

UNC-W10

Wireless Network IP Camera

User's Guide V1.0

WIRELESS NETWORK IP CAMERA User's Guide

FCC Compliance Statement

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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

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



Wireless Network
IP Camera User Manual
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Important Notice

1. Camera surveillance laws may differ for each country. Please contact the local authorities to avoid any surveillance law violations.
2. Please note that the CMOS lens that comes with the Wireless Network IP Camera can be damaged permanently if the camera lens is exposed to direct sunlight. If your application demands prolonged exposure to sunlight, you should consider equipping it with a sun visor.
3. The Wireless Network IP Camera is not weatherproof. Please be aware of environmental specifications included in the manual. For outdoor use, please use a weatherproof case to protect the Wireless Network IP Camera from water, moisture, or temperature (higher or lower than specification).
For Wireless Network IP Camera cleaning, gently wipe with clean dry cloth.
4. Be sure to use only the DC adapter that is provided with your camera. Connecting the Wireless Network IP Camera directly to AC current may cause electric damages to the Camera.
5. Be cautious when handling Wireless Network IP Camera. Physical shocks may cause serious damage.
6. Be sure to mount the Wireless Network IP Camera securely to avoid any human injuries. Please keep the Wireless Network IP Camera out of reach of children.
7. If Wireless Network IP Camera does not operate properly, please contact the closest local Wireless Network IP Camera distributor for after sales service. In all cases, you are prohibited to disassemble the product. If so, INTELLINET ACTIVE NETWORKING is not responsible for malfunction or service warranty.

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PRODUCTION OVERVIEW

About Wireless Network IP Camera



The Wireless Network IP Camera is able to connect directly to the Ethernet or Fast Ethernet network and also supported by the wireless transmission based on the IEEE802.11b standard. It is different from the conventional PC Camera, the Wireless Network IP Camera is as standalone system with built-in CPU and Web-based solutions providing a low cost solution that can transmit high quality video images for monitoring. The wireless Network Camera can be managed remotely, accessed and controlled by any PC/Notebook over the Intranet or Internet via a web browser. The simple installation procedures and web-based interface offers easy integration to your network application environments coupled with many applications such as remote monitoring for a cost-effective solution.

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Main Features and Benefits

Convenient Operation

The Wireless Network IP Camera is a standalone system with built-in CPU requiring no special hardware or software such as PC frame grabber cards. The Wireless Internet Camera supports both Active X mode for Internet Explorer and JAVA mode for Internet Explorer and Netscape Navigator. Therefore, all that is required is a common web browser, such as Microsoft Internet Explorer 4.x or above.

Open Standards

The Wireless Network IP Camera supports TCP/IP networking, SMTP e-mail, HTTP and other Internet-related protocols; the Wireless Network IP Camera can be used in a mixed operating system environment with Windows, Unix, Mac and OS/2. It integrates easily into other www/Intranet applications and CGI scripts.

Wired and Wireless Network Support

The Wireless Internet Camera supports both wired and wireless transmission providing the advantage of mobility, flexibility and high-speed of wireless LAN based technology IEEE 802.11b to transform the Wireless Internet Camera into a total solution for your network. There are three modes available configured from the slide on the rear panel.

- Local Area Network (Ethernet / Fast Ethernet) Only
- Local Area Network (Ethernet / Fast Ethernet) and Wireless Local Area Network (802.11b)
- Wireless Local Area Network (802.11b) Only

Simple Administration

Using a standard web browser, you can configure and manage the Wireless Network IP Camera directly from its own embedded web pages. The embedded operating system is upgradeable through the network; please check with your local INTELLINET ACTIVE NETWORKING dealer for firmware upgrades.

External Devices

The auxiliary Input/Output Connector on the camera allows you to connect your Wireless Network IP Camera to a variety of external devices; such as IR-sensors, switches, and alarm relays.

Security

Your Wireless Network IP Camera includes a self-contained web server, which means that digital images can be secured like any other Internet host. Your Network Administrator, using the unit's

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security settings in combination with an organization's Internet firewall, normally implements data protection. The Administrator can decide whether individuals, groups, or the whole world may access the camera. The Wireless Network IP Camera supports multi-user password protection

Compression and Performance

With an adaptive frame rate dependent on the image and lighting conditions, the Wireless Network IP Camera delivers JPEG images at up to 30 images per second.

Broad Range of Applications

With today's high-speed Internet services, the Wireless Network IP Camera can provide the ideal solution for live video images over the Intranet and Internet for remote monitoring. The Wireless Network IP Camera allows remote access from a web browser for live image viewing and allows administrator to manage and control the Wireless Network IP Camera anywhere and any time in the world. Apply the Wireless Network IP Camera to monitor various objects and places such as homes,, offices, banks, hospitals, child-care centers, amusement parks and other varieties of industrial and public monitoring. The Wireless Network IP Camera can also be used for intruder detection, capture still images for archiving and many more applications.

Free Application Software

IP installer – for quick installation

Multi-Viewer for viewing 4 cameras

PDA Viewer – for viewing the camera on Windows CE PDA devices.

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System Requirement

Network

10Base-T Ethernet or 100Base TX Fast Ethernet

Wireless Local Area Network

IEEE802.11b Wireless LAN

Recommended PC or Notebook to Access the wireless Network IP Camera.

System requirement:

CPU : Pentium II, 266 MHz or above

Memory Size : 32 MB (64MB recommended)

VGA card resolution : 800x600 or above

Web Browser:

Internet Explore 5.0 or above (Active X & JAVA Mode-Image View for Windows OS and JAVA
Mode – Image View for other OS)

Netscape 6.0 or above (JAVA Mode – Image View)

Multi-View Applications:

Support OS: Win 98, Win 98 SE, Win 2000, Win Me, Win XP

System requirement for Multi-View:

CPU : Pentium III, 450 MHz or above

Memory Size : 128 MB (256MB Recommended)

VGA card resolution : 800x600 or above

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PHYSICAL DESCRIPTION

Contents

Carefully remove all items from the package. In addition to this User's Guide, be certain that you have:

- ◆ One Wireless Network IP Camera (MNC-W10)
- ◆ Two External Wireless Antenna
- ◆ One Installation CD-ROM
- ◆ One Quick Installation Guide
- ◆ One Printed Manual
- ◆ One AC Power adapter suitable for your country's electric power
- ◆ One Camera Stand

*** If any item is missing, or if you find any damage or mismatch, promptly contact your dealer for assistant.**

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Top view and Description



Image Capture LED (Red): The Image Capture LED flashes when users are accessing the camera, it flashes once when an image is being captured or saved.

Operating Status LED (Green): This LED indicates the Wireless Network IP Camera's operating status. Once power is supplied, it is on for the first 15-20 seconds and then it blinks once every second as long as the power is connected properly.

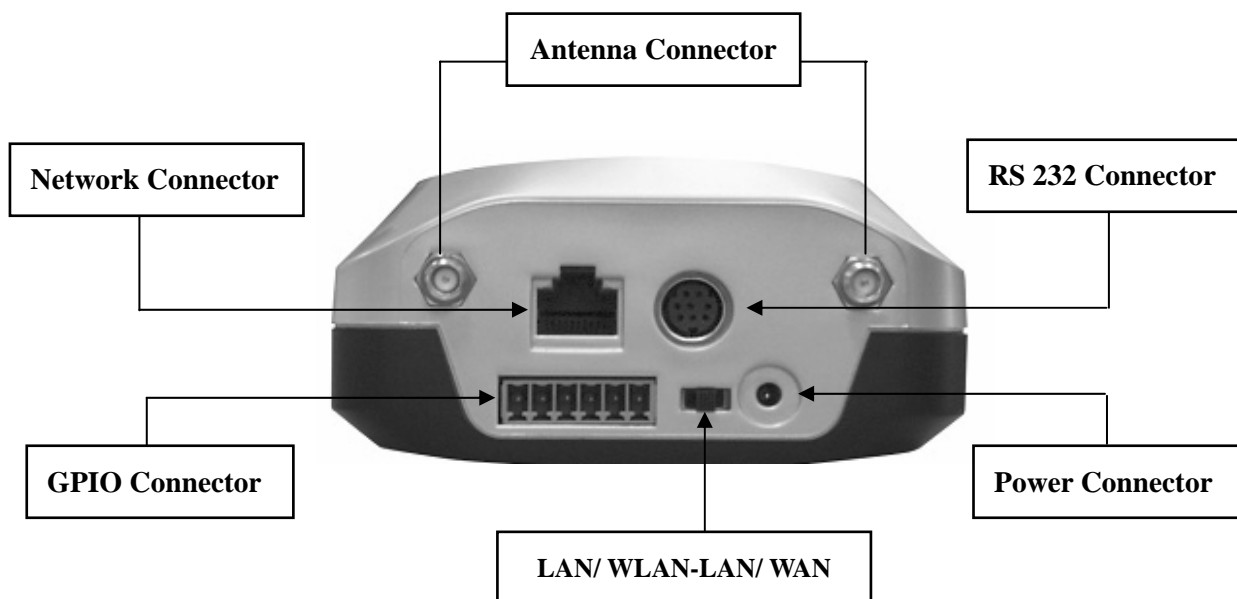
Network Activity LED (Green): This LED indicates network activity.

NOTE

1. After connecting the Ethernet network, the status led (Green) on the very right side on camera should be turn on. If not, check your network connection.
2. The slide switch on the rear panel is positioned to LAN/WAN or WLAN setting for the wireless communication to take effect.

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Rear View and Description



Power Connector: Only use the AC Adapter provided by your dealer to avoid any possible damage from electric shock.

Network Connector: Connect 10baseT Ethernet or 100base TX Fast Ethernet cable.

GPIO Connector: To connect external devices such as infrared Sensors, alarms, or motion detectors (please refer to **Appendix F – The I/O Connector**).

RS232 Cable Connector: To connect external devices such as external pan/tilt/zoom mechanism, or directly to a serial port for configuration (please refer to **Appendix G - RS 232 Cable**).

IMPORTANT

1. After connecting the Ethernet network, the status led (Green) on the very right side on camera should be turn on. If not, check your network connection.
2. Connect wireless IP Camera to Ethernet network. The default position of camera's network switch is at center position it means both network i.e. user can use camera in any network.

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INSTALLATION SUMMARY

1. Connect Ethernet and Power to the Wireless Network IP Camera.
2. Install and launch the "IP-Installer"
3. Assign an IP address and network settings
4. Securely mount the Wireless Network IP Camera.
5. Adjust the Focus

WIRELESS NETWORK IP CAMERA Quick & Easy Setup

Mount Securely

Make Connections

Launch IP Installer On Client PC

Power
(Steady Red)
Connected (Flashing Green)
Ready (Blinking Green)
3s Use (Flashing Red)

- To set up Wireless LAN, first connect via network cable
- Enter administrator's ID and password (default is "admin")
- Enter your network settings
- Click "Change Network Configurations"
- ...and you're done!

IP-Installer

Serial Number	MAC Address	IP Address
IPV4: 100.0.0.20	00:00:00:00:00:00	192.168.1.201

Admin's ID:
Admin's Password:
IP Address:
Gateway Address:
Subnet Mask Address:
Web Server Address:
Server IP Address:

Network IP Camera
MicroWeb Co., Ltd.

www.micro-web.co.kr

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ASSIGNING IP ADDRESS & ACCESSING WIRELESS NETWORK IP CAMERA'S HOMEPAGE

Assigning IP Address

To access the Wireless Network IP Camera, you need to assign an appropriate network IP address.

IMPORTANCE

- Please use the newly assigned IP address, do NOT use any occupied IP address or the default or example IP address.
- It is highly recommended that you assign an IP address before placing the Wireless Network IP Camera in a remote place or remote network.

• Network IP Address:

A network IP address is an identification code for computers or devices on a TCP/IP network. Networks using TCP/IP protocol route messages based on the IP address of the destinations within a closed Network. IP addresses can be assigned at random as long as each one is unique. However, connecting a private network to the Internet requires using registered, public IP address to avoid duplicates.

IP address can be acquired from a network administrator or an Internet service provider.

• MAC (Ethernet) Address (Media Access Control Address)

MAC address is a hardware identification code that uniquely identifies each device of a network. The MAC layer interfaces directly with the network media. Consequently, each type of network media requires a different MAC layer. The MAC address of Wireless Network IP Camera is a 12-digit number. A unique MAC address can be found on the label at the bottom of each Network IP Camera.

NOTE

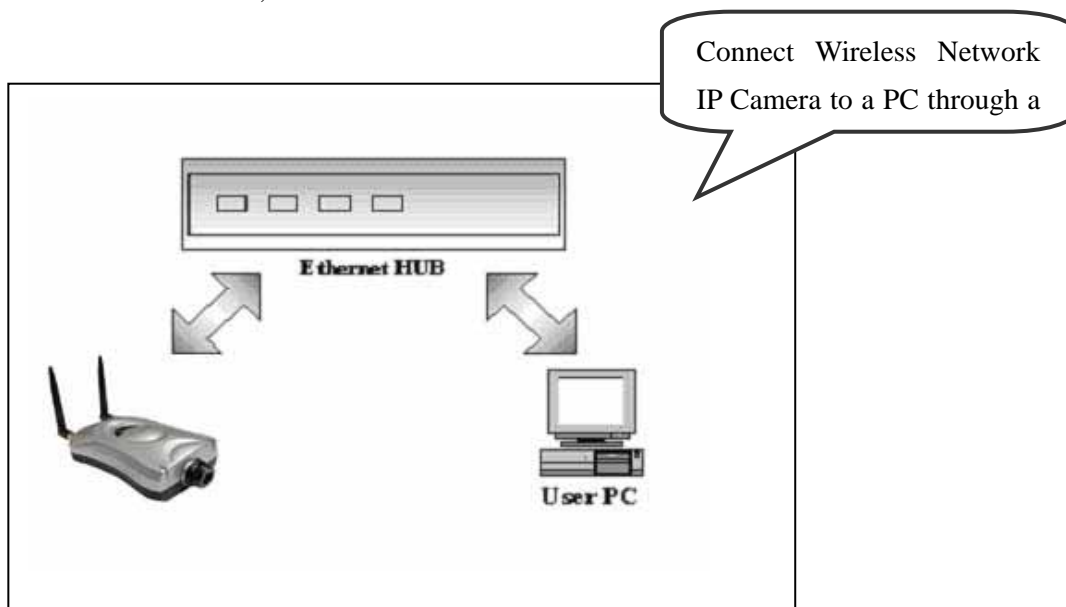
Please install the IP address installation program (IP Installer.exe) on a PC that is connected to the same local network as the Wireless Network IP Camera.

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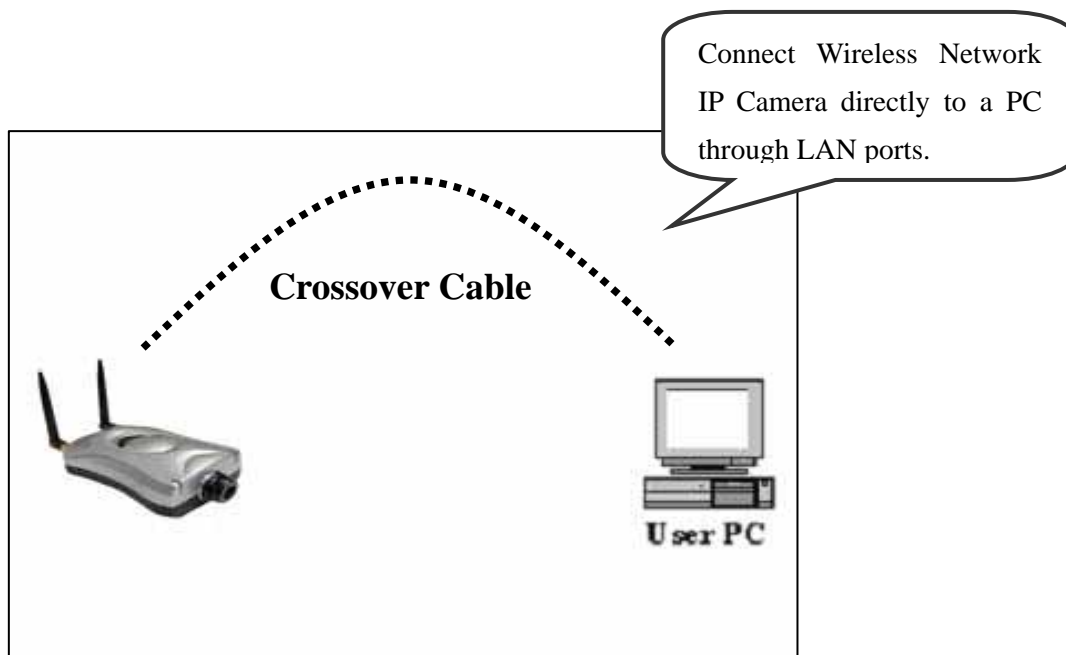
Assigning IP address by using IP installer

Connecting Wireless Network IP Camera to PC

1. Connecting with direct cable (Non Crossover UTP cable). Used when connecting the Wireless Network IP Camera to a switch, hub or router.



2. Connecting with Crossover UTP Cable. Use the crossover cable to directly connect the Wireless Network IP Camera to a PC.



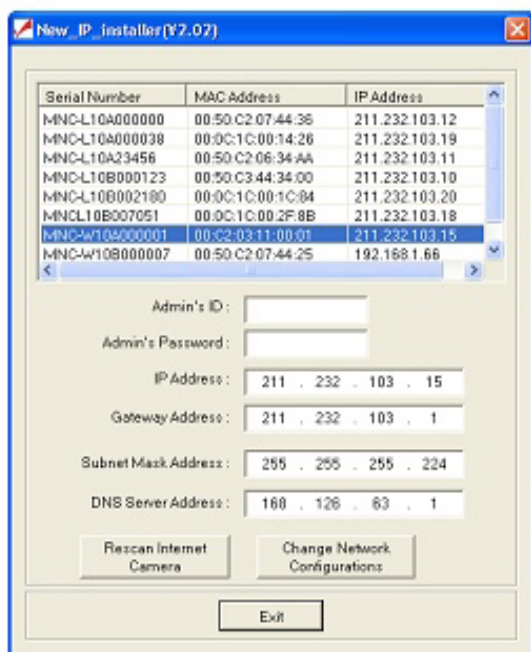
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Using IP Installer

To install an IP address, you should use the IP Installer provided with Wireless Network IP Camera.

You can download its program through the web site (<http://intellinet-network.com>)

Note : System required for IP installer; Microsoft Windows9X/NT/2000



- ① Execute the IP Installer after the Network IP Camera completes its booting (wait until the operating LED blinks every second).
- ② When the IP Installer is executed, the panel shows every Wireless Network IP Camera connected on the local network.
- ③ From the Wireless Network IP Cameras listed, select one to assign a new IP address (every Wireless Network IP Camera has a factory default IP address).

Note: The MAC Address can be found on the underside label of the Wireless Network IP Camera. To choose a Wireless Network IP Camera, click on its list.

Enter the Administrator ID and Password in the blank (Default Administrator ID and Password are all “**admin**”) to assign (or change) IP Address for the Wireless Network IP Camera and set up.

Enter the IP address, Gateway address, Subnet Mask address, DNS Server address and Server IP address that are assigned from network administrator. (When the addresses are not assigned properly, you cannot access the Wireless Network IP Camera).

