IR Intelligent Speed Dome Camera

User Manual

Thank you for buying our company product, any question or request please feel free to contact us.

The manual only use for our speed dome camera.

This manual maybe includes some inaccurate information on technology/product function/ operation or print error, we will update it in the new versions manual in future.

Attentions:

Please read this manual carefully before you install and operate the dome camera.

● Transportation Security
Heavy stress, violent vibration or water splash are not allowed during transportation, storage. Every unit should be transported in separated packing. In shipments of distributor and delivery of maintenance, any damages caused by integral packing are not covered by warranty.

● Installation Security
It has 2 installation ways: wall mounting and ceiling mounting, avoid mixing installation!

The dome camera must be handle with care! Avoid heavy stress and violent vibration during installation. Don't touch the dome cover directly by hand. When connecting the power source, please follow all electric safety standards and only use the power supply designed for this device. Keep the video and control signal in a decent distance with high voltage devices and cable. Don't apply power to dome before finishing the installation.

● Don't remove
Internal removing, assembly, repair and operations should be only performed by our company or qualified service personnel.

●Electrical Safety

The video image would be interfered when the dome is installed from Television, radio transmitter, voltage changer and audio amplifier.

●Camera Protection

Avoid shooting very bright objects directly into the camera (such as the sun or light fittings) and avoid fixating the camera lens on bright static object for long time, as it will cause Irreparable damage to the camera.

●Cleaning Method

Avoid heavy stress and violent vibration! Please don't use abrasive and violent detergent to clean the dome. Please choose dry fabric and neutral detergent. And please use lens paper to clean the lens.

● Please use our product according the work environmental standards.

CONTENTS

User Instructions

Thank you for purchasing and using our company's products.

According to our introduction of guarantee, Within the specified warranty period, our company will free to repair or replace parts that are damaged under normal use.User don't disassemble repair itself without Our Consent.

Within the specified warranty period, we will repair or replace parts (excludinghousing,bracket and cable) that are damaged under normal use (by judge of us) at no additional charge.

Free services and repairs will not be covered under the following conditions:

1) Unauthorized repair or disassembly of the product;

2) Damage due to the bad shipping, or Move of discharging;

3) Damage due to the user not according to the user manual to operate,maintain, maintenance, such as falling、 extrusion、 flooding water、 be affected with damp、 corrosion and Other damage caused by human factor;

4) The product faulty caused by the overloaded or the working environment which is not suitable for it, and surface damaged when your using it;

5) Any damage or ruin by force majeure.

1. Product Feature

1) 7"elegant appearance, housing rotates follow the camera lens, IR light will not reflect by the cover. You needn't open the PTZ housing to set the Add Code & Baud Rate, more convenient.
2) Drove by bearing and belt, more stable and smooth, long life performance.
3) Using import belt drive, Running more stable, more reliable and noiseless.
4) Using imported stepper motor, responsive, fixed position accurately.
5) Usingimported OSRAM Array IR LED, IR range is 120 m.
6) Different angles of infrared right according to the changes of the lens change times lead to visual angle on or off in stages, make the IR light illuminate Angle and lens viewing angles consistent, effectively solve the ordinary infrared machine due to the small Angle change times high power IR light in the visual Angle when open comes to the lens "flashlight" phenomenon, and make the irradiation Angle difference from the viewing Angle of current camera for the IR light producing periodic rest, reduce the infrared lamp panel working current, effectively control components of dark current and calorific value, greatly improved the integration of cameras work environment. Really improve the machine service life and stability.
7) Decoder board supply power to motor, camera and IR LED separately, machine can works more stable.
8) Using conducting ring, realize continuously rotate for 360∑ and avoid the wires twist together.
9) High precisionpreset positions, 255pcs presets; 4group routes, 4 group cruise; the default stay time of preset is 6 seconds, 4 / 8 / 10 / 15 / 20 seconds adjustable;set limitation positions on left and right; cruise / preset / route / limitation positions can delete to reset; idle function.

