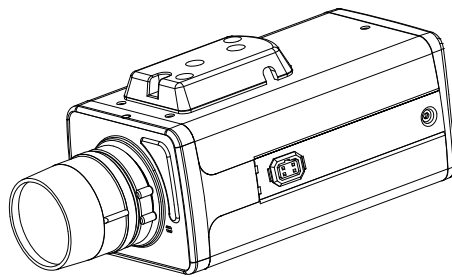


Day/Night DNR Color Camera

RP-GA8WDR



User Manual

Thanks for purchasing our product. Before operating the unit, please read the instructions carefully and keep this manual for future reference.

Safety Warning

- ⚠ 1. Read manual carefully before installing the unit.**
Please read this manual first for correct installation and operation.
- ⚠ 2. Never install the camera on a ceiling that cannot hold its weight**
The product may fall down to cause damages.
- ⚠ 3. Do not install the camera near electric or magnetic fields.**
Installed the camera away from TV, radio transmitter, magnet, electric motor, transformer, audio speakers because the magnetic fields generate from above devices will distort the video image.
- ⚠ 4. Always stop using when the product emits smoke or abnormal heat**
- ⚠ 5. Never disassemble the camera nor put impurities in it**
Disassembly or impurities may result in trouble or fire.
- ⚠ 6. Never face the camera toward the sun.**
Direct sunlight or severe ray may cause fatal damage to sensor and internal circuit.
- ⚠ 7. Keep the power cord away from wet and never touch the power cord with wet hands.**
Touching the wet power cord with hands or touching the power cord with wet hands may result in electric shock.
- ⚠ 8. Never install the camera in areas exposed to water, oil or gas.**
The water, oil or gas may result in failure, electric shock or fire.
- ⚠ 9. Cleaning**
Do not touch the surface of sensor by hand directly. Use a soft cloth to remove the dirt from the camera body. Use lens tissue or a cotton tipped applicator and ethanol to clean the sensor and the camera lens.
- ⚠ 10. Do not operate the camera beyond the specified temperature, humidity or power source ratings.**
Use the camera at temperatures within -10°C ~ 50°C and humidity below 80%. The input power source is dual power DC12V/AC 24V.
- ⚠ 11. Retain Instructions---**
The safety and operating instructions should be retained for future reference.

⚠ 12. Heed Warnings—

All warnings on the unit and in the operating instructions should be adhered to.

⚠ 13. Follow Instructions—

All operating and use instructions should be followed

⚠ 14. Cleaning—

Unplug the unit from the outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning

⚠ 15. Attachments—Do not use attachment not recommended by the product manufacturer as they may cause hazards.

16. Water and Moisture—

⚠ Do not use this unit near water—for example, near a bath tub, wash bowl, kitchen sink, or laundry tub, in a wet basement, near a swimming pool, in an unprotected outdoor installation, or any area which is classified as a wet location.

⚠ 17. Servicing—

Do not attempt to service this unit yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

18. Power Cord Protection—

⚠ Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords and plugs, convenience receptacles, and the point where they exit from the appliance.

⚠ 19. Object and Liquid Entry—

Never push objects of any kind into this unit through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock, Never spill liquid of any kind on the unit.

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

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1. Product Overview

RP-GA8WDR is designed with advanced new generation 16-bit DSP which has powerful processing capability to show over 540TVL horizontal resolution. Built-in DNR (Dynamic Noise Reduction) function, it performs clear & crisper image in low light and substantial disk-saving effect. In addition, designed with SENS-UP slow shutter technology, the starlight super-high sensitivity of 0.001 Lux is achieved.

1.1 Main Features:

- Excellent Super-high Resolution technology, 540 TV lines of horizontal resolution
- Advanced 16-bit Digital Signal Processor (DSP) delivers excellent picture quality and performance
- Day/Night function
- Built-in DNR (Dynamic Noise Reduction) for noise reduction
- The super-high sensitivity of 0.001 Lux/F=1.0 is achieved by setting SENS-UP Shutter X256
- OSD setting menu
- Support Motion Detection function
- Support Privacy function

1.2 Content List

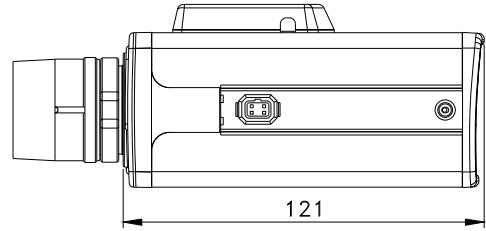
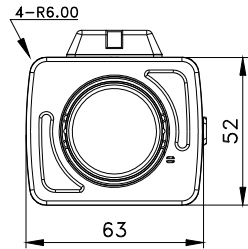
- RP-GA8WDR Color Camera unit
- User's manual

