HDSDI

HIGH DEFINITION SERIAL DIGITAL INTERFACE
OSD CONTROL – USER'S GUIDE

● **HD-SDI (1080P, 720P, 720P CROP)**

1/2.9 inch SONY CMOS (IMX-222) / 1 Lux at F1.2 / 0.1 Lux (B/W)

● **TRUE DAY & NIGHT (Option)**

This camera has a function that automa-tically 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.

● **DNR (DIGITAL NOISE REDUCTION)**

By using the DNR chip, 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.

● **WDR (WIDE DYNAMIC RANGE)**

By adopting a proprietary 1/2.9 inch SONY CMOS (IMX-222) chip,
the camera delivers clear, high quality pictures even in backlight, by increasing
exposure in dark areas while decreasing it in bright areas; a corrected image with
clear details results.

● **PRIVACY FUNCTION**

The PRIVACY function enables you to select and record only choosen area
among twenty-eight areas.

● **ADDITIONAL FUNCTION**

EXPOSURE, WHITE BAL, IMAGE, BACKLIGHT, DAY&NIGHT, DNR, MOTION
SERIAL, SYSTEM, EXIT Function are also available.

● **CONTROLLED OSD MENU**

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

Do not disassemble the camera.

There are no user-serviceable parts inside it.

Do not install the camera in extreme temperature conditions.

Do use the camera under conditions where temperatures exceed 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. It can cause malfunctions to occur.

Do not touch the front glass of the camera.

It is one of the most important parts of camera. Be careful it is not smudged by fingerprint.

Never keep the camera face to strong light directly.

It can damage the CMOS SENSOR.

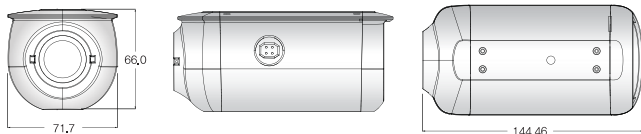**Do not drop the camera or subject it to shaking.**
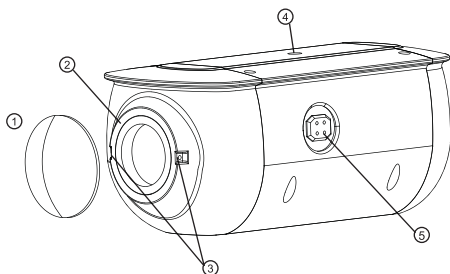
It can cause malfunctions to occur.

Note

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

DIMENSION

66.0

71.7

144.46

FRONT

① Protective Lens Cap

② CS-Mount Lens Adapter

③ BACK FOCUS Lock Screws
These are two screws used to adjust the back focus of the camera which is normally set on factory default. These must be loosened (using an L-wrench) before the camera can be focused. After readjusting, lock the screws into place.
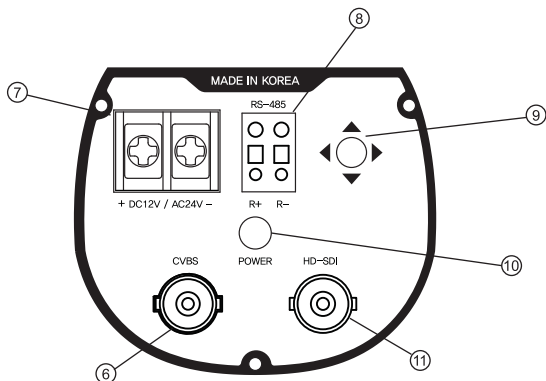
④ Tripod Mounting Holes
You can attach a mount to the camera from either the top or the bottom.

⑤ Auto Iris Lens Connector
When you use Auto Iris Lens, connect the lens plug to auto iris connector located on the side of the camera.

BACK

⑥ CVBS : It is a video analog BNC connector.

⑦ Power Input Terminal
Connects to the power source.

⑧ RS–485: This is the communication port to do the remote
control OSD menu.

⑨ Function Switch.

⑩ Power Lamp
The power lamp turns on when connected to a power source.

⑪ HD–SDI : It is HD–SDI video signal output BNC connector.

Please refer to the manual when connecting various instruments.

LENS

This camera is not supplied with a lens. Please purchase a lens that its your needs.

Notes : - If the lens has fingerprints or other objects on the lens the image quality
            might be affected.
          - A higher quality lens provides a better picture.

▶ Adjust the focus if the camera is out of focus for changing between daytime
   mode and nighttime mode.

1. Installing Auto Iris Lens

① Remove the protective cap and attach the lens into the camera by turning
   it in a clockwise direction.
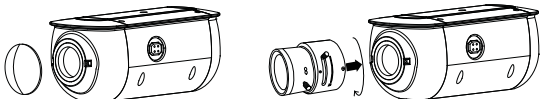
② Connect the lens plug to the auto iris connector on the side of the camera.
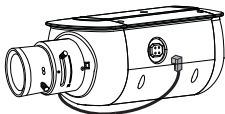
2. Installing a CS-mount Lens

Remove the protective cover and connect the lens into the camera by turning it
in a clockwise direction.

