

**ScanDome™III Dome Camera**  
HSDC-251N/P, HSDC-231N/P

**Operation & Programming Manual**



*Please read this manual thoroughly before use and keep it handy for future reference.*

Rev.060210

# Warnings and Cautions

## WARNING

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE. DO NOT INSERT ANY METALLIC OBJECTS THROUGH THE VENTILATION GRILLS OR OTHER OPENINGS ON THE EQUIPMENT.

## CAUTION



## EXPLANATION OF GRAPHICAL SYMBOLS



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instruction in the literature accompanying the product.

## FCC COMPLIANCE

**FCC INFORMATION:** THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS A DIGITAL DEVICE, PURSUANT TO PART 15 OF THE FCC RULES. THESE LIMITS ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST HARMFUL INTERFERENCE WHEN THE EQUIPMENT IS OPERATED IN A COMMERCIAL ENVIRONMENT. THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS. OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE IN WHICH CASE THE USER WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT HIS OWN EXPENSE.

**CAUTION:** CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

THIS CLASS A DIGITAL APPARATUS COMPLIES WITH CANADIAN ICES-003.  
CET APPAREIL NUMÉRIQUE DE LA CLASSE A EST CONFORME À LA NORME NMB-003 DU CANADA.

## CE COMPLIANCE STATEMENT

**WARNING**

THIS IS A CLASS A PRODUCT. IN A DOMESTIC ENVIRONMENT THIS PRODUCT MAY CAUSE RADIO INTERFERENCE IN WHICH CASE THE USER MAY BE REQUIRED TO TAKE ADEQUATE MEASURES.

## IMPORTANT SAFEGUARDS

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Unplug this apparatus during lightning storms or when unused for long periods of time.
13. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as when the power-supply cord or plug has been damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
14. CAUTION - THESE SERVICING INSTRUCTIONS ARE FOR USE BY QUALIFIED SERVICE PERSONNEL ONLY. TO REDUCE THE RISK OF ELECTRIC SHOCK DO NOT PERFORM ANY SERVICING OTHER THAN THAT CONTAINED IN THE OPERATING INSTRUCTIONS UNLESS YOU ARE QUALIFIED TO DO SO.
15. Use Certified/Listed Class 2 power supply transformer only.

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# Chapter 1 — Introduction

## 1.1 Features

The **ScanDome**™III dome camera features a high resolution **ExView HAD CCD**<sup>\*)option</sup> imager for enhanced lowlight sensitivity. User friendly, on-screen pull-down menus and short-cuts make it easy to setup and program functions.

System information aides trouble shooting by displaying the hardware and software version of the dome driver, baud rate, and protocol.

- Built-in 23x or 25x times optical power zoom camera.  
True Night Shot function with ExView HAD and IR cut filter removal mechanism
- 248 **Presets** programmed with view direction, zoom, BLC, BMB.
- 4 **Patterns** record and play back user preference of surveillance path up to 240 sec.
- 16 **Scans** : 8 speed steps from slow to medium panning with smooth **DiagonalScan**.
- 8 **Tours** : Each tour consists up to 64 **Preset, Pattern, Scan** and other **Tours**.  
Tour can be expanded up to 500 different functions using nested **Tours**.  
Smooth **DiagonalScan** mode and programmable Individual dwell time camera functions.  
(Speed, Dwell time, BLC, BMB, Focus, IRIS of the preset)
- 8 Alarm inputs with 0~8 priority / 2 Auxiliary outputs programmable NC & NO.
- 8 **Privacy Zones** : Video off or up to 8 masked blocks and 8 mask color selectable
- 64 steps of variable speed from 0.1°/sec to 90°/sec.  
Max manual speed 360°/sec with **Turbo** key pressed, **Preset** speed is 380°/sec.  
Minimum adjustable angle is 0.0375° with **SingleStep** move function.
- Programmable user preferences of speed (Slow, Medium, Fast).
- Addressable up to 999 camera **IDs** (Extendable up to 3999 in factory mode).
- Built-in RS-485/422 receiver driver.
- On-site software upgrade and upload/download of programmed data into the KBD/Dome.
- Built-in power-line surge protection and lightning protection.
- Capable of fail-safe Hot Swap.
- Optional Tinted Bubble, Indoor & Outdoor pendant housing with heater & blower, Indoor Flush Mount, Parapet mount & Roof Top mount.

## 1.2 Typical System Configuration

Additional ScanDome joystick controllers and a variety of external switching devices such as multiplexers(MUXes) and Digital Video Recorders (DVRs) may be incorporated to accommodate the needs from the small to large surveillance/security system. Figure 1 illustrates a small sample installation.

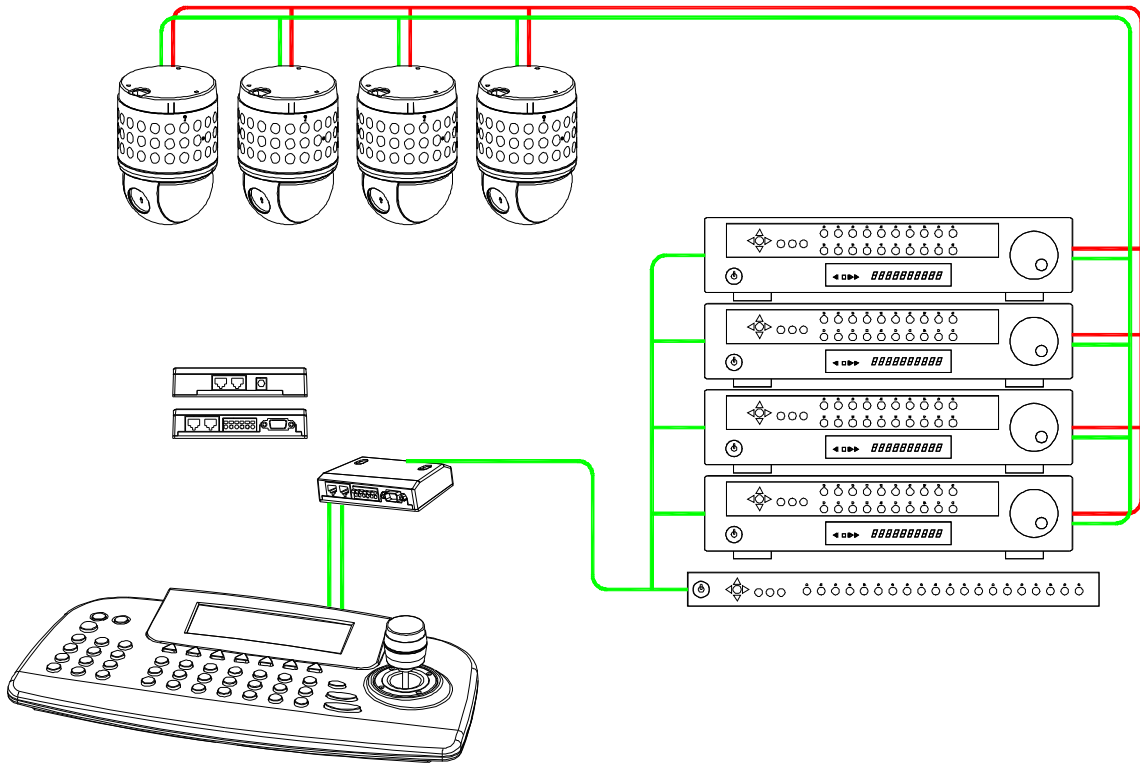


Figure 1 – Typical System Configuration



# Chapter 2 — Installation and Configuration

## 2.1 Unpacking the box

The package contains the following.

Quantity	Component
1	ScanDome™III (Dome Camera)
1	Instruction Manual (this document)
3	Assembly Screws for Attaching ScanDome
3	Plastic Anchor
1	3-Pin Connector
1	4-Pin Connector
2	8-Pin Cable Assembly
3	3-Bolt Spacer(Use for HSGN-502 and HSG-502F only)

