

The lightning flash with an 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) instructions in the literature accompanying the appliance.

INFORMATION - This equipment has been tested and found to comply with limits for a Class A digital device, pursuant to part 15 of the FCC Rules & CE 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.

WARNING - Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

CAUTION : To prevent electric shock and risk of fire hazards:

- ◆ Do NOT use power sources other than those specified.
- ◆ Do NOT expose this appliance to rain or moisture.

This installation should be made by a qualified service person and should conform to all local codes.

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■ Features

High Resolution Color for Crisp, Clear Video

- Progressive image capture
- 690TVL Effective

Wide Dynamic Range (WDR)

The camera delivers clear high quality pictures, even when backlit, by increasing exposure in dark areas while decreasing it in bright areas; a corrected image with clear details results.

- 120dB maximum dynamic range

DNR (Digital Noise Reduction)

The amount of low illuminance noise has been significantly reduced, and the signal-to-noise ratio (S/N ratio) as well as horizontal resolution, have been improved resulting in a clear and sharp image even in low light.

Day & Night

The camera identifies whether it is day or night and automatically switches to the appropriate mode, depending on its environment. By day, the camera switches to color mode in order to maintain optimal color. At night, it switches to B/W mode so as to obtain better picture definition.

High Sensitivity for low-light images

The built-in high sensitivity PIXIM SEAWOLF Sensor enables a clear image even at 0.1Lux

Motion Detection

Since the camera detects motion without any additional external sensor, you can monitor activity more efficient.

Programmable GAMMA Processing

RS-485 Communication Control Support (optional)

Remote OSD menu control via an RS-485 interface is supported.

Controlled by OSD Menu

The camera can be controlled by selecting text displayed on the monitor screen.

Additional Functions

SYNC (INT/LL), SENS-UP, FREEZE, FLIP (H/V-REV), D-ZOOM, SHARPNESS and PRIVACY functions are provided.

3 Axis built-in 100mm Dome Housing

Warning ■

The camera requires periodic inspection.

Contact an authorised technician to carry out the inspection.

Stop using your camera when you find it malfunctioning.

If the camera emits smoke or is unusually hot for a long period, a fire may be caused.

Do not install the camera on a surface that can not support it.

If the camera is installed on an inappropriate surface, it may fall and cause injury.

Do not hold plug with wet hands.

It could cause an electric shock.

Do not dis-assemble the camera.

It may result in an electric shock or other hazards.

Do not use the camera close to a gas or oil leak.

It may result in a fire or other hazards.

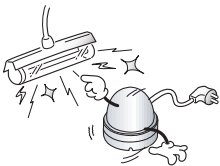
■ Precautions

Do not install the camera in extreme temperature conditions.



Only use the camera under conditions where temperatures are between -10°C and $+50^{\circ}\text{C}$. Be especially careful to provide ventilation when operating under high temperatures.

Do not install the camera under unstable lighting conditions.



Severe lighting change or flicker can cause the camera to work improperly.

Do not install or use the camera in an environment where the humidity is high.



It can cause the image quality to be poor.

Do not touch the front lens of the camera.



This is one of the most important parts of the camera. Be careful not to leave fingerprints on the lens cover.

Do not drop the camera or protect it from physical shocks.



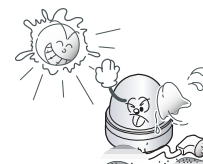
It can cause malfunctions to occur.

Do not expose the camera to rain or spill beverage on it.



If it gets wet, wipe it dry immediately. Liquids can contain minerals that corrode the electronic components.

Never keep the camera pointed directly at strong light.



It can damage the CCD.

Do not expose the camera to radioactivity.



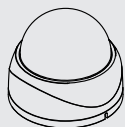
If exposed to radioactivity the CCD will fail.

Note

- If the camera is exposed to spotlight or an object reflecting strong light, smear or blooming may occur.
- Please check the power supply satisfies the normal specification before connecting the camera.

