

## INSTRUCTION MANUAL

# FULL HD BULLET CAMERA



*Please read this manual thoroughly before use and keep it handy for future reference.*



# FCC COMPLIANCE STATEMENT

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.


**FCC INFORMATION** : This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC 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.

**CAUTION** : Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

# CE COMPLIANCE STATEMENT

**WARNING** : This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

# IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.
  2. Keep these instructions.
  3. Heed all warnings.
  4. Follow all instructions.
  5. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
  6. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
  7. Only use attachments/accessories specified by the manufacturer.
  8. Use only with the cart, stand, tripod, bracket, or table specified by The manufacturer, or sold with the apparatus. When a cart is used, Use caution when moving the cart/ apparatus combination to avoid Injury from tip-over.
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- 9. CAUTION – THESE SERVICING INSTRUCTIONS ARE FOR USE BY QUALIFIED SERVICE PERSONNEL ONLY. TO REDUCE THE RISK OF ELECTRIC SHOCK DO NOT PERFORM ANY SERVICING OTHER THAN THAT CONTAINED IN THE OPERATING INSTRUCTIONS UNLESS YOU ARE QUALIFIED TO DO SO.**
- 10. Use satisfy clause 2.5 of IEC60950-1/UL 60950-1 or Certified/Listed Class 2 power source only.**
11. Indoor use only.

## EXPLANATION OF GRAPHICAL SYMBOLS



The lightning flash with 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 product.

# **CONTENTS**

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# INTRODUCTION

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The 1/2.9" 2.1M Full HD CMOS camera, especially for closed circuit television CCTV and security surveillance application.

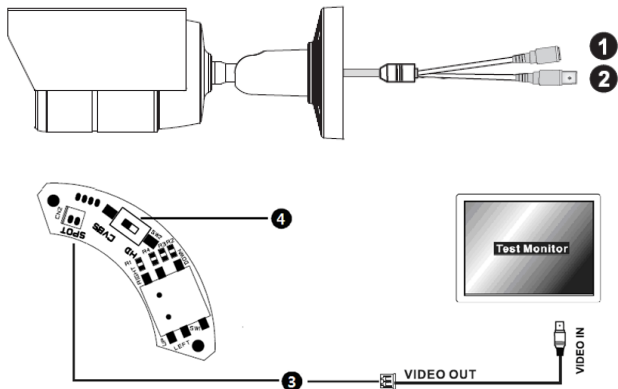
## Features:

- High performance SONY 1/2.9" 2.1M EXMOR CMOS™
- 1.0 lux(Color), 0 lux(BW, IR LED ON)
- Auto electronic shutter [1/60(1/50) ~ 1/50,000] and manual electronic shutter modes
- 25/30 fps @ 1080p
- BLC (Back-light compensation)
- Auto and manual white balance modes (ATW/AWC/Manual/AWB)
- Day & Night (ICR) : Auto / Color / BW
- OSD (on screen display)
- 3 DNR (Digital Slow Shutter)
- DWDR
- Smart IR
- 30EA, 850nm IR LED
- IR Range distance up to 30M
- Privacy mask Function (4 zone)
- Motion Detection
- Defog
- HSBLC
- Operates in DC 12V  $\pm$  10%
- Use Certified / Listed Class 2 Power source only



**IMPORTANT** : The user of this camera is responsible for checking and complying with local, state, and federal laws and statutes concerning the recording and monitoring of audio signals.

# CONNECTIONS & VIDEO OUT CHECK(CVBS)



- ① **Power** : 12V DC input, Use Certified/Listed Class 2 power source only.  
\* If using DC 12V power adaptor, use power supply capable of supplying 7 Watts.
- ② **Video** : BNC connector used to connect the camera to a DVR, etc.
- ③ **SPOT** : Spot connector used to check video output.
- ④ **Video Out Mode (HD↔CVBS)** : Select Between the video output mode from the Video(BNC) & SPOT

## LENS ADJUSTMENT

**Field of View** : Adjust setting from Tele (T) to Wide (W) field of View

**Focus** : Adjust lens focus from near (N) to infinity ( $\infty$ )

## CONTENTS OF PACKAGE

The package contents the following.