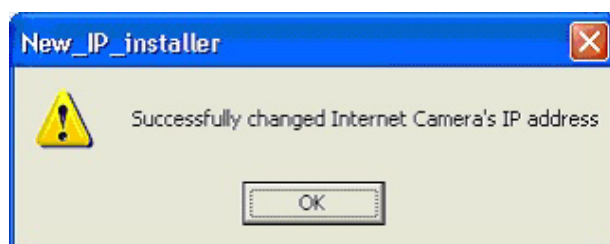
The Server IP Address represents an IP address of a PC, which is being used to execute the upgrade program when updating the Wireless Network IP Camera (please refer to **Updating Firmware**).

After entering all addresses for the Wireless Network IP Camera, click the “Change Network

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Configurations” button.

The message shows up if all the information is set up properly. Then click the “OK” button.



NOTE

After changing Network Configuration, It will take a little time to reboot the Wireless Network IP Camera so that you may access the Wireless Network IP Camera's Homepage.

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Assigning IP Address by using Hyper Terminal

You can assign an IP address by using Hyper Terminal. In this case, you should configure Hyper Terminal first

Configuring Hyper Terminal

Hyper Terminal is a basic program for Windows 9x/NT/2000. A PC can communicate with external devices through the serial port by using this program. The steps you should take to set the Hyper Terminal are as follows in the case of Windows 2000 OS:

- ① Start → Programs → Accessories → Communications → Hyper Terminal. Select one of the icons and then enter an appropriate name in the box.

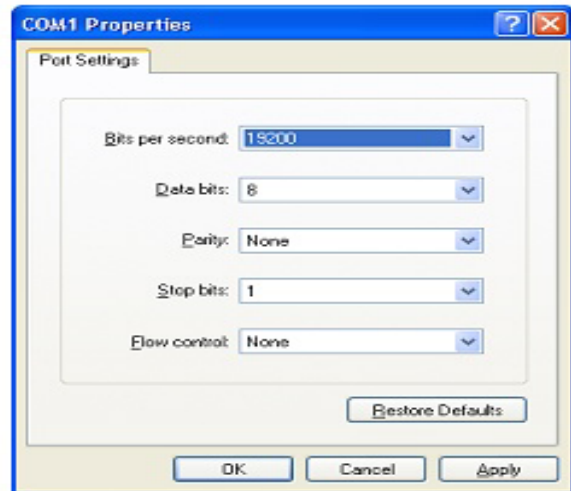


- ② Select a serial port of PC, then click “OK” button. (Usually COM1 or COM2 is recommended)

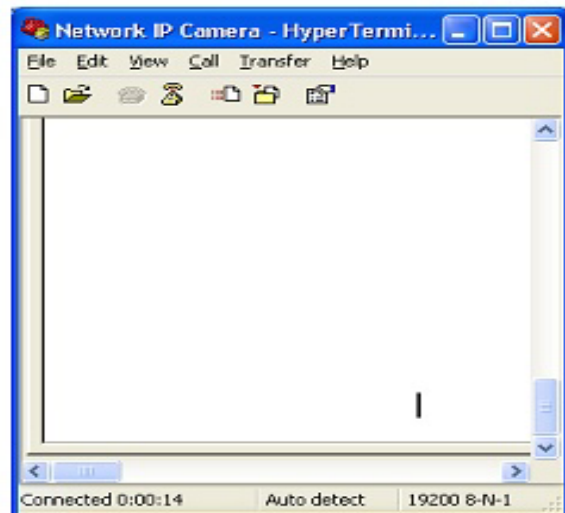


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- ③ Configure bit/sec as 19200 and leave other settings at the default values.



- ④ The panel shows up like this image when configured properly. (If it doesn't, please try again from beginning)

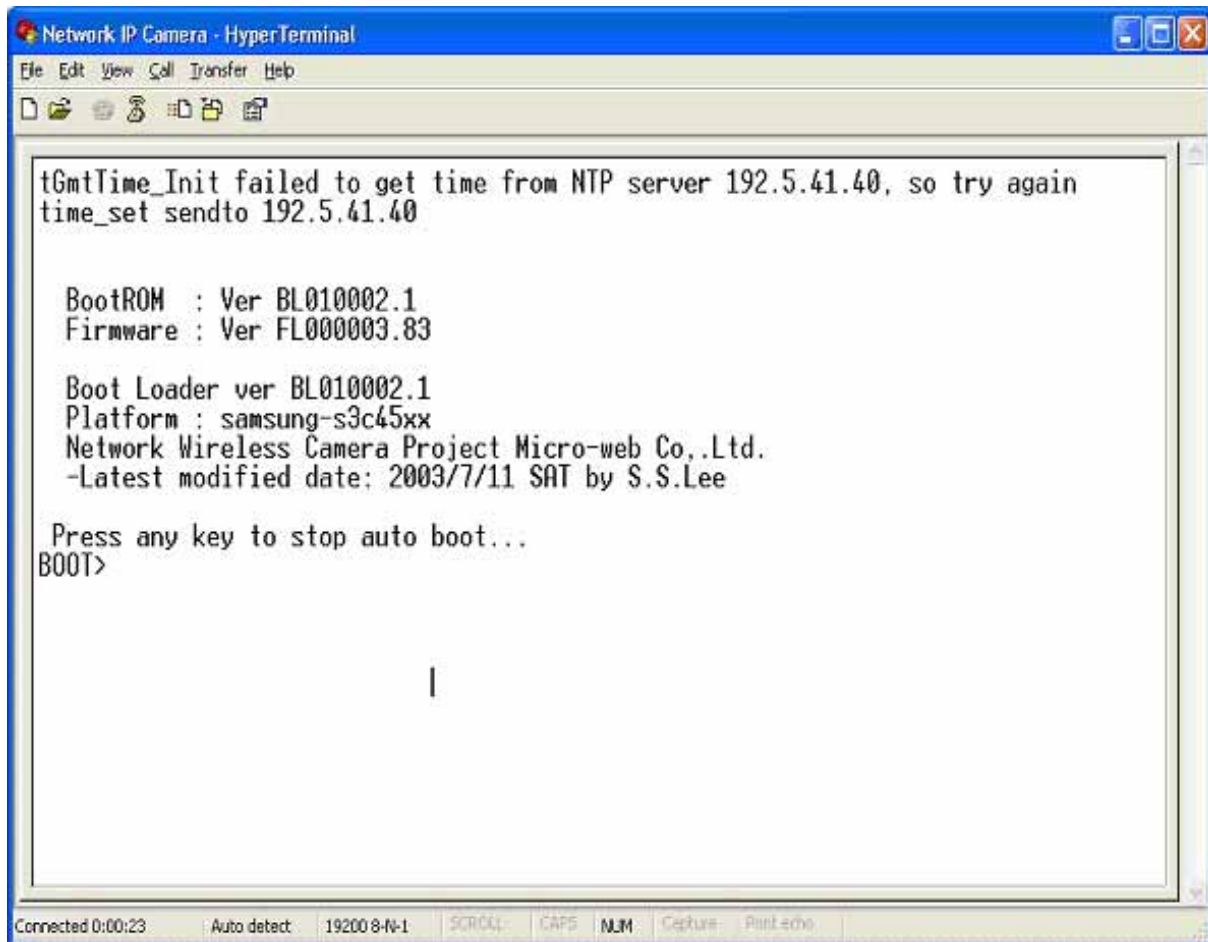


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Assigning IP Address

Follow these steps to assign an IP address using Hyper Terminal

1. Execute "Hyper Terminal" on your PC
2. Connect RS232 Cable to the serial port of PC that you have selected in Chapter 4.3.1 - Configuring Hyper Terminal and the Wireless Network IP Camera serial port while Hyper Terminal is executed.
3. Supply power to the Wireless Network IP Camera.
4. A count down will start with the message "Press any key to stop auto-boot."
5. Press any key and then "Boot" Prompt shall appear as below.



```
Network IP Camera - HyperTerminal
File Edit View Call Transfer Help
tGmtTime_Init failed to get time from NTP server 192.5.41.40, so try again
time_set sendto 192.5.41.40

BootROM : Ver BL010002.1
Firmware : Ver FL000003.83

Boot Loader ver BL010002.1
Platform : samsung-s3c45xx
Network Wireless Camera Project Micro-web Co.,Ltd.
-Latest modified date: 2003/7/11 SAT by S.S.Lee

Press any key to stop auto boot...
BOOT>
|

Connected 0:00:23 Auto detect 19200 8-N-1 SCROLL CAPS NUM Capture Print Echo
```

6. You can see Network Configuration while [Boot] Prompt is running by pressing 'p' key again.

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```
Network IP Camera - HyperTerminal
File Edit View Call Transfer Help
BootROM : Ver BL010002.1
Firmware : Ver FL000003.83
Boot Loader ver BL010002.1
Platform : samsung-s3c45xx
Network Wireless Camera Project Micro-web Co.,Ltd.
-Latest modified date: 2003/7/11 SAT by S.S.Lee
Press any key to stop auto boot..
BOOT> b2006worldcup
ADMIN> m 00:0c:1c:00:2f:8c
ADMIN> s mncl10b007052
ADMIN> p
Serial Number: MNCL10B007052
MAC Address: 00:0c:1c:00:2f:8c
Boot Model: 1:Auto by flash, 2:Auto by tftp, 3:Manual : 1 |
Internet Address: 211.232.103.18
Network Mask: 255.255.255.224
Default Gateway: 211.232.103.1
TFTP-Server Address :192.168.1.3
Source Address in ROM: 0x1010000
Target Address in RAM: 0x8000
File Size of Byte: 0
File Name: image.ram.microweb
ADMIN>
```

Here, inet on ethernet (e), host inet (h) and gateway inet (g) values are network configuration values. You should change these values in most case. If you don't know what value you should assign, refer to the network administrator.

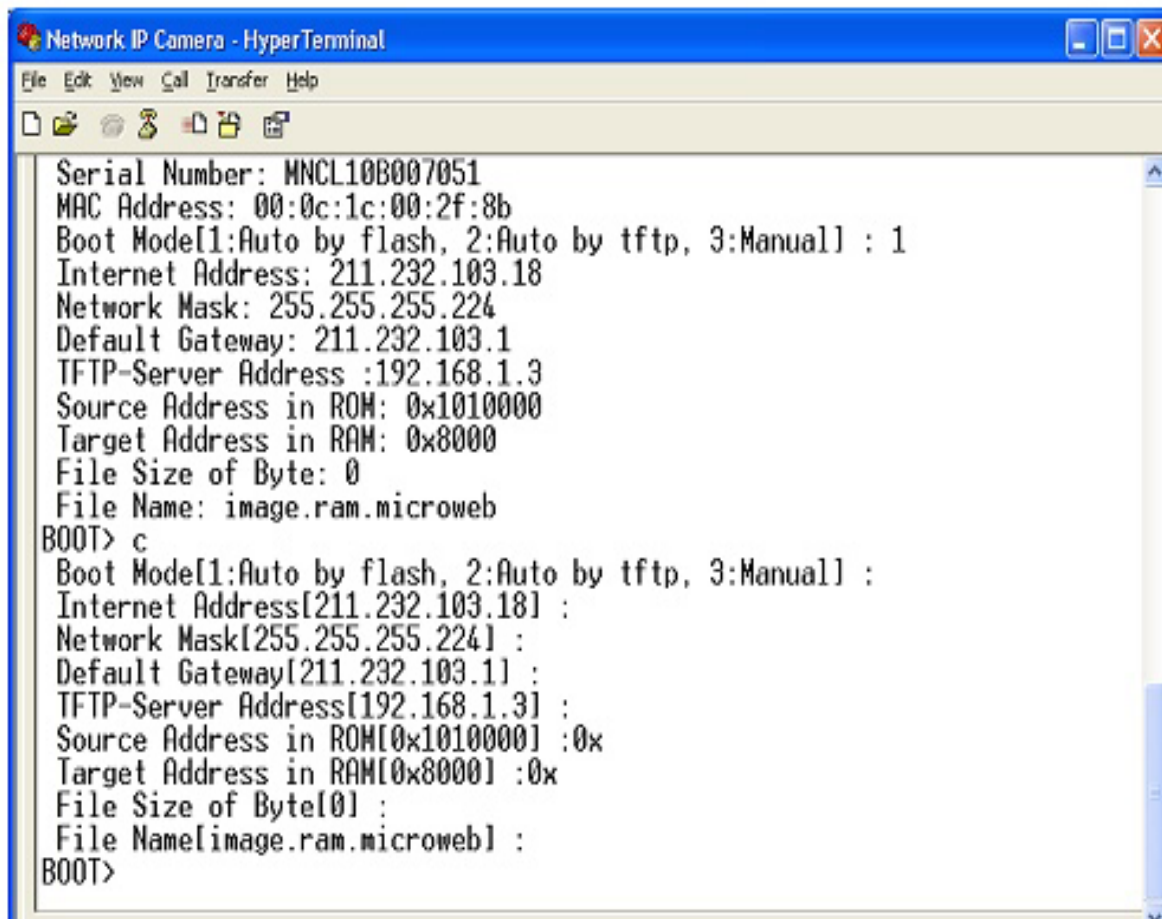
Inet on ethernet (e) is IP address and subnet mask address of Wireless Network IP Camera. IP address and subnet mask addresses are separated by colon (:). For example, IP address is represented by decimal numbers delimited by dot (.) like '192.168.1.27'. Hexadecimal numbers like 'fffff00' in the case of '255.255.255.0' represents subnet mask address. Note that the numbers of subnet mask value are not delimited by dot. See the example in the above picture.

Host inet (h) is the address to which Wireless Network IP Camera tries to connect to upgrade its firmware program in flash memory. Wireless Network IP Camera first search this host on the network on booting sequence. For more information on Wireless Network IP Camera upgrade, refer to "E. Updating Wireless Network IP Camera's Newly upgraded Program".

Gateway inet (g) is the gateway address of Network Camera

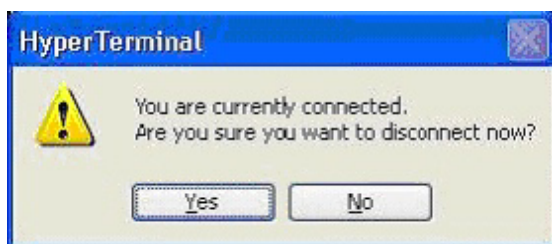
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7. Type 'c' key to change the network configuration in [Boot] prompt. If you type 'c' key, Wireless Network IP Camera shows you the information you can change its values and the current assigned values. You can change as the following figure.