1.3 Specifications

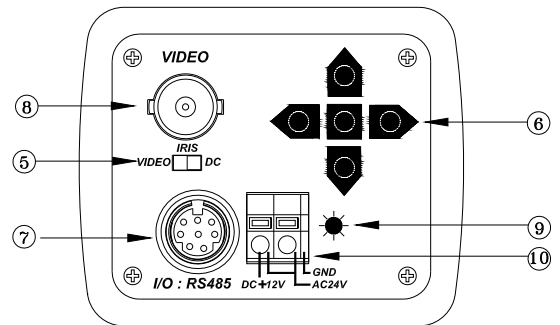
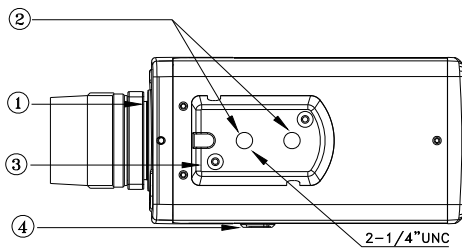
TV System	NTSC	PAL
Image Sensor	1/3" SONY DS CCD	
Total Pixels	811 (H) x 508 (V)	795 (H) x 596 (V)
Effective Pixels	768 (H) x 494 (V)	752 (H) x 582 (V)
Synchronization	Internal / Line-Lock	
Frequency	H:15.734 KHz V: 59.94Hz	H:15.625 KHz V: 50.00Hz
Resolution	Color: 540TVL; B/W: 560TVL	
Minimum Illumination	0.1 Lux/F1.0(color); 0.01Lux/F1.0(B/W); 0.001Lux/F1.0 (Sense-up)	
S/N (Y signal)	50dB (γ , Sharpness, AGC OFF)	
Dynamic Range	52dB (Low, Middle, High)	
Video Output	1.0Vp-p/75 Ω	
Iris Control	DC	
Camera Title	OFF/ON	
Day & Night	AUTO/ COLOR (Day)/ B/W (Night)/ EXTERN Selectable	
Gain Control	Low, High, OFF Selectable	
White Balance	ATW/AWC/Manual/Outdoor (1800°K~10500°K) Indoor (4500~8500K)	
Back Light Compensation	LOW/MIDDLE/HIGH/OFF Selectable	
Electronic shutter	ESC (X256, 1/50(60)sec~1/120000 sec)	
Menu	OSD Control	
Motion Detection	ON/OFF (8 Programmable Zone per Screen)	
Privacy Function	ON/OFF (8 Programmable Zone per Screen)	
Power Supply	DC12V / AC24V	
Power Consumption	3.0W Max.	
Operating Temperature/ Humidity	-10°C~+50°C 80% RH Max.	
Storage Temperature/ Humidity	-20°C~+60°C / 20%~90% RH	
Dimensions	63(W)×52(H)×121(L)mm	
Weight	400g	

2. Dimension and Functions

2.1 Dimension



2.2 Description of functions



① **Lens mount**

This mount is used to install a CS-mount lens. CS-adaptor ring is required if use a C mount lens.

② **Camera mounting screw holes**

Screw hole for fixing camera.

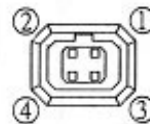
③ **Mount adaptor**

This adaptor can be attached to either the top or bottom of unit.

④ **Auto iris lens connector (4-pin type)**

The lens connector supplies the auto-iris lens (not supplied) with DC or VIDEO control signal.

PIN NO.	DC	VIDEO
1	CONTROL -	+12V
2	CONTROL +	NC
3	DRIVE +	VIDEO
4	DRIVE -	GND



⑤ **Auto Iris Mode Selection Switch**

Used to choose DC or VIDEO mode according to the type of your auto iris lens.

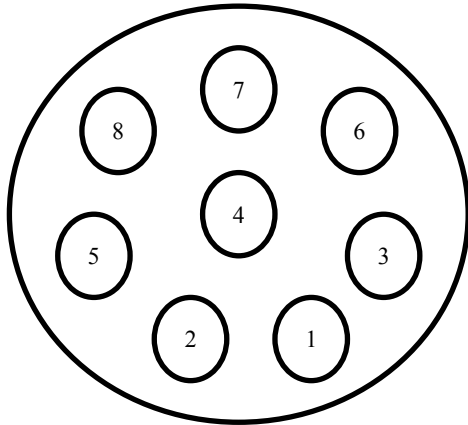
⑥ **Setting Button**

SETUP button

UP & DOWN button

LEFT & RIGHT button

⑦ **MINI DIN connector**



MINI DIN PIN	PIN ASSIGNMENT
PIN 1	RS485 +
PIN 2	RS485 -
PIN 3	GND
PIN 4	MD LED OUT
PIN 5	GND
PIN 6	D/N LED CONT
PIN 7	CDS IN
PIN 8	12V OUT

⑧ **VIDEO connector**

This is an output for connection to a video monitor, etc (75Ω).

⑨ **Power Input Indicator Light**

When the camera is connected to a power supply, the indicator light will be on.

⑩ **Power input terminal**

Connect the power supply of 12Vdc / 24Vac.

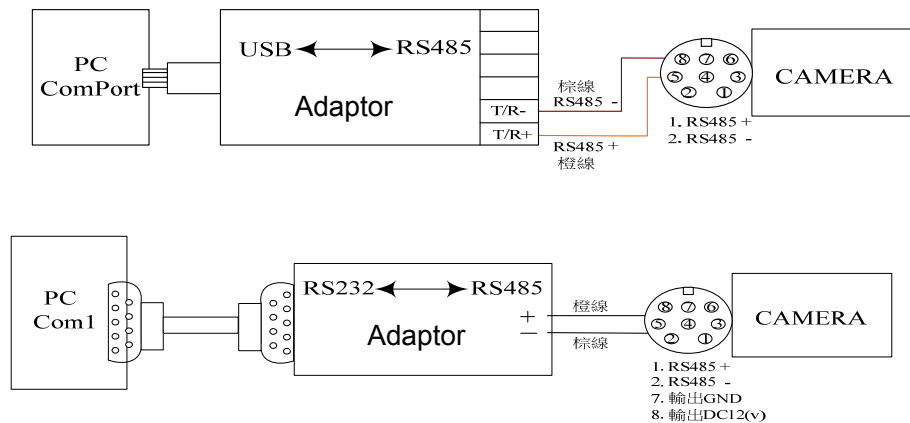
3. Camera Setup Operations

This camera utilizes an On Screen Display (OSD) user setup menu via a computer connected by the RS485 port of the camera.

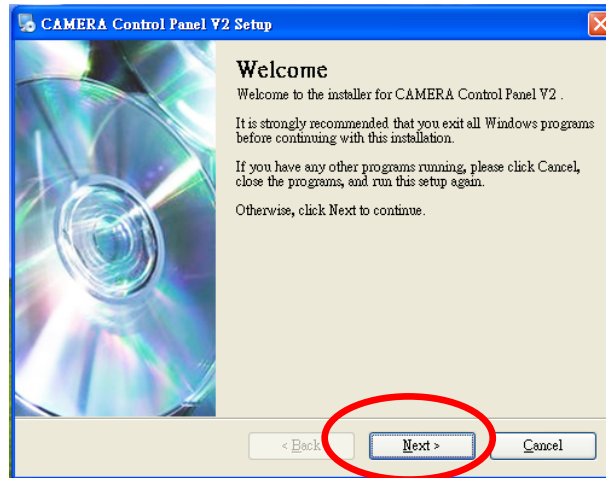
3.1 MTC-WD02 Software Operation (The software is provided in the user manual CD disk)

1. As the following figure shows, please connect a RS-232 cable to COM1 of a computer by using the end of a RS-232/ RS-485 adaptor which remarked “RS-232”.

