

# IR Night Vision High Speed Dome User's Manual



**Bernee production**

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Please read this User Manual carefully  
to ensure that you can use the device correctly and safely.

## Index

1	Preface .....	3
2	Important safe & warn information .....	3
3	Product features .....	3
4	Structure and dimensions .....	4
4.1	Dome structure diagram.....	4
4.2	Outline dimension.....	5
4.3	External wiring chart .....	5
4.4	Communication board diagram .....	6
5	Installation .....	6
5.1	Set baud rate, address code and control protocol.....	6
5.2	Test dome basic functions with power-on.....	7
5.3	Connect dome to bracket .....	8
5.4	Install dome to wall .....	10
6	PTZ control protocol, baud rate and address codes setting.....	11
6.1	PTZ control protocol setting (1-4 digits of SW1 dial switcher) .....	11
6.2	Baud rate setting (5-6 digits of SW1 dial switcher).....	11
6.3	Address code setting (1-8 digits of SW2 dial switcher).....	12
7	Basic operation.....	14
8	Full functional menu instructions .....	14
8.1	IR high speed dome command list.....	14
8.2	Menu operation.....	15
8.2.1	CAMERA 1---- Camera option 1 .....	15
8.2.2	CAMERA 2-----camera option 2.....	16
8.2.3	DOME-----Dome function options.....	17
8.2.4	PATTERN-----Pattern scan .....	18
8.2.5	PRIVACY MASK----Intelligent privacy mask.....	18
8.2.6	AUTO SCAN----Point-to-point scan .....	19
8.2.7	360 SCAN----360° continuously scan.....	19
8.2.8	PRESET----Stay time of presets .....	20
8.2.9	IR control----Manual control of IR intensity .....	20
9	Troubleshooting.....	21
10	Maintenance .....	22
11	Specifications.....	23
	Appendix 1: Menu value of factory setting .....	25
	Appendix 2: Alarm Input/Output.....	27
	Appendix 3: Wires suggested .....	28

# 1 Preface

As a basic instruction, this Manual is composed by important safe & warns information and the necessary text about integrated camera use, such as function instructions, performance features as well as specifications, installation steps, common trouble shooting or maintenance. If you first time use or have formerly used such products, please read through this Manual at first. It is best choice to read from beginning, and to select your needed is also welcomed.

## 2 Important safe & warn information

- Before installation & use, please read this manual carefully. (If the specifications to change without notice)
- Installed and maintained by qualified person as well as abide by local rules.
- Camera power: AC24V. Rated voltage is marked at dome base or other related positions
- All the camera inner are precise optical & electronic components, so in transportation must avoid heavy press, intensive shake and suchlike incorrect operations, otherwise may damage machine
- Do not disassemble inner components of machine, for there is no repair worked by customer
- In use, must comply with all electric safety standards and work with attached power supply by us. RS-485 & video signal should be kept certain distance to high voltage devices & lines during transmission process, even take measures of anti-lightning and anti-surge.
- Do not make machine work with improper temperature, humidity or voltage
- Do not direct camera to sun or other intensive light; do not monitor high bright still object long time.
- Do not use abrasive detergent cleaning body but use dry cloth
- Be careful using camera, avoid hit or shake
- In installation, please select a strong holding position for camera
- If lens is dusted, please use specified paper cleaning for lens
- Disassembling Acrylic housing, please work with cotton glove to prevent scratching machine surface
- Reinstalled or repaired over, must check resistance between circuit and its shell part to confirm insulating well, avoid short-circuit between circuit and its shell.

## 3 Product features

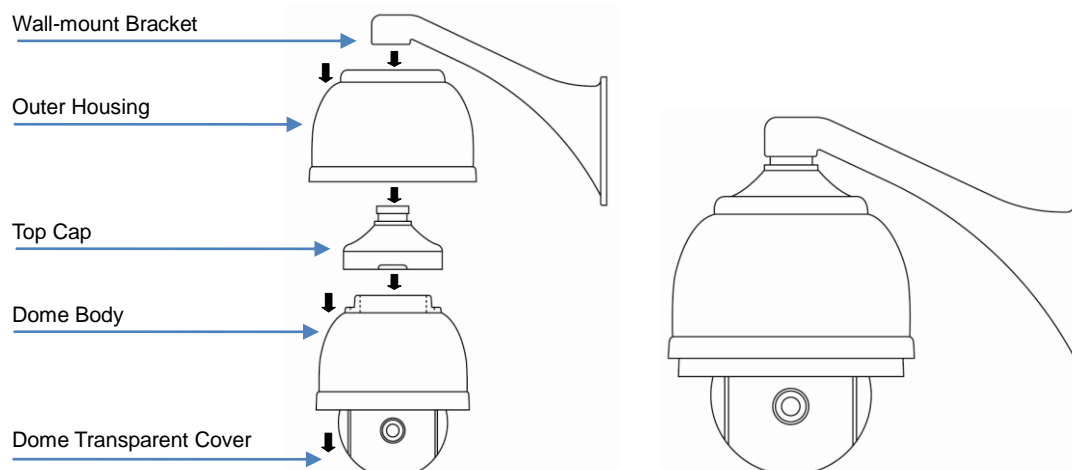
- This product adopts the array based on extra-long specular reflection IR which comes from Japanese ODR Company (IR LED leader in the world), max 180 meters ~200 meters IR distance. The IR LED “ODR” bases ceramic cooling, working with our patent aluminum circuit board and 6-blower cycled air-duct, in this way, dome inner temperature can be kept equal to ambient temperature (no more than 35°C), completely overcoming problem of high temperature of IR dome camera. This IR LED (“ODR”) fades less than 5% in 2 years.
- Adopt advanced 3-core hardware platform (built-in 3 CPUs, real-time triplex sync processing), work with embedded operating system, absolutely ensure dome operating stable & real-time, avoid any formed communication conflict, ensure system never halts, realize real 3D real-time control (in zero-delay can simultaneously control PTZ up/down/left/right/zoom), greatly enhance preset accuracy and instantaneity and stability.

- Adopt IP66 protection grade aluminum shell and waterproof designment, ensuring dome operating stably. The base memory saves dome status and preset information, regardless of unexpected power-off or replacing movement, system needs not user's hand and will auto restore to original state.
- Max. 32 zones programmable privacy mask; manual control and preset calling with auto tracking privacy mask.
- Pre-reserve structure and position for adding onsite sound monitoring facility (sound pickup range: 100m<sup>2</sup> indoor, 50m<sup>2</sup> outdoor)
- Horizontal 360° continuous rotation, rotation speed 0~240°/sec; work with sub-control circuit of one millionth accuracy customized
- 219 presets, 6 presets tours, touring with presets number displayed
- 6 pattern tours (self-study) of 10 minutes each
- Long-focus speed-limited function: dome's max speed downs as focus zooms in, so as to capture object exactly.
- The built-in decoder integrates multiple communication protocols, baud rates and various brands camera protocols
- Friendly OSD menu function: users can easily set needed running mode (e.g. set power-on action, set idle action, set proportional speed-shift, set preset tour modes, set auto scan mode, etc)
- Direction displaying function: (east/southeast/south/southwest/west/northwest/north/southeast), helping user identify real direction.
- Perfect alarm linkage function. 8 channels alarm input links to 8 presets, rapidly recheck image alarmed; 2 channels alarm output activates relevant device, in order to realize efficient early-warning measures (notice: to reduce inconvenience in wiring process, alarm is extra function, if needed, please mark it on order sheet).
- Standard units include thermostatic control system
- Built-in anti-surge & anti-lightning device resists voltage as high as 0~±4000V

