LPR Zoom Series
User Manual

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.
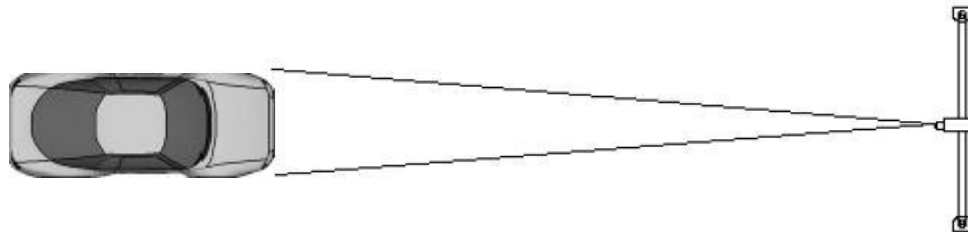
Table of Contents

1. Installation Guide

1.1 Install the camera to the front of the vehicle

It's strongly recommended to nstall the camera straight in front of and above the vehicle as shown below.

A: The captured image should be filled with a full width of the vehicle.

B: The distance between the vehicle and the camera should be within 5 to 50 meters; the camera height should be within 3 to 9 meters; the camera setup angle should be within 30 degrees.
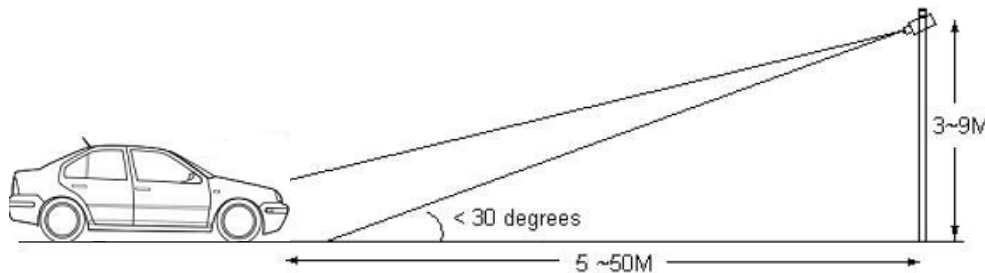
1.2 Install the camera slightly to the side

If installing the camera straight in front of the vehicle is not feasible, the camera can be placed within 15 degrees to the left or the right as shown below. To avoid capturing unnecessary contents in the image, the camera should be installed in a higher position to capture the front part of the vehicle only.

1.3 Minimum Pixels Requirement

Please make sure the captured license plate data is at least 120 pixels in width.

1.4 Minimum Shutter Speed Suggestion

In general, it's recommended to configure minimum shutter speed from 1/750 to 1/1000 for various mounting locations and scenarios.
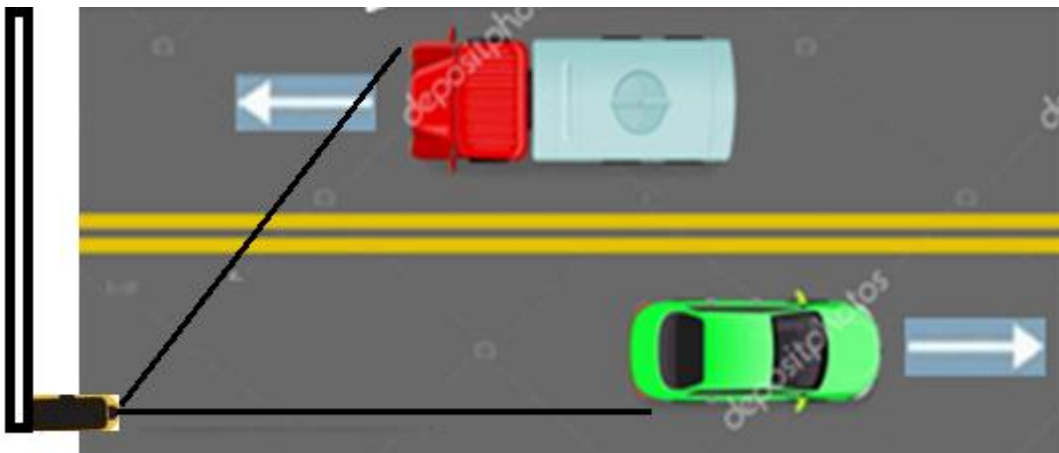
1.5 Setting Focus for DAY/NIGHT Mode

In order to make the most of LPR camera, we strongly suggest users set up/adjust the focus for DAY mode and Night mode separately.