3. Installing a C-mount Lens

① Remove the protective cap and connect the c-mount adapter turning it in a clockwise direction.

② Connect the lens into the camera by turning it in a clockwise direction.
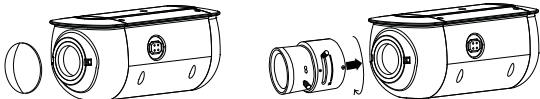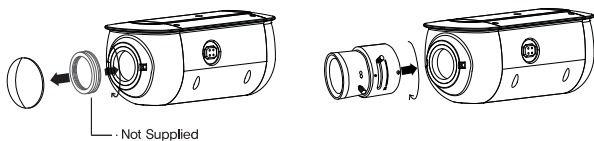

- Not Supplied

▶ How to make IRIS plug connector

Remove the insulation form the outer and inner lens cables as shown in the drawing.

approx.
0.3 inch (8mm)

approx.
0.08 inch (2mm)

outer

inner
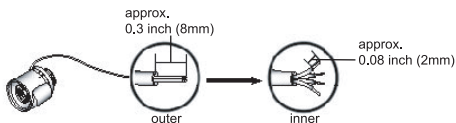
Remove the cover of the auto iris plug connector (supplied with the camera) and solder the lens cable to the pins as shown in the following configuration.

DC type
No.1 Pin Damping -
No.2 Pin Damping +
No.3 Pin Drive +
No.4 Pin Drive -

No.3 Pin
No.1 Pin
No.4 Pin
No.2 Pin

Lens cable
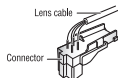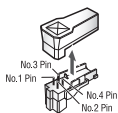
Connector

CONNECTING POWER

Different models have different power specifications, so please check
that you have the correct power source before making the connection.

1. AC/DC Dual Power

The camera has a common power input connector for both 12V DC and 24V AC.
The unit has a wide power tolerance, within DC 12V±10% or within AC 24V±10%

* The Power input is non polarized.
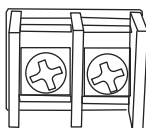
AC24V / DC12V
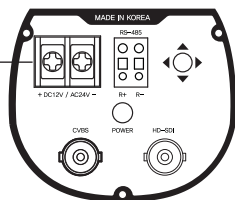
2. DC Power
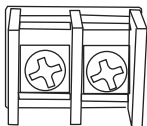
AC24V / DC12V
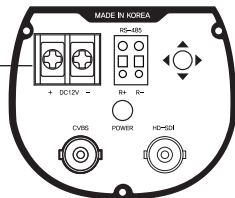
CONNECTING THE CAMERA TO THE MONITOR

1. Connect the VIDEO out jack from the camera to the video in jack on the monitor.
   Be sure the power is turned off before connecting the cable.

HD-SDI Monitor

▶ Connect to use a converter when connect
  HD-SDI output with general monitor.

Analog Monitor
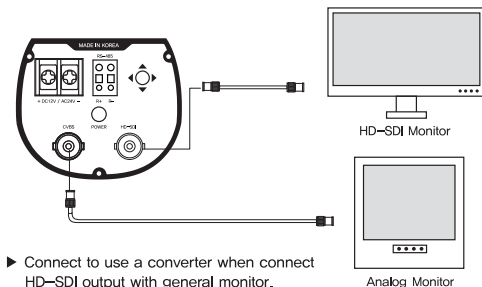
2. If using an intermediary device (DVR, VCR, etc.) between the camera and the monitor,
   please set it at Hi-Z and leave the monitor at 75Ω.

Intermediate
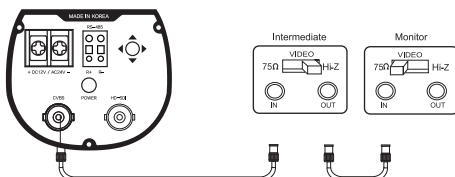
Monitor

▶ Video cable.
  The cable to connect a video output of the camera and the monitor is BNC coaxial cable same
  as the below. If the install distance between a camera and the monitor is over the max video
  transmission range, please use the separated video amplifier.

Max video transmission range	Recommended cable specification
100 ~140m	5C HFBT (75ohm)
200m	L-6CHD (75ohm) (SDI exclusive cable)

CONNECTING TO RS-485 CONTROL CABLE
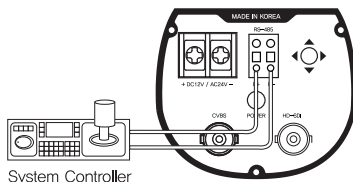
System Controller

Using a RS–485 communication, it will be able to control the OSD menu at the System Controller or DVR.

