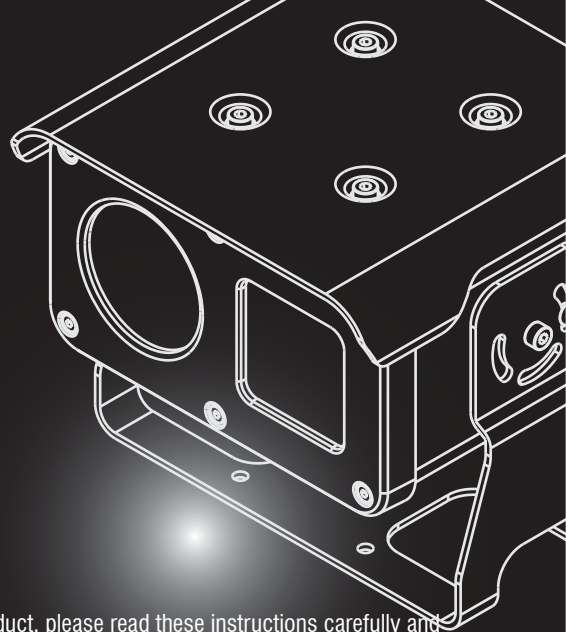


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P/N : 388037211
PRINTED IN KOREA

INSTRUCTION MANUAL SPECIAL IR 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 change 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.**

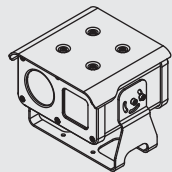


FEATURES	7P	SPECIAL FUNCTION	23P
PACKAGE COMPONENTS	8P	DISPLAY	25P
PART NAMES AND FUNCTIONS	9p	SPECIFICATION	27P
CONNECTIONS	10P	DRAWING	31P
INSTALLATION	11P	TROUBLESHOOTING	33P
MAIN MENU	13P		
FOCUS	14P		
EXPOSURE	15P		
WHITE BALANCE	18P		
IMAGE	19P		
INTELLIGENCE	21P		

Features

x12 Camera	x20, x30 Camera
<ul style="list-style-type: none"> • 1/2" Sony CMOS sensor • x12 Optical Zoom • Full HD Resolution : 1920x1080p / 30fps(25fps) • Day & Night(ICR) • WDR(Wide Dynamic Range) • DNR(Digital Noise Reduction, 2D+3D) • DIS(Digital Image Stabilization) • Privacy Mask Function • On Screen Display • Intelligent Motion Detection 	<ul style="list-style-type: none"> • 1/3" Panasonic CMOS sensor • x20, x30 Optical Zoom • Full HD Resolution : 1920x1080p / 30fps(25fps) • Day & Night (ICR) • WDR (Wide Dynamic Range) • DNR (Digital Noise Reduction, 2D+3D) • DIS (Digital Image Stabilization) • Privacy Mask Function • On Screen Display • Intelligent Motion Detection

PACKAGE COMPONENTS



Camera

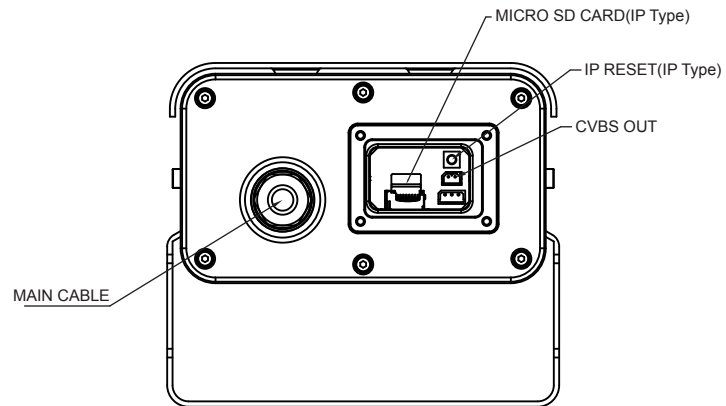


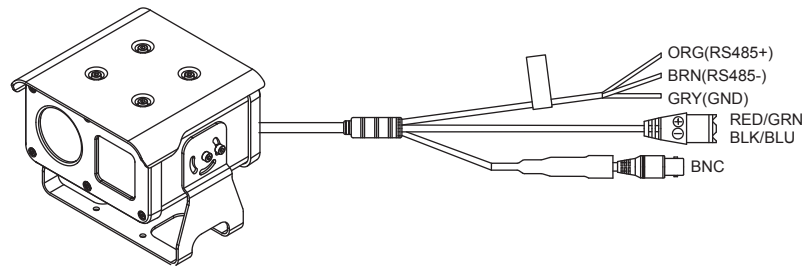
Cable



Manual

PART NAMES AND FUNCTIONS





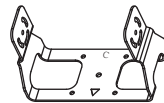
RS-485 COMMUNICATION

Connect to an external controller of RS-485 format.

BRACKET INSTALLATION

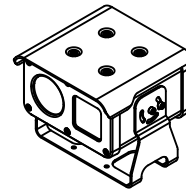
Bottom side installation

1



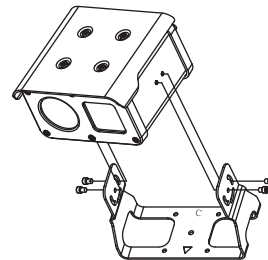
Place the bracket "▽" mark to the front and fix the bracket.

3



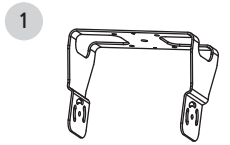
Adjust camera angle and fix the screw.

2

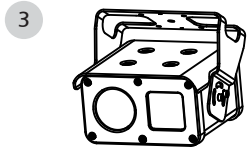


Install the camera using screw (Wrench M4*8 D/S) as figure.

Ceiling installation

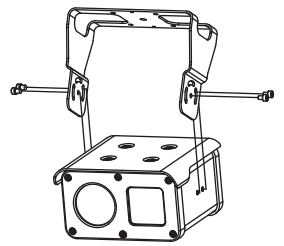


Place the "C" mark to the front side and fix the bracket on the ceiling.



Adjust camera angle and fix the screw.

2



Install the camera using screw (Wrench M4*8 D/S) as figure.

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.

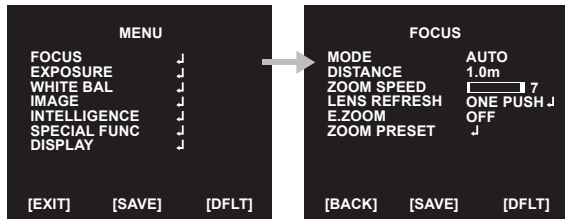
MAIN MENU



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

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]

FOCUS



- ◆ **MODE** : Select auto focus mode
 - ▶ AUTO, ONE PUSH, MANUAL
- ◆ **DISTANCE** : Select minimum distance in focus between camera and object.
 - ▶ x12 Camera : 0.1 / 1.0 / 3.0 / 5.0 / 10.0 m ▶ x20, x30 Camera : 0.1 / 1.0 / 3.0 / 6.0 / 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

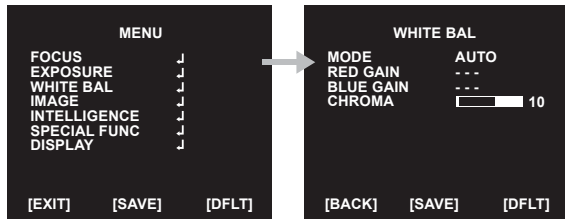


- ◆ **MODE** : Select Exposure Mode
 - ▶ AUTO / IRIS.P / SHUT.P / MANUAL
- ◆ **AGC** : Select Auto Gain Control
 - ▶ OFF / ON (AUTO, SHUT.P or IRIS.P Mode)
 - ▶ 0 ~ 10 (MANUAL Mode)
- ◆ **SHUT SPEED** : Can be set in SHUT.P or MANUAL mode
 - * 60 / 50 fps mode ▶ x8, x4, x2, 1/60(50), 1/120(100), 1/250, 1/700, 1/1000, 1/1600, 1/2500, 1/5000, 1/7000, 1/10000, 1/30000 sec
 - * 30 / 25 fps mode ▶ x4, x2, 1/30(25), 1/60(50), 1/120(100), 1/250, 1/700, 1/1000, 1/1600, 1/2500, 1/5000, 1/7000, 1/10000, 1/30000 sec
- ◆ **IRIS** : Iris level can be set in IRIS.P or MANUAL mode
 - ▶ 0 ~ 20

- ◆ DSS : Select maximum DSS (Digital Slow Shutter)
 - * 60 / 50 fps mode
 - ▶ OFF / x2, x4, x8
 - * 30 / 25 fps mode
 - ▶ OFF / x2, 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.
 - ▶ LOW, MID-LOW, MIDDLE, MID-HIGH, HIGH
 - ※ WDR doesn't work in Manual Exposure Mode and Shutter Priority Mode.
 - ※ When WDR on, CVBS output is disabled.
 - ▶ 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.

- ◆ DAY&NIGHT : Select Day&Night
 - ▶ MODE : AUTO,↵ / EXT-IN,↵ / DAY / NIGHT,↵
 - ▷ 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 \downarrow / MANUAL / INDOOR / OUTDOOR

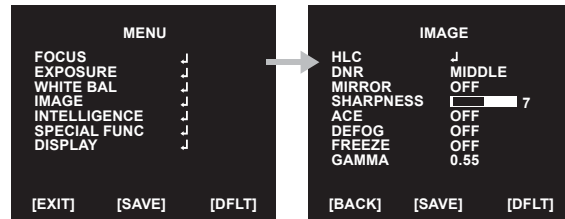
- ▷ AUTO : Automatically adjusts color according to the available lighting.
- ▷ ONE PUSH : It is a fixed white balance mode that may be automatically readjusted only by pressing ONE PUSH
- ▷ MANUAL \downarrow : Color can be corrected when the user increases or decreases "RED GAIN" or "BLUE GAIN".
- ▷ INDOOR : Set color temperature to be Indoor light (3700°K)
- ▷ OUTDOOR : Set color temperature to be Outdoor light (5100°K)

◆ 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

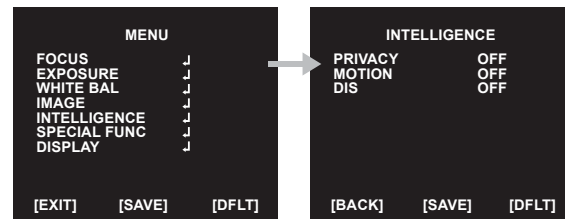
▷ H : You can flip the picture horizontally on the screen

▷ V : You can flip the picture vertically on the screen

▷ H&V : You can flip the picture horizontally & vertically on the screen

- ◆ 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,␣
 - ▷ 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

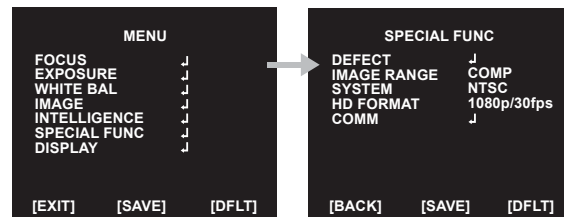
INTELLIGENCE



- ◆ PRIVACY : Hide an area you want to hide on the screen
 - ▶ OFF / ON,␣
 - ▷ 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 ~ 4)

- ◆ MOTION : When there is movement of the subject in the screen, there will be an motion detection
 - ▶ OFF / ON,↵
 - ▷ 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)
 - ▷ 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)

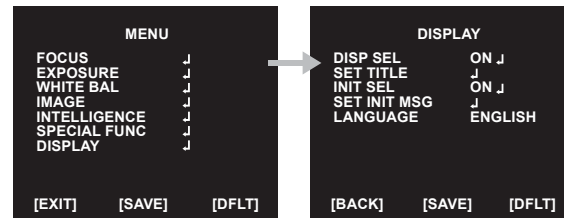
SPECIAL FUNC



- ◆ 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 or PAL
- ◆ HD FORMAT : Select Digital output (1080p/30(25)fps, 1080p/60(50)fps, 720p/30(25)fps, 720p/60(50)fps)

- ◆ 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



- ◆ DISP SEL : Select display item.
 - ▶ OFF / ON,↵
 - ▷ 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,↵
 - ▷ 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

※ 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 * + - / = ~ ! ? " '
    
```

Model	x12			x20			x30			
Image Sensor	1/2" Sony CMOS Sensor			1/3" Panasonic CMOS Sensor						
Total Pixels	1952(H) x 1241(V) = 2.42M Pixels			1956(H) x 1266(V) = 2.48M Pixels						
Active pixels	1937(H) x 1097(V) = 2.12M Pixels			1944(H) x 1092(V) = 2.12M Pixels						
Scanning system	Progressive Scan									
Sync. System	Internal									
Resolution	Digital : 1080p/60(50)fps, 1080p/30(25)fps, 720p/60(50)fps, 720p/30(25)fps									
	Analog : 700TVL									
Min. illumination	Color : 0.15 lux , BW : 0.01lux			Color : 0.5 lux , BW : 0.1lux						
	Color DSS : 0.0375 lux, BW DSS : 0.002 lux			Color DSS : 0.125 lux , BW DSS : 0.025 lux						
Video Output	HD-SDI, EX-SDI, CVBS									
S/N Ratio	more than 50dB (AGC off)									
Lens type	x12 Day & Night Zoom Lens			x20 Day & Night Zoom Lens			x30 Day & Night Zoom Lens			
Zoom Ratio	Optical x12, Digital x32 Zoom			Optical x20, Digital x32 Zoom			Optical x30, Digital x32 Zoom			
Focal Length	f = 7.0 mm ~ 84.0 mm			f = 4.7 mm ~ 94.0 mm			f = 4.3 mm ~ 129.0 mm			
Aperture Ratio	F1.5 (wide) ~ F1.9 (tele)			F1.6 (wide) ~ F3.5 (tele)			F1.6 (wide) ~ F4.7 (tele)			
Angle of View (D, H, V)	Wide	58.3°	51.1°	30.0°	62.7°	55.4°	32.6°	71.3°	58.9°	45.3°
	Tele	6.5°	5.0°	3.2°	3.3°	2.9°	1.6°	2.58°	2.11°	1.61°
Focus	Mode / Distance / Zoom Speed / Lens Refresh / E.Zoom / Zoom Preset									
Mode	Auto / One Push / Manual									

SPECIFICATION

Model	x12	x20	x30
Distance	0.1 / 1.0 / 3.0 / 5.0 / 10.0 m	0.1 / 1.0 / 3.0 / 6.0 / 10.0 m	
Zoom Speed	0(Slow) ~ 7(Fast)		
Lens Refresh	One Push / 1 ~ 10Day		
E.Zoom	Off / MAX x2 ~ x32		
Zoom Preset	5 Preset		
Exposure	Mode / AGC / Shut Speed / Iris / DSS / Flickerless / Brightness / WDR/BLC / D&N		
Mode	Auto / Iris. Priority / Shut. Priority / Manual		
Gain Control (AGC)	Off / On		
Shutter Speed	1/30(25) ~ 1/30,000 sec		
Iris	0 ~ 20		
Digital Slow Shutter (DSS)	Off / x2 / x4 (/ x8 : 60 or 50 fps mode only)		
Flickerless	Off / On		
Brightness	0 ~ 20 steps		
WDR/BLC	OFF / WDR / BLC		
Day&Night	Auto / Day / Night / Ext-in		
White Balance	Auto / One Push / Manual / Indoor / Outdoor		
Image	HLC / DNR / Mirror / Sharpness / ACE / Defog / Freeze / Gamma		
HLC	Off / On / Night Only		
DNR	Auto / Off / Low / Middle / High		

SPECIFICATION

Model	x12	x20	x30
Mirror	Off / H / V / H&V		
Sharpness	0 ~ 10 steps		
ACE	Off / Low / Middle / High		
Defog	Off / On(Auto / Manual)		
Freeze	Off / On		
Gamma	0.45 / 0.55 / 0.65 / 0.75		
Intelligence	Privacy / Motion / DIS		
Privacy Mask	Off / On (24 positions)		
Motion Detection	Off / On (3 positions)		
Digital Image Stabilizer	Off / On		
Special Func	Defect / Image Range / System / HD Format / HD-Pri / COMM		
Defect DET	One push		
Image Range	Full / Comp. / User		
System	NTSC / PAL		
HD Format	1080p/30(25)fps / 1080p/60(50)fps / 720p/30(25)fps / 720p/60(50)fps		
Comm	ID : 1 ~ 255		
	Baud Rate : 2400 / 4800 / 9600 / 19200 / 38400 / 57600 / 115200		
	Protocol : VISCA / Pelco-D / Pelco- P / Update		
Display	Disp Sel / Set Title / Init Sel / Set Init Msg / Language		

Model	x12	x20	x30
Disp Sel (Off / On)	ID / Title / Zoom Ratio / System Message		
Set Title	Text Edit		
Init Sel (Off / On)	ID / Baud Rate / Protocol / Version / Init. Message		
Set Init Msg	Text Edit		
Language	English / Simplified Chinese / Traditional Chinese / Japanese		
OSD Text	0 ~ 9 , A ~ Z , a ~ z		
Power Source	AC 24V, DC 12V		
Power Consumption	1.5A(AC 24V) , 2A(DC 12V)		
Power Input	Connector		
Video Output	Connector		
Storage Temperature	-20℃ ~ +60℃ (Humidity : 0%RH ~ 90%RH)		
Operating Temperature	-10℃ ~ +50℃ (Humidity : 0%RH ~ 90%RH)		

* Design and specifications are subject to change without notice.

