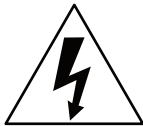




High Resolution 1000TVL Bullet Cameras

User Manual



The lightning flash with an arrowhead symbol, within an equilateral triangle is intended to alert the user to the presence of uninsulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

INFORMATION - This equipment has been tested and found to comply with limits for a Class A digital device, pursuant to part 15 of the FCC Rules & CE Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

WARNING - Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

CAUTION : To prevent electric shock and risk of fire hazards:

- Do NOT use power sources other than those specified.
- Do NOT expose this appliance to rain or moisture.

This installation should be made by a qualified service person and should conform to all local codes.

Contents

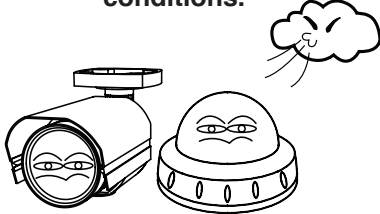
General Features.....	4
Precautions.....	5
Safety Instructions.....	6
How to Set Up the Camera Menu.....	7
Menu.....	10
Menu Set Up.....	11
Lens.....	12
Exposure.....	12
White Balance.....	14
Backlight.....	15
DNR.....	17
Day & Night.....	17
Image.....	19
System.....	20
Special.....	21
Exit.....	25
Specification.....	26
Troubleshooting.....	38

General Features

- 1000TVL
- WDR (Wide Dynamic Range)
- Preset
- DNR (Digital Noise Reduction)
- Smart IR
- Sens-Up
- Defog
- CVBS (Composite Video Blanking and Sync)
- Motion Tracking

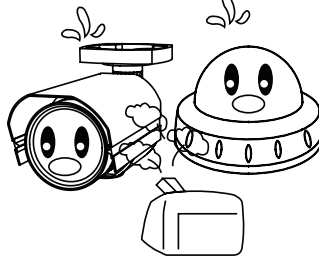
Precautions

Do not install the camera in extreme temperature conditions.



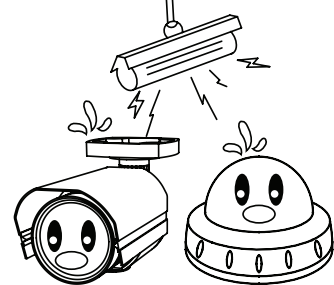
Only use the camera under conditions where temperatures are between -10°C and +50°C. Be especially careful to provide ventilation when operating under high temperatures.

Do not install or use the camera in an environment where the humidity is high.



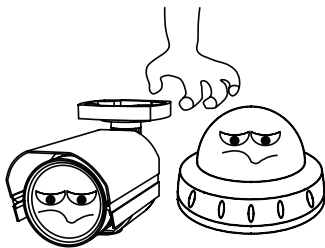
Do not install or use the camera in an environment where the humidity is high.

Do not install the camera under unstable lighting conditions.



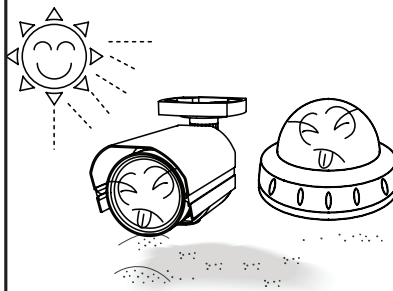
Severe lighting change or flicker can cause the camera to work improperly.

Do not touch the front lens of the camera.



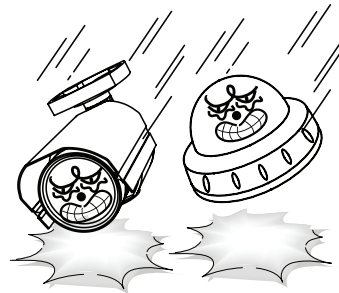
This is one of the most important parts of the camera. Be careful not to leave fingerprints on the lens cover.

Never keep the camera pointed directly at strong light.

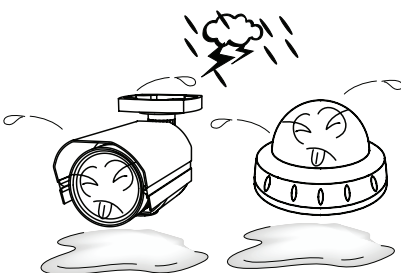


It can cause malfunctions to occur.

Do not drop the camera or subject it to physical shocks.

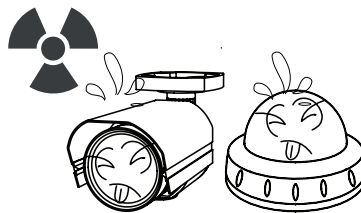


Do not expose internal grade cameras (Mini Domes) to rain or moisture.



If it gets wet, wipe dry immediately. Liquids can contain minerals that corrode the electronic components.

Do not expose the camera to radioactivity.



If exposed to radioactivity the CCD will fail.

NOTE

- If a camera is exposed to spotlights, or objects which reflect strong light, smearing or blooming may occur.
- Please check that the power satisfies the normal specification before connecting the camera.

Safety Instructions

Precautions for Use

- This camera should only be installed by qualified personnel.
- There are no user serviceable parts inside.
- Do not disassemble this camera other than to make initial adjustments.
- Use appropriate low voltage power cable to prevent fire or electrical shock.
- Please ensure your installation area can support the weight of the camera.

Please handle this Camera carefully

- Do not use strong or abrasive detergents when cleaning the camera.
- Do not expose the camera to direct sunlight.
- Do not install the camera in places where humidity is high.
- Do not install near cooling or heating devices.
- Do not expose an internal grade camera to rain or moisture.

How to Set Up the Camera Menu

● Setup Menu

PRESET MODE MENU

MAIN SETUP						
PRESET	INDOOR	OUTDOOR	LOW LIGHT	HALL WAY	LOBBY	ELEVATOR
MAIN SETUP						
RESET						

PRESET DEFAULT SETTING INFORMATION						
PRESET MODE	INDOOR	OUTDOOR	LOW LIGHT	HALL WAY	LOBBY	ELEVATOR
SENS UP	X16	X16	X32	X8	X8	X8
WDR	OFF	OFF	OFF	OFF	ON	OFF
DNR	MIDDLE	HIGH	HIGH	MIDDLE	LOW	LOW

LENS	DC	MODE	INDOOR / OUTDOOR/ DEBLUR		
		RETURN			
	MANUAL	MODE	NORMAL / DEBLUR		
		RETURN			
EXPOSURE		BRIGHTNESS	0 ~ 20		
		SHUTTER	AUTO		
			MANUAL	SPEED	PAL:1/50~1/60000 NTSC:1/60~1/60000
				RETURN	
			FLICKER		
		SENS-UP	OFF / X2 ~ X64		
		AGC	0 ~ 20		
		RETURN			
WHITE BAL	ATW				
	AWB				
	AWC-SET				
	MANUAL	KELVIN	LOW / MIDDLE / HIGH		
		R-GAN	0 ~ 20		
		B-GAN	0~ 20		
		RETURN			
BLACKLIGHT	OFF				
	HLC	LEVEL	0 ~ 20		
		MODE	ALL DAY / NIGHT ONLY		
		RETURN			
	BLC	H-POS	1 ~ 20		
		V-POS	1 ~ 20		
		H-SIZE	1 ~ 20		
		V-SIZE	1 ~ 20		
		RETURN			
	WDR	WEIGHT	LOW / MIDDLE / HIGH		
		RETURN			

● Setup Menu

DNR	OFF			
	LOW			
	MIDDLE			
	HIGH			
DAY&NIGHT	AUTO	SMART IR	0 ~ 20	
		AGC THRES	0 ~ 20	
		AGC MARGIN	0 ~ 20	
		DELAY	LOW / MIDDLE / HIGH	
		RETURN		
	COLOR			
	B/W	SMART IR	0 ~ 20	
		RETURN		
	EXTERN	SMART IR	0 ~ 20	
		EXTERN S/W	LOW/HIGH	
		DELAY	LOW/MIDDLE/HIGH	
		RETURN		
IMAGE		SHARPNESS	0 ~ 10	
		GAMMA	0.45 ~ 0.65	
		PEDSTAL	0 ~ 20	
		COLOR GAIN	0 ~ 20	
		MIRROR	OFF / ON	
		FLIP	OFF / ON	
		RETURN		
SYSTEM		COM.	CAM ID	0 ~ 255
			BAUDRATE	2400 / 4800 / 9600 / 57600 / 115200
			RETURN	
		VIEW ANGLE	WIDE 4 : 3	
			WIDE 16 : 9	XY ADJUST
			NORMAL	XY ADJUST
		CVBS	NTSC / PAL	
		LANGUAGE	ENG KOR JPN CHN(S) CHN	
		RETURN		

● Setup Menu

SPECIAL		D-ZOOM	1.0X ~ 8.0X						
		D-WDR	OFF / LOW / MIDDLE / HIGH						
		DEFOG	OFF						
			ON	MODE	AUTO				
					MANUAL				
				LEVEL	LOW				
					MIDDLE				
					HIGH				
		RETURN							
		SHADING	OFF						
			ON	WEIGHT	0 ~ 100%				
				RETURN					
			OFF						
		PRIVACY	ON	ZONE NUM	0 ~ 15				
				ZONE DISP	ON / OFF				
				H-POS	0 ~ 40				
				V-POS	0 ~ 31				
				H-SIZE	1 ~ 40				
				V-SIZE	1 ~ 31				
				Y LEVEL	0 ~ 20				
				CR LEVEL	0 ~ 20				
				CB LEVEL	0 ~ 20				
				RETURN					
				INTELLIGENT	MTN TRACKER	ON	DET . SETTING	SENSITIVITY	0 ~ 20
		OBJ KEEP	LV 0 ~ LV 60						
		MOTION EST	0 ~ 20						
		SIGNAL OUT	OFF/ANTI-SHIFT/ANTI-BLOCK/MTN TRACKER						
		RETURN							
		WINDOW TONE	0 ~ 6						
		WINDOW ZONE	0 ~ 3						
		WINDOW USE	OFF / ON						
		DET H-POS	1 ~ 40						
		DET V-POS	1 ~ 32						
		DET H - SIZE	1 ~ 40						
		DET V - SIZE	1 ~ 32						
		RETURN							
		ALARM	ANTI-SHIFT		OFF / ON				
			SHIFT SCALE		0 ~ 20				
			ANTI-BLOCK		OFF / ON				
			BLOCK SCALE		0 ~ 20				
			RETURN						
		QUICK ZOOM	MOVING		0 ~ 240 sec / 60 sec				
			ZOOM IN		0 ~ 240 sec / 60 sec				
			STANDBY		0 ~ 240 sec / 60 sec				
			SYNCHRONOUS		OFF / ON				
			TRACKING		OFF / ON				
			REPEAT		OFF ON				
RETURN									
RETURN									
		RETURN							
EXIT									

Menu

Menu settings can be selected using the buttons inside the camera.