(1) The case which it controls from the PC
Using a RS–485 converter. It connects to RS–485 control cable outside camera and serial cable
EX) SERIAL PORT OF THE PC(COM1) → SERIAL CABLE → RS–485 CONVERTER → RS–485 CONTROL CABLE

(2) The case which it controls from the DVR or System Controller
It connects the RS–485 control cable in the connection terminal of 485 control boards which are connected with the DVR or System Controller.

485 Control Board Connection Port	RS–485 Control Port
(+) CONNECTION TERMINAL (R+)	485+
(–) CONNECTION TERMINAL (R–)	485–

▸ RS–485 Communication establishment initial value

Item	Camera ID	BAUD RATE	UART MODE	RET PKT
Initial value	0	9600	8–NONE–1	Not supported

NOTES

• When you construct external control systems for a camera control, please use to the PROTOCOL or PELCO–D PROTOCOL.

• When you connecting to RS–485 control cable, please peel off the outer skin inside the RS–485 control cable.

MENU

SETUP MENU	
EXPOSURE	SENS—UP BRIGHTNESS LENS AE MODE SHUTTER AGC DOUT SCALE RETURN
WHITE BAL	AUTO AUTOext PRESET MANUAL
IMAGE	SHARPNESS DEFOG D—ZOOM MIRROR FLIP FREEZE PRIVACY SHADING COLOR GAIN ACE RETURN
BACKLIGHT	OFF WDR BLC HLM
DAY&NIGHT	MODE (AUTO, COLOR, B/W) RETURN
DNR	OFF HIGH MIDDLE LOW
MOTION	OFF SET
SERIAL	CAM ID ID DISPLAY BAUDRATE RETURN
SYSTEM	DEFECT GAMMA OUTPUT MODE CVBS FRAME RATE LANGUAGE FOCUS ADJ FACTORY SET RETURN
EXIT	

Above specifications may be changed without any notice.

SETTINGS

Settings can be made using the 5 buttons located on the back of the camera.
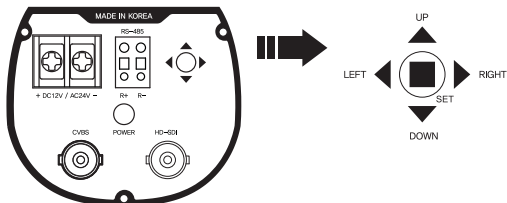
Note

• 'MANUAL' menu for fixed lens models, 'DC' menu for auto iris models.

• Box type camera have both Lens menu.

1. Please press the SET button

   • Settings can now be made. The SET menu is displayed on the monitor.
   • To run the OSD menu, please press and hold the SET button for three seconds.

2. Please select any function you wish to activate by pushing the button Up or Down

   • The cursor position will appear green on your screen.
   You can push the button Up or Down to change function you wish to change.

MENU

```
            MENU
      ☀ EXPOSURE          ↵
      ◐ WHITE BAL         AUTO
      ▦ IMAGE             ↵
      ◑ BACKLIGHT         OFF
      ❄ DAY&NIGHT         ↵
      ▦ DNR               MIDDLE
      ▣ MOTION            OFF
      ◉ SERIAL            ↵
      ☀ SYSTEM            ↵
      ▣ EXIT
```

Select any function you wish to operate by pushing the joystick Up or Down.

Modes can be changed pushing the joystick Right or Left.
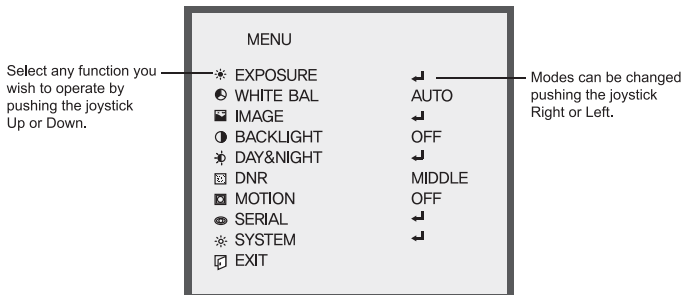
3. Please press the button Right or Left if you wish to change mode.
   • When the button is pressed Right or Left, available values and mode are displayed in order. Please keep press the button until you get the mode you wish.

4. Please select "EXIT" and then press the button to finish the setting.

SETUP

• EXPOSURE, WHITE BAL, IMAGE, BACKLIGHT, DAY&NIGHT, DNR, MOTION SERIAL, SYSTEM, EXIT control can be selected.

• When the MAIN MENU is on the screen, please position the cursor to SETUP by using the button. And then press the button.