1.6 Troubleshooting

Examples of unsuitable images:
A: Narrow field of view.

NOT RECOMMENDED!

When the view angle of the camera is too narrow, cameras being under poor configurations, or being improperly mounted, the road lane number of confident recognition could be seriously restricted. Please note that it's **NOT RECOMMENDED to install the camera to the side if users try to target dual carriageway**.
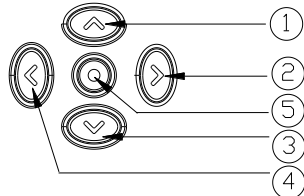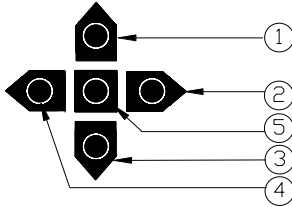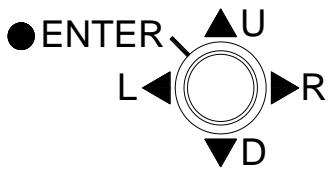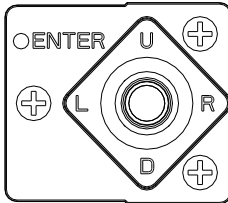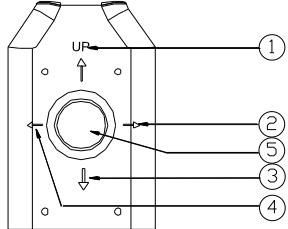
B: Lighting.

License plates are overexposed/interfered by the illumination of headlights or taillights. Try to use advanced/professional LPR cameras to avoid the glare or interference.

2. <u>OSD Operation</u>

2.1 OSD Control Buttons

Box Camera 1: Side Panel	Box Camera 2: Back Panel
Dome Camera 1	**Dome Camera 2 / Bullet Camera**
Bullet Camera	
	Note: The manufacturer reserves the right to revise and improve its products. All specifications are therefore subject to change without notice.

① **UP**

Use this button to move the cursor upwards to the desired item.

② **RIGHT**

Use this button to move the cursor to the right to select or to adjust the parameters of the selected item. The parameter increases when the right button is pressed.

③ **DOWN**

Use this button to move the cursor downwards to the desired item.

④ **LEFT**

Use this button to move the cursor to the left to select or to adjust the parameters of the selected item. The parameter decreases when the left button is pressed.

⑤ **ENTER**

Use this button to display the main menu, to confirm and to enter the submenus when they're available. Items with the symbol "<┘" in the end contain sub-menus. For further settings of those items, select the desired item with the button ▲ or ▼ and press the ENTER button to bring up the sub-menu and edit.

