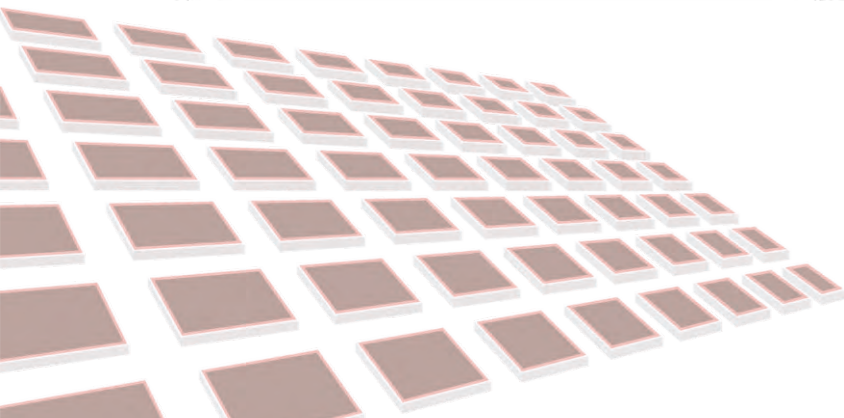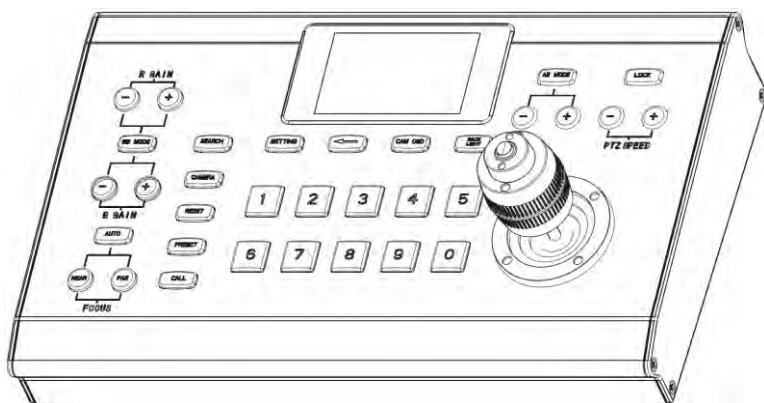# Universal PTZ camera remote controller
User Manual

Tips

Thank you for using our products.
In order to enable you to operate the machine proficiently as soon as possible, please carefully read the instruction manual we have provided for you, from which you can obtain product safety. precautions, product introduction and product use methods and other related knowledge. After you have read the manual, please keep it in a safe place for future reference.
If you find any problems during the use of the product, please contact our relevant service personnel, thank you for your cooperation.

Precautions

1. Before connecting to the device, make sure that the power supply voltage is correct. Use only the original uncut (unspliced) power supply that came with the keyboard.
2. If the product does not work normally, please contact your dealer. Never try to disassemble the device yourself. (We are not responsible for any problems caused by unauthorized repairs or maintenance.)
3. This product is an indoor device, please do not place this product in a water or humid place.
4. When transporting, the equipment should be packed in the original packaging.
5. Do not drop the machine or subject it to physical shocks.
6. Do not use strong detergent to clean the machine. When the dust is thick, wipe it gently with a neutral detergent, and it is limited to external cleaning.
7. Keep the RJ-45 port free of dust and moisture.
8. Avoid moving the machine between places that are too cold or too hot to avoid fogging inside the machine and affect its service life.

Affirm

1. We have done our best for the completeness and correctness of the contents of this manual, but there will inevitably be errors and omissions. We will not be responsible for any technical or typographical errors in the manual.
2. The appearance of the product shown in this manual is for reference only and may differ from the actual appearance of the equipment you purchased.
3. This manual guides multiple product models, so it is not used for any specific product alone.
4. The display interface, parameters, drawings and model value ranges in this manual and illustrations may be different. For details, please refer to the actual product.
5. The content of this manual is subject to change without notice.
6. If the software version is upgraded and does not conform to this manual, please refer to the software.

Feature

The smart, ergonomic PTZ controls multiple remote cameras for live event production and content creation, and is used in education, broadcasting, video conferencing, churches, etc.
The high-quality three-dimensional joystick adjusts pan and tilt, and controls the zoom through the handle lever, which can easily realize professional video production. The dedicated knobs and control buttons simplify direct access to common camera functions without the need to use the camera menu.
Quick image adjustment function, through the button, you can adjust the automatic exposure, shutter, aperture, white balance, focus, etc.
The controller supports serial RS-232, RS-422/485 and IP control. Allows the use of RS-232, RS-422 / 485, IP on a controller to control cameras in a single system.
With IP control, the controller can automatically search for IP cameras in the system. Support Onvif, VISCA over IP.

