

High-Speed Positioning System Installation Manual

Version 1.1.0

Table of Contents

1	HIGH-SPEED POSITIONING SYSTEM INSTALLATION	1
1.1	Installation Preparation	1
1.2	Initial Setup	2
1.3	Dial Switch Setup (Analog PTZ)	2
1.3.1	Dial switch Instruction	2
1.3.2	Protocol Setup	3
1.4	Reset and SD card installation (Network PTZ)	3
1.5	IR Light Installation (Optional)	6
1.5.1	Fix IR light bracket	6
1.5.2	Fix IR Light	7
1.5.3	Power cable Connection	7
1.6	PTZ Pole Mount	8
1.6.1	Installation Environment	8
1.6.2	PTZ Installation	8
1.7	Wall Mount PTZ Installation	9
1.7.1	Installation Environments	9
1.7.2	Dig installation holes	10
1.7.3	PTZ Installation	10
2	BRACKET DIMENSIONS	12
2.1	PTZ Pedestal	12
2.2	Pole Mount Pedestal	12
2.3	Wall Mount Bracket	13

3	APPENDIX I THUNDER PROOF AND SURGE PROTECTION	14
4	APPENDIX II ABOUT RS485 BUS	15
4.1	RS485 Bus Main Feature	15
4.2	RS485 Bus Transmission Distance	15
4.3	The Problem in Practical Use	15
4.4	RS485 Bus FAQ	16
5	APPENDIX III THE RELATIONSHIP BETWEEN THE 24V AC CABLE DIAMETER AND THE TRANSMISSION DISTANCE.....	17
6	APPENDIX IV WIRE GAUGE REFERENCE SHEET	18

Welcome

Thank you for purchasing our high-speed positioning system!

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

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 and corresponding working experience.
- The installation engineer or maintenance engineer shall have qualification certificate for work at height and corresponding working experience.
- 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 high-speed positioning system 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 systems 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.
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 system.
- 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 system. 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 high-speed positioning system 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.

1 HIGH-SPEED POSITIONING SYSTEM 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 high-speed positioning system 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 high-speed positioning system and its corresponding bracket.

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

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)

Set dial switch button

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

Please keep all package material well for future use

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

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 includes.

1.2 Initial Setup

The default setup is:

Protocol: PELCO-D

Address: 1.

Baud rate: 9600.

Parity: None

1.3 Dial Switch Setup (Analog PTZ)

1.3.1 Dial switch Instruction

Open dial switch cover you can see dial switch buttons. See Figure 1-1.

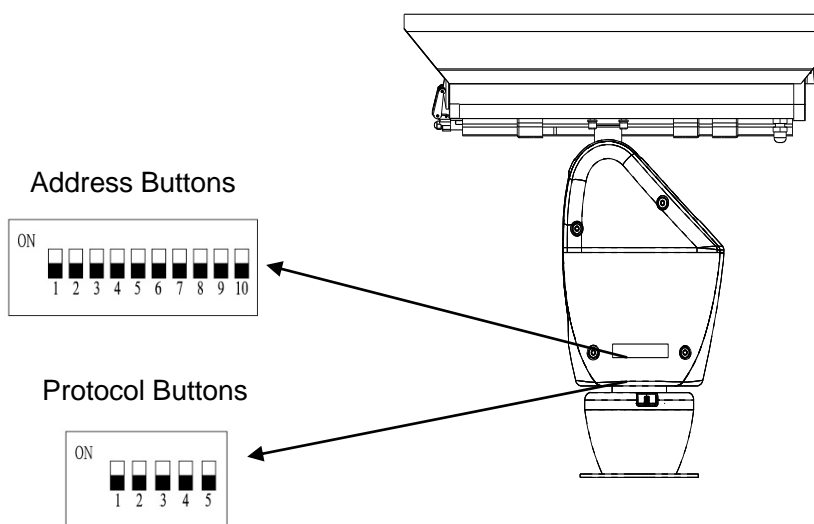


Figure 1-1

You can use 9-button dial switch to set PTZ address. See Figure 1-2.

