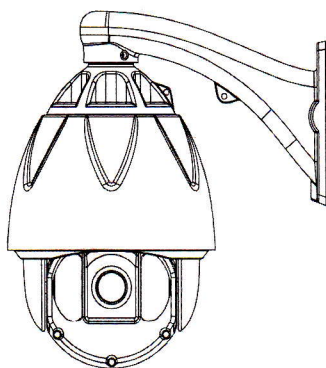


IR Speed Dome Camera

Instruction Manual



Note:

※Please read this instruction manual carefully before installation and operation, and keep this manual securely for reference when needed.

※This instruction manual describes the installation and usage of the following types of dome camera:

Wall-mounted, Roof-mounted, Wall-corner-mounted and Column-mounted

※The picture of the dome camera in this manual is subject to the physical appearance

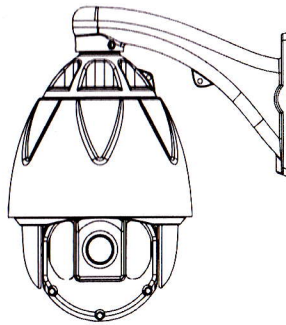
※Products shall be subject to any changes without additional notices

CONTENTS

Product characteristics	2	setting.....	14
Declaration	3	■Auto-focus resume time.....	14
■Safety precautions.....	3	■Auto-aperture resume time.....	14
■Warning.....	3	■Aperture average electrical level control.....	14
Installation preparation	4	■Aperture peak electrical level time.....	15
■Tool list.....	4	■Day/night switch.....	15
■Cable.....	4	Camera parameters	16
■Jumper switch setting.....	4	■Frame accumulation.....	16
Installation type	5	■Shutter.....	16
■Wall-mount.....	5	■Explosion.....	16
■Column-mount.....	5	■Initialize picture freeze.....	16
■Corner-mount.....	5	■White balance.....	16
■Hanging-mount.....	5	■Back light compensation mode.....	16
Installation guide	6	Cradle head parameters	17
■Wall-mount.....	6	■Auto-stop time.....	17
■Corner--mount.....	7	■Speed amplification.....	17
■Column-mount.....	7	■Ratio P/T.....	17
■Hanging-mount.....	8	■Compass direction setting.....	17
System connection	9	Auto run	18
Operation instruction	10	■Pre-set.....	18
■Screen pre-heating.....	10	■Tour.....	18
■Screen start up.....	10	■Cruise.....	19
■Entering the main manual.....	10	■Pattern.....	19
Menu operation	11	■Zone.....	20
■List item choosing.....	11	■Auto running function setting.....	20
■Value setting.....	11	Privacy Mask	21
System information	12	Appendix I: DIP SWITCH	22
■System information.....	12	■Position of DIP switch.....	22
■Field information.....	12	■Setup of protocol and baud rate.....	22
■Display setting.....	12	■Setup of dome camera address.....	23
■Screen start up.....	13	■Setup diagram of address.....	24
■Passwords.....	13	■Setup of terminal resistance DIP.....	26
■Restore factory setting.....	13	Appendix II: General knowledge of RS485 bus	27
■System restart.....	13	Appendix III: Maintenance clauses	28
Lens parameters	14	Appendix IV: Easy troubleshooting	28
■Zoom speed.....	14	Appendix V: Check list of domestic and foreign wire gauge	29
■Digital zoom.....	14	Appendix VI: Setting table of shortcut key	30
■Joystick auto-focus and auto-aperture			

Product characteristics:

- ◆ Light compensation distance: 200 meters (laser), 150 meters, 120 meters and 100 meters for choosing
- ◆ Constant current design, the inferred attenuate extend is less than 5% in 3 years, the lifespan of the inferred light can reach 40 thousand hours
- ◆ The unit inner temperature doesn't exceed 50 degree celcius after 4 hours continue work (inferred light on and get the heat balance)
- ◆ Inferred light and zooming distance adaption arithmetic, adjustment according to the zoom and distance
- ◆ Inferred light intensity, keep the picture in ideal condition

**Engine performance:**

- ◆ High quality motor with low heat output, low speed running Without shaking
- ◆ Infinitely variable speed 0.08-180°/sec, 360° horizontal continuing Rotation
- ◆ Vertical 180° turning
- ◆ 220 pre-setting point, $\pm 0.1^\circ$ accuracy
- ◆ 300°/s pre-setting speed
- ◆ 4 navigation routes, 27 pre-setting point/ route
- ◆ 4 pattern scanning, 4 horizontal scanning, 8 regions
- ◆ 8 privacy shadowing
- ◆ Manual display
- ◆ Compass display function
- ◆ Manual passwords protection
- ◆ RS485 inner multi protocol, coaxial visual control compatible AD, PHILIPS
- ◆ 16 bit field name display
- ◆ Auto matching function for focus and rotating speed
- ◆ Auto running memory, power cut off prevention.

Electrical:

- ◆ Input voltage AC 16-30 V; rated voltage AC24 V
- ◆ Input power 10 VA (exclude heating)
- ◆ 55 VA (include heating)
- ◆ Inner surge protection
- ◆ Thunderbolt protection

Architecture features:

Dome case	Aluminum alloy, acid rain resistance, ant oxygen
Engine	Aluminum, plastic, steel
Transparent case	PMMA / PC

Operational environment, operational temperature:

Maximum absolute temperature	Continuous maximum temperature	Minimum absolute temperature	Continuous minimum temperature
55℃	45℃	-45℃	-10℃

1. Assuming no air blast cooled effect
2. Continuing -50°F (-45℃) without freezing
3. 3 hours after start can melt 0.1 feet (2.5 mm) ice S

Technical parameters:

Power supply	AC 16~30V, recommended voltage AC 24V
Power	Outdoor: 45 VA
Synchronous mode	Power supply synchronous
Horizontal speed	0.08°—300°/S
Vertical speed	0.08°—300°/S
Horizontal rotation range	360° continuously
Tilt rotation range	0°—90°
Pre-setting point	220
Pre-setting point accuracy	$\pm 0.1^\circ$
Auto navigation	4
Mode record	4, more than 180 seconds for each
Auto scanning	4
Region setting	8, support inner region scanning
Control mode	RS 485, coaxial visual control
Communication baud rate	2400 BPS; 4800 BPS; 9600 BPS; 19200 BPS
Fan	Continuing rotation, rotation speed display
Heater	0℃ \pm 5℃ turn on, 8℃ \pm 3℃ turn off
Environment temperature	-45℃ ~+55℃
Environment humidity	Relative humidity 90%

Declaration

This unit generate, use and emit wireless electric wave. If the operation is not in accordance to the instruction manual, it can have negative affection to the wireless communication. The application in the populated area may have negative affection; in this case the users should make the compensations or rectifications, and the fees generate should be shouldered by the users.

■Safety precautions:

- ◆ Only qualified specialists can install and operate this equipment, there should be certificated person to conduct the installation in many counties and regions.
- ◆ Please refer to the relative safety precautions during the installation process
- ◆ Use reliable tools, low quality tools may not only damage the equipment, but may harm the personnel and estate etc.
- ◆ Check the intensity of the mounting key point in the field before installation. It is recommended the mounted part intensity should be higher than the total weight of the dome and its compartments.
- ◆ Keep the factory package material for later use.
- ◆ Pay attention to the installation environment requirement of this product.
- ◆ This equipment is in accordance with "case protection" in IP66 standard specification (IP code).

Type	Indoor	Outdoor
Temperature	-10 ~50℃	-30 ~50℃
Humidity	<90%	
Air pressure	86~106 KPa	
Power supply	AC 24V/1.25A, 50/60 Hz	

■Cautions:

- ◆ Do not install and use this product in the hazardous zone which stored or utilize flammable, explosive commodity.
- ◆ It should strictly comply with the country and local electrical safety regulations during the installation process of this product.
- ◆ Make sure the power near the fixed position and the power of this product that you may touch during the installation process has been cut off.
- ◆ The voltage of the product is 24V AC; do not connect the power that has the higher voltage than the manufacture's requirement.
- ◆ Do not utilize this product in the environment that beyond the requirement.

