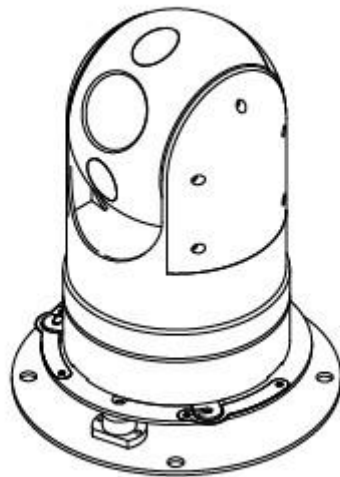


---

# **HD Infra Red Vehicle High Speed Dome Camera**

## **Manual operation**

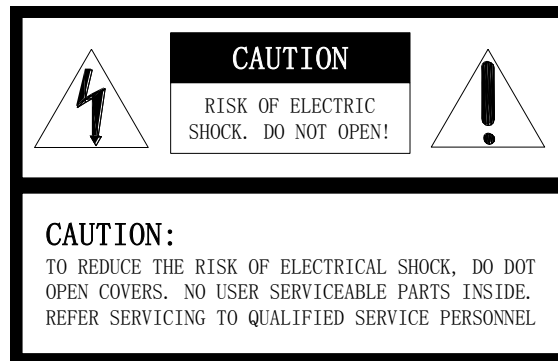
V1.0



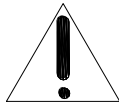
Please read the operation manual  
carefully before installing and using this product

---

## I. SAFETY PRECAUTIONS



The lightning flash with a arrowhead symbol, in an equilateral triangle, is intended to alert the user. There is uninsulated “dangerous voltage” presence near by the product’s enclosure which may be risk of to persons .



The exclamation point within an equilateral triangle is intended to alert the user to reference of the important operating and maintenance (servicing ) instructions .

THE PRODUCT CODE MARKED ON THE BOTTOM COVER. PLEASE  
FILL THE CODE IN THE FOLLOWING BLANK. PLEASE SAVING  
THIS SPECIFICATION CAREFULLY, SO THAT CHECKING.

MODEL: \_\_\_\_\_

PRODUCT CODE: \_\_\_\_\_

---

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## I. Important Safeguards

1. All the safety and operating instructions should be read before the units is operated.
2. Power supply for IR Dome Camera: DC12V. The power input power supply indicated on the base of dome or other related marking label.
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 product as there are sophisticated optical and electronic devices inside the machine.
4. Do not attempt to disassemble the camera. In order to prevent electric shock, do not remove screws or covers. There are no user-serviceable parts inside.
5. Always follow all electrical standards for safety when it is in operation. Adopt the particular power supply which is provided with the unit. RS-485 and video signal should keep enough distance with high voltage equipments and cables when they are in transmission. Precautions for anti-lightning and anti-surfing should be taken if necessary.
6. Do not operate it in case temperature, humidity and power supply are beyond the limited stipulations.
7. Do not let the camera aim at the sun or the object with extreme light whatsoever it is switched on or not. Do not let the camera aim at or monitor bright and standstill object for a long time.
8. Do not use aggressive detergent to clean the main body of the camera. Wipe dirt with dry cloth. If needed, mild detergent can be used suitably.
9. Operate the intelligent speed dome camera with great care to avoid shock or vibration. It operate incorrectly, the Speed Dome could be damaged.
10. Please ensure the installation position with enough endurance when you install the intelligent IR High speed dome camera.
11. If necessary, use a commercial lens cleaning paper to clear the lens windows. Gently wipe the lens window until clean.

## II. Description of Functions

This Infra Red High Speed dome Camera uses the highly integrated 16-bit processor, low power consumption, super stable. Built-in high-power infrared array light inside, ultra-high luminous efficiency, fill light uniform, smaller heat and night vision range up to 80 meters.

### 1. **Integrated Speed-Variable PAN/TILT**

- a. Turning 360° horizontally and continuously with unlimited positions and an adjustable speed from 0.01 - 300 °/s; turning 0 - 90° vertically with a speed up to 120 °/s.

