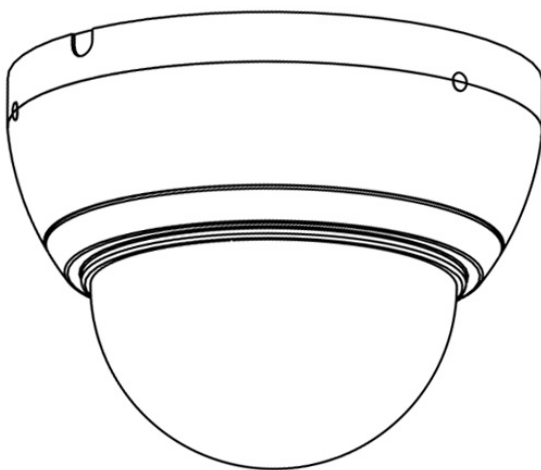# DNR Super High Resolution Day & Night Color Camera

3-AXIS INDOOR DOME CAMERA
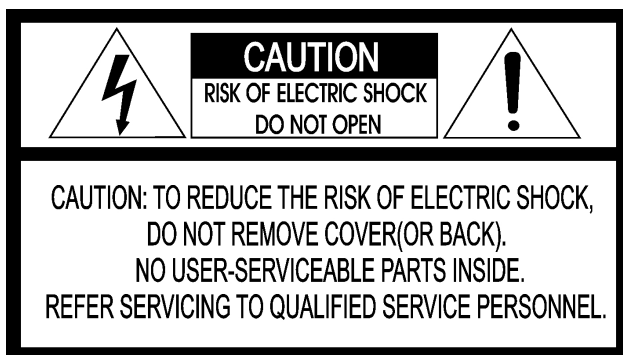
Please read this manual thoroughly before use, and keep it handy for future reference.

WARNING

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE. DO NOT INSERT ANY METALLIC OBJECTS 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-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

EXPLANATION OF GRAPHICAL SYMBOL

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of un-insulated "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

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

Cleaning
Clean the unit with a slightly damp soft cloth.
Use a mild household detergent. Never use strong solvents such as thinner or Benzene 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 are 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.

TABLE OF CONTENTS

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 includes :
1. Camera in Housing _____1
2. Instruction Manual (This Document) _____1
3. Accessory Kit for Installing _____ 1
4. Drilling guide label _____ _ 1
5. Test monitor cable_____ _ 1

INTRODUCTION

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

Features:

- 1/3" *EXview* HAD Ⅱ CCD for an image of high sensitivity
- 2.8~12 mm 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), 0.01 Lux (B/W) @ F1.2, 50IRE

   0.15 Lux (Color), 0 Lux (B/W & IR ON) @ F1.2, 50IRE(IR CAMERA ONLY)
- 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, True Day & Night (Auto)
- 2D-NR
- Smart IR / 30ea IR LEDs
- Privacy Zone 4 point, Motion Detection 4 Point
- MIRROR, SHARPNESS, HUE, CONTRAST, GAIN
- AGC (Auto Gain Control)
- VIDEO OUT (BNC)
- Internal sync
- 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.
- White pixel blemish removal.

