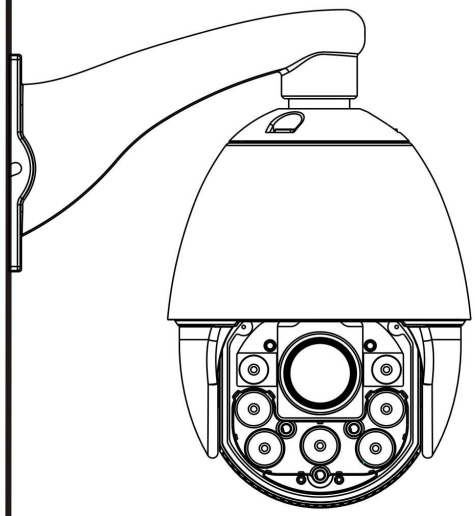
IR Lights Synchronous Zooming Model

IR HIGH-SPEED DOME PTZ



IR SPEED DOME

USER MANUAL English Version

Dear Customers,

Thank you for purchasing our product. This product is designed by our company based on the summary of a large number of users' habits and years of experiences. Thus it can satisfy customers' more needs in both function and design. Therefore, the product is more flexible to operate, easier to use and able to satisfy various demands in practice.

For the IR structure, this product applies multi-sync zoom IR LED structure which is self-developed and has unique patent. This technology leads the development direction of infrared light synchronization dimming technique. It stands at the forefront of the infrared light synchronous technology. To make sure the excellent quality of the

product, we made lots of optimization in design of the dome PTZ and took long time to test and adjust. Please read this manual carefully so that you can make better use of the selected equipment. If you have any question, please timely send feedback to us or distributor.

Thanks Again!

Notice

- Please make sure the camera can sense infrared light.
- Power supply for PTZ and infrared light should be DC 12V.
- Please strictly follow the wiring instructions.
- Pay attention to protect the transparent cover to avoid scratching.

Contents

I. Important Safety Instructions

☆ Please read the manual carefully before install this product.

☆ Please follow all the notices and cautions on the product and manual.

☆ Do not use in the environment beyond the standard temperature and humidity.

☆ Please strictly confirm the voltage of input power as over-voltage power input may burn down the product.

☆ Do not expose the indoor-purpose product to rain or any wet place.

☆ Do not put any item inside the product. This may cause short circuit and damage the product or system.

☆ Do not install in areas containing inflammable, explosive or corrosive gas.

☆ Do not disassemble any internal parts of PTZ which contains no serviceable parts.

☆ Please power off before maintenance, replacement or cleaning.

☆ Do not use spray cleaners to clean the product, otherwise it will cause internal short circuit, nor any cleaner that has strong abrasive function. In case of heavy oil stain, please use soft cloth and neutral detergent to wipe the product gently.

☆ Please make waterproof treatment to the stent junction and fixing screws for outdoor-purpose product. This can prevent moisture from entering into machine to damage the equipment.

☆ For wall-mounted machine, please fix the holders onto the targeted wall surface tightly, and then fix the product onto the holders tightly to prevent any falling down. In case of installation on uprights or other items' surface, please choose proper accessories.

☆ Please contact us or our authorized distributor in case of anything happens as below during opening the package or using the product:

A. Power supplier or control wire is broken or wiring port is damaged.
B. Rotating core falls apart.
C. Abnormality occurs in use.
D. Cover falls apart or is damaged, or the transparent optical cover is broken.
E. Malfunction even if proper operation by following the manual.

II. Notices

★ Do not aim the camera at bright objects

Do not aim the camera at the sun. No matter in use or not, the camera should not be aimed at sun or other bright objects; otherwise, it may blur the image or cause light halo.

Aiming at spotlight for a long time may cause permanent damage to photosensitive device, thus create light spots on the screen and ruin the image effect seriously. Some cameras may lose the color of the image due to the color compensation filter in photosensitive device is broken.

★ Do not reverse the product in installation

This dome ball is designed for installation on the ceiling or wall. Any reversal installation of the product, e.g. reversal installation on the floor, will make some mechanical parts work in abnormal situation. Such kind of improper use for a long time may cause damage to the mechanical parts or motor.
The waterproof treatment for this PTZ is also based on normal installation. Any reversal installation outdoor may cause influent, thus damage the PTZ and camera seriously, even destroy the whole equipment.

★ **Electrical safety**

Video cable should have good shielding effect and good quality of the cores and it is better to use STP (Shielded Twisted Pair) cable for 485 control cable. The video and control cables shall be wired separately from power cable, thus to avoid the event of video interference or control malfunction.
Wiring of cables should comply with all safety standards of electric appliance. The dome ball shall not be installed nearby any high voltage equipment. Both video cable and control cable shall maintain enough distance from the high voltage equipment (at least 50ms). If necessary, some precautions e.g. lightning protection and anti-wave shall be taken as well.
The topologic structure for 485 control cable requires a bus system. While in real practice, in case of wiring difficulty in such a bus system, a star structure can be considered, namely adopting a control cable for every dome PTZ to connect the command room directly. Both bus and star structure require to merge a terminal resistant at the most remote distance of the dome PTZ.

III. Product Features

★ Has multi-sync zoom IR LED structure with creative patent. IR LED angle keeps up with the view of cameras, so no darkness in field of view.

★ The multi-sync zoom IR LED structure makes every IR light become “all-around champion”. Every IR light can change its angle based on the camera focal length.

★ Distributed heat dissipation, low calorific value, which vastly prolong life-span of IR LED.

★ Newly invented LED array drive system can perfectly coordinate with

focal length of cameras.

★ Use infrared laser light illumination for remote view. The infrared projection distance is up to 180m, which is suitable for high-definition camera.

★ The brightness and beam angle of IR lights are user-defined, to create the perfect video effect.

★ Dual-layer sun block structure, which is useable in all kinds of environment.

★ Fast heat dissipation applied on high-speed dome, which has high-efficiency dissipation rate. It makes the IR PTZ not hot any more. All instruments inside stop working under high temperature, which highly reduces malfunction rate.

★ Adopt precise step motor as the drive. Every step is subdivided precisely to guarantee a stable and reliable operation.

★ Able to be compatible with multiple mainstream cameras and able to identify PELCO-D/PELCO-P protocol automatically.

