TP-LINK®

User Guide

TL-SC3230

Megapixel Surveillance Camera

REV: 1.0.0
1910010755

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FCC STATEMENT

This equipment has been tested and found to comply with the limits for a Class B digital camera, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/ TV technician for help.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1) This device may not cause harmful interference.

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

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

CE Mark Warning

This is a class B product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

Продукт сертифіковано згідно с правилами системи УкрСЕПРО на відповідність вимогам нормативних документів та вимогам, що передбачені чинними законодавчими актами України.

Safety Information

- When product has power button, the power button is one of the way to shut off the product; when there is no power button, the only way to completely shut off power is to disconnect the product or the power adapter from the power source.
- Don't disassemble the product, or make repairs yourself. You run the risk of electric shock and voiding the limited warranty. If you need service, please contact us.
- Avoid water and wet locations.

This product can be used in the following countries:

AT	BG	BY	CA	CZ	DE	DK	EE
ES	FI	FR	GB	GR	HU	IE	IT
LT	LV	MT	NL	NO	PL	PT	RO
RU	SE	SK	TR	UA			

DECLARATION OF CONFORMITY

For the following equipment:

Product Description: **Megapixel Surveillance Camera**

Model No.: **TL-SC3230**

Trademark: **TP-LINK**

We declare under our own responsibility that the above products satisfy all the technical regulations applicable to the product within the scope of Council Directives:
Directives 2004 / 108 / EC, Directives 2006 / 95 / EC, Directives 2011/65/EU

The above product is in conformity with the following standards or other normative documents：

EN 55022:2010
EN 55024:2010
EN 61000-3-2:2006+A1:2009+A2:2009
EN 61000-3-3:2008
EN 60950-1:2006+A11：2009+A1:2010+A12:2011

The product carries the CE Mark

CE

Person responsible for marking this declaration:

Yang Hongliang
Product Manager of International Business

Date of issue:2012

TP-LINK TECHNOLOGIES CO., LTD.
Building 24 (floors 1, 3, 4, 5), and 28 (floors 1-4) Central Science and Technology Park,
Shennan Rd, Nanshan, Shenzhen, China

Contents

Package Contents

The following items should be found in your package:

- TL-SC3230 Megapixel Surveillance Camera
- Power Adapter
- Camera Stand with screws
- RJ45 Cable
- Quick Installation Guide
- Resource CD, including:
  - This User Guide
  - Other helpful information

☞ **Note:**

Make sure that the package contains the above items. If any of the listed items is damaged or missing, please contact your distributor. Using a power adapter with a different voltage than the one included with the camera will cause damage and void the warranty for this product.

Chapter 1 Overview

The user guide explains how to operate this camera from a computer. The user should read this manual completely and carefully before operating the camera.

1.1 Introduction

This camera is an inexpensive and fully scalable surveillance camera. Because the cameras can be plugged into your existing local area network (LAN), you will potentially save thousands of dollars from unnecessary cabling.

The camera is accessible via the LAN or Internet connection. Connect your camera directly to a local area network or xDSL modem, and with Microsoft® Internet Explorer you get instant, on-demand video streams. Within minutes you can set up the camera to capture a video sequence to a PC. The live video can be uploaded to a website for the world to see.

1.2 Features

- ONVIF compliant
- Easy installation with setup wizard (IP Search)
- UPnP device discovery and NAT router transversal for easy installation
- Dynamic IP Service to search your IP camera from Internet easily
- H.264, MPEG4 and JPEG triple compression simultaneously
- 1.3 Mega-pixel resolution
- 1.3 Mega-pixel or 720P mode selectable
- 8-profile encoder simultaneously
- UDP / TCP / HTTP / HTTPS protocols selectable
- 3GPP for 3G mobile remote application
- Smartphone accessible
- Digital zoom
- Built-in microphone
- Audio line out
- Two-way audio
- Micro SD slot
- Intelligent motion detection up to 10 zones
- Voice alerting while event triggered
- Privacy masks
- 3D de-noise to improve picture quality at low lux.
- Image transmission using an FTP or e-mail for event
- DDNS and PPPoE
- Multi-channel control software for surveillance application
- On-line firmware upgrade

1.3 Minimum System Requirements

FPS (QVGA)	~120	120~360	360~540	540~960	960~
CPU	Intel P4 2.4GHz	Intel P4 3.2GHz	Intel Pentium D 950 3.4GHZ	Intel core 2 Duo E8600 3.3GHZ	Intel core i7 2600K 3.8GHZ or above
RAM	512MB	512MB	1GB	2GB	8GB or above
Display	1024x768 resolution or above Support DirectX 9.0c or above Intel 945G or Intel 965G or above				
OS	Windows XP，Win 7 (32bits or 64bits)				
Hard disk	60GB				
Ethernet	100Mbps			1Gbps	
Chipset	Intel 945 or Intel 965 or above				

Since the Windows system occupies certain resources, it is suggested to get higher grade computer hardware to reserve more processing power when more cameras are added into the surveillance network.

QVGA = 320 x 240 pixel

CIF ≒ QVGA , D1 ≒ VGA at mapping table below.

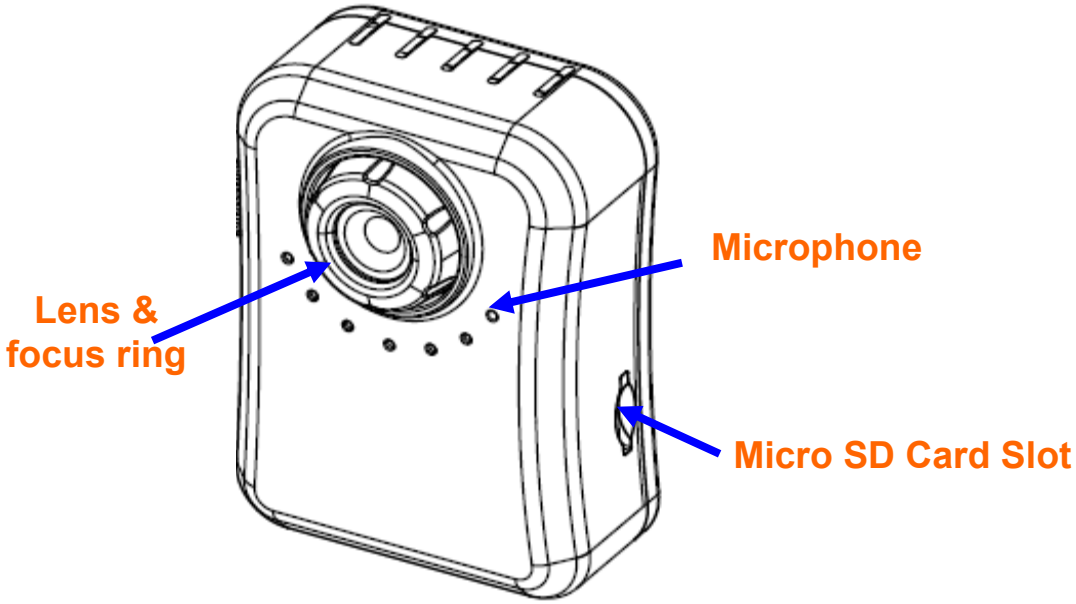
Image resolution mapping table	
Resolution	Compared with QVGA
QQVGA	QQVGA = QVGA / 4
VGA	VGA = QVGA x 4
SXGA	SXGA = QVGA x 16
FULL HD	FHD = QVGA X 24

To reach the Max. camera count, it is required to adjust the video resolution/FPS settings on each channel to make the Surveillance Manager PC able to run/decode/record the video stream.

- Microsoft Internet Explorer 6.0 or later
- Microsoft Media Player 11.0 or later (to playback recorded file)
- VGA Monitor resolution 1280 x 1024 or higher
- Pentium-4 3.6 GHz or higher
- Memory Size: 1GB or more

Chapter 2 Physical Description

2.1 Front View



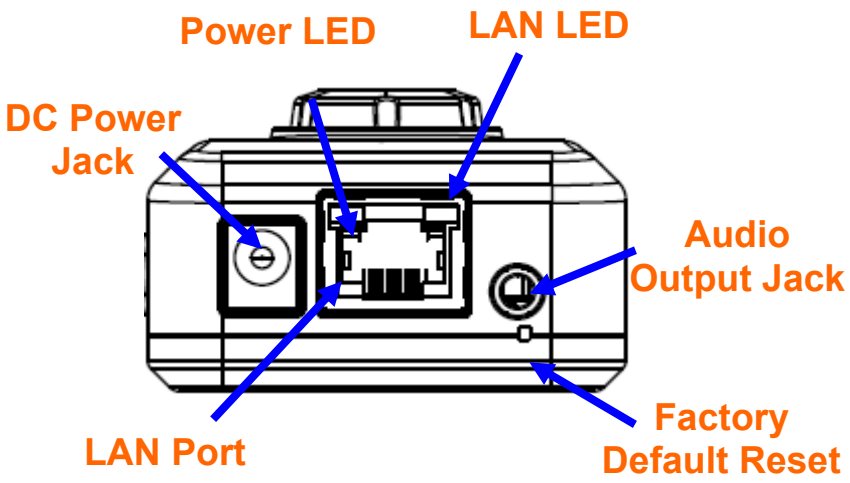
Antenna: The user can attach the included antenna to antenna connector (SMA type) or use another high-gain antenna to get higher performance. This camera has a SMA type antenna.

Lens & focus ring: The user could use this ring to adjust focus manually.

Microphone: The camera has a built-in internal microphone. This microphone is hidden in the pinhole located on the front panel.

Micro SD Card Slot: The user can insert a micro SD card into this slot for event recording.

2.2 Bottom View



Audio Output Jack: Audio-out Jack allows this camera to output audio or alerting sound.

DC Power Jack: The input power is 12VDC. Supply the power to the camera with the power adapter included in package. Otherwise, the improper power adapter may damage the unit and result in danger.

Factory Default Reset: This button is hidden in the pinhole. This button is used to restore the all factory default settings. Sometimes restarting the camera will make the system back to a normal state. If the system still got problems after restart, the user can restore the factory default settings and install it again. To restore the camera, please follow the steps below:

1. Make sure the camera is ready first. Insert the paper clip or other tool and press and hold the button down continuously.
2. Hold it for at least 5 seconds and release the tool while the camera is operating. Then the camera has been restored to default settings and reboot again.

☞ **Note:**

Restoring the factory default setting will lose all previous settings included IP address forever. The user needs to run the IP Search program to search the camera and configure it to let the camera work properly again.

LAN Port: The LAN port is a RJ45 connector for connections to 10Base-T Ethernet or 100Base-TX Fast Ethernet cabling. This Ethernet port built N-Way protocol can detect or negotiate the transmission speed of the network automatically. Please use Category 5 cable to connect the camera to a 100Mbps Fast Ethernet network switch or hub.

LAN LED (green color): This LED will be flashing while network accessing via Ethernet.

Power (orange color): This LED is used to indicate whether the camera is ready or not.

Chapter 3 Hardware Installation

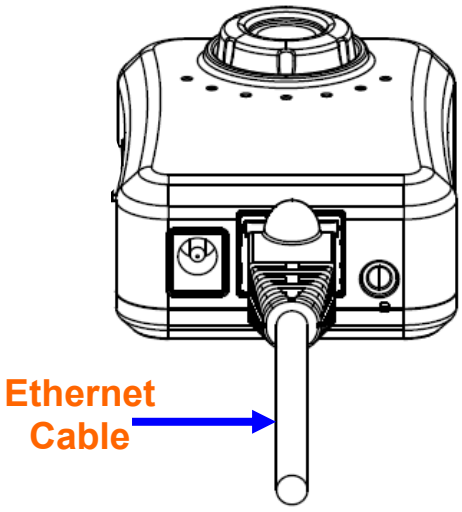
Follow the steps below to mount your camera.

1. **Attach the camera with the included stand**
2. **Place the camera on the table or fix it onto ceiling or wall**

   Use three screws to fix the camera onto the ceiling or wall. You could also put the camera on the table directly.

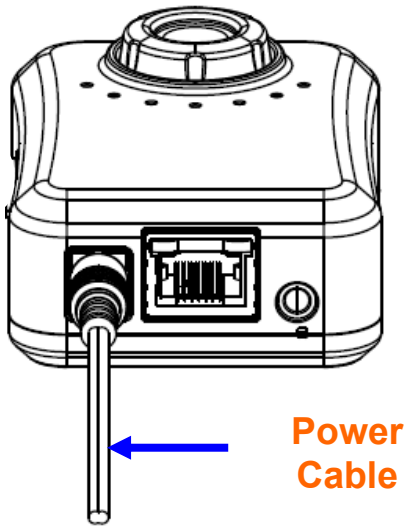
3. **Plug an Ethernet cable into the camera**

   Connect an Ethernet cable to the LAN port located on the camera's bottom and attach it to the network.



4. Connect the external power supply to camera

Connect the attached power adapter to the DC power jack of the camera. **Note**: Use the power adapter, 12VDC, included in the package and connect it to wall outlet for AC power.



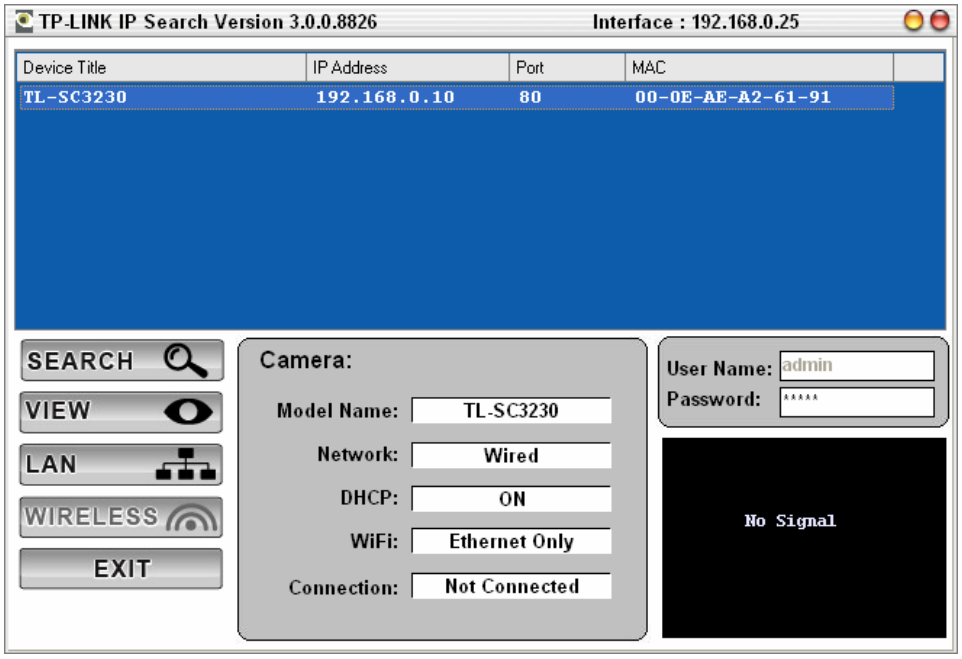
Once you have installed the camera well and powered it on, the Power LED (orange) will turn on later. Once the Power LED turned on, it means the system is booting up successfully. Furthermore, if you have a proper network connection, and access to the camera, the LAN LED (green) will flash green under wired mode.

Chapter 4 Preparation

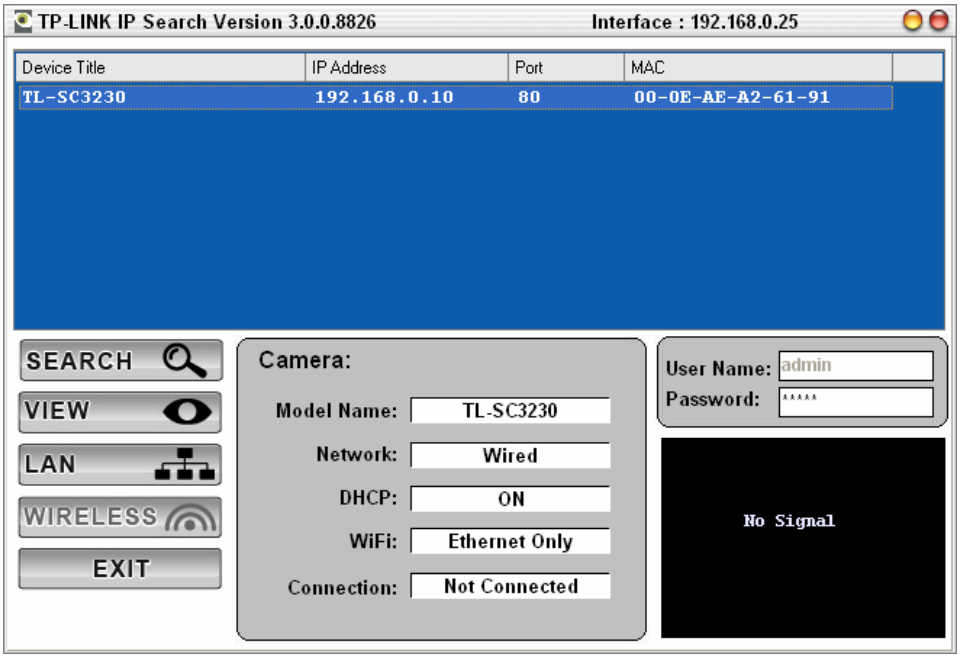
4.1 Search and Set up by IP Search

When you installed the camera on a LAN environment, you have two easy ways to search your cameras by IP Search or UPnP™ discovery. Here is the way to execute IP Search to discover camera's IP address and set up related parameter in a camera.

4.1.1 Search

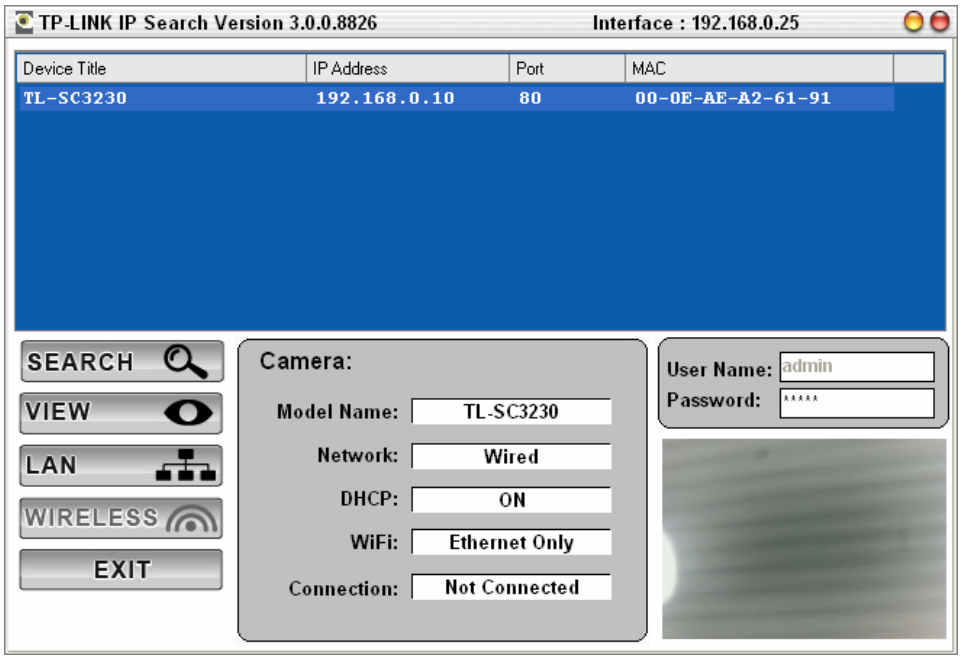


When launch the IP Search, a searching window will pop up. IP Search is starting to search cameras on the LAN. The existed cameras will be listed as below.



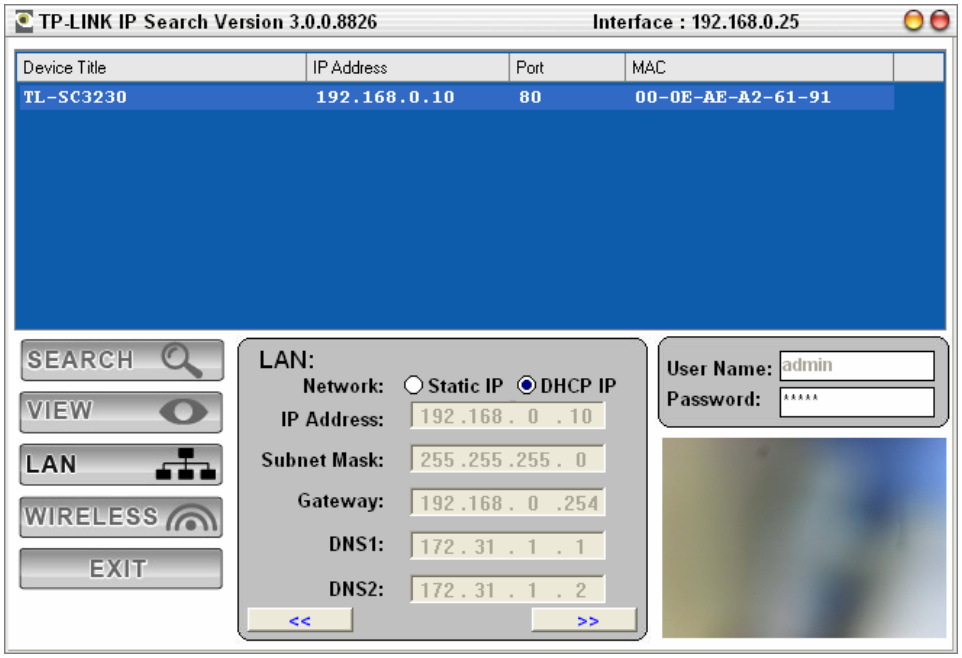
4.1.2 View

If IP Search finds network cameras, **View** button will be available. Please select the camera you want to view and click the **View** button. Then you could see the video from camera directly. Furthermore, you could double click the left button of mouse to link to the network camera by browser.

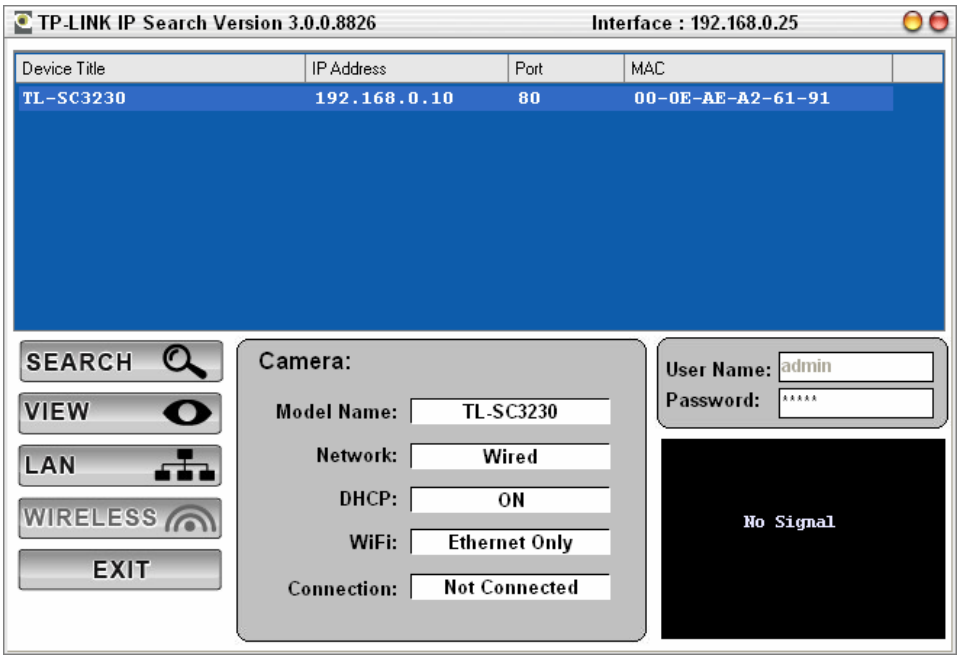


4.1.3 LAN

In case you want to change the IP related parameters of wired interface, please select the camera you want to configure and click the **LAN** button. Relative settings will be carried out as below.

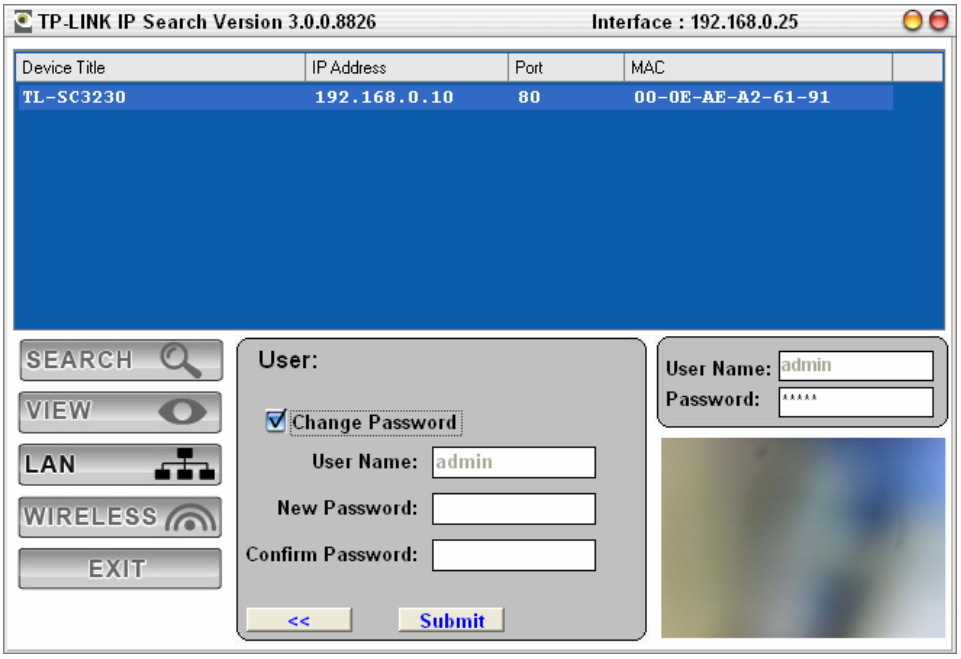


You could modify the relative settings of the selected camera. Click "**<<**" button to quit the LAN setting procedure and click "**>>**" button to move to next page as below.



If you do not want to change username and/or password, just click "**Submit**" button to perform your setting accordingly. Click "**<<**" button to go back to the previous page.

If you like to change username and/or password of the camera, just click the check button. Then, the related fields will show up as below.



After keying in new username and password, click "**Submit**" button to perform your setting accordingly. Click "**<<**" button to go back to the previous page.

4.2 UPnP of Windows® XP, Vista or 7

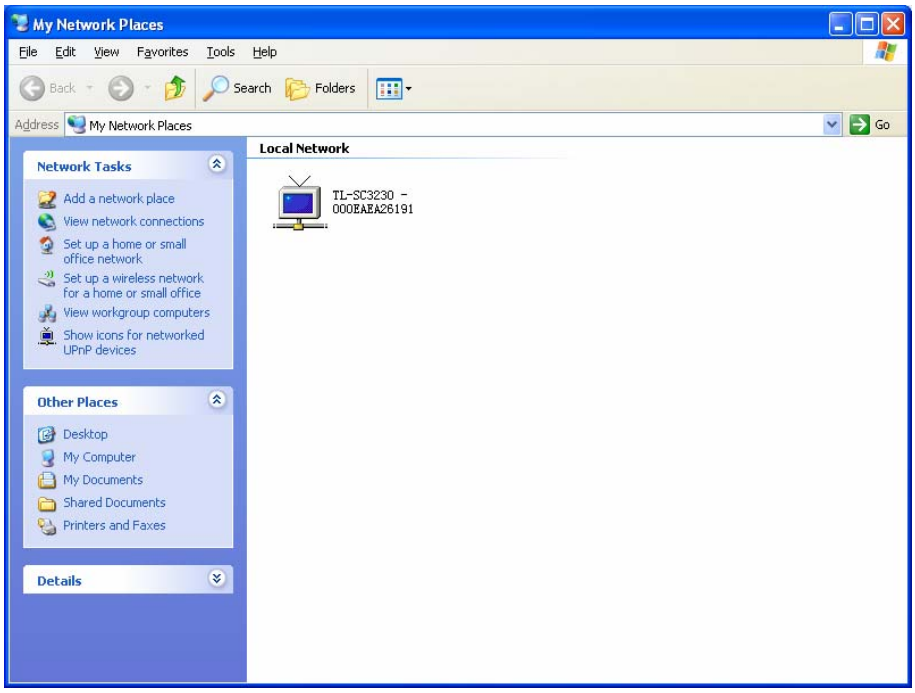
UPnP™ is short for Universal Plug and Play, which is a networking architecture that provides compatibility among networking equipment, software, and peripherals. This camera is an UPnP enabled camera. If the operating system, Windows XP, Vista or 7, of your PC is UPnP enabled, the camera will be very easy to be found.

Please refer to Appendix I to enable UPnP settings only if your operating system of PC is running Windows XP.

☞ Note:

Windows 2000 does not support UPnP feature.

To discover your camera, go to your Desktop and click **My Network Places**.



Click the targeted **camera**. Then Internet Explorer will connect to this camera automatically.

4.3 Install the camera behind a NAT Router

Once installed, the camera is accessible on your LAN. To access the camera from the Internet you must configure your broadband router to allow incoming data traffic to the camera. If the camera is installed on the LAN with a router, then it may get a dynamic IP address from the DHCP server. However, if the camera wants to be accessed from the WAN, its IP address needs to be set up as fixed IP, also the port forwarding or Virtual Server function of router needs to be set up.

However, if your NAT router supports UPnP feature, it can be very easy to achieve NAT traversal automatically. To do this, enable the NAT-traversal feature, which will attempt to automatically configure the router to allow access to the camera.

Installing the camera with an UPnP router on your network is an easy 3–step procedure:

Step1: Enable UPnP option of your NAT router

Step2: Enable UPnP NAT traversal option of the camera (default)

Step1: Enable UPnP option of your NAT router

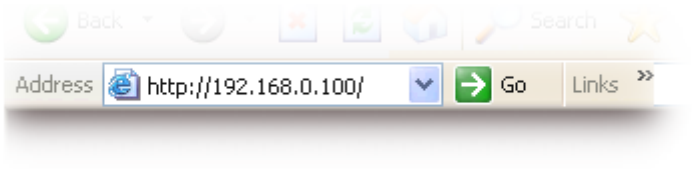
To use UPnP IGD function (NAT traversal), you need to make sure the UPnP function is enabled in your router. Most new home routers should support this function. This feature is not enabled by default in all routers. Please check user's manual of your NAT router for detail.

Step2: Enable UPnP NAT traversal option of the camera

Refer to **Setting ➔ Network ➔ UPnP** page for detail NAT traversal setting. Note that this option is enabled by default.

