User Manual

Speed Dome

V1.0

Safety Instructions

These instructions are intended to ensure that users use the product properly to avoid damage or property loss.

The precautions are 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. Use of the product should strictly comply with the electrical safety regulations of the appropriate nation and region.
2. Please use the power adapter provided by the appropriate company. The power adapter should be DC12V/4A or AC24V/2A.
3. Do not connect several devices to one power adapter as adapter overload may cause over-heat or fire hazards.
4. Please make sure that the plug is firmly connected to the power socket.
5. When the product is installed on a wall or ceiling, the device should be fixed firmly.
6. If smoke, odor, or noise arises from the device, turn off the power at once, unplug the power cable, and contact the service center.
7. If the product does not work properly, 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 electromagnetic radiation. Avoid equipment installation on vibrating surfaces or places subject to shock (this can cause equipment damage).
2. Do not place the dome in extremely hot, cold (the operating temperature should be -30°C ~ +65°C), dusty, or damp locations since this may lead to fire or electrical shock.
3. The dome cover for indoor use should be kept away from rain and moisture.

4. Do not exposing the equipment to direct sun light, low ventilation, or heat sources such as heaters or radiators (this can cause fire hazards).
5. Do not point the camera at the sun or extra-bright places since blooming or smears may occur (which is not a malfunction); this can also affect the durability of the CCD.
6. Use the provided glove when opening the dome cover and avoid direct contact with the dome cover because acidic sweat from fingers may erode the surface coating of the dome cover.
7. Use a soft and dry cloth when cleaning the inner and outer surfaces of the dome cover. Do not use alkaline detergents for cleaning.

Contents

Chapter 1 Brief Introduction

1.1 Description

The Speed Dome is a new product that features a built-in auto focus camera module. It has an inner pan/tilt module integrated with a digital decoder that supports line fault diagnosis and 3D positioning. The precise set-up and stable motor of the Speed Dome prevents shaking at any speed level.

Speed Dome is operated via digital control with a precise simple drive system. The functionality includes presets for horizontal scanning, frame scanning, follow scanning, and panoramic scanning, and also allows for manually limiting the position, auto flip, privacy mask, and backlight compensation. The highest protection for personal privacy is obtained when the Speed Dome is set-up for no-blind-spot panoramic monitoring.

Speed Dome supports protocols such as the PELCO-D, PELCO-P, and TA protocols, and it can automatically match the protocol. For convenience, the Speed Dome has both hardware dip address and software address capability. A user can configure the **System Information**, **Display**, **Camera Settings**, **Presets Settings**, **Mode Settings**, **Alarm Settings**, **Auxiliary Switcher Settings**, etc. via the **Multi-language** menu.

1. **Infrared Function** (applicable to the IR Speed Dome)

- Quick-cooling cast aluminum design.
- CCVE and PWM design; IR LED can work steadily for a long time.
- IDS (Intelligent Dimmer System); the IR brightness can be fixed by distance, zoom, and brightness of picture.
- Individual MCU infrared control system. Multi-mode and remote system upgrade can be configured.
- Multi-mode infrared settings, unique MCU IR control system, and remote system upgrade.
- 10 grade IR power and illumination.
- Perfect IR vision via internal switch between IR control and camera module optical filter.
- IP 65 Grade, TVS 4,000V lightning protection, and voltage transient protection.
- 3 Channel temperature control system detects camera and IR LED temperature.

2. **System Function**

- Integrated structural design.
- CGS (Cooling GAS System).
- IP 66 Grade, TVS 4,000V lightning protection, and voltage transient protection.

- 3 Channel temperature control system detects camera and IR LED temperature.
- Multi-Axis design.
- Heat balance device built in; fog proof.
- Precise motor device that is sensitive and steady; the accuracy deviation is >0.1; no picture shake.
- Supports online upgrades, reducing service cost.
- Supports 3D positioning.
- Easy settings for DIP and Protocol.
- Friendly Graphical User Interface.
- Supports Preset / Patrol / Pattern / Linear scan / Frame.
- Supports title display.
- Supports menu code protection.
- Low power consumption design.

3. PTZ Function

- Pan: 0° ~ 360°; Tilt: -5° ~ 90° and auto flip 180° to continue monitoring.
- 255 presets; power-off memory.
- Supports 4 preset cruise scanning; 32 presets can be added for every cruise scanning.
- Supports pattern scanning; recording time is from 10 min to 1000 min.
- Supports proportional pan/tilt zoom, rotation speed can be fixed automatically using the lens zoom.
- Built-in RTC clock; supports 16 timing tasks; individual execute cycles can be set.

4. Built-in HD camera module

- Auto IRIS and BLC
- Auto/manual white balance
- Auto/manual focus
- Auto brightness control

1.2 Functions

- **Multi-lingual OSD Menu**: The dome provides a multi-lingual OSD menu for display of system information and setting of dome parameters.
- **Self-adaptive to Multiple Protocols**: The dome is compatible with PELCO-D, PELCO-P, TA, HIK, DH, etc., and is capable of being self-adaptive to these protocols without the need for selecting the protocol by DIP switch settings.
- **Control**: The pan/tilt movement and zoom actions of the dome can be controlled using the control keyboard, DVR, matrix, etc.
- **Limit Stops**: The 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.
- **Auto Scan**: The dome provides five scanning modes: pan scanning, tilt scanning, frame scanning, random scanning, and panorama scanning. The scanning speed can be set from level 1 to 40 in the OSD menu, with the corresponding speed ranging from 1°/second to 40°/second.
- **Presets**: Each of the user-definable presets can be programmed to use pan, tilt, camera settings, and other settings. When a preset is called, the dome will automatically move to the defined position. A user is allowed to add, modify, delete, and call each preset.
- **Label Display**: The on-screen label for the preset title, azimuth/elevation, zoom, and other operations can be programmed in the menu and displayed on the monitor.
- **Auto Flip**: In manual tracking mode, when a target object goes directly beneath the dome, the dome will automatically rotate 180 degrees in the horizontal direction to maintain continuity of tracking. When the dome rotates (flips), the camera starts moving upward as long as the joystick is held in the down position. This function can be performed with the image center flip depending on different camera models. The feature can be enabled/disabled through the menu.
- **Privacy Mask**: The privacy mask allows a user to program user-defined areas that cannot be viewed by the operator of the dome system. A masked area will move with the pan and tilt functions and automatically adjust in size as the lens zooms in and out.
- **3D Intelligent Positioning**: The Speed Dome can be controlled with the two buttons and mouse scroll can be used using protocols with devices and client software. Click on a certain area and the device will move to the scene with the corresponding point as the center. When a rectangular area is selected by left-clicking the mouse, the device will move to its center and enlarge it. With right-clicking, the lens will zoom in, and lens zoom can be easily controlled by scrolling (mouse operation automatically incorporates the zooming effect).
- **Proportional Pan/Tilt**: Proportional pan/tilt 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.

- **Auto Focus**: Auto focus enables the camera to focus automatically to maintain clear video images. In manual mode, it can be controlled using the "Near" and "Far" options. With PTZ moving or lens zooming, the manual mode will revert to auto focus mode.
- **IR Cut Filter**: The IR cut filter can be set to Auto, Day, and Night. In Auto mode, the camera is capable of automatically switching between **Black & White** mode (Night) and Color mode (Day) taking into consideration the environmental lighting conditions. In manual switch mode, a user can increase the sensitivity in low light conditions by switching to the Black & White mode. Color mode is preferred under normal lighting conditions.
- **Low-Light Electronic Shutter-speed**: The shutter speed will automatically decrease in low illumination conditions to maintain clear video images by extending the exposure time. This feature can be enabled/disabled in the menu.
- **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.
- **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**.
- **Supports 4 preset cruise scanning**: 32 presets can be used for every cruise scan.
- **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 (alarm, park, time task, or power-up). By default, the focus and iris are in **Auto** status when the pattern is being memorized.
- **Power Loss Position**: The dome supports power loss position capability with a predefined dwell time. It allows the dome to resume its previous position after power is restored.
- **Patrol**: The Speed Dome provides up to eight patrols. In each patrol, a user is allowed to specify the scanning track through a group of user-defined presets, with the scanning speed between two presets and the dwell time of the preset being separately programmable.
- **Alarm Response Action**: The Speed Dome supports 4 alarm inputs which can be set to NO (normally open) and NC (normally closed). Upon having received the alarm input signal, the dome will automatically activate a user-defined action, which can be patrol, pattern, or preset call up.
- **AUX Output**: An auxiliary output is a configurable signal from the back of the dome to

trigger another device to operate. The dome provides 1 auxiliary output, AUX1. The auxiliary output type can be set to NO or NC in the menu. The alarm dwell time is also configurable.

- **Timing Tasking**: The speed action can be preset for some period, including: presets 1 ~ 8, patterns 1 ~ 8, cruises 1 ~ 8, pan scanning, etc.
- **Zone Function**: This includes the zone function operation, zone name setting, zone action, zone setting, and zone delete. Zone action: when the camera stops in some zone without any command for more than 4 min, the pan and scan will be enabled for this zone.
- **Code Protection**: The correct code must be input for the Speed Dome configuration
- **Compass Function**: This displays the specific location. The zero azimuth is regarded as north as a general rule.

The following shows the display and meaning of compass directions:

Display	N	NE	E	SE	S	SW	W	NW
Meaning	North	North East	East	South East	South	South West	West	North West

- **485 Fault Detect**: The Speed Dome will display fault information when there is a fault between the control and receiver sides. For example: fault of camera, motor, communication, IR, etc. will be displayed on screen with some special characters if the corresponding action occurs.
- **Software Protocol**: The protocol can be configured via the Speed Dome menu.

Chapter 2 Speed Dome Installation

2.1 Preparation for Installation

1. Basic Requirements

Before installation, please read the following cautionary information:

1) Installation and maintenance should be carried out by professional personnel as per relevant regulations. All electrical work must conform to the latest electrical regulations, fire regulations, and other relevant regulations. Check whether the accessories of the unit are complete according to the packing list and confirm whether the place and method of installation conforms with the requirements. If not, please contact your supplier. Please use this product in the correct environment.

2) The indoor IR intelligent high-speed Dome is only designed for in-house use. It should not be exposed to rain or installed in very humid locations.

3) After re-installation or repair, the resistance between the circuit and shell needs to be measured to check whether the insulation is sufficient and to ensure that there is no short-circuit between the circuit and shell.

4) Confirm that there is enough space to contain the product and its structural components. Confirm that the ceiling, wall, and bracket for installation can bear the total weight of the product and its structural components, and that materials used to support the weight can sustain four times the weight of the product.

5) Please refer to the following table for the appropriate work environment:

Temperature	-30 ~ 65 °C	Atmospheric Pressure	86 ~ 106 KPa
Humidity	< 90% RH	Power	DC12V/4A

2. Preparation of wire

1) Choose the right wire according to the distance.