Angle & speed;

IR **high** speed dome: horizontal 360°Rotation 200°/ sec, grade 5 horizontal scanning speed are adjustable;vertical -90—-0°rotation150°/ sec

IR **medium** speed dome: horizontal 360°Rotation 80°/ sec, grade 5 horizontal scanning speed are adjustable;vertical -90—-0°rotation30°/sec

2. Main Technical Parameters

1) Electricity

Power supply; DC12V--（4A)

PTZ drive;DC12V--/0.5A

IR light power supply;DC12V--（1.8A）

lens Drive;DC12V/200mA

Camera power supply;DC12V/500mA

Retrofitting Temperature controlling device

Working temperature;-20℃-+65℃

Address range;0～255

Communication mode;RS485

Protocol;Pelco-D, Pelco-P

Baud rate;2400bps、4800bps、9600bps Adjustable

Controlling Equipment: Video Matrix、 industrial control DVR、 DVR、 controlling keyboard etc.

Preset: 255 presets

Patrol: 4 groups（16 presets per group）

stay time for each preset positions; 4、8、10、15、20 seconds adjustable

Patter: 4 groups (3 mins per pattern)

Scan: one group frame scan, one group 360 horizontal scan

Scan speed: 3、6、9、15、40 seconds adjustable

Timer task: support preste, patrol, pattern, auto scan, 360 degree horizontal scan

2) Mechanical Specifications

PTZ rotation angle: horizontal 360°unlimited rotation, vertical 90°—-0°

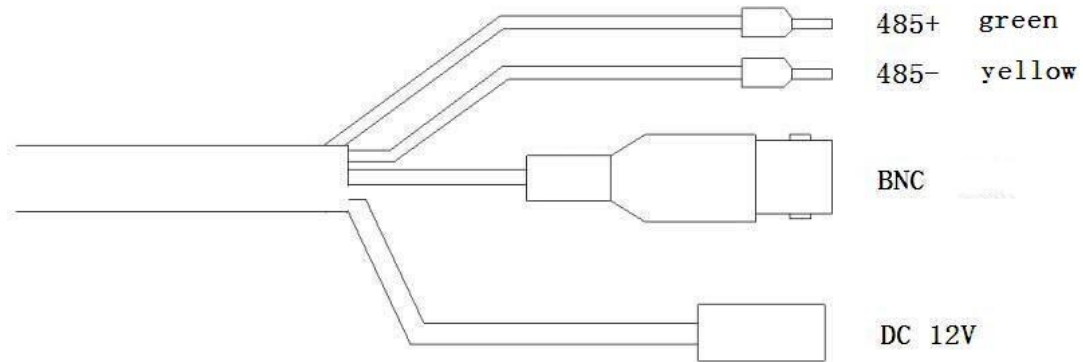PTZ rotation speed;IR medium speed dome;horizontal 6％sec～40％sec（grade 4 adjustable）

IR high speed dome;horizontal 0.1％sec～200％sec

Rotation limit;horizontal is adjustable in the range PTZ rotation angle of 360 °, software and photoelectricity limit

3. Cable Definition

Signal, power supply cable connection, please reference following chart:

```
                                        485+   green
                                        485-   yellow

                                        BNC

                                        DC 12V
```

4. Address, Protocol, Baud Rate Setting

The IR dome camera is built-in decoder board, through decoder to set the address, protocol, baud rate settings,realized PTZ and camera lens control of dome camera. This product designed the dial switch located on the sphere, given the set of convenient and stability, there is a piece of gusset plate under the ball cover which can open and close at any time. Open the gusset plate can see one 8 dip switch and one 4 dip switch.

SW1-Dip switch for the dome address

SW2-Dip switch for the dome protocol

```
SW1 Add code default 1

 1 2 3 4 5 6 7 8
```
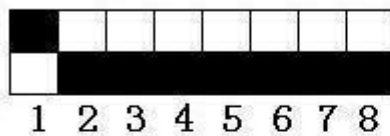
```
SW2 Baud rate default 2400

 1 2 3 4     1 2 3 4     1 2 3 4
   2400        4800        9600
```

4.1 Dome Address Setup

No.1~ No.8 of SW1 are used to set the dome address, you can set address codes within the range of 1~255. Every camera's dome address should be same as the DVR or keyboard's. Dip switch use binary, dial every number to be "ON" is means as 1, dial to be "OFF" is means as 0, details please reference the sheet.

