NiteDevil Internal Hi-Res Dome (IR Optional)

These *NiteDevil* IR Internal Dome Cameras produce high quality images and work in very low light conditions down to 0.00001 Lux. They have many features including a 3D axis mounting inner bracket for wall mounting, a SONY SuperHad CCD II and a 2.8mm ~ 12mm varifocal lens. An OSD menu provides options for a WideLux Wide Dynamic Range option, Highlight Eclipse function, motion detection, Intelligent IR control, Digital Image Stabiliser, privacy masking etc with option for RS485 menu control.

Models Available
CAM725   600TVL, 12VDC
CAM727   600TVL, 12VDC/24VAC
CAM745   600TVL, IR, 12VDC
CAM747   600TVL, IR, 12VDC/24VAC

Key Features
✓ 1/3" SONY SUPER HAD CCD II
✓ Low illumination down to 0.00001 Lux
✓ Digital Image Stabiliser
✓ WideLux sWDR Function.
✓ Highlight EclipseFunction
✓ High Resolution 600TVL (day) 650TVL (night)
✓ Intelligent IR Control

✓ True Day & Night (ICR)
✓ 3 Axis 3D built-in bracket
✓ Vari-focal 2.8 ~ 12mm Auto DC Iris Lens
✓ White Plastic Housing with Smoked Cover
✓ 20 x IR 850nm Leds on CAM745/747
✓ RS485 remote menu control
✓ 2/3DNR Noise Reduction for night viewing

Mounting the Camera
The camera is for mounting on a wall, ceiling or outdoor facia board. Note that this camera has a 3D gimble allowing wall mounting or ceiling mounting. Note that fitting the screws into a ceiling will require support for the screws.

Powering the Camera   Note: Do not connect power to the RS485 connections
CAM725
The dome requires a 12V DC regulated power supply. Connections are <u>not</u> polarity sensitive so the positive and negative cables can be connected either way around. The camera is provided with a fly lead with a terminal connector for power. This camera draws a maximum of 141mA at 12v DC. Ensure that a regulated power supply is used and allow adequate headroom i.e only use a power supply with a minimum rating of 200mA.

CAM727
This dome is dual voltage. It will work on 12vDC or 24vAC. Connections are not polarity sensitive so therefore power connections can be either way round. The camera is provided with a fly lead with a terminal connector for power. This camera draws a maximum of 200mA. Ensure that a regulated power supply is used if using 12vDC and allow adequate headroom i.e only use a power supply with a minimum rating of 300mA.

CAM745
The dome requires a 12V DC regulated power supply. Connections are <u>not</u> polarity sensitive so the positive and negative cables can be connected either way around. The camera is provided with a fly lead with a terminal connector for power. This camera draws a maximum of 330mA at 12v DC when IR LEDs are on. Ensure that a regulated power supply is used and allow adequate headroom i.e only use a power supply with a minimum rating of 500mA.

CAM747
This dome is dual voltage. It will work on 12vDC or 24vAC. Connections are not polarity sensitive so therefore power connections can be either way round. The camera is provided with a fly lead with a terminal connector for power. This camera draws a maximum of 420mA. Ensure that a regulated power supply is used if using 12vDC and allow adequate headroom i.e only use a power supply with a minimum rating of 600mA.

Connecting the camera to control equipment.

The dome camera comes with a fly lead for video out. To reduce installation time the video out lead is terminated into a male BNC connector. This allows the installer to connect the camera to control equipment via a female BNC-BNC lead. A special setup joystick controller is located on the side of the PCB board and this allows access to the OSD menu. A special socket is located to the right of the joystick controller to connect an optional test video monitor lead.

RS485 Connection

The RS485 connection allows access to the menu using a keyboard or DVR PTZ operation using an IRIS OPEN to open menu and select options using near, far, open and closed. Connect Green to Transmit + and Blue to Transmit -.

