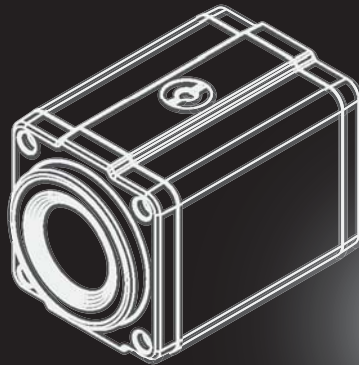


Distributed by

P/N : 388036005
PRINTED IN KOREA

INSTRUCTION MANUAL

FULL HD MEGA PIXEL ZOOM CAMERA



- Before attempting to connect or operate this product, please read these instructions carefully and save this manual for future use.
- The design and specifications are subject to be changed without prior notice to improve product's quality.



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
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



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 product.

FCC WARNING - This equipment may generate or use radio frequency energy. Changes or modifications to this equipment may cause harmful interference unless the modifications are expressly approved in the instruction

manual. The user could lose the authority to operate this equipment if an unauthorized change or modification is made.

REGULATORY INFORMATION : FCC Part 15

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.

- A suitable conduit entries, knock-outs or glands shall be provided in the cable entries of this product in the end use.

- Holes in metal, through which insulated wires pass, shall have smooth well rounded surfaces or shall be provided with brushings.

WARNING - Do not install this equipment in a confined space such as a bookcase or similar unit.

WARNING - Wiring methods shall be in accordance with the National Electric Code, ANSI/NFPA 70.

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.

WARNING - To reduce a risk of fire or electric shock, do not expose this product to rain or moisture.

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

CAUTION - To avoid electrocution, do not open the cabinet. Refer servicing to qualified personnel only.

CAUTION - The apparatus should not be exposed to water (dripping or splashing) and no objects filled with liquids, such as vases, should be placed on the apparatus.



Disposal of your old appliance

1. When this crossed-out wheeled bin symbol is attached to a product it means the product is covered by the European Directive 2002/96/EC
2. All electrical and electronic products should be disposed of separately from the municipal waste stream via designated collection facilities appointed by the government or the local authorities
3. The correct disposal of your old appliance will help prevent potential negative consequences for the environment and human health
4. For more detailed information about disposal of your old appliance, please contact your city office, waste disposal service or the shop where you purchased the product.

To disconnect power from the mains, pull out the main cord plug. When installing the product, ensure that the plug is easily accessible.

IMPORTANT SAFETY INSTRUCTIONS

- 1. Read these instructions** - All these safety and operating instructions should be read before the product is operated.
- 2. Keep these instructions** - The safety, operating and user instructions should be retained for future reference.
- 3. Heed all warnings** - All warnings on the product and in the operating instructions should be adhered to.
- 4. Follow all instructions** - All operating and user instructions should be followed.
- 5. Do not use this apparatus near water** - For example : near a bath tub, wash bowl, kitchen sink, laundry tub, in a wet basement, near a swimming pool, etc.
- 6. Clean only with dry cloth** - Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners.
- 7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.** - Slots and openings in the cabinet are provided for ventilation, to ensure reliable operation of the product, and to protect it from overheating. The openings should never be blocked by placing the product on a bed, sofa, rug or other similar surface. This product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided and the manufacturer's instructions have been adhered to.
- 8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.**

IMPORTANT SAFETY INSTRUCTIONS

- 9. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.**
- 10. Only use attachments/accessories specified by the manufacturer.**
- 11. Unplug this apparatus during lightning storms or when unused for long periods of time.**
- 12. 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 spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.**

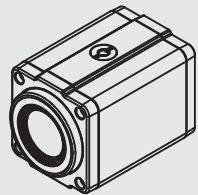


FEATURES.....	7P	SPECIAL FUNCTION	26P
PACKAGE COMPONENTS	8P	DISPLAY	28P
SYSTEM CONFIGURATION.....	9P	SPECIFICATION	29P
PART NAMES AND FUNCTIONS	10P	DRAWING	32P
CONNECTIONS	12P	TROUBLESHOOTING	33P
EXTERNAL DEVICE CONNECTIONS.....	13P		
INSTALLATION OF CAMERA	14P		
MENU OPERATION	15P		
MAIN MENU	16P		
FOCUS	17P		
EXPOSURE	18P		
WHITE BALANCE	21P		
IMAGE	22P		
INTELLIGENCE	24P		

