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# **Intelligent Speed Dome Installation Manual**

**Version 3.1.0**

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## Welcome

Thank you for purchasing our speed dome!

**Please read the following safeguards and warnings carefully before you install or use the product!**

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# Important Safeguards and Warnings

## Safety Measures

### 1. Qualified Engineer Needed

- The installation engineer or maintenance engineer shall have corresponding CCTV system installation certificate or maintenance qualification certificate.
- The installation engineer or maintenance engineer shall have qualification certificate for work at height.
- The installation engineer or maintenance engineer shall have the basic knowledge and operation technique for low-voltage cable layout and low-voltage electronic cable connection.
- Please read the installation manual carefully and keep it well for future reference,
- We are not liable for any problems caused by unauthorized modifications or attempted repair.

### 2. Lifting Appliance Requirement

- Please select the proper speed dome installation mode and use the lifting appliances at the safety environment.
- The lifting appliances shall have the enough capacity to reach the installation height.
- The lifting appliances shall have safe performance.

**The precaution measures include two types: Warning and Note.**

- **Warning:** It is to alert you there is an optional risk of death or series injury!
- **Note:** It is to alert you there is an optional risk of damage or property loss!

## Warning

1. All installation and operation here should conform to your local electrical safety codes. We assume no liability or responsibility for all the fires or electrical shock caused by improper handling or installation.
2. Be sure to use all the accessories (such as power adapter) recommended by manufacturer.
3. Do not connect several speed domes to one power adapter. It may result in overheat or fire if it exceeds the rated load.
4. Before you connect the cable, install or uninstall, or begin the daily maintenance work, please turn off the power and unplug the power cable.
5. Please make sure the produce is secure firmly on the wall or the ceiling.
6. Please turn off the power and unplug the power cable, If there is any smoke, disgusting smell, or noise. Please contact your local retailer or customer service centre for help.

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7. All the examination and repair work should be done by the qualified service engineers. We are not liable for any problems caused by unauthorized modifications or attempted repair.

## Note

### 1. Safety Transportation

- Heavy stress, violent vibration or water splash are not allowed during transportation, storage and installation.
- This series product must use split type package during the transportation.
- We are not liable for any damage or problem resulting from the integrated package during the transportation.

### 2. When device is malfunction

Shut down the device and disconnect the power cable immediately if there is smoke, abnormal smell or abnormal function. Please contact your local retailer ASAP.

### 3. Do not try to dismantle or modify the device

- There is risk of personal injury or device damage resulting from opening the shell.
- Please contact your local retailer if there is internal setup or maintenance requirement.
- We are not liable for any problems caused by unauthorized modifications or attempted repair.

### 4. Do not allow other object falling into the device

- Please make sure there is no metal or inflammable, explosive substance in the speed dome.
- The above mentioned objects in the device may result in fire, short-circuit or damage.
- Please shut down the device and disconnect the power cable if there is water or liquid falling into the camera. Please contact your local retailer ASAP.
- Please pay attention to the camera. Avoid the sea water or rain to erode the camera.

### 5. Handle carefully

Do not allow this series product fall down to the ground.  
Avoid heavy vibration.

### 6. Installation Environment Requirement

- This series speed dome should be installed in a cool, dry place away from direct sunlight, inflammable, explosive substances and etc.
- This series product shall be away from the strong electromagnetism radiant, please keep it away from wireless power, TV transmitter, transformer and etc.

### 7. Daily Maintenance

- Please use the soft cloth to clean dust on the shell, or you can use soft cloth with cleaning liquid to clean the shell and then use soft cloth to make it dry.

- 
- Do not use gasoline, dope thinner or other chemical material to clean the shell. It may result in shell transfiguration or paint flake.
  - Do not allow the plastic or rubber material to touch the shell for a long time. It may result in paint flake.

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# 1 INTELLIGENT SPEED DOME INSTALLATION

## 1.1 Installation Preparation

### Basic Requirement

- All installation and operation here should conform to your local electrical safety codes.
- Before installation, please open the package and check all the components are included. Please make sure the speed dome installation environment and installation mode can meet your requirement. If there is special requirement, please contact your local retailer for more information.
- We assume no liability or responsibility for all the fires or electrical shock caused by improper handling or installation.

### Check installation space and installation location intension

Please make sure the installation environment has enough space to install the speed dome and its corresponding bracket.

Please make sure the ceiling, wall and the bracket can support the speed dome and its corresponding installation component. It shall sustain the 8X weight of the speed dome.

### About cable

Please select the cable according to your transmission distance.

The minimum video coaxial-cable requirement is:

- 75 ohm.
- Full cable with copper conductor
- 95% knitted copper shield

International Model	Max Distance (Ft\M)
RG59/U	750Ft (229M)
RG6/U	1,000Ft (305M)
RG11/U	1,500Ft (457M)

Note: The above can be applied to analog speed dome and network speed dome

International Model	Max Distance (M\Ft)
SYV-75-3	720P (25fps\30fps): 500M/1640Ft
	720P (50fps\60fps): 300M/984Ft
	1080P (25fps\30fps):300M/984Ft

Note: The above can be applied to HDCVI speed dome

### Set dial switch button

Set dial switch button according to control protocol and speed dome address. (Please refer to user's manual for detailed information.)

### Please keep all package material well for future use

Please keep speed dome package material well in case you need to send it back to your local retailer or manufacturer for maintenance work.

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Non-original package material may result in device damage during the transportation.

## Check Accessories

Before the installation, please check the accessories one by one according to the packing list. Please make sure all the components listed are included.

## 1.2 Initial Setup

The default setup is:

- Address: 1
- Baud rate: 9600
- Parity: none
- 120Ω matched resistance: OFF

## 1.3 Dial Switch Setup (For Analog Speed Dome, HDCVI Speed Dome)

### 1.3.1 Dial Switch Description

Before you control the speed dome, please set the address, baud rate and parity first so that the speed dome can has response to the control command. See Figure 1-1.

▲Note :

Open the transparent enclosure of the speed dome; you can see the dial switch button on the PTZ main board. Please follow the steps listed below to set the baud rate, address, parity and etc. After some related information has been reset, users have to cut the power and reboot the speed dome to activate new setup!

SW2, SW3 are the two dial switches on the PTZ of the speed dome which are used to confirm the parameters such as the address, Baud rate and parity. When the button is ON, it is 1. For SW2 dial switch, 1 is the lowest bit and the 8 is the highest bit. For SW3, 1 is the lowest bit and 4 is the highest bit. (Intelligent speed dome self-adapt PELCO-D, PELCO-P, industry standard protocol, there is no need to pass dial switch setup for the control protocol).

