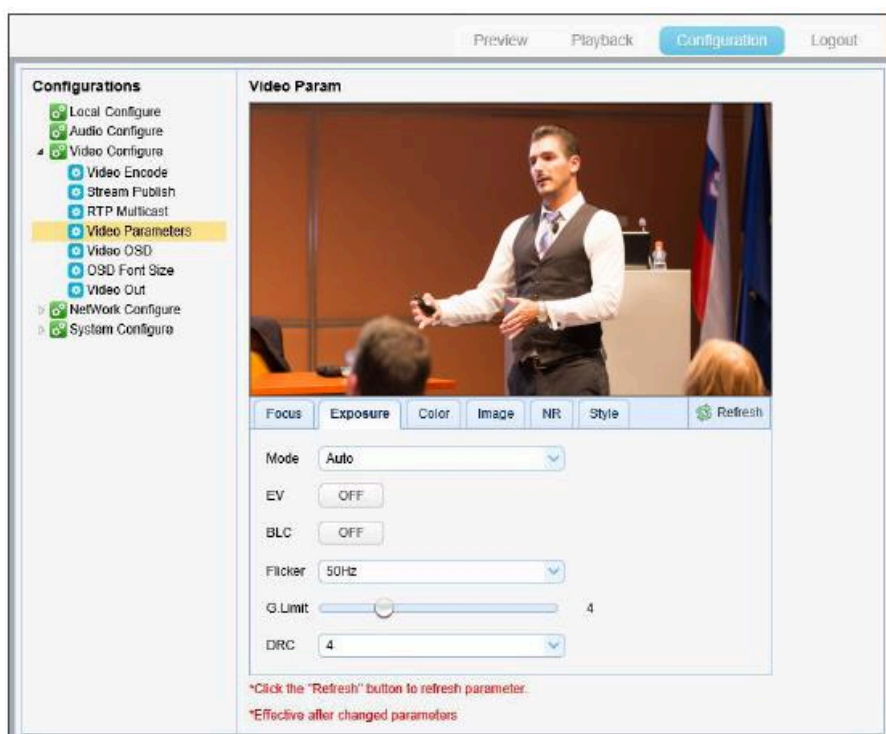
The Video Parameters page provides settings for Focus, Exposure, Color, Image, NR and Style

Focus: Focus Mode, Focus Range, and Focus Sensitivity



1. **Focus Mode:** Set the focus mode (Auto/Manual; Default: Auto)
2. **AF-Zone:** Set the focus range (Center, Top, Bottom, All; Default: Center)
3. **AF-Sensitivity:** Set the focus sensitivity (Low, Middle, High; Default: Low)

