

# **USER'S MANUAL**

## **STAINLESS STEEL CAMERA**

Before installing and using the camera, please read this instructions thoroughly and keep for reference.

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# PRECAUTIONS

- **Avoid prolonged use in high temperature and high humidity environment**  
Use the product within the operating range specified in the specifications.  
Avoid locations where heat is generated, and Install in a well-ventilated place.
- **Do not install the camera in an unstable place**  
Confirm that the camera is firmly fixed after installation.  
Dropping the product due to poor installation may cause injury.
- **Install the camera away from dusty places**  
This may cause product malfunction, poor image quality, fire or electric shock.
- **Do not install the camera under unstable lighting conditions**  
It is possible to output an inappropriate image due to severe illumination change or lighting flickering.
- **Do not install the camera near gas or oil leaks**  
Use in a place with flammable materials may cause fire.  
Also, keep distance from power line cables or use separate metal piping.
- **Do not disassemble the camera or insert foreign objects**  
There is no warranty liability for products that user disassembled.

# PRECAUTIONS

- **Do not drop the camera or shock it**  
It may cause malfunction.
- **Never keep the camera directly face to strong light.**  
Exposure to strong light such as sunlight may cause light spreading or light blurring. In addition, direct sunlight can damage the image sensor.
- **Prepare for malfunction due to natural disasters**  
The grounding work or the installation of the surge protector can minimize damage to the product due to lightning, etc.
- **Be sure to check the specifications of the power supply**  
Before connecting the power to the product, make sure that the power supply meets the recommended specifications.

# FEATURES

## 12x Camera

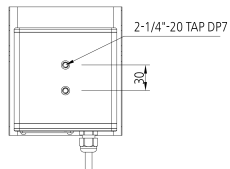
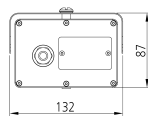
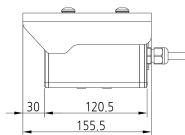
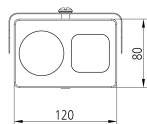
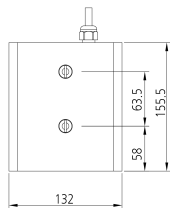
- 1/2" 2MP Sony CMOS sensor
- NETWORK, CVBS
- 12x Optical Zoom(7~84mm) & 32x Digital Zoom
- IR LED 9pcs(Up to 100m)
- Real-time True WDR
- Digital Noise Reduction(2D+3D)
- Digital Slow Shutter
- Digital Image Stabilization
- Privacy Mask Function
- High Light Compensation
- Defog Function
- ACE(Digital WDR)
- Motion Detection
- Stainless Steel Housing(SUS 316L)
- IP68/IK10
- IPv4, IPv6 support
- H.265, H.264, MJPEG video compression
- Less than 200ms latency with 2MP video streaming
- Edge storage up to 64GB
- Bi-directional audio support

# FEATURES

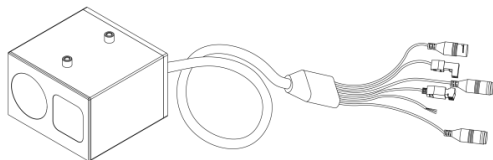
## 10x Camera

- 1/3" 2MP Panasonic CMOS sensor
- NETWORK, CVBS
- 10x Optical Zoom(5.1~51mm) & 32x Digital Zoom
- IR LED 9pcs(Up to 100m)
- Real-time True WDR
- Digital Noise Reduction(2D+3D)
- Digital Slow Shutter
- Digital Image Stabilization
- Privacy Mask Function
- High Light Compensation
- Defog Function
- ACE(Digital WDR)
- Motion Detection
- Stainless Steel Housing(SUS 316L)
- IP68/IK10
- IPv4, IPv6 support
- H.265, H.264, MJPEG video compression
- Less than 200ms latency with 2MP video streaming
- Edge storage up to 64GB
- Bi-directional audio support