Address codes and dial codes switch sheet (Binary), calculate it according to this sheet;

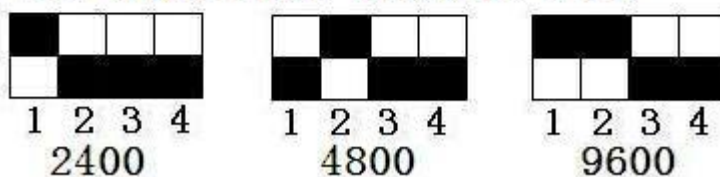| Binary	Add	Binary	Add	Binary	Add	Binary	Add
0000000	0	11110000	15	01111000	30	10110100	45
10000000	1	00001000	16	11111000	31	01110100	46
01000000	2	10001000	17	00000100	32	11110100	47
11000000	3	01001000	18	10000100	33	00001100	48
00100000	4	11001000	19	01000100	34	10001100	49
10100000	5	00101000	20	11000100	35	01001100	50
01100000	6	10101000	21	00100100	36	11001100	51
11100000	7	01101000	22	10100100	37	00101100	52
00010000	8	11101000	23	01100100	38	10101100	53
10010000	9	00011000	24	11100100	39	01101100	54
01010000	10	10011000	25	00010100	40	11101100	55
11010000	11	01011000	26	10010100	41	00011100	56
00110000	12	11011000	27	01010100	42	10011100	57
10110000	13	00111000	28	11010100	43	01011100	58
01110000	14	10111000	29	00110100	44	11011100	59
……………							
00111100	60	10111100	61	01111100	62	11111100	63
……………							
00011111	248	10011111	249	01011111	250	11011111	251
00111111	252	10111111	253	01111111	254	11111111	255

4.2 Baud Rate Setting

Set No. 1~2 dip switch of SW2 for the baud rate. It can set up the baud rate to 2400BPS、4800BPS、9600BPS. Dial every number to be "ON" is means as 1, dial to be "OFF" is means as 0，Baud rate and dial codes switch matching sheet reference sheet.

Dial Codes	2400 bps	4800 bps	9600 bps
No. 1	ON	OFF	ON
No. 2	OFF	ON	ON
No. 3	OFF	OFF	OFF

No. 4	OFF	OFF	OFF

Please reference above table to finish the dip switch setting.

4.3 Protocol Setting

Decoder of Speed dome will automatically match protocol, no need to set;PELCO_D、PELCO_P are support

5. Function Setting

5.1 Setup / Calling For Preset.

Preset function refers to through controlling equipment setting / call IR dome position parameters of the horizontal Angle and vertical Angle, by storing in digital form to the IR dome, when needs to call these parameters, adjust the IR dome to preset a set state. Operator can control it convenient and efficient through controlling keyboard and other devices to set/call preset position. This IR dome camera supports 256 presets.

（1）Set preset position

Make the IR dome moved to the corresponding position by controlling keyboard, DVR and other control equipments，You can refer to the Preset function of controlling keyboard or DVR to process preset settings after using the zoom buttons of the controlling keyboard, DVR etc controlling devices to adjust Multiples of the lens to right angle, and enter the corresponding number of preset position

Example: Using a type of controlling keyboard to set No.1 preset position

a、 Move camera to the need position by joystick. Make the lens step to the angle in demand by pressing the key "zoom"

b、 Enter"1"key;

c、 Press "SHOT" key;

d、 press and hold the "smart" key of the joystick.

e、 Press "ON" key;

（2）Call preset position.

Refer to the calling preset function of controlling keyboard or DVR to process preset calling, and according to the required preset position number to call

Example;Using a type of controlling keyboard to call No.1 preset position.

a、 Enter"1" key;

b、 Press "SHOT" key;

c、Press "ACK" key;

5.2 Calling For Cruising Function

Auto cruise is to set the cruise routes arbitrarily ,only an external command can let the dome camera according to the specified route to make a tour automatically，and staying in the corresponding preset position. There are 4 auto cruise routes for the IR dome camera，Each cruise lines can store up to 16 presets at most.

（1）Calling the auto cruising routes

By controlling keyboard or DVR to implement the commands to "call 71 preset position"，it can makes the speed dome camera auto cruise as your preset; As calling"72 preset", it will auto cruise the second cruise routes。Please see the quick operate sheet for the 4 cruises.

