HIGH SPEED DOME CAMERA

USER MANUAL

- High resolution
- Line scanning
- RS485 control interface
- Day&night function
- Continuous 360° rotation
- Built-in OSD

Please review this instruction carefully before use.

The first use please open the packing gaskets(page 6)
1. Important safeguards

2. Features

3. System installation

4. System connection

5. System setup

6. Description of functions

7. Menu setup

8. Technical data table

9. Troubleshooting

2~3

4

5~11

11~14

15~16

17~19

20~25

26~27

28~29
1. Important safeguards

- All the safety and operation instructions should be read before the units is operated.
- This unit should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power DC12/1.5A supply you plan to use, consult your appliance dealer or local power company. For units intended to operate from battery power or other sources, refer to operation instructions.
- During the course of transportation, storage and installation, the product should be avoided from incorrect operations such as heavy pressing, strong vibration etc., which can cause damage of product as there are sophisticated optical and electronic devices inside the machine.
- Do not attempt to disassemble the camera. In order to prevent electric shock, do not remove screws or covers. There are no user-serviceable parts inside.
- Always follow all electrical standards for safety when it is in operation. Adopt the particular power supply which is provided with the unit. RS-485 and video signal should keep enough distance with high voltage equipments and cables when they are in transmission. Precautions for anti-lightning and anti-surging should be taken if necessary.
- The product should be indoor installed and operated to avoid rain and moisture. Do not use it in wet places. If outdoor installation is needed, the closed protect cover should be used and it is absolutely prohibited to use it in open air independently.
- Do not operate it in case temperature, humidity and power supply are beyond the limited stipulations.
1. Important safeguards

- Do not let the camera aim at the sun or the object with extreme light what soever it is switched on or not. Do not let the camera aim at or monitor bright and standstill object for a long time.

- Do not use aggressive detergent to clean the main body of the camera. Wipe dirt with dry cloth. If needed, mild detergent can be used suitably.

- Operate the intelligent speed dome camera with great care to avoid shock or vibration. It operate incorrectly, the Speed Dome could be damaged.

- Do not place this unit on an unstable stand, tripod, bracket, or mount. The unit may fall, causing serious injury to a person and serious damage to the unit. Use only with a stand, tripod, bracket, or mount recommended by the manufacturer or sold with the product. Any mounting of the unit should follow the manufacturer's Instructions and should use mounting accessory recommended by manufacturer.

- If necessary, use a commercial lens cleaning paper to clear the lens windows. Gently wipe the lens window until clean.
2. Features

- **DNR (Digital Noise Reduction)**
  By using the DSP chip applied to the DNR technology, the amount of low illuminance noise has been significantly reduced, and the signal-to-noise ratio (S/N) as well as horizontal resolution has been improved, resulting in a clear and sharp image display even in the dark.

- **10x Optical Zoom**
  The SDM-100 built-in x10 optical zoom lens is highly reliable. It features auto focus, Auto iris and Zoom Tracking function.

- **High Resolution**
  The horizontal resolution of 500TV Lines at Color mode and 570TV Lines at BW mode can be achieved by using a high density CCD having 410,000 pixels SONY CCD, which provides clean, noiseless and reliable pictures.

- **Day & Night (ICR)**
  An infrared (IR) Cut-Filter can be disengaged from the image path for increased sensitivity in low light environments. The ICR will automatically engage depending on the ambient light, allowing the camera to be effective in day & night environment.

- **Electrical Flip function**
  The SDM-100 has function of H/V reverse mode.

- **Motion Detection (4 programmable zone per screen)**
  You can transmit an alert signal when it detects motion of an object on the screen. This feature is useful when you have to monitor several screens simultaneously.
3. System installation

1. The structure drawing explains

Walls install the support (to choose fitting)

Top cover part

Main machine part

Front cover part

Attention: machine core Partial + Front cover = Main machine partial

2. Dimension of the product (Unit: mm)
3. System installation

3. Packing gaskets backout method

a. Loosens on the front cover of three screws, Takes down the main product part.

(b) Loosens on the machine core part of three screws, Takes down the front cover, takes out the packing gasket.