2.2 OSD Operation

```
              MENU

LENS            AUTO IRIS<┘
EXPOSURE        <┘
WDR/BLC         D-WDR<┘
WHITE BAL       ATW<┘
DNR             <┘
DAY/NIGHT       AUTO<┘
IMAGE           <┘
EFFECT          <┘
SYSTEM          <┘
EXIT<┘
```
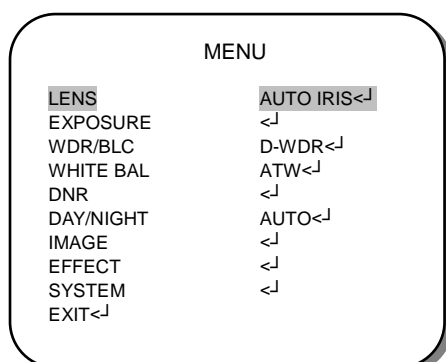
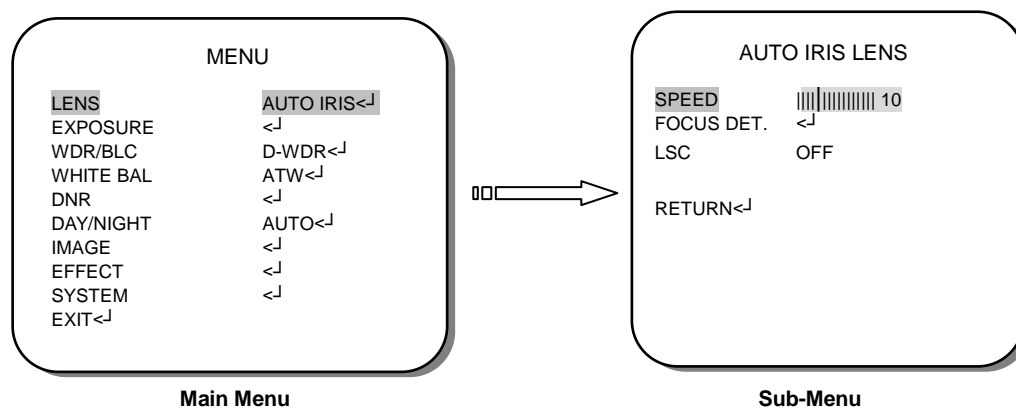1. **Start to operate the OSD menu**

   Press the **ENTER** button to bring up the OSD main menu to start operating OSD menus.

2. **Select items with the cursor buttons**

   - Use buttons ▲ and ▼ to move the cursor up and down.
   - Use buttons ◄ and ► to switch the modes or to adjust the parameters or the values of the settings.

3. **Switch to the sub-menu**

   Items with the symbol "↵" in the end contain sub-menus. For further settings of those items, select the desired item with the button ▲ or ▼ and press the **ENTER** button to bring up the sub-menu and edit.

```
              MENU                              AUTO IRIS LENS

LENS            AUTO IRIS<┘           SPEED           ||||||||||||||| 10
EXPOSURE        <┘                    FOCUS DET.      <┘
WDR/BLC         D-WDR<┘               LSC             OFF
WHITE BAL       ATW<┘
DNR             <┘          ▭▭➡
DAY/NIGHT       AUTO<┘                RETURN<┘
IMAGE           <┘
EFFECT          <┘
SYSTEM          <┘
EXIT<┘
```

Main Menu   **Sub-Menu**

4. **Return to the previous page**

   Select **RETURN** and press the **ENTER** button to return to the previous page.

5. **Exit the OSD menu**

   Select **EXIT** and press the **ENTER** button to save the settings and exit the OSD menu.

