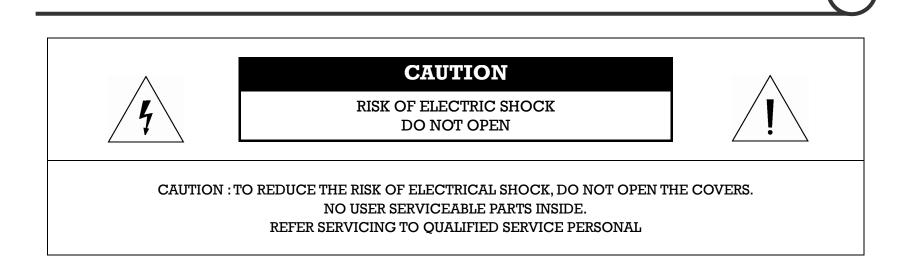
INSTRUCTION MANUAL Ver 1.2

Megapixel PTZ Camera

HC0212NOV20





This lightning flash with arrowhead symbol 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.



This exclamation point symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.



This Device compiles with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interface, and

(2) This device must accept any interference received, including interference that may cause undesired operations.

Important Safety Guide

1. Read, heed and follow all the Instructions Read all the safety and operating instructions before using the product.

2. Keep this manual Keep this manual

Keep this manual for reference in future.

3. Attachments / Accessories

Use only the attachments or accessories specified by the manufacturer.

- 4. Installation
 - Do not install near any heat resources such as radiators, heat registers, stoves, or other appratus including amplifiers that product heat. Improperly installed product may fall, cause serious injury to a child or adult and damage the product.
 - Do not block any ventilation holes or openings. Install in accordance with the manufacturer's instructions.
 - Use only with the cart, stand, tripod, bracket, mounting devices, or table specified by the manufacturer.
 - Installation should be done only by qualified personnel and conform to all the instructions by the manufacturer.
 - Refer all servicing to qualified service personnel.
 - Unless the product is specifically marked as IP67, more than IP67 or confirmed by the manufacturer, it is designed for indoor use only and it must not be installed where exposed to rain and moisture.
 - Do not load on the product.
 - Use stainless steel hardware to fasten the mount.
 - To prevent damage from water leakage when installing a mount outdoors on a roof or wall, apply sealant properly around holes.
 - These servicing instructions are for use by qualified service personnel only. To reduce the risk of electric shock, do not perform any servicing other that contained in the operationg instructions unless you are qualified to do so.
 - Use only replacement parts specified by the manufacturer.

5. Power source

This product should be operated only from the type of the power source indicated on the marking label. It is mandatorily recommended to use a UPS in order to be prepared for a power failure.

Caution

Operating

- Before using, make sure that the power supply and others are properly installed.
- While operating, if any abnormal condition or malfunction is observed, stop using the product immediately and then contact your local dealer.

Handling

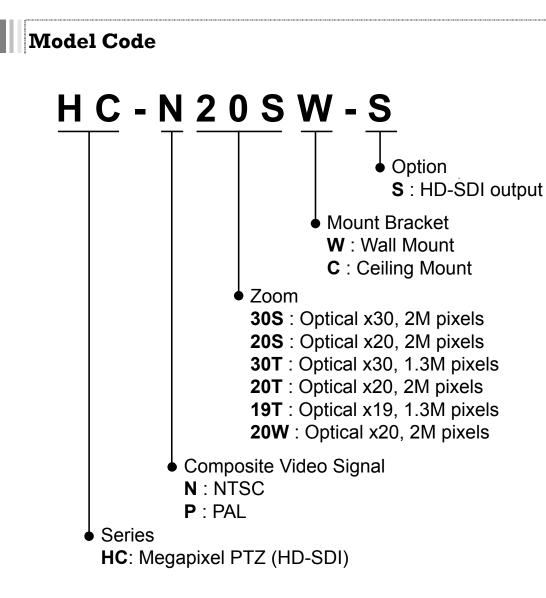
- Do not disassemble or tamper with the parts inside the product.
- Do not drop or subject the product to shock and vibration as this can damage the product.
- Care must be taken when you clean the clear dome cover. Especially, scratch and dust will ruin the quality of the product.

Installation and Storage

- Do not install the product in areas of extreme temperature, which exceed the allowable range.
- Avoid installing in humid or dusty places.
- Avoid installing in places where radiation is present.
- Avoid installing in places where there are strong magnetic fields and electric signals.
- Avoid installing in places where the product would be subject to strong vibrations.

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Features

Powerful Zoom Camera & Setup Options

- Image Sensor : 1/2.8" Exmor CMOS Image Sensor, 3 Mega pixels (30S model) 1/2.8" Exmor CMOS Image Sensor, 3 Mega pixels (20S model) 1/4" PS CMOS Image Sensor, 1.3 Mega pixels (30T model) 1/3" PS CMOS Image Sensor, 2 Mega pixels (20T model) 1/3" PS CMOS Image Sensor, 1.3 Mega pixels (19T model) 1/3" Panasonic CMOS Image Sensor, 2 Mega pixels (20W model)
 Zoom : ×30 Optical Zoom, ×12 Digital Zoom (30S model) ×20 Optical Zoom, ×12 Digital Zoom (20S model) ×30 Optical Zoom, ×12 Digital Zoom (30T model) ×20 Optical Zoom, ×16 Digital Zoom (19T model) ×19 Optical Zoom, ×12 Digital Zoom (20W model)
- Day & Night, Privacy Mask
- WDR function (30S, 20S, 30T, 20W models)
- HLC function (30T, 20T, 19T models)
- NR (Noise Reduction) Function
- Defog Function (20W model)
- Image Stabilization Function (30S, 30T, 20T, 19T models)
- Various Focus Mode : Auto-Focus, Manual Focus, Semi-Auto Focus
- Various Setup Options in OSD Menu.

HD-SDI and Composite Video Output

- Raw(Non-Compressed) Digital HD-SDI(High Definition Serial Digital Interface) Output (HDcctv v1.0, 1.485Gb/s, SMPTE 292M Standard)
- HD-SDI Video Transmission over Coaxial Cable.
- Simultaneous HD-SDI and Analogue(Composite) Video Output

Powerful Pan/Tilt Functions

- MAX. 500°/sec High Speed Pan/Tilt Motion
- With the Vector Drive Technology, Pan/Tilt motions are accomplished along the shortest path. As a result, the time to target view is remarkably short and the video on the monitor is very natural in monitoring.
- With the Micro-Stepping Control Technology, the video looks very natural at high zoom magnification during a jog operation on a controller since the camera can be controlled by 0.05°/sec. Hence it is very easy to make the camera focus on desired target views at high zoom magnification. Additionally it is easy to make the camera focus on desired positions with zoom-proportional pan/tilt movement.

RTC(Real Time Clock) Function

- Date and Time can be configured for Schedule Function
- With Backup Battery Function, Date and Time configuration should be kept up for a while, even though power is off

□ Preset, Pattern, Swing, Group, Schedule, Privacy Mask and More...

• MAX. 209 Presets are programmable and each preset can have its own parameter values independently from the other presets.

For an example, refer to the below table.

Preset No.	White Balance	Auto Exposure	•••	Label	Remarks
Preset 1	Case A	Case 3		"ENTRANCE"	
Preset 2	Case C	Case 5		"WAREHOUSE"	
•••					
Preset 95	_	_	_	_	Reserved for OSD Menu
•••					
Preset 255	Case K	Case 9		"TERRACE"	

- MAX. 10 sets of Swing are programmable. This function is that a camera moves repetitively between two preset positions at programmed speeds.
- MAX. 4 Patterns are programmable. This function is that a camera memorizes the path (mostly curve path) by the joystick of the controller and revives the trajectory operated by the joystick as closely as possible.
- MAX. 8 sets of Group are programmable. This function is that a camera memorizes the combination of Presets, Pattern and/or Swings sequently and runs Presets, Pattern and/or Swings repetitively. A Group can be combined upto 40 functions with any of Preset/Pattern/Swing.
- MAX. 8 Privacy Masks are programmable, not to intrude on any other's privacy.
- MAX. 8 sets of Schedule are programmable. This function is that a camera runs a function such as Preset, Pattern, Swing or Group at an assigned time. Also this function can be run periodically by pre-defined schedules.

PTZ(Pan/Tilt/Zoom) Control

- With the RS-485 communication connection, MAX. 255 units of cameras can be connected to a single controller.
- Pelco-D or Pelco-P protocols can be selected as a control protocol in the current firmware version.

OSD(On Screen Display) Menu

- OSD menu is provided to display the status of camera and to configure the functions interactively. A Password can be configured in OSD menu and OSD menu can be protected.
- The information such as Camera ID, Pan/Tilt Angle, Time/Date, Alarm Input and Preset information is displayed on screen.

□ Alarm In/Out Function

- 3 alarm sensor inputs and 1 alarm sensor outputs are available.
- Alarm sensor input is decoupled with photo-couplers to avoid external electric noise and shock perfectly.
- Both of N.O.(Normal Open) sensors and N.C.(Normal Close) sensors can be used and the signal range of the sensor input is from DC 5.0V to 12.0V for various applications.
- The camera can be set to move to a Preset position or to run functions such as Pattern, Swing and Group when there are external sensor activations. Also "Post Alarm" function is possible, which is supposed to activate after user-defined time period and sequentially in succession to the action by external sensor activations.

Reserved Presets(Hot Keys)

• Most camera setup options can be set up easily and directly with the reserved presets (Hot Keys), without entering into OSD menu. For more information, refer to "Reserved Presets(Hot Keys)" in this manual.

Dual Power Input

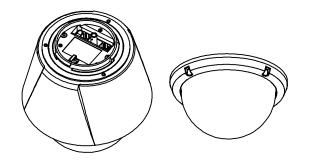
• The input power source is DC 12 V or AC 24 V.