Installation preparation

■Tools list:

- ◆ All of the following tools may be used during the installation process or parts of them:
- ◆ Bolt, nut, swell screw
- ◆ Adjustable wrench
- ◆ Cross head screwdriver
- ◆ Flat screwdriver
- ◆ Wire stripper
- ◆ Ladder
- ◆ Power drill
- ◆ Saw
- ◆ Box spanner

■Cable:

- ◆ Coaxial cable
- ◆ 75Ω resistance
- ◆ Solid copper wire
- ◆ 95% copper shield wire

Confirm the transmission distance according to the following table:

Specification	Distance
RG 59/U	750ft(229m)
RG 6/U	1,000ft(305m)
RG 16/U	1,500ft(457m)

- ◆ RS485 cable
- ◆ 0.56mm (24AWG) twisted pair

■Jumper switch and jumper setting

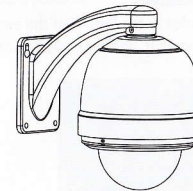
See appendix I :

- ◆ Jumper switch position
- ◆ Dome ID setting
- ◆ Cable type
- ◆ Resistance jumper setting

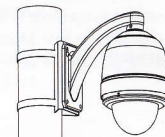
Installation type

It can be divided into 4 types according to the backbone installation type:

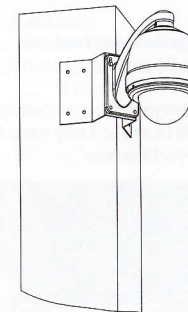
◆ Wall mount



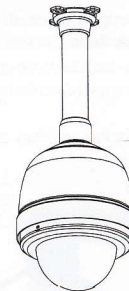
◆ Column mount



◆ Corner mount



◆ Hanging mount



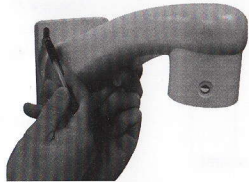
Installation instruction

■ WALL MOUNT

Check and make sure that the wall has enough intensity and may not peeling off. It is recommended that the bearing capacity of the wall is 8 times of the weight to the dome and its components.

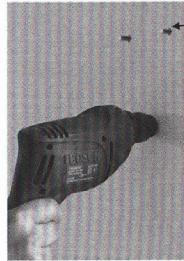
1. Mark the installation position

Use the backbone base as the mode to mark the position of the installation hole. Must always remember the two holes on the same side is vertical



2. Backbone installation

Drill 4 $\Phi 10$ holes to the length of the swell screw with percussion drill, and nail 4 M8 swell screws.



3. Assembly the dome

Get the cable across the hole on top of the case, and then affix it with 3 screws described in the appendix.

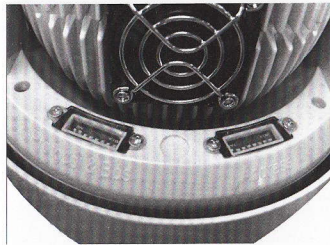
Note: affix it tightly for sure, or it may influence the running accuracy.



4. Set dome ID, protocol and baud rate

Set the dome ID, protocol and baud rate by means of jumper switch. (see appendix I)

Note: after the jumper setting, the overlay and water proof ring should be use, or it may water leakage which affect the performance.



5. Affix the dome

Mount the backbone to the swell screw, nailed in stage 2, with 4 unit equipped M8 screws.

Note: affix it tightly for sure, or it may influence the running accuracy.

6. External connection cable

Connecting according to the marks.

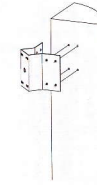
Please strictly refer to the marks for connection or it may damage the dome.

■ CORNER MOUNT

Check and make sure that the wall has enough intensity and may not peeling off. It is recommended that the bearing capacity of the wall is 8 times of the weight to the dome and its components.

1. Mark the installation position

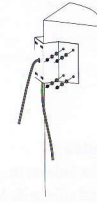
Use the corner mount base as the mode to mark the installation position.



2. Corner mount base installation

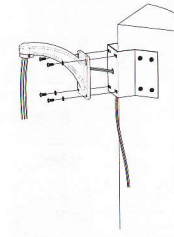
Get the power cable, RS 485 cable and video cable across the holes on the base; affix the base to the corner with M8 screw.

Note: the cables can go though the wall or fix to the side of the base.



3. Backbone installation

Get the cables across the holes on the backbone, then mount the backbone to the base



4. Continuing the mounting process referring to the "wall mount" installation method.

■ COLUMN MOUNT

The recommended diameter of the column for install the dome is 130-150 mm(5.12"-6)

1. Base installation

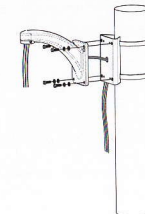
Get all the cables across the middle hole on the base, affix the base to the column.



2. Backbone installation

Get all the cables across the holes on the backbone, and then affix the base to the column.

After that, Continuing the mounting process referring to the "wall mount" installation method.

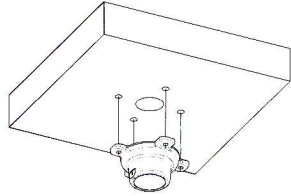


■ HANGING MOUNT

If the height of ceiling is too low, the dome can be mounted on the base

1. Mark the installation position

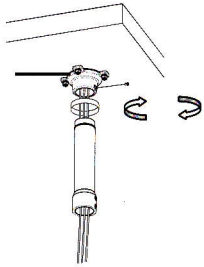
Use the backbone base as the mode to mark the installation position on the ceiling.



3. Hanging lever installation

Get the cables across the hole on the lever, screw the lever to the base, and affix with M5 screw.

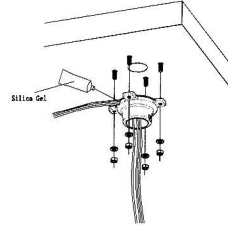
Note: if for outdoor installation, the water proof tape and silica gel should be used according to the picture shows below.



2. Base installation

Get the cables across the middle hole of the base, then affix the base to the ceiling.

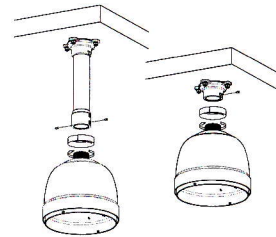
Note: if for outdoor installation, the base should be put on with silica gel.



4. Dome installation

Get the cables across the hole on top of the case, then screw the case to the hanging lever and affix it with two M5 screw

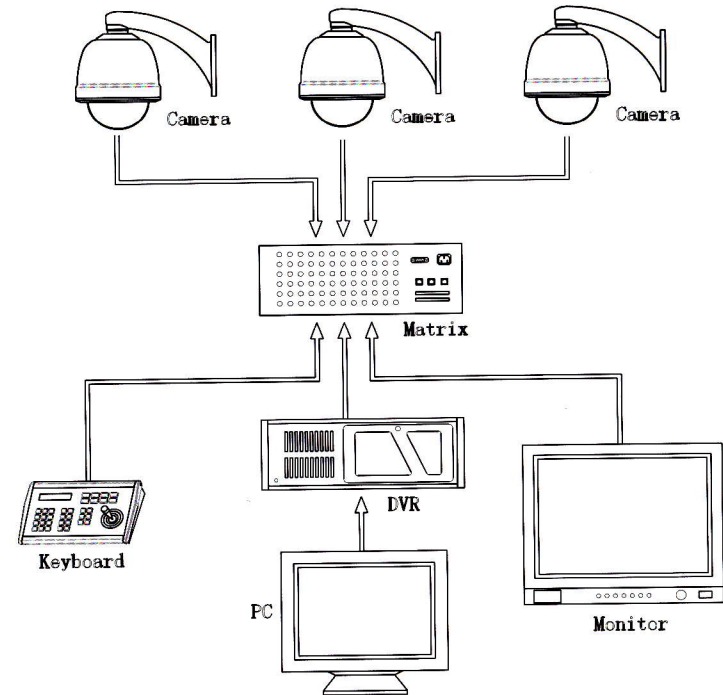
Note: for outdoor installation, water proof tape should be used. If the height of ceiling is too low, the dome can be mounted on the base



5. Outside cable connection

According to the marks for connection. Note: please strictly refer to the marks for connection or it may damage the dome.