C. gathers the main machine part and the front cover, on the locking main machine part three screws.
4. Indoor embedded installation

a. Opens the hole the ceiling among, with drills three screw holes.

b. Changes into PM4.0X45.0 the front cover three screws the screw (PM4.0X45.0), puts in the main engine part the ceiling, to uneven mounting panel.

c. On locking front cover three screws.
5. Indoor ceiling installation

Method 1:

a. The ceiling according to the size drill hole, installs the top cover on the ceiling.

![Diagram](image1)

(b)

c. On locking front cover three screws.

![Diagram](image2)

(c)
Method 2:
a. The concrete of ceiling according to the size drill hole, infiltrates the plastic expanding tube, installs with KA4.0X35.0 from the screws the top cover on the ceiling.

b. Installs the main machine part, to uneven main machine part of the partial locating slots and the top cover localization bone position, must approach the lineation along line top cover outer wall and to install.

C. On locking front cover three screw.
3. System installation

6. The wall type installs

a. Hits four holes the wall according to the size, with the support the inflates of bolt (M8.0X80.0) to fix on the wall, simultaneously fixes the top cover on the support.

![Diagram a](image)

b. Installs the main machine part, to uneven main machine part of the partial locating slots and the top cover localization bone position, must approach the lineation along line top cover outer wall and to install.

![Diagram b](image)

c. On locking front cover three screws.

![Diagram c](image)
The cleaning of down cover
To obtain constant clear videos, user should clean the down cover periodically:
✔ Be cautious when cleaning. Hold the down cover ring only to avoid direct touch to the acrylic down cover. The acid sweat mark of fingerprint will corrode the coating of down cover and scratch on down cover will cause vague images.
✔ Use soft dry cloth or the substitute to clean the inner and outer surfaces.
✔ For hard contamination, use neutral detergent. Any cleanser for high-grade furniture is applicable.

4. System connection

1. Lighting proof and surge signal proof
The product adopts TVS lightning proof technology to prevent from damage by lightning strike below 1500 W and impulse signals such as surge; but it is also necessary to abide by the following precautions to ensure electrical safety based on practical circumstances:
   ● Keep the communication cables at least 50 meter away from high voltage equipment or cables.
   ● Make outdoor cable laying-out under eaves as possible as you can.
   ● In open area shield cables in steel tube and conduct a single point ground to the tube. Trolley wire is forbidden in such circumstances.
   ● In strong thunderstorm or high faradic zone (such as high voltage transformer substation), extra strong lightning proof equipment must be installed.
   ● Take the building lightning proof requirements into account to design the lightning proof and grounding of outdoor equipment and cable laying-out in accordance with the national and industrial standards.
   ● The system must be grounded with equal potentials. The earth ground connection must satisfy the anti-interference and electrical safety requirements and must not short circuited with high voltage electricity net. When the system is grounded separately, the resistance of down conductor should be $\leq 4 \Omega$ and the sectional area of down conductor should be $\leq 25 \text{mm}^2$. 
4. System connection

2. Single connection layout as follows:

![Diagram 1](image1)

Figure 1

![Diagram 2](image2)

Figure 2

![Diagram 3](image3)

Figure 3

3. Much machine links picture as follows:

![Diagram 4](image4)

Figure 4
4. System connection

Keyboard A2 B2

RS485 BUS

HV1104 Distributor

1# 2# 3# 4#
5# 6# 7# 8#
9# 10# 11# 12#
13# 14# 15# 16#

1200M

Figure 5

Picture Control Keyboard

Monitor

HV1104 Distributor

1# 2# 3# 4#
5# 6# 7# 8#
9# 10# 11# 12#
13# 14# 15# 16#

16 screen processor

Video frequency output line

Speed Dome

HV1104 Distributor

1200M

Figure 6
4. System connection

3. Main line connection diagram as follows:

RS485 Bus

Most far-end

Keyboard

ON
1
120 Ω OFF
1
120 Ω OFF
1
120 Ω OFF
1

Notice: RS485 main line are most may the parallel control 256 intellectualizations high speed balls camera.

