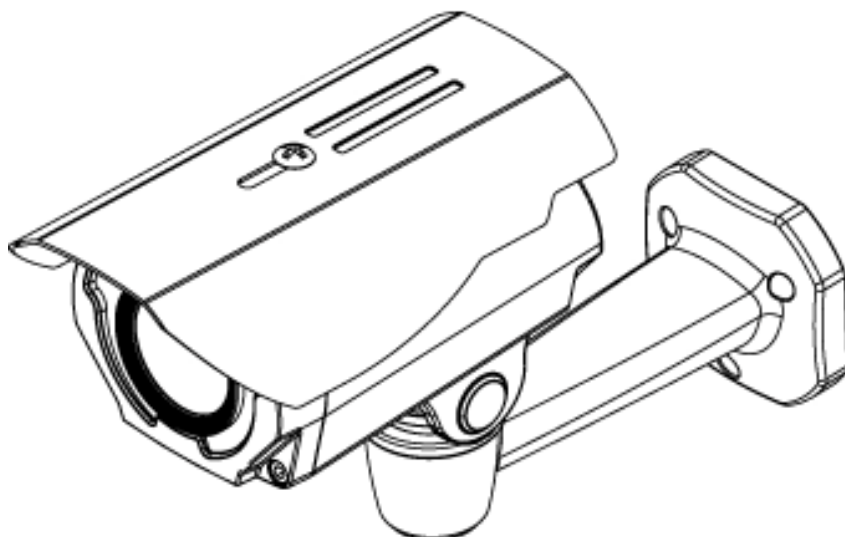# DNR Super High Resolution Day & Night Color Camera

Model No: RECBH0550-1
Outdoor Bullet Camera

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

WARNINGS AND CAUTIONS

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE. DO NOT INSERT ANY METALLIC OBJECT THROUGH THE VENTILATION GRILLS OR OTHER OPENINGS ON THE EQUIPMENT.

CAUTION

CAUTION

**RISK OF ELECTRIC SHOCK
DO NOT OPEN**

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER(OR BACK).
NO USER-SERVICABLE PARTS INSIDE.
REFFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

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.

PRECAUTIONS

Safety
Should any liquid or solid object fall into the cabinet, unplug the unit and have it checked by
qualified personnel before operating it any further.

Unplug the unit from the wall outlet if it is not going to be used for several days or more.
To disconnect the cord, pull it out by the plug. Never pull the cord itself.

Allow adequate air circulation to prevent internal heat build-up. Do not place the unit on soft surfaces (rugs, carpets, sofas, etc.) or near materials (curtains, draperies) that may block the ventilation holes.

Height and vertical linearity controls located on the rear panel are for special adjustments by qualified personnel only.

Installation
Do not install the unit in an extremely hot or humid place or in a place subject to excessive dust, mechanical vibration.

The unit is not designed to be waterproof.
Exposure to rain or water may damage the unit.

Cleaning
Clean the unit with a slightly damp soft cloth.
Use a mild household detergent. Never use strong solvents such as thinner or benzine as they might damage the finish of the unit.

Retain the original carton and packing materials for safe transport of this unit in the future.

IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. 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.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been moisture, does not operate normally, or has been dropped.
15. *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 QRE QUALIFIED TO DO SO.*
16. *Use satisfy clause 2.5 of IEC60950-1/UL60950-1 or Certified/Listed Class 2 power source only.*

FCC COMPLIANCE STATEMENT

INFORMATION TO THE USER: 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.

THIS CLASS A DIGITAL APPARATUS COMPLIES WITH CANADIAN ICES-003.

CET APPAREIL NUMÉRIQUE DE LA CLASSE A EST CONFORME À LA NORME NMB-003 DU CANADA.

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.
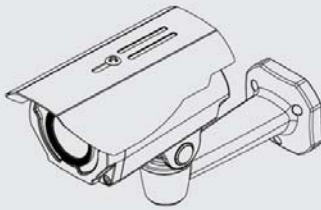
CONTENTS OF PACKAGE

Installation of the camera must be performed by qualified service personnel in accordance with all local and national electrical and mechanical codes.
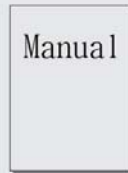
Carefully remove the color camera and its accessories from the carton and verify that they were not damaged in shipment.