- 
- b. Running stably at low speed with super lower noise. Pictures have no shaking.
  - c. Automatic 180 ° flip and panoramic monitoring without blind point, the location precision up to  $\pm 0.1^\circ$ .

## 2. High Intelligent Degree

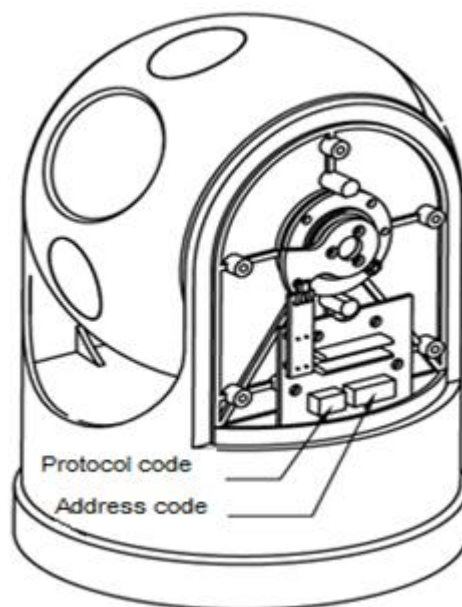
- a. As much as 256 preset positions can be preset with powerless memory.
- b. The camera can scan horizontally between two points and scan speed can be modified. The positions of linear scan are optional and the dome camera can scan the range larger or smaller than 180 ° between any two points with adjustable speed;
- c. Proportional pan function. The speed dome will depend on the amount of zoom. At telephoto zoom settings, the pan and tilt speeds will be slower for a given amount of joystick deflection than at wide zoom settings. This keeps the image from moving too fast on the monitor when there is a large amount of zoom. This slowing does not happen when going to a preset, but does occur in turbo mode when high zoom is selected. The minimum pan and tilt speeds are 0.1 degree per second at full zoom.
- d. The Integrated Protocol-D. Communication protocols are integrated inside the dome camera with selectable baud rate from 2400 bps to 19200 bps.

## III. Setup of Dome Camera

### 1. Connection of the system

#### 1) Address/Protocol Code

Before installing, please ensure the control communications and baud rates of the dome systems, then setup the dome SW2 code as the same as the system, SW1 is used to set address of the dome camera, SW2 is used to set the protocol of communication and the baud rate used by the dome camera. And the code switch as Figure 1 shows.



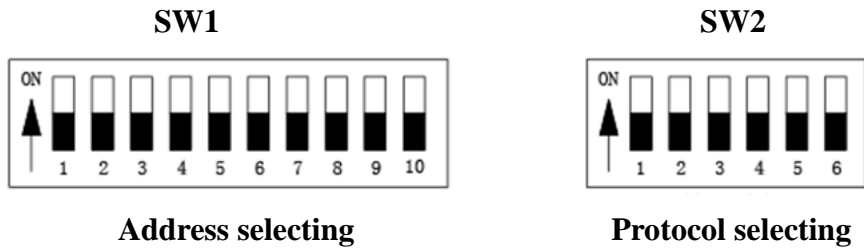


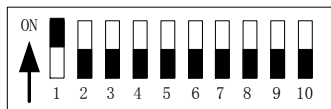
Figure 1

2. **Setup of Coding Switch of Dome Camera.** As figure 1 shows, J6(SW1) is used to set dome address, address of dome camera from 1~1023. The coding switches from DIP-10 to DIP-1 are equivalent to a 10-bit binary digital. DIP-10 is MSB while DIP-1 is LSB. The state “ON” of each bit means 1 while “OFF” means 0. Following table shows the States of Coding Switches.