Exposure

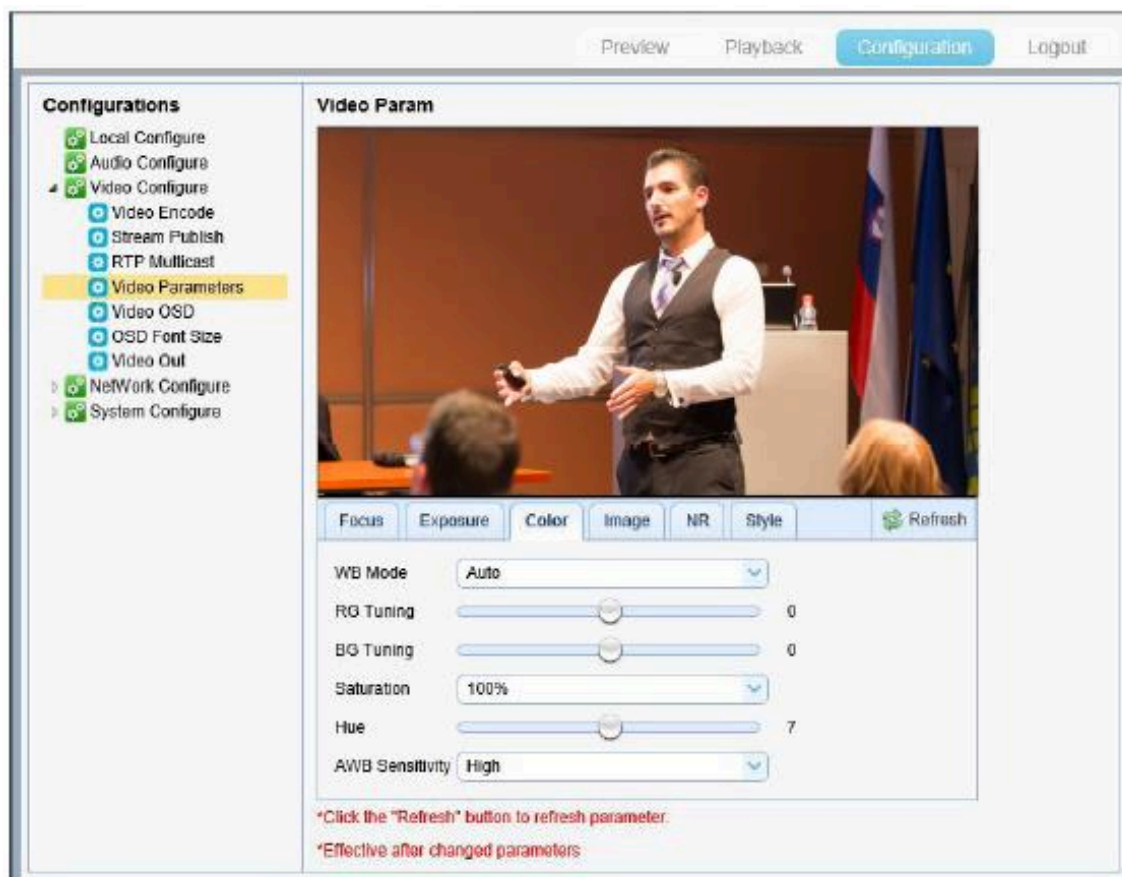


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1. **Mode:** Set the exposure mode (Automatic, Manual, Shutter Priority, Aperture Priority, Brightness Priority; Default: Automatic)
2. **Exposure Value (EV):** Exposure compensation setting is available when in Automatic exposure mode (Default: Off)
3. **EV Level:** Set the exposure compensation value (-7 ~ 7; Default: 0)
4. **Back-Light Compensation (BLC):** Turn back-light compensation on or off (Default: Off)
5. **Flicker:** Select anti-flicker mode, available in Automatic or Aperture/Brightness Priority modes (50Hz, Closed, 60Hz; Default: 50Hz)
6. **Gain (G.) Limit:** Set gain limits, available in Aperture/Brightness Priority modes (0 ~ 15; Default: 4)
7. **Dynamic Range (DR):** Set the dynamic range (Off, 1 ~ 8; Default: 4)
8. **Shutter Speed:** Available in Manual or Shutter Priority modes (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; Default: 1/100)
9. **Aperture Value:** Set the aperture value, available in Manual or Aperture Priority modes (Closed, F11.0, F9.6, F8.0, F6.8, F5.6, F4.8, F4.0, F3.4, F2.8, F2.4, F2.0, F1.8; Default: F1.8)
10. **Brightness:** Set the brightness value, available in Brightness Priority mode (0 ~ 23; Default: 11)

Color

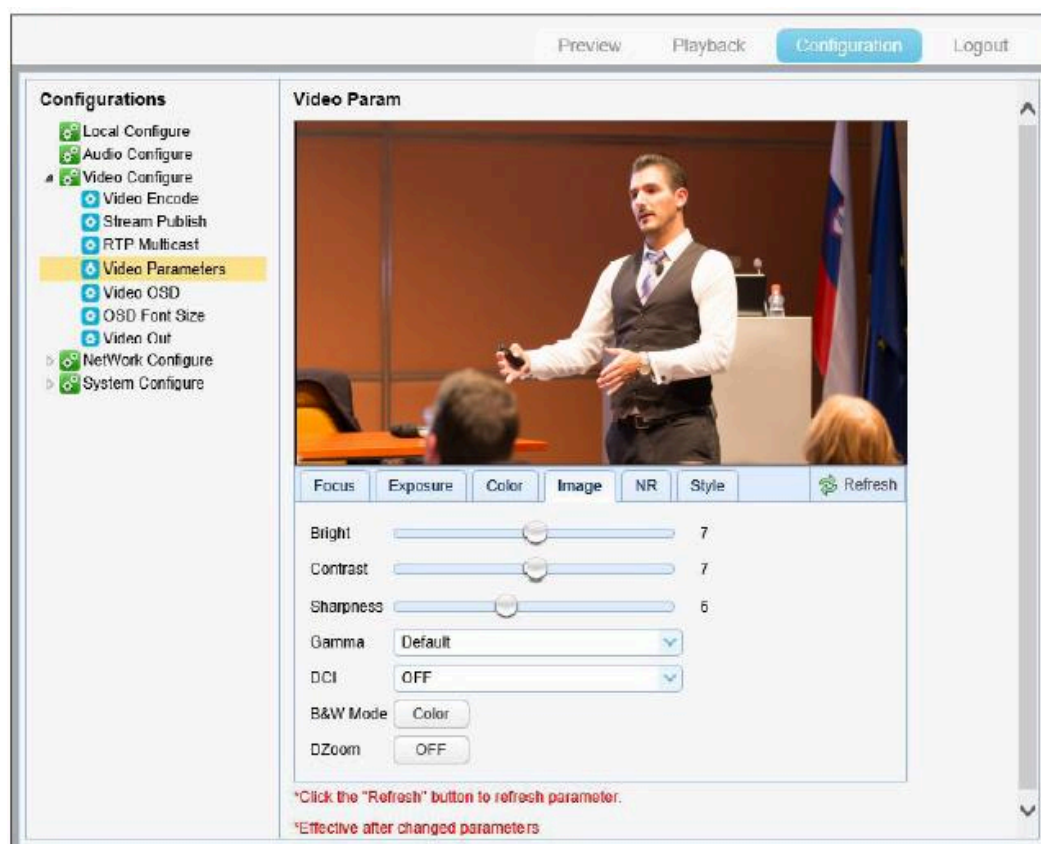


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1. **White Balance (WB) Mode:** Set the white balance mode (Automatic, 3000K, 3500K, 4000K, 4500K, 5000K, 5500K, 6000K, 6500K, 7000K, Manual, One-push; Default: Automatic)
2. **Red Gain (RG) Tuning:** Set red gain fine-tuning, available in Manual mode (-10 ~ 10; Default: 0)
3. **Blue Gain (BG) Tuning:** Set blue gain fine-tuning, available in Manual mode (-10 ~ 10; Default: 0)
4. **Saturation:** Set the saturation (60%, 70%, 80%, 90%, 100%, 110%, 120%, 130%, 140%, 150%, 160%, 170%, 180%, 190%, 200%; Default: 100%)
5. **Hue:** Set the chroma (0 ~ 14; Default: 7)
6. **Auto White Balance (AWB) Sensitivity:** Set sensitivity of auto white balance (High, Medium, Low; Default: High)
7. **Red Gain:** Set red gain, available in Manual mode (0 ~ 255; Default: 84)
8. **Blue Gain:** Set blue gain, available in Manual mode (0 ~ 255; Default: 73)