```
Network IP Camera - HyperTerminal
File Edit View Call Transfer Help
Serial Number: MNCL10B007051
MAC Address: 00:0c:1c:00:2f:8b
Boot Mode[1:Auto by flash, 2:Auto by tftp, 3:Manual] : 1
Internet Address: 211.232.103.18
Network Mask: 255.255.255.224
Default Gateway: 211.232.103.1
TFTP-Server Address :192.168.1.3
Source Address in ROM: 0x1010000
Target Address in RAM: 0x8000
File Size of Byte: 0
File Name: image.ram.microweb
BOOT> c
Boot Mode[1:Auto by flash, 2:Auto by tftp, 3:Manual] :
Internet Address[211.232.103.18] :
Network Mask[255.255.255.224] :
Default Gateway[211.232.103.1] :
TFTP-Server Address[192.168.1.3] :
Source Address in ROM[0x1010000] :0x
Target Address in RAM[0x8000] :0x
File Size of Byte[0] :
File Name[image.ram.microweb] :
BOOT>
```

8. When you terminate hyper-terminal program after you changed network configuration, hyper-terminal program asks you whether you save the session. If you save the session, you can re-use the hyper-terminal. To re-use the session you saved, click Start --> Programs --> Accessories --> Communications --> HyperTerminal --> Wireless Network IP Camera.. ht in the case of Windows 2000.



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Accessing Wireless Network IP Camera Homepage

After assigning Wireless Network IP Camera an IP address, you may access Wireless Network IP Camera and monitor real-time image on Internet. You may configure Wireless Network IP Camera within its own pages through any standard Web browser on local or remote network.

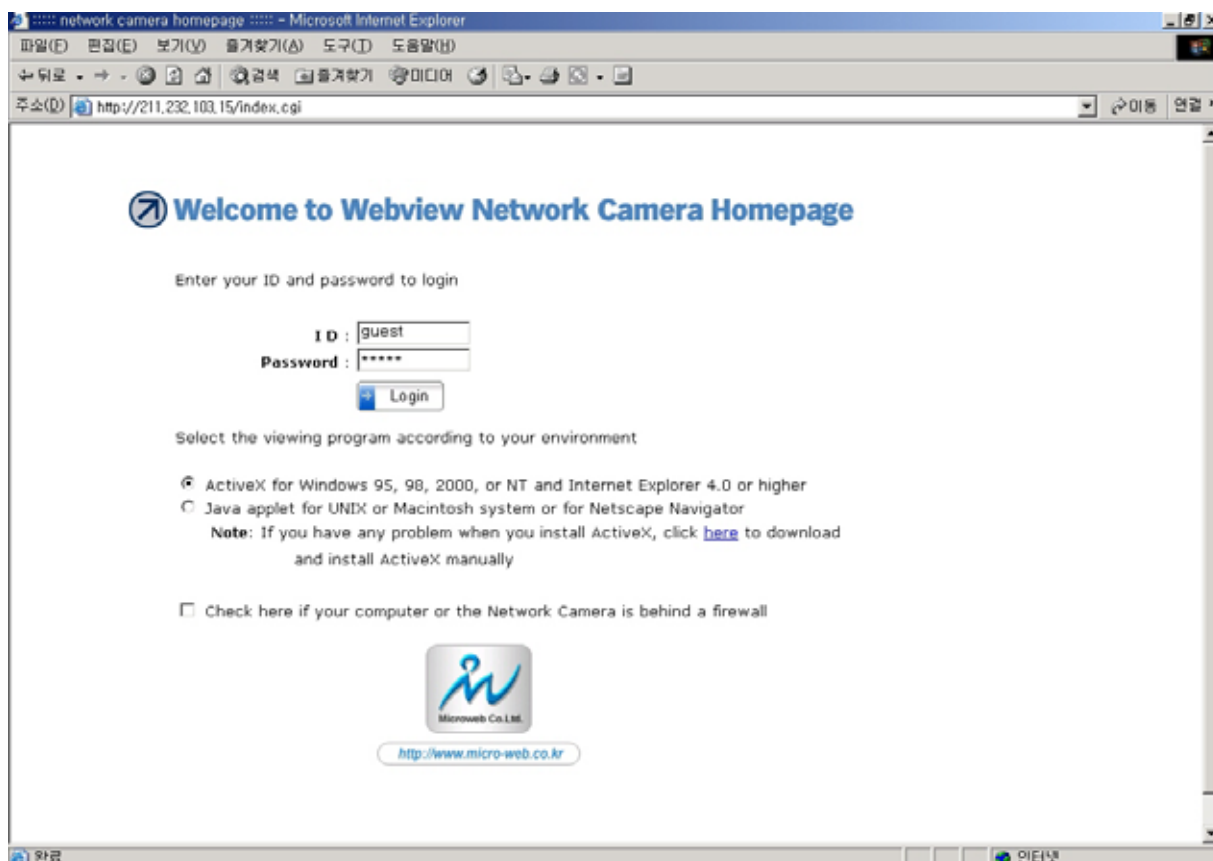
Starting Web Browser

Start your web browser by entering your Wireless Network IP Camera's IP address. And then you can see a build-in homepage.

Address)

Login Page

This page is to enter the Wireless Network IP Camera's built-in Homepage. To access this page, you may be required proper ID and Password.



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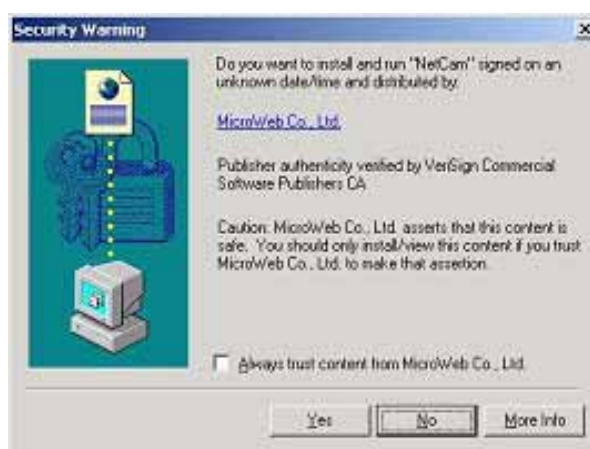
1. ID and Password

If you key in a user ID and password, you can access the camera to monitor real-time video.

With administrator's ID and password, you can access real-time video with administrator's authority. The default value of both user ID and password are "admin" and the administrator may change it at the Administrator Menu. Each ID and Password must be composed of no more than 10 bytes (e.g. 10 English letters). For the guest, the Wireless Network IP Camera has default ID and Password "guest", but guest can't configure administrator tools at all.

2. Behind Firewall

If your PC is connected on a network with a firewall, you may not view real time video properly because the video TCP port is blocked behind a firewall. If you are behind a firewall, you may view real time video through the Wireless Network IP Camera's Server Push Viewer that transmits video through web TCP port instead of the video TCP port. By clicking on "Behind Firewall" menu, you may directly connect to the Server Push Viewer when you access the Wireless Network IP Camera homepage.



3. Active-X for MS Explorer Users

For all Microsoft Explorer users, the Active-X Control program is required. The program will be installed automatically when a user accesses the Wireless Network IP Camera. For Active-X installation on your PC, just click 'Yes' to the question "do you want to install the program" on the pop-up window. If you cannot see images after installation, you should download and install Active-X manually.

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Active-X installation manually

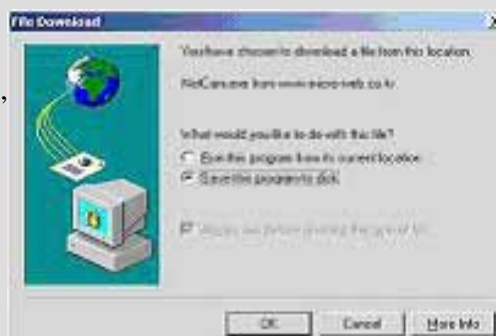
If Active-X program fails to be installed automatically, you may install it manually. The manual installation program is to be downloaded by clicking 'here' as follows:

Note: If you have any problem when you install ActiveX, visit <http://www.intellinet-network.com/driver/NetCam.exe> to download and install ActiveX manually.

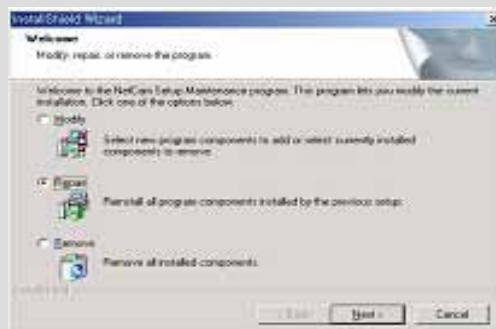
Please follow the instructions to install Active-X manually.

Please follow the instruction to install Active-X manually.

- ① When the panel appears, press "open" if you want to install right away.



- ② Install Shield Wizard appears after finishing download.
- ③ Check "Repair" then click "Next"



- ④ When installation is completed, press "Finish"
- ⑤ Go back to the Login page to access Camera homepage.



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Java Applet viewer is for a user who access Wireless Network IP Camera through a computer that does not Utilize MS Windows (OS) such as Macintosh computer, etc. Java Applet viewer is run with java virtual Machine that is installed on User's computer.

Macintosh and Unix System

The Wireless Network IP Camera Active-X program is based on MS windows OS. Therefore it is impossible to access Wireless Network IP Camera and monitor real time image through default viewer.

If a user access Wireless Network IP Camera through Macintosh or Unix systems, Wireless Network IP Camera detects that OS is not MS Windows and it operates java based image viewer to show real timimage.

Some functions are not available for Java Applet.

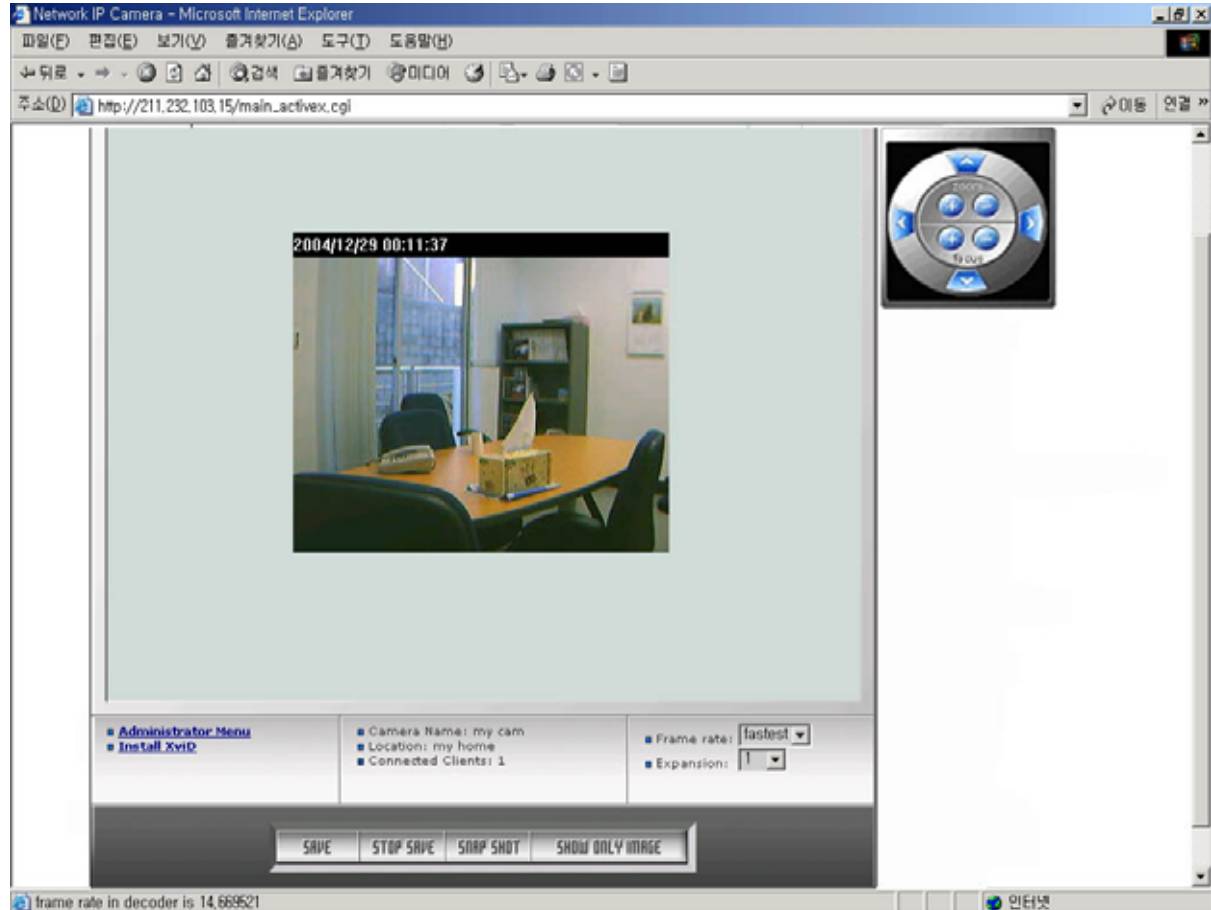
NOTE

It is highly recommended that you select ActiveX viewer for Windows 95, 98, 2000 or NT and Internet Explore 4.0 or higher. If not, choose java applet viewer.

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Wireless Network IP Camera's Homepage

Having completed the login procedure, you now see the Wireless Network IP Camera homepage



1. Connected Client

It show the number of multi access users. (100 multi users can be accessed simultaneously.)

2. Administrator Menu

This button is to access the administration menu. However, only the user who has authority as an administrator can access the page with administrator's ID and Password (**please refer to Configuring Administration Menu**).

3. Logout

WIRELESS NETWORK IP CAMERA User's Guide

4. Save, Stop save, snap shot, show only image

① Save, stop save

Users can save real time images from Wireless Network IP Camera on PC.



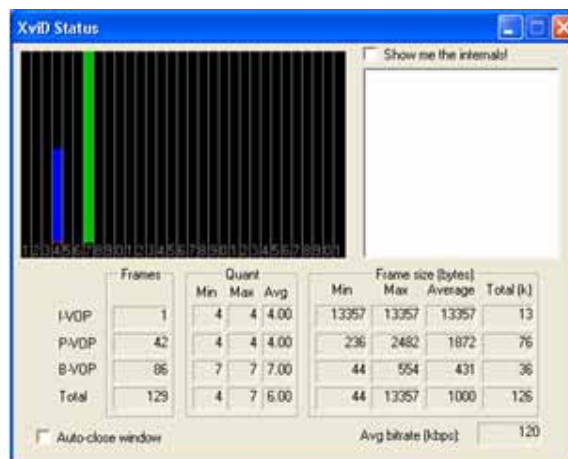
Press 'save' button then select folder that you want to save images. (The image is saved as an AVI file.)

Once it starts to save images, "Saving" message and Xvid Status appear.

To stop saving, press "stop, Save" button.



(Saving Mode)



(Xvid Status)

NOTE

- You may see the saved image by Window Media Player or Real Player.
- Click the "Install Xvid" for AVI saving
- The AVI saving will be split every 20 minutes

For example) file name 2002_04_22_15_00, file name 2002_04_22_15_20...

WIRELESS NETWORK IP CAMERA User's Guide

② Snap Shot

To save only one image, press “snap shot” button and then select a folder.

Save the image as JPG file.

(Default file name dedicate the date and time)



③ Show only image

When you want to see only video panel, Press “show only image”



5. Frame rate

You may choose image transmission speed. If you choose ‘Fastest’, you will get images at the fastest frame rate. The transmission speed depends on your network line’s capacity and PC’s performance

6. Expansion

You may select the image size from 0.5 to 2. This function may be used when you want to expand image size on your PC. (But resolution may not be changed at all)

7. Camera Name

You can set a camera name (please refer to Chapter 6.7 - System Configuration)

8. Location

This shows where the camera is located (please refer to Chapter 6.7 - System Configuration).

9. PTZ Control button

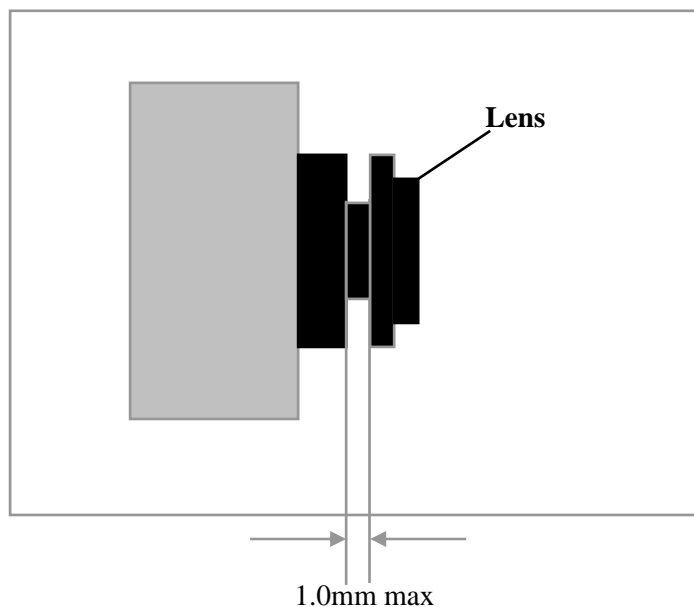
This button is to be activated when the PTZ devices are connected to the Wireless Network IP Camera (please refer to Chapter 6.7 - System Configuration).

ADJUSTING THE CAMERA LENS

Adjusting the Focus

In order for the Focus Assistant to access the full focusing range for your application environment, simply turn the lens in the clockwise or counter clockwise direction; unless you want to replace the lens, it should not be unscrewed more than 1.0mm.

***Adjust the camera focus while reviewing the picture quality on your Web browser.**



NOTE

- ◆ A Good level of focus is normally achievable throughout several planes within the camera's focusing spectrum.
- ◆ Since optimum focusing is dependent upon the camera's field of view, it is important to scan the focusing plane from the closest to furthest perspectives before attempting any fine-tuning

WIRELESS NETWORK IP CAMERA User's Guide

Replacing the Lens

Because Wireless Network IP Camera is designed with a CS-Mount, the lens supplied with your product can be replaced with any standard C or CS lens, typically used within the surveillance industry.

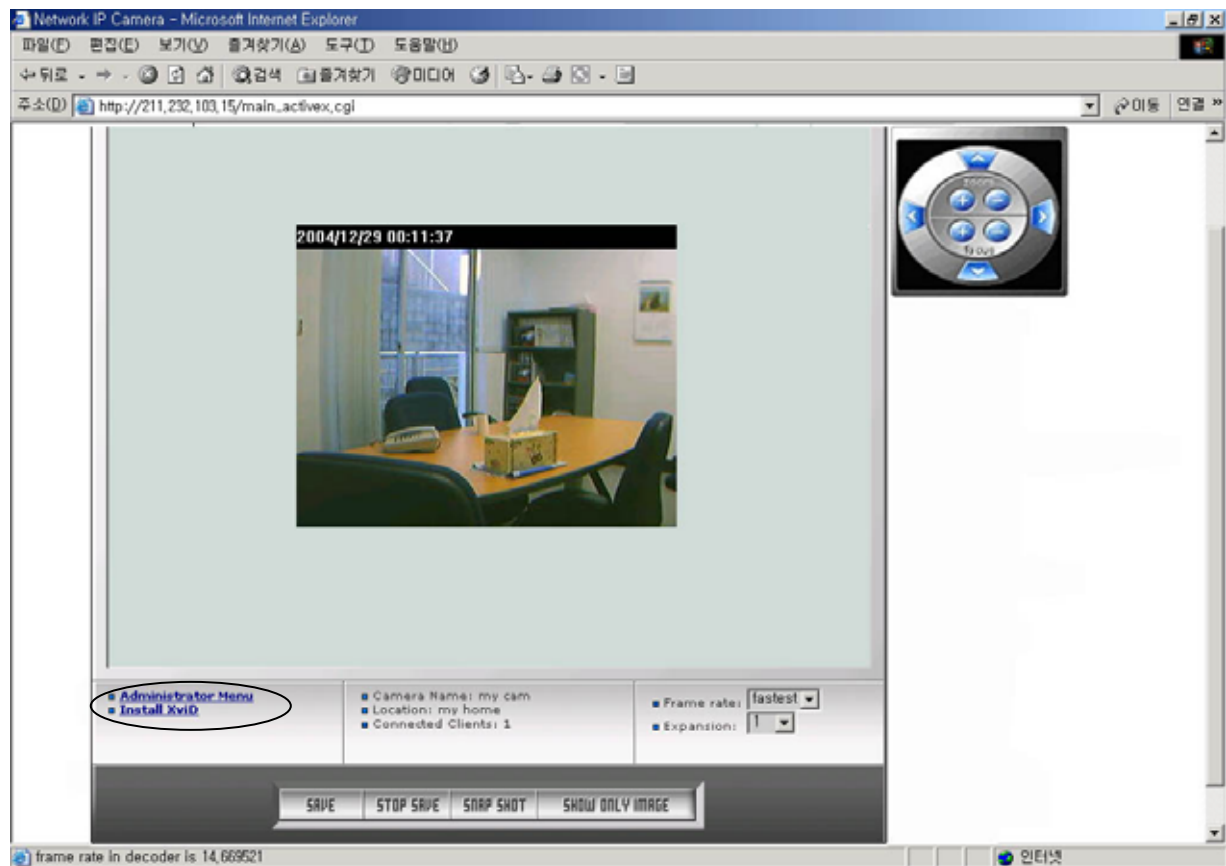
Follow the instructions below to replace the supplied lens with any C or CS type lens:

1. Unscrew Wireless Network IP Camera lens turning the lens in the anti clockwise
2. C-lens only: Attach the new lens to a C-CS Adapter
3. Screw the new lens onto Wireless Network IP Camera. If applicable, adjust the iris according to the prevailing light conditions.
4. Referring to Focusing the Camera under quiescent conditions, on page 29, **Adjusting the focus**.
5. Reload your Web browser and monitor the results from the product Home Page.

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CONFIGURING ADMINISTRATION TOOLS

You can control the configurations of Wireless Network IP Camera by Administrator's Tool.



Only authorized user can access administrator tool. If non-authorized users try to access it, you may see the caution message "You are not an administrator".

You may control all configurations for Wireless Network IP Camera.

Press "**Administrator Menu**".

WIRELESS NETWORK IP CAMERA User's Guide

Administration Menu's Overview

The table below provides a one-step overview of the Administrations Tools:

Image Configuration	To configure compression rate, image size, brightness, contrast, etc.
Network Configuration	To configure camera IP, web server port, image transfer port
Wireless Configuration	To configure wireless setting
User Configuration	To configure user ID & Password
Event Trigger Configuration	To configure event trigger condition, image capture option, trigger output
Time Configuration	To configure date and time
System Configuration	To configure the camera name, location, PTZ and see the system information.
Home	Move to Wireless Network IP Camera homepage

To prevent any unauthorized use of Wireless Network IP Camera access is strictly restricted to defined users only. Administrator(s) has exclusive access to the product Administration Tools and can determine the registration, and access rights for all users.

Enter the default ID and Password, then click **“SUMIT”**

(Default ID and Password are all “admin”)

CAUTION

Although, the Administrator's default username and password (set to “admin” for all) can be used for logging in to the unit for the first time, it is highly recommended that you change the this password for your Wireless Network IP Camera as soon as possible – since all Wireless Network IP Camera products are shipped with the same ID and Password as default.

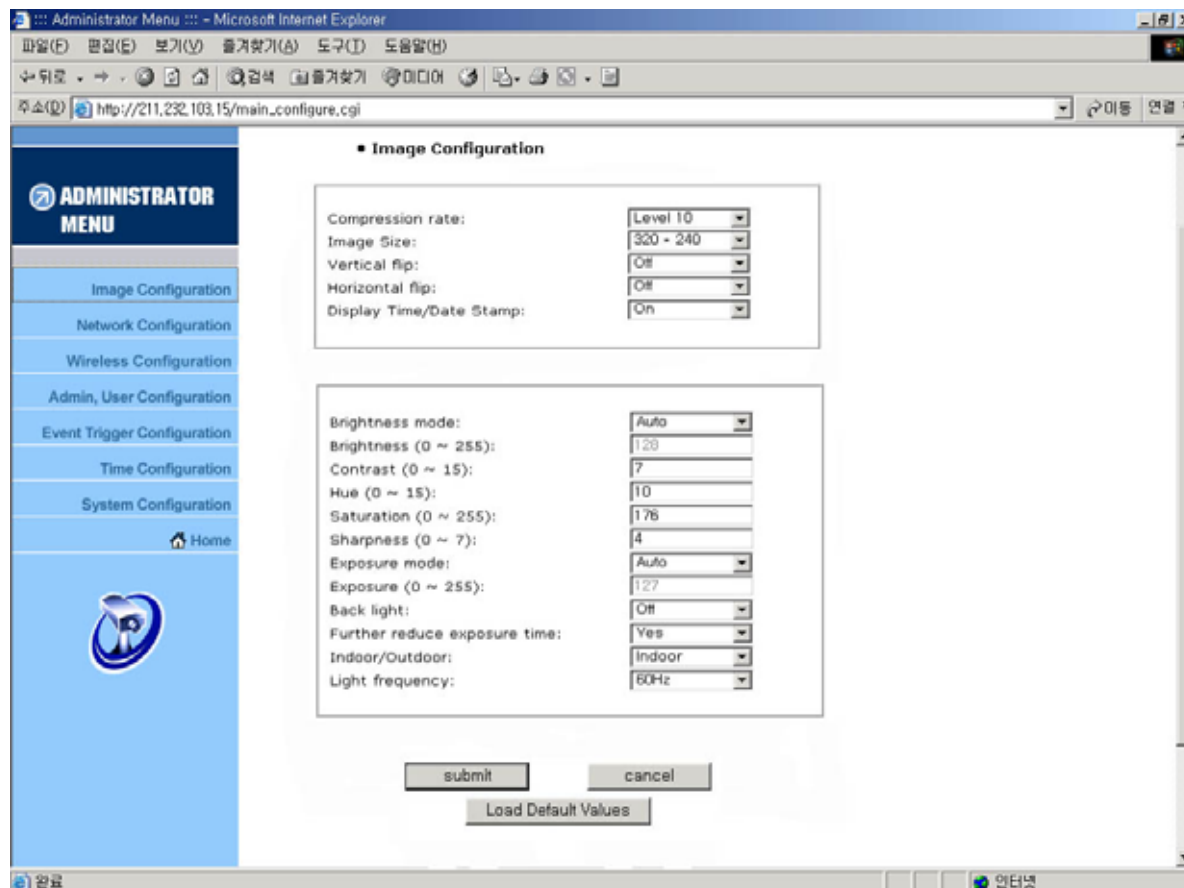
NOTE

Make sure to click **“submit”** after verifying configuration, and then you can get the right Configuration as you want, otherwise it won't be changed at all.

WIRELESS NETWORK IP CAMERA User's Guide

Image Configuration

Example of Wireless Network IP Camera definable image attributes using the Focus Assistant:



1. Compression rate

The file size of JPEG-compressed image depends upon the actual content of the image. Images containing much detail will generate larger files. Image quality is controlled through the level of compression; where, high compression yields small files, while low compression maintains higher image quality at the expense of larger files. The table below contains compression ratios for each step, derived from real-life tests:

Compression Rate	Level 1	Level 2	Level 3	Level 4	Level 5
QVGA	15	18	21	24	27
VGA	15	20	25	30	35

Level 6	Level 7	Level 8	Level 9	Level 10
30	33	36	39	42
40	45	50	55	60

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2. Image size

You may choose the image size VGA(640x480) or QVGA(320x240) and 160*120

Large sizes of image (VGA) yields lower frame rate, while small size maintains higher frame rate

3. Vertical Flip

To turn the image view upside down

4. Horizontal Flip

To switch the image view right from left

5. Brightness mode, Brightness

As a number is higher, image looks brighter. (Input digits from 0 to 255)

6. Contrast

As a number is higher, contrast becomes clearer. (Input digits from 0 to 15)

7. Hue

As a number is lower, color becomes pink. On the contrary, as a number is higher, color becomes green.

(Possible to input digit from 0 to 15)

8. Saturation

As a number is higher, color becomes deep (Possible to input digits from 0 to 255)

9. Sharpness

As a number is higher, color becomes vivid. (Possible to input digits from 0 to 7)

10. Exposure Mode

You may select "Auto" and "Manual"

11. Exposure

As a number is higher, image becomes brighter.(Possible to input digits from 0 to 255)

12. Back Light

When the light is not enough, "Back Light" may help to see the image.

13. Further reduce exposure time

To reduce exposure time from 1/20 to 1/100 under heavy light.

14. Indoor/Outdoor

To control the brightness under the circumstance

15. Light Frequency

To set a frequency for image sensor

16. Submit

Transfer a current configuration data to Wireless Network IP Camera. After transferring data.

17. Cancel

18. Load Default Values

Set the configuration as default values. (No need to press "SUBMIT")

WIRELESS NETWORK IP CAMERA User's Guide

Network Configuration

This screen defines the network type and addresses of the Wireless Network IP Camera. Here you can configure the Camera's IP address, the DNS server address, and the Server IP address. Each configuration takes just a few seconds for booting after pressing "Submit".

The screenshot shows the Network Configuration page in a web browser. The browser's address bar displays the URL `http://211.232.103.15/main_configure.cgi`. The page title is "Network Configuration". On the left side, there is a vertical "ADMINISTRATOR MENU" with the following items: Image Configuration, Network Configuration (highlighted), Wireless Configuration, Admin, User Configuration, Event Trigger Configuration, Time Configuration, System Configuration, and Home. The main content area is divided into three sections:

- Set IP, subnet mask, gateway address:** A dropdown menu is set to "manually". Below it are input fields for IP Address (211.232.103.15), Subnet mask address (255.255.255.224), and Gateway address (211.232.103.1). There is a checkbox for "send IP address to e-mail" and several port number fields: Web server port number (80), Image transfer port number (8000), Upgrade port number (8000), Ptz port number (10000), and ETSP port number (11000).
- DNS Configuration:** Fields for 1st DNS server address (0.0.0.0), 2nd DNS server address (0.0.0.0), and SMTP Server (0.0.0.0). A field for Sender email address is also present. There is a checkbox for "Use SMTP authentication" and a dropdown for Authentication method (Login). Fields for ID, Password, and Realm are also included.
- DDNS Registration:** A dropdown menu is set to "enable/disable". Fields for DDNS Server (www.dyndns.org), ID, Password, and Host Name are present. A checkbox for "DDNS manual update" is checked. A "Status:" label is at the bottom of this section.

At the bottom of the form are "submit" and "cancel" buttons.

1. Set IP Address, Subnet mask, gateway address.

To set the IP address, Subnet mask, and gateway address manually, you may select "manually" in combo box.

In case of selecting "manually", you can configure them with the IP installer as well as this page.

(If you have trouble configuring network system information, please ask your network administrator.)

To set DHCP, you may select 'using DHCP'.

When selecting "using DHCP", the IP address, Subnet mask address and Gateway address may not be activated at all. Under DHCP selection, the IP address may be sent to an email address whenever IP address is changed. Users in a local network area may check the IP address through IP installer.

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NOTE

If you select "DHCP", you may see the rebooting message "Now the Network Camera is rebooting to apply the changes..." on Web Browser. After completing rebooting, Operating Status LED blinks once per second. (The message may not be changed at all so you must check whether the Operating Status LED blinks.)

To select DHCP, you must have DHCP server in the network. Otherwise, the IP address will be rebooted automatically as the previous IP address. It may take 4 minutes for booting.

After rebooting, please reenter the previous IP address.

You may see the fail message from "Network Configuration" page.

2. Send IP address to e-mail

To send camera system information (**Camera Name, Camera Location, DHCP IP address**), check in a text box and enter you email address. (You should configure your SMTP server information first)

3. Server Port Number

To set the Port Number for the Web Server. (The default port number is '80' and users can select from 80 to 1023)

4. Image Transfer Port Number

To set the port number for the image transfer. (The default port number is "8000" and users can select from 8000 to 65535)

5. Upgrade port number

To set the Port Number for upgrading firmware. Default port number is "9000" and users can select from 8000~65535.

6. PTZ port number

To set the port number for PTZ control. (Default is '10000' and users can select from 8000 to 65535.

CAUTION

Be careful not to duplicate port number between Image Transfer Port Number and Upgrade port number. If it is duplicated, the warning message may appear.

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7. ETSP port number

To set the port number for ETSP (Event Trigger Setting Program). (Default is "11000" and users can select from 8000 to 65535. (For the detail of ETSP, please refer to the ETSP manual.)

8. 1st, 2nd DNS server address

To map between IP address and domain name, you should enter you DNS server address.

If a user set the DNS server into camera, users can configure SMTP server, FTP server, NTP server with its domain name.

DNS (Domain Name System)

DNS (Domain Name System) is to map between IP address and domain name. Every network device on the world has its IP address to be connected on Internet. And the device is to be connected not with its domain name but with its IP address. Common users are not familiar with IP addresses but the domain names.

If a user accesses a certain network device with its domain name, DNS server resolves the domain name into an IP address of the device and replies the result to the user. A lot of DNS servers are not on Internet worldwide.

9. SMTP server

This to enter the SMTP server IP address or host name to send camera system information by an email.

You should configure this first to get camera system information by email.

10. Use SMTP authentication

If you need user authentication for using the SMTP server, check in a box. and enter you ID, Password and Realm for your SMTP server. (The Wireless Network IP Camera's SMTP authentication is supporting "LOGIN" method)

- Authentication method: Choose the SMTP authentication method.
- ID : Enter the user ID for SMTP authentication.
- Password: Enter the user Password for SMTP authentication..
 - Realm : Enter the Realm for SMTP authentication.

11. DDNS Registration

To register the IP Network Camera to DDNS (Dynamic Domain name server) server, check in a "enable" box.

A dynamic IP address complicates remote access since you may not know what your current WAN

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IP address is when you want to access your network over the internet. The solution to the dynamic IP address problem comes in the form of a dynamic DNS service.

(Please refer to the "APPENDIX" for the details.)

12. ID, password

Enter the ID and Password to find the registered IP Network Camera in DDNS server.

13. Host Name

Enter the Host Name to find the registered IP Network Camera in DDNS server.

14. DDNS manual update

You can update the DDNS service manually.

15. Status

To show the status of successful access for DDNS server.

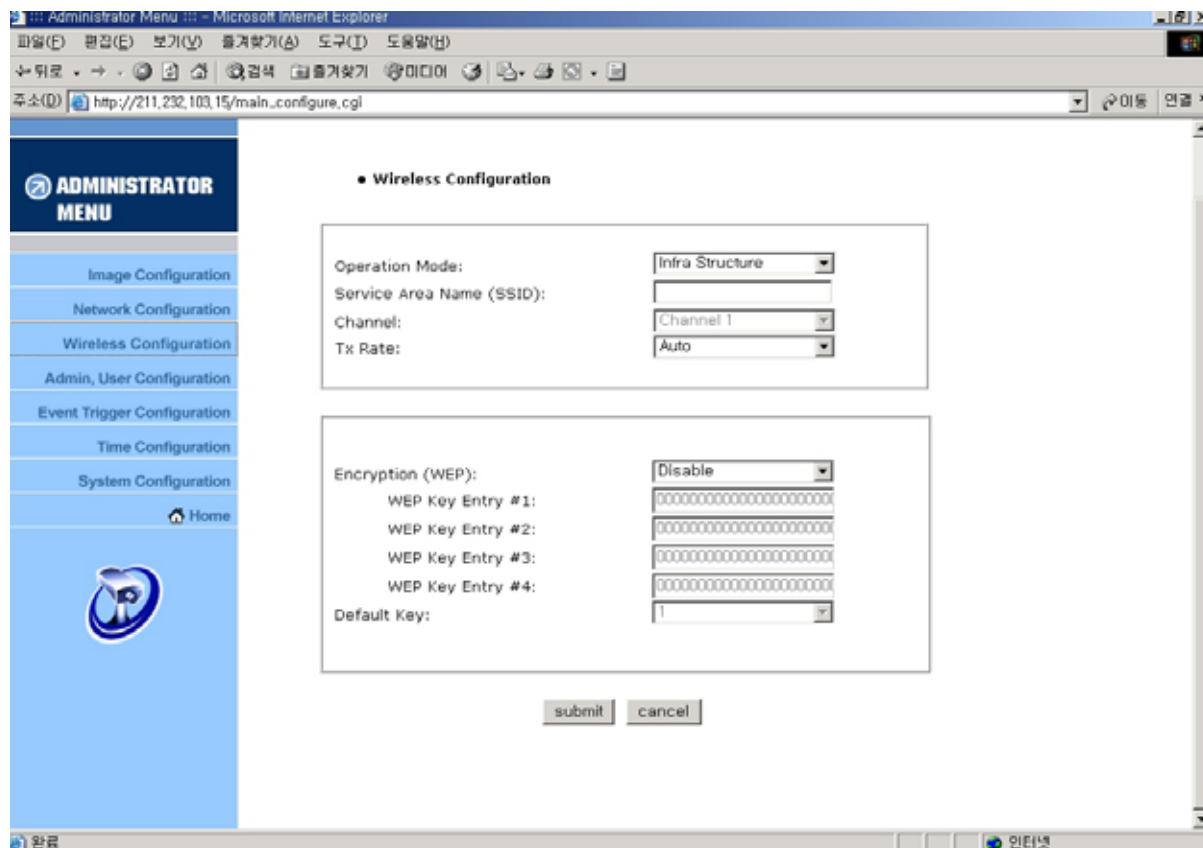
17. SUBMIT

Send configured data by user to the Wireless Network IP Camera.

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Wireless Configuration

This screen is used to configure wireless setting to match with your Access Pointer for the wireless network connection.



Wireless Setup

1. Use the connection Mode to determine the type of wireless communication for the Wireless Network IP Camera. There are two choices of **infrastructure mode** and **Adhoc mode**. The default setting for the connection mode is Infrastructure.
2. Set the **Service Area Name (SSID)** as per AP setting to which user wants to connect. i.e. **intellinet5** in our case.
3. The channel rate is set to **channel 1** as a default
4. The default setting for the “Tx rate” is Auto, it is more convenient to keep it as a default, however, users can set it to 5.5.mbps or 11 mbps as per his/her requirement.

NOTE

Keep in mind the slide switch on the rear panel is positioned to LAN-WAN or WLAN setting for the wireless communication to take effect.

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Security settings:

Wireless network communications are easily intercepted. WEP (Wired Equivalent Privacy) is an encryption method specified by the IEEE 802.11b standard to make any intercepted communications extremely difficult to interpret by unauthorized parties.

Encryption (WEP): Intellinet IP camera adopts ASCII input format as a default WEP key format. ASCII format causes each character you type to be interpreted as an eight-bit value.

All unaccented upper-and lower-case Western European characters that can be input through your keyboard's typing zone are valid.

To setup 64-bit WEP key, input 5 ASCII characters, for example, '12345'. To setup 128-bit WEP key, input 13 ASCII characters, for example, '1234567890123'.

These character counts result in bit counts of 40 and 104, respectively, the Wireless Network IP Camera will automatically pad your input to a bit count of 62 or 128.

Ex.1) Suppose your AP uses 64 bit encryption, Default key **1** and the key value is **0123456789**, in that case, your wireless camera WEP setting will be:

Encryption (WEP):	64bit
WEP Key Entry #1:	0123456789
WEP Key Entry #2:	0000000000
WEP Key Entry #3:	0000000000
WEP Key Entry #4:	0000000000
Default Key:	1

Ex.2) Suppose your AP uses **128 bit** encryption, Default key **2** and the key value is **01234567890123456789012345**, in that case, your wireless camera WEP setting will be:

Encryption (WEP):	128bit
WEP Key Entry #1:	00000000000000000000000000000000
WEP Key Entry #2:	0123456789012345678901234
WEP Key Entry #3:	00000000000000000000000000000000
WEP Key Entry #4:	00000000000000000000000000000000
Default Key:	2

Make sure the Encryption Code is the same with the access point's encryption code that the

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Wireless Network IP Camera is to be connected under Infrastructure mode. Your PC/ Notebook's encryption code also needs to be setup the same with the Wireless Internet Camera's encryption code under either Infrastructure mode or Ad-hoc mode.

The default setting for the Encryption Key is "Disable" therefore, to secure the wireless transmission be sure to Enable the Encryption Key by entering the relevant data.