## 4 Structure and dimensions

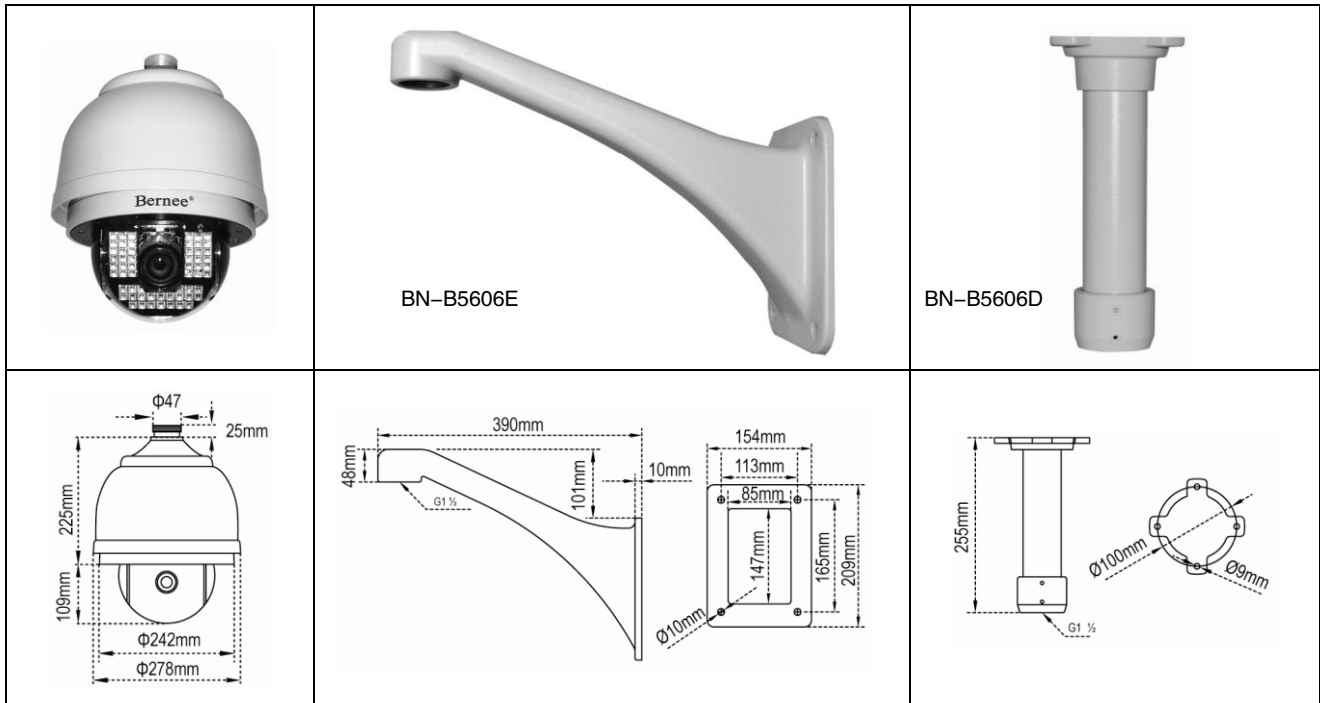
### 4.1 Dome structure diagram

BN-5606xHIR3 IR speed dome is composed by dome transparent cover, dome body, top cap, outer housing and wall-mount bracket (or pendant mount bracket), as shown in [\[Figure 1\]](#).



[Figure 1]

### 4.2 Outline dimension

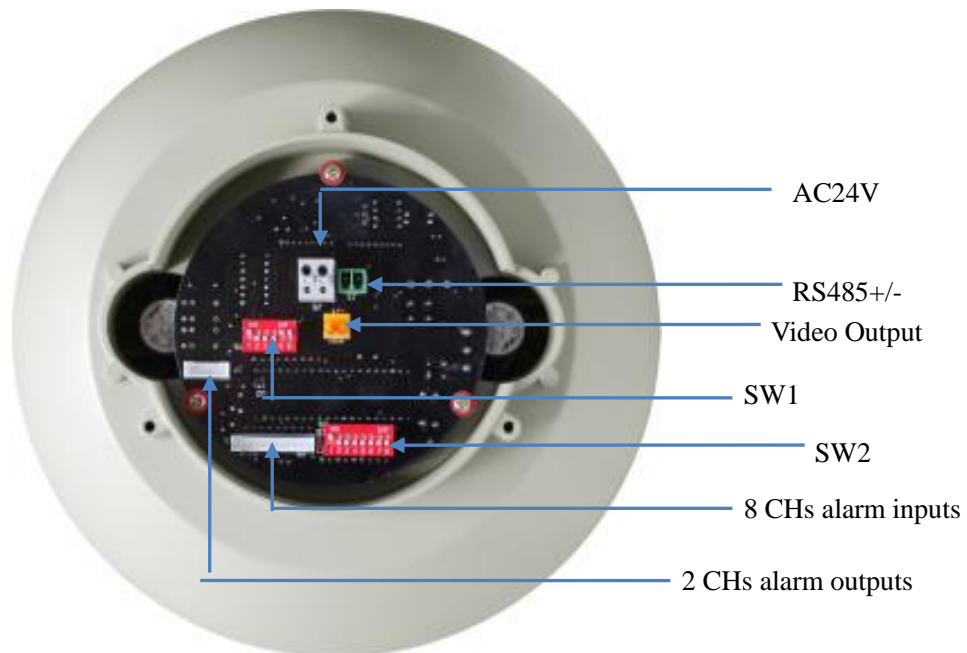


### 4.3 External wiring chart

No.	Name	Color	Function
1	Video Line		Video output
2	Power Line	Red	AC24V
		Black	AC24V
3	Control Line	Brown	RS485-
		Blue	RS485+
4	Alarm Input (optional)	Black	Alarm input common port
		White	Alarm input 8, NO, (links to #108 preset)
		Grey	Alarm input 7, NO, (links to #107 preset)
		Purple	Alarm input 6, NO, (links to #106 preset)
		Blue	Alarm input 5, NO, (links to #105 preset)
		Green	Alarm input 4, NO, (links to #104 preset)
		Yellow	Alarm input 3, NO, (links to #103 preset)
		Orange	Alarm input 2, NO, (links to #102 preset)
		Red	Alarm input 1, NO, (links to #101 preset)
5	Alarm Output 1 (optional)	Brown	Normal open
		Red	Normal close
		Orange	Middle point
6	Alarm Output 2 (optional)	Brown	Normal open
		Red	Normal close
		Orange	Middle point

## 4.4 Communication board diagram

Communication board lies in top part of dome body, seeing it by disassembling top cap, and the specification details refer to [\[Figure 2\]](#)



[Figure 2]