Image



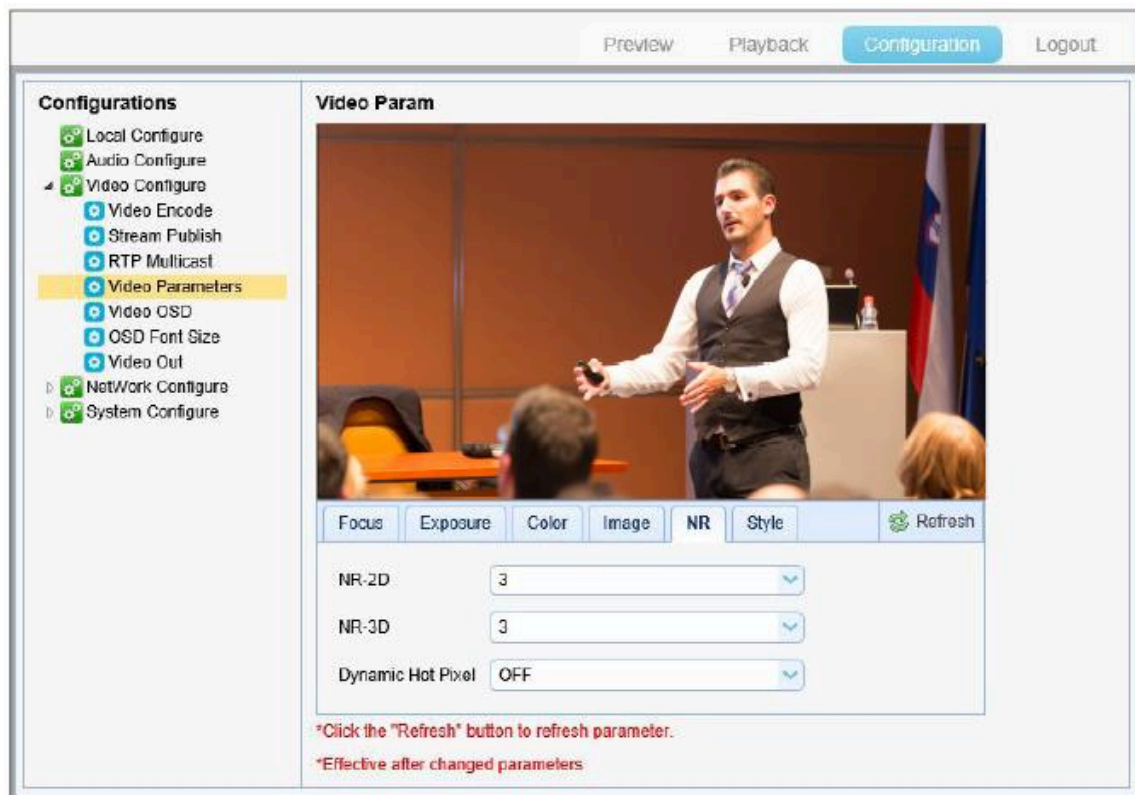
1. **Bright:** Set the brightness (0 ~ 14; Default: 3)
2. **Contrast:** Set the contrast (0 ~ 14; Default: 8)
3. **Sharpness:** Set the sharpness value (0 ~ 15; Default: 6)
4. **Gamma:** Set the gamma value (0.45, 0.50, 0.52, 0.55; Default: 0.45)
5. **Dynamic Contrast (DCI):** Set the dynamic contrast (Off, 1 ~ 8; Default: Off)

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6. **Black-and-White (B&W):** Set black-and-white mode (Color/B&W; Default: Color)
7. **Digital Zoom (DZoom):** Enable/disable digital zoom

Noise Reduction (NR)



1. **2-D Noise Reduction (NR-2D):** Set 2D noise reduction level (Off, Auto, 1 ~ 7; Default: 3)
2. **3-D Noise Reduction (NR-3D):** Set 3D noise reduction level (Off, 1 ~ 8; Default: 5)
3. **Dynamic Hot Pixel:** Set dynamic dead pixel correction level (Off, 1 ~ 8; Default: Off)

Style

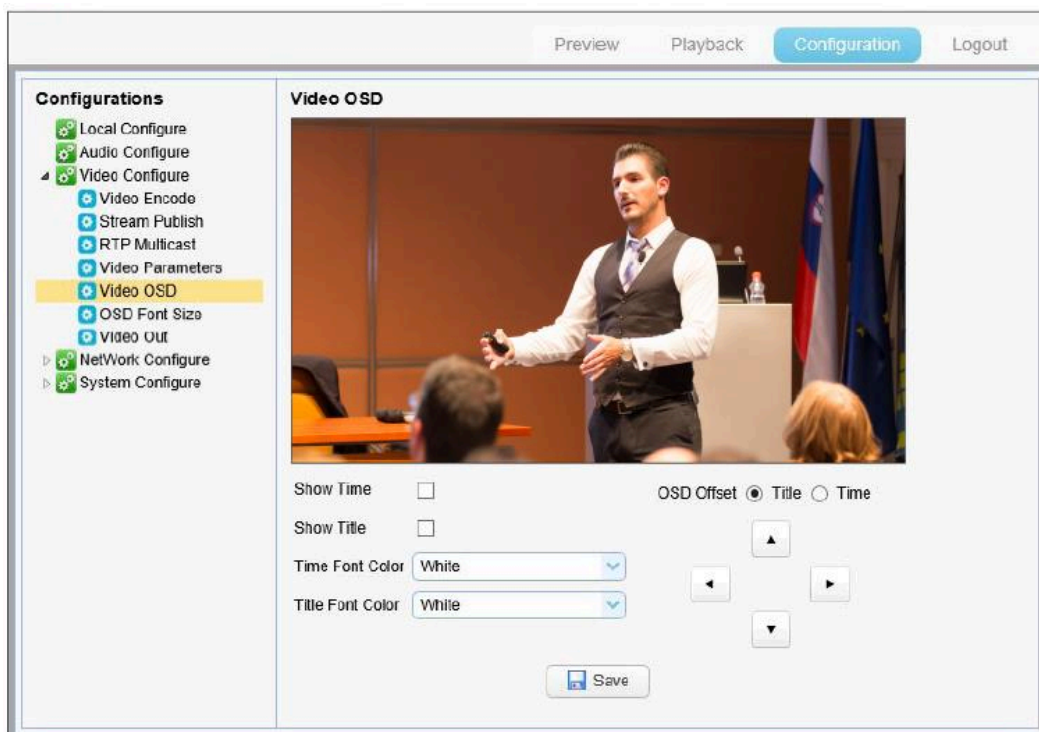
Select display style (Normal, Clarity, Bright, Soft; Default: Normal)