# DIMENSIONS



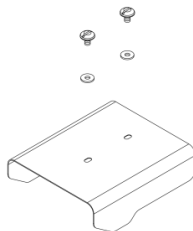
# PACKAGE COMPONENTS



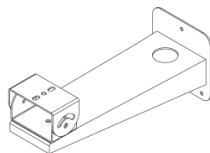
Camera



Manual



Sunshield/Sunshield bolt

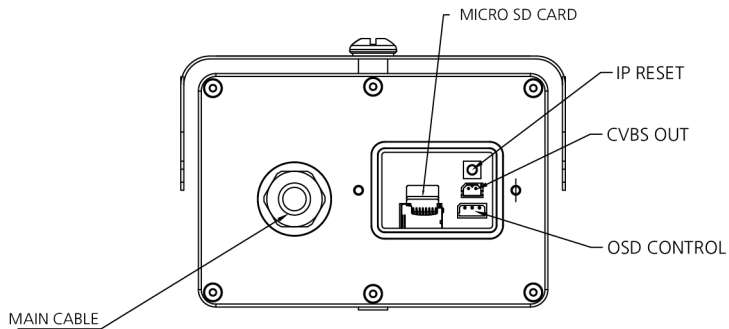


Bracket  
(Option)

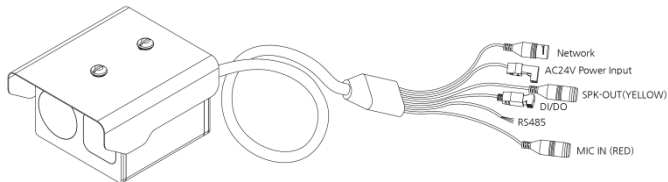


Flange Bolt 1/4"\*8  
(Option)

# PART NAMES AND FUNCTIONS



# CONNECTIONS



## **NETWORK**

Used to connect the LAN cable.(10/100Mbps supported)

## **POWER**

Used to connect the power.(AC24V/1.5A, DC12V/2A)

## **SPK-OUT/MIC IN**

Used to connect the audio SPK-OUT/MIC IN cable.(3.5 Ø)

## **DI/DO**

Alarm IN : In order to make alarm on the web GUI, short or open between DI and GND port.  
(Please refer the IP manual for more information)

Alarm OUT : Control the relay On/Off on the web GUI, relay will short or open between DOA and DOB.(Please refer the IP manual for more information)

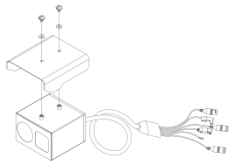
## **RS-485 COMMUNICATION**

Connect to an external controller of RS-485 format.(Protocol : Pelco-D 2400 supported)

GND : GREEN

10 F.D : BLUE(IP Initialization)

# INSTALLATION

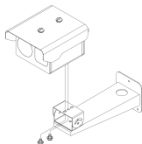


Connect the sunshield to the camera with bolt.

## Installation using a bracket

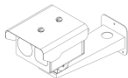


Install the bracket to the wall using screw bolts.



- When installing a camera on the concrete, make sure to use the M8 anchor bolts.
- Use the screws that can stand at least four times the weight of the device.

Secure the bracket and the product using the 2pcs of 1/4"\*8 flange bolts included in the package.



Adjust the bracket angle to match with the camera monitoring direction, and then fully secure the bolt.

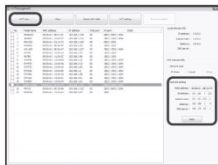
# NETWORK

## Setting IP address

Using NVTManagement enables to set network settings.

### 1. Excute NVTManagement.

- . Double click NVTManagement.exe



### 2. Setting IP address

- . Click NVT Scan button to find IP cameras than select the camera.
- . Input IP address, net mask, gateway and name server address than click Apply button.
- . Default IP and Password is ID:root, PW:pass
- . If you have any network information about your network, please ask to your network administrator.

### 3. Access the camera using web browser.

ID: root

Password: pass





# MAIN MENU

**Camera menu is subject to change without prior notice to upgrade and quality increase and we may use slip sheet for the change.**

**Please check the camera version and the slip sheet if the camera menu and this manual menu is not matched.**



Functions can be setup using "Menu Key Command" of Visca protocol.

The menu consists of the "Main Menu" and "Sub Menu".

The main menu is displayed where 7 camera functions can be selected.

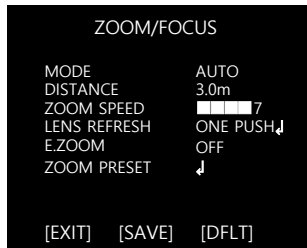
To the push of each main menu selection, the sub-menu is displayed

If you want save the menu, select [SAVE].

