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Important Safeguards

1. During the course of transportation and storage, the product should be avoided from incorrect operations such as heavy pressing, strong vibration, soaking etc, which may cause damage to the unit.
2. The product is designed for Wall-mount, Pendant-mount or Ceiling-mount installation, so it can not be installed upside-down. And the module should be handled properly so as not to bring about mechanical problems affecting the integrative functions of it. The vitreous cover of the dome is complicated optical component, so do not touch it with bare hand(s). Otherwise, the cover might be scraped, and image quality affected.
3. To ensure that the image from the High-speed Dome Camera is crisp, the vitreous cover of the Speed Dome should be cleaned periodically. When cleaning, please be cautious, please note that only the outer ring can be held, please don’t directly touch the vitreous cover, because the acid sweat from your hands may corrode the plating of the vitreous cover, and any scrape on the vitreous cover may cause the image blur and infuence the quality of the image. Please use dry cloth which is soft enough or other

substitute to wipe the outer or inner surface. If it is serious dirty, netral cleanser can be used to clean the vitreous cover.

4. Do not let any foreign objects or liquid infiltrate into the unit, which may damage the unit.

5. Please follow all electrical standards for safety when the unit is being connected and please adopt the particular power supply which is provided with the unit. The product's RS-485 and video signal adopt TVS-class lightning damage preventing technology, which can effectively prevent such pulse signal damage caused by lightning under 500W or electric surge. RS-485 and video signal should be kept enough distance from high voltage equipments and cables when they are in transmission, and necessary steps should be taken to prevent lightning damage or power surge.

6. No matter the unit is runing or not, the camera should never be aimed at the sun or object with extremely bright light. Otherwise, the camera's CCD might be permanently damaged.

7. There are no parts inside the unit which can be repaired by the users themselves. When mechanical problems arise, do not be in a haste to do any repairing, please refer to the User's Manual to find the trouble. If causes can not be located, please refer servicing to qualified professionals. All servicing must be done by authorized personnel.

I. Introduction

Adopting latest technological achievements and cutting-edge manufacturing techniques, the JG-QG900A Series High Speed Dome Camera is created with many years of accumulated experience. Equiped with a high performance DSP camera with zooming lens, integrating built-in Pan/tilt and digital decoder, it represents the future trend of hi-tech monitoring products. The unit is capable of rapid positioning, consecutively tracing and scanning, which realizes real all-directional monitoring. The unit can automatically adapt to ambient brightness and object distance. Its digital control and elegantly simple design maximally reduces the connection between differnent parts in the system, which improves the reliability of the system and facilitate the installation and maintenance. Driven by a stepper electric motar, the unit runs smoothly, reacts quickly and locates positions accurately.

With varieties of high-performances, the high speed dome camera can be applied in every walk of life to monitor moving objects in large areas, such as monitoring smart buildings, bank, city streets, power departments, airports, bus/railway stations etc.

II. Technical Data

2.1 Technical Data of the High Speed Dome Camera

Power supply	DC14~30V(2A), AC18~30V (2A)
Ambient temperature	Indoor: (0ºC～40ºC) outdoor: (-40℃～60℃)
Relative humidity	≤95% non-condensing
Power consumption	20W
Communication system	RS485 bus
Baudrate of communication	1200 / 2400 / 4800/ 9600bps
Pan speed (manual control)	0.5º-200º/s (64 ranges)
Highest Pan speed	350º/s
Pan movement	360º endless
Tilt movement	90º
Automatic flip	Automatic 180º flip when vertical 90º
Speed Auto-control as per the changing of focal length	The dome can automatically adjust the running speed following the change of the focal length.
Left & right Scan and 360º Scan	Yes
Scanning speed	High/Medium/Low 3 levels optional
Preset position number	128
Tour Groups	4
Preset position number in each tour	16 preset positions
Dwell time at each position of tour	1~255 s adjustable
Alarm	4 Channels in, 1 Channel out
Default Position function	Yes
Fog Dispersion function	Yes

Address range of the speed dome	1-255
Fan	Automatically start when the temperature is above 50℃
Heater	Automatically start when temperature is below 5℃

2.2 Camera Module Data (Built-in Canon Camera Module)

Type	Canon 22× color / Canon 22× color (day and night)
Synchronization	Internal sync/external sync
Scan	2:1 interlace
Resolution	480TVL
Min. illumination	0.07Lux
Iris	auto/manual
Focus	auto/manual
Lens zoom ratio	22×optical zoom, 16× electronic zoom
Focal length	3.9~85.8mm
Effective angle	Wide:47º/tele:2º
BLC	Manual/Auto
White balance	Auto
AGC	Auto
System of signal	NTSC/PAL
S/N	＞50dB
Video Signal output	1.0±0.2Vpp

2.3 Camera Module Data (Built-in SONY Camera Module)

Type	SONY 18× color / SONY 18× color (day and night)
Synchronization	Internal sync/external sync
Scan	2:1 interlace
Resolution	480 TVL

Illumination	0.7Lux/0.001Lux
Iris	auto/manual
Focus	auto/manual
Lens zoom ratio	18× optical zoom, 12× electronic zoom
Focal length	4.1/73.8mm
Effective angle	Wide:48º/tele:2.7º
BLC	Manual/auto
White Balance	Auto
AGC	Auto
System of signal	NTSC/PAL
S/N	＞50dB
Signal output	1.0±0.2Vpp

2.4 Camera Module Data (Built-in HITACHI Camera Module)

Type	HITACHI 23 color /HITACHI 23 color (day and night)
Synchronization	Internal sync/external sync
Scan	2:1 interlace
Resolution	480TVL for color/ 600TVL for B&W
Min. Illumination	0.2Lux for color /0.02Lux for B&W
Iris	auto/manual
Focus	auto/manual
Lens zoom ratio	23×optical zoom, 10× electronic zoom
Focal length	3.6~98mm
Effective angle	Wide: 55º/tele:2.4º
BLC	Manual/auto
White Balance	Auto
AGC	Auto
System of signal	NTSC/PAL
S/N	＞50dB
Signal output	1.0±0.2Vpp

2.5 Camera Module Data (Built-in LG Camera Module)

Type	LG 27× color / LG 27× color (day and night)
Synchronization	Internal sync/external sync
Scan	2:1 interlace

Resolution	480TVL
Min. Illumination	0.3Lux/0. 01Lux
Iris	auto/manual
Focus	auto/manual
Lens zoom ratio	27×optical zoom, 10× electronic zoom
Focal length	3.6~98mm
Effective angle	Wide:55º/tele:2.4º
BLC	Manual/auto
White balance	Auto
AGC	Auto
System of signal	NTSC/PAL
S/N	＞48dB
Signal output	1.0±0.2Vpp

2.6 Camera Module Data (Built-in CNB Camera Module)

Type	CNB 22× Color (day and night)
Synchronization	Internal sync/external sync
Scan	2:1 interlace
Resolution	480TVL
Min. illumination	1.0Lux(Color)/0.01Lux(Black and White)
Iris	auto/manual
Focus	auto/manual
Lens zoom ratio	22×optical zoom, 10× electronic zoom
Focal length	3.9~85.8mm
BLC	Manual/Auto

White balance	Auto
AGC	Auto
System of signal	NTSC/PAL
S/N	＞50dB
Video Signal output	1.0±0.2Vpp

III. Characteristics

- Adopting multi-functional high-performance DSP design with stable performance
- Integrated design with compact structure and high reliability
- Precise electric motor drive ensuring smooth running and agile reaction
- The internally saved data will not lose within a short period of time (1 year) since power off
- In-built module programme which can automatically identify 5 brands of cameras including LG, SONY, HITACHI, CANON, CNB. Other camera programmes can also be added as per the requirement of the customers.
- 128 preset positions for random storage and accurate locating
- 4 tour groups, 16 preset positions can be included in each tour group
- Support Left & Right scan and 360° scan function, Low, Medium and High 3-levels speeds optional
- The unit has a default position
- 4 channels alarm in, 1 channel alarm out
- Pan 360° consecutive movement, no blind area for the monitoring
- Tilt 90°, auto flip at the bottom, which ensures consecutive monitoring

- Automatically adjusting movement speed according to lens zoom ratio
- Automatic Iris, Focus and White Balance
- Manual Fog-dispersing Function is realized.

