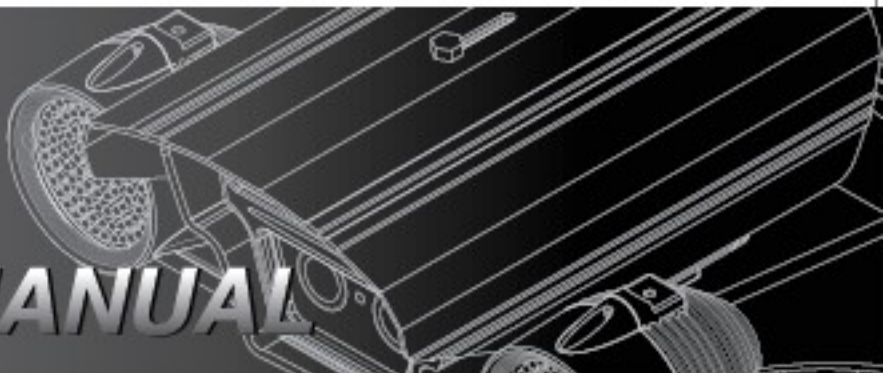


• High Resolution • Cable Pass Mounts

COLOR VIDEO CAMERA



OWNER'S MANUAL

Color Video Camera with
DAY & NIGHT and IR LEDs

WEATHERPROOF IR

DAY & NIGHT DUAL CAMERA

DIGITAL

User Information

	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.		

Explanation of two Symbols



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."



User Information

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.



Troubleshooting

If there is no picture on the monitor screen, ●

Make sure all the cables are properly connected.
Make sure the monitor is properly adjusted.

If the picture on the monitor screen is not clear, ●

Clean the lens.
Adjust the lens focus.

If there is a video noise or other unknown problems, ●

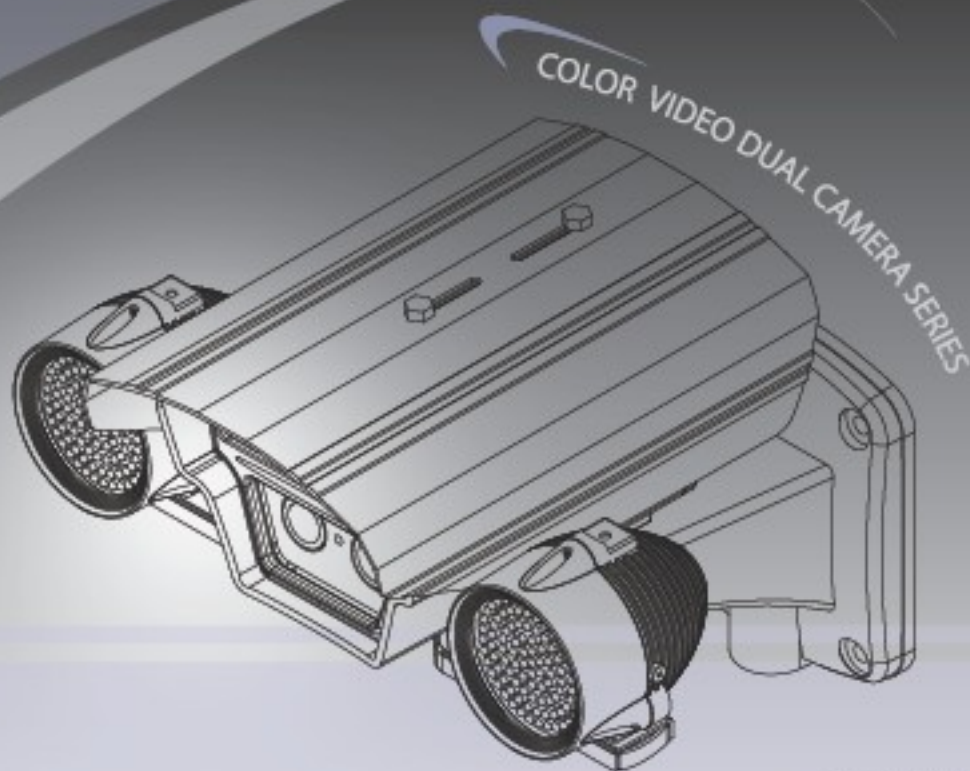
Stop using the camera and call your local dealer.

● **DO NOT DISASSEMBLE THE CAMERA** ●

IF ANY DEFECTIVE CAMERA HAS BEEN OPENED BEFORE IT ARRIVES TO
AUTHORIZED RMA OFFICE, THE DEFECTIVE CAMERA MAY NOT BE REPAIRED
UNDER IT'S WARRANTY SERVICE.

DAY & NIGHT DUAL CAMERA

HIGH RESOLUTION



DIGITAL

WEATHERPROOF IR

DAY & NIGHT IR CAMERA SERIES

*Color Video Camera with
DAY & NIGHT and IR LEDs*

COLOR VIDEO CAMERA

Contents

1. Precautions	7
2. Dimensions	8
3. Zoom and Focus Adjustment	9
4. Composition	
IR Illuminator Type	10
Normal LED Type	11
5. Features	12
6. Name and Function of Each Parts	13
7. Installation	15
8. Specifications	18



1. Precautions

- **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 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-serviceable parts inside it.

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

It can cause malfunctions to occur.

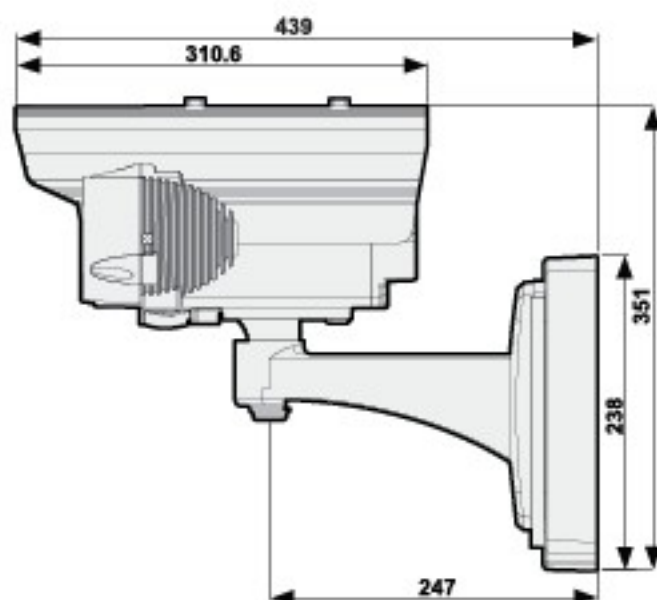
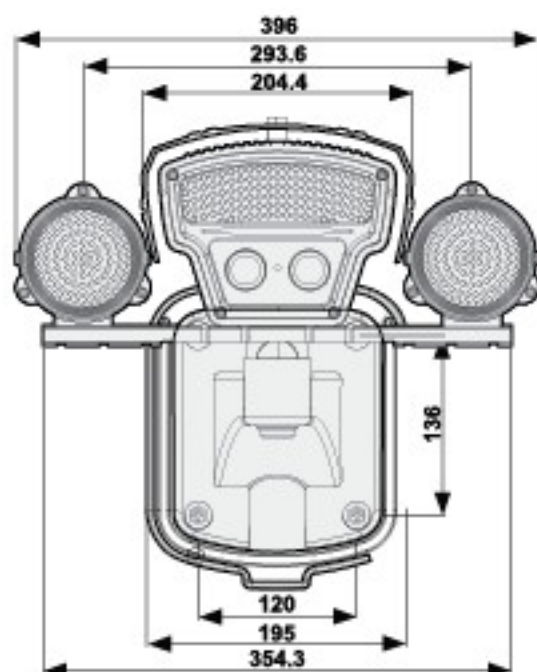
- **Never keep the camera face to strong light directly.**

It can damage CCD.

NOTE

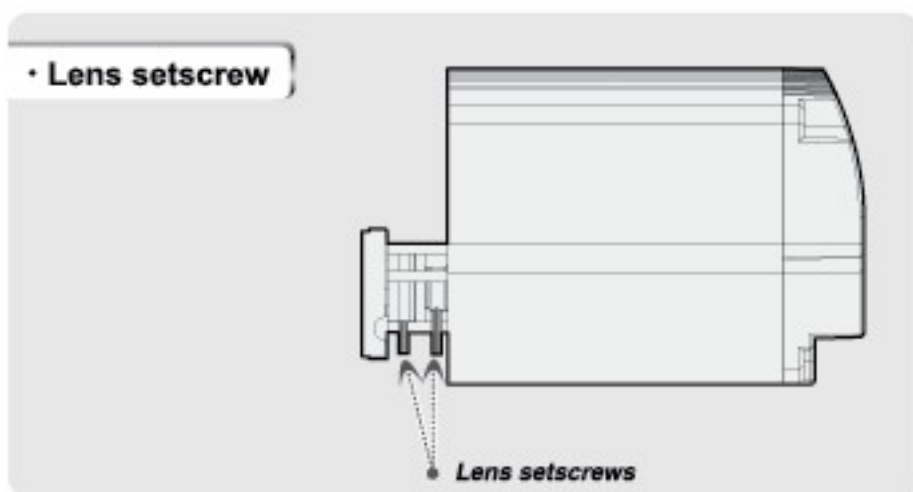
- **When this camera is installed near equipment, like a wireless communication device that emits a strong electro magnetic field, some irregularity such as noise on the monitor screen may happen.**