If you want not save the menu, select [EXIT]

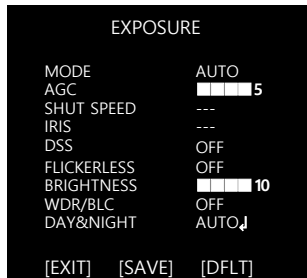
(After select , Power off -> on)

If you want default the menu, select [DFLT]



- ◆ **MODE** : Select auto focus mode
  - ▶ AUTO, ONE PUSH, MANUAL
- ◆ **DISTANCE** : Select minimum distance in focus between camera and object.
  - ▶ 0.5 / 1.5 / 3.0 / 5.0 / 10.0 m
- ◆ **ZOOM SPEED** : Select Zoom Speed
  - ▶ 0 (Slow) ~ 7 (Fast)
- ◆ **LENS REFRESH** : Lens origin calibrated automatically.
  - ▶ ONE PUSH↵ / ON (1 day ~ 10 days)
- ◆ **E.ZOOM** : Select maximum digital zoom magnification.
  - ▶ OFF / ON (max x2 ~ x19, x21, x23, x25, x28, x32)
- ◆ **ZOOM PRESET** : Select zoom preset
  - ▶ PRESET # : Select Zoom preset number (1 ~ 5)
  - ▶ MODE : OFF / ON↵
    - ▷ ON↵ : Adjust the Zoom Position

# EXPOSURE



- ◆ MODE : Select Exposure Mode
  - ▶ AUTO / IRIS.P / SHUT.P / MANUAL
- ◆ AGC : Select Auto Gain Control
  - ▶ 0 ~ 10
- ◆ SHUT SPEED : Can be set in SHUT.P or MANUAL mode
  - ▶ x32, x16, x8, x4, x2, 1/30(25), 1/60(50), 1/100, 1/120, 1/250, 1/500, 1/700, 1/1000, 1/2000, 1/3000, 1/6000, 1/10000, 1/20000, 1/30000 sec
- ◆ IRIS : Iris level can be set in IRIS.P or MANUAL mode
  - ▶ 0 ~ 20
- ◆ DSS : Select maximum DSS (Digital Slow Shutter)
  - ▶ OFF / x2, x4, x8, x16, x32
- ◆ FLICKERLESS : Select Flickerless mode
  - ▶ OFF / ON / AUTO (remove screen flicker)
- ◆ BRIGHTNESS : Adjust brightness level
  - ▶ 0(dark) ~ 20(bright) steps

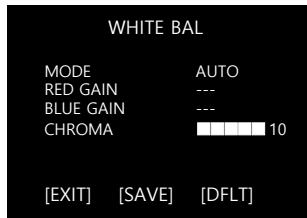
# EXPOSURE

- ◆ WDR/BLC : Select WDR(Wide Dynamic Range) or BLC(Back Light compensation)
  - ▶ WDR↵
    - ▷ MODE : Select WDR mode.
    - ▶ LINE, FRAME
      - ▷ LEVEL : Adjust WDR level.
    - ▶ LOW, MID-LOW, MIDDLE, MID-HIGH, HIGH
- ※ WDR doesn't work in Manual Exposure Mode and Shutter Priority Mode.
  - ▶ BLC↵
    - ▷ POSITION : Adjust the window position
    - ▷ SIZE : Adjust the window size
- ※ Can't use WDR and BLC at the same time.  
(When WDR On, BLC is Off. And when BLC is On, WDR is Off)
- ※ BLC doesn't work in Manual Exposure Mode.

