IR INTELLIGENT SPEED DOME
USER’S MANUAL

Speed Dome of Security & Safety of CCTV System
Solemn Declaration

While writing this manual, we’ve been very cautious and prudent in order to guarantee the credibility of all the information provided here. However, if there exists any error, your precious advice and correction will be greatly appreciated. Meanwhile, the misinterpretation of this manual is not controllable, so we are not responsible for the accidents and the damage caused by misunderstanding this manual, the damage to the third party and thereby the compensation claimed by the third party and the deletion and loss of information and thereby other indirect loss caused by incorrect software operation, maintenance or other accidental situations.

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Please base on the software when any mismatch for this manual caused by software upgrading occurs. Please read the user’s manual carefully before using the product. Make sure that your operation is complied with the operation procedure.
Part 7. Non-menu Operation Instruction

1. Up/down and left/right Movement Control
2. Auto.Scan
3. Preset Position Setting
4. Call Preset Position
5. Program Tour Group
6. Call Tour Group
7. Home Position Setting
8. Left/right Limit Scan Setting
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Part 9. Technical Parameter

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Part 11. Common Knowledge on RS485 Bus

1. Basic Features of RS485 Bus
2. RS485 control bus transmitting distance
3. Connection Methods & Terminal Resistance
4. Problems in Practical Use
5. Wires Recommended

Part 12. Code Switch Setting Table
Part 1 NOTICE

1. Handle with care while transportation.
   Do not abuse the camera. Avoid pressing, striking, shaking, etc. The camera could be damaged by improper handling or storage.

2. How to deal with malfunction
   If smoke or unusual smell comes out or malfunction occurs, SHUT DOWN the power, STOP using the camera. Ask a qualified service person for servicing.

3. Do not attempt to disassemble the camera.
   To prevent electric shock, do not remove screws or covers. There are no user serviceable parts inside. Ask a qualified service person for servicing.

4. Do Not put other objects into the camera
   No metals or combustible materials inside. If water or other liquid floats in, SHUT DOWN the power immediately, and ask a qualified service person for servicing. Avoid raindrops and sea water.

5. Handle the camera with care while placing it
   Do Not drop the camera or strike or shake it to avoid the unnecessary damage.

6. Install the camera where it’s away from power source and magnetic fields.
   Jamming pictures will be caused if the camera is installed near TV, radio, magnetic device, motor, transformer and loud-speaker, etc.

7. Avoid moisture, dust and high temperature
   Do Not install the camera near smoke, steam, or dusty and over-heated places.

8. Do not use strong or abrasive detergents
   when cleaning the camera body. Use a dry cloth to clean the camera when dirty. In case the dirt is hard to remove, use a mild detergent and wipe gently. Care should be taken not to scratch the dome when wiping it.

9. Never face the camera towards the sun, or it may damage the CCD.

10. Operate the camera under the required conditions
    ※ Warning: Do Not install the indoor speed dome outdoors.

<table>
<thead>
<tr>
<th>Indoor speed dome</th>
<th>Outdoor speed dome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature: -10°~50°C</td>
<td>Temperature: -40°~55°C</td>
</tr>
<tr>
<td>Humidity:&lt;90%</td>
<td>Humidity:&lt;90%</td>
</tr>
<tr>
<td>KPA:86-106kpa</td>
<td>KPA:86-106kpa</td>
</tr>
<tr>
<td>DC: 12v/ 5A 50/60Hz</td>
<td>DC: 12v/5A 50/60Hz</td>
</tr>
</tbody>
</table>

Part 2 Product features

1. Auto-recognition zoom camera
   - Our Intelligent speed dome is auto-recognizable for SONY, HITACHI, SANYO, SAMSUNG, LG, CNB, CANON etc. and some domestic zoom cameras. (Other zoom cameras should provide their protocols)

2. Built-in Decoder/PAN/tilt
   - Adopt the ARM design of high performance with high, stable stability. Setting data will not be lost when power-off.
Part 3【Function description】

This section only mentions main functions and their operation principles, the detailed operation will be in other section.

1. Target tracking
   Users can control the moving direction of lens by pushing joystick up and down, left and right to trace the target or change the view-angles. The size of visual angle or target image can be adjusted by changing focus.

2. Focus length/auto matching technology of rotation speed
   In the situation where focal length is long, the image will be easily distorted because speed dome responses so fast that even a slight touch of joystick could make the picture shift rapidly. Based on people-oriented design, this speed dome camera can automatically adjust pan and vertical speed according to the focal length to make the manual trace operation easier.

3. Auto-rotate
   If operator keeps pressing the joystick after reaching the limitation in vertical direction, the lens would automatically rotate 180°, so we can monitor the hind-scene.

4. Set and transfer preset
   Preset is a function that we can store parameters like the angle of PAN and the length of focus in the memory, and the speed dome could adjust itself to reach the angle of PAN and the length of focus when you transfer the preset.

5. Tour
   Automatic tour, which arranges presets in the desired order and interval by programming, is a build-in function of this intelligent speed dome. With a command, the camera of speed dome would tour automatically and continuously according to the route and interval preprogrammed.

6. Auto-scan
   The high speed dome camera can automatically and repeatedly scan 360° at both high speed and slow speed.

7. Limit scan
   To set the starting point of limit scan by using the start command in the control keyboard, and then use the
joystick to move to the end point of limit scan at a certain speed. After calling the limit scan, camera will automatically scan between the start and end points at the speed of joystick moving.

8. Guarding point

Guarding point is a function that if there is no operation for a long time, dome camera would be back to an important preset position. It usually takes about 3-254 seconds before the start or stop of guarding point function.

9. Track record route patterns

4 tour route patterns at most. Each route can continuously record the controlling operation of the PAN and camera within at least 1 minutes.

10. Privacy protection area setting (This function is related with camera)

Users can cover at most 8 privacy protection areas with black shadow through this setting. It usually takes about 3-254 seconds before the start or stop of guarding point function.

11. Area Indication Function

Users can indicate at most eight areas with titles through this setting. A title will be displayed automatically when the camera move to an indicated area. Note: Function 9, 10 and 11 are only applied to the speed dome with menu

12. Lens control

a. Focus length control: Users would get a panorama or close-up pictures by controlling the keyboard to adjust focal length.

b. Focus control:

Auto-focus is included in system default. When zooming, camera will focus in the center of picture to keep the picture clear. Under special circumstances, focus can be done by manual drive.

