

# Full HD 1080P AHD Zoom Camera

TWHDL5210



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

## Safety Warning

### 1. Read this manual carefully before installing the unit

Please read this manual first for correct installation and operation.

### 2. Never install the camera on a ceiling that cannot hold its weight

The product may fall down and cause damages.

### 3. Never install the camera near electric or magnetic fields

Install the camera away from TV, radio transmitter, magnet, electric motor, transformer, audio speakers since the magnetic fields generate from above devices would distort the video image.

### 4. Never install or use the camera in areas exposed to water, oil or gas

The water, oil or gas may result in operation failure, electric shock or fire. Do not use this unit near water-for example, near a bath tub, wash bowl, kitchen sink, or laundry tub, in a wet basement, near a swimming pool, in an unprotected outdoor installation, or any area which is classified as a wet location.

### 5. Never face the camera toward the sun

Direct sunlight or severe ray may cause fatal damage to sensor and internal circuit.

### 6. Power Cord Protection

Touching the wet power cord with hands or touching the power cord with wet hands may result in electric shock. Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, playing particular attention to cords and plugs, convenience receptacles, and the point where they exit from the appliance.

### 7. Attachments

Do not use attachment not recommended by the product manufacturer as they may cause hazards.

### 8. Object and Liquid Entry

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

### 9. Do not operate the camera in environments where the temperature, humidity or power source is beyond the specified ones

Use the camera in suitable environments where the temperature is within -10°C~50°C and humidity below 80%. Use the input power source as this instruction indicated.

## **10. Cleaning**

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

## **11. Never disassemble the camera nor put impurities in it**

Disassembly or impurities may result in trouble or fire.

## **12. Stop using when the product emits smoke or abnormal heat**

## **13. Servicing**

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

## **14. Retain Instructions**

THE SAFETY AND OPERATING INSTRUCTIONS SHOULD BE RETAINED FOR FUTURE REFERENCE.

### **NOTE:**

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

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## 1. CAMERA

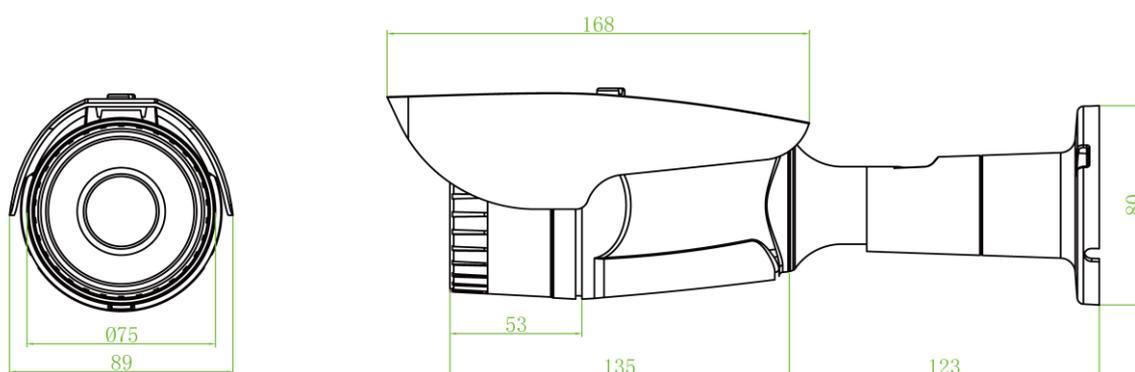
### 1.1 Feature

- 1920(H) x 1080(V) (AHD) Zoom Camera
- 1/3" Sony 2.0 M STARVIS CMOS Sensor
- Color: 0.02Lux@F1.8, B/W: 0.005Lux@F1.8, IR ON: 0Lux@F1.8
- Optical 10X Zoom
- Push AF & Auto IRIS Zoom Lens
- Simultaneous Video Output: AHD / Composite BNC
- OSD Menu Control
- Powerful WDR & Anti-Headlight (HLC)
- Fog Reduction & 3D/2D Noise Reduction

### 1.2 List of Contents

- Camera Unit
- User manual

### 1.3 Dimensions



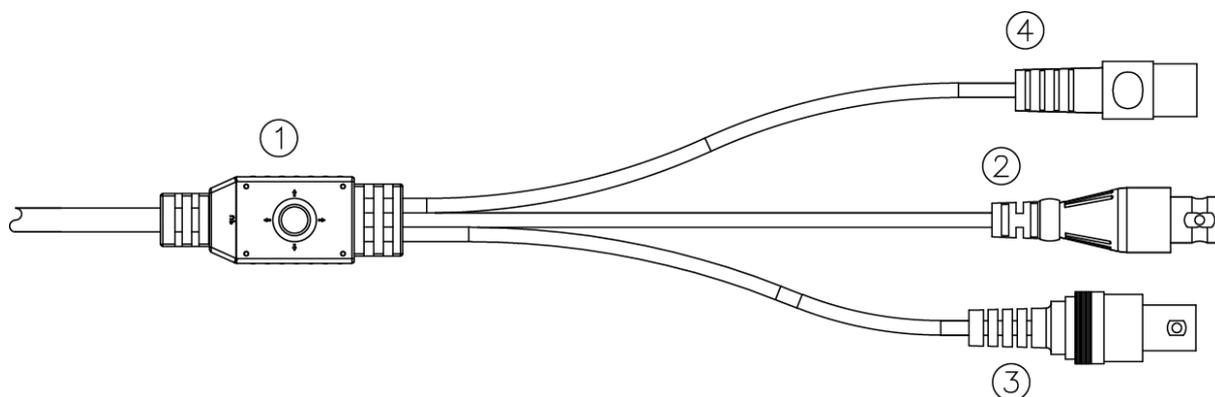
(Unit: mm)

