

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.

## ■ Features

### 23x / 30x Optical Zoom

The built-in 23x / 30x optical zoom lens is a highly durable component. It features auto focus, auto iris, and zoom functions.

### DNR (Digital Noise Reduction)

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

### Fine Picture Quality under Ultra Low Lighting

1/4" high density CCD allows the user to capture bright, high-quality images under ultra low lighting conditions.

### High Resolution

Featuring 520TV line horizontal resolution in color mode and 570TV line horizontal resolution in BW mode, the camera features Sony's 410,000 pixel CCD and captures clean, noiseless, high-quality images.

### Day & Night

The camera automatically determines whether it is night time or day time, selecting operating mode automatically. The camera operates in color mode during day light conditions and BW mode in night conditions for clearer identification.

### DIS(Digital Image Stabilizer)

The DIS function can compensate for vibration of the camera, so it helps you obtain more stabilized image under the shaking conditions.

### Motion Detection

Once motion is detected, the camera sends an alert signal to the processing unit, which, if used in conjunction with an optional alarm, can provide effective surveillance of your property.

### Control via OSD Menu and RS-485

The OSD menu and RS-485 pins allow for remote control of the camera. The user can also directly control the lens using external control connection.

### Miscellaneous Functions

Other miscellaneous functions of the camera include privacy zone masking, digital zoom, line lock synchronization (INT/LL), freeze, horizontal inversion, and user-configured presets.

## Warning ■

### The camera requires regular maintenance.

Contact an authorized technician for maintenance and/or servicing.

### Do not continue to use if malfunctioning.

Prolonged use of the camera in abnormal operating conditions (produces smoke, overheats, etc.) may result in a fire.

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

Installation on an unsuitable surface may cause the camera to fall and/or other hazards.

### Do not handle the power cable with wet hands.

May result in an electric shock.

### Do not disassemble the camera.

May result in a fire, electric shock, and/or other hazards.

### Do not place the camera in the vicinity of inflammables.

May result in a fire and/or other hazards.

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## ■ Precautions

**Do not install the camera in extreme temperature conditions.**



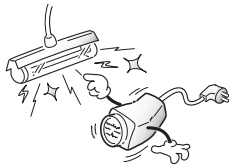
Only use the camera under conditions where temperatures are between  $-10^{\circ}\text{C}$  and  $+50^{\circ}\text{C}$ . Be especially careful to provide ventilation when operating under high temperatures.

**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 install the camera under unstable lighting conditions.**



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

**Do not touch the front lens of the camera.**



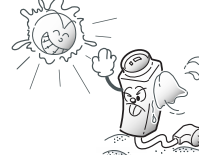
This is one of the most important parts of the camera. Be careful not to leave fingerprints on the lens cover.

**Do not drop the camera or subject it to physical shocks.**



It can cause malfunctions to occur.

**Never keep the camera pointed directly at strong light.**



It can damage the CCD.

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



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

**Do not expose the camera to radioactivity.**



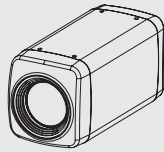
If exposed to radioactivity the CCD will fail.

### Note

- Exposure to a spotlight or an object emitting strong light may cause smear or blooming.
- Ensure that the power source complies with normal specifications before supplying it to the camera.

## ■ Components

1. ZOOM COLOR CAMERA



2. INSTRUCTION GUIDE

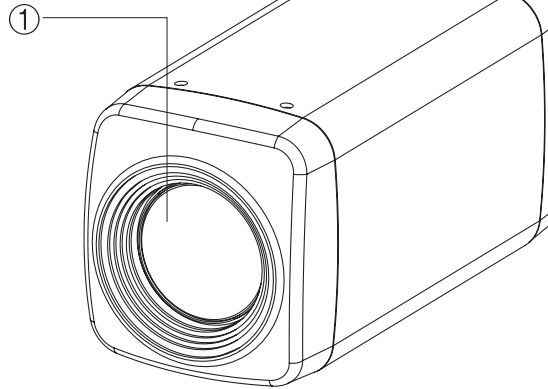


3. REMOTE CONTROLLER  
(OPTION ITEM)



## Overview ■

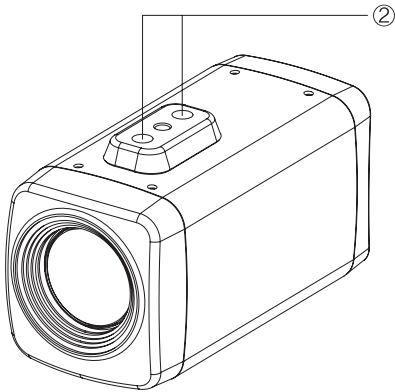
Front



① Zoom Lens

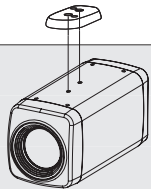
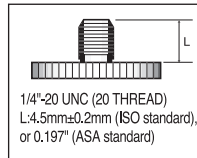
## Overview

### Top



### ② Tripod Mounting Hole

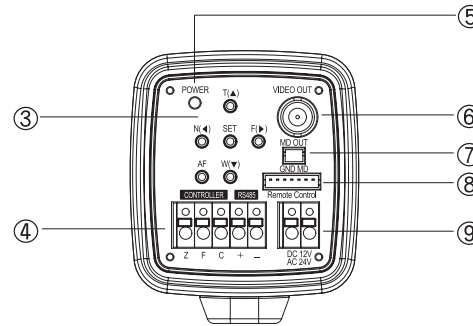
Used to install the camera on an optional tripod. The tripod must be equipped with screws with specifications shown on the right.