EXPOSURE

• When the SETUP menu screen is displayed, select EXPOSURE by using the Up and Down buttons so that arrow indicates EXPOSURE.
• Select a desired mode using the Right and Left buttons.

```
                    MENU

        ☀ EXPOSURE          ↵
        ◐ WHITE BAL         AUTO
        ▤ IMAGE             ↵
        ◑ BACKLIGHT         OFF
        ◑ DAY&NIGHT         ↵
        ▨ DNR               MIDDLE
        ▣ MOTION            OFF
        ◉ SERIAL            ↵
        ☀ SYSTEM            ↵
        ▨ EXIT
```

FIX	V/F
EXPOSURE	EXPOSURE

FIX	V/F
EXPOSURE		EXPOSURE	
SENS–UP	OFF	SENS–UP	OFF
BRIGHTNESS	┃▥▥┃▥▥┃	BRIGHTNESS	┃▥▥┃▥▥┃
LENS	MANUAL	LENS	DC
AE MODE	NORMAL	AE MODE	OUTDOOR
SHUTTER	AUTO	SHUTTER	AUTO
AGC	┃▥▥▥▥▥┃	AGC	┃▥▥▥▥▥┃
DOUT SCALE	COMP	DOUT SCALE	COMP
RETURN		RETURN	
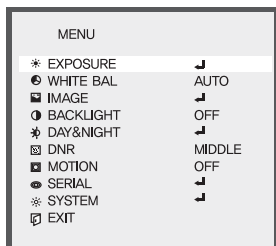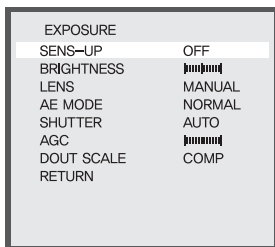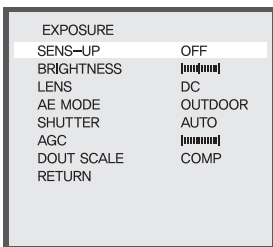
• SENS_UP : OFF / x2 / x3 / x4 / x5 / x6 / x7 / x8

  ▪ Sens-up is realized in the most low illumination quality and it provides the image without a noise at the low illumination quality.
  ▪ When it is night or dark, the camera automatically detects the light level and maintains a clear picture if this mode is activated.
  ▪ When "SENS_UP" is on, shutter cannot be adjusted.

- BRIGHTNESS : Left Key (Level DECREMENT), Right Key (Level INCREMENT)
- LENS : When using BUILT-IN LENS, the type of the lens is able to fix. (DC / MANUAL)
- AE MODE : Manual Lens mode (you can select NORMAL / DEBLUR)
  DC Lens mode (you can select INDOOR / OUTDOOR / DEBLUR)
- SHUTTER : - You can select either auto or manual shutter.
  (1/30, 1/60, 1/120, 1/240, 1/500, 1/1000, 1/2000, 1/4000, 1/8000, 1/16000, 1/30000, 1/60000)
  - Shutter is set to "Manual" when DC Lens is selected
  - Shutter is set to "Auto" when Manual Lens is selected
- AGC (Auto Gain Control) : The higher the gain level, the brighter the screen - but the higher the noise.
- DOUT SCALE :
  - You Can Select FULL / COMP / USER
  - The available image to level is (0~20)

WHITE BAL

- Use the White Balance function to adjust the screen color.
- When the SETUP menu screen is displayed, select 'White Bal.' by using the Up and Down buttons so that the arrow indicates 'White Bal.' .
- Select a desired mode using the Right and Left buttons.

```
           MENU
  ☀ EXPOSURE        ↵
  ◑ WHITE BAL       AUTO
  ▣ IMAGE           ↵
  ◑ BACKLIGHT       OFF
  ✷ DAY&NIGHT       ↵
  ▨ DNR             MIDDLE
  ▣ MOTION          OFF
  ◉ SERIAL          ↵
  ☀ SYSTEM          ↵
  ▥ EXIT
```
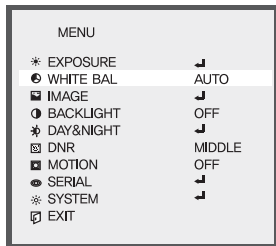
- AUTO : Default - This function continuously adjusts the white balance automatically to adapt to changes in lighting conditions.
- AUTOext : It is a mode to do a halogen and the special lighting to White detection.
- PRESET : This function adjusts the white balance regardless of the subject conditions.

MENU

☼	EXPOSURE	↵
◔	WHITE BAL	MANUAL ↵
▦	IMAGE	↵
◑	BACKLIGHT	OFF
✳	DAY&NIGHT	↵
▦	DNR	MIDDLE
▣	MOTION	OFF
◉	SERIAL	↵
☼	SYSTEM	↵
🗓	EXIT	

MANUAL

KELVIN	MIDDLE
R-GAIN	|◗◖◗◖◗◖|
B-GAIN	|◗◖◗◖◗◖|
RETURN	

• MANUAL - KELVIN ：LOW / MIDDLE / HIGH
- R-GAIN ：Left Key (Level DECREMENT), Right Key (Level INCREMENT)
- B-GAIN ：Left Key (Level DECREMENT), Right Key (Level INCREMENT)

IMAGE

• SHARPNESS, DEFOG, D-ZOOM, MIRROR, FLIP, FREEZE, PRIVACY, SHADING, COLOR GAIN, ACE, RETURN control can be selected.