3. 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

  ⊙ LENS          AUTO IRIS↵
  ☀ EXPOSURE         ↵
  ◑ HDR/BLC        D-WDR↵
  ◉ WHITE BAL      AWB
  ▦ DNR              ↵
  ☀ DAY/NIGHT      AUTO↵
  ▣ IMAGE            ↵
  ▣ EFFECT           ↵
  ☀ SYSTEM           ↵
  ▯ EXIT↵
```

■ **Menu**

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

■ **Exposure**

EXPOSURE	Default Value
MODE	INDOOR
BRIGHTNESS	7
FLICKER	OFF
SHUTTER	AUTO↵
SENSE UP	OFF
AGC MAX	18
RETURN	↵

■ **DNR**

DNR	Default Value
SMART DNR	ON
2DNR	LOW
3DNR	OFF
RETURN	↵

■ **Image**

IMAGE	Default Value
SHARPNESS	3
LOW LUX SHARP	2

SATURATION	10
GAMMA	0.55
MIRROR	OFF
FLIP	OFF
BLACK LEVEL	10
RETURN	↵

■ Effect

EFFECT	Default Value
SMART ZOOM	OFF
MOTION	OFF
PRIVACY	OFF
DEFOG	OFF
RETURN	↵

■ System

SYSTEM	Default Value
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	↵

3.1 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.
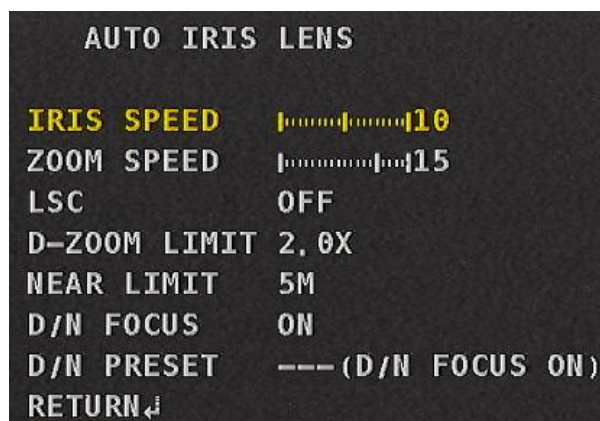
AUTO IRIS LENS   MANUAL LENS

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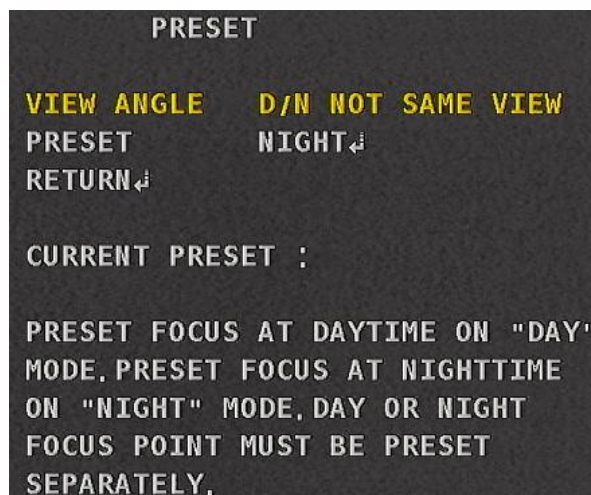
■ **D/N PRESET:**
Please must disable D/N FOCUS and SMART ZOOM to enable this function. Also, please do **adjust PRESET for DAY at day time and NIGHT at night time separately** to ensure the appropriate focus for the clearness of the target.

