4K AI PTZ Video Conference Camera

User Manual
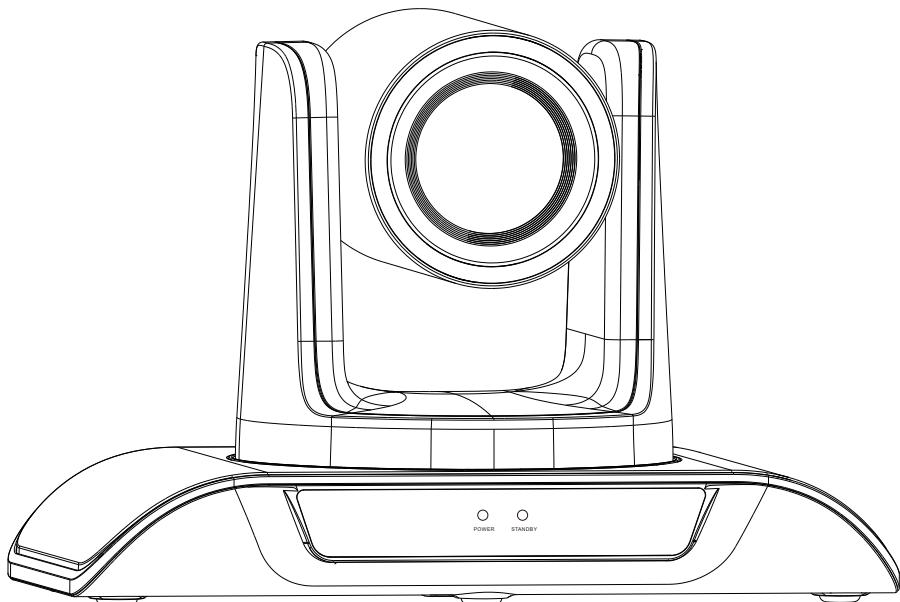
Version V1.0

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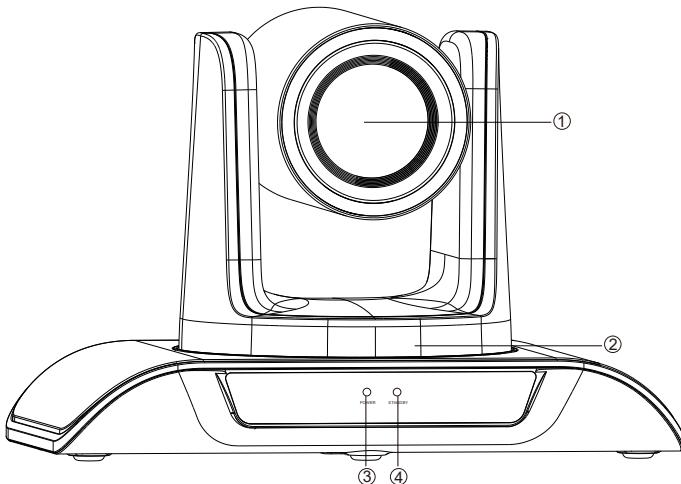
① Lens

② Pan & Tilt

③ Power

④ Standby

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RS-485

RS-232

USB

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② RS-485

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⑤ USB

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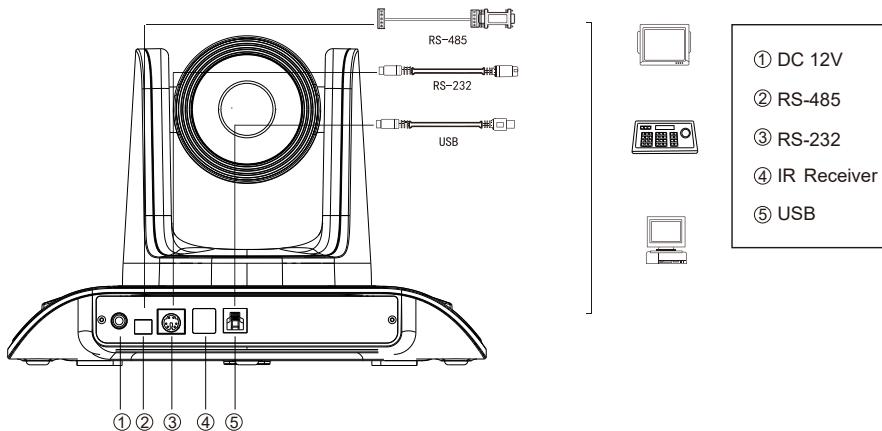
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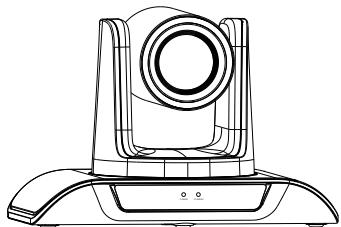