Example;Use one controlling keyboard to call the first cruise route.

a、Setting the presets you needed 1—16 preset;（see the operation 1）

b、Enter"71"

c、Press "SHOT" key;

d、Press "ACK" key;

（2）**Stay time setting for preset position when auto cruising**

It can set stay time for preset position as 4 /8 /10 /15 /20 Seconds when the IR dome camera auto cruising. Operation method by controlling keyboard, DVR to implement the command "set No.75 preset position" the stay time is 4 sec;"set No.76 preset position"，the stay time is 8 sec;Stay time setting command for auto cruising reference as below table;

Stay time	Set commands	Stay time	Set commands
4s	Call NO.75 preset	8s	Call NO.76 preset
10s	Call NO.77 preset	15s	Call NO.78 preset
20s	Call NO.79 preset		

Example: using a type of controlling keyboard to set the stay time as 8 sec

a、Enter"76"

b、Press "SHOT" key;

c、Press "ACK" key;

4 cruising routes of corresponding preset position number for cruise route and the relation table of calling or delete command

Example;Use a keyboard to remove the preset position of the third automatically cruise routes.

a、Enter"73"

b、Press "SHOT" key;

c、Press "ACK" key;

Corresponding preset position number for cruise route and the relation table of calling command

Cruise route	Call command	Presets in cruise route
NO.1	Call NO.71 preset	1—16 presets
NO.2	Call NO.72 preset	17—32 presets
NO.3	Call NO.73 preset	33—48 presets
NO.4	Call NO.74 preset	240—255 presets

5.3 limit positions on left and right(A to B)、360 degree scan、setting and remove the setup of scanning speed.

The IR dome uses the conductive ring and photo electricity to limit position，it can get through the controlling keyboard and DVR to set the left and right rotation position of the dome. and automatically scan between the limit position of setting.

（1）A、B scan setting.

By controlling keyboard or DVR to implement the command "set No.91 preset position" after moved the dome to the right for the required position ，Implementing the command "set No.92 preset position" after make the dome rotating to the left to the position of left limit position, left and right limit position is setting done. Then calling No.93 preset position, the dome just running between these two points only.

Example: use a type of controlling keyboard to set limit position on left and right

a、Press the key "set preset", Then make the camera moved to the need position by shaking joystick.

b、Enter"91";

c、Press "SHOT" key;

d、Press "ACK" key;

e、The dome camera will be moved to the left limit required by the position by shaking joystick.

f、Enter"92"

g、Press "SHOT" key;

h、Press "ACK" key;

（2）Start A、B scan

By controlling keyboard or DVR to implement the command "set No.93 preset position" （If you not set the left/ right limit position, it will prompt to set the left/ right limit position）

Example;Using a type of controlling keyboard to start using auto scanning

a、Enter"93";

b、Press "SHOT" key;

c、Press "ACK" key;

（3）Limit position on left and right to delete

By controlling keyboard or DVR to implement the command "set No.94 preset position"

Example: using some items of controlling keyboard for elimination of limit position on left and right

a、Enter"94";

b、Press "SHOT" key;

c、Press "ACK" key;

（4）360 °horizontal scan speed setting

The IR dome camera has 5 level was adjustable when horizontal rotation speed of auto scanning. operation method by controlling keyboard, DVR to implement "set No.65 preset position, The scanning rotation speed is 3 ％sec;"set No.69 preset position"，the scanning rotation speed is 40 ％sec; 360 °Horizontal rotation speed setting commands when auto scanning please reference the below table.

Horizontal rotation speed	Setting commands	Horizontal rotation speed	Setting commands
3 ％sec	Call NO.65 preset	6 ％sec	Call NO.66 preset
9 ％sec	Call NO.67 preset	15 ％sec	Call NO.68 preset
40 ％sec	Call NO.69 preset		

Example: Using some items of controlling keyboard to set horizontal speed rotation be 9 °/sec when scanning