4.4 Access the camera from the Internet Explorer for the first time

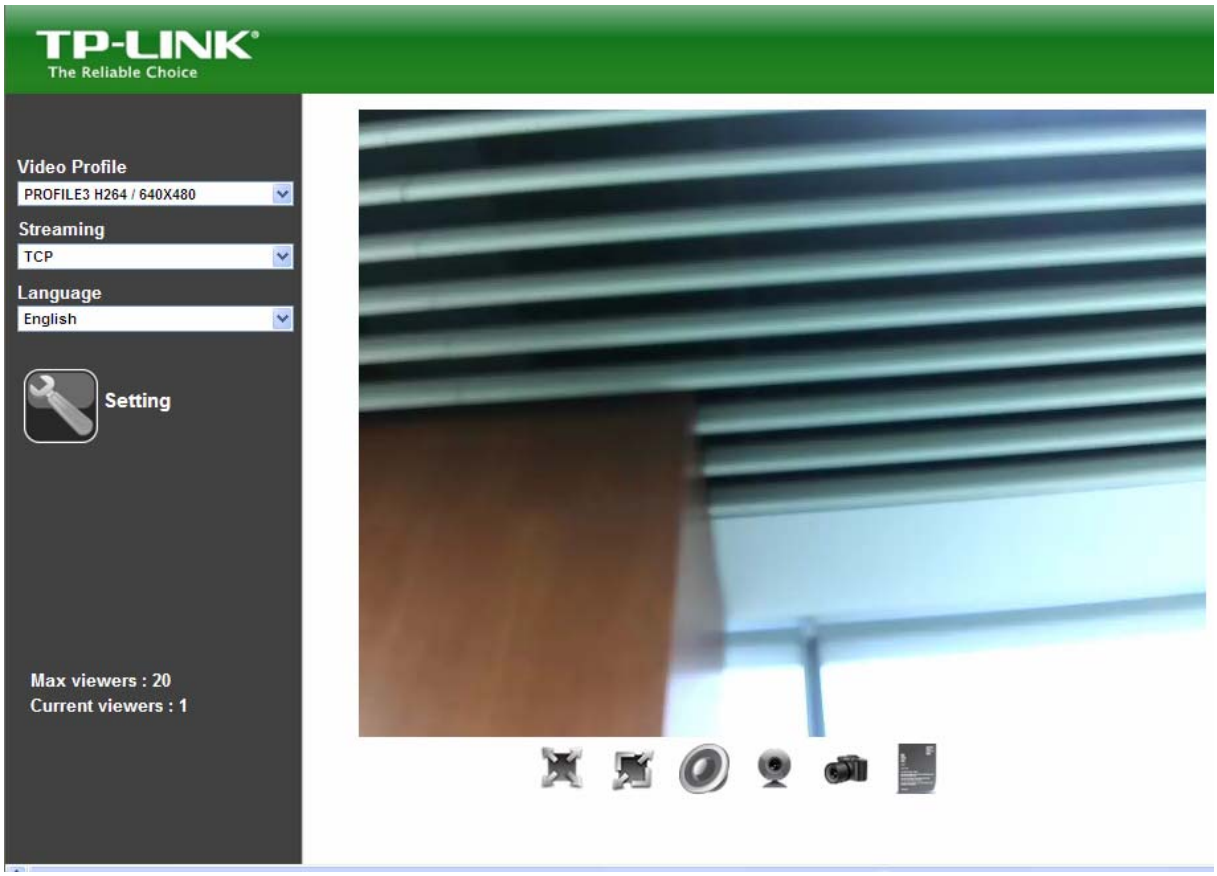
1. Start the web browser on the computer and type the IP address of the camera you want to monitor as below:



2. The Login Window of the camera is prompted. Type in your login name and password under “User name” and “Password” textbox. For the first time use (default value), input the User Name: **admin** and Password: **admin**. Click **OK** button to start the main menu.

3. According to your browser’s security setting, the IE Web Page may prompt the “Security Warning” window. If so, select “Yes” to install and run the ActiveX control into your PC. Otherwise, the system will load the ActiveX silently.

4. After the ActiveX control was installed and run, the first image will be displayed.



4.5 Logging in as a User

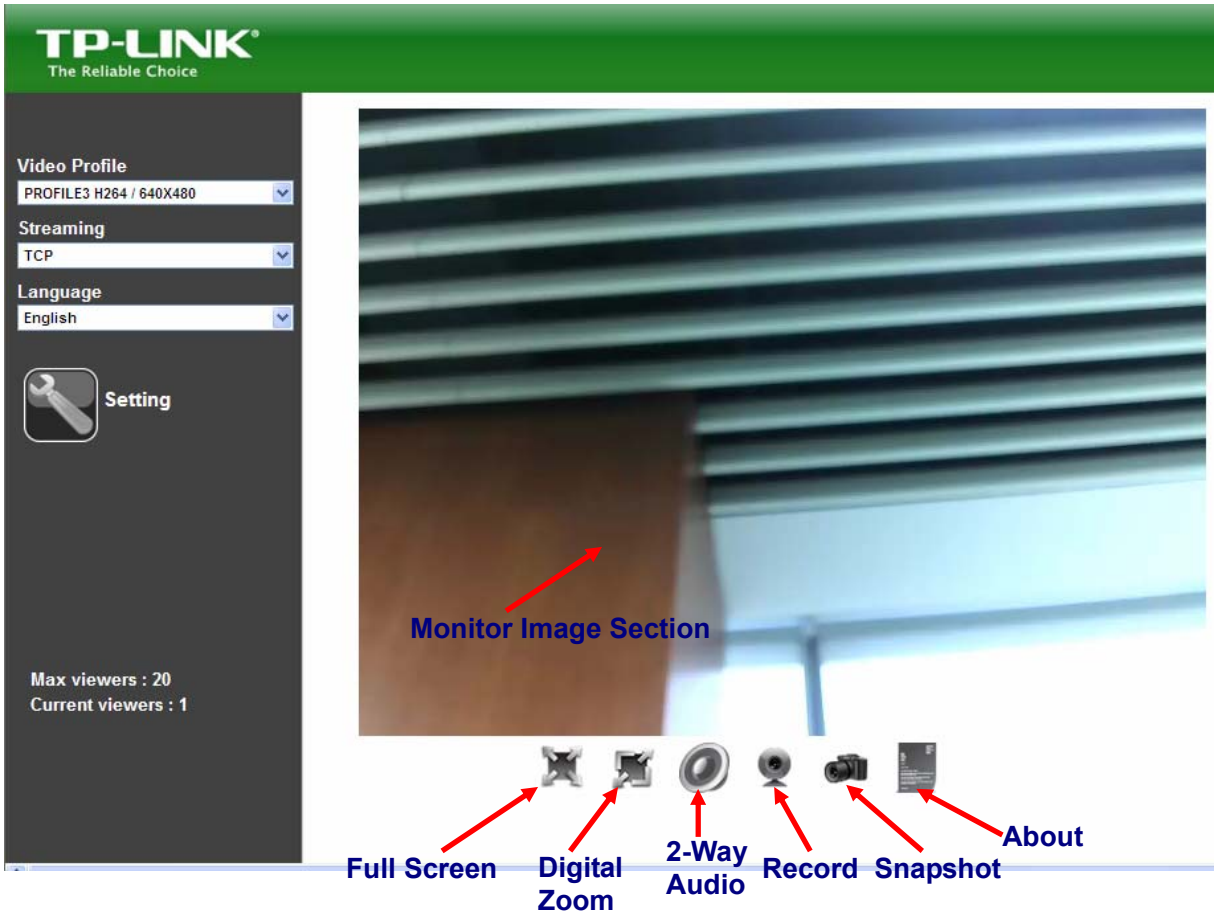
If you log in the camera as an ordinary user, “Setting” function will not be accessible.

4.6 Logging in as an Administrator

If you log in the camera as an Administrator, you can perform all the settings provided by the camera.

Chapter 5 Operating the Camera

Start-up screen will be shown as follow no matter you log into the camera as an ordinary user or as an administrator.



5.1 Monitor Image Section

The image shot by the camera is shown here. The date and time are displayed at the top of the window.

5.2 Video Profile

The camera supports multi-profile function for H.264, MEPG4 and JPEG simultaneously. The user can choose the proper and/or preferred profile which is listed here.

5.3 Streaming Protocol

The user can select proper streaming protocol according to networking environment.

5.4 Language

The camera could provide multiple languages to meet customer's requirement.

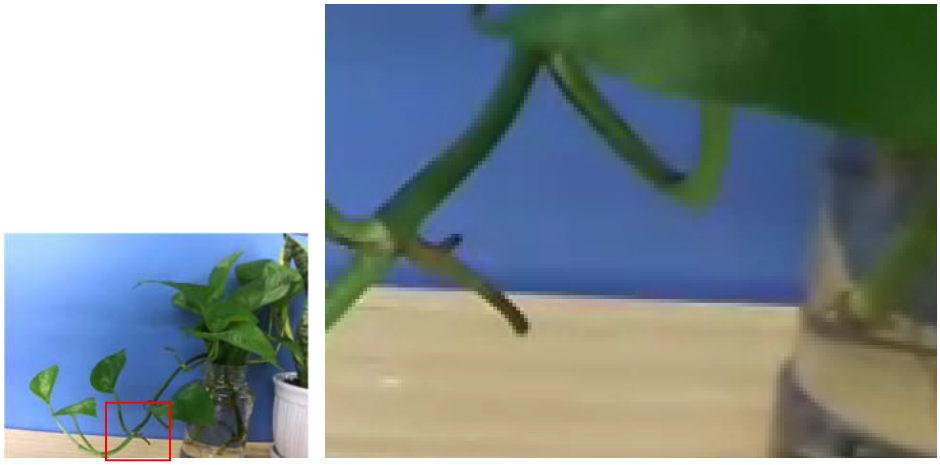
5.5 Full Screen

Enlarge video to full screen display.

 : Enlarge video to full screen display. Press “ESC” key to return to the original screen display.

5.6 Digital Zoom

Click  to activate this function as above. The user can scroll the mouth over the video to adjust zoom ratio and position.

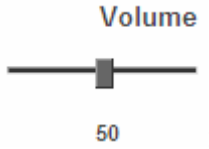


5.7 2-Way Audio

The camera supports 2-way audio function. Select the  icon and you will see the  and the control bar. The user can choose to enable or disable this function by toggling the icon below and scroll the control bar to adjust the audio volume.

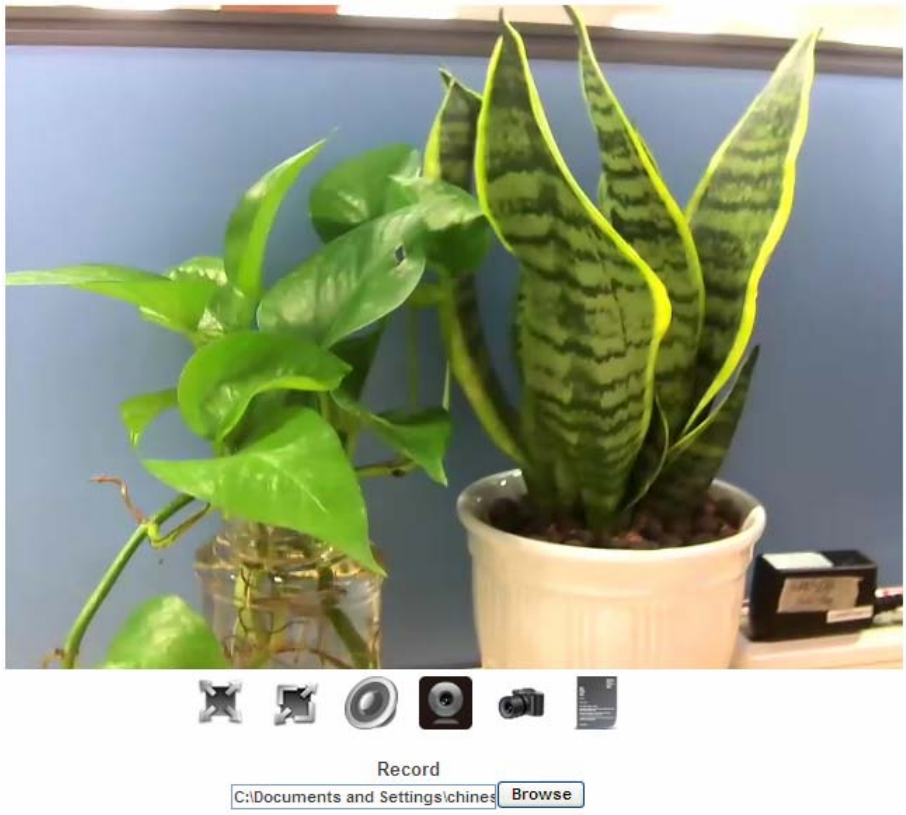
 : Enable audio uploading function.

 : Disable audio uploading function.



: Scroll the control bar to adjust the audio volume.

5.8 Record

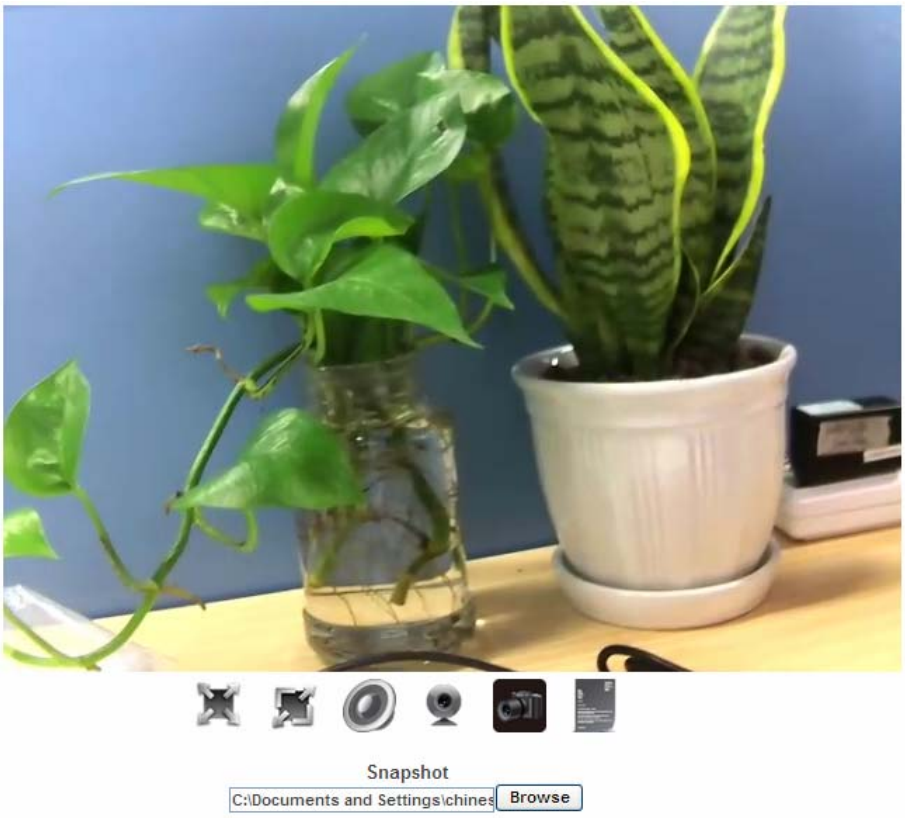


Click the  icon to activate this function. Press  to start recording. The video file is saved as ASF format into your local PC. While you want to stop it, press **Stop** to stop recording. Select **Browser** and the pop-up window will display. Select the save path and file name prefix, and select **OK** to continue.

After stopping recording, list the files. This file is named as Video_yyyymmddhhmmss.avi.

The ASF files can be displayed by the standard Windows Media Player, but it needs the DixectX 9.0 or later version to be installed.

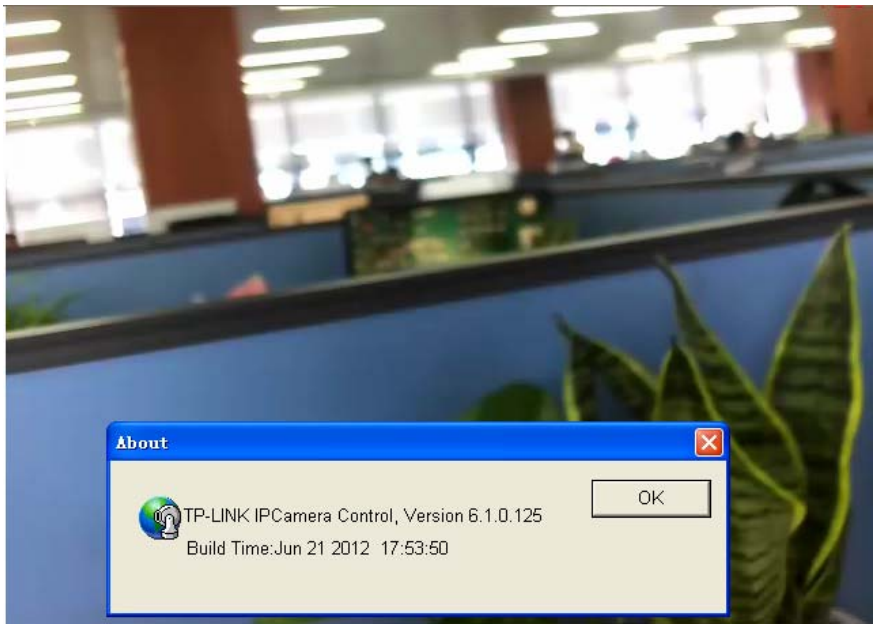
5.9 Snapshot



Click the  icon to activate this function. Press  to take a picture. The image file is saved as JPEG format into your local PC. Select **Browser** and the pop-up window will display. Select the save path and file name prefix, and select **OK** to continue.

If you like to retrieve the saved image, select the file to display the saved image by using any one of graph editing tools.

5.10 About

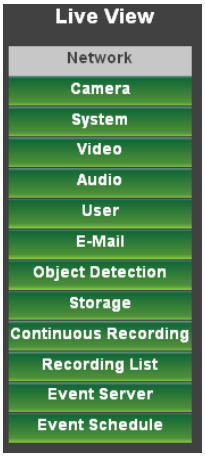


Click the  icon to show this ActiveX information.

Chapter 6 Administrating the Camera

This function is only available for the user logged into camera as administrator.

Click on each menu name to display its setting page



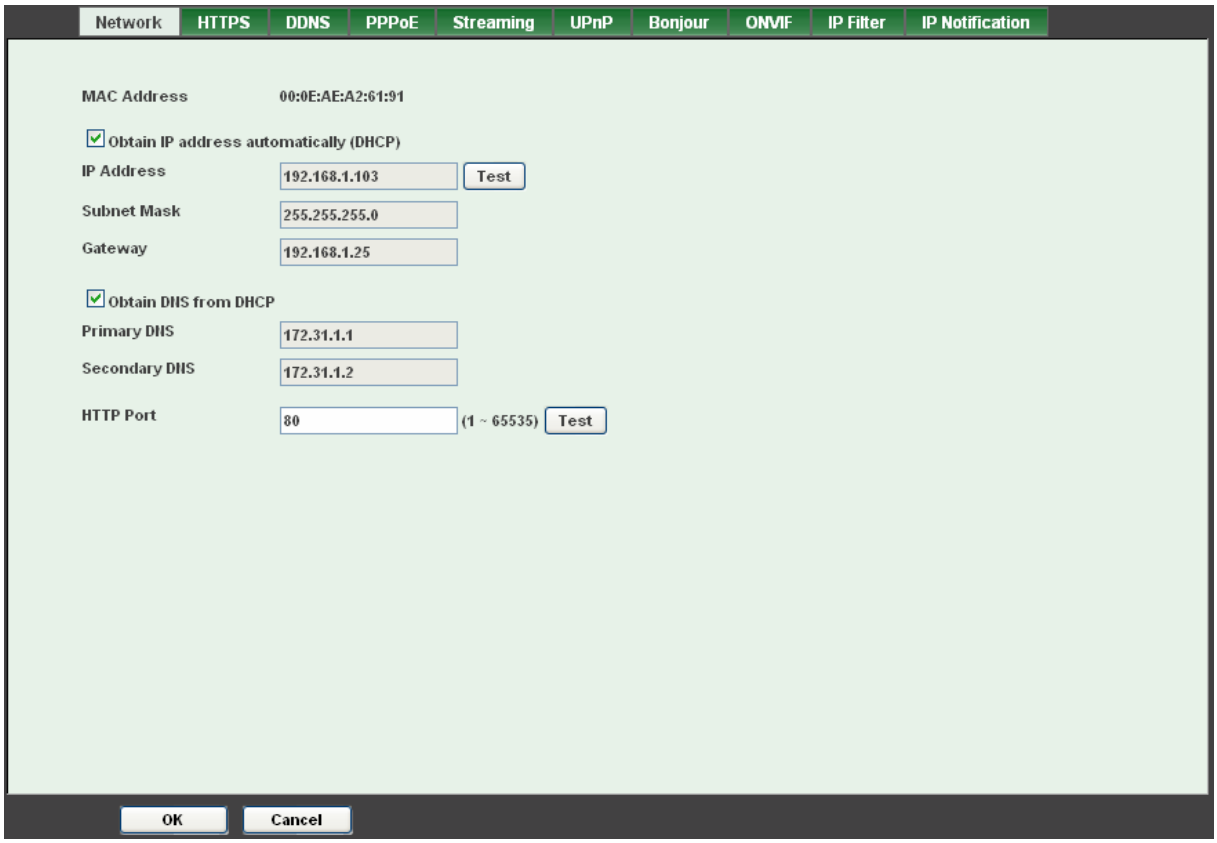
Item	Action
Network	Configure Network settings such as DHCP, DDNS, 3GPP, PPPoE and UPnP
Camera	Adjust camera parameters, position, and set camera tour
System	Configure system information, date & time, maintenance, and view system log file.
Video	Configure bit rate and frame rate of video profiles
Audio	Configure audio parameters
User	Set up user name, password and login privilege
E-Mail	Set up E-Mail configuration
Object Detection	Set up Object detection
Storage	Status and configuration of SD card
Recording List	Files list inside the SD Card
Event Server	Set up FTP/TCP/HTTP server for event
Event Schedule	Configure the schedule while event triggered

6.1 Network: Configure Network settings

Use this menu to configure the network to connect the camera and the clients.

6.1.1 Network

This section provides the menu for connecting the camera through Ethernet cable.



- **MAC address:** Displays the Ethernet MAC address of the camera. Note that the user can not modify it.

- **Obtain IP address automatically (DHCP):** DHCP: Stands for Dynamic Host Configuration Protocol. Enable this checkbox when a DHCP server is installed on the network to issue IP address assignment. With this setting, the IP address is assigned automatically. If this camera can not get an IP address within limited tries, the camera will assign a default IP address, 192.168.0.100, by itself as the default IP address.

- **IP address, Subnet mask, and Gateway:** If you do not select **Obtain an IP address automatically**, then you need to enter these network parameters manually.

- **Obtain DNS from DHCP:** Enable this checkbox when a DHCP server is installed on the network and provide DNS service.

- **Primary DNS and Secondary DNS:** If you do not select **Obtain DNS from DHCP**, then you need to enter these parameters manually.

- **HTTP Port:** The camera supports two HTTP ports. The first one is default port 80 and this port is fixed. This port is very useful for Intranet usage. The second HTTP port is changeable. Users could assign the second port number of http protocol, and the WAN users should follow the port number to login. If the http port is not assigned as 80, users have to add the port number in back of IP address. For example: http://192.168.0.100:8080. Therefore, the

user can access the camera by either http://xx.xx.xx.xx/, or http://xx.xx.xx.xx:xxxx/. If multiple cameras are installed on the LAN and also required to be accessed from the WAN, then the **HTTP Port** can be assigned as the virtual server port mapping to support multiple cameras.

Click **OK** to save and enable the setting.

6.1.2 HTTPS

HTTPS: Stands for Hypertext Transfer Protocol Secure

HTTPS is a combination of the Hypertext Transfer Protocol with the SSL/TLS protocol to provide encrypted communication and secure identification of a network web server. HTTPS connections are often used for sensitive transactions in corporate information systems. The main idea of HTTPS is to create a secure channel over an insecure network. This ensures reasonable protection from eavesdroppers and man-in-the-middle attacks, provided that adequate cipher suites are used and that the server certificate is verified and trusted.

- **HTTPS:** To enable or disable the HTTPS service here. Note that the HTTPS function of this camera is not only encrypted the web content but also audio/video data. If the HTTPS is enabled, there is further option for “HTTP&HTTPS” or “HTTPS only”. In case, the “HTTPS only” is enabled, all packets from the camera will go through HTTPS only and HTTP service is no longer available.

- **Port:** Choose the HTTPS port. The default value is 443.

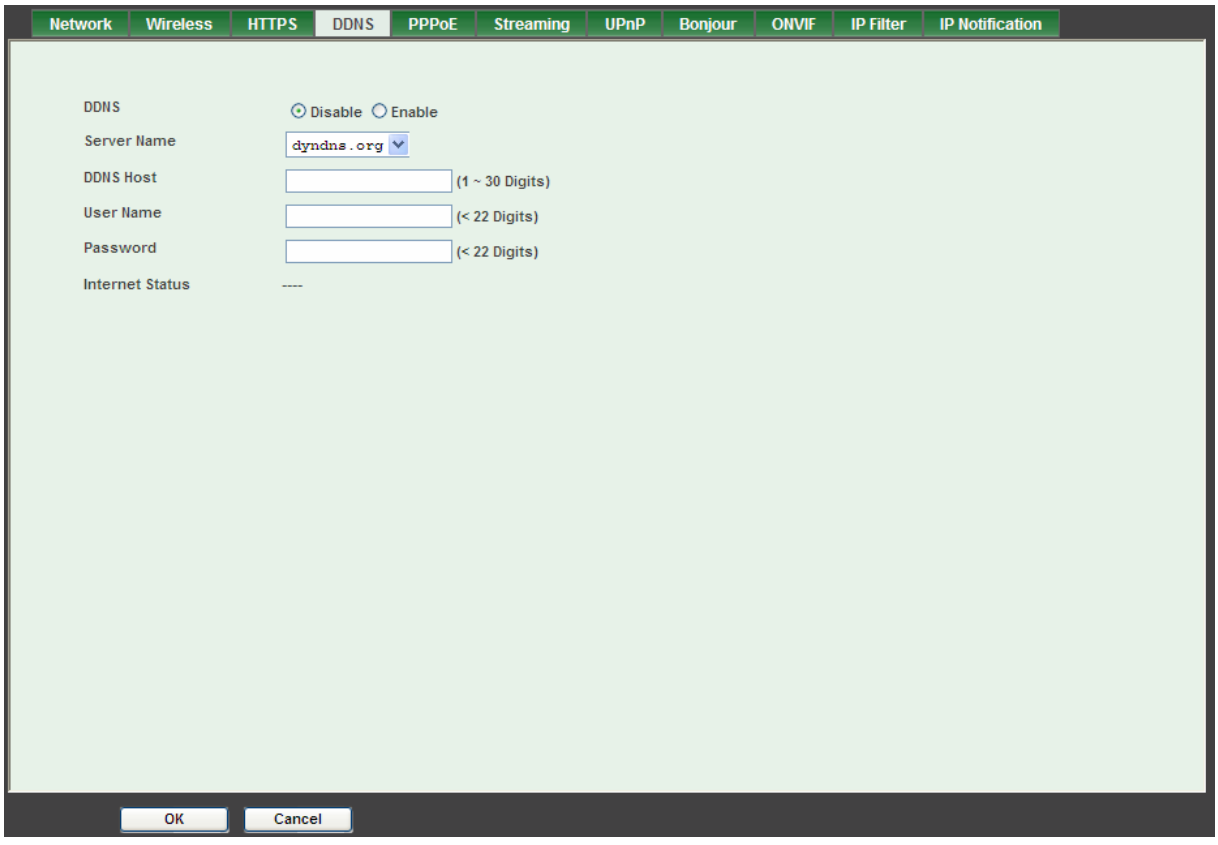
6.1.3 DDNS service

DDNS: Stands for Dynamic Domain Name Server

Your Internet Service Provider (ISP) provides you at least one IP address which you use to connect to the Internet. The address you get may be static, meaning it never changes, or dynamic, meaning it's likely to change periodically. Just how often it changes, depends on your ISP. A dynamic IP address complicates remote access since you may not know what your current WAN IP address is when you want to access your camera over the Internet. One of the possible solutions to the dynamic IP address problem comes in the form of a dynamic DNS service.

A dynamic DNS service is unique because it provides a means of updating your IP address so that your listing will remain current when your IP address changes. There are several excellent DDNS services available on the Internet. One such service you can use is www.DynDNS.org. You'll need to register with the service and set up the domain name of your choice to begin using it. Please refer to the home page of the service for detailed instructions or refer to Appendix G for more information.

If your camera is connected to xDSL directly, you might need this feature. However, if your camera is behind a NAT router, you will not need to enable this feature because your NAT router should take care of this job. As to xDSL environment, most of the users will use dynamic IP addresses. If users want to set up a web or a FTP server, then the Dynamic Domain Name Server is necessary.



- **DDNS:** To enable or disable the DDNS service here.
- **Server name:** Choose one of the built-in DDNS servers.

- **DDNS Host:** The domain name is applied of this camera.
- **User name:** The user name is used to log into DDNS.
- **Password:** The password is used to log into DDNS.

Please refer to Appendix for more detailed information.

6.1.4 PPPoE

PPPoE: Stands for Point to Point Protocol over Ethernet

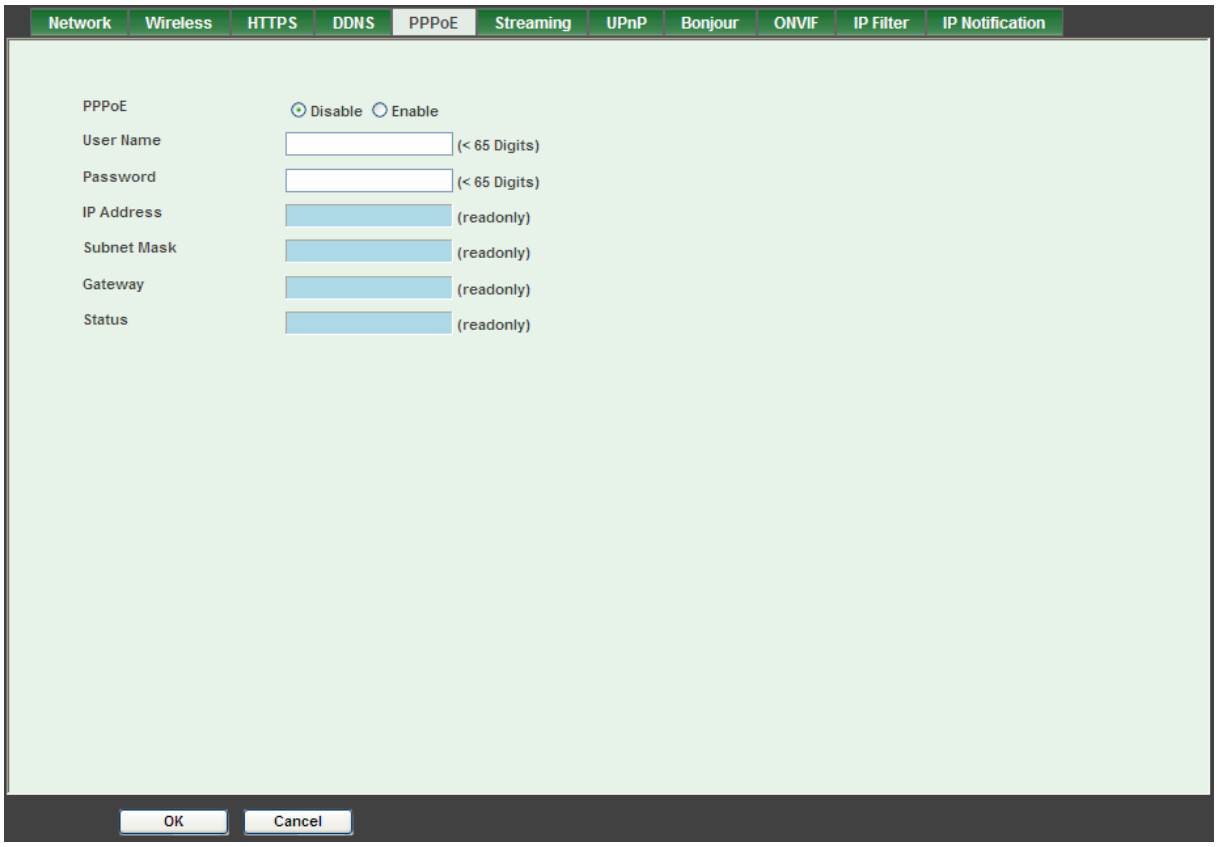
A standard builds on Ethernet and Point-to-Point network protocol. It allows your camera with xDSL or cable connects with broadband network directly, then your camera can dial up and get a dynamic IP address. For more PPPoE and Internet configuration, please consult your dealer or ISP.