HD conference camera

DC 12V power supply
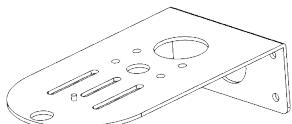
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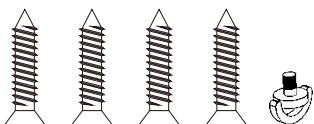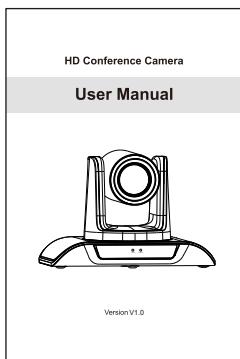
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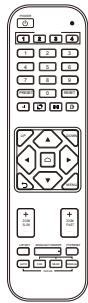
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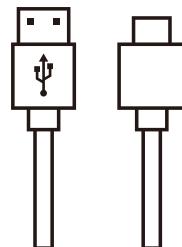
USB cable

3. Performance Characteristics

Model No.	VHD4K
Sensor	1/2.8"SONY CMOS
Effective pixels	8.29mega pixel
Video signals	4K@30/25fps,2K@30/25fps,1080p@30/25fps
Zoom	5x digital zoom
Lens	f=2.2mm
Aperture	F1.8
Horizontal Angle	107°
Vertical Angle	71°
Diagonal Angle	116°
Video Output	USB 2.0
LAN	/
Network Protocol	/
Video Encoding Format	MJPEG, YUY2
Video Resolution	4K(3840*2160) etc
Siginal Standard	NTSC/PAL
Preset Position	User can set up to 64 presets (10 presets by IR remote)
Control Interface	RS-232 (input only), RS485,USB
Shutter	1/30s～1/10000s, aut
Baud Rate	38400/9600bps
Control Protocol	VISCA, PELCO-D, PELCO-P(RS-232, RS485)
USB Protocol	UVC1.1
Minimal Illumination	0.1Lux
SNR	≥50dB
Horizontal Rotation	350°(±175°)0.1°/s～100°/s
Vertical Rotation	180° (±90°)；0.1°/s～80°s
Power Supply	DC 12V/2A
Power Consumption	12W
Work Temperature	0°~+50°
Work Humidity	0~95% RH
Product Size	247*165*171mm/285*217*197mm(before / after packing)
Product Weight (net / gross weight)	1.1kg/1.85kg

4. Remote Control Button Description
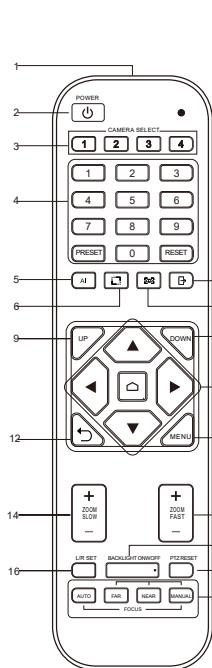
No	Name	Function
1	Lunch Window	Remote control launch window
2	Power Key	Enter into standby mode by pressing it
3	Camera Select Key	Select the camera need to control
4	Preset Position	Preset position setup keys, include 【PRESET】 and 【RESET】 Set the preset position Reset the preset position
5	AI	Turn on AI and enter Multi-human tracking; Turn off AI
6	Frame	Select a single tracking target person, blue frame indicates selected, green frame indicates locked
7	Lock	Lock and track target person
8	Exit Frame	Press 【Frame】 and then press 【Exit Frame】 to end target lock
9	Up	installed direction
10	Down	Camera rotates horizontally in reversed installed direction
11	PTZ Control Key	PTZ move according to the arrow indicates. Press【 △ 】PTZ will return to the middle position
12	Return Key	Return to the previous operation
13	Menu	Enter or exit OSD Menu after pressed it
14	ZOOM Slow Key	Zoom in + or out - slowly
15	ZOOM Fast key	Zoom in + or out - quickly
16	L/R Set Key	Long press 10 Seconds to switch the left and right directions
17	Backlight KEY	Turn on/off backlight compensation
18	PTZ Reset Key	The camera returns to its original position
19	Auto Focus	Auto/far/near/manual Default: Auto focus

★Attentions for Remote Control

1. Please check whether the indicator corresponding to the camera selection area is on or not.

2. If the remote control doesn't work, please replace batteries.

3. Make sure the Number keys on the camera selection area are consistent with the remote control address in the menu.

4. Fast/Slow Zoom Keys and Manual/Auto Focus Keys not

5. Camera Menu Setup

When operating remote control, press【MENU】to enter main menu of the video camera.

