

IR Bullet Network Camera User's Manual

201305.770. A1

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Important Notices

– Read Before Use

This instruction manual is intended for administrators and users of the IP Camera, including instructions for using and managing the camera on your network. The use of video surveillance devices can be prohibited by laws that vary from country to country. It is the user's responsibility to ensure that the operation of such devices is legal before installing this unit for surveillance purposes.

Heed all warnings

Before installing the IP Camera, please read and follow all the safety and operating instructions to avoid any damages caused by faulty assembly and installation. The user must adhere to all the warnings on the product and in this manual.

Liability

Every reasonable care has been taken in the preparation of this instruction manual. We cannot be held responsible for any technical or typographical errors and reserves the right to make alterations to the product and manuals without prior notice. We make no warranty of any kind with regard to the material contained within this manual, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. The user should verify the relevant information is current and complete before placing orders. All products are sold subject to our terms and conditions of sale at the time of order acknowledgement.

We shall not be liable nor responsible for the applications and resale of its products or bundled software with statements different from or beyond the specification/parameters stated by us. We are under no obligation to provide any further technical support service or product/software alteration beyond our representation.

Trademarks

All names used in this manual and products are probably registered trademarks of respective companies.

CE/FCC Statement (EMC)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. If the equipment is not installed and used in accordance with the instruction, it generates, uses, and can radiate radio frequency energy which may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his/her own expense will be required to take whatever measures may be required to correct the interference.

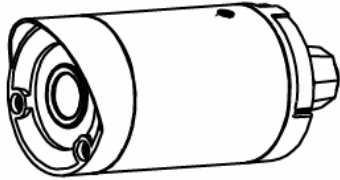
Overview

The ingenious Small 1MP IR Bullet Type IP Camera – The Camera is with incredibly tiny housing (length of 10 CM) and full-functioned design. The weather proof IP 67 housing makes an ease of installation in various environments including indoor and outdoor application. In addition, the clever light sensor design is an enhancement for IP function (IR distance up to 10 meters).

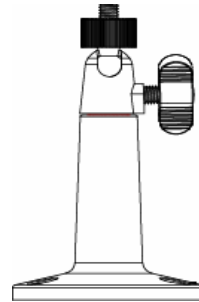
Equipped with removable IR-Cut filter for Day/Night vision, built-in multiple power source as redundant power supply that makes the camera a value-added option fitted in all kinds of projects.

Package Contents

Camera



Camera Stand



Power Adapter



Product CD



Hardware Pack

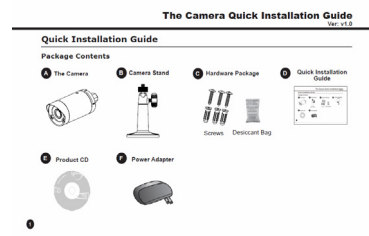


screws



Desiccant Bag

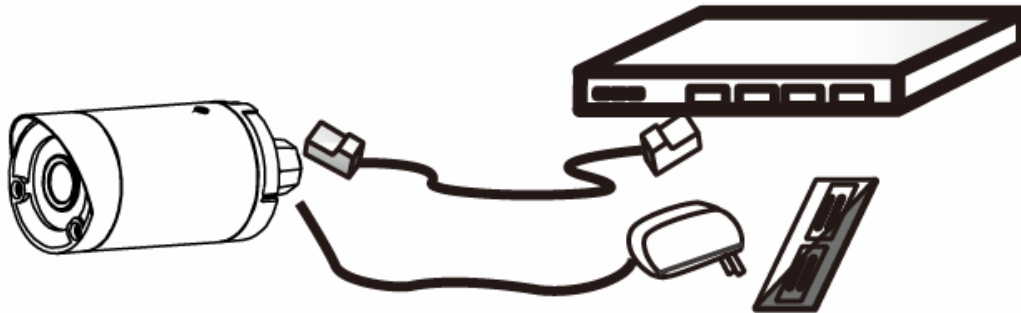
Quick Start Guide



Installation

Hardware Installation

1. Define the type of network device.
2. If the network device supports PoE (Power over Ethernet) function, simply connect the camera to it via Ethernet cable.
3. If not, the connections to the network device (via Ethernet cable), and DC 12V adapter are required.

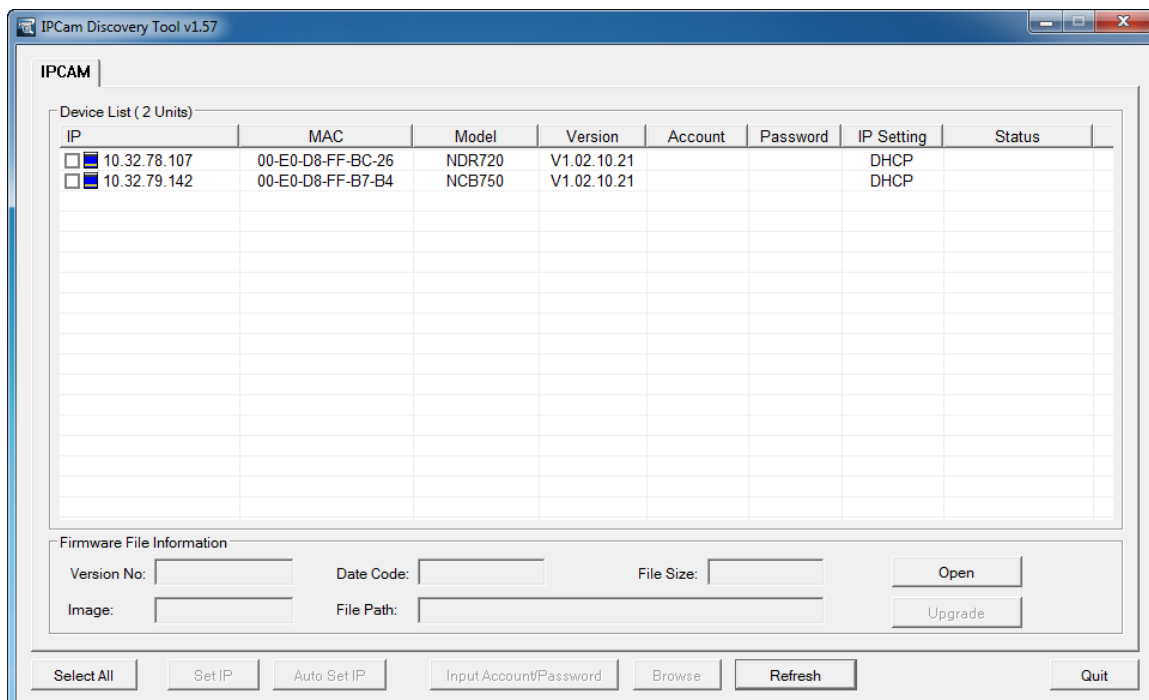


Software Installation

Discover IP Cameras

Discovery Tool is a utility provided for not only searching and displaying the available IP cameras information in a network but also managing the multiple networking settings such as static IP address assignment.

After completing the hardware installation, run IPCAMDiscovery.exe to search for the IP camera installed.



Assigning IP Address to the device

The steps of applying this search tool are described as below.

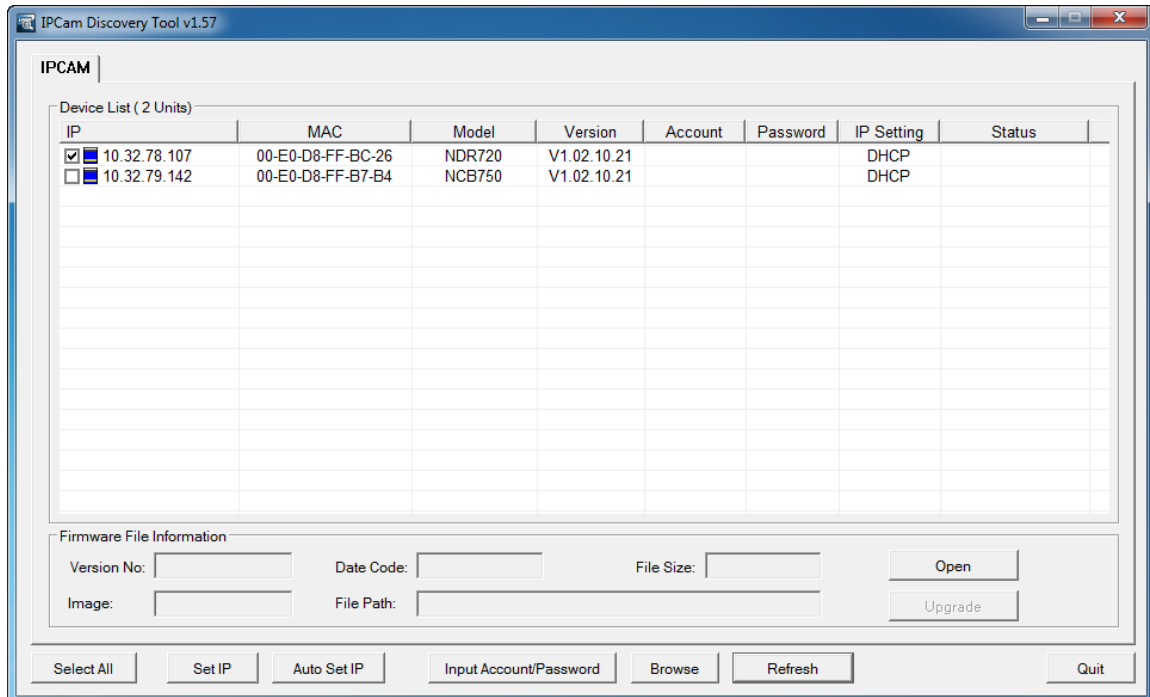
1. **Launch IPCAM Discovery Tool (IPCAMDiscovery.exe)**
2. **Assign IP address**

The selection is based on a single or multiple camera devices.

[Set IP]

This is applied to one specific camera selected from the Device List.

Step1: Select one specific camera device



Step2: Input desired IP information

The default settings of account /password are admin / 1234. If that were been changed, please enter the set values.

Set IP

IP: 192 . 168 . 1 . 30

Net Mask: 255 . 255 . 0 . 0

Gateway: 192 . 168 . 1 . 254

Account: admin

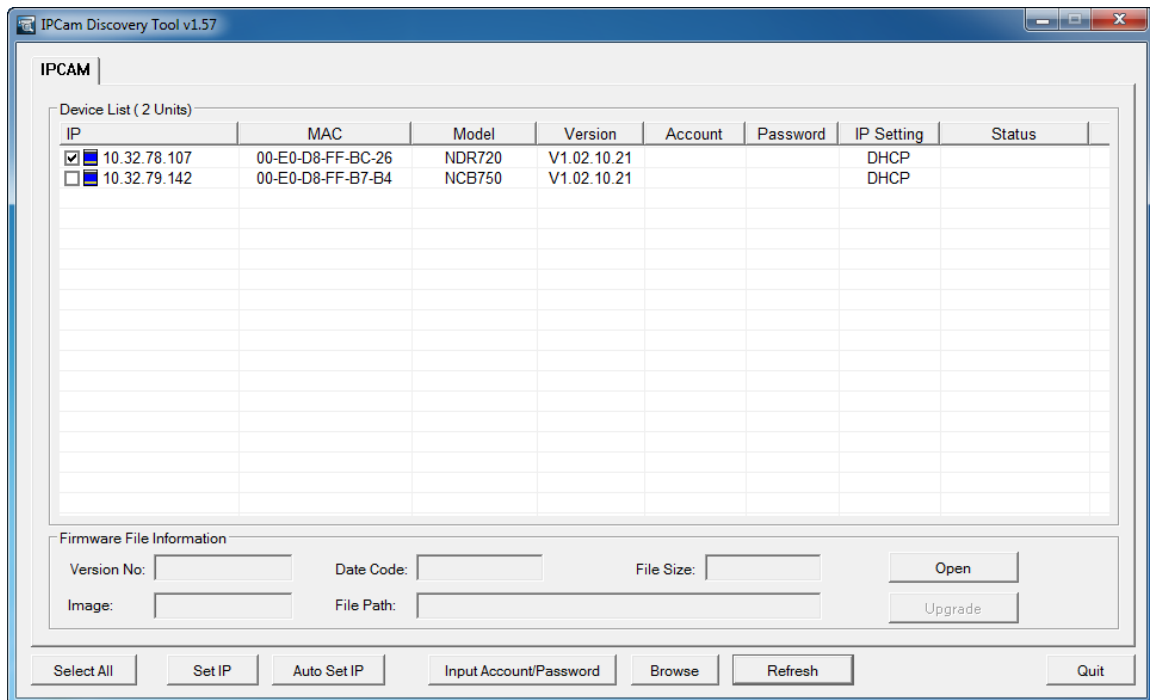
Password: *****

OK Cancel

[Auto Set IP]

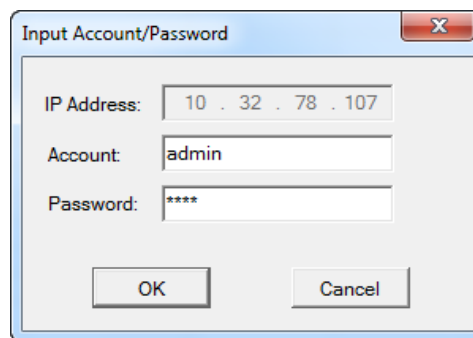
This is applied to a group of specific cameras selected from the Device List.

