ORBIT ROBOT CAMERA KD-ZP30R
Installation and Use Manual

KD-ZP30R-580

KD-ZP30R-880

Before use, please read this manual carefully and store it properly for future use

SAFETY PRECAUTIONS

1. During the installation of this device, please carefully read this safety guide and strictly follow the installation and use instructions for operation. Properly keep this manual for future use.

2. Before connecting the switch power supply of this device to an external power supply, please confirm the voltage value of the power supply. When using, please pay attention to the control voltage label of this device, which is DC12V.

3. Please use the standard charger to charge the battery.

4. Please use in the temperature and humidity environment required by the device. Camera usage environment temperature: 0 ℃~+40 ℃, humidity<90%.

5. Prevent foreign objects from entering the equipment and do not splash corrosive liquids onto the equipment to prevent danger.

6. During transportation, storage, and installation, measures should be taken to prevent damage to the product caused by heavy pressure, severe vibration, and immersion.

7. Do not disassemble without authorization. The relevant work should be carried out by qualified maintenance personnel.

8. Please use a dry soft cloth to clean the outer shell. In case of stubborn dirt, please use a neutral cleaner to wipe it off.

9. Do not use strong or abrasive cleaning agents to avoid scratching the shell.

10. After the lifting is completed, personnel are prohibited from staying under the orbit car to prevent it from falling due to other issues and causing injury to personnel.

11. During installation, special attention should be paid to fixing the reduction bracket to avoid instability that may cause the orbit car to rush out of the orbit.

SERVICE AND DISCLAIMER

The information provided in this manual is for reference only. KING has always strived to provide accurate, complete, and appropriate information. However, KING cannot rule out the possibility that some information in this manual may be incorrect or incomplete, and this manual may contain typos, missing or incorrect information. KING suggests that you double check the accuracy of the information in this document. KING is not responsible for any omissions or errors, and is not liable for any losses or damages caused by the information provided in this manual. For further information on the content of this manual or the product, please contact our local offices or KING headquarters.

For your safety, please do not let the device be exposed to rain or moisture. If there is a malfunction, please do not disassemble the casing. For after-sales matters, please contact the manufacturer and ask a professional engineer for repair.

When recording or transmitting important data, it is important to check the device connection in advance or perform a test first to ensure proper operation and avoid data loss.

According to copyright law, recorded videos or audios may not be used for purposes other than personal enjoyment without the permission of the copyright owner. Please note that for live performances, shows, and exhibitions, even your personal entertainment filming may be restricted.

CATALOG

1. PRODUCT OVERVIEW

Nowadays, there is a widespread demand for intelligent shooting systems in radio and television, new media, and campus television stations. With the continuous rise of labor costs and the expansion of industry demand, there is a serious shortage of technical personnel. With the continuous innovation of automation and intelligence, stable, high standard, reliable, and low-cost broadcast grade intelligent shooting has become a reality and has a wide market.

KIND orbit robot camera system enables photographers to obtain excellent shooting angles that traditional tripods and flatbed orbit car cannot achieve, providing diverse lens materials for the final program composition. The camera's translation, lifting, pushing, pulling, shaking, pitching, and tilting are all controlled by a servo motor system, making the system have the characteristics of slow stop and slow start, uniform and variable speed silk sliding, and flat, accurate, and stable lens shooting. At the same time, the shooting trajectory of the system can be prefabricated, stored, and called, realizing intelligent pairing and combination with the scene, making photographers more relaxed in shooting, reducing labor intensity, and reducing dependence on more professionals.

2. COMPONENT INTRODUCTION

KIND orbit robot camera consists of six parts, namely the shooting orbit system, shooting lifting system, power supply and battery system, camera system, precision intelligent shooting control system, and wireless audio and video transmission system.

1. Shooting orbit system

Shooting orbit: This orbit is molded and CNC precision machined, with a surface that has undergone multiple grinding treatments, resulting in a delicate and smooth texture. The stainless steel bullet head seamlessly connects.

Orbit size: 100cm in length, 25cm in width, and 5cm in height, with straight and curved orbit that can be spliced and combined as needed, supporting roof lifting or ground installation.

Orbit car: CNC refined, 4 × 1 silent orbit wheels, powered by a fully enclosed high torque servo motor, synchronous belt transmission, compact and silent structure, easy installation, convenient storage and carrying. The fastest speed is 10m/s and the minimum is 0.1mm/s. The speed and trajectory can be remotely adjusted, and it supports stepless speed regulation; DC 48V power supply; Maximum payload: 30kg; Empty weight of pulley car: 5kg; 200W servo motor control system, supporting 2.4G wireless remote control, with a control distance of up to 100 meters.

Straight orbit   Curved orbit   Pulley car

2. Shooting lifting system

Using a precision three-stage ball screw servo electric cylinder, the diameter of each section is Ø 145mm Ø 125mm Ø 105mm. Initial ≤ 700mm, travel 800mm, no shaking during starting, braking, and driving. Repetitive positioning accuracy ± 0.01mm, rated thrust 0.42KN, programmable positioning, integrated control. Speed range of 250mm/s to 0.1mm/s (servo motor controlled infinite speed regulation), programmable precision servo motor-driven electric control elevator, operates quietly and smoothly, easy to adjust or preset machine height.

