# Installation and Operation Manual
## for
High-Speed Dome II P/T

V4.0

Please read the operation manual carefully
before installing and using this unit

I. Points for Attention

1. Please read the operation manual carefully before installing and operating the product.
2. The product takes power supply of AC24V. The rated input voltage of the camera is marked on the base or other corresponding place.
3. 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.
4. 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.
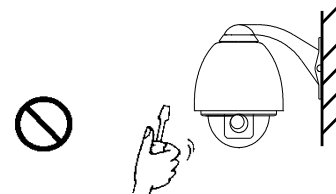
5. Always follow all electrical standards for safety when it is in operation. Adopt the particular power supply which is provided with the unit. RS-485 and video signal should keep enough distance with high voltage equipments and cables when they are in transmission. Precautions for anti-lightning and anti-surging should be taken if necessary.
6. Do not operate it in case temperature, humidity and power supply are beyond the limited stipulations.
7. Do not let the camera aim at the sun or the object with extreme light whatsoever it is switched on or not. Do not let the camera aim at or monitor bright and standstill object for a long time.
8. 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.
9. Operate the intelligent speed dome camera with great care to avoid shock or vibration. It operate incorrectly, the Speed Dome could be damaged
10. Be careful to avoid to crash, Never mount the unit on a ceiling that cannot support its weight.
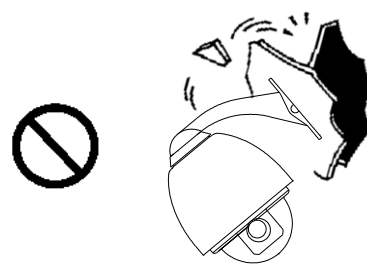
11. If necessary, use a commercial lens cleaning paper to clear the lens windows. Gently wipe the lens window until clean.

II. Description of Functions

The intelligent dome camera is a hi-tech CCTV product which incorporates high-clarity color camera, panoramic speed-variable PAN/TILT, multifunctional decoder, CPU processor, memory chip into a whole. It can largely reduce connection and installation processes of components in the system, rise up reliability of the system and facilitate installation and maintenance. Therefore it has advantages of beautiful appearance, compact structure and easy operation.

1. **Integrated Multi-Protocol Decoder**
   a. With integrated decoder and multi-protocol, it can integrate 16 kinds of communication protocols in maximum. As its baud rate of communication can be adjusted, it is compatible with many normal systems by easy setup inside the dome camera, so it has stronger versatility.
   b. RS485 serial control: addresses of camera 1-1023.

2. **Integrated speed-variable PAN/TILT**
   a. Turning 360° horizontally and continuously with unlimited positions and an adjustable speed from 0.2 -- 120rad/s，max speed 300 rad/s. turning 0 - 90° vertically with a speed up to 60 rad/s,max speed 90 rad/s。
   b. Running stably at low speed with super lower noise. Pictures have no shaking.
   c. the location precision up to ±0.1°.

3. **High Intelligent Degree**
   a. <u>As much as 128 preset positions can be preset</u> with powerless memory;
   b. <u>The camera can scan horizontally between two points</u> and scan speed can be modified. The positions of linear scan are optional and the dome camera can scan the range larger or smaller than 180° between any two points with adjustable speed;
   c. <u>Six sets of programmable patrol</u> with 16 position each set. The running speed and the detention time are adjustable respectively;
   d. <u>The Integrated Multi-Protocol.</u>   Multiple communication protocols are integrated inside the dome camera with selectable baud rate from 2400 bps to 9200 bps.

4. **Functions of the Camera**
   a. Description of the <u>Focus Control Mode</u>:   the user can adjust the focus of the camera manually.
   b. Description of <u>Backlight Compensation</u>:   when the object to be shot is dark and looks dim, the user can open the backlight compensation according to actual need.
   c. Description of <u>White Balance</u>:   when the image has color distort on the screen, the user can set different modes by orders.
   d. Description of <u>ZOOM Control</u>:   user can "pull near" or "push far" the lens according to actual conditions.
   e. Description of <u>Electronic Shutter</u>:   it is fixed on 1/50 sec after initialization when the camera is switched on.
   f. <u>AE Mode</u>:   setup of Manual/Automatic.
   g. <u>Minimum illumination</u>: it is used only when the external brightness is extremely low. Normally the camera works on the automatic state. In case the external brightness is lower than 1Lux, the camera can be switch to the Minimum illumination state automatically You can also set the Minimum illumination state manually.