NOTE

Carefully input Encryption Code, any error setting will cause communication link to fail

IMPORTANT

Infrastructure Mode:

An 802.11 networking framework in which devices communicate with each other by first going through an Access Point (AP). In infrastructure mode, wireless devices can communicate with

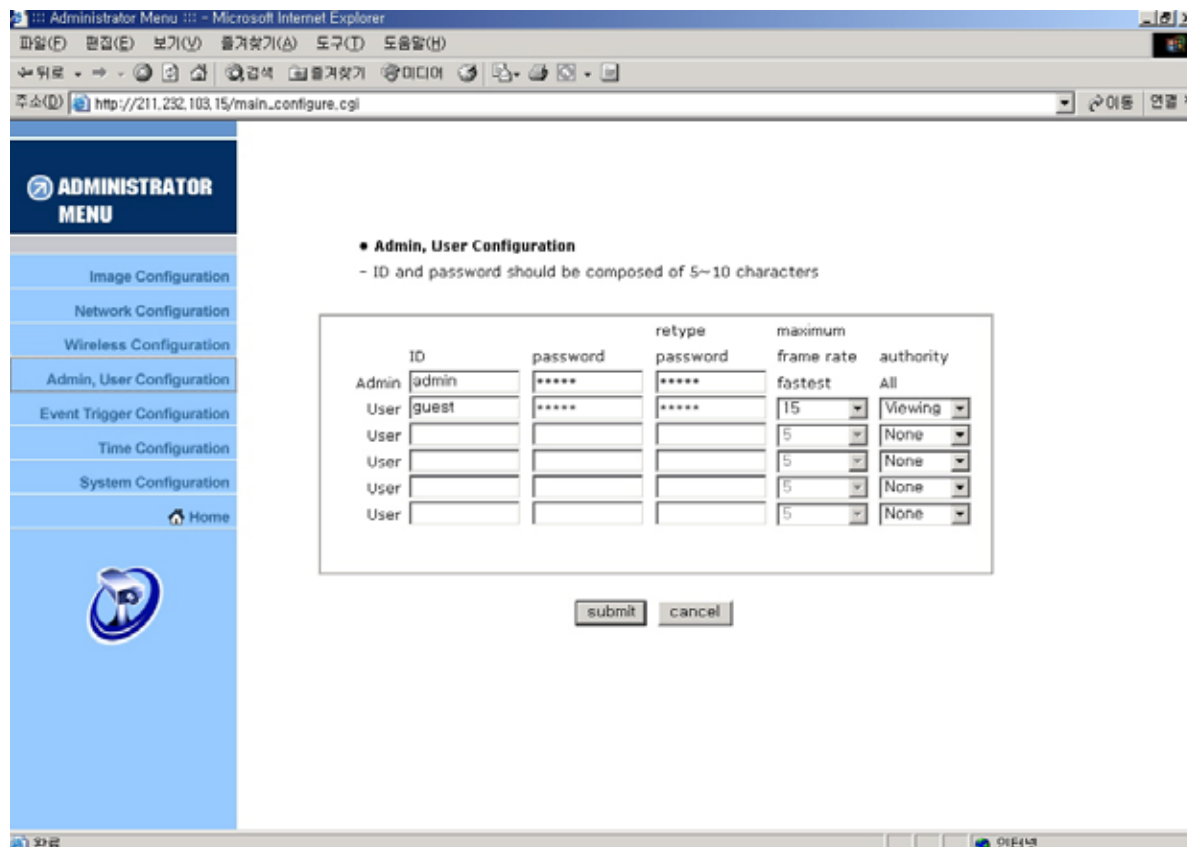
each other or can communicate with a wired network. When one AP is connected to wired network

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User Configuration

This screen is used to configure IDs and Passwords for an administrator and up to 5 users.



1. User Account

There is one administrator account and 5 user accounts. Account names can be changed.

2. Password

If you want to open your Wireless Network IP Camera to everyone, you may not change default user's ID and Password, However you should change administrator's ID and Password with unique Ones of yours.

3. Access rights

The Administrator may assign users' rights of viewing control. With the default setting, the administrator has all authority of configuration and the normal user doesn't have any right except to access the login page to see the image defaults "guest" for ID and Password.

ID and Password Limitation

It is very important to compose any ID or Password within 10 bytes' limit. 10 bytes are equal to 10 English characters.

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Event Trigger Configuration

This screen is used to designate an Email address or FTP server to receive captured images by setting SMTP or FTP settings. You may connect external devices such as infrared Sensor or Alarm Sensor to use with the provided terminal block (please refer to Appendix F – The I/O Connector).

Administrator Menu :: Microsoft Internet Explorer
주소 http://211.232.103.15/main_configure.cgi

ADMINISTRATOR MENU

- Image Configuration
- Network Configuration
- Wireless Configuration
- Admin, User Configuration
- Event Trigger Configuration**
- Time Configuration
- System Configuration
- Home

Event Trigger Configuration

Trigger condition

Activation of digital input from [0] (0~24) to [24] (0~24).
Trigger Condition: Digital Input Port = normal open normal close

Motion Detection from [0] (0~24) to [24] (0~24).

Periodically every [30] (1~3600) seconds from [0] (0~24) to [24] (0~24).
Motion detection sensitivity [5]

Image capture option

Before event (0~21): [1] seconds
After event (0~21): [3] seconds
Image capture frame rate: [1] fps
Image file name (max 10 characters): [] .JPG
Append to the image file name:
 camera IP address
 date and time
 trigger condition flag
 image sequence number

Trigger output

supply voltage to output port for [0] (0~255) seconds
 send alarm to ETSP client
 send captured image to e-mail
e-mail address (max 30 characters): []
e-mail title (max 30 characters): []
 send captured image to FTP server
FTP server (max 30 characters): [0.0.0.0]
FTP server port (21~65535): [21]
User ID (max 30 characters): []
Password (max 30 characters): []
Directory (max 30 characters): []
 FTP Rename enable

Submit cancel

1. Trigger Condition

This is to select option how to send an event signal to Wireless Network IP Camera.

① Activation of digital input port

The Wireless Network IP Camera receives an event signal from external devices such as infrared sensor Alarm sensor etc.

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② Motion Detection from.....

This is to detect motion from camera by S/W data comparison.

When you select "Motion detection", the Wireless Network IP Camera detects a motion triggered by camera lens. To detect motion the camera compares a previous image from present image. When the motion is detected, the camera recognizes the data changing through comparing the previous image data with present one.

NOTE

In a dark place without light, it may never detect the motion because its image wouldn't be changed at all.

③ Periodically.....

The Wireless Network IP Camera itself is to be triggered automatically by setting. You may set the periodical event time for certain hour.

④ Motion detection sensitivity

This is to configure the level of motion detection sensitivity.

The level is composed of 9 levels from 0 to 9.

As the level is higher, the sensitivity is much higher

NOTE

In case of level 9 for sensitivity, the camera may detect a tiny motion even a light changes, so the event can be trigger so often. In case of level 1 for sensitivity, the camera may not detect a tiny motion, though it can be missed some little motion.

It is strongly recommended to configure it as the level of 3 ~6 for sensitivity.

CAUTION

Do not use motion detection function for security purpose because Motion detection function is only developed to use for monitoring purpose.

When you want to use it on the purpose of security, you should use certain sensor such as infrared, motion sensor according to your purpose.

WIRELESS NETWORK IP CAMERA User's Guide

2. Image capture option

This is to configure image capture option when an event is triggered.

① Before Event

You may set the starting time to capture image before event is triggered.

(Input limitation is from 0 to 21 seconds.)

② After Event

You may set the finishing time to capture image after event is triggered.

(Input limitation is from 0 to 21 seconds.)

③ Image capture frame rate

Set the frame rate from 1 to 15fps when the image is being captured.

④ Image file name

You may designate image file name to send Email or FPT after image is captured.

All captured image are saved as a JPG file. (Example. "File name 000".JPG)

⑤ Append to the image file name

You may append some information to Image file Name Camera IP address

A. Camera IP address : **Ex)** "file name _192.168.1.19.JPG"

B. Date and time : **Ex)** "file name _20020218150030.JPG"

C. Trigger condition flag

In case of choosing "Activation of digital input port", "D" may be appended to image file name. **Ex)** "file name _D.JPG"

In case of choosing "Periodically every...", "P" is appended to image file name.

Ex) "file name _P.JPG"

D. Image sequence number

If you select this option, you may classify the file that has same extend name.

Consecutive numbers are from "000" to "999"

Ex) When you designate file name as "camera" and select "Image sequence number", the file name appears " camera001.JPG, camera002.JPGcamera999.JPG"

Image capture option limitation

Configuration for image capture option affects memory capacity. If you configure this option to excess memory size, the Warning message " Not enough memory..." appears.

The total image capture frame rate must be limited 45 fps due to memory size.

(Before event time + After event time) x Image capture frame rate must be under 45.

For example, in case you configure "Before event" as 3 seconds, "After event time" as 2 seconds and "image capture frame" as 3fps, the total image capture frame rate is (3 + 2) X 3 = 15 fps.

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3. Trigger Output

This is to configure digital output states and control script. Wireless Network IP Camera sends captured image via E-mail or FTP server when connected external sensors detect events.

① External devices signal output

This is to supply voltage to output port when events are triggered. (This option is only activated when you select “Activation of digital output” option in previous “**Trigger Condition**” option.)

② Send alarm to ETSP client

This is to send alarm to ETSP client.

If you check it in a box, the alarm will be sent to ETSP client when the events are triggered.

③ Send captured image via E-mail

This is to designate a person to receive captured image via Email.

Wireless Network IP Camera sends captured image to designated E-mail address through SMTP server.

You may configure SMTP server and E-mail address where you want to receive. (E-mail address must be composed within 50 bytes. 50 bytes are equal to 50 English characters.)

④ Send captured image to FTP server

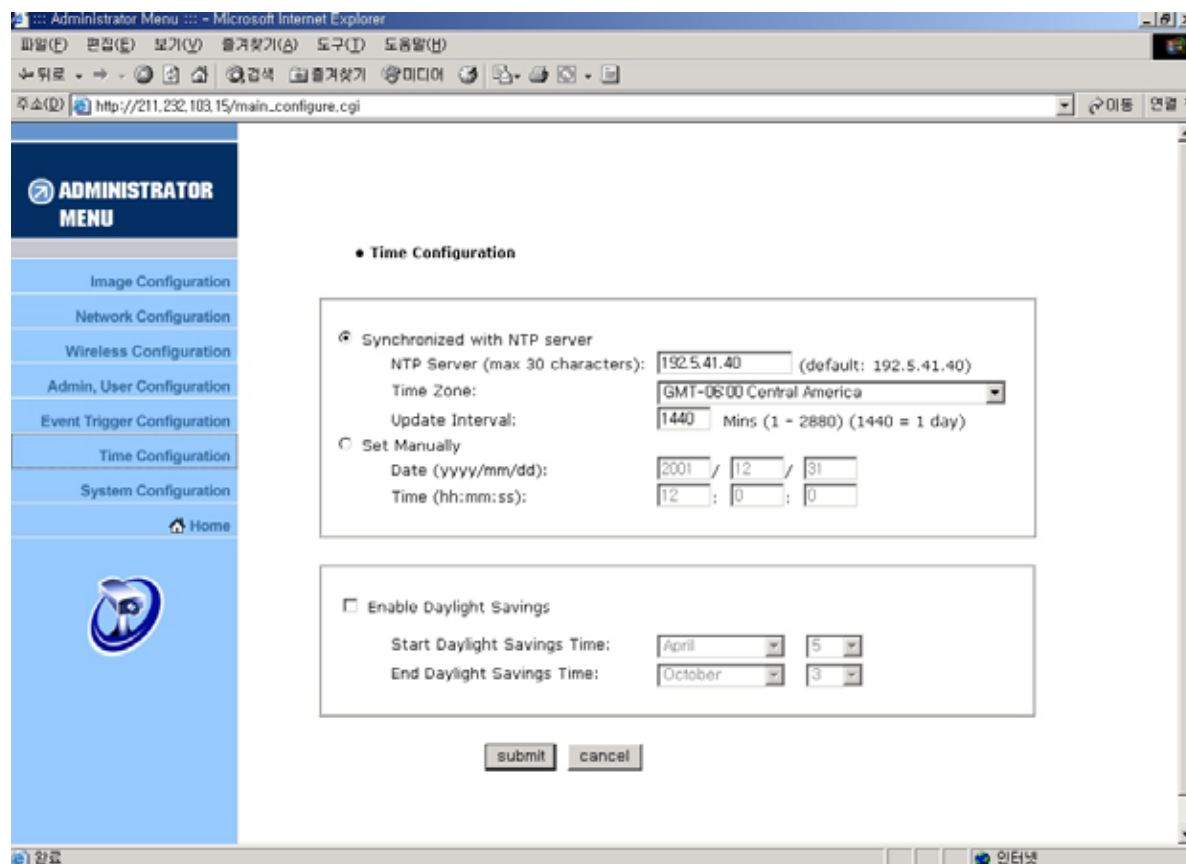
This is to send captured image from Wireless Network IP Camera when an event is triggered.

Enter ftp server IP address, User ID and Password and select directory to save image.

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Time Configuration

This screen is to configure date and time.



1. Synchronized with NTP server

The Wireless Network IP Camera automatically configures Date & Time through the NTP (Network Time Protocol) server. The NTP Server is based on Greenwich time. Select NTP server, IP address and Time zone to set the date and time automatically, then press, “SUBMIT”. It may not work due to the possible network error; in this case, you can select other NTP server and IP address or you can set the date and time manually. Once Date & Time configuration is set, you don't have to configure again whenever you connect to the Wireless Network IP Camera.

2. Set manually

Enter the Date and Time manually, then click “SUBMIT”.

3. Enable Daylight Savings

This is to configure the Daylight Savings Time

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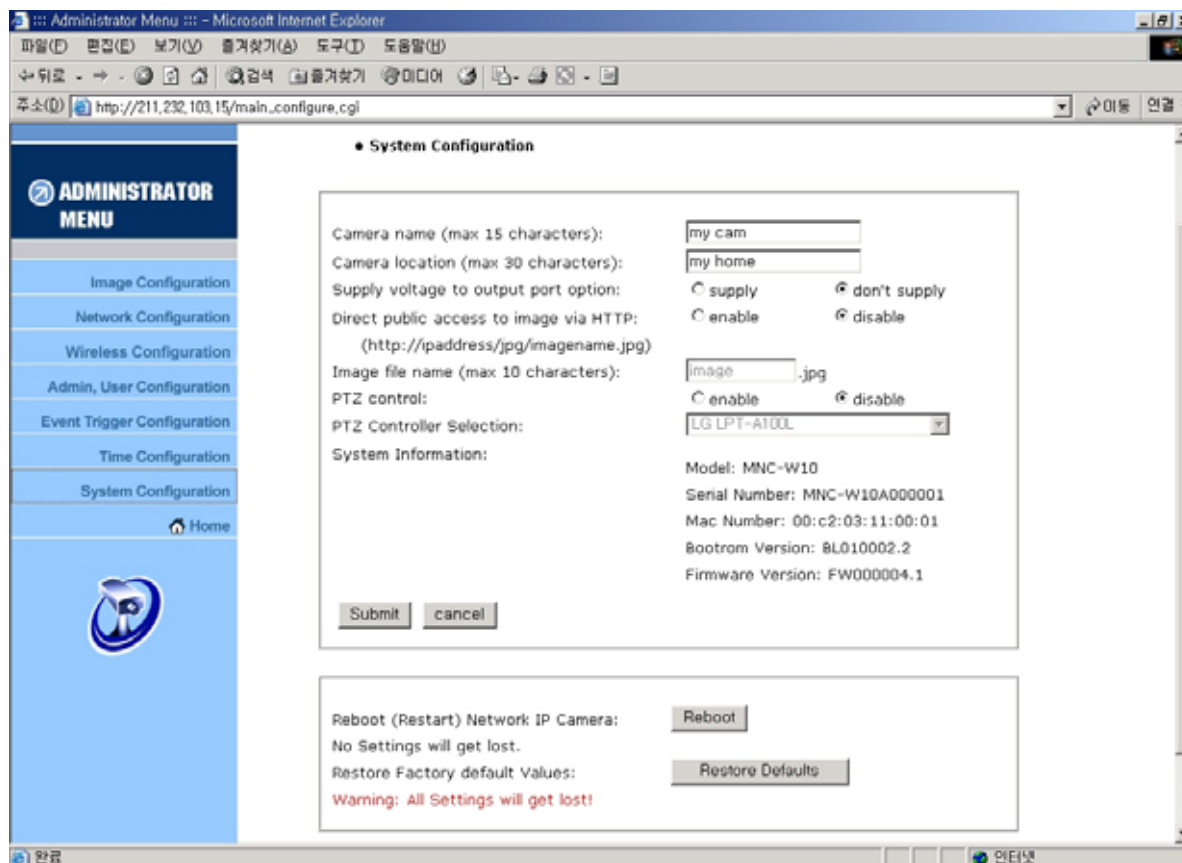
NOTE

Wireless Network IP Camera does NOT support RTC(Real Time Clock), in case you choose “Set manually” option, Wireless Network IP Camera reinstate as default value “2001/01/01 00:00:00”. To configure Date & Time, it must be reconfigured.

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System Configuration

This screen is used to configure camera name, location, and image sensor oscillator for frequency, PTZ control and System information for Wireless Network IP Camera.



1. Camera name

This is to configure camera name for the front-page view. Camera name should be composed within 15 bytes. 15 bytes are equal to 15 bytes English characters.

2. Camera location

This is to configure camera location for the front-page view. Camera location should be composed within 30 bytes. 30 bytes are equal to 30 bytes English characters.

3. Supply voltage to output port option

This option is to supply voltage to the Wireless Network IP Camera's output port. Just click "supply" to supply voltage to control the PTZ devices.

4. Direct public access to image via HTTP

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User can access the camera image via HTTP directly.

5. Image file name (max 10 characters)

Set the image file name.

6. PTZ control

This is to configure PTZ control mechanism of Wireless Network IP Camera.

You may select PTZ control enable or disable.

7. PTZ controller Section

This is to choose the PTZ controller connecting to the Wireless Network IP Camera.

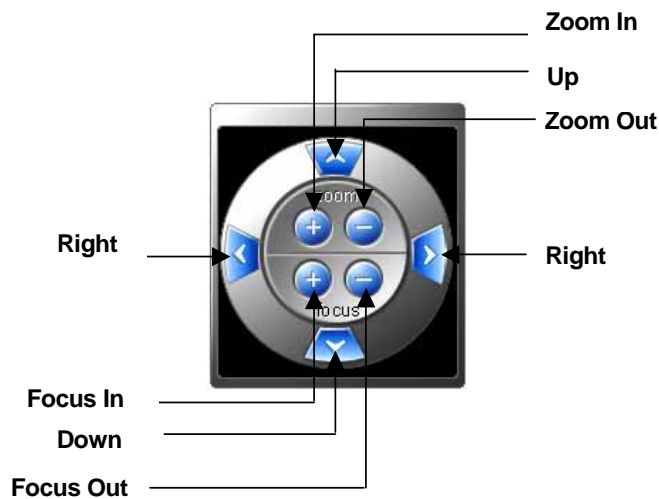
8. System Information

This is to check system information for Wireless Network IP Camera. You may see the model name, serial no., Mac no., and Bootrom & Firmware version. (please refer to the Chapter ‘ **Appendix E. Updating Firmware.**)

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PTZ CONTROL

This screen is to control PTZ function. This PTZ control box may be activated only if PTZ external devices are connected to Wireless Network IP Camera and configure PTZ control enable in System Configuration screen.



NOTE

All function is working while you pressing button. For example, while you are pressing the right button, Wireless Network IP Camera is moving to right.

APPENDIX

A. Technical Specifications

Image

Resolution: 640x480, 320x240, 160x120

Standard JPEG Compression – 10 levels of compressions

Network

10baseT Ethernet or 100baseTX Fast Ethernet

Twisted pair category 5 cables, Standard RJ45 connector

Supporting protocol: TCP/IP, UDP, PING, ARP, FTP, TFTP, and HTTP

Configuring is achieved by private setup program and Web server built in administration page.

Image Sensor

1/3" inch CMOS sensor