5. Explained:
   〈1〉 The divider may connect 3.
   〈2〉 In the ordinary circumstances, the ball machine 120 Ω is at the “OFF” condition, if could not control, then should hit in the “ON” condition.
   〈3〉 The keyboard time passed (A2, B2) the road cannot control, then traded the user to be able (A1, B1) a control.
   〈4〉 RS485 main line transmitting range:

<table>
<thead>
<tr>
<th>Baud Rate</th>
<th>Maximum Transmitting Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>2400Bps</td>
<td>1800m</td>
</tr>
<tr>
<td>4800Bps</td>
<td>1200m</td>
</tr>
<tr>
<td>9600Bps</td>
<td>800m</td>
</tr>
<tr>
<td>19200Bps</td>
<td>300m</td>
</tr>
</tbody>
</table>
1. Setup switch (Device bottom view:)

2. Disassembles the cabinet, According to Device bottom view setup Address.

ON | OFF
---|---
0# address
1# address
2# address
3# address
4# address
5# address
6# address
7# address
8# address
9# address
10# address
11# address
255# address
3. Disassembles the cabinet, According to Device bottom view setup

Baud rate.

- 2400bps
- 4800bps
- 9600bps

4. Disassembles the cabinet, According to Device bottom view setup

Protocol.

- PELCO_D
- PELCO_P
- LILIN
- VIDO-B01
- SUMSAMG
- ALEC
1. Basic operation

NOTE: It will prolong to the ball life-span and improve to run precision by operation joystick, Please bellow operation:

a. Do not run right-way when it is running left-way, do not run up-way when running down-way. It is need to stop run when the ball will changerun way.
b. Do not shift speed soon, It is right operation for: slowest -> middling speed -> flashes or flashes -> middling speed -> slowest.
c. Do not run long time: Line scan mode, Track scan mode or 3.60°.

1). UP, DOWN, LEFT and RIGHT run function

This speed can change when operation joystick to up run or down run or left run or right run. The joystick is declining that the ball is celerity, it is seven step speeds from slow to celerity.

2). Preset location

The ball can save 160 preset location (include ball up down left or right location, camera zoom lens. It will auto run to preset location when call 1.1 the save the location.

Save preset location

Operation keyboard: PRESET + N + ENTER

N: preset location number, range: 0~79, 100~179.

It will display :PRESET: No. on screen.

It will display :OVER SET Number : on screen if surpasses scope.

1.2 Call preset location

Operation keyboard: Call + N + ENTER

It will display :CALL: No. on screen.

It will display :NO-SET: No. on screen if do not save preset location.

It will display :OVER CALL N: on screen if surpasses scope.
6. Description of functions

Note:
The position is not nicety when Call preset location. Solution of two kinds:
a. Hand control the ball machine to pass 0° by horizontal direction, then arrives to 90° by vertical direction.
b. Enable the ball machine to return to the zero: \( \text{Call + 99 + ENTER} \)

It can adjust ball machine position error by above operation, then operation to “Save preset location”, the ball’s position is nicety.

1.3. Delete preset location

Operation keyboard: \( \text{PRESET + N + OFF} \)

It will display: \( \text{CLEAR: No. on screen.} \)

It will display: \( \text{CLEAR: No. on screen if do not save preset location.} \)

It will display: \( \text{CLEAR No. on screen if surpasses scope.} \)

1.4. Line scan mode

The ball can run between two preset location as for left-right monitor.

Set line scan mode start location: \( \text{PRESET + 51 + ENTER} \)

Set line scan mode end location: \( \text{PRESET + 52 + ENTER} \)

Run line scan mode: \( \text{CALL + 51 + ENTER} \)

Stop line scan mode: operation joystick stop to the ball.

Adjust speed: Main menu PTZ ball set Line speed

1.5. Track scan mode

The preset locations can called by grouping way, it can setup pause time between two preset location, the ball will arrive a preset then next preset location that it is come into being loop monitor by run the TRACK SCAN MODE. The feature is called TRACK SCAN MODE. This ball setup 8 groups preset location, each group there are 10 locations. As follows:
6. Description of functions

0--9: the first group.
10--19: the second group.
20--29: the third group.
30--39: the fourth group.
40--49: the fifth group.
50--59: the sixth group.
60--69: the seventh group.
70--79: the eighth group.