Minimum requirement for the coaxial cable: 75Ω impedance; full copper core; and 95% braided copper network shielding

National Mode	International Mode	Max Distance (M/ft)
RG59/U	RG59/U	229 m (750ft)
5C-2V	RG6/U	305 m (1000ft)
7C-2V	RG11/U	457 m (1500ft)

2) The following is the recommended maximum distance for 12VDC. Please refer to 6.4 Relationship Between Wire and Distance for the wire gauge and transmission distance.

Cable Diameter	Max Distance(M/ft)
0.75 mm^2	6 m (20 ft)
1 mm^2	9 m (30 ft)
1.5 mm^2	12 m (40 ft)
2 mm^2	15 m (50 ft)

3. Please keep the product packaging in good condition

Please keep the product packaging in good condition. The Speed Dome can be sent to the factory with this package if a service need arises.

2.2 Installation

1. Speed Dome Installation

For different bracket installation methods, please refer to Chapter 2 Speed Dome Installation and Chapter 3 Installation Description.

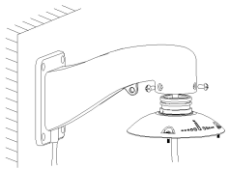
1) Take out the cable from the speed dome. Remove the connected cover from the Speed Dome and place the wire though the bracket. Connect the bracket and cover using three screws, and fix it to the wall (as shown in pic 2.2.1) (caution: the bracket must be with waterproof fodder together)

2) Open the dip switch cap with a screw driver. Configure the protocol, baud rate, and speed dome address (as shown in pic 2.2.2). Please refer to “Dip Switch Setting" in 2.4 DIP Switch Setting.

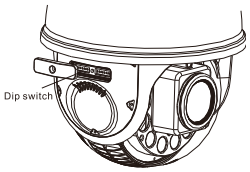
3) Remove the protective gummed tape (as shown in pic 2.2.3); check the condition of the seal ring on top of the Speed Dome.

4) Connect the safety rope of the Speed Dome to the bracket and then hook-up the Speed Dome to the connected cover (as shown in pic 2.2.4). Plug the cable into the right pin by referring to the cable mark (as shown in pic 2.2.5).

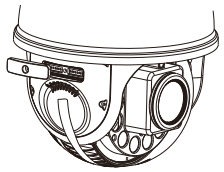
5) Mount the Speed Dome using the screws.



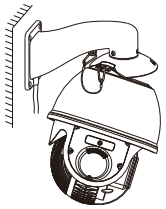
Pic 2.2.1



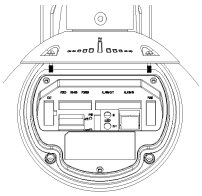
Pic 2.2.2



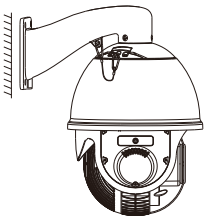
Pic 2.2.3



Pic 2.2.4



Pic 2.2.5



Pic 2.2.6

2.3 Default Setting

Protocol: Auto Match

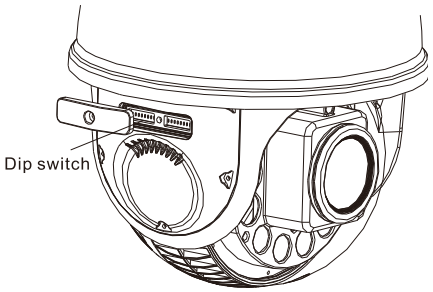
Address: No.1

Baud Rate: 2400-N-8-1

120Ω Resistance: OFF

2.4 DIP Switch Setting

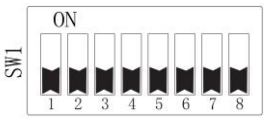
Before installing the Speed Dome, please configure the protocol, baud rate, and Speed Dome address. The DIP switch is on the side of the Speed Dome (analog Speed Dome as shown in pic 2.4.7) or in the connected cover.



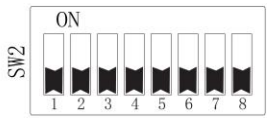
Pic 2.4.7 Diagram of Analog Speed Dip Switch

SW1: Configure the Speed Dome protocol, baud rate and 120Ω resistance.

SW2: configure the Speed Dome communication address.

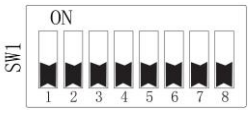


SW1 Protocol and Baud Rate Switch

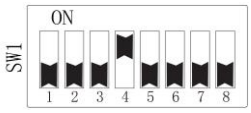


SW2 Speed Dome Address

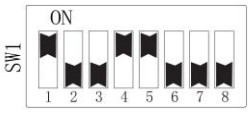
E.g. Some parts of the Dip for Protocol and Baud Rate.



Auto Match



PELCO-D&2400BPS



PELCO-P&9600BPS

1) Protocol Rule

Protocol	SW1-1	SW1-2	SW1-3
Auto Match/PELCO-D	OFF	OFF	OFF
TA	OFF	OFF	ON
PELCO-P	ON	OFF	OFF
HKV	ON	ON	OFF
DH	ON	ON	ON

2) Baud Rate Rules

Baud Rate	SW1-4	SW1-5
Auto Match/1200BPS	OFF	OFF
2400BPS	ON	OFF
4800BPS	OFF	ON
9600BPS	ON	ON

3) 120Ω resistance configuration

SW1 is the 120Ω resistance of RS485. Please configure it as the 6.2 RS485 Bus-mastering Knowledge.

4) Communicated Address Configuration

SW2 configures the speed dome address. The Speed Dome address is of a binary system. No.8 is MSB, No.2 is the LSB. For PELCO-D/TA please refer to 6.5 Address Coding Table.

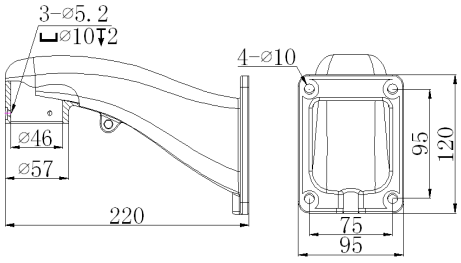
2.5 Alarm Wire Diagram

Speed Dome supports 4 channel alarm output and 2 channel input. The following table presents the details.

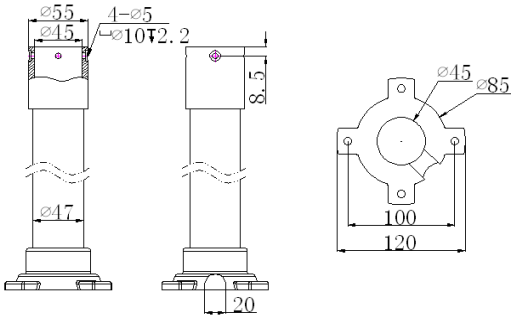
Port Name	Description
COM1	Alarm Output Channel , 1 Common Port
NO1	Alarm NO Output Channel 1
COM2	Alarm Output Channel 2 Common Port
NO2	Alarm NO Output Channel 2
GND	Alarm Output GND
IN 4	Alarm Input Channel 4
IN 3	Alarm Input Channel 3
IN 2	Alarm Input Channel 2
IN 1	Alarm Input Channel 1
GND	Alarm Input GND

Chapter 3 Installation Description

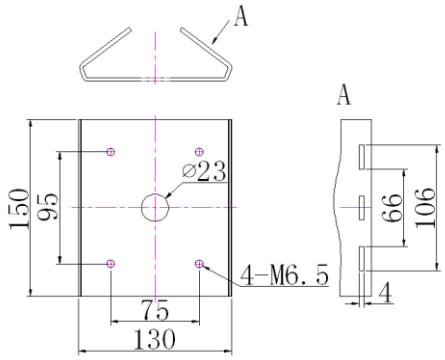
3.1 Bracket Dimensions



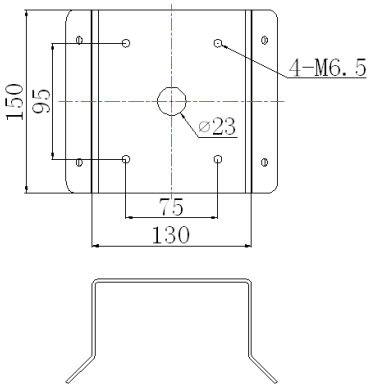
Wall Mount Dimensions



Ceiling Mount Dimensions



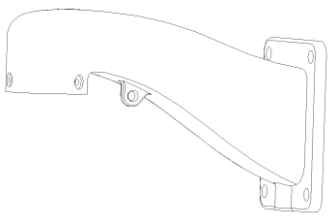
Pole Mount Dimensions



Corner Mount Dimensions

3.2 Wall Mount

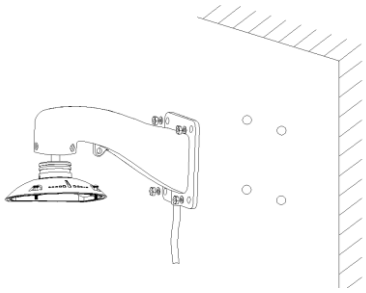
1) Accessories Installation

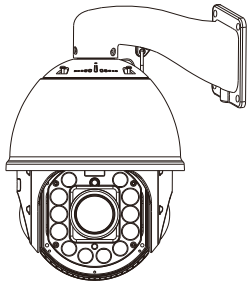


Wall Mount Bracket

Washer and Screw Cap

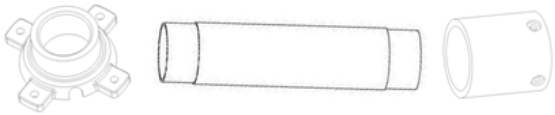
2) Mounting Step





3.3 Ceiling Bracket Installation

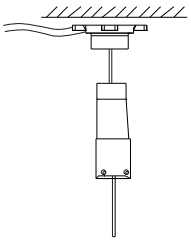
1) Accessories Installation

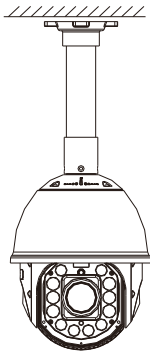


Ceiling Bracket (length optional)

Washer and Screw Cap

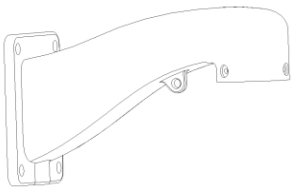
2) Mounting Step

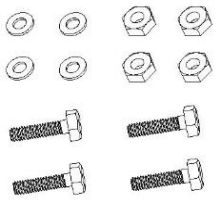




3.4 Pole Mounting

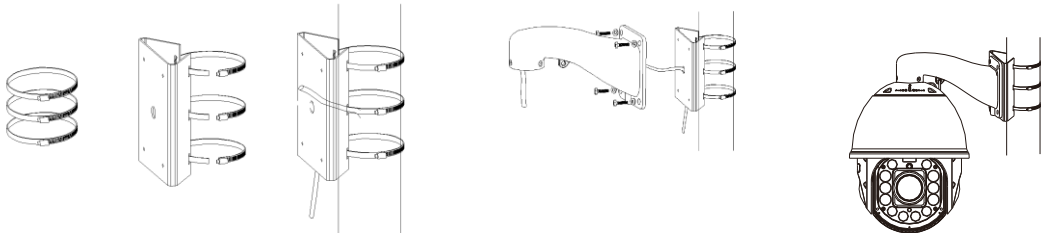
1) Accessories





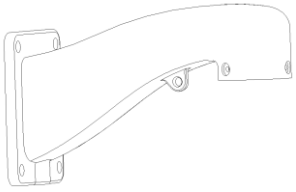
Wall Mount bracket Pole Mount bracket Fastener Washer, Screws and Screw Cap