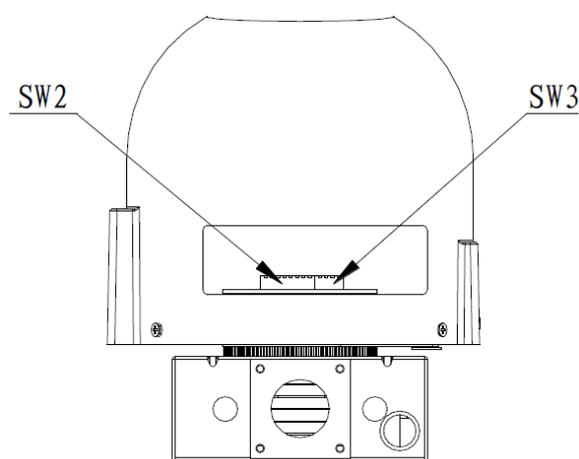


Figure 1-1

### 1.3.2 Baud Rate and Parity

The dial switch SW3 is to set speed dome baud rate and parity. It ranges from 1 to 4. The 1<sup>st</sup> and the 2<sup>nd</sup> are to set baud rate. The 3<sup>rd</sup> and the 4<sup>th</sup> are to set parity. See Figure 1-2.

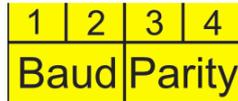


Figure 1-2

Please refer to the baud rate sheet for detailed information.

1	2	Baud Rate
OFF	OFF	9600bps
ON	OFF	4800bps
OFF	ON	2400bps
ON	ON	1200bps

Please refer to the parity setup sheet for detailed information.

3	4	Parity
OFF	OFF	NONE
ON	OFF	EVEN
OFF	ON	ODD
ON	ON	NONE

### 1.3.3 Address Setup

Please refer to Figure 1-3 for SW2 address setup. The speed dome use dial switch to set address number, encode mode adopts binary coding. Bit 1-8 is valid bit; the highest address bit is 255.

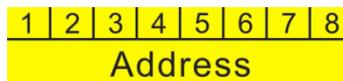


Figure 1-3

You can refer to the following sheet for more information.

Address	1	2	3	4	5	6	7	8
1	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1	ON	OFF						
2	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
3	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
4	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF
5	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF
6	OFF	ON	ON	OFF	OFF	OFF	OFF	OFF
7	ON	ON	ON	OFF	OFF	OFF	OFF	OFF
8	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF
.....	.....							
254	OFF	ON						

255	ON							
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### 1.3.4 Terminal Matching Resistance Setup

There is terminal resistance 120Ω on the power board. There are two connection modes: See Figure 1-4.

	1-2	2-3
120Ω	ON	OFF

Figure 1-4

The factory default connection mode is shown as in Figure 1-5. Right now, the jumper on the power board (Connection board) is on the pin 2 and pin 3. The 120Ω resistance does not connect to the device.

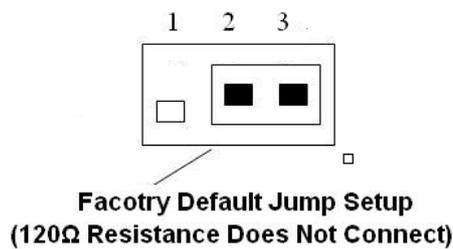


Figure 1-5

If you want to connect the 120Ω resistance, please remove the jumper from the pin 2 and pin 3 and connect to pin 1 and pin 2. Now the 120Ω is connected to the circuit. See Figure 1-6.

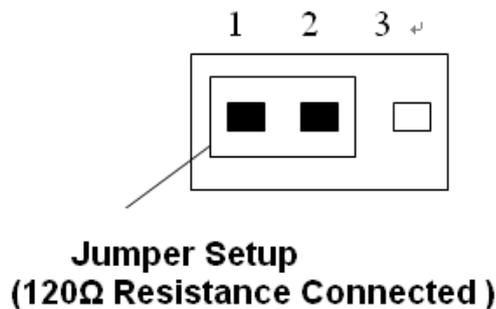


Figure 1-6

## 1.4 Reset and SD Card Installation (Network Speed Dome)

After opening the speed dome, you can see there is a reset button and Micro-SD card on the PTZ mainboard, see Figure 1-7 for more details. Reset button can be used to restore network system and Micro-SD card can be used for data storage.

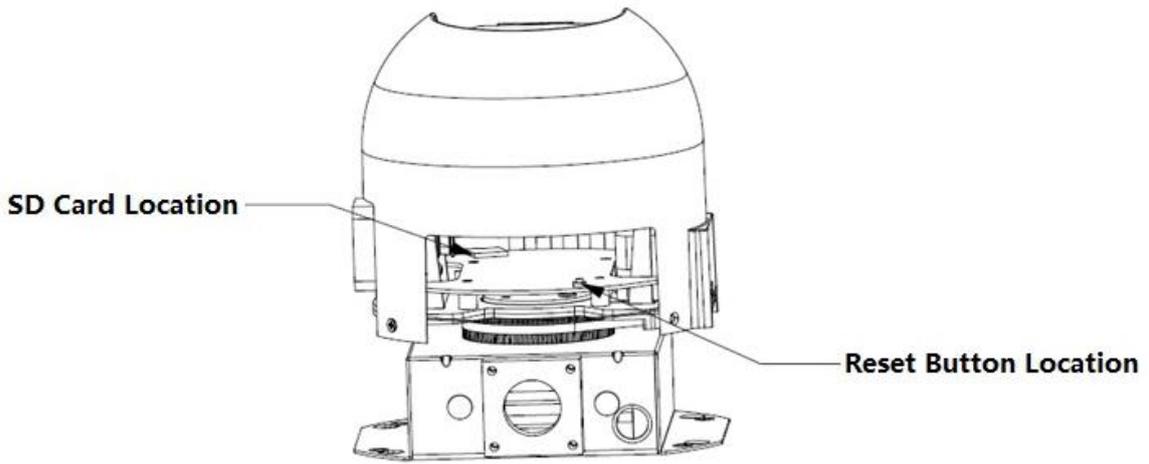


Figure 1-7

SD card of network speed dome should be installed on the module, see Figure 108 for more details.

