Integrated High Speed Dome Camera

Outdoor Dome

User's Manual

Version 1.3

00P377280ZSEB3

Preface

The information given in this manual was current when published. The company reserves the right to revise and improve its products. All specifications are subject to change without notice.

Notice

To work with the Integrated High Speed Dome Cameras, any installer or technician must have the following minimum qualifications:

- A basic knowledge of CCTV systems and components
- A basic knowledge of electrical wiring and low-voltage electrical hookups
- Have read this manual completely

Copyright

Important Information

Before proceeding, please read and observe all instructions and warnings in this manual. Retain this manual with the original bill of sale for future reference and, if necessary, warranty service. When unpacking your unit, check for missing or damaged items. If any item is missing, or if damage is evident, DO NOT INSTALL OR OPERATE THIS PRODUCT. Contact your dealer for assistance.

Regulation

CE	This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

	This symbol on the product or on its packaging indicates that this product shall not be treated as household waste in accordance with Directive 2002/96/EC. Instead it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment. By proper waste handling of this product you ensure that it has no negative consequences for the environment and human health, which could otherwise be caused if this product is thrown into the garbage bin. The recycling of materials will help to conserve natural resources. For more details information about recycling of this product, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

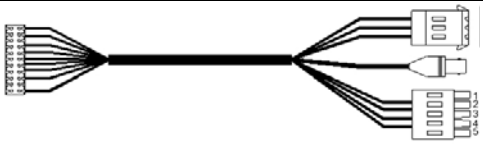
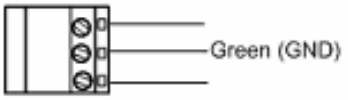
	Compliance is evidenced by written declaration from our suppliers, assuring that any potential trace contamination levels of restricted substances are below the maximum level set by EU Directive 2002/95/EC, or are exempted due to their application.

Cautions

- **Handle the camera carefully**
  Do not abuse the camera. Avoid striking, shaking, etc. The camera could be damaged by improper handing or storage.

- **Installing electricity wiring carefully**
  Ask qualified personnel of electrical wiring for the installation. Please note that input electricity to the unit is at tolerance of DC12V/AC24V ± 10%.

  The camera is capable of surge protection; ensure AC power model unit grounded appropriately against damage of heavy current or electric shock. Refer to the camera's installation guide for more information.

AC model data cable	*AC power input: 3-pin terminal block*
	

- **Do not disassemble the camera**
  To prevent electric shock, do not remove screws or covers. There are no user serviceable parts inside. Ask a qualified service person for servicing.

- **Do not block cooling holes on the bracket**
  This camera has a cooling fan inside. Blocking the cooling holes leads to build up of heat the camera and may cause malfunction.

- **Do not operate the camera beyond the specified temperature, humidity or power source ratings**
  Use the camera under conditions where temperature is between -45°C ~ 50°C (-49°F ~ 122°F), and humidity is below 90%.

- **Do not expose the camera to rain or moisture, or try to operated it in wet areas**
  This product is designed for indoor use or locations where it is protected from rain and moisture. Turn the power off immediately if the camera is wet and ask a qualified service person for servicing. Moisture can damage the camera and also create the danger of electric shock.

- **Do not use strong or abrasive detergents when cleaning the camera body**
  Use a dry cloth to clean the camera when dirty. In case the dirt is hard to remove, use a mild detergent and wipe gently.

- **Never face the camera towards the sun**
  Do not aim the camera at bright objects. Whether the camera is in use or not, never aim it at the sun or other extremely bright objects. Otherwise, the camera may be smeared or damaged.

Table of Contents

1. Overview

The dome camera is a new subcompact integrated high speed dome camera designed to deliver superb performance and durability with an intelligent and stylish housing that is suitable in any security and surveillance installation. ***The latest dome camera possesses the additional functions of Image Inverse and FW upgrade via ISP and multi-language (up to 9 languages) OSD operation.*** The dome camera also supports one cabling for easy installation and can be integrated with CCTV products, such as Digital Video Recorders (DVRs), Control Keyboards and CCTV accessories for a total surveillance solution.

The Integrated High Speed Dome Camera provides two models of new generation advanced DSP color camera:

- K Model: 23× optical zoom multiply 12× digital magnifier
- R Model: 22× optical zoom multiply 12× digital magnifier

The dome camera is equipped with functions such as continuous Auto Focus, Back Light Compensation, Auto Exposure, Digital Slow Shutter, etc., to output clear and high quality image. Removable IR cut filter ensures 24 hours operation, while Privacy Masks are specially designed to avoid any intrusive monitoring at specific region; all of the salient functions can be incorporated to meet your needs. The Home function allows users to specify a preset position as the 'home position' or home functions (Sequence/Auto-pan). Under the model, dome cameras can come back to the preset home position or functions when the camera has been idle for a user-defined period of time.

The dome provides variable pan/tilt speeds ranging from a fast patrol of 250° per second to a slow ramble of 5° per second with 0.45° pan accuracy for fast and accurate tracking ability. The 360° endless rotation and -10°~190° tilt travel make tracking the object passing directly beneath the dome. Maximum 64 preset points can be programmed for precise location of target areas, and users can also define 4 sequence and 1 auto-pan routes for the camera to operate automatically. In addition, RS-485 communication port is available for remote control purposes.

The Integrated High Speed Dome Camera provides 4 alarm inputs and 1 alarm output, and the smart alarm management mechanism can be programmed through the OSD setup menu; certain function (Preset / Sequence / Auto-Pan) can be activated when an alarm is triggered.

Large set of built-in protocols provide connectivity to other surveillance systems. The built-in protocols include DynaColor, Pelco, VCL, Philips, AD-422

(Manchester), etc, which allow the Integrated High Speed Dome Camera series to be integrated with other suppliers' surveillance systems.

Dependability and ultra high reliability are key factors in the speed dome's design cycle. Every speed dome is assembled with meticulous care and thorough testing at our ISO 9001 compliant factory. High performance, reliability and reasonably pricing make this speed dome to be an ideal solution to users' tough surveillance requirement.

1.1 Product Features

Precise and Accurate Tracking

- Auto Calibration
- Home Function
- Scheduling Function
- Pan driver accuracy of 0.45°
- Preset speed up to 250°/sec.
- Proportional Pan & Tilt Speed
- 64 Preset Position/4 Sequence /1 Auto-Pan

Low-Light Applications

- Removable IR Cut Filter (K Model)
- Minimum illumination 0.01 Lux
- Digital Slow Shutter
- Electronic Shutter

Perfect Contrast Solution for High Image Quality

- Wide Dynamic Range (K Model)
- Auto White Balance
- Auto Gain Control
- Backlight Compensation
- Auto Iris Control

Advanced Speed Dome Functions

- Up to 24 programmable privacy zones for camera view
- Digital Image Flip
- Image Inverse (K Model)
- Built-In multi-language OSD
- Easy FW upgrade via ISP
- Multiple Built-in protocols

Dynamic Dome Configuration

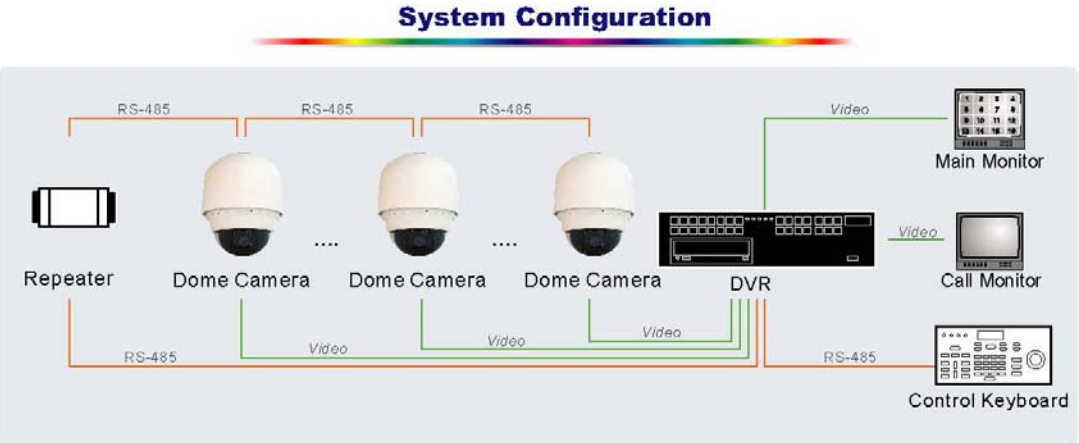
- Flexible In/Outdoor mountings
- Compact lightweight design for easy installation
- Weather resistant housing for temperature, sun ray, and rain

Integrated with Web, Enhanced Internet Capability (Optional)

- Remote monitoring operation/system configuration/software upgrade
- Include Windows active applications

1.2 Product Application

Connect the dome camera to other devices as shown in the diagram to complete a video surveillance solution.



