

BG-BPTZ-XU

1080P Full HD 3X/10X USB 2.0 / RS232

Huddle / Conference Room PTZ Camera

User Manual







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Statement

Please read these instructions carefully before connecting, operating, or configuring this product. Please save this manual for future reference.

Safety Precaution

- To prevent damaging this product, avoid heavy pressure, strong vibration, or immersion during transportation, storage, and installation.
- The housing of this product is made of organic materials. Do not expose to any liquid, gas, or solids which may corrode the shell.
- Do not expose the product to rain or moisture.
- The product has no power switch. Remove power immediately if camera is not in proper working condition to avoid electrical shock.
- To prevent the risk of electric shock, do not open the case. Installation and maintenance should only be carried out by qualified technicians.
- Installation and use of this product must strictly comply with local electrical safety standards.
- The power supply of the product is $\pm 12V$, the max electrical current is 2A.
- Do not use the product beyond the specified temperature, humidity, or power supply specifications.
- This product does not contain parts that can be maintained or repaired by users. Damage caused by dismantling the product without authorization from BZBGear is not covered under the warranty policy.
- Installation and use of this product must strictly comply with local electrical safety standards.
- Do not turn the camera head manually. Doing so may result in mechanical damage. Camera should only be placed on a stable horizontal surface and cannot be installed at an angle.
- Make sure there are no obstacles within the camera's rotational range when installing. Never power on before installation has been completed.



Introduction

The BG-BPTZ-XU is a high-quality pan tilt zoom (PTZ) camera that is available in two configurations, the 3x optical zoom and the 10x optical zoom. The 3x optical zoom variant is ideal for smaller spaces, huddle rooms, and wide-angle shots with its 85° field of view. The 10x optical zoom version is a better fit for larger rooms where individual subjects are located further away but still need to fill the frame using its field of view of up to 66°. Both variants of the BG-BPTZ-XU support resolutions up to 1080p@30Hz. The BG-BPTZ-XU has quick and easy plug and play connectivity with USB 2.0 type A for any video conferencing software such as Skype, Zoom, Microsoft Teams, and Google Meet.

Features

- **High-definition Images:** This camera employs 1/2.9-inch high quality CMOS sensor. Resolution is up to 1920x1080 with frame rate up to 30 fps.
- **H.265/H.264 encoding:** Makes motion video fluid and clear even with less than ideal bandwidth conditions.
- **Optical Zoom Lens:** either 3x or 10x optical zoom lens.
- **Leading Auto Focus Technology:** Leading autofocus algorithm allows for fast, accurate and stable auto-focusing.
- **Low Noise and High SNR:** Low Noise CMOS effectively ensures high SNR of camera video.
- **Control Interface:** RS485, RS232, RS232 supports cascade function for convenient installation.
- **Supports Multiple Control Protocols:** VISCA, PELCO-D, and PELCO-P protocols which can be automatically recognized.
- **Quiet PTZ:** Utilizing a high accuracy step driving motor ensures its movements are extremely quiet, smooth, and quick.
- **255 Presets Positions:** Up to 255 presets (10 presets by remote).
- **Application Examples:** Tele-education, Lecture recording, Webcasting, Video conferencing, Tele-training, Tele-medicine, and Emergency command systems.

Packing List

- | | |
|----------------------------|------------------------|
| ● 1x BG-BPTZ-XU Camera | ● 1x USB 2.0 Cable |
| ● 1x 12V/1.5A Power supply | ● 1x User Manual |
| ● 1x Remote Control | ● 1x Quick Start Guide |



Technical Specifications

Model Number	BG-BPTZ-3XU		BG-BPTZ-10XU
View Angle	34.1° ~ 85°		8.8° ~ 66°
F Value	f=3.35mm ~ 10.05mm		f=4.34mm ~ 41.66mm
AV	F1.7 ~ 3.0		F1.85 – F2.43
Optical Zoom	3X		10X
Camera Parameters			
Image Sensor	1/2.9 Inch High Quality CMOS Sensor		
Effective Pixels	2.07MP, 16:9		
Video Format	1920×1080P@30fps/25fps; 960×540P@30fps/25fps; 320×176P@30fps/25fps	1280×720P@30fps/25fps; 800×448P@30fps/25fps;	1024×576P@30fps/25fps; 640×360P@30fps/25fps;
Low Illumination	0.5Lux (F1.8, AGC ON)		
DNR	2D & 3D DNR		
White Balance	Auto/Manual/One Push/3000K/3500K/4000K/4500K/5000K/5500K/6000K/6500K/7000K		
Focus	Auto/Manual/One Push		
Electronic Shutter	Auto/Manual		
BLC	On/Off		
WDR	OFF/Dynamic Level Adjustment		
Video Adjustment	Brightness, Color, Saturation, Contrast, Sharpness, B/W mode, Gamma curve		
SNR	>55dB		
Interface and Protocol			
Video Output	USB2.0. Type A		
Video Compression	H.265, H.264, MJPEG		
Control Port	RS232 in & out, RS485		
Control Protocol	VISCA/Pelco-D/Pelco-P		
Power Supply	HEC3800 Outlet (DC12V)		
USB characteristics			
Support operating system	Windows 7, Windows8, Windows10, Mac OS, Linux		
Video Compression	H.265, H.264, MJPEG		
USB communication protocol	UVC		
PTZ Parameter			
Pan/Tile Rotation	-170° ~ +170° / -30° ~ +30°		
Pan/Tile Controller Speed	0.1 ~ 60°/Second, 0.1 ~ 30°/Second		
Preset Speed	Pan: 60°/Second, Tilt: 30°/Second		
Preset Numbers	255 Presets (10 presets on IR Remote)		
Other Parameter			
Working Voltage	12V		
Working current	0.25A(max)		
Power Consumption	2.5W(max)		
Storage Temperature	-10℃ ~ +60℃ , 20% ~ 95%		
Working Temperature	-10℃ ~ +50℃, 20% ~ 80%		
Dimension	156.8mm×112.6mm×139.5mm		
Weight	1KG		
Usage	Indoor Only		
Package	Camera, 12V/1.5A Power supply, Remote Controller, Manual, USB 2.0 Cable		
Optional Accessories	Wall or Ceiling mounts available		



Camera Overview

Camera Interfaces



1. **RS-232, RS-422/485:** Connect directly or cascade RS-232 or RS-485 to control the camera(s) with a joystick controller or control software.
2. **USB:** Connect a USB 2.0 type A cable to a PC for plug & play connectivity for any conferencing service like Skype or Zoom, supports resolution up to 1080@30Hz.
3. **Power:** Connect supplied 12V power adapter.



- | | |
|-------------------------------------|----------------------|
| 1. Camera Lens | 4. Mounting hole |
| 2. Remote Controller Receiver Light | 5. Tripod Screw Hole |
| 3. Camera Base | |

Power-on Initial Configuration

- 1) **Power on:** Connect DC12V power supply adapter to the power supply socket.
- 2) **Initial configuration:** Power on the unit and the power indicator light will begin blinking. The camera head will move to the bottom left and then it will return to the HOME position (intermediate position of both horizontal and vertical facing forward). The camera module will zoom out and back in as well as adjust focus near and far. When the remote control receiver light stops blinking, the self-check will be complete.

Note: If you set or change preset 0 position, after the Power on self-test is completed the camera will automatically move to the new preset 0 position.