■ Components

1. COLOR DOME CAMERA



2. SCREWS



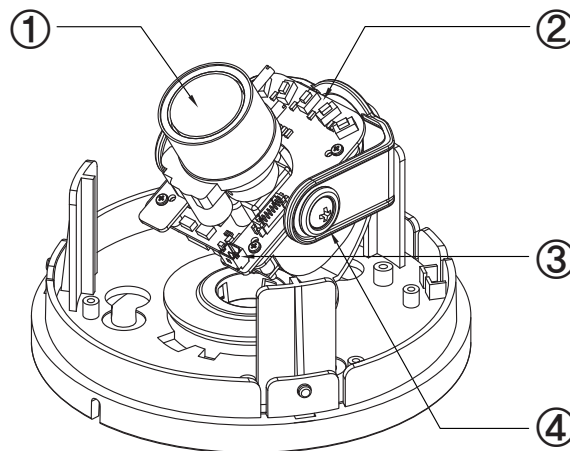
3. WIRE FOR VBS-EXTRA



4. INSTRUCTION GUIDE

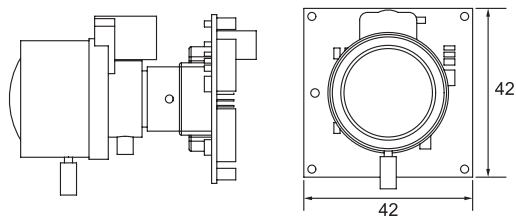


Names and Functions of Parts ■

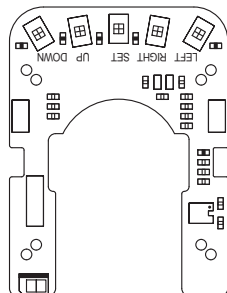


Names and Functions of Parts

① LENS : Vari-Focal DC Auto Iris Lens



② OSD PCB

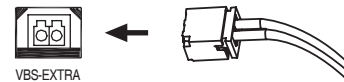


- **SET button** : Used for the menu display. This button can be used to confirm settings after changing the value of the selected function or current conditions.
- **UP & DOWN buttons** : Used for selecting items by moving the cursor up or down on the menu screen.
- **LEFT & RIGHT buttons** : Used when changing item values, by moving the cursor to the left or right on the menu screen.

Names and Functions of Parts

③ VBS-EXTRA FOR CONNECTING TO LCD

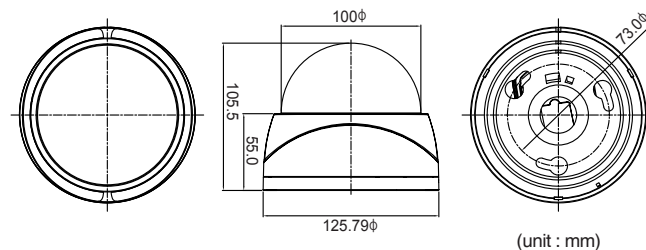
Please use the supplied wire when connecting to external monitor



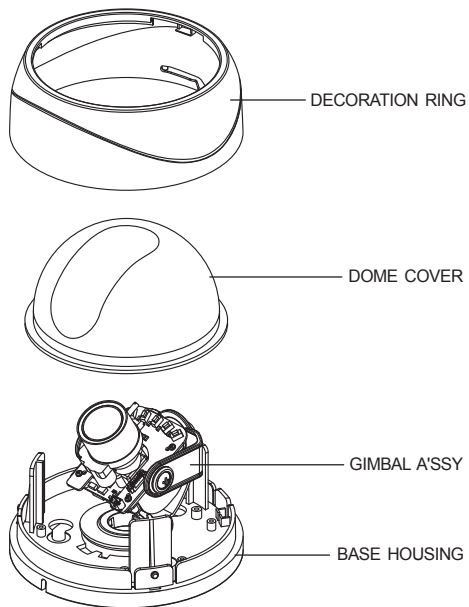
④ 3 AXIS BRACKET

Adjust the pan and tilt to give the correct angle of view.

