



650TVL

OWNER'S MANUAL

- Diagonal 6mm 1/3" Double Scan CCD
- WDR [Wide Dynamic Range]
- Selectable, Day&Night
- Ultra High Resolution [650TVL]
- OSD [On Screen Display]



COLOR CCD



DSP DIGITAL



CCD

DIGITAL COLOR

**CAUTION****RISK OF ELECTRIC SHOCK
DO NOT OPEN**

**CAUTION ! TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE
PERSONNEL.**



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of un-insulated "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.

**THE GRAPHIC SYMBOLS WITH SUPPLEMENTAL MARKING ARE ON THE BOTTOM OF THE SYSTEM.
"WARNING-TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THE UNIT TO RAIN OR MOISTURE."**

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.

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 their own expense.

WARNING

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 except for that specified.
- Do not expose this appliance to rain or moisture.

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

Thank you for purchasing this COLOR VIDEO CAMERA.
Before using this camera, please read this operation manual carefully
to obtain the best result and keep this manual for future reference.

| | |
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Read Instructions

Read all of the safety and operating instructions before using the product.

Retain Instructions

Save this instructions for later use.

Cleaning

Unplug this appliance from wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

Water and Moisture.

Do not use this product near water or moisture. (For example. near a bathtub, wash bowl, kitchen sink, or laundry tub, in a wet basement, or near swimming pool, etc.)

Installation

Do not place this product on an unstable cart, stand, or table. The product may fall causing serious injury to a child or adult, and damage to the product.

Use only with a cart or stand recommended by the manufacturer, or sold with the product. Mounting should follow the manufacturer's instructions, and should use a mounting accessory recommended by manufacturer.

Power source

This product should be operated only from the type of power source indicated on the marking label.

If you are not sure of the type of power supplied to your home, consult your dealer or local power company.

- **Do not install the camera in extreme temperature conditions.**
Do use the camera under conditions where temperatures are within -10°C to 50°C.
Especially be careful for ventilation under high temperature.
- **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.
- **Never use the camera close to a gas or oil leak.**
It can cause malfunctions to occur.
- **Do not disassemble the camera.**
There are no user repairable parts inside.
- **Do not drop the camera or subject them to physical shocks.**
It can cause malfunctions to occur.
- **Never keep the camera face to strong light directly.**
It can damage CCD.
- **Do not expose the camera to rain or spill liquid on it.**
If it gets wet, wipe it with dry cloth immediately.
Liquids can contain minerals that corrode the electronic components.

**NOTE**

When this camera is installed near wireless communication devices that emits strong electromagnetic field, irregularity such as noise on the monitor may appear.

1. Color Video Camera •-----•



2. Auto Iris Lens Plug •-----•



3. Control Plug •-----•



4. Lens Mount Cap •-----•



5. Owner's Manual •-----•



1. 1/3" High Sensitivity 960H CCD**2. Min Illumination(F1.2, 30IRE, AGC Max)**

- Color 0.1 Lux (DSS 0.0003 Lux)
- B/W ICR 0.01 Lux (DSS 0.000007 Lux)

3. High performance menus for functions

- Ultra High Resolution (650TVL)
- BLC (Back Light Compensation)
- 2DNR (Digital Noise Reduction)
- Privacy zone selectable.
- Motion detection selectable.
- MIRROR (HORIZONTAL)
- ATR (Digital WDR)
- Flickerless On/Off. (Option available on select model(s) only)

4. Selectable day & night

- ICR(IR Cut Filter Removable)
(Option available on select model(s) only)

5. RS-485 Communication Control Support

- Remotely control OSD menu via RS-485 Interface

● **CS-Mount Holding Screw**

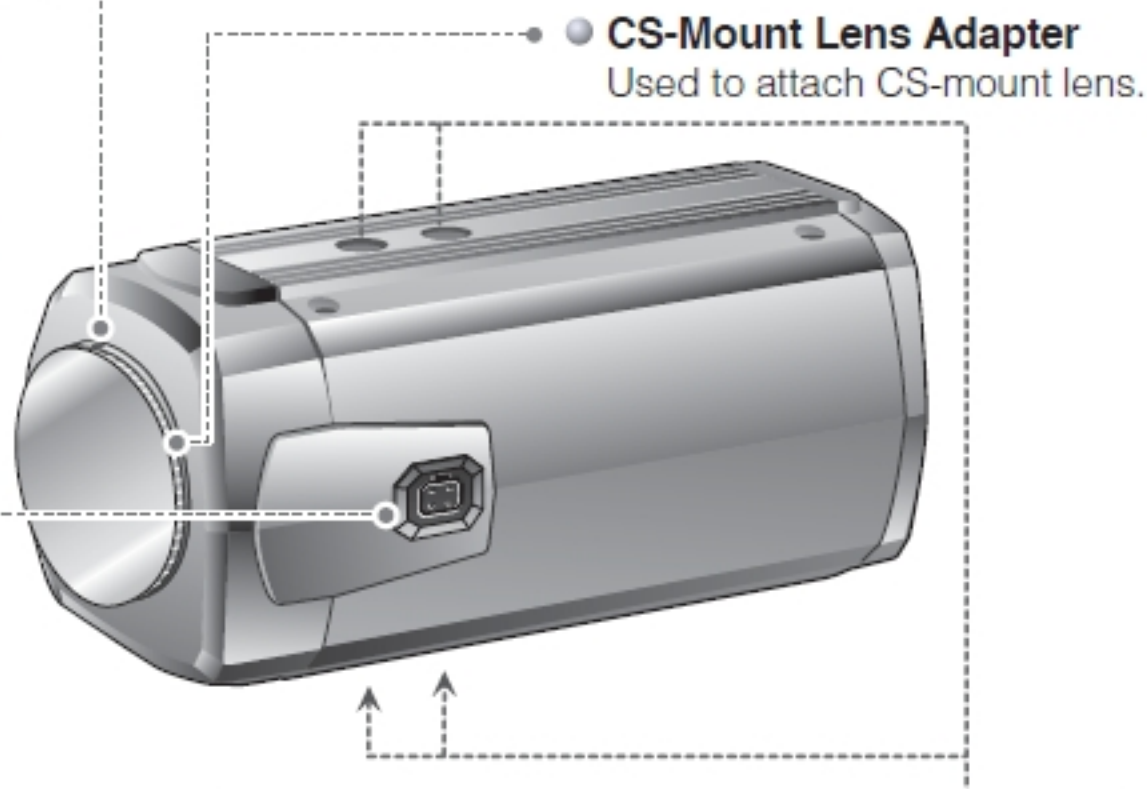
Used to readjust back focus of the camera. There are two back focus lock screw. These must be loosened before the camera may be back focused. Loosen the lock screws using the L-wrench -mount lens adaptor, and tighten the lock screws after adjustment.

● **Auto Iris Lens Connector**

Used to connect Auto Iris Lens plug.

● **Tripod Mounting hole**

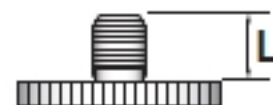
Used to install the camera on an optional tripod. The tripod must be equipped with the screw specified as shown below.



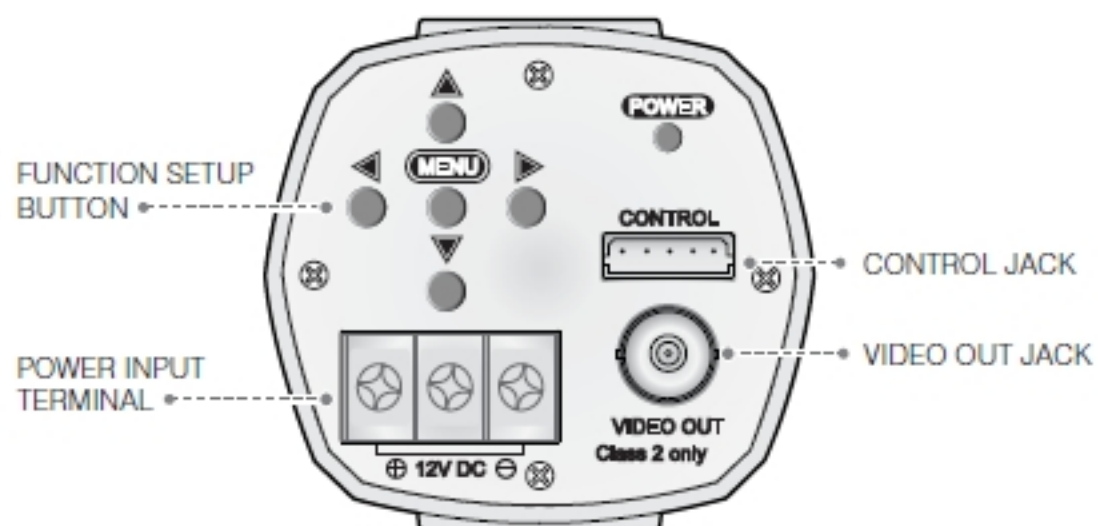
● **CS-Mount Lens Adapter**

Used to attach CS-mount lens.