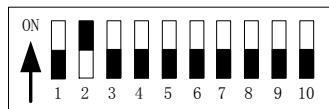
Dome Address	States of Coding Switches									
	DIP-1	DIP-2	DIP-3	DIP-4	DIP-5	DIP-6	DIP-7	DIP-8	DIP-9	DIP-10
1	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
2	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
3	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
4	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
5	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
6	OFF	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
7	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
8	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
9	ON	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
10	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
11	ON	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
12	OFF	OFF	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
13	ON	OFF	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
14	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
15	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
16	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF
17	ON	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF
18	OFF	ON	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF
...	...									
1023	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON

Table 1

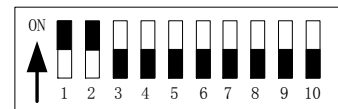
For example:



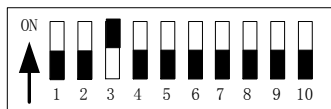
Speed Dome Address=1



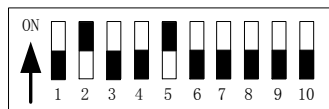
Speed Dome Address=2



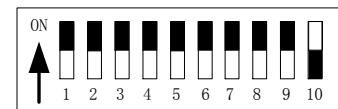
Speed Dome Address=3



Speed Dome Address=4



Speed Dome Address=18



Speed Dome Address=512

3. **Setup of the Protocol and the Default Baud Rate.** As table 2 shows, J8 (SW2) is used to set protocol and baud rate of dome camera. From DIP-4 to DIP-1 of J8 is used to select protocol, Please setup from DIP-1 to DIP-4 as OFF, it is PELCL-D.

Protocols Type	Selecting of protocol				Normal baud rate	
	DIP-1	DIP-2	DIP-3	DIP-4	DIP-5	DIP-6
PELCO-D	OFF	OFF	OFF	OFF	OFF	OFF
PELCO-P	OFF	ON	OFF	OFF	OFF	OFF

Table 2

4. **Setup of the Baud Rate of Communication.** As shown in Figure 2, J8 is used to set the protocol of communication and the baud rate used by the dome camera. DIP-6 and DIP-5 of J8(SW2) are used to select the baud rate of communication and 4 different baud rates can be selected in maximum. If the controller adopts non-standard baud rate, you can adjust it to be identical with that of the main machine as per the following table.

Baud Rate of Communication	DIP-1	DIP-2	DIP-3	DIP-4	Setup of Baud Rate	
					DIP-5	DIP-6
2400 bps					OFF	OFF
4800 bps					ON	OFF
9600 bps					OFF	ON
19200 bps					ON	ON

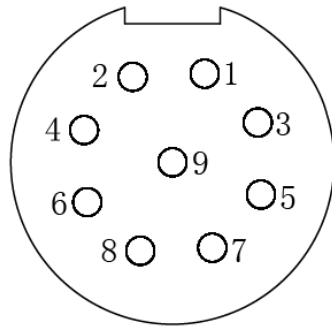
5. **Selection of the Terminal Resistor of the Dome Camera.**

Please open the base of dome ,and there have 3-line jumper on base power control board, this is the select switch of the 120 Ω terminal resistor on the bus RS485, on which only one terminal resistor of the dome camera at the farthest end can be connected, while the terminal resistors of other devices should be opened.

120 Ω terminal resistor is connected on RS485 Bus,if 3-line jumper connecting 1,2.

120 Ω terminal resistor is opened on RS485 Bus, if 3-line jumper connecting 2,3.

## IV. Description of airlines seat outlet.



4.1 9-pin input socket cores descriptions:

1. Red DC12+	2. GND with Video -	3. Yellow;RS485-
4. Orange: RS485+	5.TX+	6. Video +
7. TX-	8. RX+	9. RX-

**V. Installing ways**

1. Dimension as figure 2 shows.

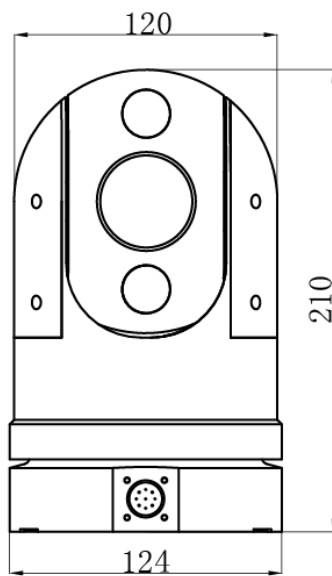


Figure 2

**2. Car surveillance PTZ installing way:**

2.1 Car vehicle shock absorber dimension as figure 3 shows.



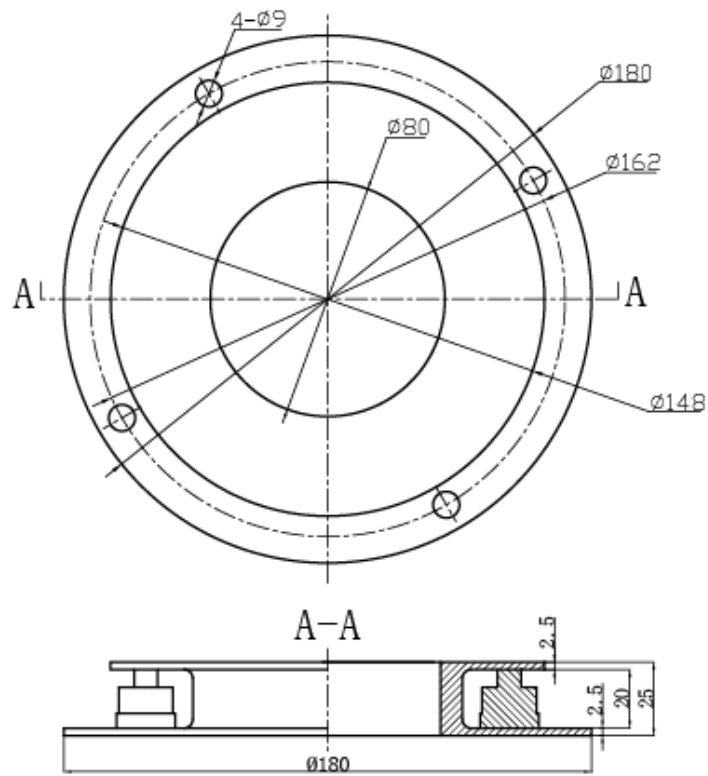


Figure 3

### 3.Steps of installation

3.1 As Figure 4 shows, please remove the outer cover and take out it;

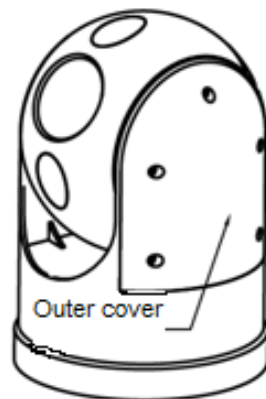


Figure 4

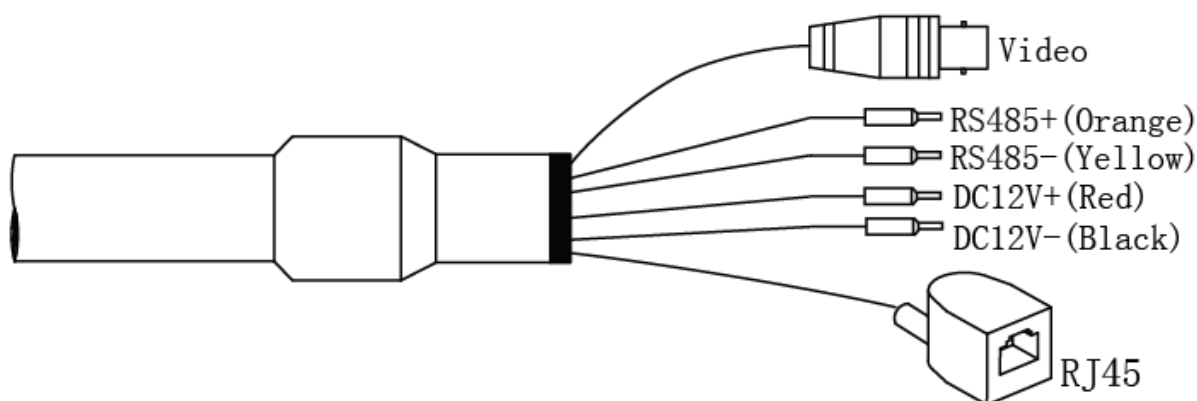
3.2 Please set the dome protocol and baud rate, also check the address of the dome.