## 1.4 Specification

Video System	PAL / NTSC Selectable
Image Sensor	1/3" Sony 2.0 M STARVIS CMOS Sensor
Resolution	1920(H)x1080(V)
Frame Rate	1920x1080p@25/30fps
SDI Standards	AHD
Minimum Illumination	Color: 0.02Lux@F1.8, B/W: 0.005Lux@F1.8, IR ON: 0Lux@F1.8
Wide Dynamic Range	120dB
Digital Video Output	AHD 1080p
Analog Video Output	CVBS (1.0Vp-p Composite, 75Ω)
Mechanical IR Cut Filter (ICR)	Automatically Switches (Switching Lux Level can be adjusted)
IR LED ; Working Distance	30 units (6pcs High Power); 20~30m
Audio	N/A
OSD Menu	OSD Control / CoC
Title	TITLE (LOCATION)
Day&Night Mode	COLOR / B&W / AUTO / EXTERNAL
Manual Electronic Shutter	AUTO: 1/25(30)~1/30, 000 Sec, Flickerless; MANUAL: 1/25(30), 1/50(60), 1/100(120), 1/240, 1/500, 1/1000, 1/2000, 1/4000, 1/8000, 1/16000, 1/30000 Sec.
Automatic Gain Control	0~20 steps
White Balance	AWB / ATW / PWB (Push Lock) / MANUAL
WDR; BLC; HLC	HIGH (Max 90dB) / MIDDLE / LOW / OFF ; Program ; ON/OFF
Flickerless	PAL 50Hz / NTSC 60Hz / OFF
Fog Reduction	Auto/Manual/Off ; Level: High/Middle/Low
Dynamic Noise Reduction	SMART / 2DNR / 3DNR
Sense Up	ON (x2, x4, x8, x16, x32) / OFF
Digital Image Stabilizer	N/A
Language	ENGLISH, JAPANESE, TRADITIONAL CHINESE, SIMPLIFIED CHINESE
E-Zoom	8x
Image Effects	SHARPNESS / SATURATION / GAMMA / MIRROR / FLIP / BLACK LEVEL
Privacy Zone Masks	16 Zones Programmable
Motion Detection	ON: Sensitivity, Programmable/OFF
Camera Control Interface	CoC
Lens	10X Optical Zoom f5mm(Wide)~50mm(Tele), F1.8 to F3.0
Angle of View	H:49.38° (Wide)~5.30° (Tele)
Minimum Working Distance	1m
Focusing System	Smart Zoom & Auto Focus
Water Resistance	IP66
Max Breaking Strength	---
Power Supply; Consumption	12Vdc, Option: PoC; 3.36W
Operation ; Storage Temperature	-10°C~50°C ; -20°C~60°C
Operation ; Storage Humidity	Maximum: RH80% ; RH90%
Dimensions	89(DIA)x168mm
Net weight	700g

Subject to change without notice.

## 1.5 Camera Parts



① **OSD Control Buttons (depends on model)**

ENTER button  
UP & DOWN buttons  
LEFT & RIGHT buttons

② **AHD Cable**

For AHD signal output, it supports Power over Coax (Option) technology.

③ **Video Out (BNC Connector)**

For analog composite video TV signal output.

**Note: Please DO NOT connect POWER UNIT to this connector as it will cause the output function DAMAGE.**

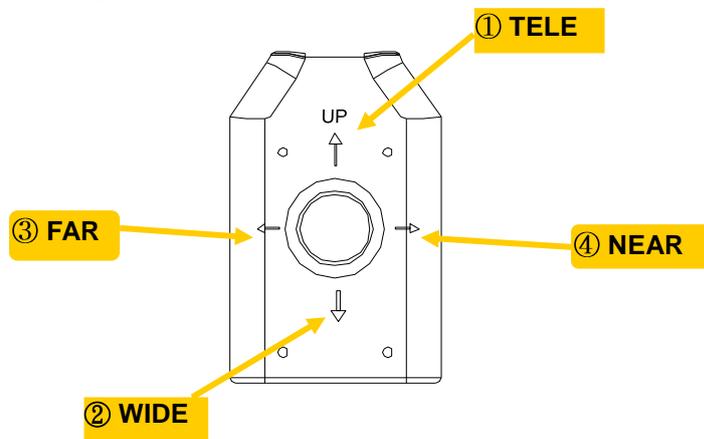
④ **Power Input: DC**

Connect to the power supply of 12Vdc.

**Note: Connectors may vary depending on model.**

## \*To Use Motorized Zoom via OSD Control Buttons: (For MV models only)

Please **DO NOT** Enter OSD. If you have accessed the OSD menu, please **EXIT** before using the motorized zoom function. Zoom and Focus functions can be operated either by **clicking** or **long pressing** the corresponding buttons.



- ① **TELE**  
Use this button to **Zoom IN**.
- ② **WIDE**  
Use this button to **Zoom OUT**.
- ③ **FAR**  
Use this button for **Manual Focus "FAR"**.
- ④ **NEAR**  
Use this button for **Manual Focus "NEAR"**.

## 2. Camera OSD

To operate the camera OSD setting, use the control key pad to control it. For some models, you might need to open the control panel case to access the control key panel. Press the **Enter** button which in the center of the control panel to bring up the "MENU" on the TV/Monitor screen as below. Please check the OSD content tables to find out the function you need.