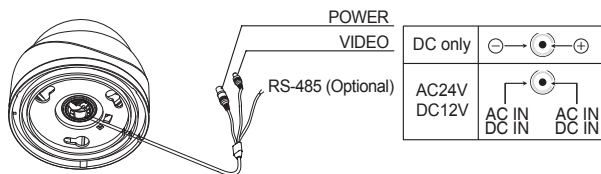
Dimensions



■ Installation



■ Cable Connections



1. Dome Base Mounting

- Open the dome cover by loosening 3 screws using special wrench provided.
- Mount the base of camera to a sturdy surface using 4 screws (1.5 inch) and 4 premade holes on the base of the dome.

2. Power Connect & Monitor Impedance

- DC12V/300mA regulated power supply (DC12V only)
- AC24V Class 2 power supply (AC24V/DC12V)
- To avoid fire or shock hazard, must use a UL listed power supply.
- Set the monitor impedance switch to 75Ω. Check the impedance switch when the screen turns blurred.

3. Camera Module Adjustment

- Loosen screws for 3-axis camera bracket and adjust the direction and angle of camera.
- Make sure to retighten the screws for camera bracket.
- Set any function you wish to activate by using the OSD buttons.

4. Dome Cover Mounting

- Replace the dome cover to the base and tighten 3 screws.

Control via RS-485 Interface (Optional)

The camera can be controlled by using an external controller equipped with RS-485 communications.

- To control using a DVR or keyboard controller

Connect the RS-485 cable (TRX+, TRX-) to the connection port of the 485 control board in the DVR or controller.

485 Control Board Connection Port	RS-485 Control Port
(+) CONNECTION TERMINAL (TRX+)	485+
(-) CONNECTION TERMINAL (TRX-)	485-

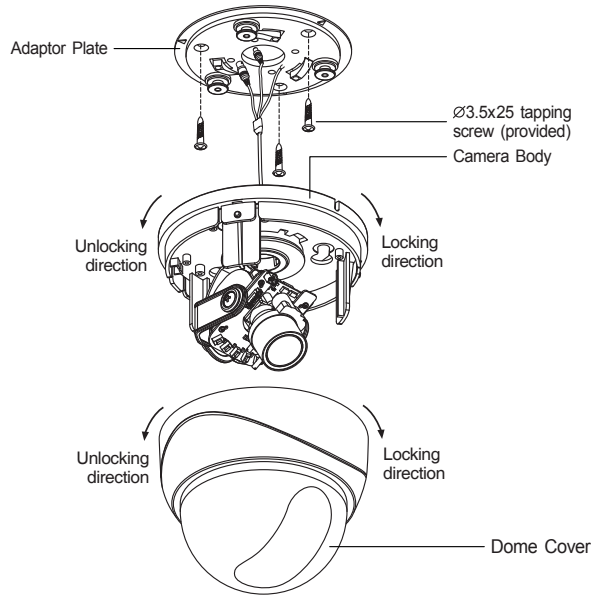
* RS-485 communication default initial values

Item	Camera ID	BAUD RATE	UART MODE	PET PKT
Initial value	1	2400	8-NONE-1	ENABLE

Note

- To control the camera use Pelco-D protocol.
 - Set Preset 95 : Enters into OSD menu.
 - Iris Open command : Set key function.
 - Iris Close command : Cancel function.

■ Installation (Adaptor Plate)



* When installing on an adaptor plate bracket.

- ① Place the adaptor plate bracket on a flat installation surface and fix it with the screws provided.
- ② When placing the camera body onto the plate, insert the plate pin into the corresponding holes on the camera body as shown in figure-1. Lock the camera in place by turning the camera body clockwise.
- ③ When placing the camera body on the plate, make sure that the power and video cables pass through.
- ④ After installation and adjustment of the camera is complete, secure the dome cover by turning it clockwise.