Perfect Outdoor Environment Compatibility and Easy Installation

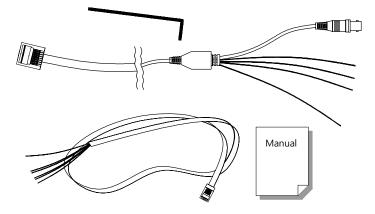
- The fans and heaters are built-in in the camera for cold and hot temperature environment. Also idealistic mechanical design protects the camera from water and dust. (IP67 when installed properly with wall mount bracket only / Only for outdoor models)
- It is easy to install and repair the camera.

Package Component

Product & Accessories

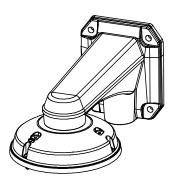


Main Body & Surface Mount Bracket

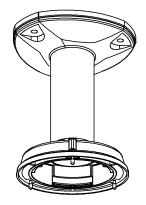


Default Accessories
[Main Cable, I/O Cable , Wrench, Owner's Manual]

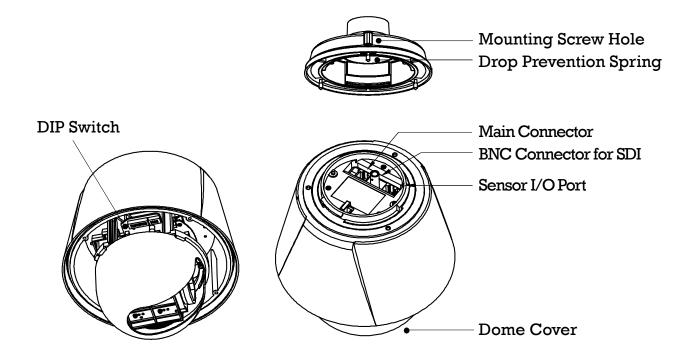
□ Brackets (Optional)



• Wall Mount Bracket [Screws:TORX Machine M4×L18,Hex Lag #14×50]



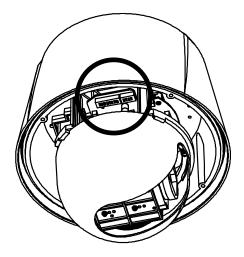
Main Part Description



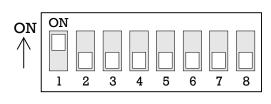
- Dome Cover Do not detach the protection vinyl from the dome cover before finishing all the installation process to protect the dome cover from scratches or dust.
- DIP Switch Used to set up camera IDs and protocols.
- Drop Prevention Spring This part keeps the camera from dropping during installation and maintenance. After install the Bracket, please, hang the spring to the drop prevention hook of main body as shown in picture for further tasks.
- Mounting Screw Hole Used to assemble the main body with a bracket with screws.
- Main Connector Used for the power wire, the composite video signal and the RS-485 communication cable connection.
- BNC Connector Used for the HD-SDI video signal connection.
- Sensor I/O Port Used for the sensor in/out connection.

DIP Switch Setup

Before installing the camera, set up the DIP switch to configure the camera ID and the communication protocol.



Camera ID Setup

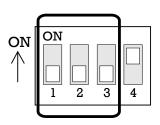


• ID numbers of cameras are set up with binary numbers. See the examples shown below.

Pin	1	2	3	4	5	6	7	8
Binary Value	1	2	4	8	16	32	64	128
ex) ID=5 ex) ID=10	on off	off on	on off	off on	off off	off off	off off	off off

- The camera ID range is "1~255". <u>Camera ID must not be</u> <u>"0"!</u>
- The factory default of the camera ID is "1".
- Match the camera ID with the Cam ID setting of your DVR or Controller to control the camera.
- If you are connecting a single camera to a controller, terminate the camera. When connecting more than one camera to a single controller, terminate the last camera on the communication line. The last camera means the camera farthest in cable length from the controller.
- Note that the total length of the communication cable between a controller and the camera(s) on the same communication line must be less than 1.2Km.

□ Communication Protocol Setup



• Select an appropriate Protocol with the DIP switch combination.

Switch Mode				
P0 (Pin 1)	P1 (Pin 2)	P2 (Pin 3)	Protocol	
OFF	OFF	OFF	PELCO-D, 2400 bps	
ON	OFF	OFF	PELCO-D, 9600 bps	
OFF	ON	OFF	PELCO-P, 4800 bps	
ON	ON	OFF	PELCO-P, 9600 bps	
Others			Reserved	

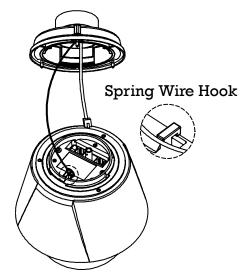
- Match the camera protocol with the camera protocol in the setting of your DVR or controller to control the camera.
- Adjust the DIP switch after turning off the camera. If you changed the camera protocol by changing the DIP S/W, the change will be effective after you reboot the camera.
- The factory default protocol is "Pelco-D, 2400 bps".

Installation with Ceiling Mount Bracket

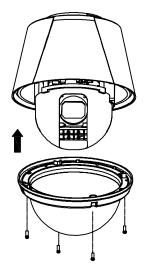
(1) Remove the ceiling tile from the ceiling (2) Hook up "Drop Prevention Spring" on and cut a hole whose diameter is 30~40mm on the ceiling tile to pass the wire(s) and cable(s) through to the upside of the ceiling. (In case of the wiring and cabling through the mounting surface only) Then prepare the ceiling mount bracket. Pull the wire(s) for the system as below. (Anchor Bolt $3/8"\times70$)

3 Line up the mold lines and assemble 4 Screw the dome cover to the main body main body to mount adaptor and turn it. And assemble the main both with the camera mount adaptor with the 3 screws. (TORX SCREW M4 \times 18).

main body to prevent camera from unexpected drop and pull the wire(s) and cable(s) for the system as below.



and remove the protection vinyl from the dome cover.

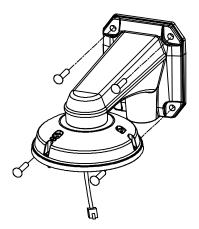


Important Notice

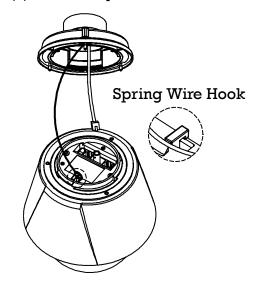
- Before starting the installation, make sure that the Camera ID and Protocol are set up properly.
- To adjust the installation height from the mounting surface, the pipe and coupler should be needed between the surface mount part of the ceiling mount bracket and the camera mount part of the ceiling mount bracket. Note that they are not supplied by the manufacturer.

Installation with Wall Mount Bracket

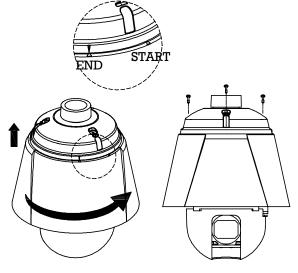
(1) Make a hole whose diameter is 30~40mm on the mounting surface to pass the wire(s) and cable(s) through the mounting surface. (In case of the wiring and cabling through the mounting surface only) Then prepare the wall mount bracket. Pull the wire(s) and cable(s) for the system as below. Attach the wall mount bracket to the mounting surface. (Hex Lag $\#14 \times 50$)

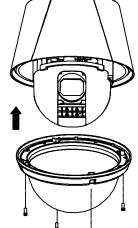


2 Hook up "Drop Prevention Spring" on main body to prevent camera from unexpected drop and pull the wire(s) and cable(s) for the system as below.



- ③ Line up the mold lines and assemble ④ Screw the dome cover to the main body main body to mount adaptor and turn it. And assemble the main both with the camera mount adaptor with the 3 screws. (TORX SCREW M4 \times 18).
 - dome cover.





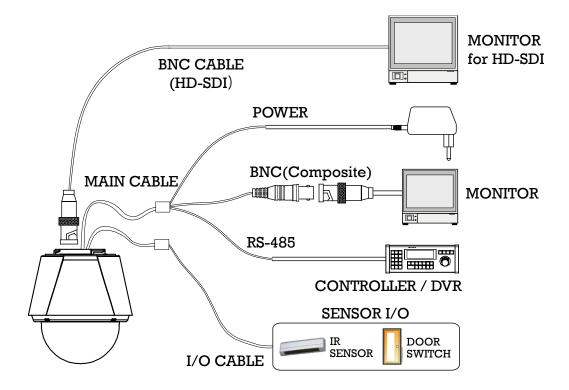
and remove the protection vinyl from the

Important Notice

• Before starting the installation, make sure that the Camera ID and Protocol are set up properly.



Wiring and Cabling



Port Description

• Main Cable

Port Pin Number (RJ45)	Connector / Wire Color	Signal
1	BNC Connector	Composite Video +
2,4	BINC Connector	Composite Video –
5	Red	RS-485 +
3	Yellow	RS-485 –
7	Orange	Power +
6,8	White	Power –

• I/O Cable

Port Pin Number (RJ25)	Wire Color	Signal
1	Blue	IN COM +
2	Yellow	IN 1 –
3	Green	IN 2 –
4	Red	IN 3 –
5	Black	OUT A
6	White	OUT B

Power Description

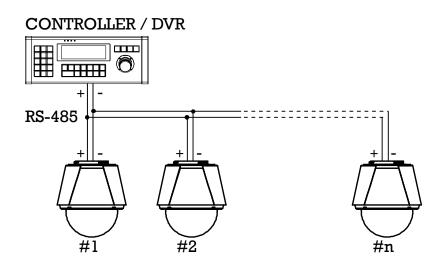
• Carefully check the voltage and current capacity of the rated power.

Power Input	Input Voltage Range	Current Consumption
DC12V Input	DC 11V~18V	1.8A
AC24V Input	AC 17V~29V	2.0 A

- For the DC input, be careful with the polarity of DC power. The system should be permanentally damaged by wrong DC input.
- In case that the length of the DC power wire is very long, there may be voltage drop and the system may not work properly. Make the length of the power wire as short as possible.

