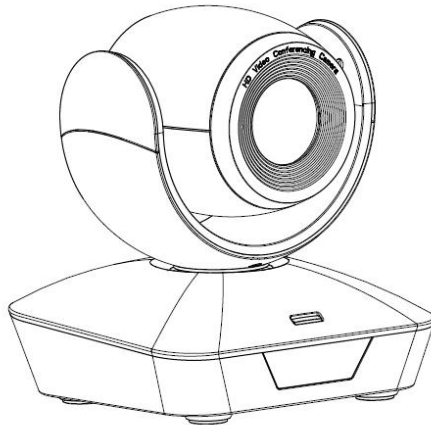


# 10X HDMI+USB Type C HD PTZ Camera

## User Manual



**V1.0**

J.BC.0205.0190





# CONTENT



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# ==SAFEETY GUIDES==

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- Before operation, please fully read and follow all instructions in the manual. For your safety, always keep this manual with the camera.
- The camera power voltage is 12V DC, rated current is 2A. We suggest you use it with the original power supply adapter supplied by the factory.
- Please keep the power cable, video cable and control cable in a safe place. Protect all cables especially the connectors.
- Operational environment:  $-10^{\circ}\text{C}\sim 50^{\circ}\text{C}$ , humidity less than 80%.
- To avoid any danger, please keep the camera away from the corrosive liquid.
- Avoid stress, vibration and damp during transportation, storage and installation.
- Do not remove the camera housing and cover. For any service, please contact authorized technicians.
- Video cable and control cable should be individually shielded, and cannot be substituted with other cables. Do not direct the camera lens towards strong light, such as the sun or the intensive light.
- Use a dry and soft cloth to clean the camera housing. Applied with neutral cleaning agent when there is need to clean. To avoid damage on the camera lens, never use strong or abrasive cleaning agents on the camera housing.
- Do not move the camera by holding the camera head. To avoid mechanical trouble, do not rotate the camera head by hand.
- Put the camera on fixed and smooth desk or platform, avoid leaned installation.
- Power Supply Polarity:



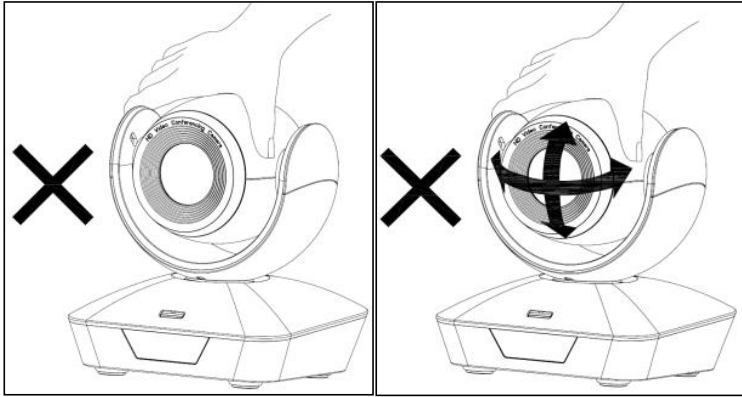
# ===== SAFETY GUIDES =====

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## Attention !

▲ The video quality may be affected by the specific frequencies of electromagnetic field.

▲ Never grasp the head of the camera, and never move the camera by hand when it is working, otherwise, mechanism maybe destroyed.



## Declaration:

■ Instructional Manual is for reference only. Please refer to the actual product.

■ Please contact Customer Service staff for the latest programs and supplementary documentations.

■ In case of any doubt or dispute in the instruction manual, the final interpretation of the company shall prevail.

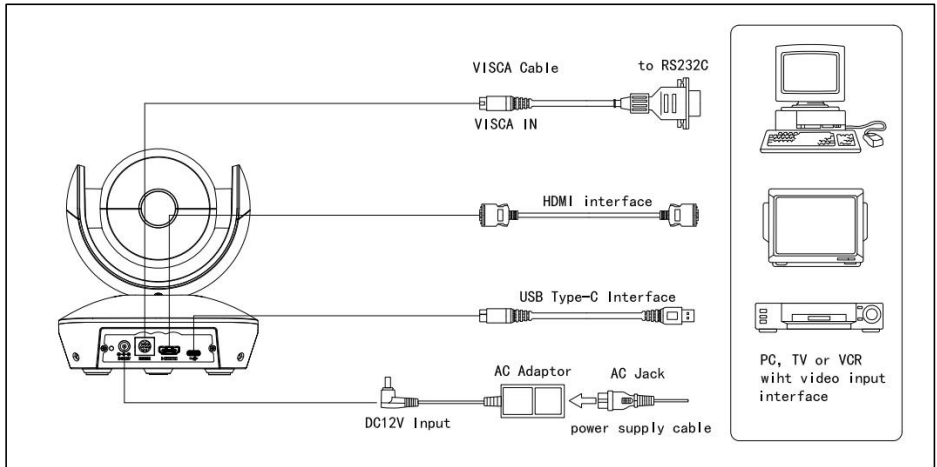
# ===== USE CHECK =====

## PACKING LIST

Check all below items when open the package

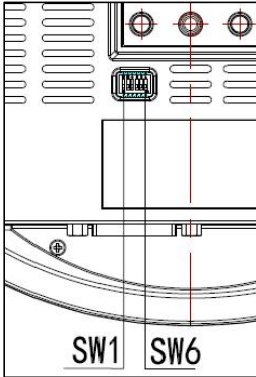
- Camera ..... 1PCS
- Power Adapter..... 1PCS
- Power Cable..... 1PCS
- Remote Controller..... 1PCS
- USB Type-C Cable..... 1PCS
- RS232 Cable..... 1PCS
- User Manual..... 1PCS
- QC PASS..... 1PCS