Flange

Lift rod

Servo motor

Transmission case
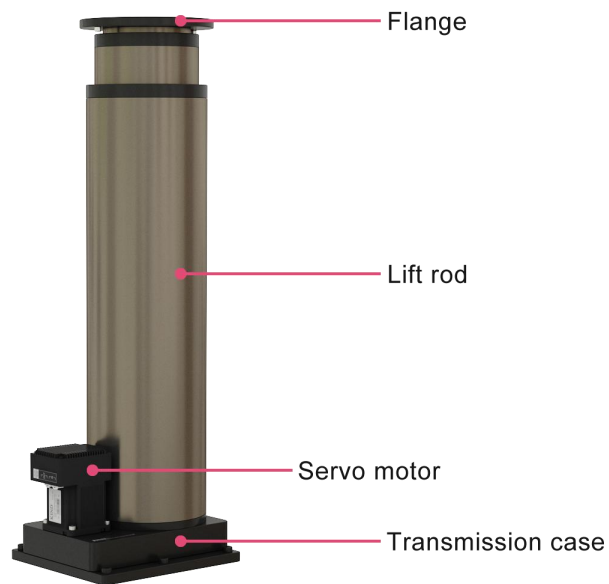
3. Power supply and battery system

The camera system, shooting orbit system, and shooting lifting system use lithium batteries, which are 28.8V 290Wh V-port batteries. The dual battery power supply automatically switches, and the built-in DC-DC power supply system realizes multiple DC power outputs, meeting the power supply of 12V for the camera system, 48V for the shooting lifting system, and 48V for the shooting orbit system.

4. Camera system(For the installation method of PTZ, please refer to the KD-A800PTZ manual)

Using KIND broadcast grade PTZ camera KD-C25 and KD-C1000, and customized matching has been made for the internal power supply structure, wireless control, and video wireless transmission of the camera.

1. ADDR: Control camera address(0 is 1,1 is 2, and so on)
2. 485 port: controls camera lens direction and focal length
3. SDI output
4. HDMI output: video output
5. RJ45 1000M Ethernet port
6. TF card
7. 3.5mm audio port
8. SDI output

9. WiFi antenna

10. USB port

11. 12V power supply

5. Precision intelligent shooting control system

Main functions: record and play video tracks, control the camera and orbit car's forward, backward, push, pull, shake, shift, and focus.

1. Control the camera's push, pull, shake, tilt, and settings. The settings menu includes functions such as white balance, focus, shutter, IRIS, etc.

2. Control the forward, backward, acceleration and deceleration, trajectory cruise, and preset bit of the orbit car.

3. Control the rise and fall of the lifting rod, as well as the speed and direction.

4. Preset shooting track: The lifting system, orbit car system, and camera system form an integrated multi axis synchronous automatic shooting system, which can achieve multi axis repeated trajectory shooting. And adjustable speed and direction; It can achieve multi axis synchronous automatic control of PTZ, orbit car and lifting system; By using the built-in encoder of the servo motor, the position of the orbit car can be accurately recorded. Based on this, two virtual start and end points can be set for the orbit car on the console. Whether it is acceleration and deceleration, cruise control, or heading switching, it can operate within a safe range between these two points, achieving automatic cruise photography.
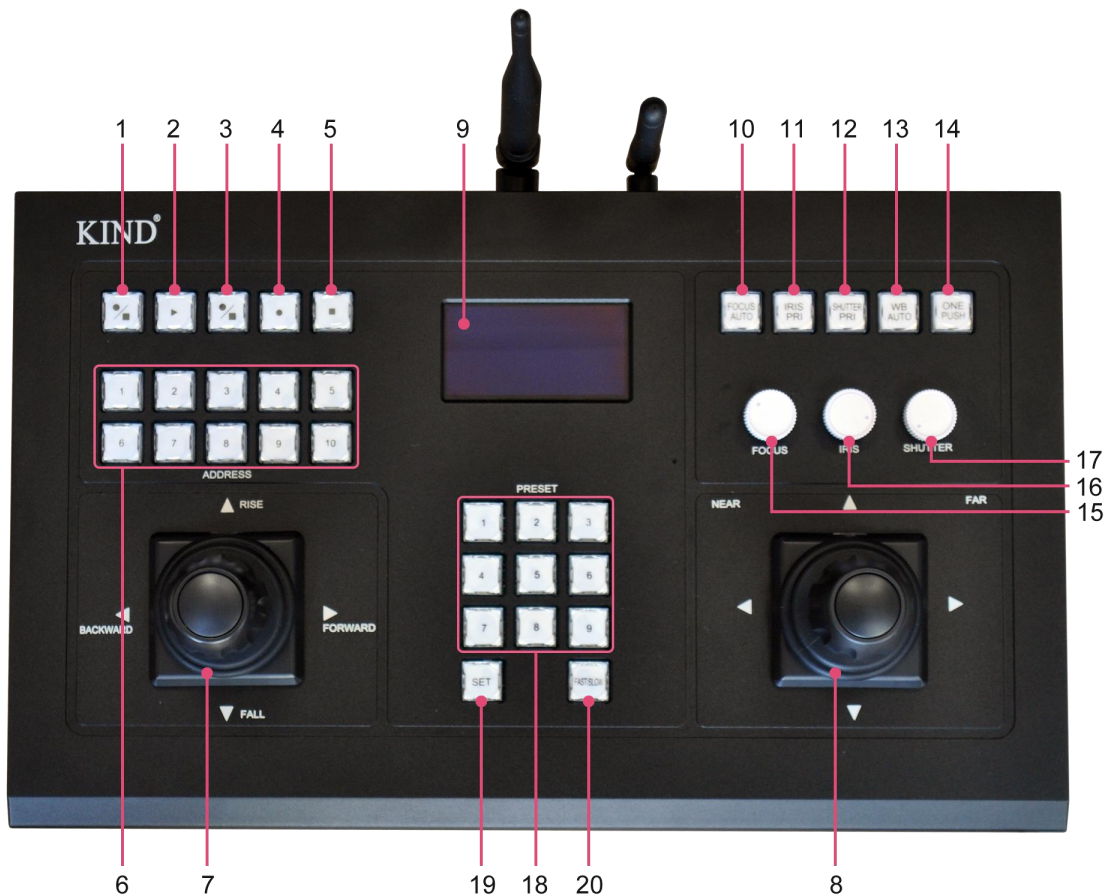
1. Record the trajectory of the orbit car and camera, the button light is on to start recording, the button light is off to stop recording.

