



PTZ-501C

ProVisual PTZ Keyboard Controller



User Manual

www.provisualusa.com

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1 - Summary

The keyboard is a universal keyboard of security monitoring series, which can control the ball-type integrated camera of all kinds protocols matrix, which has been equipped with the navigation key which can control the revolving of the camera and the zoom magnification of lens; with the LCD screen and the function of back-light, which can display the current operation order the control protocol name the current dome ID the current monitor ID and the state of joysticks. The user can control the CCTV system more easily with the joystick and the LCD screen.

1.1 - Notice

Please read the manual carefully and reserve it.

Please advert to the notice in manual.

Please don't place the keyboard in the moist place.

1.2 - Function And Characteristic

- RS485 Bus Line and a keyboard can connect 31 domes at most in the direct control mode.
- Can be compatible with all kinds of protocols.
- Can control the Iris Focus and Zoom.
- Can set and call the preset, run the scanning the pattern and the tour.
- Can control the matrix and through which can control the dome indirectly.
- Equipped with the navigation key and the larger LCD screen.
- Video out/ in and display
- Infrared ray emission, emission the same data & content as RS485

1.3 - Technical Data

► Electrical character

Input voltage: 12V - 36V DC

Rating current: 500mA (12V DC)

Rating power: 6.5W

► Communicate character

Communicate interface: RS485×1

Communicate frequency: 2400, 4800, 9600, 19200bps

► Operational environment

Operating temperature: 0°C~50°C

Relative humidity less than: 90%

► Physical property

L × W × H: 305mm × 210mm × 130mm

2 - Keyboard Connection

There is interface on the back of the keyboard, which equipped with kinds of communication like RS485, VGA Output, Video Out, and USB as figure 2-1.1

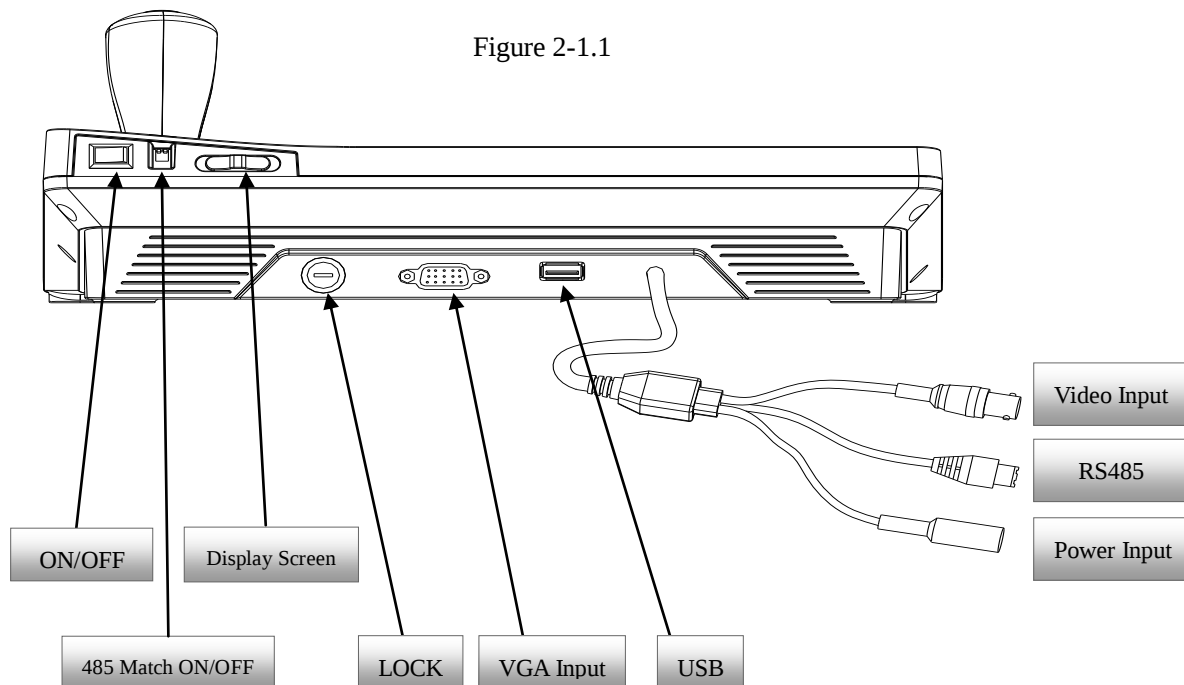
2.1 - Interface instruction

RS422 and RS485 interfaces are on the 6 bit ribbon cable connection of the keyboard. RS485 (A+B-) can connect with the dome when the keyboard controls the dome directly: RS485 A+B-can connects with DVR or other keyboards when the keyboard controls the dome by matrix.

With VGA input, the keyboard can working with a display; can connect with DVR, PC ECT. The max input resolutions 1280X720, 1024X768, 800X600,

USB Interface, use to connect with the PC. By this connect way, the keyboard can working as an aim object.