## 5 Installation

### 5.1 Set baud rate, address code and control protocol

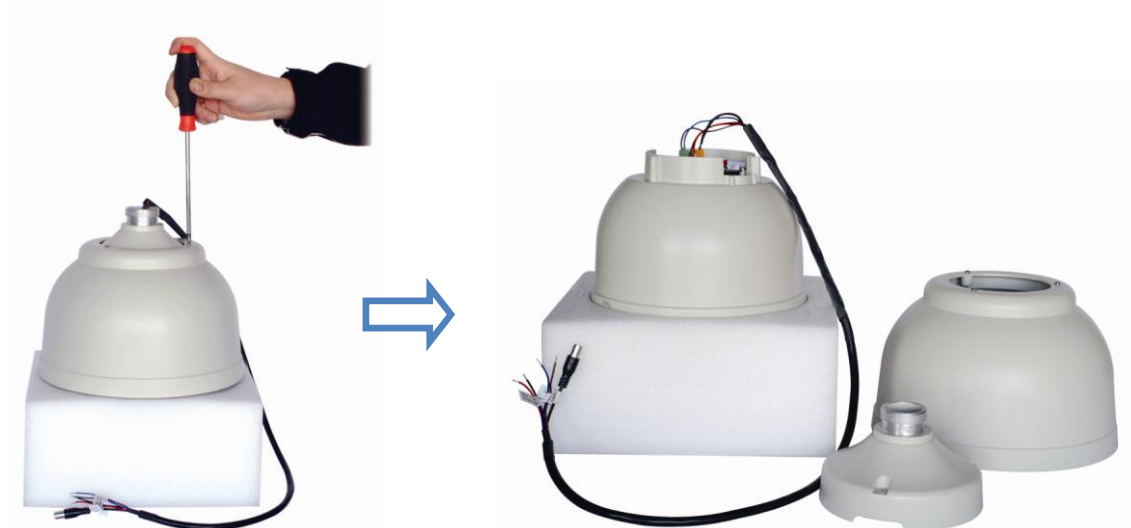
Step 1: open package, take dome and base foam sponge out of box, and uprightly put it on foam sponge (transparent cover downward), as shown in [\[Figure 3\]](#).



[Figure 3]

Step 2: use crosshead screwdriver loosening the 3 screws M4\*25 on outer housing, take off outer

housing and top cap, as shown in [\[Figure 4\]](#).



[Figure 4]

Step 3: set dome baud rate, address code and PTZ control protocol via dial switcher, details refer to: [<6 PTZ control protocol, baud rate and address codes setting>](#)

## 5.2 Test dome basic functions with power-on

Step 4: upside down dome and make transparent cover upward, ready for testing, as shown in [\[Figure 5\]](#)



[Figure 5]

**Note: after powered on, dome will auto begin self-test & auto rotating, so the dome transparent housing should be hung in the air before powered on, otherwise dome will be damaged.**

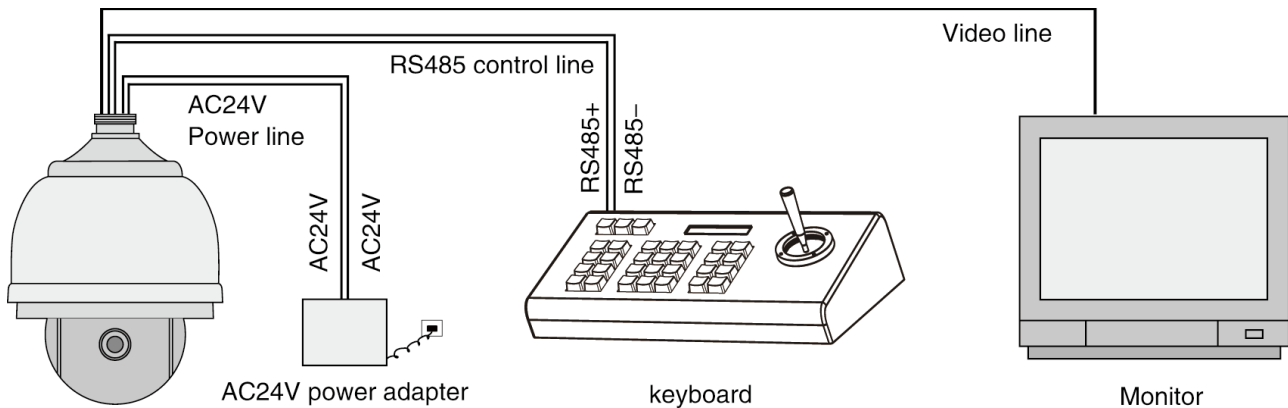
Step 5: connect 485 port of dome controller (keyboard, DVR, etc.) to RS485 port of dome by twisted pair. Be careful not to reverse the electrode of RS485 line

Step 6: connect video output port of dome to video input port of monitor by video line

Step 7: connect AC24V specified power adapter to dome power input line

Step 8: carefully check the above wiring whether correct or not, after confirmed please electrify power

adapter, test basic functions of dome. Wiring method please refers to [<4.3 External wiring chart>](#) section and [\[Figure 6\]](#). Test method please refers to [<7 Basic operation>](#) section's introduction



[Figure 6]

**Note:** If test is normal, the next work can be continued; if test is abnormal, please check circuit and each setting.

### 5.3 Connect dome to bracket

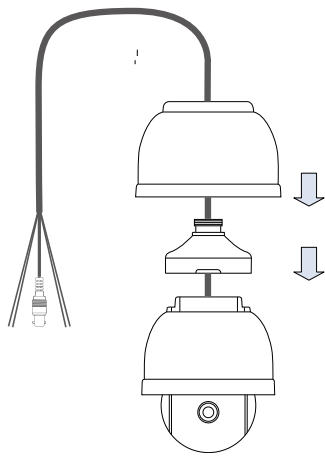
Step 9: test finished, cut off power line, RS485 line and video line

Step 10: upside down dome and uprightly put it on foam sponge (transparent cover downward), as shown in [\[Figure 7\]](#)



[Figure 7]

Step 11: install top-cap and outer housing: put dome connection line through top-cap and outer housing, and put top cap and outer housing onto dome body, as shown in [\[Figure 8\]](#).



[Figure 8]

Step 12: align 3 screw holes of top cap, outdoor housing and dome body, and then fasten 3 screws M4\*25, as shown in [\[Figure 9\]](#).



[Figure 9]

Step 13: put dome connection line through the hollow tube of bracket, as shown in [\[Figure 10\]](#). (Please check if there is remains inside the tube first before)



[Figure 10]

Step 14: connect bracket port to dome port, fasten 3 screws M4\*14, as shown in [\[Figure 11\]](#).



[Figure 11]

## 5.4 Install dome to wall

Step 15: select installation position and confirm this position having sufficient payload capacity (no less than 4 times weight of dome), draw 4 holes on the wall for installation, fix dome on the wall with expansion bolt (offered by user)

Step 16: installation finished, connect dome connection line to the relevant lines.

## 6 PTZ control protocol, baud rate and address codes setting

The dome's baud rate and protocol and address code should be ensured accordance with the settings of user's operating system (e.g. control keyboard, DVR, etc.).