Video Output

This model only supports USB 2.0 video output.

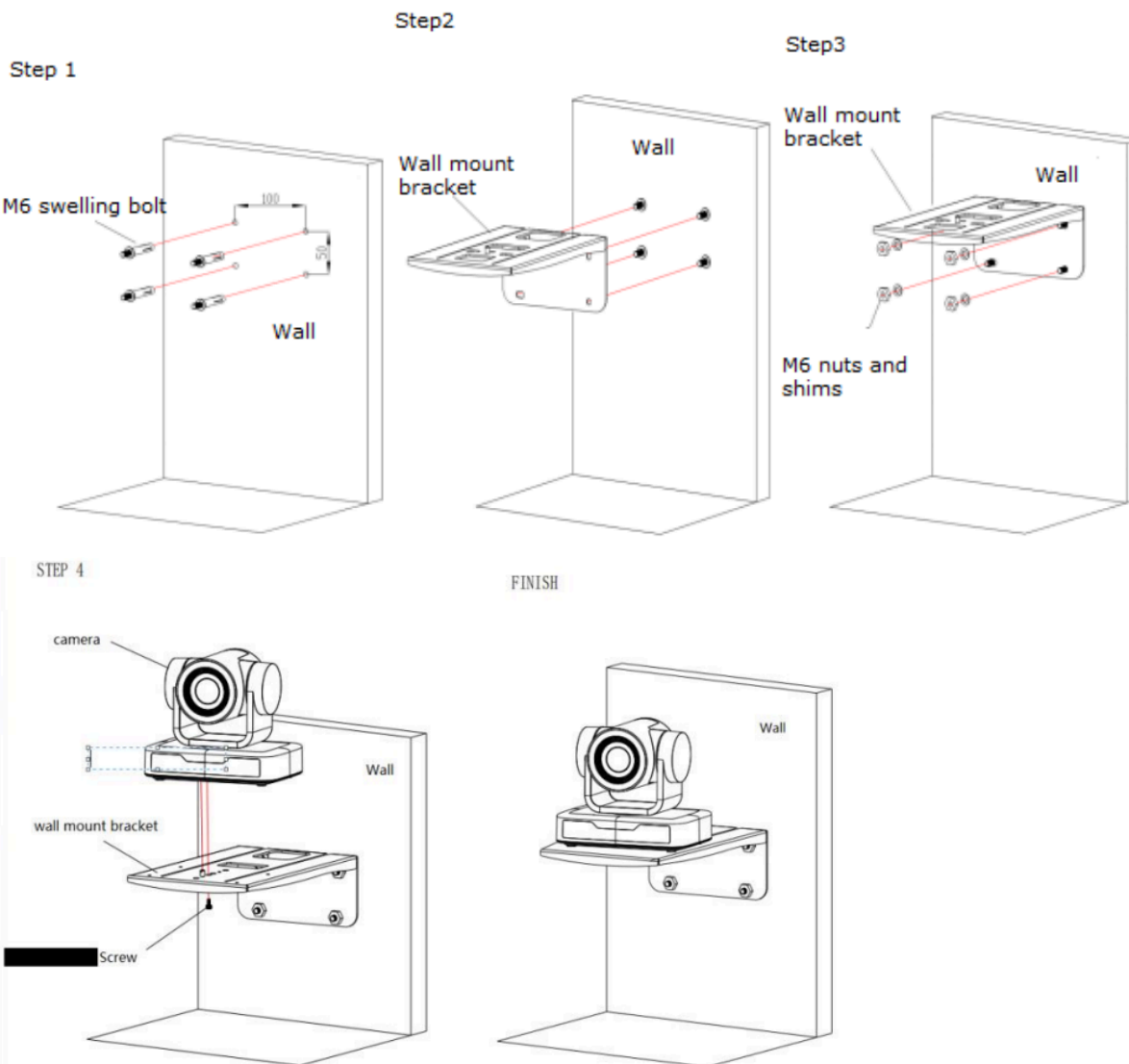
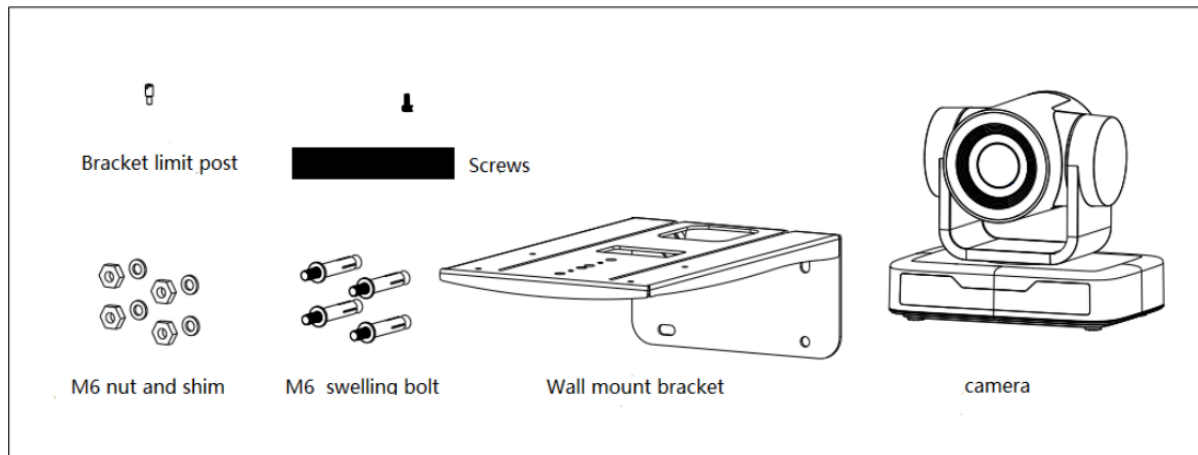
Connect the camera to a computer using the provided USB 2.0 cable and then choose your desired video conference software or camera application to view the image.



Mounting Brackets

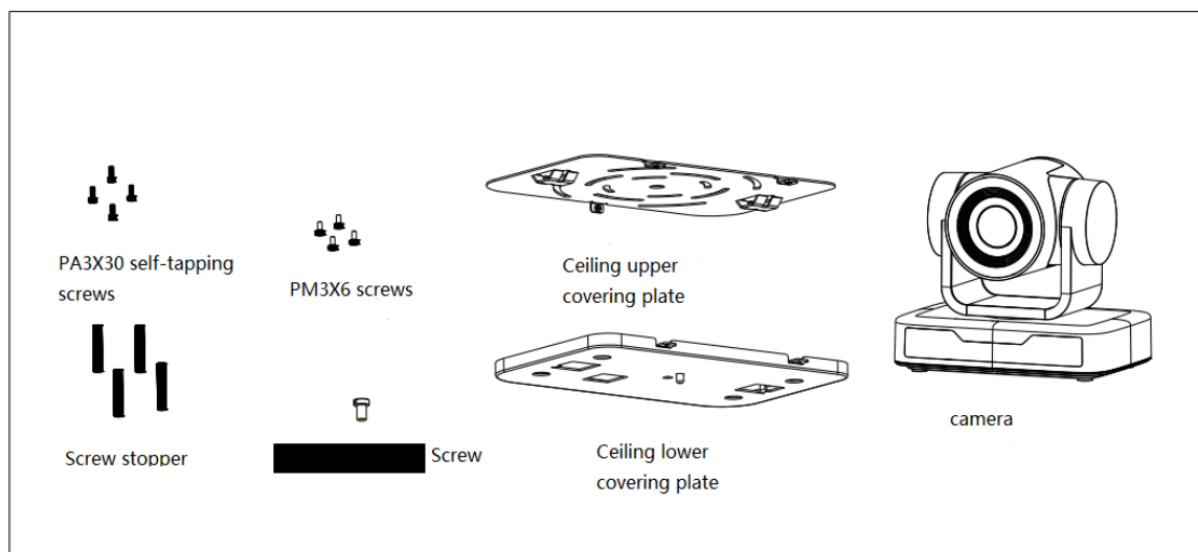
Note: Brackets can be wall mounted or upside-down. It is recommended to mount to a wall stud, ceiling joist, and to use proper mounting hardware. It is not recommended to be installed on plasterboard only.

