Integrated Intelligent Speed Dome

GRAFT

User Manual

G-SD10X I

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: Serious injury or death may cause if any of the warnings is neglected.

Cautions: Injury or equipment damage may cause if any of the cautions is neglected.

⚡	⚠
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. Please refer to the specific for the requirements.

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, odor 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 -20°C ~ +60°C), dusty or damp locations, or fire or electrical shock will occur otherwise.

3. Do not aim the camera at extra bright places (e.g. the sun or the light). A blooming or smear may occur otherwise

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

4. The dome cover for indoor use shall be kept from rain and moisture.

5. Exposing the equipment to direct sun light, low ventilation or heat source such as heater or radiator is forbidden (ignorance can cause fire danger).

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, not to use alkaline detergents.

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Chapter 1 Brief Introduction

1.1   Product description

Modern Closed circuit TV System (CCTV) for surveillance is the vision expansion and extension of mankind, and also a necessary part of surveillance system. The development of technologies such as modern electronics, image capture, new material and advanced manufacturing brings more connotations into the front-end camera products for CCTV system, so that its design is more intelligent and friendly. Integrated intelligent high-speed dome is the succession and extension of the integrated design philosophy of PTZ. It is properly designed with many functions, easy to expand and is an outstanding unit representing the camera products of a new generation.

With build-in digital decoder and PTZ, this camera is leading the trend of high-tech modern surveillance products. It is of Whole Digital Control and flexible programming; and the sophisticated transmission system has all the functions including preset points, auto scan, cruise, sequence, path preset and also Scan by Frame, Manual Position Limitation, Auto Reverse, Privacy Mask and Back Light Compensation, etc, and achieves Mouse Tracking when connecting to client software and DVR, thus provides Stable, Long-durance Working with hardly any maintenance required.

Dome camera supports PELCO-D, PELCO-P and HIK Code protocols, and is Self Adaptive to them. For more convenient usage, the camera supports Menu Setting functions, as parameters like system info, display, camera configuration, pre-set positions, sequence, mask areas can all be set on the menu, while password authentication protect the settings being modified by others.

1.2   Device Appearance

Figure 1-1 Speed Dome Appearance

1.3   Features

Onscreen Menu

The dome camera supports onscreen menu function, which allows users to get device information, status, and do dome settings.

Self-adaptive to Multiple Protocols

The dome camera supports PELCO-D, PELCO-P and HIK protocols, and is self-adaptive to them.

Keyboard Control

The vertical and horizontal camera movement can be controlled with keyboard, DVR and client software.

Manual Stops

When the device is controlled by keyboard with this function on, the horizontal motion of camera will be limited within the restricted area, and users can not see the scene outside the area.

Auto Scan

The speed dome supports three scan modes in horizontal direction including automatic scan, frame scan and random scan. Scan speed can be set on menu from level 1 to 40 corresponding to the range from 1°/second to 40°/second.

Auto Scan Stops   Depends on the Camera Function

The camera can only scan back and forth in the set area and will flip automatically when it reaches the limit with this function on. Users can not see the scene outside the area. Scan limiting function is under manual stopping function, i.e., if manual stopping function is set for device,

manual stopping function will become effective automatically at automatic scan.

Preset Point

Each preset point includes PTZ horizontal, vertical position and lens zooming factors, etc. When preset point is initiated, the dome will move to the position corresponding to preset point message. Users can add, delete and call each preset point.

Onscreen Operation Guide

Onscreen operation guide can display preset point title, position angle and zoom factor information on screen, and the function can be opened or closed in menu.

Auto Flip

If the object is on the bottom of the screen during manual scan, camera will automatically reverse 180° to ensure continuous monitoring. The function can be enabled/disabled by menu.

Privacy Blanking   Depends on the Camera Function

With privacy blanking, users can set the screen area not to be seen. The covered area will move along with device in horizontal and vertical directions and automatically adjust its size on zooming to ensure the area is always covered up.

Mouse Tracking

The speed dome can be controlled with the 2 buttons and scroll of mouse can be used under HIK 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, device will move to its center and enlarge it. With right-clicking, the lens will zoom in, and the scroller can easily make the lens zooming, and mouse operation automatically incorporates zooming effect.

Zooming

Vertical and Horizontal scan speed will be changed during zoom time, as speed down if zoom out and speed up if zoom in to get better monitoring performance. The function can be enabled/disabled by menu.

Auto focus function

The integrated engine will focus automatically to get clear image. Users can manually adjust focus by FAR and NEAR buttons, but the system will enter auto focus mode again after vertical/horizontal movement or zoom.

IR Cut Filter   Depends on the Camera Function

IR can be set as auto illumination convert mode or manual illumination convert mode. The integrated engine will automatically change CCD illumination with regard to environment lightening conditions. Without this function on, users can choose "Day" or "Night" mode to choose color or B/W display.

Low Light Shutter

Shutter speed slows down in low illumination conditions to keep the image clear. The function can be enabled/disabled in the user menu.

BLC Function

   Object will turn dark like shadows when strong background lighting exists. With BLC function on, it can automatically do back light compensation to avoid object being unidentifiable and get clear images.

Automatic White Balance

   Auto White balance function compensates between different color temperatures to get true color of object and enable the feeling of on spot monitoring.

Patrol

   Support up to 4 patrol path settings. Users use a group of preset positions to guide the camera on the patrol path, scan speed between 2 preset points and dwell time on each point can be set separately.

Pattern Path

   Series of camera movements can be saved and recalled again to form a pattern path. Supported information includes vertical and horizontal PTZ movements, zoom preset, while Auto Focus and Iris is set as default mode.

External Alarm

   The camera supports 6 channels ON/OFF alarm input, input mode can be either N.O. or N.C., or disable this channel. Camera will perform preset operations like scan, cruise, sequence and preset positions calling when detected alarm signals.

Auxiliary Alarm Output

   2 channels of auxiliary ON/OFF output for trigger or control other devices. When an alarm occurs, it will be output through the mapped auxiliary channel. Output mode can be either NO or NC, or disable this channel via operation menu, and the auxiliary output time can also be set.

Chapter 2 Installation

2.1   Installation preparation

Please check if all the items on the package list have been included with your camera before installation and make sure they are in good condition.

[Notice]: The standard configuration of dome is not including power adapter, the standard of the power adapter is AC24V/3A. And the Network Speed Dome, whose model has an "E" at its end, support PoE power.

2.2   Installation

1. Install the Hugger salver

   If the wall is wood, use self tapping screw to fix it to the wall.

   If the wall is concrete, adhere the fix card in the attachment to the position where plan to place the dome. Make 3 Φ5 holes in accordance with the 3 holes on the fix card. Then fix with the concrete screws, then use self tapping screw to fix the Hugger salver, as shown in Figure 2-1
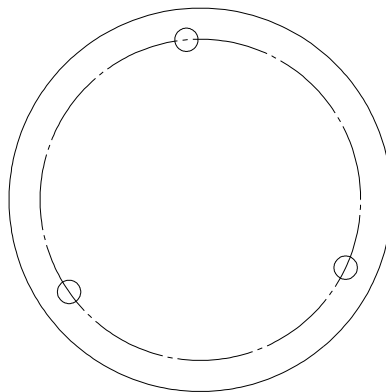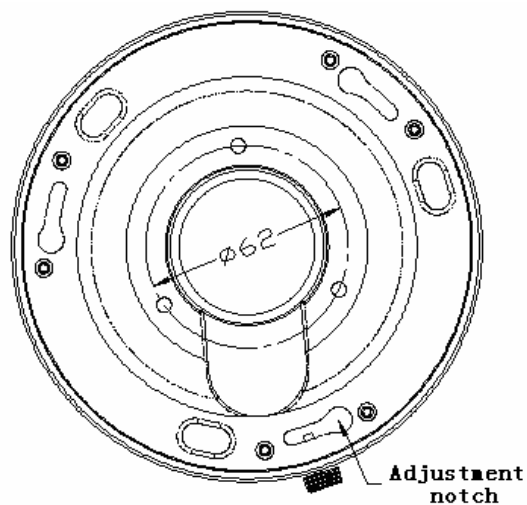
Figure 2-1 install the fix card

Figure 2-2 install the hugger salver

2. Open the dome cover and then remove the camera and pearl cotton.

3. In the bottom of the camera, we can see device base board as shown in Figure 2-3. There are two dialing switches, SW1 and SW2 for the setting of device address code, baud rate and communication protocol and other parameters. Please refer to "Chapter 2.4 Switch Setting" for specific setting.

1   **Address and protocol dial-up description**

2   **Analog video output interface(BNC)**

3   **Address and protocol dial-up switches**

4   **Network Interface**

5   **Power, voice input/output, alarm input/output and RS485 Interface**
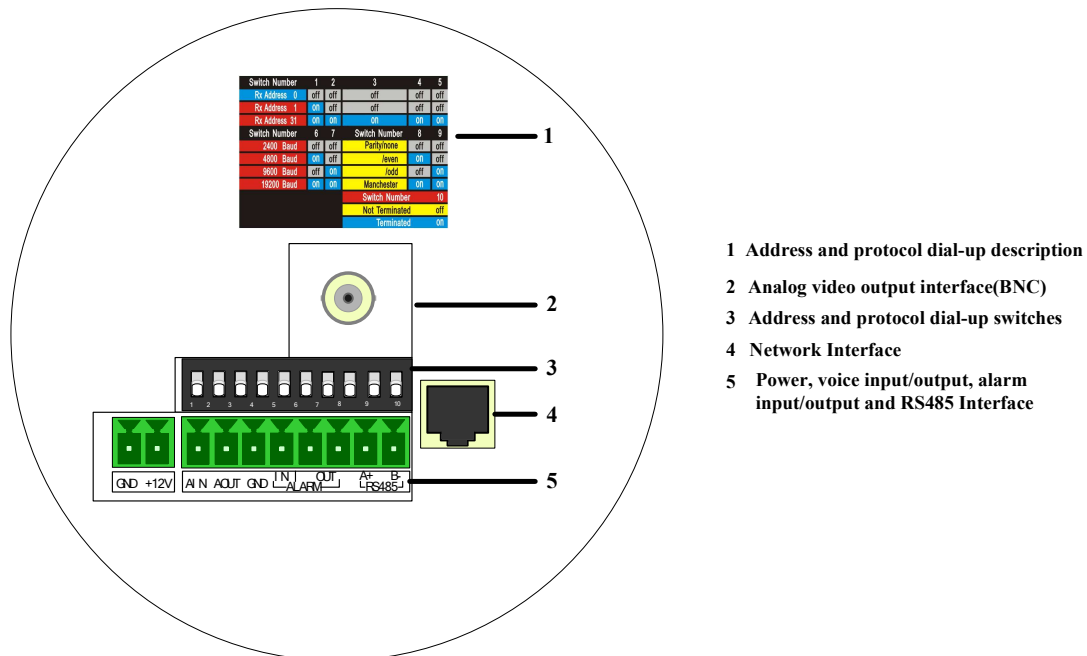
Figure 2-3 sketch map for speed dome chassis

4. Connect Power wire, Voice input/output wire, Alarm input/output wire, RS-485 control wire, video wire and network wire. Showed as Figure 2-3 "Speed dome chassis sketch map". The contents of 5th part of the figure are (from left to right): DC 12v socket, voice input/output socket, alarm input/output socket and RS-485 control wire socket.

Connection method description

    Device is provided with green bended-pin plug for signal cable. The wiring procedure is listed as below:

        1. Pull out green bended-pin plug on device base board.

        2. Loose the screw on the plug with micro-"I" shaped (or crosshead) screw driver and insert the signal cable on the lower edge of spring strip, and fasten the screw.

        3. Insert the plug back to the corresponding green bended-pin socket.

      4. Connect power cable, video output cable, RS-485 control cable, alarm input/output cable (based on the need), and then close base-plate and fasten back screw.

5. Install the Speed Dome

◆ Input the three pillar into the three holes of Hugger salver, pay attention to the directions, make the "I" symbol on the Hugger salver in the same direction of "I" symbol on the speed dome.