Video interface used for camera

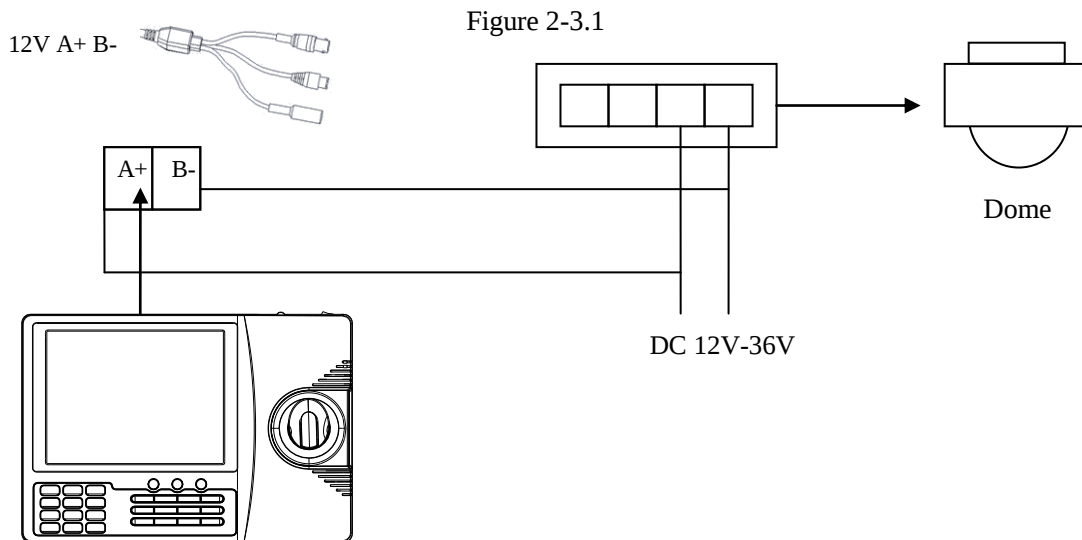


2. 2 - Connect Matrix

Can control the PELCO CM6700, CM6800 matrix. Follow are the connection way of matrix PELCO CM6700, to show the steps of connection. Cover board of CM6700 matrix has the interface of RS422 (REMOTE KEYBOARD(s)), connect it to the RS422 on the keyboard, longest distance is 1200m

2. 3 - Direct Connect With Dome

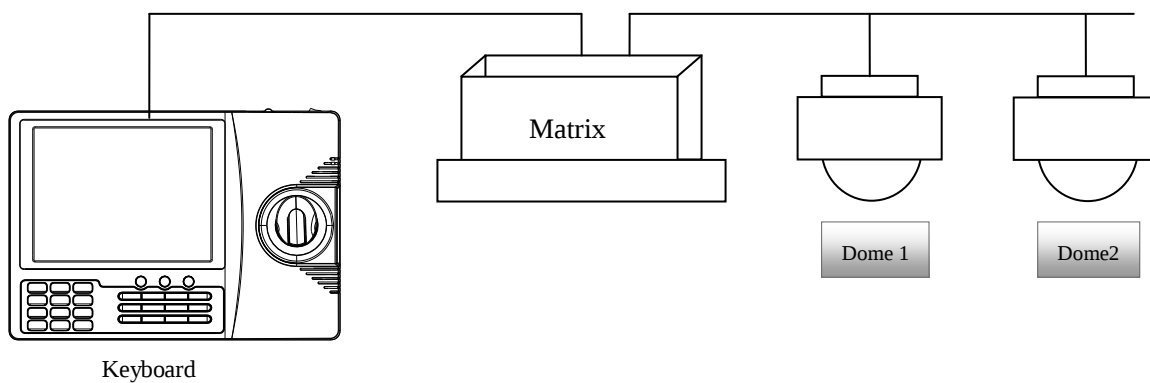
Keyboard connects the Dome with RS485. The RS485 interface of the Dome is on the commutator of the Dome. Press the metal button in the hanging frame, open the commutator, will find a 4bit power jack, follow the surface instruction to find RS485 (A+, B-) follow the instruction. Maybe a different connects way when come from different manufacturer.



2.4 - Keyboard Connections In The System

Indirect control the dome when connect with matrix (as figure 2-4.1). Contrariwise will control the domes directly, Parallel connect the keyboard and dome to the bus of RS-485, all the keyboard can control any dome among them, under this way, the add of the main keyboard should be “1” and baud rate should be 9600bps (as figure 2-4.2)