## 2.2 Basic Configuration of ScanDome Camera System.

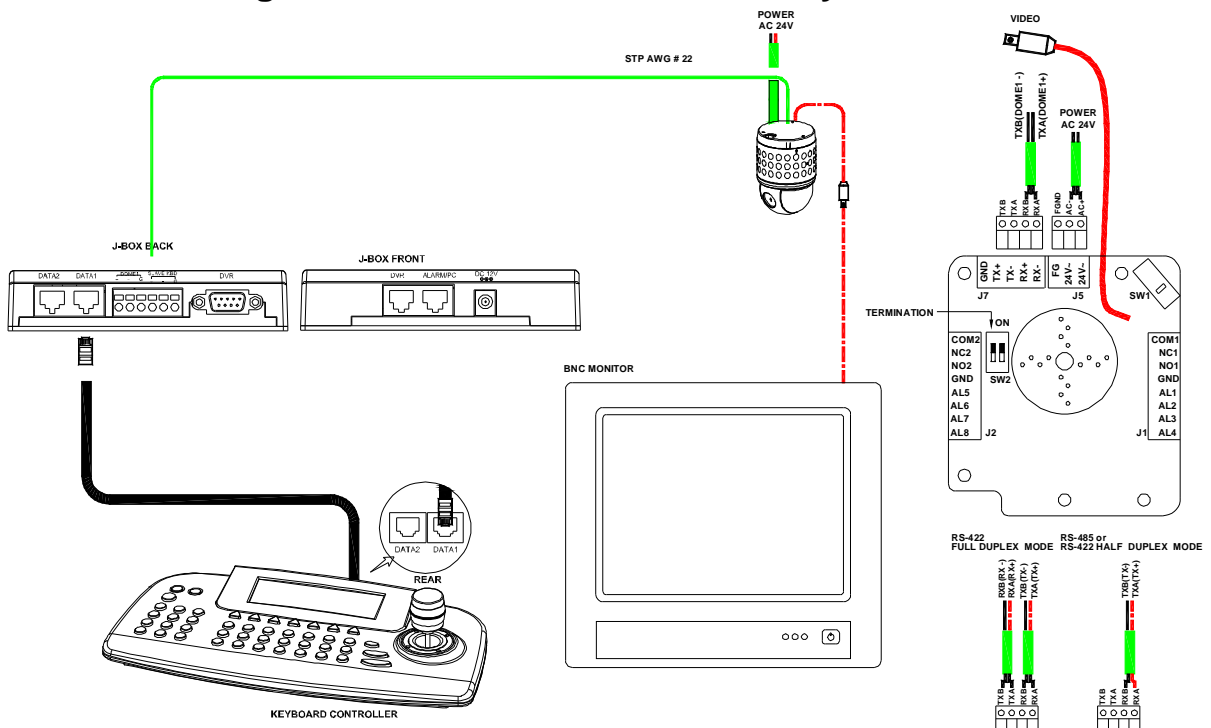
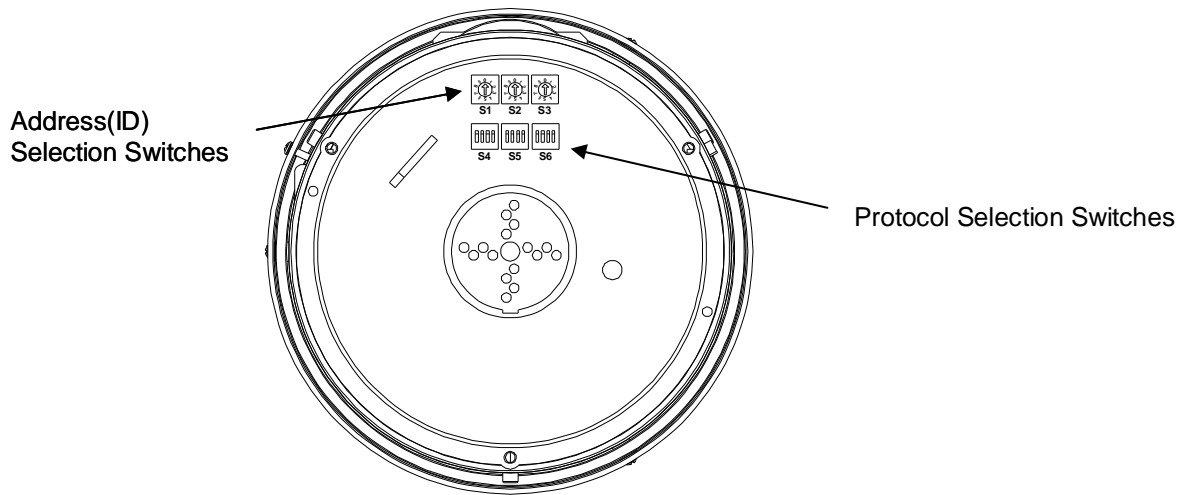


Figure 2 – Basic installation diagram

The dome camera must be installed by qualified service personnel. Before installing the dome camera system this instruction manual must be read thoroughly and understood fully. Dome cameras must be set up properly before starting the installation. This involves properly setting configuration switches. Figure 3 shows the location of these switches.

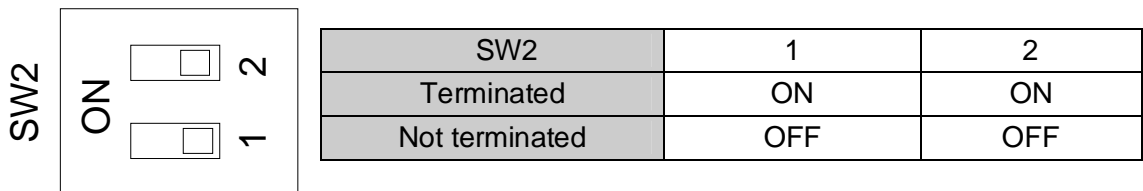


**Figure 3– Layout of Switches**

### 2.3 Principle of Termination

Every device which is connected at the end of the communication data line must be terminated by either DIP switch setting or appropriate devices such as a termination jumper to prevent potential control signal errors.

See Figure 4 for termination switch settings and Figure 5 for examples of devices requiring termination. Note : Total length of the cable for communication should not exceed 1.2Km.



**Figure 4– Setting Dome Camera Termination**

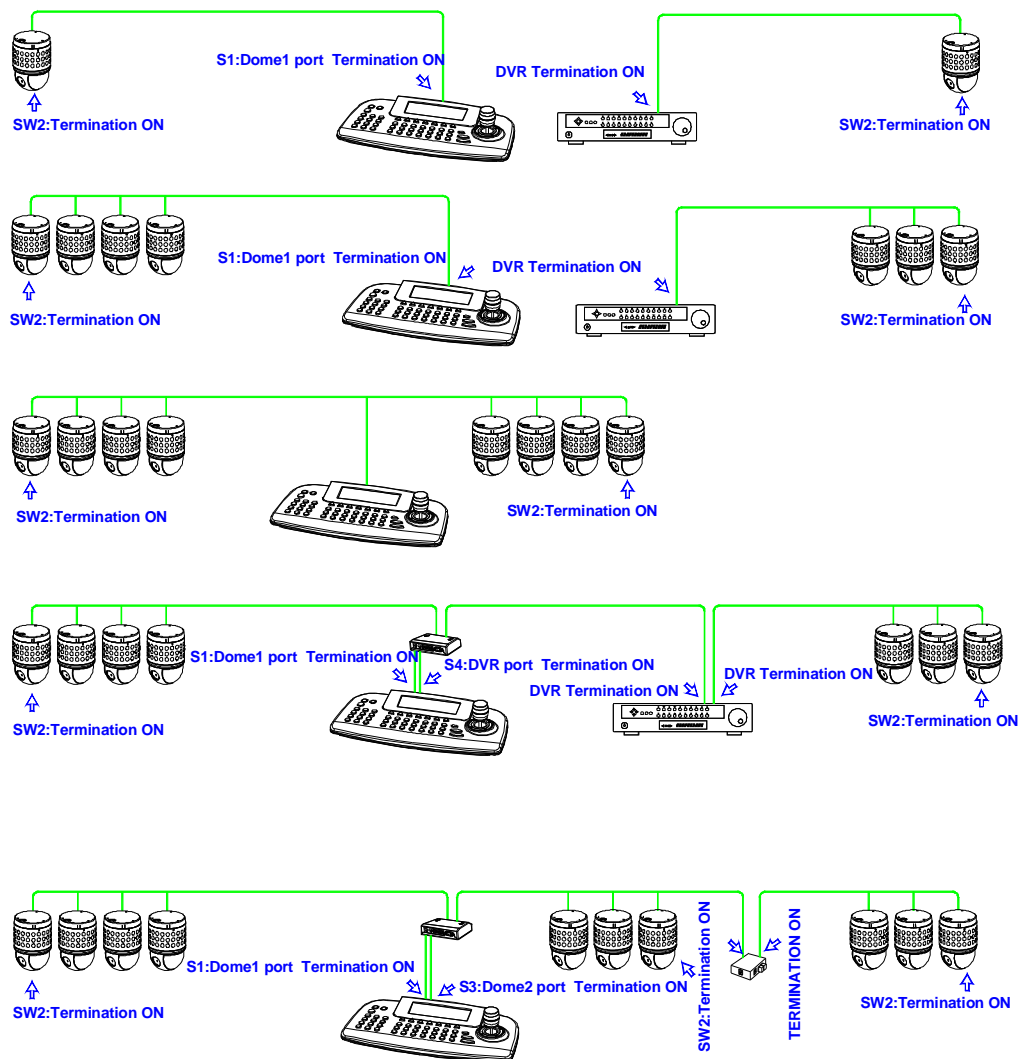


Figure 5- Termination Diagram

## 2.4 Dome Camera Address (ID)

Each dome camera must have a unique address (ID). Identical IDs on the same line may damage the control circuit caused by an electrical short. When installing multiple dome cameras or a DVR, it is recommended that the dome camera IDs be identical to the camera port of the DVR.

*Cam Port 1 = Dome ID1, Cam Port 2 = Dome ID 2 ... Cam Port 16 = Dome ID 16.*

*If more than 16 dome cameras are installed using two or more DVRs the following formula is useful to determine the Dome ID:  $ID = 16 \times (n-1) + m$  (where  $n$  = number of DVR,  $m$  = Camera Port)*

Refer to Figures 6 for setting the dome camera address (ID) and protocol selection.