2) Mounting Step

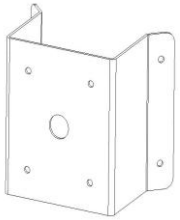


3.5 Corner Mount

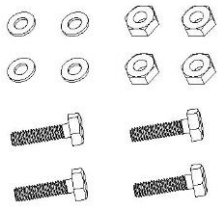
1) Accessories



Wall Mount bracket

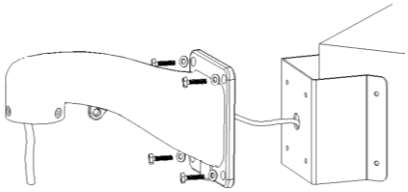


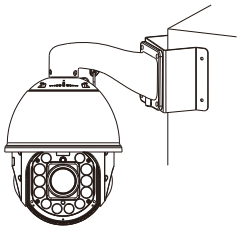
Corner Mount bracket



Washer, Screws, and Screw Cap

2) Mounting Step



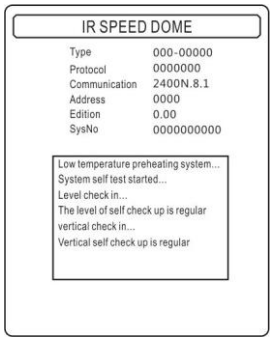


Chapter 4 Operation

4.1 POST (Power On Self-Test)

When the Speed Dome is powered on. The Self-Test can be performed. The Self-Test checks for system preheat (if necessary), and performs the camera test, pan test, and tilt test. The Self-Test parameters are displayed in pic 4.1.1. The test takes 40 seconds.

Note: If the Speed Dome address is unavailable, the software address or the address configured by the Dip Switch will display, for details on the Speed Dome software address, please refer to 5.3.6 Advanced Settings. The communication bars shows the communication speed, data bits, stop bits, etc. For instance, "2400.N,8.1" means the communication speed is 2400Bps, None Check, 8 bits, 1 stop bits.



Pic 4.1.1 Splash Screen

4.2 Basic Operation

The following describes the integrated operation with the keyboard, DVR, software, etc. It describes the general operations. Please also refer to the User Manual.

- **Pan/Tilt**: Move the keyboard joystick in the desired direction, or use the UP, DOWN, LEFT, and RIGHT keys.
- **ZOOM**: Use the TELT and WIDE keys on the keyboard and DVR to enable camera ZOOM IN and ZOOM OUT.
- **FOCUS**: Use the FAR and NEAR keys on the keyboard and DVR to enable camera FOCUS. In AUTO mode, the camera will FOCUS automatically. The manual FOCUS mode will revert to AUTO FOUCS MODE if the Speed Dome is operated manually.
- **IRIS**: Use the OPEN and CLOSE keys on the keyboard and DVR to enable camera IRIS Control. The Manual IRIS mode will revert to Auto Mode if the Speed Dome is operated manually.
- **PRESET**: The Speed Dome supports 255 presets. For the settings and operation, please refer to 5.3 Function Setting.

4.3 Special Function Preset

Call Preset	Function	Call Preset	Function
33	Auto Flip	75	Open Digital Zoom
34	Back to Zero Point	79	Factory Reset
35	Preset Scanning 1	94	Remote Reboot
36	Preset Scanning 2	96	Stop Preset Scanning
37	Preset Scanning 3	97	Random Preset Scanning
38	Preset Scanning 4	98	Frame Scanning
39	Day Mode	99	Pan Scanning
40	Night Mode	100	Tilt Scanning
41	Pattern Scanning 1	101	Panoramic Scanning
42	Pattern Scanning 2	102	Preset Scanning 5
43	Pattern Scanning 3	103	Preset Scanning 6
44	Pattern Scanning 4	104	Preset Scanning 7
60	Call the camera menu	105	Preset Scanning 8

The above presets activate the corresponding functions (e.g., Call Preset 99 activates Pan Scanning).

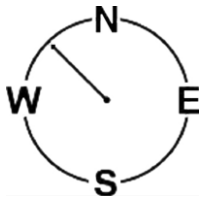
Grade 1	Grade 2	Specification of Special Preset Function
49	1	Grade 1 of IR Sensitivity (Highest)
	2	Grade 2 of IR Sensitivity
	3	Grade 3 of IR Sensitivity
	4	Grade 4 of IR Sensitivity
	5	Grade 6 of IR Sensitivity
	6	Grade 6 of IR Sensitivity (Lowest)
	7	IR LED ON
	8	IR LED OFF
	9	AUTO IR LED ON/OFF
	50	AUTO SWITCH HIGH AND LOW IR
	56	INITIALIZE IR SYSTEM
	57	LOW IR BEAM MODE
	58	ALL IR LED ON
	59	HIGH IR BEAM MODE
	131	INITIALIZE WHOLE SPEED DOME

Grade 1	Grade 2	Specification of Special Preset Function
	40	SPEED LIMIT IN 40 DEGREE/SEC
	70	SPEED LIMIT IN 70 DEGREE/SEC
	150	SPEED LIMIT IN 150 DEGREE/SEC
	250	SPEED LIMIT IN 250 DEGREE/SEC

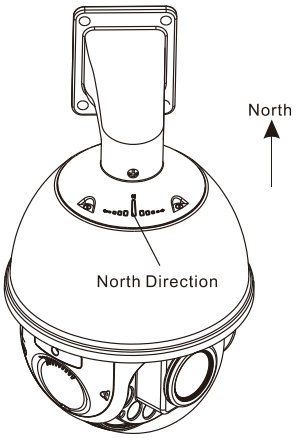
4.4 Screen Character Prompt

The Speed Dome displays screen characters for easy operation. It can display the lens multiples, azimuth angle, alarm, date, and title of presets.

- Lens Multiples: Displays the format for Z XXX, XXX is multiples of lenses.
- 3D Position angle: Shown in pic 4.4.1. The length of radius lines indicates multiples of camera module lenses; the longer the length, the greater the multiples.



Pic 4.4.1



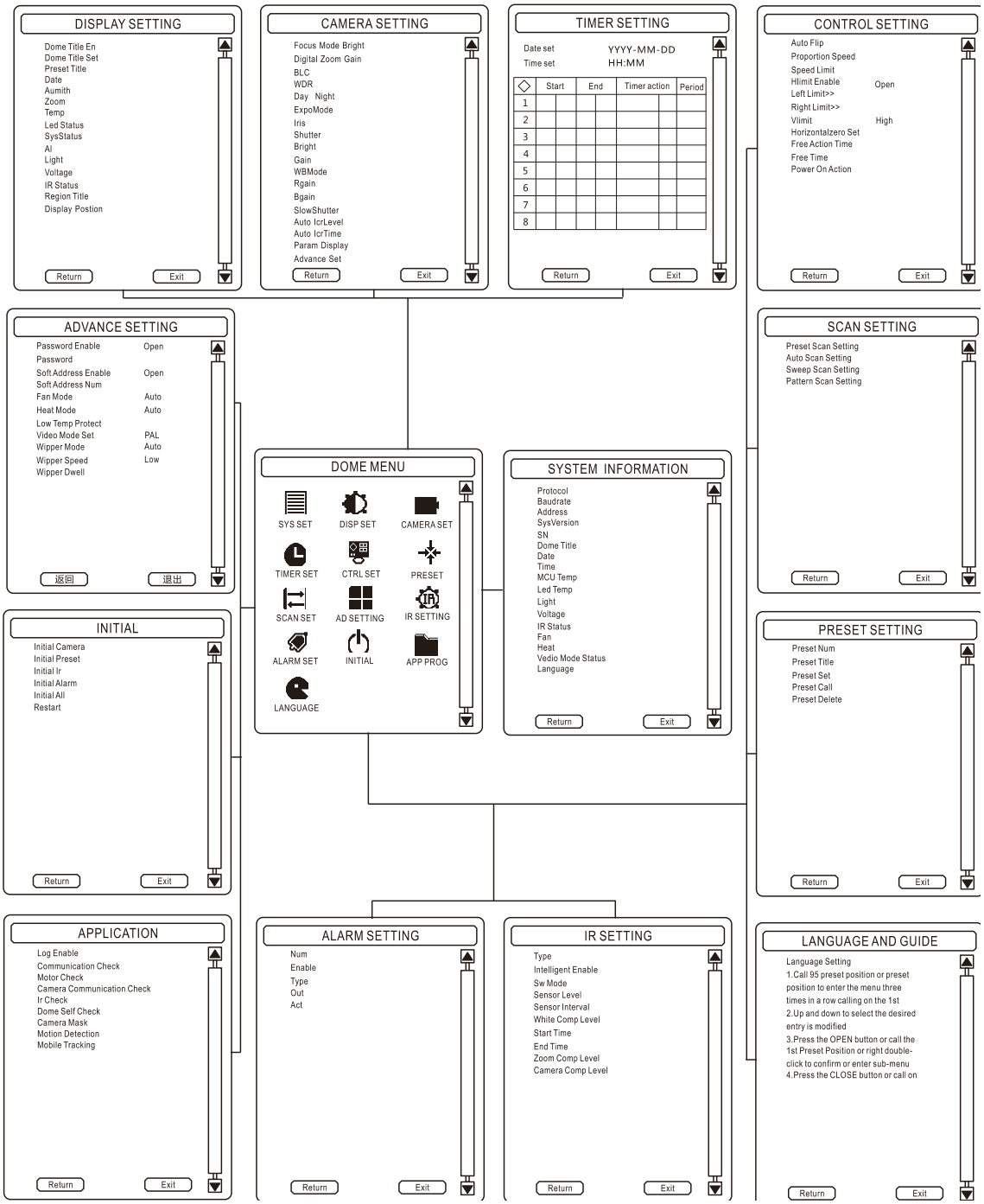
Pic 4.4.2

- **Digital Azimuth Angle Display**: The format display for SEXX | TXX. There are three numbers for degrees. North can be set in the menu or the default in the system can be used as north. Please see the north graphic on the top the Speed Dome's cover (shown in pic 4.4.2). For example. If SE128 | T28 is displayed on the screen, it means the lens of the Speed Dome is pointing 128 degree to the south-east and 28 degrees vertically.
- **Alarm**: When an alarm is triggered, the number of alarms will be shown. A horn pattern in front of the alarm number will be displayed. When many alarms are triggered simultaneously, the alarm number will blink when current alarm signal is active.
- **Date and Time**: Supports different format settings in the 24-hour format.
- **Preset Tilt**: Display the current preset tilt.

Chapter 5 Menu Guide

The following section describes the Speed Dome's menus.

