AViPAS

User Manual

V1.0

Preface

Thank you for selecting AViPAS AV-2040 4K Auto Tracking PTZ Camera. This manual provides comprehensive information on the camera's features, installation procedures, and operational guidelines.

Please ensure you read this manual thoroughly before proceeding with the installation and use of the camera.

Precautions

This product should only be used under the specified conditions to avoid any damage to the camera:

- Do not subject the camera to rain or moisture.

- Do not remove the cover. Otherwise, you may risk receiving an electric shock. In case of unintended equipment operation, contact an authorized engineer.

- Never operate under unspecified temperature, humidity or power supply.

- Please use soft dry cloth to clean the camera. If the camera is very dirty, clean it with diluted neuter detergent; do not use any type of solvents, which may damage the surface.

Note:

This is a class A production. Electromagnetic radiation at certain frequencies may affect the image quality of TV in home environment.

Table of Contents

Safety Guides

- **Electric Safety:** Installation and operation must accord with electric safety standards.

- **Use caution to transport:** Avoid stress, vibration or soakage in transport, storage and installation.

- **Polarity of power supply:** The power supply of this product is +12V, the max electrical current is 2A.

- The polarity of the power supply plug is shown in the drawing below:
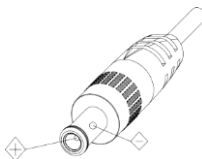
- **Installation precautions**

    1. Do not grasp the camera lens when carrying it. Do not touch the camera lens by hand. Mechanical damage may result from doing so.

    2. Do not use corrosive liquid, gas or solid environment to avoid any cover (plastic material) damage.

    3. Make sure there is no obstacle within rotation range.

    4. Do not power on before installation is completed.

- **Do not dismantle the camera:** We are not responsible for any unauthorized modification or dismantling.

- **CAUTION! Certain frequencies of electromagnetic field may affect the image of the camera!**

Note:

Video quality may be affected by the specific frequencies of electromagnetic field.

Never grasp the head of the camera or move the camera by hand when it is working. Otherwise, the mechanism may be affected.
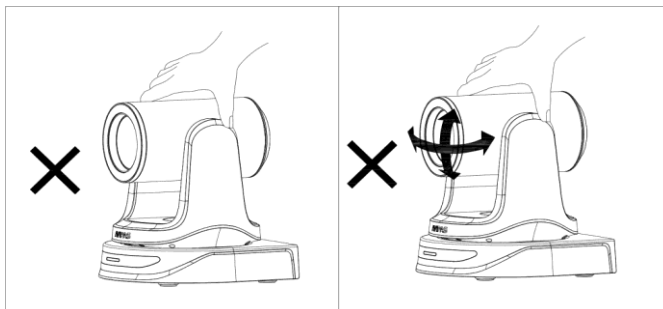
Package Included

When unpacked, check if all supplied accessories are included:

Camera - 1pc
Power Adapter (US Standard) -1pc
Power Cord (US Standard) - ·1pc
RS232 Cable (9-Pin DB-9 Female to 8-Pin Mini-Din Male)- - - - - - 1pc
USB 2.0 Cable (Type-A to Type-C) - - - - - - - - - - - - - - - - - - - 1pc
IR Remote Control - 1pc
User Manual - ·1pc
Anti-Vibration Pad - 1pc

Camera Overview

Product Highlights

- **4K Video Output**: Featuring a 1/1.8-inch Sony CMOS sensor with 8.42MP effective pixel, delivering Ultra HD video resolution
- **Zoom**: 20x optical zoom, 8x digital zoom lens with 58.5-degree field of view
- **Auto Tracking**: Automatically detects, tracks, and focuses on the moving subject which it identifies. It works for both subject and zone settings
- **Built-in Tally Light**: Indicates camera's working status. The RED light signals that the camera is currently live on air, while the GREEN light indicates it is in preview mode, ready to switch
- **Multiple Video Output Interface**: Supports HDMI 2.0, 3G-SDI, LAN and USB 2.0 Type-C outputs simultaneously, suitable for a variety of applications
- **Audio Input**: 3.5mm TRS Line-in audio input, embedded out through HDMI, SDI and IP streaming with AAC, LPCM and OPUS encoding
- **Advanced H.264/H.265 Compression**: Maximizes storage efficiency and minimizes bandwidth usage without compromising image quality
- **2D/3D Noise Reduction and High SNR($\geq$50db):** Significantly enhances video quality, especially in low-light conditions
- **Easily Adjustable Image Settings**: With both automatic and manual adjustment options, effortlessly fine-tune White Balance, Exposure, Focus, and Iris
- **Preset Position**: Up to 255 preset positions via Serial and IP, 10 preset positions via IR remote
- **Multiple Control Options:** IR Remote control, IP control (RJ45)**,** USB (Type-C), RS232 and RS485
- **Multiple Streaming Protocols**: Supports multiple streaming protocols including RTSP, RTMP, RTMPS and SRT, ensuring versatile and reliable video transmission for any application
- **Multiple Control Protocol**: Supports VISCA, PELCO-P, PELCO-D, VISCA over IP, ONVIF and UVC control protocols; IP VISCA over both TCP and UDP
- **PoE + (Power over Ethernet):** With PoE+ supported, allowing a single Cat5/6 cable for delivering power to the camera, control signal, and video out from camera, simplify installation

Specifications

Camera	AV-2040B(Black) / AV-2040W(White)
Sensor	1/1.8-inch Sony CMOS sensor, 8.42MP effective pixel
Zoom	20x Optical Zoom, 8x Digital Zoom
Lens	f = 6.8mm ~ 120mm, F1.61 ~ F4.13
Minimum Illumination	0.5 Lux (50 IRE Max AGC, 1/30, F1.8)
Horizontal Viewing Angle	58.5° (Wide)~3.7° (Tele)
Vertical Viewing Angle	35° ~ 2.1°
Diagonal Viewing Angle	65.3° ~ 4.2°
Video Format	HDMI 2.0: 3840*2160P60/59.94/50/30/29.97/25; 1920*1080P60/59.94/50/30/29.97/25/24/23.98; 1920*1080I60/59.94/50; 1280*720P60/59.94/50/30/29.97/25
	3G-SDI: 1920*1080P60/59.94/50/30/29.97/25/24/23.98; 1920*1080I60/59.94/50; 1280*720P60/59.94/50/30/29.97/25
	IP Main Stream: 3840*2160P15~60;1920*1080P15~60;1280*720P15~60;1024*576P15~60; Sub Stream: 720*480P15~60; 640*480P15~60; 640*360P15~60
	USB 2.0 Type-C: *NV12*: 1920*1080P5; 1280*720P15; 1024*576P25; 800*448P30 *YUY2*: 1920*1080P5; 1280*720P10; 1024*576P15; 800*448P30 *MJPG*: 3840*2160P30;1920*1080P60;1280*720P60; 1024*576P60;800*448P60 *H264/H265*: 3840*2160P30; 1920*1080P60; 1280*720P60; 1024*576P60; 800*448P60
Pan Tilt, Auto Tracking & Tally Light	
Pan/Tilt Rotation	Pan: ±170°, Tilt: -30°~+90°
Pan/Tilt Control Speed	Pan: 0 - 120°/sec, Tilt: 0 - 80°/sec
Preset Speed	Pan: 100°/sec, Tilt: 45°/sec (*Note: recall preset speed*)
Maximum Preset Positions	IR remote control: 10; Serial RS232 / RS485: 255; IP: 255
Tracking Position	Left / Center / Right
Tracking Ratio of Figure	1/6, 1/8, 1/10, 1/12, 1/16, 1/20, Full body (*Note: 1/6 is for Head and Shoulder*)
Tally Light	Green (Preview mode), Red (Program mode)
Tally Light Brightness	OFF / Low / Middle / High
Image Parameter	
Noise Reduction	2D & 3D
SNR	≥50dB
Exposure	Auto/Manual/Shutter/Iris/Bright
White Balance	Auto / Manual / Indoor / Outdoor / ATW / One Push / Color Temperature (range: 2500k-10000k)
Anti-Flicker	50Hz / 60Hz / OFF
Focus	Auto / Manual
Iris	CLOSE ~ F11

Shutter Speed	1/30s ~ 1/10000s
Backlight Compensation	On / Off
Flip Horizontal	On / Off
Flip Vertical	On / Off
Gamma	Support
WDR	Off / Dynamic level adjustment
IP Network Specification	
Video Encoding Standard	H.264 / H.265
Video Streaming Mode	First streaming, second streaming
First Streaming Resolution	3840*2160P15~60; 1920*1080P15~60; 1280*720P15~60; 1024*576P15~60
Second Streaming Resolution	720*480P15~60; 640*480P15~60; 640*360P15~60
Bitrate Control	Variable Bitrate (VBR), Constant Bitrate (CBR)
Bitrate Range	1Mbps ~ 120Mbps
Network Speed	1000 Mbps
Audio Encoding Format	AAC / LPCM / OPUS
Streaming Protocols	TCP / IP, HTTP, RTSP, RTMP/RTMPS, SRT, RTP
USB Communication	UVC 1.1
Input/Output Interface	
Video Output	1*HDMI 2.0, 1*3G-SDI, 1*LAN(RJ45), 1*USB 2.0(Type-C)
Communication Interface	1* 8-pin Mini DIN RS232-in, 1* 8-pin Mini DIN RS232-out, 1* RS485 (shared with RS232-in port)
Control Protocol	ONVIF / VISCA / Pelco-D / Pelco-P / UVC1.1 / VISCA-Over-IP
RS232 Daisy Chain	Supports up to 7 cameras under VISCA protocol
Audio Input Interface	3.5mm TRS Line-in input, embedded audio out through HDMI/SDI/IP streaming
Power Input	DC12V
General Specification	
Power Input	DC12V/ PoE+(IEEE802.3at Standard)
Input Electric Current	Maximum: 1A
Power Consumption	Maximum: 13W
Stored Temperature	-10℃~+50℃
Storage Humidity	20%~95%
Working Temperature	-10℃ ~+50℃
Working Humidity	20% ~ 80%
Dimension	6.6*6.6*7.1inch (167.5*168*180mm)
Weight	3.5lbs (1.6kg)

Camera Interface
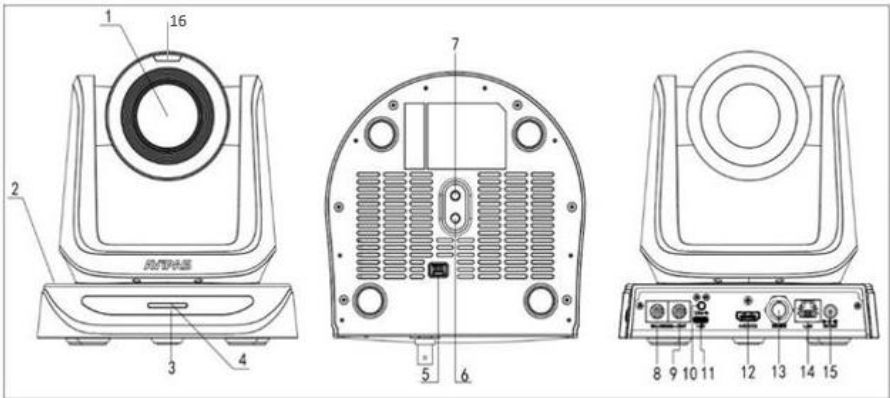
Figure 1.1 Interface Diagram

1. Camera Lens
2. Camera Base
3. IR Receiver Panel
4. Power Indicator Light*
5. Dial Switch**
6. Screw Hole for Tripod (1/4-20")
7. Installation Hole
8. RS232 8-pin Mini-Din(RS485) Input

9. RS232 8-pin Mini-Din Output
10. 3.5mm TRS Audio Input (Line-in)
11. USB 2.0 Type-C Output
12. HDMI 2.0 Output
13. 3G-SDI Output
14. RJ45 Network Interface (LAN)
15. DC 12V Power Supply Socket
16. Tally Light (RED on air, GREEN preview)