IV. Description of Functions

1. Trace the Target

The users can control the movement of the camera by operating the joystick of the keyboard so that they can trace the moving object or change the monitoring area. The angle of view or the size of the image of the object can be changed through adjusting the focal length. In the default Auto-focus, Auto Iris state, following the movement of the camera, the lens will quickly adjust itself to get clear image according to the change of the object.

2. Automatic Adjustment of Focal Length/Movement Speed

When the focus is long and in the mode of manual adjustment, due to the high sensitivity of the High-speed Dome Camera, even the slightest movement of the joystick would make the image move quickly, which causes image losses. Based on human design, the dome can automatically adjust the horizontal and vertical moving speed of the pan/tilt according to the current focal-length, which makes the manual target-tracing operation much easier.

3. Automatic Flip

In the process of operating the joystick to trace and monitor, if the user move the lens to the bottom(vertical) then continues pressing the joystick, the lens will automatically flip 180º horizontally, then the user can still control

it to move upwards till 90°, which enables the user to directly observe the situation on the back side, thus tilt 180° consecutive monitoring can be realized.

4. Set up and Preview Preset Positions

The preset position function works in this way: the High-speed Dome Camera stores the data of the pan/tilt angles and lens focal-length in current state; when needed, preview these data, then move the pan/tilt and the camera to the corresponding position. The user can quickly and conveniently preview the preset position with the controlling keyboard. The High-speed Dome Camera supports 128 preset positions.

5. Automatic Tours

The automatic tour function is a built-in function of the High-speed dome camera. Through beforehand programming, the user can arrange the preset positions into the automatic tour in the desired order, then, the user can use such equipment as controlling keyboard to make the High-speed dome camera automatically move as per the order of the preset positions set in the tour with stipulated time intervals.

● Automatic tour among preset positions can be realized through grouping together the preset positions into the tour.

● The tour order is programmable. The staying time at each preset position can be set up.

● Sixteen preset positions can be stored in one tour. Altogether 4 tours can be set up with the speed dome.

6. Automatic Scanning

Left/right limiting positions can be set up through controlling keyboard,

and the camera can automatically scan horizontally between the left limiting position and the right limiting position, at the preset speed.

7. Alarm Function

User can set important position as alarm point. Once there is alarm signal coming into the unit from external-connected sensor, the unit will immediately turn the lens to the alarm point, at the same time output alarm signal through the Alarm-output terminal.

8. Default Position Function

The unit supports default position function. The user can set up default position for a key monitoring area according to actual conditions. If not operated after 10 minutes, the High-speed Dome Camera will automatically monitor the default position.

9. Camera Lens Control

Users can adjust the Focal-length through controlling the keyboard to get panoramic view or close view that they desire.

Focal Length Control

Users can adjust the Focal-length through controlling the keyboard to get panoramic view or close view that they desire.

Focus Control

The system takes auto-focus as the default. While moving, the camera can automatically focus on the center of the object view to get clear image. Under special circumstances, the user can manually adjust the focus to achieve desired image effect.

● Manual focus can be realized through controlling the keyboard or matrix. For details, please refer to the operation manual of the controlling keyboard

or matrix.

● In the state of manual focus, the user can control focal–length to make the lens focus on the object. If the High-speed Dome Camera is set up to resume auto-focus upon joystick operation, when there is operating on the joystick, the High-speed Dome Camera will automatically focus. If a period of time is set up for auto-focus resuming, once there is no controlling order received, after the period of time, the High-speed Dome Camera will resume auto-focus.

Under the following circumstances, the camera can not carry out auto-focus:

● When the object is not in the center of the view.

● When simultaneously observe a far object and a near one, clarity for both of the images can not be guaranteed at the same time.

● When observing objects with extreme brightness, such as neon lights, spotlight, etc

● When the object is behind the glass with water drops or dust

● When the object moves very fast

● When the object is large-sized and drab, such as wall

● When the object is too dark or fuzzy

Iris Control

● The system takes auto-iris as the default. The iris can automatically sense the change of the environmental light and make quick adjustment, so that the brightness of the image is stable.

● The user can manually adjust the iris through controlling the keyboard to obtain desired brightness for the image.

Automatic Back Light Compensation (BLC)

Automatic Back Light Compensation can be realized via district dividing. In extremely bright background, the camera can compensate the brightness

of the relatively dark objects, while adjust the light of the bright background, avoiding that the whole image is too bright to watch due to the too high brightness of the background while the object is too dark to be distinguished, so that the clear image can be got.

Automatic White Balance

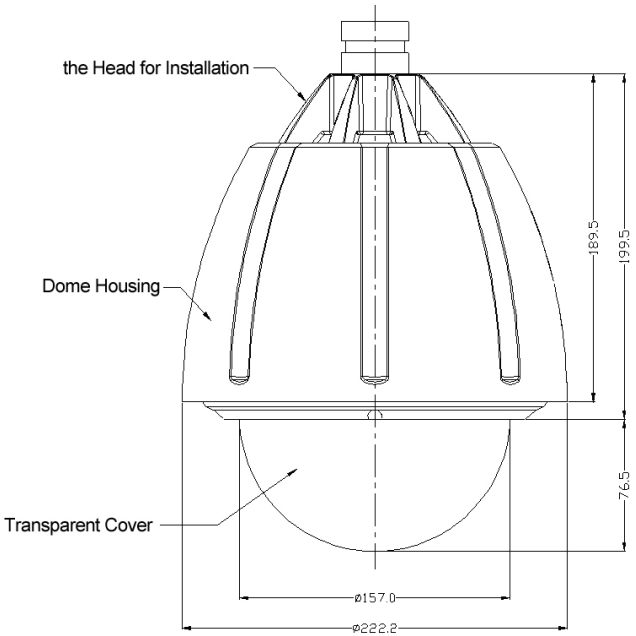
According to the ambient brightness, the camera can automatically adjust the White Balance to re-display the real color.

V. Setup, Installation and Connection

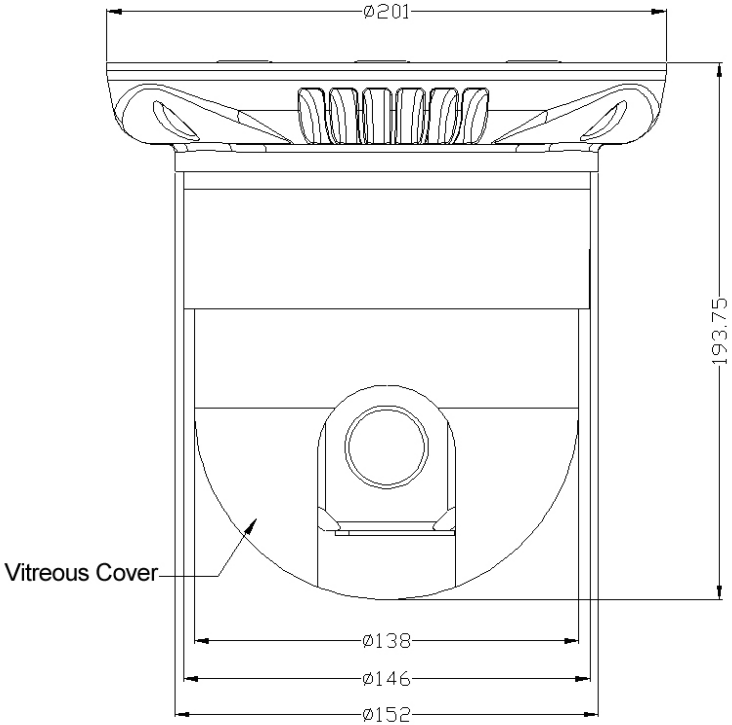
There are three types of installation for high speed dome cameras, the dimensions are shown below:

5.1 Outer-shape and Dimension of Wall-mount, Pendant-mount and Ceiling-mount High-speed Dome Camera

5.1.1 Outer-shape and Dimension of Wall-mount and Pendant-mount High-speed Dome Camera



5.1.2 Outer-shape and Dimension of Ceiling-mount High-speed Dome Camera (The outer appearance is defferent from the former two)



5.2 Installation Style and Ancillary Components

Products	Installation Style	Bracket	Cable (with connector)
High Speed Dome Camera	Wall-mount	Wall bracket	Power Cable 1pc Video cable 1pc 485 cable 1pc 5-strands cable 1pc (Alarm input) 2-strands cable 1pc (Alarm output)
	Pendant-mount	Bracket with the length of 20cm or 40 cm	
	Ceiling-mount	No bracket	

Remarks:

1. The connection must be carried out by qualified personnel conforming to local regulations.
2. For connection details, please refer to the silk-screen printing indications and installation instructions on the PCB board.
3. The vitreous cover of the High-speed Dome Camera is complicated optical component, so do not touch it with bare hand(s). Otherwise, the cover might be scraped, and image quality affected.
4. To ensure the clarity of images, please clean the vitreous cover regularly. Be careful when cleaning it. You can only hold the outer ring of the vitreous cover. Do not touch it with bare hand(s), for acid sweat left may erode the surface plating of the vitreous cover, or hard things may scrape the vitreous cover leading to fuzzy image and, hence, affecting image quality. Please use adequately soft dry cloth or other substitutes to clean the inner and outer surfaces. If the vitreous cover is extremely dirty, it may be cleaned with mild detergent.

5.3 Preparation of the Installation:

· To avoid mistakes, installation must be done by qualified personnel conforming to related regulations.

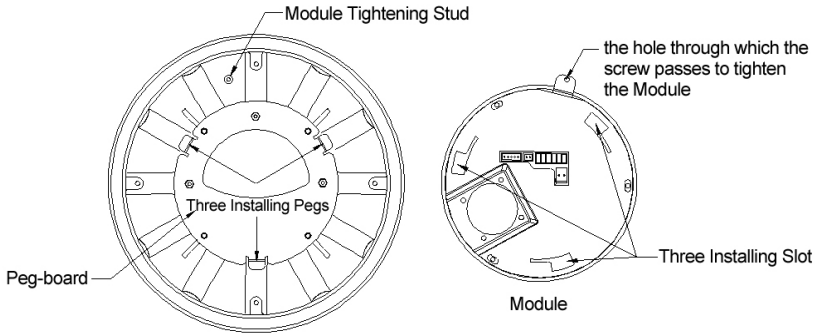
· Please check whether the attachments are all ready, and whether the installing location and style of installation are compatible.

· The wall-mount and the pendant-mount high speed dome camera is composed of bracket, housings, power adaptor, decoding board, pan/tilt, temperature controlling devices, etc. Well, the ceiling-mount high speed dome camera is composed of ceiling installing board, ceiling-mount decorating cover, housings, power supply, decoding board, pan/tilt etc.

· When the High-speed dome camera leaves factory, it has undergone installation testing, so the user can directly carry out the installation.

However, for wall-mount and pendant-mount high speed dome, before installation, the user should open the vitreous cover and make sure the screws are tight and cable connectors not loose.

The sketch for the Installation of the Module into the Housing of the wall-mount or pendant-mount high speed dome:



Locate the three installing slots at the bottom of the module into the three

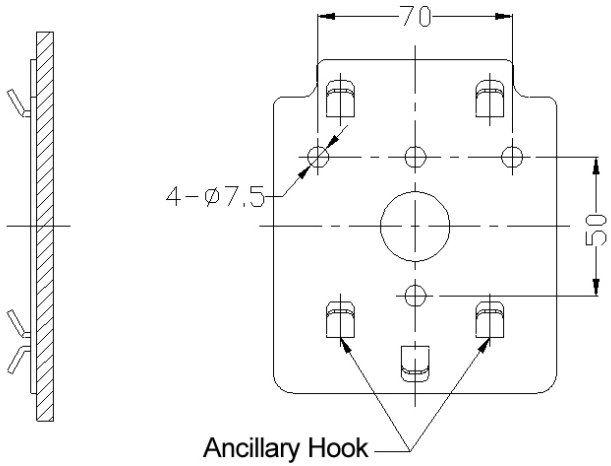
pegs on the housing peg-board (be sure in right direction), and lock them in place then swivel the module right for 20°, to the point where the screw-fixing hole in the module meets the corresponding stud. Finally, fix the module with the housing with M3 screw and make sure it is tight.

5.4 Installation of Wall-mount High-speed Dome Camera

5.4.1 Installation of Wall-mount Bracket

Remarks: The wall for the selected installation location must be firm without peeling. To avoid quivering images resulting from unstable installation, make sure the place for installation can sustain five times the total weight of the High-speed Dome Camera, the bracket and the base.

A. Use the bottom installation board of the bracket as template and draw the positions of the installing holes on the desired wall locus;



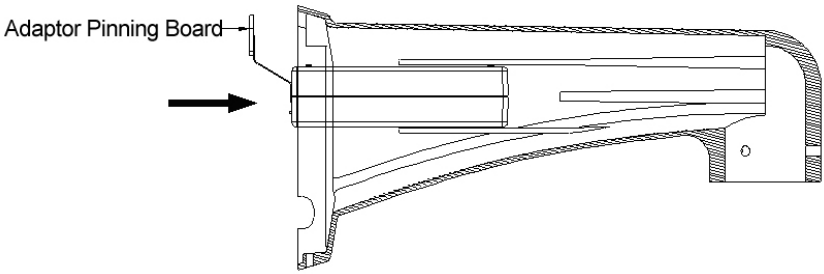
Wall Bracket Installation Dimensions

B. Use an electrical drill to make four holes for M6 screws on the above-drawn positions, and drive in the expansion M6 screws;

C. Push the power cable, communication cable and video cable through the bracket tube, leaving long enough cables for connection;

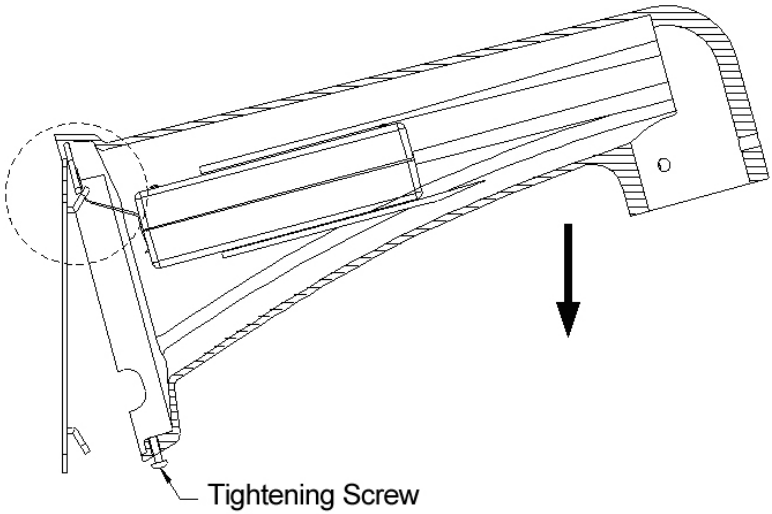
D. Fix the installation board of the bracket firmly on the wall with four M6 screw nuts and washers.