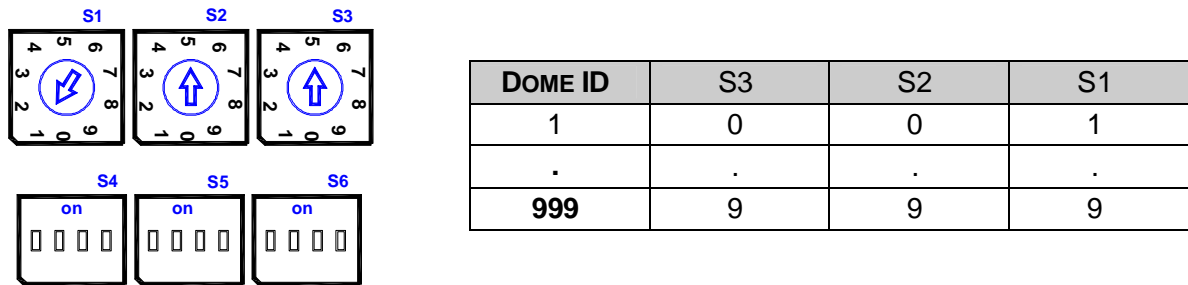


Figure 6– Setting Dome Camera Address (ID) and Protocol

## 2.5 Setting Protocols

A **ScanDome** camera is capable of negotiating with multiple protocols if the communication speed is matched (same baud rate i.e., 9600 bps). See Figure 7 for the appropriate protocol switch settings.

Note : Consult service personnel if a dome camera is installed with a device other than a **ScanDome Controller**.

Dip s/w	Function				
S4	D1	VIDEO	VIDEO		D1
	D2	COMM.	NTSC		Off
	D3	Camera	PAL		On
	D4		COMMUNICATION		D2
S5	D5	Protocol	RS- 422		On
	D6		RS- 485		Off
	D7		Camera	D3	D4
	D8		Default	Off	Off
S6	D9	Baud rate	RESERVED	On	Off
	D10		RESERVED	Off	On
	D11		RESERVED	On	On
	D12		RESERVED	On	On
	Baud rate	D9	D10	D11	
	2400 bps	Off	Off	Off	
	4800 bps	Off	Off	On	
	9600 bps	Off	On	Off	
	19200 bps	Off	On	On	
	38400 bps	On	Off	Off	
	57600 bps	On	Off	On	
	Protocol	D5	D6	D7	D8
	S2/E,PL,ER,PH(No)	Off	Off	Off	Off
	S2/E,PL,ER,PH(Even)	On	Off	Off	Off
	PL	Off	On	Off	Off
	RESERVED	On	On	Off	Off
	S2	Off	Off	On	Off
	PD	On	Off	On	Off
	VN	Off	On	On	Off
	SN	On	On	On	Off
	DC	Off	Off	Off	On
	RESERVED	On	Off	Off	On
	RESERVED	Off	On	Off	On
	RESERVED	On	On	Off	On
	RESERVED	Off	Off	On	On
	VCL	On	Off	On	On
	KD6	Off	On	On	On
	Factory Default	On	On	On	On
	Extended Dome ID	D12			
	0~999	OFF			
	1000~3999	ON			

Figure 7– Protocol Selection tables

## 2.6 Connections

### • How to Connect RS485/422

The dome camera has a built-in RS-485/422 receiver so that it can be controlled remotely by an external control device such as a joystick controller or DVR.

RS-485: Connect the TXA(Tx+) and TXB(Tx-) of the RS485 control devices ( KDB, DVR...)to RX+, RX- of the dome camera.

RS-422: Connect TXA(Tx+) and TXB(Tx-) of the control device to RX+, RX- and TX+, TX- of the dome camera respectively. You need to select RS-422 mode at S4.

RS-485 does not allow for a star connection layout. A splitter is required if a star connection layout is desired. RS-485 guarantees 1.2 Km of data line routing. A repeater is recommended to extend over 1.2 Km.

- **Connecting Video output**

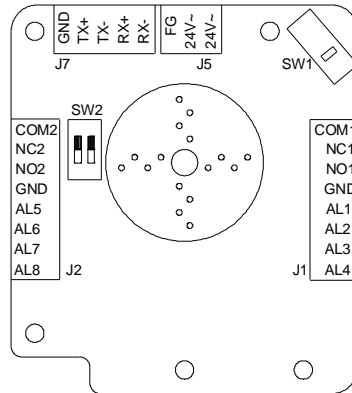
See page 9 **Figure 2 – Basic installation diagram**

- **Connecting Alarms**

**AL1 to 8 (Alarm In)**

Magnetic, PIR or other external sensor devices can be used to signal the dome camera reacting to an event.

— See Chapter 3 — Program and Operation for configuring alarm input.



**Pin configuration of the supplied alarm cable JP4 and JP2**

**GND (Ground)**

NOTE: All the connectors marked **GND** are common.

Connect the ground of the Alarm input and/or alarm output to the GND connector.

**NO / NC (Normally Opened or Normally Closed dry contact relay output)**

The dome camera can activate external devices such as buzzers or lights using dry contact relays. Connect the device to the NO(NC) (Alarm Out) and COM (Common) connectors. See Chapter 3 — Program and Operation for configuring alarm output.

- **Connecting the Power**

Connect AC 24V 1000mA power to the dome camera.

Use certified / Listed Class 2 power supply transformer only.

## 2.7 Mounting the Dome Camera

Once all DIP switches are set appropriately and all external connections are made, the dome camera can be mounted.

The **ScanDome** camera is designed to mount on a structural surface supporting loads up to 5 Kg. See Figure 8.

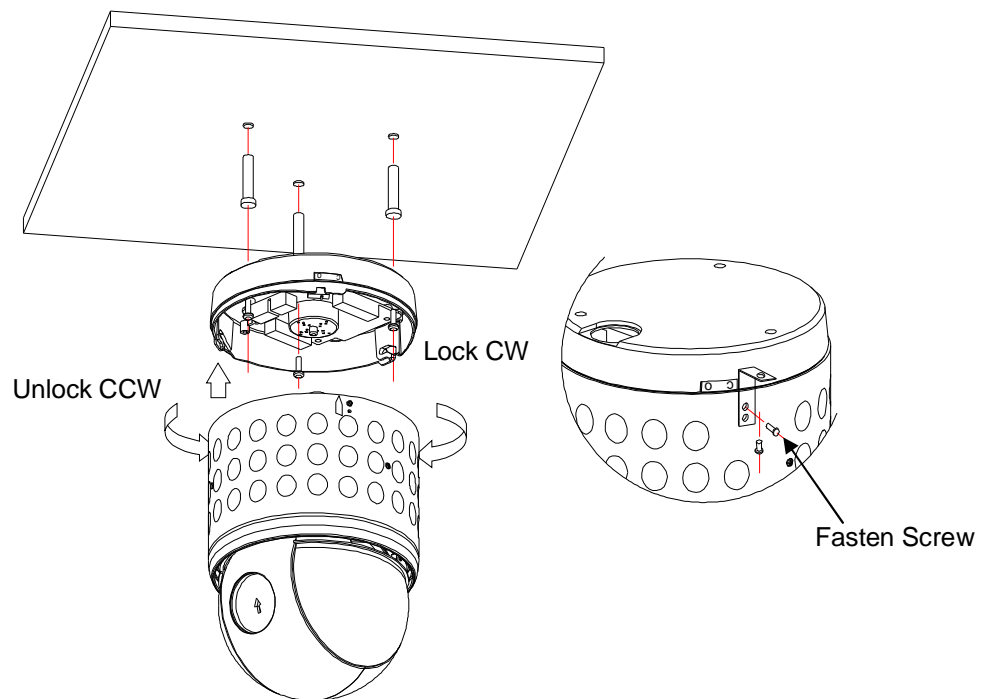


Figure 8 – Example of a ceiling mounted installation

## 2.8 Power on and Boot-up Sequence

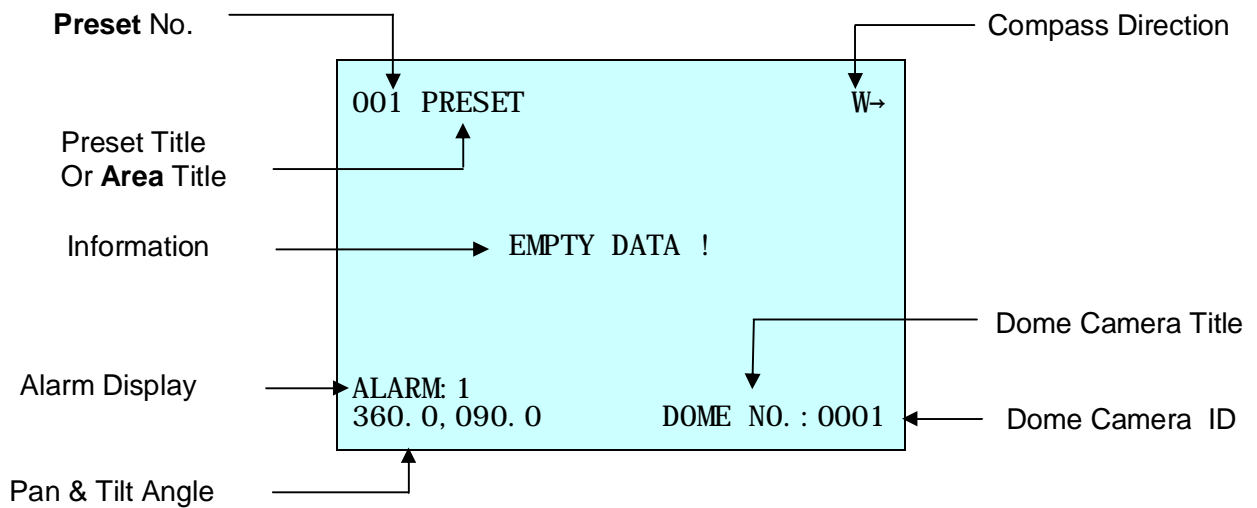
When the power is applied to the dome camera, it will start a boot-up sequence. When boot-up is done, the following information is displayed on the monitor screen.