2. Play the recorded track of the orbit car and camera, the button light is on to start playing, the button light is off, and the playback is complete.

3. Start or stop all camera recordings.

4. The camera at the current position starts recording.

5. Stop the recording of the current camera position.

6. Camera address, capable of connecting 10 sets of cameras simultaneously.

7. Control the forward, backward, and lifting functions of the orbit car

8. Control the left, right, tilt, and focal length of the PTZ camera (the focal length of the camera can be adjusted by rotating the joystick).

9. Screen displays the status and memory capacity of NDI cameras.

10. The button light is on to adjust the focal length of the camera.

11. Button light on, ISIR priority.

12. Button light on, shutter priority.

13. Button light on, adjust white balance.

14. One click white balance.

15. Adjust the focal length through a knob.

16. Manually adjust the ISIR by rotating the knob to adjust the ISIR.

17. The SHUTTER PRI button light is on, and the knob can adjust the shutter speed; The SHUTTER PRI button light is off, and the knob can adjust the movement speed of the rail car and camera, with a total of 8 gears.

18. Camera preset bit, which can quickly return the camera to the previously set position, with a total of 9 sets available for use.

19. Confirm button for camera preset point. After adjusting the camera position, press this button to confirm and set successfully.

20. Adjust the speed of the camera and orbit car, with the button light on indicating the fastest speed and the button light off indicating the set speed.

1. (AB) Terminal 485 port, connected to the camera through 485 port, can control the camera separately.

2. (TRG) Terminal 232 port, T sending, R receiving, G grounding, connected to the camera through 232 port, can control the camera separately.

3. After connecting the B-type USB port to the virtual recording device, the real-time track of the rail car can be viewed on the software.

4. DC12V power supply, please do not use power supplies of other voltages.

5. 2.4G antenna can enhance the control signal of orbit cars.

6. 433M antenna can enhance the control signal of the camera.

6. Wireless audio and video transmission system

Wireless transmission of HD 1080p images to a monitor. High performance and powerful remote signals are transmitted through walls, floors, and ceilings, with a maximum range of up to 100 feet (with streaming line of sight for maximum range). Easily send clear, uncompressed high-definition videos and digital audio. Even when streaming 3D video to 1080p devices, there is no delay in the signal (real-time). Easy to install, plug and play, no need for expensive or inconvenient cables. No software or WiFi is required. Receiver: HDMI x 1 output. Compact transmitter integrated into the camera.

3. INSTALLATION INSTRUCTIONS

1. Orbit installation
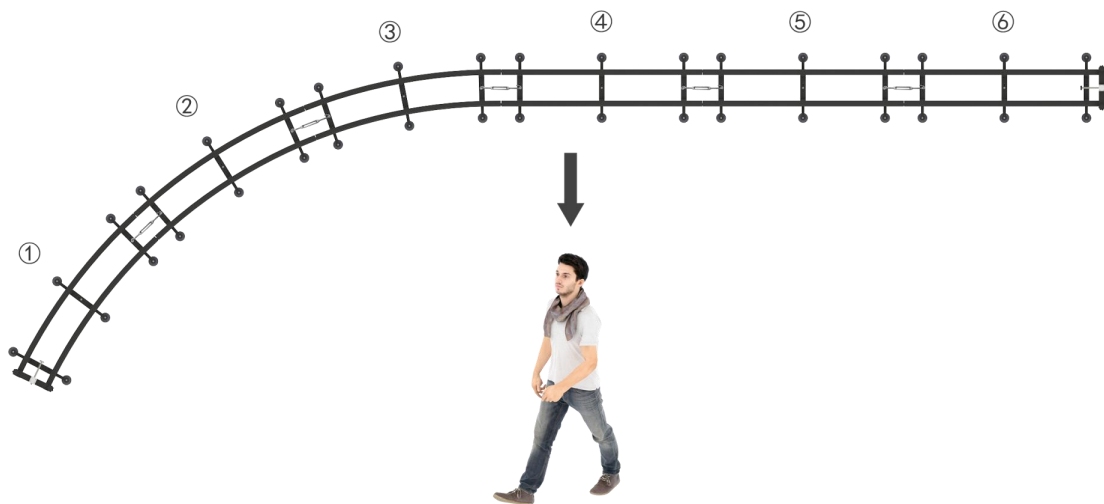
First determine the starting and ending points of the orbit,
and determine the position of each section of the orbit based on the number