## QUICK START



# ===== USE CHECK =====

## Dial Switch Setting (at the bottom of the camera)



| Dial Switch (ARM) |      |      |                |
|-------------------|------|------|----------------|
|                   | SW-1 | SW-2 | Instruction    |
| 1                 | OFF  | OFF  | Upgrading mode |
| 2                 | ON   | OFF  | Debugging mode |
| 3                 | OFF  | ON   | Undefined      |
| 4                 | ON   | ON   | Working mode   |

| Dial Switch |      |      |             |
|-------------|------|------|-------------|
|             | SW-3 | SW-4 | Instruction |
| 1           | OFF  | OFF  | Reserved    |
| 2           | ON   | OFF  | Reserved    |
| 3           | OFF  | ON   | Reserved    |
| 4           | ON   | ON   | Reserved    |

| Dial Switch |      |      |             |
|-------------|------|------|-------------|
|             | SW-5 | SW-6 | Instruction |
| 1           | OFF  | OFF  | Reserved    |
| 2           | ON   | OFF  | Reserved    |
| 3           | OFF  | ON   | Reserved    |
| 4           | ON   | ON   | Reserved    |

# === PRODUCT HIGHLIGHTS ===

---

- ★ With the most advanced HD DSP, 1/2.8-inch 2.4 million image sensor.
- ★ High-quality 10x 62.5-degree wide-angle optical lens, to ensure the smooth and transparent HD images.
- ★ Independent intellectual property rights of the focus algorithm, fast and accurate focus performance, to ensure that the image remains clear in the process of zooming, focusing process is fast and smooth.
- ★ USB and HDMI output simultaneously.
- ★ HDMI maximum resolution support 1920\*1080P60 output, suitable for a variety of occasions.
- ★ USB Type-C multiple compression output, the maximum resolution support MJPG1920\*1080P60, suitable for different video software applications.
- ★ USB Type-C support Windows, MAC OS, Android, Linux and other operating systems.
- ★ Using the standard UVC protocol, compatible with most video conferencing software.
- ★ Support image flip function: can be front-mounted, inverted, to meet the requirements of different occasions video framing.
- ★ High-precision motor positioning, quiet and smooth mechanical rotation.
- ★ Support 128 preset bits.
- ★ Support RS232/485 serial port control.
- ★ Standard Sony Visca and Pelco-P/D control protocol.
- ★ Support WDR wide dynamic, 3D noise reduction function.
- ★ Brightness, contrast, hue, saturation, sharpness, gamma, exposure, white balance, gain and other parameters can be adjusted.
- ★ Support user's own program upgrade.
- ★ Support USB Type-C interface power supply.
- ★ Comes with a multi-functional infrared remote control, easy and fast for users to use.
- ★ Multi-language menu: support Chinese, English, Russian.





# CAMERA SPEC



| 10X HD PTZ Camera          |   |
|----------------------------|---|
| <b>Sensor</b>              | 1/2.8inch high quality, 2.4 MP CMOS Sensor  |
| <b>Video Format</b>        | HDMI<br>1920*1080P60/59.94/50/30/29.97/25/24<br>1920*1080I60/59.94/50<br>1280*720P60/59.94/50/30/29.97/25                                       |
|                            | USB Type-C<br>MJPEG: 1920*1080P60; 1280*960P60; 1280*720P60;<br>1024*768P60; 800*600P60; 640*480P30; 320*240P60<br>YUY2: 640*480P30; 320*240P30 |
| <b>Video Interface</b>     | HDMI, USB Type-C  |
| <b>Focal Length</b>        | 4.7mm~47mm  |
| <b>Aperture</b>            | F1.6~3.0  |
| <b>View Angel</b>          | 62.5°(Wide)~6.43°(Tele)   |
| <b>Lens Magnifications</b> | 10x optical zoom + 4x digital zoom  |
| <b>Rotation Angle</b>      | Pan: ±170°; Tilt: -30°~+90°;  |
| <b>Rotation Speed</b>      | Pan: 0.1°~120°/s; Tilt: 0.1°~80°/s  |
| <b>Preset</b>              | Remote controller: 10; RS232: 128; Accuracy: 0.1°   |
| <b>Control Port</b>        | RS232   |
| <b>Protocol</b>            | Visca Serial, Pelco-P, Pelco-D  |
| <b>Minimum Lux</b>         | 0.1lux  |
| <b>White Balance</b>       | Auto / Manual / ATW / Push / Indoor / Outdoor / Color Temperature   |
| <b>Exposure</b>            | Auto / Manual / Shutter / Iris / Bright   |
| <b>Focus</b>               | Auto / Manual   |
| <b>Iris</b>                | Auto / Manual   |
| <b>Shutter</b>             | Auto / Manual   |
| <b>Gamma select</b>        | Supported   |
| <b>WDR</b>                 | Supported   |
| <b>BLC</b>                 | Supported   |