RAM TEST  
CHECK NO. : OK!  
CHECK AAAA : OK!  
CHECK 5555 : OK!



SCANDOMEI II Vx. xxx  
CAMERA TYPE xxxx  
WAIT DOME SETTING.  
INIT TILT ORIGIN SET OK  
INIT PAN ORIGIN SET OK  
INIT CAMERA SET OK

**On Screen Display in normal control mode**









## Chapter 3 — Program and Operation

### Dome Camera Selection

Before you start programming or operating a dome camera, you should make the dome camera be under control of the joystick controller. In other words, the dome camera that you want to effect changes must be currently selected.

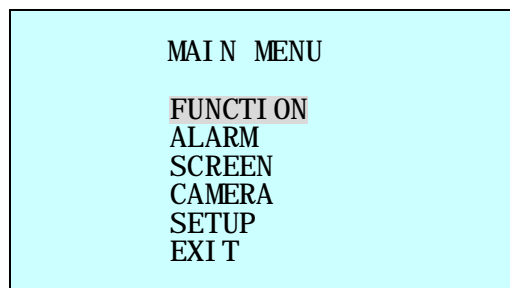
**Example:** Pressing **1**, **6** and **CAM** key sequentially will select dome camera 16. The selected dome camera ID will be displayed on the monitor.

Principle of joystick usage in the programming (editing) mode

Button or Joystick movement in menu	Function
 <b>Joystick left or right</b>	Go into the sub-menu items. Execute the command(exit) Change value. Navigate through the menu items.
 <b>Joystick up or down</b>	Navigate through the menu items.
 <b>Joystick down</b>	Finish editing title.
 <b>Zoom handle twist</b>	Change value.(Increase / Decrease) Enter editing title mode.
  <b>SHFT + Joystick</b>	PTZ control mode.
<b>ESC</b>	Escape from the menu without change.
<b>Home or Off button</b>	Delete value or name of the field.

### 3.1 FUNCTION

Pressing the **MENU** button on the keyboard controller, the following On-screen **MAIN MENU** will be shown on your monitor screen.





Locate the cursor on the **FUNCTION** item and then push the joystick to the right to enter **FUNCTION** menu.

```
FUNCTION
HOME FUNCTION
PRESET
PATTERN
SCAN
TOUR
EXIT
```

### 3.1.1 HOME FUNCTION (MENU =>FUNCTION => HOME FUNCTION)

After **HOME FUNCTION** item has been selected, follow the directions below to set **HOME** function.

```
HOME FUNCTION
FUNCTION      : NONE
NUMBER       : ---
TIME         : 240 SEC
OPERATION    : DI SABLE
SAVE AND EXIT
```

```
FUNCTION      : Tour/ Preset/ Pattern/ Scan
NUMBER       : ---
TIME         : 10~240 Seconds
OPERATION    : ENABLE/ DISABLE
```

The **HOME** function invokes predefined functions such as Preset, Tour, Pattern, or Scan function after the keyboard controller has been idle for a programmed time.

Follow the steps below to program the **Home** function:

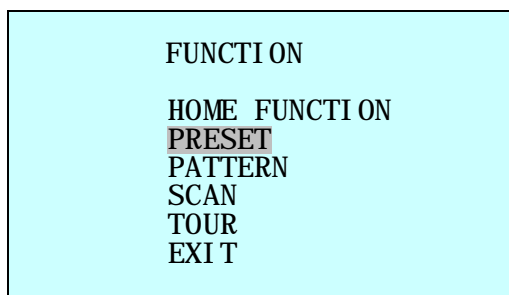
1. Select the camera number by pressing **No.** and **CAM**
2. Press **MENU** to display the main menu on the monitor.
3. Push the **Joystick** to the right on "**FUNCTIONS**".
4. Enter Home Function menu by pushing the **Joystick** to the right.
5. Push the **Joystick** to the right/ left (or twist CCW/CW) to scroll Tour, Pattern, Auto Scan and Preset functions.
6. Select Function Number by pushing the **Joystick** down, and twist the **Joystick** to the CCW/CW (or push right/left). The executable function number will be scrolled. If selected function is not programmed, it won't change. Go to setup function first.

7. Pushing the **Joystick** down and twist the **Joystick** to CCW/CW (or push the stick to right/left) to set waiting time.
8. Locate the cursor on **OPERATION** option by pushing the **Joystick** down. Choose operation status Enable or Disable by pushing the **Joystick** to the right or to the left (or twist CCW/CW).

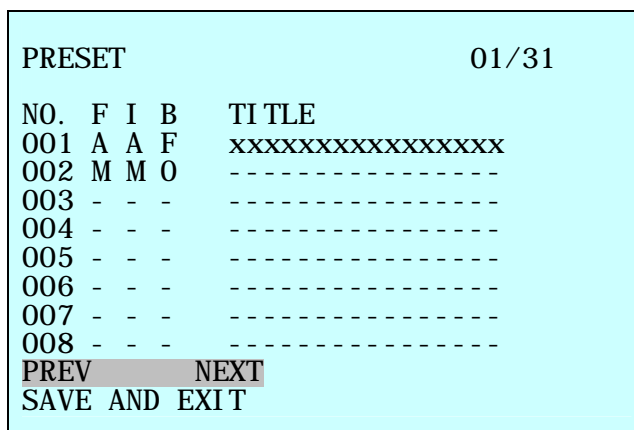
### 3.1.2 PRESET ( **MENU** => FUNCTION => PRESET **Short Cut :PRST** )

Preset memorizes pan, tilt, zoom, focus and iris settings. Once programmed, pressing combination of **0** ~ **9** numbers and a **Preset** button on your controller automatically calls up the preset position. Presets may be assigned to alarm actions or as the “home” position for the dome camera.

Locate the cursor on the **PRESET** item and then push the joystick to the right to enter **PRESET** menu.



There are 31 pages of preset programming menu. Each page can hold 8 presets. Locate the cursor on “**PREV** **NEXT**”, preset menu pages can be scrolled by pushing the **Joystick** to the Left or Right on the “**PREV** **NEXT**”.



- F : Focus I : IRIS B : BLC**
- X : 16 digit of preset title
- : not defined
- █ : Current cursor position
- F : **A**(Auto Tracking)/**M**(Manual Tracking)
- I : **A**(Auto Iris)/**M**(Manual Iris)
- B : **F**(BLC OFF)/**O**(BLC ON)/**A**(Auto BLC)/**B**(BMB)

Follow the steps below to program the Preset positions.

1. Select the camera number by pressing **0** ~ **9** and **CAM**.
2. Simply press **PRST** button to enter preset menu. (**MENU** => **FUNCTION** => **PRESET**)
3. Select the empty preset location to be programmed using the **Joystick** up/down. If selected location is not empty, pressing **PRST** button will show your predefined position.
4. After selecting an empty position, press and hold **SHFT/PGM** then use the **Joystick** to control the direction of the camera and lens. (Or twist zoom handle or hit zoom button to start PTZ control for view selection.)
5. After aiming the camera (view direction and lens control) at specific position, release **SHFT/PGM** button (or hit the focus button). The selected location No. field will be filled with "A A F". Push the joystick to the right to select each Focus/ Iris /BLC mode using zoom handle.
6. Move the cursor to the title field to edit/enter the title. Rotate the handle CW and CCW or press **Tele** or **Wide** button to scroll through the alphanumeric characters. Push the handle to right or left to select next or previous digit.
7. To finish entering the title, push the **Joystick** up/downward.
8. Locate the cursor on "PREV NEXT" item to select the previous/next page of presets, scroll the page by pushing the **Joystick** to the Left on "PREV NEXT".
9. Repeat steps 2 through 8 for each additional preset position.
10. Select **Save and Exit** by pushing the Joystick to the right. Press **ESC** to exit the Preset menu without saving.

**NOTE:** Press the **Home** or **OFF** button at programmed position to delete a programmed preset view.

### Shortcut of Preset Program.

Select direction of the camera, zoom and focus to be programmed, then press No. (**1~248**), and then press **SHFT**, **PRST** subsequently. The current view will be stored to the selected preset number if position is empty. If selected preset number is not empty, "PRESET EXISTING" message will be displayed on the monitor and you will be prompted to overwrite.

**Example:** **1**, **0** + **PGM** + **PRST** will memorize current view as preset No. **10**. In this case, focus and Iris mode will be memorized as auto and dwell time will be set to 3 sec.

### 3.1.3 PATTERN (**MENU** => **FUNCTION** => **PATTERN** or Shortcut: **PTRN**)

The Pattern function stores user's control of the selected dome camera for up to 240 seconds. 4 patterns can be stored in 240 seconds of total recording space. Stored pattern is played back by pressing **No.** + **PTRN** buttons subsequently.