* ***Camera Normal Working Mode****: Solid Blue Color Light*

** 5. Dial Switch Indication
Note: Cameras are set to working mode by default, please DO NOT dial switch unless suggested by AViPAS Inc.
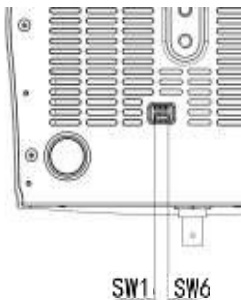
Dial Switch			
	SW-1	SW-2	Instruction
1	OFF	OFF	Upgrading mode
2	ON	OFF	Debugging mode
3	OFF	ON	Undefined
4	**ON**	**ON**	**Working mode**
	SW-3	SW-4	Instruction
1	OFF	OFF	Reserved
2	ON	OFF	Reserved
3	OFF	ON	Reserved
4	ON	ON	Reserved
	SW-5	SW-6	Instruction
1	OFF	OFF	Undefined
2	**ON**	**OFF**	**Working mode**
3	OFF	ON	Undefined
4	ON	ON	Undefined

Camera Installation

Camera Dimension (mm)
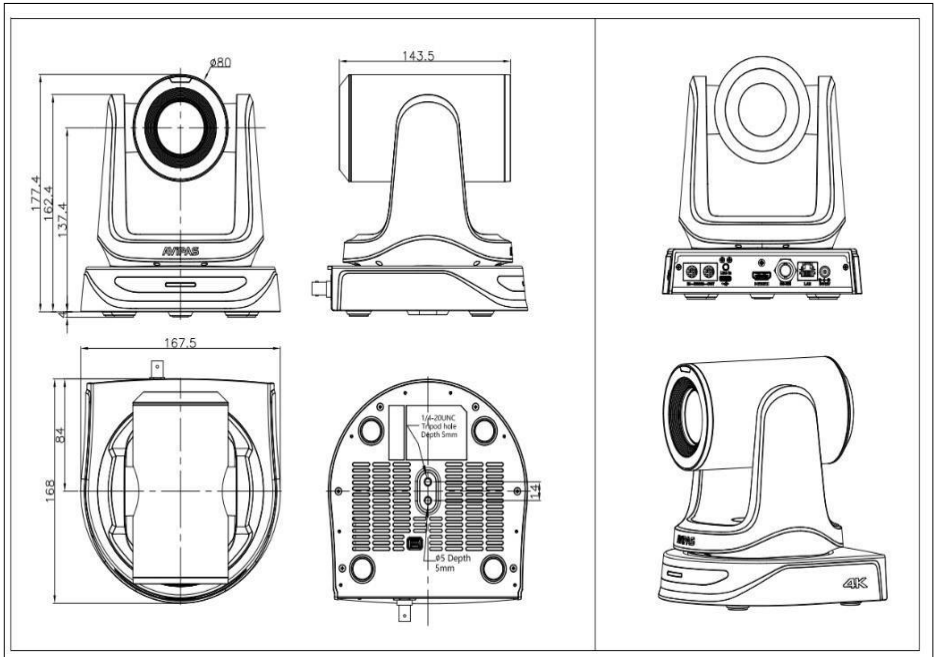
Figure 1.2 Dimension Diagram

Note: mm to inch conversion for Figure 1.2

143.5mm=5.60 inch	177.4mm=6.98 inch	162.4mm=6.39 inch	137.4mm=5.41 inch
167.5mm=5.60 inch	168.0mm=6.60 inch	84.00mm=3.31 inch	80mm=3.15 inch

Mounting Brackets

Note: Ceiling or wall mounting brackets can only be mounted in a stable place to avoid falling.
For safety reasons, do not install the camera on the plasterboard.

1) Wall Mount Installation (Wall Mount Sold Separately)
Note: Customers may select any wall mount bracket that is compatible with the installation requirements.
Or choose from AViPAS wall mount brackets: **AV-W22G** *(Black) or* **AV-W22W** *(White).*

2.Use four M4*30mm self-tapping screws to mount the wall-mount bracket on the wall.

3.Fix the lower cover of the bracket to the base of the camera with imperial screws (size 1/4-20UNC*3/8).
Note: A layer of the silicone shock-absorbing pad should be positioned between the camera base and the bracket.(It is included in the package.)

1.Drill the hole on the wall referring to the wall mounting bracket hole position, hole diameter of Ø6mm, position the four Ø6mm plastic expansion screws in the drilled hole.
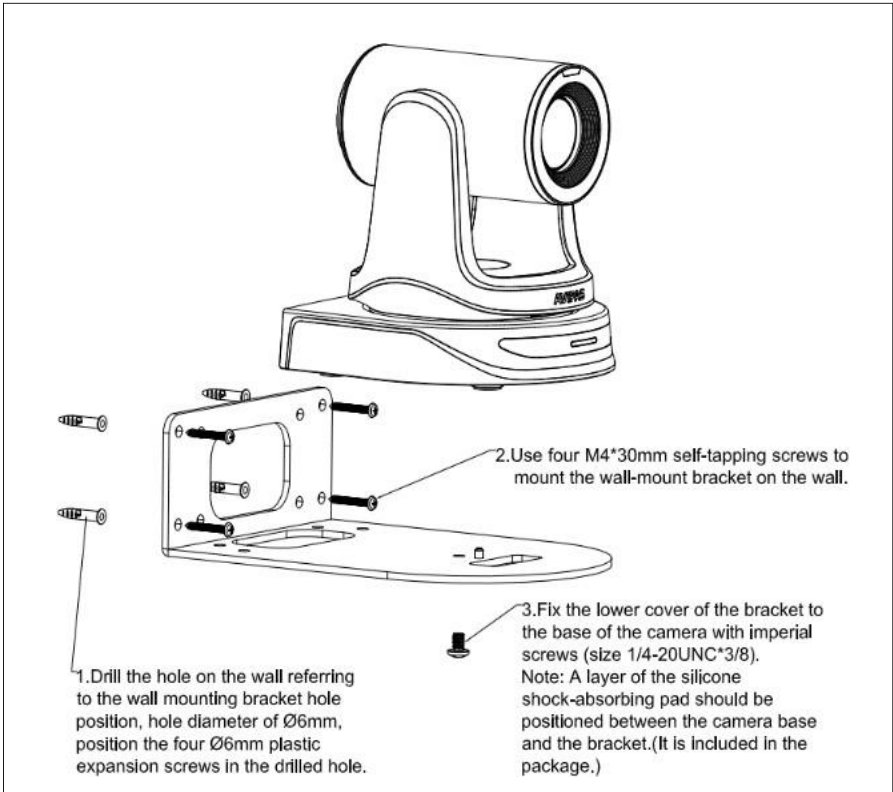
Figure 1.3 Wall Mount Image

Instructions:

1. Drill the hole on the wall referring to the wall mounting bracket hole position, hole diameter of φ6mm, position the four φ6mm plastic expansion screws in the drilled hole.

2. Use four M4*30 self-tapping screws to mount the wall-mount bracket on the wall.

3. Fix the lower cover of the bracket to the base of the camera with imperial screws (SIZE 1/4-20UNC*3/8)

4. **Note:** A layer of silicone shock-absorbing pad should be positioned between the camera base and the bracket. (Included in the package)

2) Ceiling Mount Installation (Ceiling Mount Sold Separately)

Note: Customers may select any ceiling mount bracket that is compatible with the installation requirements. Or select AViPAS ceiling mount bracket: **AV-C20G** *(Black) or* **AV-C20W** *(White).*
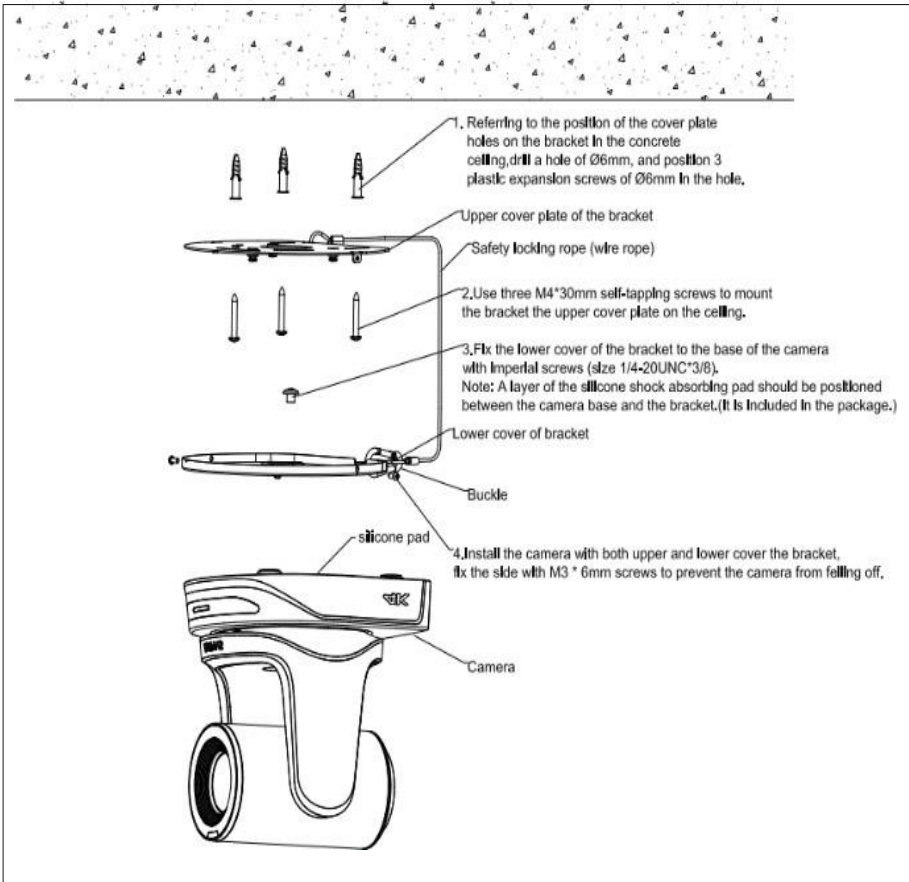

Figure 1.4 Ceiling Mount Image

Instructions:

1. Referring to the position of the cover plate holes on the bracket in the concrete ceiling, drill a hole of φ6, and position 3 plastic expansion screws of φ6 in the hole.
2. Use three M4*30 self-tapping screws to mount the bracket on the upper cover plate on the ceiling.
3. Fix the lower cover of bracket to the base of the camera with imperial screws(Size 1/4-20UNC*3/8） **Note:** A layer of silicone shock-absorbing pad should be positioned between the camera base and the bracket. (It is included in the package).
4. Install the camera with both upper and lower cover of the bracket, fix the side with M3*6 screws to prevent the camera from falling off.

IR Remote Guide

POWER Button

Under working status, press the POWER button to enter standby mode. Press it again to switch to working mode.
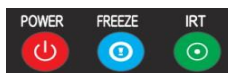
FREEZE（NOT Supported through USB output）

Press FREEZE to freeze/ unfreeze the image.

IRT (IR Transfer/IR Pass)

Open/close the IR pass function. Once pressed the IRT key, the camera will receive and pass the IR remote control signal to the codec/terminal (via VISCA IN port).

SET1 ~ SET4(Address Setting)

To set the current camera's address (ID), press and hold the key for 3 seconds until the backlight of that key is ON.
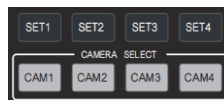
CAM1 ~ CAM4(Camera Selecting)

Press the corresponding camera number to select the camera. The default camera address for the IR remote control is #1.

NUMERIC KEY (1-9)

Set preset: press and hold the number for 3 seconds to set preset position.

Call preset: press the corresponding number to call preset position. *** If the preset position is set to #0, that will be the new 【HOME 】 position.*

CLR PRE (Clear Presets)

Press CLR PRE + number key to clear the corresponding preset position. Press and hold the key to clear all existing preset positions.