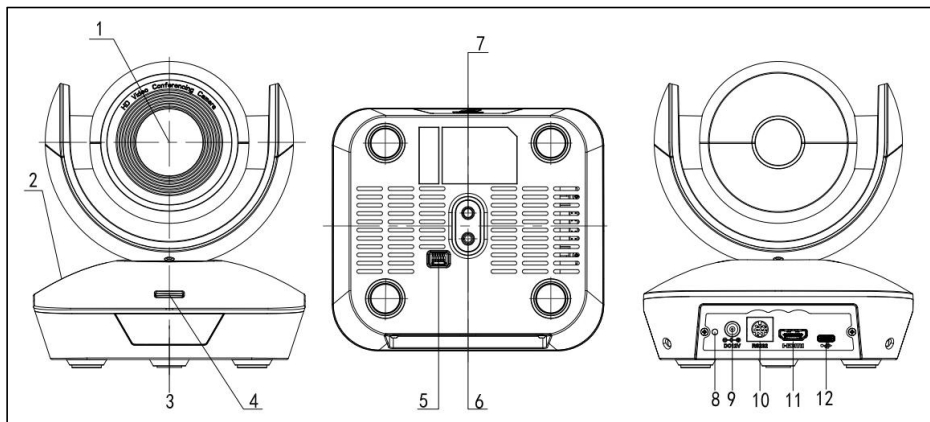


# CAMERA SPEC



|                            |                   |
|----------------------------|-------------------|
| <b>2D Noise Reduction</b>  | Supported         |
| <b>3D Noise Reduction</b>  | Supported         |
| <b>Anti-flicker</b>        | OFF, 50Hz, 60Hz   |
| <b>Pan Tilt Flip</b>       | Supported         |
| <b>Mirroring</b>           | Supported         |
| <b>Input Voltage</b>       | DC 12V / USB 5V   |
| <b>Dimension</b>           | 148mm×132mm×162mm |
| <b>Net Weight</b>          | 0.9kg(2LBS)       |
| <b>Working Temperature</b> | -10°C~50°C        |
| <b>Working Humidity</b>    | ≤80%              |

# == INTERFACE DESCRIPTION ==



1.Camera Lens

2.Camera Base

3.IR Receiver Panel

4.Power Indicator Light

5.Dial Switch

6.Tripod Screw Hole

7.Installation Hole

8.Power Indicator

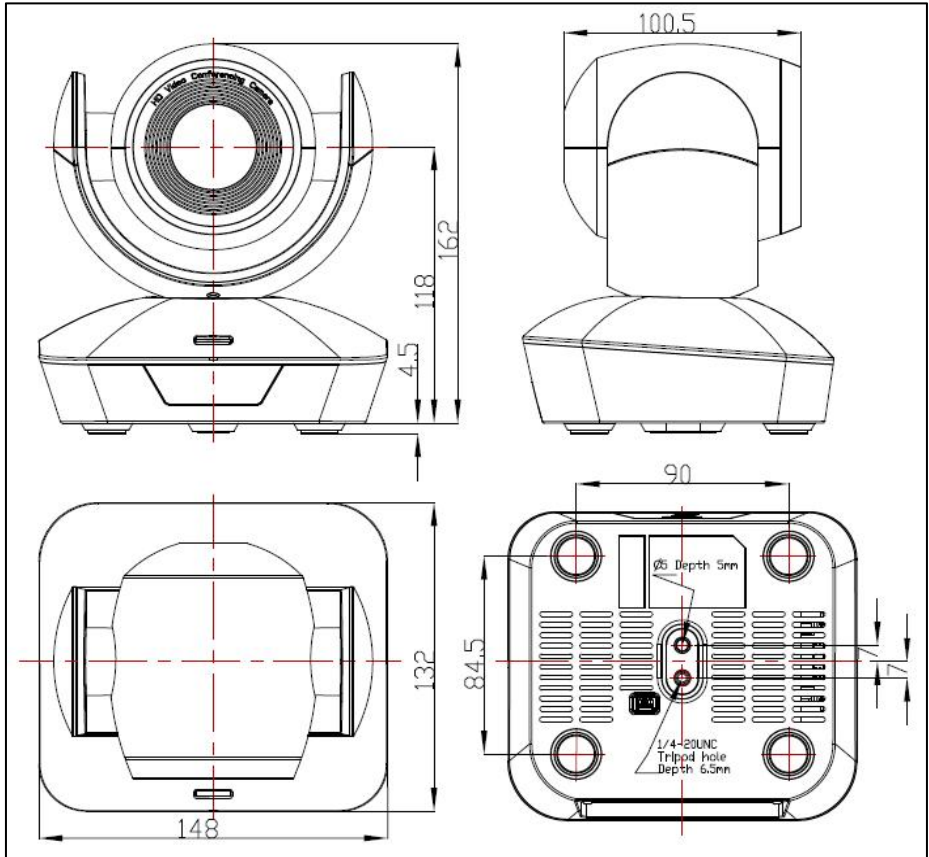
9.DC 12V plug

10.RS232 port

11.HDMI port

12.USB Type-C port

# ==== CAMERA DIMENSION =====



# IR REMOTE CONTROLLER



## LED Function Instruction

Press any button and shows in red color: Current selection is to control the camera;

Press any button and shows in green color: Current selection is to control the codec;

Press any button and shows in blue color: Current selection is to control the TV;

## Power button

**Red button:** in normal work mode, short press one time, camera will enter standby mode; short press again, the camera will start self-configuration and go to HOME position; it will go to No.0 preset position if that was set;

**Green button:** Codec power button(need to learn the button coding);

**Blue button:** TV power button( need to learn the button coding);

## Focus (Left): +/-

Manual focus, only valid under manual focus model;

## Zoom (Right): +/-

Control the lens zoom rate;

## Navigate : Up/Down/Left/Right

In normal working mode, use navigate key to control pan/tilt;

## Confirm/Home button:

In normal working mode, short press to let the camera go back to Home position.

