IR Speed Dome

User Manual

V1.0.0

Hikvision Digital Technology Co., Ltd.

http://www.hikvision.com

Thank you for purchasing our product. If there is any question or request, please do not hesitate to contact the dealer.

This manual is applicable to the IR Speed Dome.

This manual may contain several technically inaccurate places or printing errors, and the content is subject to change without notice. The updates will be added into the new version of this manual. We will readily improve or update the products or procedures described in the manual.

The content in this installation guide is only for your reference! If there is inconsistency between the image and the actual product, the actual product shall govern.

The components, assemblies and accessories mentioned in this guide is only for illustration, not standing for the exact equipment of the purchased model, please take the packing list as the standard.

Regulatory Information

FCC Information

FCC compliance: This equipment has been tested and found to comply with the limits for a digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC Conditions

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation

EU Conformity Statement

CE This product and - if applicable - the supplied accessories too are marked with "CE" and comply therefore with the applicable harmonized European standards listed under the Low Voltage Directive 2006/95/EC, the EMC Directive 2004/108/EC.

2002/96/EC (WEEE directive): Products marked with this symbol cannot be disposed of as unsorted municipal waste in the European Union. For proper recycling, return this product to your local supplier upon the purchase of equivalent new equipment, or dispose of it at designated collection points. For more information see: www.recyclethis.info.

2006/66/EC (battery directive): This product contains a battery that cannot be disposed of as unsorted municipal waste in the European Union. See the product documentation for specific battery information. The battery is marked with this symbol, which may include lettering to indicate cadmium (Cd), lead (Pb), or mercury (Hg). For proper recycling, return the battery to your supplier or to a designated collection point. For more information see: www.recyclethis.info.

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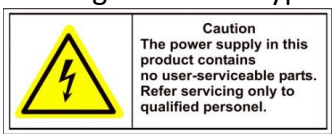
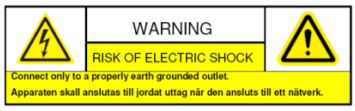
Safety Warnings and Cautions

Please pay attention to the following warnings and cautions:

Hazardous Voltage may be present: Special measures and precautions must be taken when using this device. Some potentials (voltages) on the device may present a hazard to the user. This device should only be used by Employees from our company with knowledge and training in working with these types of devices that contain live circuits.



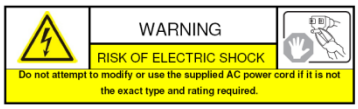
Power Supply Hazardous Voltage: AC mains voltages are present within the power supply assembly. This device must be connected to a UL approved, completely enclosed power supply, of the proper rated voltage and current. No user serviceable parts inside the power supply.



System Grounding (Earthing): To avoid shock, ensure that all AC wiring is not exposed and that the earth grounding is maintained. Ensure that any equipment to which this device will be attached is also connected to properly wired grounded receptacles and are approved medical devices.

Power Connect and Disconnect: The AC power supply cord is the main disconnect device to mains (AC power).The socket outlet shall be installed near the equipment and shall be readily accessible.

Installation and Maintenance: Do not connect/disconnect any cables to or perform installation/maintenance on this device during an electrical storm.



Power Cord Requirements: The connector that plugs into the wall outlet must be a grounding-type male plug designed for use in your region. It must have certification marks showing certification by an agency in your region. The connector that plugs into the AC receptacle on the power supply must be an IEC 320, sheet C13, female connector. See the following website for more information http://kropla.com/electric2.htm.

Lithium Battery: This device contains a Lithium Battery. There is a risk of explosion if the battery is replaced by an incorrect type. Dispose of used batteries according to the vendor's instructions and in accordance with local environmental regulations.

Perchlorate Material: Special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate. This notice is required by California Code of Regulations, Title 22, Division 4.5, Chapter 33: Best Management Practices for Perchlorate Materials. This device includes a battery which contains perchlorate material.

Taiwan battery recycling:

Please recycle batteries.

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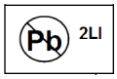
Thermal and Mechanical Injury: Some components such as heat sinks, power regulators, and processors may be hot; care should be taken to avoid contact with these components.

Electro Magnetic Interference: This equipment has not been tested for compliance with emissions limits of FCC and similar international regulations. This device is not, and may not be, offered for sale or lease, or sold, or leased until authorization from the United States FCC or its equivalent in other countries has been obtained. Use of this equipment in a residential location is prohibited. This equipment generates, uses and can radiate radio frequency energy which may result in harmful interference to radio communications. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment on and off, the user is required to take measures to eliminate the interference or discontinue the use of this equipment.

Lead Content:



Please recycle this device in a responsible manner. Refer to local environmental regulations for proper recycling; do not dispose of device in unsorted municipal waste.

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Safety Instruction

These instructions are intended to ensure that user can use the product correctly to avoid danger or property loss. The precaution measure is divided into **Warnings** and **Cautions**:

Warnings: Neglecting any of the warnings may cause serious injury or death.

Cautions: Neglecting any of the cautions may cause injury or equipment damage.

Warnings: Follow these safeguards to prevent serious injury or death.	**Cautions**: Follow these precautions to prevent potential injury or material damage.

Warnings

1. In the use of the product, you must be strict compliance with the electrical safety regulations of the nation and region.
2. Please use the power adapter, which is provided by normal company. The standard of the power adapter is AC24V/3A.
3. Do not connect several devices to one power adapter as adapter overload may cause over-heat or fire hazard.
4. Please make sure that the plug is firmly connected on the power socket.
5. When the product is installed on wall or ceiling, the device shall be firmly fixed.
6. If smoke, odors or noise rise from the device, turn off the power at once and unplug the power cable, and then please contact the service center.
7. If the product does not work properly, please contact your dealer or the nearest service center. Never attempt to disassemble the camera yourself. (We shall not assume any responsibility for problems caused by unauthorized repair or maintenance.)

Cautions

1. Do not drop the dome or subject it to physical shock, and do not expose it to high electromagnetism radiation. Avoid the equipment installation on vibrations surface or places subject to shock (ignorance can cause equipment damage).
2. Do not place the dome in extremely hot, cold (the operating temperature shall be -30°C ~ +65°C), dusty or damp locations, or fire or electrical shock will occur otherwise.
3. The dome cover for indoor use shall be kept from rain and moisture.
4. Exposing the equipment to direct sun light, low ventilation or heat source such as heater or radiator is forbidden (ignorance can cause fire danger).
5. Do not aim the camera at the sun or extra bright places. A blooming or smear may occur

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otherwise (which is not a malfunction however), and affecting the endurance of CCD at the same time.

6. Please use the provided glove when open up the dome cover, avoid direct contact with the dome cover, because the acidic sweat of the fingers may erode the surface coating of the dome cover.
7. Please use a soft and dry cloth when clean inside and outside surfaces of the dome cover, do not use alkaline detergents.

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Contents

Chapter 1 Introduction 1

1.1 Production Features 1

Chapter 2 Getting Started 2

2.1 Power on Self-test 2
2.2 System-defined Presets 3
2.3 On Screen Display 3

Chapter 3 Menu Operation 4

3.1 Main Menu 4
3.2 Dome Setup 4
3.2.1 Configuring the System Parameters 5
3.2.2 Configuring the Camera Settings 7
3.2.3 Configuring the PTZ Parameters 9
3.2.4 Configuring the IR Parameter Setup 11
3.2.5 Configuring the Patrol 12
3.2.6 Configuring the Pattern 14
3.2.7 Configuring the Time Tasks 15
3.2.8 Configuring the Privacy Mask 17
3.3 Restoring the Default Settings 18
3.4 Restoring the Camera Settings 19
3.5 Rebooting the Dome 19

Appendix 20

Appendix 1 Lightning & Surge Protection 20
Appendix 2 RS485 Bus Connection 21
Appendix 3 24VAC Wire Gauge & Transmission Distance 24
Appendix 4 Table of Wire Gauge Standards 25

Glossary 26

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Chapter 1 Introduction

1.1 Production Features

IR speed dome adopts a high-performance integrated sensor with the auto-focus and auto-white balance function. With a built-in pan/tilt unit, the IR speed dome features in highly sensitive response and reliable performance. The outstanding features are shown as below:

- Adopt 1/4" high performance CCD, which ensures the image quality.
- Support 3D-Positioning function, which can locate the target quickly and correctly.
- Built-in temperature sensor, which can display the internal temperature of the camera.
- Support the scheduled preset, patrol, pattern, and auto-scan functions.
- Support both English and Chinese, and support operation prompts which make it easier to operate.
- Ingress protection level reaches IP66.