⚠️ **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
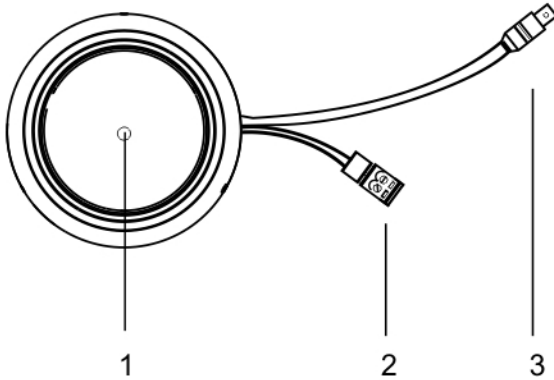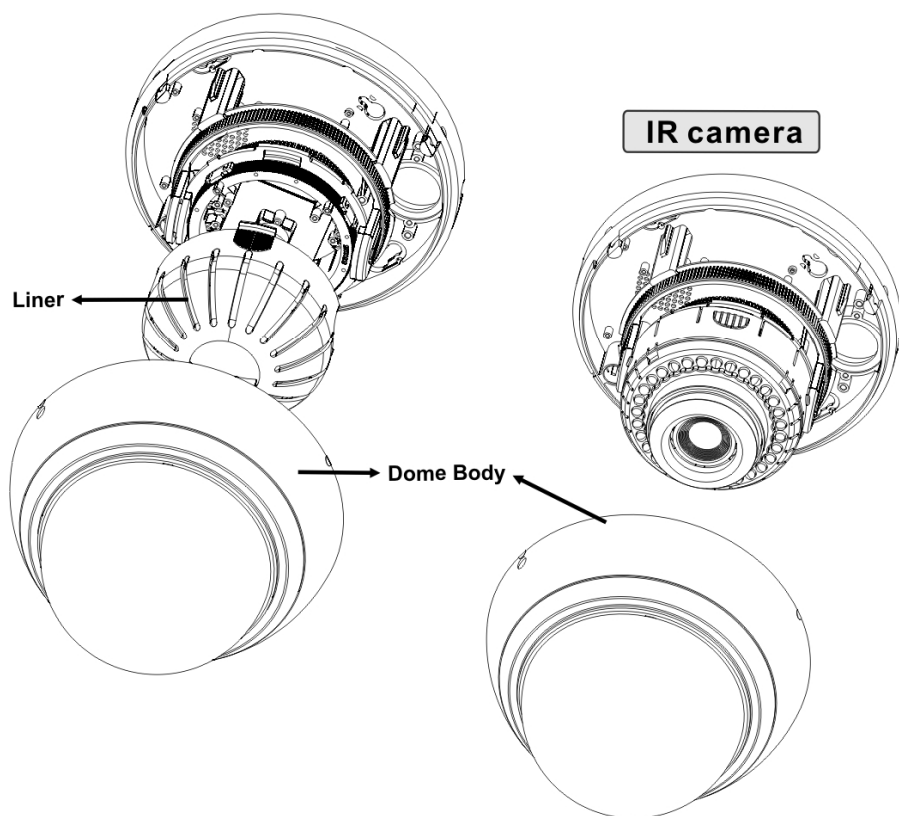

1. Lens : 2.8~12mm D/N Vari-focal(DC AI) for wide area monitoring

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.

BASE INSTALLATION

1. Make mounting holes and cable hole in the place (ceiling or wall) to which this dome camera is installed using the Drilling guide label.

IR camera

Liner

Dome Body

2. To remove the liner used in the dome without IR illuminators, squeeze the sides of the liner at the serrated surfaces and pull off.

CEILING / WALL

Drilling Guide Label

Drilling Position(PA5)