Please refer to your equipment control manual in terms of specific operation.

※NOTE: Camera can NOT automatically focus in the following situation:

- Target is not the center of the screen.
- Clear picture of target would not be guaranteed when observing them both in the distance and close-up at the same time
- Target can’t be a strong light object, such as neon light and spotlight
- Target moves too fast
- Target is too dark or blur

c. Aperture control:

Auto-IRIS is included in system default. Camera adjusts IRIS according to the change of environmental light to stabilize images. Auto aperture is advised.

※NOTE: When aperture is in manual control, speed dome will automatically lock the current position of manual status, and it would not restore auto aperture status even when the scene is changed.

- d. Auto backlight compensation

Auto-backlight compensation is achieved respectively in 6 zones. Camera automatically implements light compensation, which can help camera get a clear image, when black target in a strong light background, and to avoid the background being too bright while the target being too dark.

- e. Auto White Balance:

Self-adjust according to the change of environmental light, reappearing true color.
Part 12【code Switch setting table 】

1. SW2 IP address setting table

In the following table “1” stand for “ON” position in IP address switch.”0” stand for “OFF” position in IP address switch.

<table>
<thead>
<tr>
<th>Address Code</th>
<th>Address Switch</th>
<th>Address Code</th>
<th>Address Switch</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 0 0 0 0 0 0 0</td>
<td>26</td>
<td>0 1 0 1 1 0 0 0</td>
</tr>
<tr>
<td>2</td>
<td>0 1 0 0 0 0 0 0</td>
<td>27</td>
<td>1 1 0 1 1 0 0 0</td>
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<tr>
<td>3</td>
<td>1 1 0 0 0 0 0 0</td>
<td>28</td>
<td>0 0 1 1 1 0 0 0</td>
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<td>4</td>
<td>0 0 1 0 0 0 0 0</td>
<td>29</td>
<td>1 0 1 1 1 0 0 0</td>
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<td>5</td>
<td>1 0 1 0 0 0 0 0</td>
<td>30</td>
<td>0 1 1 1 1 0 0 0</td>
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<tr>
<td>6</td>
<td>0 1 1 0 0 0 0 0</td>
<td>31</td>
<td>1 1 1 1 1 0 0 0</td>
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<tr>
<td>7</td>
<td>1 1 1 0 0 0 0 0</td>
<td>32</td>
<td>0 0 0 0 1 0 0 0</td>
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<tr>
<td>8</td>
<td>0 0 0 1 0 0 0 0</td>
<td>33</td>
<td>1 0 0 0 1 0 0 0</td>
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<td>9</td>
<td>1 0 0 1 0 0 0 0</td>
<td>34</td>
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<td>10</td>
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<td>11</td>
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<td>12</td>
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<td>37</td>
<td>1 0 1 0 1 0 0 0</td>
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<td>13</td>
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<td>15</td>
<td>1 1 1 1 0 0 0 0</td>
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<td>16</td>
<td>0 0 0 1 1 0 0 0</td>
<td>41</td>
<td>1 0 0 1 1 0 0 0</td>
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<td>17</td>
<td>1 0 0 1 1 0 0 0</td>
<td>42</td>
<td>0 1 0 1 1 0 0 0</td>
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<td>18</td>
<td>1 0 0 1 0 1 0 0</td>
<td>43</td>
<td>1 1 0 1 1 0 0 0</td>
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<td>19</td>
<td>1 1 0 1 0 0 0 0</td>
<td>44</td>
<td>0 1 1 0 1 0 0 0</td>
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<td>21</td>
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<td>0 1 1 1 1 0 0 0</td>
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<td>22</td>
<td>0 1 1 1 0 0 0 0</td>
<td>47</td>
<td>1 1 1 0 1 0 0 0</td>
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<td>23</td>
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<td>24</td>
<td>0 0 0 1 1 0 0 0</td>
<td>49</td>
<td>1 0 0 1 1 0 0 0</td>
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<tr>
<td>25</td>
<td>1 0 0 1 1 0 0 0</td>
<td>50</td>
<td>0 1 0 0 1 1 0 0</td>
</tr>
</tbody>
</table>

Part 4【Installation preparation】

1. Basic requirements
   - All electrical work should comply with the latest local electrical regulations, fire-proof precautions and other relative legislations and regulations.
   - Check whether accessories are as complete as the packing list shows. If not, please contact the supplier.
   - Make sure that the place where it’s applied and installed meets the requirements of installation.

2. Check the structure of the place of installation.
   - Make sure that there is enough room to install this product and its accessories.
   - Make sure that the ceiling, wall and bracket where this product is installed should be able to endure 4 times as heavy as speed dome.

3. Set DIP switch
   - Set DIP switch according to speed dome IP address (Detailed information refers to page 30)
   - Setting IP address by software address refers to page 21【Communication settings】

4. Please keep all the packing material of dome
   Please keep the packing material of dome after taking apart the package. If problems occur, please re-pack it with the original package and send it back to manufacturer.

※NOTE: Non-original package will cause the unexpected damage during transportation.

Part 5【Installation Guidance】

A. Intelligent speed dome camera mainly has three types of installations:
   ①: insert type; ②: ceiling type; ③: rack mounting

B. In according to installation type, there are three ways on rack mounting below :
   ①: wallhung type ②: column type ③: lifting type

Rack mounting fits for indoor or outdoor installation. Outdoor dome camera has an extra sun-shade shell. Dome camera IP rate is 66.

1. Dome-Insert Installation conditions:

   Insert dome camera is applied to indoor ceiling setting
   (1) At least 200mm above the ceiling
   (2) Ceiling thickness is 5mm—42mm
   (3) Ceiling must bear 4 times the weight of camera at least.

Step a. Drill a hole in the ceiling
   (1) Use proper tools to drill a hole with 3mm diameter in the center of installation place. On one side of the hole twist a self-drilling screw and fix it on the ceiling.
   (2) Draw a circle with pencil in ceiling, and then remove the material inside the circuit.
Step b. Install ceiling mount
(1) First, keep pushing the ceiling mount into the hole in the ceiling until the mount is totally inside the hole. Second, unfold the three brackets and screw them up. Last, when the metal pieces are fully expanded, tighten the screws to fix the mount into ceiling firmly.