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.
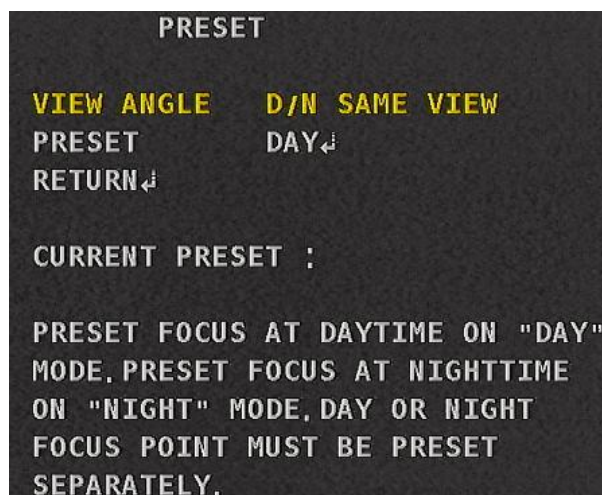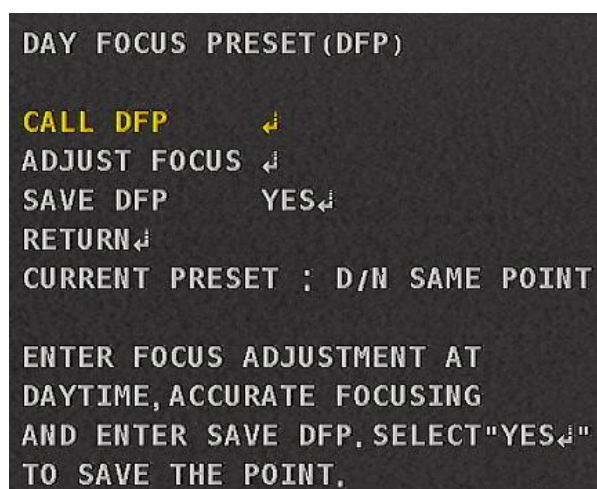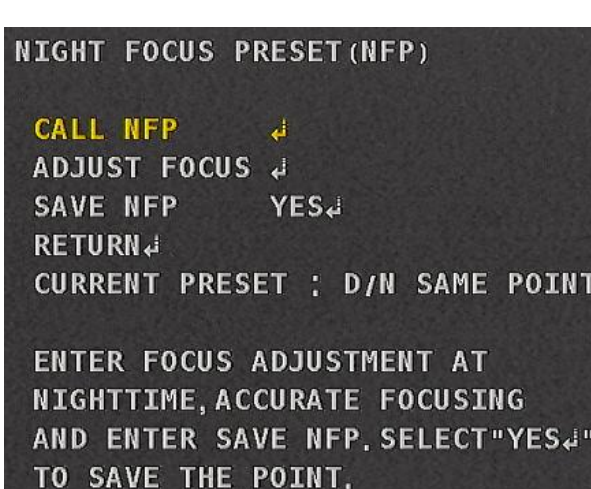

D/N SAME VIEW

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.
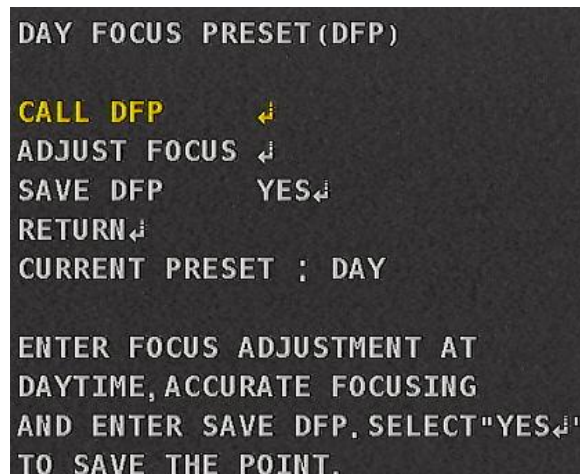
D/N NOT SAME VIEW   D/N SAME VIEW
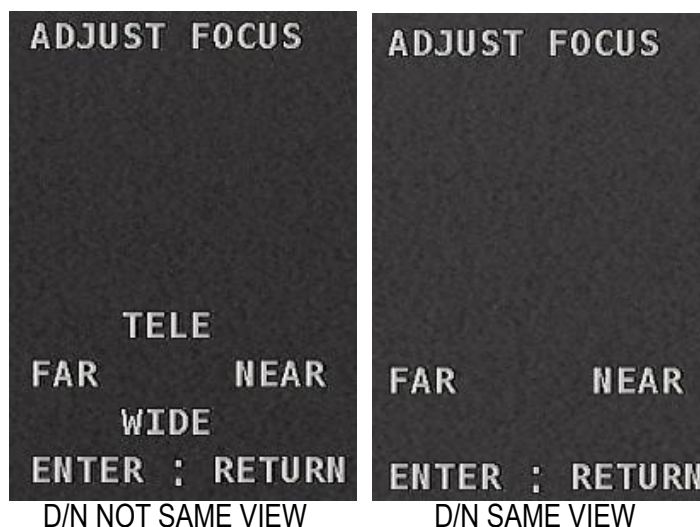
CALL DFP/NFP:
Entering CALL DFP/NFP will activate each focus point and CURRENT PRESET will show the setup accordingly. See the change from NIGHT to DAY after calling below.
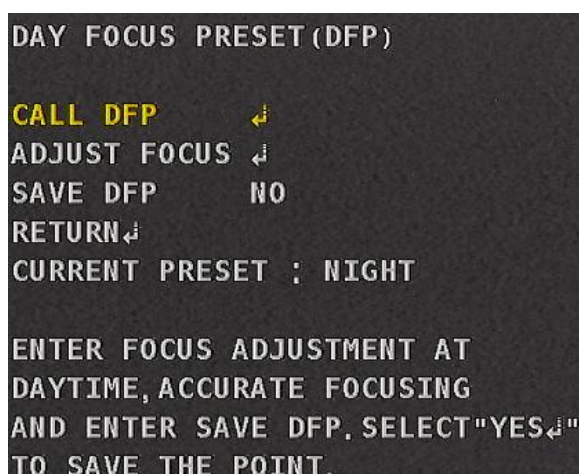
CURRENT PRESET before CALLING   CURRENT PRESET after CALLING

■ **RETURN:**
Return to upper level of OSD menu.

9

3.2 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.

AUTO IRIS LENS

MANUAL LENS

■ **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 SHTTER 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 SHTTER 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:**
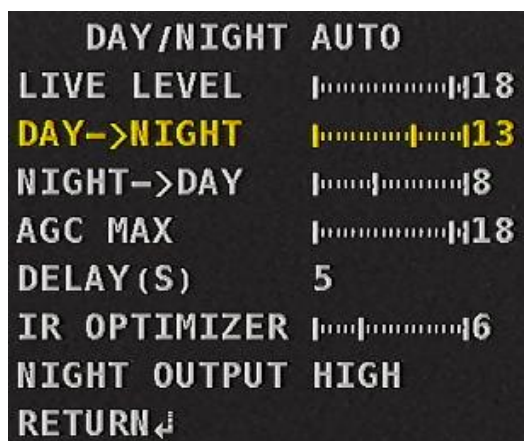To modify the "sense up" speed setting from 2 to 32x.

■ **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.

3.3 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.