# EXPOSURE

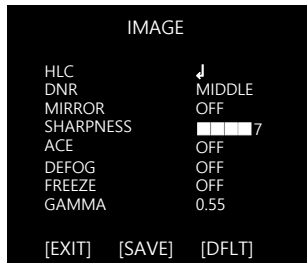
- ◆ DAY&NIGHT : Select Day&Night
  - ▶ MODE : AUTO<sup>㉔</sup> / EXT-IN<sup>㉔</sup> / DAY / NIGHT<sup>㉔</sup>
    - ▷ AUTO
  - ▶ DELAY : 0 ~ 255 sec
  - ▶ THRS : 0 ~ 28
    - Day↔Night switching level in Auto Mode.
    - Switching in lower lux with lower threshold level.
  - ▶ GAP : LOW, MID-LOW, MIDDLE, MID-HIGH, HIGH
    - Margin between Day→Night switching level and Night→Day switching level.
  - ▶ IR DETECTION : Setting IR Detection mode. (ON / OFF)
  - ▶ IR DET LEVEL : Setting IR Detection level. (LOW, MID-LOW, MIDDLE, MID-HIGH, HIGH)
  - ▶ BURST : OFF / ON
    - ▷ EXT-IN
  - ▶ DELAY : 0 ~ 255 sec
  - ▶ BURST : OFF / ON
  - ▶ POLARITY : External Input polarity (ACTIVE LOW / ACTIVE HIGH)
    - ▷ NIGHT
  - ▶ BURST : OFF / ON

# WHITE BALANCE



- ◆ AWB : Select WHITE BALANCE mode
  - ▶ AUTO / ONE PUSH↵ / MANUAL / INDOOR / OUTDOOR / AUTO-EXT
  - ▷ AUTO : Automatically adjusts color according to the available lighting.
  - ▷ ONE PUSH : It is a fixed white balance mode that may be automatically readjusted only by pressing ONE PUSH
  - ▷ MANUAL↵ : Color can be corrected when the user increases or decreases “RED GAIN” or “BLUE GAIN”.
  - ▷ INDOOR : Set color temperature to be Indoor light (3700°K)
  - ▷ OUTDOOR : Set color temperature to be Outdoor light (5100°K)
  - ▷ AUTO-EXT : Auto mode operating on a wider range of color temperatures.
- ◆ RED GAIN : Adjust R gain value ▶ 0 ~ 20 steps
- ◆ BLUE GAIN : Adjust B gain value ▶ 0 ~ 20 steps
- ◆ CHROMA : Adjust CHROMA gain value ▶ 0 ~ 20 steps

# IMAGE

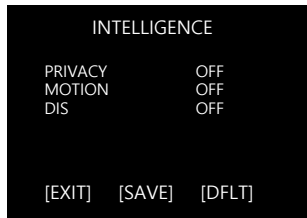


- ◆ HLC : Select High Light Compensation.  
When extremely bright light is projected to the camera masking is used on the portion to prevent partial saturation on the monitor.
  - ▷ MODE : OFF / ON / NIGHT
  - ▷ LEVEL : 0 ~ 20 steps
  - ▷ COLOR : 0 ~ 13 steps
- ◆ DNR : Select Digital Noise Reduction
  - ▶ OFF / LOW / MIDDLE / HIGH / AUTO
- ◆ MIRROR : Select a flip mode
  - ▶ OFF / H / V / H&V
    - ▷ H : You can flip the picture horizontally on the screen
    - ▷ V : You can flip the picture vertically on the screen
    - ▷ H&V : You can flip the picture horizontally & vertically on the screen

# IMAGE

- ◆ SHARPNESS : Adjust sharpness level
  - ▶ 0 ~ 10 steps
- ◆ ACE : Select Digital WDR (Wide Dynamic Range)
  - ▶ OFF / LOW / MIDDLE / HIGH
- ◆ DEFOG : Carry out defog function
  - ▶ OFF / ON<sup>↵</sup>
    - ▷ MODE : AUTO / MANUAL
    - ▷ LEVEL : LOW / MIDDLE / HIGH
- ※ Can't use DEFOG and ACE at the same time (when DEFOG is On, ACE is Off)
- ◆ FREEZE : Select real or still mode
  - ▶ OFF / ON
- ◆ GAMMA : Select GAMMA
  - ▶ 0.45 / 0.55 / 0.65 / 0.75