Attach the bracket to the top of the camera. Use screws included in the package or their equivalent (less than 6mm). Otherwise, the bracket may not assemble to the camera properly.

## Overview

### Rear



### ③ Key Buttons

- Following buttons control zoom, focus, and auto focus functions.
  - W (▼) button : To widen the view. (ZOOM OUT)
  - T (▲) button : To close in on a far object. (ZOOM IN)
  - N (◀) button : To see a near object clearly.
  - F (▶) button : To see a far object clearly.
  - AF button : To activate auto focus just once.
- Pressing the 'SET' button locks the zoom control function of these buttons and prompts the main setup menu.

### Note

- The zoom position is saved after 5 seconds when you set zoom function.
- Main setup menu can be navigated using these buttons.
  - SET : To access the main setup menu.
  - UP (▲) : To move the arrow indicator to up.
  - DOWN (▼) : To move the arrow indicator to down.
  - LEFT (◀) : To move the arrow indicator to left.
  - RIGHT (▶) : To move the arrow indicator to right.

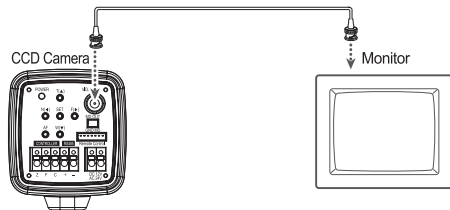
## Overview

- ④ **External Control Connector**  
Zoom and focus functions can be controlled using external signals.
- ⑤ **Power LED**  
Illuminates when power is supplied.
- ⑥ **Video Output Jack**  
Used to connect an external video monitor in jack.
- ⑦ **Motion Output Connector**  
Relates to the motion detection output signal.
- ⑧ **Key Extra Connector**  
Connects to the remote controller(option) when you want to install remotely.
- ⑨ **Power Input Terminal**  
Power supply terminal (DC 12V, AC 24V).

## Connection

### Connecting to Monitor

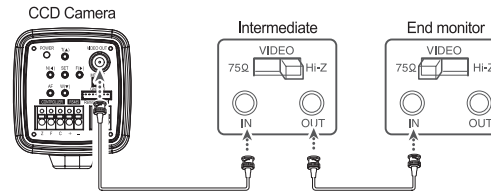
Connect Video Out Jack to the monitor's Video In jack as shown below.



- Connection methods may vary depending on the video equipment. Please refer to the model specific instruction manual.
- Connect cables with the unit powered down.

## Connection

- Set the 75Ω/Hi-Z selection switch as shown below if you have an intermediate device.



### Connecting to Power

Each model has a different power input specification. Please check the model type and standard power requirement before connecting to power.

#### DC Power Type (DC 12V, 500mA)

Use DC 12V/500mA power source for DC12V Only Model.

Power Input Terminal

#### AC/DC Power Type

Use AC24V/500mA or DC 12V/500mA power source for Dual Power Model.

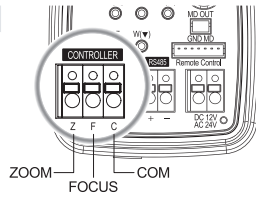
#### Note

- Connect the power once the installation is complete.
- The wire is polarized. Match '+' and '-' terminals properly.

## ■ Connection

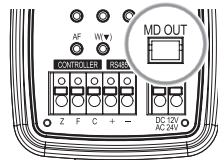
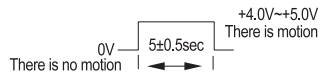
### ■ Connecting to Connection

#### External Control Connector



Connector	Function	Signal Level	I/O
ZOOM	Tele	+6V~+12V COM	I
	Wide	COM -8V~-12V	
FOCUS	Far	+6V~+12V COM	I
	Near	COM -8V~-12V	
COM		COM	-

#### Motion Output Connector



\* MD (Motion Detection) Output Signal Level (less than 10mA)

\* When using the MD function, the 'GND' should be connected to the frame ground.

## Installation ■

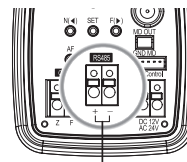
### Communication Control Connector

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-

(※ Go Preset 95 : Enters into OSD menu or Set key function)

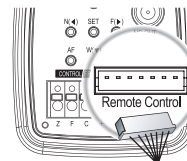


Keyboard



### Key Extra Connector

Connects to the remote controller(option) when you want to install remotely.



Remote Controller



### Note

- Contact an authorized technician for inspection.



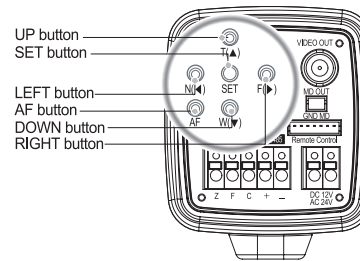
## ■ Operating Your Camera

### ■ Menu Configuration

MAIN SETUP MENU			
CAM TITLE	· OFF	· ON	
WHITE BALANCE	· ATW(OUTDOOR)	· AWC → SET	· MANUAL
BACKLIGHT	· OFF	· LOW	· MIDDLE
	· HIGH		
MOTION DET	· OFF	· ON	
FOCUS	· MODE	· ZOOM TRK	
	· ZOOM SPEED	· D-ZOOM	
	· DISP ZOOM MAG	· ZOOM POS INIT	
	· LENS INIT	· END	
EXPOSURE	· BRIGHTNESS	· IRIS	· SHUTTER
	· AGC	· DNR	· SENS-UP
	· END		
SPECIAL	· USER PRESET	· PRIVACY	
	· DAY/NIGHT	· DIS	· SYNC
	· COMM ADJ	· IMAGE ADJ	· END
RESET			
EXIT			

### ■ Menu Setup

Use the six buttons on back of the camera.