Step1: Select specific cameras

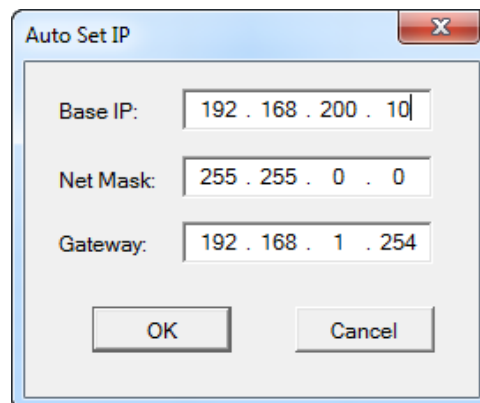


Step 2: Input Account / Password

The default account information is admin / 1234. If the values have been re-set, please enter the set values.

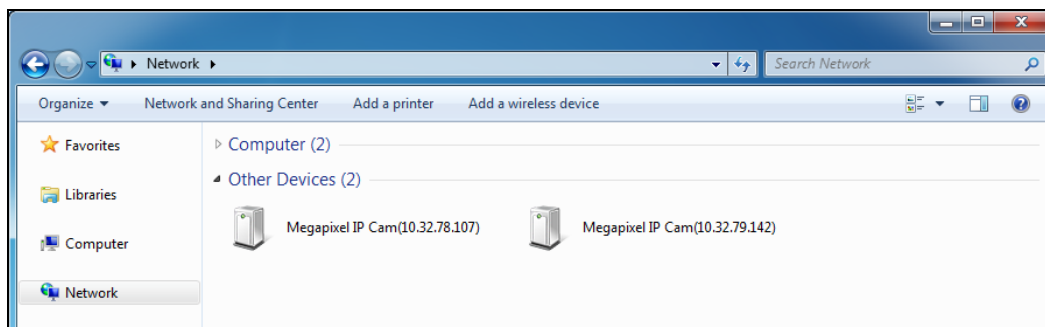


Step 3: Input IP information



Discovering devices in Windows Network

If the IP camera is installed in a network with DHCP and UPnP services, after obtaining an IP address from DHCP server, it can then be discovered in “Windows Network” of a client PC, see figure below. The reason for being automatically discovered is that the IP camera’s UPnP is default enabled (see **Network** → **Network Connectivity**).



NOTE

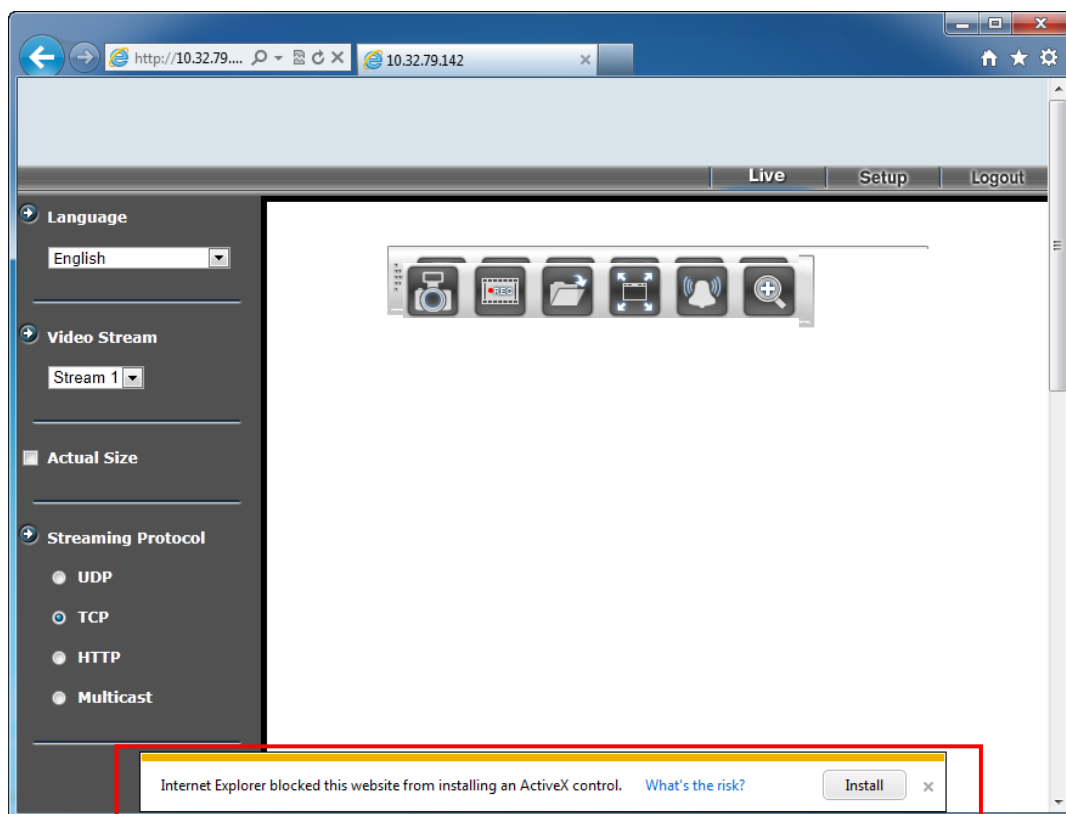
The term “**Windows Network**” in given figure above is used in Windows Vista / 7. It can be referred to Windows XP “**My Network Places**” which possesses the same capability of discovering UPnP devices.

Right-click on the device and select “Properties”, the pop-up window shows all the information related to the device, including the **web access info**. Use the web address to connect to the IP camera. Or simply double-click on the selected device, which gets immediately access to the camera webpage.

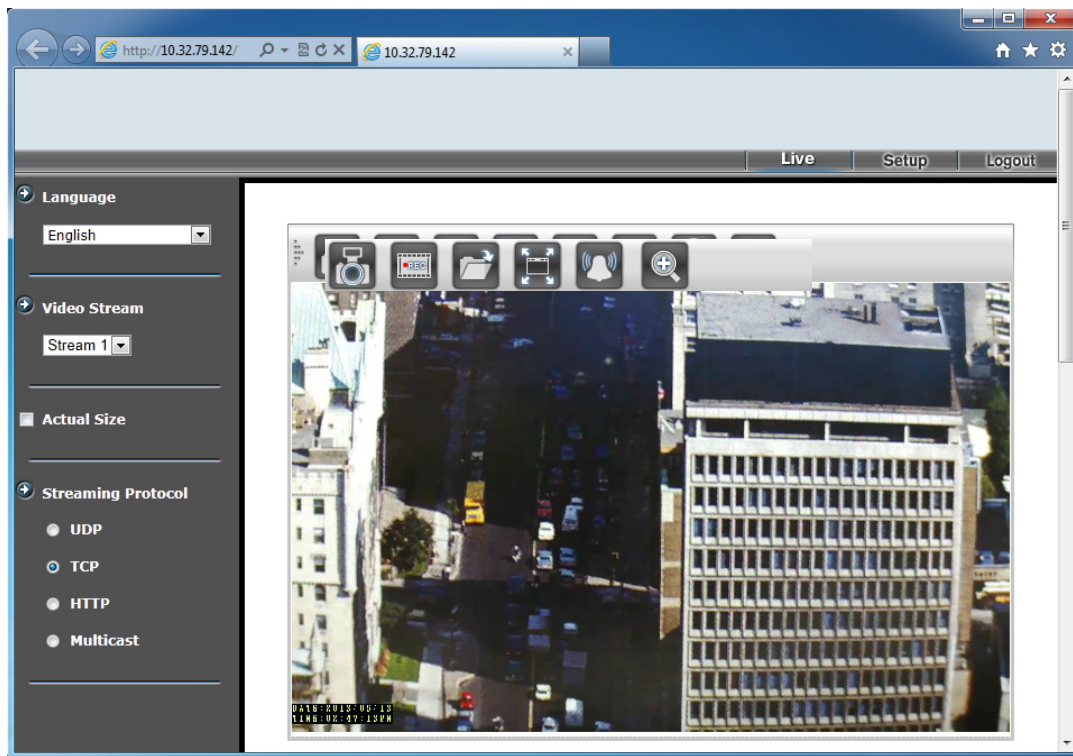
To identify the camera from the listed devices in “Network”, utilize the UPnP name and the device’s MAC address. This MAC address can be found on the label.

ActiveX add-on Installation

It is recommended to use Internet Explorer 8 or later as the primary browser to access the IP cameras website. The first-time access to the camera webpage will be prompted to install the ActiveX. To allow the installation, click “**Install**” on the message bar and follow the instructions to complete ActiveX installation.



When the installation is completed, IE browser can display the live video of the IP camera as the below figure.



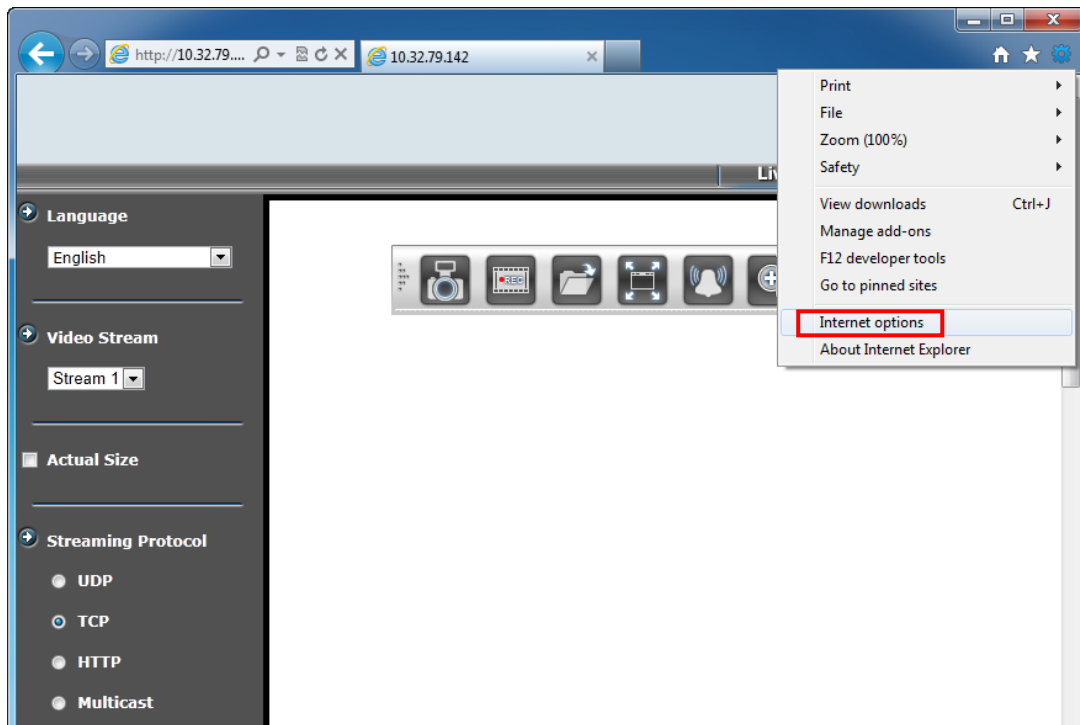
NOTE

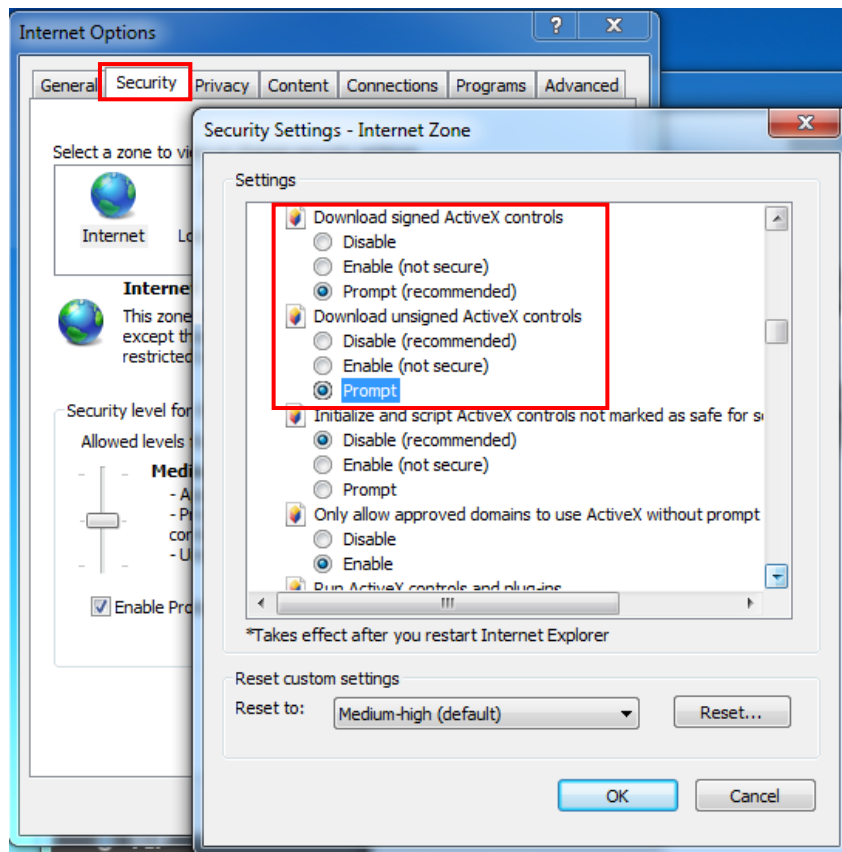
If, however, there is not any prompted message or ActiveX can not be installed at all, it is needed to change the IE security level and settings.

<Example>

Internet Explorer 9: Internet Options → Security → Custom level

Ensure the “Download signed ActiveX controls” setting is either “Enable” or “Prompt” selected.