Installation
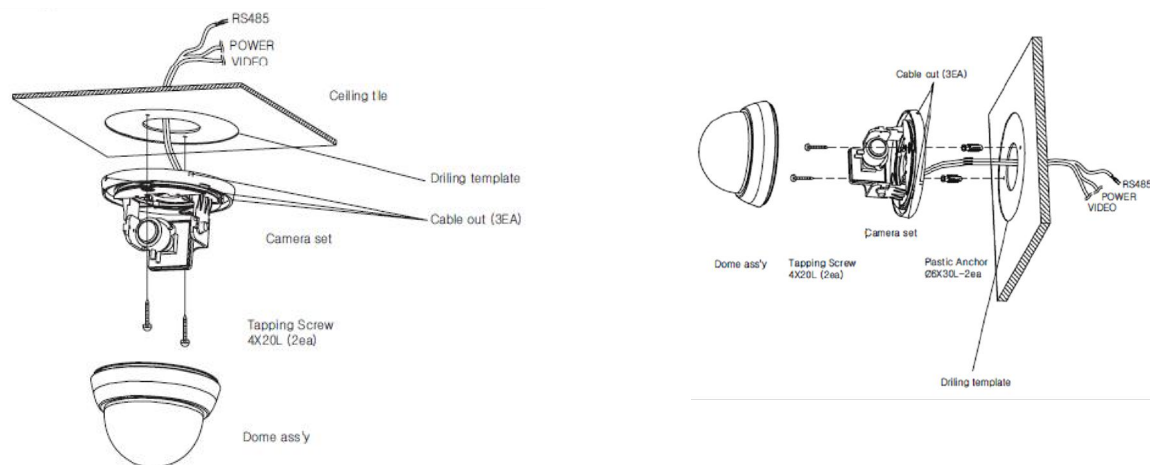
1.   Drill holes in wall or ceiling using template.

2.   Screw dome baseplate to wall or ceiling.

3.   Adjust camera zoom, focus and menu settings and then clip on dome cover.

4.   These cameras have a 3D axis allowing the camera to be fitted directly on a wall.
        They have a 360° panning axis, 90° tilt axis and 180° rotation axis.

        Panning: Hold the camera base and grip camera mechanism on both sides and turn it slowly to position required.

        Tilt: Loosen the screws on both sides and tilt the lens to required position.

        Rotation: Hold the camera board in one hand and rotate the lens to adjust picture.

Adjusting Zoom and Focus

        In order to adjust zoom and focus, if you have the IR model, you will need to remove the IR cover. This is easily unclipped. Now adjust the zoom and focus settings controls.
        Loosen the controls using a small screwdriver. You may find it easier to set the Zoom control first and then adjust the Focus.
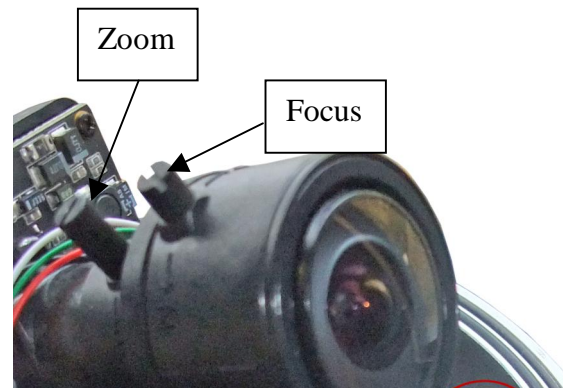
Zoom

Focus

Retighten the Zoom and Focus controls.
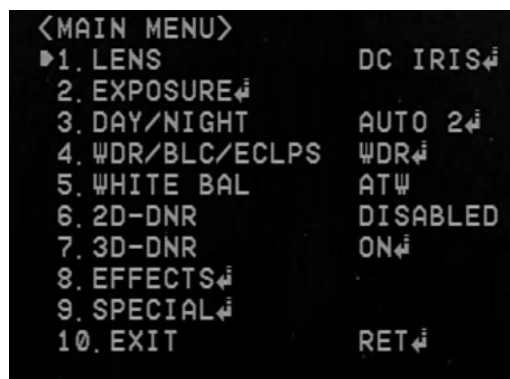
OSD (On Screen Display) Function

Remove the dome cover to access the PCB board for entering the menu.

1. If you want to use the test monitor lead supplied, plug it into the Test Monitor Connection shown in diagram.
The spare short lead is a spare extension.

2. The OSD menu is accessed by first pressing down the centre button (SET Button).

3. Move button upwards to move down menu.
Move button downwards to move up menu
Move button right to move right
Move button left to move left
Press button down to Enter.

Test
Monitor
Connection
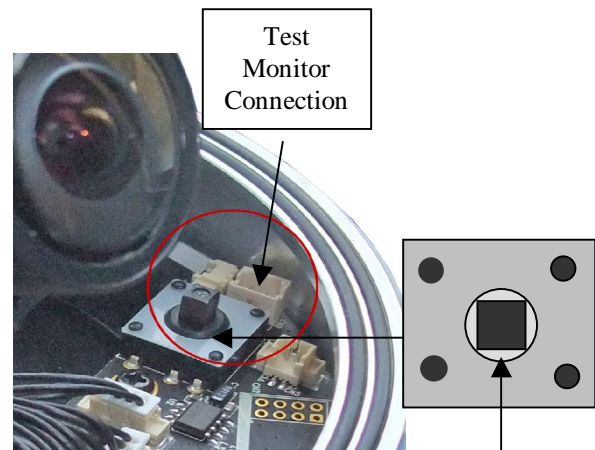
**Menu Set
Button
Press
Down**