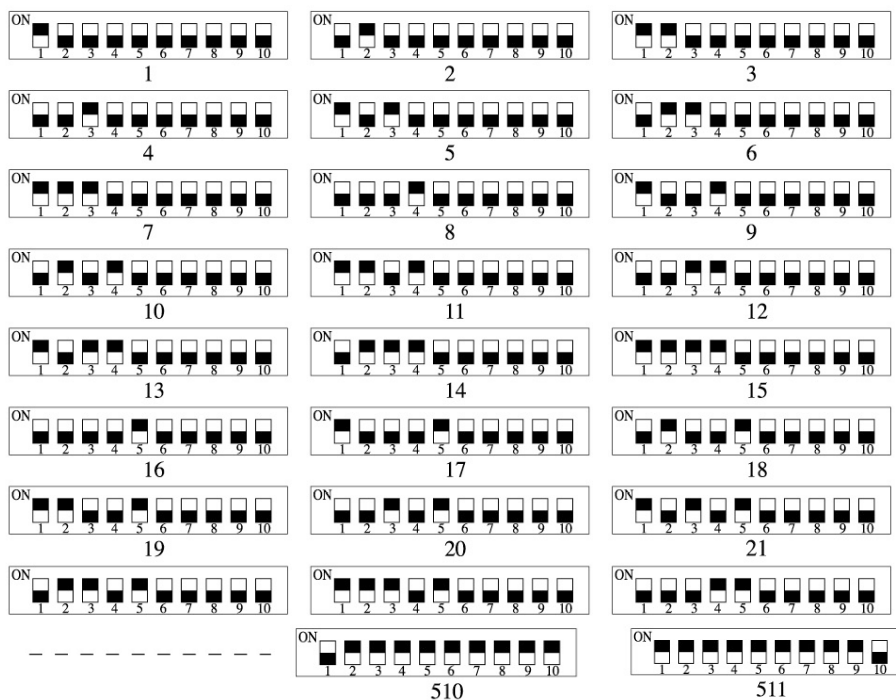


Figure 1-2

Important

The control cable can parallel connect several systems, but the 10th of the farthest one need to connect to the ON position to connect to 120Ω.

The 10th button is on and the rest buttons can set according to your address number. See Figure 1-3

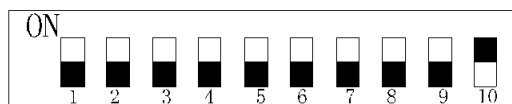


Figure 1-3

1.3.2 Protocol Setup

You can use a 5-button dial switch to set protocol. See Figure 1-4.

Important

Before the protocol setup, please shut down the device!

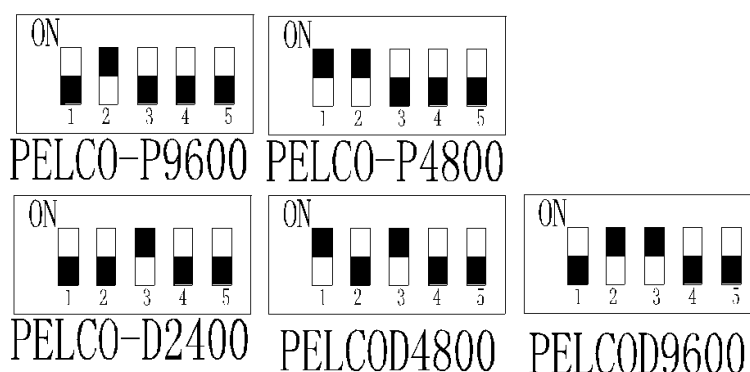
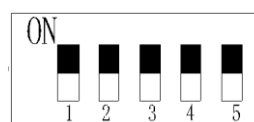


Figure 1-4

1.4 Reset and SD card installation (Network PTZ)

In the PTZ enclosure, there is a network camera. Open the enclosure, remove the four screws on the fixing board, you can see there are reset button (RESET) and Micro-SD card on the rear panel. RESET button is to restore system setup, and Micro-SD card is to save data. See Figure 1-5.

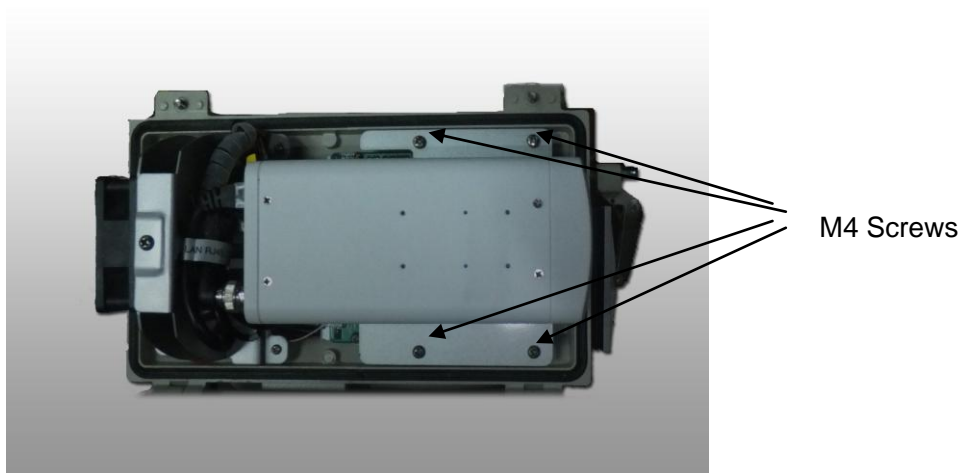


Figure 1-5

SD card installation interface is shown as below. See Figure 1-6.

