HIGH SPEED DOME CAMERA

USER MANUAL

- High resolution
- Line scanning
- RS485 control interface

- Day&night function
- Continuous360° rotation
- Built -in OSD

Please review this instruction carefully before use.

The first use please open the packing gaskets(page 6)

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 powerDC12/1.5A 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.

- 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.

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 feature s 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 auto matically engage depending on the ambient light, allowing the camera to be effective in day & night environment.

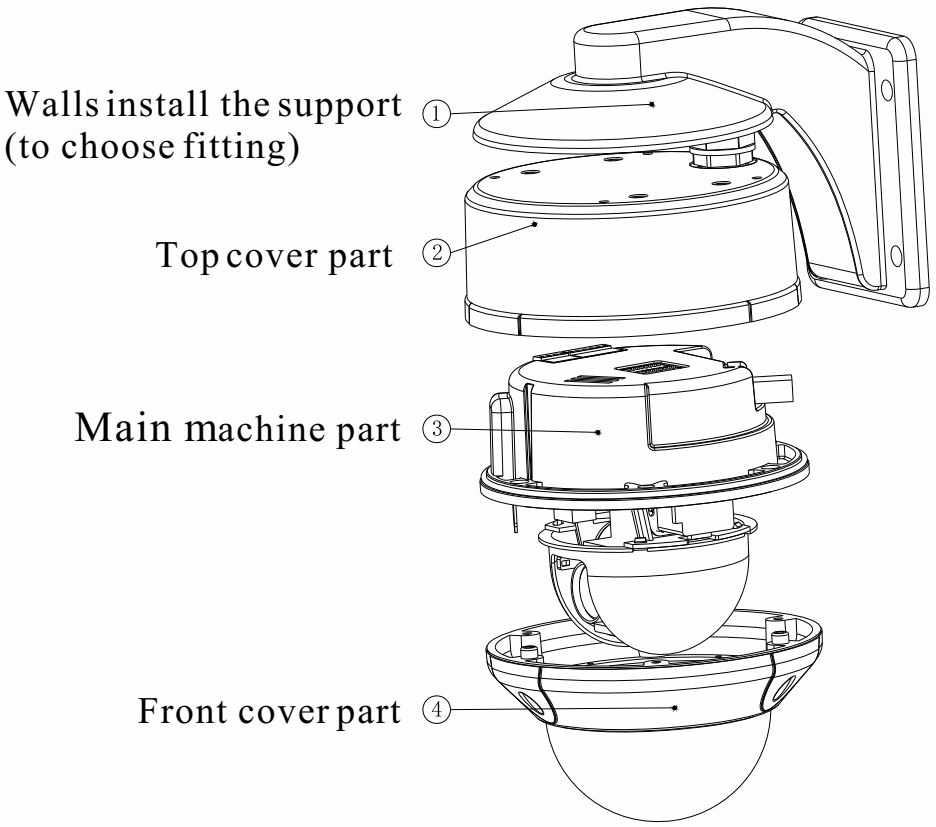
☞ Electrical Flip function

The SDM-100 has function of H/V reverse mode

☞ Motion Detection(4 programmable zone per screen)

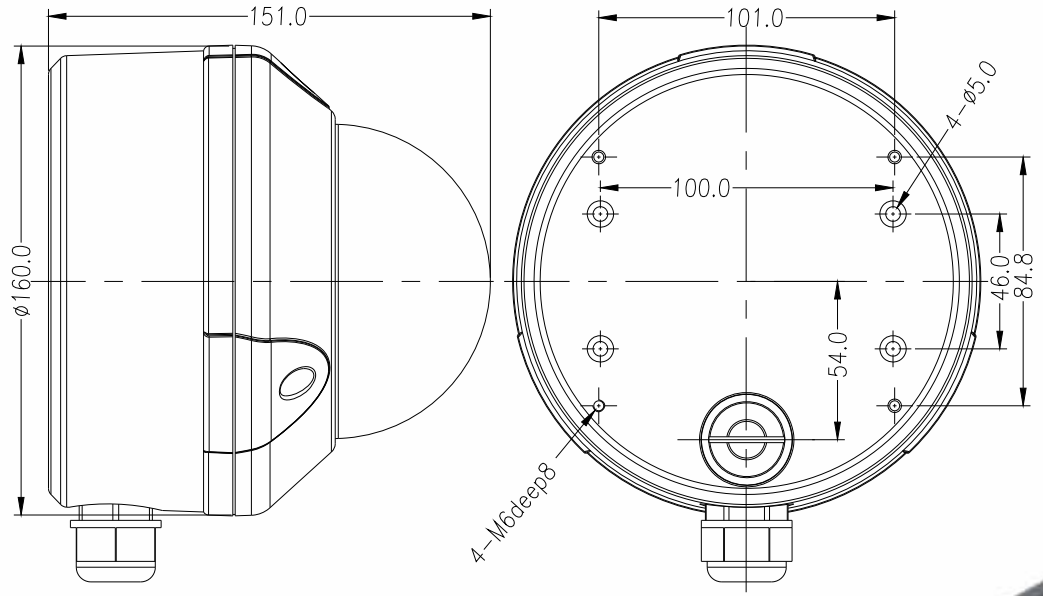
You can transmits an alert signal when it detects motion of an object on the screen. This feature is useful when you have to monitor several screens simultaneously.

1. The structure drawing explains



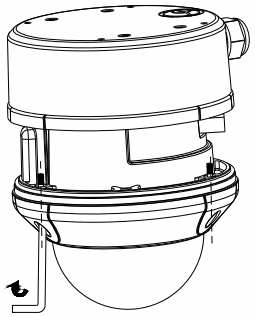
Attention：machine core Partial +Front cover= Main machine partial

2. Dimension of the product (Unit : mm)



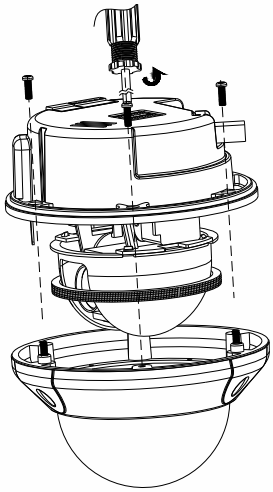
3.packing gaskets backout method

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



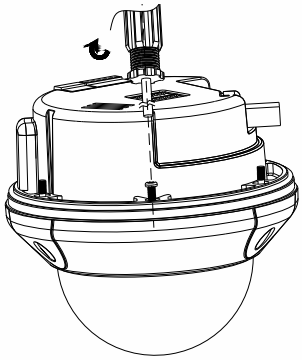
(a)

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



(b)

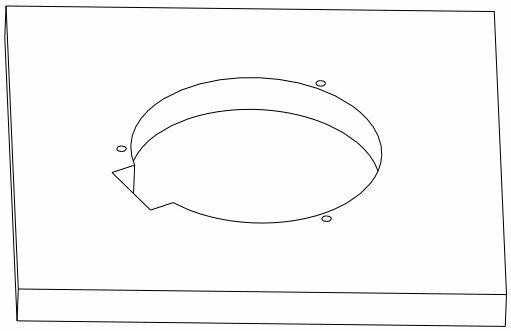
C. gathers the main machine part and the front cover, on the locking main machine part three screws.



