D-Link DCS-900W

Internet Camera

Manual
Version 1.00

D-Link

Building Networks for People
(11/10/03)

Contents

Package Contents

Contents of Package:

- One DCS-900W Internet Camera
- One Installation CD-ROM
- One 802.11b Antenna
- One AC power adapter
- One Camera Stand
- One Category 5 Ethernet Cable
  If any of the above items are missing, please contact your reseller.

System Requirements:

Local Area Network: 10Base-T Ethernet or 100BaseTX Fast Ethernet
Wireless Local Area Network: 802.11b Wireless Router or Access Point
Recommended: PC, Mac or Notebook to access the Internet Camera
Web Configuration

- Java Enabled and Compliant Web Browser (recommended)
- CPU: Pentium III, 450 MHz or above
- Memory Size: 64 MB recommended
- VGA card resolution: 800x600 or above

IPView Lite Configuration

- Windows XP, Me, 2000, 98SE
- CPU: Pentium III, 450 MHz or above
- Memory Size: 128 MB (256 MB recommended)
- VGA card resolution: 800 x 600 or above

Introduction

Congratulations on your purchase of the DCS-900W Internet Camera! The DCS-900W is a versatile and unique solution for your small office or home. Unlike a PC Camera, the DCS-900W is a stand-alone system with a built-in CPU and Web server that transmits high quality video images for monitoring. The DCS-900W can be accessed remotely, and controlled from any PC/Notebook over the Intranet or Internet via a web browser. The simple installation procedure and intuitive web-based interface offer easy integration with your Ethernet/Fast Ethernet or 802.11b wireless network. The DCS-900W also comes with remote monitoring capability for a complete and cost-effective home security solution.

Features & Benefits

Simple to Use

The DCS-900W is a stand-alone system with a built-in CPU, requiring no special hardware or software such as PC frame grabber cards. The DCS-900W supports both ActiveX mode for Internet Explorer and Java mode for Internet Explorer and Netscape Navigator. All that is required is a computer with current Web browser software.

Supports a Variety of Platforms

Supporting TCP/IP networking, HTTP, and other Internet related protocols, the DCS-900W can be utilized in a mixed operating system environment such as Windows, Unix, and Macintosh. It can also be integrated easily into other Internet/Intranet applications because of its standards-based features.

802.11b Wireless or Ethernet/Fast Ethernet Support

The DCS-900W offers both 802.11b wireless and Ethernet/Fast Ethernet connectivity, making the DCS-900W easy to integrate into your existing network environment. The DCS-900W works with a 10Mbps Ethernet based network or 100Mbps Fast Ethernet based network for traditional wired environments and works with 802.11b routers or access points for added flexibility.

Features & Benefits *(continued)*

Web Configuration

Using a standard Web browser, Administrators can configure and manage the Internet Camera directly from its own Web page via the Intranet or Internet. This means anytime, anywhere access to your DCS-900W from anywhere in the world!

Remote Monitoring Utility

The IPView Lite application adds enhanced features and functionality for the Internet Camera and allows administrators to configure and access the Internet Camera from a remote site via Intranet or Internet. Other features include image monitoring, recording images to a hard drive, viewing up to 4 cameras on one screen, and taking snapshots.

Broad Range of Applications

With today's high-speed Internet services, the Internet Camera can provide the ideal solution for live video images over the Intranet and Internet for remote monitoring. The Internet Camera allows remote access from a Web browser for live image viewing and allows the administrator to manage and control the Internet Camera anytime, anywhere in the world. Many applications exist, including industrial and public monitoring of homes, offices, banks, hospitals, child-care centers, and amusement parks.

Connections

802.11b Antenna

Ethernet Cable
Connector

DC Power Connector

Reset Button
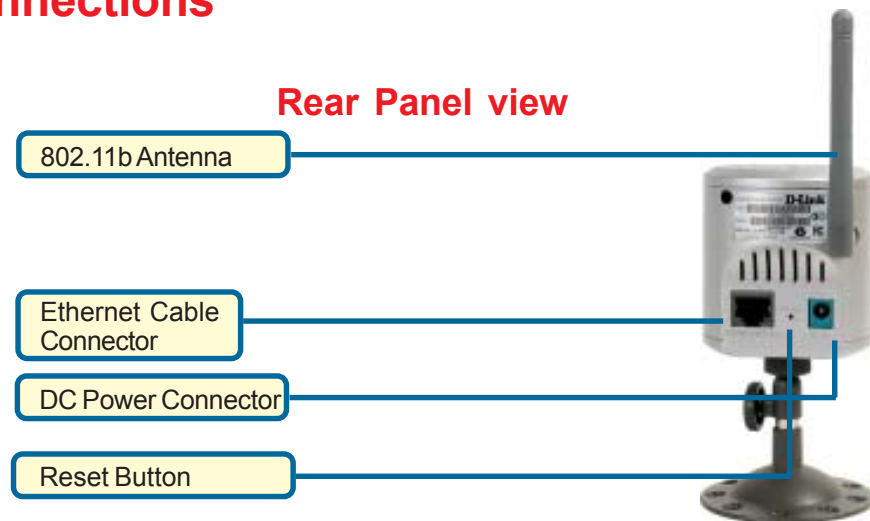
802.11b Antenna

The DCS-900W features an 802.11b wireless antenna for 802.11b wireless connectivity to your existing wireless network. The DCS-900W can be used in conjuction with an 802.11b compliant access point or router.

Network Cable Connector

The DCS-900W features an RJ-45 connector for connections to 10Base-T Ethernet cabling or 100Base-TX Fast Ethernet cabling (which should be Category 5 UTP twisted-pair cable). The port supports the NWay protocol, allowing the DCS-900W to automatically detect or negotiate the transmission speed of the network.

DC Power Connector

The DC power input connector is labeled **DC 5V** with a single jack socket to supply power to the DCS-900W.

Reset Button

Reset will be initiated when the reset button is pressed once and Power LED begins to flash.