System connection



Operation Instruction

The camera can be operated through the keys on the keyboard or keys combinations. It can also be realized by operating screen menu. We can turn to the screen menu (within 5 seconds) by setting No. 95 pre-setting point or setting No 1 pre-setting point continuously, which can be done by keyboard input or other device (like computers) which can send directions to the camera.

The operation of display screen is as follows:

■Screen pre-heating (Outer Camera)

Under power on status, the system temperature is below -15C/5F, the screen displays as follows:

```
Outer Temp :-030C/-022F
System Temp: -020C/-004F
Fan Speed  :6480rpm
System Under -15C/5F
System Heating Up
Please Wait.....
```

The system is always in heating condition, until the system temperature is no longer below -15C/5F, then the pre-heating process is finished. The camera starts to run.

< Outer Temp >

Outer Temperature XXC/XXF

C: Celsius; F: Fahrenheit's temperature

◆ < System Tem >

System Temperature

◆ < Fan Speed >

Fan speed of temperature system in camera rpm: revolutions **per minute**

■Screen start up

When we start or restart the camera, it will display the startup message and the cameras will self monitor for about 40 seconds. At the same time, it will flash with 'Booting up' until the camera will receive effective operation instruction and the screen will disappear automatically when it shows Booting Success

```
Protocol : Ernitec
Baud Rate : 4800BPS
Camera ID : 001
Camera S/N : 8888888888
Model : -----
Version : 2.10
Outer Temp :022C/071F
System Tem: 027C/080F

Bootting Up... ..
```

- ◆ <Protocol>
Camera Control Protocol
- ◆ <Baud Rate>
Camera communication
- ◆ <Camera ID>
Camera ID, can be set up through dial switch or camera menu
(See appendix 1)
- ◆ <Camera S/N>
Camera Serial Number
- ◆ <Model>

- ◆ <Version>
Software Version

```
Protocol : Ernitec
Baud Rate : 4800BPS
Camera ID : 001
Camera S/N : 8888888888
Model : -----
Version : 2.10
Outer Temp :022C/071F
System Tem: 027C/080F
Boot up Success
```

■Entering the main menu

- ◆ By setting the No 95 presetting point or continuously set No. 1 pre-setting points for two times within 5 seconds, it will show the main menu.

Notice: For controlling keyboard by the 3rd party, please refer to the instruction manual carefully and confirm the way to set presetting point. Different manufacturers may adopt different ways.

- ◆ If the menu password is taking effect, the user shall enter into the password and then go to the menus. (Default password 123456)
- ◆ To choose numbers 0-9 through moving joy stick from up and down and to choose digits from left to right, the password screen will disappear automatically if entering into wrong password.

The screen menu will shut off automatically if we stop to operate for more than 1 minute. The setting in the screen menu will save automatically and will not lose if the power supply is cut off.

List operation

■ List item choosing

In the main menu, the cursor will flash at the left side of the menu item to choose the menu item by moving cursors from up to down. Turn the joy stick right and enter into the chosen menu item.

Choose the menu item and go into the menu, run the menu, change value or edit title.

■value setting

To change value by moving joy stick from up to down; turn right and enter into the menu, and turn left to save and exit out. For the multi digits, change values by moving up and down and choose digits by moving left and right; turn left and exit out.

Notice: In order to improve the typing speed, it can move the joy stick to the most upper level or bottom level for 10 seconds,

For example: in order to change the compensation level, please take those steps:

1. set No. 95 pre-setting point, or continuously set No. 1 pre-setting points for two times and enter into the main menu

```
System Info
Lens
Camera
Pan/Tilt
Auto Running
Privacy Mask
Exit
```

2. Move the cursor to Camera by moving joy stick; choose BLC Mode by turning the joy stick to the right side.

```
White Balance: Auto
BLC Mode
Back
```

Notice: the menu pathway is written as follows:

<Main Menu> → <Camera > → <BLC Mode> → <BLC Level>

3.

<BLC Level> option flashes. To change value by moving joy stick from up to down; and turn left and exit out.

```
BLC Level: off
Back
```

All done, choose <Back> and return to the upper menu.

System Information

■ System Information

<Main Menu> → <System>

Site Info
Display Setup
Bootup Screen
Password
Set Default
System Reboot
Back

The system information includes the following setups:

- ◆ <Site Info>
Camera ID, Name, Broadcasting Address.
- ◆ <Display Setup>
Screen display of system information.
- ◆ <Boot up Screen>
System information if boot up.
- ◆ <Password>
Change password.
- ◆ <Set Default>
Restore the setting to default value.
- ◆ <Reboot System>
Reboot Camera System

■ Site Information

<Main Menu> → <System> → <Site Info>

Site ID: 007
Name: Is Bond
Broadcast Add: 255
Back

<Site ID> displays the current camera ID. Each camera has its own ID, with range varying from 001 to 254.

Notice: <Site ID> only the dial switch can set programmable ID and through menu setting.

Move the cursor to the <Site ID>, turn right and enter into the setting options.

The submenus are as follows:

Site S/N :8888899999
Input S/N:0000000000
Back

Move the cursor to the <Input S/N>, turn right and type into the relevant numbers according to <Site S/N>. The cursor points at <Back>, turn right and exit out the setting. The cursor flashes at the number behind the Site ID, Move the joy stick to choose appropriate numbers from up to down, and turn left to save.

Name is the name of Camera, and it shall be easily remembered by the user.

<Broadcast Add> is used to set broadcast address, which is the same useful as the Site ID. When the camera receives an order from one of the two addresses, it will both react. Refer to the <Changing Values> to get to know how to change the broadcast address.

Choose <back> and back into the upper menu.

■ Display Setup

<Main Menu> → <System> → <Display Setup>

Site Name: On
Preset Title: On
Cruise Title: On
Pattern Name: On
Zoom: On
Orientation: On
Zone Name: On
Back

Through setting ON, OFF, the user can choose the message on the screen when it is running.

- ◆ <Site Name>
Open it and display site name.
- ◆ <Preset Title>
Start it, set pre-setting point and display Preset Title.
- ◆ <Cruise Title>
Start it, and then display Cruise Title.
- ◆ <Pattern Name>
Start it, and then display Pattern Name when the camera replays pattern.
- ◆ <Zoom>
Start it, and then display current Zoom value.
- ◆ <Orientation>
Start it, and then choose the Lens Orientation.
- ◆ <Zone Name>
Start it, and display Zone Name.
- ◆ Choose <back> and back into the upper menu.

■ Boot up Screen

<Main Menu> → <System> → <Bootup Screen>

Protocol : Ernitec
Camera ID : 001
Baud Rate : 9600bps
Protocol : Default
Model :
Version : 0.95
Outer Temp :022C/071F
System Tem:027C/080F
Call Preset 1 To Back

The startup message shows the main camera parameters, and the value under this main menu is read-only. Refer to "Boot up Info" and check system status, set No. 1 preset point and back into the upper menu.

■ Password

<Main menu> → <System> → <Password>

Input Password:*****
Confirm :*****
PSWD Protection: On
Back

◆ <Input Password>

Move the joy stick to the right side and enter into next menu.