1) Wall Mount Setup

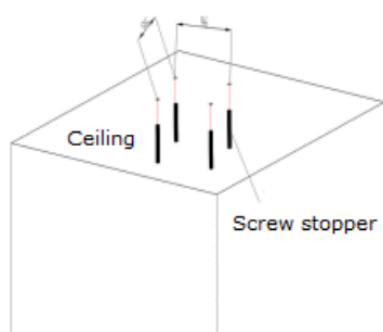




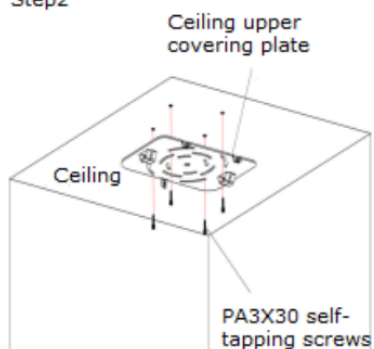
2). Ceiling Mount Setup



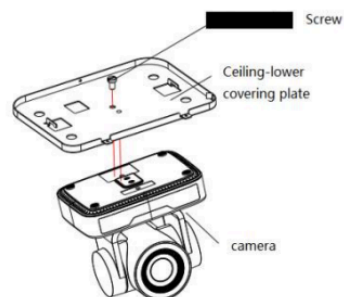
Step1



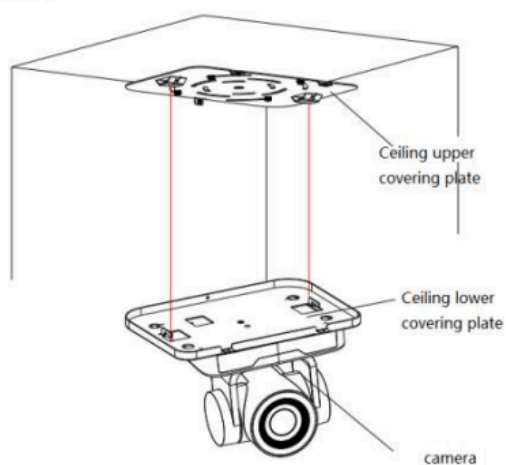
Step2



STEP 3

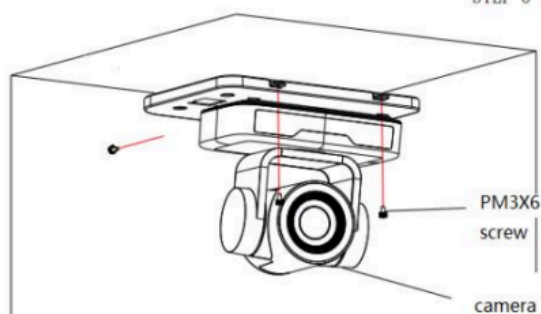


STEP 4



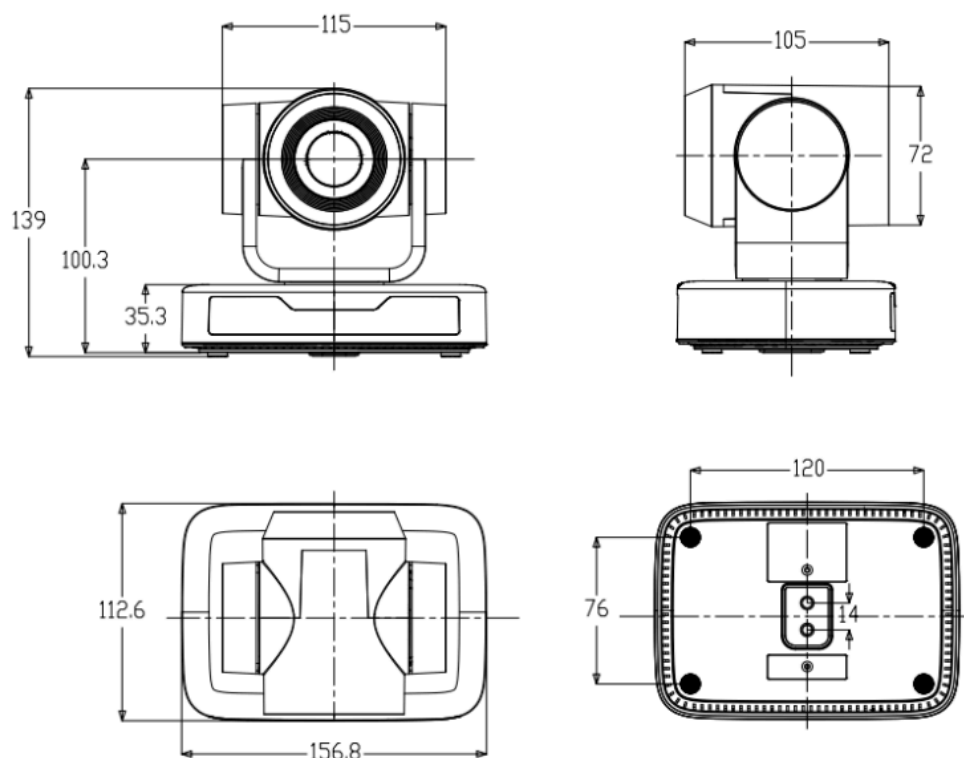
FINISH

STEP 5



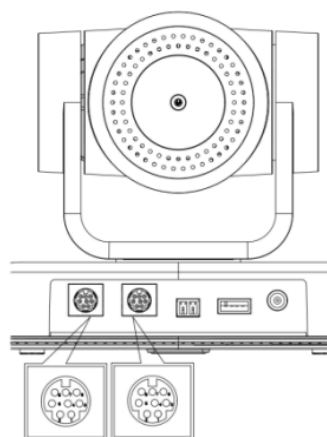


Product Dimension



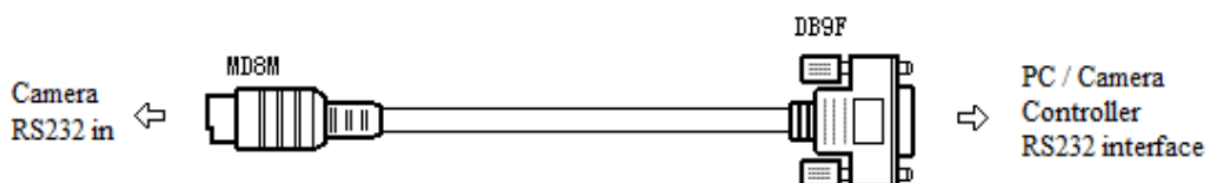
RS-232 Interface

1) RS-232 Interface Definition



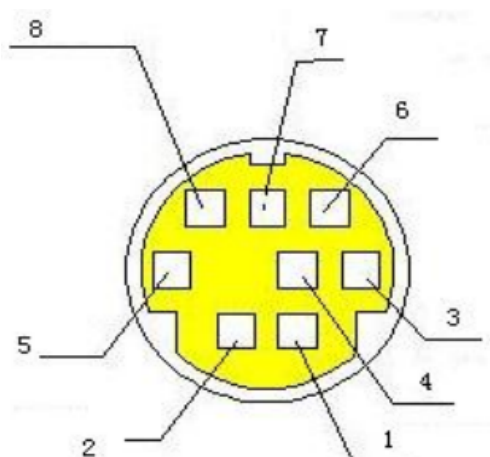
Computer or keyboard and camera connection method