Warning: A steel safe belt must be used between ceiling mount and ceiling to avoid that speed dome accidentally drops. Safe belt should be provided by user.

Step c. Set speed dome
(1) Set (DIP switches) SW2 under the bottom of dome machine to control speed dome IP address. (Detailed information can be found in PART 12)
(2) Without SW2 DIP switches, setting the IP address by software address refer to Page21【Communication settings】

Step d. Connect dome lines
(1) Put video line, power supply line and signal control line through the round hole in the ceiling mount, and connect the lines with the corresponding places in dome. (The type of wire is shown as figure 5)

Steps e. Dome installation
(1) Insert the three screws which are in the bottom of dome into the holes in ceiling mount, and then turn the mount as figure 5 shows to make sure that the screws are inside positioning slot firmly.

Step a. drill a hole in the ceiling
(1) Draw a circle according to the size of hole with a pencil in ceiling, and then remove the material inside the circuit.
(2) Drill three holes around the hole in the ceiling according to the corresponding position in the mount and insert set-screws in each hole. (Setscrews should be provided by users).

2. Ceiling-mounted installation:

Installation conditions:
This installation way is applied to stiff ceiling indoor
(1) The thickness of ceiling must be enough to set up the screws
(2) Ceiling must bear 4 times the weight of camera at least.

4. Problems in practical use:
- In the real construction, user often adopts y-junction connection mode whose terminal impedance are connected between the two farthest equipments (as B and D in figure 21). But it doesn’t comply with the use requirement of RS485 industrial standard, so it will lower the reliability of control signal by causing the problems such as signal reflection and a weaker anti-interference ability when there is long distance among every equipment. Its syndrome is like that speed dome can’t be controlled completely or intermittently or keeps running even if it’s stopped. We advise user to use RS485 allotter which can avoid problems and increase the communication reliability in the situation mentioned above by change y-junction mode to the connection mode complying with RS485 industrial standard.

5. Wires Recommended

1). 12V power supply connection distance and cable material requirement:

<table>
<thead>
<tr>
<th>Power supply cable diameter</th>
<th>0.5mm² (20&quot;)</th>
<th>1.0mm² (18&quot;)</th>
<th>1.5mm² (16&quot;)</th>
<th>2.5mm² (14&quot;)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indoor speed dome 72W power supply</td>
<td>25m(94ft)</td>
<td>45m(150ft)</td>
<td>70m(238ft)</td>
<td>110m(380ft)</td>
</tr>
<tr>
<td>Outdoor speed dome 72W power source</td>
<td>10m(37ft)</td>
<td>18m(60ft)</td>
<td>28m(95ft)</td>
<td>45m(152ft)</td>
</tr>
</tbody>
</table>

2). Requirement of video cable:

<table>
<thead>
<tr>
<th>Model</th>
<th>Max transmitting distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>75-5</td>
<td>370M</td>
</tr>
<tr>
<td>75-7</td>
<td>500M</td>
</tr>
<tr>
<td>75-9</td>
<td>680M</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model</th>
<th>Max transmitting distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>75-2</td>
<td>150M</td>
</tr>
<tr>
<td>75-3</td>
<td>200M</td>
</tr>
<tr>
<td>75-4</td>
<td>270M</td>
</tr>
</tbody>
</table>

NOTE: The same mode cable produced by different manufacturer may differ. The table above simply mentions the average reference distance of video cable transmitting.
Part11【Common Knowledge on RS485 control bus】

1. Basic features of RS485 control bus:
   ◆ RS485 control bus is a half duplex communication bus whose impedance is 120Ω. Its load capacity differs in the different connection interface, IC is 32-128 valid load (including main control equipment and controlled equipments).

2. RS485 control bus transmitting distance:
   ◆ When using 0.56mm(24AWG) twisted pair line as the communication electric cable, the maximal transmission distances differ in different Baud rate setting. Maximum transmission distances and corresponding Baud rates are shown in following table:

<table>
<thead>
<tr>
<th>Baud rate</th>
<th>Maximum distance</th>
<th>Baud rate</th>
<th>Maximum distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>2400BPS</td>
<td>1800m</td>
<td>4800BPS</td>
<td>1200m</td>
</tr>
<tr>
<td>9600BPS</td>
<td>800m</td>
<td>19200BPS</td>
<td>600m</td>
</tr>
</tbody>
</table>

   ◆ The max transmission distance would be shortened in conditions like: when a slim communication cable is used or the speed dome is used in the environment with strong electromagnetic interference or there are many equipments connected to control bus, vice versa.

3. Connect mode and terminal impedance
   ◆ The RS485 industry control bus requires daisy-chain connection mode between equipments, and 120Ω terminal impedances should be connected at each end. The mode is shown in figure 41. Simplified connection mode is shown in figure 42. The distance of D must be less than 23 feet (7 meters).

Step b. fix ceiling mount:
There are two connection ways:
One is from center hole, the other is from the hole beside
① Make sure the installation position and the connection way.
Insert the three setscrews in the holes respectively, and then fasten the screws with gasket and screw cap. (Take the example of putting the wire through the center of ceiling mount)

Step c. Set speed dome:
(1) Set (DIP switches) SW2 under the bottom of dome machine to control speed dome IP address. (Detailed information can be found in PART 12)
(2) Without SW2 DIP switches, setting the IP address by software address refer to Page21【Communication settings】

Step d. Line connection:
(1) Put video line, power supply line and signal control line through the round hole in the ceiling mount. (The type of wire is shown as figure 9)

Steps e. Dome installation
Insert the three setscrews which are in the bottom of dome into the holes in the ceiling mount, and then turn the mount as figure 9 shows to make sure that the screws are inside positioning slot firmly.

3. Wall-hung installation

Step a. drill a hole on the wall.
① As shown in figure 10, taking the installation holes of bottom surface of wall bracket as the template, draw the drilling positions and drill the holes:

Step b. Install bracket and housing:
(1) Put video lines, power lines and signal-control lines through the hollow tube of the wall mounting bracket as the figure 11 shows.
(2) Install the speed dome camera on the bracket, and fix it with 3 PCS screws.
(3) Fix the installed dome camera to the wall with bulgy screws.

