

6400AK Series Camera

User Manual

Version 1.0

RoHS CE FC

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Warning

Thank you for choosing Color Video Camera, Please make sure the mode of the camera and Supply Voltage is correct before operating it.

According to the stipulation of FCC part 15, our products have passed the test and be known as a Class A Digital Product.



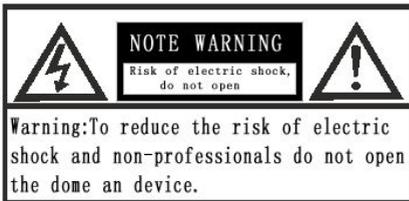
SA1966

In order to prevent the risk of electric shock and fire, Please don't put the camera exposed under the rain and wet place.



SA1965

Please be careful when you see the mark of Dangerous Voltage , because it might be raise Electrical shock.



Note:

To avoid electric shock or fire hazard, do not use more than the power of the range listed in this manual.

This provision is specifically designed to provide reasonable protection for this product in commercial areas which might be suffered malicious attack, and it might be radiate radio energy, If you didn't install and use following the user manual, it might be cause harmful interference, and it will be your responsibility.

Note: It might be influence your use for any change with the product that didn't receive our permission.

Safety Precaution

1. Please read this manual carefully before using this Intelligent Dome Camera.
2. In order to avoid damaging this product, please choose the power correctly.
3. During the course of transportation ,storage and installation, the product should be avoided from incorrect operations such as heavy pressing, strong vibration etc, which can cause damage of the product as there are sophisticated optical and electronic parts inside the machine. The camera should not be powered on before the installation is complete.
4. The Camera should not be put on unsteady desks and brackets.
5. Avoid liquid or other things penetrating into the camera, or the camera could be damaged.
6. To avoid affecting the usage of the Dome Camera, please do not dismount its inner elements. There are no user serviceable parts inside.
7. The unit should be used in accordance with electrical standards. Its RS-485 and Video Signal adopt TVS-level anti-thunder. Keep the camera and signal cables away from high voltage cables. Precautions for anti-surge and anti-lightening should be taken when necessary.
8. No matter the camera is in use or not, it should never be exposed to the sun or other bright objects. Otherwise, it may cause permanent damage to Camera CCD.
9. When the machine is not operating properly, do not attempt to disassemble the camera .Ask a qualified service personnel for servicing or contact our after service department.
10. Do not disassemble, or modify the system

Product Declaration

1. The product please prevail in kind, the instructions are for reference only.
2. The products will update in time, if upgrade without notice and it will be allowed differences before and after the update.
3. The latest procedures and supplement, please contact with our customer service.
4. If you do not follow the instructions to operating, it will be bear any loss caused by using the side.
5. Make sure to buy our products from the formal channels, we will be not to bear if they are not ours.

I 、 Product Overview

Intelligent Dome Camera is a high-tech surveillance product combined high-performance and high-speed focused Integrated monitoring system, universal variable PTZ, multifunctional decoder, universal character generator, CPU as well as memory chip into one. By doing so, this kind of camera not only has the functions of rapid location and continuous follow-up scanning in a row, but also achieves the real all-round and no blind spot monitoring. Besides, it can automatically adapt to the environment and the objectives that are changing in terms of distance. This camera adopts full digital control system, and its design is quite exquisite and simple, minimizing the connections between system components to improve the reliability of the system to the greatest extent, and it is very convenient for installation and maintenance. Moreover, it uses precision stepping motor to drive, achieving the effects of stable operation, rapid response and accurate positioning, and the accuracy of positioning can reach $\pm 0.1^\circ$. In addition, it has the intelligent functions of around scanning, pattern scanning, privacy dodging, and motion detection, alarm uploading images to the appointed mailbox or FTP server. This camera is applied to large area, and moving objects monitoring in every walk of life, such as intelligent mansion, banks, urban streets, electricity departments, airports, stations and so on.

II、Technical Specifications

Mode		RL-CS-6400AK-138IR	RL-CS-6400AK-141IR
Video Core	Image sensor	1/3" SONY Exview CCD II	1/4" SONY Super HAD CCD
	Video core	Relong 8022W	Sony1010P
	Signal system	PAL/NTSC	
	Horizontal resolution	650TVL	540TVL
	Min. Illumination	0.001Lux/F1.2(color mode)	0.01Lux/F1.2(color mode)
	AWB	manual、 auto、 fluorescence、 indoor、 outdoor、 speed AWB.	
	AGC	auto	
	S/N ratio	≥52db	
	BLC	auto	
	Electronic shutter	1/50s(1/60s)-1/100,000s(auto/manual optional)	
	D/N	color/ B&W auto change	
	Privacy mask	0	8 zones
	Focus mode	auto	
Focus speed	≤0.6s		
Lens	Focus	22X,f=4.5~99mm	36X,f=3.4~122.4mm

Power supply	AC24V (±10%) /3A
Operation temperature	-30℃~+50℃
Humidity	≤95% HR no dew
Control mode	manual、 auto、 timing、 automatically change the channel according to the lens multiple.
Communication mode	RS-485
Baud rate	2400/4800/9600/19200bps
Rotate speed	Horizontal 0.4~300°/s, 1~64 shift
Rotate range	horizontal360° rotation, vertical 90°
Auto flip function	Auto flip when vertical.
Timed events	Support 24
Pattern scanning	Support 4 group.
Pattern scanning record	Each group can record 100 orders and no time limited within orders.
Auto scanning	360°
Two spots scanning	Support two close spots scanning and two long distance spots scanning
Two spots scanning speed	1-8 optional
Scouting group	6
Speed to Patrol Point	1-8 optional
Every Preset Position Dwelling Time	1-60s optional
Scouting Spots in every Group	Can set up 16 preset position
Protection Level	Waterproof IP66,built-in multi-level lightning and Surge Protection
Menu	Phone style OSD menu design, operating easily ,can achieve all the functions of cloud terrace.
Dome Camera ID	0~255, 0 is the broadcast ID.

Intelligent Dome Camera (6400AK Series) User Manual

Mode		RL-CS-6400AK-149IR	RL-CS-6400AK-148IR	RL-CS-6400AK-146IR
Video Core	Video core	Sony980P	Sony480	Relong 6122W
	Image sensor	1/4" SONY Super HAD CCD		
	Signal system	PAL/NTSC		
	Horizontal resolution	480TVL	480TVL	650TVL
	Min.Illumination	0.1Lux/F1.2(color mode)		
	AWB	manual、auto、fluorescence、indoor、outdoor、speed AWB.		
	AGC	auto		
	S/N ratio	≥52db		
	BLC	auto		
	Electronic shutter	1/50s(1/60s)-1/100,000s(auto/manual optional)		
	D/N	color/ B&W auto change		
	Privacy mask	8 zones		0
	Focus mode	auto		
Focus speed	≤0.6s			
Lens	focus	26X,f=3.5~91mm	18X,f=4.1~73.8mm	22X,f=3.9~85.8mm

Power supply	AC24V (±10%) /3A
Operation temperature	-30℃~+50℃
Humidity	≤95% RH no dew
Control mode	manual、auto、timing, automatically change the channel according to the lens multiple.
Communication mode	RS-485
Baud rate	2400/4800/9600/19200bps
Rotate speed	Horizontal 0.4~300°/s, 1~64 shift.
Rotate range	Horizontal 360°rotation, vertical 90°
Auto flip function	Auto flip when vertical.
Timed events	Support 24
Pattern scanning	Support 4 group.
Pattern scanning record	Each group can record 100 orders and no time limited within orders.
Auto scanning	360°
Two spots scanning	Support two close spots scanning and two long distance spots scanning
Two spots scanning speed	1-8 optional
Scouting group	Support 6 group
Speed to Patrol Point	1-8 optional
Every Preset Position Dwelling Time	1-60s optional
Scouting Spots in every Group	Can set up 16 preset position
Protection Level	Waterproof IP66,built-in multi-level lightning and Surge Protection
Menu	Phone style OSD menu design, operating easily ,can achieve all the functions of cloud terrace.
Dome Camera ID	0~255, 0 is the broadcast ID.