Factory Reset will be initiated when the reset button is pressed continuously for three seconds or when the Power LED begins to light up. Release the reset button and the Power LED will begin to flash indicating that the DCS-900W's settings are reverting back to the factory settings. The IP address will also return to the default setting of 192.168.0.20.
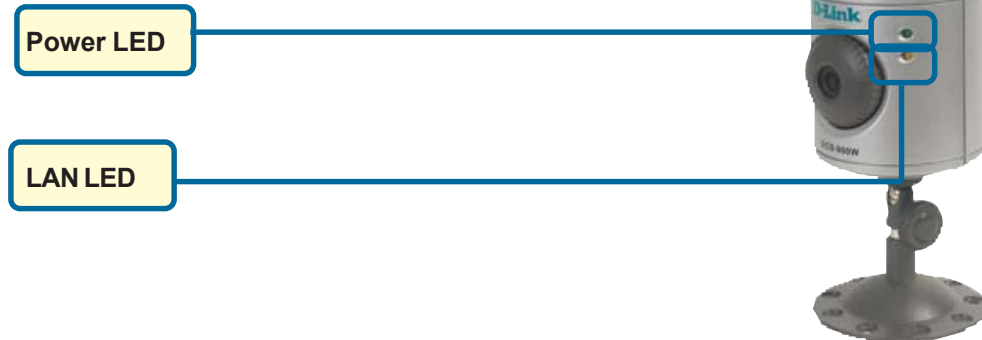
Connections *(continued)*

Bottom Panel view

Stand Connector
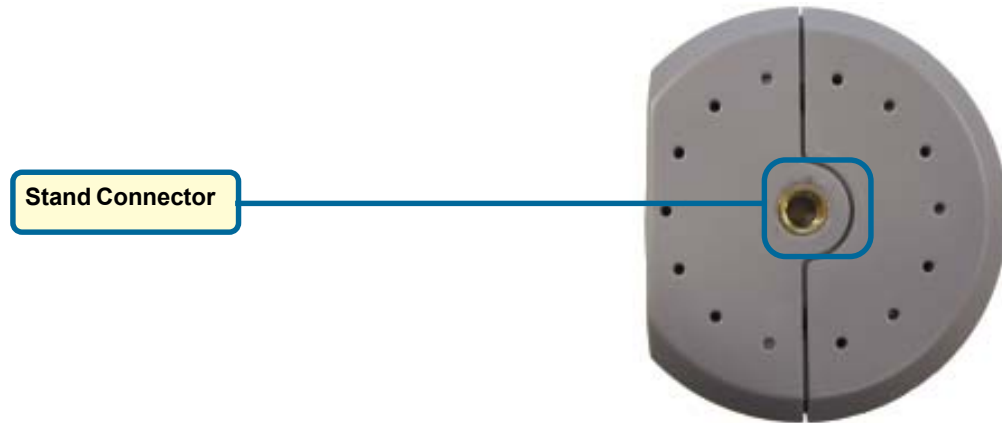
LEDS

LED stands for **L**ight-**E**mitting **D**iode.

Front view

Power LED

LAN LED

Power LED

The Power LED is positioned on the right side of the DCS-900W lens. Steady green confirms that the DCS-900W is powered **ON**.

Note:

There are three settings for the Power LED for monitoring purposes: Normal / Off / Dummy. *Please refer to the **DCS-900W Camera Configuration** section for detailed information and usage*.

LAN LED

The LAN LED is positioned on the right side of the DCS-900W's lens. It is located below the Power LED.

Steady orange confirms a good connection to the LAN.

Depending on the data traffic, the LED will begin to flash to indicate that the DCS-900W is receiving/transceiving from/to the LAN network.

Hardware Installation

Attach the Antenna
Locate the antenna included with your DCS-900W and attach it to the antenna connector located on the back of the DCS-900W.

Attach the Swivel Stand
Locate the stand connector on the bottom panel of the DCS-900W and screw on the swivel stand to the base of the DCS-900W.

Connect the Ethernet Cable
Connect the included Ethernet cable to the network cable connector located on the back panel of the DCS-900W and attach it to the network. Network Connectivity is confirmed when the orange LED Indicator on the DCS-900W located below the Power LED is illuminated.

Attach the External Power Supply
Attach the external power supply to the DC power input connector located on the rear panel of the DCS-900W and connect it to your local power supply. *Note:* Power source is confirmed when the green LED Power Indicator located to the right of the lens on the DCS-900W is illuminated.

Security

To ensure the highest security and prevent unauthorized usage of the DCS-900W, the Administrator has the exclusive privilege to authorize all users. The DCS-900W supports multi-level password protection/access to the DCS-900W that can be restricted by the Administrator for defined users who have a **User Name** and **User Password**.

The Administrator can release a public **User Name** and **Password** so that when remote users access the DCS-900W they will be allowed to view the images transmitted by the DCS-900W.

Note:
When the DCS-900W is used for the first time, it is highly recommended that the Administrator set the **Admin ID** and **Admin Password** to constrain user access to the DCS-900W since the Default settings are Null String (no password). Once the ID and Password are defined, only the Administrator has access to the management of the DCS-900W. This procedure should be done as soon as possible since the security features of the DCS-900W will not be enabled until the **Admin ID** and **Admin Password** is defined.
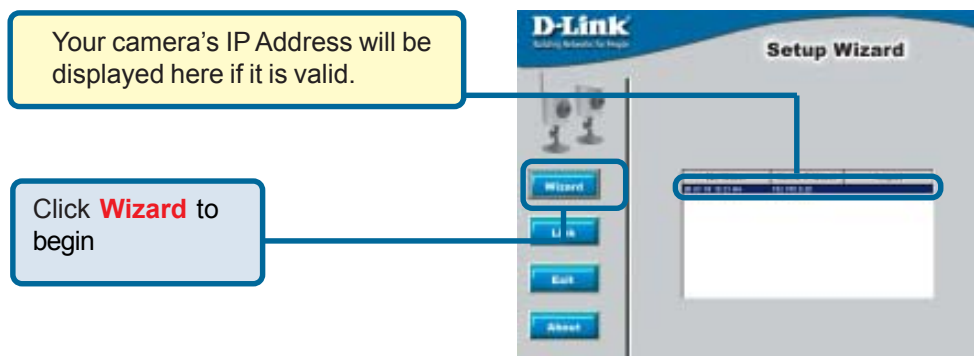
Using the Setup Wizard

Follow the simple steps below to run the Setup Wizard to guide you quickly through the installation process. Insert the **D-Link DCS-900W** Driver CD into your CD-ROM drive. When the autorun screen appears, click I**nstall Wizard** to begin the installation.