Camera in Housing.....	1
Instruction Manual (This Document).....	1
Accessory Kit for Installing.....	1



### **REMINDER:**

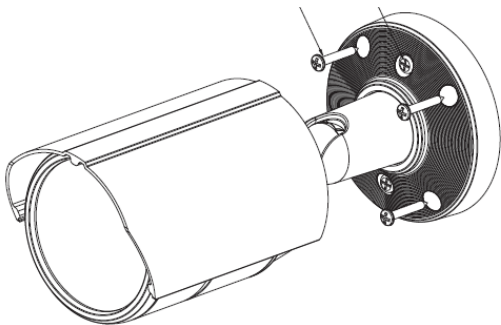
Never aim the camera directly into the sun.

# BASE INSTALLATION

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3X20mm Tapping Screws

Tension adjustment screw



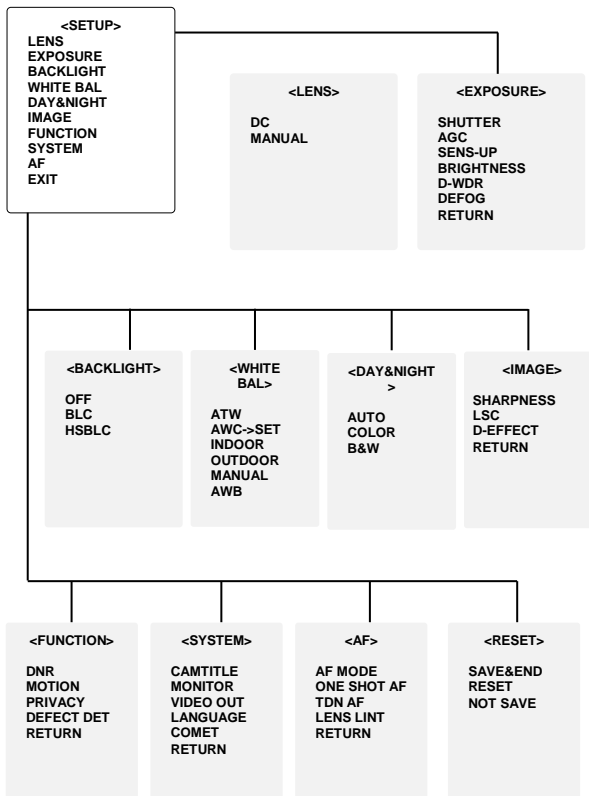
Position camera for best field of view then tighten camera/mount  
Tension adjustment screws (x2)

## Caution

“Adjusting the position of the camera after installation could potentially damage the cable”



# STRUCTURE OF THE SETUP MENU

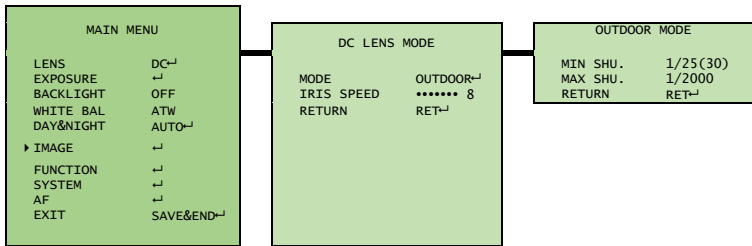


## LENS

The EXPOSURE menu is used to set the automatic light control method for the camera. It provides the ability to adjust the SHUTTER speed, AGC SENS-UP, BRIGHTNESS, D-WDR, and DEFOG functions of the camera.