326,688 pixels, 24-bit color, YUV digital output

Automatic exposure/Gain/White balance control

Image enhancement – brightness, contrast, gamma, saturation, sharpness, etc

664x492 pixel array elements

Electronic shutter: 1/30 s ~ 1/15734 s

Auto back light compensation: Automatic back light on or off depending on the lighting condition.

Lens specification

Replaceable standard CS mount lens

Focal length 6.0 mm, Angular field of view 54°, Object distance 0.1m to infinity

Maximum Relative aperture F1.8

C-Mount adapter available

Hardware

32bit RISC Net ARM CPU

ZORAN hardware compression chip

384 Kbytes video frame buffer

4M flash memory

SDRAM 8Mbyte

12V Power supply adapter included

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Under 6W power consumption

System Requirements

Operating systems: Windows 9x, Windows NT/2000, Linux, Unix, Mac, etc.

Internet Explorer 4.0 or higher.

JAVA applet for no PC user (Mac or Unix)

I/O Connector

D-sub 9pin RS232 connector

1 Input to trigger the camera on external events.

1 Output of 12 V to signal external devices, max 150 mA

Installation

Assigning IP address via IP installer program

Approvals

EMC: FCC Class B, CE EN55022/1994, EN61000-3-2 & 3: 1995, EN50082-1: 1997

Operating Temperature

0-50°C

Others

Operating Status LED, Power LED, Image Capture LED, Network Packet Transmit LED

EEPROM clear button

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B. Frequently Asked Question (FAQ)

Asks for the features

1. What is a Network IP camera?

A Network IP Camera is a stand-alone device which allows a user to view live, full motion video from anywhere on a computer network, even over the Internet, using a standard web-browser.

2. Are all Network IP cameras the same?

No, some network cameras have an embedded OS (operating system) as well as an embedded Web server. To be called a Network IP camera, the only requirement is that the camera connects to the network, and not a computer - an embedded OS is what separates network cameras.

3. Why Choose a Network IP Camera over a Web Camera?

An IP Camera is a true networking device containing an embedded OS (Operating System), supports multiple users, and can be viewed using any web browser. It does not require additional hardware to operate and therefore has the flexibility to be located anywhere with a network connection. A web cam must be connected to a host computer, supports only one user at a time, and cannot be shared on a network. Only the host computer can access the web cam.

4. What is the advantage of the embedded OS?

Cameras with an embedded OS communicated directly with the user, the images or video is sent directly from the camera to the person accessing the camera. A Network camera without an embedded OS must rely on a third party server or a separate piece of software, meaning the images/video is sent to the third party server, then the user access the image from the third party server.

5. Do I need a public fixed IP address for each camera?

No, you of course, can have a real, public, static IP address for each camera, however, using just one static IP address for your router and a virtual server or port forwarding scheme, you can use many cameras with just one static IP and just about any router. Please also note that the IP camera must have an adjustable web server port (you must be able to change the web server port) to use multiple cameras behind a router.

6. Can I use the camera outside?

Some Network IP Cameras are sturdy enough for outdoor use with a outdoor camera enclosure.

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7. What additional software is required?

Networking IP Cameras with an embedded Operating System (OS) should not need any additional software.

8. How does the built-in motion detection work?

It very simply compares what it sees now to what it saw in the last frame and based on a sensitivity you select will trigger an event. The event can be to send a email, to send a Image to a FTP server, or to send a series of images (before and after the motion is detected) to a email address or a FTP server-all with software built into the camera, nothing else is required.

9. What is the maximum length Ethernet cable I can use?

The same topology limitations that apply to any 10/100 Ethernet card apply, meaning the maximum segment length is 100 meters from switch/hub to the camera

10. How much digital video can be stored on a normal 20-gigabyte hard drive?

Network IP Cameras equipped with a compression technology that can store almost a month of continuous video on a 20-gigabyte hard drive.

11. What is Power-over-Ethernet (PoE)?

Power-over-Ethernet (PoE) or "Active Ethernet" eliminates the need to run power to devices on a wired LAN. Using Power-over-Ethernet, installers need to run only a single CAT5 Ethernet cable that carries both power and data to each device. This allows greater flexibility and significantly decreases installation costs in many cases.

12. Can Network IP Cameras use different lenses?

Advanced Network IP Cameras utilize CS-mount lenses, which can accommodate a variety of specialized lenses, such as wide-angle, fish-eye or telephoto lenses.

13. What image sizes can be viewed from Network IP Cameras?

Advanced Network IP Cameras use multiple pre-set image sizes that typically include 160 x 120, 320 x 240 and 640 x 480 pixel image sizes.

14. Can I view a Network IP Camera from my PDA?

Network IP Cameras can now be viewed on most Windows CE, including Pocket PC and Pocket PC 2002 devices, such as the Compaq iPAQ, HP Jornada, Dell Axim, Casio Cassiopeia and many other devices.

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C. Trouble Shooting

This appendix provides useful information to help you to resolve any difficulty you might have with your Wireless Network IP Camera. Fault symptoms, possible causes and remedial actions are provided within a quick reference table.

PINGing your IP Address

By sending a packet to the specified address and waiting for a reply, the PING (Packet Internet Groper) can determine whether a specific IP address is accessible; it also provides a particularly useful method for confirming addressing conflicts with your Wireless Network IP Camera on the network.

Having disconnected your Wireless Network IP Camera, follow the instructions below in association with Symptoms, Possible Cause and Remedial Actions, on next page, and run the PING utility to troubleshoot TCP/IP problems on your network.

- ① Start a DOS window
- ② Type ping x.x.x.x, where is the IP address of Wireless Network IP Camera
- ③ The subsequent replies will provide an explanation as to the case as to the cause of the problem. Replies can be interpreted as defined in the table below:

PING Reply	Interpretation and recommendation
bytes = 32 time = 2 ms	The IP address is already used and cannot be used again. You must obtain a new IP address
Destination host unreachable	Wireless Network IP Camera is not accessible within your subnet. You must obtain a new IP address
Request timed out	This IP address is not used by anyone and is available for use with your Wireless Network IP Camera

Symptoms, Possible Causes and Remedial Actions

Symptoms	Possible causes	Remedial actions
Wireless Network IP Camera cannot be accessed from a Web browser	The IP address is already used by another devices	1.Disconnect your Wireless Network IP Camera from the network 2. Run the PING utility (as described in PINGing your IP Address below) and follow

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The Power LED is not constantly lit	The IP address is located within a different subnet	<p>Run the PING utility (as described in PINGing Your IP Address, on page 39), If the utility returns “no response” or similar, the diagnosis is probably correct – you should then proceed as follows</p> <p>In Windows 95/98 or Windows NT, check the IP address for your Wireless Network IP Camera is within the same subnet as your workstation:</p> <ol style="list-style-type: none"> 1.Click “Start”, “Settings”, “Control Panel” and “Network”. 2.Specify the TCP/IP adapter and click on “Properties”. In Properties, Click “IP Address”. 3.Check that the first 3 numbers within the IP address of your Wireless Network IP Camera matches the first 3 of your workstation. If not, your Wireless Network IP Camera may be on a different subnet and the IP address cannot be set from this workstation. You must set the IP address for Wireless Network IP Camera from a workstation on the same subnet.
	Other networking problems	<p>Trying replacing your network cable</p> <p>Test the network interface of the product by connecting a local computer to the unit, using a standard Crossover (hub-to-hub) Cable.</p> <p>If the above actions do not resolve the problem, Wireless Network IP Camera maybe faulty, In this case, try to localize the problem by connecting Wireless Network IP Camera to the serial port of a local computer, using the supported RS232 Cable</p>
	Faulty power supply	Verify that you are using an provided power supply
The network LED is off	Faulty cabling	<ol style="list-style-type: none"> 1.To verify that the cables are functional, PING the address of a known existing unit on your network. 2.If the cabling is OK and your network is reachable, your should receive the reply similar to this: ... bytes = 32 time = 2 ms,
The operating status LED	Faulty connecting	Verify that the power is well connected
Your Wireless Network IP Camera works locally, but not externally.	<p>Firewall protection</p> <p>Default routers required</p> <p>The internet site is too heavily loaded</p>	<p>Check the internet firewall with your system manager</p> <p>Check if you need to configure the default router settings</p> <p>Configure Wireless Network IP Camera to upload your video images to an FTP server or an ISP</p>

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A series broad vertical white line appears across the image.	The CMOS sensor becomes overloaded when the light is too bright. This can happen e.g. with sun light reflexes.	Direct exposure to extreme sunlight or halogen light may cause serious damage to the CMOS sensor. Reposition your Wireless Network IP Camera into a more shaded location immediately. Note: damage caused to Wireless Network IP Camera through over exposure to direct sunlight or halogen light is not covered under the product warranty.
Bad focus	Focus has not been correctly adjusted	Adjusting the camera manually till the image views clear.
Noisy images	Video images may be noisy if you are using Wireless Network IP Camera in a very low light environment	To solve this problem, you need more light. Use the back light function. If not helpful, you may wish to consider replacing the basic lens with a more sensitive lens, if the lighting conditions within the installation area can not be improved
Bad quality images	The Display Properties are incorrectly configured for your desktop	Open the Display Properties in your desktop and configure your display to show at least 65'000 colors, i.e. at least 16-bit. Note: Using only 16 or 256 colors on your computer will produce dithering artifacts in the image.
	The camera is not Focused correctly	Referring to the above, adjust the camera manually

NOTE

If you still have a problem after reading this information, please contact your dealer or check the FAQ on the INTELLINET ACTIVE NETWORKING web site at <http://www.intellinet-network.com>.

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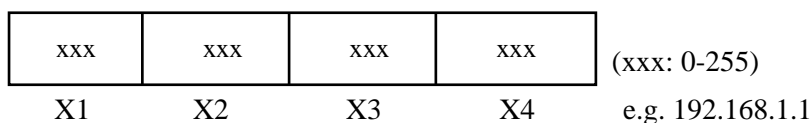
D. Utilizing IP Addresses on Local Network

Introduction

Access to the Internet is achieved via Internet IP addresses. Currently, IP addresses are limited. There are 5 classes of networks, and each network contains IP addresses. A network can only hold a limited number of IP addresses. The number of IP addresses depends on the network class. The 5 classes are labeled "A" through "E" with the most common one being the "C" class network.