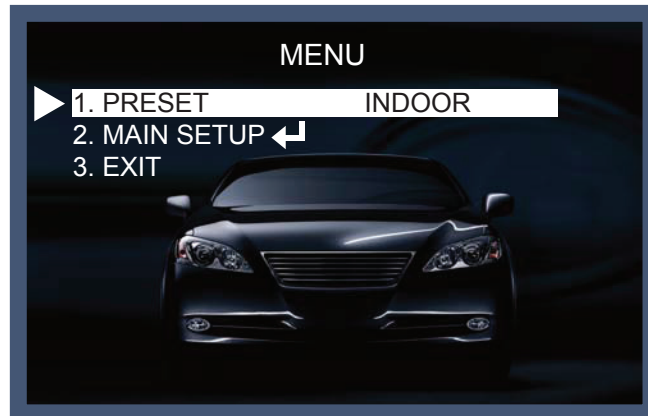
1. Press the SET button.

* The Menu will be displayed on the monitor.

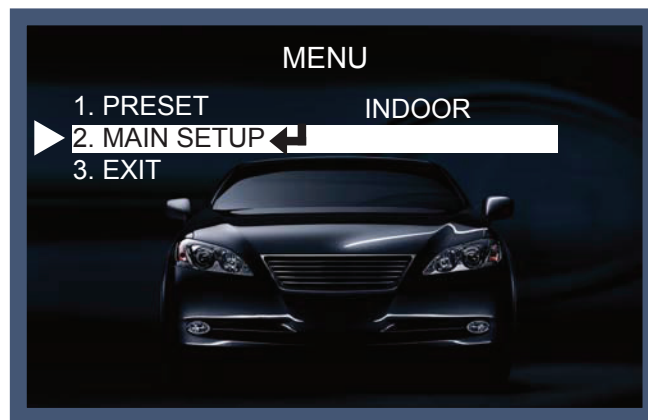
MENU

PRESET: Preset is provided to maximize user convenience.

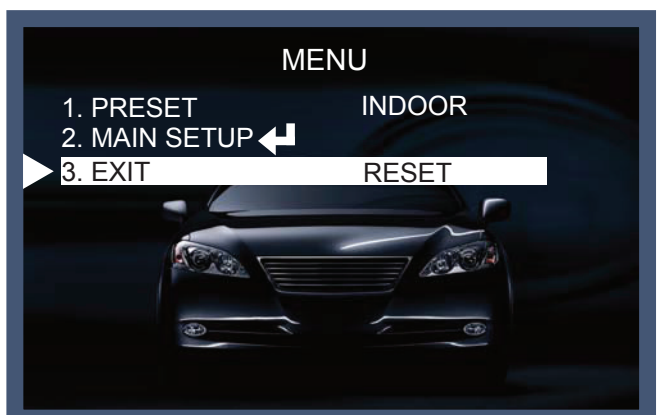
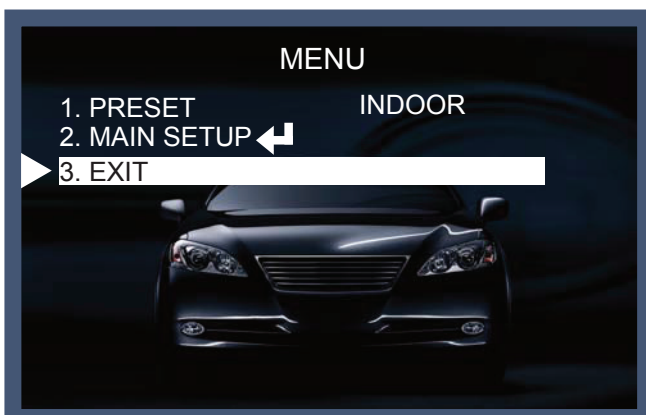
(PRESET: Indoor / Outdoor / Low light / Hallway / Lobby / Elevator)



2. MAIN SETUP: Enter the Main Setup to adjust further settings.



3. RESET: Move the OSD Joystick left or right on EXIT then the RESET option will appear. Press the button for 2-3 seconds to reset.

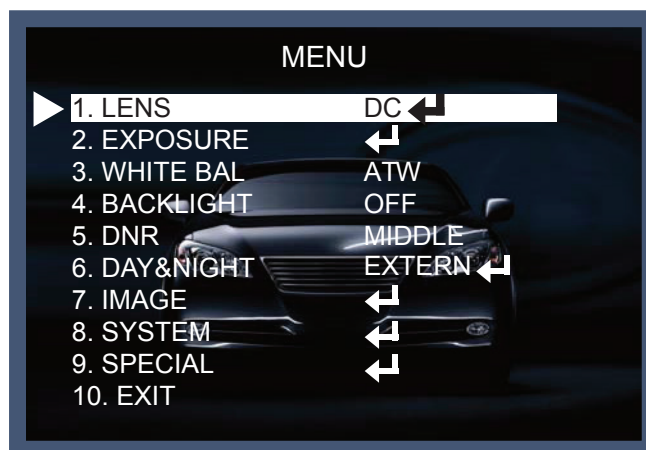


Menu Set Up

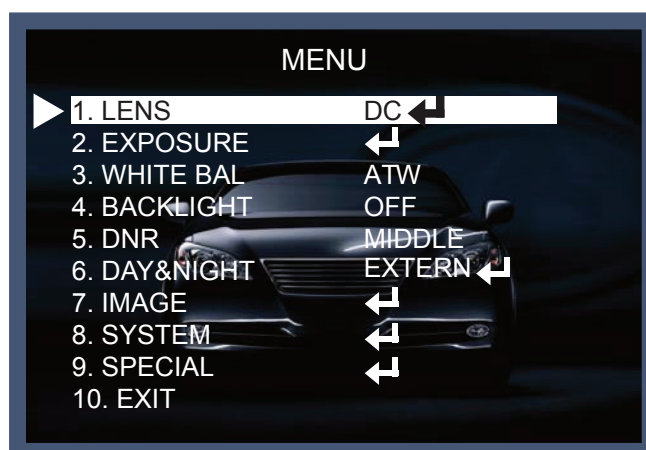
Menu settings can be selected using the buttons inside the camera.

1. Press the SET button.

* The Set Up Menu will be displayed on the monitor.



2. Move and select the required function using the Up and Down buttons.



3. Change Menu settings using the Left or Right buttons.

* Available values are displayed by pressing the Left and Right buttons.
Press the buttons until the desired value is displayed.

4. After altering the setting, move the cursor to EXIT and press the SET button to exit.

NOTE

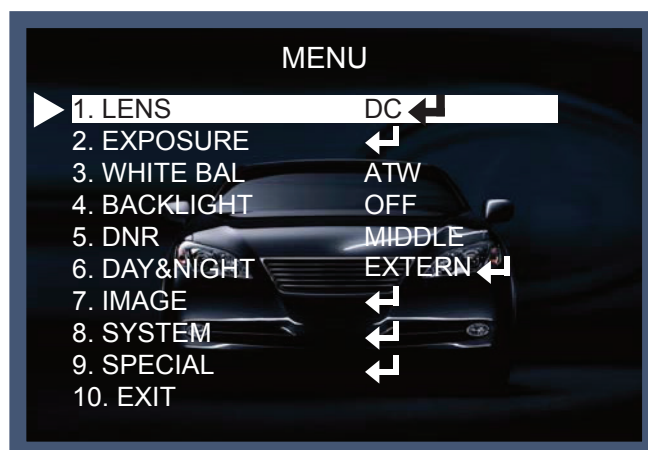
* Move to the available submenu by moving  arrow to desired feature.

* A submenu is not available when this symbol is displayed "----".

Lens

This function adjusts the brightness of the image being displayed on the monitor.

1. Move the cursor to LENS using the Up and Down buttons on the Set Up Menu screen.
2. Select the desired lens type by pressing the Left or Right button.



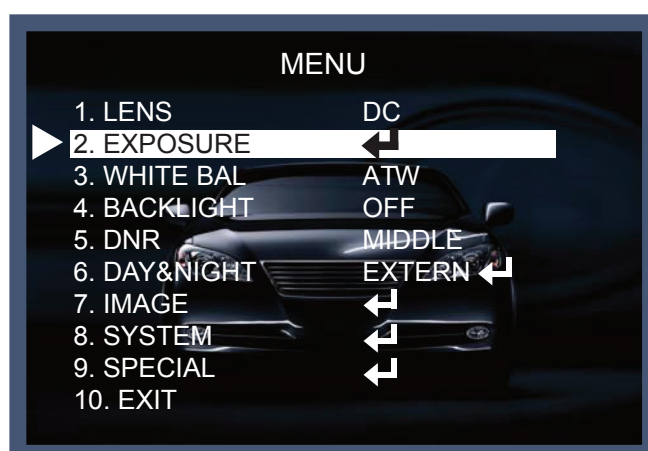
NOTE

* On DC mode, you can select INDOOR, OUTDOOR, or DEBLUR depending on the installation environment.

* On MANUAL mode, you can select NORMAL or DEBLUR depending on the installation environment.

Exposure

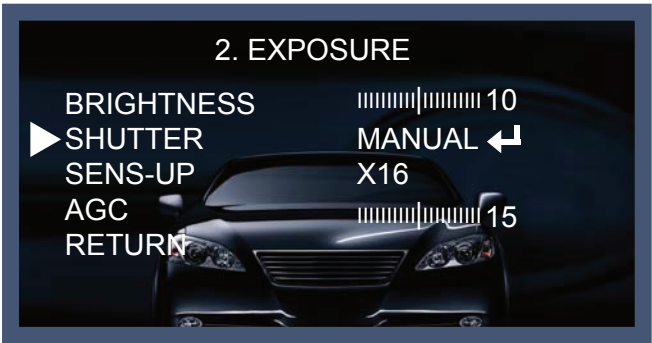
1. On the Main Menu, Select EXPOSURE using the Up or Down buttons.
2. Select the desired mode by pressing the Left or Right button.