Click **Next**

Click **Yes**

Using the Setup Wizard *(continued)*

Click **Next**

Click **Finish**
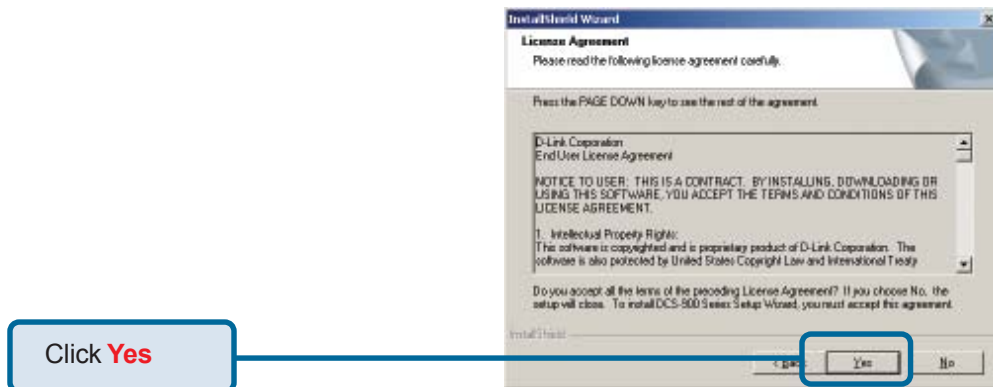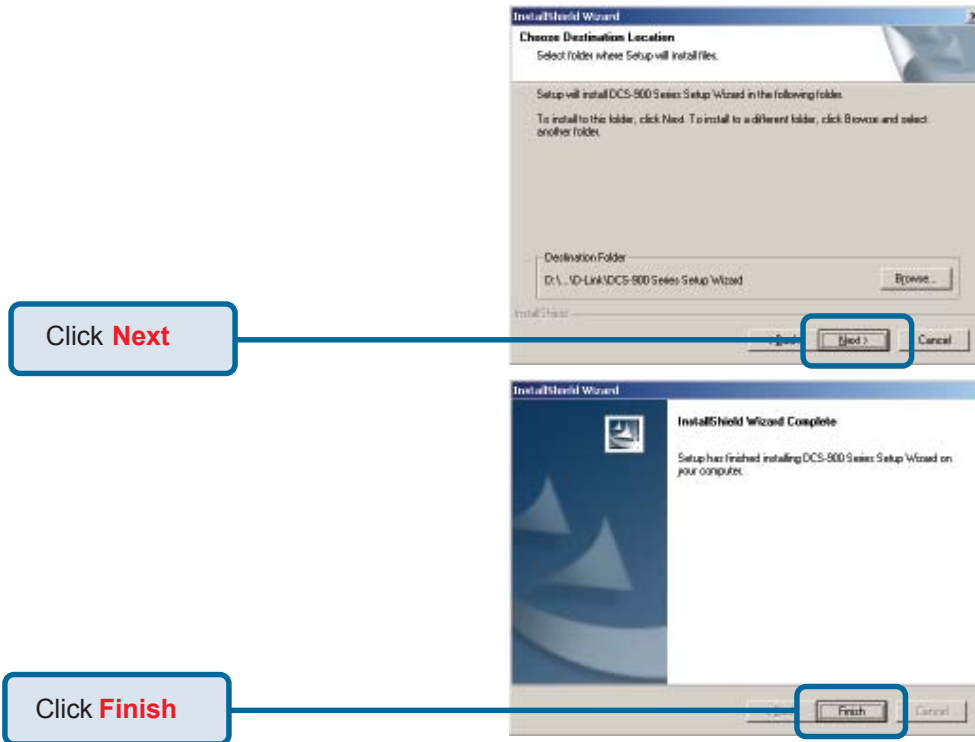
To run the Setup Wizard, click on
Start->**Programs**->**DCS-900W Series Setup Wizard**.

Your camera's IP Address will be displayed here if it is valid.

Click **Wizard** to begin

Using the Setup Wizard *(continued)*

This screen appears if the default IP Address of the camera (192.168.0.20) does not correspond with your local area network settings. You must assign an IP address for your camera that corresponds to your network's IP addressing scheme.

Click **Yes**
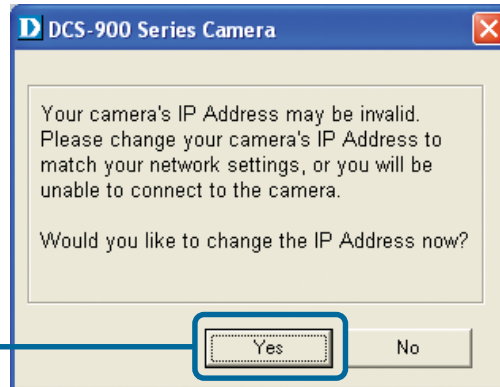
By default, the Admin ID and Password are blank. If you are running this Setup Wizard for the first time, leave both Admin ID and Password fields blank and simply click OK to continue.

Click **OK**
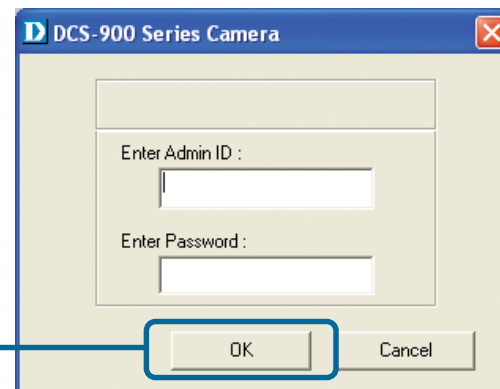
The IP Address of your camera must correspond with your network settings for you to access the camera. If you are unsure of what these settings should be, please check with your network administrator.

Click **OK**

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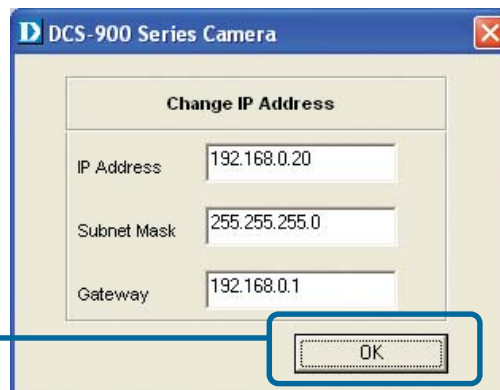
Using the Setup Wizard *(continued)*

You must change the **Admin ID** and **Password** immediately to protect your camera against unauthorized access. By default, the Admin ID and Password are blank. To change the Admin ID and Password, select both **Change** boxes and enter a **New ID** and **New Password**.