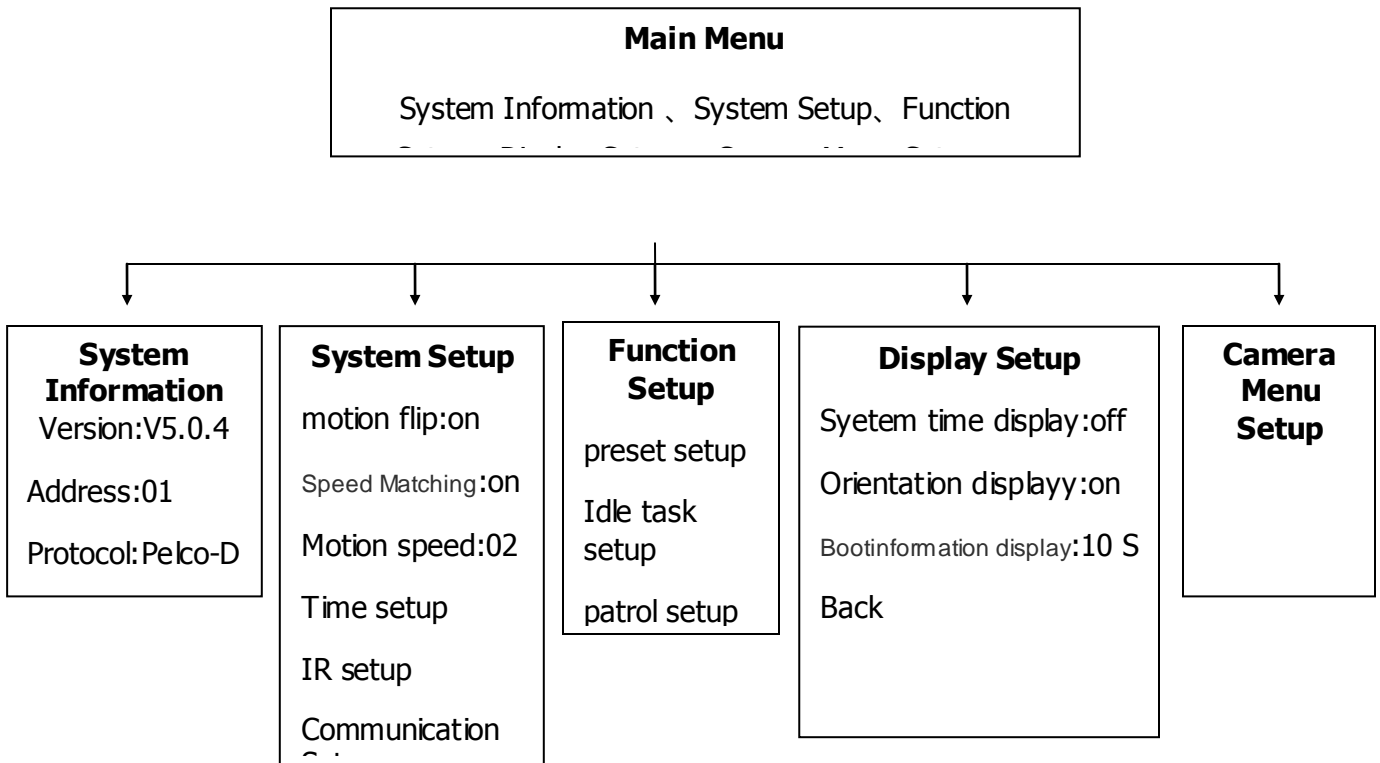a、Ener"67"

