User Manual

G3 High Speed Dome

ⓘ **Before using the product, please read this manual carefully.**

CE FC

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Welcome

Thank you for purchasing DR-E588 G3 high speed dome.

This series speed dome is newly upgraded with AMP connector for easier installation and black liner for discreet surveillance. Its powerful functions make it a state-of-the-art speed dome, and it will fulfill your wide range professional security surveillance need.

Features:

- Pursuant to **FCC** and **CE** rules. IP66 standard for outdoor dome
- Multi-protocol compatibitity
- Built-in real time clock
- Scheduled auto running functions
- Auto run the assigned function after a period of idling
- 360° continuous pan, 90° tilt with auto flip
- Smooth and accurate positioning
- 220 presets, 4 sequences of 32 presets each, 4 patterns 180 seconds each
  4 panning, 8 regions, up to 8 privacy masking
- Built-in 7in/2out alarm
- Built-in BNC / UTP transmission interface
- Optional IP and fiber optic transmission interface
- High resolution & high sensitivity varifocal camera module with
  built-in TVS1500w thunder-proof and surge-proof
- AMP plug for easy installation
- On-screen compass and tilt indication
- RS485, Manchester, Bi-phase or Coaxitron control interface

Declaration

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of FCC rules and European Union 89/336/EEC directive and its lastest amended version. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment under **CE** and **FCC** rules**.**

Precautions:

1. Only qualified and experienced person can carry on this installation.
2. Always conform to national and local safety codes during installation.
3. Use reliable tools only, poor quality tools may cause danger. e.g. ladder.
4. Do install the speed dome to appropriate environment (Refer to the chart below). This product conforms to IP66 standard as specified in "Housing Protection Classification (IP code)".
5. Check the site space and toughness before installing. It should be able to bear 4 times the weight of the dome and its accessories.
6. Keep all the original dome package materials in case of future repacking and transportation.

Model	Indoor	Outdoor
Maximum Temp Range	-10 °C~+50°C	-30 °C~+50°C
Humidity	<90%	<90%
Air Pressure	86~106KPa	86~106KPa
Power Supply	AC24V/1.25A, 50/60Hz	AC24V/2.5A, 50/60Hz

Warnings:

1. **DO NOT** install this speed dome in hazardous places where combustible or explosive materials are stored or used.
2. **DO NOT** install indoor dome in outdoor environment.
3. This speed dome runs on 24v AC. **DO NOT** connect higher or lower voltage to it.
4. **DO NOT** turn power on before completing installation.
5. **DO NOT** disassemble any part of the items.
6. Use soft towel to clean the down cover when necessary. **DO NOT** use caustic detergent.
7. To protect CCD, **avoid** facing the camera to direct strong light. e.g the sun.

Installation Preparation

Tools Lists:

You may need following tools for the installation: Screws and nuts, Philips screw driver, Minus screw driver, Wire scissors, Ladder, Drill, Saw.

Cables:

Video Coaxial Cable

The video coaxial cable should be:

1) 75Ł impedance,

2) Solid copper wire,

3) 95% braided copper shield.

Check the max transmission distance referring to the chart below.

International Gauge	Transmission Distance(Max.)
RG 59/U	750ft (229m)
RG 6/U	1,000ft (305m)
RG 16/U	1,5000ft (457m)

RS485 Cable

0.56mm (24AWG) twisted pair wire's maximum transmission distances are as follows. NOTE: Use RS485 distributor if you need to transfer further.

Baud Rate	Transmission Distance (Max.)
2400BPs	1800m
4800BPs	1200m
9600BPs	800m

To learn more about RS485, see appendix III.

DIP switches and jumpers settings

Refer to appendix I to set the followings:

Protocol and Baud rate

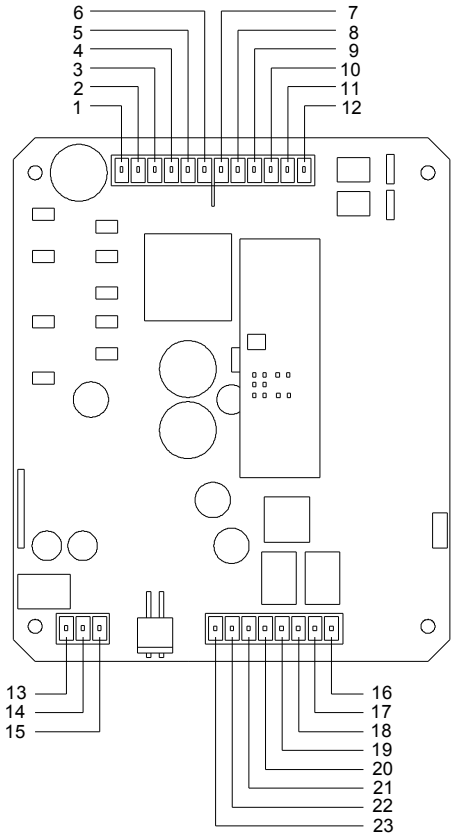
Dome address

Video cable type

Resistor jumper

Alarm output method

Wiring Diagram for alarm, video &RS485 and Power



1 Alarm Input1
2 Alarm Input2
3 Alarm Input3
4 Alarm Input4
5 Alarm Input5
6 Alarm Input6
7 Alarm Input7
8 Common Port

9 Alarm Output1
10 Alarm Output1
11 Alarm Output2
12 Alarm Output2

13 24V AC
14 Ground
15 24V AC

16 Video Output
17 Video Ground
18 RS485+
19 RS485-
20 Reserved
21 Reserved
22 Reserved
23 Reserved

Installation Type Guide

Three main kinds of installation are available for G3 high speed dome:

1) In-ceiling Mount,
2) Surface Mount,
3) Bracket Mount.

There are 4 bracket options for bracket mount:

1) Wall Mount,
2) Corner Mount,
3) Pole Mount,
4) Pendant Mount.

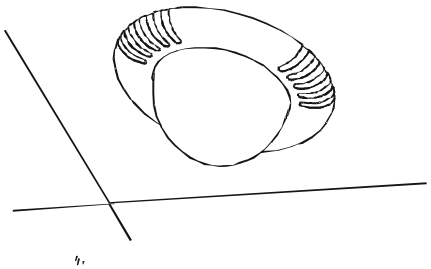
NOTE: Installation site should be able to withstand at least 4 times the weight of the dome.

Type	Weight(kg/lb)
Surface Dome	2.20kg/4.85lb
Indoor Ceiling Dome	2.43kg(5.35lb)
Indoor Dome (excluding bracket)	2.93kg(6.45lb)
Outdoor Dome (excluding bracket)	3.78kg(8.33lb)
Pendant Bracket	1.53kg(3.37lb)
Wall Bracket	1.25kg(2.75lb)
Corner Bracket	1.90kg(4.19lb)
Pole Bracket	1.20kg(2.64lb)

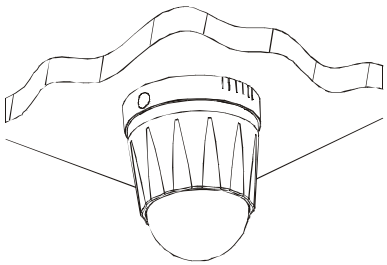
Bracket mount dome has indoor type and outdoor type. Comparing to indoor type, outdoor type has extra sun-shield housing, temperature sensor and heater. Outdoor type conforms to IP66 standard. (Refer to appendix IV)

WARNING: DO NOT install indoor dome in outdoor environment.

In-ceiling Mount (Page 5~7)

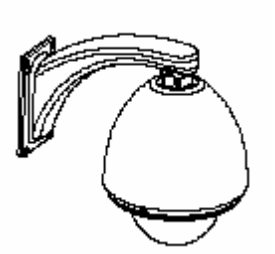


Surface Mount (Page 8~10)

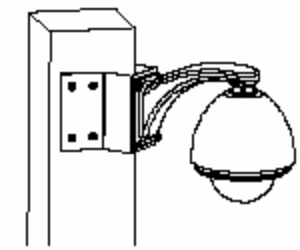


Bracket Mount

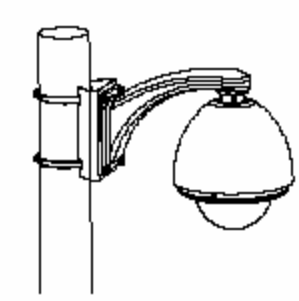
1. Wall Mount (Page 11~13)



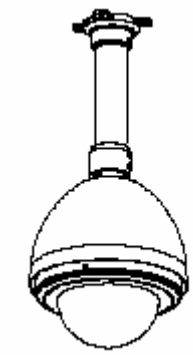
2. Corner Mount (Page 14~16)



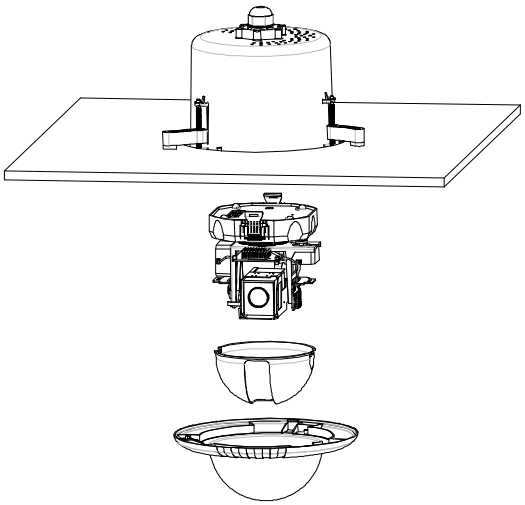
3. Pole Mount (Page 17~19)



4. Pendant Mount (Page 20~22)

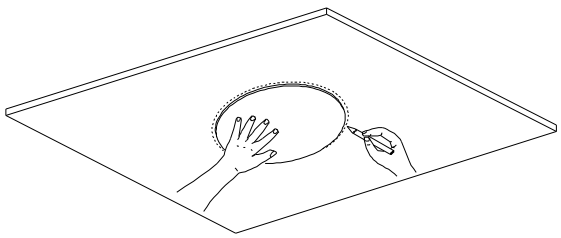


In-Ceiling Mount



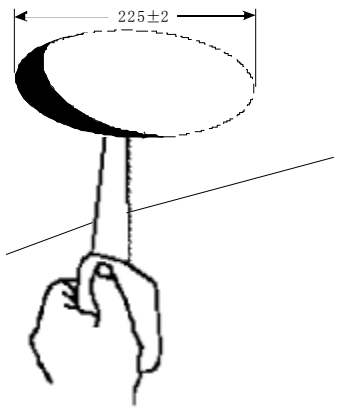
Installation requirement:

1. The thickness of the ceiling should be less than 42mm
2. The ceiling should be able to bear 4 times of the weight of the speed dome.
3. Upper space should be at least 20cm high.



1 Draw a circle on ceiling.

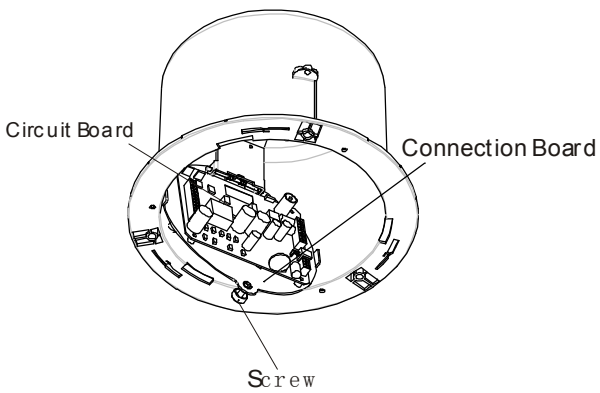
Take the paper circle(accessory) as a template to draw a circle on the ceiling. The paper circle's diameter is 225mm.



2 Cut the circle off.

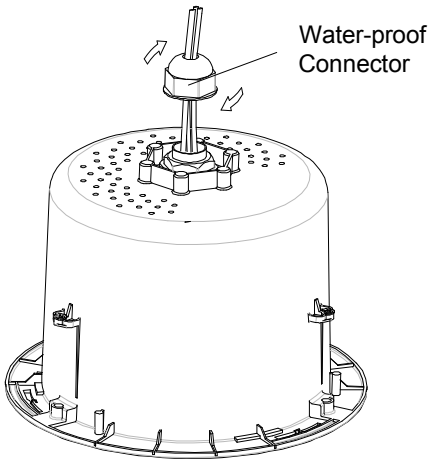
Use a saw or proper tool to cut off the circle.

NOTE: Make sure the diameter of the circle is 225±2mm before cutting the circle off.



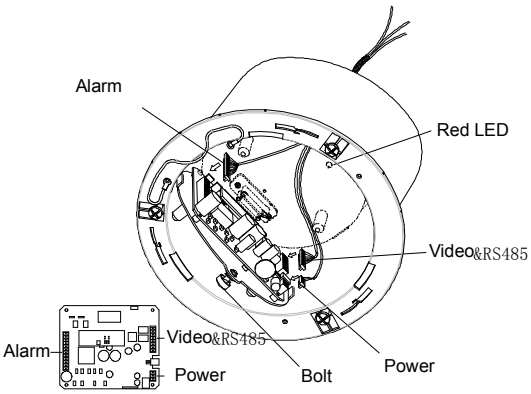
3 Unfasten the circuit board.

Unscrew the screw to open the circuit board on connection board.



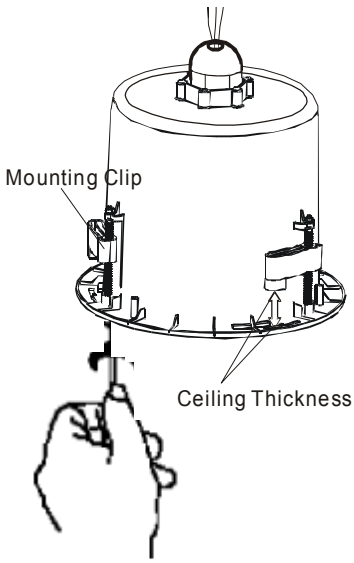
4 Prepare cables.

Prepare wiring and then put Power/RS485/Video cables through water-proof connector and the top of housing. Finally, turn the connector into the top hole of the housing.



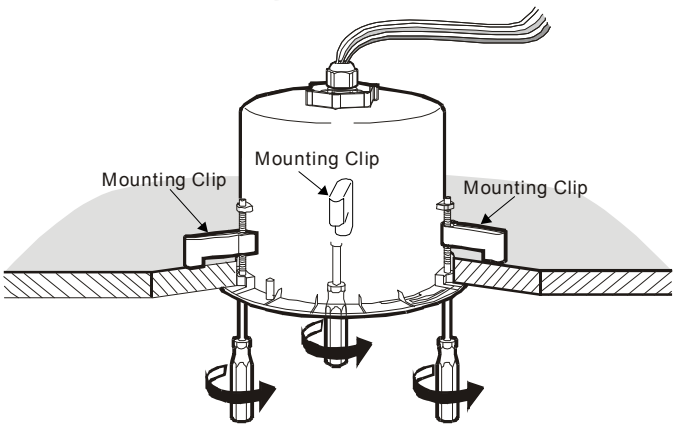
5 Connect cables.

Insert cables into corresponding sockets on circuit board. When finished, tighten the circuit board back and turn on the power. The red LED will light. Turn off the power after checking.
NOTE: There are signs for each port. Fix cables as picture showed in page 3. Please make sure power is off before doing connection.



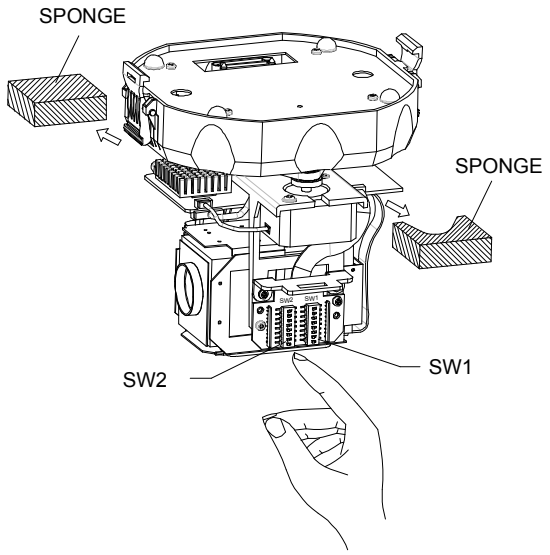
6 Adjust clips.

Adjust the height of the three mounting clips.Swing the three mounting clips to adhere to housing.



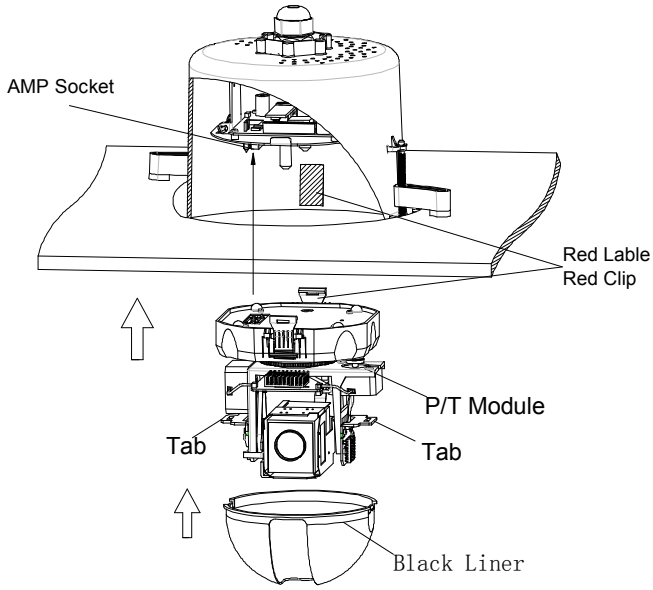
7 Install housing.

Push housing into ceiling and let the clips stretch out. Finally, screw the three clips to tighten the housing.
NOTE: Use even strength to adjust the three clips, or it may distort the shape of the housing.



8 Set dome ID, baud rate and protocol.

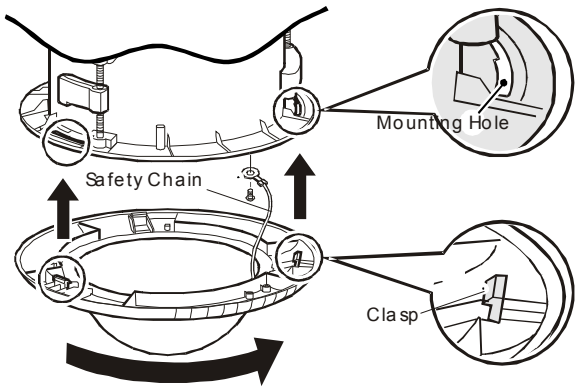
Set dome ID, baud rate and protocol via DIP switches (refer to APPENDIX I). Take the two sponges off .



9 Install black liner and Pan/Tilt Module.

Push the black liner into the two tabs. Install the pan/tilt module with two clips, red to red, black to black and match the AMP sockets.Gently push the module upward until you hear two click noise.

NOTE: DO NOT forget to take off the lens cover.