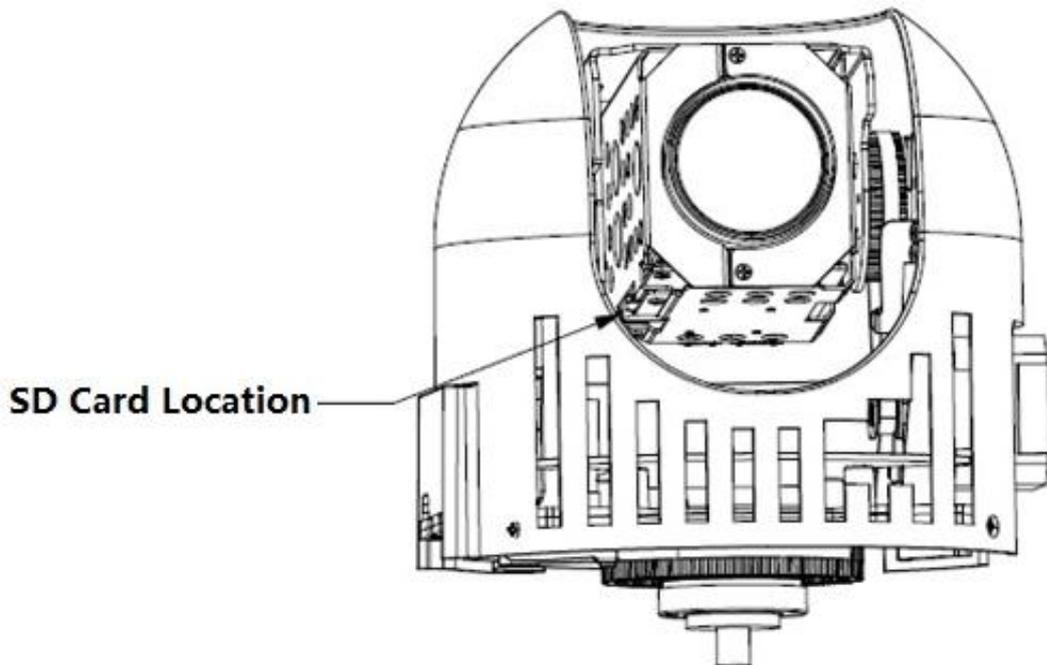


Figure 1-8

Note:

Please contact the technical support of our company if you have any questions.

## 1.5 Installation

Installation here includes intelligent analog speed dome, intelligent network speed dome, intelligent auto-tracking speed dome and etc.

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The speed dome has several types of installation brackets. You can refer to the chapter 3 to chapter 5 for detailed information. Here we are going to install the speed dome in wall mount bracket.

Step 1 Remove the package and then take out the device.

Step 2 Open the transparent cover and take out the EPE around the speed dome driver. Please remove the protective paster from the driver and take off the camera lens cap. See Figure 1-9.

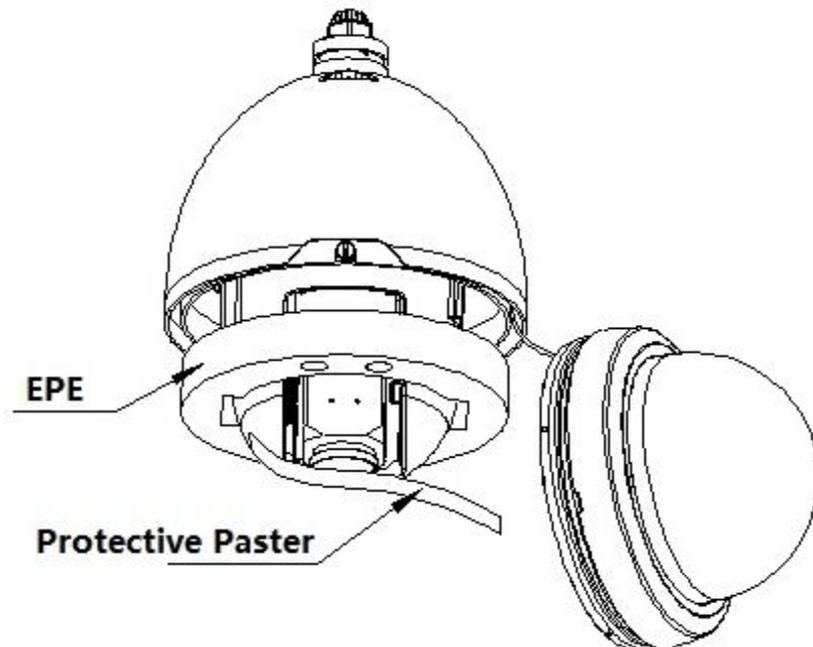


Figure 1-9

Step 3 Set Dial Switch of Intelligent Speed Dome (Analog Speed Dome)

Set the parameters of intelligent speed dome address, Baud rate and so on. There are SW2 and SW3 two dial switches on the PTZ, which are used to set the parameters of address, Baud rate and so on, see Figure 1-10 for more details, and see “1.3 Dial Switch Setup (For Analog Speed Dome, HDCVI Speed Dome) for the way to set.

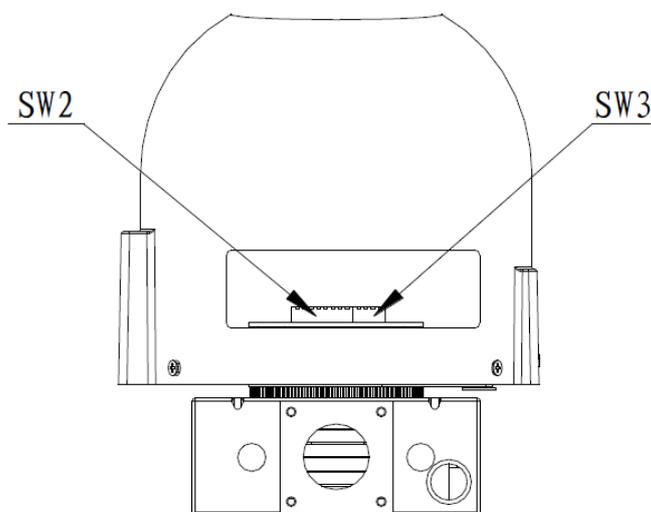


Figure 1-10

Step 4 Install the Transparent Cover

1. Please note you need to check the steel wire of the bracket is firmly secure or not.
2. Please line up the captive screws to the quadrate groove of the bracket and then push the bracket into the internal enclosure. Fix these two captive screws. See Figure 1-11.

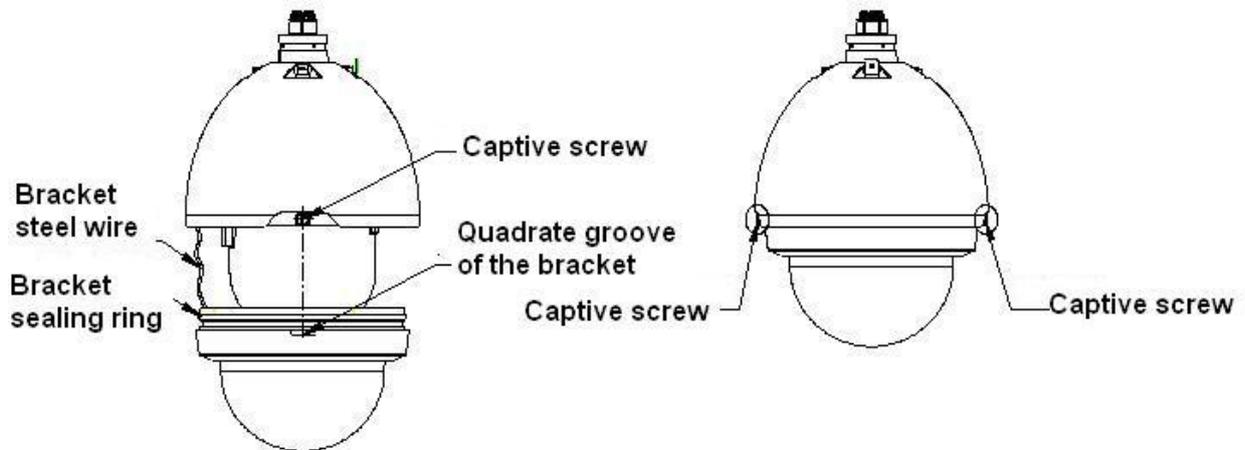


Figure 1-11

#### Step 5 Wall Mount Bracket Installation

1. Pull the composition cable of the intelligent speed through the other end of the wall mount bracket via the end of column of the wall mount bracket. See Figure 1-12.
2. Line up the straight line marginal of the wall mount bracket to the straight line marginal of the internal enclosure of the intelligent speed dome. Push the intelligent speed dome to the wall mount bracket along the straight line marginal. See Figure 1-12.