◆ Turn the speed dome widdershins about 15 degrees until it can't be turned any further. At this moment, the "I" symbol on the speed dome is aligned with the locking screw on the

Hugger salver

◆ Screw the locking screws
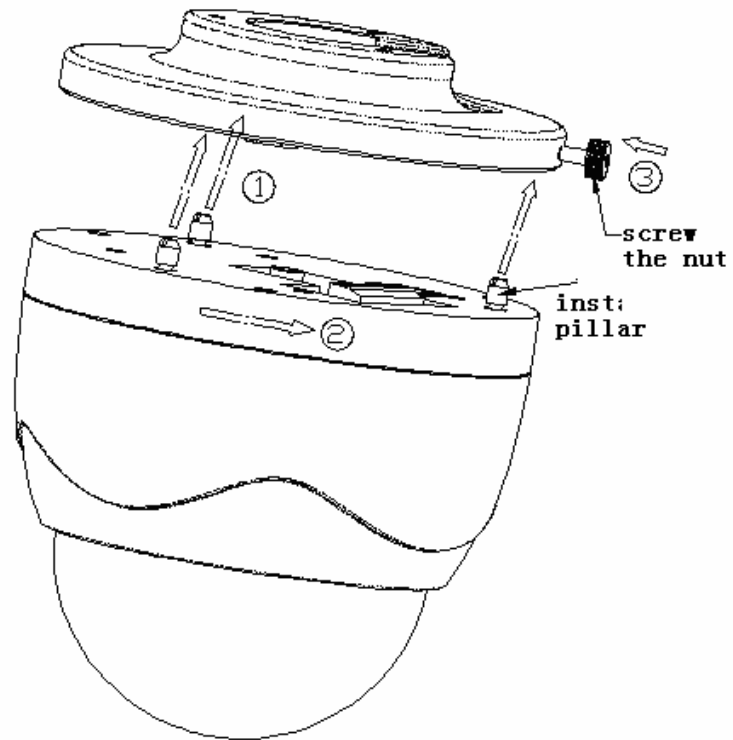
Figure 2-4 Install the speed dome
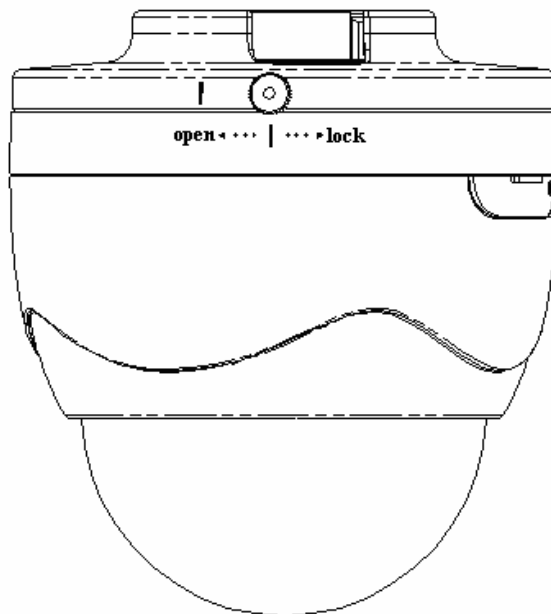
Figure 2-5 the speed dome be installed

2.3 Initial setting

Address: 0

Baud rate: 2400

120Ω matching resistance: OFF

2.4 Switch setting
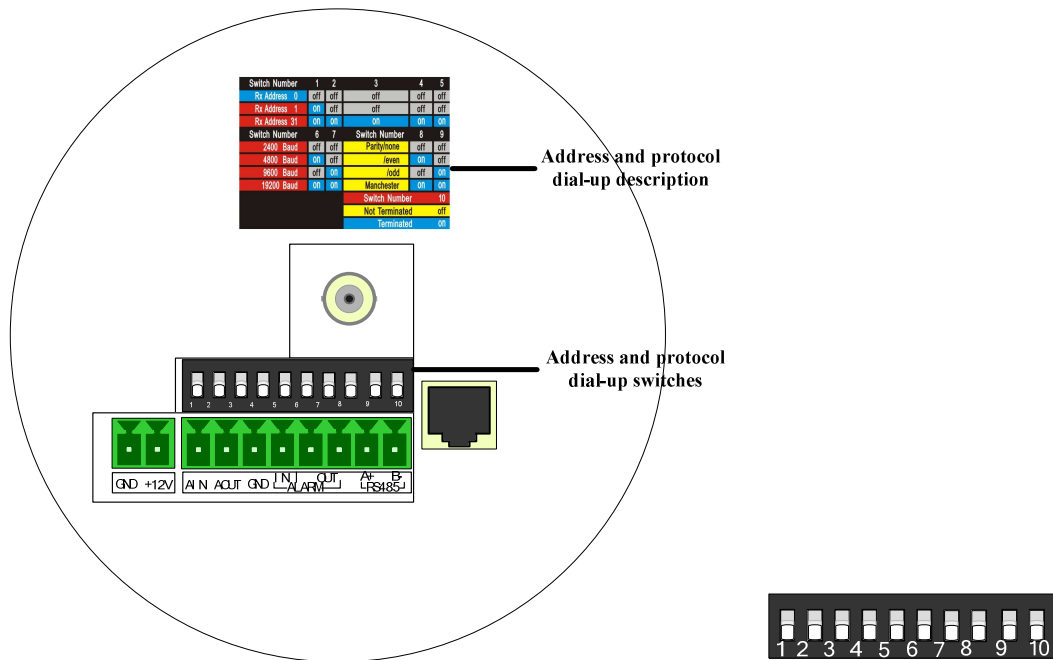
Figure 2-6 Address and protocol dial-up switches

There is a dial-up switches on the speed dome chassis, showed in Figure 2-6. Bit 1 to Bit 5 are used to set the speed dome address, Bit 6 and Bit 7 are used to set the baud rate, Bit 8 and Bit 9 are used to set parity and Manchester protocol. Bit 10 is used to set 120Ω matched resistance. The set method is stated as below in detail.

Note: This speed dome auto adapt Pelco-P□Pelco-D and HIK Code protocol.

2.4.1 Device address setting

1 to 5 is used to set device address as follow, 1 is the smallest and 5 is the biggest:

Device address	1	2	3	4	5
0	OFF	OFF	OFF	OFF	OFF
1	ON	OFF	OFF	OFF	OFF
31	ON	ON	ON	ON	ON

More examples for address codes dialing mode (1-31):

address	Code dialing				
	1	2	3	4	5
0	OFF	OFF	OFF	OFF	OFF
1	ON	OFF	OFF	OFF	OFF
2	OFF	ON	OFF	OFF	OFF
3	ON	ON	OFF	OFF	OFF
4	OFF	OFF	ON	OFF	OFF
5	ON	OFF	ON	OFF	OFF
6	OFF	ON	ON	OFF	OFF
7	ON	ON	ON	OFF	OFF
8	OFF	OFF	OFF	ON	OFF
9	ON	OFF	OFF	ON	OFF
10	OFF	ON	OFF	ON	OFF
11	ON	ON	OFF	ON	OFF
12	OFF	OFF	ON	ON	OFF

8

13	ON	OFF	ON	ON	OFF
14	OFF	ON	ON	ON	OFF
15	ON	ON	ON	ON	OFF
16	OFF	OFF	OFF	OFF	ON
17	ON	OFF	OFF	OFF	ON
18	OFF	ON	OFF	OFF	ON
19	ON	ON	OFF	OFF	ON
20	OFF	OFF	ON	OFF	ON
21	ON	OFF	ON	OFF	ON
22	OFF	ON	ON	OFF	ON
23	ON	ON	ON	OFF	ON
24	OFF	OFF	OFF	ON	ON
25	ON	OFF	OFF	ON	ON
26	OFF	ON	OFF	ON	ON
27	ON	ON	OFF	ON	ON
28	OFF	OFF	ON	ON	ON
29	ON	OFF	ON	ON	ON
30	OFF	ON	ON	ON	ON
31	ON	ON	ON	ON	ON

2.4.2 Baud rate setting

Dial-up switches 6 and 7 are used for setting baud rating, from 00 to 11. They represents 2400bps、4800bps、9600bps、19200bps respectively. If the value is beyond the range, the default baud rate is 9600bps. The following table shows the dial-up way of corresponding baud rate in detail:

Baud rate	6	7
2400	OFF	OFF
4800	ON	OFF
9600	OFF	ON
19200	ON	ON

2.4.3 Communication protocol setting

Dial-up switches 6 and 7 are used for setting parity and Manchester protocol. The following table shows the dial-up way of corresponding communication protocol in detail:

	8	9
parity/none	OFF	OFF
/even	ON	OFF
/odd	OFF	ON
Manchester	ON	ON

2.4.4 Terminal matched resistance settings

Turn the Bit 10 of dial –up switches on means getting through 120Ω RS-485 line terminal matched resistance, on the contrary, means don't get through the resistance.

2.5 Alarm In and Output Connection Description

The speed dome can connect one channel alarm semaphore (0 to DC 12v) input and one channel on-off output. Thereinto, the connection of alarm output is showed below.

Left Diagram   Right Diagram
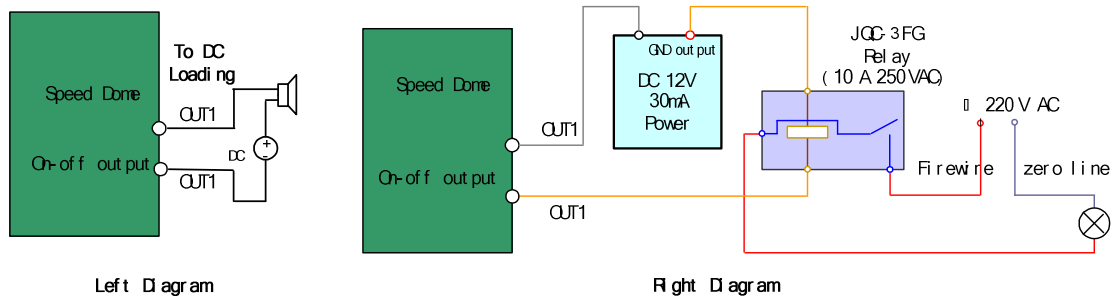
Alarm output belongs to switching value(no voltage), external power is needed when connect with a annunciator. When connect with external DC power(the connection method is showed in left diagram), the external power should be in the range of DC12V, 30mA. When connect the external AC power, external relay is asked to avoid the danger of device damaging and getting an electric shock (the connection method is showed in right diagram).

Chapter 3   Operation Instruction

3.1   Power-on Action

After power is turned on, device will perform self-test action that begins with lens motion, then horizontal motion and finally vertical motion. After power-on self-test action, the interface as shown in following Figure will be displayed. The start-up interface will disappear after 40 seconds.


```
                SYSTEM  INFORMATION

DOME DRIVER MODEL          SEE THE DOME
DOME ADDRESS                           0
COMMUNICATION                 9600,N,8,1
TEMPERATURE                        35°C
SOFTWARE VERSION                     2.0
 LANGUAGE                        ENGLISH
 IP ADDRESS:   192  000  000  064
 SUB MASK:     255  255  255  000
              BACK        EXIT
```

Lens motion: Lens zoom in and out, and then close iris. Iris keeps closed until motor action finishes.

Horizontal motion: Dome turns clockwise first and then counter-clockwise after it detects zero position. It will stop after a short trip.

Vertical motion: camera will begin with slow downward motion. After reaching contact point, it will move up quickly and stop at 45°.

Column "Dome Address" displays current device address, i.e., address on dial tray. Now, dome soft address is not used. If dome soft address is used, dome soft address will be displayed on booting. Please refer to Chapter 4.3.1 for dome soft address settings.

3.2   Basic Function Guide

The following operation shall be done in collaboration with backline control device or client software. Control devices include control keyboard and DVR, etc. Client software is the software

on customer's end. Examples are given here for common operation only with assumption that the current control system supports following operation. Please refer to Client Softwatre User Manual for detail operation guide.

Horizontal and vertical motion: move the joystick toward the expected direction, or press Up/Down/Left/Right buttons.

Lens zooming operation: press **TELE** button to pull the lens closer and the scene will be bigger. Press **WIDE** button to pull the lens farther and the scene will be smaller.

Focusing operation: After FAR button is pressed, the object far away will become more legible and the object in vicinity will become ambiguous. After NEAR button is pressed, the object in vicinity will become more legible and the object far away will become ambiguous.

Under auto focus mode, camera will focus automatically to maintain legible Figure. Now, manual focusing operation will still be possible. However, after other operation of device, camera will resume auto focus.

Iris operation: press OPEN and the iris will enlarge and image brightness will increase. Press CLOSE and the iris will gradually shrink that leads to brightness decrease. Under automatic iris mode, both OPEN and CLOSE buttons are still valid. However, after other operation on dome, camera will resume automatic iris motion.

Preset point operation:

Preset point can be set or called through keyboard or menu.

Under manual operation mode, press **PRESET** + numeric in sequence and then **ENTER** to confirm and save the current PTZ and lens setting as preset point information. Preset point num is the input numeric. And it supports 200 preset points. However, preset point setting range is related to control system used. See control system manual. To utilize preset point, press **CALL** + numeric in sequence and **ENTER** to confirm. Part of preset point codes are used as special function and saved for operation. See 3.3 on page 35.

For preset point operation on menu, see 4.3.5 on page 48.

Note: Utilization of preset point on device will be restricted within joystick range. If preset point is in the range, the utilization is effective. If not, it will be ignored. Special preset point utilization is no exception.