Click **Next**

The **IP Address, Subnet Mask** of your camera and **Gateway** must correspond with your network settings for you to access the camera. If you are unsure of what these settings should be, please check with your network administrator.
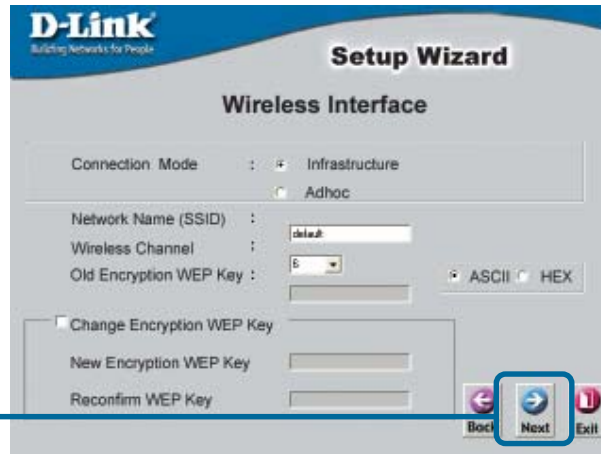
Click **Next**

Using the Setup Wizard *(continued)*

The Connection Mode depends on how your camera is connected to your network. Click Infrastructure for use with a router or Adhoc for a peer-to-peer connection. The Network Name, Wireless Channel, and Encryption Keys MUST correspond with your wireless network settings for the camera to work.

Click **Next**

If you need to make any changes, click **Back** to modify your camera settings. Otherwise, click **Restart** to save and apply your settings.

Using the Setup Wizard *(continued)*

Your setup is now complete! Click **Link** to launch your web browser and view your images.
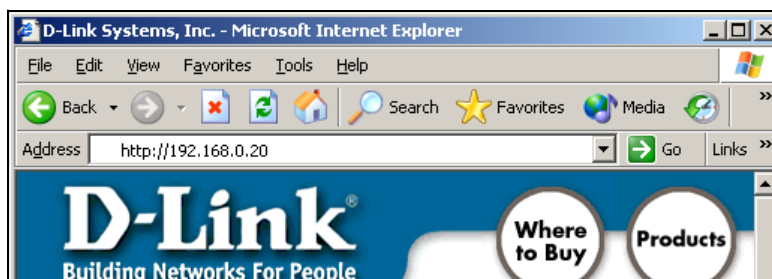
Click **Link**

DCS-900W Configuration

Web Configuration

After completing the Setup Wizard, you are ready to use your camera. The web configuration utility is designed to easily access and configure your DCS-900W.

From the Web Browser, enter the IP address that you assigned to your DCS-900W to access the Welcome screen of the DCS-900W. Press **Enter**.

Note:

The PC's IP address must correspond with the DCS-900W's IP address in the same segment (i.e. PC=192.168.0.5, Camera=192.168.0.20) for the two devices to communicate. For instructions on how to do this, please access instructions for installing any of the D-Link Broadband Gateway products from **support.dlink.com/** products.

Home Screen

After the camera's IP address is entered in the Browser, the DCS-900W Home screen will appear with a still image from your camera. There will be three options to choose from to set up and view your Internet Camera:

- ActiveX
- Java
- Setup

DCS-900W Configuration *(continued)*

Configuration

Click on **Setup** from the Home screen to access the settings required for the DCS-900W.

There will be several options in the Configuration page to choose from to setup your DCS-900W and they are as follows:

> **Advanced**
> - System
> - Video
>
> **Tools**
> - Admin
> - Time
> - Default
>
> **Status**
> **Help**

DCS-900W Configuration *(continued)*

Advanced > System

The System menu allows you to configure and set up your DCS-900W for operation. If you already set up your camera using the Setup Wizard, you may view/change your settings here.

To access the System menu, click on the **Advanced Tab** in the menu bar, then the **System** tab in the left hand bar and the **System** screen will appear as illustrated below:

DCS-900W Configuration *(continued)*

Advanced > System

Camera Name:

This field is used for entering a descriptive name for the camera. The default setting for the Camera Name is CS-xxxxxx, where xxxxxx are the last six digits of the MAC Address. The maximum length is 32 characters (Printable ASCII).

Location:

This field is used for entering a descriptive name for the location used by the DCS-900W.

IP Assignment:

> **Important Information**
>
> Access to the Internet Camera is gained by assigning a proper IP Address. Please make sure to use a vacant IP address when you assign the IP Address for the Internet Camera. This will prevent IP Address conflicts.

There are two options to select from the IP Assignment, either **Manually Assign** or **Assign Automatically Using**.

Manually Assign

You can click **Manually Assign** and directly enter a valid IP Address for your camera. Remember that your camera's IP Address must correspond to your network settings if you wish to change it here.

The default settings are as follows:
- Default IP – 192.168.0.20
- Subnet Mask – 255.255.255.0
- Default Gateway – 0.0.0.0

DCS-900W Configuration *(continued)*

Advanced > System

Assign Automatically Using

> **Important**
> This options is recommended only for advanced users and network administrators since it may be difficult to determine the IP Address of the unit after the IP Address has been automatically asssigned. It is recommended that an IP Address be assigned manually.

If your network is using **RARP, BOOTP,** or **DHCP Server** you can Click **Assign Automatically Using** and click on **RARP**, **BOOTP** or **DHCP**. Under this setting the DCS-900W will automatically assign an IP Address from the **RARP, BOOTP** or **DHCP Server**. Each time the DCS-900W starts up, be sure the **RARP, BOOTP** or **DHCP Server** is set up to assign a static IP to your DCS-900W.

If your application requires direct connection from an ADSL modem through the DCS-900W's RJ-45 LAN port and you also have an ISP PPPoE account, click on **PPPoE** and enter the **Service Name**, **User ID** and **Password** into the respective fields.
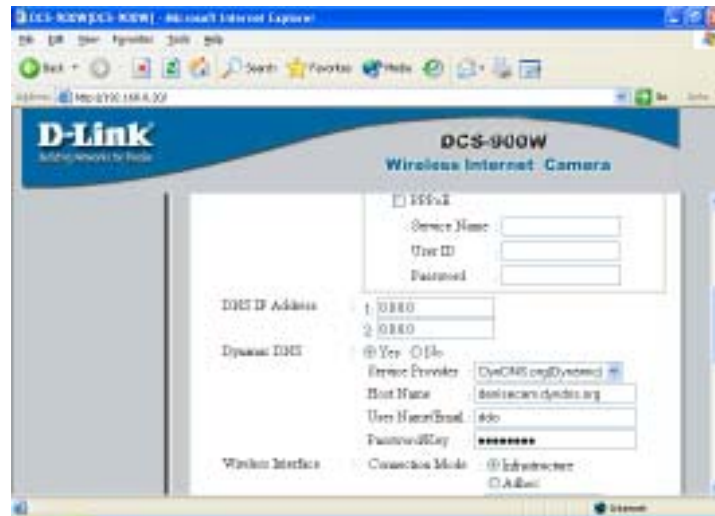
The DCS-900W will get an IP Address from the ISP each time it starts up.