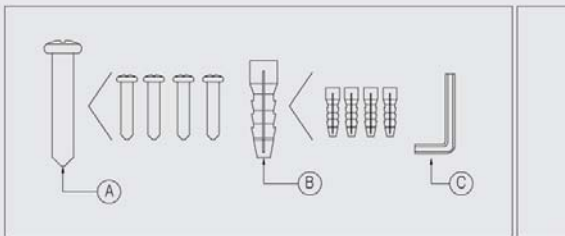The contents of the package include:

1. Camera in Housing _____1
2. Instruction Manual (This Document) _____1
3. Accessory Kit for installing _____1
4. Drilling guide label _____1

Bullet Camera
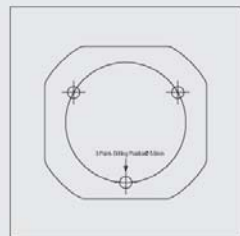
Manual

Accessory Kit

Template Sheet

TABLE OF CONTENTS

INTRODUCTION

The camera provides high-quality images using SONY 1/3" CCD and digital Signal process LSIs.

Features:

- 1/3" *EXview* HAD CCD **II** for an image of high sensitivity
- 2.8~12mm D/N Vari-focal(DC AI) / 5~50mm D/N Vari-focal(DC AI)
- Digital Wide Dynamic Range (Adaptive Tone Reproduction)
- Excellent picture quality
- 700 lines of resolution
- Minimum illumination   0.15 Lux (Color) / 0 Lux (B/W & IR ON)
- Auto electronic shutter [1/60(1/50) ~ 1/10,000] and manual electronic shutter modes
- OSD (On Screen Display)
- Auto and manual white balance modes
- Auto BLC and HLC,   Day & Night (Auto)
- 2D-NR
- Smart IR
- Privacy Zone 4 point, Motion Detection 4 Point
- MIRROR, SHARPNESS, HUE, CONTRAST, GAIN
- AGC (Auto Gain Control)
- VIDEO OUT (BNC)
- Internal
- Operates in 12VDC or 24VAC
  (If using DC 12V power adaptor, Please use a power supply capable of supplying over 600mA.)
- Use Certified / Listed Class 2 power source only.
- Auto White Defect
- Heater Option (ONLY 24VAC)

⚠ **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.

CAMERA CONNECTION
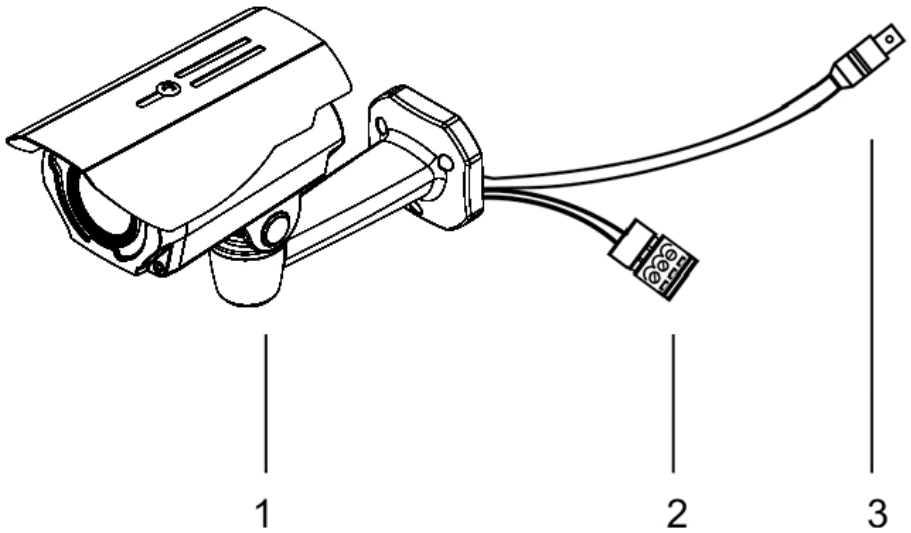
1. Bullet Camera
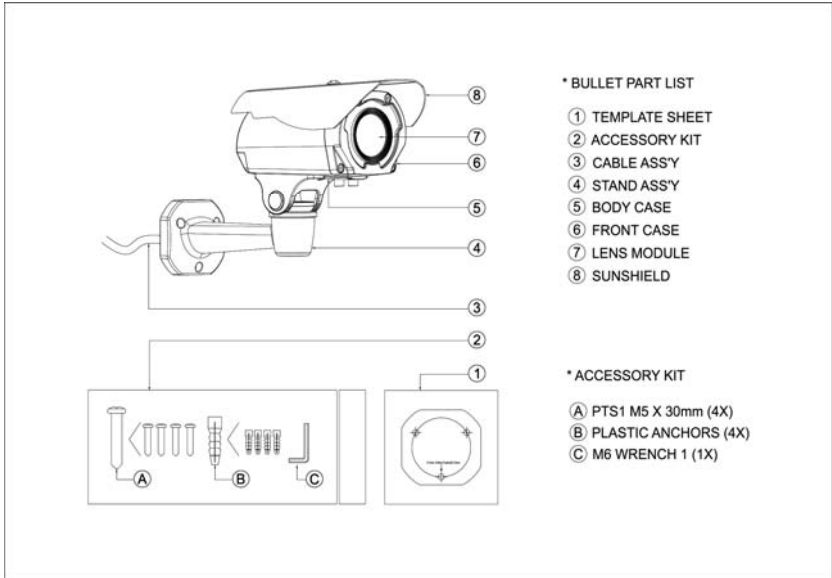
2. Power : power source from a DC 12V or AC 24V