The camera can directly connect to the xDSL, however, it should be set up on a LAN environment to program the PPPoE information first, and then connect to the xDSL modem. Power on again, then the camera will dial on to the ISP connect to the WAN through the xDSL modem.

The procedures are

• Connect to a LAN by DHCP or Fixed IP

• Access the camera, and enter **Setting ➔ Network ➔ PPPoE** as below

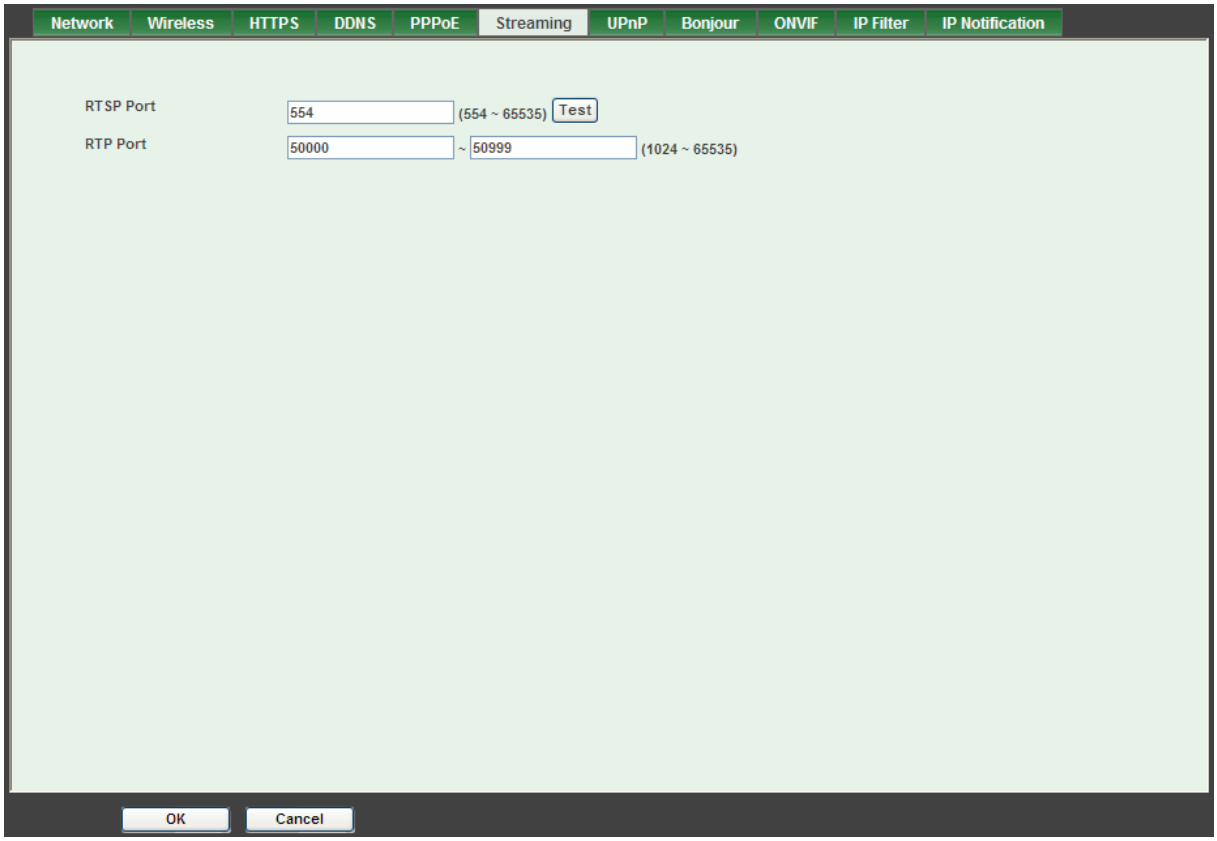


- **PPPoE:** To enable or disable the PPPoE service here.

- **User name:** Type the user name for the PPPoE service which is provided by the ISP.
- **Password:** Type the password for the PPPoE service which is provided by the ISP.
- **IP address, Subnet mask, and Gateway (read only):** Shows the IP information got from PPPoE server site.
- **Status:** Shows the Status of PPPoE connection.

6.1.5 Streaming

RTSP is a streaming control protocol, and a starting point for negotiating transports such as RTP, multicast and Unicast, and for negotiating codecs. RTSP can be considered a "remote control" for controlling the media stream delivered by a media server. RTSP servers typically use RTP as the protocol for the actual transport of audio/video data.

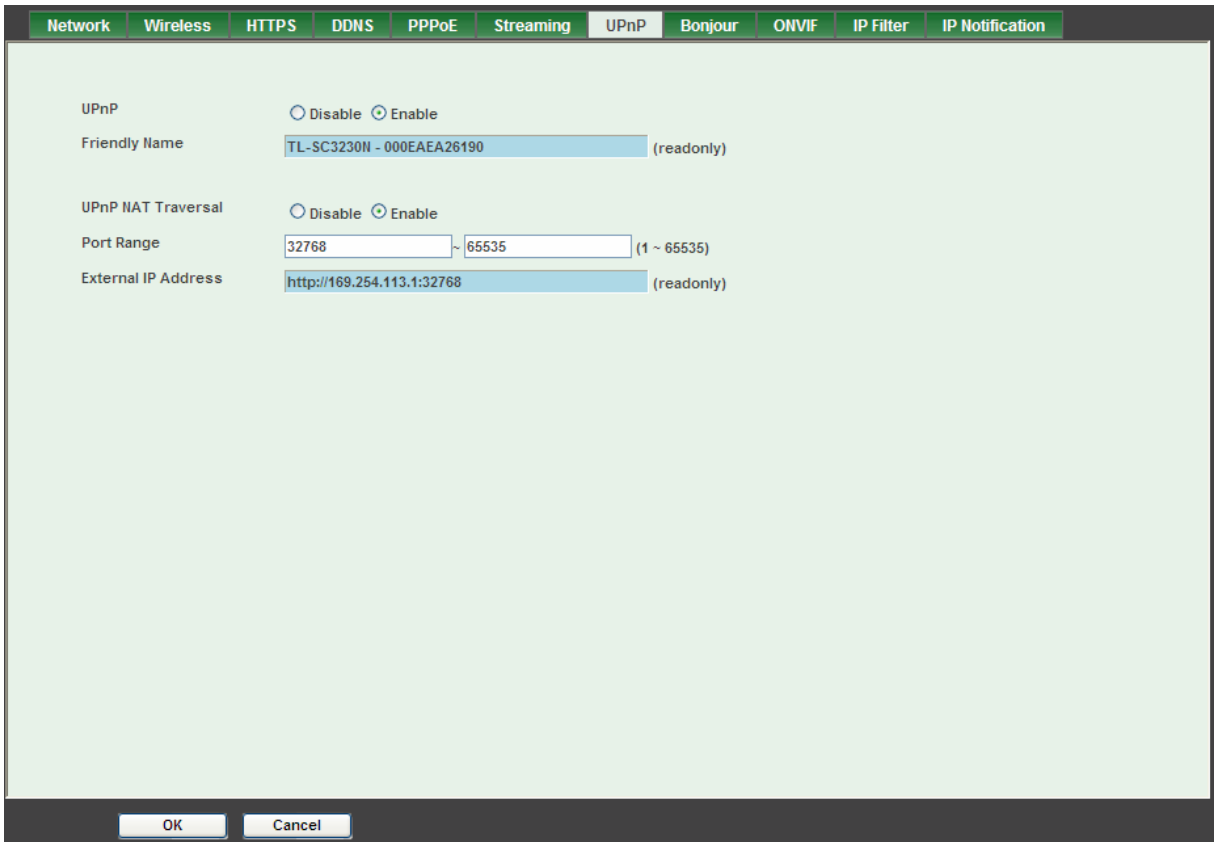


- **RTSP Port:** Choose the RTSP port. The RTSP protocol allows a connecting client to start a video stream. Enter the RTSP port number to use. The default value is 554.
- **RTP Port:** Specify the range of transmission port number of video stream. The default range is 50000 to 50999. The user can specify a number between 1024 and 65535.

6.1.6 UPnP

UPnP is short for Universal Plug and Play, which is a networking architecture that provides compatibility among networking equipment, software, and peripherals. This camera is an UPnP enabled camera. If your operating system is UPnP enabled, the camera will automatically be detected and a new icon will be added to “My Network Places.” If you do not want to use the UPnP functionality, it can be disabled.

In addition, this camera also provides UPnP IGD function for NAT traversal easily. Use NAT traversal when your camera is located on an intranet (LAN) and you wish to make it available from the other (WAN) side of a NAT router. With NAT traversal properly configured, all HTTP traffic to an external HTTP port in the NAT router will be forwarded to the camera.

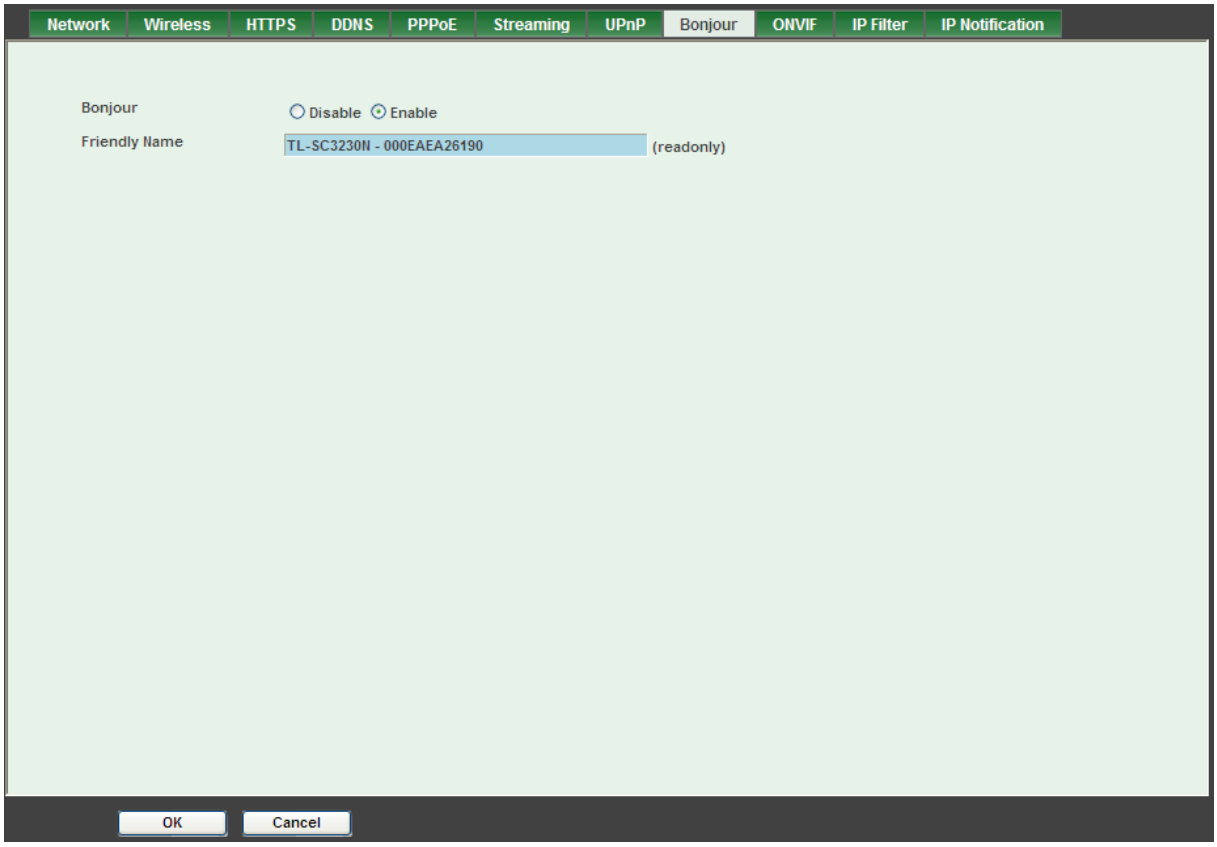


- **UPnP:** To enable or disable the UPnP service here.
- **Friendly Name:** To show the friendly name of this camera here.
- **UPnP NAT Traversal:** When enabled, the camera will attempt to configure port mapping in a NAT router on your network, using UPnP™. **Note** that UPnP™ must be enabled in the NAT router first.
- **Port Range:** The port range will open in NAT router.
- **External IP address:** Show the IP address and port for WAN access through Internet. If NAT traversal is configured successfully, the user can use this IP address and port to access this camera. The external IP address is not shown in case NAT traversal function is failed.

6.1.7 Bonjour

Bonjour, also known as zero-configuration networking, enables automatic discovery of computers, cameras, and services on IP networks. Bonjour uses industry standard IP protocols to allow cameras to automatically discover each other without the need to enter IP addresses or configure DNS servers. Specifically, Bonjour enables automatic IP address assignment without a DHCP server, name to address translation without a DNS server, and service discovery without a directory server. Bonjour is an open protocol which Apple has submitted to the IETF as part of the

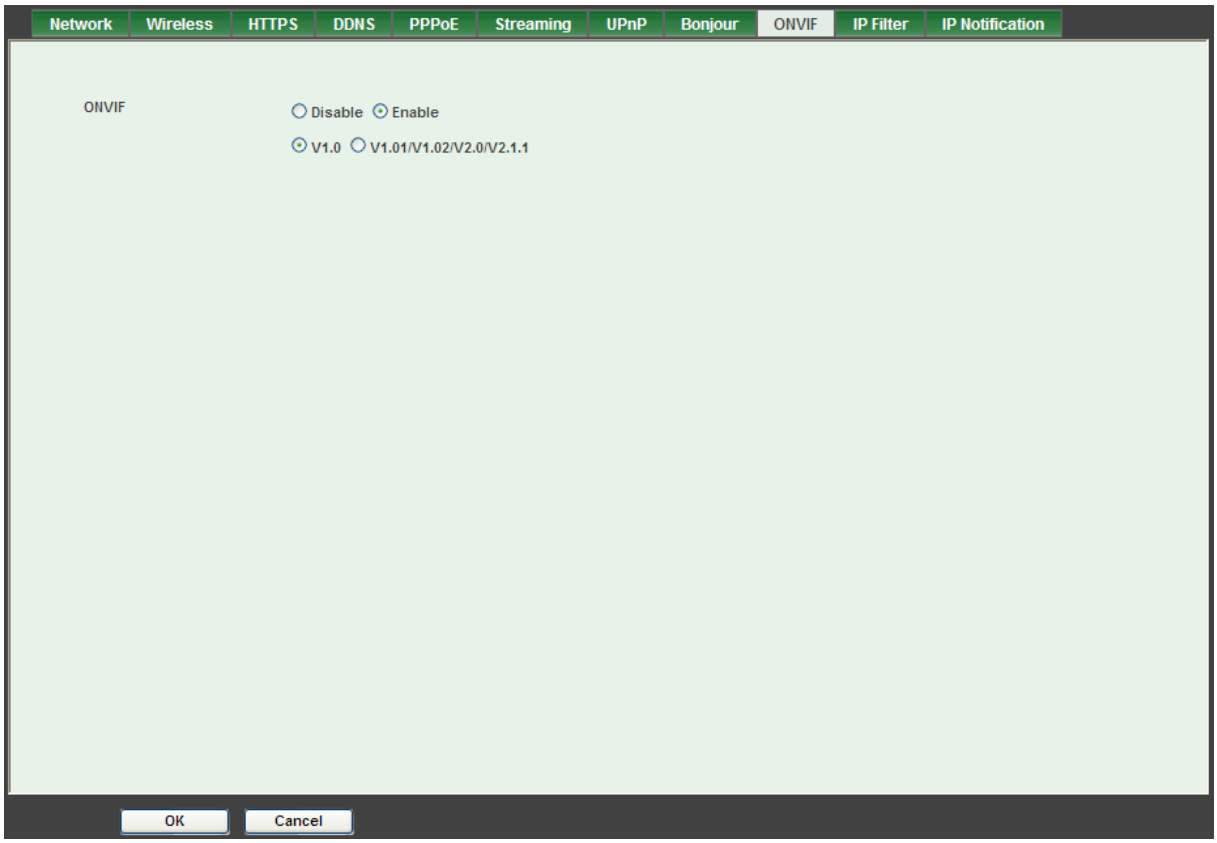
ongoing standards-creation process.



- **Bonjour:** To enable or disable the Bonjour service here.
- **Friendly Name:** To show the friendly name of this camera here.

6.1.8 ONVIF

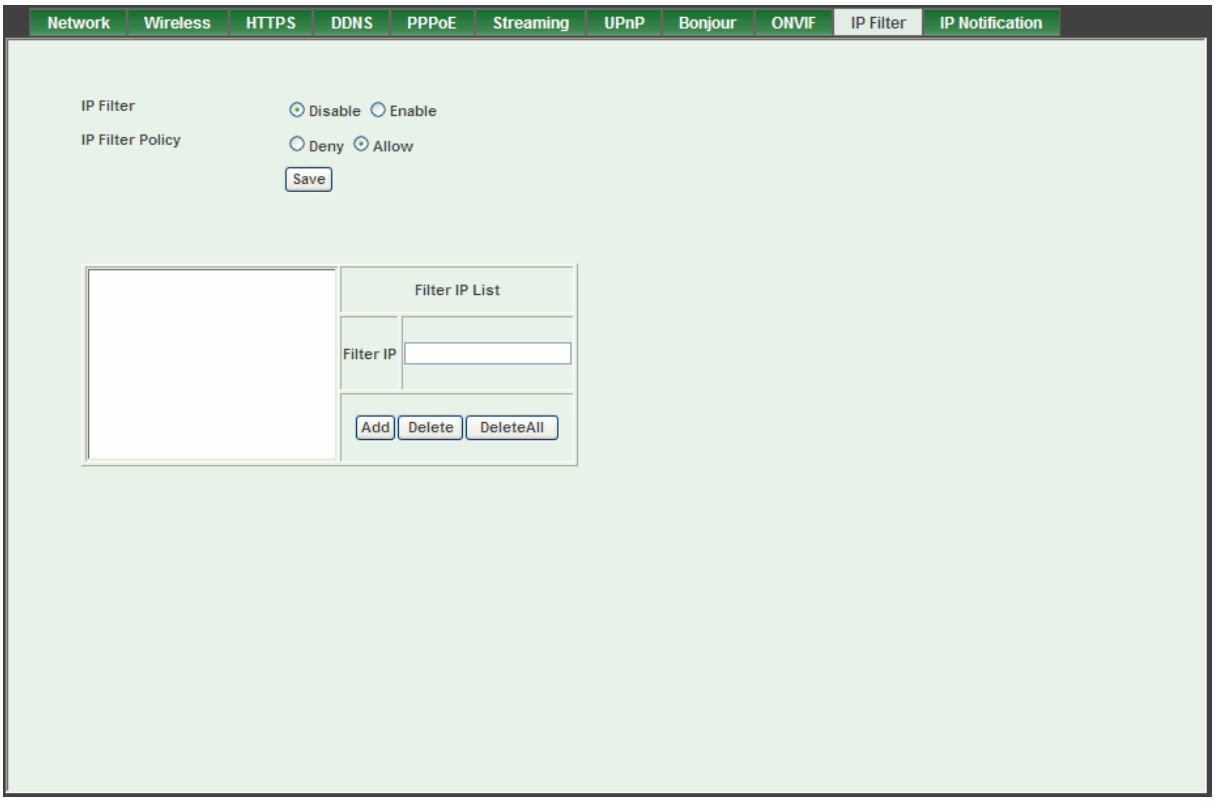
ONVIF is a global and open industry forum with the goal to facilitate the development and use of a global open standard for the interface of physical IP-based security products. Or in other words, create a standard for how IP products within video surveillance and other physical security areas can communicate with each other.



- **ONVIF:** To enable or disable the ONVIF interface here.
- **Version:** Currently, the V1.0 or V1.01/V1.02/V2.0/V2.1.1 is available.

6.1.9 IP Filter

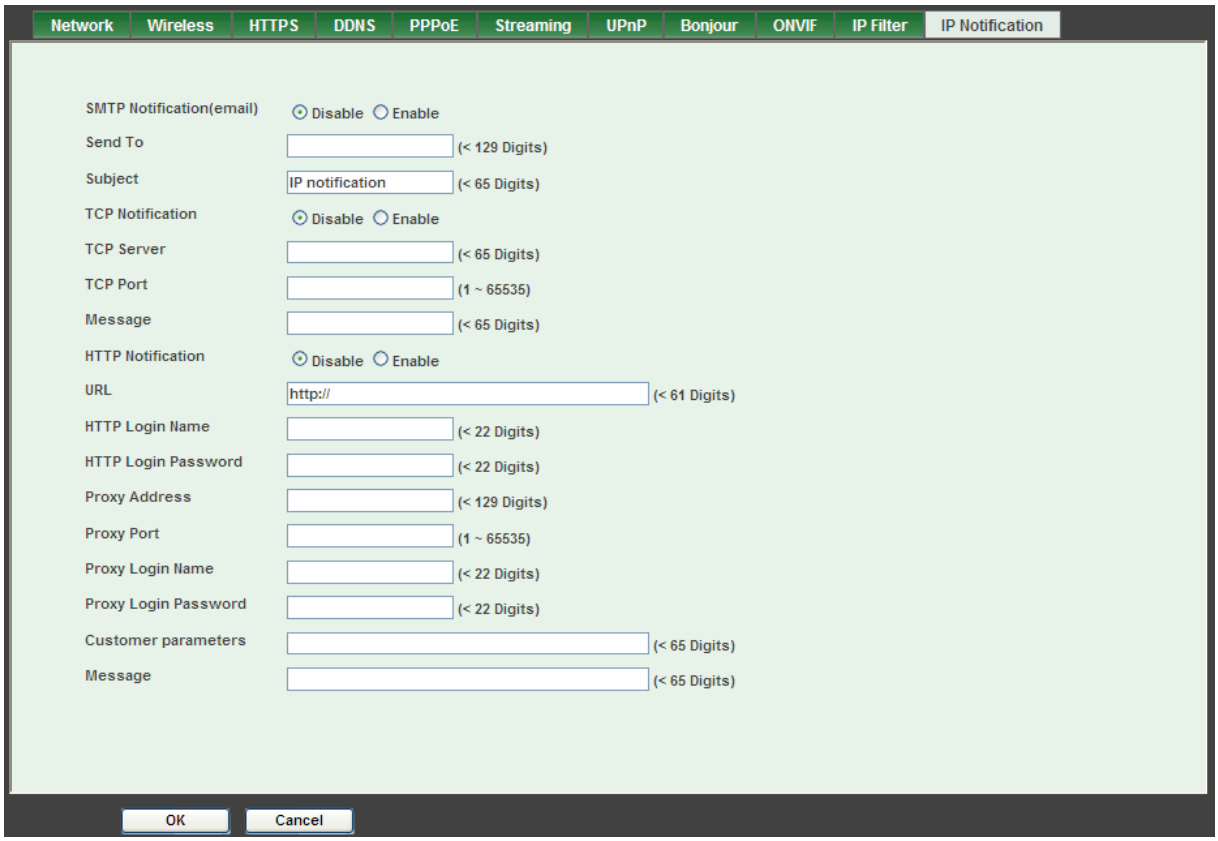
You can enter different users' IP addresses which are allowed or denied to enter by the camera.



- **IP Filter:** To enable or disable the IP filter function here.
- **IP Filter Policy:** Choose the filter policy where is denying or allowing.

6.1.10 IP Notification

In case the IP address is changed, system is able to send out an email to alert someone if the function is enabled.



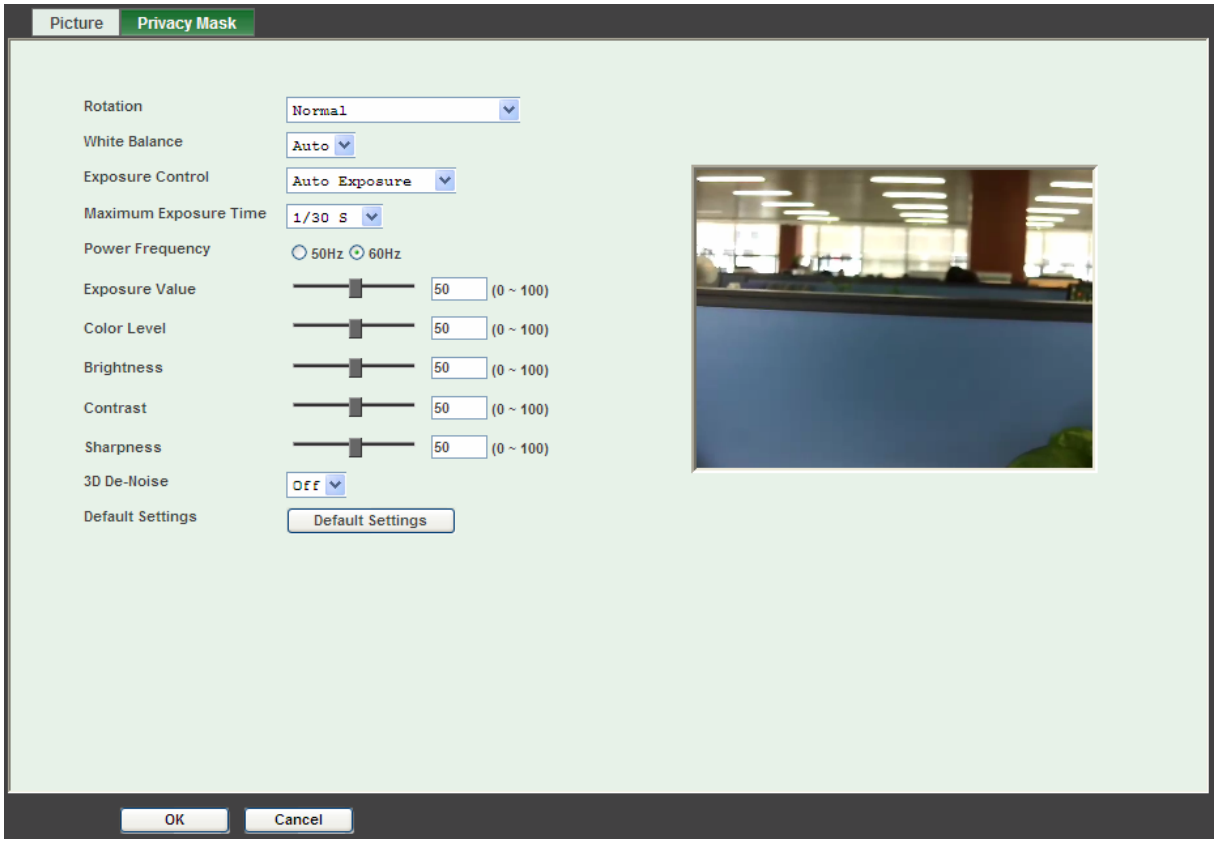
- **SMTP Notification (e-mail):** If this function is enabled, the "**Send to**" and "**Subject**" fields need to be filled.
- **Send To:** Type the receiver's e-mail address. This address is used for mail reply.
- **Subject:** Type the subject/title of the E-mail.
- **TCP Notification:** If this function is enabled, the "**TCP Server**", "**TCP Port**", and "**Message**" fields need to be filled.
- **TCP Server:** Type the server name or the IP address of the TCP server.
- **TCP Port:** Set port number of TCP server.
- **Message:** The message will be sent to FTP server.
- **HTTP Notification:** If this function is enabled, the fields below need to be filled.
- **URL:** Type the server name or the IP address of the HTTP server.
- **HTTP Login name:** Type the user name for the HTTP server.
- **HTTP Login Password:** Type the password for the HTTP server.
- **Proxy Address:** Type the server name or the IP address of the HTTP Proxy.
- **Proxy Port:** Set port number of Proxy.
- **Proxy Login name:** Type the user name for the HTTP Proxy.

- **Proxy Login Password:** Type the password for the HTTP Proxy.
- **Custom parameter:** The user can set specific parameters to HTTP server.
- **Message:** The message will be sent to HTTP server.

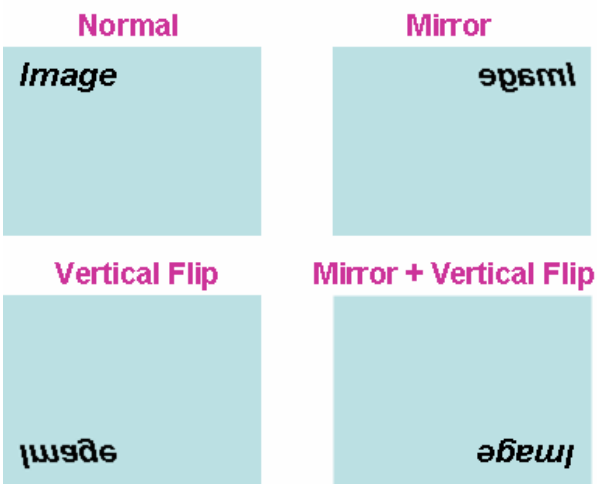
6.2 Camera: Adjust camera parameters

Use this menu to set the functions of the camera parameters of the camera.