LEARN KEY Combination when setting Auto Tracking Functions
LEARN + **LEARN** + **1:** Set the Pan left limitation & Tilt up limitation
LEARN + **LEARN** + **2:** Set Blackboard Zone
LEARN + **LEARN** + **3:** Set the Pan right limitation & Tilt down limitation
LEARN + **LEARN** + **5:** Set the initial position

CLR PRE KEY Combination when setting Auto Tracking Functions
CLR PRE + **CLR PRE** +**1:** Clear the Pan left limitation & Tilt up limitation
CLR PRE + **CLR PRE** +**2:** Clear current settings for Blackboard Zone
CLR PRE + **CLR PRE** +**3:** Clear the Pan right limitation & Tilt down limitation
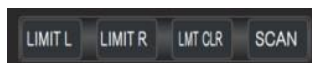**CLR PRE** + **CLR PRE** +**5:** Clear initial position

LEARN + **LIMIT L:** Set the pan left limit position.
LEARN + **LIMIT R:** Set the pan right limit position.
LEARN + **LMT CLR:** Clear all limit positions.
SCAN: Reserved

FOCUS: +/- Manually adjust focus, only valid under manual mode.

ZOOM: +/- Manually adjust zoom.

NAVIGATE KEY: ▲Up /▼Down/◄Left/►Right
Under camera working mode, use navigate keys to pan/ tilt.
On the camera On-Screen Display (OSD) menu, use navigate keys to select and enter submenu.

OK KEY
Under Working mode: short press the 【OK】button to return the camera to its 【HOME】 position(default is centered).
On the camera OSD: press the 【OK】 button to confirm the selected options.

AF: Auto focus
MF: Manual focus
RESET: Long press for 3 seconds to reset camera back to factory default settings

MENU: to open/ close the OSD menu; to enter/ exit the OSD menu, or to return to the previous submenu
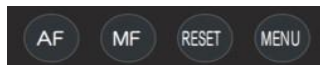
F1: Reserved
F2: Reserved
F3: Short Press: One-touch white balance. (working only under "PUSH" mode)
F4: Long press: switch video format to HDMI at 2160P29.97 and SDI at 1080P29.97
F1 + 1: Call the Pan left & Tilt up limitation
F1 + 2: Call Blackboard Zone
F1 + 3: Call the Pan right & Tilt down limitation
F1 + 5: Call the initial position

AT CTL: Auto Tracking mode ON/OFF
AT MODE: Auto Tracking presenter position, Left/Center/Right
BRIGHT-/BRIGHT+: Set image brightness, only valid under "Bright" exposure mode.
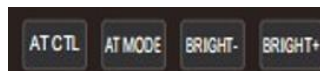
VIDEO FORMAT SELECTION: Press and hold for 3 seconds to select video format output
** After done selection, the image will flicker once and then return to normal, indicating that the video format has been successfully changed.

Camera On-Screen Display (OSD) Menu

1. Under working status, press the MENU key on the IR remote control, to enter the OSD menu as shown below:

MENU				
SYSTEM	PROTOCOL	<	VISCA	>
EXPOSURE	ADDRESS	<	1	>
IMAGE	BAUDRATE	<	9600	>
QUALITY	PROTOCOL LOCK	<	OFF	>
PTZ SETTINGS	RS485	<	ON	>
VIDEO FORMAT	TALLY BRIGHTNESS	<	HIGH	>
IP SETTINGS	AUTO TRACKING	<	OFF	>
RESET	TARGET POSITION	<	CENTER	>
INFO	TARGET SCALE	<	1/16	>

Figure 1.5 OSD Menu

2. Main Menu Navigation: Press the ▲UP/▼DOWN arrows to select options from the main menu.
3. Sub-Menu Access:
   - Press the ►RIGHT arrow to enter the sub-menu. Use the ▲UP/DOWN▼ arrows to navigate through the sub-menu options.
   - Use the ◄LEFT/►RIGHT arrows to adjust the current settings.
4. Returning to Previous Menu: Press the MENU key again to return to the previous menu. Repeat this step to exit the OSD.

System Setting

MENU	SUB MENU	DESCRIPTION/VALUE	DEFAULT
SYSTEM	PROTOCOL	Options: VISCA / PELCO-P / PELCO-D	VISCA
	ADDRESS	VISCA: 1 ~ 7, PELCO-P / D: 0 ~ 255	1
	BAUDRATE	2400 / 4800 / 9600 / 115200	9600
	PROTOCOL LOCK	ON / OFF, once set ON, PROTOCOL, ADDRESS and BAUDRATE will be locked	OFF
	RS485	ON / OFF	ON
	TALLY BRIGHTNESS*	OFF / LOW / MIDDLE / HIGH	LOW
	AUTO TRACKING	ON / OFF	OFF
	TARGET POSITION	Center / Left / Right	CENTER
	TARGET SCALE	Figure Size: 1/6, 1/8, 1/10, 1/12, 1/16, 1/20, Full Body **(1/6 is for Head and Shoulder, 1/12 is about full upper body)	1/16

Note: *How to set up Tally Light, please visit our website www.avipas.com-> [Support]-> [How to materials]->[How to set up Tally] Or contact us at service@avipas.com to get more tech support.

Exposure Setting

MENU	SUB MENU	DESCRIPTION/VALUE	DEFAULT
EXPOSURE	EXPOSURE MODE	AUTO / MANUAL / SHUTTER / IRIS / BRIGHT	AUTO
	SHUTTER	1/30s ~ 1/10000s, only valid under MANUAL and SHUTTER mode	AUTO
	IRIS	CLOSE ~ F14, only valid under MANUAL and IRIS mode	AUTO
	GAIN	0dB ~ 30dB, only valid under MANUAL mode	AUTO
	EXPOSURE BRIGHTNESS	0 ~ 27, only valid under BRIGHT priority mode.	AUTO
	BRIGHTNESS	0 ~ 15	8
	WIDE DYNAMIC MODE	ON / OFF	OFF
	WIDE DYNAMIC LEVEL	1~ 6	1
	BLC	ON / OFF	OFF

Image Setting

MENU	SUB MENU	DESCRIPTION/VALUE	DEFAULT
IMAGE	WHITE BALANCE MODE	ATW/MANUAL/AUTO/INDOOR/ OUTDOOR/ PUSH	ATW
	RED GAIN	Red gain level: 0 ~ 255, only valid under manual white balance mode.	AUTO
	BLUE GAIN	Blue gain level: 0 ~ 255, only valid under manual white balance mode	AUTO
	COLOR TEMPERATURE	2500K~10000K(ONLY UNDER C.T. MODE)	AUTO
	FLICKER	Anti-Flicker setting: 50Hz/ 60Hz / OFF	60Hz
	DIGITAL ZOOM	ON / OFF	OFF
	FOCUS MODE	AUTO / MANUAL	AUTO
	FOCUS AREA	ALL / TOP / BOTTON / CENTER	ALL
	FOCUS N E A R LIMIT	Near Focus limitation: 1.5M / 2M / 3M / 6M / 10M	1.5M

Quality Setting

MENU	SUB MENU	DESCRIPTION/VALUE	DEFAULT
QUALITY	2D NOISE REDUCTION	OFF / ON	OFF
	3D NOISE REDUCTION	OFF / AUTO / 1 ~ 4. Increasing the value can help in very noisy environments but setting it too high might result in a loss of fine details.	AUTO
	SHARPNESS	0 ~ 15	6
	CONTRAST	0 ~ 15	8
	SATURATION	0 ~ 15	8
	GAMMA	0 ~ 15	8
	IMAGE STYLE	USER / NORMAL/ COLORFULL	USER
	FOCUS SENSITIVITY	LOW / NORMAL / HIGH	HIGH

PTZ Setting

MENU	SUB MENU	DESCRIPTION/VALUE	DEFAULT
PTZ SETTINGS	SPEED BY ZOOM	ON / OFF	ON
	FLIP HORIZONTAL	Flip horizontal: ON / OFF	OFF
	FLIP VERTICAL	Flip vertical: ON / OFF	OFF
	PT SPEED	Pan tilt speed: 5 ~ 24	18
	ZOOM SPEED	Zoom speed: 1 ~ 7	5
	PRESET FREEZE	ON / OFF(when "ON", image freeze during recalling presets)	ON
	PRESET PT SPEED	Preset pan tilt speed: 2 ~ 24(The speed of Pan & tilt movements when recalling presets)	15
	PRESET ZOOM SPEED	Preset zoom speed: 1~7(Zooming speed when recalling presets)	5
	PRESET SAVE AE&AW	OFF / ON(when "ON", AE & AW settings remain consistent between switching different preset positions)	OFF

Video Format Setting

Note:
- The IR remote can only change the video format for **SDI** and **HDMI**.
- To change the video format for **IP**, use the **Web UI**.
- To change the video format for **USB**, use the **PC**.
- Press 【OK】to confirm the selected options.

MENU	SUB MENU	DESCRIPTION/VALUE	DEFAULT
VIDEO FORMAT	RESOLUTION	2160P, 1080P, 1080I, 720P	1080P
	FRAME RATE	60, 59.94, 50, 30, 29.97, 25, 24, 23.98	29.97
	3G-SDI	LEVEL A / LEVEL B	LEVEL B
	COLOR SPACE	YCC422, YC444, RGB	YCC422

Tips:
- ***HDMI****: Supports up to 2160P60(default: 1080P29.97)*
- ***SDI****: Supports up to 1080P60 (default: 1080P29.97)*
- *Once you select **HDMI** and **IP** video output at 2160P60, **SDI and USB** will not have signal out*
- *If **HDMI** and **IP** output are set to 4KP60, No **SDI** signal out. See below chart for quick reference*

	HDMI	SDI	IP	USB
Mode 0	*2160P60*	*No signal*	*2160P60*	*No signal*
Mode 1(default)	*2160P60*	*1080P60*	*2160P30*	*2160P30*

IP Setting

MEMU	SUB MEMU	DESCRIPTION/VALUES
IP SETTINGS	DHCP	ON / OFF(default)
	IP	192.168.001.188(default)
	MASK	255.255.255.000(default)
	GATEWAY	192.168.001.001(default)
	DNS	000.000.000.000(default)
	MAIN SIZE	Main steaming resolution up to 3840*2160(default 1920*1080)
	BITRATE	Range 1024Kbps ~ 122800Kbps (default 16384Kbps)
	SUB SIZE	Sub steaming resolution up to 720*480(default 640 * 360)
	BITRATE	Range 1Mbps ~ 120Mbps(default 1024Kbps)

Tips:
- *When DHCP is "OFF", the camera IP address can be changed manually.*
- *When DHCP is "ON," all default settings will be disabled. At this time, if the camera is connected directly to a managed network switch, the camera will automatically be signed a new IP address.*

Reset Setting

MENU	SUB MENU	DESCRIPTION/VALUE
RESET	SYSTEM RESET	Reset System settings to factory default
	CAMERA RESET	Reset Camera Image settings to factory default*
	PAN TILT RESET	Reset Pan/Tilt settings to factory default
	ALL RESET	Reset all settings to factory default

*Note: *Camera Reset: Only reset camera's image settings including exposure, image, quality and video format. But for Camera IP address, login "Username" and "Password" will NOT be reset to default, remain unchanged.*

Info

MENU	SUB MENU	DESCRIPTION
INFO	IR ADDRESS	Camera IR Remote Control address: No. 1
	CLIENT	Default client end protocol: VISCA
	MODEL NO.	Camera model number: AV-2040
	ARM VERSION	ARM firmware version: 2.1B
	ISP VERSION	Camera version: 579
	RELEASE DATE	Software release date: 20241016

Camera Web UI

Access Camera via IP (Computer)

Prerequired: The camera and PC must be in the same Local Area Network (LAN). It required the first three segments of their IP addresses are identical, while the fourth segment is unique.

- Example: Camera current IP Address is: *192.168.1.188*, PC IP Address must be: *192.168.1.XXX* (where XXX is any number different from 188, but less than 255).

  Tip: the IP address of each device on this network, must be unique.

Assigning IP Address for PTZ Camera and PC to a same Local Area Network (LAN)

For WINDOWNS User:

Step 1: **Connect Camera and PC** directly via **Ethernet Cable**, or Connect both Camera and PC to a same Network switch (router or PoE switch) via Ethernet Cable

Step 2: From your PC, on the bottom-right corner of your PC, [right click] on the Network icon, then click on the **[Open Network and Settings]** -> Click [Network & internet]-> Click [**Ethernet**]

Step 3: Click on [**Edit**] for "IP assignment", select "IP settings" to [**Manual**], turn [IPv4] "**ON**".