**Menu button:** show the camera version.



## Number buttons

**Set Preset:** Long press(3seconds) the number button to save preset;

**Clear Preset:** Clear+number button to clear the relative preset;

Long press(3seconds) the Clear button to clear all preset;

**Run Preset:** Short press the number button to run the relative preset.



# == IR REMOTE CONTROLLER ==

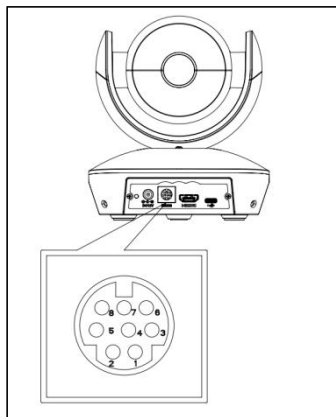
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## LEARNING FUNCTION:

1. Press the green button, the LED indicator light will show in green color for 1 second, means switch to video terminal/codec control mode;
2. **Single Button Coding:** long press(3seconds) Home +number"1" button simultaneously, the green indicator LED will light, enter button learning mode, press the buttons which need to be learned, LED will start flickering(1HZ), now can start button learning: get the codec remote point to the camera remote's infrared tube( about 10cm distance), then press the button which need to be learned, the LED re-flickering when learning finishes ; press other buttons which also need to be learned; Press the Home+"0" buttons simultaneously to exit and save all remote data.  
If the button learning fails, the camera will enter normal working mode after 15seconds, LED will extinguish.
3. **All Button Coding:** long press (3seconds) Home+number"2" button simultaneously, the green indicator LED will start flickering(1HZ), to enter all button learning mode: get codec remote point to the camera remote's infrared tube( about 10cm distance), to start all button coding mode, the LED will extinguish when learning finished.  
If the button learning fails, the camera will enter normal working mode after 15seconds, LED will extinguish.
4. **All Button Sending Mode:** long press (3seconds) the Menu + number "3" button simultaneously, the remote will enter all button sending mode.
5. Similar operation for the TV control mode learning.



# VISCA IN (RS232 PORT)



| NO. | Functions |
|-----|-----------|
| 1   | DTR       |
| 2   | DSR       |
| 3   | TXD       |
| 4   | GND       |
| 5   | RXD       |
| 6   | A         |
| 7   | IR OUT    |
| 8   | B         |

## VISCA IN 与 Mini DIN

| Camera VISCA IN |        | Mini DIN |     |
|-----------------|--------|----------|-----|
| 1               | DTR    | 1        | DSR |
| 2               | DSR    | 2        | DTR |
| 3               | TXD    | 5        | RXD |
| 4               | GND    | 4        | GND |
| 5               | RXD    | 3        | TXD |
| 6               | A(+)   | 6        | NC  |
| 7               | IR OUT | 7        | NC  |
| 8               | B(-)   | 8        | NC  |

## VISCA IN 与 DB9 Connection

| Camera VISCA IN |        | Windows DB-9 |     |
|-----------------|--------|--------------|-----|
| 1               | DTR    | 6            | DSR |
| 2               | DSR    | 4            | DTR |
| 3               | TXD    | 2            | RXD |
| 4               | GND    | 5            | GND |
| 5               | RXD    | 3            | TXD |
| 6               | A(+)   |              |     |
| 7               | IR OUT |              |     |
| 8               | B(-)   |              |     |

## SERIAL PORT CONFIGURATION:

| Parameter | Value                 |
|-----------|-----------------------|
| Baud rate | 2400/4800/9600/115200 |
| Start bit | 1bit                  |
| Date bit  | 8bits                 |
| Stop bit  | 1bit                  |
| Check bit | None                  |



# VISCA PROTOCOL



## Part1 Camera Return Command

| Ack/Completion Message |          |  |
|------------------------|----------|--|
|                        | command  | Note   |
| ACK                    | z0 41 FF | Returned when the command is accepted.       |
| Completion             | z0 51 FF | Returned when the command has been executed. |

| Error Messages         |             |   |
|------------------------|-------------|---|
|                        | command     | 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. |

## Part2 Camera Control Command

| Command type    | function          | command                       |  |
|-----------------|-------------------|-------------------------------|--|
| Address Set     | Broadcast         | 88 30 01 FF                   | Address setting  |
| I/F 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             | p = 0(low)~7(high)                                       |
|                 | Tele(Standard)    | 8x 01 04 07 02 FF             |  |
|                 | Wide(Standard)    | 8x 01 04 07 03 FF             |  |
|                 | Tele(Variable)    | 8x 01 04 07 2p FF             |  |
|                 | Wide(Variable)    | 8x 01 04 07 3p FF             |  |
|                 | Direct            | 8x 01 04 47 0p 0q 0r 0s FF    |  |
| CAM_DZoom       | Direct with speed | 8x 0A 04 47 0t 0p 0q 0r 0s FF | t: spd 0~7<br>pqrs: Zoom Position (0(wide)~0x4000(tele)) |
|                 | ON                | 8x 01 04 06 02 FF             |  |
|                 | OFF               | 8x 01 04 06 03 FF             |  |
|                 | Combine Mode      | 8x 01 04 36 00 FF             | Combine with optical zoom control                        |
|                 | Separate Mode     | 8x 01 04 36 01 FF             | Separate with optical zoom control                       |
|                 | Stop              | 8x 01 04 06 00 FF             | Enable In separate mode                                  |
|                 | Tele (Variable)   | 8x 01 04 06 2p FF             | Enable In separate mode                                  |
|                 | Wide (Variable)   | 8x 01 04 06 3p FF             | Enable In separate mode                                  |
| CAM_Focus       | Direct            | 8x 01 04 46 0p 0q 0r 0s FF    | Enable In separate mode                                  |
|                 | Stop              | 8x 01 04 08 00 FF             | p=0 (Low) to 7 (High)                                    |
|                 | Far(Standard)     | 8x 01 04 08 02 FF             |  |
|                 | Near(Standard)    | 8x 01 04 08 03 FF             |  |
|                 | Far (Variable)    | 8x 01 04 08 2p FF             |  |
| Near (Variable) | 8x 01 04 08 3p FF |                               |  |