1/4"- 20 UNC (20 THREAD)
L : 4.5mm±0.2mm (ISO standard),
or 0.197" (ASA standard)



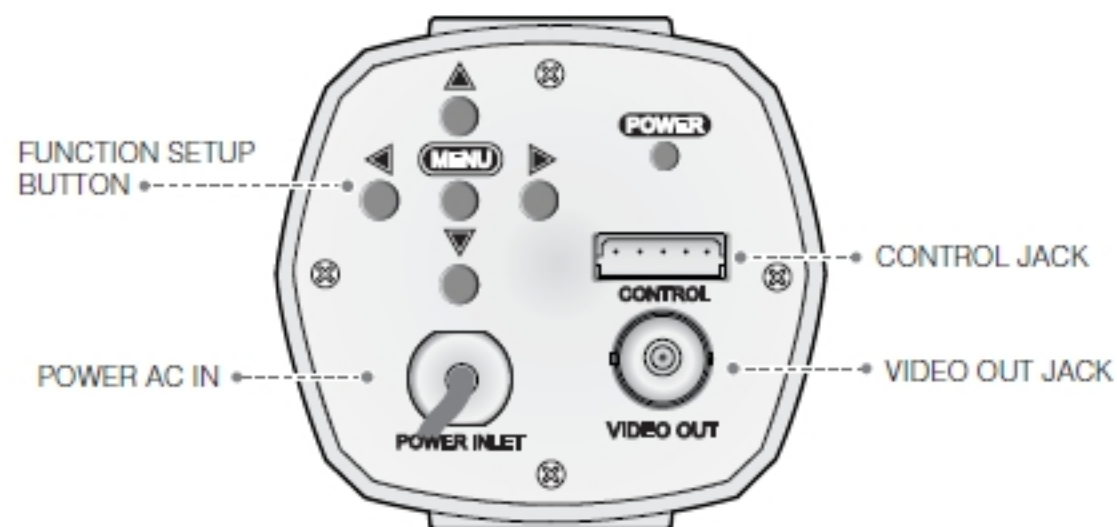
12V DC INPUT MODEL



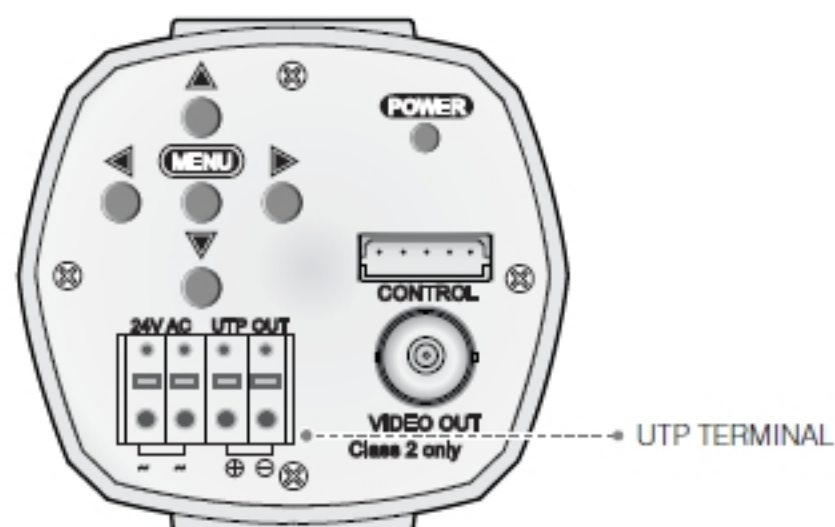
24V AC / 12V DC INPUT MODEL



100V AC ~ 220V AC INPUT MODEL



UTP TRANSMISSION MODEL



LENS

The lens is not supplied with this camera. Purchase a lens suitable for your environment. This camera accepts the auto iris lens and both C-mount and CS-mount lens.

- If the lens is marked with fingerprints or other marks, the image quality might be poor.



- NOTE**
- It is recommended to use a high quality lens to improve the image quality under low illumination.
 - For using main functions it is recommended to use Auto Iris Lens with DC type.

Installing Auto Iris Lens

1. Peel approximately 8mm from the end of the lens cable outer cover.

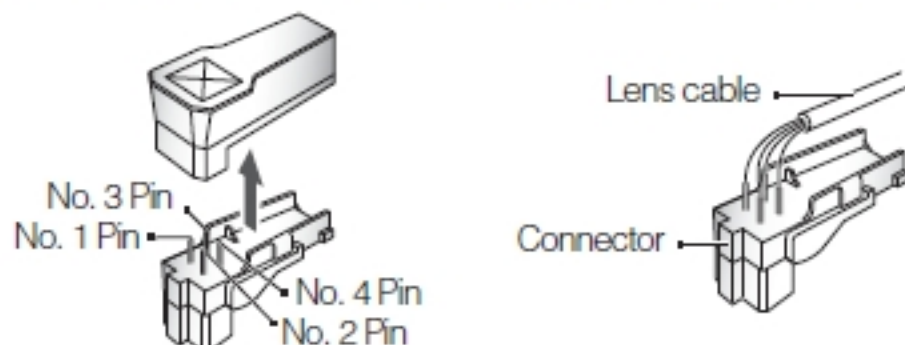


2. Peel approximately 2mm from the end of the cable inner cover.

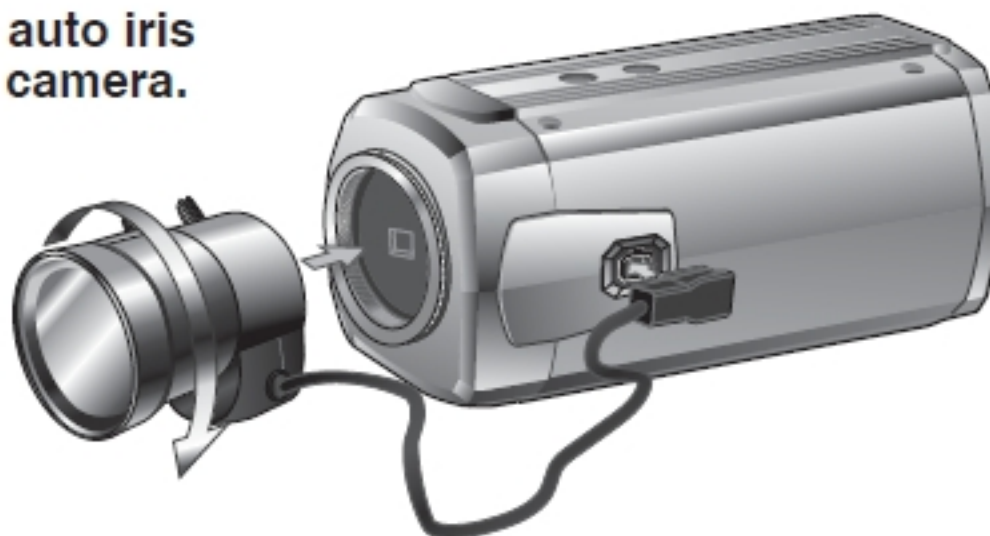


3. Remove the cover from the iris lens plug supplied, and solder the lens cable to the plug as shown below.

| PIN NUMBER | DC LENS |
|------------|-----------|
| 1 | Damping - |
| 2 | Damping + |
| 3 | Drive + |
| 4 | Drive - |



4. Remove the protective cap, and attach the lens to the camera by turning clockwise.
5. Connect the lens plug to the auto iris connector on the side of the camera.



Installing C/CS-Mount Lens

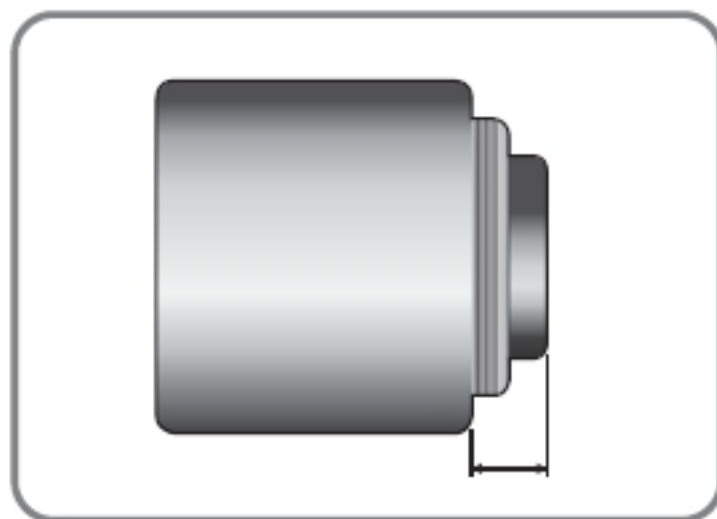
- Before mounting a lens, please check whether it is a C-mount or CS-mount lens. The back focus is set for the CS-mount lens at the factory.

Mounting a CS-Mount Lens

- After removing the protecting cap, attach the lens into the camera by turning clockwise.



- Use the lens under the specification as shown. Otherwise the lens can damage the camera or abnormal fixing may result.

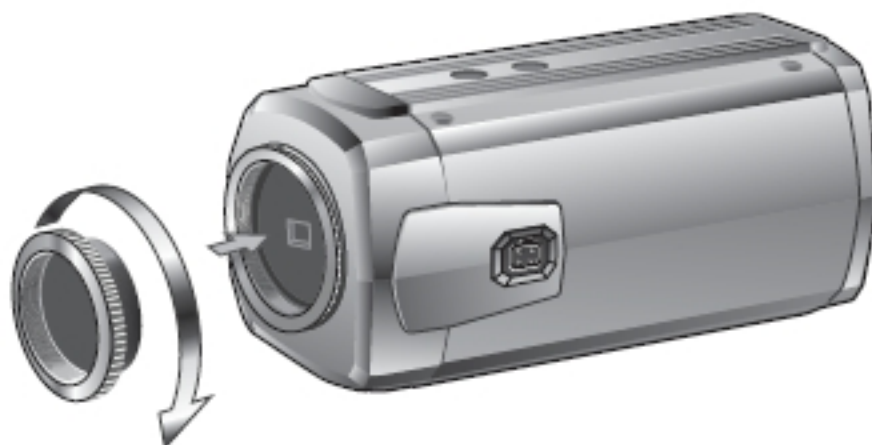


- C-mount lens : 10mm or less
- CS-mount lens : 5mm or less

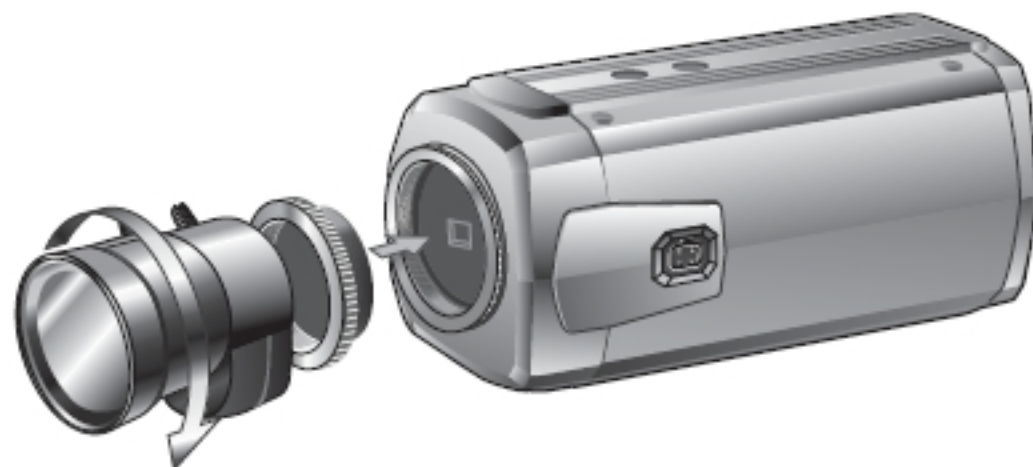
- A heavy lens may disturb the balance with the camera and possibly result in damage. Don't use a lens heavier than 450g.