III、Installation and Connection

3.1 Installation and Connection

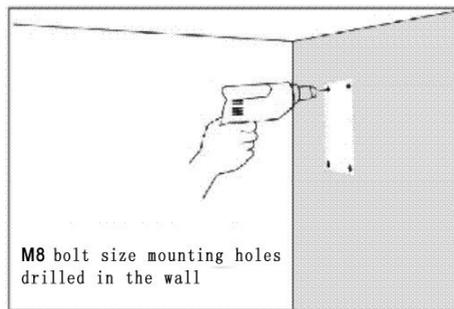
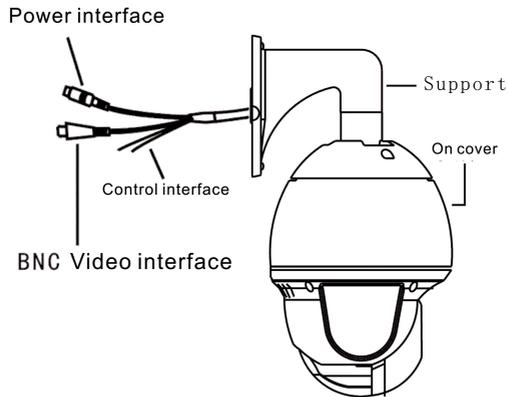
1. The installation and connection of the Mini Intelligent Dome Camera should be implemented under local provisions by people who own the technical qualifications of CCTV system installation.
2. Please refer to the silk print on PCB and the installation manual for the detailed information of the connection of each line.
3. Avoid direct touch to the lower cover of the dome to prevent scratches and the loss of image quality, for the cover is a high-level optical instrument.
4. To ensure the image quality, the lower cover of the dome camera should be cleaned periodically. When cleaning, take the lower cover down by holding the outer ring carefully, avoiding direct touch; the acidic sweat on one's finger might corrode the coating of the cover. And the scratches made by hard objects might also result in a blurry image. Please use a tender dry cloth or other substitutes to clean both the inner and outer side of the cover. If the dirt is hard to clean, a neutral detergent could be used; any cleanser which is for luxury furniture can be used for the lower cover.

3.1.1 Intelligent Dome Camera Wall-mounted Bracket Installation

Wall-mounted Bracket Installation

Note: The wall which to be installed on should be solid and with no delaminating. The bearing capacity of the installation location should be able to afford at least five times of the total weight of the Dome, frame and pedestal, in order to avoid image jitter caused by unstable installation.

- a. When installing on the wall, put up a positioning on it first.
- b. Use percussion drill to drill holes according to the marks; install four expansion bolts (M8).
- c. Put the cable, communication line and video wire through the frame holes, and set aside enough cable for connection.
- d. Fasten the frame to the wall by using four M8 nuts and four spacers, and then install the dome.



Note: Don't touch the camera cover by your hand, if you need to operate on it, you should wear the professional gloves.

Outer Wire Connection

Connect the BNC video interface of Dome Camera to the arranged video cable; connect the power cord to the arranged power cord(AC24V).RS485 control wire is connected to RS485 control wire layer out.

□ Ensure that the positive and negative polarity of RS485 is properly connected. “A” represents positive pole, while “B” negative pole. If RS485 is wrongly connected, it could not control the Dome Camera.

a. Check the polarity of the plug and socket, and the connection of cable, then power on.

b. When the self-checking starts, the Dome will turn 360° horizontally and then 90° vertically for the testing of the camera and the electrical and mechanical

structure of the Dome, and turn back to the initial position by the resetting program, then vertically turn to 45° . When the Dome totally stops, the self-checking finishes and it is ready to be under control.

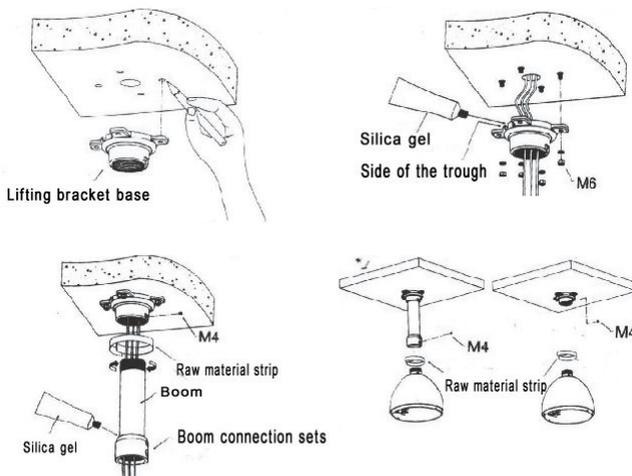
c. You should wipe the dust and stain that on the transparent cast with a soft flannel to prevent scratching the under hood.

d. Please let the screw be aligned from 3 holes in under hood and cover, and fasten it with 3 M3 screws.

3.1.2 Intelligent Dome Camera Ceiling-mounted Bracket Installation

Ceiling-mounted Bracket Installation

Note: The ceiling which to be installed on should be solid and with no delaminating. The bearing capacity of the installation location should be able to afford at least five times of the total weight of the Dome, frame and pedestal, in order to avoid image jitter caused by unstable installation



Note: If the camera used in outdoor, Waterproof seal should be in the camera and bracket connecting part.

- select a firm place on the ceiling that can withstand the weight of 5 kg.
- With impact driller to lay a fixed hole on the mark holes.
- Put the cable、 communication line and video wire through the frame holes, and set aside enough cable for connection.
- Put the bracket secured to the ceiling then install the Dome Camera well.

IV、 Product Main Function

4.1 Camera Function

4.1.1 Object Tracking

Users can use the control lever on the control keyboard to move the Dome camera up and down, or left and right to track the moving object or change the field of vision, and change the visual angle or the image of the object by adjusting the focal length.

4.1.2 Focal Length/Rotating Speed Auto-matching Technology

When manual adjusting the Dome camera with a long focal distance, the high rotating speed of camera may cause image loss even touch the control lever slightly. Considering the humanization, this ball camera is designed to auto-adjust both the horizontal and vertical rotating speed according to the focal length which makes the manual operation of tracking easier.

4.1.3 Auto-overturn

When the operator turns the scene to the bottom (vertically) and continues pressing the control stick, the camera will turn 180° horizontally and then upturn 90° to get a back view, which provides a 180° whole-course continuous monitor.

4.1.4 Set and Call Preset Position

Preset function is that the position parameters of horizontal angle, vertical angle, and lens focus are stored into Dome Camera with the preset position numbers. When needed, these parameters can be transferred to adjust the Dome Camera to a fixed position. This kind of camera support 128 preset positions.

4.1.5 Set Cruising Function

Cruising Function is an inside feature for Speed Dome Camera. It can arrange preset positions to the cruising queue in a required order by preset program. It can transfer the cruising numbers While it need to cruising, under this external command, the Dome Camera can automatically visit back and forth at a specified interval time in sequence.

4.1.6 Scanning between Two Spots

The Dome Camera have the left and right scanning function, you can set the first point and the second point randomly, the Speed Dome Camera can scan automatically visit back and forth under user's selected speed.

4.1.7 Home Place Function

Speed Dome Camera have one Home Place itself, according to the actual situation you can setup the home place which you need to stress protection. When the camera no people to operate, it will turn to home place automatically to start monitoring.

4.1.8 Timed Events

The Speed Dome Camera can set up 24 Timed Events, and also can finish the monitoring function in setting time.

4.2 Core Function

4.2.1 Zoom Control

Users can zoom in or out by using the [WIDE] and [TELE] key on the control keyboard to get an overall perspective or a close shot.

4.2.2 Auto BLC

The camera will divide the scene into six areas to realize the auto back light compensation. In a bright environment, it will auto-compensate the dark object and adjust the lighting for the bright background, in order to avoid obtaining an over-bright picture without visualizing the dark object instead of a clear image.

