
Before You Use This Product

The use of surveillance devices may be prohibited by law in your country. The Network Camera is not only a high-performance web-ready camera but also can be part of a flexible surveillance system. It is the user's responsibility to ensure that the operation of such devices is legal before installing this unit for its intended use.

It is important to first verify that all contents received are complete according to the list in the "Package Contents" chapter. Take notice of the warnings in "Quick installation guide" before the Network Camera is installed, then carefully read and follow the instructions in the "Installation" chapter to avoid damages due to faulty assembly and installation. This also ensures the product is used properly as intended.

The Network Camera is a network device and its use should be straightforward for those who have basic network knowledge. The "Troubleshooting" chapter in the Appendix provides remedies to the most common errors in set up and configuration. You should consult this chapter first if you run into a system error.

The Network Camera is designed for various applications including video sharing, general security/surveillance, etc. The "How to Use" chapter suggests ways to best utilize the Network Camera and ensure proper operations. For the creative and professional developers, the "URL Commands of The Network Camera " chapter serves to be a helpful reference to customize existing homepages or integrating with the current web server.

For paragraphs preceded by  the reader should use caution to understand completely the warnings. Ignoring the warnings may result in serious hazards or injuries.

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Package Contents

Network Camera



Camera stand



Power adapter



Software CD

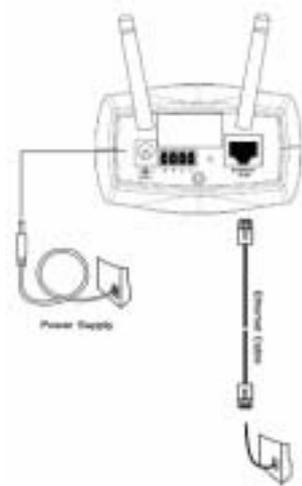


I/O terminal block connector



Installation

Hardware installation



Please verify that your product package contains all the accessories listed in the foregoing Package Contents. Depending on the user's application, an Ethernet cable may be needed. The Ethernet cable should meet the specs of UTP Category 5 and not exceed 100 meters in length.

 Connect the power adapter jack to the Network Camera before plugging in to the power socket. This will reduce the risk of accidental electric shock.

Upon powering up, the device runs through a self-test procedure and the front LEDs will blink between green and red a few times. If self-test passes, the LED will be green and the Network Camera will standby for getting IP address. If self-test fails the red LED will blink several times. Refer to Appendix A for troubleshooting.

The Network Camera will first detect Ethernet. If it does not connect to Ethernet, the Network Camera will try WLAN. During the searching and connecting process to the wireless access point or station, the red LED of the Network Camera will flash every second. Until the Network Camera connects to the other wireless device, the red LED will become lighted. Operating in either network mode, the green LED will flash every second as heartbeat to indicate alive.

To install in Ethernet

Make sure the Ethernet is firmly connected to a switch hub. After attaching the Ethernet cable plug in the power adapter. If the LED turns out to be steady green after

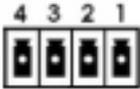
self-test, go to next paragraph "Software installation". If the Ethernet is not available, Network Camera will switch to wireless LAN mode.

To install in wireless LAN

If the Ethernet is not available while power on, the Network Camera will search for any access point with the SSID "default". Once any access point is found, the LED will turn green to wait for installation. If the network environment cannot meet the default settings, install Network Camera in Ethernet to proceed with wireless LAN configuration.

The Network Camera provides a general I/O terminal block with one digital input and one relay switch for device control. Pin 1 and pin 2 can be connected to an external sensor device and the state of voltage will be monitored from the initial state 'LOW'. The relay switch of pin 3 and pin 4 can be used to turn on or off the external device.

 Consult with the dealer of the peripherals for correct installation.



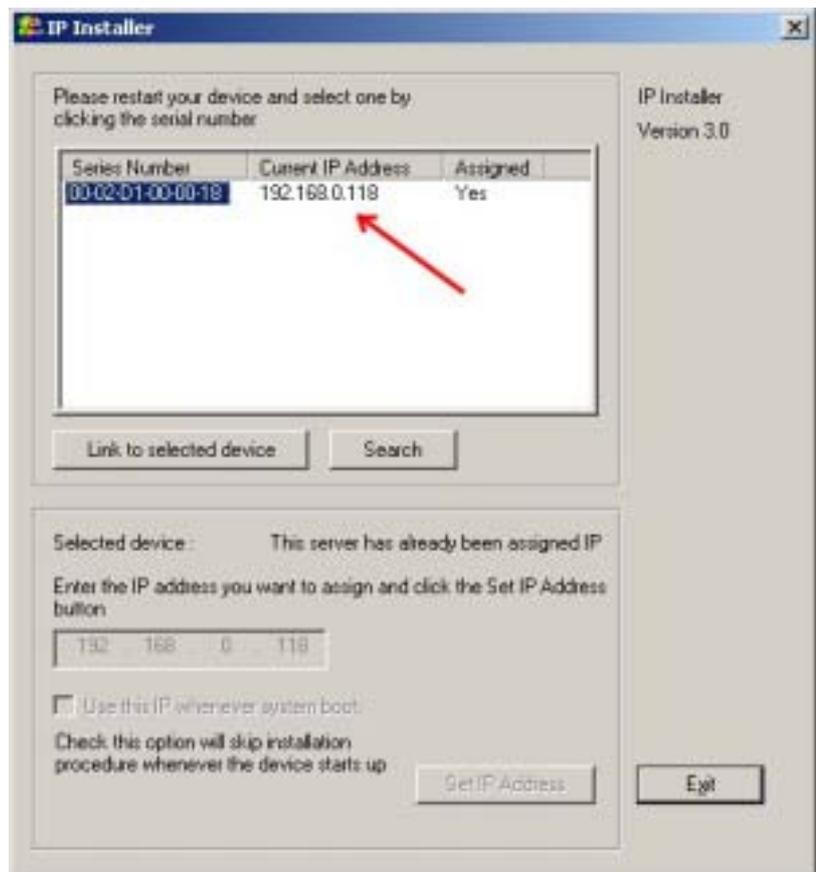
- | | | |
|---|-----------|---|
| 1 | DI- | INPUT (Initial state of DI is low) |
| 2 | DI+ | INPUT (Max. 50mA, 12VDC) |
| 3 | SW_COMMON | OUTPUT (open from SW_OPEN at initial state) (close with SW_OPEN when set DO to ON) |
| 4 | SW_NOPEN | OUTPUT (Max. 1A, 24VDC or 0.5A, 125VAC) |

Software installation

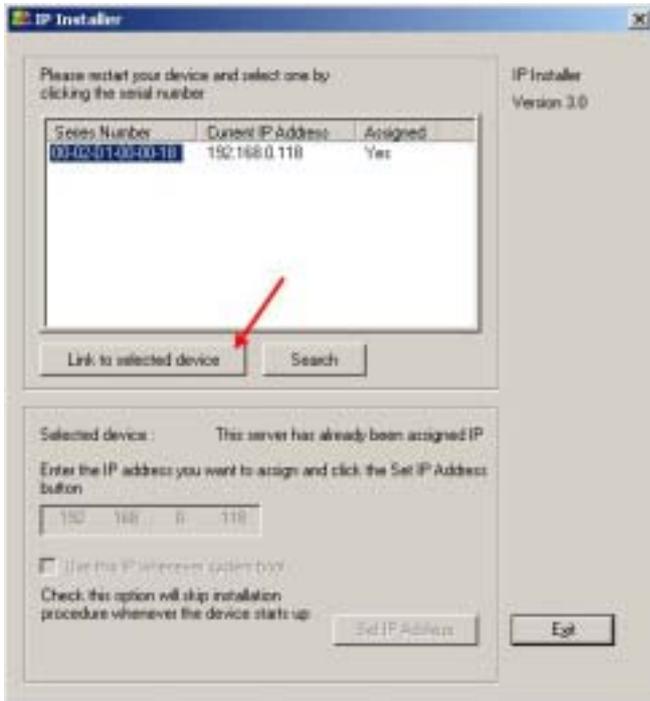
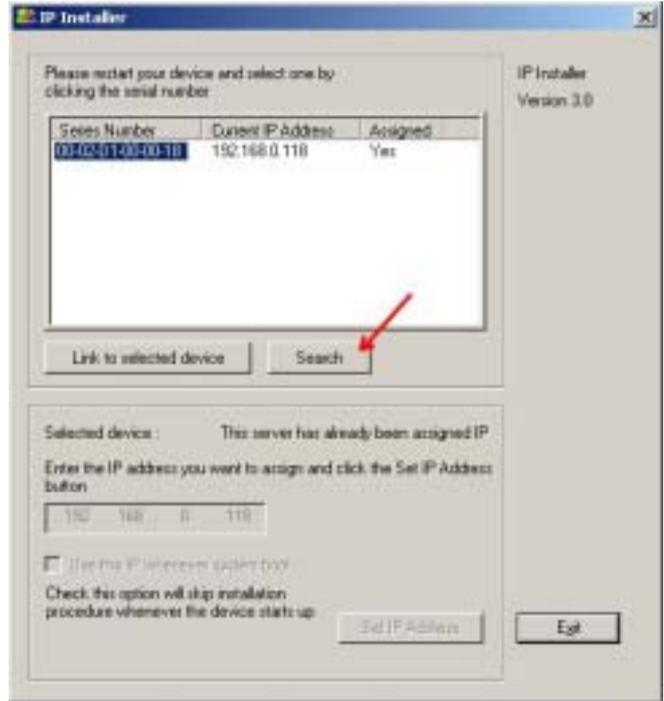
In this manual, "User" refers to whoever has access to the Network Camera, and "Administrator" refers to the person who can configure the Network Camera and grant user access to the camera.

At the end of the hardware installation, users can use Installer program included in the product CDROM to find the location of the Network Camera. There may be many Network Cameras in the local network. Users can differentiate the Network Cameras with the serial number. The serial number is printed on the labels on the carton and the bottom of the Network Camera body.

The IP addresses shown in the "Current IP Address" field reflect those on the local network. They may be from the DHCP server. If there is no DHCP server, the camera will try to find a free IP address (this takes from 15 second to 3 minutes, depending on the LAN status). The method of finding IP address is seeking from 192.168.0.99



If users run Installer program before the hardware installation, the Network Camera may not be showed on the Installer list. After the hardware installation, users may click on  to update the list.



Users may click directly on  to access the Network Camera in the default browser.

Once installation is complete, the Administrator should proceed to the next section "Initial access to the Network Camera" for necessary checks and

configurations.

Initial Access to the Network Camera

Check Network Settings

The Network Camera can be connected either before or immediately after software installation onto the Local Area Network. The Administrator should complete the network settings on the configuration page, including the correct subnet mask and IP address of gateway and DNS. Ask your network administrator or Internet service provider for the detail information. By default the Network Camera requires the Administrator to run installation every time it reboots. If the network settings are to remain unchanged, disable the Install option. Refer to "Network settings" on the System Configuration page for details. If any setting is entered incorrectly and cannot proceed to setting up the Network Camera, restore the factory settings following the steps in the "Troubleshooting" chapter of the Appendix.