6.2.1 Picture



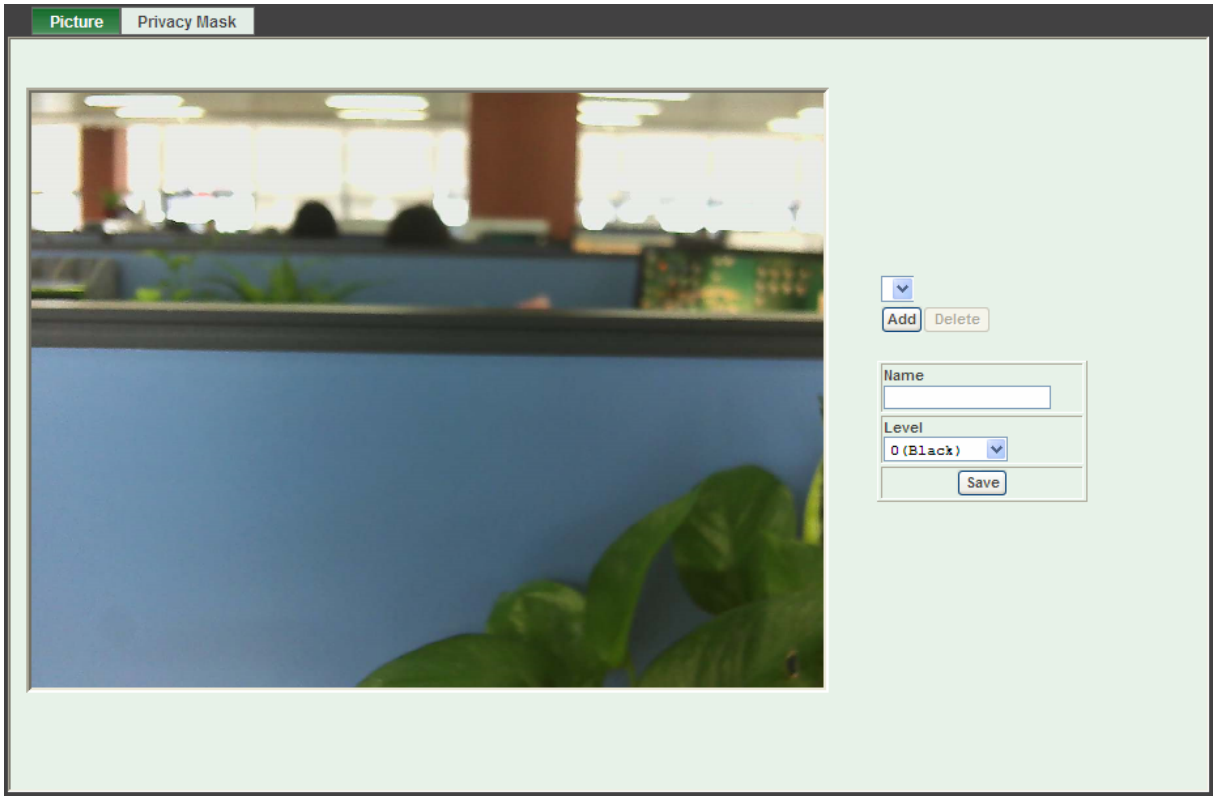
- **Rotation:** Turn the “Mirror” and “Vertical Flip” On or OFF. The image will be overturned as below.



- **White Balance:** Auto: will adjust the white balance automatically. Hold: will hold the white balance.
- **Exposure Control:** Auto: will adjust the internal gain automatically. Hold: will hold the internal gain.
- **Maximum Exposure Time:** Set the Maximum Exposure Time. However, the real exposure time may be shorter in good light condition.
- **Power Frequency:** Frequency of power line: 50 or 60Hz.
- **Color Level:** Large value indicates the image will be colorful.
- **Brightness:** Large value will brighten camera.
- **Contrast:** Large value will contrast camera heavily.
- **Sharpness:** Large value indicates the image will be sharpened.
- **3D De-Noise:** 3D De-Noise can remove or lower unwanted noise and preserve fine details and edges.
- **Default Settings:** Restore to factory image settings.

6.2.2 Privacy Mask

Use this page to specify privacy mask window 1 to window 8 and set the name and gray level for selected window.



- **Add and Delete:** To add or delete the privacy mask windows, the user can specify up to 8

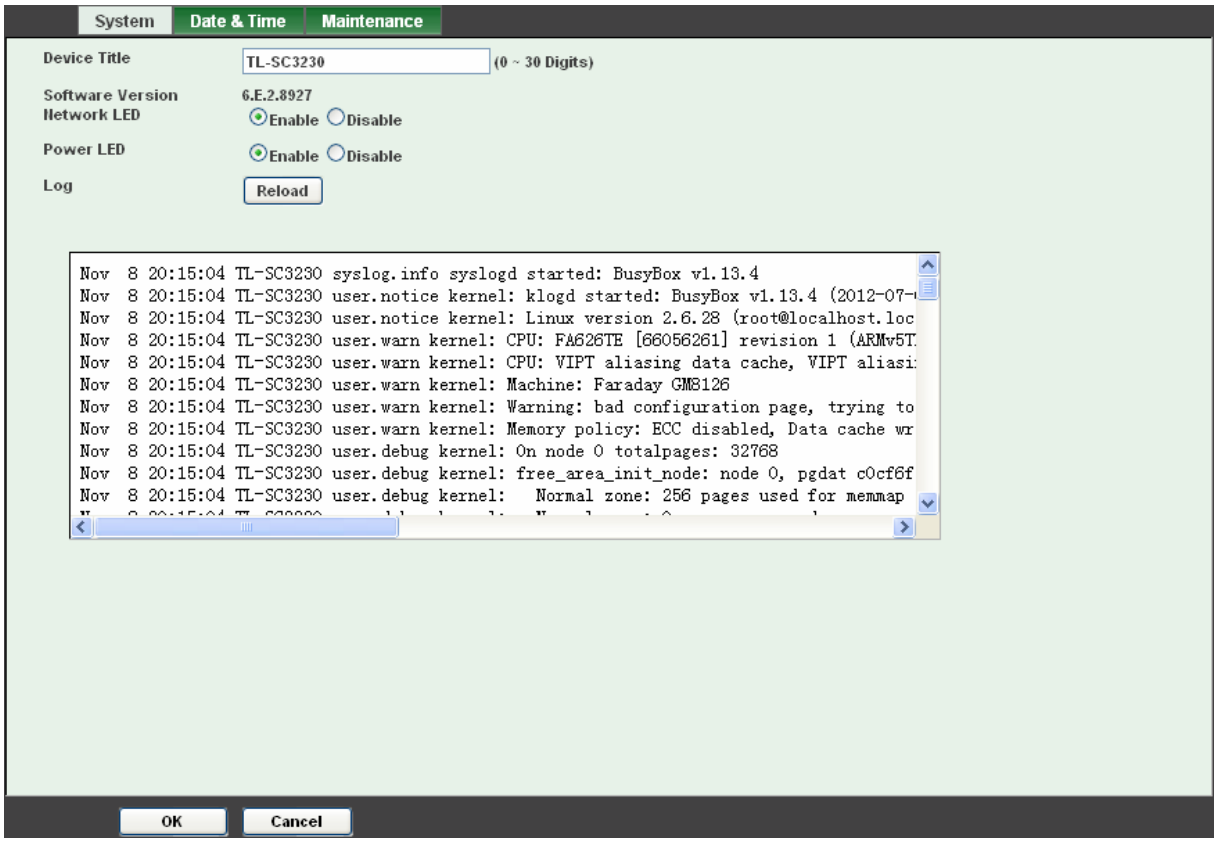
windows to mask the video captured by this camera. By dragging mouse on the image, you can change the position and size of the selected window accordingly.

- **Name:** Name of the specified privacy window.
- **Level:** To define the gray level of mask block. The smaller value, the darker.

6.3 System: Configure and maintain system

Use this menu to perform the principal settings of the camera.

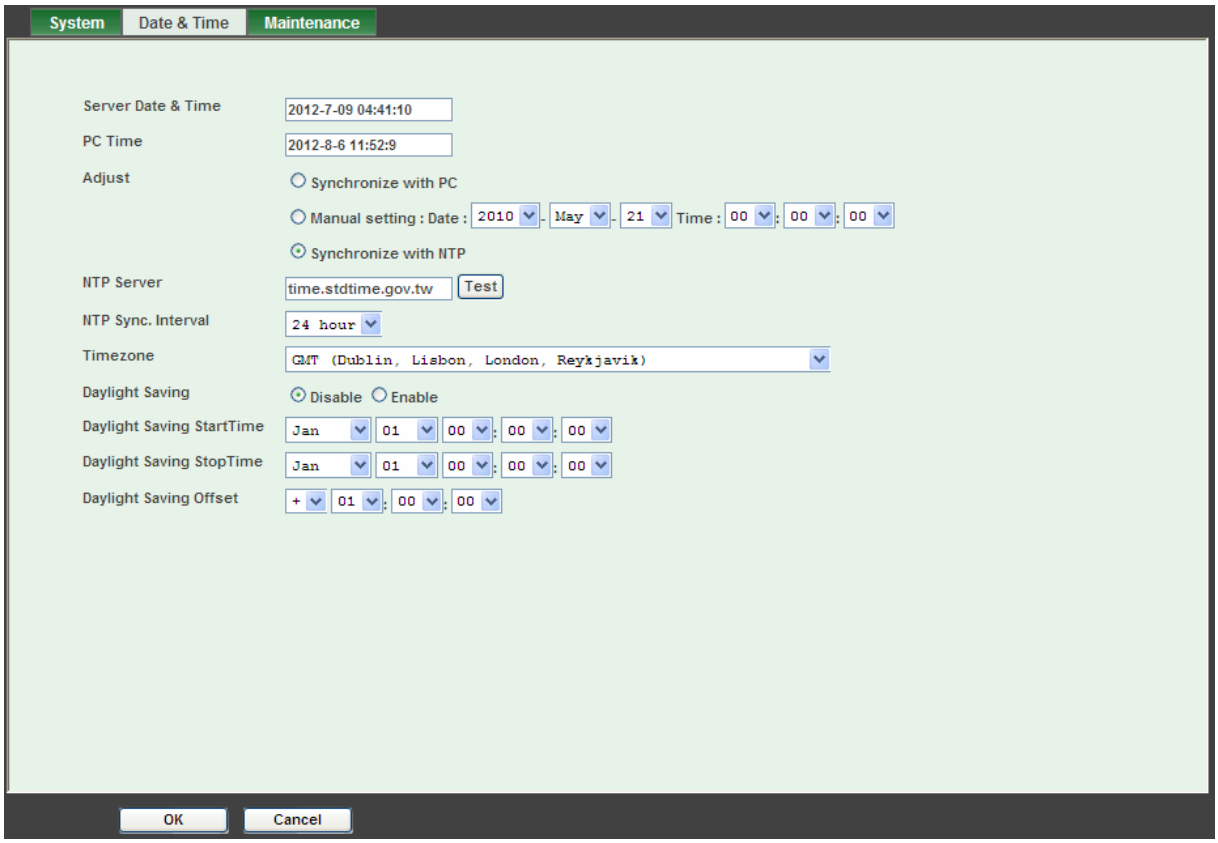
6.3.1 System



- **Camera Title:** You can enter the name of this unit here. It's very useful to identify the specific camera from multiple units. The information will be shown on IP Search once the camera is found.
- **Software Version:** This information shows the software version of the camera.
- **Network (LAN) LED:** To turn on or off LAN LED.
- **Power LED:** To turn on or off the Power LED.
- **Log:** The user can check the system log information of the camera, including the *Main Info*, *Appended Info*, *Operator IP*, *and so on …*
- **Reload:** Click this button; the user can refresh the log information of the camera.

6.3.2 Date & Time

You can set up the camera or make it synchronized with PC or remote NTP server. Also, you may select your time zone in order to synchronize time locally.



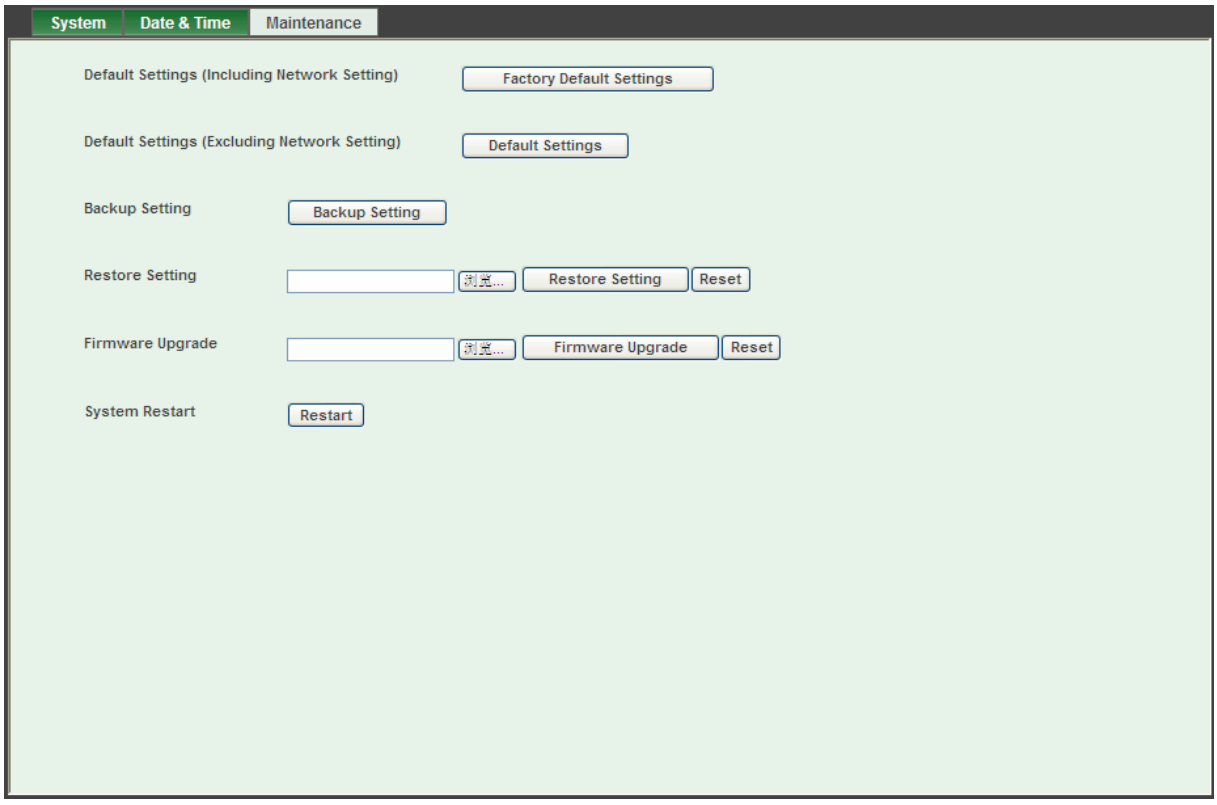
- **Server Date & Time:** Displays the date and time of the camera.
- **PC Time:** Displays the date and time of the connected PC.
- **Adjust:**

  - Synchronize with PC:
  Click this option to enable time synchronization with PC time.

  - Manual setting:
  Click this option to set time and date manually.

  - Synchronize with NTP:
  Click this option if you want to synchronize the camera's date and time with those of time server called NTP server (Network Time Protocol).
- **NTP Server:** Type the host name or IP address or domain name of the NTP server.
- **NTP Sync. Interval:** Select an interval between 1 and 24 hours at which you want to adjust the camera's time referring to NTP server
- **Time zone:** Set the time difference from Greenwich Mean Time in the area where the camera is installed.
- **Daylight Saving:** Disable or enable the daylight saving adjustment.

6.3.3 Maintenance



- **Hard Factory Default (Include the network setting):** Recall the camera hard factory default settings. Note that click this button will reset all camera's parameters to the factory settings (including the IP address).

- **Factory Default (Except the network setting):** The unit is restarted and most current settings are reset to factory default values. This action will not reset the network setting.

- **Backup Setting:** To take a backup of all of the parameters, click this button. If necessary, it will then be possible to return to the previous settings, if settings are changed and there is unexpected behavior.

- **Restore Setting:** Click the "**Browse"** button to locate the saved backup file and then click the "**Restore Setting"** button. The settings will be restored to the previous configuration.

- **Firmware Upgrade:** The camera supports new firmware upgrade (the software that controls the operation in the camera). Please contact your dealer for the latest version if necessary.

  Download the latest firmware file from our website or your dealer. Unzip this firmware file to binary file and store it into your PC. Follow the steps as below carefully:

  1. Close all other application programs which are not necessary for firmware update.

  2. Make sure that only you access this camera while firmware updating.

  3. Disable all event trigger and/or schedule trigger functions first.

  4. In this web page, click "**Browse**" button. Select the Firmware binary file.

5. Once the firmware file was selected, click "**Firmware Upgrade**" button.

6. The upgrade progress information will be displayed. Once the uploading process completed, the camera will reboot the system automatically.

7. Please wait for timer countdown, and then you can use IP Search to search the camera again.

☞ **Note:**

The download firmware procedure cannot be interrupted. If the power and/or network connection are broken during the download procedure, it will cause serious damage to the camera.

Be aware that you shall not turn off the power during updating the firmware and wait for finish message.

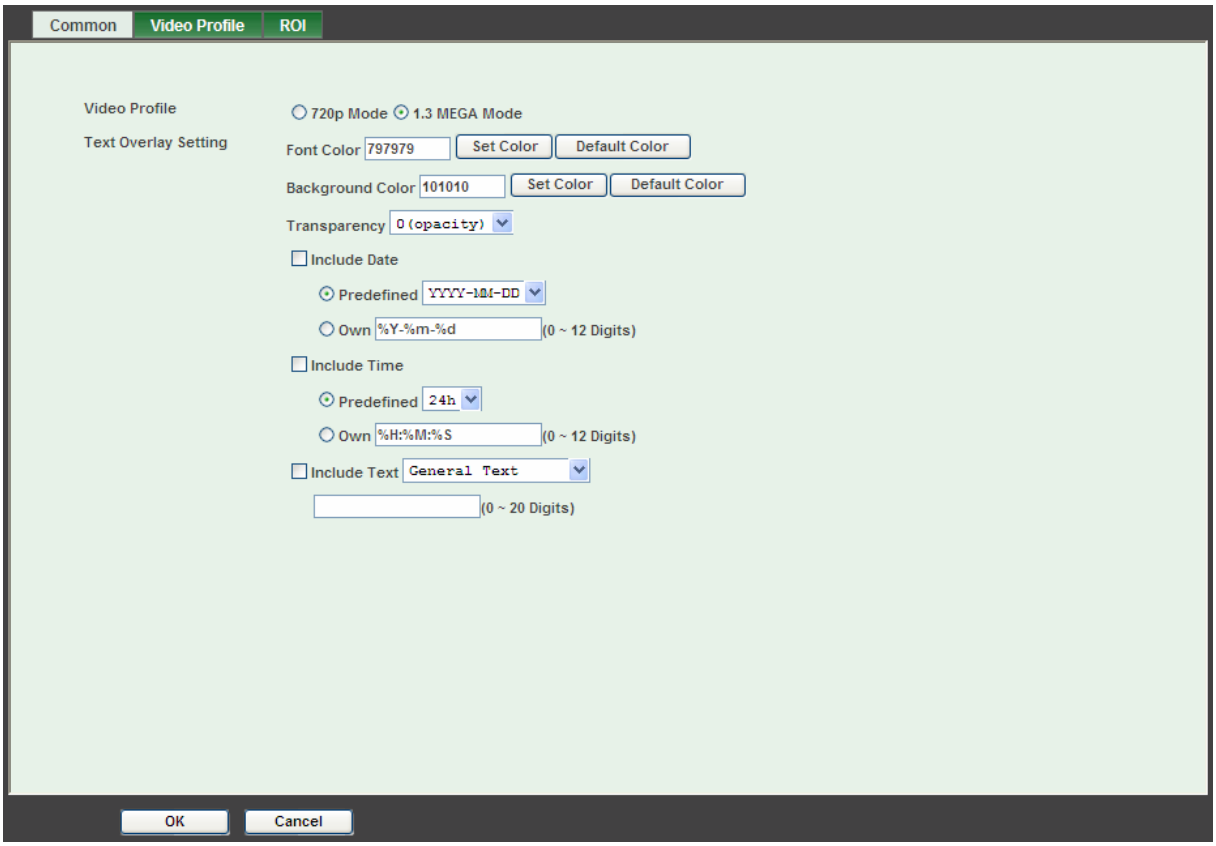
Furthermore, the firmware upgrade procedure is always risky and do not try to upgrade new firmware if it's not necessary.

- **System Restart:** The camera is restarted without changing any of the network settings. It means the IP address of the camera will not change after firmware upgrade.

6.4 Video: Configure profile

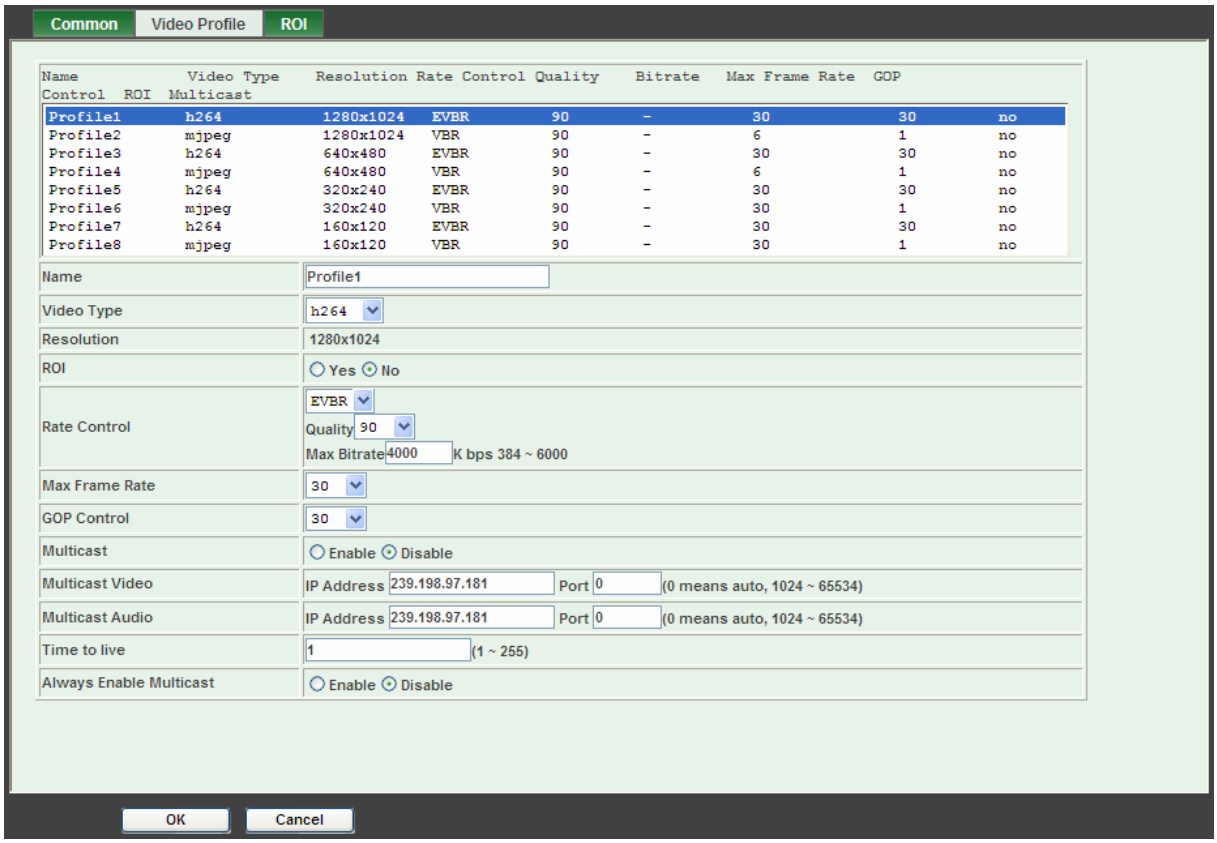
This device provides 2 modes of video profile. The first one is 1.3 Mega mode which supports video resolution up to 1.3 Mega-pixel. Maximum frame rate of this mode is up to 30fps. The second one is 720p mode which supports video resolution up to 1280x720 but frame rate can be up to 30fps. User only can select either 1.3 Mega or 720p mode to operate the camera. Switching 1.3 Mega and 720p mode, the device will take time to re-configure system.

6.4.1 Common



- **Text Overlay Setting:** There are some important information can be embedded into image, including date, time, and/or text. The user also can change the font color, background color, or transparency.

6.4.2 Video Profile



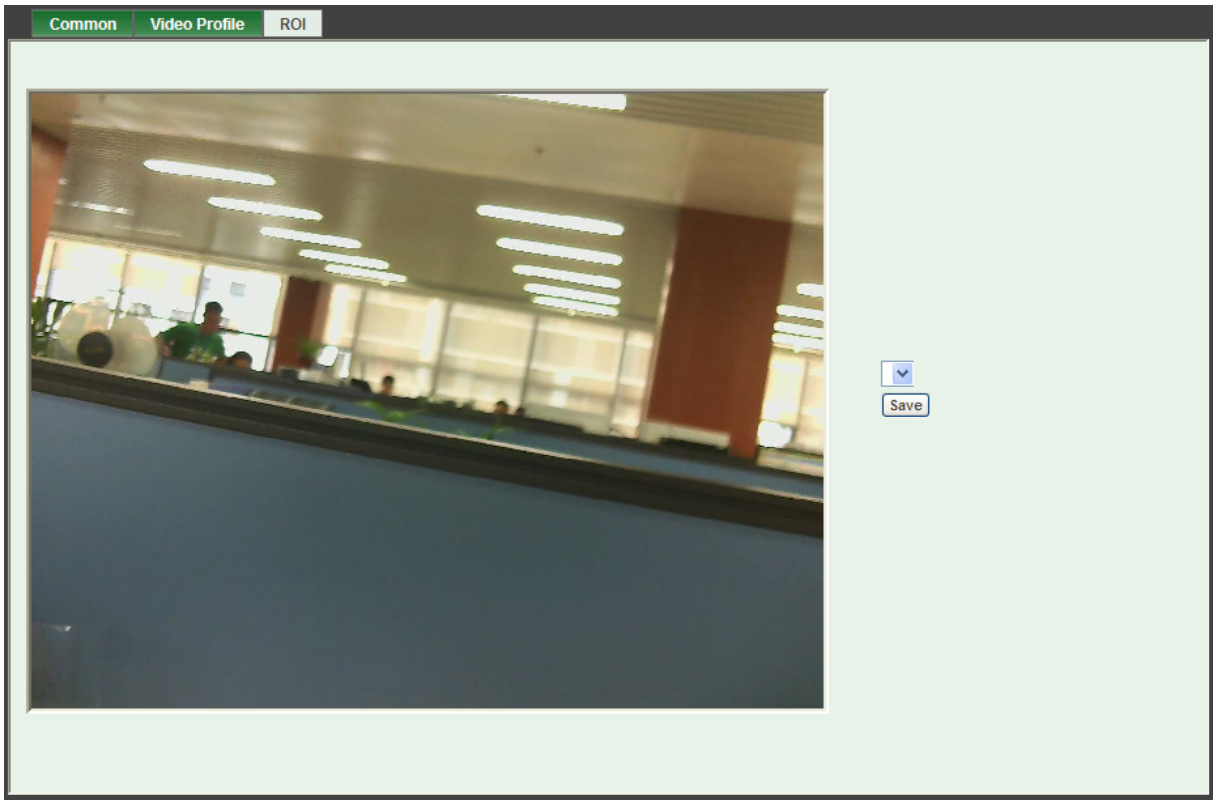
- **Name:** To assign a name to the selected profile.
- **Video Type:** Video codec of the selected profile.
- **Resolution:** Shows the resolution of the selected profile.
- **ROI:** Assign the selected profile as a ROI stream or not. (Only available for the profiles with max resolution)
- **Rate Control:** Defines the rate control method of this profile. There are four options: Constant Bit Rate (CBR), Variable Bit Rate (VBR), Enhanced Constant Bit Rate (ECBR), and Enhanced Variable Bit Rate (EVBR).
  - For CBR, the video bit rate is between low to high bandwidth based on different resolutions. The user can set the desired bit rate to match the limitation of bandwidth.
  - For VBR, the user should choose the quality level to set the video quality rather than bit rate. The quality level is between 1 and 100. The higher value can reach the better quality but of course will consume higher bandwidth.
  - For ECBR, the video bitrate is based on normal CBR mode. However, the target bitrate can be increased to max target bitrate while lots of motion in video. The max target bitrate will keep a pre-defined time period and then back to normal CBR bitrate.
  - For EVBR, the video bitrate is based on normal VBR mode. However, the bitrate can be limited to the max bitrate while lots of motion in video.

- **Max Frame Rate:** Defines the targeted frame rate of this profile. For example, set the frame rate to 30 fps, then the image will be updated for 30 frames per second as possible. The user needs to set reasonable max frame rate versus video quality under the limited bandwidth.

- **GOP Control:** Defines the Intra/Inter-frame (I/P) ratio of this profile. For example, set the GOP to 30, then the video stream will have one Intra-frame every 30 frames.

6.4.3 ROI

ROI means Region of Interest. Use this page to specify location of ROI windows. Only the maximum resolution profiles can be defined as ROI.

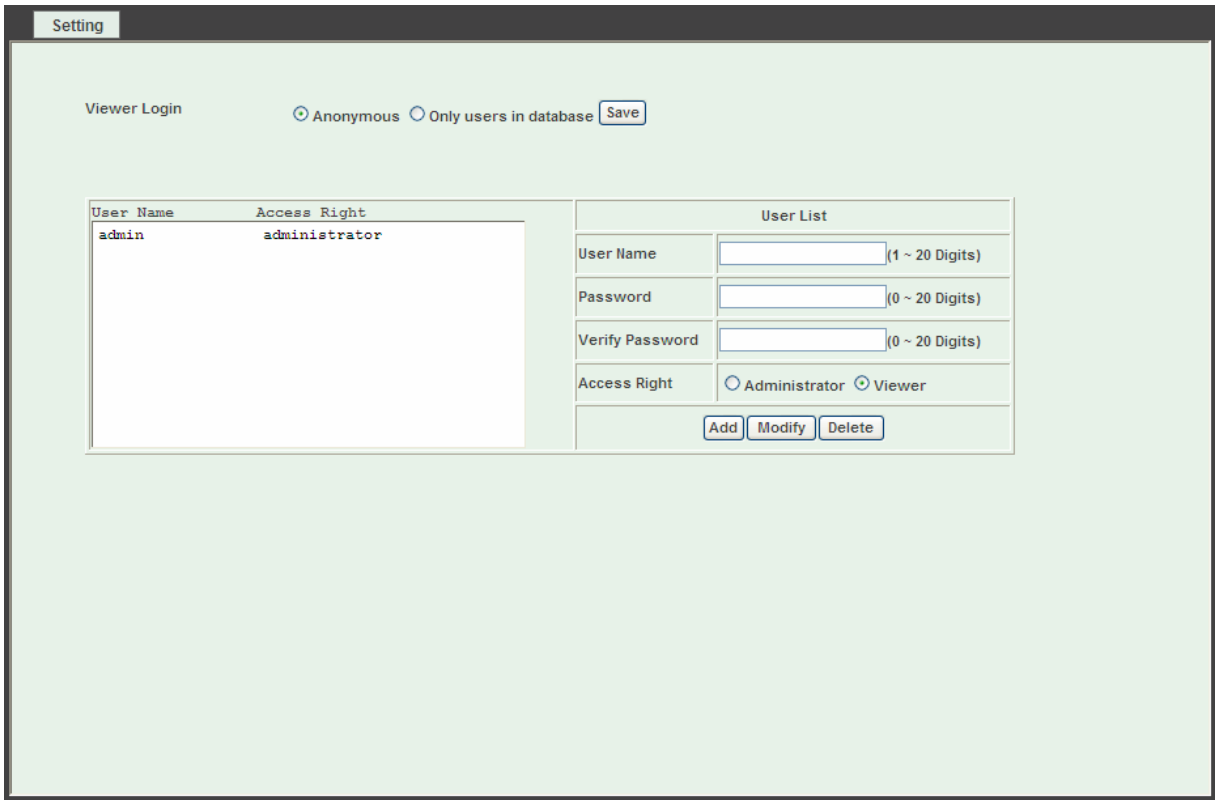


6.5 Audio: Audio parameters

- **Audio:** To enable or disable audio function
- **Audio Type:** To select audio codec
- **Audio Mode:** To select Simplex or Full duplex (2-way audio) mode
- **Input Gain:** To adjust gain of input audio
- **Output Gain:** To adjust gain of output audio

6.6 User: Manage user name, password and login privilege

Use this menu to add, update, or remove the usernames and passwords of the Administrator and viewer.