2. Dimensions

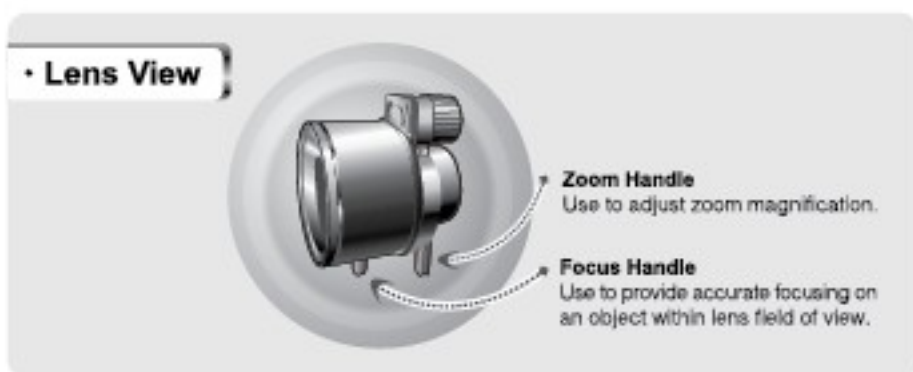




3. Zoom and Focus Adjustment

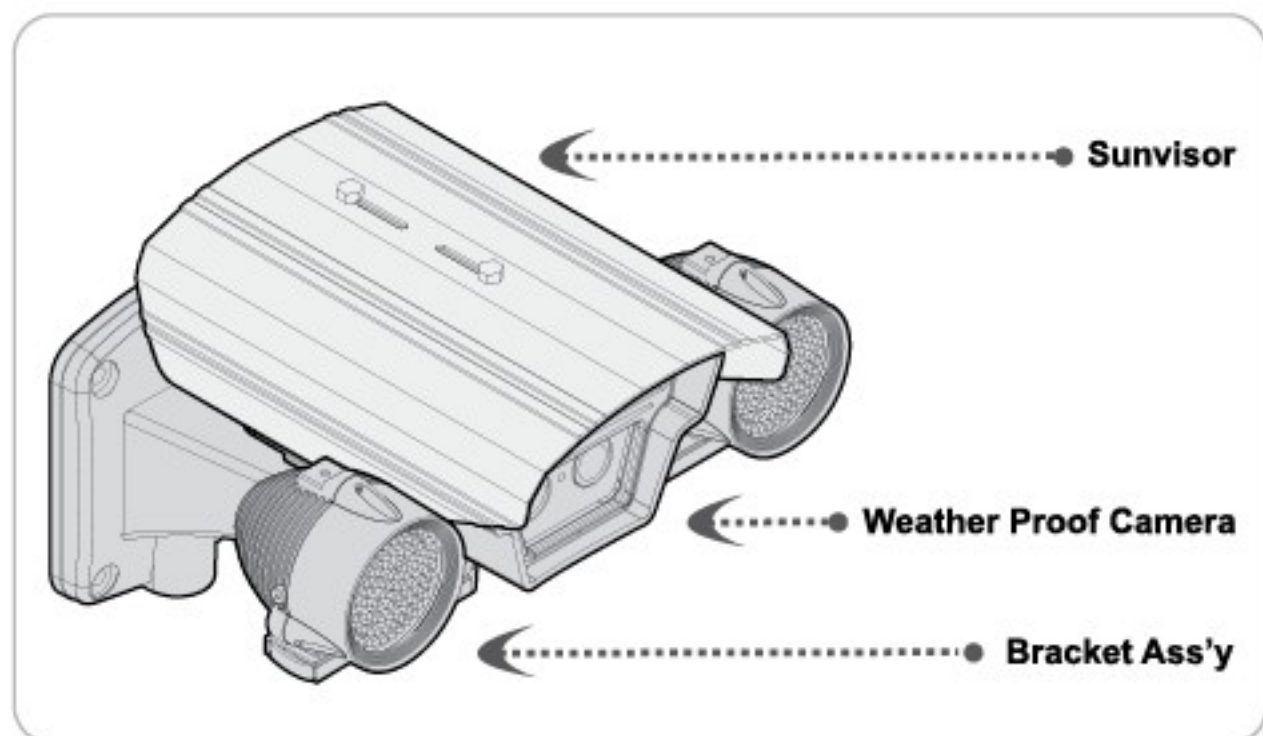


- Unlock the zoom(or the focus) handle to release it.
- Adjusting the zoom(or the focus) handle by moving it to Wide(Near) or Tele(Far) position.



- After adjustment, tighten the zoom(or focus) handle, taking care that the adjusted position does not change.
- After adjusting zoom and focus the varifocal lens, reinstall the front body and main body by screw the four fixed screws.

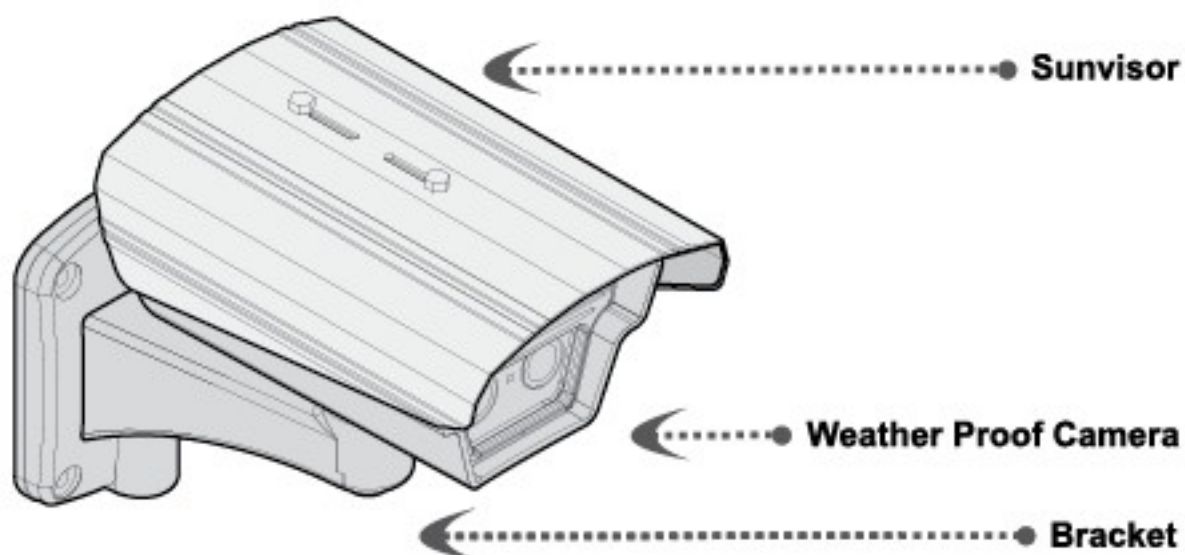
4. Composition - IR Illuminator Type (Option Model)



12V DC Input Model



4. Composition - Normal LED Type



● Owner's Manual



12V DC Input Model



5. Features

1. Dual Camera (Color & Monochrome)

Dual Image Sensor

2. High Resolution

The horizontal resolution of 550 TV lines can be achieved by using a high density CCD having effective 410K pixels, which provides clean, noiseless and reliable pictures.

3. Built-in IR LEDs / IR Illuminator

Two IR illuminators enable you to see any object under total darkness. Each of them is composed by 103 IR LEDs (Total 206 IR LEDs).
- Normal LED Type model uses built-in IR LEDs (IR LED: Total 112EA)

4. Backlight Compensation

The backlight compensation technology allows the camera to find the best picture conditions in any environment and automatically gives a necessary light level compensation.

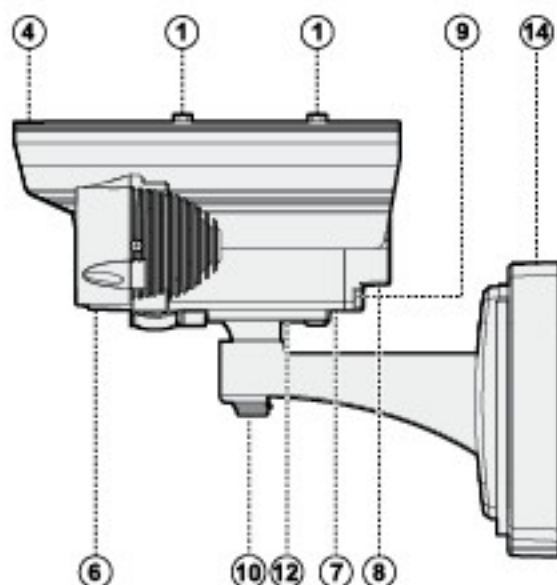
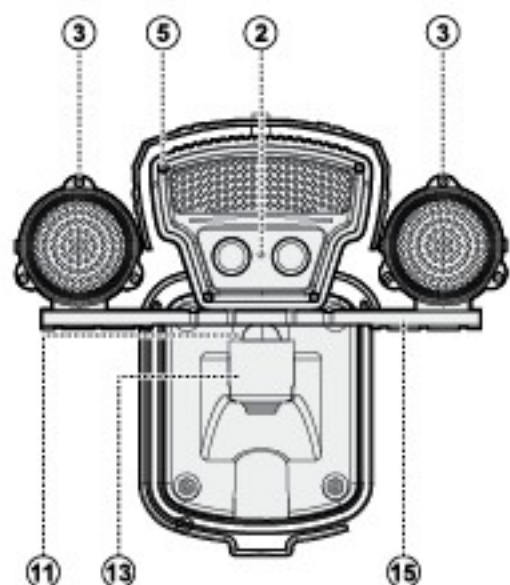
5. Auto White Balance

AWB function allows the camera to adjust the white balance automatically in response to light conditions.

6. Electronic Iris at the speed of 1/60 ~ 100,000sec (NTSC models), 1/50 ~ 100,000sec (PAL models).

7. Camera Control

RS-485 (PELCO "D") Control (BD7660VR) only

6. Name and Function of Each Parts**① Fixing Bolt for Sunvisor**

You can unfasten the bolt in order to fix mounting bracket above.

② Photo Sensor**③ IR Illuminator (Infrared LED)**

Automatically controlled according to light condition.

④ Sunvisor

To reduce direct sunlight and protect the camera unit from rain or snow outdoor.

⑤ Fixed Screws (front- 4EA & rear- 4EA)

Remove the front & rear body from the main body unscrews the four(total eight) fixed screws.

⑥ Front Body / ⑦ Main Body / ⑧ Rear Body**⑨ Compression Gland**

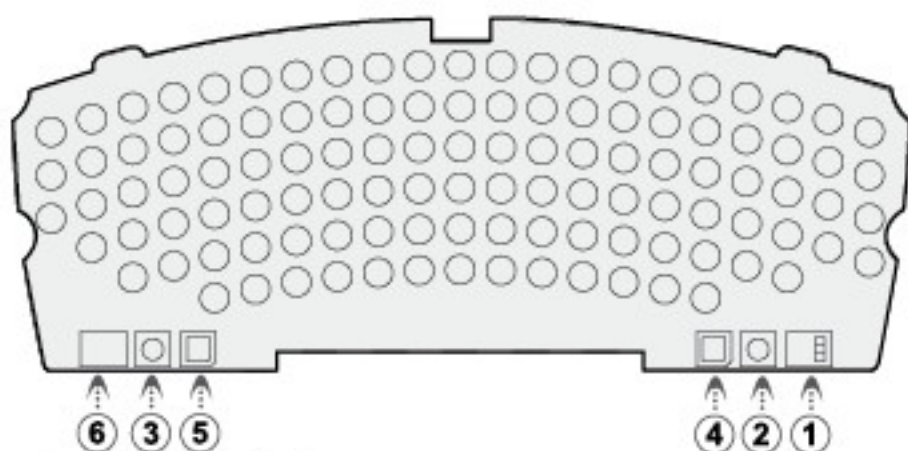
Used to connecting the IR illuminator cables to the rear body panel.

⑩ Mounting Bracket Fixing Bolt

Fix the camera main body to bracket by wrench bolt.

⑪ Base Adapter / ⑫ Base Adapter Fixing Bolt**⑬ Wall Mount Bracket / ⑭ Bracket Supporter****⑮ IR Illuminator Supporter**

Main body : Front Panel



1. Function Selection Switch.

BLC (Back Light Compensation)

This feature would be useful when camera is facing an object that has excessive light behind it, BLC prevents the center of object from too much darkness.

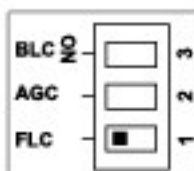
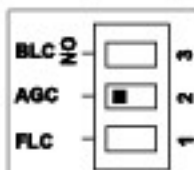
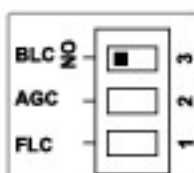
E.g : Video camera in the store facing the entrance doors.

AGC (Automatic Gain Control)

With AGC ON, the setting, camera's sensitivity is automatically increased when the level of ambient light drops. AGC function automatically controls signal gain in the range of maximum 28dB.

FL (Flickerless)

If the camera is used with 50Hz fluorescent lighting, there maybe flicker on the screen, In this case, FL switch should be set to ON position. But FL switch should be set to OFF position if 60Hz power source is used.



2. Color DC Level Adjustment V.R

Used to adjust video output level of DC driven auto iris lens.

When the brightness control of the monitor does not operate correctly.

3. B/W DC Level Adjustment V.R

Used to adjust video output level of DC driven auto iris lens.

When the brightness control of the monitor does not operate correctly.

4. Service video out connector (Color)

5. Service video out connector (B/W)

6. D/N (Day & Night)

It selects Auto, Night function.

It senses day and night according to cds level.

