



CMOS Wide Dynamic Range Color Camera Instruction Guide

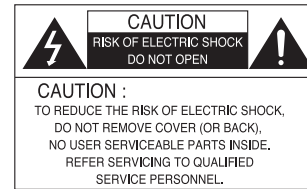
Product: BLK-CWS108NH



Pixim CMOS WDR Color Camera

Printed in KOREA

Please read this manual before using your camera, and always follow the instructions for safety and proper use. Save this manual for future reference.



The lightning flash with an arrowhead symbol, within an equilateral triangle is intended to alert the user to the presence of uninsulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

INFORMATION - This equipment has been tested and found to comply with limits for a Class A digital device, pursuant to part 15 of the FCC Rules & CE Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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

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

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

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

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■ Features

High Resolution color for crisp, clear video

- Progressive image capture
- 540 HTVL equivalent

High Sensitivity for low-light images

- Advanced noise reduction technology

Wide Dynamic Range provides excellent quality in high-contrast environments

- 120dB maximum dynamic range

DNR (Digital Noise Reduction)

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

VIDEO/DC Drive Lens

The video drive lens and the DC drive lens can be selected by the touch of a switch.

Controlled by OSD Menu

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

Additional Functions

- Automatic White Balance
- Backlight Compensation
- Automatic Gain Control
- Day / Night

Warning ■

The camera requires periodic inspection.

Contact an authorised technician to carry out the inspection.

Stop using your camera when you find it malfunctioning.

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

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

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

Do not hold plug with wet hands.

It could cause an electric shock.

Do not dis-assemble the camera.

It may result in an electric shock or other hazards.

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

It may result in a fire or other hazards.

■ Precautions

Do not install the camera in extreme temperature conditions.



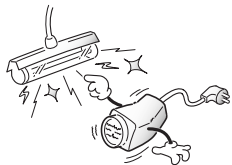
Only use the camera under conditions where temperatures are between -10°C and $+50^{\circ}\text{C}$. Be especially careful to provide ventilation when operating under high temperatures.

Do not install 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 and protect it from 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 beverage on it.



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

Do not expose the camera to radioactivity.



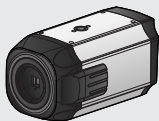
If exposed to radioactivity the CCD will fail.



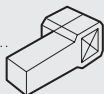
Note

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

1. Ultra High Resolution
WDR Color CCD Camera



2. Auto Iris Lens Connector Plug



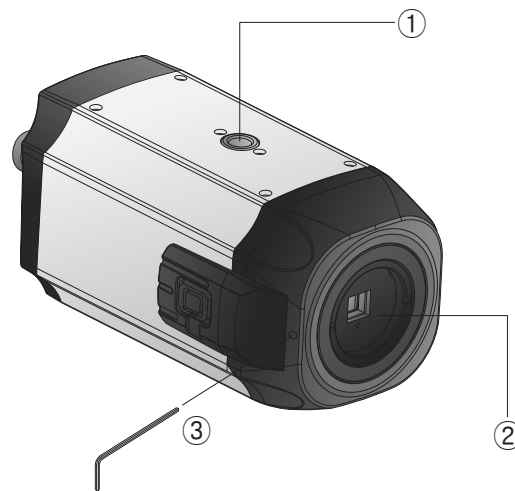
3. C-Mount Adapter



4. Instruction Manual



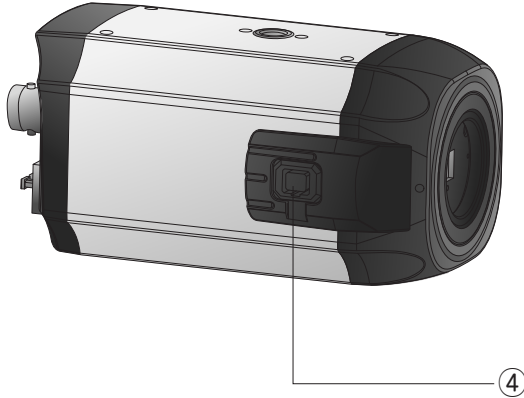
Front View



- ① **Tripod Mounting Bracket Screw Hole**
Used to fix the Tripod Mounting Bracket to the top of the camera.
- ② **C-Mount Lens Adapter**
Install this adapter to use a C-Mount Lens.
- ③ **Back Focus clamp screw**
Loosen the clamp screw with a screwdriver before adjusting the Back Focal length.