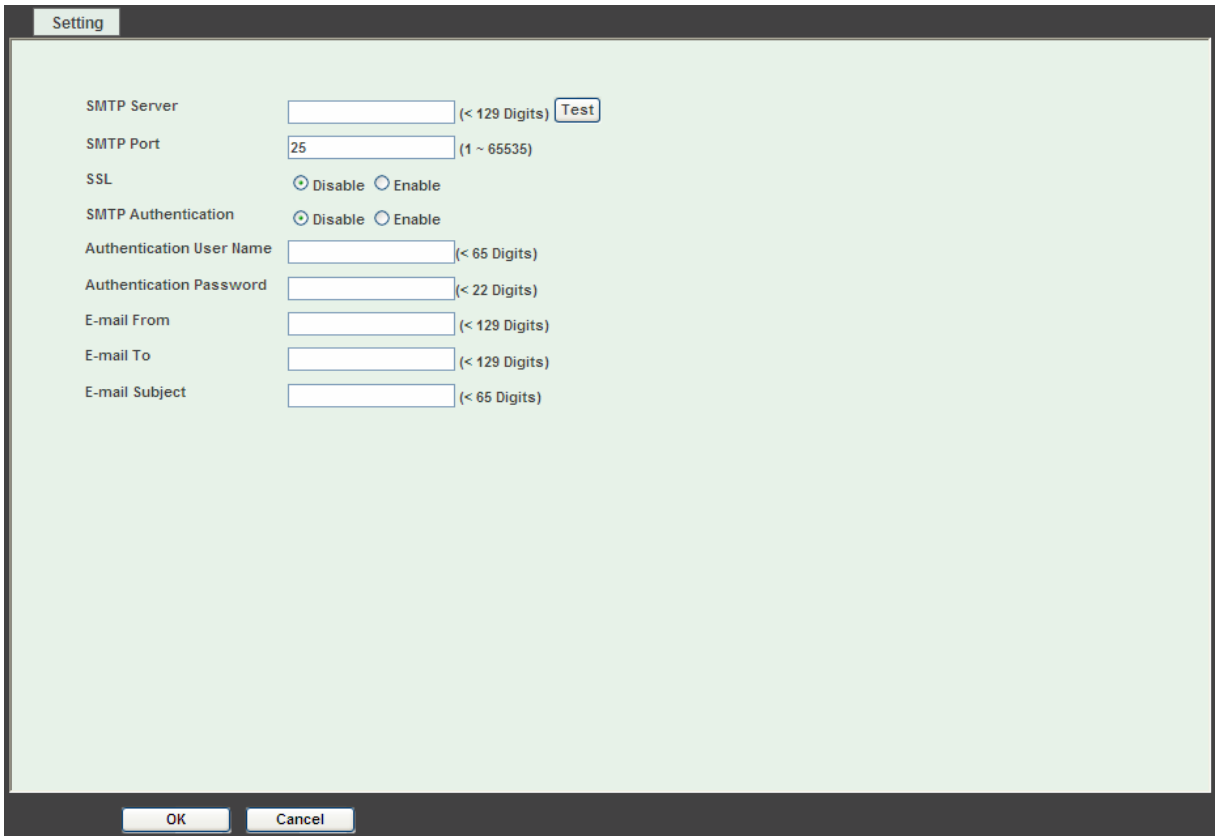
- **Viewer login:** Select “Anonymous” to allow all users to view the video as long as they are connected. Otherwise, only users in database can view the video after login.

- **Access Right:** Administrator can access every function in this camera. However, viewers only can view the video and access limited function.

- **Add, Modify, and Delete of Users account:** Manage the user’s account of viewer user.

6.7 E-Mail: Set up E-Mail configuration

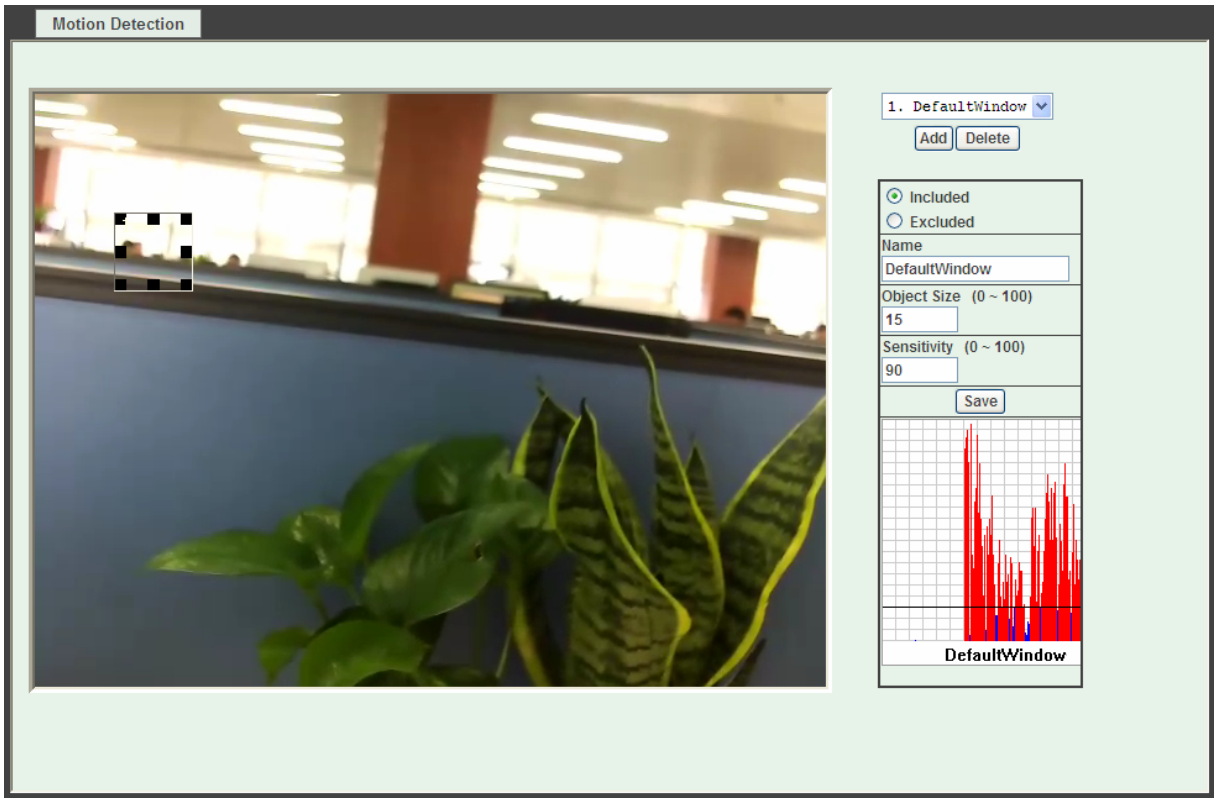
The user may set up SMTP mail parameters for further operation of Event Schedule. That’s, if users want to send the alarm message out, it will need to configure parameters here first and also add at least one event schedule to enable event triggering.



- **SMTP Server:** Type the SMTP server name or the IP address of the SMTP server.
- **Test:** Send a test mail to mail server to check this account is available or not.
- **SMTP Port:** Set port number of SMTP service.
- **SSL:** Enable SSL function or not.
- **SMTP Authentication:** Select the authentication required when you send an e-mail. **Disable**: if no authentication is required when an e-mail is sent. **Enable**: if authentication is required when an e-mail is sent.
- **Authentication User name:** Type the user name for the SMTP server if **Authentication** is enabled.
- **Authentication Password:** Type the password for the SMTP server if **Authentication** is enabled.
- **E-mail From:** Type the sender's E-mail address. This address is used for reply e-mails.
- **E-mail To:** Type the receiver's e-mail address.
- **E-mail Subject:** Type the subject/title of the e-mail.

6.8 Object detection: Set up Object detection

Use this menu to specify motion detection window 1 to window 10 and set the conditions for detection while observing a captured image.



- **Add and Del:** To add or delete the motion windows. The user can specify up to 10 Included and/or Excluded windows to monitor the video captured by this camera. By dragging mouse on the image, you can change the position and size of the selected motion window accordingly.

- **Included or Excluded Window:** These windows can be specified as Included or Excluded type. **Included** windows target specific areas within the whole video image. **Excluded** windows define areas within an Include window that should be ignored (areas outside Include windows are automatically ignored)

- **Name:** Name of the specified motion window.

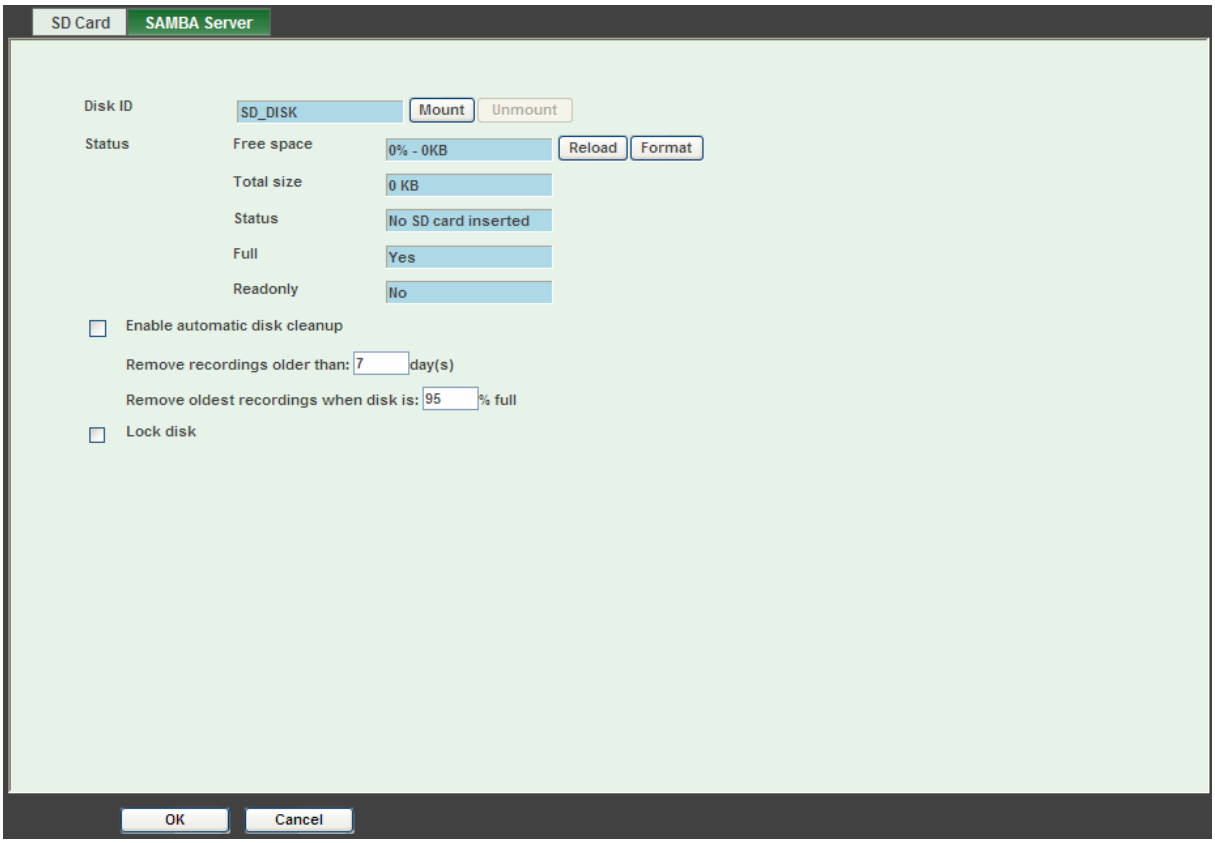
- **Object Size:** Defines the object size of motion detection. The smaller size will be easier to trigger event.

- **Sensitivity:** Defines the sensitivity value of motion detection. The higher value, the more sensitivity.

6.9 Storage: Status and configuration of SD card

This page shows the status of attached SD card. You may set up related parameters to manage the attached SD card also the video recording storage on the samba server.

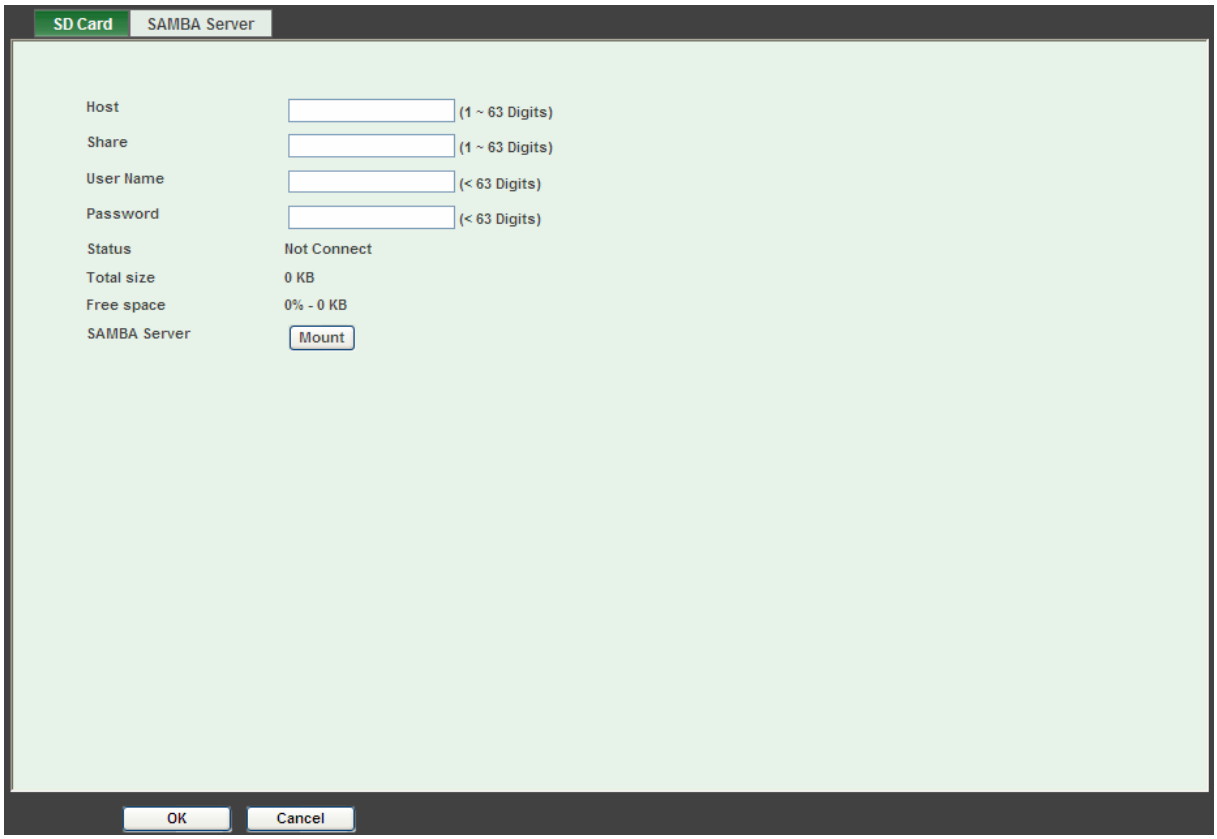
6.9.1 SD Card



- **Enable automatic disk cleanup:** Delete old recorded files while the conditions are reached as below.
- **Remove recordings order than:** Delete old files by days.
- **Remove oldest recordings when disk is:** Delete old files by left capacity.

6.9.2 SAMBA Server

The camera can send video stream to specified SAMBA server.



- **SAMBA Host:** Type the IP address of the SAMBA server.
- **Share:** Type the video storage destination on the SAMBA server.
- **SAMBA username:** Type the user name to login the SAMBA server.
- **SAMBA Login Password:** Type the password to login the SAMBA server.

6.10 Continuous Recording

The camera provides continuous video recording feature to store camera video clip to SD card or samba server in local network. The page shows the status of attached SD card. You may set up related parameters to manage the attached SD card also the video recording storage on the samba server.

☞ **Note:**

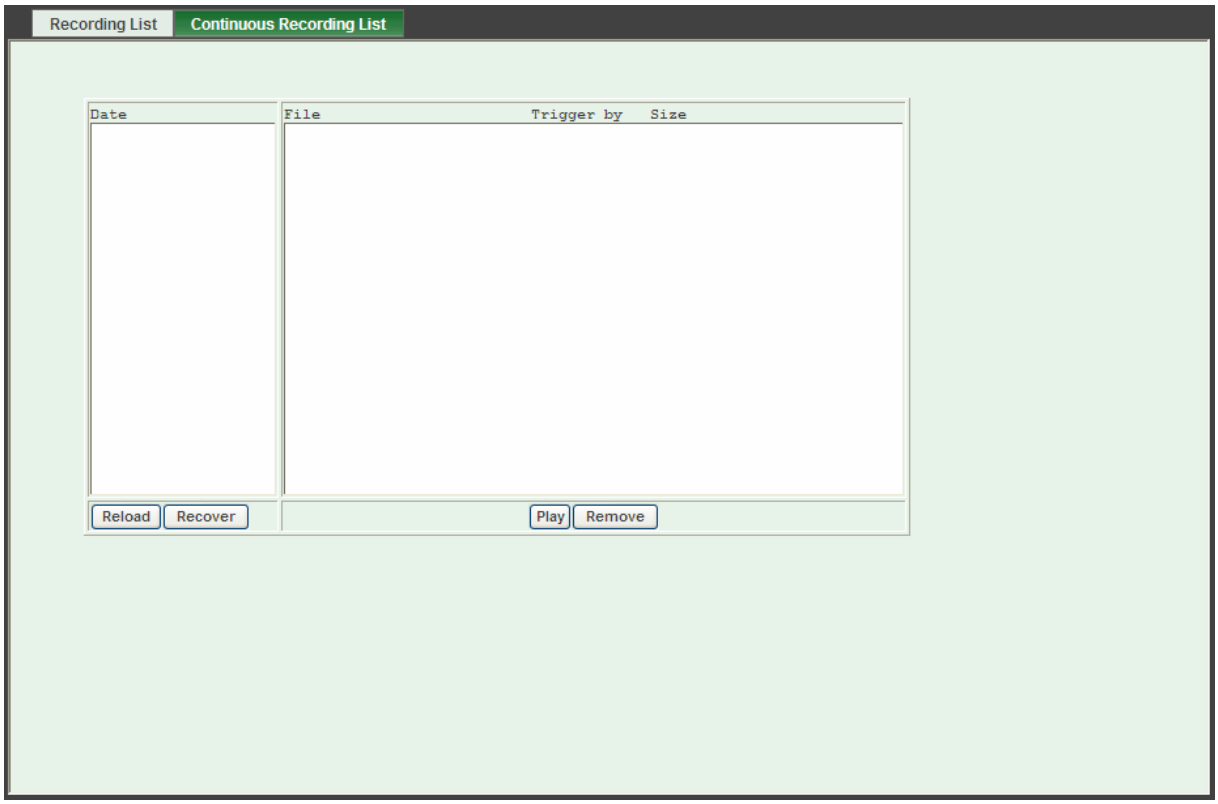
1) Max. 5 minutes of video can be recorded to SD card or samba server.

2) There are various factors affecting the recording results, such as network congestion, SD card writing performance, hardware resource limitation…etc.; NO guarantee will be given to “seamless recording” in the recorded video clips.

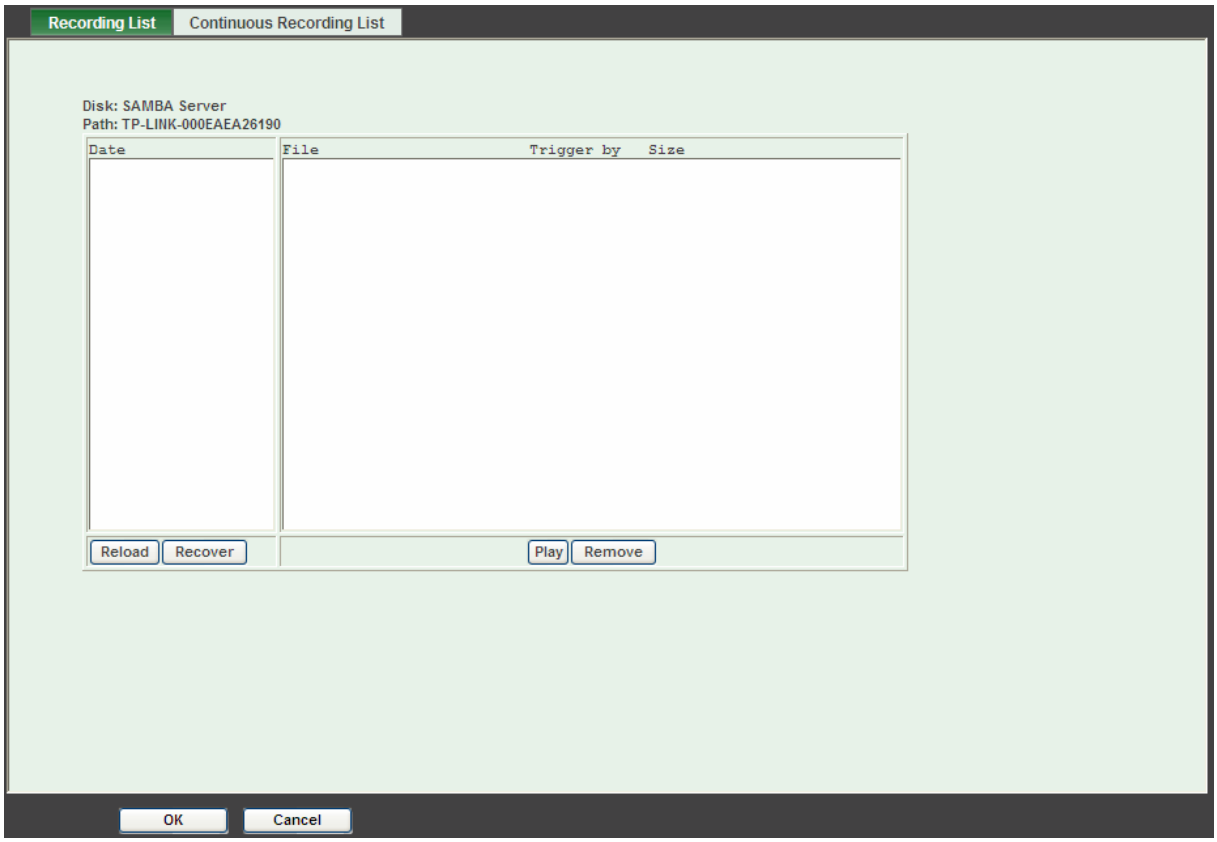
- **Disable / Enable:** Enable or disable the continuous recording feature in camera.
- **Record File Type:** Select video profile to be used in video recording. Please note that max. 5 minutes of video can be recorded.
- **Disk:** Select SD card or SAMBA server as recording destination.
- **Path:** Type the password to login the SAMBA server.
- **Restart:** If the **Restart** button is pressed, the current recording tasks will be terminated, and start a new recording session.

6.11 Recording List: Files list inside the SD Card/samba server

This page shows the files list information. The user may play or delete the selected file.



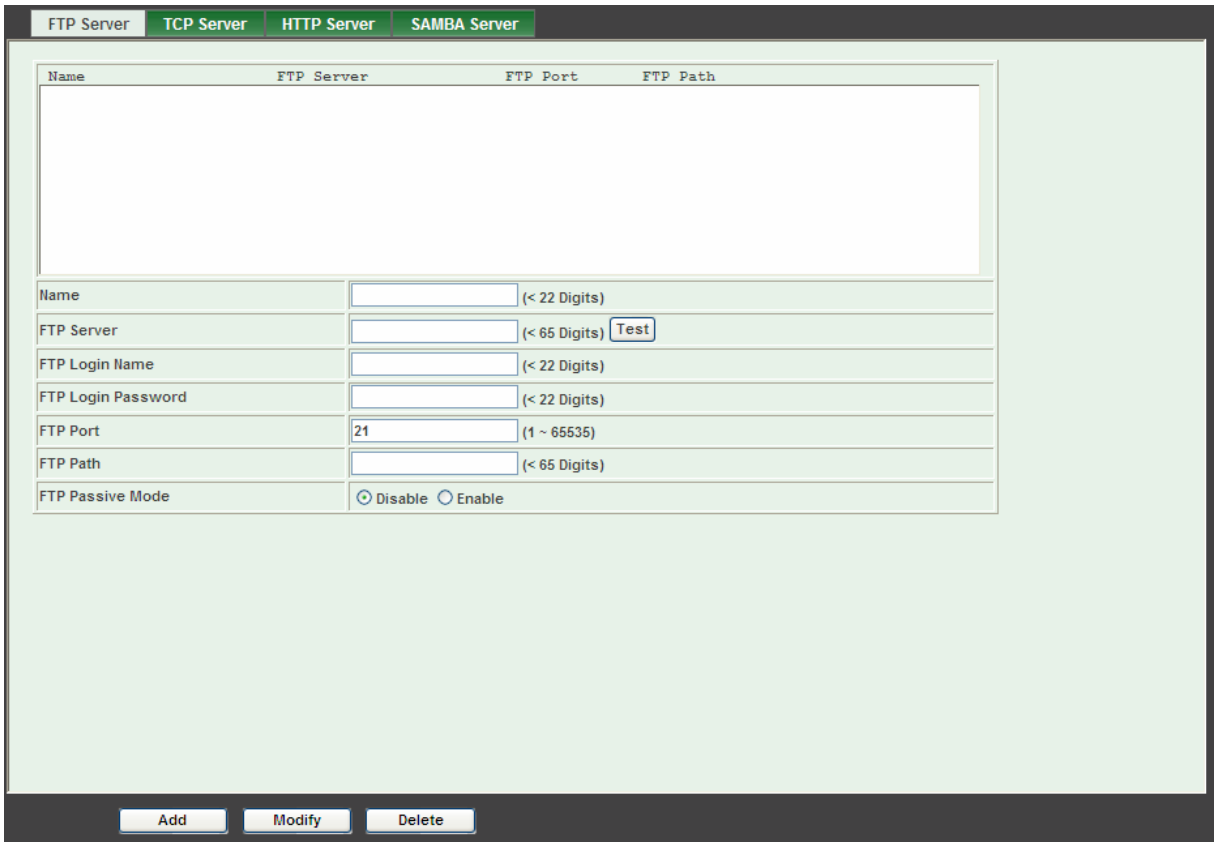
This page shows the event triggered or scheduled recorded video files list in SD card or on the samba server. The user may play or delete the selected file.



6.12 Event Server: Set up FTP/TCP/HTTP/SAMBA server configuration

6.12.1 FTP Server

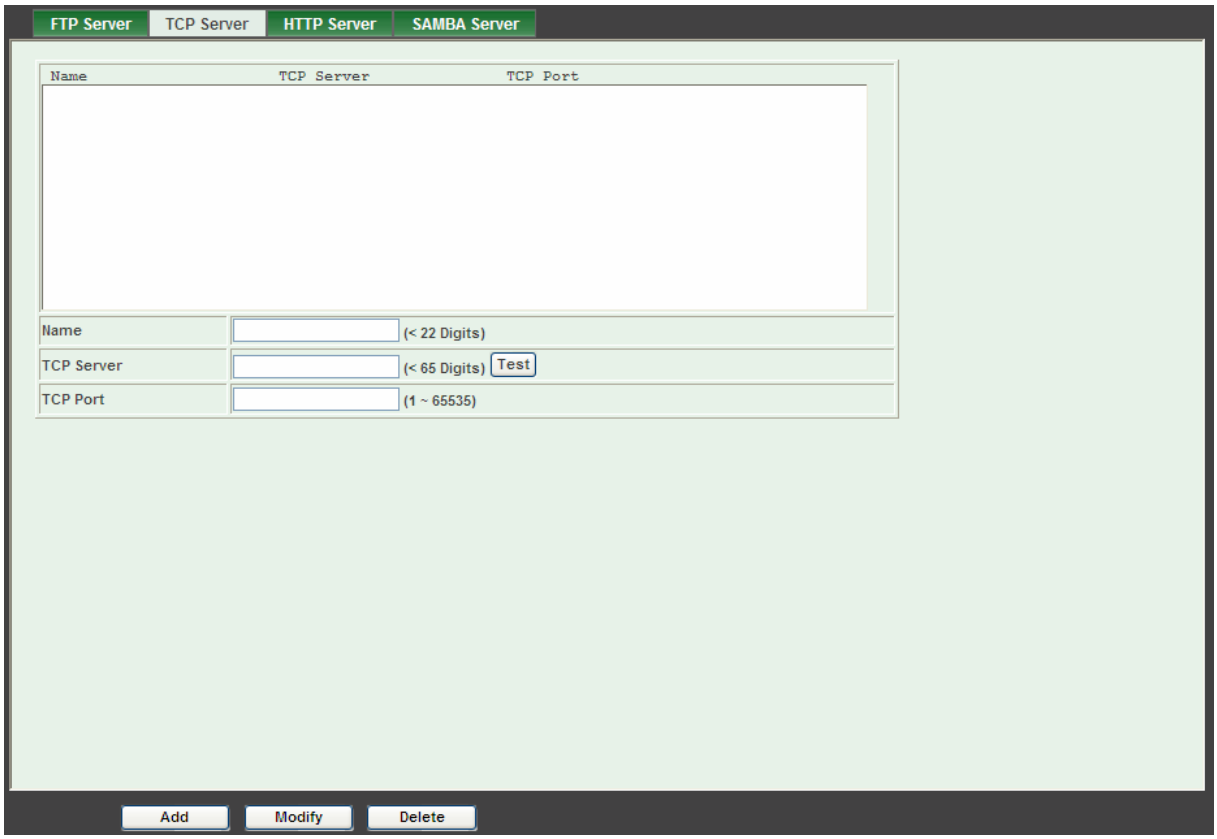
You may set up FTP parameters for further operation of Event Schedule. That's, if users want to send the alarm message to an FTP server, it will need to configure parameters here and also add at least one event schedule to enable event triggering as SMTP.



- **Name:** The user can specify multiple FTP paths as wish. Therefore, the user needs to specify a name for each FTP setting.
- **FTP Server:** Type the server name or the IP address of the FTP server.
- **Test:** Check the FTP server whether this account is available or not.
- **FTP Login name:** Type the user name for the FTP server.
- **FTP Login Password:** Type the password for the FTP server.
- **FTP Port:** Set port number of FTP service.
- **FTP Path:** Set working directory path of FTP server.
- **FTP Passive Mode:** Select passive or active mode connecting to FTP server.