Control keyboard panel diagram
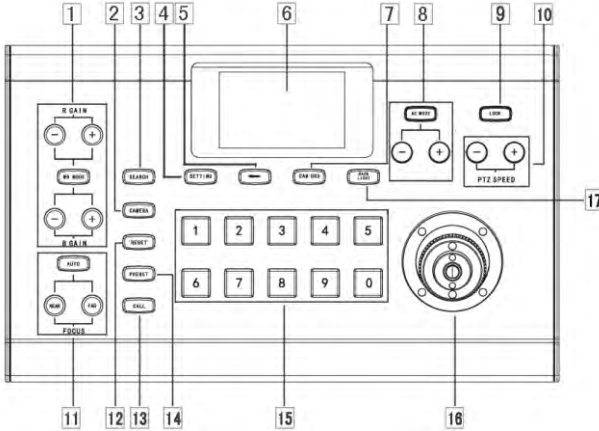
Button function

1. White balance adjustment
"WBC MODE" white balance mode selection
"B" Manual white balance blue gain "+", "-".
"R" manual white balance red gain "+","-".
2. Camera selection
Network control: Short press to open the camera list
   Long press 2S to edit the camera list (only the devices added to the list through search can be edited)
Serial port control: number key + "CAMERA" to select camera
3. Search   Used to search connected devices; support search protocol VISCA/VISCA OVER IP/ONVIF
4. "SETTING"   keyboard menu call
5. "←"   network mode
6. Display screen
7. "CAM OSD"   Camera menu call, support protocol VISCA/VISCA OVER IP/ONVIF
8. Exposure mode selection
   "AE MODE" exposure mode selection
    Aperture priority mode "-/+" to adjust the aperture value
    Shutter priority mode "-/+" to adjust the shutter speed
    Bright priority mode "-/+" to adjust the bright value
9. "LOCK"   keyboard key lock
10. "PAN-TILT SPEED"   adjustment joystick control, pan-tilt rotation speed and lens zoom speed
11. Focus mode selection
    "AUTO" auto focus mode
    "NEAR" manual focus mode close focus
    "FAR" manual focus mode far focus
12. Delete presets   Number key + "RESET" to delete preset
13. Call presets   Number key + "CALL" to call the preset position
14. Set the preset position   Number key + "PRESET" to set the preset position
15. 1-0 number keys
16. Control joystick
The joystick is used to operate the pan, tilt and focus of the camera. Choose the camera you want to control through the joystick.
   Pan and pitch
    The left and right direction of the joystick is panning, and the up and down is tilting. When you release the remote sensing, the camera will stop moving.
    focal length
    When you turn the knob on the joystick clockwise, the field of view will become larger (zoom), otherwise it will become smaller (zoom).
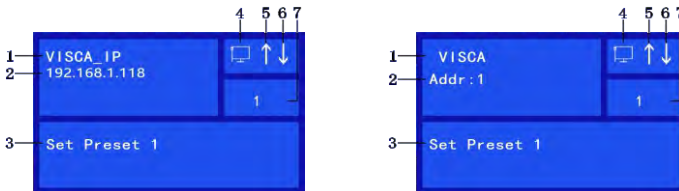17. "BACKLIGHT"   backlight compensation

Control keyboard interface diagram
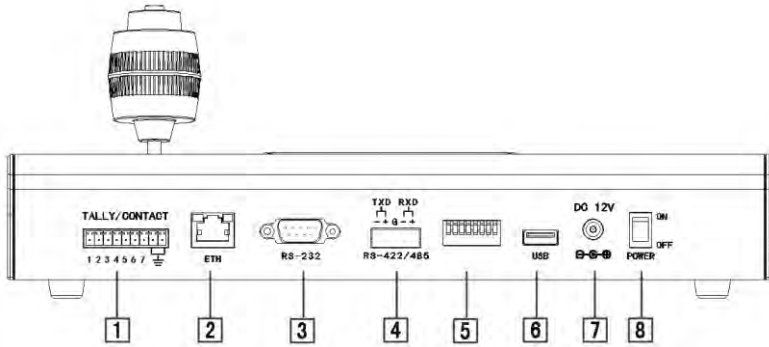
1. TALLY interface（leave and no function）
2. Ethernet port
3. RS232 control
4. RS422/485 control
5. DIP switch area