Orbit ①	Orbit ②	Orbit ③	Orbit ④	Orbit ⑤	Orbit ⑥
1	1	1	1	1	1
Support bracket	Reduction bracket	Locking nut	Support foot	Hoisting nut	Hook
18	2	36	36	36	5

Ground installation

1. Install the support foot on the support brackets, with 2 support foot installed on each bracket. The depth of each support foot inserted into the installation bracket should be consistent for easy horizontal adjustment in the future.

2. Install the support bracket onto the orbit, with 3 sets of support brackets installed on each orbit.

3. The sequence of orbit installation numbers is connected end-to-end, and the joint is fixed with a hook.

4. Adjust the height of the support foot to keep all tracks level.

5. Lock the locking nut on the support foot.

Ceiling installation

1. Install the suspension rod, which requires precise positioning and accurate height calculation.

2. Install the support bracket onto the orbit, with 3 sets of support brackets installed on each orbit.

3. The orbit is installed in the corresponding position according to the number and fixed to the suspension rod with hoisting nuts. Lock the adjacent two sections of orbit by hook and adjust the level of the track by adjusting the support foot.

4. Lock the screw on the locking nut.

Attention: Paste the horizontal position sensing sticker. Pay attention to the direction and interface. The first half of the orbit is covered with a pure black sticker, while the rest are covered with black and white stickers. After the lifting is completed, personnel are prohibited from staying under the orbit car to prevent it from falling due to other issues and causing injury to personnel.
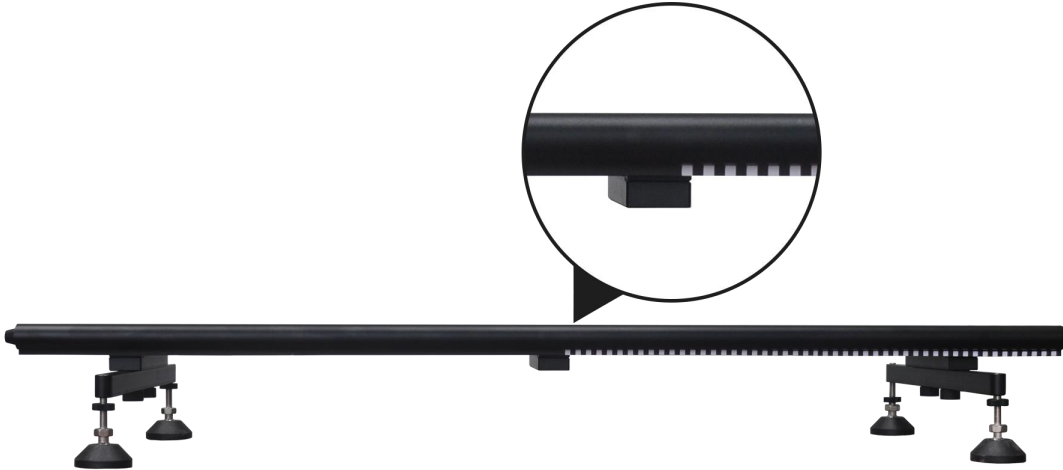
2. Pulley car installation

The pulley car slides into the track from the starting point of the track, paying attention to the front and rear directions of the body, with the motor at the front and the controller at the rear.