**\*Note: Function Names and Default Values may vary depending on models.**



### Menu

<b>MENU</b>	<b>Default Value</b>	<b>Alternative Options</b>
LENS	AUTO IRIS<↓	MANUAL<↓
EXPOSURE	<↓	See <b>Exposure</b> Table
HDR/BLC	D-WDR<↓	OFF, HDR<↓, HLC<↓, BLC<↓
WHITE BAL	AWB	PUSH LOCK<↓, MANUAL<↓, ATW
DNR	<↓	See <b>DNR</b> Table
DAY/NIGHT	AUTO<↓	B/W<↓, COLOR, EXTERNAL<↓ or IR SYNC<↓
IMAGE	<↓	See <b>Image</b> Table
EFFECT	<↓	See <b>Effect</b> Table
SYSTEM	<↓	See <b>System</b> Table
EXIT	<↓	

### Exposure

<b>EXPOSURE</b>	<b>Default Value</b>
MODE	INDOOR
BRIGHTNESS	7
FLICKER	OFF
SHUTTER	AUTO<↓
SENSE UP	OFF
AGC MAX	18
RETURN	<↓

### DNR

<b>DNR</b>	<b>Default Value</b>
SMART DNR	ON
2DNR	LOW
3DNR	OFF
RETURN	<↓

### Image

<b>IMAGE</b>	<b>Default Value</b>
SHARPNESS	3
LOW LUX SHARP	2

SATURATION	10
GAMMA	0.55
MIRROR	OFF
FLIP	OFF
BLACK LEVEL	10
RETURN	<⏪

## Effect

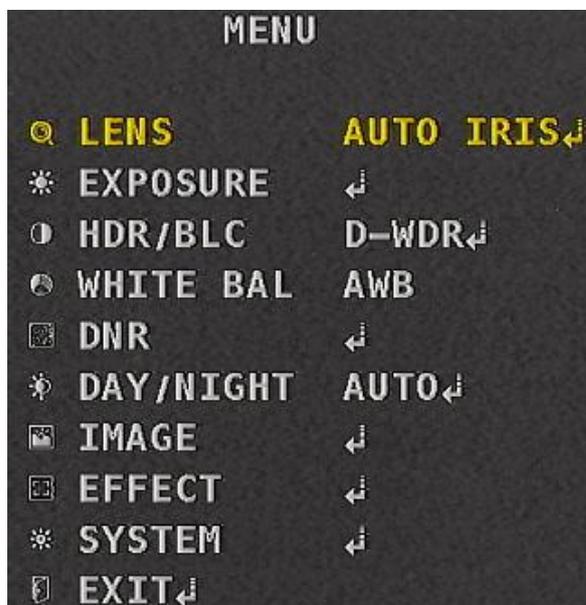
<b>EFFECT</b>	<b>Default Value</b>
SMART ZOOM	OFF
MOTION	OFF
PRIVACY	OFF
DEFOG	OFF
RETURN	<⏪

## System

<b>SYSTEM</b>	<b>Default Value</b>
DIGITAL OUT	1080P
FRAME RATE	30 FPS
ANALOG OUT	NTSC
DVR	<⏪
CABLE LENGTH	0-200M
COLORBAR	OFF
LANGUAGE	ENGLISH
FW 4.0 AHU4D	160901132NBXNC04
RESTORE	NO
RETURN	<⏪

## 2.1 Menu

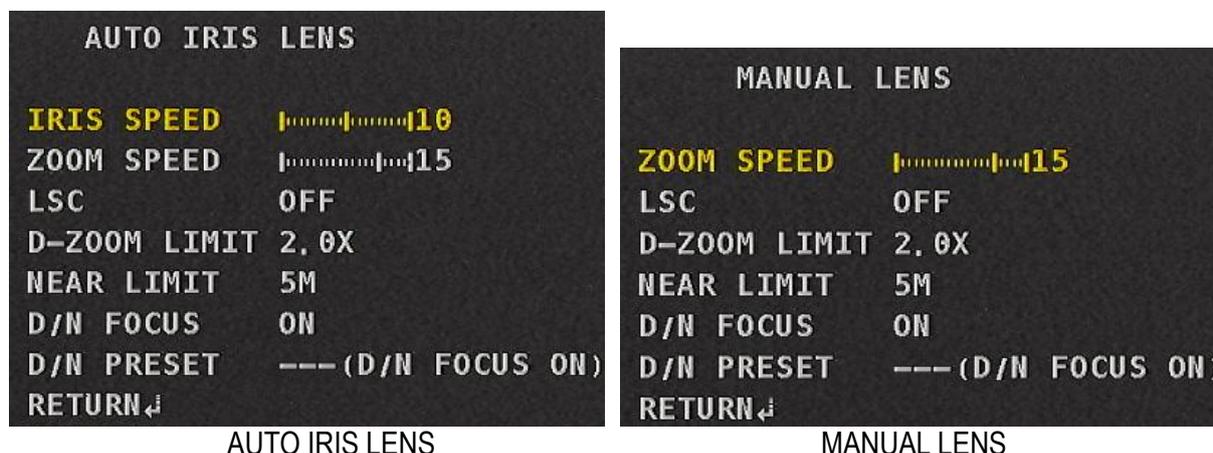
In the "MENU" of camera OSD, there are several sub-menus and items can be selected to modify the settings.



- **LENS:**  
To select the lens is on AUTO IRIS or on MANUAL.
- **EXPOSURE:**  
This is a sub-menu for exposure setting. Please check the details in its section.
- **HDR/BLC:**  
To select the mode of HDR/BLC. Models with **PoC** function have **no WDR option**.
- **WHITE BAL:**  
To select the mode of white balance: **ATW, AWB, MANUAL, PUSH LOCK**.
- **DNR:**  
To adjust the mode of DNR. **2DNR/3DNR** can be set among **OFF/LOW/MID/HIGH** options and the default is **LOW**.
- **DAY/NIGHT:**  
To select the mode of day/night. **EXTERNAL** is shown as **IR SYNC** in non-box type models.
- **IMAGE:**  
This is a sub-menu for image setting. Please check the details in its section.
- **EFFECT:**  
This is a sub-menu for effect setting. Please check the details in its section.
- **SYSTEM:**  
This is a sub-menu for system setting. Please check the details in its section.
- **EXIT:**  
After you finished all the settings, to exit the OSD, please select the "EXIT" on the "MENU". Just push the "Enter" button, and then it will quit the setting menu.

## 2.2 LENS

In the "LENS" page of the camera OSD, there are some items can be selected to modify the settings. Users can switch lens mode between AUTO IRIS and MANUAL and adjust the optical settings accordingly.