Mounting a C-Mount Lens

1. Attach the C-MOUNT lens adapter by turning clockwise.



2. Attach the lens to the camera by turning clockwise.



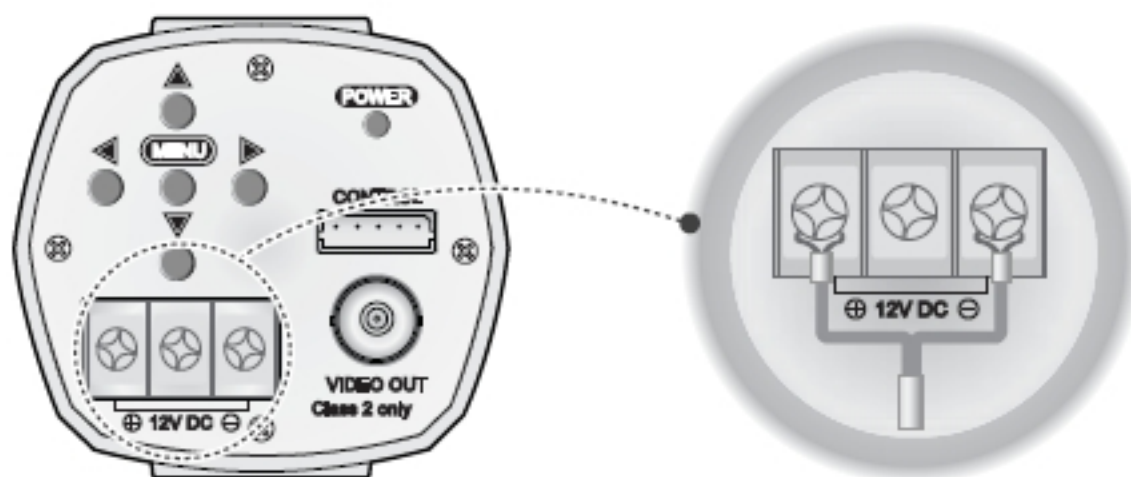
※ C-Mount ring is option available on select model only.

Connecting to Power

Each model has different power specification, please check the name of the model and power specification before connecting to power source. Please refer to the sticker identifying the model, which is attached on the product, for power specification.

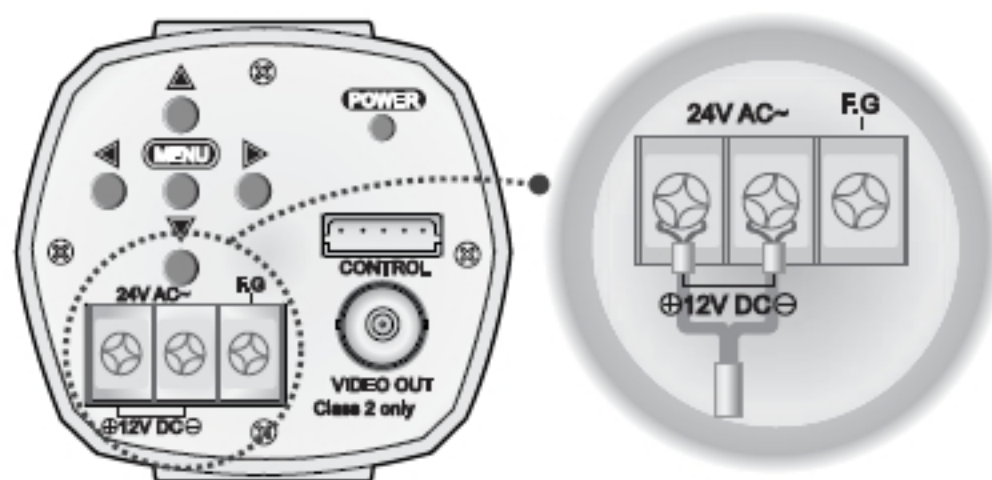
For 12V DC Power Type

The wire is polarized. Be careful of polarity. Use 12V DC power source.



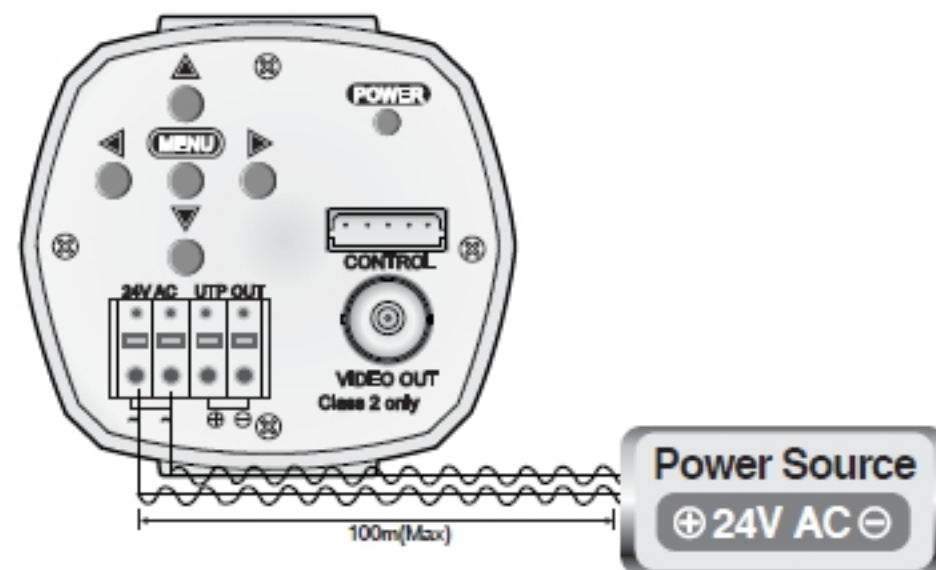
For 24V AC/ 12V DC Power Type

Use 24V AC power source or 12V DC power source.



For 24V AC Power Type [UTP Video Output]

When using 24V AC power, it is possible to supply the power within 100m. Use 4 wires by 2 pair of wires.





NOTE

- Be sure to connect power after all the installation is done.
- Note that AC adaptor is not supplied with camera.
- Use only 24V AC / 12V DC UL listed class 2 power supply.
- Do not use power sources other than that specified.

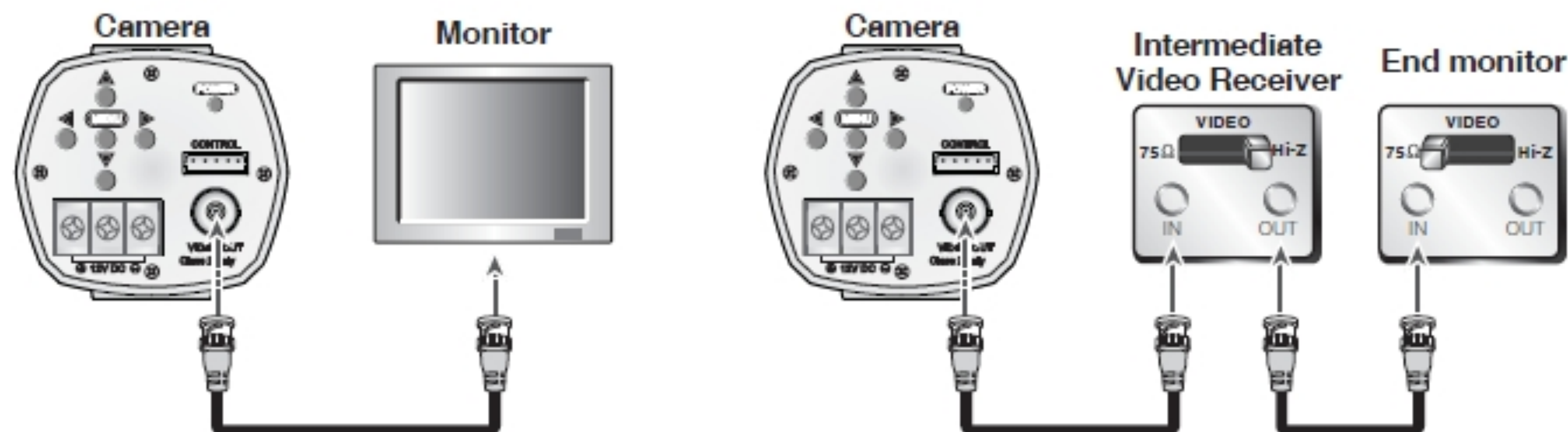
For 100V AC ~ 220V AC Power Type



Connecting to Monitor

For BNC Video Output Model

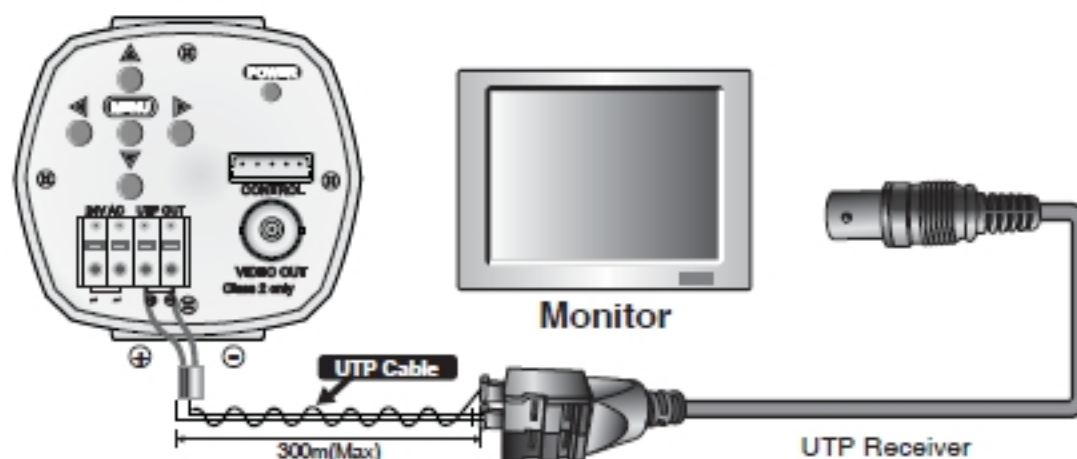
Connect the VIDEO out jack to the monitor video in jack.