How to Use the Camera ■

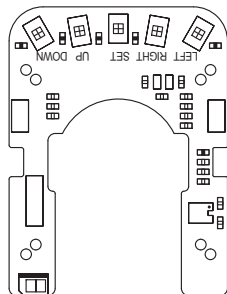
■ Menu

SETUP menu			
PRESETS	· NORMAL	· INDOOR	· OUTDOOR
EXPOSURE	· LENS · EXPOSURE MODE · DNR · COLOR ROLL	· FOCUS · AGC · HIGHLIGHT · SENS-UP	
WDR	· MIDDLE · LOW	· HIGH	· USER
WHITE BALANCE	· ATW · AWB	· INDOOR · MANUAL	· OUTDOOR
DAY/NIGHT	· AUTO	· COLOR	· BW
IMAGE ADJ.	· FREEZE · COLOR GAIN	· FLIP · GAMMA	· SHARPNESS
SPECIAL	· CAMERA ID · MOTION · RS485 SETUP	· VIDEO OUT · PRIVACY SETUP · RESET	· DZOOM · SYNC · RETURN
EXIT MENU			

How to Use the Camera

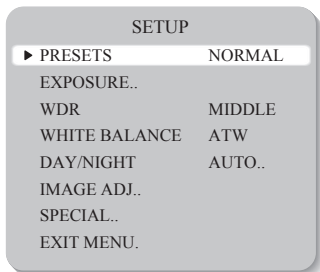
Settings

Settings can be made using the 5 buttons located in the camera.



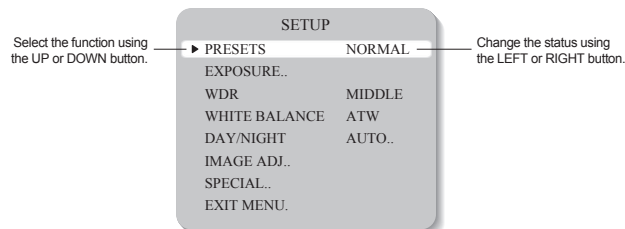
1. Press the SET button

- Settings can now be made. The SETUP menu is displayed on the monitor.



2. Select a menu item from the list available by using the UP and DOWN buttons.

- Functions are selected using up and down buttons.
- The selected position is displayed in blue.

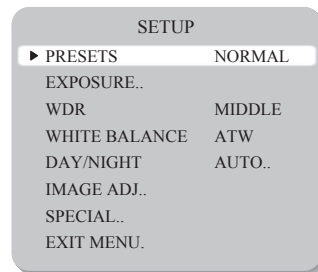


3. Set up a selected item by using the Left and Right buttons.
4. To finish and save the settings, select 'EXIT' and press the SET button.

Note

- An item with the .. icon also has sub-menus. To select a sub-menu, press the SET button.

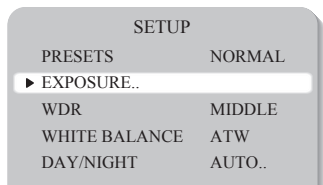
PRESETS



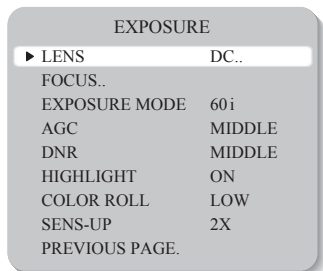
- **NORMAL** : Normal environment.
- **INDOOR** : Indoor environment.
- **OUTDOOR** : Outdoor environment.

How to Use the Camera

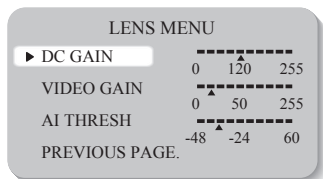
EXPOSURE



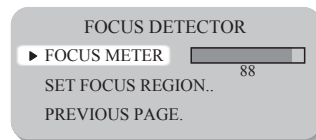
When the SETUP menu screen is displayed, select 'EXPOSURE' by using the Up and Down buttons so that the arrow indicates 'EXPOSURE'.