Note: If the menu has many pages, the user can use the **Down** arrow key to navigate to the next page. There may be differences in the functions of camera modules. Different cameras may have different menu displays.



5.1 Menu Operation Guide

Call preset point No.95 to open the menu via controller keyboard, DVR, or client software. For example, if you want to open the camera menu, you could enter the PTZ Housing mode at the front of the panel with the **PTZ Housing** button and then press the **Video** button. Then, press keys **[0] [9] [5]** or on the controller keyboard and then press the call button.

Change the cursor position by using the **up**, **down**, **left**, and **right** keys. The user can move the cursor to the required menu. Press **Aperture + (OPEN)** or call preset point No.1 for SURE (represented by OPEN in this manual). If the menu has sub-menus, please enter the corresponding sub-menu. Click **IRIS-(CLOSE)** or call preset point 2 to return to the previous menu (represented by **CLOSE** in the manual)

In the GUI menu, when the menu is modified, the **OPEN** button will appear in which the modification type needs to be selected from a dropdown that contains list, table, input method, and coordinate curve editing operation.

List Operation: Most objects are modified using the list box operation. When the user clicks **OPEN**, a list of items that can be modified will pop up. Select the desired operation and then click **OPEN** to confirm the modification. When an item exists in multiple sub-items, the left and right buttons will be displayed to modify the sub-items.

Table Operation: In the form selected, click **OPEN** to modify the selected cells. When the table cannot fully display the data items, the table will smart scroll. Click **OPEN** to bring up the modification options. In the **Modify** interface, click **OPEN** to modify, and click **CLOSE** to cancel.

Bulk editing can be performed via the TELE, WIDE operation. In the bulk editing mode, for the anti-color display, the upper and lower values can be smart filled at same time. Select the items to modify and click **OPEN** to confirm the modification; click **CLOSE** to cancel editing. When you need filling with increment or decrement, when you in the second cell, left and right operate for second cell numerical, it is length between the difference numerical of first cell and second cell.

Coordinate Curve Operation: Select the coordinate curve and click **OPEN** to select spline modification. A triangular guidepost will display above the above area to modify. Modify the spot numerical using the left and right keys. After editing, click **OPEN** to confirm the modification.

Text Input: When text is entered, a text input keyboard will pop up. Use the **upper**, **lower**, **left** and **right** keys to select the required input data. Click **OPEN** to confirm the edit and click **CLOSE** to cancel.

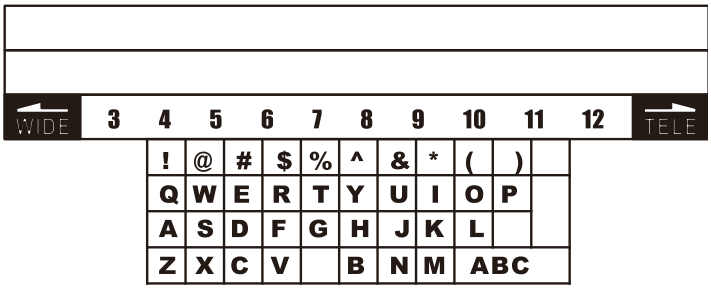
Special keyboard keys are shown below:

"←": Delete one byte

"↵": Confirmation input and return

“_”: Input Space

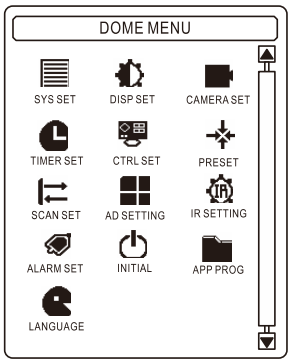
"ABC/abc": Input method selection button.



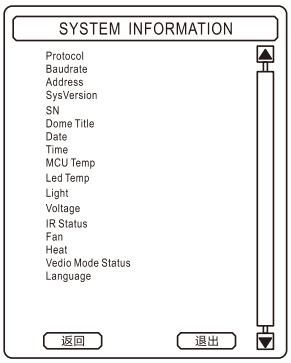
Pic 5.1.1 Input Method

When the input method is the spell type, it will display the selected byte in three lines. Move the cursor to the byte required and click **OPEN** to confirm the input byte. When the selected byte does not fully display in the first line, you can click **TELE** or **WIDE** to turn the page.

5.2 Main Menu and System Information



Pic 5.2.1 Main Menu



Pic 5.2.2 System Information

The System information menu displays system information of the Speed Dome (see pic 5.2.2). The menu information cannot be modified. The temperature is referring to that inside the PTZ Housing.

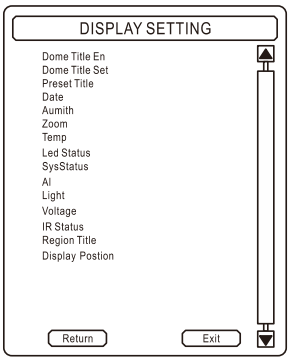
Move the cursor to "return" and click **OPEN** to return to the previous menu. Click **Exit** and then click **OPEN** to exit the menu operation.

5.3 Function Setting

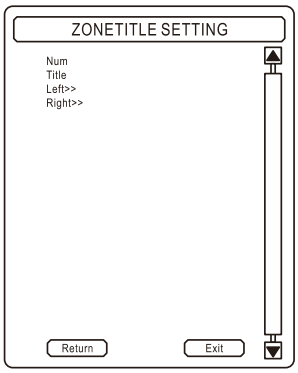
5.3.1 Display Setting

The "DISPLAY INFORMATION SETTING" menu has two pages, as shown in pic 5.3.1. Each menu item can be selected independently. Each item displays at a fixed location in the video on the screen. The display time interval is 1 sec, 3 sec, and 6 sec. "Alarm Indication" can also operate with menu operation at same time, the difference is that in the non-menu state will trigger the

alarm linkage. Opposite, it can not trigger the alarm linkage.



Pic 5.3.1 Display Setting



Pic 5.3.2 Zone title Setting

Zone Title Setting

- **"Region Title" menu** (shown in pic 5.3.2)

Zone number refers to the current operating region (choose the options from 1 ~ 8). The “Zone Title Setting" displays the name of the current zone number. The "Left Limit Setting" and "Right Limit Setting" sets the right and left limits for the current region.

To enter the region information, numbers, English alphabets, and Chinese alphabets can be used (see pic 5.1.1). The following keys are present:

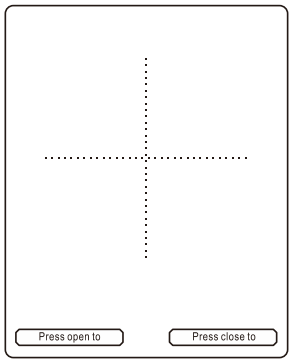
Diaphragm + : confirm, save setting, and return to previous menu.

Diaphragm - : cancel current operation, and return to previous menu.

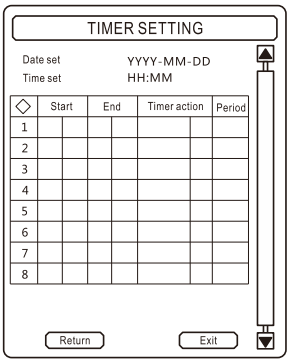
Up, Down, Left, Right: Select Chinese characters / move cursor / enter alphabets.

- **Regional limit setting**

If setting the regional limit, please enter the left limit setting as shown in pic 5.3.3. Follow the screen prompt and enter the left limit setting. Call preset point 001 or click **OPEN** to confirm confirmation. Use the same steps to set the right limit.



Pic 5.3.3 Regional Limit



Pic 5.3.4 Timer setting

5.3.2 Timer Setting

The timer settings are shown in pic 5.3.5. Move the keyboard joystick left or right or press the

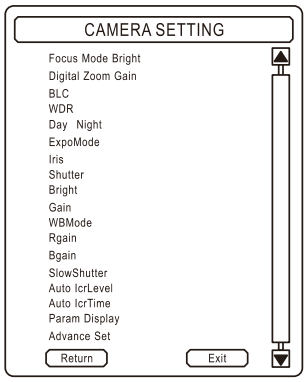
left and right buttons on the front of the DVR panel to move between menu items. Move the keyboard joystick up and down or press the up and down buttons on front of the DVR panel to change the menu items. The following options are available: Optional Timer 1 ~ 8. The timing action includes eight presets, including pattern scan 1 ~ 4, cruise scan 1 ~ 8, horizontal scan, linear sweep tow points, etc. The user can set the start time and end time.

Timing Cycle Setting

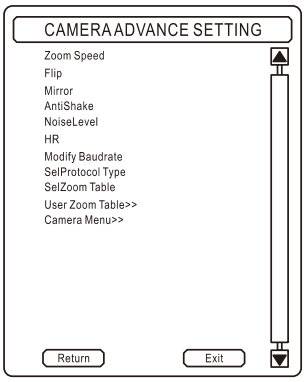
Move the cursor to the **cycle** column and click **OPEN** to open the cycle settings. Select **open** or **closed** from "Monday" to "Sunday".

5.3.3 Camera Setting

The PTZ camera allows the user to adjust its parameters via the menu, which is shown in pic 5.3.5.



Pic 5.3.5 Camera Settings



Pic 5.3.6 Advanced Camera Settings

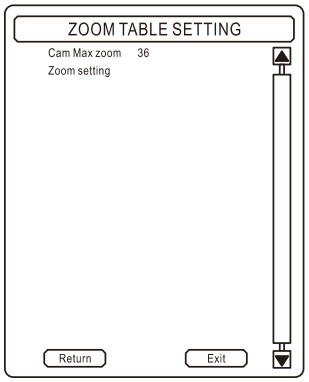
Description of Parameters and Settings

- **Focus Mode**: The options here are: Optional Automatic, Hand, and Semi-automatic. In the automatic focus mode, Speed Dome will automatically adjust the focus of the camera to obtain clear images. Adjusting the keyboard keys or the focus+ and focus- buttons on the front of the DVR panel will not adjust the focus in automatic focus mode. When auto-focus is not enabled, the focus needs to be set manually. In semi-automatic focus mode, the Speed Dome will auto-focus during movement or zoom. The Speed Dome will fix the focus when it stops moving or zooming. The default setting is auto-focus.
- **Digital Zoom**: The camera's zoom includes Optical zoom and Digital zoom. Different Speed Domes may have different camera zooms. Zoom = Digital zoom × Digital zoom. The default setting is Maximum Optical Zoom.
- **Backlight Compensation**: When backlight compensation is activated, Speed Dome will compensate for brightness in dark areas or adjust the brightness for bright backgrounds. Avoid using the camera in very bright places to obtain clear images.
- **WDR**: When the WDR function is enabled, scenes with both dark and bright areas are balanced to obtain clearer images.