Note: Click "Refresh" to save & apply changes to camera Video Parameter settings

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7.3.3.4 Video OSD



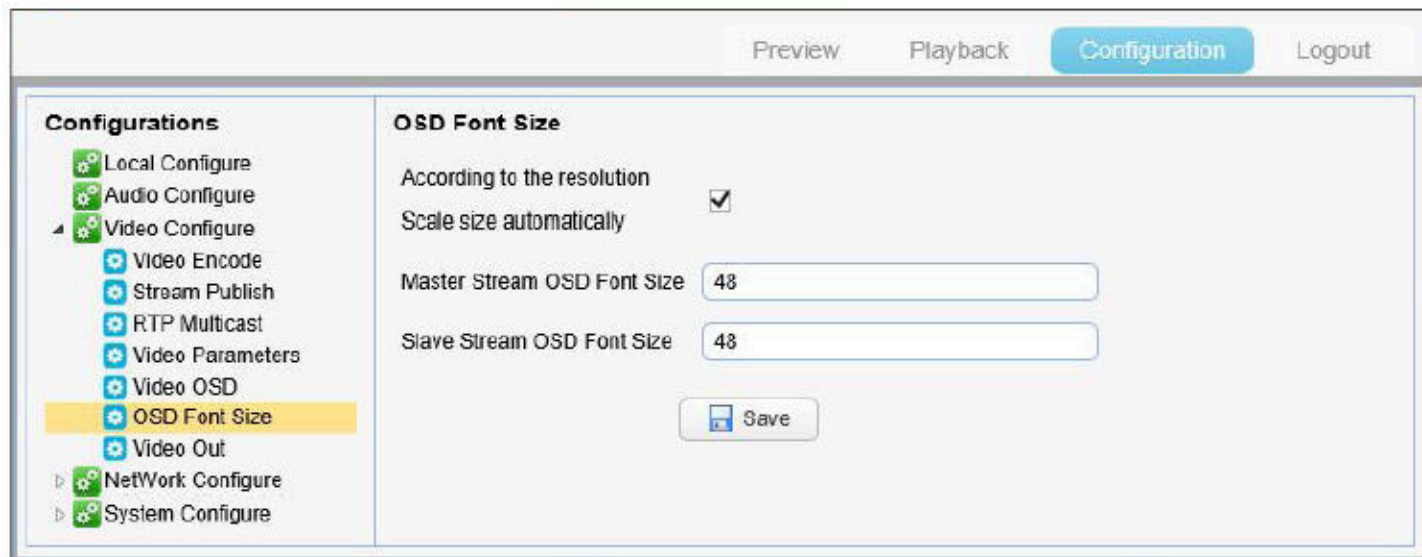
1. **Show Time:** Set whether to display the date & time (Default: On)
2. **Show Title:** Set whether to display the title (Default: On)
3. **Time Font Color:** Set the time and date font color (Black, Blue, Red, White, Yellow; Default: White)
4. **Title Font Color:** Set the title font color (Black, Blue, Red, White, Yellow; Default: White)
5. **OSD Offset:** Set the date/time and title display position by clicking the “Up”, “Down”, “Left”, and “Right” buttons to move the corresponding OSD item position
6. **Title Content:** Set the title (Default: CW-210)
7. **Time Content:** Set the date/time format (Default: YYYY/MM/DD HH:MM:SS)

Click the “Save” button to save and apply changes to the Video OSD settings (“Save successful” message will be displayed)