- **LENS** : Using this function, you can control the screen brightness.
 - DC / Manual : Select Lens Type



- **FOCUS** : To adjust the DC and VIDEO lens focus

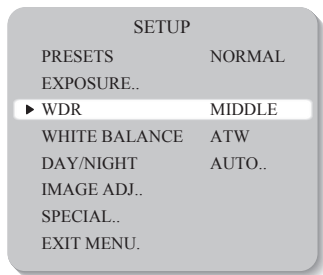


- **EXPOSURE MODE** : To select the number of fields and number of exposure cycles.
 - 60i/30p selectable
- **AGC (AUTO GAIN CONTROL)** : In the dark situation, the higher the gain level, the brighter the screen but the higher the noise.
 - OFF / LOW / MIDDLE / HIGH selectable
- **DNR (Digital Noise Reduction)** : The level of background noise in low light decreases automatically as the level of gain changes.
 - OFF / LOW / MIDDLE / HIGH selectable
- **HIGHLIGHT** : To optimize the scene when high dynamic range lighting is detected.
 - ON : bright parts of the image are most visible.
 - OFF : dark parts of the image are most visible.
- **COLOR ROLL** : To control a detector that finds color fluorescent roll.
 - OFF / LOW / MIDDLE / HIGH selectable

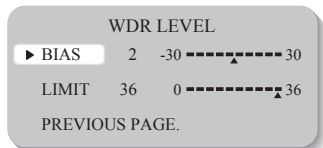
How to Use the Camera

- **SENS-UP** : When it is night or dark, the camera automatically detects the light level and maintains a clear picture if this mode is activated.
 - 2X, 4X, 8X, 16X, 32X
 - OFF : Deactivates the SENS-UP function.

WDR



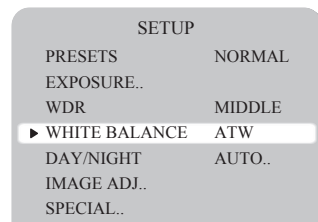
- **WDR** : When the image has simultaneous bright and dark areas, the Wide Dynamic Range makes both areas distinct.
 - LOW / MIDDLE / HIGH / USER selectable



WHITE BALANCE

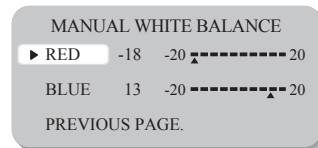
Use the White Balance function to adjust the screen colors.

1. Position the cursor to point to WHITE BAL on the SETUP menu screen, select using the Up and Down buttons.
2. Select the desired mode using the Left and Right buttons.



※ Select one of the following 5 modes, as appropriate.

- **ATW** : The ATW mode continuously monitors.
- **INDOOR** : Select when the color temperature is between 4000°K and 8500°K
- **OUTDOOR** : Select when the color temperature is between 2000°K and 11000°K
- **AWB** : To obtain the optimum state under the current luminance levels, direct the camera to point toward a sheet of white paper and press the SET button. If the environment changes, including the light source, the white balance will require re-adjustment.
- **MANUAL** : Select to "fine-tune" the White Balance manually. Set White Balance first using the ATW or AWB mode. Afterwards switch to MANUAL mode, fine-tune the White Balance and then press the SET button.

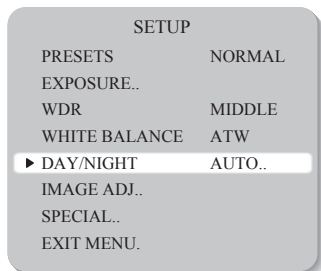


■ How to Use the Camera

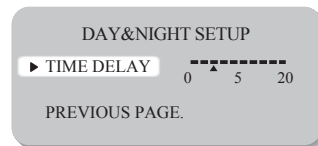
Note

- Under the following conditions White Balance may not work properly. In such cases, select the AWC mode.
 - ① When the color temperature of the subject environment has a very high temperature range (e.g. clear sky, or sunset)
 - ② When the ambient illumination of the subject is low.
 - ③ If the camera is directed toward a fluorescent light, or is installed in a place where illumination changes dramatically, the White Balance operation may become unstable.