Old Password:*****
Back

- < Old Password >
Input the Old Password.
- < Back >
Back and the cursor will return to the back of < Input Password > if entering into old password correctly, and then you can enter into expected password. If the password is wrong, the cursor will back into the front of < Input Password >, and then you can alter the password.
- ◆ <Confirm>
Only if you enter into the new password and it could move to this step and confirm the new password. If the password is not consistent with the first password, the password will remain the same as the old password.
- ◆ < PSWD Protection >
It is used to open and close password protection.

When setting it to ON (start up), the user saves preset point through going in to the main menu or keyboards, and the correct password is required.

Notice: the default password of camera is 123456. If you forget the altered password, please contact supplier to obtain main password. Choose <back> and back into the upper menu.

■ Set Default

<Main Menu> → <System Info> → <Set Default>

Site Info
Display Setup
Initial Information
Password
Set Default
System Reboot
Back

Choose <Set Default>.

List of Default Value

Item	Default Value
Zoom Speed	High
Digital Zoom	Off
AI/AF Resume Mode	Both
AF Resume Time	005
AF Resume Time	005
Iris ALC	084
Iris PIC	016
Day/Night	Auto
all display config	Off
Frame Limit	1/25
Shutter	Off
Exposure	Off
White Balance	Auto
BLC Level	000
Speed Amplify	Off
Proportional P/T	On
Pswd Protection	Off
Park Time	Off
Park Action	Off
Arm/Disarm	Disarm
Reset Delay	004

■ System Reboot

<Main Menu> → <System> →

<System Reboot>

Site Info
Display Setup
Initial Information
Password
Set Default
System Reboot
Back

Choose <System Reboot> and restart the camera. All the setting will remain the same when restart the camera.

Lens parameters

<Main Menu> → <Lens>

Zoom Speed : High
Digital Zoom : Off
Joystick AF/AI : Both
AF Resume Time: Off
AI Resume Time: Off
Iris ALC Value : 057
Iris PLC Value : 016
Day/Night : Auto
Back

■ Adjust Zoom Speed

<Main Menu> → <Lens> → <Zoom Speed>

Adjust the Zoom Speed to a high or low level.

■ Digital Zoom

<Main Menu> → <Lens> → <Digital Zoom>

Digital zoom can enlarge picture through repeating pixel. Although the picture is enlarged, the resolution remains the same and it can change zoom speed by setting the biggest value.

OFF close off digital zoom (Default setting)

1 X ~ 12 X Digital Zoom.

■ Joystick AF/AI

<Main Menu> → <Lens> → <Joystick AF/AI>

Set the automatic restore mode after moving the joystick. This function will be enabled when moving the joystick.

The options are as follows:

【BOTH】 Joystick movement will enable automatic focus and automatic iris.

【FOCUS】 Joystick movement will enable automatic focus.

【IRIS】 Joystick movement will enable automatic iris.

【NONE】 Joystick movement will not enable automatic focus and automatic iris.

■ Resume time

<Main Menu> → <Lens> → <AF Resume time>

The default system setting is the automatic mode, and

then the system will obtain clear pictures by adjusting focus automatically.

The focus can be adjusted through keyboard or controlling the matrix. The operation method can refer to the manual.

This menu option will set the resume time to automatic focus when adjust the focus manually and all the operation are completed. The default value is 5 seconds.

【Off】 Turn off this function.

【001-255】 resume time to automatic focus. The unit is second.

Notice: The camera will realize automatic focus under the following conditions:

- ◆ The target is not in the center of the picture.
- ◆ The near and far target of the same picture can not be both clear.
- ◆ Strong light target, like spotlight.
- ◆ Target is behind the moist or dusty glass.
- ◆ Target moves too fast.
- ◆ Large area target, like wall.
- ◆ Target is too shadowy or blurry.
- ◆ Set the <Joystick AF/AI> to None or set the <Joystick AF/AI> to 【IRIS】 and set the resume time to 【Off】.

■ AI Resume Time

<Main Menu> → <Lens> → <AI Resume Time>

The light passes through the iris and projects into the CCD and forms picture. The big iris will form clearer picture due to more light. The iris can be adjusted automatically or manually. The details of manual control can refer to the manual.

This menu option will set the resume time to automatic iris when adjust the iris manually and the camera stops to work. The default value is 5 seconds.

【Off】 Turn off this function.

【001-255】 The resume time to automatic iris when adjust the iris manually

■ Iris ALC Value

<Main Menu> → <Lens> → <>

Set the Iris ALC Value. The value range is 000~255. Default Value:

23X Color/ Black White: 084

Notice: It is recommended keeping default value.

■ Iris ALC Peak Value

<Main Menu> → <Lens> → <Iris PLC Value>

Set the Iris ALC peak value. The value range is 000~255.

Default Value:

23X Color/ Black/Color 016

Notice: Keep default value.

■ Day/Night

<Main Menu> → <Lens> → <Day/Night>

Set the day and night mode to change between color and white and black. The color mode is suitable for day which requires more light. The

single mode is more sensitive and better for night background, but the picture is black and white.

Notice: this option is only suitable for camera in day/night mode.

<Auto>: Auto Mode, The camera will change mode automatically according to the change of light. (Default setting)

<Night>: The camera is in single color mode.

Notice: The Iris ALC Value, Iris ALC Peak Value, and Day/Night are only provided to the limited camera models. Please refer to actual menu.

Camera parameters

<Main Menu> → <Camera>

Frame Limit : Off
Shutter : Off
Exposure : Off
Preset Freeze : Off
White Balance: Auto
BLC Mode
Back

■Frame Limit

<Main Menu> → <Camera> → <Frame Limit>

When there is less light, the picture that obtained by camera is very shadowy. But if accumulate the frames and output them together, it will improve a lot.

◆ <Frame Limit>

Set the frame output proportion.

【Off】Turn off this function. (Default 1/1.5, 1/3, 1/6, 1/13, 1/25, the value is much more smaller, and the sensitivity is more higher)

Notice: Under the same light, the more sensitivity, the clearer picture and more deferred time.

■Shutter

<Main Menu> → <Camera> → <Shutter>

The shutter will allow more light to pass through and get to the picture forming component. The less shutter time, the less light and the picture is much shadowy. The shutter time is set as follows:

【Off】 Set the automatic shutter time. (Default)
【1/30000, 1/10000, 1/4000, 1/2000, 1/1000, 1/500, 1/250, 1/150, 1/100, 1/50, 1/25, 1/12, 1/6, 1/3, 1/1.5】

Set the automatic shutter time

■Explosion

<Main Menu> → <Camera> → <Shutter>

The exposure is the quantity of light that reach the picture forming component. The value is much smaller, and the light is more and the picture is clearer. The values are as follows:

【Off】 Automatic exposure value. (Default) F1.6, F2.2, F3.2, F4.4, F6.4, F8.8, F12, F17, F24, F34

■Preset Freeze

<Main Menu> → <Camera> → <Preset Freeze>

【On】 The camera will not pass the picture that forms in the movement to preset point. The picture will freeze when reaching the preset point, so we can not see the picture between current point and preset point. This function decreases the useless pictures in the internet or DVR application process.

【Off】 Turn off this function. (Default)

Notice: this function is suitable for certain models.

■White Balance

<Main Menu> → <Camera> → <White Balance>

White balance is usually compensated by increasing white balance. Under some conditions, the user can adjust red and blue manually to achieve this effect. The options are:

【AUTO】 AUTO White Balance (Default Setup)

【MANUAL】 adjust red and blue manually. Move the joystick to the right and go into the main menu. It will appear the following window:

WB-R : 000
WB-B : 000
Back

【R Gain (000-255)】 Adjust red gain.

【B Gain (000-255)】 Adjust blue gain.