Overview

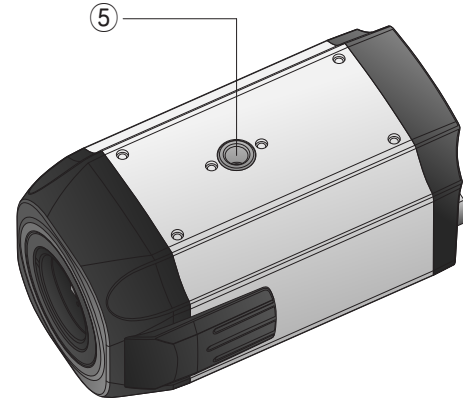
Side View



④ Auto Iris Lens Connector

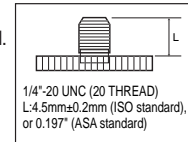
Used to connect Auto Iris Lens plug.

Bottom View



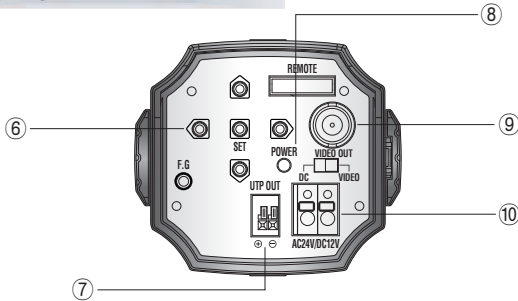
⑤ Tripod Mounting Bracket Screw Hole

Used to fix the camera on a bracket or tripod.
The screw sizes for this hole are as follows:



Overview

Rear View



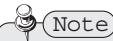
- ⑥ **Function Setup Button**
- SET Button : Displays the menu on the screen. Press this button to confirm status or after changing a selected item.
 - Up and Down Button : Used to move the cursor up or down in the menu screen to select a desired menu item.
 - Left and Right Button : Used to move the cursor left or right in the menu screen or to change the value of the selected item.
- ⑦ **When using UTP Cable**
- Connect UTP(Unshield 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 is correct.
 - Use UTP wire "CAT 24AWG" to have the best transmission quality.
- ⑧ **Power LED**
When power is properly connected, this LED comes on.
- ⑨ **Video OUT Port**
Video signals are output through this port. Connect this port to the Video IN port of a monitor.

Installation Procedures

- ⑩ **Power IN Port**
Connect the power as specified for each model here.

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-and CS-mount lens.

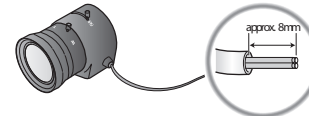


Note

- It is recommended to use the DC type Auto Iris Lens to effectively enjoy the major functions of this camera.
- Keep the lens surface clean, since if it is contaminated with dirt or fingerprints the picture quality suffers.