Camera	WindowsDB-9
1.DTR	1.DCD
2.DSR	2.RXD
3.TXD	3.TXD
4.GND	4.DTR
5.RXD	5.GND
6.GND	6.DSR
7.IR OUT	7.RTS
8.NC	8.CTS
	9.RI



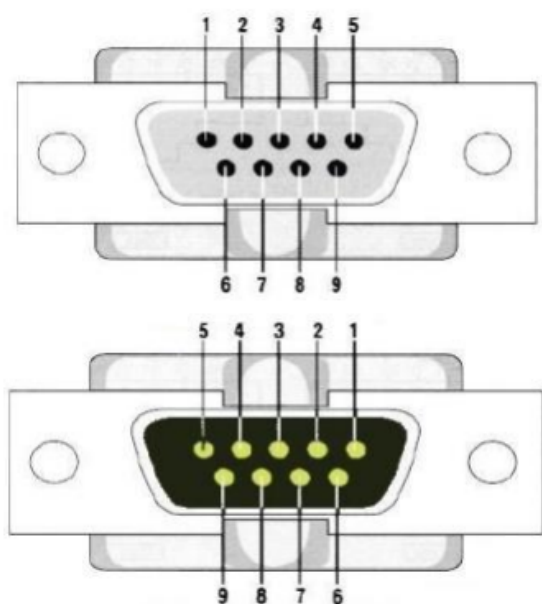


2) RS-232 Mini-DIN 8-pin Port Definition



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

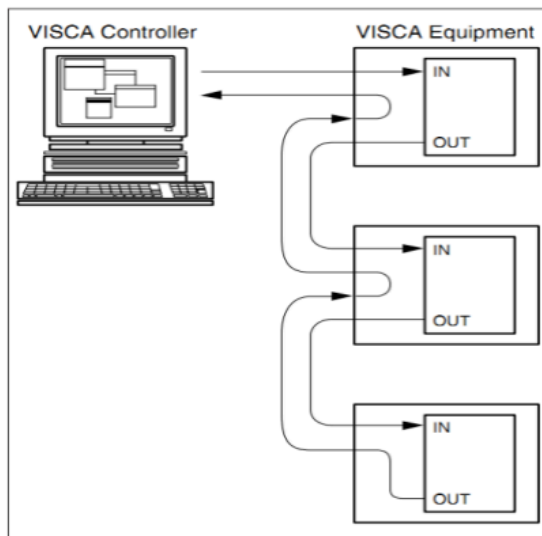
3) RS232(DB9) Port Definition



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



4) VISCA networking as shown below



Camera cascade connection

Camera 1		Camera 2
1.DTR		1.DTR
2.DSR		2.DSR
3.TXD		3.TXD
4.GND		4.GND
5.RXD		5.RXD
6.GND		6.GND
7.IR OUT		7.OPEN
8. NC		8.OPEN

Remote Control

Match Code for Wireless Remote Control



One-to-One Code Matching:

Press the "set" and "*" keys combined for 3 seconds, LED indicator starts flashing. Camera will receive the signal and power on. The LED indicator will turn off if the code matching is successful. The camera can be controlled by the wireless remote control only after one to one code pairing.

If one-to-one code matching fails, the red LED light flashes for 20 seconds and then will go off. The camera will halt code matching and activate sleep mode; Hold the power for 3 seconds to wake the camera up and re-match code.

Note: Upon matching code successfully, please select the camera's address to control it.

Clear Code:

Press the "set" and "*" keys combined for 3 seconds, the LED indicator will start flashing. Camera will power off and on and the LED indicator will go off if the code clearing is successful.

Sleep Mode and Wake Up:

Press and hold the power button for 3 seconds to wake up the camera from sleep mode.



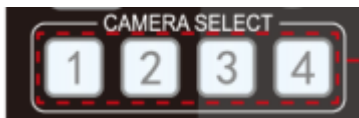
Keys Introduction for IR Remote Control

- In this manual, “press the key” means a click rather than a long-press, and a special note will be given if a long-press for more than one second is required.
- When a key-combination is required, do it in sequence. For example, **[*]+[#]+[F1]** means press “**[*]**” first and then press “**[#]**” and last press “**[F1]**”.

1. Standby Key

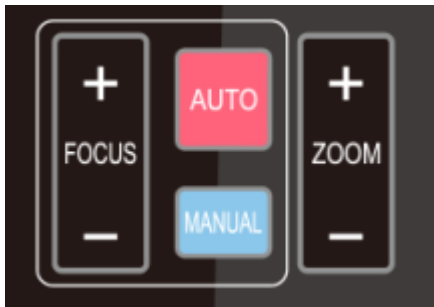
The camera enters standby mode if the power button is pressed for 3 seconds. Press and hold power for 3 seconds to wake up the camera and it will perform the system self-check again and return to the HOME position (If preset (0) position is set, the camera will return to the preset (0) position).

2. Camera Selection



Select the camera's address to control it.

3. Focus Control



Auto: Auto focus mode

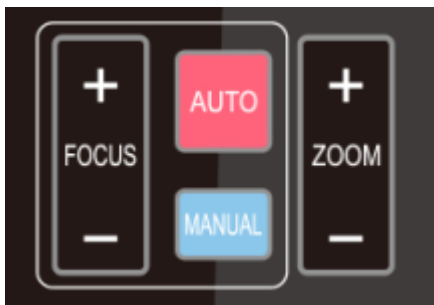
Manual: Manual focus mode

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

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

Press and hold the keys, focusing will continue and stop based on the key being pressed and released.

4. Zoom Control



ZOOM +: press **[ZOOM +]** key to zoom in

ZOOM - : press **[ZOOM -]** key to zoom out

Press and hold the keys, the action of zoom will continue until the key is released.



5. Set and Clear Presets



Set Preset: press **【SET PRESET】** button, and then press the number key 0-9 to set preset positions.

Note: 10 presets are available via the remote control.

Call Preset: Press a number key (0-9) to call a preset position.

Clear Preset: Press **【CLEAR PRESET】** and then press the number key 0-9 to clear the preset position.

Note: press the **【#】** key three times to clear all presets.