E. Put the power adaptor into the wall bracket and pin the power adaptor with the adaptor pinning board, lest the power adaptor slides out. (See the figure below)



F. Fix the high speed dome with the wall bracket. (refer to the detailed explanation in the next page)

G. Put up the wall bracket assembled with high speed dome on the ancillary hooks. Pull the power cable, video cable and controlling cable out through the wire out-going hole, and direct the dotted-line part shown in the figure to the two corresponding pegs on the installed peg-board, then push the bracket downward until it locks in place. Make sure the wall bracket is well fixed with the installation board, then direct the screw on the bracket to the corresponding hole on the lower part of the installation board and tighten the screw. (See the figure below)

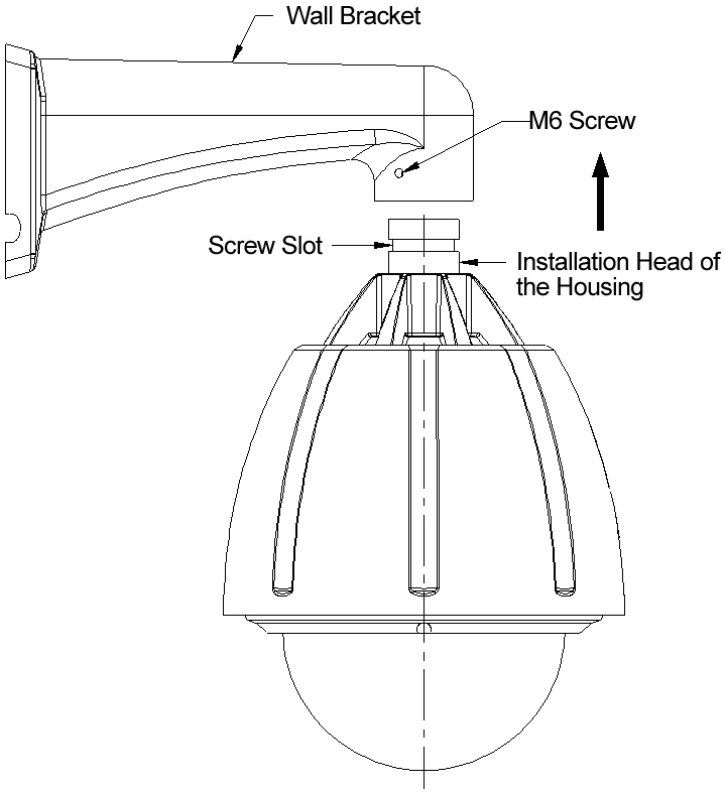


5.4.2 Installation of High Speed Dome Camera

a. Unpack the carton and carefully take out the High-speed Dome Camera and its attachments, open the vitreous cover and take out the fillings.

b. Check cable connectors and see if any of them loose and set up the coding switch.

c. Put the connecting cables into the bracket tube, then push the installing port on the top of the outer housing into the installing hole of the bracket, tighten the 3 M6 screws and fix well. Make sure the M6 screws just fit in the screw slot of the installing port of the housing. (See the picture below)


Wall Bracket
M6 Screw
Screw Slot
Installation Head of the Housing

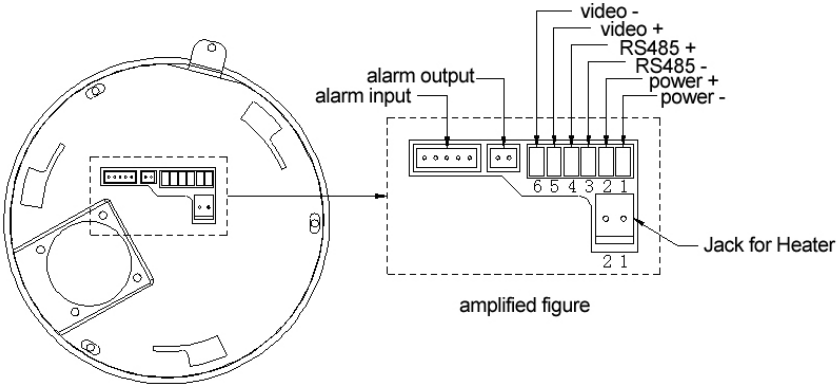
5.4.3 Connection of Exterior Cables

Connect BNC video outlet of the High-speed Dome Camera with the already disposed video cable, the power cable with the already disposed power cable (AC24V or DC14V) and RS485 controlling cable with already disposed RS485 controlling cable. The cables of high speed dome camera is shown below:

Cable	Application	Connecting Objects	Remarks
Power cable	AC24V or DC14V power supply	high speed dome--- power supply adaptor	Power supply connecting outlet
485 cable	485 controlling signal	high speed dome --- controlling device	Green (A), white(B)
Video Cable	Camera signal	Camera--- monitoring device	BNC connector
5-strand cable	Alarm input	Detctor--- high speed dome	Black (Alarm input public terminal) Yellow (the 1st channel alarm input) Green (the 2nd channel alarm input) Blue (the 3rd channel alarm input) White (the 4th channel alarm input)
2-strand cable	Alarm output	High speed dome--- alarm horn	Brown (alarm output public terminal) Grey (alarm output terminal)

- Make sure the polarity of RS485 controlling cable connection is correct, A: RS485 positive, B: RS485 negative.
- If wrongly connected, the High-speed Dome Camera will be out of control.

The detailed connection as the sketch below:



5.4.4 Switching on Power

a Make sure the polarity of plugs, sockets and cables connection is correct, then switch on power

b The High-speed Dome Camera begins to do the self-check by moving pan 360°, tilt 90° to check the camera lens, the electrical and mechanical structures in pan/tilt state, then executing the restoration program and resuming its original position. After the High-speed Dome Camera stops moving, it finishes self-check and is ready to receive controlling instructions

c Use controlling device to control the High-speed Dome Camera, checking whether it can perform the functions of the pan/tilt and camera lens. If not, please check the setup of communication protocol, Baud rate and address, and the connection of 485 controlling cable.

5.4.5 Vitreous Cover Installation

a Clean the dust and stain on the vitreous cover with soft cloth, attention not to scrape the vitreous cover;

b Aim the four special bolts (the bolts don't fall even if they are loosened to the extreme) in the vitreous cover at the bolts holes in the outer housing, then tighten the bolts.

5.5 Installation of Pendant-mount High Speed Dome

5.5.1 Installation of Pendant-mount Bracket

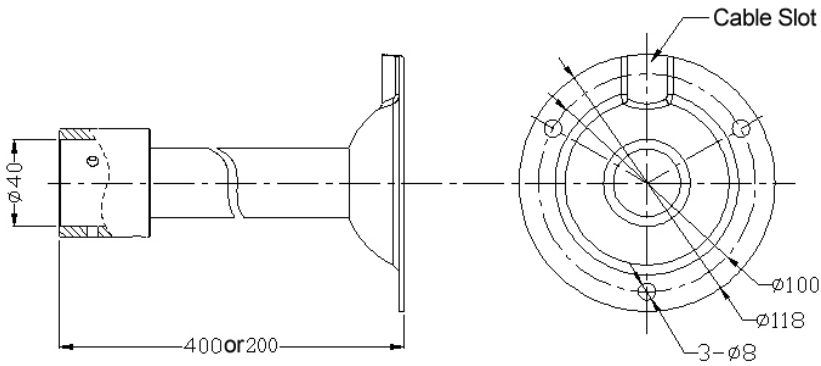
Remarks: The ceiling for the selected installation location must be firm without peeling. To avoid quivering images resulting from unstable installation, make sure the place for installation can sustain five times the total weight of the High-speed Dome Camera, the bracket and the base.

A Use the bracket as template and draw the positions of the installing holes on the desired ceiling locus;

B Use an electric drill to make three holes for M6 screws on the above-drawn positions, and drive in the special M6 screws;

C Push the power cable, communication cable and video cable through the bracket tube, leaving long enough cables for connection;

D Fix the bracket firmly on the ceiling with three M6 screw nuts and washers.



5.5.2 Installation of High Speed Dome Camera

a. Unpack the carton and carefully take out the High-speed Dome Camera and its attachments, open the vitreous cover and take out the fillings.

b. Check cable connectors and see if any of them loose and set up the coding switch.

c. Put the connecting cables into the bracket tube, then push the installing port on the top of the outer housing into the installing hole of the bracket, tighten the 3 M6 screws and fix well. Make sure the M6 screws just fit in the screw slot of the installing port of the housing.