★ Adopt precise conductive electric circle structure that can realize 360° continuous rotation, no any blind zone in monitoring

★ Three kinds of 360° horizontal scan mode. Two kinds of horizontal restricted scan modes that is programmable and one pattern scan track.

★ Duration at start and end points of the programmable horizontal restricted scan modes is adjustable.

★ If power-on again after accidental power-off, the equipment may resume the status automatically.

★ Have functions of proportional speed-down, auto flip, guard-bit etc.

★ 200 preset points, 6 cruise tracks which can be deleted separately and duration at the preset points is adjustable.

★ Optical dome cover with good quality of light penetration and no distortion.

IV. Product Overview

The IR high-speed dome PTZ integrates the functions of PTZ control, camera control and internal IR LED. With the exquisite and simple mechanical design, high-speed and steady operation, arbitrarily position-setting and continuous tracking scan, the PTZ achieves all-round and intelligent monitoring without blind spots in the true sense. It has the advantages of high reliability, long-term stable operation, no maintenance.

IR high-speed dome PTZ can automatically identify PELCO-D/PELCO-P protocol, can support a variety of popular control system platform and can match to a variety of mainstream cameras perfectly. It is convenient to use because customers do not need to choose the control protocol.

IR high-speed dome PTZ has the functions of proportional spin-down, auto-flip, guard-bit, pattern scan, power-on action, etc. It also has other features, such as cruise track, horizontal restricted scan, and 360-degree horizontal scan functions. With these functions, it will be very convenient for users to realize the intention of monitoring. It truly reflects the convenience of intelligent monitoring.

The angle and intensity of the IR light change according to the camera's focal length, so that the entire scene can be clearly visible. Built-in third-generation array power infrared light and the laser light allow users to get a clear image of monitoring in completely dark environment and truly achieve day and night surveillance.

The various features of the IR high-speed dome PTZ enable the system to be used in monitoring system of all sectors of . Such as the power system, the telecommunications sector, banking security, factories and mines, the intelligent community buildings, supermarkets, shopping malls, urban road monitoring, airports, railway stations and other monitoring positions.

V. Function Description

Main functions of the IR high-speed dome PTZ are briefly specified as below. And introduce the general principles of the various functions and operations, without further explanation of detailed operation steps.

1. Set address code, baud rate and control protocol

The address code gives the dome PTZ an identity separated from any other equipment in the system, so any operation command will contain its targeted address code. Therefore, operator may control any equipment in the system without any effect on the others.

Baud rate means the rate of data transmission. Only the baud rate is consistent with each other can the data received by the equipment be guaranteed to be the same as those transmitted by control system. Command rendered by control system follows the designated baud rate to transmit data, so the control system and equipment shall have the same baud rate.

Control protocol means the specific definitions to the format and content of the command rendered or received. Only the control protocol is consistent can the equipment execute the command from control system correctly. This high-speed dome PTZ can identify the control protocol automatically, so in practice, users just need to set the baud rate and address code.

The default address code is 1, and baud rate is 2400. Please refer to the DIP Set-up for details of setting the address code and baud rate.

2. Target tracking

User may use the joystick of control system to rotate the camera up or down, left or right to track the moving target. Also may change the size of target image by adjusting the focus, thus to zoom in or out the image of distant objects. Under the status of auto focus, the rotation of lens can make the camera adjust automatically and quickly according to the changes of scenery, thus user may acquire a clear image immediately.

3. Auto matching technology of focal length/ rotation speed

This function is also named as proportional speed changing function. In manual adjustment, when the camera zooms in the distant object, a slight touch to the joystick may cause a quick movement of image, thereby the monitoring object will lost. Based on the user-friendly design, the smart dome PTZ can automatically adjust the speed of camera rotation horizontally or vertically according to the focal length, thus manual operation for target tracking will be easier and more convenient. Factory default of this function is on, and users may close it if not necessary.

In manual operation, the IR high-speed dome PTZ horizontal rotation speed may change from 0.1°/s to 200°/s， and vertically from 0.1°/s to 120°/s. This can absolutely satisfy the customer needs in surveillance.

4. Auto flipping

Use joystick to rotate the camera downwards. When it reaches to the vertical position, keep holding the joystick. Then the lens may flip upwards automatically after rotate horizontally 180°. User may view the scene behind directly, thus to realize a surveillance in vertical 180° continuously. Default value of this function is on, and users may close it if not necessary.

5. Set and call preset position

Preset function means the dome PTZ can store the positional parameters of current state of horizontal angle, tilt angle and focal length, etc into a

memory machine. When needed, all these parameters can be called quickly and PTZ and camera can be adjusted to the desired position as well. Operator may control the system to store and call the presets easily and conveniently. The PTZ can support up to 200 preset points.

6. Auto cruise at preset point

This can be shortly named as auto cruise. It can drive the sequence of preset points set previously (namely cruise track) move reciprocatingly within predetermined time intervals. Every sequence of preset points in this PTZ has 16 preset points. Auto cruise can make the camera stay more time on the key monitoring points automatically in order to avoid any lost of key monitoring data, thus to relieve the tasks of the operator. The staying time on preset point is adjustable, and the factory default value is 5 seconds. Operator can adjust the time within the scope of 3s, 5s, 10s, 30s, 60s and 180s by his own. Auto cruise can be started by an external command. The PTZ has 6 auto cruise tracks. Every track can be started or deleted separately. Therefore user can operate very conveniently.

7. Pattern scan

Pattern scan is an enhanced preset auto cruise. Via pattern scan command, we can specify the preset points cruise order and the staying time. This function can be started by an external command. The PTZ has one pattern scan track and all preset points can be added into this sequence.

8. 360° continuous scan

360° continuous scan means the PTZ keeps rotating in one direction until stopped by another command. The PTZ has three speeds in this function: slow scan is 5°/s, medium is 12°/s and fast is 20°/s. This function can be started by an external command.

9. Horizontal restricted scan

This function can specify the start and end points of horizontal scan scope, thus to make the PTZ move reciprocatingly within a specified range. The PTZ has two speeds in this function: slow one is 5°/s and the fast is 12°/s. Staying time on the start and end points of horizontal restricted scan is adjustable. The factory default value is 3s. Operator can adjust the time to 1s, 3s or 10s by own.