3.3   Preset points with specific function:

Examples of special function preset point are given as follow:

No. of preset point function

33   auto flip

34   return to zero point

35   run patrol path 1

36   run patrol path 2

37   run patrol path 3

38   run patrol path 4

39	camera setting to day working mode
40	camera setting to night working mode
41	run Pattern Path 1
42	run Pattern Path 2
43	run Pattern Path 3
44	run Pattern Path 4
92	Limit Stops setting
93	setting of manual left-right stops
94	remote reboot
95	enter main menu
96	stop scan
97	random scan
98	scan by frame
99	auto scan

3.4   Onscreen operation guide

Device provides a series of onscreen operation guide to facilitate operation. The characters that can be displayed include lens zooming rate, angle, alarm, clock and preset point title.

Len zooming rate indication: In form of Z XXX, and XXX is the current zooming rate of lens.

Angle position: In form of PXXX/TXX, the three digits after P is horizontal angle and the two digits after T is vertical angle. The angle of Zero position can be defined by user on menu or defaulted by the system.

For example: P235/T35 displayed on screen indicates that the current device is at a position of 235 ° of horizontal angle and 35 ° of vertical angle.

Alarm: when an alarm is triggered, screen will display relevant alarm number and a horn-shaped pattern in front alarm number. If alarm is triggered in several channels, the number of alarm triggered will flash.

Clock display: in form of X day□X month□XXXX year   week-day X   XX hour□XX minute □XX second. Hour is displayed with 24 hour system.

Preset point label display: utilized preset point label is displayed.

Chapter 4 Menu Operation

4.1 Main menu

[Notice]: Different types of Dome with a different menu.

Enter no. 95 preset point to enter device Main menu as shown in Figure 4-1.

Change cursor position through joystick and move the cursor on the menu option to be selected. Press <OPEN> to confirm, i.e., operation can be done on this menu options. If current menu contains sub-menu, and then it will enter the corresponding sub-menu.

To perform operation on menu option, the selection number behind menu can be changed by moving joystick up and down. Press <OPEN> to confirm and return to previous menu. The same procedure is followed for the next operation for which no description is given. Select "Exit" menu option to confirm and exit from menu operation.
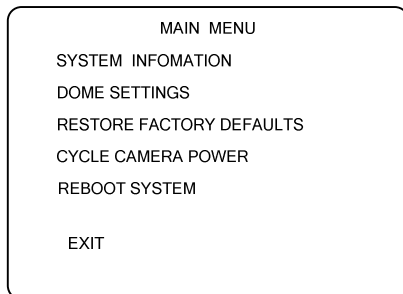
```
        MAIN  MENU                          SYSTEM  INFORMATION

    SYSTEM  INFOMATION           DOME DRIVER MODEL      SEE THE DOME

    DOME SETTINGS                DOME ADDRESS                     0

    RESTORE FACTORY DEFAULTS     COMMUNICATION            9600,N,8,1

    CYCLE CAMERA POWER           TEMPERATURE                   35°C

    REBOOT SYSTEM                SOFTWARE VERSION               2.0

                                  LANGUAGE                 ENGLISH
        EXIT
                                        BACK        EXIT
```
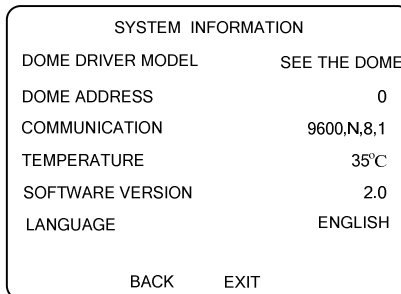
| Figure 4-1 | Figure 4-2 |

4.2 Sys information

This menu displays current dome system information, as shown in Figure 4-2. Information in menu option can not be changed and Temperature refers to temperature inside device cover.

Click "Return" to return to the previous menu, or click "Exit" to save the settings. Operation is similar to all level submenus.

4.3 Dome settings

On entering dome settings menu, information as shown in Figure 4-3-1 is displayed. There are totally two interfaces for dome settings menu, as shown in Figure 4-3-1 and Figure 4-3-2 respectively. The two interfaces can be switched over by moving joystick left or right. During interface switch-over, cursor shape can be changed from time to time to indicate the interface status (first page, end page and middle page). The controlled items are selected still by moving joystick up and down.
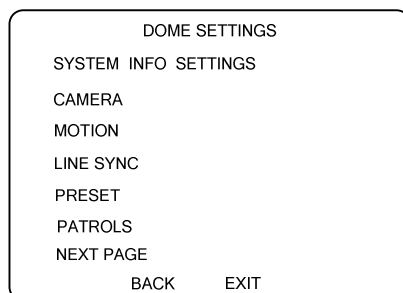
```
        DOME SETTINGS                        DOME SETTINGS
                                   PATTERN PATH
    SYSTEM  INFO  SETTINGS
                                   PRIVACY BLANK
    CAMERA
                                   ALARM INPUTS
    MOTION
                                   AUX OUTPUTS
    LINE SYNC
                                   CLEAR SETTINGS
    PRESET
                                   PASSWORD
    PATROLS

    NEXT PAGE
            BACK        EXIT
```
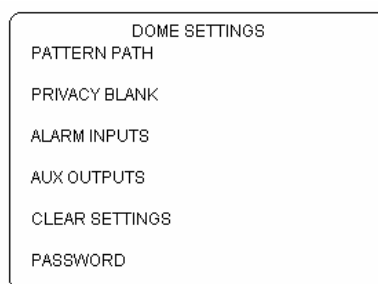
| Figure 4-3-1 | Figure 4-3-2 |

4.3.1 System information setting

System information setting menu is shown in Figure 4-3-3.

1 Device soft address:

When soft address is enabled, device will apply soft address. This unit supports 1~255 device soft addresses. However, consideration shall be given on the supporting range of currently applied keyboard for device address when soft address is set. When soft address is disabled, device will apply the hard address on dialing code on the base board. Among these addresses, the hardware address 0 is the broadcasting address which can receive control message from any address. If control device address is zero, all devices can be brought under control.
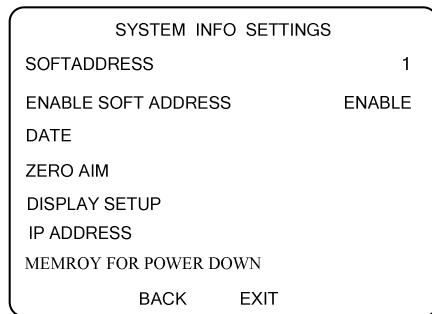
```
        SYSTEM  INFO  SETTINGS

SOFTADDRESS                    1

ENABLE SOFT ADDRESS      ENABLE

DATE

ZERO AIM

DISPLAY SETUP

IP ADDRESS

MEMROY FOR POWER DOWN

          BACK      EXIT
```
```


     Y. M. D.                08  05  06

     H. M. S.                16  03  12


     IRIS+   OK
     IRIS-   CANCEL


```
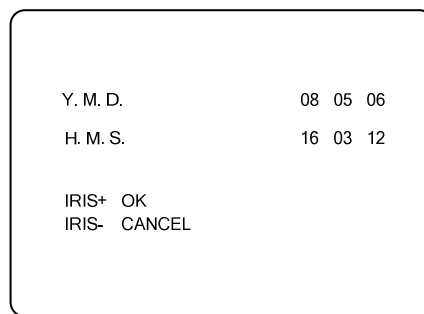　　　　　Figure 4-3-3　　　　　　　　　　　　Figure 4-3-4

2 System date:

System date interface is shown in Figure 4-3-4. The interface in Figure indicates that the current date is 15 hr 33 m 25 s, Jan. 18, 2007. Menu options to be modified are selected by moving joystick left or right.

3 Zero position angle setting:

After entering this menu, move joystick left or right to define the zero position angle of device in horizontal level. Save the setting and exit after selection.

4 Display information setting:

Display information setting menu interface is shown in Figure 4-3-5.

The display duration can be selected independently with each menu option. The display time interval can be 2 seconds, 5 seconds or 10 seconds. Normal open mode or close mode can be selected as well. Each display position is fixed and preset point display position covers position angle display and lens zooming rate display. If both are set on Normal open mode, preset point title will always be displayed under preset point mode. Under the other modes, the position angle and lens zooming rate will be displayed. Alarm prompt and menu operation can be done at the same time. The difference is that alarm linkage will be triggered under non-menu mode, while no alarm linkage will be triggered under menu mode.
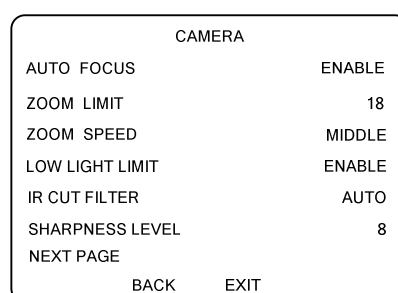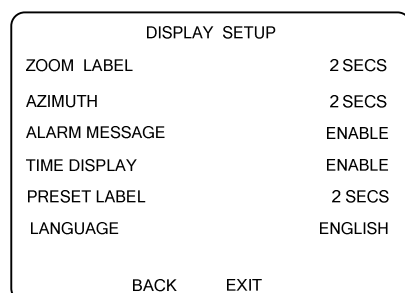
```
          DISPLAY  SETUP

ZOOM  LABEL              2 SECS

AZIMUTH                  2 SECS

ALARM MESSAGE           ENABLE

TIME DISPLAY            ENABLE

PRESET LABEL            2 SECS

  LANGUAGE             ENGLISH


        BACK      EXIT
```
```
               CAMERA

AUTO  FOCUS              ENABLE

ZOOM  LIMIT                  18

ZOOM  SPEED             MIDDLE

LOW LIGHT LIMIT         ENABLE

IR CUT FILTER             AUTO

SHARPNESS LEVEL             8

NEXT PAGE

          BACK      EXIT
```

Figure 4-3-5   Figure 4-3-6

```
        CAMERA                                    CAMERA
BACKLIGHT              ENABLE            PICTURE FLIP            ENABLE
EXPOSURE MODE            AUTO            WHITE BALANCE          OUTDOOR
IRIS                       8            R  GAIN                     30
SHUTTER                   30            B  GAIN                     30
GAIN                       2            SLOW EXPOSURE LEVEL          2
EXP COMP                   8
NEXT PAGE
        BACK     EXIT                            BACK      EXIT
```
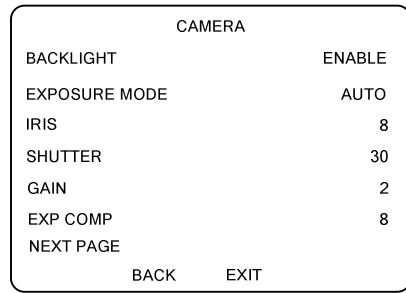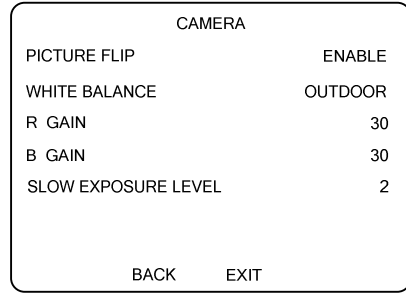
Figure 4-3-7   Figure 4-3-8

4.3.2 Camera function

Camera function menu has two interfaces, as shown in Figure 4-3-6, 4-3-7 and 4-3-8. When it is not on menu option operation mode, three interfaces can be switched over by moving joystick left or right.

1 Auto focus:

Under auto focus mode, camera will automatically adjust the focus to get clear image, and the manual FAR and NEAR focus adjustment buttons will be disabled with this function on. When no auto focus is used, focusing shall be done manually.

2 Zoom Limit:

This unit has zooming options 18, 36, 72, 144 and 216. Max. optic focus variation is 18 times.

3 Zooming Speed:

Zooming variation speed comes in three positions, i.e., high, medium and low.

4 Low lighting Limit:

The shutter will automatically slow down to obtain clearer figure through exposure time extension under low lightening.

5 IR Cut Filter:

IR Cut Filter can be set into both auto and manual mode. The camera will automatically convert CCD sensitivity according to ambient light change. If the function is disabled, color display or black & white display can be selected through "Day" and "Night" on the menu.

6 Sharpness:

Options are from 1 to 16 and 16 is the most legible position.

7 Backlight Comp

When backlight compensation is on, camera will automatically compensate the brightness of dark object on the background that is under strong light, and adjust bright background, in order to avoid light conglomeration on the entire figure due to bright background and unidentifiable dark object. Thus, legible Figure can be obtained.

8 Expo Pattern

Exposure pattern can be set to one of auto mode, iris, shutter preference and self-defined mode. When setting is automatic, iris, shutter and gain will all be automatic. When it is set to iris preference, the iris will take setting value, while shutter and gain will be automatic. When it is set to shutter preference, the iris will take setting value, while iris and gain will be automatic. When it is set to self-definition, the iris, shutter and gain will all take their setting values.