Note :if the camera is used for outdoor environment, please seal it to be waterproof.
① After winding enough PTFE tapes around the screw thread, screw the housing firmly to the wall mounting bracket
② Seal the joint face between wall and the bracket, holes, and the joint face between bracket and around the housing with silica gel to be waterproof.
Step c. Set speed dome
(1) Set (DIP switches) SW2 under the bottom of dome machine to control speed dome IP address. (Detailed information can be found in PART 12)
(2) Without SW2 DIP switches, setting the IP address by software address refer to Page 21【Communication settings】

Step d. Install the speed dome core
(1) Hold the module with a hand, put the 2 waist-holes at the module bottom accordingly into the 2 screws of top bracket, and screw it to the bottom of the waist-holes. Screw the 2 screws firmly with a screwdriver.

Step e. install dome
(1) Insert two setscrews which are in the bottom of dome into the waist-shape holes in top mount and turn the mount to make sure that two screws are in the positioning slot.

Part 10【Simple Trouble Shooting】

Breakdown phenomenon | Possible causes | Solution
--- | --- | ---
Speed dome has no movement and there is no picture in monitor when power is on. | 1. The end of 12V DC power supply isn’t connected with speed dome correctly. 2. Power failure or transformer breakdown. | 1. Check whether speed dome is connected to 12V DC power supply. Make sure that connection with sockets is well. 2. Check whether the city power supply is working well and whether 12V DC transformer works well.

After self testing, keyboard can’t control speed dome. | 1. IP address Switch of speed dome is set incorrectly. 2. Reverse connection and open/short circuit of RS485 control bus. 3. RS485 control bus breaks down. | 1. Reset DIP switches according to DIP switch setting table. Make sure that the IP address speed dome is the same with that of keyboard. 2. Check connection of RS485 control bus and guarantee well and correct connection. 3. Refer to common knowledge of RS485 control bus.

Dome can be controlled but without working smoothly. | A. Bad connection of RS485. B. One line of RS 485 is off . C. Main machine is too far from dome. D. Too many parallel connections. | A. Reconnect RS485; B. Change another RS485; C. Install a terminal matching resistance; D. Install a RS485 distributor.

Blurry picture | 1. Focus of speed dome is in the manual status. 2. Transparent lower dome gets dirty. | 1. Change the manual focus status to auto focus status. Or call the preset to adjust the focus. 2. Clean transparent lower dome.

No self-testing or with noise | Power supply not enough Mechanical failure | Replacement to meet the requirements of power Need to overhaul

There are the vertical direction of the roll bar on the monitor, when switching between cameras | Different phase of the camera power | If several speed dome camera is connected to the same transformer, the power supply connection in each speed dome camera to be the same, that is, the transformer at one end of the outlet must be connected to the terminal on the same side of each speed dome camera

The self-testing successfully but can not operate high-speed dome camera | Control lines reversed or open circuit | Check the wiring of control lines, to ensure that wiring is correct and good contact

The address or protocol baud rate of the speed dome camera is not set correctly | Refer to the manual reset |
**Part 9【Technical Parameters】**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>DC12V</td>
</tr>
<tr>
<td>Power consumption</td>
<td>Indoor speed dome: 15W, Outdoor speed dome: 50W</td>
</tr>
<tr>
<td>Decoder</td>
<td>Built-in</td>
</tr>
<tr>
<td>Synchronous mode</td>
<td>Inner synchronization</td>
</tr>
<tr>
<td>Video output</td>
<td>1.0vp-p</td>
</tr>
<tr>
<td>Focus Iris</td>
<td>Auto</td>
</tr>
<tr>
<td>Preset</td>
<td>256 Presets</td>
</tr>
<tr>
<td>Tour</td>
<td>5(Editable)</td>
</tr>
<tr>
<td>Guarding position</td>
<td>3-254 seconds (settable)</td>
</tr>
<tr>
<td>Pattern tracking record</td>
<td>5(Menu type has this function)</td>
</tr>
<tr>
<td>Privacy protection</td>
<td>8(Menu type has this function)</td>
</tr>
<tr>
<td>Area-indicative function</td>
<td>8(Menu type has this function)</td>
</tr>
<tr>
<td>Auto scan</td>
<td>2</td>
</tr>
<tr>
<td>Left or right limitation scan</td>
<td>359° adjustable</td>
</tr>
<tr>
<td>Auto-control of focal speed</td>
<td>Control speed automatically according to the length of focal length</td>
</tr>
<tr>
<td>Auto overturn</td>
<td>ON/OFF</td>
</tr>
<tr>
<td>Horizontal overturn scan</td>
<td>360° continuous overturn</td>
</tr>
<tr>
<td>Manual pan speed</td>
<td>Medium speed dome series 0.1°—120°/s</td>
</tr>
<tr>
<td>Vertical revolving range</td>
<td>Vertical 90°/180°</td>
</tr>
<tr>
<td>Vertical speed</td>
<td>Medium speed dome series 0.5—50°/s</td>
</tr>
<tr>
<td>Control mode</td>
<td>RS485</td>
</tr>
<tr>
<td>Communication protocol</td>
<td>PELCO-D, PELCO-P automatic identification</td>
</tr>
<tr>
<td>Correspondence baud rate</td>
<td>2400/4800/9600bps automatic identification</td>
</tr>
<tr>
<td>Address code</td>
<td>Hardware configuration and software configuration</td>
</tr>
<tr>
<td>Camera</td>
<td>Support all mainstream camera currently on the market</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>Indoor: -10℃—+50℃, Outdoor: -40℃—+55℃</td>
</tr>
</tbody>
</table>

Technical parameter changes, without notice

---

5. **Lifting installation of dome:**

- **Step a Drill holes on the ceiling:**
  1. Take the holes of the ceiling base as a template and mark the positions of the holes as figure 17 shows. Drill the holes and load with bulgy screws inside.

- **Step b Install dome camera:**
  1. Put the video lines, power lines and signal-control lines through the hollow tube of hanger rod and fasten the dome and the hanger rod.
  2. Put the video lines, power lines and signal-control lines through the central holes at the hanger bottom and into the sealing groove at the side notch of the bottom of connecting base of the hanger, ad fasten the dome and the hanger rod as figure 18 shows.
  3. Fix the installed dome camera onto the ceiling.