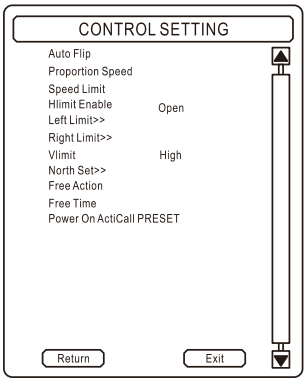
- **B/W Mode**: This contains three options: automatic, day, and night. In the automatic mode, the camera automatically selects color display or B/W display when it senses ambient changes. The default setting is automatic. Presets 049 and 008 can be called to change the mode to day mode, and presets 049 and 007 can be called to change the mode to B/W mode.
- **Exposure Mode**: Here, the aperture size, shutter speed, brightness, and gain settings can be configured. The aperture size can be set from 0 to 17. When the aperture size is 17, it is the largest and the brightness of the image is maximum. Shutter speed options are 1, 2, 4, 8, 15, 30, 60, 125, 180, 250, 500, 1000, 2000, 4000, and 10000. If the shutter speed is X, it means the shutter speed is 1/X sec. The gain can be set from 0 to 15. The number represents the original signal's degree of amplification.
- **White Balance**: Use this to compensate for color differences in images resulting from differences in the color of light in the scenes.
- **Slow Shutter**: Under low illumination conditions, use a slow shutter speed to extend the exposure time to obtain a clearer and brighter image. The default setting is closed.
- **Automatic B/W Mode Threshold**: High, middle, and low sensitivity can be selected.
- **Automatic B/W Mode Interval**: Here, the B/W switch shortest time can be set via this function.
- **Camera Module Parameter Display**: Displays current camera module's parameters.
- **Camera Module Advanced setting**: Advanced parameters can be set through this function.
- **Zoom Rate**: Options are High, Middle, and Low.
- **Image Flip**: Here, the image can be rotated up, down, and reversed from left to right and vice versa.
- **Image Mirror**: The picture on the screen becomes a mirror image.
- **Shake Reduction Level**: Options are Closed, High, Medium, and Low. Closed means the shake reduction function is not enabled; high indicates shake reduction amount is high and image jitter is relatively small. The default setting is medium.
- **S/N Ratio Level**: Four options are available: Closed, High, Medium, and Low. When closed is selected, the S/N Ratio function is not enabled; High indicates the S/N Ratio is very good, with less noise. Low indicates the S/N Ratio is not good. The default value is Medium.
- **High Resolution Mode**: This provides clearer images without distortion.
- **Camera Module Protocol**: Here, the camera protocols can be set.
- **CAMERA MODULE ZOOM TABLE**: Here, the camera's zoom table can be set.
- **Custom Zoom Table Setting**: Here, the camera zoom and lens position with each zoom can be set, as shown in pic 5.3.7. Please see pic 5.3.3 for setting the position of the lens.

- **Enter Camera Module Menu**: The user can enter the camera menu through this option and set the camera's parameters.

Note: The camera settings depend on the camera model. Certain features may not be supported in some models.



Pic 5.3.7 Zoom Table Settings



Pic 5.3.8 Control Settings

5.3.4 Operation Settings

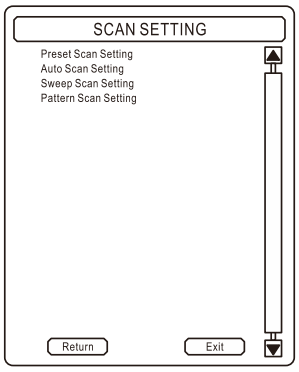
Navigate to the Control Settings menu shown in pic 5.3.8.

- **Auto-Flip**: When the lens rotates vertically to 90°, if the user keeps pressing the joystick, the lens will automatically flip 180° horizontally, providing continuous monitoring of a moving object. To enable, move the cursor to AUTO FLIP and select ON or OFF by moving the joystick left or right.
- **Proportional Zooming**: When Proportional Zooming is enabled, the PTZ Housing will change the zoom according to the set zoom magnification. When the zoom magnification is increased, the speed of Speed Dome will automatic change slowly; When the zoom magnification decreases, the movement speed of Speed Dome will automatic change to fast. In order to get the good tracking effect. If closed this function and in the higher magnification, it is difficult for tracking slow target and stop target.
- **Speed Limit**: The options are High, Medium, and Low.
- **Horizontal Limit**: The horizontal limit can set using the keyboard joystick or the Left and Right buttons on front of the DVR panel. Pic 5.3.1 shows a schematic for setting the position of the area.
- **Vertical Limit**: The options are High, Medium, and Low, which can be configured by using the keyboard joystick or the Left and Right buttons on front of the DVR panel.
- **Idle Action**: Presets 1 ~ 8 can be selected. Pattern 1 ~ 2, Cruise 1 ~ 8, and Scan and Closed can be selected by using the keyboard joystick or the Left and Right buttons on front of the DVR panel.
- **Idle Time Setting**: When auto-action is not set and a signal is not received for a while, the Speed Dome will perform the required action.

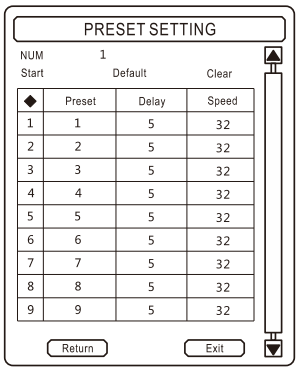
- **Power up Action**: Presets 1 ~ 8 can be selected. Pattern 1 ~ 2, Cruise 1 ~ 8, and Scan and Closed can be selected by using the keyboard joystick or the Left and Right buttons on front of the DVR panel.
- **Event Priority**: When the function is activated at same time, preferentially activated in accordance with the priority.

5.3.5 Scan Settings

Navigate to the Scan Settings Menu shown in pic. 5.3.9.



Pic 5.3.9 Scan Settings



Pic 5.3.10 Preset Settings

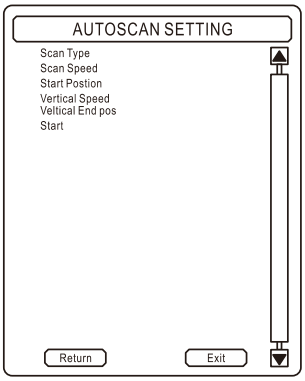
1. Preset Setting

Navigate to the **Presets Setting** menu shown in pic 5.3.10.

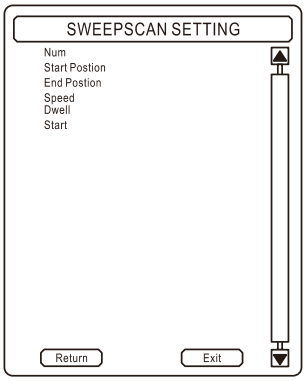
The unit uses presets to monitor zones containing the presets. The user can select **Cruise Numbers** from 1 to 8, the number of presets, speed, and time by using the keyboard joystick or the **Left** and **Right** buttons on front of the DVR panel. Click **OPEN** to enter editing mode make changes.

2. Automatic Scan Setting

Navigate to the **Automatic Scan Setting** menu shown in pic 5.3.11.



Pic 5.3.11 Auto Scan Setting



Pic 5.3.12 Sweep Scan Setting

- **Scan Mode**: Select the scan mode.

- **Speed of Horizontal Scan**: The options are **High**, **Medium**, and **Low**.
- **Setting Scan Start Position**: Click **OPEN** to enter the start position, as shown in pic 5.3.1.
- **Vertical Speed of Pattern**: The options are **High**, **Medium**, and **Low**.
- **Pattern Up Limit And Pattern Down Limit**: Click **OPEN** to set the upper and lower limits (see pic 5.3.1).

3. SWEEP SCAN SETTING

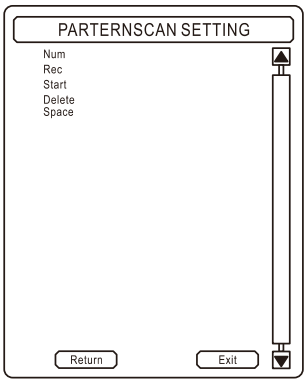
With horizontal sweep scanning, the unit scans back and forth between two specified horizontal points, and the scanning speed and scanning direction can be set by users as shown in pic 5.3.12.

- **Scan Number**: Scan number options are from 1 to 20.
- **Sweep Scan Left Limit And Linear Scan Right Limit**: Click OPEN and enter the left and right limits, as shown in pic 5.3.1.
- **Speed of Sweep Scan**: The options are High, Medium, and Low.
- **Sweep Scan Park Time:** The left and right linear scan times can be set.

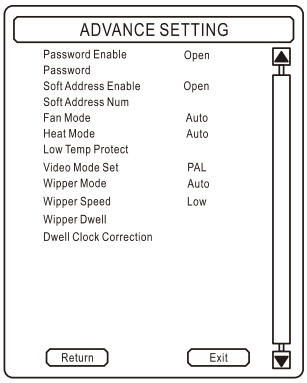
4. Pattern Scan

Navigate to the **Pattern Scan** menu shown in pic 5.3.13.

Using **Pattern Scan** a series of camera actions can be programmed, such as horizontal movement, zooming, and so on.



Pic 5.3.13 Pattern Scan Settings



Pic 5.3.14 Advanced Settings

- **Pattern Scan Numbers**: Options are from 1 to 4.
- **Pattern Scan Setting**: Click **OPEN** to enter the settings, and click **OPEN** to record a path for the pattern scan. Then, click **OPEN** to save it.
- **Delete**: Click **OPEN** to delete the pattern scan.
- **Remaining Space**: The pattern scan can be viewed in the **Remaining Space**.

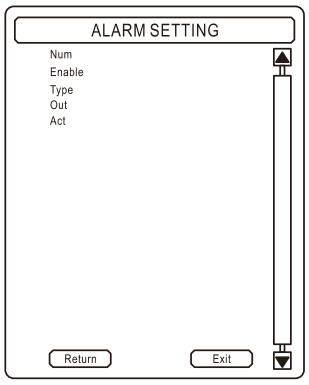
5.3.6 Advanced Settings

Navigate to the ADVANCED SETTINGS menu shown in pic 5.3.14.

- **Menu Password Protection**: Options are **Open** or **Closed**. Click **OPEN** to enable password protection (see Pic 5.3.1).
- **Soft Address**: Options are **Open** or **Closed**. Click **OPEN** to set it (see pic. 5.3.1).
- **Fan Mode**: Options are **Open**, **Closed** and **Automatic**.
- **Heat Mode**: Options are **Open**, **Closed** and **Automatic**.
- **Low-Temperature Protection**: Options are **Open** or **Closed** for low-temperature protection. When Open is selected, the Speed Dome will pre-heat before staring up.
- **Video System**: Options are PAL or NTSC.

5.3.7 Alarm Settings

Navigate to the **ALARM SETTINGS** menu shown in pic 5.3.15.