6. Pan/Tilt Control

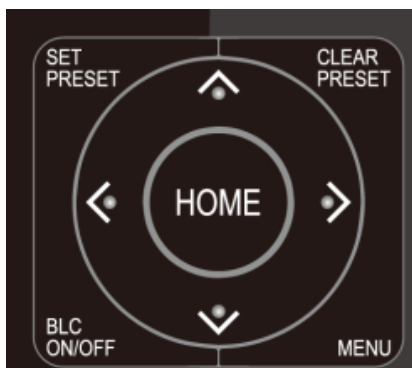


Up: press ▲ Down: press ▼
Left: press ◀ Right: press ▶

Back to middle position: press **【HOME】**

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

7. Menu Setting



【MENU】: Open / close the OSD menu

【HOME】: Camera lens back to the middle position;
Confirm button; Enter next menu

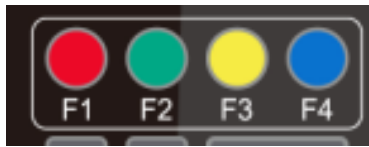
【↑】【↓】: Choose item

【←】【→】: Modify values

【BLC ON/OFF】: Turn on or off the back light compensation



8. Camera Remote Control Address Setting



- 【*】+【#】+【F1】: Camera Address No.1
- 【*】+【#】+【F2】: Camera Address No. 2
- 【*】+【#】+【F3】: Camera Address No. 3
- 【*】+【#】+【F4】: Camera Address No. 4

9. Key Combination



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

Note: If the address of the former remote control is not address 1, the camera will restore to address 1 when the unit is restored to factory defaults. Users need to change the remote control address to address 1 to control the camera again.



Menu Introduction

Main Menu

In normal working mode, press the **[MENU]** key to display the On Screen Display (OSD) menu. Use the scrolling arrow to point/highlight items.

Setup: System parameter settings

Camera: Camera parameter settings

P/T/Z: Pan, tilt, and zoom settings

Version: Camera firmware version information

Restore Default: Reset the camera to factory default settings. Select YES to confirm or NO to cancel.

[↑↓] Select: Use the up and down arrow keys on the remote to select a menu item.

[← →] Change Value: Use the left and right arrows keys to modify a setting parameter.

[MENU] Back: Press **[Menu]** to go back or return to a previous menu item.

[Home] OK: Press **[Home]** to confirm and implement a settings change.

MENU

=====

(Setup)

(Camera)

(P/T/Z)

(Version)

(Restore Default)

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

System Setting

Move the pointer to (Setup) in the Main Menu, click the **[HOME]** key and enter into the (System Setting) as shown below:

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

Visca Address: VISCA=1~7

Visca Address Fix: On/Off

Pelco-P: 1~255

Pelco-D: 1~255

Baud rate: 2400/4800/9600/115200

Auto Flip: On/Off

SETUP

=====

Protocol	Auto
Visca Address	1
Visca Address Fix	OFF
PELCO-P Address	1
PELCO-D Address	1
Baudrate	9600
Auto Flip	OFF

[↑ ↓] Select [← →] Change Value



Camera Setting

Move the pointer to (CAMERA) in the Main Menu, click the **[HOME]** key and enter the (CAMERA) settings as shown below:

Exposure: Enter into Exposure settings

Color: Enter into color settings

Image: Enter into image settings

Focus: Enter into focus settings

Noise Reduction: Enter into noise reductions

CAMERA

=====

(Exposure)

(Color)

(Image)

(Focus)

(Noise Reduction)

Style	Default
[↑ ↓]Select	[← →]Change Value
[Menu]Back	[Home]OK

1) Exposure Setting

Move the pointer to (EXPOSURE) in the Main Menu, click the **[HOME]** key and enter into the (Exposure) sub menu as shown below:

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

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

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

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

Gain limit: 0~15(only available in Auto/ Iris priority /Brightness priority mode)

DRC: Off, 1~8

EXPOSURE

=====

Mode	Auto
EV	OFF
BLC	OFF
Flicker	50Hz
G.Limit	3
DRC	2

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



2) Color setting

Move the pointer to (COLOR) in the Main Menu, click the **[HOME]** and enter the (COLOR) sub menu as shown below:

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

Red fine-tuning: -10~10 (only available in automatic mode)

Blue fine-tunable: -10~10 (only available in automatic mode)

Saturation: 60%, 70%, 80%, 90%, 100%, 110%, 120%, 130%

Hue: 0~14

AWB Sensitivity: high/middle/low

COLOR

WB Mode	Auto
RG Tuning	-10
BG Tuning	-10
Saturation	100%
Hue	7
AWB Sensitivity	High

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

3) Image

Move the pointer to (IMAGE) in the Menu, click the **[HOME]** and enter into the (IMAGE) sub menu as shown below:

Brightness: 0~14

Contrast: 0~14

Sharpness: 0~15

Flip-H: On/Off

Flip-V: On/Off

B&W Mode: color, black/white

Gamma: Default/0.45/0.50/0.55/0.63

DCI: Dynamic Contrast: Off/1~8

IMAGE

Brightness	7
Contrast	8
Sharpness	3
Flip-H	OFF
Flip-V	OFF
B&W-Mode	Color
Gamma	Default
DCI	Close
Low-Light Mode	OFF

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



4) Focus

Move the pointer to (FOCUS) in the Menu, click the **[HOME]** and enter the (FOCUS) menu as shown below:

Focus Mode: Auto/manual

AF-Zone: Up/middle/down

AF-Sensitivity: High/middle/low

FOCUS

```
=====
Focus Mode           Auto
AF-Zone              Center
AF-Sensitivity        Low

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

5) Noise Reduction

Move the pointer to (NOISE REDUCTION) in the Menu, click the **[HOME]** key and enter the (NOISE REDUCTION) menu as shown below:

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

3D Noise Reduction: Close, 1~8

Dynamic Hot Pixel: Close, 1~5

NOISE REDUCTION

```
=====
NR-2D                3
NR-3D                3
Dynamic Hot Pixel     3

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

P/T/Z

Move the pointer to (P/T/Z) in the Main Menu, click the **[HOME]** and enter the (P/T/Z) sub menu as shown below:

Depth of Field: Only effective for the remote controller, On/ Off;

(When zooming in, the PT control speed by remoter will become slow)

Zoom Speed: Set the zoom speed for the remote controller, 1~8

Image Freezing: On/Off

Accelerating Curve: Fast/Slow

P/T/Z

```
=====
Depth of field       ON
Zoom speed           8
Image Freezing       OFF
Acc Curve            Slow

[↑ ↓]Select   [← →]Change Value
```



Version

Move the pointer to (VERSION) in the Main Menu, click the **[HOME]** and enter the (VERSION) menu as shown below:

MCU Version: Display MCU version information

Camera Version: Display camera version information

AF Version: Display the focus version information

```

VERSION
=====
MCU Version      3.1.0    2019-11-23
Camera Version   1.0.0    2019-12-4
AF Version       1.0.0    2019-08-20
  
```

Restore Default

Move the pointer to (RESTORE DEFAULT) in the Main Menu, click the **[HOME]** and enter the (RESTORE DEFAULT) sub menu as shown below:

Restore default: YES/NO. Color style and video format cannot be restored to factory default

```

RESTORE DEFAULT
=====
Restore  Default?      NO

[↑ ↓]Select  [← →]Change Value
[Menu]Back   [Home]OK
  
```

Note: If the address of the camera on a remote was changed to 2, 3, or 4 the camera's address will be restored to address 1 when the factory restore is complete. Users will need to change the remote address back to 1 to control the camera again.