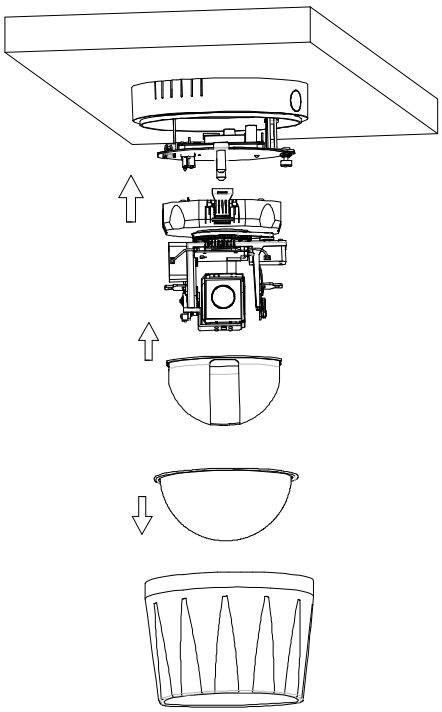
10 Install down cover.

Fix the safety chain on housing. The safety chain prevents the down cover dropping down. Match the clasps and mounting holes then turn clock-wise.

NOTE: Let the safety chain inside the arc groove of the down cover, otherwise it may scratch the lens.

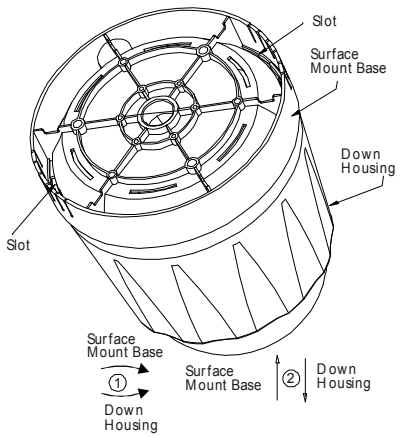
NOTE: If you found difficult to fit in the down cover, try readjusting the three clips.

Surface Mount



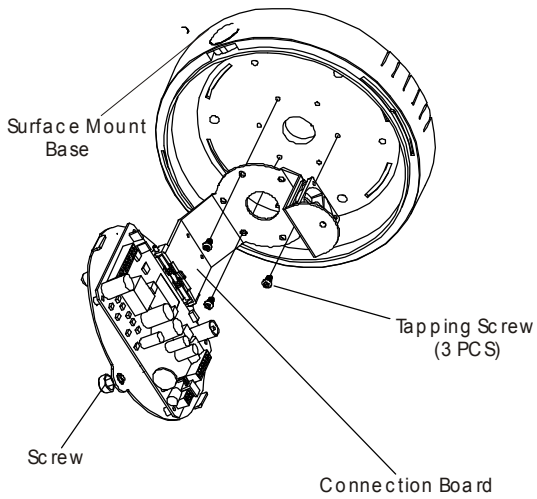
Installation requirement:

1. The ceiling should be hard and solid.
2. The ceiling should be able to bear 4 times of the weight of the speed dome.



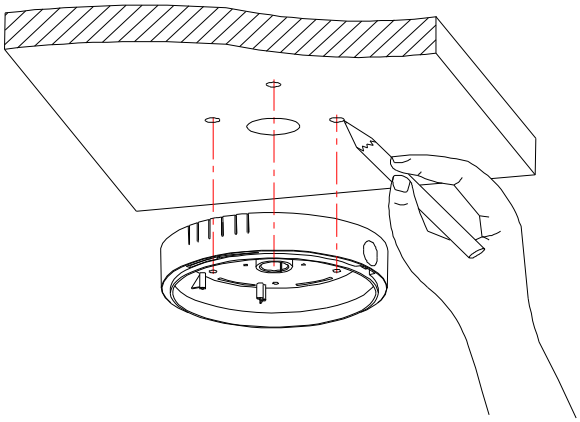
1 Detach down housing.

Turn down housing anticlockwise and pull down the down housing.



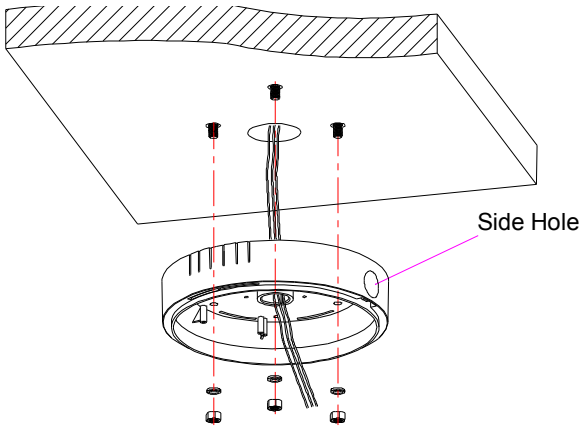
2 Detach base.

Unlock the screw on the connection board and open it. Unscrew the 3 tapping screws to detach the connection board and surface mount base.



3 Mark fastener positions.

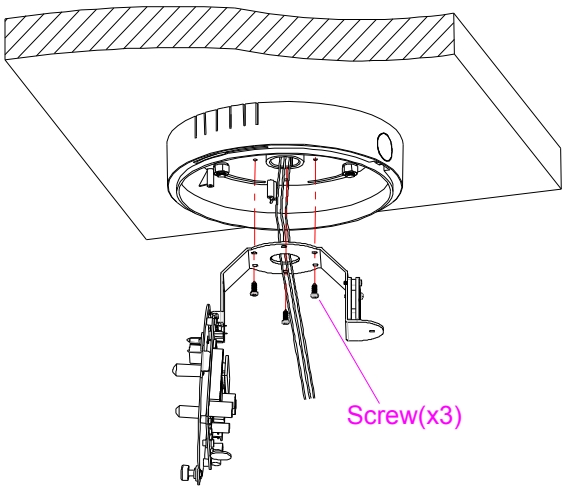
Using the surface mount base as a template, mark the fastener positions on ceiling and drill holes.



4 Install surface mount base.

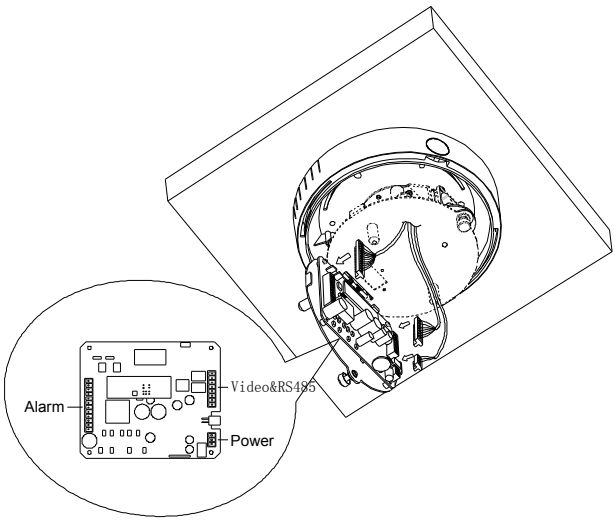
Put Power/RS485/Video cables through the central hole of surface mount base and fix it on ceiling.

NOTE: Wires can be also put through the side hole of suface mount base.



5 Install connection board.

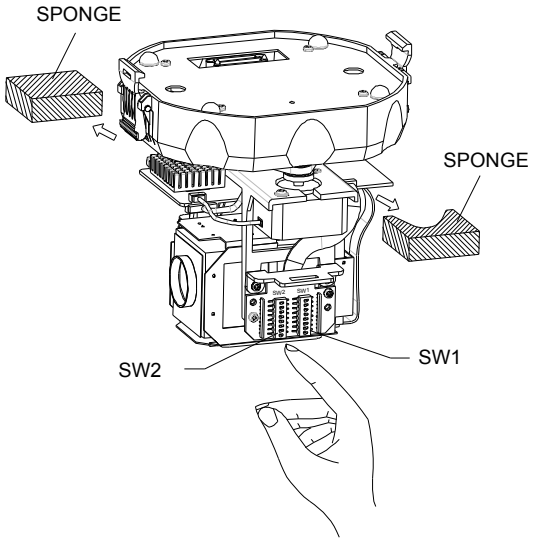
Put cables through the central hole of the connection board, and then fasten the connection board onto the surface mount base by using 3 tapping screws.



6 Connect cables.

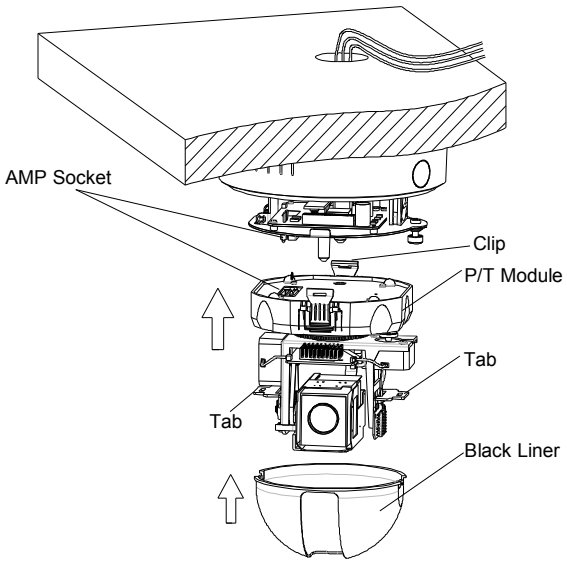
Insert cables into corresponding sockets on circuit board. When finished, tighten the circuit board back and turn on the power. The red LED will light.Turn off the power after checking.

NOTE: There are signs for each port.Please connect cables according to the signs. See page 3.



7 Set dome ID, baud rate and protocol.

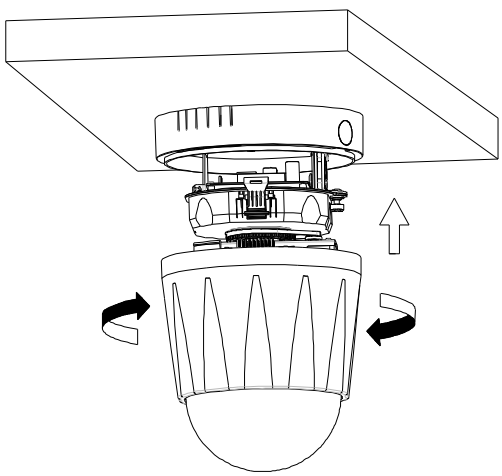
Set dome ID, baud rate and protocol via DIP switches (refer to APPENDIX I). Take the two sponges off .



8 Install black liner and Pan/Tilt Module.

Push the black liner into the two tabs. Install the pan/tilt module with two clips, red to red, black to black and match the AMP sockets. Gently push the module upward until you hear two click sound. Finally, check if it is tightly installed.

NOTE: Be sure the AMP sockets are clean without dust. DO NOT forget to take off the lens cover.

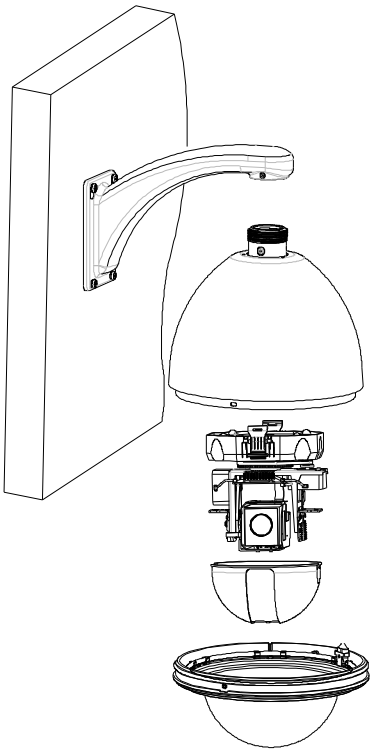


9 Install down housing.

Match the tabs of down cover into slot and turn clockwise to fix the down housing.

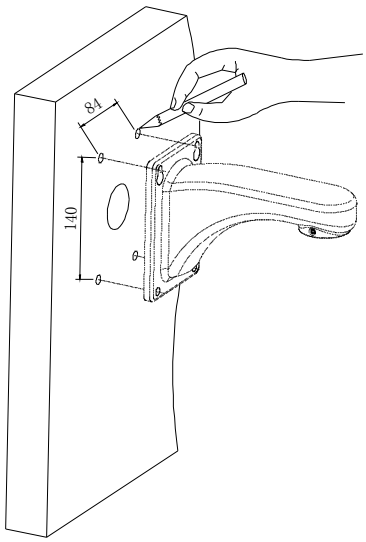
NOTE: Check if it is tightly installed.

Wall Mount



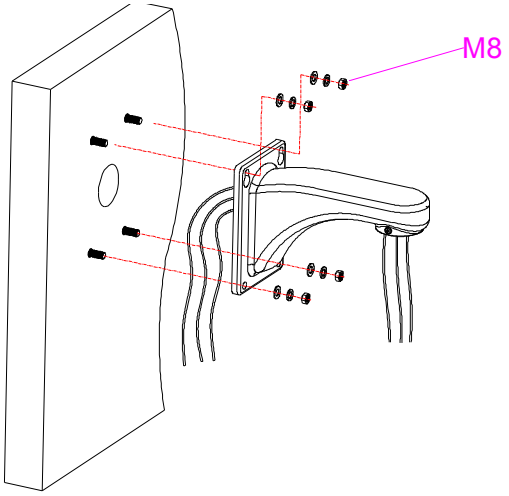
Installation requirement:

1. The wall must be firm and without peeling off.
2. The wall should be able to bear 4 times of the weight of the speed dome.



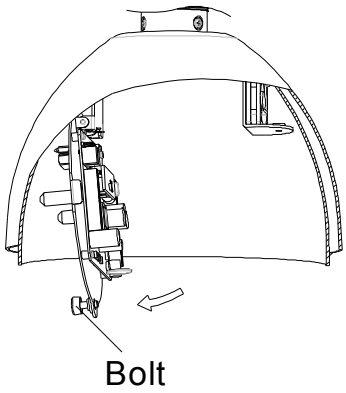
1 Mark screws positions.

Take the bracket base as the template to mark the screws positions on wall. Drill the holes and put expension screws inside.



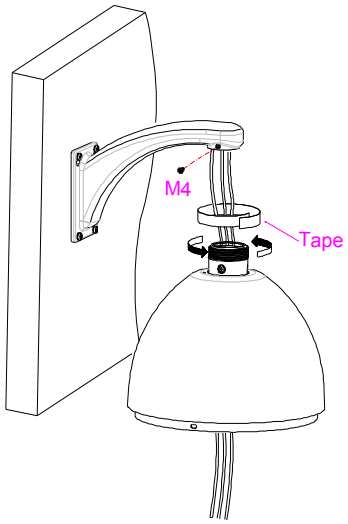
2 Install bracket.

Put Power/RS485/Video cables through the cavity of bracket, and then install bracket on wall.
NOTE: Put cables through the wall or aside the bracket.



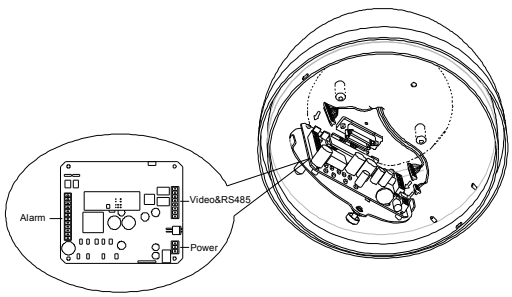
3 Unfasten the circuit board.

Unscrew the screw to open the circuit board on connection base.



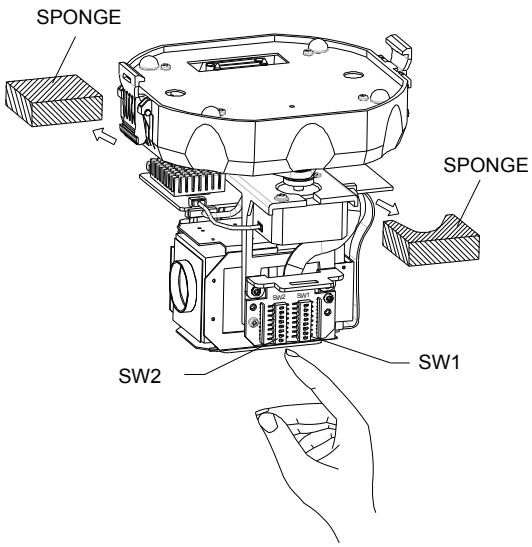
4 Install housing.

Insert cables into housing through the top hole. Then, turn the housing thread pipe head into the wall bracket and fasten the connection with a M4 screw.
Apply water-proof tape to the housing thread.
NOTE: Apply silica gel to the gap between bracket and wall in the case of outdoor dome.



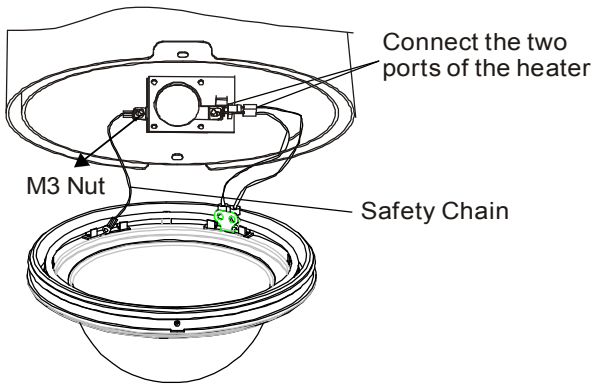
5 Connect cables.

Plug cables into corresponding sockets on circuit board. When finished, tighten the circuit board back and turn on the power. The red LED will light.Turn off the power after checking.
NOTE: There are signs for each port. Fix cables as picture showed in page 3. Please make sure power is off before doing connections.



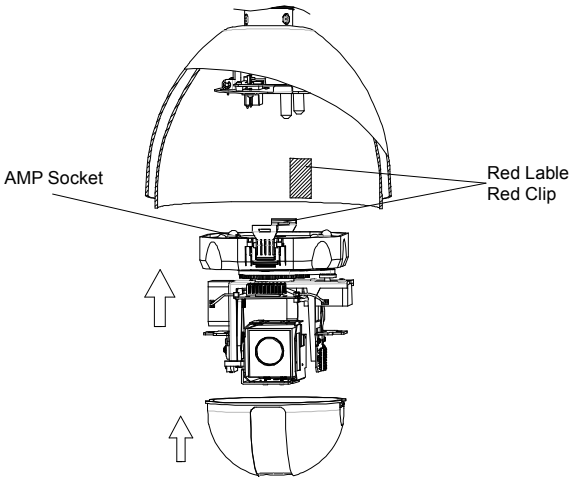
6 Set dome ID, baud rate and protocol.

Set dome ID, bard rate and protocol via DIP switches(refer to APPENDIX I). Take the sponges off.



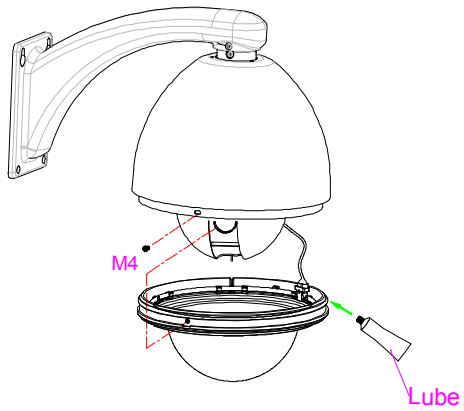
7 Down cover preliminary installation.