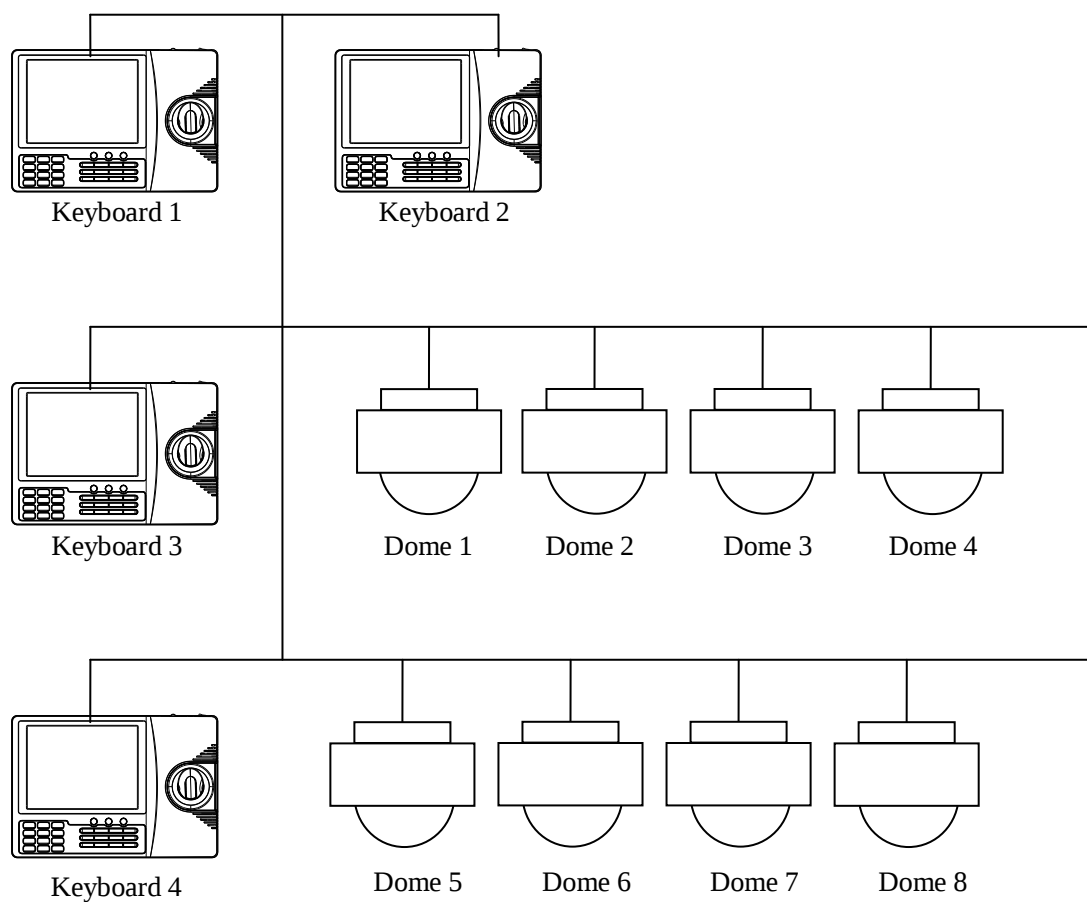
Figure 2-4.1



Caution

- 1- The max quantity of master equip and be charged equip controlled by a RS485 bus is 32, so when use the keyboard to control direct the max dome quantity is 31.
- 2- Max quantity keyboard in a system is 4; also the 4 keyboards should be different ID.

Figure 2-4.2



3 - Operation Instruction

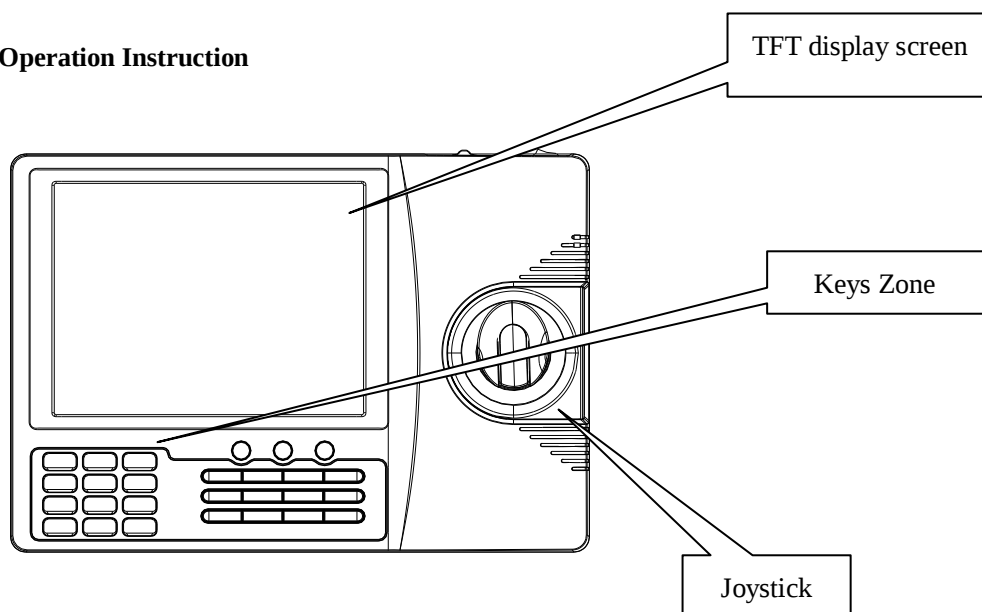


Figure 3-1.1

Attention please because different system have some different special operation ways, so should consider the actual requirement when operation in some special systems.

3.1 - Electrify

Keyboard will self-check, and press MENU to display the detail information about the Baud rate, Protocol and camera ID.

Attention

Navigation key should be nil when keyboard is self-checking

3.2 - TFT Display Screen

TFT screen display content: aim dome, aim monitor add baud rate etc. At the bottom of the content will show the keyboard information, as follows figure show. When operation, TFT back light will on, and will off 15s after stop the operation.