4.2.3 Auto WEB

Automatically adjust according to the lighting of the surroundings to recover the true colors; or you can adjust the WEB manually to achieve the best results.

4.2.4 Exposure

According to the brightness of the environment, you can adjust the exposure in order to achieve the optimal effect.

V、Camera(OSD)Setup

5.1 Operating instructions

5.1.1 Item Selections

“△” means the current operation of the menu. And select the current operation by controlling “Up”、 “Down”、 “Left”、 “Right” button.

When the symbol “△” is on the left of the screen, select the items by controlling the “Up” and “Down” buttons. Press the “Right” button to enter the menu or carry out specific functions or keep the present selection. Press the “Left” button to return the former menu or exit.

5.1.2 Digital Input

Set preset position “1-9” to achieve number “1-9” input.

Set preset position “10”to achieve number “0” input

Set preset position “11”to cancel the former input

Set preset position “12”to cancel all numbers that input before

Example 1: Input password “8109”

1. Set preset position “8”-----display“*”
2. Set preset position “1”-----display“**”
3. Set preset position “10”-----display“***”
4. Set preset position “9”-----display“****”

Example 2: Input ID”100”

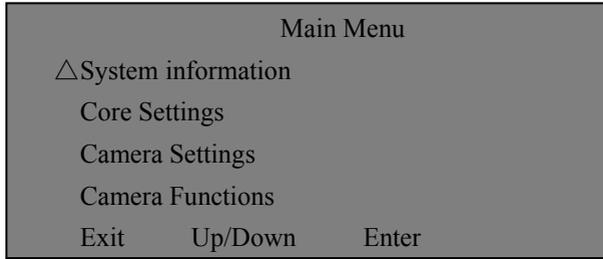
1. Set preset position “1”-----display“1”
2. Set preset position “10”-----display“10”
- 3.Set preset position “10”-----display“100”

5.2 Enter/Exit Dome Camera Main Menu

5.2.1 Enter the Menu

Set preset position number“113”, if you choose a password-protected permission, then you should input the password, click “Right” button to confirm

the password is correct then enter into the Main Menu, if you do not select a password-protected, you can access directly.



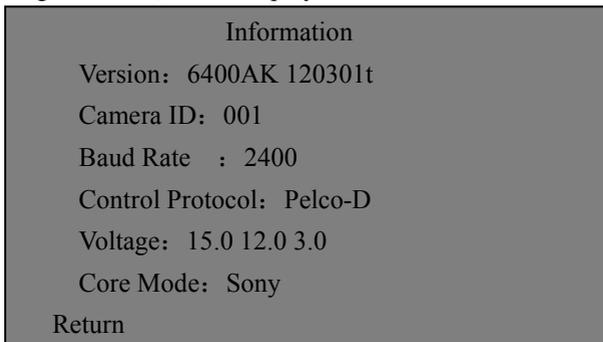
5.2.2 Exit the Menu

Three methods to exit the menu:

1. Choose exit button in the main menu, click “Left” button to exit the menu.
2. Transfer preset position “113” to exit the menu.
3. Transfer the Dome Camera functions in the menu, then carry out the related functions, exit the menu at the same time.

5.3 Check the Basic Information

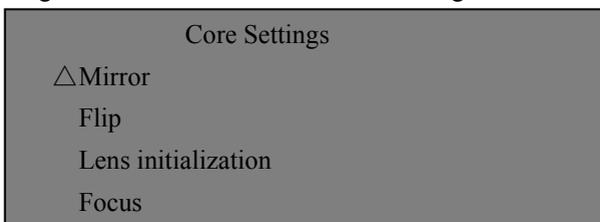
- a. Choose “Information” in current operation.
- b. Click “Right” button, it will display the basic information of the camera.



- c. Click “Left” button to return the main menu.

5.4 Enter the Core Setup

- a. Choose “Core Setup” in current operation
- b. Click “Right” button to enter into the core setting



5.4.1 Mirror

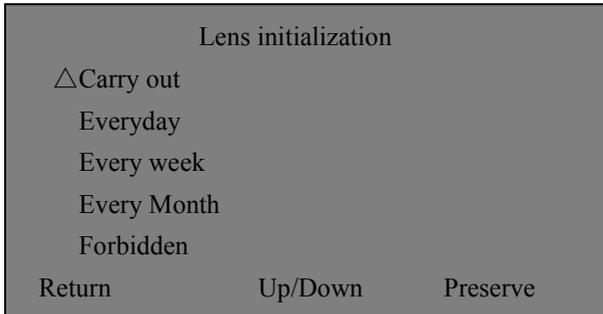
- a. Select the “Mirror” option
- b. Click the “Right” button, and then carry out the Mirror Settings.

5.4.2 Flip

- a. Select the “Flip” option
- b. Click the “Right” button, and then carry out the Flipping Settings.

5.4.3 Lens initialization

- a. Select the “Lens initialization” option
- b. Click the “Right” button, and then enter into the “Lens initialization” option settings

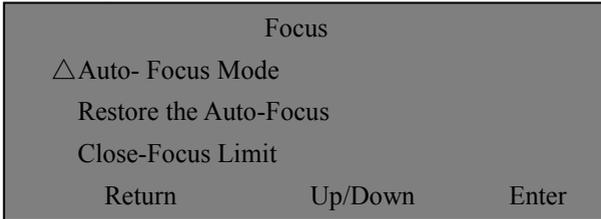


- c. Choose “carry out”; click the “Right” button, and then carry out the first lens initialization immediately
- d. Choose “Everyday”; click the “Right” button, and then carry out the first lens initialization automatically per 24 hours.
- e. Choose “Every week”; click the “Right” button, and then carry out the first lens initialization automatically per 168 hours.
- f. Choose “Every Moth”; click the “Right” button, and then carry out the first lens initialization automatically per 720 hours.
- g. Choose “Forbidden”; click the “Right” button, then the Lens initialization

will be forbidden.

5.4.4 Focus

- a. Select the “Focus”
- b. Click the “Right” button, and then enter into the Focus Setting

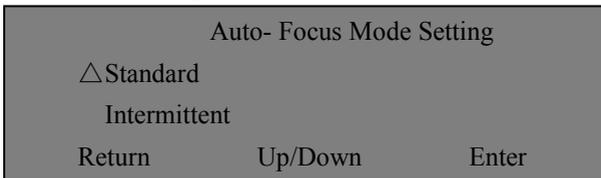


5.4.4.1 Auto-Focus

- a. Select the “Auto- Focus Setting”
- b. Click the “Right” button, and then enter into the Auto-Focus Mode Setting.
- c. Click “Up/Down” button, and choose the following Auto-Focus Mode.

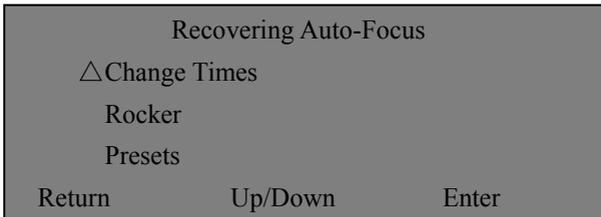
Standard: Letting the Lens in a long continuous Auto-Focus state

Intermittent: Setting the Camera Auto-Focus time interval is 3-240 sec.



5.4.4.2 Recovering Auto-Focus

- a. Select the present operation “Recovering Auto-Focus”
- b. Click the “Right” button, and then enter into the setting of “Recovering Auto-Focus”



- c. Click the “Up/Down” buttons; select the Recovering Auto-Focus Mode as below.

Change Times: The camera will recover auto-focus after change times

Rocker: Click the rocker button it will recover auto-focus.