10. Power-on to equipment

If the an unexpected power outages happened when auto cruise at preset points, pattern scan, 360° continuous scan or horizontal restricted scan, the equipment may run at the previous status automatically after the power restore. When there is no command above is running before it power off, it will automatically run to the first preset point if you have set one; if not, it will stay at the position where it stopped after self-test. So it is recommended to set the preset point to prevent losing important monitoring objectives after unexpected power outages.

11. Guard-bit function

The PTZ has function of guard-bit in design, which is an important

monitoring point for the operator to concentrate on. The first preset point is set as the guard-bit for this PTZ. Therefore operator should set the key morning point at the first preset point. When this function is on, if there is no action in 5 minutes, the PTZ will automatically run to the guard-bit point. This can prevent important monitoring data lost due to operator's negligence. The factory default value of this function is off, so user may turn it on if necessary.

12. Lens control

A. Focal distance control

Change of focal distance can zoom in the monitoring target to get close-ups or zoom out for a wide angle effect. Pressing the key TELE, the monitoring target will be closer, and picture will be zoomed in. Pressing the key WIDE, the monitoring target will be pulled away and the picture will be zoomed out. If you click TELE or WIDE quickly, the image will be zoomed in or out slightly. Camera zooms varies depend on the time you press the key.

B. Focus control

Focus is a process to adjust the clearness of an objective or a scene in the image. The factory default value of this function is auto focus. Under this mode, when the monitoring target is zoomed in or out, camera lens will automatically focus on the center of image in order to keep the image's clearness. However, in the following cases, the user may need to manually adjust the focus, so as to achieve the desired image effect.

☆ Monitoring target is not in the center of image.

☆ Monitoring targets are located near and far at the same time.

☆ Monitoring target is strong lighting items like neon lamp, spot lamp or other glowing objective, etc.

☆ Monitoring target is behind the glasses with water drops or dirt.

☆ Monitoring target is moving too quickly.

☆ Monitoring target area is too big such as a wall.

☆ Monitoring target is too dark or inherently fuzzy.

Function of manual focus is available only when the camera is set as this mode. Press the key FAR, then item or scene in distance will become clear while nearer ones will become obscure. Press the key NEAR, then item or scene nearer will become clear while the distant ones will become obscure. User may repeat pressing the key of focus to acquire a satisfactory image. Same as changing the size of image, the change of

focus is determined by the time of pressing on the focus key. The manual focus mode in some cameras requires a control command. For more details, please consult the camera manufacturer.

C. Iris control

Most cameras inside the PTZ are auto iris cameras, which do not support manual adjustment. Some special types of camera have the manual adjust function can use iris control accordingly.

13. Auto BLC (Backlight Compensation)

When BLC function is turned on, camera can automatically compensate the brightness for dark target under a bright background, and adjust light for the bright background to get a clear image. It can avoid a mass bright on the image due to the brightness of background and the target is too dark to be identified. Factory default of this function is off, and users may turn on the function with an external command.

14. Switch to colorful/black-and-white

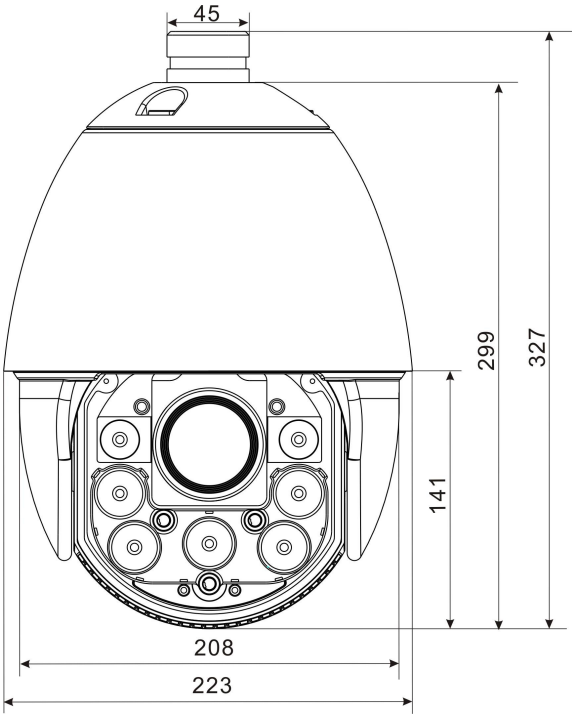
Camera with night vision function can switch to black-and-white mode at night. In this mode, it can improve the clarity of image to show more details, and sense the infrared light at the same time. With the auxiliary infrared lighting, it can further improve the clarity of the image.

15. IR LED and lens matching system

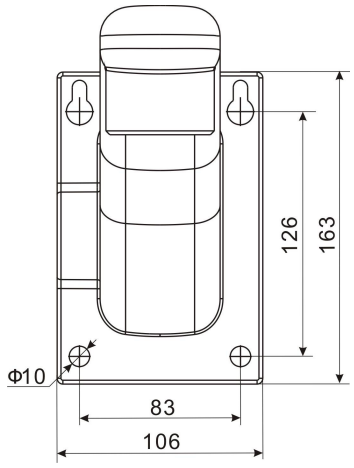
Through this system, the IR LED can adjust its monitoring angle according to the lend zoom in times. With an elaborate design, each IR LED can adjust its shining angle, so they can match the lens zoom in times. Then user can get best camera image.

When it is dark enough and the IR LED starts work, IR LEDS and laser lights will automatically adjust their brightness and shining angle according to the camera zooming times. When adjust the zooming times manually, the IR lights synchronous zooming model can ensure the intensity and angle of the IR light will match to the field view’s angle of the camera perfectly.