3.3 Please fix the outer cover, and ensure the tightness of waterproof seals.

3.4 Please fix the vehicle shock-absorb to the bottom basement of the dome, and fix the whole dome.

3.5 Please connect the air socket outline in accordance with the connection wire color of the diagram correctly.

## VI. System control wires as figure shows



## VII. To Ensure a Smooth and Successful Installation, You Should:

- 1、 Have electrical work to comply with latest national electrical code, national fire code, and all applicable local codes and ordinances.
- 2、 Coordinate with other trades to avoid interference.
- 3、 Verify existing conditions on the site and coordinate with owner side to ensure necessary utilities available.
- 4、 Copy all related plans, specifications, shop drawings and attachments to schedule and coordinate related work.
- 5、 Thoroughly review the project to ensure that all jobs should meet or exceed the above requirements. Contact with the CCTV Project Coordinator to draw attention in case alleged discrepancies occur.

## VIII. Technical data table.

- 1、 Main technical data table of high speed dome camera.

Power supply	DC12V 50/60Hz 2.5A
Power consumption	18W Heater: 6W
Preset position	256
Zoom-rotation interaction	The dome will adjust the manual control speed automatically according to the current zoom.
Auto overturning	The camera will rotate 180 °automatically, when it reaches the vertical position.
Pan scanning	360 °programmable
Cruising track	8
Pan speed(Max)	300 %S
Pan running speed	0 °-- 220 %S
Pan range	360 °continuously
Tilt range	PTZ: -20—90 ° Dome: -95 °- 95 °
Tilt speed(Max)	120 %S

Tilt running speed	0 °-- 90 %S
Communication	RS485
Baud rate	2400/4800/9600/19200 bps
Fan / heater	Auto control
Infra Red distance	80m (2 groups Infrared light) / 200 m (1 group infrared lamp with 1W linkage laser light)
Relative humidity	10-75% (without agglomeration)
Work temperature	Outdoor: -45°C -- +60°C
Weight	2.5KG

## 2、Dome command

Operation Command	Operation	Operation Display (SONY)
Preset NO 1 point	Preset + 1+ Enter	SET 001
CALL NO 1 point	Call + 1 + Enter	POS 001
Auto scan	Call + 141 + Enter	SCAN POS001~002
Counterclockwise 180 °horizontal rotation	Call + 33 + Enter	PAN 180
360 °Auto scan (10 %s)	Call + 99 (149)+ Enter	SCAN 360
Set the start point of scan	Preset + 51+ Enter	SET START
Set the end point of scan	Preset + 52+ Enter	SET END
Auto scan start	Call + 51+ Enter	SCAN
Auto scan stop	Call + 52+ Enter	
Cruise (From NO.1 to NO.16 )	Call + 53(76/97/151) + Enter	PATROL POS001~016
Cruise 2 (from NO.21 to No.32 )	Call + 152(98) + Enter	PATROL POS021~032
Dome Reset	Preset + 53+ Enter	SELF TEST
BLC ON	Call + 55(171)+ Enter	BLC ON
BLC OFF	Call + 170+ Enter /Preset+55+Enter	BLC OFF
D-ZOOM ON	Call + 58(231)+ Enter	DIGI ON
D-ZOOM OFF	Preset+58+Enter/ Call + 230+ Enter	DIGI OFF
AUTO Focus	Call + 59+ Enter	AUTO FOCUS
Manual Focus	Preset + 59+ Enter	MAN FOCUS
AUTO AE	Call + 60+ Enter	AUTO Exposure
Manual AE	Preset + 60+ Enter	MAN IRIS
WB AUTO	Call + 61+ Enter	AWB
WB Indoor	call + 62+enter	
WB Outdoor	preset+62+enter	
WB ATW	Preset + 61+ Enter	ATW
Level reverse ON	Call + 63+ Enter	Mirror ON
Level reverse OFF	Preset + 63+ Enter	Mirror OFF
Camera Display ON	Call + 57(192)+ Enter	OSD ON
Camera Display OFF	Preset+57+Enter/ Call + 191+ Enter	OSD OFF