	1	2	3	4	5	6	7	8
ON	NC	NC	NC	NC	NC	NC	NC	UPGRADE MODE
OFF	NC	NC	NC	NC	NC	NC	NC	NC

6.USB interface
7.Power interface
8.Power switch

Home Screen

1.Network control, display network control protocol
  Serial port control, display the current control protocol
2.Network control, IP address display
  When serial port control, display the ID of the camera
3.Operation record area
4.Network connection indicator icon
  If display " 🖥 ",Indicates that the network was successfully connected
  If display " 🖥 ",The network is not connected
5. Instruction sending indicator icon
6.Command receive indicator icon
7.Enter the digital display area

Power supply

Use the following methods to power the keyboard

1.DC power supply from power adapter (Standard 12V)
2.POE power (Connect the Ethernet IP port to the POE switch, function is optional)
   Use CAT6 cable, the maximum distance is 100m (802.3 af)

Interface pin definition
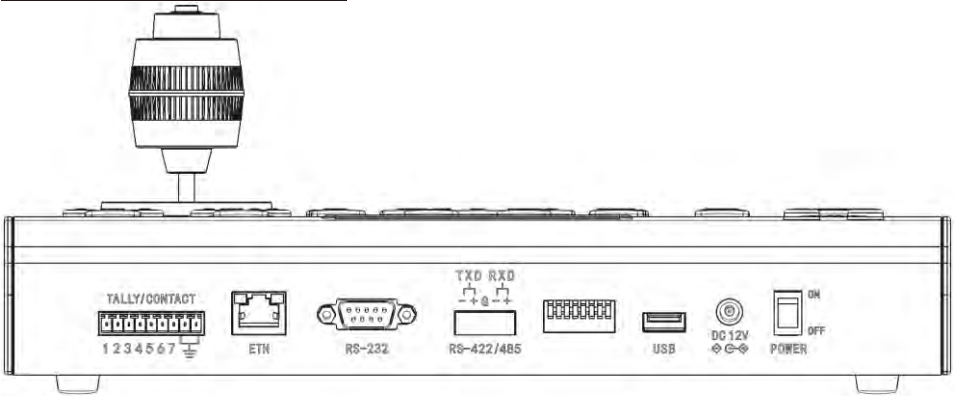
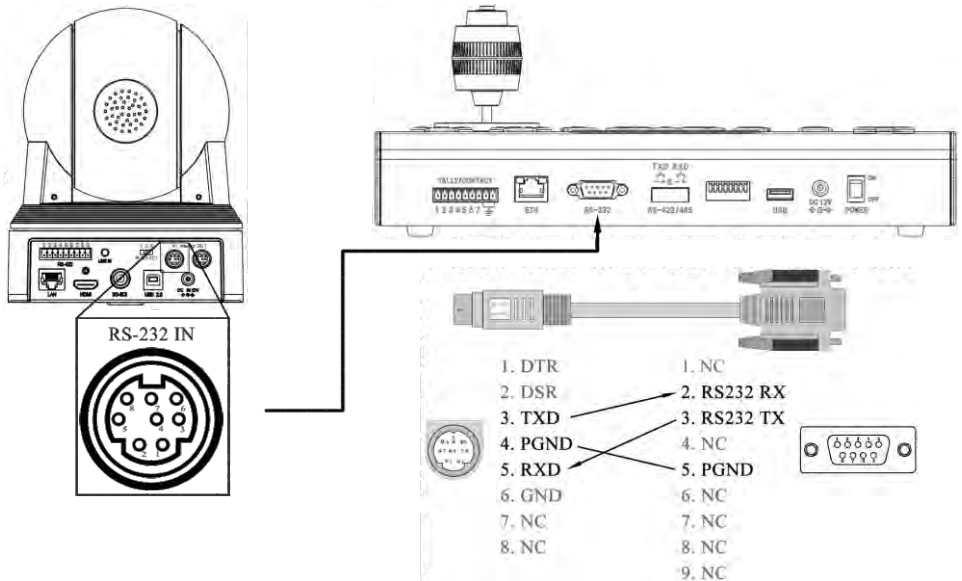| TALLY		LAN			DB9 (RS232)	
Pin NO	Function	Pin NO	Function	Color	Pin NO	Function
1	Tally1	1	TX+	Orange/White	1	NC
2	Tally2	2	TX-	Orange	2	RS232 RX
3	Tally3	3	RX+	Green/White	3	RS232 TX
4	Tally4	4	NC	Blue	4	NC
5	Tally5	5	NC	Blue/White	5	PGND
6	Tally6	6	RX-	Green	6	NC
7	Tally7	7	NC	Brown/White	7	NC
8	PGND	8	NC	Brown	8	NC
9	PGND				9	NC