3. BRIGHTNESS: Used to adjust the overall brightness level.
(BRIGHTNESS : 0 ~ 20 / Default Value : 10)



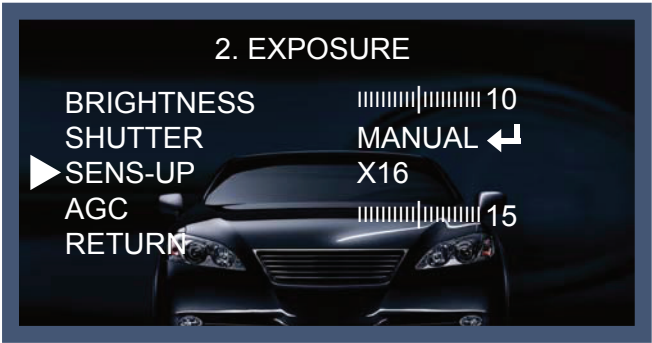
4. SHUTTER: Adjust the Electronic Shutter Speed by selecting one of the modes.
(AUTO, MANUAL, FLICKER).



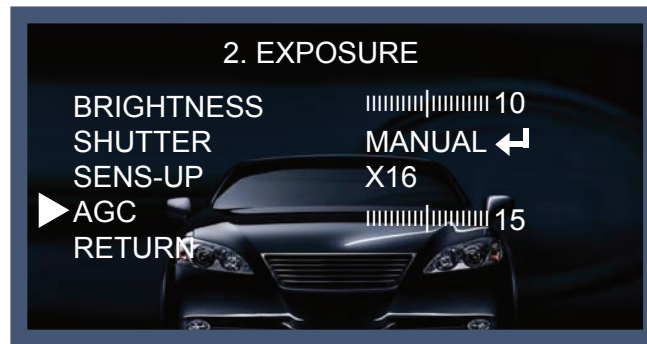
- MANUAL MODE: Shutter Speed is adjustable from 1/60 up to 1/60,000. (PAL : 1/50 - 1/60,000)



5. SENS-UP: The degree of darkness is automatically sensed and compensated for.
(Digital Slow Shutter: x2 ~ x64)



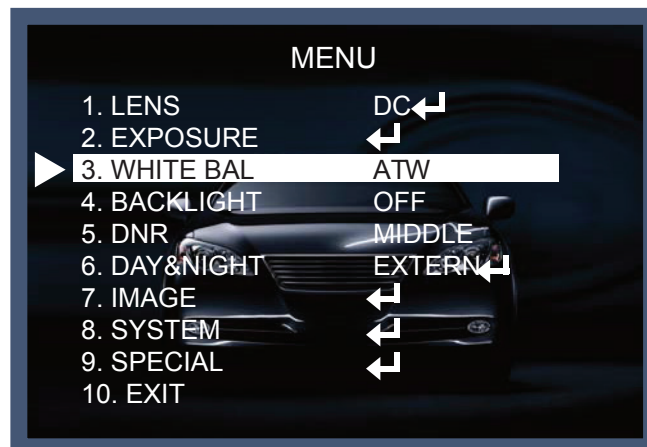
6. AGC : The brighter image can be displayed by adjusting AGC (Auto Gain Control) level.
(AGC : 0 ~ 20 / Default : 15 / Default Value : 15)



White Balance

Use this function when adjustment of the colour output is needed.

1. Move the triangular cursor to WHITE BAL on the Set Up Menu screen, using the Up and Down buttons
2. Select the desired mode using the Left and Right buttons.



3. Select the most appropriate mode for the prevailing installation conditions.
 - ATW: Use this mode when the colour temperature is from 1,800K to 10,500K.
 - AWB: Use this mode when the colour temperature is from 3,000K to 7,000K.
 - AWC → SET: Direct and focus the camera toward a blank white sheet of paper and press the SET button. If the lighting conditions change re-calibration will be required.
 - MANUAL: Manual setting allows for more detailed colour control. First adjust the white balance using either ATW or AWB. Then change to manual mode and press the SET button.



NOTE

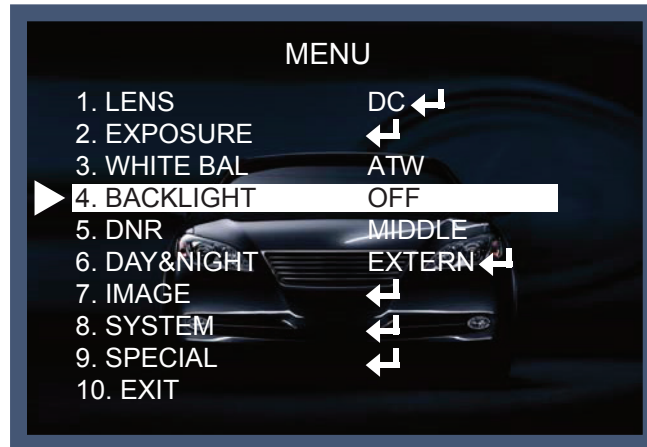
White Balance may not work correctly in the following conditions:

- * When there is a very high colour temperature within the subject, for example a sunset in a clear sky.
- * It is very dark
- * If the camera is pointed towards fluorescent light, or there is a drastic change in lighting, the White Balance operation may become unstable.
- * In these conditions, AWB mode is recommended.

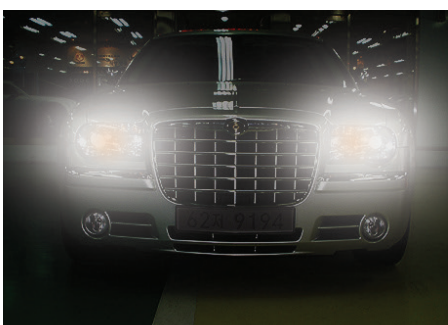
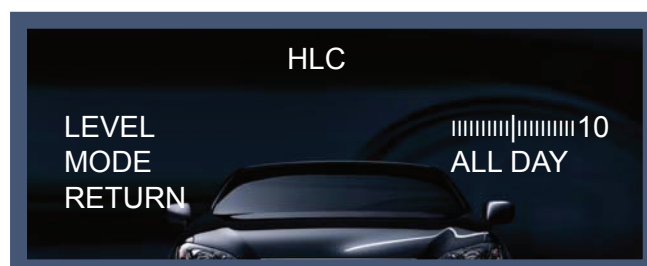
Backlight

On this menu, back light image can be compensated by users selecting one of the modes (HLC, BLC, and WDR).

1. Move the triangular cursor to BACKLIGHT on the Set Up Menu screen using the Up and Down buttons
2. Select the desired mode using the Left or Right buttons.



3. HLC: If the scene contains an extremely bright light source, such as car headlights, HLC can be used to mask them. This is especially useful for number plate recognition.

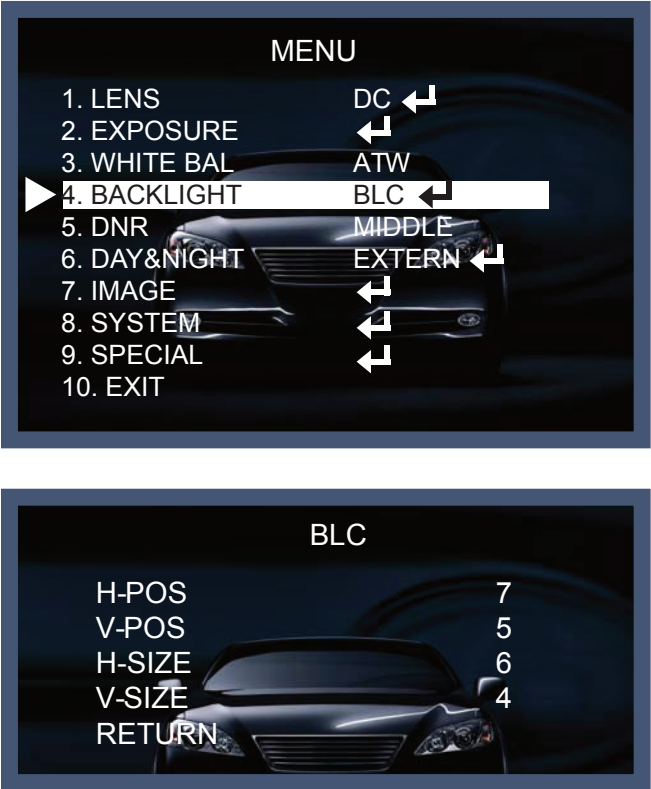


Normal

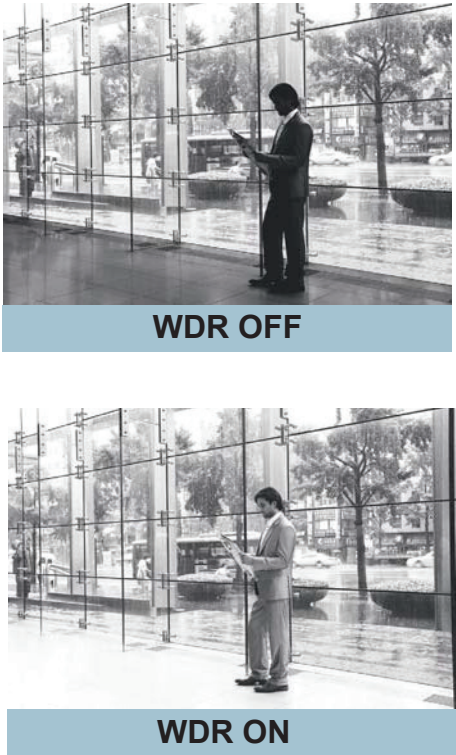
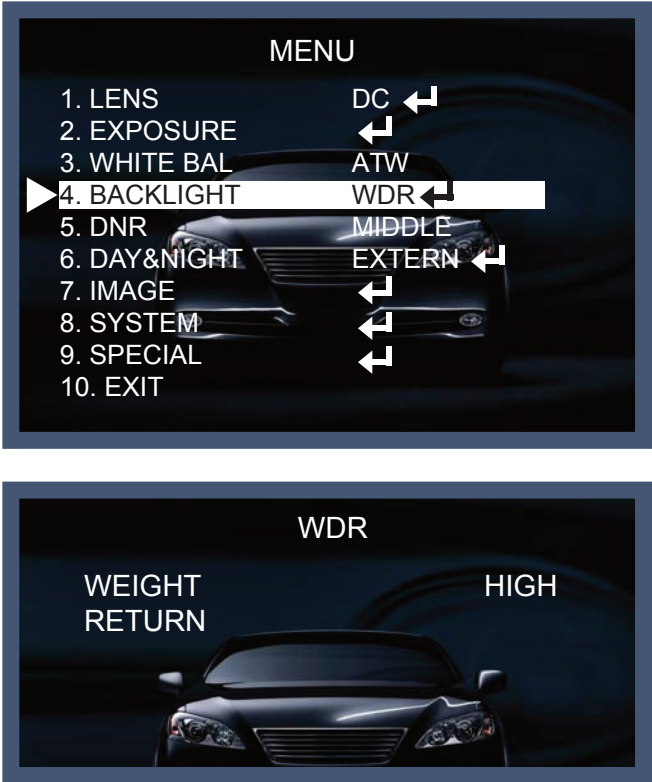


HLC

4. BLC (Black Light Compensation): The camera is equipped with 3D-DNR which provides intelligent light level control to overcome strong backlit conditions.
- BLC: The BLC area can be set by the user to compensate for backlit installation environments.