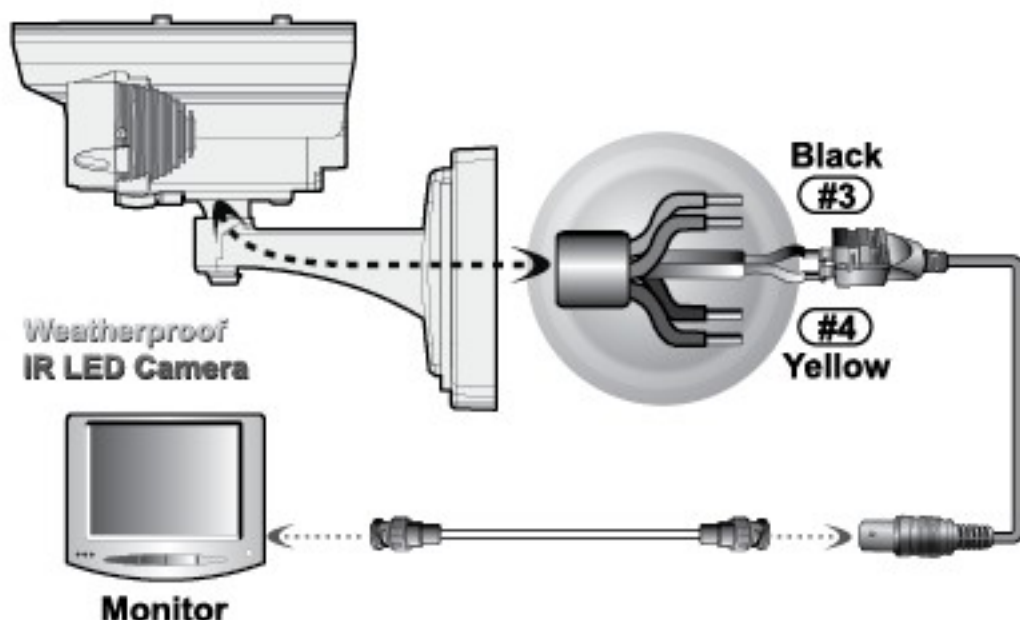
NOTE

- Functions related to color mode can't be used with B/W mode on

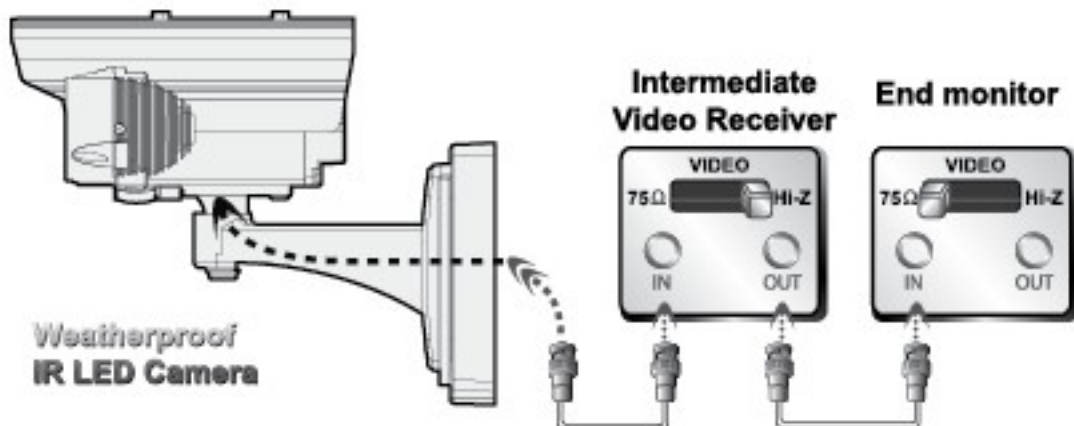
7. Installation

1. Connecting to Monitor

- Cable the VIDEO out 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.



2. Connecting to Power Supply

12V DC Power

- The wire is polarized.
- Use 12V DC $\equiv$ power source.



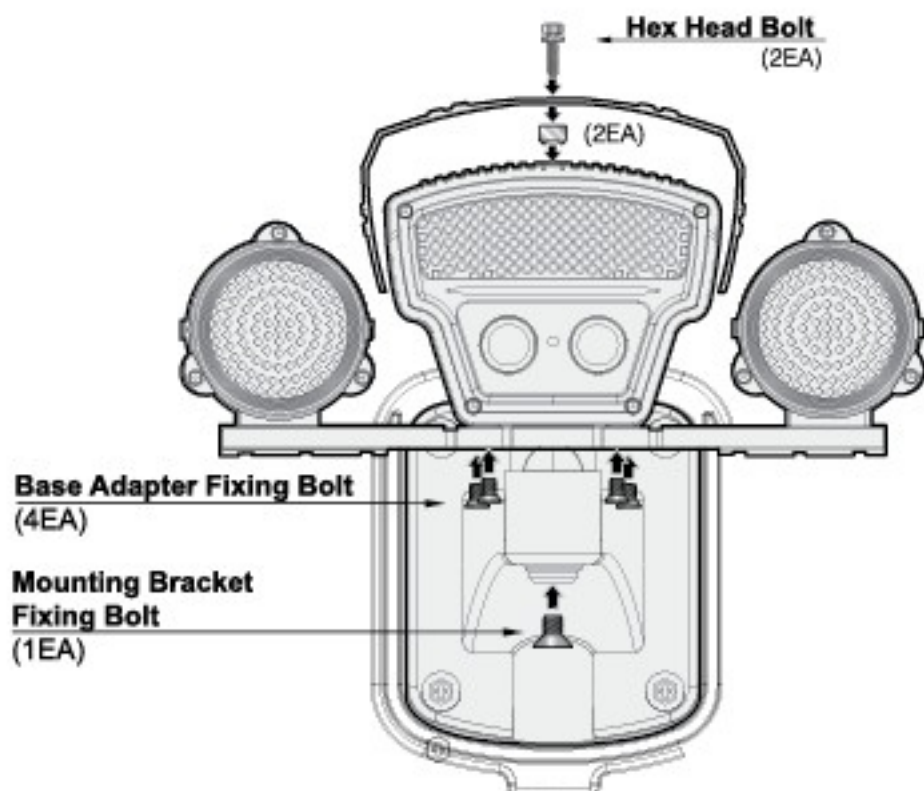
No.	Line Color	Function	Remark
#1	RED	12V DC	12V DC / 5A
#2	ORANGE	GND	GND
#3	BLACK	GND(VIDEO)	GND
#4	YELLOW	VIDEO OUT	1.0Vp-p Composite
#5	GREEN	RS-485 (+)	-
#6	BROWN	RS-485 (-)	-

NOTE

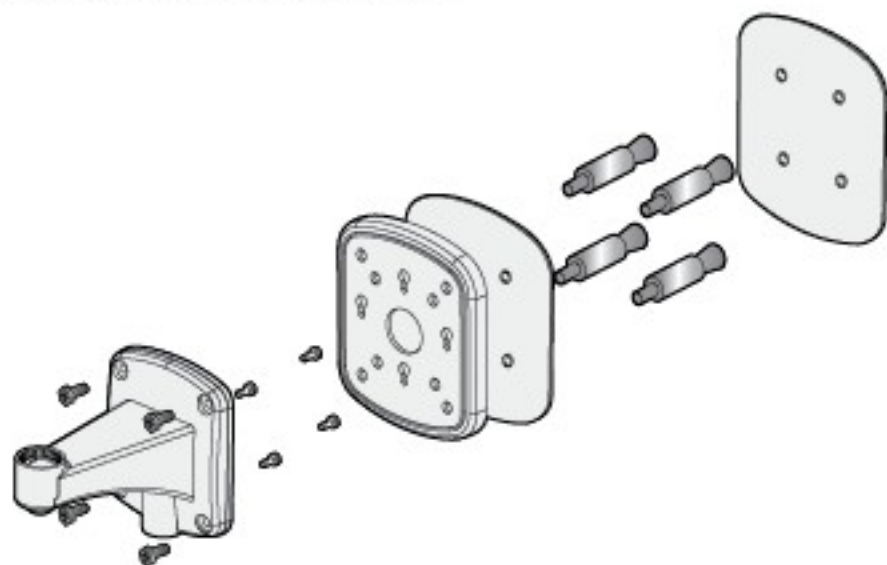
- Make sure you are using only the supplied AC adapter.

3. Camera Installation

- Assembling the sunvisor and the bracket.



- Assembling the bracket supporter

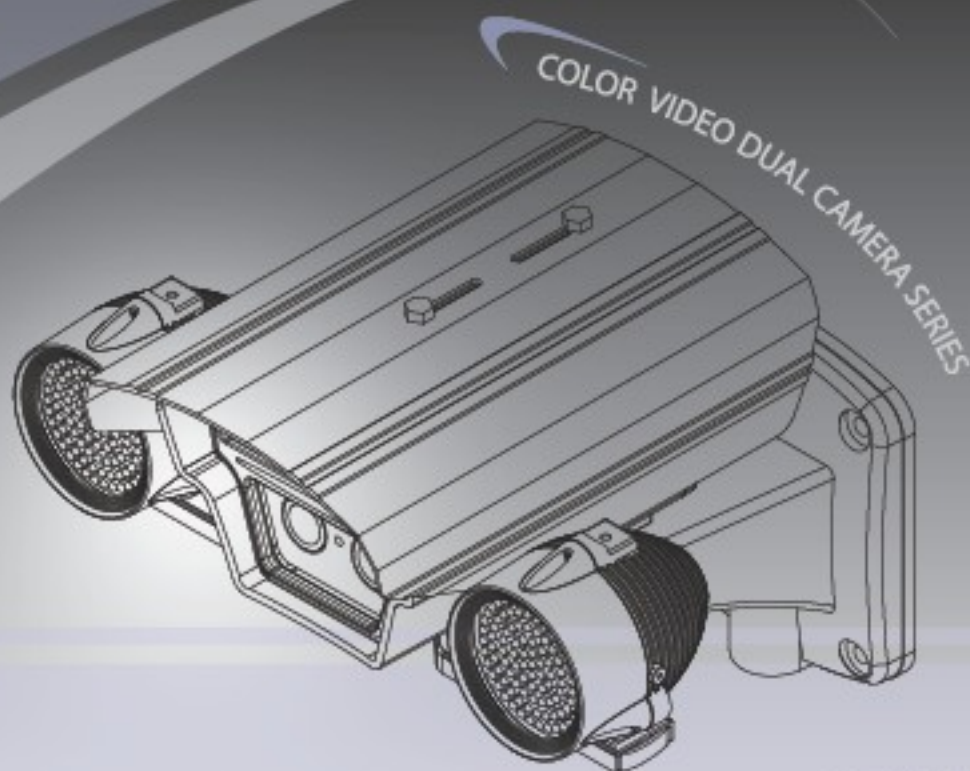


8. Specifications

Model(BD7310xVR)	Super High Resolution	
CCD	COLOR	Monochrome(B/W)
CCD Pick-up Element	2:1 Interlace Transfer 1/3 Inch Super HAD CCD	
Effective Pixels NTSC	768(H) x 494(V)	
Effective Pixels PAL	752(H) x 582(V)	
Video Output	Composite : 1.0V p-p, 75Ω	
Sync. System	Internal Sync	
Luminance S/N Ratio	48dB Min. (AGC OFF)	
Resolution	550 TV lines	600 TV lines
Sensitivity	0.1 Lux(B/W) / 0 Lux (IR LED On)	
Lens	DC Iris Vari-focal lens (f=3.8~9.5mm F1.2)	
White Balance	Auto (AWB)	
Auto Gain Control	On / Off Selectable	ON
Back Light Compensation	On / Off Selectable	OFF
Flickerless	On / Off Selectable	OFF
IR LED Illuminator & IR Visible Range	BD7310xVR : IR LED 112EA (850nm 30°) & 60m BD7311xVR : IR LED 112EA + IR LED 206EA(850nm 30°) & 80m	
Operating Temperature	-10°C~+45°C / -30°C~+50°C (with Fan & Heater)	
Storage Temperature	-20°C~+65°C	
Power Consumption	12V DC (9.6V~13.2V), Max. BD7310_30W	
Dimensions (WxHxD)	396(W) x 351(H) x 439(D)mm	
Weight	8kg	