■ **IRIS SPEED/ZOOM SPEED:**

To modify the value of lens IRIS SPEED/ZOOM SPEED accordingly.

■ **LSC:**

To enable or disable the function of Lens Shading Compensation. **WEIGHT** level (Default 80%) can be further adjusted when LSC is ON. (See below)



LSC ON

■ **D-ZOOM LIMIT:**

To adjust the digital zoom maximum level from 1.0X to 8.0X.

■ **NEAR LIMIT:**

To adjust the nearest focusing distance between 1M and 5M. It's recommended to select 5M when the object is over 5M to save the focusing time.

■ **D/N FOCUS:**

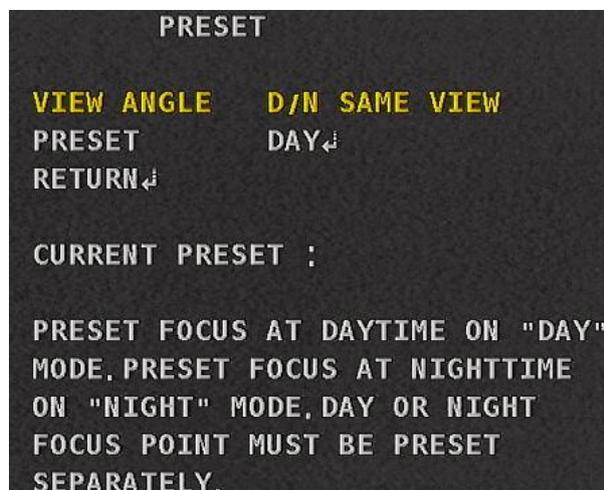
**Default is ON.** Please note that enabling this function will **automatically disable D/N PRESET.**

■ **D/N PRESET:**

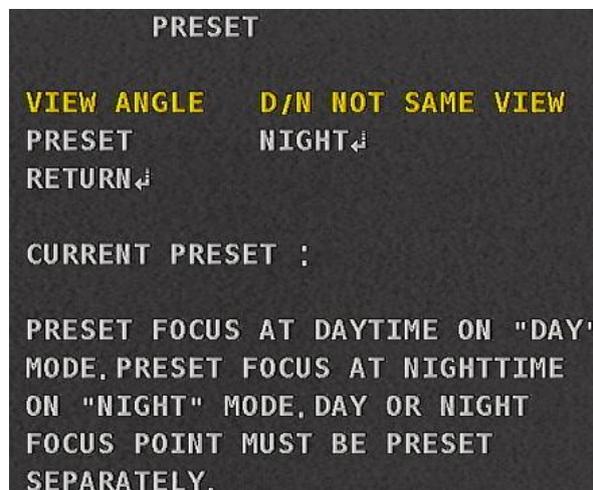
**Please must disable D/N FOCUS and SMART ZOOM to enable this function.** Also, please do **adjust PRESET for DAY at day time and NIGHT at night time separately** to ensure the appropriate focus for the clearness of the target.

## VIEW ANGLE:

This is an option for users to decide whether to set the same view angle for DAY and NIGHT mode or not. It is recommended to make proper adjustment based upon the actual lighting environment and the monitoring targets.



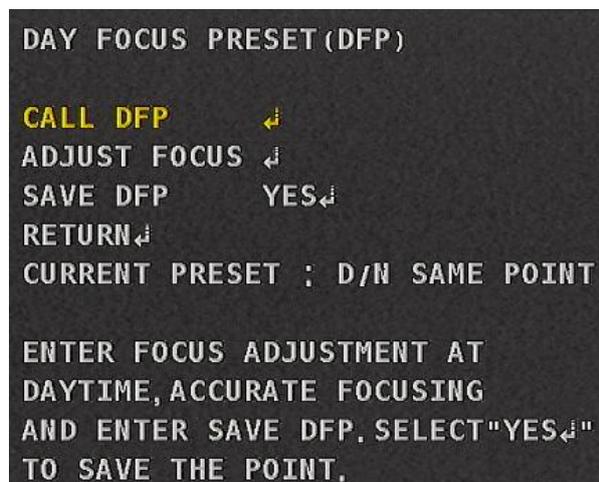
D/N SAME VIEW



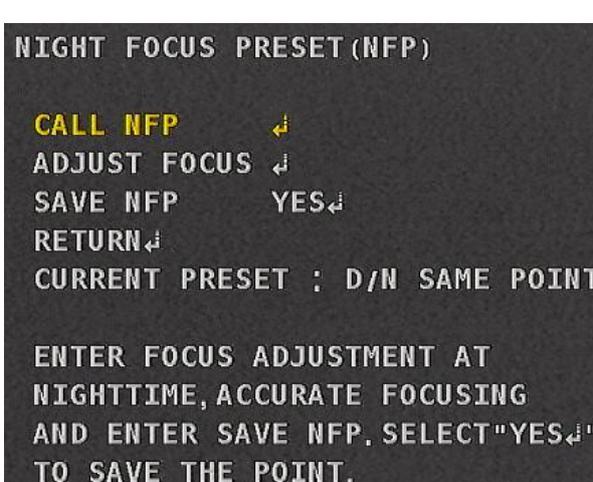
D/N NOT SAME VIEW

## PRESET:

Please must enter DAY and NIGHT modes to set focus points separately. Important notes also shown below the display for reference.