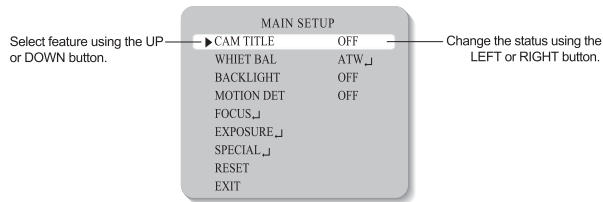


1. Press the SET button to access the main setup mode.
  - Main setup menu is displayed on the monitor screen.

MAIN SETUP	
▶ CAM TITLE	OFF
WHIET BAL	ATW,↓
BACKLIGHT	OFF
MOTION DET	OFF
FOCUS,↓	
EXPOSURE,↓	
SPECIAL,↓	
RESET	
EXIT	

2. Select the desired feature using the UP or DOWN button.
  - Each pressing of the UP or DOWN button moves the indicator to the next or previous feature.
  - Move the arrow indicator to the desired feature item.

## ■ Operating Your Camera



3. Change the status of the selected feature using the LEFT or RIGHT button.
4. When completed, move the arrow indicator to 'EXIT' and press the SET button.

### Note

- Features marked with a have an accessible submenu.
- Access the submenu by pressing the SET button.

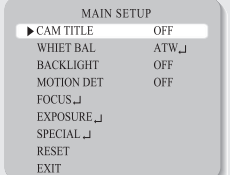
## CAM TITLE

Use this feature to designate a name for the camera, which will display on the monitor screen.

1. Press the SET button to display the main setup menu and move the arrow indicator to 'CAM TITLE' using the UP or DOWN button.
2. Set 'CAM TITLE' to 'ON' using the LEFT or RIGHT button.

### Note

- If the CAM TITLE feature is set to 'OFF', the name will not be displayed in the monitor.

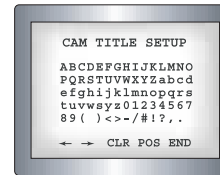


3. Press SET button.



4. You can enter up to 20 characters.

- ① Move the cursor to the character entry field using the LEFT or RIGHT button.
- ② Use UP, DOWN, LEFT, and RIGHT buttons to select a desired character.



- ③ Press the SET button to confirm selection of the blinking character. The character is then saved, and the cursor in the entry field moves to the next position.
- ④ Repeat steps ① through ③ until the desired name has been entered.

### Note

#### • Correcting Mistakes

Move the cursor to 'CLR' and press the SET button to clear the entire entry. To modify one character, use ← or → to position the cursor above the character to be modified and click the SET button after selecting the character to enter.

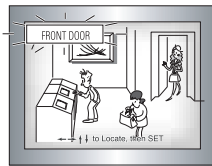
## ■ Operating Your Camera

5. Select on screen position of the CAM TITLE.

① Move the cursor to 'POS' and press SET button.



② The CAM TITLE is displayed on the top-left of the monitor screen. (Default position)



③ Select the position by using the 4-directional buttons, then press the SET button to confirm the position.

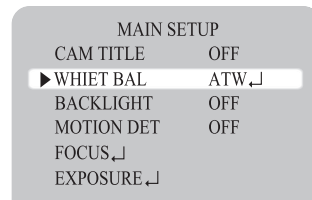


6. When completed, move the cursor to 'END' and press SET button.

## WHITE BALANCE control

Your camera provides three 'WHITE BAL' control modes for your choosing in adjusting the white balance.

1. Press the SET button to access the main setup menu and move the indicator to 'WHITE BAL' using the UP or DOWN button.
2. Set 'WHITE BAL' using the LEFT or RIGHT button.



The three white balance control modes are as follows :

### ⦿ ATW (Auto Tracking White Balance):

- OUTDOOR : This mode can be used within the color temperature range 1800~10500° K (Ex: fluorescent light, outdoor, sodium vapor lamp or inside tunnels)
- INDOOR : This mode can be used within the color temperature range 3000K~10500° K.

### ⦿ AWC (Auto White Balance Control) :

The white balance is automatically adjusted in a specific environment. In order to obtain the best result, press the SET button while the camera focuses on white paper. If the environment including the light source is changed, you have to adjust the white balance again.

### ⦿ MANUAL :

To fine adjust, select the Manual mode. You can increase or decrease the red or blue factor while monitoring the difference on the screen. Set to 'MANUAL' mode and press the SET button. Increase or decrease the value for red(R-Gain) and blue(B-Gain), watching the color of the picture, and press the SET button when you obtain the best color.

## ■ Operating Your Camera

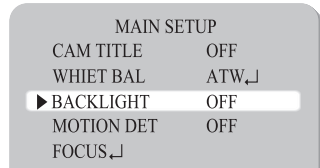
### Note

- Proper White Balance may not be obtained under the following conditions.
  - ① When the scene contains mostly high color temperature object, such as a blue sky or sunset.
  - ② When the scene is dim.
  - ③ If your camera directly faces a fluorescent lamp or is used in an environment of varying lighting conditions.

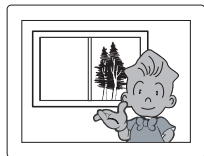
## BACKLIGHT

When there is a strong backlight behind the object, clear images of the background as well as the object can still be obtained by using the BACKLIGHT function.