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7. 3.3.5 OSD Font Size

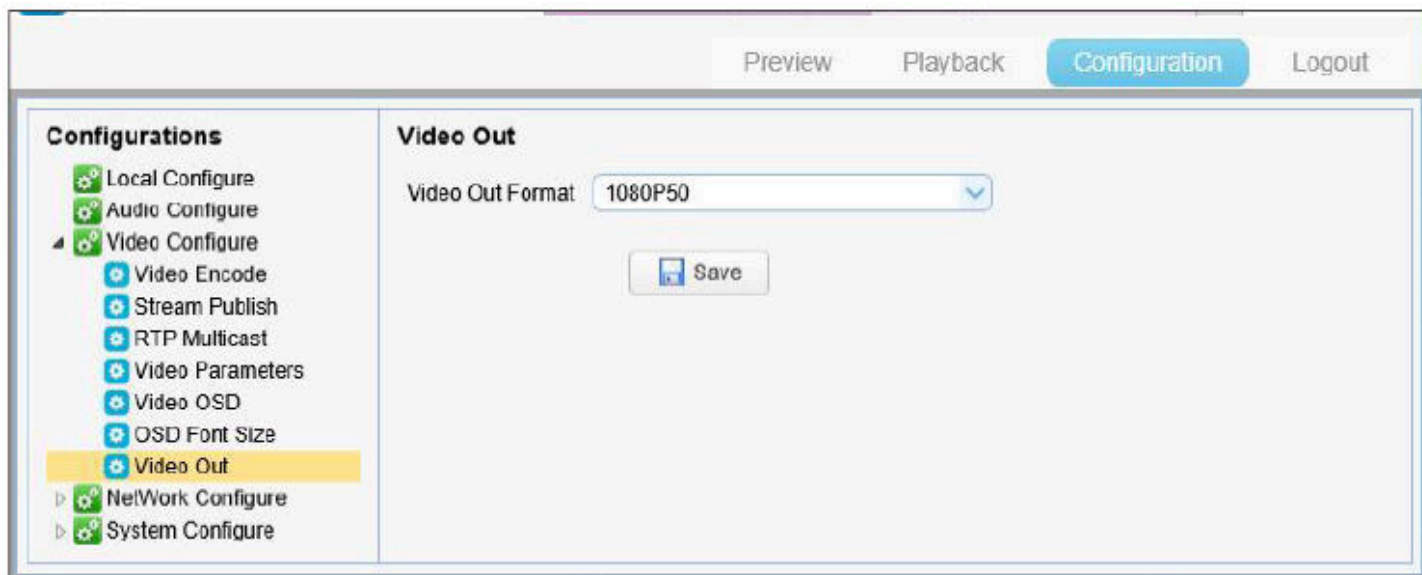


The screenshot shows a web-based configuration interface for an Auto-Tracking Camera. At the top, there are four tabs: "Preview", "Playback", "Configuration" (which is active and highlighted in blue), and "Logout". On the left side, there is a "Configurations" menu with a tree view. The "Video Configure" section is expanded, and "OSD Font Size" is selected and highlighted in yellow. The main area on the right is titled "OSD Font Size". It contains the following settings: "According to the resolution" with a checked checkbox, "Scale size automatically" with a checked checkbox, "Master Stream OSD Font Size" with a text input field containing "48", and "Slave Stream OSD Font Size" with a text input field containing "48". At the bottom right of the main area is a "Save" button with a floppy disk icon.

1. **Master Stream OSD Font Size:** Set the character size of the display (8 ~ 200; Default: 48)
2. **Slave Stream OSD Font Size:** Set the character size of the display (8 ~ 200; Default: 48)

Click the “Save” button to save and apply changes to the OSD Font Size. Device will restart automatically.

7.3.3.6 Video Out



The screenshot shows the same web-based configuration interface as the previous one, but now the "Video Out" option in the "Configurations" menu is selected and highlighted in yellow. The main area on the right is titled "Video Out". It contains a single setting: "Video Out Format" with a dropdown menu showing "1080P50". At the bottom right of the main area is a "Save" button with a floppy disk icon.

Video Out Format: Set the video output format (1080P50, 1080P25, 1080I60, 1080I50, 720P60, 720P50; Default: 1080P50)

Click the “Save” button to save and apply changes to the video output format

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7.3.4 Network Configuration

Configurations

- Local Configure
- Audio Configure
- Video Configure
- NetWork Configure
 - Network Port
 - Ethernet
 - DNS
 - GB28181
- System Configure

Menu	Description
Network Port	Set the network port, including data, web, onvif, etc.
Ethernet	Set the camera's IP address to use DHCP (obtain an IP automatically) or a static IP
DNS	Set the DNS parameters
GB28181	Enable/disable GB28181, and configure related settings

7.3.4.1 Network Port

Preview

Playback

Configuration

Logout

Configurations

- Local Configure
- Audio Configure
- Video Configure
- NetWork Configure
 - Network Port
 - Ethernet
 - DNS
 - GB28181
- System Configure

Network Port

Port Data

Port Web

Port Onvif

Port Soap

Port RTMP

Port Rtsp

Port Visca

 Save

- Port Data:** Set the data port (0 ~ 65535; Default: 3000)
- Port Web:** Set the web port (0 ~ 65535; Default: 80)
- Port ONVIF:** Set the ONVIF port (0 ~ 65535; Default: 2000)

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4. **Port Soap:** Set the Soap port (0 ~ 65535; Default: 1936)
5. **Port RTMP:** Set the RTMP port (0 ~ 65535; Default: 1935)
6. **Port RTSP:** Set the RTSP port (0 ~ 65535; Default: 554)
7. **Port VISCA:** Set the VISCA port (0 ~ 65535; Default: Default: 1259)

Click the “Save” button to save and apply changes to the Network Port settings. The camera will restart automatically after changes to the Data, Web, ONVIF, RTSP, or VISCA ports.

To access RTMP stream, got to following address:

rtmp://[Device IP Address]:[RTMP port]/live/[Stream Name]

[Device IP Address} = IP address of camera (e.g. 192.168.11.202)

[RTMP port] = Port assigned in Port RTMP (Default: 1935)

[Stream Name] = “av0” for Main Stream, “av1” for Sub-stream

e.g. rtmp:// 192.168.11.202:1935/live/av0

To access RTSP stream, go to following address:

rtsp://[Device IP Address]:[RTSP port]/live/[Stream Name]

[Device IP Address} = IP address of camera (e.g. 192.168.11.202)

[RTSP port] = Port assigned in Port RTSP (Default: 554)

[Stream Name] = “av0” for Main stream, “av1” for Sub-stream

e.g. rtsp:// 192.168.11.202:554/live/av0

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7.3.4.2 Ethernet Parameters

Preview Playback Configuration Logout

Configurations

- Local Configure
- Audio Configure
- Video Configure
- NetWork Configure
 - Network Port
 - Ethernet**
 - DNS
 - GB28181
- System Configure

Ethernet

DHCP ☐

IP Address 192.168.11.202

Subnet Mask 255.255.255.0

Default Gateway 192.168.11.254

MAC Address E4:77:D4:01:18:B8

Save

1. **DHCP:** Set whether to obtain an IP address automatically (Default: Off)
2. **IP Address:** Set the static IP address (Default: 192.168.11.202)
3. **Subnet Mask:** Set the subnet mask (Default: 255.255.5.0)
4. **Default Gateway:** Set the default gateway (Default: 192.168.11.254)
5. **MAC Address:** Displays the physical (MAC) address of the camera (cannot be modified)