5.1 Level 1 Menu - Main Menu

```
                  Main Menu
    - - - - - - - - - - - - - - - - - - - - - - - -

    → Exposure
      Color
      Image
      P/T/Z
      Communication
      AI Control
      Information
      Restore Default
      Language              English


      [Home]                Enter
      [Menu]                Back
```

Language: Support Chinese/English
Click the Home button on the Remote to enter level 2 sub-menu
Click the Menu button on the Remote to exit menu

5.2 Level 2 Menu - Exposure

```
                  Exposure
    - - - - - - - - - - - - - - - - - - - - -

    → Mode                 Auto
      Backlight            On
      ExpComp              0
      Flicker              50Hz
      [Return]
```

Mode: Auto/Manual
Backlight: On/Off the backlight
ExpComp: Exposure compensation, optional item is -10 to 10
Flicker: Off/50Hz/60Hz
When changing the exposure mode to Manual, the sub-menu is as follows,

```
                    Exposure
  _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
  → Mode                  Manual
     Shutter              1/60
     Gain                 0
     Flicker              50Hz
     [Return]
```

Shutter: Shutter value setting, the value is between 1/120 and 1/5
Gain: Exposure Gain Setting, optional item is 1 to 100
Flicker: Auto/Off/50HZ/60HZ

5.3 Level 2 Menu - Color

```
                     Color
  _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
  → Brightness              50
     Contrast               50
     Hue                    50
     Saturation             50
     Sharpness              50
     WB Mode                Auto
     Rtuning                50
     Btuning                50
     [Return]
```

Brightness: Set image brightness dynamically. Default 50, optional item is 0-99
Contrast: Set image contrast dynamically. Default 50, optional item is 0-99
Hue: Set the relative brightness of the image. Default 50, optional item is 0-99
Saturation: Set image color effect. Default 50, optional item is 0-99
Sharpness: Set sharpness level. Default 50, optional item is 0-99
WB mode: Auto/Manual/VAR
When the WB mode is Auto, the Rtuning and Btuning value
can be tuned and the range is 0 to 99
When the WB mode is Manual, the sub-menu will be the following:

```
                    Color
    - - - - - - - - - - - - - - - -
    Brightness            50
    Contrast              50
    Hue                   50
    Saturation            50
    Sharpness             50
  → WB Mode               Manual
    Rtuning               50
    Btuning               50
    Rgain                 50
    Bgain                 50
    [Return]
```

In manual WB mode, the above values can be adjusted. The Rgain and Bgain value can be tuned, the range is 0 to 99. When the WB mode is VAR, the sub-menu will be the following:

```
                    Color
    - - - - - - - - - - - - - - - - -
  → Brightness            50
    Contrast              50
    Hue                   50
    Saturation            50
    Sharpness             50
    WB Mode               VAR
    Color Temp            5500
    Rtuning               50
    Btuning               50
    [Return]
```

The range for the color temp can be adjusted between 2500K to 9000K.

5.4 Level 2 Menu Image

```
                    Image
    - - - - - - - - - - - - - - - - -
  → Flip                  Off
    Mirror                Off
    Video Format          4K30
    Menu Mirror           Off
    USB Mode              ISOC
    Style                 Normal
    [Return]
```

Flip: Off/On, Enable/disable the picture up/down
Mirror: Off/On, Enable/disable the picture left/right flip
Video Format: 4K30/4K25/2K30/2K25/1080P30/1080P25
720P60/720P50/720P30/720P25
Menu Mirror: Off/On, Enable/disable the menu picture left/right flip
Mode: ISOC/BULK
USB mode: Adjust between Isochronous transfers mode
and Bulktransfers mode. Style Mode: Normal, PC, Bright

5.5 Video Format

4K supports video formats as follows:

```
                    Video Format
_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
     4KP30
     4KP25
 →  1080P60
     1080P50
     1080P30
     1080P25
     720P60
     720P50
     720P30
     720P25
```

5.6 Level 2 Menu P/T/Z

```
                       P/T/Z
_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
 →  Acc Curve
     [Return]              Middle
```