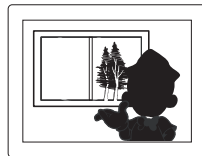
1. Please position the arrow to point to 'BACKLIGHT' on the SETUP menu by using the UP and DOWN buttons.
2. Please select the mode you wish to operate by pressing the LEFT or RIGHT button.



- ⊕ **HIGH/MIDDLE/LOW:** You can adjust the sensitivity of Backlight Compensation.
- ⊖ **OFF:** BACKLIGHT function does not operate.



BACKLIGHT ON

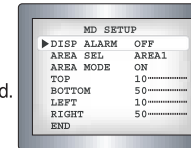


BACKLIGHT OFF

## MOTION DETECTION

This product has a feature that allows you to observe movements of objects in 4 different areas on the screen, and the words 'MOTION DETECTED' appear on the screen when movement is detected; 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. The camera receives detection signal from MD output terminal.

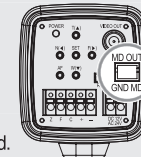
- Please press the SETUP button.
  - OFF: MOTION DETECTION mode is cancelled.
  - ON: Any motion in the selected areas is observed.
- Please press the SETUP button.
  - OFF: MOTION DETECTION mode is cancelled.
  - ON: Any motion in the selected areas is observed.
- Please select the area you wish to observe from the 4 areas in AREA SEL mode.
- Please select ON mode for the chosen area.
- Please adjust the size of the area to be observed by using the UP, DOWN, LEFT or RIGHT button.
- Please press the SETUP button to save changes and complete the setting.



### Note

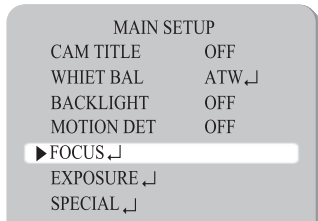
#### Tips on Using the Motion Detection Feature

- The feature may not function properly under flickering light conditions.
- The camera interprets sudden changes in lighting and subsequent change in brightness of an object as motion.
- With the feature enabled, other algorithms may require additional time to operate than usual.
- This system does not guarantee prevention of fire or theft. The manufacturer shall not be held responsible for any accident or damage incurred.
- Connect an external alarm device to MD Out on back of the camera.



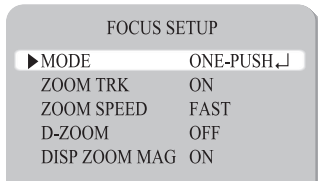
## ■ Operating Your Camera

### FOCUS

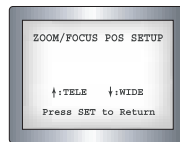


1. Press the SET button to access the main setup menu and then position the indicator over FOCUS using the UP or DOWN button.
2. Press the SET button.

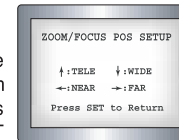
☉ **MODE:** You can select the most suitable zoom mode. Move the arrow indicator to 'MODE' using UP or DOWN button.



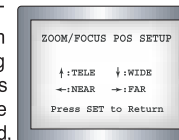
- **AUTO :** Select AUTO and press the SET button to confirm. Increase or decrease optical zoom (ZOOM) or digital zoom (DZOOM) positions using the UP or DOWN button while verifying the changes on screen. Enabling D-ZOOM (ON) means that digital zoom will activate once optical zoom ends. Focus is automatically adjusted with moving zoom.



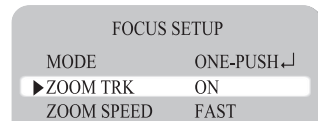
- **ONE PUSH :** Focus is automatically adjusted just once, after zoom position is changed. Select ' ONE PUSH' and press the SET button to confirm. Increase or decrease optical zoom (ZOOM) or digital zoom (D-ZOOM) positions using the directional buttons while verifying the changes on screen. Press the SET button once desired image quality is obtained.



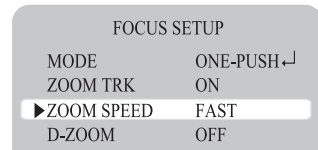
- **MANUAL :** Select 'MANUAL' and press the SET button to confirm. Increase or decrease optical zoom (ZOOM) or digital zoom (D-ZOOM) positions using the directional buttons while verifying the changes on screen. Press the SET button once desired image quality is obtained. Focus can be manually adjusted, independent of moving zoom.



- ☉ **ZOOM TRK:** You can select to use 'ZOOM TRK'. Move the arrow indicator to 'ZOOM TRK' using UP or DOWN button. Set 'ZOOM TRK' to on using LEFT or RIGHT button.



- ☉ **ZOOM SPEED:** Configure zoom tracing speed using this feature. Position the indicator over 'ZOOM SPEED' using the UP or DOWN button and then set to desired mode using the LEFT or RIGHT button.



## ■ Operating Your Camera

- **FAST:** To move zoom fast.
- **SLOW:** To move zoom slowly.



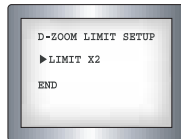
### Note

- The 'ZOOM SPEED' mode cannot be used if 'MODE' is set to 'AUTO' and 'ZOOM TRK' is 'ON'.

- **D-ZOOM:** Configure magnification limit from x2~x10 using this feature. Position the indicator over 'D-ZOOM' using the UP or DOWN button. Set 'D-ZOOM' to 'ON' and press the SET button to confirm.

FOCUS SETUP	
MODE	ONE-PUSH ↵
ZOOM TRK	ON
ZOOM SPEED	FAST
▶ D-ZOOM	ON
DISP ZOOM MAG	ON

- Set 'ZOOM LIMIT' to the desired level using the LEFT or RIGHT button.