- As the connecting method varies with the instruments, refer to the manual supplied with the instrument.
- Connect the cable after power is turned off.
- Set the 75Ω/ Hi-Z selection switch as shown below if you have an intermediate device.

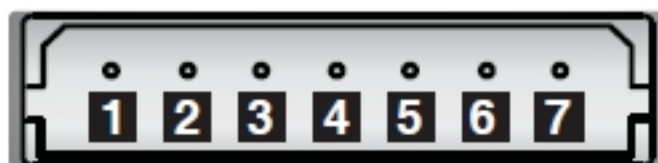
For UTP Video Output Model

Connect the UTP video output terminal on the back of the product to the monitor.



- Connect UTP (Unshielded Twisted Pair) wire to the UTP output of the camera directly.
- UTP transmitter is included in the camera therefore additional UTP transmitter is not necessary.
- UTP receiver is necessary to connect UTP wire to Monitor or DVR.
- When connecting UTP wire, make sure the polarity of the video signal.
- Use UTP wire "CAT5 24AWG" to have the best transmission quality.
- The twisted-pair output cannot be used at the same time as the Composite Video output.

Control Jack



Control Input/Output Jack (RS-485)

| No. | Function |
|-----|--------------------|
| 1 | Motion Detection |
| 2 | GND |
| 3 | Day / Night Output |
| 4 | N/C |
| 5 | EXT(CDS Sensor) |
| 6 | R+ (RS-485) |
| 7 | R- (RS-485) |

Day / Night Output

It is the function that can turn on external IR LED lamp when the Day/Night mode is set "Auto" or "IRED" or "EXT1, EXT2" on the OSD menu of the camera.

| | |
|---|--------------------|
| 3 | Day / Night Output |
| 2 | GND |



Motion Detection

Motion Detection pin is high(3.3v) when the "MOTION..." on the screen. -> The motion block blink on the screen.

| | |
|---|------------------|
| 1 | Motion Detection |
| 2 | GND |



CDS Input

It is the function that can turn on external DAY/NIGHT mode is set "IRED" on the OSD menu of the camera.

| | |
|---|-----------------|
| 5 | EXT(CDS Sensor) |
| 2 | GND |

• CDS Type



EXT Input

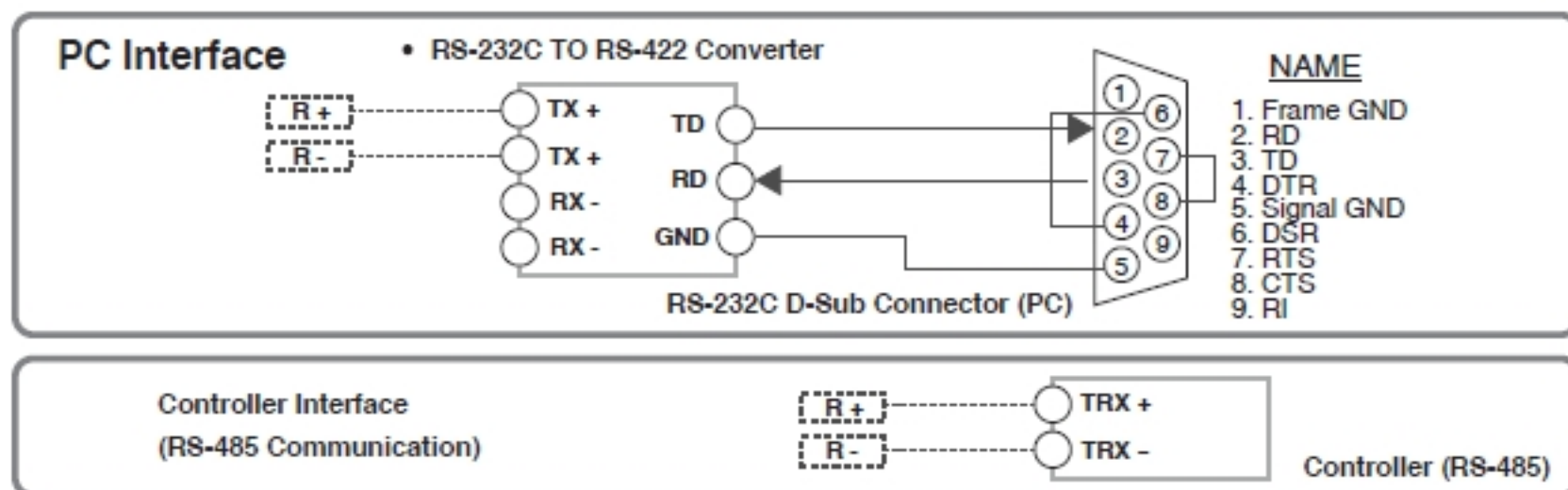
It is the function that can exchange COLOR or B/W then the DAY/NIGHT mode is set "EXT1" or "EXT2" on the OSD menu of the camera.

| | |
|---|-----------------|
| 5 | EXT(CDS Sensor) |
| 2 | GND |



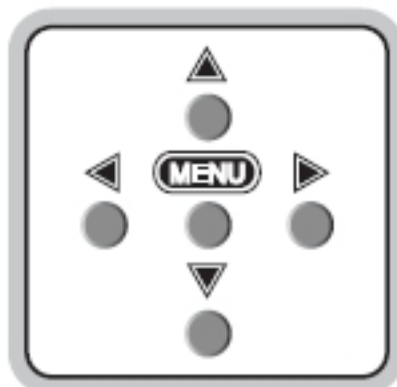
Control Input Jack (RS-485)

It is a terminal that controls the function of the camera at long distance.



Function Setup Button

Functions can be set up using 5 buttons on the camera's rear panel.



- **MENU Buttons** : Used to access menu mode. Also used to escape menu mode.
- **UP/DOWN Buttons** : Used to choose the desired menu item. It also moves the cursor up or down in the menu screen.
- **LEFT/RIGHT Buttons** : Used to change the parameter of the selected menu item. It also moves the cursor the left or right in the menu screen.

| | | | |
|-----------|--------------|-------------|---|
| LENS | DC | BRIGHTNESS | 0~255 |
| | | AGC | 0~20 |
| | | FLICKERLESS | ON, OFF |
| | | DSS | OFF, X2, X4, X8, X16, X32, X64, X128, X256, X512 |
| | | SHUTTER | 1/60(1/50), 1/120(1/100), 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000 |
| | | RETURN | ↩ |
| | ESC | BRIGHTNESS | 0~255 |
| | | AGC | 0~20 |
| | | FLICKERLESS | ON, OFF |
| | | DSS | OFF, X2, X4, X8, X16, X32, X64, X128, X256, X512 |
| | | RETURN | ↩ |
| WHITE BAL | ATW | ENVIRONMENT | INDOOR, OUTDOOR |
| | | RETURN | ↩ |
| | PUSH | | |
| | USER1, USER2 | R-GAIN | 0~255 |
| | | B-GAIN | 0~255 |
| | | RETURN | ↩ |
| | ANTI CR | ENVIRONMENT | INDOOR, OUTDOOR |
| | | RETURN | ↩ |
| | MANUAL | B-GAIN UP | |
| | | B-GAIN DOWN | |
| | | PRESET | |
| | | RETURN | ↩ |
| | PUSH LOCK | | |
| WDR | WDR | MODE | WDR, DWDR |
| | | BRIGHTNESS | 0~255 |
| | | CONTRAST | LOW, MID-LOW, MID, MID-HIGH, HIGH |
| | | RETURN | ↩ |
| | BLC | AREA | AUTO, MANUAL |
| | | RETURN | ↩ |

| | | | |
|-----------|-------|------------|--|
| WDR | HLC | CLIP LEVEL | 0~255 |
| | | SCALE | 0~15 |
| | | RETURN | ↩ |
| | OFF | | |
| DNR | 2DNR | LEVEL | LOW, MID, HIGH |
| | | RETURN | |
| | 3DNR | LEVEL | AUTO, LOW, MID, HIGH |
| | | RETURN | ↩ |
| | OFF | | |
| DAY/NIGHT | AUTO | DELAY CNT | 0~15 SEC |
| | | D/N LEVEL | LOW, MID, HIGH |
| | | RETURN | ↩ |
| | COLOR | | |
| | B/W | BURST | ON, OFF |
| | | RETURN | |
| | IRED | AREA | AUTO, MANUAL |
| | | DELAY CNT | 0~15 SEC |
| | | DAY→NIGHT | 0~254 |
| | | NIGHT→DAY | 1~255 |
| | | BRIGHTNESS | 0~31 |
| | | DWDR | ON, OFF |
| | | CONTRAST | LOW, MID-LOW, MID, MID-HIGH, HIGH |
| | | RETURN | ↩ |
| | EXT1 | | |
| | EXT2 | | |
| IMAGE ADJ | IMAGE | SHARPNESS | 0~15 |
| | | GAMMA | 0.38, 0.42, 0.45, 0.50, 0.55, 0.63, 0.71, 0.83 |
| | | HR MODE | OFF, X1, X2, X3, X4, X5, X6, X7 |
| | | CONTRAST | 0~63 |
| | | RETURN | ↩ |

