

IR High Speed Dome Operation Manual



**The installation and use the product, please read the instructions and
keep it for later reference**

Contents

- 1. Product performance.....2
- 2. Technical parameters (excluding the camera).....2
- 3. Menu (OSD) and function operation guide..... 3
- 4. Other functions.....16
- 5. Infrared lamp current adjust (applicable to some models)..... 17
- 6. Camera, ball machine installation and lead wiring.....17
- 7. Control instruction list.....19
- 8. Troubleshooting.....19

Thank you for purchasing the intelligent infrared high-speed ball type camera series produced by our company, the infrared high-speed ball type camera series are applying the latest technology design, which have more stable circuit design and convenient installation, 12 of the new generation dot-matrix infrared lamps are included on the products, night vision effect is excellent, and the infrared lamps draw current reasonably, they won't consume more current in order to pursue the night vision effect, and lead to dead lamps, this is your best choice for the excellent night vision effect.

1. Product performance

- Infrared lamp is adopting particular heat-sink technology, which prolongs the service life of the infrared lamp
- Dual layers of metal structure, excellent heat-sink performance
- Convenient installation of camera, no need to disassemble the infrared lamp board
- High quality and high performance stepping motor, stable operation without trembling and wobbling.
- The special "watchdog" function, check infrared high-speed ball operation state regularly to prevent crashing, and saves data.
- Formidable Chinese/ English OSD (menu) function, users know function settings more readily, more convenient for use.
- Rotation speed, 0.1-280 ° / s adjustable
- Horizontal 360 degrees continuous rotation, vertical rotation range from 0 to 90 °
- Support 128 high accuracy presetting bits
- Eight cruise multiples for presetting bits, each group can multiple 16 presetting bits
- Scanning speed between presetting bits is settable from 1 to 64, retention time of each presetting bit is settable from 1 to 60 seconds
- Support 4 groups of Pattern scanning, each group can save up to 400 operations
- Work with SONY, Samsung, LG, CNB integration cameras (able to customize the camera protocol)
- Support changing communication baud rate, address and protocol in menu, convenient and flexible operation
- Proportion variable times, the holder slows the speed gradually according to the variable extent which ensures clear images and the best effect
- Various built-in control protocols, support PELCO_D/P automatic identification
- Information protection in power cut and built-in surge protection device
- Great linkage alarm. Support 2 alarm signal inputs, 1 alarm switch output

2. Technical parameters (excluding the camera)

Power Supply	DC12V ±5%
Power rating	30W (12V)
High power lattice infrared lamp quantity	12 PCS
Distance of discover	150-200 Meter (Different cameras with different distances)
Ambient temperature	-40℃-+70℃
Humidity	≤95% no freezing No condensation phenomenon
Support equipment model	SONY、SAMSUNG、New LG、CNB
Communication mode	RS485
Communication Baud rate	2400 / 4800 / 9600/19200 bps
Horizontal rotating speed	0.1°-280° (1-64 level variable-speed)
OSD menu language	English
Horizontal rotating scope	360° continuous rotating
Vertical rotating speed	0.1°-280° (1-64 shifts)
Vertical rotating scope	0-90° rotate
Proportion variable times	Control rate adjusted automatically according to the zoom size
Spacing scanning range	Any direction
Spacing scanning speed	1-64 shifts settable
Quantity of preset bit	128
Pattern scanning	4 groups
Retention time of multiple scanning preset point	1-60 seconds settable
Multiple scanning	8 groups
Alarm linkage	2 inputs,1 output. Support multichannel alarm linkages simultaneously

3. Menu (OSD) and function operation guide

Intelligent infrared high-speed ball camera not only has stable performance, but also strengthens the interactive human-machine conversation function, built-in menu of the infrared high speed camera make all the information display on the monitor, this makes the operation more intuitive and convenient, and the intelligent infrared high-speed ball camera can be intelligently controlled through the keyboard (DVR). At the same time, different control system platforms have different operation methods, please refer to the operation guide of the system manufacturer, in some cases, there will be some special requirements and operation methods, please contact the control system agent to get the necessary information. The following operations differ among control devices made by different manufacturers, for details, please read the control equipment manual.

1.Set and call presetting bit

Presetting bit function is to save the location parameters of horizontal angle, vertical angle, and camera focal length as serial numbers from 1 to 128 to the ball camera, it can quickly and accurately locate by calling the parameters when in need, the operators can quickly save and call the presetting bits through keyboard or other devices, intelligent infrared high-speed ball camera support 128 presetting bits.

1.1Set presetting bit

After adjust the camera lens to the best position through the keyboard control (include the location selection, camera zoom, focus), click "Presetting bit # + PRESET" in order, after setting, the monitor shows "SET PRESET OK", then this presetting bit succeeded in setting.

Example: set #1 presetting bit

Step 1: Move the ball machine to the needed position and adjust the camera zoom and other parameters.

Step 2: click "1 + PRESET" buttons in order, the monitor shows "SET PRESET OK", then #1 presetting bit is set

successfully.

Note: different control equipments might have different operation methods

1.2 Call a presetting bit

To call a presetting bit is to make the ball go back to the previously set positions quickly and accurately, input a presetting bit number on the keyboard and then click "SHOT" button, the ball machine will go back to the previously set position.

Example: Call #1 presetting bit, click "1 + SHOT" button in order, the camera goes to #1 presetting bit, if #1 presetting bit has not been set, the ball machine does not move.

Note: if the presetting bit has not been set yet, the ball does not move.

2. Call intelligent infrared high-speed ball camera menu (it will not show menu if no camera is installed)

When the ball machine is in standby mode, call # 95 presetting bit, enter into "menu", turn the joystick up, down, left, right to select menu options, move the cursor before this option if you want to select this option, click "IRIS OPEN" button, after entering submenu options, turn the joystick up, down, left, right to choose the cursor and click "IRIS OPEN" button, click "IRIS/CLOSE" button to exit menu interface. If it needs to enter some values, call the presetting bit number of which it needs values after entering the menu interface.