Keyboard	V 1.00
Keyboard	ID: 001
Camera	ID: 001
Monitor	ID: 001
Protocol	: Pelco-d
Baudrate	: 2400bps

Figure 3-1.2

3.3 - Navigation Keys Controls Dome

Two main function of the navigation key, control the dome turn around; setup the aimed object's menu.

- For menu setup: UP is for the upper menu, DOWN for the next menu, RIGHT for the sub menu or save the setup, RIGHT for exit.
- Direct proportion between the speed of the Dome and the lean angle of the navigation keys, large lean angle, faster rotation speed.

3.4 - Rigger The Aim Dome

【N】 + 【CAM】

【N】 for Number, input the serial number of the Dome, Press 【CAM】 key to rigger the add of the aim dome

3.5 - Dome Lens Control

• Zoom:

Press 【TELE】 , multiple accretions.

Press 【WIDE】 key, multiple minish

• Focus:

Press 【FAR】 key focus for far objects.

Press 【NEAR】 key focus for vicinity objects.

Normally, Zoom and focus will be adjust auto by the dome, and with the 【FAR】 【NEAR】 to realize the manual zoom and focus

• Iris:

Press 【OPEN】 key, manual Iris accretion,

Press 【CLOSE】 key, manual Iris minish,

3.6 - Set Dome Function

3.6.1 - Preset

Pre set: **【SET】** + **【N】** + **【PRESET】**

Adjust preset: **【N】** + **【PRESET】**

【N】 for the number of the pre-set.

3.6.2 - Pattern

- Design path setup: **【SET】** + **【N】** + **【PATTERN】** + path + **【SET】** + 0 + **【PATTERN】**
- Press **【SET】** key, input the number of design scan (1-4), press **【PATTERN】** key, enter the path setup state, when ending press **【SET】** key first, then press **【0】** key, then **【PATTERN】** key,
- Starting the design scan: **【N】** + **【PATTERN】** input the design scan number (1-4), press **【PATTERN】** key to starting,
- Startup pattern: **【N】** + **【PATTERN】** to input the scan no. (1-4), Press **【PATTERN】**, startup the pattern.

3.6.3 - Cruise

Starting: **【N】** + **【TOUR】** / **【TOUR】** cruise number first, then **【TOUR】** key, starting the cruise.

Direct press the **【TOUR】** key when the system only has one cruise.

3.7 - Call Dome Main Menu

【9】 + **【5】** + **【PRESET】**: Input 95, press **【PRESET】** key, aim Dome, menu will display on the monitor.

3.8 - Matrix Control

3.8.1 - Call Matrix Main Menu

【SHIFT】 + **【SET】**: Call the main menu, the menu will display on the object monitor. How to use the keyboard
Setting the matrix? Please refers the matrix operate manual.

3.8.2 - Confirm After Program

【ENTER】: after the matrix is programmed, press **【ENTER】**, reflects confirm after program.
As for the detail program, please refer to the matrix operation manual.

3.8.3 - Change Object Monitor

【N】 + **【MON】** Input the monitor ID, then press **MON** the image and the menu of the dome that you controlled by keyboard will display in the object monitor

4 - Keyboard Control

• Keyboard control

Turn on the power and press **【MENU】**, the system information will display as (4.1-1) and press again, the information will disappear. You can do all the operation during this time.

Press **【MENU】** and hold 2s, and call the main menu. All the sub menu setting needs enter the main menu. After entering the main menu, press the Figure key and or use the joystick to select the menu.

- | |
|---|
| <ol style="list-style-type: none"> 1. Keyboard setup 2. Dome setup 3. Protocol select 4. System setup 5. Exit menu |
|---|

Figure 4.1-1

- **Save setting**

After finishing the setting, press the **【ENTER】** keyboard to save; TFT will display “Success”.

- **Back previous menu**

Press **【PREV】** keyboard, or turn the joystick to left, it will back to previous menu1

4.1 - Keyboard Parameter Setup

4.1.1 - Dome ID Setup

1 - Enter the main menu

TFT will display (picture4.1.1-1)

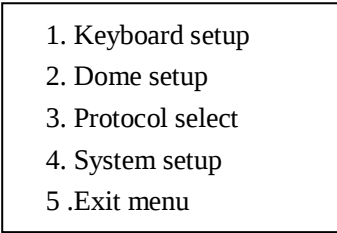
- 
1. Keyboard setup
 2. Dome setup
 3. Protocol select
 4. System setup
 5. Exit menu

Figure 4.1.1-1

2 - Press **【1】** to select the keyboard setting as TFT (Picture4.1.1-2)

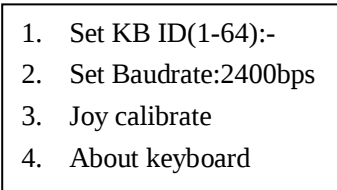
- 
1. Set KB ID(1-64):-
 2. Set Baudrate:2400bps
 3. Joy calibrate
 4. About keyboard

Figure 4.1.1-2

3 - Press **【1】** again will show the picture (Picture4.1.1-3)

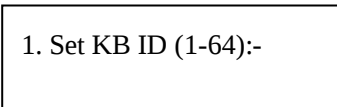
- 
1. Set KB ID (1-64):-

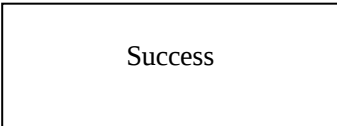
Figure 4.1.1-3

4 - Press **【1】** to select the ID Setting (Picture4.1.1-4)

- 
1. Set KB ID (1-64):

Figure 4.1.1-4

Use the Number. Keys on the keyboard to select the camera ID in the range (1-64); and then press the **【Enter】** to save, the screen will display Success as picture (4.1.1-5).