DAY & NIGHT DUAL CAMERA

HIGH RESOLUTION



DIGITAL

WEATHERPROOF IR

DAY & NIGHT IR CAMERA SERIES

*Color Video Camera with
DAY & NIGHT and IR LEDs*

COLOR VIDEO CAMERA



Contents

1. Precautions	21
2. Dimensions	22
3. Zoom and Focus Adjustment	23
4. Composition	
IR Illuminator Type	24
Normal LED Type	25
5. Features	26
6. Name and Function of Each Parts	27
7. Installation	29
8. Operating Camera	32
9. Connections	43
10. Communication Protocol	44
11. Specifications	45



1. Precautions

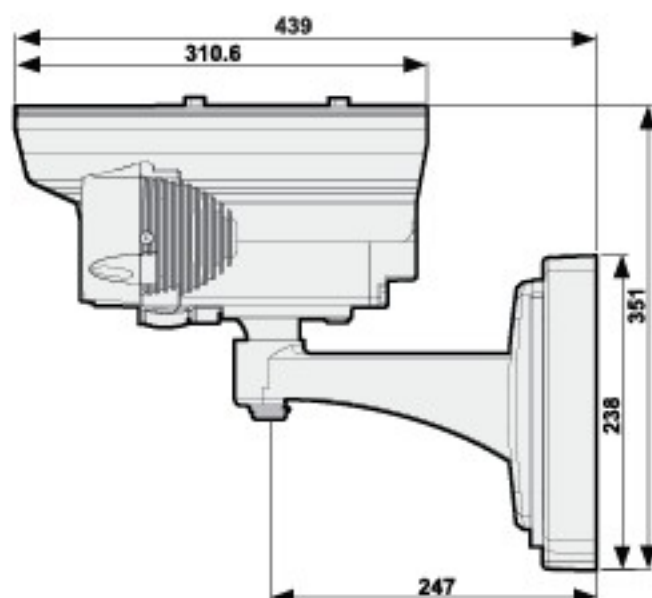
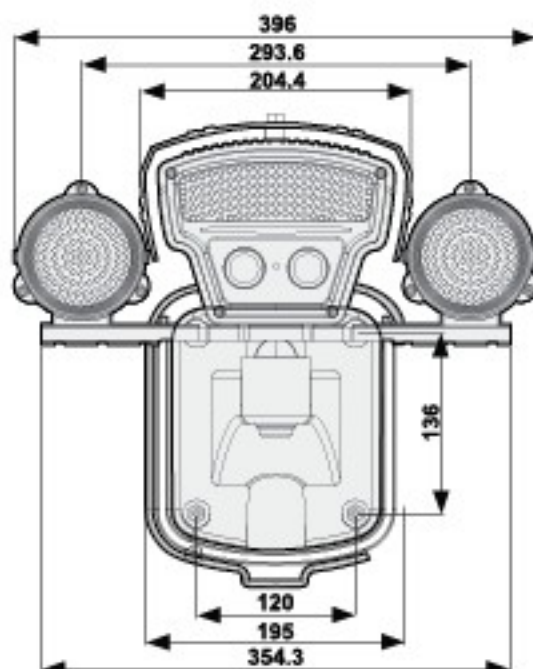
- **Do not install the camera in extreme temperature conditions.**
Do use the camera under conditions where temperatures are within -10°C to 50°C.
Especially be careful for ventilation under high temperature.
- **Do not install the camera under unstable lighting conditions.**
Severe lighting change or 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-serviceable parts inside it.
- **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.

NOTE

- **When this camera is installed near equipment, like a wireless communication device that emits a strong electro magnetic field, some irregularity such as noise on the monitor screen may happen.**

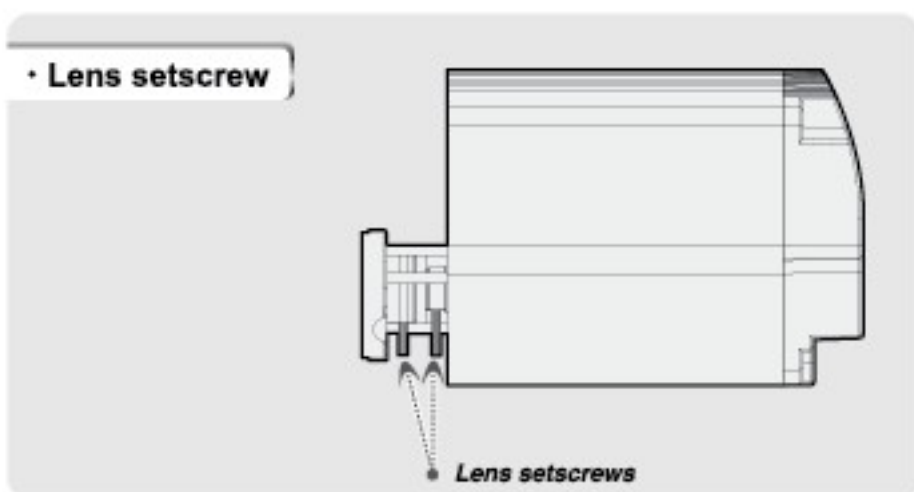


2. Dimensions

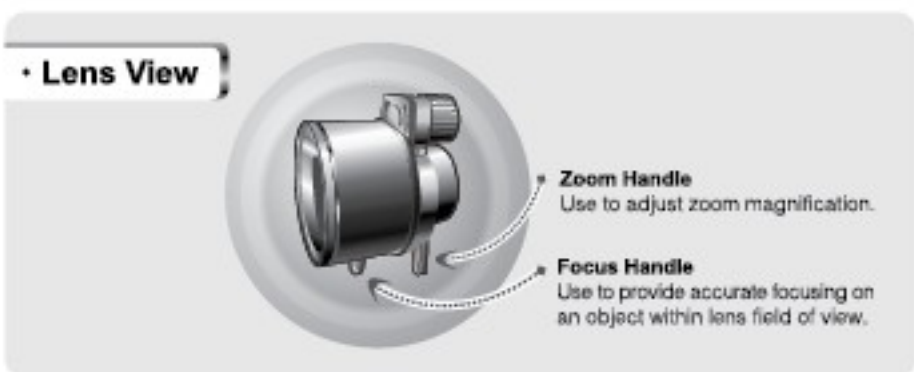




3. Zoom and Focus Adjustment

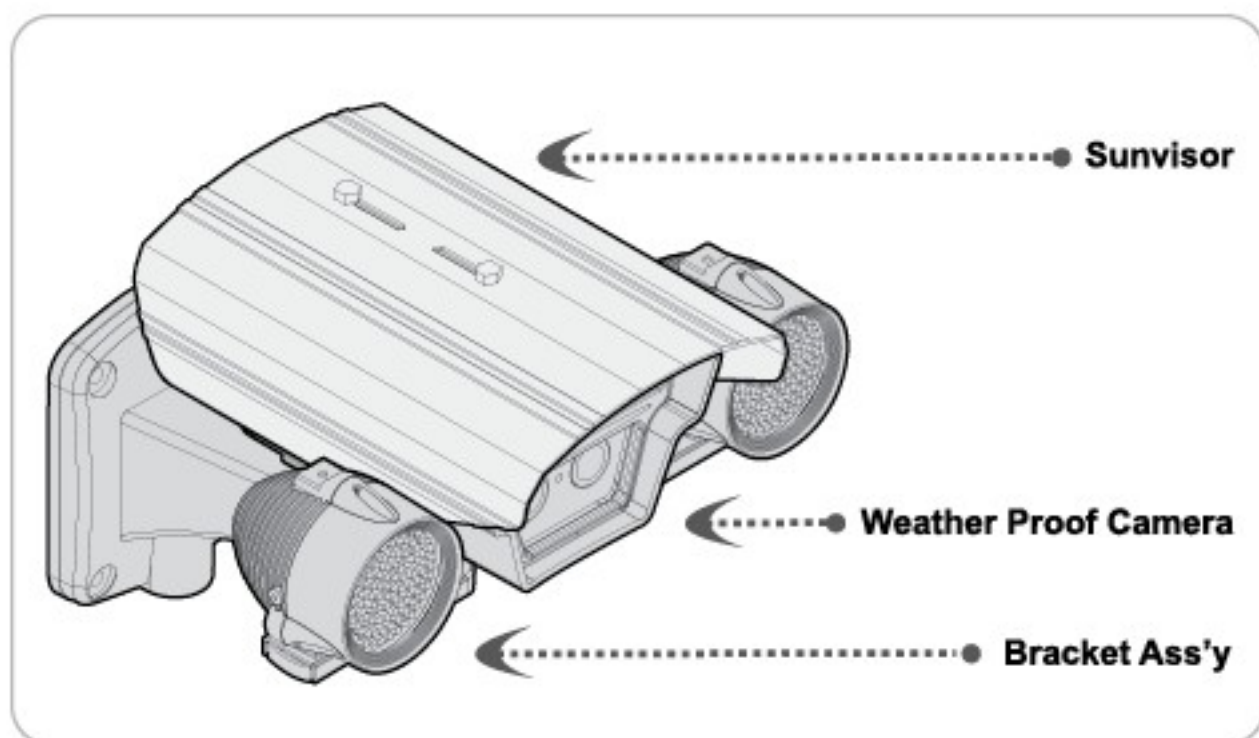


- Unlock the zoom(or the focus) handle to release it.
- Adjusting the zoom(or the focus) handle by moving it to Wide(Near) or Tele(Far) position.



- After adjustment, tighten the zoom(or focus) handle, taking care that the adjusted position does not change.
- After adjusting zoom and focus the varifocal lens, reinstall the front body and main body by screw the four fixed screws.

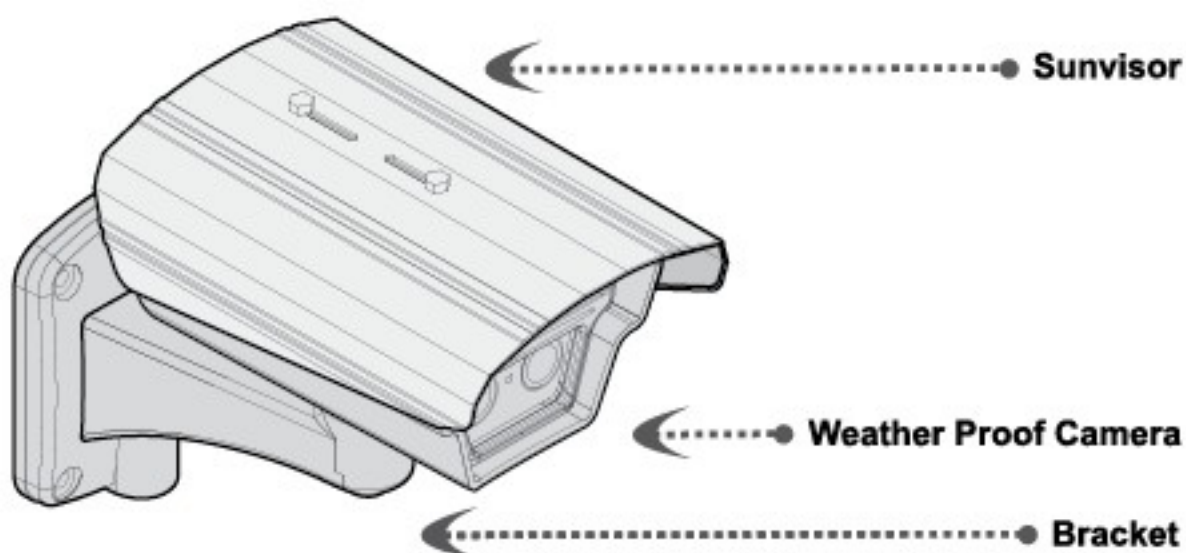
4. Composition - IR Illuminator Type (Option Model)



12V DC Input Model



4. Composition - Normal LED Type



12V DC Input Model

5. Features

1. Dual Camera (Color & Monochrome)

Dual Image Sensor

2. Built-in IR LEDs / IR Illuminator

Two IR illuminators enable you to see any object under total darkness. Each of them is composed by 103 IR LEDs (Total 206 IR LEDs).