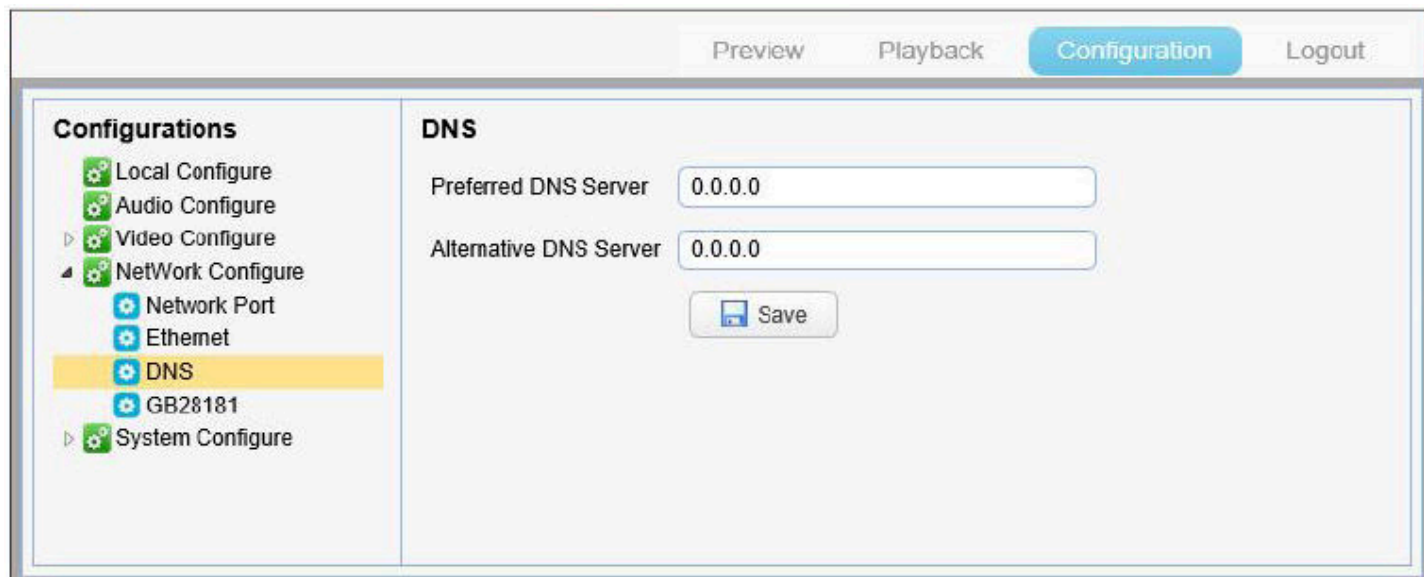
Click the “Save” button to save an apply changes to the Ethernet Parameters settings

Note: When using static IP addresses, check that the desired IP address is available before assigning it. Failing to do so can result in IP conflicts with another device, preventing either from being accessible via the network.

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7.3.4.3 DNS



The screenshot shows a web-based configuration interface for an Auto-Tracking Camera. At the top, there are four tabs: "Preview", "Playback", "Configuration" (which is highlighted in blue), and "Logout". On the left side, there is a "Configurations" menu with a tree structure. The items are: "Local Configure", "Audio Configure", "Video Configure", "NetWork Configure" (which is expanded), "Network Port", "Ethernet", "DNS" (which is highlighted in yellow), "GB28181", and "System Configure". The main area on the right is titled "DNS" and contains two text input fields: "Preferred DNS Server" and "Alternative DNS Server", both of which currently contain the value "0.0.0.0". Below these fields is a "Save" button with a floppy disk icon.

1. **Preferred DNS Server:** Set the preferred DNS server (Default: 0.0.0.0)
2. **Alternative DNS Server:** Set the alternative DNS server (Default: 0.0.0.0)

Click the "Save" button to save and apply changes to the DNS settings

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7.3.4.4 GB28181

Preview Playback **Configuration** Logout

Configurations

- Local Configure
- Audio Configure
- Video Configure
- NetWork Configure
 - Network Port
 - Ethernet
 - DNS
 - GB28181**
- System Configure

GB28181

Enable ☐

ClockSync ☐

Video Type Main Stream

Registration Valid Time(s) 3600

Heartbeat Time(s) 60

Register ID 34020000001320000001

Register Name IPC

Register Password

Equipment Belong

Administrative Region

Alarm Areas

Device Address

Local SIP Port 5060

Server IP

Server SIP Port 5060

Server ID 34020000002000000001

Save

1. **Enable:** Set whether camera uses GB28181 (Default: Off)
2. **ClockSync:** Choose whether the synchronization time is set (Default: Off)
3. **Video Type:** Choose video stream type (Main/Secondary Stream; Default: Main Stream)
4. Registration Valid Time (s): 5 ~ 65535 (Default: 3600)
5. **Heartbeat Time (s):** 1 ~ 65535 (Default: 60)
6. **Register ID:** 34020000001320000001
7. Register Name: IPC
8. Register Password: 12345678
9. **Equipment Belong:** Completed by user, if desired (Default: Blank)
10. **Administrative Region:** Completed by user, if desired (Default: Blank)

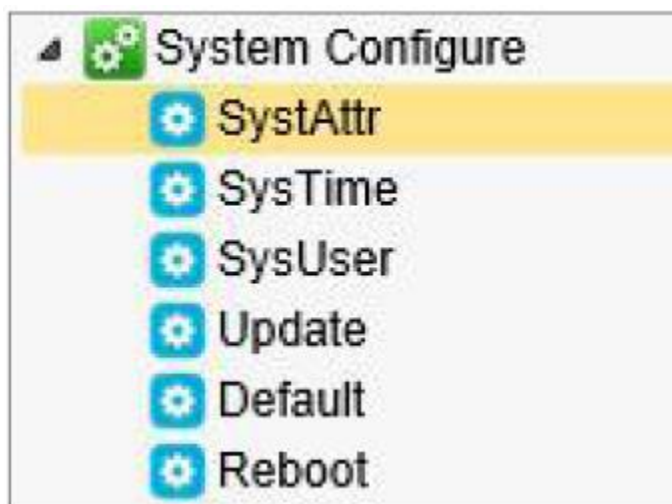
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- 11. **Alarm Areas:** Completed by user, if desired (Default: Blank)
- 12. **Device Address:** Completed by user, if desired (Default: Blank)
- 13. **Local SIP port:** 0 ~ 65535 (Default: 5060)
- 14. **Server IP:** IP address of the computer
- 15. **Server SIP Port:** 0 ~ 65535 (Default: 5060)
- 16. **Server ID:** 34020000002000000001