PATTERN SETUP		
NO.	TITLE	SEC
01 :	XXXXXXXXXXXXXXXXXXXX	000
02 :	XXXXXXXXXXXXXXXXXXXX	041
03 :	XXXXXXXXXXXXXXXXXXXX	010
04 :	XXXXXXXXXXXXXXXXXXXX	020
TOTAL :		071
SAVE AND EXIT		

Follow the steps below to program the Pattern:

1. Press **MENU** key to display the main menu on the monitor.
2. Simply press the **PTRN** key. (or **MENU** => **FUNCTION** => **PATTERN**)
3. Select the empty Pattern number to be programmed by pushing the **Joystick** Up or Down. If SEC column is not 000, then the selected No. of pattern is already recorded.
4. Press and hold down the **SHFT/PGM** key while controlling the camera direction and zoom with the **Joystick**. Your controls will be automatically recorded until you release the **SHFT/PGM** key. You can repeat this procedure until you are satisfied with the pattern recorded. *(Or twist zoom handle or hit zoom button to start PTZ control for view selection and hit the Focus button to stop.)*
5. Scroll down to the Save and Exit option and push the **Joystick** to the right to save and exit.
6. You can title the selected Pattern by twisting the **Joystick**. Rotate the handle clockwise or counterclockwise to scroll through the alphanumeric characters, push the handle to right or left to select next or previous space.
7. Pressing **ESC** will not save currently recorded data and exits to the previous menu mode. Press the **HOME** or **OFF** button at any programmed position to delete the programmed pattern.

**NOTE: If total recording time reaches 240 seconds, it will automatically stop for a moment and start recording again. Previous data will be overwritten.**

### 3.1.4 SCAN ( **MENU** => FUNCTION => SCAN or Shortcut: **SCAN** )

The Scan function supports up to 16 programmed section of angles at 8 programmable speeds.

```
SCAN MENU                                01/16

SCAN 01  : AUTOSCAN01
SPEED    : 1~8/SLW/MID
START    : 127. 1,  027. 0
END      : 157. 7,  080. 7
DIR.     : CCW
SWAP     : OFF
SAVE AND EXIT
```

SPEED(MODE) : 1/ 2 / 3/ 4/ 5/ 6/ 7/ 8/ SLOW / MEDIUM  
1: SLOWER ↔ 8 FASTER  
SLW : smooth DiagonalScan in slowest speed  
MID : smooth DiagonalScan in medium speed  
DiagonalScan shows moving path from start point to end point including tilt and zoom simultaneously.

Follow the steps below to program Scans.

1. Press the **SCAN** key to enter Auto Scan menu directly. (or **MENU** => **FUNCTION** => **SCAN**).
2. Select an Auto Scan number by pushing the **Joystick** left or right.
3. Twist the **Joystick** to enter the title by scrolling through the alphanumeric characters and pushing the handle to the right or left to move to the next space. Press **ENTR** key or push the **Joystick** down to finish title mode.
4. Push the **Joystick** downward to select "SPEED" and set the speed by twisting the **Joystick** clockwise or counterclockwise or moving the **Joystick** left/ right to select the auto scan speed.
5. When finish entering the title, select "START ANGLE" with the **Joystick**. Hold down the **SHFT/PGM** key while selecting the start position using the **Joystick**. Current panning position will be displayed. Release **SHFT/PGM** key to complete the selection of the start position. (Or twist zoom handle or hit zoom button to start PTZ control for view selection and hit the Focus button to stop.)
6. Push the **Joystick** downward to select "END ANGLE." Hold down the **SHFT/PGM** key while moving the Joystick to select the end position. The end position angle should be larger than start position. Release the **SHFT/PGM** key to complete the selection of the end position. (Or twist zoom handle or hit zoom button to start PTZ control for view selection and hit the Focus button to stop.)
7. Push the **Joystick** downward to select "DIR." Set the scan direction by moving the **Joystick** left and right to select the auto scan direction.(CW or CCW)

8. Push the **Joystick** downward to select "SWAP" and set the swap by moving the **Joystick** left and right to select the swap ON or OFF.
9. Select **Save and Exit** by pushing the **Joystick** to the right. Press **ESC** to exit the program without saving.

**NOTE:** Press **17** + **SCAN** to automatically calls up the auto-pan function.

### 3.1.5 TOUR (or **MENU** => FUNCTION => TOUR, **Short Cut:** **TOUR**)

There are 8 programmable Tours. Each Tour consists of up to 8 Preset positions, Patterns, Scans or other Tours. Using second-level Tours, it can be expanded to over 56 functions in a single Tour. However tours second level Tours will be ignored when called by a Tours. This can be best illustrated by the following example:

- If**
- Tour 01 : Preset 02, Preset 03, Tour 02, Tour 03
  - Tour 02 : Preset 05, Preset 06, Tour 04, Preset 05
  - Tour 03 : Preset 07, Pattern 01
  - Tour 04 : Preset 08, Preset 05, Pattern 01

Tour1 executes as follows:

Preset 02 → Preset 03 → Preset 05 → Preset 06 → Preset 05 → Preset 07 → Pattern 01 → ... (Repeat) ---Tour 04 in Tour 02 will be skipped in Tour 01

Tour 02 executes as follows:

Preset 05 → Preset 06 → Preset 08 → Preset 05 → Pattern 01 → Preset 05 ... Repeat (Tour4 is still valid if called directly from Tour2.)

```

TOUR 01: xxxxxxxxxxxxxxxxxxxx  01/08

FUNC NO  S DW TITLE
PRST 248 S 99 -----
PTRN 004 S 99 -----
SCAN 016 S 99 -----
TOUR 008 S 99 -----
-----
-----
-----
PREV      NEXT
SAVE AND EXIT

```

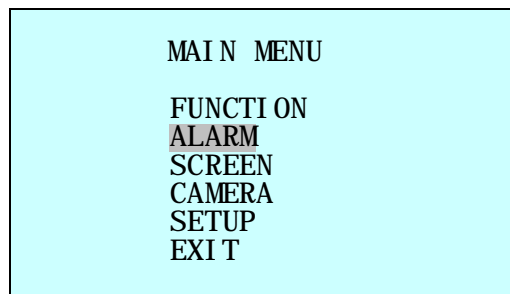
- xxxxx** : 16 digits of title for tour label
- : blank preset position
- Speed** : Fast (Normal)/ Slow V. Scan/ Medium V. Scan
- DWell** : 03-99 Sec
- PRST** : Preset 1~248
- PTRN** : PATTERN 1~4
- SCAN** : SCAN 1~16
- TOUR** : TOUR 2~8

Follow the steps below to program the Tours:

1. Press **MENU** => **FUNCTION** => **TOUR**, Short Cut: **TOUR MENU** to display the main menu on the monitor. **No.** + **SHFT**+**TOUR** will open directly Tour **No.**
2. Choose an empty location of function by pushing the **Joystick** up or down.
3. Stored Preset view can be recalled by pressing **Prst** button, the camera will move to the stored Preset view.
4. To place predefined functions as a Tour, press the function buttons (such as **Tour**, **Ptrn**, or **Scan**, **Prst** ). Then select function No. by twisting the Zoom handle. (Programmed function No. will be scrolled). To remove functions from the Tour, press the **HOME** or **Off** button, blank position mark (- -) will be displayed. You can overwrite the programmed position.
5. Repeat Step 2 through 4 for each desired position. Each title will be displayed on top of the line.
6. Up to 8 Presets, Tours, Patterns Scans can be selected for a Tour. You can expand the Tour sequence by calling other programmed tours. Push the **Joystick** handle to right or left while the cursor is on the top of the line (TOUR 01) to select another page of the Tour menu. (TOUR 01)
7. You can enter a title for the selected Tour by twisting the **Joystick** while the cursor is on the top of the line (TOUR 01). Rotate the handle clockwise or counterclockwise to scroll through the alphanumeric characters. Push the handle to the right or left to select the next or previous digit.
8. Select Save and Exit by pushing the **Joystick** to the right. Press **ESC** to exit the program without saving.

**NOTE: All functions should be programmed before being referred to in the tour menu. Otherwise functions won't be selectable by item 4 in the procedure.**

### 3.2 ALARM ( **MENU** => ALARM)



Locate the cursor on **ALARM** item in the main menu and push the joystick to the right for **ALARM** programming of the camera.

ALARM SETUP						
NO	FUN	PRI	IN	OUT	HLD	LATCH
01	P01	0	OFF	OFF	001	OFF
02	048	4	OFF	OFF	001	OFF
03	001	4	OFF	OFF	001	OFF
04	---	3	OFF	OFF	001	OFF
05	---	3	OFF	OFF	001	OFF
06	---	3	OFF	OFF	001	OFF
07	---	3	OFF	OFF	001	OFF
08	---	3	OFF	OFF	001	OFF
SAVE AND EXIT						

NO : Alarm input number  
 FUNC : Priority 1~8 calls Preset(xxx),  
 Priority 0 supports dedicated functions like a Pattern(Pxx), Tour(Txx), Scan(Sxx).

PRI : Lower No. has higher priority, Equal priority alarms will be serviced repeatedly.  
 IN : NO/NC - normally open /Closed, OFF - ignore  
 OUT : OUT1~OUT2 - Relay out 1,2 OFF - No output.  
 HLD : Alarm will be held for programmed time (01 to 99 seconds)  
 LATCH : ON - Shows all alarms including past alarm, OFF - Shows activated alarms only.