Presets: Click the presets button it will recover auto-focus(1-37X)

d. Click the “Left” button, exit

5.4.4.3 Close Distance Focus Limit

a. Choose the “Close Distance Focus Limit” option

b. Click the “Right” button, and then enter into the Close Distance Focus Limit setting

c. Click the “Up/Down” buttons to choose “Infinity, 8M, 5M, 3M, 2M, 1M, 50CM”

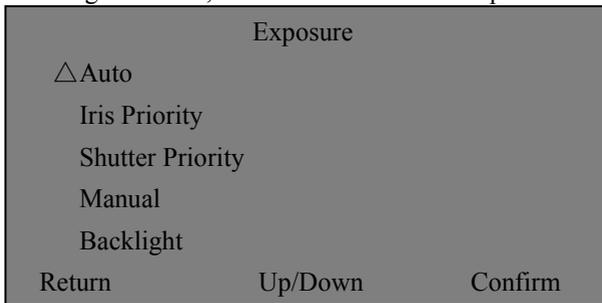
d. Click the “Right” button to save settings and then return back

e. Click the “Right” button to exit the setting and then return back to the Focus Menu

5.4.5 Exposure

a. Choose the “Exposure” option

b. Click the “Right” button, and then enter into the exposure settings page



5.4.5.1 Auto

a. Choose the “Auto” option

b. Click the “Right” button, and carry out the Auto Exposure Mode, then enter Auto Exposure Intermittent time site

c. Setup the Auto Exposure Intermittent time (3-240S)

5.4.5.2 Iris Priority

a. Choose the “Iris Priority” option

b. Click the “Right” button, and carry out the Iris Priority Exposure Mode

5.4.5.3 Shutter Priority

a. Choose the “Shutter Priority” option

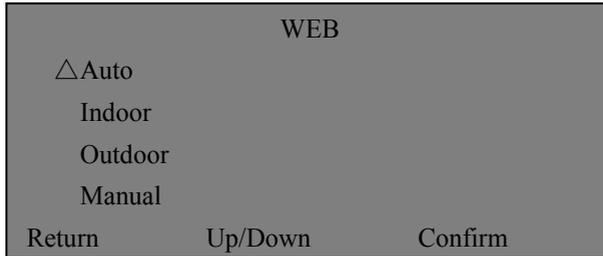
b. Click the “Right” button, and carry out the Shutter Priority Exposure Mode

5.4.5.4 Manual

a. Choose the “Manual” option

5.4.7 WEB

- a. Choose the “WEB” option
- b. Click the “Right” button; enter into the WEB setting



5.4.7.1 Auto

- a. Choose the “Auto” option
- b. Click the “Right” button, select Auto WEB mode and enter into the Auto WEB intermission allowed / forbidden selections
- c. Choose the “Allow” option, Click the “Right” button; enter into the Auto WEB intermission time input
- d. Input the numbers 3-240, Click the “Right” button to save, and then return back

5.4.7.2 Indoor

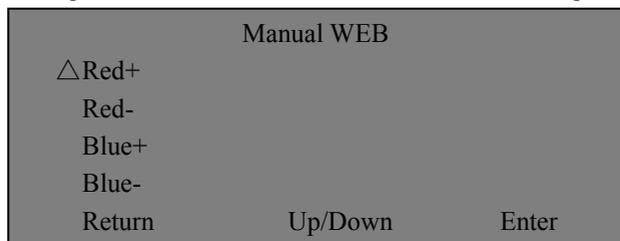
- a. Choose the “Indoor” option
- b. Click the “Right” button, select the indoor mode

5.4.7.3 Outdoor

- a. Choose the “Outdoor” option
- b. Click the “Right” button, select the outdoor mode

5.4.7.4 Manual

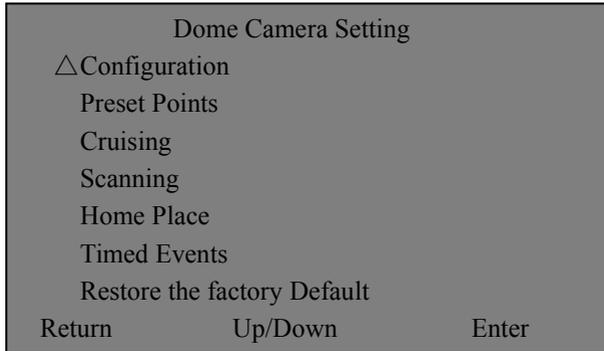
- a. Choose the “Manual” option
- b. Click the “Right” button, enter into the manual WEB setting



NOTE: Some video movement doesn't support some settings.

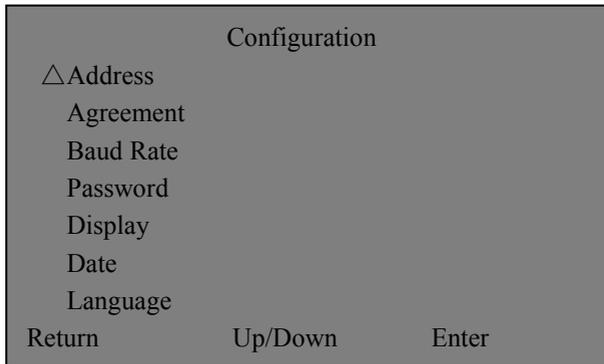
5.5 Dome Camera Setting

- a. Choose the “Dome Camera Setting” option
- b. Click the “Right” button, enter into Dome Camera Setting



5.5.1 Configuration

- a. Choose the “Configuration” option
- b. Click the “Right” button, enter into the configuration setting



- c. Click “Up/Down” buttons, to select “Address, Agreement, Baud Rate, Password, Display, Date, Language”

5.5.1.1 Address

- a. Choose the “Address” option
- b. Click the “Right” button, enter into the “Address” input
- c. Input the address code, click the “Right” button, save the address settings (the address code range is 0-255), then enter into the broadcasting address “Allow/Forbidden” selections
- d. Select “Allow/Forbidden”, click the “Right” button to save and then return back (0 is the broadcasting address)

5.5.1.2 Agreement

- a. Choose the “Agreement” option
- b. Click the “Right” button, enter into the “Agreement” selection
- c. Click “Up/Down” buttons to choose the agreement of “Pelco-D” or “Pelco-P”
- d. Click the “Right” button to save and exit

5.5.1.3 Baud Rate

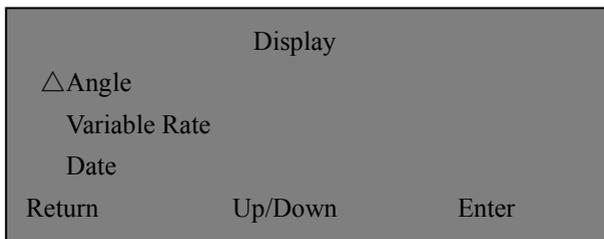
- a. Choose the “Baud Rate” option
- b. Click the “Right” button, enter into the Baud Rate setting
- c. Click “Up/Down” buttons, select the parameters for “2400, 4800, 9600, 19200”
- d. Click the “Right” button to save and then exit.

5.5.1.4 Password

- a. Choose the “Password” option; Click the “Right” button to enter into to the password “Allow/Forbidden” selections
- b. Select “Allow” in the current operation, Click the “Right” button to enter into password input.
- c. Input the password figures for the 1-8 (the factory default password is 88888888), Click the “Right” button to enter the password re-enter
- d. Re-enter password figures for the 1-8, Click the “Right” button, if this twice passwords is fit, the new password will be saved and then exit, otherwise it will show wrong and exit.