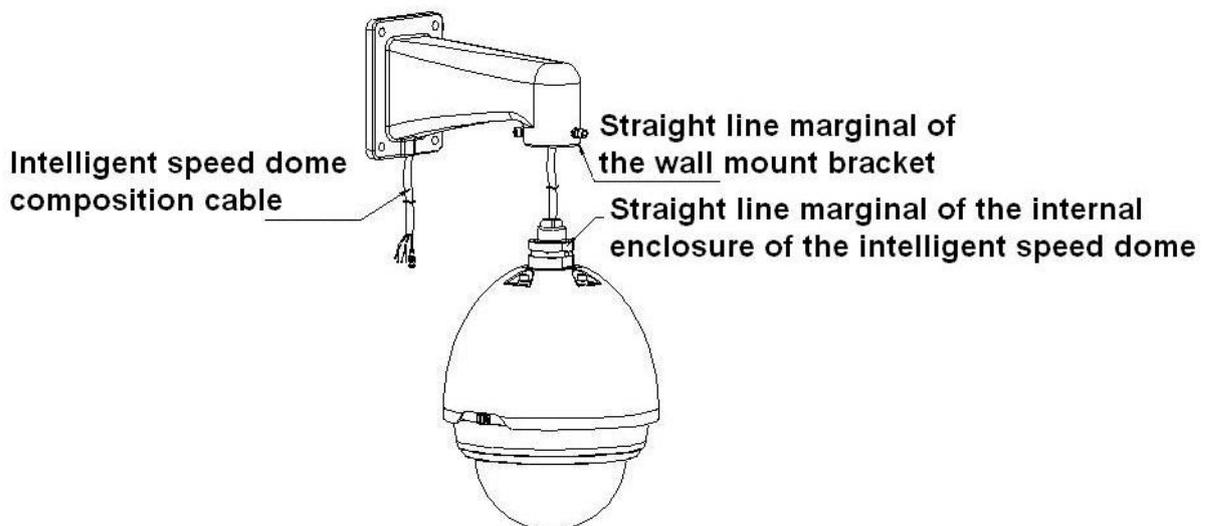


Figure 1-12

3. Use the hex wrench to turn the M6\*16 inner hex stainless screw of the wall mount bracket to the  $\Phi 6.5$  round hole bottom of straight line marginal of speed dome internal enclosure. Please note, the step here is very important. Please make sure the screw is completely turned into the bottom of the  $\Phi 6.5$  round hole. Otherwise there is falling risk of intelligent speed. See Figure 13 and 14 for more details.

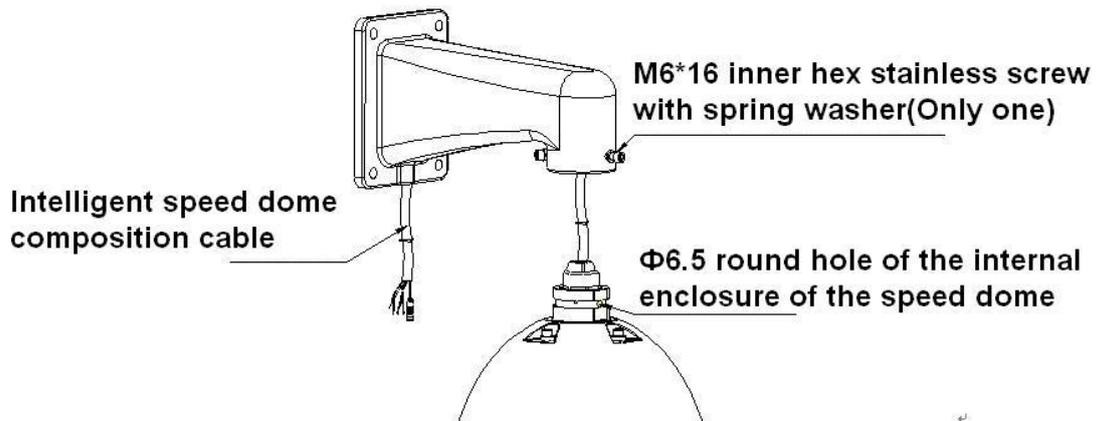


Figure 1-13

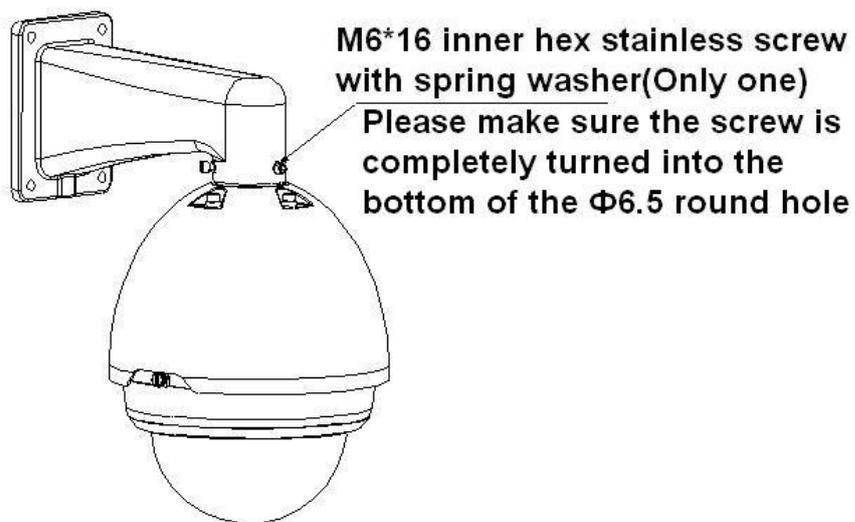


Figure 1-14

4. Use the hex wrench to fix the other two M6\*10 inner hex stainless screws (with spring washer) of the bracket to secure the speed dome. See Figure 1-15.