There are 9 levels of priority. 0 : Highest priority supports repeated/dedicated functions like a Pattern(Pxx), Tour(Txx), Scan(Sxx). 1~8: Same level of alarm calls presets one after the other.

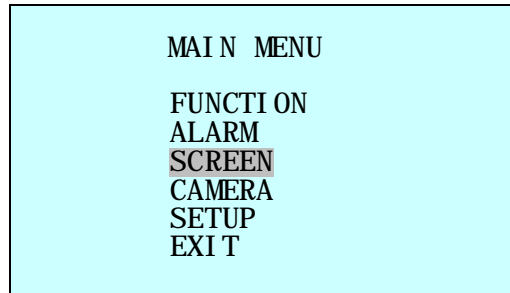
Ex) Alarm 01 calls Pattern 01, After alarm 01 is released alarm 02, 03 will call **preset 48** and **preset 01**

1. Press Menu to display the main menu on the monitor. Select the Alarm option by pushing the Joystick up or down and push to right to enter the detail menu.
2. Select the alarm input number by pushing the Joystick up or down and select the column you wish to setup. Selected position will be highlighted.
3. Select the Preset, Status of Input (NC/NO/OFF), and Output (OUT1~2/OFF) by pushing the Joystick to the right or to the left.
4. To increase or decrease the preset number or to change the status or output number, twist the Joystick clockwise or counterclockwise. In case of preset, programmed preset number will be scrolled.
5. Locate the cursor on **Save and exit** and push the Joystick to the Save and exit. Press ESC to exit the program without saving.

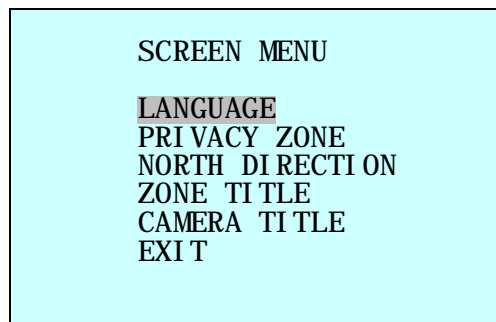


### 3.3 SCREEN

Pressing the **MENU** button on the keyboard controller, the following On-screen **MAIN MENU** will be shown on your monitor screen.

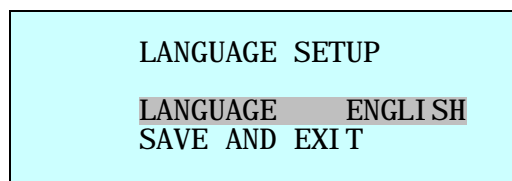


Locate the cursor on the **SCREEN** item and then push the joystick to the right to enter **SCREEN** menu.



#### 3.3.1 LANGUAGE( **MENU** => SCREEN => LANGUAGE)

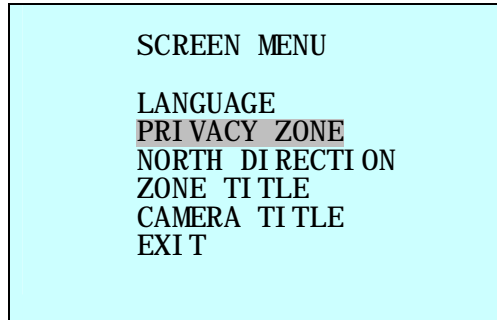
Push the joystick handle to the right to select **LANGUAGE** options.



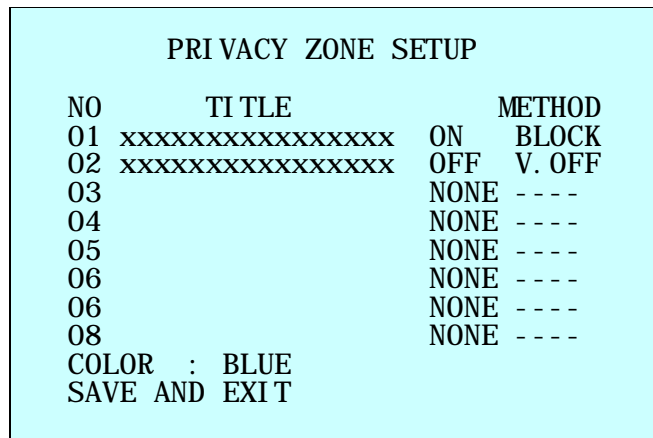
Preferred language will be scrolled when you push the joystick to the right on **LANGUAGE ENGLISH**.

### 3.3.2 PRIVACY ZONE ( **MENU** => SCREEN => PRIVACY ZONE)

Locate the cursor on the **PRIVACY ZONE** item and then push the joystick to the right to enter the menu.



This function disables the viewing of restricted areas for privacy reasons. Mask up to 8 unwanted views in a camera.



1. Select the Privacy Zone option by pushing **Joystick** Up or Down and push to right to enter the detail menu.
2. Select the privacy zone number by pushing the Joystick up or down.
3. To enter the zone name, rotate the handle clockwise or counterclockwise. You can select alphanumeric characters by rotating the handle. Move to the next character position by pushing the Joystick to the right. To finish entering the title, push the **Joystick** down or press the **ENTR** key.
4. To adjust the “marked” (privacy) area, press and hold down the **SHFT/PGM** key and then use the **Joystick** (direction and zoom) until you get desired view. Release the key, the right column will be set to ON. (Or twist zoom handle or hit zoom button to start PTZ control for view selection and hit the Focus button to exit from control mode.)
5. You can overwrite an existing zone. Use the Home key to delete the marked zone, or push the **Joystick** to the right or left to turn the stored zone On or Off.
6. Select the mask color by pushing the Joystick left or right

7. Select the Save and Exit option by pushing the **Joystick** up or down. Save and exit the program by pushing the **Joystick** to the right. Press **ESC** to exit the program without saving.

Press the **HOME** or **Off** button to delete programmed privacy zone.

### 3.3.3 NORTH DIRECTION ( **MENU** => SCREEN => NORTH DIRECTION)

Push the joystick handle to the right to select **NORTH DIRECTION** options.

```

NORTH DI RECTI ON
DISPLAY      : OFF
POSITION    : 000.0
SAVE AND EXI T
  
```

1. Select DISPLAY option whether display or not.
2. Move to **POSITION** item to set north direction, press and down the **SHFT/PGM** key and then use the **Joystick** (direction and zoom) until you get desired direction. Release the key then current pan angle will be displayed on position item. *(Or twist zoom handle or hit zoom button to start PTZ control for view selection and hit the Focus button to exit from control mode.)*

### 3.3.4 ZONE TITLE ( **MENU** => SCREEN => ZONE TITLE)

Enter a specific name in sectioned angle between START and END.

```

ZONE TITLE                01/04
DISPLAY : ON
NO      TITLE           START  END
01 WI NDOW             123.4 345.6
02                    -----
03                    -----
04                    -----
05                    -----
06                    -----
PREV  NEXT
SAVE AND EXI T
  
```

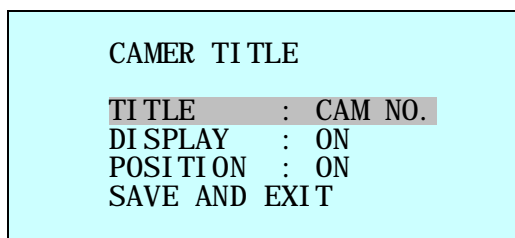
DISPLAY : ON/OFF zone title on the screen

1. Press **MENU** => **SCREEN** => **ZONE TITLE** to display zone title menu on the monitor.
2. Select the zone number by pushing the **Joystick** up or down. Select Start, End or number column to be set by pushing the handle to the right or left. The selected column will be highlighted.

3. Twist the joystick handle on the No. column to enter zone title. You can select alphanumeric characters by rotating the handle. Move to the next character by pushing the **Joystick** to the right. To finish entering the title, push the **Joystick** down.
4. To adjust panning limit, press the **SHFT/PGM** key and hold down. Then use the **Joystick** to go the desired direction. The end limit must be in an increasing direction. (Start < End).  
(Or twist zoom handle or hit zoom button to start PTZ control for view selection and hit the Focus button to exit from control mode.)
5. **PREV NEXT** : got to previous page or next page of the menu
6. Save and exit the program by pushing the **Joystick** to the right. Press ESC to exit the program without saving.

### 3.3.5 CAMERA TITLE ( **MENU** => SCREEN => CAMERA TITLE)

Push the joystick handle to the right to select **CAMERA TITLE** options.



1. Twist the joystick handle on the **TITLE : CAMERA NO.** to enter camera title. You can select alphanumeric characters by rotating the handle. Move to the next character by pushing the **Joystick** to the right. To finish entering the title, push the **Joystick** down.
3. Select DISPLAY option whether TITLE display or not.
4. Select POSITION option whether coordinate angle display or not.
5. **Save and exit** with joystick handle to right ( Or **ESC** to exit without saving)

### 3.4 CAMERA ( **MENU** => CAMERA)

**NOTE:** The menu features will vary depending on the camera module installed in your dome camera.

```
CAMERA MENU  
  
FOCUS CONTROL  
WB CONTROL  
AE CONTROL  
BLC/BMB SETUP  
SHARPNESS      : 10 (0~15)  
DIGITAL ZOOM   : OFF (2X/4X/MAX)  
NIGHT SHOT  
CAMERA DEFAULT  
SAVE AND EXIT
```

#### 3.4.1 FOCUS CONTROL( **MENU** => CAMERA => FOCUS CONTROL)

```
FOCUS SETUP  
  
MODE           : MANUAL  
SAVE AND EXIT(ESC TO EXIT)
```

MODE : AUTO / MANUAL

**CAUTION:** Avoid continuous, 24-hour use of the auto focus heavy movement condition. This will shorten the lifespan of the lens.