- **DISP ZOOM MAG:** Use this feature to display the current zoom magnification level on screen. Position the indicator over 'DISP ZOOM MAG' using the UP or DOWN button. Then set to ON using the LEFT or RIGHT button.

FOCUS SETUP	
MODE	ONE-PUSH ↵
ZOOM TRK	ON
ZOOM SPEED	FAST
D-ZOOM	OFF
▶ DISP ZOOM MAG	ON

- **ZOOM POS INIT:** Moves to the controlled ZOOM position when the power turned on and is a function of the initial ZOOM position control.

FOCUS SETUP	
MODE	ONE-PUSH ↵
ZOOM TRK	ON
ZOOM SPEED	FAST
D-ZOOM	ON
DISP ZOOM MAG	ON
▶ ZOOM POS INIT	ON
LENS INIT	ON

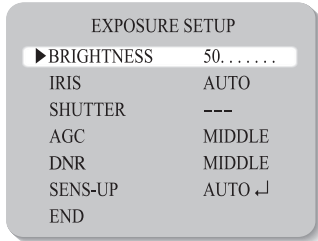
- **LENS INIT :** Use this feature to initialize the lens. Position the indicator over LENS INIT. using the UP or DOWN button. Press the SET button to confirm.

FOCUS SETUP	
MODE	ONE-PUSH ↵
ZOOM TRK	ON
ZOOM SPEED	FAST
D-ZOOM	OFF
DISP ZOOM MAG	ON
ZOOM POS INIT	OFF
▶ LENS INIT	ON
END	

- **END:** To revert to the main setup menu.

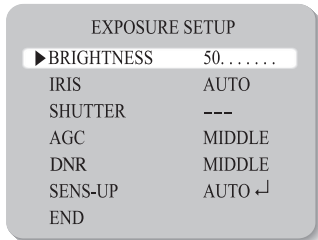
## ■ Operating Your Camera

### EXPOSURE

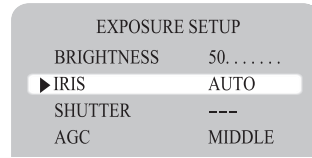


1. Press the SET button to access the main setup menu and then position the indicator over 'EXPOSURE' using the UP or DOWN button.
2. Press the SET button to confirm.

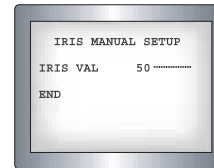
- **BRIGHTNESS:** Use this feature to adjust image brightness. Position the indicator over 'BRIGHTNESS' using the UP or DOWN button. Then increase or decrease brightness level using the LEFT or RIGHT button while verifying the changes on screen. Set END once desired level is obtained.



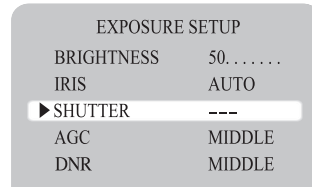
- **IRIS:** Set 'IRIS' to 'AUTO' or 'MANUAL'. Position the indicator over 'IRIS' using the UP or DOWN button and then select the desired iris mode using the LEFT or RIGHT button.



- **AUTO:** The iris is automatically activated upon illumination.
- **MANUAL:** Manual iris configuration. Set 'IRIS' to 'MANUAL' using the LEFT or RIGHT button and then press the SET button. Increase or decrease iris level using the LEFT or RIGHT button while verifying the changes on screen.



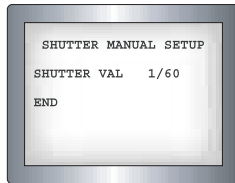
- **SHUTTER :** Control image brightness by adjusting shutter speed.
  1. Position the indicator over 'SHUTTER' using the UP or DOWN button. Then select the desired shutter mode (A.FLK, ESC, MANUAL) using the LEFT or RIGHT button.



## ■ Operating Your Camera

- **A.FLK (NTSC: 1/100, PAL: 1/120)**: Flicker-free mode
- **ESC**: Automatic shutter speed setting (optimal)
- **MANUAL**: Manual shutter speed setting

- If you choose 'MANUAL', select the optimal shutter speed.
  - In MANUAL mode, the optimal shutter speed needs to be designated. Select from 1/60 to 1/120,000 (NTSC) or from 1/50 to 1/120,000 (PAL).
  - \* 'Sens-Up' mode can be configured manually (2x to 128x).
  - Verify changes made to the shutter speed by referencing to changes in on screen brightness.



- Press the SET button to complete.

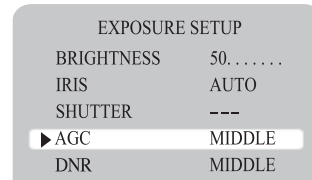
### Note

- Image may become unstable if the camera is set to 'ESC' mode and faces a strong fluorescent light.
- Under 'ESC' mode, the brightness can be adjusted using the LEFT or RIGHT button.
- The WDR feature is not available under MANUAL mode.
- Sens-up is disabled under 'MANUAL' or 'A.FLK' mode.

### ⦿ AGC (Auto Gain Control): For brighter images.

- Position the indicator over 'AGC' using the UP or DOWN button.
- Set 'AGC' to the desired mode using the LEFT or RIGHT button.