The following menu will be displayed on your monitor on pressing SET button (Joystick controller):

```
<MAIN MENU>
▶1. LENS          DC IRIS↵
 2. EXPOSURE↵
 3. DAY/NIGHT     AUTO 2↵
 4. WDR/BLC/ECLPS WDR↵
 5. WHITE BAL     ATW
 6. 2D-DNR        DISABLED
 7. 3D-DNR        ON↵
 8. EFFECTS↵
 9. SPECIAL↵
10. EXIT          RET↵
```

Menu Structure Functions

LENS	MANUAL	DC			
EXPOSURE	AGC	SHUTTER	SENS-UP	INITIAL	SAVE
DAY/NIGHT	AUT01	AUT02	DAY	NIGHT	
WDR/BLC/ECLPS	OFF	WDR	BLC	ECLPS	
WHITEBAL	ATW	COL-ROLL	PUSH	MANUAL	
2D-DNR	DISABLED	OFF	LOW	MIDDLE	HIGH
3D-DNR	ON	OFF			
EFFECTS	DZOOM MODE COLOR ADJUST	IMAGE FREEZE TARGET CROSS	D-EFFECT BAD PIXEL	CONTRAST INITIAL SET	SHARPNESS SAVE
SPECIAL	CAM NAME MONITOR TYPE	MOTION DET FACE REC	PRIVACY MASK COMM SET	LANGUAGE FACTORY RESET	STABILIZER SAVE
EXIT					

NOTE: All items with the ⬅ icon allow you to access a submenu by pressing the SET button down. Any item showing - - -   icon functionality is not available on this camera.

SPECIAL NOTE: SENS UP is the NITEDEVIL option

(a)   When SHUTTER is in Manual mode, SENS UP does not operate.
(b)   When AGC is turned off, SENS UP does not operate.
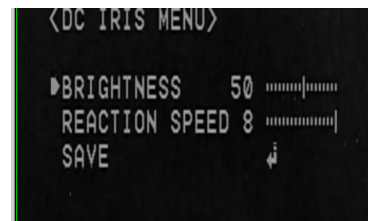(c)   When SENS UP is off, 3-DNR does not operate.

LENS

Select the lens and adjust the SETUP suitable to
the type of lens.
When DC iris lens is used. (The default lens fitted)
Please select the lens mode to DC IRIS.
Press the SET to enter the <DC IRIS MENU>.

BRIGHTNESS: adjust the brightness of screen to widest
setting during the brightest point in the day without the
picture whiting out.

REACTION: Reaction speed of the shutter is adjustable.
It is useful when the light conditions keep changing quickly.
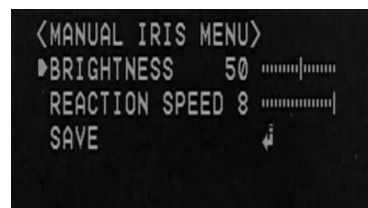
SAVE : Press SAVE to finish all settings and return to <MAIN MENU>

When MANUAL lens is used
1. Please select the lens mode to MANUAL.
2. Press the SET to enter the <MANUAL IRIS MENU>.
   BRIGHTNESS: same as above
   REACTION: same as above

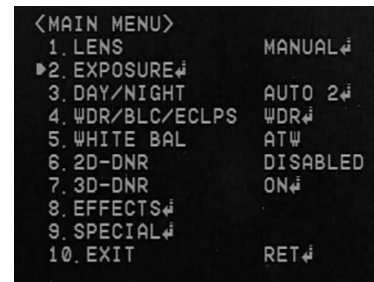## EXPOSURE

AGC (Auto Gain Control)
OFF: Deactivates the AGC function.
LOW: Allows automatic gain control from 0 to 20dB. (Default)
MIDDLE: Allows automatic gain control from 0 to 30dB.
HIGH: Allows automatic gain control from 0 to 42dB.

The higher the gain level, the brighter the screen becomes while the higher the noise as well.
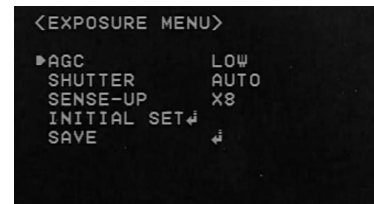
SHUTTER

AUTO: The shutter speed is controlled automatically (Default)
FLK: Please select FLK mode when flickering occurs on the
Screen. Can be caused by an imbalance between illumination and frequency.
FIXED : The shutter speed is controlled manually.
Select the speed from '1/50' to '1/90,000 sec. (PAL).
Select Digital Slow Shutter between x2 ~ x512. **(DSS)**

Please use FIXED mode only when the light level of the surveillance area is fixed all the time.