5.5.1.5 Display

- a. Choose the “Display” option
- b. Click the “Right” button to enter the display setting



- c. Click “Up/Down” buttons to select the display parameters as below

Angle: Click the “Right” button to enter the Allow/Forbidden angle display selection, select “Allow”, click the “Right” button to enter the “0” setting; you

can choose new “0” position through the direction button, then set preset position 12 to save and return back; If you do not modify the “0” position, you can set preset position 11 to return

Variable Rate : Click the “Right” button to enter the Allow/Forbidden variable rate selection, select related setting, and click the “Right” button to save and return

Date: Click the “Right” button, enter into the Allow/Forbidden date display selection, select the related setting, and click the “Right” button to save and return

d. Click the “Left” button to exit the setting and return back to the configuration menu

5.5.1.6 Date

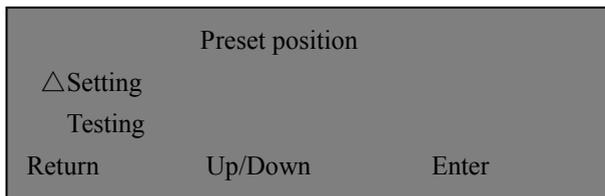
- a. Choose the “Date” option
- b. Click the “Right” button to enter the date setting
- c. Set the parameters of “Year, Month, Day, Hour, Minute, Second”, click the “Right” button to save and then exit (the year setting range is 0-99)

5.5.1.7 Language

- a. Choose the “Language” option to enter the language selection
- b. Select “language”, click the “Right” button to change the language then exit.

5.5.2 Preset Position

- a. Choose the “Preset Position” option
- b. Click the “Right” button to enter the Preset Position setting
- c. Click “Up/Down” buttons to select the menu of “setting/ testing”



5.5.2.1 Setting

- a. Choose the “Setting” option
- b. Click the “Right” button to enter the preset position numbers input
- c. Input the preset position numbers (1-128); click the “Right” button to enter

the preset position setting

d. Set PTZ and Mirror position by controller, according to the picture prompt, set preset position 11 to return, and set preset position 12 to save and return back

e. Click the “Left” button to exit setting and return back to preset position

5.5.2.2 Testing

a. Choose the “Testing” option

b. Click the “Right” button; enter the preset position numbers input

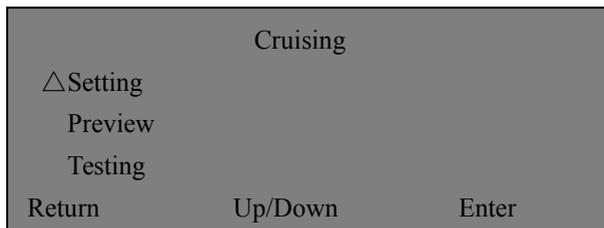
c. Input the preset position numbers (1-128), Click the “Right” button to starting preset position testing

5.5.3 Cruising

a. Choose the “Cruising” option

b. Click the “Right” button, enter the cruising setting

c. Click “Up/Down” buttons to select the menu of “setting, preview, and testing”



5.5.3.1 Setting

a. Choose the “Setting” option

b. Click the “Right” button, enter the cruising group input

c. Input the cruising numbers(1-6), click the “Right” button to set cruising; each cruising group can set 16 patrol points, each patrol point set sequence is preset(1-128)、 speed (1-8)、 time(1-60), finish it you can enter the next patrol point setting

d. Click the “Left” button to exit the setting and return back to the cruising menu

5.5.3.2 Preview

a. Choose the “Preview” option

b. Click the “Right” button, enter the cruising group input

c. Input the cruising group numbers, you can preview the parameters of it

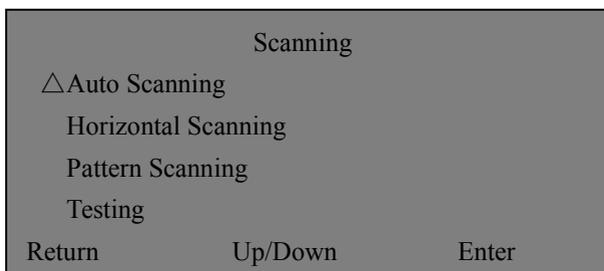
- d. Click the “Left” button, exit the setting and return back to cruising menu

5.5.3.3 Testing

- a. Choose the “Testing” option
- b. Click the “Right” button, enter the cruising group input
- c. Input the cruising group numbers, click the “Right” button to test the cruising group

5.5.4 Scanning

- a. Choose the “Scanning” option
- b. Click the “Right” button, enter the scanning selection
- c. Click “Up/Down” buttons to select the menu of “Auto Scanning, Horizontal Scanning, Pattern Scanning and Testing”



5.5.4.1 Auto Scanning

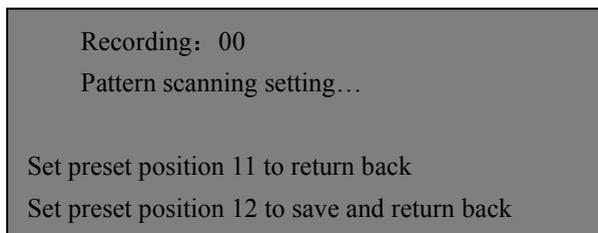
- a. Choose the “Auto Scanning” option
- b. Click the “Right” button to enter the Auto Scanning “Allow/Forbidden” selections
- c. Choose “Allow”, click the “Right” button to enter the first point setting, you can operate the controller to set the PTZ and mirror, then set preset position 11 to return back or set preset position 12 to enter the second point setting
- d. Operating the controller to set the PTZ and mirror of second point, set preset position 11 to return back or set preset position 12 to enter the speed input
- e. Input numbers 1-8 to set speed, and click the “Right” button to save and return

5.5.4.2 Horizontal Scanning

- a. Choose the “Horizontal Scanning” option
- b. Click the “Right” button to enter the Horizontal Scanning speed input
- c. Input numbers 1-8, and clicks the “Right” button to save and return back

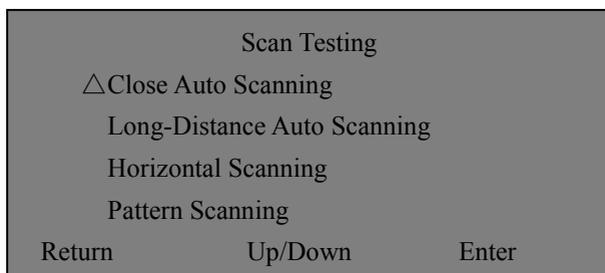
5.5.4.3 Pattern Scanning

- a. Choose the “Pattern Scanning” option
- b. Click the “Right” button to enter the Pattern Scanning group input
- c. Input numbers 1-4; click the “Right” button to enter the Pattern Scanning “Allow/Forbidden” selections
- d. Select “Allow” and click the “Right” button, the Pattern Scanning setting will be start, you can choose those operations, such as :Up、Down、 Left、 Right、 Variable、 Focus、 Aperture、 Call Preset Position、 Call Horizontal Scanning、 Call Two pots Scanning and Call Cruising; each pattern scanning can records 100pcs different orders, and there is no limit between them.
- e. Set preset position 11 to return back, Set preset position 12 to save and return back



5.5.4.4 Testing

- a. Choose the “Testing” option
- b. Click the “Right” button, enter the scan testing



- c. Click “Up/Down” buttons, select the scan testing mode as below

Close Auto Scanning: The dome camera execute the Close Auto Scan testing, setup preset points “11”to exit testing

Long-Distance Auto Scanning: The dome camera execute the Close Auto Scan testing, setup preset points “11”to exit testing

Horizontal Scanning: The dome camera execute the Horizontal Scan testing,

setup preset points “11”to exit testing

Pattern Scanning: The dome camera execute the Pattern Scan testing, setup preset points “11”to exit testing

d. Click the “Left” button, return to the scanning menu

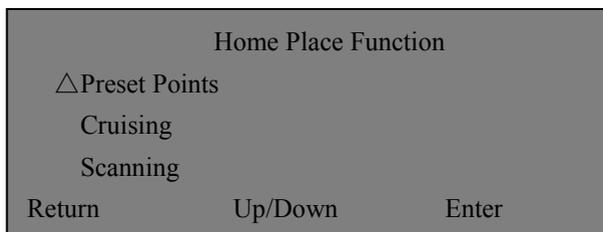
5.5.5 Home Place

a. Choose the “Home Place” option

b. Click the “Right” button, and enter into the home place allowed/forbidden selections

c. Select “allow”, click the “Right” button, enter into the home place function selection

c. Click the “Up/Down” buttons, select “Preset Points, Cruising, Scanning” etc functions