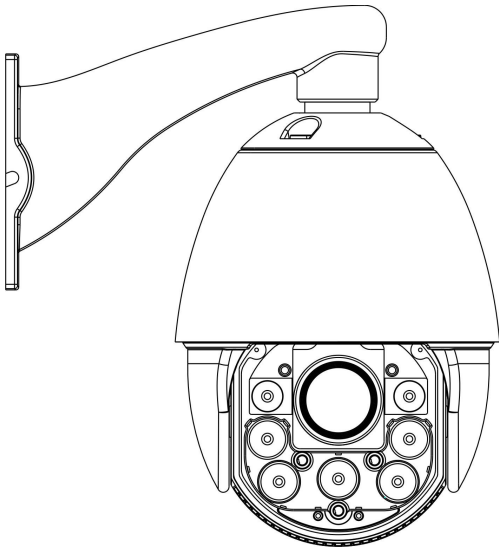
VI. Dimensional Drawings of the PTZ



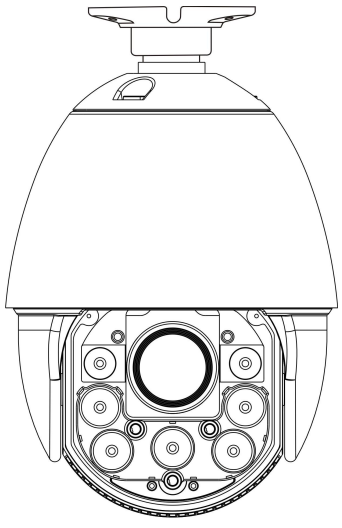
Dimensions



Wall-mounted Bracket Dimensions



A. Wall-mounted Installation (Indoor/outdoor)



B. Ceiling Installation (Only Indoor)

Remarks:
The ceiling model is suggested not to be installed outdoor due to the ceiling holders are designed according to indoor standard. Therefore, in case of outdoor purpose, please make sure to make waterproof treatment on the holders. Customers are kindly reminded that any damage caused to equipment by water influent due to the holders are used for outdoor purpose is beyond the scope of maintenance.

VIII. Installation Method

1. Preparatory work

All electrical work must comply with and use the latest electrical regulations, fire regulations and other related legislations.
Confirm the application location and installation of the dome PTZ is consistent with requirements. If not match, please contact the supplier. Please use this product according to the product environmental requirements.
Confirm there is enough space to accommodate the product and its components in the installation site. Be sure that the carrying capacity of ceiling, wall and mounting bracket is five times than total weight of the PTZ and its components.

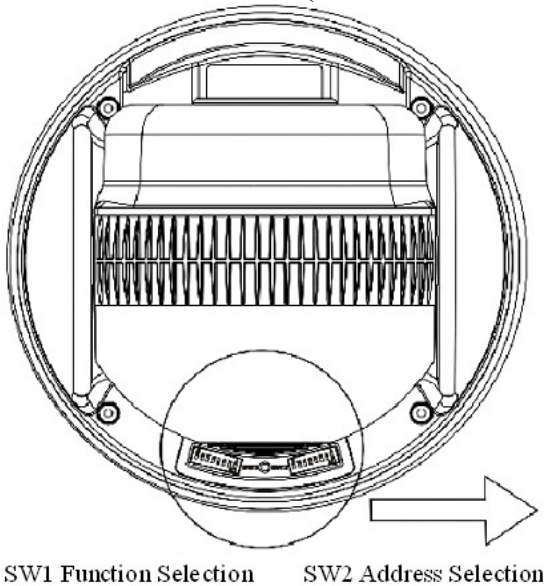
2. Fixed and connection method of PTZ

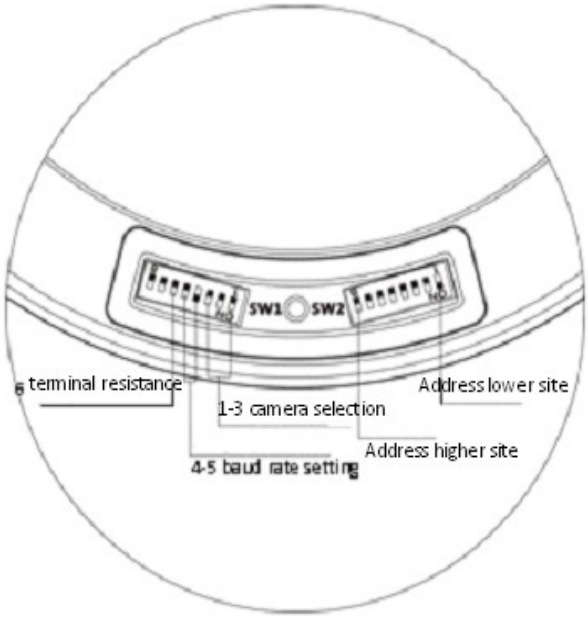
A. Install video camera
When remove the two fixing screws at the camera back shell and open it, you can see the camera pallet. Now remove one fixing screw of the pallet and pull it back, the camera plate can be taken.
Fix the camera onto the pallet with specific screws. Then connect the 9-cord flat wire offered by the PTZ to the corresponding interfaces of camera and decoder board, noticing the direction. Inset the camera pallet back to its slot. Please make sure the camera is closed to protective glass. Please repeatedly adjust until the camera is installed to the best position.
B. Set baud rate and address code
There are four options for baud rate: 1200, 2400, 4800 and 9600 and the default value is 2400. Please refer to the method of setting baud rate to adjust if needed.
Address code ranges from 0 to 255 and default value is 1. Please set the

code according to specified situation and refer to the method of setting 8-digit DIP switch SW2 for the setting details.
C. When confirm the installation site and finish the installation of the holder, draw the pre-paved cable through the holder.
D. Connect the reserved cable interface of the PTZ to the corresponding reserved cable (Please refer to the mark of reserved cable).
E. Connect the PTZ with the holder well, and then fix the screws tightly. Make sure to take waterproof treatment for outdoor equipment.
F. When follow the above steps to install the PTZ, please check the circuit and confirm voltage. If they are all correct, power on for testing, at this moment, the PTZ will do self test.
G. After everything is proved to be normal in test, fix the camera back shell well. (Notice: The screws shall be fixed tightly for the purposes of waterproof and anti-dirt). After taking off the film on the optical cover, the installation is done fully.

3. Set DIP switch in dome machine

The communication protocol between the PTZ and the host can be identified automatically, therefore user does not need to choose the protocol on DIP switch.
After change the baud rate and address code through DIP switch and choose the camera, make sure to cut off the power supply. Then power on again, so that the equipment can work normally.
DIP switch is located near the camera back shell. Remove the fixed Seal baffle, you will see the DIP switch (shown as below).