When Using Auto Iris Lens

1. Strip the insulation of the auto iris lens cable 8mm from the end..



2. Strip the insulation of the core of the auto iris lens cable to expose a 2mm length.

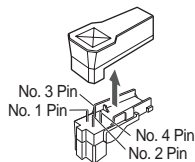


■ Installation Procedures

3. Remove the cover of the auto iris lens connector plug and solder the lens cable to the connector pin of the plug.

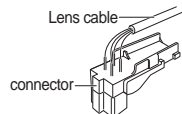
• For a Video Drive Lens

Pin 1: Red (Power)
Pin 2: NC
Pin 3: White (Video Signal)
Pin 4: Black (Ground)

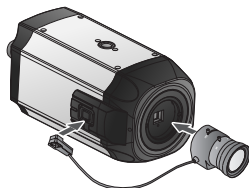


• For a DC Drive Lens

Pin 1: Damping -
Pin 2: Damping +
Pin 3: Drive +
Pin 4: Drive -



4. Fit the cover of the auto iris lens connector plug, remove the protective glass cover from the front of the camera, and fasten the auto iris lens by turning it clockwise.

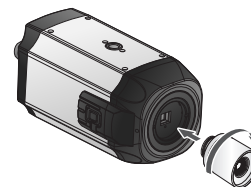


When Using C/CS Mount Lens

Before installing a lens, identify whether the lens to be installed is a C-Mount or CS-Mount. This camera is set for a CS-Mount Lens by default. To install a C-Mount Lens, a simple modification is required.

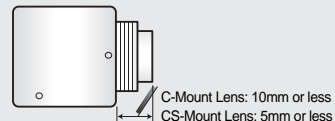
• When Using a CS Mount Lens

Remove the protective glass cover at the front of this product and turn the CSMount Lens clockwise to install it. And set focus of camera using Back Focus Control Lever of camera side after combining CS-Mount lens.



Note

- Use the lens connector shown in the following figure. If the dimensions of the connector are not correct, it may damage the camera, or the lens may not be installed firmly.

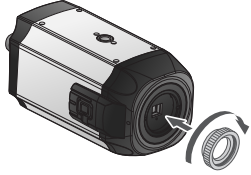


- If the lens is too heavy, the camera becomes unbalanced and there may be problems. Use a lens that weighs less than 450g.
- When adjusting the Automatic Level Control (ALC) of an auto iris lens, use Av mode if available. If you use the Pk mode, the picture brightness may change continuously.

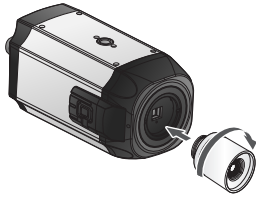
■ Installation Procedures

• When Using a C Mount Lens

1. Remove the protective glass cover at the front of this product and turn the CMount Adapter clockwise to install it.



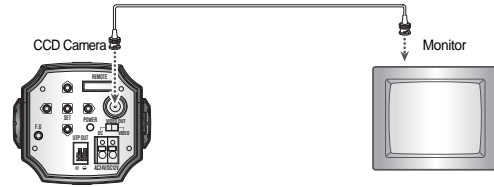
2. Turn the C-Mount lens clockwise to install it.



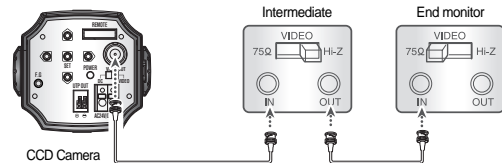
3. Set focus of camera using Back Focus Control Lever of camera side after combining C-Mount lens.

Connecting a Monitor

Connect the Video OUT port on the rear panel of the camera to a monitor.



- Since the connection procedure may differ depending on the type of monitor or peripheral device to be connected, refer to the User Manual for the device to be connected.
- Make sure to turn off the device to be connected before making any connections.
- Turn the 75Ω/Hi-Z switches of interim display devices to the Hi-Z position, and the switches of any final device to the 75Ω position.



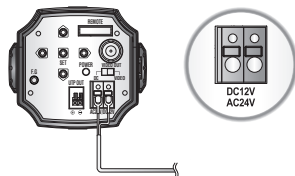
Installation Procedures

Connecting Power

Since power specifications differ depending on the model, make sure to check your model name and specifications before connecting power. You can connect power as shown in the following figure.