Controller ➡ Motor
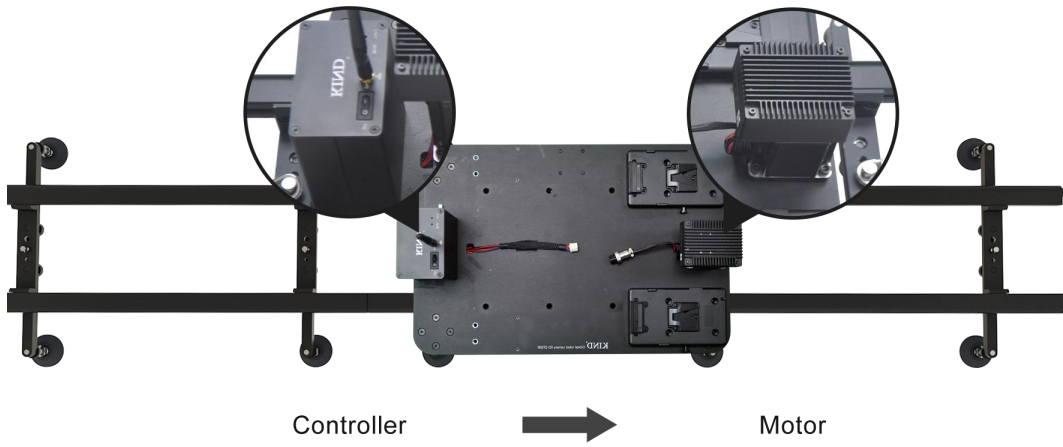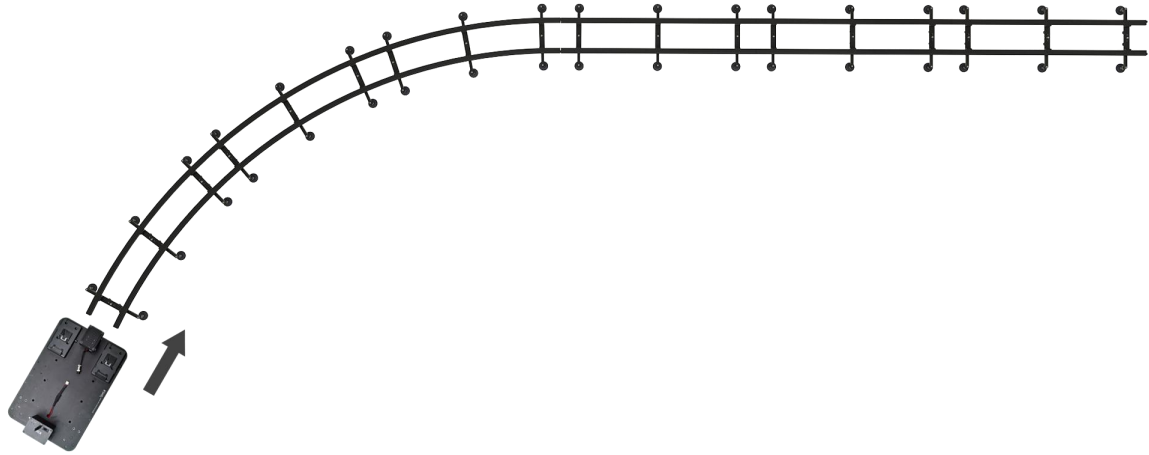
3. Lift rod installation

Place the lift rod gently on the pulley car, align the lift rod with the fixing hole on the pulley car, and tighten the 6 fixing screws.

Fixing hole

Motor control cable   Camera control cable
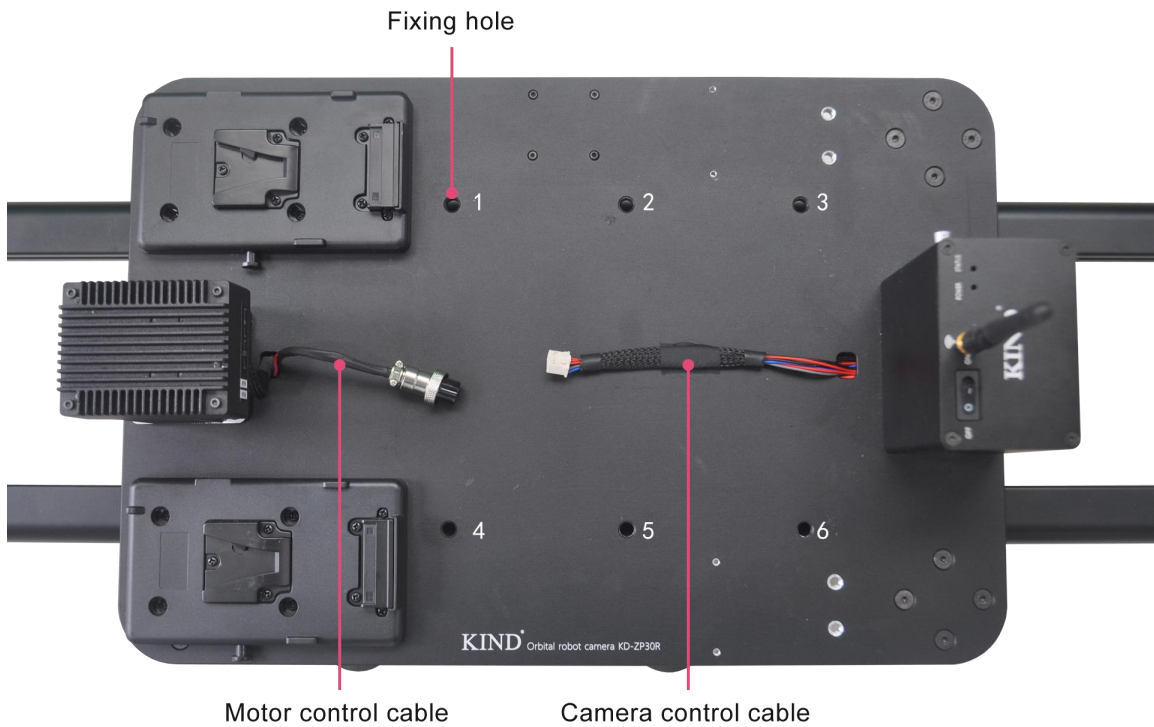
Plug in the camera control cable (six pin round mouth at the tail of the lift rod), plug in the motor control cable (IN port of the lifting rod motor), and the installation is complete.

4. Camera installation

Place the camera on the flange of the lift rod and secure it with 2 1/4 British standard screw.