2.1 Enter the infrared high-speed ball menu:

Call #95 presetting bit "95 + SHOT" in standby mode, the monitor shows below:



The main menu is divided into four items, specifically shown below:

1. CONTROL MENU

The parameters of all control functions can be set through the menu of infrared high-speed ball camera.

2. DISPLAY CONTORL

Single item or all screen information can be opened or closed through this menu.

3. CAMERA MENU

All parameters of the integration camera can be adjusted through this menu.

4. SYSTEM SETTING

Chinese and English OSD can be selected, and system set parameters can be reset through this menu.

Move the joystick up and down to move the cursor, click the option and click "IRIS OPEN" to enter the submenu; Click "IRIS CLOSE" to return to the previous page.

In the whole process of screen display, the following tips are always shown on the bottom of the display:

" IRIS OPEN:ENTER" SETTING CONFIRM

"IRIS CLOSE: EXIT" EXIT the current menu/return to the previous page

2.1.1 CONTROL OPTION

Move the cursor up and down to choose "1. CONTROL OPTION" in the main menu, click "IRIS OPEN" button to enter the submenu of control settings, the screen shows below:

The following six function can be set via the control setting menu:

- | | |
|---|-------------------------------------|
| 1.360 SCAN/horizontal scan: | set 360° scanning parameters. |
| 2. SAN A-B/two points scan: | set two points scanning parameters. |
| 3. WATCH POSITION/watch position setting: | set watch position parameters. |

- 4. MULTIPLE SCAN/multiple scanning setting: set cruise route parameters.
- 5. PATTERN SETTINGS: record cruise route and Run.
- 6. ALARM SETTINGS: link presetting bits after alarm.

2.1.1.1 360° scan

It can scan continuously at horizontal level according to preset speed, rotating direction is the same as the ball machine finally rotate before scan implemented.

1. Set 360° scanning speed

- A. Move the cursor to "1.360 SCAN" in the control setting menu, click "IRIS OPEN" button to enter, the screen shows below:



- B. Set SPEED 1-64 through inputting "number+ SHOT", click "IRIS OPEN" to confirm, the screen shows "SET 360 SCAN SPEED OK" for one second if the order is effective.

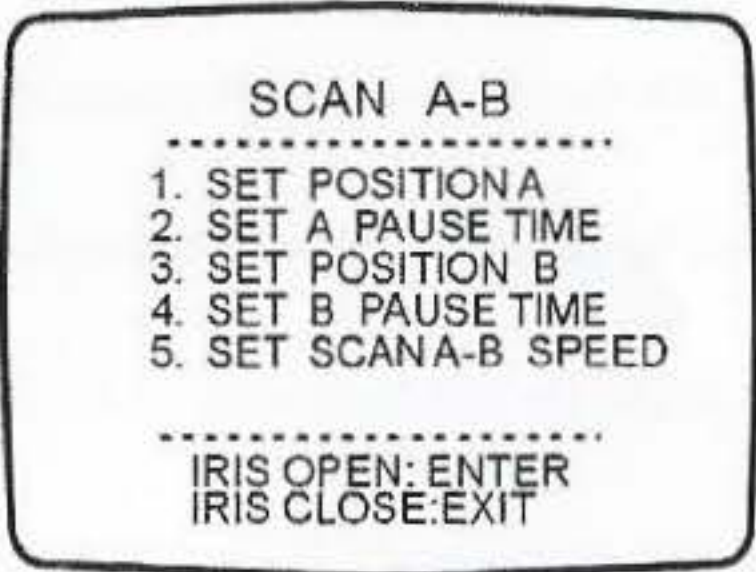
Note: the ball camera ranks the speeds among 64 level, level 1 as the lowest, level 64 as the fastest.

2. Call 360 scanning function

- 1. Adjust the ball machine to the ideal vertical Angle by moving the joystick on the keyboard when it is in standby mode..
- 2. Call #99 presetting bit, input " 99 + SHOT "in order, the ball machine scans with the speed set in advance.

2.1.1.2 SCAN A-B/two points scanning function

This function is to make the ball machine scan between two points back and forth constantly, starting point, ending point, pause time and operation speed can be set, under the Settings menu, move the cursor to "2. SCAN A-B" item, then click " IRIS OPEN" to enter two points scan and set submenu, screen is as follows:



1. SET POSITION A

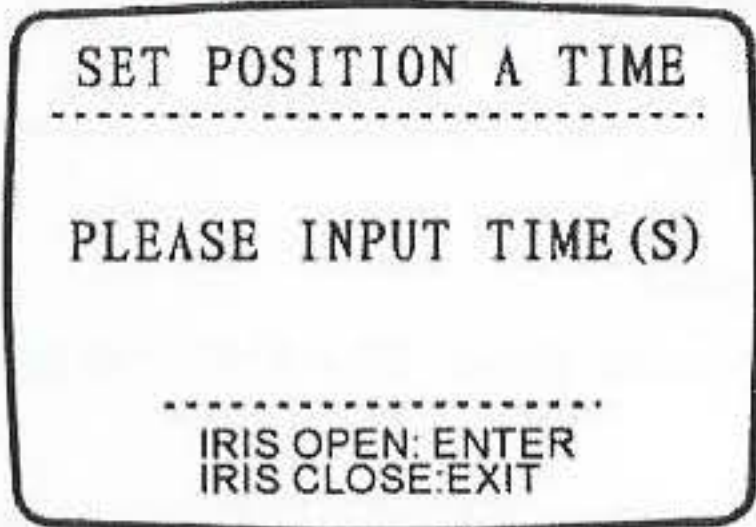
- A. Move the cursor to "1. SET POSITION A", click "IRIS OPEN" to enter, the screen displays as follows for English version:



B. Move the joystick to make the ball machine run to the appointed place, adjust the zoom and other parameters, click "IRIS OPEN" to complete setting, and it will automatically return to B interface.

3. SET A PAUSE TIME

A. Move the cursor to "2. SET A PAUSE TIME", click "IRIS OPEN" to enter, the screen displays as follows:



B. Set the pause time (1-128 seconds) at position A through inputting "number+ SHOT", click "IRIS OPEN" to confirm, and it automatically returns to B interface.