5.5.5.1 Preset Points

a. Choose the “Preset Points” option, click the “Right” button, and enter into the preset points numbers input

b. Input the preset points’ numbers, click the “Right” button, and enter into the home place waiting time setting

5.5.5.2 Cruising

a. Choose the “Cruising” option, click the “Right” button, and enter into the home place cruising setting

b. Input the cruising numbers, click the “Right” button, enter into the home place waiting time setting

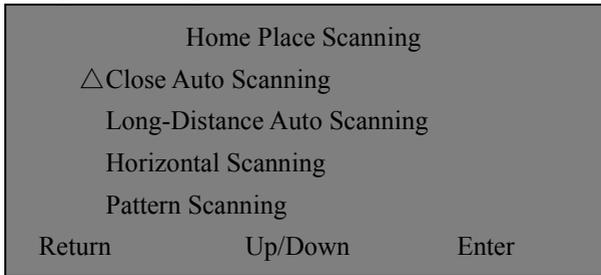
5.5.5.3 Scanning

a. Choose the “Scanning” option

b. Click the “Right” button; enter into the Home Place Scanning selection

c. Select “Close Auto Scanning, Long-Distance Auto Scanning, Horizontal Scanning, Pattern Scanning” ,then click the “Right “button, and enter into the

home place waiting time setting



5.5.5.4 Home Place Latency Time

a. Input numbers 10-240, click the “Right” button to save the site then return back to the last menu

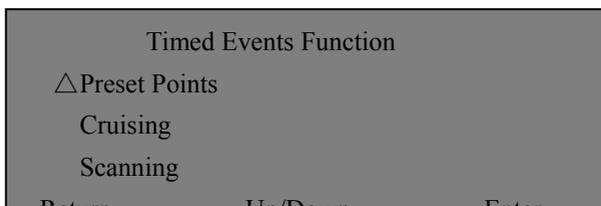
5.6 Timed Events

- Choose the “Timed Events” option
- Click the “Right” button; enter into the timed events setting
- Click the “Up/Down” button to select setting or preview



5.6.1 Setting

- Choose the “Setting” option, click the “Right” button, and enter into the timed events number input
- Input numbers 1-24, click the “Right” button, and enter into the timed events “Allow/Forbidden” selection
- Select “Allow”, click the “Right” button, enter into the timed events function selection
- Select 1-128 Preset Points, 1-6 Group Cruising, 1-4 Group Pattern Scanning, Close/ Long-Distance two spots Scanning or horizontal Scanning, click the “Right” button, enter into the timed events, then beginning to carry out the time setting



- e. Input numbers 0-23, click the “Right” button, enter into the timed events, then beginning to carry out the minutes setting
- f. Input numbers 0-59, click the “Right” button, enter into the timed events, then beginning to carry out the time setting
- g. Input numbers 1-3600, click the “Right” button, save settings and then return back

5.6.2 Preview

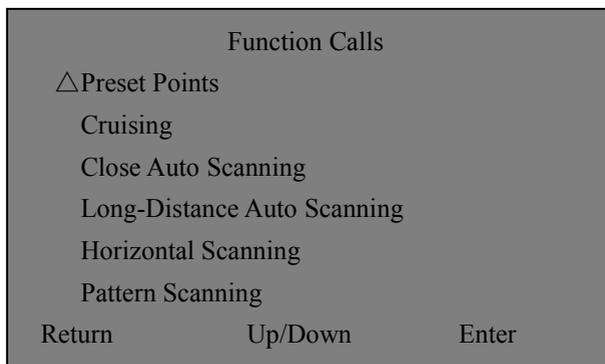
- a. Choose the “Preview” option
- b. Click the “Right” button, enter into the timed events preview, you can preview all the setting that you have timed
- c. Click the “Left” button; Exit this setting and return to the dome camera setting

5.7 Restore the Factory Default

- a. Choose the “Restore the Factory Default” option
- b. Click the “Right” button, the dome camera will restore the Factory Default (Doesn't restore the password and language selection)

5.8 Dome Camera Functions

- a. Choose the “Dome Camera Functions” option
- b. Click the “Right” button; enter the Function Calls
- c. Click the “Left” button; Exit the function to return to the menu at the same time



5.8.1 Preset Points

- a. Choose the “Preset Points” option
- b. Click the “Right” button; enter the Preset Points number input
- c. Input the Preset Points numbers, Click the “Right” button; call the Preset Points then exit the menu at the same time

5.8.2 Cruising

- a. Choose the “Cruising” option
- b. Click the “Right” button; enter the Cruising input
- c. Input the Cruising numbers, Click the “Right” button; call the Cruising then exit the menu at the same time

5.8.3 Close Auto Scanning

- a. Choose the “Close Auto Scanning” option
- b. Click the “Right” button; call the Close Auto Scanning then exit the menu at the same time

5.8.4 Long-Distance Auto Scanning

- a. Choose the “Long-Distance Auto Scanning” option
- b. Click the “Right” button; call the Long-Distance Auto Scanning then exit the menu at the same time

5.8.5 Horizontal Scanning

- a. Choose the “Horizontal Scanning” option
- b. Click the “Right” button; call the Horizontal scanning then exit the menu at the same time

5.8.6 Pattern Scanning

- a. Choose the “Pattern Scanning” option; enter pattern scanning input
- b. Input the pattern scanning number, then click the “Right” button, call the pattern scanning then exit the menu at the same time

5.9 Exit

- a. Choose the “Exit” option
- b. Click the “Left” button, exit the menu

VI、 Trouble Shooting

Problems	Possible reasons	Solutions
No action, no pictures when power is on	Power supply damaged or under power	Replace
	Wrong connection of power	Correct
	Project line fault	Eliminate
Abnormal self-check. Images with motor noise	Mechanical failure	Recondition
	Camera inclined	Reinstall
	Power supply not enough	Replace required power supply; Put power supply close to Dome Camera
Normal self-check, but no images	Wrong connection of video	Correct
	Bad connection of video	Eliminate
	Camera damaged	Replace
Normal self-check, but out of control	Wrong connection of signal control cable	Correct
	Dome ID setup is wrong	Reselect
	Protocol or communication baud rate is not matched	Adjust protocol to match with the controller, and power on again
Unstable images	Bad connection of video	Press to connect well
	Power not enough	Replace
Dome Camera out of control	Self-check error	Power on again
	Bad connection of	Eliminate

	control cable	
	Bad host operations	Power on again
	Overload or communication distance too far	Add code distributor

VII、 Appendix I :Lightning and Surge Protection

The Product adopts grade 3 lightning protection technology, which is effective for avoiding the damage of equipment from pulse signal, such as those from instant lightning or surge. However, for outdoor installation, necessary protection must be adopted according to the situation on condition that the electric safety must be guaranteed.