Network Connections

Connect the keyboard's "LAN" port to the port on the Ethernet switch
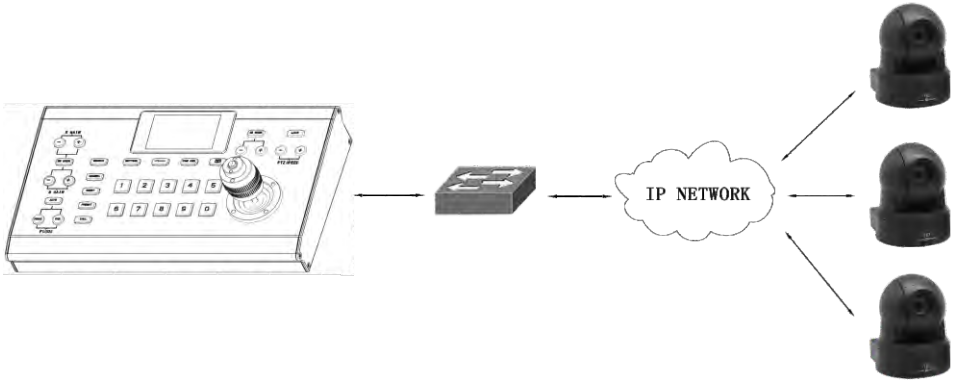
Serial connection

1.Use DB9 to RS232 8-pin mini-port control line for RS-232 connection

1. DTR   1. NC
2. DSR   2. RS232 RX
3. TXD   3. RS232 TX
4. PGND 4. NC
5. RXD   5. PGND
6. GND   6. NC
7. NC   7. NC
8. NC   8. NC
           9. NC

2.Phoenix head for RS-422 connection

1. TXD- IN   1. TDX-
2. TXD+ IN   2. TXD+
3..RXD- IN   3. GND
4. RXD+ IN   4. RXD-
5. GND   5. RXD+
6. TXD- OUT
7. TXD+ OUT
8..RXD- OUT
9. RXD+ OUT
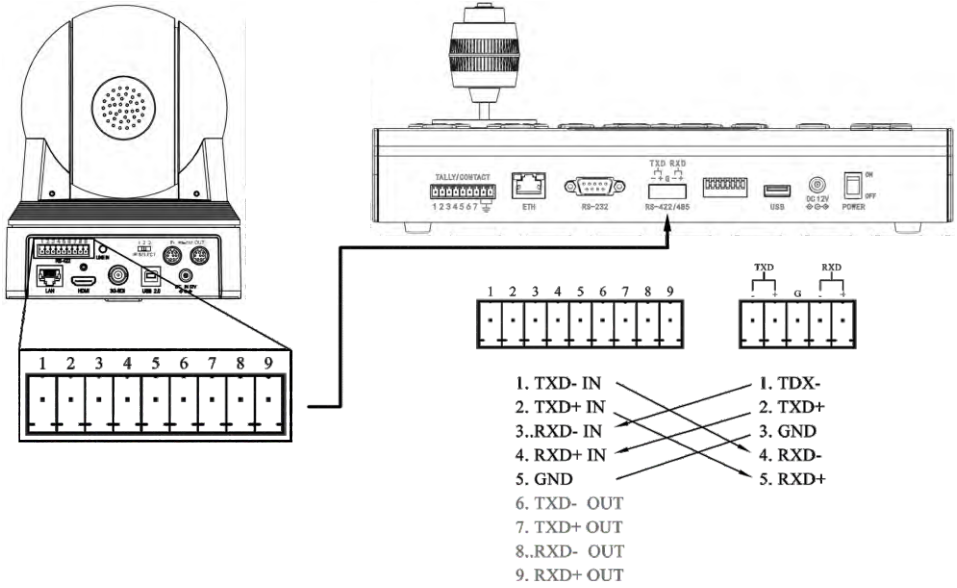
Keyboard OSD menu Settings

- Press"SETTING"button, open/exit the keyboard menu
- Use the joystick to browse the keyboard menu
  - a.Move the joystick up and down to browse the menu options
  - b.Move the joystick to the right and send the "Enter" command
  - c.Move the joystick left to send the "EXIT" command
  - d.The top button of the joystick sends the "Enter" command
- Use the joystick to operate the virtual keyboard
  - a.Move the joystick left and right up and down to select characters
  - b.The top button of the joystick sends the "Enter" command

List of main menu

```
SETTING
1.Serial Port Protocol    VISCA>
2.Protocol setting           >
3.Custom Camera List         >
4.Blacklist Setting          >
5.Ethernet                   >
6.Serial Port                >
7.Rocker                     >
8.Buzzer                  OFF>
9.Sleep Time         No Sleep>
10.Language          English >
11.About Device              >
12.Reset Device              >
```

```
Select  Protocol
1.VISCA
2.Pelco D              √
3.Pelco P
```
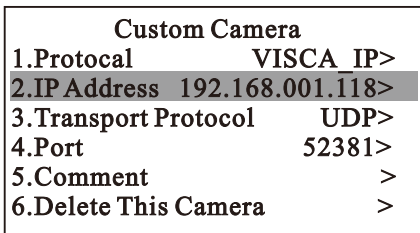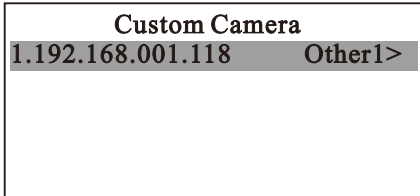
Sbu Menu

