LG

Life's Good

OWNER'S MANUAL
Network Dome Camera

Please read this manual carefully before operating
your set and retain it for future reference.

MODELS
LW9424 Megapixel Network PTZ Camera

Safety Information

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.

This lightning flash with 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 user.

- Caution: Danger of explosion if battery is incorrectly replaced. Replaced only with the same or equivalent

- type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

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

This Class A digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

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 qu alified service person and should conform to all local codes.
Caution: To avoid electrical shock, 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.
Caution: This product employs a Laser System. To ensure proper use of this product, please read this owner's manual carefully and retain it for future reference. Should the unit require maintenance, contact an authorized service center. Performing controls, adjustments, or carrying out procedures other than those specified herein may result inhazardous radiation exposure. To prevent direct exposure to laser beam, do not try to open the enclosure. Visible laser radiation when open. DO NOT STARE INTO BEAM.

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

LG Electronics hereby declares that this/these product(s) is/are in compliance with the essential requirements and other relevant provisions of Directive 2004/108/EC, 2006/95/EC, and 2009/125/EC.

European representative :

LG Electronics Service Europe B.V.
Veluwezoom 15, 1327
AE Almere. The Netherlands
(Tel : +31-(0)36-547-8888)

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.

EEE Compliance with Directive. (for Turkey only)

IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been 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.

Safety Precautions

- Do not attempt to disassemble the camera
  To prevent electric shock, do not remove screws or covers. There are no user serviceable parts inside. Ask a qualified service personnel for servicing.

- Avoid the camera with direct sunlight
  Do not aim the camera at bright objects. Whether the camera is in use or not, never face it with direct sunlight or other extremely bright objects. Otherwise blooming or smear may be caused.

- Handle the camera with care
  Do not abuse the camera. Avoid striking, shaking, etc. The camera could be damaged by improper handling or storage.

- Do not use strong solvents or detergents
  Use a dry cloth to the camera when it is dirty. If it is hard to remove the dirt on the camera, use a mild detergent and wipe it gently.

- Do not install this camera upside down
  This camera is designed for mounting on the ceiling or wall. If you install this camera upside down, for example, mounted on the floor, it may cause malfunction.

- Do not use the camera in such places as shown below. The lens may become cloudy due to condensation if the camera is used under the following conditions.

- Rapid temperature fluctuation by switching an air conditioner on and off.

- Rapid temperature fluctuation due to frequent door opening and closing.

- Use in an environment where eyeglasses become foggy.

- Use in a room filled with cigarette smoke or dust.

- If the lens becomes cloudy due to condensation, remove the dome cover and wipe all moist surfaces

- with a soft cloth.

- Before operating, please check proper

temperature, humidity and power source ratings.

- Use the camera under conditions where temperature is from -10 °C to 50 °C and humidity is below 80 %. The input power source is AC 24 V.

- Consumables

- Parts having contacts such as the lens-drive motors, cooling fan built inside the camera are subject to wear with time. About replacement and maintenance of such parts, please ask the nearest service center.

Camera Installation Location
Discuss the installation location for the camera with your retailer, and select a place that is strong enough for the installation.
- Install the camera on a ceiling (concrete, etc.) at a location that is sufficiently strong to support it.

- Install the camera body on the foundation section of the building or sections having sufficient bearing strength.

Never install or use the camera in the following locations
- Do not install it in areas exposed to direct sunlight or rain.

- Do not install the camera near the air outlet of an air conditioner.

- Near a swimming pool or other areas where chemicals are used.

- Food preparation areas and other locations where there are large amounts of steam vapor and oil, in flammable atmospheres, other special environments.

- Areas where radiation, X-rays, strong electric waves, or magnetism is generated.

- At sea, in coastal areas, or in areas where corrosive gas is being generated.

- Areas outside of the allowable ambient operating temperature range.

About Static Electricity Removal
Before installing the camera, touch a metal case or other metallic parts with your hand to remove static electricity from your body.
Do not install in areas subjected to high amounts of humidity or dust.

Doing so may cause internal components to damage more easily or malfunction.
Do not wire cables near power lines.

Tightening the Screws
Screws should be tightened sufficiently in accordance with the materials and structure of the installation location. After tightening the screws, visually inspect them to make sure there is no unevenness and that each screw is tight.

Contents

Preparation

Introduction

This User Manual provides information on operating and managing the megapixel IP PTZ camera. The Manual includes instructions of installation, operation and configuration of megapixel IP PTZ camera as well as how to make troubleshooting.

Feature

This product is a megapixel PTZ network-based camera with remote live monitoring, audio monitoring and control via an IP network such as LAN, ADSL/VDSL, and Wireless LAN.

Camera
1/3" 2 MegaPixel CMOS
x20 optical zoom, x12 digital zoom
True Day & Night (ICR)

Video
Highly efficient compression algorithm, H.264 & MJPEG support
Resolutions: CIF (352x240) – HD (1920x1080)
Wide range of transmission rates: 256kbps ~ 10Mbps
Motion detection
Composite video output

Audio
Multi-transmission mode: Simplex (megapixel IP PTZ camera → Client PC, Client PC → megapixel IP PTZ camera), Full Duplex

Network
Fixed IP & Dynamic IP (DHCP) support
1:1, 1:N support
Multicasting
Various types of Protocol support : TCP/IP, UDP, Multicast, DHCP, SMTP, HTTP, SNMP, RTP, RTSP

Serial Data
RS-485 support

Sensor and Alarm
Support direct connections of external sensor and alarm devices
Event Alarm notification.

2 alarm sensor Inputs and 2 alarm Output relays are available
If an external sensor is activated, camera can be set to move to the corresponding Preset position.

User Interface
Live monitoring and system configuration through LG Smart station and LG Smart Web Viewer.

High Reliability
Reliable embedded system
System Recovery using dual watchdog

Powerful Pan/Tilt Functions
Max. 360°/sec high speed Pan/Tilt Motion
Using Vector Drive Technology, Pan/Tilt motions are accomplished in a shortest path. As a result, time to target view is reduced dramatically and the video on the monitor is very natural to watch.
For jog operation using a controller, since ultra slow speed 0.05°/sec can be reached, it is very easy to locate camera to desired target view. Additionally it is easy to move camera to a desired position with zoom-proportional pan/tilt movement.

Preset, Pattern, Swing, Group
MAX. 128 Presets are assignable and characteristics of each preset can be set up independently,
Max. 8 set of Swing action can be stored. This enables to move camera repetitively between two preset positions with designated speed.
Max. 4 of Patterns can be recorded and dplayed back. This enables to move camera to follow any trajectory operated by joystick as closely as possible.
Max. 8 set of Group action can be stored. This enables to move camera repetitively with combination of Preset or Pattern or Swing. A Group is composed of max. 20 entities of Preset/Pattern/Swings.

PTZ(Pan/Tilt/Zoom) Control
With RS-485 communication, max. 255 of cameras can be controlled at the same time.
Pelco-D or Pelco-P or LG multix protocol can be selected as a control protocol in the current version of firmware..
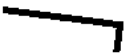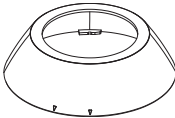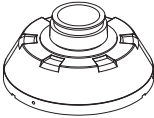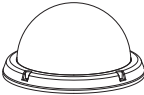
Easy Installation and Perfect Outdoor Environment Compatibility
Fans and heaters are built-in in camera for cold and hot temperature environment. Also idealistic
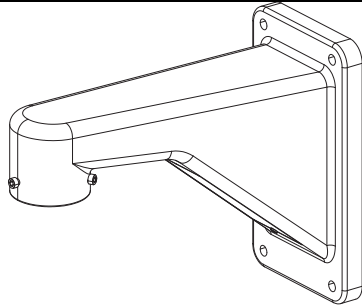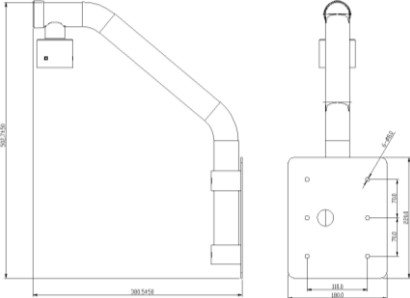
mechanical design protects camera from water and dust. (IP 66)
It is easy to install and maintain camera with terminal for cable connection in brackets.

Accessories

Wrench Driver	
Installation CD	
Alarm I/O Connector	
Screw (SAMS M3X10)	
Cover Adaptor	
Mount Adaptor	
Dome Cover Ass'y	

Optional Accessories

Wall Mount Bracket	 [Screws : Machine M14×50, Hex Lag #14×50]
Pole Mount Bracket	 [Screws : Machine M14×50, Hex Lag #14×50]
Para Mount Bracket	 [Screws : Machine M14×50, Hex Lag #14×50]

Part Names and Functions

DIP Switch

Power Connector
Video Out Connector
Audio In Connector
Audio Out Connector
LAN Connector
Alarm I/O Adaptor
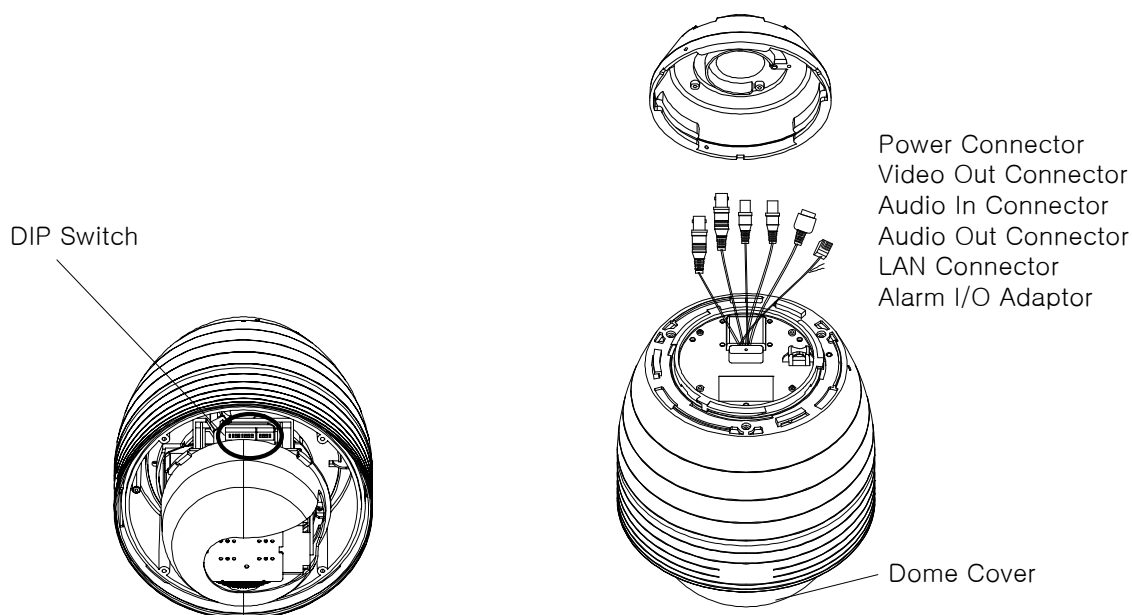
Dome Cover

| **Dome Cover**	Do not detach protection vinyl from dome cover before finishing all installation process to protect dome cover from scratches or dust.
DIP Switch	Sets up camera ID and protocol.
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	This hole is for screws that assembles the main body with a bracket.
Alarm I/O Connector	The RS-485 communication cable, alarm in/out connection cable and IP Reset cable. (See table "Port Description of Alarm I/O Pin out")
Video (BNC)	Used for the composite video out connection.
LAN Port	Used for the Ethernet connection
Audio Port	Used for the audio in/out connection.

Installation

Megapixel IP Camera can be connected in either 1 to 1 connection where one camera is connected to one PC client or 1 to many connections where one camera can be connected to several PCs.
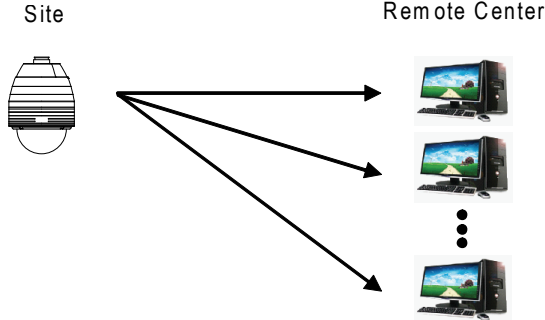
Connection

Topology
Generally, LW9424 megapixel Network PTZ Camera and PC is connected in 1-to-1 mode or 1-to many configuration.

1:1 Connection .
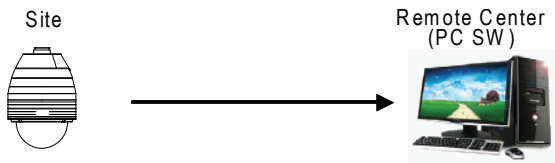
One camera is installed at a site where video images are transmitted. A PC is installed at a central location to receive and view the video images on an analog monitor. Audio and serial data are transferred in either direction.

1:N Connection .

In this configuration, a site can be monitored from many remote central locations. Although up to 64 PCs can be connected to one camera, in the real network environment, network bandwidth can limit the maximum connections.

In case that a PTZ is connected to more than 1 client, to get stable images, the number of client is limited for each Bitrate as below.

Bitrate	NO. of Clients	Bitrate	NO. of Clients
10Mbps	1	3Mbps	4
7Mbps	2	2Mbps	5
5Mbps	3	1Mbps	7

Multicast Mode

If the network supports multicasting, a large number of PCs can be used to receive video effectively from a camera using a single streaming of video and audio. However, multicast mode is possible only when network environment supports multicast.

Smart Station
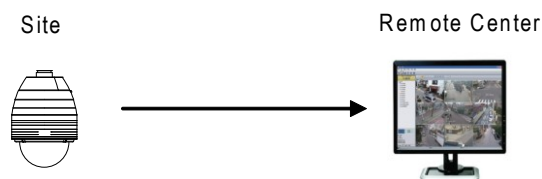
Smart station is a Window-based remote monitoring program in order to monitor or control video, audio, and events in real time from several IP cameras. Please refer to the Smart station User Manual for more in detail.

Basic Connection Overview
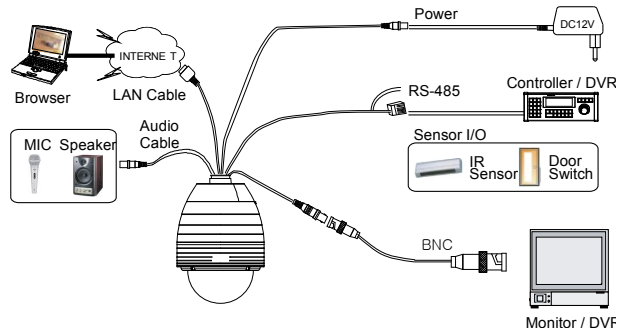
Port Description of Alarm I/O Pin out

Color	Signal	Description
GRAY	ALARM IN <COM>	GROUND
WHITE	ALARM IN 1	
GREEN	ALARM IN 2	
ORANGE	ALARM OUT <COM>	Relay Common
PINK	ALARM OUT 2	Normal Open Relay Out
BLUE	ALARM OUT 1	Normal Open Relay Out
RED	RS 485 +	
B:ACL	RS 485 -	
VIOLET	IP RESET	IP Address Reset
BROWN	GND	GROUND

ALARM input connection

Before connecting wires to sensors, check operation voltage and output type of sensors. there are 2 output types in sensor output, Open Collector and Voltage Output, properly connect wires to sensors according to sensor output type.

Sensor Input
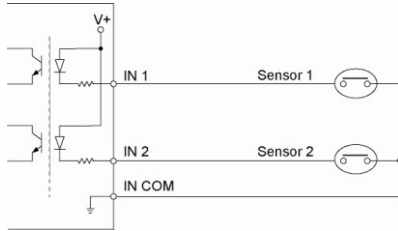
ALARM output connection

Relay Output
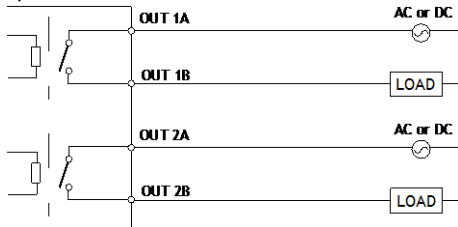
Maximum allowable electrical load of relay is shown bellow table.

Drive Power	DC Power	AC Power
Max. Load	Max DC 24V, 1A	Max AC 125V, 0.5A

Connecting power source

Carefully check the voltage and current capacity of the rated power. The rated power is indicated in the back of main unit.

After confirming the power source, connect power adaptor and connect the 12V DC connector to the system

For the DC input models, be careful with the polarity of DC power. The system should be permanently damaged by wrong DC input.

In case that the length of the 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.

This camera must always be operated by AC 24 V or DC 12 V Certified/Listed,Class 2 power supply only.

Connecting Network

Plug network cable to Ethernet port (RJ-45 network port).

Connecting IP Reset Cable

Reset its network configuration to the factory defaults. IP address obtain from DHCP server. To initialize the Network setting to the factory default, press the reset button for more than 5 seconds

Connecting Audio

Audio is full-duplex. It is possible to set the mode as Tx-only, Rx-only or Tx-Rx.

Connect AUDIO IN and AUDIO OUT ports to audio devices accordingly.

The Audio signal required is line level, so audio equipment with an amp, mixer or other amplifier should be used.

Camera ID Setting

When you control the camera through RS-485, before installation, you should set the DIP switches to configure the camera ID, communication protocol.
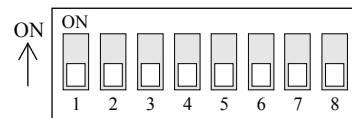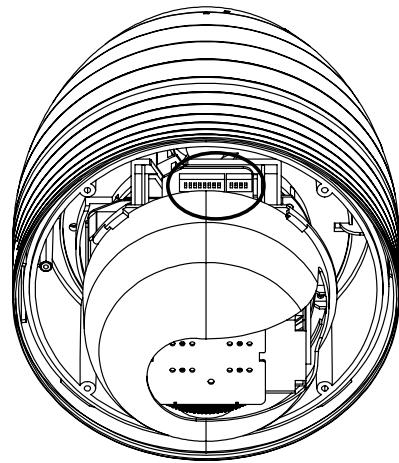
ID numbers of camera are set up with binary numbers..

See the examples shown below

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

The camera ID range is 1~255. **Camera ID must not be 0**.
Factory default of Camera ID is 1.
Match the camera ID with Cam ID setting of your DVR or Controller to control the camera.

Protocol and baud rate settings
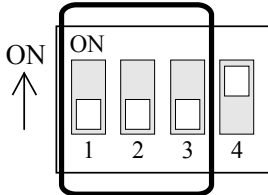
Select the appropriate Protocol with DIP switch combination.

Switch State			Protocol/Baud rate
P0 (Pin 1)	P1 (Pin 2)	P2 (Pin 3)	
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
OFF	OFF	ON	LG Multix, 9600bps
Otherwise			Reserved

If you want to control using DVR or P/T controller, their protocol must

be identical to camera. Otherwise, you can not control the camera.
Adjust the DIP switch after turning off the camera. If you changed the camera protocol by changing the DIP switch, the change will be effective after you reboot the camera.
Factory default of protocol is "LG Multix, 9600 bps".

Mounting the camera
Wall mount (optional)

① Place the cover adaptor between the wall mount bracket and the mount adaptor. Then assemble the mount adaptor with the wall mount adaptor with 3 screws(M5 x 15).

③ Align the arrow stud of the main body with the arrow stud of the cover adaptor and slightly push the main body to the mount adaptor. Then turn the main body clockwise and assemble the main body with the mount adaptor with 3 screws(SAMS M3x10). And align the arrow stud of the cover adaptor with the arrow stud of the main body and turn the cover adaptor counterclockwise.

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.
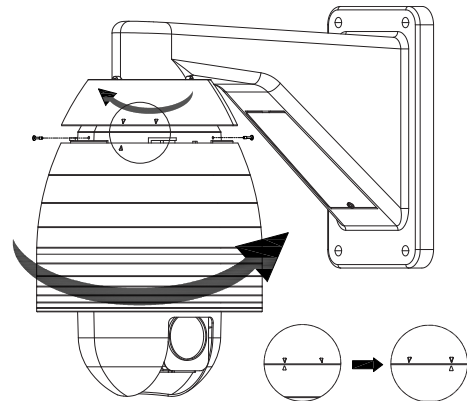
④ Remove the sticker and Zoom module cap. Screw the dome cover to the main body and remove the protection vinyl from the dome cover.
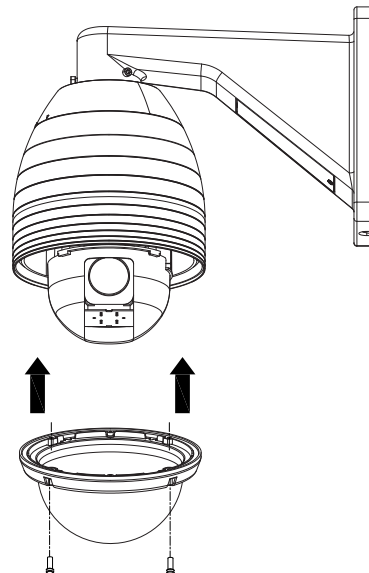
Notice
Before starting the installation, make sure that the Camera ID and Protocol are set up properly.

System Operation

Remote Video Monitoring

There are two ways to monitor video when the center system and LW9424 are connected. In order for a proper operation, an IP address must be set accordingly. Please refer to **Remote Setting** for further details.

Video Monitoring using Internet Explorer

Open Internet Explorer and enter camera's IP address. The system will ask for confirmation to install Active-X control. Once authorized, the Internet Explorer will start to display video images from camera as shown.

Default ID: admin / PW: admin

Video Selection

Select the Video stream to be viewed: Primary or Secondary

This camera is capable of dual streaming; primary streaming and secondary streaming.

Video will be displayed according to the resolution set on video configuration. If dual streaming (**"Use Dual Encode" Menu in Video page**) is not activated, secondary video is not available
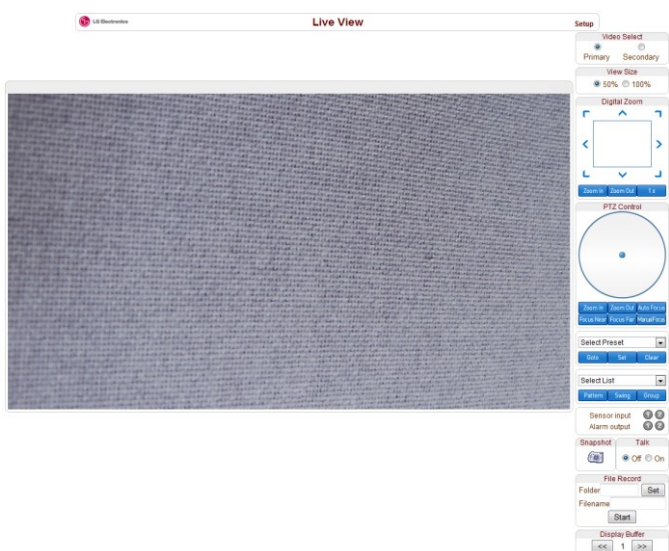
Screen Size

Adjust the Screen size

Screen size is initially adjusted according to the compression resolution. If you click 50% icon, the whole screen size will be reduced to half size.

Digital Zoom
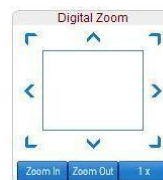
Control the Digital zoom on the screen

The more the camera zooms in, the smaller the square of control panel is. Position of the image can be changed by moving position of the square. Max x5 Digital Zoom is available.

If you press **x1,** the screen will return to the normal size. This digital zoom function is operated on a web browser and different from digital zoom function of a camera.

PTZ Control Panel (Optical Zoom & Digital zoom built-in the camera)
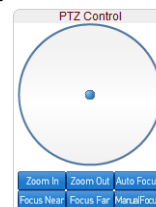
Control PTZ and PTZ Control Panel is used for controlling external PTZ devices when the external PTZ devices are connected through serial port.

It is possible to make zooming control by **Zoom in/out** buttons of PTZ control Panel (In order to use digital zoom, select **Digital zoom ON** in the **Camera** tab)

Focus Near, Focus Far, Auto Focus, Manual Focus

Adjust the focus of the lens

Select Preset

  Set preset position and move to the specific preset position.

- **Goto**: Move to the selected preset entry if the preset entry is set.

- **Set**: Set the current position to the selected preset entry.

- **Clear**: Delete the selected preset entry.

Select List

Run a selected Pattern or Swing or Group.

After selecting an entry in the list, Pattern, Swing or Group button can be pressed. Then, corresponding operation is executed for the selected list.

(Please refer to the **PTZ tab** to set Pattern, Swing and

Group)

Sensor Input
Display the status of the sensor in real time.
This camera supports two sensor inputs. When the sensor of the camera is working, the sensor light turns red.

Alarm Output
Operate the alarm device by pressing the number icon
This camera supports two alarm outputs. A number icon indicates status of the alarm device.
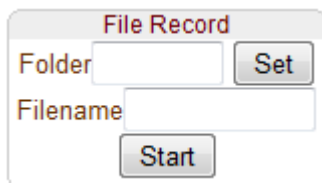
Screen Capture
Capture video images and store them as BMP or JPEG files.

Audio Transfer
Transfer audio from PC's mic to the camera.

File record

File Record		
Folder		Set
Filename		
	Start	

Recording to an AVI file on Live view page is available. AVI files are generated in the specified folder or in specified file name on the PC where web browser is running.
Enter the name of the folder or the prefix of the file name. If the path string ends with '₩' the path is recognized as a folder. If not, it is recognized as a prefix of the file name.
Press **"Start"** button to start to record.
Press **"Stop"** button to stop to record.
AVI file named "**IP address_hh_mm_ss"** or "**File name_IP address_hh_mm_ss"** will be generated in the specified folder depending on whether the path specified a folder or a prefix of the file name.

Display Buffer

Display Buffer
<< 10 >>

Set the number of video frames to be buffered before being displayed on web browser. Larger value results in smoother video by sacrificing the latency. A setting of 1 ~ 5 frames can be used generally for most situations.

Initialization of IP address

If a system IP address is lost, the system can be reset to the system default IP address using the reset button in the back side of the system.

1. While system is in operation, press the reset button for more than 5 seconds.
2. The system will reboot automatically
After initialization, its IP address obtains from DHCP server.   Please connect a LAN with a DHCP server.

Remote Configuration

Using Web Brower

Remote setting is available by using web browser. Enter IP address of camera and then a live view screen appears as below. Press **Setup** button located in the upper right area of the monitoring screen to go to the server setup. For Remote Setting, user should be authorized higher than manager level.
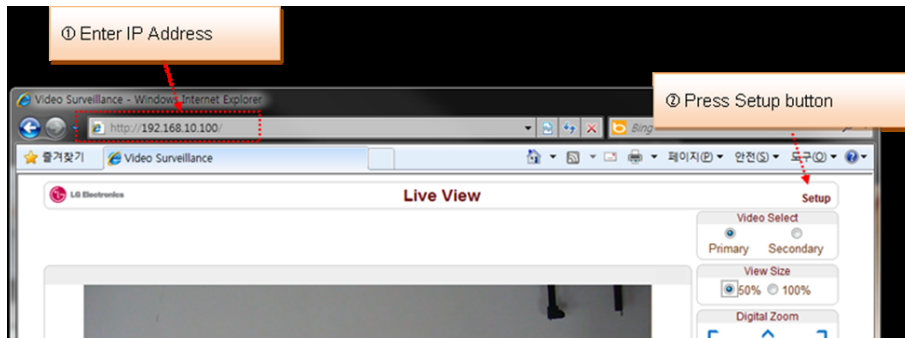
The configurations are grouped into 10 categories: **System**, **Video**, **Audio**, **Network**, **Serial**, **Event, PTZ, Record, User and Camera.** Any configuration changes are not applied until **Apply** button is pressed. Leaving the page without pressing **Apply** button, any changes in the page will be discarded.

System Configuration

General

System ID

Enter System ID that is used as a camera title
The set System ID is displayed with video image on
Web browser and CMS can use System ID as camera
name.

Language

Select the language to be used for web-based
configuration

Firmware

Firmware version

Display the current firmware version

Board ID

Display the Network board ID of the camera
recognized by system

Upgrade

Upgrade firmware
Press **Browse** button to select a firmware file from PC.
Press **Firmware Upgrade** button to start to upgrade.
Messages for showing status (downloading /
upgrading) will be displayed.
The camera will reboot automatically after completing
upgrade. **Do not turn the camera off during
upgrading**
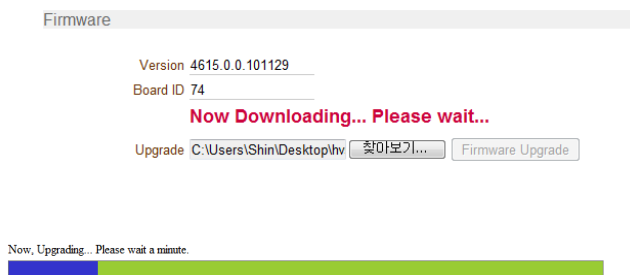
Time

Start Time

The latest the camera's booting date and time

Current Time

Current date & time
Enter a new date and time and press **Set Current
Time** button to update date & time

Time Format

Change the time format. Selectable time formats are
as below

- YYYY/MM/DD hh:mm:ss (Ex. 2010- 4-11 18:18:42)
- DD/MM/YYYY hh:mm:ss (Ex.11- 4-2010 18:18:42)
- MM/DD/YYYY hh:mm:ss (Ex. 4-11-2010 18:18:42)

Time Zone

Select time zone of where the camera is installed.
Depending on the time zone, Daylight Saving Time
will work automatically

> A **time zone** is a region of the earth that has uniform standard time, usually referred to as the **local time**. By convention, time zones compute their local time as an offset from UTC (Coordinated Universal Time). In casual use, GMT (Greenwich Mean Time) can be considered equivalent to UTC. Local time is UTC plus the current time zone offset for the considered location

.

Automatically synchronize with NTP server

Synchronize the camera time with an NTP server using
NTP (network time protocol).
Name of the NTP server should be registered on NTP
server Name.

> The **Network Time Protocol** (**NTP**) is a protocol for synchronizing the clocks of computer systems over packet-switched, variable-latency data networks. It is designed particularly to resist the effects of variable latency by using a jitter buffer.

Reboot

Reboot the camera.
Reboot the LW9424 Camera

Factory Reset

All settings including user accounts and logs are
cleared.
"Factory Reset except network settings" is offered.

Video Configuration
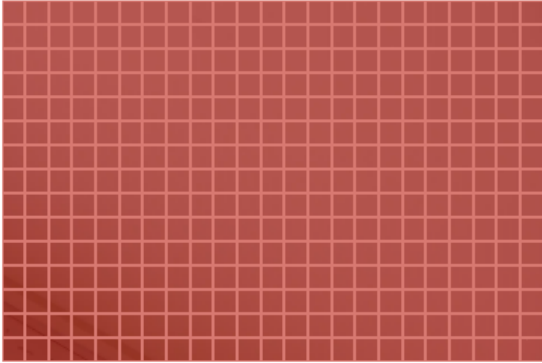
Encode
Enable Preview
Select **ON** to enable to display video on the monitor that is connected to the composite video port.
Select the **Output format** accordingly in the end of the Video page.
Note that when **Enable Preview is ON**, dual streaming is not available.
When the video is transmitted directly to the monitor through BNC cable, the video does not go thorough network and encoding. Therefore, there is less delay and no an effect from network limitation.

Resolution
Select video encoding resolution.
5 steps of the resolution are available.
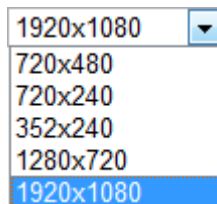
Scaling option is used when encoding resolution is different from input resolution. Without **Scaling** option, input video will be cut according to encoding resolution. On the other hand, if **Scaling** is selected, input video will be adjusted according to encoding resolution.

Frame rate
Determine the maximum number of frames per second for the video stream.
1 ~ 30 frame rate can be selected. The actual frame rate of video can be less than the maximum frame rate set due to the network bandwidth limitation

Preference
Select encoding mode to control video quality or bitrate: Quality or Bit rate.
If 'Bitrate' selected, the video encoding will be effected by the 'Bitrate' value entered. Therefore, "Bitrate" mode corresponds to CBR (Constant Bit rate) encoding.
If 'Quality' selected, the video encoding will be effected by the quality of image selected. Therefore, "Quality" mode corresponds to VBR (Variable Bit Rate) encoding.

Quality (in VBR mode)

Select Video quality. 5 levels of quality are available. Quality mode (VBR encoding) tries to encode every frame in a constant quality. Therefore, resulting bitrate may varies a lot depending on the complexity or activity changes in the input video. It is preferred when constant video quality is required and network bandwidth is enough for delivering the stream of highly varying bitrate.

Bit rate (in CBR mode)
Determine bitrate value between 256Kbps ~ 10Mbps. Bitrate mode (CBR encoding) allows you to set a fixed target bitrate that consumes a predictable amount of bandwidth.   Usually this mode is used with high quality video   or video with frequent image changes 2~3 Mbps is highly recommended for high quality video transmission.

GOP
GOP sets the number of Partial frame(P-Frame) between I-Frames.
Interval of I-Frames can be setup from 1 to 30.

H.264 Profile
Select H.264 Profile: **High Profile** or **Baseline Profile**
The standard defines various sets of capabilities, which are referred to as profiles, targeting specific classes of applications.

High Profile (HiP)
The primary profile for broadcast and disc storage applications, particularly for high-definition television applications (for example, this is the profile adopted by the Blu-ray Disc storage format and the DVB HDTV broadcast service).

Baseline Profile (BP)
Primarily for low-cost applications that require additional data loss robustness, this profile is used in some videoconferencing and mobile applications. This profile includes all features that are supported in the Constrained Baseline Profile, plus three additional features that can be used for loss robustness (or for other purposes such as low-delay multi-point video stream compositing).

Dual Encode
Use Dual Encode
Select **Off** button on the **Enable Preview** to enable to use Dual Encode

Select **ON** to enable to use Dual Encoding
The secondary video can be viewed on **Live View**
window by selecting **Secondary** on **Video selection**

Dual Compression Algorithm
Select H.264 or MJPEG for the secondary streaming.
Maximum resolution is 720x480 and 3 steps of
resolution are available. If **MJPEG** is selected, only
"**Quality"** mode is supported

Motion Detection
Motion Detection on PTZ
Allow disabling of motion detection when PTZ
operation is performed. When it is set to Disable,
motion detection is disable while the scene is changed
due to PTZ control.

Motion Detection Area Editing
Configure regions for motion detection. Regions of
arbitrary shape can be configured by the following
steps.
① Select **Enable** on **Edit** tab
② Select editing Mode. **Set** is for including cells to
motion detection region and **Erase** is for excluding.
③ Select cells using the right button of the mouse.
Multiple cells can be selected conveniently by press
and dragging.
④ Press **Apply Edited Area** to save the editing

Sensitivity
Sensitivity is the condition to trigger an event of
motion detection.
The value determines the sensitivity of the motion
detection within a block: the larger, the more sensitive.
It is selectable from 0 to 100.

Information Display
System ID and/or server time can be display over the
video window in Internet Explorer. Each item can be
turn on or off separately, and position also can be
configure. This information is displayed **after the
video is decompressed.** At the top or bottom of
your message can be displayed.

Output Format
Output Format menu appears only when **Enable
Preview** is on.
Select the output format for the monitor preview
according to the video output and monitor
specification.

Audio Configuration

Mode
Select audio operation mode

Mode	Action
Off	No operation
Tx-Only	Transmit only
Rx-Only	Receive only
Tx & Rx	Transmit and Receive

Input Gain
Set audio input gain from 0 to 31.

Network Configuration

Local
IP mode
Select the IP mode: Fixed IP or DHCP (Dynamic Host Configuration Protocol)
Depending on the selected mode, further configuration items come as follows

IP Mode	Selection	Description
Fixed IP	Local IP	Fixed IP address
	Local Gateway	Gateway IP address
	Local Subnet	Subnet mask
DHCP	N/A	

☞ Please ask IP address information from ISP provider or network manager.

DNS
Obtain DNS server address automatically
Get DNS server address automatically when IP mode is DHCP.
Use the following DNS server addresses
Enter the DNS server IP address.
Primary DNS server
Secondary DNS server

Domain Name System (**DNS**) is a database system that translates a computer's fully qualified domain name into an IP address. Networked computers use IP addresses to locate and connect to each other, but IP addresses can be difficult for people to remember. For example, on the web, it's much easier to remember the domain name www.amazon.com than it is to remember its corresponding IP address (207.171.166.48). Each organization that maintains a computer network will have at least one server handling DNS queries. That server, called a name server, will hold a list of all the IP addresses within its network, plus a cache of IP addresses for recently accessed computers outside the network.

Port
Base Port
Enter the Base Port number.
Network base port is use for communication with remote clients. In order for camera and remote systems (CMS, NVR software) to be connected, the port number must be identically configured in camera side and client side.

HTTP Port
Enter HTTP port used for web-based connection
RTSP Port
Enter RTSP port used for RTSP-based connection. The default RTSP port is 554
RTSP (Real Time Streaming Protocol) is a standard for media streaming between server and client.

EX) VLC media player
Primary Video & Audio: rtsp://IP address/Master-0
Secondary Video & Audio : rtsp://IP address/Slave-0

Discovery
UPNP
By setting **UPNP** to ON, it allows the discovery by the client according to UPNP (Universal Plug and Play) protocol.

WS Discovery
If WS Discovery is turned on, cameras under a LAN can be searched on a client with WS Discovery protocol. The WS Discovery is used as the default search protocol on ONVIF.

RTP Session
RTP (Real-Time Transport Protocol) is an Internet protocol used for transmitting single real-time multimedia data such as audio and video to a select group of connected clients. Normally RTSP uses RTP to format packets of multimedia content. **RTP Session** menu is used when the RTP only streaming without RTSP connection. RTP stream will be transmitted to the destination set. The SDP (Session Description Protocol) file can be found in the server, and a client can retrieve it using http connection.

Related settings are as following.
Destination IP : Set the IP Address for your destination system which will receive RTP stream
Destination Port : Set the Port for your destination system which will receive RTP stream
User Name: Enter the User name that will be used as session name in the SDP file.
File Name: Fixed as ch0.sdp. Then, it can be accessed through http://ServerAddress/ch0.sdp

RTP Session
Use RTP Session ⦿ Off ○ On
Destination IP 0.0.0.0
Destination Port 0
User Name
File Name ch0.sdp

SNMP
This camera can be used as an SNMP agent. It is compatible to both SNMPv1 and SNMPv2. Settings for using SNMP (Simple Network Management Protocol) are as following
SNMP Listen Port: The port is for connecting external devices when system operates as a SNMP client.

SNMP is not used by setting 0 value.
SNMP Trap Destination IP: Set the SNMP Trap Destination IP.
SNMP Trap Destination Port: Set the SNMP Trap Destination Port. SNMP is not used by setting 0 value.

SNMP	
SNMP Listen port	161
SNMP Trap Destination IP	192.168.10.100
SNMP Trap Destination Port	162

Simple Network Management Protocol (SNMP) is used by network management systems to communicate with network elements. SNMP lets TCP/IP-based network management clients use a TCP/IP-based internetwork to exchange information about the configuration and status of nodes. SNMP can also generate trap messages used to report significant TCP/IP events asynchronously to interested clients. For example, a router could send a message if one of its redundant power supplies fails or a printer could send an SNMP trap when it is out of paper

Multicast
Multicast IP
The Multicast menu is used for configuring the multicast IP address to which media stream is delivered when a client such as a CMS or NVR software is connected in multicast mode. The multicast IP address selection range is between 224.0.0.0 and 239.255.255.255. The selection can be used only when media protocol is set to Multicast.

DDNS
Select the DDNS (Dynamic DNS) server to use.

DDNS	
DDNS	○ Off ◉ On
DDNS Server	www.lgddns.com
Domain Name	

Bitrate control
When there are more than one client connected to the camera, due to bandwidth difference among the clients some of them do not have enough bandwidth to receive encoded stream completely. In this case, it is possible to select the way to stream video to clients as following.
Frame Drop Mode: Encoding is performed strictly according to video settings. When a client is connected through a network with less bandwidth, it may not receive all the frames. That is, frames are dropped on sending module if the network is bottlenecked.
Suppression Mode: Encoding bitrate and frame rate

are adjusted not to drop any frames when the network bandwidths to some clients are limited. In this case, all clients can be affected by the averaged bitrate and frame rate.

Address Info
Followed network information is displayed (Read only)
IP Address: The Camera own IP address. This information is useful when the camera's IP mode is set to DHCP.
Domain Name: In case the camera is registered at DDNS server, the registered domain name is displayed.
MAC Address: Display the MAC address of the camera. In case the camera is registered at DDNS server, the MAC address is used in DDNS registration.

Serial Configuration

Serial Port Configuration
Serial Port Information
This camera supports one RS-485 serial port
The camera's serial port is configured with the DIP
switch in the camera. **Serial Port Information** section
just displays the information. DIP switch setting is
effective only after the camera is rebooted. By default,
LG Multix protocol is used with 9600bps baudrate.

Sensor Type
There is two sensor input ports on LW9424. The
sensor port can be configured to the following.

Function	Operation
OFF	Not used
NO (Normally Open)	The port is normally open and activated when closed.
NC (Normally Closed)	The port is normally closed and activated when opened.

The function of the sensor port is set based on the
type of the sensor connected.

Sensor Schedule
Choose **Sensor OFF** or **Sensor ON** and click the
below schedule cells to make Sensor Schedule
according to day of week and hour.

Click desired "Cell" to set schedule.

Click desired "Time Line or Date Line" to set schedule.

To set all cells in the schedule, click below "Empty
Cell".

Event Configuration

This camera has two sensor ports and two alarm ports.

In the Event setup, actions which will be followed Events can be configured. In Local setup, the actions which will be followed Events at a local site can be configured. In Remote setup, the actions which will be followed Events at a Remote site can be configured.

The following table lists the possible actions for events.

Action	Description
Alarm out	Triggers alarm (relay) port.
E-mail	Sends E-mail to the specified address. AVI file can be attached
FTP	Upload AVI file to a specified FTP server
Preset	Move to the Preset position

Local Event Configuration
Sensor1 / Sensor2 / On Motion
Configure the actions when the sensor is activated. Multiple actions can be set for a single event.

On Motion
Configure the actions when motion is detected. Multiple actions can be set for a single event.

Alarm activation duration
Set the duration of alarm activation in case of an event.

E-mail Notification
Specify the information to send event information, when E-mail is selected as an event action. SSL does not supported.

Server Address: Enter an address of mail(SMTP) server. SMTP can be IP address or Domain name(ex : mail.lge.com)
Port: Specify a port for SMTP operation (**Port 25 is the default port in SMTP operation**. If a different port is configured in the SMTP server, this port needs to be changed accordingly).
Sender Address: Enter an account registered in the SMTP server.
Authentication on SMTP server: Specify if the E-mail server requires authentication for E-mail sending.
ID & password: When the server requires authentication, ID and Password of an E-mail account need to be entered.
SSL(Secure Sockets Layer) : Selecting secured connections with SSL.
Destination address: Enter Destination address. More than one address can be entered by delimiting comma (,) or semi-colon (;). Destination address can take up to 60 characters.
Video Clip Attaching: Video clip stored at the moment of event can be attached as an AVI or JPEG file format. When dual encoding is enabled, **Primary video**, **Secondary video**(H.264 only) or **JPEG Capture** can be selected. The duration of video clip can be configured with **Pre-Event Time** and **Post-Event Time** in **Event Record** section.
Number of Frame: The number of JPEG frames is configured. This setting is applicable only when **JPEG Capture** is selected. The number of frames actually captured may be less than this setting depending on video setting or network condition.

E-mail Test : E-mail sending can be tested with this button. Event videos in avi or event images in JPEG can be attached at E-mails. In Dual Encode configuration, both of Primary Video and Secondary Video can be configured. For Secondary Video, only H.264 can be used. When JPEG Capture is selected, plural images can be continuously captured and attached at E-mails. In Number of Frame, the number of the maximum frame can be configured. The actual number of the frame may be less than the configured number by network conditions and file sizes. Please note that configured settings should be saved first by pressing **Apply** button before using E-mail Test function.

One of the following messages will come as a result of the test.

Message	Description
E-mail sent successfully	Test E-mail has been sent successfully. Reception in the client can be checked.
Failed to connect SMTP server	Connection to the SMTP server failed. It is necessary to check if the server is reachable and server address and port are correct.
Authentication failed	The server is reachable but authentication failed. ID and/or password need to be checked.
SMTP server rejected the mail	The server is reachable, but mail sending failed due to a reason other than authentication. This error happens often when the server authenticates according to its own rule. For example, IP addresses of a specific range or addressed of a specific suffix are allowed.

An attached file can not exceed 2MB. If it is bigger than 2MB, it will be divided by 2MB and

transferred.

FTP Upload

Specify the information to upload event information, when FTP is selected as an event action

Server Address: Enter an address of an FTP server to receive video files FTP server can be IP address or Domain name(ex : ftp.lge.com)

Port: Specify a port for FTP operation (Port 21 is the default port in FTP operation. If a different port is configured in the FTP server, this port needs to be changed accordingly).

ID & password: Enter ID and Password for accessing the FTP server.

FTP Base Directory: Specify the name of the directory to be created in the FTP server.

Upload video: Primary Video and **Secondary Video**, **JPEG Capture** can be selected for uploading. The duration of video clip can be configured with **Pre-Event Time** and **Post-Event Time** in **Event Record** section.

Number of Frame: Enter frame number of JPEG Capture (from 1 to 10). The number of frames actually uploaded may be less than this setting depending on video setting or network condition.

Continuous Upload: Continuous upload '**On'** allows video clips to be transmitted regularly regardless of occurrence of events. When this mode is turned on, FTP upload by events is suppressed.

Upload Duration: Specify recording duration of a video clip to be transmitted. (Max 300 sec).

Upload Interval: Specify transmission interval. (Max 3600 sec).

Upload Duration is not included in Upload interval. For example, if Upload Interval is 60 seconds and Upload Duration is 20 seconds, a video clip for 20 seconds is transmitted every 80 seconds.

If Continuous Upload is set to On, FTP Upload function will not work with Event function.

Upload Duration and Upload Interval can be configured by seconds. Upload Duration means the time to be recorded for 1 AVI file. Upload Interval means the time interval between AVI files.

FTP Test: FTP upload function can be tested with this button. Please note that configured settings should be saved first by pressing **Apply** button before using FTP Test function.

One of the following messages will come as a result of the test.

Message	Description
FTP connection tested successfully	The connection to the FTP server is successful.
Failed to connect FTP server	The connection to the FTP server failed. It is necessary to check if the server is reachable and server address and port are correct.
Authentication failed	The server is reachable but authentication failed. ID and/or password need to be checked..
Failed to upload file	File upload failed. The user of the ID is not allowed for writing into the directory or FTP server can be full.
Failed to erase file	Failed to delete the test file. The user of the ID doesn't have the privilege for file deletion.

An uploading file can not exceed 2MB. If it is bigger than 2MB, it will be divided by 2MB and uploaded.
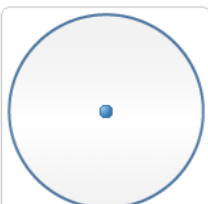
PTZ Configuration

PTZ

Circular plate provides panning and tilting functions combined with speed control. Clicking a mouse on a position of the circular plate determines the speed of the control as well as the direction.

Mask

Mask is a function to hide specific regions in the scene for privacy's reason etc. Mask regions in the target scene are maintained regardless of a PTZ action. Max 8 mask regions can be defined.
Select one of the entries in **Select Mask Number** list.
New: A new mask is created on the center of the scene. Existing mask with the same number will be erased.
Search: Control PTZ to view the mask region on the center of the video area. Nothing happens if corresponding mask doesn't exist.
Erase: The mask with selected number is erased.
Erase All: All masks are erased.
4 arrow buttons: Adjust the size of the mask.
Notice: Mask area adjusts its position and size according to PTZ operations. Since there can be a little latency between PTZ control and adjustment of mask area, it is useful to configure the mask area a little large in case the area should be protected strictly.

Note : Size and position of mask areas can be automatically adjusted by PTZ operation. There may be time delay. A mask can not be configured at positions higher than 70 degrees.

Preset

Max 128 preset positions can be defined.
Select Preset Number: Select an entry in the list to be assigned to current camera position.
Focus Mode: Select the focus mode after preset Goto is executed.
. **Do not change**: current focus mode is not changed.
. **Focus Auto**: auto-focusing is executed after the preset moved.
. **Focus Manual**: move to the focus position saved when preset set.
Event Holding Time: Set the time to stay at the preset position when the preset moved by event.
If it is set to 0, the camera doesn't return to original position after moving to the preset position by event.
Edit Label: Assign a label to the preset position. Only the first 15 preset entries (Preset-1 ~ Preset-15) can have labels.

Pattern

Pattern is a function that the camera memorizes the path (mostly curve path) by joystick of controller for assigned time and revives the path exactly as it memorized. 4 patterns can be defined and max 760 communication commands can be stored in a pattern.
Select one of the entries in **Select Pattern Number** list
Press **Set Pattern Start** button. Form the pattern by controlling PTZ. Every path will be saved until pressing **Set Pattern Stop** button
Press **Set Pattern Stop** button to save the pattern
Press **Run Pattern** button to run the selected pattern
Notice: When the camera memorizes patterns, not the positions of pan/tilt/zoom but the commands are stored in the memory. Hence there might be small differences between the original path visited on forming the pattern and the revived path on running the pattern.

Swing

By using swing function, you can make camera to move between 2 preset positions repeatedly. When swing function runs, camera moves from the preset assigned as the 1st point to the preset assigned as the 2nd point in CW(Clockwise) direction. Then camera moves from the preset assigned as the 2nd point to the preset assigned as the 1st point in CCW(Counterclockwise) direction.
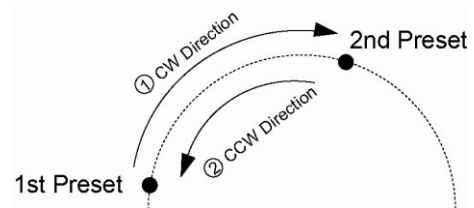
In case the preset assigned as the 1st point is same as the preset assigned as the 2nd point, camera turns on its axis by 360° in CW(Clockwise) direction and then it turns on its axis by 360° in CCW(Counterclockwise) direction.

.
Check **Enable** box
Select the Preset for **1st Position** and **2nd Position**
Enter the **Speed** (0~255)
Press **Save Swing** button to save the Swing

Group

This function is that the camera memorizes the combination of Presets, Pattern and/or Swings sequentially and runs Presets, Pattern and/or Swings repetitively on activation. Max 8 groups   are programmable. Each group can have max 20 actions which are the combinations of Preset, Pattern and Swing. **Option** field has different meanings for Preset and Pattern/Swing. For Preset, it configures the preset speed. For Pattern/Swing, it configures the number of repetition. Dwell time between actions can be set up as well.
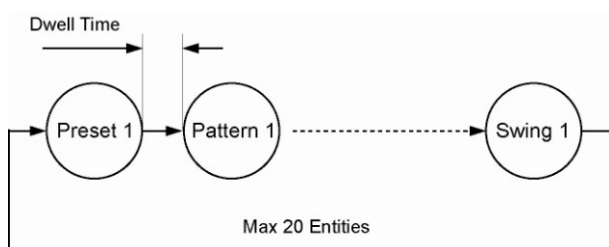
Select one of the entries of Group
Press **Modify Group** button. The following window will appear.
Set **Action(Preset or Swing or Pattern)**, **Dwell Time** and **Option** and click **Enable** squares
Press **Apply** button and the Group can be used on the **Live View Page**
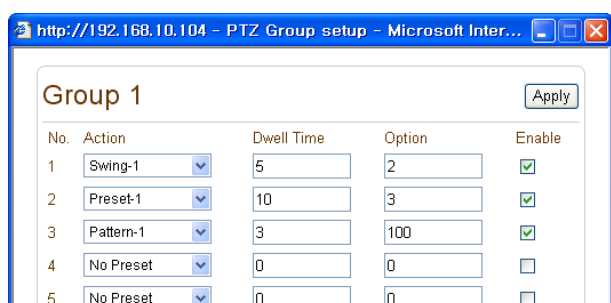
☞ If a group includes an entry for which pattern or swing is not defined, nothing happens on the entry. However, Dwell time is applied for the entry even in such case.

Ex) Group-1
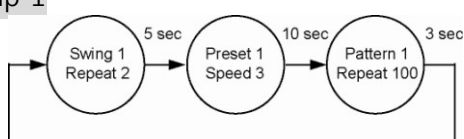
Using Pattern/Swing/Group in Live view page

Pattern, Swing or Group which is configured on PTZ page can be activated in Live view page.
Select an entry in the list. 8 entries are valid for Swing and Group, while 4 entries are valid for Pattern.
Press the button for the function to activate.

Record Configuration

Setup screen showing Record configuration page with Disk Information, General, Event Type, and Schedule Table sections.

DISK

SD memory can be used, and at least 1GB size is recommended. Either EXT3 or FAT32 file system can be used. A disk with either EXT3 or FAT32 file system can be read in Linux PC. However, only disk with FAT32 file system can be read in Windows PC
Less than 4Mbps of video bit rate is recommend when you record and monitor video simultaneously for frame dropping may happen due to performance limitation.
Please don't remove SD card on which recording is going. Files can be damaged..

Disk information

During booting, the system reads status of disk and initializes it. Once the initialization of a disk is finished, the status of disk is shown on **Record** page of web-based setup.

Refer to the chart for checking the status of disk.

Disk status	Description
Disk error detected	Error
No disk	Disk is not connected to the system.
Searching Disk information	Checking the status of disk. Refresh the page and wait until the status is changed.
Mounting and Recovering Disk...	Performing recovery process when disk damage is found. It takes from seconds to minutes for recovering.
Disk format needed	Disk is attached, but the type of the file system is unknown or damaged.
Unknown disk type detected	
USB Disk available	Available to be used for recording
Disk removed or in abnormal state	Disk is detached during operation or there is damage on the file system. If it happens while disk is connected, it is recommended to format the disk.

General

Use record

- **Off**: Recording function will not be used when **"Off"** is selected
- **Use Disk**: Recording will be enabled and data will be written to a disk
- **Use FTP**: Recording will be enabled and data will be uploaded to an FTP server.
☞ When FTP is activated in the record page by selecting **Use FTP** or **Use Disk** with enabling **Automatically Backup to FTP**, FTP upload by event is automatically disabled.
Select Video: Select video stream to record
Overwrite: When the disk becomes full, the oldest data are deleted automatically. It is valid only when **Use Record** is set to **Use Disk**.
Max File Size/Max File Length: Max File Size option is for limiting the size of AVI file. If small file size is set, files of small size will be generated but numbers of the files will be increased. **Max File Length** option is for limiting the time length of AVI file. If the size of a file becomes **Max File Size** or the duration of the recording reaches **Max File Length**, a new file is created.
Automatically Backup to FTP: Data recorded in the disk can be uploaded to an FTP server automatically for backup. FTP server is configured on Event page. It is valid only when **Use Record** is set to **Use Disk**.
Erase After Backup: Data are deleted in the disk automatically after being uploaded to the FTP server. It is valid only when **Automatically Backup to FTP** is used.
Start Time of Backup Data: Specify the time of the data in the disk from which Backup to FTP Disk is performed. This time is changed automatically as the backup to FTP server goes. So it is useful to check current backup status. It is valid only when **Automatically Backup to FTP** is used.

Event Type

Three recording modes are supported: **Continuous**, **Event**, **Disconnect**. In case of Event recording, event types can be selected among several events. Selected event type is used for configuring the schedule table. Up to 4 event types can be configured and each event type can be a combination of sensor and motion event.
Pre-event Time: Specify the duration of recording

before an event happens.
Post-event Time: Specify the duration after the event is cleared.

Schedule Table

Actual recording mode is determined by **Schedule Table**, where recording mode configured by day (of a week) and hour.
 Each of recording mode configures the recording operation as follows:
Record off : No recording
Continuous : Records continuously
Disconnect: Recording is started when the system loses the connection to its last client. When there are multiple clients and one of the client is disconnected, this doesn't happen.
Event Type: Records when an event configured in **Event Type** setting happens.

Checking status of recording

Recording status can be checked on the main view page.
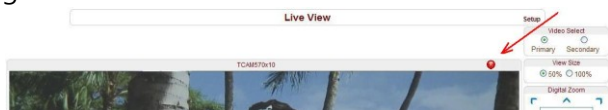
Search and Playback

Recorded video and audio data can be saved as AVI format in the disk. In general, one AVI file is created for an event in case of event-based recording. However, it is possible that recorded data by serious of events happening continuously can be merged to a single AVI file depending on pre/post event time setting. The size of file is limited 10~200MB and 10 Minutes. Continuous recording makes continuous AVI files, and each files are limited 10~200MB and 10 Minutes.

Search
Actual recording A file currently being recorded doesn't appear until it is completed. In case of Continuous recording, a file will be shown after 10 minutes from the start of recording, if a file size is set to generate every 10 minutes.
Press **Search Page** button on the **Record** setup page. Dates with recording data will be shown as follows.

First, choose the date for search and the list of AVI files will be shown.
The file name shows the date and time: "**Date Begin Time End Time.avi**".

Press **Root** to move back to the page with date list.

Playback
 Selecting an AVI file will show a dialog for opening or saving the file.
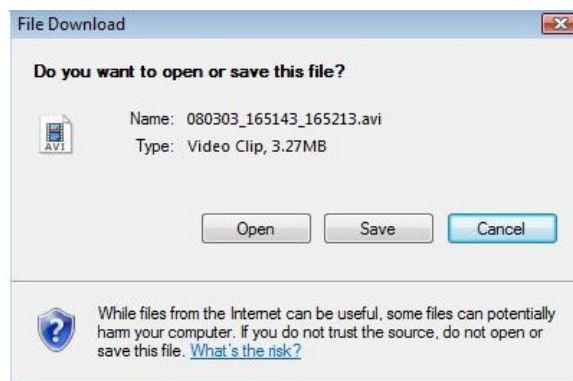
 Pressing **Save** button, the file will be stored in the PC. The AVI file can be played with Windows Media Player.
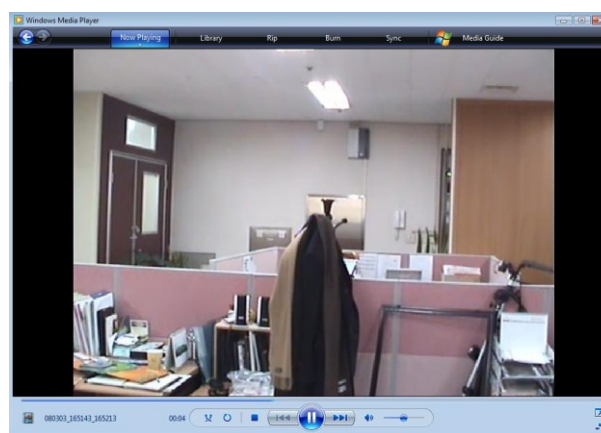
If you press **Open** in the dialog, the file will be downloaded and played automatically with Media Player.
 Another connection through web is disabled during

downloading and it is also not allowed to download two AVI files at the same time.

Deletion of data
 If you want to delete recorded files, select the files by checking the item in front of each file and press **Delete** button.

It is possible to delete multiple files at once.

User Configuration
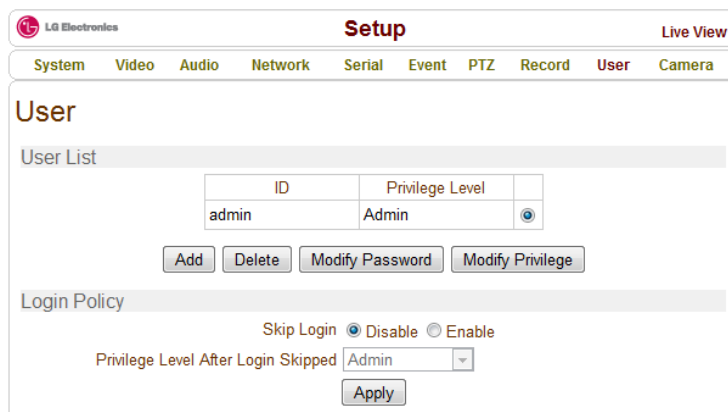
User List

User can be registered and privilege level of a user can be specified. User configuration is allowed only to admin user. Max 16 users can be registered and each user can have one of four privileges.

Privilege	Allowed Operations	Remarks
Admin	All operations	User ID = admin
Manager	All operations except for user configuration	
User	Live viewing and PTZ control	
Guest	Live viewing only	

Add User

Press **Add** button. The following window will appear.
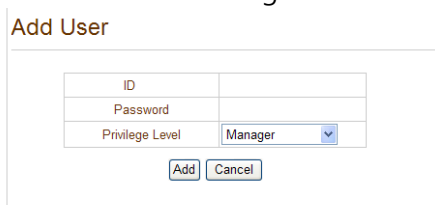
Enter User ID and password (Up to 15 characters) and select **Privilege Level**

Delete User

Select the User to be deleted and press **Delete** button.

Change Password

Press **Modify password** button. The following window will appear.
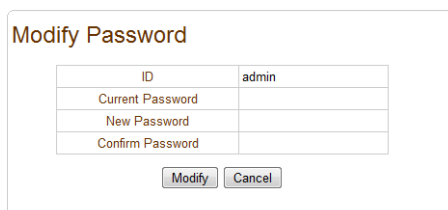
Enter the current password and then set a new password.

Modify Privilege Level

Press **Modify Privilege** button to change User level. It is not allowed to change the privilege level of admin user.
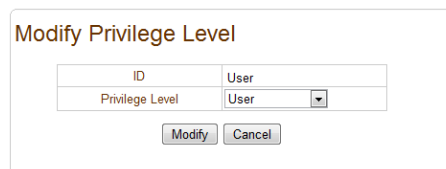
Login Policy

Authentication Type

HTTP authentication based on RFC 2617(HTTP Authentication: Basic and Digest Access Authentication) is supported.

Skip Login provides for convenient access to the server when authentication is not required. When Skip Login is set to **Enable**, login step is skipped. The privilege level after login in this way is determined by the setting of **Privilege Level After Login Skipped**.

☞ User settings are applied correctly only after all Internet Explorers running in the PC are terminated. This is because Internet Explorer may reuse previous login information.

Camera Configuration

Day&Night

Day&Night Mode : To provide clear images in low lighting condition, the IR cut filter moves automatically. This technology can be operated by Day & Night lens or Filter changeable mechanism on board.

Day(color): Deliver color image regardless of light

Night(Black & White): Deliver B/W image regardless of light

Auto : Automatically switches between Day mode and Night mode by detecting light condition to have best images.

Night to Day transition threshold : Configures a parameter to make IR cut filter start working. This parameter can be configured 0~28 and its factory default is 6.

White Balance

Please refer to the followings for white balance modes supported by the camera.

Auto : Calculates white balance using color information of whole screen.

Manual : Manually changes Red and Blue offset(gain). Range should be 0~255

Indoor : 3200K Base Mode

Outdoor : 5800K Base Mode

Outdoor Auto : This is an auto white balance mode specifically for outdoors. It allows you to capture images with natural white balance in the morning and evening.

Auto Explosure

AE Mode

Full Auto : Automatically controls Iris, Gain and Shutter speed(59.94/NTSC; 1/60S, 50/PAL; 1/50S). In this mode, DSS (Digital Shutter Speed) and Back Light Compensation can be enabled.

Manual : A user controls Shutter (21 Step), Iris (14 Step) and Gain (16 Level).

Shutter Priority : A user controls Shutter (21 Step) speed. Iris and Gain are automatically changed.

Iris Priority : A user controls Iris (14 Step, F1.6~Close). Shutter speed and Gain are automatically changed.

Bright : A user controls Bright manually. A camera algorithm controls Gain and Iris automatically.

DSS(Digital Shutter Speed): When DSS is enabled, the rate of input image is controlled automatically to generate images having reasonable illumination. That is, the rate of input image can be reduced in low illumination environment. **DSS Limit** is used to configure the minimum rate of input image. When it is set to 1/4 for example, automatic increase of digital shutter speed is limited to 1/4 second. In other words, input of 4 images per second is guaranteed.

BLC (Back Light Compensation): It is an ability of a camera to balance the lighting in a scene with an extremely bright background such as sunlight. It helps to obtain the finest light contrast and get clear image. This function can be set to On/Off.

ETC

Digital Zoom

LW9424 provides Optical x20 and Digital x12, totally x240. (f=4.7 ~ 94mm)

Aperture Level

Aperture Level is used to enhance edge of object. Its option has 16 levels. The higher value is selected, the better edge can be obtained. This option is effective in adding Alphanumeric with Burn-in-OSD.

WDR (Wide Dynamic Range): WDR combines two fields which are high shutter speed exposure in bright areas and low shutter exposure in dark areas into one composite image. It helps to get clear images from dark parts of the image without saturation from the bright part.

Image Flip / Mirror

Vertically or horizontally flips images. After installing LW9424, properly adjust this option to have proper images. The factory default is Flip Off / Mirror Off.

Noise Reduction

reduces noise in images. To have enhanced images from noisy images, use this option. The higher value is selected, the better image can be obtained. 1~5 and OFF are available. The Factory Default is Off.

Focus mode

has 2 focus modes, "Focus Auto" or "Focus Manual". Focus Near/Far buttons on Live View will work when "Focus Manual" is selected.

Freeze on Position Move

Holds the image of the start preset and releases the images the end preset. This function is useful to save

disk space of recorders.

Zoom Proportional Jog
When Zoom Proportional Jog is ON, pan/tilt speed is adjusted automatically according to current zoom level.

Auto Flip
ON: When 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**.**
Off: Tilting more than 90° is not allowed.

Max Jog Speed
Set maximum speed of pan and tilt operation (8 steps).

Max Zoom Speed
Set maximum speed of zoom operation (8 steps).

Display PTZ Action
PTZ control action such as Preset Goto, Pattern, Swing or Group can be displayed on the top of live display. As the information is displayed with burn-in OSD, it is inserted into encoded stream and all clients see the information.
Auto: The information is displayed only for several seconds after a specific operation.
ON: The information is displayed always.
OFF: The information is never displayed.

Description of action is displayed while configuring the Pattern.

Power Up Action
Specify if the camera will continue previous action such as pattern, swing or group after it is rebooted by power.
ON: If pattern, swing or group was running before rebooting, the action is resumed. If it was in stopped state, it moves to the last position.
Off: Moves to the initial position after rebooting.

Scheduling Configurations
In order to allow different configurations of the camera according to time of a day, the feature of defining camera configurations and scheduling them is provided..

Configuration Set
Select
4 different configuration sets can be configured by opening the page with **Config Set#N** buttons. For example, Config Set#1 can be configured for day mode, and Config Set#2 can be configured for night mode.

Scheduling of the configurations
Cells in the weekly/hourly schedule table can be set to appropriate configurations by clicking a specific cell or a cell for hour or a cell for a day of a week.

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Glibc, libelf, DirectFB, libusb

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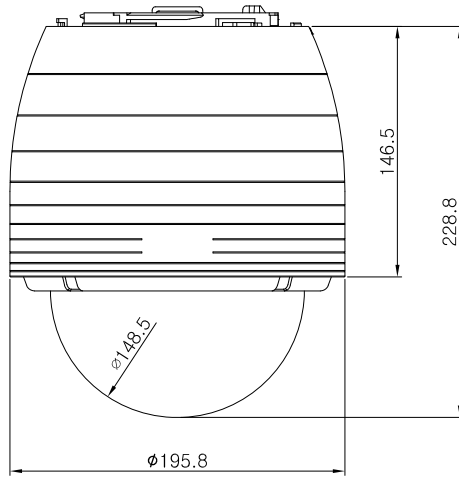
Appendix

Specifications

Camera Part (20X zoom, 2M pixel model)	
Image Sensor	1/3", Type CMOS Sensor
Total Pixels	1920(H) × 1080(V), 2M
Lens	F1.6(Wide) ~ F3.5(Tele), f=4.7 ~ 94.0mm
	×20 Optical Zoom, x12 Digital Zoom
Angle of View	H : 55.4°(Wide) ~ 2.9°(Tele)
Minimum Object Distance	10mm (Wide), 800mm(Tele)
Zoom Speed	2.3 sec (Focus Tracking ON, Optical only) 4.3 sec (Optical WIDE – Digital TELE, 30p/60p)
AE Mode	Full auto / Shutter Priority / Iris Priority / Bright / Manual
Iris Control	Auto / Manual (F1.6 ~ F14)
Gain Control	Auto / Manual (-3 ~ 28dB)
Shutter Speed Control	Auto / Manual (1/1 ~ 1/10,000sec)
White Balance	Auto / Indoor / Outdoor / Outdoor Auto / Manual (Red, Blue Gain Adjustable)
Day & Night (ICR)	Auto / Manual
Min. Illumination	1.7 lux/1/30 sec., 50% (Typical value) 0.5 lux/1/30 sec., 50% (High Sensitivity mode ON) 0.26 lux/1/4 sec (NTSC), 1/3 sec (PAL) (Typical value) 0.0005 lux/1/4 sec (NTSC), 1/3 sec (PAL) ICR-ON Mode
BLC	On / Off
WDR	On / Off
Noise Reduction	On (1~5 Level) / Off
Privacy Mask	8 Masks (Spherical Coordinate)

Video	Standards	Main Stream : H.264, Secondary Stream : H.264 / MJPEG
	Output	1 × BNC (Composite, Optional)
	Resolution	1920×1080/30fps ~ 352×240/30fps
	Frame Rate	1 ~ 30 fps
	Bit Rate	256 Kbps ~ 10 Mbps
Audio	Algorithm	G.711
	Input	1 × Line - In
	Output	1 × Line - Out
	Sample Rate	G.711 : 8 KHz
	Bit Rate	G.711 : 64 Kbps

Mechanism Part			
Network	Interface		Ethernet 10/100 Base-T (RJ-45)
	Protocol		TCP/IP, UDP, Multicast, DHCP, SMTP HTTP, SNMP, RTP, RTSP
Software	True CMS, Web Viewer		Live Monitoring, Recording, Search & Playback, Backup
Pan/Tilt	Travel Range		Pan : 360°(Endless), Tilt : 90°
	Speed	Preset	360°/sec
		Jog	0.05 ~ 360°/sec (Proportional to Zoom)
		Swing	1.4° ~ 180°/sec
	Preset		128 Presets
	Pattern		4 Patterns (760 command/Pattern)
	Swing		8 Swings
	Group		8 Groups (20 Actions/Group)
Communication	Type		RS-485
	PTZ Protocol		Pelco-D, Pelco-P, LG Multix
Sensor / Alarm	Sensor		2 Inputs, Photo-Coupler Input
	Alarm		2 Relay Outputs, Max Load : DC24V 1A / AC125V 0.5A
	IP Reset Button		Yes
Physical	Mount Accessory		Wall Mount or Ceiling Mount, Sun-shield (Optional)
	Dimension	Dome	∅ 148.5mm / ∅ 5.9″
		Body	195.8×228.8 mm / 7.7×9.0 ″
		Wall	365.4×347.3 mm / 14.4×13.7 ″
	Weight	Body	Approx 2.9 Kg
		Wall	Approx 3.8 Kg
	Material	Dome	Polycarbonate
		Internal	Polycarbonate, ABS
		External	Aluminum
	Rated Power		DC12V, 2000mA (24W) / AC24V, 2080mA (50W)
	Waterproof		IP 66
	Fan		Always ON
	Heater		Operation start from Internal Temperature 10°C
	Operation Temperature		-20°C ~ 50°C / -4°F ~ 122°F

Dimension

- Main Body

- Wall Mount

AB28