■BLC Mode

<Main Menu> → <Camera> → <BLC Mode>

If the light is too strong, the objects in the center of picture will become too shadowy. The camera can adjust the lightness of the whole picture through those central points. So the backlight compensation can improve the brightness of those central points.

If the background is too shadowy, and the central points will become shadowy too, while the backlight compensation can lower the brightness of those central points.

Choose backlight compensation mode, and the editing menu will pop out.

【00】 Close off backlight compensation.

【001-255】 Choose different backlight compensation levels. The bigger the value, the more backlight compensation.

BLC Level: 000
Back

Pan/Tilt Parameter

<Main Menu> → <Pan/Tilt>

Auto Stop Time : Off
Speed Amplify : Off
Proportional P/T: Off
Set North
Back

■Auto Stop Time

<Main Menu> → <Pan/Tilt> → <Auto Stop Time>
For some special protocols, it still can not stop when the joystick and keyboard cease to operate. This menu set the automatic stop time.

【OFF】 Turn off this function. (Default Setting)

【001~255】 This value refers to time (second): The camera will stop automatically if receives no message after starting up.

■Speed Amplify

<Main Menu> → <Pan/Tilt> → <Speed Amplify>

For some special protocols, the control speed is a little low. The menu 【Speed Amplify】 can accelerate the camera speed. The options are:

【OFF】 Turn off this function. (Default Setting)

【01 ~ 32】 Speed Amplify

■Proportional P/T

<Main Menu> → <Pan/Tilt> → <Proportional P/T>

The camera can rotate at a certain speed. The moving speed on the screen is much fast than in a wider range. This menu can decrease the rotation speed in near area which can help operator to get the same speed either in a near or far area.

【ON】 Startup (Default Setting)

【OFF】 Forbidden

■Set North

<Main Menu> → <Pan/Tilt> → <Set North>

The user can set the camera to point to the north through keyboard which can help operator see the picture more oriented in the control room.

Choose <Set North>, and the following menu will pop out.

Auto Stop Time: Off
Speed Amplify: Off
Proportional P/T: Off
Set North
Back

【Back】 Choose and enter into the upper menu.

Notice: It is better to set the camera to the north the same as the north in geology.

Auto Running

<Main Menu> → <Auto Running>

System Info
Lens
Camera
Pan/Tilt
Auto Running
Privacy Mask
Exit

■ Preset

<Main Menu> → <Auto Running> → <Preset>

Preset
Tour
Pattern
Cruise
Zone
Park Time: Off
Park Action: Off
Back

"Preset" is a viewpoint which is set by users and shall be often observed. A preset stores the parameters of position and zooming and can be used to correctly position the camera on a viewpoint. For example, the user can set the door doorway as the preset if he often wants to observe the doorway, and then he can directly use the preset to observe the doorway.

Note: It can set 220 presets.

【Preset Number】: Display the current preset number. Move the rocker up and down to select the number from 001 to 220.

【Title】: Move the rocker right to enter the Title, move the rocker right to select the position to be edited and move the rocker up and down to select the suitable letter, so as to set the title of current preset.

Preset Number : 001
Title: PRE1
Set Current
Test Current
Test Next
Remove Current
Back

Note: It can edit 16 positions at most. Please refer to the relevant chapters of operation guidance if the user is unfamiliar with editing.

【Set Current】 Select it to set the position and zooming of preset. Select Set Current to pop up the

following menu.

Call Preset 1 To
Confirm.....

Move to the right position and zooming and use Preset 1 to save.

【Remove Current】 Select it to remove the current preset and display name.

【Back】 Select it to enter the previous menu.

■ Tour

<Main Menu> → <Auto Running> → <Tour>

Tour Number : 001
Dwell: 001
Edit
Test
Run
Back

Tour is the series composed of preset and dwell time. It is usually used to repeatedly use a series of preset when necessary. For example, if a shopping center has several doorways, the tour can be repeatedly used in these doorways.

Note: The dome camera system can set four tour routes. Each tour route can include 27 independent presets and dwell time.

<Tour Number> Display the number of current tour route. Its value range is 001 to 004.

<Dwell>: Set dwell time for each preset. Its value range is 0 to 99. For example, the default dwell time is 001 and the dwell time of all presets is 1s, but the user can set dwell time for each different preset by <Edit> menu according to needs.

<Edit> Edit the dwell time of each preset.

Preset-Dwell
001-001 002-004 003-002
004-001 000-001 000-001
000-001 000-001 000-001
000-001 000-001 000-001
000-001 000-001 000-001
000-001 000-001 000-001
000-001 000-001 000-001
000-001 000-001 000-001
000-001 000-001 000-001
000-001 000-001 000-001
Save And Back
Cancel And Back

The format is Preset number-Dwell time.

For example, 003-02 means using the Preset 003 and with dwell time of 2s. Move the rocker right and left to select the items to be edited. Move the rocker up and down to change the value.

In the above example, the dome camera system orderly uses the Preset 1 with dwell time of 1s, uses Preset 2 with dwell time of 4s, uses Preset 3 with dwell time of 2s and finally uses Preset 4 with dwell time of 1s.

<Save And Back> Save tour route and back
<Cancel And Back> Cancel and back.

Note: If the dwell time of preset is 0, the system will skip this preset and take the Preset 0 as the end of tour route.

Note: The preset doesn't have delete function. Reedit to change the preset.

<Test>: Run the current tour route once to check whether the set of tour meets requirements.

<Run>: Continuously run the current tour route. The system will run circularly.

<Back>: Back to previous menu.

■ Cruise

<Main Menu> → <Auto Running> → <Cruise>

Cruise Number : 001
Left Position
Right Position
Default Speed: 001
Run
Back

The dome camera scans parallel from left limit to right limit.

Note: It can only scan parallel.

Note: Setting the ideal zooming value and carrying out the cruise, the zooming value won't be changed.

The dome camera has four cruise routes.

<Cruise Number>

Display the current number of cruise. Its value range is 001 to 004. Move up and down to change the values.

<Left Position>

Set the left limit.

Pop up the following menu.

Call Preset 1 To
Confirm.....

Operate the dome camera to an ideal position and then use Preset 1 to save.

<Right Position> Set the right limit by using the same method of setting left limit.

<Cruise Speed> Set cruise speed. Its value range is 001 to 255. The larger the value is, the higher the speed will be. Move the rocker right to select and move it up and down to change values.

<Run> Start cruise (001~004).

<Back> Back to previous menu.

■ Pattern

<Main Menu> → <Auto Running> → <Pattern>

Pattern Number: 001
Record
Test
Run
Back

Pattern is the series composed of operation command and command interval. It is very useful when repeating an irregular moving route in variable speed. Note: The dome camera can set four patterns. The duration of each pattern route is less than 3 minutes.

<Pattern Number>: Display the number of current pattern. Its value range is 001 to 004.

<Record> Record pattern

<Test> Test the recorded pattern.

<Run> Run the pattern till the system receives the new control command.

<Back> Back to previous menu.

During the operation of <Record>, the menu is changed into:

Call preset 1 To
Confirm
X/100

Record.....

The user can operate the holder to make it turn and zoom in the desired value. When the user wants to stop recording, the user can use Preset 1 to confirm. And then the current pattern is recorded.

■ Zone

<Main Menu> → <Auto Running> → <Zone>

Zone Number: 001
Title: 0000000000000000
Left Limit
Right Limit
Remove Current
Pan Speed: 001
Run
Back

Zone is an area between two points. The user can set the zone to carry out cruise.

<Zone> Zone is similar with cruise, but the zone can be named by user. When the camera enters a certain zone, the name of zone will be displayed to warn operator.

Note: The camera can only carry out horizontal cruise. The user of this dome camera can set 8 zones.