LENS		Minimum illumination
16x	f =3.9 to 63mm (F1.6 DC Iris)	1 Lux (F1.6)
18x	f =4.1 to 73.8 mm (F1.4 to F3.0)	1 Lux (common) / 0.01 Lux（B & W）
22x	f =4 to 88 mm (F1.6 to F3.8)	0.2 Lux（F1.6 1/3s）
23x	f =3.6 to 82.8 mm (F1.6 to F3.7)	0.01 Lux（B & W）
26x	f =3.5 to 91 mm (F1.6 to F3.8)	0.01 Lux（B & W）
27x	f =3.6 to 98 mm (F1.5 to F3.8)	1 Lux (Common / 0.01 Lux（B & W）

III. Setup of the Menu of the Dome Camera
1 Basic Operation of the Menu
1．1   Call preset 64 or call preset 1 twice within 4 seconds to enter the main menu by the control keyboard or by the matrix.

1．2   When the menu is displayed on the screen, operate "TILT UP", "TILT DOWN" to move the cursor to the option to be set, operate "PAN LEFT", "PAN RIGHT" to modify the content or the order to enter this option.

1．3   Keep the joystick in one direction for over 1 second to speed up operation.

1．4   All setups on the menu couldn't be lost even power failure happens.

1．5   Special utilizations can be seen on the descriptions of functions of the menu in detail.

2 Setup of the Menu

2.1   MAIN MENU

```
      MAIN   MENU
1. DISPLAY SETUP
2. CAMERA  SETUP
3. CONTROL SETUP
4. PROGRAM
5. TITLE   EDIT
6. DOME    RESET
7. EXIT
```

2.1.1   DISPLAY SETUP: to enter the submenu of display of the screen by which ID display, title display of preset point and display of camera screen can be set.

2.1.1   CAMERA SETUP: to enter the submenu of setup of normal data of camera.

2.1.2   CONTROL SETUP: to enter the submenu of setup of control data over the dome camera.

2.1.3   PROGRAM: to enter the setup of enhanced function of dome camera.

2.1.4   TITLE EDIT :   to edit titles of preset position.

2.1.5   DOME RESET: to reset the dome camera.

2.1.6   EXIT: to quit the main menu.

2.2   DISPLAY SETUP

```
 DISPLAY SETUP
1. ID DISPLAY
2. ID POS
3. TITLE DIS
4. TITLE POS
5. CAM DISPLAY
6. PAL CAM
7. RETURN
```

2.2.1   ID DISPLAY: when it is set at ON, address of dome camera appears on the screen such as "CAM 001". The default setting is ON.

2.2.2   ID POS: to set the display position of address on one of following corners: TOP-L, TOP-R, BOTT-R and BOTT-L.

2.2.3   TITLE DIS: when it is set at ON, the title of preset point appears on the left of screen such as "NO.001 ABCDEFGH" when the preset point is called. The modification of title of preset point is set on TITLE EDIT option.

2.2.4   TITLE POS: to set the display position of title of preset point from Line 1 to Line 10. Line 1 is at the top of screen.

2.2.5   CAM DISPLAY: when it is set at ON, the camera screen will be opened.

2.2.6   PAL CAM :   PAL/NTSC switching to suit the camera.

2.2.7   RETURN: to return to MAIN MENU.

2.3   CAMERA SETUP

```
  CAMERA SETUP
1. SLOWSHUTTER
2. BACK LIGHT
3. ICR  SHOT
4. D-ZOOM
5. WB SET
6. IRIS
7. MENU OF CAM
8. RETURN
```

2.3.1   SLOW SHUTTER: frame accumulation with two options Manual/Automatic. When camera screen is opened under automatic state, ASS displays on screen.

2.3.2   BACK LIGHT: backlight compensation ON/OFF.

2.3.3   ICR SHOT: low shooting，ON/AUTO

2.3.4   D-ZOOM: setup of digital zooming ON/OFF.

2.3.5   WB SET: setup of white balance. ATW / INDOOR / OUTDOOR / ONEPUSH / AUTO / MANU

2.3.6   IRIS: setup of automatic iris AUTO/MANU.

3

2.3.7   MENU OF CAM: blank
2.3.8   RETURN: return to MAIN MENU.

2.4   CONTROL SETUP

```
┌────────────────────┐
│  CONTROL SETUP     │
│  1. AUTO FLIP      │
│  2. PTZ SPEED RATE │
│  3. AUTO HOME      │
│  4. HOME POS       │
│  5. DWELL TIME     │
│  6. LANGUAGE       │
│  7. RETURN         │
└────────────────────┘
```