4. SET POSITION B

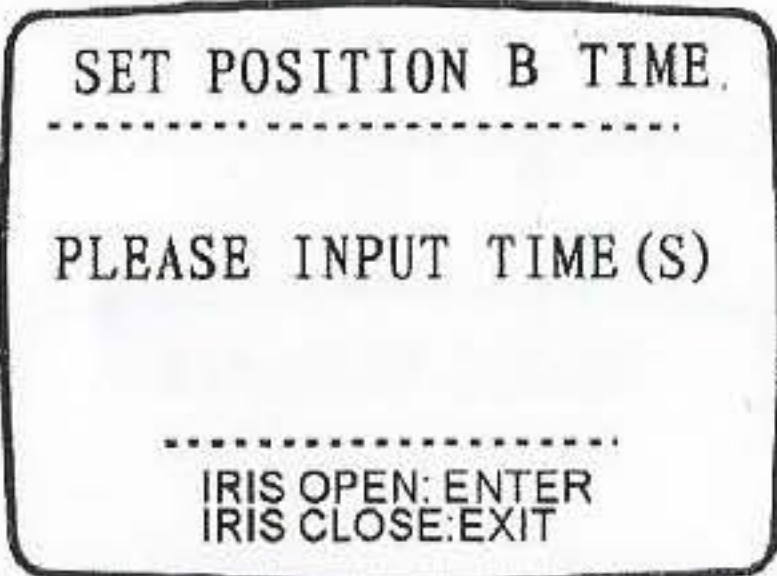
A. Move the cursor to "3. SET POSITION B", click "IRIS OPEN" to enter, the screen displays as follows for English version:



B. Move the joystick to make the ball machine run to the appointed place, adjust the zoom and other parameters, click "IRIS OPEN" to complete setting, and it will automatically return to B interface.

5. SET B PAUSE TIME

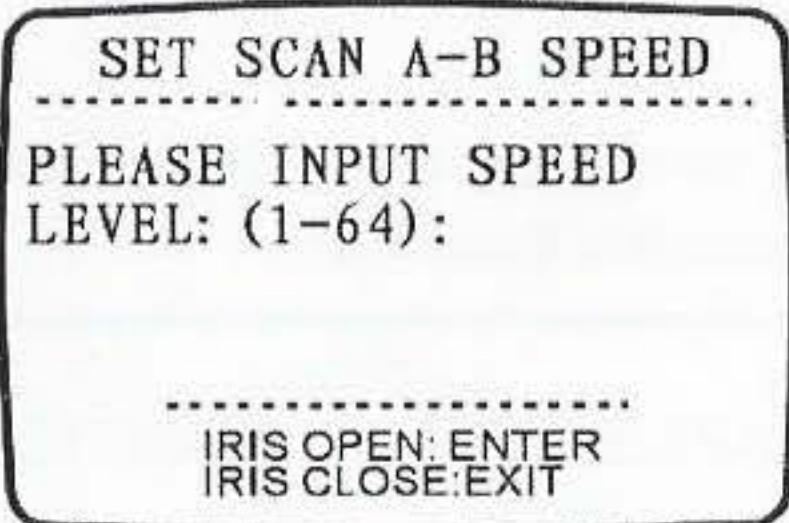
A. Move the cursor to "4. SET B PAUSE TIME", click "IRIS OPEN" to enter, the screen displays as follows:



B. Set the pause time (1-128 seconds) at position B through inputting "number+ SHOT", click "IRIS OPEN" to confirm, and it automatically returns to B interface.

6. SET SCAN A-B SPEED

A. Move the cursor to "5. SET SCAN A-B SPEED", click "IRIS OPEN" to enter, the screen displays as follows:



B. Set SPEED 1-64 through inputting "number+ SHOT", click "IRIS OPEN" to confirm, the prompt message will show on the screen for one second if the order is effective.



2.1.1.3 Call two points scanning function

Call #89 presetting bit under standby mode, input " 89 + SHOT "in order, the ball machine scans with the speed set in advance.
Call #90 presetting bit under standby mode, input "90 + SHOT "in order, the ball machine scans with the speed set in advance.

2.1.1.4 WATCH POSITION

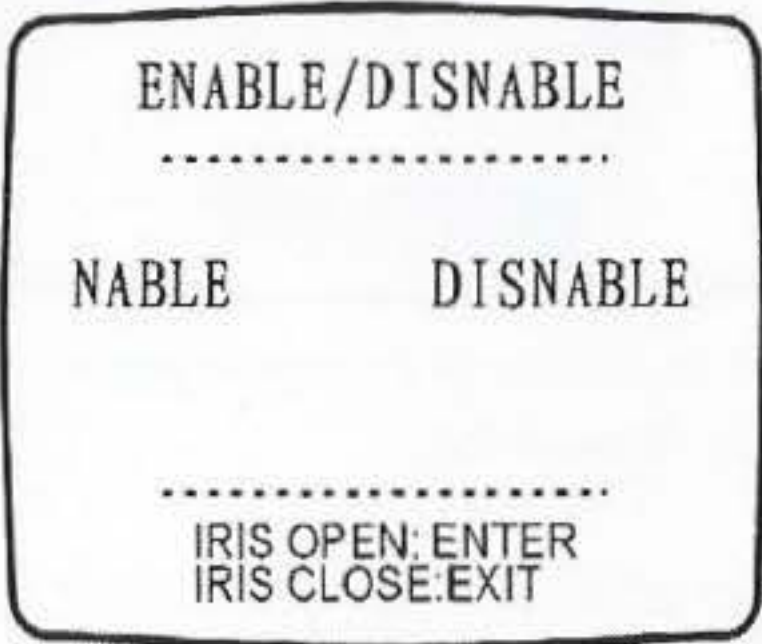
Watch function will make the ball machine run to the appointed position in appointed time when the ball machine is in idle condition.
Move the cursor to "3. WATCH POSITION" under control setting menu, click" IRIS "OPEN" to enter submenu of watch position setting, and the screen displays as follows:



C interface

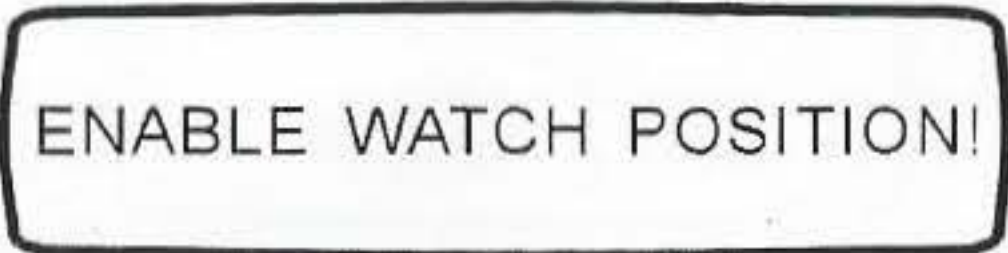
2.1.1.4.1 ENABLE/DISABLE

Move the cursor to ENABLE/DISABLE/OPEN/CLOSE WATCH", click "IRIS OPEN ", the screen displays as follows:



1. Open watch

Move the cursor to "ENABLE/YES", click "IRIS OPEN" to confirm, the prompt message will show on the screen for one second if the order is effective, then return to C interface



2. Close watch

Move the cursor to "DISABLE/NO", click "IRIS OPEN" to confirm, the prompt message will show on the screen for one second if the order is effective, then return to C interface

DISABLE WATCH POSITION!

Click 2.1.1.4.2 SET WAIT TIME

A. Move the cursor to "2. SET WAIT TIME", click "IRIS OPEN " to enter, the screen displays as follows:

SET WAT TIME

PLEASE INPUT TIME (S)

IRIS OPEN: ENTER
IRIS CLOSE: EXIT

B. Set wait time from 1-128 seconds through inputting "number+ SHOT", click "IRIS OPEN" to confirm, the prompt message will show on the screen for one second if the order is effective, then it automatically return to C interface.

SET WAIT TIME OK!

2.1.1.4.3 SET POSITION

A. Move the cursor to "3. SET POSITION", click "IRIS OPEN " to enter, the screen displays as follows

SET POSITION

PLEASE CONTROL
JOYSTICK

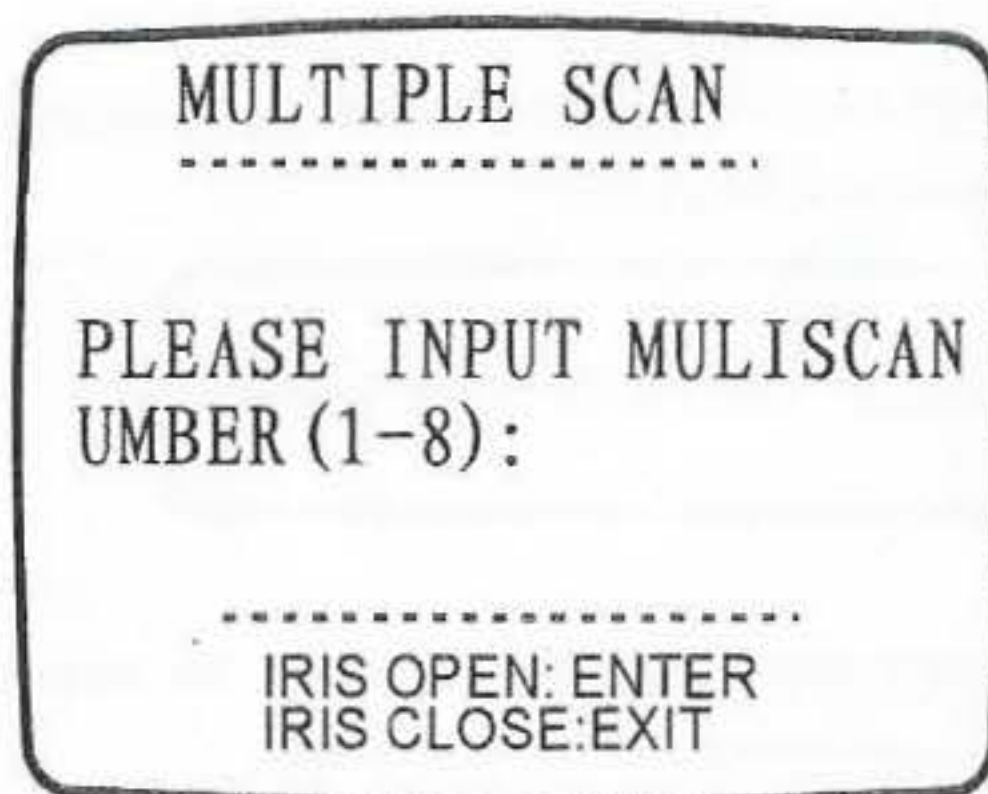
IRIS OPEN: ENTER
IRIS CLOSE: EXIT

B. Move the joystick to make the ball machine run to the appointed place, adjust the zoom and other parameters, click "IRIS OPEN" to complete setting, and it will automatically return to C interface.

2.1.1.5 MULTIPLE SCAN/Multiple scan function

Multiple scan (patrol) is an important function of ball camera, you can set cruise line through operating, just an external command will make the ball camera inspect as per the appointed line, this product supports 8 groups of multiple scan, each group comprises of 16 presetting bits (can be less than 16 presetting bits, presetting bits can be repeated), and the pause time and speed of each presetting bit can be adjusted.