- ◆ <Zone Number>
Display the number of current zone. Its value range is 001 to 008. Move the rocker right to select and move it up and down to change values.
- ◆ <Title>
Set the name of zone. Select the right figure or letter. Repeat the above process to complete the editing.
- ◆ <Left Limit>
Set the position of left limit. Pop up the following menu:

Call Preset 1 To
Confirm.....

Its setting method is similar with the setting method of preset. Move the camera to a necessary position and then use Preset 1 to save.

- ◆ <Right Limit>
Set right limit. The method is similar with that of right limit.
- ◆ <Remove Current>
Remove the current zone setting.
- ◆ <Pan Speed>
Set the cruise speed (moving speed of camera). Its

value range is 001 to 255. The larger the value is, the higher the speed will be. Move the rocker right to select and move it up and down to change values.

- ◆ <Run> Start the cruise of current zone (001~008).
- ◆ <Back> Back to previous menu.

■ Auto Running Function Setting

<Main Menu> → <Auto Running>

Preset
Tour
Pattern
Cruise
Zone
Park Time: Off
Park Action: Off
Back

This function can run (Park Action) function after the dome camera has no operation for a certain period. For example, when the dome camera is touring, the operator stops the touring to do other works, and the dome camera can start the (Park Action) auto running, such as pattern, tour and so on, set by system after the operation is stopped.

- ◆ <Park Time>
Free time
Value as follows: OFF, 001~255.
【OFF】: Close this function.
【001~255】: Recover the free time before auto running.
- ◆ <Park Action>
Auto running action of system after free time

There have the following options:

- 【OFF】 Close this function.
- 【PRE 001~220】 Use preset 001~220.
- 【SCAN 001~004】 Run cruise 001~004.
- 【TOUR 001~004】 Run tour 001~004.
- 【PAT 001~004】 Run pattern 001~004.

Preset
Tour
Pattern
Cruise
Zone
Park Time: 010
Park Action: Pat 001
Back

In the example shown in menu, the system will run the Pattern 1 after there is no operation for 10 seconds.

Privacy Mask

<Main Menu> → <Privacy Mask>

Note: The privacy mask function is only for some models.

Mask No. :001
Mask Setup
Remove Mask
Back

This dome camera can set a square black patch in the image.

- ◆ <Mask No>
Display the number of current privacy mask zone. Its value range is 001 to 008. Move the rocker right and then move it up and down to change the number.
- ◆ <Mask Setup>
Set the location and size of mask. Enter <Mask Setup> and then pop up the following menu.

Call Preset 1 To
Confirm.....

Wave the rocker to make dome camera display the mask area. Use Preset 1 to confirm. Wave the rocker up, down, left and right to aim at the position and use Preset 1 to confirm. Wave the rocker right or down to change the size of black patch and use Preset 1 to save.

Note: Align the top left corner of black patch first because the black patch can only extends to the lower right.

- ◆ <Remove Mask>
Remove the current privacy mask.
- <Back> Back to the main menu.

DIP Switch

◆ Position of DIP switch

The default is set as 2400 bps.

[illegible]

Protocol	Switch Number							
	1	2	3	4	5	6	7	8
ERNITEC								
YAAN	ON							
ALEC		ON						
PELCO_PD	ON	ON						
PELCO_C			ON					
VCL	ON		ON					
MOLYNX		ON	ON					
VICON	ON	ON	ON					
DIAMOND				ON				
KALATEL	ON			ON				
HUNDA		ON		ON				
LILIN	ON	ON		ON				
SANTACHI			ON	ON				
PELCO_PDC	ON		ON	ON				
UNIVISIONV1*		ON	ON	ON				
UNIVISIONV2*	ON	ON	ON	ON				
AD*					ON			
ADT	ON				ON			
PANASONIC		ON			ON			
Reserved4								
Reserved5								
Reserved6								
Reserved7								
Reserved8								
Reserved9								
Reserved10								
Reserved11								
Reserved12								
Reserved13								
Reserved14								
Reserved15								

* means there shall have other accessories.

1. Hard address:

2. Programmable address:

3. Broadcast address:

◆ **Setup diagram of address**

[illegible]

address								
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Algorithm of hard address:

B1=ON ID1=1; B1=OFF ID1=0;SV1=1
B2=ON ID2=2; B2=OFF ID2=0;SV2=2
B3=ON ID3=4; B3=OFF ID3=0;SV3=4
B4=ON ID4=8; B4=OFF ID4=0;SV4=8
B5=ON ID5=16; B5=OFF ID5=0;SV5=16
B6=ON ID6=32; B6=OFF ID6=0;SV6=32
B7=ON ID7=64; B7=OFF ID7=0;SV7=64
B8=ON ID8=128; B8=OFF
ID8=0;SV8=128

$$ID = ID1 + ID2 + ID3 + ID4 + ID5 + ID6 + ID7 + ID8$$

1. If the ID number is set to be more than or equal to SVn, the Bn is set as On; if the ID number is set to be less than SVn, the Bn is set as Off.

2. Repeat the step 1 to set the value of ID-SV_n

For example, repeat the step 1 to set the value of ID-SV_n into 85,

85<SV8->B8=OFF; 85>SV7->B7=ON
85- SV7=21 21<SV6→ B6=OFF; 21>

SV5→ B5=ON

21- SV5=5 5< SV4→B4=OFF; 5>
SV3→ B3=ON

5- SV3=1 1<SV2→ B2=OFF;
1>=SV1→ B1=ON

So B7, B5, B3 and B1 are ON and other position of OFF.

$$\text{ID}(85) = \text{ID7}(64) + \text{ID5}(16) + \text{ID3}(4) + \text{ID1}(1)$$

4. Refer to the following for address setup

ID	B1	B2	B3	B4	B5	B6	B7	B8
1	ON							
2		ON						
3	ON	ON						
4			ON					
5	ON		ON					
6		ON	ON					
7	ON	ON	ON					
8				ON				
9	ON			ON				
10		ON		ON				
11	ON	ON		ON				
12			ON	ON				
13	ON		ON	ON				
14		ON	ON	ON				
15	ON	ON	ON	ON				
16					ON			
17	ON				ON			
18		ON			ON			
19	ON	ON			ON			
20			ON		ON			
21	ON		ON		ON			
22		ON	ON		ON			
23	ON	ON	ON		ON			
24				ON	ON			
25	ON			ON	ON			
26		ON		ON	ON			
27	ON	ON		ON	ON			
28			ON	ON	ON			
29	ON		ON	ON	ON			
30		ON	ON	ON	ON			
31	ON	ON	ON	ON	ON			
32						ON		
33	ON					ON		
34		ON				ON		
35	ON	ON				ON		
36			ON			ON		
37	ON		ON			ON		
38		ON	ON			ON		
39	ON	ON	ON			ON		
40				ON		ON		
41	ON			ON		ON		
42		ON		ON		ON		
43	ON	ON		ON		ON		
44			ON	ON		ON		
45	ON		ON	ON		ON		
46		ON	ON	ON		ON		
47	ON	ON	ON	ON		ON		
48					ON	ON		
49	ON				ON	ON		
50		ON			ON	ON		
51	ON	ON			ON	ON		