With the above features, the IR speed dome can be widely used in various surveillance fields, such as forest, railway, airport, harbor, oil field, plaza, park, scenic spot, street, train station, stadium, etc.

1.2 Appearance

Figure 1-1 IR speed dome

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Chapter 2 Getting Started

Before you start:

You can operate the speed dome using a control device. The control devices include the control keyboards, DVRs, DVSs, etc. In this and the following chapters, operation of the speed dome by the IE browser of a DVR is taken as an example.

Note: Please make sure that the baudrate, data bit and address of the speed dome have been configured to the same as those of the control device. Please refer to Table 2-1 for details of the configuration.

2.1 Power on Self-test Actions

After the power is connected, the IR dome performs a series of POST (power on self-test) which includes the lens actions and the pan and tilt movements. After the power on self-test finished, the system information displays for 2 minutes on the live view screen shown below.

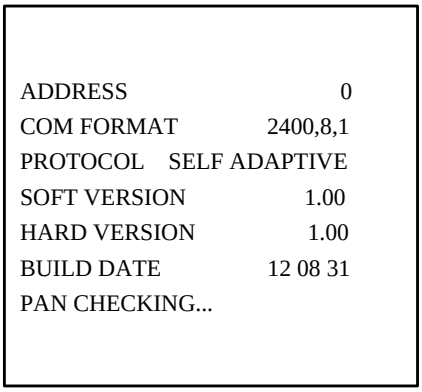

Figure 2-1 System Information

Table 2-1 Description of System Information

System Info	Description
ADDRESS	The address of the speed dome. The default value is 0
COM FORMAT	The communication settings of the speed dome. Baudrate(default 2400), data bit(8 digit) and stop bit(1 digit).
SOFT VERSION	The version of the software.
HARD VERSION	The version of the hardware.
BUILD DATE	The date when the program of the software is compiled.

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2.2 System-defined Presets

Purpose:

The section lists the system-defined presets with special functions. These presets cannot be edited but only be called by a control device, e.g., a DVR. To call the system-defined presets remotely, you can choose the preset number from the drop-down list in the PTZ control panel of the control device through a web browser. Please refer to the table below for details.

Table 2-2 Description of System-defined Presets

Preset NO.	Function	Preset NO.	Function
33	Auto-flip	41	Pattern 1
34	Return to home position	42	Pattern 2
35	Patrol 1	43	Pattern 3
36	Patrol 2	44	Pattern 4
37	Patrol 3	94	Remote reboot
38	Patrol 4	95	Access main menu
39	IR cut filter in	96	Stop scanning
40	IR cut filter out	99	Start pan scanning

2.3 On Screen Display

The IR speed dome provides a series of on-screen display for better operation. The on screen display includes Zoom, Pan/Tilt angle, Preset title, Time.

Zoom: Displayed as Z-XXX, XXX stands for the current zoom value of the lens.

P/T Angle: Display as NEXXX-TXXX, NE –XXX stands for the angle in Northeast direction. The numbers followed by T stand for the angle vertically. E.g., NE062 T046, it means the lens is aiming at the angle of 210 degrees in South, 046 degrees vertically.

Time Display: Displayed as Day/Month/Year/Day of Week/Hour/Minute. It supports 24-hour time system.

Preset Title: After you call the configured preset, the preset number is displayed if the lens move to the certain place where you've set a preset for.

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Chapter 3 Menu Operation

Notes:

1. The operation interface of the different speed domes may differ. Please refer to the actual operation interface.
2. You can click the left and right direction buttons in the PTZ control panel via the IE browser of the DVR to enter the next page and return to the previous page of the submenu if more than one page is available.

3.1 Main Menu

To enter the main menu:

Connect the speed dome to a DVR and visit the DVR via an IE browser. For PELCO-P/D and other private PTZ protocols, call preset 95 from the preset list of the DVR.

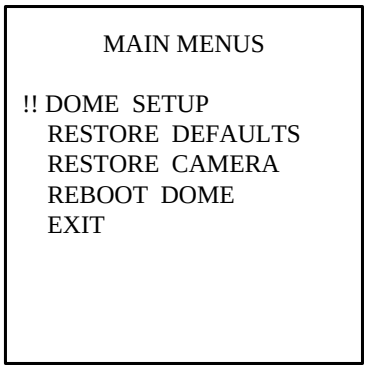

Figure 3-1 Main Menu

To move the cursor and operate the menu:

- Move the cursor up/down: On the IE browser live view page of the DVR, click up and down direction buttons or **FOCUS +** and **FOCUS -** buttons in the PTZ control panel to move the cursor up and down.
- Enter/Exit: On the IE browser live view page of the DVR, click **IRIS+** to enter a submenu; move the cursor to **Exit** and click **IRIS+** to exit.

To change the value of a parameter:

Steps:

1. Move the cursor (exclamation mark) to the target item and click **IRIS+** to select the item.
2. Click the up/down or left/right buttons in the PTZ control panel to choose the value from the selectable list.
3. Press **IRIS+** to confirm the change or click **IRIS-** to cancel and restore the original value.

3.2 Dome Setup

Move the cursor to the Dome Setup, and click **IRIS+** to enter the Dome edit mode. See Figure 3-2.

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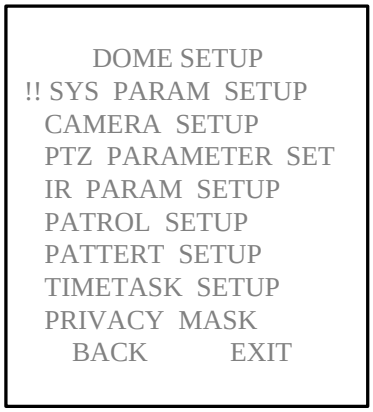

Figure 3-2 Dome Setup

3.2.1 Configuring the System Parameters

Purpose:

You can check and also edit the system information of the software address, baudrate, system time, etc. on the system information settings menu.

Enter the system information settings menu:

MAIN MENUS > DOME SETUP> SYS PARAM SETUP

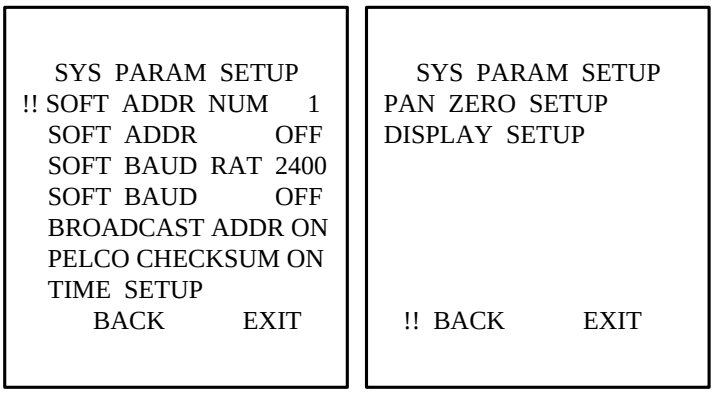

Figure 3-3 System Information Settings

Note: You can click the left and right direction buttons in the PTZ control panel via the IE browser of the DVR to enter the next page and return to the previous page of the submenu if more than one page is available.

Descriptions of system parameter configuration:

- **Soft Address Settings**

  If the **SOFT ADDR** is set as **ON**, the soft address is the valid address for connecting to the IR speed dome. The selectable soft address range is from 1 to 255;

  If the **SOFT ADDR** is set as **OFF**, the hard address set by the DIP switch is the valid address of the speed dome (the hard address is set as 0 by default).