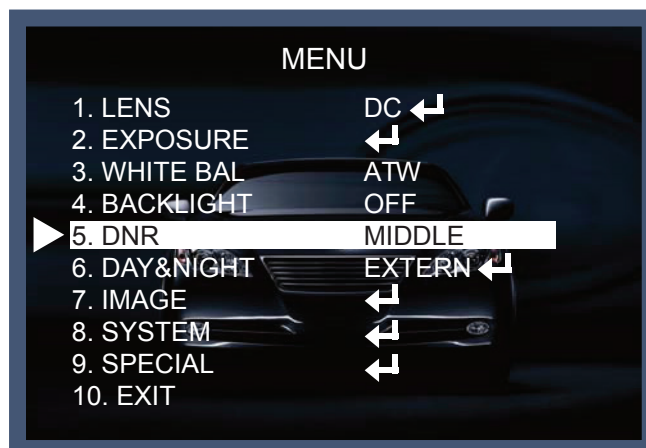
- H-POS: Adjust the H (Horizontal) Position of the BLC Area (1 ~ 20)
- V-POS: Adjust the V (Vertical) Position of the BLC Area (1 ~ 20)
- H-SIZE: Adjust the H (Horizontal) Size of the BLC Area (1 ~ 20)
- V-SIZE: Adjust the V (Vertical) Size of the BLC Area (1 ~ 20)



DNR

This function makes the noise of the low light background decrease and is a highlighted feature.

1. Move the triangular cursor to DNR on the Set Up Menu screen using the Up and Down buttons.
2. Select one of the modes (OFF, LOW, MIDDLE, HIGH) to use DNR by pressing the Right or Left button.



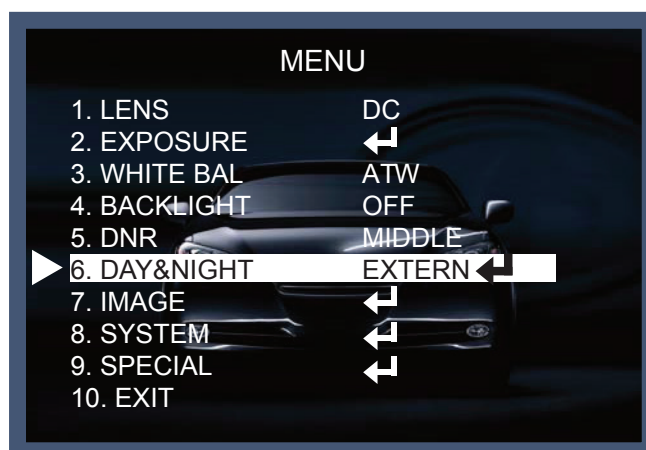
NOTE

* When the DNR function is activated noise cancellation is extremely effective. However, ghosting can occur if the level is set too high.

Day & Night

The Day & Night menu is used to set the camera video output.

1. Select Day & Night using the Up or Down button on the Set Up Menu screen.
2. Select the desired mode using the Left or Right buttons. (EXTERN, AUTO, COLOUR, B&W)



- EXT : It can change into COLOUR or B&W Mode automatically through the connection with the ground terminal. Users can adjust SMART-IR Level (0 ~ 20), EXTERN S/W Level, and working time of the D/N filter.



- AUTO: Automatically switches to colour during daytime and monochrome at night time, or low light environments. The switching time is adjustable - both day to night and night to day.



- SMART IR: It is used to compensate IR Saturation (0 ~ 20)
- AGC THRES: AGC Threshold Level (0 ~ 20)
- AGC MARGIN: AGC D/N Margin Level (0 ~ 20)

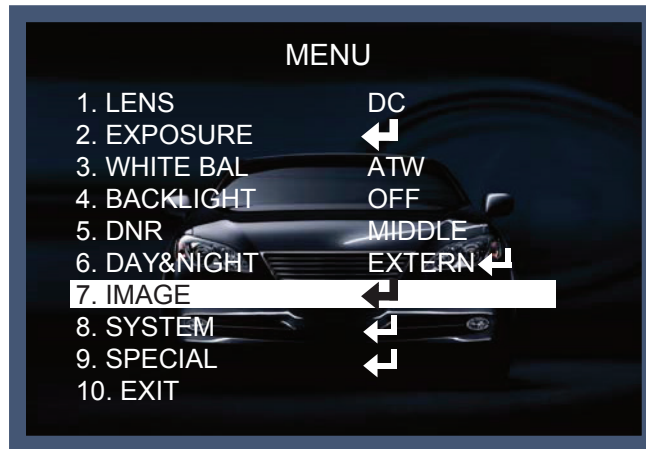


- COLOUR : Making the Video Output Colour always.
- B&W : Making the video output B&W always. By selecting the colour signal On or Off, this allows the burst signal to disappear or not.

Image

This can be used when you want to select an additional function control.

1. When the Set Up Menu is displayed, select IMAGE using the Up and Down buttons.
2. Select one of the Modes using the Left or Right buttons.



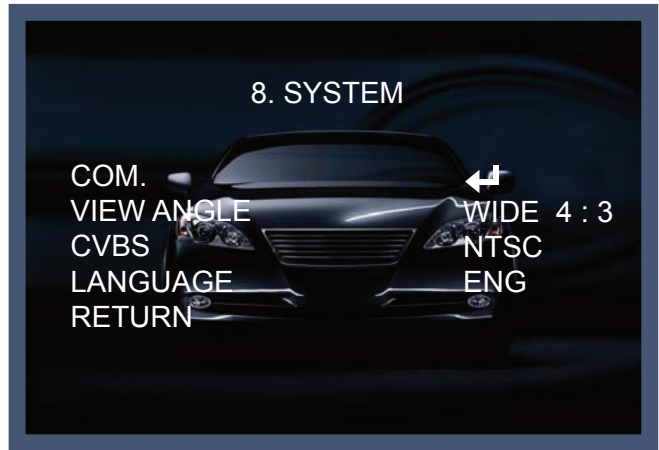
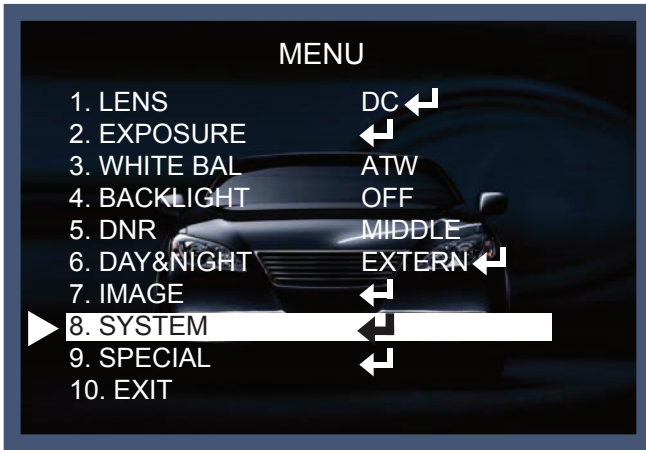
- SHARPNESS: The outline of an image becomes sharp and more distinct as the level of sharpness increases. It has better be used to adjust the value to the proper one depending on a sort of image. (SHARPNESS : 0 ~ 10)
- GAMMA: Gamma value is adjustable (GAMMA : 0.45 ~ 0.65)
- PEDESTAL: Pedestal value is adjustable (PEDESTAL : 0 ~ 20)
- COLOUR GAIN : Colour gain value is adjustable (COLOUR GAIN : 0 ~ 20)
- MIRROR: The image of the monitor is reversed horizontally.
- FLIP: The image of the monitor is reversed vertically.



System

This can be used when you want to select an additional function control.

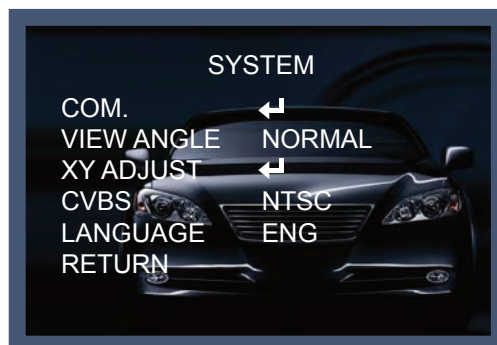
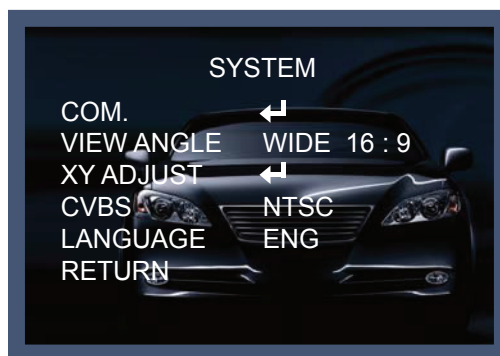
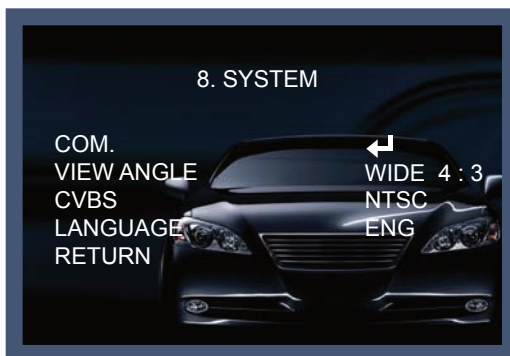
1. When the Set Up Menu is displayed, select SYSTEM using the Up and Down buttons.
2. Select one of the Modes using the Left or Right buttons.