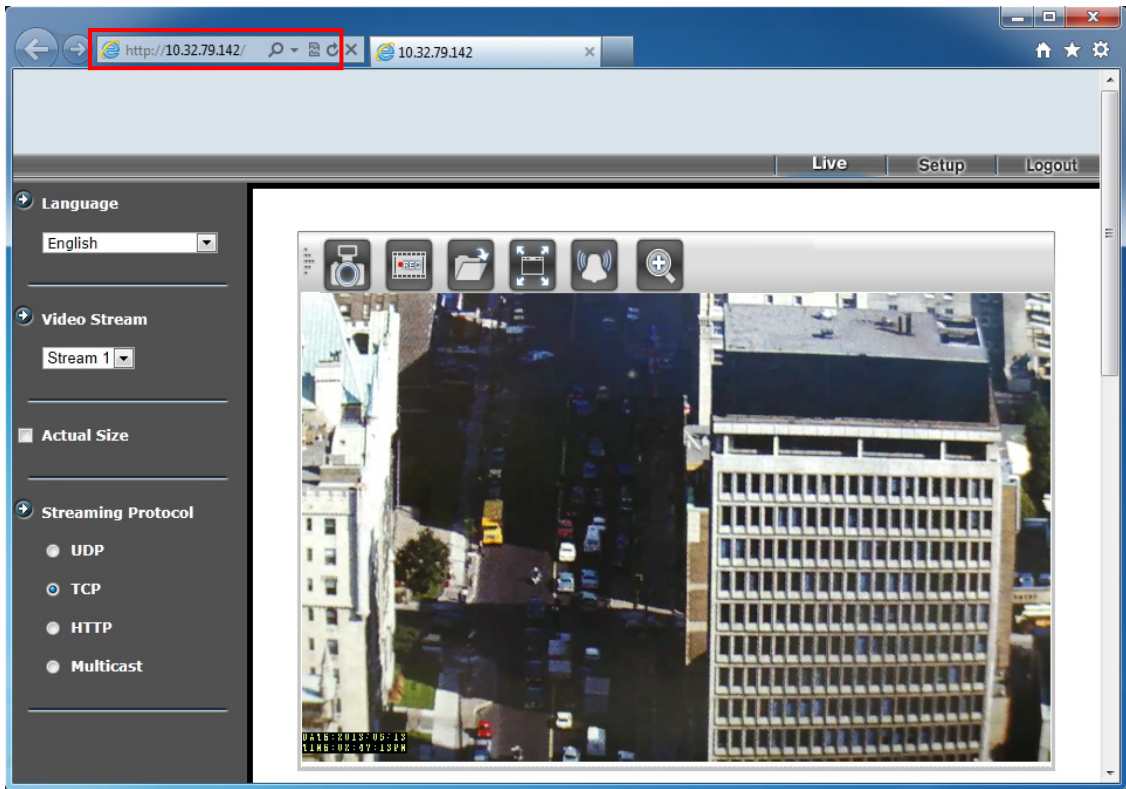
Accessing the camera

Viewing the live video

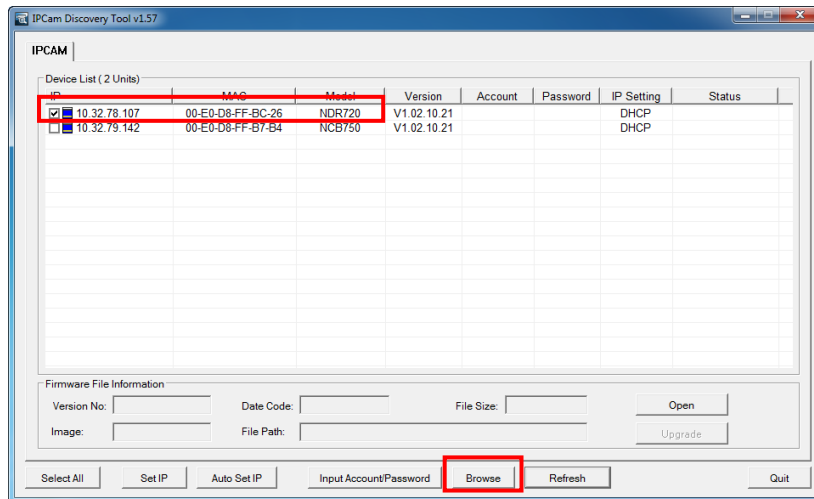
With the correct installation and IP settings, the camera device can be approached via network. There are three ways to view the live video from the camera: Internet Explorer, RTSP players, and NVR / CMS software.

1. Internet Explorer

- Launch IE browser and input the IP address of the camera or,
- Click on "Browse" button on the selected IP camera address from IPCAM Discovery Tool



OR



NOTE

IP cameras also support the other web browsers for viewing the live video such as Firefox, Google Chrome or Safari. The default settings of account /password are admin / 1234.

2. RTSP Player

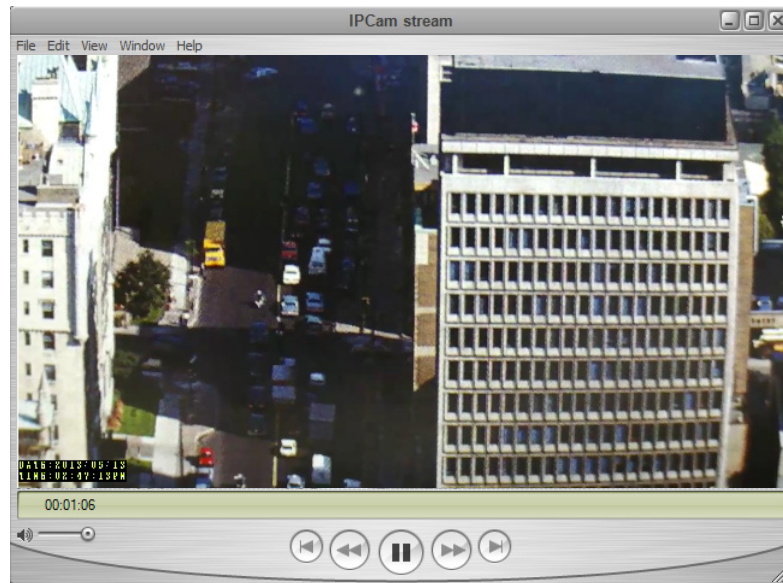
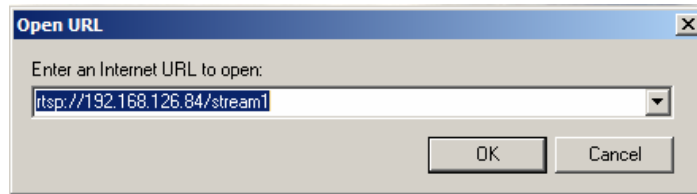
The live video of the camera can be played with RTSP players, such as VLC or QuickTime.

The camera supports two simultaneous video streaming (see **Video & Audio → Video Setting**). To gain access to the camera for each video stream, the **RTSP URL** will be required. The default paths for the 2 streams are “stream1” and “stream2”. The URL format should be input as below.

Stream1: `rtsp://Camera_IP/stream1`

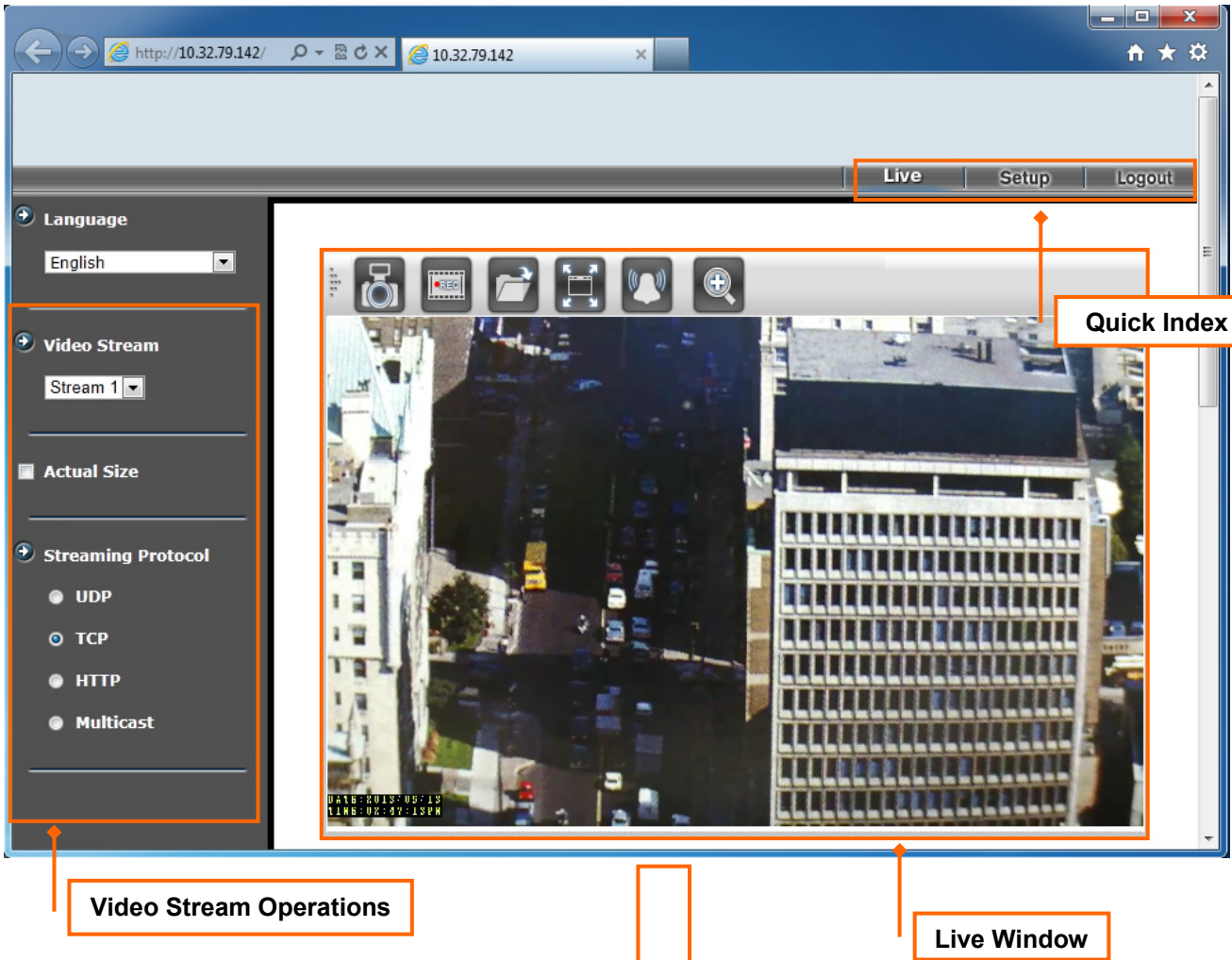
Stream2: `rtsp://Camera_IP/stream2`

The example given below is the live video displayed with QuickTime player.

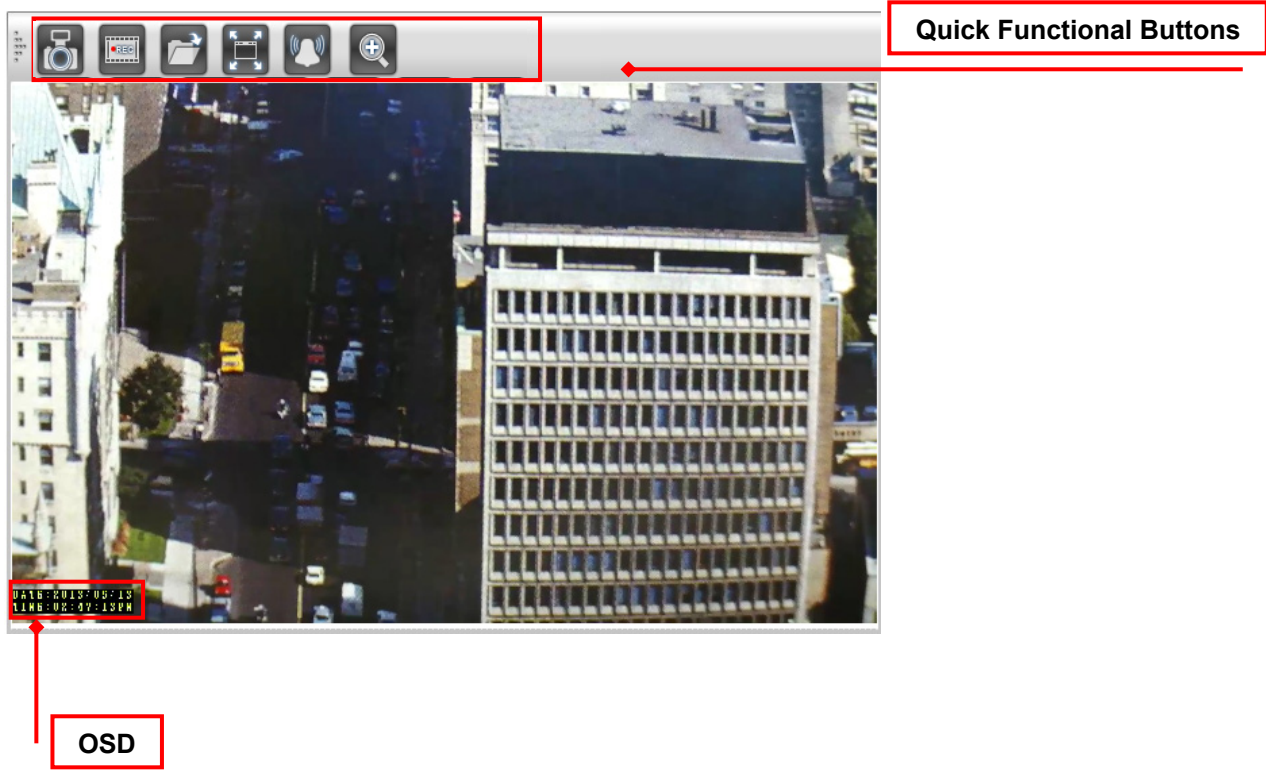


The Live view page

The following illustration shows you the front page of IP camera website.