Run Track scan mode: \texttt{CALL + 53 + ENTER}

It will jump to next one if the preset location done not save or dele.

Stop Track scan mode: operation joystick stop to the ball.

Direct run track: \texttt{SHOT + N + ENTER}

Adjust speed: Main menu $\rightarrow$ PTZ Ball $\rightarrow$ track speed

1.6. \textit{360\textdegree} mode

Start 360\textdegree\ mode: \texttt{AUTO + ON}

the mode speed can changed at menu: PTZ Ball set $\Rightarrow$ 360\textdegree\ speed.

Stop 360\textdegree\ mode: \texttt{AUTO + OFF} or operation joystick stop to the ball.
6. Description of functions

1. Menu operation

- Open the main menu by **ALL** 5 **ENTER**
- You can control the camera using keyboard directly, Please see the manual of keyboard for details.
- When the main menu display on the screen, the cursor display on the left, operate joystick UP or joystick DOWN to the preset item for entering submenu or charging item.
- Operate joystick Tele, joystick Wide to enter the item. Tele key or Wide key may as the enter key.
- When changing the value of the item, the value will be flashing, operate joystick UP, joystick Down to change the value.
- When inputting some numbers or characters (i.e. inputting title, changing address), operate joystick left, joystick right to move the cursor and change the value of each bit.
- The menu will close automatically after 200 seconds non-operation.
- The setting parameters in the menu will not lose after powered off.

2. System setup

<table>
<thead>
<tr>
<th>Main menu</th>
<th>System</th>
<th>Camera</th>
<th>Alarm</th>
<th>PTZ Ball</th>
<th>Help</th>
<th>Exit</th>
</tr>
</thead>
<tbody>
<tr>
<td>➜ System</td>
<td>set</td>
<td>set</td>
<td>set</td>
<td>set</td>
<td>set</td>
<td>set</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System set</th>
<th>Title</th>
<th>Title Dis</th>
<th>Default</th>
<th>Restart</th>
<th>Address</th>
<th>Baud rate</th>
<th>Protocol</th>
<th>Format</th>
<th>Exit</th>
</tr>
</thead>
<tbody>
<tr>
<td>➜ Title</td>
<td>:CAMERA-1</td>
<td>:on</td>
<td>:off</td>
<td>:off</td>
<td>:001</td>
<td>:2400bps</td>
<td>:PELCO-D</td>
<td>:PAL</td>
<td>:set</td>
</tr>
</tbody>
</table>

a) **TITLE:** CAMERA-1
Editing title (Capital, number and punctuation).

b) **TITLE DIS:** ON/ OFF
Setting whether displaying the title on the bottom.
c) **DEFAULT**: OFF/ON

Camera factory default set. When the camera doesn't work properly for the parameters changed, user can exclude the malfunction by restoring the factory default set.

d) **RESTART**: OFF/ON

Restart camera. User also exclude the malfunction by restarting the camera when it is working improperly.

e) **ADDRESS**: 001

Change camera address (range: 0-255). When there are more than one connected on the RS485 bus, user need to change the camera address. The camera will not be set on the same address.

f) **BAUD RATE**: 2400bps

Setting the communication parameters baud rate. Including: 9600bps, 4800bps, 2400bps.

g) **PROTOCOL**: PELCO-D

Setting controlling protocol, including: PELCO-P, PELCO-D, SANSUNG, VIDO-B01, ALEC, LILIN.

**Notice**: SAMSUNG, VIDO-B01 are same set to sw2.

h) **Format**: PAL.

Select PAL if use PAL camera.
Select NTSC if use NTSC camera.
Camera default value: NTSC format.