ID	B1	B2	B3	B4	B5	B6	B7	B8
52			ON		ON	ON		
53	ON		ON		ON	ON		
54		ON	ON		ON	ON		
55	ON	ON	ON		ON	ON		
56				ON	ON	ON		
57	ON			ON	ON	ON		
58		ON		ON	ON	ON		
59	ON	ON		ON	ON	ON		
60			ON	ON	ON	ON		
61	ON		ON	ON	ON	ON		
62		ON	ON	ON	ON	ON		
63	ON	ON	ON	ON	ON	ON		
64							ON	
65	ON						ON	
66		ON					ON	
67	ON	ON					ON	
68			ON				ON	
69	ON		ON				ON	
70		ON	ON				ON	
71	ON	ON	ON				ON	
72				ON			ON	
73	ON			ON			ON	
74		ON		ON			ON	
75	ON	ON		ON			ON	
76			ON	ON			ON	
77	ON		ON	ON			ON	
78		ON	ON	ON			ON	
79	ON	ON	ON	ON			ON	
80					ON		ON	
81	ON				ON		ON	
82		ON			ON		ON	
83	ON	ON			ON		ON	
84			ON		ON		ON	
85	ON		ON		ON		ON	
86		ON	ON		ON		ON	
87	ON	ON	ON		ON		ON	
88				ON	ON		ON	
89	ON			ON	ON		ON	
90		ON		ON	ON		ON	
91	ON	ON		ON	ON		ON	
92			ON	ON	ON		ON	
93	ON		ON	ON	ON		ON	
94		ON	ON	ON	ON		ON	
95	ON	ON	ON	ON	ON		ON	
96						ON	ON	
97	ON					ON	ON	
98		ON				ON	ON	
99	ON	ON				ON	ON	
100			ON			ON	ON	
101	ON		ON			ON	ON	
102		ON	ON			ON	ON	

ID	B1	B2	B3	B4	B5	B6	B7	B8
103	ON	ON	ON			ON	ON	
104				ON		ON	ON	

105	ON			ON		ON	ON	
106		ON		ON		ON	ON	
107	ON	ON		ON		ON	ON	
108			ON	ON		ON	ON	
109	ON		ON	ON		ON	ON	
110		ON	ON	ON		ON	ON	
111	ON	ON	ON	ON		ON	ON	
112					ON	ON	ON	
113	ON				ON	ON	ON	
114		ON			ON	ON	ON	
115	ON	ON			ON	ON	ON	
116			ON		ON	ON	ON	
117	ON		ON		ON	ON	ON	
118		ON	ON		ON	ON	ON	
119	ON	ON	ON		ON	ON	ON	
120				ON	ON	ON	ON	
121	ON			ON	ON	ON	ON	
122		ON		ON	ON	ON	ON	
123	ON	ON		ON	ON	ON	ON	
124			ON	ON	ON	ON	ON	
125	ON		ON	ON	ON	ON	ON	
126		ON	ON	ON	ON	ON	ON	
127	ON	ON	ON	ON	ON	ON	ON	
128								ON
129	ON							ON
130		ON						ON
131	ON	ON						ON
132			ON					ON
133	ON		ON					ON
134		ON	ON					ON
135	ON	ON	ON					ON
136				ON				ON
137	ON			ON				ON
138		ON		ON				ON
139	ON	ON		ON				ON
140			ON	ON				ON
141	ON		ON	ON				ON
142		ON	ON	ON				ON
143	ON	ON	ON	ON				ON
144					ON			ON
145	ON				ON			ON
146		ON			ON			ON
147	ON	ON			ON			ON
148			ON		ON			ON
149	ON		ON		ON			ON
150		ON	ON		ON			ON
151	ON	ON	ON		ON			ON
152				ON	ON			ON
153	ON			ON	ON			ON
154		ON		ON	ON			ON

ID	B1	B2	B3	B4	B5	B6	B7	B8
155	ON	ON		ON	ON			ON
156			ON	ON	ON			ON
157	ON		ON	ON	ON			ON
158		ON	ON	ON	ON			ON
159	ON	ON	ON	ON	ON			ON
160						ON		ON
161	ON					ON		ON
162		ON				ON		ON
163	ON	ON				ON		ON
164			ON			ON		ON
165	ON		ON			ON		ON
166		ON	ON			ON		ON
167	ON	ON	ON			ON		ON
168				ON		ON		ON
169	ON			ON		ON		ON
170		ON		ON		ON		ON
171	ON	ON		ON		ON		ON
172			ON	ON		ON		ON
173	ON		ON	ON		ON		ON
174		ON	ON	ON		ON		ON
175	ON	ON	ON	ON		ON		ON
176					ON	ON		ON
177	ON				ON	ON		ON
178		ON			ON	ON		ON
179	ON	ON			ON	ON		ON
180			ON		ON	ON		ON
181	ON		ON		ON	ON		ON
182		ON	ON		ON	ON		ON
183	ON	ON	ON		ON	ON		ON
184				ON	ON	ON		ON
185	ON			ON	ON	ON		ON
186		ON		ON	ON	ON		ON
187	ON	ON		ON	ON	ON		ON
188			ON	ON	ON	ON		ON
189	ON		ON	ON	ON	ON		ON
190		ON	ON	ON	ON	ON		ON
191	ON	ON	ON	ON	ON	ON		ON
192							ON	ON
193	ON						ON	ON
194		ON					ON	ON
195	ON	ON					ON	ON
196			ON				ON	ON
197	ON		ON				ON	ON
198		ON	ON				ON	ON
199	ON	ON	ON				ON	ON
200				ON			ON	ON
201	ON			ON			ON	ON
202		ON		ON			ON	ON
203	ON	ON		ON			ON	ON
204			ON	ON			ON	ON
205	ON		ON	ON			ON	ON
206		ON	ON	ON			ON	ON

ID	B1	B2	B3	B4	B5	B6	B7	B8
207	ON	ON	ON	ON			ON	ON
208					ON		ON	ON
209	ON						ON	ON
210		ON			ON		ON	ON

211	ON	ON			ON		ON	ON
212			ON		ON		ON	ON
213	ON		ON		ON		ON	ON
214		ON	ON		ON		ON	ON
215	ON	ON	ON		ON		ON	ON
216				ON	ON		ON	ON
217	ON			ON	ON		ON	ON
218		ON		ON	ON		ON	ON
219	ON	ON		ON	ON		ON	ON
220			ON	ON	ON		ON	ON
221	ON		ON	ON	ON		ON	ON
222		ON	ON	ON	ON		ON	ON
223	ON	ON	ON	ON	ON		ON	ON
224						ON	ON	ON
225	ON					ON	ON	ON
226		ON				ON	ON	ON
227	ON	ON				ON	ON	ON
228			ON			ON	ON	ON
229	ON		ON			ON	ON	ON
230		ON	ON			ON	ON	ON

ID	B1	B2	B3	B4	B5	B6	B7	B8
231	ON	ON	ON			ON	ON	ON
232				ON		ON	ON	ON
233	ON			ON		ON	ON	ON
234		ON		ON		ON	ON	ON
235	ON	ON		ON		ON	ON	ON
236			ON	ON		ON	ON	ON
237	ON		ON	ON		ON	ON	ON
238		ON	ON	ON		ON	ON	ON
239	ON	ON	ON	ON		ON	ON	ON
240					ON	ON	ON	ON
241	ON				ON	ON	ON	ON
242		ON			ON	ON	ON	ON
243	ON	ON			ON	ON	ON	ON
244			ON		ON	ON	ON	ON
245	ON		ON		ON	ON	ON	ON
246		ON	ON		ON	ON	ON	ON
247	ON	ON	ON		ON	ON	ON	ON
248				ON	ON	ON	ON	ON
249	ON			ON	ON	ON	ON	ON
250		ON		ON	ON	ON	ON	ON
251	ON	ON		ON	ON	ON	ON	ON
252			ON	ON	ON	ON	ON	ON
253	ON		ON	ON	ON	ON	ON	ON
254		ON	ON	ON	ON	ON	ON	ON

◆ Setup of terminal resistance DIP

The RS485 bus has two 120Ω resistances on both sides. It is in the farthest end (keyboard and dome camera) of RS485 bus. The default setup is OFF.

Protocol	Switch Number (Protocol & BPS)							
	1	2	3	4	5	6	7	8
Terminal resistance DIP	X	X	X	X	X	ON		

The default setup is OFF.