# INTELLIGENCE



- ◆ **PRIVACY** : Hide an area you want to hide on the screen
  - ▶ OFF / ON<sup>d</sup>
    - ▷ MASK# : Select mask area number (1 ~ 24)
    - ▷ MODE : Mask enable or disable(OFF / ON)
    - ▷ POSITION : Adjust the mask position
    - ▷ SIZE : Adjust the mask size
    - ▷ COLOR : Select mask color(0 ~ 13)
    - ▷ TRANS : Select mask transparency level(0 ~ 3)
- ◆ **MOTION** : When there is movement of the subject in the screen, there will be an motion detection
  - ▶ OFF / ON<sup>d</sup>
    - ▷ AREA# : Setting 3 areas(1~3) of motion detection
    - ▷ MODE : OFF / ON (Limit and define areas of motion detection)
    - ▷ SENSITIVITY : Adjust sensitivity of MD (0 ~ 20 steps)  
More sensitive to setting to low step with sensitivity
    - ▷ POSITION : Adjust the Area position
    - ▷ SIZE : Adjust the Area size
    - ▷ INTERVAL :Select the alarm interval time (0 ~ 255sec)

# INTELLIGENCE

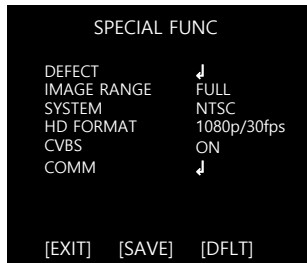
- ▷ DWELL TIME : Select the duration time about changing MD mode (0 ~ 255sec)
- ▷ ZOOM PRESET : Select Motion Zoom Preset Mode and Position (OFF / ON↵)

## ◆ DIS : Select Digital Image Stabilizer mode

### ▶ OFF / ON↵

- ▷ RANGE : Setting the image compensation range. (10%, 20%, 30%)
- ▷ FILTER : Setting the sensitivity to hold DIS function in worst case.  
(LOW, MIDDLE, HIGH)
- ▷ AUTO C : Setting Auto Centering mode (OFF, HALF, FULL)

# SPECIAL FUNCTION

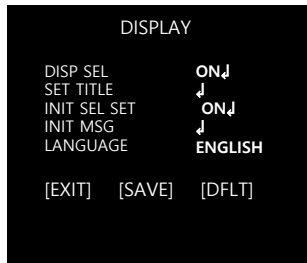


- ◆ DEFECT : Compensates for bad pixels that may occur.  
Occurs when the whole screen is in full black or if there is bad pixelation and it changes the THRS values until the screen is fixed.
- ※ When you use this function, you have to block the lens for blocking lights into the lens.
- ◆ IMAGE RANGE : Select image bit range.  
(Full : 100%, Compressed : 75%)
  - ▶ FULL, COMP, USER↵
    - ▷ LEVEL : Select user mode level (0 ~ 32)
- ◆ SYSTEM : Select NTSC(30fps) or PAL(25fps).
- ◆ HD FORMAT : Display digital output.  
(▶ Fixed to 1080p/30(25)fps)
- ◆ CVBS : Select CVBS output.
  - ▶ OFF / ON

# SPECIAL FUNCTION

- ◆ COMM : Set up the camera ID, baud rate, protocol
  - ▷ ID : Select the camera ID
    - ▶ 1 ~ 255
  - ▷ BAUD RATE : Select serial communication speed
    - ▶ 2400 / 4800 / 9600 / 19200 / 38400 / 57600 / 115200bps
  - ▷ PROTOCOL : Select operating protocol
    - ▶ VISCA / PELCO-D / PELCO-P / UPDATE

# DISPLAY



※ Character Table of Text edit Mode

A B C D E F G H I J K L M N O P Q R S T  
 U V W X Y Z a b c d e f g h i j k l m n  
 o p q r s t u v w x y z , . ( ) { } [ ]  
 0 1 2 3 4 5 6 7 8 9 \* + - / = ~ ! ? " ' "

- ◆ DISP SEL : Select display item.
  - ▶ OFF / ON<sup>4</sup>
    - ▷ ID : OFF / ON
    - ▷ TITLE : OFF / ON
    - ▷ ZOOM RATIO : OFF / ON
    - ▷ SYSTEM MSG : OFF / ON (MD Alarm)
- ◆ SET TITLE : Select camera title menu  
 (Text edit– max 40 characters)
- ◆ INIT SEL : Select display initial message.
  - ▶ OFF / ON<sup>4</sup>
    - ▷ ID : OFF / ON
    - ▷ BAUDRATE : OFF / ON
    - ▷ PROTOCOL : OFF / ON
    - ▷ VERSION : OFF / ON
    - ▷ INIT MSG : OFF / ON
- ◆ SET INIT MSG : modify initial message.  
 (Text edit – max 40 characters)
- ◆ LANGUAGE : Select language.
  - ▶ English / Simplified Chinese / Traditional Chinese / Japanese