3. Video : BNC connector used to connect the camera to a monitor, switcher.ect.

CONTENTS of PACKAGE

* BULLET PART LIST

1. TEMPLATE SHEET
2. ACCESSORY KIT
3. CABLE ASS'Y
4. STAND ASS'Y
5. BODY CASE
6. FRONT CASE
7. LENS MODULE
8. SUNSHIELD

* ACCESSORY KIT

A. PTS1 M5 X 30mm (4X)
B. PLASTIC ANCHORS (4X)
C. M6 WRENCH 1 (1X)

The package contains the following.

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

QUICK INSTALL

1. Drill the mounting location using the supplied drill guide label.

2. Attach the bullet housing to the ceiling using suitable fasteners, PTS M5 x 30MM screws are supplied only use if they are suitable.

3. After bullet camera adjust the angle and rotating, fixed to stand using the M6 L-WRENCH.

(If something is disturbing Photo Sensor, operation problem might be occurred)

PTS1,M5X30 MOUNTING SCREWS(3X)
STAND BASE
PLASTIC ANCHORS(3X)
TEMPLATE SHEET
WALL

-SCREW UP THE MOUNT SCREW
(M6 X 16mm)

-REMOVE THE CONDUIT
KNOCKOUT PUNCHED
-FOR THE CABLE ENTRY

* WALL MOUNTING MODE

360°
* CAMERA ROTATE MODE

65.0°

50.0°

* CAMERA TILT MODE

OSD MENU STRUCTURE

```
SETUP MENU (page 1)

LENS
SHUTTER/AGC
WHITE BAL
BACKLIGHT
PICT ADJUST
ATR
MOTION DET

NEXT (page2)
EXIT          SAVE ALL
```

```
LENS

AUTO ↵
MANUAL
```

```
SHUTTER/AGC

AUTO↵
MANUAL↵
```

```
WHITE BALANCE

ATW ↵
PUSH
USER 1↵
USER 2↵
ANTI CR
MANUAL↵
PUSH LOCK
```

```
BACKLIGHT

OFF
BLC
HLC
```

```
PICTURE ADJUST↵
  MIRROR
  BRIGHTNESS
  CONTRAST
  SHARPNESS
  HUE
  GAIN
 RETURN
```

```
ATR

OFF
ON↵
```

```
MOTION DET

OFF
ON↵
```

```
SETUP MENU (page 2)

PRIVACY
DAY/NIGHT
NR
CAMERA ID
LANGUAGE
CAMERA RESET

BACK (page 1)
EXIT          SAVE ALL
```

```
PRIVACY

OFF
ON↵
```

```
DAY/NIGHT

COLOR
B/W↵
```

```
NR↵
   NR MODE
   Y LEVEL
   C LEVEL
   RETURN
```

```
CAMERA ID

OFF
ON↵
```

```
LANGUAGE
   ENGLISH

   日本語

   DEUTSCH
   FRANCAIS
   PYCCKNN
   PORTUGUES
   ESPANOL
```

```
CAMERA RESET

(return the camera to
factory defaults)
```

LENS

AUTO
TYPE (DC / VIDEO)
Sets the type of mechanical iris
(Video lens is not supported)
MODE (AUTO / OPEN / CLOSE)
Sets the type of control to be applied over the mechanical iris.
SPEED (0 – 255)
Sets the convergence speed of the mechanical iris.