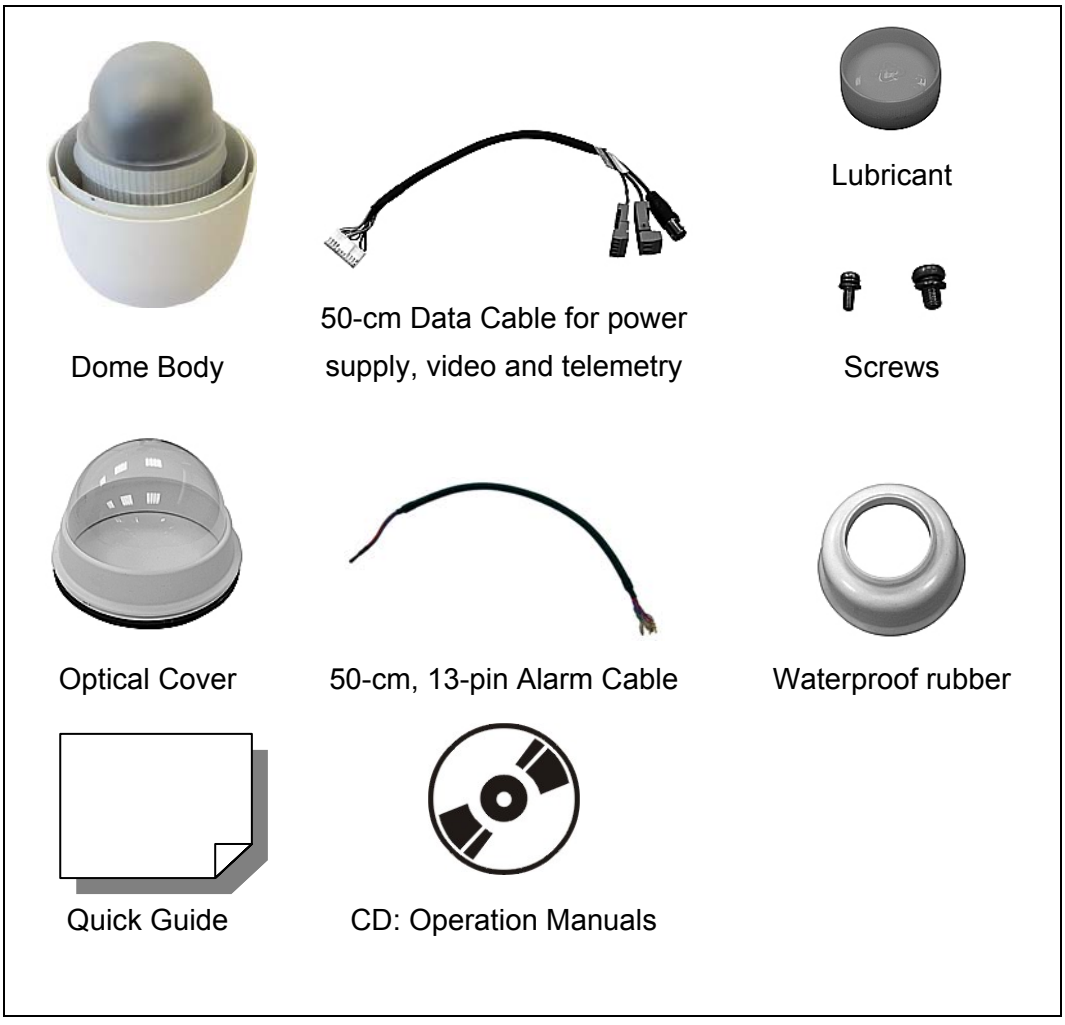
NOTE: To extend the network distance up to 1.2 km (4000 feet) and to protect the connected devices, it is highly recommended to place a repeater at the mid-point. However, a repeater may be needed in the network distance less than 1.2 km if the used cables are not the CAT 5, 24-gauge cables (see 2.7 RS-485 Connector Definition). Refer to the repeater's manual for detailed information.

2. Connecting the High Speed Dome

Please refer to the following sections to connect, set and operate the dome camera. In order to control the integrated high speed dome, basically a control keyboard or other control device is required.

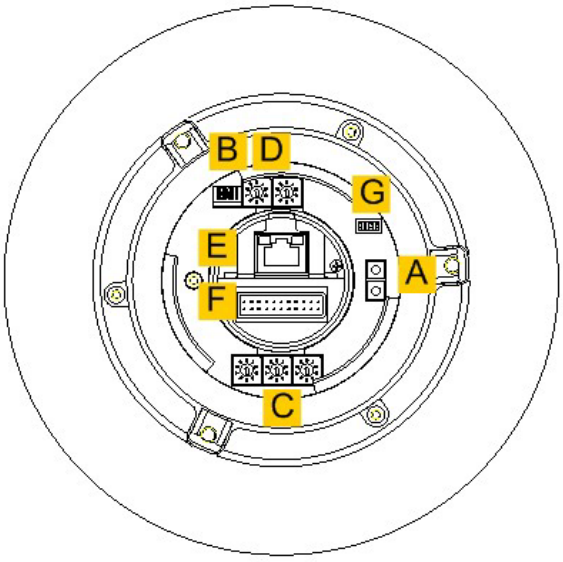
2.1 Package Contents

Before proceeding, please check the box contains the items listed here. If any item is missing or has defects, DO NOT install or operate the product and contact your dealer for assistance.



2.2 Switch Definition

First of all, configuring the dome ID and communication protocol is required before connecting the dome camera to other devices. The switches used for configuring these settings are located on the bottom of the dome camera.



A	Reserved
B	Communication Switch
C	Dome ID Switch
D	Dome Control Protocol Switch
E	RJ-45 Connector (for IP dome only)
F	22-Pin Connector
G	ISP Connector (for FW upgrade)

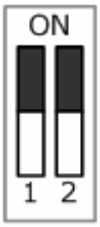
2.3 Communication Switch Setting

The table below shows the function of each pin within the Communication Switch.

Communication Switch		
	SW 1	RS-485 Setting
	SW 2	
	SW 3	Termination
	SW 4	Line Lock
	SW 5	System Initialization
	SW 6	Reserved

RS-485 is the interface that communicates the dome camera and its control device; for this reason, the RS-485 setup of the dome and the control device must be the same. The RS-485 default setting is half-duplex (see the diagram

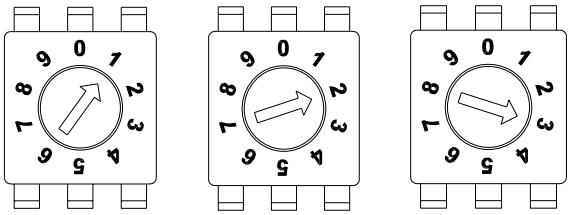
follows). Please do not change the default setting without qualified specialist or supplier's notice. As for the SW 3 and SW 4, they are used for termination and Line Lock adjustment respectively. The SW 5 is mainly used when users want to restore the camera to the factory default status; moreover, once firmware upgrade is carried out, users also need to reset the SW 5 afterward.

RS-485 Setting	
Half-duplex	Full-duplex
	

2.4 Dome ID Setting

Please change the dome ID if there is more than one dome on the same installation site. Use the switch to change your speed dome ID by turning the arrow to the desired number respectively. For instance, if the dome ID is 123, the ID switch should be set as below.

NOTE: No two domes should be given the same ID, or communication conflict may occur.



Centesimal Digit Decimal Digit Single Digit

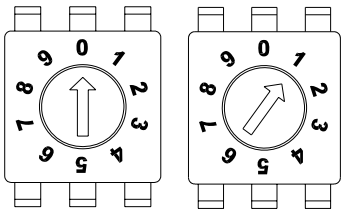
NOTE: The number "0" should locate upwards as shown in the diagram above for correct switch definition.

2.5 Dome Control Protocol Setting

Protocol is a specific set of rules, procedures used for data communications. Basing on the devices of your surveillance system and define the protocol you are going to use. Generally, use one protocol even the devices are provided from different manufacturers. Use the switch to set your dome control protocol and the baud rate. Refer to below table and turn the arrow to choose a protocol for your speed dome.

Switch No.	Protocol	Baud Rate
00	VCL	9600
01	Pelco D	2400
02	Pelco P	4800
04	Chiper	9600
05	Philips	9600
07	DSCP	9600
08	AD422	4800
09	DM P	9600
11	Pelco D	4800
12	Pelco D	9600
13	Pelco P	2400
14	Pelco P	9600
15	JVC	9600
21	Kalatel-485	9600
22	Kalatel-422	4800

Select protocol: Pelco D, with switch no. 01 and baud rate 2400, for instance, the protocol switch should be set as below.