Success

Figure 4.1.1-5

If the NO you input outside the range1~64, it will display Error as picture (4.1.1-6)...



Error

Figure 4.1.1-6

5 - Press **【PREV】** or use the shake toward to LEFT to back to previous menu.

4.1.2 - Keyboard Baud Rate Setup

Enter the main menu as the TFT picture (4.1.1-1) show.

Press **【1】** will show on the TFT as picture (4.1.1-2)

Press **【2】** select the Baud Rate setting, as Picture (4.1.2-1)

2. Set Baudrate: 2400bps (4800bps/9600bps/19200bps)

Figure 4.1.2-1

2400bps \ 4800bps \ 9600bps \ 19200bps is available, you can select the Baud rate you need and press the **【ENTER】** to save. If you operate success, the screen will show “Success”.

Press **【PREV】** or use the shake toward to LEFT to back to previous menu.

Warning:

If connect to the matrix, it must select the 9600bps. And is multi keyboard to work, it must use 9600bps or 19200bps

4.1.3 - Information Display

Enter the menu, TFT will display as 4.1.1-2press **【4】**, TFT will display as (figure 4.1.4-1).

Version: 1.00
KB ID: 001
Protocol: Pelco-d
Baudrate: 2400bps

Figure 4.1.4-1

Press **【PREV】** or use the joystick turn LEFT back to previous menu. The keyboard menu will display all the keyboard setting information; include the keyboard model, keyboard ID, Protocol and the Baud rate.

4.2 - Dome Setup

4.2.1 - Preset Setup

Enter the main menu as picture (4.1.1-1) and press **【2】** to enter the dome setting menu as picture (4.2.1-1). This part you can set the follow function: Preset, Scan, Pattern, and Tour.

1. Set dome preset
2. Set dome scan
3. Set dome pattern
4. Set dome tour

Figure 4.2.1-1

Press **【1】** enter the dome Preset function setting as picture (4.2.1-2).

1. Save preset
2. Show preset
3. Clear preset

Figure 4.2.1-2

Item 1: Save preset; item 2: Show the preset; Item 3: clear the preset

Press **【1】** enter the preset, you can input the preset NO as picture (4.2.1-3) show

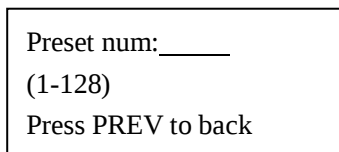


Figure 4.2.1-3

After enter the preset menu you can use navigate key control the dome directly, and input the preset NO to save as the picture 4.2.1-4 show. And on the TFT screen will display SUCCESS.

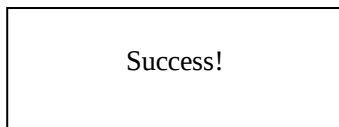


Figure 4.2.1-4

Press **【Prev】** back to previous men.

Warning:

While enter the dome preset menu, the keyboard navigate keyboard can directly control the dome and lens control zone also can control the dome's lens.

Press **【2】** enter the “Show the preset” menu as picture 4.2.1-5

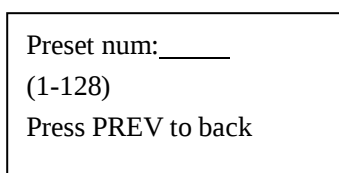


Figure 4.2.1-5

Input the Preset NO and press the **【ENTER】** to call it, and the TFT will display “Success”. Use the navigate Key or **【PREV】** back to previous menu.

Press **【3】** enter the “clear the Preset” to clear preset information as picture 4.2.1-6 show.

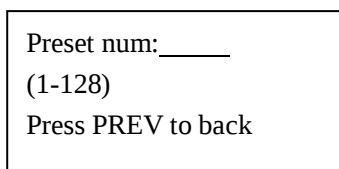


Figure 4.2.1-6

Input the PRESET NO which you want to clear, and press the Enter to clear it, and it will show “Success” and back to previous men.

4.2.2 - Dome Scan Setup

Enter the menu like picture (4.1.1-1)

Press **【2】** enter the dome setting menu as the picture (4.2.1-1).

Press **【2】** again to enter the dome scan setting as picture 4.2.2-1.

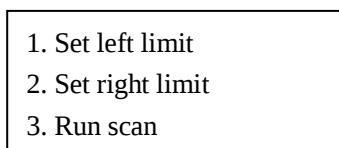


Figure 4.2.2-1

Dome scan setting include the: Left limit, Right Limit and Run scan

Press **【1】** to set the Left limit as picture 4.2.2-2 show.