  Notes:

  1. Before you set the soft address of the speed dome, you need to confirm the control range of

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the control device (e.g. the DVR).

2. After you enable/disable the soft address, the speed dome will reboot automatically to activate the settings.

- **Soft baudrate settings**

If the **SOFT BAUD** is set as **ON**, the soft baudrate is the valid baudrate for the speed dome, with 2400, 4800, and 9600 are selectable.

If the **SOFT BAUD** is set as **OFF**, the baudrate should be set by the DIP switch.

Note: After you enable/disable the soft baudrate, the speed dome will reboot automatically to activate the settings.

- **Broadcast Address Settings**.

When the **BROADCAST ADDRESS** is set to **ON**, the control device with address 0 is capable of controlling all domes connected to it.

- **Protocol Settings**

The PELCO CHECKSUM is used for Pelco-P and Pelco-D protocols. If the video turns to slack or uncontrollable, you can set the PELCO CHECKSUM as ON to improve the video quality.

- **Time Setup**

You can set the system time (See Figure 3-4) from this item according to the steps below.

Steps:

(1) Move the cursor to **TIME SETUP** by using the direction buttons and click **IRIS+** to enter.

(2) Click the left/right direction buttons to position the cursor on the specific item (year/month/day or hour/minute/second) of which you want to change the value.

(3) Click the up/down direction buttons to increase/decrease the value.

(4) Click **IRIS+** button to confirm and exit.

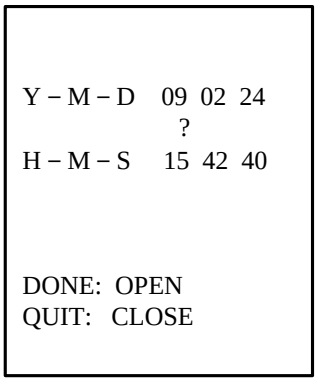

Figure 3-4 Time Setup

- **0° angle (initial position) configuration**

You can define the initial position of the speed dome from PAN ZERO SETUP.

Steps:

1. Move the cursor to **PAN ZERO SETUP** using the direction buttons and click **IRIS+** to enter.
2. Click the left/right/up/down direction buttons to adjust the monitor angle of the speed dome to find the initial position.
3. Click **IRIS+** button to confirm and exit.

- **Display Setup**

This option is for the on screen display setup. The Zoom, Pan/Tilt angle, Preset title, Time, and Heatfan can be displayed on the screen by setting them to “ON”. To disable the display of those

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menus, you can set them to “OFF”.

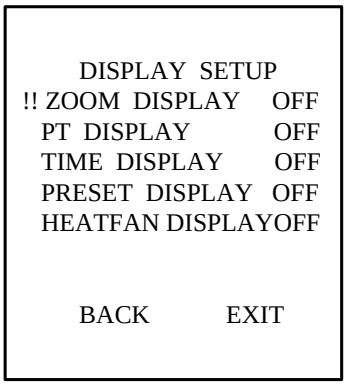

Figure 3-5 Display Setup

3.2.2 Configuring the Camera Settings

Note:

The menu operation interface of the different model of speed dome may differ. Please refer to the actual operation interface.

You can configure the Focus, Shutter, White Balance and Noise Reduce, etc. on the OSD menu. See Figure 3-6.

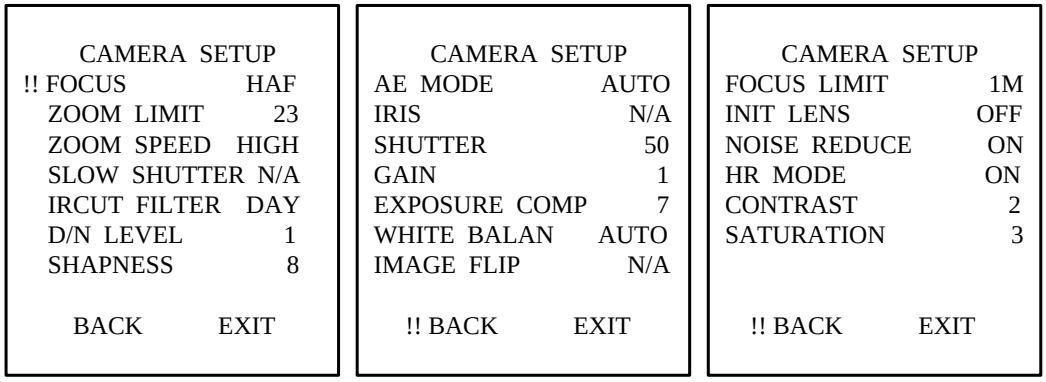

Figure 3-6 Camera Setup

- **Focus Settings**

  Steps:

  (1) Move the cursor to **FOCUS** using the direction buttons and click **IRIS+** to enter.

  (2) Click up/down direction buttons to choose the focus mode as **AF**, **MF** or **HAF**.

  AF (Auto-focus): The lens remains in focus during PTZ movements.

  MF (Manual Focus): Lens focus is adjusted manually.

  HAF (Half-auto Focus): The lens remains at a fixed focus point when PTZ movements stop; when the PTZ movements are resumed, the lens focuses automatically. It is the default focus mode.

  (3) Click **IRIS+** button to confirm.

- **Zoom Limit Settings**

  Purpose:

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Zoom limit is a user-defined limitation of the zoom amount (Zoom amount=optical zoom× digital zoom). Take DS-2AF1-762 as an example, if you set the zoom limit as 20, the optical zoom function will be performed, and if you set the zoom limit to 40, 80, 160, or 320, the digital zoom function will be enabled then.

Note: The zoom limit function is only supported by a certain camera model series.

- **Zoom Speed Settings**

  Purpose:

  You can define the speed at which the lens changes from distant view to the close shot.

  Steps:

  (1) Move the cursor to **ZOOM SPEED** using the direction buttons and click **IRIS+** to enter.

  (2) Click up/down direction buttons to choose the speed from **HIGH, MEDUIM** and **LOW**.

  (3) Click **IRIS+** button to confirm.

- **Slow Shutter**.

  Slow shutter is for slow down the shutter speed and extends exposure time under low lighting circumstances to obtain clearer image.

Note: The Slow Shutter function is only supported by a certain camera model series.

- **IR Cut Filter.**

  It can be set as **AUTO**, **DAY** or **NIGHT**.

  AUTO: The speed dome is capable of automatically switching from Black and White mode (NIGHT) and Color mode (DAY) regarding to the lightening conditions. It is the default value.

  NIGHT (B/W): You can switch the IR cut filter into Black and White mode to increase the lens sensitivity in low light conditions

  DAY (Color): You can switch it to DAY mode in normal lighting conditions.

Note: You can set the **IRCUT FILTER** value on this menu, and you can call preset 39 to set the IR cut filter mode to **DAY** mode and call preset 40 to set it as **NIGHT** mode. This can only be done after you set the **LED CONTROL** to **CLOSE** from **IR PARAMETER.**

- **D/N Level.**

  The D/N level is the brightness for auto D/N mode switch. As a threshold, IR cut filter switches between DAY and NIGHT when the light condition reaches the user-defined D/N level. Three levels are selectable: **0, 1** and **2**.

- **Sharpness:**

  The sharpness function can increase the auto-gain of the speed dome and sharpen the edges in the picture to enhance the picture details. You can set the **SHARPNESS** level from 0 to 15. The default setting level is 8.

- **AE Mode**

  It defines the priority of iris, shutter and gain while the speed dome adjusting the brightness of the live view. You can set the AE Mode to **Auto** or **Manual.** When it is set to Auto, the gain is adjustable, and if it is set to Manual, the shutter and gain are adjustable.

- **Shutter**

  You can set it as 1, 2, 4, 8, 15, 30, 50, 125, 180, 250, 500, 1000, 2000, 4000 or 10000.

Note: The value of X indicates that the shutter speed is 1/X second. If you set the **SHUTTER** value bigger (shutter speed is faster), the amount of entering light per second is fewer, and the image is darker.