2.4.1   AUTO FLIP: 180° automatic flip of dome camera ON/OFF.
2.4.2   PTZ SPEED RATA: The speed dome will depend on the amount of zoom.
2.4.3   AUTO HOME : when it is set at ON, home function is available, namely, the dome camera will return HOME if user has no action in a period of time. The dome camera shall not return HOME if it is on tour state. If no HOME is needed when the dome camera is stopped, set the option at OFF.
2.4.4   HOME POS: HOME means return home. For example to set one scene as HOME, call the scene first and set it as preset point, then call out the menu to enter into this submenu, change figures after HOME POS into 5. If automatic HOME function is needed, do not forget to set AUTO HOME at ON. This option display 1—50,1—50 means preset position from 1 to 50;
2.4.5   DWELL TIME: to set the time of automatic HOME, which means the camera shall return HOME if it is not controlled in a period of time which can be from 1 to 99 minutes.
2.4.6   LANGUAGE: ENGLISH/CHINESE   LAGUAGE switch.
2.4.7   RETURN: return to MAIN MENU.

2.5   PROGRAM Options

```
┌────────────────────────┐
│      PROGRAM           │
│  1. AUTO PAN START POS │
│  2. AUTO PAN END POS   │
│  3. RUN AUTO PAN       │
│  4. SET PATROL         │
│  5. RUN PATROL         │
│  6. RECORD PATTERN     │
│  7. RUN PATTERN        │
│  8. RETURN             │
└────────────────────────┘
```

2.5.1   AUTO PAN START POS: To set start position of auto scan between two points. To move the dome camera by joystick after entering and to return by CLOSE button.
2.5.2   AUTO PAN END POS: To set end position of auto scan between two points. To move the holder by joystick after entering and to return by CLOSE button.
2.5.3   RUN AUTO PAN: Auto scan function between two points. First of all, you must set the start position and the end position of auto scan. If the start position is just the end position, it means 360° scan. The speed of auto scan has six grades: FAST / NORMAL / SLOW / -FAST / -NORMAL / -SLOW in which the first three grades are scan less than 180° while the later three grades larger than 180°. Adjust speed by PAN LEFT/PAN RIGHT, and operate and exit by OPEN button. The start position and the end position of auto scan are set by options 1 and 2 in this submenu.
2.5.4   SET PATROL: to edit data for multi-points patrol. Select no. of patrol by PAN LEFT/PAN RIGHT,   enter into edit by OPEN button and exit edit by CLOSE button. Operations under edit state can be seen later.
2.5.5   RUN PATROL: to run multi-points patrol function. Select no. of patrol by PAN LEFT/PAN RIGHT, run and exit by OPEN button.
2.5.6   RECORD PATTERN: This pattern can consist of any standard pan and tilt or lens command. Preset, flip, digital zoom, proportional pan, and turbo are not allowed in a pattern. The pattern length is 40 seconds in maximum. To return when 40 seconds expire or by push CLOSE button.
2.5.7   RUN PATTERN: to self-learn loci of tour. To exit the menu after running or to stop running by joystick.
2.5.8   RETURN: return to Main Menu.

Appendix to the Menu

2.5.9   Operation of Edit State of Multi-Points Patrol.   When entering into edit state the screen displays as follows:

```
NO POS SP TM POS SP TM

01 001 01 01 002 01 01
03 003 01 01 004 01 01
05 -- -- -- --- -- --
07 -- -- -- --- -- --
09 -- -- -- --- -- --
11 -- -- -- --- -- --
13 --- -- -- --- -- --
15 --- -- -- --- -- --

SEQ:01        CLOSE:EXIT
```

NO – Serial No. of patrol position
POS – No. of preset position
SP – leaving speed
TM – dwelling time

After entering into edit area, screen shows as follows:
Edit Area, data of 2 patrol position appears on one line.

SEQ:01   –   It means the set No.1 patrol
CLOSE: EXIT –   Push CLOSE to exit edit state

Both top and bottom lines display prompt and information of each patrol is displayed on the middle of the screen. **Data of 2 Patrol points appears on one line.** Move cursor by PAN LEFT/RIGHT and modify data by TILT UP/DOWN. Press buttons for one second to speed up operation. Press CLOSE button to exit edit state and store modifications. The program will search the position of the first "---" of POS, store dada before it and regard data after it as invalid. In above figure, the program stores previous four points with settable range from 1 to 63 and from 65 to 128. When "---" of POS appears, the tour range is ended. The settable range of SP is from 0 to 8 (0 and 1 are the same with fastest speed while 8 has the lowest speed). The settable range of TM is from 0 to 99 seconds.