(c)

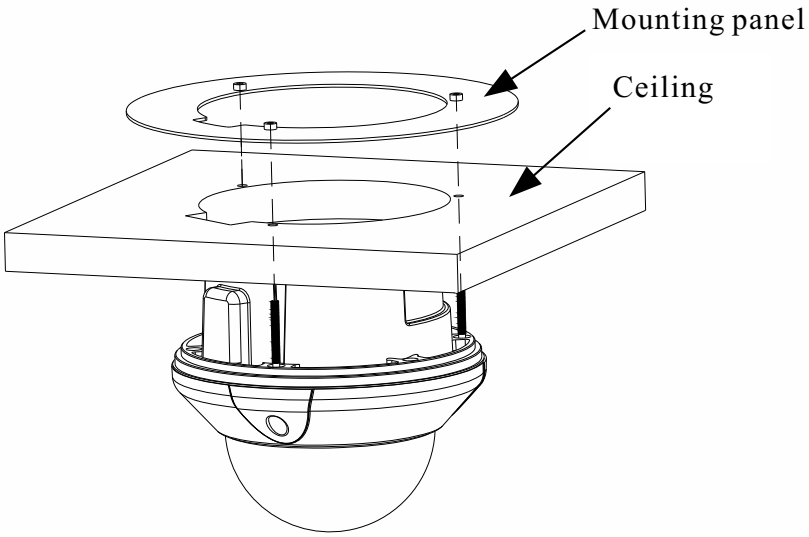
4. Indoor embedded installation

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



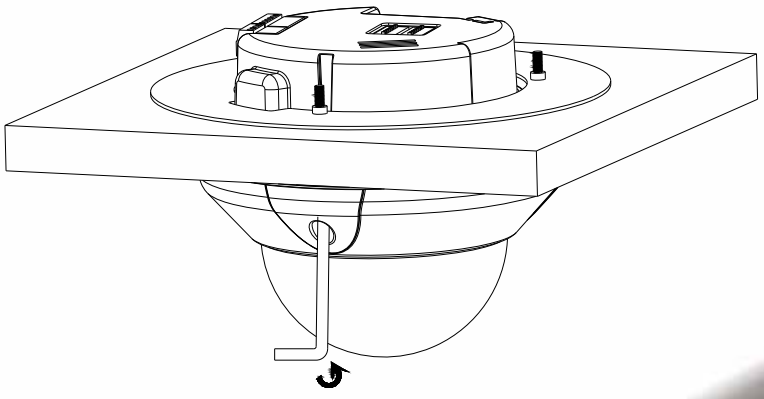
(a)

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.



(b)

c. On locking front cover three screws

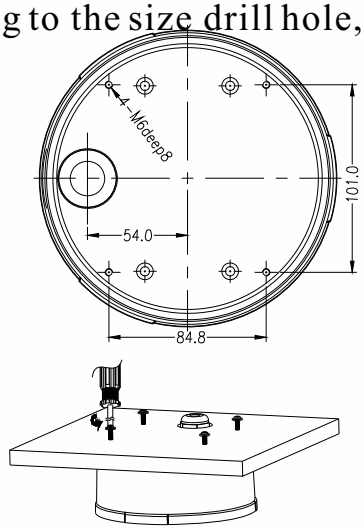


(c)

5. Indoor ceiling installation

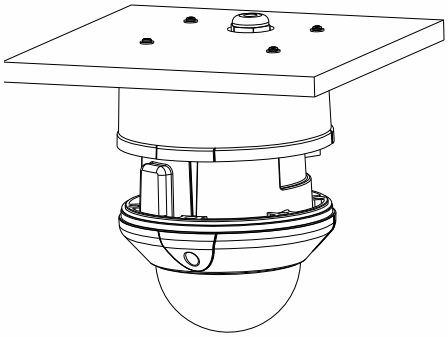
Method 1:

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



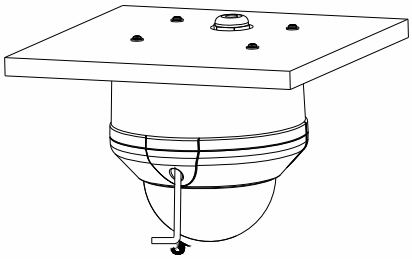
(a)

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.



(b)

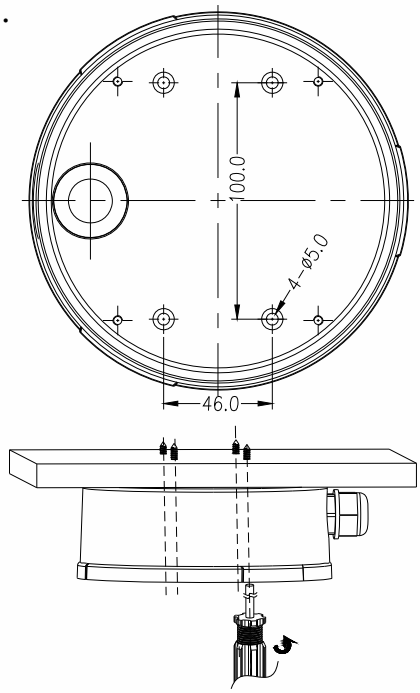
c.On locking front cover three screws.



(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.



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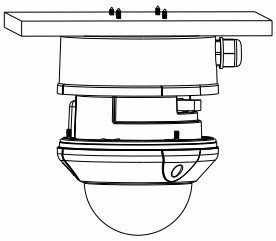
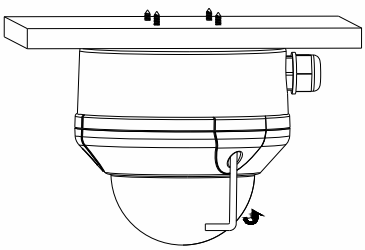
(a)

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.