Plastic anchor

Screw Tapping (M6)
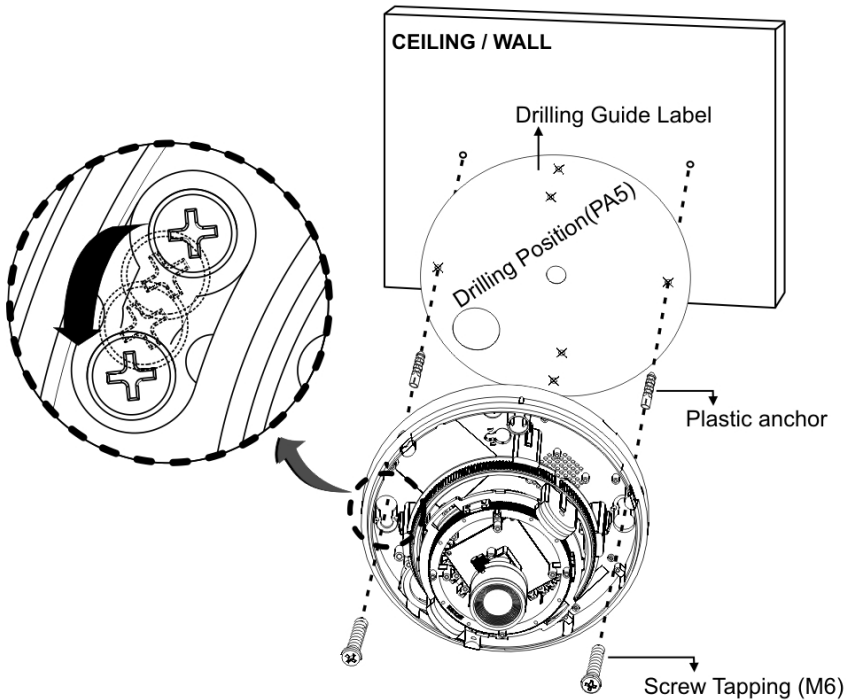
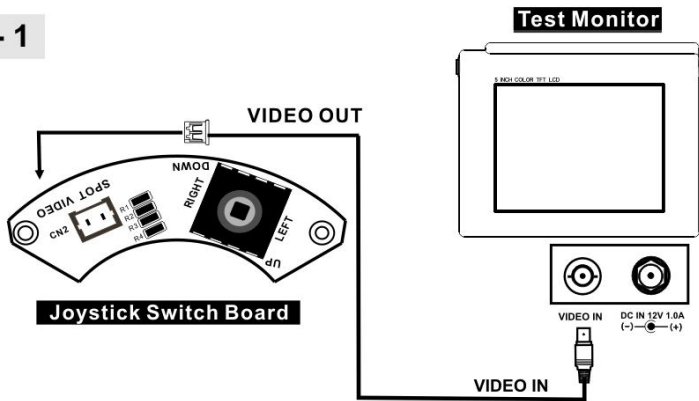3. Attach the housing to the ceiling or wall using suitable fasteners. Two M6x35 tapping screws are furnished. Fasten the appropriate screws to the surface and place the camera base on them then twist to the right to lock. Tighten the screws just enough to hold the base firmly in place.

4. Reassemble the camera in reverse order of disassembly.
Finally, lock dome body with locking screw(M3X5) from the accessory kit.

VIDEO OUT CHECK

TYPE - 1

Test Monitor

5 INCH COLOR TFT LCD

VIDEO OUT

SPOT VIDEO

CN2

DOWN

RIGHT

LEFT

UP

Joystick Switch Board

VIDEO IN   DC IN 12V 1.0A
(−)—●—(+)

VIDEO IN

TYPE - 2

Test Monitor

5 INCH COLOR TFT LCD

VIDEO OUT

VIDEO IN   DC IN 12V 1.0A
(−)—●—(+)