- 1) DC** Select the DC mode. ► INDOOR, OUTDOOR  
Select the DC iris speed ► 0~15
- 2) MANUAL** Select the MANUAL mode

### <LENS> Mode



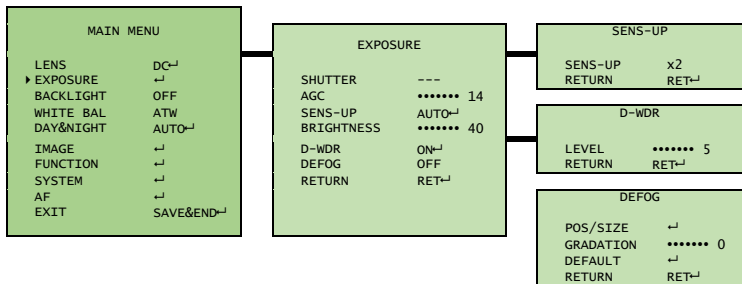
**NOTE** Choose when installed in an external DC mode outdoor.

## EXPOSURE

The EXPOSURE menu is used to set the automatic light control method for the camera. It provides the ability to adjust the SHUTTER speed, AGC, SENS-UP, BRIGHTNESS, D-WDR, and DEFOG functions of the camera.

- 1) SHUTTER** Select the SHUTTER speed level.  
► Auto, 1/60(50), FLK~1/240 – 1/50000, x2 ~ x30
- 2) AGC** Adjust the Auto Gain Control level. ► OFF, Auto (x2 ~ x30)
- 3) SENS-UP** Select the Digital Slow Shutter level. ► OFF, AUTO (x2 ~ x30)
- 4) BRIGHTNESS** Adjust the BRIGHTNESS level. ► 0 - 100
- 5) D-WDR** Select the Digital WDR. ► AUTO, ON(level 0~8), OFF
- 6) DEFOG** Select the DEFOG mode. ► AUTO, ON(level 0~8), OFF
  - POS/SIZE** Adjust the window position & size
  - GRADATION** ► 0 ~ 2
  - DEFAULT** Initialize the setting values

## <EXPOSURE> Mode



## BACKLIGHT

The BACKLIGHT menu is used to the ability to prevent back lighting from the image.

**1) BLC** Prevents such a back light effect to secure a clear image under All illumination environments.

Adjust the size of Back Light Compensation area.

**LEVEL** Select the BLC gain ▶ Low, Middle, High

**AREA** Adjust the window position & size

**DEFAULT** Initialize the setting values

**2) HSBLC** Mask the high light zone with specific color & level.

**SELECT** Select the HSBLC area ▶ AREA1 - AREA4

**DISPLAY** Adjust the HSBLC area window position & size

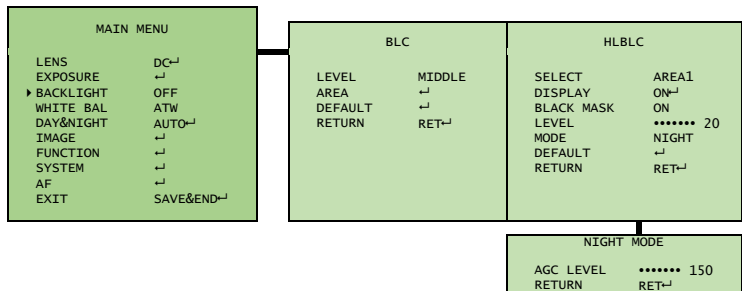
**BLACK MASK** Select the BLACK MASK ▶ ON, OFF

**LEVEL** Select the HSBLC level ▶ 0 ~ 100

**MODE** All Day, Night

**DEFAULT** Initialize the setting values.

## <BACK LIGHT> Mode

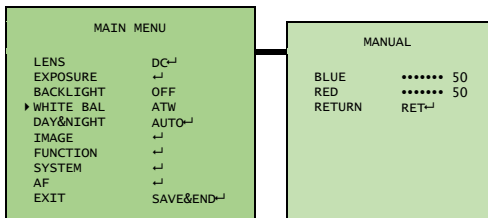


## WHITE BALANCE

The screen color can be adjusted by using the Auto White Balance function. It compensates for deviations in the white color caused by changes in the color temperature of the light source so that the colors are reproduced correctly.