- Normal LED Type model uses built-in IR LEDs (IR LED: Total 112EA)

3. 1/3 Inch PIXIM DPS Sensor High Sensitivity

4. High Resolution 530TVL

5. Ultra WDR (ULTRA Wide Dynamic Range)

6. Digital Slow Shutter : 2x ~32x

7. Min. Illumination : 0.08Lux (DSS on)

8. OSD. Auto White Balance, Privacy Mask Zone

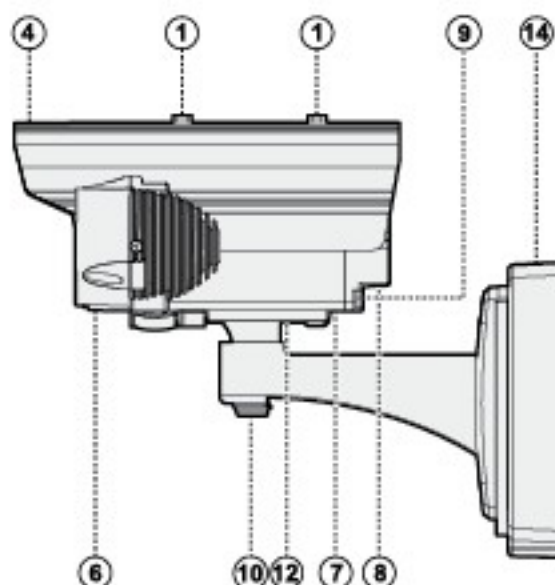
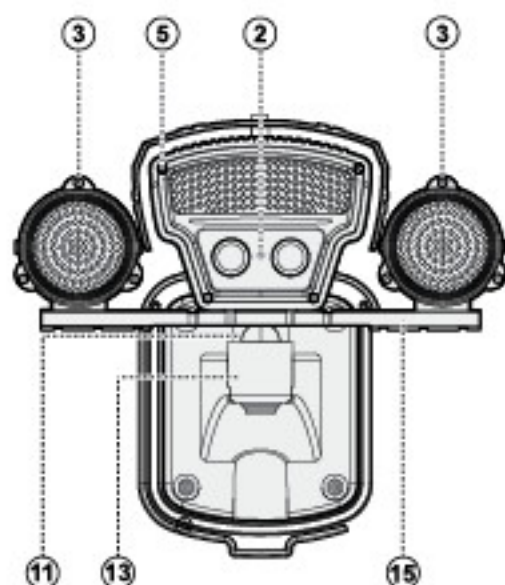
9. AGC(Auto), BLC(Zone Selectable)

10. Auto-FFF (Fluorescent Flicker Free)

11. Digital Noise Reduction

12. Camera Control

RS-485 (PELCO "D") Control (BD7660VR) only

6. Name and Function of Each Parts**① Fixing Bolt for Sunvisor**

You can unfasten the bolt in order to fix mounting bracket above.

② Photo Sensor**③ IR Illuminator (Infrared LED)**

Automatically controlled according to light condition.

④ Sunvisor

To reduce direct sunlight and protect the camera unit from rain or snow outdoor.

⑤ Fixed Screws (front- 4EA & rear- 4EA)

Remove the front & rear body from the main body unscrews the four(total eight) fixed screws.

⑥ Front Body / ⑦ Main Body / ⑧ Rear Body**⑨ Compression Gland**

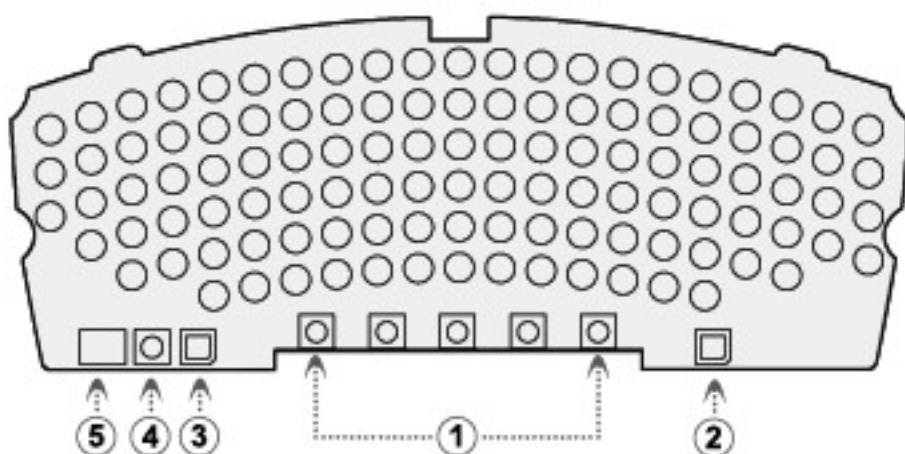
Used to connecting the IR illuminator cables to the rear body panel.

⑩ Mounting Bracket Fixing Bolt

Fix the camera main body to bracket by wrench bolt.

⑪ Base Adapter / ⑫ Base Adapter Fixing Bolt**⑬ Wall Mount Bracket / ⑭ Bracket Supporter****⑮ IR Illuminator Supporter**

Main body : Front Panel



1. Function Setup Button.

-Functions can be setup using 5 buttons on the camera's front panel.



➤ **MENU Buttons :**

Used to access menu mode. Also used to escape menu mode.

➤ **UP/DOWN Button :**

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.

2. Service video out connector (Color)

3. Service video out connector (B/W)

4. B/W DC Level Adjustment V.R

-Used to adjust video output level of DC driven auto iris lens.

-When the brightness control of the monitor does not operate correctly.

5. D/N (Day & Night)

-It selects Auto, Night function.

-It senses day and night according to cds level.

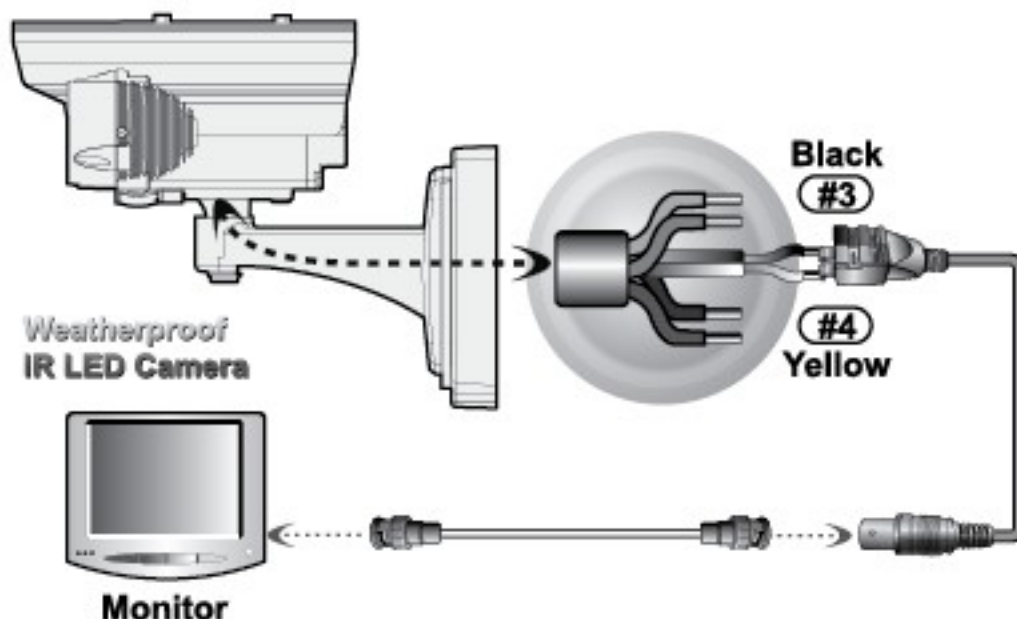
NOTE

- Functions related to color mode can't be used with B/W mode on.

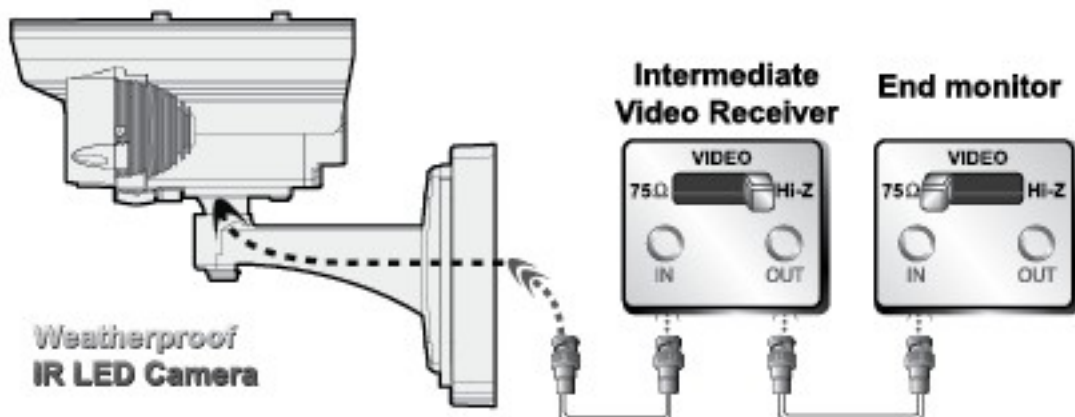
7. Installation

1. Connecting to Monitor

- Cable the VIDEO out 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.



2. Connecting to Power Supply

12V DC Power

- The wire is polarized.
- Use 12V DC $\equiv$ power source.



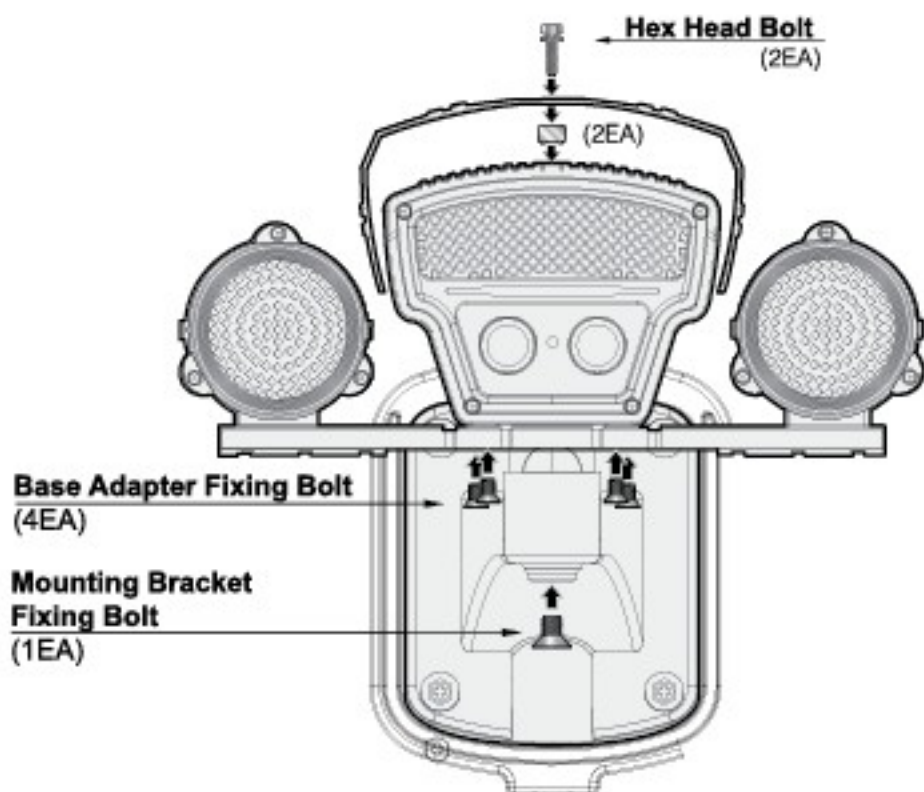
No.	Line Color	Function	Remark
#1	RED	12V DC	12V DC / 5A
#2	ORANGE	GND	GND
#3	BLACK	GND(VIDEO)	GND
#4	YELLOW	VIDEO OUT	1.0Vp-p Composite
#5	GREEN	RS-485 (+)	-
#6	BROWN	RS-485 (-)	-