Attach the safety chain with a M3 nut as picture shows. The safety chain prevents the down cover from dropping down.
NOTE: Connect the heater plug into the socket in the case of outdoor dome.



8 Install black liner and Pan/Tilt Module.

Install the pan/tilt module with two clips, red to red, black to black and match the holes in pan/tilt module and the guild poles. Gently push the module upward until you hear two click sound. Finally, check if it is tightly installed. Push the black liner into the two tabs.
NOTE: Do not forget to take off the lens cover.

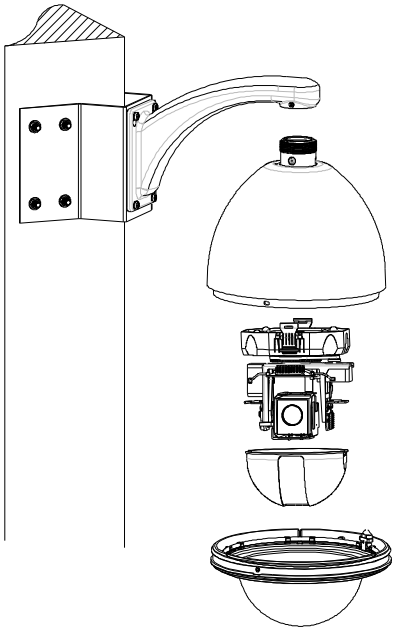


9 Install down cover.

Unscrew the two M4 screw on down cover ring.Push up the down cover into the housing and then fasten down cover with two M4 screws.
NOTE: Apply lubricant to the O-ring to make down cover easier to slip in.

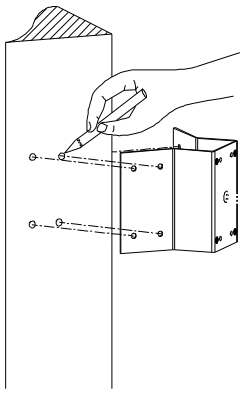
Corner Mount

The wall for installation should be firm without peeling off. The installation site must be able to withstand four times the weight of dome, bracket and bracket base.



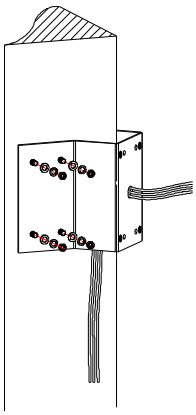
Installation requirement:

1. The corner wall must be firm and without peeling off.
2. The corner wall should be able to bear 4 times of the weight of the speed dome.



1 Mark screws positions.

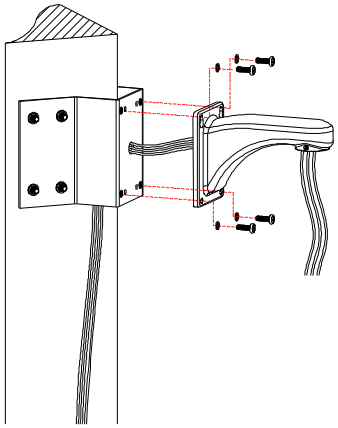
Take the bracket base as the template to mark the screws positions on wall. Drill the holes and put expension screws inside.



2 Install base.

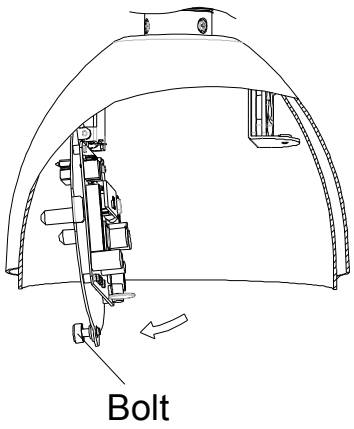
Put Power/RS485/Video cables through the hole of corner base and use M8 nuts to fasten corner base on the mounting surface.

NOTE: Put cables through the wall of aside the corner base.



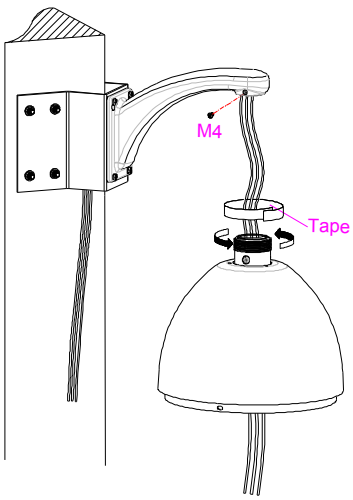
3 Install bracket.

Put cables through the cavity of bracket and fasten bracket on base.



4 Unfasten the circuit board.

Unscrew the screw to open the circuit board on connection base.

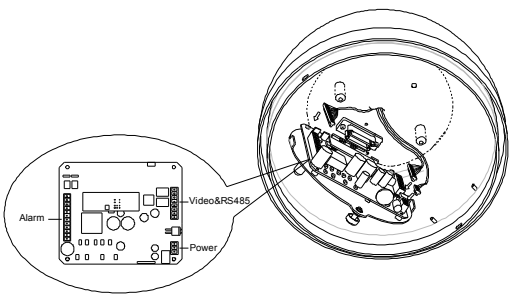


5 Install housing.

Put cables through the top hole of the housing, and then turn the housing thread pipe head into the corner bracket and fasten the connection with a M4 screw.

Apply water-proof tape to the housing thread.

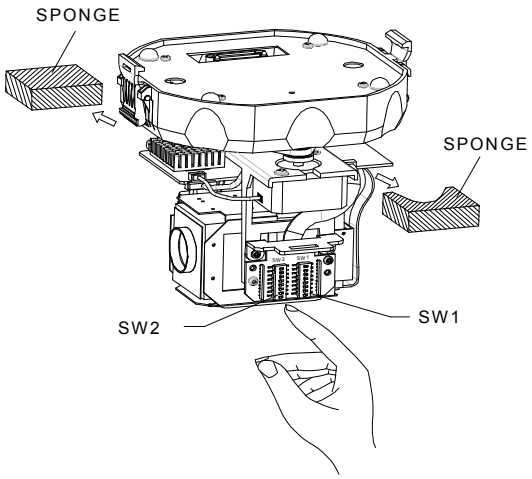
NOTE: Apply silica gel to the gap between bracket and the base in the case of outdoor dome.



6 Connect cables.

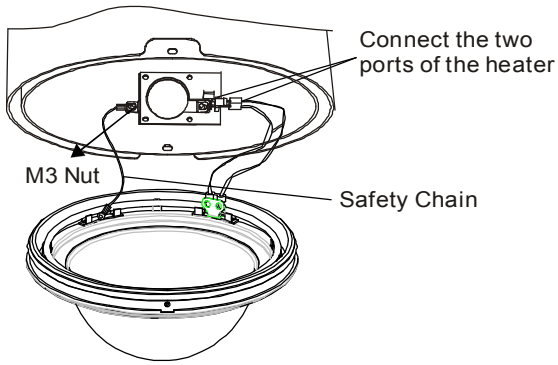
Plug cables into corresponding sockets on circuit board. When finished, tighten the circuit board back and turn on the power. The red LED will light. Turn off the power after checking.

NOTE: There are signs for each port. Fix cables as picture showed in page 3. Please make sure power is off before doing connections.



7 Set dome ID, baud rate and protocol.

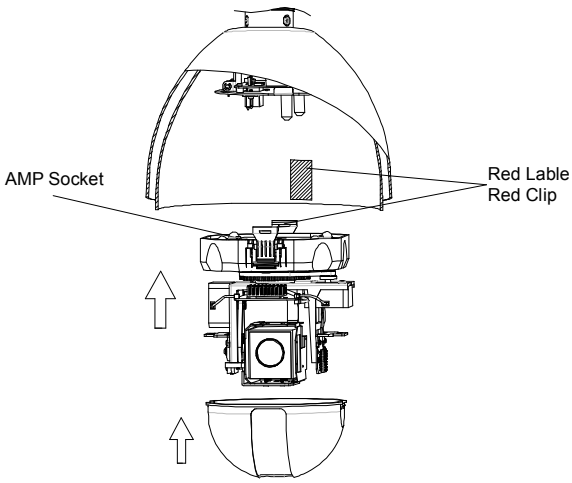
Set dome ID, baud rate and protocol via DIP switches (refer to APPENDIX I). Take the two sponges off.



8 Down cover preliminary installation.

Attach the safety chain with a M3 screw as picture shows. The safety chain prevents the down cover from dropping down.

NOTE:Connect the heater plug into the socket in the case of outdoor dome.



nstall black liner and Pan/Tilt Module.

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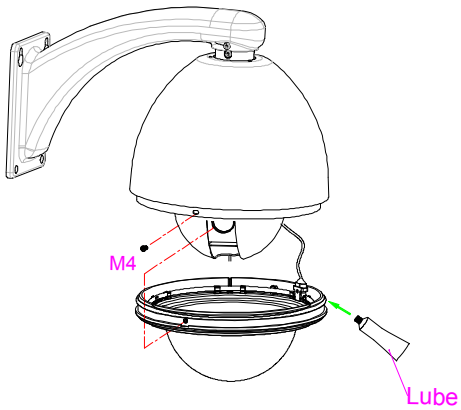
Push the black liner into the two tabs.

NOTE: Do not forget to take off the lens cover.

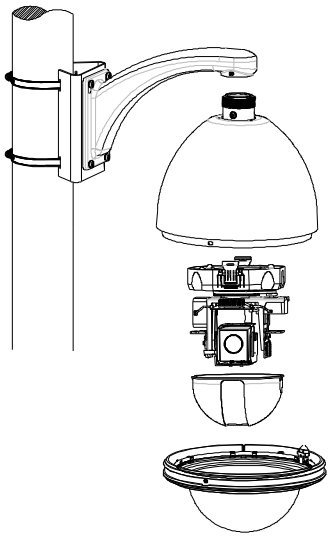


10 Install down cover.

Unscrew the two M4 screw on down cover ring. Push up the down cover into the housing and then fasten down cover with two M4 screws.

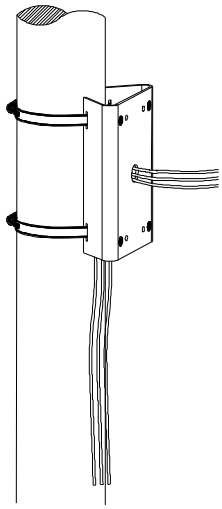
NOTE: Apply lubricant to the O-ring to make down cover easier to slip in.

Pole Mount



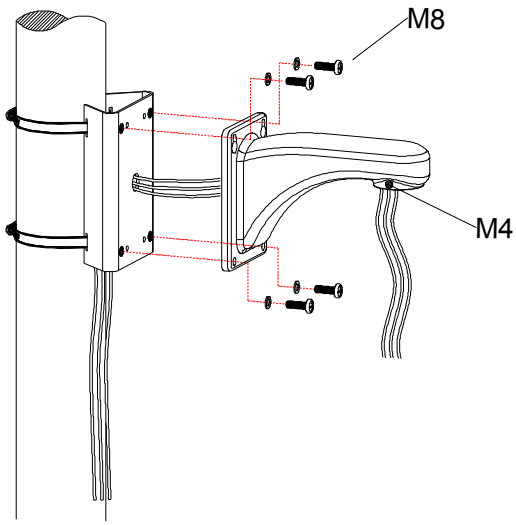
Installation requirement:

1. The pole must be in diameter of 130-150mm (5.12”~6”).



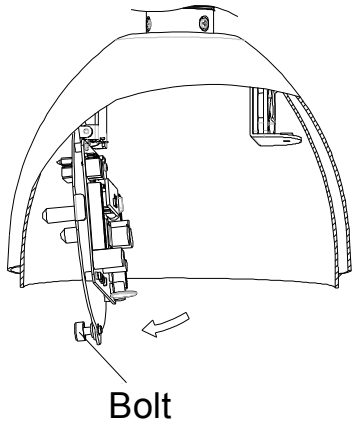
1 Install base.

Put Power/RS485/Video cables through the central hole of the bracket base, and then fix it around the pole.



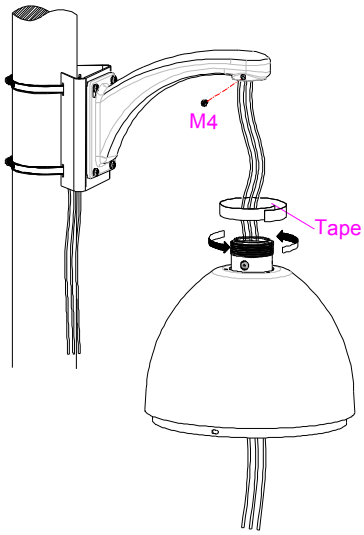
2 Install bracket.

Put cables through the cavity of bracket and fasten it on base.



3 Unfasten the circuit board.

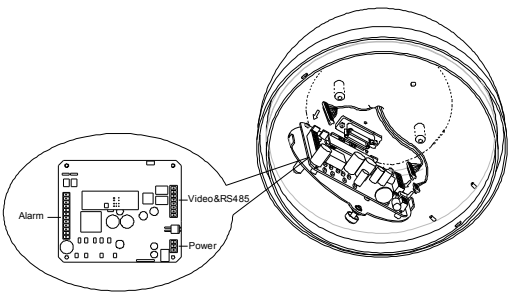
Unscrew the screw to open the circuit board on connection board.



4 Install housing.

Put cables through the top hole of the housing, and then turn the housing thread pipe head into the pole bracket and fasten the connection with a M4 screw. Apply water-proof tape to the housing thread.

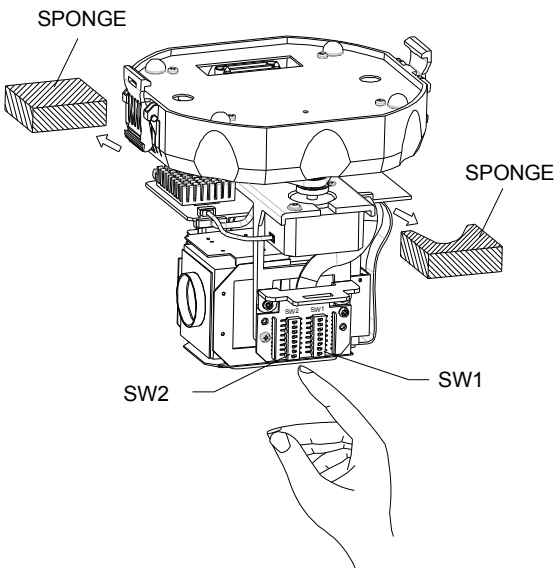
NOTE: Apply silica gel to the gap between bracket and the base in the case of outdoor dome.



5 Connect cables.

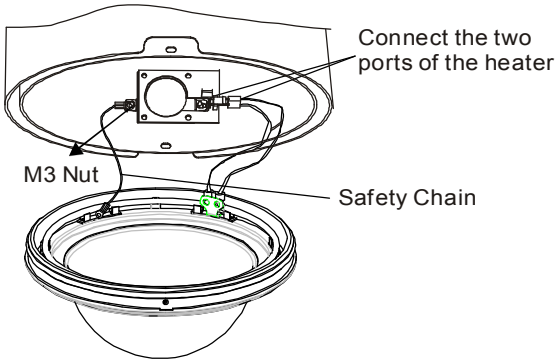
Plug cables into corresponding sockets on circuit board. When finished, tighten the circuit board back and turn on the power. The red LED will light.Turn off the power after checking.

NOTE: There are signs for each port. Fix cables as picture showed in page 3. Please make sure power is off before doing connections.



6 Set dome ID, baud rate and protocol.

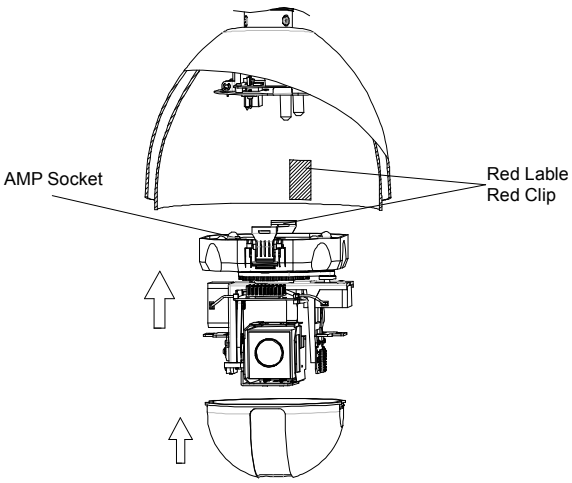
Set dome ID, baud rate and protocol via DIP switches (refer to APPENDIX I). Take the two sponges off.



7 Down cover preliminary installation.

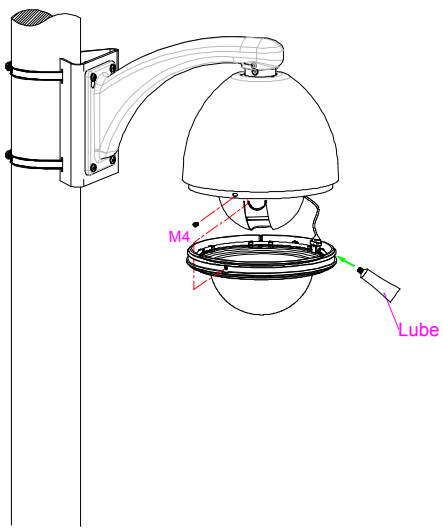
Attach the safety chain with a M3 nut as picture shows. The safety chain prevents the down cover from dropping down.

NOTE:Connect the heater plug into the socket in the case of outdoor dome.



8 Install black liner and Pan/Tilt Module.

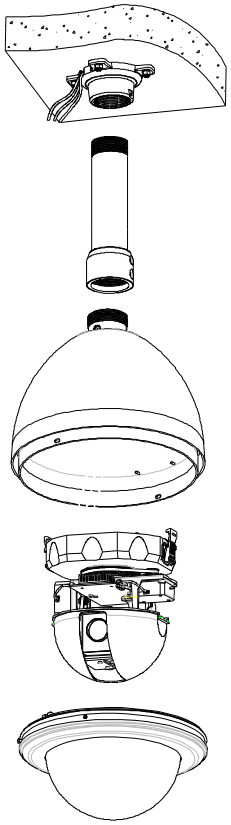
Install the pan/tilt module with two clips, red to red, black to black and match the holes in pan/ tilt module and the guild poles. Gently push the module upward until you hear two click sound. Finally, check if it is tightly installed.
Push the black liner into the two tabs.
NOTE: Do not forget to take off the lens cover.



9 Install down cover.

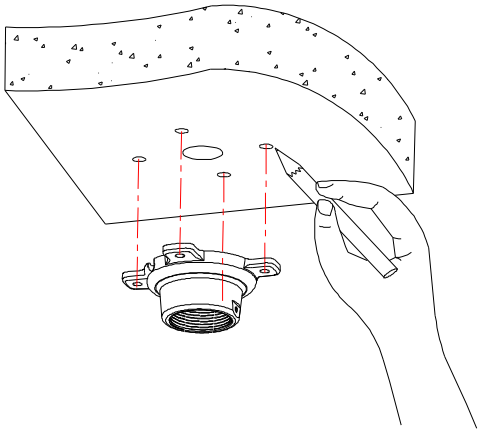
Unscrew the two M4 screws on down cover ring. Push up the down cover into the housing and then fasten down cover with two M4 screws.
NOTE: Apply lubricant to the O-ring to make down cover easier to slip in.