Add Password to prevent Unauthorized Access

The default Administrator's password is blank and the Network Camera initially will not ask for any password. The Administrator should immediately implement a new password as a matter of prudent security practice. Once the Administrator's password is saved, the Network Camera will ask for the user's name and password before each access. The Administrator can set up a maximum of twenty (20) user accounts. Each user can access the Network Camera except to perform system configuration. Some critical functions are exclusive for the Administrator, such as system configuration, user administration, and software upgrades. The user name for the Administrator is permanently assigned as "root". Once the password is changed, the browser will display an authentication window to ask for the new password. **Once the password is set, there is no provision to recover the Administrator's password. The only option is to restore to the original factory default settings.**

How to Use

Authentication

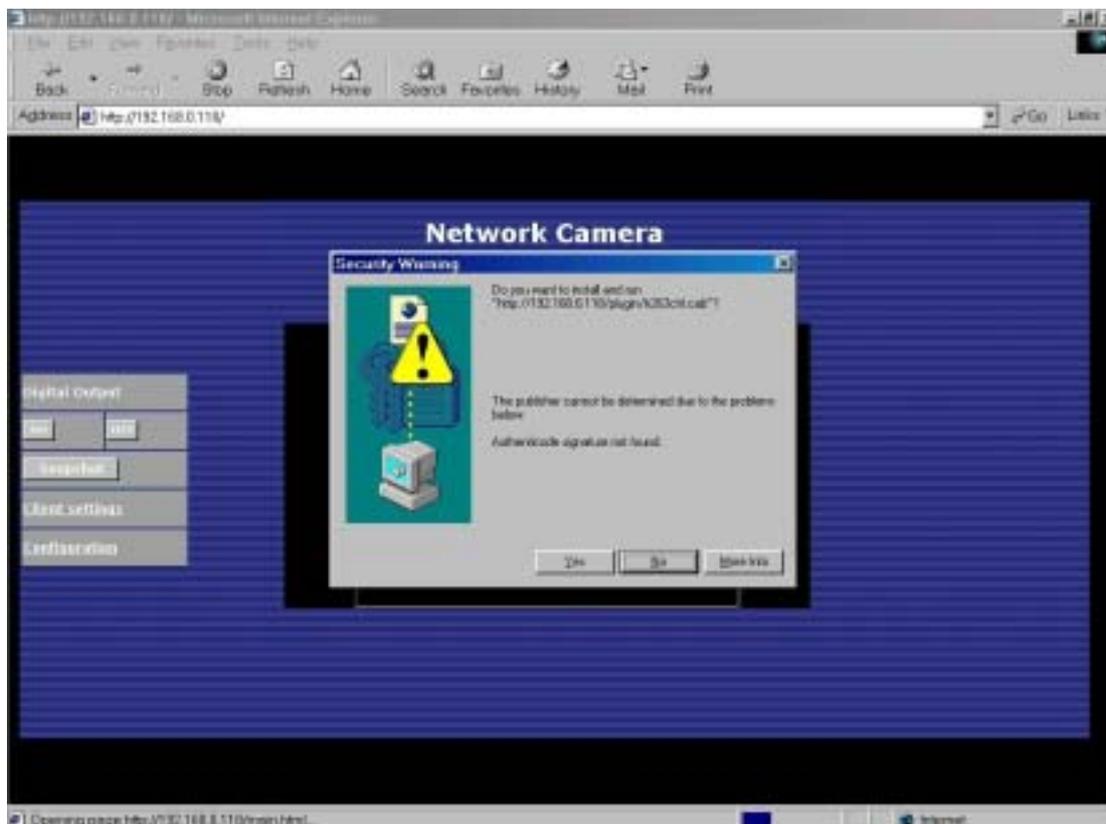
After opening the Web browser and typing in the URL of the Network Camera, a dialogue window pops up to request a username and password. Upon successful authentication, the following figure is displayed.

The foreground is the login window and the background shows the message if authentication fails. The user may check the option box to save the password for future convenience. This option is not available to the Administrator for obvious reason.



Installing plug-in

For the initial access to the Network Camera in Windows, the web browser may prompt for permission to install a new plug-in for the Network Camera. Permission request depends on the Internet security settings of the user's PC or notebook. If the highest security level is set, the computer may prohibit any installation and execution attempt. This plug-in has been registered for certificate and is used to display the video in the browser. Users may click on to proceed. If the web browser does not allow the user to continue to install, check the Internet security option to lower the security levels or contact your IT or networking supervisor for help.



Primary user's capability

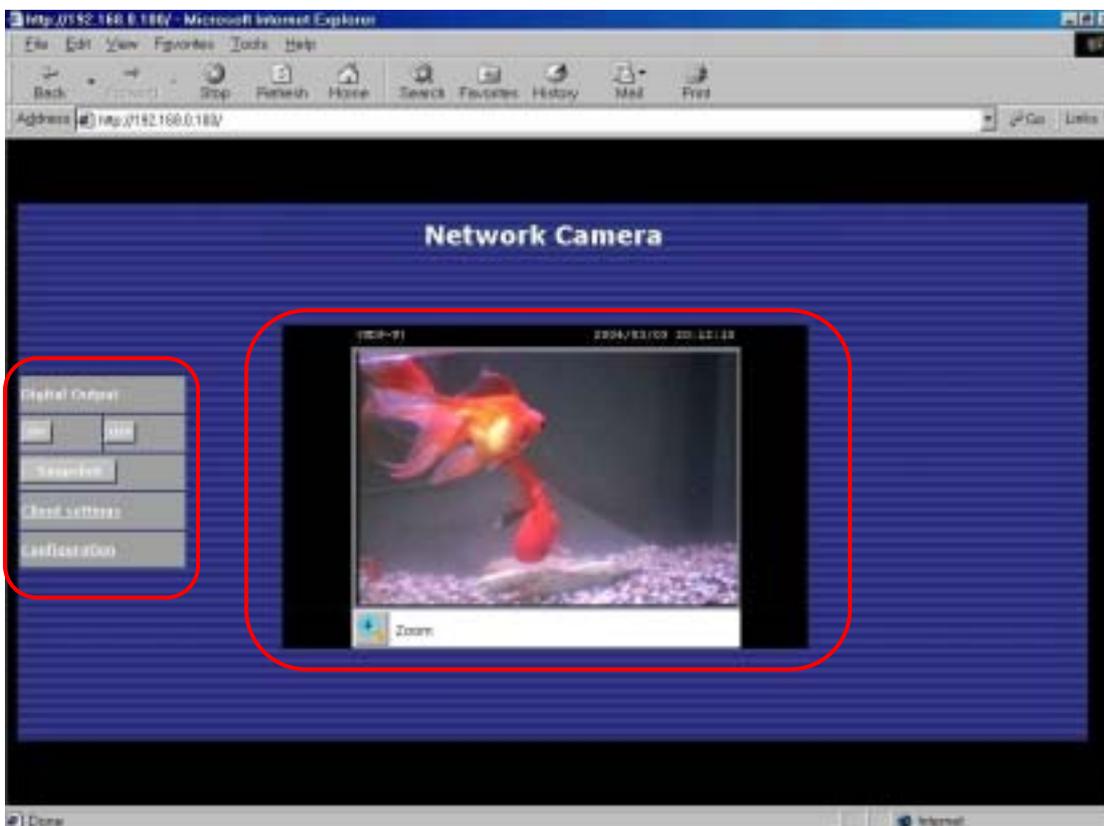
Main screen with camera view

The main page layout has two parts:

Configuration functions: The camera can be configured using these user interfaces.

Camera View: What the camera sees.

Click on the configuration link to the left of the image window to enter the configuration page.



Digital Zoom

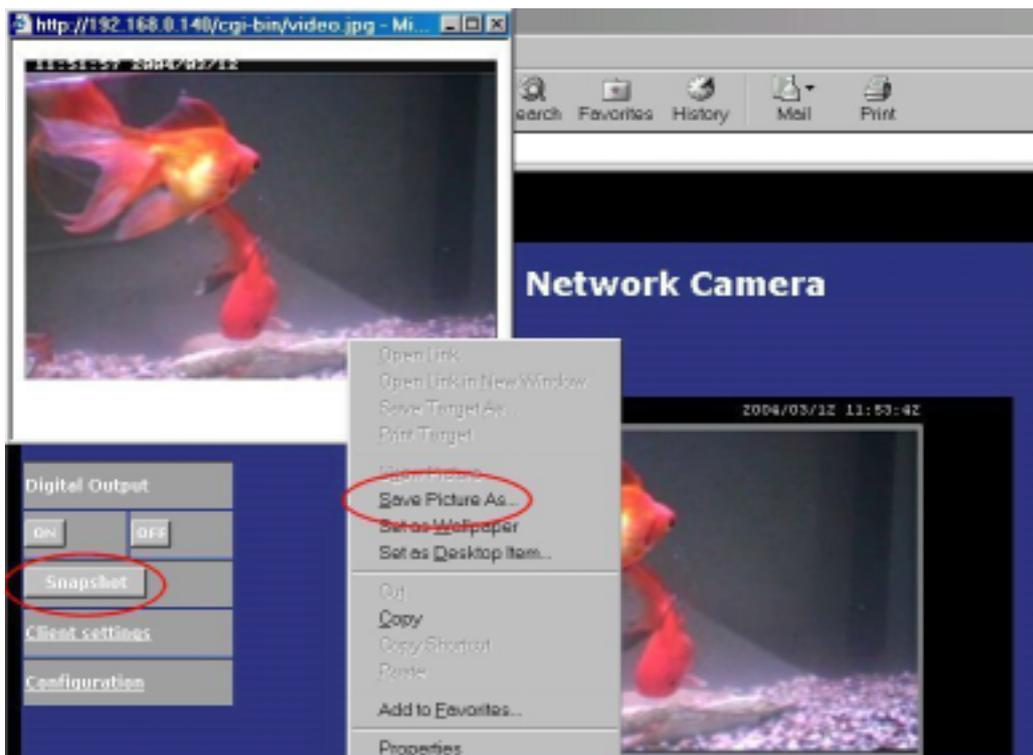
Click on the magnifier icon under the camera view then the digital zoom control panel will be shown. Uncheck "Disable digital zoom" and use the slider control to change the zoom factors.

Digital Output

Clicking on the "On" or "Off" button turns the digital output to either on or off status.

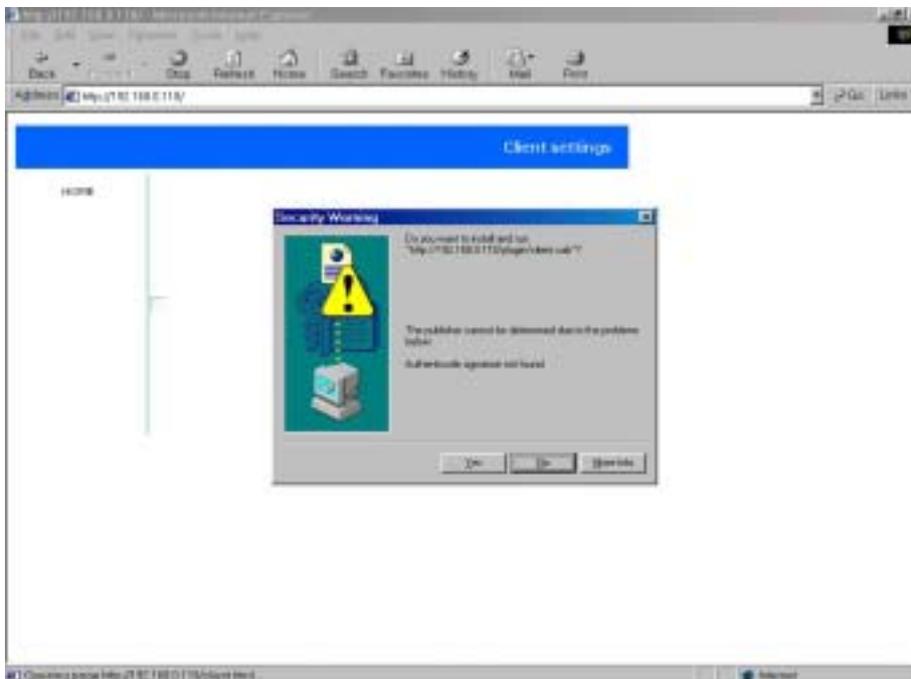
Snapshot

Click on **Snapshot**, web browser will pop up a new window to show the snapshot. Users can point at the snapshot and click the right button of mouse to save it.