For AC / DC power

- Since the power specification supports both AC and DC, connect AC 24V, 500mA Adaptor or DC 12V, 500mA Adaptor.



When the resistance value of copper wire is at [20°C(68°F)]

| Copper wire size(AWG) | #24(0.22mm ²) | #22(0.33mm ²) | #20(0.52mm ²) | #18(0.83mm ²) |
|-----------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| Resistance value(/m) | 0.078 | 0.050 | 0.030 | 0.018 |
| Voltage drop(V/m) | 0.028 | 0.018 | 0.011 | 0.006 |

- As shown in the table above, voltage decreases as the wire gets longer. Therefore use of an excessively long adaptor output line for connection to the camera may affect the performance of the camera.

※ Standard voltage for camera operation : DC 12V±10%, AC 24V±10%

※ There may be some deviation in voltage drop depending on the type of wire and the manufacturer.

Menu Flow

Setup Page Menu

| SETUP | |
|------------|----------|
| ▶ PRESETS | CUSTOM |
| | INDOOR |
| | OUTDOOR |
| | NORMAL |
| | FLUOR |
| LENS | DC.. |
| | VIDEO.. |
| | MANUAL |
| WDR | AUTO |
| | HIGH |
| | USER.. |
| | LOW |
| WHITE BAL. | ATW.. |
| | ATWDes.. |
| | AWC.. |
| | MANUAL.. |
| AGC | MIDDLE |
| | HIGH |
| | OFF |
| | LOW |
| DNR | AUTO |
| | OFF |
| SENS-UP | AUTO.. |
| | OFF |
| SPECIAL.. | |
| EXIT | |

Menu Flow

Special Page Menu

| SPECIAL | |
|----------------|--------------------------|
| ▶ CAMERA ID | OFF ON.. ID, Position |
| DAY&NIGHT | AUTO.. COLOR |
| MIRROR | OFF ON |
| BACKLIGHT | OFF ON.. |
| RESOLUTION | NORMAL HIGH |
| ADVANCED SETUP | |
| RESET | |
| RETURN | |

Menu Flow

Advanced Page Menu

| ADVANCED SETUP | |
|-------------------|-------------|
| ▶ VIDEO STANDARD | PAL NTSC |
| SYNC | INT LL |
| SHARPNESS | -8 ----- 8 |
| APERTURE | -8 ----- 8 |
| VERSION (D15-1.0) | |
| RETURN | |

Setup Page Menu

PRESETS

| SETUP | |
|------------|------------------------------------------------|
| ▶ PRESETS | CUSTOM INDOOR OUTDOOR NORMAL FLUOR |
| LENS | DC |
| WDR | AUTO |
| WHITE BAL. | ATW |
| AGC | MIDDLE |
| DNR | AUTO |
| SENS-UP | AUTO |
| SPECIAL | |
| EXIT | |

- **Custom** : Custom setting mode.
- **Indoor** : Indoor environment.
- **Outdoor** : Outdoor environment.
- **Normal** : Normal environment.
- **Fluor** : Fluorescent light environment.

Setup Page Menu

LENS

| SETUP | |
|------------|--------|
| PRESETS | CUSTOM |
| ▶ LENS | DC |
| | VIDEO |
| | MANUAL |
| WDR | AUTO |
| WHITE BAL. | ATW |
| AGC | MIDDLE |
| DNR | AUTO |
| SENS-UP | AUTO |
| SPECIAL | |
| EXIT | |

• Lens

Choose the lens type DC, Video and Manual lens by using the selector button.

| DC MODE | |
|---------------|------------|
| ▶ BIAS | 0 *80 255 |
| LIMIT | -42 *20 60 |
| PREVIOUS PAGE | |

WDR

Wide Dynamic Range is essential for capturing the images at all light levels. The main function of the WDR is to accumulate the scope of contrast between the brightest and darkest points in the picture. With the AUTO option, the distribution of brightness values is automatically adapted to the recording scenario.