According to **Camera IP address: *192.168.1.188***

(AV-2040 default IP address), to make PC IP address **192.168.1.XXX** (first three segment must be the same, while 4th must be unique).

Change PC IPv4 address to: *192.168.1.170*;

Sub mask: *255.255.255.0;*

IPv4 gateway: *192.168.1.1*;

DNS: 8.8.8.8 (check your internet provider or type ipconfig on cmd, some will have 75.75.75.0 or others*)*

Click [**Save**]

(*Tip: Gateway IPv4 address, the last digit must be number "1")*

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How to find current Camera IP address:

- *use IR remote to open OSD-> IP setting-> camera's IP address*
- *use IR remote, long press [RESET] key, camera will be back to default IP address*
- *Connect camera to monitor using HDMI or SDI cable, turn off the camera and turn back on, the current IP address will show up on your monitor*

For Mac User:

Step 1: **Connect Camera and PC** directly via **Ethernet Cable**, Or Connect both Camera and PC to a same Network switch (router or PoE switch) via Ethernet Cable

Step 2: From your Mac, go to [**System Settings**]-> Click [**Network**]-> [**LAN**] or [**Ethernet**] settings
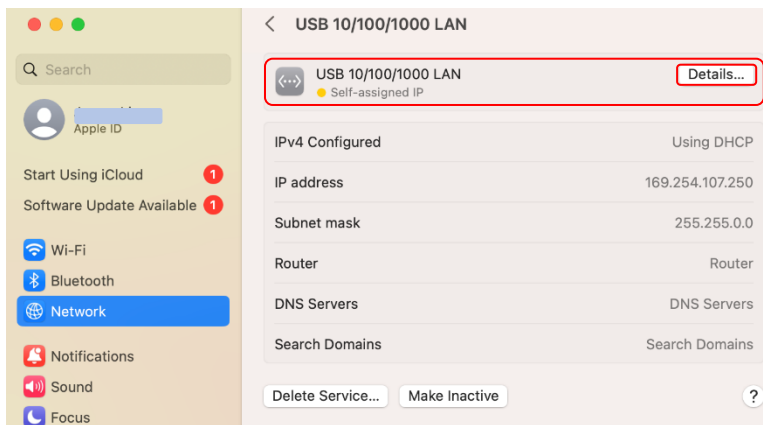
Step 3: Click [**Details**] -> Click [**TCP/IP**]

From the Configure IPv4 menu, select [**Manually**].

Change IPv4 Address to be consistent with the camera IP address. For example,

Camera IP address: *192.168.1.188*

Change PC IPv4 address to:

192.168.1.160;

Sub mask: *255.255.0.0 or 255.255.255.0*
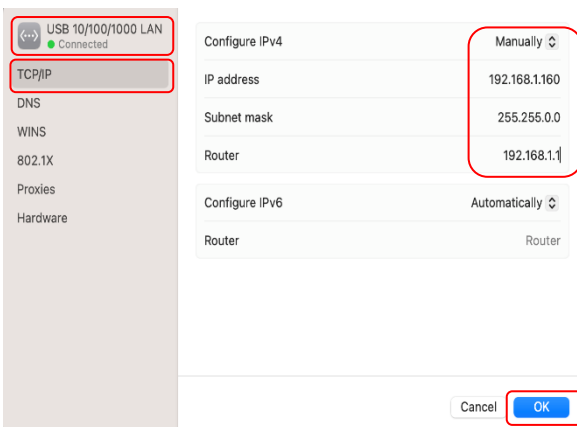
Router: *192.168.1.1*;

Click [**OK**]

(*Tip: Router address, the last digit must be number "1"*

See windows user's page for the tips on how to find current camera IP address)

Note: For more detailed tech support, please refer to: avipas.com-> [SUPPORT] -> "HOW TO"

MATERIALS -> *"Access camera via IP".*

Camera Web UI Login

1). Web Page Login

Open a web browser, input camera IP address. In this case, take AV-2040 as an example, the default AV-2040 IP address is 192.168.1.188.
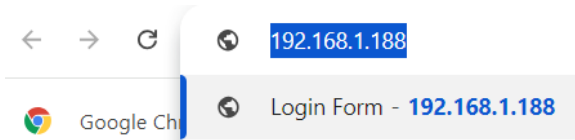
Then Login in page will appear, enter Username and Password:
Default username: **admin**
Default password: **admin**
Click **"Login"**
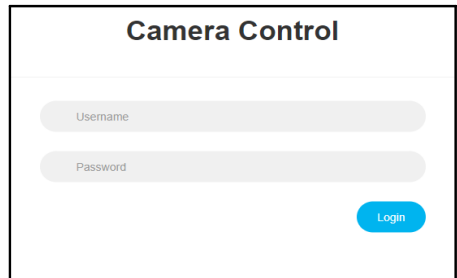
2). Real-time Preview

On the right top: "Preview" "Settings" and "Logout".

On the right-side: there is a virtual control panel. Options include movements of pan/tilt/zoom, focus mode, presets, speed adjustment of PTZ and focus, auto tracking controls. More auto tracking settings at Page 24-26.

At the bottom right: users can select between the mainstream and sub-stream previews.

3). Settings

Click "Settings" to enter camera settings interface:
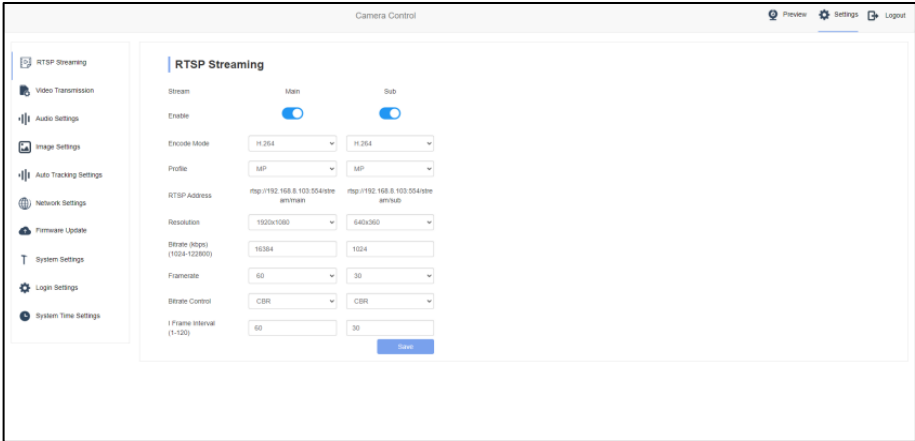
RTSP Streaming
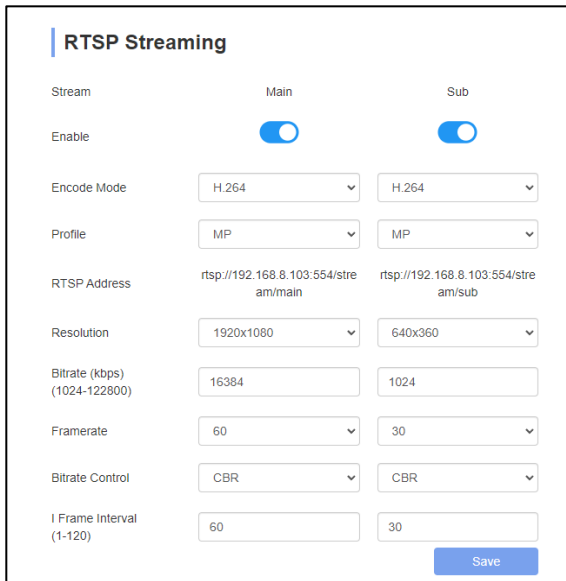
Configure the parameters according to the network settings. Note: stream name is: 554/stream/main
For example：the default IP address of the camera is 192.168.1.188. To obtain video from streaming platform such as OBS Studio, VMix via RTSP stream, please use the URL below:
Main stream: rtsp://192.168.1.188:554/stream/main
Sub stream: rtsp://192.168.1.188:554/stream/sub

Video Transmission

To set up RTMP, RTP Multicast and SRT connections.

For instance, to push RTMP stream directly to a server/ platform (public network) such as YouTube Live, Facebook Live, please make sure the camera's IP configurations are set to be consistent with the public network, otherwise it will not connect to server successfully. Once connected successfully, the red x check mark will be replaced with a blue check mark.

RTMP Setting

Stream	Main	Sub
Enable	🔵 ✓	⚪ ❌
RTMP Address	rtmp://a.rtmp.youtube.com/live2/v0jb-9j6y-gfck-tzf2-ch86	

Save

Note:

This is an indicator for RTMP streaming connection.

"Red" : Not in streaming or No Connection
"Blue": Streaming and Stable Connection
Must Turn on [Audio State] in Audio Settings

RTP Multicast Setting

Stream	Main	Sub
Enable	⚪	⚪
Multicast IP	232.255.255.255	232.255.255.255
Multicast Port	4000	4002
RTSP Address	rtsp://192.168.1.188:8554/multicast/main	rtsp://192.168.1.188:8554/multicast/sub
RTP Address	rtp://232.255.255.255:4000	rtp://232.255.255.255:4002

Save

SRT Setting

Mode	Listener
Enable	🔵
Port	1600
Latency(ms)	120
Encryption	⚪
Key Length	16
Passphrase	
Main Stream	srt://192.168.1.188:1600?streamid=r=0
Sub Stream	srt://192.168.1.188:1600?streamid=r=1

Save

Note: For more connection details, please refer to: avipas.com-> [SUPPORT] -> "HOW TO" MATERIALS -> How to live stream via RTMP(S)-AV-2040/2020/2010/2000 Series.

Audio Setting

To enable/disable embedded audio. Audio encoding mode can be selected (AAC, LPCM, OPUS).

Parameters such as sampling rate, bit rate and volume can be adjusted.

Note**: when doing RTMP streaming, must turn [Audio State] ON

Image Settings

To set focus, exposure, white balance, image, image quality, noise-reduction and video, as the following picture:

Focus: focus mode options, focus sensitivity, digital zoom.

| Focus | Exposure | White Balance | Image | Image Quality | Noise Reduction | Video |

Focus Mode　　Auto ∨
Sensitivity　　middle ∨
Digital Zoom　　○

Reset
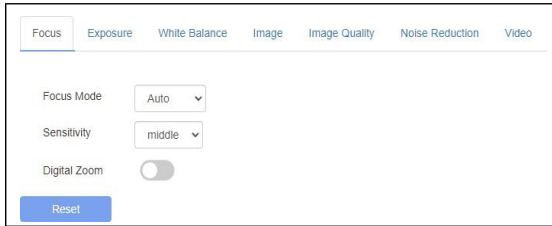
Exposure: exposure mode, shutter speed, gain, iris, brightness, anti-flicker.

| Focus | Exposure | White Balance | Image | Image Quality | Noise Reduction | Video |

Exposure Mode　Auto ∨　　Gain　　0dB ∨
Shutter　　1/100 ∨　　Iris　　F2.8 ∨
Anti-flicker　　● 60Hz ∨　　Brightness　　11 ∨

Reset
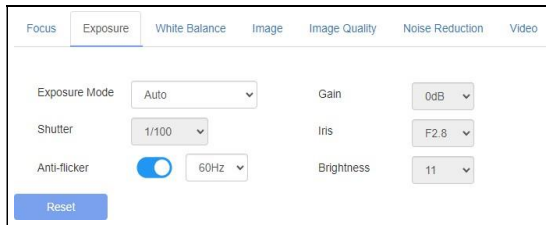
White Balance: white balance mode, red gain, blue gain, color temperature.

| Focus | Exposure | White Balance | Image | Image Quality | Noise Reduction | Video |

WB Mode　　Auto Tracking ∨
Red Gain　　　120　　Color Temperature　　6500K
Blue Gain　　　84

Reset
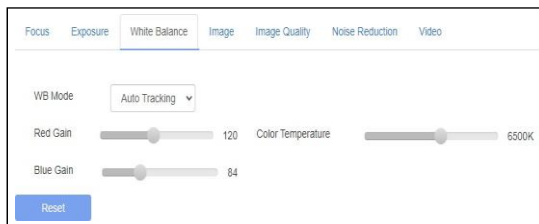
Image: mirror(flip horizontally), flip(flip vertically), backlight compensation, freeze, Gamma, WDR (wide dynamic range).