Press ENTER sure
Press PREV to back

Figure 4.2.2-2

While enter the dome limit setting menu, move the dome to the suitable position, and press **【Enter】** to save and will show “Success” and back to previous menu.

Select the item 2 to set the Right limit, and do the same as the left limit setting,

Back to the menu and press **【3】** to operate the Run Scan.

Warning:

After entering the dome scan menu, the keyboard can directly control the dome and lens control zone also can control the dome’s lens.

4.2.3 - Pattern Setup

Enter the menu as the picture (4.1.1-1)

Press **【2】** enter the dome setting menu as the picture (4.2.1-1);

And then press **【3】** enter the pattern setting as picture 4.2.3-1 show

1. Pattern num:___
2. Set pattern
3. Run pattern

Figure 4.2.3-1

After enter the menu, the system need input the pattern information you want, you can put in the NO1~4 and

Press the **【ENTER】**. The mouse will skip to the next item auto to set the second patter you need. If you already have it, you can skip it and select the **【3】** to run the pattern directly.

Pattern setting: After enter the pattern setting menu, move the dome do the suitable position and press the **【1】** to start record the scan track. The screen will display “Start, like the picture4.2.3-2. Press “0” to finish the scan record and the screen will show “Success” and back to the previous menu.

Press 1 to start
Press 0 to start
Press PREV to back

Figure 4.2.3-2

Warning:

After entering the dome pattern, the keyboard can directly control the dome and lens control zone also can control the dome’s lens.

4.2.4 - Tour Setup

Press **【2】** enter the dome setting menu, as the picture 4.2.1-1 show,

And then press **【4】** enter the tour setting as the picture 4.2.4-1 show.

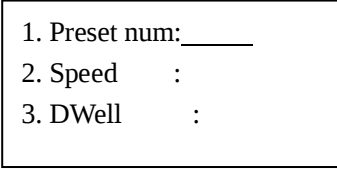
1. Tour num:___
2. Insert preset
3. Run tour

Figure 4.2.4-1

After enter the menu, you need input the TOUR information, the range you can put is 1~6, and press the **【ENTER】**. The mouse will

auto skip to the second TOUR setting. If you have already set it, you can skip it. And it will show the “Success” and back to the previous menu.

Select the Item 2 as picture (4.2.4-2), you need input the tour preset, and in the second item you need put in the speed information, the range is (1-127); In the third item you need input the time how long it need to stop, the range is (1-255). After finishing the entire step, press the **【ENTER】** and will display “Success “and back to previous menu.

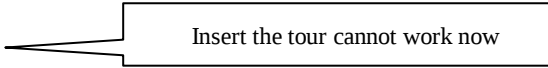


1. Preset num: _____
2. Speed :
3. DWell :

Figure 4.2.4-2

Press **【3】** Run the TOUR

Warning:



Insert the tour cannot work now

4.3 - Protocol Setup

Enter the menu as picture (4.1.1-1), Press **【3】** enter the Protocol setting as picture (4.3-1)



1. Matrix
2. Dome

Figure 4.3-1

4.3.1 - Pelco Matrix Model

Press **【1】** enter the PELCO Matrix model as the picture (4.3.1-1);

And then press the **【ENTER】** to select the Protocol and back to previous menu.



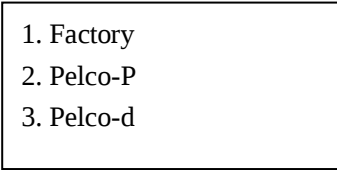
1. Pelco Matrix

Figure 4.3.1-1

4.3.2 - Dome Control Model

Press **【2】** enter the dome control model as the picture (4.3.2-1).

According to the user's need, select the suitable PROTOCOL and back to the previous menu.

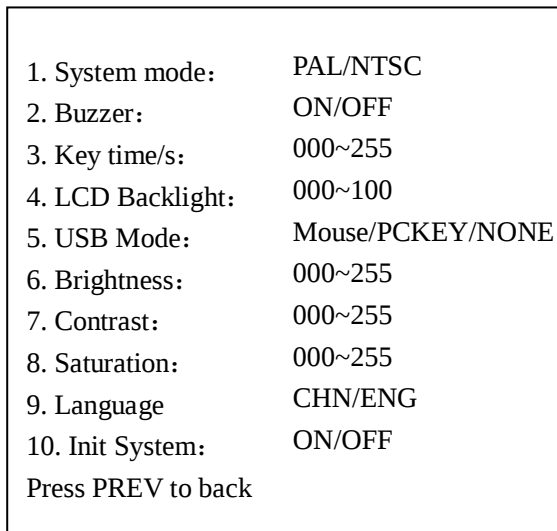


1. Factory
2. Pelco-P
3. Pelco-d

Figure 4.3.2-1

4.4 - System Setting

(Can select the key 4) as picture 4.4



1. System mode:	PAL/NTSC
2. Buzzer:	ON/OFF
3. Key time/s:	000~255
4. LCD Backlight:	000~100
5. USB Mode:	Mouse/PCKEY/NONE
6. Brightness:	000~255
7. Contrast:	000~255
8. Saturation:	000~255
9. Language	CHN/ENG
10. Init System:	ON/OFF
Press PREV to back	

Figure 4.4

Instruction:

1. System choice
2. Buzzer function choose
3. Screen save setting (Unit: second, set as 0 means cancel the screen save)
4. Back light adjust
5. USB model mode
6. Picture brightness adjust
7. Picture contrast
8. Picture color
9. Language
10. System initialization

4.5 - Exit The Keyboard Menu

Enter the menu as picture (4.2.1-1) and press the **【5】** to exit the menu.