  Note: If dome is used outdoor, seal the joint face between the ceiling and the hanger base, and around the holes with silica gel to be waterproof. Tape around the screws at the top of hanger rod and fasten the hanger to the hanger bottom. As figure 19 shows, seal the joint face between hanger joint sleeve and the hanger with silica gel to be waterproof.

- **Step c Set driver of dome:** refer to the drive setting of wallhung dome on Page 10
- **Step d Install the module:** refer to the installation of wallhung dome module on Page 10
- **Step e Install the lower housing:** refer to the installation of lower housing of wallhung dome on Page 10

---

6. **Product connection**

![Diagram](image)
Part 6【Menu Setting of OSD system】

1. English menu index

**SYSTEM INFO**
- Site Address: 001
- Camera Type: SONY
- Protocol: PELCO-D
- Baud Rate: 2400
- Version: V3.0

**CAMERA SELECTION**
- SONY 9600 NO
- LG-327(CANON) 9600 NO
- C&B 9600 NO
- SANYO 9600 NO
- SAMSUNG 38000 EVEN
- HITACHI 48000 EVEN
- LG-MULTIXE 9600 NO

**CAMERA SETTINGS**
- Zoom Speed: High/Low
- Digital Zoom: On/Off
- Auto Iris: On/Off
- Slow Shutter: On/Off
- Auto Check: On/Off

**PRESET POS SETTINGS**
- No.: 001
- Title: POS0001
- Save
- Clear
- Return

**TOUR SETTINGS**
- No.: 01-5
- Interval Time: 05
- Title: TOUR NO1
- Preset Pos No. List
- Save
- Return

**DISPLAY SETTINGS**
- Tour: On/Off
- Preset Pos: On/Off
- Zone: On/Off
- Angle: On/Off
- Dome Title: On/Off

**ADVANCED SETTINGS**
- Home Pos Settings
- Scan Settings
- Auto Flip Settings
- Zone Settings
- Privacy Masking

**HOME POS SETTINGS**
- Time: 003
- Preset Pos No.: 001
- Open/On/Off
- Save
- Return

**SCAN SETTINGS**
- Set 1st Point
- Set 2nd Point
- Run
- Save
- Return

**ZONE SETTINGS**
- No.: 01-05
- Title: ZONE
- Set Left Limit Pos
- Set Right Limit Pos
- Save
- Clear
- Return

**PRIVACY MASKING**
- No.: 01-05
- Title: ZONE
- Set Zone
- Set Mask Pos
- Set Mask Size
- Start
- Clear
- Return

**TRACK SETTINGS**
- No.: 01-05
- Title: TRACK 001
- Set Start Pos
- Record
- Save
- Return

**ALARM SETTINGS**
- On: 01-05
- Display: Off/On
- Preset Pos No.: 001
- Time: 003
- Alarm: Off/On
- Save
- Return

**DOME SETTINGS**
- Language: English
- TV Standard: PAL/NTSC
- Dome Title: DOME0005

**COMM SETTING**
- Dome_Addr.: 001
- Protocol: PELCO-D
- Baud Rate: 2400
- Text
- Save
- Return

---

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**Preset NO.** | **Speed dome / camera control content** | **Call preset** | **Set preset**
---|---|---|---
131 | Start the second track record (effective for menu camera) | ☑ | ☑
132 | Start the third track record (effective for menu camera) | ☑ | ☑
133 | Start the fourth track record (effective for menu camera) | ☑ | ☑
135 | Set video output format as PAL (effective for dome menu) | ☑ | ☑
136 | Set video output format as NTSC (effective for dome menu) | ☑ | ☑
141 | Set movement range of up and down of mini speed dome as 0-180° | ☑ | ☑
142 | Set movement range of up and down of mini speed dome as 0-90° | ☑ | ☑
144 | Setting the PTZ slow down 2 times corresponding to the zoom | ☑ | ☑
145 | Setting the PTZ slow down 4 times corresponding to the zoom | ☑ | ☑
146 | Setting the PTZ slow down 8 times corresponding to the zoom | ☑ | ☑
131 | Setting software address | ☑ | ☑
148 | Open the Camera boot initialized function | ☑ | ☑
149 | Close the camera boot initialized function | ☑ | ☑
65 | Enter OSD menu of speed dome | ☑ | ☑
95 | Enter OSD menu of speed dome | ☑ | ☑
95 | Exist OSD menu of speed dome | ☑ | ☑
111 | Reset | ☑ | ☑
150 | Restore factory defaults | ☑ | ☑
134 | Enter Camera Menu (some camera available) | ☑ | ☑
134 | Exit Camera Menu (some camera available) | ☑ | ☑
8 【Common functions operating Express】

Note: ☐ stands for effective function.

<table>
<thead>
<tr>
<th>Preset NO.</th>
<th>Speed dome / camera control content</th>
<th>Call preset</th>
<th>Set preset</th>
</tr>
</thead>
</table>
| Menu or non menu program tour operation: (*It’s effective after entering OSD menu or referring to non-menu programming on Page 22.*)
| 100        | Start the first programmed tour ☐   |             |           |
| 101        | Start the second programmed tour ☐  |             |           |
| 102        | Start the third programmed tour ☐  |             |           |
| 103        | Start the fourth programmed tour ☐ |             |           |
| 104        | Start the fifth programmed tour ☐  |             |           |

Easy tour operation:

<table>
<thead>
<tr>
<th>Preset</th>
<th>Speed dome / camera control content</th>
<th>Call preset</th>
<th>Set preset</th>
</tr>
</thead>
<tbody>
<tr>
<td>115</td>
<td>Start the first programmed tour 1-16 scanning ☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>116</td>
<td>Start the second programmed tour 17-32 scanning ☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>117</td>
<td>Start the third programmed tour 33-48 scanning ☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>118</td>
<td>Start the fourth programmed tour 49-64 scanning ☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>119</td>
<td>Start the fifth programmed tour 65-80 scanning ☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>110</td>
<td>Left Limit position ☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>111</td>
<td>Right Limit position ☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>112</td>
<td>Call panning limit position ☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>113</td>
<td>lens/over-turn auto-match Open ☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>114</td>
<td>lens/overturn auto-match Off ☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>120</td>
<td>Pan slowly ☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>121</td>
<td>Pan quickly ☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>122</td>
<td>Home position setting ☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>123</td>
<td>Start home position ☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>124</td>
<td>Stop home position ☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>125</td>
<td>Auto-overturn on ☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>126</td>
<td>Auto-overturn off ☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>127</td>
<td>open the SONY camera auto IR mode ☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>128</td>
<td>close the SONY camera auto IR mode ☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>130</td>
<td>Start the first track record (effective for menu camera) ☐</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Basic operation