DCS-900W Configuration *(continued)*
Advanced > System

DNS IP Address:

DNS (Domain Name Service) is an Internet service that translates domain names (ie. www.dlink.com) into IP Addresses (ie. 192.168.0.20). The DNS IP Address can be obtained from your ISP.

Dynamic DNS

The DCS-900W supports Dynamic DNS which means that you can obtain and assign an easy to remember static address for your camera like www.mycamera.com through a free service such as www.dyndns.org. This means that no matter how often your camera's IP changes, you will always be able to access your camera using your unique assigned name such as www.mycamera.com.

DCS-900W Configuration *(continued)*
Advanced > System

Wireless Interface:

Connection Mode:

Use the Connection Mode to determine the type of wireless communication for the Internet Camera. There are three choices: **Infrastructure mode**, **802.11 Adhoc mode** and **Adhoc mode**. The default setting for the Connection Mode is Infrastructure.

Note:

Keep in mind that after setting the Wireless Interface make sure that the Slide Switch on the rear panel is positioned to either LAN/WLAN or WLAN setting for the wireless communication to take effect.

To enable WEP Encryption, first decide which WEP key format will be applied. Click on the ASCII or HEX check box to select the type of format, then input the WEP key. To Confirm the WEP key you must enter the data once again in the Confirm WEP Key field.

ASCII input format

ASCII format interprets each character 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'. This results in bit counts of 40 and 104, respectively; the Internet Camera will automatically pad your input to a bit count of 64 or 128.

DCS-900W Configuration *(continued)*
Advanced > System

HEX input format

HEX format interprets each pair of characters as an eight-bit value in hexadecimal (base 16) notation. Only the digits 0 through 9 and the letters A through F (in upper or lower case) are valid. To set up a 64-bit WEP key, input 10 numbers in HEX format, for example, '3132333435', this is the same with the ASCII input '12345'. To set up a 128-bit WEP key, input 26 numbers in HEX format, for example, '31323334353637383930313233', this is the same with the ASCII input '1234567890123'. This results in bit counts of 40 and 104, respectively; the Internet Camera will automatically pad your input to a bit count of 64 or 128.

In the Confirm WEP Key field, input the same characters that were inputted in the Encryption Code field.

Make sure the Encryption Code matches the Access Point's encryption code when the Internet Camera is connected in Infrastructure mode. Your PC/Notebook's encryption code also needs to match the encryption code used by the Internet Camera in either Infrastructure mode or Ad-hoc mode.

By default, an Encryption key is not assigned to the DCS-1000W. Therefore, to secure the wireless transmission be sure to enable the Encryption Key by entering the relevant data.

Note:

Be sure to carefully input and document the Encryption Code; input errors will cause the communication link to fail.

LED Control:

The LED control allows you to set up the LED illumination as desired. This feature provides flexibility when surveillance activity is **ON**.There are three options as follows:

- Normal
  Power -LED indicator is steady **ON**.
  LAN- When LAN activity is present, the LED indicator will flash steadily **ON.**
- OFF
  Power - LED indicator is off.
  LAN – LED indicator is off.
- Dummy
  Power - LED indicator is steady **ON**.
  LAN - LED indicator is **ON** with random flashing.

DCS-900W Configuration *(continued)*
Advanced > System

The default setting for the LED control is **Normal**. When you have configured the LED control the correct illumination will be applied after 1 minute.
Note: The three LED options allow the Administrator to customize the LEDs for discreet camera operation in surveillance scenarios. In Normal Mode, the LED indicator functions normally. Under Off Mode, the LED indicators are both **OFF** during active monitoring. In Dummy Mode, the LEDs are active and monitoring is either active or inactive.

Loading ActiveX From:

This field is used to specify the location of Xplug Control (ActiveX) plug-in program. Enter the information as required in .ocx format, for example: http://www.*<your company>*.com/xplug.ocx where *<your company>* must be replaced with your company's DNS server.

Instructions for installing ActiveX from the driver CD is included in this manual. Please refer to the Appendix.

Open Second Port:

The Open Second Port option is used when multiple cameras are being installed on a network OR if you need to use a port other than the default Port 80 and 8481 for image viewing. If you are installing only one camera and wish to use the default ports, you do not have to open a second port on your camera. If you are installing a camera behind a router, you must also open a port on your router for remote viewing of your camera. For detailed instructions on how to do this, please refer to the next section of this manual on how to install the DCS-900W with a router. For each additional camera that is installed, you must select the Open Second Port option and assign the approriate Web server and Transfer Image Ports for each camera to enable remote viewing.

For example, for a multiple camera installation, you can open the second port for each additional DCS-900W from Port 81 to Port 85 as follows:

Internet Camera 1 – IP 192.168.0.101, second Web Port 81
Internet Camera 2 – IP 192.168.0.102, second Web Port 82
Internet Camera 3 – IP 192.168.0.103, second Web Port 83
Internet Camera 4 – IP 192.168.0.104, second Web Port 84
Internet Camera 5 – IP 192.168.0.105, second Web Port 85

DCS-900W Configuration *(continued)*
Advanced > System

The Transfer Image Port must also be assigned a port number for multiple camera installation, beginning with Port 8482:

Internet Camera 1 – IP 192.168.0.101, second Web Port 8482
Internet Camera 2 – IP 192.168.0.102, second Web Port 8483
Internet Camera 3 – IP 192.168.0.103, second Web Port 8484
Internet Camera 4 – IP 192.168.0.104, second Web Port 8485
Internet Camera 5 – IP 192.168.0.105, second Web Port 8486

Note: If you are installing multiple DCS-900W and wish to use the default 192.168.0.20 address, remember to assign this address to the LAST camera that you plan to install to avoid conflict of IP Address.

IMPORTANT: You MUST also set up your router/gateway for Port Mapping--this will enable remote viewing of your camera via the Internet. Please refer to your router's instruction manual on how to open up Ports. For additional help on configuring your camera to work with your router, please refer to the next section on setting up your camera for use with a router. For installing multiple cameras, TWO ports per camera must be opened on your router, the Web server and image transfer port.