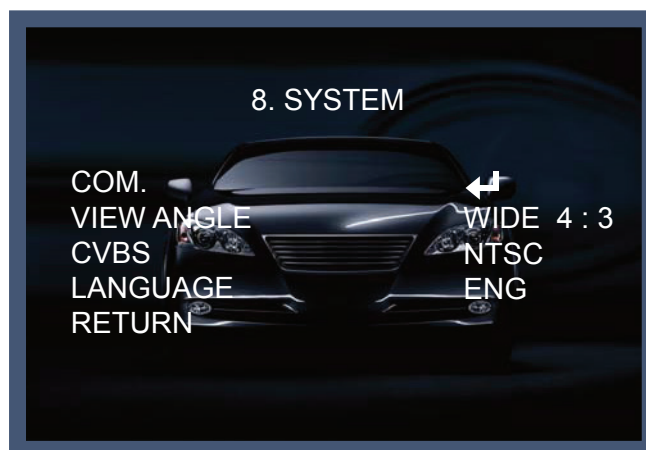
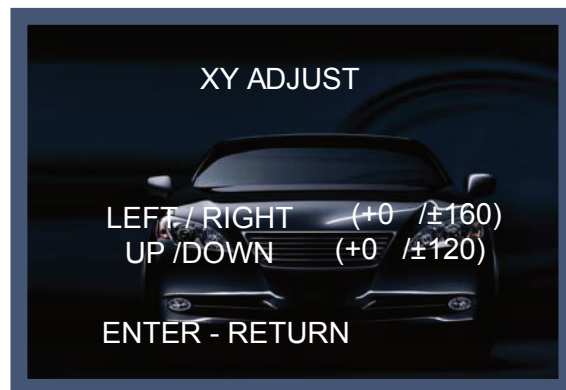
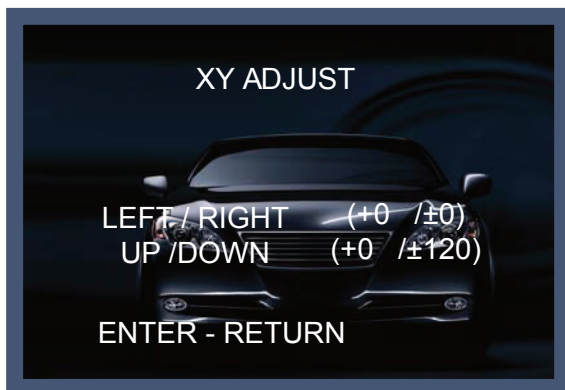
- COM: This menu is used for RS-485 Communication. Users are able to select 'CAM ID (0 ~ 255)' and 'BAUDRATE (2400 / 4800 / 9600 / 57600 / 115200)'.



- VIEW ANGLE: Users are able to adjust aspect ratio by selecting 'WIDE 4:3', 'WIDE 16:9' or 'NORMAL' depending on the monitor aimed for surveillance. (Default Value : WIDE 4:3)



For further adjustment, please enter into 'XY ADJUST' on 'WIDE 16:9' or 'NORMAL'.

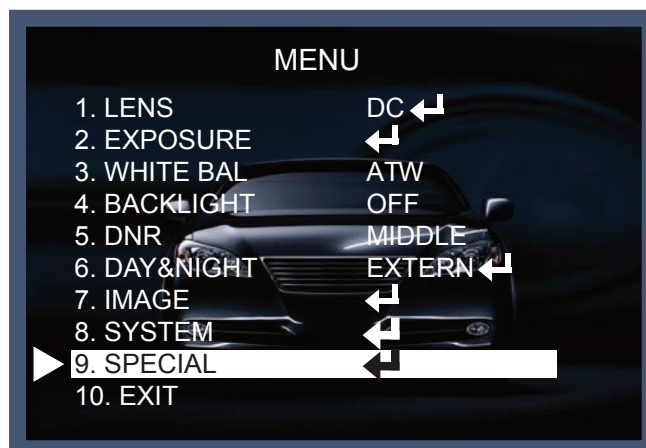


- CVBS : TV system is manually switchable to 'PAL' or 'NTSC' on CVBS (Composite Video Blanking and Sync).
- LANGUAGE: English, Korean, Japanese, Chinese are available

Special

This menu is used to select additional control functions.

1. When the Main Menu is displayed, select SPECIAL using the Up and Down buttons.
2. Select one of the modes using the Up and Down buttons.

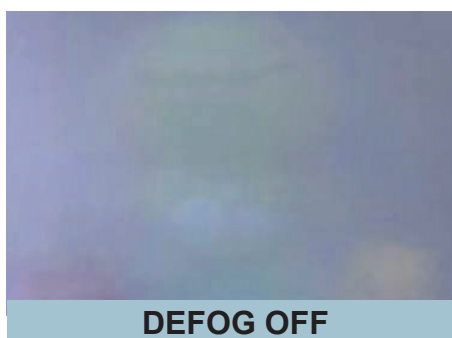




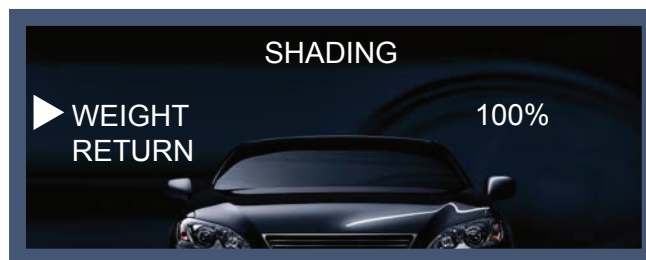
- D-ZOOM : Digital Zoom supports up to x8 available (x1 ~ x8)
The higher the digital zoom magnification is, the lower the resolution is.



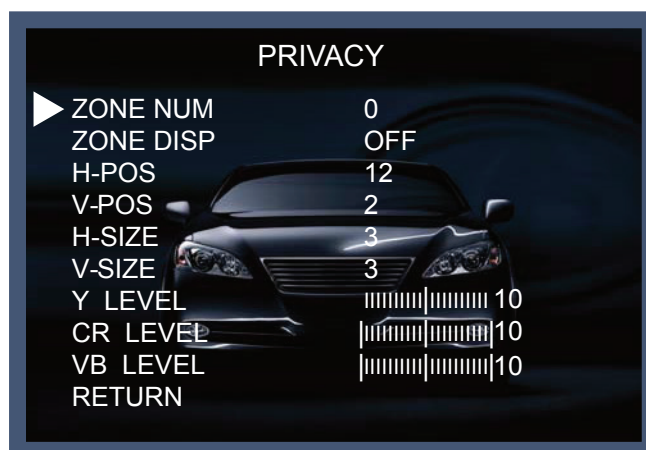
- D-WDR : This camera which is using 3D-DNR DSP provides intelligent light level control to overcome even strong backlight conditions. (OFF / LOW / MIDDLE / HIGH)
- DEFOG : This function helps to recognize the object in a foggy or dusty weather condition.



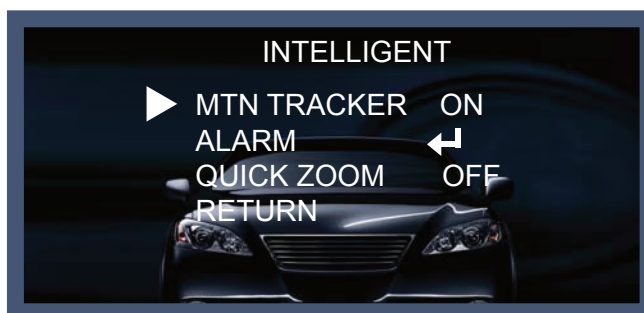
- **SHADING** : Used to increase brightness in case the angle of lens is set as wide causing a darker image on both sides than that on the center.



- **PRIVACY**: This is used to hide certain areas on the monitor. You can designate each different 15 areas. The size of a designated area can be adjusted.



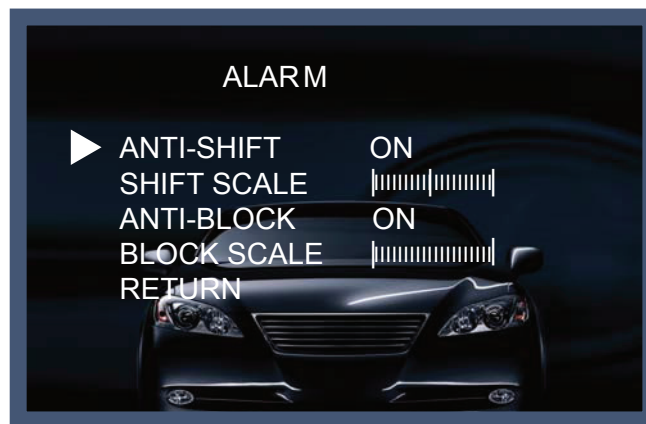
- **INTELLIGENT**: It is used for crime prevention & detection by providing intelligent functions based on motion tracking.



- **MTN TRACKER**: Used to adjust a certain area for Motion Tracking



- **ALARM:** Used to set 'ANTI-SHIFT' or 'ANTI-BLOCK' based on motion tracking. Scale Level of these functions are adjustable.



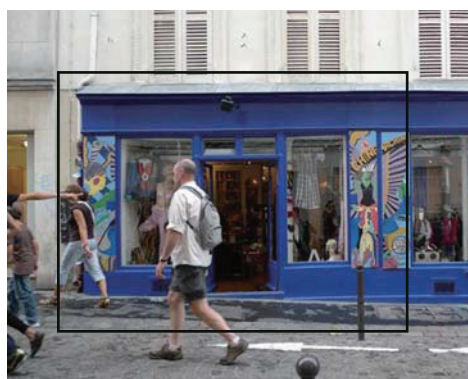
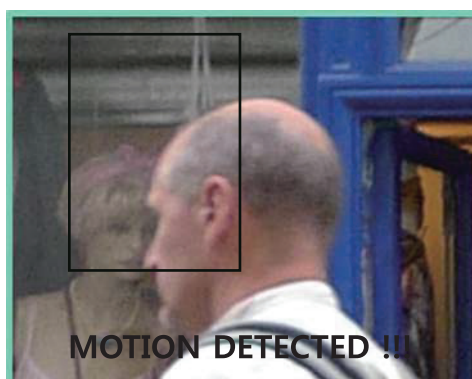
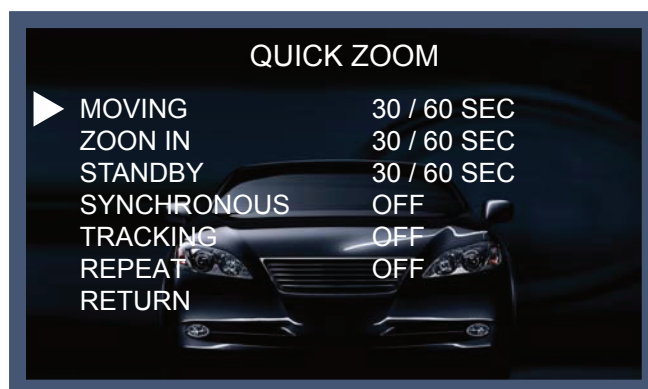
- **ANTI-SHIFT :** If someone intends to change or shift the camera direction by their hands or objects, it will be automatically detected by a warning message (SHIFTING DETECTED !!!) on the monitor.