DAY/NIGHT



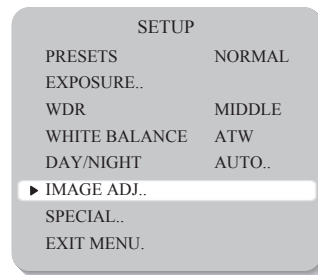
- **AUTO** : This camera has an IR Cut-Filter and automatically changes to the appropriate mode according to lighting levels. To set up the switching time and switching speed for the AUTO mode press the SET button.



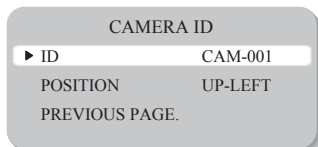
- **COLOR** : The picture is displayed in color.
- **B/W** : The picture is always displayed in black and white.

IMAGE ADJ.

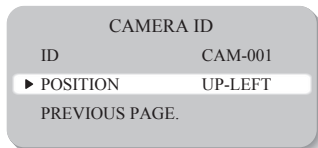
When the SETUP menu screen is displayed, select 'IMAGE ADJ.' using the Up and Down buttons.



■ How to Use the Camera

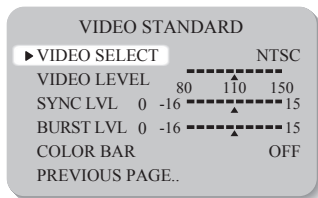


- ① Move the cursor to the letter required by using the Set-Up button.
- ② Select an ID from A,B~Y,Z, a,b~y,z, 0,1~8,9 by using the LEFT and RIGHT buttons.
- ③ Repeat the above steps until the ID is complete.



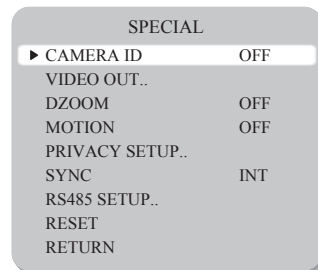
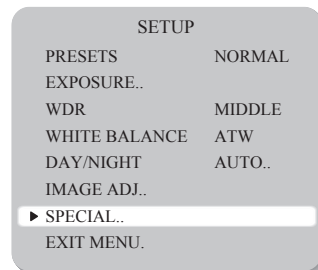
- ① Select the position where the ID is to be displayed by using the LEFT and RIGHT buttons.

- **VIDEO OUT** : Move the cursor to select the video system
 - VIDEO STANDARD : You can control NTSC / PAL, Video level, Sync level, Burst level.



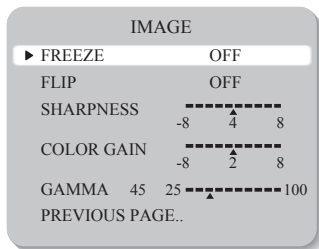
SPECIAL

When the SETUP menu screen is displayed, select 'SPECIAL' by using the Up and Down buttons so that the arrow indicates 'SPECIAL'.

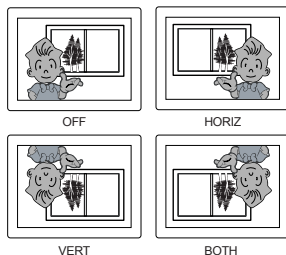


- **CAMERA ID** : User can enter a unique name for the respective camera. The maximum length of the ID is ten characters.
 - You can choose the ON and OFF with the selector. If you select ON, the entered camera ID is displayed at the selected position in the video picture (normal operation).
 - Please select the setup button while in ON mode.
 - Select the desired position with the selector.