Client settings

At the initial access to the “Connection type” page in Windows, the web browser will ask for a new plug-in installation, the plug-in being the Network Camera. This plug-in has been registered for certification and can be used to change the parameters at the client’s site. The user may click on to install the plug-in. If the web browser does not allow the user to complete the installation, check the Internet security to lower the security level or contact your IT or networking supervisor.



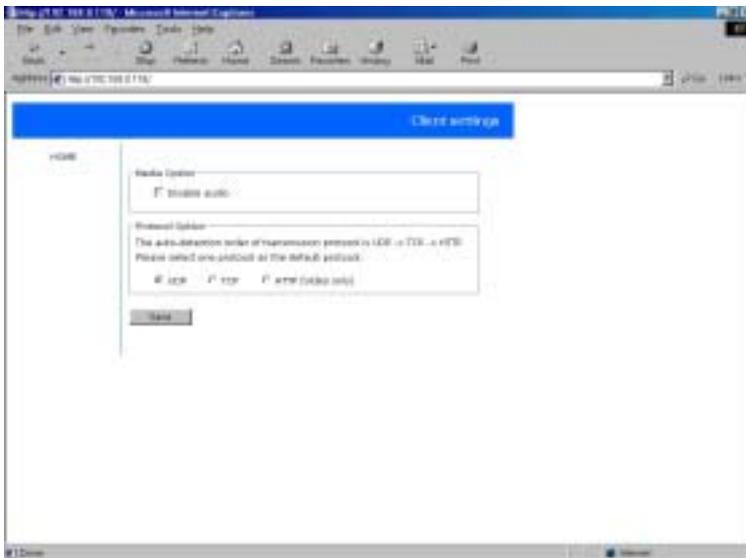
There are two settings for the client side. One is “**Media Option**” for users to determine if audio should be muted. The other is “**Protocol Option**” which allows choices on connection protocol between client and server. There are three protocols choices to optimize your usage - UDP, TCP and HTTP.

The UDP protocol allows for more real-time audio and video streams. However, some packets may be lost due to network burst traffic and images may be obscured.

The TCP protocol allows for less packet loss and produces a more accurate video display. The downside with this protocol is that the real-time effect is worse than that with the

UDP protocol.

The **HTTP** protocol must be selected if the network is protected by a firewall and it only allows HTTP Port (80) to be opened. In this mode, audio will not be sent and only video is operational. If no special need is required, UDP protocol is recommended. Generally speaking, the client's choice will be in the order of UDP TCP HTTP. After the Network Camera is connected successfully, "Protocol Option" will indicate the selected protocol. The selected protocol will be recorded in the user's PC and will be used for the next connection. If the network environment is changed, or the user wants to let the web browser to detect again, manually select the UDP protocol, save, and return HOME to re-connect.



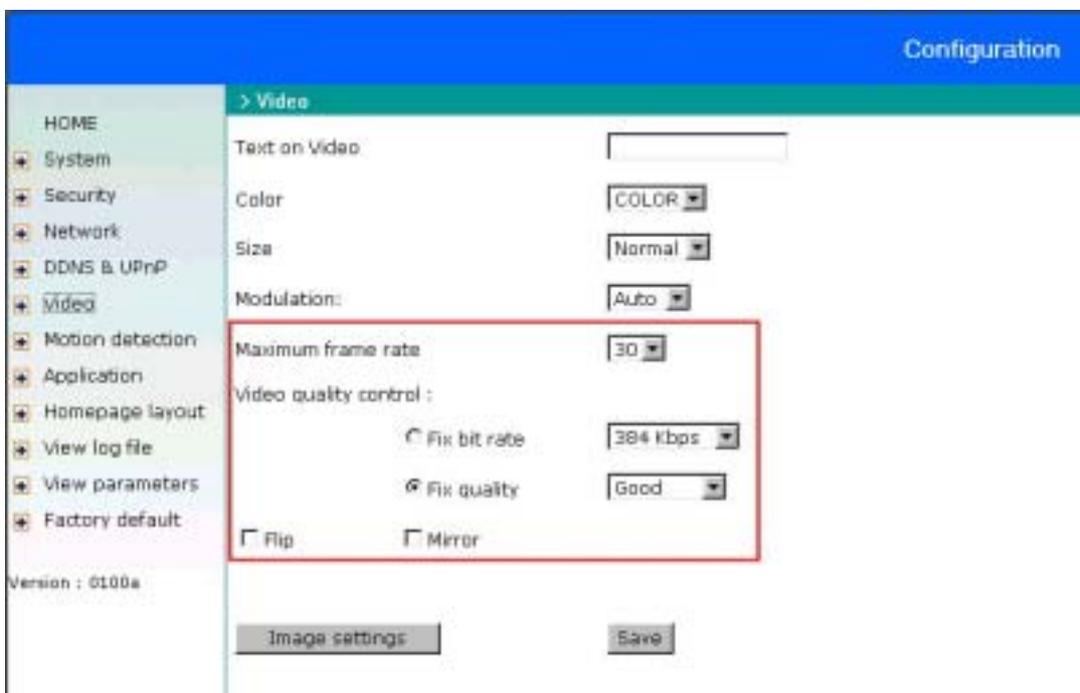
<url> <http://<Network Camera>/protocol.html>

<Network Camera> is the domain name or the original IP address of the Network Camera.

Administrator's capability

Fine-tuning for Best Performance

Best performance generally equates to the fastest image refresh rate with the best video quality, and at the lowest network bandwidth as possible. The three factors, "Maximum frame rate", "Fix bit rate", and "Fix quality" on the Video Configuration page, are correlative to allow for achieving the best performance possible.



For Best Real-time Video Images

To achieve good real-time visual effect, the network bandwidth should be large enough to allow a transmission rate of greater than 20 image frames per second. If the broadband network is over 1 Mbps, set the "Fix bit rate" to 1000Kbps or 1200Kbps, and set "Fix quality" at the highest quality. The maximum frame rate is 25 in PAL system and 30 in NTSC system. If your network bandwidth is more than 384Kbps, you can fix

the bit rate according to your bandwidth and set the maximum frame rate to 25 fps or 30 fps. If the images vary dramatically in your environment, you may want to slow the maximum frame rate down to 20 fps in order to lower the rate of data transmission. This allows for better video quality and the human eyes cannot readily detect the differences between those of 20, 25, or 30 frames per second. If your network bandwidth is below 384 Kbps, set the "Fix bit rate" according to your bandwidth and try to get the best performance by fine-tuning with the "Maximum frame rate". In a slow network, greater frame rate results in blur images. Another work-around is to choose "Half" in the "Size" option for better images, or "Halfx2" for a larger image view. Video quality performance will vary somewhat due to the number of users viewing on the network; even when the parameters have initially been finely tuned. Performance will also suffer due to poor connectivity because of the network's burst constraint.

Only Quality Images Will Do

To have the best video quality, you should set "Fix quality" at "Detailed" or "Excellent" and adjust the "Maximum frame rate" to match your network's bandwidth. If your network is slow and you receive "broken" pictures, go to the TCP protocol in "Connection type" and choose a more appropriate mode of transmission. The images may suffer a time delay due to a slower connection. The delay will also increase with added number of users.

Somewhere Between Real-time and Clear Images

If you have a broadband network, set "Fix quality" at "Normal" or better, rather than setting "Fix bit rate". You can also fix the bandwidth according to your actual network speed and adjust the frame rate. Start from 30 fps down for best results but not below 15 fps. If the image qualities are not improved, select a lower bandwidth setting.

Opening accounts for new users

The screenshot shows the 'Configuration' page for a Network Camera, specifically the 'Security' section. The page is divided into four numbered sections:

- Root password:** A section with a warning '* Blank root password will disable user authentication'. It contains two text input fields labeled 'Root password' and 'Confirm password', and a 'Save' button.
- Add user:** A section with two text input fields for 'User name' and 'User password'. Below them is a checkbox labeled 'Permit to access DI/DO' with a red arrow pointing to it, and an 'Add' button.
- Delete user:** A section with a dropdown menu for 'User name' (currently showing '-- no user --') and a 'Delete' button.
- Guest account options:** A section with two checkboxes: 'Allow 'demo' account to view' and 'Allow more guests with snapshot mode'. Below them is a text input for 'Snapshot interval' (set to 10) and a 'Save' button.

On the left side, there is a navigation menu with options: HOME, System, Security, Network, DDNS & UPnP, Video, Motion detection, Application, Homepage layout, View log file, View parameters, and Factory default. The version number '0100a' is also visible.

Protect Network Camera by passwords

The Network Camera is shipped without any password by default. That means everyone can access the Network Camera including the configuration as long as the IP address is known. It is necessary to assign a password if the Network Camera is intended to be accessed by others. Type a new word twice in 1 to enable protection. This password is used to identify the administrator. Then add an account with user name and password for your friends in 2. Network Camera can provide twenty accounts for your valuable customers or friends. Each account identifies the access right rather than the real visitor. That allows multiple visitors share the same account of different level. An option to access DI/DO is provided for each account. Some users may need to prohibit from controlling your attached devices. You may delete some

users from 3 .