Apply/Cancel:
After making sure all your settings are correct, click on the **Apply** button to store the settings. You can alternatively click on the **Cancel** icon to restore all settings to the values last saved to or retrieved from the DCS-900W.

DCS-900W Configuration *(continued)*
Installing the DCS-900W Behind a Router

Single Camera Installation

If you are installing a single camera on your network the installation is an easy 4–step procedure:

1) Identify Your Camera on the Network
2) Assign a Local IP Address for Your Camera
3) Determine Your Router's WAN IP Address (Enable Remote Viewing)
4) Open Virtual Server Ports for Your Router (Enable Remote Viewing)

Multiple Camera Installation

If you are installing multiple cameras on your network, the installation is an easy 5-step procedure:

1) Identify Your Camera on the Network
2) Assign a Local IP Address for Your Camera
3) Open a Second Port on the Camera
4) Determine Your Router's WAN IP Address (Enable Remote Viewing)
5) Open Virtual Server Ports for Your Router (Enable Remote Viewing)

DCS-900W Configuration *(continued)*
Installing the DCS-900W Behind a Router
1) Identify Your Camera on the Network

Once you are logged into the camera via a web browser on your network PC,click
on the **Advanced** Tab, and select **System**. Enter a unique **Camera Name** and
Location. These settings are important if you are installing several cameras on your
network.

Identify Your Camera on Your Network

2) Assign a Local IP Address for Your Camera

A Local IP Address is required to configure your camera and to view your
camera within your local (home) network. You may use the default camera IP
Address of 192.168.0.20. If you wish to use a different IP Address, be sure that the
camera settings correspond to your network settings. The Default Gateway will be
the IP Address of your router's Local IP Address(i.e.192.168.0.1 if you are using a D-
Link router)

Assign a Local IP Address

DCS-900W Configuration *(continued)*
## Installing the DCS-900W Behind a Router
Assigning and opening second port in the DCS-900W
(For Installing Multiple Cameras)

Opening ports will allow users to view the camera via the Internet. The ports that are opened must be unique for each camera in order to successfully view the images remotely.

3) Open Second Port

>The **Open Second Port** option is used when multiple cameras are being installed on a network OR for using a port other than the default port for image viewing. For each additional camera that is installed, you must select the Open Second Port Option and assign the appropriate Web server and Transfer Image ports for each camera to enable remote viewing.

>By default, ports **80** (Web server port) and **8481** (for camera image viewing) are open. If these ports are available for use, you DO NOT have to open a second port and can proceed to the next section. If port 80 is *not* available (for example, if you are already using port 80 to run a webserver or your ISP blocks access on port 80*) you MUST open a second port and designate a new Web server port (81, 82, 83,…etc) AND a new image transfer port (8482, 8483,…etc). IMPORTANT: Be sure to take note of these settings since these same settings will be used to configure your router.

Enter the desired port settings for your camera here.
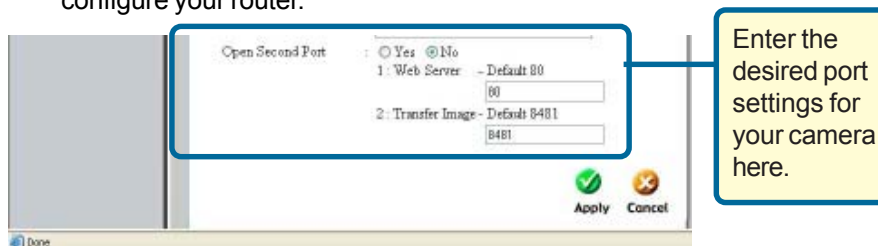
Open a Second Port for Your Camera

*IMPORTANT NOTE: Some ISPs block traffic on commonly used ports like port 80 to conserve bandwidth. Be sure to check with your ISP so that you can open the appropriate ports accordingly. If your ISP does not pass traffic on port 80, you will need to change the service port the camera uses from 80 to something else, like 800. If you are behind a residential gateway, you will need to open the corresponding port on your gateway as well. Not all gateways are the same, so refer to your user's manual for specific instructions on how to forward ports.

DCS-900W Configuration *(continued)*
Installing the DCS-900W Behind a Router
ROUTER SET-UP AND INSTALLATION

The following steps generally apply to any router that you have on your network. The D-Link DI-614+ is used as an example to clarify the configuration process.

Your WAN IP Address information will be listed here.
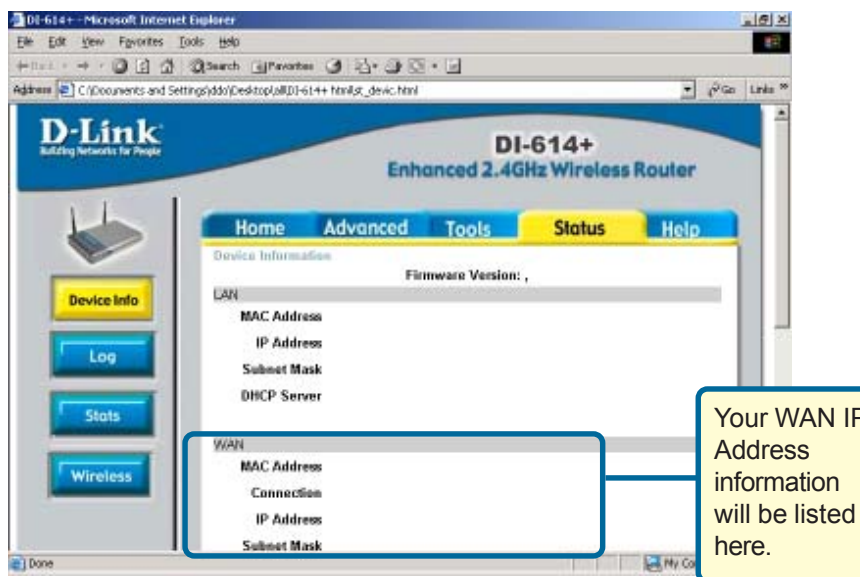
Determine Your Router's WAN IP Address

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

DCS-900W Configuration *(continued)*
Installing the DCS-900W Behind a Router

ASSIGNING AND OPENING VIRTUAL SERVER PORTS

5) Open Virtual Server Ports To Enable Remote Image Viewing
The Virtual Server Ports of your router must be opened for remote access to your camera. This is also referred to as port forwarding. Please proceed as follows:

- Select **Enabled** to enable virtual server settings.
- Enter your camera's Local IP Address (Step ②) in the **Private IP** field.
- Select **TCP** under **Protocol Type**.
- If you are using the default camera port settings, enter 80 in to the **Public** and **Private** Port section*.
- **Schedule** should be set to **Always** so that the camera images can be accessed at any time.
- In the **Virtual Servers List**, a check mark appearing before the camera name will indicate that the ports are enabled.
- Click **Apply** to save your settings. Note: If you are installing multiple cameras, be sure to open TWO ports per additional camera installed: port 81, 82, etc. for web server and port 8482, 8483, etc for image transfer.