SENSE-UP (This is the NiteDevil feature)
Low light sensitivity is greatly improved with the use of this function.
Low light sensitivity level is adjustable from x2, x3, x4, x5, x6, x8, x10, x12, x14, x16,
X32, x64, x128, x256, x512 times Default setting is x8
When SENS-UP level is high, the picture becomes brighter while noise is increased at the same rate of SENS-UP.
ON : Adjustable SENS-UP level between x2 ~ x512.
OFF: SENS-UP is disabled.

Note
When the SHUTTER is set to MANUAL mode, SENS-UP does not operate.
When the AGC is set to OFF, SENS-UP does not operate.

INITIAL SET
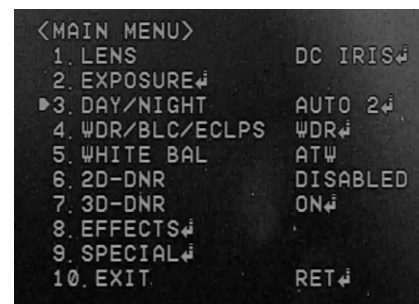Initialise all settings of EXPOSURE menu.
SAVE

DAY / NIGHT
It is used to improve the sensitivity and clarity of picture quality in low light situations

DAY : The image is always displayed in colour.

NIGHT : The image is always displayed in black and white.

AUTO1: The image is automatically converted to B/W from colour at 3 lux.

IR WDR LEVEL: Select Anti- IR saturation level OFF/LOW/MIDDLE/HIGH

IR WDR ADJUST: Adjust the value in each of selected level 0 ~ 6

Use this option if camera is an Infra-red camera

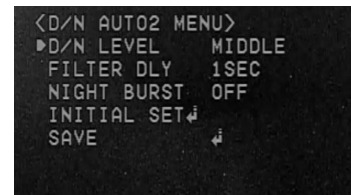**AUTO2**: The image is automatically converted to B/W from colour at 3 lux.

D/N LEVEL: LOW/MIDDLE/HIGH

FILTER DLY: Select the duration time about changing the Day/Night mode. (1 SEC, 3 SEC, 5 SEC, 10 SEC, 15 SEC, 30 SEC, 60 SEC)

NIGHT BURST: Burst ON/OFF selectable.

INITIAL SET: Initialise all settings of AUTO2 menu. Default setting

**Use this option if camera is <u>not</u> an Infra-red camera**

WDR/BLC/ECLPS

The image quality is greatly improved with the use of this mode when there is a strong backlight behind the object.
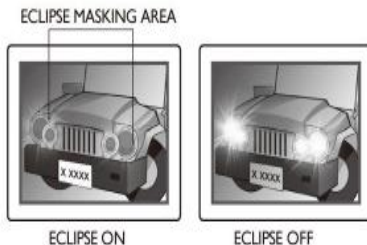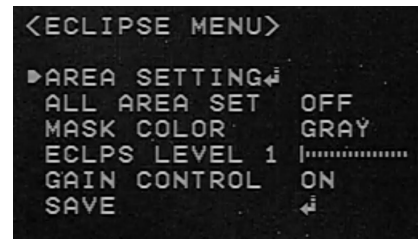
OFF : Deactivates the WDR function.

WDR: Camera scans both brightly lit backgrounds and shaded areas in extremely contrasted light situations. (LOW/MIDDLE/HIGH) settings available.

BLC: Enables a user to directly select a desired area from a picture and to view the area more clearly. (LOW/MIDDEL/HIGH) settings available.
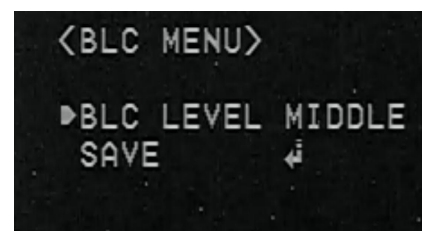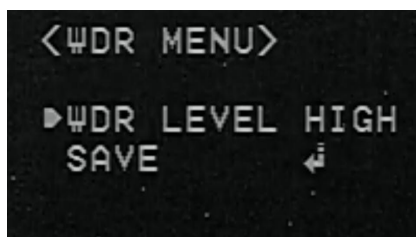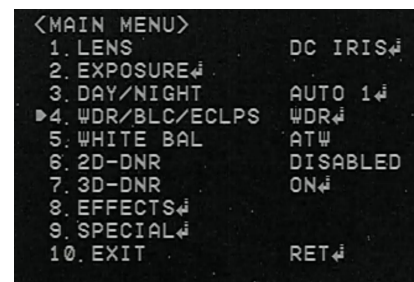
ECLIPSE:
This can mask the headlights to view a car license number plate more clearly. You can select masking colour. Adjust the ECLIPSE level with the GAIN CONTROL in OFF mode.

```
<ECLIPSE MENU>

▶AREA SETTING↵
 ALL AREA SET   OFF
 MASK COLOR     GRAY
 ECLPS LEVEL 1  |···········
 GAIN CONTROL   ON
 SAVE              ↵
```

```
     ECLIPSE MASKING AREA

     ECLIPSE ON      ECLIPSE OFF
```

WHITE BAL (White Balance)

This is useful to optimise the white balance control under a certain artificial lighting area where a standard white balance condition is not suitable.