6.12.2 TCP Server

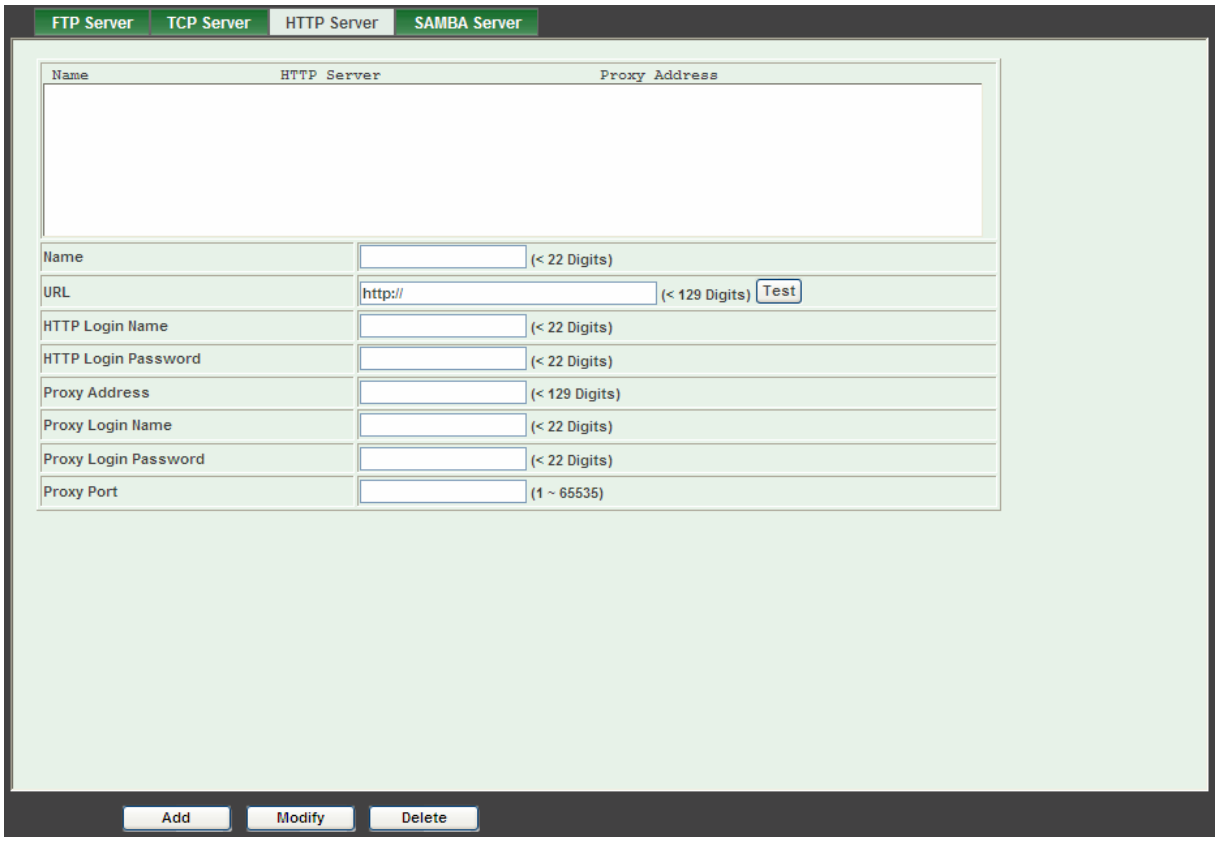
In addition to send video file to FTP server, the camera also can send event message to specified TCP server.



- **Name:** The user can specify multiple TCP servers as wish. Therefore, the user needs to specify a name for each TCP server setting.
- **TCP Server:** Type the server name or the IP address of the TCP server.
- **TCP Port:** Set port number of TCP server.

6.12.3 HTTP Server

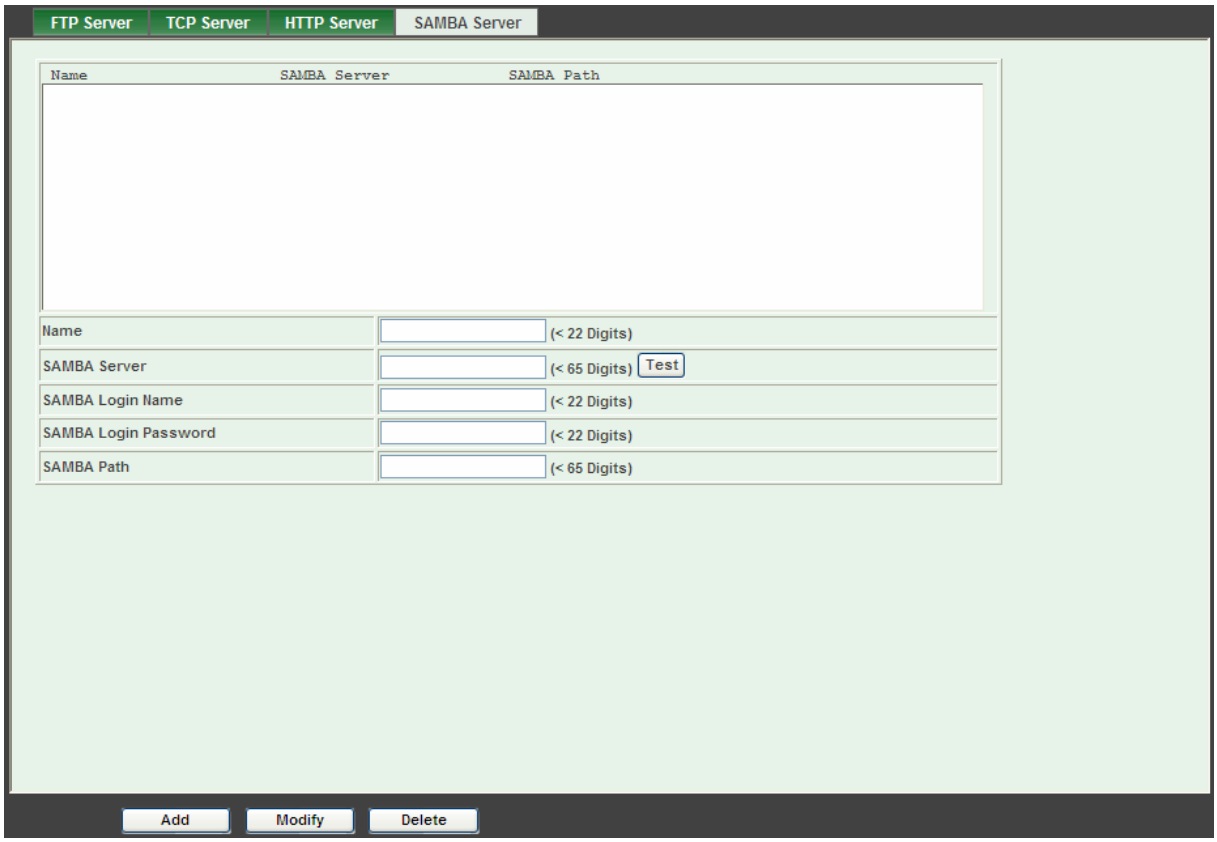
The camera also can send event message to specified HTTP server.



- **Name:** The user can specify multiple HTTP servers as wish. Therefore, the user needs to specify a name for each HTTP server setting.
- **URL:** Type the server name or the IP address of the HTTP server.
- **Test:** Check the HTTP server whether it is available or not.
- **HTTP Login name:** Type the user name for the HTTP server.
- **HTTP Login Password:** Type the password for the HTTP server.
- **Proxy Address:** Type the server name or the IP address of the HTTP Proxy.
- **Proxy Login name:** Type the user name for the HTTP Proxy.
- **Proxy Login Password:** Type the password for the HTTP Proxy.
- **Proxy Port:** Set port number of Proxy.

6.12.4 SAMBA Server

The camera also can send video stream to specified SAMBA server.

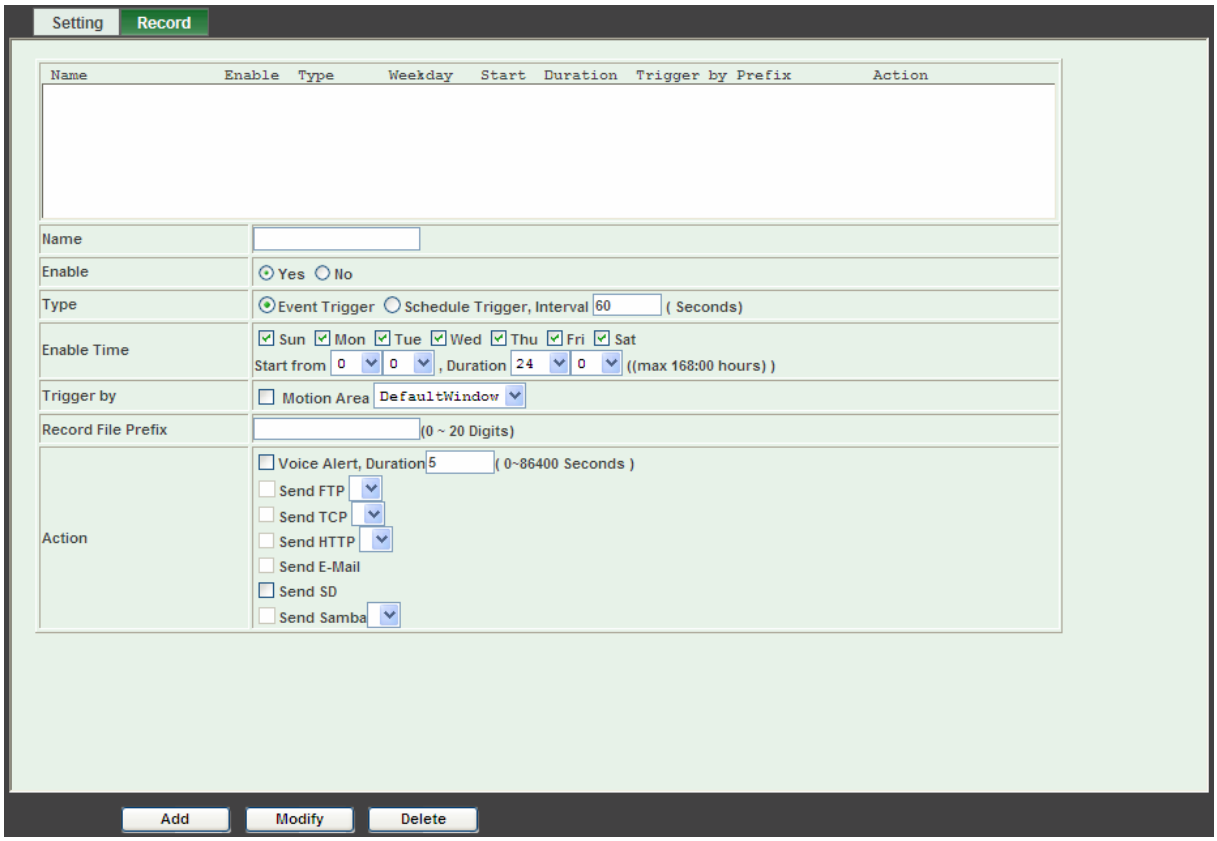


- **Name:** The user can specify multiple HTTP servers as wish. Therefore, the user needs to specify a name for each HTTP server setting.
- **SAMBA Server:** Type the server name or the IP address of the SAMBA server.
- **Test:** Check the SAMBA server whether this account is available or not.
- **SAMBA Login name:** Type the user name for the SAMBA server.
- **SAMBA Login Password:** Type the password for the SAMBA server.
- **SAMBA Path:** Set working directory path of SAMBA server.

6.13 Event Schedule: Configure the event schedule

6.13.1 Setting

This menu is used to specify the schedule of Event or Schedule Trigger and activate the some actions provided by this camera. Where the Schedule Trigger will be activated by user-define interval without event happened.

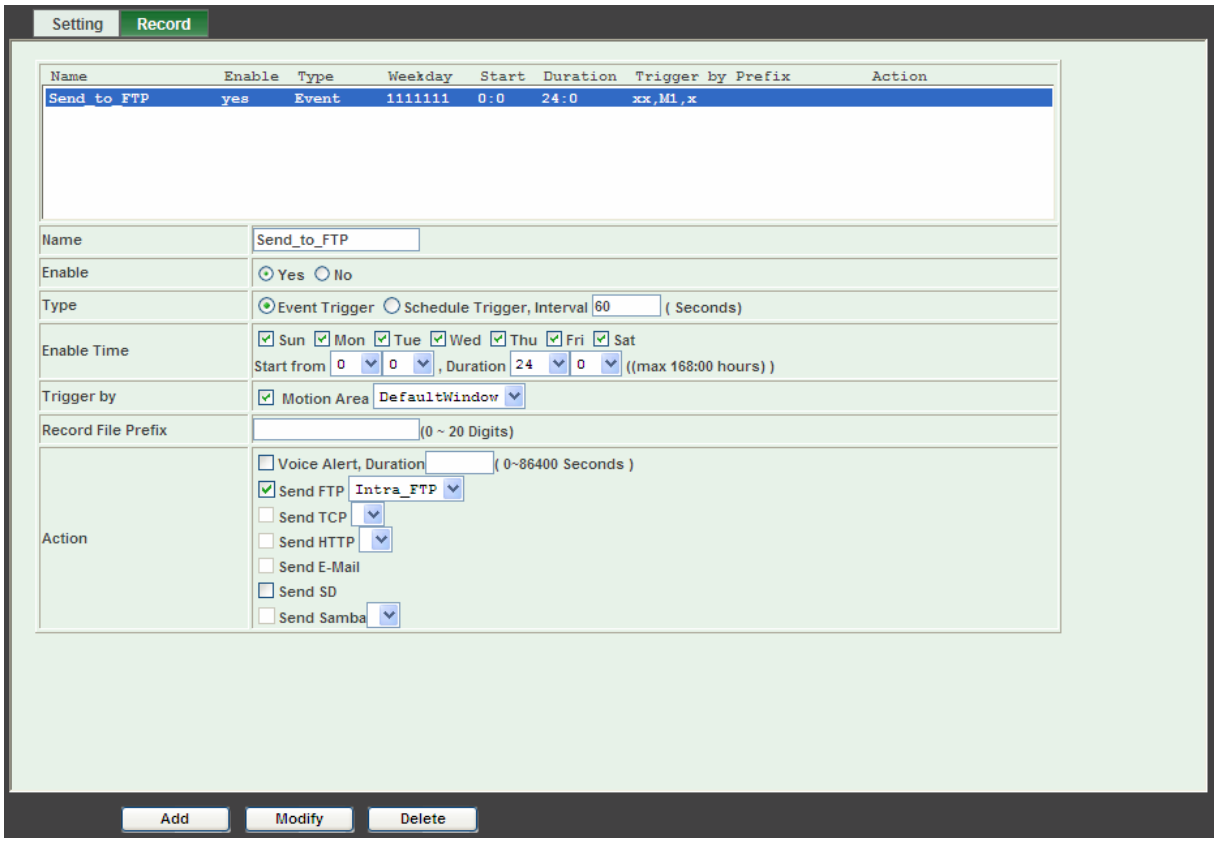


- **Name:** Name of the Event or Schedule.
- **Enable:** Enable or disable this Event or Schedule.
- **Type:** Event trigger or Schedule trigger.
- **Enable Time:** Define the feasible time slot.
- **Trigger by:** Select the triggered sources.
- **Action:** Define the actions once event triggered.

Example 1:

Send file to FTP server by motion triggered always:

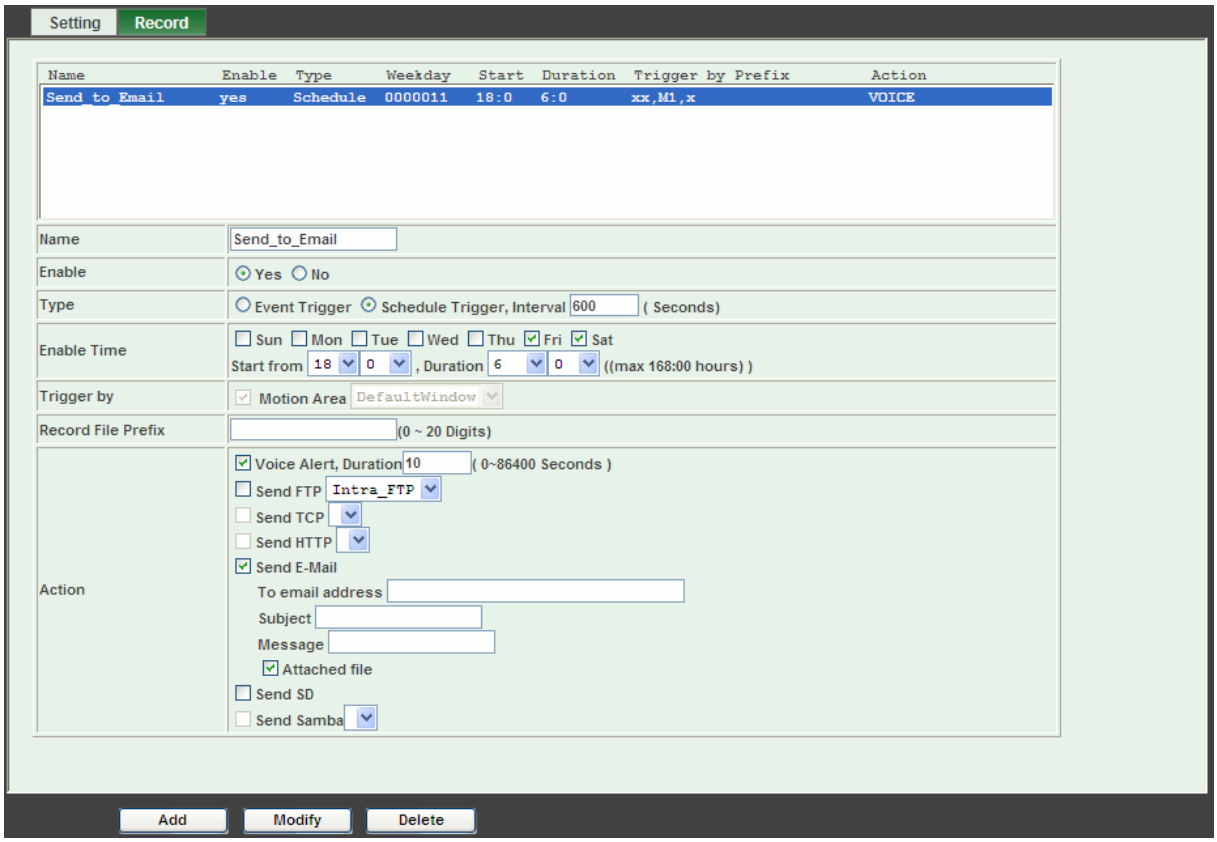
1. Select event trigger
2. Enable time: start from 00:00 to 24:00 every day
3. Trigger by: Motion Area (Added in Object Detection page)
4. Action : Send FTP (Add in Event Server -> FTP Server page)



Example 2:

Send file to E-Mail server by motion triggered from Friday 18:00 to Saturday 06:00

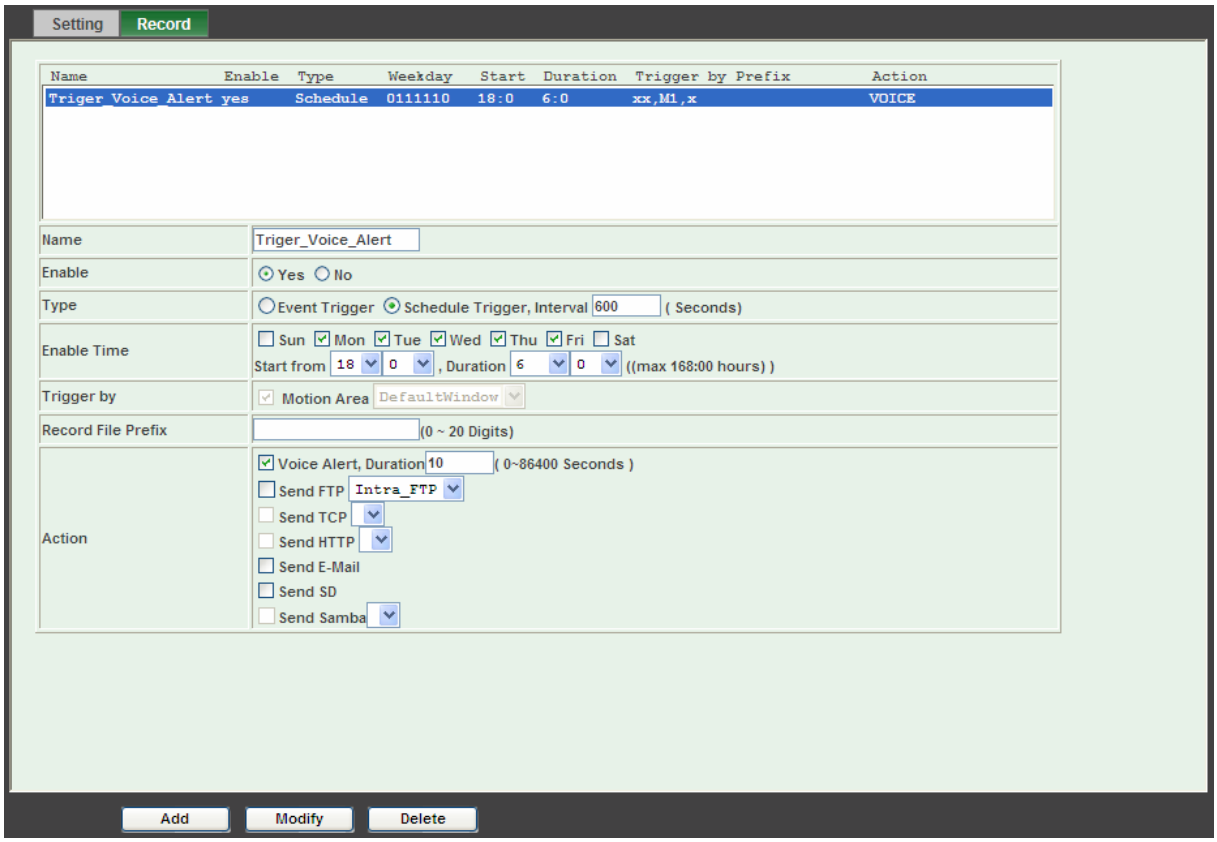
1. Select event trigger.
2. Enable time: start from Friday 18:00 and keep work in 12 hours, so it will stop on Saturday 06:00.
3. Trigger by : Motion Area (Added in Object Detection page)
4. Action : Send e-mail (Add in E-Mail page)
   1) To email address: You need to input the receiver email address.
   2) Subject: You could specify the email subject.
   3) Message: You could specify the email content.



Example 3:

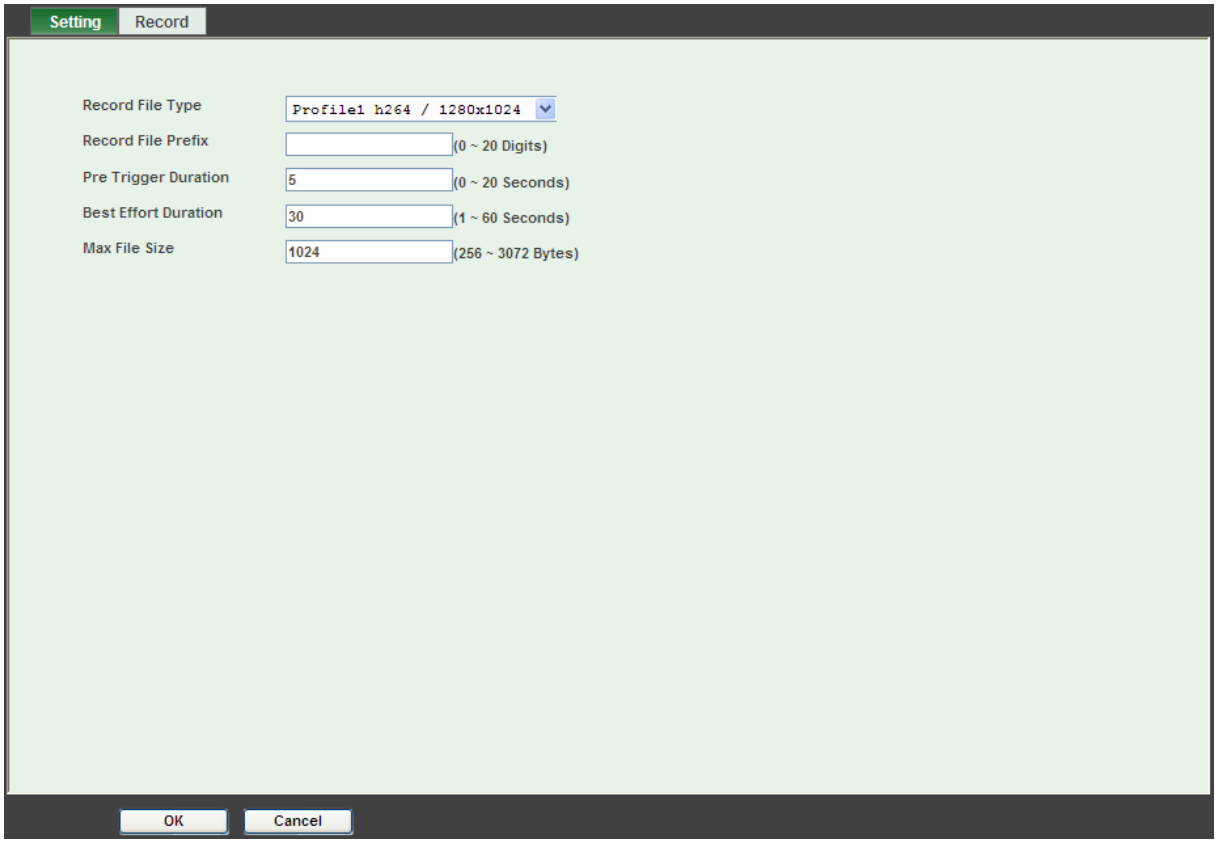
Enable Voice Alert every 10-minute during 18:00 to 24:00 from Monday to Friday.

1. Type: Select schedule trigger and interval is 10-minute.
2. Enable time: Select Monday to Friday, and set start time from 18:00 and keep work in 6 hours.
3. Trigger by : You do not need to choose it, because this will be triggered every 10 minute
4. Action : Voice Alert



6.13.2 Record

The user can choose the type of record file for event or schedule application.



- **Record File Type:** Choose a profile to record.
- **Record File Prefix:** Define the prefix of recorded filename.
- **JPEG Picture Numbers:** Define the picture numbers of JPEG to be sent out. (by mode)
- **Pre-Trigger Duration:** Define the maximum duration of pre-alarm.
- **Best Effort Duration:** Define the best effort duration of post-alarm.
- **Max File Size:** Define the maximum buffer size of record file.

Appendix A: Troubleshooting & FAQ

Question	Answer or Resolution
Features	
The video and audio codec is adopted in the camera.	The camera utilizes H.264, MPEG4 and JPEG triple compression to provide high quality images. H.264 and MPEG4 are standards for video compression and JPEG is a standard for image compression. The audio codec is defined as AMR for 3GPP and G.711/G.726 for RTSP streaming.
The maximum number of users accessing the camera simultaneously.	The maximum number of users is limited to 20. However, it also depends on the total bandwidth accessed to this camera from clients. The maximum data throughput of the camera is around 20~25Mbps for UDP mode and 10Mbps for HTTP mode. Therefore, the actual number of connected clients varies by streaming mode, settings of resolution, codec type, frame rate and bandwidth. Obviously, the performance of the each connected client will slow down when many users are logged on.
The camera can be used outdoors or not.	The camera is not weatherproof. It needs to be equipped with a weatherproof case for outdoors using. However, equipped with a weatherproof case might disable the audio function of the camera.
Install this camera	
Status LED does not light up.	• Check and confirm that the DC power adaptor, included in package, is used. Secure the power connector and re-power it on again. • If the problem is not solved, the camera might be faulty. Contact your dealer for further help.
The network cabling is required for the camera.	The camera uses Category 5 UTP cable allowing 10 and/or 100 Base-T networking.
The camera will be installed and work if a firewall exists on the network.	If a firewall exists on the network, port 80 is open for ordinary data communication. The HTTP port and RTSP port need to be opened on the firewall or NAT router.
The username and password for the first time or after factory default reset	Username is **admin** and password is **admin**. Note that it's all case sensitive.
Forgot the username and password	Follow the steps below. 1. Restore the factory default setting by pressing and holding down more than 5 seconds on the camera. 2. Reconfigure the camera.
Forgot the IP address of the camera.	Check IP address of camera by using the IP Search program or by UPnP discovery.

IP Search program cannot find the camera.	• Re-power the camera if the program cannot find the unit within 1 minute. • Do not connect camera over a router. IP Search program cannot detect camera over a router. • If IP address is not assigned to the PC which running IP Search program, then IP Search program cannot find camera. Make sure that IP address is assigned to the PC properly. • Antivirus software on the PC might interfere with the setup program. Disable the firewall of the antivirus software during setting up this camera. • Check the firewall setting of your PC or Notebook.
Internet Explorer does not seem to work well with the camera	Make sure that your Internet Explorer is version 6.0 or later. If you are experiencing problems, try upgrading to the latest version of Microsoft's Internet Explorer from the Microsoft webpage.
IP Search program fails to save the network parameters.	• Network may have trouble. Confirm the parameters and connections of the camera.
UPnP NAT Traversal	
Cannot work with NAT router	• Maybe NAT router does not support UPnP function. Please check user's manual of router and turn on UPnP function. • Maybe UPnP function of NAT router is not compatible to the IP camera. Please contact your dealer to get the approval routers list.
Some IP cameras are working but others are failed	• Maybe too many IP cameras have been installed on the LAN, and then NAT router is out of resource to support more cameras. You could turn off and on NAT router to clear out of date information inside router.
Access this camera	
Cannot access the login page and other web pages of the camera from Internet Explorer	• Maybe the IP Address of the camera is already being used by another camera or computer. To confirm this possible problem, disconnect the camera from the network first, and then run the PING utility to check it out. • May be due to the network cable. Try correcting your network cable and configuration. Test the network interface by connecting a local computer to the camera via a crossover cable. • Make sure the Internet connection and setting is ok. • Make sure enter the IP address of Internet Explorer is correct. If the camera has a dynamic address, it may have changed since you last checked it. • Network congestion may prevent the web page appearing quickly. Wait for a while. • The IP address and Subnet Mask of the PC and camera must be in the same class of the private IP address on the LAN. • Make sure the http port used by the camera, default=80, is forward to the camera's private IP address.