- 1) ATW** Automatically adjust color temperature.
- 2) AWC→SET** Automatically readjust only by pressing AWC→SET.
- 3) INDOOR** Set the color temperature to 3200°K
- 4) OUTDOOR** Set the color temperature to 6300°K
- 5) MANUAL** Manual mode.  
User can change Red and Blue gain value manually.  
**BLUE** 0 ~ 100  
**RED** 0 ~ 100
- 6) AWB** Automatically extended range of color temperature adjustment.

### <WHITE BALANCE> Mode



## DAY&NIGHT

The DAY&NIGHT menu is used to configure the day and night related setting for the camera.

### 1) D&N AUTO

- Input Method** CDS
- DAY&NIGHT** Mode are changed according to the sensor inputs
- D&N LEVEL** Adjust levels of transition ▶ 0 - 255
- N&D LEVEL** Adjust levels of transition ▶ 0 - 255
- DELAY** 1-60 SEC
- Input Method** AGC

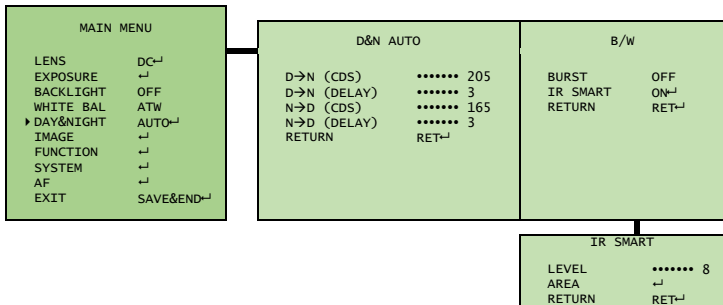
DAY&NIGHT mode are changed according to the brightness of the image. Use only when the camera is installed in a dark place but the camera is viewing a bright place. When used in a normal installation, hunting may occur.

- D&N LEVEL** Adjust levels of transition ▶ 0 - 255
- N&D LEVEL** Adjust levels of transition ▶ 0 - 255
- DELAY** 1-60 SEC

### 2) D&N B&W

- IR SMART** LEVEL 1~15
- AREA** Adjust the window position & size.

## <DAY & NIGHT> Mode

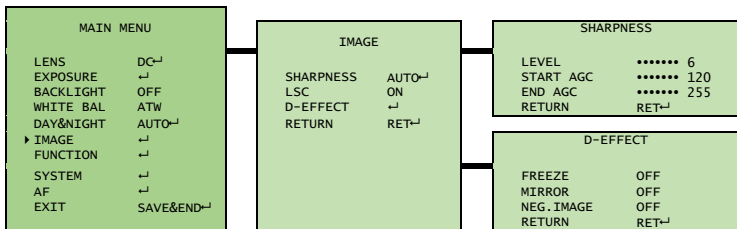


## IMAGE

The IMAGE menu provides the ability to adjust the SHARPNESS, LSC and D-EFFECT functions of the camera.

- 1) SHARPNESS** Adjust the SHARPNESS level. ▶ OFF, AUTO (0 - 10)
- 2) LSC** Select the Lens Shading Compensation. ▶ ON, OFF
- 3) D-EFFECT**
  - FREEZE** Select real or still mode ▶ ON, OFF
  - MIRROR** Select OFF, MIRROR, V-FLIP, ROTATE
  - NEG. IMAGE** Select Negative image mode ▶ ON, OFF

## <IMAGE> Mode



## FUNCTION

The IMAGE menu provides the ability to adjust the DNR, MOTION, PRIVACY and DEFECT DET functions of the camera.