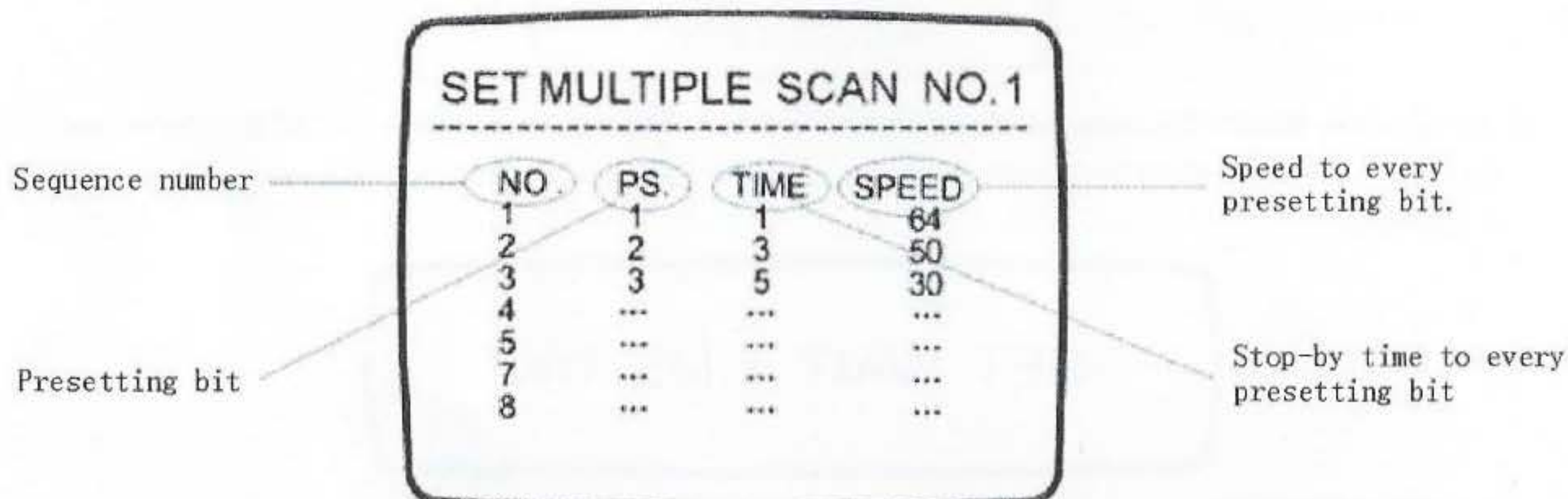
Move the cursor to "4. MULTIPLE SCAN" under the control setting menu, click" IRIS "OPEN" to enter submenu of pattern scan, the screen displays as follows:



2.1.1.5.1 Scanning parameters Setting

Move the cursor to the group (NO. 1-NO. 8) you want set, click "IRIS OPEN" to enter parameters setting, the screen shows:

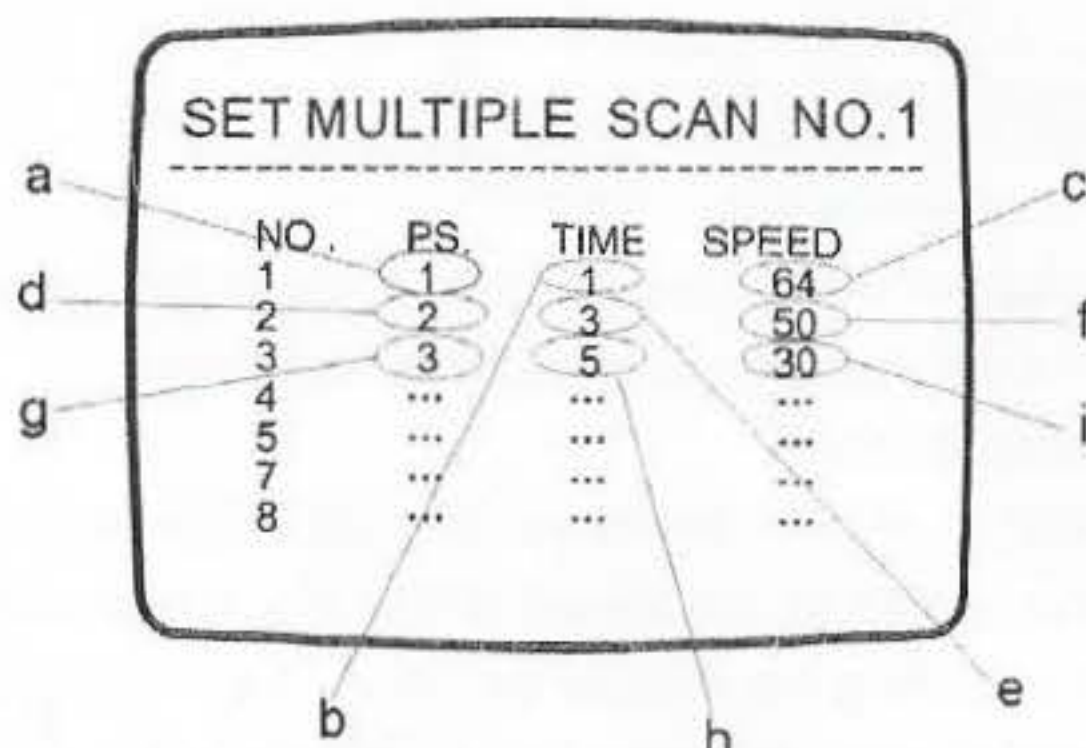
Note: Move the joystick up, down, left or right to set parameter.



Set the presetting bit, pause time and speed by inputting "number+ SHOT". After setting up parameters, click "IRIS OPEN" to confirm.

Example: group 1 of Pattern scan comprises of three presetting bits(#1, #2, #3), pause time for #1 presetting bit is 1 second, operation speed is level 64 (the fastest); pause time for #2 presetting bit is 3 second, operation speed is level 50; pause time for #3 presetting bit is 5 second, operation speed is level 30.

A. Move the cursor and select "1. NO. 1" in multiple scanning menu, click "IRIS OPEN" to enter NO. 1 multiple scan parameter setting.



B. Move the cursor to position a, click the number "1 + SHOT", Position a shows "1".

C. Move the cursor to position b, click the number "1 + SHOT", Position b shows "1".

- D. Move the cursor to position c, click the number "64 + SHOT", Position c shows "64".
- E. Move the cursor to position d, click the number "2 + SHOT", Position d shows "2".
- F. Move the cursor to position e, click the number "3 + SHOT", Position e shows "3".
- G. Move the cursor to position f, click the number "50 + SHOT", Position f show "50".
- H. Move the cursor to position g click the number "3 + SHOT", Position g show "3".
- I. Move the cursor to position h, click the number "5 + SHOT", Position h show "5".
- J. Move the cursor to position i, click the number "30 + SHOT", Position i show "30".
- K. Click "IRIS OPEN" button to confirm the above settings, the setting is ok after showing the information below.