(1) Instruction: In order to make it easy to understand this operation, we make agreements as follows:
A) Through calling NO.65 preset point or set up NO.95 preset point, the system enters main menu of OSD
B) When editing menu, the up and down of joystick is used to select submenu and edit numerical value. The right and left of joystick will be used to enter or exit submenu.
C) All of setting data will not be lost when power is off.
D) The position of the equipment information is displayed on monitor as follows:

- Preset position displaying area
- Tracking record displaying area
- Alarming display area
- Zone title display area
- Cruising title display area
- Image display area

Introductions:
When preset position/scanning label displaying area displays PRESET XXX N/C, SCAN-N N/C, it can indicate that the present point and left and right scans haven’t been set up.

3. Power on and self-testing

(1) Self-testing procedure will be started after the power is on. The equipment can automatically identify integrated camera equipment first (Only limited to the integrated camera of HITACHI, SONY, LG, CNB, SANYO, SAMSUNG, CANON), and then from horizontal rotating to primary horizontal point of factory defaults, and move down to primary vertical point. The camera lens will be tested from far-focusing to close-focusing and then from close-focusing to far-focusing. After self-testing, the screen will appear the relevant information as follows: (as shown in Figure 21)

4. Main menu description

(1) The system will enter into OSD main menu through calling No.65 preset point or set up No.95 preset point. (as shown in Figure 22)

5. System information setting

(1) System information view
Such as: Address code; Camera type; Communication protocol; Version number
6. Selecting Camera

【SONY 9600 NO】SONY camera  Baud rate 9600 No check digit
【LG-327(CANON) 9600 NO】LG-327 series or CANON camera  Baud rate 9600 No check digit
【C&B 9600 NO】C&B Camera  Baud rate 9600 No check digit
【SANYO 9600 NO】SANYO camera  Baud rate 9600 No check digit
【SAMSUNG 38400 ODD】Samsung 38400 odd number checking
【LG-MULTIXE 9600 NO】LG-MULTIXE series camera  baud rate 9600 No check digit
【HITACHI 4800 EVEN】HITACHI camera  baud rate 9600 No check digit
【SONY 9600 NO】SONY camera  Baud rate 9600 No check digit

6.1. Way to operate the camera is as follows:
Grey shows the using camera, you can select the camera you wanted by moving the joystick up or down. Confirm the selected camera protocol by moving the joystick to the right. The selected camera can use the camera protocol and save it into EEPROM at the same time. When you open the equipment next time, it will use the camera you selected last time if the auto-check mode of the camera is off. If the auto-check mode is on, auto-check mode will be in operation and the camera that you selected last time won’t be in use. The auto-check mode of the camera can be configured in camera setting menu

7. Lens Parameters Setting

(1) The system will enter main menu of OSD by calling No.65 preset point or setting up No.95 preset point. Moving up or down to point cursor at 【CAMERA SETTINGS】 , then move the joystick right to enter lens parameters setting (shown as Figure 25)(Note: some functions can not be executed for some types of machines)

(2) For more setting of cameras parameters , please press iris opening 【OPEN】 or iris closing 【CLOSE】 to menu setting of camera. (Part of cameras have this function).

8. Preset Position Setting

(1) When storing the parameters of level angle, angle of inclination, lens focus in the current state into preset points, you can call these parameters quickly and adjust the PTZ and camera to this position. The equipment can store 1-128 preset points at most.

(2) In Figure 22, moving the cursor up or down to 【PRESETS POS SETTINGS】 , moving the joystick right to the menu of preset position setting (shown in Figure 26)
Part 7 【Non Menu Operation Instruction】

These operating instructions cover the basic operations and features of the dome without involving with the specific operation of other control equipments of other companies. Different control equipments differ in specific operation methods. In terms of special requirements and operations, please contact the local distributor.

1. Control the up/down and left/right of camera

   After selecting a camera, use the keyboard joystick to control the directions of the camera. The joystick control the movements of the camera. When the joystick turn to the right, the camera moves to the right. Similarly, when the joystick turn to the left, the camera also moves to the left. When the joystick moves vertically, the camera responds in the vertical direction. The camera can move horizontally and vertically simultaneously with moving direction of the joystick.

2. Auto scan

   Call preset position 120 to start slow scan of horizontal 360°. Call preset 121 to start fast scan of horizontal 360°.

3. Preset Position Setting

   Enter the preset position setting status, use the number key to input the camera number on which you want to set preset, then press SHOT and ON. (See the following figure)

4. Call Preset Position

   Enter the preset number and then press SHOT key to call the preset position you want, then the camera will immediately move to the preset position and automatically change to zoom, focus and aperture of the preset position you called.

5. Program Tour Group

   Five tour groups (100,101,102,103,104) are available in this product.
   - Each tour group has 16 presets at least. If less than 16, the last preset number should be set 119, and then exit. If more than 16, system will automatically save the former 16 presets. The interval time must be set more than 3 seconds. If the interval time is less than 3 seconds, the system will automatically set 3 seconds as default interval time.

   Detailed operation is showed in the following plan

   Examples: Set the first tour group including 5 presets. The number of the five presets are 1 → 10 → 15 → 16 → 21, interval time is 6 seconds.
setting. The touring title contains 8 characters at most, the supporting characters (0-9, A-Z blank).

D) Move the cursor to 【PRESET POS NO. LIST】. The setting area turns grey when moving the cursor right to the setting area of touring【XXX...XXX】. Move the joystick up or down to select preset position. When Moving the joystick left or right, the cursor will jump to the former or next position. The camera rotates through every preset position from the left to right or from up to down. If the preset position is 0, it will automatically jump to next preset position that is not 0.