MENU

☼	EXPOSURE	↵
◔	WHITE BAL	AUTO
▦	IMAGE	↵
◑	BACKLIGHT	OFF
✳	DAY&NIGHT	↵
▦	DNR	MIDDLE
▣	MOTION	OFF
◉	SERIAL	↵
☼	SYSTEM	↵
🗓	EXIT	

IMAGE

SHARPNESS	6
DEFOG	OFF
D-ZOOM	0
MIRROR	OFF
FLIP	OFF
FREEZE	OFF
PRIVACY	OFF
SHADING	OFF
COLOR GAIN	|◗◖◗◖◗◖|
ACE	OFF
RETURN	

• SHARPNESS ：Control 0 to 10 by right and left button.

IMAGE

SHARPNESS	6
DEFOG	SET ↵
D—ZOOM	0
MIRROR	OFF
FLIP	OFF
FREEZE	OFF
PRIVACY	OFF
SHADING	OFF
COLOR GAIN	[ımı|ımıı]
ACE	OFF
RETURN	

DEFOG

MODE	AUTO
LEVEL	MIDDLE
RETURN	

- DEFOG : MODE (you can select AUTO / MANUAL), LEVEL (you can select LOW / MIDDLE / HIGH)
- DZOOM : You can use a digital zoom of 0 ～ 127
- MIRROR / FLIP : You can select function by using LEFT or RIGHT button.

OFF   MIRROR (ON)   FLIP (ON)

- FREEZE : The video can be stopped.

IMAGE

SHARPNESS	6
DEFOG	OFF
D—ZOOM	0
MIRROR	OFF
FLIP	OFF
FREEZE	OFF
PRIVACY	SET ↵
SHADING	OFF
COLOR GAIN	[ımı|ımıı]
ACE	OFF
RETURN	

PRIVACY

ZONE NUM	0
ZONE DISP	ON
H—POS	2
V—POS	1
H—SIZE	14
V—SIZE	8
RETURN	

- PRIVACY : This modes conceals the areas you do not wish to appear on the screen.

  - ZONE NUM : Select the region to apply Privacy (0～15)
  - ZONE DISP : you can select (ON/OFF)
  - H—POS : You can move the position of the range that you selected in the ZONE NUM to Left and Right.
  - V—POS : You can move the position of the range that you selected in the ZONE NUM to Up and Down.
  - H—SIZE : You can increase and decrease the size of the range that you selected in the ZONE NUM horizontally.
  - V—SIZE : You can increase and decrease the size of the range that you selected in the ZONE NUM vertically.

```
        IMAGE                              SHADING
  SHARPNESS        6                  WEIGHT          100%
  DEFOG            OFF                RETURN
  D-ZOOM           0
  MIRROR           OFF
  FLIP             OFF
  FREEZE           OFF
  PRIVACY          OFF
  SHADING          SET ↵
  COLOR GAIN       |IIII|IIII|
  ACE              OFF
  RETURN
```

• SHADING : When using wide angle lens, you can compensate darkness of corner on the screen.

• COLOR GAIN: You can set the level point of COLOR GAIN

```
        IMAGE
  SHARPNESS        6
  DEFOG            OFF
  D-ZOOM           0
  MIRROR           OFF
  FLIP             OFF
  FREEZE           OFF
  PRIVACY          OFF
  SHADING          OFF
  COLOR GAIN       |IIII|IIII|
  ACE              OFF
  RETURN
```

• ACE (Adaptive Color & Contrast Enhancement) : OFF, LOW, MIDDLE, HIGH

ACE black performs an image Enhancement processing to enhance visibility of an image by changing the brightness values to the level that people can recognize the change. This processing technique is equivalent to the dynamic range reduction technique. Which converts the HDR (High Dynamic Range) into the restricted LDR (Low Dynamic Range)