| Focus | Exposure | White Balance | Image | Image Quality | Noise Reduction | Video |

Mirror　　○　　Freeze　　○
Flip　　○　　Gamma　　8
BLC　　○　　D-WDR　　○

Reset
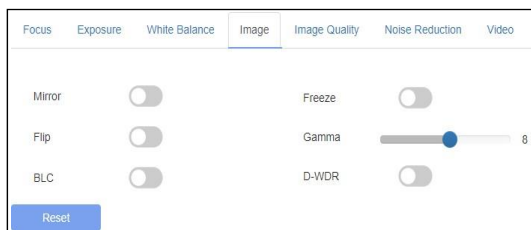
Image Quality: adjustment for brightness, sharpness, contrast, saturation.
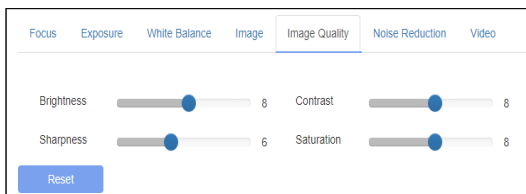
Noise Reduction: 2D/3D reduction. There is on/off option for 2D, and off/auto/1~4 selections.
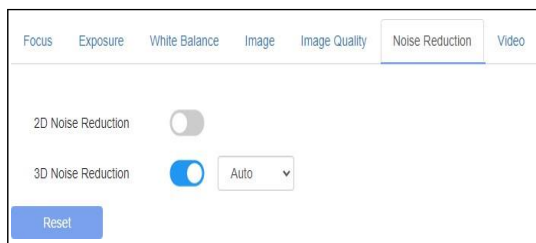
Video: set video output format.
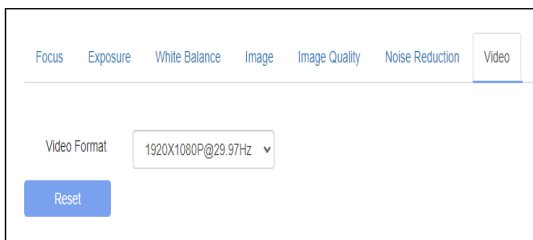
Auto Tracking Settings

AV-2040 auto tracking camera adopts AI-based technologies to provide advanced tracking capabilities. Featuring both face and human body detection technologies that ensures optimal performance in various scenarios.
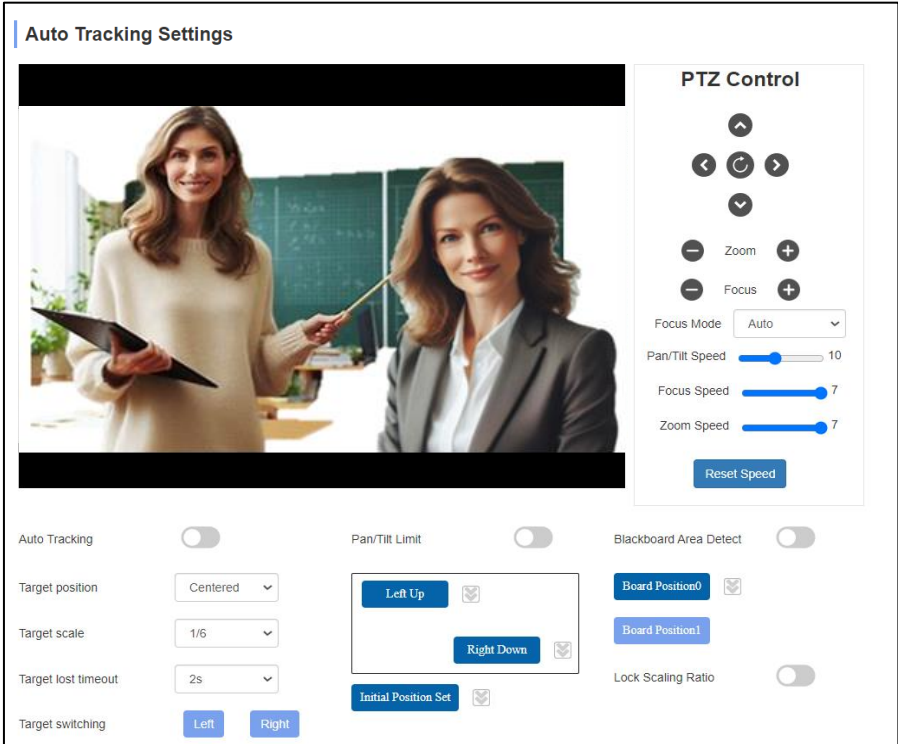
Part 1. Auto Tracking Settings for presenter

- **Auto Tracking:** Auto Tracking ON/OFF.
- **Target position**: Continuously track the targeted presenter and maintain the presenter in a specific position on the screen when the presenter moving around. Three position options: Left, Center, or Right. Click to "Active".
- **Target scale**: Adjust the size of the targeted figure on screen to a range from 1/6, 1/8, 1/10. 1/12,1/16, 1/20, and Full body (*e.g., 1/6 for a head and shoulders portrait, 1/12 for full upper body*).
- **Lock Scaling Ratio**: Click to turn "ON", click it again to turn "OFF." When "ON", it will lock the current scaling ratio when the precentor moving around which can reduce uncomfortableness for audience.
- **Target lost timeout**: Configure the countdown time for the camera to return to its initial position when the original targeted presenter is no longer in the frame. The timeout can be set between 2 and 10 seconds.
- **Target switching**: when there are two people in the frame, you can switch the target between left and right person. *Tips: when there are more than two people on the screen, zoom in one person as targeted presenter, then zoom out and switch between left or right people next to the initial target*.

Part 2. Zone Settings-Pan/Tilt Limitation

- **Pan/Tilt Limit**: With setting up the Pan & Tilt limitation, to set up a safety zone that camera can keep tracking the initial target. Beyond this zone, the camera will stop following.
- **Note**:
  - You need to **disable [Auto Tracking]** and **disable [Pan/Tilt Limitation]** while configuring these settings.
  - **The [double down arrow]** is used to confirm limit positions or to check limit positions.
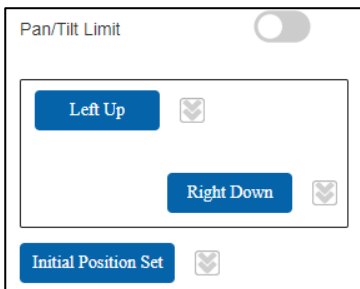
- **Steps for how to set up Pan/Tilt Limit**:
  1. Turn off "Auto Tracking".
  2. Turn off "Pan/Tilt Limit".
  3. **Set Pan/Tilt Limitation**: Use the PTZ navigation control panel to set up the top left boundary using the "Left Up" button and the bottom right boundary using the "Right Down" button.
  4. **Confirm or check Pan/Tilt Limitation**: "double arrow" icon will show up respectively next to "Left Up" and "Right Down" for confirmation of successful setup and also to check the specific position before turning on auto tracking.
  5. **Delete current Pan/Tilt limitation**: Click once "Left Up" or "Right Down" buttons to delete current angles.
  6. After setting up, turn on "Pan/Tilt Limit".
  7. Turn on "Auto Tracking", camera will only track the target within the pan/tilt limitation area, if the target walks out of the area, camera will stop tracking and be back to initial position based on lost time out setting.

Part 3. Initial Position Settings

- **Initial Position Set**: To set a 'home' position for the camera. If the target subject exits the scene for a time longer than the Target Lost Timeout value, this command returns the camera to its initial position.
- **Note**:
  - You must **disable [Auto Tracking]** while configuring these settings.
  - **The [double down arrow]** is used to confirm and check the initial position.
- **Steps are:**
  1. Turn off "Auto Tracking".
  2. **Set initial position:** Use the PTZ navigation control panel or IR remote to set up camera position.
  3. **Confirm setup:** The "Double down arrow" will appear if the setup is successful, and the "Initial Position Set" icon will turn to a darker blue.
  4. **Back to Initial Position Set:** Enable "Auto tracking" This feature will be available during tracking. If the target is lost, the camera will be back to the initial position automatically.
  5. **Delete Initial Position**: click "Initial Position Set" to delete and recreate again.

Part 4. Zone Settings - Blackboard Area Detection
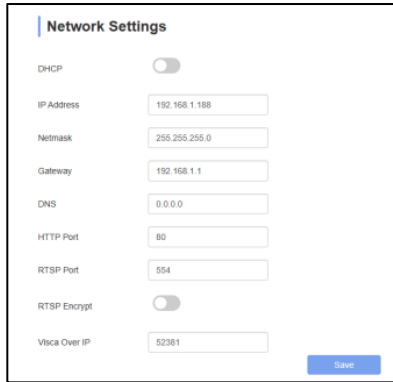
- **Blackboard Area Detect**: Define areas where the camera should not track the target when the target moves horizontally (left to right) within the zone. For example, when a teacher moves in front of the blackboard from left to right, the camera will stop following. This reduces distractions for students, allowing them to focus more comfortably on classroom activities.
- **Note**:
    - You need to **disable [Auto Tracking]** and **disable [Blackboard Area Detect]** while configuring these settings.
    - **The [double down arrow]** is used to confirm or to check blackboard positions.
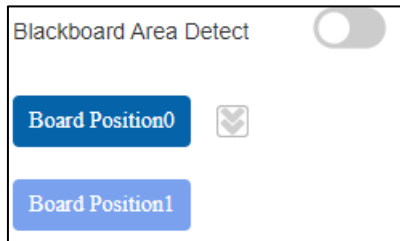
- **Steps for how to set up Board Positions**:
    1. Turn off "Auto Tracking".
    2. Turn off "Blackboard Area Detect".
    3. **Create Board Position**: Use PTZ navigation control panel to move camera to frame a zone. Then click "Board Position0" to save the position. There will be a "double arrow icon" shown up next to it.
    4. **Confirm or check Board Position**: Click ![icon] "double arrow" to confirm or check the board positions before turning on auto tracking.
    5. **Delete Board Position**: Click once "Board Position0" or "Board Position1" icons.
    6. Turn on "Blackboard Area Detect".
    7. Turn on "Auto Tracking", when the target enters the board position area, target movement will be ignored by the camera. When the target moves outside the zone, tracking will resume.

Network Settings

To set DHCP mode, IP address, subnet mask, default gateway, http port, web port, main stream port and sub stream port.

Default settings are as following:

DHCP: OFF	Gateway: 192.168.1.1	RTSP Port: 554
IP Address: 192.168.1.188	DNS: 000.000.000.000	RTSP Encrypt: OFF/ON
Subnet Mask: 255.255.255.000	HTTP Port: 80	VISCA OVER IP: 52381

Note: You can change the IP address, Netmask, Gateway and DNS accordingly based on your local network configurations. Click "Save" to confirm changes.

Firmware Update

1). Log in to the web page to access camera settings.

2). Go to "Settings" -> "Firmware Update"

Firmware Update

Control Version	1.0.0.1
Device Name	AV2040
System Version	V1.0.0
MCU Version	V2.1C_2024-10-17
APP Version	V580_2024-10-18

📄 Select File

📎
Upgrade   fw_4K20x_imx678_cv22_autotrack_avipas_20241018_v580.
bin

🚀 Upgrade

Upgrading

1.Do not power off or restart the camera during firmware upgrade.

2.Do not control device or web page during firmware
upgrade,which may cause unexpected error.

3.The camera will restart automatically after firmware upgrade.

`3%`

3). Click "Select File" to select the ".bin" update file, then start the upgrading process. When the upgrade is in progress, do not power off during the process.

4). An "upgrade success, wait for reboot" message will prompt, and camera will reboot after completion of update.

5). Re-log in to check the firmware version to make sure the software upgrade is successful.

6). Rebooting the camera is recommended.

Note: For the latest firmware version files, you may download from our website or contact us at service@avipas.com.

System Settings

System Mode: To select the system mode for the camera.
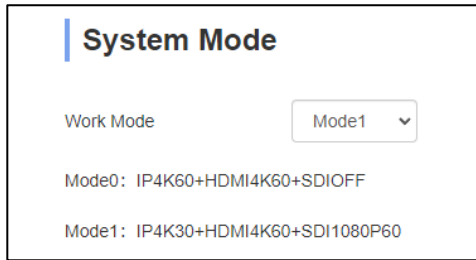
- **Mode 0:** when IP and HDMI are selected to output 4KP60, SDI output will be no video image
- **Mode 1:** when IP outputs 4KP30 and HDMI outputs 4KP60, SDI can output up to 1080P60.