Via the setting of dial switcher lied inside of dome top-cap can set baud rate, protocol and address code (suggested using tweezer to adjust dial switcher). Dial switcher position shown in [<4.4 Communication board diagram>](#)

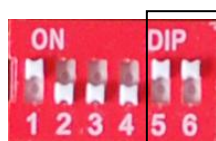
### 6.1 PTZ control protocol setting (1-4 digits of SW1 dial switcher)



1=ON; 0=OFF

Protocols	Dial Switcher(SW1)			
	1	2	3	4
PELCO—D	0	0	0	0
PELCO—P	1	0	0	0
ALEC	1	1	0	0
KALATEL	0	0	1	0
LILIN	1	0	1	0
VICON	0	1	1	0
Panasonic	1	1	1	0
DAHUA	0	0	0	1
Santachi	1	0	0	1
Philips	0	1	0	1
AD	1	1	0	1
Reserved	0	0	1	1
Reserved	1	0	1	1
Reserved	0	1	1	1
Reserved	1	1	1	1

### 6.2 Baud rate setting (5-6 digits of SW1 dial switcher)



1=ON; 0=OFF

Baud Rate	Dial Switcher(SW1)	
	5	6
1200BPS	0	0
2400BPS	1	0
4800BPS	0	1
9600BPS	1	1

### 6.3 Address code setting (1-8 digits of SW2 dial switcher)



1=ON; 0=OFF

Address Number	ID(SW2) 12345678	Address Number	ID(SW2) 12345678	Address Number	ID(SW2) 12345678	Address Number	ID(SW2) 12345678
1	10000000	33	10000100	65	10000010	97	10000110
2	01000000	34	01000100	66	01000010	98	01000110
3	11000000	35	11000100	67	11000010	99	11000110
4	00100000	36	00100100	68	00100010	100	00100110
5	10100000	37	10100100	69	10100010	101	10100110
6	01100000	38	01100100	70	01100010	102	01100110
7	11100000	39	11100100	71	11100010	103	11100110
8	00010000	40	00010100	72	00010010	104	00010110
9	10010000	41	10010100	73	10010010	105	10010110
10	01010000	42	01010100	74	01010010	106	01010110
11	11010000	43	11010100	75	11010010	107	11010110
12	00110000	44	00110100	76	00110010	108	00110110
13	10110000	45	10110100	77	10110010	109	10110110
14	01110000	46	01110100	78	01110010	110	01110110
15	11110000	47	11110100	79	11110010	111	11110110
16	00001000	48	00001100	80	00001010	112	00001110
17	10001000	49	10001100	81	10001010	113	10001110
18	01001000	50	01001100	82	01001010	114	01001110
19	11001000	51	11001100	83	11001010	115	11001110
20	00101000	52	00101100	84	00101010	116	00101110
21	10101000	53	10101100	85	10101010	117	10101110
22	01101000	54	01101100	86	01101010	118	01101110
23	11101000	55	11101100	87	11101010	119	11101110
24	00011000	56	00011100	88	00011010	120	00011110
25	10011000	57	10011100	89	10011010	121	10011110
26	01011000	58	01011100	90	01011010	122	01011110
27	11011000	59	11011100	91	11011010	123	11011110

28	00111000	60	00111100	92	00111010	124	00111110
29	10111000	61	10111100	93	10111010	125	10111110
30	01111000	62	01111100	94	01111010	126	01111110
31	11111000	63	11111100	95	11111010	127	11111110
32	00000100	64	00000010	96	00000110	128	00000001

129	10000001	161	10000101	193	10000011	225	10000111
130	01000001	162	01000101	194	01000011	226	01000111
131	11000001	163	11000101	195	11000011	227	11000111
132	00100001	164	00100101	196	00100011	228	00100111
133	10100001	165	10100101	197	10100011	229	10100111
134	01100001	166	01100101	198	01100011	230	01100111
135	11100001	167	11100101	199	11100011	231	11100111
136	00010001	168	00010101	200	00010011	232	00010111
137	10010001	169	10010101	201	10010011	233	10010111
138	01010001	170	01010101	202	01010011	234	01010111
139	11010001	171	11010101	203	11010011	235	11010111
140	00110001	172	00110101	204	00110011	236	00110111
141	10110001	173	10110101	205	10110011	237	10110111
142	01110001	174	01110101	206	01110011	238	01110111
143	11110001	175	11110101	207	11110011	239	11110111
144	00001001	176	00001101	208	00001011	240	00001111
145	10001001	177	10001101	209	10001011	241	10001111
146	01001001	178	01001101	210	01001011	242	01001111
147	11001001	179	11001101	211	11001011	243	11001111
148	00101001	180	00101101	212	00101011	244	00101111
149	10101001	181	10101101	213	10101011	245	10101111
150	01101001	182	01101101	214	01101011	246	01101111
151	11101001	183	11101101	215	11101011	247	11101111
152	00011001	184	00011101	216	00011011	248	00011111
153	10011001	185	10011101	217	10011011	249	10011111
154	01011001	186	01011101	218	01011011	250	01011111
155	11011001	187	11011101	219	11011011	251	11011111
156	00111001	188	00111101	220	00111011	252	00111111
157	10111001	189	10111101	221	10111011	253	10111111
158	01111001	190	01111101	222	01111011	254	01111111
159	11111001	191	11111101	223	11111011	255	11111111
160	00000101	192	00000011	224	00000111		

**Notes: when this series integrated dome cameras matches with matrix server / keyboard and other suchlike controlling devices, address code maybe disaccorded with some of matrix switchers / keyboards one-to-one. Details refer to the devices instructions.**

## 7 Basic operation

- **Preparation**  
Set dome ID, baud rate and control protocol at dial switchers; Connect video line, control line and power line well.
- **Power-on for self test**  
After powered on 1 second, dome rightward turns self-test. Lasting 10~20 seconds, screen displays “INIT OK” after self-test finished and normal work begins. (No reacting to any command of keyboard during self-test); Next, if menu has set “power on action” (details in full-functional menu instructions), dome will carry out relevant commands.
- **Manually control dome full directions rotation**  
After selecting a dome, you can manually control dome rotation (up/down/right/left) by joystick on keyboard. Joystick lead dome rotating with three kinds of moving: up-down, left-right, diagonal line.
- **Preset position setting (#1~#64; #101~#255)**  
Step by the below (keyboard as instance of control device):  
Step 1: Use number key of keyboard input camera number of preset position, press [CAMERA] key to select camera.  
Step 2: Operate joystick, zoom key, focus key to adjust camera’s image.  
Step 3: Input specified preset number, press [SET] key to save preset parameters.
- **Call preset positions (#1~#64; #101~#255)**  
The follow steps show how to view these presets (keyboard as instance of control device):  
Step 1: Use number key of keyboard input camera number of the called, press [CAMERA] key to select camera.  
Step 2: Input number of preset position of the called, press [CALL] key, camera turns to the specialized position. Lens zoom, focus and iris auto convert to the preset parameters.

## 8 Full functional menu instructions

### 8.1 IR high speed dome command list

**Notes:** “☒” means this function Available; “ NA ”means Not Available

Presets Number	Control Content	Call Presets	Set Preset
65	First route (Sequential scan of #1~# 16 presets)	☒	NA
66	Second route (Sequential scan of #17~# 32 presets)	☒	NA
67	Third route (Sequential scan of #33~# 48 presets)	☒	NA
68	Fourth route (Sequential scan of #49~# 64 presets)	☒	NA
69	Fifth route (Sequential scan of #101~# 127 presets)	☒	NA
70	All presets with sequential scanning	☒	NA
80	Display information on screen	Off	On

85	View the version of dome	↔	NA
87	PATTERN tour track record	End	Start
88	Privacy mask setting	End	Start
89	Delete single privacy mask zone (one click)	↔	NA
90	Delete all privacy mask zones (double confirm)	↔	NA
91	Back to Factory Settings (specific integrated camera needed)	↔	↔
92	Full functional menu	Exit	Enter
93	Exit & save settings to memory (powered-off restore)	↔	NA
94	Delete single preset (double confirm)	↔	NA
95	Delete all presets (double confirm)	↔	NA
96	AUTO point-to-point scanning ※	Run scan	Starting point of scan
97	AUTO point-to-point scanning ※	↔	Ending point of scan
98	Dome inner temperature	↔	NA
99	Set “compass”	NA	↔
100	Alarm unset	↔	NA

※**Note:** Point-to-point auto scan (AUTO SCAN)

Set preset #96 as the starting point of point-to-point scan, and set preset #97 as the ending point. Call preset #96 to run point-to-point scan. If starting or ending point is not defined, in scanning, monitor will display “INVALID” and requires set them again.