Serial Port Communication and Control

Under normal working conditions the camera can be controlled through its RS-232/RS-485 interfaces using VISCA, PELCO-D, and PELCO-P protocols by using a RS-232 serial adapter with the following parameter:

Baud rate: 2400/4800/9600/115200 bits / sec;

Start bit: 1;

Data bits: 8;

Stop bit: 1;

Parity: None.

VISCA Protocol List

VISCA Protocol Return Command

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

z = camera address + 8

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

VISCA Protocol Control Command

Command	Function	Command packet	Note
AddressSet	Broadcast	88 30 0p FF	p: Address setting
IFClear	Broadcast	88 01 00 01 FF	1/F Clear
CommandCancel		8x 21 FF	
CAM_Power	On	8x 01 04 00 02 FF	Power ON/OFF
	Off	8x 01 04 00 03 FF	
CAM_Zoom	Stop	8x 01 04 07 00 FF	p = 0(low) - F(high) pqrs: Zoom Position
	Tele(Standard)	8x 01 04 07 02 FF	
	Wide(Standard)	8x 01 04 07 03 FF	
	Tele(Variable)	8x 01 04 07 2p FF	
	Wide(Variable)	8x 01 04 07 3p FF	
	Direct	8x 01 04 47 0p 0q 0r 0s FF	
CAM_Focus	Stop	8x 01 04 08 00 FF	p - O(low) - F(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	



Command	Function	Command packet	Note
	Near (Variable)	8x 01 04 08 3p FF	pqrs: Focus Position
	Direct	8x 01 04 48 0p 0q 0r 0s FF	
	Auto Focus	8x 01 04 38 02 FF	
	Manual Focus	8x 01 04 38 03 FF	
	One Push mode	8x 01 04 38 04 FF	
CAM_Zoom Focus	Direct	8x 01 04 47 0p 0q 0r 0s 0t 0u 0v 0w FF	pqrs: Zoom Position tuvw: Focus Position
CAM_WB	Auto	8x 01 04 35 00 FF	
	3000K	8x 01 04 35 01 FF	
	4000k	8x 01 04 35 02 FF	
	One Push mode	8x 01 04 35 03 FF	
	5000k	8x 01 04 35 04 FF	
	Manual	8x 01 04 35 05 FF	
	6500k	8x 01 04 35 06 FF	
	3500K	8x 01 04 35 07 FF	
	4500K	8x 01 04 35 08 FF	
	5500K	8x 01 04 35 09 FF	
	6000K	8x 01 04 35 0A FF	
	7000K	8x 01 04 35 0B FF	
CAM_RGain	Reset	8x 01 04 03 00 FF	Manual Control of R Gain
	Up	8x 01 04 03 02 FF	
	Down	8x 01 04 03 03 FF	
	Direct	8x 01 04 43 00 00 0p 0q FF	pq: R Gain
CAM_Bgain	Reset	8x 01 04 04 00 FF	Manual Control of B Gain
	Up	8x 01 04 04 02 FF	
	Down	8x 01 04 04 03 FF	
	Direct	8x 01 04 44 00 00 0p 0q FF	pq: B Gain
CAM_AE	Full Auto	8x 01 04 39 00 FF	Automatic Exposure mode
	Manual	8x 01 04 39 03 FF	Manual Control mode
	Shutter priority	8x 01 04 39 0A FF	Shutter Priority Automatic Exposure mode
	Iris priority	8x 01 04 39 0B FF	Iris Priority Automatic Exposure mode
	Bright	8x 01 04 39 0D FF	Bright mode
CAM_Shutter	Reset	8x 01 04 0A 00 FF	Shutter Setting
	Up	8x 01 04 0A 02 FF	
	Down	8x 01 04 0A 03 FF	
	Direct	8x 01 04 4A 00 00 0p 0q FF	pq: Shutter Position
CAM_Iris	Reset	8x 01 04 0B 00 FF	Iris Setting
	Up	8x 01 04 0B 02 FF	
	Down	8x 01 04 0B 03 FF	
	Direct	8x 01 04 4B 00 00 0p 0q FF	pq: Iris Position
CAM_Gain Limit	Gain Limit	8x 01 04 2C 0p FF	p: Gain Position
CAM_Bright	Reset	8x 01 04 0D 00 FF	Bright Setting
	Up	8x 01 04 0D 02 FF	
	Down	8x 01 04 0D 03 FF	



Command	Function	Command packet	Note
	Direct	8x 01 04 4D 00 00 0p 0q FF	pq: Bright Position
CAM_ExpComp	On	8x 01 04 3E02 FF	Exposure Compensation ON/OFF
	Off	8x 01 04 3E03 FF	
	Reset	8x 01 04 0E 00 FF	Exposure Compensation Amount Setting
	Up	8x 01 04 0E 02 FF	
	Down	8x 01 04 0E 03 FF	
	Direct	8x 01 04 4E 00 00 0p 0q FF	pq: ExpComp Position
CAM_Back Light	On	8x 01 04 33 02 FF	Back Light Compensation
	Off	8x 01 04 33 03 FF	
CAM_WDRStrength	Reset	8x 01 04 21 00 FF	WDR Level Setting
	Up	8x 01 04 21 02 FF	
	Down	8x 01 04 21 03 FF	
	Direct	8x 01 04 51 00 00 00 0p FF	p: WDR Level Position
CAM_NR (2D)		8x 01 04 53 0p FF	P=0-7 0:OFF
CAM_NR (3D)		8x 01 04 54 0p FF	P=0-8 0:OFF
CAM_Gamma		8x 01 04 5B 0p FF	p = 0 - 4 0: Default 1: 0.45 2: 0.50 3: 0.55 4: 0.63
CAM_Flicker	OFF	8x 01 04 23 00 FF	OFF
	50HZ	8x 01 04 23 01 FF	50HZ
	60HZ	8x 01 04 23 02 FF	60HZ
CAM_Aperture	Reset	8x 01 04 02 00 FF	Aperture Control
	Up	8x 01 04 02 02 FF	
	Down	8x 01 04 02 03 FF	
	Direct	8x 01 04 42 00 00 0p 0q FF	pq: Aperture Gain
CAM_Memory	Reset	8x 01 04 3F00 pq FF	pq: Memory Number(=0 to 254) Corresponds to 0 to 9 on the Remote Commander
	Set	8x 01 04 3F01 pq FF	
	Recall	8x 01 04 3F02 pq FF	
CAM_LR_Reverse	On	8x 01 04 61 02 FF	Image Flip Horizontal ON/OFF
	Off	8x 01 04 61 03 FF	
CAM_PictureFlip	On	8x 01 04 66 02 FF	Image Flip Vertical ON/OFF
	Off	8x 01 04 66 03 FF	
CAM_ColorSaturation	Direct	8x 01 04 49 00 00 00 0p FF	P=0-7 0:60% 1:70% 2:80% 3:90% 4:100% 5:110% 6:120% 7:130%
CAM_IDWrite		8x 01 04 22 0p 0q 0r 0s FF	pqrs: Camera ID (=0000 to FFFF)
SYS_Menu	ON	8x 01 04 06 06 02 FF	Turn on the menu screen
	OFF	8x 01 04 06 06 03 FF	Turn off the menu screen
IR_Receive	ON	8x 01 06 08 02 FF	IR(remote commander)receive On/Off
	OFF	8x 01 06 08 03 FF	
IR_ReceiveReturn	On	8x 01 7D 01 03 00 00 FF	IR(remote commander)receive message via the VISCA communication ON/OFF
	Off	8x 01 7D 01 13 00 00 FF	
CAM_SettingReset	Reset	8x 01 04 A0 10 FF	Reset Factory Setting
CAM_Brightness	Direct	8x 01 04 A1 00 00 0p 0q FF	pq: Brightness Position