| SETUP | |
|------------|--------|
| PRESETS | CUSTOM |
| LENS | DC |
| ▶ WDR | USER |
| | AUTO |
| | HIGH |
| | LOW |
| WHITE BAL. | ATW |
| AGC | MIDDLE |
| DNR | AUTO |
| SENS-UP | AUTO |
| SPECIAL | |
| EXIT | |

• User can select the desired level HIGH, USER & LOW, in addition to automatic adaptation (Auto), by moving the selector button.

| WDR LEVEL | |
|---------------|---------------|
| ▶ BIAS | 0 -36 -----36 |
| LIMIT | 36 0 -----36 |
| PREVIOUS PAGE | |

Setup Page Menu

WHITE BALANCE

White Balance is a function which compensates different colors of light being emitted from different light sources.

Users can select the above levels as they desire according to the environment.

• **ATW (Auto Tracking White Balance)** The ATW mode continuously monitors color temperature. With WB Control set to ATW, color temperature & White balance can be automatically adjusted accordingly.

| SETUP | |
|--------------|--------|
| PRESETS | CUSTOM |
| LENS | DC |
| WDR | AUTO |
| ▶ WHITE BAL. | ATW |
| | ATWDes |
| | AWC |
| | MANUAL |
| AGC | MIDDLE |
| DNR | AUTO |
| SENS-UP | AUTO |
| SPECIAL | |
| EXIT | |

| ATW CONTROL | |
|---------------|-----------------|
| ▶ LOWLIMIT | 2K * 2800 5.5K |
| HIGHLIMIT | 5.5K * 7500 11K |
| PREVIOUS PAGE | |

• ATWDesat (ATW Desaturating)

When WB is set to ATWDesat, the Extended Color temperature is desaturated i.e when there is a excess of light temperature, ATWDesat Function is used as well as it reduces the Noise. The limits of the color temperature setting remain 2000K and 11,000K

• AWC (Auto White Balance)

When set to AWC, Color temperature of the Light is automatically adjusted.

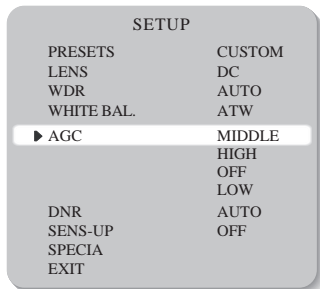
• Manual (Manual White Balance)

Manual White Balance (MWB) Mode is used when other White Balance Options are failed.

AGC

Automatic Gain Control is a feature which adjust automatically according to the incoming Signal. By positioning the arrow to 'AGC' on the SETUP menu with the help of UP and DOWN buttons, you can select the Mode you wish to go

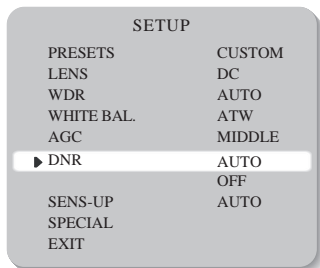
■ Setup Page Menu



- As the level of gain increases, the screen gets brighter and the level of noise also increases.

DNR

DNR is Digital Noise Reduction System with a maximum gain of 24 DB.

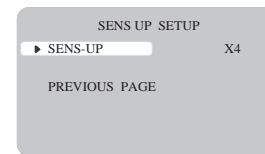
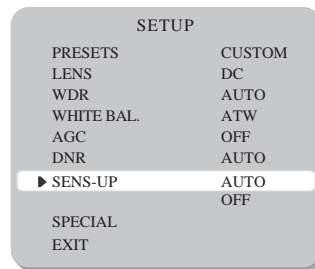


- **AUTO**
There is a reduction in noise level with almost no ghost image.
- **OFF**
There is no reduction in noise level.

Setup Page Menu ■

SENS-UP

Sens-up helps maintain a bright, clear screen image by automatically detecting changes in the level of light in low light level conditions.