5 - Appendix

5.1 - RS485 Bus General Knowledge

● RS485 Bus General Character

According to RS485 industrial standards, RS485 Bus is of half-duplexed data transmission cables with characteristic impedance as 120. The maximum load capacity is 32 unit loads (including main controller and controller equipment)

● Distance of RS485 Bus Transmission

While use the 0.56mm (24AWG) twisted cable as the communication, the farthest distance it can reach as follow based on the different Baud rate:

Baud rate	Max. distance
2400bps	1800M
4800bps	1200M
9600bps	800M
19200bps	600M

If user selects thinner cables, or installs the dome in an environment with strong electromagnetic interference, or connects lots of equipment to the RS485 Bus, the maximum transmitting distance will be decreased. To increase the maximum transmitting distance, do the contrary.

● Connection and Terminal Resistance

The RS485 standards require a daisy-chain connection between the equipment. There must be termination resistance with 120 impedance at both ends of the connection (refer to picture 4-1.1). Please refer to picture 4-1.2 for simple connection But “D” should not exceed 7m.

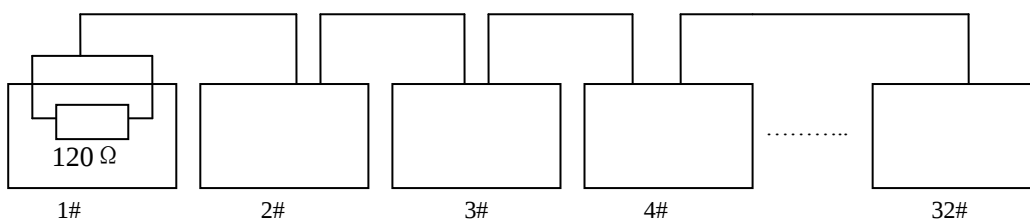


Figure 4-1.1

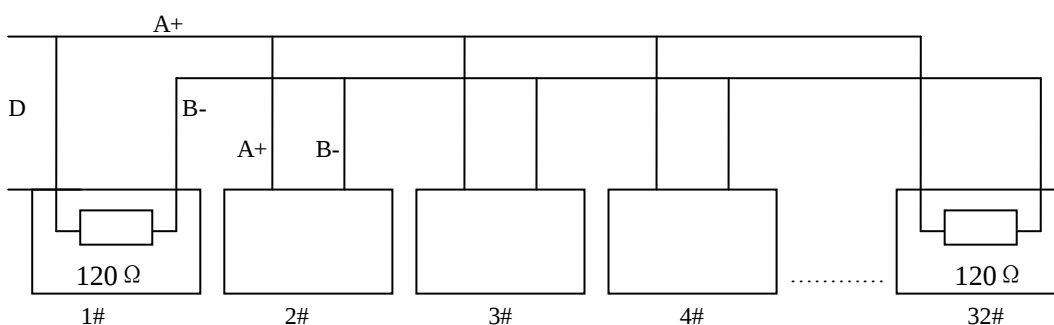


Figure 4-1.2

● Problems in practical use

In some circumstances user adopts a star configuration in practical connection. The termination resistors must be connected to the two equipments that are father away from each other, such as equipment1# and 15# (refer to picture 4-1.3). As the star configuration is not in conformity with the requirements of RS485 standards, problems such as signal reflections, lower anti-interference performance arise

when the cables are long in the connection. The reliability of control signals are decreased with the phenomena that the dome dose not responds to or just responds at intervals to the controller, or dose continuous operation without stop.

In such circumstances the factory will recommends the usage of Rs485 distributor. The distributor can change the star configuration connection to the mode of connection stipulated in the RS485standards. The new connection achieves reliable data transmission (refer to picture 4-1.4