2.6 TITLE EDIT

When entering into edit state the screen displays as follows:
In the figure we find the preset point is No.1 with title of "NO TITLE". Move cursor by PAN LEFT/RIGHT and modify data by TILT UP/DOWN. Press buttons for one second to speed up operation. Press CLOSE button

```
TITLE EDIT
1. PRESET NO
2. TITLE
3. RETURN
```

to exit edit state and store modifications. The title of preset point has 8 characters in maximum such as 0-9, A-Z, +, - and space. Note: the first character should be 0-9 or A-Z, otherwise it means to delete the title of the preset point, and when preset point is adjusted, only "NO.XXX" spears without title to be displayed.

Ⅲ. Setup of the Dome Camera

1. Connection of the System

1) The Systematic Drawing of the Dome Camera
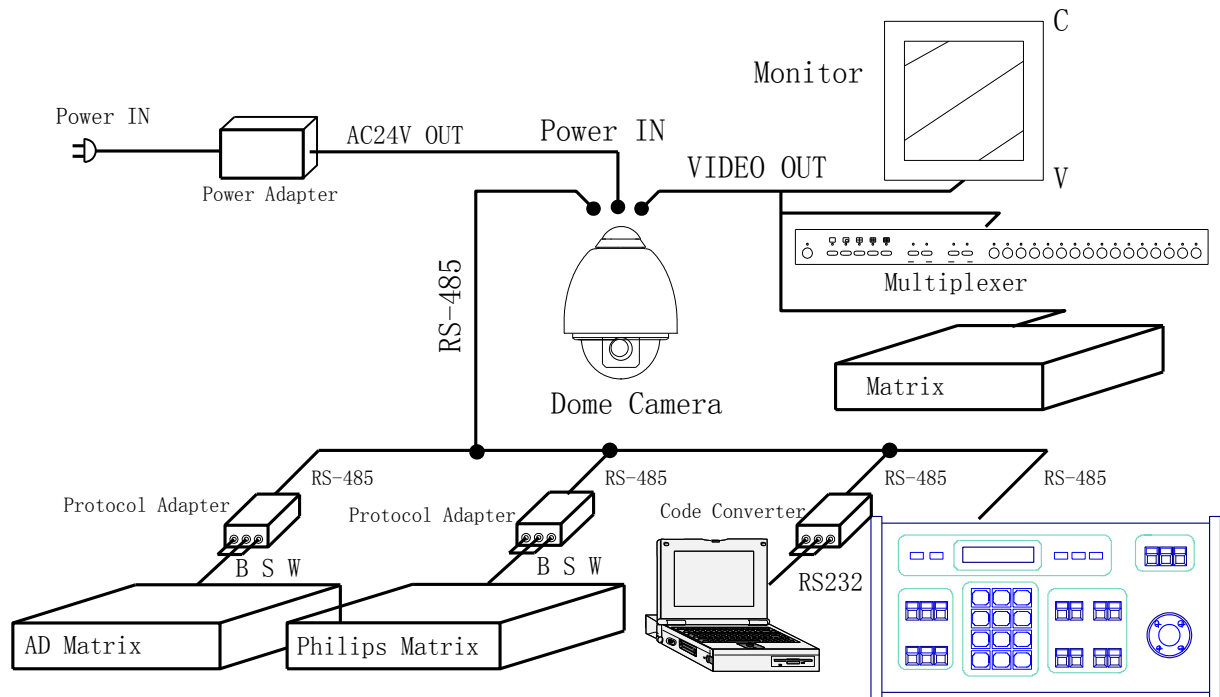