**NOTE:**

e) **ADDRESS**,

f) **BAUD RATE**,

g) **PROTOCOL**

the 3 item can not change parameter on menu.
### 3. Camera setup

#### Main menu
- **System**
- **Camera**
- **Alarm**
- **PTZ Ball**
- **Help**
- **Exit**

#### Setup menu

<table>
<thead>
<tr>
<th>Setup Menu</th>
<th>Function</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Camera Title</strong></td>
<td>● OFF   ● ON</td>
<td><em>Set camera title string and OSD Display Position</em></td>
</tr>
<tr>
<td></td>
<td>● ATW-Mode:</td>
<td>ATW is controlled 2 mode by color temperature range</td>
</tr>
<tr>
<td></td>
<td>- OUT DOOR</td>
<td>*Mode-INDOOR:3000-10,500° K</td>
</tr>
<tr>
<td></td>
<td>- IN DOOR</td>
<td>- OUTDOOR:1,8000-10,500° K</td>
</tr>
<tr>
<td></td>
<td>● AWC</td>
<td><em>AWC: ONE PUSH</em></td>
</tr>
<tr>
<td></td>
<td>● MANUAL</td>
<td><em>MANUAL: RED/BLUE adjustable</em></td>
</tr>
<tr>
<td><strong>Back Light</strong></td>
<td>● OFF ● LOW ● MIDDLE ● HIGH</td>
<td><em>Back light compensation</em></td>
</tr>
<tr>
<td><strong>Motion Detection</strong></td>
<td>● OFF ● ON</td>
<td><em>ON mode: AREA (4 Programmable zone/size)</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td>*The word “MOTION DETECTED” appear on the screen.</td>
</tr>
<tr>
<td><strong>Focus</strong></td>
<td>● MODE</td>
<td><em>AUTO/MANUAL/ONE-PUSH</em></td>
</tr>
<tr>
<td></td>
<td>● ZOOM TRK</td>
<td><em>ON/OFF</em></td>
</tr>
<tr>
<td></td>
<td>● ZOOM SPEED</td>
<td><em>FAST/SLOW</em></td>
</tr>
<tr>
<td></td>
<td>● D-ZOOM</td>
<td><em>OFF/ON</em></td>
</tr>
<tr>
<td></td>
<td>● DISP ZOOM MAG</td>
<td><em>OFF/ON</em></td>
</tr>
<tr>
<td></td>
<td>● ZOOM POS INIT</td>
<td><em>OFF/ON</em></td>
</tr>
<tr>
<td></td>
<td>● LENS INIT</td>
<td><em>Execute lens initialization.</em></td>
</tr>
<tr>
<td><strong>Exposure</strong></td>
<td>● BRIGHTNESS</td>
<td><em>The brightness can be adjusted.</em></td>
</tr>
<tr>
<td></td>
<td>● IRIS</td>
<td><em>AUTO/MANUAL</em></td>
</tr>
<tr>
<td></td>
<td>● SHUTTER</td>
<td><em>---/MANUAL/A.FLK</em></td>
</tr>
<tr>
<td></td>
<td>● AGC</td>
<td><em>OFF/NORMAL/HIGH</em></td>
</tr>
<tr>
<td></td>
<td>● SSNR</td>
<td><em>OFF/LOW/DIDDLE/HIGH</em></td>
</tr>
<tr>
<td></td>
<td>● SENS-UP</td>
<td><em>OFF/ON</em></td>
</tr>
<tr>
<td><strong>Special</strong></td>
<td>RESET (Refer to the bottom)</td>
<td><em>Returns to the level which was set by the manufacturer for shipment.</em></td>
</tr>
<tr>
<td></td>
<td>Exit</td>
<td><em>Saved all the setting menu, the exit.</em></td>
</tr>
</tbody>
</table>

**NOTICE:** Then user need to operation: Open menu (CALL + 95 + ENTER)  
=> Main menu => Camera set => SPECIAL => COMM Addition  
=> COMM ID => 0 or 1 => in turn menu.
### 4. Alarm set menu

Function note: Auto run to preset location and monitor to it and display “ALARM 1” on screen bottom when this ball is alarming. Input type:

- **a. Normal close**: This ball is alarming when alarm interface have closed.
- **b. Normal open**: This ball is alarming when alarm interface have opened.
- **c. Not installed**: This ball is not alarming when alarm have not installed.