# VISCA PROTOCOL



| Command type   | function            | command                                   |  |
|----------------|---------------------|---|--|
|                | Direct              | 8x 01 04 48 0p 0q 0r 0s FF                | pqrs: Focus Position   |
|                | Auto Focus          | 8x 01 04 38 02 FF                         |  |
|                | Manual Focus        | 8x 01 04 38 03 FF                         |  |
|                | One Push AF         | 8x 01 04 18 01 FF                         |  |
| CAM_Zoom Focus | Direct              | 8x 01 04 47 0p 0q 0r 0s 0t 0u<br>0v 0w FF | pqrs: Zoom Position<br>(0(wide)~ 0x4000(tele))<br>tuvw: Focus Position |
| CAM_WB         | Auto                | 8x 01 04 35 00 FF                         |  |
|                | Indoor              | 8x 01 04 35 01 FF                         |  |
|                | Outdoor             | 8x 01 04 35 02 FF                         |  |
|                | One Push            | 8x 01 04 35 03 FF                         |  |
|                | ATW                 | 8x 01 04 35 04 FF                         |  |
|                | Manual              | 8x 01 04 35 05 FF                         |  |
|                | Sodium lamp         | 8x 01 04 35 08 FF                         |  |
|                | fluorescent         | 8x 01 04 35 09 FF                         |  |
| CAM_R Gain     | One Push<br>Trigger | 8x 01 04 10 05 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                         |  |
| CAM_B Gain     | Direct              | 8x 01 04 43 00 00 0p 0q FF                | pq: R Gain (0~0xFF)  |
|                | 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                         |  |
| CAM_AE         | 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<br>Automatic Exposure mode                            |
|                | Iris Priority       | 8x 01 04 39 0B FF                         | Iris Priority Automatic<br>Exposure mode                               |
| CAM_Shutter    | Bright              | 8x 01 04 39 0D FF                         | Bright Mode (Manual control)   |
|                | Reset               | 8x 01 04 0A 00 FF                         | Shutter Setting  |
|                | Up                  | 8x 01 04 0A 02 FF                         |  |
|                | Down                | 8x 01 04 0A 03 FF                         |  |
| CAM_Iris       | Direct              | 8x 01 04 4A 00 00 0p 0q FF                | pq: Shutter Position (0~0x15)  |
|                | Reset               | 8x 01 04 0B 00 FF                         | Iris Setting(0~0xD)  |
|                | Up                  | 8x 01 04 0B 02 FF                         |  |
|                | Down                | 8x 01 04 0B 03 FF                         |  |
| CAM_Gain       | Direct              | 8x 01 04 4B 00 00 0p 0q FF                | pq: Iris Position (0~ 0x11)  |
|                | Reset               | 8x 01 04 0C 00 FF                         | Gain Setting (0~0x0F)  |
|                | Up                  | 8x 01 04 0C 02 FF                         |  |
|                | Down                | 8x 01 04 0C 03 FF                         |  |
| CAM_Bright     | Direct              | 8x 01 04 0C 00 00 0p 0q FF                | pq: Gain Positon (0~0x0E)  |
|                | Reset               | 8x 01 04 0D 00 FF                         | Bright Setting   |
|                | Up                  | 8x 01 04 0D 02 FF                         |  |
|                | Down                | 8x 01 04 0D 03 FF                         |  |
| CAM_Bright     | Direct              | 8x 01 04 4D 00 00 0p 0q FF                | pq: Bright l Positon<br>(0~0x1B)                                       |



# VISCA PROTOCOL



| Command type              | function              | command                    |   |
|---------------------------|-----------------------|----------------------------|---|
| CAM_WDR                   | On                    | 8x 01 04 3D 02 FF          | Exposure Compensation   |
|                           | Off                   | 8x 01 04 3D 03 FF          | ON/OFF  |
|                           | 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)<br>Corresponds to 0 to 9 on the Remote Commander |
|                           | Set                   | 8x 01 04 3F 01 pp FF       |   |
|                           | Recall                | 8x 01 04 3F 02 pp FF       |   |
| CAM_LR_Reverse            | On                    | 8x 01 04 61 02 FF          | Image Flip Horizontal   |
|                           | Off                   | 8x 01 04 61 03 FF          | ON/OFF  |
| 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_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 Speed Set | 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)  |
| FLICK                     | 50HZ                  | 8x 01 04 23 01 FF          |   |
|                           | 60HZ                  | 8x 01 04 23 02 FF          |   |
|                           | OFF                   | 8x 01 04 23 00 FF          |   |