1. Serial port protocol selection

Set up the serial port control protocol, the default control protocol is VISCA, and the optional control protocol is VISCA/Pelco D/Pelco P;
- Select the appropriate protocol—Pelco D
- Exit the menu to save

2.protocol settings

Device compatibility when setting VISCA protocol control, used to adapt to different manufacturers of cameras;
- Select the appropriate brand
- Exit the menu to save

3.Custom camera list

Used to add/manage custom IP addresses (Visca_IP protocol only)
Add new custom address
- Select the camera brand that supports Visca_IP protocol—Other1
- When the camera brand is selected as Other1, select the transmission protocol UDP/TCP according to the process, fill in the camera IP, fill in the UDP/TCP port number, and device description (if you don't fill in the description, you can directly select the "Enter" icon on the virtual keyboard to save and exit)

Manage custom addresses
● Select a custom IP address
● When the camera brand is selected as Other1, editable items: communication protocol (VISCA_IP select the corresponding camera brand), IP address, communication protocol (UDP/TCP), port number, device description, delete the camera
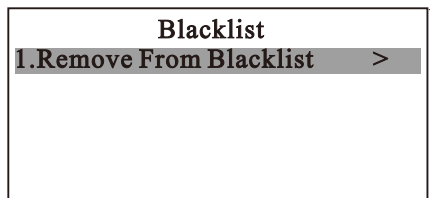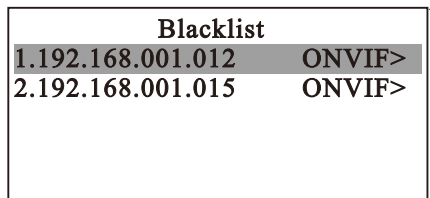
```
Custom Camera
1.Add New Custom Address    >
2.Manage Custom Address     >
```

```
Custom Camera
1.192.168.001.118      Other1>
```

```
Custom Camera
1.Protocal          VISCA_IP>
2.IP Address  192.168.001.118>
3.Transport Protocol    UDP>
4.Port              52381>
5.Comment               >
6.Delete This Camera    >
```
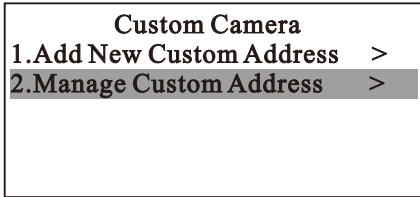
4.Blacklist settings

Used to manage the devices added to the blacklist
● Select "Remove all items", select "YES" to remove all devices added to the blacklist at once

```
Blacklist
1.Remove All Item        >
2.Blacklist              >
```

```
Blacklist
1.NO
2.YES
```
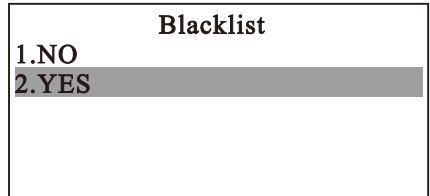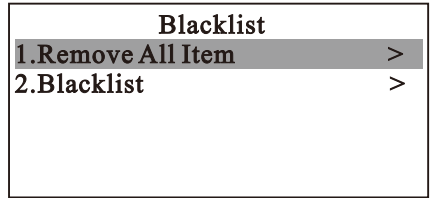
● Select the "Blacklist" to display all device IP added to the blacklist, and you can remove the blacklist one by one

```
Blacklist
1.Remove All Item        >
2.Blacklist              >
```

```
Blacklist
1.192.168.001.012    ONVIF>
2.192.168.001.015    ONVIF>
```

```
Blacklist
1.Remove From Blacklist   >
```
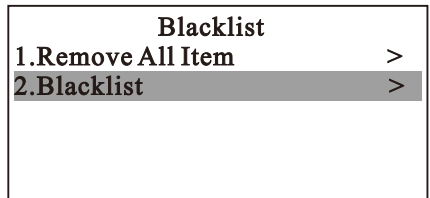
5.Ethernet settings

IP address could set to static address IP or DHCP address

● If set "DHCP":cursor move to "DHCP", select "ON"，exit menu and save

Ethernet	
1.DHCP	ON>
2.IP	192.168.1.118
3.Mask	255.255.255.0
4.GateWay	192.168.1.1