9. Iris

Iris can be set from 0 to 17. 17 is the biggest iris. The bigger the iris is, the brighter the image will be.

10 Shutter

Shutter can be set into 1, 2, 4, 8, 15, 30, 60, 125, 180, 250, 500, 1000, 2000, 4000 or 10000. If it is set to X, the shutter time is 1/X.

11 Gain

Gain can be set from 0 to 15. The bigger the gain is, the brighter the Figure will be.

12 Expo Comp

Exposure compensation effect can be adjusted through exposure volume adjustment.

13 White Balance

The color temperature gap is extremely big with different lights. Whiteness balance correction will compensate different color temperature, and thus the true color of the object can be restored. This unit has four modes: auto, indoor, outdoor and user mode. When it is on user mode, "Red" and "Blue" color compensation options will be enabled.

4.3.3 Run Pattern

Run pattern menu has two interfaces as shown in Figure 4-3-9 and Figure 4-3-10. If menu options are not selected on interface 1, it can enter interface 2 by moving joystick to the right. Likewise, if menu options are not selected on interface 2, it can enter interface 1 by moving joystick to the left.
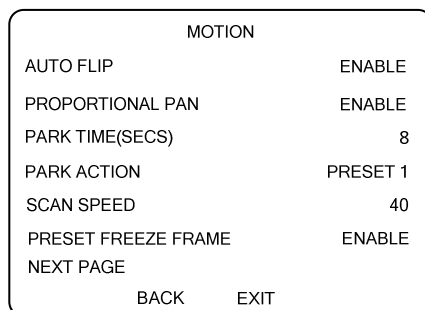
MOTION	
AUTO FLIP	ENABLE
PROPORTIONAL PAN	ENABLE
PARK TIME(SECS)	8
PARK ACTION	PRESET 1
SCAN SPEED	40
PRESET FREEZE FRAME	ENABLE
NEXT PAGE	
BACK EXIT	

MOTION	
LIMIT STOPS	ENABLE
<SET MANUAL STOP>	
<CLEAR MANUAL STOP>	
<SET SCAN STOP>	
<CLEAR SCAN STOP>	
MOVING SPEED LEVEL	MIDDLE
PRESET SPEED LEVEL	4
BACK EXIT	

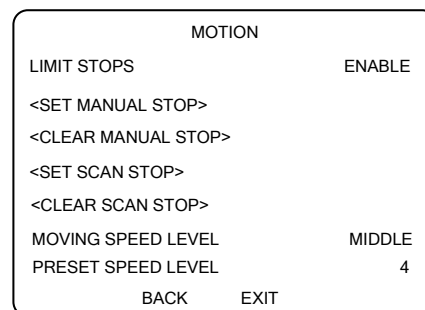Figure 4-3-9   Figure 4-3-10

1 Auto Flip

If the object is on the bottom of the screen during manual scan, camera will automatically reverse 180° to ensure continuous monitoring. If joystick is not released during this period and keeps moving up (i.e., the device will run in the direction in which vertical angle increases), then the dome will run in the direction in which the vertical angle reduces after flipping to keep tracing continuity. After joystick is released, order resolution will restore to its original status.

When auto flip is disabled, vertical motion of dome will not trigger horizontal motion.

Note: The function will be invalid when pattern path is set. If the dome is still in limitation area after turning over by more than 180 °, then the function will be enabled. Otherwise the function will be invalid.

2 Proportional Pan:

When proportional pan function is started, PTZ horizontal and vertical motion speeds will automatically change accordingly. When portion increases, camera motion will automatically slowed down; when portion decreases, camera will automatically speed up in order to achieve better object tracing effect.

If this function is closed, it will be difficult to trace slow motion object or focus on still object with higher proportion.

Note: this function will always be valid on setting pattern path.

3 Park Time

When no control signal is received within a period of time and park action is set, then the dome will perform this motion. Park time can be set from 5 seconds to 720 seconds.

Note: If no control signal is received for a period of time under following circumstances, no automatic running will be performed: 1. Call special preset point and relative motion isn't stopped; 2. External alarm with motion unstopped.

4 Park Action

The option includes three scan modes as auto scan, scan by frame and random scan with 4 patrol path, 4 pattern path and 8 preset points. Automatic running mode can also be set into closed mode.

5 Scan speed

It is the speeds for automatic scan, frame scan and random scan, which can be set from 1 to 40 corresponding to device horizontal speed from 1 °/s to 40 °/s. Due to the speed-up and slow-down of dome running, if scan area is small with high scan speed and scan stops settings, the scan may have already slowed down before reaching the preset speed and therefore it can not reach the scan speed.

6   Preset Pic Freeze:

When preset point is called with this function on, video image will keep the previous status before the dome reaches the target preset position.

7 Limit Stops:

Left and right limits can be set for both joystick operation and scan to let the dome runs in a certain ranged area. This limit on device will be valid only when limit stops is open. If limit stops is set to close mode, then the dome will not be restricted even if there is stops setting.

8 Manual stops:

To set the operation limit of joystick, enter this menu option and move the joystick to the left or right to the desired limited area based on the prompt. Move the joystick to the right after pressing <OPEN> to confirm. After it reaches the desired limited area on the right, press <OPEN> to confirm and the setting is finished. If "Limit Setting" menu option is on Open status, device will move the joystick to the left and the boundary reached is the left limit point.

When device moves the joystick to the right, the boundary reached is the right limit point. If there has already been a limit stop setting, the new setting will cover previous setting.

9   Clear manual stops

This option is used to clear the operation limit of joystick already set.

10   Auto Scan Stops

It is used for setting limit stops in auto scan mode. Setting method is same as the joystick operation.

Note: If manual stops are already set, automatic scan will be restricted within manual stops area no matter there is a auto stop setting or not.

11   Clear Auto Scan Stops:

This menu option is used to clear the operation limit stops of joystick already set.

4.3.4 Line Sync

Note: Version 2.00 does not support line synchronization function.

4.3.5 Presets

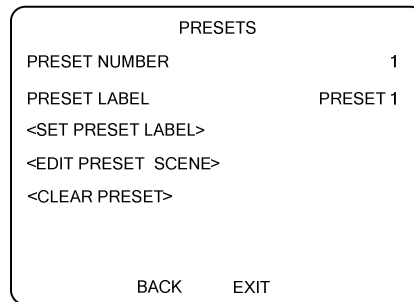Preset point menu interface is shown as Figure 4-3-11.

```
                    PRESETS
PRESET NUMBER                        1

PRESET LABEL                  PRESET 1

<SET PRESET LABEL>

<EDIT PRESET  SCENE>

<CLEAR PRESET>



             BACK      EXIT
```
Figure 4-3-11

Preset Number

The dome supports up to 200 preset points. "Preset Number" displays the preset point under the current operation. If this preset point has already been defined, the description of this preset point will be displayed below. If it is not defined, "No Definition" will be displayed. Preset points for special application will remain in control protocol and do not display in setting therefore.

1   Edit Preset Label

Preset label settings is as shown in Figure 4-3-12 (in editing status).

The label input can be numeric, capital or small English letter, special symbol or the Chinese character contained in Level-I Chinese Word Bank. The inputting method contains simple editing function with the following function keys:

ZOOMWIDE

For switching between input status INS or OVR, where INS indicates that input characters are inserted to cursor position and OVR indicates that input character will displace the character at cursor position. Cursor will automatically move forward after character is input.

ZOOMTELE

Delete the characters at cursor position.

FOCUSFAR

Move the cursor under the title in cycle from right to left.

FOCUSNEAR

Switch input status among Numeric, Capital/Small English, Symbol, Chinese and Editing status.

OPEN

Confirm/enter into the operation of next level.

CLOSE

Cancel/return to the previous operation.

UP, DOWN, LEFT, RIGHT
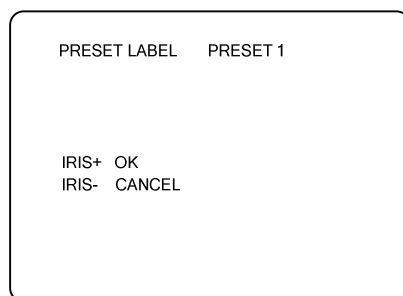
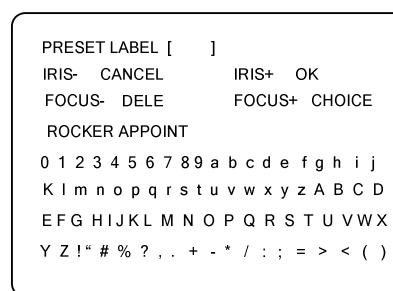Select Chinese character to be input/move cursor/input phonetics.

```
┌─────────────────────────────┐   ┌─────────────────────────────────────┐
│                             │   │ PRESET LABEL [      ]               │
│  PRESET LABEL     PRESET 1  │   │ IRIS-   CANCEL         IRIS+   OK    │
│                             │   │ FOCUS-  DELE          FOCUS+  CHOICE │
│                             │   │  ROCKER APPOINT                     │
│                             │   │ 0 1 2 3 4 5 6 7 89 a b c d e f g h i j│
│  IRIS+  OK                  │   │ K l m n o p q r s t u v w x y z A B C D│
│  IRIS-  CANCEL              │   │ E F G HIJKL M N O P Q R S T U VW X   │
│                             │   │ Y Z !" # % ? , . + - * / : ; = > < ( )│
│                             │   │                                     │
└─────────────────────────────┘   └─────────────────────────────────────┘
        Figure 4-3-12                        Figure 4-3-13
```

Description is given through the following examples:

1) Input of numeric, capital & small English letter and special symbol is described through the example of English letters.

Small English letter input is shown in Figure 4-3-13.

Select input status for Small English with FOCUS NEAR, and the fist 10 letter in English will display on the menu. If the letter to be input is "b", please move the cursor to "b" with LEFT and RIGHT and then press OPEN to confirm. If the letter to be input is "k", please switch to the following 10 English letters with UP and DOWN, so that they will display in the bracket, and operate similarly as letter "b" input (during this period, ZOOMWIDE, ZOOMTELE, FOCUSFAR and FOCUSNEAR will all be effective). On finishing letter input, press CLOSE to return to editing mode., and press OPEN to finish input. The modifications will be cancelled if CLOSE is pressed.
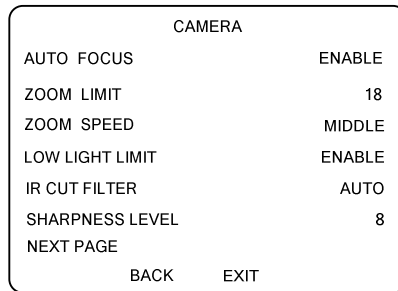
```
                    CAMERA
AUTO  FOCUS                      ENABLE

ZOOM  LIMIT                         18

ZOOM  SPEED                     MIDDLE

LOW LIGHT LIMIT                  ENABLE

IR CUT FILTER                       AUTO

SHARPNESS LEVEL                    8
NEXT PAGE
               BACK      EXIT
```
Figure 4-3-14

2　Reference Info (Lens Position)

After entering this menu, users can operate PTZ and lens to set the position of current preset. If the position on this preset point has already been set, the original setting will be covered.

Note: the lens position setting will be restricted within the limited area when manual stops are set.

3　Camera Func

There are three interfaces on Camera Function sub-menu in Presets menu, as shown in Figure 4-3-14, 4-3-15 and 4-3-16. Camera function can be set separately for each preset point, and the setting is valid on preset point mode only. After preset point status is changed, the camera function parameters will automatically restore to default settings.
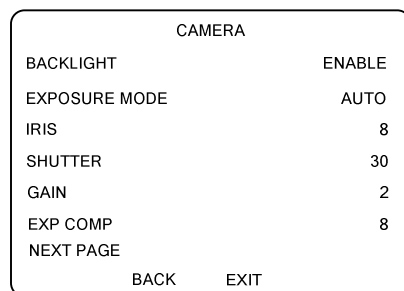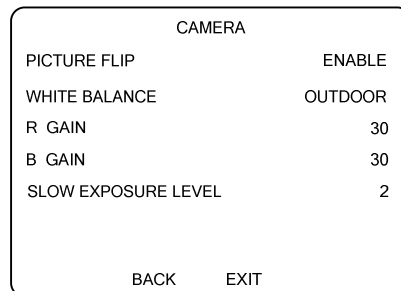
```
                CAMERA
BACKLIGHT                   ENABLE

EXPOSURE MODE                 AUTO

IRIS                            8

SHUTTER                        30

GAIN                            2

EXP COMP                        8
NEXT PAGE
            BACK      EXIT
```
```
                CAMERA
PICTURE FLIP                ENABLE

WHITE BALANCE              OUTDOOR

R  GAIN                         30

B  GAIN                         30

SLOW EXPOSURE LEVEL             2



            BACK      EXIT
```
Figure 4-3-15　　　　　　　　　Figure 4-3-16

4　Clear Presets

This menu item is used to delete current preset point.