BLACKLIGHT

```
              MENU

   ☀ EXPOSURE              ↵
   ☽ WHITE BAL             AUTO
   ▣ IMAGE                 ↵
   ◑ BACKLIGHT             OFF
   ✸ DAY&NIGHT             ↵
   ▨ DNR                   MIDDLE
   ▶ MOTION                OFF
   ◉ SERIAL                ↵
   ☀ SYSTEM                ↵
   ▱ EXIT
```

```
              MENU

   ☀ EXPOSURE              ↵
   ☽ WHITE BAL             AUTO
   ▣ IMAGE                 ↵
   ◑ BACKLIGHT             HLM ↵
   ✸ DAY&NIGHT             ↵
   ▨ DNR                   MIDDLE
   ▶ MOTION                OFF
   ◉ SERIAL                ↵
   ◉ SPECIAL               ↵
   ☀ SYSTEM                ↵
   ▱ EXIT
```

```
              HLM

   LEVEL            |▪▪▪|▪▪▪|
   MODE                 NIGHT ONLY
   RETURN
```
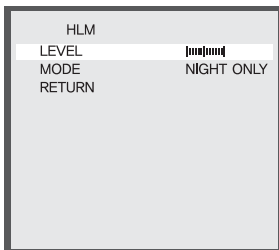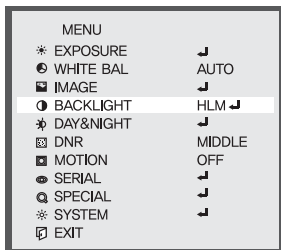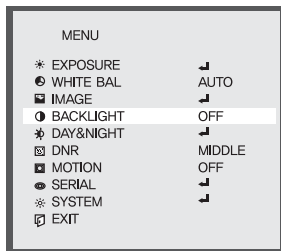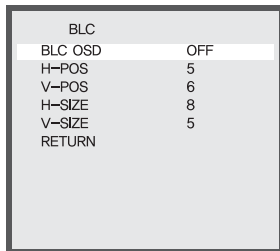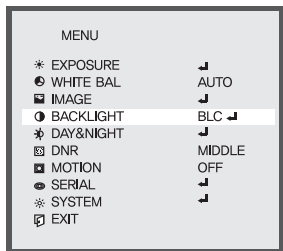
• HLM (High Light Mask)
  Function is being prevented against headlights of vehicle effectively.
  it is the most suitable function to see license plates at night.

    - LEVEL: You can set the level point of HLM
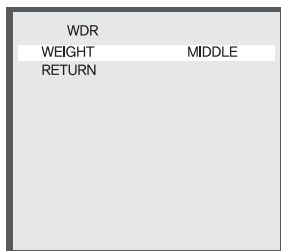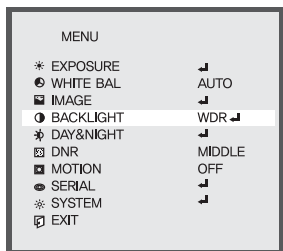   - MODE : you can select (NIGHT ONLY / ALL DAY)

```
        MENU
  ☀ EXPOSURE        ↵
  ◐ WHITE BAL       AUTO
  ▣ IMAGE           ↵
  ▣ BACKLIGHT       BLC ↵
  ✳ DAY&NIGHT       ↵
  ▨ DNR             MIDDLE
  ▣ MOTION          OFF
  ◉ SERIAL          ↵
  ☼ SYSTEM          ↵
  ▣ EXIT
```

```
             BLC
    BLC OSD            OFF
    H─POS              5
    V─POS              6
    H─SIZE             8
    V─SIZE             5
    RETURN
```

• BLC (Backlight Compensation)
  When there is a strong backlight behind the object, clear images of the background as well as the
  object can still be obtained by using the BLC function.
    ▪ BLC OSD：The area to apply the BLC function is shown in BOX shape.
    ▪ H─POS：You can move the range to apply BLC to Left and Right
    ▪ V─POS：You can move the range to apply BLC to Up and Down
    ▪ H─SIZE：You can increase and decrease the size of the range to apply BLC horizontally.
    ▪ V─SIZE：You can increase and decrease the size of the range to apply BLC vertically.

```
        MENU
  ☀ EXPOSURE        ↵
  ◐ WHITE BAL       AUTO
  ▣ IMAGE           ↵
  ◐ BACKLIGHT       WDR ↵
  ✳ DAY&NIGHT       ↵
  ▨ DNR             MIDDLE
  ▣ MOTION          OFF
  ◉ SERIAL          ↵
  ☼ SYSTEM          ↵
  ▣ EXIT
```

```
            WDR
    WEIGHT            MIDDLE
    RETURN
```

• WDR (Wide Dynamic Range)：OFF / LOW / MIDDLE / HIGH
  Realize the improved backlight compensation function more
  than existed WDR (Wide Dynamic Range) with a fusion ratio
  of the optimum by pixel, when they composite both a shutter
  of high speed at the light area and the shutter of low speed
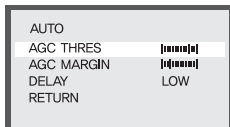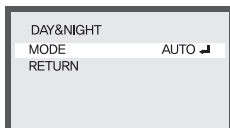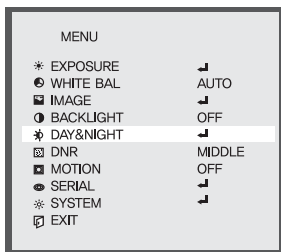 at the dark area.

WDR (ON)   WDR (OFF)

DAY & NIGHT

```
        MENU

  ☀ EXPOSURE          ↵
  ◐ WHITE BAL         AUTO
  ▦ IMAGE             ↵
  ◑ BACKLIGHT         OFF
  ❄ DAY&NIGHT         ↵
  ▨ DNR               MIDDLE
  ▶ MOTION            OFF
  ◉ SERIAL            ↵
  ☀ SYSTEM            ↵
  ⊡ EXIT
```

```
   DAY&NIGHT
   MODE               AUTO ↵
   RETURN
```

```
   AUTO
   AGC THRES          |□□□□|
   AGC MARGIN         |□|□□□|
   DELAY              LOW
   RETURN
```
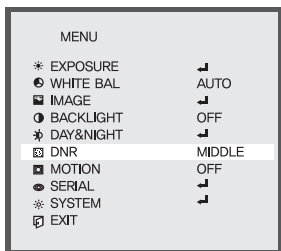
- AUTO ： The camera will automatically show color image in high lux and black / white image in low lux.
- COLOR ： This picture is always displayed in color.
- B&W ： The picture is always displayed in black and white. You can turn on or off the burst signal on B/W mode.