SET MULTIPLE SCAN OK!

Click " IRIS OPEN" to confirm after setting up the parameters, click "IRIS/CLOSE " button to give up the settings.

The other 7 groups have the same setting procedure, the presetting bits added must have been set in advance, otherwise the setting is void.

2.1.1.5.2 Call multiple scan

There are 2 kinds of scanning modes for multiple scan, they are reciprocating scan and commuting scan, see detailed commands below:

- 1. Activate #1 perambulatory group, call #71 presetting bit, enter "71 + SHOT" button
- 2. Activate #2 perambulatory group, call #72 presetting bit, enter "72 + SHOT" button
- 3. Activate #3 perambulatory group, call #73 presetting bit, enter "73 + SHOT" button
- 4. Activate #4 perambulatory group, call #74 presetting bit, enter "74 + SHOT" button
- 5. Activate #5 perambulatory group, call #75 presetting bit, enter "75 + SHOT" button
- 6. Activate #6 perambulatory group, call #76 presetting bit, enter "76 + SHOT" button
- 7. Activate #7 perambulatory group, call #77 presetting bit, enter "77 + SHOT" button
- 8. Activate #8 perambulatory group, call #78 presetting bit, enter "78 + SHOT" button

Example: Call No. 1 multiple scan

- A. Enter the Numbers "71 + SHOT" when the ball camera is in standby mode, the ball will implement the first multiple scan circularly (1→2→3→1→2→3→1→2→3.....)

2.1.1.6 PATTERN SCAN

Move the cursor to "5. PATTERN SETTINGS" under control setting menu, click "IRIS OPEN" button to enter the submenu of watch position setting, the screen displays as follows:

PATTERN SCAN
.....
PLEASE INPUT PATTERN
UMBER (1-4):
.....
IRIS OPEN: ENTER
IRIS CLOSE:EXIT

2.1.1.6.1 PATTERN SCAN RECORDING

- A. Input the multiple number (1-4) you want by entering "number+SHOT", click "IRIS OPEN" button to confirm.
- B. Move the joystick, the ball machine will Run in the multiple you want, after recording, click " IRIS OPEN"

button to complete the multiple recording.

2.1.1.6.2 PATTERN SCAN MULTIPLE OPERATING

Call # 101-104 presetting bit prior to entering menu, then it can run 1-4 pattern scan respectively.

2.1.1.7 ALARM SETTINGS

Alarm linkage function supports 4 alarm inputs, 1 alarm output. When external alarm happens, and input alarm signal to ground to the ball machine, the ball machine will automatically transfer to the linkage presetting bit set by the user, and cut off the internal relay. if there are several alarm inputs at the same time, the ball will inspect between several linkage presetting bits, and it will stop inspection if the ball machine is not controlled within 5 minute.

Move the cursor to "6. ALARM SETTINGS" under control setting menu, click "IRIS OPEN" button to enter submenu, and the screen shows:



Set the alarm channel(1-4) you want by inputting "number+SHOT", click "IRIS OPEN" button to confirm and enter the presetting bit setting menu of alarm linkage presetting bit, and the screen shows :



Set a presetting bit by inputting "number+SHOT", click "IRIS OPEN" button to confirm and quit, the alarm setting of this channel is completed, the other three channels apply the same setting method.

2.2 DISPLAY CONTROL

Move the cursor and select "2. DISPLAY CONTROL" in the main menu, click "IRIS OPEN" button to enter the submenu of display control, the screen shows below (D interface) :



D interface

1. PRESET NO: Presetting bit number showing on the screen or not is optional.
2. POSITION: Coordinate value showing on the screen or not is optional.
3. DOME ADDRESS: Current address code showing on the screen or not is optional.
4. BAUD RATE: Current baud rate showing on the screen or not is optional.
5. PROTOCOL NAME: Current protocol name showing on the screen or not is optional.

2.2.1 OPEN/CLOSE ITEMS

Move the cursor to select the items you want to open or close (take "setting presetting bit number display" as an example, others apply the same setting method), click "IRIS OPEN" button to enter, the screen displays as follows:



1. Open display options

Move the cursor to "1. YES " item, click "IRIS OPEN" button to confirm, and it returns to D interface automatically when setting is effected.

2. Close display options

Move the cursor to "2. NO " item, click "IRIS OPEN" button to confirm, and it returns to D interface automatically when setting is effected.

Note: the screen items can be opened/closed separately or totally.

2.3 CAMERA MENU

The camera menu contains all the parameters settings of the integration camera (integration cameras of different model types have different functions, it depends on the model type of the integration camera whether all settings can be used or not), the camera effects can be optimized by adjusting the corresponding parameters. Move the cursor and select "3. CAMERA MENU" item in the main menu, click "IRIS OPEN" button to enter camera submenu, the screen shows:

(the menus of different brands of integration cameras have slight differences, samsung, LG and CNB use built-in internal menu. The following tables are for reference only)



1. CAMERA TYPE/INTEGRATION CAMERAS BRAND SETTINGS

1. SONY
2. SAMSUNG
3. OUR INTEGRATION CAMERA

4. CNB

5. LG927-937

2. DZOOM

1. ON

2. OFF

3. FOCUS

1. AUTO

2. MANUAL

3. ONE PUSH TRIGGER

4. INFINITY

4. MIRROR

1. ON

2. OFF

5. SLOWSHUTTER

1. AUTO

2. MANUAL

6. DAY NIGHT SETUP

1. ON

2. OFF

7. FREEZE

1. ON

2. OFF

8. DISPLAY

1. ON

2. OFF

9. BACKLIGHT

1. ON

2. OFF

10. WBC MODE

1. AUTO

2. INDOOR

3. OUTDOOR

4. ONE PUSH WB

11. AGC SETUP

1. UP

2. DOWN

3. RESET

12. SHUTTER SETUP

1. UP

2. DOWN

3. RESET

13. EXPCOMP ON/OFF

1. ON

2. OFF

14. EXPCOMP LEVEL

1. UP

- 2. DOWN
- 3. RESET
- 15. PICTURE EFFECT
 - 1. NEG. ART
 - 2. B&W
 - 3. OFF
- 16. SAVE SETTINGS

2.4 SYSTEM SETTING

System setting comprises of operations of system parameters setting, reset, menu language selection, etc. Move the cursor and select "4. SYSTEM SETTING", click "IRIS OPEN" button to enter the submenu of display control, the screen shows:



1. LANGUAGE SETTING

This ball machine supports English menu display.