ICR OFF Color Mode	Call + 67(179)+ Enter	IRCUT OFF
ICR ON B&W Mode	Preset+67+Enter/ Call + 178+ Enter	IRCUT ON
ICR AUTO Mode	call+56+enter	IRCUT AUTO
Fan ON	Call + 201+ Enter	FAN ON
Fan Auto (Fan Work 45 °above)	Call + 202+ Enter	FAN AUTO
Adaptation Speed ON	Call + 210+ Enter	LIM ON
Adaptation Speed OFF	Call + 211+ Enter	LIM OFF
Power failure memory OFF	Call + 220+ Enter	PWR OFF
Power failure memory ON	Call + 221+ Enter	PWR ON
FLIP ON	Call + 248+ Enter	AFLIP ON
FLIP OFF	Preset + 248+ Enter	AFLIP OFF
AUTO HOME ON For Cruise (in 5 minutes)	Call + 90+ Enter	PARK ON
AUTO HOME OFF	Preset+90+Enter/ Call + 250+ENTER	PARK OFF
AUTO HOME ON For NO.1 (in 5 minutes)	Call + 251+ENTER	PARK POS1
AUTO HOME ON For SCAN (in 5 minutes)	Call + 252 +ENTER	PARK SCAN
AUTO HOME ON For Cruise (in 5 minutes)	Call + 253 +ENTER	PARKPATROL
Camera Reset	Preset + 54 + Enter /Call + 241 + Enter	RESET C
SYSTEM RESET	Call + 54 (240)+ Enter	RESET D
SHARP +	call+80+enter	Sharpness +
SHARP -	call+81+enter	Sharpness -
SHARP reset	call+82+enter	
WDR ON	call+71+enter	WDR ON
WDR OFF	preset+71+enter	WDR OFF
Auto WDR	call+70+enter	
SLOW Shutter ON	call+83+enter	
SLOW Shutter OFF	preset+83+enter	

### 3、Hikvision HD Camera Parameter:

Camera	HK 30x,2.0 Mega pixel camera module
Model	DS-2ZMD3007B
Image sensor	1/2.8" Progressive Scan CMOS
Zoom	30X Optical zoom
Focal length	4.5-135mm
Resolutions	50HZ:25fps(1920x1080) 60HZ:30fps(1920x1080) 50HZ:25fps(1280x720) 60HZ:30fps(1280x720)
Min.illumination	Color: 0.05Lux @ (F1.6, AGC ON)Day&Night: 0.01Lux @(F1.6, AGC ON)
S/N ratio	>52dB
Back light compensation	ON/OFF
WB、Iris、Focus	Auto/Manual
Day&Night model	ICR filter
Electronic shutter	1/1s ~ 1/30,000s
WDR	Support
3D Noise Reducing	Support

ONVIF	Support
PoE	NO

4、Hikvision HD Camera Parameter:

Camera	HK20x,2.0 Mega pixel camera module
Model	DS-2ZMD2007B
Image sensor	1/2.8" Progressive Scan CMOS
Zoom	20X Optical zoom
Focal length	4.7-94mm
Resolutions	50HZ:25fps(1920x1080) 60HZ:30fps(1920x1080) 50HZ:25fps(1280x720) 60HZ:30fps(1280x720)
Min.illumination	Color: 0.05Lux @ (F1.6, AGC ON)Day&Night: 0.01Lux @(F1.6, AGC ON)
S/N ratio	>52dB
Backlight compensation	ON/OFF
WB、Iris、Focus	Auto/Manual
Day&Night model	ICR filter
Electronic shutter	1/1s ~ 1/30,000s
WDR	Support
3D Noise Reducing	Support
ONVIF	Support
PoE	NO