Acc Curve: Adjust the rotation speed of the Pan and Tilt,Fast/Middle/Slow,

5.7 Level 2 Menu-Communication

```
              Communication
_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
   Protocol
                     Auto
   Baudrate
                     9600
   RC Address
                     2
 → [Return]
```

Protocol: Default Visca, option item Visca/PELCO-D/PELCO-P/Auto
Address: Set the camera's address, option item 1-7 in Visca,
1-255 in PELCO-D, 1-32 in PELCO-P
Baudrate: Default 9600, option item 2400/4800/9600/38400
RC Address: Set the IR remote control's address to control the corresponding
camera, option item ALL/1/2/3/4

5.8 Level 2 Menu - AI Control

```
                   AI Control
_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
→ Gesture Control          On
     [Return]
```

Hand Control: On/Off

5.9 Level 2 Menu - Information

```
                 Information
_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
    Model               4K CAMERA
    Version             2.30S_WIFI_1_ 1103
                        2023-11-06 16:26:10
→ [Return]
```

Model: 4K Camera
Version: 2.30S_WIFI_1_ 1103
Date: 2023-11-06 16:26:10
Notice: The version number here is just an example,
the actual parameters shall prevail.

5.10 Level 2 Menu - Restore Default

```
                Restore Default
_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
    Restore?               NO/YES
→ [Return]
```

Restore: No/Yes, before you Exit the Menu,
please choose restore all settings on the menu or not.

6. Common Operation Instructions

6.1 Camera Select

Set the IR remote control's address to control the corresponding camera, option item 1/2/3/4

CAMERA SELECT

| 1 | 2 | 3 | 4 |

6.2 Camera Direction Control

▲ Turning up

▼ Turning down

◄ Turning left

► Turning right

⌂ Turning to default
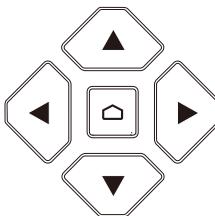
Note: Press the direction key when you need to adjust the angle. If you want to move the camera slowly, just click the direction key; If you want to move the camera fast at a large scale, just long-press the button.

6.3 Camera Focus Mode Control

【AUTO】 Switch the focus mode to AUTO

【MANUAL】 Switch the focus mode to MANUAL

【FAR】 Far focus manually

【NEAR】 Near focus manually

These 4 keys are not applicable for fixed focus cameras.

| AUTO | FAR | NEAR | MANUAL |

FOCUS

6.4 Camera Zoom Control

Press any one of the 4【ZOOM】to make the zoom functioning. These 4
keys are not applicable for fixed focus cameras.

```
   +            +
 ZOOM        ZOOM
 SLOW        FAST

   —            —
```

6.5 Preset Setup, Call, Cancel

(1) Reserve Preset: Press【PRESET】, then press one of the numbers (0-
9) to reserve a preset that corresponds to the NUMBER.
Note: You can setup 10 presets at most by the remote control.   .
(2) Call Preset: Press the NUMBER (0-9) directly to call the reserved preset
Note: It won't work if there's no preset reserved in the corresponding
number.

(3) Remove Preset: Press【RESET】, then press one of the number (0-
9) to remove a preset that corresponds to the NUMBER.

```
  1      2      3

  4      5      6

  7      8      9

PRESET   0    RESET
```

6.6 Camera AI Tracking by Remote Control

| AI | ⌐ ⌐ | ◎ | ➡ |
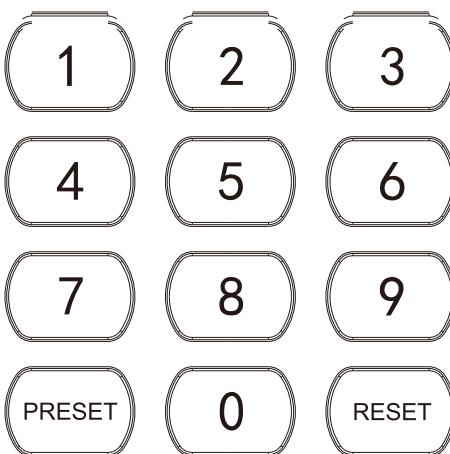
(1) Enable/Disable AI Tracking: Press the 【 AI 】 button, and the " 🧍 " icon will appear in the upper right corner of the screen, indicating that the AI tracking mode is activated. Press the 【 AI 】 button again, and the " 🧍 " icon will disappear, indicating that the AI tracking mode is deactivated.