Pendent Mount



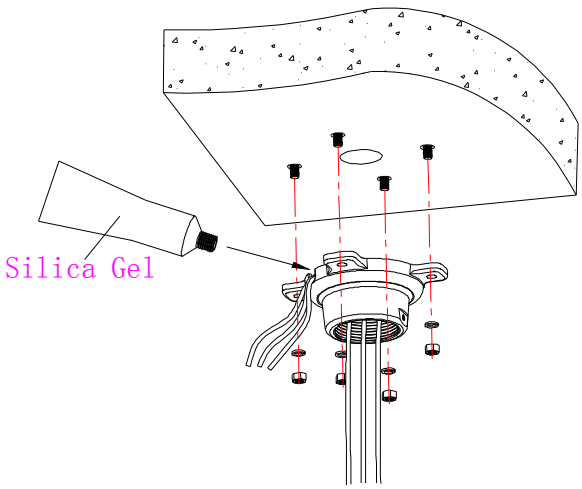
Installation requirement:

1. The ceiling must be firm and without peeling off.
2. The ceiling should be able to bear 4 times of the weight of the speed dome.



1 Mark screws positions.

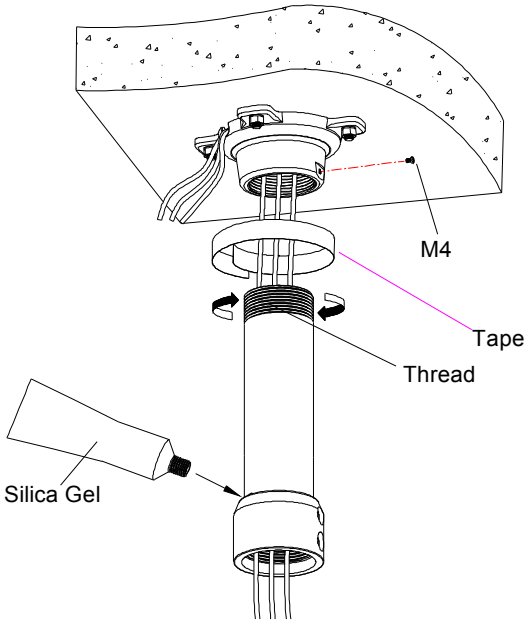
Take the bracket base as the template to mark the screws positions on ceiling. Drill the holes and put expension screws inside.



2 Install base.

Put Power/RS485/Video cables through the central hole of the bracket base, and then fix it on ceiling.

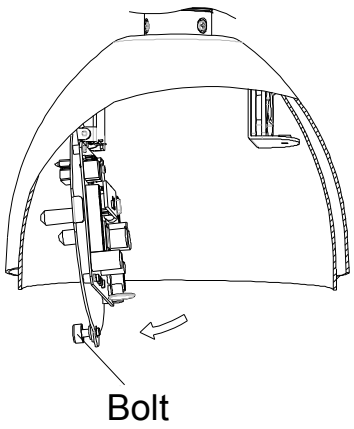
NOTE: Put silica gel along the top of bracket base in the case of outdoor dome.



3 Install suspender.

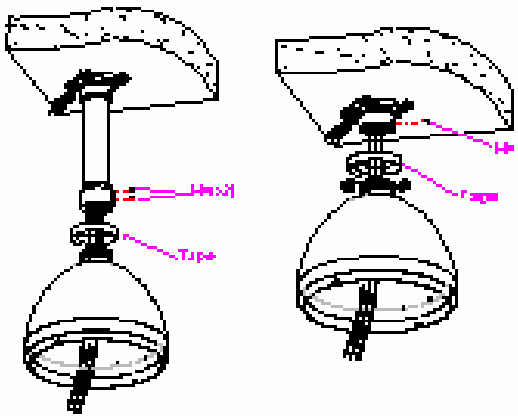
Put cables through the cavity of suspender, and then turn the thread pipe head into the bracket base and fasten the connection with a M4 screw.

NOTE: Apply water-proof tape to the thread and put silica gel to the suspender as picture shows in the case of outdoor dome.



4 Unfasten the circuit board.

Unscrew the screw to open the circuit board on connection base.

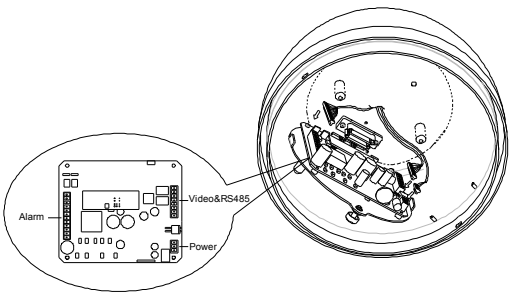


5 Install housing.

Put cables through the top hole of the housing, and then turn the housing thread pipe head into suspender and fasten the connection with two M4 screws. If installation height is not high enough, mount housing directly into the base.

Apply water-proof tape to the housing thread.

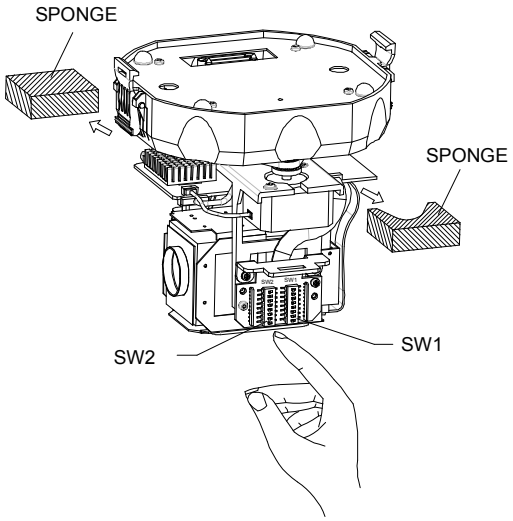
NOTE: Apply silica gel to the gap between bracket and the ceiling in the case of outdoor dome.



6 Connect cables.

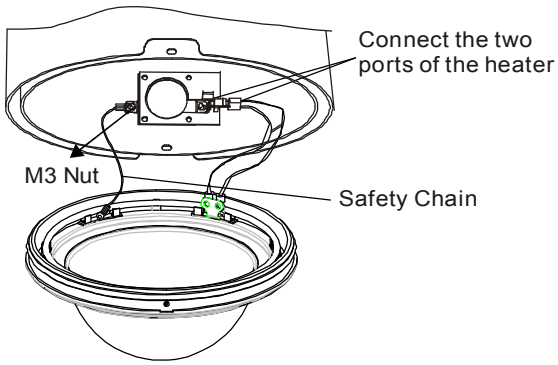
Plug cables into corresponding sockets on circuit board. When finished, tighten the circuit board back and turn on the power. The red LED will light. Turn off the power after checking.

NOTE: There are signs for each port. Fix cables as picture showed in page 3. Please make sure power is off before doing connections.



7 Set dome ID, baud rate and protocol.

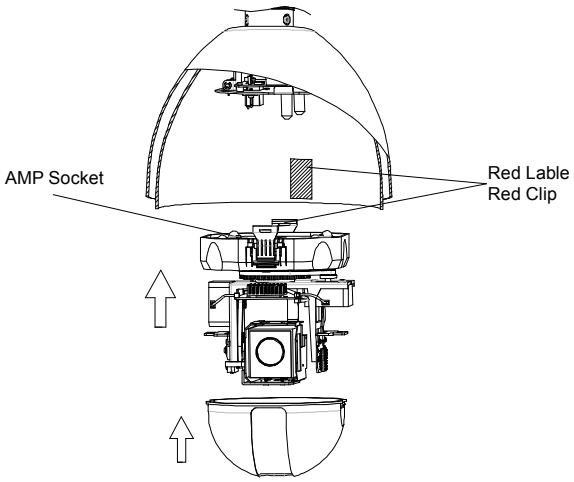
Set dome ID, baud rate and protocol via DIP switches (refer to APPENDIX I). Take the two sponges off.



8 Down cover preliminary installation.

Attach the safety chain with a M3 nut as picture shows. The safety chain prevents the down cover from dropping down.

NOTE:Connect the heater plug into the socket in the case of outdoor dome.

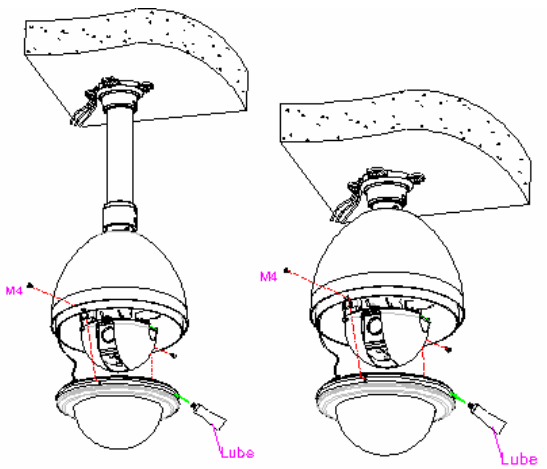


Install black liner and Pan/Tilt Module.

Install the pan/tilt module with two clips, red to red, black to black and match the holes in pan/tilt module and the guild poles. Gently push the module upward until you hear two click sound. Finally, check if it is tightly installed.

Push the black liner into the two tabs.

NOTE: Do not forget to take off the lens cover.

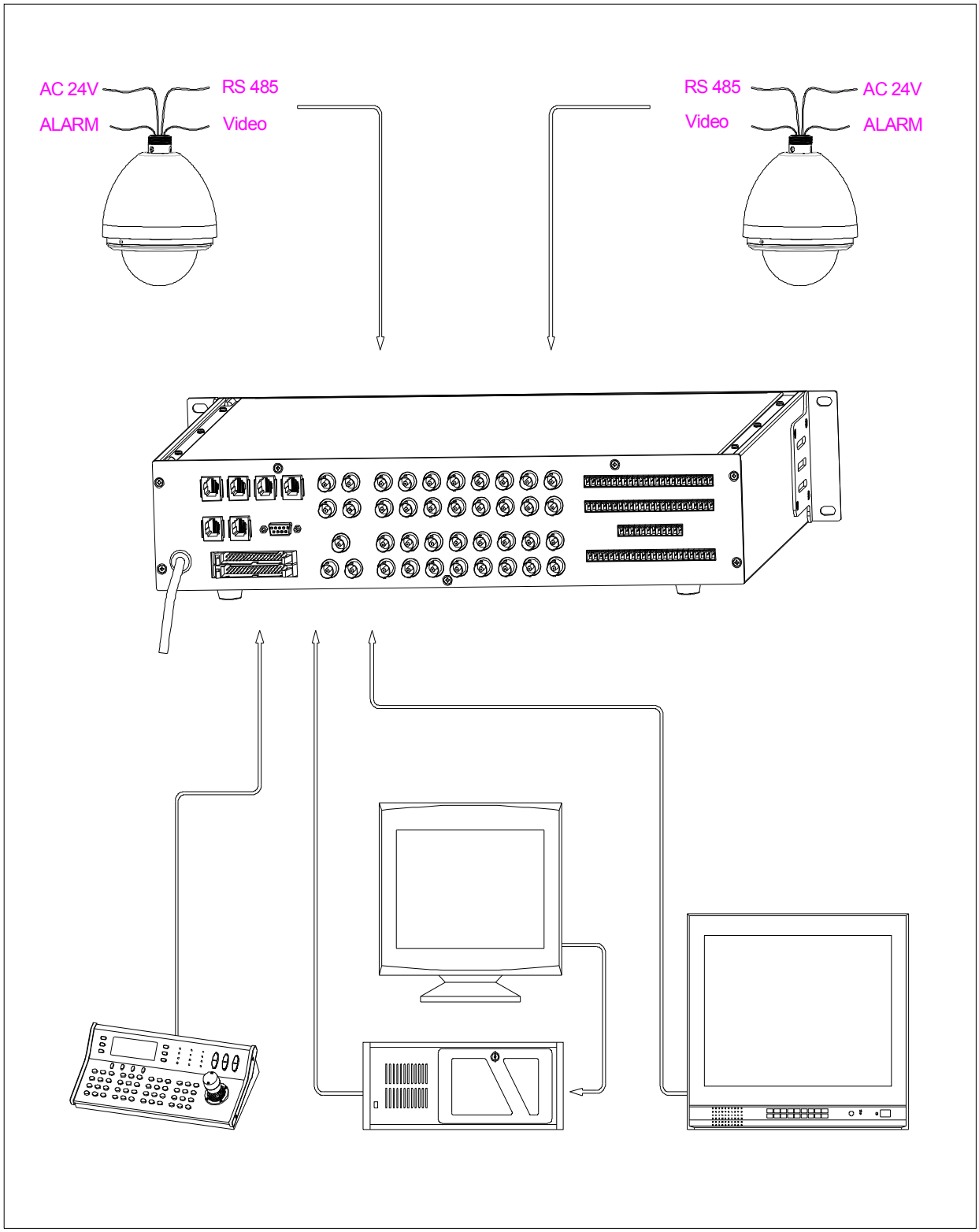


10 Install down cover.

Unscrew the two M4 screws on down cover ring. Push up the down cover into the housing and then fasten down cover with two M4 screws.

NOTE: Apply lubricant to the O-ring to make down cover easier to slip in.

System Connection



Operation

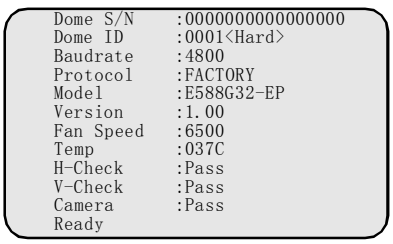
A. Operation Instruction

Two methods are available for carrying out the operation from the system controller.

1. Pressing combined hot keys to operate different functions. Please refer to the system controller manual for the detailed commands.
2. Enter the OSD menu and operate according to the following instruction.

Initial Information

When power on or restart the dome, the initial information will display on screen when the dome conducting self-testing. The information will disappear after the dome receives the first effective command.



Dome S/N: The dome's serial number

Dome ID: The dome ID address set by DIP switch or keyboard.

Baudrate: Baud rate for dome control bus.

Protocol: The dome's controlling protocol. (refer to appendix Ⅰ for more detail)

Model: The dome model number.

Fan Speed: The speed of current running fan caculated by rounds per minute.

Temp: The dome inside tempertature. Unit C or F

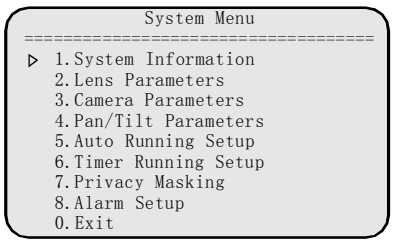
Accessing System Menu

- Call out the dome's main system menu on your monitor by calling preset 95 or calling preset 1 twice within 5 seconds.

Note: The way to call a preset may vary among keyboards from different manufactures. Please read those manuals to learn keyboard operation.

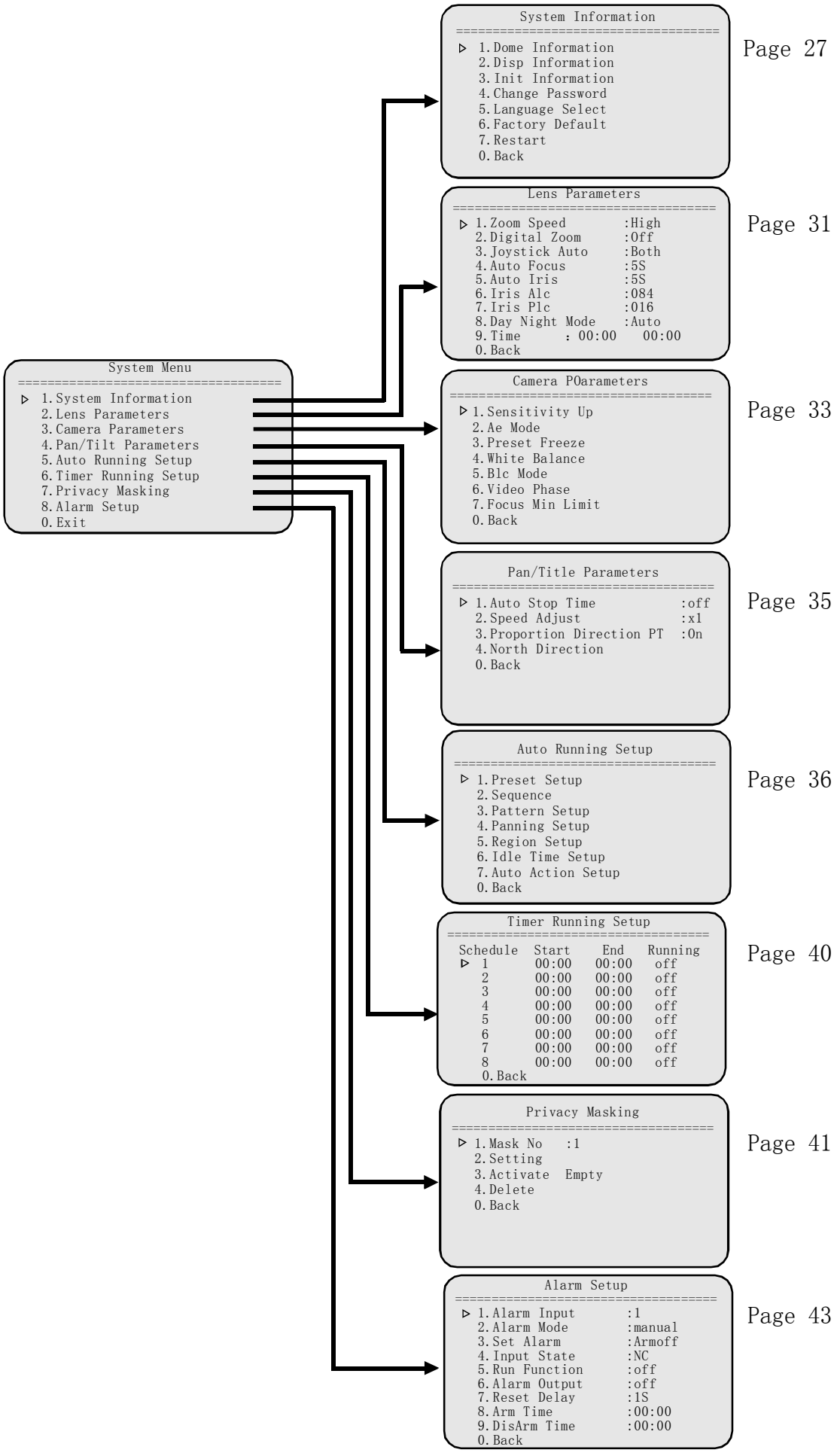
- When there is password protection, user needs to input the correct 6-bit password to enter the OSD menu. (Original password is 000000).
- To input password, move the joystick up or down to select number (0-9), move the joystick left and right to choose password digit. If the input password is wrong, the password input window will close.

Note: You still can control the dome if input a wrong password, only can't enter the OSD menu.