DNR

- DNR (Digital Noise Reduction)

  Improve S/N ratio and more clean the low illumination quality and can be monitoring at night clearly without the image drag and noise phenomenon.

```
        MENU

  ☀ EXPOSURE          ↵
  ◐ WHITE BAL         AUTO
  ▦ IMAGE             ↵
  ◑ BACKLIGHT         OFF
  ❄ DAY&NIGHT         ↵
  ▨ DNR               MIDDLE
  ▶ MOTION            OFF
  ◉ SERIAL            ↵
  ☀ SYSTEM            ↵
  ⊡ EXIT
```
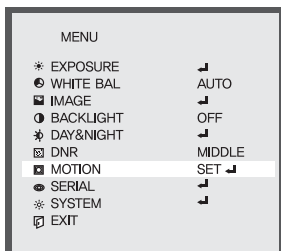
- OFF ： DNR function does not operate.
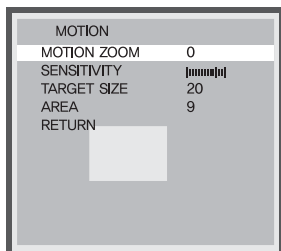- LOW / MIDDLE / HIGH ： You can select 'LOW', 'MIDDLE' or 'HIGH' menu as DNR condition.

MOTION

Function of MOTION can designate the range of the user to detect the movement on the
screen and adjust the size of the area. So, you can monitor the movement of an object on the given
region more efficiently

```
          MENU

  ☀ EXPOSURE          ↵
  ◑ WHITE BAL         AUTO
  ▨ IMAGE             ↵
  ◐ BACKLIGHT         OFF
  ☽ DAY&NIGHT         ↵
  ▨ DNR               MIDDLE
  ▨ MOTION            SET ↵
  ◉ SERIAL            ↵
  ☀ SYSTEM            ↵
  ▨ EXIT
```

• OFF : MOTION mode is cancelled.
• SET : Any motion in the selected areas is observed.

```
     MOTION

  MOTION ZOOM       0
  SENSITIVITY       |▮▮▮▮▮▮|▮|
  TARGET SIZE       20
  AREA              9
  RETURN
```

- MOTION ZOOM : You could set from "0" to "99" and D-Zoom is operated to the setting value when
                the moving is detected.
- SENSITIVITY : Set the sensitivity of the moving detection.
- TARGET SIZE : Set the target thing size to detect the moving. (0~255)
- PILING UP (SEARCH function) : It meets the operating conditions of the searchlight if the set value is
                same value or more by counting movements per second
- PAUSE TIME (SEARCH function) : If there is no movement during the setting value after the detection,
                it clears the count value of PILING UP and stops the searchlight operating.
- AREA : Select the range to apply motion (16 Zone)

SERIAL

```
         MENU
  ☀ EXPOSURE          ↵
  ⟳ WHITE BAL         AUTO
  ▣ IMAGE             ↵
  ◑ BACKLIGHT         OFF
  ⟐ DAY&NIGHT         ↵
  ▨ DNR               MIDDLE
  ▣ MOTION            OFF
  ◉ SERIAL            ↵
  ☀ SYSTEM            ↵
  ▨ EXIT
```

```
         SERIAL
     CAM ID          0
     ID DISPLAY      OFF
     BAUDRATE        9600
     RETURN
```

• CAM ID : You can select camera ID from 0 to 255 when using remote control.
• ID DISPLAY : You can select ID ON or OFF
• BAUDRATE : You can select 2400 / 4800 / 9600 / 57600 / 115200 bps. Support "pel-D protocol"

SYSTEM

```
         MENU
  ☀ EXPOSURE          ↵
  ⟳ WHITE BAL         AUTO
  ▣ IMAGE             ↵
  ◑ BACKLIGHT         OFF
  ⟐ DAY&NIGHT         ↵
  ▨ DNR               MIDDLE
  ▣ MOTION            OFF
  ◉ SERIAL            ↵
  ☀ SYSTEM            ↵
  ▨ EXIT
```

```
         SYSTEM
     DEFECT          OFF
     GAMMA           0.55
     OUTPUT MODE     1080P
     CVBS            NTSC
     FRAME RATE      30
     LANGUAGE        ENG
     FOCUS ADJ       OFF
     FACTORY SET     ON
     RETURN
```