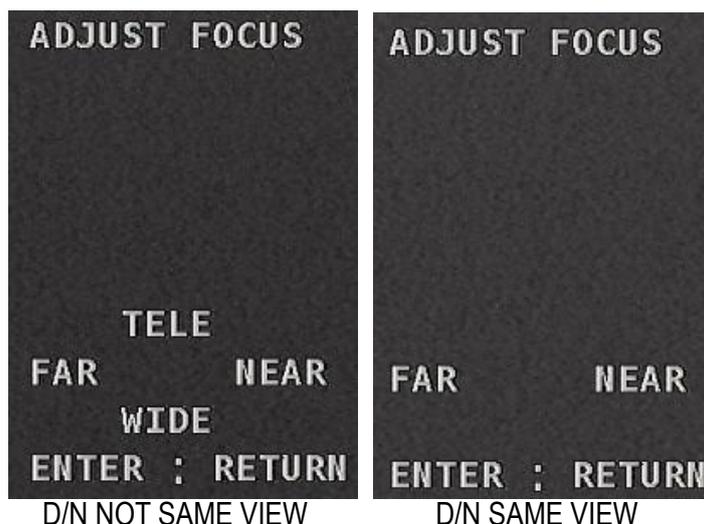
DAY FOCUS PRESET



NIGHT FOCUS PRESET

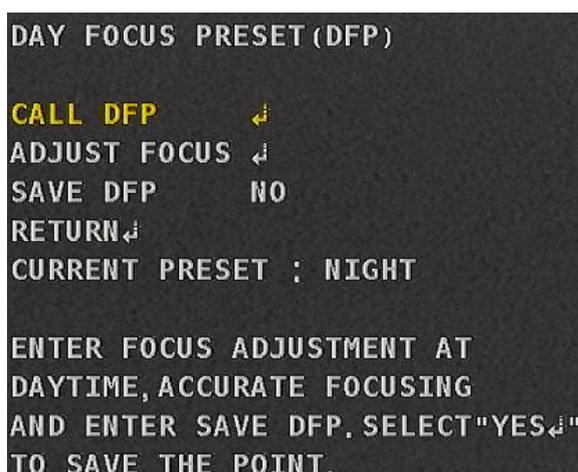
## ADJUST FOCUS:

Please must enter DAY and NIGHT modes to set focus points separately. Important notes also shown below the display for reference. See below to adjust accordingly by using the direction keys (UP/DOWN/RIGHT/LEFT). Please note TELE and WIDE will not be adjustable when VIEW ANGLE of D/N is the SAME. Also, be sure to save DFP/NFP by selecting YES after adjustment each time.

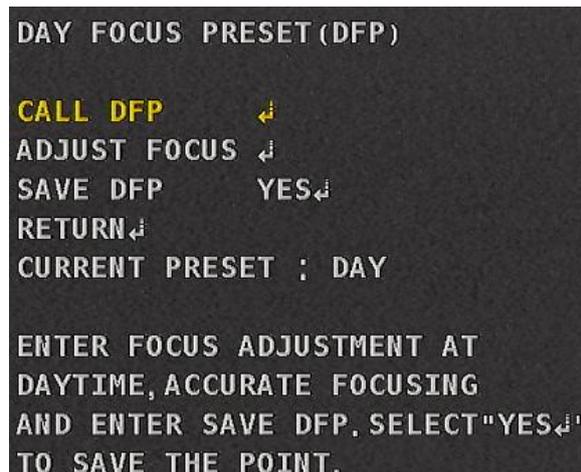


**CALL DFP/NFP:**

Entering CALL DFP/NFP will activate each focus point and CURRENT PRESET will show the setup accordingly. See the change from NIGHT to DAY after calling below.



CURRENT PRESET before CALLING



CURRENT PRESET after CALLING

■ **RETURN:**

Return to upper level of OSD menu.

## 2.3 Exposure

In the "EXPOSURE" of camera OSD, there are some items can be selected to modify the settings. The main function of this page is about the optical settings.



- **MODE:**  
**INDOOR** is recommended for BOX type models. **OUTDOOR** is recommended for other models with either AUTO IRIS or AUTO IRIS plus IR function.
- **BRIGHTNESS:**  
 To modify the value of brightness.
- **FLICKER:**  
 To enable or disable FLICKER function. The default is OFF.
- **SHUTTER: (AUTO IRIS LENS)**  
 AUTO, MANUAL, 2 options available. The value of **SHUTTER MIN/MAX** speed for **AUTO** and **MANUAL** modes can be further adjusted as shown in the screenshots below. The defaults of SHUTTER MIN/MAX are **1/30 and 1/120 (subject to change by models)** under INDOOR mode; while they are **1/30 and 1/2000 (subject to change by models)** under OUTDOOR mode. There is no default SPEED difference between the two modes if MANUAL SHUTTER is chosen. Please refer to the screenshots below.



AUTO SHUTTER (INDOOR)



AUTO SHUTTER (OUTDOOR)



MANUAL SHUTTER

## ■ SHUTTER: (MANUAL LENS)

AUTO, MANUAL, 2 options available. The value of **SHUTTER MIN/MAX** speed for **AUTO** and **MANUAL** modes can be further adjusted as shown in the screenshots below.

The defaults of SHUTTER MIN/MAX are **1/30** and **1/30000** (subject to change by models) for AUTO SHUTTER; while the default MANUAL SHUTTER SPEED has no change (1/30). Please refer to the screenshots below.



AUTO SHUTTER



MANUAL SHUTTER

## ■ SENSE-UP:

To modify the "sense up" speed setting from 2 to 32x.

## ■ AGC:

To modify the value of AGC (Automatic Gain Control). The bigger the number, the brighter the screen can be. Note that the noise will increase as well.

## ■ RETURN:

Return to upper level of OSD menu.

## 2.4 HDR/BLC

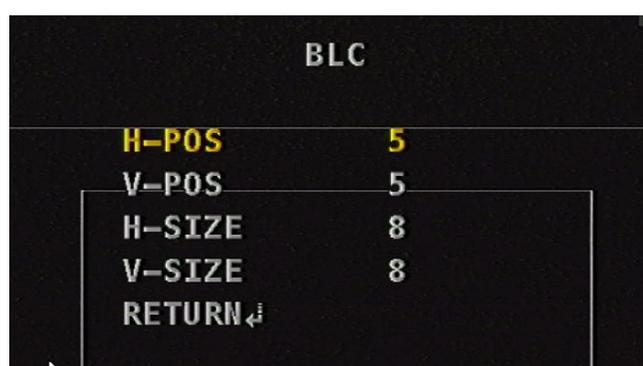
In the "HDR/BLC" of camera OSD, total 5 options are available and 4 of which have advanced settings menu for adjustment. Please see details below.