(b)

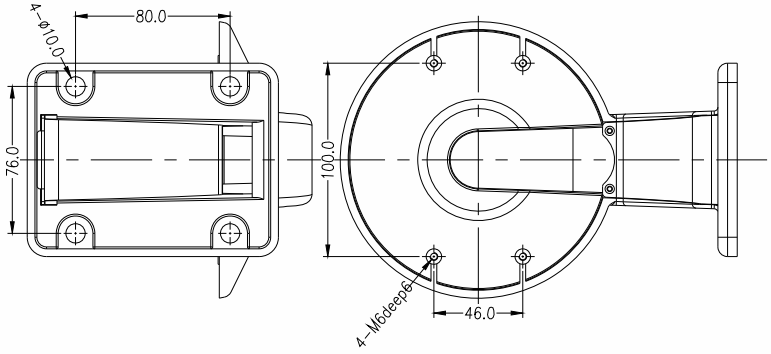
c. On locking front cover three screw



(c)

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.



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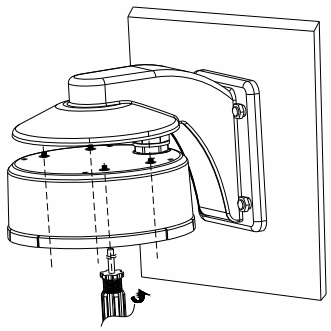
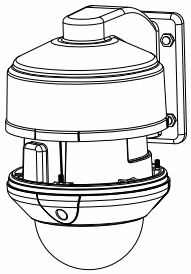


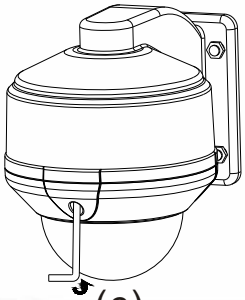
(a)

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.



(b)

c. On locking front cover three screws.



(c)

The cleaning if 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.

System installation

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 meters 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 $\leqslant 4\,\Omega$ and the sectional areaof down conductor should be $\leqslant 25mm^2$.

System installation

1.Single connection layout as follows:

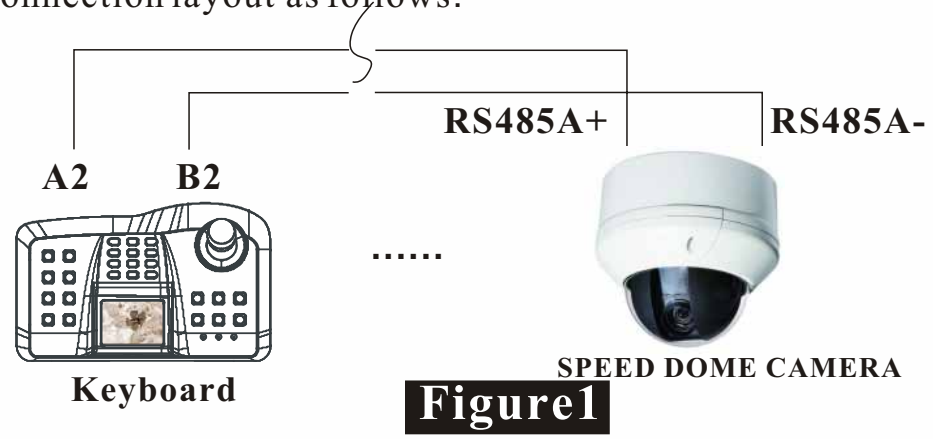


Figure1

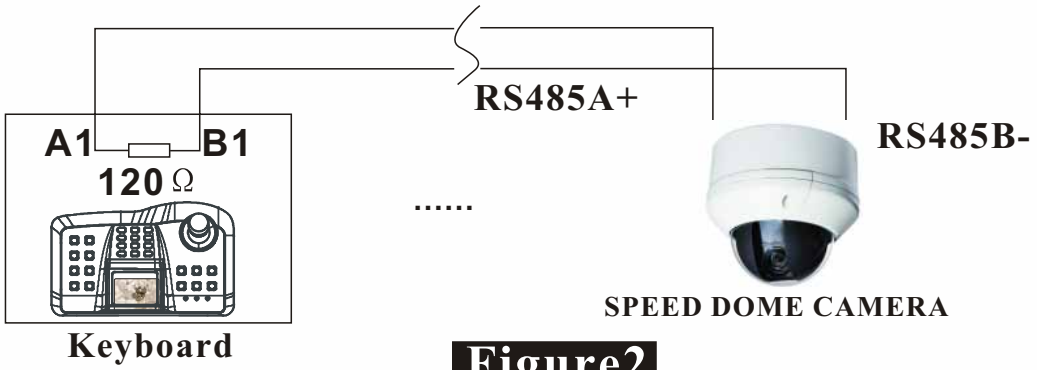


Figure2

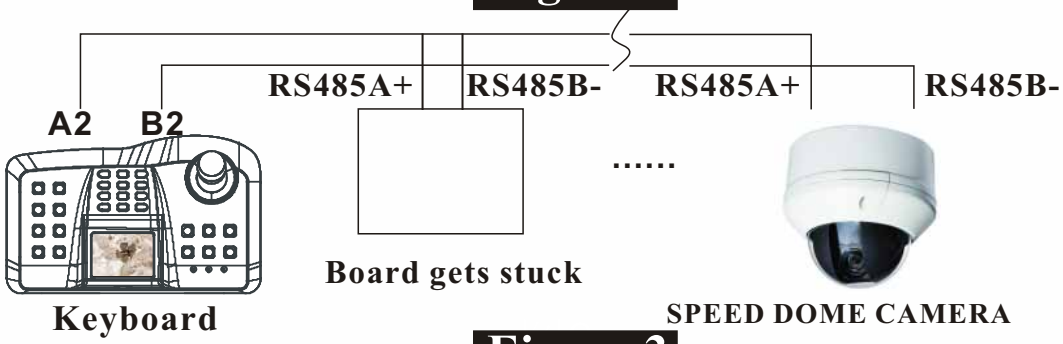


Figure3

2. Much machine links picture as follows:

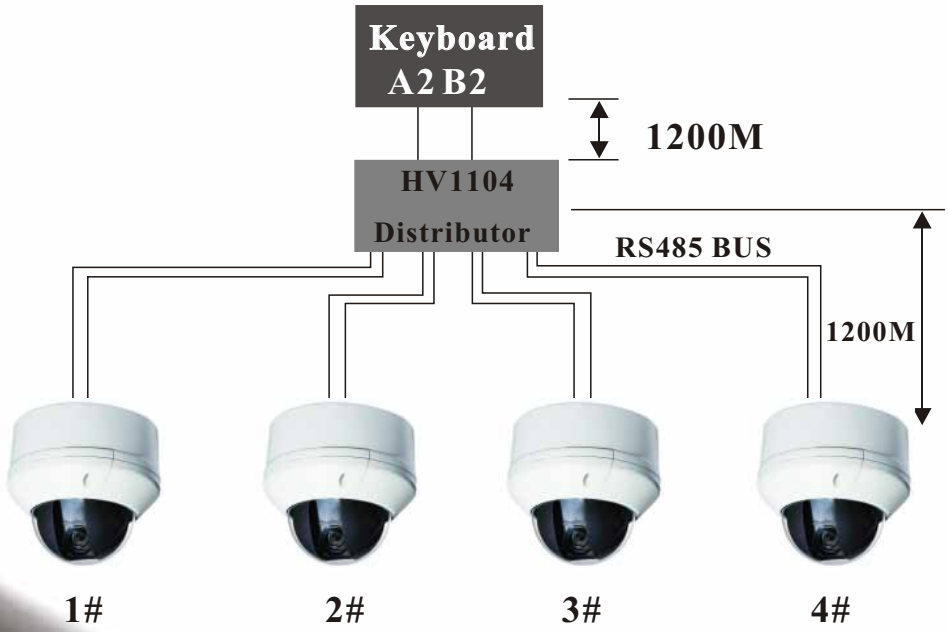


Figure4

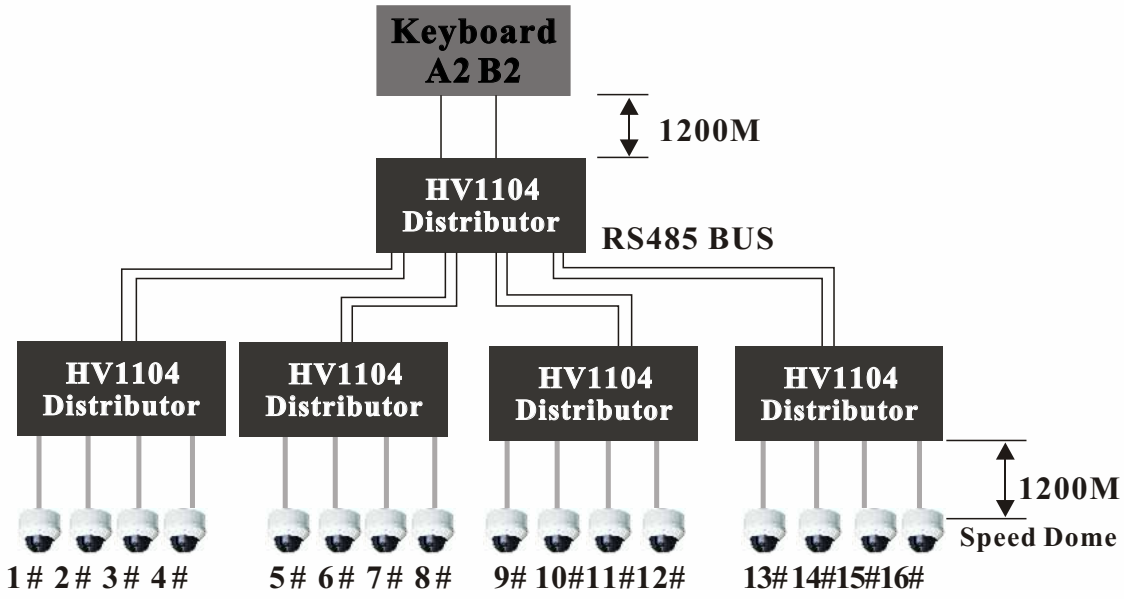


Figure5

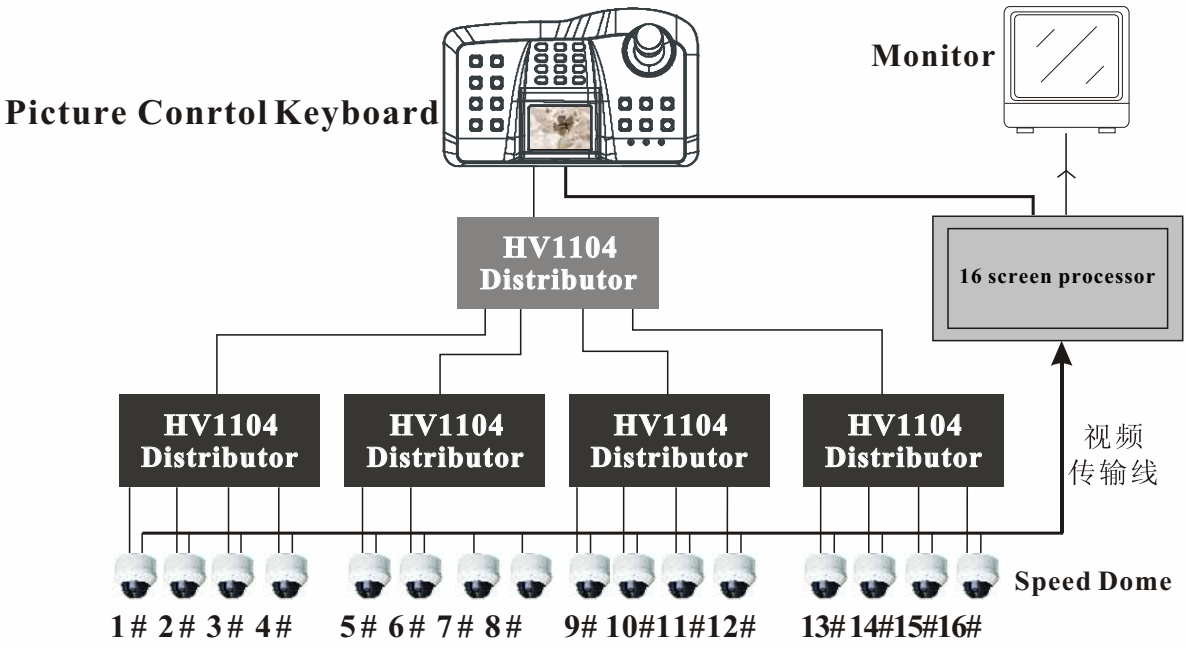
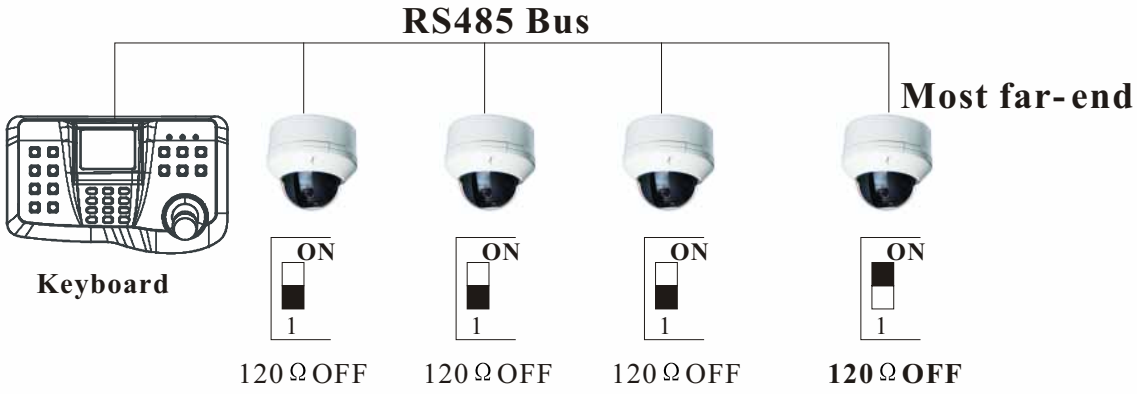