Figure 1

2) Address / Protocol Coding Switch Drawing

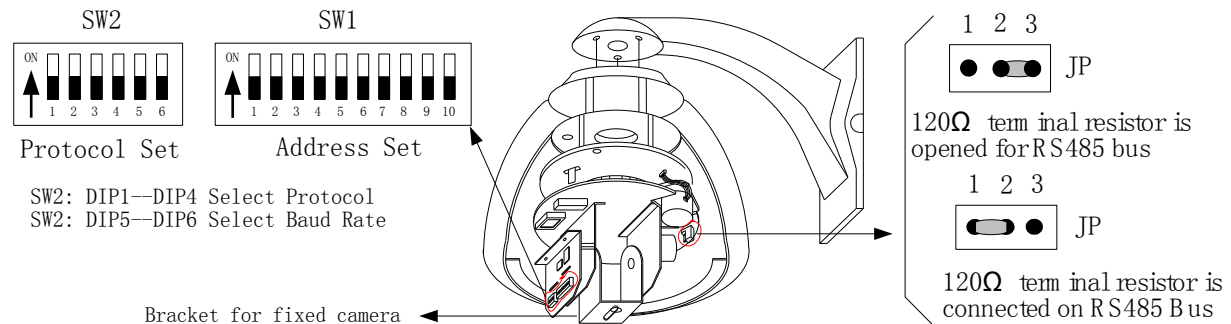

Figure 2

2. Setup of Coding Switch of Dome Camera.
As shown in Figure 2, SW1 is used to set address of the dome camera from 1 – 1023. The ID-CODE from DIP-10 to DIP-1 are equivalent to a 10-bit binary digit. DIP-10 is MSB while DIP-1 is LSB. The state "ON" of each bit means 1 while "OFF" means 0. Following table shows states of coding switches of some addresses.

Dome	ID-CODE Status									
Address	DIP-1	DIP-2	DIP-3	DIP-4	DIP-5	DIP-6	DIP-7	DIP-8	DIP-9	DIP-10
1	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
2	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
3	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
4	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
5	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
6	OFF	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
7	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
8	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF

6

9	ON	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
10	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
11	ON	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
12	OFF	OFF	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
13	ON	OFF	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
14	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
15	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
16	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF
17	ON	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF
18	OFF	ON	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF
…	…	…	…	…	…	…	…	…	…	…
1023	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON

Table   1

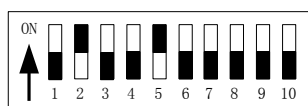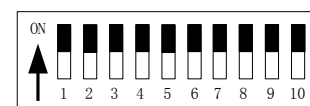For Example:
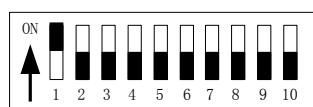
Speed Dome Address=1
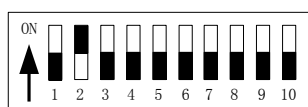
Speed Dome Address=2
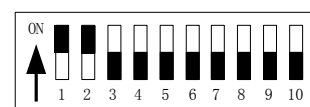
Speed Dome Address=3
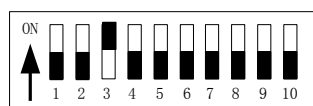
Speed Dome Address=4

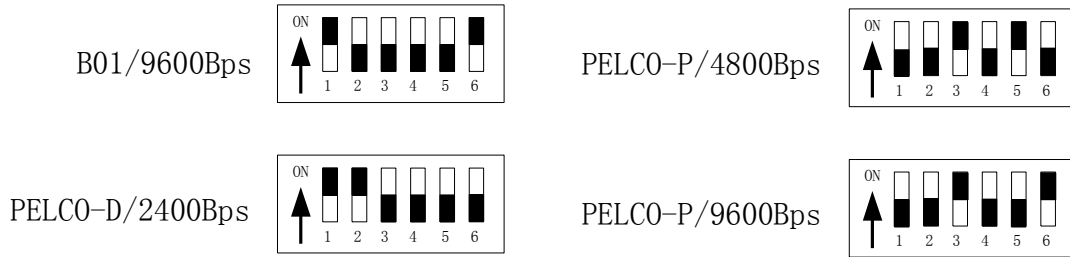Speed Dome Address=18

Speed Dome Address=1023

3. **Setup of the Protocol and the Default Baud Rate.**   As shown in Figure 2, SW2 is used to set the protocol of communication and the baud rate used by the dome camera. DIP-4 to DIP-1 of SW2 is used to select protocols and 16 different protocols can be selected in maximum. Following table shows states of coding switches of protocols selected by the dome camera

Protocols	DIP status				Normal Baud Rate	
	DIP-1	DIP-2	DIP-3	DIP-4	DIP-5	DIP-6
SAMSUNG	ON	OFF	OFF	OFF	OFF	ON
B01	ON	OFF	OFF	OFF	OFF	ON
NEON	ON	OFF	OFF	OFF	OFF	ON
Santachi	OFF	ON	OFF	OFF	OFF	ON
PELCO-D	ON	ON	OFF	OFF	OFF	OFF
PELCO-P/4800	OFF	OFF	ON	OFF	ON	OFF
PELCO-P/9600					OFF	ON
PANASONIC	ON	OFF	ON	OFF	OFF	ON
Longcomity	OFF	ON	ON	OFF	OFF	ON
HUNDA600	ON	ON	ON	OFF	OFF	ON
LILIN	OFF	OFF	OFF	ON	OFF	ON
VICON	ON	OFF	OFF	ON	ON	OFF
MOLYNX	OFF	ON	OFF	ON	OFF	ON
KALATEL	ON	ON	OFF	ON	ON	OFF
VCL	OFF	OFF	ON	ON	OFF	ON
Reserved	ON	OFF	ON	ON	OFF	ON
ALEC	OFF	ON	ON	ON	OFF	ON
Ultrak	ON	ON	ON	ON	OFF	ON