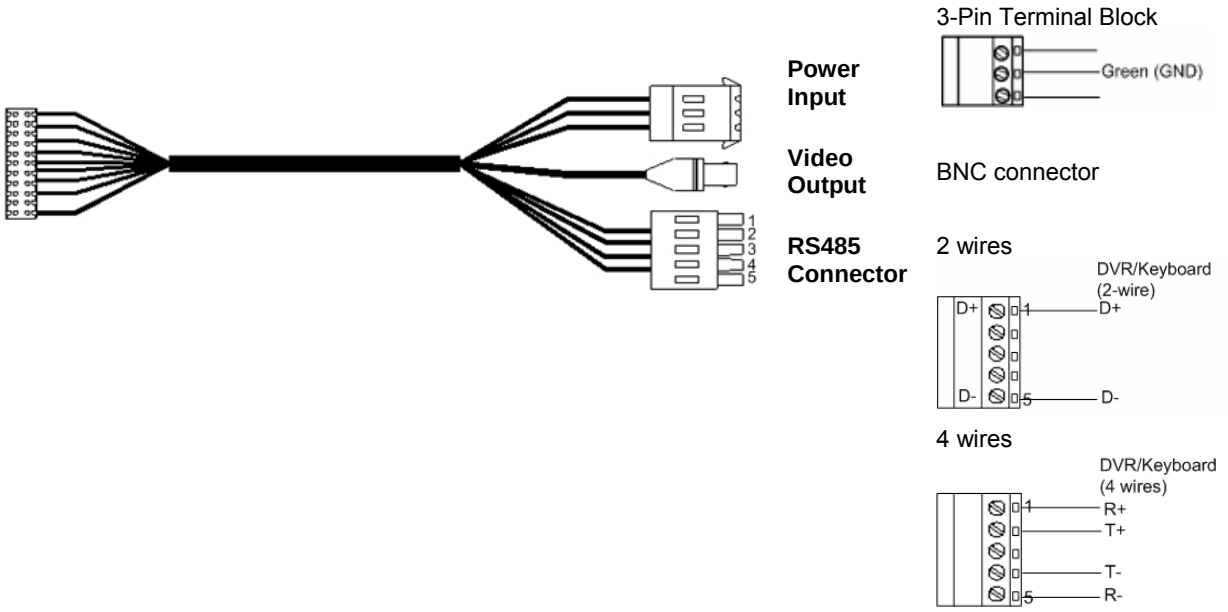


Decimal Digit Single Digit

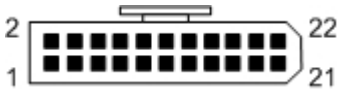
NOTE: The number "0" should locate upwards as shown in the diagram above for correct switch definition.

2.6 22-Pin Connector Definition

A 50-cm data cable (shown as the figure below) is shipped with the integrated high speed dome for quick installation for demo or testing usage. Additionaly, the section will also provide the definition of each pin within the 22-pin connector on the data cable. For more information about RS-485 connector, see 2.7 RS-485 Connector Definition.



NOTE: When wiring the power cable, make sure the G/Y wire (Ground) inserted into the mid-pin of the terminal block.

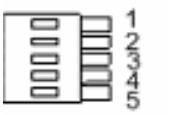


The 22-pin connector definition is listed as below.

Pin	Definition	Cable
1	AC 24-1/DC (+)	20AWG
2	ALM NC	
3	AC 24-2/DC (−)	20AWG
4	ALM NO	
5	FG	20AWG
6	ALM COM	
7	T+	24AWG
8	R-	
9	T-	
10	R+	
11	ISOG	
12	ALM-1	
13	ALM-3	
14	ALM-2	
15	ALM-4	
16~19	Reserved	
20	ALM GND	
21	VGND	24AWG
22	Video	

2.7 RS-485 Connector Definition

RS-485 is the interface that communicates the dome camera and its control device. Please connect the control keyboard to the speed dome through the terminal block. The recommended cables for RS-485 communication are **CAT 5** cables; maximum cable length for over 24-gauge wire is 4000 feet (1219 meters). If the total cable length exceeds 4000 feet, using a repeater to maintain the signals is recommended. Please refer to the figure and table below for pin defination and wiring.

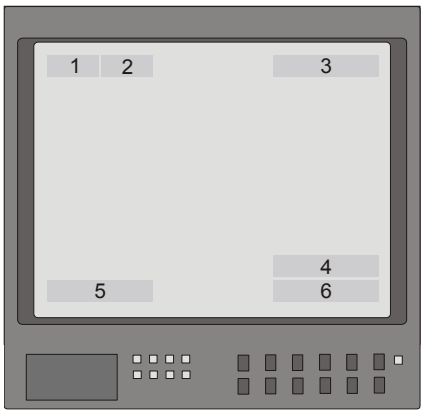


Pin	Corresponding Pins (22-Pin Connector)	Definition
1	7,10	T+, R+ (D+)
2~4	Reserved	
5	8,9	T-, R- (D-)

3. Operation and Configuration

3.1 Display Format

The information shown on the screen are described in terms of OSD display, position and function description in the table below.



Position	Function	OSD Display	Description
1	Focus Modes	A	Auto Focus Mode
		M	Manual Focus Mode
2	Backlight	X	Back Light Compensation OFF
		B	Back Light Compensation ON
3	Alarm	ALARM	Alarm Message
4	Zoom Ratio	×1	Present Zoom Ratio (Optical Zoom/Digital Zoom)
5	Title	• Maximum 20 characters for each title. • 16 sets of title are available.	
6	Camera ID	Show the camera ID	

3.2 OSD Menu Tree

The OSD setup menu structure of R & K model is listed below. Ths star symbol indicates the factory default. For detailed function description, please see 3.3 Configuration Menu.

R/K Model

Item	Layer 1	Layer 2	Layer 3	Default
LANGUAGE	<ENGLISH>, <FRENCH>, <GERMAN>, <ITALIAN>, <JAPANESE>, <POLISH>, <PORTUGUESE>, <RUSSIAN>, <SPANISH>			ENGLISH
DEFAULT CAMERA	<ON>, <OFF>			ON
BACKLIGHT	<ON>	BLC LEVEL <00> ~ <30>		OFF
	<OFF>			
FOCUS	AUTO	TUNING VALUE <1CM>, <10CM>, <30CM>, <1M>		10CM
	MANUAL	FOCUS SPEED <0> ~ <3>		
AE MODE	AUTO	IRIS OFFSET <00> ~ <15>		
	SHUTTER	SHUTTER SPEED K Model:<1/30000> ~ <1/2> R Model:<1/30000> ~ <1/50> (PAL); <1/30000> ~ <1/60> (NTSC)		
	IRIS	<00> ~ <09>		
	AGC	<00> ~ <05>		
WBC MODE	AUTO (Auto White Balance)			☆
	MANUAL	R GAIN <00> ~ <99> B GAIN <00> ~ <99>		
SETUP MENU 1	ZOOM SPEED	<FAST>, <SLOW>		FAST
	DIGITAL ZOOM	<OFF>, <02> ~ <12>		OFF
	SLOW SHUTTER (K Model only)	<1/2> ~ <1/60> (NTSC)		1/30
		<1/1.5> ~ <1/50> (PAL)		1/25
	IMAGE INVERSE (K Model only)	<ON>, <OFF>		OFF
	APERTURE	<AUTO>		☆
		<MANUAL>	H APERTURE <00> ~ <31> V APERTURE <00> ~ <31>	
	EXIT	YES		
SETUP MENU 2	FLIP	<OFF>, <M.E.>, <IMAGE> (K Model only)		OFF
	ANGLE ADJUSTER	MIN ANGLE<-10 ~ +10 DEG>		0
		MAX ANGLE <080 ~ 100 DEG>		90
	SPEED BY ZOOM	<ON>, <OFF>		OFF
	AUTO CALI.	<ON>, <OFF>		OFF
	SYSTEM RESET	YES		
	EXIT	YES		
ID DISPLAY	<ON>, <OFF>			ON
TITLE DISPLAY	<ON>, <OFF>			OFF
TITLE SETTING	<01> ~ <16>			01
PRESET	PRESET SET	<001>~<064>		ENTER
	PRESET RUN	<001>~<064>		ENTER
	EXIT	YES		ENTER
SEQUENCE	SEQUENCE LINE	<1> ~ <4>		1
	SEQUENCE POINT	<01> ~ <32>		01
	PRESET POS.	<001> ~ <064>		001
	SPEED	<01> ~ <15>		01
	DWELL TIME	<000> ~ <127> SEC.		000
	RUN SEQUENCE	ENTER		
	EXIT	YES		
AUTOPAN	AUTOPAN LINE	1		1