How to Use the Camera

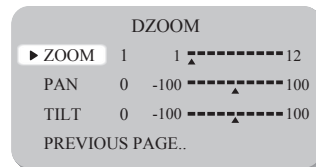


- **FREEZE** : View still pictures.
- OFF / ON selectable
- **FLIP** : OFF / HORIZ / VERT / BOTH selectable

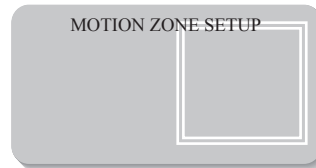
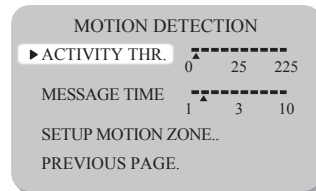


- **SHARPNESS** : The outline of the video image becomes cleaner and more distinctive as the level of SHARPNESS increases. If the level goes up excessively, however, it may affect the video image and generate noise.
- The available range of level is -8 ~ 8
- **COLOR GAIN** : To control the color level in the video.
- The available range of level is -8 ~ 8
- **GAMMA** : Users can change the gamma setting between 25 and 100

- **DZOOM** : Digital P/T/Z are used to create a zoom lens effect. Zoom Factor (1X to 8X), Pan($\pm 100\%$, center of image can be moved to left and right edges of screen), Tilt($\pm 100\%$, center of image can be moved to top and bottom edges of screen)



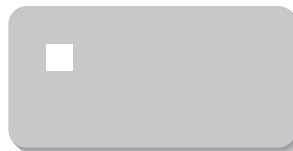
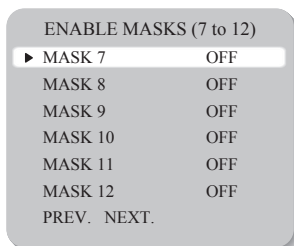
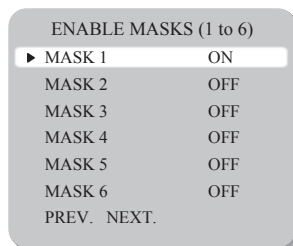
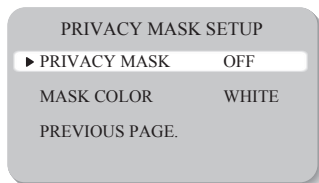
- **MOTION** : This product has a feature that allows you to observe movements of objects in on the screen, hence a single individual can conduct supervision efficiently. The camera detects an object's movement by sensing disparity of outline, and level of brightness and color.



■ How to Use the Camera

- White : MOTION ZONE Position movement
Green : MOTION ZONE Size enlargement
Red : MOTION ZONE Size reduction
- For MOTION ZONE Confirm, long press SET button

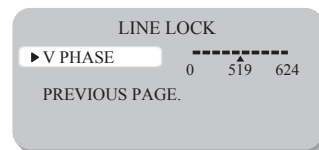
- **PRIVACY SETUP** : Hide an area you want to hide on the screen.



- White : PRIVACY-ZONE Position movement
Blue : PRIVACY-ZONE Size enlargement or reduction
- For PRIVACY-ZONE Confirm, long press SET button

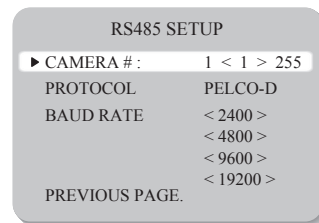
- **SYNC** : Two synchronization modes are available, INTERNAL and EXTERNAL LINELOCK. In LINE-LOCK mode, it synchronizes the video signal between cameras without a synchronous generator. The line-lock synchronization is only used in areas of 60Hz (NTSC) / 50Hz (PAL).

- INT : Internal synchronization
- LL : External line-lock synchronization
 - If 'LL' is selected, it can be adjusted to the desired phase. Press the SET button.



- Adjust to the desired phase from 0 to 624.

- **RS485 SETUP** : This function sets up the camera communication status when controlling the camera through an external control device.



EXIT MENU.

Saves all the setting menus and then exits.

■ Troubleshooting

If you have trouble operating your camera, refer to the following table. If the guidelines do not enable you to solve the problem, contact an authorized technician.