The opened menu will close automatically after 1 minute without receiving any operation command. All the settings will be saved automatically to protect against power cuts.

B. Menu Tree


System Menu
1.System Information
2.Lens Parameters
3.Camera Parameters
4.Pan/Tilt Parameters
5.Auto Running Setup
6.Timer Running Setup
7.Privacy Masking
8.Alarm Setup
0.Exit
System Information
1.Dome Information
2.Disp Information
3.Init Information
4.Change Password
5.Language Select
6.Factory Default
7.Restart
0.Back
Page 27
Lens Parameters
1.Zoom Speed :High
2.Digital Zoom :Off
3.Joystick Auto :Both
4.Auto Focus :5S
5.Auto Iris :5S
6.Iris Alc :084
7.Iris Plc :016
8.Day Night Mode :Auto
9.Time : 00:00 00:00
0.Back
Page 31
Camera POarameters
1.Sensitivity Up
2.Ae Mode
3.Preset Freeze
4.White Balance
5.Blc Mode
6.Video Phase
7.Focus Min Limit
0.Back
Page 33
Pan/Title Parameters
1.Auto Stop Time :off
2.Speed Adjust :x1
3.Proportion Direction PT :On
4.North Direction
0.Back
Page 35
Auto Running Setup
1.Preset Setup
2.Sequence
3.Pattern Setup
4.Panning Setup
5.Region Setup
6.Idle Time Setup
7.Auto Action Setup
0.Back
Page 36
Timer Running Setup
Schedule Start End Running
1 00:00 00:00 off
2 00:00 00:00 off
3 00:00 00:00 off
4 00:00 00:00 off
5 00:00 00:00 off
6 00:00 00:00 off
7 00:00 00:00 off
8 00:00 00:00 off
0.Back
Page 40
Privacy Masking
1.Mask No :1
2.Setting
3.Activate Empty
4.Delete
0.Back
Page 41
Alarm Setup
1.Alarm Input :1
2.Alarm Mode :manual
3.Set Alarm :Armoff
4.Input State :NC
5.Run Function :off
6.Alarm Output :off
7.Reset Delay :1S
8.Arm Time :00:00
9.DisArm Time :00:00
0.Back
Page 43

C. Menu Operation

Selecting item

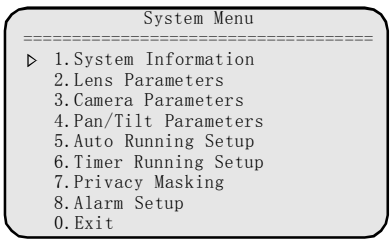
- In the main menu, the cursor flashes on the left, move the joystick up or down to move the cursor to the desired setting item. Move the joystick right to select the item.
- Select an item to ① enter its sub menu or ② run a specific function or ③ change its value or ④ edit its title.

Changing values

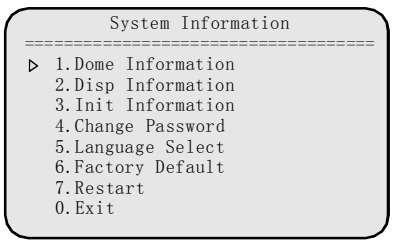
Move the joystick up or down to change the value, move the joystick left to save the setting and exit. In the case of more than one changing value, move left and right to select place, move up or down to change value, move left most to save the setting and exit.
Note: To increase the value changing speed, hold the joystick in up or down position for more than 10 seconds.

For example: In order to change the password, please follow these steps.

1. Call preset 95 or call preset 1 twice within 5 seconds to access the main menu.

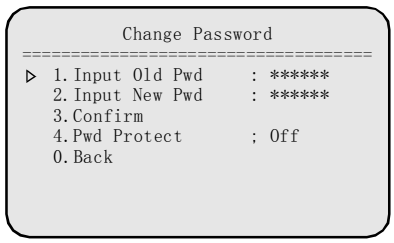


2. Move the joystick down to let the cursor point to System Information then move the joystick right to select it.
   Select Change Password in the same way.



Note: Here-in-after menu paths are written in the following format:

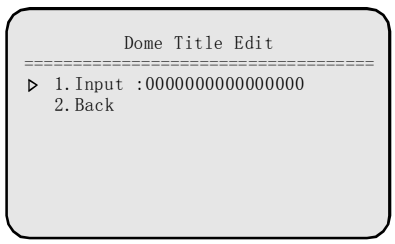
Main menu →System Information→ Change Password



3. Input the old password and new password, Default password is 000000. Move joystick left or right to selet digit; Move up or down to change the number. Move cursor to left most index position after inputting a password
4. Select "**3. Confirm**" to confirm this password changing. System will indicate "**Old Password error**" or " **Pwd Modify Success**".

Editing titles

Access Dome Title Edit Menu following the path:
System menu → Dome Information → Title → Input



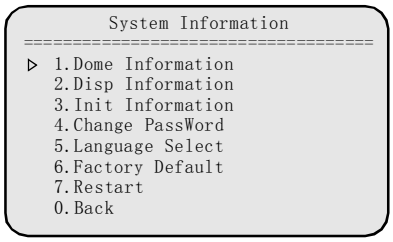
Move cursor left or right to select character, move down to edit the blinking character. Zoom In/out to switch character groups:

Number [0 1 2 3 4 5 6 7 8 9]
Capital ↕ [A B C]
Lowercast ↕ [a b c]
Sign [/ + - ( ) & % # ! $]
Special char [á í ó w é]

Move to desired character then move up to select or move down to cancel.
Note: Call preset 1 to switch between Modify and Insert editting method.

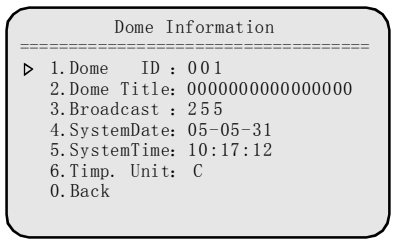
1. System Information

System menu → System Information



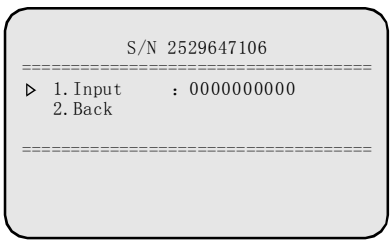
1.1 Dome Information

System Menu → System Information → Dome Information



- **Dome ID:** Dome ID shows the current dome's ID. Each dome has its unique ID, the ID varies from **001 to 255** (255 is default broadcast ID). Set the Dome ID only when DIP switch is set Programmable ID. Refer to page 45 to get information about ID setting.

  Move the cursor to Dome ID and then move the joystick right to enter dome ID setting sub-menu as following picture.



  Move the cursor to **Input** and then move the joystick right, input the S/N according to the number above the line.

  Move the joystick up or down to change the value and then move the joystick left to save the setting.

- **Dome Title:** It is the title of the dome. Assigning a name to a dome helps user to remember which dome it is. Refer to operation on page 26 to learn how to edit title.

- **Broadcast:** It sets broadcast ID number(001~255). The ID should be different from any dome's ID, default setting is 255. When a command is sent to broadcast ID, all the domes connected to the control bus accept the command. Read page 45 to get information about ID setting.

- **System Date**: Set the System Date. Display format is **year-month-day**.

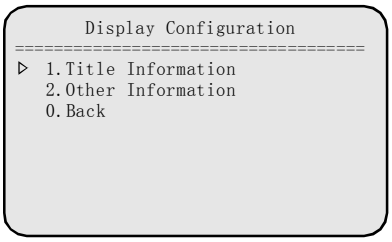
- **System Time:** set the system time in order to show the time on screen and enable timer scheduled functions. Display format: **hour : min : sec**

- **Temp Uint:** select temperature Unit C or F

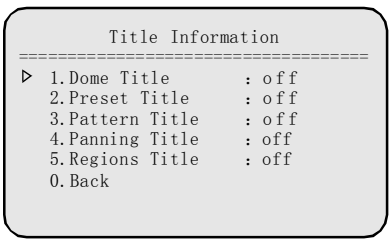
- **Back:** Exit to upper menu level.

1.2 Display Information

System Menu→ System Information → Display Information



1.2.1 Title Information



This sub-menu allows user to select either display some information on screen or not. Those information includes:

Dome Title (ON/OFF):

To set whether display dome title.

Preset Title (ON, OFF, 3S-255S) :

To set ON or OFF or display time for preset title when calling preset.

Pattern Title (ON, OFF, 3S-255S):

To set ON or OFF or display time for pattern title when the dome is replaying pattern.

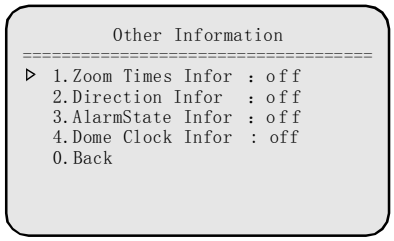
Panning Title (ON, OFF, 3S-255S) :

To set ON or OFF or display time for panning title when the dome is scanning.

Region Title (ON, OFF, 3S-255S) :

To set ON or OFF or display time for region title when the camera moves to the region.

1.2.2 Other Information



Settings for **zoom times Infor** and **Direction Infor** are: **ON, OFF, 3S-255S**.(3 seconds to 255 seconds, it shows how long time the information on screen will last.)

Zoom Times Infor (ON, OFF, 3S-255S):

To set the display time of the zoom times.

Direction Infor (ON, OFF, 3S-255S):

To set the display time of camera pointing direction.

AlarmState Infor (ON/OFF)

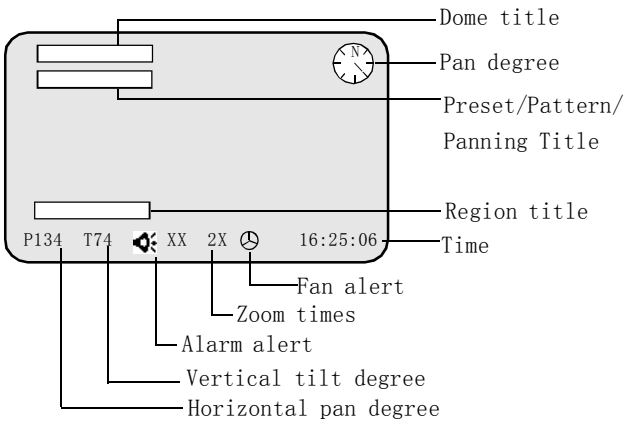
To set whether display the alarm state infor.

Dome Clock Infor (ON/OFF) :

To set whether display the system time.

Select **BACK** to return to upper menu level.

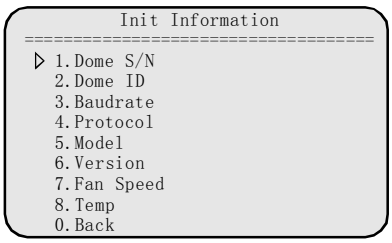
- **Information text Position**



Note: Fan symbol indicates fan speed below 1000 rounds/min. Alarm symbol indicates there is an alarm comes in.

1.3 Init Information

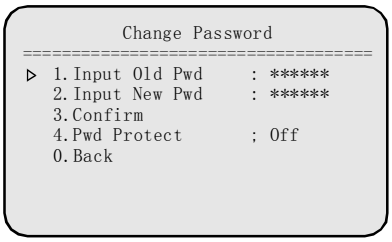
System Menu→ System Information → Init Information



This menu shows the dome's summary information. Helping user to know the dome's states. Information includes: Dome S/N number,Dome ID (hard ID or soft ID), BaudRate, Protocol, Dome model, Software version, Fan speed (rounds per min), Dome inside temperature.

1.4 Change Password

System menu → System Information → Change Password



Old password: Input Old password, Default password is 000000.

New password: Input new password

Confirm: To confirm the password changing. System will pop-up "old password error" if old password inputted is not correct,or pop-up "Pwd modify success" to indicate password had been changed.

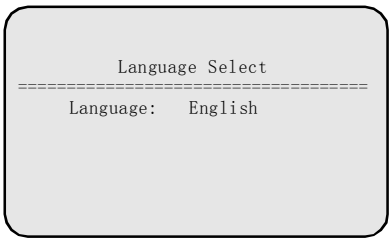
Pwd protect: To enable or disable password protection. System will request password to change this setting. If Pwd Protect is ON, user needs to enter password to access menu or set preset.

Back: Return to upper menu level

Note: Contact your supplier for master password if you forget the password.

1.5 Language Select

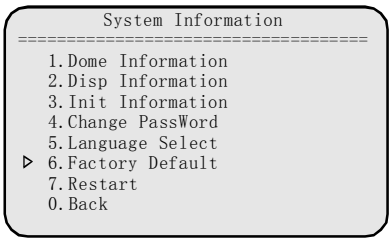
System Menu→ System Information → Language Select



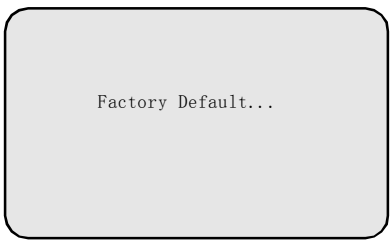
Select one of the following languages: English, French, German, Italian, Portaguese, Spanish, Russian, Chinese

1.6 Factory Default

System menu → System Information → Factory Default



Select **Factory Default** to restore factory default settings. System will request password to set it. Factory default will not change dome ID.

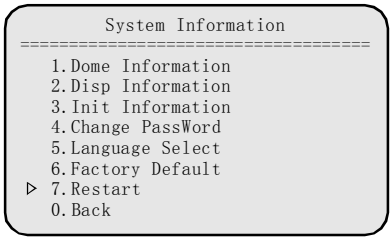


List of Default Setting

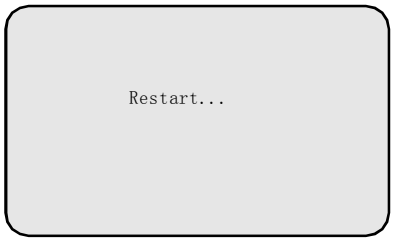
Zooming Speed	HIGH	White Balance	Auto
Digital Zoom	x10	Foucs Min Limit	30CM
Joystick Auto	Both	Idle Time	30S
Auto Focus	5S	Auto action	Off
Auto Iris	5S	Alarm Mode	Namual
Iris Alc	084	Set Alarm	Armoff
Iris Plc	016	Input State	NC
Day Night Mode	Auto	Run Function	Off
Sensitivity	1/1.5	Alarm Output	Off
Preset Freeze	Off	Reset Delay	20S

1.7 Restart

System Menu→ System Information → Restart

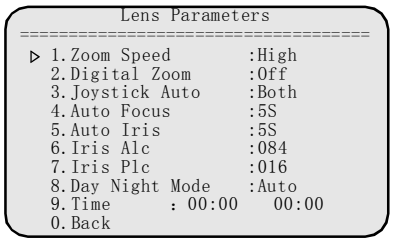


Select Restart to reboot the dome. Then the pop-up window appears as below. Settings will not change after restarting.



2. Lens Parameters

System Menu → Lens Parameters



2.1 Zooming Speed

To set the zoom speed level, **High** or **Low**

2.2 Digital Zoom

Digital zoom magnifies the picture by duplicating pixels. The picture is enlarged but the resolution is still the same. This menu item sets max digital zoom magnification times.

OFF : Turn off digital zoom

X1-~ X10 : Max. digital zoom times

2.3 Joystick Auto

To set automatic restore mode. When the joystick moves, the selected function will start. Function options are:

Both : Joystick movement triggers both auto focus and auto iris. (default)

Focus : Joystick movement triggers auto focus only.

Iris: Joystick movement triggers auto iris only.

Off : Joystick movement triggers none of the functions.

2.4 Auto Focus

System default of Auto Focus is to automatically adjust the focus to get the clear image. Focus can also be manually controlled by key board or matrix. For manual operation detail, please refer to keyboard or matrix operation manual.

This item sets the time to restore auto focus after focus is manually adjusted.

OFF: Never restore auto focus. That means focus is always in manual mode.

001-255: The dome will start auto focus that number of seconds after user manually adjust focus.

Note: The camera might not be able to auto focus in the following circumstances:

1) Target is not in the center of image.
2) Near and far targets in the same picture can not be both clear.
3) Target is a strong light object. Such as spotlight etc.
4) Target is behind the glass with water drop or dust.
5) Target moves too fast.
6) Large area target such as wall.
7) Target is too dark or vague.
8) Joystick Auto set Off or Joystick Auto set Iris, and Focus is set OFF.

2.5 Auto Iris

Light goes through iris and reaches CCD to form an image. Larger iris lets more light goes through and the image will be brighter. Iris can be controlled automatically or manually. For manual operation detail, please refer to keyboard or matrix manual.

This item sets the time to restore auto iris after iris is manually changed.

OFF: Never restore auto iris. That means iris is always in manual mode.

001-255: The dome will start auto iris that number of seconds after user manually adjust iris.

2 6 Iris Alc

To set the iris average level control value. The value could be 000~255.

Default value: 22X color camera: 066, 23X color/ mono camera: 084 (different camera has different ALC default value)

Note: Changing default value is strongly **NOT** recommended.

2.7 Iris Plc

To set the iris peak level control value. The value could be 000~127.

Default value: 23X color/mono camera: 016 (different camera has different PLC default value)

Note: Changing default value is strongly **NOT** recommended.

2.8 Day/Night Mode

This is to set the dome color/monochrome switching mode. Color mode is suitable to work in daytime because it needs higher illumination. By contrary, light sensitivity of mono mode is much higher. It is suitable to work at night in low illumination environment but the video is black and white.

Auto: The dome will automatically change modes according to the environment illumination.
Day: The dome is always in colorful mode.
Night: The dome is always in monochrome mode.
Timer: Set schedule for mode change.

Note: You need to set exposure mode to auto in order to get auto Day/Night mode.

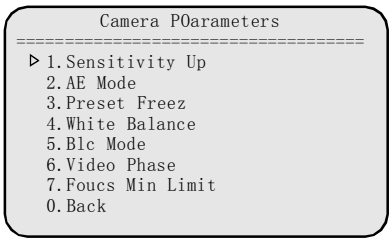
2.9 Time: 00:00 00: 00

Set the Day Mode start time and Night mode start time. If the two time are the same, the camera will keep current mode all the time.

Note: Iris Plc, IRF Control, Day Mode Time, Night Mode Time setting items are are for some models only.

3. Camera Parameters

System Menu → Camera Parameters



3.1 Sensitivity Up

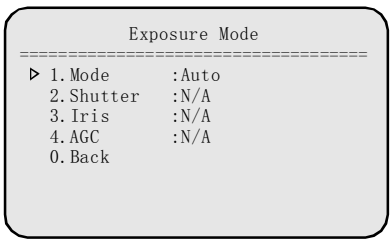
In extremely low illumination circumstance, the images retrieved by the dome are very dark. Slow shutter gathers more light.Pictures will be brighter.

OFF: Disable this function. (default)
1/1.5, 1/3, 1/6, 1/12, 1/25: The smaller value represents brighter pictures.

Note: High sensitivity will make video sluggish.
Note: Sensitivity up is only available when **AE mode** is **Auto**.