## 8.2 Menu operation

**Set #92 preset** and enter full-functional interactive OSD, screen will display main menu (first level menu) Upping or downing (or press **[ZOOM+]/[ZOOM-]** key) joystick to change the selected menu items

Each menu item’s state value is in right side to it (each item’s factory setting showing in [<Appendix 1 Menu value of factory setting >](#)). For the items switched as ON/OFF, joystick rightward (or pressing **[NEAR]** key) means switching value to ON; joystick leftward (or pressing **[FAR]** key) means switching value to OFF; the function WDR needs support of specified camera.

**Any setting about item’s state-value will instantly take effect & carry out, but before calling #93 preset (details in “main menu” instruction), it is not saved to memory.**

**Whenever as soon as input command for calling #92 preset, system will give up the modification on menu item data with power-off preserve**

**Whenever as soon as input command for calling #93 preset, system will set the modification on menu item data with power-off preserve**

### 8.2.1 CAMERA 1---- Camera option 1

- 1) **AUTO ICR (IR CUT filter auto switch):** joystick rightward (or pressing **[NEAR]** key) switches filter to ON, then camera will auto judge the luminance condition, control IR CUT filter switching

camera between color mode and B/W mode; joystick leftward (or pressing **[FAR]** key) switches IR CUT filter to OFF

- 2) **ICR (IR Cut filter manual switch):** only when AUTO ICR is OFF, this function will take effect. Rightward joystick (or press **[NEAR]** key) to switch to ON, then no matter what luminance condition is, B/W mode will be opened enforcedly; joystick leftward (or press **[FAR]** key) to switch to OFF
- 3) **WDR (wide dynamic range):** Rightward joystick (or press **[NEAR]** key) to switch to ON; joystick leftward (or press **[FAR]** key) to switch to OFF. (Note: This option is valid specifically for wide dynamic camera module)
- 4) **D-ZOOM (digital zoom):** rightward joystick (or press **[NEAR]** key) to switch to ON, then camera opens digital zoom enlargement function; joystick leftward (or press **[FAR]** key) to switch to OFF, then camera closes digital zoom enlargement function, only controlling optical zoom
- 5) **AF (auto focus mode):** rightward joystick (or press **[NEAR]** key) to switch to ON (auto focus); joystick leftward (or press **[FAR]** key) to switch to OFF (manual focus, only for the cases demanding precise manual focusing)
- 6) **BLC (backlight compensation):** rightward joystick (or press **[NEAR]** key) to switch to ON; joystick leftward (or press **[FAR]** key) to switch to OFF
- 7) **AWB (auto white balance):** leftward/rightward joystick (or press **[FAR]/[NEAR]** key) to switch state value of menu item (i.e., auto/indoor/outdoor/ATW/manual and suchlike AWB modes)
- 8) **COLOR:** rightward joystick (or press **[NEAR]** key) to switch to ON (open, the camera is in color mode); joystick leftward (or press **[FAR]** key) to switch to OFF (the camera is in B/W mode)

### 8.2.2 CAMERA 2-----camera option 2

- 9) **FLIP (Image flip up and down):** rightward joystick (or press **[NEAR]** key) to switch to ON (the image will flip to reverse display); joystick leftward (or press **[FAR]** key) to switch to OFF. When FLIP state value of menu item is ON, the DIR DISP (direction display) will be impacted, “east, west” displayed reversely
- 10) **MIRROR (Image mirror left/right):** rightward joystick (or press **[NEAR]** key) to switch to ON (the image will mirror after left/right reversing); joystick leftward (or press **[FAR]** key) to switch to OFF
- 11) **AE (auto exposure):** rightward joystick (or press **[NEAR]** key) to switch to ON; joystick leftward (or press **[FAR]** key) to switch to OFF (manual shutter, only for the cases demanding shutter speed setting by manual)
- 12) **M.SHUT (manual shutter speed):** only when AE mode is OFF (manual shutter), this function will take effect; leftward/rightward joystick (or press **[FAR]/[NEAR]** key) to switch state value of menu item (i.e. use different shutter speed)
- 13) **NEG (negative):** rightward joystick (or press **[NEAR]** key) to switch to ON (the image is negative invert effect); joystick leftward (or press **[FAR]** key) to switch to OFF

- 14) **FREEZE (Image freezing):** rightward joystick (or press **[NEAR]** key) to switch to ON (image is frozen); joystick leftward (or press **[FAR]** key) to switch to OFF (cancel image freezing)

### 8.2.3 DOME-----Dome function options

- 15) **AUTO FLIP (180° auto flip):** rightward joystick (or press **[NEAR]** key) to switch to ON (when dome turns to vertical 90°, it will auto flip 180° and then continue to track object); joystick leftward (or press **[FAR]** key) to switch to OFF.

- 16) **PRO SPEED (proportional speed-down):** rightward joystick (or press **[NEAR]** key) to switch to ON (dome's max speed downs as focus zooms in, so as to capture object exactly); joystick leftward (or press **[FAR]** key) to switch to OFF.

- 17) **IDLE (idle action setting):** this menu authorizes user to customize the idle activities of dome as it has no task for a period time. Leftward/rightward joystick (or press **[FAR]/[NEAR]** key) to switch state value of menu item

NONE: No action

PRESET 1: Turn to #1 preset (original position)

AUTO: Run point-to-point auto scanning

SEQUENCE 1: Run #1 presets tour

PATTERN 1: Run #1 pattern scan tour

- 18) **POWER UP (power up action setting):** this menu authorizes user to define dome how acts after electrified self-test over. Leftward/rightward joystick (or press **[FAR]/[NEAR]** key) to switch state value of menu item

NONE: No action

PRESET 1: Turn to #1 preset (original position)

AUTO: Run point-to-point auto scanning

SEQUENCE 1: Run #1 presets tour

PATTERN 1: Run #1 pattern scan tour

In order to ensure auto running customized actions in next power up, it must call #93 preset commands to exit menu and save settings

- 19) **DIR DISP (direction display):** for dome's first time power up, it should be finished "set compass" operation at first (make dome turn to true south, then set #99 preset). Select this menu, rightward joystick (or press **[NEAR]** key) to switch to ON, then lower-part screen displays which the real direction dome directs to horizontally (to ensure practical efficiency, this series domes display directions instead of the longitude and latitude, including E-true east / SE-south east / S-south / SW-south west / W-true west / NW-north west / N-true north / NE-north east); joystick leftward (or press **[FAR]** key) to switch to OFF.

- 20) **DIR RUN (directional running):** for dome's first time power up, it must finish "set compass" operation at first (make dome turn to true south, then set #99 preset). Select this menu, leftward/rightward joystick (or press **[FAR]/[NEAR]** key) to switch to define state value of menu item (i.e. the direction demanded to dome: E-true east / SE-south east / S-south / SW-south west / W-true west / NW-north west / N-true north / NE-north east).