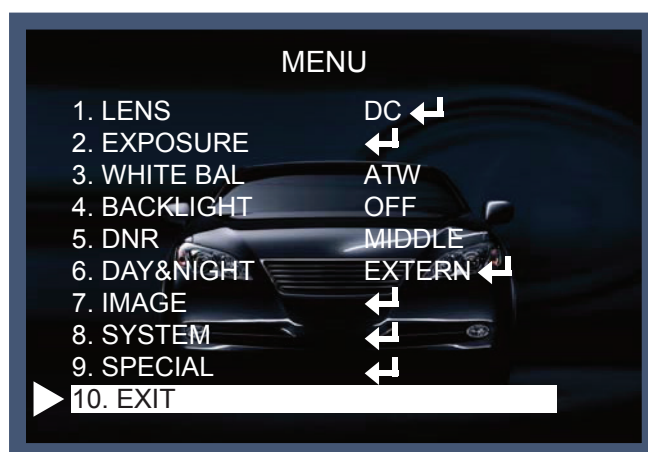
- **ANTI-BLOCK:** If someone intentionally blocks the front of the camera by hands or spray, etc., it will be automatically detected by a warning message (BLOCKING DETECTED !!!) on the monitor.



- **QUICK ZOOM** : Digital 'Zoom-In' is operated to precisely detect objects when objects enter a designated Motion-Detection area. The area setting is available on MTN TRACKER (Page 23).



Exit



Press 'EXIT' button to save the current settings and exit the Setup Menu.

Specification



Model Number	GS550IRTDN
Image Sensor	1/3" 1.3 Mega Sony Exmor Sensor (Imx138)
Resolution	1000TVL
Effective Pixels	1305 (H) x 1049 (V), 1.37M Pixels
Total Pixels	1312 (H) x 1069 (V), 1.40M Pixels
Scanning System	Progressive Scan
S/N Ratio	More than 50dB
Frame Rate	Max. 50P/60P
Video Output	CVBS: 1.0Vp-p/75 Ω
Minimum Illumination	0 Lux (IR LED ON)
Lens	DC / MANUAL
Electronic Shutter Speed	AUTO / MANUAL (1/60 Sec ~ 1/60000 Sec) / FLICKER
OSD	Built-In
BLC	0
HSBLC	0
WDR (Wide Dynamic Range)	ON (LOW / MIDDLE / HIGH) / OFF
Digital WDR	ON (LOW / MIDDLE / HIGH) / OFF
Day & Night	COLOUR / B&W / AUTO / EXT
White Balance	AUTO / AUTO EXT / AWC->SET / MANUAL
Smart-IR	0~20 (Level Adjustable), Default: 0
Sens-Up	x2 ~ x32, Default: x8
Motion Detection	ON / OFF (Programmable 4 Zones)
Motion Tracking (Quick Zoom)	ON / OFF
OSD Output for Anti Shifting	ON / OFF
OSD Output for Anti Blocking	ON / OFF
3D DNR	OFF / LOW / MIDDLE / HIGH
Defog	ON (AUTO / MANUAL) / OFF
Brightness	0~20 (Level Adjustable), Default: 10
AGC	0~20 (Level Adjustable), Default: 20
Privacy Masking	ON / OFF (Programmable 16 Zones)
Mirror / V-FLIP	ON / OFF
Sharpness	0~15 (Level Adjustable), Default: 7
Lens Shading Compensation (LSC)	ON / OFF
RS-485 (Protocol)	Available
View Angle	WIDE 4:3 / Normal / WIDE 16:9
CVBS Output	NTSC / PAL Selectable
Communication	Coaxial Control
Power Consumption	IR LED ON: 1A Max
Power Supply	Dual Voltage
Lens	DC Auto Iris Varifocal Lens (5-50 mm)
Dimensions (W x H x D)	90 x 134 x 290 mm
Weight	2000g

Features and specifications are subject to change for further improvement without notice

Specification



Model Number	ZB2812IR
Image Sensor	1/3" 1.3 Mega Sony Exmor Sensor (Imx138)
Resolution	1000TVL
Effective Pixels	1305 (H) x 1049 (V), 1.37M Pixels
Total Pixels	1312 (H) x 1069 (V), 1.40M Pixels
Scanning System	Progressive Scan
S/N Ratio	More than 50dB
Frame Rate	Max. 50P/60P
Video Output	CVBS: 1.0Vp-p/75 Ω
Minimum Illumination	0 Lux (IR LED ON)
Lens	DC / MANUAL
Electronic Shutter Speed	AUTO / MANUAL (1/60 Sec ~ 1/60000 Sec) / FLICKER
OSD	Built-In
BLC	0
HSBLC	0
WDR (Wide Dynamic Range)	ON (LOW / MIDDLE / HIGH) / OFF
Digital WDR	ON (LOW / MIDDLE / HIGH) / OFF
Day & Night	COLOUR / B&W / AUTO / EXT
White Balance	AUTO / AUTO EXT / AWC->SET / MANUAL
Smart-IR	0~20 (Level Adjustable), Default: 0
Sens-Up	x2 ~ x32, Default: x8
Motion Detection	ON / OFF (Programmable 4 Zones)
Motion Tracking (Quick Zoom)	ON / OFF
OSD Output for Anti Shifting	ON / OFF
OSD Output for Anti Blocking	ON / OFF
3D DNR	OFF / LOW / MIDDLE / HIGH
Defog	ON (AUTO / MANUAL) / OFF
Brightness	0~20 (Level Adjustable), Default: 10
AGC	0~20 (Level Adjustable), Default: 20
Privacy Masking	ON / OFF (Programmable 16 Zones)
Mirror / V-FLIP	ON / OFF
Sharpness	0~15 (Level Adjustable), Default: 7
Lens Shading Compensation (LSC)	ON / OFF
RS-485 (Protocol)	Available
View Angle	WIDE 4:3 / Normal / WIDE 16:9
CVBS Output	NTSC / PAL Selectable
Communication	Coaxial Control
Power Consumption	IR LED ON: 400mA
Power Supply	DC12V
Lens	DC Auto Iris Varifocal Lens (2.8-12mm)
Dimensions (W x H x D)	70 x 90 x 188 mm
Weight	500g

Features and specifications are subject to change for further improvement without notice

Specification



Model Number	ZD2812
Image Sensor	1/3" 1.3 Mega Sony Exmor Sensor (Imx138)
Resolution	1000TVL
Effective Pixels	1305 (H) x 1049 (V), 1.37M Pixels
Total Pixels	1312 (H) x 1069 (V), 1.40M Pixels
Scanning System	Progressive Scan
S/N Ratio	More than 50dB
Frame Rate	Max. 50P/60P
Video Output	CVBS: 1.0Vp-p/75 Ω
Minimum Illumination	0.00001 Lux
Lens	DC / MANUAL
Electronic Shutter Speed	AUTO / MANUAL (1/60 Sec ~ 1/60000 Sec) / FLICKER
OSD	Built-In
BLC	0
HSBLC	0
WDR (Wide Dynamic Range)	ON (LOW / MIDDLE / HIGH) / OFF
Digital WDR	ON (LOW / MIDDLE / HIGH) / OFF
Day & Night	COLOUR / B&W / AUTO / EXT
White Balance	AUTO / AUTO EXT / AWC->SET / MANUAL
Smart-IR	0~20 (Level Adjustable), Default: 0
Sens-Up	x2 ~ x32, Default: x8
Motion Detection	ON / OFF (Programmable 4 Zones)
Motion Tracking (Quick Zoom)	ON / OFF
OSD Output for Anti Shifting	ON / OFF
OSD Output for Anti Blocking	ON / OFF
3D DNR	OFF / LOW / MIDDLE / HIGH
Defog	ON (AUTO / MANUAL) / OFF
Brightness	0~20 (Level Adjustable), Default: 10
AGC	0~20 (Level Adjustable), Default: 20
Privacy Masking	ON / OFF (Programmable 16 Zones)
Mirror / V-FLIP	ON / OFF
Sharpness	0~15 (Level Adjustable), Default: 7
Lens Shading Compensation (LSC)	ON / OFF
RS-485 (Protocol)	Available
View Angle	WIDE 4:3 / Normal / WIDE 16:9
CVBS Output	NTSC / PAL Selectable
Communication	Coaxial Control
Power Consumption	IR LED ON: 700mA Max
Power Supply	Dual Voltage
Lens	DC Auto Iris Varifocal Lens (2.8-12 mm)
Dimensions (W x H x D)	95 x 80 x 265 mm
Weight	1500g

Features and specifications are subject to change for further improvement without notice

Specification



Model Number	ZD2812IR
Image Sensor	1/3" 1.3 Mega Sony Exmor Sensor (Imx138)
Resolution	1000TVL
Effective Pixels	1305 (H) x 1049 (V), 1.37M Pixels
Total Pixels	1312 (H) x 1069 (V), 1.40M Pixels
Scanning System	Progressive Scan
S/N Ratio	More than 50dB
Frame Rate	Max. 50P/60P
Video Output	CVBS : 1.0Vp-p/75 Ω
Minimum Illumination	0 Lux (IR LED ON)
Lens	DC / MANUAL
Electronic Shutter Speed	AUTO / MANUAL (1/60 Sec ~ 1/60000 Sec) / FLICKER
OSD	Built-In
BLC	0
HSBLC	0
WDR (Wide Dynamic Range)	ON (LOW / MIDDLE / HIGH) / OFF
Digital WDR	ON (LOW / MIDDLE / HIGH) / OFF
Day & Night	COLOUR / B&W / AUTO / EXT
White Balance	AUTO / AUTO EXT / AWC->SET / MANUAL
Smart-IR	0~20 (Level Adjustable), Default: 0
Sens-Up	x2 ~ x32, Default : x8
Motion Detection	ON / OFF (Programmable 4 Zones)
Motion Tracking (Quick Zoom)	ON / OFF
OSD Output for Anti Shifting	ON / OFF
OSD Output for Anti Blocking	ON / OFF
3D DNR	OFF / LOW / MIDDLE / HIGH
Defog	ON (AUTO / MANUAL) / OFF
Brightness	0~20 (Level Adjustable), Default: 10
AGC	0~20 (Level Adjustable), Default: 20
Privacy Masking	ON / OFF (Programmable 16 Zones)
Mirror / V-FLIP	ON / OFF
Sharpness	0~15 (Level Adjustable), Default: 7
Lens Shading Compensation (LSC)	ON / OFF
RS-485 (Protocol)	Available
View Angle	WIDE 4:3 / Normal / WIDE 16:9
CVBS Output	NTSC / PAL Selectable
Communication	Coaxial Control
Power Consumption	IR LED ON: 700mA Max
Power Supply	Dual Voltage
Lens	DC Auto Iris Varifocal Lens (2.8-12 mm)
Dimensions (W x H x D)	95 x 80 x 265 mm
Weight	1500g