### 7. Menu setup

<table>
<thead>
<tr>
<th>SETUP MENU</th>
<th>Function</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>USER PRESET</td>
<td>• OFF • ON</td>
<td>No use</td>
</tr>
<tr>
<td>PRIVACY</td>
<td>• OFF • ON</td>
<td>*On mode: area(4 Programmable zone) / SIZE / TONE adjustable</td>
</tr>
<tr>
<td>DAY/NIGHT</td>
<td>• COLOR • B/W • AUTO1 • AUTO2</td>
<td>*COLOR / B/W * AUTO1,2 according to the luminance level, DSN filter is automatically switched</td>
</tr>
<tr>
<td>SYNC</td>
<td>• INT</td>
<td>*Internal</td>
</tr>
<tr>
<td>COMM Addition</td>
<td>• CAM ID • DIS CAM ID • BAUD RATE • UART MODE • RET-PKT</td>
<td>*Open menu (CALL + 95 + ENTER), Returns to the level which was set by the menu facturer for shipment. Eg: CAM ID or CAM ID: 1. Warning: don’t setup</td>
</tr>
<tr>
<td>IMAGE Addition</td>
<td>• FREEZE • H-REV • V-REV • SHARRNESS • COLOR</td>
<td>*OFF / ON *OFF / ON *OFF / ON *The Sharpness can be adjusted. *The color level can be adjusted (0~100)</td>
</tr>
</tbody>
</table>

Specifications are subject to change without notice.
7. Menu setup

Set operation:

a. Install alarm, for example: infrared sensor.

b. Operation joystick that this ball run to alarm preset location.

c. Operation keyboard: CALL + 95 + ENTER to open menu.

d. Into sub-menu Alarm set item at main menu.

e. Set Input type depend on alarm's output interface. for example: infrared sensor.

5. PTZ ball set menu

- **Main menu**
  - System: set
  - Camera: set
  - Alarm: set
  - PTZ Ball: set
  - Help
  - Exit

- **PTZ Ball set**
  - Line speed: 4
  - Line stop: 003s
  - Track group: 00-09
  - Track speed: 7
  - Track stop: 003s
  - Track restart: off
  - 360 run: off
  - 360 speed: 3
  - Step Dis: on
  - Exit

**Lines speed**: range: 1~7 step slowest: 1 flashest: 7 default: 4.

**Lines pause**: line run pause time range: 0s~255s, default: 3s.

**Track group**: range: 00~79, min group: 00~09, max group: 70~79, default: 00~09.

**Track speed**: range: 1~7, slowest: 1, flashest: 7, default: 7.

**Track pause**: scan pause time range: 0s~255s, default: 3s.

**Track dis**: on Display switch of step

360 run: off

360 speed: range: 1~7, slowest: 1, flashest: 7, default: 3.

Exit
NOTE:

a. **Line speed**  Operation keyboard: **CALL + 51 + ENTER** to activation the function, Line stop Operation joystick stop to the ball.

b. **Track group, Track speed and Track pause** Operation keyboard: **CALL + 53 + ENTER** to activation the function. Or **SHOT + N + ENTER**

c. **360 ° run and 360 ° speed**  Operation keyboard: **AUTO + ON** to activation the function. Operation keyboard: **AUTO + OFF** to disable the function.

### 6. Help menu

- **Main menu**
  - System: set
  - Camera: set
  - Alarm: set
  - PTZ Ball: set
- **Help**
- **Exit**

#### Keyboard command

- **Open menu:** **CALL + 95 + ENTER**
- **Clear pre:** **PRESET + N + OFF**
- **Set preset:** **PRESET + N + ENTER**
- **Call preset:** **CALL + N + ENTER**
- **Line scan:** **CALL + 51 + ENTER**
- **Track scan:** **CALL + 53 + ENTER**
- **360 run:** **AUTO + ON + ENTER**
- **Home goto 0:** **CALL + 99 + ENTER**
- **Exit**
### 8. Technical data table