Fixing hole   Fixing hole   Fixing hole   Fixing hole

Camera chassis   Flange

5. Battery installation

The dedicated magnet is installed in a specific area on the back of the battery, and the red light on the battery lights up, indicating that the battery is in 28.2V output mode.

Installation position of magnet
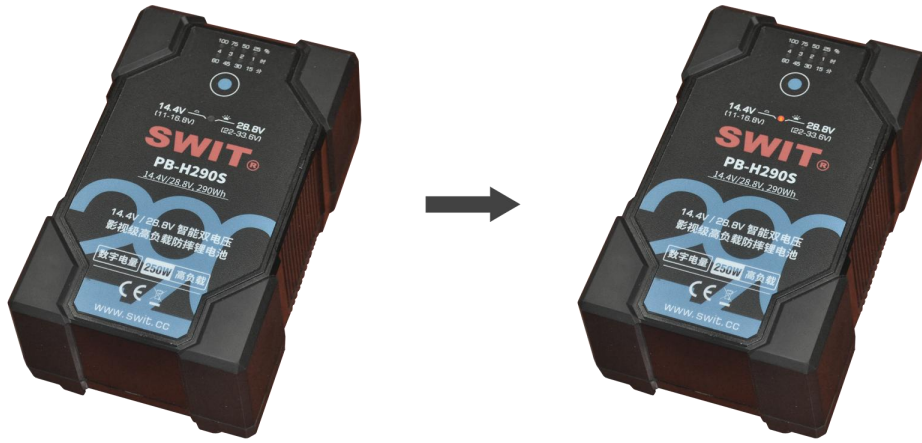
Red light on
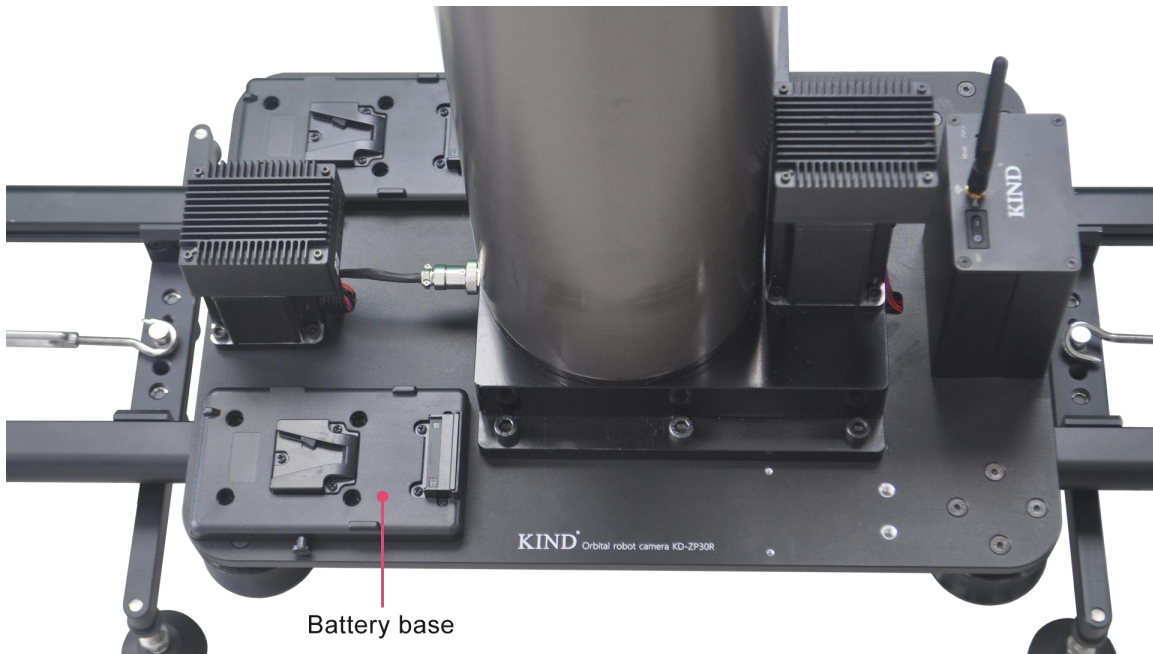
Battery base

Without using a battery, the battery base has a power cord interface that can be directly powered using a power adapter.

6. Reduction bracket installation

Install reduction brackets at the starting and ending points of the orbit, paying attention to the installation direction, with the spring facing the orbit.

4. DEBUGGING AND USE INSTRUCTIONS

1. Position sensor

Push the orbit car to the end of the track. Turn on the power switch of the orbit car and confirm that the two red light spots emitted by the position sensor fall on the sensor sticker. The orbit car will slowly move towards the starting point of the track when executing the self check program. Confirm that the yellow lights on both sides of the sensor are flashing while the car is moving. If the sensor does not flash or the orbit car stops halfway, it is necessary to adjust the sensor and check the sensor sticker.