NOTE

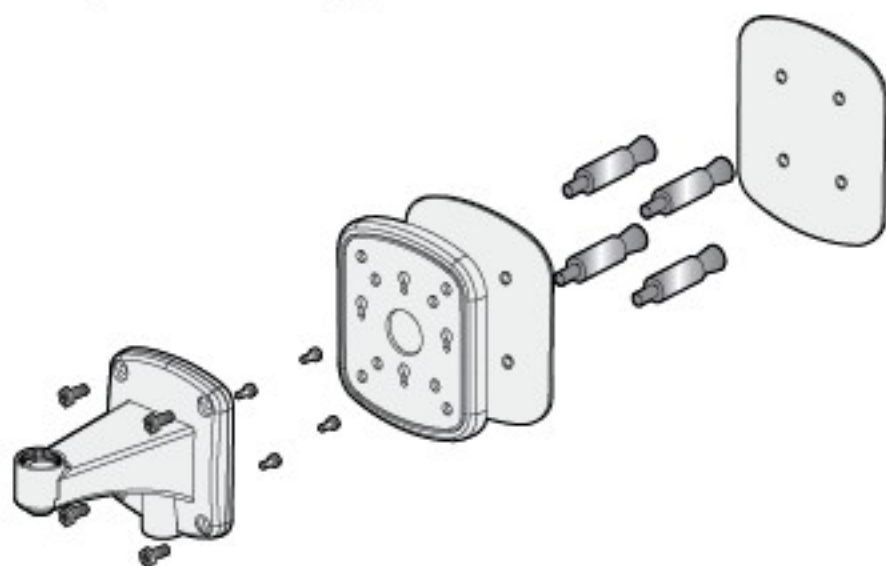
- Make sure you are using only the supplied AC adapter.

3. Camera Installation

- **Assembling the sunvisor and the bracket.**



- **Assembling the bracket supporter**



8. Operating Camera

MAIN MENU	
ZONE LABEL	• OFF • ON
LENS SELECT	• DC/VIDEO • MANUAL
WDR & EXPOSURE	• AGC LIMIT • AGC OFFSET • WDR LIMIT • WDR OFFSET
	• WDR SPEED • AE PREFERENCE • DIG. SLOW SHUTTER
WHITE BALANCE	• ATWDesat • AWB HOLD • MANUAL
DAY & NIGHT	• COLOR • AUTO • B/W • EXT
BASIC FUNCTIONS	• TV MODE/SYNC. • RESOLUTION • SHARPNESS • APERTURE
	• CHROMA • GAMMA • NOISE REDUCTION
SPECIAL FUNCTIONS	• RS-485 ID SETUP • PRIVACY MASKING • AUTO-FFF SETUP
	• FLUORESCENT • IMAGE MIRROR • ZONE SELECT
SAVE /EXIT	• SAVE SETTINGS AND EXIT • REJECT CHANGES AND EXIT
	• LOAD FACTORY SETTING • F/W Rev. : • OSD Ver. :



OSD Menu Structure

MAIN MENU

▶ **ZONE LABEL** OFF
 LENS SELECT DC/VIDEO..
 WDR & EXPOSURE Enter..
 WHITE BALANCE ATW/Deat..
 DAY & NIGHT COLOR
 BASIC FUNCTIONS..
 SPECIAL FUNCTIONS..
 SAVE/EXIT..

AUTO IRIS LENS

▶ **LENS GAIN** 75
 open <- 75
 A.I. OFFSET -14
 PREVIOUS PAGE..

WDR & EXPOSURE

▶ **AGC LIMIT** 40 0 60
 AGC OFFSET 0 -8 2
 WDR LIMIT 38 0 38
 WDR OFFSET -5 -8 2
 WDR SPEED NORMAL
 AE PREFERENCE HIGHLIGHTS
 DIG. SLOW SHUTTER OFF
 PREVIOUS PAGE..

ATW

▶ **LOWLIMIT** 2K < 2000 > 2.8K
 HIGHLIMIT 7.5K < 11000 > 11K
 WB OFFSET -2K < 0 > 2K
 WB SPEED NORMAL
 PREVIOUS PAGE..

ZONE LABEL

▶ **ZONE LABEL** 1
 POSITION UP-LEFT
 CLEAR ZONE LABEL? No
 PREVIOUS PAGE..

MANUAL LENS

▶ **E.I. OFFSET** -20
 PREVIOUS PAGE..

DIG. SLOW SHUTTER SETUP

DSS PRIORITY GAIN
 DSS COLOR COLOR
 PREVIOUS PAGE..

AWB HOLD

▶ **Save AWB HOLD DATA and**
 ALL Changes..
 CANCEL..
 *** WARNING ***
 All User properties will
 be written to ROM!

MANUAL WHITE BALANCE

▶ **ADJ. KELVIN** 2K 3200 11K
 PREVIOUS PAGE..

DAY & NIGHT AUTO MODE

▶ **D to N DELAY** 1 < 2 > 255
 N to D DELAY 2 < 5 > 255
 NIGHT MODE BW+BURST
 NIGHT GAIN BOOST UP ON
 NIGHT WDR LIMIT 0 < 14 > 38
 D to N AGC Th. 18 < 22 > 38
 N to D AGC Th. 0 < 8 > 15
 PREVIOUS PAGE..

BASIC FUNCTIONS

▶ **TV MODE / SYNC.** NTSC..
 RESOLUTION NORMAL
 SHARPNESS 1 -8 8
 APERTURE 1 -8 8
 CHROMA -1 -8 2
 GAMMA 0.40
 NOISE REDUCTION ON
 PREVIOUS PAGE..

SPECIAL FUNCTIONS

▶ **RS-485 ID SETUP**
 PRIVACY MASKING OFF
 AUTO-FFF SETUP Enter..
 FLUORESCENT OFF
 IMAGE MIRROR OFF
 ZONE SELECT FULLSCREEN
 PREVIOUS PAGE..

SAVE/EXIT

▶ **SAVE SETTINGS AND EXIT..**
 REJECT CHANGES AND EXIT..
 LOAD FACTORY SETTINGS No
 FW Rev. : 3.1 - 5.0.21
 OSD Ver. : 1.31_GNF1_3.1
 PREVIOUS PAGE..

DAY & NIGHT EXT. MODE

▶ **D to N DELAY** 1 < 3 > 255
 N to D DELAY 1 < 6 > 255
 NIGHT MODE BW+BURST
 NIGHT GAIN BOOST UP ON
 NIGHT WDR LIMIT 0 < 14 > 38
 PREVIOUS PAGE..

NTSC or PAL

▶ **VIDEO LEVEL** < 110 > IRE
 SYNC INTERNAL
 V-PHASE 64
 COLOR BAR OFF
 PREVIOUS PAGE..

RS-485 ID NUMBER

RS-485 ID Number: # 1
 CONFIRM ID number? NO
 PREVIOUS PAGE..

ENABLE MASKS (1-5)

▶ **MASK COLOR** WHITE
 MASK 1 OFF
 MASK 2 OFF
 MASK 3 OFF
 MASK 4 OFF
 MASK 5 OFF
 NEXT PAGE (MASK 6-12)..
 PREVIOUS PAGE..

AUTO-FFF CHANGE

▶ **AUTO FFF SET OFF.**
 AUTO FFF SET ON..
 ADJUST AUTO FFF ZONE..
 PREVIOUS PAGE..
 *** WARNING ***
 CURRENT FFF SETTING = OFF



Setting up the Menu

Use five buttons on front side of the camera.



- DOWN Button
- UP Button
- LEFT Button
- RIGHT Button
- MENU(SET) Button

SETUP

- Press and hold MENU button 1 second to access the setup mode.
- Select the status using the ◀, ▶, ▲, ▼ button.

MAIN MENU

ZONE LABEL	OFF
LENS SELECT	DC/VIDEO..
WDR & EXPOSURE	Enter..
WHITE BALANCE	ATWDesat..
DAY & NIGHT	COLOR
BASIC FUNCTIONS..	
SPECIAL FUNCTIONS..	
SAVE/EXIT..	



Main Menu - ZONE LABEL

1. Setting up the ZONE LABEL

• ZONE LABEL

- ① On the SETUP menu screen, move the arrow indicator to the 'ZONE LABEL' using UP or DOWN button.
- ② Select 'ON..' by using the LEFT or RIGHT button.
- ③ Press the MENU button to access the ZONE LABEL Setting mode.
- ④ You can enter up to 12 characters.
 - Advance the cursor to the next character by pressing the MENU button. Pressing MENU will advance to next character spot while saving previous character.
 - Select the desired character by using the LEFT or RIGHT button.
- ⑤ Complete the ZONE LABEL character by using the UP or DOWN button.

MAIN MENU

▶ ZONE LABEL	OFF
LENS SELECT	DC/VIDEO..
WDR & EXPOSURE	Enter..
WHITE BALANCE	ATWDesat..
DAY & NIGHT	COLOR
BASIC FUNCTIONS..	
SPECIAL FUNCTIONS..	
SAVE/EXIT..	

• POSITION

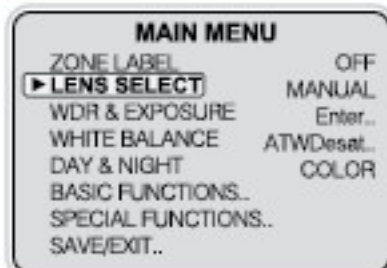
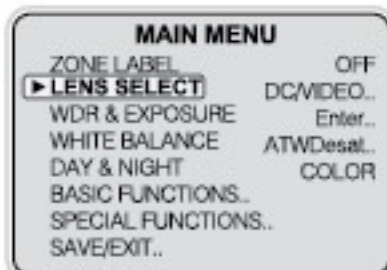
Move the arrow indicator to POSITION and press the MENU button. Select the position by using the LEFT or RIGHT button. (Choose from the 6 position on the menu.)

• CLEAR ZONE LABEL

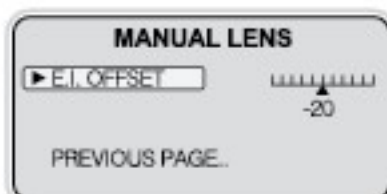
Select YES by using the LEFT or RIGHT button, then followed by MENU button. This clears the entire ZONE LABEL.

**Main Menu - LENS SELECT****2. Setting up the LENS**

- On the MEIN MENU screen, move the arrow indicator to the "LENS SELECT"



- When DC/VIDEO LENS selected, press MENU button to control the LENS GAIN and OFFSET. (Choose DC or VIDEO type Auto-Iris LENS and then Select DC or VIDEO switch on the rear panel.)



- When MANUAL LENS selected, press MENU button to control the ELETRONIC IRIS OFFSET.

NOTE

- Use of AUTO IRIS LENS(DC TYPE)is recommended than MANUAL LENS.
- Some lens may not perform properly depending on the BRIGHTNESS LEVEL.



Main Menu - WDR & EXPOSURE

3. Setting up the WDR & EXPOSURE

- On the MAIN MENU screen, move the arrow indicator to the "WDR & EXPOSURE"
- Press MENU button twice to access WDR & EXPOSURE screen.