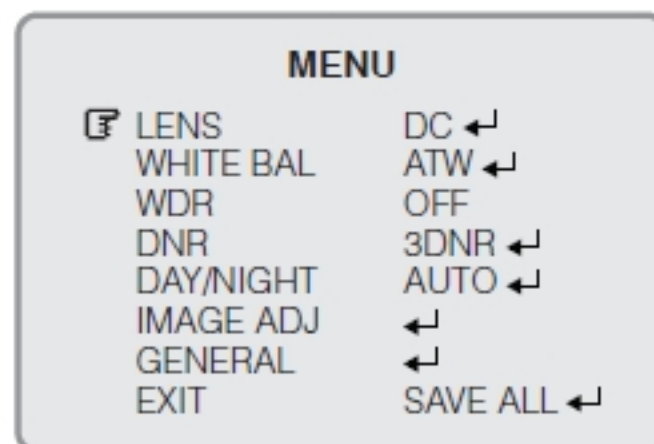
| | | | |
|-----------|------------|-------------|---|
| IMAGE ADJ | D-EFFECT | DIS | ON, OFF |
| | | D-ZOOM | OFF, X2, X3, X4, X6, X8, X16 |
| | | MIRROR | OFF, V-FLIP, H-FLIP, HV-FLIP |
| | | FREEZE | ON, OFF |
| | | NEGA/POSI | NEGA, POSI |
| | | RETURN | ↩ |
| | COLOR-GAIN | R-GAIN | 0~63 |
| | | B-GAIN | 0~63 |
| | | RETURN | ↩ |
| | MOTION | AREA | 1/4, 2/4, 3/4, 4/4 |
| | | DISPLAY | ON, OFF |
| | | DETECT AREA | |
| | | SENSITIVITY | 0~15 |
| | | TOP | 0~15 |
| | | BOTTOM | 1~16 |
| | | LEFT | 0~23 |
| | | RIGHT | 1~24 |
| | | RETURN | ↩ |
| | PRIVACY | AREA | 1/15~15/15 |
| | | DISPLAY | ON, OFF |
| | | POSITION | |
| | | COLOR | GREEN, BLUE, YELLOW, CYAN, MAGENTA, WHITE, BLACK, RED |
| | | TRANSP | 0.00, 0.50, 0.75, 1.00 |
| | | MOSAIC | ON, OFF |
| | | RETURN | ↩ |
| | RETURN | | ↩ |

| | | |
|---------|---------------|---|
| GENERAL | CAM ID | 0~255 |
| | ID DISPLAY | ON, OFF |
| | CAM TITLE | ON, OFF |
| | LANGUAGE | ENGLISH (16 Languages) |
| | SYNC | INT |
| | BAUDRATE | 2400, 4800, 9600, 19200, 38400, 57600, 115200 BPS |
| | VERSION | |
| | FACTORY RESET | |
| | RETURN | ← |
| EXIT | SAVE ALL | |
| | NOT SAVE | |

MAIN MENU

Press Menu button to open MAIN MENU.

Select each sub-menu by using the ◀, ▶, ▲, ▼ button. Press the MENU(SET) button to select.

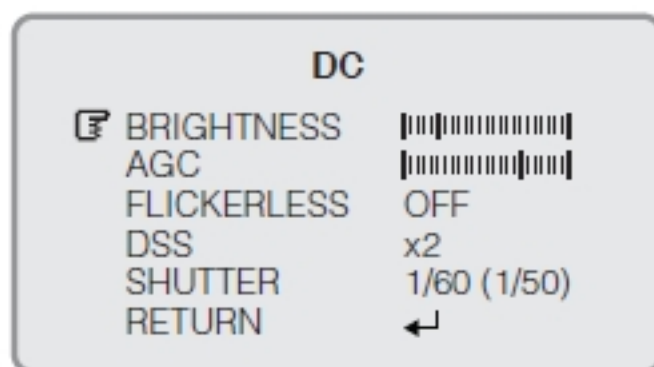


- Select EXIT using the UP or DOWN button.
- Please select SAVE ALL or NOT SAVE by press the LEFT or RIGHT button before you exit the main menu.

LENS

Select LENS using the UP or DOWN button. You can select DC and ESC using the LEFT or RIGHT button.

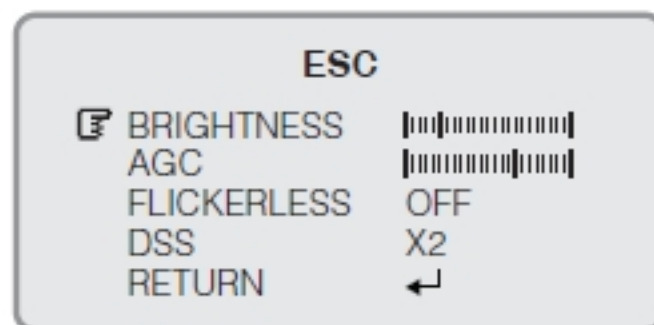
1. LENS DC : Select DC and press the MENU to open DC Menu.



- BRIGHTNESS : Select BRIGHTNESS using the UP or DOWN button.
You can select between 0~255 using the LEFT or RIGHT button.
- AGC : Select AGC using the UP or DOWN button.
You can select between 0~20 using the LEFT or RIGHT button.
- FLICKERLESS : Select FLICKERLESS using the UP or DOWN button.
You can select between ON, OFF using the LEFT or RIGHT button.
- DSS (Digital Slow Shutter) : Select DSS using the UP or DOWN button.
You can select between OFF or x2~x512 using the LEFT or RIGHT button.

- SHUTTER : Select SHUTTER using the UP or DOWN button.
You can select between 1/50(PAL),1/60(NTSC)~1/10000 using the LEFT or RIGHT button.

2. LENS ESC : Press Menu when ESC is displayed to open ESC menu.

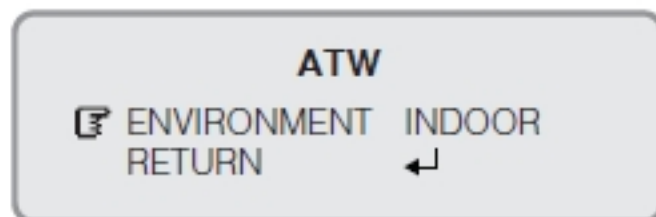


- BRIGHTNESS : Select BRIGHTNESS using the UP or DOWN button.
You can select between 0~255 using the LEFT or RIGHT button.
- AGC : Select AGC using the UP or DOWN button.
You can select between 0~20 using the LEFT or RIGHT button.
- FLICKERLESS : Select AGC using the UP or DOWN button.
You can select between ON, OFF using the LEFT or RIGHT button.
- DSS (Digital Slow Shutter) : Select DSS using the UP or DOWN button.
You can select between OFF or x2~x512 using the LEFT or RIGHT button.

WHITE BAL(White Balance)

Select **WHITE BAL** using the **UP** or **DOWN** button. You can select **ATW**, **PUSH**, **USER1**, **USER2**, **ANTI CR** or **MANUAL**, **PUSH LOCK** using the **LEFT** or **RIGHT** button. The sub menu for each option will open up when you press **MENU** when the desired option is displayed.

1. **ATW** : Color temperature is automatically adjusted in between 2,000K and 10,000K.
You can select **INDOOR** or **OUTDOOR**, depending on the environment.



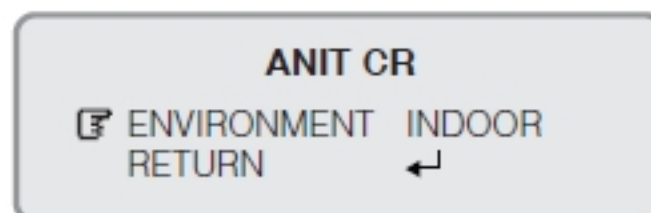
2. **PUSH** : This function turns on the automatic adjustment of the white balance regardless of the subject conditions especially when the color temperature is out of the range (from 1500K to 15000K.)

3. USER1, USER2 : To set a certain color temperature with R-GAIN and B-GAIN

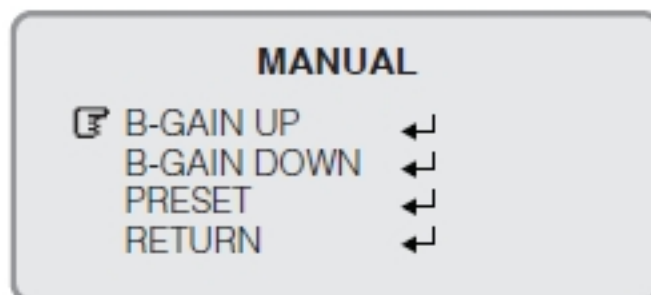


- R-GAIN : To adjust density of R-GAIN(0~255)
- B-GAIN : To adjust density of B-GAIN(0~255)

4. ANTI CR : Use this feature when there is a color rolling. Color rolling occurs when frequency of a non-inverter fluorescent light does not match the camera's driving frequency. You can select INDOOR or OUTDOOR, depending on the environment.



5. MANUAL : Adjust the white balance manually using the B-GAIN UP or B-GAIN DOWN settings.



- B-GAIN UP/B-GAIN DOWN : Manually set the B gain level by adjusting the B-GAIN UP or B-GAIN DOWN level.
(The corresponding R gain will be automatically adjusted as the B gain changes.)
- PRESET : Return to PRESET level of the B gain.

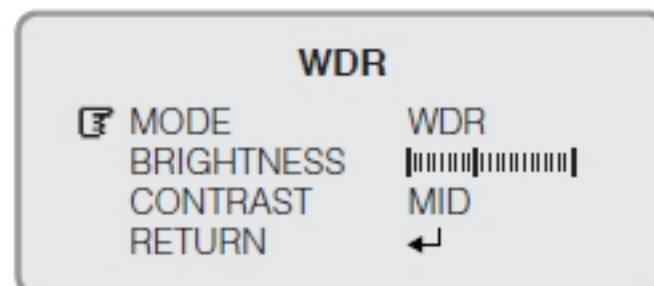
6. PUSH LOCK : If the color does not display properly even after adjusting, use this function to activate a one-time auto adjustment of color temperature.

WDR

Select WDR using the UP or DOWN button.