Command	Function	Command packet	Note
CAM_Contrast	Direct	8x 01 04 A2 00 00 0p 0q FF	pq: Contrast Position
CAM_Flip	OFF	8x 01 04 A4 00FF	Single Command For Video Flip
	Flip-H	8x 01 04 A4 01 FF	
	Flip-V	8x 01 04 A4 02 FF	
	Flip-HV	8x 01 04 A4 03 FF	
CAM_VideoSystem	Set camera video system	8x 01 06 35 00 0p FF	P: 0~E Video format 0:1080P60 8:720P30 1:1080P50 9:720P25 2:1080i60A:1080P59.94 3:1080i50B:1080i59.94 4:720P60 C:720P59.94 5:720P50 D:1080P29.97 6:1080P30 E:720P29.97 7:1080P25
Pan-tiltDrive	Up	8x 01 06 01 VV WW03 01 FF	VV: Pan speed 0x01 (low speed) to 0x18 (high speed)
	Down	8x 01 06 01 VV WW 03 02 FF	
	Left	8x 01 06 01 VV WW01 03 FF	WW: Tilt speed 0x01 (low speed) to 0x14 (high speed)
	Right	8x 01 06 01 VV WW 02 03 FF	
	Upleft	8x 01 06 01 VV WW01 01 FF	YYYY: Pan Position
	Upright	8x 01 06 01 VV WW02 01 FF	ZZZZ: Tilt Position
	DownLeft	8x 01 06 01 VV WW01 02 FF	
	DownRight	8x 01 06 01 VV WW 02 02 FF	
	Stop	8x 01 06 01 VV WW 03 03 FF	
	AbsolutePosition	8x 01 06 02 VV WW 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	
	RelativePosition	8x 01 06 03 VV WW 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	
	Home	8x 01 06 04 FF	
	Reset	8x 01 06 05 FF	
Pan-tiltLimitSet	Set	8x 01 06 07 00 0W 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	W: 1 UpRight 0: DownLeft YYYY: Pan Limit Position(TBD) ZZZZ: Tilt Limit Position(TBD)
	Clear	8x 01 06 07 01 0W 07 0F 0F 0F 07 0F 0F 0F FF	

VISCA Protocol Inquiry Command

Command	Command Packet	Return Packet	Note
CAM_PowerInq	8x 09 04 00 FF	y0 50 02 FF	On
		y0 50 03 FF	Off(Standby)
CAM_ZoomPosInq	8x 09 04 47 FF	y0 50 0p 0q 0r 0s FF	pqrs: Zoom Position
CAM_FocusAFModelInq	8x 09 04 38 FF	y0 50 02 FF	Auto Focus
		y0 50 03 FF	Manual Focus
		y0 50 04 FF	One Push mode
CAM_FocusPosInq	8x 09 04 48 FF	y0 50 0p 0q 0r 0s FF	pqrs: Focus Position
CAM_WBModelInq	8x 09 04 35 FF	y0 50 00 FF	Auto
		y0 50 01 FF	3000K
		y0 50 02 FF	4000K
		y0 50 03 FF	One Push Mode
		y0 50 04 FF	5000K
		y0 50 05 FF	Manual



Command	Command Packet	Return Packet	Note
		y0 50 00 FF	6500K
		y0 50 06 FF	6500K
		y0 50 07 FF	3500K
		y0 50 08 FF	4500K
		y0 50 09 FF	5500K
		y0 50 0A FF	6000K
CAM_RGainInq	8x 09 04 43 FF	y0 50 0B FF	7000K
CAM_BGainInq	8x 09 04 44 FF	y0 50 00 00 0p 0q FF	pq: B Gain
CAM_AEModeInq	8x 09 04 39 FF	y0 50 00 FF	Full Auto
		y0 50 03 FF	Manual
		y0 50 0A FF	Shutter priority
		y0 50 0B FF	Iris priority
		y0 50 0D FF	Bright
CAM_ShutterPosInq	8x 09 04 4A FF	y0 50 00 00 0p 0q FF	pq: Shutter Position
CAM_IrisPosInq	8x 09 04 4B FF	y0 50 00 00 0p 0q FF	pq: Iris Position
CAM_GainLimitInq	8x 09 04 2C FF	y0 50 0p FF	p: Gain Position
CAM_BrightPosInq	8x 09 04 4D FF	y0 50 00 00 0p 0q FF	pq: Bright Position
CAM_ExpCompModeInq	8x 09 04 3E FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_ExpCompPosInq	8x 09 04 4E FF	y0 50 00 00 0p 0q FF	pq: ExpComp Position
CAM_BacklightModeInq	8x 09 04 33 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_WDRStrengthInq	8x 09 04 51 FF	y0 50 00 00 00 0p FF	p: WDR Strength
CAM_NRLevel(2D)Inq	8x 09 04 53 FF	y0 50 0p FF	p: 2DNR Level
CAM_NRLevel(3D)Inq	8x 09 04 54 FF	y0 50 0p FF	p: 3DNR Level
CAM_FlickerModeInq	8x 09 04 55 FF	y0 50 0p FF	p: Flicker Settings(0: OFF, 1: 50Hz, 2:60Hz)
CAM_ApertureInq	8x 09 04 42 FF	y0 50 00 00 0p 0q FF	pq: Aperture Gain
CAM_PictureEffectModeInq	8x 09 04 63 FF	y0 50 00 FF	Off
		y0 50 04 FF	B&W
CAM_MemoryInq	8x 09 04 3F FF	y0 50 0p FF	p: Memory number last operated.
SYSMenuModeInq	8x 09 06 06 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_LRRReverseInq	8x 09 04 61 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_PictureFlipInq	8x 09 04 66 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_ColorSaturationInq	8x 09 04 49 FF	y0 50 00 00 00 0p FF	p: Color Gain setting Oh (60%) to Eh (130%)
CAM_IDInq	8x 09 04 22 FF	y0 50 0p FF	p: Gamma ID
IR_ReceiveInq	8x 09 06 08 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
IR_ReceiveReturn		y0 07 7D 01 04 00 FF	Power ON/OFF
		y0 07 7D 01 04 07 FF	Zoom tele/wide
		y0 07 7D 01 04 38 FF	AF ON/OFF