E) Move the cursor to 【SAVE】, When moving the joystick to the right,【SAVE TOUR】 ending shows “xxx”, When “xxx” disappears, it indicates that the current operation has been completed. Note: xxx consists of tour code and interval time.

F) Move the cursor to 【RUN】. Move the joystick right to execute operating tour route and exit the menu.

10. Display setting

(1) All titles and displaying open/close on the screen can be set through 【DISPLAY SETTING】. Once confirmed, the setting comes into use. It will the parameters you configured next time when the machine is on. Shown as Figure 28

![Figure 28](image)

11. Advanced setting

Instruction: Only first through calling No.65 preset point or setting No.95 can all the other settings enter main menu of OSD. No further instruction. Main menu is shown as figure 22, while entering other submenu setting shown in Figure 29.

12. Home position function

(1) The home position function is that dome cameras will automatically return to one important position that user presets when the operator is away for a long time. The home position will not be in use when the dome camera is moving+. You can set home position or its waiting time(3-254 seconds), ON or OFF through【TIME】and【PRESET】 in the menu item: 【HOME POS SETTING】

![Figure 30](image)

13. Auto limit scan

【SET 1ST POINT】 Set the first point, and call No.65 or No.1 back to menu after setting.

【SET 2ND POINT】 Set the second point, and call No.65 or No.1 back to menu after setting.

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editting, move right or left till the last and the systems will save the settings automatically.

Notice: 8 English characters can be set in the title. As for the unnecessary characters, move the joystick right to skip them. As for the characters that need to be deleted, replace them with space. Move the joystick right to skip to the next character after editing each character.

(3) Ways to operate the communication setting are as follows:

① Two mode of speed dome communication: 1. protocol and baud rate are both auto-recognizable, and the address code uses SW2 switch of binary system. 2. Use soft address, protocol, baud rate (software configuration) and the setting of【COMM SETTING】 in the menu. The specific way starts from A. Notice: If user needs to shift (Software configuration) to auto-recognizable protocol, baud rate mode, call to【NEW】 preset position.

② If there is no OSD menu of speed dome, ways of setting software adress as follow: Setting 131 preset, so it can into setting software adress status, then using the way of calling preset to set the adress that you need. such as: setting the adress 2:

A) Move the joystick up or down as figure 22 shows, and then move the cursor to【DOME SETTING】. Move the joystick right to enter sub-menu setting of the dome as figure 39 shows.

B) Move the joystick up or down as figure 39 shows, and then move the cursor to【COMM SETTING】. Move the joystick right to enter the setting of dome address (domain number), protocol and baud rate.

C) Move the cursor to【DOME ADDR】 and the setting area turns grey when moving the joystick right. Move the joystick up or down set the dome address as figure 40 shows.

D) Move the cursor to【PROTOCOL】 and the setting area turns grey when moving the joystick right. Move the joystick up or down to set the protocol.

E) Move the cursor to【BAUD RATE】 and the setting area turns grey when moving the joystick right. Move the joystick up or down to set the baud rate.

F) After choosing the address, protocol and baud rate you want, move the cursor to【TEST】. Start 120 seconds(2 minutes) countdown after moving the joystick right. Test and try the equipment control during the countdown, like the corresponding dome address of DVR, keyboard, etc. and the editing of protocol and baud rate. When the equipment control is well configured and the communication with dome is successful, move the joystick up/down or left/right, and test is completed when【OK】is displayed.

G) Move the cursor to【SAVE】 and move the joystick right. The settings of dome address, protocol and baud rate are saved when【OK】is displayed.

Note: Speed dome camera debugging can not control, but can not determine the control device address settings or dome camera address, firstly dome camera address is set to 0 invalid address judgment and analysis. (dome camera for No. 0, all addresses can be controlled)

2. Communication settings if you do not remember the address before the dome camera can not control, you can use the 255 broadcast address.

(4) Restore defaults settings:

Notice: Clear all the setting [All the data that have been set by user will be lost by conducting this operation.]
18. Alarm Setting

(1) The machine can connect alarm inputs of 4 routes and alarm output of 1 route, conducting interactive alarm. External alarm signals the machine, and the machine will turn to the alarming places to take photos (calling preset position or starting preset position of touring routes record, etc)

【NO.】(1-4) : alarm code (1-4):1
【DISPLAY】: ON/OFF alarm display: on/off
【PRESET NO.】:001 preset position code:001
【TIME】:003 the alarm interval time:003,3 seconds at least
【ALARM】: alarm control: on/off

(2) Ways to define the operation of routes recorder are as follows:
   A) Move the cursor to【NO.】. and the setting area turns grey when moving the joystick right. Move the joystick up or down to set alarm code. At last move the joystick right or left to exit the setup.
   B) Move the cursor to【DISPLAY】 and the setting area ON/OFF turns grey when moving the joystick right. When moving the joystick up or down to set alarm, ON/OFF shows up on the screen.
   C) Move the cursor to【PRESET NO.】 and the setting area turns grey when moving the joystick right. Move the joystick up or down to set interaction with alarm input. The options of interaction of alarm are as follows: preset position-99, preset position touring 100-104 (matching with 1-5 touring), tracking routes record 130-133 (matching with 1-4 routes record), Off setting is No.0 preset position. And then move the joystick right or left to exit the setting.
   D) Move the cursor to【TIME】 and the setting area turns grey when moving the joystick right. Move the joystick up or down to set the interval time of preset position when setting some certain route input
   E) Move the cursor to【ALARM】 and the setting area turns grey when moving the joystick right. Move the joystick up or down to set alarm code. At last move the joystick right or left to exit the setup.
   F) Move the cursor to【SAVE】 and save the current setting after all the above operation.

19. Dome Settings

(1) Language choice:
   English and Chinese menu are available; this function can be saved even if the power is off.

(2) Ways to edit the dome titles:
A) When using several speed domes, in order to tag each speed dome, this system provide tagging setting function of dome. The ways are as follow:
B) Move the joystick up or down as figure 22 shows, and then move the cursor to【DOMES SETTINGS】. Move the joystick right to enter sub-menu setting of the dome as figure 39 shows.
C) Move the joystick up or down as figure 39 shows, and then move the cursor to【DOMES TITLE】. Move the joystick right to enter title setting, and the characters of title which cursor indicates turns grey. Move the joystick up or down to choose the characters.