Click the "Save" button to save and apply changes to GB28181 settings

7.3.5 System Configuration

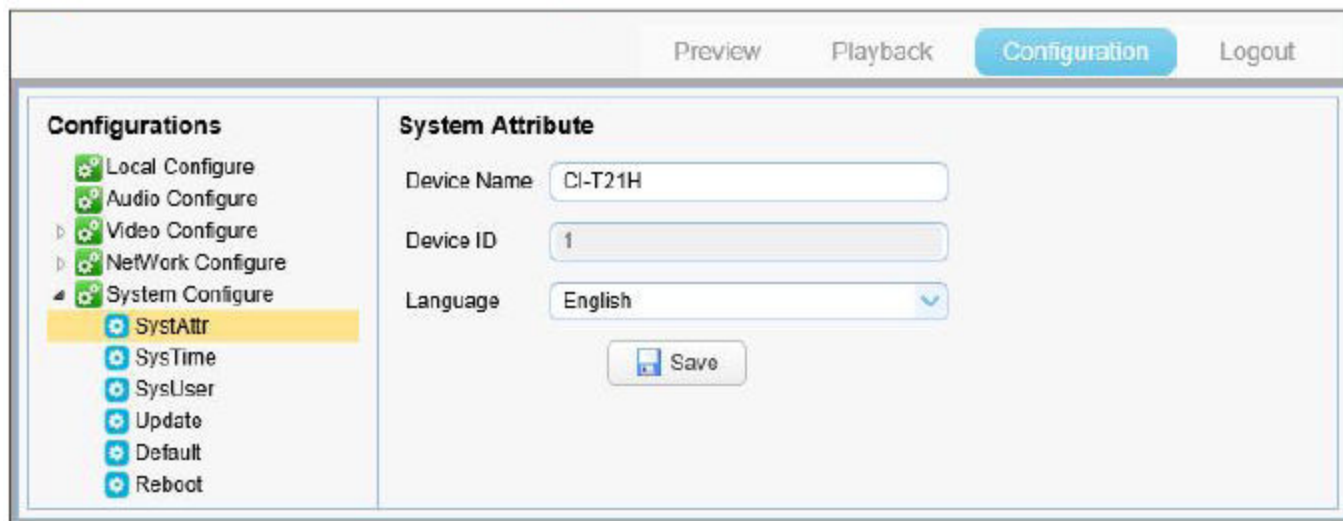


Menu	Description
System Attributes	Set the device name, ID, and system language
System Time	Set the system date and time
User Set	Set the username and password
Release Upgrade	Show & update camera and AF versions
Restore Factory Defaults	Restore all settings to their default values
Reboot	Reboot the camera

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7.3.5.1 System Attributes



The screenshot displays the configuration interface for the Auto-Tracking Camera. At the top, there are four tabs: "Preview", "Playback", "Configuration" (which is highlighted in blue), and "Logout". On the left side, under the heading "Configurations", there is a list of settings: "Local Configure", "Audio Configure", "Video Configure", "NetWork Configure", "System Configure", "SystAttr" (highlighted in yellow), "SysTime", "SysUser", "Update", "Default", and "Reboot". The main area on the right is titled "System Attribute" and contains three fields: "Device Name" with the value "CI-T21H", "Device ID" with the value "1", and "Language" with a dropdown menu showing "English". Below these fields is a "Save" button with a floppy disk icon.

1. **Device Name:** Set the device name (Default: CI-T21S)
2. **Device ID:** Displays the device ID (cannot be changed)
3. **Language:** Set the system language (English/Simplified Chinese; Default: English)

Note: Users will need to re-login after modifying the Language setting

Click the "Save" button to save and apply changes to the System Attributes

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7.3.5.2 System Time

Preview Playback **Configuration** Logout

Configurations

- Local Configure
- Audio Configure
- Video Configure
- NetWork Configure
- System Configure
 - SysAttr
 - SysTime**
 - SysUser
 - Update
 - Default
 - Reboot

System Time

Date Format: YYYY-MM-DD

Date Sprtr: /

Zone: (GMT+08:00)Beijing, Hongkong, Sin

Hour Type: 24 Hours

NTP Enable: ☐

Update Interval: 1 day

Host Uri: time.nist.gov

Host Port: 123

Save

Time Settings

Time Settings: Synchronize with computer time

Computer Time: 2018-08-09 19:54:26

Sync.

1. **Date Format:** Set the date format (YYYY-MM-DD, MM-DD-YYYY, DD-MM-YYYY; Default: YYYY-MM-DD)
2. **Date Sprtr:** Set the date separating character ("/", ".", "-"; Default: "/")
3. **Zone:** Set the time zone (Default: GMT+08:00)
4. **Hour Type:** Set the time type (12/24-hour; Default: 24-hour)
5. **NTP Enable:** Enable/disable NTP (Default: Off)
6. **Update Interval:** Choose how often the NTP server updates the system time, only valid with NTP On (checked) (1 ~ 10 days; Default: 1)
7. **Host URL:** Set NTP server address or domain name, only valid with NTP On (checked) (Default: time.nist.gov)
8. **Host Port:** Set the NTP server port, only valid with NTP On (checked) (Default: 123)

Click the "Save" button to save and apply changes to the System Time

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Time Settings

Time Settings

Time Settings: Set manually

New Time: 08/10/2017 09:54:01

Calendar: Aug 2017

S	M	T	W	T	F	S
30	31	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	1	2

Time: 09:54:01

Buttons: Today, Ok, Close

1. **Time Settings:** Set the time mode (Computer time synchronization, NTP server time synchronization, Set manually)
2. **Computer Time:** Displays the current computer time (cannot be changed)
3. **New Time:** Set the time manually, valid in Computer time synchronization mode (click the calendar on the right)