- Position the arrow to point to 'SENS UP' on the SETUP menu by using the UP and DOWN buttons.
- Select the value required by pressing the LEFT or RIGHT button.
 - **AUTO** : Low light level automatic mode. (X2~X32)
 - **OFF** : The function does not operate.
- Press the SET button when all the settings are complete.

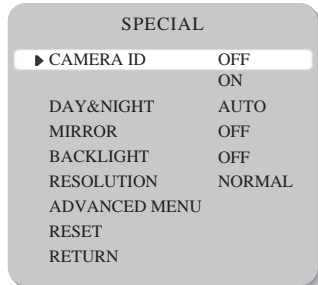
EXIT

Saves all the setting menus and then exits.

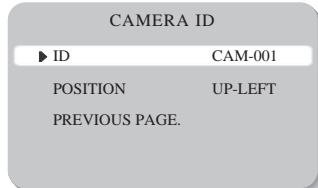
Special Page Menu

CAMERA ID

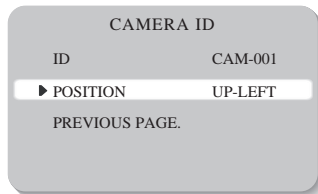
User can enter a unique name for the respective camera.
The maximum length of the ID is ten characters.



- You can choose the ON and OFF with the selector. If you select ON, the entered camera ID is displayed at the selected position in the video picture (normal operation).
- Please select the setup button while in ON mode.
- Select the desired position with the selector.



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

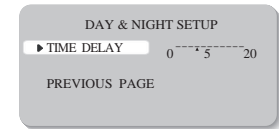
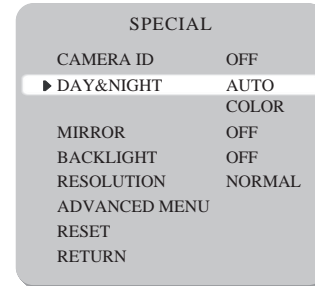


- ① Select the position where the ID is to be displayed by using the LEFT and RIGHT buttons.

Special Page Menu

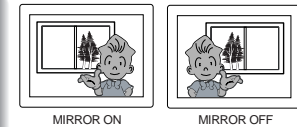
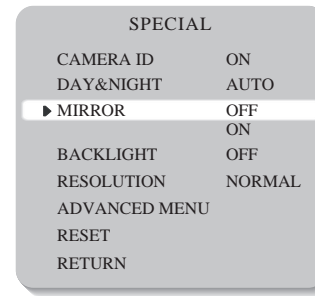
DAY & NIGHT

This camera has a function that automatically selects the mode that is appropriate for daytime or night-time conditions. The COLOR mode operates in daytime conditions to provide optimum colors, and BW mode operates in nighttime conditions to enhance the definition of the image.



MIRROR

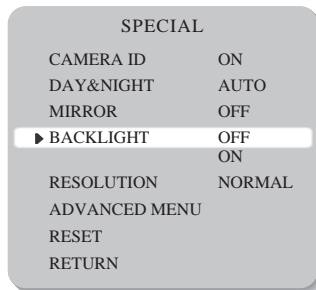
Select "OFF" to show the image as normal. Select "ON" to reflect image horizontally.



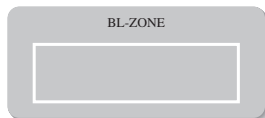
Special Page Menu

BACKLIGHT

Backlight is feature of a Camera which compensates when there is a large amount of background light.



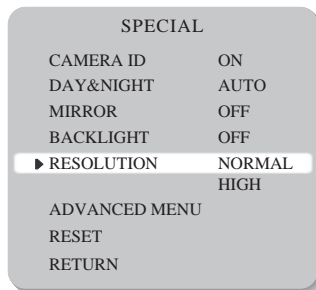
- When Backlight is ON, Back Light gets activated.