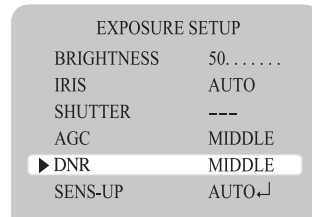
- **HIGH** : Wide range gain value adjustment
- **MIDDLE** : Middle range gain value adjustment
- **LOW** : Narrow range gain value adjustment
- **OFF** : Disabled



### ⦿ DNR(Digital Noise Reduction): On screen noise reduction.

- Position the indicator over 'DNR' using the UP or DOWN button.
- Set 'DNR' to the desired mode using the LEFT or RIGHT button.

- **LOW** : Low noise reduction
- **MIDDLE** : Medium noise reduction
- **HIGH** : High noise reduction
- **OFF** : Disabled





## ■ Operating Your Camera

### Note

- Changing 'AGC' setting from LOW to HIGH results in greater sensitivity, as well as on screen noise.
- Setting 'AGC' to OFF locks 'DNR' configuration.

🔍 **SENS-UP** : This feature ensures clear images at night or under low lighting conditions.

1. Position the indicator over 'SENS-UP' using the UP or DOWN button.
2. Set 'SENS-UP' to the desired mode using the LEFT or RIGHT button.

- **AUTO** : Select this mode for use in night time or under low lighting conditions.
- **OFF** : Disabled

EXPOSURE SETUP	
BRIGHTNESS	50.....
IRIS	AUTO
SHUTTER	---
AGC	MIDDLE
DNR	MIDDLE
▶ SENS-UP	AUTO,↵
END	

### Note

- Once 'AUTO' mode is set, the user can configure Sens-Up limit by increasing /decreasing the shutter speed (e.g.: x2, ..., x32, x64, ..., x128).
- Enabling Sens-Up increases camera sensitivity and may result in additional noise and/or other phenomena. This is normal.

## SPECIAL

SPECIAL SETUP	
▶ USER PRESET	OFF
PRIVACY	OFF
DAY/NIGHT	COLOR,↵
DIS	OFF
SYNC	INT
COMM ADJ,↵	
IMAGE ADJ,↵	
END	

1. Press the SET button to access the main setup menu and then position the indicator over 'SPECIAL' using the UP or DOWN button.
2. Press the SET button to confirm.

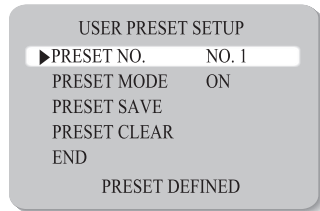
### 🔍 USER PRESET:

Preset user-designated configurations using this feature. Position the indicator over 'USER PRESET' using the UP or DOWN button and then set to 'ON' using the LEFT or RIGHT button. Press the SET button to confirm.

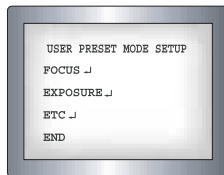
SPECIAL SETUP	
▶ USER PRESET	OFF
PRIVACY	OFF
DAY/NIGHT	COLOR,↵
DIS	OFF
SYNC	INT
COMM ADJ,↵	
IMAGE ADJ,↵	
END	

## ■ Operating Your Camera

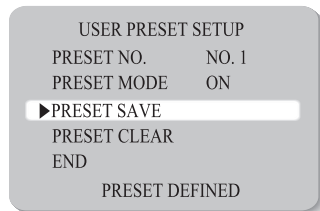
- **PRESET NO:** Up to eight different preset configurations are supported.



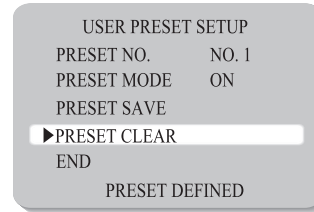
- **PRESET MODE:** Configure initial settings under FOCUS, EXPOSURE, etc.



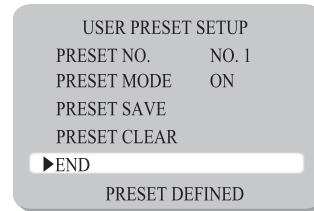
- **PRESET SAVE:** Save configured preset.



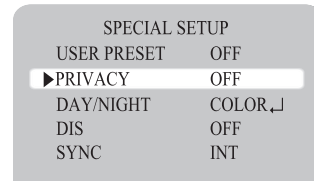
- **PRESET CLEAR:** Clear configured preset.



- **END:** Revert to the SPECIAL SETUP menu.



- **PRIVACY:** Mask privacy area using this feature. The mask area expand/contract upon the zoom position.

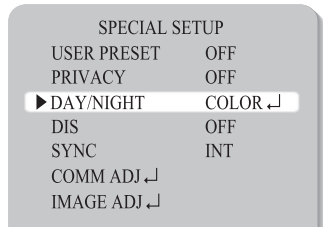


## ■ Operating Your Camera

- **GROUP SEL** : Choose up to eight groups. Each group can consist of four mask areas.
- **MASK COLOR** : Adjust desired mask color level.
- **AREA SEL** : Configure eight mask areas.
- **AREA MODE** : Mask area display.
- **TOP** : To move the mask area up.
- **BOTTOM** : To move the mask area down.
- **LEFT** : To move the mask area left.
- **RIGHT** : To move the mask area right.

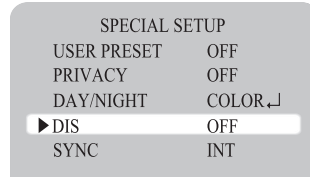


- **DAY/NIGHT** : Select from COLOR, BW or AUTO modes.



- **COLOR** : Color mode.
- **B/W** : BW mode.
- **AUTO** : The camera automatically detects lighting conditions and selects the mode accordingly.