Opening Virtual Server Ports on Your Router

DCS-900W Configuration *(continued)*
Installing the DCS-900W Behind a Router

*IMPORTANT NOTE: Some ISPs may block access to port 80. Be sure to check with your ISP so that you can open the appropriate ports accordingly. Some ISPs block traffic on commonly used ports to conserve bandwidth. If your ISP does not pass traffic on port 80, you will need to change the service port the camera uses from 80 to something else, like 800. If you are behind a residential gateway, you will need to open the corresponding port on your gateway as well. Not all Gateways are the same, so refer to your user´s manual for specific instructions on how to forward ports.

Viewing Your Camera

After all settings have been entered correctly, a user inside or outside your network will have access to the camera through a standard web browser. To access from the Internet, simply type in the Static IP Address of the **router** given to you by your ISP (Step 4), a colon, and the port number that you gave your camera. (Ex. http://205.163.122.96:83). To access from a computer on your local (home) network, simply enter the local IP Address of your camera (i.e. 192.168.0.35).

DCS-900W Configuration *(continued)*
Advanced > Video

The Video menu allows you to control and adjust the image settings for your DCS-900W. Click on **Video** on the left hand panel and the Image screen will appear as shown in the following illustration:

Video Resolution:
Select the desired video resolution format: 320x240 (default) or 640x480.

Compression Rate:
Select the desired compression rate ranging from very low to very high. Higher video compression rates will generate more compact file sizes with less video quality, and lower video compression will result in larger files with higher video quality. The default setting is **Medium**.

Frame Rate:
Select the frame rate desired. Use the default setting of **Auto** for optimal results.

Brightness Control:
Allows you to adjust the brightness level. The default setting is **64**.

Contrast Control:
Allows you to adjust the contrast level. The default setting is **64**.

Hue Control:
Allows you to adjust the hue level. The default setting is **64**.

DCS-900W Configuration *(continued)*

Advanced > Video

Light Frequency:

Adjust the light frequency to suit your area of operation. 50 Hz and 60 Hz variants are available to accommodate the different light frequencies found in USA (60 Hz) and Europe (50 Hz) for optimal image quality.

Apply/Cancel:

After making sure all your settings are correct, click on **Apply** to store the settings. You can alternatively click on **Cancel** to restore all settings to the values last saved to or retrieved from the DCS-900W.

Tools > Admin

The **Tools->Admin** menu allows the system administrator to assign users permission to monitor the DCS-900W from a remote site.

Click on **Tools,** then **Admin** in the left hand panel to access the Admin menu.

Enter the **Admin Password** with a maximum length of 8 (Printable ASCII) characters.

To confirm the **Admin Password**, type in your password again.

The default setting for **Admin ID** is blank (Null String). You need to key in the **Admin ID** with a maximum length of 12 (Printable ASCII) characters.

DCS-900W Configuration *(continued)*

Tools > Admin

Add User
User Name:
Enter the user name in this field. A maximum of 8 user names are allowed, however each user name must be different. Each user name can be used as a group. For example, if the User Name is **Guest** and the User Password is **Guest,** anyone can access the DCS-900W using this information. The maximum length for the User Name is 12 characters (Printable ASCII).

User Password:
Enter the user's password you want to assign to the specific user-name. The maximum password length is 8 characters (Printable ASCII).

To add a new user name, input the necessary information first and click on **Add**.

Delete User: Select the user you wish to delete from the pull down menu and click on the **delete** icon.

Important Information

Once the administrator has added users for the DCS-900W, users will be required to enter a login password to access the video image from the DCS-900W. The password dialog box is illustrated below.
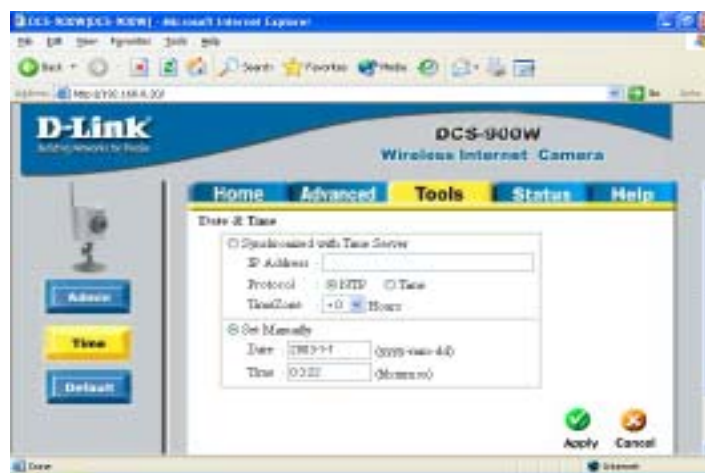

DCS-900W Configuration *(continued)*
Tools > Time

The **Time** menu sets the DCS-900W's time and date requirements to provide correct information to users who are accessing from a remote site. The two options in the **Time** settings are *Synchronized with Time Server* or *Set Manually*.

Click on **Time** in the left hand panel and this screen will appear as illustrated below:

DateTime:
Select **Synchronized with Time Server** and the time will be based on the GMT setting. This is the default setting for the DCS-900W. Using a time server with your camera is recommended for time/date accuracy for your recorded video images and is critical for surveillance applications. Public time servers are available on the web. You must choose the appropriate time server matching your region of operation.

The NTP server web addresses listed below will set the time server.
        http://www.eecis.udel.edu/~mills/ntp/clock1a.htm
        http://www.eecis.udel.edu/~mills/ntp/clock2a.htm

IP Address:
Enter the IP Address of the *Time Server* in this field. The IP address will be listed with the time server information on the web.

DCS-900W Configuration *(continued)*

Tools > Time

Protocol:

Two options are available for linking with the *Time Server.* The default setting is **NTP**.