● if set static IP address, Move the cursor to "DHCP", Select "OFF"
● Move the cursor to "IP", enter the corresponding value with the number button
● Set up the subnet mask and gateway as needed
● Exit menu and save

6. Serial port settings

Used to set the baud rate of serial port control and serial port forwarding;
● Baud rate setting, select the serial port to be set—RS232
● Choose the corresponding baud rate—9600
● Exit the menu to save

Serial Port	
1.Baud Rate	>
2.Instruction Repeater	>

Serial Port	
1.RS232/USB Band Rate	9600>
2.RS422/485 Band Rate	9600>

Serial Port	
1.2400	
2.4800	
3.9600	√
4.19200	
5.38400	
6.115200	

● Command forwarding setting, select RS232 as input, RS422/485 as output, and vice versa;
● Exit the menu to save.

Serial Port	
1.Baud Rate	>
2.Instruction Repeater	>

Serial Port	
1.OFF	
2.RS232/USB As Input	
3.RS422/RS485 As Input	

7.Joystick settings

Used for 3D joystick function setting and rocker switch correction;
● 3D joystick function setting, select "Pitch Reverse"—ON
● Exit the menu to save

Rocker	
1.PAN Reverse	OFF>
2.TILT Reverse	ON>

8.Buzzer

Set Buzzer on/off

● Select "Buzzer"
● Select "ON", exit the menu and save

```
                Buzzer
1.OFF
2.ON                        √


```

9. Time setting of LCD screen

Set the keyboard display sleep time;

● Select "sleep time";
● Select "not sleep", exit the menu to save

```
              Sleep Time
1.1 Minute
2.5 Minute
3.30 Minute
4.No Sleep                  √

```

10.Language

Set the display language of the keyboard menu;

● Select "Language";
● Select "English", exit the menu to save

```
              Language
1.English
2. 中文简体


```

11.About Device

Show device information

● Select "About Device", will show the current information of device

```
            About Device
            Hardware Version
V1.rel.20191208.0000
            Mac Address
B4:2E:99:54:BB:D3
            Software Version
2021.V3.0.3
            Compile Date
2021.02.03
```

12.Reset Device

Clear all settings and restore to factory default settings;

● Select "Reset Device"
● Select "YES", and wait for the resetting

```
            Reset Device
1.NO
2.YES


```

Camera allocation

1.Serial connection and manually add cameras

● 232 port, can control up to 7 daisy chain RS-232 cameras through RS-232 Visca protocol;
    422 port, up to 7 daisy-chain RS-422 cameras can be controlled through RS-422 Visca protocol;
      Up to 255 cameras through RS-485 Pelco protocol;
● Connect 255 cameras separately through Visca _IP protocol
● Connect 255 cameras separately through ONVIF protocol

If choosing VISCA, PELCO-D, PELCO-P, need to set the baud rate of each channel to be consistent with the camera;

2.Search the local network and add the IP camera to the controller

● Press "SEARCH" button to search for IP cameras (if it's controlling with serial port, need to press the "←" button to switch to IP mode, and then press "SEARCH" to search for IP)
● Screen shows searching
● Use the joystick to browse the discovered ONVIF/VISCA_IP cameras;
  （For discovered cameras, can add camera description, or add to camera list, or add to blacklist)
● Edit the discovered cameras and add them to the camera list
● Exit the search list
● Press the "CAMERA" button to open camera list, use joystick to select the corresponding camera
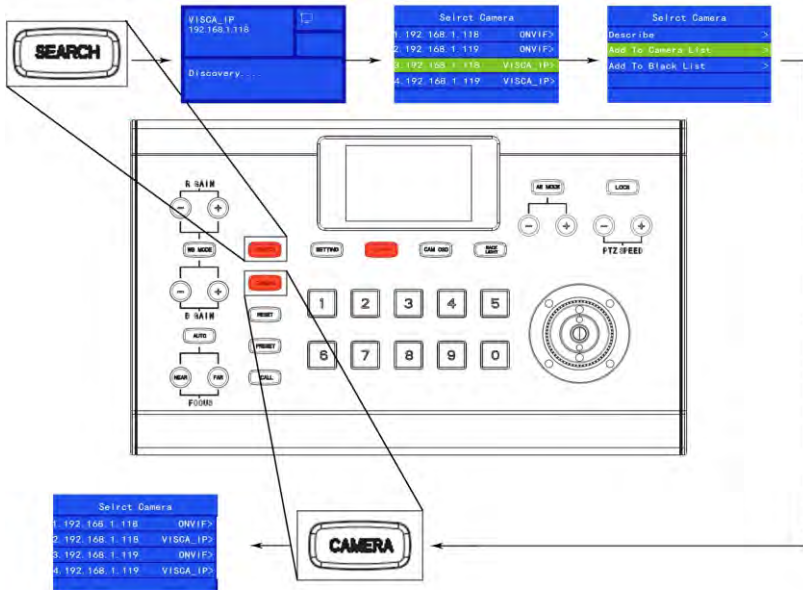
3.Manually add the VISCA_IP camera to the controller