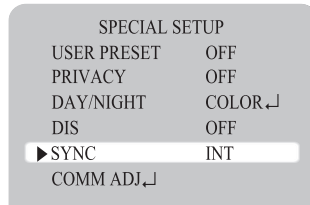
- **DIS** : The DIS mode can compensate for vibration of the camera.



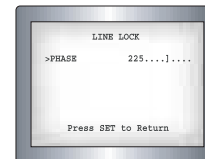
### Note

- When DIS is operating, D-ZOOM does not operate.

- **SYNC** : Two synchronization modes are available INTERNAL and EXTERNAL LINE-LOCK. In LINE-LOCK mode, it synchronizes the camera's video out signal to the external SYNC signal.



- **INT** : Internal synchronization
- **LL** : External line-lock synchronization  
 -If you choose 'LL', you can adjust the desired phase. Press the SET button.  
 -You can adjust the desired phase from 0 to 359.



## ■ Operating Your Camera



### Note

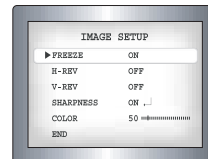
- For NTSC models, the line-lock mode can be used if the external SYNC signal frequency is at 60Hz.
- For PAL models, the line-lock mode can be used if the external SYNC signal frequency is at 50Hz.

- **COMM ADJ:** Use this feature to select communication protocol (refer to p.46~ p.51 for details). Position the indicator over 'COMMUNICATION' using the UP or DOWN button.



- **CAM ID** : Assign an ID number to the camera (1 to 255). Identification number zero is used for Remote controller setup.
- **DISP CAM ID** : Displays camera ID on top left corner of the screen.
- **BAUD RATE** : Configure baud rate from 2400/4800/9600/19200/38400 /57600 bps.
- **UART MODE** : Configure parity bit to NON, EVEN, or ODD. Data bit is set to 8bit, and stop bit to 1bit. Set the UART MODE to EVEN if using the Remote Controller.
- **RET PKT** : Used to transfer a packet.
- **END**

- **IMAGE ADJ:** Includes image quality or special function factors.



- **FREEZE** : Use this feature to freeze capture an image.
- **H-REV** : Use this feature to horizontally inverse the screen.
- **V-REV** : Use this feature to vertically inverse the screen.
- **SHARPNESS** : Increasing this value sharpens object edges. Too high of a setting, however, produces noise and may obscure the image.
- **COLOR** : Adjusting this value affects the chroma level only; the burst level is unaffected.

- **END** : evert back to the USER PRESET menu.

### RESET

To reset your camera to factory default condition.

### EXIT

To finish setup menu.

## ■ Troubleshooting

Refer to the following table if you are experiencing trouble with your camera. Contact an authorized technician if the table does not provide you with a solution to the trouble.

Problem	Solution
<b>No display</b>	<ul style="list-style-type: none"> <li>Check the power cable and the wiring between the camera and the monitor.</li> <li>Ensure proper video cable connection (Video Out Jack).</li> </ul>
<b>Dim display</b>	<ul style="list-style-type: none"> <li>The lens could be dirty. Clean with a soft, clean piece of cloth.</li> <li>Adjust monitor settings.</li> <li>Adjust camera position if exposed to a strong light source.</li> </ul>
<b>Dark display</b>	<ul style="list-style-type: none"> <li>Adjust the monitor's contrast level.</li> <li>Set the intermediate device, if in use, to 75Ω / Hi-z (refer to p.15).</li> </ul>
<b>The camera is not functioning properly and its surface is hot</b>	<ul style="list-style-type: none"> <li>Check the power source for compliance with specifications.</li> </ul>
<b>Motion Detection feature is not active.</b>	<ul style="list-style-type: none"> <li>Ensure that the feature is set to ON.</li> </ul>

Problem	Solution																
<b>Uneven colors Flickering</b>	<ul style="list-style-type: none"> <li>Adjust and configure WHITE BAL.</li> <li>The camera may be facing the sun or a fluorescent light. Adjust the position of the camera.</li> </ul>																
<b>Can't select LL mode</b>	<ul style="list-style-type: none"> <li>The camera may be connected to a DC power source. Connect to an AC power source.</li> </ul>																
<b>LL is not function properly.</b>	<ul style="list-style-type: none"> <li>Check external SYNC signal frequency (should be 60Hz for NTSC, 50Hz for PAL).</li> </ul>																
<b>RS-485 communication fails.</b>	<ul style="list-style-type: none"> <li>Check the polarity between the RS-485 Control Port and the RS-485 cable. <table border="1" data-bbox="1121 781 1472 846"> <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> </li> <li>Check the RS-485 Communication default settings. <p>* RS-485 Communication default settings are:</p> <table border="1" data-bbox="1121 938 1472 987"> <thead> <tr> <th>Item</th> <th>Camera ID</th> <th>BAUD RATE</th> <th>UART MODE</th> <th>RET PKT</th> </tr> </thead> <tbody> <tr> <td>Initial value</td> <td>1</td> <td>9600</td> <td>8-NONE-1</td> <td>ENABLE</td> </tr> </tbody> </table> </li> </ul>	485 Control Board Connection Port	RS-485 Control Port	(+) CONNECTION TERMINAL (TRX+)	485+	(-) CONNECTION TERMINAL (TRX-)	485-	Item	Camera ID	BAUD RATE	UART MODE	RET PKT	Initial value	1	9600	8-NONE-1	ENABLE
485 Control Board Connection Port	RS-485 Control Port																
(+) CONNECTION TERMINAL (TRX+)	485+																
(-) CONNECTION TERMINAL (TRX-)	485-																
Item	Camera ID	BAUD RATE	UART MODE	RET PKT													
Initial value	1	9600	8-NONE-1	ENABLE													