VIDEO IN

Joystick Switch Board

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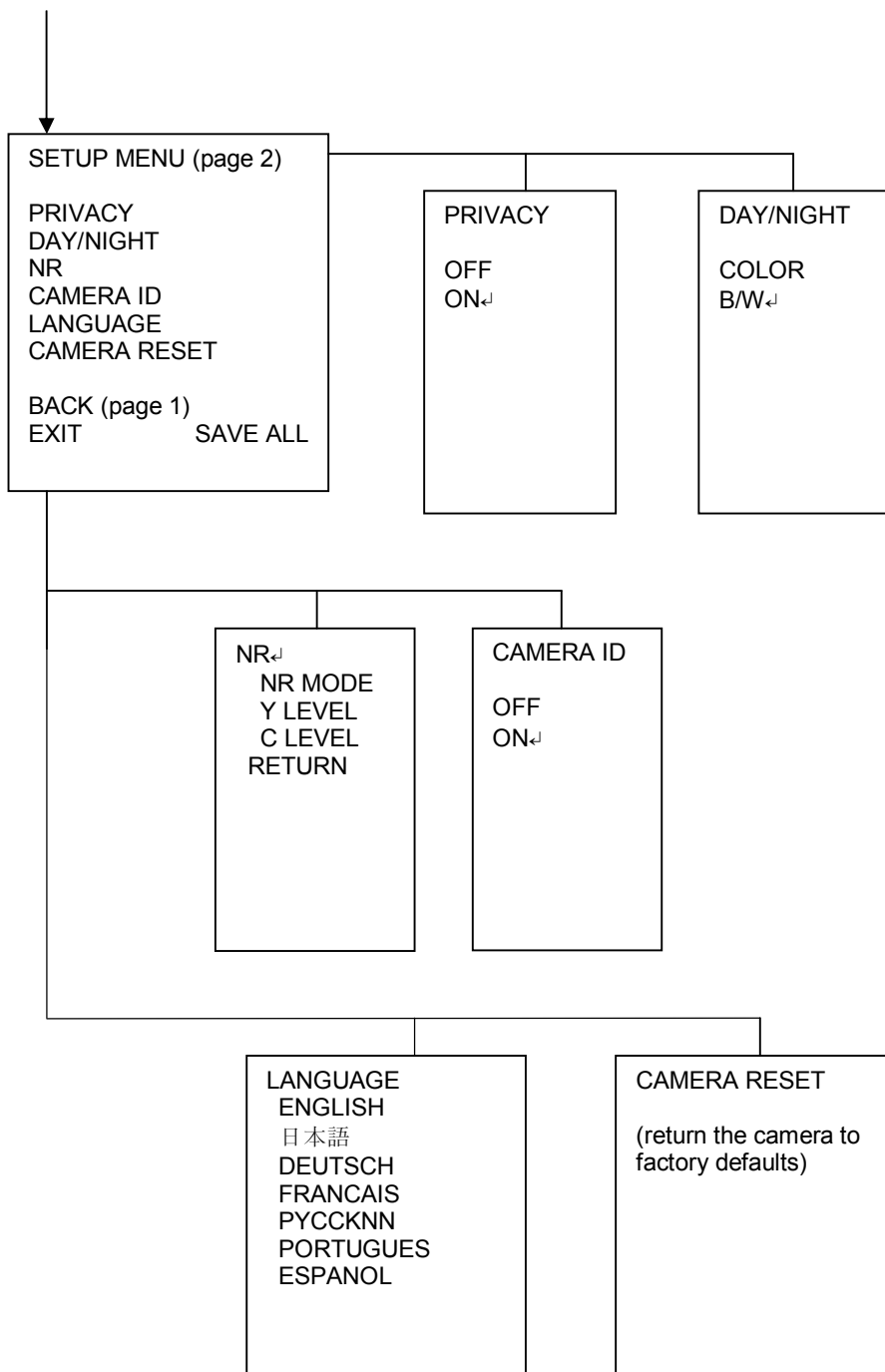
AUTO
 TYPE (DC / VIDEO)
 Sets the type of mechanical iris
 (Video lens is not supported)
 MODE (AUTO / OPEN / CLOSE)
 Sets the type of control to be applied over the mechanical iris.
 SPEED (0 – 255)
 Sets the convergence speed of the mechanical iris.

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.
  ENVIREMENT (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 (D-WDR)