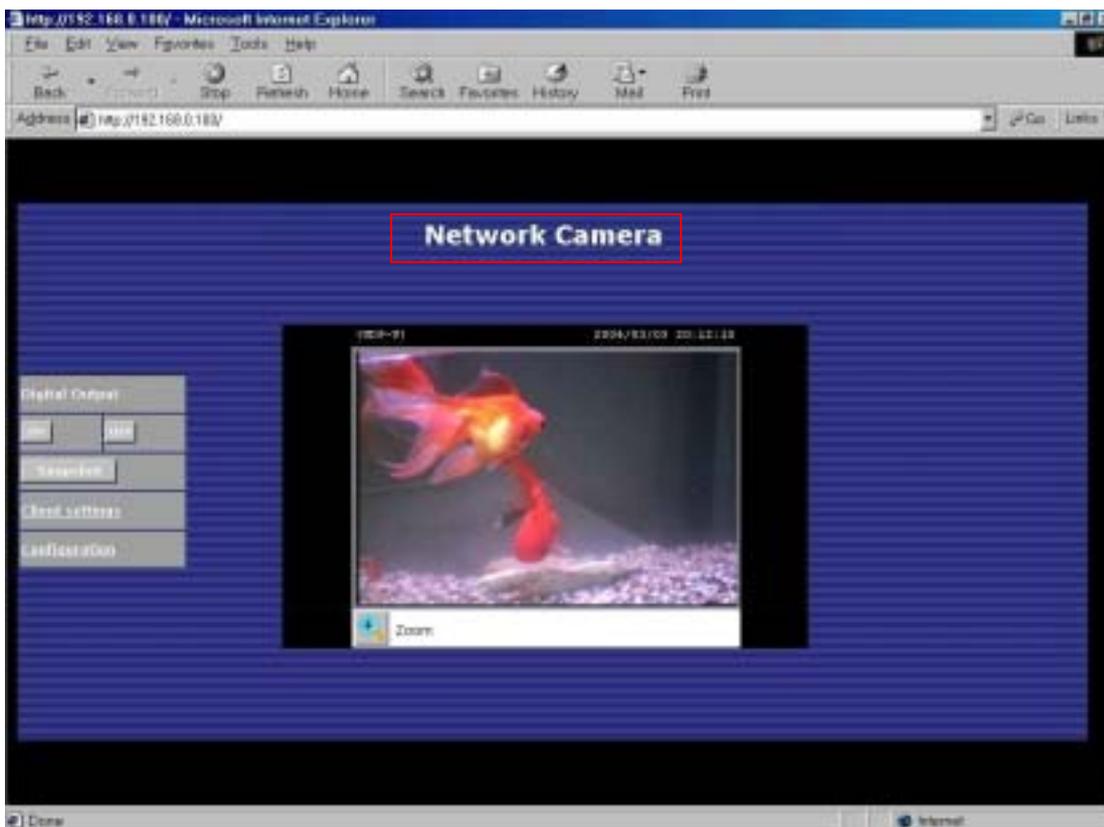
More flexible options for viewers 4

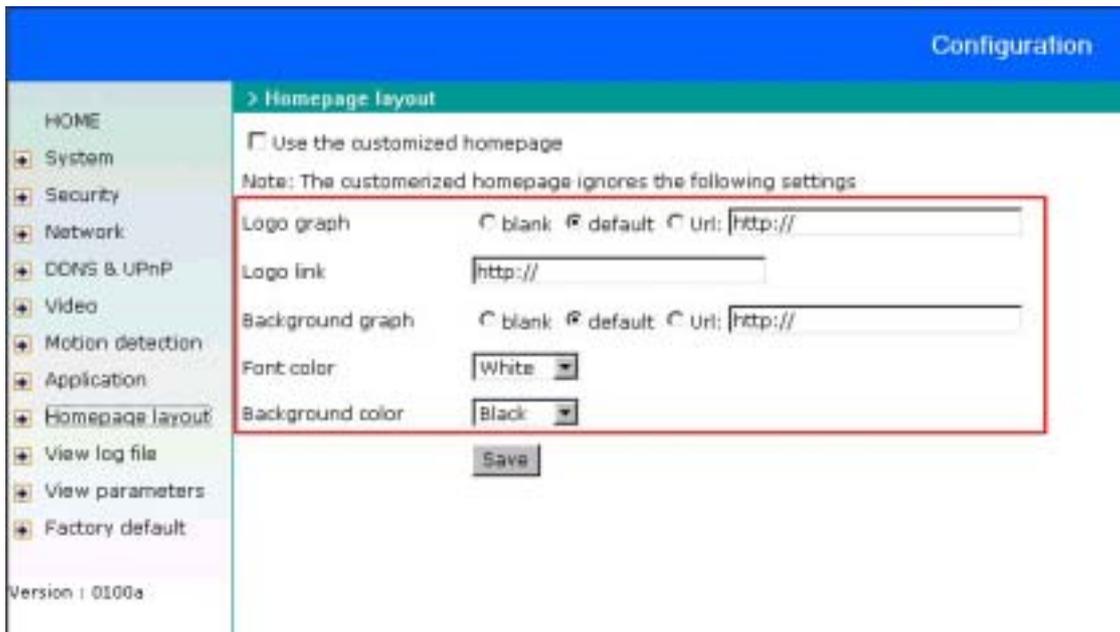
The first option allows anyone uses "demo" as the user name to view without password. The Administrator can also decide if more viewers are allowed to watch the video if the viewers exceed the limit. The overloaded viewers will have snapshot mode instead.

Change homepage layout

How to change the subject text of homepage

1. Click on "Configuration" on homepage,
2. Change the text in "Host name",
3. Click on "Save" button.





How to change the font color

1. Click on "Configuration" on homepage,
 2. Click on "Homepage layout" at the left column,
 3. Find "Font color" and pull down the list to choose any color you like,
 4. Click on "Save" button.
- * The font color is better to contrast with the background.

How to change the background

1. Click on "Configuration" on homepage,
2. Click on "Homepage layout" at the left column,

If you want to display simple color without any image,

3. Find "Background graph" and choose "blank",
4. Find "Background color" and pull down the list to choose any color you like,
5. Click on "Save" button.

* The background color is better to contrast with the font.

If you want to use the image from another web site as background,

3. Find "Background graph" and choose "Url",
4. Type the URL of the image on the Internet in the edit box, for example, "http://dgl.microsoft.com/thumbnails/j023/j0235217(t).gif",
5. Click on "Save" button.

If you want to change the default background image stored in the Network Camera,

3. Find "Background graph" and choose "default",
4. Click on "Save" button,
5. Prepare an image file with size less than 131000 bytes and rename it to wallppr.jpg,
6. Open an FTP client program and connect to the Network Camera. The user name and password is as same as the Administrator's.
7. Transfer wallppr.jpg in local folder to the Network Camera,
8. Close the FTP program and reload the homepage of the Network Camera.

How to change the image logo at the upper left corner of homepage

1. Click on "Configuration" on homepage,
2. Click on "Homepage layout" at the left column,

If you want to remove any logo,

3. Find "Logo graph" and choose "blank",
4. Click on "Save" button.

If you want to use the image from another web site as logo,

3. Find "Logo graph" and choose "Url",
4. Type the URL of the image on the Internet in the edit box, for example, "http://dgl.microsoft.com/thumbnails/j023/j0234430(t).gif",
5. Click on "Save" button.

If you want to change the default logo stored in the Network Camera,

3. Find "Logo graph" and choose "default",
4. Click on "Save" button,

-
-
5. Prepare an image file with size less than 65000 bytes and rename it to logo.gif,
 6. Open an FTP client program and connect to the Network Camera. The user name and password is as same as the Administrator's.
 7. Transfer logo.gif in local folder to the Network Camera,
 8. Close the FTP program and reload the homepage of the Network Camera.

If you want to add hyperlink to the logo image,

3. Find "Logo link" and type the hyperlink in the edit box, for example, <http://www.mywebsite.com>,
4. Click on "Save" button.

How to design my own homepage to replace the current one

1. Prepare your own homepage with size less than 65000 bytes and rename it to user.htm,
2. Insert the html codes of video object, the bold Italian text in the following example, into the appropriate position in user.htm. Note that the codes of video object must be copied exactly the same including the letter case.

```
***** Example homepage begin *****
<html>
<head>
<title>Example – custom homepage</title>
</head>
<body background="/pic/wallppr.jpg">
<p>
  <a href="/setup/config.html">
    
    </a>
    <font size="7" face="Comic Sans MS" color="#FF0000">
Network Camera Demo
</font>
</p>
<p align="left">
<!-- Copy the next bold line to where you want to show the image coming from
Network Camera. This line is remark only and is hidden on homepage. //-->
<OBJECT ID=VAMCtrl></OBJECT>
</p>
</body>
</html>
***** Example homepage end *****
```

-
-
3. Open an FTP client program and connect to the Network Camera. The user name and password is as same as the Administrator's.
 4. Transfer user.htm in local folder to the Network Camera,
 5. Close the FTP program and reload the homepage of the Network Camera,
 6. Click on "Configuration" on homepage,
 7. Click on "Homepage layout" at the left column,
 8. Check "Use the customized homepage".
 9. Click on "Save" button and return to homepage.

* The user.htm only provides plain text content that scripts and URL of external resources can be used to adorn the homepage. Refer to tutorials of writing HTML and scripts.

 If the customized homepage goes wrong and cannot display, link to the "Homepage layout" page, "<http://<IP address of Network Camera>/setup/layout.html>", to disable "Use the customized homepage".

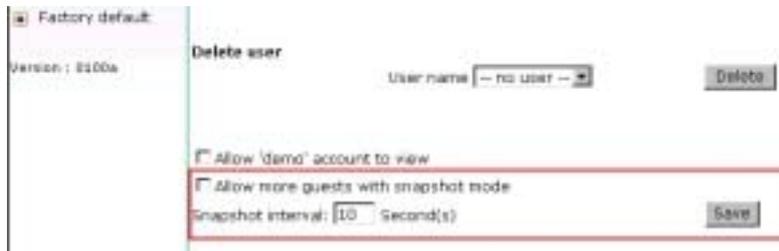
Build a multimedia web attraction site

Demo on multiple sites – mid-scale service

The Network Camera can allow ten visitors on-line simultaneously. After installation, focus the Network Camera on any view you would like friends to share and tell the visitors to type in the web browser address. Caution: You may want to maintain your visitor's list in the security configuration page to block out unexpected visitors. No need to have the geeks' skill and equipments, no need to find suitable software.

Product demo for e-business – large-scale service

If the number of visitors has exceeded the limit, the Network Camera can allow the "overload" viewers to see the snapshots in JPEG mode, on the homepage. These are still images and will be refreshed periodically and automatically. It needs a script function supported by the web browser.



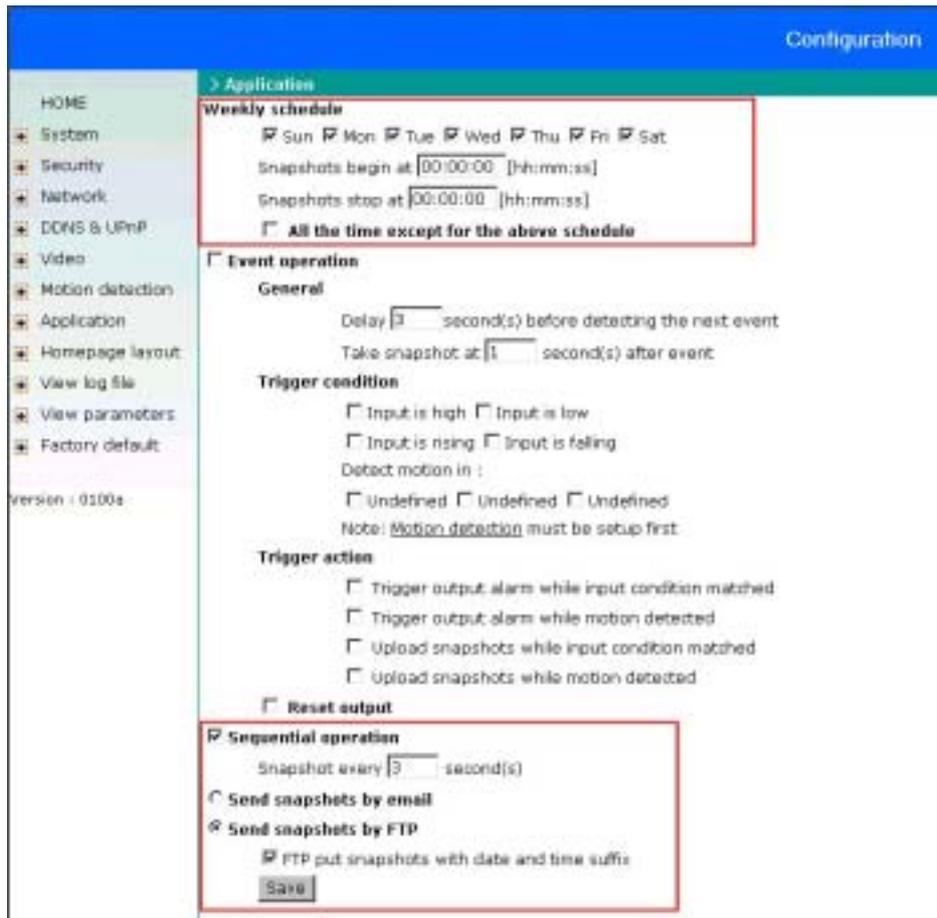
1. Click on "Configuration" on homepage,
2. Click on "Security" at the left column,
3. Go to the page bottom and check "Allow more viewers with snapshot mode",
4. Set the snapshot interval to refresh the still image automatically. The longer the snapshot interval is, the better the snapshot mode works for more viewers.

If you want to expand to allow in more viewers, the host server should be able to handle large network traffic, which must handle the picture refreshing from the Network Camera.