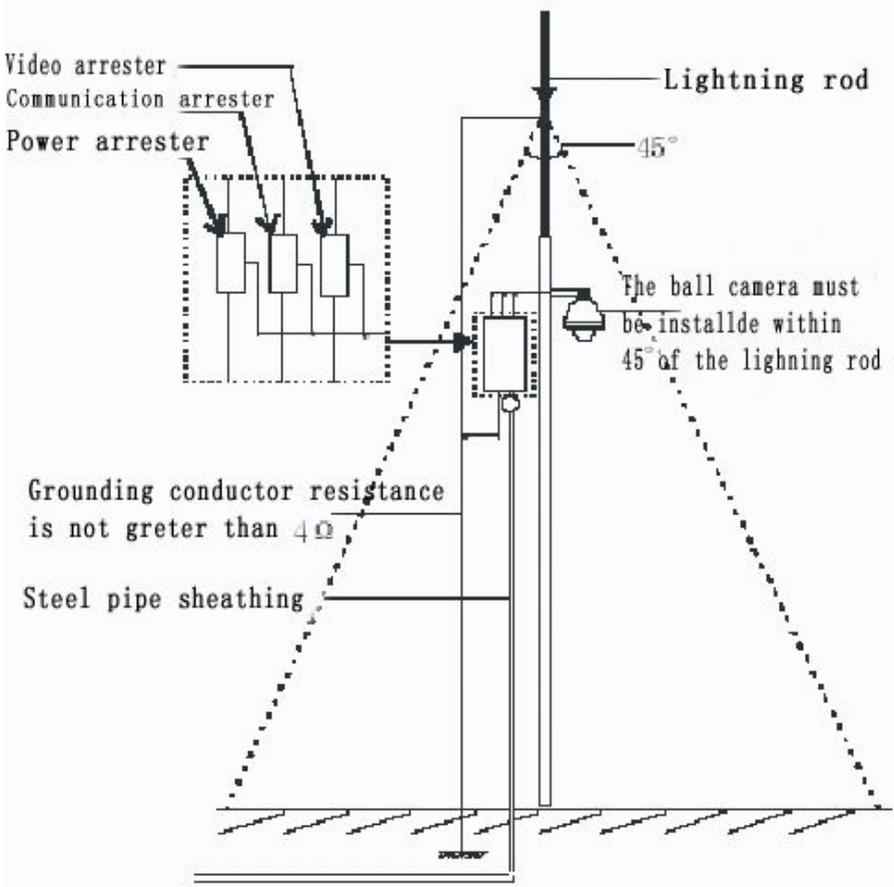
◎ The transmission line must be at least 50 meters away from high-voltage equipment and cable, try to arrange the line along the eaves.

◎ The underground sealed steel tube arrangement must be adopted in open area, and steel tube must adopt one single connect earth. The overhead ground arrangement is absolutely forbidden.

◎ In the intense thunderstorm or high induced voltage area(e.g.: High-Voltage Junction Box), such methods as the installation of extra superpower lightning protection equipments or lightning rod must be adopted.

◎ The design of outdoor device and the lightning protection and earthing of line must meet the requirement of the building's lightning protection, and be in accordance with relevant national and industrial standards.

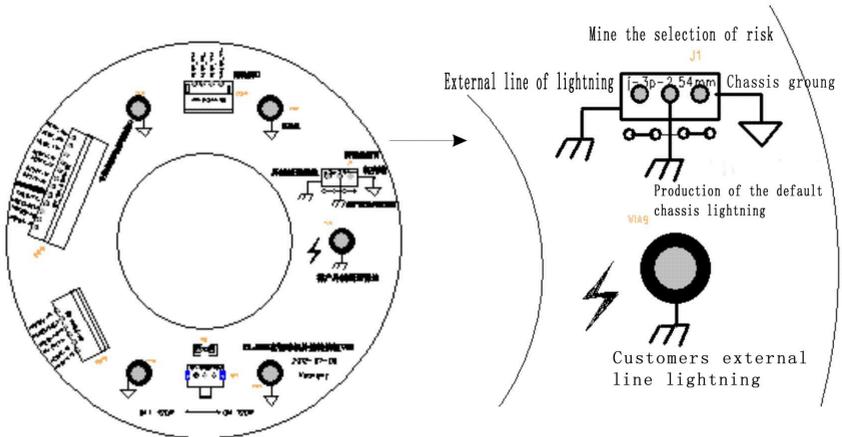
◎ The system must be earthed with equal potential. The earthing device must meet the requirements of both anti-interference and electric safety, and mustn't connect to, or mix with the zero line of any strong power grid. When the system adopts the earth connection alone, the impedance should be no more than $4\ \Omega$, and section surface should not excess 25mm^2 .



PIC 1

This product use the dome shell connecting ground, if you don't use it, lightning ground jumper cap can be changed to lightning to connect the external

lines. Single-wire earthed lightning ground locking in customers' external line lightning ground screw, and pick the Lightning to take the press to an external line lightning protection ground terminal. (As picture 2)



PIC 2

Appendix II: Cleanness of Transparent Cover

◎To ensure the image quality, the lower cover of the dome camera should be cleaned periodically

◎When cleaning, take the lower cover down by holding the outer ring carefully, avoiding direct touch; the acidic sweat on one's finger might corrode the coating of the cover. And the scratches made by hard objects might also result in a blurry image.

◎Please use a tender dry cloth or other substitutes to clean both the inner and outer side of the cover.

◎If the dirt is hard to clean, a neutral detergent could be used; any cleanser which is for luxury furniture can be used for the lower cover.

Appendix III: General Knowledge of RS485

1. Basic Characteristics of RS485

According to its standard, RS485 industrial bus is a half-duplex C-bus of

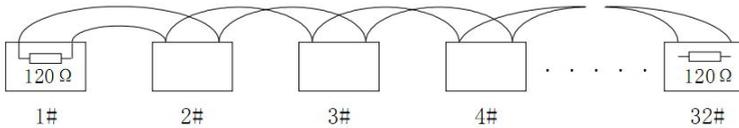
special impedance $120\ \Omega$, whose largest loading capacity is 32 payloads. (Including master device and controlled device)

2. The transmission distance of RS 485

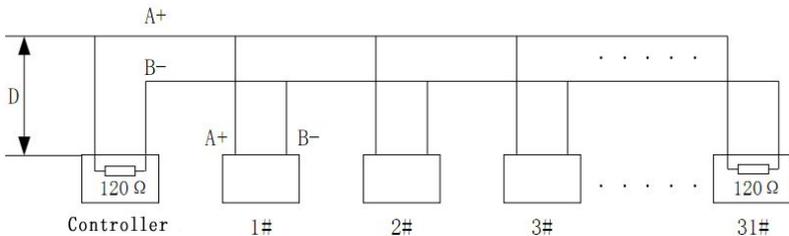
Band Rate	Maximum Transmission Distance
2400Bps	1800M
4800Bps	1200M
9600Bps	800M

3. Connection mode and terminal resistance

a) RS 485 industrial bus standard requires that daisy chained ways should be adopted among devices with $120\ \Omega$ terminal resistors at both ends. The connection can be simplified as that in picture 4, but “D” distance should not be more than 7 meters.

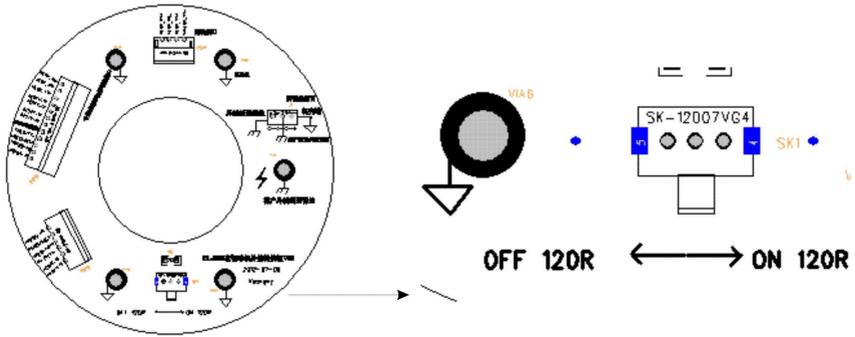


PIC 3



PIC 4

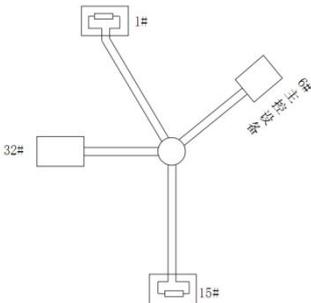
b) The connection mode of device terminal $120\ \Omega$: There are device terminal resistances on controller board, which have two connection modes. One is the factory default connection mode, without $120\ \Omega$ resistor connected this time. When $120\ \Omega$ resistor is required, the SK1 DIP switch on controller board should be pulled into “ON” (As picture5). Then the $120\ \Omega$ resistor is connected to circuits.