	• The port number assigned in your camera might not be available via Internet. Check your ISP for available port. • The proxy server may prevent you from connecting directly to the camera, set up not to use the proxy server. • Confirm that Default Gateway address is correct. • The router needs Port Forwarding feature. Refer to your router's manual for details. • Packet Filtering of the router may prohibit access from an external network. Refer to your router's manual for details. • Access the camera from the Internet with the global IP address of the router and port number of camera. • Some routers reject the global IP address to access the camera on the same LAN. Access with the private IP address and correct port number of camera. • When you use DDNS, you need to set Default Gateway and DNS server address. • If it's not working after above procedure, reset camera to default setting and installed it again. • If the problem is not solved, the camera might be faulty. Contact your dealer for further help.
Image or video does not appear in the main page.	• The first time the PC connects to camera, a pop-up **Security Warning window** will appear to download ActiveX Controls. When using Windows XP, or Vista, log on with an appropriate account that is authorized to install applications. • Network congestion may prevent the Image screen from appearing quickly. You may choose lower resolution to reduce the required bandwidth.
Check the camera's ActiveX is installed on your computer	Go to C:\Windows\Downloaded Program Files and check to see if there is an entry for the file "**IPCamera Control"**. The status column should show "Installed". If the file is not listed, make sure your Security Settings in Internet Explorer are configured properly and then try reloading the camera's home page. Most likely, the ActiveX control did not download and install correctly. Check your Internet Explorer security settings and then close and restart Internet Explorer. Try to browse and log in again.
Internet Explorer displays the following message: "Your current security settings prohibit downloading ActiveX controls".	Set up the IE security settings or configure the individual settings to allow downloading and scripting of ActiveX controls.
The camera work locally but not externally.	• Might be caused from the firewall protection. Check the Internet firewall with your system or network administrator. The firewall may need to have some settings changed in order for the camera to be accessible outside your LAN. • Make sure that the camera isn't conflicting with any other web server running on your LAN. • Check the configuration of the router settings allow the camera to be accessed outside your local LAN.

	• Check the bandwidth of Internet connection. If the Internet bandwidth is lower than target bit rate, the video streaming will not work correctly.
The unreadable characters are displayed.	Use the operating system of the selected language. Set the Encoding or the Character Set of the selected language on the Internet Explorer.
Frame rate is slower than the setting.	• The traffic of the network and the object of the image affect the frame rate. The network congestion causes frame rate slower than the setting. • Check the bandwidth of Internet connection. If the Internet bandwidth is lower than target bit rate, the video streaming will not work correctly. • Ethernet switching hub can smooth the frame rate.
Blank screen or very slow video when audio is enabled.	• Your connection to the camera does not have enough bandwidth to support a higher frame rate for the streamed image size. Try reducing the video streaming size to 160x120 or 320x240 and/or disabling audio. • Audio will consume 32 kbps. Disable audio to improve video. Your Internet connection may not have enough bandwidth to support streaming audio from the camera.
Image Transfer on e-mail or FTP does not work.	• Default Gateway and DNS server address should be set up correctly. • If FTP does not work properly, ask your ISP or network administrator about the transferring mode of FTP server.
Pan/Tilt does not work. (including Click to Center and Preset Positioning)	• Click **Refresh** on the Internet Explorer when the communication stops with the camera. The image will refresh. • Other clients may be operating Pan/Tilt. • Pan/Tilt operation has reached the end of corner.
Pan/Tilt does not work smoothly.	There may be a slight delay when you are using the Pan/Tilt feature in conjunction with streaming audio and video. If you find that there is a significant delay while panning or tilting the camera, try disabling the audio streaming and/or reducing the video streaming size.
Video quality of the camera	
The focus on the camera is bad.	• The lens is dirty or dust is attached. Fingerprints, dust, stain, etc. on the lens can degrade the image quality.
The color of the image is poor or strange.	• Adjust White Balance. • To insure the images you are viewing are the best they can be, set the Display property setting (color quality) to 16bit at least and 24 bit or higher if possible within your computer. • The configuration on the camera image display is incorrect. You need to adjust the image related parameters such as brightness, contrast, hue and sharpness properly.
Image flickers.	• Wrong power line frequency makes images flicker. Make sure the 50 or 60Hz format of your camera. • If the object is dark, the image will flicker. Make the condition

	around the camera brighter.
Noisy images occur.	The video images might be noisy if the camera is located in a very low light environment. Make the condition around the camera brighter or turn the White-light LED on.
Miscellaneous	
Cannot play the recorded ASF file	Have installed Microsoft®'s DirectX 9.0 or later and use the Windows Media Player 11.0 or later to play the AVI filed recorded by the camera.

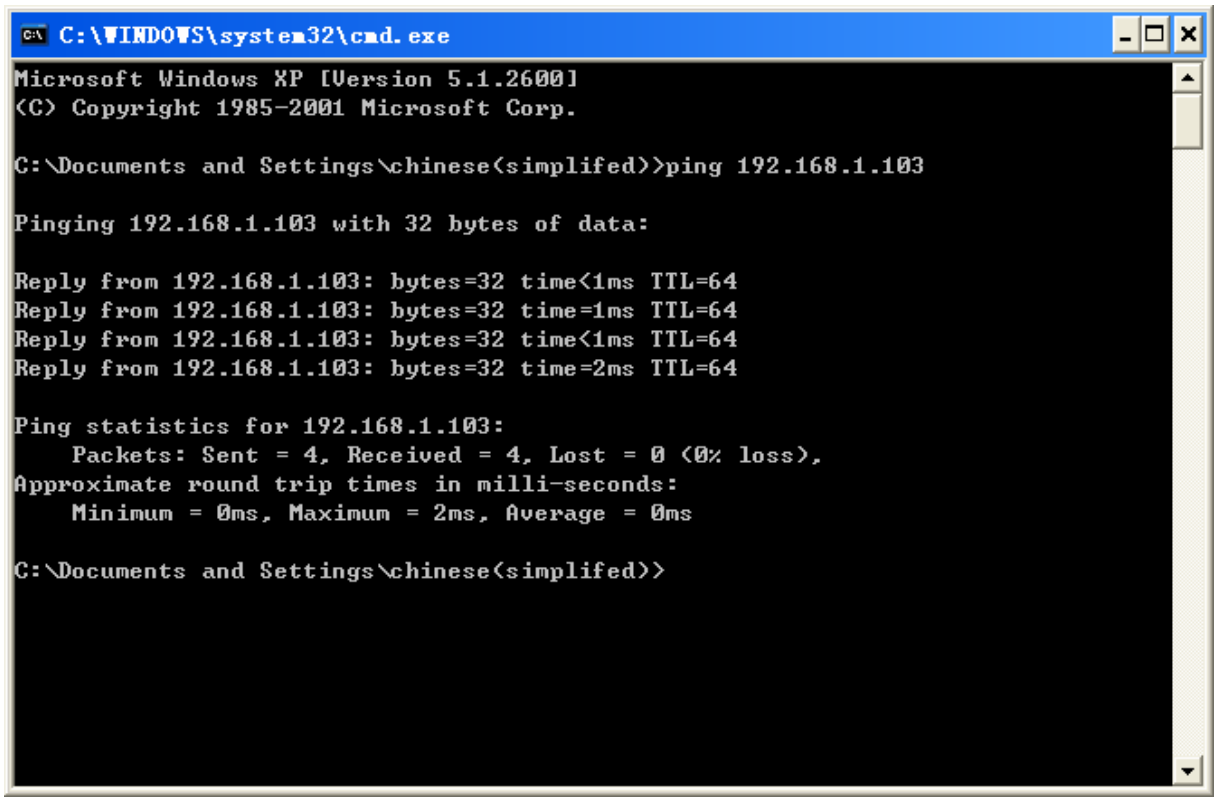
Appendix B: PING IP Address

The PING (stands for Packet Internet Groper) command is used to detect whether a specific IP address is accessible by sending a packet to the specific address and waiting for a reply. It's also a very useful tool to confirm the camera installed or if the IP address conflicts with any other cameras over the network.

If you want to make sure the IP address of the camera, utilize the PING command as follows:

- Launch a Command Prompt.
- Type ping x.x.x.x, where x.x.x.x is the IP address of the camera. For example, ping 192.168.1.103

The replies, as illustrated below, will provide an explanation to the problem.



If you want to detect any other cameras conflicts with the IP address of camera, also can utilize the PING command but you must disconnect the camera from the network first.

Appendix C: Bandwidth Estimation

The frame rate of video transmitted from the camera depends on connection bandwidth between client and server, video resolution, codec type, and quality setting of server. Here is a guideline to help you roughly estimate the bandwidth requirements form your camera.

The required bandwidth depends on content of video source. The slow motion video will produce smaller bit rate generally and fast motion will produce higher bit rate vice versa. Actual results generated by the camera may be varying.

Image Resolution	Average range of data sizes for JPEG mode	Average bit rate for MPEG4 mode	Average bit rate for H.264 mode
160 x 120 (QQVGA)	3 ~ 6k byte per frame	64kbps~256kbps @ 30fps	25kbps~512kbps @ 30fps
320 x 240 (QVGA)	8 ~ 20k byte per frame	NA	128kbps~2048kbps @ 30fps
640 x 480 (VGA)	20 ~ 50K byte per frame	NA	384kbps~4096kbps @ 30fps
1280x720 (720p)	100 ~ 200K byte per frame	NA	1,024kbps~8,000kbps @ 30fps

☞ **Note:**

Audio streaming also takes bandwidth around 32kbps. Some xDSL/Cable modem upload speeds could not even reach up to 128 kbps. Thus, you may not be able to receive good quality video while also streaming audio on a 128 kbps or lower connection. Even though the upload speed is more than 128kbps, for optimal video performance, disabling audio streaming will get better video performance.

Appendix D: Specifications

Camera	LAN	WLAN
Image Camera	1.3 Mega-pixel image sensor	
Effective Pixels	1280 x 1024 pixels	
Sensitivity	1.0V/lux-sec	
Lens	4.3mm	
IP Module		
Video		
Video Encoder	H.264, MPEG4 and Motion JPEG simultaneously (Tri-encoders)	
Video Profile	8 profiles simultaneously (including 3GPP profile)	
Frame Rate	Up to 30fps for all resolutions	
Image Setting	AE, AWB 3D noise reduction Color, brightness, sharpness, contrast Mirror/Flip Privacy Masks Text, time and date overlay	
Streaming	Simultaneously multi-profile streaming Streaming over UDP, TCP, or HTTP M-JPEG streaming over HTTP (server push) Supports 3GPP mobile surveillance (MPEG4) Controllable frame rate and bandwidth Constant and variable bit rate (H.264) ROI	
Audio		
Audio Encoder	RTSP: G.711 64kbps, G.726 32kbps 3GPP: AMR	
Audio Streaming	One-way or two-way	
Microphone	Built-in microphone	
Audio Output	Adjustable audio output gain	
Network		
Supported Protocols	IPv4, TCP, UDP, HTTP, HTTPS, SMTP, FTP, NTP, DNS, DDNS, DHCP, ARP, Bonjour, UPnP, RTSP, RTP, RTCP, IGMP, PPPoE, 3GPP, Samba, ICMP	
Security	Password protection, IP address filtering, HTTPS encrypted data transmission, user access log	
Users	20 simultaneous unicast users	
Ethernet	10/100M auto negotiation	
System Integration		
Application Programming Interface	ONVIF Open API for software integration SDK	
Alarm Triggers	Intelligent video motion detection	
Motion Detection	10-zone video motion detection with included or excluded options	
Alarm Events	File upload via FTP, SAMBA, SD card or email Notification via email, HTTP, and TCP Audio alerting output	
Video Buffer	Pre- and post- alarm buffering	
General		
RAM	128MB	
ROM	16MB	
Power Supply	12V DC external power adapter	

Power Consumption	2W	3W
Connectors	RJ-45 10BaseT/100BaseTX DC power jack Audio out Factory default reset Micro SD card (Max 32GB, Class 6)	
Indication LED	Green and orange LEDs	
Operating Temperature	0°C to 40°C (32°F to 104°F)	
Operating Humidity	20% ~ 80% (non-condensing)	
Dimension	HxWxD:74.5 x 52.6 x 35..0 (mm)	
Viewing System		
OS	Windows® XP, Vista, 7	
Browser	IE 6.0 or later, Firefox 2.0 or later, Safari	
Cell Phone	With 3GPP player	
Video Player	VLC, Quick Time, Real Player, Core Player	
Software		
Search & Installation	IP Search	
Bundled NVR Program	Surveillance Manager 64CH	

Appendix E: Configure Port Forwarding Manually

The camera can be used with a router. If the camera wants to be accessed from the WAN, its IP address needs to be set up as fixed IP address, also the port forwarding or Virtual Server function of router needs to be set up. This camera supports UPnP traversal function. Therefore, the user could use this feature to configure port forwarding of NAT router first. However, if the user needs to configure port forwarding manually, please follow the steps as below:

Manually installing the camera with a router on your network is an easy 3–step procedure as following:

(1) Assign a local/fixed IP address to your camera
(2) Access the Router with Your Web browser
(3) Open/Configure Virtual Server Ports of Your Router

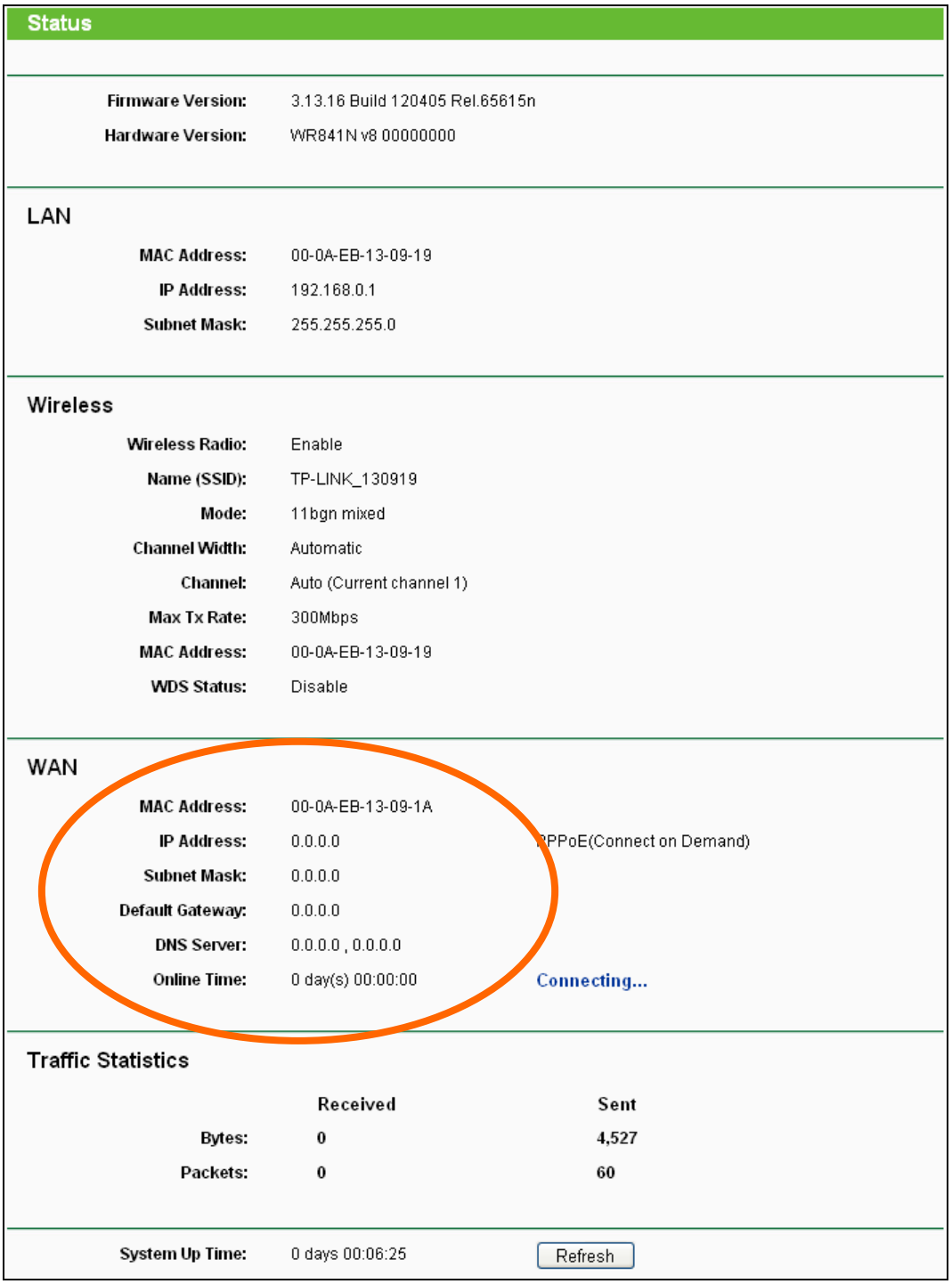
(1) Assign a local/fixed IP address to your camera

The camera must be assigned a local and fixed IP Address that allows it to be recognized by the router. Manually set up the camera with a fixed IP address, for example, *192.168.0.100*.

(2) Access the Router with Your Web browser

The following steps generally apply to any router that you have on your network. The TP-LINK TL-WR841ND is used as an example to clarify the configuration process. Configure the initial settings of the router by following the steps outlined in the router's **Quick Installation Guide**.

If you have cable or DSL service, you will most likely have a dynamically assigned WAN IP Address. 'Dynamic' means that your router's WAN IP address can change from time to time depending on your ISP. A dynamic WAN IP Address identifies your router on the public network and allows it to access the Internet. To find out what your router's WAN IP Address is, go to the **Status** screen on your router and locate the WAN information for your router. As shown on the following page the WAN IP Address will be listed. This will be the address that you will need to type in your web browser to view your camera over the Internet.



Your WAN IP Address will be listed here.

Note: Because a dynamic WAN IP can change from time to time depending on your ISP, you may want to obtain a Static IP address from your ISP. A Static IP address is a fixed IP address that will not change over time and will be more convenient for you to use to access your camera from a remote location. If you could not get a Static IP address from your ISP or DDNS is a solution alternatively.

(3) Open/set Virtual Server Ports to enable remote image viewing

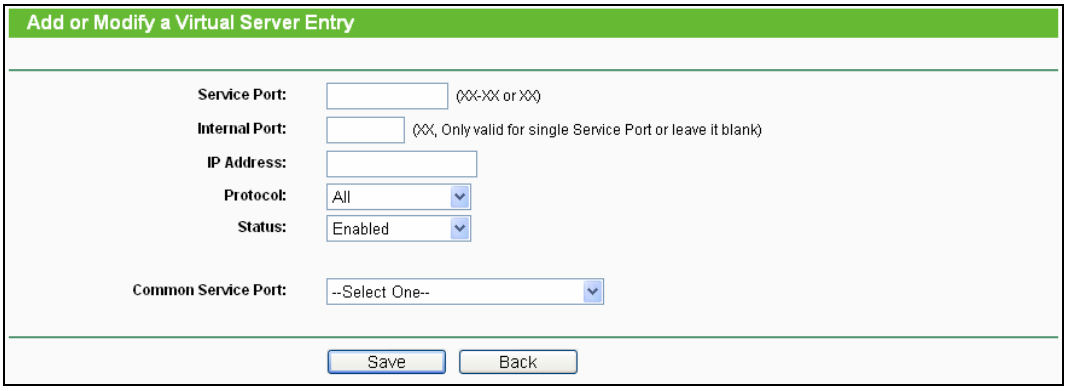
The firewall security features built into the router and most routers prevent users from accessing

the video from the camera over the Internet. The router connects to the Internet over a series of numbered ports. The ports normally used by the camera are blocked from access over the Internet. Therefore, these ports need to be made accessible over the Internet. This is accomplished using the **Virtual Server** function on the router. The Virtual Server ports used by the camera must be opened through the router for remote access to your camera. Virtual Server is accessed by clicking on **Forwarding→Virtual Server**.

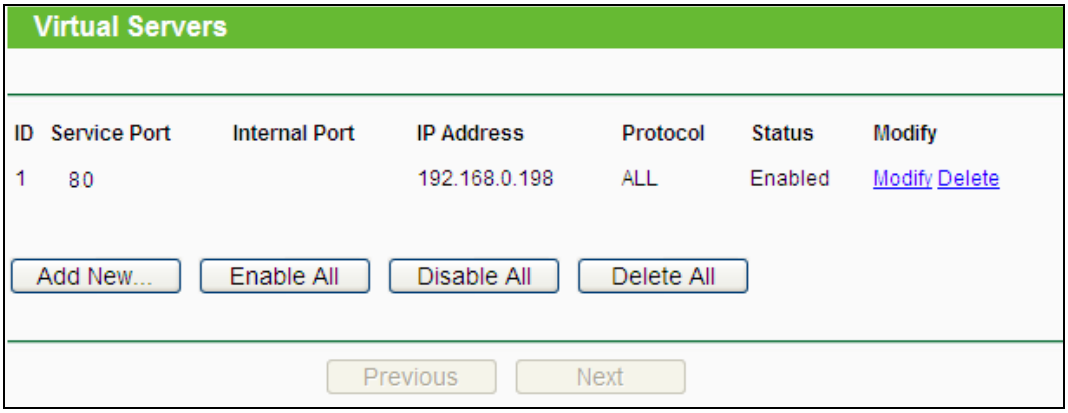
Follow these steps to configure your router's Virtual Server settings.

To set up a virtual server entry:

1. Click the **Add New…** button, the next screen will pop-up.
2. Select the service port you want to use from the **Common Service Port** list. If the **Common Service Port** list does not have the service that you want to use, type the service port number or service port range (e.g., **80**) in the **Service Port** box.
3. Type your camera's local IP address (e.g., **192.168.0.198**) in the **IP Address** box.
4. Select the **All** protocol.
5. Select the **Enable** to enable the virtual server.
6. Click the **Save** button.



Important: Some ISPs block access to port 80. Be sure to check with your ISP so that you can open the appropriate ports accordingly. If your ISP does not pass traffic on port 80, you will need to change the port the camera uses from 80 to something else, such as 8080. Not all routers are the same, so refer to your user manual for specific instructions on how to open ports.



Then the camera can be accessed from WAN by the router's WAN IP Address.

By now, you have finished your entire PC configuration for this camera.

Appendix F: DDNS Application

1. Preface

If you have a Cable modem or xDSL, this is a great way to host your own camera or other TCP/IP Service. Get your own domain like www.yourname.com, www.yourname.com.tw etc. (Note: This domain must be registered with Internic via registration authorities such as Network Solutions, DirectNIC, Register.com etc). Your domain name's dynamic IP address is automatically tracked by a DDNS server.

Host your own camera and much more no matter what your computer's IP address may be and even if you have dialup, DSL or cable modem internet connection where your computer's IP address changes all the time!! DDNS service supports all top level domain names including but not limited to .com, .net, .org, .to, .uk etc.

2. Ethernet Network Environment

Normally, DDNS service is only necessary for the users that could only obtain dynamic IP addresses. As to the users that could obtain the static valid IP address, they do not usually have to apply the DDNS service. Before we decide if DDNS is necessary for the users, we have to check what kind of Ethernet network environment we have to install our Networked camera on.

(1) Environment of Fixed Valid IP Network

If users could obtain valid IP addresses, they could save the effort to apply DDNS service. Because the IP address in this environment is fixed, users could input the IP address or domain name of demo site directly in the IE browser.

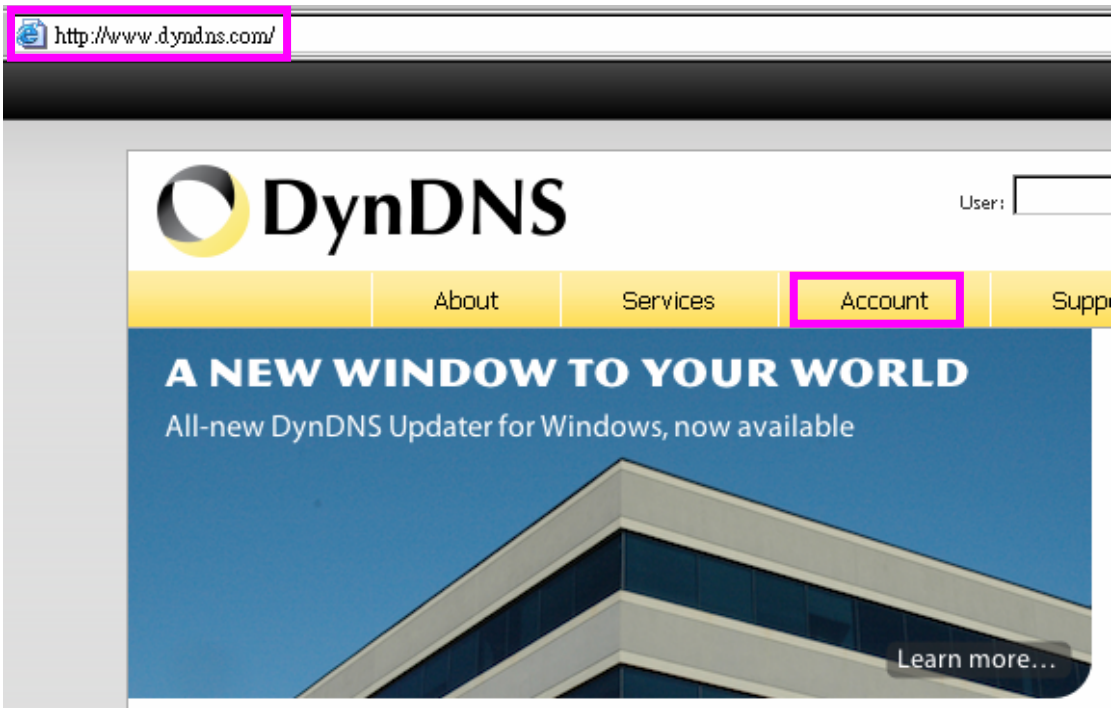
(2) Environment of Dynamic IP Network

If users is under an environment of dynamic IP network (Dial-up xDSL), they have to apply a domain name in advance. Then apply DDNS service. Finally set up the necessary information of DDNS and PPPoE of the camera in order to let the outside administrator be able to access through internet.

3. Application Steps—DDNS & Domain Name

(1) Visit the following web site: http://www.dyndns.org/

(2) Click “Account”



(3) After the columns show up at the left side, click “Create Account”.

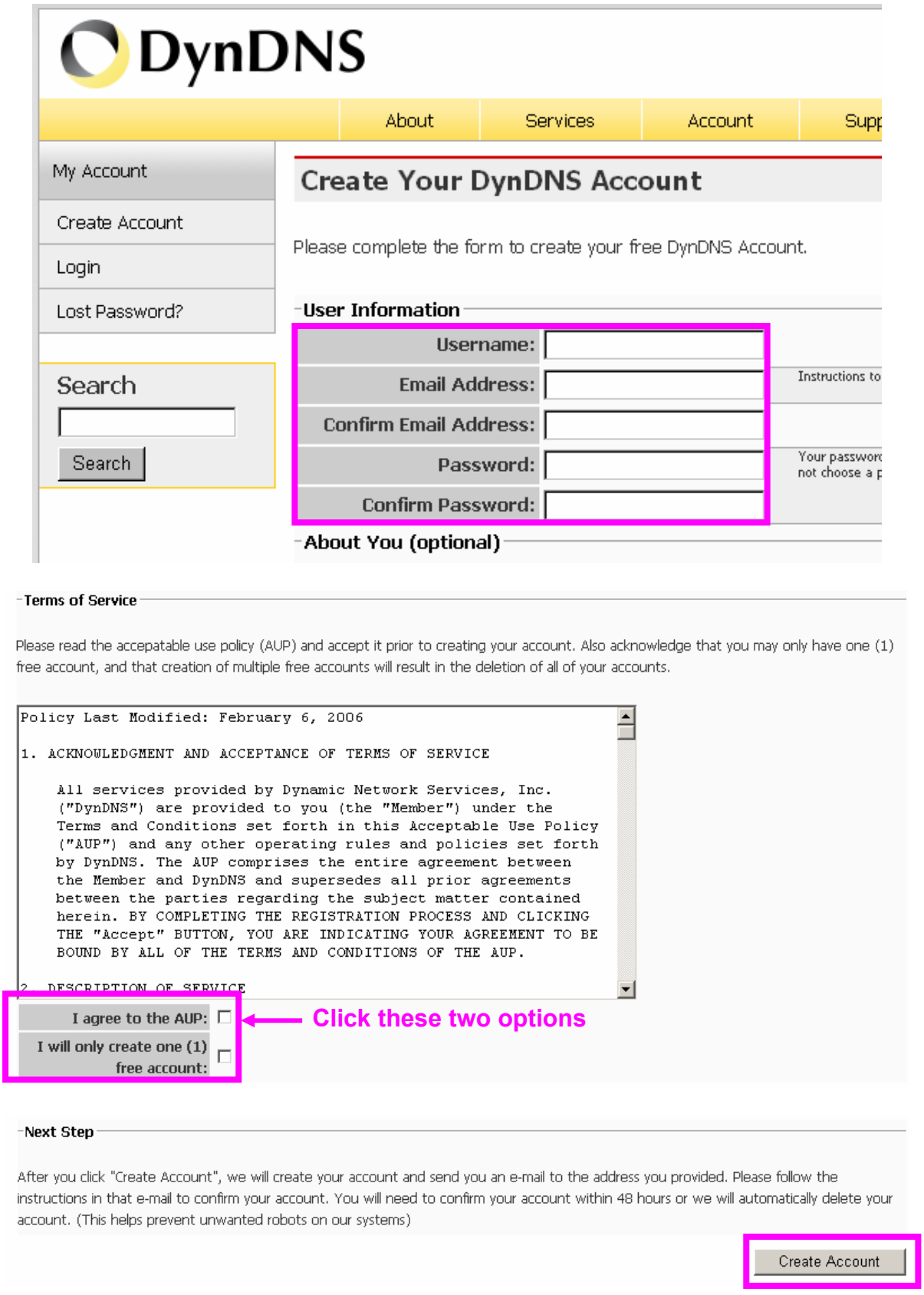
(4) Fill the application agreement and necessary information.

a) Username

b) E-mail address and confirmation

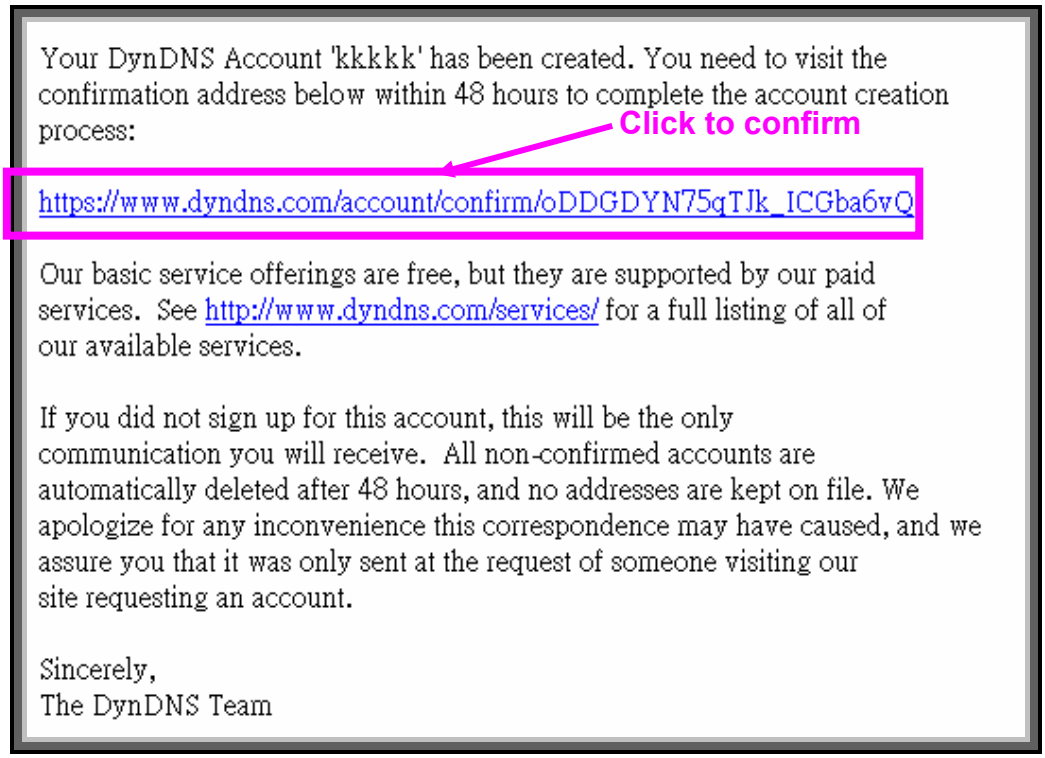
c) Password and confirmation

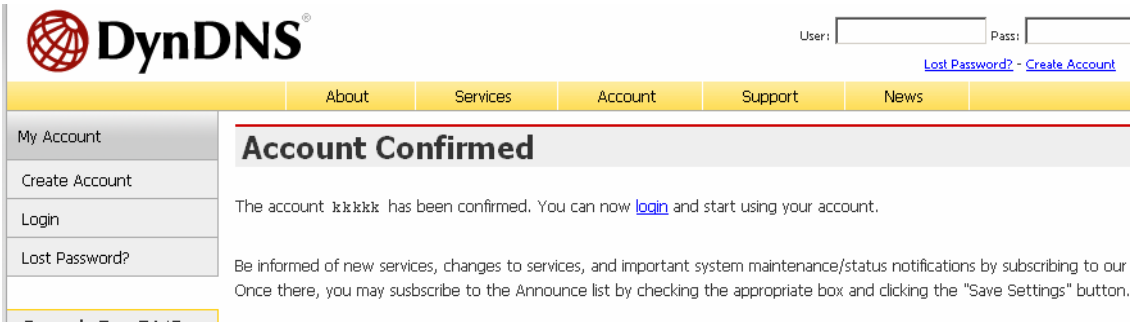
d) Submit all the input information and finish creating an account



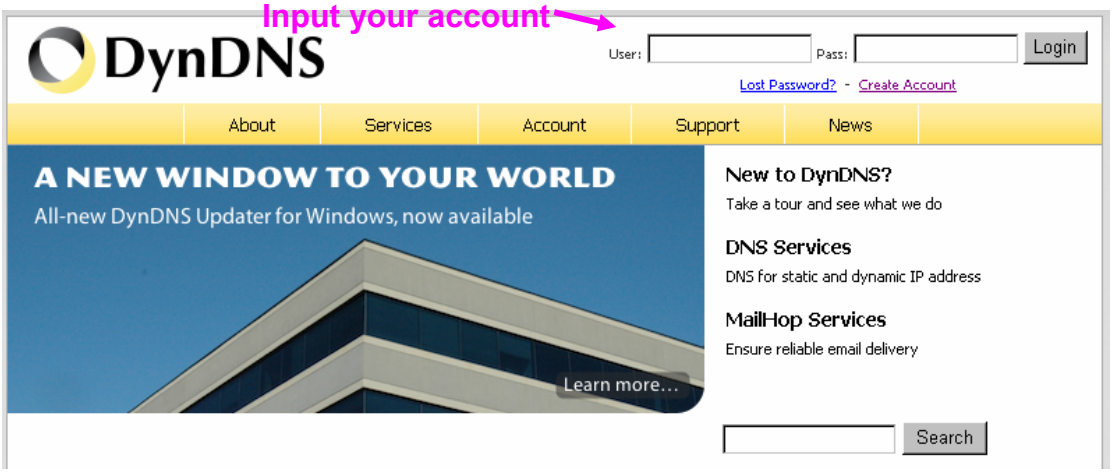
(5) Check your e-mail mailbox. There will be an e-mail with a title “Your DynDNS Account Information“. Click the hyperlink address to confirm the DDNS service that you just applied.