# VISCA PROTOCOL



| Command type              | function  | command                    |  |
|---------------------------|-----------|----------------------------|--|
| 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  |
|                           |           |                            | 1080P59.94 0x0E  |
|                           |           |                            | 1080I59.94 0x0F  |
|                           |           |                            | 1080P29.97 0x10  |
|                           |           |                            | 720P59.94 0x13   |
| 720P29.97 0x14            |           |                            |  |
| 1080P24 0x11              |           |                            |  |
| 1080P23.98 0x12           |           |                            |  |
| Video System Set(Sony)    |           | 8x 01 04 24 72 0p 0q FF    | pq: Video format   |
|                           |           |                            | 1080P60 0x2e   |
|                           |           |                            | 1080P50 0x2f   |
|                           |           |                            | 1080I60 0x01   |
|                           |           |                            | 1080I50 0x04   |
|                           |           |                            | 1080P30 0x06   |
|                           |           |                            | 1080P25 0x08   |
|                           |           |                            | 720P60 0x09  |
|                           |           |                            | 720P50 0x0c  |
|                           |           |                            | 720P30 0x0e  |
|                           |           |                            | 720P25 0x11  |
|                           |           |                            | 1080P59.94 0x13  |
|                           |           |                            | 1080I59.94 0x02  |
|                           |           |                            | 1080P29.97 0x07  |
|                           |           |                            | 720P59.94 0x0a   |
| 720P29.97 0x0f            |           |                            |  |
| 1080P24 0x2a              |           |                            |  |
| 1080P23.98 0x2b           |           |                            |  |
| CAM_ID Write              |           | 8x 01 04 22 0p 0q 0r 0s FF | pqrs: Camera ID (=0000 to FFFF)  |
| 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   |
|                           | 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          |  |
| Pan_tilt Drive            | Up        | 8x 01 06 01 VV WW 03 01 FF | VV: Pan speed 0x01 (low speed) to 0x18 (high speed)<br>WW: Tilt speed 0x01 (low speed) to 0x14 (high speed)<br>YYYY: Pan Position(TBD)<br>ZZZZ: Tilt Position(TBD) |
|                           | Down      | 8x 01 06 01 VV WW 03 02 FF |  |
|                           | Left      | 8x 01 06 01 VV WW 01 03 FF |  |
|                           | Right     | 8x 01 06 01 VV WW 02 03 FF |  |
|                           | Up left   | 8x 01 06 01 VV WW 01 01 FF |  |



# VISCA PROTOCOL



| Command type       | function          | command                                      |   |
|--------------------|-------------------|--|---|
|                    | Up right          | 8x 01 06 01 VV WW 02 01 FF                   |   |
|                    | Down Left         | 8x 01 06 01 VV WW 01 02 FF                   |   |
|                    | Down Right        | 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-tilt Limit Set | Set               | 8x 01 06 07 00 0W 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF | W: 1: Up Right<br>0: Down Left<br>YYYY: Pan Limit Position(TBD)<br>ZZZZ: Tilt Limit |
|                    | Clear             | 8x 01 06 07 01 0W 07 0F 0F 0F 07 0F 0F 0F FF |   |

## Part3 Camera Inquiry Command

| Command type           | command        | return               | 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_DZoom Mode Inq     | 8x 09 04 36 FF | y0 50 0p FF          | p: 0:combination mode<br>1:separate mode        |
| CAM_DZoom Posi Inq     | 8x 09 04 46 FF | y0 50 0p 0q 0r 0s FF | pqrs: Zoom Position                             |
| CAM_Speed By Zoom Inq  | 8x 09 06 A0 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)<br>p: 0: off 1: on                     |
| CAM_3D_Inq             | 8x 09 04 53 FF | y0 50 03 FF          | (0~0x05)<br>p:0:off 1: auto<br>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 | pp: R Gain                                      |
| CAM_BGain Inq          | 8x 09 04 44 FF | y0 50 00 00 0p 0q FF | pp: B Gain                                      |
| CAM_Saturation Inq     | 8x 09 04 A1 FF | y0 50 00 00 0p 0q FF | pp: saturation                                  |
| CAM_Contrast Inq       | 8x 09 04 A2 FF | y0 50 00 00 0p 0q FF | pp: contrast                                    |



# VISCA PROTOCOL



| Command type              | command           | return                           | note   |
|---------------------------|-------------------|----------------------------------|--|
| 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<br>1: 50HZ<br>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  |
| CAM_WDR Pos Inq           | 8x 09 04 D3 FF    | y0 50 0p FF                      | p: WDR Position  |
| CAM_Aperture Inq          | 8x 09 04 42 FF    | y0 50 00 00 0p 0q FF             | pq: Aperture Gain  |
| CAM_Preset Exist Inq      | 8x 09 04 3F pp FF | y0 50 0q FF                      | pp: Memory number<br>q: 1=preset exist<br>0=preset not saved |
| 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_Flare Mode Inq        | 8x 09 04 B6 FF    | y0 50 pp FF                      |  |
| CAM_Flare Bright          | 8x 09 04 B7 FF    | y0 50 pp FF                      |  |
| CAM_Flare Red             | 8x 09 04 B8 FF    | y0 50 pp FF                      |  |
| CAM_Flare Green           | 8x 09 04 B9 FF    | y0 50 pp FF                      |  |
| CAM_Flare Blue            | 8x 09 04 BA FF    | y0 50 pp FF                      |  |
| CAM_Version Inq           | 8x 09 00 02 FF    | y0 50 ab cd mn pq rs tu vw FF    |  |
| 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 | www: Pan Position zzzz: Tilt Position                        |