5.5.3 Connection of Exterior Cables

Connect BNC video outlet of the High-speed Dome Camera with the already disposed video cable, the power cable with the already disposed power cable (AC24V or DC14V) and RS485 controlling cable with already disposed RS485 controlling cable. The cables of high speed dome camera is shown below:

Cable	Application	Connecting Objects	Remarks
Power cable	AC24V or DC14V power supply	high speed dome--- power supply adaptor	Power supply connecting outlet
485 cable	485 controlling signal	high speed dome--- controlling device	Green (A), white(B)
Video Cable	Camera signal	Camera--- monitoring device	BNC connector
5-strand cable	Alarm input	Detctor--- high speed dome	Black (Alarm input public terminal) Yellow (the 1st channel alarm input) Green (the 2nd channel alarm input) Blue (the 3rd channel alarm input) White (the 4th channel alarm input)
2-strand cable	Alarm output	High speed dome--- alarm horn	Brown (alarm output public terminal) Grey (alarm output terminal)

- Make sure the polarity of RS485 controlling cable connection is correct, A: RS485 positive, B: RS485 negative.
- If wrongly connected, the High-speed Dome Camera will be out of control.

5.5.4 Switch on Power

a. Make sure the polarity of plugs, sockets and cables connection is correct, then switch on power

b. The High-speed Dome Camera begins to do self-check by moving pan 360°, tilt 90° to check the camera lens, the electrical and mechanical structures in pan/tilt state, then executing the restoration program and

resuming its original position. After the High-speed Dome Camera stops moving, it finishes self-check and is ready to receive controlling instructions

c. Use controlling device to control the High-speed Dome Camera, checking whether it can perform the functions of the pan/tilt and camera lens. If not, please check the setup of communication protocol, Baud rate and address, and the connection of 485 controlling cable.

5.5.5 Vitreous Cover Installation

a. Clean the dust and stain on the vitreous cover with soft cloth, attention not to scrape the vitreous cover;

b. Aim the four special bolts (the bolts don't fall even if they are loosened to the extreme) in the vitreous cover at the bolts holes in the outer housing, then tighten the bolts.

5.6 Installation of ceiling-mount high speed dome camera

5.6.1 Installation of ceiling-mount installation board

Remarks: The ceiling for the selected installation location must be firm without peeling. To avoid quivering images resulting from unstable installation, make sure the place for installation can sustain five times the weight of the High-speed Dome Camera.

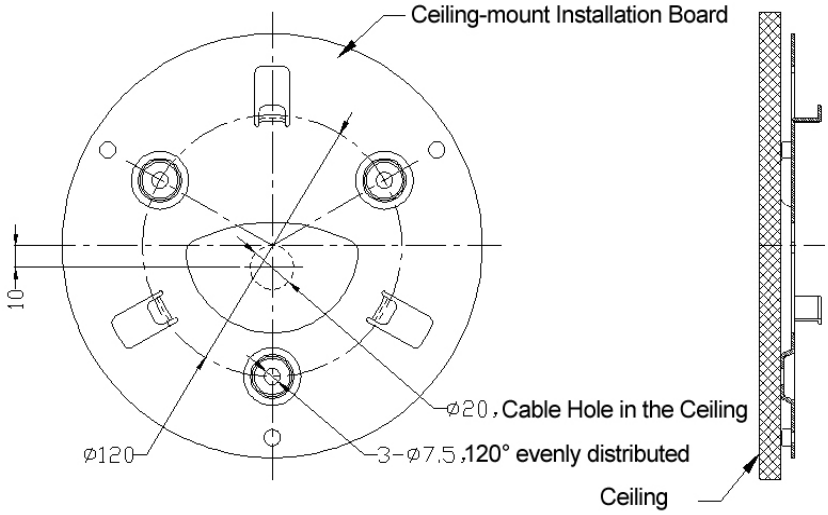
A. Use the ceiling-mount installation board as template and draw the positions of the three installing holes and the cable hole on the desired ceiling locus;

B. Use an electric drill to make three Expansion screw holes for M6 screws on the above-drawn positions, and drive in the Expansion M6 screws;

C. Use an electric drill to make a cable hole with the diameter of 20mm on the ceiling.

D. Push the power cable, communication cable and video cable through the cable hole, leaving long enough cables for connection;

E. Fix the ceiling-mount installation board firmly on the ceiling with three M6 screw nuts and washers.

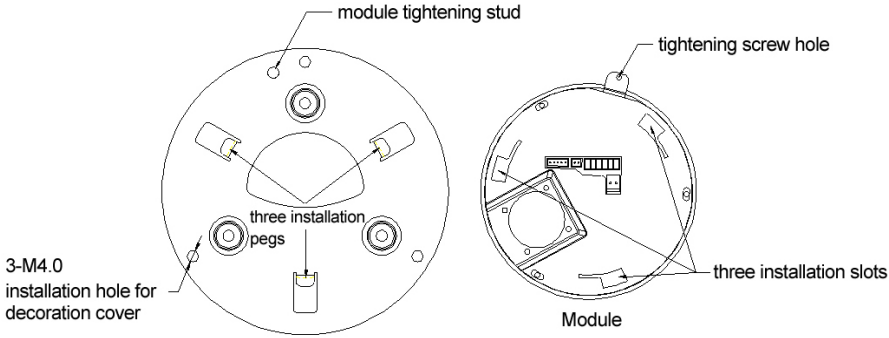


5.6.2 Installation of High Speed Dome Camera

A. Unpack the carton and carefully take out the High-speed Dome Camera and its attachments, open the vitreous cover and take out the fillings.

B. Check cable connectors and see if any of them loose and set up the coding switch.

C. Install the module of the high speed dome. (See the picture below)



Locate the three installing slots at the bottom of the module into the three pegs on the installation board (be sure in right direction), and lock them in place then swivel the module right for 20°, to the point where the screw-fixing hole in the module meets the corresponding stud. Finally, fix the module with the installation board with M3 screw and make sure it is tight.

D. Install the decorating cover with the installation board, tighten the screw.

5.6.3 Connection of Exterior Cables

Connect BNC video outlet of the High-speed Dome Camera with the already disposed video cable, the power cable with the already disposed power cable (AC24V or DC14V) and RS485 controlling cable with already disposed RS485 controlling cable. The cables of high speed dome camera is shown below:

Cable	Application	Connecting Objects	Remarks
Power cable	AC24V or DC14V power supply	high speed dome--- power supply adaptor	Power supply connecting outlet

485 cable	485 controlling signal	high speed dome---controlling device	Green (A), white(B)
Video Cable	Camera signal	Camera---monitoring device	BNC connector
5-strand cable	Alarm input	Detector---high speed dome	Black (Alarm input public terminal) Yellow (the 1st channel alarm input) Green (the 2nd channel alarm input) Blue (the 3rd channel alarm input) White (the 4th channel alarm input)
2-strand cable	Alarm output	High speed dome---alarm horn	Brown (alarm output public terminal) Grey (alarm output terminal)

- Make sure the polarity of RS485 controlling cable connection is correct, A: RS485 positive, B: RS485 negative.
- If wrongly connected, the High-speed Dome Camera will be out of control.

5.6.4 Switch on Power

a. Make sure the polarity of plugs, sockets and cables connection is correct, then switch on power

b. The High-speed Dome Camera begins to do self-check by moving pan 360°, tilt 90° to check the camera lens, the electrical and mechanical structures in pan/tilt state, then executing the restoration program and resuming its original position. After the High-speed Dome Camera stops moving, it finishes self-check and is ready to receive controlling instructions

c. Use controlling device to control the High-speed Dome Camera, checking whether it can perform the functions of the pan/tilt and camera lens. If not,

please check the setup of communication protocol, Baud rate and address, and the connection of 485 controlling cable.