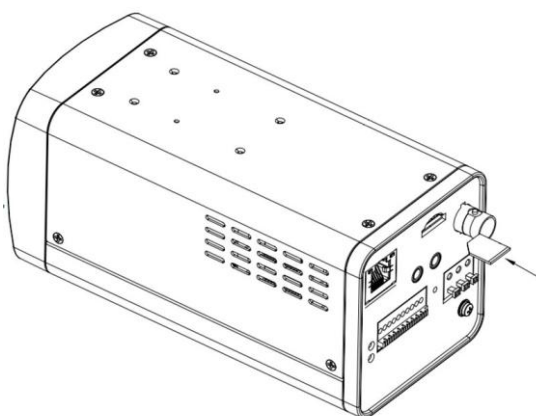


Figure 1-6

The rear panel is shown as below. See Figure 1-7.

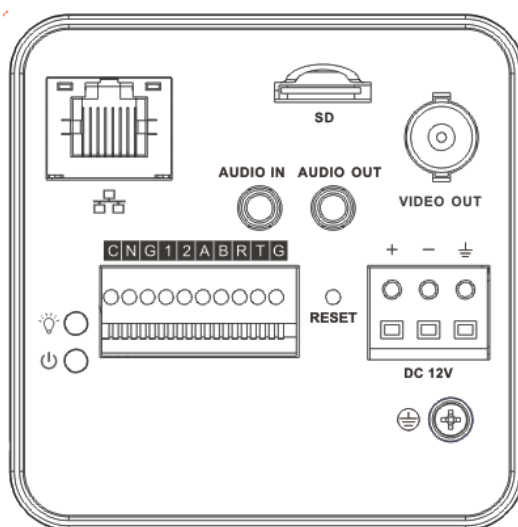


Figure 1-7

For special network block camera SD card installation, please refer to the steps listed below.

Important

Please note, the following operation is for professional engineer only. We are not liable for any problem resulting from the unauthorized operation.

- a) Refer to Figure 1-8 to remove the screws.

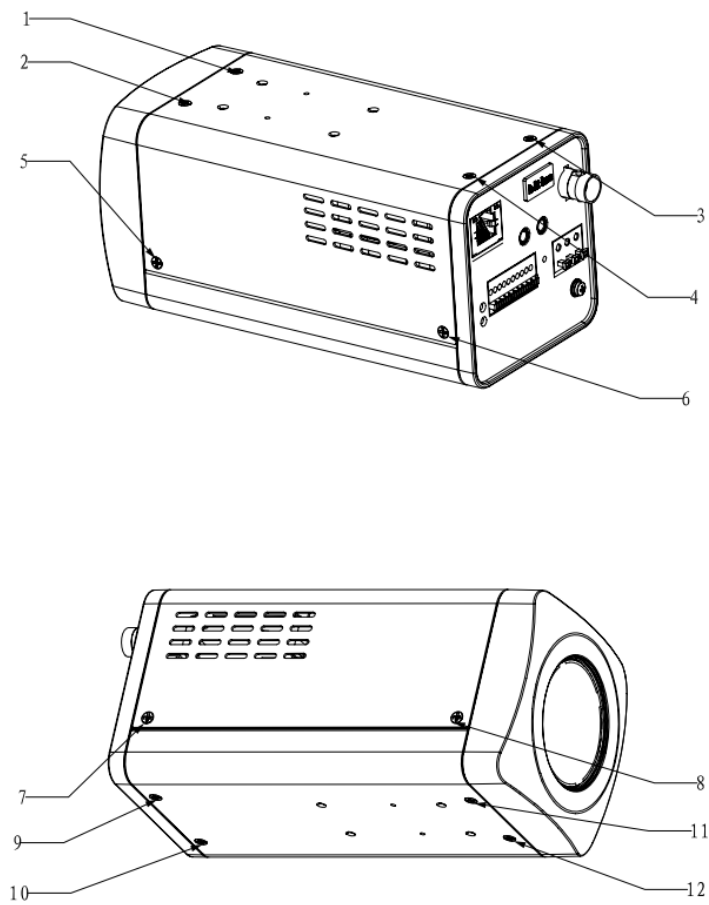


Figure 1-8

- b) Refer to Figure 1-9.to open the cover.