- **D-WDR:**  
LEVEL can be adjusted, but it's disabled under Factory Default (Restore setting).
- **HDR:**  
To modify the WEIGHT value among LOW/MIDDLE/HIGH. Default setting is MIDDLE.



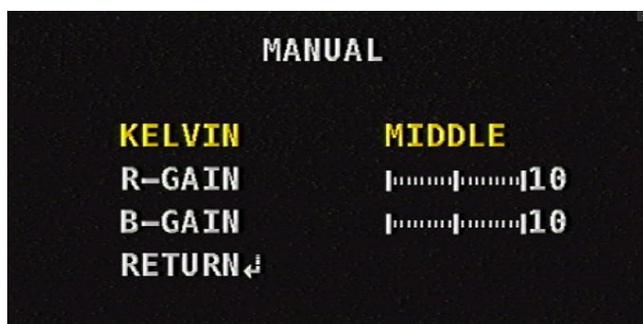
- **HLC:**  
LEVEL: To adjust the value from 0 to 20. Default is 10.  
MODE: To select the mode between ALL DAY and NIGHT ONLY.



- **BLC:**  
To adjust the Horizontal/Vertical value for BLC (inner frame in the screenshot) position and size separately.
- **OFF:**  
To disable HDR/BLC function.
- **RETURN:**  
Return to upper level of OSD menu.

## 2.5 WHITE BAL

In the "WHITE BAL" of camera OSD, total 4 options are available and 2 of which have advanced settings menu for adjustment. Please see details below.

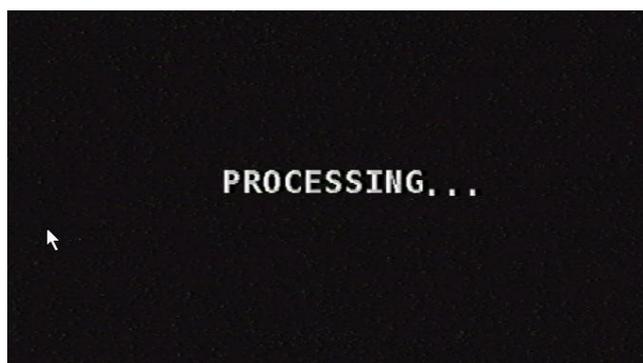


### ■ MANUAL:

**KELVIN:** To adjust the KELVIN (Color temperature) value among LOW/MIDDLE/HIGH.

**R-GAIN:** To adjust the R-GAIN (RED GAIN) value from 0 to 20.

**B-GAIN:** To adjust the B-GAIN (BLUE GAIN) value from 0 to 20



### ■ PUSH LOCK:

Press ENTER to lock white balance according to the current display (e.g. point the camera towards a sheet of white paper). The camera will start processing as shown in the screenshot above.

### ■ AWB:

Auto White Balance.

### ■ ATW:

Auto Tracking White balance.

### ■ RETURN:

Return to upper level of OSD menu.

## 2.6 DNR

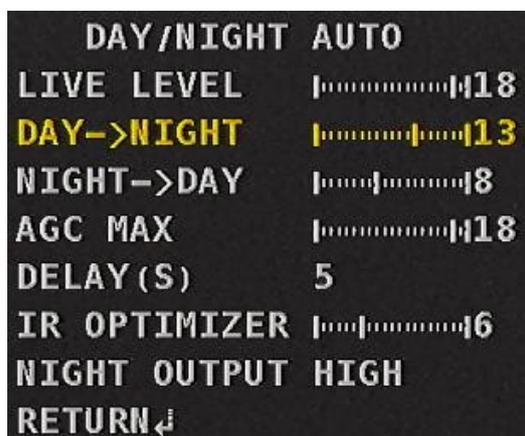
In the "DNR" of camera OSD, there are some items can be selected to modify the settings. The main function of this page is to adjust the digital noise reduction.



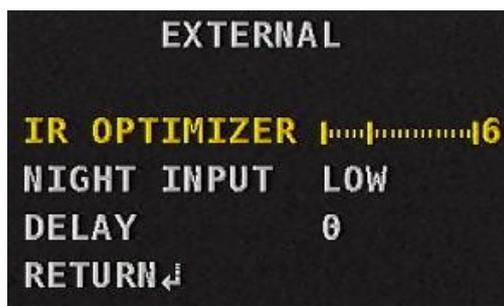
- **SMART DNR:**  
To enable or disable SMART DNR mode. Default setting is OFF as of recommended use.
- **2DNR:**  
To modify the value among OFF/LOW/MIDDLE/HIGH. Default setting is LOW.
- **3DNR:**  
To modify the value among OFF/LOW/MIDDLE/HIGH. Default setting is OFF.
- **RETURN:**  
Return to upper level of OSD menu.

## 2.7 DAY/NIGHT

In the "DAY/NIGHT" of camera OSD, **AUTO**, **IR SYNC** or **EXTERNAL**, **B/W**, can be selected to modify the settings. Selecting **COLOR** will keep the camera in color display and **B/W** is on the contrary. **IR SYNC** or **EXTERNAL** makes the camera view synchronize with **IR LED** to switch **COLOR** or **B/W** based on the brightness of the environment.