IX、Troubleshooting

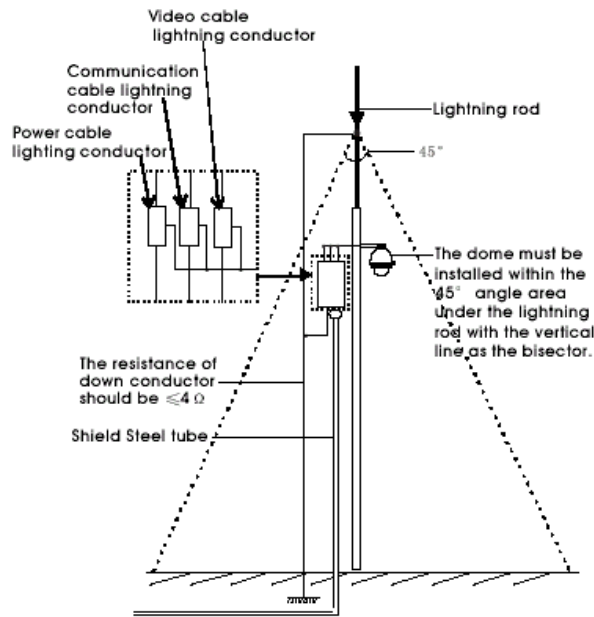
Problems	Possible Causes	Remedies
No action when power is switched on	Power supply fault	Replace
	Bad connection of the power	Correct
	Transformer damaged	Replace
Abnormal self-check. Images with motor noise	Mechanical failure	Repair
	Camera inclined	Reinstall
	Power supply not enough	Replace
Normal self-check but no images	Video signal fault	Reinstall
	Bad connection of the video	Press to connect well
	Camera damaged	Replace
Normal self-check but out of control	RS485 bus bad connection	Check the RS485 connection
	Dome ID setup is wrong	Reselect

	Protocol setup is wrong	Reset and Switch ON again
Vague image	Bad connection of the video	Press to connect well
	Power supply not enough	Replace
Dome camera out of control	Self check error	Switch ON again
	Bad connection of control wire	Replace
	Bad control of dome	Switch ON again
	Load much or communication distance is far	<ol style="list-style-type: none"> <li>1. The farthest dome terminal resistor away from the control set to "ON" status, the rest set to "OFF" status.</li> <li>2. Adding code distributor</li> </ol>

## Appendix I : Lightning Proof and Surge Signal Proof

The product adopts TVS lightning proof technology to prevent from damage by lightning strike below 1500 W and impulse signals such as surge; but it is also necessary to abide by the following precautions to ensure electrical safety based on practical circumstances:

- Keep the communication cables at least 50 meters away from high voltage equipment or cables.
- Make outdoor cable laying-out under eaves as possible as you can.
- In open area shield cables in steel tube and conduct a single point ground to the tube. Trolley wire is forbidden in such circumstances.
- In strong thunderstorm or high faradic zone (such as high voltage transformer substation), extra strong lightning proof equipment must be installed.
- Take the building lightning proof requirements into account to design the lightning proof and grounding of outdoor equipment and cable laying-out in accordance with the national and industrial standards.
- The system must be grounded with equal potentials. The earth ground connection must satisfy the anti-interference and electrical safety requirements and must not short circuited with high voltage electricity net. When the system is grounded separately, the resistance of down conductor should be  $\leq 4\Omega$  and the sectional area of down conductor should be  $\leq 25\text{mm}^2$ .



<Figure 5>

## Appendix II : The Cleaning of Clear Dome Cover

To obtain constant clear videos, user should clean the down cover periodically.

- Be cautious when cleaning. Hold the down cover ring only to avoid direct touch to the acrylic down cover. The acid sweat mark of fingerprint will corrode the coating of down cover and scratch on down cover will cause vague images.
- Use soft dry cloth or the substitute to clean the inner and outer surfaces.
- For hard contamination, use neutral detergent. Any cleanser for high grade furniture is applicable.

## Appendix III : RS485 Bus Basic Knowledge

### 1. Characteristics of RS485 Bus

As specified by RS485 standards, RS485 Bus is of half-duplexed data transmission cables with characteristic impedance as  $120\Omega$ . The maximum load capacity is 32 unit loads (including main controller and controlled equipment).