Item	Layer 1	Layer 2	Layer 3	Default
	START POINT	<TO FIND>, <TO SAVE>		
	END POINT	<TO FIND>, <TO SAVE>		
	DIRECTION	<RIGHT>, <LEFT>		RIGHT
	SPEED	<01> ~ <04>		01
	RUN AUTOPAN	ENTER		
	EXIT	YES		
CRUISE	NONE			
HOME SETTING	HOME FUNCTION	<ON>, <OFF>		OFF
	SELECT MODE	<PRESET>, <SEQUENCE>, <AUTOPAN>		PRESET
	PRESET POINT	<001> ~ <064>		001
	SEQUENCE LINE	<1> ~ <4>		1
	AUTOPAN LINE	<1>		1
	RETURN TIME	<1> ~ <128> MIN.		1
	GO	ENTER		
	EXIT	YES		
IR FUNCTION (K Model only)	<AUTO>, <ON>	THREADHOLD <MID>, <HI>, <LOW> IR COLOR <B/W>, <COLOR> EXIT <YES>		AUTO
ALARM SETTNG	ALARM PIN	<1> ~ <4>		1
	ALARM SWITCH	<ON>, <OFF>		OFF
	ALARM TYPE	<NO> (Normal Open), <NC> (Normal Close)		N.C.
	ALARM ACTION	<PRESET>, <SEQUENCE>, <AUTOPAN>		PRESET
	PRESET POINT	<001> ~ <064>		001
	SEQUENCE LINE	<1> ~ <4>		1
	AUTOPAN LINE	<001>		1
	DWELL TIME	<001> ~ <127> Sec., <ALWAYS>		ALWAYS
	EXIT	YES		
WDR FUNCTION (K Model only)	<ON>	RATIO LEVEL <000> ~ <128> SHUTTER SPEED <000> ~ <128> IRIS OFFSET <000> ~ <128> EXIT <YES>		
	<OFF>			☆
	<AUTO>			
PRIVACY MASK (K Model only)	PRIVACY SWITCH	<ON>, <OFF>		OFF
	MASK SHADE	<GRAY>, <WHITE>, <BLACK>		BLACK
	SET MASK	<01> ~ <08>	H CENTER <000> ~ <255>	
			V CENTER <000> ~ <255>	
			H SIZE <000> ~ <127>	
			V SIZE <000> ~ <127>	
			EXIT + SAVE	
	CLEAR MASK	<01> ~ <08>, <RESET>		01
	MASK DISPLAY	<FIRST>, <LAST>		FIRST
	EXIT	YES		
TIME SETTING	NONE			
SCHEDULE	NONE			
EXIT OSD	YES			

3.3 Configuration Menu

The detailed functions and parameter settings of your high speed dome can be set through the OSD (On Screen Display) menu with a control device, such as a control keyboard. The items in each model's OSD menu (R and K model) are described in the following sections.

To enter the OSD menu of the selected camera, press the <CAMERA MENU> button on the control keyboard and hold it for 3 seconds to enter the OSD menu.

To select the setup item, use direction keys on a keyboard to move the OSD cursor in the OSD menu.

To setup items, use direction keys on a keyboard to move the OSD cursor in the OSD menu. For items with →, press right/left direction buttons on the control keyboard to select. For items with ↓, press the <CAMERA MENU> button on the control keyboard to enter their sub menus. For items with →↓, users can use the right/left direction buttons to select functions, and then press the <CAMERA MENU> button on the control keyboard to enter their sub menus.

For further detailed setup procedures, please refer to the user's manual of your installed control devices.

3.3.1 LANGUAGE

The camera supports multi-language OSD operation; the available languages include English, French, German, Italian, Japanese, Polish, Portuguese, Russian and Spanish. You can straight set a wanted language on the **MAIN PAGE 1**, as shown below. As you select a language with the arrow keys, the OSD will automatically change to the language you selected. The default language is <ENGLISH>.

MAIN PAGE 1

LANGUAGE	ENGLISH
DEFAULT CAMERA	ON
BACKLIGHT	OFF
FOCUS	AUTO
AE MODE	ENTER
WBC MODE	AUTO
SETUP MENU 1	ENTER
SETUP MENU 2	ENTER

3.3.2 DEFAULT CAMERA

The DEFAULT CAMERA option is used to restore some camera settings back to

default setting. The settings that are affected include Backlight, Focus, AE, WBC, Aperture, Zoom Speed and Digital Zoom. Once any one of the items is modified, the setting will become <OFF> automatically. Select <ON> for this item to recall the mentioned camera parameters.

3.3.3 BACKLIGHT

The Backlight compensation function prevents the center object from being too dark in surroundings where excessive light is behind the object.

The Backlight Compensation Level ranges from 00 to 30.

BLC LEVEL	00

NOTE: If this function is enabled, the WDR function (for K model only) will be disabled automatically. For details, refer to section 3.3.18 WDR Setting.

After completing setup of backlight, go back to the **Main Page 1** and continue to set the focus values.

MAIN PAGE 1	
LANGUAGE	ENGLISH
DEFAULT CAMERA	ON
BACKLIGHT	OFF
FOCUS	AUTO
AE MODE	AUTO
WBC MODE	AUTO
SETUP MENU 1	ENTER
SETUP MENU 2	ENTER

3.3.4 FOCUS

The focus of the dome camera can be operated in two modes: Auto Focus mode and Manual Focus mode. Various setting for different models are described as follows.

- **AUTO**

The optimum focus is achieved by the internal digital circuit. Users can adjust the minimum auto focus range for some special conditions; the options are <1 cm>, <10 cm>, <30 cm> and <1 m>.

TURNING VALUE	10CM

- **MANUAL**

In this focus mode, users can adjust the focus speed, ranging from 0 ~ 3.

FOCUS SPEED	0

After completing setup of focus, go back to the **Main Page 1** and continue to set the AE mode.

MAIN PAGE 1	
LANGUAGE	ENGLISH
DEFAULT CAMERA	ON
BACKLIGHT	OFF
FOCUS	AUTO
AE MODE	AUTO
WBC MODE	AUTO
SETUP MENU 1	ENTER
SETUP MENU 2	ENTER

3.3.5 AE MODE

The exposure is the amount of light received by the image sensor and is determined by the width of lens diaphragm opening (iris adjustment), the amount of exposure by the sensor (shutter speed) and other exposure parameters. With this item, users can define how the Auto Exposure (AE) function works.

- **AUTO**

  In this mode, the camera's Shutter, IRIS and AGC control function work automatically to compensate the light exposure of image sensor for consistent video output level. IRIS OFFSET is used to set the level of IRIS variation (00 ~ 15).

- **SHUTTER**

  With this option, the priority of SHUTTER is higher than IRIS and AGC; IRIS and AGC circuit will function automatically in cooperating with SHUTTER to get consistent exposure. The range of shutter speed for K model is: 1/30000 ~ 1/2 and for R model: 1/30000 ~ 1/50 (PAL) or 1/60 (NTSC).

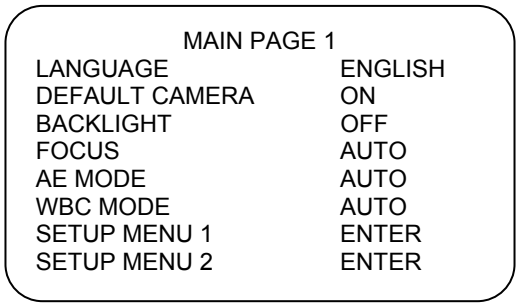
- **IRIS**

  With this option, the priority of IRIS is higher than SHUTTER and AGC; SHUTTER and AGC circuit will function automatically in cooperating with IRIS to get consistent exposure. If the IRIS is modified manually, the action of exposure compensation depends on the AGC circuit. The range

of Iris level is between 00 and 09.

- **AGC**
  With this option, the priority of AGC is higher than SHUTTER and IRIS; SHUTTER and IRIS circuit will function automatically in cooperating with AGC to get consistent exposure. If AGC is adjusted manually, the exposure compensation depends on the changing of IRIS. The range of Iris level is between 00 and 05.

After completing various parameter setups, please exit the AE MODE menu and go back to the **Main Page 1** to continue to set the WBC mode.



3.3.6 WBC MODE

A digital camera needs to find reference color temperature, which is a way of measuring the quality of a light source, for calculating all the other colors. The unit for measuring this ratio is in degree Kelvin (K). You can select one of the White Balance Control modes according to the condition. The following table shows the color temperature of some light sources.

Light Sources	Color Temperature in K
Cloudy Sky	6,000 to 8,000
Noon Sun and Clear Sky	6,500
Household Lighting	2,500 to 3,000
75-watt Bulb	2,820
Candle Flame	1,200 to 1,500

- **AUTO**
  In this mode, white balance works within its color temperature range and calculates the best-fit white balance.

- **MANUAL**
  In this mode, users can change the White Balance value manually; adjustable R gain and B gain range from 00 to 99.

WBC MENU	
R GAIN	50
B GAIN	50

After WBC relevant parameter setups are completed, please exit the WBC MODE menu and go back to the **Main Page 1** to continue to set other functions under the setup menu 1.

MAIN PAGE 1	
LANGUAGE	ENGLISH
DEFAULT CAMERA	ON
BACKLIGHT	OFF
FOCUS	AUTO
AE MODE	AUTO
WBC MODE	AUTO
SETUP MENU 1	ENTER
SETUP MENU 2	ENTER

3.3.7 SETUP MENU 1

K Model:

SETUP MENU 1	
ZOOM SPEED	FAST
DIGITAL ZOOM	OFF
SLOW SHUTTER	OFF
IMAGE INVERSE	OFF
APERTURE	AUTO
EXIT	YES

R Model:

SETUP MENU 1	
ZOOM SPEED	FAST
DIGITAL ZOOM	OFF
SLOW SHUTTER	NONE
IMAGE INVERSE	NONE
APERTURE	AUTO
EXIT	YES

- ### ZOOM SPEED

  This item is used to set the zoom speed of the dome camera; the options are <FAST> (default) and <SLOW>.