Live Video Window





Snapshot: Press the button to capture an image photo



Record: Press the button to start recording. Press again to stop it.



Set Path: set up a file path that video clips and snapshots can be stored.



Full Screen: Press the button to enter the full screen mode. Press ESC key to return.

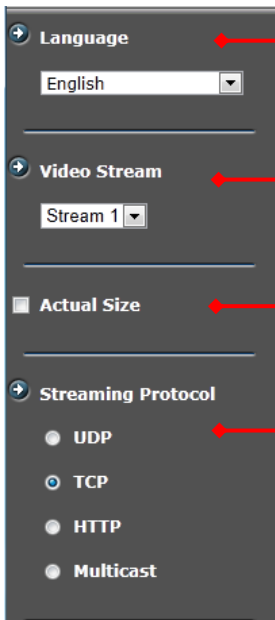


Manual Trigger: Press the button as triggering an event. See *Event Management* for detail.



Digital Zoom: toggle the digital zoom function.

Video Stream Operations



Language selection for the WEB UI

Select video stream for displaying on live video window

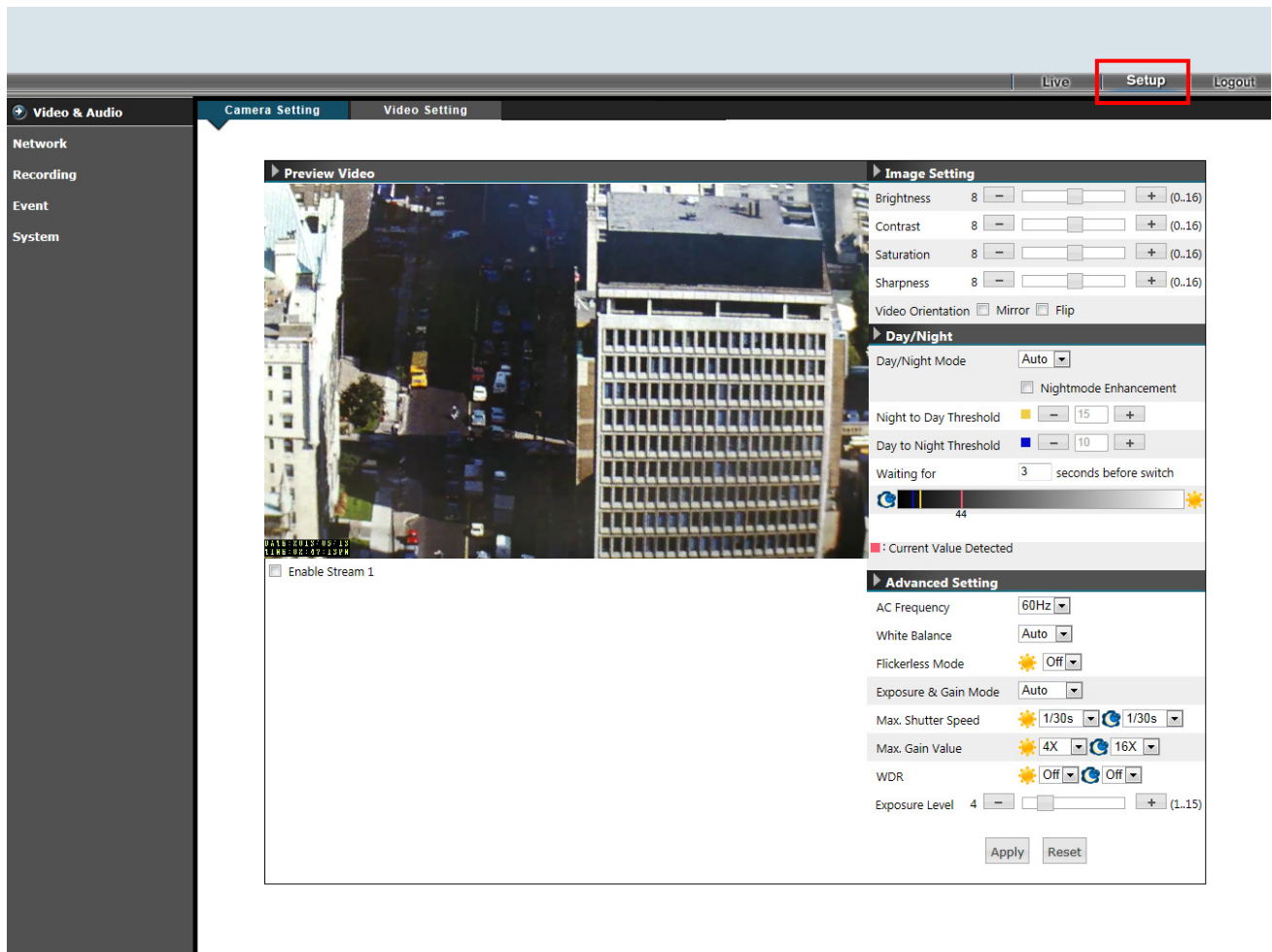
Display the video in actual (configured) size or digital (scaled)

Select the preferred streaming protocol on the client

Video

This section describes how to configure the video streaming of the device and the related camera image configurations. Users with Administrator or Operator authority (see **System → User Management**) are able to do these configurations.

Click on “**Setup**” of Quick Index to enter the “**Video & Audio**” page shown as below.



There are 2 sub-settings under “**Video & Audio**”:

- **Camera Setting**
- **Video Setting**

Camera Setting

The screenshot displays a camera settings menu with three main sections:

- Image Setting:** Includes sliders for Brightness, Contrast, Saturation, and Sharpness, all set to 8. Below these are checkboxes for Video Orientation: Mirror and Flip.
- Day/Night:** Features a Day/Night Mode dropdown set to 'Auto', a Nightmode Enhancement checkbox, and sliders for Night to Day Threshold (15) and Day to Night Threshold (10). A 'Waiting for' field is set to 3 seconds. A color calibration bar shows a current value of 44.
- Advanced Setting:** Includes dropdowns for AC Frequency (60Hz), White Balance (Auto), Exposure & Gain Mode (Auto), Max. Shutter Speed (1/30s), Max. Gain Value (4X), and WDR (Off). An Exposure Level slider is set to 4.

Image Setting

Brightness: the luminance of image view. Default value is 8; adjustable from 0 to 16.

Contrast: the ratio of luminance of white to black. Default value is 8; adjustable from 0 to 16.

Saturation: colorfulness of a color related to its own brightness. Default value is 8, adjustable from 0 to 16.

Sharpness: refer to image acutance, which presents in the edges contrast of an image. Default value is 8, adjustable from 0 to 16.

The 4 correlates are referring image appearance in terms of color/vision that is adjustable according to user preferences.

Video Orientation: change the image orientation.

- **Mirror:** rotate the image horizontally.
- **Flip:** rotate the image vertically.

Note: These operations are usually applied when camera must be installed in an exceptional position. For the example of ceiling installation, camera must be installed upside-down.

Day/Night

Day/Night Mode:

Switch the video images for **Day** (plenty of light) or **Night** (Low light) scene. In default “Auto” mode, camera will switch to Day or Night vision according to the light intensity. The Day / Night modes contain 2 actions: switching IR Filter **On / Off**, and image hue **Color / Mono**.

In day mode, the IR filter is switched in to avoid the image sensor from receiving the infrared, thus the true color image is provided. When camera enters night mode, IR filter is switched off to allow IR illuminations going into the sensor, thus increasing the images light level. The image color is switched to B/W (Mono mode).

Nightmode Enhancement

With this function enabled, the better night vision will be obtained. However, the number of FPS may drop depends on the actual environmental illuminations.

Night to Day Threshold

The value reflects the timing switching from night to day.

Day to Night Threshold

The value reflects the timing switching from day to night.

Switch Time

The value reflects the delay time for both ways of day and night switch.

Waiting for seconds before switch

Advanced Setting

AC Frequency: Anti-flicker setting for environment with fluorescent light sources, image sensor needs to fit the frequency of light (power) source. For instance, the power frequency is 50Hz for most European countries, while 60Hz is typically for US. This setting is therefore regionally different.

White Balance: The selections for enable auto white balance function or just make it as fixed. The default setting is set to AUTO.

Flickerless Mode: Flickering can also present in various exposure level. Set “Flickerless” Mode “On” to fix the maximum shutter speed (auto exposure control). Thus, the flickers can be eliminated.

Exposure & Gain Mode: Select auto / manual Exposure & Gain control mode. The selection defines the controlling in a range of or fixed value, according to the following two items (**Shutter Speed** and **Gain Value**). The configurations will be limited at selected maximum rates when AUTO mode is on.

Max. Shutter Speed: referring to exposure time. Higher shutter speed is normally applied under strong light circumstance, so the image won't be overexposure. Lower shutter speed, on the other hand keeps image luminance in low light environment.


Max. Gain Value: the amplification factor for the incoming light. Increasing the gain value provides a brighter image, but the noises may also be increased.


WDR: Enable this function for enhancing image under backlight circumstances.

Exposure Level: Adjust Exposure level for a target level of sensed brightness. Auto exposure function will adjust to exposure time to make the sense image brightness close to the target.





NOTE




The “**Shutter Speed**”, “**Gain Value**” and “**WDR**” can be configured for daytime and nighttime. The configurations will be applied according to the current status of “**Day/Night Mode**”.

 : represents the Day mode





 : represents the Night mode

The setting items with the Day or Night mode symbol will be altered along with the setting of Day/Night mode. The examples are illustrated as below.

Day/Night	
Day/Night Mode	Day
<input type="checkbox"/> Nightmode Enhancement	
Advanced Setting	
AC Frequency	60Hz
White Balance	Auto
Flickerless Mode	 Off
Exposure & Gain Mode	Auto
Max. Shutter Speed	 1/30s
Max. Gain Value	 4X
WDR	 Off
Exposure Level	4 <input type="button" value="-"/> <input type="text" value=""/> <input type="button" value="+"/> (1..15)

Day/Night	
Day/Night Mode	Night
<input type="checkbox"/> Nightmode Enhancement	
Advanced Setting	
AC Frequency	60Hz
White Balance	Auto
Exposure & Gain Mode	Auto
Max. Shutter Speed	 1/30s
Max. Gain Value	 16X
WDR	 Off
Exposure Level	4 <input type="button" value="-"/> <input type="text" value=""/> <input type="button" value="+"/> (1..15)

Video Setting

Video Stream	
<input checked="" type="checkbox"/> Enable Stream 1	
<input type="checkbox"/> Enable Stream 2	
Video Overlay	
<input checked="" type="checkbox"/> Enable OSD	
Privacy Mask	
<input type="checkbox"/> Enable Privacy Mask	

Video Stream

This tab provides detailed stream configurations. These settings can affect video size, quality. The maximum transmission performance can be expected under the condition of full network bandwidth.

The camera supports up to 2 video streams. Each stream can be configured with following items.

Video Stream

Enable Stream 1

Video Format: H.264

Resolution: 1280x800

Frame Rate: 30 fps

Intra Frame Period: 1 S

Video Quality

Constant Bit Rate Target Bit Rate: 64Kbps

Variable Bit Rate Quality Level: Excellent

Enable Stream 2

Video Format: H.264

Resolution: 800x450

Frame Rate: 15 fps

Intra Frame Period: 1 S

Video Quality

Constant Bit Rate Target Bit Rate: 64Kbps

Variable Bit Rate Quality Level: Excellent

Video Overlay

Enable OSD

Privacy Mask

Enable Privacy Mask

Video Format: H.264, MPEG4 and MJPEG are available for the selection. The demand of bandwidth and storage requirement differs from the selection of video format. In the request of same video quality, H.264 contributes to less bandwidth and storage requirement, which can be more efficient than MPEG4 or MJPEG.

Resolution: The resolution here describes an image size counted in width by height, e.g. 1280x720, referring to **pixel resolution**.

The available resolutions for Stream 1 and Stream 2 are listed in the following table.

Resolution	Stream 1	Stream 2
1280 x 800	V	-
1280 x 720	V	-
800 x 450	V	V
640 x 360	V	V
320 x 180	V	V

"V": available
"-": not available

Frame Rate: It represents the number of frames that are displayed per second. The higher the frame rate is the better/smoothier the video stream can be obtained. However, it would be the tradeoffs for the higher network bandwidth and storage requirement.

Intra Frame Period: This is applied only in MPEG4 / H.264 which the video stream is composed of **I**-frames (full image information) and **P**-frames (motion-compensated difference information).

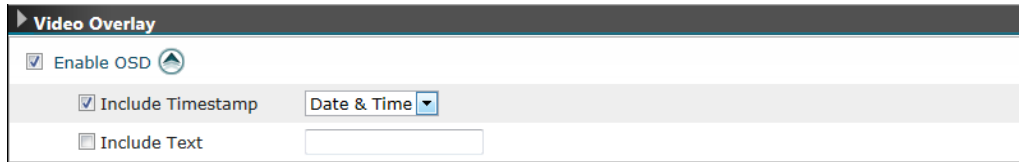
This setting configures the time period between 2 I-frames. The shorter period means the higher frequency of I-frame. Video can then be well handled whereas the bit rate may increase.

Video Quality: There are two types of bit rate controls for video quality adjustment, Constant Bit Rate (CBR) and Variable Bit Rate (VBR).

CBR mode concerns about the circumstances of fixed data rate transferring. However, VBR is utilized when network bandwidth is less concerned.