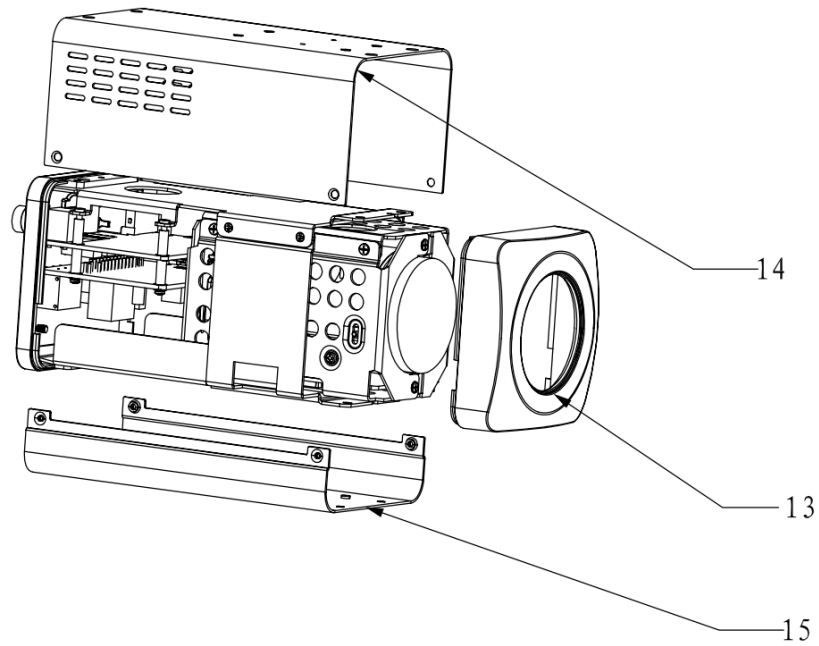


Figure 1-9

c) Take or remove SD card. See Figure 1-10.

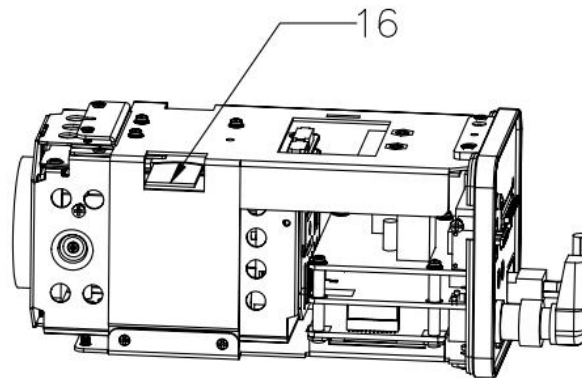


Figure 1-10

d) Follow the reverse sequence to uninstall/install the screws and covers back.

1.5 IR Light Installation (Optional)

1.5.1 Fix IR light bracket

Use the four M5*12 inner hex screws with spring washer (provided) to fix the IR light bracket on both sides of the enclosure. See Figure 1-11.



Figure 1-11

1.5.2 Fix IR Light

Use two M6*16 hex screws with spring washer (provided) to fix the two IR lights on the bracket. Please pay attention to the IR light direction. See Figure 1-12.

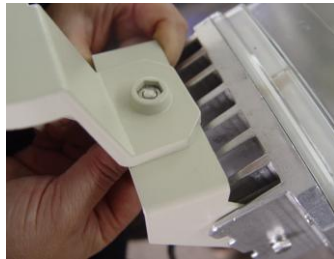


Figure 1-12

1.5.3 Power cable Connection

Put the power cable waterproof plug to the IR light socket. See Figure 1-13.



Figure 1-13

Use cable cover plate to press the cable firmly. For the end near the IR light, you can use the ribbon to secure the cable. See Figure 1-14.



Figure 1-14

Adjust the IR light top/bottom/left/right position and then secure the top/down/left/right adjusting screws. See Figure 1-15.



Figure 1-15

Important

After you installed the PTZ, please make sure you have installed IR light waterproof plug. Otherwise, it may result in IR light water leakage.

1.6 PTZ Pole Mount

PTZ has several brackets to meet various installation requirements. Please refer to the following contents to install the PTZ. Now we are going to install pole mount PTZ.

1.6.1 Installation Environment

Pole mount PTZ can be used for indoor/outdoor pole bracket structure.

The holes of the pole mount bracket can work with the holes of the PTZ pedestal.

The pole mount bracket can min sustain 4X weigh of the PTZ.

1.6.2 PTZ Installation

Step 1: Connect PTZ and bracket

Connect the cable through pole mount bracket, line up the screw of the PTZ pedestal to the holes of the pole mount bracket. Use screws to fix the PTZ firmly. See Figure 1-16.

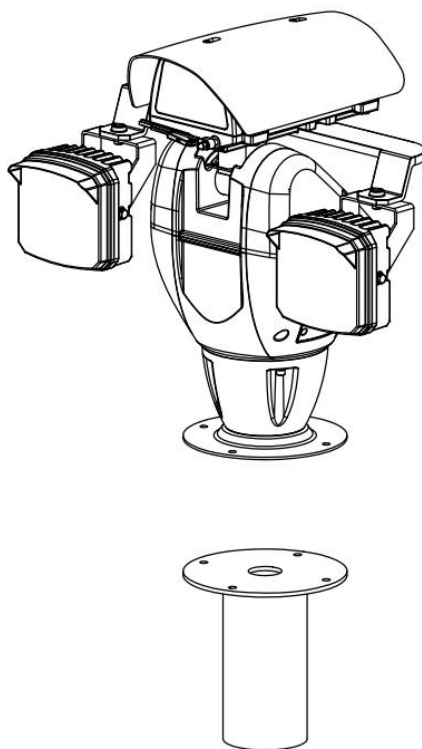


Figure 1-16

Step 2: Cable Connection

Important

The following cable connection shall be done with professional technical engineer or the installation engineer. All the operations here shall conform to your local regulations.

Slight difference may be found on the cables.