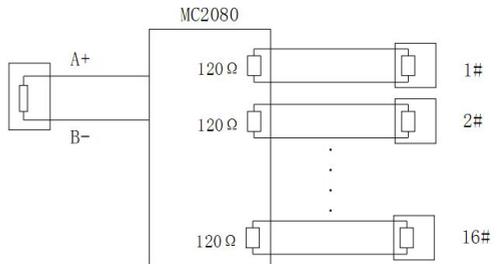
PIC5

4. Some problems in application

Star connection is always adopted by users in application. In this situation, the terminal resistors should be on the 1# and 15# (as it is shown in picture 6) of two devices with maximum line distance. However, this connection type is not consistent with the operating requirements of RS 485 industrial standard, so the problems, like signal reflex and the decrease of anti-jamming capability, easily occur, which may reduce the reliability of controlled signal. The phenomenon reflected is that balling machine is completely or discontinuously out of control, or that it cannot stop running. To solve these problems, we propose to use MC 2080 Rs485 distributor, because this product can convert the star connection mode to that one accord with RS 485 industrial standard, avoiding problems to improve the reliability.



PIC6



PIC7

Appendix IV : Relational Table of 24VAC Line Diameter and Transmission Distance

The maximum transmission distance s recommended in the situation that the line diameter is fixed and 24V AC voltage wastage rate is below 10%. As for the AC main power supply device, a device with an 80VA rated power is installed in a place 35 feet away from the transformer, then the required minimum line widths should be 0.8000mm.

Distance feet (m)	Wire radii (mm)			
	0. 8000	1. 000	1. 250	2. 000
10	283 (86)	451 (137)	716 (218)	1811 (551)
20	141 (42)	225 (68)	358 (109)	905 (275)
30	94 (28)	150 (45)	238 (72)	603 (183)
40	70 (21)	112 (34)	179 (54)	452 (137)
50	56 (17)	90 (27)	143 (43)	362 (110)
60	47 (14)	75 (22)	119 (36)	301 (91)
70	40 (12)	64 (19)	102 (31)	258 (78)
80	35 (10)	56 (17)	89 (27)	226 (68)
90	31 (9)	50 (15)	79 (24)	201 (61)
100	28 (8)	45 (13)	71 (21)	181 (55)
110	25 (7)	41 (12)	65 (19)	164 (49)
120	23 (7)	37 (11)	59 (17)	150 (45)
130	21 (6)	34 (10)	55 (16)	139 (42)
140	20 (6)	32 (9)	51 (15)	129 (39)
150	18 (5)	30 (9)	47 (14)	120 (36)
160	17 (5)	28 (8)	44 (13)	113 (34)
170	16 (4)	26 (7)	42 (12)	106 (32)
180	15 (4)	25 (7)	39 (11)	100 (30)
190	14 (4)	23 (7)	37 (11)	95 (28)
200	14 (4)	22 (6)	35 (10)	90 (27)

Appendix V: Domestic and Overseas Gauge Table

Metric naked wire radii (mm)	Approximately American radii AWG	Approximately England radii SWG	Naked wire cross section area (mm ²)
0.050	43	47	0.00196
0.060	42	46	0.00283
0.070	41	45	0.00385
0.080	40	44	0.00503
0.090	39	43	0.00636
0.100	38	42	0.00785
0.110	37	41	0.00950
0.130	36	39	0.01327
0.140	35		0.01539
0.160	34	37	0.02011
0.180	33		0.02545
0.200	32	35	0.03142
0.230	31		0.04115
0.250	30	33	0.04909
0.290	29	31	0.06605
0.330	28	30	0.08553
0.350	27	29	0.09621
0.400	26	28	0.1237
0.450	25		0.1602
0.560	24	24	0.2463
0.600	23	23	0.2827
0.710	22	22	0.3958
0.750	21		0.4417
0.800	20	21	0.5027

Appendix VI: Address coding table

Binary code	address	Binary code	address	Binary code	address
00000001	1	00010111	23	00101101	45
00000010	2	00011000	24	00101110	46
00000011	3	00011001	25	00101111	47
00000100	4	00011010	26	00110000	48
00000101	5	00011011	27	00110001	49
00000110	6	00011100	28	00110010	50
00000111	7	00011101	29	00110011	51
00001000	8	00011110	30	00110100	52
00001001	9	00011111	31	00110101	53
00001010	10	00100000	32	00110110	54
00001011	11	00100001	33	00110111	55
00001100	12	00100010	34	00111000	56
00001101	13	00100011	35	00111001	57
00001110	14	00100100	36	00111010	58
00001111	15	00100101	37	00111011	59
00010000	16	00100110	38	00111100	60
00010001	17	00100111	39	00111101	61
00010010	18	00101000	40	00111110	62
00010011	19	00101001	41	00111111	63
00010100	20	00101010	42	01000000	64
00010101	21	00101011	42	01000001	65
00010110	22	00101100	44	01000010	66
01000011	67	01101101	109	10010111	151
01000100	68	01101110	110	10011000	152
01000101	69	01101111	111	10011001	153
01000110	70	01110000	112	10011010	154
01000111	71	01110001	113	10011011	155
01001000	72	01110010	114	10011100	156

Appendix VI: Address coding table

Binary code	address	Binary code	address	Binary code	address
01001001	73	01110011	115	10011101	157
01001010	74	01110100	116	10011110	158
01001011	75	01110101	117	10011111	159
01001100	76	01110110	118	10100000	160
01001101	77	01110111	119	10100001	161
01001110	78	01111000	120	10100010	162
01001111	79	01111001	121	10100011	163
01010000	80	01111010	122	10100100	164
01010001	81	01111011	123	10100101	165
01010010	82	01111100	124	10100110	166
01010011	83	01111101	125	10100111	167
01010100	84	01111110	126	10101000	168
01010101	85	01111111	127	10101001	169
01010110	86	10000000	128	10101010	170
01010111	87	10000001	129	10101011	171
01011000	88	10000010	130	10101100	172
01011001	89	10000011	131	10101101	173
01011010	90	10000100	132	10101110	174
01011011	91	10000101	133	10101111	175
01011100	92	10000110	134	10110000	176
01011101	93	10000111	135	10110001	177
01011110	94	10001000	136	10110010	178
01011111	95	10001001	137	10110011	179
01100000	96	10001010	138	10110100	180
01100001	97	10001011	139	10110101	181
01100010	98	10001100	140	10110110	182
01100011	99	10001101	141	10110111	183
01100100	100	10001110	142	10111000	184

Appendix VI: Address coding table

Binary code	address	Binary code	address	Binary code	address
01100101	101	10001111	143	10111001	185
01100110	102	10010000	144	10111010	186
01100111	103	10010001	145	10111011	187
01101000	104	10010010	146	10111100	188
01101001	105	10010011	147	10111101	189
01101010	106	10010100	148	10111110	190
01101011	107	10010101	149	10111111	191
01101100	108	10010110	150	11000000	192
11000001	193	11010110	214	11101011	235
11000010	194	11010111	215	11101100	236
11000011	195	11011000	216	11101101	237
11000100	196	11011001	217	11101110	238
11000101	197	11011010	218	11101111	239
11000110	198	11011011	219	11110000	240
11000111	199	11011100	220	11110001	241
11001000	200	11011101	221	11110010	242
11001001	201	11011110	222	11110011	243
11001010	202	11011111	223	11110100	244
11001011	203	11100000	224	11110101	245
11001100	204	11100001	225	11110110	246
11001101	205	11100010	226	11110111	247
11001110	206	11100011	227	11111000	248
11001111	207	11100100	228	11111001	249
11010000	208	11100101	229	11111010	250
11010001	209	11100110	230	11111011	251
11010010	210	11100111	231	11111100	252
11010011	211	11101000	232	11111101	253
11010100	212	11101001	233	11111110	254
11010101	213	11101010	234	11111111	255