If the web space has FTP service,

Set the Network Camera as an FTP client to upload the pictures. The access to the Network Camera will be independent of the number of viewers and the picture quality will remain constant.

1. Click on "Configuration" on homepage,
2. Click on "Network" at the left column,
3. Fill the FTP related settings including server, user name and password, as well as the upload path if specified by the web space,
4. Click on save and wait for system restart,



-
-
5. Click on "Application" at the left column,
 6. Select the weekday and daily schedule you want to upload the pictures,
 7. Select "Sequential operation" and set the interval,
 8. Select FTP without date time suffix as the upload method and click on save,
 9. The image file uploaded to the web space is named "video.jpg". Check if the file is successfully uploaded to the correct folder,
 10. Prepare a homepage with the embedded image reference to the image file uploaded via FTP in advance.

If the web space has no FTP service,

An auto-refresh homepage can be used to periodically poll the newest image from the Network Camera. It is most efficient if using a free web space provider as the FTP service may be limiting.

1. Prepare an auto-refresh homepage like the following example. The URL of image is `http://"IP address of the Network Camera"/cgi-bin/video.jpg`. Modify the IP address according to your Network Camera. Define the refresh interval according to your network bandwidth for best result. If the refresh rate is too fast and there is a large number of visitors, this may overload the Network Camera and slows the response.

```
***** Example homepage begin *****
<html>
<head>
<title>Example - auto refresh</title>
</head>
<body background="/pic/wallppr.jpg">
<p align=left>
  <font size="7" face="Comic Sans MS" color="#FF0000">
  Network Camera Demo
  </font>
</p>
<p align=left>
<!-- Begin of scripts to auto refresh the image. Change the IP address in the image
URL and refreshrate if necessary. //-->
<script language=javascript>
var image="http://192.168.0.203/cgi-bin/video.jpg";          //IMAGE URL
var refreshrate=5;          //SECONDS BETWEEN REFRESH
var imgwidth=352;          //IMAGE WIDTH
var imgheight=240;          //IMAGE HEIGHT (NTSC: 240; PAL: 288)
function refresh(){
document.images["pic"].src=image+"?" +new Date();
setTimeout('refresh()', refreshrate*1000);}
document.write('<img          src="" +image+""          height="" +imgheight+""
width="" +imgwidth+"" name="pic">');
if(document.images)window.onload=refresh;
</script>
<!-- End of scripts to auto refresh the image. //-->
</p>
</body>
</html>***** Example homepage end *****
```

Build a security application

The Administrator can combine options on the application page to perform many useful security applications. There are two trigger sources coming from attached devices such as for motion detection. There are also two kinds of actions responding to such events, including uploading snapshots over the Internet and driving other attached devices. To upload the snapshots, users can choose either email or FTP according to user's needs. Both e-mail and FTP use the network settings on the network page. Refer to the definition section for detail configuration.

Trigger condition

Input is high Input is low
 Input is rising Input is falling
Detect motion in :
 Undefined Undefined Undefined
Note: Motion detection must be setup first

Trigger action

Trigger output alarm while input condition matched
 Trigger output alarm while motion detected
 Upload snapshots while input condition matched
 Upload snapshots while motion detected

Reset output

Sequential operation
Snapshot every second(s)

Send snapshots by email
 Send snapshots by FTP
 FTP put snapshots with date and time suffix

1. Click on "Configuration" on homepage,
2. Click on "Application" at the left column,
3. Check the weekdays as you need and give the period of "**Snapshots begin**" time and "**Snapshots end**" time to monitor the trigger conditions every day,
4. Check the "**Event operation**". The trigger condition can be set to detected motion or status of the attached device,

> Application

Weekly schedule

Sun Mon Tue Wed Thu Fri Sat
Snapshots begin at [hh:mm:ss]
Snapshots stop at [hh:mm:ss]
 All the time except for the above schedule

Event operation

General

Delay second(s) before detecting the next event
Take snapshot at second(s) after event

Trigger condition

Input is high Input is low
 Input is rising Input is falling
Detect motion in :
 Undefined Undefined Undefined
Note: Motion detection must be setup first

Trigger action

Trigger output alarm while input condition matched
 Trigger output alarm while motion detected
 Upload snapshots while input condition matched
 Upload snapshots while motion detected

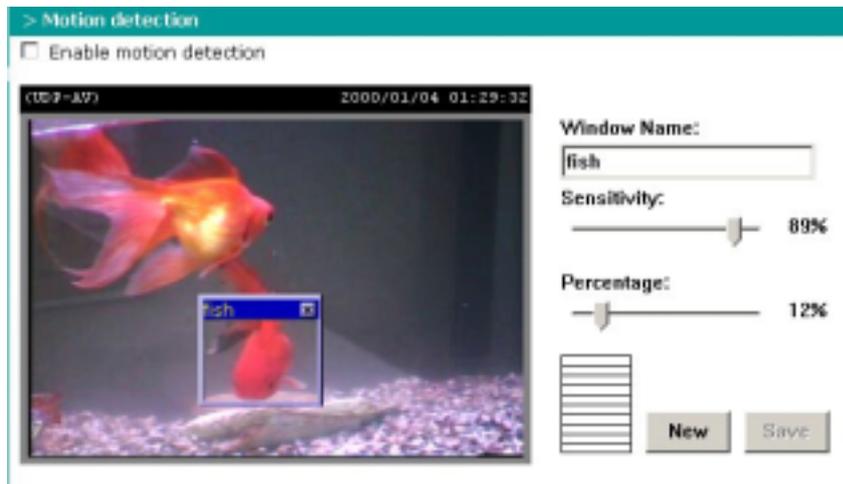
Reset output

-
5. Set the delay **before detecting next event** to avoid continuous false alarms following the original event,
 6. Set the delay to **take snapshots after event** to capture the direction of the moving objects,

Send snapshots when motion is detected

If no external sensor is available, Administrator can use the built-in motion detection to monitor any movement and send snapshots via email for security check.

7. Click on "**Motion detection**" at the left column,
8. Check "Enable motion detection",
9. Click on new to have a new window to monitor video,
10. Type in a name to identify the new window
11. Use the mouse to click, hold, and drag the window corner to resize or the title bar to move,
12. Fine-tune using the "Sensitivity" and "Percentage" fields to best suit the camera's environment. Higher "Sensitivity" detects the slighter motion. Higher "Percentage" discriminates smaller objects,
13. Clicking on "Save" enables the activity display. Green means the motion in the window is under the watermark set by Administrator and red means it is over the watermark,



14. Click on "**Application**" at the left column,
15. Check the window name set in step 10,

-
-
16. Check "Upload snapshots while motion detected", if e-mailing the snapshots is preferred,
 17. Check "Send snapshots by email",
 18. Click on save to validate.

Software revision upgrade

Customers can obtain the up-to-date software from the web site. An easy-to-use Upgrade Wizard is provided to upgrade the Network Camera with just a few clicks. The upgrade function is opened to the Administrator only. To upgrade the system, follow the procedures below.

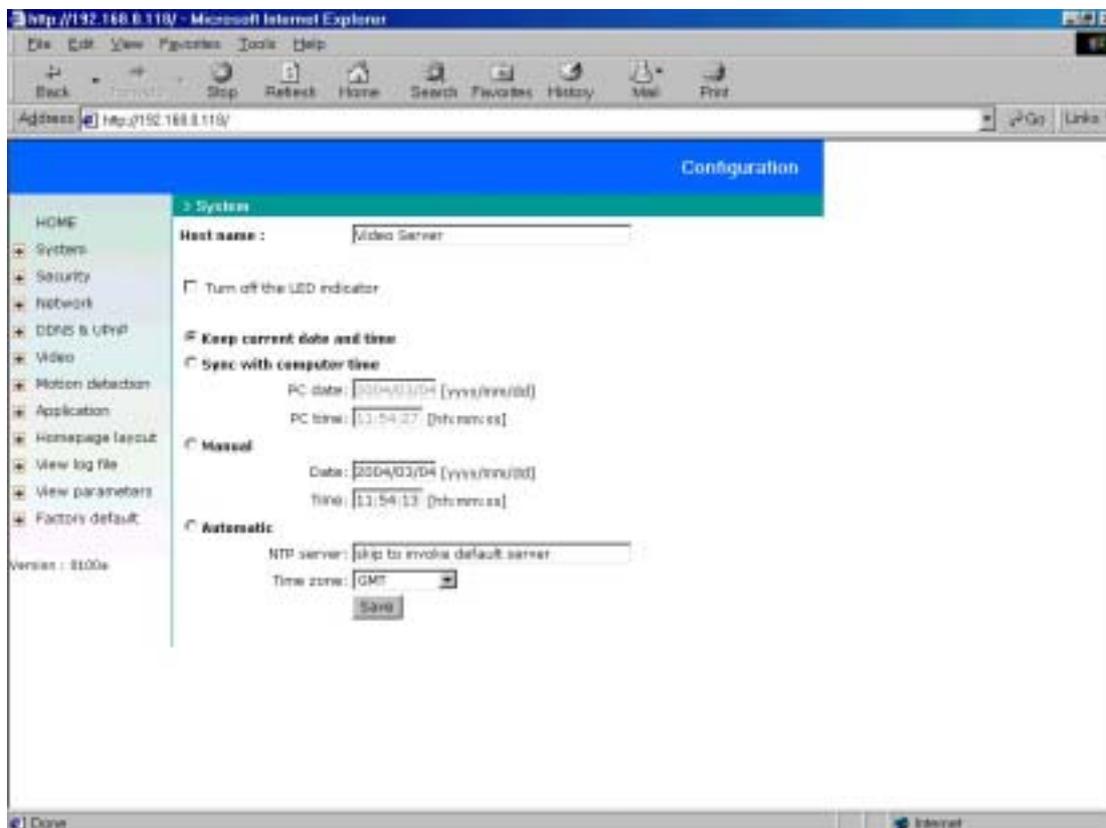
1. Download the firmware file named FLASH.BIN from the appropriate product folder.
2. Run the Upgrade Wizard and proceed following the prompts. Refer to the instructions of the Upgrade Wizard for details.
3. The whole process will finish in a few minutes and it will automatically restart the system.



If power fails during the writing process of Flash memory, the program in the memory of the Network Camera may be destroyed permanently. If the Network Camera cannot restart properly, ask your dealer for technical service.

Definition in Configuration

Only the Administrator can access system configuration. Each category in the left column will be explained in the following pages. The bold texts are the specific phrase on the Option pages. The Administrator may type the URL below the figure to directly enter the frame page of configuration. If the Administrator also wants to set certain options through the URL, read the reference appendix for details.



<url> <http://<Network Camera>/setup/config.html>

<Network Camera> is the domain name or original IP address of the Network Camera.

System parameters

"Host name" The text displays the title at the top of the main page.

"Turn off the LED indicator" Check this option to shut off the LED beside the lens. It can prevent others from observing the operation.

"Keep current date and time" Click on this to reserve the current date and time of the Network Camera. An internal real-time clock maintains the date and time even when the power of the system is turned off.

"Sync with computer time" Synchronizes the date and time of the Network Camera with the local computer. The read-only date and time of the PC is displayed as updated.

"Manual" Adjust the date and time according to what is entered by the Administrator. Notice the format in the related field while doing the entry.

"Automatic" Synchronize with the NTP server over the Internet whenever the Network Camera starts up. It will fail if the assigned time-server cannot be reached.

"NTP server" Assign the IP address or domain name of the time-server. Leaving the text box blank connects the Network Camera to the default time-servers.

"Time zone" Adjust the time with that of the time-servers for local settings.