(2) Selecting a Single Person in Multi-Person Frame:

① When there are multiple people in the camera frame, press 【 ⌐ ⌐ 】 to enter the selection mode. The person currently being tracked by default will be highlighted with a blue frame. Use the left and right buttons to switch the blue frame to the person you want to lock onto, then press 【 ◎ 】 . The blue frame will disappear, and the " 🧍 " icon will appear in the upper right corner of the screen, indicating that tracking has started.

② In the case of locked AI tracking, press 【 ⌐ ⌐ 】 , and a green frame will appear around the currently locked-on person. Press 【 ➡ 】 to end the lock-on, and the selection frame will disappear.

6.6 Camera AI Tracking by Remote Control

To activate the gesture mode on the remote control:

Menu - > AI Control- > Gesture Control- > On

```
                    AI Control
    _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
  → Gesture Control        On
    [Return]
```
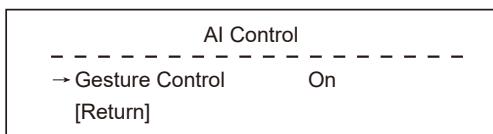
No.	Gesture	Gesture control	Function	Tips
1		OK	Turn on Multi-human tracking mode and focus on target	Only works in Non-tracking mode
2		Scissors	Stop Multi-human tracking to enter Solo tracking and focus on target	Only works in Multi-human tracking mode
3		Pistol	Zoom in to 5x	Only works in Non-tracking mode
4		Fingerindex	Gradually Zoom out to original size	Only works in Non-tracking mode
5		Good	Stop Solo tracking and enter Multi-human tracking mode	Only works in Solo tracking mode
6		Palm	Stop tracking and picture returns to original size	Only works in tracking mode

Notice:

(1) Gesture mode in the menu conflicts with the AI mode on the remote control. When Gesture mode is activated, the three buttons 【 ▢ 】, 【 ◉ 】, and 【 ➨ 】 on the remote control become inactive.

(2) In Gesture mode, pressing the 【AI】 button on the remote control will automatically deactivate Gesture mode and activate AI mode.

(3) In AI mode, Pan-Tilt-Zoom is controlled by the tracking algorithm. If the directional buttons on the remote control are pressed to control the PTZ while in AI mode, the AI mode will be automatically deactivated.

6.8 RS-232 Interface Distribution
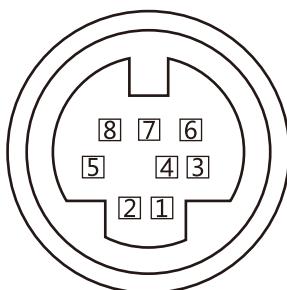

VISCA RS-232 IN

1.N.C.

2.N.C.

3.TXD

4.GND

5.RXD

6.N.C.

7.N.C.

8.N.C.

6.9 RS-485 Interface Distribution

| PIN NUM	FUNCTION
A	DTR IN+ (connect to RS-485)
B	DSR IN-(connect to RS-485)
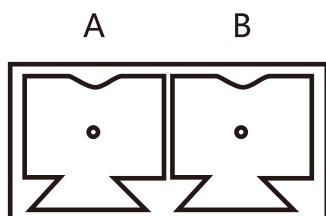
7. Installation Instructions

7.1 Surface Installation

Put the camera on the desk flatly, and make sure the camera is in a horizontal position. If you want to put the camera on an oblique surface, please make sure the angle of inclination is less than 15 degrees to ensure the camera's pan&tilt works normally.
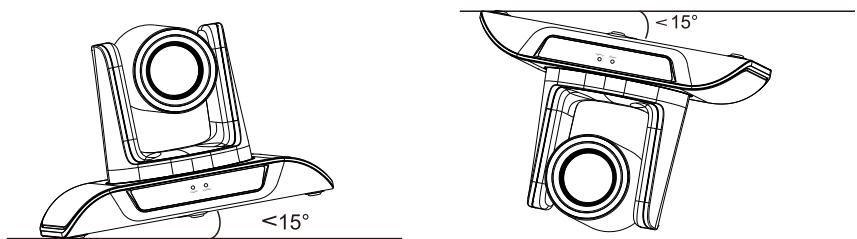
7.2 Wall Mount Installation

Step 1: Mount the wall mount bracket

Wall mount

Wall mount bracket
(This side is to the wall.)

Mounting the bracket
vertically to the wall with
screws.