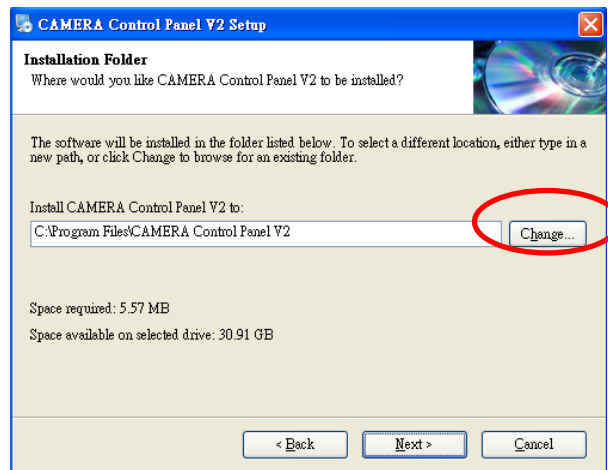
Next, please connect the other end “PS2” connector of the RS-232/ RS-485 adaptor to PS2 terminal of the camera.



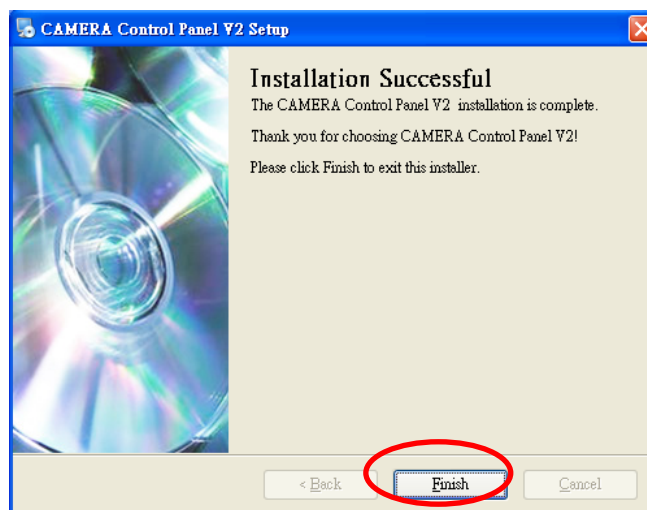
2. Please connect the power supply of DC12V to the camera.
3. Put the attached software CD into the CD-ROM of the computer. Then, the computer will run the installation software automatically. When the “CONTROL PANEL” installation window appears, please click “Next”.



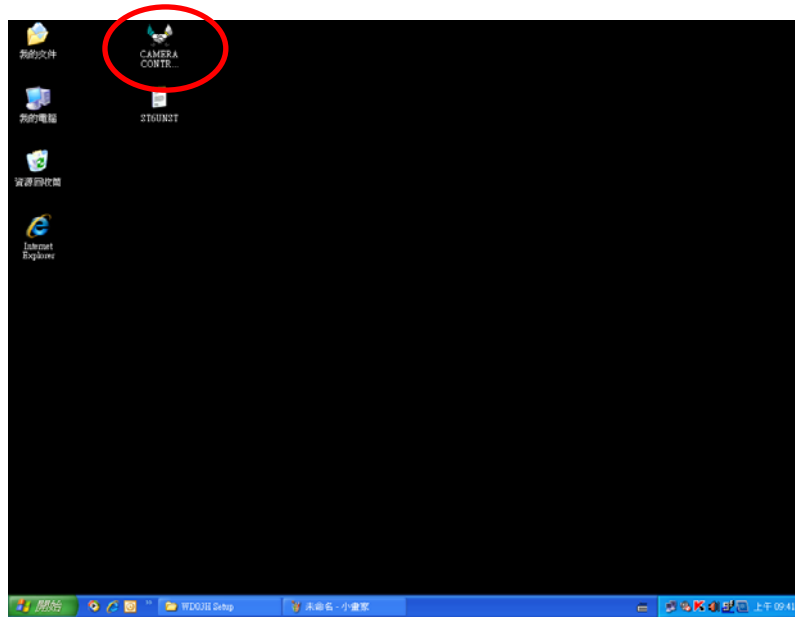
4. Choose a directory to install the software.
(In order to operate the software conveniently, “Desktop” is suggested for users to install.)



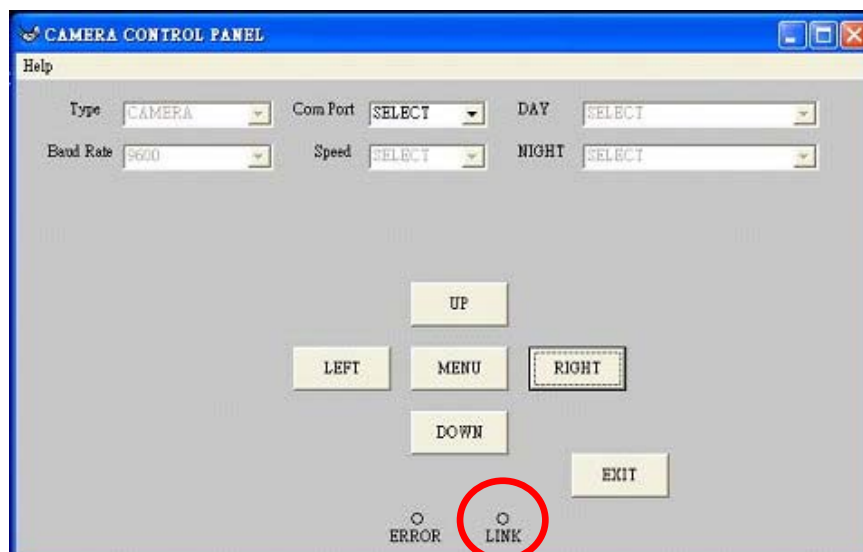
5. Follow the steps, and the software will be installed completely.