Remember to click on to immediately validate the changes. Otherwise, the correct time will not be synchronized

Security settings

“Root password” Change the Administrator’s password by type in the new password identically in both text boxes. The typed entries will be displayed as asterisks for the security purpose. After pressing , the web browser will ask the Administrator for the new password for access.

“Add user” Type the new user's name and password and press to insert the new entry. The new user will be displayed in the user name list. There is a maximum of twenty user accounts. Each user can have the privilege to **“Permit for I/O control”**.

“Delete user” Pull down the user list to find the user’s name and press to complete.

“Allow ‘demo’ account to view” Click this to permit anyone who types in “demo” as user name. No password is needed for demo account. Note that a demo account is restricted to view only.

“Allow more viewers with snapshot mode” There can only be a maximum of 10 users to simultaneously view the video. This option allows for the 11th viewer on, the overloaded viewers, to see only still images. These still images are automatically refreshed by the interval defined below. This feature must be supported by the java script capability of the web browsers.

“Snapshot interval” defines the refresh rate of the still image in the homepage seen by the overloaded viewers.

Network settings

Any changes made to this page will restart the system in order to validate the changes. Make sure every field is entered correctly before clicking on .

"Reset IP address at next boot", the default status is checked to get IP address automatically at the server start. Therefore, once the network settings, especially the IP address, have been entered correctly, uncheck this option

General

"IP address" This is necessary for network identification.

"Subnet mask" This is used to determine if the destination is in the same subnet. The default value is "255.255.255.0".

"Default router" This is the gateway used to forward frames to destinations in a different subnet. Invalid router setting will fail the transmission to destinations in different subnet.

"Primary DNS" The primary domain name server that translates hostnames into IP addresses.

"Secondary DNS" Secondary domain name server that backups the Primary DNS.

HTTP

"Http port" This can be other than the default port 80. Once the port is changed, the users must be notified the change for the connection to be successful. For instance, when the Administrator changes the HTTP port of the Network Camera whose IP address is 192.168.0.100 from 80 to 8080, the users must type in the web browser "http://192.168.0.100:8080" instead of "http://192.168.0.100".

Streaming

"Control channel port" This can be something other than the default port 5001 in

order to work with the port opened by the firewall.

“Audio channel port” This can be something other than the default port 5002 in order to work with the port opened by the firewall.

“Video channel port” This can be something other than the default port 5003 in order to work with the port opened by the firewall.

“Improve audio quality in low bandwidth environment” if the Network Camera seems to work in a low bandwidth network environment, the user can use this option to see if audio quality can be improved by sacrificing some real-time synchronization.

“Mute” This can force the transmission protocol to HTTP and disable audio.

WLAN Configuration

“SSID” (Service Set Identifier), it is a name that identifies a wireless network. Access Points and wireless clients attempting to connect to a specific WLAN (Wireless Local Area Network) must use the same SSID. The default setting is **default**. *Note: The maximum length of SSID is 32 single-byte characters and SSID can't be any of “, <, > and space character.*

“Wireless mode” Clicking on the pull-down menu to select from the following options:

“Infrastructure” Make the Network Camera connect to the WLAN via an Access Point. (The default setting)

“Ad-Hoc” Make the Network Camera connect directly to a host equipped with a wireless adapter in a peer-to-peer environment.

“Channel” While in infrastructure mode, the channel is selected automatically to match the channel setting for the selected Access Point. In Ad-Hoc mode, the channel must be manually set to the same channel for each wireless adapter. The default channel setting depends on the installed region.

“TX rate” This field is for selecting the maximum transmission rate on the network. The default setting is “auto”, that is the Network Camera will try to connect to the other wireless device with highest transmitting rate.

“Preamble”, either **“Long preamble”** or **“Short preamble”** defines the length of the CRC block (Cyclic Redundancy Check is a common technique for detecting data

transmission errors) for communication between the Access Point and the roaming wireless device. Long Preamble is the default setting. *Note: High network traffic areas should use the shorter preamble type.*

“Data encryption” Checking the box to enable the data encryption. By default it is disabled.

“Auth. Mode” Choosing one of the following modes, (Auto is the default setting)

- **“Auto”** – Will automatically decide the authentication mode of the wireless client.
- **“Shared”** – allows communication only with other devices with identical WEP settings.
- **“Open”** – communicates the key across the network.

“Key length” The administrator can select the key length among 64, 128 or 256 bits. 64bits is the default setting.

“Key format” Hexadecimal or ASCII. **“HEX”** is the default setting.

- **“HEX”** digits consist of the numbers 0~9 and the letters A-F.
- **“ASCII”** is a code for representing English letters as numbers from 0-127 except “, <, > and space characters that are reserved.

“Network Key” Entering a key in either hexadecimal or ASCII format. When selecting different key length, acceptable input length is listed as following:

64 bits key length: 10 Hex digits or 5 characters.

128 bites key length: 26 Hex digits or 13 characters.

256 bits key length: 58 Hex digits or 29 characters.

Note: When 22(“), 3C(<) or 3E(>) are input in network key, the key format can’t be changed to ASCII format.

 Some invalid settings may cause the system failure to respond. Change the configuration only if necessary and consult with your network supervisor or experienced users for correct settings. Once the system has lost contact, refer to Appendix A for reset and restore procedures.

Mail & FTP

SMTP

When the SMTP server support SMTP authentication, users need to give the valid user name and password to send email via the server.

“SMTP (mail) server 1” The domain name or IP address of the external email server.

“User name of SMTP 1” This granted user name on the external email server.

“Password of SMTP 1” This granted password on the external email server.

“Recipient email address 1” The email address of the recipients for snapshots or log file. Multiple recipients must be separated by semicolon, ‘;’.

“SMTP (mail) server 2” The domain name or IP address of another email server once the previous server is unreachable.

“User name of SMTP 2”, granted user name on the backup email server.

“Password of SMTP 2”, granted password on the backup email server.

“Recipient email address 2” The email address of the recipients for the backup server.

“Sender email address”, the email address of the sender.

FTP

“Local FTP server port” This can be other than the default port 21. The user can change this value from 1 to 65535. After the changed, the external FTP client program must change the server port of connection accordingly.

“1st FTP server” The domain name or the IP address of the external FTP server. The following user settings must be correctly configured for remote access.

“1st FTP user name” Granted user name on the external FTP server.

“1st FTP password” Granted password on the external FTP server.

“1st FTP remote folder” Granted folder on the external FTP server. The string must conform to that of the external FTP server. Some FTP servers cannot accept preceding slash symbol before the path without virtual path mapping. Refer to the instructions for

the external FTP server for details. The folder privilege must be open for upload.

“Primary FTP passive mode” The Network Camera is located inside the network protected by a firewall, data connection for FTP may be prohibited. By selecting passive mode, the FTP can bypass the rule and allow snapshot upload to proceed. If the passive mode is selected, the Network Camera can automatically attempt for active mode, if the external FTP server does not support passive mode.

“2nd FTP server” The domain name or IP address of the external FTP server.

“2nd FTP user name” Granted user name on the backup FTP server.

“2nd FTP password” Granted password on the backup FTP server.

“2nd FTP remote folder” Granted folder on the backup FTP server.

“Secondary FTP passive mode” Passive mode setting for the backup FTP server.

DDNS and UPnP settings

“Enable DDNS” This option turns on the DDNS function.

“Provider” The provider list contains four hosts that provide DDNS services. Please connect to the service provider’s website to make sure the service charges.

“Host name” If users wants to use DDNS service, this field must be filled. Please input the hostname that is registered in the DDNS server.

“Username/E-mail” The Username or E-mail field is necessary for logging in the DDNS server or notify users of the new IP address. **Note:** when this field is input as **“Username”** the following field must be input as **“Password”**.

“Password/Key” Please input the password or key to get the DDNS service.

“Enable UPnP” The turns on or off the UPnP function. When UPnP is turn off, the camera cannot be found through network neighbors in MS Windows. XP. If the UPnP network component is installed in Windows XP, the hostname of the Network Camera will be shown with bracketed IP address in the Network neighbors. Ex: Network Camera (192.168.0.96). That is: The hostname of the Network Camera is *“Network Camera”*, and the IP address of the Network Camera is *192.168.0.96*.

“Save” Click on the button to save current settings for the DDNS service and UPnP function.

Video codec parameters

“Text on video” The text will be displayed in the black bar above the video window with a timestamp. The timestamp is captured from the date and time of the Network Camera that is maintained by a built-in real-time clock.

“Color” Select either for color or monochrome video display.

“Size” There are five options for three video sizes. **“Half”** is the quarter size of **“Normal”**. **“Half x 2”** has the same video size as **“Normal”** but of a lesser quality, while consuming less network bandwidth. **“Normal”** is the quarter size of **“Double”**. **“Normal x 2”** has the same video size as **“Double”** but of a lesser quality, while consuming less network bandwidth.

“Power line frequency (for fluorescent light)”, the fluorescent light will flash according to the power line frequency that depends on local utility. Change the frequency setting to eliminate uncomfortable flash image when the light source is only fluorescent light.

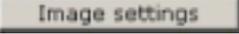
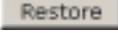
There are three dependent parameters provided for video performance adjustment.

“Maximum frame rate” This limits the maximal refresh frame rate, which can be combined with the **“Video quality control”** to optimize the bandwidth utilization and video quality. If the user wants to fix the bandwidth utilization regardless of the video quality, choose **“Fix bit rate”** and select the desired bandwidth. The video quality may be poor due to the sending of maximal frame rate within the limited bandwidth when images are moving rapidly. Consequently, to ensure detailed video quality (quantization rate) regardless of the network, it will utilize more bandwidth to send the maximal frames when images change drastically.

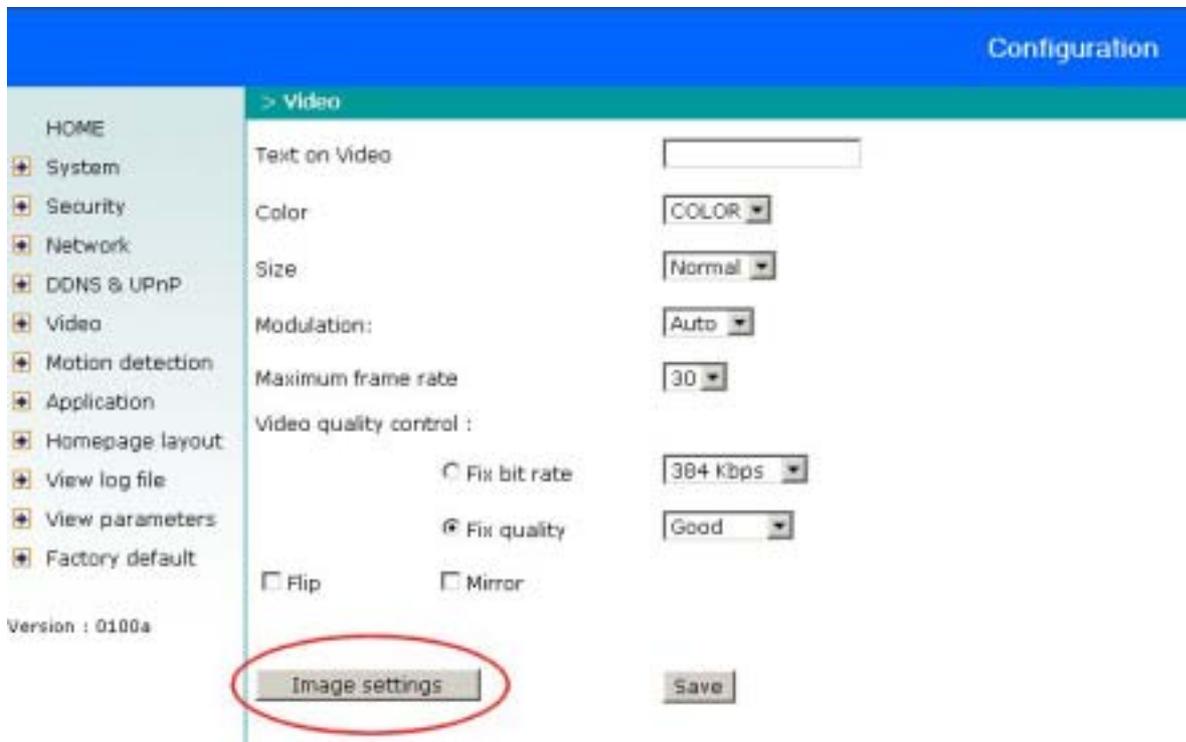
“Flip” Vertically rotate the video.