3.2 AE Mode

System Menu → Camera Parameters → AE Mode



To set exposure mode. The value option are: **Auto, Shutter, Iris, AGC.**

Shutter:

Set Shutter speed in priority, available: 1/1.5, 1/3, 1/6, 1/12, 1/25, 1/100, 1/150, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000, 1/30000

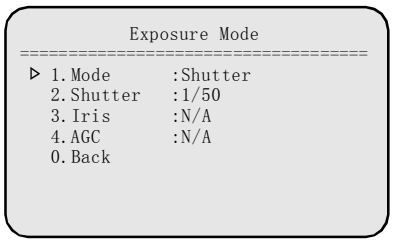
Iris:

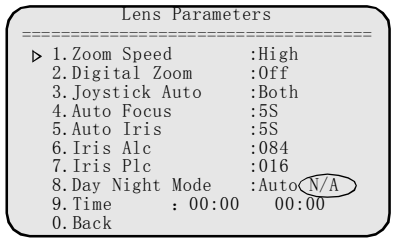
Set Iris in priority. Values are: F1.6, F2.2, F3.2, F4.4, F6.4, F8.8, F12, F17, F24, F34

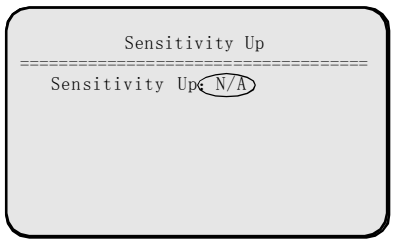
AGC:

Set Auto gain control in prionity. Values are: 0dB, 6dB,12dB,18dB,24dB,30dB. Higher dB makes video brighter.

Note: Day/Night auto mode and Sensityvity Up will be void if exposure mode is not auto.





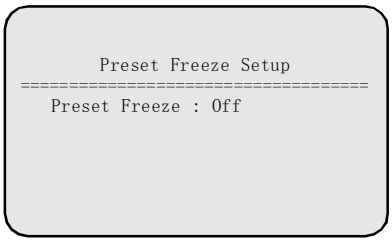


Only one of Shutter, Iris, AGC will take effect

Mode	Shutter	Iris	AGC
Auto	N/A	N/A	N/A
Shutter	1/1.5、1/3、1/6、1/12、1/25、1/50、1/100、1/150、1/250、1/500、1/1000、1/2000、1/4000、1/10000、1/30000	N/A	N/A
Iris	N/A	F1.6、F2.2、F3.2、F4.4、F6.4、F8.8、F12、F17、F24、F34	N/A
AGC	N/A	N/A	0dB、6dB、12dB、18dB、24dB、30dB

3.3 Preset Freeze

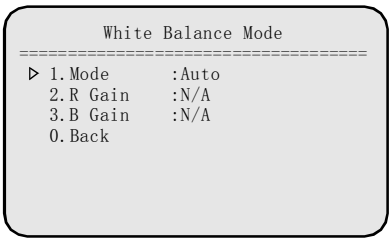
System Menu → Camera Parameters → Preset Freeze



If Preset Freeze is On, the camera will not transmit the video when it moves to a preset. The image freezes until the image of the preset presents. Therefore you can not see the scene between the current postion and the preset. This feature reduces useless date traffic in web application and save storage space for DVR.

3.4 White Balance

System Menu → Camera Parameters → White Balance

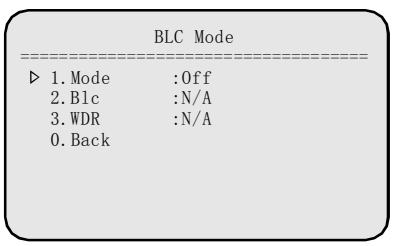


White balance simulates sun light circumstance. However in some lighting conditions, user may want to manually adjust the red and blue settings for optimal viewing. The setting options are:

AUTO Auto white balance. (default setting)
USER Manually set the red and blue values.
R Gain & B Gain Set red and blue color depth.

3.5 BLC Mode

System Menu → Camera Parameters → BLC Mode



If the backlight is bright, the objects in the center of the picture may appear dark. The dome can auto adjust the brightness of the whole image according to the brightness of center point. Therefore backlight compensation can increase the brightness of the objects in the center.

OFF: Disable this function.
BLC: Standard BLC mode.
WDR: Wide Dynanic Rage mode.

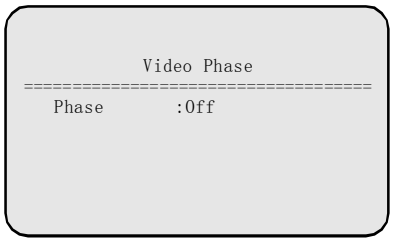
When the backlight mode is setting in the **BLC** or **WDR** mode, use this item to set diffe rent backlight compensation grade.

000 Disable backlight compensation function.
001-255 Choose different backlight compensation grade. Greater value means more backlight compensation.

Mode	BLC	WDR
Off	N/A	N/A
BLC	000-255	N/A
WDR	N/A	000-128

3.6 Video Phase

System Menu → Camera Parameters → Video Phase

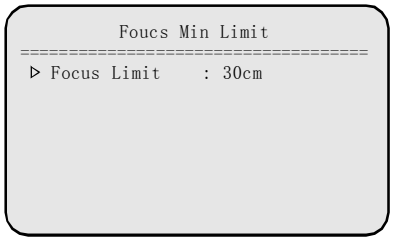


OFF : Disable this function.
001~360: Choose the suitable phase to get synchronous video.
Note: Some mode only has **ON/OFF**.

3.7 Foucs Min. Limit

System Menu → Camera Parameters → Foucs Min Limit

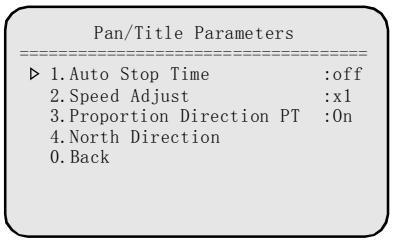
Set a distance from the lens, the camera will not focus on objects in that distance. E.g. This feature can prevent camera from focusing on the down cover.



Values for focus limit are: **1cm, 10cm, 30cm, 100cm**

4. Pan/Title Parameters

System Menu→ Pan/Title Parameters



4.1 Auto Stop Time

For some particular protocols, the dome will not stop moving even there is no operation on joystick. This menu item sets the time that after a period of specified time the dome will stop itself. Values are in 50ms unit:

OFF: Disable this function (default setting)

001~255: After that value*50ms the dome will automatically stop moving.

4.2 Speed Adjust

Some protocols' controlling speed is much faster or much lower, set Speed Adjust to adjust the dome movement. Options are as below:

X1: Original speed (default setting)

↑2 ~ ↑32: Times faster than original speed.

↓2 ~ ↓32: Times slower than original speed.

4.3 Proportion Direction PT

The dome moves at a speed of certain degrees per second. Objects on screen move much faster in telescope than in widescope, even undesirable too faster in some case. This function decreases the dome movement speed while zooming in.

ON : Enable (default setting)

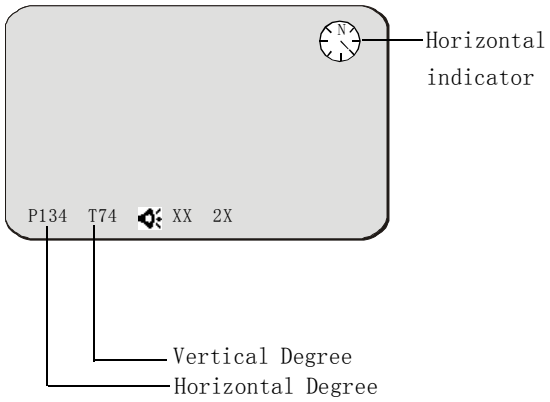
OFF: Disable

4.4 North Direction

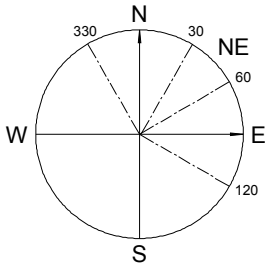
User can set orientation on screen by using joystick to postion north.

Pan degree is the relative degree to a specific direction, that direction is called NORTH.

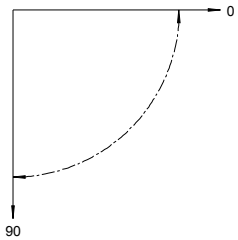
Note: Not restrict to geographical north.



Horizontal 0～360



Vertical 0～90

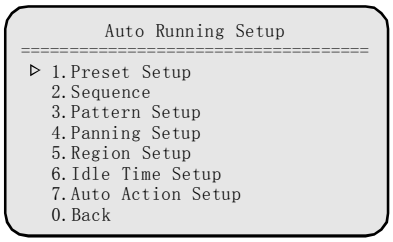


For example

- Move to a position and call preset 1 to save.

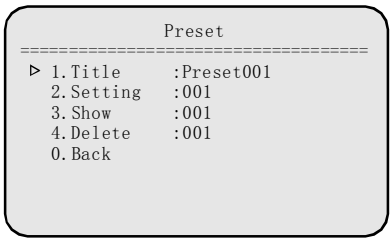
5. Auto Running Setup

System Menu → Auto Running Setup



5.1 Preset Setup

System Menu →Auto Running Setup→ Preset



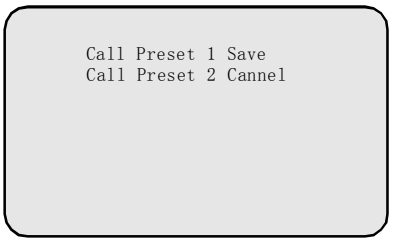
Preset is the point that user save for frequently use. A preset saves both direction and zoom parameter, the camera will quickly and precisely go and zoom to a specific point if a preset is called. E.g. If you often want to see the door you can set the point of door as preset P, then you can see the door simply by calling the preset P. This dome has 220 presets.

Note: preset 95 is reserved for accessing dome menu.

TITLE: To set the preset title. Move left or right to select the target letter,Turn joystick left or right to select input method. Move up or down to select the desired letter, number or character.

Note: If you are not familiar with editing, please refer to Operation on page 26.

Setting Select a preset number then move right., The following menu will display



Move to the desired position and zoom to a suitable level, call preset 1 to save the current preset, Call preset 2 to cancel.

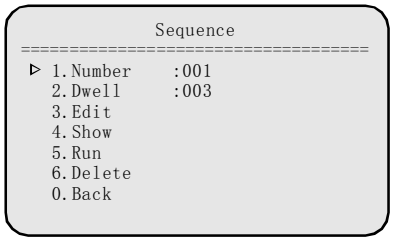
SHOW: Select a preset number and show the preset position

DELETE: Select a preset number and delete.

BACK Select it to back to upper menu level.

5.2 Sequence Setup

System Menu → Auto Running →Sequence Setup



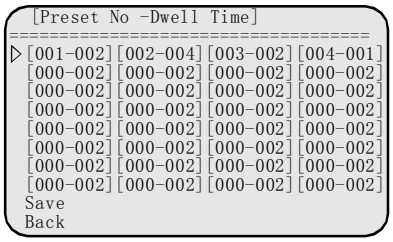
A "sequence" is a sequencial moving from preset to preset and dwell for a specific time for each preset. It is useful if you need to repeat switching among a number of presets. E.g. A shopping mall has several entrances. A sequence can automatically loop the position of each entrance.

4 sequences can be set for the dome. Each sequence can contain up to 32 presets and dwell time for each preset is independent.

Number: Shows the current tour number. Values are **001~004**. Pan right then tilt up or down to select other sequence.

Dwell: Set the default dwell time in second for each preset. Value ranges from 000～255.
For example, Dwell: 001, all presets' dwell time is set as 1 second, user can set independent dwell time for each preset in Edit menu.

Edit: To edit the presets and corresponding dwell time in a tour. The following picture shows the edit menu.



E.g. 003-002 means going to preset 003 and dwell for 2 second. Move joystick left or right to select editing item, move up or down to change value.

In the example in picture above, the tour starts from preset 1 dwells for 2 second, then goes to preset 2 dwell for 4 second, then preset 3 for 2 second and finally preset 4 for 1 second.

Select **Save** to save the sequence, select **Back** to quit without saving.

Note: When a preset's dwell time is set 0, system will skip that preset. System will consider preset 0 as the end of a sequence.

Show: To run the current sequence once. Use this function to check the sequence.

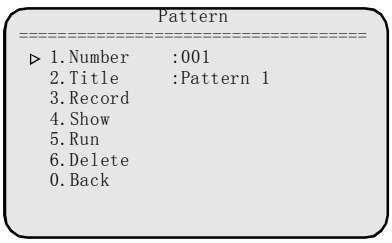
Run: To run the current sequence continuously. System will loop the sequence.

Delete : To delete current sequence.

Back: Exit to upper menu level.

5.3 Pattern Setup

System Menu → Auto Running →Pattern Setup

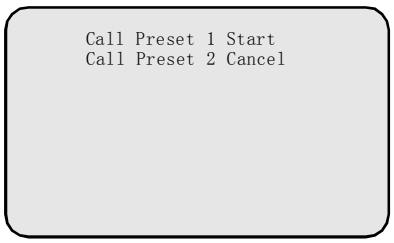


A pattern records a continuous movement of the camera in a period of time. The difference between sequence and pattern is that camera moves direct line from a preset to another at a fixed speed in sequence mode but it moves flexible curve at various speed in pattern mode. Speed Dome can record 4 patterns, up to 180 seconds each.

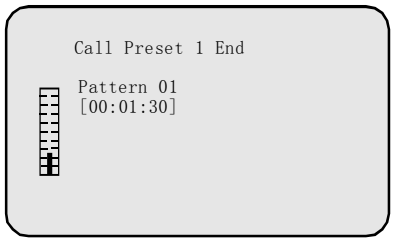
Number: Indicates the current pattern number. Values are **001~004**. Pan right then tilt up or down to select other pattern.

Title: Title is the title of the Pattern.
Assigning a name to a Pattern helps user to remember which pattern it is. Refer to Operation on page 26 to learn how to edit title.

Record: To start recording the pattern. The recording begins immediately after calling preset 1 or call preset 2 to cancel the recording.



Move and zoom the camera in any route and speed you want, call preset 1 to end the recording.



Column on the left shows the time lapse and volume of the pattern memory.

Note: Pettern memory only records the operation of pan/tilt and lens command.

Show: To run the current pattern once. Use this function to check the pattern.

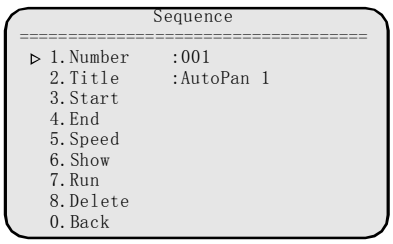
Run: To run the current pattern continually. System will loop the pattern.

Delete: To delete current pattern.

Back: Exit to upper menu level.

5.4 Panning Setup

System Menu → Auto Running Setup → Panning Setup



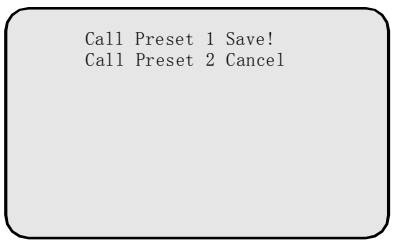
Autoscan enables you to scan back and forth an area between two parallel sites at a definable speed. E.g. If two sites (A & B) are set, the camera will loop to and from those two sites. A→B→A→B→……
This dome has max. **4** Pannings.

Note: Camera makes horizontal movement only.
Tips: Zoom to desired level then run panning, the camera will keep that zoom.

Number: Display the current panning number. Values are **001~004**. Pan right then tilt up or down to select other panning.

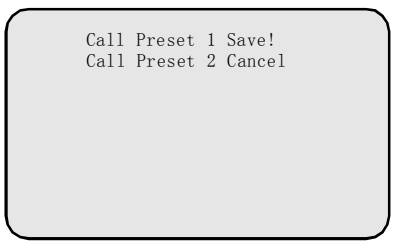
Title: Title is the title of the panning. Assigning a name to a panning helps user to remember which panning it is. Refer to Operation on page 26 to learn how to edit title.

Start: To set the start position. The following picture shows the setting menu.



Move the camera to a particular position and call preset 1 to save or call preset 2 to cancel

End: To set the end position. Set it in the same way as Start.



Speed: Set the panning speed (camera movement speed). Value ranges from **001 to 255**, the greater number represents the higher speed. Pan right to select, tilt up or down to change value.

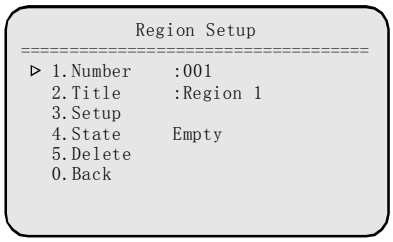
Show: To run the current panning once, use this function to check the panning.

Run: To run the panning continuously.

Delete: To delete current panning.

5.5 Region Setup

System Menu → Auto Running Setup → Region Setup



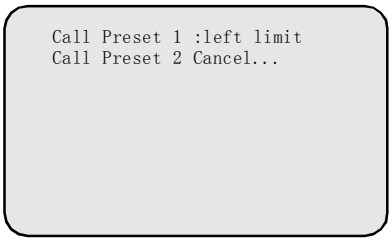
A region is an area between two parallel points. User can assign a title for a REGION. (E.g. Dangerous area). Whenever the camera moves into the region, the title will display on the screen to alert the user.

Number: Display the current region number. Values are **001~008**. Pan right then tilt up or down to select other region.

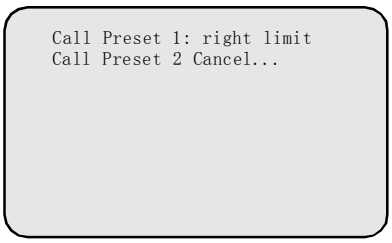
Title: To set the region title.

Note: If you are not familiar with editing, please refer to "Operation " on page 26.

Setup: Move to desired position and call preset 1 to save left limit or call preset 2 to cancel.



After setting the left limit, below menu will pop-up, set the right limit as the same way as setting left limit



State: Indicate the current region is existing or empty

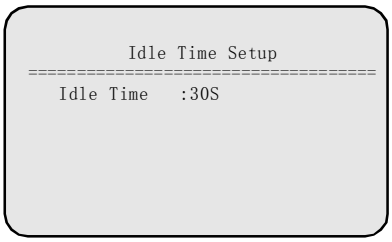
Delete: Delete current region.

Back: Exit to upper menu level.

5.6 Idle Time Setup

This function let the system automatically run assigned function after a specific period of system idle time. For example: the dome is running a sequence and a operator breaks the sequence to do other work, the dome can automatically carry on the sequence within a period of time after the operator finishes using it.

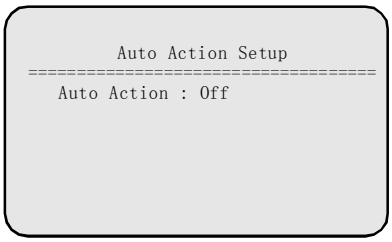
System Menu→ Auto Running Setup → Idle Time Setup



Idle Time : Idle time means a period of time without operation on the keyboard. The values includes: **Off, 003S~255S**.