- **LIVE LEVEL:**  
The camera will automatically detect the lighting condition of the current environment and show the number. Bigger number means brighter environment.
- **DAY->NIGHT:**  
In collaboration with LIVE LEVEL function, set the value for the camera to switch from DAY to NIGHT display.
- **NIGHT->DAY:**  
In collaboration with LIVE LEVEL function, set the value for the camera to switch from NIGHT to DAY display.
- **AGC MAX:**  
To modify the value of AGC (Automatic Gain Control). The bigger the number, the brighter the screen can be. Note that the noise will increase as well.
- **DELAY (S):**  
To modify the delay time value from 0-255 seconds.
- **IR OPTIMIZER:**  
To adjust the IR Optimizer value to improve the image exposure issue when IR is turned on. The dark side of the image will also be optimized in terms of even brightness to enhance the effect as a whole.
- **NIGHT OUTPUT:**  
To adjust the setting value between HIGH and LOW under NIGHT OUTPUT. This option will not be shown for models with FIXED IRIS plus IR or AUTO IRIS plus IR to avoid IR switching errors.



- **IR OPTIMIZER:**  
To adjust the IR Optimizer value to improve the image exposure issue when IR is turned on. The dark side of the image will also be optimized in terms of even brightness to enhance the effect as a whole.
- **NIGHT INPUT:**  
To adjust the setting value between HIGH and LOW under NIGHT INPUT. Camera display in COLOR or B/W depends on the HIGH/LOW input on the DNI port of the rear panel. This function works only for box models when syncing with IR illuminators. No adjustment is needed for DOME and BULLET models.
- **DELAY:**  
To modify the delay time value from 0-255 seconds.



- **IR OPTIMIZER:**  
To adjust the IR Optimizer value to improve the image exposure issue when IR is turned on. The dark side of the image will also be optimized in terms of even brightness to enhance the effect as a whole.
- **RETURN:**  
Return to upper level of OSD menu.

## 2.8 Image

In the "IMAGE" of camera OSD, there are some items can be selected to modify the settings. The main function of this page is about the image settings.



- **SHARPNESS:**  
To modify the value of sharpness.
- **LOW LUX SHARP:**  
To modify the value of sharpness under low light source or dark environment.
- **SATURATION:**  
To modify the value of saturation.
- **GAMMA:**  
To modify the value of gamma.
- **MIRROR:**  
To enable or disable the mode of image mirror.
- **FLIP:**  
To enable or disable the mode of image flip.
- **BLACK LEVEL:**  
To adjust the value of black level. Default is 10.
- **RETURN:**  
Return to upper level of OSD menu.

## 2.9 Effect

In the "EFFECT" of camera OSD, there are some items can be selected to modify the settings. The main function of this page is about the camera effects.



- **SMART ZOOM:**  
To enable or disable the "smart zoom" function. Please must enable and set the DET DISP function below as well to achieve the best effect. Check the details in next section.  
**Note: If SMART ZOOM is ON, MOTION will automatically be disabled.**
- **MOTION:**  
To enable the "motion" effect or not. Enable this will go its sub-menu for motion setting. Please check the details in its section.  
**Note: If MOTION is ON, SMART ZOOM will automatically be disabled.**
- **PRIVACY:**  
To enable the "privacy" effect or not. Enable this will go its sub-menu for privacy setting. Please check the details in its section.
- **DEFOG:**  
To enable the "defog" effect or not. Enable this will go its sub-menu for defog setting. Please check the details in its section.
- **RETURN:**  
Return to upper level of OSD menu.

## 2.10 SMART ZOOM

After enabling "SMART ZOOM" of camera OSD, there are some items can be selected to modify the settings as shown in the screenshot below. **Please note that enabling SMART ZOOM will automatically disable MOTION.**



SMART ZOOM ON

### ■ SMART AREA:

To enable or disable the smart zoom function. Please must enable and set the DET DISP function below as well to achieve the best effect.



SMART AREA SETTINGS

### ■ SMART AREA:

To adjust the frame size of the detection display area from 1 (the smallest) to 5 (the biggest).

### ■ FOCUS POINT:

Please follow the 2 steps on the screen to **set up the focus point for DAY and NIGHT separately to ensure the best zoom effect.**

- **DET DISP:**  
To enable or disable the detection display function. Please see below for advanced settings.
- **MOVING DISP:**  
To enable or disable showing texts “MOVING...” on the screen to work with the related functions shown above.
- **SENSITIVITY:**  
To adjust the sensitivity for detection area level from 0 to 20. The bigger the number is set, the more sensitive the camera will be.
- **STAY MODE:**  
  
**CONTINUE:** When SMART ZOOM is triggered, CONTINUE mode keeps the camera staying focus on the area persistently.  
  
**SINGLE:** When SMART ZOOM is triggered, SINGLE mode, in contrast to CONTINUE mode, namely will only operate zooming once in a default time frame.
- **STAY TIME:**  
To adjust the time value for STAY MODE (focus keep) above from 0 to 20 seconds.
- **INTERVAL:**  
To adjust the detection interval from 0 to 255 seconds to start next SMART ZOOM.
- **RETURN:**  
Return to upper level of OSD menu.

## 2.11 Motion

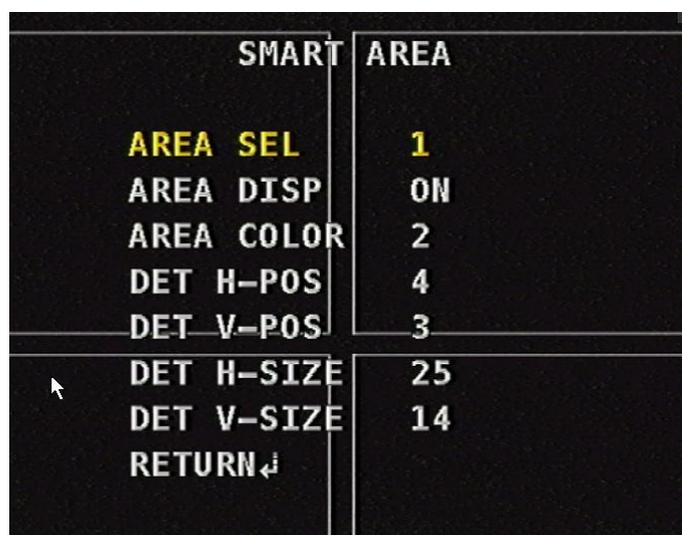
In the "MOTION" of camera OSD, there are some items can be selected to modify the settings. The main function of this page is about the motion detection. **Please note that enabling MOTION will automatically disable SMART ZOOM.**



MOTION ON

### ■ DET DISP:

To enable or disable the detection display function. Please see below for advanced settings.