IP Construction and Network Class

1. IP Construction



2. Network Class

A Class: A network that contains IP addresses from 0 to 127 at room 'X1'

Network ID: X1

Host ID: X2, X3, X4

There are 128 A-Class networks in the world.

B Class: A network that contains IP addresses from 128 to 191 at room 'X1'

Network ID: X1, X2

Host ID: X3, X4

There are 65, 534 B-Class networks in the world.

C Class: A network that contains IP addresses from 192 to 223 at room 'X1'.

Network ID: X1, X2, X3

Host ID: X4

The most common network in the world; there are 2,097,152 C-class networks in the world.

D Class: A network that contains IP addresses from 224 to 239 at room 'X1'. D-class networks are used for multicasting, and are not allowed for common use.

E Class: A network that contains IP addresses from 240 to 255 at room 'X1'. E-class network are reserved.

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C Class Network

1. Features of Addresses

IP address: The three-digit number in room 'X4' is for the Host ID. The number ranged from 0 to 255. Among the numbers, 0 is used for Network ID, 1 is used for Router IP (Gateway address) and 255 are used for Broadcast address. The number from 2 to 244 are IP addresses that can be assigned to Wireless Network IP Camera, PC etc.

Network ID: Identifies a network. Generally the first number assigned is Network ID.

Gateway address: The IP address of the router for connecting Internet and local network.

Broadcast address: The IP address for broadcasting. All devices connected on local network have the same Broadcast address.

Subnet Mask: Divides a local network into two remote networks. Subnet mask shows the IP quantity in a certain network. The number that can be used as subnet mask is limited (0, 4, 8, 16, 32, 64, 128)

2. Network Configuration

- ① To use as one network

Network ID: xxx.xxx.xxx.0

Gateway Address: xxx.xxx.xxx.1

Subnet Mask: 255.255.255.0

Broadcast Address: xxx.xxx.xxx.255

IP Addresses: xxx.xxx.xxx.2 – xxx.xxx.xxx.254

- ② To use as two Sub-networks (1/2 + 1/2)

Sub-Network ID: xxx.xxx.xxx.0

Gateway Address: xxx.xxx.xxx.1

Subnet Mask: 255.255.255.128

Broadcast Address: xxx.xxx.xxx.127

IP Addresses: xxx.xxx.xxx.2 – xxx.xxx.xxx.126

Sub-Network ID: xxx.xxx.xxx.128

Gateway Address: xxx.xxx.xxx.129

Subnet Mask: 255.255.255.128

Broadcast Address: xxx.xxx.xxx.255

IP Addresses: xxx.xxx.xxx.130 – xxx.xxx.xxx.254

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- ③ To use as three sub-networks ($1/4 + 1/4 + 1/2$)

Sub-Network ID: xxx.xxx.xxx.0

Gateway Address: xxx.xxx.xxx.1

Subnet Mask: 255.255.255.192

Broadcast Address: xxx.xxx.xxx.63

IP Addresses: xxx.xxx.xxx.2 – xxx.xxx.xxx.62

Sub-Network ID: xxx.xxx.xxx.64

Gateway Address: xxx.xxx.xxx.65

Subnet Mask: 255.255.255.192

Broadcast Address: xxx.xxx.xxx.127

IP Addresses: xxx.xxx.xxx.66 – xxx.xxx.xxx.126

Sub-Network ID: xxx.xxx.xxx.128

Gateway Address: xxx.xxx.xxx.129

Subnet Mask: 255.255.255.128

Broadcast Address: xxx.xxx.xxx.225

IP Addresses: xxx.xxx.xxx.130 – xxx.xxx.xxx.256

- ④ To use as four sub-networks ($1/4 + 1/4 + 1/4 + 1/4$)

Sub-Network ID: xxx.xxx.xxx.0

Gateway Address: xxx.xxx.xxx.1

Subnet Mask: 255.255.255.192

Broadcast Address: xxx.xxx.xxx.63

IP Addresses: xxx.xxx.xxx.2 – xxx.xxx.xxx.62

Sub-Network ID: xxx.xxx.xxx.64

Gateway Address: xxx.xxx.xxx.65

Subnet Mask: 255.255.255.192

Broadcast Address: xxx.xxx.xxx.127

IP Addresses: xxx.xxx.xxx.66 – xxx.xxx.xxx.126

Sub-Network ID: xxx.xxx.xxx.128

Gateway Address: xxx.xxx.xxx.129

Subnet Mask: 255.255.255.192

Broadcast Address: xxx.xxx.xxx.191

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IP Addresses: xxx.xxx.xxx.130 – xxx.xxx.xxx.190

Sub-Network ID: xxx.xxx.xxx.192

Gateway Address: xxx.xxx.xxx.193

Subnet Mask: 255.255.255.192

Broadcast Address: xxx.xxx.xxx.255

IP Addresses: xxx.xxx.xxx.194 – xxx.xxx.xxx.254

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E. Updating Firmware

CAUTION

This process to update the current firmware is already installed into your Wireless Network IP Camera

If you are to begin the process, follow the instruction as manual. And during the process, do not give physical shock nor disconnect network and power. Otherwise, your Wireless Network IP Camera can be damaged seriously, which may result inappropriate operation or operation failure.

If you failed to update Firmware or Wireless Network IP Camera does not operate properly after updating process, please contact your dealer nearby in your area.

Identify the version of Firmware

You can identify the version of Wireless Network IP Camera's Firmware on System Configuration Page.

(You may check the version of your Wireless Network IP Camera firmware first and then try to update)

Follow the below steps to check the present version of Firmware

- ① Connect to your Wireless Network IP Camera's homepage.
- ② Click "Administrator Menu".
- ③ Move to System Configuration Page and then you can check the version of Firmware.

Download New Firmware

You can download the latest Firmware software through the Internet at the INTELLINET ACTIVE NETWORKING support website located at www.intellinet-network.com.

Install New Firmware

The Wireless Network IP Camera can be upgraded via the LAN or remotely over the Internet.

Follow these steps for loading the new firmware:

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- ① Confirm that the Wireless Network IP Camera is connected

to your PC. (As long as you can access your Wireless Network IP Camera Homepage, you can process upgrading)

- ② Execute the newly updated firmware.
- ③ Enter Camera's IP address, Upgrade port number, Admin ID and Password configured on the Network Configuration page.

And then press "start upgrade" button.

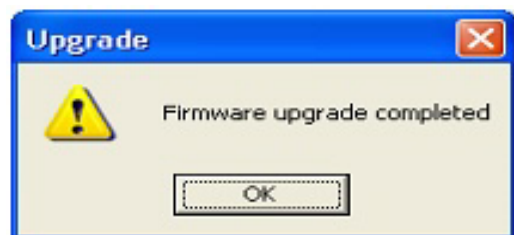
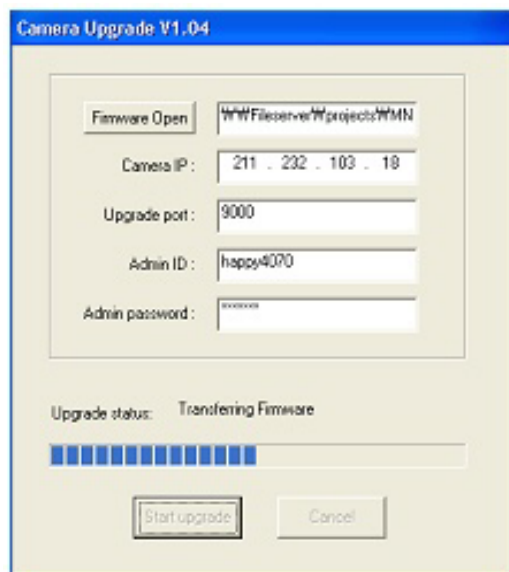
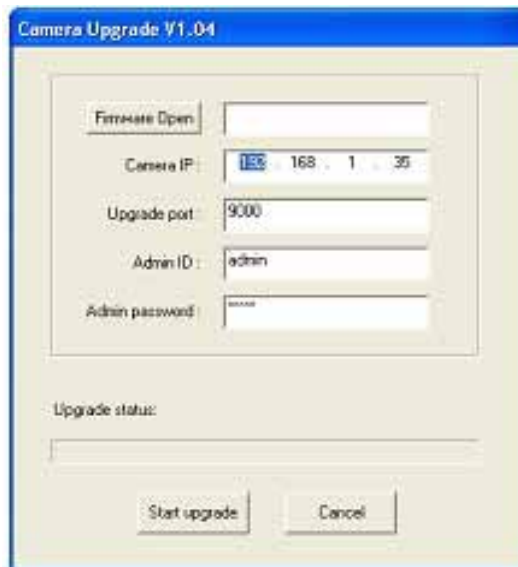
You may see the upgrading status.

Upgrading levels are divided into 4 steps from the step of "Transferring Firmware" to "Verify flash memory".

(Each step is indicated on progress bar)

- ④ When completed upgrading, a message appears indicating the upgrade has been completed.

Click the "OK" button.



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F. The I/O Connector

The I/O Connector provides the physical interface to a digital output, and a single digital photo-coupled input that is used for connecting a variety of external alarm devices to the Wireless Network IP Camera; including, IR-sensors, switches and alarm relay.

In combination with the configurable alarm facilities, you can quickly develop a variety of security applications that are triggered on time – or alarm based – events. The connector can also be utilized as an alternative connection point for DC power supply to the unit.



NO	Function	Description
1	Power GND (-)	Power for the external input/output devices (-)
2	Power DC12V (+)	Power for the external input/output devices (+)
3	Digital Out (+)	Output to the external output devices (+)
4	Digital Out GND (-)	Output to the external output devices (-)
5	Digital In (+)	Input for the external input devices (+)
6	Digital In GND (-)	Input for the external input devices (-)

1-2 PIN

To supply external devices with power. PIN1 is connected to GND terminal of device's power and PIN2 is connected to (+) terminal. However, the external device should be less DC 12V as a voltage and 200mA as an electric current.

3-4 PIN

PIN3 is connected to (+) terminal of external output device; PIN4 is connected to GND terminal of it. Wireless Network IP Camera makes external output device operating by sending signal to external output device. However, the external device should be less DC 12V as a voltage and 200mA as an electric current.

5-6 PIN

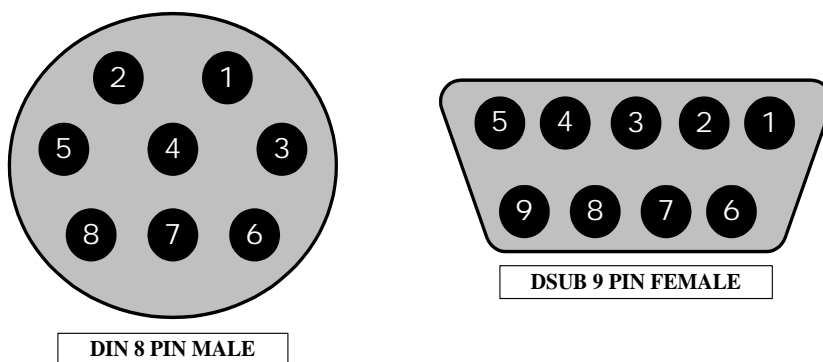
PIN5, 6 are connected to the signal output terminal of external input device such as infrared sensor or alarm sensor. (This signal output terminal should be "Normally Open" type.)

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G. RS 232 CABLE

The Serial Connector

In absence of a local network connection, the RS232 serial connector provides a physical interface for connecting a PTZ devices or computer to Wireless Network IP Camera. This means that Wireless Network IP Camera can operate as a standard unit -independent of any computer network. Users can connect to Wireless Network IP Camera by external mode.



DIN8P MALE TO DSUB9P FEMALE		
PIN NAME	DIN 8 PIN MALE	DSUB 9 PIN FEMALE
RTS	1	8
CTS	2	7
TXD	3	2
GND	4	5
RXD	5	3
DTR	6	6
DCD	7	4
RI	8	9
NC		1

PIN Function

RTS : Return to send

CTS : Clear to send

TXD : Transmit Data

RXD : Receive Data

DTR : Data Terminal Ready

GND : Ground

DSR : Data Signal Ready

RI : (Ring LED)

CD : (Carrier Detect)

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H. Dynamic Domain Name Server (DDNS)

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

The Internet uses DNS servers to lookup domain names and translates them into IP addresses. Domain names, such as www.intellinte-network.com , are just easy to remember aliases for IP addresses. A dynamic DNS service is unique because it provides a means of updating your IP address so that your listing will remain current when your IP address changes. There are several excellent DDNS services available on the Internet and best of all they're free to use. Two such several excellent DDNS services are www.ods.org (ODS) and www.DynDNS.org. You'll need to register with the service and set up the domain name of your choice to begin using it. Please refer the the home page or the service for detailed instructions.

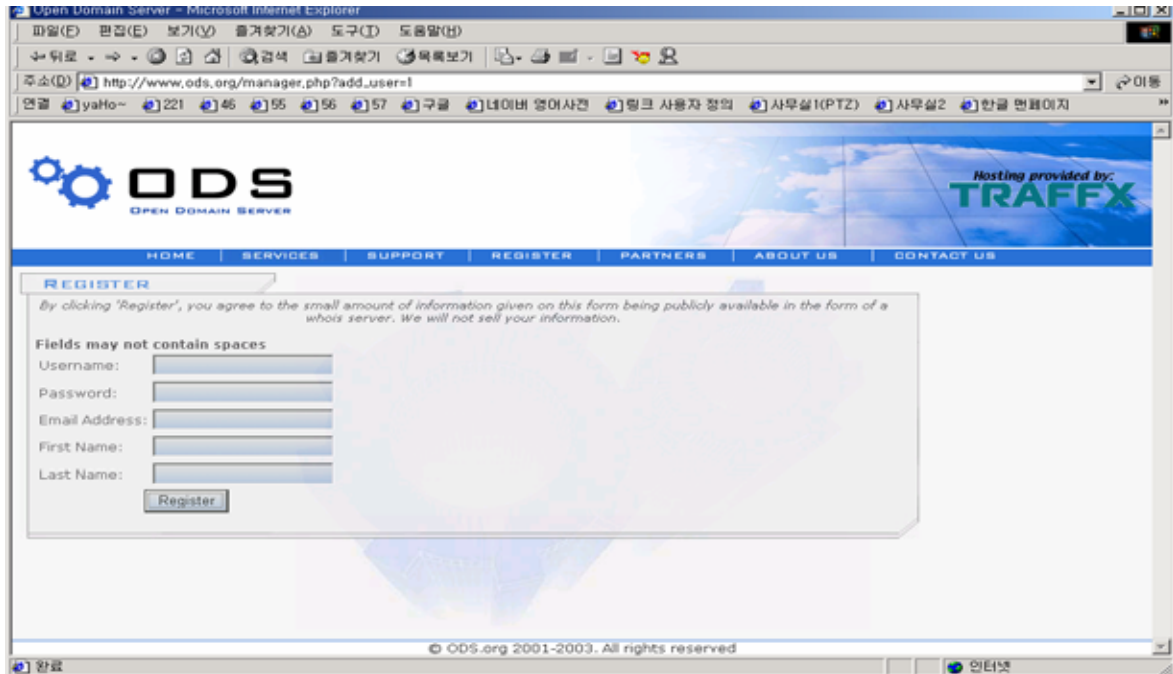
A DDNS service works by uploading your WAN IP address to its servers periodically, your gateway-router may support DDNS directly, in which case you can enter your DDNS account information into your router and it will update the DDNS servers automatically when your IP address changes. Please consult your router's documentation for more information. If your router does not support DDNS, you can run a small client utility on any PC on your network which will perform the updating. The client utility is usually provided for free by the service.

Check the service's web page for further information, terms and conditions.

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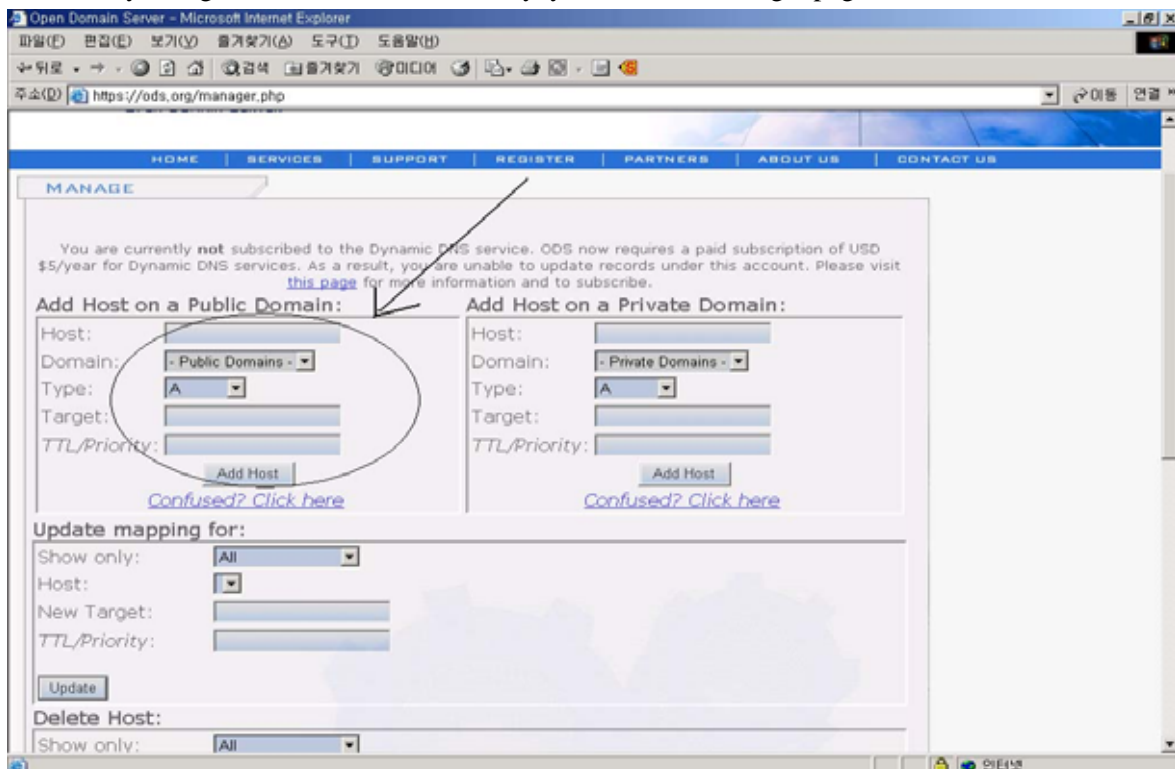
How to use ODS DDNS service

1. Get access to ODS homepage (www.ods.org).



2. In case you didn't register your ID, you should select 'REGISTER' menu and then register your ID/ Password. Otherwise, you just login with registered ID/Password.

3. After you register ID/Password normally, you can see 'Manage' page.



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If you want to use normal DDNS service among many services, you should fill in the blanks in a check box and then click “Add Host” button.

- ① Host: write name you want.
- ② Domain: Select domain you want.
- ③ Type: Select ‘A’ (‘A’ is normal)
- ④ Target: Write initial IP of equipment but just write any IP address that is in the form of “xxx.xxx.xxx.xxx”
- ⑤ TTL Priority: Do NOT select. This is option.

If you want to select “intellinet.dyndns.org” for domain name, write ‘intellinet’ in Host item and then select dyndns.org for domain. Otherwise, please refer to the premium service.

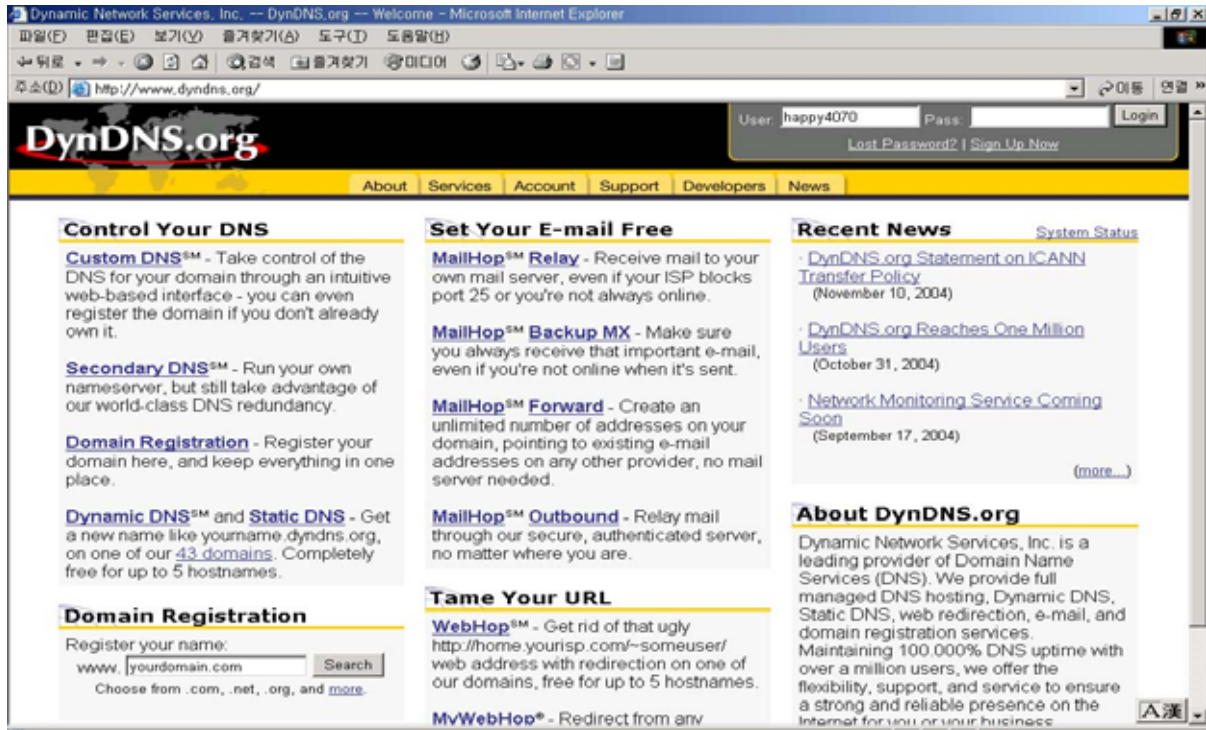
NOTE

After completing DynDNS setting, you should set DDNS registration for the Wireless Network IP Camera

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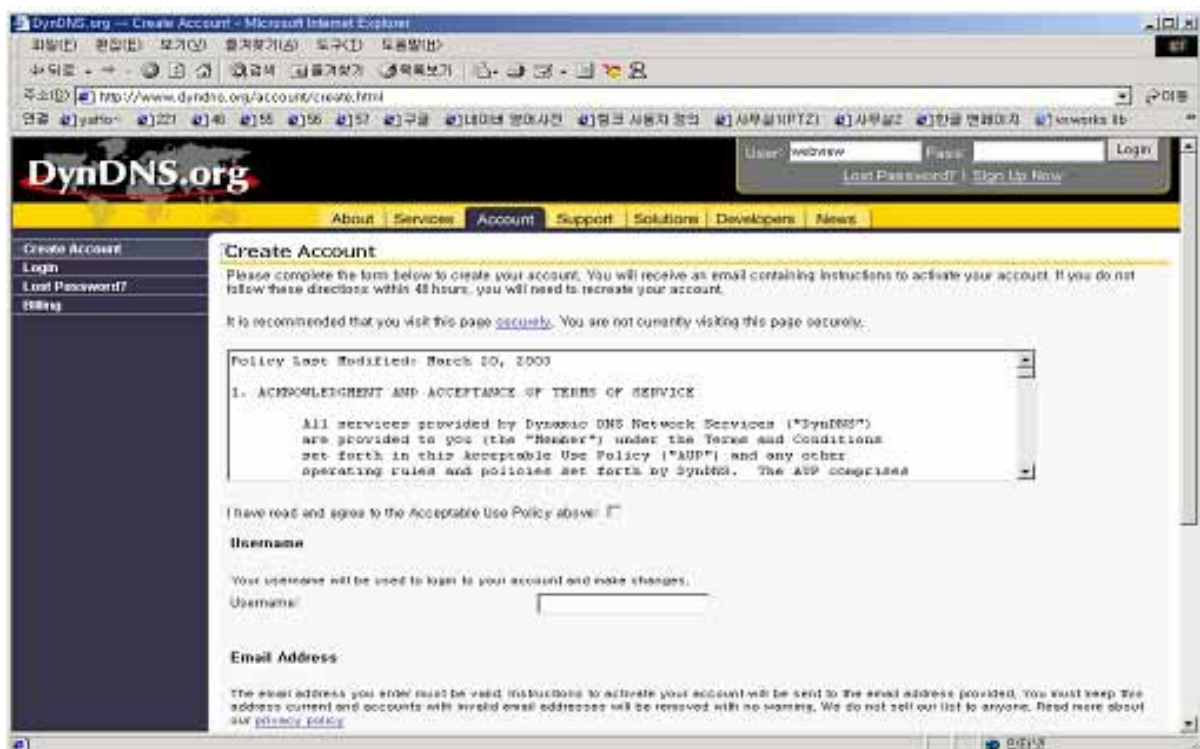
How to use DynDNS DDNS server

1. Get access to DynDNS homepage (www.dyndns.org).

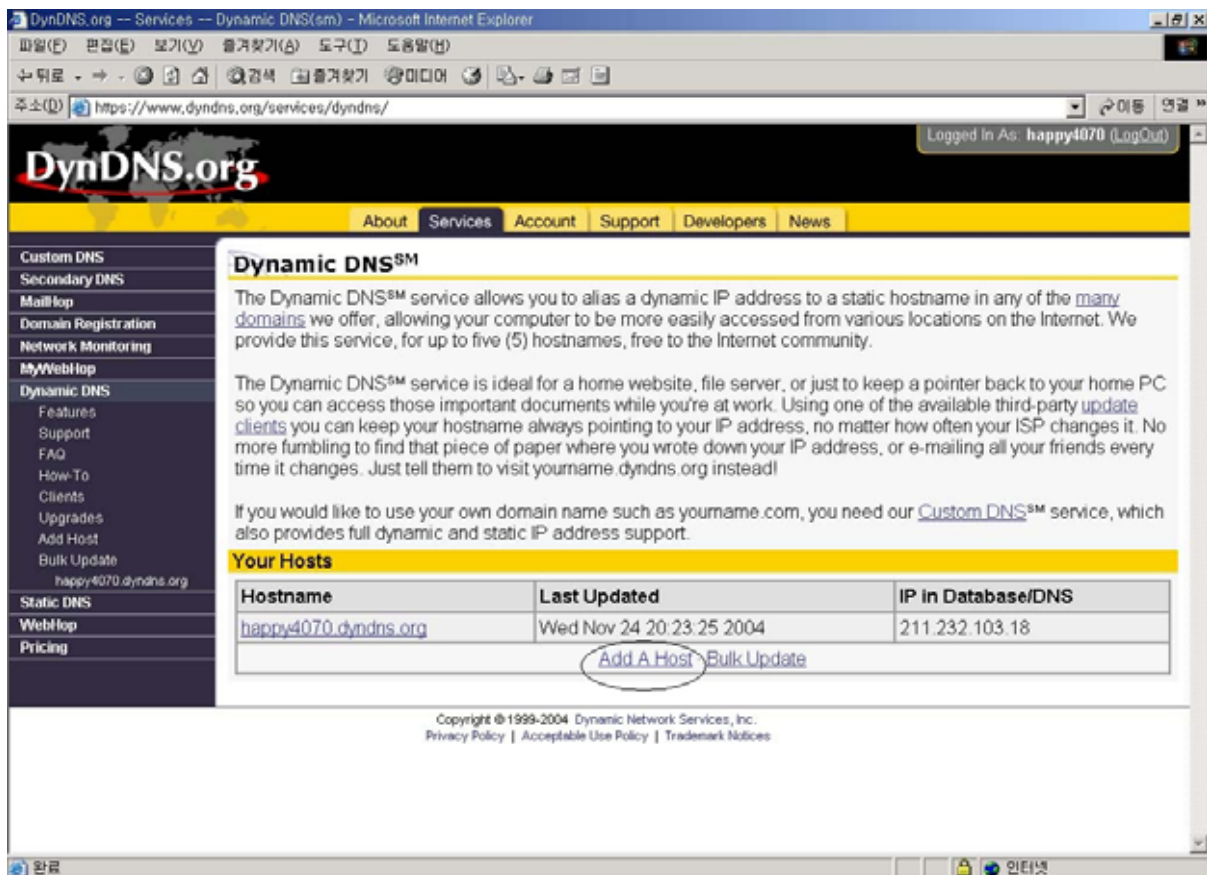


2. In case you didn't register your ID, click "Sign Up Now" and then register your ID.