Switch the DIP to the side with numbers means OFF, the corresponding number is 0 then to ON, the number is 1.

The 8-digit DIP switch SW1 is used to set the parameters for the PTZ. Digit 1, 2 and 3 are options of camera protocol, 4 and 5 are for baud rate and the 6 is for terminal resistance, 7 and 8 are the reserved ones. The 8-digit DIP switch SW2 is an address coding switch adopted binary coding method, which totally can set 256 different PTZ address codes. Among them, bit 1 is low code and bit 8 is the high one. The coding principle is to encode from low digit to high.

Some PELCO-P protocol address codes of control systems starts from 0, namely when the address code transmitted by the control system is 1, the address code of decoder is 0. Please pay attention when use the PELCO-P protocol.

Digit	1	2	3	4	5	6	7	8	Description
Camera Selection	0	0	0						SONY
	0	0	1						LG
	0	1	0						CNB
	0	1	1						**Samsung**
	1	0	1						**Hitachi**
	1	1	0						VISION
Baud Rate （BPS）				0	0				1200
				1	0				2400
				0	1				4800
				1	1				9600
Terminal Resistance						0			**Disconnect terminal resistance**
						1			**Connect terminal resistance**

Table 1: Set SW1 DIP Switch

* Note: for the specific camera models supported (can match with the lens array exactly), please contact the suppliers.

Below is the DIP code table for partial addresses for user's reference.

Add	DIP1−8	Add	DIP1−8	Add	DIP1−8	Add	DIP1−8
1	10000000	2	01000000	3	11000000	4	00100000
5	10100000	6	01100000	7	11100000	8	00010000
9	10010000	10	01010000	11	11010000	12	00110000
13	10110000	14	01110000	15	11110000	16	00001000
17	10001000	18	01001000	19	11001000	20	00101000
21	10101000	22	01101000	23	11101000	24	00011000
25	10011000	26	01011000	27	11011000	28	00111000
29	10111000	30	01111000	31	11111000	32	00000100
33	10000100	34	01000100	35	11000100	36	00100100
37	10100100	38	01100100	39	11100100	40	00010100
41	10010100	42	01010100	43	11010100	44	00110100
45	10110100	46	01110100	47	11110100	48	00001100
49	10001100	50	01001100	51	11001100	52	00101100
53	10101100	54	01101100	55	11101100	56	00011100
57	10011100	58	01011100	59	11011100	60	00111100
61	10111100	62	01111100	63	11111100	64	00000010
65	10000010	66	01000010	67	11000010	68	00100010
69	10100010	70	01100010	71	11100010	72	00010010
73	10010010	74	01010010	75	11010010	76	00110010
77	10110010	78	01110010	79	11110010	80	00001010
81	10001010	82	01001010	83	11001010	84	00101010
85	10101010	86	01101010	87	11101010	88	00011010
89	10011010	90	01011010	91	11011010	92	00111010
93	10111010	94	01111010	95	11111010	96	00000110
97	10000110	98	01000110	99	11000110	100	00100110
101	10100110	102	01100110	103	11100110	104	00010110
105	10010110	106	01010110	107	11010110	108	00110110
109	10110110	110	01110110	111	11110110	112	00001110
113	10001110	114	01001110	115	11001110	116	00101110
117	10101110	118	01101110	119	11101110	120	00011110
121	10011110	122	01011110	123	11011110	124	00111110
125	10111110	126	01111110	127	11111110	128	00000001
129	10000001	……		255	11111111	Note:1=ON, 0=OFF	

Table 2: Set SW2 DIP Switch (Address Code)

Calculation method of address: (Below are the values when switch "ON")
Switch address: 1 2 3 4 5 6 7 8
Corresponding value: 1 2 4 8 16 32 64 128

IX. Basic Operation to Dome PTZ

Operation methods vary a bit among different control systems. Normally user shall follow the user manual offered by the system manufacturer. Due to some special requirements and methods may be required in different circumstances, so please contact the distributor to obtain necessary information. Below is the operation specification for regular control method.

1. Self test after power-on

After power-on, the dome PTZ will automatically move horizontally and vertically; thereafter, it will test the camera to tell the model of camera then indentify the communication protocol with the camera. Only after this self test can the dome PTZ run regularly.

2. Control camera to rotate up and down, left and right

User shall select the PTZ before intending to control the dome machine. After selection, control the joystick on the keyboard or the direction key in the software to rotate the dome machine up or down, left or right. When user operates the joystick on the keyboard or clicks the direction key, dome machine will move to the operated direction exactly.

3. Set preset point

Follow the steps below to set the preset point:

A. Select the dome machine.

B. Operate the joystick or direction key to the position wanted then adjust the size of surveillance target until the desired size.

C. Press the command PRESET, input the designated preset number, then save the parameters of preset scene after confirmation.

4. Call preset point

Follow the steps below to call the preset point:

A. Select the dome machine.

B. Press the command CALL and input the number of designated preset point. After confirmation, camera will immediately move to the preset point, and focal distance and focus of lens will automatically adjust to the preset parameters. If the input is a preset point with special function (refer to the table of preset functions), the dome machine will execute the function in accordance with the special function preset point. (e.g. Call No.64 preset point, the dome machine will start 360° medium-speed scan)

5. Call and delete cruise track

Totally the dome machine has 6 cruise tracks as below:
Track 1: No.1-16 Preset Points Track 2: No.17-32 Preset Points
Track 3: No.33-48 Preset Points Track 4: No. 97-112 Preset Points
Track 5: No.113-128 Preset Points Track 6: All Preset Points

Prerequisite of the preset point cruise is that every cruise track shall have at least two or more than two preset points.

A. Call the cruise track

Press the command CALL, input “49”, after confirmation, start the cruise track No.1.
Press the command CALL, input “50”, after confirmation, start the cruise track No.2.
Press the command CALL, input “51”, after confirmation, start the cruise track No.3.
Press the command CALL, input “52”, after confirmation, start the cruise track No.4.
Press the command CALL, input “53”, after confirmation, start the cruise track No.5.
Press the command CALL, input “54”, after confirmation, start the cruise track No.6.