Table 2

Some protocols and the states of the coding switches of normal baud rate of these protocols are shown as follows:

B01/9600Bps   PELC0-P/4800Bps

PELC0-D/2400Bps   PELC0-P/9600Bps

4. Setup of the Baud Rate of Communication. As shown in Figure 2, SW2 is used to set the protocol of communication and the baud rate used by the dome camera. DIP-6 and DIP-5 of SW2 are used to select the baud rate of communication and 4 different baud rates can be selected in maximum. If the controller adopts non-standard baud rate, you can adjust it to be identical with that of the controller as per the following table.

Baud Rate of Communication	DIP-1	DIP-2	DIP-3	DIP-4	Setup of Baud Rate	
					DIP-5	DIP-6
2400bps					OFF	OFF
4800bps					ON	OFF
9600bps					OFF	ON
19200bps					ON	ON

5. Selection of the Terminal Resistor of the Dome Camera. As shown in Figure 2, JP is the select switch of the 120 Ω terminal resistor on the bus RS485, on which only one terminal resistor of the dome camera at the farthest end can be connected, while the terminal resistors of other devices should be opened.

Ⅳ. The Installation of the System

1. The style of the Installation
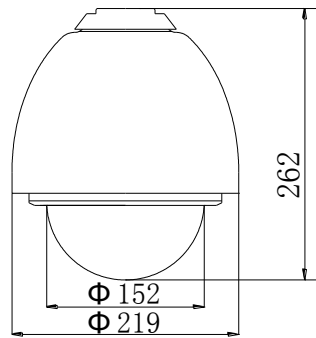
1) Dimension of the Product

262

Φ 152
Φ 219

Figure 3

2) The Style of Installation
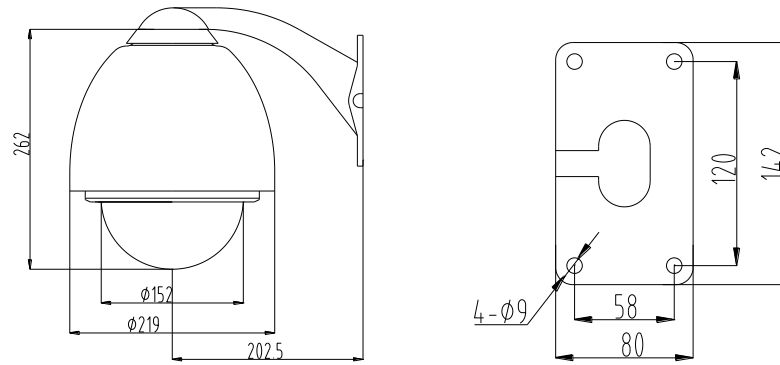   a) Wall Installation

Figure 4
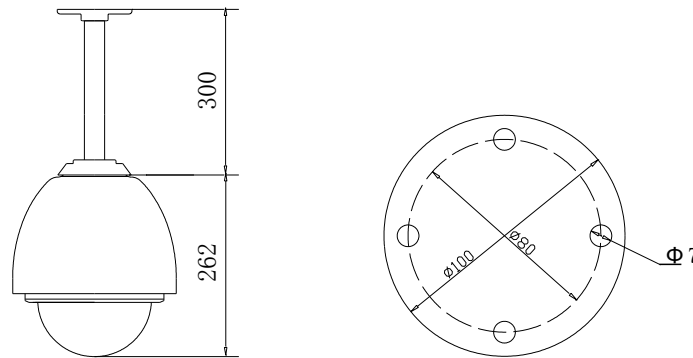
b)   In-Ceiling Installation

Figure 5

2.   **Steps of Installation (taking wall-mounting as example)**

1. Unpacking the carton and carefully take out the dome camera and its attachments.

2. Rotate the vitreous cover counterclockwise and take out it. (see Figure 6) Note: It can be ignored the steps 2,3,4,5 while the protocol and address are matching with the controller.