DET DISP ON

### ■ AREA SEL:

4 areas are available as shown in the screenshot above. 1 refers to the upper left one, 2 is the upper right, 3 is the lower left and 4 is the lower right.

### ■ AREA DISP:

To enable or disable the area display.

### ■ AREA COLOR:

To select the area color from 0 to 6.

### ■ DET H-POS:

To adjust the horizontal position value of the selected area.

- **DET V-POS:**  
To adjust the vertical position value of the selected area.
- **DET H-SIZE:**  
To adjust the width (horizontal size value) of the selected area.
- **DET V-SIZE:**  
To adjust the height (vertical size value) of the selected area.
- **MOVING DISP:**  
To enable or disable showing texts “MOVING...” on the screen to work with the related functions shown above.
- **SENSITIVITY:**  
To adjust the sensitivity for detection area level from 0 to 20. The bigger the number is set, the more sensitive the camera will be.
- **ALARM:**  
To enable or disable the output of the alarm.
- **ALARM TIME:**  
To adjust the alarm time value from 0 to 20 seconds the camera pauses at the preset zoom in area.
- **RETURN:**  
Return to upper level of OSD menu.

## 2.12 Privacy

In the "PRIVACY" of camera OSD, please enable this function to enter and modify the settings. The main function of this page is about the privacy mask size and position.



- **ZONE NUM:**  
To select number of zone for privacy mask from 1 to 16.
- **ZONE DISP:**  
To enable or disable the zone display.
- **H-POS:**  
To adjust the horizontal position value for privacy mask from 0 to 60.
- **V-POS:**  
To adjust the vertical position value for privacy mask from 0 to 40.
- **H-SIZE:**  
To adjust the horizontal size value for privacy mask from 0 to 40.
- **V-SIZE:**  
To adjust the vertical size value for privacy mask from 0 to 40.
- **Y-LEVEL:**  
To adjust the luminance level for privacy mask from 0 to 20.
- **CR LEVEL:**  
To adjust the color red level for privacy mask from 0 to 20.
- **CB LEVEL:**  
To adjust the color blue level for privacy mask from 0 to 20.
- **RETURN:**  
Return to upper level of OSD menu.

## 2.13 Defog

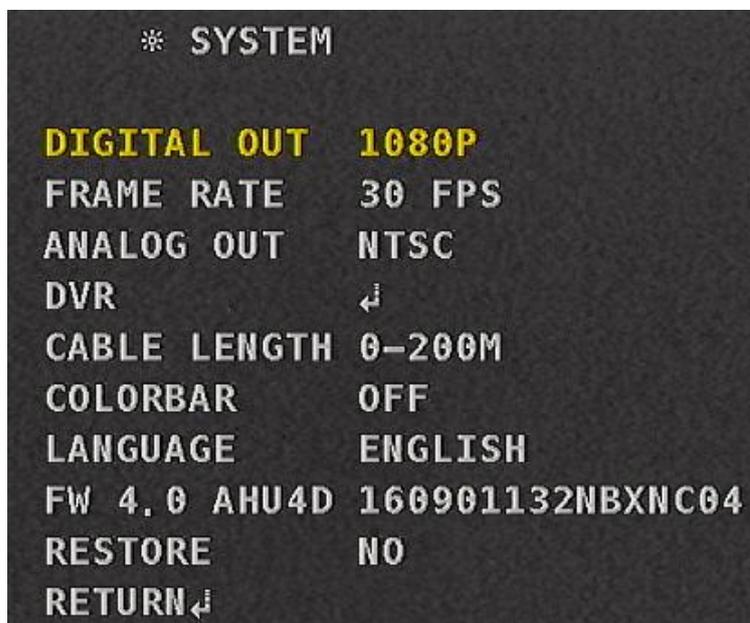
In the "DEFOG" of camera OSD, please enable this function to enter and modify the settings. The main function of this page is about the fog reduction effects.



- **MODE:**  
To select the mode of fog reduction: AUTO / MANUAL.
- **LEVEL:**  
To adjust the level of fog reduction: LOW / MIDDLE / HIGH.
- **RETURN:**  
Return to upper level of OSD menu.

## 2.14 System

In the "SYSTEM" of camera OSD, there are several sub-menus and items can be selected to modify the settings. The main function of this page is about the video format information and OSD firmware version.



- **DIGITAL OUT:**  
To select the digital output setting between 1080P and 720P.
- **FRAME RATE:**  
To select the frame rate setting between 30FPS and 25FPS.
- **ANALOG OUT:**  
To select the analog output setting between NTSC and PAL.



- **DVR:**  
To select the DVR model by brands and adjust its corresponding image related settings.

**PROTOCOL:**  
PELCO D-1, PELCO D-2 and SH-C three protocols to cooperate with the selected DVR.

**COC:**

To enable or disable the function of **Control over Coaxial cable**.

**■ CABLE LENGTH:**

To select the Transmission Distance from 0-200M or over 200M supported by the camera with **Distance Compensation Setting**.

**■ COLORBAR:**

To enable or disable the mode of COLORBAR.

**■ LANGUAGE:**

To select the OSD language among ENGLISH, TRADITION CHINESE, SIMPLIFIED CHINESE, and JAPANESE.

**■ FW 4.0 AHU4D:**

The firmware version of this camera. (Version may vary depending on production)

**■ RESTORE:**

Select YES to restore all settings to the default value.

**■ RETURN:**

Return to upper level of OSD menu.