B. Delete the cruise track

It is designed in the dome PTZ that all preset points at one cruise track can be deleted by one time. In case of any intention to redefine a cruise track, user may delete it then redefine. This is to avoid too many trifles in deleting every preset point, or the embarrassment when user intends to keep some preset points but there is only one available option to delete all the preset points.

Press the command CALL, input “55”, after confirmation, delete the preset points No.1-16.
Press the command CALL, input “56”, after confirmation, delete the preset points No.17-32.
Press the command CALL, input “57”, after confirmation, delete the preset points No.33-48.
Press the command CALL, input “58”, after confirmation, delete the preset points No.97-112.
Press the command CALL, input “59”, after confirmation, delete the preset points No.113-128.
Press the command CALL, input “60”, after confirmation, delete all preset points.

6. Setting and application of restricted scan function

A. Set the scope of restricted scan.

Adjust the dome machine to start point. Adjust the focal distance of lens, then press the command PRESET and input “61”, after confirmation, save the start point of camera.

Then adjust the dome machine to end point. Press the command PRESET and input “62”, after confirmation, save the end point of camera.
During time at the start and end point for horizontal restricted scan is adjustable. There are three kinds: 1s, 3s and 10s. The default value is 3s. If you want to adjust the time, please follow below steps.
Press the command CALL, input “77”, after confirmation, set the time as 1s.
Press the command CALL, input “78”, after confirmation, set the time as 3s.
Press the command CALL, input “79”, after confirmation, set the time as 10s.
B. Start restricted scan
Only after setting the start and end point, can the restricted san be started.
Press the command CALL, input “61”, after confirmation, start the slow restricted scan. Its speed is 5°/s.
Press the command CALL, input “62”, after confirmation, start the fast restricted scan. Its speed is 12°/s.
C. Stop restricted scan
With below method, the restricted scan can be stopped. Operate the keys on the joystick of UP, DOWN, LEFT or RIGHT, operate the functions of zooming and focus to the lens or call other preset points.

7. 360° horizontal scan

After the function is started, PTZ will follow one direction to rotate at a designated speed. If intend to stop this function, please follow the methods below: operate the keys on the joystick of UP, DOWN, LEFT or RIGHT, operate the functions of zooming and focus to the lens or call other preset points. Totally there are three kinds of speed for this function as below:
Press the command CALL, input the number “63”, after confirmation, start 360° slowly linear scan. It rotates at the horizontal speed of 5°/s.
Press the command CALL, input the number “64”, after confirmation, start 360° medium linear scan. It rotates at the horizontal speed of 12°/s.
Press the command CALL, input the number “65”, after confirmation, start 360° fast linear scan. It rotates at the horizontal speed of 20°/s.

8. Set and call pattern track scan

A. Set pattern track scan.
Press the command PRESET, input “66”, after confirmation, enter into the setting model.

a. Press the command CALL, input the number of preset point. Then add preset point that needed to be scanned.
b. Press the command PRESET, input the number between 1 and 250 to set the staying time of the preset point. The unit is “s”.
c. By repeating the above two steps, add all the preset points.
d. After finished, press the key UP or DOWN to quit.

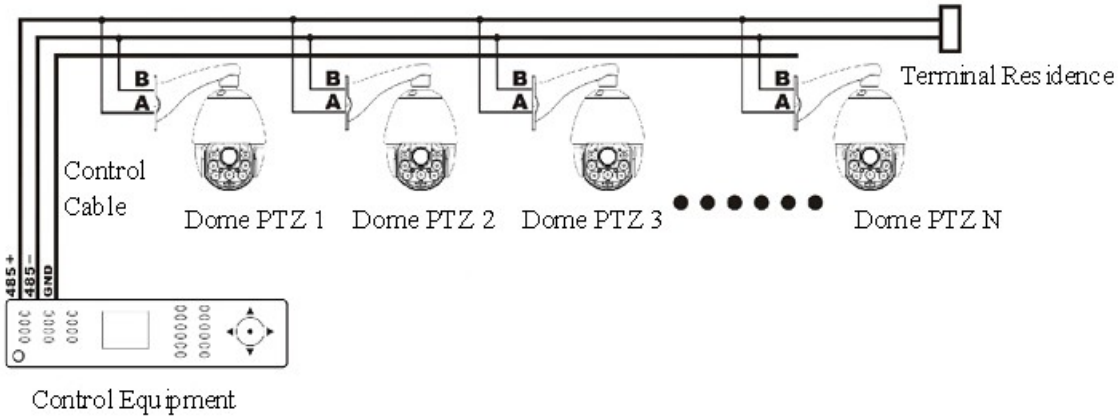
B: Call pattern track scan.
Press the command CALL, input “66”, after confirmation, the function will be started.

9. Set and call customized IR light intensity and IR sync-lens position

Call No.67 to enter into the customized model. Press the iris “-” to enhance the light. When then intensity reaches to its maximum, the camera lens begins work. Press the iris “+” to weaken the light. This process is opposite from the above one.
Then call No.88 to adjust the lamp brightness separately. Press the iris “-” to enhance the light and “+” to weaken it. Call No.89 to adjust the camera lens. Press the iris “-” to extend the lens and “+” to retract it.
Recall No.88 or No.89 to return to the state of No.67. Call No.67 directly to turn off this function.

X. Wiring Diagram for Multiple Dome PTZs

Built-in decoder in this dome machine adopts RS485 communication method. “A” and “B” are signal wiring thermals and “GND” is a shielding area. Furthermore, “A” shall connect to the positive end of the interface on RS485 equipment and “B” connects to its negative end.



Connection Diagram for Multiple RS485 Dome PTZs

The standard RS485 control equipment is connected with the decoder of dome PTZ via two-cord STP, with cable distance not further than 1200m.
The above wiring structure is a bus structure. Namely after coming out from the control equipment, the RS485 signal cable should connect with all decoders in sequence until the final terminal matching resistance.
Due to whether the control signal received by the decoder is correct or not and whether the signal is clear or not have direct relationship with wiring structure, so RS485 signal cable demands a bus structure in wiring. In case the bus structure wiring is unavailable at the site, user may adopt a star structure, namely all decoders should connected to the control

equipment with a separate RS405 cable without any branches therein. In such kind of wiring structure, if any problem occurs in transmission of RS485 signal, user may adopt additional distributors or other equipment to solve the problem.
In real practice, if the equipment control still can not go smoothly after adopting a correct wiring structure, user shall take the priority to consider if anything wrong with the terminal matching resistance at the most remote of the equipment. Operation method listed below: Switch the digit No.6 of DIP SW1 to the position "ON" in order to connect the 120Ω terminal matching resistance.