“Mirror” Horizontally rotate the video. Check options both if the Network Camera is installed upside down.

“White balance” Adjust the value for best color temperature.

 Click on this button to pop up another window to tune **“Brightness”**, **“Contrast”**, **“Hue”** and **“Saturation”** for video compensation. Each field has eleven levels ranged from -5 to +5. The user may press  to fine-tune the image. When the image is O.K., press  to set the image settings.  Click on this to

recall the original settings without incorporating the changes.



Motion detection

“Enable motion detection” Check this option to turn on motion detection.

New Click on this button to add a new window. At most three windows can exist simultaneously. Use the mouse to click, hold, and drag the window frame to resize or the title bar to move. Clicking on the ‘x’ at the upper right-hand corner of the window to delete the window. Remember to save in order to validate the changes.

Save Click on this button to save the related window settings. A graphic bar will rise or fall depending on the image variation. A green bar means the image variation is under monitoring level and a red bar means the image variation is over monitoring level. When the bar goes red, the detected window will also be outlined in red. Going back to the homepage, the monitored window is hidden but the red frame shows when motion is detected.

“Window Name” The text will show at the top of the window.

“Sensitivity” This sets the endurable difference between two sequential images.

“Percentage” This sets the space ratio of moving objects in the monitoring window. Higher sensitivity and small percentage will allow easier motion detection.

The following figure shows the screen when **Save** is clicked. The monitoring window has been outlined in red and the graphic bar goes red since the goldfish is moving.



Application settings

Weekly schedule

“Sun” ~ “Sat” Select the days of the week to perform the following operations.

“Snapshots begin at” Set the time to start operations.

“Snapshots stop at” Set the time to stop operations.

Setting identical begin time and stop time means 24-hour operation.

“All the time except for the above schedule” Set the schedule all the time except for the above in a week.

Event operation

“Delay second(s) before detecting next event” Set the time delay before restarting to check on the triggering condition when the current condition is triggered.

“Take snapshots at second(s) after event” After the camera has taken a snapshot when a condition is triggered, another snapshot will be taken after this configured interval, in seconds.

“Trigger condition” There are four conditions relative to the digital input and the three windows for motion detection. More than one condition can be selected at once. Select the appropriate digital input condition that suits the characteristics of the external device. “high”, “low” selects level-triggering via external voltage input. “rising”, “falling” is for edge-triggering. There are three windows for motion detection each can be assigned a name. If motion detection has not been set up, **“undefined”** will be shown instead of the window title. If this happens, clicking on “Motion detection” and a note will show to direct the User to the configuration page for motion detection.

“Trigger action” There are four options for two types of action. More than one condition can be selected at once. While choosing to trigger an output alarm, the digital output will short both pins and complete the external device’s circuit. The normal state is open. Either email or FTP can be used to command uploading snapshots. The snapshot names will be “vpre.jpg”, “vtrg.jpg”, and “vpos.jpg”, respectively. They stand

for the snapshots, before event, right upon event, and after event. The date and time suffix may also be added as an option. Confirm the external mail or FTP server settings in the network configuration.

“Reset output” Select and save this option to reset the external device at the digital output to return to the original state.

Sequential operation

“Snapshot every second(s)” The Network Camera will send snapshots at the specified intervals to the external server using the method selected below. Remember: This operation is still subject to the conditions set in the weekly schedule..

“Send snapshots by email” This selects the uploading method following the intervals set above. The snapshot named “video.jpg” will be attached in the email with the subject title “Periodic snapshots”.

“Send snapshots by FTP” The snapshots will be uploaded to the external FTP server with the file name defined in the next option. This can also be used to refresh the captured images stored in the external web server to build creative homepages.

“FTP put snapshots with date and time suffix” This option sets up the snapshot capture date and time, which can be used to easily differentiate the snapshot file names in either the sequential or event operation. For instance, “video@20030102030405.jpg” means the JPEG image was captured in the year 2003, January the 2nd, at 3 o’clock, 4 minute, and 5 second. If this suffix is omitted, the file named “video.jpg” on the external FTP server will be refreshed at the specified interval.

Homepage layout settings

“Use the customized homepage”, check this option to use “user.htm” uploaded by the Administrator instead of the default one. Refer to the section “Administrator’s capability” for detail usage. The following options related to the default homepage will not affect the “user.htm”.

“Logo graph”, the logo located at the upper left corner of homepage can be hidden, the default one that can be changed by the Administrator, or any image on the Internet that can be located via URL. The default logo is stored in memory and can be changed by FTP. The maximal size is 32000 bytes. Though the file name is fixed to “logo.gif”, the image can be any file format as long as the web browser can read it. Refer to the section “Administrator’s capability” for how to change the default logo.

“Logo link”, when users click on the logo image, a new window will pop up to show the homepage of the given URL. Clear the URL will disable the link function.

“Background graph”, the background image can be hidden to show the background color only, the default one that can be changed by the Administrator, or any image on the Internet that can be located via URL. The default background image is stored in memory and can be changed by FTP. The maximal size is 131000 bytes. Though the file name is fixed to “wallppr.jpg”, it can be any file format as long as the web browser can read it. Refer to the section “Administrator’s capability” for how to change the background image.

“Font color”, pull down the list to select any color for the text in the homepage.

“Background color”, pull down the list to select any color for the homepage background. It can be seen when the background image is not displayed.

Viewing system log

Click the link on the configuration page to view the system log file. The content of the file provides useful information about configuration and connection after system boot-up.

Viewing system parameters

Click on this link on the configuration page to view the entire system's parameter set. The content is the same as those in CONFIG.INI.

Restore factory default settings

Click on the link on the configuration page to restore the factory default settings. Any changes made so far will be lost and the system will be reset to the initial factory settings. After clicking on the "Restore" button and make confirmation, the system will restart and require the installer program to set up the network again.

Appendix

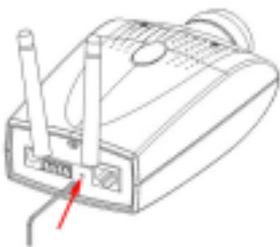
A. Troubleshooting

Status LED

After powering up, the Network Camera performs a self-diagnostic to detect any hardware defects. The following table lists the LED patterns in general . In case of any fatal error, the LED will blink in a pattern other than those below.

| Condition | LED color |
|---------------------------------------|---|
| During self-diagnostic after power on | Blink in interchanged green and red |
| Ethernet signal is lost | Steady red till Ethernet is detected |
| Before network is setup | Steady green till IP address is confirmed |
| After network is setup | Blink green every second |
| Any hardware failure | Other patterns |

Reset and restore



 Restore the factory defaults will erase any previous settings. Reset or restore the system after power on.

There is a button hidden in the pinhole beside the Ethernet socket. It is used to reset the system or restore the factory default settings. Sometimes resetting the system can make the system back to normal state. If the system still has problems after reset, restore the factory settings and install again.

RESET: Poke the wrench to click on the button.

RESTORE: 1. Poke the wrench to press on the button continuously.
2. Wait for self-diagnostic to run twice.
3. Withdraw the wrench as soon as the second self-diagnostic starts.

B. Frequently asked questions

Q What if I forget my password?

A After the Administrator's password is assigned, every access to the Network Camera needs authentication. If you are one of the managed users, you have to ask the Administrator for the password. If you are the Administrator, there is no way to recover the root password except for restoring factory default. Refer to Appendix A for the procedures.

Q Why can I not watch video from the Network Camera after it is authenticated?

A There are many possible scenarios regarding this problem,

1. If you have just installed the Network Camera and are unable to watch the video, check if the heartbeat LED is blinking or the lens cap is removed. If the heartbeat LED is dim, perform the software installation again.
2. If the Network Camera is well installed and you are accessing the Network Camera for the first time using Internet Explorer, adjust the security level of Internet Explorer to allow installation of plug-ins.
3. If the problem still exists after adjusting, and the message over the image window is showing "connecting", the network traffic may be too crowded.

Q What is the plug-in for?

A The plug-in provided by the Network Camera is used to display motion pictures and audio in Internet Explorer. If your system does not allow installation of any plug-in software, the security level of the web browser may need to be lowered. It is recommended that you consult your network supervisors in your office regarding adjustment of the security level. Software installation may be regulated in some offices.

Q Why is the timestamp different from the system time of my PC or notebook?

A The timestamp is based on the system time of the Network Camera. It is maintained by a real-time clock inside and can be automatically synchronized with the time server if the Network Camera is connected to the Internet and the function is enabled.

Differences of several hours may result from the time zone setting.

Q Can I install it on ceiling?

A Yes. There are flip and mirror options in video configuration page to correct the images for upside down installation.

Q The image is not clear enough.

A Rotate the lens to adjust the focus after the Network Camera is installed in the proper position. The image settings and white balance can be fine tuned to achieve the best visual effect. Also notice the power line frequency must match the local utility to synchronize and minimize the effect of flickering florescent lights.

Q Why does the image not refresh regularly?

A Some anti-virus programs filter the received web content. It takes time to perform data examination and affect the streaming application such as the Network Camera. However it only affects the HTP mode of the Network Camera. If the network allows only HTTP mode, disable the web filtering function of the anti-virus program temporarily. During the period, users should be aware of the risk of malicious network activity.

Q I have opened motion detection windows but it cannot work.

A If the motion detection windows are setup and names are given, check to see if the function is checked at the first line. While it is enabled, adjust the sensitivity and percentage to monitor the level indicator for best results.

Q I cannot hear any sound while watching.

A If there is "V_ONLY" shown above the image, click on connection type to uncheck "Disable audio". If there is "V" shown instead of "AV", the sound card in your PC may not properly installed. If "AV" is shown, check the audio source of the Network Camera.

Q How many users are allowed to watch the Network Camera at the same time?

A Too many users requesting the real-time multimedia content will jam the network. For best results, the Network Camera is designed to accommodate maximum ten (10) users to watch and listen to the Network Camera at the same time. For a larger number

of users, it is recommended to build another web server to host the retrieving contents from the Network Camera.

Q How fast is the video rate of the Network Camera?

A The MPEG4 codec engine can process 30 frames per second internally. However the total performance is subject to many coefficients as follows:

1. Network throughput,
 2. Bandwidth share,
 3. Number of users,
 4. The complicated/detailed objects and movement in view,
 5. The level of your PC or notebook computer that is responsible for displaying images.
- In general, the transfer rate in a general local network environment can achieve over 200 kilobytes per second and approximately 10 to 20 pictures per second from a regular environment.

Q How can I keep the Network Camera as private as possible?

A The Network Camera is designed for surveillance purposes and has many flexible interfaces. The user authentication and special confirmation in installation can keep the Network Camera from unauthorized access. You may also change the HTTP port to non-public number. The demo account is good to separate guests from normal users and thus you can easily block guests anytime. You can check the system log to examine any abnormal activities and trace the origins.

Q Why can I not access the Network Camera when I setup some options in the application?