#### 3.4.2 WB (white balance) ( **MENU** => CAMERA => WB CONTROL)

```
WB SETUP  
  
MODE   : ATW  
CONT   : AUTO  
EXIT
```

MODE ATW / INDOOR / OUTDOOR / MWB / AWC(ONE PUSH) / AWC(AUTO)  
 CONT AUTO / 0~99 (in MWB) / LOCK (in AWC(ONE PUSH))  
 Use the ATW mode for normal use.  
 CONT modes are controllable only in AWC(ONE PUSH) and MWB Mode  
 Push the **Joystick** to the right or left to change.

### 3.4.3 AE CONTROL ( MENU => CAMERA => AE CONTROL)

Depending on your dome camera, you will see either the following screen or the next.

```

AE SETUP

MODE          : AUTO
SLOW SHUTTER  : X128
IRIS          : F2.4
GAIN          : 8 DB
BRIGHT       : 8
SHUTTER       : 1/60
SAVE AND EXIT
  
```

```

MODE          : AUTO / SHUTTER FIX / IRIS FIX / GAIN FIX / MANUAL
SLOW SHUTTER  : OFF/X2/X4/X8/X16/X32/X64/X128
IRIS          : CLOSE / F28/ F22 / F19 / F16 / F14 / F11 / F9.6 / F8.0 / F6.8 /
              F5.6 / F4.8 / F4.0 / F3.4 / F2.8 / F2.4 / F2.0
GAIN          : 8 DB / 10 DB / ..... / 38 DB
SHUTTER       : 1/60(1/50), 1/100(1/120),.. .. ,1/1000, 1/2000, 1/4000, 1/10000.
  
```

**NOTE :** Values in ( ) are for PAL Camera.

### 3.4.4 BLC/BMB SETUP ( MENU è CAMERA è BLC/BMB SETUP)

Objects in front of bright backgrounds will be clearer with BLC ON/AUTO/BMB.

\*) **BMB**[Black Mask BLC] : It is another function of BLC. It mask the excessive light to dark level and make brighter to see object around the excessive light.

```

BLC/BMB SETUP

BLC           : OFF
BLOCK SET
PREVIEW
BMB LEVEL     : 07
EXIT
  
```

```

BLC           : OFF, ON, AUTO, BMB
BMB LEVEL     : 1 ~ 7
              (As BMB level lower, BMB masked range enlarge more and more)
  
```

Select BMB operated area depending on circumstance, for using BMB more effectively. Screen is divided 16 areas, each area is set separately.

BLC/BMB SETUP				
BLC	: BMB			
BLOCK SET	1	2	3	4
01	-	-	-	-
02	-	*	*	-
03	-	*	*	-
04	-	-	-	-

SET→FAR/NEAR, EXIT→ESC  
 SELECT→TELE/WIDE  
 PREVIEW→OPEN/CLOSE

### 3.4.5 SHARPNESS CONTROL ( **MENU** => CAMERA => SHARPNESS)

The higher, the more enhanced edges in the picture. (0~15).

### 3.4.6 DIGITAL ZOOM ( **MENU** => CAMERA => DIGITAL ZOOM)

**OFF** - Optical zoom only

**2x, 4x, Max.** - Digitally magnifies up to 2x, 4x 10x respectively.

### 3.4.7 NIGHT SHOT MENU ( **MENU** => CAMERA => NIGHT SHOT)

The NIGHT SHOT option removes the IR Cut filter of the camera and makes the camera sensitive to near infrared.

If NIGHT SHOT mode of the selected camera is set to Manual, **10+ ON** will enable the NIGHT SHOT mode, **10+ OFF** will turn off the NIGHT SHOT mode.

NIGHT SHOT SETUP	
MODE	: MANUAL
LOCAL CONTROL	: OFF
EXIT	

MODE : MANUAL / AUTO

AUTO – Camera automatically goes into B&W mode at low light.

MANUAL - Manually controls the Night Shot mode in LOCAL CONTROL option. On/Off Night Shot mode remotely by pressing **[10]+** **[ON]** **[10]+** **[OFF]**.

### 3.4.8 CAMERA DEFAULT ( **[MENU]** => CAMERA =>CAMERA DEFAULT)

Returns all changed camera values to factory default .

```
CAMERA DEFAULT
ARE YOU SURE : (Y/N)
YES : ENTER OR MENU KEY
NO  : ESC KEY
```

### 3.5 SETUP ( **[MENU]** => SETUP)

```
SETUP MENU
FLIP           : ON/OFF
SPEED          : FAST
PRESET FREEZE : ON/OFF
PANNING RANGE
TILT OVER ANGLE
CALIBRATION
LINE LOCK CONTROL
FACTORY DEFAULT
ERASE DATA
SYSTEM INFORMATION
EXIT
```

#### 3.5.1 FLIP ( **[MENU]** => SETUP => FLIP)

When the ScanDome camera is mounted on a ceiling, you can set one of three ways in how it can track a target moving in a path directly below the camera:

**ON** - When the camera reaches the floor directly above the moving object, the dome camera tracks the object smoothly with a digitally corrected image.

**OFF** – The dome camera does not perform a flip.

#### 3.5.2 SPEED ( **[MENU]** => SETUP => SPEED)

User can select preferable speed curves of manual control.( FAST / SLOW / MED)

#### 3.5.3 PRESET FREEZE ( **[MENU]** => SETUP => PRESET FREEZE)

This option is used to set the pause previous image until the preset action is complete.



### 3.5.4 PANNING RANGE (MENU => SETUP => PANNING RANGE)

When the dome camera is installed near a wall, panning range can be limited by user.

```
PANNING RANGE SETUP
RIGHT LIMITE      : 000.0
LEFT LIMT        : 000.0
ENABLE           : DISABLE/ENABLE
SWAP RIGHT LEFT
SAVE AND EXIT
```

When the dome camera is installed near a wall or corner, panning range can be limited by user.

### 3.5.5 TILT OVER ANGLE (MENU => SETUP => TILT OVER ANGLE)

This option is used to set the limit of the horizontal view angle so that the trim ring or ceiling does not obstruct the horizontal image when zooming out (wide angle).

**ON:** In some installations it is desirable for the dome camera to be able to see above the horizon. When this option is chosen, the dome will tilt up over the horizon (About 5 degrees). When the lens is zoomed out, you can see the ceiling line. But when the lens is zoomed in, the viewing angle is narrower, and the ceiling line disappears.

**W/O BUBBLE :** The tilt range of the camera is limited to see the horizon so the picture shows part of the ceiling line.

**WITH BUBBLE :** The tilt range of the camera is limited to see below the horizon (- 10 degrees).

```
VIEW ANGLE SETUP
TILT OVER ANGLE  : W/O BUBBLE
SAVE AND EXIT
```

### 3.5.6 CALIBRATION (MENU => SETUP => CALIBRATION)

```
CALIBRATION
ORIGIN RESET
ORIGIN POSITION MOVE
ORIGIN OFFSET   : DISABLE
AUTO CALIBRATION : OFF
SAVE AND EXIT
```

ORIGIN RESET: Calibrate the ORIGIN point.

ORIGIN POSITION MOVE : Adjust the small amount of position error from re-installation.

AUTO CALIBRATION : The dome camera calibrates automatically when the deviation of dome position by force or vibration is detect. ( over 2 degrees )

### 3.4.7 LINE LOCK CONTROL ( MENU => CAMERA => L/L CONTROL)

```
LINE LOCK SETUP

MODE      :      INTERNAL
PHASE    :      (0~255)
EXIT
```

MODE           INTERNAL / EXTERNAL   Adjusts phase of picture with other  
PHASE           0~255                   cameras in EXTERNAL mode.  
EXIT (ESC TO EXIT)

### 3.5.8 FACTORY DEFAULT (MENU => SETUP => FACTORY DEFAULT)

```
FACTORY DEFAULT

ARE YOU SURE : (Y/N)
YES : ENTER OR MENU KEY
NO  : ESC KEY
```

Programmed data go back to initial state as ex-factory

### 3.5.9 ERASE DATA (MENU => SETUP => ERASE DATA)

```
ERASE PROGRAMMED DATA

ARE YOU SURE : (Y/N)
YES : ENTER OR MENU KEY
NO  : ESC KEY
```

Erase programmed data in the EEPROM of the selected dome camera. Press **MENU** or **ENTER** button to erase data, **ESC** key to exit without erasing. Origin offset value is not affected.