Then DDNS you applied activated.





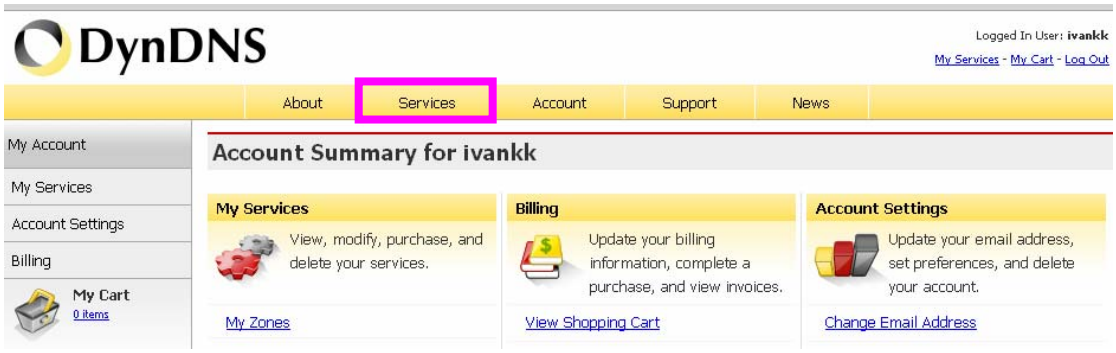
(6) Enter the web page http://www.dyndns.org/ again. Input your username and password that you just applied to login administration interface of DDNS server.



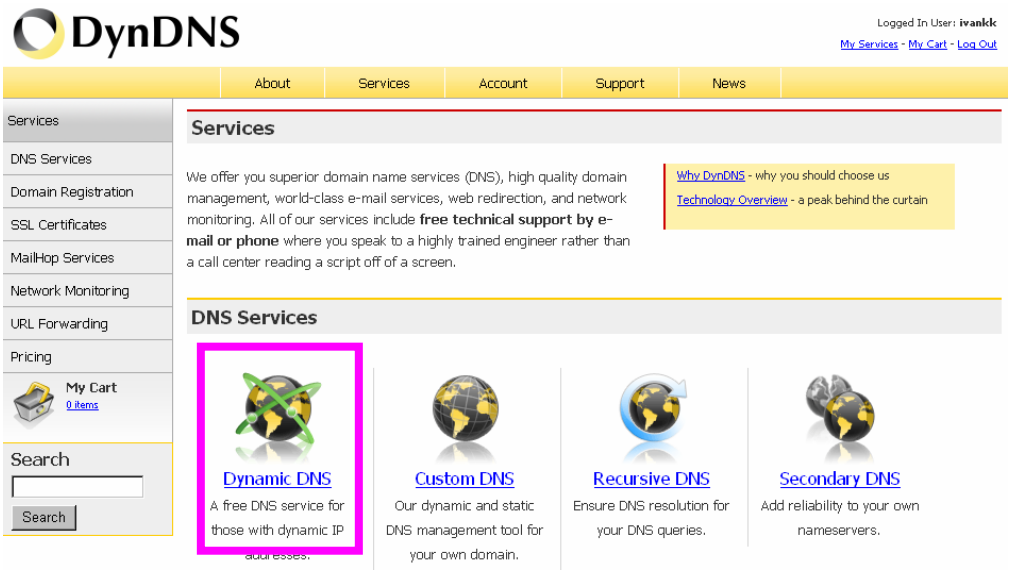
(7) If the correct username and password are input, you can see the following picture at the

top-right of the login page.

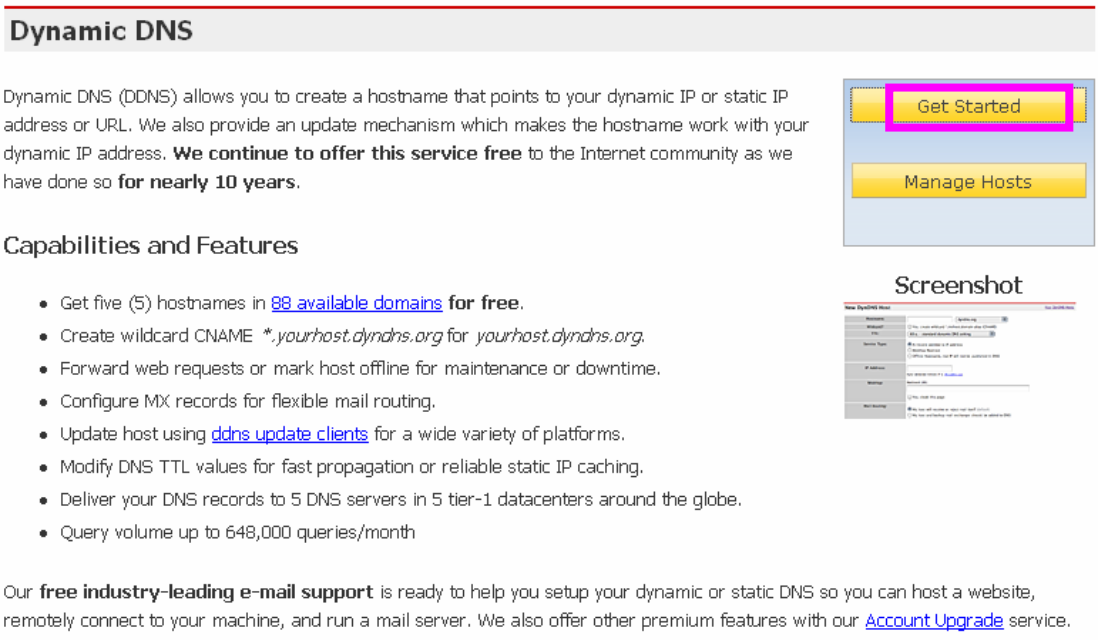
(8) Click the “Services”.



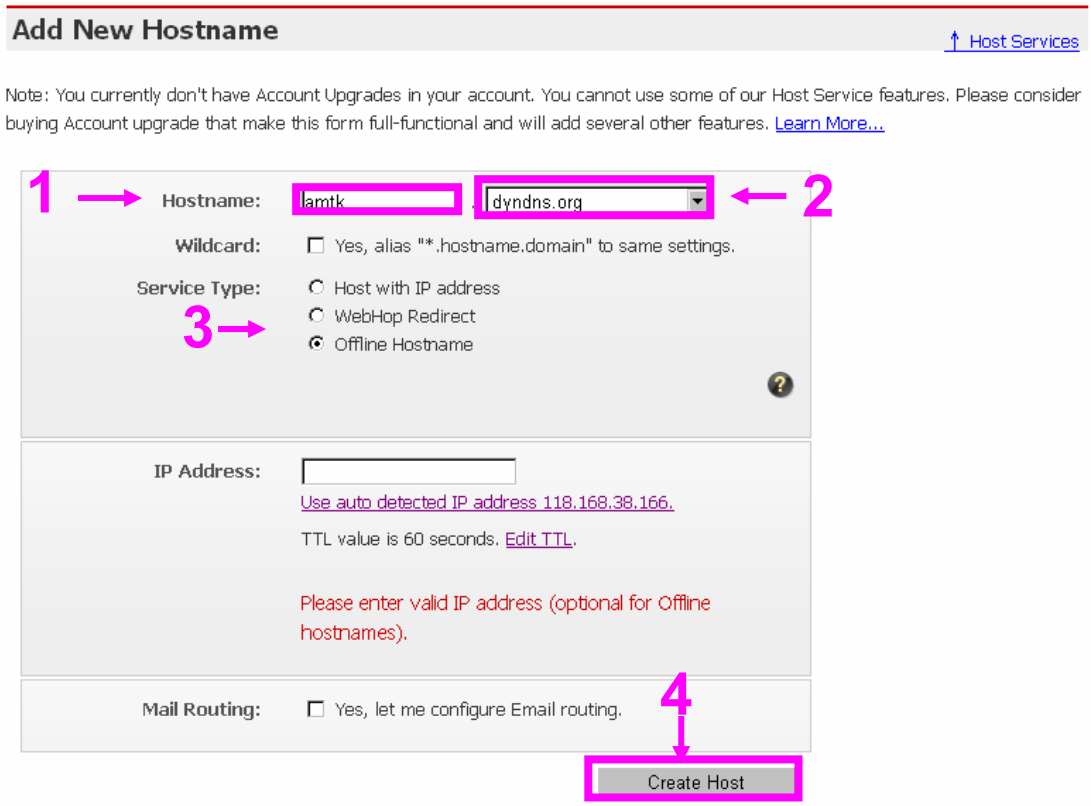
(9) Click the “Dynamic DNS ”.



(10) Click the “Get Started”.



(11) We could create a domain name without any charge at this step. First, we input the host name. (Pink No.1) Then we pick a domain that is easy to remember. (Pink No.2) The 3rd step is to click “Offline Hostname” from Service Type. (Pink No.3) Finally, click the “Create Host” to submit the domain name information and finish DDNS application. (Pink No.4)



4. Set up the DDNS and PPPoE of Camera

At last, users have to enter the web page of camera and set up the necessary information of DDNS and PPPoE after the application of DDNS service. Please check the user manual to

access the DDNS and PPPoE pages. After saving the modification, restart the camera. Then the external users could browse the Networked camera by the input of their domain name.

Appendix G: Power Line Frequency

Country	Voltage	Frequency	Comments
Argentina	220V	50 Hz	*Neutral and line wires are reversed from that used in Australia and elsewhere.
Australia	230V*	50 Hz	*Outlets typically controlled by adjacent switch. Though *nominal* voltage has been officially changed to 230V, 240V is within tolerances and commonly found.
Austria	230V	50 Hz	
Brazil	110/220V*	60 Hz	*127V found in states of Bahia, Paran?(including Curitiba), Rio de Janeiro, S Paulo and Minas Gerais (though 220V may be found in some hotels). Other areas are 220V only, with the exception of Fortaleza (240V).
Canada	120V	60 Hz	
China, People's Republic of	220V	50 Hz	
Finland	230V	50 Hz	
France	230V	50 Hz	
Germany	230V	50 Hz	
Hong Kong	220V*	50 Hz	
India	230V	50 Hz	
Italy	230V	50 Hz	
Japan	100V	50/60 Hz*	*Eastern Japan 50 Hz (Tokyo, Kawasaki, Sapporo, Yokohoma, and Sendai); Western Japan 60 Hz (Osaka, Kyoto, Nagoya, Hiroshima)
Malaysia	240V	50 Hz	
Netherlands	230V	50 Hz	
Portugal	230V	50 Hz	
Spain	230V	50 Hz	
Sweden	230V	50 Hz	
Switzerland	230V	50 Hz	
Taiwan	110V V	60 Hz	
Thailand	220V	50 Hz	
United Kingdom	230V*	50 Hz	*Outlets typically controlled by adjacent switch. Though *nominal* voltage has been officially changed to 230V, 240V is within tolerances and commonly found.
United States of America	120V	60 Hz	

Appendix H: 3GPP

To use the 3GPP function, in addition to previous section, you might need more information or configuration to make this function work. Please **note** that to use the 3GPP function, it strongly recommends to install the camera with a public and fixed IP address without any firewall protection.

RTSP Port:

Port 554 is the default for RTSP service. However, sometimes, some service providers change this port number for some reasons. If so, the user needs to change this port accordingly.

Dialing procedure:

1. Choose a verified player (PacketVideo or Realplayer currently)

2. Use the following URL to access: rtsp://*host*/mpeg4/media.3gp

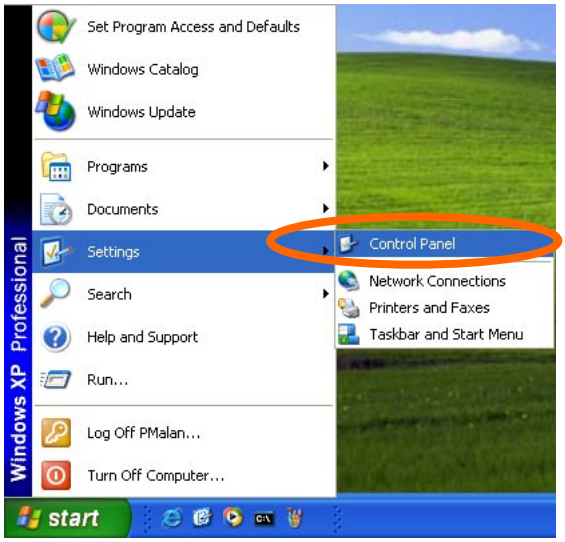
   Where *host* is the host name or IP address of the camera.

Compatible 3G mobile phone:

Please contact your dealer to get the approved list of compatible 3G phone.

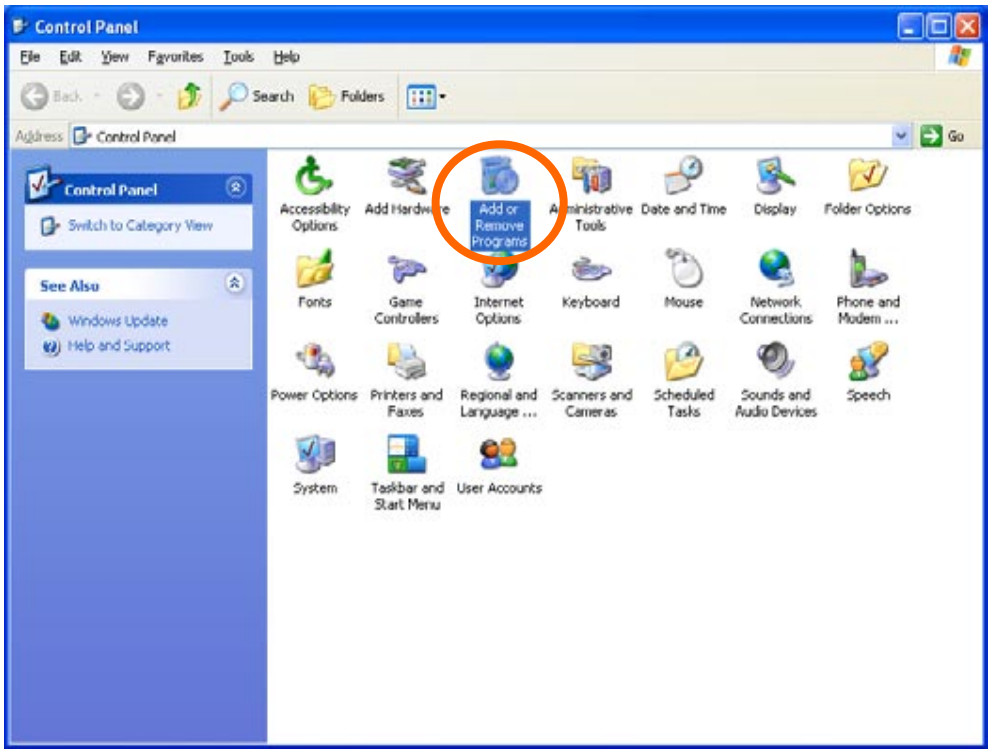
Appendix I: Enable UPnP of Windows XP

Use the following steps to enable UPnP settings only if your operating system of PC is running Windows XP.

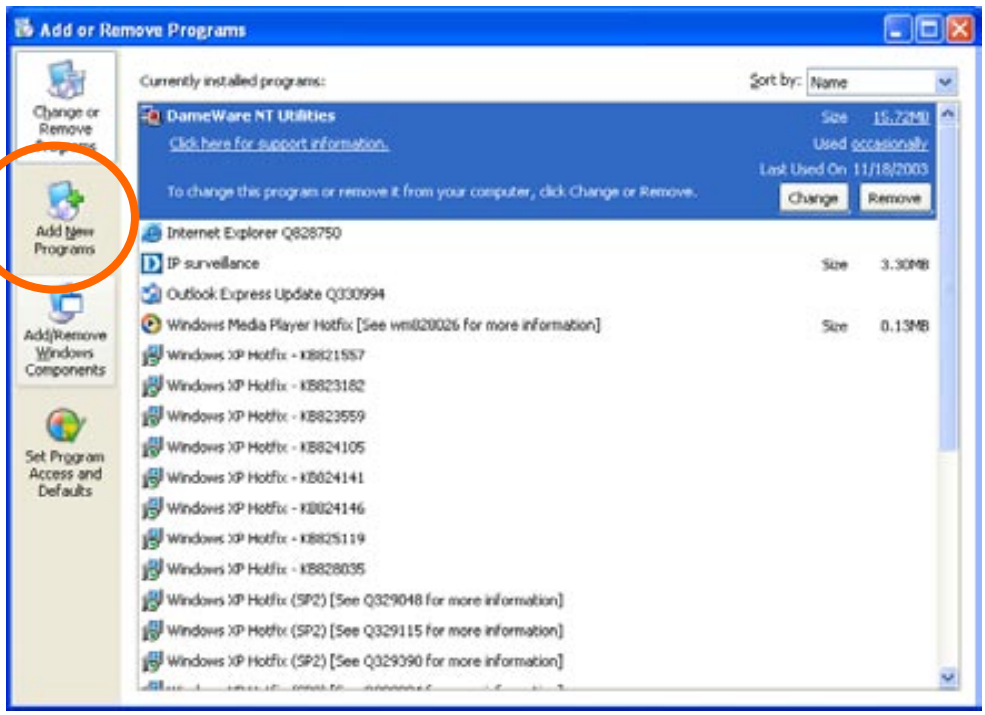


Go to **Start > Settings**.

Click **Control Panel**

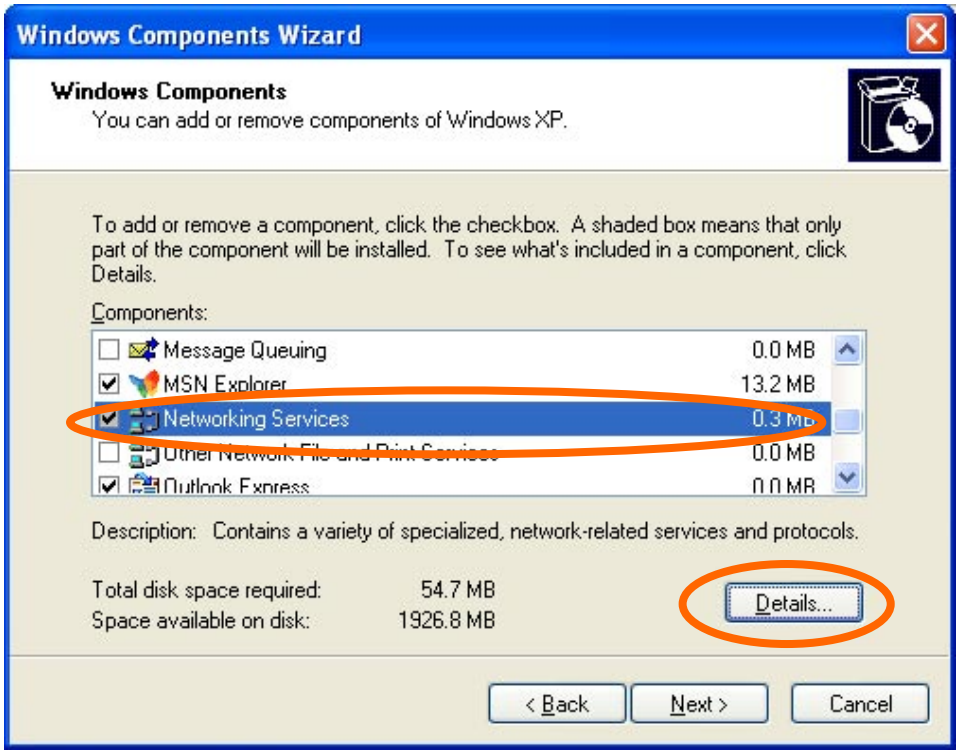


Click **Add or Remove Programs**



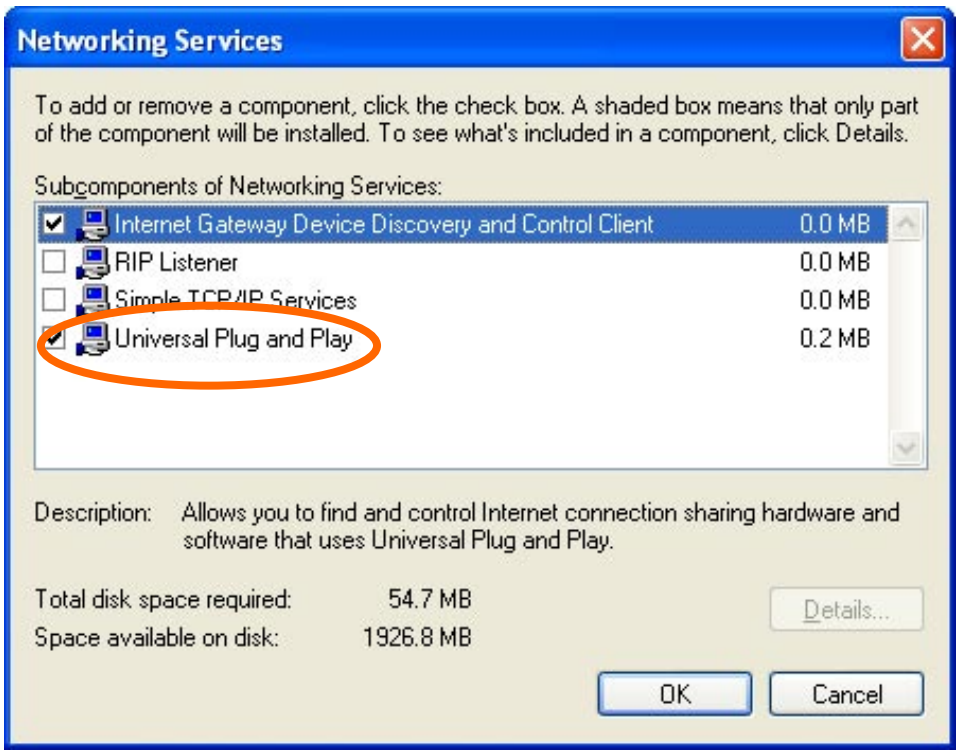
Click **Add/Remove Windows Components**

The following screen will appear:



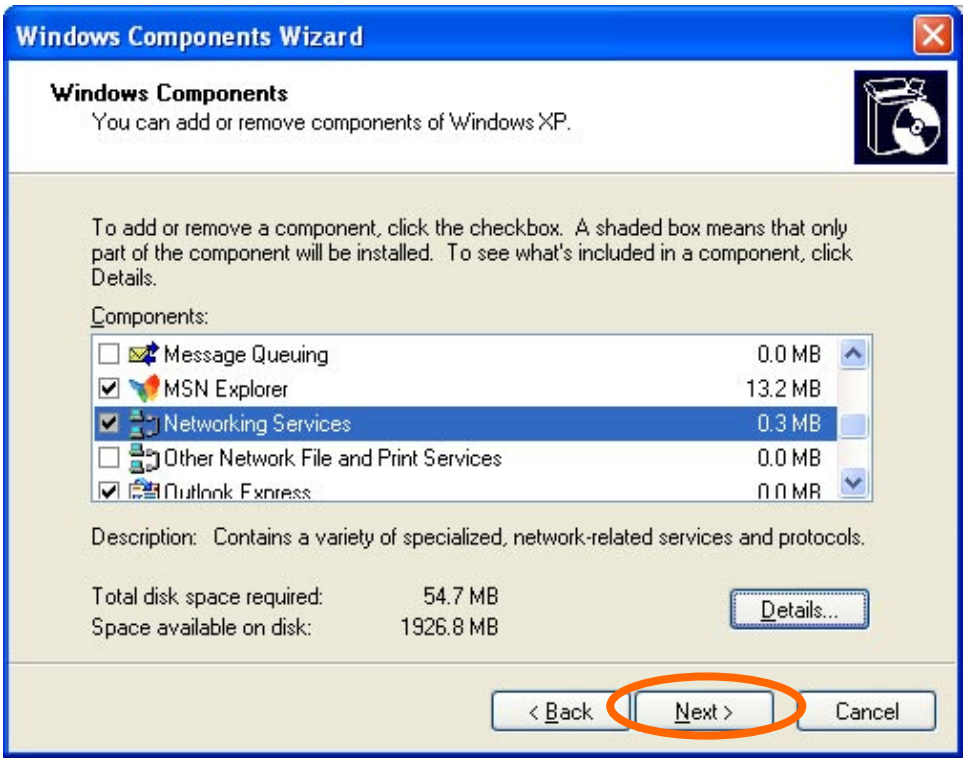
Select **Networking Services**

Click **Details**

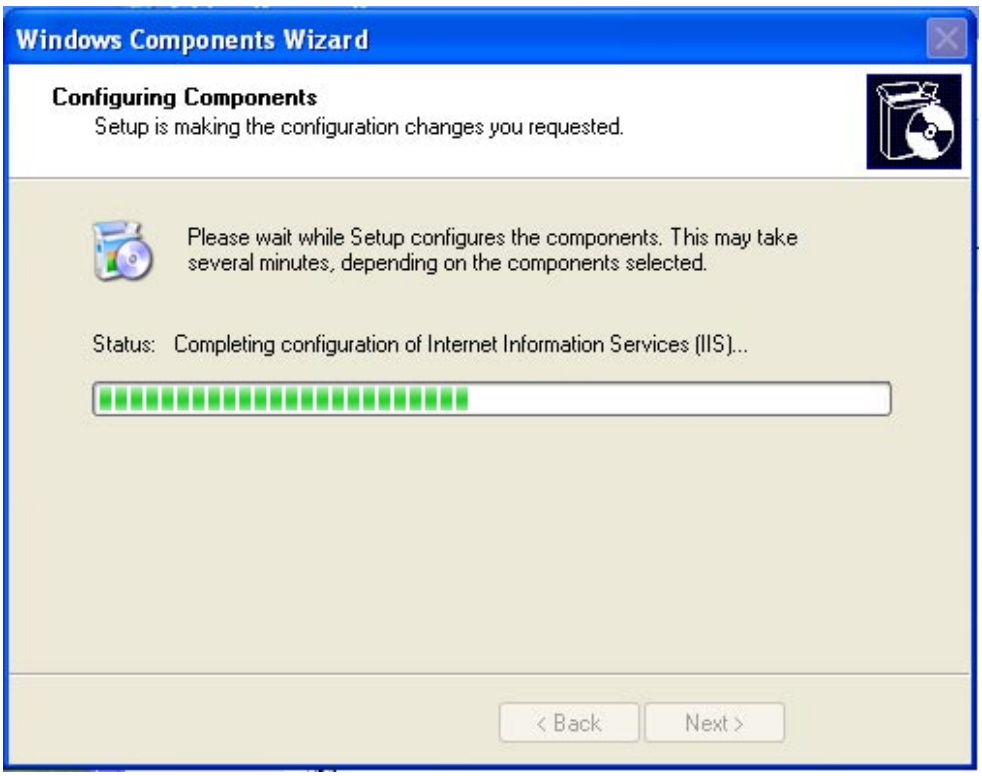


Select **Universal Plug and Play**

Click **OK**



Click **Next**



Please wait while Setting up configures the components.

Click **Finish**