2. ADDRESS SETTING

Enter the ball machine address 1-255 by entering "number+SHOT", click "IRIS OPEN" button to confirm, it shows "SET ADDRESS OK" on the screen for 1 second if the setting is effective, after modification, the user will have to use new address to control.

Note: Addresses of some control equipments are started from 0, if it cannot control, try to ± 1 on the basis of the original setting.

3. BAUD RATE SETTING

Go into the menu, move the direction key to select baud rate, click "IRIS OPEN" button to confirm, the message "SET ADDRESS OK " will be displayed on the screen for 1 second if the set up is ok, after modification, the user will have to use new baud rate to control.

4. PROTOCOL SETTING

Go into the menu, move the direction key to select protocol, click "IRIS OPEN" button to confirm, the message "SET protocol OK " will be displayed on the screen for 1 second if the set up is ok, after modification, the user will have to use new protocol to control.

5. LOAD FACTORY SETTING

Go into the menu, Move the joystick to select "ok", then click "IRIS OPEN" button to confirm, system will load the factory default settings, at the same time the screen prompts "PLEASE WAIT...", after loading, system goes back to the previous page automatically.

Reset function can also be realized by calling 100 presetting bits, when the ball machine is in standby mode or operation mode, the screen prompts "PLEASE WAIT...", after several seconds, the screen shows "reset success".

Note: All the parameters will be cleared after reset is done.

4. Other functions

1. Variable times control

The user can adjust the zoom control through the keyboard to get the panoramic view, or close view.

2. Focus control

The system default automatic focus on, and when the camera zooms, cameras will focus subject to the center of the scene, and keep the image clear; Under special circumstances, users can manually focus, to get the desired image effect.

Note: the camera will not focus on target automatically under the following circumstances

- A. Target is not in the center of the view;
- B. When observing distance and nearby targets, can not guarantee both targets are clear.
- C. Targets are intense light sources, such as neon light, spot light, etc.
- D. Target is behind glass with droplets or dusts.
- E. Target moves too fast.
- F. Large area of drab objectives, such as a wall.
- G. Target is too dark or vague.

3. Diaphragm control

The system defaults for automatic diaphragm. Through automatic feel and measurement from the around environment, quickly makes the adjustment and makes the brightness of image output stably.

The user can control the keyboard, the manual adjustment by the size of the aperture, find the screen brightness.

Note: when manually control the diaphragm, the ball machine will automatically lock the current location of manual control, even if the current scene changes, it won't automatically revert to automatic diaphragm. Move the joystick or give a command to revert to automatic diaphragm.

4. Automatic backlight

The camera implements automatic backlight in six areas, when under strong light, automatically add backlight on the dark target, make daylighting adjustments for bright background, avoid showing the whole image as a bright spot for bright background and illegible target because of being dark, in order to get clear images.

5. Automatic WBC

Adjust automatically, restore true color according to the ambient light change.

6. Presetting bits error calibration

After long time operation, or because of external forces that lead to errors of presetting bits, it can calibrate the presetting bit reference points through error calibration function. When in standby mode, call #34 presetting bit, the ball machine will automatically turn right to the horizontal check point, and then down to the vertical checking point, then presetting bit error calibration completed.

5. Infrared lamp current adjust (applicable to some models)

The intelligent infrared high-speed ball cameras can adjust the brightness of the infrared lamp according to the different scenes demands, and presetting bits setting can preserve the brightness of the infrared lamp, so as to achieve the best night vision effect. **Specific operations below:**

1. Automatic mode:

After the infrared lamp lights up at night, when the focal length is adjusted, the brightness of the infrared lamp adjusts automatically along with lens magnifications changes, the larger of the lens magnifications, the brighter of the infrared lamp.

2. Manual mode:

The user can manually control the brightness of the infrared lamp of high-speed ball by clicking "IRIS OPEN,

IRIS CLOSE" on the keyboard, long press "IRIS OPEN/OPEN" to get the infrared lamp getting brighter, long press "IRIS CLOSE/CLOSE" to get the infrared lamp getting darker.

3. Infrared lamp brightness saving:

When the operator uses the keyboard to control the high-speed ball and aim at an object or a direction, adjust the lens (including position selection, camera zoom), if the user is still not satisfied with the brightness of the infrared lamp adjusted automatically, he/she can manually adjust the brightness of the infrared lamp, after adjusted, when saving the presetting bit, the ball machine will also save the brightness of the infrared lamp of the presetting bit, then when the operator call presetting bit or cruise multiple next time, the brightness of the infrared lamp will be as bright as saved.

6. Camera, ball machine installation and lead wiring

1. Camera installation (see pictures in camera installation guide)

Step 1: Take off the three screws which are used to fix the metal plate on the rear of the camera cabin, get the metal plate down, then take off the 2 screws used to fix the camera bracket on the bottom of the cabin, take the camera bracket out, and take out the camera transfer board.

Step 2: Install the transfer board on the tail or top of the camera, then install the camera onto the bracket, there are arrow instructions on brackets for different brands of cameras showing installation position for front and rear, if the camera lens is not in the center of the mirror plane in front of the camera cabin, then install an isolation copper post between the bracket and camera.

Step 3: Pull the camera wires out of the camera cabin slightly, plug into the outlet on the camera transfer board, lay the camera flat and install into the cabin, then center the 2 fixing holes on the bracket with the 2 fixing holes on the cabin, and screw it to fix the bracket.