*CAUTION: Unless you download the data into a safe place, all the data in the selected dome camera will be lost. (Refer to Download/ Upload data function in the Keyboard Configuration utility)*

### 3.5.10 SYSTEM INFORMATION (MENU => SETUP => ERASE DATA)

```
SYSTEM I NFORMATI ON
CAMERA TYPE      : XXXXXXXX
H/W VERSION     : V1. 0
ROM VERSION     : V1. 0
PROTOCOL        : S2E
BUADRATE        : 9600BPS
EXIT
```

This screen shows information of the dome camera for service or trouble shooting

## Appendix A — Specifications

### Lens

<b>Camera(HSDC-231N/P)</b>	
Image Sensor	1/4" Super HAD Color CCD (Sony)
Picture elements	NTSC : 768x494 Approx. 380K pixels PAL : 752x582 Approx. 440K pixels
Horizontal Resolution	470 / 460 lines(NTSC/PAL)
Lens	23x optical zoom with auto focus 10x digital zoom F1.6 to F3.8, f=3.8mm to 87.4mm
View angle	Approx. 50.7° (WIDE end) to 2.36° (TELE end)
Minimum Illumination	1.0 lx ( 30 IRE ) ; Day & Night OFF 0.1 lx ( 30 IRE ) ; Day & Night ON 0.01 lx ; Field integration x128 ON 0.001 lx ( 30 IRE ) ; Night ON+Field integration x128 ON
S/N ratio	more than 50dB

<b>Camera(HSDC-231NX/PX)</b>	
Image Sensor	1/4" Exview Color CCD (Sony)
Picture elements	NTSC : 768x494 Approx. 380K pixels PAL : 752x582 Approx. 440K pixels
Horizontal Resolution	470 / 460 lines(NTSC/PAL)
Lens	23x optical zoom with auto focus 10x digital zoom F1.6 to F3.8, f=3.8mm to 87.4mm
View angle	Approx. 50.7° (WIDE end) to 2.36° (TELE end)
Minimum Illumination	0.7 lx ( 30 IRE ) ; Day & Night OFF 0.06 lx ( 30 IRE ) ; Day & Night ON 0.005 lx ; Field integration x128 ON 0.0005 lx ( 30 IRE ) ; Night ON+Field integration x128 ON
S/N ratio	more than 50dB

<b>Camera(HSDC-251N/P)</b>	
Image Sensor	1/4" Super HAD Color CCD (Sony)
Picture elements	NTSC : 768x494 Approx. 380K pixels PAL : 752x582 Approx. 440K pixels
Horizontal Resolution	470 / 460 lines(NTSC/PAL)

Lens	25x optical zoom with auto focus 10x digital zoom F1.6 to F3.7, f=3.8mm to 95mm
View angle	Approx. 56.2° (WIDE end) to 2.4° (TELE end)
Minimum Illumination	1.0 lx ( 30 IRE ) ; Day & Night OFF 0.1 lx ( 30 IRE ) ; Day & Night ON 0.01 lx ; Field integration x128 ON 0.001 lx ( 30 IRE ) ; Night ON+Field integration x128 ON
S/N ratio	more than 50dB

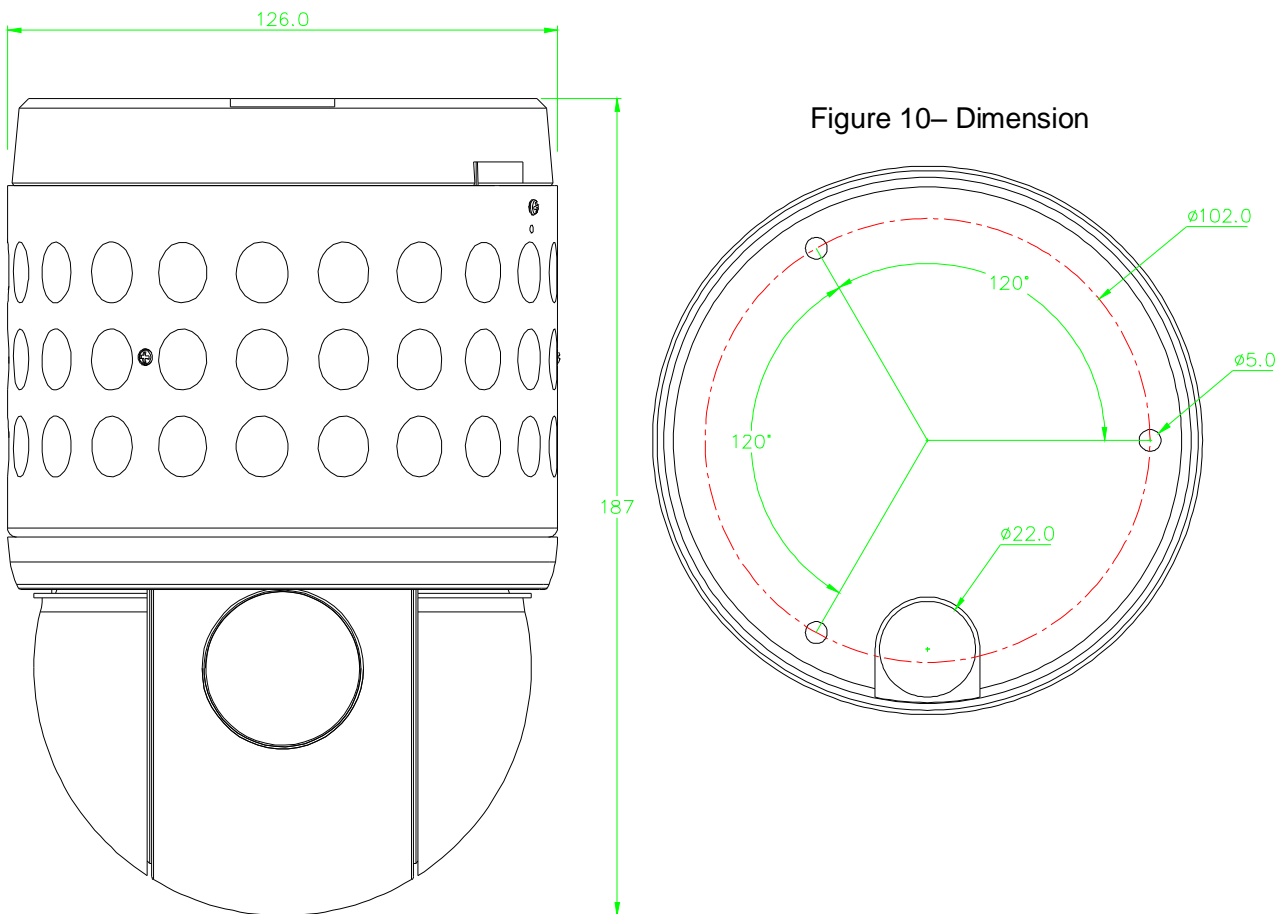
<b>Camera(HSDC-251NX/PX)</b>	
Image Sensor	1/4" Exview Color CCD (Sony)
Picture elements	NTSC : 768x494 Approx. 380K pixels PAL : 752x582 Approx. 440K pixels
Horizontal Resolution	470 / 460 lines(NTSC/PAL)
Lens	25x optical zoom with auto focus 10x digital zoom F1.6 to F3.7, f=3.8mm to 95mm
View angle	Approx. 56.2° (WIDE end) to 2.4° (TELE end)
Minimum Illumination	0.7 lx ( 30 IRE ) ; Day & Night OFF 0.06 lx( 30 IRE ) ; Day & Night ON 0.005 lx ; Field integration x128 ON 0.0005 lx ( 30 IRE ) ; Night ON+Field integration x128 ON
S/N ratio	more than 50dB

#### Controller specifications

<b>General</b>	
Certification	CE EMC, FCC CLASS A
<b>Electrical</b>	
Input Voltage	18 to 30 VAC; 24 VAC nominal, built-in power-line surge
Power Requirement	24 VAC/VDC 850mA
Power Consumption	Maximum 20W
Alarm Output	2 Normal relays 24 VDC/1A Max (selectable NC/NO)
Alarm Input	8 Normal dry contact (selectable NC/NO)
Control	RS-485/422 baud rate:2400~38400bps (default:9600bps)
Access Time	0.75 second maximum preset recall time
ID (Camera Address)	999 (Factory mode selectable over 999 camera)

<b>Mechanical</b>	
Dimension	See Figure 10
Weight	Approx 1.2 kg
Pan Angle	360° continuous rotation
Speed	0.1° to 90°/sec. (proportional to zoom)
	360°/sec. maximum (with Turbo key pressed)
	Preset Speed : 380°/sec
Preset reliability	0.2°
Flip	Rotate 180° at bottom of tilt
Autoscan	16 auto scan include vector scan/1 Auto Pan
Preset Position	248 positions with camera status (16-character title)
Tour	8 tours
Pattern	Four patterns, 240 second
On-Screen Display	Displays camera ID and area name on screen
<b>Environment</b>	
Operating temperature	0°C to 50°C (32°F to 122(F)
Operating humidity	0 to 90%RH (non-condensing)
Storage temperature	-20°C to 60°C (4°F to 140°F)

Specifications are subject to change without notice.



## Appendix B — Troubleshooting

If problems occur, verify the installation of the camera with the instructions in this manual. Isolate the problem from the equipments in the system and refer to the equipment manual for further information.

Problem	Solution
No video.	Verify that power is connected to all pieces of equipment in the system. Verify that the power switches are in the ON position. Check that the BNC connectors are inserted properly. (see Figure 4).
Poor video quality.	Check the voltage level of the dome camera. Check the power supply voltage (nominal 24VAC)
Dome cameras lose their positions.	Reset the cameras using the Dome configuration menus. Check if there is unusual sound. Check the voltage level of the dome camera.
Camera number does not match the multiplexer number.	Check the camera ID and insert the BNC cable into the proper input of the multiplexer.
Picture is torn when switching	Adjust phase of Line Lock.