3. Take out the black liner. (Figure 7)

4. Based on the ID-CODE shown as Figure 2, set up the protocol used by the camera and the baud rate as per the state according to Table 1. Check the address of the camera to see if it is matched with that you need. If not, set the address of the dome camera at corresponding position as per Table 1.
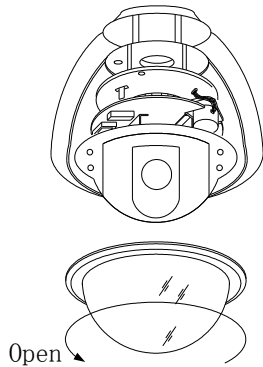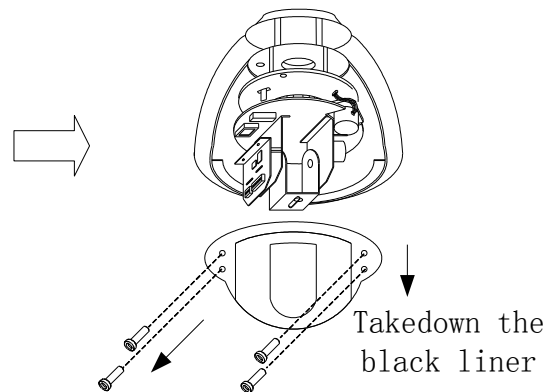
Figure 6
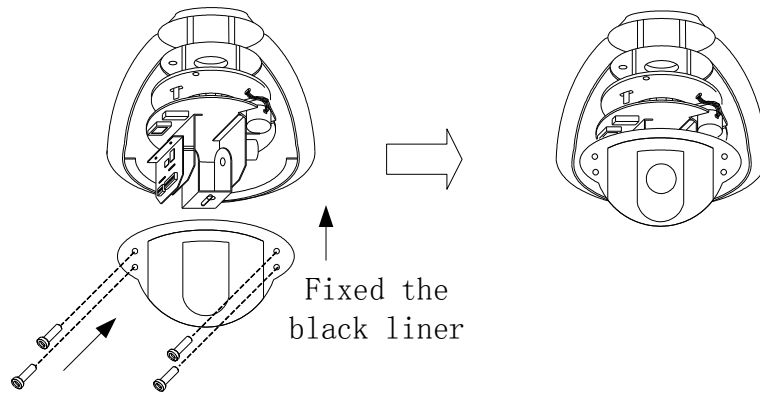
Figure 7

5. Fix the black liner (see Figure 8).

Figure 8

6. Take out the cover of the wall-mounting bracket (see Figure 9).
7. Fix the bracket on the wall (see Figure 10).
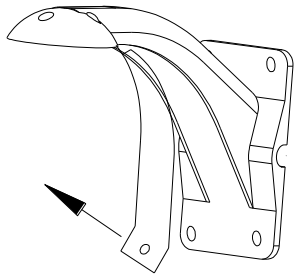8. Drill the system control wires through the bracket (see Figure 11).
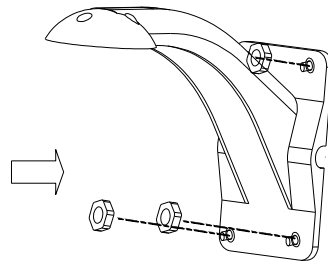

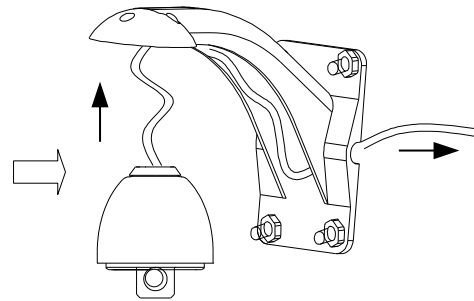Figure 9   Figure 10   Figure 11

9. Install the aluminum alloy ball on the bracket（Figure 12）.

10. Rotate the vitreous cover clockwise and mount it（Figure 13）.
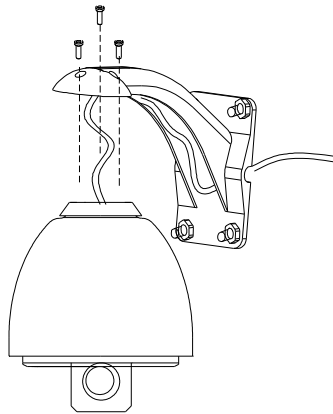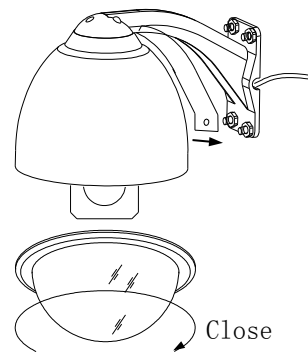
Figure 12   Figure 13