5.7 Auto Action Setup

System Menu→ Auto Running Setup → Auto Action Setup



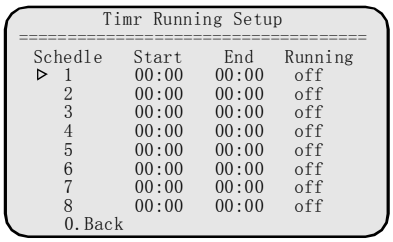
Auto Action: Idle action refers to the function that system will automatically run when idle time is up.

The function could be:

OFF:	Disable this function
Preset (1~220):	Call preset 001~220
Panning (1~4):	Run panning 001~004
Sequence (1~4):	Run sequence 001~004
Pattern (1~4):	Run pattern 001~004

6.Timer Running Setup

System Menu→ Timer Running Setup



This function allows the system to run specified functions during the scheduled time. For example, let the dome run a Pattern during 3 to 5 pm without any operator to control the dome at that time.

Schedule: Display current time slot index number. 8 time slots are available. Move joystick right and then move up o down to select other time slot.

Start: Set the start time of Timer Runing.

End: Set the stop time of Timer Running.

Running: Enable the auto running functions during the specified period of time.

OFF: Disable auto running function.

Preset (1~220): Enable Preset function.

Sequence (1~4): Enable Sequence funtion.

Pattern (1~4): Enable Pattern function.

Panning (1~4): Enable Panning function.

NOTE:

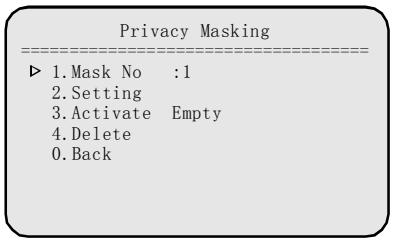
The specified time can not be overlapped. Otherwise, the assigned Timer Running functions are ineffective.

Timer Running function is prior to Auto Action function.

Operations on keyboard will break the Time Running function, however the function will continue after ten seconds idle.

7. Privacy Masking

Note: Privacy masking is for some models only.
System Menu → Privacy Masking



The feature of privacy masking can protect public privacy. E.g. a resident's window, a toilet. Integrated Speed Dome can cover a black square on some particular parts.

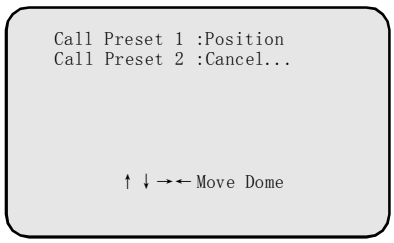
Mask No : Display the current mask zone number. Values are **1~8** or **1~4**. Pan right then tilt up or down to select other mask zone.

Setting: Select this menu item to set the position and size of the masking zone.

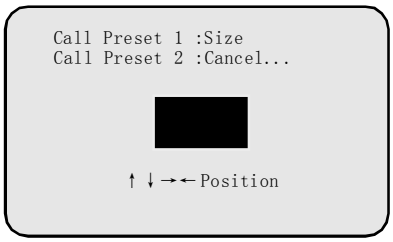
■ **For Hitachi camera**

The setting has three steps: **A. Choose area, B. Set position, C. Set size**.

A. Choose area
Move the camera to your desired area and call preset 1 to confirm.

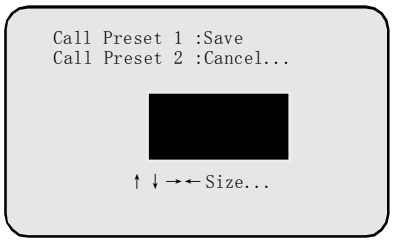


B. Set position
Enter setting, the following window will pop up:



Move the black square to the desired position, call preset 1 to save.
Tips: Match the top left angle of the black square to wanted position because the black square can expand down and right only.

C. Set size



Move the joystick to adjust the size of the black square, call preset 1 to save.

Activate: Enable / disable the current privacy masking. **ON**: enable, **OFF**: disable.
Some module can set the the zoom time for Privacy Masking activation. When zoom time is greater than a specific time, the dome will auto activate the privacy mask.

Delete : To delete current privacy masking.

Back: Back to main menu.

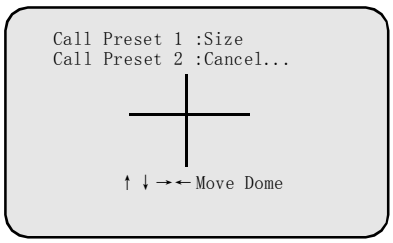
Activate: To indicate whether this privacy masking is existing or not. **Empty**: not set. **Open**: Existing

Delete: To delete current privacy masking.

■ **For Sony camera**

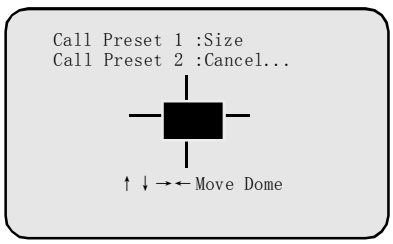
The setting has two steps: **A. Choose area, B. Set size**.

A. Choose area



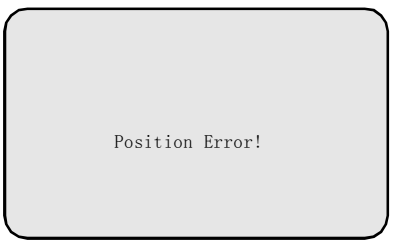
Move the cross to the center of desired position, call preset 1 to save the position then go to step B or call preset 2 to cancel.

B. Set size



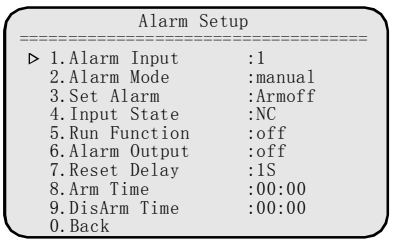
Move up, down, left or right to adjust the size, call preset 1 to save or call preset 2 to cancel.

Note: One screen has limited number of privacy mask. If the masking number exceeds, system will pop up an alert massage. User can choose other place or delecte other masking to set a new one.



8. Alarm Setup

System Menu → Alarm Setup



Alarm Input: Select alarm input channel number (**1-7**).

Alarm Mode: Auto or manual set alarm.

Auto: Dome will set alarm based on Arm Time and DisArm time.

Manual: Manually set alarm in following item

Set Alarm: **Arm off** or **Arm on**.
(Disable or enale the alarm input channel)

Input State: Select current alarm input channel's normal state. **NO** or **NC** (normal open or normal close).

Run Function: Set auto respond function.

Off, Preset (001-220), Panning (1-4), Pattern (1-4), Sequence (1-4).

Alarm Output: Select respond output channel for current input channel.

Off, 1, 2, 1&2.

Reset Delay: Set the preriod time that system will auto reset the alarm after current alarm inputs

Values: **1 second to 255 second.**

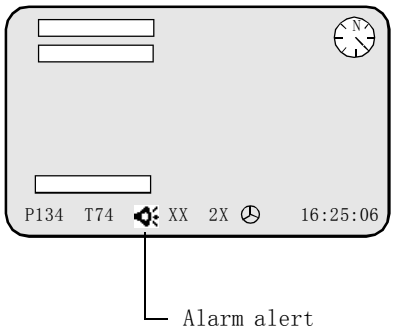
Arm Time: Set the alarm enable time.

DisArm Time: Set the alarm disable time.

Note: It only takes effect when alarm mode is set auto.

Back: Back to system menu.

Tips: A symbol will flash when an alarm comes in.

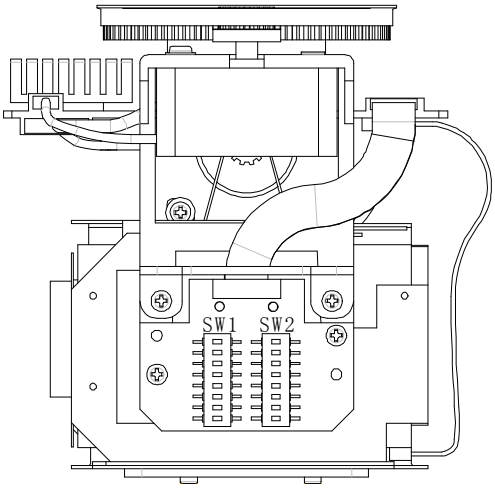


Appendix I: Dip Switch & Jumper Settings

This appendix guides you to set protocol, baud rate, dome address, video cable type, resistor jumper and alarm output method.

DIP Switches' position

The corresponding Dip-switches' positions are shown below:



Protocol and baud rate setting

SW2 is for protocol and baud rate settings.The first 6 (1-6) bits of SW2 are for protocol setting and the last 2 (7-8) bits are for baud rate setting. Below charts shows the setting detail. O means ON, blank means OFF. Default setting is 4800 bps.

Baud Rate	Switch Number							
	ON 1	2	3	4	5	6	7	8
2400bps								
4800bps							○	
9600bps								○
19200bps							○	○

NOTE: If you are using **AD** or **PHILIPS** or **BBV** protocol, please set the baud rate to 19200 bps.

This speed dome supports multiprotocol. The setting chart is shown below, O means ON, blank means OFF, X means either ON or OFF. Default setting is factory.

Protocol	Switch Number							
	ON 1	2	3	4	5	6	7	8
FACTORY								
VCL	○							
PELCO_P		○						
PELCO_D	○	○						
MOLYNX			○					
VICON	○		○					
DIAMOND		○	○					
KALATEL	○	○	○					
Reserved				○				
Reserved	○			○				
Reserved		○		○				
PELCO_C*	○	○		○				
Reserved			○	○				
Reserved	○		○	○				
Reserved		○	○	○				
AD*	○	○	○	○				
Reserved					○			
PANASONIC	○				○			
Reserved		○			○			
SENSORNET*	○	○			○			
Reserved			○		○			
BBV*	○		○		○			
Reserved		○	○		○			
Reserved	○	○	○		○			
Reserved				○	○			
Reserved	○			○	○			
Reserved		○		○	○			
Reserved	○	○		○	○			
Reserved			○	○	○			
Reserved	○		○	○	○			
Reserved		○	○	○	○			
Reserved	○	○	○	○	○			
PHILIPS*	X	X	X	X	X	○		

NOTE: Protocols marked with * need other protocl board.

Dome address setting

The control commands contain target dome's ID. The dome only reacts to the command sent to its own address or bradcast address. So, each dome should be assigned an address. Four kinds of IDs are applicable for domes:

- **Hard ID**: Hard ID is set via DIP SW1, it can not be changed from OSD menu. Hard ID ranges from 1 to 255.
- **Programmable ID**: Set all 8bits of SW1 to ON to activate soft address. Input 10-bit camera SN number, and then set dome ID by controller(The dome SN number can be found on the side of the camera or on the pakage.).
- **Debug ID**: Set the SW1 to 0 (all OFF), the dome will react to any command for any ID.
  NOTE: Debug ID only works with Factory protocol.
- **Broadcast ID**: When a command is sent to broadcast ID, all domes connected to the control bus will respond to that command. Broadcast ID is definable, ranges from 1 to 255, the default broadcast ID is 255.

SW1 is for dome ID setting. The setting is strictly according to binary system, if you are not familiar with binary system please look up the address setting chart.

NOTE: When using Philips protocol, the first 5 bits of SW2 and all bits of SW1 are for address setting. Max address can be 8191. Example: in order to set address 2657, set bit 1, 6, 7 of SW1 and bit 2, 4 of SW2 ON. (2657=1+32+64+512+2048)

Address setting chart

O means ON, blank means OFF.

ID	Switch Number							
	ON 1	2	3	4	5	6	7	8
0								
1	○							
2		○						
3	○	○						
4			○					
5	○		○					
6		○	○					
7	○	○	○					
8				○				
9	○			○				
10		○		○				
11	○	○		○				
12			○	○				
13	○		○	○				
14		○	○	○				
15	○	○	○	○				
16					○			
17	○				○			
18		○			○			
19	○	○			○			
20			○		○			
21	○		○		○			
22		○	○		○			
23	○	○	○		○			
24				○	○			
25	○			○	○			
26		○		○	○			
27	○	○		○	○			
28			○	○	○			
29	○		○	○	○			
30		○	○	○	○			
31	○	○	○	○	○			
32						○		
33	○					○		
34		○				○		
35	○	○				○		
36			○			○		
37	○		○			○		
38		○	○			○		
39	○	○	○			○		
40				○		○		
41	○			○		○		
42		○		○		○		
43	○	○		○		○		

ID	Switch Number							
	ON 1	2	3	4	5	6	7	8
44			○	○		○		
45	○		○	○		○		
46		○	○	○		○		
47	○	○	○	○		○		
48					○	○		
49	○				○	○		
50		○			○	○		
51	○	○			○	○		
52			○		○	○		
53	○		○		○	○		
54		○	○		○	○		
55	○	○	○		○	○		
56				○	○	○		
57	○			○	○	○		
58		○		○	○	○		
59	○	○		○	○	○		
60			○	○	○	○		
61	○		○	○	○	○		
62		○	○	○	○	○		
63	○	○	○	○	○	○		
64							○	
65	○						○	
66		○					○	
67	○	○					○	
68			○				○	
69	○		○				○	
70		○	○				○	
71	○	○	○				○	
72				○			○	
73	○			○			○	
74		○		○			○	
75	○	○		○			○	
76			○	○			○	
77	○		○	○			○	
78		○	○	○			○	
79	○	○	○	○			○	
80					○		○	
81	○				○		○	
82		○			○		○	
83	○	○			○		○	
84			○		○		○	
85	○		○		○		○	
86		○	○		○		○	
87	○	○	○		○		○	

ID	Switch Number							
	ON 1	2	3	4	5	6	7	8
88				○	○		○	
89	○			○	○		○	
90		○		○	○		○	
91	○	○		○	○		○	
92			○	○	○		○	
93	○		○	○	○		○	
94		○	○	○	○		○	
95	○	○	○	○	○		○	
96						○	○	
97	○					○	○	
98		○				○	○	
99	○	○				○	○	
100			○			○	○	
101	○		○			○	○	
102		○	○			○	○	
103	○	○	○			○	○	
104				○		○	○	
105	○			○		○	○	
106		○		○		○	○	
107	○	○		○		○	○	
108			○	○		○	○	
109	○		○	○		○	○	
110		○	○	○		○	○	
111	○	○	○	○		○	○	
112					○	○	○	
113	○				○	○	○	
114		○			○	○	○	
115	○	○			○	○	○	
116			○		○	○	○	
117	○		○		○	○	○	
118		○	○		○	○	○	
119	○	○	○		○	○	○	
120				○	○	○	○	
121	○			○	○	○	○	
122		○		○	○	○	○	
123	○	○		○	○	○	○	
124			○	○	○	○	○	
125	○		○	○	○	○	○	
126		○	○	○	○	○	○	
127	○	○	○	○	○	○	○	
128								○
129	○							○
130		○						○
131	○	○						○

ID	Switch Number							
	ON 1	2	3	4	5	6	7	8
132			○					○
133	○		○					○
134		○	○					○
135	○	○	○					○
136				○				○
137	○			○				○
138		○		○				○
139	○	○		○				○
140			○	○				○
141	○		○	○				○
142		○	○	○				○
143	○	○	○	○				○
144					○			○
145	○				○			○
146		○			○			○
147	○	○			○			○
148			○		○			○
149	○		○		○			○
150		○	○		○			○
151	○	○	○		○			○
152				○	○			○
153	○			○	○			○
154		○		○	○			○
155	○	○		○	○			○
156			○	○	○			○
157	○		○	○	○			○
158		○	○	○	○			○
159	○	○	○	○	○			○
160						○		○
161	○					○		○
162		○				○		○
163	○	○				○		○
164			○			○		○
165	○		○			○		○
166		○	○			○		○
167	○	○	○			○		○
168				○		○		○
169	○			○		○		○
170		○		○		○		○
171	○	○		○		○		○
172			○	○		○		○
173	○		○	○		○		○
174		○	○	○		○		○
175	○	○	○	○		○		○

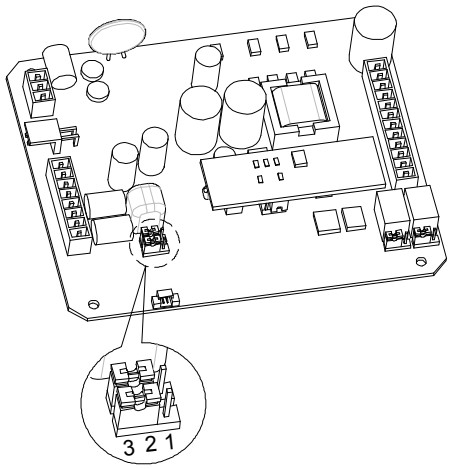
ID	Switch Number							
	ON 1	2	3	4	5	6	7	8
176					○	○		○
177	○				○	○		○
178		○			○	○		○
179	○	○			○	○		○
180			○		○	○		○
181	○		○		○	○		○
182		○	○		○	○		○
183	○	○	○		○	○		○
184				○	○	○		○
185	○			○	○	○		○
186		○		○	○	○		○
187	○	○		○	○	○		○
188			○	○	○	○		○
189	○		○	○	○	○		○
190		○	○	○	○	○		○
191	○	○	○	○	○	○		○
192							○	○
193	○						○	○
194		○					○	○
195	○	○					○	○
196			○				○	○
197	○		○				○	○
198		○	○				○	○
199	○	○	○				○	○
200				○			○	○
201	○			○			○	○
202		○		○			○	○
203	○	○		○			○	○
204			○	○			○	○
205	○		○	○			○	○
206		○	○	○			○	○
207	○	○	○	○			○	○
208					○		○	○
209	○				○		○	○
210		○			○		○	○
211	○	○			○		○	○
212			○		○		○	○
213	○		○		○		○	○
214		○	○		○		○	○
215	○	○	○		○		○	○
216				○	○		○	○
217	○			○	○		○	○
218		○		○	○		○	○
219	○	○		○	○		○	○

ID	Switch Number							
	ON 1	2	3	4	5	6	7	8
220			○	○	○		○	○
221	○		○	○	○		○	○
222		○	○	○	○		○	○
223	○	○	○	○	○		○	○
224						○	○	○
225	○					○	○	○
226		○				○	○	○
227	○	○				○	○	○
228			○			○	○	○
229	○		○			○	○	○
230		○	○			○	○	○
231	○	○	○			○	○	○
232				○		○	○	○
233	○			○		○	○	○
234		○		○		○	○	○
235	○	○		○		○	○	○
236			○	○		○	○	○
237	○		○	○		○	○	○
238		○	○	○		○	○	○
239	○	○	○	○		○	○	○
240					○	○	○	○
241	○				○	○	○	○
242		○			○	○	○	○
243	○	○			○	○	○	○
244			○		○	○	○	○
245	○		○		○	○	○	○
246		○	○		○	○	○	○
247	○	○	○		○	○	○	○
248				○	○	○	○	○
249	○			○	○	○	○	○
250		○		○	○	○	○	○
251	○	○		○	○	○	○	○
252			○	○	○	○	○	○
253	○		○	○	○	○	○	○
254		○	○	○	○	○	○	○
255 Program-mable Address	○	○	○	○	○	○	○	○

Video cable type setting

G3 speed dome supports two common types of cables to transmit video signal, coaxial cable and twisted pair cable. Comparing to twisted pair cable, coaxial cable does not need extra adapter and band width is higher but co-axial cable is more expensive and transmission distance is shorter.