● Open the menu, select "custom camera list", add the required VISCA_IP address; select the brand as Other1, select the transmission protocol UDP/TCP according to the process, fill in the camera IP, then fill in the UDP/TCP port number, and device description (if not fill in the description, you can directly select "Enter" on the virtual controller to save and exit)
● Exit the menu
● Short press the "CAMERA" button and open the camera list, use the joystick to select custom cameras with "CUSTOM" (IP control)
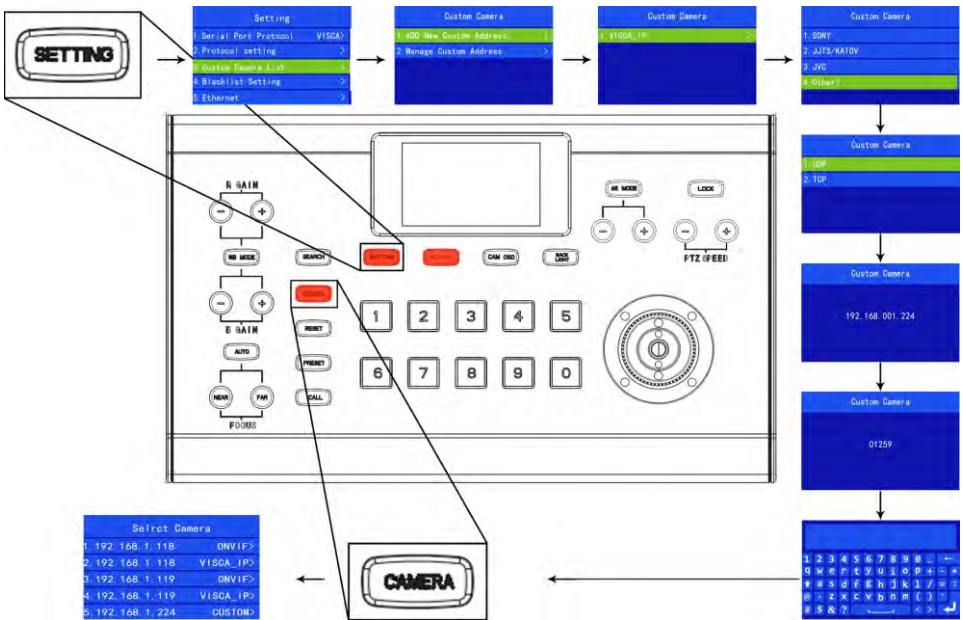
4. Edit the camera list

● In the IP mode, long press the "CAMERA" button for 2S to enter, the camera list editing interface

● Can edit ONVIF/VISCA_IP devices added to the camera list from the search list; (Editable, camera description, remove camera list, add to blacklist, ONVIF settings can also edit user name and password)
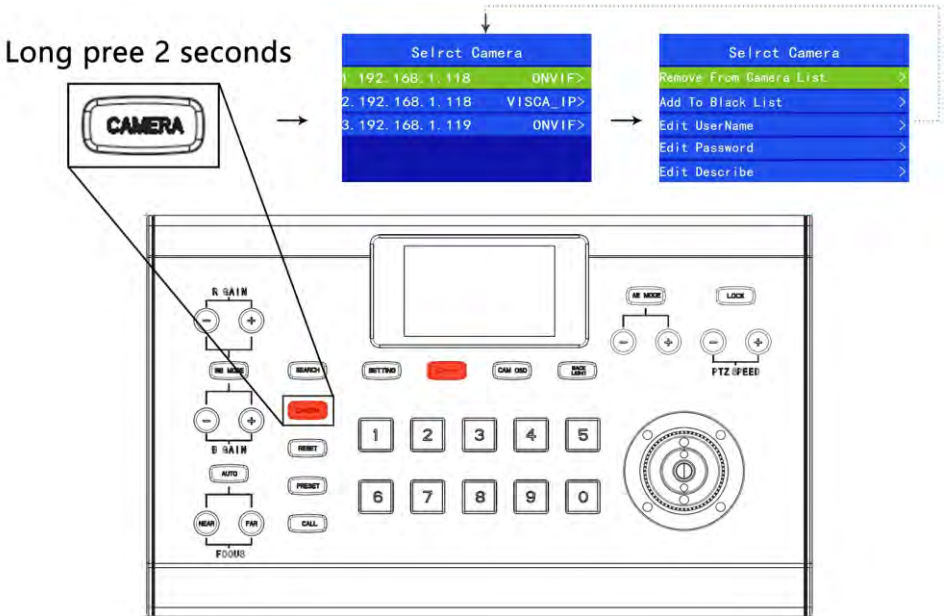
Interact with the camera