6. If the software is installed successfully, an icon of “CAMERA CONTROL PANEL” will appear on the “Desktop”.



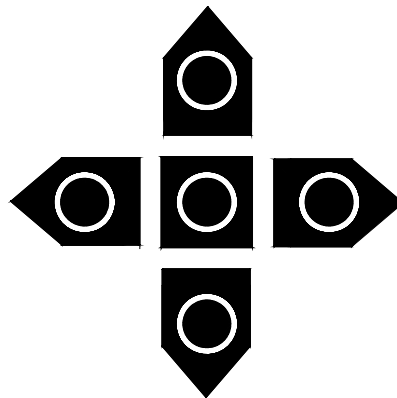
7. Once the camera is setup ready, please click the “CAMERA CONTROL PANEL” icon.
8. Then, a “CAMERA CONTROL PANEL” window will appear. At this time, the LED indicator light will from “Red” turn to “Green”, and this means the computer have sent the communication signal via RS-232 cable.



9. "CONTROL PANEL" buttons description


Description	
Type	Choose the mode No. of camera
Com Port	Choose a communication port
Baud Rate	Baud rate setting
Speed	Speed setting
DAY	N/A
NIGHT	N/A
MENU	Menu/OK
UP	Upward (Move the icon vertically between the menus and options.)
DOWN	Downward (Move the icon vertically between the menus and options.)
LEFT	Move left (Move the icon horizontally between the menus and options or adjust the parameter.)
RIGHT	Move right (Move the icon horizontally between the menus and options or adjust the parameter.)
LINK	LED indicator light (When the communication is working, the LED light is RED.)
ERROR	When the communication is error, the LED light will be RED.
EXIT	Exit

3.2 Setup Buttons: To set items on the user setup menu, use the following buttons on the back panel.

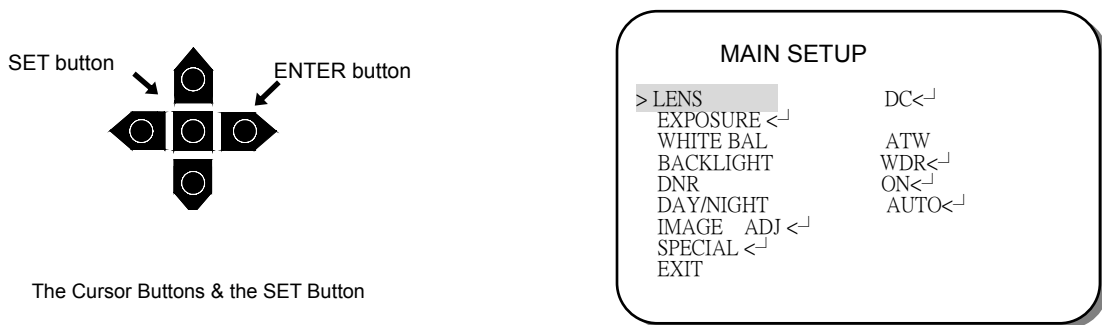


- ① **Up Button:** This button is used to move the cursor upwards. Use this button to select the item wanted to set.

- ② **Down Button:** This button is used to move the cursor downwards. Use this button to select the item wanted to set.

- ③ **Right Button:** Use this button to select or adjust the parameters of the select item. The parameter changes each time as this button is pressed.
- ④ **Left Button:** Use this button to select or adjust the parameters of the select item. The parameter changes each time as this button is pressed.
- ⑤ **Set Button:** This button is used to switch to the sub-menu. If the item has its own setting menu (sign ) , press this button to display the setting menu. This is also a quick button to return the previous menu.

3.3 Display/Close the user setup menu screen







The Cursor Buttons & the SET Button

I. Press the SET button

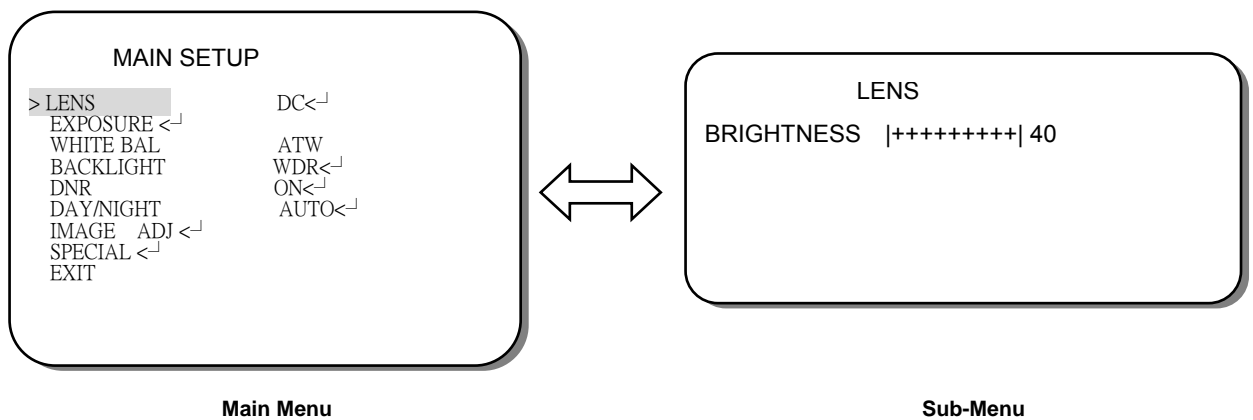
The menu screen will appear on the monitor as the block shown above.


II. Using the cursor button

Use the cursor button  or  to move the cursor up or down. Use the cursor button  or  to adjust the mode or parameter of settings.

III. Switch to sub-menu screens

When the item with sub-menu is selected, press the **ENTER** button to switch to the sub-menu for further settings. Please refer to the figure below.



Note: For those select items with “  ” sign in the end, they have the sub-menu for further settings.

IV. Return to previous page

Select RETURN and press the **ENTER** button to return to previous page.