Step 4: Check if the camera lens is in the center of the mirror plane in front of the camera cabin, then center the fixing holes on the metal plate that has been taken off with the fixing holes on the camera cabin, and screw it to fix. (Note: When installing the metal plate, make sure to have the waterproof ring in place, or water might leak in and damage the camera)

2. Ball machine installation

2.1 Wall bracket installation

Step 1: Draw out the positions for the 4 fixing holes(bottom of bracket) on the wall by putting the wall bracket onto the ball machine installation position, then drill 4 holes (6 mm driller), then install explosion screws, threaded in a little bit for the above 2 screws first.

Step 2: Unlock the 3 screws on top of the wall bracket(don't take off), get the lead wires of the ball machine in from the top, and pull out from the bottom, then connect the bracket top with the ball machine, and tighten the 3 screws on the top(screws must be threaded into the fixing slot on the flange plate on top of the ball machine)

Step 3: Put the 2 big holes on the wall bracket align with the explosion screws equipped with nuts, lift up the bracket about 45 degrees, and let the bracket slide down slowly, when the 2 fixing holes on the bottom of the bracket are centered with the explosion screws, lay the bottom of the bracket and fixed surface flat(note: lead the outgoing line from the exiting slot on the flank of the bracket)

Step 4: Tighten the 4 explosion screws and fix the ball machine.

2.2 Lift bracket installation

Step 1: Draw out the positions for the 3 fixing holes(bottom of bracket) on the wall by putting the wall bracket onto the ball machine installation position, then drill 3 holes (6 mm driller), install explosion screws.

Step 2: Unlock the 3 screws on top of the lift bracket(don't take off), get the lead wires of the ball machine in from the top, and pull out from the bottom, then connect the bracket tail with the ball machine, and tighten the

3 screws on the top(screws must be threaded into the fixing slot on the flange plate on top of the ball machine)

Step 3: Center the holes of the lift bracket with the explosion screws, lead the outgoing line from the exiting slot on the flank of the bracket and fix the ball machine.

3. Lead wiring

Step 1: Connect the BNC of the video transmission cable with the BCN of the ball machine video cable, wrap with waterproof tape.

Step 2: Connect the positive (A) of RS485 control cable with the positive (blue) of RS485 cable of the ball machine, wrap with waterproof tape, then connect the negative (B) of RS485 control cable with the negative (white) of RS485 cable of the ball machine, wrap with waterproof tape.

Step 3: Connect the plug of the DC12V power supply with the socket of the ball machine, wrap with waterproof tape.

The following is alarm lead wiring, this alarm input is low level trigger alarm, trigger alarm by giving out a low level on the corresponding alarm input trigger signal cable, alarm output for switching output, the maximum load current is 3A, specific wiring method is as follows:

Step 4: Connect the common wire(black) of the alarm wire to ground of the alarm probe, then connect the signal output wire of the alarm probe with #1wire(green) of the alarm input of the ball machine, if you need a second channel, then connect the signal output wire of the alarm probe with #2 wire (yellow) of the alarm input of the ball machine, connect the ground wire of #2 probe and the brown wire.

Step 5: Red and orange wires among the alarm wires are alarm output wires, for switching output, this controls the light or alarm horn. The two wires of alarm output is equivalent to a control switch, the maximum current is 3A.

7. Control instruction list

When the ball machine is in standby or operation mode, enter the below commands directly, then the corresponding functions will be calld quickly, details below

Presetting bit number	Function
Call No.34 presetting bit	presetting bit reference point error calibration
Call No.71 presetting bit	Run No.1 multiple scanning
Call No.72 presetting bit	Run No.2 multiple scanning
Call No.73 presetting bit	Run No.3 multiple scanning
Call No.74 presetting bit	Run No.4 multiple scanning
Call No.75 presetting bit	Run No.5 multiple scanning
Call No.76 presetting bit	Run No.6 multiple scanning
Call No.77 presetting bit	Run No.7 multiple scanning
Call No.78 presetting bit	Run No.8 multiple scanning
Call No.89 presetting bit	Run left-right space back and forth scan
Call No.90 presetting bit	Run left-right space reciprocating scan
Call No.95 presetting bit	Call ball machine menu
Call No.99 presetting bit	Run 360° continuous scan
Call No.100 presetting bit	Restore Factory Settings
Call No.101 presetting bit	Run No.1 Pattern scanning
Call No.102 presetting bit	Run No.2 Pattern scanning
Call No.103 presetting bit	Run No.3 Pattern scanning
Call No.104 presetting bit	Run No.4 Pattern scanning

8. Troubleshooting

Problem	Possible cause	Solution
No action, no image, indicator is off after powerer on	Misconnect the power cord	Check the connectivity of the power cord
	Damaged power supply	Replace the power supply
	Blown fuse	Replace the fuse
	Poor contact of the power cord	Connect the power cord well
With Self-inspection, image, but not in control after powered on	address code, baud rate of the ball machine set incorrectly	Reset the address code, baud rate of the ball machine
	Wrong protocol	Correct control protocol
	RS485 reversed wiring or open circuit	Check RS485 wiring of control line
Self-check cannot be implemented, showing image with motor humming	Mechanical failure, loose transmission belt	Power off, rotate laser manually and see if it hums or not, check if transmission belt is loose or not
	Camera tilted	Adjust the camera
	Insufficient power supply or power cord is too thin	Replace power supply that can drive the unit, it would be better to put the power supply near the ball machine, use a thicker power cord
Image is not stable	Poor contact of the video circuitry	Check if all connectors are in good contact
	Insufficient power supply	Use power supply with higher power
Fuzzy image	Focus on the manual state	Run ball machine or call any presetting bit
	Dirty ball cover	Clean the ball cover
Uncontrollable ball machine or delayed action	Insufficient power supply for the ball machine or power cord is too thin	Replace power supply that can drive the unit, it would be better to put the power supply near the ball machine, use a thicker power cord
	485 communication is not balanced, or control line is too far, baud rate is set too high	Add matching resistors to the ball camera which is farthest from the control, change jumper cap from Pin 1,2 to Pin 2,3, set the baud rate lower.