MANUAL
Manual lens only
. (**Note** Since Manual mode AUTO mode is changed SHUTTER/AGC to
SHUT+AUTO IRIS when MANUAL is changed to AUTO, AUTO MODE
should be changed to AUTO IRIS in SHUTTER/AGC)

SHUTTER/AGC

AUTO
HIGH LUMINANCE
MODE (SHUT+AUTO IRIS / AUTO IRIS)
(**Note**: only SHUT can be selected if LENS is in MANUAL mode
SHUT+AUTO IRIS is AE(Auto Exposure) for SHUTTER is 1/500(1/480) and
MIRIS)
BRIGHTNESS (0 ~ 255)
Adjusts the brightness

LOW LUMINANCE
MODE (AGC / OFF)
Auto Gain Control on or off
BRIGHTNESS (x0.25 / x0.50 / x0.75/ x1.00)
Amount of AGC applied in low lighting conditions

MANUAL
MODE (SHUT+ AGC)
Auto gain control
SHUTTER
Select the shutter speed (1/60, 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000,
1/10000)
AGC
Sets the AGC gain applied [dB] for ME (manual exposure)
(6, 12, 18, 24, 30, 36, 42, 44.8dB)

WHITE BAL

ATW (Auto Trace White balance)
 SPEED (0~255)
 Adjusts the pull-in speed of ATW.
 DELAY CNT (0~255)
 Sets the time-based hysteresis of ATW.
 ATW FRAME (x0.5 / x1 / x1.5 / x2)
 Sets the pull-in frame magnification.
 ENVIROMENT (INDOOR / OUTDOOR)
 Preset for either indoor or outdoor applications of the ATW

PUSH
Wide range Auto White Balance mode (AWB)

USER1 & 2
Both USER 1 & 2 can be individually set up for specific applications. The gain
values for the outdoor fixed mode are used as the adjustment items of USER1
on the internal OSD menu.
 B-GAIN (0~255)
 R-GAIN (0~255)

ANTI CR
Color rolling suppression

MANUAL
The B and R gain values for manual WB are set on this screen.
 LEVEL (NTSC : 13 ~ 56) , (PAL : 16 ~ 78)

PUSH LOCK
PUSHLOCK is selected and the Enter input is active

BACKLIGHT

Sharpens subjects with backlight (OFF / BLC / HLC)

PICT ADJUST

MIRROR	(OFF / ON) Horizontally inverts image.
BRIGHTNESS	(0~255) Sets the screen brightness.
CONTRAST	(0~255) Sets the screen contrast.
SHARPNESS	(0~255) Sets the screen sharpness.
HUE	(0~255) Adjusts the hue.
GAIN	(0~255) Adjusts the gain.

ATR

ATR (Adaptive Tone Reproduction) allows adjustment of the image to assist with widely contrasting scenes of view.

LUMINANCE (LOW / MID / HIGH)
 Sets the extent of the luminance compression
CONTRAST (LOW / MIDLOW / MID / MIDHIGH / HIGH)
 Sets the extent of the contrast enhancement

MOTION DET

DETECT SENSE (0~127)
Sets the motion detection sensitivity (0=low sensitivity, 127=high sensitivity)
BLOCK DISP (OFF / ON / ENABLE)
Applies a Motion block trace in the selected area. To define the area, select Enable and push centrally on the joystick. Use the Joystick to navigate to the blocks you want to **Disable** and not include in motion trace. To return to the menu, push and hold central joystick for 2secs and release.
MOTION AREA (ON / OFF)
 Enables/disables the motion detection
AREA SEL (1~4)
Selects the motion detection area
(**Note**: Set the area sel it would be better
 to move firstly BOTTOM and RIGHT)
TOP (NTSC:0~244 , PAL:0~288)
0 = top
BOTTOM (NTSC:0~244 , PAL:0~288)
244(288) = bottom
LEFT (NTSC:0~474 , PAL:0~468)
0 = left
RIGHT (NTSC:0~474 , PAL:0~468)
474(468) = right

```
MOTION DET

DETECT SENSE  IIIIIIIIIII  111
BLOCK DISP        OFF
MONITOR AREA   ON
AREA SEL          1/4
  TOP            IIIIIIIII   000
  BOTTOM     IIIIIIIII   076
  LEFT          IIIIIIIII   000
  RIGHT        IIIIIIIII   183
RETURN
```