Features

- 1/2.8" SONY CMOS Sensor
- x3 Optical Zoom
- Full HD Resolution
- Day & Night (ICR)
- Wide Dynamic Range
- Digital Noise Reduction(2D+3D)
- Privacy mask Function
- On Screen Display
- Intelligent motion detection
- Protocol

PACKAGE COMPONENTS



CAMERA



MANUAL



DC 12V CABLE



SERVICE VIDEO OUT
BNC CABLE

[Optional Remote Controller]



Not used

Tele/ Up

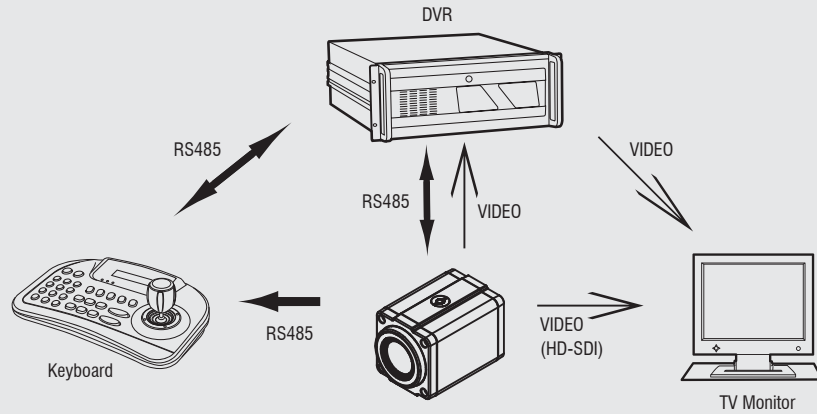
Far / Right

Menu/ Set

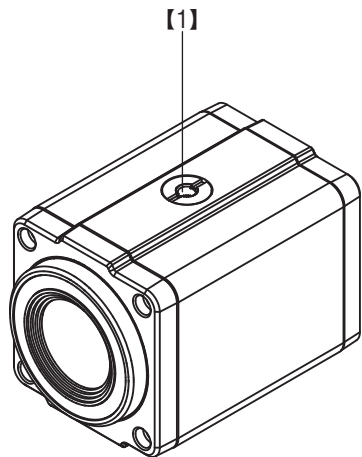
Wide / Down

Near / Left

SYSTEM CONFIGURATION



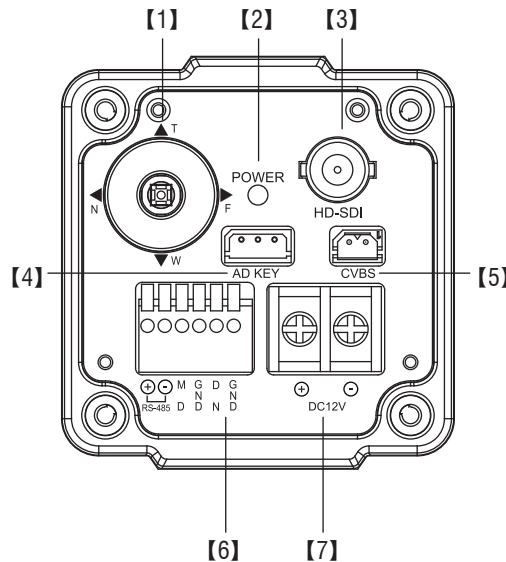
PART NAMES AND FUNCTIONS



【1】 Camera installation bracket

The bracket can be fixed at the top or bottom of the camera.

PART NAMES AND FUNCTIONS



【1】 OSD / Zoom / Focus control

【2】 Power LED

【3】 HD-SDI Out

【4】 AD Key

1: GND

2: AD-key

3: GND

【5】 CVBS Out

【6】 Control Terminal

1: RS-485 (+)

2: RS-485 (-)

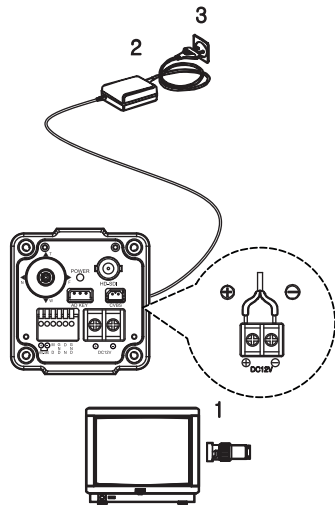
3: Motion Detection Out

4: Ground

5: Day&Night Input (Low : Night, High : Day)

6: Ground

【7】 Power : DC12V



Basic connection

The peripheral devices (DVR, monitor, lens, etc), DC adaptor and cables are not supplied.