Appendix II: General Knowledge of RS485 Bus

1 Basic Characteristics of RS485 Bus

According to the standard of RS485 industrial bus, the RS485 industrial bus is the half-duplex communication bus with characteristic impedance of 120 Ω and its largest load capacity is 32 effective loads (including the main control equipment and controlled equipment).

2 Transmit Distance of RS485 Bus

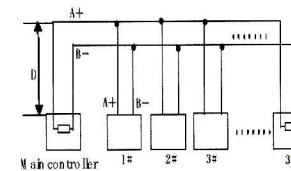
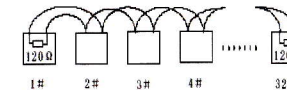
When the 0.56mm (24AWG) twisted pair is used as communication cable, the theoretical value of maximum transmit distance is as follows according to different baud rate.

Baud Rate	Max. Transmit Distance
2400BPS	1200m
4800BPS	1000m
9600BPS	800m

When the thinner communication cable is used, the product is used in the environment with strong electromagnetic interference, or major equipments are connected with bus, the maximum transmit distance will be properly reduced. Otherwise the maximum transmit distance will be increased.

3 Connection Method and Terminal Resistance

3-1 The standard of RS485 industrial bus requires the equipments are connected in the way of daisy chain and with the terminal resistance of 120 Ω on both sides. (Shown as figure 36) the simplified connection can be as Figure 37, but the distance of "D" section shall be not more than 7m.

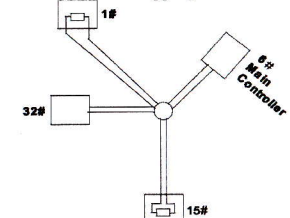


3-2 Connection method of 120Ω resistance in equipment terminal (for stepping motor): (shown as the above figure)
In the default connection way when leaving the factory, the 120Ω resistance is not placed in. When the 120Ω resistance is to be placed in, the sixth feet in Protocol & BPS position shall be on the ON position, and then the 120Ω resistance is

not placed in circuit.

4 Problems in Practical Application

If the user usually uses the connection way of star chain in practical construction and application, the terminal resistance must be connected with the farthest two equipments of circuit (such as the 1# equipment and 15# equipment in figure). However, this connection way doesn't meet the requirements of RS485 industrial standard on use, so it is easy to produce signal reflex, resisting disturbance capability and other problems and cause the reduction of control signal reliability when the circuit distance of equipments is too far. The reflected phenomenon is the dome camera is wholly or partly uncontrolled or runs automatically without stopping.



5 Solutions to General Faults of 485-Bus

Fault Conditions	Possible Cause	Solutions
The dome camera can inspect automatically but it can't control automatically.	A. The control signal hasn't reached the dome camera if the red and green lights on DIP plate are off; B. The control signal hasn't reached the dome camera and the protocol or baud rate is wrong if the green light on DIP plate is on and the red light is off.	A. Inspect the control circuit system; B. Exchange the + and - connection electrode of RS485; C. Tight the connection; D. Change the RS485 wire; E. Check whether the protocol or baud rate is right.
The dome camera can be controlled but can't run smoothly. Both red and green lights are on.	A. The RS485 wire has poor contact; B. A piece of RS485 wire is cut off; C. The distance of host and dome camera is too large; D. The dome camera has too many parallel connections.	A. Re-connect the RS485 wire; B. Change the RS485 wire; C. Add the terminal matched resistance; D. Increase the RS485 drive.

Appendix III: Maintenance Clauses

1 Warranty Scope

- If the fault is validated to be caused by defects of product material or technology, the manufacturer will repair or change it without compensation within one year after the good is delivered;
- The warranty period of all repaired or changed parts is 90 days since the good is delivered;
- The faults caused by force majeure (such as wars, earthquakes, lightning strike, etc.), inappropriate use, abnormal operation, reconstructions, normal abrasions or accidents are not in the warranty scope;
- The manufacturer doesn't bear any risks and responsibilities for the damages or losses caused by special use or application of products. The amount of compensation born by manufacturer for breach of faith, negligence or infringement shall exceed the sales amount of product. The manufacturer doesn't bear any responsibilities for the special, unexpected or continuous damages caused by any other reasons;
- Our Company provides the lifetime paid maintenance services for the broken products that exceed the warranty period.

2 Warranty Conditions

The buyer shall contact manufacturer to obtain the maintenance number (RAN) for the goods to be maintained in warranty period. And the following product information shall also be provided with goods:

- Model and series number;
- Deliver date, order number, sales order number or invoice number of manufacturer;
- Detailed fault phenomenon.

If you have dispute on the maintenance of product in warranty clauses, please attach the written explanation when returning the products.

Appendix IV: Easy Troubleshooting

Fault Condition	Possible Cause	Solutions
There's no action and image after electrification.	The AC power is not or poor connected with the socket of circuit board; The utility power is cut off for the transformer is in fault; The camera core is not well installed; The output voltage of transformer is too low; The power board is in fault.	Check whether the power is connected and ensure the socket is in good contact; Check whether the utility power is in normal state and whether the transformer is in normal operation; Check whether the wires are correctly connected and ensure their good contact; Measure the load voltage of dome camera by multi-meter. The voltage will exceed the working voltage range of dome camera if it is lower than 18V.
There have self-inspection and image and the controller can't work after electrification.	The setting of DIP switch of dome camera is not correct; The control line is reversed or open.	Reset the DIP switch according to the setting of DIP switch; Check connection of control line and ensure the connection is correct and on good contact.
The rotation speed of fan is less than 1000rps.	The wire of fan is not well connected.	Connect the connection of fan well. Please contact the supplier to change the fan if rotation speed of fan is still less than 1000rps.
The menu is dim.	The focus is in manual state; The dome cover is dirty.	Operate the dome camera to make it in auto focusing state; clean the dome cover.

Appendix V: Check List of Domestic and Foreign Wire Gauge

Diameter of Metric Bare Wire (mm)	Approximate American Wire Gauge AWC	Approximate Standard Wire Gauge SWC	Section Area of Bare Wire (mm ²)
0.050	43	47	0.00196
0.060	42	46	0.00285
0.070	41	45	0.00385
0.080	40	44	0.00503
0.090	39	43	0.00636
0.100	38	42	0.00785
0.110	37	41	0.00950
0.130	36	39	0.01327
0.140	35		0.01539
0.160	34	37	0.02011
0.180	33		0.02545
0.200	32	35	0.03142
0.230	31		0.04115
0.250	30	33	0.04909
0.290	29	31	0.06605
0.330	28	30	0.08553
0.350	27	29	0.09621
0.400	26	28	0.1257
0.450	25		0.1602
0.560	23	24	0.2463
0.600	24	23	0.2827
0.710	22	22	0.3958
0.750	21		0.4417
0.800	20	21	0.5027
0.900	19	20	0.6362
1.000	18	19	0.7854
1.250	16	18	1.2266
1.500	15		1.7665
2.000	12	14	3.1420
2.500			4.9080
3.000			7.0683

Appendix VI: Setting Table of Shortcut Key

Note: Some special functions have no relevant commands in "PELCO-D" protocol, so we realize the function conversion by some general commands to control the special functions of dome camera. We generally use "adjusting preset position/setting preset position" to convert. The comparison table of command conversion is listed as follows:

Used Preset No.	Definition of Keyboard Operation	Used Preset No.	Definition of Keyboard Operation
201	Start the first pattern scanning	210	Start the holder 360° scanning (high speed)
202	Start the second pattern scanning	211	Start the holder 360° scanning (middle speed)
203	Start the third pattern scanning	212	Start the holder 360° scanning (low speed)
204	Start the fourth pattern scanning	215	Start left and right scanning (high speed)
206	Start the second tour route	216	Start left and right scanning (middle speed)
207	Start the first tour route	217	Start left and right scanning (low speed)
208	Start the third tour route	219	Re-start
209	Start the fourth tour route	95	Open the camera menu