PRIVACY

AREA SEL (1~4)
Selects the motion detection area
(**Note**: Set the area sel it would be better
 to move firstly BOTTOM and RIGHT)
TOP (NTSC:0~244 , PAL:0~288)
0 = top
BOTTOM (NTSC:0~244 , PAL:0~288)
244(288) = bottom

```
PRIVACY

AREA SEL        1/4

  TOP          IIIIIIIIIII000
  BOTTOM   IIIIIIIIIII077
  LEFT        IIIIIIIIIII000
  RIGHT      IIIIIIIIIII187
COLOR        1
TRANSP       1.00
MOSAIC       OFF
RETURN
```

LEFT (NTSC:0~474 , PAL:0~468)
0 = left
RIGHT (NTSC:0~474 , PAL:0~468)
474(468) = right

COLOR (1~8)
 Sets the colors of the privacy zones.
TRANSP (0.00 / 0.50 / 0.75 / 1.00)
 Sets the transparency of the privacy zone area if color is selected.
MOSAIC (OFF / ON)
 Sets the mosaic function as the privacy to ON or OFF.
 (Note: when ON, transparency needs to be set at 0.00 and privacy zones
 can only be 1 color OR mosaic and not mixed)

DAY / NIGHT

COLOR (color only operation)
B/W (monochrome only operation)
  BURST (OFF / ON)
  Allows the color burst signal in monochrome to be removed if required.
  IR OPTIMIZER (OFF / ON)
  Smart IR mode OFF or ON
  MODE (ONLY IR OPTIMIZER ON, AUTO / CENTER)
  Auto : Histogram integration mode
  Center : Center priority mode
  LEVEL (ONLY IR OPTIMIZER ON, 0~31)

NR (2D-DNR)

This is used to remove noise from the image in low light conditions when
AGC is applied.

NR MODE (OFF, Y, C, Y/C)
 Sets the 2D NR filter mode.
Y LEVEL (0-15)
  Sets the Y filter (Luminance) strength.
C LEVEL (0-15)
  Sets the C filter (Chrominance) strength.

CAMERA ID

Sets the camera ID to ON or OFF. A title of 52 characters per line can be applied.

```
CAMERA ID

 CAMERAID

   ABCDEFGHIJKLMNOPQRSTUV
   WXYZ0123456789-!"#$%&'
   ()_`,¥:;<=>?@¥^*.x+/

         ↔→↑↓ CLR POS
RETURN↵
```

Use the joystick to navigate the cursor. Pushing centrally on the joystick will allow selection of that character.

The arrows at the bottom allow you to move the cursor without changing the character.

CLR
Inserts a space
POS
Allows you adjust the location of the camera ID title display. (if you move too much right side or down, it might lose ID on the screen)

LANGUAGE

LANGUAGE select between:
English, Japanese, German, French, Russian, Portuguese & Spanish.

CAMERA RESET

CAMERA RESET - Returns the camera to the factory default settings.

SAVE ALL

SAVE ALL - Saves all the changes made in the menu.