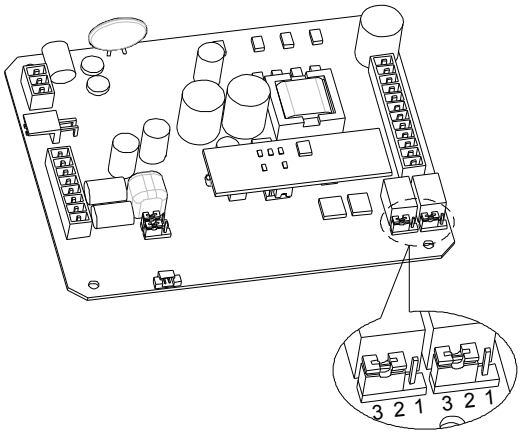
When choosing the first and second pins in the JP4 and JP5,the video signal is transmitted via twisted-pair.When choosing the second and third pins in the JP4 and JP5, the video signal is tansfered via coxial cable. Factory default is via coxial cable.(refer to following picture)



1 2	2 3
TP	BNC

Alarm output method setting

There are two alarm output methods: NO and NC.NO means mormal state is open circuit, the circuit will be closed when an alarm comes in. NC means the contrary. When choosing the first and second pins in JP12 and JP14,the alarm output state is NO. When choosing the second and third pins in JP12 and JP 14, the alarm output state is NC. Factory default is NO.(refer to following picture)

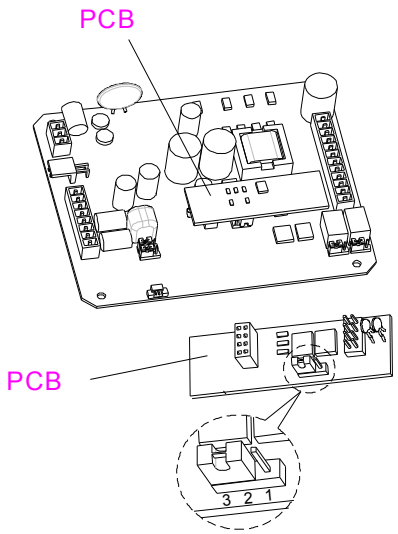


1 2	2 3
NO	NC

Resistor jumper setting

RS485 bus needs two 120 ohm resistors at both ends. Set on the 120 ohm resistors of the two devices (keyboard or dome) in the farthest distant on RS485 bus. Defualt setting is OFF. Refer to page 51 for more RS485 detail.

When connecting the first and second pins in JP1, the 120 ohms termination resistor is connected. When connecting the second and third pins in JP1, the termination resistor is unconnected.



1 2	2 3
ON	OFF

Appendix II: Wire Diameter & Transmission Distance Comparison Chart

The transmission distance listed below are farthest ones recommended for each given wire diameter when the 24Vac voltage loss ratio is below 10% (for equipment powered by AC, the allowed maximum voltage loss ratio is 10%).For example, a set of equipment with nominal power as 80VA, installed 35 feet (10m) away from transformer, needs a wire with a minimum diameter of 0.8000mm.

Wire Diameter (mm)

Power (VA) / Transmission Distance (feet (m))

	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)**

Wire Gauge Conversion Chart

Bare wire diameter metric size (mm)	AWG (approximate)	SWG (approximate)	QQ-1 type maximum outer diameter(mm)	Bare wire cross-sectional area(mm)
0.050	43	47	0.065	0.00196
0.060	42	46	0.080	0.00283
0.070	41	45	0.090	0.00385
0.080	40	44	0.100	0.00503
0.090	39	43	0.110	0.00636
0.100	38	42	0.125	0.00785
0.110	37	41	0.135	0.00950
0.130	36	39	0.155	0.01327
0.140	35		0.165	0.01539
0.160	34	37	0.190	0.02011
0.180	33		0.210	0.02545
0.200	32	35	0.230	0.03142
0.230	31		0.265	0.04115
0.250	30	33	0.290	0.04909
0.290	29	31	0.330	0.06605
0.330	28	30	0.370	0.08553
0.350	27	29	0.390	0.09621
0.400	26	28	0.440	0.1257
0.450	25		0.490	0.1602
0.560	24	24	0.610	0.2463
0.600	23	23	0.650	0.2827
0.710	22	22	0.760	0.3958
0.750	21		0.810	0.4417
0.800	20	21	0.860	0.5027
0.900	19	20	0.960	0.6362
1.000	18	19	1.07	0.7854
1.250	16	18	1.33	1.2266
1.500	15		1.58	1.7663
2.000	12	14	2.09	3.1420
2.500			2.59	4.9080.
3.00				7.0683

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¦ø. 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 f

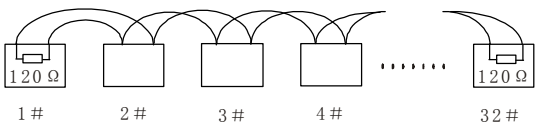
Baud Rate	Maximum Transmitting Distance
2400BPS	1800m
4800BPS	1200m
9600BPS	800m

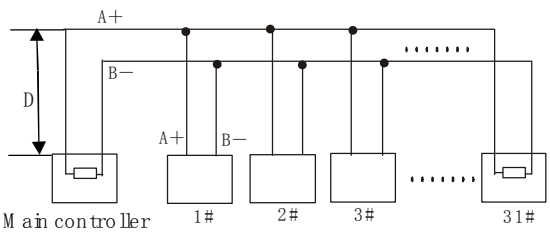
If user selects thinner cables, or installs the dome in an environment with strong electromagnetic interference, or connects lots of equipment to the RS485 Bus, the maximum transmitting distance will be decreased. To increase the maximum transmitting distance, do the contrary.

3. Connection and termination resistor

3-1 The RS485 standards require a daisy-chain connection between the equipment. There must be termination resistors with 120 ohm impedance at both ends of the connection (refer to following pictures).

Please refer to below picture for simple connection. Distance “D” should not exceed 7 meters.



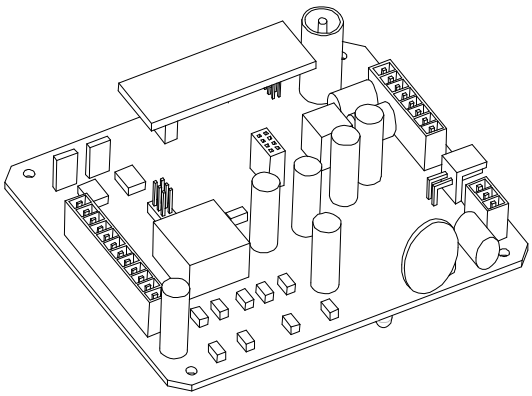


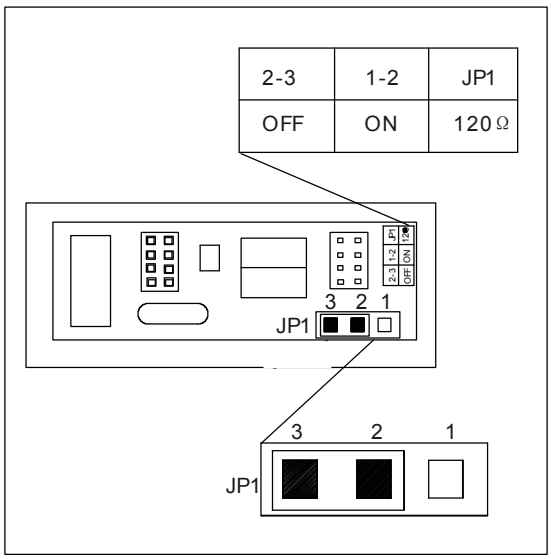
3-2 The connection of 120 ohm termination resistor:

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 following pictures).

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

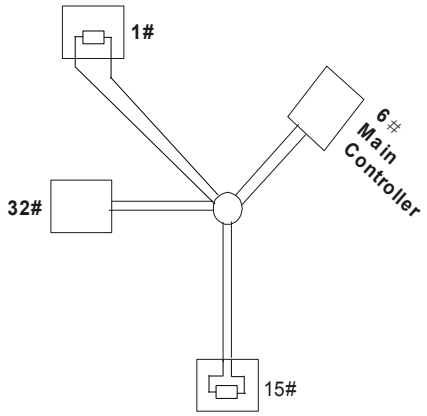
2) when connecting the 120ohm temination resistor, user should pull out the protocol PCB and plug the jumper on Pin1&Pin2. Install the PCB back and the termination resistor is connected.



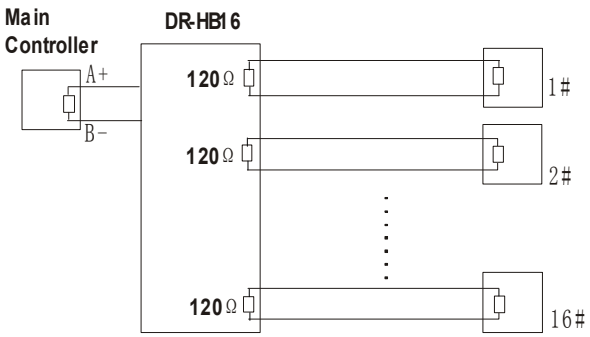


4. Problems in practical connection

In some circumstances user adopts a star configuration in practical connection. The termination resistors must be connected to the two equipment that are farthest away from each other, such as equipment 1# and 15# in Picture 61. As the star configuration is not in conformity with the requirements of RS485 standards, problems such as signal reflections, lower anti-interference performance arise when the cables are long in the connection. The reliability of control signals is decreased with the phenomena that the dome does not respond to or just responds at intervals to the controller, or does continuous operation without stop (refer to following picutre).



In such circumstances the factory recommends the usage of DR-HB16 RS485 distributor. The distributor can change the star configuration connection to the mode of connection stipulated in the RS485 standards. The new connection achieves reliable data transmission (refer to following picture).



5. RS485 Bus Troubleshooting (refer to following form)

Trouble	Possible Cause	Solution
Dome can do self-testing but cannot be controlled.	1. The address and baud rate settings of dome are not in conformity with those of controller. 2. The "+" and "-" connection of RS485 Bus is incorrect. 3. Wiring is not fully seated. 4. There is breakage in the middle section of the RS485 Bus.	1. Change the address and baud rate of controller or dome. 2. Correct the connection. 3. Make sure the connections are fully seated.
The dome can be controlled but the operation is	1. The RS485 Bus line is not in good contact with the connectors. 2. One wire of the RS485 Bus is broken. 3. The dome is very far away from controller. 4. There are too many domes connected in the system.	1. Secure the connection. 2. Replace RS485 Bus wires. 3. Add termination resistors to the system. 4. Install RS485 distributor.

Appendix IV: Lighting Proof & 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.

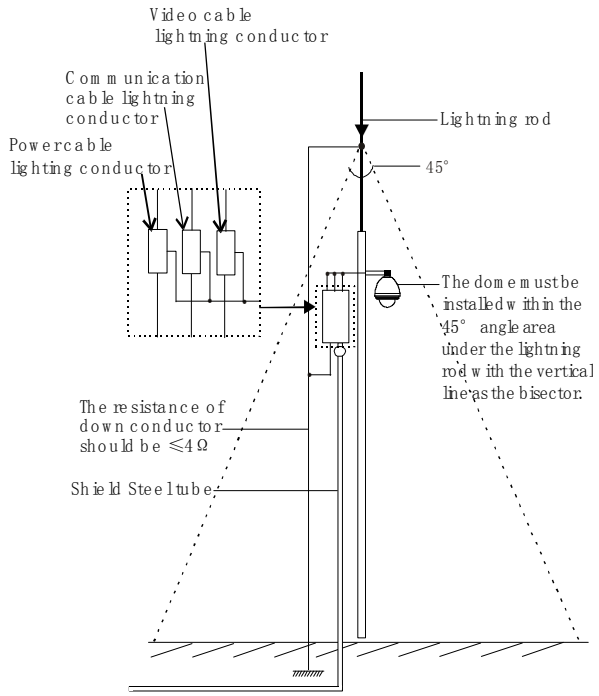
Make outdoor cable laying-out under eaves as possible as you can.

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 impedance of down conductor should be less than 4 ohms and the sectional area of down conductor should be greater than 25 square mm (refer to following picture).



Appendix V: The Cleaning Of Clear Down 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 VI: Trouble Shooting

Trouble	Possible Causes	Solution
No action, no video after powered up	If the red LED on the circuit connection board in the housing is not lit, causes may be: 1. The 24Vac power supply is not connected to the port of the circuit connection board or the contact is not good. 2.The municipal power supply has been cut off or the 24Vac transformer is in malfunction. If the red LED on the circuit connection board in the housing is lit, causes may be: 1. Fuse is bad or it is not installed. 2. The MOLEX is not connected to RJ45 or the connection is not good in contact; the power PCB is not connected to receiver PCB or the connection is not good in contact. 3. 24Vac transformer outputs too low voltage. 4.The power PCB is bad.	1. Check the power supply to see if it is connected, or confirm if the plug contact well. 2. Check to see if the municipal power supply has been cut off. Check to see if the 24Vac transformer is ok.. 1.Replace the fuse. The fuse is a 4-ampere one. 2.Check and confirm all the wire connections are correct and good in contact. 3.Use a voltmeter the check the voltage load to the dome. If the voltage is below 24 Vac, the voltage is not applicable. 4.Please contact factory or distributor for replacement of power PCB.
Self-testing and image are normal but the dome is uncontrollable.	1. The dome DIP switch setting is incorrect. 2. The two poles of the control cables are connected wrongly or the connection is open.	1. Reset the DIP switches as per the DIP switch setting chart. 2.Check the control cables and confirm the connection is correct and good in contact.
Fan does not function.	1. Wire connection of fan is not good.	1. Connect the fan wire. If the fan still does not function, contact the distributor or factory.
Vague Image	1. Manual focus has been set. 2. Unclean down cover.	1. Operate dome or call any preset. 2. Clean the down cover.

AppendixVII: Warranty

1. Scope

The factory warrants its dome camera products to be free from defect in materials and workmanship for a period of one year from the date of purchase. During this period the factory will repair or replace components of the product which proves to be defective.

The factory warrants the repaired and replaced components for a period of 90 days from the date of dispatching repaired products.

Defects of products caused by Force Majeure (such as war, earthquake, lightning strike and so on), abuse, non-standard operation, change of construction, normal wear or accident are void of warranty.

Factory assumes no risk and shall be subject to no liability for damages or loss resulting from the specific use or application made of the products. Factory's liability for any claim, whether based on breach of contract, negligence, infringement of any rights of any party or product liability, relating to the products shall not exceed the price paid by the distributor to the factory. In no event will factory be liable for any special, incidental or consequential damages however caused, whether by the negligence of the factory or otherwise.

For defective products exceeding the warranty period, the factory assures the user a lifetime payable service.

2. Products information

Should a product require service during the warranty period, please contact the factory to request an RAN number and ship the product to factory with the following information:

Product model and serial number;

Date of purchase, purchase order number, sales confirmation number and invoice number;

Detailed description of defect or malfunction.

If there is a dispute regarding the warranty of a product which does not fall under the warranty conditions stated above, please include a written explanation with the product when returned.

3. Shipping

To speed the shipping back of repaired product, user should request the RAN(Returned Authorization Number) number first and ship the product with a RAN label to the factory at user's own charges. Factory will adopt the same means of transportation as user does to ship back the repaired product. Factory will only bear the freight charges for shipping back.

AppendixVIII: Specification

Model	DR-E588 G3-F	DR-E588 G3-E	DR-E588 G3-C	DR-E588 G3-N	DR-E588 G3-H
CAMERA FEATURES					
Scan system	2: 1 interlacing				
Image sensor	1/4 Super HAD CCD	1/4 Exview HAD CCD			1/4 Exview HAD CCD
Pixels	752(H)× 582(V) PAL			768(H)× 494(V) NTSC	
Scan frequency H/V	15.625KHz/50Hz(PAL) 15.734KHz/60Hz(NTSC)				
Resolution	470TVL	470TVL(C)/550TVL(M)	470TVL	470TVL	470TVL
Zoom ratio	216×(optical 18x, digital 12x)	230×(optical 23x, digital 10x)	176× (optical 22x, digital 8x)	264× (optical 22x, digital 12x)	312× (optical 26x, digital 12x)
Sync system	Internal				
Video output	1.0±0.2Vp-p				
S/N	≥50dB				
Sensitivity	0.9Lux	0.08lux(c)/0.013lux(m)	0.02lux	0.9lux	0.02lux(c)/0.01Lux(m)
White balance	Auto/Manual				
BLC	Off/Auto				
OPTICAL LENS					
Angle of view	Wide48° /Tele2.7°	Wide54° /Tele2.5°	Wide47° /Tele2.2°	Wide47° /Tele2.2°	Wide54.2° /Tele2.2°
Aperture (F)	F1.4-F3.0	F1.6-F3.8	F1.6-F3.8	F1.6-F3.8	F1.6-F3.8
Focal length	f=4.1~73.8mm	f=3.6~82.8mm	f=4~88mm	f=4~88mm	f=3.5~91mm
MECHANICAL					
Pan/tilt speed(Manual)	0.5° ~ 160° /s				
Preset speed	360° /s(Average) 520° /s (Max)				
Rotation	Pan 360° continuously Tilt 0° ~90°				
Zoom speed control	Rotates 180° at the bottom of the dome				
Zoom speed	3.9s/6.3s(wide/tele)	4.2s/5.8s(wide/tele)	3.9s/6.3s(wide/tele)	3.9s/6.3s(wide/tele)	3.9s/6.3s (Wide/tele)
Auto flip	Auto				
OPERATION FEATURES					
Preset	220 with titles				
Auto pan	0° ~355° programmable, 4 auto scan routes				
Display area	8 with titles				
Privacy mask	0	8	8	0	8
Preset tour	4				
Pattern	4				
Built-in alarm	7 inputs, 2 outputs				
ENVIRONMENTAL					
Environment temperature	0℃~+50℃ (Indoor) -40℃~+70℃ (Outdoor)				
Environment humidity	0~95%				
Protection grade	Weather proof housing, TVS 1500W thunder proof Surge proof				
ELECTRICAL					
Power supply	AC24V 50/60Hz				
Power consumption	10W(Indoor)			50W(Outdoor)	
GENERAL					
Receiver	Built-in				
Video output	Female BNC/UTP				
Remote control	RS485/422, Manchester code, BI-phase, Coaxitron				
Baud rate	2400/4800/9600/19200bps				
ID range	1~254				
Down cover	Transparent	Smoked	Golden	Silver	
Fan & heater(Outdoor)	Fan works continuously, Heater starts automatically				
Dimensions	283 x247mm (Ceiling)	308 x218mm (Indoor)	251 x204mm (Surface)	308 x236mm (Outdoor)	(Height xDiameter)
Weight	2.5Kg (Indoor) (Bracket excluded)			3.2Kg (Outdoor) (Bracket excluded)	