- 1) DNR** Select Digital Noise Reduction.
  - 2D** ▶ OFF, LOW, MIDDLE, HIGH
  - 3D** ▶ OFF, LOW, MIDDLE, HIGH
- 2) MOTION** Detects the Motioned Object in the image. ▶ ON, OFF

<b>SELECT</b>	Select the Motion area ▶ AREA1 - AREA4
<b>DISPLAY</b>	Adjust the Motion area window position & size
<b>SENSITIVITY</b>	Adjust the Motion sensitivity level ▶ 0 - 100
<b>COLOR</b>	Select the motion area color ▶ WHITE - Red, Green, Blue
<b>TRANS</b>	Select the motion area transparency. ▶ 1.0, 0.75, 0.5, 0.25
<b>ALARM</b>	Select the Motion alarm
<b>VIEW TYPE</b>	Select view type of the Motion area ▶ OFF, BLOCK, OUTLINE, ALL
<b>OSD VIEW</b>	Select the Motion OSD view ▶ OFF, ON
<b>TIME</b>	Select the Motion Alarm time ▶ 1 - 15
<b>DEFAULT</b>	Initialize the setting values

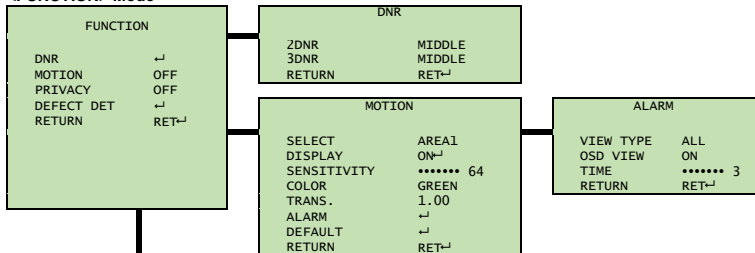
### 3) PRIVACY Hide an area you want to hide on the screen.

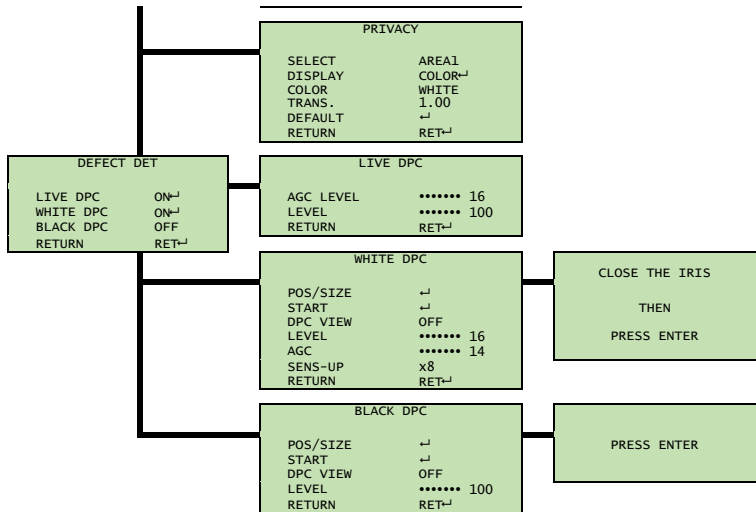
<b>SELECT</b>	Select the privacy zone ▶ AREA1 - AREA4
<b>DISPLAY</b>	Adjust the Privacy window type, position & size ▶ OFF, INV., MOSAIC, COLOR
<b>COLOR</b>	Select the privacy zone color ▶ WHITE - USER
<b>TRANS</b>	Select the privacy zone transparency ▶ 1.0, 0.75, 0.5, 0.25
<b>DEFAULT</b>	Initialize the setting values

### 4) DEFECT DET Compensates for bad pixels.

<b>LIVE DPC</b>	Select the Live DPC mode ▶ OFF, ON
<b>AGC LEVEL</b>	Select the AGC level ▶ 0 - 255
<b>LEVEL</b>	Select the Live DPC level ▶ 0 - 100
<b>WHITE DPC</b>	Select the White DPC mode ▶ OFF, ON
<b>POS/SIZE</b>	Adjust the White DPC area window position & size
<b>START</b>	Start the white pixels correction ▶ OFF, ON
<b>DPC VIEW</b>	Select the White DPC level ▶ 0 - 60
<b>LEVEL</b>	Select the AGC Level ▶ 0 - 14
<b>AGC</b>	Select the Sens-up level ▶ x2 - x30
<b>SENS-UP</b>	Select the Black DPC mode ▶ OFF, ON
<b>BLACK DPC</b>	Adjust the Black DPC area window position & size
<b>POS/SIZE</b>	Start the Black pixels correction ▶ OFF, ON
<b>START</b>	Select the Black DPC level ▶ 0 - 100
<b>DPC VIEW</b>	
<b>LEVEL</b>	