• AGC LIMIT

The maximum amount of AGC(Automatic Gain Control) gain.
Set desired value by using the LEFT or RIGHT button.

• AGC OFFSET

Offset to the AGC(Automatic Gain Control).
Set desired value by using the LEFT or RIGHT button.
(This adjustment results a similar effect to BRIGHTNESS control.)

• WDR LIMIT

The maximum amount of WDR(Wide Dynamic Range) range.
Set maximum value by using the LEFT or RIGHT button.
(This limits the dynamic range of the camera.)

• WDR OFFSET

Offset to the WDR(Wide Dynamic Range) control.
Set value by using the LEFT or RIGHT button.
(This adjustment results in similar effect to lower luminance GAMMA control.)

• AE PREFERENCE

Automatically optimizes the scene for highlights or for shadow areas.
Set to HIGHLIGHTS or SHADOWS, using the LEFT or RIGHT button.

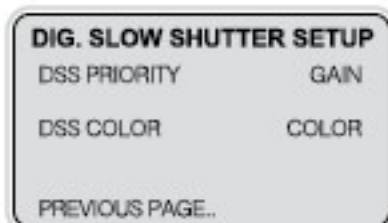
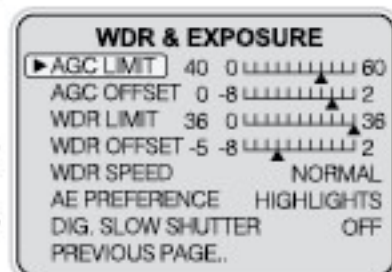
- **HIGHLIGHTS** : optimizes scene for bright areas.
- **SHADOWS** : optimizes scene for dark areas.

• DIGITAL SLOW SHUTTER

Select a shutter speed from x2 to x32 by using the LEFT or RIGHT button.
Notice that the "AGC LIMIT" value changes accordingly.

• DIGITAL SLOW SHUTTER setup

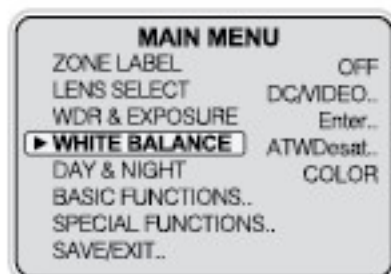
Using LEFT or RIGHT button, select desired zoom level. (IE x2~x32)
Press MENU button to enter "DIG. SLOW SHUTTER SETUP" OSD screen.



- ◀ **DSS PRIORITY** - Using LEFT or RIGHT button, select the DSS priority (IE. GAIN or SHUTTER)
GAIN : In low ambient lighting, AGC GAIN will increase before decreasing SHUTTER speed.
SHUTTER : In low ambient lighting, SHUTTER speed will decrease before increasing AGC GAIN.
- ◀ **DSS COLOR** - Select whether or not to output color signal while DSS is in operation.
COLOR : Continue outputting color signal while DSS is in operation.
BW+BURST : Do not output color signal while DSS is in operation, but output color burst at all times.
(If AUTO.. or EXT.. is selected as DAY & NIGHT mode, this function is fixed to color signal output, and is selected by selection of NIGHT mode of DAY & NIGHT)

**Main Menu - WHITE BALANCE****4. Setting up the WHITE BALANCE**

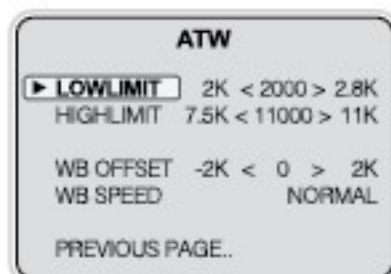
- On the MAIN MENU, use UP or DOWN button to move the arrow indicator to "WHITE BALANCE".
- Using LEFT or RIGHT button select desired WHITE BALANCE value.

**• ATWDesat..**

ATW(Auto Tracking White Balance) Desaturating mode will dynamically seek and limit its visible color spectrum to 2,000°K ~ 11,000°K range.

(Default setting will work on most indoor or outdoor application)

- Using LEFT or RIGHT button, select the "ATWDesat.." value.
- Press MENU once more to enter into ATW Desaturating Mode sub menu.

**➤ LOW LIMIT**

- Using LEFT or RIGHT button select desired color temperature for low cut off limit. ("ATW Norm" mode is recommended when selecting below 2,800°K limit)

➤ HIGH LIMIT

- Using LEFT or RIGHT button, select desired color temperature for high cut off limit.

➤ WB OFFSET

- Using LEFT or RIGHT button, select desired White Balance Offset value.

➤ WB SPEED

- Using LEFT or RIGHT button select desired White Balance speed value.

• AWB HOLD..

This feature is similar to that of WHITE BALANCE MANUAL and when selected the white balance stays fixed to the color temperature of the object.

• MANUAL..

This feature allows users to arbitrarily set and fix desired color temperature.

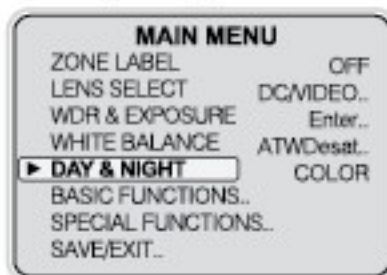


Main Menu - DAY & NIGHT

5. Setting up the DAY & NIGHT

This function is used both in products including the ICR(filter change function) and products without the ICR. However, this function serves as a function for removing only COLOR signal in the products without the ICR.

- On the MAIN MENU, move the arrow indicator to "DAY & NIGHT" by using the UP or DOWN button.
- Select DAY & NIGHT function by using the LEFT or RIGHT button.



• COLOR

Converted to and fixed to the DAY function.

• B/W

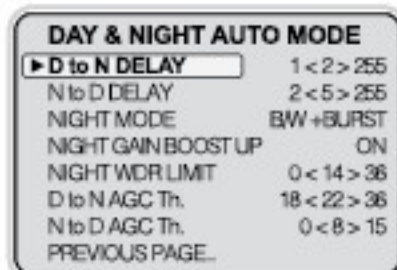
Converted to and fixed to the NIGHT function.

(However, this output form depends on the selection of the NIGHT MODE in the AUTO.. option.)

• AUTO..

The DAY/NIGHT conversion function is executed by the AGC GAIN level.

- Select AUTO.. by using the LEFT or RIGHT button.
- Press the MENU button to access the following option adjustment window.



- **D to N DELAY** - In conversion from DAY to NIGHT, Converted to NIGHT if the NIGHT conversion condition is maintained during time (seconds) corresponding to this setting value.
- **N to D DELAY** - In conversion from NIGHT to DAY, Converted to DAY if the DAY conversion condition is maintained during time (seconds) corresponding to this setting value.
- **NIGHT MODE** - Select camera signal output form in NIGHT-converted state.
(This selection value is also applied when the DAY & NIGHT function selection is selected for B/W.)

**Main Menu - DAY & NIGHT**

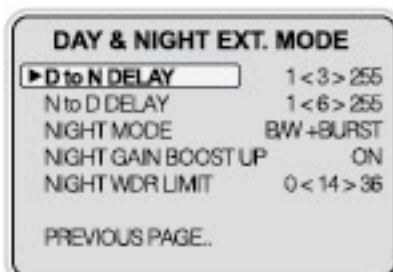
- **NIGHT GAIN BOOST UP** - Boost up GAIN in the NIGHT-converted state by about 6dB to raise the dark signal.
(This selection value is also applied when DAY & NIGHT function selection is selected for B/W.)
- **NIGHT WDR LIMIT** - Limit the WDR operation level in the NIGHT-converted state.
(This menu is omitted blank for products without the ICR.
This selection value is also applied when DAY & NIGHT function selection is selected for B/W.)
- **D to N AGC TH** - This function sets the AGC level threshold value for conversion to NIGHT.
- **N to D AGC TH** - This function sets the AGC level threshold value for conversion to DAY.

- **EXT..**

The DAY/NIGHT conversion function is executed by the external signal input.

- Select EXT.. by using the LEFT or RIGHT button.

- Press the MENU button to access the following option adjustment window.

**NOTE**

- Functions related to color mode can't be used with B/W mode on.



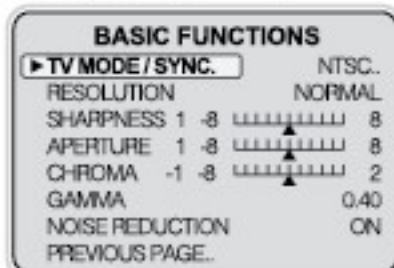
Main Menu - BASIC FUNCTIONS

6. Setting up the BASIC FUNCTIONS..

- On the MAIN MENU, move the arrow indicator to 'BASIC FUNCTIONS..' by using the UP or DOWN button.
- Press the MENU button to access the following option adjustment window.

• TV MODE / SYNC.

- Change TV MODE to NTSC.. or PAL.. by using the LEFT or RIGHT button.
- Press the MENU button to access the following option adjustment window.



• RESOLUTION

- Select the resolution of the camera.
- Select NORMAL or HIGH by using the LEFT or RIGHT button.

• SHARPNESS

- Select the resolution of the camera.
- Select the SHARPNESS level of the camera image.

• APERTURE

- Select the APERTURE level of the camera image.
- Select the level by using the LEFT or RIGHT button.

• CHROMA

- Select the CHROMA level (color depth) of the camera image.
- Select the level by using the LEFT or RIGHT button.

• GAMMA

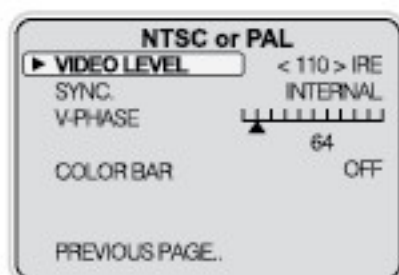
- Select the GAMMA level of the camera image.
- Select the level by using the LEFT or RIGHT button.

• NOISE REDUCTION

- Turn ON/OFF the NOISE REDUCTION function of the camera image.
- Select ON or OFF by using the LEFT or RIGHT button.

• NTSC (or PAL)

- **VIDEO LEVEL** - Set the output level of the luminance signal.
- **SYNC.** - Select sync. (The LINE-LOCK sync is supported only in products corresponding to a power supply of 24AVC.)
- **V-PHASE** - If the LINE-LOCK sync is selected, adjust the VERTICAL PHASE.
- **COLOR BAR**
 - Output the standard color BAR signal.



**Main Menu - SPECIAL FUNCTIONS****7. Setting up the SPECIAL FUNCTIONS..**

- On the MAIN MENU, move the arrow indicator to "SPECIAL FUNCTIONS.." by using the UP or DOWN button.
- Press the MENU button to access the following option adjustment window.

**• RS-485 ID SETUP..**

This product supports the adjustment function for the OSD by using the RS-485 reception function using the PELCO-D protocol.

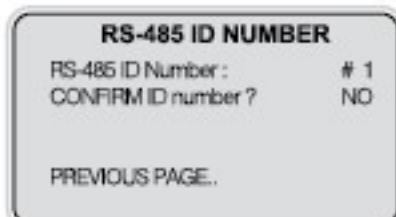
- Press the MENU button in the RS-485 ID SETUP.. item to access the following option adjustment window.

- **RS-485 ID Number** - Select CAMERA ID NUMBER by using the LEFT or RIGHT button.

- **CONFIRM ID number ?**

Apply the CAMERA ID NUMBER changed in the above item.

- Select YES by using the LEFT or RIGHT button, and then confirm by pressing the MENU button.

**• PRIVACY MASKING**

This product supports 12 PRIVACY MASKING functions.

- Move the arrow indicator to "PRIVACY MASKING" by using the UP or DOWN button.
- Select ON.. by using the LEFT or RIGHT button, and then press the MENU button to access the following option adjustment window.