```
DAY/NIGHT  AUTO
LIVE LEVEL      |·············|·|18
DAY->NIGHT      |·········|····|13
NIGHT->DAY      |·····|·········|8
AGC MAX         |·············|·|18
DELAY(S)        5
IR OPTIMIZER    |···|·········|6
NIGHT OUTPUT HIGH
RETURN↵
```

■ **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.

3.4 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.

3.5 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.
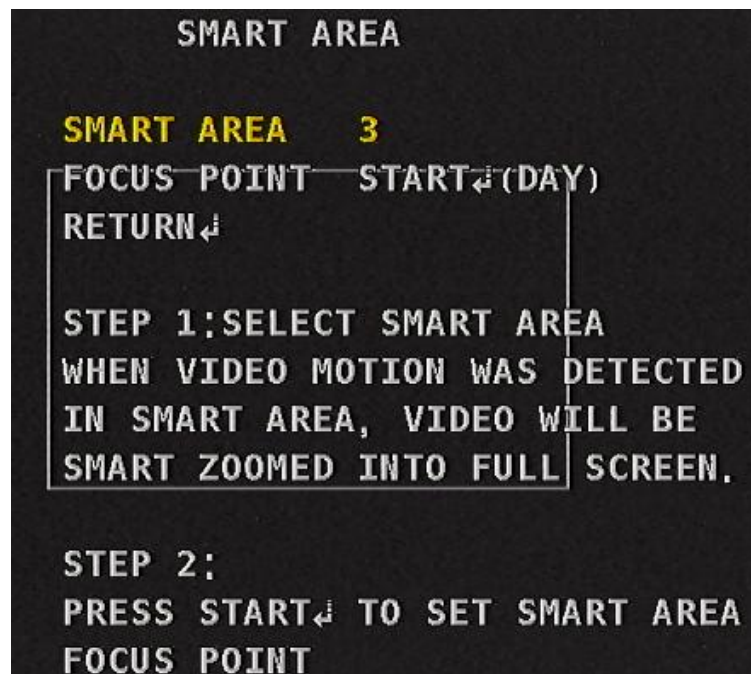
SMART AREA SETTINGS

■ **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.