XI. Simple Trouble-shooting & Maintenance

Please read the User Manual carefully before installing and using the machine, do not depend on personal experience. Because the performance characteristics, installation and use method from different manufacturers smart dome are different. In case of any problem occurs and no cause can be identified after check, please contact the manufacturer immediately to acquire the technical support. If some problems happened during the installation and operation, please follow the steps and methods below to analyze and solve the problems.
If the dome PTZ in monitoring position can't be controlled or capture no video image, please dismantle the dome machine, and then take it to the control room for test. If the test shows it is normal, then check the circuit.
If the test in the control room is not normal, please follow the solution table below to analyze and solve the problems.

Trouble	Possible Reason	Solution
No reaction, no image or IR lights do not work after power-on	Power specification unmatched	Check and correct
	Wrong power wiring	Check and correct
	Damage of power supply	Change
	Fuse tube broken	Change
	Bad connection of power wire	Eliminate
Image and self-test are available but uncontrollable after power-on.	Incorrect setting of address code or baud rate	Reset the address code or baud rate according to user manual
	Wrong wiring of RS-485 cable or open circuit	Check the wiring of RS-485 control cable
	Control protocol unmatched	Set the control machine to PELCO-D/PELCO-P protocol

Image unstable	Bad contact of video cable	Check and eliminate
	Low power	Change
Control available, but not smooth	Bad connection of RS-485 cable	Check the wiring of RS-485 control cable
	One RS-485 cable broken	Check the wiring of RS-485 control cable
	Malfunction occurs to one equipment	Check and eliminate
	RS-485 control cable not wired in a bus structure	Change to bus or star topologic structure
	Terminal matching resistance not set on the most remote end of the bus structure	Connect to 120Ω terminal matching resistance

XII. Key Technical Indicators

1. IR lights of the lens array

Number of infrared lens	5 sync-lens and 2 fixed lens
Number of infrared light	7
Infrared emitters	High-power array LED and laser
Wavelength	850nm
Projection distance	≥180m
Variable angle range	3.2°-55°
Power consumption	7-15W
Infrared control	Automatic/ Manual control
Infrared life	≥50,000 hours

2. Dome PTZ

Item	High Speed	Medium Speed	Intelligent
Horizontal rotation range	360° unlimited		
Horizontal rotation speed	0.1°/s-200°/s	0.1°/s-120°/s	0.5°/s-20°/s
Vertical rotation range	90° (180° Auto flip)		
Vertical rotation speed	0.1°/s-120°/s	0.1°/s-20°/s	0.5°/s-10°/s
Communication method	RS485		
Communication protocol	Automatic identification (PELCO_D/P protocol)		
Communication baud rate	Baud Rate 1200bps/2400bps/4800bps/9600bps		
Dome PTZ address	1-255		
Preset Points	200		
Inspection teams	6 (16/bar)		
Horizontal scanning speed	01-64		
Preset staying time	03-180 seconds adjustable		
Two points scanning speed	5°/s and 12°/s optional		
Two points scanning position	Arbitrarily set		
Two points scan staying time	1 second/3 seconds/10 seconds optional		
Power-on mode	Power-on recovery/two points scanning/ horizontal scan/guard-bit/inspection teams		
Power-off recovery	Memory PTZ and instruction		
Guard mode	Off/guard-bit		
Guard waiting time	5 minutes		
Guard position	Arbitrarily set		
Alarm function	Optional (two inputs, one outputs)		
Support integrated machine	Sony, LG, CNB, Samsung, Hitachi, Domestic		
Electronic zoom	Support		
Video freeze	Support		
Backlight compensation	Support		
Data reset	Factory reset/Clear preset/Camera data reset		
Proportional variable speed	Support		
Input voltage	DC 12V		
Input power	PTZ 10W		
Working temperature	-25°C-49°C		
Waterproof	IP66		
Lightning protection	Moment 6000V		
Standard bracket	Wall mounting or ceiling mounting		
PTZ net weight	3.5Kg	3.2 Kg	

XIII. Introduction of HD Webcam with Megapixel

In the video monitoring system, we usually use the HD web camera with million pixel. This kind of webcam can get image with more than 25FPS continuously and its maximum resolution is 720P (1280*720, 1.0 Megapixel) or 1080P (resolution 1920*1080, 2.0 Megapixel). In general the zoom should be 16:9 and it can analyze digital signal for 1080i (resolution 1920*1080) or the vertical and horizontal number of scan lines must meet 720P digital signal. Only meet or exceed the above standards can be classified as high-definition products.

HD is the development trend for video monitoring. Compare with the traditional analog monitoring camera and the common network monitoring camera, the megapixel HD webcam has many advantages. Such as high definition, megapixel sensor, more video information. The Progressive scanning of CCD/CMOS can make the picture clearer and more natural. It is also convenient to integrate the intelligence analysis. The HD webcam also has the advantages of larger coverage and good image quality.

The HD webcam adopted in this series of HD IR sync-zooming high-speed dome PTZ has the following features.

★ 720P uses 1.3 megapixel and 1/3 low light CMOS.

★ 1080P uses 3.1 megapixel and 1/3 wide dynamic CMOS.

★ 18 optical zoom.

★ Self-optimized focusing algorithm and can quickly focus under various environment.

★ Day and night IR-cut and intelligent noise reduction.

★ Support ONVIF protocol.