Problem	Solution
Nothing appears on the screen.	<ul style="list-style-type: none"> • Check the power connections. • Check the VIDEO signal line connection.
The image on the screen is dim.	<ul style="list-style-type: none"> • Make sure the lens is clean. Clean the lens with a soft clean lint free cloth. • Adjust the monitor contrast & brightness controls. • Re-position the camera if necessary.
The image on the screen is dark.	<ul style="list-style-type: none"> • Adjust the contrast control of the monitor. • If you have an intermediate device, set the 75Ω/ Hi-Z properly.
The camera is not working properly, and the surface of the camera is hot.	<ul style="list-style-type: none"> • Check that an appropriate power source is connected to the camera.
The DAY/NIGHT menu does not work.	<ul style="list-style-type: none"> • Check that AGC in the EXPOSURE menu is set to 'OFF'.

Problem	Solution												
The Motion Detection function does not work.	<ul style="list-style-type: none"> • Check that MOTION DET in the SPECIAL SETUP is not set to 'OFF'. 												
Color is not correct.	<ul style="list-style-type: none"> • Check the WHITE BAL settings in the SETUP menu. 												
The screen flickers continually.	<ul style="list-style-type: none"> • Check that the camera is not facing toward the sun. 												
RS-485 communication fails.	<ul style="list-style-type: none"> • Check the polarity between the RS-485 Control Port and the RS-485 cable. <table border="1" data-bbox="1114 549 1481 605"> <thead> <tr> <th>485 Control Board Connection Port</th> <th>RS-485 Control Port</th> </tr> </thead> <tbody> <tr> <td>(+) CONNECTION TERMINAL (TRX+)</td> <td>485+</td> </tr> <tr> <td>(-) CONNECTION TERMINAL (TRX-)</td> <td>485-</td> </tr> </tbody> </table> • Check the RS-485 Communication default settings. <ul style="list-style-type: none"> * RS-485 Communication default settings are: <table border="1" data-bbox="1114 689 1481 729"> <thead> <tr> <th>Item</th> <th>Camera ID</th> <th>BAUD RATE</th> </tr> </thead> <tbody> <tr> <td>Initial value</td> <td>1</td> <td>2400</td> </tr> </tbody> </table> 	485 Control Board Connection Port	RS-485 Control Port	(+) CONNECTION TERMINAL (TRX+)	485+	(-) CONNECTION TERMINAL (TRX-)	485-	Item	Camera ID	BAUD RATE	Initial value	1	2400
485 Control Board Connection Port	RS-485 Control Port												
(+) CONNECTION TERMINAL (TRX+)	485+												
(-) CONNECTION TERMINAL (TRX-)	485-												
Item	Camera ID	BAUD RATE											
Initial value	1	2400											

■ Specifications

ITEM	NTSC		PAL	
	Power Consumption	AC24V / DC12V 170mA(AC24V)/250mA(DC12V)	DC12V 160mA	AC24V / DC12V 170mA(AC24V)/250mA(DC12V)
Image Sensor	PIXIM 1/3" High Sensitivity Digital Sensor			
Effective Pixels	758(H) x 540(V)			
Dynamic Range	120dB(Max), 102dB(Typical)			
Horizontal Resolution	690TVL Effective			
Min. Illumination	0.1Lux			
Day & Night	Auto / Color / B/W / EXTERN			
White Balance	Auto / AWB / Indoor / Outdoor / Manual			
WB Range	2000°K~11,000°K			
Shutter Speed	up to 1/30, 720 sec			
Sens-up	Auto / Off (Selectable x2 ~ x32)			
Privacy Masking	12 Zones			
Remote Control	RS-485			
AGC	Low / Auto / High / Off			
Image Flip	Horizontal and Vertical			
Camera ID	On / Off			
S/N Ratio	More than 50dB			
Video Output	Composite video output 75 ohm terminated			
OSD	Built-in			
Sync. System	Internal / Line Lock			
Operating Humidity	30% ~ 90% RH			
Operating Temp.	-10°C to 50°			

WDR Digital Sensor Color Dome Camera

Instruction Guide



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