Figure 1-15

5. After the installation; please use the hex wrench to secure the three M6 stainless screws. Please make sure these three M6 stainless screws are firm so that it can secure the speed dome on the wall mount bracket. Otherwise there is falling risk of the speed dome if these three screws are not in the proper position.

#### Step 6 Secure the Speed Dome

Please select the installation wall. Please make sure the wall is thick enough to install the expansion bolt. Please refer to chapter 3 for detailed information.

Note:

The wall can at least sustain the 8x weight of the speed dome, bracket and other accessories.

#### Step 7 Cable Connection

Connect the reserved integration cable of the intelligent speed dome to the corresponding power cable, video output cable, RS485 control cable, alarm input/output port(if necessary) of the multiple-function composite cable of the quick installation speed dome. Paste the insulating tape in the connection position to do the proper waterproof work.

Note:

The video port is covered the heat shrink tube of high shrinking ratio. After the video connection, please heat the tube to make sure the video port is damp proof and water proof.

Step 8 The installation of speed dome is completed, see Figure 1-16 for more details.

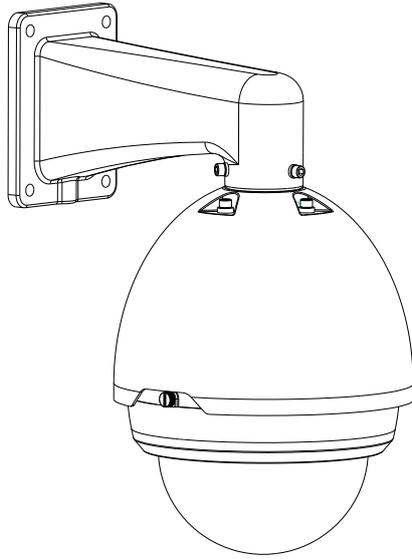


Figure 1-16

## 2 BRACKET DIMENSIONS

### 2.1 Wall Mount Bracket

The wall mount bracket dimensions are shown as below. The unit is mm. See Figure 2-1.

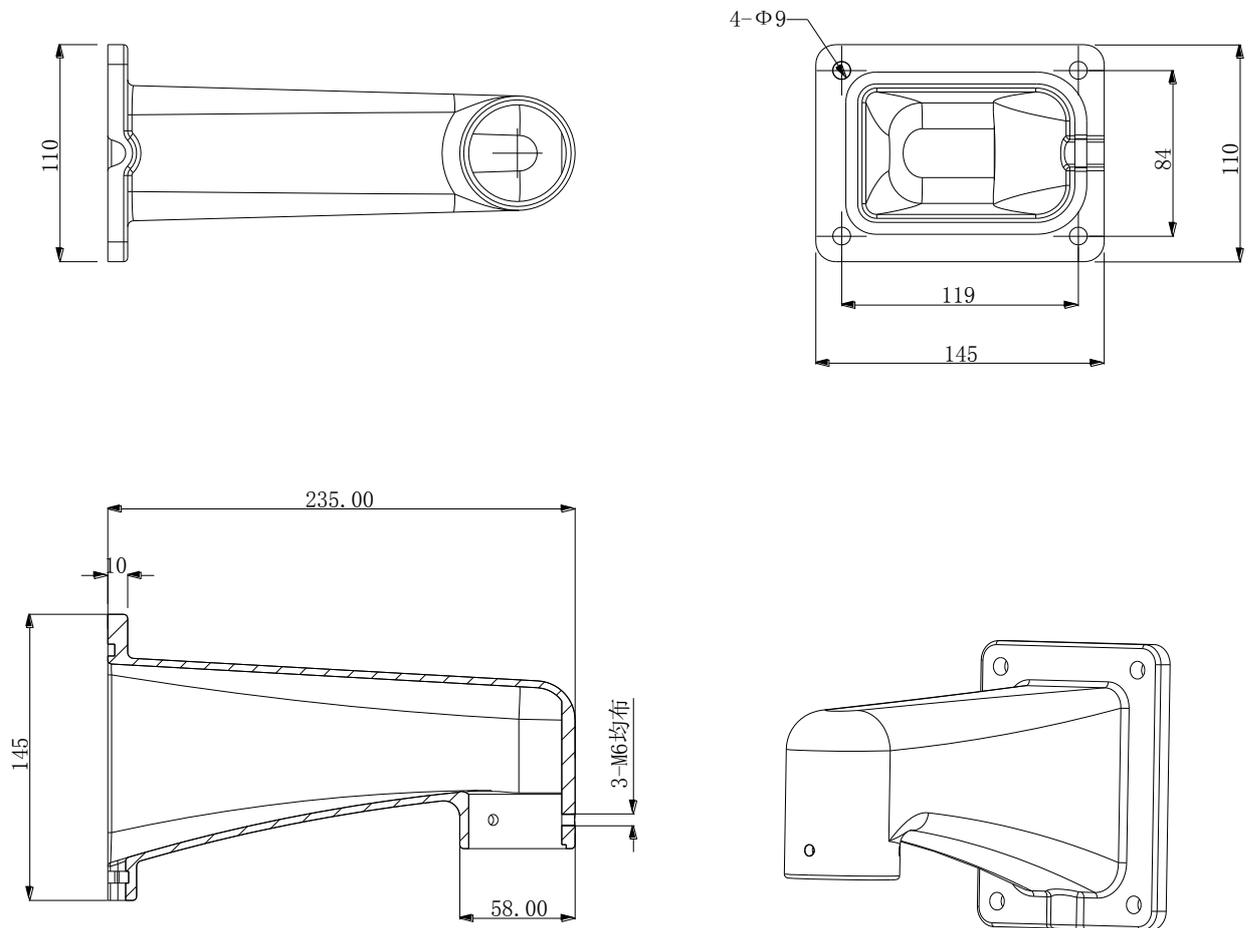


Figure 2-1

### 2.2 Corner Mount Bracket

The corner mount bracket is shown as below. The unit is mm. See Figure 2-2.