- ### DIGITAL ZOOM

  With this item, users can enable or disable the 12× Digital Zoom. The Digital Zoom will be activated after the full Optical Zoom level is reached. Digital zoom ratio is adjustable from <02> to <12>. The default setting is <OFF>.

  NOTE: The difference between optical and digital zoom is that optical zoom uses the lens within the camera to draw the image closer via zoom in or out to achieve the desired effect. Optical zoom remains the same quality and full resolution of the zoomed image. On the other hand, Digital zoom takes a portion of an image and expands the partial image to the full size of the original image; therefore, the image quality will be reduced.

- ### SLOW SHUTTER (K Model Only)

  The shutter speed determines how long the image sensor is exposed to

light. To see clear image in a dark environment, please enable this function and select a slower shutter speed.

The shutter speed is adjustable in K model. With the slowest shutter speed, users can see objects in a dark environment under 0.2 lux or see smooth video image with a higher shutter speed. The options are from <1/2> to <1/60> for NTSC and <1/1.5> to <1/50> for PAL.

- **IMAGE INVERSE (K Model Only)**

Users can select <ON> to make the displayed image inversed vertically and horizontally (see the figures shown below). Occasions to employ the function include conferences, demonstration, testing, etc. For K model, when this function is enabled, the preset mask(s) will be set off automatically (see 3.3.19 Privacy Mask). The default setting is <OFF>.

Application: Users can see the displayed images, as shown below, when a dome is placed on the desk top in a conference, for instance.

IMAGE INVERSE (OFF)

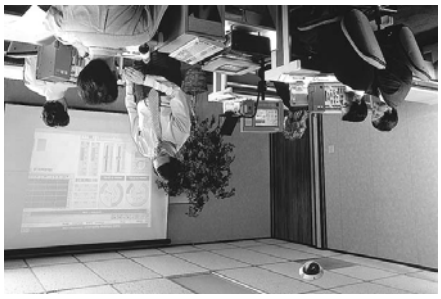


IMAGE INVERSE (ON)

- **APERTURE**

Under this setup menu, users can adjust enhancement of the edges of objects in the picture.

Users can select either the <AUTO> mode or <MANUAL> mode. Under the <MANUAL> mode, the parameters of H aperture and V aperture are adjustable, ranging from 00 to 31.

APERTURE MENU	
H APERTURE	00
V APERTURE	00

- **EXIT**

Exit the SETUP MENU 1 and go back to the **MAIN PAGE 1** to set other functions under the setup menu 1.

R/K Model:

MAIN PAGE 1	
LANGUAGE	ENGLISH
DEFAULT CAMERA	ON
BACKLIGHT	OFF
FOCUS	AUTO
AE MODE	AUTO
WBC MODE	AUTO
SETUP MENU 1	ENTER
SETUP MENU 2	ENTER

3.3.8 SETUP MENU 2

R/K Model:

SETUP MENU 2	
FLIP	ENTER
ANGLE ADJUSTER	ENTER
SPEED BY ZOOM	OFF
AUTO CALI.	OFF
SYSTEM RESET	YES
EXIT	YES

- **FLIP**

Users can track an object continuously when it passes through under the dome camera with setting Flip to IMAGE (digital flip) or M.E. (mechanical flip).

FLIP SETTING	
FLIP	OFF
EXIT	YES

IMAGE (K Model only)

IMAGE represents digital IMAGE FLIP, which enables users to keep tracking objects seamlessly; under the mode, almost no delay occurs in comparing with that under the M.E. mode.

NOTE: The Privacy Mask function will be automatically disabled if the Image Flip function is enabled, and the screen will show "MASK WILL BE SET OFF."

M.E. (Mechanical Flip)

M.E. is a standard mechanical operation. As the dome tilts 90°, it will pan 180°, and then continue tilting to keep tracking objects.

OFF

Select this item to disable the flip function.

NOTE: To make the dome tilt between -10° to +100° or -10° ~ +190°, please go to **ANGLE ADJUSTER** (see next section) to complete setting. Otherwise, the dome will only be able to tilt 90°.

- ## ANGLE ADJUSTER

The item is for adjusting the angle of view. The Range of the view angle varies in different FLIP modes: the angle ranges from -10° to +100° in the M.E. FLIP and FLIP OFF modes, and from -10° ~ +190° in the IMAGE FLIP mode.

ANGLE ADJUSTER	
ADJUST MIN ANGLE	-10DEG
ADJUST MAX ANGLE	100DEG
EXIT + SAVE	YES

- ## SPEED BY ZOOM

If the item is set to <ON>, the pan/tilt speed will be automatically adjusted by internal algorithm when zooming. The larger zoom ratio leads to the lower rotating speed.

- ## AUTO CALI. (Auto Calibration)

There are one horizontal point and one vertical infrared rays check point in each dome. During installation or maintenance, the dome camera's position may be moved. Therefore, the relative distance between the original set point and the check point will be changed. If enable the Auto Calibration function, the dome will automatically detect the matter and reset the horizontal point back to the original position.

- ## SYSTEM RESET

Select this item for remote resetting.

- ## EXIT

Exit the SETUP MENU 2 and go back to the **MAIN PAGE 1**.Then go to the **MAIN PAGE 2** to carry on setting other functions.

MAIN PAGE 2	
ID DISPLAY	ON
TITLE DISPLAY	OFF
TITLE SETTING	01
PRESET	ENTER
SEQUENCE	ENTER
AUTOPAN	ENTER
CRUISE	NONE
HOME SETTING	ENTER

3.3.9 ID DISPLAY

Press the direction button down to turn the MAIN MENU page from 1 to 2, and then the menu item <ID DISPLAY> will be shown on the top. Users are allowed to choose whether the dome ID will be displayed on screen for identifying the domes. For more information, please refer to 2.4 Dome ID Setting.

- **ON**
  Display the ID address of the selected dome on the right bottom of the screen.

- **OFF**
  Hide the ID address of the selected dome.

3.3.10 TITLE DISPLAY

Users are allowed to name a view area, where the title will be displayed on screen for easy recognition.

- **ON**
  Select <ON> to display the title set for a view area on screen while the camera shooting the view area.

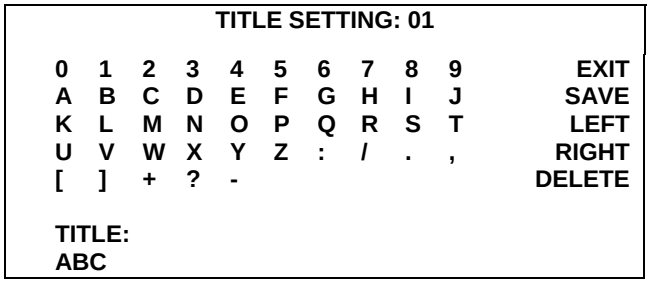
- **OFF**
  When **TITLE DISPLAY** is set <OFF>, no title will be displayed on screen even titles have been set in advance.

3.3.11 TITLE SETTING

Up to 16 zone titles can be set with maximum 20 characters for each title. Each view area's title can be named with a privacy mask ID number for future recognition.

NOTE: For the K model, the available area for setting a privacy mask is restricted within tilt angle 45°.

Follow the steps to set a camera title.
STEP 1: Operate the dome to a view area where you want to set a title for it.
STEP 2: Turn on the OSD and go to the **MAIN PAGE 2** to select <TITLE SETTING>.
STEP 3: Select a number to represent the view area.
STEP 4: Press <ENTER> to go into the editing page.

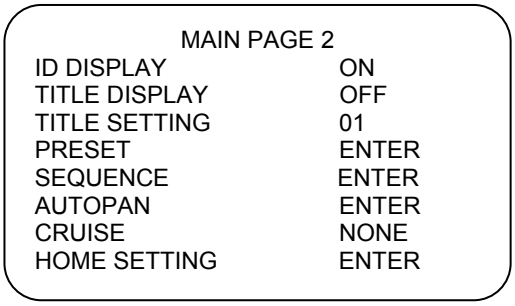


STEP 5: Choose a character with direction keys and then press <ENTER> to input. For example: <A > <ENTER>, <B> <ENTER>, <C> <ENTER> TITLE: ABC

STEP 6: To delete input characters, move the cursor to <LEFT> or <RIGHT> and press <ENTER> to select a character in the entry field. Then move the cursor to <DELETE> and press <ENTER> to delete the selected character.

STEP 7: When the setting is completed, move the cursor to <SAVE> and press <ENTER> to save.

After completing tile setting, go back to the **MAIN PAGE 2** to carry on setup of preset points.