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7.3.5.3 User Set

Preview Playback Configuration Logout

Configurations

- Local Configure
- Audio Configure
- Video Configure
- NetWork Configure
- System Configure
 - SystAllr
 - SysTime
 - SysUser
 - Update
 - Default
 - Reboot

User Set

Authority: admin

User Name: admin

Password:

Confirm Password:

Save

1. **Authority:** Select a user type (Administrator, User 1, User 2; Default: Administrator)
2. **User Name:** Set the username (Administrator default: "admin"; User 1 default: "user1"; User 2 default: "user2")
3. **Password:** Set the password (Administrator default: "admin"; User 1 default: "user1"; User 2 default: "user2")
4. **Confirm Password:** Confirm the new password (must match "Password" field)

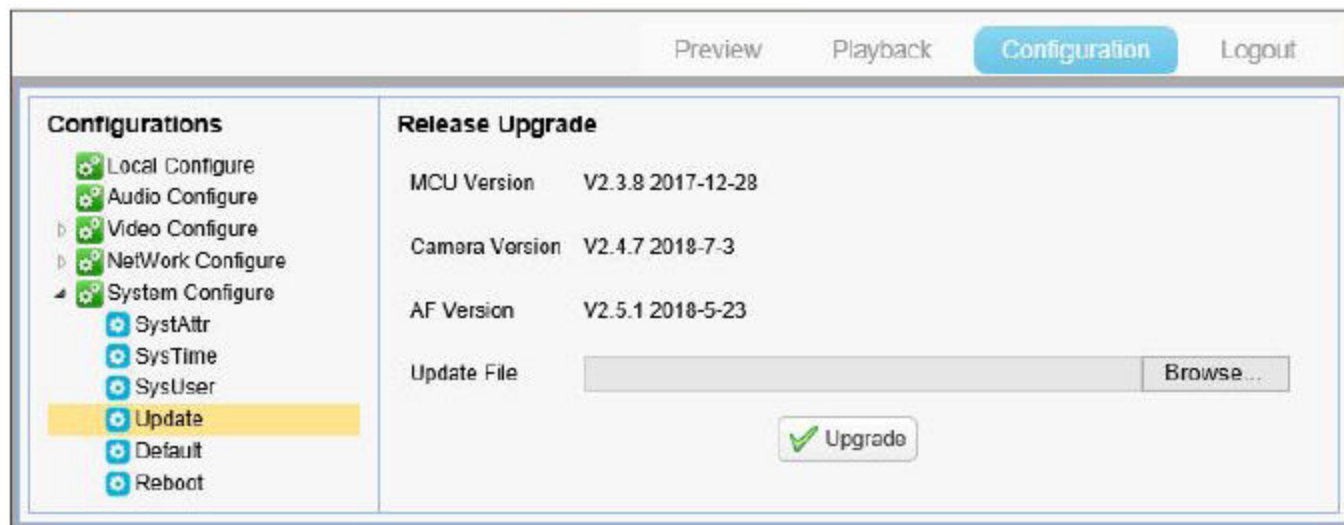
Note: Usernames and passwords are case-sensitive

Note: When logged in using a normal user's username and password, the configuration settings are not available. Normal users only have privileges to preview & playback

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7.3.5.4 Release Upgrade



This page displays the current MCU, camera firmware, and AF versions. This information is read-only (cannot be modified).

Update File: To install a new version, click “Browse” and navigate in the file menu to the upgrade file. Click “Upgrade” and a dialog box will appear. After the update has been successfully installed, the device will reboot automatically.

Note: Make sure that the camera stays connected to power and network for the entire process, or the update will fail.

7.3.5.5 Restore Factory Defaults

Click the “Restore Factory Defaults” button and choose “Yes” or “No,” as desired, in the pop-up menu. After choosing “Yes,” the camera will restart with all settings restored to their default values.

7.3.5.6 Reboot

Click “Reboot” and choose “Yes” or “No,” as desired, from the pop-up menu. After choosing “Yes,” the camera will restart.

7.4 Logout

Click “Logout” to open the Logout popup menu. Choose “Yes” or “No,” as desired. Selecting “Yes” will log out of the menu and return to the User Login page.

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8. Camera Maintenance and Troubleshooting

8.1 Camera Maintenance

1. If the camera will not be used for a long time, turn it off and disconnect the power adapter and AC plug
2. Use a soft cloth or tissue to clean the camera cover
3. Use a soft cloth to clean the camera lens. Use a gentle chemical cleaner if badly smeared. Do not use a strong or corrosive cleaner, as this can scuff or damage the lens.

8.2 Troubleshooting

Problem	Suggested Solution
No video output	1. Check whether the camera power supply is connected, the voltage is normal, and the power indicator is lit 2. Check whether the camera self-inspects after being restarted 3. Check whether the cable is properly connected to the camera's output and to the display
Flickering or inconsistent image	Check whether the cable is properly connected to the camera's output and to the display
Image dithers when zooming in or zooming out	1. Check whether the camera is securely installed on a stable surface 2. Check whether there is a shaking machine or object near the camera
Remote controller does not work	1. Confirm that the remote control address is set to the same value as the camera to be controller (Note: When the camera is reset, its address is automatically set to 1) 2. Check whether the remote control batteries need to be replaced 3. Confirm that the web interface is not open anywhere. The camera cannot be controlled via remote control when the web interface is open.
Camera does not respond to serial commands	1. Check whether the serial device protocol, baud rate, and address are correct 2. Check whether the serial cable is properly connected
Cannot log in to the web interface	Check whether the camera's video output is displaying normally Check whether the network cable is connected properly (the yellow Ethernet light flashes when the network cable is connected normally) Check whether the segment of the camera's IP address has been added to the PC's network settings Verify network connection by pinging the camera's IP address

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