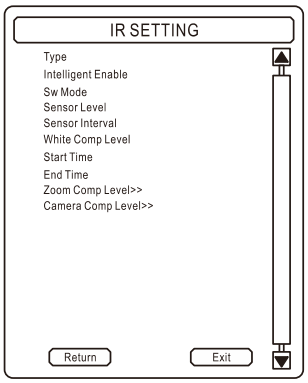


Pic 5.3.15 Alarm Settings

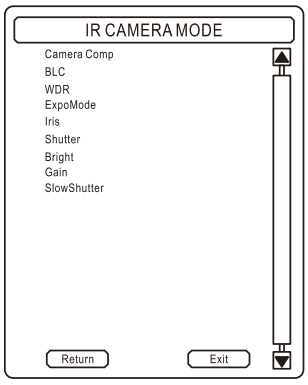
- **Alarm Channel**: Channels from 1 to 4 can be selected here.
- **Alarm Switcher**: Options are **Open** or **Closed**.
- **Alarm Output Channel**: Select Channel no.1 or 2 for the alarm output channel.
- **Alarm Action**: Each channel alarm can have one alarm output action. When an alarm is triggered, this action will automatically be performed. The alarm action can be chosen from Presets 1 ~ 8. Pattern scan from 1 to 2, Cruise scan from 1 to 8, horizontal scan, pattern scan, etc.

5.3.8 IR LED Setting

Navigate to the **IR LED SETTINGS** menu shown in pic 5.3.16.



Pic 5.3.16 IR Settings



Pic 5.3.17 IR Camera Mode

- **IR Compensation Type**: Displays whether the IR LED is a dot matrix LED or Laser.
- **Dimming Type**: Options are **Automatic** and **Manual**.
- **IR switch Mode**: Options are **Open**, **Closed**, **Timing**, and **Auto**.
- **Photosensitive Threshold**: Options are **High**, **Medium**, and **Low**.
- **White Light Protection Mode**: Options are **High**, **Medium**, and **Low**.
- **Controlling when the IR is Open or Closed**: Set the opening and closing times of the IR LED in the **IR LED Timing** mode. Please refer to the section on setting the time and date for reference.

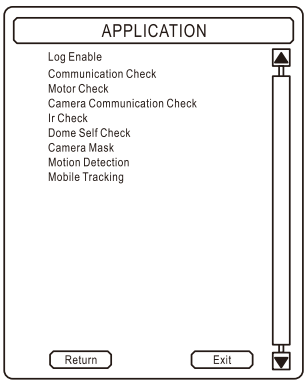
Setting IR Magnification Compensation:

Navigate to the **IR Camera Mode** menu shown in pic 5.3.17.

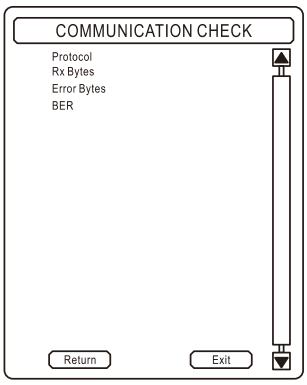
- **IR Camera Mode**: Options are **Open** and **Closed**.
- **Backlight Compensation**: Use backlight compensation to improve the brightness of the image.
- **Wide Dynamic Range**: The wide dynamic range function can improve the image quality.
- **Exposure**: Here, the **IRIS**, **Shutter**, **Brightness**, and **Gain** parameters can be set. The greater the IRIS, the clearer the image. Shutter speed can be set to 1, 2, 4, 8, 15, 30, 60, 125, 180, 250, 500, 1000, 2000, 4000, and 10000. If it is set for X, it means the shutter speed is 1/X sec. Gain reflects the amplification degree of the original signal.
- **White Balance**: Change the **White Balance** settings to obtain the most accurate colors in the images.
- **Slow Shutter**: Under low illumination conditions, the shutter speed should be slow to extend the exposure time. The default setting is **Closed**.

5.3.9 Application

Navigate to the Application menu shown in pic 5.3.18.

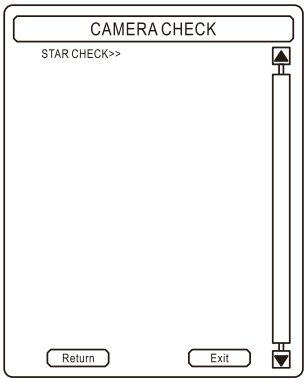


Pic 5.3.18 Application

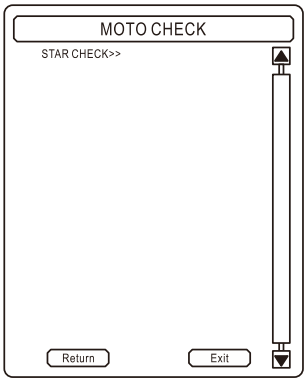


Pic 5.3.19 Communication Check

- **Communication Log**: Options are **Open** and **Closed**. When a problem occurs with the Speed Dome the user can send the communication log to us for analysis and resolution.
- **Communication Test**: Click **OPEN** for start the **Communication Test**. Supporting software is required for this process.
- **Motor Check**: Click **OPEN** for being the **Motor Check**.
- **Camera Check**: Click **OPEN** for the **Camera Check**.

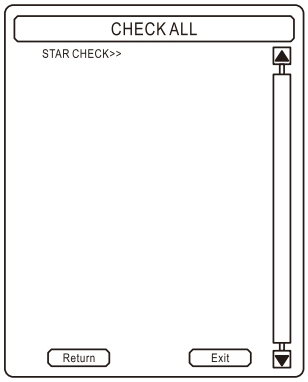


Pic 5.3.20 Camera Check

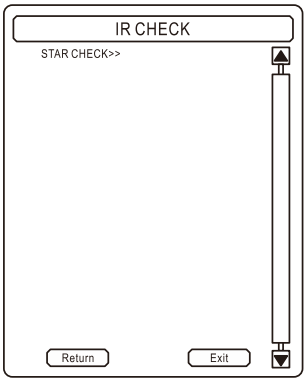


Pic 5.3.21 Motor Check

- **IR Check**: Click **OPEN** for **IR Check**.
- **Check All**: Click **OPEN** to **Check All**.



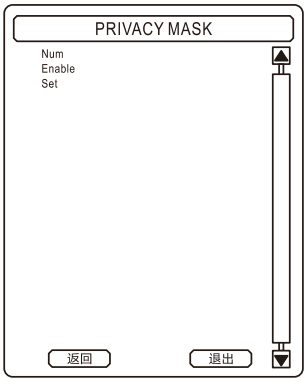
Pic 5.3.22 Check All



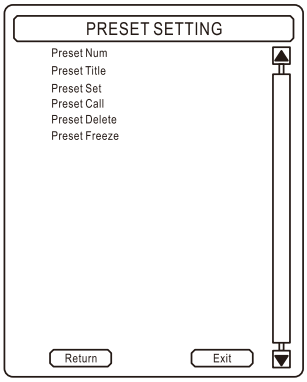
Pic 5.3.23 IR Self

5.3.10 Privacy Mask

Navigate to the **Privacy Mask** menu shown in pic 5.3.24 (**Note**: some cameras don't support this function).



Pic 5.3.24 Privacy Mask



Pic 5.3.25 Preset Setting

- **Mask Number**: Select a number from 1 to 24.
- **Enable Mask**: Options are **Open** and **Closed**.
- **Setting Privacy Area**: Move the cursor to **Set Privacy Area** and click **OPEN** to set a mask zone, and move the zone to be masked to the center of the screen. Then click **OPEN** to enter the size of the zone to be masked. The size of the area to be masked can be adjusted by moving the joystick. Click **OPEN** after the setting is entered.

5.3.11 Privacy Mask

Navigate to the Preset menu shown in pic 5.3.25.

- **Preset Number**: Select a number from 1 to 48.
- **Preset Title**: Click **OPEN** to edit the preset title (see pic 5.3.1).

- **Setting Preset**: Click **OPEN** to configure the preset (see pic 5.3.1).
- **Call Preset**: After clicking **OPEN**, use the joystick to select the preset number and then click **OPEN** to confirm.
- **Delete Preset**: After clicking **OPEN**, use the joystick to select the preset number and then click **OPEN** to confirm.

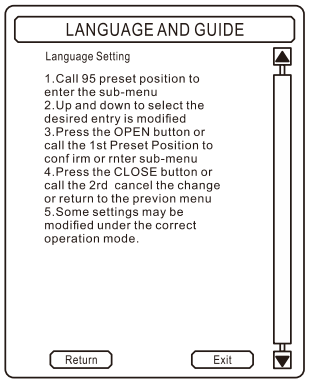
5.3.12 Preset

Navigate to the **Preset** menu shown in pic 5.3.25.

- **Preset Number**: Select a number from 1 to 48.
- **Preset Title**: Click **OPEN** to edit the preset title (see pic 5.3.1).
- **Setting Preset**: Click **OPEN** to configure the preset (see pic 5.3.1).
- **Call Preset**: After clicking **OPEN**, use the joystick to select the preset number and then click **OPEN** to confirm.
- **Delete Preset**: After clicking **OPEN**, use the joystick to select the preset number and then click **OPEN** to confirm.

5.3.13 Language Guide

Navigate to the Language Guide menu shown in pic 5.3.26.



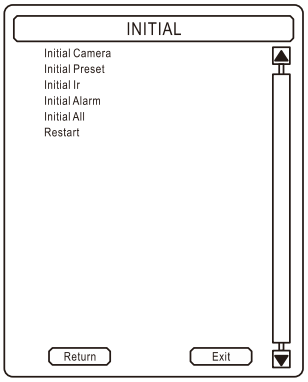
Pic 5.3.26 Language Guide

Language Settings: The desired language can be selected from this menu.

5.4 Initial

Navigate to the Initialization menu shown in pic 5.4.1.

Here, the camera, preset, IR Setting, and alarm can be initialized in addition to all other parameters for initialization of the Speed Dome.



Pic 5.4.1 Initial

Chapter 6 Appendix

6.1 Lightning and Surge Protection

This product adopts a Ceramic Gas Discharge Tube and TVS-class lightning protection technology to effectively prevent pulse signal damage caused by instantaneous lightning under 4000 W or electrical surges. However, with outdoor installations, to ensure electrical safety, the following protective measures should be taken:

- Signal transmission lines must be kept at least 50 meters from high voltage equipment and high voltage.
- Lay out the routing under eaves.
- In open fields, underground sealed steel tubes should be used, and the steel tube must have one-point grounding without overhead wiring.
- In intense thunderstorm or high induced voltage areas (such as high voltage substations), extra-high-power lightning protection equipment must be used together with lightning rods and other measures.
- The lightning protection and grounded design for outdoor installation and wiring must be combined with the buildings lightning protection requirements, and comply with the relevant national and industry standards.
- The system must have equipotential grounding. The grounded device must meet the double requirements of system anti-jamming and electrical safety, and should not be short-circuited or hybrid-circuited with a neutral leg of forceful electric power. When the system is grounded alone, the impedance of the grounded conductor should not be more than 4 ohm, and the sectional area of the grounded wire should not be more than 25 mm^2.