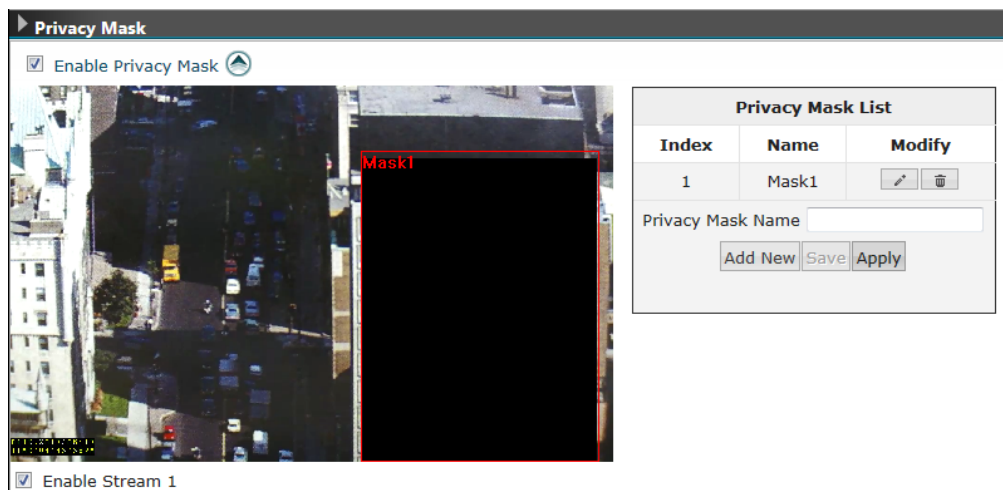
Note: CBR is not applicable in MJPEG video mode.

Video Overlay



The camera supports stamping text information on the video images. The options of the date/time string or/and a line of text message (e.g. camera name or location) are available for displaying on the images.

Privacy Mask

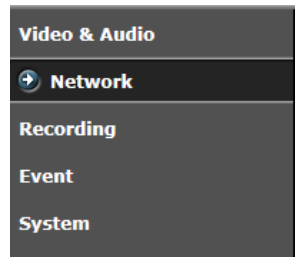


Privacy Mask can block out the specific areas from view. The blocked areas will not be seen in both live view and recorded video clips and the total of 8 profiles can be created to the list.

To create Privacy Mask, simply input Privacy Mask Name and click “**Add New**” button and then apply it to complete the addition.

Network Configuration

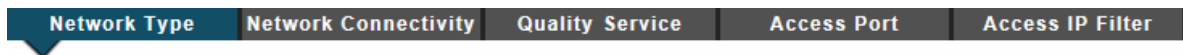
The IP Camera acts as one of the network devices. It allows user to configure the network functionalities based on applications. This section will describe the network configurations. Fundamentally, for instance, the IP assignment of the device can be done via **DHCP server**, **static IP option** or **PPPoE** to obtain IP from the service provider.



There are 5 subdirectories in “Network”:

- **Network Type**
- **Network Connectivity**
- **Quality Service**
- **Access Port**
- **Access IP Filter**

Network Type



Network Type	
<input checked="" type="radio"/> Enable DHCP Service	
<input type="radio"/> Use Static IP	
IP Address	<input type="text" value="192.168.1.99"/>
Subnet Mask	<input type="text" value="255.255.255.0"/>
Gateway	<input type="text" value="192.168.1.254"/>
Primary DNS Server	<input type="text"/>
Secondary DNS Server	<input type="text"/>
<input type="checkbox"/> Enable PPPoE Service	
Account	<input type="text"/>
Password	<input type="text"/>

Apply

Network Type

There are 3 ways to configure IP address for the IP camera device, including **DHCP**, **Static IP** and **PPPoE**.

Enable DHCP Service: The default setting is DHCP, which camera will be automatically given an IP address in a network with DHCP server.

Use Static IP: Camera may also be manually assigned with a static IP address. Subnet mask, Gateway and DNS server(s) will also need to be specified for certain network function properly executed.

Enable PPPoE Service: This service is usually provided by an ISP (Internet Service Provider). IP Camera can establish a dial-up connection to the ISP and then get connected to Internet.

Network Connectivity

This page provides the connectivity configuration, so that IP camera can be accessed without necessarily providing the numerical IP address.

Network Type	Network Connectivity	Quality Service	Access Port	Access IP Filter
<div><h3>Network Connectivity</h3><p><input checked="" type="checkbox"/> Enable UPnP Service</p><p>UPnP Name <input type="text"/></p><p><input type="checkbox"/> Enable DDNS Service</p><p>Service Provider <input type="text" value="dyndns.org"/></p><p>Hostname <input type="text"/></p><p>Account <input type="text"/></p><p>Password <input type="text"/></p><p><input type="button" value="Apply"/></p></div>				

Enable UPnP Service: with UPnP enabled, IP camera device can be easily discovered in Windows Network (My Network Places). See “Discover devices in Windows Network” in previous section.

Enable DDNS Service: By registering this sort of service, camera can be assigned and accessed over Internet with a hostname instead of IP address. To enable the services, visiting the website of the service provider and registering an account are required.

Dyndns.org: <http://www.dyndns.com/>

Quality Service

Quality Service provides network traffic management to guarantee the quality of services in higher priority, especially when network is insufficient. DSCP (Different Service Code Point) is a 6-bit IP header which defines the service level of the packet. According to the DSCP value, routers with PHB (Per-Hop Behavior) will define a specific class of traffic for the packet, in terms of bandwidth, latency, or loss rate, etc. Enable QoS and set DSCP value for the service to ensure its quality to be maintained.

Network Type	Network Connectivity	Quality Service	Access Port	Access IP Filter
<div><h3>Quality Service</h3><p><input type="checkbox"/> Enable QoS / DSCP</p><p>RTSP (0 to 63) <input type="text" value="0"/></p><p>Event (0 to 63) <input type="text" value="0"/></p><p>HTTP (0 to 63) <input type="text" value="0"/></p><p><input type="button" value="Apply"/></p></div>				

NOTE

To make the QoS function work, all the switches and routers in the network must support QoS.

Access Port

This page provides the ports configuration for requesting the services from the camera device. These services include Web Page access, HTTP and RTSP streaming services.

Network Type	Network Connectivity	Quality Service	Access Port	Access IP Filter
Access Port				
HTTP Setting				
HTTP Port		<input type="text" value="80"/>		
HTTPS Setting				
HTTPS Port		<input type="text" value="443"/>		
RTSP Setting				
RTSP Port		<input type="text" value="554"/>		
Multicast Setting				
<input type="checkbox"/> Always Multicast Stream 1				
Multicast Group Address		<input type="text" value="239.128.1.99"/>		
Multicast Video Port		<input type="text" value="5560"/>		
Multicast Audio Port		<input type="text" value="5562"/>		
Multicast TTL [1~255]		<input type="text" value="15"/>		
<input type="checkbox"/> Always Multicast Stream 2				
Multicast Group Address		<input type="text" value="239.128.1.100"/>		
Multicast Video Port		<input type="text" value="5564"/>		
Multicast Audio Port		<input type="text" value="5566"/>		
Multicast TTL [1~255]		<input type="text" value="15"/>		
<input type="button" value="Apply"/>				

HTTP port / HTTPS port: By default, the HTTP and HTTPS ports are set to 80 and 443 respectively. They can also be assigned to another port number between 1025 and 65535.

The HTTP port is basically provided for device's webpage access. When the video format is set to MJPEG, user is able to retrieve the live video via HTTP URL, e.g.

Http://<ip_address>/operator/get_video.cgi?channel=[1, 2]

, where channel is to specify stream1 or stream2

RTSP port: RTSP (Real-Time Streaming Protocol) is used to control the live media streaming. This port is provided to request the streaming service. By default, the port number is set to 554. It can also be assigned to another port number between 1025 and 65535.

Multicast: Multicast is a streaming method with bandwidth conserving technology. By delivering a single video stream to multiple network clients, the bandwidth utilization can be reduced.

Select the Always multicast option to enable multicast for stream 1 ~ 2.

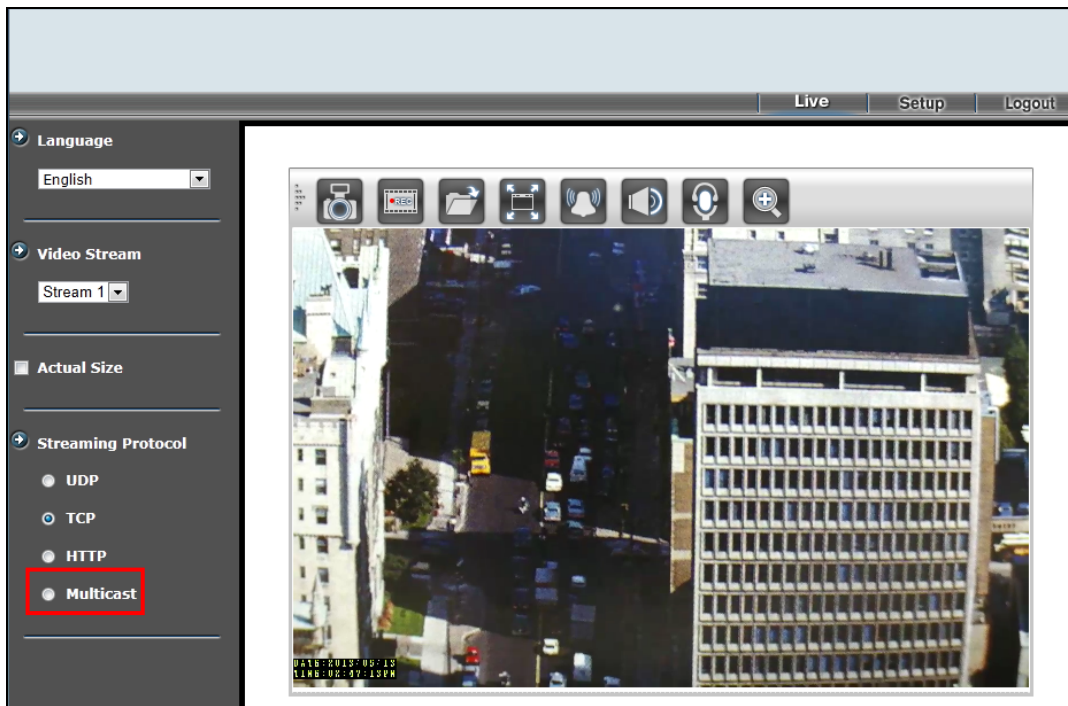
Multicast Group Address – Set the IP address for multicast streaming. The Multicast IP address must be in the range from 224.0.1.0 to 239.255.255.255.

Multicast Ports – Set the port for multicast streaming.

Multicast TTL – The multicast Time-To-Live (TTL) gives the range of routers that multicast traffic can pass through in the networks.

NOTE

The multicast stream can be triggered by a network client (e.g. choosing "Multicast" from the live view page) whereas "Always Multicast" option is not enabled. This mechanism is known as "Multicast On Demand". In this mode, multicast stream starts when one or more clients request. It stops automatically when the last client leaves the multicast group. "Always Multicast", on the other hand, starts or stops multicast stream by enabling/disabling this function. It doesn't matter whether there is client request or not.



Access IP Filter

This setting also provides a basic security by filtering the accesses from other hosts. Enable this function and choose "Allow / Deny" of the listed IP addresses. Up to 15 IP addresses can be added in the list.

Network Type	Network Connectivity	Quality Service	Access Port	Access IP Filter																																																
<div style="border: 1px solid black; padding: 5px;"> <p>Access IP Filter</p> <p><input type="checkbox"/> Enable IP Filter</p> <p>Filter Type <input type="radio"/> Allow <input checked="" type="radio"/> Deny</p> <table border="1"> <thead> <tr> <th>No.</th> <th>IP Address</th> <th>Enable</th> </tr> </thead> <tbody> <tr><td>1</td><td><input type="text"/></td><td><input type="checkbox"/></td></tr> <tr><td>2</td><td><input type="text"/></td><td><input type="checkbox"/></td></tr> <tr><td>3</td><td><input type="text"/></td><td><input type="checkbox"/></td></tr> <tr><td>4</td><td><input type="text"/></td><td><input type="checkbox"/></td></tr> <tr><td>5</td><td><input type="text"/></td><td><input type="checkbox"/></td></tr> <tr><td>6</td><td><input type="text"/></td><td><input type="checkbox"/></td></tr> <tr><td>7</td><td><input type="text"/></td><td><input type="checkbox"/></td></tr> <tr><td>8</td><td><input type="text"/></td><td><input type="checkbox"/></td></tr> <tr><td>9</td><td><input type="text"/></td><td><input type="checkbox"/></td></tr> <tr><td>10</td><td><input type="text"/></td><td><input type="checkbox"/></td></tr> <tr><td>11</td><td><input type="text"/></td><td><input type="checkbox"/></td></tr> <tr><td>12</td><td><input type="text"/></td><td><input type="checkbox"/></td></tr> <tr><td>13</td><td><input type="text"/></td><td><input type="checkbox"/></td></tr> <tr><td>14</td><td><input type="text"/></td><td><input type="checkbox"/></td></tr> <tr><td>15</td><td><input type="text"/></td><td><input type="checkbox"/></td></tr> </tbody> </table> <p style="text-align: center;"><input type="button" value="Apply"/></p> </div>					No.	IP Address	Enable	1	<input type="text"/>	<input type="checkbox"/>	2	<input type="text"/>	<input type="checkbox"/>	3	<input type="text"/>	<input type="checkbox"/>	4	<input type="text"/>	<input type="checkbox"/>	5	<input type="text"/>	<input type="checkbox"/>	6	<input type="text"/>	<input type="checkbox"/>	7	<input type="text"/>	<input type="checkbox"/>	8	<input type="text"/>	<input type="checkbox"/>	9	<input type="text"/>	<input type="checkbox"/>	10	<input type="text"/>	<input type="checkbox"/>	11	<input type="text"/>	<input type="checkbox"/>	12	<input type="text"/>	<input type="checkbox"/>	13	<input type="text"/>	<input type="checkbox"/>	14	<input type="text"/>	<input type="checkbox"/>	15	<input type="text"/>	<input type="checkbox"/>
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Recording

This section provides the recording configuration on the camera. Unlike the recording function (Quick Functional Button) on the live view page, video can also be recorded to the local network storage (Samba) according to a time based schedule.