# VISCA PROTOCOL



## 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 ■■■■

| 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   |
| Up left                      | 0xFF  | Address | 0x00  | 0x0C  | Pan Speed       | Tilt Speed     | SUM   |
| Up right                     | 0xFF  | Address | 0x00  | 0x0A  | Pan Speed       | Tilt Speed     | SUM   |
| Down Left                    | 0xFF  | Address | 0x00  | 0x14  | Pan Speed       | Tilt Speed     | SUM   |
| Down Right                   | 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   |
| Stop                         | 0xFF  | Address | 0x00  | 0x00  | Pan Speed       | Tilt Speed     | 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 ■■■■

| 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   |
| Up left                      | 0Xa0  | Address | 0x00  | 0x0C  | Pan Speed       | Tilt Speed     | 0Xaf  | XOR   |
| Up right                     | 0Xa0  | Address | 0x00  | 0x0A  | Pan Speed       | Tilt Speed     | 0Xaf  | XOR   |
| Down Left                    | 0Xa0  | Address | 0x00  | 0x14  | Pan Speed       | Tilt Speed     | 0Xaf  | XOR   |
| Down Right                   | 0Xa0  | Address | 0x00  | 0x12  | Pan Speed       | Tilt Speed     | 0Xaf  | XOR   |
| Zoom In                      | 0Xa0  | Address | 0x00  | 0x20  | 0x00            | 0x00           | 0Xaf  | XOR   |
| Zoom Out                     | 0Xa0  | Address | 0x00  | 0x40  | 0x00            | 0x00           | 0Xaf  | XOR   |
| Focus Far                    | 0Xa0  | Address | 0x00  | 0x80  | 0x00            | 0x00           | 0Xaf  | XOR   |
| Focus Near                   | 0Xa0  | Address | 0x01  | 0x00  | 0x00            | 0x00           | 0Xaf  | XOR   |
| Stop                         | 0Xa0  | Address | 0x00  | 0x00  | Pan Speed       | Tilt Speed     | 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   |





# OSD MENU



1. Under working mode, press the MENU key on the IR remote controller, to enter the OSD menu as below:

| MENU         |               |   |            |
|--------------|---------------|---|------------|
| SYSTEM       | PROTOCOL      | < | VISCA >    |
| EXPOSURE     | ADDRESS       | < | 001 >      |
| IMAGE        | BAUDRATE      | < | 9600 >     |
| QUALITY      | PROTOCOL LOCK | < | OFF >      |
| PTZ SETTINGS | RS485         | < | ON >       |
| VIDEO FORMAT | VISCA PATH    | < | OVER ALL > |
| RESET        | LANGUAGE      | < | ENGLISH >  |
| INFORMATIONS |               |   |            |

2. After entering the main menu, use the navigate UP/DOWN key to select the main menu. Once selected, the main menu will change to blue background, and the right side will show sub-menu options.

3. Press the navigate RIGHT key to enter the sub-menu; use the UP/DONW key to select the sub-menu; use the LEFT/RIGHT key to select parameter.

4. Press the MENU key again to return to the previous menu. Press the MENU key continuously to exit the OSD menu.

## 5. OSD Menu Setting List

|        |               |                                       |                   |
|--------|---------------|---------------------------------------|-------------------|
| SYSTEM | PROTOCOL      | Optional: VISCA, PLC.P, PLC.D         | Default: VISCA    |
|        | ADDRESS       | VISCA:: 1~7 PLC-P/D: 0~255            | Default: 1        |
|        | BAUDRATE      | Optional: 2400, 4800, 9600, 115200    | Default: 9600     |
|        | PROTOCOL LOCK | Optional: OFF, ON                     | Default: OFF      |
|        | RS485         | Optional: OFF, ON                     | Default: ON       |
|        | VISCA PATH    | Optional: OVER ALL, OVER IP, OVER COM | Default: OVER ALL |
|        | LANGUAGE      | Optional: CHINESE, ENGLISH, RUSSIAN   | Default: ENGLISH  |

|          |               |   |               |
|----------|---------------|---|---------------|
| EXPOSURE | EXPOSURE MODE | AUTO, MANUAL, SHUTTER, IRIS, BRIGHT                                   | Default: AUTO |
|          | SHUTTER       | Shutter speed: 1/30~1/10000, only valid under MANUAL and SHUTTER mode | Default: AUTO |



# OSD MENU



|  |                    |   |               |
|--|--------------------|---|---------------|
|  | IRIS               | Iris setting: CLOSE~F1.8, only valid under MANUAL and IRIS mode | Default: AUTO |
|  | GAIN               | Gain setting: 0dB~30dB, only valid under MANUAL mode            | Default: AUTO |
|  | EXPOSURE BRIGHT    | Bright setting: 0~27, only valid under BRIGHT priority mode.    | Default: AUTO |
|  | BRIGHT             | 0~15  | Default: 8    |
|  | WIDE DYNAMIC MODE  | Optional: OFF, ON   | Default: OFF  |
|  | WIDE DYNAMIC LEVEL | 1~6   | Default: 1    |
|  | BLC                | OFF/ON  | Default: OFF  |