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【RUN】 Execute limit scan
(1) The operator can set left limit and right limit through【SET 1st POINT】 and【SET 2nd POINT】 in the menu item:【SCAN SETTINGS】 and achieve horizontal reciprocating scan at the speed of joystick’s final movement between the left and right limit of cameras.

14. Auto Overturn
(1) Move the joystick up or down to point the cursor to【OVERTURN SETTINGS】. Move the joystick right to enter the setting of auto overturn and move the joystick up or down to select it. If selecting ON, it opens the auto overturn function, or if selecting OFF, it closes the auto overturn function. The set value can be switched between ON/OFF, and then move the cursor of the joystick left or right to return to【OVERTURN SETTINGS】 and the auto overturn is done.

Note: User can directly watch the back scene and achieve overall monitoring, if use keeps pressing the joystick after connecting the lens to the bottom when the auto overturn function is on.

15. Zone Indication Setup

【NO.】 (1-8) : 1 zone number(1-8):1
【TITLE】 : ZONE 1 zone title: No.1 zone
【SET LEFT LIMIT POS】 set left limit position, After setting, user need to call No.65 or No.1 preset position to return to menu mode.
【SET RIGHT LIMIT POS】 set right limit position. After setting, user need to call No.65 or No.1 preset position to return to menu mode.

(1) Firstly, through calling No.65 preset point or setting No.95 preset point it enters main menu of OSD. It displays the indicative title of this zone on the screen when the camera moves to this zone when【DISPLAY SETTINGS】 (in the main menu)【ZONE IND】 is【ON】: 8 zones at most can be set.

(2) Ways to define indicative zone are as follows:
A) Move the cursor to【NO.】 and the setting area turns grey when moving the joystick right. Move the joystick up or down to set code, and then move the joystick left or right to exit the setting.
B) Move the cursor to【TITLE】 and the setting area turns grey when moving the joystick right. Move the joystick up or down to set area title, and then move the joystick left or right to exit the setting. The area title setting contains 8 characters at most, the supporting characters (0-9,A-Z, blank).
C) Move the cursor to【SET LEFT LIMIT POS】 and the setting area turns grey when moving the joystick...
right, and then move joystick and select left border, and later the cursor becomes white when calling No.65 or No.1 preset position.

D) Set the right border of the current area (the same as the above) Note: The effective area is the clockwise area between the left and right border.

E) Move the cursor to 【SAVE】 after finishing the operations mentioned above, and then move the joystick right to save the current area setting.

16. Privacy Masking setting

(1) Through invoking NO.65 preset position or setting No.95 preset position the system enters main menu of OSD. All of submenu setting must call main menu in advance. (Main menu is shown as Figure 22). The cursor will point at 【PRIVACY MASKING】 by moving the joystick up or down, and then enter the menu of function setting by moving the joystick right (shown as Figure 34). You can set privacy masking in any position of the monitored area and set a privacy masking section for every privacy masking area. At most 8 privacy section can be set.

Instruction: different camera types may differ in setting the range of privacy zone as well as in setting methods, so it should be based on the camera in use.

The setting range of HITACHI series camera shown as follows

The setting range of SONNY and SANYO series camera shown as follows

(2) Ways to define the privacy masking zone are as follows:

A) Move the cursor to 【NO.】 , and the setting area turns grey when moving the joystick right. Move the joystick up or down to set code, and then movie the joystick left or right to exit the setting. Instruction: The machine will auto-call the privacy masking section that has been set well to the screen after finishing setting the code, if the corresponding privacy masking zone has been set well when setting privacy zone number.

B) Move the cursor to 【SET ZONE POS】 , and then move the joystick right to show the selected privacy masking image on the screen. Call No.1 preset position and confirm it.

C) Move the cursor to 【SET MASK POS】 , and then move the joystick right, and the privacy masking section will automatically appear on the center of the screen. If privacy masking section has been set in this area number, it will directly jump to this step to continue the following operation.

D) Move the joystick up/down/left/right to adjust the position of privacy masking zone on the screen. Instruction: The privacy masking section will automatically move along with the direction of the joystick after pressing the joystick for 2 seconds. Call No.1 preset position after setting the position, and the screen will be shown as Figure 35.

E) Move the cursor to 【SET MASK SIZE】 and then move the joystick right. Move the joystick left or right to adjust the width of privacy masking section and move the joystick up or down to adjust the height of privacy masking section. Instruction :the height and width of privacy masking section will automatically increase or decrease along with the direction of the joystick after pressing the joystick for 2 seconds. Call the No.1 preset position to save the setting after finishing it and the screen will be shown as Figure 36.

F) Move the cursor to 【START】 and then move the joystick right to enable the privacy masking of this area.

G) If you want to delete the privacy masking of the current area, move the joystick to point the cursor at 【CLEAR】 , and then it can be deleted by moving the joystick to the right.

17. Tracking Routes Recorder

(1) This machine can record continuously the regular controlling of the operator to the PTZ and camera for one minutes at least. The dome camera will auto move back and forth with only one order. This machine just can save 4 routs.

(2) Way to define the operation of tracking records are as follows:

A) Move the cursor to 【NO.】 , and then move the joystick right and the content of setting zone turns grey. Move the joystick up or down to set tracking code, and then move the joystick left or right to exit the setting.

B) Move the cursor to 【TITLE】 , and then move the joystick right and the content of setting zone turns grey. Move the joystick up or down to set tracking title, and then move the joystick left or right to exit the setting. The tracking title contains 8 characters at most, the supporting characters((0-9,A-Z,blank),

C) Move the cursor to 【SET START POS】 , and then move the joystick right to select the starting point that needs recording, and then call No.1 preset position to confirm it.

D) Move the cursor to 【RECORD】 and move the joystick right to start recording. It will appears “031” on the right. If you want to finish recording, you can call No.1 preset position to stop recording and return to menu.

E) Move the cursor to 【SAVE】 and move the joystick right to save the current tracking routes recording.

F) Move the cursor to 【RUN】 and move the joystick to the side to operate continually the current tracking routes record. Any operation on the joystick can stop the recording.