4.3.6　Patrols

See Figure 4-3-17 for patrol menu interface.

1　Patrol Num

It is the number of patrol path for the current operation. This unit supports 4 patrol paths numbered from 1 to 4.

```
        PATROLS                          INDEX    PRESET      TIME  SCAN SPEED
PATROL NUMBER              1              1        0           2      30
                                         2        0           2      30
<EDIT PATROL PATH>                       3        0           2      30
<PATROL PREVIEW>                         4        0           2      30
<CLEAR PATROL>                           5        0           2      30
                                         6        0           2      30
                                         7        0           2      30
        BACK    EXIT                     8        0           2      30
```
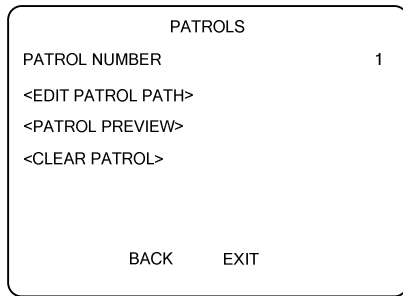
<div style="text-align:center">Figure 4-3-17   Figure 4-3-18</div>

2   Edit Patrol Path

Menu interface of edit patrol path is shown in Figure 4-3-18.

Move joystick up and down to select the numbers in "Number" column. Move the joystick to left and right to select between "Preset", "Dwell Time" and "Scan Speed". When cursor stays on "Preset", "Dwell Time" and "Scan Speed", move the joystick up and down to change setting value. Presets can be deleted or added in the edited path. "Preset Point" is initialized as 0, "Stay Time" as 2 and "Cruise Speed" as 30. Click Open and exit after finish setting.

Note: Patrol begins in horizontal direction. After horizontal scan is finished, it will quickly reach the vertical preset position, followed by a pause and then corresponding lens zooming change.

3   Preview Path

Users can view the patrol path already been set under this function, and stop preview on clicking OPEN.

4   Clear Path

This menu option is used to delete current patrol path.

4.3.7 Pattern Path

Pattern Path menu interface is shown in Figure 4-3-19.

```
        PATTERNS                          REMAINING MEMORY(%)        100
PATTERN NUMBER             1

<EDIT PATTERN PATH>
<PATTERN VIEW>                            IRIS+   OK
<CLEAR PATTERN>                           IRIS-   CANCEL
 REMAINING MEMORY(%)       100


        BACK    EXIT
```
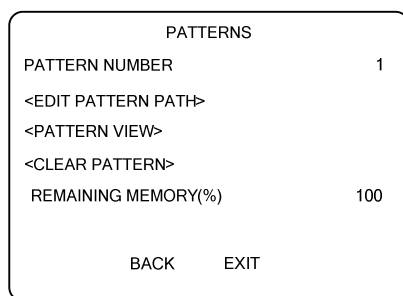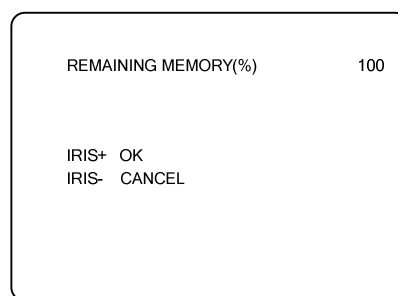
<div style="text-align:center">Figure 4-3-19   Figure 4-3-20</div>

1 Pattern Path Num

It is the Pattern Path number for the current operation. This unit supports 4 Pattern Paths from 1 to 4.

2 Program Path

The submenu of program path is shown in Figure 4-3-20.

Enter this option by pressing Enter button and the following operation on dome will be recorded. The current available space will be display lively, and the path can no longer be recorded after the remaining space is 0.

Note: Among the four paths, path 1 has the highest priority and path 4 the lowest. To edit a certain path when another edited path with lower priority already exists or this path has already been edited, then the system will indicate whether the previous editing shall be deleted or re-editing is required, which can be done by following the prompt message. If no manual stops are set and this stops are set in the following operation, this stops will act on the motion recorded in the Pattern Path.

3 Preview Path

If the Pattern Path corresponding to the current path has been set after this menu option is entered, this Pattern Path shall be run for preview. After Exit is entered, the Pattern Path will stop running.

4. Clear Path

This menu option is used to delete the current patrol path.

Note: when a path is deleted, the other paths already edited with lower priority will be deleted at the same time.

4.3.8 Privacy blanking

The menu interface for privacy cover-up is shown in Figure 4-3-21.

1 Window Num

It is the window numbers for available operation from 1 to 12. Up to 8 windows can be set on one image.

2 Window Status

Window status can be set as Open or Close. If current window has not been set, users cannot set it as Open. After Set Window, the default window status will be Open.

```
         WINDOW BLANKING                          SET WINDOW POSITION
WINDOW NUMBER                 1                    FOCUS+   SWITCH CONTENT
WINDOW ENABLE            ENABLE
<WINDOW SETTING>                                  IRIS+   OK
<CLEAR WINDOW>                                    IRIS-   CANCEL



         BACK     EXIT
```
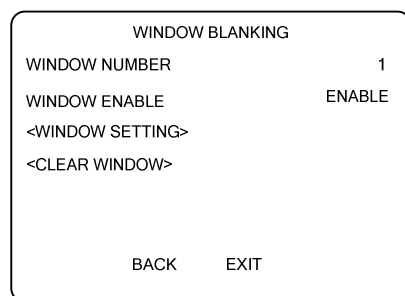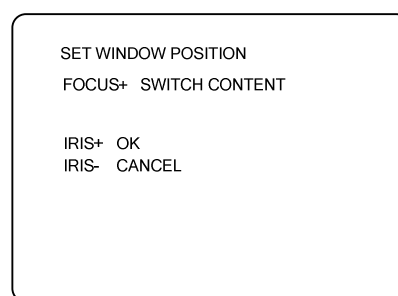
| Figure 4-3-21 | Figure 4-3-22 |

3 Set Window

Set Window is shown in Figure 4-3-22. Press OPEN to enter Set Window interface and the

monitor will display a semi-transparent purple blanking at the center. Now, the setting is "Adjust Position". The masked area can be moved to video center by moving joystick up and down or to the right or left. Then, press NEAR to change the setting to "Adjust Size". The size of masked blanking can be adjusted by joystick. Press OPEN to save masked window settings after adjustment. At the same time, window color will change to non-transparent gray. The setting information can be switched for multiple times. If the window has already been set before entering this interface, the system will indicate whether to re-setting or not, and users can follow the prompt operation guide afterward.

4 Clear window

This setting is used to delete the blank window with the current number.

4.3.9 Alarm Inputs

Alarm Inputs menu is shown as Figure 4-3-23.

1 Alarm Resume

This function can be set as Open or Close. When an alarm is triggered, the dome will perform the preset operation. If alarm resume is open after the alarm is eliminated, the dome will return to the status before the alarm is triggered. If alarm resume is closed, the dome will stop the current movement only and not return to the status before the alarm triggered.

Note: 1. Pre-alarm status includes PTZ position, lens zooming factor, focus and iris parameters before an alarm is triggered.
2. If the dome is in motion before an alarm triggered, it will return to previous PTZ position and then continue with the motion before the alarm is triggered.

ALARMS		ALARM SETTINGS	
RESUME	ENABLE	ALARM NUMBER	1
SEQUENCE(SECS)	5	ALARM PRIORITY	HIGH
RESET DELAY(SECS)	5	ALARM ACTION	DISABLE
<ALARM SETTINGS>		ACTIVATE AUX	DISABLE
		ALARM CONTACT	ALWAYS OPEN
BACK EXIT		BACK EXIT	
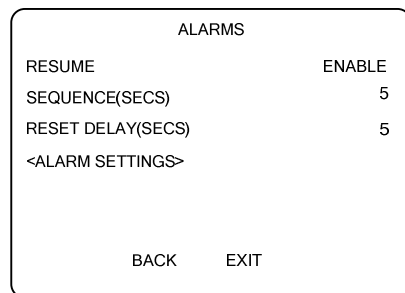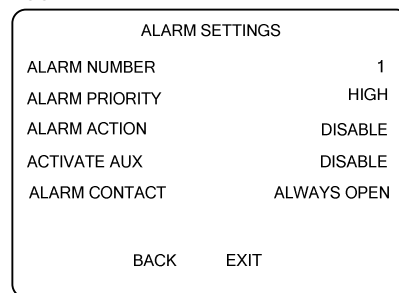
Figure 4-3-23   Figure 4-3-24

2 Alarm Sequence

If there are more than one channel with highest priority among the alarm channels currently triggered, then the dome can do all the preset operations following the time reference between the alarms, and the time interval can be set from 1 second to 200 seconds.

3 Alarm Rest Delay

After the alarm for one channel is eliminated, the alarm of this path will not be triggered for a certain period of time in order to avoid duplication. This time interval can be set from 0 second to 300 second.

4 Alarm Settings

Alarm settings menu is shown in Figure 4-3-24.

(1) Alarm Num

Num 1 to 6 refers to the alarm channel num.

23

(2) Priority

      Alarms priority is divided into three priority levels as high, medium and low. If alarms triggered are at different priority levels, only the linkage corresponding to the highest priority alarm will be performed. If there is more than one alarm with the highest priority, the current alarm act will be switched automatically among them in every alarm sequence time.

(3) Alarm Act

One Alarm Act can be set for each alarm input channel. When an alarm is triggered, this action can be performed automatically. The alarm act can be set in preset point 1~8, patrol 1~4 or Pattern Path 1~4. If no response action is needed, it can be set to "NONE".

(4) Aux Output

The dome has 2 auxiliary outputs and each alarm channel can be related with one channel output. If it is set to "1", then the alarm channel will be referring to auxiliary output 1. If it is set to "2", then the alarm channel will be referring to auxiliary output 2. Set to "NONE" if no auxiliary output is needed.

(5) Alarm Inputs

      It is used for defining alarm input signal type and can be set to NO, NC and Off. With Normal Close, the low-electric-level alarm will be triggered. With Normal Open, the high-electric-level alarm will be triggered. With Off, this path of alarm will be closed.

5 Aux Output

    Auxiliary output menu is shown in Figure 4-3-25.

(1) Aux Output

It is used to set auxiliary output type to Normal Open or Normal Close. With Normal Open, output 1 is valid. With Normal Close, output 0 is valid.

(2) Dwell time

    It refers to output interval on this output channel, which can be set from 0 to 60 sec.

ACTIVATE AUX	
AUX 1 MODE	ALWAYS CLOSE
DWELL TIME(SECS)	0
AUX 2 MODE	ALWAYS CLOSE
DWELL TIME(SECS)	0
BACK	EXIT
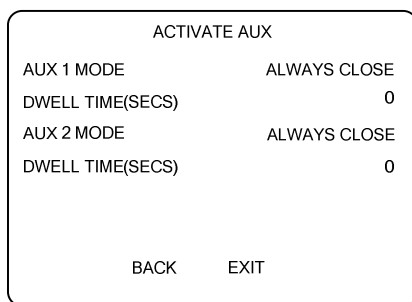
CLEAR
<CLEAR ALL PRESETS>
<CLEAR ALL PATROLS>
<CLEAR ALL PATTERNS>
<CLEAR ALL WINDOW BLANKING>
<RESTORE FACTORY DEFAULTS>
BACK   EXIT
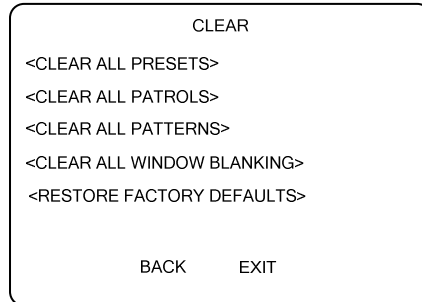
Figure 4-3-25   Figure 4-3-26

4.3.10 Clear Settings

    Clear Settings menu is shown in Figure 4-3-26 and used to clear dome settings.

Note: Please pay attention with "Restore Defaults" as all users' settings will be cleared and the dome will automatically reboot.

4.3.11 Password protection

Note: Version 1.00 does not support this function.

4.4   Restore Defaults

"Restore Defaults" menu is shown as Figure 4-3-26. The dome will be restored to below default parameters this operation is taken.

Device address	0
CommSpeed	9600bps
120Ω matching resistance	closed
Dome Soft Address	closed
Azimuth Zero Display	Horizontal benchmark
Auto Focus	Open
Zoom Limit	Optics Zoom
Zoom speed	high
Low Light Limit	Open
IR Cut Filter	Automatic
Backlight Comp	Closed
Expo Pattern	Automatic
Exposure Comp	0dB
White Balance	Automatic
Auto Flip	Open
Proportion Pan	Open
Park Time	5 seconds
Park Action	None
Scan speed	28 °/second
Preset Pic Freeze	Close
Limit Stops	Close
Alarm Resume	Open
Alarm switchover time	5 second
Effective Sequence	5 second
Alarm Inputs	Close
Aux Output 1 and 2	NC
Aux Output 1 and 2 Dwell Time	0 second
Alarm Display, Clock Display	Open
Zoom display, Reference Info, Preset Label display	Display for 2 seconds after restore

4.5   Camera Reset

It is used to reset the camera, and camera parameters will be restored to factory settings and

the camera will reboot.