A Since the Network Camera is a "network device", any incorrect network settings will make it unreachable. If this happens, restore the factory default settings following the procedures in Appendix A.

C. URL commands of the Network Camera

For some customers who already have their own web site or web control application, the Network Camera can be easily integrated through convenient URLs. This section lists the commands in URL format corresponding to the basic functions of the erase Network Camera.

Capture update Snapshot of JPEG image

`/cgi-bin/video.jpg`

The Network Camera will return the most up-to-date snapshot in JPEG format.

Query status of the digital input

`/cgi-bin/getdi.cgi`

The Network Camera will return the status of digital input.

Drive the digital output

`/cgi-bin/setdo.cgi?do=<state>`

The state is either "H", "L". "H" means high that is NC is connected with COMMON and "L" means means low that is NO is connected with COMMON.

For instance, typing [http://192.168.0.201/cgi-bin/setdo.cgi? Do=h](http://192.168.0.201/cgi-bin/setdo.cgi?Do=h) in the address bar of the web browser will command the Network Camera, with IP address of 192.168.0.201, to set digital output to connect to NC with COMMON.

Restore factory default settings

`/setup/restore.cgi`

The Network Camera will automatically restart after restoring factory default configurations.

Restart system

`/setup/reset.cgi`

Restart the Network Camera without warning.

Page URL

The configuration page has a frame layout including an option list frame and an option page frame. Referenced URLs, except for the configuration page, direct users to the option page frame only. Some pages, such as image quality setting and preset setting, are opened in new windows for preview.

Only the Administrator can access these URLs.

| Homepage name | Referenced URL |
|------------------------|----------------------|
| connection type page | /client.html |
| configuration page | /setup/config.html |
| system option | /setup/system.html |
| security option | /setup/security.html |
| network option | /setup/network.html |
| video option | /setup/video.html |
| motion detection | /setup/motion.html |
| image quality option | /setup/image.html |
| application option | /setup/app.html |
| homepage layout option | /setup/layout.html |
| system log | /setup/logfile.html |
| system parameters | /setup/parafile.html |
| set factory default | /setup/factory.html |

System resource URL

There are some images used on the homepage when the homepage layout is in image mode. The Administrator may use the following links to show the images saved in the Network Camera on another page.

| Resource name | Referenced URL |
|-------------------|------------------|
| system logo image | /pic/logo.gif |
| background image | /pic/wallppr.jpg |

General format of command URL

Every configuration can be set through URL with POST method by the Administrator only.

<general format>

URL[?[name=value][&name=value].....]

<method>

POST

<authorized user>

root

System configuration URL

URL: /setup/system.cgi

| NAME | VALUE | DESCRIPTION |
|--------|--|--|
| host | <text string shorter than 15 characters> | system name |
| Ledoff | yes | turn off front LED |
| | no | turn off front LED |
| method | keep | keep date and time unchanged |
| | auto | use NTP server to synchronize |
| | manu | directly adjust date and time |
| date | <yyyy/mm/dd> | year, month and date separated by slash |
| time | <hh:mm:ss> | hour, minute and second separated by colon |
| ntp | <domain name or IP address> | NTP server |
| zone | -12 ~ 12 | time zone, 8 means GMT +8:00 |

Security configuration URL

URL: /setup/security.cgi

| NAME | VALUE | DESCRIPTION |
|----------|--|---------------------------------|
| rootpass | <text string shorter than 15 characters> | change root password |
| username | <text string shorter than 15 characters> | add new user |
| userpass | <text string shorter than 15 characters> | new user's password |
| deluser | <text string shorter than 15 characters> | existing user name |
| action | <blank> | validate demo users with "open" |
| open | yes | grant for demo account |
| | no | prohibit for demo account |
| dido | yes | permission for DIDO access |
| | no | prohibit for DIDO access |

Network configuration URL

URL: /setup/network.cgi

| NAME | VALUE | DESCRIPTION |
|--------|--|-----------------------------------|
| reset | yes | enable installation at next boot |
| | no | disable installation at next boot |
| ip | <IP address> | Network Camera's IP address |
| subnet | <IP address> | subnet mask |
| router | <IP address> | default gateway |
| domain | <text string shorter than 40 characters> | domain name of Network Camera |

| | | |
|-------------|--|---------------------------------------|
| dns1 | <IP address> | primary DNS server |
| dns2 | <IP address> | secondary DNS server |
| smtp1 | <domain name or IP address> | primary SMTP server |
| mailto1 | <string shorter than 80 characters> | mail recipient address |
| smtp2 | <domain name or IP address> | secondary SMTP server |
| mailto2 | <text string shorter than 80 characters> | mail recipient address |
| returnemail | <text string shorter than 80 characters> | return email address |
| ftpp | <number less than 65535> | FTP port |
| ftp1 | <domain name or IP address> | primary FTP server |
| ftppuser1 | <text string shorter than 15 characters> | user name for primary FTP server |
| ftppass1 | <text string shorter than 15 characters> | password for primary FTP server |
| ftppfolder1 | <text string shorter than 40 characters> | upload folder in primary FTP server |
| ftp2 | <domain name or IP address> | secondary FTP server |
| ftppuser2 | <text string shorter than 15 characters> | user name for secondary FTP server |
| ftppass2 | <text string shorter than 15 characters> | password for secondary FTP server |
| ftppfolder2 | <text string shorter than 40 characters> | upload folder in secondary FTP server |
| http | <number less than 65535> | HTTP port |
| controlport | <number less than 65535> | control Channel port |
| videoport | <number less than 65535> | video Channel port |
| audioport | <number less than 65535> | audio Channel port |
| lowband | yes | optimal for the low bandwidth |
| | no | keep the original way |

Video configuration URL

URL: /setup/video.cgi

| NAME | VALUE | DESCRIPTION |
|---------|--|----------------------------------|
| text | <text string shorter than 15 characters> | enclosed caption |
| size | 1 | half |
| | 2 | half x 2 |
| | 3 | normal |
| color | B/W | monochrome |
| | <other than B/W> | color |
| quality | fixb | fix bit rate |
| | <other than fixb> | fix quantization |
| quan | 1 | lowest quality of video |
| | 2 | lower quality of video |
| | 3 | normal quality of video |
| | 4 | higher quality of video |
| | 5 | highest quality of video |
| bitrate | 64000 | set bit rate to 64K bps |
| | 128000 | set bit rate to 128K bps |
| | 256000 | set bit rate to 256K bps |
| | 384000 | set bit rate to 384K bps |
| | 512000 | set bit rate to 512K bps |
| | 768000 | set bit rate to 768K bps |
| | 1000000 | set bit rate to 1000K bps |
| | 1200000 | set bit rate to 1200K bps |
| frame | 1 | set maximum frame rate to 1 fps |
| | 2 | set maximum frame rate to 2 fps |
| | 3 | set maximum frame rate to 3 fps |
| | 5 | set maximum frame rate to 5 fps |
| | 10 | set maximum frame rate to 10 fps |

| | | |
|--------|-----|----------------------------------|
| | 15 | set maximum frame rate to 15 fps |
| | 20 | set maximum frame rate to 20 fps |
| | 25 | set maximum frame rate to 25 fps |
| | 30 | set maximum frame rate to 30 fps |
| flip | yes | flip image |
| | no | normal image |
| mirror | yes | mirror image |
| | no | normal image |

Image quality configuration URL

URL: [/setup/image.cgi](#)

| NAME | VALUE | DESCRIPTION |
|------------|----------------|------------------------------|
| brightness | <-5 ~ 5> | adjust brightness of image |
| contrast | <-5 ~ 5> | adjust contrast of image |
| hue | <-5 ~ 5> | adjust hue of image |
| saturation | <-5 ~ 5> | adjust saturation of image |
| preview | <not required> | not save the parameters |
| restore | <not required> | recall the original settings |
| save | <not required> | save the parameters |

Application configuration URL

URL: /setup/app.cgi

| NAME | VALUE | DESCRIPTION |
|----------|------------------|---|
| emode | <not required> | event mode application |
| smode | <not required> | sequential mode application |
| smethod | mail | upload snapshots by email |
| | ftp | upload snapshots by FTP |
| suffix | <not required> | FTP file with date and time suffix |
| delay | <integer> | seconds delay to detect next event |
| inter | <integer> | seconds delay to capture post-event |
| dihigh | < not required > | set DI high as trigger condition |
| dilow | < not required > | set DI low as trigger condition |
| dirise | < not required > | set DI rising as trigger condition |
| difall | < not required > | set DI falling as trigger condition |
| motion1 | < not required > | set motion window1 as trigger condition |
| motion2 | < not required > | set motion window2 as trigger condition |
| motion3 | < not required > | set motion window3 as trigger condition |
| ioalarm | < not required > | trigger DO when DI condition matched |
| mdalarm | < not required > | trigger DO when motion detected |
| ioupload | < not required > | upload snapshot when DI condition matched |
| mdupload | < not required > | upload snapshot when motion detected |
| sinter | <integer> | seconds interval for sequential mode |
| sbegin | <hh:mm:ss> | time to start sequential mode |
| send | <hh:mm:ss> | time to stop sequential mode |

Homepage layout configuration URL

URL: /setup/layout.cgi

| NAME | VALUE | DESCRIPTION |
|---------|--|-----------------------------------|
| cuslogo | blank | hide logo |
| | def | use default logo |
| | url | use image from URL |
| logourl | <text string shorter than 80 characters> | URL of image for logo |
| linkurl | <text string shorter than 80 characters> | URL to link when clicking on logo |
| cusback | blank | hide background image |
| | def | use default background |
| | url | use image from URL |
| backurl | <text string shorter than 80 characters> | URL of image for background |
| fcolor | <0 ~ 15> | color index for font |
| bcolor | <0 ~ 15> | color index for background |

D. Technical specifications

- System

CPU: Trimedia PN1300
RAM: 8MB SDRAM
ROM: 2MB FLASH ROM

- Networking

Protocol

TCP/IP, HTTP, SMTP, FTP, Telnet, NTP, DNS, DHCP, DRM, DDNS and UPnP

Ethernet

10BaseT or 100BaseT Fast Ethernet

WLAN

2.4GHz 802.11b+ DSSS CSMA/CA
22/11/5.5/2/1Mbps
Coverage: 100M/22Mbps, 150M/11Mbps,
250M/5.5Mbps, 300M/2Mbps, 350M/1Mbps

- Video

Algorithm supported

MPEG4(short header mode)

Features

Adjustable image size, quality and bit rate
Timestamp and text overlay
3 motion detection windows

Resolution

NTSC

Up to 30 frames at 176x120
Up to 30 frames at 352x240

- Camera Specification

1/3 inch color CMOS sensor
640x480
2.5Lux/F1.4
AGC/AWB
Electronic shutter: 1/60 ~ 1/15000 second

- Lens

Standard CS mount type lens, 6.0mm, F1.8

- Audio

24Kbps, 8Kbps(optional)

- Microphone

Omni-directional
Frequency: 50 – 16000Hz
S/N ratio: more than 60dB

- General I/O

1 sensor input(max. 12VDC 50mA)
1 relay output(max. 24VDC 1A, 125VAC 0.5A)

- LED indicator

Dual color status indicator

- Dimension

143.5mm(L) * 88.9mm(W) * 57.2mm(H)

- Weight

NET. 315g

- Power

Consumption: near 8.4W
Universal switching power supply included
Input: 100-240VAC, 50/60Hz, 0.4A
Output: 12VDC, 1.5A

- Operating Environment

Temperature: 0-50°C/32-122°F
Humidity: 95%RH

- Viewing system requirement

Operating system

Microsoft Windows 98SE/ME/2000/XP

Browser

Internet Explorer 5.x or above