1. Connecting the monitor.

Make the video signal connection between the camera and the monitor or time lapse monitor or DVR.

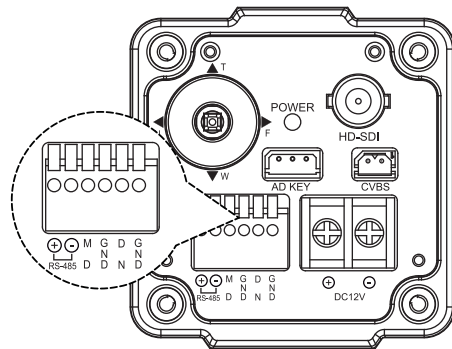
2. Use a commercially available DC12V adaptor.

Connect an DC 12V power source to the DC 12V input terminal on the back of the camera.

3. Insert the plug of this power cord into a wall outlet.

The POWER indicator will light. Adjust the picture on the monitor using the Brightness and Contrast controls etc.

To monitor's Video Input
or Camera Input



RS-485 COMMUNICATION

Connect to an external controller of RS-485 format.

Motion Detection Out

When the motion detection function is working, DC3.3V is outputted to OUT pin and GND pin.

Day & Night input

Day/Night mode of the camera can be switched by signal from an external device. To use this function, <DAY&NIGHT> setting of the camera should be set to the <EXT>.

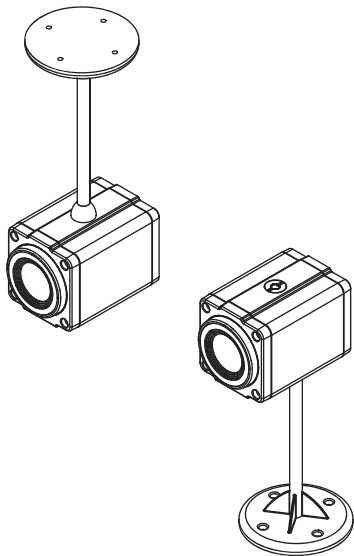
Note : Use a relay unit if the voltage or current of the connected device exceeds the ratings.

INSTALLATION OF CAMERA

The bracket can be installed to either the top or bottom of the camera as desired. From changing the position of the camera mounting bracket, you should always reuse the screws that have been removed.

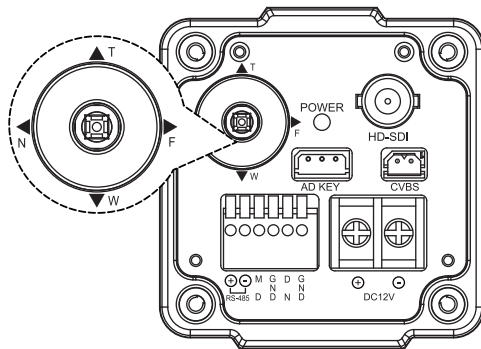
Note :


When using a camera mounting bracket, select a location that is strong enough to bear the full weight of the camera and the mounting bracket hold long periods, and install the camera mounting bracket securely.



MENU OPERATION

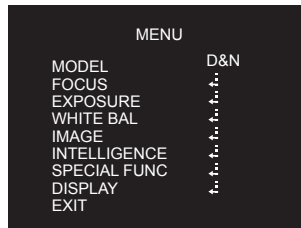
This camera utilizes an on-screen user MENU. To set items on the menu, use the following buttons on the side panel.



- ▲ ^T Tele(Up) button : Zoom in, Tele (Moves the cursor upwards. Use this button to select an item or adjust the parameters.)
- ▼ ^W Wide(Down) button : Zoom out, Wide (Moves the cursor downwards. Use this button to select an item or adjust the parameters.)
- ▶ ^F Far(Right) button : Adjust focus in Manual Mode (Moves the cursor to the right. Use this button to select or adjust the parameters of the selected item. The parameter changes each time this button is pressed.)
- ◀ ^N Near(Left) button : Adjust focus in Manual Mode (Moves the cursor to the left. Use this button to select or adjust the parameters of the selected item. The parameter changes each time this button is pressed.)
- Ⓜ Set button : Executes selections and displays a submenu for an item with the  mark.