# SPECIFICATION

## 12x Camera

Image Sensor	1/2" Sony CMOS Sensor
Total Pixels	1952(H) x 1241(V) = 2.42M Pixels
Active pixels	1937(H) x 1097 (V) = 2.12M Pixels
Lens	12x Day & Night Zoom Lens f = 7.0mm ~ 84mm, F1.5 (wide) ~ F1.9 (tele)
FOV	Horizontal : 54.07°~ 4.98°, Vertical : 32.03°~2.80°
Digital Zoom	2x ~ 32x
Resolution	Digital : 1080p30(25)fps Analog : CVBS (※ Test Only)
Min. illumination	Color(1/30s, 78dB) : 0.15 lux , BW(1/30s, 78dB) : 0.01lux Color DSS(1/1s, 78dB) : 0.0375 lux , BW DSS(1/1s, 78dB) : 0.002 lux
Video Output	CVBS(※ Test Only)
S/N Ratio	more than 50dB (AGC off)
Comm. Baudrate	2400 / 4800 / 9600 / 19200 / 38400 / 57600 / 115200

# SPECIFICATION

## 10x Camera

Image Sensor	1/3" Panasonic CMOS Sensor
Total Pixels	1956 (H) x 1266 (V) = 2.48M Pixels
Active pixels	1944 (H) x 1092 (V) = 2.12M Pixels
Lens	10x Day & Night Zoom Lens f = 5.1mm ~ 51mm, F1.6 (wide) ~ F1.8 (tele)
FOV	Horizontal : 54°~ 4.9°, Vertical : 31°~4.0°
Digital Zoom	2x ~ 32x
Resolution	Digital : 1080p30(25)fps Analog : CVBS (※ Test Only)
Min. illumination	Color(1/30s, 78dB) : 0.5 lux , BW(1/30s, 78dB) : 0.1lux Color DSS(1/1s, 78dB) : 0.125 lux , BW DSS(1/1s, 78dB) : 0.025 lux
Video Output	CVBS(※ Test Only)
S/N Ratio	more than 50dB (AGC off)
Comm. Baudrate	2400 / 4800 / 9600 / 19200 / 38400 / 57600 / 115200

# SPECIFICATION

Focusing Mode	Auto / Manual
Shutter Speed	1/30(25) ~ 1/30,000 sec
WDR/BLC	OFF / WDR / BLC
White Balance	Auto / One Push / Manual / Indoor / Outdoor / Auto-Ext
Power Source	AC24V / DC12V
Power Consumption	1.5A(AC24V) / 2A(DC12V)
Storage Temperature	-20°C~50°C / 90% RH
Weight	2.5kg

※ Design and specifications are subject to change without notice.

# SPECIFICATION

## NETWORK

Ethernet	RJ-45 (10/100BASE-T)
Video Compression Format	H.265, H.264, MJPEG
Resolution	1920x1080, 1280x720, 1024x576, 640x360, D1, 4CIF, VGA, CIF, QVGA
bit rate	32Kbps~8Mbps (CBR,/VBR Support)
Max. frame rate	30fps@1920x1080
Streaming Capability	Supports up to Triple streams(H.265, H.264, MJPEG)
Audio In / Out	Mic In / Audio Out
Audio Compression	G.711
Audio Communication	Bi-directional audio
Protocol	TCP, UDP, IP, HTTP, DHCP, DNS, ICMP, ARP, IPv4 / IPv6, DDNS, NTP, SNMP, Syslog, UPnP, Bonjour, ZeroConf, RTP/RTSP, Onvif, Genetec Protocol
Storage	SDXC (up to 64GB, MicroSD)
Security	MD5 Password / iptables (firewall) / SSL
Webpage Language	Korean, English
Web Viewer	IE8.0 or above, Microsoft Edge, Firefox, Google Chrome, Apple Safari

P/N :  
PRINTED IN KOREA

Distributed by

21.08.31

## 업데이트 내역

SR-HS128, H108

날짜	내용	비고
19.11.20	초안 수정	
20.01.09	햇빛가리개 부분 수정(p8, p11)	
21.08.31	도면 수정	