V. Close the menu screen

To close the menu screen, use the cursor button to select **EXIT** and press the **ENTER** button.

4. User Setup

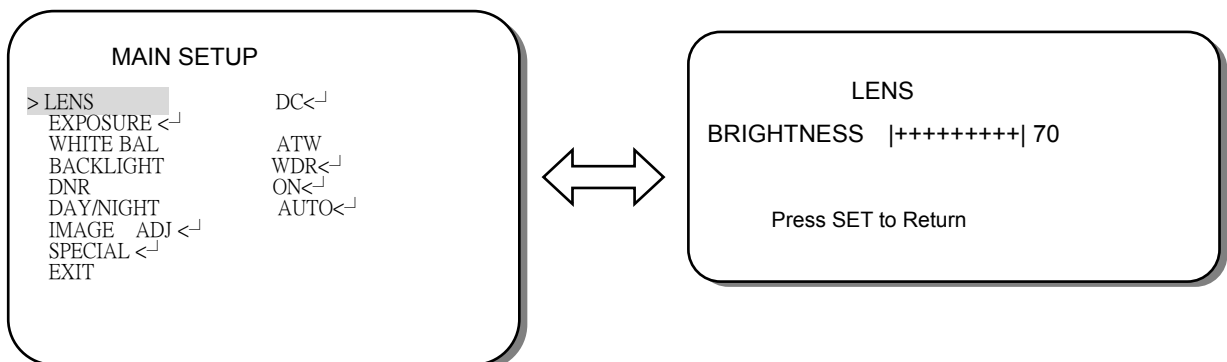
4.1 LENS

When the SETUP menu is displayed on the screen, please direct the arrow to point to “LENS” by using the UP and DOWN buttons, and press the ENTER button to enter the sub-menu. The lens can be set to DC, VIDEO, or Manual lens.

Note:

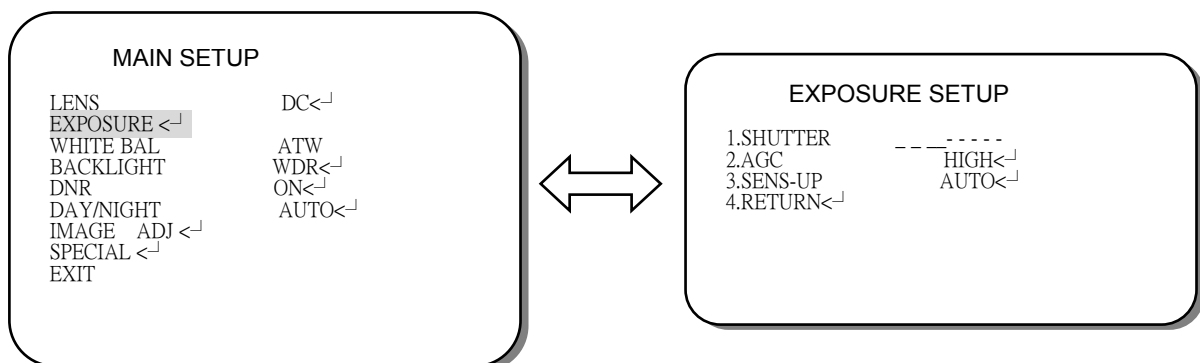
- When an auto iris lens is applied, according to the type of lens you used, please set the “AUTO IRIS MODE SELECTION SWITCH” to DC or VIDEO mode at the rear panel of camera.

4.1.1. Brightness: When the DC lens mode is selected, please select the brightness level you would like from 1~70 by pressing the LEFT or RIGHT button. (If the BACKLIGHT function is set on WDR, the adjustment range is from 1~40.)



4.2 EXPOSURE

When the SETUP menu is displayed on the screen, please direct the arrow to point to “EXPOSURE” by using the UP and DOWN buttons, and press the ENTER button to enter the sub-menu.



4.2.1. SHUTTER: Select the shutter mode by pressing the LEFT or RIGHT button. (A.FLK/ ESC/ Manual)

- ⇒ A.FLK: Please select “A.FLK” mode when flickering occurs on the screen, because of an irregular balance between illumination and frequency. NTSC model: 1/100, PAL model: 1/120.
- ⇒ ESC: Automatic Electronic Shutter Control
- ⇒ Manual: Adjust the shutter speed manually.

Note:

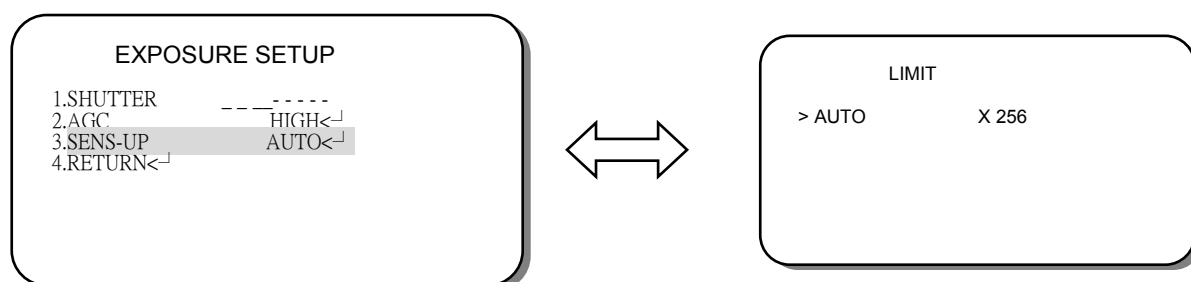
- When selecting WDR mode for BACKLIGHT, please do not select “A.FLK” mode.
- When “A.FLK” is on, the SENS-UP function will be disabled.