- 21) **DIR GO (go directional running):** select “ON” and exit menu, dome will instantly run to aimed direction; rightward joystick (or press **[NEAR]** key) to switch to ON; Joystick leftward (or press FAR) to switch to OFF

#### 8.2.4 PATTERN-----Pattern scan

- 22) **PATTERN NO. (set number for pattern tour):** select this menu item, leftward/rightward joystick (or press **[FAR]/[NEAR]** key) to switch to define state value of menu item (i.e. #1/#2/#3/#4/#5/#6)
- 23) **PATTERN GO (start pattern scan):** select “ON” and exit menu(call #92 preset), then dome will instantly run the pattern tour of the selected numbers (i.e. the current value of PATTERN NO.); rightward joystick (or press **[NEAR]** key) to switch to ON; Joystick leftward (or press **[FAR]** key) to switch to OFF

##### **Explain 1: how to set the pattern tour:**

Step 1: Enter menu item, set PATTERN NO. (Number of pattern tour);

Step 2: Exit menu;

Step 3: Set #87 preset, start to record pattern tour, in the lower screen display “00X PATTERN” (“X” refers to the current pattern tour number, e.g. displaying “001 PATTERN” means that the #1 pattern tour’s setting is undergoing). The recordable pattern actions include pan or tilt rotation, zooming and calling presets.

Step 4: Call #87 preset, then the lower screen display “PATTERN”, which means the recording of pattern scan has finished

##### **Explain 2: how to delete pattern tours:**

Enter menu item, set “PATTERN NO. (Number of pattern tour)” as the wanted number for deleting;

Exit menu;

Set #87 preset, directly call #87 preset and delete it, not need any pan or tilt rotating, zooming or calling presets.

#### 8.2.5 PRIVACY MASK-----Intelligent privacy mask

- 24) **PRIVACY NO. (set numbers for privacy zone):** select this menu item, leftward/rightward joystick (or press **[FAR]/[NEAR]** key) to switch to define state value of menu item (available numbers: #1/#2/#3)
- 25) **PRIVACY # (activate privacy zone):** this item allows user to set whether or not activate the defined privacy zones. Rightward joystick (or press **[NEAR]** key) to switch to ON; Joystick leftward (or press **[FAR]** key) to switch to OFF

(Note: once set any effective privacy zone, PRIVACY will auto set as *ON*, at this moment it is still available to enter menu and manually set PRIVACY as *OFF*; however once call #90 preset with confirming step and delete all privacy zones, PRIVACY will auto set as *OFF*)

##### **Explain 1: Set privacy zone (odd number zone is blue; even number zone is red)**

Step 1: Enter menu item, set wanted number as “PRIVACY NO. (Number of privacy zone)”;

Step 2: Exit menu;

Step 3: Set #88 preset, start to record pattern tour, in the lower screen display “00X MASK” (“X” refers to the current privacy zone number, e.g. displaying “001 PRIVACY” means that the #1 privacy zone’s setting is undergoing). Move image up/down/left/right with joystick, move wanted image part to the under of privacy zone, adjust privacy zone size (TELE for wider; WIDE for narrower; FAR for higher; NEAR for shorter) to proper degree (to ensure effect, usually set the size of privacy zone as 1.5 times that of the covered part)

Step 4: Call #88 preset, then “00X MASK” (at the lower part screen) disappears, which means the settings of privacy zone have been saved completely.

### **Explain 2: delete privacy zones one by one**

Step 1: Enter menu item, set “PRIVACY NO. (Number of privacy zone)” as the wanted number for deleting;

Step 2: Exit menu;

Step 3: Call #89 preset.

### **Explain 3: delete all privacy zones**

Call #90 preset, lower part screen display “DEL ?”; call #90 preset again within 5 seconds to confirm deleting, then display “DEL OK” and be able to delete all privacy zones by one-click.

## **8.2.6 AUTO SCAN-----Point-to-point scan**

- 26) S SPEED (set scan speed):** select this menu item, leftward/rightward joystick (or press **[FAR]/[NEAR]** key) to switch to define state value of menu item (i.e. speed level 1~8; the larger in number the faster in speed; level 4 as factory setting)
- 27) S STAY (set stay time of starting and ending point of scan):** select this menu item, leftward/rightward joystick (or press **[FAR]/[NEAR]** key) to switch to define state value of menu item (i.e. stay time 1~28 seconds; 2 seconds as factory setting)
- 28) AUTO GO (start point-to-point scan):** select “ON” and exit menu(call #92 preset), dome will instantly start point-to-point scan with the speed scheduled in “S SPEED”; rightward joystick (or press **[NEAR]** key) to switch to ON; Joystick leftward (or press **[FAR]** key) to switch to OFF.

## **8.2.7 360 SCAN-----360° continuously scan**

- 29) S SPEED (set scan speed):** select this menu item, leftward/rightward joystick (or press **[FAR]/[NEAR]** key) to switch to define state value of menu item (i.e. speed level 1~8; the larger in number the faster in speed; level 4 as factory setting)
- 30) DIRECTION (set the direction of 360° continuously scan):** select this menu item, leftward/rightward joystick (or press **[FAR]/[NEAR]** key) to switch to define state value of menu item (LEFT for leftward; RIGHT for rightward)

- 31) **SCAN GO (start 360° continuously scan):** select “ON” and exit menu(call #92 preset), dome will instantly start 360° continuously scan with the direction scheduled in “DIRECTION” and the speed scheduled in “S SPEED”

### 8.2.8 PRESET-----Stay time of presets

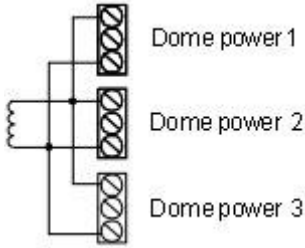
- 32) **P STAY (stay time of presets):** select this menu item, leftward/rightward joystick (or press **[FAR]/[NEAR]** key) to switch to define state value of menu item (i.e. stay time 1~28 seconds; 8 seconds as factory setting)
- 33) **UNI TIME (all presets use unified stay time in presets tour):** rightward joystick (or press **[NEAR]** key) to switch to “ON”; at this moment if run presets tour, each preset has unified stay time of current “P STAY” parameters; joystick leftward (or press **[FAR]** key) to switch to “OFF”; at this moment if run presets tour, each preset has different stay times of respective settings according to the demand for each. ※

※ **Note:** when the menu item “UNI TIME” is OFF, operations of setting each stay time are: first, enter menu, set “P STAY” value as the stay time wanted by #1 preset, exit menu, set #1 preset using keyboard or DVR; second, enter menu, set “P STAY” value as the stay time wanted by #2 preset, exit menu, set #2 preset using keyboard or DVR;.....similarly to other, thus set stay times for all presets. What to be noticed is that before running scan tour if UNI TIME is “ON”, all presets stay time are the current “P STAY” value, even though each preset stay time has been defined respectively according to above instructions. The defined stay times can auto restore as powered off.