Below is the table of the maximum video format that each video source can output under different mode:

	HDMI	SDI	IP	USB
Mode 0	4K60	*No Signal*	4K60	*No Signal*
Mode 1(default)	4K60	1080P60	4K30	4K30

Reset Options: To reset the camera to default settings.
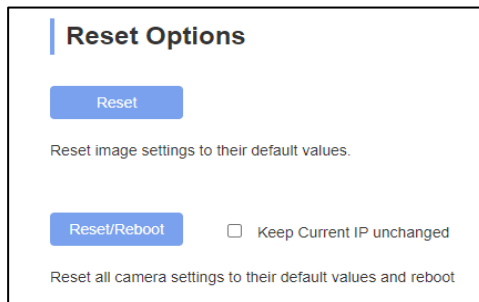
- Reset: reset camera image settings to factory default values
- Reset/Reboot: reset all camera settings back to factory default settings and reboot the camera
- If you want to keep the current camera IP address unchanged, check "Keep Current IP Unchanged."

Device Control: To reboot the camera, let the camera enter sleep mode or back to working mode
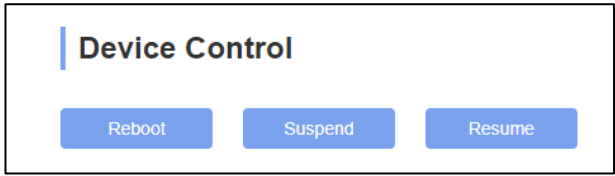
- Reboot: Restart camera
- Suspend: Enter sleep mode
- Resume: Resume to working mode
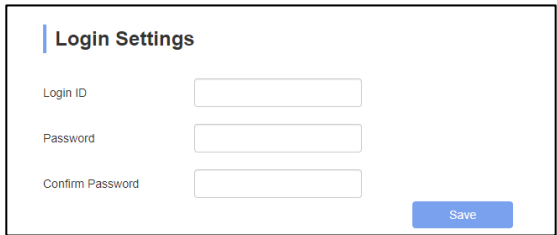
Profile Manage: To automatically generate or import camera settings' profiles
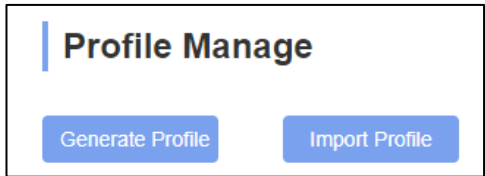
- Generate Profile: once clicked, config.txt will be generated and downloaded automatically including focus, exposure settings
- Import Profile: you can import previous saved profiles from your devices

Login Settings

To set camera account login ID and password.

System Time Settings

To set the time zone and NTP enable.

UVC Control

1. Make sure the USB 2.0 camera output is connected to the USB 2.0 port on the PC/MAC, and it is recognized by the PC Device Manager. If connected to the USB 3.0 port, video resolution may be compromised.

2. The interval of control commands sent from the server (via USB) to the camera should be no less than 250ms.

UVC Properties	VISCA
PU_BRIGHTNESS_CONTROL	81 01 04 4d 00 00 0p 0q FF
PU_CONTRAST_CONTROL	81 01 04 A2 00 00 0p 0q FF
PU_SATURATION_CONTROL	81 01 04 A1 00 00 0p 0q FF
PU_SHARPNESS_CONTROL	8x 01 04 42 00 00 0p 0q FF
PU_GAMMA_CONTROL	8x 01 04 5B 0p FF
PU_WHITE_BALANCE_TEMPERATURE_CONTROL	8x 01 04 35 0X FF
PU_BACKLIGHT_COMPENSATION_CONTROL	81 01 04 33 02/03 FF
PU_POWER_LINE_FREQUENCY_CONTROL	8x 01 04 AA 00/01/02 FF
CT_ZOOM_ABSOLUTE_CONTROL	8x 01 04 47 0p 0q 0r 0s FF
CT_PANTILT_ABSOLUTE_CONTROL	8x 01 06 02 VV WW 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z F
CT_PANTILT_RELATIVE_CONTROL	8x 01 06 01 pp qq rr ss FF
CT_ZOOM_RELATIVE_CONTROL	8x 01 04 07 pp FF

Serial Control

AV-2040 could be controlled through RS232 and RS485 interface. Serial parameters are as below:

Parameter	Value	Parameter	Value
Baud rate	2400/4800/9600/115200	Stop Bit	1bit
Start Bit	1 bit	Check Bit	None
Data Bit	8 bit		

1). Camera RS-232 Interface Definition
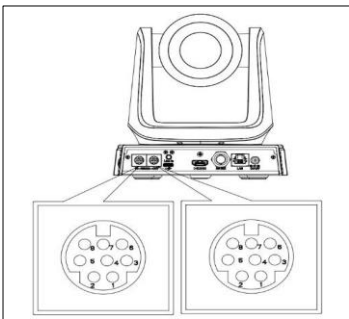
	PIN NO	Mini-Din IN(F)	Mini-Din OUT(F)
RS232	1	DTR	DTR
	2	DSR	DSR
	3	TXD	TXD
	4	GND	GND
	5	RXD	RXD
RS485	6	A(+)	
	7	IR OUT	
	8	B(-)	

2). RS232 Cable (included in box): 8-Pin Mini-Din(M) to DB-9(F)
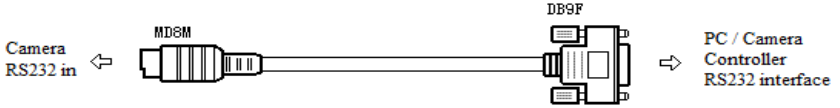
3). Camera Daisy Chain Connection(M) Table

Camera RS232 IN(F)		Mini-Din(M)	
1	DTR	1	DSR
2	DSR	2	DTR
3	TXD	5	RXD
4	GND	4	GND
5	RXD	3	TXD
6	NC	6	NC
7	NC	7	NC
8	NC	8	NC

4). Camera Mini-Din(M) to DB-9(F) Connection Table

Mini Din(M)		DB-9(F)	
1	DTR	6	DSR
2	DSR	4	DTR
3	TXD	2	RXD
4	GND	5	GND
5	RXD	3	TXD
6	NC	6	NC
7	NC	7	NC
8	NC	8	NC
		9	NC

Protocol Commands

VISCA Protocol Commands

VISCA 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
Address Set	Broadcast	88 30 01 FF	Address setting
IF_Clear	Broadcast	88 01 00 01 FF	I/F Clear
Command Cancel		8x 21 FF	
CAM_Power	On	8x 01 04 00 02 FF	Power ON/OFF
	Off	8x 01 04 00 03 FF	Address setting
CAM_Zoom	Stop	8x 01 04 07 00 FF	
	Tele	8x 01 04 07 02 FF	
	Wide	8x 01 04 07 03 FF	
	Tele	8x 01 04 07 2p FF	p = 0(low)~7(high)
	Wide	8x 01 04 07 3p FF	
	Direct	8x 01 04 47 0p 0q 0r 0s FF	pqrs: Zoom Position (0(wide) ~0x4000(tele))
	Direct with speed	8x 0A 04 47 0t 0p 0q 0r 0s FF	t: spd 0~7 pqrs: Zoom Position (0(wide) ~0x4000(tele))
CAM_DZoom	ON	8x 01 04 06 02 FF	
	OFF	8x 01 04 06 03 FF	
	Combine	8x 01 04 36 00 FF	Combine with optical zoom
	Separate	8x 01 04 36 01 FF	Separate with optical zoom
	Stop	8x 01 04 06 00 FF	Enable In separate mode
	Tele	8x 01 04 06 2p FF	Enable In separate mode
	Wide	8x 01 04 06 3p FF	Enable In separate mode
	Direct	8x 01 04 46 0p 0q 0r 0s FF	Enable In separate mode
CAM_Focus	Stop	8x 01 04 08 00 FF	
	Far	8x 01 04 08 02 FF	
	Near	8x 01 04 08 03 FF	
	Far	8x 01 04 08 2p FF	p=0 (Low) to 7 (High)
	Near	8x 01 04 08 3p FF	p=0 (Low) to 7 (High)

Command	Function	Command Packet	Note
	Direct	8x 01 04 48 0p 0q 0r 0s FF	pqrs: Focus Position
	Auto Focus	8x 01 04 38 02 FF	
	Manual	8x 01 04 38 03 FF	
	One Push	8x 01 04 18 01 FF	
CAM_Zoom Focus	Direct	8x 01 04 47 0p 0q 0r 0s 0t 0u 0v 0w FF	pqrs: Zoom Position (0(wide)~ 0x4000(tele)) tuvw: Focus Position
	Auto	8x 01 04 35 00 FF	
	Indoor	8x 01 04 35 01 FF	
	Outdoor	8x 01 04 35 02 FF	
CAM_WB	One Push	8x 01 04 35 03 FF	
	ATW	8x 01 04 35 04 FF	
	Manual	8x 01 04 35 05 FF	
	One Push Trigger	8x 01 04 10 05 FF	
	Reset	8x 01 04 03 00 FF	
CAM_R Gain	Up	8x 01 04 03 02 FF	Manual Control of R Gain
	Down	8x 01 04 03 03 FF	
	Direct	8x 01 04 43 00 00 0p 0q FF	pq: R Gain (0~0xFF)
	Reset	8x 01 04 04 00 FF	
CAM_B Gain	Up	8x 01 04 04 02 FF	Manual Control of B Gain
	Down	8x 01 04 04 03 FF	
	Direct	8x 01 04 44 00 00 0p 0q FF	pq: B Gain (0~0xFF)
	Full Auto	8x01 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
CAM_AE	Iris Priority	8x 01 04 39 0B FF	Iris Priority Automatic Exposure mode
	Bright	8x 01 04 39 0D FF	Bright Mode (Manual control)
	Reset	8x 01 04 0A 00 FF	
CAM_Shutter	Up	8x 01 04 0A 02 FF	Shutter Setting
	Down	8x 01 04 0A 03 FF	
	Direct	8x 01 04 4A 00 00 0p 0q FF	pq: Shutter Position (0~0x15)
	Reset	8x 01 04 0B 00 FF	
CAM_Iris	Up	8x 01 04 0B 02 FF	Iris Setting(0~0xD)
	Down	8x 01 04 0B 03 FF	
	Direct	8x 01 04 4B 00 00 0p 0q FF	pq: Iris Position (0~ 0x11)
	Reset	8x 01 04 0C 00 FF	
	Up	8x 01 04 0C 02 FF	Gain Setting (0~0x0F)
	Down	8x 01 04 0C 03 FF	
CAM_Gain	Direct	8x 01 04 0C 00 00 0p 0q FF	pq: Gain Positon (0~0x0E)
	GainLimit	8x 01 04 2C 0p FF	p: GainLimt 0x04~0x0F
	Reset	8x 01 04 0D 00 FF	
	Up	8x 01 04 0D 02 FF	Bright Setting
CAM_AEBright	Down	8x 01 04 0D 03 FF	
	Direct	8x 01 04 4D 00 00 0p 0q FF	pq: Bright l Position (0~0x1B)