- **Gain**

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The value of gain indicates the amplification degree of the original image signal. You can set the value from 0 to 15.

- **Exposure Compensation Function**:
  You can set the **EXPOSURE COMP** value from 0 to 14. The value change can affect the exposure effect, and the default value is 7.
- **White Balance**:
  You can set **WHITE BALANCE** mode as **AUTO**, **INDOOR**, **OUTDOOR**, **SELFDEF** (self-defined), **ATW** (auto-tracking) and **HAUTO** (half-auto).
- **Image Flip**:
  If you turn the **IMAGE FLIP** function on, the image will be flipped diagonally along its central axis, shown as the mirror reflection of the image.

Note: The image flip function is only supported by a certain camera model series.

- **Focus Limit**
  You can set **FOCUS LIMIT** as **30CM**, **1M** or **3M** to make sure that the speed dome focuses on the target; when you set it as **1M** (default), the focus limit will automatically change according to the lens zooming.
- **Init Lens**
  You can turn the **INIT LENS** on to trigger a spontaneous lens initiation to ensure the normal operation
- **Noise Reduction**:
  There are two options for noise reduction: ON or OFF.
- **HR Mode**
  Set **the HR MODE** as **ON** to adjust the resolution higher. Switch it **OFF** to disable the function, which can avoid cross color of the image.
- **Contrast:**
  Adjust the image contrast on **CONTRAST** submenu to 0-7.
- **Saturation:**
  Adjust the image saturation on **SATURATION** submenu to 0-7.

3.2.3 Configuring the PTZ Parameters

You can configure the Park Time, Image Freeze, Dome Speed, etc. according to the steps in this session. See Figure 3-7. Enter PTZ configuration menu:

MAIN MENUS > DOME SETUP > PTZ PARAMETER SET

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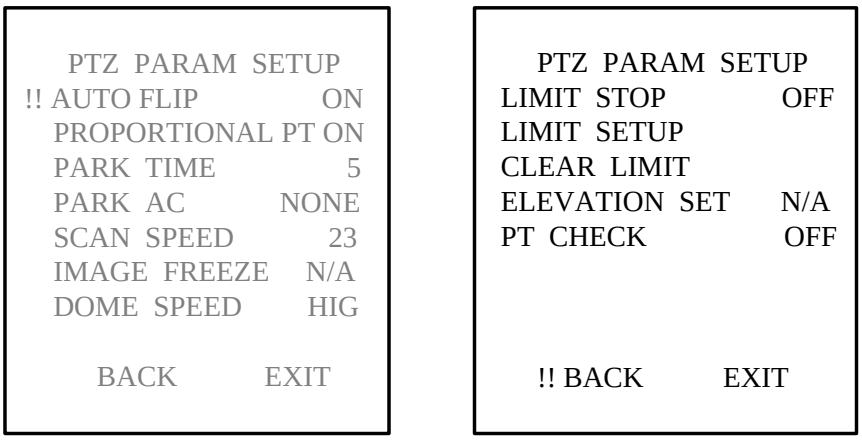

Figure 3-7 PTZ Configuration

Descriptions of PTZ parameter configuration:

- **Auto-Flip**
  In manual tracking mode, when a target object goes directly beneath the speed dome, it automatically rotates (flips) 90 degrees horizontally to track the object, if there is no further command received, it rotates 180 degrees horizontally, and then move upward straightly.
- **Proportional PT**
  When the speed dome is zooming in/out, you can enable the Proportional PT function to automatically reduce or increase the panning and tilting speed according to the zooming amount. This function enables the speed dome to trace the object at a proper speed when the speed dome is zooming and the monitored scene is narrowed (zoom in) or enlarged (zoom out). The panning and tilting speeds is slower in telephoto state than that of the wide zoom state.
  You can set **PROPORTIONAL PT** to **ON** or **OFF** to enable/disable the function.

Note: This function is enabled automatically while setting the patterns.

- **Park Time**
  This feature allows the speed dome to start a predefined park action (scan, preset, pattern, etc.) automatically if there is no control signal received after a period of inactivity (park time). You can set **PARK TIME** from 5 to 720 seconds.
- **Park AC**
  You can set the park action (**PARK ACT**) as preset 1-8, pattern 1-4, patrol 1-4, pan scan, day mode, night mode or none.
- **Scan Speed**
  Scan speed defines the scan degree per second of panning scan. Pan scan speed is adjustable from 1 to 40 degrees per second.
- **Image Freeze**
  This feature enables the live view to switch directly from one scene defined by a preset to another, without showing the transition areas between these two to ensure the surveillance efficiency. It can also reduce the use of bandwidth in a digital network system.
  You can set **IMAGE FREEZE** on to enable this function.

Note: The image freeze function is only supported by a certain camera model series.

- **Dome Speed**

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The manual movement speed can be set as **HIGH**, **MID** or **LOW**.

- **Limit Stops**

  If you set the limit stops to **OFF**, the movement of the speed dome will not be affected even if you setup the limits.

- **Limit Setup**

  Steps:

  1. Move the cursor to **Limit Setup** and click **IRIS+** to enter the edit mode.
  2. Use the direction button in the PTZ panel to define the area when you see **SET LEFT LIMIT** on the screen.
  3. Follow the prompts to configure the right, up and down limit stops.

Note: The new limit stops will overwrite the existed ones by default.

- **Clear Limit**

  You can clear the defined limit stops. Click **IRIS+** to enter **CLEAR Limit** and click **IRIS+** to clear the stops.

- **Elevation Angle**

  Elevation angle is used for adjusting the angle in vertical direction.

Note: The Elevation angle function is only supported by a certain camera model series.

- **PT Check**

  PTZ check is used for the auto-position correction when the camera is out of synchronism. It is set to **OFF** by default, and usually used in the vibration environment. It is not recommended to set it **ON** when there is no synchronism lost.

3.2.4 Configuring the IR Parameter Setup

You can configure the IR Sense, Near/Far LED Current, Fan/Heat Control from this section. See Figure 3-8.

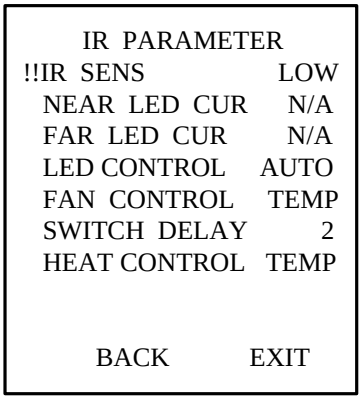

Figure 3-8 IR Parameter Set

- **IR Sens**

  IR sensitivity refers to the value of the IR LED, and you can set it to **Low**, **Medium**, and **High**.

- **Near LED Current**

  Near LED Current refers to the strength of the near IR LED.

Note: The near LED current function is only supported by a certain camera model series.

- **Far LED Current**

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Far LED Current refers to the strength of the far IR LED.

Note: The near LED current function is only supported by a certain camera model series.

- **LED Control**
  Auto, Close, All On, Far On, Near On are selectable according to the different environment demands.
- **Fan Control**
  It is used for the fan control of the IR LED, and you can set it to ON, OFF, TEMP.
- **Switch Delay**
  Switch delay refers to the dwell time it takes to adapt to the environment when the day mode switches to the night mode.
- **Heat Control**
  Heat control is used for avoiding the lens blur caused by the humidity entering into the internal of the camera during the installation, which come to be the fog when the internal temperature is quite will differ from the outside temperature. The heat control can warm the camera to fit the cold whether better.

3.2.5 Configuring the Patrol

Purpose:

A patrol is a series of dome scanning actions between the preset positions. You can call a patrol to scan the scenes automatically among a group of configured presets in sequence.

Steps:

1. Move the cursor to enter patrol configuration interface:
   MAIN MENUS > DOME SETUP> PATROLS
2. Choose the **Patrol Number**.
   Steps:
   (1) Move the cursor to **PATROLS NUM** and click **IRIS+** to enter edit mode.
   (2) Click the up and down direction buttons to select the number of the patrol which is to be configured.
   (3) Click **IRIS+** again to confirm and exit edit mode of this column.