Features and specifications are subject to change for further improvement without notice

Specification



Model Number	ZD2812IR/ACW
Image Sensor	1/3" 1.3 Mega Sony Exmor Sensor (Imx138)
Resolution	1000TVL
Effective Pixels	1305 (H) x 1049 (V), 1.37M Pixels
Total Pixels	1312 (H) x 1069 (V), 1.40M Pixels
Scanning System	Progressive Scan
S/N Ratio	More than 50dB
Frame Rate	Max. 50P/60P
Video Output	CVBS: 1.0Vp-p/75 Ω
Minimum Illumination	0 Lux (IR LED ON)
Lens	DC / MANUAL
Electronic Shutter Speed	AUTO / MANUAL (1/60 Sec ~ 1/60000 Sec) / FLICKER
OSD	Built-In
BLC	0
HSBLC	0
WDR (Wide Dynamic Range)	ON (LOW / MIDDLE / HIGH) / OFF
Digital WDR	ON (LOW / MIDDLE / HIGH) / OFF
Day & Night	COLOUR / B&W / AUTO / EXT
White Balance	AUTO / AUTO EXT / AWC->SET / MANUAL
Smart-IR	0~20 (Level Adjustable), Default: 0
Sens-Up	x64, Default : x8
Motion Detection	ON / OFF (Programmable 4 Zones)
Motion Tracking (Quick Zoom)	ON / OFF
OSD Output for Anti Shifting	ON / OFF
OSD Output for Anti Blocking	ON / OFF
3D DNR	OFF/LOW/MIDDLE/HIGH
Defog	ON (AUTO / MANUAL) / OFF
Brightness	0~20 (Level Adjustable), Default: 10
AGC	0~20 (Level Adjustable), Default: 20
Privacy Masking	ON / OFF (Programmable 16 Zones)
Mirror / V-FLIP	ON / OFF
Sharpness	0~15 (Level Adjustable), Default: 7
Lens Shading Compensation (LSC)	ON / OFF
RS-485 (Protocol)	Available
View Angle	WIDE 4:3 / Normal / WIDE 16:9
CVBS Output	NTSC / PAL Selectable
Communication	Coaxial Control
Power Consumption	IR LED ON: 800mA Max
Power Supply	Dual Voltage
Lens	DC Auto Iris Varifocal Lens (2.8-12 mm)
Dimensions (W x H x D)	88 x 115 x 245 mm
Weight	1600g

Features and specifications are subject to change for further improvement without notice

Specification



Model Number	ZD5501
Image Sensor	1/3" 1.3 Mega Sony Exmor Sensor (Imx138)
Resolution	1000TVL
Effective Pixels	1305 (H) x 1049 (V), 1.37M Pixels
Total Pixels	1312 (H) x 1069 (V), 1.40M Pixels
Scanning System	Progressive Scan
S/N Ratio	More than 50dB
Frame Rate	Max. 50P/60P
Video Output	CVBS: 1.0Vp-p/75 Ω
Minimum Illumination	0 Lux (IR LED ON)
Lens	DC / MANUAL
Electronic Shutter Speed	AUTO / MANUAL (1/60 Sec ~ 1/60000 Sec) / FLICKER
OSD	Built-In
BLC	0
HSBLC	0
WDR (Wide Dynamic Range)	ON (LOW / MIDDLE / HIGH) / OFF
Digital WDR	ON (LOW / MIDDLE / HIGH) / OFF
Day & Night	COLOUR / B&W / AUTO / EXT
White Balance	AUTO / AUTO EXT / AWC->SET / MANUAL
Smart-IR	0~20 (Level Adjustable), Default: 0
Sens-Up	x2 ~ x32, Default : x8
Motion Detection	ON / OFF (Programmable 4 Zones)
Motion Tracking (Quick Zoom)	ON / OFF
OSD Output for Anti Shifting	ON / OFF
OSD Output for Anti Blocking	ON / OFF
3D DNR	OFF / LOW / MIDDLE / HIGH
Defog	ON (AUTO / MANUAL) / OFF
Brightness	0~20 (Level Adjustable), Default: 10
AGC	0~20 (Level Adjustable), Default: 20
Privacy Masking	ON / OFF (Programmable 16 Zones)
Mirror / V-FLIP	ON / OFF
Sharpness	0~15 (Level Adjustable), Default: 7
Lens Shading Compensation (LSC)	ON / OFF
RS-485 (Protocol)	Available
View Angle	WIDE 4:3 / Normal / WIDE 16:9
CVBS Output	NTSC / PAL Selectable
Communication	Coaxial Control
Power Consumption	IR LED ON: 2A Max
Power Supply	Dual Voltage
Lens	DC Auto Iris Varifocal Lens (5-50 mm)
Dimensions (W x H x D)	240 x 80 x 265 mm
Weight	2500g

Features and specifications are subject to change for further improvement without notice

Specification



Model Number	ZD5502
Image Sensor	1/3" 1.3 Mega Sony Exmor Sensor (Imx138)
Resolution	1000TVL
Effective Pixels	1305 (H) x 1049 (V), 1.37M Pixels
Total Pixels	1312 (H) x 1069 (V), 1.40M Pixels
Scanning System	Progressive Scan
S/N Ratio	More than 50dB
Frame Rate	Max. 50P/60P
Video Output	CVBS: 1.0Vp-p/75 Ω
Minimum Illumination	0 Lux (IR LED ON)
Lens	DC / MANUAL
Electronic Shutter Speed	AUTO / MANUAL (1/60 Sec ~ 1/60000 Sec) / FLICKER
OSD	Built-In
BLC	0
HSBLC	0
WDR (Wide Dynamic Range)	ON (LOW / MIDDLE / HIGH) / OFF
Digital WDR	ON (LOW / MIDDLE / HIGH) / OFF
Day & Night	COLOUR / B&W / AUTO / EXT
White Balance	AUTO / AUTO EXT / AWC->SET / MANUAL
Smart-IR	0~20 (Level Adjustable), Default: 0
Sens-Up	x2 ~ x32, Default : x8
Motion Detection	ON / OFF (Programmable 4 Zones)
Motion Tracking (Quick Zoom)	ON / OFF
OSD Output for Anti Shifting	ON / OFF
OSD Output for Anti Blocking	ON / OFF
3D DNR	OFF / LOW / MIDDLE / HIGH
Defog	ON (AUTO / MANUAL) / OFF
Brightness	0~20 (Level Adjustable), Default: 10
AGC	0~20 (Level Adjustable), Default: 20
Privacy Masking	ON / OFF (Programmable 16 Zones)
Mirror / V-FLIP	ON / OFF
Sharpness	0~15 (Level Adjustable), Default: 7
Lens Shading Compensation (LSC)	ON / OFF
RS-485 (Protocol)	Available
View Angle	WIDE 4:3 / Normal / WIDE 16:9
CVBS Output	NTSC / PAL Selectable
Communication	Coaxial Control
Power Consumption	IR LED ON: 1.5A Max
Power Supply	Dual Voltage
Lens	DC Auto Iris Varifocal Lens (5-50 mm)
Dimensions (W x H x D)	195 x 157 x 310 mm
Weight	2300g

Features and specifications are subject to change for further improvement without notice

Specification



Model Number	ZD5503
Image Sensor	1/3" 1.3 Mega Sony Exmor Sensor (Imx138)
Resolution	1000TVL
Effective Pixels	1305 (H) x 1049 (V), 1.37M Pixels
Total Pixels	1312 (H) x 1069 (V), 1.40M Pixels
Scanning System	Progressive Scan
S/N Ratio	More than 50dB
Frame Rate	Max. 50P/60P
Video Output	CVBS: 1.0Vp-p/75 Ω
Minimum Illumination	0 Lux (IR LED ON)
Lens	DC / MANUAL
Electronic Shutter Speed	AUTO / MANUAL (1/60 Sec ~ 1/60000 Sec) / FLICKER
OSD	Built-In
BLC	0
HSBLC	0
WDR (Wide Dynamic Range)	ON (LOW/ MIDDLE / HIGH) / OFF
Digital WDR	ON (LOW / MIDDLE / HIGH) / OFF
Day & Night	COLOUR / B&W / AUTO / EXT
White Balance	AUTO / AUTO EXT / AWC->SET / MANUAL
Smart-IR	0~20 (Level Adjustable), Default: 0
Sens-Up	x2 ~ x32, Default: x8
Motion Detection	ON / OFF (Programmable 4 Zones)
Motion Tracking (Quick Zoom)	ON / OFF
OSD Output for Anti Shifting	ON / OFF
OSD Output for Anti Blocking	ON / OFF
3D DNR	OFF / LOW / MIDDLE / HIGH
Defog	ON (AUTO / MANUAL) / OFF
Brightness	0~20 (Level Adjustable), Default: 10
AGC	0~20 (Level Adjustable), Default: 20
Privacy Masking	ON / OFF (Programmable 16 Zones)
Mirror / V-FLIP	ON / OFF
Sharpness	0~15 (Level Adjustable), Default: 7
Lens Shading Compensation (LSC)	ON / OFF
RS-485 (Protocol)	Available
View Angle	WIDE 4:3 / Normal / WIDE 16:9
CVBS Output	NTSC / PAL Selectable
Communication	Coaxial Control
Power Consumption	IR LED ON: 500mA Max
Power Supply	Dual Voltage
Lens	DC Auto Iris Varifocal Lens (5-50 mm)
Dimensions (W x H x D)	103 x 108 x 260mm
Weight	2300g

Features and specifications are subject to change for further improvement without notice