XIV. Technical Parameters for 720P HD Camera

Performance Parameters		Performance Indexes
Video Parameter	Image Sensor	1/3” Ex-view 1.3 Mega Pixel CMOS
	Maximum resolution	PAL: 1280×720; NTSC: 1280*960
	Scan model	Progressive scan
	Mini illumination	Color: 0.2Lux@F 1.2 Black and white: 0.02Lux@F1.2
	Electronic shutter	Automatic/manual (1/5-1/50000s)
	Day/night conversion	Automatic/manual
Code Parameter	Compression standard	H.264/Mjpeg
	Output bit rate	32Kbps-16Mbps
	Frame rate	25fps(1280*720)
	Data rate	One data rate, two data rate
	Audio Standard	G.711
Lens Specifications	Focal length	4.7-84.6mm
	Zoom	18*optical zooms
	Zoom speed	3s
	Horizontal angel of view	55.2°-3.2° (Wide angle/Tele focus)
	Mini object distance	10mm (W)-1500mm(T)
	Aperture	Automatic
Function	White balance	Automatic/manual
	Mirror image	Horizontal/vertical/horizontal+ Vertical/off
	Number of preset	256
Output Interface	Web	RJ45 10/100M Adaptive Ethernet interface
	Audio Interfaces	One input, one output
	Alarm interface	One input, one output
	Memory function	Support SD/SDHC card (16G)
Network Protocol	TCP/IP, HTTP, DHCP, DNS, DDNS, RTP, RTSP, PPPoE, SMTP, NTP, UPnP, ONVIF	
General Parameter	Power supply	DC12V
	Consumption	5.6W (MAX)
	Working temperature	-20°C ~ +60°C

XV. Technical Parameters for 1080P HD Camera

Performance Parameters		Performance Indexes
Video Parameter	Image Sensor	1/3” Ex-view 1.3 Mega Pixel CMOS
	Maximum resolution	1920*100
	Scan model	Progressive scan
	Mini illumination	Color: 0.2Lux@F1.2 Black and white: 0.05Lux@F1.2
	Electronic shutter	Automatic/manual (1/5-1/50000s)
	Day/night conversion	Automatic/manual
Code Parameter	Compression standard	H.264/Mjpeg
	Output bit rate	32Kbps-16Mbps
	Frame rate	25fps(1920*1080), 25fps(1280*720)
	Data rate	One data rate, two data rate
	Audio Standard	G.711
Lens Specifications	Focal length	4.7-84.6mm
	Zoom	18*optical zooms
	Zoom speed	3s
	Horizontal angel of view	55.2°-3.2° (Wide angle/Tele focus)
	Mini object distance	10mm (W)-1500mm(T)
	Aperture	Automatic
Function	White balance	Automatic/manual
	Mirror image	Horizontal/vertical/horizontal+ Vertical/off
	Number of preset	256
Output Interface	Web	RJ45 10/100M Adaptive Ethernet interface
	Audio Interfaces	One input, one output
	Alarm interface	One input, one output
	Memory function	Support SD/SDHC card (16G)
Network Protocol	TCP/IP, HTTP, DHCP, DNS, DDNS, RTP, RTSP, PPPoE, SMTP, NTP, UPnP, ONVIF	
General Parameter	Power supply	DC12V
	Consumption	6.0(MAX)
	Working temperature	-20°C ~ +60°C

Appendix I. Quality Requirement of the Installation or Maintenance Staff

1. Has certificate of installation or maintenance for CCTV system
2. Has certificate of high-altitude operations
3. Has basic knowledge and operating skills of low-voltage wiring and low-voltage electronic circuit wiring
4. Understand and be familiar with the product description

Appendix II. Copyright Statement

Appendix III. List of Control Commands

Preset point	Control content	Operation (Call)	Operation (Set)	Default value
49	Start the cruise track No.1 (Scan the preset points 1-16 in sequence)	Call		OFF
50	Start the cruise track No.2 (Scan the preset points 17-32 in sequence)	Call		OFF
51	Start the cruise track No.3 (Scan the preset points 33-48 in sequence)	Call		OFF
52	Start the cruise track No.4 (Scan the preset points 97-112 in sequence)	Call		OFF
53	Start the cruise track No.5 (Scan the preset points 113-128 in sequence)	Call		OFF
54	Start the cruise track No.6 (Scan all preset points in sequence)	Call		OFF
55	Delete the cruise track No.1 (Preset points 1-16)	Call		OFF
56	Delete the cruise track No.2 (Preset points 17-32)	Call		OFF
57	Delete the cruise track No.3 (Preset points 33-48）	Call		OFF
58	Delete the cruise track No.4 (Preset points 97~112)	Call		OFF
59	Delete the cruise track No.5 (Preset points 113-128)	Call		OFF
60	Delete all preset points	Call		OFF
61	Start slowly horizontal restricted scan/set the start point of horizontal restricted scan	Call	Set	OFF
62	Start fast horizontal restricted scan/set the end point of horizontal restricted scan	Call	Set	OFF
63	Start 360° slow horizontal scan	Call		OFF
64	Start 360° medium horizontal scan	Call		OFF
65	Start 360° fast horizontal scan	Call		OFF
66	Start pattern cruise track scan/enter into pattern scan model	Call	Set	OFF
67	Start/end customized LED light (operating iris command)	Call		OFF
68	Set proportional deceleration ON/OFF	Call	Set	ON
69	Set automatic flip ON/OFF	Call	Set	ON
70	Set guard-bit ON/OFF	Call	Set	OFF

71	Set staying time on preset point of track cruise as 3s	Call		OFF
72	Set staying time on preset point of track cruise as 5s	Call		Default
73	Set staying time on preset point of track cruise as 10s	Call		OFF
74	Set staying time on preset point of track cruise as 30s	Call		OFF
75	Set staying time on preset point of track cruise as 60s	Call		OFF
76	Set staying time on preset point of track cruise as 180s	Call		OFF
77	Set staying time on start point/end point of horizontal restricted scan as 1s	Call		OFF
78	Set staying time on start point / end point of horizontal restricted scan as 3s	Call		Default
79	Set staying time on start point / end point of horizontal restricted as 10s	Call		OFF
80	Recover the default values of the dome PTZ	Call		OFF
81	Display the OSD menu of camera	Enter	Quit	OFF
82	Display the camera information	ON	OFF	ON
83	Digital ZOOM	ON	OFF	ON
84	Switch of colorful/black-and-white	Colorful	Black-and-white	Colorful
85	Backlight compensation (BLC)	ON	OFF	OFF
86	Focus mode	Auto	Manual	Auto
87	Static image	Frozen	Regular	Regular
88	Set customized IR lamp brightness individually ON/OFF	Call		OFF
89	Set customized IR sync-lends individually ON/OFF	Call		OFF