EXIT

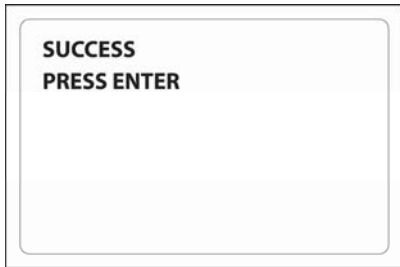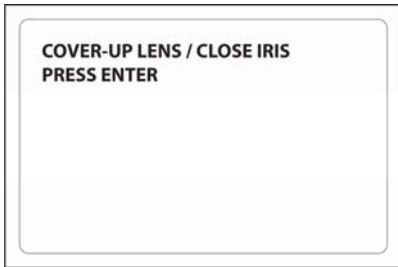**EXIT** – Exits the menu and does not save changes made.
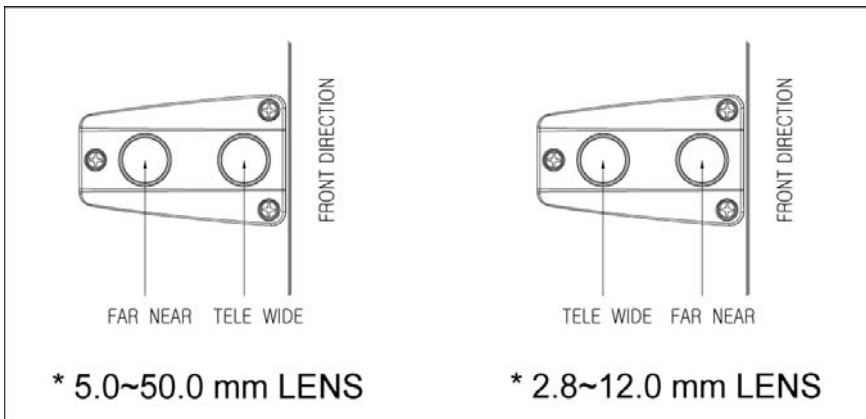
AUTO WHITE DEFECT

Push the left button for 5 seconds and enter Auto white defect menu.
Cover the lens and Enter for starting.

If white defects are over 65pcs, the camera is faulty and auto defect is useless.
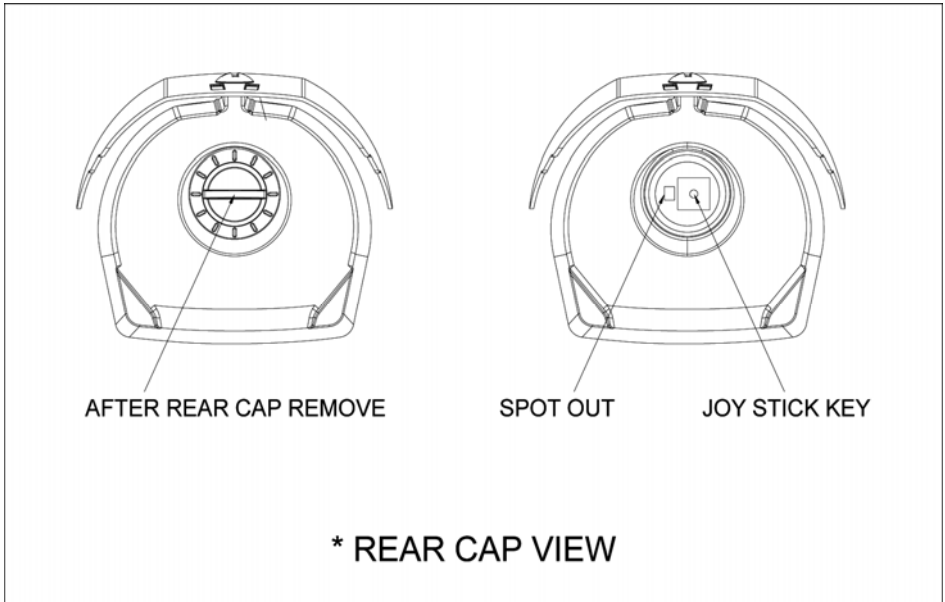
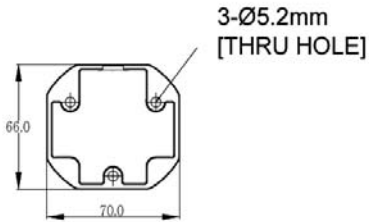Over 70'C Auto white defect can't be activated.