4.2.2. AGC:

1. Please direct the arrow to point to “AGC” on the EXPOSURE SETUP menu by using the UP and DOWN buttons.
2. Please use the RIGHT or LEFT button to select the mode you would like. The more the level of gain increases, the brighter the screen and the level of noise increases as well.
 - ⇒ High: The gain increases from 0dB up to 42dB.
 - ⇒ Low: The gain increases from 0dB up to 30dB.
 - ⇒ OFF

4.2.3. SENS-UP:

1. SENS UP is used to keep a brilliant, vivid screen image by automatically detecting changes in the level of light under low light level conditions.
2. Please direct the arrow to point to “SENS UP” on the EXPOSURE SETUP menu by using the UP and DOWN buttons.
3. Select the mode you would like to operate by pressing the LEFT or RIGHT button.
 - ⇒ AUTO: Low light level auto mode. Default value is AUTO (Up to X 256).
 - ⇒ OFF

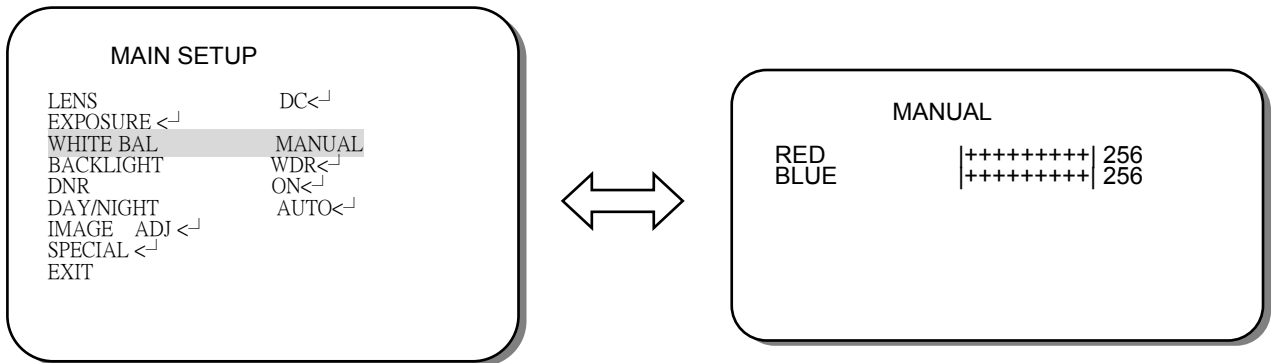


4.3 WHITE BAL.

1. The screen color can be adjusted by using the WHITE BALANCE function.
2. Please direct the arrow to point to “WHITE BAL” on the SETUP menu by using the UP and DOWN buttons.
3. Please select the mode you would like to operate by pressing the LEFT or RIGHT button.

Please select one of the 5 modes below:

- ⇒ ATW: Select this when the color temperature is between 1800°K and 10500°K.
- ⇒ INDOOR: Select this when the color temperature is between 4500°K and 8500°K.
- ⇒ OUTDOOR: Select this when the color temperature is between 1800°K and 10500°K. (sodium light inclusion)
- ⇒ AWC→SET: To find the optimal setting for the current luminance environment in this mode, set the point the camera towards a sheet of white paper and press the SET button. If the environment changes, readjust it.
- ⇒ MANUAL: The manual adjustment mode enables a more precise adjustment. Please select ATW or AWC first. Then change to manual adjustment mode and press the SET button. Set the suitable color temperature, and increase or decrease the red and blue color values at the same time while checking the color changes of the object.

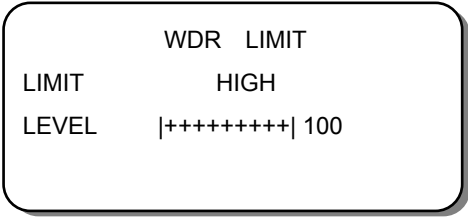


Note:
 Under the following conditions, the WHITE BALANCE function may not operate well. In such cases, please select the AWC mode.

- When the object’s surroundings have a high color temperature.
- When the object’s surroundings are dark.
- If the camera faces a fluorescent light directly or is installed in a place where the illumination changes constantly, the WHITE BALANCE function may become unstable.

4.4 BACKLIGHT

1. Please direct the arrow to point to “BACKLIGHT” on the SETUP menu by using the UP and DOWN buttons.
2. Please select the mode you would like to operate by pressing the LEFT or RIGHT button.
 - 2.1. WDR (Wide Dynamic Range): When there are both bright and dark areas at the same time, this mode makes both areas distinctive.
 - LIMIT: Adjust the WDR Sensitivity by selecting LOW, MIDDLE, or HIGH.
 - LEVEL: Adjust the WDR Brightness by controlling the bar from 0 to 100.



2.2. BLC: When there is bright backlight behind the object, this mode makes both the object and the background can be obtained clearly.

- Adjust the size of BLC area
- LEVEL: HIGH MIDDLE LOW

BLC SETUP

TOP	+++++++ 33
BOTTOM	+++++++ 99
LEFT	+++++++ 57
RIGHT	+++++++ 115
LEVEL	LOW

2.2. HLC: Under high brightness condition, when there is a bright light shines on the setting area, this mode can block the bright light so that the shape of objects can be obtained clearly.

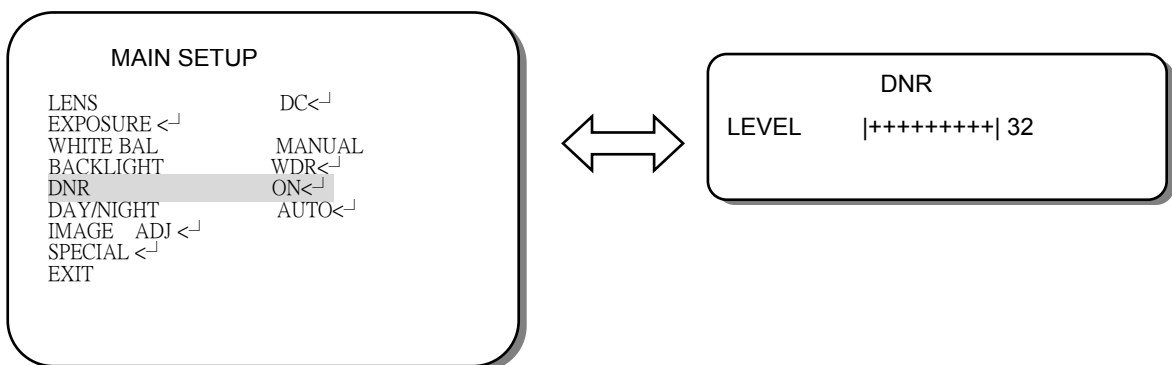
- SETUP: to adjust the darkness of the mask color.