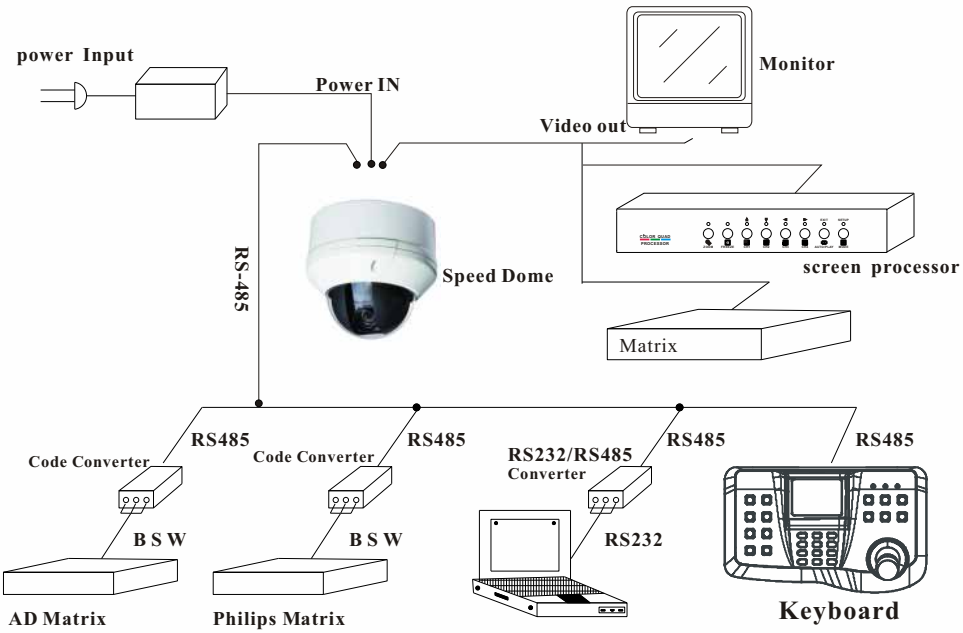
Figure6

3.Main line connection diagram as follows:



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

4.System wiring diagram as follows:



5. Explained:

〈1〉 The divider may connect 3.

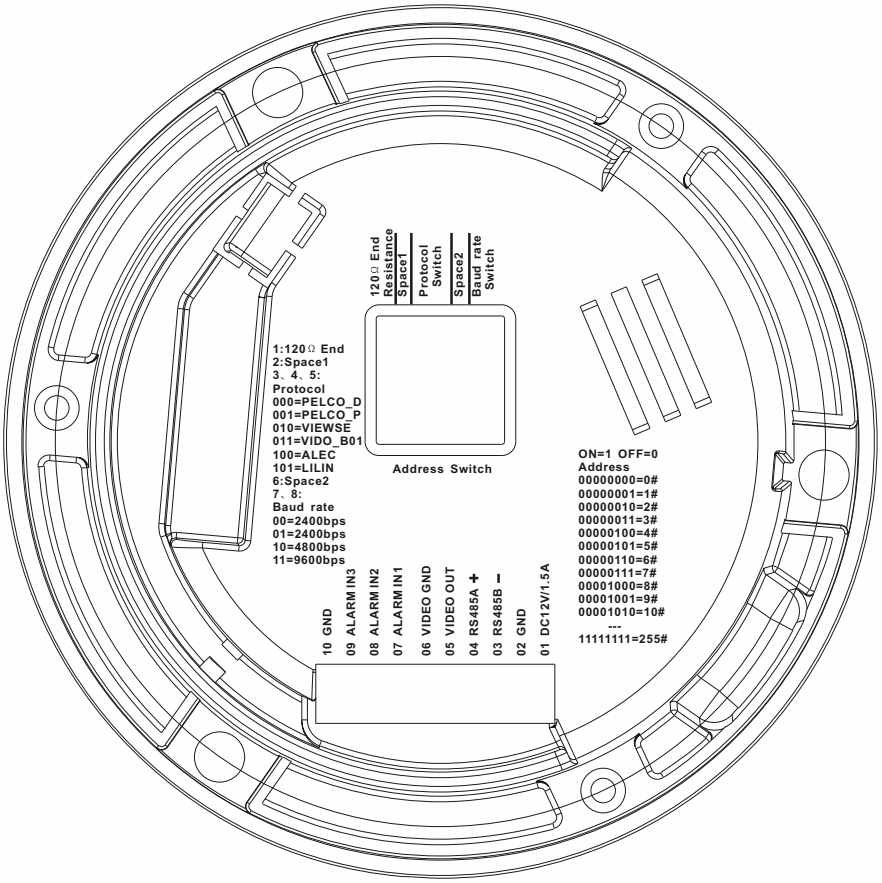
〈2〉 In the ordinary circumstances, the ball machine 120 Omega is at the "OFF" condition, if could not control, then should hit in the "ON" condition.