If the red light spot emitted by the sensor does not fall onto the sensor sticker, it is necessary to check the installation height of the sensor. If the yellow indicator light of the sensor does not flash while the car is in motion, first check if the sensor sticker is correctly attached, slowly push the orbit car, and make sure that the two red light spots fall into the black grid respectively. Confirm that the yellow indicator light of the sensor is off, and make sure that the two red light spots fall into the white grid respectively. Confirm that the yellow indicator light of the sensor is on. If the above two states are incorrect, it is necessary to adjust the adjustment knob on the sensor by rotating clockwise to enhance sensitivity and counterclockwise to reduce sensitivity. In general, there is no need to adjust the sensor knob, as the optimal sensing effect is already provided at the factory.

2. PTZ, Forward, backward, lifting, and speed

1. Select the correct address. Orbit cars and camera use address 1.

2. The joystick on the left side of the keyboard controls the lifting and lowering of the orbit car by pushing it up and down, and controls the forward and backward movement of the orbit car by pushing it left and right.

3. The joystick on the right side of the keyboard can control the PTZ camera.

4. The FAST SLOW button on the keyboard is used to switch between fast mode and slow mode. The currently selected control speed will be displayed on the screen. There are 8 levels of speed control. Rotate the SHUTTER knob to change the current speed level.

3. Focus, IRIS, shutter

1. Press the FOCUS AUTO button to switch between autofocus and manual autofocus modes. When the button light goes out, rotating the FOCUS knob can manually focus.

2. Press the IRIS PRI button to enter manual aperture mode. When the button light is on, and rotating the IRIS knob can manually adjust the aperture.

3. Press the SHUTTER PRI button to enter manual shutter mode. When the button light is on, rotating the SHUTTER knob can manually adjust the shutter speed.

4. White balance

Press the WB AUTO button to switch between automatic white balance and one click white balance mode. When the button light goes out, press the ONE PUSH button to activate the one click white balance function.

5. Preset bit setting, calling, and clearing

1. Set preset bit. Control the orbit car and camera to the desired preset position, select the preset bit number to be set by pressing the number buttons 1-9 in the preset area on the keyboard, and press the SET button to set.

2. Call the preset bit. Press the number buttons 1-9 in the preset area on the keyboard to call the preset bit.

3. Clear preset bit. Press the number buttons 1-9 in the preset area on the keyboard to select the preset bit to be cleared, and long press the SET button for 3 seconds to clear it.

6. Track recording and playback

1. Track recording. Select the track number to be recorded from the number buttons 1-9 in the preset area on the keyboard. Press the track recording button ●/■, the button light will turn on, indicating that the track is being recorded. Operate two joysticks to control the orbit car and camera to create the desired motion track. Press the button ●/■ again, the button light will turn off, and the track recording is complete. The starting point of the track is simultaneously set as the corresponding preset point.

2. Track playback. Select the track number to be play from the number buttons 1-9 in the preset area on the keyboard. The orbit car and camera will automatically return to the starting point of the track. Attention: Before each playback, select the track number again to return the orbit car and camera to the starting point of the track. Press the track playback button, the button light will turn on, and playback will begin. After the playback is completed, the button light will automatically turn off.

3. Auto loop playback. Only the first track can be automatically played in a loop. Long press the number 1 button in the preset area on the keyboard, and when the SET button light comes on, the automatic loop playback will start. Press and hold the number 1 button again, and when the SET button light goes out, the automatic loop playback stops.

7. Video recording control

1. All camera information connected to the keyboard will be displayed on the small screen of the keyboard, including camera number, recording status, and remaining memory capacity.

2. Recording and stopping of a single camera. Select the camera using the numeric buttons 1-10 in the address area of the keyboard. Press the record button ● or stop button ■ on the keyboard to operate the recording. When the light on the recording button is on, it indicates that the recording is in progress.

3. Recording and stopping of all cameras. Short press the keyboard buttons ●/■ to control all cameras to start recording. Long press the keyboard buttons ●/■ to control all cameras to stop. When this button light is on, it indicates that all cameras are recording.

8. Remote control
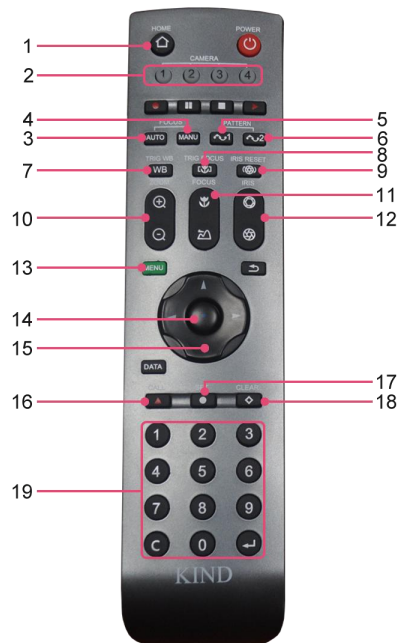
1.HOME：The camera returns to its initial position

2.CAMERA：To switch the control camera address, it needs to correspond with the camera dialer, and once it corresponds, the camera can be set up

3.FOCUS AUTO：Auto focus

4.FOCUS MANU：Manual focus mode

5.PATTERN 1：4Kp30 signal switching (takes effect after setting and restarting the camera)

6.PATTERN 2：1080i50 signal switching (takes effect after setting and restarting the camera)

7.TRIG WB：One click white balance

8.TRIG FOCUS：One click autofocus

9.IRIS RESET：Reset IRIS

10.ZOOM：Adjust focal length

11.FOCUS：Manual focus

12.IRIS：Adjust IRIS

13.MENU：Open the camera's function menu

14.CONFIRM：Confirm on the menu

15.DIRECTION：Select from the menu and press the right arrow button to enter the next level interface of the menu.