## ■ Specifications

		NTSC(12V Only)	NTSC(Dual)	PAL(12V Only)	PAL(Dual)
P O W E R	<b>Input Voltage</b>	DC 10V~14V (Recommended : 12V)	DC 12V(±15%)  AC 24V(±15%)	DC 10V~14V (Recommended : 12V)	DC 12V(±15%)  AC 24V(±15%)
	<b>Input Current</b>	250mA: Steady-state 416mA: Max (Zoom, Focus, Day&night motor operating)	DC 12V 333mA: Steady-state 500mA: Max (Zoom, Focus, Day&night motor operating)	250mA: Steady-state 416mA: Max (Zoom, Focus, Day&night motor operating)	DC 12V 333mA: Steady-state 500mA: Max (Zoom, Focus, Day&night motor operating)
	<b>Power Consumption</b>	3W: Normal 5W: Max (Zoom, Focus, Day & Night motor operating, at 12V)	DC12V: Normal 3W/Max 5W AC 24V: Normal 4W/Max 6W	3W: Normal 5W: Max (Zoom, Focus, Day & Night motor operating, at 12V)	DC12V: Normal 3W/Max 5W AC 24V: Normal 4W/Max 6W
C C D	<b>Size</b>	1/4 inch, Color Super HAD CCD			
	<b>Total Pixels</b>	811(H) x 508(V)		795(H) x 596(V)	
	<b>Effective Pixels</b>	768(H) x 494(V)		752(H) x 582(V)	
O P T I C S	<b>Optics</b>	23X, f=3.84 to 88.4mm (F 1.6 to 3.0) : In case of 23X Model 30X, f=3.3 to 99.0mm (F 1.6 to 3.4) : In case of 30X Model			
	<b>Min. Focus Distance</b>	1000mm			
	<b>D. ZOOM</b>	OFF/ON (Limit 10x)			
	<b>Angle Field of view</b>	H : Appr. 58.0°(Wide) to 2.22 ° (Tele) V : Appr. 44.8 ° (Wide) to 1.68 ° (Tele)			
S Y N C.	<b>Scanning System</b>	2:1 Interface			
	<b>Synchronization</b>	Internal / Line Lock			
	<b>Frequency</b>	Horizontal:15,734 KHz/Vertical :59.94 Hz		Horizontal: 15,625 KHz/Vertical : 50.00 Hz	
E L E C T R I C A L	<b>Camera Title</b>	ON/OFF (Displayed 20 characters)			
	<b>Camera ID</b>	255 ID Selectable			
	<b>Resolution</b>	520 TV Lines(Min.) : Color 570 TV Lines(Min.) : B/W			
	<b>Video Output</b>	CVBS : 1.0Vp-p/75Ω			
	<b>S/N (Y signal)</b>	50 dB (AGC Off, Weight ON)			
	<b>Min. Illumination</b>	0.6 Lux @ F1.6: Color / 0.1 Lux @F1.6: B/W			
	<b>Backlight Compensation</b>	LOW/MIDDLE/HIGH/OFF Selectable			
	<b>Day &amp; Night</b>	AUTO/COLOR / B/W(ICR type)			

		NTSC(12V Only)	NTSC(Dual)	PAL(12V Only)	PAL(Dual)
E L E C T R I C A L	<b>Gain Control</b>	Low, Middle, High, OFF Selectable			
	<b>White Balance</b>	ATW (INDOOR (3,000K~10,500K), OUTDOOR (1,800K~10,500K))/AWC/MANUAL			
	<b>Electronic Shutter Speed</b>	AUTOMANUAL (X128 ~ 1/60sec ~ 1/120,000sec) Sens-up Limit is selectable		AUTOMANUAL (X128 ~ 1/50sec ~ 1/120,000sec) Sens-up Limit is selectable	
	<b>O.S.D</b>	Built-In			
	<b>Motion Detection</b>	ON/OFF (Built-in alarm output connector)			
	<b>SSNR</b>	LOW/MIDDLE/HIGH/OFF Selectable (Noise Control)			
	<b>Focus</b>	Auto / Manual / One Push			
	<b>Zoom Movement Speed</b>	5.2 Sec : Wide to Tele		5.4 Sec : Wide to Tele	
	<b>Lens Initialize</b>	Built-In			
	<b>Preset</b>	8-Positions			
	<b>DIS</b>	ON / OFF			
	<b>Privacy Function</b>	ON/OFF(32 Zones, 8 Group / 4 Programmable Zone per Screen)			
	<b>FLIP</b>	LEFT/RIGHT, UP/DOWN			
	<b>FREEZE</b>	On/Off			
	<b>IRIS Control</b>	Auto/Manual			
<b>Communication</b>	RS-485(2,400bps, 4,800bps, 9,600bps, 19,200bps, 38,400bps, 57,600bps Selectable) PELCO-D PROTOCOL AVAILABLE				
<b>Control Output</b>	External Control by Voltage (ZOOM, FOCUS)				
<b>Operating Temperature/Humidity</b>	-10°C to +50°C / 30% to 90% RH				
<b>Dimension</b>	64(W) X 64(H) X 140(D)mm				
<b>Weight</b>	410g				
<b>Option</b>	Remote Controller(RS-485 type)				

■ MEMO



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Model : DNR2300Z  
DNR3000Z

## High Sensitivity Day&Night Power Zoom Color Camera

Instruction Guide

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