6.2 RS485 Bus-mastering Knowledge

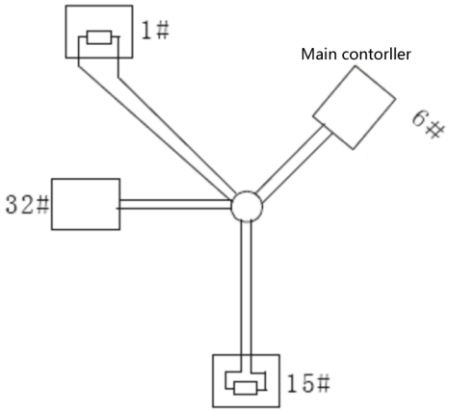
- **RS485 Bus-mastering basic characteristics**
  According to the RS485 bus-mastering standard, the maximum load capacity is 32 payloads (including main controller and controlled set) for the RS485 bus for half-duplex communication buses
- **RS485 bus-mastering transmission distance**
  When the Twisted pair with 0.56 mm (24AWG) is used as the communication cable, the baud rate is different. The maximum theoretical transmission distance is shown below:

Baud Rate	Max. Distance
2400BPS	1800m
4800BPS	1200m
9600BPS	800m

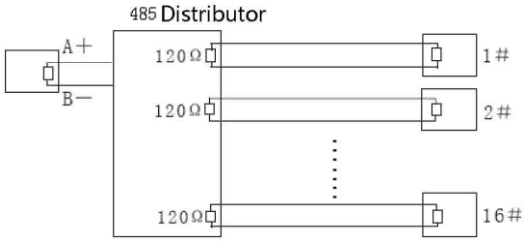
When our products are used with thin cables or in strong electromagnetic interference environments, the maximum transmission distance will be shorter.

- **Problems with practical application**

Users often use star-type connection methods for installation, and therefore, the termination resistors must connect to the equipment which these two devices spacing farthest in distance. (as follow,1# and 15# devices). However, this connection method does not comply with the RS485 standard. Various equipment use longer distances, easily form signal reflections, and reduce the anti-jamming capability, lead to weak control signals. Under such situations, it will not be possible to control the Speed Dome.



In this situation, we suggest adding one RS485 distributor to solve the problems, avoid production problems and improve communication.



6.3 Basic Trouble Shooting

Problems	Possible Causes	Solutions
No action, no picture when power is switched on	Power supply adaptor damaged or power supply not sufficient	Replace
	Wrong contact of power cables	Correct
	Engineering line fault	Exclude
Abnormal self-check, image shown with motor	Mechanical failure	Repair
	Camera inclined	Reinstall
	Power supply not sufficient	Replace, better to place the adaptor near the unit
Normal self-check but no image	Wrong contact of video lines	Correct
	Bad contact of video cables	Exclude
	Camera is damaged	Replace
Normal self-check and image but out of control	Wrong contact of control signal	Correct
	Address configuration wrong	Choose new address and power up
	Protocol or baud rate configuration wrong	Adjust protocol and baud rate to match controller and power up
Unstable image	Bad contact of video cable	Exclude
	Power supply not sufficient or power cables too long	Replace
IR intelligent high-Speed Dome out of control	Abnormal self-check	Power-on again
	Bad contact of control lines	Remove
	The host operations have a problem	Power up the host again
	The load is too much, the distance is too far	Increase yards distributor
Focus out of control	Focus is in automatic mode	Set focus mode to manual

6.4 Relationship Between Wire and Distance

When the Wire diameter size is same and the 24VAC power loss below 10%, recommended maximum transmission distance. (For AC powered equipment, Maximum Power loss is 10% is allowed. For example, one deceive rated power is 80W, installed 35 feet from the transformer <10M> distance, it will need the Maximum wire size is 0.80mm).

Wire Dia. (mm) / Distance (m) / Power (W)	0.80	1.00	1.25	2.00
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)

6.5 Address Coding Table

Metric Bare Wire Dia.	USA Wire Gauge	British Wire AWG SWG	Cross-sectional area (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
3.000			7.0683

6.6 AWG Sheet at Home and Abroad

SW2 Address Setting

Add	1	2	3	4	5	6	7	8
1	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
2	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
3	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
4	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF
5	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF
6	OFF	ON	ON	OFF	OFF	OFF	OFF	OFF
7	ON	ON	ON	OFF	OFF	OFF	OFF	OFF
8	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF
9	ON	OFF	OFF	ON	OFF	OFF	OFF	OFF
10	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF
11	ON	ON	OFF	ON	OFF	OFF	OFF	OFF
12	OFF	OFF	ON	ON	OFF	OFF	OFF	OFF
13	ON	OFF	ON	ON	OFF	OFF	OFF	OFF
14	OFF	ON	ON	ON	OFF	OFF	OFF	OFF
15	ON	ON	ON	ON	OFF	OFF	OFF	OFF
16	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF
17	ON	OFF	OFF	OFF	ON	OFF	OFF	OFF
18	OFF	ON	OFF	OFF	ON	OFF	OFF	OFF
19	ON	ON	OFF	OFF	ON	OFF	OFF	OFF
20	OFF	OFF	ON	OFF	ON	OFF	OFF	OFF
21	ON	OFF	ON	OFF	ON	OFF	OFF	OFF
22	OFF	ON	ON	OFF	ON	OFF	OFF	OFF
23	ON	ON	ON	OFF	ON	OFF	OFF	OFF
24	OFF	OFF	OFF	ON	ON	OFF	OFF	OFF
25	ON	OFF	OFF	ON	ON	OFF	OFF	OFF
26	OFF	ON	OFF	ON	ON	OFF	OFF	OFF
27	ON	ON	OFF	ON	ON	OFF	OFF	OFF
28	OFF	OFF	ON	ON	ON	OFF	OFF	OFF
29	ON	OFF	ON	ON	ON	OFF	OFF	OFF
30	OFF	ON	ON	ON	ON	OFF	OFF	OFF
31	ON	ON	ON	ON	ON	OFF	OFF	OFF
32	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF

Add	1	2	3	4	5	6	7	8
33	ON	OFF	OFF	OFF	OFF	ON	OFF	OFF
34	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF
35	ON	ON	OFF	OFF	OFF	ON	OFF	OFF
36	OFF	OFF	ON	OFF	OFF	ON	OFF	OFF
37	ON	OFF	ON	OFF	OFF	ON	OFF	OFF
38	OFF	ON	ON	OFF	OFF	ON	OFF	OFF
39	ON	ON	ON	OFF	OFF	ON	OFF	OFF
40	OFF	OFF	OFF	ON	OFF	ON	OFF	OFF
41	ON	OFF	OFF	ON	OFF	ON	OFF	OFF
42	OFF	ON	OFF	ON	OFF	ON	OFF	OFF
43	ON	ON	OFF	ON	OFF	ON	OFF	OFF
44	OFF	OFF	ON	ON	OFF	ON	OFF	OFF
45	ON	OFF	ON	ON	OFF	ON	OFF	OFF
46	OFF	ON	ON	ON	OFF	ON	OFF	OFF
47	ON	ON	ON	ON	OFF	ON	OFF	OFF
48	OFF	OFF	OFF	OFF	ON	ON	OFF	OFF
49	ON	OFF	OFF	OFF	ON	ON	OFF	OFF
50	OFF	ON	OFF	OFF	ON	ON	OFF	OFF
51	ON	ON	OFF	OFF	ON	ON	OFF	OFF
52	OFF	OFF	ON	OFF	ON	ON	OFF	OFF
53	ON	OFF	ON	OFF	ON	ON	OFF	OFF
54	OFF	ON	ON	OFF	ON	ON	OFF	OFF
55	ON	ON	ON	OFF	ON	ON	OFF	OFF
56	OFF	OFF	OFF	ON	ON	ON	OFF	OFF
57	ON	OFF	OFF	ON	ON	ON	OFF	OFF
58	OFF	ON	OFF	ON	ON	ON	OFF	OFF
59	ON	ON	OFF	ON	ON	ON	OFF	OFF
60	OFF	OFF	ON	ON	ON	ON	OFF	OFF
61	ON	OFF	ON	ON	ON	ON	OFF	OFF
62	OFF	ON	ON	ON	ON	ON	OFF	OFF
63	ON	ON	ON	ON	ON	ON	OFF	OFF
64	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF

SW2 Address Setting (continued)

Add	1	2	3	4	5	6	7	8
65	ON	OFF	OFF	OFF	OFF	OFF	ON	OFF
66	OFF	ON	OFF	OFF	OFF	OFF	ON	OFF
67	ON	ON	OFF	OFF	OFF	OFF	ON	OFF
68	OFF	OFF	ON	OFF	OFF	OFF	ON	OFF
69	ON	OFF	ON	OFF	OFF	OFF	ON	OFF
70	OFF	ON	ON	OFF	OFF	OFF	ON	OFF
71	ON	ON	ON	OFF	OFF	OFF	ON	OFF
72	OFF	OFF	OFF	ON	OFF	OFF	ON	OFF
73	ON	OFF	OFF	ON	OFF	OFF	ON	OFF
74	OFF	ON	OFF	ON	OFF	OFF	ON	OFF
75	ON	ON	OFF	ON	OFF	OFF	ON	OFF
76	OFF	OFF	ON	ON	OFF	OFF	ON	OFF
77	ON	OFF	ON	ON	OFF	OFF	ON	OFF
78	OFF	ON	ON	ON	OFF	OFF	ON	OFF
79	ON	ON	ON	ON	OFF	OFF	ON	OFF
80	OFF	OFF	OFF	OFF	ON	OFF	ON	OFF
81	ON	OFF	OFF	OFF	ON	OFF	ON	OFF
82	OFF	ON	OFF	OFF	ON	OFF	ON	OFF
83	ON	ON	OFF	OFF	ON	OFF	ON	OFF
84	OFF	OFF	ON	OFF	ON	OFF	ON	OFF
85	ON	OFF	ON	OFF	ON	OFF	ON	OFF
86	OFF	ON	ON	OFF	ON	OFF	ON	OFF
87	ON	ON	ON	OFF	ON	OFF	ON	OFF
88	OFF	OFF	OFF	ON	ON	OFF	ON	OFF
89	ON	OFF	OFF	ON	ON	OFF	ON	OFF
90	OFF	ON	OFF	ON	ON	OFF	ON	OFF
91	ON	ON	OFF	ON	ON	OFF	ON	OFF
92	OFF	OFF	ON	ON	ON	OFF	ON	OFF
93	ON	OFF	ON	ON	ON	OFF	ON	OFF
94	OFF	ON	ON	ON	ON	OFF	ON	OFF
95	ON	ON	ON	ON	ON	OFF	ON	OFF
96	OFF	OFF	OFF	OFF	OFF	ON	ON	OFF