### <FUNCTION> Mode





## SYSTEM

The SYSTEM menu provides the ability to adjust the CAM TITLE, RS485, MONITOR, CVBS CROP, VIDEO OUT, LANGUAGE and VERSION functions of the camera.

1) **CAM TITLE** Maximum of 15 characters are allowed.

2) **MONITOR** Select the Monitor type ► LCD, CRT

### LCD

**BLUE GAIN** Adjust the Blue gain level ► 0 - 100

**RED GAIN** Adjust the Red gain level ► 0 - 100

**GAMMA** Select the gamma level ► USER, 0.45 - 1.0

### CRT

**BLUE GAIN** Adjust the Blue gain level ► 0 - 100

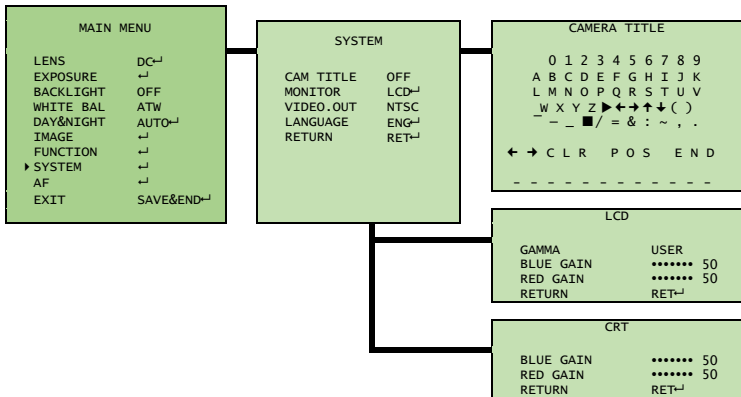
**RED GAIN** Adjust the Red gain level ► 0 - 100

**GAMMA** Select the gamma level ► USER, 0.45 - 1.0

4) **VIDEO OUT** Select the video out type ► NTSC, PAL

5) **LANGUAGE** OSD menu LANGUAGE (16ea) ► ENGLISH etc.

## <SYSTEM> Mode

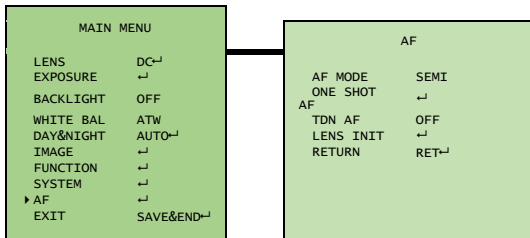


## AF

The AF menu provides the ability to adjust the AF MODE, ONE SHOT AF, TDN AF and LENS INIT functions of the camera.

- 1) AF MODE** Semi, Auto, Manual.  
**SEMI** Waits until the zoom function has finished before focusing  
**AUTO** Tracks closely with the zoom  
**MANUAL** Once the camera is zoomed in using Semi or Auto, the Up / Down buttons allow manual focusing
- 2) ONE SHOT AF** Will focus the camera
- 3) TDN AF** Will refocus when switching between color/B&W and B&W /color ▶ Off / On
- 4) LENS INIT** Reinitializes the lens

## <AF> Mode





## EXIT

The EXIT menu provides the ability to adjust the RESET, SAVE & END and NOT SAVE functions of the camera.