- Video & Audio
- Network
- Recording**
- Event
- System

There are 2 subdirectories in the "Recording" category:

- Recording Plan
- Samba

Recording Plan

Recording Plan

Samba

▶ Recording Plan List

Name	Status	Mon.	Tue.	Wed.	Thu.	Fri.	Sat.	Sun.	Src.	Dest.	Remove
▶ Add/Edit Recording Plan											
<input type="checkbox"/> Enable This Recording Plan											
Plan Name	<input type="text"/>										
Video Source	None ▼										
Maximum File Size	200MB ▼										
Destination	None ▼										
2013/05/14 15:48:33 Tue.											
<input checked="" type="radio"/> Select All <input type="radio"/> Scheduled Pattern											
All 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23											
Mon.											
Tue.											
Wed.											
Thu.											
Fri.											
Sat.											
Sun.											
<input type="button" value="Apply"/> <input type="button" value="Remove all schedule"/>											

Recording Plan List

▶ Recording Plan List											
Name	Status	Mon.	Tue.	Wed.	Thu.	Fri.	Sat.	Sun.	Src.	Dest.	Remove
Off_Duty	Enabled				00:00 ~ 09:00 19:00 ~ 24:00				Stream 2	Samba	

It lists the created/scheduled recording plan(s). The details of a recording plan include:

Plan Name: Identifier of the recording plan

Status: Enable or Disable the recording plan

Mon ~ Sun: Displays the hours in days of a week that recording is effective

Src. (Source): The video source selected to be recorded

Dest. (Destination): The stored path for the recording file

Remove: Click to delete this recording plan.

Add / Edit Recording Plan

Add/Edit Recording Plan

Enable This Recording Plan

Plan Name	Off_Duty
Video Source	Stream 2
Maximum File Size	200MB
Destination	Samba

2013/05/14 16:19:57 Tue.

Select All
 Scheduled Pattern

All	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Mon.																								
Tue.																								
Wed.																								
Thu.																								
Fri.																								
Sat.																								
Sun.																								

Plan Name: Identifier of the recording plan

Video Source: The selection of the video source to be recorded. Options: None or Stream 2.

NOTE: Stream 2 should be enabled prior to recording plan.

Maximum File Size: This option defines the maximum file size of each video clip.

Destination: choose the destination storage for the recorded video files.

Select All: 24/7 continuous recording

Scheduled Pattern: User-defined time frame

Samba

This page allows user to configure the file storage via Samba. To begin with it, click Enable Samba and then input the related information.

Samba

Samba Status	Ready <input type="button" value="Remove"/>
Total Size	686.33 GBytes
Free Size	438.19 GBytes
Used Size	248.14 GBytes
Used (%)	36.15% <input type="button" value="Refresh"/>

Samba Setting

Enable Samba

Path	//10.32.79.90/Off_Duty <small>*Note: Backslashes will replace the slashes</small>
User Name	admin
Password	••••

NOTE

Samba can only support mounting a shared folder located in the root directory. For example, to mount a folder called "Shared" can be input the path as below.

\\<IP>\Shared

Event Management

Event management describes the handling of events with the corresponding actions. A common case can be exemplified is storing a captured image to a local storage (Actions), when there is a Motion Event (Trigger Condition). This chapter gives the configurations of **Triggers** (what to detect?) and **Actions** (“what to send” and “where to send”). A time based schedule can also be applied.

Video & Audio

Network

Recording

Event

System

Configuration of Event Handling

There are 4 subdirectories in the “Event” category. The 4 configuration groups are correlated. A completed event setting may need to configure each part in sequence.

- Event Server & Media
- Motion Configuration
- Event List

Event Server & Media

The “Event Server” is the configuration of “where to send”, e.g. FTP server, while Media is the sending file type. The combination of file type and the remote servers will then be applied as an event action.

Event Server List

Click on “Add New” button to add the remote servers. These are email recipients and FTP server.

Server Name	Server Type	Address	Remove
<input type="button" value="Add New"/>	Note: Maximum number of event server list is 2		

Add Event Server

Server Name:

Server Type:

Email

Mail Server Address:

User Name:

Password:

Server Port Number:

Sender's E-mail Address:

Mail Subject Prefix:

Receiver Table

Index	Email Address	Description
1	<input type="text"/>	<input type="text"/>
2	<input type="text"/>	<input type="text"/>
3	<input type="text"/>	<input type="text"/>
4	<input type="text"/>	<input type="text"/>
5	<input type="text"/>	<input type="text"/>

FTP

FTP Server Address:

User Name:

Password:

Server Port Number:

Upload Path:

*Note: Backslashes will replace the slashes

Server Name: Identifier of the event server

Server Type

Email: Send the media file via email when an event is triggered.

- **Mail Server Address:** Enter a host name or IP address of the email server.
- **User Name:** Enter the user name of the email account.
- **Password:** Enter the password of the email account.
- **Server Port Number:** Enter the server port of the mail server. The default is 25.
- **Sender's E-mail Address:** Enter the email address of the sender
- **Mail Subject Prefix:** Enter the subject description for the mail.
- **Receiver Table:** Enter the recipients' email address. The mail can be sent to up to 5 recipients.

FTP: Send the media file to a FTP server when an event is triggered.

- **FTP Server address:** Enter the FTP server's address.
- **User Name:** Enter the user name of the FTP login account.
- **Password:** Enter the user name of the FTP login password.
- **Server Port Number:** Enter the server port of the FTP server. The default is 21.
- **Upload Path:** Enter the file path that files will be sent to.

Media Type

There are 2 types of media (file) available, **snapshot** (.jpg image) and **video clip** (.avi).

Media Type	
Snapshot	
Video Source	Stream 1
Send	0 pre-alarm image(s) [0~2]
Send	1 post-alarm image(s) [1~3]
Video Clip	
Video Source	None
Pre-alarm record	0 seconds [0~3]
Post-alarm record	5 seconds [1~5]
Maximum file size	5000 KBytes [500~5000]

Video Source: Select the video source to be captured

Pre-alarm / Post-alarm image(s): Enter the numbers of images that will be captured before and after trigger is activated.

Pre-alarm / Post-alarm video: Enter the numbers of seconds that video will be recorded before and after trigger is activated.

Maximum file size: Define the maximum file size that a video clip is generated.

Motion Configuration

There are 3 MD (Motion Detection) areas can be enabled. Each MD can be individually enabled/disabled, defined the covering range and trigger sensitivity.

To enable and verified the MD, follow the steps provided below.

1. Check the box to enable the motion area
2. Drag and drop to move the motion window
3. Hold and drag any corner of the rectangle to resize the window.
4. By dragging the pin of the slider bars, adjust the detection “Sensitivity” and “Object Size” of the rectangle covered area.

NOTE:

By name implying, the “**Sensitivity**” setting means the sensitivity level to the motion detection; the higher value given makes the motion window more sensitive to the moving object. “**Object Size**” indicates the trigger threshold. A lower “Object Size” value means it is easier to exceed the value, and thus trigger the motion event.

5. The status chart shows the motion activities. When the motion vector exceeds a threshold (the Object Size), the motion trigger is activated.
6. To enable other motion area, repeat above steps.
7. Click on “Apply” button to save the settings.

The screenshot displays the 'Motion Configuration' interface. At the top, there are navigation tabs: 'Event Server & Media', 'Motion Configuration', 'DI/DO Setting', and 'Event List'. The main area is divided into two sections. On the left, a video feed titled 'Event Motion' shows a street scene with a red rectangular area labeled 'Area 1' overlaid. Below the video, there is a checkbox for 'Enable Stream 1' which is checked. On the right, the configuration panel for 'Motion Area 1' is shown. It includes a red square icon, a checked 'Enable Motion Area 1' checkbox, a 'Window Name' field set to 'Area 1', and two sliders: 'Sensitivity (0..100)' and 'Object Size(0..100)', both set to 50. Below these are sections for 'Motion Area 2' (green icon) and 'Motion Area 3' (blue icon). At the bottom right, a status chart is highlighted with a red border. The chart has a y-axis from 0 to 100 and an x-axis from 0 to 50. A horizontal red line is drawn at the 50 level. A red line graph shows a fluctuating signal that starts near 100, stays above the 50 threshold until approximately x=35, then drops below it. Below the chart, there are three radio buttons for 'Show in chart:' with '1' selected, and an 'Apply' button.

Event List

List a summary of configured events. That is the selection of trigger condition(s) and the corresponding actions, as well as the scheduling. Up to 10 event objects can be configured.

To begin with it, click on “Add New” button to extend for the detailed configurations.

Event List

Name	Status	Mon.	Tue.	Wed.	Thu.	Fri.	Sat.	Sun.	Trigger	Action	Modify
<div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="border: 2px solid red; padding: 2px; display: inline-block;">Add New</div> <div style="font-size: 0.8em; color: gray;">*Note: Up to 3 events can be configured</div> <div style="font-size: 0.8em; color: red; text-align: right;"> MD: Motion Detection DI: Digital Input MA: Manual NF: Network Fail DO: Digital Output PR: Periodically </div> </div>											

Add / Edit Event List

Enable This Event

Event Name

2013/05/14 16:29:10 Tue.
 Select All
 Scheduled Pattern

All	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Mon.																								
Tue.																								
Wed.																								
Thu.																								
Fri.																								
Sat.																								
Sun.																								

Triggered by

- Motion Detection
- Motion Area 1 Motion Area 2 Motion Area 3
- Manual Trigger
- Network Fail
- Periodically

 Trigger the event every minute(s) (1~60)

Action

Upload files to a server


Event Server	Media Type
<input type="checkbox"/> -Select Event Server-	<input type="checkbox"/> -Select Media Type-
<input type="checkbox"/> -Select Event Server-	<input type="checkbox"/> -Select Media Type-
<input type="checkbox"/> -Select Event Server-	<input type="checkbox"/> -Select Media Type-
<input type="checkbox"/> -Select Event Server-	<input type="checkbox"/> -Select Media Type-

Event Name: Enter an event name, e.g. Motion Detection, to identify this configured event.

Select All: 24/7 continuous recording

Scheduled Pattern: User-defined time frame

Triggered by: This describes the selection of trigger conditions which include:

- **Motion Detection:** Select the motion detection area(s) used for trigger condition. To enable and configure the motion detection areas, go to **Motion Configuration**.
- **Manual Trigger:** Enable system to detect the user input action (press the alarm button,  on the live view page).
- **Network Fail:** Enable system to detect the network connection status.
- **Periodically:** Enable the system to perform the set Action periodically by entering number of minute(s) in the field as below.

Trigger the event every minute(s) (1~60)

Action: selection of responding actions

- **Upload files to a server:** There are two drag-down selections, *Event Server* and *Media Type*. The Event Server indicates the file destination such as the FTP and Samba, and the file type includes snapshot image and video clip. For the snapshot / video clip configurations, go to **Event Server & Media**.

NOTE


The dependency of *Event Server* and *Media Type* is described as below.

- When *Event Server* is Samba, the selection of *Media Type* will be either Image or Video.
- When *Event Server* is either Mail or FTP, the selection of *Media Type* will only be Image.

Examples of Event Handling

The following case is provided as the examples of **Event Handling**.

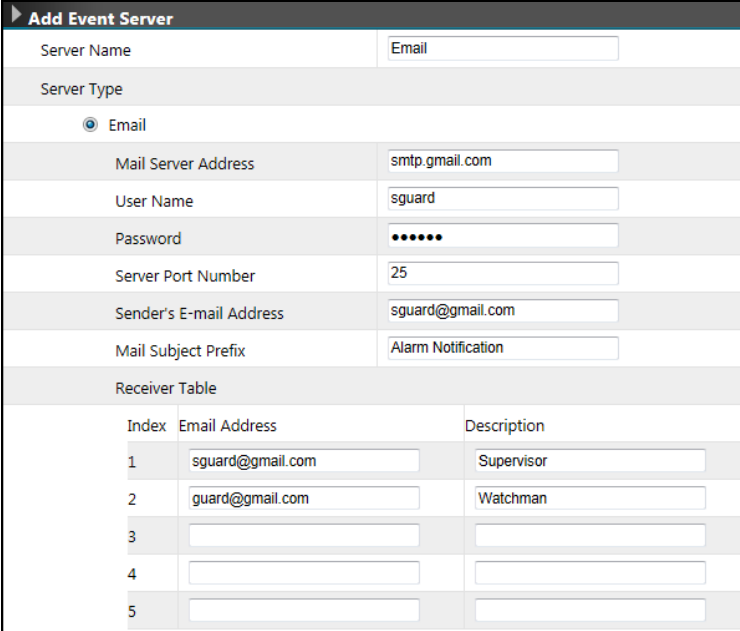
Scenario

While viewing live video, user can manually trigger an event anytime simply by pressing the button,  on the web page. It will send email to the specified email accounts with the captured pictures.