Camera menu is subject to be changed 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.

MAIN MENU

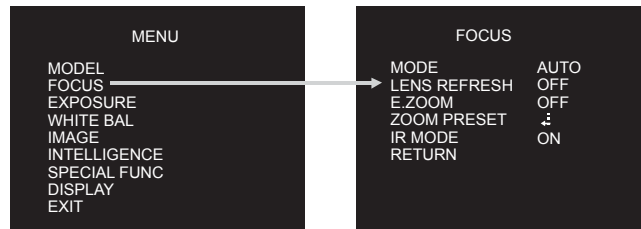


Functions can be setup using “Menu Key Command” of Visca protocol.
The menu consists of the “Main Menu” and “Sub Menu”.
The main menu is displayed where 7 camera functions can be selected.
To the push of each main menu selection, the sub-menu is displayed

MODEL

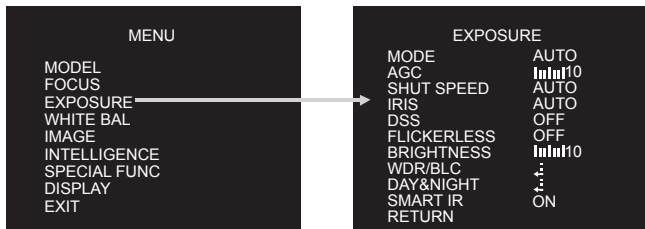
MODEL : Select model
- D&N

FOCUS



- ◆ MODE : Select auto focus mode
 - ▶ AUTO, ONE PUSH, MANUAL
- ◆ 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)
 - ※ Can't use Digital Zoom when the motion detection is turned on.
- ◆ ZOOM PRESET : Select zoom preset
 - ▶ PRESET # : Select Zoom preset number (1 ~ 5)
 - ▶ MODE : OFF / ON, ↵
 - ▷ ON, ↵ : Adjust the Zoom Position
- ◆ IR MODE : Select IR MODE(OFF / ON)
 - ▶ On : Recommend for indoor / Off : Recommend for outdoor

EXPOSURE



- ◆ **MODE** : Adjust 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
 - ▶ AUTO / x4 / x3 / x2 / 1/30(25), 1/60(50), 1/120(100), 1/240, 1/500, 1/1000, 1/2000, 1/4000, 1/8000, 1/16000, 1/30000, 1/60000 sec
 - ※ Slow shutter speed (x2 ~ x4) can be set in MANUAL mode.
- ◆ **IRIS** : Iris level can be set in IRIS.P or MANUAL mode
 - ▶ AUTO / MANUAL(0 ~ 20)
- ◆ **DSS** : Select maximum DSS(Digital Slow Shutter)
 - ▶ OFF / x2, x3, x4

- ◆ **FLICKERLESS** : Select Flickerless mode
 - ▶ OFF / ON (remove screen flicker)
- ◆ **BRIGHTNESS** : Adjust brightness level
 - ▶ 0(dark) ~ 20(bright) steps
- ◆ **WDR/BLC** : Select WDR(Wide Dynamic Range) or BLC(Back Light Compensation)
 - ▶ WDR.↵
 - ▷ LEVEL : Adjust WDR level(0 ~ 3).
 - ※ WDR doesn't work in Manual Exposure Mode and Shutter Priority Mode.
 - ▶ BLC.↵
 - ▷ AREA : Control BLC area according to light condition.
 - ▷ POSITION : Adjust the window X-Axis/Y-Axis position
 - ▷ SIZE : Adjust the window X-Axis/Y-Axis 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.
- ◆ **DAY&NIGHT** : Select Day&Night
 1. D&N Model
 - ▶ AUTO / DAY / NIGHT / EXT
 - ▷ Delay : 0 ~ 255 second
 - ▷ BURST : OFF / ON
 - ▷ THRS : LOW / MIDDLE / HIGH

Adjust the conversion value of Day↔Night time in Day↔Night Auto Mode.
The higher threshold value convert Day↔Night in the lower intensity .

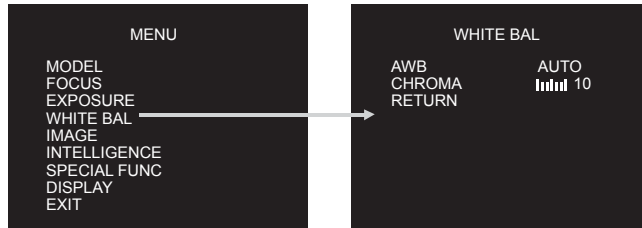
▷ GAP : LOW / MIDDLE / HIGH

This setting adjusts the margin of change from the setting of light to dark / daytime to nighttime and dark to light / nighttime to daytime. If this setting is too low, fluctuation may occur.

◆ DEBLUR : Select Deblur (On / OFF)

※ Can't use DEBLUR when the SHUT.P and MANUAL mode is set.

WHITE BALANCE



◆ AWB : Select WHITE BALANCE mode

▶ AUTO / ONE PUSH / MANUAL / INDOOR / OUTDOOR

▷ 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".

▶ RED GAIN : Adjust R gain value 0 ~ 20

▶ BLUE GAIN : Adjust B gain value 0 ~ 20

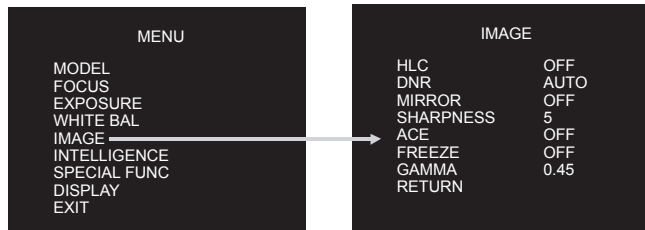
▷ INDOOR : Set color temperature to be Indoor light (3700°K)

▷ OUTDOOR : Set color temperature to be Outdoor light (5100°K)

◆ CHROMA : Adjust CHROMA gain value

▶ 0 ~ 20 steps

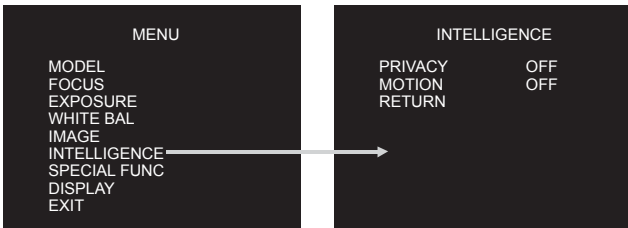
IMAGE



- ◆ 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.
- ▶ OFF / ON.┘
 - ▷ ON.┘ LEVEL : 0 ~ 20 steps
 - COLOR : Black, White, Yellow, Cyan, Green, Magenta, Red, Blue
- ◆ DNR : Select Digital Noise Reduction
- ▶ AUTO / OFF / LOW / MIDDLE / HIGH
- ◆ 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

- ◆ SHARPNESS : Adjust sharpness level
 - ▶ 0 ~ 10 steps
- ◆ ACE : Select Digital WDR(Wide Dynamic Range)
 - ▶ OFF / ON
 - ※ Can't use ACE and DEFOG at the same time
(When ACE On, DEFOG is Off. And when DEFOG is On, ACE is Off)
- ◆ Freeze : Select real or still mode
 - ▶ OFF / ON
- ◆ GAMMA : Select GAMMA
 - ▶ 0.45 / 0.50 / 0.55 / 0.60 / 0.65

INTELLIGENCE



◆ PRIVACY : Hide an area you want to hide on the screen

▶ OFF / ON.↵

- ▷ MASK# : Select mask area number (0 ~ 23)
- ▷ MODE : Mask enable or disable (OFF / ON)
- ▷ POSITOIN : Adjust the mask X-Axis/Y-Axis position
- ▷ SIZE : Adjust the mask X-Axis/Y-Axis size
- ▷ COLOR : 0 ~ 13
- ▷ TRANS : Select mask transparency level (0 ~ 4)

◆ MOTION : When there is movement of the subject in the screen, there will be an motion detection

▶ OFF / ON.↵

- ▷ SENSITIVITY : Adjust sensitivity of MD (0 ~ 20 steps)
More sensitive to setting to low step with sensitivity
- ▷ AREA : Designate motion detection area (WHOLE / EACH)
 - ▷ AREA# : Setting 3 areas(0~2) of motion detection
 - ▷ MODE : Limit and define areas of motion detection
 - ▷ POSITION : Adjust the AREA X-Axis/Y-Axis position
 - ▷ SIZE : Adjust the AREA X-Axis/Y-Axis size
 - ▷ TRANS : Adjust color tone of out of selected areas.
- ▷ INTERVAL : Select the alarm interval time (0 ~ 255sec)
- ▷ DWELL : Select the duration time about changing MD mode (0 ~ 255sec)
- ▷ SET ZOOM POS : Select Motion Zoom Preset Mode and Position (OFF / ON.↵)

※ Can't use Motion detection when the Privacy Mask is turned on.

SPECIAL FUNCTION



- ◆ DEFECT DET : 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. (OFF / ON)
 - ◆ DEFOG : Carry out defog function
 - ▶ OFF / ON
 - ▷ LEVEL : Eliminate amount of fog on display screen.(0 ~ 10)
- ※ Can't use ACE and DEFOG at the same time
(When ACE On, DEFOG is Off. And when DEFOG is On, ACE is Off)

- ◆ SYSTEM : Select NTSC or PAL. (NTSC / PAL)
- ◆ HD FORMAT : Select Digital output 1080P or 720P. (1080P / 720P)
- ◆ 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
 - ▷ APPLY : Save the settled ID, Baud rate and protocol.
(It is not changed after performs the factory default)
- ◆ DEFAULT : All the settings will be restored to the factory default.

DISPLAY



◆ DISP SEL : Select display item.

▶ OFF / ON, \downarrow

▷ ID : OFF / ON

▷ TITLE : OFF / ON

▷ ZOOM RATIO : OFF / ON

◆ SET TITLE : Select camera title menu (Text edit)

```

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 * + - / = ~ ! ? " '
S P   B S       C L R   P O S
RETURN
    
```

◆ LANGUAGE : Select language.

▶ ENGLISH / Simplified Chinese / Traditional Chinese / Japanese

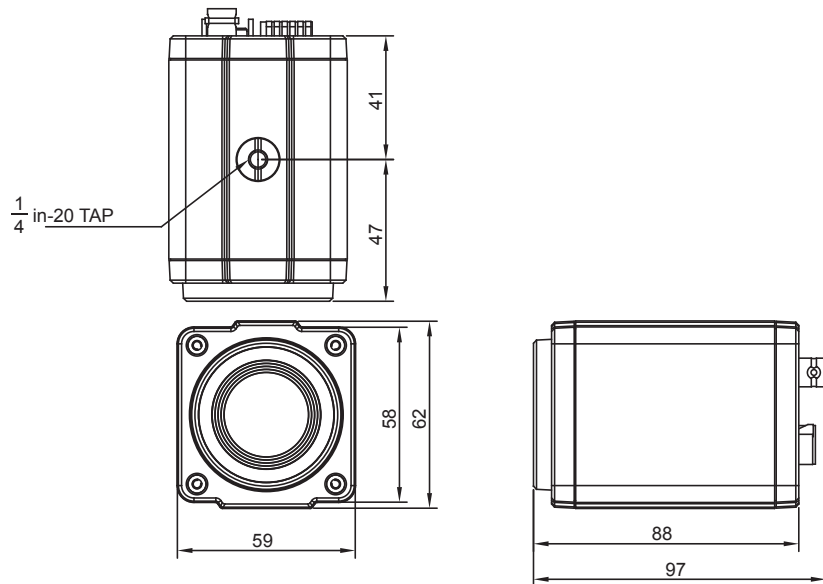
Image Sensor	1/2.8" SONY CMOS Sensor
Total Pixels	2,000(H) x 1,121(V), 2.24M Pixels
Active pixels	1,936(H) x 1,105(V), 2.12M Pixels
Scanning system	Progressive Scan
Sync. System	Internal
Resolution	Digital ; 1920x1080p(1080p/30fps) , 1280x720p(720p/60fps) Analog : 700TVL
Min. illumination	Color : 1.0 lux , BW : 0.5lux Color DSS : 0.002 lux , BW DSS : 0.001 lux
Video Output	HD : Digital(LVDS) Analog SD : VBS(without WDR)
S/N Ratio	more than 50dB (AGC off)
Lens type	3x Day & Night Zoom Lens
Zoom Ratio	Optical 3x, Digital 32x Zoom
Focal Length	f = 3.2 mm ~ 9.0 mm
Aperture Ratio	F1.2 (wide) ~ F2.1 (tele)
MODEL	D&N
Focus	Mode / Lens Refresh / E.Zoom / Zoom Preset / IR MODE
Mode	Auto / One Push / Manual
Lens Refresh	ONE PUSH / 1 ~ 10Day
E.Zoom	Off / MAX x2 ~ x32
Zoom Preset	PRESET# / MODE

SPECIFICATION

Exposure	Mode / AGC / Shut Speed / IRIS / DSS / Flickerless / Brightness / WDR/BLC / D&N / DEBLUR
Mode	AUTO / IRIS.P / SHUT.P / MANUAL
AGC	0 ~ 10
Shutter Speed	1/30(25) ~ 1/60,000 sec
Iris	0 ~ 20
Digital Slow Shutter (DSS)	Off / Max x2 ~ x4
Flickerless	Off / On
Brightness	0 ~ 20
WDR/BLC	OFF / WDR / BLC
Day&Night	Auto / Day / Night / Ext
Deblur	Off / On
White Balance	AUTO / One Push / Manual / Indoor / Outdoor
Image	HLC / DNR / Mirror / Sharpness / ACE / Freeze / Gamma
HLC	Off / On
DNR	Auto / Off / Low / Middle / High
Mirror	Off / H / V / H&V
Sharpness	0 ~ 10
ACE	Off / On
Freeze	Off / On
Gamma	0.45 / 0.50 / 0.55 / 0.60 / 0.65
Intelligent	Privacy / Motion

SPECIFICATION

Privacy Mask	Off / 24 positions
Motion Detection	Off / 3 positions
Special	Defect DET / Defog / System / HD Format / Comm / Default
Defect DET	Off / On
Defog	Off / On
System	NTSC / PAL
HD Format	1080P / 720P
Comm	Baud Rate : 2400 / 4800 / 9600 / 19200 / 38400 / 57600 / 115200 Protocol : VISCA / Pelco-D / Pelco- P / Update
Default	Off / On
Display	Disp Sel / Set Title
Disp Sel (Off / On)	ID / Title / Zoom Ratio
Set Title	Text Edit
Language	English / Simplified Chinese / Traditional Chinese / Japanese
OSD Text	0 ~ 9 , A ~ Z , a ~ z
Power Source	DC12V±10%
Power Consumption	300mA
Power Input	Connector
Video Output	Connector
Storage Temperature	-20℃ ~ +60℃ (Humidity : 20%RH ~ 95%RH)
Operating Temperature	-10℃ ~ +50℃ (Humidity : 20%RH ~ 80%RH)
Dimension (W x H x D)	59(W) x 62(H) x 97(D) mm
Weight	310g



If there are problems in operation, please refer to the items below.
If the problem persists, please contact the agent you purchased this product from.

Trouble shooting

- Nothing appears on the screen.
 - Please check the power connection.
 - Please check the video signal line connection.
- The video image is not clear.
 - Please clean the lens with a clean cloth or brush.
 - Please adjust that the screen is not exposed directly to a bright light.
 - Please move the camera if necessary.
- The screen is dark.
 - Please adjust the contrast feature of the monitor.
 - If you have an intermediate device, set the 75 Ω /Hi-Z properly, and check the terminals.
 - Please adjust the brightness level.
- The MOTION DETECTION function is not working
 - Please check if "MOTION DETECTION" mode is turned on.
 - Please check if the MD Sensitivity is too high.
 - Please check the setting of the MD AREA.
- The WDR function is not working
 - Please check if the WDR Level is too low.
 - Please check if the AE Mode is set to MANUAL. The WDR doesn't work in MANUAL, Shutter priority Exposure mode.
- Colors are not quite right.
 - Please check if the camera is facing directly into sunlight or fluorescent light.
- The Day&Night function doesn't work.
 - Please check if the AGC of EXPOSURE menu is set to OFF.
 - The Auto Day&Night doesn't work in AGC OFF status.