HLC SETUP

MASK COLOR	+++++++ 220
------------	--------------

4.5 DNR (Dynamic Noise Reduction)

1. When the level of noise is reduced, the performance of a camera can apparently be improved. When it is recorded digitally, reduced noise can reduce image file size. As the level of gain changes, the background noise in the low light level automatically decreases.
2. Please direct the arrow to point to “DNR” on the SETUP menu by using the UP and DOWN buttons.
3. Please select the mode you would like to operate by pressing the LEFT or RIGHT button.
 - ⇒ ON: Activates DNR. Please enter the sub-menu to adjust the DNR level.
 - ⇒ OFF: Deactivates DNR. Noise is not reduced.



Note:

- When “AGC” is OFF, the DNR function will be disabled.

4.6 DAY/NIGHT

The camera can be set in Color or B/W mode in the Day/Night function.

1. Please direct the arrow to point to “DAY/NIGHT” on the SETUP menu by using the UP and DOWN buttons.
2. Please select the mode you would like to operate by pressing the LEFT or RIGHT button.
 - ⇒ COLOR
 - ⇒ B/W
 - ⇒ AUTO: The camera will switch to B/W or Color mode automatically. The switching time and speed can be selected by pressing the SET button.

DWELL TIME: Select the duration time about changing the day/night mode from 5s, 7s, 10s, 15s, 20s, 30s, 40, and 60s.

DURATION: Select brightness of illumination about changing the day/night mode.

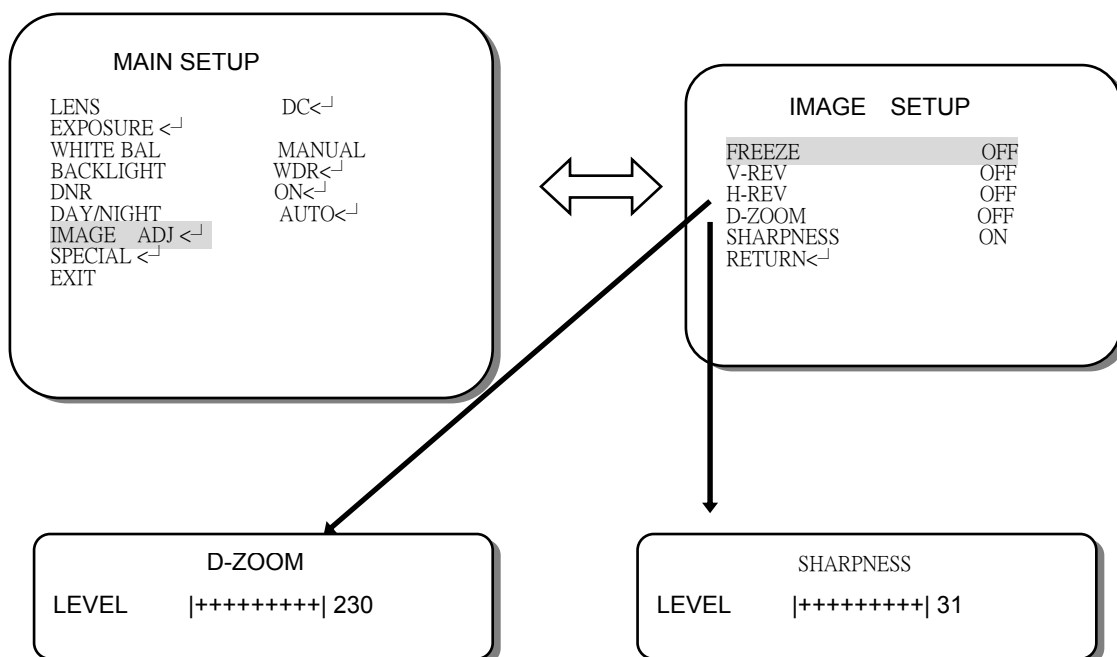
→FAST / SLOW

	Color → B/W	B/W → Color
FAST	2.5Lux	4Lux
SLOW	0.8Lux	6Lux

- ⇒ EXTERNAL: This mode allows you to apply a desired filter to external signals.

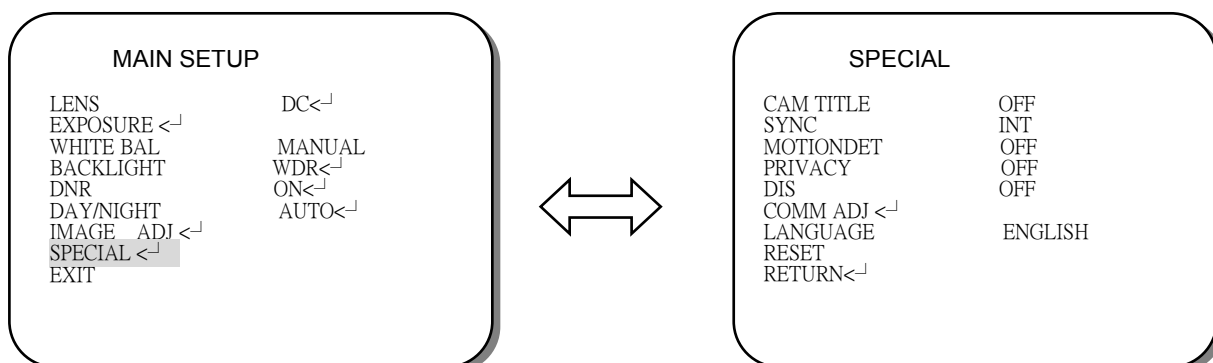
4.7 IMAGE ADJ

1. Please direct the arrow to point to “IMAGE ADJ” on the SETUP menu by using the UP and DOWN buttons.
2. Please select the mode you would like to operate by pressing the LEFT or RIGHT button.