Please refer to Figure 1-17 to connect network cable, power cable (RS485, video, alarm, audio are optional.) to the port of the cable terminal box.

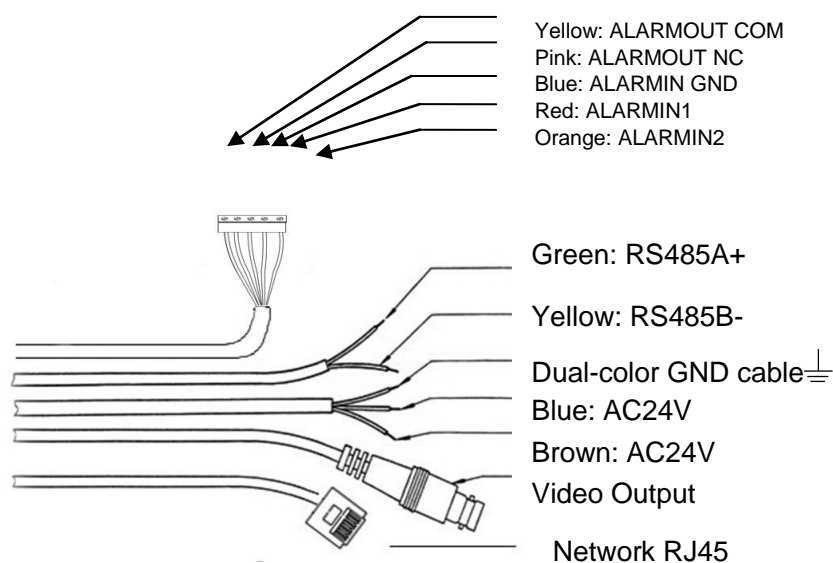


Figure 1-17

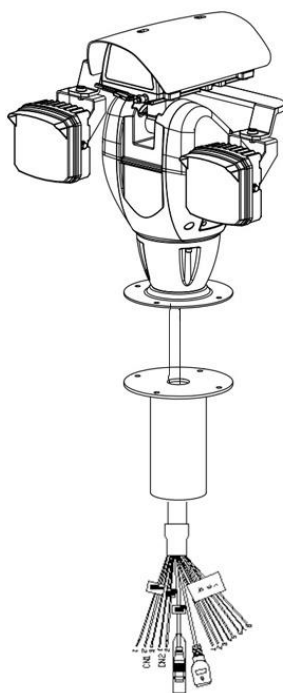


Figure 1-18

1.7 Wall Mount PTZ Installation

1.7.1 Installation Environments

The wall mount high-speed positioning system 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 4x weight of the PTZ.

1.7.2 Dig installation holes

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). See Figure 1-19.

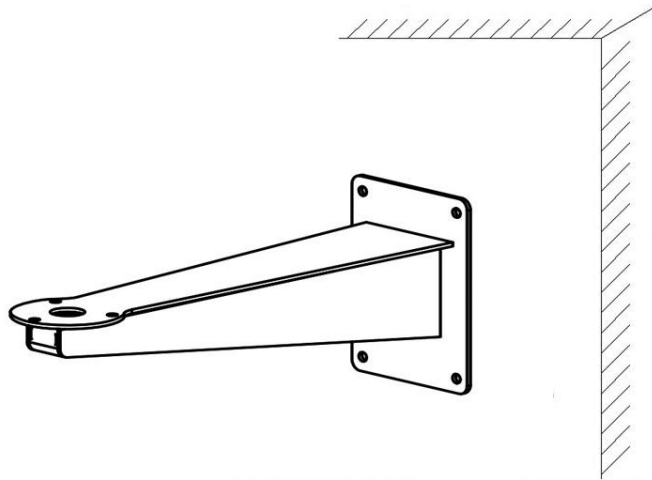


Figure 1-19

1.7.3 PTZ Installation

Step1: Connect PTZ and bracket.

Use the quick installation screws of the PTZ to secure the PTZ to the bracket. Use the hex screw to fix the PTZ. See Figure 1-20.

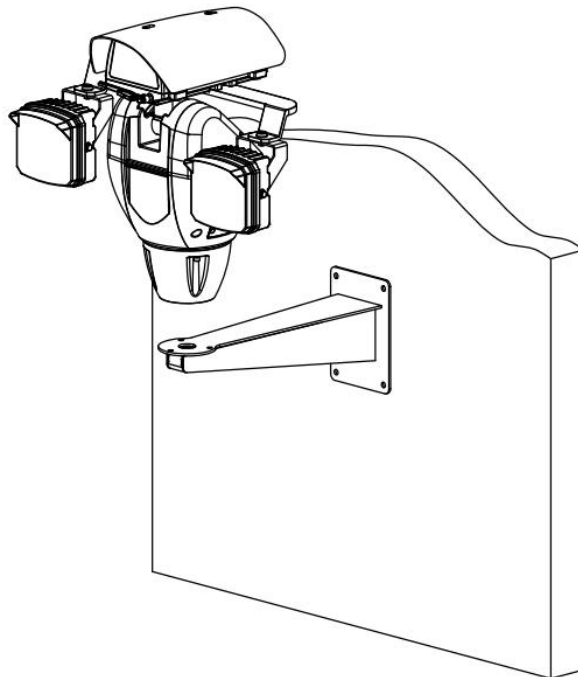


Figure 1-20

Step 2: Cable connection

Step 3: Fix bracket.