COVER-UP LENS / CLOSE IRIS PRESS ENTER	SUCCESS PRESS ENTER

LENS ADJUSTMENT (OPTIONAL VARIFOCAL LENS)

* 5.0~50.0 mm LENS   * 2.8~12.0 mm LENS

Lens	5 ~ 50 mm	2.8 ~ 12 mm
Image Size	1/3'' CCD	
Focal Length	5 ~ 50 mm	2.8 ~ 12 mm
Angular Field of View	HORIZONTAL	
	51.5° ~ 6.5°	100.8 ° ~ 23.7 °

SPOT OUT / JOY STICK KEY

AFTER REAR CAP REMOVE   SPOT OUT   JOY STICK KEY

* REAR CAP VIEW

EXTERNAL DIMENSION

Dimensions

REAR VIEW

3-Ø5.2mm
[THRU HOLE]

66.0
70.0

FRONT VIEW

98.4
85.0
76.0
177.5

SIDE VIEW

263.5
170.0
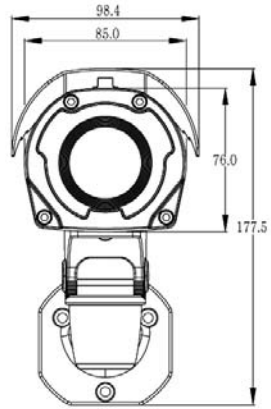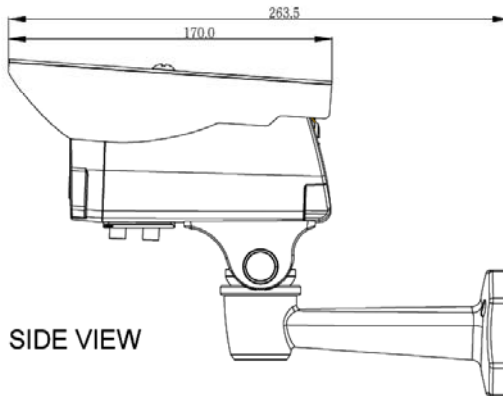
Window Size	1.5mm thick, impact-resistant P.C 38cm diameter
Weight - Unit: Shipping:	2.09 lb. (950g) 2.90 lb. (1300g)

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SPECCIFICATIONS

MODEL		NTSC	PAL
Power	Power source	DC 12V / AC 24V±10%	
	Power consumption	6 Watts (550mA) / 45Watts(3.5A) with Heater	
General	Image sensor	1/3" SONY *EXview* HAD CCD II	
	Total pixels	1020(H) x 508(V)	1020(H) x 596(V)
	Effective pixels	976(H)x494(V)	976(H)x582(V)
	Scanning system	2:1 Interlace	
	Scanning frequency	15.734KHz(H) x 59.94Hz(V)	15.625KHz(H) x 50Hz(V)
	Sync. system	Internal	
	Electronic Shutter	1/60 ~ 1/10,000 sec	1/50 ~ 1/10,000 sec
	Resolution	700TVL	
	Min. illumination	0.15 Lux (Color) / 0 Lux (B/W)	
	LED range	50M 45EA 850nm	
	Video output	1.0Vp-p (75 ohm, composite)	
	S/N ratio	50 dB (AGC OFF)	
	Camera Control	Internal OSD Key	
	F U N C T I O N	ATR (Adaptive Tone Reproduction)	LUMINANCE(L/M/H), CONTRAST(L/LM/M/MH/H)	
		Backlight	OFF / BLC / HLC	
		Day & Night	AUTO	
		Smart IR	On / Off / Level	
		MD (Motion Detection)	"On (4 areas) / Off Adjustable Size & Sensitivity"	
		PM (Privacy Masking)	0 ~ 4 zone	
		WB (White Balance)	ATW / PUSH / USER1 / USER2 / ANTI CR / MANUAL / PUSH LOCK	
		AGC (Auto Gain Control)	On / Off	
		Exposure	Auto Iris / Auto Iris + Electronic Shutter	
		Brightness	0 ~ 255 steps	
		Contrast	0 ~ 255 steps	
		Sharpness	0 ~ 255 steps	
		HUE	0 ~ 255 steps	
		Gain	0 ~ 255 steps	
		NR(Noise Reduction)	OFF / Y / C / Y, C	
		Mirror	ON / OFF	
Connector & etc	Power input	3-Pin Terminal block	
	Video output	BNC connector	
	Lens	2.8~12mm / 5~50mm Vari-focal lens (True D/N)	
	Operating temperature	-10℃ ~ 50 ℃ / -40 ℃ ~ 50 ℃ (with Heater)	
	Operating humidity	0~96% (non-condensing)	
	External dimension	236.5 x 177.5 mm	
	Weight	950g	

DNR Super High Resolution Day & Night Color Camera