3.3.12 PRESET

- **PRESET SET**
  Move the camera to the targeted shooting area/point. When the cursor flashes, press "ENTER" to set the area/point as preset point 1, 2, 3, etc. Totally 64 preset points can be set.

- **PRESET RUN**
  Select the preset point that you want to execute. After pressing "ENTER", the camera will turn to the appointed point.

- **EXIT**
  Exit the PRESET menu and go back to the **MAIN PAGE 2** to carry on setup of sequence.

MAIN PAGE 2	
ID DISPLAY	ON
TITLE DISPLAY	OFF
TITLE SETTING	01
PRESET	ENTER
SEQUENCE	ENTER
AUTOPAN	ENTER
CRUISE	NONE
HOME SETTING	ENTER

Users could set preset points through a keyboard. Please refer to the control keyboard's quick guide for further information.

3.3.13 SEQUENCE

The function executes pre-positioning of the pan, tilt, zoom and focus features in a certain sequence for a camera. Before setting this function, users must pre-define at least two preset points.

SEQUENCE	
SEQUENCE LINE	1
SEQUENCE POINT	01
PRESET POSITION	001
SPEED	01
DWELL TIME	001
RUN SEQUENCE	ENTER
EXIT	YES

- **SEQUENCE LINE**

  There are four sets of sequence lines built in the dome camera. Using LEFT/RIGHT direction keys to select a line first and then set its sequence points.

- **SEQUENCE POINT**

  Up to 32 points can be specified for each sequence line. The sequence points represent order of the preset points that the dome will automatically run. The following setup items, including PRESET POSITION, SPEED and DWELL TIME, will influence how the camera runs through each sequence point.

- **PRESET POSITION**

  Users can assign a specific preset position to the selected sequence point with this item.

- **SPEED**
  Users can set the speed of one sequence point to the next one, and the range of setup speed is from 1 to 15. Within the range, PAN speed is adjustable from 10 ~ 400(degree/sec.), and TILT speed is adjustable from 8 ~ 400(degree/sec.).

- **DWELL TIME**
  The DWELL TIME is the duration time that the dome will stay at a sequence point, and the range is from <0> to <127> seconds. The dome will go to the next sequence point when the DWELL TIME expires. If the setting is <0>, the dome will stay at this sequence point until users manually move the dome.

- **RUN SEQUENCE**
  Users can command the dome camera to run the selected sequence line manually.

- **EXIT**
  Select the item to exit the SEQUENCE menu; go back to the **MAIN PAGE 2** to carry on setup of auto-pan.

MAIN PAGE 2	
ID DISPLAY	ON
TITLE DISPLAY	OFF
TITLE SETTING	01
PRESET	ENTER
SEQUENCE	ENTER
AUTOPAN	ENTER
CRUISE	NONE
HOME SETTING	ENTER

Users could execute the sequence function through a keyboard. Please refer to the control keyboard's quick guide for further information.

3.3.14 AUTOPAN

Auto-pan means motion of scanning an area horizontally so that the dome camera can catch horizontal view. The parameters are listed as follows.

AUTOPAN	
AUTOPAN LINE	1
START POINT	TO FIND
END POINT	TO FIND
DIRECTION	RIGHT
SPEED	01
RUN AUTOPAN	ENTER
EXIT	YES

- **AUTOPAN LINE**

  Users could set an auto-pan line to scan a certain area. In addition, users are able to command the dome camera to do endless panning by setting the start point the same as the end point.

- **START POINT**

  Follow the description below to set the start position of the AUTOPAN path.

  1. Move the cursor to <START POINT> and press <ENTER> while the item, <TO FIND>, is flashing. Then the item will turn <TO SAVE> automatically.
  2. Move the dome to a desired position and press <ENTER> to save the position as the start point; the cursor will move to <END POINT> automatically. Ensure setting the end point to complete auto-pan setting.

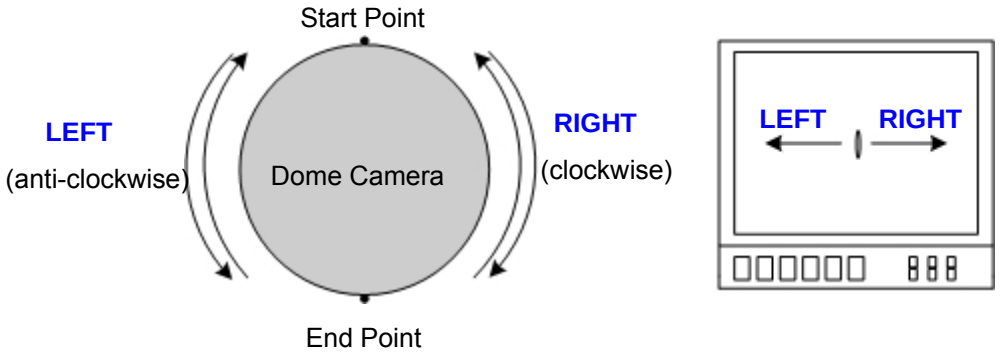
  NOTE: The tilt and zoom values of the start point will be recorded and fixed for the selected auto-pan line.

- **END POINT**

  Users are able to set the end point after the start point is defined. Pan the dome to another position and press <ENTER> to save the position as the end point.

- **DIRECTION**

  The item is for setting the AUTOPAN direction of the dome camera. The dome will start to pan clockwise from the start point to the end point if your selection is <RIGHT>, and then return to the start point. The dome will start to pan anti-clockwise from the start point to the end point if your selection is <LEFT>. Refer to the diagram below.



- **SPEED**

  The item is for defining the dome camera rotation speed while running auto-pan. The speed is adjustable from 1 to 4 (10 ~ 45 degree/sec.).

- **RUN AUTOPAN**
  After all setting related to auto-pan are completed, select this item to execute the Auto-pan function.

- **EXIT**
  Exit the AUTOPAN setup menu; go back to the **MAIN PAGE 2** to carry on setup of Home Setting.

MAIN PAGE 2	
ID DISPLAY	ON
TITLE DISPLAY	OFF
TITLE SETTING	01
PRESET	ENTER
SEQUENCE	ENTER
AUTOPAN	ENTER
CRUISE	NONE
HOME SETTING	ENTER

Users could execute the auto-pan function through a keyboard. Please refer to the control keyboard's quick guide for further information.

3.3.15 HOME SETTING

Users are able to set an operation mode to ensure constant monitoring. If the dome idles for a period of time, the preset function will be activated automatically; this is the HOME function. The HOME function allows constant and accurate monitoring to avoid the dome idling or missing events.

HOME SETTING	
HOME FUNCTION	OFF
SELECT MODE	PRESET
PRESET POINT	001
RETURN TIME	001MIN.
GO	ENTER
EXIT	YES

- **HOME FUNCTION**
  The item is used to enable or disable the HOME function. Use the left/right direction keys of the control keyboard to change the setting.

- **SELECT MODE**
  Select one of the modes that the dome should execute when the HOME function is enabled and the RETURN TIME expires. The options include <AUTOPAN>, <SEQUENCE> and <PRESET>. Use the left/right direction keys of the control keyboard to change the setting, and the items below will change in cooperating with your selection.

- **PRESET POINT**

  Select a preset point where the dome should go after the Return Time function, which will be mentioned later, is activated. The preset point(s) should be set prior either in the PRESET setup menu or through the keyboard.

  SEQUENCE LINE

  Select a sequence line that the dome camera should execute after the Return Time function is activated. The sequence line(s) should be defined prior either in the SEQUENCE setup menu or through the keyboard.

  AUTOPAN LINE

  Select an auto-pan line that the dome camera should execute after the Return Time function is activated. The auto-pan line(s) should be defined prior either in the AUTOPAN setup menu or through the keyboard.

- **RETURN TIME**

  The dome starts to count down RETURN TIME when the dome idles, and then execute the SELECT MODE function when the return time is up. The RETURN TIME ranges from 1 to 128 minutes.

- **GO**

  If HOME function is enabled, users are allowed to execute HOME function by selecting this item.

- **EXIT**

  Exit the HOME SETTING menu. Then go to the **MAIN PAGE 3** to carry on other setups.

NOTE: If use R model, please skip the following section and go to **3.3.17 ALARM SETTING** to continue setup of alarm related setting.

R Model:

MAIN PAGE 3	
IR FUNCTION	NONE
ALARM SETTING	ENTER
WDR FUNCTION	NONE
PRIVACY MASK	NONE
TIME SETTING	NONE
SCHEDULE	NONE
EXIT OSD	YES

K Model:

MAIN PAGE 3	
IR FUNCTION	AUTO
ALARM SETTING	ENTER
WDR FUNCTION	OFF
PRIVACY MASK	ENTER
TIME SETTING	NONE
SCHEDULE	NONE
EXIT OSD	YES

3.3.16 IR FUNCTION (Removable IR Cut)

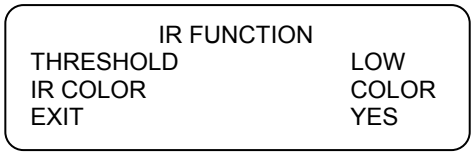
With the IR cut filter, the dome can still catch clear image at night time or in low

light conditions. During day time, the IR cut filter will be on to block the infrared light for clear image; during night time, the IR cut filter will be removed to catch infrared light, and the displayed images will become black and white. Moreover, in the K model, users are able to view color images when the IR function is activated. Refer to the description below to operate the IR function.