Note: You can configure up to 4 patrols.

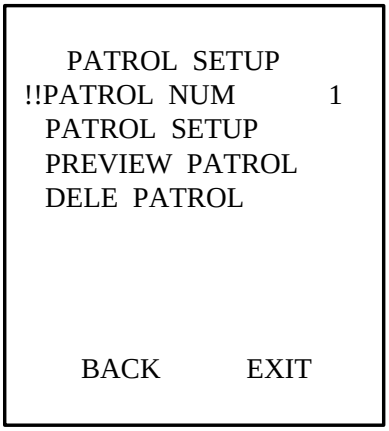

Figure 3-9 Patrol Configuration Menu

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3. **Patrol Setup**.

Steps:

(1) Move the cursor to **PATROL SETUP** and click **IRIS+** to enter the edit mode.

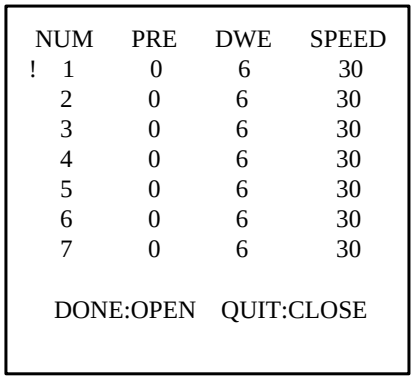

Figure 3-10 Edit the Patrol

(2) Click up/down direction buttons to position the preset to be edited.

(3) Click left/right direction buttons to position the cursor to **PRESET**, **DWELL TIME** and **SPEED** of a preset. Click the up and down direction buttons to set each value.

Note: The presets you set for a patrol should be the defined presets; dwell time (0-30 seconds selectable) is the time that the speed dome pauses on the certain preset; speed (level 1-40 selectable, refer to Table 3-2) is the patrol speed the speed dome switching between the presets.

(4) Follow above steps to define other presets for the selected patrol. You can configure up to 32 presets in sequence for a patrol. Press **IRIS+** to save the current settings or press **IRIS-** to cancel and return to the previous menu.

Table 3-1 Patrol Speed

Level	Speed(°/s)	Level	Speed(°/s)	Level	Speed(°/s)
1	0.5	2	1.5	3	3
4	4.5	5	6	6	8
7	9.5	8	11	9	13
10	14.5	11	16	12	17.5
13	19	14	20.5	15	22
16	24	17	25.5	18	27
19	28.5	20	30	21	32
22	33.5	23	35	24	36.5
25	38	26	40	27	41.5
28	43	29	44.5	30	46
31	48	32	49.5	33	51
34	52.5	35	54	36	56
37	57.5	38	59	39	60.5
40	62				

4. **Preview the patrol**.

Move the cursor to **PREVIEW** and click **IRIS+** to preview the current patrol and enable the speed dome to scan among the presets.

5. **Delete a patrol**.

You can move the cursor to **CLEAR PATH** and click **IRIS+** to delete the current patrol.

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3.2.6 Configuring the Pattern

Purpose:

A pattern is a memorized, repeatable series of panning, tilting, zooming and preset movements that can be recalled by a command or automatically performed by a configured function (park, time task, and power-up).

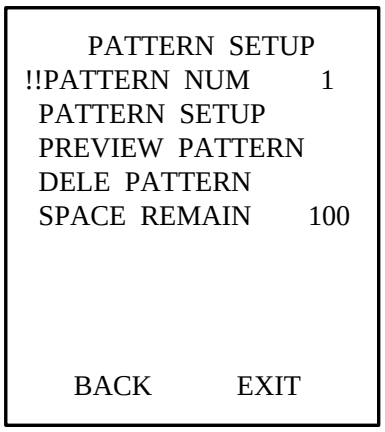

Figure 3-11 Pattern Configuration Menu

Steps:

- Move the cursor to enter the **PATTERNS** interface:
  MAIN MENUS > DOME SETUP > PATTERN SETUP
- Choose the **Pattern Number**.
  Steps:
  (1) Move the cursor to **PATTERN NUM** and click **IRIS+** to enter edit mode.
  (2) Click the up and down direction buttons to select the number of the pattern which is to be configured.
  (3) Click **IRIS+** again to confirm.

Note: You can configure up to 4 patterns.

- **Pattern Setup**.
  Step:
  (1) Move the cursor to **PATTERN SETUP** and click **IRIS+** to enter the edit mode.

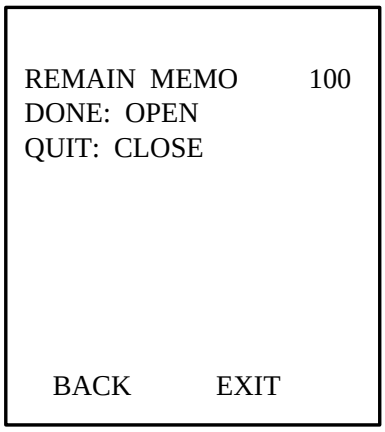

Figure 3-12 Pattern Setup

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(2) Click the PTZ control buttons and direction buttons to pan, tilt, call the presets or zoom in/out the speed dome to draw a movement path. The speed dome can automatically memorize the path you operated as a pattern.

(3) Click **IRIS+** again to save the pattern and exit edit mode.

Notes:

1. **Remain Memo** indicates the remaining memory of the speed dome for configuring the patterns. When it reaches 0, no more patterns can be configured. You can also see the remaining memory shown under **PATTERNS** menu as **Space Remain**.
2. The panning/tilting movements and the lens operations cannot be memorized simultaneously.

- **Preview the pattern**.
  Enter the **PREVIEW** menu to preview the current pattern.
- **Delete Pattern**
  Click **IRIS+** to enter the **Delete Pattern** interface, and click **IRIS+** to confirm the deletion.
- **Space Remain**
  Space remain refers to capacity of the speed dome to record the pattern

3.2.7 Configuring the Time Tasks

Purpose:

A time task is a scheduled dome action which can be configured to perform automatically at a specific time.

Steps:

1. Move the cursor to enter the **TIME TASK** interface:
   MAIN MENUS > DOME SETUP > TIME TASK SETUP
2. Choose the **Task Number**.
   Steps:
   (1) Move the cursor to **TIMETASK SETUP** and click **IRIS+** to enter the edit mode.
   (2) Click the up and down direction buttons to select the number of the task which is to be configured.
   (3) Click **IRIS+** again to confirm and exit edit mode of this column.
   Note: You can configure up to 8 tasks.

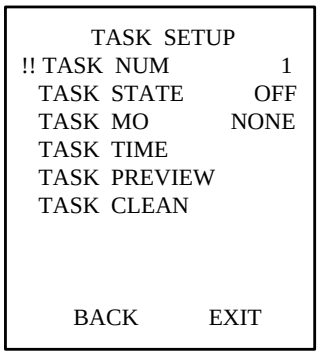

Figure 3-13 Time Task Configuration Menu

3. Set the **Task State**.
   Steps:

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(1) Move the cursor to **TASK STATE** and click **IRIS+** to enter the edit mode.
(2) Click the up and down direction buttons to set the task status to **ON**.
(3) Click **IRIS+** again to confirm and exit edit mode of this column.
Note: If you set the task state as "OFF", it won't take the task even if you set the task memory.

4. Configure the **Task Mo**

Steps:

(1) Move the cursor to **TASK MO** and click the **IRIS+** to enter the edit mode.
(2) Click the up and down direction buttons to select the task action from preset 1-8, pattern 1-4, patrol 1-4, pan scan, day mode, night mode and none.
(3) Click **IRIS+** again to confirm and exit the edit mode of this column.

5. Set the **Task Time**.

Steps:

(1) Move the cursor to **TASK TIME** and click **IRIS+** to enter edit mode.
(2) Click the left and right direction buttons to position the cursor to **WEEK**, **START (H-M)** and **END (H-M)**.
(3) Click the up and down direction buttons to select the specific day and time.
(4) Click **IRIS+** to confirm and exit.