5.7 Connection and installation of alarm

Connect the alarm cables according to the sketch below. Once distinguishing the alarm signal coming in, the speed dome will immediately act as per the process set before, it will start the camera, display the image of the alarm zone on the monitor, adjust the speed dome to the alarm point, and monitor the preset position, record what happens at the alarm zone as soon as possible. Connection of the alarm cables as the sketch below:

Attention:

a. Alarm input must be ON/OFF input signal, any other types of input signal(such as power voltage etc) is possible to damage the unit. When there are alarm signals from multi channels, the unit will respond to them one by one, the interval is 2 seconds.

b. Once there is alarm signal coming in, the unit will not respond to “Scan” , “Cruising” etc functions. Manual operation is needed to restore “Scan” , “Cruising” etc functions.

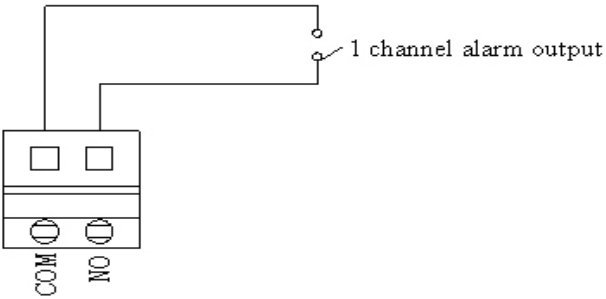
c. No matter the alarm funtion is opened or closed, alarm output always responds. For example, if the alarm function of the unit is not open, when the unit distinguishes alarm signal, the unit will not be adjusted to corresponding preset position, but the alarm output still responds.

d. The operation method for alarm fuction is: through previewing the No. 147(117) “preset position” to open alarm function, throuh previewing No. 148(118) “preset position” to close alarm function.

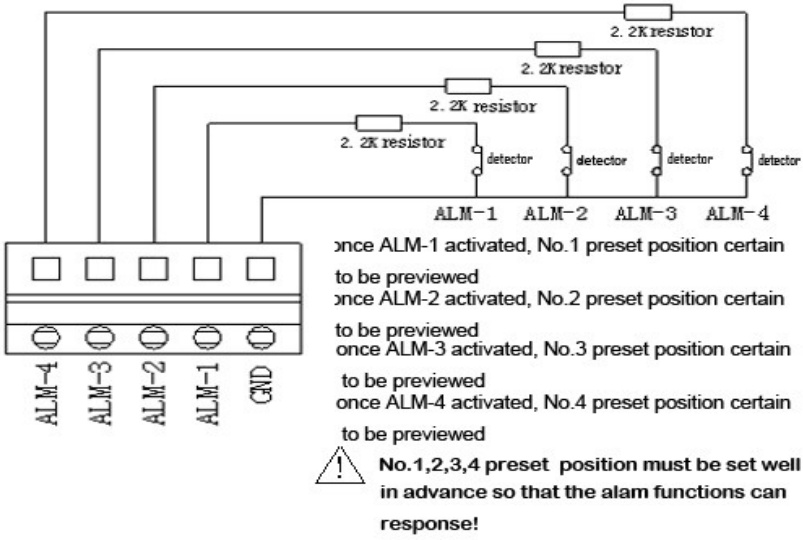
e. For the input terminals which are not connected with detectors, 2.2KΩ risistor must be connected, otherwise the speed dome will thinks that there

is alarm signal coming in, thus the alarm output is always on.

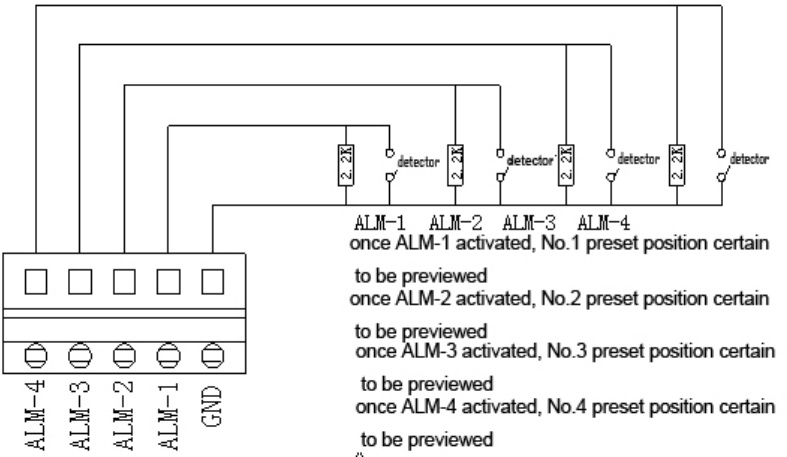
Alarm output connection sketch



Connection sketch for Alarm input with Usual-closed detector



Connection sketch for Alarm input with Usual-open detector



once ALM-1 activated, No.1 preset position certain to be previewed

once ALM-2 activated, No.2 preset position certain to be previewed

once ALM-3 activated, No.3 preset position certain to be previewed

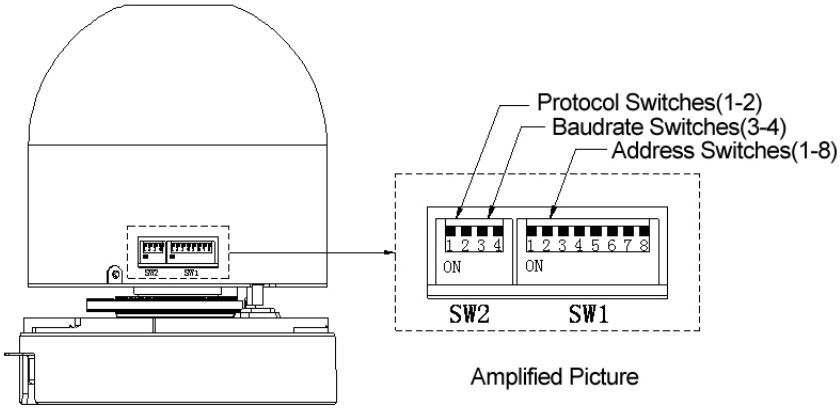
once ALM-4 activated, No.4 preset position certain to be previewed

No.1,2,3,4 preset position must be set well in advance so that the alam functions can response!

VI. Setup of the functions of the High Speed Dome Camera

6.1 Setup Address, Baud Rate and Protocol for High Speed Dome Camera

Before the installation of the High-speed Dome Camera, you must confirm the protocol and Baud rate of the controlling system as well as the address code of the high speed dome camera, then, set up the switches in the speed dome to conform to the controlling system. The corresponding switches setup is shown in the following figure:



6.1.1 Set up Communication Protocol of the High Speed Dome Camera

The DIP-1 and DIP-2 of SW2 on the PCB board is for communication protocol setup. Please refer to the following table:

NO.	2 1	PROTOCOL
1	0 0	PELCO_D
2	0 1	PELCO_P
3	1 0	JCO
4	1 1	PELCO_D1

If the controlling device could only support the preset position numbers below 128, please use PELCO_D1 controlling protocol.

6.1.2 Set up the Address of the High Speed Dome Camera

Before actual using, the address of the High-speed dome camera should be set up. The switches(1-8) of SW1 on the PCB board is used to set address of the High-speed Dome Camera from 1 to 255. The coding switches from DIP-1 to DIP-8 are equivalent to a 8-bit binary figure. The state “ON” of each bit means “1” while”OFF”means”0”. Corresponding state of coding switches and address is shown in the appendix table.

6.1.3 Set up Baud Rate of Communication

DIP-3 and DIP-4 of SW2 on the PCB board is used to set up Baudrate of communication, the default setup is 4800BPS. Following table shows states of coding switches and cosrresponding Baudrate.

No.	4 3	Baudrate
1	0 0	1200 BPS
2	0 1	2400 BPS
3	1 0	4800 BPS
4	1 1	9600 BPS

- If protocol, address and Baud rate are set up when power is on, then the high speed dome camera must be switched off and restarted to make the setup valid.