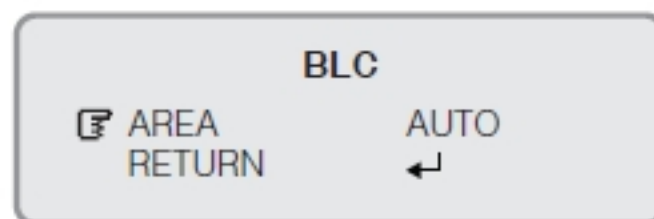
You can select WDR, BLC, HLC and OFF using the LEFT or RIGHT button.

- 1. WDR :** Select WDR and Press MENU button to open WDR Menu
The Wide Dynamic Range(WDR) function enhances the dark area and reduces overexposure in the image by combining multiple number of images together.



- MODE : Select MODE using the UP or DOWN button.
You can select WDR, DWDR using the LEFT or RIGHT button
- BRIGHTNESS : Select BRIGHTNESS using the UP or DOWN button.
You can select between 0~255 using the LEFT or RIGHT button.
- CONTRAST : Select contrast using the UP or DOWN button.
You can select between LOW, MID-LOW, MID, MID-HIGH, HIGH using the LEFT or RIGHT button.

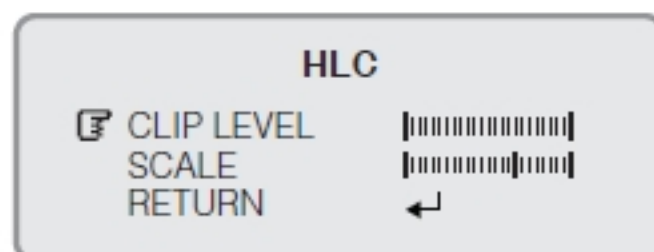
2. BLC(backlight compensation) : The backlight compensation feature increases the brightness of the overall image so the dark image under backlight shows brighter.
Press Menu when BLC is displayed to open BLC menu.



- AREA : Select AREA using the UP or DOWN button.
You can select AUTO and MANUAL using the LEFT or RIGHT button.
Press Menu when MANUAL is displayed by using the LEFT or RIGHT button.
You can select where the strong backlight area is from nine areas.



- 3. HLC :** The High Light Compensation(HLC) feature masks off the strong light in the image so the rest of the image shows brighter.
Press Menu when ON is displayed to open HLC menu.



- CLIP LEVEL : Select CLIP LEVEL using the UP or DOWN button.
You can select between 0~255 using the LEFT or RIGHT button.
- SCALE : Select SCALE using the UP or DOWN button.
You can select between 0~15 using the LEFT or RIGHT button.

DNR

Select DNR using the UP or DOWN button.

You can select 2DNR, 3DNR and OFF using the LEFT or RIGHT button.

DNR feature digitally reduces the noise in the image at low light conditions.

1. **2DNR** : Press Menu when 2DNR is displayed to open 2DNR menu.



- LEVEL : Select LEVEL using the UP or DOWN button.

You can select LOW, MID and HIGH using the LEFT or RIGHT button.

2. 3DNR : Press Menu when 3DNR is displayed to open 3DNR menu.

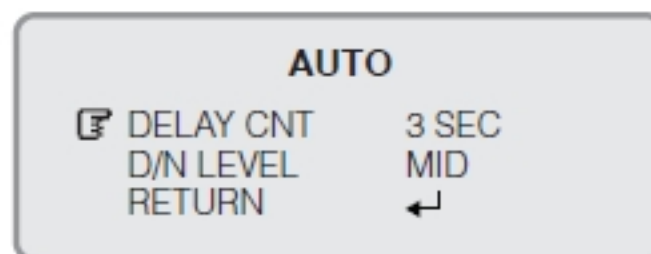


- LEVEL : Select LEVEL using the UP or DOWN button.
You can select AUTO, LOW, MID and HIGH using the LEFT or RIGHT button.

DAY/NIGHT

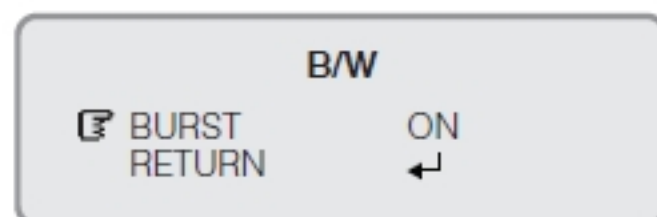
Select DAY/NIGHT using the UP or DOWN button. You can select AUTO, COLOR, B/W, IRED, EXT1, EXT2 using the LEFT or RIGHT button. The DAY/NIGHT function makes the camera switch to night mode at low light conditions so the camera shows night time images.

1.AUTO : This will have the camera switch automatically between COLOR and B/W depending on the light level. Press Menu when AUTO is displayed to open AUTO menu.



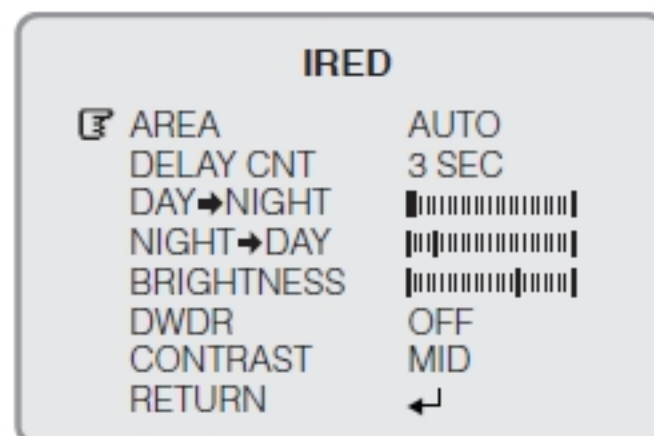
- DELAY CNT : Select DELAY CNT using the UP or DOWN button.
You can select between 0~15sec using the LEFT or RIGHT button.
- D/N LEVEL : Select D/N LEVEL using the UP or DOWN button.
You can select light level(Lux) for switching from LOW, MID and HIGH by using the LEFT or RIGHT button.

2. **COLOR** : Set the camera to color only mode (Day mode)
3. **B/W** : Set the camera to black and white only mode
Press MENU when B/W is displayed to open B/W menu

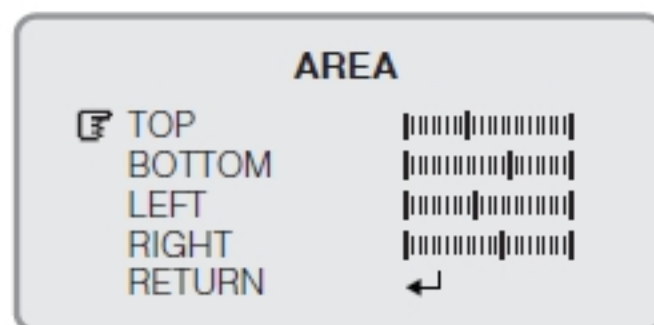


- BURST : Select BURST using the UP or DOWN button.
You can set the COLOR BURST ON or OFF by using the LEFT or RIGHT button.

- 4. IRED :** In this mode, the camera switches between COLOR and IRED automatically upon the illumination level. You can Select IRED using the LEFT or RIGHT button and then press the MENU button to access IRED menu.



- AREA : Select AREA using the UP or DOWN button. You can select AUTO and MANUAL using the LEFT or RIGHT button. In AUTO mode, IR Optimizer(optimizes the brightness of the image for best image reproduction) will be applied to entire View area. In MANUAL mode, Set up an area to which the IR Optimizer will be applied.



- TOP : Select TOP using the UP or DOWN button. You can select between 1~114(NTSC), 1~136(PAL) using the LEFT or RIGHT button.
- BOTTOM : Select BOTTOM using the UP or DOWN button. You can select between 9~122(NTSC), 9~144(PAL) using the LEFT or RIGHT button.
- LEFT : Select LEFT using the UP or DOWN button. You can select between 1~223 using the LEFT or RIGHT button.
- RIGHT : Select RIGHT using the UP or DOWN button. You can select between 17~239 using the LEFT or RIGHT button.

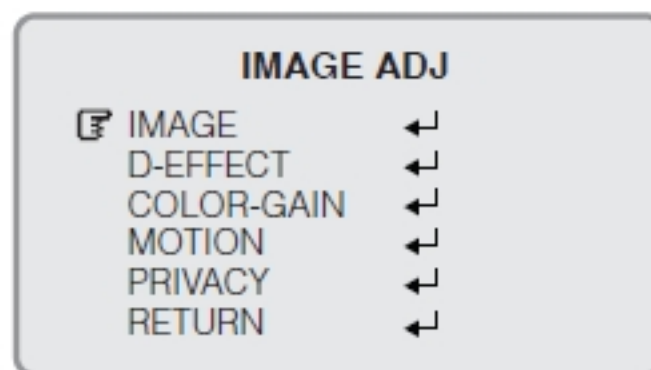
- DELAY CNT : Select DELAY CNT using the UP or DOWN button.
You can select between 0~15sec using the LFET or RIGHT button.
- DAY→NIGHT : Select DAY→NIGHT using the UP or DOWN button.
You can select between 0~254 using the LFET or RIGHT button.
- NIGHT→DAY : Select NIGHT→DAY using the UP or DOWN button.
You can select between 1~255 using the LFET or RIGHT button.
- BRIGHTNESS : Select BRIGHTNESS using the UP or DOWN button.
You can select between 0~31 using the LFET or RIGHT button.
- DWDR : Select DWDR using the UP or DOWN button.
You can turn DWDR OFF or ON using the LFET or RIGHT button.
- CONTRAST : Select CONTRAST using the UP or DOWN button.
You can select between LOW, MID-LOW, MID, MID-HIGH and HIGH using the LFET or RIGHT button.