### 2. Transmission distances of RS485 Bus

When user selects the 0.56mm (24AWG) twisted pair wires as data transmission cable, the maximum theoretical transmitting distances are as follows:

Baud Rate	Maximum Transmitting Distance
2400 Bps	1800m
4800 Bps	1200m
9600Bps	800m

Table 3

If user selects thinner cables, or installs the dome in an environment with strong electromagnetic interference, or connects lots of equipment to the RS485 Bus, the maximum transmitting distance will be decreased. To increase the maximum transmitting distance, do the contrary.

### 3. Connection and termination resistor

The RS485 standards require a daisy-chain connection between the equipment. There must be termination resistors with  $120\Omega$  impedance at both ends of the connection (refer to Figure 6).

Please refer to Figure 7 for simple connection. "D" should not exceed 7m.

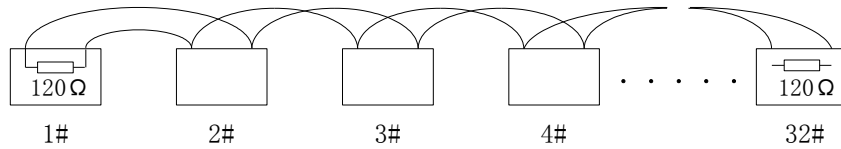


Figure 6

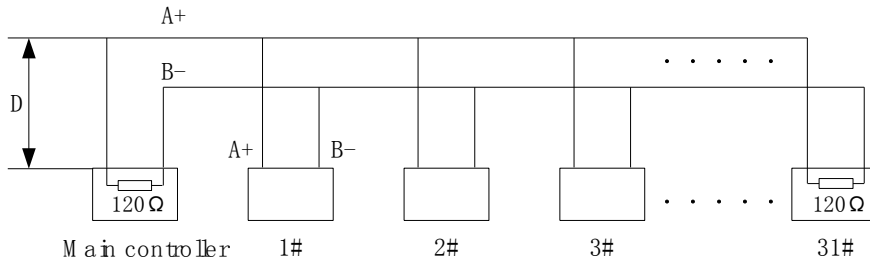
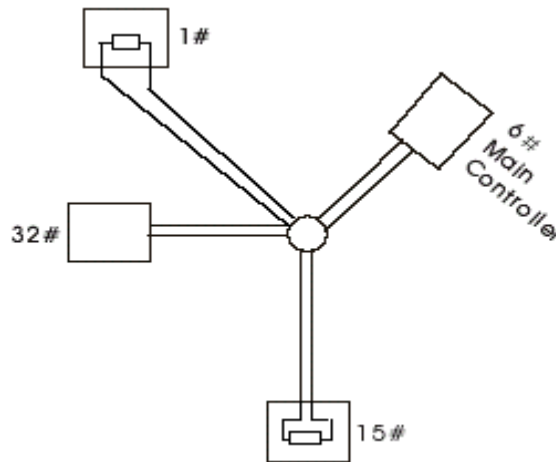


Figure 7

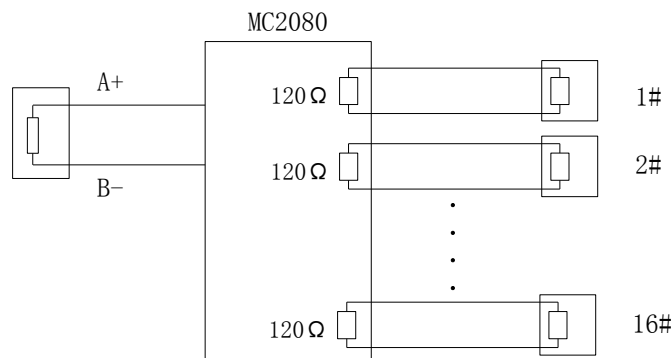
The connection of 120Ω termination resistor: The termination resistor is ready on the Protocol PCB. There are two kinds of connection. Refer to the Protocol PCB jumper setting form (refer to Picture 1).

1) In the Picture it is the factory default connection. The jumper is seated on Pin2&Pin3 and the termination resistor is not connected.

2) when connecting the 120Ω termination resistor, user should plug the jumper on Pin1&Pin2. and the termination resistor is connected.



<Figure 8>



<Figure 9>