Note: The weekday can be set to be from **Monday** to **Sunday** or **Whole Week**.

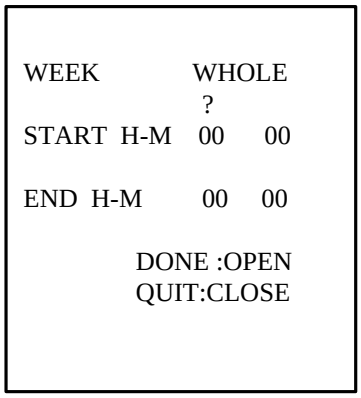

Figure 3-14 Set the Task Time

6. **Task Preview**.

Move the cursor to **TASK PREVIEW** and click **IRIS+** to view the time, action and status of the scheduled task.

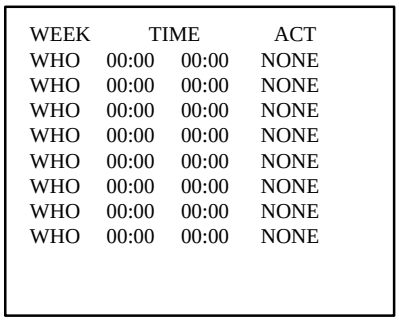

Figure 3-15 Preview the Task Time

Note: The first line of the task refers to task No.1, and the second line refers to task No.2, and so on,

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the last line refers to the task No.8.

7. **Task Clean**.
   Move the cursor to **TASK CLEAN** and click **IRIS+** to delete the time and action of the current task.

3.2.8 Configuring the Privacy Mask

Purpose:

Privacy mask enables you to cover certain areas on the live video to prevent certain spots in the surveillance area from being live viewed and recorded. The masked areas can move with the pan/tilt movements and automatically adjust the size as the lens zooming in/out.

Steps:

1. Move the cursor to enter the privacy mask configuration interface:
   MAIN MENUS > DOME SETUP > PRIVACY MASK

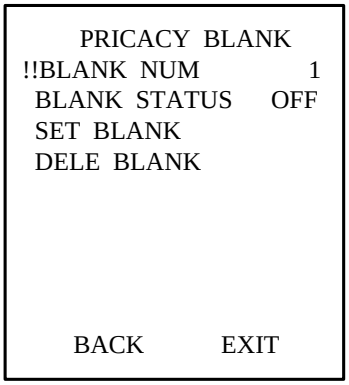

Figure 3-16 Privacy Mask Configuration Menu

2. Choose the **Privacy Mask Number**.
   Steps:
   (1) Move the cursor to **BLANK NUM** and click **IRIS+** button to enter edit mode.
   (2) Click the up and down direction buttons to select the number of the pattern which is to be configured.
   (3) Click **IRIS+** again to confirm and exit edit mode of this column.
   Note: The configurable privacy mask numbers vary depends on the camera models.
3. Set the **Blank Status**.
   Enter the **BLANK STATUS** interface and click the up and down direction buttons to set it **ON** or **OFF**.
   Note: If no privacy mask has been configured, you cannot set the status as **ON**. If the privacy mask is configured, the status will be set as **ON** automatically.
4. Configure the **SET BLANK**.
   Steps:
   (1) Move the cursor to **SET BLANK** and click **IRIS+** button to enter edit mode. You will see a purple privacy mask on the live window.

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Figure 3-17 Set the Privacy Mask

(2) You can see **ADJUST BLANK POS** message on the screen. Click the direction buttons to adjust the position of the privacy mask to the designed scene.

(3) Click **FOCUS +** button on the PTZ control panel, and you will see **ADJUST BLANK SIZE** message on the screen. Click the up/down buttons to increase/decrease the height of the mask and click right/left buttons to increase/decrease the width of the mask. Click **IRIS+** button to save the settings and return to the previous menu and you can see the mask turn to gray.

(4) To modify the configured mask, click **IRIS+** button to enter the **SET BLANK** menu and click **IRIS+** button again to modify.

Note: The tilt range for configuring the privacy masks is from 0 to 70°.

5. **Delete Blank.**

   Enter the **DELE BLANK** menu to delete the current privacy mask.

3.3 Restoring the Default Settings

Purpose:

You can reset all the dome settings to factory default parameters as shown in the table below.

Enter default dome settings menu:

MAIN MENUS > RESTORE DEFAUTLS

Click **IRIS+** to restore the dome settings to the default value as shown in the table below; or click **IRIS-** to exit.

Parameters	Default Value
Dome address	0
Baud rate	2400bps
120Ω matching resistance	Off
Soft address	Off
Azimuth zero	Zero angle
Auto-focus	HAF
Zoom limit	Max Optical Zoom
Zoom speed	High
Low light limit	On

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D&N Mode	Day
AE mode	Auto
White balance	Auto
Proportional pan	On
Park time	5 seconds
Park action	None
Scan speed	23 °/second
Limit stops	Off

Table 3-2 Default Dome Settings

3.4 Restoring the Camera Settings

Enter default camera settings menu:
MAIN MENUS > RESTORE CAMERA
Click **IRIS+** to restore the camera settings to the default value; or click **IRIS-** to exit.
Note: Camera settings include the lens settings and display settings.

3.5 Rebooting the Dome

Enter **MAIN MENUS > REBOOT DOME** and click **IRIS+** to reboot the speed dome remotely.

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Appendix

Appendix 1 Lightning & Surge Protection

This product adopts TVS plate lightning protection technology to avoid damage caused by pulse signal that is below 3000W, like instantaneous lighting, surging, etc. According to the actual situation outdoors, necessary protection measures must be taken to secure the electrical safety.

- The distance between signal transmission line and High-voltage equipment or high-voltage cable is at least 50m.
- Outdoor wiring should better be along the eaves as much as possible.
- In the open field, wiring should be buried underground in sealed steel pipe, and the steel-pipe should be one-point grounding. Overhead routing method is forbidden.
- In strong thunderstorm area or high induction voltage areas (such as high-voltage transformer substation), high power lightning protection apparatus and lightning conductor are necessary to be appended.
- The design for installation and wiring with lightning protection and grounding in mind should be combined with the lightning protection consideration of the building, and conform to the related national standards and industry standards.
- The system should be equipotentially grounded, and the grounding equipment must satisfy double-request of system anti-jamming and electric safety, and it must not appear short circuit and open circuit with the zero conductor of strong grid. When the system is grounding individual, the resistance should be no more than 4Ω, the section al area of the grounding cable should be no less than 25mm2. For grounding instructions, please refer to the Installation Manual of Speed dome.

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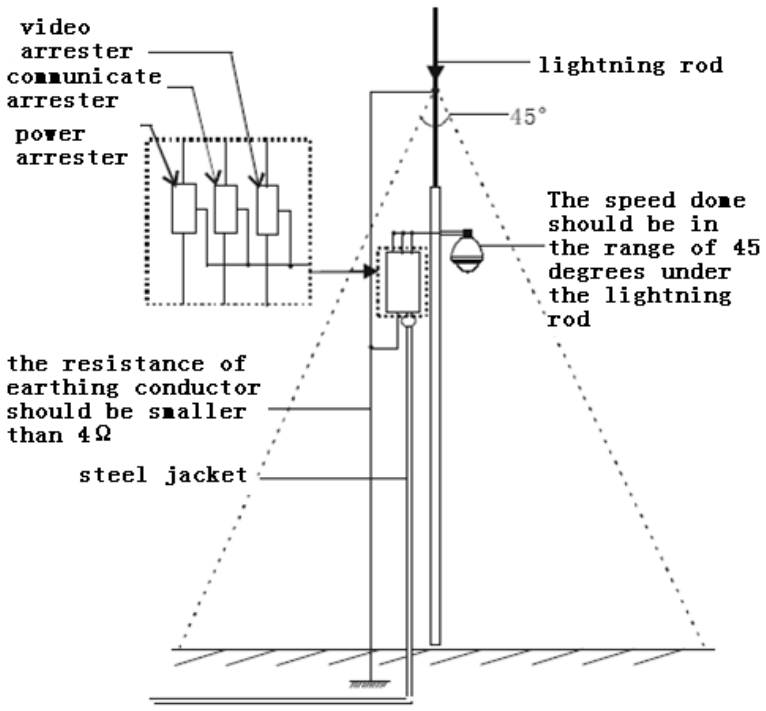

Figure A- 1 Lightning & Surge Protection

Appendix 2 RS485 Bus Connection

- General Property of RS485 Bus

According to RS485 industry bus standard, RS485 is a half-duplex communication bus which has 120Ω characteristic impendence, the maximum load ability is 32 payloads (including controller device and controlled device).