5. EXT1, EXT2 : To switch the DAY/NIGHT mode using on external input(EXT)

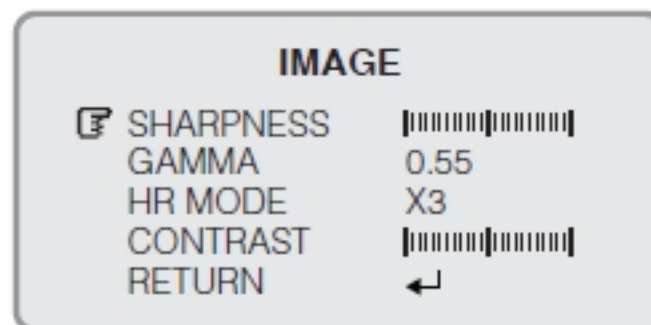
- EXT1 : High(DAY), Low(Night)
- EXT2 : Low(DAY), High(Night)

IMAGE ADJ

Select IMAGE ADJ using the UP or DOWN button. Press Menu to open IMAGE ADJUST menu.

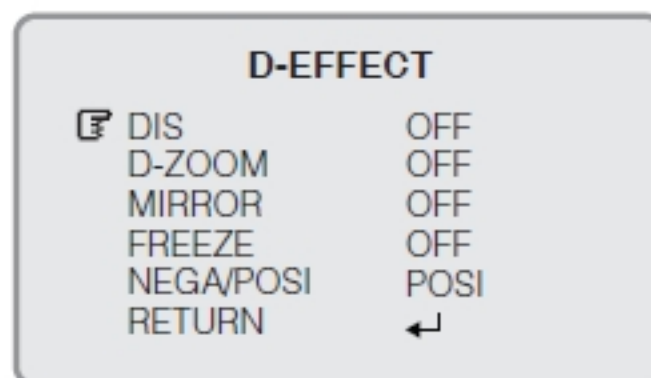


1. IMAGE : Select IMAGE using the UP or DOWN button. Press Menu to open IMAGE menu.



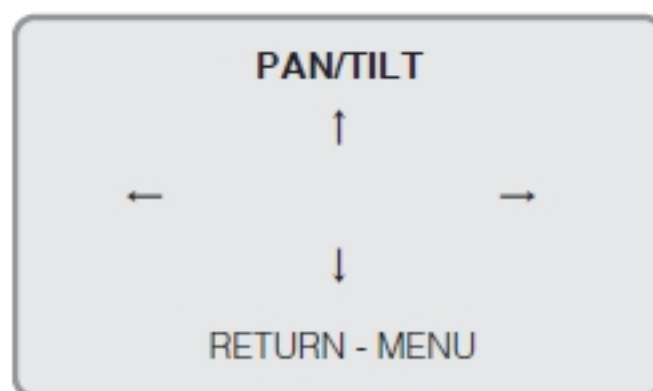
- SHARPNESS : Select SHARPNESS using the UP or DOWN button.
You can select between 0~15 using the LEFT or RIGHT button.
- GAMMA : Select GAMMA using the UP or DOWN button.
You can select between 0.38~0.83 using the LEFT or RIGHT button.
- HR MODE : Select HR MODE using the UP or DOWN button.
You can select between OFF and $\times 1 \sim \times 7$ using the LEFT or RIGHT button.
- CONTRAST : Select CONTRAST using the UP or DOWN button.
You can select between 0~63 using the LEFT or RIGHT button.

2. D-EFFECT : Select D-EFFECT using the UP or DOWN button. Press Menu to open D-EFFECT menu.



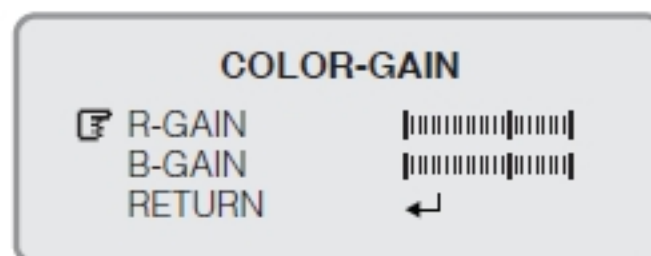
- DIS : Select DIS using the UP or DOWN button.
You can select ON or OFF using the LEFT or RIGHT button.

- D-ZOOM : Select D-ZOOM using the UP or DOWN button.
You can select between OFF and $\times 2 \sim \times 16$ using the LEFT or RIGHT button.
When D-ZOOM mode is operated. Press Menu to go into PAN/TILT menu.
You can adjust the screen horizontally and vertically by push the button.



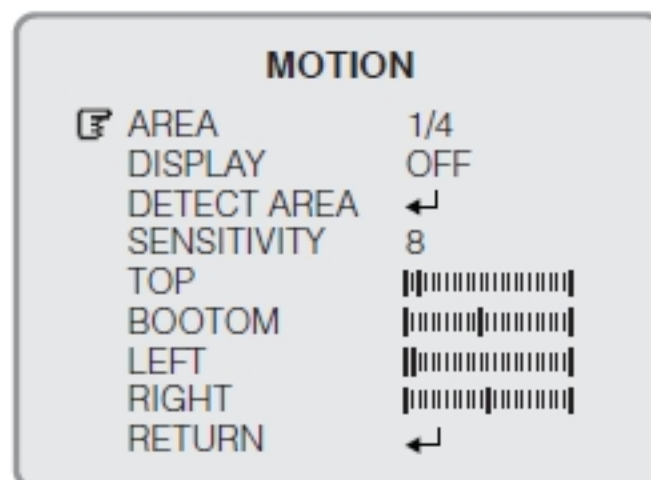
- MIRROR : Select MIRROR using the UP or DOWN button. You can select between OFF, V-FLIP, H-FLIP and HV-FLIP using the LEFT or RIGHT button.
- FREEZE : Select FREEZE using the UP or DOWN button.
You can select ON or OFF using the UP or DOWN button.
- NEGA/POSI : Select NEGA/POSI using the UP or DOWN button.
You can select NEGA or POSI using the LEFT or RIGHT button.

- 3. COLOR-GAIN :** Select COLOR-GAIN using the UP or DOWN button.
 Press Menu to open COLOR-GAIN menu.

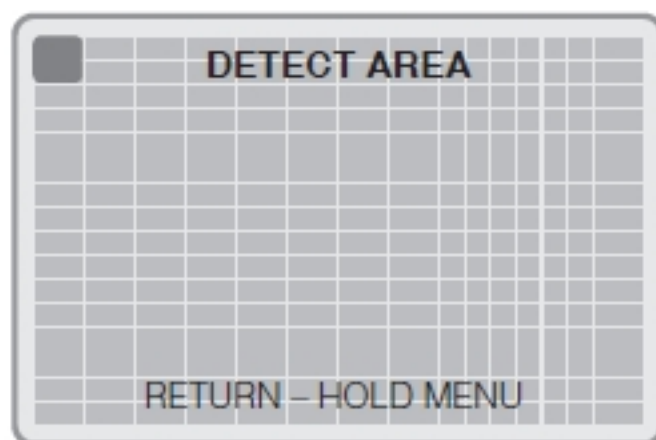


- R-GAIN : To adjust density of R-GAIN(0~63)
- B-GAIN : To adjust density of B-GAIN(0~63)

- 4. MOTION :** Select MOTION using the UP or DOWN button. Press Menu to open MOTION menu.

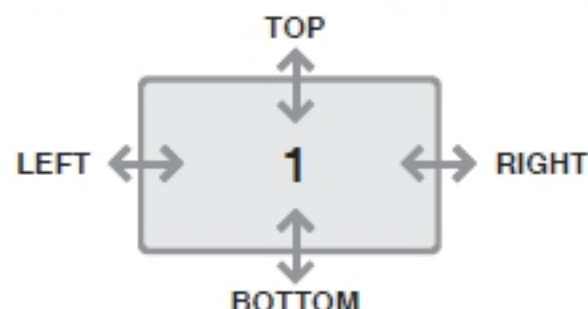


- AREA : Select AREA using the UP or DOWN button.
You can select between 1/4, 2/4, 3/4, 4/4 using the LEFT or RIGHT button.
- DISPLAY : Select DISPLAY using the UP or DOWN button.
You can select ON or OFF using the LEFT or RIGHT button.
- DETECT AREA : Select DETECT AREA using the UP or DOWN button.
Press Menu to open DETECT AREA menu.
You can choose from 96 blocks in 12x8 size.



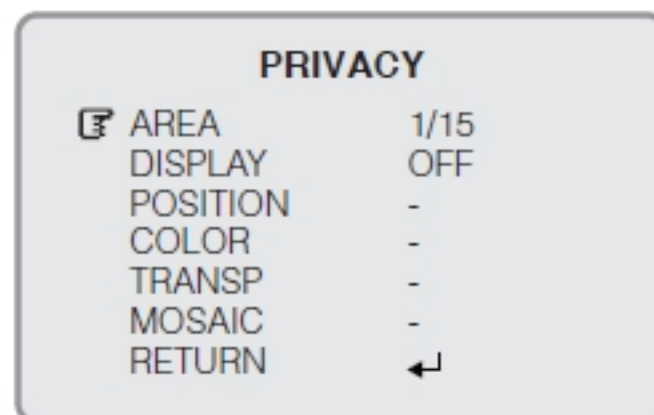
- SENSITIVITY : Select SENSITIVITY using the UP or DOWN button.
You can select between 0~15 using the LEFT or RIGHT button.

- TOP, BOTTOM, LEFT, RIGHT : Select TOP, BOTTOM, LEFT and RIGHT using the UP or DOWN button.



- TOP : Extend or reduce the upper limit of the area(0~15)
- BOTTOM : Extend or reduce the bottom limit of the area(1~16)
- LEFT : Extend or reduce the left limit of the area(0~23)
- RIGHT : Extend or reduce the right limit of the area(1~24)

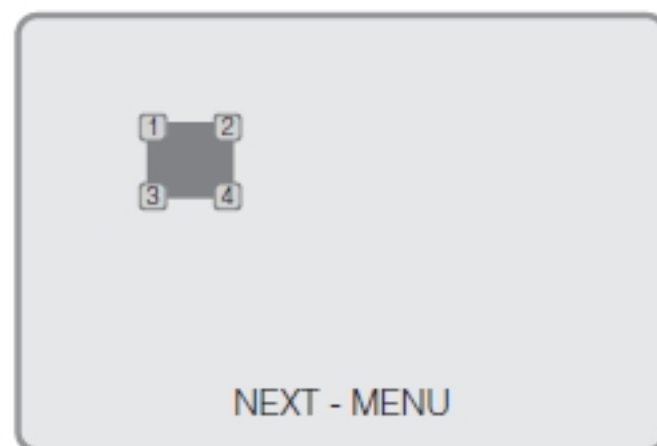
5. PRIVACY : Select PRIVACY using the UP or DOWN button. Press Menu to open PRIVACY menu.