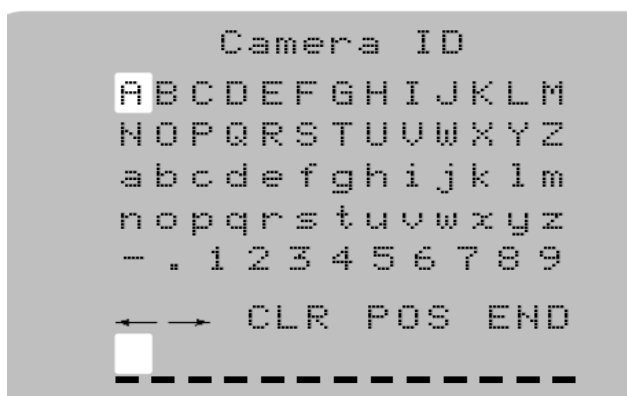


4.8 SPECIAL

Please direct the arrow to point to “SPECIAL” on the SETUP menu by using the UP and DOWN buttons.



4.8.1. CAM TITLE: Input the camera ID, and it will be appeared on the monitor.



4.8.2. SYNC:

There are two SYNCHRONIZATION modes: INTERNAL and EXTERNAL LINE-LOCK. In LINE-LOCK mode, without a synchronous generator, it synchronizes the video signal between cameras. The Line-Lock synchronization is only used for AC power input models in the places of 60Hz (NTSC models) or 50Hz (PAL models).

-INT: Internal synchronization

-LL: External line-lock synchronization

=> If you choose “LL”, you can adjust the phase you wish to set. Then press the SET button.

You can adjust the phase you wish to set from 0 to 259.

4.8.3. MOTION DETECTION:

This camera enables you to observe movements of objects in 8 different places on the screen, the message “MOTION DETECTED” appears on the screen when movement is detected; therefore this helps to improve supervision efficiency.

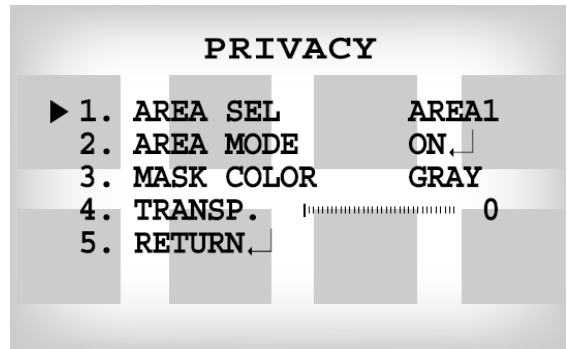
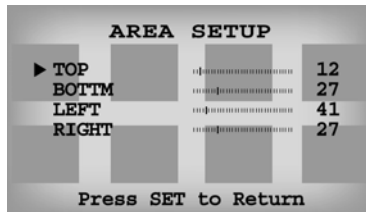
1. SENSITIVITY: You can select up to 8 MD areas.

2. AREA MODE: Determine whether to use the MD area selected in SENSITIVITY.
3. SEL POS: Determine which of the 4 vertices of each MD area is to be used.
4. YPOS: Determine the coordinate of the vertical axis for SEL POS.
5. XPOS: Determine the coordinate of the horizontal axis for SEL POS.
6. FILL→SET: Fills in a selected MD area. The color of filling is sequentially selected as brown, orange, blue, cyan, yellowish green, purple and red.
7. RETURN: Select this to save the MOTION DET menu settings and return to the SPECIAL menu.

4.8.4. PRIVACY:

This mode covers the areas you do not want to see on the screen. Please direct the arrow to point to “PRIVACY” on the SPECIAL menu by using the UP or DOWN button.

1. AREA SEL: You can select up to 8 MD areas.
2. AREA MODE: Determine whether to use the area selected in the AREA SEL, and the size and position of the area.



3. MASK COLOR: Determine the area color. You can select Gray, Green, Red, Blue, Black, or White.
4. TRANSP: Determine the transparency of selected area. Select the range of transparency from 0 to 3.
5. RETURN: Select this to save the PRIVACY menu settings and return to the SPECIAL menu.

4.8.5. DIS (Digital Image Stabilizer):

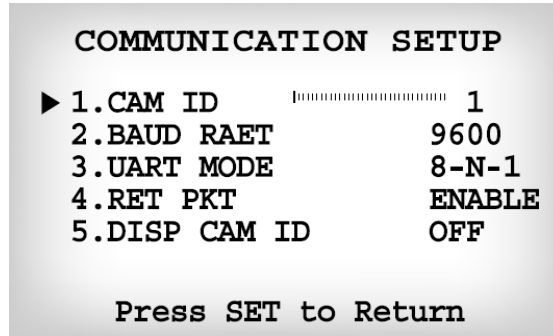
Please direct the arrow to point to “DIS” on the SPECIAL menu by using the UP or DOWN button. This function mitigates any picture movement due to external factors such as wind.

4.8.6. COMM ADJ:

This function sets up the camera communication status when controlling the camera through an external control device. Please direct the arrow to point to “COMM ADJ” on the SPECIAL menu by using the UP or DOWN button.

1. CAM ID: Determine the camera's identification number (between 0 and 255).
2. BAUD RATE: You can select from 2400/4800/9600/19200/38400/57600 bps.
3. UART MODE: You can select NONE, EVEN or ODD for the parity bits.
4. RET PKY: Determine whether to send a command back to the controller device, when a communication control command is sent to the camera.

5. DISP CAM ID: Display camera ID on top left corner of the screen.



4.8.7. LANGUAGE:

Please direct the arrow to point to "LANGUAGE" on the SPECIAL menu by using the UP or DOWN button. You can select the menu language according to your requirements.

4.8.8. RESET:

Please direct the arrow to point to "RESET" on the SPECIAL menu by using the UP or DOWN button. Reset the camera settings to the factory defaults.

4.8.9. RETURN:

Please direct the arrow to point to "RETURN" on the SPECIAL menu by using the UP or DOWN button. Select this to save the SPECIAL menu settings and return to the SPECIAL menu.