Specification



Model Number	ZD5504
Image Sensor	1/3" 1.3 Mega Sony Exmor Sensor (Imx138)
Resolution	1000TVL
Effective Pixels	1305 (H) x 1049 (V), 1.37M Pixels
Total Pixels	1312 (H) x 1069 (V), 1.40M Pixels
Scanning System	Progressive Scan
S/N Ratio	More than 50dB
Frame Rate	Max. 50P/60P
Video Output	CVBS: 1.0Vp-p/75 Ω
Minimum Illumination	0.00001 Lux
Lens	DC / MANUAL
Electronic Shutter Speed	AUTO / MANUAL (1/60 Sec ~ 1/60000 Sec) / FLICKER
OSD	Built-In
BLC	0
HSBLC	0
WDR (Wide Dynamic Range)	ON (LOW / MIDDLE / HIGH) / OFF
Digital WDR	ON (LOW / MIDDLE / HIGH) / OFF
Day & Night	COLOUR / B&W / AUTO / EXT
White Balance	AUTO / AUTO EXT / AWC->SET / MANUAL
Smart-IR	0~20 (Level Adjustable), Default: 0
Sens-Up	x2 ~ x32, Default: x8
Motion Detection	ON / OFF (Programmable 4 Zones)
Motion Tracking (Quick Zoom)	ON / OFF
OSD Output for Anti Shifting	ON / OFF
OSD Output for Anti Blocking	ON / OFF
3D DNR	OFF / LOW / MIDDLE / HIGH
Defog	ON (AUTO / MANUAL) / OFF
Brightness	0~20 (Level Adjustable), Default: 10
AGC	0~20 (Level Adjustable), Default: 20
Privacy Masking	ON / OFF (Programmable 16 Zones)
Mirror / V-FLIP	ON / OFF
Sharpness	0~15 (Level Adjustable), Default: 7
Lens Shading Compensation (LSC)	ON / OFF
RS-485 (Protocol)	Available
View Angle	WIDE 4:3 / Normal / WIDE 16:9
CVBS Output	NTSC / PAL Selectable
Communication	Coaxial Control
Power Consumption	IR LED ON: 700mA Max
Power Supply	Dual Voltage
Lens	DC Auto Iris Varifocal Lens (5-50 mm)
Dimensions (W x H x D)	95 x 80 x 265mm
Weight	1500g

Features and specifications are subject to change for further improvement without notice

Specification



Model Number	ZD9221
Image Sensor	1/3" 1.3 Mega Sony Exmor Sensor (Imx138)
Resolution	1000TVL
Effective Pixels	1305 (H) x 1049 (V), 1.37M Pixels
Total Pixels	1312 (H) x 1069 (V), 1.40M Pixels
Scanning System	Progressive Scan
S/N Ratio	More than 50dB
Frame Rate	Max. 50P/60P
Video Output	CVBS: 1.0Vp-p/75 Ω
Minimum Illumination	0 Lux (IR LED ON)
Lens	DC / MANUAL
Electronic Shutter Speed	AUTO / MANUAL (1/60 Sec ~ 1/60000 Sec) / FLICKER
OSD	Built-In
BLC	0
HSBLC	0
WDR (Wide Dynamic Range)	ON (LOW / MIDDLE / HIGH) / OFF
Digital WDR	ON (LOW / MIDDLE / HIGH) / OFF
Day & Night	COLOUR / B&W / AUTO / EXT
White Balance	AUTO / AUTO EXT / AWC->SET / MANUAL
Smart-IR	0~20 (Level Adjustable), Default: 0
Sens-Up	x2 ~ x32, Default: x8
Motion Detection	ON / OFF (Programmable 4 Zones)
Motion Tracking (Quick Zoom)	ON / OFF
OSD Output for Anti Shifting	ON / OFF
OSD Output for Anti Blocking	ON / OFF
3D DNR	OFF / LOW / MIDDLE / HIGH
Defog	ON (AUTO / MANUAL) / OFF
Brightness	0~20 (Level Adjustable), Default: 10
AGC	0~20 (Level Adjustable), Default: 20
Privacy Masking	ON / OFF (Programmable 16 Zones)
Mirror / V-FLIP	ON / OFF
Sharpness	0~15 (Level Adjustable), Default: 7
Lens Shading Compensation (LSC)	ON / OFF
RS-485 (Protocol)	Available
View Angle	WIDE 4:3 / Normal / WIDE 16:9
CVBS Output	NTSC / PAL Selectable
Communication	Coaxial Control
Power Consumption	IR LED ON: 2A Max
Power Supply	Dual Voltage
Lens	DC Auto Iris Varifocal Lens (9-22 mm)
Dimensions (W x H x D)	195 x 155 x 260 mm
Weight	2300g

Features and specifications are subject to change for further improvement without notice

Specification



Model Number	ZD9222
Image Sensor	1/3" 1.3 Mega Sony Exmor Sensor (Imx138)
Resolution	1000TVL
Effective Pixels	1305 (H) x 1049 (V), 1.37M Pixels
Total Pixels	1312 (H) x 1069 (V), 1.40M Pixels
Scanning System	Progressive Scan
S/N Ratio	More than 50dB
Frame Rate	Max. 50P/60P
Video Output	CVBS: 1.0Vp-p/75 Ω
Minimum Illumination	0 Lux (IR LED ON)
Lens	DC / MANUAL
Electronic Shutter Speed	AUTO / MANUAL (1/60 Sec ~ 1/60000 Sec) / FLICKER
OSD	Built-In
BLC	0
HSBLC	0
WDR (Wide Dynamic Range)	ON (LOW / MIDDLE / HIGH) / OFF
Digital WDR	ON (LOW / MIDDLE / HIGH) / OFF
Day & Night	COLOUR / B&W / AUTO / EXT
White Balance	AUTO / AUTO EXT / AWC->SET / MANUAL
Smart-IR	0~20 (Level Adjustable), Default: 0
Sens-Up	x2 ~ x32, Default : x8
Motion Detection	ON / OFF (Programmable 4 Zones)
Motion Tracking (Quick Zoom)	ON / OFF
OSD Output for Anti Shifting	ON / OFF
OSD Output for Anti Blocking	ON / OFF
3D DNR	OFF / LOW / MIDDLE / HIGH
Defog	ON (AUTO / MANUAL) / OFF
Brightness	0~20 (Level Adjustable), Default: 10
AGC	0~20 (Level Adjustable), Default: 20
Privacy Masking	ON / OFF (Programmable 16 Zones)
Mirror / V-FLIP	ON/OFF
Sharpness	0~15 (Level Adjustable), Default: 7
Lens Shading Compensation (LSC)	ON / OFF
RS-485 (Protocol)	Available
View Angle	WIDE 4:3 / Normal / WIDE 16:9
CVBS Output	NTSC / PAL Selectable
Communication	Coaxial Control
Power Consumption	IR LED ON: 1.5A Max
Power Supply	Dual Voltage
Lens	DC Auto Iris Varifocal Lens (9-22 mm)
Dimensions (W x H x D)	195 x 157 x 310 mm
Weight	2300g

Features and specifications are subject to change for further improvement without notice

Specification



Model Number	ZD9223
Image Sensor	1/3" 1.3 Mega Sony Exmor Sensor (Imx138)
Resolution	1000TVL
Effective Pixels	1305 (H) x 1049 (V), 1.37M Pixels
Total Pixels	1312 (H) x 1069 (V), 1.40M Pixels
Scanning System	Progressive Scan
S/N Ratio	More than 50dB
Frame Rate	Max. 50P/60P
Video Output	CVBS: 1.0Vp-p/75 Ω
Minimum Illumination	0 Lux (IR LED ON)
Lens	DC / MANUAL
Electronic Shutter Speed	AUTO / MANUAL (1/60 Sec ~ 1/60000 Sec) / FLICKER
OSD	Built-In
BLC	0
HSBLC	0
WDR (Wide Dynamic Range)	ON (LOW / MIDDLE / HIGH) / OFF
Digital WDR	ON (LOW / MIDDLE / HIGH) / OFF
Day & Night	COLOUR / B&W / AUTO / EXT
White Balance	AUTO / AUTO EXT / AWC->SET / MANUAL
Smart-IR	0~20 (Level Adjustable), Default: 0
Sens-Up	x2 ~ x32, Default : x8
Motion Detection	ON / OFF (Programmable 4 Zones)
Motion Tracking (Quick Zoom)	ON / OFF
OSD Output for Anti Shifting	ON / OFF
OSD Output for Anti Blocking	ON / OFF
3D DNR	OFF / LOW / MIDDLE / HIGH
Defog	ON (AUTO / MANUAL) / OFF
Brightness	0~20 (Level Adjustable), Default: 10
AGC	0~20 (Level Adjustable), Default: 20
Privacy Masking	ON / OFF (Programmable 16 Zones)
Mirror / V-FLIP	ON / OFF
Sharpness	0~15 (Level Adjustable), Default: 7
Lens Shading Compensation (LSC)	ON/OFF
RS-485 (Protocol)	Available
View Angle	WIDE 4:3 / Normal / WIDE 16:9
CVBS Output	NTSC / PAL Selectable
Communication	Coaxial Control
Power Consumption	IR LED ON: 700mA Max
Power Supply	Dual Voltage
Lens	DC Auto Iris Varifocal Lens (9-22 mm)
Dimensions (W x H x D)	95 x 80 x 265 mm
Weight	1500g

Features and specifications are subject to change for further improvement without notice

Troubleshooting

Problem	Possible Cause
Nothing appears on the screen.	Check the power cable, power supply output and video connection between the camera and monitor.
The image on the screen is dim.	- Are the camera lens or the lens glass dirty? (Clean the lens / glass with a soft clean cloth) - Adjust the monitor controls, as required. - If the camera is facing a very strong light, change the camera position. - Adjust the lens focus.
The image on the screen is dark.	- Adjust the contrast control of the monitor. - If there is an intermediate device, correctly set the 75 Ω/Hi-z.
The camera is not working properly and the surface of the camera is hot.	Check the camera is correctly connected to an appropriate regulated power source.
Motion Detection is not activated.	- Has MOTION DET been set to ON in the menu? - Has MD AREA been properly defined?
The colour of the picture is not correct.	Check the settings in WHITE BALANCE menu.
The image on the screen flickers.	Make sure that the camera isn't facing direct sunlight or fluorescent lighting. If necessary, change the camera position.
The SENS UP does not work.	- Check that the AGC setting in the EXPOSURE menu isn't set to OFF. - Check that the EXPOSURE menu and make sure SHUTTER is set to -----.

Memo



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