〈3〉 The keyboard time passed (A2, B2) the road cannot control, then traded the user to be able (A1, B1) a control.

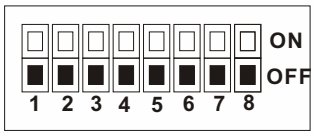
〈4〉 RS485 main line transmitting range:

Baud Rate	Maximum Transmitting Distance
2400Bps	1800m
4800Bps	1200m
9600Bps	800m
19200Bps	200m

1.Setup switch



2.Address setup



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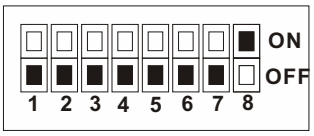
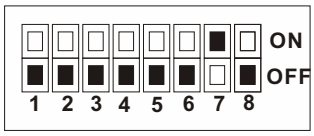


1#地址



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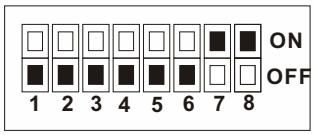

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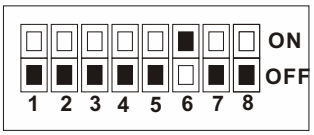

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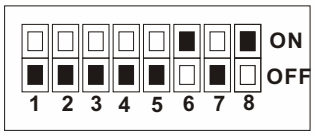

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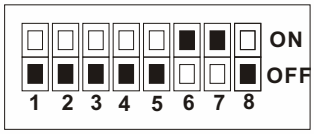

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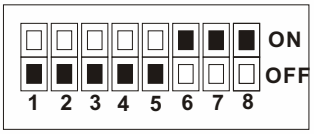

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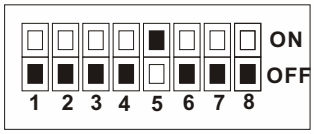

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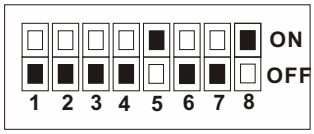

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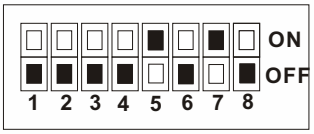

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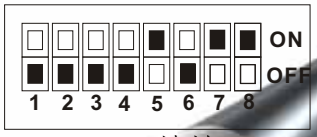
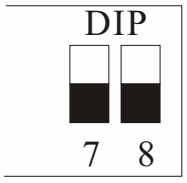
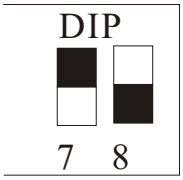


11#地址

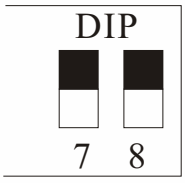
3.Baud rate setup



2400bps

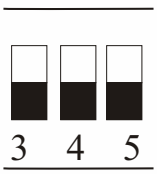


4800bps

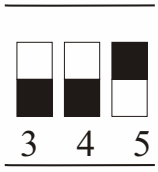


9600bps

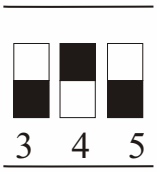
4.Protocol setup



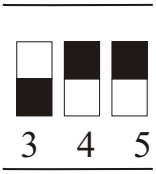
PELCO_D



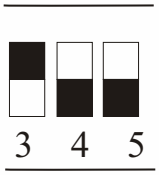
PELCO_P



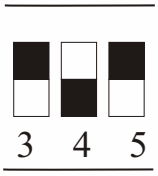
HTS



VIDO-B01
SUMSAMG
NEON



ALEC



LILIN

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 change run way.

b.Do not shift speed soon, It is right operation for: slowest -> middling speed -> flashest or flashes -> middling speed -> slowest.

c.Do not run long time: Line scan mode, Track scan mode or 360°

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 1.1the 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 N:** on screen if surpasses scope.

1.2Call 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.

Note :

The position is not nicety when Call preset location . Solution of two kinds:

a.Hand control the ball machine to pass 0^{o} by horizontal direction , then arrives to 90^{o} by vertical direction.

b. Enable the ball machine to return to the zero : Call + 99 + ENTER

Tt can adjust ball machine position error by above operation, then operation to "Save preset location", the ball's position is nicety.

1.3.**Dele preset location**

Operation keyboard: PRESET + N + OFF

It will display :CLEAR: No. on screen.

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

It will display :OVER CLEAR N 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: PRESET +51 +ENTER

Set line scan mode end location: PRESET +52 +ENTER

Run line scan mode: 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:

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: 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：SHOT + N + ENTER

Adjust speed ： Main menu→ Preset set→ Track speed

1.6 .**360° mode**

Start 360° mode：AUTO + ON

the mode speed can changed at menu: PTZ Ball set => 360° speed.

Stop 360° mode：AUTO + OFF or operation joystick stop to the ball.

1.Menu operation

✤ Open the main menu by CALL + 95 + 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.

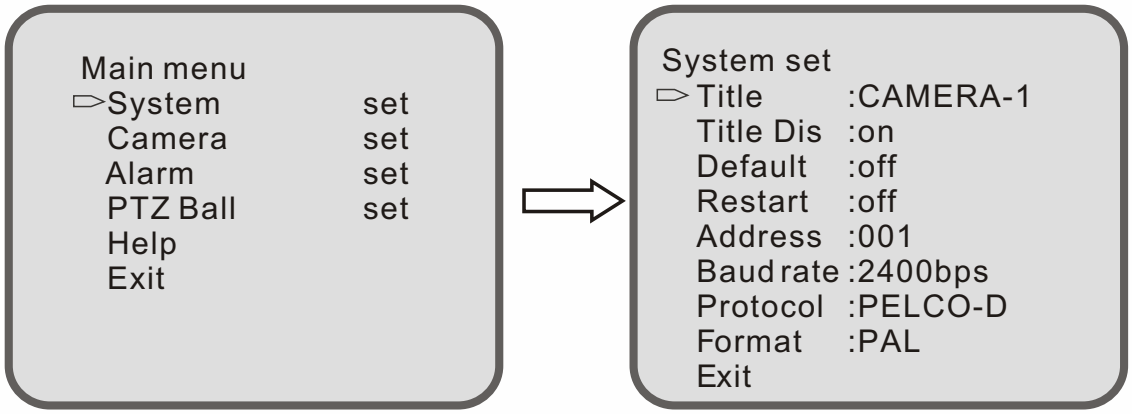
✤ When changing the value of the item, the value will be flashing, operate joystick UP, joystick Down to change the value.