Fix the PTZ and bracket on the wall. See Figure 1-21.

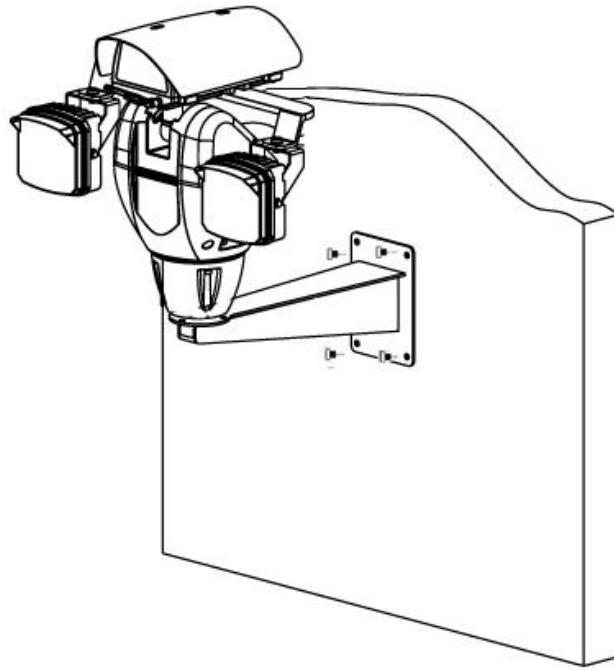


Figure 1-21

2 BRACKET DIMENSIONS

2.1 PTZ Pedestal

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

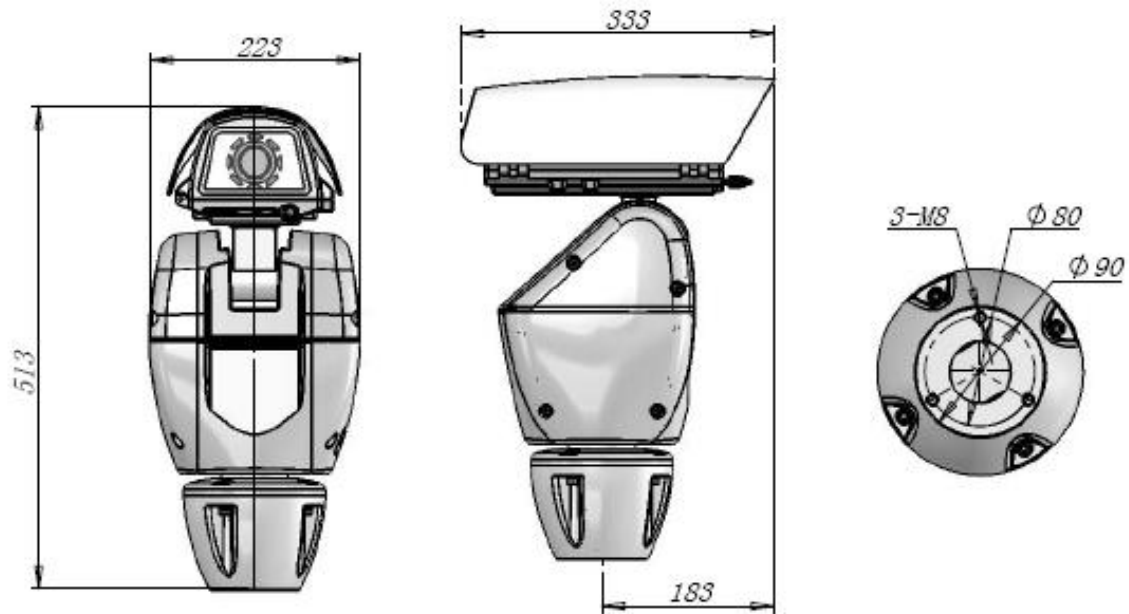


Figure 2-1

2.2 Pole Mount Pedestal

The hanging mount bracket is shown as below. See Figure 2-2.