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

RESOLUTION

Choose resolution between high and normal with the selector (RIGHT/LEFT)

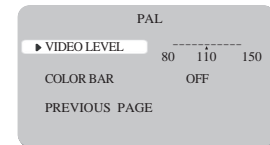
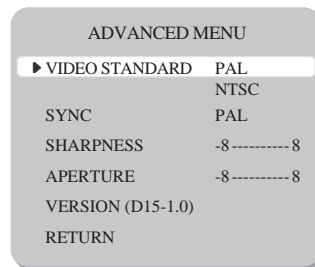


- The high resolution supports Progressive Rate video up to 540 TV Line and normal resolution supports 480 TV Line.

Advanced Page Menu

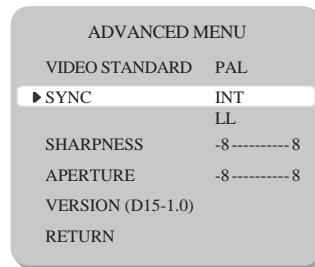
VIDEO STANDARD

Choose video system between PAL and NTSC by moving the selector.

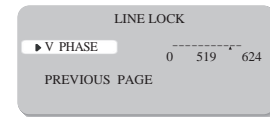


SYNC

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



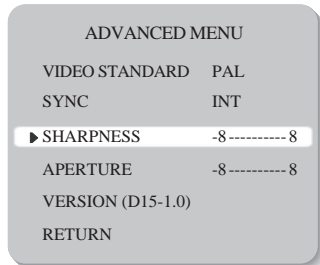
- INT : Internal synchronisation
- LL : External line-lock synchronisation
- If 'LL' is selected, it can be adjusted to the desired phase. Press the SET button.
- Adjust to the desired phase from 0 to 624.



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SHARPNESS

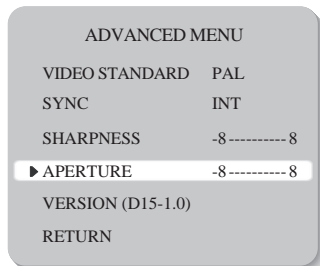
The outline of the video image becomes cleaner and more distinctive as the level of SHARPNESS increases. If the level goes up excessively, however, it may affect the video image and generate noise.



• The available range of level is -8 ~ 8

APERTURE

The outline of the video image becomes cleaner and more distinctive as the level of APERTURE increases. If the level goes up excessively, however, it may affect the video image and generate noise.



• The available range of level is -8 ~ 8

Specifications

| ITEM | Specifications |
|------------------------|--------------------------------------------------------------|
| Image Sensor | PIXIM 1/3" High Resolution ORCA C-MOS |
| Effective Pixels | 720(H) x 540(V) |
| Sync System | INT / LL Selectable |
| Electronic Shutter | up to 1/22,000sec. |
| Main Video Output | 1.0 Vp-p Composite, 75 ohm |
| Service Monitor Output | 1.0 Vp-p Composite, 75 ohm |
| Horizontal Resolution | 540 TV Lines (High Resolution mode) / F1.2 |
| Min. Illumination | 0.8Lux(40IRE Color), 0.1Lux(40IRE Slow Shutter mode) at F1.2 |
| Dynamic Range | 120dB(max), 102dB(typical) |
| AGC Control | 0~46dB |
| Iris Control | DC / Video |
| DNR | OFF / AUTO |
| Lens Mount | C/CS Mount (Screw Lock) |
| Camera Control&Setup | OSD Menu |
| Power Requirement | AC24V / DC12V (Max 170mA / 250mA) |
| Operating Temperature | 0°C ~ +45°C |
| Operating Humidity | Within 90% RH |
| Dimensions | 66.5(W) × 58.5(H) × 110.0(D)mm |
| Weight | Approx. 400g |

■ MEMO

A large rectangular area defined by a dotted line, intended for writing a memo.