- RS485 Bus Transmission Distance

When using 0.56mm (24AWG) twisted-pair line, according to different baudrate, the maximum transmission distance theory table is shown as below:

Table A-1 Max. Distance of RS485 Transmission

Baudrate	Max. Distance
2400BPS	1800m
4800BPS	1200m
9600BPS	800m

The transmission distance will be decreased if we use the thinner cable, or use this product under the strong electromagnetic interference situation, or there are lots of devices are added to the bus; on the contrary, the transmission distance will be increased.

- Connection Methods

  RS485 industry bus standard require daisy-chain connection method between any devices, both sides have to connect a 120Ω terminal resistance (show as Diagram 1), the simplified connection method is shown as diagram 2, but the distance of “D” should not be too long.

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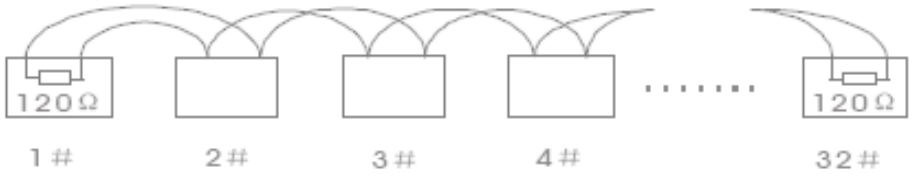

Figure A-2 RS485 Connection 1

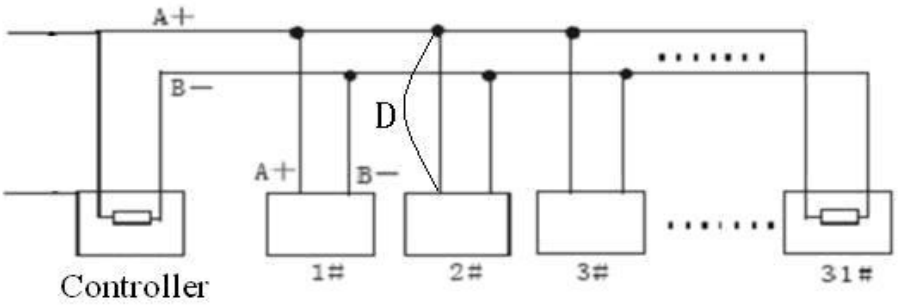

Figure A-3 RS485 Connection 2

- Problems in the Practical Application

Normally, users adopt star-shape connection method in construction, under this situation, the terminal resistors must be connected between two farthest devices (as Figure A- 4, 1# and 15#), but this connection method is not satisfy the requirement of the RS485 industry standard so that it will lead to some problems such as signal reflection, anti-jamming ability decline when the devices are faraway. At this time, the speed dome will be uncontrollable, or self-running, etc.

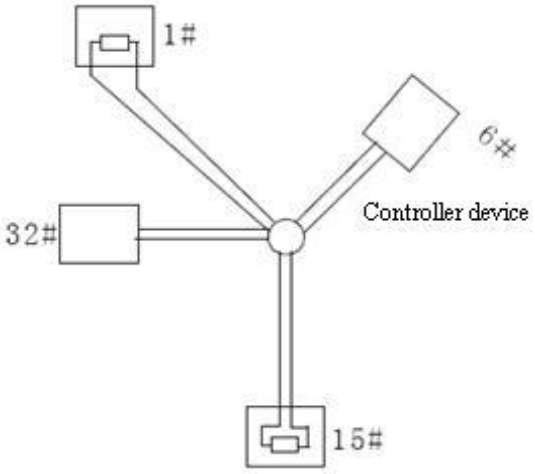

Figure A-4 Star Shape Connection

For such case, the best way is adding a RS485 distributor. This product can effectively change the star-shape connection to which satisfies the requirement of RS485 industry standard, in order to avoid those problems and improve the communication reliability.

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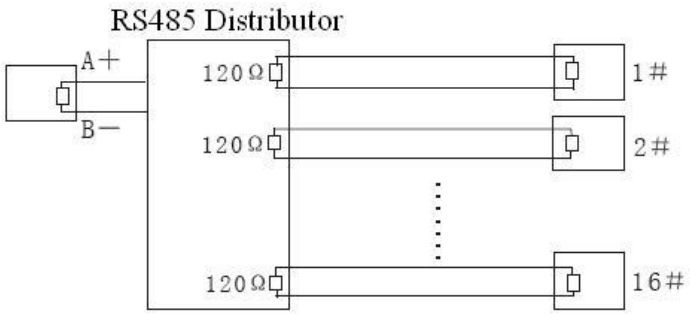

Figure A-5 RS485 Distributor

- FAQ of RS485 Bus

Fault Phenomenon	Probable Cause	Solutions
The speed dome do the self-check but can not be controlled.	1. The address or Baud Rate is not matched between Host and the Speed Dome.	1. Adjust the address or Baud Rate of Host or Speed Dome to make a match.
	2. RS485+,- are connected incorrectly.	2.Change the RS485+ and RS485- wires.
	3. Wiring drops.	3.fastening the wire
	4. RS485 wire broke;	4. Change RS485 wire.
The speed dome can be controlled but not smoothly	1. loose contact of RS485	1. fastening RS485 wire;
	2. one RS485 wire broke;	2. Change RS485 wire.
	3. Host and speed dome are too far away	3. Add terminal matched resistance
	4. Too many speed domes are connected	4. Add RS485 distributor

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Appendix 3 24VAC Wire Gauge & Transmission Distance

The following table has described the recommended maximum distance adopted for the certain wire gauge when the 24VAC voltage loss rate is less than 10%. For the AC driven device, the maximum voltage loss rate allowable is 10%. For example, for a device with the rating power of 80VA which is installed at a distance of 35 feet (10m) away from the transformer, then the minimum wire gauge required is 0.8000mm.

Wire Gauge mm / Distance feet(m) / Power (va)	0.8000	1.000	1.250	2.000
10	283 (86)	451 (137)	716 (218)	1811 (551)
20	141 (42)	225 (68)	358 (109)	905 (275)
30	94 (28)	150 (45)	238 (72)	603 (183)
40	70 (21)	112 (34)	179 (54)	452 (137)
50	56 (17)	90 (27)	143 (43)	362 (110)
60	47 (14)	75 (22)	119 (36)	301 (91)
70	40 (12)	64 (19)	102 (31)	258 (78)
80	35 (10)	56 (17)	89 (27)	226 (68)
90	31 (9)	50 (15)	79 (24)	201 (61)
100	28 (8)	45 (13)	71 (21)	181 (55)
110	25 (7)	41 (12)	65 (19)	164 (49)
120	23 (7)	37 (11)	59 (17)	150 (45)
130	21 (6)	34 (10)	55 (16)	139 (42)
140	20 (6)	32 (9)	51 (15)	129 (39)
150	18 (5)	30 (9)	47 (14)	120 (36)
160	17 (5)	28 (8)	44 (13)	113 (34)
170	16 (4)	26 (7)	42 (12)	106 (32)
180	15 (4)	25 (7)	39 (11)	100 (30)
190	14 (4)	23 (7)	37 (11)	95 (28)
200	14 (4)	22 (6)	35 (10)	90 (27)

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Appendix 4 Table of Wire Gauge Standards

Bare Wire Gauge (mm)	American Wire Gage AWG	(British)Standard Wire Gauge SWG	Cross-sectional Area ofBare Wire mm^2
0.050	43	47	0.00196
0.060	42	46	0.00283
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	24	24	0.2463
0.600	23	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		1.7663
2.000	12	14	3.1420
2.500			4.9080.
3.00			7.0683

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Glossary

Note:

The glossary gives brief explanations to the basic operation principle or the basic function of the speed dome. However, it doesn't mean the listed functions are all supported by this series of speed dome. For the detailed functions of this series of speed dome, please refer to the specification of the corresponding speed dome.