K Model:

- **AUTO**
  The Internal circuit will automatically decide the occasion to remove the IR cut filter according to the image brightness level.

- **ON**
  Select the item to remove the IR cut filter.



THRESHOLD

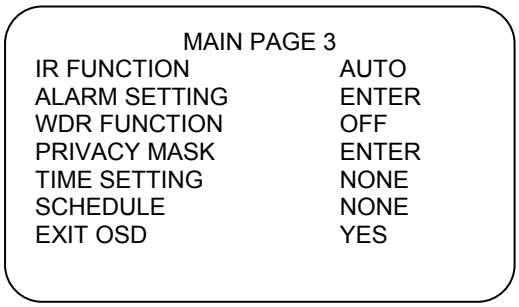
The dome will remove the filter immediately when the threshold value is reached. The threshold options are <LOW>, <MID> and <HI>. <LOW> threshold indicates a higher sensitivity and can improve reliability of lens.

IR COLOR

When the IR function is enabled, the video output can be programmed as color or B/W (black and white).

Exit

Exit the IR function menu and go back to the **MAIN PAGE 3** to carry on setup of alarm setting.



3.3.17 ALARM SETTING

The integrated high speed dome provides four alarm inputs and one alarm output (N.O. or N.C) to connect alarm devices. With this function, the dome can cooperate with alarm system to catch events' images. For wiring, please refer to the installation guide and/or qualified service personnel. Adjustable alarm parameters are listed below.

ALARM SETTING	
ALARM PIN	1
ALARM SWITCH	OFF
ALARM TYPE	N.C.
ALARM ACTION	PRESET
PRESET POINT	001
DWELL TIME	ALWAYS
EXIT	YES

- **ALARM PIN**

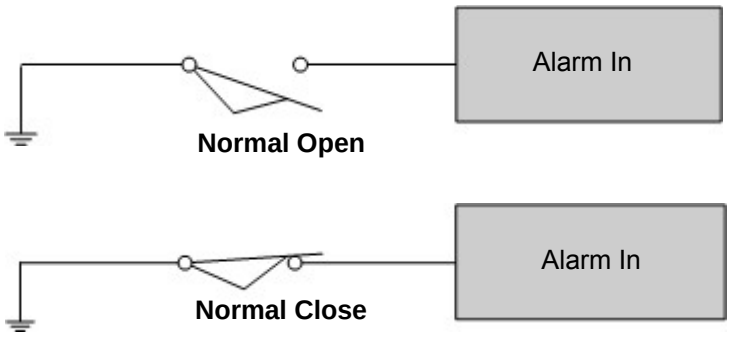
  The dome provides 4 alarm inputs and 1 output (N.O. / N.C.). Select an alarm connector which you want to set its alarm-related parameters with this item, and then set its alarm-related parameters in the Alarm Setting menu. For alarm pin definitions, please refer to 2.7 Alarm Pin Definition or the installation guide.

- **ALARM SWITCH**

  The item is used to enable or disable the selected alarm pin function. Use the left/right direction keys on the control keyboard to change the setting.

- **ALARM TYPE**

  There are two kinds of alarm types: Normal Open and Normal Close, which are illustrated as below. Select an alarm type that corresponds with the alarm application.



- **ALARM ACTION**

  The alarm actions include PRESET, SEQUENCE and AUTOPAN functions. Select one of these modes so that certain action will be executed when an alarm is triggered. Use the right direction key of the control keyboard to select a particular action mode, and the items listed below will change in accordance with your selected alarm action.

- **PRESET POINT**

  Select a preset point where the dome should go when an alarm pin is triggered. The preset point(s) should be set prior either in the PRESET

setup menu or through the keyboard.

SEQUENCE LINE

Select a sequence line that the dome camera should execute when an alarm pin is triggered. The sequence line(s) should be defined prior either in the SEQUENCE setup menu or through the keyboard.

AUTOPAN LINE

Under the mode, the dome camera would execute the auto-pan line when an alarm pin is triggered. The auto-pan line should be defined prior either in the AUTOPAN setup menu or through the keyboard.

- **DWELL TIME**

  The DWELL TIME is duration of executing an alarm action. If select the PRESET mode, when alarm takes place, the dome will go to the selected preset position and stay there for a user-defined period of time (1~127seconds/Always). If select other modes (SEQUENCE/AUTOPAN), the dome will keep executing the selected mode (DWELL TIME: ALWAYS) until alarm condition is released or users rotate the dome.

  NOTE: The dwell time is only adjustable when selecting **PRESET** as the alarm action.

- **EXIT**

  If use K model, after exiting the ALARM SETTING menu, go back to the **MAIN PAGE 3** to carry on setup of WDR function.

K Model:

MAIN PAGE 3	
IR FUNCTION	AUTO
ALARM SETTING	ENTER
WDR FUNCTION	OFF
PRIVACY MASK	ENTER
TIME SETTING	NONE
SCHEDULE	NONE
EXIT OSD	YES

3.3.18 WDR FUNCTION (K Model Only)

The Wide Dynamic Range (WDR) function is especially effective in solving indoor and outdoor contrast issues to enhance better image quality and video display. It enables the dome to catch detailed data from the dark part (Indoor) without any saturation from the bright part (Outdoor).

NOTE: The Backlight function will be turned off automatically when the WDR function is enabled because the WDR function has better effects than Backlight Compensation.

- **AUTO**
  In this mode, the dome camera will operate the WDR function automatically.

- **ON**
  Under the item, users can define three parameters' value: RATIO LEVEL (000 ~ 128), SHUTTER SPEED (000 ~ 128) and IRIS OFFSET (000 ~ 128), as shown in the following column.

WDR MODE	
RATIO LEVEL	000
SHUTTER SPEED	000
IRIS OFFSET	000
EXIT	YES

- **OFF**
  Exit the WDR FUNCTION menu and go back to the **MAIN PAGE 3** to carry on setup of privacy mask.

MAIN PAGE 3	
IR FUNCTION	AUTO
ALARM SETTING	ENTER
WDR FUNCTION	OFF
PRIVACY MASK	ENTER
TIME SETTING	NONE
SCHEDULE	NONE
EXIT OSD	YES

3.3.19 PRIVACY MASK

The Privacy Mask function aims to avoid any intrusive monitoring. Users can adjust the camera view position using the joystick, and adjust the mask size and area via the direction keys on the control keyboard. The dome camera will memorize the center of the selected view as an original point, so the joystick will be locked as users enter the SET MASK menu (mentioned later). Refer to the following description for setting privacy masks.

NOTE: The Image Flip function (for all models) and the Image Inverse function (for K model) will be disabled automatically while the Privacy Mask function is enabled.

K Model:

PRIVACY	
PRIVACY SWITCH	OFF
SHADE	BLACK
SET MASK	01
CLEAR MASK	01
MASK DISPLAY	FIRST
EXIT	YES

- **PRIVACY SWITCH**

  The item is used to enable or disable the masking function. Set this item to <ON> before configuring mask zones.

- **SHADE**

  The color of a privacy mask can be selected through this item. The available colors are black, gray and white.

- **SET MASK**

  After pressing <ENTER> to enter the sub-menu of SET MASK, the dome will memorize the present position as a privacy mask position; up to 8 masks can be set. The model restricts the mask zones to be set too close with each other.

NOTE: For the K model, the available area for setting a privacy mask is restricted within tilt angle 45°, and two mask zones are allowed to set in a view area.

MASK01 MENU	
H CENTER	000
V CENTER	000
H SIZE	000
V SIZE	000
EXIT+SAVE	YES

H CENTER (000~255)

The original center of a mask zone is the center of a screen. Users can move the center of a mask zone to another position through adjust this value by pressing the LEFT/RIGHT keys on the keyboard.

V CENTER (000~255)

The original center of mask zone is the center of screen. User can move the center of mask zone to another position through adjust this value by pressing the LEFT/RIGHT keys on the keyboard.

H SIZE (000~127)

Users can adjust the horizontal size of a privacy mask through this item. Set the H and V size to 0 can also delete the selected mask.

V SIZE (000~127)

User can adjust the vertical size of a privacy mask through this item. Set the H and V size to 0 can also delete the selected mask.

- **CLEAR MASK**

  Users can delete a preset mask zone with this item. Please follow the steps listed below.

  1. Select the mask zone that will be erased (e.g. 01).
  2. Press <ENTER> to confirm the selection. Consequently, the screen will display the instructions to reset after the mask is cleared.
  3. Select <RESET> under the CLEAR MASK item and press <ENTER> to proceed with resetting.

- **MASK DISPLAY**

  This item is used to set the time to display a privacy mask.