- AREA : Select AREA using the UP or DOWN button.
You can select between 1/15~15/15 using the LEFT or RIGHT button.
- DISPLAY : Select DISPLAY using the UP or DOWN button.
You can select ON or OFF using the LEFT or RIGHT button.
When ON is selected, you can configure for POSITION, COLOR, TRANSP and MOSAIC options.

| PRIVACY | |
|----------|-------|
| AREA | 1/15 |
| DISPLAY | ON |
| POSITION | ← |
| COLOR | BLACK |
| TRANSP | 1.00 |
| MOSAIC | - |
| RETURN | ← |

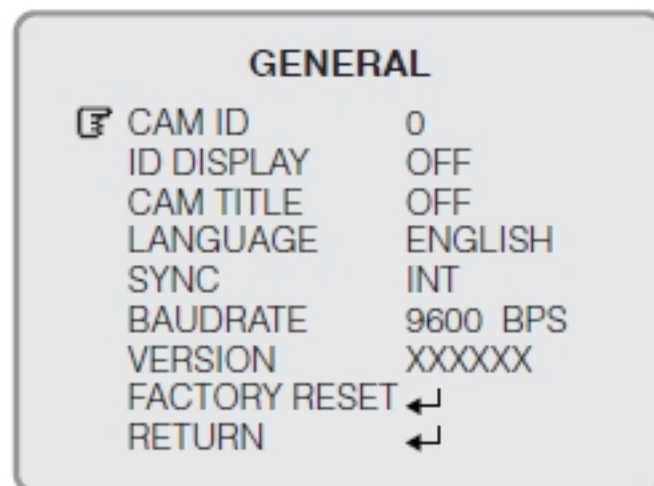
- POSITION : Select POSITION using the UP or DOWN button. Press Menu to open POSITION menu.
To specify the PRIVACY POSITION, select and adjust the four corners of a quadrangle.



- COLOR : Select COLOR using the UP or DOWN button.
You can select between BLACK, RED, GREEN, BLUE, YELLOW, CYAN, MAGENTA and WHITE using the LEFT or RIGHT button.
- TRANSP : Select TRANSP using the UP or DOWN button.
You can select between 0.00, 0.50, 0.75, and 1.00 using the LEFT or RIGHT button.
- MOSAIC : Select MOSAIC using the UP or DOWN button.
You can select ON or OFF using the LEFT or RIGHT button.
MOSAIC function will be disabled at TRANSP value 1.00.

GENERAL

Select **GENERAL** using the **UP** or **DOWN** button. Press **Menu** to open **GENERAL** menu.



1. CAM ID : Select CAM ID using the **UP** or **DOWN** button.

You can select between 0~255 using the **LEFT** or **RIGHT** button.

2. ID DISPLAY : Select ID DISPLAY using the **UP** or **DOWN** button.

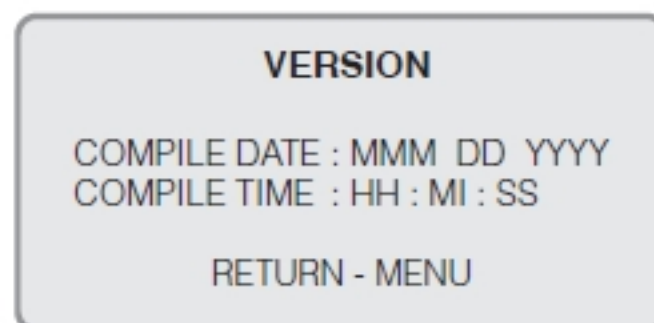
You can select **ON** or **OFF** using the **LEFT** or **RIGHT** button.

- CAM TITLE : Select CAM TITLE using the UP or DOWN button.
You can select ON or OFF using the LEFT or RIGHT button.
When setting CAM TITLE ON, press Menu to open CAM TITLE menu.



- Go to the character you want by push the button to UP, DOWN, LEFT, or RIGHT direction.
Press Menu to select the character, and the selected character will be displayed on the arrow above.
- LANGUAGE : Select LANGUAGE using the UP or DOWN button.
You can select LANGUAGE using the LEFT or RIGHT button.
16 Languages (English, Korean, Simplified Chinese, Traditional Chinese, Japanese, Spanish , French, Italian, Portuguese, German, Polish, Czech, Trukish, Russian, Hungarian, Greek)

- SYNC : Not used.
- BAUDRATE : Select BAUDRATE using the UP or DOWN button.
You can select between 2400BPS, 4800PBS, 9600BPS, 19200BPS, 38400BPS, 57600BPS and 115200BPS using the LEFT or RIGHT button.
- VERSION : Select VERSION using the UP or DOWN button. Press Menu to see VERSION info.



- FACTORY RESET : Use this option to recall factory default configurations.
Select FACTORY RESET using the UP or DOWN button and press MENU button to recall the Factory Default configurations.

12V DC Input Model

| MODEL | ULTRA HIGH RESOLUTION | |
|--------------------------|---|-------------------|
| Signal System | NTSC | PAL |
| Image Sensor | 1/3" DUBLE SCAN CCD | |
| Effective Pixels | 976(H)x494(V) | 976(H)x582(V) |
| Video Output | Composite:1.0V P-P, 75Ω Unbalanced | |
| Sync. System | Internal Sync | |
| Luminane S/N Ratio | 50dB Min.(AGC off) | |
| Horizontal Resolution | 650 TV Lines | |
| Sensitivity(F1.2, 30IRE) | Color 0.1 Lux (DSS 0.0003 Lux) | |
| | B/W ICR 0.01 Lux (DSS 0.000007 Lux) | |
| Electronic Shutter | 1/60 ~ 10,000 Sec | 1/50 ~ 10,000 Sec |
| White Balance | ATW, PUSH, USER1, USER2, ANTI CR, MANUAL, PUSH LOCK | |
| WDR/BLC/HLC | OFF, WDR, BLC, HLC | |
| AGC | 0~20 | |
| D-ZOOM | OFF~X16 | |

| | |
|--------------------------------|------------------------------------|
| DIS | OFF/ON |
| DSS | OFF~X512 |
| NR | 3DNR, OFF, 2DNR |
| Day/Night | AUTO, COLOR, B/W, IRED, EXT1, EXT2 |
| Burst | ON/OFF |
| Motion Detection | OFF/ON (4 ZONE) |
| Privacy | OFF/ON (15 ZONE) |
| Mirror | OFF, H-FLIP, V-FLIP, HV-FLIP |
| Sharpness | 0~15 |
| OSD Language | English (10 Languages) |
| Communication | RS-485(Pelco-D) |
| Spplly Voltage | 12V DC(±10%) |
| Power Consumption | MAX 3W |
| Operation Temperature/Humidity | -10°C to + 50°C / 30% to 90% RH |
| Storage Temperature/Humidity | -20°C to + 60°C / 20% to 90% RH |

24V AC / 12V DC Input Model

| MODEL | ULTRA HIGH RESOLUTION | |
|--------------------------|---|-------------------|
| Signal System | NTSC | PAL |
| Image Sensor | 1/3" DUBLE SCAN CCD | |
| Effective Pixels | 976(H)x494(V) | 976(H)x582(V) |
| Video Output | Composite:1.0V P-P, 75Ω Unbalanced | |
| Sync. System | Internal Sync | |
| Luminance S/N Ratio | 50dB Min.(AGC off) | |
| Horizontal Resolution | 650 TV Lines | |
| Sensitivity(F1.2, 30IRE) | Color 0.1 Lux (DSS 0.0003 Lux) B/W ICR 0.01 Lux (DSS 0.000007 Lux) | |
| Electronic Shutter | 1/60 ~ 10,000 Sec | 1/50 ~ 10,000 Sec |
| White Balance | ATW, PUSH, USER1, USER2, ANTI CR, MANUAL, PUSH LOCK | |
| WDR/BLC/HLC | OFF, WDR, BLC, HLC | |
| AGC | 0~20 | |
| D-ZOOM | OFF~X16 | |

| | |
|--------------------------------|------------------------------------|
| DIS | OFF/ON |
| DSS | OFF~X512 |
| NR | 3DNR, OFF, 2DNR |
| Day/Night | AUTO, COLOR, B/W, IRED, EXT1, EXT2 |
| Burst | ON/OFF |
| Motion Detection | OFF/ON(4 ZONE) |
| Privacy | OFF/ON(15 ZONE) |
| Mirror | OFF, H-FLIP, V-FLIP, HV-FLIP |
| Sharpness | 0~15 |
| OSD Language | English (16 Languages) |
| Communication | RS-485(Pelco-D) |
| Spplly Voltage | 24V AC(±10%)/12V DC(±10%) |
| Power Consumption | MAX 4W |
| Operation Temperature/Humidity | -10°C to + 50°C / 30% to 90% RH |
| Storage Temperature/Humidity | -20°C to + 60°C / 20% to 90% RH |

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

Nothing appears on the screen

- ✓ Check to see if the power cord and line connection between the camera and monitor are fixed properly.
- ✓ Check to see if you have properly connected VIDEO cable to the camera VIDEO output jack.

The image on the screen is dim

- ✓ Is lens stained with dirt? Clean your lens with soft, clean cloth.
- ✓ Set the monitor to proper condition.
- ✓ If the camera is exposed to too strong light, change the camera position.
- ✓ Adjust the lens' focus properly.

The image on the screen is dark

- ✓ Adjust the contrast feature 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.

- ✓ Check to see if you have properly connected the camera to an appropriate power source.

The image on the screen flickers.

- ✓ Check whether the camera is exposed to strong sunlight or fluorescent lighting.

MEMO

COLOR VIDEO CAMERA

DIGITAL COLOR VIDEO CAMERA SERIES

P/N : 3810-0300A (Ver.1205E)

Design and specifications are subject to change without notice.