✤ 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



a)TITLE:CAMERA-1

Editing title (Capital, number and punctuation).

b)TITLE DIS: ON/ OFF

Setting whether displaying the title on the bottom.

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

f) BAUD RATE:2400dps

Setting the communication parameters baud rate.

including: 9600dps, 4800dps, 2400dps.

g) PROTOCOL:PELCO-D

Setting controlling protocol, including: PELCO-P, PELCO-D, HTS, SAMSUNG,NEON,VIDO-BO1, ALEC, LILIN,

Notice: SAMSUNG,NEON,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:

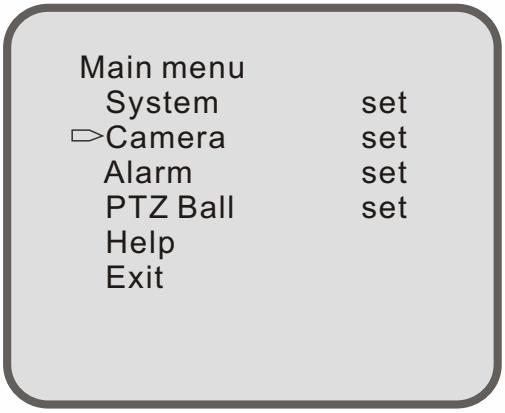
e)ADDRESS,

f) BAUD RATE,

g) PROTOCOL

the 3 item can not change parameter on menu.

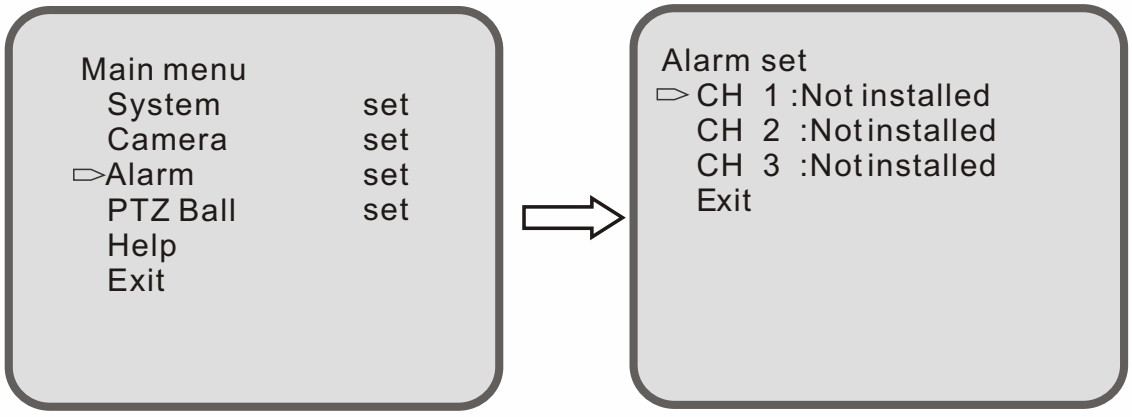
3.camera setupess.



SETUP menu	Function	Summary
CAMERA TITLE	● OFF ● ON	*Set camera Title String and OSD Display Position
WHITE BAL.	● ATW －Mode: OUTDOOR INDOOR ● AWC ● MANUAL	ATW is controlled 2 mode by color temperature range *Mode－INDOOR:3000-10,5000° K －OUTDOOR:1,8000-10,500° K *AWC :ONE PUSH *MANUAL:RED / BLUE Adjustable
BACKLIGHT	● OFF ● LOW ● MIDDLE ● HIGH	*Backlight compensation
Motion Detection	● OFF ● ON	*ON mode: AREA(4 Programmable zone/SIZE) *Theword ” MOTION DETECTED” appear on the screen.
FOCUS	● MODE ● ZOOM TRK ● ZOOM SPEED ● D-ZOOM ● DISP ZOOM MAG ● ZOOM POS INIT ●LENS INIT	*AUTO / MANUAL / ONE-PUSH *ON / OFF *FAST / SLOW *OFF/ON(There is a D. Zoom limit of x10) *OFF / ON *OFF / ON *Execute lens initialization.
EXPOSURE	● BRIGHTNESS ● IRIS ● SHUTTER ● AGC ● SSNR ●SENS-UP	*The Brightness can be adjusted. *AUTO / MANUAL *--- / MANUAL / A.FLK *OFF / NORMAL / HIGH *OFF / LOW / MIDDLE / HIGH *OFF / ON
SPECIAL	Refer to the bottom.	
RESET		*Returns to the level which was set by the manufacturer for shipment.
EXIT		*Saved all the setting menu, then exits

Special menu	Function	Summary
USER PRESET	• OFF • ON	No use
PRIVACY	• OFF • ON	*ON mode: AREA(4 Programmable zone) /SIZE/TONE adjustable
DAY/NIGHT	• COLOR • BW • AUTO1 • AUTO2	*COLOR: COLOR FIX *BW:B/W FIX *AUTO1,2:According to the luminance level, D&N filter is automatically switched
SYNC	• INT • LL	*LL mode: you can adjust desired phase from 0°-359° *Trigger Signal: Auto Detection
COMM ADJ	• CAM ID • DIS CAM ID • BAUD RATE • UART MODE	*OFF/ON(Maximum length for the name display is limited 15 letters.) *OFF / ON Warning: don't setup. Warning: don't setup.
IMAGE ADJ	• FREEZE • H-REV • V-REV SHARPNESS • COLOR	*OFF / ON *OFF / ON *OFF / ON *The Sharpness can be adjusted. *The Color level can be adjusted(0-100)

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.

Set operation:

a. Install alarm, for example: infrared sensor.