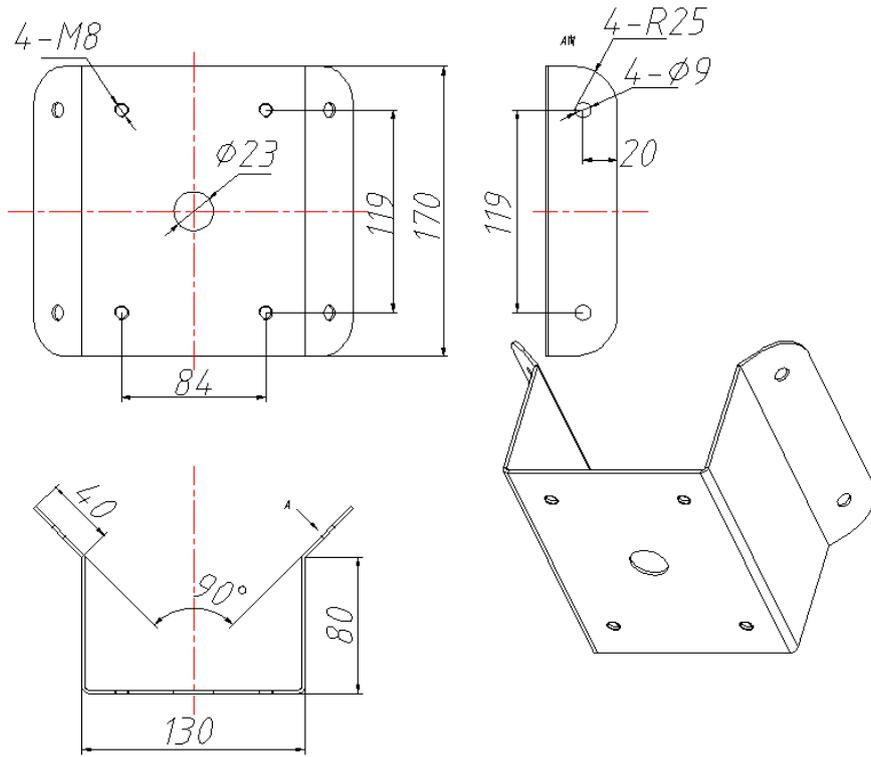


Figure 2-2

### 2.3 Pole Mount Bracket

The corner mount bracket is shown as below. The unit is mm. See Figure 2-3.

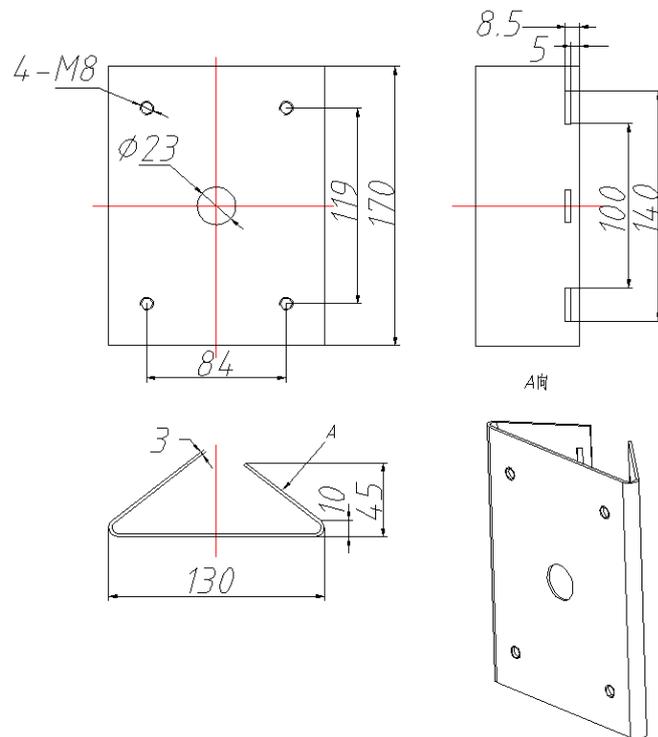


Figure 2-3

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## 3 WALL MOUNT BRACKET INSTALLATION

### 3.1 Component Installation

Wall mount bracket is shown as below. See Figure 3-1.

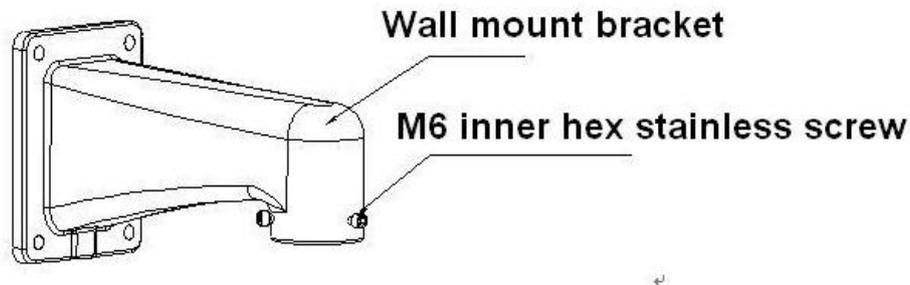


Figure 3-1

### 3.2 Installation

#### 3.2.1 Installation Requirements

The wall mount speed dome can be installed in the hard construction wall in the indoor or outdoor environments. Before the installation, please make sure:

- The wall is thick enough to install the expansion bolt.
- The wall can at least sustain the 8x weight of the speed dome.

#### 3.2.2 Installation Steps

1). Please draw four holes position in the wall according to the hole of the bottom of the wall mount bracket. Then you can dig four holes and insert the expansion bolts (not provided). Use four hex bolts and flat washer to fix the bracket in the expansion bolts. See Figure 3-2.

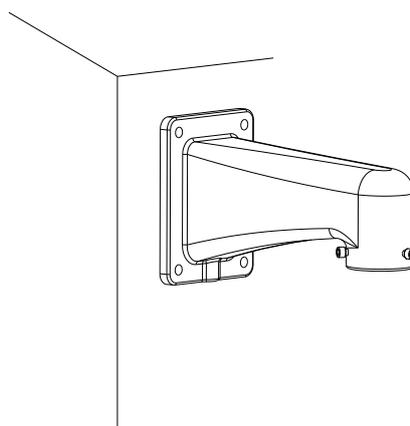


Figure 3-2

2). Install the speed dome in the bracket. Please refer to chapter 1.5 for detailed installation information. See Figure 3-3.

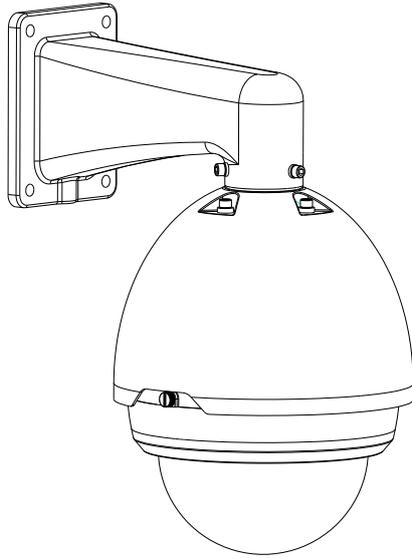


Figure 3-3

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## 4 CORNER MOUNT BRACKET INSTALLATION

### 4.1 Component Installation

Corner mount bracket and its components are shown as below. See Figure 4-1.