4.6 System Reboot

It is for system rebooting.

Chapter 5 Parameters Configuration

[Notice]: This chapter is just for network dome.

There are several network parameters of the camera that need to be set after the hardware installation. Those parameters including IP address, subnet mask and port number, etc. can be set through various kinds of methods, 2 of which are introduced as below.

1. Set the camera parameters such as IP address and PPPOE through IE.

2. Set the camera parameters through the client software.

Please make sure that the PC and network dome are connected and can ping successfully before the parameter setting. 2 different ways of connections are showed as Fig. 5.1 & Fig. 5.2.
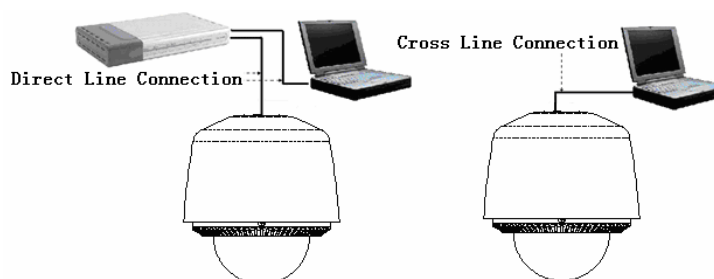
Fig 5.1 Direct Line Connection   Fig 5.2 Cross Line Connection

5.1 Set Parameters through IE

The default IP of the dome is 192.0.0.64 with 8000 as the default port, admin as the administrator, and 12345 as the password. The administrator can create up to 15 separate operators with different right levels.

To login the dome through IE, input the IP address in the address column, and the "Login" dialog box will pop-up as Fig. 5.3. Input your user name and password, and then click "Login" to enter the "preview" page. Double click the "Camera 01" channel or "Preview" button to view the menu as Figure 5.4. Right click the "Camera 01" channel, and the "Main Stream"□"Sub Stream" and "Open sound" options will popup. Select the Open sound option.
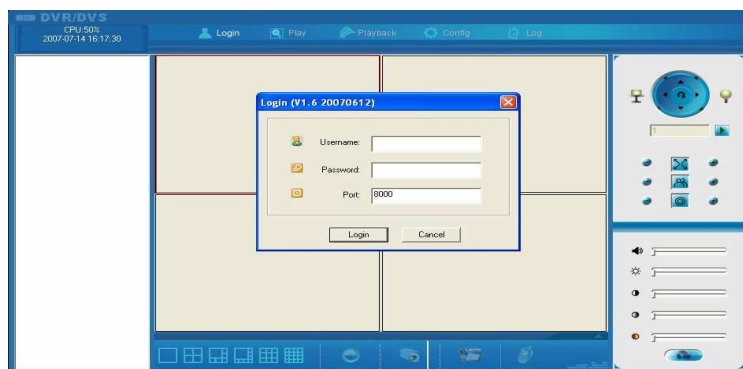
Fig 5.3 Login Interface
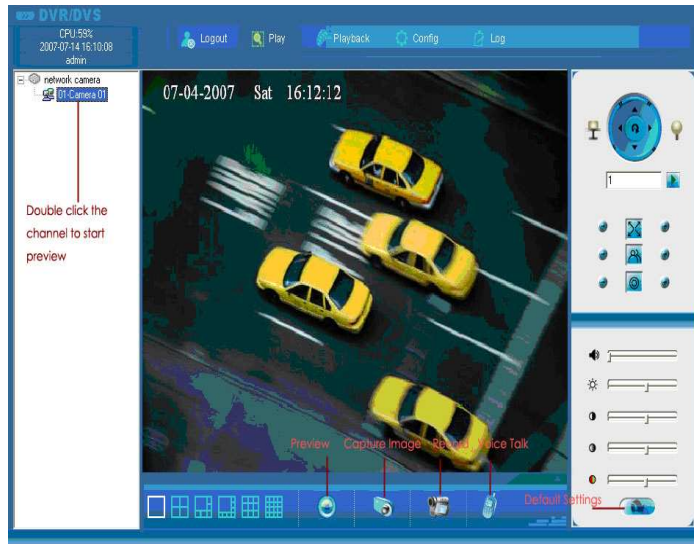
Fig 5.4 Previewing Interface

The "Playback" and "Log" functions are reserved as Fig. 5.4. To set the dome parameters through IE browser, click "Config" and wait for the "Remote Parameters Config" dialog box to pop up, and then set the parameters like IP address, etc. for your demand as Fig. 5.5.

For more specific information of "Remote Parameters Config", please refer to "Instructions of Client Software (version 4.0)" from Section 2.5.3 of remote-distance parameter settings. Instructions can be found in the client software4.0 in the path of "Start" → "Program"→ "client software 4.0" after installation.
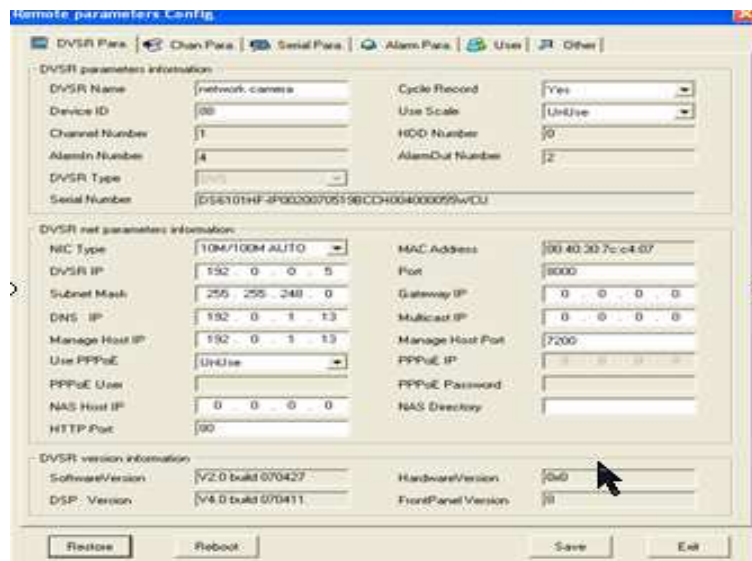
Fig 5.5 Remote Parameters Config

Notice   Security level settings are necessary for browsing equipments by IE. Please open the IE browser and set the security level to "Low" in "Tools/ Internet Options/ Security/ Customize" or enable the "ActiveX Controls and Plug-Ins" directly.

5.2 Parameter Configuration through Client Software

After the installation of client software 4.0, click the "client software 4.0 "in "Start"→ "Program"→ "client software 4.0", a message box of "Register Administrator" as Fig. 5.6 will appear by then for the first time running. Both the user name and password should be no less than 6 digits for registration.

Notice   Please keep the user name and password in mind .You may not be able to get access to the software if any of them is missing.
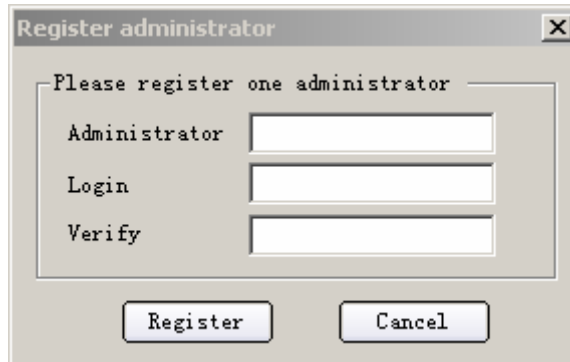
Fig 5.6 Register Administrator

Enter the registered user name and password as Fig. 5.7. Click "Login" to enter the "Preview" menu as Fig. 5.8.

Fig 5.7 User Login
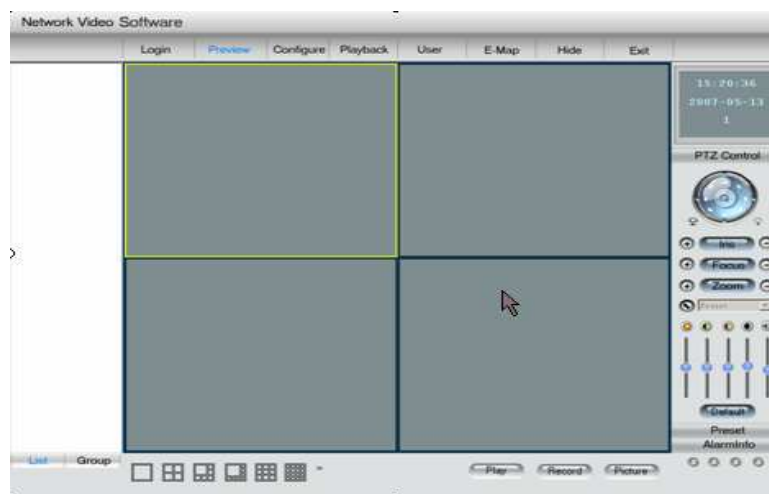
Fig 5.8 Preview Menu

Click the "Configure" button in Fig. 5.8, and then right click the blank spaces in the middle. Click the "Create Root Node" button as Fig. 5.9, and the "Area Properties" message will pop up as fig 5.10.
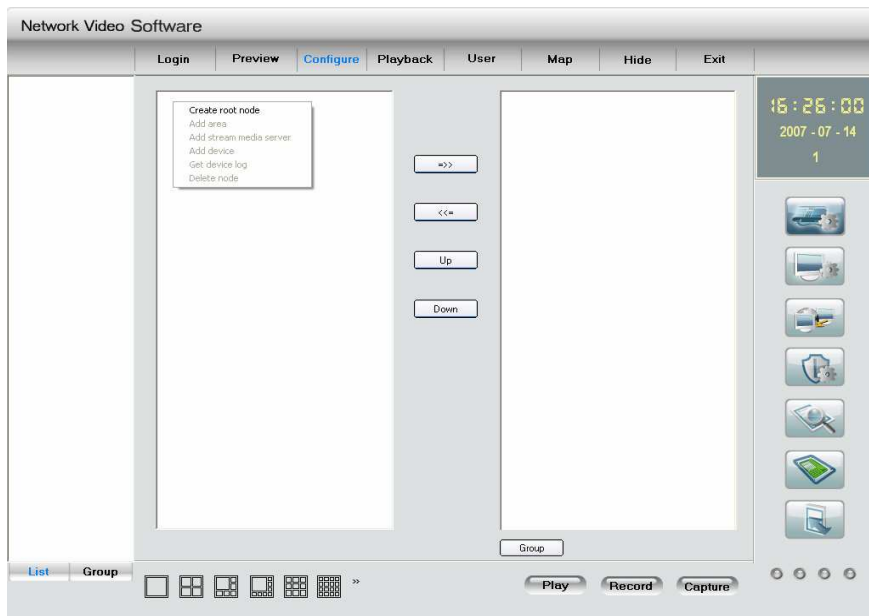
Fig 5.9 Create Root Node
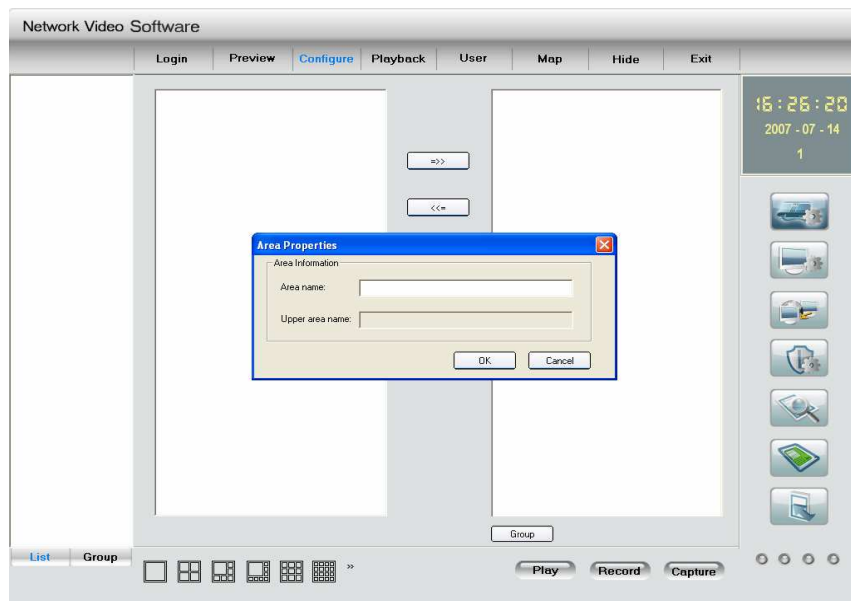
Fig 5.10 Area Properties