### 8.2.9 IR control-----Manual control of IR intensity

- 34) **FINE IR CTRL (Fine control IR intensity):** this menu takes effect only when IR AUTO ON is “OFF”. Select this item, leftward/rightward joystick (or press **[FAR]/[NEAR]** key) to switch to define state value of menu item (i.e. IR intensity level 1~100; up or down one level each time; the number larger the IR intensity higher; select “0” to close IR completely)
- 35) **FAST IR CTRL (fast control IR intensity):** this menu takes effect only when IR AUTO ON is “OFF”. Select this item, leftward/rightward joystick (or press **[FAR]/[NEAR]** key) to switch to define state value of menu item (i.e. IR intensity level 1~100; up or down ten levels each time; the number larger the IR intensity higher; select “0” to close IR completely)
- 36) **IR AUTO ON (IR auto turns on in low illumination):** factory setting is “ON”. Rightward joystick (or press **[NEAR]** key) to switch to “ON”. In such case, IR auto turns on in low illumination, meantime enforcedly switches camera’s module to IR filter, and camera switches to B/W mode of night vision; leftward joystick (or press **[FAR]** key) to switch to OFF ( in such case, IR cannot auto turn on in low illumination, but need manually opening IR and switching camera to IR filter)

## 9 Troubleshooting

Troubles	Possible Reasons	Solutions
Powered on, but no reaction, no image and no indicator shining	Power line connection incorrect	Revise
	Power source damaged	Replace
	Power line contact poor	Remove poor contact
Powered on, self-test well, having image, but out of control	Dome address & baud-rate setting wrong	Reset dome address code & baud rate
	Protocol wrong	Revise
	RS485 line connection inverted or open-circuit	Check connection of RS485 control line
Fail to finish self-test, having image but with motor hums	Mechanical errors	Examine & repair machine
	Camera slope	Place well
	Power inadequate	Replaced with proper power supply, near to camera for better
Image Unstable	Video circuit contact poor	Remove poor contact
	Power inadequate	Replace
Image Vague	Focus by manual	Operate dome or call any preset position
	Dome shell dirty	Clean shell
A dome stop control failed or delayed	Dome power inadequate	Replaced with proper power supply, near to camera for better
	Check whether controlling-resistance of farthest dome is added	Add proper resistance (100Ω~140Ω) for farthest dome
	Distance overlong, 485 signal fading greatly	Replaced by thicker diameter control line
	485 converter drive inadequate	Replaced by RS485 converter with power driver
Switch image with vertical rolling on monitor	Camera phase wrong	<p>If one power line links multiple domes (centralized power supply), one end of 24V AC connector of dome should be linked to one end of 24V AC connector of power supply; similarly to the other end linking</p> 

# 10 Maintenance

## 1) Please accord to operating environments.

## 2) Do not let camera direct to strong light objects.

No matter in working or not working, camera must not direct to the sun and other objects with strong light. Otherwise, CCD maybe damaged permanent.

## 3) Electric safety, lightning proof, surge proof

In process of using this products, should accord to each item of electric safety criteria. Dome and signal line must be at least 50 meters away from high voltage equipments & lines. If it is hard to meet the above requirements, please adopt steel tube to wrap signal line, besides set some grounding for steel tube;

This product adopts TVS lightning proof skill which can prevent equipments being destroyed by under  $\pm 4000V$  lightning strike, surge and other suchlike pulse signals.

## 4) Transparent cover cleaning

In order to ensure dome image clear, transparent cover should timely cleaned. When cleaning, we should only hold outer ring of transparent cover, but not directly touch the cover, otherwise acid sweat will erode the cladding material of glass surface, moreover other rigid substance can also scratch the cover, causing image vague. So you'd better use soft enough materials (i.e. dry cloth), as for serious stains, both neutral detergent and other high-quality personal detergents are suitable.

## 5) Careful transport

Transport & storage process should avoid heavy press, intense shock and soak. This product should adopt integrated packing transport, no matter dealer's shipping or return to plant repairing, the damage caused by transport method is beyond guaranty range.

## 6) Careful installation

Transparent cover belongs to advanced optical products, should avoid be directly touched to scratch surface and harm image quality. Before thorough installation please do not power on.

## 7) Do not disassemble

Inner dome there is no DIY repaired components. The repair work must be finished by our technical staff.

# 11 Specifications

## Note:

1) The IR IED of BN-5606xHIR3 series IR high speed dome is made in Japan

2) The IR IED of BN-5606xHIR4 series IR high speed dome is made in Taiwan

Models	BN-5606DHIR3	BN-5606AHIR3	BN-5606CHIR3	BN-5606XHR3	BN-5606YHIR3 (WDR)	BN-5606GHIR3 (WDR)
	BN-5606DHIR4	BN-5606AHIR4	BN-5606CHIR4	BN-5606XHR4	BN-5606YHIR4 (WDR)	BN-5606GHIR4 (WDR)
Image Sensor	1/4" Super HAD CCD	1/4" Ex-view HAD CCD	1/4" SONY Super HAD II CCD	1/4" Ex-view HAD CCD	1/4" Ex-view HAD CCD	1/4" Double Density Interline Transfer CCD
Effective Pixels	500×582(H×V)	752×582(H×V)	752×582(H×V)	752×582(H×V)	752×582(H×V)	752×582(H×V)
Horizontal Resolution	420 TV lines	480 TV lines	Color: 600 TV lines B/W: 650 TV lines	480 TV lines	530 TV lines	Color: 550 TV lines B/W: 680 TV lines
Optical Zoom	22X, f=3.9~85.8mm( F1.6-3.7)	22X, f=3.9~85.8mm( F1.6-3.7)	27X, f=3.6mm~97.2 mm(F1.4-3.0)	18X, f=4.1mm~73.8 mm(F1.4-3.0)	18X, f=4.1mm~73.8 mm(F1.4-3.0)	37X, f=3.5~129mm( F 1.6 to 3.9)
Digital Zoom	No	16X	10X	12X	12X	12X
Min. Illumination	Color: 0.5Lux B/W: 0.05Lux	Color: 0.1Lux, B/W: 0.01Lux	Color: 0.1Lux B/W: 0.001Lux	Color: 0.7Lux B/W: 0.002Lux	Color: 0.7Lux B/W: 0.002Lux	Color: 1Lux B/W: 0.1Lux
Day/night Switch	Auto (IR cut filter)					
IR Distance	BN-5606xHIR3 series: Max. 180~200 meters BN-5606xHIR4 series: Max. 150~170 meters					
S/N Ratio	>50dB					
Electronic Shutter	1/50~1/10,000s	1/50~1/30,000s	1/50 ~ 1/10,000s (8 levels)	1/1~1/10,000s(2 2 levels)	1/1~1/10,000s(2 2 levels)	Auto/Manual / A.FLK(1/120,00 0 ~ X256)
White Balance	AWC/Manual /Push Auto	ATW/AWC/Man ual/Indoor/Out door	ATW/Manual /Push Auto	ATW/AWC/Man ual/Indoor/Out door	ATW/AWC/Man ual/Indoor/Out door	ATW/AWC/Man ual/Indoor/Out door
Gain Control	Auto/Manual	Auto/Manual	Auto/Manual	Auto/Manual	Auto/Manual	Low/Middle/Hig h/Manual/Off
Backlight Compensation	ON/OFF	On/Auto/Super/ Off	Off, Low, Middle, High	ON/OFF	ON/OFF	WDR/BLC /HLC / OFF
WDR Function	No	No	With	No	With	With
Privacy Mask	No	No	ON/OFF (4	ON/OFF (32	ON/OFF (32	ON/OFF (8

			zones)	zones)	zones)	zones)
Video Output	BNC,1.0Vp-p,75Ω					
Pan Travel	0~360° endless					
Tilt Travel	0~90°					
Pan/tilt Speed	0.5°~240°/s (adjustable)					
Presets	219					
Address Range	1~255					
Preset Tours	6					
Pattern Tours	6					
Alarm Input	8(optional)					
Alarm Output	2(optional)					
Communication	RS485					
Power Supply	AC24V/5A					
Dimension	Φ278×334mm					
Weight	7kg					
Operating Temperature	-30°C~65°C					