- **MASK COLOR** - Select the color of the MASK area by using the LEFT or RIGHT button.

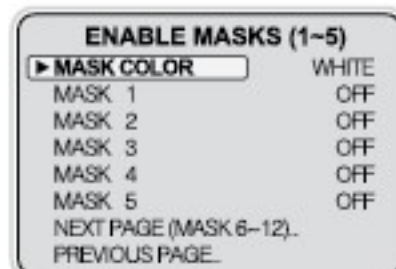
- **MASK 1**

(Same instructions for MASK1 through MASK12)

- Select ON.. by using the LEFT or RIGHT button, Press the MENU button to access the window for adjusting the size and position of the MASK area. (The reference point of the MASK position is the upper left corner.)

- If displayed in the white color: change the position by using the UP, DOWN, LEFT, or RIGHT button.
- If displayed in the blue color: move the area to the right by using the LEFT or RIGHT button. move the area downward by using the UP or DOWN button.

(Whenever the MENU button is pressed short, the adjustment mode is changed with the color change. If the MENU button is pressed and held down long for about 1 second, you will return to the previous menu screen.)





Main Menu - SPECIAL FUNCTIONS

➤ NEXT PAGE (MASK 6~12)..

- Press the MENU button in the NEXT PAGE (MASK 6~12) item to access the next MASK adjustment window.
- The adjustment method for each item is same as instruction provided for MASK 1 above. (same for 1~12)

ENABLE MASKS (6~12)

▶ MASK 6	OFF
MASK 7	OFF
MASK 8	OFF
MASK 9	OFF
MASK 10	OFF
MASK 11	OFF
MASK 12	OFF
PREVIOUS PAGE.	

• AUTO-FFF SETUP

This AUTO FLUORESCENT FLICKER FREE function is available in NTSC, 50Hz area. (The use of this function may degrade WDR operation performance.)

- Move the arrow indicator to 'AUTO-FFF SETUP' by using the UP or DOWN button.
- Press the MENU button to access the following option adjustment window. (This shows the current setting state of the AUTO-FFF in the bottom line.)

AUTO-FFF CHANGE

▶ AUTO FFF SET OFF..

AUTO FFF SET ON.
ADJUST AUTO FFF ZONE.
PREVIOUS PAGE.

WARNING

CURRENT FFF SETTING = **OFF**

- **AUTO FFF SET OFF..** - Press the MENU button in the AUTO FFF SET OFF. item to turn OFF the AUTO FFF function.
- **AUTO FFF SET ON..** - Press the MENU button in the AUTO FFF SET ON. item to turn ON the AUTO FFF function.
- **ADJUST AUTO FFF ZONE..** - Press the MENU button in the ADJUST AUTO FFF ZONE. item, to access the window for adjusting the AUTO FFF sensing area.

- If displayed in the white line: Change the position by using the UP, DOWN, LEFT or RIGHT button.
- If displayed in the green line: Enlarge the area in each buttons' direction by using the UP, DOWN, LEFT, or RIGHT button.
- If displayed in the red line: Reduce the area in each buttons' direction by using the UP, DOWN, LEFT, or RIGHT button.

(Whenever the MENU button is pressed short, the adjustment mode is changed with the color change. If the MENU button is pressed long for about 1 second, you will return to the previous menu screen.)

- **FLUORESCENT** This item provides a mode available in the fluorescent lamp illumination environment.
 - Select a desired item among OFF/FLUOR.1/FLUOR.2 by using the LEFT or RIGHT button.

OFF Select in the normal environment.

FLUOR.1 Set to be used by user's function setting in the fluorescent lamp illumination environment. (However, the selection of the FLUOR.1 mode may degrade the WDR operation to the MIDDLE level.)

FLUOR.2 The internal parameter is set to minimize color rolling in the fluorescent lamp illumination environment. (However, the selection of the FLUOR.2 mode may degrade the WDR operation to the LOW level.)

- **IMAGE MIRROR** - Select the horizontal/vertical/horizontal and vertical image inversion function by using the LEFT or RIGHT button.
- **ZONE SELECT** This item sets the WDR operation area. (WDR, AE, BLC all are applied at the same time.)

FULLSCREEN The full screen is set to the WDR operation area and the area is not variable.

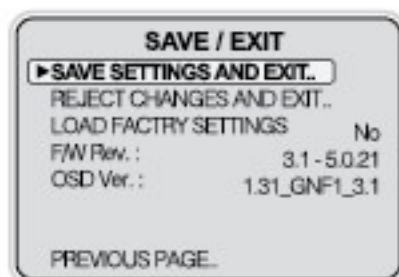
SAFE AREA The OVERSCAN area of the monitor is selected as the WDR operation area and the area is not variable.

USER #1.. The central 70% area of the screen is selected as the WDR operation area and the area is variable.

USER #2.. The central 50% area of the screen is selected as the WDR operation area and the area is variable. (Press the MENU button to access the window for area change. Same as the AUTO FFF ZONE setting method.)

**Main Menu - SAVE / EXIT****8. Setting up the SAVE/EXIT..**

- On the MAIN MENU using UP or DOWN button, move arrow indicator to "SAVE/EXIT".
- Press MENU button to enter to see below OSD screen.

**• SAVE SETTINGS AND EXIT..**

Select this to save and exit the OSD menu.

- Using UP or DOWN button, move the arrow indicator to "SAVE SETTINGS AND EXIT".
- Press MENU button to save and exit OSD.

• REJECT CHANGES AND EXIT..

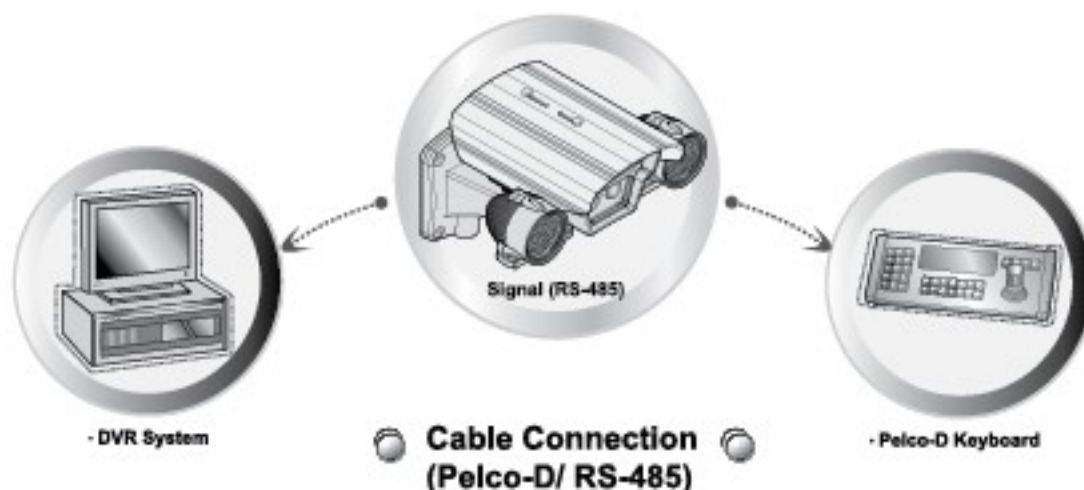
Select this to cancel all value changes and exit OSD menu.

- Using UP or DOWN button, move the arrow indicator to "REJECT CHANGES AND EXIT".
- Press MENU button to exit OSD while leaving all values unchanged.

• LOAD FACTRY SETTINGS

Selecting this will load factory default values followed by automatic reset.

- Using UP or DOWN button, move the arrow indicator to "LOAD FACTRY SETTINGS".
- Using LEFT or RIGHT button, select "YES" and press MENU button to initiate factory value reset.

9. Connections**Connecting to Controller**

10. Communication Protocol

Function	95+Long_PRESET (MAIN MENU open)						
	BYTE 1	BYTE 2	BYTE 3	BYTE 4	BYTE 5	BYTE 6	BYTE 7
MSG	0xFF	Cam ID	0x00	0x03	0x00	0x5F	Checksum
Function	IRIS OPEN (MENU button)						
	BYTE 1	BYTE 2	BYTE 3	BYTE 4	BYTE 5	BYTE 6	BYTE 7
MSG	0xFF	Cam ID	0x02	0x00	0x00	0x00	Checksum
Function	IRIS CLOSE (EXIT current Page)						
	BYTE 1	BYTE 2	BYTE 3	BYTE 4	BYTE 5	BYTE 6	BYTE 7
MSG	0xFF	Cam ID	0x04	0x00	0x00	0x00	Checksum
Function	zoom TELE (UP button)						
	BYTE 1	BYTE 2	BYTE 3	BYTE 4	BYTE 5	BYTE 6	BYTE 7
MSG	0xFF	Cam ID	0x00	0x20	0x00	0x00	Checksum
Function	zoom WIDE (DOWN button)						
	BYTE 1	BYTE 2	BYTE 3	BYTE 4	BYTE 5	BYTE 6	BYTE 7
MSG	0xFF	Cam ID	0x00	0x40	0x00	0x00	Checksum
Function	focus FAR (RIGHT button)						
	BYTE 1	BYTE 2	BYTE 3	BYTE 4	BYTE 5	BYTE 6	BYTE 7
MSG	0xFF	Cam ID	0x00	0x80	0x00	0x00	Checksum
Function	focus NEAR (LEFT button)						
	BYTE 1	BYTE 2	BYTE 3	BYTE 4	BYTE 5	BYTE 6	BYTE 7
MSG	0xFF	Cam ID	0x01	0x00	0x00	0x00	Checksum

11. Specifications

Model(BD7660xVR)	Super High Resolution	
Image Sensor	1/3 Inch PIXIM DPS Sensor	Monochrome (B/W)
Scanning System	2:1 Interlace	
Effective Pixels NTSC	720(H) x 540(V)	768(H) x 494(V)
Effective Pixels PAL		752(H) x 582(V)
Video Output	Composite : 1.0V p-p, 75 Ω	
Sync. System	Internal Sync	
Electronic Shutter Speed NTSC	32x~2x, 1/60~1/30, 720 sec	1/60~1/100,000 sec
Electronic Shutter Speed PAL	32x~2x, 1/50~1/30, 720 sec	1/50~1/100,000 sec
WDR	102dB(Typical) / 120dB(Max)	-
Digital Noise Reduction	ON/OFF	-
Luminance S/N Ratio	More than 50dB (AGC OFF)	48dB Min. (AGC OFF)
Resolution	Max. 530TV Lines	600TV Lines
Sensitivity	0.1 Lux (B/W) / 0 Lux (IR LED On)	
Lens	DC Iris Vari-focal Lens (f=3.8~9.5mm F1.2)	
White Balance	ATWDesat(2,000°K ~11,000°K) AWB HOLD / MANUAL	
Auto Gain Control	Auto / Zone Adjustable	ON
Back Light Compensation		OFF
Flickerless	Auto-FFF ON/OFF	OFF
Privacy Zone	ON/OFF(12 Programmable)	-
Sharpness	Level Adjustable	-
IR LED Illuminator & IR Visible Range	BD7660xVR : IR LED 112EA (850nm 30°C) & 60m	
	BD7661xVR : IR LED 112EA + IR LED 206EA (850nm 30°C) & 80m	
Operating Temperature	-10°C~+45°C / -30°C~+50°C (with Fan & Heater)	
Storage Temperature	-20°C~+65°C	
Power Consumption	12V DC(9.6V~13.2V), Max.BD7660xVR_30W	
Dimensions (WxHxD)	396(W) x 351 (H)x 439(D)mm	
Weight	8kg	



NOTE



NOTE

WEATHERPROOF IR

DAY & NIGHT IR CAMERA SERIES

DIGITAL

Color Video Camera Series

**Design and specifications are
subject to change without notice.**

P/N : 3810-0147A (Ver.0808E)