□ RS-485 Communication

• For PTZ control, connect the cable(s) to your keyboard or DVR. To connect multiple cameras to a single controller, RS-485 communication should be connected in parallel as shown below. If you are connecting a single camera to a controller, terminate the camera. When connecting more than one camera to a single controller, terminate the last camera on the communication line. The last camera means the camera farthest in cable length from the controller. Note that the total length of the communication cable between a controller and the camera(s) on the same communication line must be less than 1.2Km.

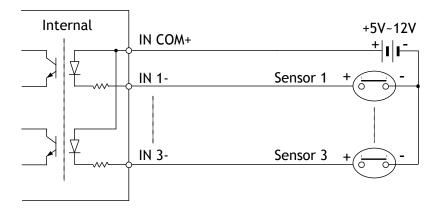


HD-SDI Video Output

- Transmission Distance of HD-SDI Video Signal should be variable by cables. There may be no video on a monitor due to cable quality or specification. Use proper BNC Coaxial Cables after considering transmission distance.
- Your reference, see the below table. It shows transmission distances by cables.

Cable Type	Transmission Distance
RG11 14AWG	330 Meter
Belden 1694A 18AWG	230 Meter
RG6 18AWG (5C-HFBT)	210 Meter
RG59 20AWG	150 Meter
RG59 23AWG	110 Meter
3C2V 25AWG	90 Meter

🖵 Alarm Input



Before connecting sensors, check driving voltages and output signal types of the sensors. Since output signal types of the sensors are divided into Open Collector type and Voltage Output type in general, the wiring must be done properly after considering those types.

Signal	Description
IN COM+	The electric power source to drive input circuit. Connect the (+) wire of electric power source to drive the Sensors to this port as shown in the above circuit.
IN1 -, IN2 -, IN3 -	Connect the outputs of sensors to each port as shown in the above circuit.

If you want to use Alarm Input, the types of sensors must be selected in OSD menu. The sensor types are divided into Normal Open and Normal Close. If wrong sensor types are selected, alarms should be activated reversely to sensor inputs.

⊙ Normal Open	Output Voltage is high state when sensor is activated
\odot Normal Close	Output Voltage is high state when sensor is not activated

□ Relay Output



The maximum loads are as follows.

Power Type	DC Power	AC Power
Maximum Load	MAX. DC 24V, 1A	MAX. AC 125V, 0.5A

Check Points before Operation

- Before turning on the system, check if the wire(s) and cable(s) are connected properly.
- Check if the camera ID on the controller is properly selected. The camera ID must be identical to that of the target camera. The camera ID can be checked by reading the DIP switch of the camera or on OSD.
- If your controller supports multi-protocols, the protocol must be changed to match to that of the camera.
- Adjust the DIP switch after turning off the camera. If you changed the camera protocol by changing the DIP S/W, the change will be effective after you reboot the camera.
- Since the operation method can be different by controllers, refer to your controller manual if the camera can not be controlled properly. The operation of this manual is based on the standard Pelco® Controller.

Check Points for Preset and Pattern Function before Operation

• Check fully how to operate preset function and pattern function with your controller or DVR in advance to operate the camera functions when using a controller or a DVR.

< Go Preset >	Input [Preset Number] and press [Preset] button shortly.
< Set Preset >	Input [Preset Number] and keep pressing [Preset] button for more than 2 seconds.
< Run Pattern >	Input [Pattern Number] and press [Pattern] button shortly.
< Set Pattern >	Input [Pattern Number] and keep pressing [Pattern] button for more than 2 seconds.

• Refer to the following table when using standard Pelco® protocol controllers.

• If your controller or DVR has no pattern button or function, use the Hot Keys with preset numbers. For more information, refer to "**Reserved Presets(Hot Keys)**" in this manual.

OSD Menu

- Function With OSD menu, the system can be properly configured for each application.
- Entering into OSD Go Preset [95]

Reserved Presets (Hot Keys)

• Description Some Preset numbers are reserved to change some parameters without entering into OSD menu.

 Hot Keys 	Go Preset [95]	: Entering into OSD menu
	Go Preset [131~138]	: Running Pattern Function $1 \sim 8$
	Go Preset [141~150]	: Running Swing Function $1 \sim 10$
	Go Preset [151~158]	:Running Group Function 1~8
	GoPreset [161]	:Turning off Relay Output
	Set Preset [161]	:Turning on Relay Output
	GoPreset [167]	:Setting Zoom Proportional Function to ON
	Set Preset [167]	:Setting Zoom Proportional Function to OFF
	Go Preset [170]	:Setting Camera BLC Mode to OFF
	GoPreset[171]	:Setting Camera BLC Mode to ON
	GoPreset [174]	:Setting Camera Focus Mode to AUTO
	GoPreset [175]	: Setting Camera Focus Mode to Manual
	GoPreset [176]	:Setting Camera Focus Mode to SEMI-AUTO
	GoPreset [177]	:Setting Day & Night Mode to AUTO
	GoPreset [178]	:Setting Day & Night Mode to NIGHT
	GoPreset [179]	:Setting Day & Night Mode to DAY
	GoPreset [190]	:Setting OSD Display Mode to AUTO (Except Privacy Mask)
	GoPreset[191]	:Setting OSD Display Mode to OFF (Except Privacy Mask)
	GoPreset [192]	:Setting OSD Display Mode to ON (Except Privacy Mask)
	Go Preset [193]	: Setting all Privacy Mask Display to OFF
	Go Preset [194]	: Setting all Privacy Mask Display to ON

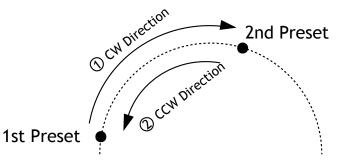


Preset

- Function MAX. 209 presets can be configured except the Reserved Presets (Hot Keys). Camera parameters such as White Balance, Auto Exposure and others can be set up independently and each preset can have its own parameter values independently from the other persets. When setting up presets with a controller, Label should be blank and Video settings should be set to "GLOBAL" as the default. To change the parameters, enter into OSD menu.
- Setting Presets Set Preset [1~255]
- Running Presets Go Preset [1~255]
- Deleting Presets To delete Presets, enter into OSD menu.

Swing

• Function This function is that the camera moves repetitively between two preset positions at programmed speeds. When a swing function runs, the camera moves from the preset assigned as the 1st point to the preset assigned as the 2nd point in CW(Clockwise) direction. Then the camera moves from the preset assigned as the 2nd point to the preset assigned as the 1st point to the preset assigned as the 1st point in CCW(Counterclockwise) direction.



In case that the preset assigned as the 1st point and the preset assigned as the 2nd point are same, the camera turns on its axis by 360° in CW(Clockwise) direction and then it turns back on its axis by 360° in CCW(Counterclockwise) direction. The Swing speed is defined from 10° /sec to 180° /sec.

- Setting Swings To set Swing, enter into OSD menu.
- Running Swings Method 1) <Run Pattern> [Swing NO. + 10] ex) Run Swing 3: <Run Pattern> [13] Method 2) <Go Preset> [Swing NO. + 140] ex) Run Swing 3: <Go Preset> [143]
- Deleting Swings To delete Swings, enter into OSD menu.

Pattern

• Function This function is that the camera memorizes the path (mostly curve path) by the joystick of the controller and revives the trajectory operated by joystick as closely as possible.

MAX. 4 Patterns are programmable and Maximum 768 communication commands can be programmed in a pattern.

• Setting Patterns A Pattern can be created by the following methods.

Method 1) <Set Pattern> [Pattern NO.]

O The Pattern programming window appears on the monitor as below.

PATTERN RECORDING [NEAR : SAVE / FAR : CANCE	Ľ]

- O The movement by Joystick can be memorized in a pattern.
- \odot To save the recording, press NEAR key and to cancel, press FAR key.

Method 2) Programming in OSD Menu: See the section "How to use OSD Menu".

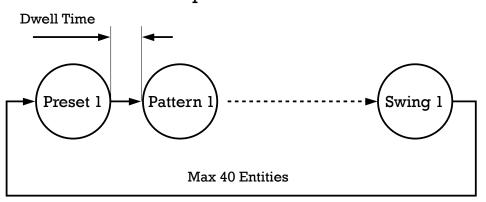
- Running Patterns Method 1) <Run Pattern> [Pattern NO.] ex) Run Pattern 2: <Run Pattern> [2] Method 2) <Go Preset> [Pattern NO. + 130] ex) Run Pattern 2: <Go Preset> [132]
- Deleting Patterns To delete Patterns, enter into OSD menu.

Note) When the system memorizes Patterns, the commands are stored in the momories, not the positions of Pan/Tilt/Zoom. Hence there might be small differences between the original path and the revived path by path type of Patterns. Note that it is not a problem in position precision.



Group

• Function This function is that the camera memorizes the combination of Presets, Pattern and/or Swings sequently and runs Presets, Pattern and/or Swings repetitively. MAX. 8 sets of Group are programmable. Each group can have MAX. 40 actions which are the combination of Preset, Pattern and Swing. Preset speed can be set up and the repeat number of Pattern & Swing can be set up in Group setup. Dwell time between actions can be set up also.



- Setting Groups To set Groups, enter into OSD menu.
- Running Groups Method 1) <Run Pattern> [Group NO. + 20] ex) Run Group 7 : <Run Pattern> [27] Method 2) <Go Preset> [Group NO. + 150] ex) Run Group 7 : <Go Preset> [157]
- Deleting Groups To delete Groups, enter into OSD menu.

Other Functions

- Power Up Action This setting defines a specific activity (Preset, Pattern, Swing and Group) to be performed in the event that the power to the camera is cycled. This function enables the user to resume, after turning on power, the last action being executed before turning off the power. Most of actions such as Preset, Pattern, Swing and Group are available for this function but Jog actions are not available to resume.
- AutoFlip In case that tilt angle arrives at the top of tilt orbit(90°), zoom module camera turns on its axis by 180° at the top of tilt orbit and moves to opposite tilt direction (180°) to keep tracing targets.
- Parking Action This feature allows the camera to begin a specified operation after a programmed time of inactivity. This function makes the camera automatically run a pre-defined action if there is no command from controller for a pre-defined time period. "Wait Time" means how long a camera should wait for from the previous-last (most recent) command before running the pre-defined action. It can be set to 1 second ~ 3 hours.

Alarm Input
 3 Alarm Inputs are available. When external sensors activate, the camera runs pre-defined actions such as Preset, Pattern, Swing and Group. After the pre-defined time period passed, "Post Alarm" activates, which is pre-defined. Note that only the latest alarm input is effective when multiple sensors are activated at the same time.

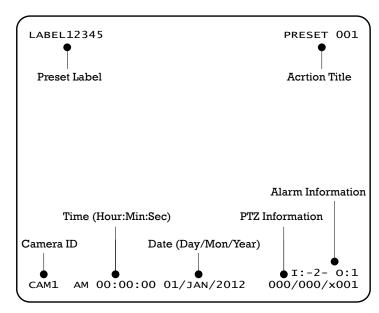
- Schedule
 8 Schedule are programmable. A camera runs functions such as Preset, Pattern, Swing and Group at assigned times. After a pre-defined time passes, "Post Action" runs. Also this function can be run periodically by pre-defined schedules. A Period can be configured by Once/Hourly/Daily/Weekly/Monthly.
- Privacy Zone Mask Privacy Zone Mask allows a user to program 8 rectangulars that can not be viewed by the operator of the system. To protect others' privacy, MAX. 8 Privacy Masks can be created on the arbitrary position to hide objects such as windows, shops or private house. With the Spherical Coordinates system, powerful Privacy Zone Mask function is possible. A mask area will move with pan and tilt functions and automatically adjust in size as the lens zooms telephoto and wide.
- Password for OSD A Password can be configured in OSD menu and OSD menu can be protected.

[Important Notice] It is mandatorily recommended that a user must take a memo for a password before a user applies a password to a system. When a Password is forgotten, a unit can not be unlocked and the unit is supposed to be shipped back to the manufacturer.

OPERATION

- GLOBAL/LOCAL Image Setup
 WB(White Balance) and AE(Auto Exposure) can be set up independently for each preset. There are 2 modes, "Global" mode & "Local" mode. The Global mode is that WB and AE are set up totally and simultaneously for all presets. The Global parameter setup can be done in "VIDEO" menu. The Local mode is that WB and AE are set up independently for each preset. Each Local parameter such as WB and AE activates correspondingly when the camera arrives at each preset position. During jog operation, Global WB/AE value should be applied. All Local WB/AE values do not change although Global WB/AE value changes. The Local mode has the prior to the Global mode.
- Semi-Auto Focus This mode automatically exchanges focus modes between Manual Focus mode and Auto Focus mode by operation. Manual Focus mode activates in preset operation and Auto Focus mode activates during jog operation. With Manual mode at presets, Focus data is memorized in each preset in advance and the camera calls focus data in correspondence with presets as soon as the camera arrives at presets. It should shorten time to get focuses. The focus mode automatically changes to Auto Focus mode when jog operation starts.

OSD Display



- P/T/Z Information Displays the pan/tilt positions and zoom magnification.
- Camera ID Displays the selected Camera ID (Address).
 - ActionTitleIdentifies Actions"PRESET xxx"When Preset xxx is memorized or the camera
reaches Preset xxx."PATTERN x"When Pattern x is in action."SWG×-PRESET xxx"When Swing x is in action. Displays both of Swing
number and Preset number."UNDEFINED"When a undefined function is called to run
- Preset Label Displays preset labels when the camera arrives at presets.
- Alarm Information Displays activated alarms. This information shows current state of Alarm Inputs and Relay Outputs. If an Input point is ON state, it will show a number corresponding to each point. If an Input point is OFF state, '-' will be displayed.

Example) The point 2 & 3 of inputs are **ON** and Output is **ON**.

- Time/Date Displays the current time and date.
- Heater Status Displays the Heater Status. If the Heater is OFF, the background of OSD is Blue color. If the Heater is ON, the background of OSD is Orange color.

Quick Programming Guide

- To move the cursor in the menu, use the joystick to the "**Up/Down**" direction or "**Left/Right**" direction.
- To change a value of an item, use "Tele/Wide" of the joystick in the controller.
- The menu items with ">>" always have sub-menus. To move to submenu, use "**Right**" of the joystick.
- To go to the previous-upper level menus, use "Left" of the joystick
- On the item with ">", use "**Tele**" of the joystick to execute.

Video Setup (30S, 20S model)

VIDEO	FOCUS MODE	SEMIAUTO
PTZ	WHITE BALANCE	AUTO
ACTION	- RED OFFSET	128
OSD	- BLUE OFFSET	128
SYSTEM	EXPOSURE MODE	AUTO
INFORMATION	- SHUTTER	1/60
	- IRIS	F5.6
	- GAIN	0 dB
	- BRIGHTNESS	10
	BLC	OFF
	WDR	OFF
	AUTO DSS	ON
	APERTURE	12
	DAY&NIGHT	AUTO
	DIGITAL ZOOM	ON
	IMAGE FLIP	OFF
	STABILIZATION	OFF
	PRIVACY MASK	>>
	HD-SDI RESOLUTION	1080p30

• Focus Mode [AUTO/MANUAL/SEMIAUTO]

Sets camera Focus mode.

O SEMIAUTO Mode

This mode automatically exchanges focus modes between Manual Focus mode and Auto Focus mode by operation. Manual Focus mode activates in preset operation and Auto Focus mode activates during jog operation

	With Manual mode at presets, Focus data is memorized in each preset in advance and the camera calls focus data in correspondence with presets as soon as camera arrives at presets. It should shorten time to get focuses. Focus mode automatically changes to Auto Focus mode when jog operation starts.
• White Balance	[AUTO/MANUAL] Retains color balance over a color temperature range. In auto mode, this feature automatically processes the viewed image. In Manual mode, Red and Blue level can be set up manually.
 Red Offset 	[0 ~ 255] Adjusts the picture output in the red range.
• Blue Offset	[0 ~ 255] Adjusts the picture output in the blue range.
● Exposure Mode	[AUTO/MANUAL/SHUTTER/IRIS/BRIGHTNESS] Set Auto Exposure mode.
• Shutter	$[1/1 \sim 1/10000]$ If AE mode is set to SHUTTER mode or MANUAL mode, this can be set up. For Flickerless function, set the shutter mode to 1/100 in NTSC, 1/20 in PAL.
● Iris	[CLOSE/F1.6~F14] If AE mode is set to IRIS mode or MANUAL mode, this can be set up.
● Gain	[-3dB ~ 28dB] If AE mode is set to MANUAL mode, this can be set up.
 Brightness 	$[0 \sim 31]$ If AE mode is set to BRIGHTNESS mode, this can be set up.
• BLC	[ON/OFF] Sets Backlight Compensation. If a bright backlight is present, the subjects in the picture may appear dark or as a silhouette. Backlight compensation enhances objects in the center of the picture. The camera uses the center of the picture to adjust the iris. If there is a bright light source outside of this area, it will wash out to white. The camera will adjust the iris so that the object in the sensitive area is properly exposed.
• WDR	[OFF/ON] The WDR(Wide Dynamic Range) is a function for dividing an image into several blocks and correcting blocked-up shadows and blown-out hightlights in accordance with the intensity diffrence. It enables you to obtain images in which portions ranging from dark to light can be recognized, even when capturing a subject with a large intensity difference that is backlit or includes extremely light portions.

• Auto DSS [ON/OFF] When set to ON, ensure that the slow shutter is set to automatically when the brightness drops. Effective only when the AE mode is set to AUTO. The Auto DSS function is not abailiable in WDR mode. Aperture $[0 \sim 15]$ Adjust the enhancement of the edges of objects in the picture. • Day/Night [AUTO/DAY/NIGHT] Sets Day&Night mode. • Digital Zoom [ON/OFF] Sets the digital zoom functions to ON/OFF. If this is set to OFF, the optical zoom function runs but the zoom function stops at the end of optical zoom magnification. • Image Flip [ON/OFF] Sets System Image Flip Function to ON/OFF. When this function is set to ON, flipped images always come out. When the camera is installed as Desktop type, set to ON to get proper images. Stabilization [ON/OFF] Compensates image vibrations by wind or others. The images with vibrations are compensated by Digital Zoom function and the image resolution with this function should be lower than normal image resolution when this function is turned on. This function is not supported on 20S model. • HD-SDI NTSC : [1080p30/1080i60/720p60/720p30] Resolution PAL : [1080p25/1080i50/720p60/720p30] Sets the video resolution of HD-SDI. Match the resolution with the setting of monitor or DVR. If there is no confirmation within 10 seconds by pressing the **NEAR** button, it is automatically restored to its previous configuration.

Video Setup (30T, 20T, 19T model)

VIDEO	FOCUS MODE	SEMIAUTO
PTZ	WHITE BALANCE	AUTO
ACTION	- RED OFFSET	105
OSD	- BLUE OFFSET	112
SYSTEM	SHUTTER MODE	ESC
INFORMATION	- SHUTTER	1/60
	IRIS MODE	AUTO
	- IRIS	F1.6
	GAIN MODE	MEDIUM
	- GAIN	0 dB
	BRIGHTNESS	50
	BACKLIGHT	OFF
	- LEVEL	LOW
	- COLOR	1
	SENS-UP	AUTO
	- SENS-UP LIMIT	X2
	SSNR	MEDIUM
	SHARPNESS	12
	DAY&NIGHT	AUTO
	[NEXT : MORE]	

VIDEO	DIGITAL ZOOM	ON
PTZ	IMAGE FLIP	OFF
ACTION	STABILIZATION	OFF
OSD	PRIVACY MASK	>>
SYSTEM INFORMATION	HD-SDI RESOLUTION	1080p30
INTORMATION		



● Focus Mode	[AUTO/MANUAL/SEMIAUTO] Sets camera Focus mode. O SEMIAUTO Mode
	This mode automatically exchanges focus modes between Manual Focus mode and Auto Focus mode by operation. Manual Focus mode activates in preset operation and Auto Focus mode activates during jog operation
• White Balance	[AUTO/MANUAL] Retains color balance over a color temperature range. In auto mode, this feature automatically processes the viewed image. In Manual mode, Red and Blue level can be set up manually.
• Red/Blue	[0 ~ 255]
Offset	Adjusts the picture output in the red/blue range.
• Shutter	[ESC/A.Flicker/Manual($\times 60 \sim 1/33000 \text{sec} \text{ or } \times 60 \sim 1/30000 \text{sec}$)] Sets Shutter Speed. Shutter Speed is the duration of the electronic shutter. If Iris is set to Manual and Shutter Speed is set to ESC, Shutter Speed has higher priority. If Shutter Speed is set to A.Flicker, to remove Flicker, Shutter Speed should be set to 1/100 sec. for NTSC and 1/120 for PAL
• Iris	[AUTO/MANUAL(F1.6~F28/CLOSE or F1.35~F28/CLOSE)]
	Sets Iris to operate automatically or at a user-defined level. If Iris is set to Auto, Iris has higher priority in adjusting AE and Shutter Speed is fixed. Auto iris is the lens function that automatically opens closes the iris in response to changing light conditions. If Iris is set to Manual, Iris is fixed and Iris has lower priority in adjusting AE, in comparison with others.
• Gain	[OFF/LOW/MIDDLE/HIGH/MANUAL(0~36dB or 0~42dB)]
- Cum	Sets AGC. This setting enhances image brightness automatically in case that luminance level of image signal is too low.
• Brightness	[1~100] Adjusts the brightness of the images. Iris, The Shutter Speed and Gain are adjusted automatically in correspondence with each numeric value.
• Backlight	 [OFF/BLC/HLC] Sets Backlight Compensation. If a bright backlight is present, the subjects in the picture may appear dark or as a silhouette. Backlight compensation enhances objects in the center of the picture. The camera uses the center of the picture to adjust the iris. If there is a bright light source outside of this area, it will wash out to white. The camera will adjust the iris so that the object in the sensitive area is properly exposed. HLC(High Light Compensation) function removes the high light in a limited environment such as parking garage. The level is adjuatable in the BLC mode and the level and masking color are adjustable in the HLC mode.

	The WDR(Wide Dynamic Range) is a function for dividing an image into several blocks and correcting blocked-up shadows and blown-out hightlights in accordance with the intensity diffrence. It enables you to obtain images in which portions ranging from dark to light can be recognized, even when capturing a subject with a large intensity difference that is backlit or includes extremely light portions. The WDR function is supported on 30T model only.
● Sens-Up	[AUTO(×2~×60)/OFF] Sets SENS-UP. This setting activates Slow Shutter function when luminance of image (signal) is too dark. It is possible to set up the maximum number of frames piled up one on another by Slow Shutter function
• SSNR	[OFF/LOW/MIDDLE/HIGH] Sets SSNR. This setting enhances the images by deducting noises when the gain level of the mages is too high.
 Sharpness 	[1-31] Sets image sharpness to enhance pictures.
● Day/Night	[AUTO/DAY/NIGHT] Sets Day&Night mode.
• Digital Zoom	[ON/OFF] Sets the digital zoom functions to ON/OFF. If this is set to OFF, the optical zoom function runs but the zoom function stops at the end of optical zoom magnification.
● Image Flip	[ON/OFF] Sets System Image Flip Function to ON/OFF. When this function is set to ON, flipped images always come out. When the camera is installed as Desktop type, set to ON to get proper images.
 Stabilization 	 [ON/OFF] Compensates image vibrations by wind or others. The images with vibrations are compensated by Digital Zoom function and the image resolution with this function should be lower than normal image resolution when this function is turned on. Also this function may not work properly in the following cases. Dark scene or Low contrast scene High frequency vibration

- During Pan/Tilt/Zoom/Focus moving
- During Iris/Shutter/Gain moving

● HD-SDI	NTSC	:[1080p30/1080i60/720p60/720p30]
Resolution	PAL	:[1080p25/1080i50/720p60/720p30]

Sets the video resolution of HD-SDI. Match the resolution with the setting of monitor or DVR.

If there is no confirmation within 10 seconds by pressing the **NEAR** button, it is automatically restored to its previous configuration.

Video Setup (20W model)

IDEO	FOCUS MODE	SEMIAUTO
TΖ	WHITE BALANCE	AUTO
CTION	- RED OFFSET	10
SD	- BLUE OFFSET	10
YSTEM	EXPOSURE MODE	AUTO
FORMATION	- SHUTTER	1/60
	- IRIS	13
	- GAIN	+19 dB
	- BRIGHTNESS	19
	BLC	OFF
	WDR	OFF
	DEFOG	OFF
	- LEVEL	5
	AUTO DSS	ON
	APERTURE	8
	DAY&NIGHT	AUTO
	DIGITAL ZOOM	ON
	IMAGE FLIP	OFF
	[NEXT : MORE]	

VIDEO	PRIVACY MASK	>>
PTZ ACTION OSD SYSTEM INFORMATION	HD-SDI RESOLUTION	1080p30
TINFORMATION		

	OSD MENU (4)
● Focus Mode	[AUTO/MANUAL/SEMIAUTO]
	Sets camera Focus mode.
	O <u>SEMIAUTO Mode</u>
	This mode automatically exchanges focus modes between Manual Focus mode and Auto Focus mode by operation. Manual Focus mode activates in preset operation and Auto Focus mode activates during jog operation. With Manual mode at presets, Focus data is memorized in each preset in advance and the camera calls focus data in correspondence with presets as soon as camera arrives at presets. It should shorten time to get focuses. Focus mode automatically changes to Auto Focus mode when jog operation starts.
• White Balance	[AUTO/MANUAL]
	Retains color balance over a color temperature range. In auto mode, this feature automatically processes the viewed image. In Manual mode, Red and Blue level can be set up manually.
 Red Offset 	[0~20]
	Adjusts the picture output in the red range.
• Blue Offset	[0 ~ 20]
	Adjusts the picture output in the blue range.
• Exposure Mode	[AUTO/MANUAL/SHUTTER/IRIS/BRIGHTNESS] Set Auto Exposure mode.
• Shutter	$[1/7(6) \sim 1/60000]$
	If AE mode is set to SHUTTER mode or MANUAL mode, this can be set up.
● Iris	[CLOSE/1~13]
-	If AE mode is set to IRIS mode or MANUAL mode, this can be set up.
● Gain	[0dB~45dB]
	If AE mode is set to MANUAL mode, this can be set up.
• Brightness	[0 ~ 31]
	If AE mode is set to BRIGHTNESS mode, this can be set up.
• BLC	[ON/OFF]
	Sets Backlight Compensation. If a bright backlight is present, the subjects in the picture may appear dark or as a silhouette. Backlight compensation enhances objects in the center of the picture. The camera uses the center of the picture to adjust the iris. If there is a bright light source outside of this

• WDR	[OFF/ON]	
	several k hightlight obtain in recognize	(Wide Dynamic Range) is a function for dividing an image into blocks and correcting blocked-up shadows and blown-out s in accordance with the intensity diffrence. It enables you to hages in which portions ranging from dark to light can be ed, even when capturing a subject with a large intensity difference cklit or includes extremely light portions.
• Defog	[ON/OFF] Sets the Defog function. When se tot ON, WDR function does not work.	
• Auto DSS	[ON/OFF] When set to ON, ensure that the slow shutter is set to automatically when the brightness drops. Effective only when the AE mode is set to AUTO. The Auto DSS function is not abailiable in WDR mode.	
• Aperture	$[0 \sim 10]$ Adjust the enhancement of the edges of objects in the picture.	
● Day/Night	[AUTO/DAY/NIGHT] Sets Day&Night mode.	
● Digital Zoom	[ON/OFF] Sets the digital zoom functions to ON/OFF. If this is set to OFF, the optical zoom function runs but the zoom function stops at the end of optical zoom magnification.	
● Image Flip	[ON/OFF] Sets System Image Flip Function to ON/OFF. When this function is set to ON, flipped images always come out. When the camera is installed as Desktop type, set to ON to get proper images.	
 HD-SDI Resolution 	NTSC PAL	:[1080p30/1080i60/720p60/720p30] :[1080p25/1080i50/720p60/720p30]
	Sets the video resolution of HD-SDI. Match the resolution with the setting of monitor or DVR.	
	If there is no confirmation within 10 seconds by pressing the NEAR button, it is automatically restored to its previous configuration.	



Privacy Mask Setup

PRIVACY MASK MASK NO	1 UNDEFINED
CLEAR MASK	>
DISPLAY MASK	OFF
EDIT MASK	>>
MASK COLOR	BLACK

Privacy Zone Mask allows the user to program 8 rectangulars that can not be viewed by the operator of the system. To protect privacy, MAX. 8 Privacy Masks can be created on the arbitrary position to hide objects such as windows, shops or private house. With the Spherical Coordinates system, powerful Privacy Zone Mask function is possible. A mask area will move with pan and tilt functions and automatically adjust in size as the lens zooms telephoto and wide.

● Mask NO	[1~8] Selects a Mask number to program. If the selected mask has already data, the camera moves as it was programmed. Otherwise, "UNDEFINED" will be displayed.
 Clear Mask 	Deletes the mask data of the selected mask number.
• Display Mask	[ON/OFF] Sets if the mask of the selected mask number shows or not on the screen.
● Mask Color	[BLACK/GRAY1~6/WHITE/RED/GREEN] Sets the color of mask. The setting value is applied to all masks. ① 30S, 20S, 20W models only

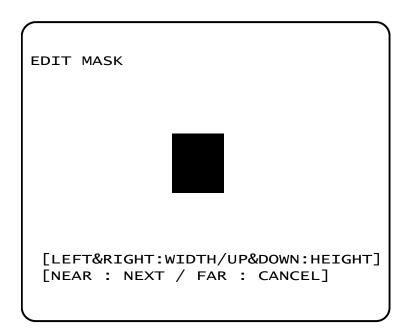


Privacy Mask Area Setup

(
	EDIT MASK	
	MOVE TO TARGET POSITION	
	[NEAR : NEXT / FAR : CANCEL]	
l		

Move your camera to an area to mask, and press **NEAR** button. Then a mask will be displayed in the center of screen.

Privacy Mask Size Setup



Adjust the mask size. Use the joystick or the arrow buttons of your controller to adjust mask size. (Left/Right/Up/Down)



PTZ Setup

VIDEO PTZ ACTION OSD SYSTEM INFORMATION	POWER UP ACTION AUTO PARKING - ACTION TYPE - ACTION NUMBER - WAIT TIME AUTO FLIP JOG MAX SPEED JOG DIRECTION ZOOM PROPORTIONAL JOG FREEZE IN PRESET	ON OFF HOME - 00:10:00 ON 120/SEC INVERSE ON OFF

• Power Up Action	[ON/OFF] Refer to "Other Functions" section.
• Auto Parking	[ON/OFF] If Auto Parking is set to ON, the camera runs an assigned function automatically if there is no PTZ command during the programmed "Wait Time".
• Action Type / Action Number	[HOME/PRESET/SWING/PATTERN/GROUP/PREV ACTION] This feature defines the activity when the camera parks. If Park Action is set to "HOME", the camera moves to the home position which is memorized when the system boots. If Park Action is set to "PREV. ACTION", the camera runs the previous action which it ran most recently.
• Wait Time	[1~59 sec. / 1~180 min.] Wait Time can be programmed from 1 second to 180 minutes.
• Auto Flip	[ON/OFF] Refer to "Other Functions" section.
● Jog Max Speed	[1°/sec ~360°/sec] Sets the maximum jog speed.

● Jog Direction	[INVERSE/NORMAL] Sets the Jog Direction. If this is set to 'Inverse', the view direction in the screen is same as the direction of joystick. If this is set to 'Normal', the view direction in the screen is the reverse dirction of joystick.
• Zoom	[ON/OFF]
Propotional Jog	Decides whether jog operation speed is interlocked with zoom magnification. If this is set to "ON", jog operation speed is interlocked with zoom magnification and jog operation speed becomes lower for easier control as zoom magnification becomes higher.
• Freeze in Preset	[ON/OFF] Sets Frame Freeze Function. This feature freezes the scene on the monitor when going to a preset. At the start point of a preset movement, a camera starts freezing the image of the start point. Camera keeps displaying the image of the start point during preset movement and does not display the images which camera gets during preset movement. As soon as camera stops at preset end point, camera starts displaying live images which it gets at the end preset point. This feature also reduces bandwidth when working with digital systems or digital network systems.

OSD MENU



ACTION Setup

VIDEO PTZ		
ACTION	MOTION EDIT LOCK	OFF
OSD	PRESET	>>
SYSTEM	SWING	>>
INFORMATION	PATTERN	>>
	GROUP	>>
	ALARM TRIGGER	>>
	SCHEDULE	>>

 Motion Edit [ON/OFF] Lock If Motion Lock is set to ON, it is impossible to set up and delete Preset, Swing, Pattern and Group. It is possible only to run those functions. To set up and delete those functions, enter into OSD menu.

PRESET Setup

PRESET NO	1 UNDEFINED	
CLEAR PRESET	>	
EDIT SCENE	>>	
EDIT LABEL	>> [
RELAY OUT	OFF	
CAMERA LOCAL SETTING	OFF	
WHITE BALANCE	AUTO	
- RED OFFSET	128	
- BLUE OFFSET	128	
EXPOSURE MODE	AUTO	
- SHUTTER	1/60	
- IRIS	F6.8	
- GAIN	2 dB	
- BRIGHTNESS	10	
BLC	OFF	
WDR	OFF	
AUTO DSS	ON	
APERTURE	12	
DAY&NIGHT	AUTO	

- Preset No [1~255] MAX. 209 Presets except the Reserved Presets (Hot Keys) Selects a preset number to set up. If a selected preset is already defined, the camera moves to the pre-defined position. If a selected preset is not defined, "UNDEFINED" shows on the monitor.
- Clear Preset Deletes the data of the selected Preset.
- Edit Scene Re-defines the scene position of the selected Preset.
- Edit Label Edits the label of the selected Preset to show on the monitor when the preset runs. MAX. 10 alphanuberic characteristics are allowed.
- Relay Out Defines the relay output.
- Camera Local [ON/OFF]

Setting Image paremeters can be set up independently for each preset. There are 2 modes, "Global" mode & "Local" mode. The Global mode is that parameters are set up totally and simultaneously for all presets. The Global parameters setup can be done in "VIDEO" menu. The Local mode is that parameters are set up independently for each preset. Each Local parameter activate correspondingly when the camera arrives at each preset position. During jog operation, Global parameter should be applied. All Local parameters do not change although Global parameters changes.

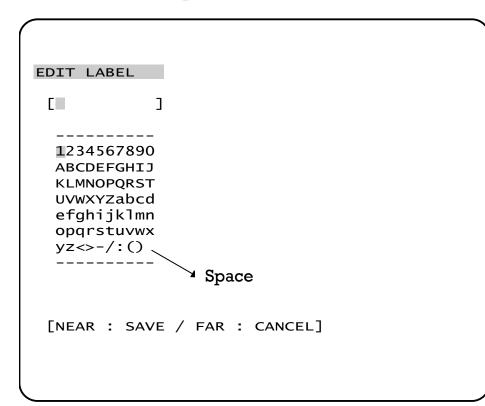
(1) The sub-menu of Camera Local Setting depends on the model. Refer to the description of "Video Setup"



Preset Scene Setup

EDIT PRESET MOVE TO TARGET POSITION [NEAR : NEXT / FAR : CANCEL]

Preset Label Setup



- 1 Use the Joystick to move the camera to a desired position.
- 2 Save the preset position by pressing **NEAR** key.
- ③ Press **FAR** key to cancel targeting the preset position.

- 1 As soon as finishing selecting an alphabet or a number, the cursor moves to the next digit.
- 2 With Left/Right/Up/Down of the joystick, move to a desired character in the alphanumeric set. To select a desired character, press the TELE key. To clear current charcter and move to backward, press the WIDE key.
- ③ The end character in the alphanumeric set is space character.



SWING Setup

SWING NO	1 UNDEFINED
- 1ST PRESET	1 UNDEFINED
- 2ND PRESET - SWING SPEED	1 UNDEFINED 30/sec
CLEAR SWING	>
RUN SWING	>

 Swing Number [1~10]
 Selects a Swing number to edit. If the selected Swing is not defined, "UNDEFINED" is displayed.

• 1st Position [PRESET 1~255]

2nd Position Sets the 2 positions for a Swing function. If the selected preset is not defined, "UNDEFINED" is displayed.

When a swing function runs, the camera moves from the preset assigned as the 1st point to the preset assigned as the 2nd point in CW(Clockwise) direction. Then the camera moves from the preset assigned as the 2nd point to the preset assigned as the 1st point in CCW (Counterclockwise) direction. In case that the preset assigned as the 1st point and the preset assigned as the 2nd point are same, the camera turns on its axis by 360° in CW direction and then it turns on its axis by 360° in CCW direction.

- Swing Speed [1°/sec.~180°/sec.] Defines Swing speed between the 2 Preset positions from 1°/sec to 180°/sec
- Clear Swing Deletes the data of the selected Swing.
- Run Swing Runs Swing for the test purposes to check if it works properly.



PATTERN Se	tup
	PATTERN NO 1 UNDEETNED
	PATTERN NO 1 UNDEFINED CLEAR PATTERN > RUN PATTERN > EDIT PATTERN >>
● Pattern No	[1~4] Selects a Pattern number to edit. If the selected pattern number is not defined, "UNDEFINED" will be displayed.
• Clear Pattern	Deletes the data of the selected pattern.
• Run Pattern	Runs the Pattern for the test purposes to check if it works properly.

• Edit Pattern Edits the selected pattern.



🖵 Edit Pattern

EDIT PATTERN	1 With the Joystick of your controller, move the camera to the start position with an appropriate zoom magnafication. To start the pattern recording, press NEAR key. To exit, press FAR key.
MOVE TO TARGET POSITION [NEAR : NEXT / FAR : CANCEL]	
EDIT PATTERN] 90%	2 Move camera with joystick of controller to memorize the path (mostly curve path) in the selected pattern. The movement by Joystick will be memorized in a pattern. After a pattern is programmed, the remaining storage is displayed in progress bar on the screen.
PATTERN RECORDING [NEAR : SAVE / FAR : CANCEL]	③ To save the data and exit, press NEAR key. To cancel saving the data and delete the data, press FAR key.



GROUP Setup

					1	FETNER
	P NO				_ 0.12	EFINED
	R GROUP				>	
UN	GROUP				>	
NO /	ACTION T	YPE 4	ACTION	NO	DWELL	OPTION
1	UNDEFI	NED	1		00:05	_
2	UNDEFI	NED	1		00:05	-
3	UNDEFI	NED	1		00:05	-
4	UNDEFI	NED	1		00:05	_
5	UNDEFI	NED	1		00:05	_
6	UNDEFI	NED	1		00:05	_
7	UNDEFI	NED	1		00:05	_
8	UNDEFI	NED	1		00:05	_
9	UNDEFI	NED	1		00:05	_
10	UNDEFI	NED	1		00:05	_

 Group No [1~8] Selects a Group number to edit. If the selected Group number is not defined, "UNDEFINED" will be displayed.

- Clear Group Deletes the data of the selected Group.
- Run Group Runs the Group for the test purposes to check if it works properly.
- Action Type [UNDEFINED/PRESET/SWING/PATTERN]
 Action No Selects the actions to execute. MAX. 40 actions are allowed in a Group.
- Dwell [0 SEC. ~ 4 MIN.] Sets the Dwell Time between functions.
- Option Option. It is a preset speed when a preset is selected in the Action. It is the number of repeat when a Pattern or a Swing is selected in the Action.

Press the **FAR** key to move the cursor position to "Group No" after edit of actions is complete.



ALARM TRIGGER Setup

	ALARM TRIGGER		
	ALARM NO ALARM TYPE TRIGGERED ACTION TRIGGERED ACTION NO TRIGGERED HOLD TIME POST ACTION POST ACTION NO	1 NORMAL OPEN UNDEFINED - ENDLESS HOME -	
• Alarm No	[1~3] Selects a sensor number to set up		
● Туре	[NORMAL OPEN/ NORMAL CLOS Selects sensor operation type.	E]	
 Triggered Action / Action No 	[UNDEFINED/PRESET/PATTERN/S Selects an action to run when a se	-	
• Hold Time	[ENDLESS / 1~59 SEC. / 1~180 MI Sets the time period for the ac activation. After the time period p Action" runs sequentially in succ activation. If this option is set to activate.	tion which is run by passes, the action pre- cession to the action k	-defined in "Post by external sensor
 Post Action / Post Action No 	[HOME/PRESET/PATTERN/SWING Selects the action that a camera w TIME" passes. If Post Action is runs the previous action which it r	vill run after the time set to "PREV. ACTI	period in "HOLD



SCHEDULE Setup

	SCHEDULE	
	SCHEDULE NO SCHEDULED ACTION SCHEDULED ACTION NO SCHEDULED HOLD TIME POST ACTION POST ACTION NO ACTION CYCLE - YEAR - MONTH - DAY - HOUR - MINUTE	1 UNDEFINED - ENDLESS HOME - ONCE 2012 JAN 1 0 0
	- SECOND	0
• Schedule No	[1~8] Selects a Schedule to be configure	ed.
 Action / Action No 	[UNDEFINED/PRESET/PATTERN/S Consigures a function to be run fo	-
● Hold Time	[ENDLESS / 1~59 SEC. / 1~180 MIN.] Configures a time period to run an Action. After this time passes, "Post Action" should run. If Post Action is configured to ENDLESS, Post Action should not run.	

- Post Action / [HOME/PRESET/PATTERN/SWING/GROUP/PREV ACTION] Post Action No Configures a function to be run after a Hold Time. When "PREV. ACTION" is configured, the latest function which is running just before a Schedule Function should keep running again.
- [ONCE/HOURLY/DAILY/WEEKLY/MONTHLY] • Cycle Configures a time period to repetitively run a Schedule Function. If "ONCE" is configured, a Schedule function should run once and it should not run again.
- Time Configures a Date and a Timeto run a Schedule Function.



OSD Setup

VIDEO PTZ ACTION OSD SYSTEM INFORMATION	DISP CAMERA ID DISP ALARM I/O DISP PTZ INFO DISP ACTION TITLE DISP PRESET LABEL DISP TIME DISP DATE	ON AUTO AUTO AUTO AUTO ON ON

OSD setup allows you to program how labels are displayed on the monitor. In case of AUTO, the labels are displayed on the monitor when there are any changes in parameters.

● Camera ID	[ON/OFF] Displays the selected Camera ID.
● Alarm I/O	[ON/OFF/AUTO] Displays the activated alarms. This information shows the current state of Alarm Inputs and Relay Outputs. If an Input point is ON state, it will show a number corresponding to each point. If an Input point is OFF state, '-' will be displayed.
• PTZ Information	[ON/OFF/AUTO] Displays the positions of pan/tilt, zoom magnification.
 Action Title 	[ON/OFF/AUTO] Identfies Actions. "PRESET xxx", "PATTERN x", "SWG x-PRESET xxx", "UNDEFINED"
• Preset Label	[ON/OFF/AUTO] Displays the preset labels when the camera arrives at presets.

 Display Date 	[ON/OFF] Configures whether Date will be displayed in OSD or not.
 Display Time 	[ON/OFF] Configures whether Time will be displayed in OSD or not.

SYSTEM Setup

\mathcal{C}		
VIDEO		
PTZ		
ACTION		
OSD		
SYSTEM	LANGUAGE	ENGLISH
INFORMATION	TIME SETTING	>>
	HEATER SETTING	AUTO
	ENABLE PASSWORD	OFF
	EDIT PASSWORD	>>
	FACTORY RESET	>
	- RESET VIDEO	>
	– RESET PTZ	>
	- RESET ACTION	>
	- RESET OSD	>
	REBOOT SYSTEM	>
l		

[AUTO/ON/OFF] Heater Setting Configures how Heater works. If this is set to "AUTO", an internal sensor detects internal temperature and Heater automatically starts working or stops working according to internal temperature change. • Enable Password [ON/OFF] Configures whether OSD menu will be protected with a password. • Factory Reset Deletes all configuration data and the system is set to the factory default. If the Factory Reset is selected, a message asks for the final confirmation. Press the **NEAR** button for the final confirmation. Reset Video Initializes all the configuration data for VIDEO menu. Reset PTZ Initializes all the configuration data for PTZ menu. Reset Action Initializes all the configuration data for ACTION menu. Reset OSD Initializes all the configuration data for OSD menu. • Reboot System Reboots the system.



□ Factory Default

• Video Menu Setting (30S, 20S Model)			
Focus Mode	SEMIAUTO	Day&Night	AUTO
White Balance	AUTO	Digital Zoom	ON
Exposure Mode	AUTO	Image Flip	OFF
BLC	OFF	Stabilization	OFF
WDR	OFF	Privacy Mask	UNDEFINED
Auto DSS	ON	HD-SDI Resolution	1080p30 (NTSC)
Aperture	12		1080p25 (PAL)

Focus Mode	SEMIAUTO	Sharpness	12
White Balance	AUTO	Day&Night	AUTO
Shutter	ESC	Digital Zoom	ON
Iris	AUTO	Image Flip	OFF
Gain	MEDIUM	Stabilization	OFF
Brightness	50	Privacy Mask	UNDEFINED
Backlight	OFF	HD-SDI Resolution	1080p30 (NTSC)
Sens-Up	Auto x2		1080p25 (PAL)
SSNR	MEDIUM		

 Video Menu Setti 	ng (20W Model)		
Focus Mode	SEMIAUTO	Aperture	8
White Balance	AUTO	Day&Night	AUTO
Exposure Mode	AUTO	Digital Zoom	ON
BLC	OFF	Image Flip	OFF
WDR	OFF	Privacy Mask	UNDEFINED
Defog	OFF	HD-SDI Resolution	1080p30 (NTSC)
Auto DSS	ON		1080p25 (PAL)

• ACTION Menu Setting • PTZ Menu Setting Power Up Action ON Motion Edit Lock OFF **Auto Parking** OFF Preset UNDEFINED Auto Flip Swing ON UNDEFINED Jog Max Speed 120°/sec Pattern UNDEFINED Jog Direction **INVERSE** Group **UNDEFINED** Zoom Proportional Jog Alarm Trigger ON UNDEFINED Freeze In Preset OFF Schedule **UNDEFINED** • OSD Menu Setting • SYSTEM Menu Setting 01/JAN/2012 Disp Camera ID ON Time 00:00:00 Disp Alarm I/O AUTO Disp PTZ Info Heater Setting AUTO AUTO **Disp Action Title** AUTO Enable Password OFF Disp Preset Label AUTO Password Blank **Disp Time** ON **Disp** Date ON

OSD MENU



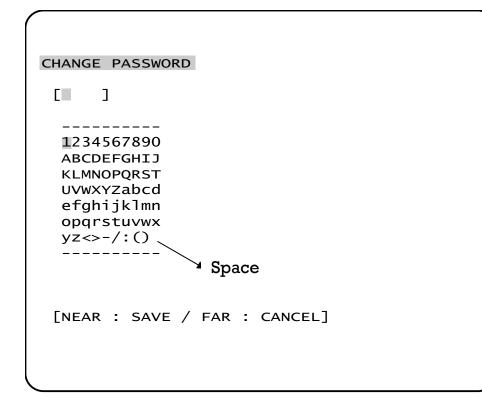
TIME Setup

[
TIME SETTING		
YEAR	2012	
MONTH	JAN	
DAY	1	
HOUR	0	
MINUTE	0	
SECOND	0	

Configure current date and time. HOUR does not support AM or PM form. HOUR can be configured in 24 hour form.



PASSWORD Setup



- As soon as finishing selecting an alphabet or a number, the cursor moves to the next digit.
- 2 With Left/Right/Up/Down of the joystick, move to a desired character in the alphanumeric set. To select a desired character, press the TELE key. To clear current charcter and move to backward, press the WIDE key.
- (3) The end character in the alphanumeric set is space character.



[Caution] It is mandatorily recommended that a user must take a memo for a password before a user applies a password to a system. When a Password is forgotten, a unit can not be unlocked and the unit is supposed to be shipped back to the manufacturer.

Specifications

	CAMERA PART (30S Model)
Image Sensor	1/2.8" Exmor CMOS Sensor
Pixels	3,270K pixels
Zoom	×30 Optical Zoom, ×12 Digital Zoom
Video Signal-to-Noise	50 dB
Forcal Length	F1.6~4.7, f=4.61~138.3mm
Angle of View (H)	57.5°(Wide)~2.1°(Tele)
Min.Working Distance	10mm(Wide), 1200mm(Tele)
ZoomSpeed	4.6 sec (Wide to Tele)
Minimum Illuminance	0.5 Lux (Color, 1/30sec, 50 IRE) 0. 005 Lux (B/W, 1/4 or 1/3sec, 50 IRE)
Day & Night	Auto / Day / Night(ICR)
Focus	Auto / Manual / SemiAuto
AEMode	Auto / Iris / Shutter / Manual / Brightness
White Balance	Auto / Manual(Red, Blue Gain Adjustable)
BLC	On / Off
WDR	On / Off
Aperture	Adjustable
NR	Yes
Privacy Zone	8 Masks, Spherical Coordinate
Stabilization	ON / OFF

	CAMERA PART (20S Model)
Image Sensor	1/2.8" Exmor CMOS Sensor
Pixels	3,270K pixels
Zoom	×20 Optical Zoom, ×12 Digital Zoom
Video Signal-to-Noise	50 dB
Forcal Length	F1.6~3.9, f=3.5~129.5mm
Angle of View (H)	55.4°(Wide)~2.9°(Tele)
Min.Working Distance	10mm(Wide), 1000mm(Tele)
ZoomSpeed	2.3 sec (Wide to Tele)
Minimum Illuminance	0.5 Lux (Color, 1/30sec, 50 IRE) 0.005 Lux (B/W, 1/4 or 1/3sec, 50 IRE)
Day & Night	Auto / Day / Night(ICR)
Focus	Auto / Manual / SemiAuto
AEMode	Auto / Iris / Shutter / Manual / Brightness
White Balance	Auto / Manual(Red, Blue Gain Adjustable)
BLC	On / Off
WDR	On / Off
Aperture	Adjustable
NR	Yes
Privacy Zone	8 Masks, Spherical Coordinate

CAMERA PART (30T Model)				
Image Sensor	1/4" PS CMOS Sensor			
Pixels	1,300K pixels			
Zoom	×30 Optical Zoom, ×12 Digital Zoom			
Video Signal-to-Noise	50 dB			
Forcal Length	F1.35~3.7, f=3.5~101.5mm			
Angle of View (H)	H:54.8°(Wide)~2.01°(Tele) / V:44.6°(Wide)~1.61°(Tele)			
Min.Working Distance	1500mm			
ZoomSpeed	3 sec (Wide to Tele)			
Minimum Illuminance	1.5 Lux (Color, F1.6, 50 IRE) / 0. 1Lux (B/W, F1.6,50 IRE)			
Day & Night	Auto / Day / Night(ICR)			
Focus	Auto / Manual / SemiAuto			
White Balance	Auto / Manual(Red, Blue Gain Adjustable)			
Iris	Auto / Manual			
Gain	OFF / Low / Middle / High / Manual			
Shutter Speed	Auto / Manual(×60~1/33,000) / A.FLK			
BLC	OFF / BLC / HLC			
SSNR	Low / Middle / High / OFF			
Sens-Up	OFF / Auto (×2~×60)			
Brightness	1~100			
Sharpness	1~31			
Privacy Zone	8 Masks, Spherical Coordinate			
Stabilization	ON / OFF			

CAMERA PART (20T Model)				
Image Sensor	1/3" PS CMOS Sensor			
Pixels	2,000K pixels			
Zoom	×20 Optical Zoom, ×8 Digital Zoom			
Video Signal-to-Noise	50 dB			
Forcal Length	F1.6~2.9, f=4.45~89mm			
Angle of View (H)	H : 55.56°(Wide)~3.10°(Tele) / V : 43.32°(Wide)~2.34°(Tele)			
Min.Working Distance	1000mm			
ZoomSpeed	3.3 sec (Wide to Tele)			
Minimum Illuminance	1.5 Lux (Color, F1.6, 50 IRE) / 0. 1Lux (B/W, F1.6,50 IRE)			
Day & Night	Auto / Day / Night(ICR)			
Focus	Auto / Manual / SemiAuto			
White Balance	Auto / Manual(Red, Blue Gain Adjustable)			
Iris	Auto / Manual			
Gain	OFF / Low / Middle / High / Manual			
Shutter Speed	Auto / Manual(×60~1/33,000) / A.FLK			
BLC	OFF / BLC / HLC			
SSNR	Low / Middle / High / OFF			
Sens-Up	OFF / Auto (×2~×60)			
Brightness	1~100			
Sharpness	1~31			
Privacy Zone	8 Masks, Spherical Coordinate			
Stabilization	ON / OFF			

CAMERA PART (19T Model)				
Image Sensor	1/3" PS CMOS Sensor			
Pixels	1,300K pixels			
Zoom	×19 Optical Zoom, ×16 Digital Zoom			
Video Signal-to-Noise	52 dB			
Forcal Length	F1.6~2.9, f=4.5~85.5mm			
Angle of View (H)	H : 55.24°(Wide)~3.16°(Tele) / V : 44.96°(Wide)~2.542°(Tele)			
Min.Working Distance	1000mm			
ZoomSpeed	3.3 sec (Wide to Tele)			
Minimum Illuminance	0.7 Lux (Color, F1.6, 50 IRE) / 0.08 Lux (B/W, F1.6,50 IRE)			
Day & Night	Auto / Day / Night(ICR)			
Focus	Auto / Manual / SemiAuto			
White Balance	Auto / Manual(Red, Blue Gain Adjustable)			
Iris	Auto / Manual			
Gain	OFF / Low / Middle / High / Manual			
Shutter Speed	Auto / Manual(×60~1/30,000) / A.FLK			
BLC	OFF / BLC / HLC			
SSNR	Low / Middle / High / OFF			
Sens-Up	OFF / Auto (×2~×60)			
Brightness	1~100			
Sharpness	1~31			
Privacy Zone	8 Masks, Spherical Coordinate			
Stabilization	ON / OFF			

CAMERA PART (20W Model)				
Image Sensor	ensor 1/3" Panasonic CMOS Sensor			
Pixels	2,000K pixels			
Zoom	imes20 Optical Zoom, $ imes$ 12 Digital Zoom			
Video Signal-to-Noise	50 dB			
Forcal Length	F1.6~3.5, f=4.7~94.0mm			
Angle of View (H)	55.4°(Wide)~2.9°(Tele)			
Minimum Illuminance	0.5 Lux (Color) 0.001 Lux (B/W, DSS)			
Day & Night	Auto / Day / Night(ICR)			
Focus	Auto / Manual / SemiAuto			
AEMode	Auto / Iris / Shutter / Manual / Brightness			
White Balance	Auto / Manual(Red, Blue Gain Adjustable)			
BLC	On / Off			
WDR	On / Off			
Defog	On / Off			
Aperture	Adjustable			
NR	Yes			
Privacy Zone	8 Masks, Spherical Coordinate			

MECHANISM PART				
Movement Range	Pan	360°(Endless)		
	Tilt	90°		
	Preset	500°/sec.		
Speed	Jog	$0.05 \sim 360^{\circ}$ /sec. (Proportional to Zoom)		
	Swing	10~ 180°/sec.		
Preset		209 Presets (Label, Independent Camera Parameter Setting)		
Pattern		4 Patterns [768 Commands(Approx. 5 Minute) / Pattern]		
Swing		10 Swings		
Group		8 Groups (MAX. 40 Actions with The Combination of Preset, Pattern and Swing)		
Schedule		8 Schedules		
Other Pan/Tilt Functions		Auto Flip, Auto Parking, Power Up Action and etc.		
Video Ouptut		2×BNC (HD-SDI and CVBS)		
HD-SDI		HDcctv v1.0, 1.485Gb/s, SMPTE 292M standard Resolution : 1080p/30/25, 1080i/60/50, 720p/60/50/30/25		
CVBS		lVp-p		
Real Time Clock		Yes, RTC battery backup time : 2 weeks		
Communication		RS-485		
Protocol		Pelco-D, Pelco-P Selectable		
OSD		English Menu / Time / PTZ information etc, Password protection		
Sensor Input		3 Inputs, Photo-Coupler Type, DC 5V~12V		
Alarm Outputs		l Output, Relay Output, MAX. Load DC24V 1A / AC125V 0.5A		
Fan		Always ON		
Heater		Operation Start from Internal Temperature 10°C		
Operation Temperature		-30° C $\sim 50^{\circ}$ C		
Rated Power		DC 12V / 1.8A or AC 24V / 2.0A		

MECHANICAL				
		Ceiling Mount	Wall Mount	
Material	Dome	Polycarbonate		
	Internal	Polycarbonate, ABS		
	External	Aluminium		
Dome Size	·	Ø150mm/Ø5.9"		
Dimension Ø200×407.8 mm		Ø200×407.8 mm	300×309.1 mm	
Weight		Approx 3.6 Kg	Approx 3.4 Kg	

[Note]

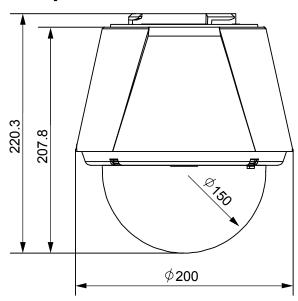
1) Specification and features are subject to change without prior notice.

2) Specification and features are different by models.

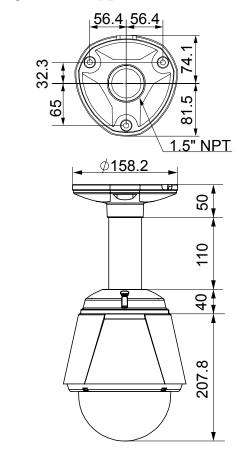
3) Check the voltage and current capacity of rated power carefully.

Dimension

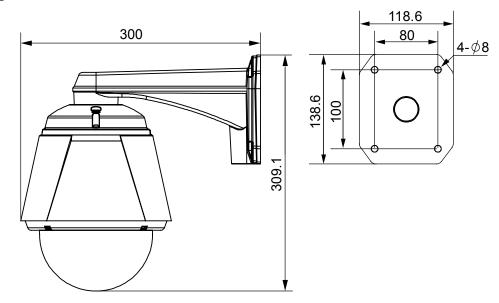
• Main Body



• Ceiling Mount Type



• Wall Mount Type



[Unit : mm]