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

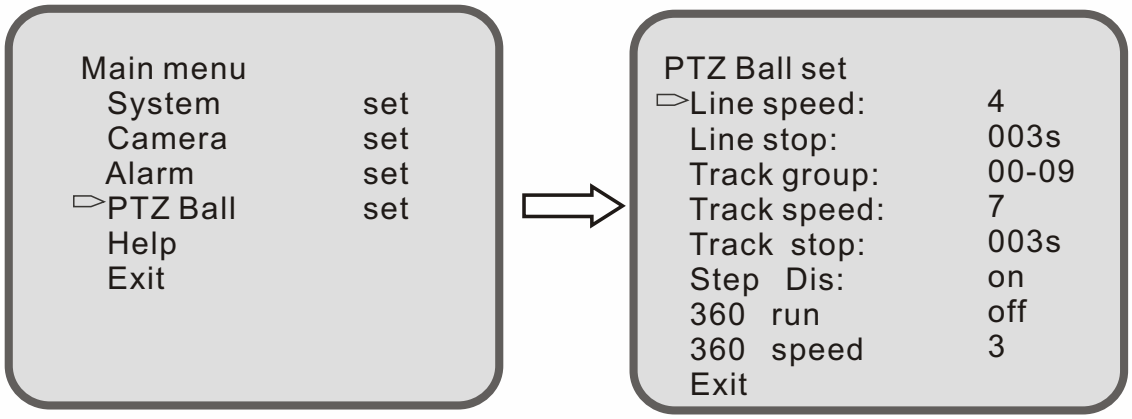
c. Operation keyboard: CALL + 95 + ENTER to open menu.

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



Lines speed : range: 1~7step 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

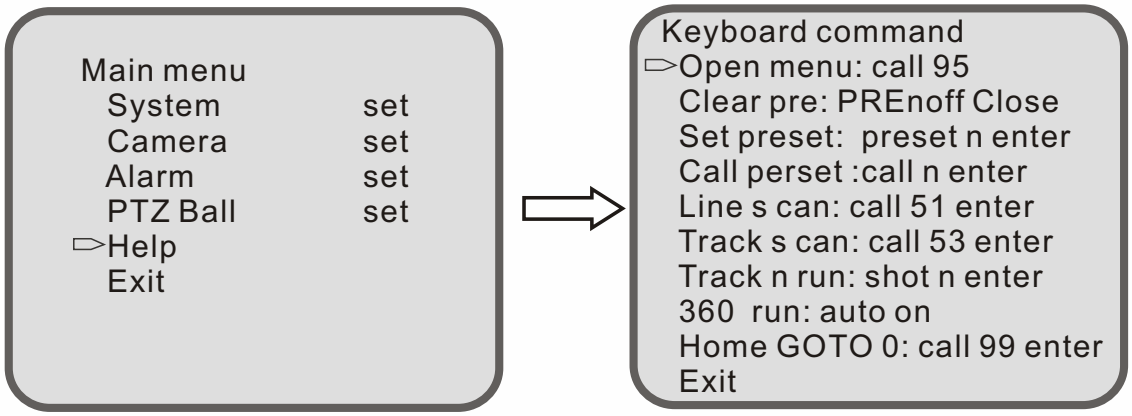
NOTE:

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



Keyboard command

Open menu: call 95 enter

Clear pre: pre 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

8.1.Technical data table of the ball

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

8.2.Camera specifications

Specifications		NTSC	PAL
CCD	Size	1/4 inch, Inter line Transfer CCD	
	Total Pixels	811(H) x 508(V)	795(H) x 596(V)
	Effective Pixels	768(H) x 494(V)	752(H) x 582(V)
OPTICS	Optics	10X , f = 3.8 to 38.0mm(F1.8)	
	Min . Focus Distance	1,000mm	
	D. ZOOM	OFF/ON(X2~X10)	
	Angle Field of view	H : Appr . 51.2 °(Wide) to 5.58 ° (Tele)/V : Appr.39.3 ° (Wide) to 4.27 ° (Tele)	
sync.	Scanning System	2: 1 Inter lace	
	Synchronization	Internal/VD-Lock	
	Frequency	H:15.734KHz/V:59.94Hz	H:15.625KHz/V:50Hz
ELECTRICAL	Resolution	500 TV Lines(Min.):Color (WIDE) / 570 TV Lines(Min.) : B/W(WIDE)	
	Min. Illumination	0.7 Lux / F1.8(50 IRE); Color / 0.02 Lux / F1.8 (50 IRE); B/W	
	S/N(Y signal)	50 dB (AGC Off ,Weight ON)	
	Video output	CVBS : 1.0Vp-p/75 Ω	
	Focus	Auto/Manual/One push	
	Zoom Movement Speed	1.67 sec : Wide to Tele	1.75 sec : Wide to Tele
	IRIS Control	Auto, Manual	
	Lens Initialize	Built-In	
	Camera Title	OFF/ON(Displayed 15 characters)	
	Camera ID	255 ID Selectable	
	Day & Night	Auto1, Auto2,COLOR,B/W(ICR)	
	Gain Control	Normal, High, OFF Selectable	
	White Balance	ATW/AWC/Manual(1800 °K~10,500 °K)	
	Back Light Compensation	LOW/MIDDLE/HIGH/OFF Selectable	
	Electronic shutter speed	AUTO(X128 ~ 1/60sec ~ 1/120,000sec) Sens-up and Sens-up Limit is selectable, Flicker less	AUTO(X128~ 1/50sec~ 1/120,000sec) Sens-up and Sens-up Limit is selectable, Flicker less
	O.S.D	Built-In	
	Motion Detection	ON/OFF(4 Programmable Zone per Screen)	
	SSNR	Low, Middle, High, Off	
	Privacy Function	ON/OFF(32Zones,It consists of 8Group 4Programmable Zone per Screen)	
	FLIP	Vertical , Horizontal , Vertical-Horizontal , OFF Selectable	

Problems	Possible Causes	Remedies
No action when power is switched on	Power supply fault	Replace
	Bad connection of the power	Correct
	Transformer damaged	Replace
Abnormal self-check. Images with motor noise	Mechanical failure	Repair
	Camera inclined	Reinstall
	Power supply not enough	Replace
Normal self-check no image	Video signal fault	Reinstall
	Bad connection of the video	Press to connect well
	Camera damaged	Replace
Normal self-check but out of control	RS485 bus bad connection	CheckttheRS485 connection
	Dome ID setup is wrong	Reselect
	Protocol setup is wrong	Reset and Switch ON again
Vague image	Bad connection of the video	Press to connect well
	Power supply not enough	Replace
Dome camera out of control	Self check error	Power on again
	Bad connection of control	Press to connect well
	Bad control of matrix	Power on again
The ball's position is not nicety	The position is error	1.opration the ball to pass 0° by horizontal direction and arrive 90° by vertical direction. 2. Call+99+enter.

Dome can run, But camera can't TELE, WIDE or do not open the menu	The camera has fault, .It needs to reset	Shake out hood cover, then 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. Move the cursor to RESET item. 3.Short circuit GND to SET position by wire, Reset the camera.