11. Connect the control wires of the system as per Figure 14.

RED LINE(AC24V IN)   RED CONNECTOR
BLACK LINE(AC24V IN)   (POWER IN)
ORANGE LINE(RS485+)
YELLOW LINE(RS485-)   BLACK CONNECTOR
                            (RS485 CONTROL IN)
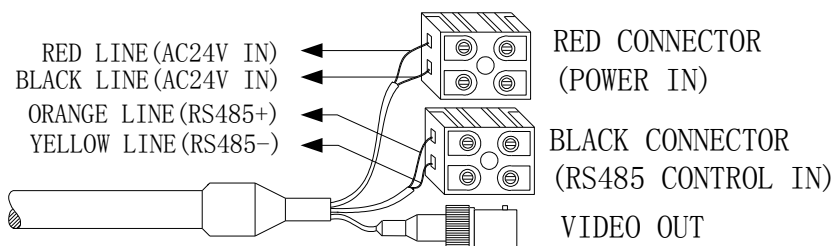   VIDEO OUT

10

Figure 14

3. To ensure a smooth and successful installation, you must:

1. **Have electrical work comply with latest national electrical code, national fire code, and all applicable local codes and ordinances.**

2. **Coordinate work with other trades to avoid interference.**

3. **Verify existing site conditions and coordinate with owner's representative and appropriate utilities as required.**

4. **Obtain copies of all related plans, specifications, shop drawings and addenda to schedule and coordinate related work**

5. **Thoroughly review the project to ensure that all work meets or exceeds the above requirements. Bring alleged discrepancies to the attention of the CCTV Project Coordinator.**

Ⅴ． Technical data table

1、Indoor/Outdoor Speed Dome

Power supply	AC24V 50/60Hz
Power consumption	Indoor dome：12W Outdoor dome：35W
Sync system	Internal
Preset	128 presets
Patrol	6
Auto pan scan	360°Programmable
Pan Manual Control Speed	0—120°/s
Pan Preset Speed	300°/s max
Pan rotation range	360°continues
Title range	Tilt 90°
Tilt speed	0- 60°/s
Tilt Preset Speed	90°/s
Control mode	RS485
Baud Rate	2400/4800/9600/19200 bps
Fan & heater	Fan & heater auto-start (only outdoor dome)
Environment temp	Indoor dome：0℃ — +40℃ Outdoor dome −35℃ -- +55℃

2、Camera Optional data table

Mode	16×	18×	22×	23×	27×
	Color	Day/Night switch	Color	Day/Night switch	Day/Night switch
Sync mode	Internal				
Image Inductor	1/4″ Color CCD				
Scanning system	2:1 interlacing				
Resolution	>470TVL	≥480TVL			
Effective Pixels PAN	470,000 pixels	752×582(440K)		758×592(450K)	795×596(470K)
NTSC	440,000 pixels	768×494(380K)		758×504(380K)	811×508(410K)
Sensitivity	1Lux(F1.6)	1Lux / 0.01Lux	0.2LuxF1.6 1/3s)	1Lux / 0.01Lux	1Lux / 0.01Lux
Iris	Auto/ Manual				
Focus	Auto/ Manual				
Zoom Rate	16× optical f=3.9 to 63 mm	18× optical f=4.1 to 73.8 mm	22× optical f=4 to 88 mm	23× optical f=3.6 to 82.8 mm	27× optical f=3.6 to 98 mm
Angel of view	Wide：47°	Wide：48°	Wide：47°	Wide：54°	

	TELE：3°	TELE：2.7°	TELE：2.2°	TELE：2.5°	
B.L compensation	Auto/ Manual				
White balance	Auto/ Manual				
Gain Control	Auto/ Manual				
Signal formal	Auto/ Manual				
S/N	>46dB	≥50dB			
Video output	1.0±0.2Vp-p				

Ⅵ. Troubleshooting

Problem	Probable cause	Solution
On power no action	Power supply fault	Replace
	Bad connection of the power	Make correction
	Transformer damaged	Replace
On power cannot self-check have image but have motor noise	Mechanical failure	Repair
	Camera incline	Reinstall
	Power supply not enough	Replace
Self-check ok, but have no image	Video signal fault	Reinstall
	Bad connection of the video	Press to full connect
	Camera damaged	Replace
Self-check ok but cannot control	RS485 Bus bad connection	Check the RS485 connection
	Dome id setting is wrong	Reselect
	Protocol setting is wrong	Reset and on power again
Vague image	Bad connection of the video	Press to full connect
	Power supply not enough	Replace
On power cannot control	Self check error	On power again
	Bad connection of control	Press to full connect
	Bad control of matrix	On power again