### 1) EXIT

- RESET**      Factory initialization of camera settings
- SAVE & END**      Save and exit menu
- NOT SAVE**      Exiting the menu without saving

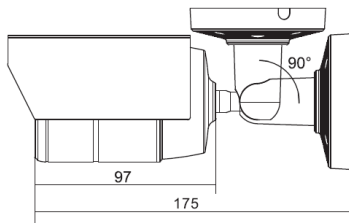
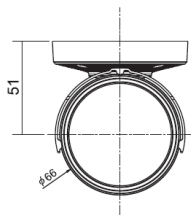
## DC AUTO IRIS LENS

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Image Size	1/2.9" CMOS
Focal Length	2.8-12mm
Aperture Ratio	1:1.4
Angular Field of View	DIAGONAL 2.8mm : 130° 12mm : 37°

# EXTERNAL DIMENSION

## Dimensions



**Weight - Unit:** 0.99 lb. (0.45 kg)  
**Shipping:** 1.32 lb. (0.6 kg)

Unit: mm

# SPECIFICATIONS

MODEL		2M HD Bullet CAMERA	
Power	Power Source	DC12V ± 10%	
	Power Consumption	MAX 6.6 Watts (500mA)	
General	Image sensor	1/2.9" 2.1M Sony CMOS	
	Total Pixels	2000(H) x 1121(V)	
	Active Pixels	1920(H) x 1080(V)	
	Scanning system	Progressive	
	Sync. System	Internal	
	Video Frame Rate	1920x1080p@25 fps ; 1920x1080p@30 fps	
	CVBS Resolution	1000 TVL	
	Min. illumination	1.0 lux(COLOR), 0 lux(BW, IR LED ON)	
	Video Output	BNC (AHD / CVBS Selectable)	
	IR	IR LED	30ea IR LED (850nm)
		DISTANCE	30M
	Camera Control	OSD Menu (Joystick Switch, coaxial control)	
	S/N Ratio	More than 50dB (AGC off)	
Function	Lens	DC / MANUAL	
	Exposure	Shutter	AUTO, 1/60, FLK ~ 1/50,000 sec
		AGC	1 ~ 15
		Sens-UP	OFF / AUTO (x2, x4, x6, x8, x10, x15, x20, x25, x30)
		Brightness	1 ~ 100
		D-WDR	OFF / ON / AUTO
		Defog	OFF / AUTO
	Backlight	OFF / BLC / HSBLC	
	White Balance	ATW / AWC / INDOOR / OUTDOOR / MANUAL / AWB	
	Day & Night	AUTO / COLOR / B&W	
	DNR	2DNR	OFF / LOW / MIDDLE / HIGH
		3DNR	OFF / LOW / MIDDLE / HIGH
	S P E C I A L	Camera Title	OFF / ON
		D-Effect	OFF / FREEZE / MIRROR / NEG.IMAGE
		Motion Detection	OFF / ON (4 zone)
		Privacy Masking	OFF / ON (4 zone)
		Language	ENG / CHN1 / CHN2 / GER / FRA / ITA / SPA / POL / RUS / POR / NED / TUR / KOR / JPN / HEB / ARB
		Defect Detection	LIVE DPC / WHITE DPC / BLACK DPC
		Sharpness	OFF / AUTO (0 ~ 10)
		Monitor	CRT / LCD
		LSC (Shading)	OFF / ON
		Video mode	NTSC / PAL
	AF	AF Mode	SEMI / AUTO / MANUAL
		One Shot AF	Enter
		TDN AF	OFF / ON
		Lens Initialize	Enter
	Save & Exit	SAVE & EXIT / NOT SAVE / RESET	
Connector & etc.	Power input	DC Jack	
	Video out	BNC Connector(AHD/CVBS)	
	Transmission Distance	Over 500m via 5C-2V coaxial cable	
	Lens Mount	Fixed mount	
	Lens	2 Motor, f=2.8-12mm F1.4-360 Varifocal, ICR (D&N)	
	Operating temperature	14°F ~ 122°F (-10°C ~ +50°C)	
	Operating humidity	0 ~ 96% (non-condensing)	
	External dimension	Φ66 x 173 mm(H)	
	Weight	450g	
	Ingress Protection	IP66	

## **FULL HD BULLET CAMERA**

5030xxxxA