Command	Command Packet	Return Packet	Note
		y0 07 7D 01 04 33 FF	Camera Backlight
		y0 07 7D 01 04 3F FF	Camera Memory
		y0 07 7D01 06 01 FF	Pan title Driver
CAM_BrightnessInq	8x 09 04 A1 FF	y0 50 00 00 0p 0q FF	pq: Brightness Position
CAM_ContrastingInq	8x 09 04 A2 FF	y0 50 00 00 0p 0q FF	pq: Contrast Position
CAM_FlipInq	8x 09 04 A4 FF	y0 50 00 FF	Off
		y0 50 01 FF	Flip-H
		y0 50 02 FF	Flip-V
		y0 50 03 FF	Flip-HV
CAM_GammaInq	8x 09 04 5B FF	y0 50 0p FF	p: Gamma setting
CAM_VersionInq	8x 09 00 02 FF	y0 50 ab cd mn pq rs tu vw FF	ab cd : vender ID (0220) mn pq : model ID ST (0910) U3 (3950) rs tu : ARM Version vw : reserve
VideoSystemInq	8x 09 06 23 FF	y0 50 0p FF	P: 0~E Video format 0:1080P60 8:720P30 1:1080P50 9:720P25 2:1080i60 A:1080P59.94 3:1080i50 B:1080i59.94 4:720P60 C:720P59.94 5:720P50 D:1080P29.97 6:1080P30 E:720P29.97 7:1080P25
Pan-tiltMaxSpeedInq	8x 09 06 11 FF	y0 50 ww zz FF	ww: Pan Max Speed zz: Tilt Max Speed
Pan-tiltPosInq	8x 09 06 12 FF	y0 50 0w 0w 0w 0w	www: Pan Position zzzz: Tilt
		0z0z0z0zFF	Position

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

Pelco-D Protocol Command List

Function	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7
Up	0xFF	Address	0x00	0x08	Pan Speed	Tilt Speed	SUM
Down	0xFF	Address	0x00	0x10	Pan Speed	Tilt Speed	SUM
Left	0xFF	Address	0x00	0x04	Pan Speed	Tilt Speed	SUM
Right	0xFF	Address	0x00	0x02	Pan Speed	Tilt Speed	SUM
Upleft	0xFF	Address	0x00	0x0C	Pan Speed	Tilt Speed	SUM
Upright	0xFF	Address	0x00	0x0A	Pan Speed	Tilt Speed	SUM
DownLeft	0xFF	Address	0x00	0x14	Pan Speed	Tilt Speed	SUM
DownRight	0xFF	Address	0x00	0x12	Pan Speed	Tilt Speed	SUM
Zoom In	0xFF	Address	0x00	0x20	0x00	0x00	SUM
Zoom Out	0xFF	Address	0x00	0x40	0x00	0x00	SUM
Focus Far	0xFF	Address	0x00	0x80	0x00	0x00	SUM
Focus Near	0xFF	Address	0x01	0x00	0x00	0x00	SUM
Stop	0xFF	Address	0x00	0x00	0x00	0x00	SUM
Set Preset	0xFF	Address	0x00	0x03	0x00	Preset ID	SUM
Clear Preset	0xFF	Address	0x00	0x05	0x00	Preset ID	SUM



Function	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7
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	0x5 B	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



Camera Maintenance and Troubleshooting

Camera Maintenance

- 1) If the camera will not be used for an extended period of time, turning off the power can help extend the life of the product.
- 2) Use a soft cloth or tissue to clean the camera body.
- 3) Use soft cloth to clean the lens; Use neutral cleanser if needed by applying it to the cloth first. Do not directly spray the camera.

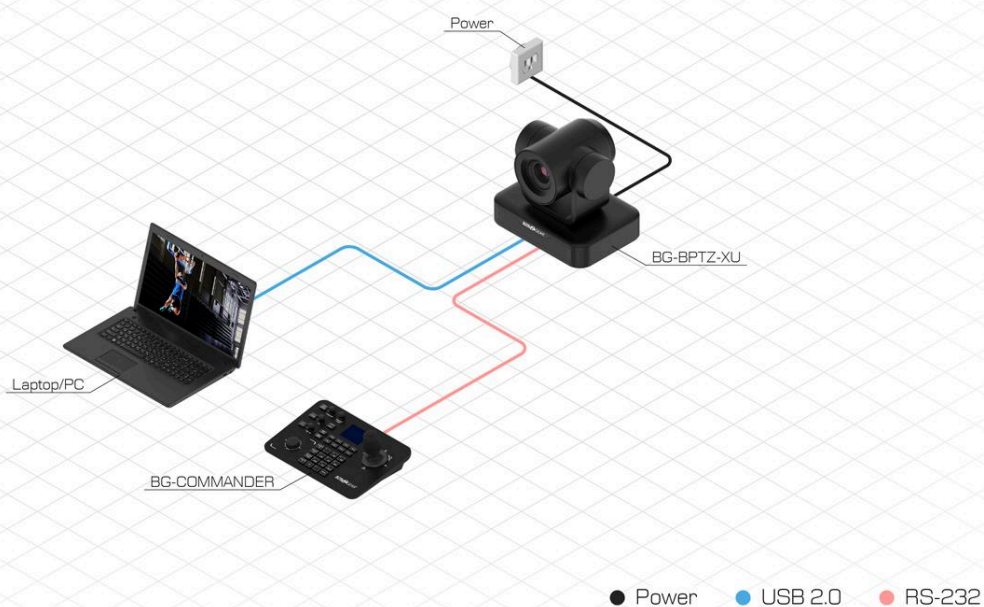
Troubleshooting

- 1) **No Video Output:**
 - Check if the camera power supply is connected, the voltage is normal, and the power indicator is lit.
 - Check whether the camera performed a self-test after restart successfully.
 - Check whether the bottom DIP switch is in the normal operating mode.
 - Verify that the output cable and display monitor are working properly.
- 2) **Intermittent Image:**
 - Verify that the output cable and video displays are working properly.
- 3) **Image distorts/is shaky when camera is stationary/moving:**
 - Check whether the camera installation position is solid.
 - Check whether there is machinery or objects nearby that could be transmitting vibration to the camera.
- 4) **Remote control does not work:**
 - Verify the remote control address is set appropriately.
 - Check remote control batteries.
 - Verify the camera is in the normal operating mode.
 - Verify the OSD has been exited. The camera cannot be controlled while the menu is being displayed.
- 5) **Serial port not works:**
 - Verify that the camera serial device protocol, baud rate, address is correct.
 - Check whether the control cable is connected properly.
 - Check whether the camera working mode is set to the normal operating mode.



Application Example

BG-BPTZ-XU
Connection Diagram



BZBGear



Tech Support

Have technical questions? We may have answered them already!

Please visit BZBGear's support page (bzbgear.com/support) for helpful information and tips regarding our products. Here you will find our Knowledge Base (bzbgear.com/knowledge-base) with detailed tutorials, quick start guides, and step-by-step troubleshooting instructions. Or explore our YouTube channel, BZB TV (youtube.com/c/BZBTVchannel), for help setting up, configuring, and other helpful how-to videos about our gear.

Need more in-depth support? Connect with one of our technical specialists directly:

<u>Phone</u>	<u>Email</u>	<u>Live Chat</u>
1.888.499.9906	support@bzbgear.com	bzbgear.com

Limited Product Warranty Terms

Pro Line: 5-year warranty from the date of purchase for AV/Broadcasting products bought on or after August 1, 2024.

Essential Line: 3-year warranty from the date of purchase for AV/Broadcasting products bought on or after August 1, 2024.

Cables: Lifetime Limited Product Warranty.

For complete warranty information, please visit bzbgear.com/warranty.

For questions, please call 1.888.499.9906 or email support@bzbgear.com.

Mission Statement

BZBGear is a breakthrough manufacturer of high-quality, innovative audiovisual equipment ranging from AVoIP, professional broadcasting, conferencing, home theater, to live streaming solutions. We pride ourselves on unparalleled customer support and services. Our team offers system design consultation, and highly reviewed technical support for all the products in our catalog. BZBGear delivers quality products designed with users in mind.



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