Step 2: Install the camera

Screw hole

Rotate the camera
clockwise to install it.
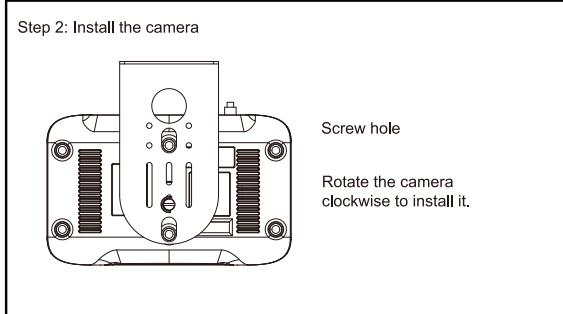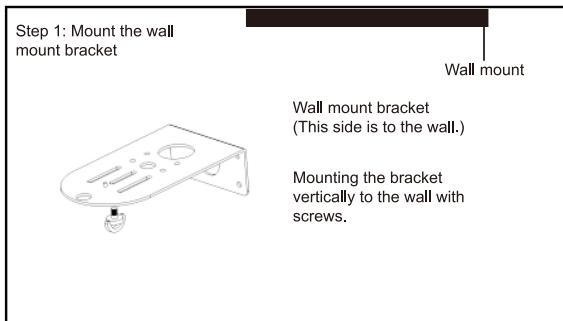
8. Trouble Shooting

Before requesting service to service engineer, please refer to the following methods to remove failures. If the failures still can't be solved, please contact us for assistance.

Q: The video of the camera cannot be displayed on the screen.

A: Please check the connection between power cable, video cable, camera and monitor, fix the connector on each end.

Q: It's unable to Pan, Tilt and Zoom camera.

A: Because the menu was displayed on monitor. Please re-operate after exiting the menu.

Q: Why the camera rotates for about 10 seconds after power on?

A: This is the normal self-test of the camera.

Q: Poor Image quality while using in church or other low-light conditions.

A: Press menu (ON/OFF) to adjust backlight effect to suit the church lighting properly.

Q: Remote control is not working or insensitive.

A: ①Not work, please replace batteries.
   ②Not sensitive: Choose the correct "IR select" number to corrspond to the camera. Control the camera within 10m (32.8ft). Remove the obstacles. Aim at the sensor which is in front of the camera when controlling it.

Q: USB interface is not identifiable.

A: Please check if the USB cable and extension cable are well connected or not. If yes, change to another USB interface and try to connect again.

Q: It won't be controlled via RS-232/RS-485 when camera connect to PC.

A: Make sure it is a correct connection between the camera and PC. (Refer to RS-485 and RS-232 Pins distribution on page 12).

Q: Why no ceiling mount bracket?

A: Camera comes with wall mount only. ceiling mount or tripod brackets need to buy separately.

Q: Does this camera has built-in mic?

A: No, this camera comes with no built-in mic.

Q: Can we control the camera only by the remote control?

A: You can control the camera by remote control, keyboard controller (joystick), and software.

9 . Maintenance Services

All products purchased from our company are guaranteed to keep in good repair for 36 months. If there are any quality problems during the guarantee period, we will maintain them for free.

Under any of the following warranties, related maintenance costs will be collected:

1. Product was not normally used.
2. Fire, electric shock, outside object collapse or other natural disasters causing the equipment damaged.
3. Unauthorized repair, misuse, abuse or change.

Warranty Card

Thank you so much for choosing our products.

User's Info

Name:_____   Tel: _____

Email:_____   Post Code:_____

Address:_____

_____

_____

Product's Info

Product Name:_____

Factory Serial Number:_____

Fault Description

_____

_____

_____

_____

Attention
1. This card is considered as the protection to fix warranty, so please reserve it carefully. Please fill in truthfully.
2. Please indicate the model number, factory serial number and the detailed description of the fault information.

Certificate
of

compliance

Q.A.

QC PASSED
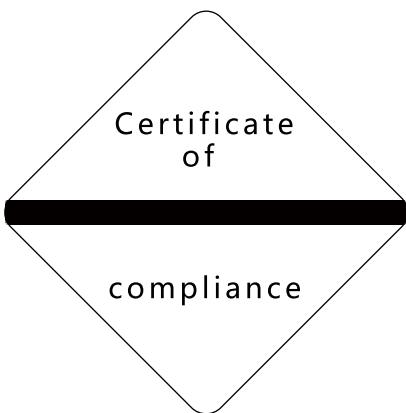
Connect, collaborate and create with Tenveo.