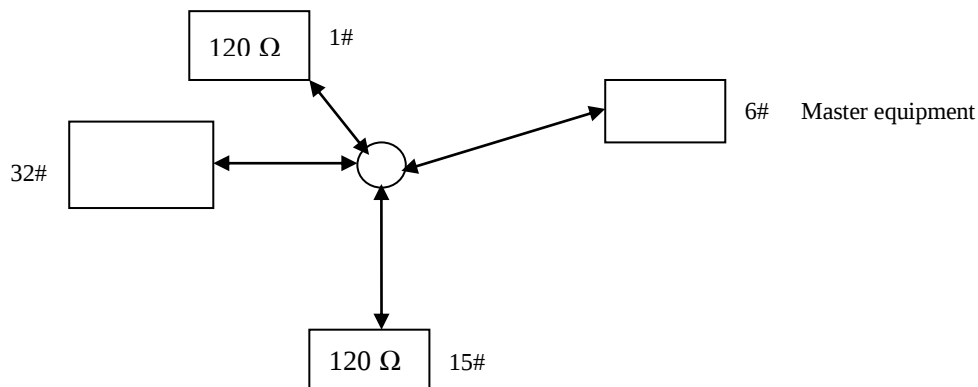


Figure 4-1.3

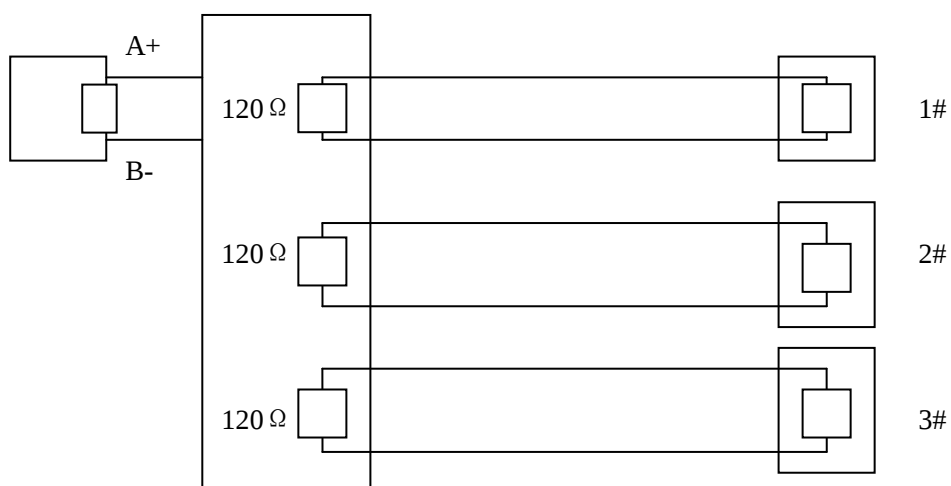


Figure 4-1.4

5.2 - Keyboard Shortcut Instruction

WORKING MODE	SHORTCUT	OPERATION OBJECT	FUNCTION
DIRECT CONTROL MODE	【POWER】	Keyboard	ON/OFF
	【MENU】	Keyboard	System information display
	【N】 + 【CAM】	High speed dome	Input Dome ID, press 【CAM】 to select object dome.
	【TELE】	High speed dome	Press 【TELE】 , increase the multiple of lens
	【WIDE】	High speed dome	Press 【WIDE】 , reduce the multiple of lens
	【FAR】	High speed dome	Press 【FAR】 , far focus
	【NEAR】	High speed dome	Press 【NEAR】 , near focus
	【CLOSE】	High speed dome	Press 【CLOSE】 , reduce iris
	【OPEN】	High speed dome	Press 【OPEN】 , increase Iris
	【SET】 + 【N】 + 【PRESET】	High speed dome	Adjust the image to object position, Press 【SET】 to input the preset, and press 【PRESET】 to set the preset
	【N】 + 【PRESET】	High speed dome	Input preset ID, press 【Preset】 to call the preset
	【SET】 + 【1】 + 【SCAN】	High speed dome	Adjust the image to object position, press Set to input 【1】 , then press Scan to set 【scan】 left limit.
	【SET】 + 【2】 + 【SCAN】	High speed dome	Adjust the image to object position, press Set to input 【2】 , then press 【Scan】 to set scan right limit.
	【1】 + 【SCAN】	High speed dome	Input 【1】 , press 【Scan】 to run scan.
	【SET】+【N】+【PATTERN】	High speed dome	Press 【Set】to input pattern number, press【Pattern】 to record pattern path.
	【SET】+【0】+【PATTERN】	High speed dome	Press【SET】 and input0, Press【PATTERN】to save path
	【N】 + 【PATTERN】	High speed dome	Input the pattern path(1-4),Press 【PATTERN】 to start pattern
	【N】+ 【TOUR】/【TOUR】	High speed dome	Input the TOUR NO, press 【TOUR】 or directly press 【TOUR】 to start the Tour
	【9】 + 【5】 + 【PRESET】	High speed dome	Input 95 and press 【Preset】 to call the menu
PELCO MATRIX MODE	【SHIFT】 + 【SET】	Matrix	Press 【SHIFT】 and 【SET】 to call the matrix menu
	【PREV】	Matrix	Press 【PREV】 skip to the previous dome, hold on 2sec on 【PREV】 to continuously skip the sixteen domes of connection matrix forwards
	【NEXT】	Matrix	Press 【NEXT】 skip to the previous dome, hold on 2sec on 【NEXT】 to continuously skip the sixteen domes of connection matrix backwards
	【Stop】	Matrix	Stop switch
	【ENTER】	Matrix	After program, press 【Enter】 to confirm.
	【N】 + 【MON】	Matrix	Input monitor ID, press 【Cam】 to select object monitor

Note: 【PRE】 = 【PRESET】 【PAT】 = 【PATTERN】 【SHI=SHIFT】 【ENT= 【ENTER】

6 - Keyboard Menu Index