b、Press "SHOT" key;
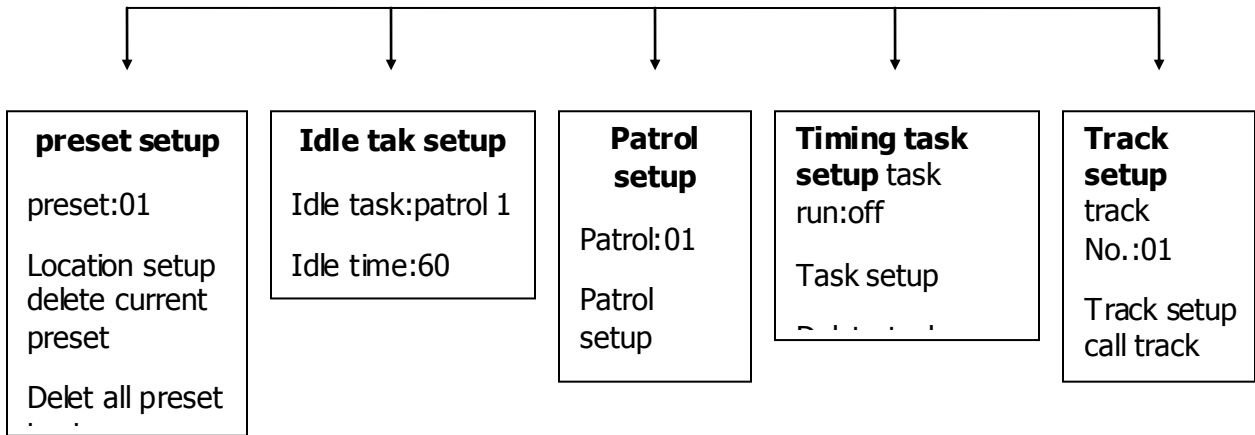
c、Press "ACK" key;

5.4 Factory Default

By controlling keyboard or DVR to implement the command "call No.96 preset position" then can make the dome camera settings back to factory default state. Has now set all preset position function will be cleared (limit position on left and right will not be cleared)

Example: Using a type of controlling keyboard to restore the factory default

a、Enter "96";

b、Press "SHOT" key;

c、Press "ACK" key;

6.System OSD menu setup(for models with OSD menu)

Main Menu
System Information 、 System Setup、 Function

System Information	**System Setup**	**Function Setup**	**Display Setup**	**Camera Menu Setup**
Version:V5.0.4	motion flip:on	preset setup	Syetem time display:off	
Address:01	Speed Matching:on	Idle task setup	Orientation displayy:on	
Protocol:Pelco-D	Motion speed:02	patrol setup	Bootinformation display:10 S	
	Time setup		Back	
	IR setup			
	Communication			

preset setup	Idle tak setup	Patrol setup	Timing task setup task	Track setup track
preset:01	Idle task:patrol 1	Patrol:01	run:off	No.:01
Location setup delete current preset	Idle time:60	Patrol setup	Task setup	Track setup call track
Delet all preset				

6.1 Self Test Display

After powering on speed dome, the speed dome will pan and tilt automatically, and it will show the system information . After system information disappear, the self test over. The system information show as below

Address:	001
Protocol:	Pelco-D
Baud rate:	2400

 Note: different speed dome setup, will show different content

6.2 Main Menu

After powering on speed dome, and the speed dome can work normally, call preset 95, enter to main menu, show as below

Main menu

1.system information

2.system setup

3.function setup

4.display setup

5.camera menu setup

6.factory default

```
7.exit
```

keyboard button function explanation:

[RIGHT]pan right;Enter to sub menu or a setup

[LEFT]pan left;Return to previous menu or exit a setup

[UP]tilt up;During menu setup, move menu option up or modify parameter

[DOWN]tilt down;During menu setup, move menu option down or modify parameter

6.3 Syetem Information

Users can check the speed dome information by menu, the information include: speed dome address, baud rate, protocol, speed dome title, program version etc. The method as below

Move the Cursor to 【system information】, press right to enter system information menu

```
System information
1.version;V5.0.4
2.address;01
3.protocol;Pelco-D
4.baud rate;2400
5.self test;OK
6.back
```

6.4 System Setup

Users can setup the speed dome function by this menu. Move the cursor to 【system setup】, press right to enter system setup menu

```
system setup
1、 motion flip:off/on
2、 speed matching;off/on
3、 motion speed: 02
4、 time setup:
5、 IR setup:
```

> 6、communication setup;
>
> 7.language:Chinese/English

Motion flip: open or close the flip function;

Speed matching: when speed dome is zooming, the control speed will change as well;

Motion speed: control speed adjustment;

Time setup:set the system time for the speed dome;

IR setup: set the IR mode and sensitivity ;

Communication setting ;the PTZ camera's communication information setting.

System language: set the PTZ camera's menu language

6.5 Special Function

Move the cursor to Special function,you can setting through this menu :Preset func / Idel func/ Patrol func /Timer Task /Trace func .