Command	Function	Command Packet	Note
CAM_ImageBright	Direct	8x 01 04 A4 00 00 0p 0q FF	pq: Image Bright Position (0~0x0F) AE_AUTO/AE_SHUTTER/AE _IRIS
CAM_WDR	On	8x 01 04 3D 02 FF	Exposure Compensation ON/OFF
	Off	8x 01 04 3D 03 FF	
	Direct	8x 01 04 D3 pq FF	pq: ExpComp Position (0~0x6)
CAM_Back Light (BLC)	On	8x 01 04 33 02 FF	BackLight On
	Off	8x 01 04 33 03 FF	BackLight Off
CAM_Sharpness	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 (0~0x0F)
CAM_Memory(preset)	Reset	8x 01 04 3F 00 pp FF	pp: Preset Number (=0 to 127)
	Set	8x 01 04 3F 01 pp FF	
	Recall	8x 01 04 3F 02 pp FF	
CAM_MemoryH (preset)	Reset	8x 01 04 3F 00 0p 0p FF	pp: Preset Number (=0 to 255) Corresponds to 0 to 9 on the Remote Commander
	Set	8x 01 04 3F 01 0p 0p FF	
	Recall	8x 01 04 3F 02 0p 0p FF	
Freeze	Set	8x 01 04 75 0p FF	p: Freeze switch 3=OFF 2=ON
Preset Freeze Set	Set	8x 01 04 76 0p FF	p: Preset Freeze switch 3= OFF 2=ON
Preset Speed Set	Set	8x 01 7E 01 0B 00 qq FF	qq: Preset speed 2~24 default:15
Preset Speed Adj	adj	8x 01 7E 01 1B 0p FF	p: direction adjustment 3= down 2=up
CAM_LR_Reverse	On	8x 01 04 61 02 FF	Image Flip Horizontal ON/OFF
	Off	8x 01 04 61 03 FF	
CAM_Picture Flip	On	8x 01 04 66 02 FF	Image Flip Vertical ON/OFF
	Off	8x 01 04 66 03 FF	
CAM_RS485Ctl	On	8x 01 06 A5 02 FF	
	Off	8x 01 06 A5 03 FF	
CAM_Saturation	Saturation	8x 01 04 A1 00 00 0p 0q FF	pq: saturation level 0x00~0x0f
CAM_Contrast	Contrast	8x 01 04 A2 00 00 0p 0q FF	pq: Contrast level 0x00~0x0f
CAM_Speed By Zoom	On	8x 01 06 A0 02 FF	
	Off	8x 01 06 A0 03 FF	
CAM_PT Speed	PT Speed	8x 01 04 C1 00 00 0p 0q FF	pq: PT speed 0x05~0x18
CAM_Zoom Speed	Zoom Speed	8x 01 04 D1 00 00 0p 0q FF	pq: Zoom speed 0x01~0x07
CAM_Zoom Display	On	8x 01 06 C2 02 FF	
	Off	8x 01 06 C2 03 FF	

Command	Function	Command Packet	Note
CAM_Freeze	Freeze	8x 01 04 75 0p FF	p: Freeze switch 3=OFF, 2=ON
CAM_Preset Freeze Set	Preset Freeze Set	8x 01 04 76 0p FF	p: Preset Freeze switch 3=OFF, 2=ON
CAM_Preset PT Speed Set	Preset PT Speed Set	8x 01 7E 01 0B 00 qq FF	qq: Preset PT Speed 02~24 default:15
CAM_Preset Zoom Speed Set	Preset Zoom	81 01 7E 01 2B 00 qq FF	qq: Preset Zoom Speed 01~07 default:5
CAM_Preset Speed Adj	Preset Speed Adj	8x 01 7E 01 1B 0p FF	p: Adjustment of direction 3=down, 2=up
CAM_IR address	IR address	8x 01 06 D8 0p FF	p:IR address 1~4
CAM_Gamma	Gamma set	8x 01 04 5B 0p FF	P: Gamma NO. (0~4)
CAM_2D Noise Reduction	Direct	8x 01 04 A5 0p FF	(0~0x01)
CAM_3D Noise Reduction	Direct	8x 01 04 53 0p FF	(0~0x05)
CAM_AT_OnOff	Direct	8x 01 04 C8 0p FF	P: 0 = off 1 = on
CAM_AT_TargetChange	Target change	8x 01 04 CA 0p FF	P:0x02 right move P:0x03 left move
CAM_TargetLocation	Target location	8x 01 04 CB 0p FF	P: 0:mid 1: left 2: right
CAM_TargetRatio	Target ratio	8x 01 04 CC 0p 0q FF	Pq:(6~20) Human is 1/pq in the pic
CAM_AT_ChangeTime	Direct	8x 01 04 CD 0p 0q FF	pq: t time=t*100ms（Target lost time detect）
CAM_AT_BlackBoardMode	Direct	8x 01 04 CE 0p FF	p：1=Enable 0=Disable
CAM_AT_LeftUp_Limit (preset#251)	Direct	8x 01 04 3F 0p 0F 0B FF	p：1=Set 2=Call 3=Clear
CAM_AT_RightDown_Limit(preset#253)	Direct	8x 01 04 3F 0p 0F 0D FF	p：1=Set 2=Call 3=Clear
CAM_AT_InitialPosition (preset#255)	Direct	8x 01 04 3F 0p 0F 0F FF	p：1=Set 2=Call 3=Clear
CAM_AT_BlackBoard Position0(preset#252)	Direct	8x 01 04 3F 0p 0F 0C FF	p：1=Set 2=Call 3=Clear
CAM_AT_BlackBoard Position1(preset#250)	Direct	8x 01 04 3F 0p 0F 0A FF	p：1=Set 2=Call 3=Clear
CAM_AT_ZoomLock	Direct	8x 01 04 D6 00 0p FF	p：1=Enable 0=Disable
CAM_AT_LimitEnable	Direct	8x 01 04 D7 0p FF	p：1=Enable 0=Disable

Command	Function	Command Packet	Note
CAM_AudioSet	Direct	8x 01 04 D8 0p 0q 0r 0s 0t 0u 0m 0n 0h 0i 0j FF	0p：0x01-ON 0x00-OFF 0q：0x01-line in rstu: samplerate m:volume 0~100 h : encode mode 4:LPCM 5: ACC ij:bitrate*1000
FLICK	50HZ	8x 01 04 23 01 FF	
	60HZ	8x 01 04 23 02 FF	
	OFF	8x 01 04 23 00 FF	
Video System Set (Factory)		8x 01 06 35 00 pp FF	pp: Video format 1080P60 0x00 1080P50 0x01 1080I60 0x02 1080I50 0x03 1080P30 0x04 1080P25 0x05 720P60 0x06 720P50 0x07 720P30 0x08 720P25 0x09 1080P5994 0x0E 1080I5994 0x0F 1080P2997 0x10 720P5994 0x13 720P2997 0x14 1080P24 0x11 1080P2398 0x12 4K@30 0x15 4K@25 0x16 4K@60 0x17 4K@50 0x18 4K@59.94 0x19 4K@29.97 0x1A
Video System Set (Sony)		8x 01 04 24 72 0p 0q FF	1080P60 0x2e 1080P50 0x2f 1080I60 0x01 1080I50 0x04 1080P30 0x06 1080P25 0x08 720P60 0x09 720P50 0x0c 720P30 0x0e 720P25 0x11 1080P5994 0x13 1080I5994 0x02 1080P2997 0x07 720P5994 0x0a 720P2997 0x0f 1080P24 0x2a 1080P2398 0x2b 4K@30 0x15 4K@25 0x16 4K@60 0x17 4K@50 0x18 4K@59.94 0x19 4K@29.97 0x1A

Command	Function	Command Packet	Note
CAM_ID Write		8x 01 04 22 0p 0q 0r 0s FF	pqrs: Camera ID (=0000 to FFFF)
CAM_ID Write		8x 01 04 22 0p 0q 0r 0s FF	pqrs: Camera ID (=0000 to FFFF)
DHCP control	DHCP off	8x 01 04 AE 00 FF	DHCP off
	DHCP on	8x 01 04 AE 01 FF	DHCP on
IP address control	IP set	8x 01 04 AB 0p 0q 0r 0s 0m 0n 0x 0y FF	Set ip to: pq.rs.mn.xy
	Mask set	8x 01 04 AC 0p 0q 0r 0s 0m 0n 0x 0y FF	Set mask to: pq.rs.mn.xy
	Gateway set	8x 01 04 AD 0p 0q 0r 0s 0m 0n 0x 0y FF	Set gateway to : pq.rs.mn.xy
Mainstream	resolution	8x 01 04 C2 00 0p 0q 0r 0s 0m 0n 0x 0y FF	pqrs : Column(x size) mnxy: Line (y size) only support:1920*1080, 1280*720, 1024*576
	rate	8x 01 04 C2 01 0p 0q 0r 0s 0m 0n 0x 0y FF	pqrsmnxy: bitrate (1024~61440kbps)
	Encode Mode	8x 01 04 C2 02 0p 0q FF	Mode sel: 0xpq 0x00: h264 0x01: h265
	Frame Rate	8x 01 04 C2 03 0p 0q FF	Frame rate: 0xpq (15~60)
	IDR	8x 01 04 C2 04 0p 0q FF	IDR Setting: 0xpq (1~120)
	Stream Rate Mode	8x 01 04 C2 05 0p 0q FF	Contor mode: 0xpq 0x00: CBR 0x01: VBR
Sub stream	resolution	8x 01 04 C3 00 0p 0q 0r 0s 0m 0n 0x 0y FF	pqrs : Column(x size) mnxy: Line (y size) only support: 640*360
	rate	8x 01 04 C3 01 0p 0q 0r 0s 0m 0n 0x 0y FF	pqrsmnxy: bitrate (1024~20480kbps)
	Encode Mode	8x 01 04 C3 02 0p 0q FF	Mode sel: 0xpq 0x00: h264 0x01: h265
	Frame Rate	8x 01 04 C3 03 0p 0q FF	Frame rate: 0xpq (15~60)
	IDR	8x 01 04 C3 04 0p 0q FF	IDR Setting: 0xpq (1~120)
	Stream Rate Mode	8x 01 04 C3 05 0p 0q FF	Contor mode: 0xpq 0x00: CBR 0x01: VBR
SYS_Menu	Menu On	8x 01 06 06 02 FF	Turn on the menu
	Menu Off	8x 01 06 06 03 FF	Turn off the menu
	Menu Back	8x 01 06 06 10 FF	Menu step back

Command	Function	Command Packet	Note
SYS_Menu	Menu OK	8x 01 7E 01 02 00 01 FF	Menu ok
IR_Receive	On	8x 01 06 08 02 FF	IR (remote commander) receive ON/OFF
	Off	8x 01 06 08 03 FF	
	On/Off	8x 01 06 08 10 FF	
Tally control	Tally on/off	8x 01 7E 01 0A 00 0p FF	p: 0: OFF (LED off) 1: (LED green on) 2: (LED red on) 4: (LED blue on)
Pan_tilt Drive	Up	8x 01 06 01 VV WW 03 01	VV: Pan speed 0x01 (low speed) to 0x18 (high speed) WW: Tilt speed 0x01 (low speed) to 0x14 (high speed) YYYY: Pan Position (TBD) ZZZZ: Tilt Position (TBD
	Down	8x 01 06 01 VV WW 03 02	
	Left	8x 01 06 01 VV WW 01 03	
	Right	8x 01 06 01 VV WW 02 03	
	Up left	8x 01 06 01 VV WW 01 01	
	Up right	8x 01 06 01 VV WW 02 01	
	Down Left	8x 01 06 01 VV WW 01 02	
	Down Right	8x 01 06 01 VV WW 02 02	
	Stop	8x 01 06 01 VV WW 03 03	
	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-tilt Limit Set	Set	8x 01 06 07 00 0W 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	W: 1: Up Right 0: Down Left 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_Power Inq	8x 09 04 00 FF	y0 50 02 FF	On
		y0 50 03 FF	Off (Standby)
CAM_Zoom Pos Inq	8x 09 04 47 FF	y0 50 0p 0q 0r 0s FF	pqrs: Zoom Position
CAM_DZoom On Off Inq	8x 09 04 06 FF	y0 50 0p FF	p: 2: ON 3: OFF
CAM_PT Speed Inq(IR)	8x 09 04 C1 FF	y0 50 pp FF	pp: 0x05~0x18
CAM_Zoom Speed Inq(IR)	8x 09 04 D1 FF	y0 50 0p FF	p:0x00~0x07
CAM_Focus Mode Inq	8x 09 04 38 FF	y0 50 02 FF	Auto Focus
		y0 50 03 FF	Manual Focus
CAM_Focus Pos Inq	8x 09 04 48 FF	y0 50 0p 0q 0r 0s FF	pqrs: Focus Position
CAM_2D_Inq	8x 09 04 A5 FF	y0 50 03 FF	(0~0x01) p: 0: off 1: on
CAM_3D_Inq	8x 09 04 53 FF	y0 50 03 FF	(0~0x05) p:0: off 1: auto 2~5: noise level
CAM_WB Mode Inq	8x 09 04 35 FF	y0 50 00 FF	Auto
		y0 50 01 FF	Indoor mode
		y0 50 02 FF	Outdoor mode
		y0 50 03 FF	OnePush mode
		y0 50 04 FF	ATW
		y0 50 05 FF	Manual
CAM_RGain Inq	8x 09 04 43 FF	y0 50 00 00 0p 0q FF	pq: R Gain
CAM_BGain Inq	8x 09 04 44 FF	y0 50 00 00 0p 0q FF	pq: B Gain
CAM_Saturation Inq	8x 09 04 A1 FF	y0 50 00 00 0p 0q FF	pq: saturation
CAM_Contrast Inq	8x 09 04 A2 FF	y0 50 00 00 0p 0q FF	pq: contrast
CAM_AE Mode Inq	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_Flicker Mode Inq	8x 09 04 AA FF	y0 50 0p FF	p: 0: OFF
			     1: 50HZ
			     2: 60HZ