Input the area name (you can create whatever name you like) and click "OK" as Fig. 5.11. Then right click the area name you have just created as Fig. 5.12.
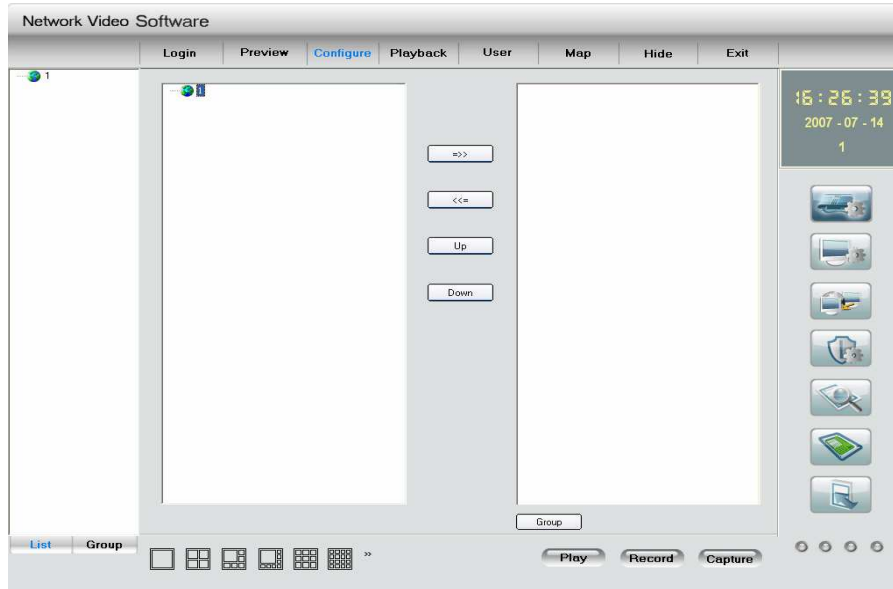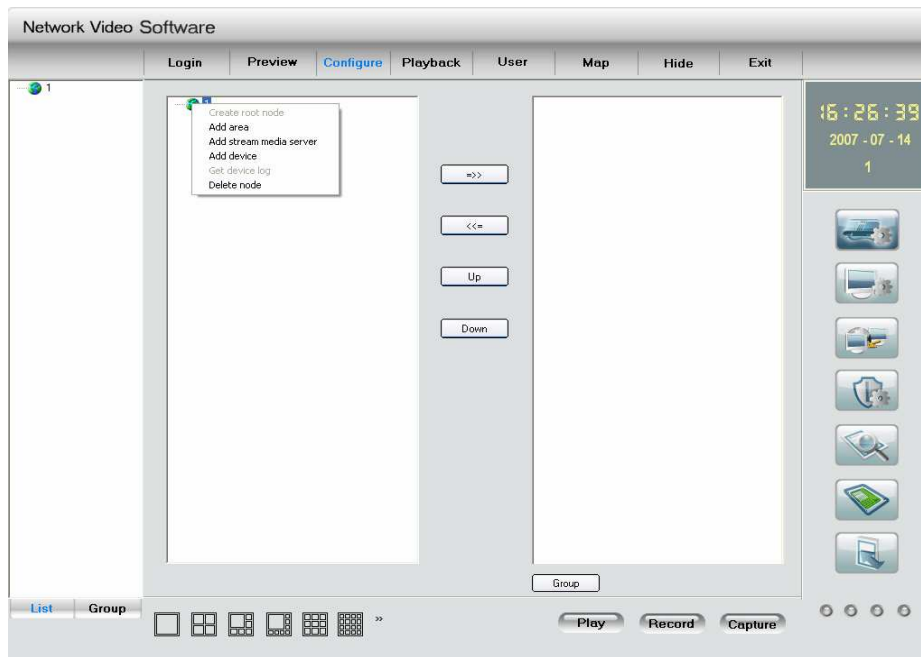
Fig 5.11Area Name Adding Completed

Fig 5.12 Right Click the Area Name

Click "Add Device", and the "Server Properties" dialog box will pop up as Fig. 5.13. Input your "Server Name" and select "HC" from the "Server Type" option. Select "Normal" from "Register" option. Input your dome IP in "Server IP", e.g. 192.0.0.64; "User Name": admin, "Password": 12345, and 8000 for the default "Port", and then modify "Channel" to 1. Click the "OK" button as Fig. 5.14.
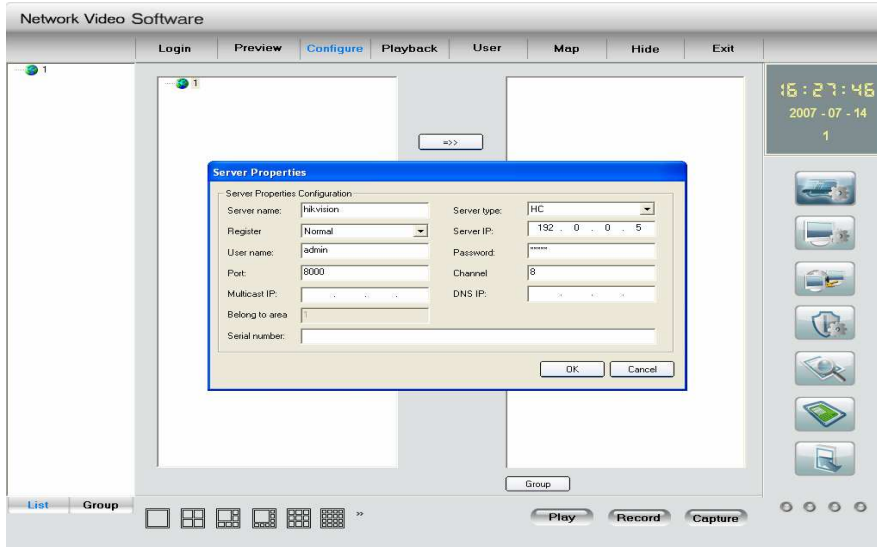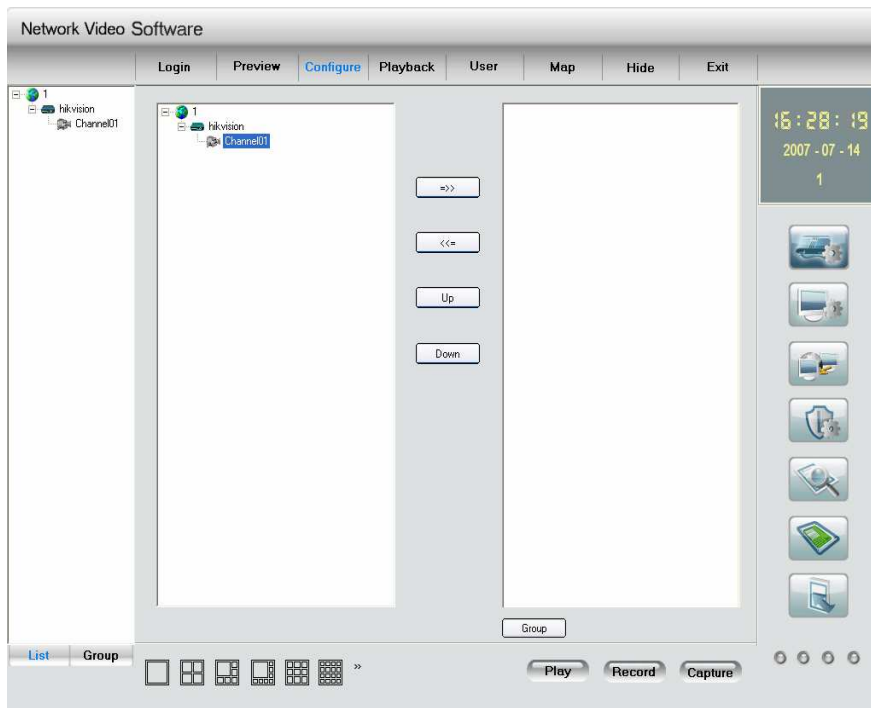
Fig 5.13 Add Device

Fig 5.14 DVR Adding Completed

Click the "Preview" button in Fig. 5.14 to enter the "Preview" menu as Fig. 5.15. Double click the channel name in the left tree to preview the pictures.
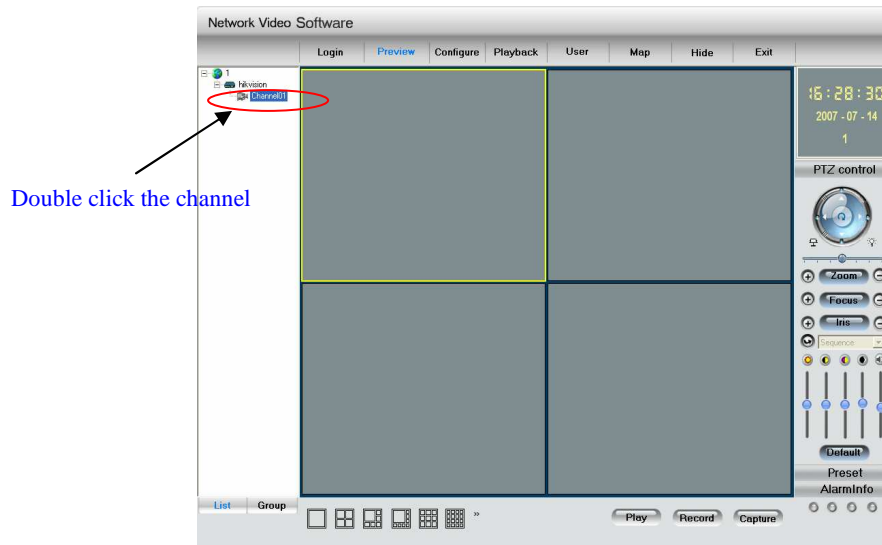
Fig 5.15 Preview Menu

Please refer to "Network Video Surveillance Software Operation Instruction (4.0)" for more detailed parameters configuration. You can find the document in PC Operating System after the installation of client software 4.0 by selecting "Start"-> "Program"-> "client software 4.0".

Chapter 6 WAN Access

The IP protocol supports WAN access based on PPPoE dial up function. Make sure that the software you are using supports the function before using these network functions.

6.1 Dial Up With PPPoE

Make sure that the user name and pass word of PPPoE are set correctly by the client software (refer to "User Manual of Network Digital Surveillance Software") as Fig.6.1. The dome will try to establish connection to the network with PPPoE function automatically every time when it is powered on, and get a dynamic IP address by then.
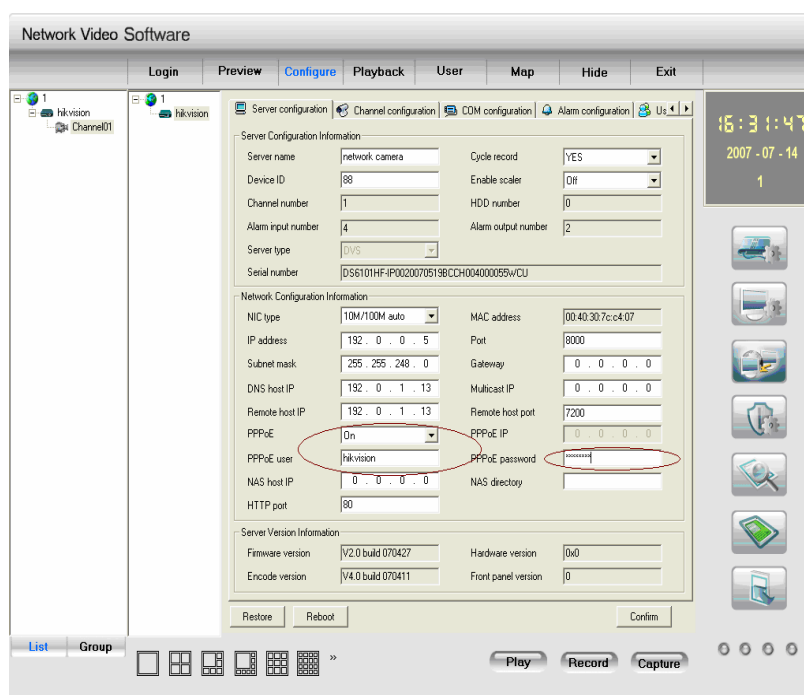
Fig 6.1 Dial Up with PPPoE

Notice　**Please make sure that the ADSL Modem is powered on .The dome needs to be restarted to establish the network connection after the configuration of PPPoE parameters for the first time.**

6.2 WAN Access

There are two methods to get the access, which are shown as below.

1. Get a static IP from your ISP for WAN access.

You can open some ports (such as 80 & 8000 ports) in the router which has got static IP from the ISP, and then connect them to the router. After that you can use the client software to control it. Turn to ch3.2 to find the client software operations.