  FIRST

  If select this mode, the camera will detect the mask zone at the next preset position and display the mask in advance, and then pan the dome to the preset point.

  LAST

  If select this mode, the camera will move the dome to the preset point, and then display the mask zone.

- **EXIT**

  Exit the PRIVACY MASK menu and go back to the **MAIN PAGE 3**.

K Model:

MAIN PAGE 3

IR FUNCTION	AUTO
ALARM SETTING	ENTER
WDR FUNCTION	OFF
PRIVACY MASK	ENTER
TIME SETTING	NONE
SCHEDULE	NONE
EXIT OSD	YES

3.3.20 EXIT OSD

To exit the OSD setup menu, users can either select this item on the bottom of **MAIN PAGE 3** or press the ESC button on the control keyboard.

Appendix A: Technical Specification

Items		R Model	K Model
CAMERA			
CCD Sensor		1/4" CCD	1/4" CCD
Progressive Scan		-	Yes
Optical Zoom		22×	23x
Digital Zoom		1×~ 12× variable	
Effective Pixels	NTSC	380k	
	PAL	440k	
Horizontal Resolution	NTSC	480 TVL	
	PAL	480 TVL	
Scanning System		NTSC / PAL	
Synchronization		Internal / Line Lock	
Video Output		1.0 Vp-p / 75 Ω, BNC	
S/N Ratio		> 50 dB (AGC Off)	
Minimum Illumination		1 lux	0.1 lux; 0.01 lux(B/W)
Focal Length		4~88 mm	3.6~82.8 mm
Focus Mode		Auto / Manual	
White Balance		Auto / Manual	
Iris Control		Auto / Manual	
Electronic Shutter	NTSC	1/60~1/30k sec.	1/2~1/30k sec.
	PAL	1/50~1/30k sec	1/1.5~1/30k sec
AGC control		Auto / Manual	
Back Light Compensation		On / Off	
OPERATION			
Built-in Protocol		DynaColor, Pelco D&P, VCL, Philips, AD-422, JVC, Kalatel, etc.	
Multi-Language OSD		English, French, German, Italian, Japanese, Polish, Portuguese, Russian, Spanish	
Pan Travel		360° endless	
Tilt Travel		-10°~100°	-10°~190°
Manual Speed		1°~70°/s	
Presets		64	
Preset Accuracy	Pan	0.45°	
	Tilt	0.45°	
Preset Speed	Pan	5°~250°/s	
	Tilt	5°~250°/s	
Cruise		-	
Sequence		4	
Auto Pan		1	
Privacy Mask		-	8
Proportional Pan & Tilt		On/Off (Pan and tilt speed proportional to zoom ratio)	
Resume after Power loss		Yes	
Zone Title		16	
Home Function		Preset, Sequence, Auto pan	
Auto Flip		Mechanical/Off	
Digital Slow Shutter		-	On/Off
Electronic Image Stabilizer		-	-
Motion Detection		-	-
Wide Dynamic Range		-	On/Off
Day/Night: IR Cut Filter		-	On/Off
Alarm Input		4	
Alarm Output		1	
Alarm Reaction		Preset, Sequence, Auto pan	
GENERAL			
Environment		Indoor / Outdoor	
Controller Interface		RS-485	
Operating Temperature		-45°C ~ 50°C (-49°F ~ 122°F)	
Waterproof Standard		IP66 standard (DH801^{+} series)	
Dimension		⌀172 x 302.5mm (6.7 x 11.9 Inches); ⌀190 x 302.5mm (7.5x 11.9 Inches), with sunshield	
Weight		6 kg (13.2 lbs)	
Power Source		AC24V ± 10%	
Power Consumption		65 W (with Heater)	
Regulatory		CE, FCC, RoHS	

OSD Menu Notes

The following OSD menu table is provided for users to record various dome setting.

<R/K Model>

Item	Layer 1	Layer 2	Layer 3	Notes
LANGUAGE	<ENGLISH>, <FRENCH>, <GERMAN>, <ITALIAN>, <JAPANESE>, <POLISH>, <PORTUGUESE>, <RUSSIAN>, <SPANISH>			
DEFAULT CAMERA	<ON>, <OFF>			
BACKLIGHT	<ON>	BLC LEVEL <00> ~ <30>		
	<OFF>			
FOCUS	AUTO	TUNING VALUE <1CM>, <10CM>, <30CM>, <1M>		
	MANUAL	FOCUS SPEED <0> ~ <3>		
AE MODE	AUTO	IRIS OFFSET <00> ~ <15>		
	SHUTTER	SHUTTER SPEED K Model:<1/30000> ~ <1/2> R Model:<1/30000> ~ <1/50> (PAL); <1/30000> ~ <1/60> (NTSC)		
	IRIS	<00> ~ <09>		
	AGC	<00> ~ <05>		
WBC MODE	AUTO (Auto White Balance)			
	MANUAL	R GAIN <00> ~ <99> B GAIN <00> ~ <99>		
SETUP MENU 1	ZOOM SPEED	<FAST>, <SLOW>		
	DIGITAL ZOOM	<OFF>, <02> ~ <12>		
	SLOW SHUTTER (K Model only)	<1/2> ~ <1/60> (NTSC)		
		<1/1.5> ~ <1/50> (PAL)		
	IMAGE INVERSE (K Model only)	<ON>, <OFF>		
	APERTURE	<AUTO>		
		<MANUAL>	H APERTURE <00> ~ <31> V APERTURE <00> ~ <31>	
	EXIT	YES		
SETUP MENU 2	FLIP	<OFF>, <M.E.>, <IMAGE> (K Model only)		
	ANGLE ADJUSTER	MIN ANGLE<-10 ~ +10 DEG>		
		MAX ANGLE <080 ~ 100 DEG>		
	SPEED BY ZOOM	<ON>, <OFF>		
	AUTO CALI.	<ON>, <OFF>		
	SYSTEM RESET	YES		
	EXIT	YES		
ID DISPLAY	<ON>, <OFF>			
TITLE DISPLAY	<ON>, <OFF>			
TITLE SETTING	<01> ~ <16>			
PRESET	PRESET SET	<001>~<064>		
	PRESET RUN	<001>~<064>		
	EXIT	YES		
SEQUENCE	SEQUENCE LINE	<1> ~ <4>		
	SEQUENCE POINT	<01> ~ <32>		
	PRESET POS.	<001> ~ <064>		
	SPEED	<01> ~ <15>		
	DWELL TIME	<000> ~ <127> SEC.		
	RUN SEQUENCE	ENTER		
	EXIT	YES		
AUTOPAN	AUTOPAN LINE	1		
	START POINT	<TO FIND>, <TO SAVE>		
	END POINT	<TO FIND>, <TO SAVE>		
	DIRECTION	<RIGHT>, <LEFT>		

Item	Layer 1	Layer 2	Layer 3	Notes
	SPEED	<01> ~ <04>		
	RUN AUTOPAN	ENTER		
	EXIT	YES		
CRUISE	NONE			
HOME SETTING	HOME FUNCTION	<ON>, <OFF>		
	SELECT MODE	<PRESET>, <SEQUENCE>, <AUTOPAN>		
	PRESET POINT	<001> ~ <064>		
	SEQUENCE LINE	<1> ~ <4>		
	AUTOPAN LINE	<1>		
	RETURN TIME	<1> ~ <128> MIN.		
	GO	ENTER		
	EXIT	YES		
IR FUNCTION (K Model only)	<AUTO>, <ON>	THREADHOLD <MID>, <HI>, <LOW> IR COLOR <B/W>, <COLOR> EXIT <YES>		
ALARM SETTNG	ALARM PIN	<1> ~ <4>		
	ALARM SWITCH	<ON>, <OFF>		
	ALARM TYPE	<NO> (Normal Open), <NC> (Normal Close)		
	ALARM ACTION	<PRESET>, <SEQUENCE>, <AUTOPAN>		
	PRESET POINT	<001> ~ <064>		
	SEQUENCE LINE	<1> ~ <4>		
	AUTOPAN LINE	<001>		
	DWELL TIME	<001> ~ <127> Sec., <ALWAYS>		
	EXIT	YES		
WDR FUNCTION (K Model only)	<ON>	RATIO LEVEL <000> ~ <128> SHUTTER SPEED <000> ~ <128> IRIS OFFSET <000> ~ <128> EXIT <YES>		
	<OFF>			
	<AUTO>			
PRIVACY MASK (K Model only)	PRIVACY SWITCH	<ON>, <OFF>		
	MASK SHADE	<GRAY>, <WHITE>, <BLACK>		
	SET MASK	<01> ~ <08>	H CENTER <000> ~ <255>	
			V CENTER <000> ~ <255>	
			H SIZE <000> ~ <127>	
			V SIZE <000> ~ <127>	
			EXIT + SAVE	
	CLEAR MASK	<01> ~ <08>, <RESET>		
	MASK DISPLAY	<FIRST>, <LAST>		
	EXIT	YES		
TIME SETTING	NONE			
SCHEDULE	NONE			
EXIT OSD	YES			