The configurations are illustrated as below:

Step 1: Add Event Server

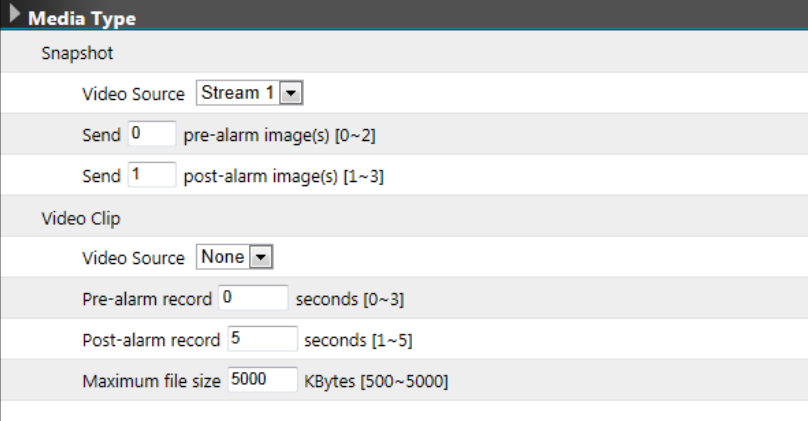
- Go to **Event → Event Server & Media → Event Server List**
- Click on “**Add New**” button
- Choose “**Email**” and fill in the email server and recipients’ information.



Add Event Server		
Server Name	Email	
Server Type	<input checked="" type="radio"/> Email	
Mail Server Address	smtp.gmail.com	
User Name	sguard	
Password	•••••	
Server Port Number	25	
Sender's E-mail Address	sguard@gmail.com	
Mail Subject Prefix	Alarm Notification	
Receiver Table		
Index	Email Address	Description
1	sguard@gmail.com	Supervisor
2	guard@gmail.com	Watchman
3		
4		
5		

Step 2: Configure Media Type

- On the same web page, configure the Media Type. For the following example, the system is configured to capture 1 picture before (pre-alarm) the event and 2 pictures for the event and after (post-alarm).



Media Type	
Snapshot	
Video Source	Stream 1
Send	0 pre-alarm image(s) [0~2]
Send	1 post-alarm image(s) [1~3]
Video Clip	
Video Source	None
Pre-alarm record	0 seconds [0~3]
Post-alarm record	5 seconds [1~5]
Maximum file size	5000 KBytes [500~5000]

- Click on “Apply” button to save the email server and media settings.

Step 3: Configure Event List

- On Event List page, click on “Add New” button.
- Enable and configure this event

Add / Edit Event List

Enable This Event **a**

Event Name **b**

2013/05/15 11:00:00 Wed.

c Select All
 Scheduled Pattern

All	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Mon.																				
Tue.																				
Wed.																				
Thu.																				
Fri.																				
Sat.																				
Sun.																				

Triggered by

Motion Detection

Motion Area 1 Motion Area 2 Motion Area 3

d Manual Trigger

Network Fail

Periodically

Trigger the event every minute(s) (1~60)

Action

Upload files to a server

Event Server	Media Type
<input checked="" type="checkbox"/> Mail	Image
<input type="checkbox"/> -Select Event Server-	-Select Media Type-
<input type="checkbox"/> -Select Event Server-	-Select Media Type-
<input type="checkbox"/> -Select Event Server-	-Select Media Type-

e

- Event of manual triggering -

a. Check the box to enable this event. It can be deselected later with all the following settings remained.

b. Give a name of this event setting; e.g. MTrigger (stands for Manual Trigger). This is an identity of an object of event handling.

c. Choose “Select All” for 24/7, as this event is required for that it can be triggered anytime.

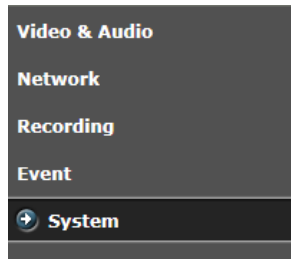
d. Select “Manual Trigger” for this event’s trigger source. This will activate the manual trigger button in the live view that user can manually trigger an alarm anytime.

e. Check the box to enable and select “Mail” for Event Server and “Image” for the media type

- Click on “Apply” button to save the settings of this page.

System Options

System Options provide users to obtain and configure the system settings of the IP camera system. It contains the page of **System Information**, **Date and Time**, **User Management**, **Maintenance** and **Log Service**. The details about each subcategory will be described as below.



System Information

The page gives details of the IP camera system.

In **System Status**, Firmware Version and MAC Address are listed. The Camera Name and Location fields are revisable to identify a unit among multiple cameras installed.

The IP address info of this IP camera is listed in **Network Status**. The RTSP Status field shows the video stream(s) being requested by the listed client(s).

▶ System Status	
Camera Name	<input type="text"/>
Location	<input type="text"/>
Firmware Version	V1.02.12.05
MAC Address	00:E0:D8:FF:BB:13
▶ Network Status	
IP Address	192.168.127.43
Subnet Mask	255.255.0.0
Gateway	192.168.1.254
DNS Server	192.168.200.87
PPPoE IP Address	
DDNS Domain Name	
RTSP Status	

Date and Time

This section describes the date/time adjustment for the IP camera system. The ways to adjust the IP camera's date/time can be automatic (Synchronize with NTP Server / PC) or manual settings.

System Information	Date and Time	User Management	Maintenance	LOG service
Current Date & Time				
Date (yyyy/mm/dd)	2013/05/14			
Time (hh:mm:ss)	10:56:52			
Configure Date & Time				
<input type="radio"/> Keep Current Date & Time				
<input type="radio"/> Synchronize with NTP Server				
NTP Server Address	<input type="text" value="time.windows.com"/>			
Update Interval	Daily			
<input checked="" type="radio"/> Synchronize with PC				
Computer Date	2013/05/14			
Computer Time	10:56:43			
<input type="radio"/> Set Manually				
Date	<input type="text"/>			
Time	<input type="text" value="10:56:16"/>			
Date Display Format	YYYY/MM/DD			
Time Zone	(GMT+08:00) Taipei			
<input type="checkbox"/> Daylight Saving Time Enable Automatically				
Start	MTH Jan WK 1st - SUN Time 0 : 0			
End	MTH Jan WK 1st - SUN Time 0 : 0			
<input type="button" value="Apply"/>				

Current Date & Time

Display current system date/time of the IP camera. The date format can be changed from the drop-down list in **Configure Date & Time**.

Configure Date & Time

Keep Current Date & Time: The option of keeping current date and time, not to be adjusted.

Synchronize with NTP Server: automatic method for date/time adjustment. The IP Camera must be able to gain access to the given NTP server (e.g. time.windows.com), which is usually the ability of Internet access. The IP camera system can therefore get updated with the time server.

NOTE: To apply "synchronize with NTP Server", a **Time Zone** must be selected for referencing to the local time.

Synchronize with PC: The PC connected to the IP camera can also be a date/time synchronizer. However, if the PC is connecting from a **time zone** different from where camera is installed, the system will pop up a warning message for time zone differential.

Set manually: Manually adjust the date / time for the system

Date Display Format: The system date can be displayed in the format of DD/MM/YYYY, MM/DD/YYYY or YYYY/MM/DD.

Time Zone: Select an appropriate time zone for local where IP camera is installed. The automatic adjustments will be applied based on the selected time zone. Check the "**Daylight Saving Time**" checkbox for areas that are observing DST.

User Management

By default, the access to the camera is user authenticated. For security, the IP camera should be restricted to account only accesses. It is able to enable/disable user accounts, as well as to manage the added users in this page.

The screenshot shows a web interface for user management. At the top, there is a checkbox labeled "Enable Authentication" which is checked. Below it is a section titled "Add/Edit User Account" containing a table with the following data:

Account	Password	User Group	Edit
admin	*****	Administrator	

Below the table are two buttons: "Create User" and "Apply".

Initially, there is a default account, **admin** in the "User List". To enable/disable this account, click on "Enable Authentication" check box and then apply. To edit password for the default account, click "Edit" to enter the configuration window.

This screenshot shows the "Edit account" configuration window. It has a title bar with "Edit account" and a close button. A red asterisk indicates that all fields are required. The form contains the following fields:

- Account:
- Password:
- Confirm:
- User Group:

At the bottom right, there are "Save" and "Cancel" buttons.

To create a new account, click "Create User" button. Enter Account / Password for this account with the group type on the "Create account" window.

This screenshot shows the "Create account" configuration window. It has a title bar with "Create account" and a close button. A red asterisk indicates that all fields are required. The form contains the following fields:

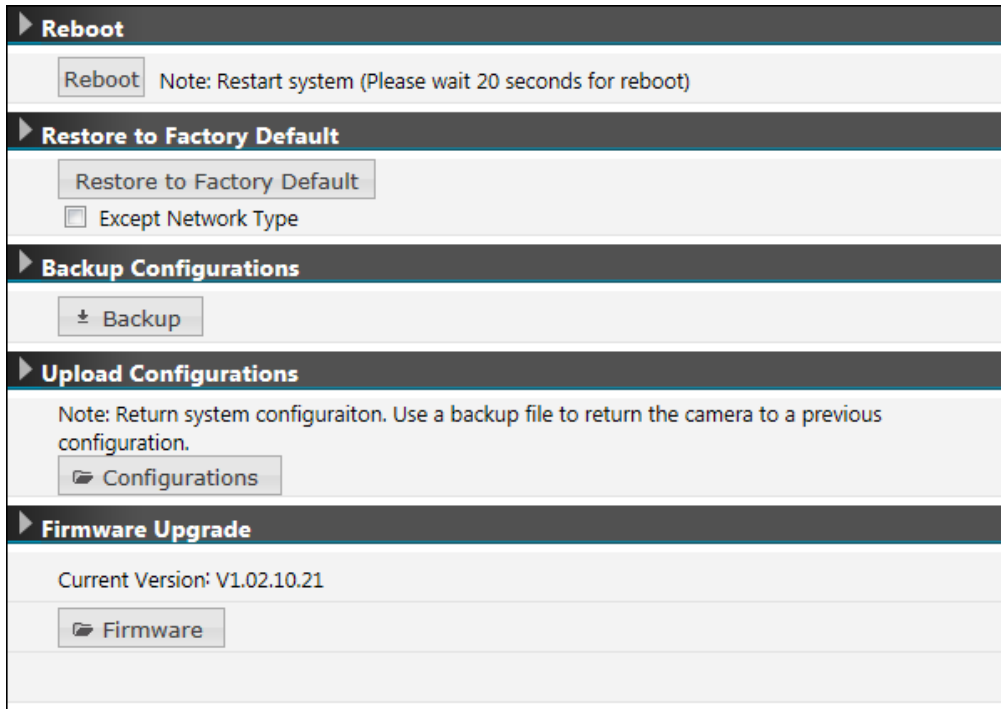
- Account:
- Password:
- Confirm:
- User Group:

At the bottom right, there are "Create" and "Cancel" buttons.

The user account with "**Administrator**" authentication can do all the configurations. "**Operator**" has the same rights as Administrator, except for **User Management**. "**Viewer**" is allowed only the access to live view page. Up to 8 user accounts can be added in the User List.

Maintenance

This page provides tools for camera system maintenances.



Reboot: Restart the camera system

Restore to Factory Default: Restore camera factory default settings. The network setting can be kept by checking the “**Except Network Type**” checkbox.

Backup Configurations: The system settings can be backed up and exported to a file. The file can be applied to upload the previous user settings to the camera, or other cameras.

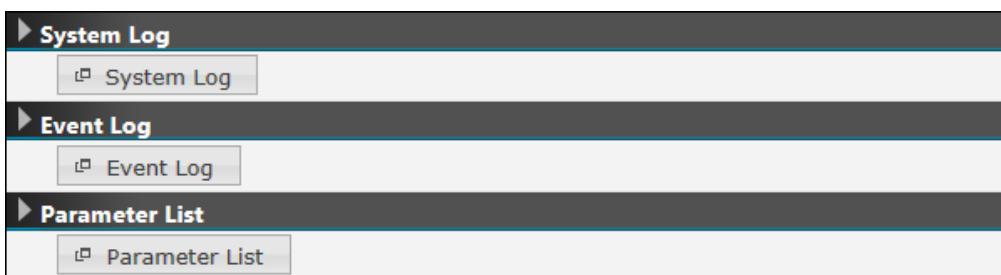
NOTE

The backup file can be applied to other IP cameras, so users won't need to configure each device. It is recommended to switch the IP setting to DHCP mode before exporting the backup file. Otherwise, all IP cameras will have the same IP address.

Firmware Upgrade: There may be new released firmware for features update or issues fixed. To upgrade the firmware for the system, retrieve the firmware image file, import to the system and then do the upgrade process.

LOG service

The system operations and / or process will be recorded in the log system. The link provides the review of these records.



System Log: It contains records of system changes such as login failed or link on/off.

Event Log: It records the log message of triggered event, for instance, motion detection is asserted.

Parameter List: It lists all the system parameters with the current value.

Connectors & LED

Cable connectors



LED Indicators

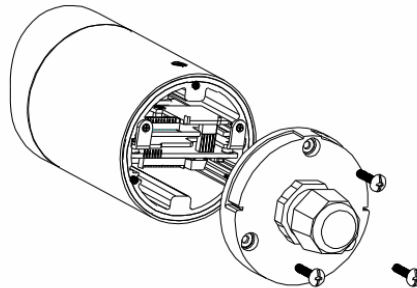
RJ45 LEDs for Network Status:

	LED1 (Green)	LED2 (Amber)
10 Link / Traffic	Steady ON / Flashing	OFF
100 Link / Traffic	Steady ON / Flashing	Steady ON

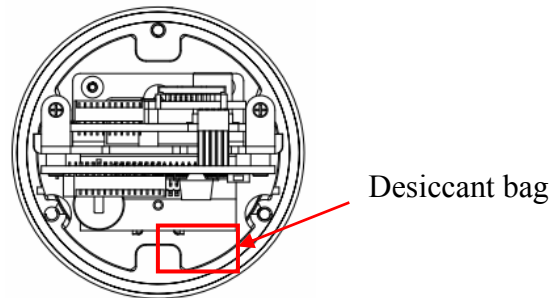
Desiccant Bag Replacement

The **Camera** comes with a desiccant bag placed inside. It is not necessary to replace it until the rear cover of the camera has been opened for some reasons. The SOP is described below for users to complete the replacement.