- **3D Intelligent Positioning**

The speed dome can be controlled with the 2 buttons and scroll of mouse can be used under PRIVATE-Code protocols with devices and client software. Click on a certain area and the device will move to the scene with corresponding point as the center. When a rectangular area is selected by left-clicking the mouse, device will move to its center and enlarge it. With right-clicking, the lens will zoom in, and the scroll can easily make the lens zooming, and mouse operation automatically incorporates zooming effect.

- **Auto Scan**

The speed dome provides 5 scanning modes: pan scanning, tilt scanning, frame scanning, random scanning and panorama scanning. The scanning speed can be set by OSD menu from level 1 to 40, with the corresponding speed ranging from 1°/second to 40°/second.

- **Auto Flip**

In manual tracking mode, when a target object goes directly beneath the speed dome, the speed dome will automatically rotate 90 degrees in horizontal direction to maintain continuity of tracking.

- **Auto Focus**

The auto focus enables the camera to focus automatically to maintain clear video images.

- **Alarm Response Action**

The speed dome supports 7 alarm inputs which can be set to NO or NC. Upon having received the alarm input signal, the speed dome will automatically activate a user-defined action, which can be programmed to: preset 1-8, pattern 1-4, patrol 1-8, pan scan, tilt scan, random scan, frame scan, panoramic scan, color/B&W mode or none. After the alarm is cleared, the speed dome is capable of resuming its previous activity or position.

- **AUX Output**

An auxiliary output is a configurable signal from the speed dome back box that can trigger another device to operate. The speed dome provides two auxiliary outputs: AUX1 andAUX2. The auxiliary output type can be set to NO (normally open) or NC (normally closed) by menu. And the alarm dwell time is configurable as well.

- **Backlight Compensation (BLC)**

If a bright backlight is present, the subjects in the picture may appear dark or as a silhouette. Backlight compensation (BLC) enhances objects in the center of the picture. The dome uses the center of the picture to adjust the iris. If there is a bright light source outside of this area, it will wash out to white. The camera will adjust the iris so that the object in the sensitive area is properly exposed.

- **Camera Title**

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Title text is the label used to identify the camera viewed on the monitor. Up to 15 characters can be used for a title

- **DAY/NIGHT Auto-switch**

The speed dome delivers color images during the day; as light diminishes at night, it switches to night mode and delivers black and white images with high quality. You can also switch it to **NIGHT** mode manually to increase the sensitivity in low light conditions.

- **Digital Noise Reduction (DNR)**

DNR is the process of removing noise from a signal. It compensates for the low-light conditions, and corrects imperfections in the image by removing a large percentage of the noises; it helps to deliver a cleaner signal, a more visually appealing image, and make it easier to identify the objects.

- **Exposure Compensation**

Exposure compensation is a function for adjusting the situations including unusual lighting distribution, variations, non-standard processing, or other conditions of underexposure or overexposure to get an optimum image.

- **PTZ Control**

The pan/tilt movement and zoom actions of speed dome can be controlled by the control devices like keyboard, DVR, matrix, etc.

- **Limit Stops**

The speed dome can be programmed to move within the limit stops (left/right, up/down) which are configurable by the control keyboard, DVR or client application software.

- **Manchester Code Self-test**

The speed dome supports Manchester code self-test for error diagnostic while adopting Manchester protocol. You can enable the Manchester code diagnosis function by setting the positions 4, 5 and 6 of DIP Switch SW2 to **ON**. The corresponding error code will be displayed on the screen (not available during park time).

Table 3-3 Descriptions of the Error Code

Error Code	Description
E0	Normal control.
E1	Cable is disconnected.
E2	Cable is connected and data can be normally received, but the address setting is incorrect.
E3	Cable is connected and data can be normally received, but the command setting is incorrect.
E4	Cable is connected and data can be normally received, but the settings of address and command are incorrect.
E5	Cable is connected, but the received data does not comply with the requirements of Manchester code.

- **Menu Function**

IR speed dome supports Menu function. You can check the related information and the status of the speed dome through the operation menu, and you can also configure its parameters via the menu.

- **On Screen Display(OSD)**

The IR speed dome provides a series of on screen display for better operation. The on screen display

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includes Zoom, Pan/Tilt angle, Preset title, and Time, etc

- **Preset Freeze Frame**

This feature freezes the scene on the monitor when going to a preset. This allows for smooth transition from one preset scene to another and also guarantees that masked area will not be revealed when going to a preset.

- **Presets**

Each of the user-definable presets can be programmed to use pan, tilt, camera settings and other settings. When preset is called, the speed dome will automatically move to the defined position. User is allowed to add, modify, delete and call each preset.

- **Patrol**

The high speed dome provides up to 8 patrols. In each patrol, user is allowed to specify the scanning track by a group of user-defined presets, with the scanning speed between two presets and the dwell time at the preset separately programmable.

- **Pattern**

A pattern is a memorized, repeating series of pan, tilt, zoom, and preset functions that can be recalled with a command from a controller or automatically by a configured function (park, time task, or power-up). By default the focus and iris are in auto status during the preset is being memorized.

- **Privacy Mask**

The privacy mask allows a user to program user-defined areas that cannot be viewed by the operator of the speed dome system. A masked area will move with pan and tilt functions and automatically adjust in size as the lens zooms telephoto and wide. **Privacy Mask:** This function allows you to block or mask certain areas of a scene to prevent the personal privacy from being recorded or viewed.

- **Proportional Pan**

Proportional pan automatically reduces or increases the pan and tilt speeds in proportion to the amount of zoom. At telephoto zoom settings, the pan and tilt speeds will be slower for a given amount of joystick deflection than at wide zoom settings. This keeps the image from moving too fast on the monitor when there is a large amount of zoom.

- **Power-off Memory**

This feature allows the speed dome to resume its previous position or status after power is restored. By default setting, the speed dome supports the power-off memory capability with the dwell time of 3 minutes.

- **Password protection**

It’s a function to prevent unauthorized changes to the dome settings.

- **RS-485 Failure Diagnostics**

In the presence of failure at the transmitting and receiving terminals of RS-485 communications, the speed dome is capable of performing self-test and detecting the fault results which will be displayed on the screen.

- **Self-adaptive Protocol**

The speed dome is compatible with PELCO-D, PELCO-P, PRIVATE-Code, VICON and KALATEL-312 protocol, etc., and is capable of being self-adaptive to these protocols without selecting protocol by DIP switch settings. You can also configure the protocol via OSD menu.

- **Soft Baud Rate**

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The baud rate of the speed dome can be configured by the menu without need of DIP switch settings.

- **Time Task**

A time task is a preconfigured action that can be performed automatically at a specific date and time. The programmable actions include: preset 1-8, pattern 1-4, patrol 1-4, pan scan, tilt scan, random scan, frame scan, panorama scan, day/night mode or none.

- **White Balance (WB)**

This feature automatically processes the viewed image to retain color balance over a color temperature range. The default setting for white balance is AUTO.

- **Wide Dynamic Range (WDR)**

When the Wide Dynamic Range (WDR) function is on, the dome is able to balance the brightest and darkest sections of a scene to produce a picture that is better balanced in lighting and provides more details.

- **Zone**

A zone is a pan and tilt area defined by a left/right and up/down limit stops. The speed dome provides eight zones, each with configurable label and limit stops. If the speed dome has dwelled at a zone without receiving any command over 4 minutes, this feature will enable the speed dome to perform panorama scanning within the zone.

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