> Special Function
>
> 1.Preset func
>
> 2.Idle func
>
> 3Patrol func
>
> 4Timer Task
>
> 5Trace func
>
> 6Return

6.5.1 Preset Func

Through Preset func , you can perform on the PTZ camera preset setting,single clearance and all preset clearance ,it's convenient to call and add cruise group.

> Preset function
>
> 1.Preset No.: 01
>
> 2. setting location
>
> 3 .clear the current preset
>
> 4 .clear all the presets
>
> 5 .Return

6.5.2 Idle Func

Through Idel func ,you can set the PTZ camera Idle task and Idle waiting time,when the PTZ mil in the setting f time without any operation,the PTZ camera will perform to automatically setting behavior.Idle task contains A cruise group,1 to 4 preset,1to 4 trajectory , 360 degree scanning path;A,B two scan and task.

```
         Idle func

1.Idle task:cruise 1

2.Idle waiting:  60（s）

3.Return
```

6.5.3 Patrol Func

Through the Patrol func,you can set to cruise,running and clearing ,support a total of 16 cruise group setting.

```
            Patrol func

1.Cruise NO.:  01

2.Set cruise

3.running cruise

4.clearing cruise

5.return
```

6.5.4 Timer Task

Through the Timer Task ,you can set the PTZ camera in set of execution of the set period of action.

```
            Timer Task

1.Task to run:off

2.set task
```

> 3.clear task
>
> 4.return

6.5.5 Trace Func

Through the Trace func,you can track record,running,remove the PTZ camera,trajectory support 8,each support 3 minutes of recording.It will record the user's operation in the process of the recording,when calling trajectory recorded,the PTZ camera can perform operations.

> **Trace func**
>
> 1.Trace NO.:01
> 2.Setting trace
> 3.Running trace
> 4.Clearing trace
> 5.Return

6.6 Display Information

Through the Display information,you can open and close the system time,system position,setting the start information display time.

> Display information
>
> 1.Sys time:off
> 2.Sys position:on
> 3.Start infor:on
> 4.Return

6.7 PTZ Camera System Setting.

Through the PTZ camera system setting,you can setting the PTZ camera module's parameter,such as setting the brightness and the color effect.(The PTZ camera module must be support set items,and different PTZ camera module,different MENU.)

> Camera menu setup
>
> (Different camera module is in a different setting, it is refference to the real o bject camera for the detail s)

6.8 Restore The Factory Value

Chose 《Restore the factory value》, you can drop all of the PTZ camera's parameter ,such as

6.9 EXIT

Chose <exit> to exit the PTZ menu

7.PTZ dome camera instruction list

Function	Mode Of Operation
The first cruise line（1-16 presets）	call 71
The second cruise line（17-32 presets）	call72
The third cruise line（33-48 presets）	call73
The fourth cruise line（240-255 presets）	call74
A cruise preset for 4 seconds	call75
A cruise preset for 8 seconds	call76
A cruise preset for 10 seconds	call77
A cruise preset for 15 seconds	call78
A cruise preset for 20 seconds	call79
To record the first path	call81
To record the second path	call82
To record the third path	call83
To record the fourth path	call84
end of the recording track	call85
Start the first track	call86
Start the second track	call87
Start the third track	call88
Start the fourth track	call89
Set the limit point A left	call91
Set the limit point B right	call92
To enable A, B two scans	call93
To clear A, B two scans	call94
Enable the level 360 - degree continuous scanning	call95
A 360 - degree scan, and A, B two scanning speed	Call 65, 66, 67, 68, 66 preset position, the corresponding rate of 3, 6 degrees per second, 9, 15 degrees and 40 degrees

Idle task setting	Preset level 1
	trajectory 1
	A/B scans
	Call 64:360 degree scans
clear all of the presets	call60
Open the camera menu	Call70
Open the dome menu	call95
Restore the factory	call96

8. Notice

1.The power supply of this product should be DC12V-14V, please use matched power from our company to supply;

2.Forbid turning around by outside force whether power on or off

3.Dial switch is on the bottom of the ball cover. Open buckle, you can adjust the address code and baud rate. Please don't open without permission

4.The cruise stay time is 6s(default), user can set the other time,reference to the " setting of cruise stay time.

5.If the preset has a deviation because of the long time operation, power down and external force factors, it can be called the NO.96 preset postion to make a factory default.