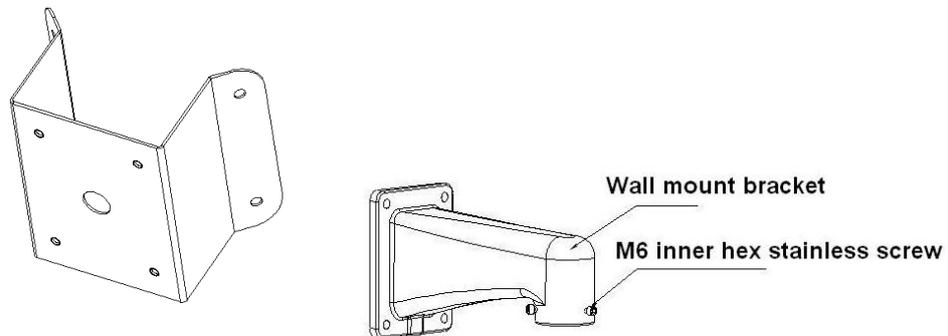


Figure 4-1

### 4.2 Installation

#### 4.2.1 Installation Requirements

The corner mount speed dome can be installed in the hard construction wall in the indoor or outdoor environments where there is a 90 degrees angle. Before the installation, please make sure:

- The wall is thick enough to install the expansion bolt.
- The wall can at least sustain the 8x weight of the speed dome.

#### 4.2.2 Installation Steps

1). Please draw four holes position in the wall according to the holes of the corner installation accessories. See Figure 4-2.

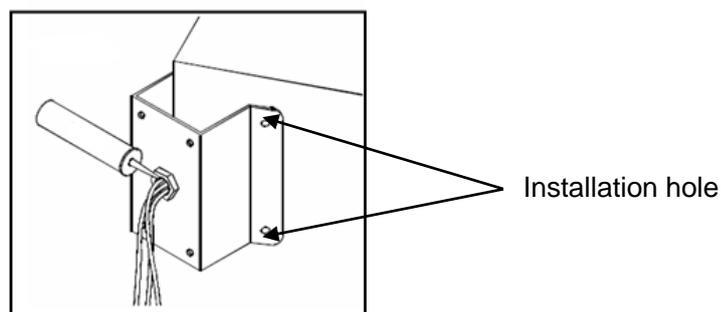


Figure 4-2

Then you can dig four holes and insert the M8 expansion bolts. Pull the power cable, video/control cable and the alarm cable (Please connect if necessary) through the centre hole of the bottom of the corner bracket, the waterproof adhesive, and the centre of the bracket. Please reserve the enough cable connection length and then use the M8 expansion bolt to secure the corner mount bracket chassis on the wall.

2). Please refer to chapter 1.5 for detailed installation information. See Figure 4-3.

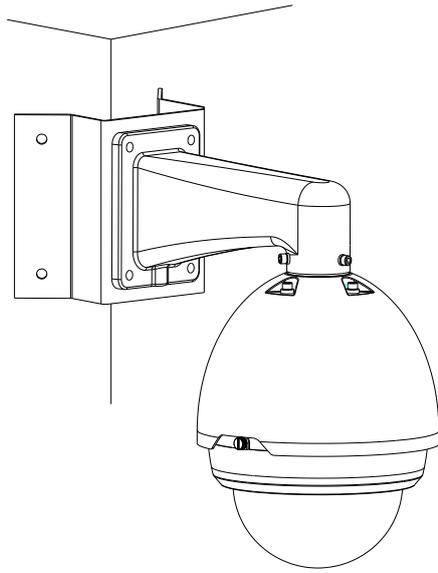


Figure 4-3

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## 5 POLE MOUNT BRACKET INSTALLATION

### 5.1 Installation Components

Pole mount bracket and its components are shown as below. See Figure 5-1.

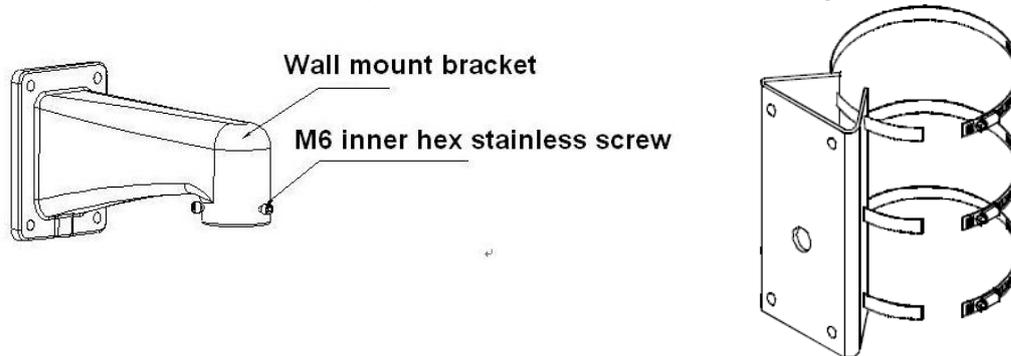


Figure 5-1

### 5.2 Installation

#### 5.2.1 Installation Requirements

The corner mount speed dome can be installed in the hard construction wall in the indoor or outdoor environments.

Before the installation, please make sure the pole bracket can sustain the 8X weight of the speed dome.

1). The diameter of the pole structure shall comply with the installation dimension of the clamp.

Default factory clamp is six inches for the column of  $\phi 130-152\text{mm}$ . It can work with the pole

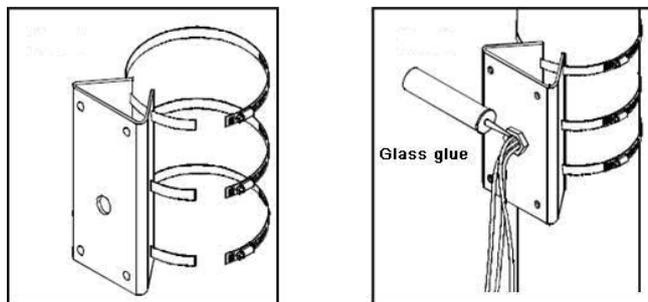
installation bracket. You can adjust the diameter and the value (clamp specification) is :  $\phi 59-$

$82\text{mm}$ ,  $\phi 84-108\text{mm}$ ,  $\phi 103-127\text{mm}$ ,  $\phi 130-152\text{mm}$ ,  $\phi 155-178\text{mm}$ ,  $\phi 180-203\text{mm}$ ,  $\phi 194-216\text{mm}$ .

#### 5.2.2 Installation Steps

Step 1 Please refer to Figure 5-2 to install clamp and pole bracket.

Pull the cable out of the pole accessories and then use clamp to fix the pole accessories to the pole. Finally, you can use glass cement to the output hole to secure waterproof.



Clamp and pole bracket connection

Pole bracket and the pole connection

Figure 5-2

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Step 2 Please refer to chapter 1.5 for detailed installation information. See Figure 5-3 for the complete installation of Speed dome.

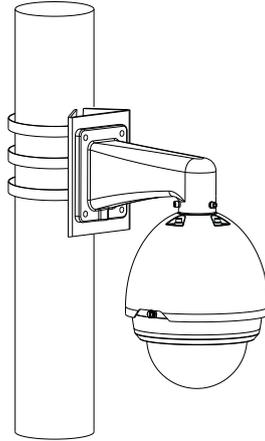


Figure 5-3

## 6 APPENDIX I THUNDER PROOF AND SURGE PROTECTION

This series speed dome adopts TVS lighting protection technology. It can effectively prevent damages from various pulse signals below 1500W, such as sudden lighting and surge. While maintaining your local electrical safety code, you still need to take necessary precaution measures when installing the speed dome in the outdoor environment.