16.CALL：Select preset bit button

　　Select the preset bit button previously set, press the CALL button, and the camera will return to the preset bit previously set.

17.SET：Set preset bit button；

　　Adjust the camera position, select one of the buttons 1-9, and press the SET button to complete the setting.

18.CLEAR：Clear preset bit button.

Select the preset bit you want to delete and click the CLEAR button to clear it.

19.Number button：9 preset bit.

After turning on the camera, if the lens is not in the initial position (the lens will be in the center position after turning on the camera), first press the number 0 button, then press the CLEAR button, power off and restart the camera. After turning on, the lens will return to the center position.

9. PTZ Camera Menu

Press the MENU button of the remote control to enter the setting menu, as shown in the picture below.

RETURN	-->
EXPOSURE	-->
FOCUS	AUTO
WB	-->
SYSTEM	-->
COLOR	-->
IMAGE	-->

EXPOSURE

AUTO

RETURN	-->
EXPOSURE	AUTO
GAIN	18 DB
SHUTTER	1/50
IRIS	F2. 6
BRIGHT	031
EXPCOMP	OFF
LEVEL	0
BLC	OFF

BRIGHT

RETURN	-->
EXPOSURE	BRIGHT
GAIN	18 DB
SHUTTER	1/50
IRIS	F2.6
BRIGHT	031
EXPCOMP	OFF
LEVEL	0
BLC	OFF

GAIN

RETURN	-->
EXPOSURE	GAIN
GAIN	18 DB
SHUTTER	1/50
IRIS	F2.6
BRIGHT	031
EXPCOMP	OFF
LEVEL	0
BLC	OFF

SHUTTER

RETURN	-->
EXPOSURE	SHUTTER
GAIN	18 DB
SHUTTER	1/50
IRIS	F2.6
BRIGHT	031
EXPCOMP	OFF
LEVEL	0
BLC	OFF

MANUAL

RETURN	-->
EXPOSURE	MANUAL
GAIN	18 DB
SHUTTER	1/50
IRIS	F2.6
BRIGHT	031
EXPCOMP	OFF
LEVEL	0
BLC	OFF

FOCUS
AUTO

RETURN	-->
EXPOSURE	AUTO
FOCUS	AUTO
WB	-->
SYSTEM	-->
COLOR	-->
IMAGE	-->

MANUAL

RETURN	-->
EXPOSURE	AUTO
FOCUS	MANUAL
WB	-->
SYSTEM	-->
COLOR	-->
IMAGE	-->

WB

AUTO

```
RETURN      -->
WB          AUTO
RGAIN       210
BGAIN       172
```

OUTDOOR

```
RETURN      -->
WB          OUTDOOR
RGAIN       210
BGAIN       172
```

INDOOR

```
RETURN      -->
WB          INDOOR
RGAIN       210
BGAIN       172
```

ONE PUSH

```
RETURN      -->
WB          ONE  PUSH
RGAIN       210
BGAIN       172
```

ATW

```
RETURN      -->
WB          ATW
RGAIN       210
BGAIN       172
```

SYSTEM

RETURN	-->	
F-RATE	1080I50	
RESET	OFF	

COLOR

RETURN	-->	
GAIN	004	
HUE	007	

IMAGE

RETURN	-->	
E-FLIP	OFF	
LR REV	OFF	
FREEZE	OFF	
B&W	OFF	
STAB	OFF	
COL BAR	OFF	
SRZ MOD	OFF	

Attention: In case of camera malfunction or abnormal parameters, it is recommended to restore the system to its default values.

5. PACKING LIST

Straight/curved orbit
Support bracket
Hand screw (short)
Support feet (ground mounted)
Lifting screws (non-standard for ceiling installation)
Orbit car
Lifting rod (including fixing screws)
Control keyboard and power adapter
Battery (optional)
Supporting tool

6. ATER-SALE SERVICE

Dear user, in order to ensure that you fully enjoy high-quality service, please carefully read the following product service regulations.

Our company provides limited warranty and lifetime repair services

1. The warranty period is 12 months from the date of sale. During the limited warranty period, you will enjoy free warranty service for product malfunctions, which will be sent by the user to the company for repair (malfunctions caused by improper use, human error, or force majeure are not covered by the warranty).

2. After the limited warranty period of more than 12 months, the product's malfunction will be covered by a paid lifetime repair service.

Maintenance service time

1. From the date the user sends the product to the company, there will be a 24-hour response service. Phone: 010-58732647.

2. Before returning the product to our company, please contact our relevant technical personnel in advance and then send the product back to our company. Otherwise, if the repair is not timely, it will affect your use.

7. FAQ

After turning on, if there is no action to find the zero point, check if the red indicator light on the battery is on. The indicator light needs to be on here.

Unable to find 0 o'clock, check if the position sensor is working properly.

The received image has mosaic, but due to the chaotic wireless signal in the usage environment, restart the receiver to reselect the channel.