2. Use DNS service for WAN access.

You will need a PC connected to Internet with static IP that owns software providing DNS service at the same time(such as IP Server)(the PC is so-called DNS server).You can also register a

domain name through the DNS service dealer and visit it with the domain name.

When network dome is connected to WAN with PPPoE, it will get an IP address, and send its name and the IP to the DNS server. The client software will immediately connect to the PC that used as the DNS server to tell it which network dome is waiting for access. Then the server will search for all the registered network domes, and match the dome with this IP. When the IP address is returned, the client software will connect to the network dome to get the video.

Operations: Run the client software 4.0, select "Configure"→ "Server Configuration" select network dome.

In the right tree, input "Server Name" & "DNS Host IP" in the "Server Configuration" box as Fig 6.1, and click "Confirm". Select "Configure"-> "Device Management", double click the network dome name you just added, the "server attribute" message box will pop up as Fig. 6.2. Make sure that the "sever name" is consist with the sever name in "remote config"; and select "private DNS" in "register mode";   then input the IP address of DNS server in "DNS address", click "Confirm". Then you can preview the picture in the "preview" menu.
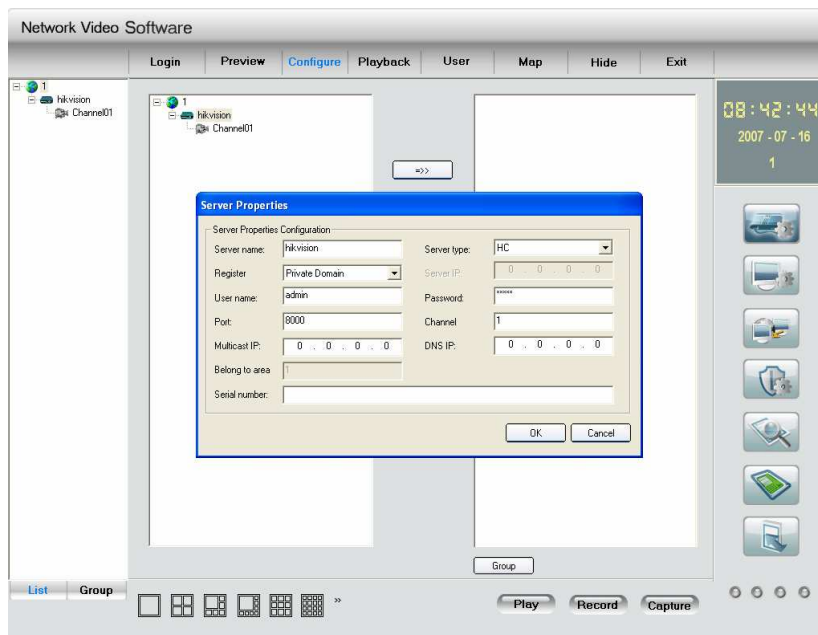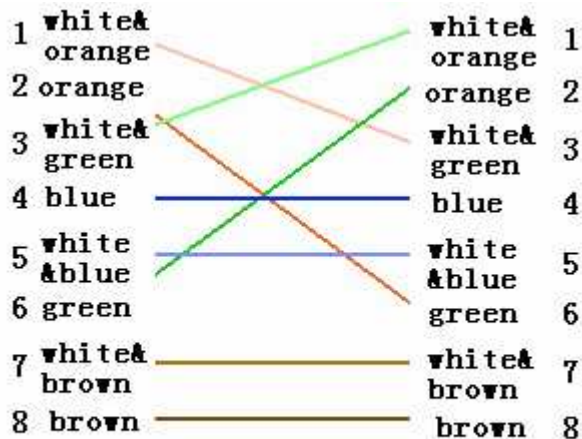

Fig 6.2 DNS Server

Appendix A   Making Network Wire

（1）The twisted-pair for connecting all-in-one network speed dome camera Network Ethernet and HUB (through line)

（2）The twisted-pair for connecting all-in-one network speed dome camera Network Ethernet and PC(cross wire)

Appendix B   RS485 Bus Common Sense

1. RS485 Bus Basic Features

According to RS485 Industry Bus Standard, RS485 Industry Bus is semiduplex communication bus with 120Ω Resistance, the maximum loading capability is 32 effective loads (including main control equipment and controlled plant)

2. RS485 Bus Transmission Length

When using 0.56mm□24AWG□cross wire as communication wire, the maximum transmission length in theory is relevant with the baud rate, the details are showed in the following tables:

Baud Rate	The maximum transmission length
2400BPS	1800m
4800BPS	1200m
9600BPS	800m

When using thin communication wire, or using the products in strong electromagnetic interference environment, or many devices are connected on the bus, the maximum length should become shorter accordingly, on the contrary, the maximum length should become longer.

3.   Connection Way and Terminal Resistance

1)   RS485 industry bus standards ask the devices being connected in daisy chained way, there are 120Ω terminal resistance at the two ends(show as figure one); simplified connection can use the connection method shown in figure two, but the length of "D" should be smaller than 7 meters.
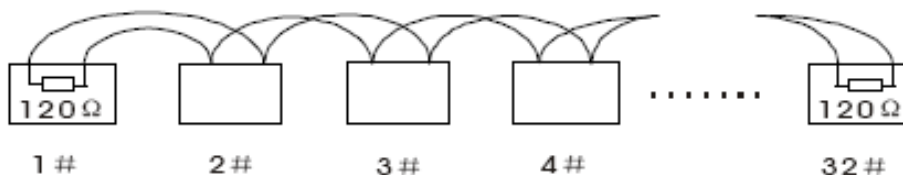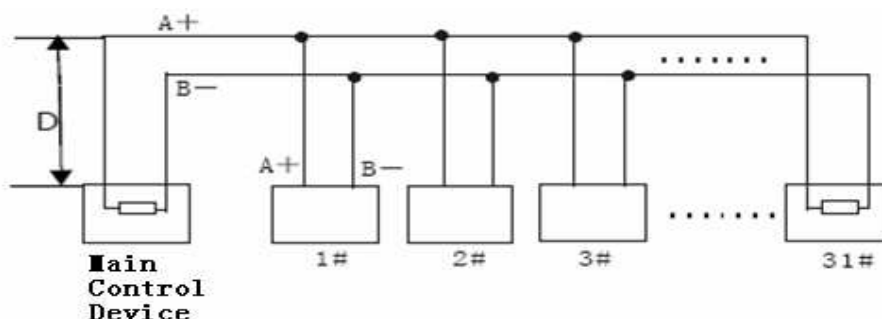

Figure one

Figure two

2)   The Connection Method of Speed dome Terminal 120Ω Resistance

Speed dome Terminal 120Ω matched resistance can be connected by setting the dial-up switches on the speed dome chassis, as shown in figure three. When the speed dome leave the factory, 120Ω matched resistance is not connected as default; users can set the 10th bit of the switches on to connect the matched resistance, on the contrary, if users don't want to connect the matched resistance, turn the 10th bit of the switches off.
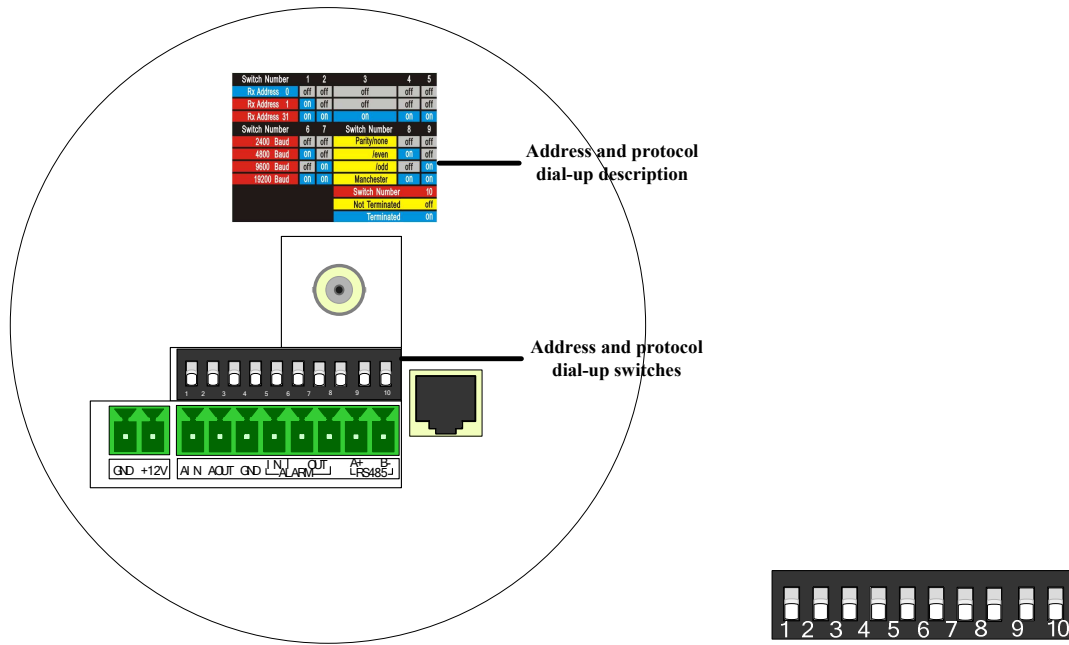

Figure three

4. The problems in practical

Users are likely to use star connection in practice, at this time match resistance should be connected at the two devices that most apart(In figure four, those are device one and device 15). But as this connection way does not meet the RS485 Industry Standards, problems like signal reflex, decreasing of resisting disturbance capacity are likely to take place when the device are long away from each other, and result in the reliability of control signals coming down. In this case, speed dome may be completely uncontrollable, or scan with no way to stop it.
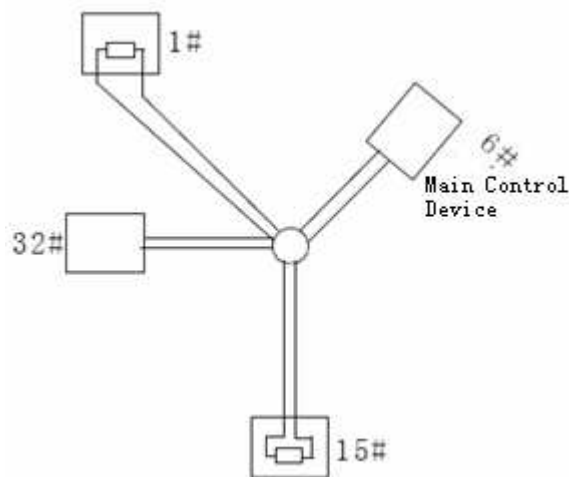
Figure four

In this case, it is recommended that a RS485 distributor being added. This product can change star connection into a connection that accord with RS485 Industry Standard effectively, consequently, solve the problems, lift communication liability, shown in figure five.
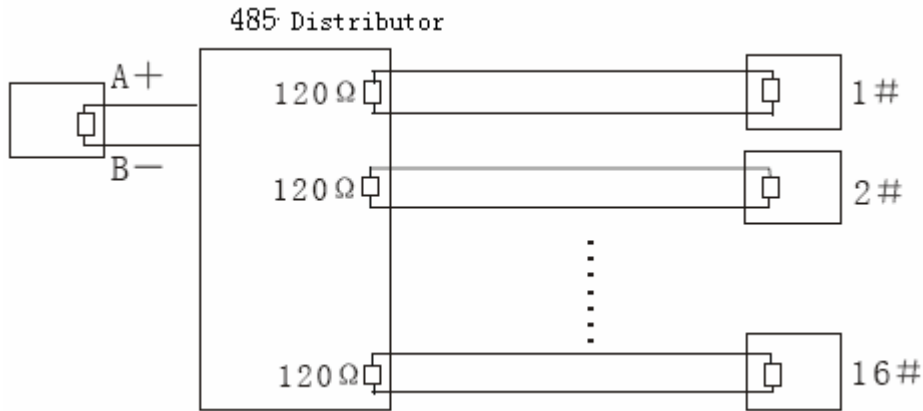

Figure five

5. Common Malfunction and Solution 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

Appendix C   The Table of the Relationship between Wire Diameter and Transmission Length for 24V AC

When the wire diameter is a fixed value and 24V AC voltage wastage rate is below 10%, the recommended maximum transmission length is as follows(For the AC power supply device, the biggest voltage wastage rate is 10%. For example, a device with 80VA rated power, being installed 35 feet (10 meters) away from the voltage transformer, the minimum wire diameter is 0.8000mm).

Length (m) / Power va \ wire diameter mm	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)

Appendix D Wire Gauge Comparison List Home and Abroad

Metric Naked Wire Diamter (mm)	Approx Wire Gauge for American (AWG)	Approx Wire Gauge for Britan (SWG)	Cross-Sectional Area of Naked Wire (mm²)
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.