|       |                    |   |               |
|-------|--------------------|---|---------------|
| IMAGE | WHITE BALANCE MODE | Optional: ATW, MANUAL, AUTO, INDOOR, OUTDOOR, PUSH, C.T.                | Default: ATW  |
|       | RED GAIN           | Red gain level: 0~255, only valid under manual white balance mode       | Default: AUTO |
|       | BLUE GAIN          | Blue gain level:0~255 , only valid under manual white balance mode      | Default: AUTO |
|       | COLOR TEMPERATURE  | Set the color temperature value: 2500~10000 only valid under C.T. mode. | Default: AUTO |
|       | FLICKER            | Anti-Flicker setting:50/60HZ/OFF, to reduce the video flicker           | Default: 50HZ |
|       | DIGITAL ZOOM       | Optional: OFF, ON   | Default: OFF  |
|       | FOCUS MODE         | AUTO, MANUAL  | Default: AUTO |

|         |                    |  |               |
|---------|--------------------|--|---------------|
| QUALITY | 2D NOISE REDUCTION | 2D noise reduction: the bigger value is, the less noise on image is, the lower resolution is                                 | Default: OFF  |
|         | 3D NOISE REDUCTION | 3D noise reduction: OFF/AUTO/0~4, the bigger value is, the less motion noise on image is. High value will cause image smear. | Default: AUTO |
|         | SHARPNESS          | Sharpness setting: 0~15, the higher value is, edge of the image will be sharpen  | Default: 6    |
|         | CONTRAST           | Set contrast level: 0~15   | Default: 8    |
|         | SATURATION         | Set saturation level: 0~15   | Default: 8    |
|         | GAMMA              | Select gamma level: 0~15   | Default: 8    |
|         | IMAGE STYLE        | Optional: USER, NORMAL, COLORFULL  | Default: USER |



# OSD MENU



|                 |                   |                          |              |
|-----------------|-------------------|--------------------------|--------------|
| PTZ<br>SETTINGS | SPEED BY ZOOM     | Optional: OFF, ON        | Default: ON  |
|                 | FLIP HORIZONTAL   | Flip horizontal          | Default: OFF |
|                 | FLIP VERTICAL     | Flip vertical            | Default: OFF |
|                 | PT SPEED          | Set Pan Tilt speed: 5~24 | Default: 18  |
|                 | ZOOM SPEED        | Set Zoom speed: 1~7      | Default: 5   |
|                 | PRESET FREEZE     | Optional: OFF, ON        | Default: OFF |
|                 | PRESET PT SPEED   | Preset head speed: 2~24  | Default: 15  |
|                 | PRESET ZOOM SPEED | Preset zoom speed: 1~7   | Default: 5   |
|                 | PRESET SAVE AE&AW | Optional: OFF, ON        | Default: OFF |

|                 |            |   |
|-----------------|------------|---|
| VIDEO<br>FORMAT | SIZE       | 1080P, 1080I, 720P                      |
|                 | FRAME RARE | 60, 59.94, 50, 30, 29.97, 25, 24, 23.98 |

|       |                |  |
|-------|----------------|--|
| RESET | SYSTEM RESET   | Reset communication parameter to default |
|       | CAMERA RESET   | Reset image parameter to default         |
|       | PAN TILI RESET | Reset pan/tilt parameter to default      |
|       | ALL RESET      | Reset all parameter to default           |

|                  |              |                             |
|------------------|--------------|-----------------------------|
| INFO<br>RMATIONS | IR ADDRESS   | Camera IR control address   |
|                  | CLIENT       | VISCA                       |
|                  | MODEL NO.    | Model number                |
|                  | ARM VERSION  | ARM firmware version        |
|                  | ISP VERSION  | Camera ISP firmware version |
|                  | RELEASE DATE | Software release date       |



# UVC CONTROL



1. Only run the client software after the camera has completed self-configuration (the IR indicator in blue color and will not flash); otherwise may cause black video issue.
2. Make sure the camera is recognized by the PC Device Manager.
3. Make sure the interval of video format switching more than 1 second, otherwise black video maybe caused.
4. Make sure the interval of control command sending from the server (via USB) to the camera no less than 250ms.
5. Support standard UVC interface.

| UVC properties                                 | VISCA  |
|--|--|
| PU_BACKLIGHT_COMPENSATION_CONTROL              | 8x 01 04 33 02 FF                            |
| CY_FX_UVC_PU_BRIGHTNESS_CONTROL                | 8x 01 04 A4 00 00 0p 0q FF                   |
| CY_FX_UVC_PU_CONTRAST_CONTROL                  | 8x 01 04 A2 00 00 0p 0q FF                   |
| CY_FX_UVC_PU_SATURATION_CONTROL                | 8x 01 04 A1 00 00 0p 0q FF                   |
| CY_FX_UVC_PU_SHARPNESS_CONTROL                 | 8x 01 04 42 00 00 0p 0q FF                   |
| CY_FX_UVC_PU_GAMMA_CONTROL                     | 8x 01 04 5B 0p FF                            |
| CY_FX_UVC_PU_WHITE_BALANCE_TEMPERATURE_CONTROL | 8x 01 04 35 0p FF                            |
| CY_FX_UVC_PU_BACKLIGHT_COMPENSATION_CONTROL    | 8x 01 04 33 0p FF                            |
| CY_FX_UVC_PU_GAIN_CONTROL                      | 8x 01 04 49 00 00 0p 0q FF                   |
| CY_FX_UVC_PU_POWER_LINE_FREQUENCY_CONTROL      | 8x 01 04 AA 0p FF                            |
| PU_GAIN_CONTROL                                | 8x 01 04 49 00 00 00 0p 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 FF |
| CT_PANTILT_RELATIVE_CONTROL                    | 8x 01 06 01 pp qq rr ss FF                   |
| CT_ZOOM_RELATIVE_CONTROL                       | 8x 01 04 07 pp FF                            |