ATR (Adaptive Tone Reproduction or Digital-Wide Dynamic Range) 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
(To set the selection area it is best to
  begin at the BOTTOM-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              IIIIIIIIII   000
 BOTTOM          IIIIIIIIII   076
 LEFT            IIIIIIIIII   000
 RIGHT           IIIIIIIIII   183
RETURN
```

PRIVACY

AREA SEL (1~4)
Selects the Privacy area
(To set the selection area it is best to
  begin at the BOTTOM-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)
Selects the color 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 IF IR OPTIMIZER IS 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.

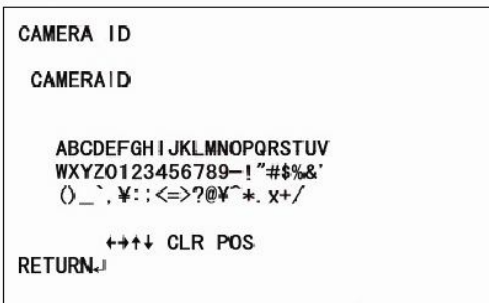**NR MODE** (OFF, Y, C, Y/C)
  Sets the 2D NR filter mode.
Y LEVEL (0-15)
   Sets the Y filter (Luminance) strength.
C LEVEL (0-15)
   Sets the C filter (Chrominance) strength.

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

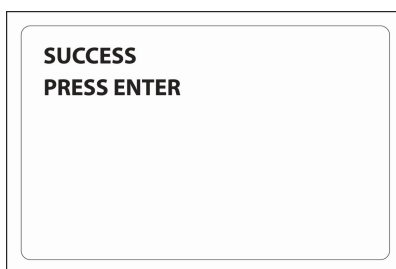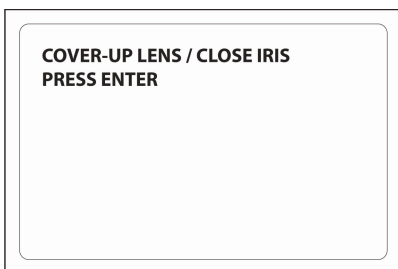**EXIT** – Exits the menu and does not save changes made.

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.
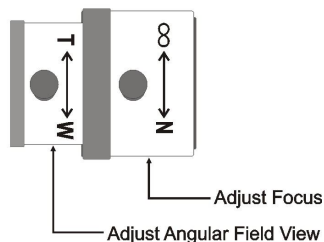
Over 70'C Auto white defect can't be activated.

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

**SUCCESS
PRESS ENTER**

LENS ADJUSTMENT (OPTIONAL VARIFOCAL LENS)

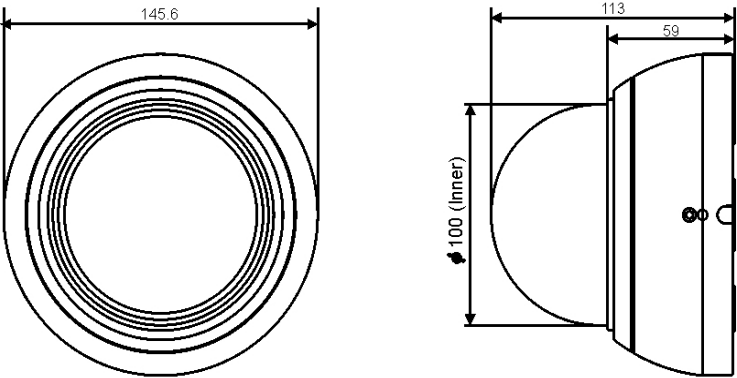**Field of view:** Adjust setting from Tele (T) to Wide (W) field of View.

Focus: Adjust lens focus from near (N) to infinity (∞).

Adjust Focus

Adjust Angular Field View

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

EXTERNAL DIMENSION

Dimensions

145.6

113

59

ϕ100 (Inner)

Unit: mm

Window Size	0.1 in. (2.5mm thick), impact-resistant P.C (LEXAN) 3.93 in. (10cm) diameter
Cable Entry	One 1" opening holes
Weight - Unit: Shipping:	0.88 lb. (0.4kg) 1.41 lb. (0.64 kg)

14

SPECIFICATIONS

MODEL		NTSC	PAL
Power	Power source	DC 12V / AC 24V (±10%)	
	Power consumption	3.5 Watts (300mA)	
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	1/50 ~ 1/10,000 sec	
	Resolution	700TVL	
	Min. illumination	0.15 Lux (Color), 0.01 Lux (B/W) @ F1.2, 50IRE	
	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 ; D-WDR)	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	2-Pin Terminal block	
	Video output	BNC connector / Spot out	
	Lens	2.8~12mm Vari-focal lens (True D/N)	
	Operating temperature	-10ºC ~ +50 ºC	
	Operating humidity	0~96% (non-condensing)	
	External dimension	145.6 x 113 mm	
	Weight	400g	

SPECIFICATIONS – IR CAMERA ONLY

	MODEL	NTSC	PAL
Power	Power source	DC 12V / AC 24V (±10%)	
	Power consumption	5 Watts (450mA)	
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	1/50 ~ 1/10,000 sec	
	Resolution	700TVL	
	Min. illumination	0.15 Lux (Color), 0 Lux (B/W & IR ON) @ F1.2, 50IRE	
	IR LED / Sensor	IR LED 30EA(850nm) / 40 degree), Sensor 1EA	
	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 ; D-WDR)	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	2-Pin Terminal block	
	Video output	BNC connector / Spot out	
	Lens	2.8~12mm Vari-focal lens (True D/N)	
	Operating temperature	-10ºC ~ +50 ºC	
	Operating humidity	0~96% (non-condensing)	
	External dimension	145.6 x 113 mm	
	Weight	400g	