#### 8.1. Technical data table of the ball

<table>
<thead>
<tr>
<th>Manual speed (Pan/Tilt)</th>
<th>Min: 1.5° /s, Max: 120° /s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto speed (Pan/Tilt)</td>
<td>Min: 1.5° /s, Max: 240° /s</td>
</tr>
<tr>
<td>Pan range</td>
<td>360°</td>
</tr>
<tr>
<td>Tilt range</td>
<td>0~90°</td>
</tr>
<tr>
<td>Preset location</td>
<td>160 Presets</td>
</tr>
<tr>
<td>Tilt range</td>
<td>8 cruises, 7 step speeds</td>
</tr>
<tr>
<td>Line scan mode</td>
<td>1 cruises, 7 step speeds</td>
</tr>
<tr>
<td>360° run mode</td>
<td>7 step speeds</td>
</tr>
<tr>
<td>OSD system</td>
<td>Setup Parameter, Setup Title, XY POSITION, Auto Clear Screen</td>
</tr>
<tr>
<td>Protocol</td>
<td>PELCO-D, PELCO-P, ALEC, LILIN, VIDO-B01, SUMSANG</td>
</tr>
<tr>
<td>Baud rate</td>
<td>9600bps, 4800bps, 2400bps</td>
</tr>
<tr>
<td>Communications mode</td>
<td>RS485 bus, max distance: 1800m</td>
</tr>
<tr>
<td>Power supply</td>
<td>DC12V/1.5A</td>
</tr>
</tbody>
</table>

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### 8.2 Technical data table of the ball

<table>
<thead>
<tr>
<th>Specifications</th>
<th>NTSC</th>
<th>PAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>1/4 inch, Inter line Transfer CCD</td>
<td></td>
</tr>
<tr>
<td>Effective Pixels</td>
<td>811 (H) x 508 (V)</td>
<td>759 (H) x 596 (V)</td>
</tr>
<tr>
<td></td>
<td>768 (H) x 494 (V)</td>
<td>752 (H) x 582 (V)</td>
</tr>
<tr>
<td>Lens</td>
<td>10X, f=3.8 to 38.0 mm (F1.8)</td>
<td></td>
</tr>
<tr>
<td>Optics</td>
<td>1,000 mm</td>
<td></td>
</tr>
<tr>
<td>Min. Focus Distance</td>
<td>OFF/ON (1X~10X)</td>
<td></td>
</tr>
<tr>
<td>Angle Field of view</td>
<td>H: Appr. 51.2° (Wide) to 5.58° (Tele) / V: Appr. 39.3° (Wide) to 4.27° (Tele)</td>
<td></td>
</tr>
<tr>
<td>Scanning System</td>
<td>2: 1 Interlace</td>
<td></td>
</tr>
<tr>
<td>Sync. System</td>
<td>Internal</td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>H: 15.734 KHz/V: 59.94 Hz</td>
<td>H: 15.625 KHz/V: 50 Hz</td>
</tr>
<tr>
<td>Resolution</td>
<td>500 TV lines (Min.): Color / 570 TV lines (Min.): B/W</td>
<td></td>
</tr>
<tr>
<td>Min. Illumination</td>
<td>0.7 LUX/F1.8 (50IRE): Color / 0.02 Lux/F1.8 (50IRE): B/W</td>
<td></td>
</tr>
<tr>
<td>S/N (Y signal)</td>
<td>50 dB (AGC off, Weight ON)</td>
<td></td>
</tr>
<tr>
<td>Video output</td>
<td>CVBS: 1.0 Vp-p 75Ω</td>
<td></td>
</tr>
<tr>
<td>Focus</td>
<td>Auto/Manual / one push</td>
<td></td>
</tr>
<tr>
<td>Zoom Movement Speed</td>
<td>1.67 sec: wide to tele</td>
<td>1.75 sec: wide to tele</td>
</tr>
<tr>
<td>IRIS Control</td>
<td>Auto, Manual</td>
<td></td>
</tr>
<tr>
<td>Lens Initialize</td>
<td>Built-in</td>
<td></td>
</tr>
<tr>
<td>Camera Title</td>
<td>OFF/ON (Displayed 15 characters)</td>
<td></td>
</tr>
<tr>
<td>Camera ID</td>
<td>255 ID Selectable</td>
<td></td>
</tr>
<tr>
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</tr>
<tr>
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<td></td>
</tr>
<tr>
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<td>ATW/AWC/ Manual (1800° K~10° 500° K)</td>
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</tr>
<tr>
<td>Back Light Compensation</td>
<td>Low, Middle, High, Off</td>
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</tr>
<tr>
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<td>AUTO (X128<del>1/60 sec</del>1/120, OOO sec)</td>
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</tr>
<tr>
<td></td>
<td>sens-up and sen-np Limit is selectable,</td>
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</tr>
<tr>
<td></td>
<td>flicker less.</td>
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</tr>
<tr>
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<td>Built</td>
<td></td>
</tr>
<tr>
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<td>ON/OFF</td>
<td></td>
</tr>
<tr>
<td>SSNR</td>
<td>Low, Middle, High, Off</td>
<td></td>
</tr>
<tr>
<td>FLIP</td>
<td>Vertical, Horizontal</td>
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## Troubleshooting:

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<thead>
<tr>
<th>Problems</th>
<th>possible causes</th>
<th>Remedies</th>
</tr>
</thead>
<tbody>
<tr>
<td>No action when is switched on</td>
<td>Power supply fault</td>
<td>Replace</td>
</tr>
<tr>
<td></td>
<td>Bad connection of the power</td>
<td>Correct</td>
</tr>
<tr>
<td></td>
<td>Transformer damaged</td>
<td>Replace</td>
</tr>
<tr>
<td>Abnormal self-check, images with motor noise</td>
<td>Mechanical failure</td>
<td>Repair</td>
</tr>
<tr>
<td></td>
<td>Camera inclined</td>
<td>Reinstall</td>
</tr>
<tr>
<td></td>
<td>Power supply not enough</td>
<td>Replace</td>
</tr>
<tr>
<td>Normal self-check no image</td>
<td>Video signal fault</td>
<td>Reinstall</td>
</tr>
<tr>
<td></td>
<td>Bad connection of the video</td>
<td>Press to connect well</td>
</tr>
<tr>
<td></td>
<td>Camera damaged</td>
<td>Replace</td>
</tr>
<tr>
<td>Normal self-check out of control</td>
<td>Rs485 bus bad connection</td>
<td>Check the Rs485 connection</td>
</tr>
<tr>
<td></td>
<td>Dome ID setup is wrong</td>
<td>Replace</td>
</tr>
<tr>
<td></td>
<td>Protocol setup is wrong</td>
<td>Reselect Reset and switch on again</td>
</tr>
<tr>
<td>Vague image</td>
<td>Bad connection of the video</td>
<td>Press to connect well</td>
</tr>
<tr>
<td></td>
<td>Power supply not enough</td>
<td>Replace</td>
</tr>
<tr>
<td>Dome camera out of control</td>
<td>Self check error</td>
<td>Power on again</td>
</tr>
<tr>
<td></td>
<td>Bad connection of control</td>
<td>Press to connect well</td>
</tr>
<tr>
<td></td>
<td>Bad control of matrix</td>
<td>Power on again</td>
</tr>
<tr>
<td>The ball’s position is not nicely set</td>
<td>The position is error</td>
<td>1. Operation the ball to pass 0° by horizontal direction and arrive 90° by vertical direction. 2. CALL+99+ENTER.</td>
</tr>
<tr>
<td>Dome can run, but camera can’t to TELE, WIDE or do not open the menu</td>
<td>The camera has fault, it needs to reset.</td>
<td>Shake out hood cover, the find out five test position on the PCB (refer underside picture 100.) 1. Short circuit GND to SET position by wire, camera menu will open. 2. Short circuit GND to SET position by wire, More the cursor to RESET item. 3. Short circuit GND to SET position by wire, reset the camera.</td>
</tr>
<tr>
<td>RESET to the camera, The camera can not been on menu OSD.</td>
<td>The camera can not been Controlled</td>
<td>Open menu (CALL+95+ENTER) =&gt; Main menu =&gt; Camera set =&gt; SPECIAL =&gt; COMM Addition =&gt; COMM ID =&gt; 0 or 1 =&gt; in turn menu.</td>
</tr>
</tbody>
</table>