ATW (Auto Tracking White Balance)
This mode can be used within the colour temperature range of 1,500˚K~11,000˚K. (※ Default)

```
<MAIN MENU>
 1.LENS          DC IRIS↵
 2.EXPOSURE↵
 3.DAY/NIGHT     AUTO 1↵
 4.WDR/BLC/ECLPS OFF
▶5.WHITE BAL     ATW
 6.2D-DNR        DISABLED
 7.3D-DNR        ON↵
 8.EFFECTS↵
 9.SPECIAL↵
 10.EXIT         RET↵
```
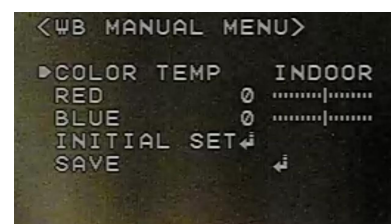
COL-ROLL (Anti color rolling mode)
Use it only when the rolling is severely shown.

MANUAL
Recommended for use when the lighting does not change. Select **INDOOR** or **OUTDOOR** mode.

PUSH (Push lock)
Use this when the White Balance has deviated due to electrical interference. Face the camera towards a white wall or white paper and press the menu button to set.

```
<WB MANUAL MENU>

▶COLOR TEMP    INDOOR
 RED        0  ········|·······
 BLUE       0  ········|·······
 INITIAL SET↵
 SAVE          ↵
```

Note: White Balance may not work properly in the following conditions:-
1. When the colour range of the environment surrounding the subject is out of the control range (e.g. clear sky or sunset).
2. When the ambient illumination of the subject is dim.
3.   If the camera is directed towards a fluorescent light or is installed in a place where illumination changes dramatically, the White Balance operation may become unstable.

DIGITAL NOISE REDUCTION (Used with the NiteDevil feature)
This option reproduces noiseless images with 2D/3D
filtering Noise Reduction Technology. 2D DNR helps
preserve definition in the picture, whilst 3D DNR
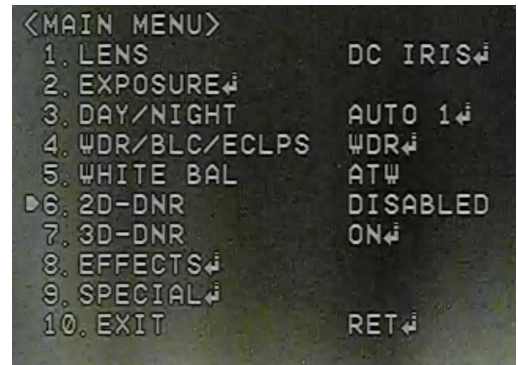produces clear images with no ghost effect.

2D-DNR (2D Noise Reduction)

LOW:
MIDDLE:
HIGH:
DISABLED: Deactivates 2D-DNR. Noise is not reduced.
OFF : Activates 2D-DNR(Level : 0). Noise is not reduced.

NOTE: Bad pixel detection function is only operational when 2D-DNR DISABLED is selected.

3D-DNR (3D Noise Reduction)

The background noise in the low light level decreases
automatically as the level of gain changes.
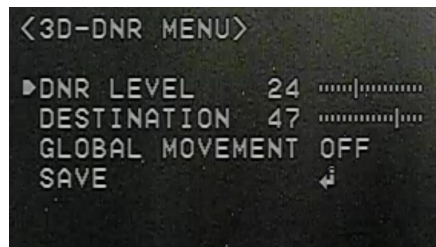**DNR LEVEL**
Adjust the noise reduction level.

DESTINATION
Adjust the 3DNR gain.
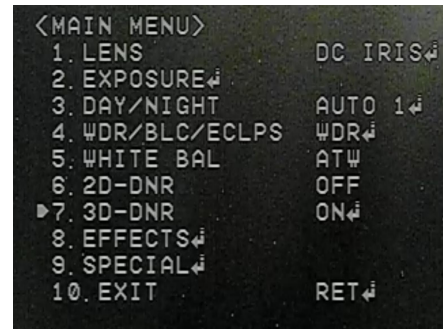
GLOBAL MOVEMENT
Controls ghosting.