6.In order to control the infrared light calorific value effectively and ordinary infrared machine "flashlight" phenomenon independent control, switch the lens at 11 times, so if there is one set of lamp off, are all normal phenomenon. Because the IR light off means they are under a state of rest when the irradiation angle and the current camera viewing angle are not consistent.

7.The preset setting of this camera with lens preset position as the same as ordinary high-speed dome camera. As for setup method, please refer to "preset position settings"

8.The camera outlet is directly high temperature conductive ring lines avoid interface, please don't pull output cable.

After-Sales Service

Dear user, in order to get the high quality service for the speed dome camera, please read the below service charters.

1. We can offer the service of limited warranty and life-long maintenance

 (1)In the limited warranty (within 24 month from getting the camera), you can enjoy the maintenance free service. Note: improper operation, man-made fault and other irresistible reasons are excluding of the limited warranty.

 (2) If beyond 24 months from you getting the camera, our company promises that we will provide a payment that if customer needs maintenance service for life.

2. Repair response time

 (1) When the camera arrives at our company, the response service is within 24 hours.

 (2) The customer need contact our company staff before sending camera back; if not, customer will be responsible for the risk of untimely repair.

In the warranty period, our company offer free repair; but it will pay for the material cost when include any of below situation:

 (1) It is damaged due to not follow the manual to operate.

 (2) It is damaged due to lightning, fire disaster and other force majeure factors.

 (3) It is damaged due to matching with other poor design products, which produced by other manufacturer.

Statement:

Because of continuous new technology, so there is no further notice for change of specifications.

Company has the authority to ultimate interpretation for the manual.

User Name:

_____

Address:

_____

Tel:_____ Fax:_____ Post code:____

_____

E-mail:_____

Model:_____

_

Production date:_____ Year_____ Month_____ Day

Appendix

Appendix I: Lightning and Surge Protection

This product is adopted the protection circuit which is composed of the gas discharge tube and TVS diode. It can effectively prevent the damage of equipment by transient lightning under 3.0 kV, surge and other kinds of pulse signal. But, for outdoor installation, we should do the necessary protective measure on the premise of guarantee the electrical safety according to the actual situation.

1. Signal transmission lines must keep at least 50 meters with the high voltage equipment or high voltage cable.

2. You shall choose to wire under the eave when you wire outside.

3. For empty area, you must wire through the way of sealing steel pipe buried, and also the steel pipe need to be earthed in one-point. Wiring overhead is absolutely forbidden.
4. In strong thunderstorms or high induction voltage region (e.g., high voltage transformer substation), It must be taken measures to add extra high power lightning protection equipment and install lightning rod or other measures

5.Lightning protection of outdoor installation and wiring and grounding design must be combined with the building lightning protection requirements into consideration, as well as conform to the requirements of relevant national standards and industry standards

6. The way of equipotential grounding is necessary for the system. Grounding device must meet requirements of the system anti-interference and electrical safety, and it cannot null line short or mixed wire with strong power grid. System separate grounding, grounding resistance is not greater than 4Ω.

Appendix II: Basic Troubleshooting

Fault Phenomenon	Possible Cause	Solution
When connect to power supply, there is no self-check, no image, and the indicator light doesn't light	Power cable wrong to connection	Correct
	Power supply was broken	Change
	Power supply mismatches	change
	Power cable poor contact	change
There is a self check and has image, but can't control	Address code and bound rate is wrong	Reset the address code and bound rate
	Protocol is wrong	correct
	RS485 polarity reversed or open circuit	Check the connection cable of the RS-485
Pan can tilt can't be control	Control cable poor contact	troubleshooting
	Operation mistake	Power down and restart

	over loading or the communication distance is too far	1. Add a Resistor to the farthest camera form the controller, and turn to "ON", the other turn to off. 2. Add code distributor.
Image is unstable	Video cable poor contact	Eliminate
	Power shortage to the power supply	Change
	Video cable is disturbed	Eliminate
Control delay or stop to rotate	Power shortage to the camera power supply	Change the better power supply, and best to put it near the camera.
	Checking that if there is a matched resistor added to the fastest camera	added a matched resistor to the fastest camera
	485 signal attenuation，poor driving force to 485 convertor	Change a new convertor