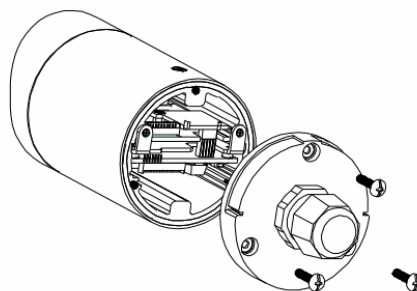
Step 1: Unscrew the rear cover of the camera



Step 2: Carefully open the rear cover and find the location as the red box shown below for installation.



Step 3: Close and screw the rear cover firmly. (M3 screw force: 12kgf / cm²)



Troubleshooting

Check firmware version

Firmware version may imply the functionalities' updates or availability in the camera system. Therefore, in the first step of troubleshooting and then reporting, it helps to locate the found issues. Newer version firmware may have these issues corrected.

The version code can be found in **Setup -> System -> System Information**, see figure below.

System Status	
Camera Name	<input type="text"/>
Location	<input type="text"/>
Firmware Version	V1.02.12.05
MAC Address	00:E0:D8:FF:BB:13

Upgrade device firmware

Firmware upgrade process should be done via the web configuration: **Setup -> System -> Maintenance -> Firmware Upgrade**. Before the process, read the instructions and release notes coming with each new released version.

[Read Before Upgrade]

1. The latest firmware image is available on our official website.
2. Make sure all other client connections are disconnected and current jobs such as recording are required to terminate.
3. During the upgrading period, ***DO NOT*** disconnect the power of the camera. Otherwise the system unit might be damaged.
4. The front LED indicator will be slow flashing in red during the upgrading process. When it becomes steady green, the upgrading process is completed.

[Steps of Firmware Upgrade]

1. Go to firmware upgrade page on the web. **Figure 1**
2. Click "Firmware" button to load the firmware image. **Figure 1**
3. Click "Upgrade" to begin (the upgrade progress bar will pop up). **Figure 2**
4. Once it is done, the system will reboot automatically.
5. Go back to firmware upgrade page and confirm if the "current version" is up-to-dated. **Figure 3**

Figure 1

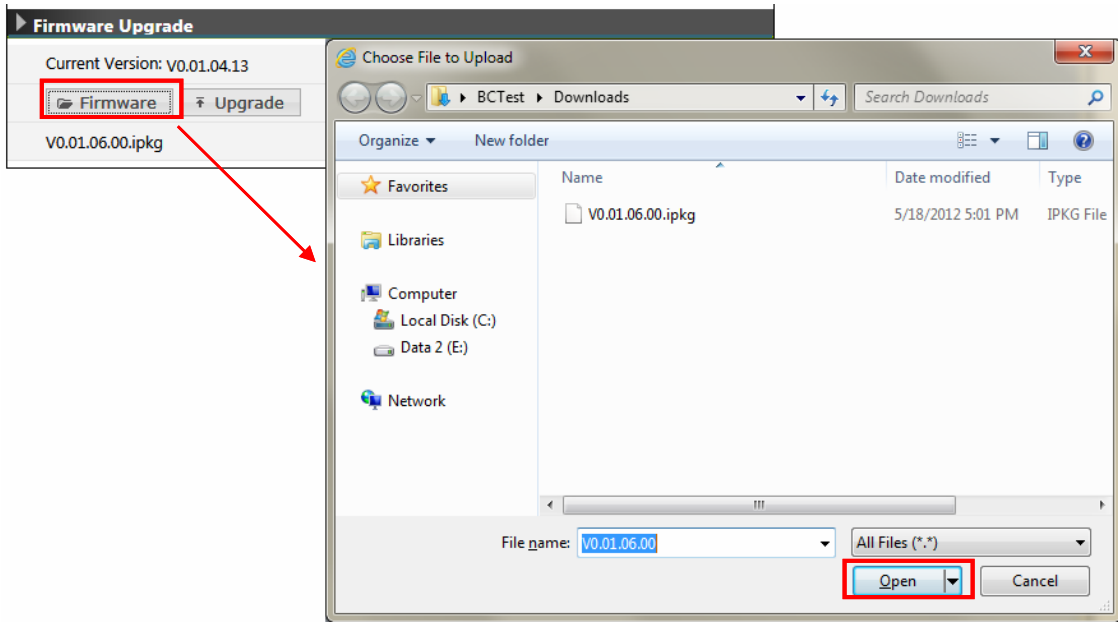


Figure 2

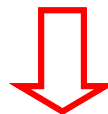
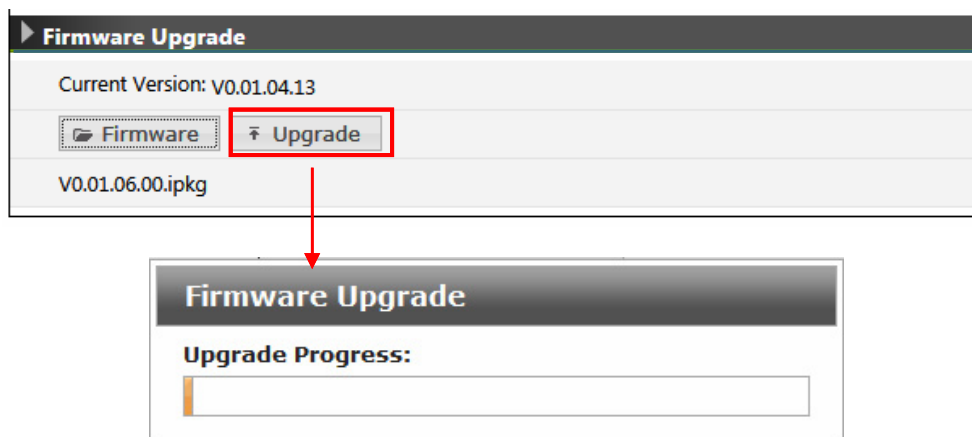
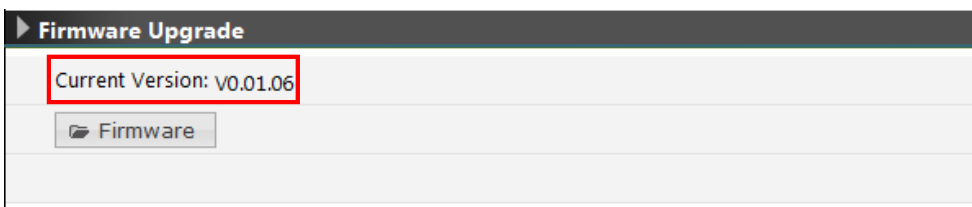


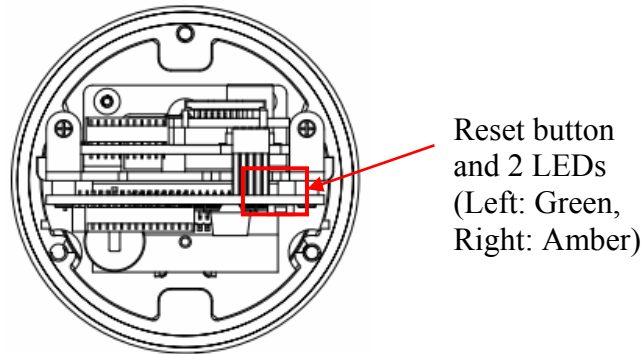
Figure 3



Recover device settings

In some cases, camera system does not respond to any operation. A certain recovering processes would help to get the unit back to initial status, so that it can resume operable / configurable. This will be the operations on the “Reset Button”.

Due to the water-resistance design, the Reset button is located inside the housing. To press the Reset button, it is necessary to open the rear cover. To learn the procedures, please refer to the previous ““Desiccant Bag Replacement” sections.



Before executing hardware reset, please make sure the system booting process is completed. Normally, it takes 30 seconds to complete the process.

1. Restart / Reboot the device

Press and release the **Reset Button** within 5 second, the system will be restarted (the **LEDs** will be **steady ON** during rebooting process). Upon successful reboot, **ONLY** green LED will be **steady ON** during normal operation.

2. Reset account/password to factory default

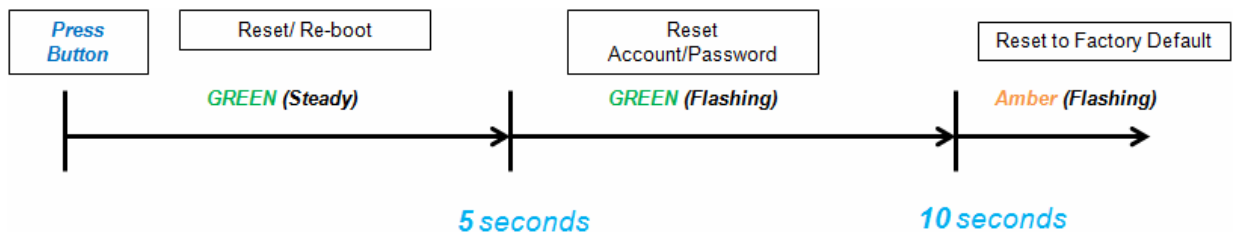
Press and hold the **Reset Button** over 5 seconds, the green LED will change from steady on to flashing. During green LED flashing, then release reset button, **ONLY** account/password will be reset as factory default, which is **admin/1234**. Please notice that, all configured accounts/passwords will be cleared and only the default one will be reserved.

3. Reset to factory default settings

Press and hold the **Reset button** over 10 seconds, then green LED turn off, amber LED will keep flashing. During amber LED flashing, then release the reset button, **ALL** settings will be reset as factory default.

The system will enter the restoring process automatically and complete it in 30 seconds after reset button released.

The following illustrates the LED behavior during the restoring process for reference.



Technical Specifications

Video	
Sensor Type	1/4" 1M progress scan CMOS sensor
Active Pixels	1280 x 800 (HxV)
Compression	H.264 / MPEG4 / Motion JPEG
Streaming	Dual simultaneous streams
Resolution	(WXGA)1280x 800, 1280x 720, 800x450, 640x360, 320x180
Max. Frame Rate	Megapixel (1280x 800) at 30 fps (NTSC/PAL)
Day/Night	Mechanical (ICR) D/N Control
Day/Night Mode	Auto/ Day/ Night
Shutter Time	Range from 1/960s to 1/30s selectable (60Hz); Range from 1/1000s to 1/25s selectable (50Hz)
Minimum Illumination	IR LED Off (shutter speed: 1/30 sec): 0.6 Lux @10IRE; 1.2 Lux @50IRE IR LED On: 0 lux
Bit Rate Control	Simultaneous stream bit rate control: CBR/VBR
Lens	
Type, Focal Length, F-number	Built-in Fixed Lens, f=4.2mm, F1.8 (Mega pixel lens)
View Angle	H: 49.8°/ V: 39°
IR LEDs	
LED Quantity	12 pcs (850nm)
IR Distance	10 meters (33 ft.)
IR turn on status	Under 10 Lux by auto control (light sensor), threshold adjustable in UI
LED Life	More than 10,000 hours (50°C)
Image Enhancement	
Image Settings	AWB, AES, AGC; Flickerless Mode: On/ Off; Exposure & Gain Mode: Auto/ Manual; White Balance: Auto/ Fixed; Sharpness, Saturation, Brightness, Contrast: 17 level sensitivity; Exposure Level: 15 level sensitivity;
Digital WDR	Yes; 8 level sensitivity
Privacy Zone	Yes; customized threshold privacy zone (up to 8)
Image Orientation	Mirror, Flip
Frequency Control	50Hz, 60Hz
Date & Time Stamp	Yes
Test Overlay	Yes
Intelligent Video & Event Management	
Motion Detection	Up to 3 customized threshold detection windows, 101 detected object size or level sensitivity
Ethernet Detection	Network Fail detection
Others	Snapshot, digital Zoom, Optimized i-frame setting
Events	Motion detection, Manual Trigger, Network Fail, Periodically Trigger.
Event Actions	File upload via FTP, SMTP and SAMBA; Notification via FTP, and email; Video recording to SAMBA
Store Category	Alarm / Motion / Schedule/ Un-interrupt recording Stores video clips and snapshots
Network	
Protocol	IPv4, IPv6, HTTP, HTTPS, SMTP, FTP, DHCP, NTP, TCP/IP, UPnP, RTSP/RTP/RTCP, DNS, DDNS,

	PPPoE, IGMP, QoS, Bonjour, Samba, Multicast.
Ethernet	10Base-T/100Base-TX Ethernet connection for LAN / WAN, RJ-45
PoE	IEEE 802.3af
ONVIF	Yes
Browser	IE Browser 8.0 or 9.0
Security	Three-level access with password protection
I/O & Controls	
Power	DC Jack (2.0mm)
Power LED Indicator	Yes
Network	RJ-45 with LEDs (Network indicator)
Reset	Within 1 sec for rebooting system; more than 10 sec until red LED starts to flash for loading default
Bicolor LED	Power & System Status
Power	
Power Requirement	DC 12V \pm 10% / PoE(IEEE 802.3af)
Power Consumption (Max.)	9W
Mechanism	
Dimensions(Φ xH)	Φ 60 mm x 114 mm (Φ 2.4" x 4.48")
Weight	548g (1.21 lb) w/o bracket
Protection	IP67
Battery Backed-up Real-time Clock	Yes; Internal RTC
Environment	
Operating Temperature	-10°C ~ 50°C (14°F ~ 122°F)
Operating Humidity	20~ 90% RH
Storage Temperature	-10°C ~ 55°C (14°F ~ 131°F)
Regulatory	
Approvals	CE, FCC, RoHS
Others	
Accessories	Wall mount with free pack-in camera stand, Power Adapter