EFFECTS

D-ZOOM : You can use digital zoom.
    ZOOM : x1 ~ x8.30
    DZOOM PAN : -100 ~ 100
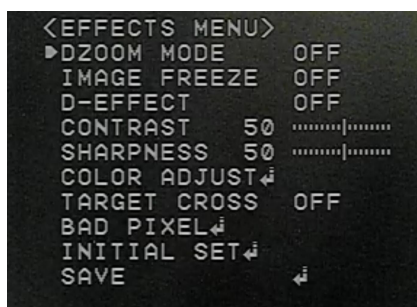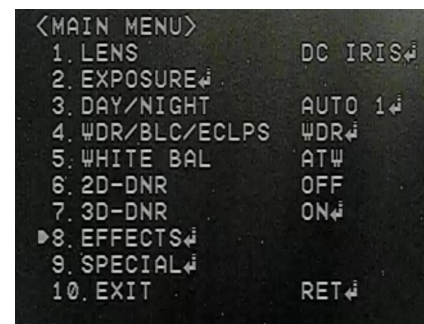   DZOOM TILT : -100 ~ 100

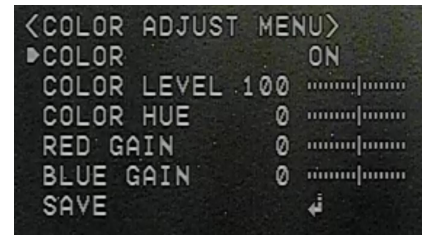**IMAGE FREEZE** : You can view still or live image.

D-EFFECT
 V-FLIP : Flips the picture vertically on the screen.
 MIRROR : Flips the picture horizontally on the screen.
 ROTATE : Rotates the picture on the screen.

CONTRAST : 0 ~ 100
SHARPNESS : 0 ~ 100
COLOR ADJUST
 COLOR : ON/OFF
 COLOR LEVEL : 0 ~ 200
 COLOR HUE : -180 ~ +180
 RED GAIN :   -100 ~ +100
 BLUE GAIN : -100 ~ +100

TARGET CROSS : Displays '╋' on the screen
 COLOR : BLACK, GREY, WHITE, RED, GREEN,
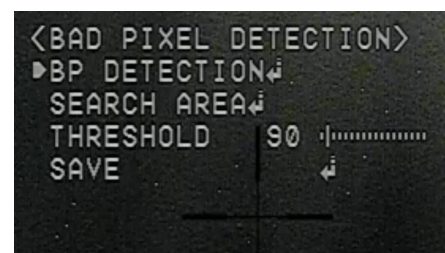   YELLOW
 MOVE X : -100 ~ 100
 MOVE Y: -100 ~ 100

 INITIAL SET (Default setting for this option)
 SAVE

The TARGET CROSS function when in operation will display '╋' but disappears if MOTION DETION function is 'ON'

BAD PIXEL: BAD PIXEL compensation
 BP DETECTION: Make the screen completely
 black by covering the camera.
 SEARCH AREA: X START / Y START / WIDTH /
 HEIGHT
 THRESHOLD: 40 ~ 1024
 SAVE

NOTE: Users may simply activate BP DETECTION and go directly to SAVE. Any bad pixels in full screen mode are automatically compensated.
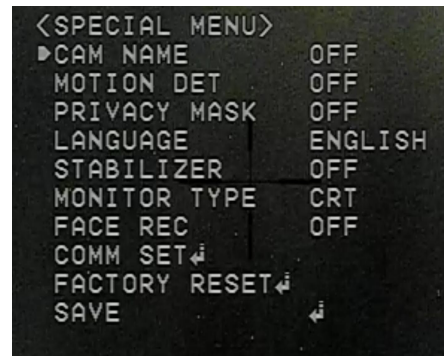
INITIAL SET: Initialises all settings in EFFECTS menu. Target Cross and Bad Pixel modes are not initialised.

SPECIAL

CAM NAME (Camera Name)
Select 'CAM NAME' and switch option ON .

Note: If 'OFF' is selected, the CAM NAME does
not appear on the monitor even if it has been input.
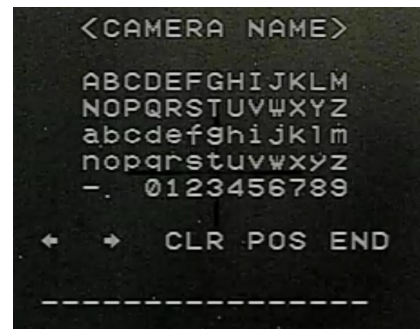Up to 15 characters for the name are available.

Please move the cursor to the letter required by
using the UP and DOWN selections.