1. Serial control

● Choose RS232 or RS422/485 as output, such as: "RS232"

● Press number key + "CAMERA" to select the camera to be controlled

（During VISCA protocol control, there are multiple cameras, first press the "SEARCH" button to assign addresses)

2. IP control

● "←" button

● Press the "CAMERA" button to open the camera list, use the joystick to select the corresponding device

Camera control

1. Set the camera OSD menu

● Press the "CAM OSD" button, and send a command to open the camera OSD menu (only for VISCA and VISCA_IP protocols)

● Use the joystick to browse the menu

a. Move the joystick up and down to browse the menu options

b. Move left and right to adjust the value

c. Send the "ENTER" command via the top button of the joystick

2. Manually move

● Horizontal, vertical and zoom can be executed simultaneously

● The joystick can be used to move horizontally and vertically in any direction

● The joystick can be rotated to zoom in/out

● The joystick can quickly return the gimbal and lens to the initial position by pressing the top button

● When not in the menu, PTZ Speed "+, -" buttons can control the camera's horizontal/vertical/zoom speed

● Rotate the joystick to adjust the zoom in/out

3. Set, call, delete presets

● Set the preset position

    a. Move the camera to the desired position.

    b. Press the number "1" and "0" buttons successively, then press the "preset" button to set the NO.10 preset position.
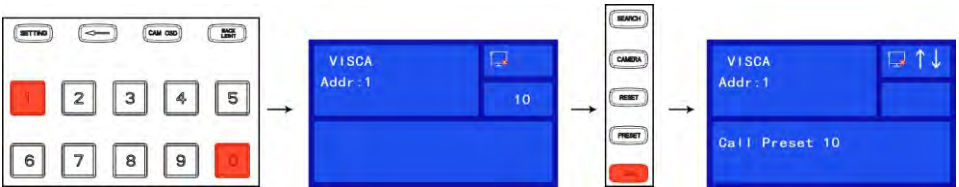
    c. The keyboard screen operation record area displays, "Set Preset 10".

● Call presets

    a. Press the number "1" and "0" buttons successively, and then press the "CALL" button to call the preset position 10.

    b. The keyboard screen operation record area displays "Call Preset 10".

● Delete presets

    a. Press the number "1" and "0" buttons successively, and then press the "RESET" button to delete preset position 10.

    b. The keyboard screen operation record area displays, "Delete Preset 1".

4. Adjust image parameters

Use the image adjustment panel to set or adjust image parameters (only applicable to VISCA and VISCA_IP protocols, PELCO / ONVIF protocol image adjustment functions are not complete)

BLC (Backlight compensation)

● Turn on/off the backlight compensation of the camera through the "BACK LIGHT" button

White balance

● Switch between auto/ATW...white balance mode by using "WB MOOD" button

● Use the "R GAIN + / -" button to switch to manual white balance and manually adjust the red gain value

Use the "B GAIN + / -" button to switch to manual white balance and manually adjust the blue gain value

Exposure

● Through the "AE MODE" button, you can switch the exposure mode: auto, aperture priority, shutter priority, brightness priority

● Adjust the aperture, shutter and brightness values in each mode through the "+, -" buttons;
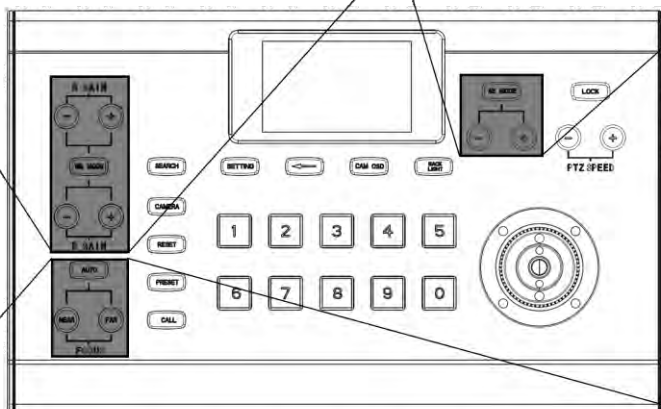
Focus

● Manually adjust (near / far) by pressing the "NERA / FAR" button in the FOCUS area

● Automatic adjustment by using the AUTO button