## Appendix 1: Menu value of factory setting

Main Menu	Sub Menu	Factory Setting	Power Off Setting	Remarks
CAMERA				
	AUTO ICR	OFF	YES	
	ICR	OFF	YES	
	WDR	OFF	YES	
	D-ZOOM	ON	YES	
	AF	ON		
	BLC	OFF		
	AWB	AUTO		
	COLOR	ON		
	FLIP	OFF	YES	
	MIRROR	OFF		
	AE	ON		
	M.SHUT	06		
	NEG	OFF		
	FREEZE	OFF		
DOME				
	AUTO FLIP	OFF	YES	180°
	PRO SPEED	ON	YES	
	IDLE	PRESET 1	YES	
	POWER UP	NONE	YES	
	DIR DISP	OFF	YES	
	DIR RUN	S		
	DIR GO	OFF		
PATTERN				
	PATTERN NO.	1		
	PATTERN GO	OFF		
PRIVACY MASK				Intelligent privacy mask
	PRIVACY NO.	01		Privacy zone number setting
	PRIVACY	Changeable		Activate privacy zone (during power on, set as "ON" if privacy zone exists; otherwise set as "OFF" )
AUTO SCAN			Unsaved	Point-to-point scanning
	S SPEED	4		Scanning speed setting
	S STAY	02		Stay time setting of starting and ending point of scan
	AUTO GO	OFF		Start point-to-point scanning
360 SCAN			YES	360° continuously scanning

	S SPEED	4		Scanning speed setting
	DIRECTION	RIGHT		Direction setting of 360° continuously scanning
	SCAN GO	OFF		Start 360° continuously scanning
PRESET			YES	Stay time of presets
	P STAY	08		Stay time of presets
	UNI TIME	ON		Unified stay time of presets
IR CONTROL			YES	Control for IR intensity
	FINE IR CTRL	0	YES	Fine control for IR intensity
	FAST IR CTRL	0		Fast control for IR intensity
	IR AUTO ON	ON		IR turns on in low illumination

## Appendix 2: Alarm Input/Output

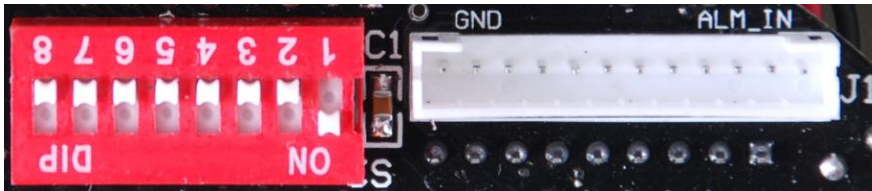
### 1) Alarm line connection

Alarm line connection please refers to [<4.3 Communication board diagram>](#)

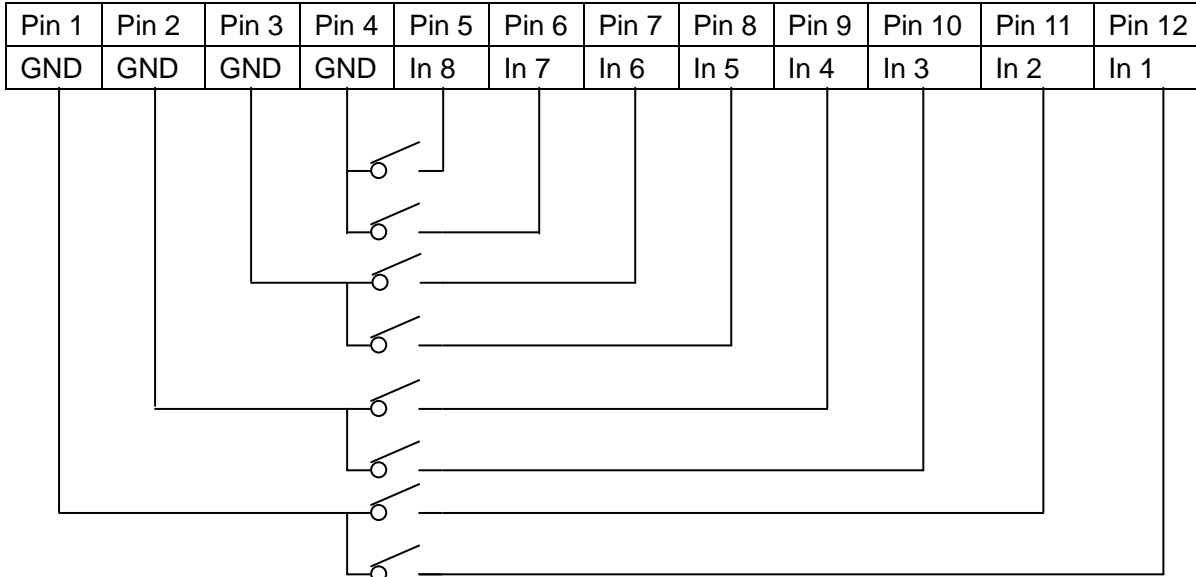
### 2) Alarm function description

This high speed dome can optionally work with 8-channel alarm input and 2-channel alarm output, as the alarm detector linked with dome's alarm-in connector appears alarm, dome will react and turns to relevant presets, meanwhile, 2 channels relays will output alarm drive signal of switching value. #101~#108 preset separately match with #1~#8 alarm input; e.g., as soon as dome receives #1 alarm input, it will auto link to #101 preset, likewise for others points. When alarm input event is coped over, calling #100 preset, alarm output relay will restore to normal status, closing alarm output drive signal.

### 3) Alarm input definition of communication board



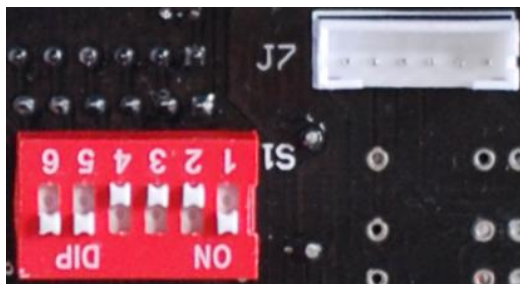
J1 on main control board (from left to right):



Alarm input instructions:

Please connect lines according to the above diagram for wiring; wrong wiring may cause device fail to receive data or even burnt down. The inputted signal is the switch signal which will activate warning as soon as switch closes.

### 4) Alarm output definition of communication board



J7 on main control board (from left to right):

Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6
K2	C2	B2	K1	C1	B1

Note: (NO: normal on; NC: normal close)

B1: NC of alarm output 1

C1: COM of alarm output 1

K1: NO of alarm output 1

B2: of alarm output 2

C2: of alarm output 2

K2: of alarm output 2

## Appendix 3: Wires suggested

### 1) 24V power line distance & requirements:

Diameter of Line	0.5mm <sup>2</sup> (20 #)	1.0mm <sup>2</sup> (18 #)	1.5mm <sup>2</sup> (16 #)	2.5mm <sup>2</sup> (14 #)
120W Power-supply (outdoor dome)	10m(37ft)	18m(60ft)	28m(95ft)	45m(152ft)

### 2) Video cable requirements:

Cable Models	Max. Distance
75-2	150 meters
75-3	≈200 meters
75-4	≈270 meters
75-5	370 meters
75-7	≈500 meters
75-9	≈680 meters

Notes: same model cables have differences by manufacturers, above numbers are the commons.