Set a name from characters A~Z / a~z / 0~9 by
using the UP, DOWN, LEFT and RIGHT buttons.
Press the menu button to enter the character.
When the character is saved, the cursor moves to
the next space.
Repeat to input name required.

Note:
If a wrong name has been input, press the menu button after moving the cursor to CLR, and all
letters will be erased. If you want to correct a letter, please move the cursor to the arrow at the
bottom left of the screen and press the menu button. Then position the cursor on the letter you wish
to correct, and then move the cursor onto the letter you wish to choose and press the menu button.
When a name has been chosen, please select a position for the name to display.

Please move the cursor onto 'POS' and then press the button.
The name will appear in the top left hand corner.
Please find the position you wish to display the name, by using the 4 directional selections, and then
press the menu button. Then select END and press the menu button to complete CAM NAME input.

MOTION (Motion Detection)

You can set up to 8 motion detection areas and if
movement is detected in an area the message:
MOTION AT : <area number> is displayed.
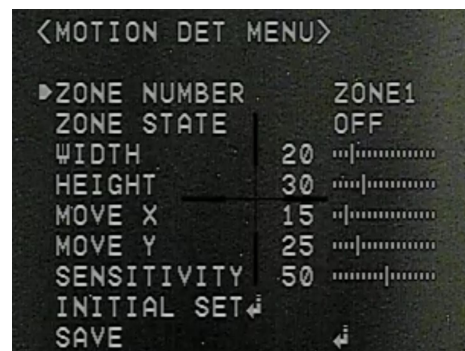
ZONE NUMBER : Select up to 8 MD areas.
ZONE STATE : Switches zone on or off.
WIDTH : Determines the horizontal size.
HEIGHT : Determines the vertical size.
MOVE X : Determines the horizontal axis.
MOVE Y : Determines the vertical axis.
SENSITIVITY : Determines the motion detection sensitivity.
INITIAL SET : Initialise all settings in MOTION DET menu.
SAVE : Select this to save the MOTION menu setting and return to the SPECIAL menu.

PRIVACY (Privacy Masking)

MASK NUMBER : Select up to 8 PRIVACY areas.
MASK STATE : Switch Mask state on or off.
SENSITIVITY : Determines area color. You can select
GREY, WHITE, RED, GREEN, BLUE, YELLOW, BLACK.
WIDTH : Determines the horizontal size.
HEIGHT : Determines the vertical size.
MOVE X : Determines the horizontal axis.
MOVE Y : Determines the vertical axis.
INITIAL SET : Initialise all PRIVACY masking settings.
SAVE : Select this to save the PRIVACY menu settings
and return to the SPECIAL menu.

LANGUAGE
You can select the menu language from English, Korean, Russian, Spanish and French

STABILIZER (DIS)
This function mitigates any picture movement due to external factors such as wind.
Note: When the STABILIZER option is used there is a possibility of decreased resolution because
this function uses digital zoom.
STABILIZER does not operate when background illumination is too low or picture contains a large
expanse of black or white colour e.g white wall or sky.

MONITOR TYPE
This selects a different GAMMA setting.

CRT : GAMMA 0.45
LCD : GAMMA 1.0

FACE REC (Face Recognition)
In a situation where the internal illumination is dark
but strong backlight exists behind the subject, the
human face can become unrecognisable. This mode
is suited for this particular problem.
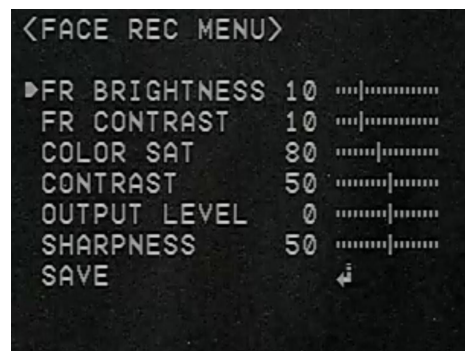FR BRIGHTNESS : 0 ~ 40
FR CONTRAST : 0 ~ 40
COLOR SAT : 0 ~ 200
CONTRAST : 0 ~ 100
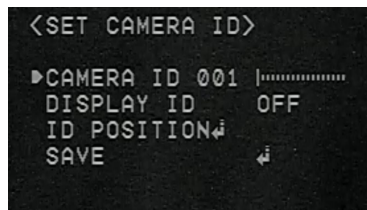OUTPUT LEVEL : -64 ~ +64
SHARPNESS : 0 ~ 100

COMM SET (Communication setting)
This function sets up the camera communication status when controlling the camera through an external control device such as DVR with PTZ functionality or RS485 keyboard. See further info below.

CAMERA ID
CAMERA ID : Determines the camera's identification number (between 0 and 255).

ID POSITION: Displays camera title on top left & right side of the screen.

BAUD RATE : You can select 4800/9600/19200/38400/57600 bps .