• DEFECT DET
    - OFF : DEFECT DET Mode is off.
    - ON : Close the lens to block the light.
    - Adjust left & right buttons and press "SET" button to automatically start the mode.
• GAMMA SET : You Can Select (0.45 / 0.50 / 0.55 / 0.60 / 0.65)

• OUTPUT MODE : You can select (1080P / 720P / 720P CROP)

• CVBS : you can select (NTSC / PAL)

• FRAME RATE : 1080P, 720P : Set output frame to 30 or 25. (Be set NTSC or PAL mode)

                720P CROP : Set output frame to 60 or 50. (Be set NTSC or PAL mode)

• LANGUAGE : ENG, CHN, CHN(S), JPN, KOR,

• FOCUS ADJ

```
   SYSTEM
 FOCUS ADJ       ON
 FACTORY SET     ON
 RETURN          ON
```
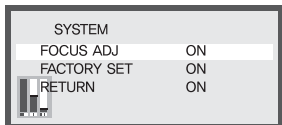
▶ Left box : Focus of the area of the low illumination

▶ Middle box : Focus of the area of the intermediate illumination

▶ Right box : Focus of the area of the high illumination

   - If you move slowly lens, the green box will begin to appear

   - When you turn the lens for the green box not to be visible, Focus is the right.

   - It is possible only one box of three boxes is right.

• FACTORY SET : Factory initialize

EXIT

• Saves all the setting menus and then exits.

If there are problems in operation, please refer to the items below. If the problem persists, please contact the agent you purchased this product from.

Nothing appears on the screen.

• Please check the power connection.
• Please check the video signal line connection.

The video image is not clear.

• Please check if the lens is clean.
  Please clean the lens with a clean cloth or brush.
• Please adjust the contrast feature of the monitor.
• Please make sure that the screen is not exposed directly to a bright light.
  Please move the camera if necessary.
• Please readjust the back focus of the camera.

The screen is dark.

• Please adjust the contrast feature of the monitor.
• If you have an intermediate device, set the 75Ω/Hi-z properly, and check the terminals.
• Please check if an auto iris lens is being used and adjust the brightness level.

The MOTION DETECTION function is not working.

• Please check if 'MOTION DETECTION' mode is turned on.
• Please check if the MD SENSITIVITY is too low.
• Please check the setting of the MD AREA.

Colors are not quite right.

• Please check the 'WHITE BAL' setting.

The screen is flickering.

• Please check if the camera is facing directly into sunlight or fluorescent light.
• Please check if an auto iris lens is being used.
• Please check the connection of the lens connector cable.

There is a problem with the camera operation.
The camera surface is too hot and black stripes appear on the screen.

• Please check if an appropriate power source to the camera complies with the manufacturer's standard requirement, or if the voltage keeps changing.

SPECIFICATION

RESOLUTION	1080P, 720P, 720P CROP
SENSOR	1/2.9 inch SONY CMOS (IMX-222)
TOTAL PIXELS	2000(H) x 1241(V) = 2,482,000
EFFECTIVE PIXELS	1944(H) X 1092(V) = 2,122,648
SCANNING SYSTEM	PROGRESSIVE
S/N (Y SIGNAL)	More than 52 dB (AGC Off)
VIDEO OUTPUT	SMPTE292M (HD-SDI) / (CVBS: 1.0Vp-p (75ohm) : Option)
MINI.ILLUMINATION	1 Lux at F1.2 / 0.1 Lux (B/W)
WHITE BALANCE	AUTO / AUTO EXT / PRESET / MANUAL
SHUTTER	AUTO / MANUAL (1/30sec ~ 1/60,000sec)
BRIGHTNESS	ADJUSTABLE (0 ~ 20 STEP)
SENS_UP	OFF / X2 / X3 / X4 / X5 / X6 / X7 / X8
DNR	OFF / LOW / MIDDLE / HIGH
BACKLIGHT	OFF / WDR / BLC / HLM
ACE	OFF / LOW / MIDDLE / HIGH
DAY & NIGHT	AUTO (Day <--> Night TIME Change) , COLOR , B/W, EXTERN, MDIR (SEARCH Option)
PRIVACY	OFF / ON (16 Zone)
MOTION	OFF / SET
D.ZOOM	0 ~ 127
FLIP	OFF / ON
FREEZE	OFF / ON
LANGUAGE	ENG, CHN, CHN(S), JPN, KOR
SHARPNESS	ADJUSTABLE (0 ~ 10 STEP)
DEFOG	OFF / SET
COMM	RS-485 (PELCO-D)
OPERATING TEMPERATURE / HUMIDITY	-10'C~+50'C / 30%~80% RH
STORAGE TEMPERATURE / HUMIDITY	-20'C~+60'C / 20%~90% RH
POWER	DC12V [AC24V / DC12V DualPower (option)]
SIGNAL TRANSMISSION	The distant difference is occurred according to cable option and other circumstances. (based on 5C-HFBT : 200M)

▶ Above specifications may be changed without any notice.