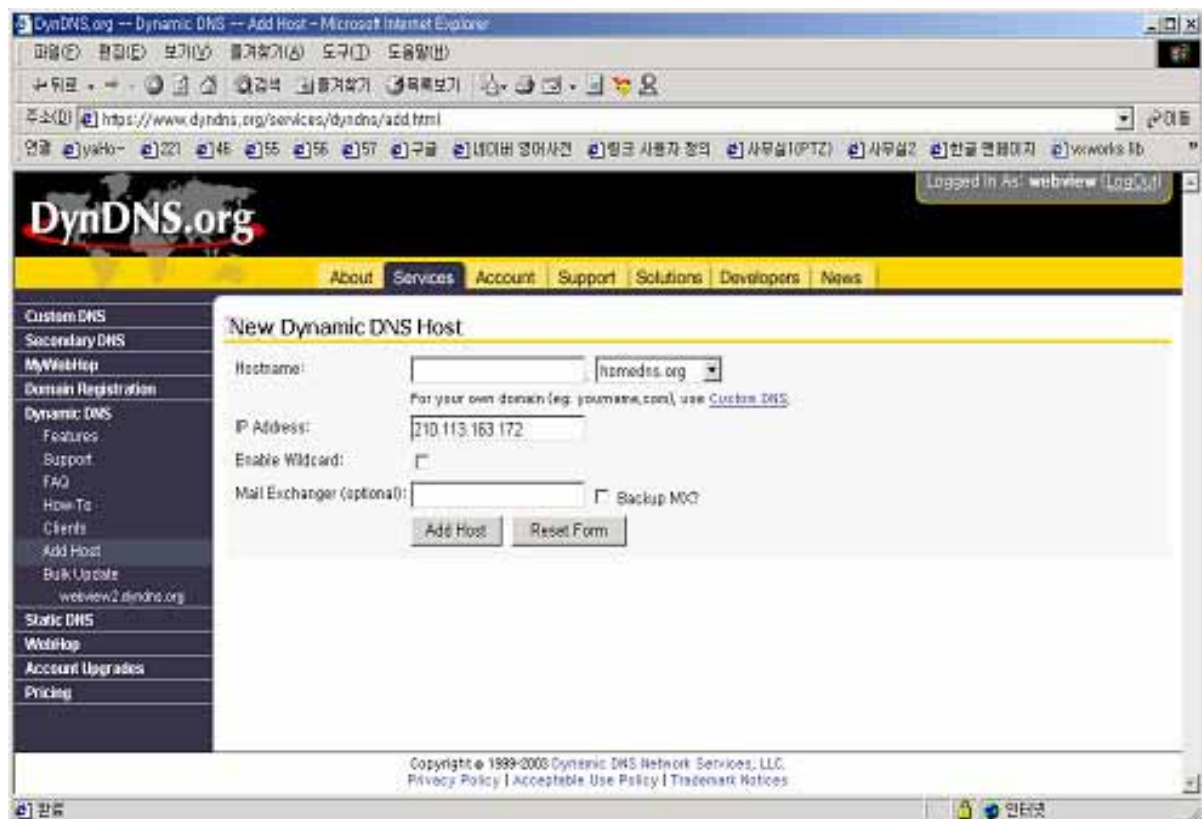
Otherwise, you just login with registered ID.



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3. Click "Add Host", and then go to the next page.

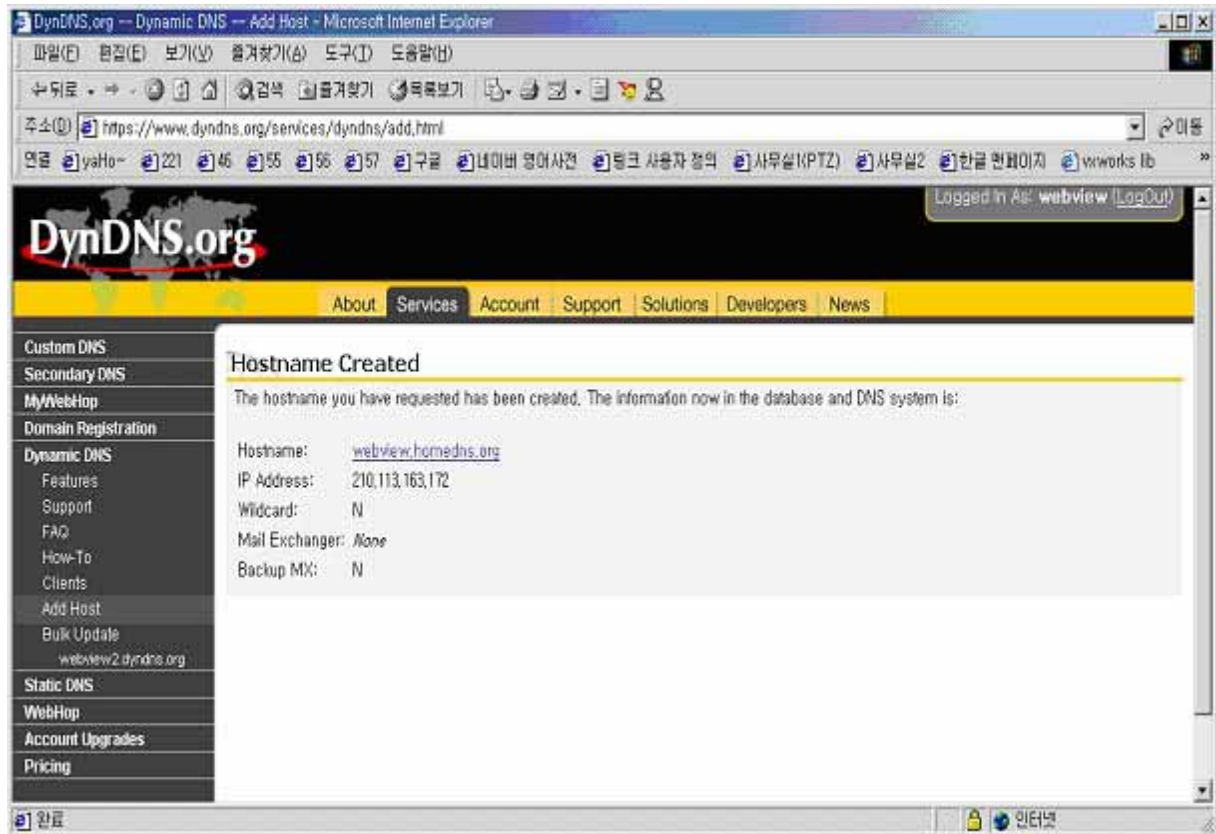


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4. Enter Domain name you want and just leave other items, and then Click “Add Host” button to register.

If you want to know detail of each field, please refer to FAQ of each homepage.

5. You may see this page that shows setting information. after the register is succeeded,

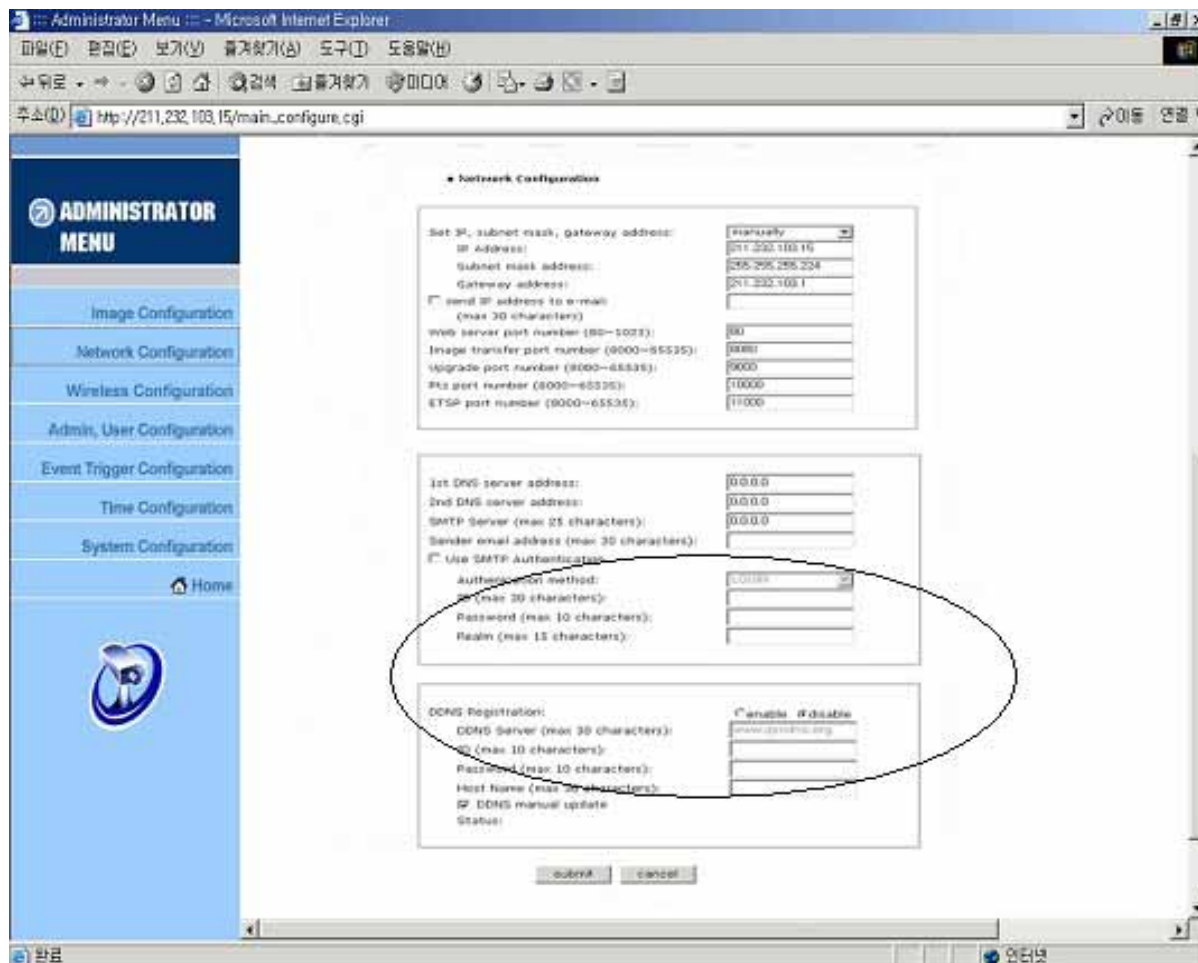


NOTE

After completing DynDNS setting, you should set DDNS registration for the Wireless Network IP Camera

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DDNS registration for the Wireless Network IP Camera



1. After you set ODS or DynDNS successfully, you should move administration -> network configuration.
2. In DDNS Registration item, select DDNS server (ODS or DynDNS) you want.
Enter ID/Password that you registered and fill domain name that you set in each homepage.
(ex: intellient.ods.org)
 - Before DDNS setting, you should register ID/ Password and domain name in ODS or DynDNS DDNS service.
3. If register is finished successfully, you may see "Registration Success" in status. Now, you can connect to the Wireless Network IP Camera by a domain name that you registered.

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I. High Speed Solutions

This information is to help you access high-speed Internet services such as xDSL or a cable modem connection. However, most high-speed Internet Services provide you with some external IP addresses, there are several practical issues that should be considered.

AVAILABLE IP ADDRESS

ISP (Internet Service Provider) will provide you with several external static IP addresses ideally –in which case you can assign any one of these to your Wireless Network IP Camera to make it fully accessible over the Internet. However, if your service provider supplies you with only one IP number – which is often the case – this IP number is normally assigned to your PC-leaving no connection available for your Wireless Network IP Camera.

What can you do if your ISP is unable to provide you with an IP number?

There are a number of other options what you may like to consider: including:

NAT BOX

Short for Network Address Translation, NAT (Network Address Translation) is Internet standard that allows a local-area network (LAN) to use one set of IP addresses for internal traffic and a second set of addresses for external traffic. A NAT box located where your LAN meets the Internet will handle all of the necessary IP address translations and provides:

- Internal IP addresses that are unique to your network – with no possibility of conflict with IP Addresses used by other companies and organizations.
- The possibility of combining multiple ISDN connections into a single Internet connection.
- An effective firewall for hiding internal IP addresses

NAT Feature in Windows 2000

Utilize the NAT feature in Windows 2000 to allow multiple Ethernet cards in your PC, and you can then use one of port for the Internet and the other for your internal network. With this solution, you can let your Wireless Network IP Camera upload image streams to an external Web Server that is maintained and located with your ISP.

ROUTERS AND FIREWALLS

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Another solution is to use one of several small routers/firewalls currently available on the market. These provide the necessary NAT functionality and allow complete independence for your PC, which can be switched off or rebooted without affecting the image transmission from your Wireless Network IP Camera.

WINGATE SERVER SOFTWARE:

Running on a single Windows 95/98/2000 or NT computer, this software allows multiple users simultaneous access to the Internet through a LAN or higher-speed line, such as xDSL or cable modem connection; and effectively shares a single Internet connection with almost any type of client computer running TCP/IP.

For more advanced users, the WinGate 3.0 Standard and Pro versions also allow the administrator to change the IP bindings so that external requests may be routed specifically to your Wireless Network IP Camera – running behind the WinGate software.

NOTE

NAT, or Network Address Translator, Virtual LAN) A hardware device currently being developed and used to extend the Internet addresses already in use. NAT has been suggested as an alternative to adopting IPv6 (IPng). It allows duplicate IP addresses to be used within a corporation and unique addresses outside. It is defined in RFC 1631.

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J. Reinstating the Factory Default Settings

This information explains instructions in detail on how to set the default settings in the Wireless Network IP Camera. In certain circumstances it may become necessary to restart or reinstate the Factory Default settings for your Wireless Network IP Camera: This is performed by pressing the Reset Button, or using Hyper Terminal Setting. Follow these instructions to reinstate the product factory default settings

By pressing Reset button.

- ① Using a paper clip or any sharp pin, press the reset button on the backside of Wireless Network IP Camera.
- ② Switch off the Wireless Network IP Camera by disconnecting the power cable.
- ③ Press and keep the Reset Button pressed, and then reconnect the power supply cable.
- ④ Keep the Reset Button pressed until the Operating Status LED (Green) blinks three times. (Note that this may take up to 10~15 seconds), then release the button. When the Operating Status LED (Green) blinks three times.

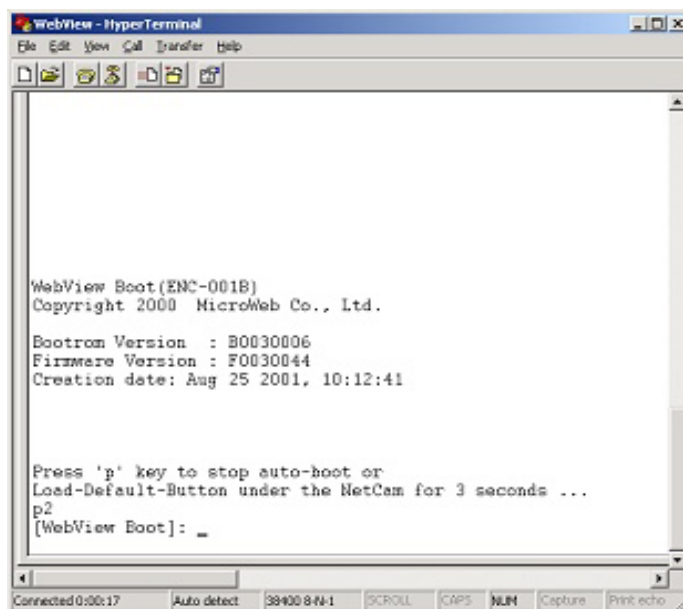
By Using Hyper Terminal

- ① Execute "Hyper Terminal" as referred to Chapter "4.3.1 Configuring Hyper Terminal"
- ② Supply the power to the Wireless Network IP Camera.
- ③ After a while, the count down starts with the message

"Press 'p' key to stop auto-boot or Load-Default-Button under the NetCam for 3 seconds..."

.At this time, press 'p' key. Then, [WebView Boot] prompt shows like the right side image.

- ④ When you enter 'w', Administrator ID & Password reinstate as factory default 'admin'



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NOTE

Reinstating the original default settings will cause all parameters (Including IP address) to be reset.

Factory default setting

Administrator ID: admin

Administrator Password: admin

Guest ID: guest

Guest Password: guest

IP Address: 192.168.1.221

Subnet Mask Address: 255.255.255.0

Gateway Address: 192.168.1.1

Server IP Address: 192.168.1.200

Compression Rate: Level 1

Image Size: QVGA

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K. Glossary of Terms

ActiveX – A control (or set of rules) used by a browser. ActiveX controls are often downloaded and installed automatically as required.

ARP – Address Resolution Protocol. A method for finding a host's Ethernet address from its Internet address. The sender broadcasts an ARP packet containing the Internet address of another host and waits for it (or some other host) to send back its Ethernet address. Each host maintains a cache of address translations to reduce delay and loading. ARP allows the Internet address to be independent of the Ethernet address but it only works if all hosts support it. The ARP command can be used to set the IP – addresses for your product.

CGI – A standard for running external programs from a World-Wide Web HTTP server. CGI specifies how to pass arguments to the executing program as part of the HTTP request. It also defines a set of environment variables. Commonly, the program will generate some HTML which will be passed back to the browser but it can also request URL redirection. A set of rules (or a program) that allows a Web Server to communications with other programs.

DSL – Digital Subscriber Loop, A family of digital telecommunications protocols designed to allow high speed data communication over the existing copper telephone lines between end-users and telephone companies.

DHCP - A protocol that provides a means to dynamically allocate IP addresses to computers on a local area network. The system administrator assigns a range of IP addresses to DHCP and each client computer on the LAN has its TCP/IP software configured to request an IP address from the DHCP server. The request and grant process uses a lease concept with a controllable time period.

Ethernet –A widely used networking standard.

Firewall –A virtual barrier between a LAN (Local Area Network) and other networks, e.g. the Internet.

Frame Grabber Card – Plug-in hardware for “grabbing” images.

FTP - A client-server protocol that allows a user on one computer to transfer files to and from another computer over a TCP/IP network. Also the client program the user executes to transfer files. It is defined in STD 9, RFC 959.

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HTML - A markup language used to structure text and multimedia documents and to set up hypertext links between documents, used extensively on the World Wide Web.

HTTP - A protocol used to request and transmit files, especially WebPages and WebPages components, over the Internet or other computer network.

Intranet - A privately maintained computer network that can be accessed only by authorized persons, especially members or employees of the organization that owns it.

IP - Internet Protocol. The network layer for the TCP/IP protocol suite widely used on Ethernet networks, defined in STD 5, RFC 791. IP is a connectionless, best-effort packet switching protocol. It provides packet routing, fragmentation and re-assembly through the data link layer.

IP number (address) - A unique number used by a computer on the network to allow it to be identified and found.

JPEG - A standard image format, used widely for photographs. Also known as JPG.

LAN - Local Area Network. A data communications network which is geographically limited (typically to a 1 km radius) allowing easy interconnection of terminals, microprocessors and computers within adjacent buildings. Ethernet and FDDI are examples of standard LANs.

PING - A protocol that sends a message to another computer and waits for acknowledgment, often used to check if another computer on a network is reachable.

PPP - Point-to-Point Protocol. A method allowing one computer to connect to another, usually via a modem over a phone line.

Protocol - A set of formal rules describing how to transmit data, especially across a network. Low-level protocols define the electrical and physical standards to be observed, bit- and byte-ordering and the transmission and error detection and correction of the bit stream. High-level protocols deal with the data formatting, including the syntax of messages, the terminal to computer dialogue, character sets, sequencing of messages etc.

SMTP - Simple Mail Transfer Protocol

TCP/IP - Transmission Control Protocol/Internet Protocol. The wide-area-networking protocol that makes the Internet work. TCP/IP is used on many networks, including the Internet. TCP keeps

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track of the individual packets of information and IP contains the rules for how the packets are actually sent and received.

URL – Uniform Resource Locator. An “address” on the network.

WAN – Wide–Area–Network. A communications network that uses such devices as telephone lines, satellite dishes, or radio waves to span a larger geographic area than can be covered by a LAN.

Wizard – A program designed specifically to guide the user through a procedure. Typically used for installation and configuration. Installshield Wizard is required to download ActiveX manually.

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