SAVE/REBOOT: Select this to **save the COMM SET** menu setting and return to the main screen.

PREVIOUS: Return to COMM SET menu.

RS485
This option allows setting of the menu using the RS485 connecting lead. If using an Alien DVR connect lead to T+ and T-. The camera RS485 lead Green = T+ and Blue = T-.

Set camera ID in camera to same as in DVR PTZ menu.

Ensure baud rates are set the same. The suggested baud rate = 4800.
Set the Protocol to PELCO-D in DVR.
Then **set** Preset 95 in DVR to display menu. In the PTZ menu use the down arrow key to move to menu line and the right arrow key to alter value. Then use the IRIS+ button to enter.

Note: RS-485 cable : Please connect (-) first and then (+).
IF there is an RS-485 cable connection problem or any other problem that causes a message **'ERROR RS-485 Connection. Please Reconnect and Reboot'** to be displayed, then power off the camera and reboot.

FACTORY RESET
Resets the camera setting to the factory defaults except <COMM SET> which is not initialised.

EXIT
Save all setting menus by pressing the menu button and then EXIT.

Troubleshooting

No screen display   * check power supply to camera
                                           * check video line
                                           * check brightness of Auto Iris Lens

Unclear video image   * check lens is clean
                          * adjust monitor contrast

Day/Night menu fault   * Check if AGC switched off

Sens-Up menu fault   * Check if AGC switched off, check that Shutter menu is FLK or Manual

Colour incorrect   * Check White Balance setup

Dimensions
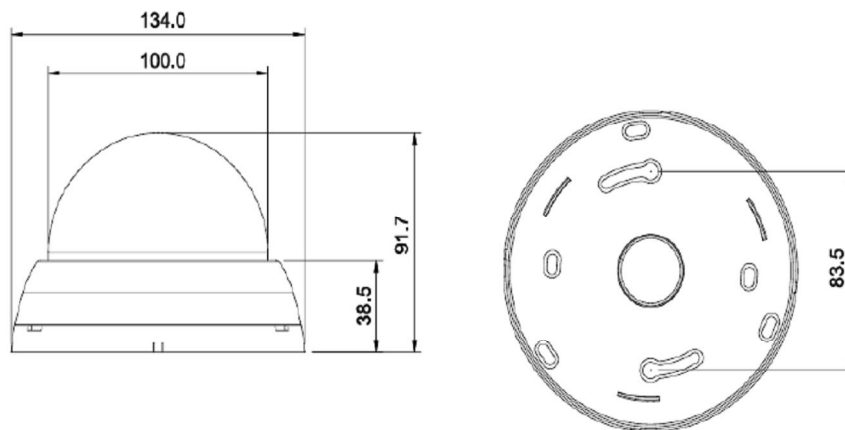
TECHNICAL SPECIFICATIONS

Model No	CAM725	CAM727	CAM745	CAM747
Operating Current	12vDC 141mA	12vDC 141mA or 24vAC 200mA	12vDC 330mA	12vDC 330mA or 24vAC 420mA
IR LEDs	No		20 x 850nm IR Leds	
IR beam distance	No		Up to 30 metres	
Weight	500 grms		520 grms	
Lens	2.8 ~ 12mm DC Iris Lens/F1.2		2.8 ~ 12mm DC Iris Lens (ICR)	
Image Sensor	1/3" Sony Super HAD CCDII			
Effective Pixels	PAL: 752(H) x 582(V)			
Horizontal Resolution	600TVL (Day) 650TVL (Night)			
Synchronising System	Internal			
Scanning System	625 Lines 2:1 Interlaced			
Video Output	1.0v p~p composite 75 ohms			
Signal to Noise Ratio	More than 52dB (AGC Off)			
Minimum Illumination	0.00001 Lux/F1.2 (Sens-Up) 0.2 Lux/F1.2			
Shutter Speed	NTSC: 1/60 ~ 1/100000 sec PAL:1/50 ~ 1/100000 sec			
Gamma Correction	Standard r = 0.45 (OSD)			
White Balance	1800K ~ 11000K auto			
Gain Control	6dB ~ 40dB Off / Low / Middle / High			
Smear Effect	0.005%			
Power Source	12vDC		12vDC or 24vAC	
Operating Temperature	-10°C ~ +50°C			
Humidity	Within 90% RH			
Measurements	134mm (D) x 91.7 (H)			
OSD MENU				
White Balance	ATW / COL-ROLL / PUSH / MANUAL			
Sens-up	x2 ~ x512			
Privacy Masking	Off / On (8 x programmable zones)			
Motion Detection	Off / On (8 zones)			
Digital Zoom	Off / On (x1 ~ x8.30)			
3DNR	Off / On			