Remark: If the High-speed Dome Camera is used at the farthest terminal, there should be a parallel connection of a 120Ω terminal matching resistor between A, B lines of RS485.

6.2 Table for the functions of the high speed dome camera

Notice: “PELCO-D” protocol has no corresponding orders for part of the special functions, so we converted functions of some of the commonly-used orders, generally converting in the way of “preview preset position/ set up preset position”. Order converting correspondence is shown in the following table:

Preview “preset position” No.	Keyboard operation meaning	Preview “preset position” No.	Keyboard operation meaning
130	Set up left limiting position	138	Stop Pan/tilt auto-scanning
131	Set up right limiting position	140	Start tour setup
132	Start Left & right scanning (low speed)	141	Exit tour setup
133	Start Left & right scanning (medium speed)	142	Start running a tour
134	Start Left & right scanning (high speed)	147	Open Alarm Function

135	Start Pan/tilt 360º scanning (low speed)	148	Close Alarm Function
136	Start Pan/tilt 360º scanning (medium speed)	162	Activate default position function
137	Start Pan/tilt 360º scanning (high speed)	163	Close default position function
150	High speed dome camera position restoration	164	Set up default position function
145	Enter menu of the camera module	165	Open the fog dispersing function
146	Exit menu of the camera module	166	Close the fog dispersing function

If preset position numbers larger than 128 could not be previewed on the controlling device, please choose PELCO-D1 protocol, functions operation table as below:

Preview “preset position” No.	Keyboard operation meaning	Preview “preset position ” No.	Keyboard operation meaning
100	Set up left limiting position	108	Stop Pan/tilt auto-scanning
101	Set up right limiting position	110	Start tour setup
102	Start Left & right scanning (low speed)	111	Exit tour setup
103	Start Left & right scanning (medium speed)	112	Start running a tour
104	Start Left & right scanning (high speed)	117	Open Alarm Function

105	Start Pan/tilt 360º scanning (low speed)	118	Close Alarm Function
106	Start Pan/tilt 360º scanning (medium speed)	122	Activate default position function
107	Start Pan/tilt 360º scanning (high speed)	123	Close default position function
99	High speed dome camera position restoration	124	Set up default position function
95	Enter menu of the camera module	125	Open the fog dispersing function
96	Exit menu of the camera module	126	Close the fog dispersing function

Intelligent control and all of its functions can be realized through the keyboard's control over High-speed Dome Camera. Because different controlling system interfaces may differ in operation, operation details are subject to the related manufacturer's manuals. Under certain circumstances of special requirements and operations, please refer to dealers for necessary information.

6.3 Set up and Preview Preset Positions

The function of preset positions works in this way: the High-speed Dome Camera saves the current pan/tilt and zooming ratio parameters in number order (1-128), quickly previews those parameters when needed, and adjust the dome to the corresponding positions. Users can use such devices as controlling keyboard to save and preview preset positions quickly and conveniently. The High-speed Dome Camera can support 128 preset

positions.

6.3.1 Set up Preset Positions

After adjusting the pan/tilt of the High-speed Dome Camera to desired state (including position, lens, focus and iris) through the keyboard, enter the number representing the preset position and LED displays the entered preset position number. Press the “PRESET” key, then LED resumes to previous displaying state again, now you have set up the preset position successfully.

Example: Set up preset position No.1

a. Use the joystick to move the High-speed Dome Camera to the desired position and adjust the camera lens.

b. Enter “1”

c. Press the “PRESET” key

◆ Manual focus approach can be adopted to set up preset positions for distant objects, that is, after adusting the lens to focus on distant place, control the keys “FOCUS+”and “FOCUS-”on the controlling keyboard to set up optimal focal image storage to avoid fuzzy images resulting from the interference of other distant objects.

6.3.2 Preview Preset Positions

The function enables the High-speed Dome Camera to quickly return to the preset position.

Enter the number(1～128) key for preset position number which you need to preview, and LED displays the preset position number. Then, press the “PREVIEW” key. The High-speed Dome Camera will return to the preset position.

e.g. Preview the No.1 preset position

a. Enter “1”

b. Press “PREVIEW” key

6.4 Setup and run tour groups

The tour group function is to group some preset positions together, if the user wants to preview these preset positions, with only one external order, the High-speed Dome Camera will automatically preview the preset positions in the group one by one. The dwelling time at each preset position can be set within 1-255 seconds. Up to 16 preset positions can be saved in each tour group. And at most 4 tour groups can be set up. The operation is as below:

A. In the keyboard initial state, enter number “140”(110) and press the “PREVIEW” key to enter the tour setup.

B. After entering the setup, add preset position number to the tour. Enter the first desired preset position number and press the “PREVIEW” key, and the first preset position is successfully added. Then goes the second one. Enter the second desired preset position number and press the “PREVIEW” key, and the second preset position is successfully added. More preset positions can be added in the same way.

C. After all the required preset positions having been added in the tour, enter the number “141”(111) on the keyboard and press the “PREVIEW” key to exit the tour setup.

D. Start Running a Tour: In the keyboard initial state, enter number “142”(112) and press the “PREVIEW” key to start running the preset tour.

Example: Set up the tour order to be 1→2→5→3→4→6 (please set up preset positions before tour setup)

1. Preview “preset position” 140(110) to enter tour setup (Enter number

"140"(110) and press the "PREVIEW" key)

2. Preview preset position 1 to set up the first tour position (Enter number "1" and press the "PREVIEW" key)
3. Preview preset position 2 to set up the second tour position (Enter number "2" and press the "PREVIEW" key)
4. Preview preset position 5 to set up the third tour position (Enter number "5" and press the "PREVIEW" key)
5. Preview preset position 3 to set up the fourth tour position (Enter number "3"and press the "PREVIEW" key)
6. Preview preset position 4 to set up the fifth tour position (Enter number "4"and press the "PREVIEW" key)
7. Preview preset position 6 to set up the sixth tour position (Enter number "6"and press the "PREVIEW" key)
8. Preview "preset position" 141(111) to exit tour setup (Enter number "141"(111) and press the "PREVIEW" key)
9. Preview "preset position" 142(112) to start running the tour, and the High-speed Dome Camera runs the tour and begins to scan in the order of 1→2→5→3→4→6.

If other devices are used to control the High-speed Dome Camera, due to the protocol limitation, some special functions of the High-speed Dome Camera may be not operational.

6.5 Setup and start Left & Right scan

The speed dome camera has Left/Right scanning function. The user can set up the left and right limiting positions for the required left&right scanning area. When running the left&right scan, the unit will scan forwards and backwards between the left and right limiting positions consecutively.

6.5.1 Set up Left & Right limiting positions

The user can freely set a beginning point as the Left Limiting Position, an end point as the Right Limiting Position(Attention: If the beginning point is the same as the end point, the speed dome will scan 360° endlessly). Meanwhile, the unit will automatically record the zooming times of the lens at the beginning point and take this data as the constant zooming times of the lens when scanning, also, the unit will record the vertical angle of the beginning point and take this angle as the constant vertical angle when scanning. The operation of setting up Left & right limiting position is as below:

1. Set up the Left Limiting Position: Operate the joystick towards left, adjust the image to the desired postion, then:
   A. Input 130(100)
   B. Press PREVIEW key
2. Set up the Right Limiting Position: After the Left Limiting position is set up well, operate the joystick towards right, adjust the image to the desired postion, then:
   A. Input 131(101)
   B. Press PREVIEW key

   After setting up well, operate as below to run the scan.

6.5.2 Start Left & Right scan:

To start Left & Right scan means that the user use an external order to start the scan and to make the speed dome scan between two limiting positions, so that the user can monitor the corresponding district. Three kinds of speed are optional: 132(102) for low speed, 133(103) for medium speed, 134(104) for high speed. The user can operate on the keyboard, the operation is as below:

Operation through previewing function code:

a. Input 132(102)

b. Press PREVIEW key

Then the speed dome will scan between the two positions with low speed. The setup method for other speeds are the same.