Add	1	2	3	4	5	6	7	8
97	ON	OFF	OFF	OFF	OFF	ON	ON	OFF
98	OFF	ON	OFF	OFF	OFF	ON	ON	OFF
99	ON	ON	OFF	OFF	OFF	ON	ON	OFF
100	OFF	OFF	ON	OFF	OFF	ON	ON	OFF
101	ON	OFF	ON	OFF	OFF	ON	ON	OFF
102	OFF	ON	ON	OFF	OFF	ON	ON	OFF
103	ON	ON	ON	OFF	OFF	ON	ON	OFF
104	OFF	OFF	OFF	ON	OFF	ON	ON	OFF
105	ON	OFF	OFF	ON	OFF	ON	ON	OFF
106	OFF	ON	OFF	ON	OFF	ON	ON	OFF
107	ON	ON	OFF	ON	OFF	ON	ON	OFF
108	OFF	OFF	ON	ON	OFF	ON	ON	OFF
109	ON	OFF	ON	ON	OFF	ON	ON	OFF
110	OFF	ON	ON	ON	OFF	ON	ON	OFF
111	ON	ON	ON	ON	OFF	ON	ON	OFF
112	OFF	OFF	OFF	OFF	ON	ON	ON	OFF
113	ON	OFF	OFF	OFF	ON	ON	ON	OFF
114	OFF	ON	OFF	OFF	ON	ON	ON	OFF
115	ON	ON	OFF	OFF	ON	ON	ON	OFF
116	OFF	OFF	ON	OFF	ON	ON	ON	OFF
117	ON	OFF	ON	OFF	ON	ON	ON	OFF
118	OFF	ON	ON	OFF	ON	ON	ON	OFF
119	ON	ON	ON	OFF	ON	ON	ON	OFF
120	OFF	OFF	OFF	ON	ON	ON	ON	OFF
121	ON	OFF	OFF	ON	ON	ON	ON	OFF
122	OFF	ON	OFF	ON	ON	ON	ON	OFF
123	ON	ON	OFF	ON	ON	ON	ON	OFF
124	OFF	OFF	ON	ON	ON	ON	ON	OFF
125	ON	OFF	ON	ON	ON	ON	ON	OFF
126	OFF	ON	ON	ON	ON	ON	ON	OFF
127	ON	ON	ON	ON	ON	ON	ON	OFF
128	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON

SW2 Address Setting (continued)

Add	1	2	3	4	5	6	7	8
129	ON	OFF	OFF	OFF	OFF	OFF	OFF	ON
130	OFF	ON	OFF	OFF	OFF	OFF	OFF	ON
131	ON	ON	OFF	OFF	OFF	OFF	OFF	ON
132	OFF	OFF	ON	OFF	OFF	OFF	OFF	ON
133	ON	OFF	ON	OFF	OFF	OFF	OFF	ON
134	OFF	ON	ON	OFF	OFF	OFF	OFF	ON
135	ON	ON	ON	OFF	OFF	OFF	OFF	ON
136	OFF	OFF	OFF	ON	OFF	OFF	OFF	ON
137	ON	OFF	OFF	ON	OFF	OFF	OFF	ON
138	OFF	ON	OFF	ON	OFF	OFF	OFF	ON
139	ON	ON	OFF	ON	OFF	OFF	OFF	ON
140	OFF	OFF	ON	ON	OFF	OFF	OFF	ON
141	ON	OFF	ON	ON	OFF	OFF	OFF	ON
142	OFF	ON	ON	ON	OFF	OFF	OFF	ON
143	ON	ON	ON	ON	OFF	OFF	OFF	ON
144	OFF	OFF	OFF	OFF	ON	OFF	OFF	ON
145	ON	OFF	OFF	OFF	ON	OFF	OFF	ON
146	OFF	ON	OFF	OFF	ON	OFF	OFF	ON
147	ON	ON	OFF	OFF	ON	OFF	OFF	ON
148	OFF	OFF	ON	OFF	ON	OFF	OFF	ON
149	ON	OFF	ON	OFF	ON	OFF	OFF	ON
150	OFF	ON	ON	OFF	ON	OFF	OFF	ON
151	ON	ON	ON	OFF	ON	OFF	OFF	ON
152	OFF	OFF	OFF	ON	ON	OFF	OFF	ON
153	ON	OFF	OFF	ON	ON	OFF	OFF	ON
154	OFF	ON	OFF	ON	ON	OFF	OFF	ON
155	ON	ON	OFF	ON	ON	OFF	OFF	ON
156	OFF	OFF	ON	ON	ON	OFF	OFF	ON
157	ON	OFF	ON	ON	ON	OFF	OFF	ON
158	OFF	ON	ON	ON	ON	OFF	OFF	ON
159	ON	ON	ON	ON	ON	OFF	OFF	ON
160	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON

Add	1	2	3	4	5	6	7	8
161	ON	OFF	OFF	OFF	OFF	ON	OFF	ON
162	OFF	ON	OFF	OFF	OFF	ON	OFF	ON
163	ON	ON	OFF	OFF	OFF	ON	OFF	ON
164	OFF	OFF	ON	OFF	OFF	ON	OFF	ON
165	ON	OFF	ON	OFF	OFF	ON	OFF	ON
166	OFF	ON	ON	OFF	OFF	ON	OFF	ON
167	ON	ON	ON	OFF	OFF	ON	OFF	ON
168	OFF	OFF	OFF	ON	OFF	ON	OFF	ON
169	ON	OFF	OFF	ON	OFF	ON	OFF	ON
170	OFF	ON	OFF	ON	OFF	ON	OFF	ON
171	ON	ON	OFF	ON	OFF	ON	OFF	ON
172	OFF	OFF	ON	ON	OFF	ON	OFF	ON
173	ON	OFF	ON	ON	OFF	ON	OFF	ON
174	OFF	ON	ON	ON	OFF	ON	OFF	ON
175	ON	ON	ON	ON	OFF	ON	OFF	ON
176	OFF	OFF	OFF	OFF	ON	ON	OFF	ON
177	ON	OFF	OFF	OFF	ON	ON	OFF	ON
178	OFF	ON	OFF	OFF	ON	ON	OFF	ON
179	ON	ON	OFF	OFF	ON	ON	OFF	ON
180	OFF	OFF	ON	OFF	ON	ON	OFF	ON
181	ON	OFF	ON	OFF	ON	ON	OFF	ON
182	OFF	ON	ON	OFF	ON	ON	OFF	ON
183	ON	ON	ON	OFF	ON	ON	OFF	ON
184	OFF	OFF	OFF	ON	ON	ON	OFF	ON
185	ON	OFF	OFF	ON	ON	ON	OFF	ON
186	OFF	ON	OFF	ON	ON	ON	OFF	ON
187	ON	ON	OFF	ON	ON	ON	OFF	ON
188	OFF	OFF	ON	ON	ON	ON	OFF	ON
189	ON	OFF	ON	ON	ON	ON	OFF	ON
190	OFF	ON	ON	ON	ON	ON	OFF	ON
191	ON	ON	ON	ON	ON	ON	OFF	ON
192	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON

SW2 Address Setting (continued)

Add	1	2	3	4	5	6	7	8
193	ON	OFF	OFF	OFF	OFF	OFF	ON	ON
194	OFF	ON	OFF	OFF	OFF	OFF	ON	ON
195	ON	ON	OFF	OFF	OFF	OFF	ON	ON
196	OFF	OFF	ON	OFF	OFF	OFF	ON	ON
197	ON	OFF	ON	OFF	OFF	OFF	ON	ON
198	OFF	ON	ON	OFF	OFF	OFF	ON	ON
199	ON	ON	ON	OFF	OFF	OFF	ON	ON
200	OFF	OFF	OFF	ON	OFF	OFF	ON	ON
201	ON	OFF	OFF	ON	OFF	OFF	ON	ON
202	OFF	ON	OFF	ON	OFF	OFF	ON	ON
203	ON	ON	OFF	ON	OFF	OFF	ON	ON
204	OFF	OFF	ON	ON	OFF	OFF	ON	ON
205	ON	OFF	ON	ON	OFF	OFF	ON	ON
206	OFF	ON	ON	ON	OFF	OFF	ON	ON
207	ON	ON	ON	ON	OFF	OFF	ON	ON
208	OFF	OFF	OFF	OFF	ON	OFF	ON	ON
209	ON	OFF	OFF	OFF	ON	OFF	ON	ON
210	OFF	ON	OFF	OFF	ON	OFF	ON	ON
211	ON	ON	OFF	OFF	ON	OFF	ON	ON
212	OFF	OFF	ON	OFF	ON	OFF	ON	ON
213	ON	OFF	ON	OFF	ON	OFF	ON	ON
214	OFF	ON	ON	OFF	ON	OFF	ON	ON
215	ON	ON	ON	OFF	ON	OFF	ON	ON
216	OFF	OFF	OFF	ON	ON	OFF	ON	ON
217	ON	OFF	OFF	ON	ON	OFF	ON	ON
218	OFF	ON	OFF	ON	ON	OFF	ON	ON
219	ON	ON	OFF	ON	ON	OFF	ON	ON
220	OFF	OFF	ON	ON	ON	OFF	ON	ON
221	ON	OFF	ON	ON	ON	OFF	ON	ON
222	OFF	ON	ON	ON	ON	OFF	ON	ON
223	ON	ON	ON	ON	ON	OFF	ON	ON
224	OFF	OFF	OFF	OFF	OFF	ON	ON	ON

Add	1	2	3	4	5	6	7	8
225	ON	OFF	OFF	OFF	OFF	ON	ON	ON
226	OFF	ON	OFF	OFF	OFF	ON	ON	ON
227	ON	ON	OFF	OFF	OFF	ON	ON	ON
228	OFF	OFF	ON	OFF	OFF	ON	ON	ON
229	ON	OFF	ON	OFF	OFF	ON	ON	ON
230	OFF	ON	ON	OFF	OFF	ON	ON	ON
231	ON	ON	ON	OFF	OFF	ON	ON	ON
232	OFF	OFF	OFF	ON	OFF	ON	ON	ON
233	ON	OFF	OFF	ON	OFF	ON	ON	ON
234	OFF	ON	OFF	ON	OFF	ON	ON	ON
235	ON	ON	OFF	ON	OFF	ON	ON	ON
236	OFF	OFF	ON	ON	OFF	ON	ON	ON
237	ON	OFF	ON	ON	OFF	ON	ON	ON
238	OFF	ON	ON	ON	OFF	ON	ON	ON
239	ON	ON	ON	ON	OFF	ON	ON	ON
240	OFF	OFF	OFF	OFF	ON	ON	ON	ON
241	ON	OFF	OFF	OFF	ON	ON	ON	ON
242	OFF	ON	OFF	OFF	ON	ON	ON	ON
243	ON	ON	OFF	OFF	ON	ON	ON	ON
244	OFF	OFF	ON	OFF	ON	ON	ON	ON
245	ON	OFF	ON	OFF	ON	ON	ON	ON
246	OFF	ON	ON	OFF	ON	ON	ON	ON
247	ON	ON	ON	OFF	ON	ON	ON	ON
248	OFF	OFF	OFF	ON	ON	ON	ON	ON
249	ON	OFF	OFF	ON	ON	ON	ON	ON
250	OFF	ON	OFF	ON	ON	ON	ON	ON
251	ON	ON	OFF	ON	ON	ON	ON	ON
252	OFF	OFF	ON	ON	ON	ON	ON	ON
253	ON	OFF	ON	ON	ON	ON	ON	ON
254	OFF	ON	ON	ON	ON	ON	ON	ON
255	ON	ON	ON	ON	ON	ON	ON	ON
0	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF