



## OWNER'S MANUAL

# High Definition Network Camera

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

### MODEL

LNB5100/LNB3100 series

LND5100/LND3100 series

LNV5100 series

LNU5100R series

LND5100R/LNV5100R series

LND7300/LNV7300 series



MFL67860012

IPsolute

1306 (V1.1)

# Contents

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# Introduction

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The LG Network Camera is designed to use on an Ethernet network and must be assigned an IP address to make it accessible.

This manual contains instructions on how to install and manage the LG Network Camera in your networking environment. Some knowledge of networking environments would be beneficial to the reader.

Note that design and specification of this unit may differ from the manual as quality improvement. Should you require any technical assistance, please contact authorized service center.

## Features Chart

This table shows the differences between the models.

Item	LNB5100	LND5100	LNB3100	LND3100	LN5100
VA	Yes	Yes	No	No	Yes
Audio	Yes	Yes	No	No	Yes
Sensor&Relay	Yes	Yes	No	No	Yes

Item	LNU5100R	LND5100R	LN5100R	LN7300	LND7300
VA	Yes	Yes	Yes	Yes	Yes
Audio	Yes	Yes	Yes	Yes	Yes
Sensor&Relay	Yes	Yes	Yes	Yes	Yes

# Operation and settings

## Before using the system

- Before using the LG IP device make sure the connections are correct and verify whether proper power supply is used.
- Check the connections of the LG IP device for the correct conditions.
- Check that the LG IP device is(are) connected to the network and that power is supplied.
- Once the connections are made you need to install the LG client program to the PC from which you want to access the device. The LG Smart Web Viewer program is automatically installed when you connect the LG IP device.  
The LVi510 and the LG Smart Web Viewer program are the network program of the LG Video Server and the LG IP cameras.
- To view streaming video in Internet Explorer, set your browser to allow ActiveX controls. If you find this message "This website wants to install the following add-on: 'IPCam\_Streamer.cab' from 'LG ELECTRONICS INC'", Click the yellow bar and install LG Smart Web Viewer Program on your computer. Please set your browser zoom level to 100%.
- The Layouts and the Live view pages may differ with different OS (Operating Systems) and Web Browsers.
- Care needs to be taken not to run any other applications when the Client Program is running as it may cause memory shortage.

## Recommended PC Requirements

The LG IP device can be used with most standard operating systems and browsers.

Items	Requirements
Operating System	Windows XP Professional, Windows VISTA, Windows 7
CPU	Intel Core2 Quad Q6700 (2.66 GHz) or above
Web Browser	Microsoft Internet Explorer above the version 7.0 and below the version 9.0.
DirectX	DirectX 9.0c (Windows XP), DirectX 11 (Windows VISTA, Windows 7) or above
Memory	2 GB or above RAM
Graphics Card	256 MB or above Video RAM
Resolution	2 048 x 1 536 (with 32 bit color) or higher

# Accessing the LG IP device

You can access the LG IP device by following the below steps.

## 1. Install LVi510 Program

It recommended to use LVi510 surely.

## 2. Discover the LG IP device using the IP Utility

The IP Utility can automatically discover and display LG IP devices on your network.

The IP Utility shows the MAC address, IP address, Model name and so on.

### Note:

The computer running the IP Utility must be on the same network segment (physical subnet) as the LG IP device.

- 2.1 Run the IP Utility program.
- 2.2 Click the [Search] button or select the [Search] option in the Device search menu.  
After a few seconds the found LG IP devices gets displayed in the IP Utility window.

## 3. Logging in to the LG Smart Web Viewer

- 3.1 Run the IP Utility and find the LG IP devices.
- 3.2 When the LG IP devices appear in the IP Utility window, double-click IP address or right click on the same IP address and select "Connect to Web Page" to start the LG Smart Web Viewer. When accessing the LG Smart Web Viewer, the authentication dialog appears on the screen.
- 3.3 Enter the user name and password. (Note that the

default administrator user name and password are "admin".)

### Note:

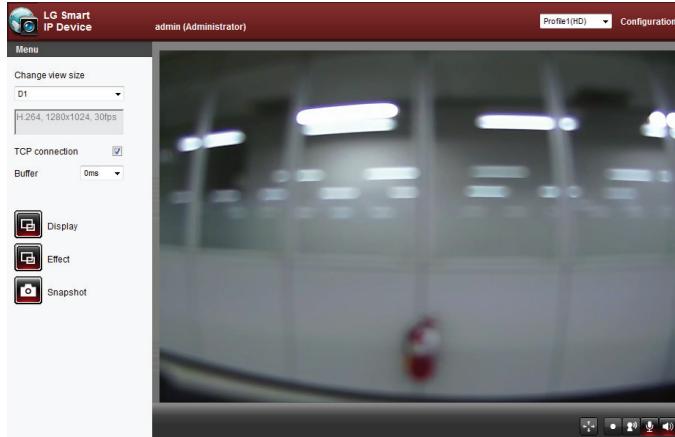
Default password must be changed for security after initial connection.

- 3.4 Click the [OK] button and then the LG Smart Web Viewer is displayed in your browser.

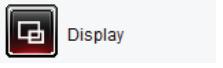
### Notes:

- You can also access the LG Smart Web Viewer as shown below.
  - 3.1 Start your Web browser.
  - 3.2 Enter the IP address of the LG IP device in the address bar of the browser.
  - 3.3 Enter the user name and password set by the administrator.
  - 3.4 Click the [OK] button and then the LG Smart Web Viewer is displayed in your browser.
- The LG Smart Web Viewer needs more time to display it according to the network conditions.
- If the login window is not displayed, check the pop-up blocker. If you set the pop-up blocker, the login window is not displayed. You must allow the pop-ups.
- If you connect the LG Smart Web Viewer for the first time, the Security Warning window is displayed to install the LG Smart Web Viewer program. You must install the LG Smart Web Viewer program for using the LG IP device.
- If your computer or network is protected by a proxy or firewall, the proxy or firewall settings can prevent the LG Smart Web Viewer program. Change the proxy or firewall settings to activate the LG Smart Web Viewer program.

# LG Smart Web Viewer Overview



Item	Description
<p>Change view size</p> <p>D1</p>	<p>Select the video image size from the drop-down list. The initial view size is set to D1.</p> <p><b>Notes:</b></p> <ul style="list-style-type: none"> <li>• Select [FULL SCREEN] to enlarge full screen of monitor. To return previous screen, press ESC key or double click.</li> <li>• When you select [AUTO RESIZE], size of live view screen fit to window. Ratio imaging is fixed by width based.</li> </ul>

	It displays Video Codec, Resolution and FPS of the selected video stream.
<input checked="" type="checkbox"/> TCP connection	Check this option as the network connection type (TCP or UDP). If you check it, the client connects to the server using TCP connection.
Buffer 0ms	Select buffering time of live stream.
	<p>Click to display the check box of [Hostname], [Framerate] and [Bitrate] options. [Display] is displayed on left top of the live view window in order of selecting options.</p> <p><b>Video Analysis</b></p> <ul style="list-style-type: none"> <li>&gt; Hide: Video Analysis display function is not in use.</li> <li>&gt; SVA: Displays the Smart Video Analysis function to the live view window.</li> <li>&gt; MD: Displays the Motion Detection function to the live view window.</li> </ul> <p><b>Note:</b> When you use the DPTZ function, all of Display function is deactivated for a while.</p>

 Effect	<p>Click to effect and then check the check box of [Edge Enhancement] option. The user gets more sharp reception on the live view window.</p> <p><b>Note:</b> This feature only affects the live view window.</p>	<p><b>Configuration</b></p>	<p>Provides all the necessary tools for setting up the device to your requirements. The user will need administrator level to do this.</p> <p><b>Note:</b> If you want to exit the Configuration menu, select one of the video stream in the Live view drop-down list.</p>
 Snapshot	<p>Click to save the current image in JPEG format on your computer.</p> <ol style="list-style-type: none"> <li>1. Click the [Snapshot] button and then the Snapshot window is displayed.</li> <li>2. Click the [Save] button in the Snapshot window.</li> <li>3. Enter the file name (JPEG format) and select the folder to save it.</li> <li>4. Click the [Save] button to confirm it.</li> <li>5. Click the [Close] button in the Snapshot window to close it.</li> </ol>		<p>Displays the current surveillance live screen. You can monitor the camera image on the live view window of the LG Smart Web Viewer.</p>
			<p>Click this button and drag the area to use digital PTZ function. Right-clicking the screen will bring up the previous magnification. (Color icon: On, Gray scale icon: Off.)</p>
 Profile1(HD) ▾	<p>Select the video stream. From the Live view drop-down list, select the desired video image source.</p> <p><b>Note:</b> You can set the stream configurations independently. This would facilitate the user to set the live view at his comfort.</p>		

	<ol style="list-style-type: none"> <li>1. Click this button to open the folder browse window. Click the button again in next time, video is recorded automatically without selection of folder.</li> </ol> <p><b>Note:</b></p> <p>If you want to change the folder, move to other pages or press the refresh button.</p> <ol style="list-style-type: none"> <li>2. Recording button is activated and recording will be started.</li> </ol> <p><b>Note:</b></p> <p>If recording exceed the time(1 hour) or size limit (1 GB), recording is stopped automatically with warning.</p> <ol style="list-style-type: none"> <li>3. To stop the recording, click this button during the recording.</li> </ol>
	Click this button to connect or disconnect the audio communication between the LG IP device and the connected PC. The option depends on the model. (Color icon: On, Gray scale icon: Off.)
	Click this button to switch the microphone off and on for the computer. The option depends on the model. (Color icon: On, Gray scale icon: Off.)
	Click this button to switch the sound off and on, for the speaker of the computer. The option depends on the model. (Color icon: On, Gray scale icon: Off.)

## Configuration menu overview

The following table shows the list of menu items.

The configuration images are different from each model.

Main Menu	Sub Menu	Note
System	Version	
	Date & Time	
	Maintenance	
	Storage	Option
	Text Overlay	Option
	Log & Report	
	Language	
Audio & Video	Camera	
	Stream	
	Audio	Option
Network	Basic	
	RTP stream	
	TCP/IP	
	DDNS	
	IP filtering	
	SNMP	
	QoS	
	802.1x	
	SIP	
User	Basic	

Event	Event server	
	Sensor & Relay	Option
	Motion detect	
	Smart analytics	Option
	Triggered Event	
	Scheduled Event	

## Configuring the LG Network Camera Device

The features and options of the LG IP camera are configured through the Configuration menu.

Only administrator-level users have permission to access the Configuration menu.

### Accessing the Configuration menu

Click the [Configuration] button to display the LG Smart Web Viewer configuration window.

#### Warning

The Configuration setup should be made by qualified service personnel or system installers.

## System settings

### Version

Displays the current Model Name and Software version.

Version	Model Name	LNV7300
Software version	1913.0.0.1305290	
Copyright		
Copyright 2009 LG Electronics. All Rights Reserved.		

### Date & Time

Date & Time	Time zone	GMT	
Time mode			
<input checked="" type="radio"/> Synchronize with NTP server	pool.ntp.org		
Time will be synchronized with NTP server every	1 hour		
Click button to test this server			
<input type="radio"/> Synchronize with personal computer	2012-12-21 11:15:11		
<input type="radio"/> Synchronize manually			
Date:	2012-12-21		
Time:	11	:15	:10
Server time			
2012-12-21 02:15:10			
Save			

### Time zone

Set the time difference from GMT in the area where the IP device is installed. Select the time zone in the area where the IP device is installed from the drop down list.

### Time mode

- > **Synchronize with NTP Server:** Select if you want to synchronize the IP device's date and time with those of the time server called NTP (Network Time Protocol). Specify the NTP server's name. Click the [Test] button for connection test to the server.
- > **Synchronize with personal computer:** Select if you want to synchronize the IP device's date and time with your computer.
- > **Synchronize manually:** Select if you want to set the IP device's date and time manually. Select the year, month and date by clicking the calendar button. Set hour, minutes and seconds in the edit boxes.

### Notes:

- When system reboot after time setting, time of system could be delayed. If you set the time correctly, set the [Synchronize with NTP server] option.
- Refer to NTP configuration as operation system of the Recording Server when the Recording Server use recording function and NTP server.

### Server time

- > **Server time:** Displays the current date and time of the IP device.
- > **Save:** Click this button to confirm the settings.

## Maintenance

The screenshot shows the 'Maintenance' section of the IP device's configuration interface. The 'System' section is currently selected. Under 'System', there are links for 'Version', 'Date & Time', 'Maintenance' (which is currently selected and expanded), 'Storage', 'Text Overlay', 'Log & Report', and 'Language'. Under 'Maintenance', there are links for 'System reboot', 'Backup & Restore', and 'Firmware'. Each of these links has a corresponding button: 'Reboot' for 'System reboot', 'Backup' and 'Restore' for 'Backup & Restore', and 'Upgrade' for 'Firmware'. There is also a 'Browse...' button with the placeholder 'ex: c:\backup.config' for 'Backup & Restore' and 'Browse...' with 'ex: c:\firmware.dat' for 'Firmware'.

### System reboot

Click the [Reboot] button to restart the IP device. It takes some minutes for the IP device to start again.

### Backup and restore

- > **Backup:** To take a backup all of the settings. If necessary, it make possible to return to a backup configuration.
  1. Click the [Backup] button.
  2. Click the [Save] button.
  3. Follow the instructions on the browser to specify the folder.
  4. Click the [Save] button to save the settings.
- > **Restore:**
  1. Click the [Browse] button.
  2. Find and open the file in which the configuration setting data is stored.
  3. Click the [Restore] button and the system settings will be restored and reboot the system.

### **Note:**

Backup and Restore can happen on IP device having the same version of firmware. This feature is not intended for multi-configurations or for firmware upgrades.

### Firmware

#### > Upgrade

1. Click the [Browse] button.
2. Find and open the firmware file.
3. Click the [Upgrade] button to update the firmware.

#### **Note:**

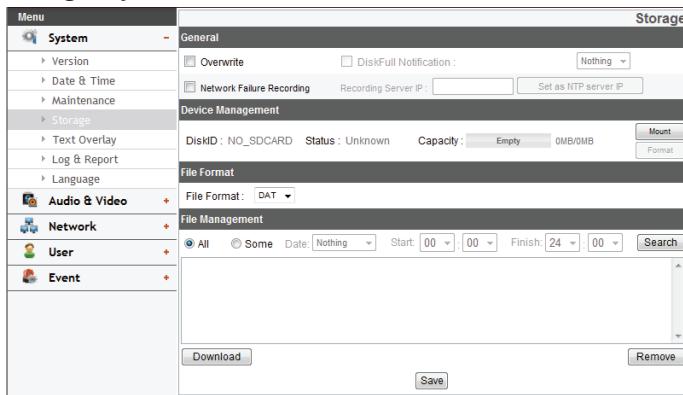
When you upgrade the system, it may take some minutes to be done. Do not close the browser while the upgrade is in progress. If you close the browser, it may cause a malfunction. You should wait until the confirmation window is displayed. When the upgrade is finished, the confirmation window will be displayed.

- > **Initialize:** The [Initialize] button should be used with caution. Clicking it will return all of the IP device's settings to the factory default values. Except for the Network settings, PTZ Protocol and Preset settings. (The option depends on the model.)

### **Note:**

Refer the "Clear browser's cache" of Troubleshooting.

## Storage (Optional)



### Note:

SD Card function may not be supported in specific countries.

### General

- > Overwrite: If the micro SD card has insufficient space and this option will be activated. It will overwrite the oldest data.
- > DiskFull Notification: Sends an warning e-mail to the SMTP server when the micro SD card has fully recorded. Select the SMTP server from the drop-down list. You should register the SMTP server on the Event server setting to set this function.
- > Network Failure Recording: Select the check box to activate the micro SD card recording function. If the system does not work with recording server, the system will record the data to the micro SD Card. When the system connect to the recording server again, the recorded data of the micro SD card will transfer to the recording server automatically.
- > Recording Server IP: Enter the recording server IP.

- > Set as NTP server IP: Click this button to use the entered Recording Server IP as the NTP server IP.

### Notes:

- The recorded file name is made automatically as the "[Created date of the file]\_[GMT Recording Time].DAT" type.
- If the capacity of the SD card remains less than 200 MB, stop recording or overwrite new file after delete old one as [Overwrite] setting. The overwritten file can not play or may malfunction when you download.
- Recorded file on the SD card, is recording 1 frame per second when set video codec to MJPEG.

### Device Management

- > Using the micro SD card
  1. Insert the micro SD card carefully to the micro SD card slot of the camera.
  2. Click the [Mount] button. If the micro SD card is mounted to the system correctly, the [Mount] button will be changed to the [Unmount] button.
  3. Displays the information of the [Disk ID], [Status], [Capacity] options.

### Notes:

- When the micro SD card is mounted, you should format the micro SD card. After the micro SD card format is finished, you should click the [Mount] button to use it.
- When you use the micro SD card format function, it may not progress immediately. In this case, you should try it again after waiting a few minutes.

- > Remove the micro SD card
  1. Click the [Unmount] button. If the micro SD card is unmounted from the system correctly, the [Unmount] button will be changed to the [Mount] button.
  2. Remove the micro SD card from the micro SD card slot of the camera.

**Note:**

When you use the Unmount function, it may not progress immediately. Operations such as recording of the system and reading of data are required stop time before the Unmount function is activated. You should try it again after waiting a few minutes.

[File Format](#)

- > File Format: You can selects the Recording File Format(AVI or DAT). Recording, Search and Download are available according to the setting.

**Notes:**

- SD Recording or FTP(Video) Sending Format are set according to the setting. When you select to AVI, [Auto Recording function] may not be activated in case of network error.
- IP Camera's time will be appeared in players based on DirectShow such as Windows Media Player and MPlayer.

[File Management](#)

Displays the recorded file of the micro SD card on the list. Click the [Search] button to display the recorded file. The list will be updated when you click the [Search] button.

- > To view the recorded file of the micro SD card
  1. Select the search option.
    - All: Search the all recorded files in the micro SD card.
    - Some: You can set the search condition by using the date and time options.
  2. Click the [Search] button and then the search result is displayed on the list.
- > Download: You can download the recorded data of the list to your PC. Select a recorded file on the list and click the [Download] button. The two confirmation window is displayed. You should download the all files that the recorded file(\*.DAT) and information file(\*.INFO). You can download as AVI file according to File format.

**Notes:**

- It is recommended to deactivate the [Overwrite] function before you download the file. When [Overwrite] function is activated, the downloading file might be overwritten, if the micro SD card has insufficient space.
- The downloaded file can be played by using the LG File player.
- > Remove: Delete file from the SD card.
- Save: Click this button to confirm the settings.

## Text Overlay

Text Overlay

Enable:  On  Off

Date & Time:  On  Off

Flickering:  On  Off

Position:  Top/Right  Top/Left  Top/Center  Top/Right  Bottom/Left  Bottom/Center  Bottom/Right

Save

### Text Overlay

- > Enable: Set to ON or OFF. Setup menu is appeared when selects ON.
- > Date & Time : Select the ON to display time and date of Client PC.
- > Channel Name: Enter the channel name you want to use. You type the Channel Name, it will be displayed whether you select the ON or OFF.
- > Flickering: Set to On or OFF.
- > Position: You can designate the position of text from drop down list.
- Save: Click this button to confirm the settings.

### **Note:**

The text settings on [Text Overlay] is preserved, even though initialize the camera from [Maintenance] or [Factory Reset].

You can change the text settings on [Text Overlay] directly.

## Text Overlay (Optional)

Text Overlay

Preview

Mode:  Normal Mode  Multiline Mode

Basic Configuration

Date & Time

Text Information	X Position	Y Position
Text1: A	1	1
Text2: B	1	2
Text3: C	1	3
Text4: D	1	4

User Title

Save

### Note:

The text overlay option may differ in method as to model and version.

### Preview

You can preview the camera image on the preview window.

### Mode

- > Normal Mode: Follow the normal procedure of text overlay option by selecting the [Normal Mode].
- > Multiline Mode: Set more characters, color and size of the text overlay by selecting the [Multiline Mode]. The saved text overlay is displayed on the left top of screen.

## Basic Configuration

When you select the [Normal Mode], you can adjust the [Date&Time], the [Text Information], the [X position], the [Y position] and the [User Title] function. And other functions are able to adjust by selecting the [Multiline Mode].

- > Date&Time: Click the check box of [Date&Time] to display time and date of Client PC.
- > Text Information: Enter characters in the text field. (From [Text1] to [Text4]) Maximum input characters are depends on the resolution.
  - LNB5100/LNB3100/LND5100(R)/LND3100/LNV5100(R)/LUN5100R series

CaptureMode	Column	Row
16:9	24	12
4:3 or 5:4	24	16

- LNV7300/LND7300 series

CaptureMode	Column	Row
16:9	27	13
4:3 or 5:4	27	16

- > X Position: Set the horizontal position of each text overlay.
- > Y Position: Set the vertical position of each text overlay.
- > User Title: Enter the user title. The user title is displayed on the right bottom of screen.



- > Multi-Line Text: Enter characters in the text field. Maximum input characters are depends on the resolution.
  - LNB5100/LNB3100/LND5100(R)/LND3100/LNV5100(R)/LUN5100R series

Capture Mode	16:9		4:3 or 5:4		
	Font Size	Column	Row	Column	Row
0	32	12	32	16	
1	32	12	32	16	
2	24	12	24	16	
3	18	9	18	12	

- LNV7300/LND7300 series

Capture Mode	16:9		4:3 or 5:4	
Font Size	Column	Row	Column	Row
0	32	16	32	16
1	32	16	32	16
2	32	16	32	16
3	27	13	27	16

- > Color: You can make any color by adjusting R.G.B LEVEL.
- > Size: You can adjust the font size.

**Notes:**

- If you change the [CaptureMode], the existing characters may not be seen partially.
- The [Multi-Line Text] is an one off feature. When refresh a browser to connect this option again, the text input field of [Multi-Line Text] is cleared but contents of text overlay are remained on a live view screen.
- If you use below features, text overlay is changed [Normal Mode]  
: [System>Maintenance>Reboot], [OSD Control>Reset], [Audio & Video>Camera>CaptureMode]
- Save: Click this button to confirm the settings.

## Log & Report

Log & Report

Menu

- System
  - Version
  - Date & Time
  - Maintenance
  - Storage
  - Text Overlay
  - Log & Report (selected)
  - Language
- Audio & Video
- Network
- User
- Event

Log & Report

Log & Report status

Click button to see log information of system.

View log

Click button to see report information of system.

View report

### Log & Report status

The System log provides a summary of the status of the IP device. The unit records the data of the software activity in a file.

- > View Log: Click this button to display the system log information.
  - Download: Click this button to see the log information of system.
- > View report: Click this button to display the report of the system.
  - Download: Click this button to see the report information of system.

**Note:**

The downloaded file is a UNIX type. If you open the file in Microsoft Note pad, it will display the text as if the file contained no line breaks at all.

## Language

The screenshot shows the 'Language' configuration page. The left sidebar has a 'System' section with 'Version', 'Date & Time', 'Maintenance', 'Storage', 'Text Overlay', 'Log & Report', and 'Language' (which is selected). Below it are 'Audio & Video', 'Network', 'User', and 'Event' sections. The main panel is titled 'Language' and shows a 'Language list' with 'English' selected. Other options are '한국어' (Korean), '中文' (Chinese), and '日本語' (Japanese). A 'Save' button is at the bottom right.

### Language list

Select a language for the LG Smart Web Viewer configuration menu and information display.

- Save: Click this button to confirm the settings.

## Audio & Video settings

### Camera

The screenshot shows the 'Camera' configuration page. The left sidebar has 'System', 'Audio & Video' (selected), 'Network', 'User', and 'Event' sections. The main panel has tabs for 'General', 'Exposure', 'White Balance', 'Day/Night', 'Privacy Mask', 'SmartIR', and 'Special'. The 'General' tab is selected, showing a preview window with a camera feed of a ceiling light fixture. Below the preview are settings for 'Contrast' (50), 'Standard' (NTSC), 'CaptureMode' (4:3 or 5:4), and 'Sensor Framerate' (30). A 'Save' button is at the bottom right.

### Note:

The option depends on the model. This table shows the differences between the models.

ITEM	LNB5100, LND5100	LNB3100, LND3100	LNU5100R, LND5100R, LNV5100R	LNV7300, LND7300
ALC	Yes	Yes (LNB3100 only)	Yes	Yes
ELC	Yes	Yes	Yes	Yes
ABF	No	No	No	Yes
Scene Mode	Yes	No	Yes	Yes
Flickerless	No	Yes	No	No
Max Shutter, Sens-Up Limit	x 60	x 60	x 60	x 64
SmartIR	No	No	Yes	No
D-Zoom	Yes	Yes	Yes	Yes
D-Effect	Yes	Yes	Yes	Yes
Stabilizer	Yes	Yes	Yes	Yes

**Note:**

If the video image size is 4:3 or 5:4 mode, the D-Zoom, D-Effect, and Stabilizer function is not activated for LNV7300 and LND7300 models.

Preview

You can preview the camera image on the preview window.

General

- > Contrast: Edit the contrast value from 0 to 100. Selecting 100 provides the image with the highest contrast.
- > Standard: Displays the video standard of the camera.
- > CaptureMode: Select the capture mode.

**Note:**

If you change the CaptureMode option, the Privacy, WDR/BLC and HSBLIC settings on the OSD menu are initialized.

- > Sensor Framerate (Optional): You can select the Sensor Framerate value between 30 and 25.

**Notes:**

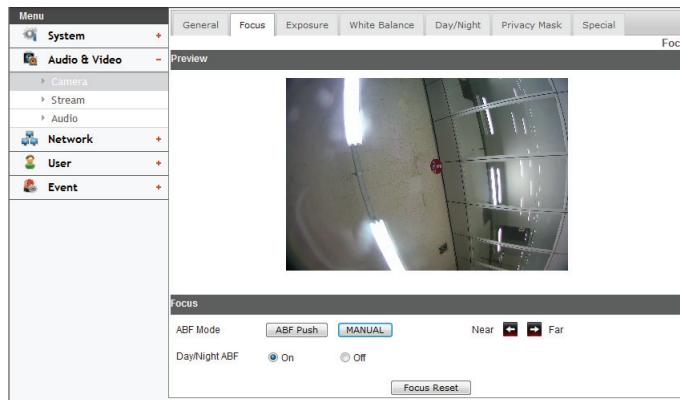
- It is recommended to select Sensor Framerate value to 30 in 60 Hz region, 25 in 50 Hz region to reduce flicker.
- Maximum FPS is set 25 when you select Sensor Framerate value 25.

- Save: Click this button to confirm the settings.

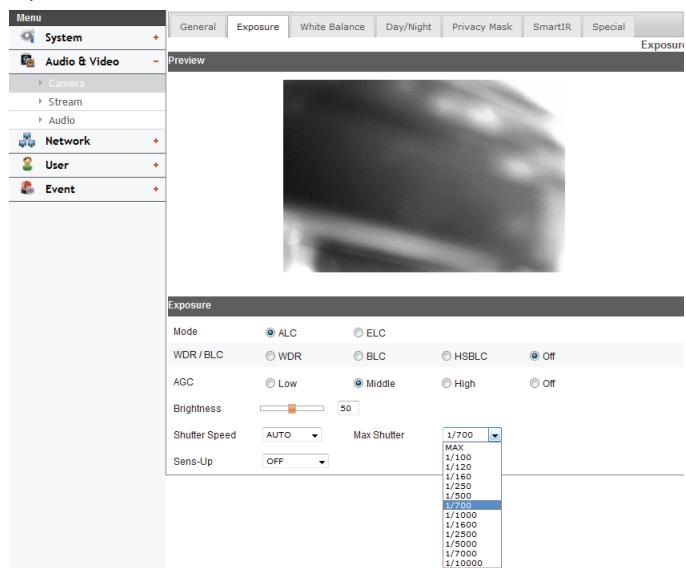
**Note:**

The Capture mode and Sensor Framerate are not initialized.

## Focus



## Exposure



- > ABF Mode: Click the [ABF Push] or [MANUAL] button.
  - ABF Push: This function will be activated automatically to adjust the back focus.
  - MANUAL: Use [Near] or [Far] button to adjust the focus.
- > Day/Night ABF: You can set the Day&Night function with ABF function.
  - ON: If you set to On, the ABF function will be activated automatically when the D/N function is activated.
  - OFF: Not used.
- Focus Reset: Return to factory default settings.

### Note:

Some values you have set may not be applied, while the ABF function is running. Please set the values after the ABF function is finished.

- HSLBC: Use for masking brightness of the specific area to view the subject more clearly.
  - > AREA SETTING: Click the [Show] button to select area.
  - > GRAY SCALE: Select a gray scale.
  - > USER SCALE: Set a bright level.
  - > MASK: Select [On] or [Off]. If you set the MASK to ON, the mask function is activated only when the HSLBC is activated.
- Off: Not in use.
- > AGC: If the images are too dark, change the maximum [AGC] value to make the images bright.
- > Brightness: You can increase the brightness of the darkened video. If you set the brightness to lower value, the image gets darkened. If you set the brightness to higher value, the image gets bright.
- > Shutter Speed: Select the desired shutter speed for camera exposure. You can change the shutter speed to higher speed to capture fast-moving subjects, though the image becomes darker.
  - Max Shutter: When the [Shutter Speed] is on AUTO mode, the [Max Shutter] function is activated. It limits the maximum value of the [Shutter Speed].

#### Notes:

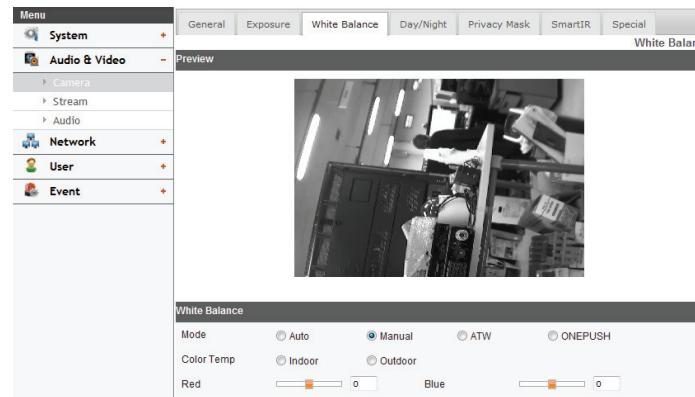
- [Max] means when the maximum shutter speed becomes 1/25 in case of 25 frames, and also becomes 1/30 in case of 30 frames.
- [Max Shutter] value is fixed to 1/700 on the WDR mode.
- > Sens-Up: If pictures are not clear due to darkness, this Sens-Up operation would increase the sensitivity of picture.

#### Note:

If you set to one of the [Shutter Speed] options except AUTO

on the [Shutter Speed] menu or [AGC] to [OFF], the [Sens-Up] setting is not available.

#### White Balance

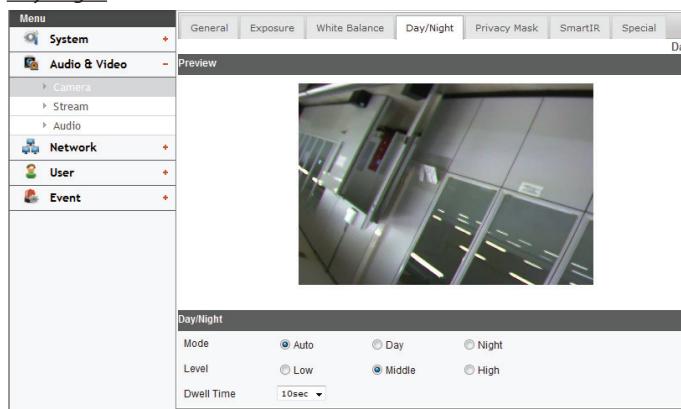


- > Mode: Select [Mode] option on the [White Balance] menu, then select the following mode.
  - Auto: You can set the white balance options automatically. When the [Mode] is set to [Auto], [Color Temp], [Red] and [Blue] option are not activated.
  - Manual: You can set the white balance options manually.
    - > Color Temp: Click to select the option.
      - Indoor: The color temperature range for the proper white balance is approximately 3 200 K.
      - Outdoor: The color temperature range for the proper white balance is approximately 5 100 K.
    - > Red: Set the desired red value.
    - > Blue: Set the desired blue value.
  - ATW (Auto-Tracing White Balance): In this mode, white

balance has better coverage than auto. Proper white balance may not be obtained under the following conditions:

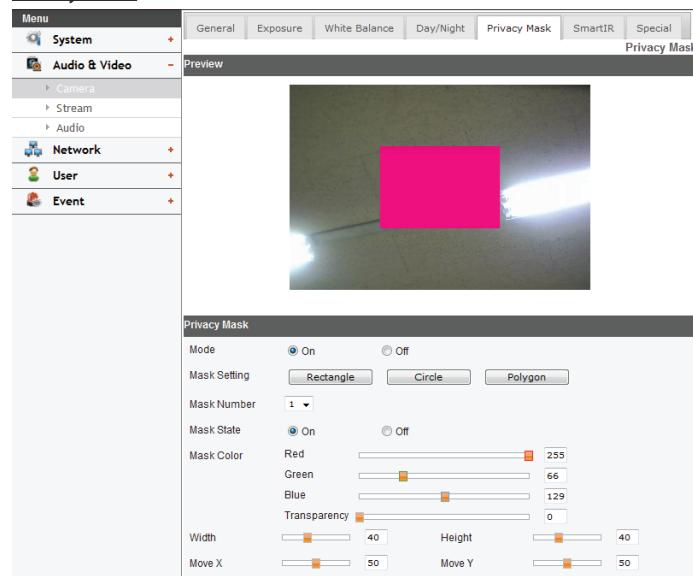
1. When the scene contains mostly high color temperature objects, such as a blue sky or sunset.
  2. When the scene is dim.
- ONE PUSH: If you select the [ONE PUSH] mode, you will be able to set up the White Balance automatically.

## Day/Night



- > Mode: Select [Mode] option on the [Day/Night] menu, then select the following mode.
  - Auto: [Day/Night] mode changes automatically.
  - Day: Color mode enabled.
  - Night: Black-and-white mode enabled.
- > Level: Click the option to select a level.
- > Dwell Time: Click the drop-down list to select a dwell time.

## Privacy Mask



This function is aiming at the protection of personal privacy. The selected part is not displayed on the screen.

- > Mode: Select [ON] to set the Mask Setting menu.
- > Mask Setting: Select a type of Mask Setting.

### Note:

The mask area can be set in different ways, depending on the type of Mask Setting.

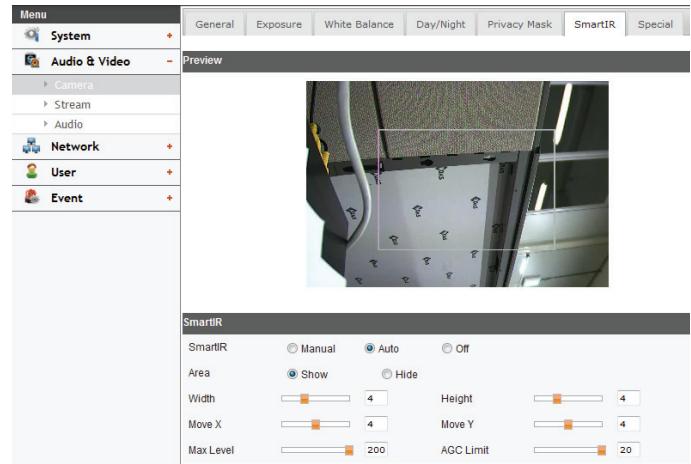
- RECTANGLE :
  - Mask Number: Click the drop-down list to select one of the [Mask Number].

- Mask State: Set to [On] or [Off] on the [Mask State] menu. When you set to [On], [Mask Color], [Width], [Height], [Move X] and [Move Y] option is activated.
- Mask Color : You can make any color by adjusting R.G.B LEVEL and adjust the transparency of MASK.
- Height: Increase or decrease the vertical size of the mask.
- Width: Increase or decrease the horizontal size of the mask.
- Move Y: Moves vertical position of the mask.
- Move X: Moves horizontal position of the mask.
- CIRCLE :
- Mask Number: Click the drop-down list to select one of the [Mask Number].
- Mask State: Set to [On] or [Off] on the [Mask State] menu. When you set to [On], [Mask Color], [Width], [Height], [Move X], [Move Y] and [Radius] option is activated.
- Mask Color : You can make any color by adjusting R.G.B LEVEL and adjust the transparency of MASK.
- Height: Increase or decrease the vertical size of the mask.
- Width: Increase or decrease the horizontal size of the mask.
- Move Y: Moves vertical position of the mask.
- Move X: Moves horizontal position of the mask.
- Radius : You can adjust the Radius size.
- POLYGON :
- Polygon Setting : Select [Draw] and then Use the  ,  ,  ,  buttons to draw the polygon by moving each vertex. Select [Move] and then  ,  ,  ,  buttons to move the polygon.

#### Note:

- The [Privacy Mask] size is recommended to set the size default or more.
- Adjust the size about 50 % bigger, to cover the object completely.

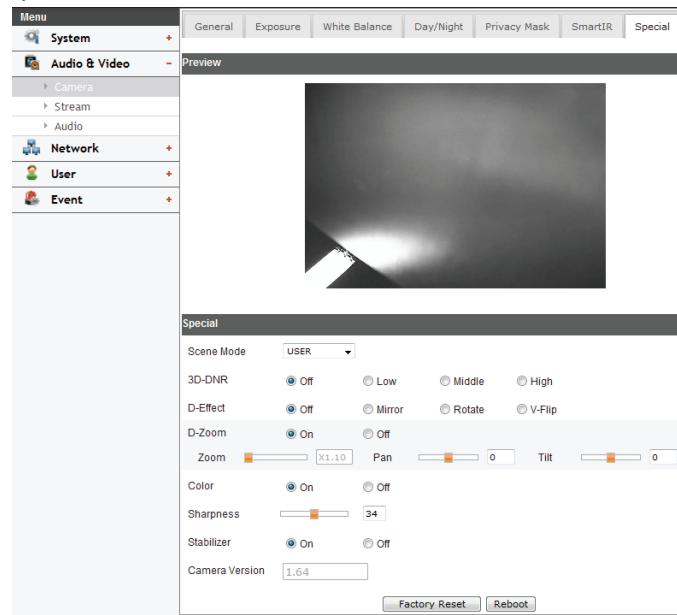
#### SmartIR



- > SmartIR: SmartIR function improve the sensitivity in the low luminance. SmartIR analyze the image of the screen, when the subject is close. Then SmartIR reduce the IR LED brightness and gain to prevent saturation of the closed subject.
  - Manual: When the [Day/Night] menu set to [Night] mode, user can adjust the brightness of the IR LED.

- Auto: When the [Day/Night] menu set to [Night] mode, the brightness of the IR LED will be adjusted automatically.
  - OFF: When the [Day/Night] menu set to [Night] mode, IR LED will be turned off.
- > Area: Select the [Show] to display the area setting.
- > Width / Height: Adjust the size of the area to the left and right or up and down.
- > Move X / Move Y: Adjust the location of the area to the left and right or up and down.
- > Max Level: Limits the maximum brightness of IR LED. Can be set from 0 to 200.
- > AGC Limit: When the Smart IR is working, limits the value of maximum gain.

## Special



### Note:

If the video image size is 4:3 or 5:4 mode, the D-Zoom, D-Effect, and Stabilizer function is not activated for LNV7300 and LND7300 models.

- > Scene Mode: You can set value installed camera environment properly using this function. Several configuration value is set automatically to select option.
  - USER: If user change each value of function, save the changes.
  - STD: Settings general environment .

- BKLT: WDR set automatically to see the subject clearly under the backlight condition.
- LOWLIT: Increase the Gain and set SENS-UP function to see the subject clearly under the low light condition.
- OUTDOOR: Change to the ELC mode not to decrease definition under too light condition. And decrease Brightness value slightly prevent to video of supersaturation.
- INDOOR: Condition of light set automatically to match indoor environment.
- TRAFFIC: Set shutter speed fast to apprehend traffic information and status.

**Notes:**

- Set each value of option as selected option on the [Scene Mode] like as below table.

OPTION	STD	BKLT	LOWLIT	OUTDOOR
Max Shutter	1/700	1/700	1/700	1/700
Shutter speed	AUTO	AUTO	AUTO	AUTO
AGC	MIDDLE	MIDDLE	HIGH	MIDDLE
White Balance	ATW	ATW	ATW	ATW
WDR/BLC	Unused	Use	Unused	Unused
3D-DNR	MIDDLE	MIDDLE	MIDDLE	MIDDLE
DAY/NIGHT	AUTO	AUTO	AUTO	AUTO
ACE	Unused	Use	Unused	Unused
SHARPNESS	34	34	34	34
BRIGHTNESS	50	50	50	45
SENS-UP	OFF	OFF	AUTO x10	OFF
EXPOSURE	ALC	ALC	ALC	ALC

OPTION	INDOOR	TRAFFIC	USER
Max Shutter	MAX	-	-
Shutter speed	AUTO	Manual (1/120)	-
AGC	MIDDLE	HIGH	-
White Balance	Manual (Indoor)	ATW	-
WDR/BLC	Unused	Unused	-
3D-DNR	MIDDLE	MIDDLE	-
DAY/NIGHT	AUTO	AUTO	-
ACE	Unused	Unused	-
SHARPNESS	34	34	-
BRIGHTNESS	50	50	-
SENS-UP	OFF	OFF	-
EXPOSURE	ALC	ALC	-

- Value of [Scene Mode] is not initialized even the reboot system. If you set to [STD], the default value of [SCENE MODE], run factory reset.
- If you use not DC Iris lens but Manual Iris lens, must set ELC mode on the [Exposure] option. In this case, value of [Scene Mode] set to [USER] automatically.
- When the [Max Shutter] value is maximum, if you set the [Capture Mode] to 30 fps and 25 fps the shutter speed will be 1/30 sec and 1/25 sec.
- > 3D-DNR: If pictures are not clear due to noise, this option would reduce the noise of picture. When you use this function, the afterimage may occur.
- > D-Effect: You can select the digital effect.
  - Mirror: Turn on the mirror effect.
  - Rotate: Rotate the picture. (180°)
  - V-Flip: Flip the picture vertically.

- Off: Turn off the digital effect.
- > D-ZOOM: Select [On] to set the digital zoom level.
  - Zoom: You can enlarge the screen.
  - Pan: You can move the screen. (left or right)
  - Tilt: You can move the screen. (up or down)
- > Color: You can switch the displayed picture to gray scale or color.
  - On: To display the picture with color. If you set [On], the [Color Level] option is activated. Adjust the [Color Level] value using by jog controller or enter the desired value.
  - Off: To display the picture with grayscale.
- > Sharpness: The degree to which the boundary of the two portions is clearly distinguished. Adjust the value using by jog controller enter the desired value. If you set the sharpness value to higher, the image outline becomes sharp. If you set to lower value, the image outline becomes dim.
- > Stabilizer: The image stabilizer function minimizes the appearance of shaky images caused by low-frequency vibration. This function is useful for outdoor surveillance. Select the [Stabilizer] option and set to [On] or [Off].
- > Camera Version: Displays the software version on the monitor.
- Factory Reset: Clear certain settings and information and return to factory default settings.
- Reboot: Reboot the camera system.

## Stream

### Resolution

- > HD: Displays the maximum image size of the camera.
- > SD: Select the output image size of the camera.

#### Note:

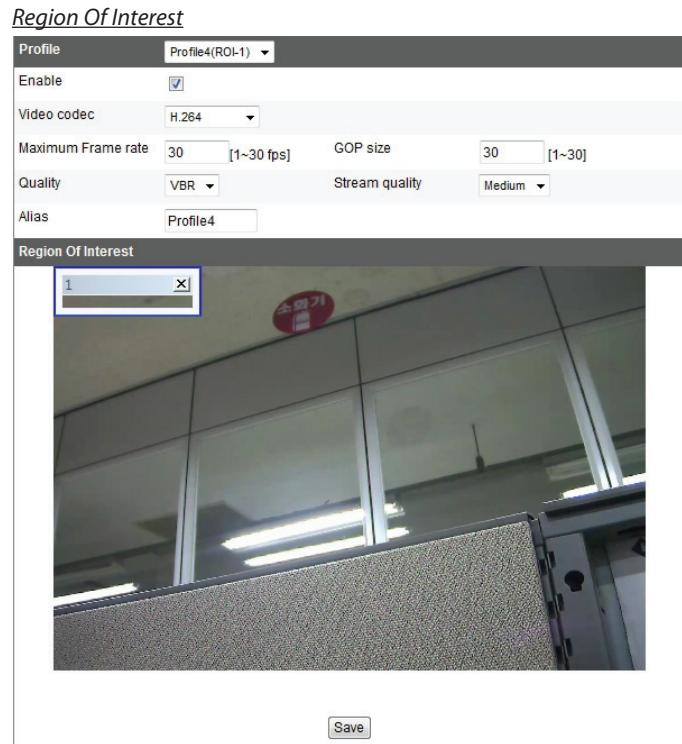
When you use the Smart Analytics function, SD resolution is changed as shown below.

Smart Analytics	D1	CIF
Off	704 x 480	352 x 240
On	640 x 384	320 x 192

### Profile

- > Enable: Click to activate the stream function.
- > Video codec: Select the video mode (Codec) from the drop-down list. The viewer can choose among MJPEG, H.264 and H.264\_HIGH.
- > Maximum frame rate: Set the frame rate of the image.
- > GOP size: It means "Group of Pictures". The higher the GOP, the better is the video quality of the camera. Edit the value of GOP from 1 to 30. This setting is valid for H.264 video format only.

- > Quality: Select the Quality.
    - VBR: The bit rate may vary depending on the complexity of the video to meet the selected quality.
    - CBR: The video quality may vary in order to preserve a constant bit rate.
  - > Stream quality: If the [Quality] option set to VBR, this option is displayed. Select the stream quality from the drop down box, the camera supports five types. (Highest, High, Medium, Low and Lowest)
  - > Alias: Enter the profile name you want to use.
  - > Bit rate: If the [Quality] option set to CBR, this option is displayed. Edit the bit rate value from 256 kbps to 10 240 kbps.
- Note:**
- If the 'Bit rate' is configured too low with high resolution, the actual frame rate will decrease because of narrow bandwidth. So you need to set or change the 'Bit rate' to high value.
- Save: Click this button to confirm the settings.



You can set and streaming the desired area on the live view window to use ROI(Region Of Interest) function. Select Profile4(ROI-1) to Profile7(ROI-4).

- > Enable
  1. Click to activate the [Region Of Interest] window. You can add the 4 windows maximum for ROI function.

2. Click the edge or corner of the window box to adjust the window size.
3. Click the [Save] button to save the settings.

**Note:**

ROI area can not overlap with each other.

## Audio (Optional)



### Audio In

- > Enable: Click the check box if you want to send the audio from the microphone input connector.

**Note:**

The Clients connected to the IP device remain unaffected with additional changes made in the setting.

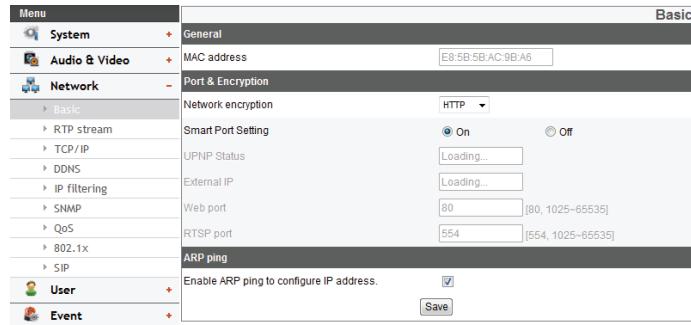
- > Audio type: Select the type of audio encoding. (G711 PCMA, G711 PCMU, G726 24K, G726 32K)

### Audio Out

- > Enable: Click the check box to output the audio from the speaker.
- Save: Click this button to confirm the settings.

## Network settings

### Basic



### General

- > MAC address: Displays the MAC address.

### Port & Encryption

- > Network encryption: Select the HTTP or HTTPS option for security.
- > Smart Port Setting: Select [On] to allocate a port number automatically.

**Note:**

If you select [On], [UPNP Status], [External IP], [Web Port] and [RTSP Port] options are deactivated.

- > UPNP Status: When you use the router that is supported UPnP function, you can set the port forwarding automatically by using the [Smart Port Setting]. [UPnP Status] shows connected status of router.
- > External IP: When you connect the router that is supported UPnP function, this option is displayed. Displays the external

IP address allocated router.

- > Web port: The default HTTP port number (80) can be changed to any port within the range 1 025 to 65 535.
- > RTSP port: Check RTSP port. The default port is 554. Other ports can be selected within the range 1 025 to 65 535.

**Note:**

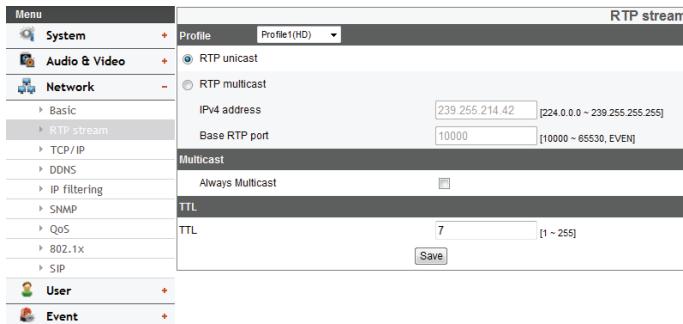
The RTSP port number should not be same with the web port number.

#### ARP Ping

- > Enable ARP Ping to configure IP address: Check to enable ARP ping.
- Save: Click this button to confirm the settings.

#### **RTP stream**

RTP (Real-time Transport Protocol) is an internet protocol that allows programs to manage the real-time transmission of multimedia data, via unicast or multicast.



#### Profile

- > RTP unicast: When enabled the transmission of the data to

the specified equipment happens on a network specifying a single address.

- > RTP multicast: When enabled it reduces the transmission load on the camera by making the computer of the same segment network receive the same transmission data.

- IPv4 address: Set the IP address for RTP multicast.
- Base RTP port: Enter the port number of even number used for the multicast streaming. Each profile uses successive 6 port number which starts from [Base RTP port]. It is initially set to 10 000 and you can edit this between 10 000 and 65 530.

**Note:**

Each profile using multicast needs its own multicast IP address and port numbers to avoid address conflict. When more than 2 profiles use same multicast IP address, each [Base RTP port] number should be distinguished from the other port number more than 6 at least.

#### Multicast

- > Always Multicast: Check to enable multicast regardless of client connection.

#### TTL

- > TTL: This option indicates the Time-To-Live of multicast packets. The default setting is 7, and the allowed TTL range is from 1 to 255.

- Save: Click this button to confirm the settings.

## TCP/IP

The screenshot shows the TCP/IP configuration interface. The left sidebar has a 'Menu' section with 'System', 'Audio & Video', 'Network' (selected), 'Basic', 'TCP / IP' (selected), 'DDNS', 'IP filtering', 'SNMP', 'QoS', '802.1x', 'SIP', 'User', and 'Event'. The main area has two sections: 'IPv4 address status' and 'IPv6 address status'. The 'IPv4 address status' section has two tabs: 'Automatically set with DHCP' (selected) and 'Statically set'. Under 'Automatically set with DHCP', there is a dropdown for 'Notify to SMTP server, if IP address is changed' set to 'Nothing'. Under 'Statically set', there are fields for 'IPv4 address' (10.20.98.155), 'Subnet mask' (255.255.254.0), and 'Gateway' (10.20.98.1). The 'IPv6 address status' section has tabs for 'Primary DNS server' (156.147.151.32) and 'Secondary DNS server' (165.244.106.110). The 'IPv6 address status' section also has tabs for 'Enable' (unchecked), 'Mode' (set to 'Basic'), and 'IPv6 address' (::/64). A 'Save' button is at the bottom.

### IPv4 address status

- > Automatically set with DHCP: Select this option when a DHCP server is installed on the network to allow IP address assignment. With this setting, the IP address is assigned automatically.
- Notify to SMTP server, if IP address is changed: If you select this option, the user get a notification mail telling about changing of IP of the IP device.

#### **Notes:**

- You should register the SMTP server on the Event server setting to set this function.
- If you select [Automatically set with DHCP], the camera obtain IP address from DHCP server after IP address is set "192.168.0.16".
- > Statically set: Select this option when you set a fixed IP address, with this setting, specify the IP address, Subnet mask and default gateway manually.

#### **Operation and settings**

- IPv4 address: Enter an IP address.
- Subnet mask: Enter a subnet mask address.
- Gateway: Enter the gateway address.

### DNS server status

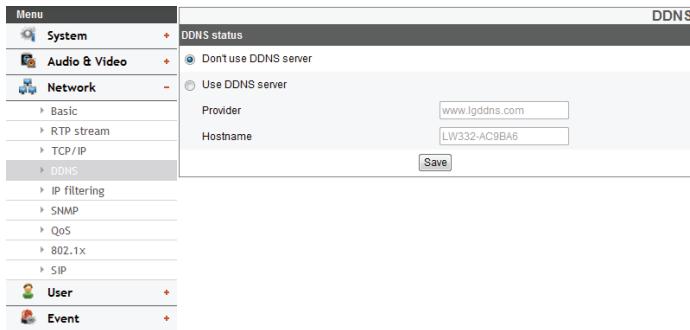
- > Primary DNS server: Enter the Primary domain name server that translates the host names into IP address.
- > Secondary DNS server: Enter the Secondary DNS server address that backups the Primary DNS.

### IPv6 address status

- > Enable: Click the check box if you want to use the IPv6 address.
- > Mode
  - Manual: Select this option when you set a fixed IP address manually.
  - Basic: Select this option to allow IPv6 address assignment based on the Mac address. With this setting, the IP address is assigned automatically.
  - DHCPv6: Select this option when exist a DHCPv6 server in network. If DHCPv6 server is not existed or temporary disability, it requests assignment every 3 minutes.
- > IPv6 address: You can enter the IP address when you select the Manual mode. It alarms when you enter the invalid IP address.
- > Save: Click this button to confirm the settings.

## DDNS

This free service is very useful when combined with the LG DDNS Server. It allows the user to connect the IP device using the URL, rather than an IP Address. This also solves the problem of having a dynamic IP address.



DDNS status

Don't use DDNS server

Provider: www.lgddns.com

Hostname: LW332-AC9BA6

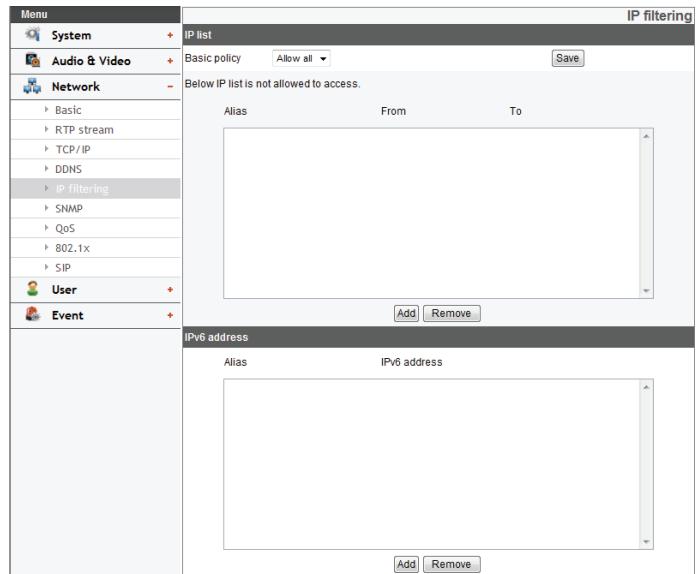
Save

### DDNS status

- > Don't use DDNS server: Disable the DDNS function.
- > Use DDNS server: Enable the DDNS function.
  - Provider: Displays the DDNS provider.
  - Hostname: Enter the host name you want to use.
- Save: Click this button to confirm the settings.

## IP filtering

The access of the IP addresses in the list are allowed or denied according to the choice made in the drop-down list of the Basic policy option. The administrator can add up to 10 IP address entries to the list (a single entry can contain multiple IP addresses). The users from these IP addresses need to be specified in the user list with the appropriate access rights. The IP list is to control the access permission of clients by checking the client IP address.



IP list

Basic policy: Allow all

Alias	From

Add Remove

IPv6 address

Alias	IPv6 address

Add Remove

### IP list

- > Basic policy: Select the basic policy type.
  - Allow all: Allow all the IP address basically, but the IP addresses in the list are denied.

- Deny all: Deny all the IP address basically, but the IP addresses in the list are allowed. It needs at least one IP address to activate this function.
- Save: Click this button to confirm the settings.
- Add: Click this button to add the IP address.
  1. Click the [Add] button.
  2. Set the IP options.
    - Alias: Enter the alias.
    - From: Enter the start IP address for the IP filtering.
    - To: Enter the end IP address for the IP filtering.

**Note:**

If you want to deny or to allow a range of IP addresses, enter the start IP address to "From" and the end IP address to "To". You can also add an IP address by entering the same IP address to "From" and "To".

3. Click the [Save] button.
  4. Repeat the steps 1 to 3 to add additional IP address.
- Remove: Click this button to delete the IP address.
    1. Select the alias from the list.
    2. Click the [Remove] button. The IP address will be deleted.

IPv6 address

- Add: Click this button to add the IP address.
  1. Click the [Add] button.
  2. Set the IP address option.
    - Alias: Enter the alias.
    - IPv6 address: Enter the IP address for IP filtering.
  3. Click the [Save] button.
  4. Repeat the steps 1 to 3 to add additional IPv6 address.

- Remove: Click this button to delete the IPv6 address.
  1. Select the alias from the list.
  2. Click the [Remove] button. The IPv6 address will be deleted.

**SNMP**

The Simple Network Management Protocol (SNMP) is an application protocol to exchange the management information of network devices.



SNMP v1/v2c

- > Enable SNMP v1/v2c: Selects when SNMP is allowed access to this device.
- > Read Community: Specifies the SNMP management community in which you want to read this system.
- > Write Community: Specifies the SNMP management community in which you want to write this system.

SNMP v3

- > Enable SNMP v3: Selects when SNMP v3 is allowed access to this device. It supports authentication and encryption.
- > SecurityName: Type the security name for the SNMP.

- > Password: Type the password for the SNMP.
- Save: Click this button to confirm the settings.

## QoS

You can specify network Quality of Service (QoS) settings.

QoS DSCP Configuration

Video DSCP: 63 [0-63]  
Audio DSCP: 63 [0-63]  
Event DSCP: 63 [0-63]

Save

### QoS DSCP Configuration

- > Video DSCP: Enter the priority of Video for DSCP (Differentiated Service Code Point) Quality of Service.
- > Audio DSCP: Enter the priority of Audio for DSCP Quality of Service.
- > Event DSCP: Enter the priority of Event for DSCP Quality of Service.
- Save: Click this button to confirm the settings.

## 802.1x

Specifies whether 802.1x network access is enabled.

802.1x/EAPOL using EAP-TLS

Enable: ON OFF

Certificates

CA Certificate: (No client certificate uploaded) Browse... Upload... Remove...

Client Certificate: (No client certificate uploaded) Browse... Upload... Remove...

Client private key: (No client certificate uploaded) Browse... Upload... Remove...

Basic Configuration

EAPOL Version: 1

EAP ID:

Password:

Save

### 802.1x/EAPOL using EAP-TLS

- > Enable: Select on to enable the protocol. Current authorization status of 802.1x port is displayed on buttons right.

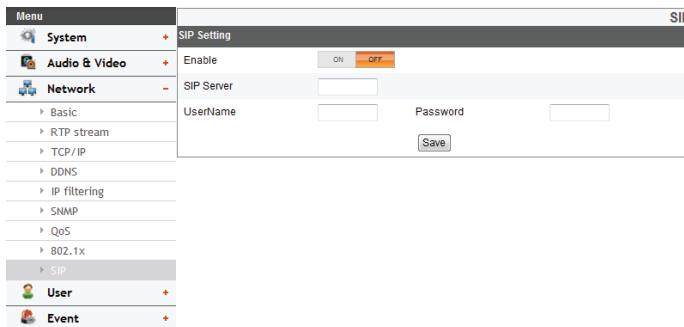
### Certificates

- > To upload or remove the certificates
  1. Click the [Browse] Button.
  2. Find and open the certificates file.
  - CA Certificate: Upload the accredited certificate included public key.
  - Client Certificate: Upload the accredited certificate included client authentication key.
  - Client private key: Upload the accredited certificate included client private key.
  3. Click the [Upload] button to install certificates.
  4. Click the [Remove] button to delete certificates.

## Basic Configuration

- > EAPOL Version: Select the EAPOL version.
- > EAP ID: Enter the ID of the client certificate using up to 16 characters.
- > Password: Enter the password of the client private key using up to 16 characters.
- Save: Click this button to confirm the settings.

## SIP



## SIP Setting

- > Enable: Set to On when you use the SIP server.
- > SIP Server: Enter the hostname or IP address of the SIP register server.
- > UserName: Enter the name of the device used when making calls with SIP.
- > Password: Enter the SIP server authorization password.
- Save: Click this button to confirm the settings.

## **Notes:**

- When you set to [On] on the [Enable] option, [Enable

## Operation and settings

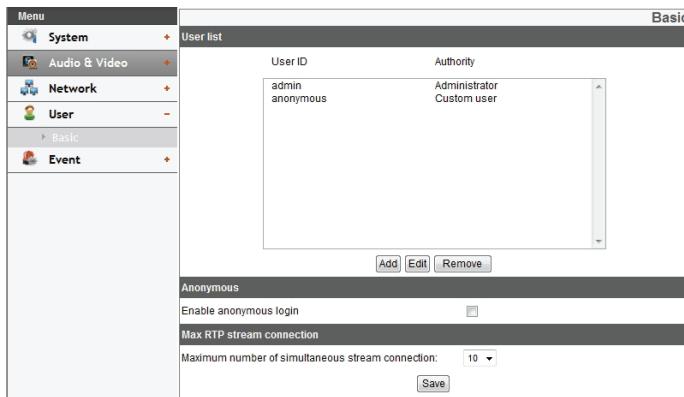
anonymous login] option is enabled automatically.

- You should set the SIP port number not to conflict with multicast port and 5353.

## User settings

### Basic

The IP device is shipped with the login rights of administrator only. If others need to access the IP device excluding the configuration a login with viewer rights need to be created. A maximum of 50 users can be created.



#### User list

##### > Add the User

You can register a new user with various access rights.

1. Click the [Add] button. User setting dialog is displayed.
2. Enter the new User ID and Password. (Should have a minimum of 4 characters and preferably a combination of alphanumeric.)
3. To confirm the password, retype the password that you typed in the Password box.
4. Select the authority from the drop down list to provide

the access rights to each user and then click the [Save] to confirm your selection.

- Administrator: Allows you to operate setup menus and to view live images.
- Power user: Use of the limited functions of the system. (The Configuration menu is not allowed.) A power user can use the Live View and audio functions.
- Normal user: Provides the lowest level of access, Allows to view live images only.
- Custom user: The user can login and view the live stream image only when the "Enable anonymous login" option is checked to enable it.

#### **Note:**

Remember the password.

##### > Edit the registered user

You can change the password or authority.

1. Choose the user ID and then click the [Edit] button.
2. Change the Password or Authority, then click the [Save] button to confirm your selection.

##### > Delete the registered user

1. Choose the user ID you want to delete.
2. Click the [Remove] button.

#### **Note:**

The default administrator user ID 'admin' and 'anonymous' are permanent and cannot be deleted.

#### Anonymous

##### > Enable anonymous login

Check the box to enable anonymous user login - allows the

user access for only viewing the live stream image.

#### Maximum RTP stream connection

- > Maximum number of simultaneous stream connection:

Set this number to limit the number of simultaneous stream connections.

The connections depend on the stream configuration as shown in the following Maximum RTP stream connection by stream configuration.

- LNU5100R, LNV5100(R), LND5100(R), LNB5100, LNB3100, LND3100 series

Video Codec	Resolution	Frame Rate	Maximum RTP stream
H.264	1 280 x 1 024	30	Up to 10
MJPEG	1 280 x 1 024	20	Up to 7

- LNV7300 series, LND7300 series

Video Codec	Resolution	Frame Rate	Maximum RTP stream
H.264	2 040 x 1 536	20	Up to 10
H.264	1 920 x 1 080	30	Up to 10
MJPEG	2 040 x 1 536	5	Up to 10
MJPEG	1 920 x 1 080	10	Up to 7

#### **Notes:**

- Preview window of the IP device setting and preset setting are affected by this setting.
- The video streaming may appear poor at times, this may be because of the network traffic, too many devices

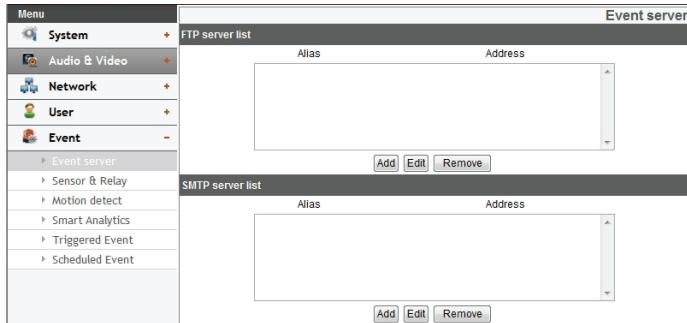
connected to the switch or hub, enabling motion detection to each of the video streams and because of other programs running on your computer.

- Save: Click this button to confirm the settings.

## Event settings

### Event Server

Event Servers are used to receive the recorded video clip and/or notification messages.



#### FTP server list

Image files can be transferred to the FTP server within the scheduled time. Image file that has been recorded linked to an external event is sent to the FTP server periodically.

- > To add the FTP server
  1. Click the [Add] button. FTP server setting window is displayed.
  2. Set the FTP server options.
    - Alias: Type the FTP Server name to upload the image files.
    - Address: Enter the FTP server's IP address.
    - Port: Enter the port number. The default FTP port is 21.
    - User ID: Type the user name for the Folder shared in

the FTP server.

- Password: Type the password for the folder shared in the FTP Server.
  - Folder: Type the path with the folder that is shared in the FTP server.
  - Test: Select [Test] to test the FTP server.
3. Click the [Save] button to confirm the settings.
- > To edit the FTP server
1. Choose the FTP server in the FTP server list.
  2. Click the [Edit] button.  
You can check or edit the FTP server options.
- > To delete the FTP server
1. Choose the FTP server in the FTP server list.
  2. Click the [Remove] button. This would remove the FTP server from the list.

#### SMTP server list

By selecting the e-mail option, a still image of the event is captured and an e-mail with the attached image file is sent to the specified mail address.

- > To add the SMTP server
  1. Click the [Add] button. SMTP server setting window is displayed.
  2. Set the SMTP server options.
    - Alias: Enter the SMTP server name.
    - User ID: Enter the user ID of the SMTP server. This would be the one who owns the mail account.
    - Password: Enter the password of the SMTP server.
    - Address: Enter the SMTP server address.

- Port: Enter the port number. The default port is 25.
  - Enable SSL: Check when use the SSL (Secure Socket Layer) protocol. SSL protocol is cryptographic protocols that provide secure communication on a network.
  - Receiving address: Type the recipients e-mail address. You can specify only one recipient e-mail address.
  - Administrator address: Type the e-mail address of the administrator.
  - Subject: Enter the subject/title of the e-mail.
  - Message: This message can describe the information of the acquired IP address, etc.
  - Test: Select [Test] to test the SMTP server.
3. Click the [Save] button to confirm the settings.
- > To edit the SMTP server
1. Choose the SMTP server in the SMTP server list.
  2. Click the [Edit] button.  
You can check or edit the SMTP server options.
- > To delete the SMTP server
1. Choose the SMTP server in the SMTP server list.
  2. Click the [Remove] button.

## Sensor & Relay (Optional)

Sensor & Relay											
<table border="1"> <thead> <tr> <th>Enable</th> <th>Alias</th> <th>Type</th> <th></th> </tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/></td> <td>Sensor-0</td> <td>Normal open</td> <td>▼</td> </tr> </tbody> </table>				Enable	Alias	Type		<input checked="" type="checkbox"/>	Sensor-0	Normal open	▼
Enable	Alias	Type									
<input checked="" type="checkbox"/>	Sensor-0	Normal open	▼								
<table border="1"> <thead> <tr> <th>Control duration [1~86400(24hour).second]</th> <th>Alias</th> <th>Type</th> <th>Control relay</th> </tr> </thead> <tbody> <tr> <td>5</td> <td>Relay-0</td> <td>Normal open</td> <td>▼</td> </tr> </tbody> </table>				Control duration [1~86400(24hour).second]	Alias	Type	Control relay	5	Relay-0	Normal open	▼
Control duration [1~86400(24hour).second]	Alias	Type	Control relay								
5	Relay-0	Normal open	▼								
<input type="button" value="Save"/>											

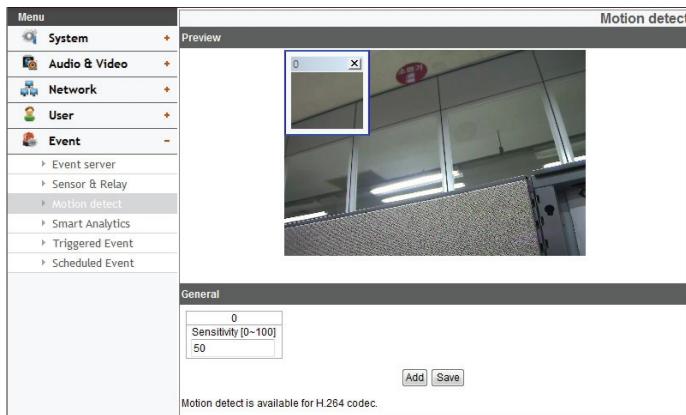
### Sensor

- > Enable: Marks up when you want to activate the sensor.
- > Alias: Displays the sensor name.
- > Type: Select the sensor type.

### Relay

- > Control duration: Enter the relay time.
- > Alias: Displays the relay name.
- > Type: Select the relay type.
- > Control relay
  - Run: Click to activate the relay.
  - Stop: Click to stop the relay.
- Save: Click this button to confirm the settings.

## Motion detect



### Preview

You can preview the motion detection window on the preview window.

### General

- > Sensitivity: Enter the sensitivity to detect an object in motion.
- > Save: Click this button to confirm the settings.

### **Note:**

Motion detect function may not normal operate as installation environment.

### How to set the motion detect window

1. Click the [Add] button. The motion detect window is displayed. You can add the five windows maximum for motion detection area.
2. Set the [Sensitivity] option.
3. Click the edge or corner of the window box to adjust the window size for motion detection.
4. Click the [Save] button to save the settings.

### **Notes:**

- You can reset the window size. Click one of the window edge or corner and drag & drop to reset the motion detection area.
- Motion Detection can be activated when at least one of channels(HD/SD) is enabled, Video codec is set to H.264 and GOP size is more than 2.

## Smart Analytics (Optional)

### Notes:

- The [Smart Analytics] option is ancillary function and performance is depends on installation environment or configuration.
- SD resolution is changed when you use the Smart Analytics function.

### Smart Analytics Monitoring

- > Enable : Set to [ON] or [OFF]. Setup menu is appeared when selects [ON].



### Event

Select the Event. (Intelligent Motion Detection, Streaming Metadata, Trip Zone, Object Counting) If you choose option, selected option is activated.

### Preview

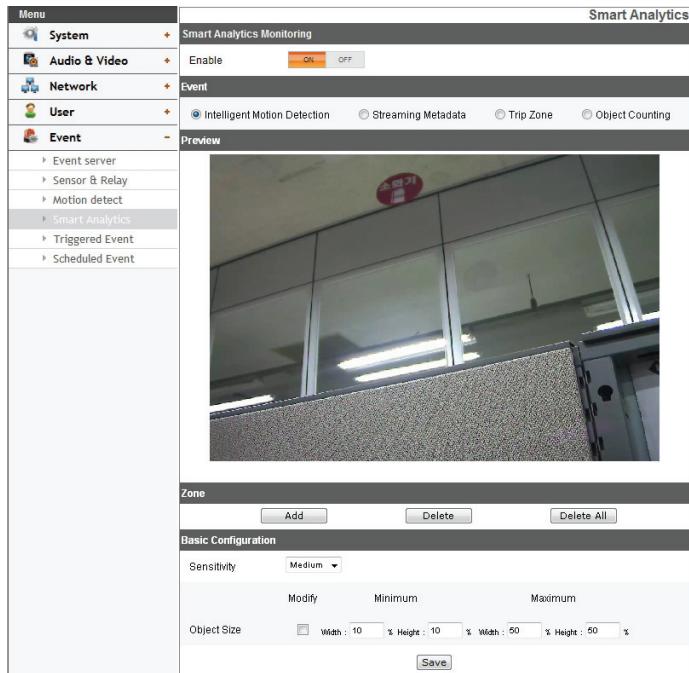
You can preview the camera image on the preview window.

### Notes:

- Double click the preview screen to maximize full screen.
- To return to previous screen to double click full screen.

## Intelligent Motion Detection

Detect the motion of object where you set the zone.



- > Zone: Set the zone.

- Add
  1. Click the [Add] button. When you click on the preview screen, yellow cross point is displayed.
  2. Click again to make another point. The point is connected as sky blue line from previous point.

- To complete the zone, move the mouse cursor from the selected points and click the mouse right button.

**Notes:**

- When you select all of point, you can set up to 15 points and area is set automatically.
- You can cancel the point by click the mouse right button near the other point.
- If the path is intersected each other, area setting can not complete.
- Up to 4 Zone is available to set.
- Delete: Delete the selected zone.
- Delete All: Delete all of the motion area.

> Basic Configuration

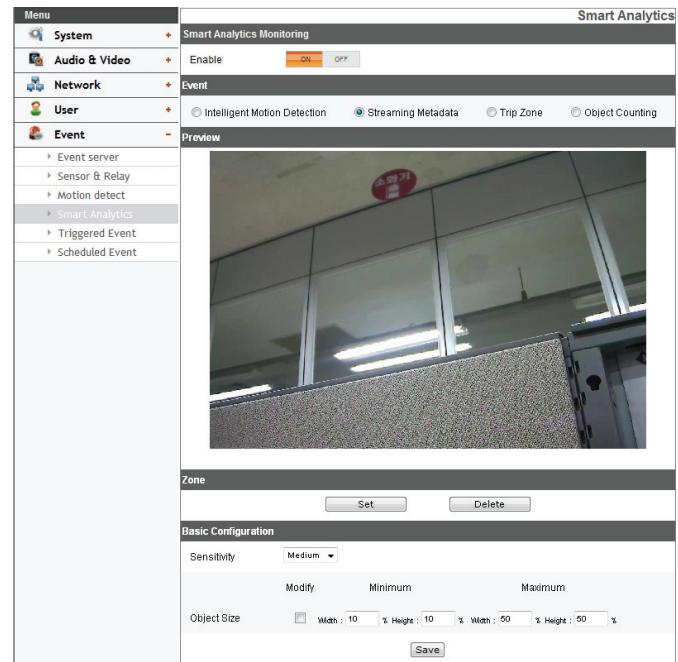
- Sensitivity: Select the sensitivity from drop-down list to detect an object in motion.
- Object Size
  - Click the check box of the [Modify] option.
  - The rectangular zone of the maximum and the minimum object size are displayed.
  - Drag the point of the rectangular zone to adjust the size.

**Notes:**

- When you click [Modify], value of maximum and minimum object size is initialized.
- Width and Height of zone are displayed as percentage of the screen automatically.
- Maximum value is more than minimum value.
- Save: Click this button to confirm the settings.

Streaming Metadata

Send the VA Metadata where detected zone of the user's setting for use from the Client. The camera do not conduct the VA detection.



> Zone: Set the zone.

- Set
  - Click the [Set] button. When you click on the preview screen, yellow cross point is displayed.
  - Click again to make another point. The point is connected as sky blue line from previous point.

- To complete the zone, move the mouse cursor from the selected points and click the mouse right button.

**Notes:**

- When you select all of point, you can set up to 15 points and area is set automatically.
- You can cancel the point by click the mouse right button near the other point.
- If the path is intersected each other, area setting can not complete.
- Delete: Delete the zone.

> Basic Configuration

- Sensitivity: Select the sensitivity from drop-down list to detect an object in motion.
- Object Size
  - Click the check box of the [Modify] option.
  - The rectangular zone of the maximum and the minimum object size are displayed.
  - Drag the point of the rectangular zone to adjust the size.

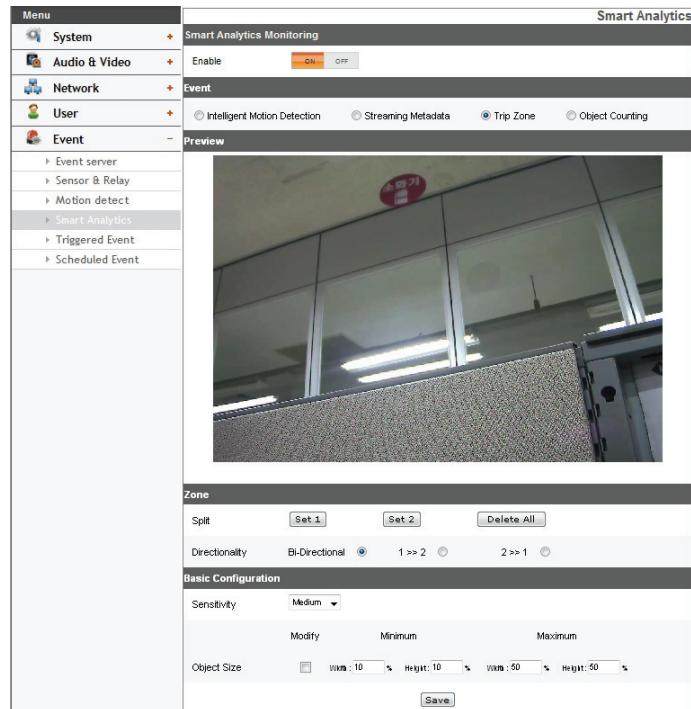
**Notes:**

- When you click [Modify], value of maximum and minimum object size is initialized.
- Width and Height of zone are displayed as percentage of the screen automatically.

- Save: Click this button to confirm the settings.

**Trip Zone**

Detect the direction of object by dividing two of zone.



> Zone: Set the zone.

- Split:

- Click the [Set1] button. When you click on the preview screen, yellow cross point is displayed.

2. Click again to make another point and the point is connected as sky blue line from previous point.
3. Click the mouse right button to complete the zone.

**Notes:**

- You can cancel the point by click the mouse right button near the other point.
- If the path is intersected each other, area setting can not complete.

4. Click [Set2] and select side of the previous zone.
  5. Repeat the steps 1 to 3 to add other positions.
  6. Click [Delete All] to clear all of the area.
- Directionality: Select the movement direction of object.

**Notes:**

- When you select all of point, you can set up to 15 points and area is set automatically.
- You can cancel the point by click the mouse right button near the other point.
- If the path is intersected each other, area setting can not complete.

> Basic Configuration

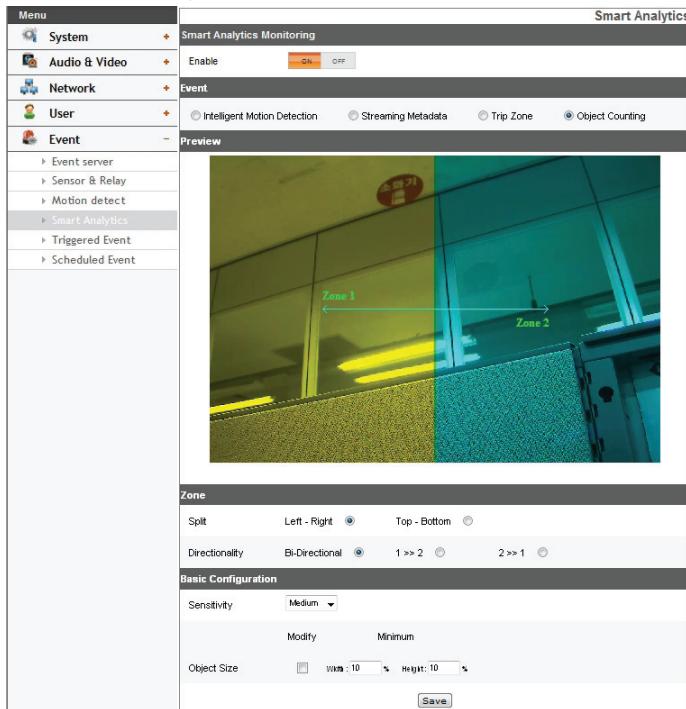
- Sensitivity: Select the sensitivity from drop-down list to detect an object in motion.
- Object Size
  1. Click the check box of the [Modify] option.
  2. The rectangular zone of the maximum and the minimum object size are displayed.
  3. Drag the point of the rectangular zone to adjust the size.

**Notes:**

- When you click [Modify], value of maximum and minimum object size is initialized.
- Width and Height of zone are displayed as percentage of the screen automatically.
- Save: Click this button to confirm the settings.

## Object Counting

Detect the direction of object by dividing two of zone. Detect zone is divided automatically as vertically or horizontally. The number of detection is displayed on center bottom of the preview screen.



### > Zone: Set the zone.

- Split: Select the method of dividing the zone either vertically or horizontally.
- Directionality: Select the movement direction of object.

## Operation and settings

### > Basic Configuration

- Sensitivity: Select the sensitivity from drop-down list to detect an object in motion.
- Object Size
  - 1. Click the check box of the [Modify] option.
  - 2. The rectangular zone of the minimum object size is displayed.
  - 3. Drag the point of the rectangular zone to adjust the size.

#### Notes:

- When you click [Modify], value of minimum object size is initialized.
- Width and Height of zone are displayed as percentage of the screen automatically.

- Save: Click this button to confirm the settings.

## Triggered Event

When an event (VA/ Motion detect/ Sensor Event) occurs, this unit records the live images and routes as configured.

Trigger	Relay	FTP(VIDEO)	SMTP	SDCard Recording	FTP(JPEG)
Sensor-0	Relay-0				
MotionDetect-0					
IMotionDetect					
TripZone					
ObjectCounting					

### Event schedule list

> To edit the Event Schedule

1. Select the Trigger event and click the [Edit] button. Event schedule window is displayed.
2. Set the options.
  - Trigger: Display the selected trigger event and the current state of trigger. Current state of trigger is Displayed to On or Off.
  - Time: Sets the weekday, Start, Finish, Pre alarm, Post alarm and Ignore interval time options.
  - Action: Selects the options. This occurs when the event runs.
    - FTP server/SMTP server: Uploading of images to an FTP server, or e-mail notification.
    - Control relay(Optional): The relay is activated or deactivated.
    - SDCard recording: Record on the SD card when the event runs.
    - FTP server(JPEG): Sends the JPEG Image to

the FTP server. Image file and suffix setting is available. You can select Date/Time or Sequence of Suffix.

- Stream: Selects the stream of the connected camera.
  - Programmable Alarm (Optional): When the sensor event is activated, the camera will start the recording with the setting value of these options. Using this function, you can get high quality recorded image.
1. Click the check box if you want to activate this function.
  2. Sets the options.
  3. Click the [Save] button to confirm the settings.

### Notes:

- You should register the SMTP and FTP server on the Event server setting to set this function.
- Recording of event(VA/Motion detect/Sensor event) runs every 5 minutes split file.
- Used stream is profile of Master or HD resolution in case of FTP(JPEG) transmission.

## Scheduled Event

Activation Time

Scheduled Event

Activation Time

Always Only scheduled time

00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Sun	Mon	Tue	Wed	Thu	Fri	Sat																	

Action

SDCard recording

FTP server(JPEG)

Profile1(HD)

test

Always

Send Image per 5 seconds [5second-] Base File Name BaseFileName.jpg Suffix Date/Time

Save

## Notes:

- You can select through drag of Activation Time table that is possible to select according to weekday and time.
- Used stream is profile of Master or HD resolution in case of FTP(JPEG) transmission. If always checkbox next to FTP(JPEG) is checked, FTP(JPEG) is always enable regardless of the activation time.
- Save: Click this button to confirm the settings.

## Action

Set the below option.

- SDCard recording : Record to SD Card when event occurs. Selects the camera stream for SD card recording.
- FTP server(JPEG) : Upload the image or send the e-mail to the FTP server. Send Image per, Base File Name and Suffix setting are available.

# Reference

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## Troubleshooting

This section provides useful information to help you to resolve any difficulty you might have with your LG IP device. Fault symptoms, possible causes and remedial actions are provided here.

### **IP Setting problems**

- ARP/Ping: Disconnect and reconnect the power to the network camera. The device should get the IP within 2 minutes.
- Ping your camera: Open the command prompt on your computer, type ping with the IP address of the network device. The reply obtained by this command provides explanation for the cause of the problem.
  1. bytes = 32 time = 2 ms indicates that the IP address is already used and cannot reuse the same. A new IP address needs to be obtained.
  2. Destination host unreachable: indicates that the network device and your computer do not fall in the same subnet hence needs to get a new IP address. Contact the system administrator for the required help.
  3. Request timed out: Indicates that the IP is free as it is not used by anyone and the network device can obtain this.
- IP Conflicts: If the LG network device is set with a static IP address and if the DHCP option is set then there may be IP's same as the network device and other network partner. Hence set the static IP address to 0.0.0.0 to resolve this conflict.

### **Cannot access the camera from browser:**

- Reconnect the network camera with power and check the ping operation to know if the IP is used by others.
- Disable the proxy setting in the Browser if you are using a proxy server.
- Check for proper cabling and network connections, try to ping after verifying the connectivity.
- Sometimes when HTTPS is enabled, we would be checking the URL with http, in this case manually change the URL to the http/https accordingly.
- Verify the DNS and Gateway settings if the IP address is assigned statically to the network device.

### **Accessing camera external to the local network**

- Firewall Protection: Check for the internet firewall with the system administrator, either he has to do port forwarding or modify the DMZ function on the router.
- Default router needed: Check if you need configure the router settings.

### **Sporadic network performance**

- Network Switches or hubs used may be of the lower configuration and the load on this may not meet the required conditions of our network camera.
- Check for the RJ-45 cables that are used for the network connectivity.
- If POE is used check if the power is got by the network camera when connected to it.

### **Login Password lost**

- Reset the camera by pressing the Reset button for more than 3 seconds to restore default settings.
- After the factory settings login using the default user name and password.

### **Video Streaming problems**

- If the video streaming does not start on the Web browser, install the LG Web Client ActiveX program on your computer following the instructions on the Web browser.
- When Windows IE browsers are used always take care to allow pop ups, check this option before we run the web client.
- Check the quality of image by referring the video settings as described in the manual.
- Sometimes there would be intermittent or very slow video streaming, this may be because of the higher resolution and frame rate that are set for the video.
- The video streaming may appear poor at times, this may be because of the network traffic ,too many devices connected to the switch or hub, enabling motion detection to each of the video streams and because of other programs running on your computer.
- If the images appear to be blurred adjust the focus of the network camera to get a clear image.
- Video images if appear white and black adjust the settings in the OSD to get back the colorful image.
- Select the Night mode if the network camera is connected at a place where surrounding light is less or dark.

- If we obtain lower frame rate than set we need to check from the system administrator for sufficient bandwidth available or reduce the number of applications running on the client computer.
- If the client PC's are unable to access the multicast stream, check with the system administrator for the use of a valid multicast address or check if the router is supporting multicasting.
- If the images appear to have white or gray stripes on it, upgrade the Video graphics driver on the client PC to the latest version.
- Video images may be noisy if you are using the camera in a very low light environment or the bit rate/quality is set to very low values. Provide higher values for quality and support the surrounding environment with enough light.

#### **Audio condition**

The client computer that is interacting with the camera needs to have a sound card that is functional to support speaker and microphone.

The sound card needs to be checked for its support for full duplex communication.

Ensure that the mute button of the client computer is not set and all the audio settings are correct.

Speaker button on the web viewer should be enabled to listen the audio from the network camera.

Ensure that the bidirectional audio button is enabled on the Web viewer and the microphone is set.

Change the input and the output gain for microphone and the speaker respectively to set correct audio level.

#### **Clear browser's Cache**

- If your browser is not working correctly after upgrade firmware. Please follow the below solution.
- Solution: Deleting your browser's cache may be resolved this issue.
  1. Open Internet Options in browser Tools menu and click the [Delete Files] button in the second entry (Internet temporary files).
  2. Check the other settings that should not be changed.

#### **RCA output problem**

- RCA output use to initial installation.
- Depending on the IP Camera usage scenario, RCA output video may not be smooth. It is used for initial installation only.

### **BNC output usage**

BNC connector is for convenience of camera installation, and it is not suited to surveillance.

For all further support please contact the supplier or forums or websites.

### **Open source software notice**

To obtain the source code under GPL, LGPL, MPL and other open source licenses, that is contained in this product, please visit <http://opensource.lge.com>. In addition to the source code, all referred license terms, warranty disclaimers and copyright notices are available for download. LG Electronics will also provide open source code to you on CD-ROM for a charge covering the cost of performing such distribution (such as the cost of media, shipping and handling) upon email request to [opensource@lge.com](mailto:opensource@lge.com). This offer is valid for three (3) years from the date on which you purchased the product.

# Specifications

## LNB5100/LND5100/LNV5100 Series

Item	LNB5100	LND5100	LNV5100		
Image Device	6.08 mm (1/3 type) Progressive Scan CMOS (1.3 Mega Pixels)				
Lens Type	DC-Iris, CS Mountable (Optimization of 6.08 mm (1/3 type) Lens of 1.3 Mega Pixels or above)		2.8 mm to 10 mm F1.2		
Day/Night	ICR				
Minimum Illumination	Color	0.3 lx (F1.2, Gain : High)			
	B/W	0.005 lx (F1.2, Gain : High)			
WDR	Support				
Image Enhancement	Backlight Compensation, 2D+3D-DNR, Exposure Control, Sens Up Control, AGC, White Balance, Privacy Masking, EIS, Sharpness, Digital Zoom, Scene mode				
Resolution (Maximum)	Up to 1 280 x 1 024				
Output	RJ-45 (Network), RCA (Installation)				
Frame Rate (Maximum)	30 fps @ 1280 x 1024, 30 fps @ 720p				
Compression	H.264_HIGH, H.264, MJPEG				
Multi-Streaming	Dynamic Profile (Up to 7)				
Audio In/Out	1/1				
Audio Compression	G.711, G.726				
2-way Audio	Support				
SD Slot	micro SD				

EVENT	Alarm In/Out	1/1		
	Motion detection	Support		
	Event Notification	Relay Out, Email, FTP		
	Pre Event Buffering	Support		
VA	Intelligent Motion Detection	Support		
	Streaming Metadata	Support		
	Trip Zone	Support		
	Object Counting	Support		
Integrated Client		LVi510		
Remote S/W		LVi510, Mobile application (iPhone, Android, iPad)		
Connections		Up to 10		
Security		Password Protection, HTTPS(SSL, TLS)		
Ethernet		10/100 Ethernet		
Protocol	IPv4 and IPv6	TCP/IP, UDP, HTTP, HTTPS, RTP, RTSP, DHCP, ICMP		
	IPv4	FTP, SMTP, NTP, ARP, SNMP v1/v2c/v3, DDNS(LG)		
Open Protocol		ONVIF 2.2 Profile S,PSIA 1.1		
Operation Temperature/Humidity		-10 °C to 50 °C / 0 % RH to 80 % RH		
Power Source		PoE (IEEE 802.3af ), DC 12 V (±20 %)		
Power Consumption		5.9 W		
Input current		Maximum 440 mA (DC 12 V), Maximum 140 mA (PoE)		
Dimension		68.6 mm x 54.0 mm x 121.5 mm (W x H x D)		140 mm x 120 mm (Ø x H)
Weight		365 g		964 g

LNB3100/LND3100 Series

Item	LNB3100	LND3100
Image Device	6.08 mm (1/3 type) Progressive Scan CMOS (1.3 Mega Pixels)	
Lens Type	DC-Iris, CS Mountable (Optimization of 6.08 mm (1/3 type) Lens of 1.3 Mega Pixels or above)	3 mm F2.0
Day/Night	Digital	
Minimum Illumination	0.3 lx (F1.2, Gain : High)	0.7 lx (F2.0, Gain : High)
WDR	Support	
Image Enhancement	Backlight Compensation, 2D+3D-DNR, Exposure Control, Sens Up Control, AGC, White Balance, Privacy Masking, EIS, Sharpness, Digital Zoom	
Resolution (Maximum)	Up to 1 280 x 1 024	
Output	RJ-45 (Network), RCA (Installation)	
Frame Rate (Maximum)	30 fps @ 1 280 x 1 024, 30 fps @ 720p	
Compression	H.264_HIGH, H.264, MJPEG	
Multi-Streaming	Dynamic Profile (Up to 7)	
SD Slot	micro SD (Optional)	
EVENT	Motion detection	Support
	Event Notification	Email, FTP
	Pre Event Buffering	Support
Integrated Client	LVi510	
Remote S/W	LVi510, Mobile application (iPhone, Android, iPad)	
Connections	Up to 10	
Security	Password Protection, HTTPS(SSL, TLS)	
Ethernet	10/100 Ethernet	

Protocol	IPv4 and IPv6	TCP/IP, UDP, HTTP, HTTPS, RTP, RTSP, DHCP, ICMP			
	IPv4	FTP, SMTP, NTP, ARP, SNMP v1/v2c/v3, DDNS(LG)			
Open Protocol	ONVIF 2.2 Profile S,PSIA 1.1				
Operation Temperature/Humidity	-10 °C to 50 °C / 0 % RH to 80 % RH				
Power Source	PoE (IEEE 802.3af ), DC 12 V (±20 %)				
Power Consumption	5.9 W				
Input current	Maximum 440 mA (DC 12 V), Maximum 140 mA (PoE)				
Dimension	68.6 mm x 54.0 mm x 121.5 mm (W x H x D)	140 mm x 110 mm (Ø x H)			
Weight	357 g	506 g			

LNU5100R/LND5100R/LNV5100R Series

Item	LNU5100R	LND5100R	LNV5100R
Image Device	6.08 mm (1/3 type) Progressive Scan CMOS (1.3 Mega Pixels)		
Lens Type	2.8 mm to 10 mm F1.2		
Day/Night	ICR		
Minimum Illumination	Color	0.3 lx (F1.2, Gain : High)	
	B/W	0 lx (LED On)	
IR Distance	30 m	20 m	
WDR	Support		
Image Enhancement	Backlight Compensation, 2D+3D-DNR, Exposure Control, Sens Up Control, AGC, White Balance, Privacy Masking, EIS, Sharpness, Digital Zoom, Scene mode		
Resolution (Maximum)	Up to 1 280 x 1 024		
Output	RJ-45 (Network), RCA (Installation)		
Frame Rate (Maximum)	30 fps @ 1 280 x 1 024, 30 fps @ 720p		
Compression	H.264_HIGH, H.264, MJPEG		
Multi-Streaming	Dynamic Profile (Up to 7)		
Audio In/Out	1/1		
Audio Compression	G.711, G.726		
2-way Audio	Support		
SD Slot	micro SD		
EVENT	Alarm In/Out	1/1	
	Motion detection	Support	
	Event Notification	Relay Out, Email, FTP	
	Pre Event Buffering	Support	

VA	Intelligent Motion Detection	Support			
	Streaming Metadata	Support			
	Trip Zone	Support			
	Object Counting	Support			
Integrated Client		LVi510			
Remote S/W		LVi510, Mobile application (iPhone, Android, iPad)			
Connections		Up to 10			
Protection		IP66, Vandal Proof	Not Support	IP66, Vandal Proof	
Security		Password Protection, HTTPS(SSL, TLS)			
Ethernet		10/100 Ethernet			
Protocol	IPv4 and IPv6	TCP/IP, UDP, HTTP, HTTPS, RTP, RTSP, DHCP, ICMP			
	IPv4	FTP, SMTP, NTP, ARP, SNMP v1/v2c/v3, DDNS(LG)			
Open Protocol		ONVIF 2.2 Profile S,PSIA 1.1			
Operation Temperature/Humidity		-10 °C to 50 °C / 0 % RH to 80 % RH			
Power Source		PoE (IEEE 802.3af ), DC 12 V (±20 %), AC 24 V (±10 %)	PoE (IEEE 802.3af ), DC 12 V (±20 %)		
Power Consumption		9.9 W	7 W		
Input current		Maximum 590 mA (AC 24 V), Maximum 690 mA (DC 12 V), Maximum 190 mA (PoE)	Maximum 590 mA (DC 12 V), Maximum 170 mA (PoE)		
Dimension		84 mm x 83.5 mm x 339 mm (W x H x D)	140 x 120 mm (Ø x H)	140 x 122 mm (Ø x H)	
Weight		1.4 kg (with Sunshield 1.57 kg)	570 g	927 g	

Item	LNV7300	LND7300
Image Device	6.49 mm (1/2.8 Type) Progressive Scan CMOS (3 Mega Pixels)	
Lens Type	3 mm to 9 mm F1.2	
Day/Night	ICR	
Minimum Illumination (30 IRE)	Color	0.4 lx
	B/W	0.005 lx
WDR	Support	
Image Enhancement	Backlight Compensation, 2D+3D-DNR, Exposure Control, Sens Up Control, AGC, White Balance, Privacy Masking, EIS, Sharpness, Digital Zoom, Scene mode	
Resolution (Maximum)	Up to 2040 x 1536	
Output	RJ-45 (Network), RCA (Installation)	
Frame Rate (Maximum)	20 fps @ 2 040 x 1 536, 30 fps @ 1 920 x 1 080	
Compression	H.264_HIGH, H.264, MJPEG	
Multi-Streaming	Dynamic Profile (Up to 7)	
Audio In/Out	1/1	
Audio Compression	G.711, G.726	
2-way Audio	Support	
SD Slot	micro SD	
EVENT	Alarm In/Out	1/1
	Motion detection	Support
	Event Notification	Relay Out, Email, FTP
	Pre Event Buffering	Support

VA	Intelligent Motion Detection	Support
	Streaming Metadata	Support
	Trip Zone	Support
	Object Counting	Support
Integrated Client		LVi510
Remote S/W		LVi510, Mobile application (iPhone, Android, iPad)
Connections		Up to 10
Protection		IP66, Vandal Proof
Security		Password Protection, HTTPS(SSL, TLS)
Ethernet		10/100 Ethernet
Protocol	IPv4 and IPv6	TCP/IP, UDP, HTTP, HTTPS, RTP, RTSP, DHCP, ICMP
	IPv4	FTP, SMTP, NTP, ARP, SNMP v1/v2c/v3, DDNS(LG)
Open Protocol		ONVIF 2.2 Profile S, PSIA 1.1
Operation Temperature/Humidity		-10 °C to 50 °C / 0 % RH to 80 % RH
Power Source		PoE (IEEE 802.3af), DC 12 V (±20 %)
Power Consumption		5.9 W
Input current		Maximum 590 mA (DC 12 V), Maximum 170 mA (PoE)
Dimension (Ø x H)		140 x 122 mm
Weight		949 g
		140 x 120 mm
		598 g