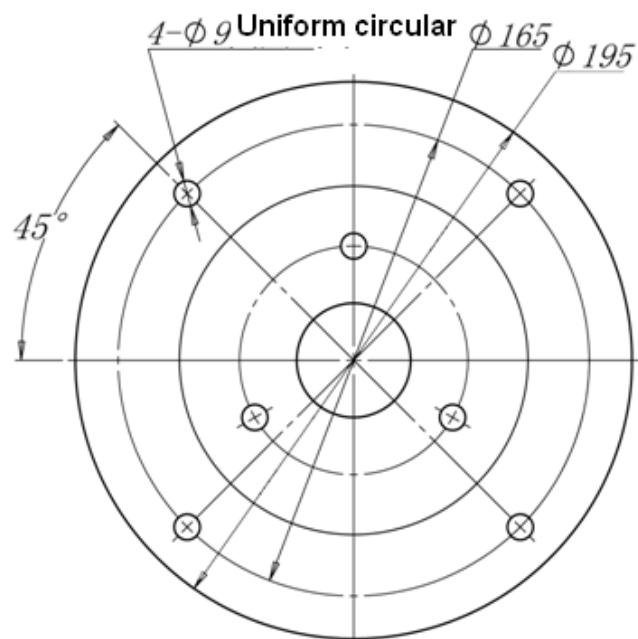


Figure 2-2

2.3 Wall Mount Bracket

The wall mount bracket is shown as below. See Figure 2-3.

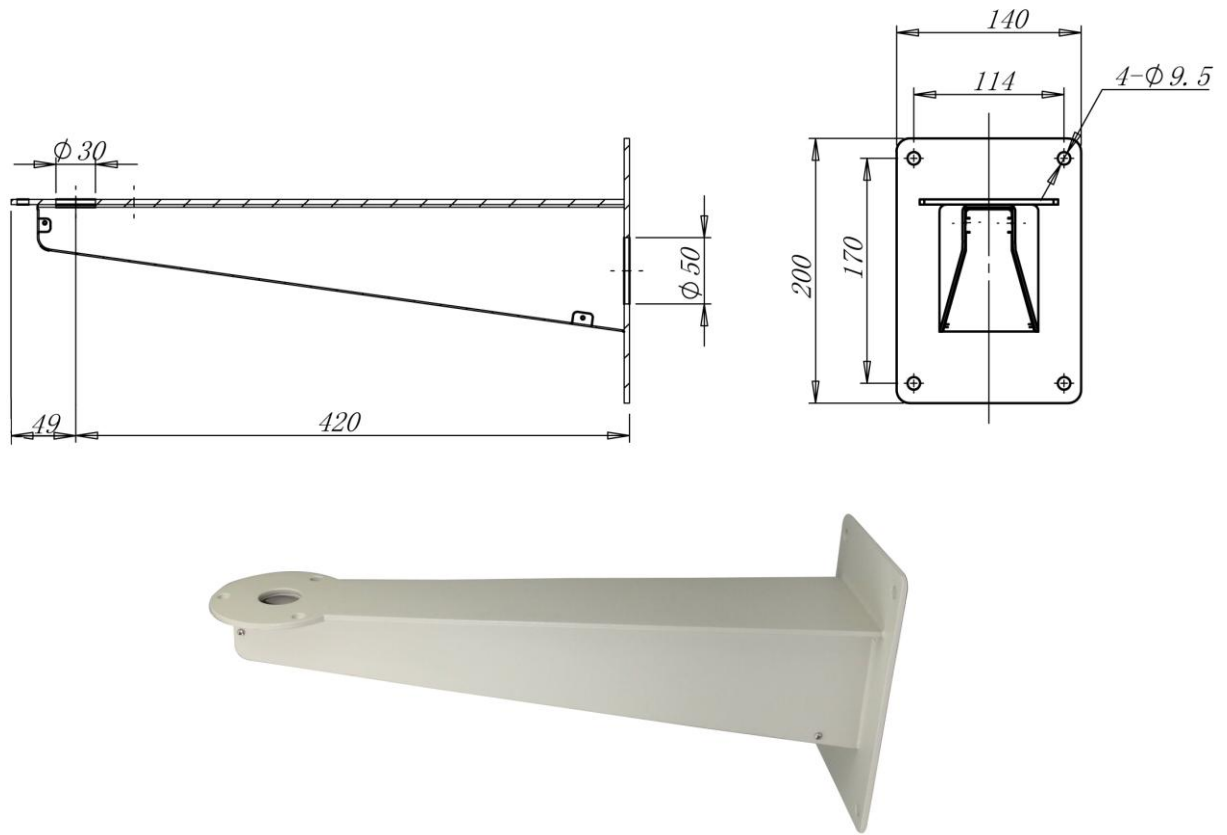


Figure 2-3

3 APPENDIX I THUNDER PROOF AND SURGE PROTECTION

This series high-speed positioning system 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 high-speed positioning system 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 3-1.