- The distance between the signal transmission cable and high-voltage device (or high-voltage cable) shall be at least 50 meters.
- Outdoor cable layout shall go under the penthouse if possible.
- For vast land, please use sealing steel tube under the land to implement cable layout and connects one point to the earth. Open floor cable layout is forbidden.
- In area of strong thunderstorm hit or near high sensitive voltage (such as near high-voltage transformer substation), you need to install additional high-power thunder protection device or lightning rod.
- The thunder protection and earth of the outdoor device and cable shall be considered in the building whole thunder protection and conform to your local national or industry standard.
- System shall adopt equal-potential wiring. The earth device shall meet anti-jamming and at the same time conforms to your local electrical safety code. The earth device shall not short circuit to N (neutral) line of high voltage power grid or mixed with other wires. When connect the system to the earth alone, the earth resistance shall not be more than  $4\Omega$  and earth cable cross-sectional area shall below  $25\text{ mm}^2$ . See Figure 6-1.

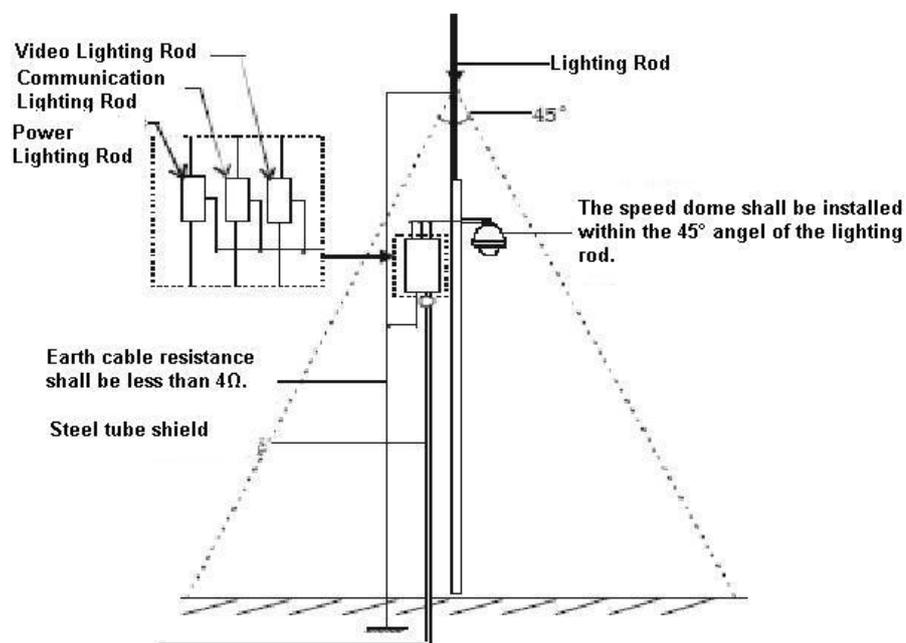


Figure 6-1

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## 7 APPENDIX II ABOUT RS485 BUS

### 7.1 RS485 Bus Main Feature

RS485 is semi duplex communication cable of impedance  $120\Omega$  . Its max load amount is 32 effective loads (including main control device and devices to be charged).

### 7.2 RS485 Bus Transmission Distance

When we take 0.56mm (24AWG) twisted-pair as communication cable, the max transmission distance (theoretically) are listed below (according to different baud rates).

Baud Rate	Max Distance
2400 BPS	1800M
4800 BPS	1200M
9600 BPS	800M

In the following situations, the max transmission distance shall become shorter accordingly:

- The communication cable is a little bit thin;
- The surrounding environment has strong electromagnetic interference;
- There are too much devices connected to the RS485 bus;

And vice versa, the max transmission distance shall become longer.

### 7.3 The Problem in Practical Use

In practical usage, we usually adopt star type connection. The terminal resistance shall connect to the furthest two devices (Such as device 1# and device 15# in Figure 7-1 ). But this connection way does not conform to RS485 Bus standard. When the distances between devices are too long, the signal reflection occurs and anti-jamming decreases, thus the signal reliability becomes very low. You can see speed dome is not under control or speed dome is running automatically and can not stop.

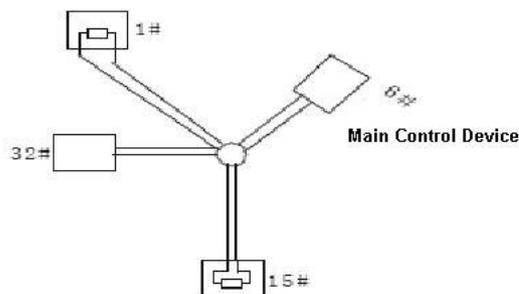


Figure 7-1

In this situation, we recommend RS485 distributor. This device can turn star type connection into the connection that conforms to RS485 bus industry standard, which can avoid the above mentioned problems and enhance communication reliability. See Figure 7-2.

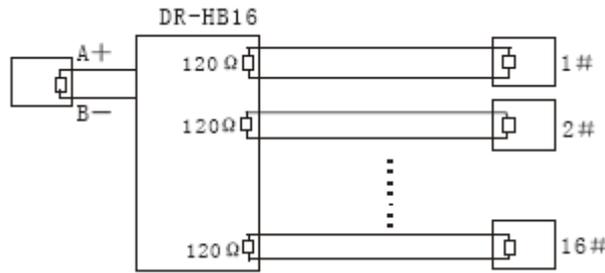


Figure 7-2

## 7.4 RS485 Bus FAQ

Phenomenon	Possible Reasons	Solution
Speed dome can run self-diagnosis but I can not control it.	<ul style="list-style-type: none"> <li>● Host address(baud rate) and speed dome address(baud rate) are not match;</li> <li>● Positive and negative end of RS485 Bus are misconnected;</li> <li>● Connection cable is loose;</li> <li>● RS485 Bus connection are cut off;</li> </ul>	<ul style="list-style-type: none"> <li>● Modify host or speed dome setup ;</li> <li>● Switch RS485 positive end and negative end;</li> <li>● Fix connection cable firmly;</li> <li>● Replace RS485 Bus.</li> </ul>
I can control the speed dome but is not smooth	<ul style="list-style-type: none"> <li>● RS485 Bus connection are not good;</li> <li>● One RS485 bus is off;</li> <li>● The distance between host and speed dome is too far;</li> <li>● Parallel connected too much speed domes.</li> </ul>	<ul style="list-style-type: none"> <li>● Connect RS 485 Bus again;</li> <li>● Replace RS485 Bus;</li> <li>● Add terminal matching resistance;</li> <li>● Add RS485 distributor.</li> </ul>

### Note

- This manual is for reference only. Slight difference may be found in the user interface.
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