6.6 Start 360° endless scan

The Speed Dome can carry out 360° scan function. So that all-direction scanning and monitoring effect is realized. Three kinds of speed are optional: 135 for low speed, 136 for medium speed, 137 for high speed. The user can operate on the keyboard, the operation is as below:

a. Input 135

b. Press PREVIEW key

Then the speed dome will carry out 360° endless scanning. The setup method for other speeds are the same.

6.7 Stop Left & Right scan and 360° scan

While the unit is carrying out scanning operation, if you require the unit carry out other operations, you can operate on the keyboard to stop the auto scan. Operation is as below:

a. Input 138(108)

b. Press PREVIEW key

The Auto Scan can also be stopped by any operation on the joystick of the keyboard.

6.8 Open and close the menu of camera module

The unit has a function as “setting up the parameters of the Camera Module”. Users can open and close the menu of the camera by previewing 145 and 146 “preset positions”. After entering the menu, users can set up the camera conveniently. The operation is as below:

1. Open the menu of the camera

a. Input 145(95)

b. Press PREVIEW key.

2. Close the menu of the camera

a. Input 146(96)

b. Press PREVIEW key.

Attention: If the camera module doesn't have menu function, this function with the unit is unavailable.

6.9 Setup, Activate and Exit the Default Position function

The unit has a default position. The user can set up default position for a key monitoring area according to actual conditions. If not operated after 5 minutes, the high speed dome camera will automatically turn to the default position and monitor.

1. Set up the Default Position

Move the High-speed Dome Camera to a key monitoring area through controlling keyboard, then enter number "164"(124) from the keyboard and press the "PREVIEW" key, then the setup is successful.

2. Activate and Exit the Default Position function

The user can activate or exit the function of default position through the keyboard. Enter number "162"(122) and press the "PREVIEW" key, the function is activated. Enter number "163"(123) and press the "PREVIEW" key, the function is exited.

6.10 Open and close fog-dispersion function.

Due to the influence of the climatic condition, there may be fog on the vitreous cover of the high speed dome, if it influences the image of the camera, the user can disperse the fog through the Fog-dispersion function,

so that the user can see clear image. (Working principle: When the fog-dispersion function is open, the heater and the fan will begin to work simutaneously, the temperature inside the speed dome will increase thus the fog will disappear.) The operation is as below:

1. Open the fog-dispersion function:
   a. Input 165 (125)
   b. Press PREVIEW key
2. Close the fog-dispersion function:
   a. Input 166 (126)
   b. Press PREVIEW key

VII. Trouble Shooting Table

Problems	Possible causes	remedies
No action, no picture, no indicator on when power is switched on.	Wrong connection of power cables	Correct
	Power supply adaptor damaged	Replace
	Fuse damaged	Replace
	Bad power cable connection	Correct
Normal self-check and image but out of control	Address or Baud rate setup wrong	Set up again
	Protocol setup wrong	Set up again
	RS485 bus bad connection	Check RS485 bus connection
Abnormal self-check image with motor noise	Mechanical failure	Repair
	Camera inclined	Reinstall
	Power supply not enough	Replace, better to place the adaptor nearby the speed dome
Unstable image	Bad connection of video cable	Correct
	Power supply not enough	Replace
Fuzzy image	At Manual focus state	Operate the High-speed Dome Camera or preview any preset positions
	Vitreous cover dirty	Clean the vitreous cover
Some High-speed Dome Camera out of control or control delayed	Power supply not enough	Replace, better to place the adaptor nearby the speed dome
	Whether matching resistor is in the High-speed Dome Camera at the farthest end	Install matching resistor in the High-speed Dome Camera

	The distance is too far, the attenuation of 485 signal is too much	Thicken the controlling cable
	The driving power of the 485 converter is not enough	Replace with converter with separate power supply

VIII. Correspondence of Address and Coding Switches

(SW1: DIP1-DIP8)

编号	12345678	编号	87654321	编号	87654321
1	00000001	32	00100000	63	00111111
2	00000010	33	00100001	64	01000000
3	00000011	34	00100010	65	01000001
4	00000100	35	00100011	66	01000010
5	00000101	36	00100100	67	01000011
6	00000110	37	00100101	68	01000100
7	00000111	38	00100110	69	01000101
8	00001000	39	00100111	70	01000110
9	00001001	40	00101000	71	01000111
10	00001010	41	00101001	72	01001000
11	00001011	42	00101010	73	01001001
12	00001100	43	00101011	74	01001010
13	00001101	44	00101100	75	01001011
14	00001110	45	00101101	76	01001100
15	00001111	46	00101110	77	01001101
16	00010000	47	00101111	78	01001110
17	00010001	48	00110000	79	01001111
18	00010010	49	00110001	80	01010000
19	00010011	50	00110010	81	01010001
20	00010100	51	00110011	82	01010010
21	00010101	52	00110100	83	01010011
22	00010110	53	00110101	84	01010100
23	00010111	54	00110110	85	01010101
24	00011000	55	00110111	86	01010110
25	00011001	56	00111000	87	01010111
26	00011010	57	00111001	88	01011000

27	00011011	58	00111010	89	01011001
28	00011100	59	00111011	90	01011010
29	00011101	60	00111100	91	01011011
30	00011110	61	00111101	92	01011100
31	00011111	62	00111110	93	01011101

编 号	87654321	编 号	87654321	编 号	87654321
94	01011110	125	01111101	156	10011100
95	01011111	126	01111110	157	10011101
96	01100000	127	01111111	158	10011110
97	01100001	128	10000000	159	10011111
98	01100010	129	10000001	160	10100000
99	01100011	130	10000010	161	10100001
100	01100100	131	10000011	162	10100010
101	01100101	132	10000100	163	10100011
102	01100110	133	10000101	164	10100100
103	01100111	134	10000110	165	10100101
104	01101000	135	10000111	166	10100110
105	01101001	136	10001000	167	10100111
106	01101010	137	10001001	168	10101000
107	01101011	138	10001010	169	10101001
108	01101100	139	10001011	170	10101010
109	01101101	140	10001100	171	10101011
110	01101110	141	10001101	172	10101100
111	01101111	142	10001110	173	10101101
112	01110000	143	10001111	174	10101110
113	01110001	144	10010000	175	10101111
114	01110010	145	10010001	176	10110000
115	01110011	146	10010010	177	10110001
116	01110100	147	10010011	178	10110010
117	01110101	148	10010100	179	10110011
118	01110110	149	10010101	180	10110100
119	01110111	150	10010110	181	10110101

120	01111000	151	10010111	182	10110110
121	01111001	152	10011000	183	10110111
122	01111010	153	10011001	184	10111000
123	01111011	154	10011010	185	10111001
124	01111100	155	10011011	186	10111010

编 号	87654321	编 号	87654321	编 号	87654321
187	10111011	210	11010010	233	11101001
188	10111100	211	11010011	234	11101010
189	10111101	212	11010100	235	11101011
190	10111110	213	11010101	236	11101100
191	10111111	214	11010110	237	11101101
192	11000000	215	11010111	238	11101110
193	11000001	216	11011000	239	11101111
194	11000010	217	11011001	240	11110000
195	11000011	218	11011010	241	11110001
196	11000100	219	11011011	242	11110010
197	11000101	220	11011100	243	11110011
198	11000110	221	11011101	244	11110100
199	11000111	222	11011110	245	11110101
200	11001000	223	11011111	246	11110110
201	11001001	224	11100000	247	11110111
202	11001010	225	11100001	248	11111000
203	11001011	226	11100010	249	11111001
204	11001100	227	11100011	250	11111010
205	11001101	228	11100100	251	11111011
206	11001110	229	11100101	252	11111100
207	11001111	230	11100110	253	11111101
208	11010000	231	11100111	254	11111110
209	11010001	232	11101000	255	11111111