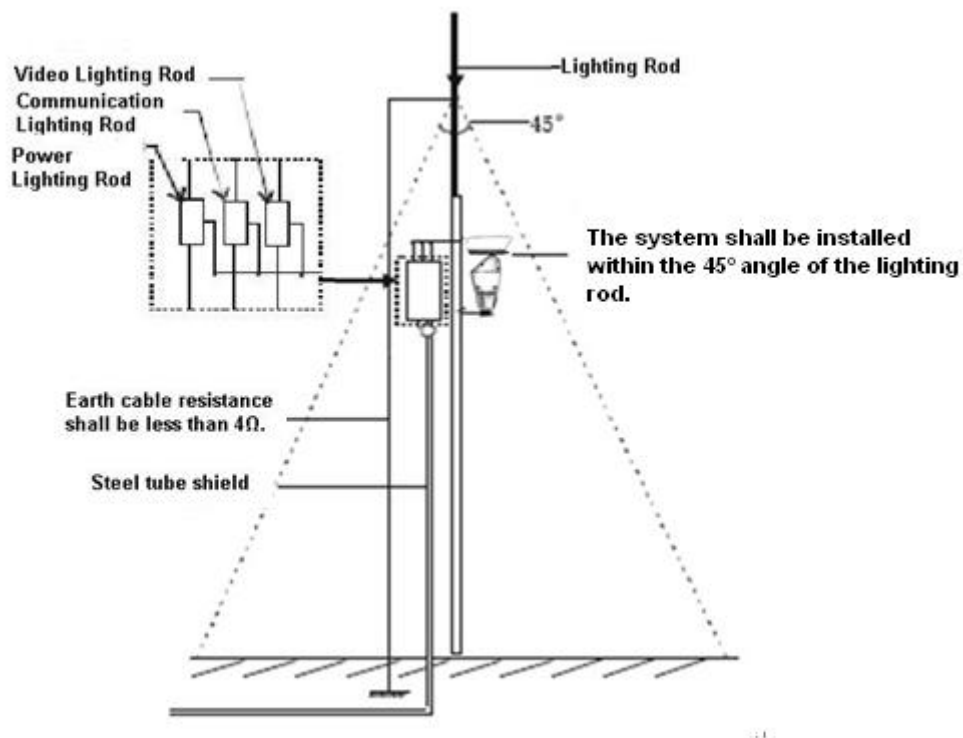


Figure 3-1

4 APPENDIX II ABOUT RS485 BUS

4.1 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).

4.2 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.

4.3 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 4-1). 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 high-speed positioning system is not under control or high-speed positioning system is running automatically and can not stop.

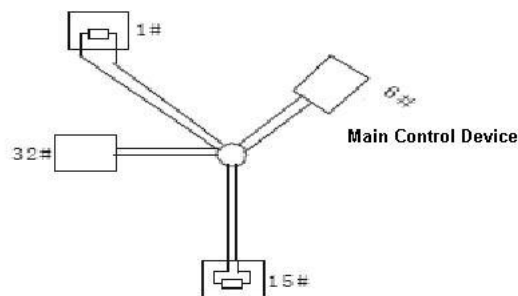


Figure 4-1

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 4-2.

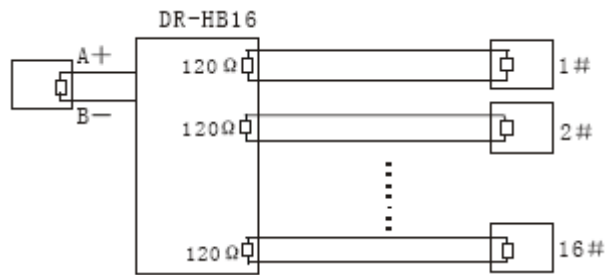


Figure 4-2

4.4 RS485 Bus FAQ

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

5 APPENDIX III THE RELATIONSHIP BETWEEN THE 24V AC CABLE DIAMETER AND THE TRANSMISSION DISTANCE

It is the recommended transmission distance when the cable diameter is fixed and the 24V AC power consumption is below 10%. For the AC device, the max permission voltage power consumption is 10%. For example, when a device of rated power 80VA installed from the transformer 35 inches (10m), then the min cable diameter is 0.8000mm.

Feet (m) W	mm	0.8000	1.000	1.250	2.000
10		242 (74)	380(116)	593 (181)	1525 (465)
20		121 (37)	190 (58)	295 (90)	761 (232)
30		78 (24)	124 (38)	196 (60)	508 (155)
40		59 (18)	95 (29)	147(45)	380 (116)
50		45 (14)	75 (23)	118 (36)	305 (93)
60		39 (12)	62 (19)	98 (30)	252 (77)
70		32 (10)	52 (16)	82 (25)	216 (66)
80		29 (9)	45 (14)	72 (22)	190 (58)
90		26 (8)	39 (12)	65 (20)	167 (51)
100		22 (7)	36 (11)	59 (18)	150 (46)

6 APPENDIX IV WIRE GAUGE REFERENCE SHEET

Metric bare wire diameter (mm)	AWG	SWG	Bare wire cross section (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	0.1257
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
0.900	19	20	0.6362
1.000	18	19	0.7854
1.250	16	18	1.2266
1.500	15		1.7663
2.000	12	14	3.1420
2.500			4.9080
3.000			7.0683

Note

- This manual is for reference only. Slight difference may be found in the user interface.
- All the designs and software here are subject to change without prior written notice.
- All trademarks and registered trademarks are the properties of their respective owners.

- If there is any uncertainty or controversy, please refer to the final explanation of us.
- Please visit our website or contact your local service engineer for more information.