CAM_Shutter Pos Inq	8x 09 04 4A FF	y0 50 00 00 0p 0q FF	pq: Shutter Position
CAM_Iris Pos Inq	8x 09 04 4B FF	y0 50 00 00 0p 0q FF	pq: Iris Position
CAM_Gain Posi Inq	8x 09 04 4C FF	y0 50 00 00 0p 0q FF	pq: Gain Position
CAM_ Bright Posi Inq	8x 09 04 4D FF	y0 50 00 00 0p 0q FF	pq: Bright Position
CAM_WDR Mode Inq	8x 09 04 3D FF	y0 50 02 FF	On
		y0 50 03 FF	Off

Command	Command Packet	Return Packet	Note
CAM_Pre PT Speed Inq	8x 09 7E 01 0B FF	y0 50 pp FF	pp: 0x05~0x18
CAM_Pre Zoom Speed Inq	8x 09 7E 01 2B FF	y0 50 pp FF	pp: 0x01~0x07
SYS_Menu Mode Inq	8x 09 06 06 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_LR_Reverse Inq	8x 09 04 61 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_Picture Flip Inq	8x 09 04 66 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_ID Inq	8x 09 04 22 FF	y0 50 0p 0q 0r 0s FF	pqrs: Camera ID
CAM_DHCP Inq	8x 09 04 AE FF	y0 50 pp FF	
CAM_IP Inq	8x 09 04 AB FF	y0 50 0p 0p 0q 0q 0r 0r 0s 0s FF	
CAM_MASK Inq	8x 09 04 AC FF	y0 50 0p 0p 0q 0q 0r 0r 0s 0s FF	
CAM_GATEWAY Inq	8x 09 04 AD FF	y0 50 0p 0p 0q 0q 0r 0r 0s 0s FF	
CAM_Version Inq	8x 09 00 02 FF	y0 50 ab cd mn pq rs tu vw FF	
Tally Inq	8x 09 7E 01 0A FF	y0 50 0p FF	p: tally state
Freeze Inq	8x 09 04 75 FF	y0 50 0p FF	p: Freeze switch 3 = OFF 2 = ON
Preset Freeze Inq	8x 09 04 76 FF	y0 50 0p FF	p: Preset Freeze switch 3 = OFF 2 = ON
PresetExist Inq	8x 09 04 3F 0p 0p FF	y0 50 0q FF	pp: preset NO. 0~255 q：0: not saved 1:saved
Preset Speed Set Inq	8x 09 7E 01 0B FF	y0 50 pp FF	pp: Preset Speed 2~24 default:15
CAM_AT_OnOff_Inq	8x 09 04 C8 FF	y0 50 0p FF	P: 0 = off 1 = on
CAM_TargetLocation_Inq	8x 09 04 CB FF	y0 50 0p FF	P: 0:mid 1: left 2:right
CAM_TargetRatio_Inq	8x 09 04 CC FF	y0 50 0p 0q FF	Pq:(6~20) Human is 1/pq in the pic
CAM_AT_ChangeTime_Inq	8x 09 04 CD FF	y0 50 0p 0q FF	pq: t time=t*100ms （Target lost time detect）
CAM_AT_BlackBoardMode _Inq	8x 09 04 CE FF	y0 50 0p FF	p: 1=Enable 0=Disable
CAM_AT_ZoomLock_Inq	8x 09 04 D6 00 FF	y0 50 0p FF	p: 1=Enable 0=Disable
CAM_AT_LimitEnable_Inq	8x 09 04 D7 FF	y0 50 0p FF	p: 1=Enable 0=Disable
CAM_AT_LeftUp_Limit_In q(preset#251)	8x 09 04 3F 0F 0B FF	y0 50 0p FF	p: 1：position set 0：not set
CAM_AT_RightDown_ Limit_Inq(preset#253)	8x 09 04 3F 0F 0D FF	y0 50 0p FF	p: 1：position set 0：not set
CAM_AT_InitialPosition_In q(preset#255)	8x 09 04 3F 0F 0F FF	y0 50 0p FF	p: 1：position set 0：not set

Command	Command Packet	Return Packet	Note
CAM_AT_BlackBoard Position0_Inq(preset#252)	8x 09 04 3F 0F 0C FF	y0 50 0p FF	p: 1：position set　0：not set
CAM_AT_BlackBoard Position1_Inq(preset#250)	8x 09 04 3F 0F 0A FF	y0 50 0p FF	p: 1：position set　0：not set
CAM_AudioSet	8x 09 04 D8 FF	8x 01 04 D8 0p 0q 0r 0s 0t 0u 0m 0n 0h 0i 0j FF	0p：0x01-ON 0x00-OFF 0q：0x01-line in rstu：samplerate mn：volume 0~100 h：encode mode 4 ：LPCM 5: ACC ij：bitrate*1000
Video System Inq(Factory)	8x 09 06 23 FF	y0 50 pp FF	pp: Video format
Video System Inq(Sony)	8x 09 04 24 72 FF	y0 50 0p 0p FF	pp: Video format
IR_Transfer	8x 09 06 1A FF	y0 50 02 FF	On
		y0 50 03 FF	Off
IR_Receive	8x 09 06 08 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
Pan-tilt Max Speed Inq	8x 09 06 11 FF	y0 50 ww zz FF	ww: Pan Max Speed zz: Tilt Max Speed
Pan-tilt Pos Inq	8x 09 06 12 FF	y0 50 0w 0w 0w 0w 0z 0z 0z 0z FF	wwww: Pan Position zzzz: Tilt Position
Mainstream Resolution Inq	8x 09 04 C2 00 FF	y0 50 0p 0q 0r 0s 0m 0n 0x 0y FF	pqrs : Column(x size) mnxy: Line (y size) only support: 3840*2160 1920*1080 1280*720 1024*576
Main stream Rate Inq	8x 09 04 C2 01 FF	y0 50 0p 0q 0r 0s 0m 0n 0x 0y FF	pqrsmnxy: bitrate (1024~122800kbps)
Main Encode Mode Inq	8x 09 04 C2 02 FF	y0 50 pp FF	Mode sel:0xpp 0x00: h264 0x01: h265
Main Frame Rate Inq	8x 09 04 C2 03 FF	y0 50 pp FF	Frame rate:0xpp (15~60)
Main IDR Inq	8x 09 04 C2 04 FF	y0 50 pp FF	IDR Setting:0xpp (1~120)
Main Stream Rate Mode Inq	8x 09 04 C2 05 FF	y0 50 pp FF	Contor mode:0xpp 0x00: CBR 0x01: VBR

Command	Command Packet	Return Packet	Note
Sub stream Resolution Inq	8x 09 04 C3 00 FF	y0 50 0p 0q 0r 0s 0m 0n 0x 0y FF	pqrs: Column (x size) mnxy: Line (y size) only support: 720*480 640*480 640*360
Sub stream Rate Inq	8x 09 04 C3 01 FF	y0 50 0p 0q 0r 0s 0m 0n 0x 0y FF	pqrsmnxy: bitrate (1024~20480kbps)
Sub Encode Mode Inq	8x 09 04 C3 02 FF	y0 50 pp FF	Mode sel:0xpp 0x00: h264 0x01: h265
Sub Frame Rate Inq	8x 09 04 C3 03 FF	y0 50 pp FF	Frame rate:0xpp (15~60)
Sub IDR Inq	8x 09 04 C3 04 FF	y0 50 pp FF	IDR Setting:0xpp (1~120)
Sub Stream Rate Mode Inq	8x 09 04 C3 05 FF	y0 50 pp FF	Contor mode:0xpp 0x00: CBR 0x01: VBR

VISCA Pan Tilt Absolute Position Value

Pan Angle	VISCA Value	Tilt Angle	VISCA Value
-170	0xF670	-30	0xFE50
-135	0xF868	0	0x0000
-90	0xFAF0	30	0x01B0
-45	0xFD78	60	0x0360
0	0x0000	90	0x510
45	0x0288		
90	0x0510		
135	0x0798		
170	0x0990		

VISCA Pan Tilt Speed Value

Pan (Degree/Second)		Tilt (Degree/Second)	
0	0.3	0	0.3
1	1	1	1
2	1.5	2	1.5
3	2.2	3	2.2
4	2.4	4	3.6
5	2.6	5	4.7
6	2.8	6	6
7	3.0	7	8
8	3.2	8	10
9	3.4	9	12
10	3.8	10	15
11	4.5	11	18
12	6	12	23
13	9	13	30
14	15	14	39
15	19	15	48
16	25	16	59
17	32	17	69
18	38	18	80
19	45		
20	58		
21	75		
22	88		
23	105		
24	120		

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
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

Maintenance and Troubleshooting

Maintenance

1. Please power off the camera and disconnect the power adapter from the socket whenever the camera is not in use.
2. Use 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

1. **No video output**
   - Check Power Supply: Ensure the camera's power supply is connected and the power indicator light on the camera is solid blue.
   - Self-Check: Verify that the camera performs a self-check (moves the lens through its entire range) when powered on.
   - Check Video Connections: Ensure that all video cables (HDMI, SDI, or whichever you are using) are securely connected to both the camera and the display.
   - Check the Input Selection display: if the "Input" on display set to the correct input source that matches the camera's output.
   - Check Video Format: check video format from camera that compatible with the video format on display.

2. **Has video output, but no display on screen**
   - Check the video format, make sure its format is compatible with your monitor/switcher.

3. **Remote control does not work**
   - Remote control address is set to 1 (if the machine is set back to the factory defaults, remote control addresses need to be back to 1 too)
   - Check the battery, make sure it has enough capacity.
   - Check the menu setting. Camera control via IR remote control is only available after exiting the menu. If video outputs via LAN, menu will not be displayed. The camera menu will automatically close after 30 seconds.

4. **Serial port does not work**
   - Check the camera serial device protocol, baud rate and address (camera ID), make sure they're consistent with controller's settings.
   - Check the serial cable, make sure it is connected properly.

5. **Web pages cannot log in**
   - Check whether the network cable is connected properly (Ethernet port indicator light should be flashing yellow). First-time use, please connect the camera directly to your PC.
   - Check if the computer is set to the network segment that is consistent with the IP address of the camera. For details, please refer to: avipas.com-> "SUPPORT" -> "HOW TO MATERIALS" -> Access camera via IP.
   - Clear browser data on your PC web browser

Warranty and Support

Warranty

Thank you for your interest in the products of AVIPAS Inc.

This Limited Warranty applies to UHD Conference Camera purchased from AVIPAS Inc.

This Limited Warranty covers any defect in material and workmanship under normal use within the Warranty Period. AVIPAS Inc. will repair or replace the qualified products at no charge.

AVIPAS Inc. provides a **two (2)-year** warranty (from the date of purchase) for this UHD Conference Camera.

This Limited Warranty does not cover problems including but not limited to improper handling, malfunction or damage not resulting from defects in material.

To receive warranty service, please contact AVIPAS Inc. first. We will decide whether a repair or replacement is needed and will advise you of the cost of such repair or replacement.

Support

For more help, please visit our website: *avipas.com* or contact *service@avipas.com* for technical support, FAQs and more knowledge-based information about how to better use our camera.

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