TimeZone:

The System administrator must select the time zone for the region. *Please refer to the Appendix for the time zone selection table.*

To set the **Time** manually select **Set Manually**. The system administrator must then enter the Date and Time in the respective field manually. When **Set Manually** is selected, each time the DCS-900W is powered off, the time must be reset manually at reboot.

Apply/Cancel:

After making sure all settings are correct, click on the **Apply** icon to store the settings in the DCS-900W. You can alternatively click on the **Cancel** icon to restore all settings to the values last saved to or retrieved from the DCS-900W.

DCS-900W Configuration *(continued)*

Tools > Default

The **Default** tab contains commands for restarting the DCS-900W.
Click on **Tools**, then the **Default** tab in the left hand panel and the **Tools** screen will appear as illustrated below

Factory Reset:

A factory reset restarts the DCS-900W and returns all settings to their default values. The Factory Reset panel contains the message "Do you really want to factory reset this device?" and a YES button. If you do not want to carry out a factory reset command, exit the panel without clicking YES, otherwise click on the **"YES"** icon and factory reset will be initiated.

> **Warning**
> The Network settings must be reconfigured after a Factory Reset!

Status

The **Status** menu displays information about your DCS-900W.
Click on **Status** and the Information screen will appear as illustrated below:
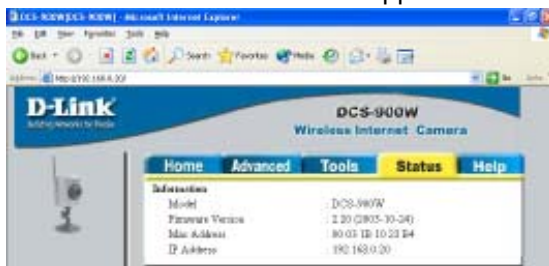
The Information table provides detailed information about the DCS-900W such as the Model Name, Firmware Version, Mac Address, and IP Address.

DCS-900W Configuration *(continued)*
Status

Completing Your Camera Configuration

Once the configuration is completed, click on **Home** to return to the Home screen and select the desired Viewing Image using either ActiveX Mode or Java Mode as described in the next section.

The last step is to position the DCS-900W and adjust the focus, by manually turning the lens clockwise or counter-clockwise to the desired image quality.

ActiveX

To view video images from the browser, click on **ActiveX** in the **Home** screen, and the following screen appears below:

Camera Name - The Camera name will be displayed in the top bar located above the camera image when the Camera Name field is entered in the Web Configuration setting under **Advanced > System.**

Location- The location of the DCS-900W will be displayed when the Location field is changed in the Web Configuration settings under **Advanced > System.**

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DCS-900W Configuration *(continued)*
ActiveX

Date/Time - The date/time of the DCS-900W will be displayed according to your time server settings or from settings you have made manually.

Note:
Please refer to the Appendix for instructions on how to install ActiveX.

Java

Click on **Java** from the Home screen to access the video images from the Internet Explorer or Netscape browser as illustrated below:

DCS-900W Configuration *(continued)*
Java

Camera Name - The Camera name will be displayed when the Camera Name field is changed in the Web Configuration setting under **Advanced > System.**

Location - The location of the DCS-900W will be displayed when the Location field is changed in the Web Configuration settings under **Advanced > System.**

Date/Time - The date/time of the DCS-900W will be displayed according to your time server settings or from your manual settings.

IPView Lite Application Installation

IPView Lite software is included for administrators to manage up to 4 **DCS-900Ws** remotely, record to hard drive, and configure advanced settings for the DCS-900W. IPView Lite is a complete software management tool for the DCS-900W and includes all configurable settings available in the web configuration utility.

Insert the CD-ROM into the CD-ROM drive to initiate the auto-run program. A menu screen will appear as shown on the right.

Click Install IPView Lite

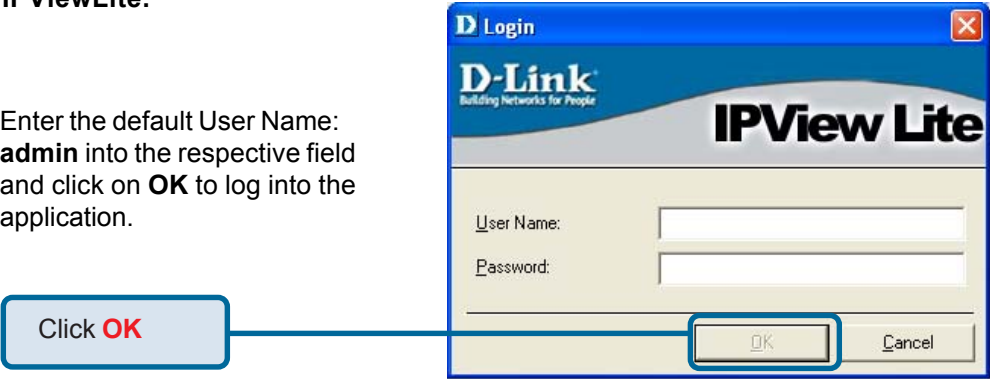# IPView Lite Application Installation *(continued)*

Click **Next**

Click **Yes**

Click **Next**

IPView Lite Application Installation *(continued)*

Click **Next**

Click **Finish**
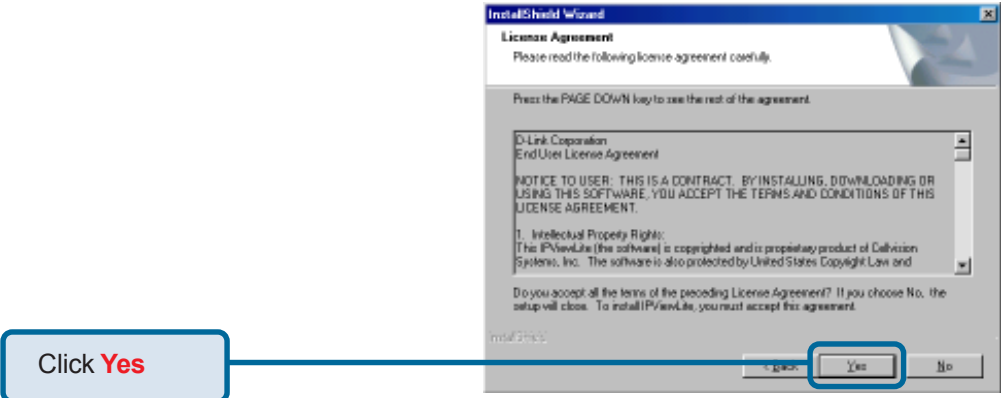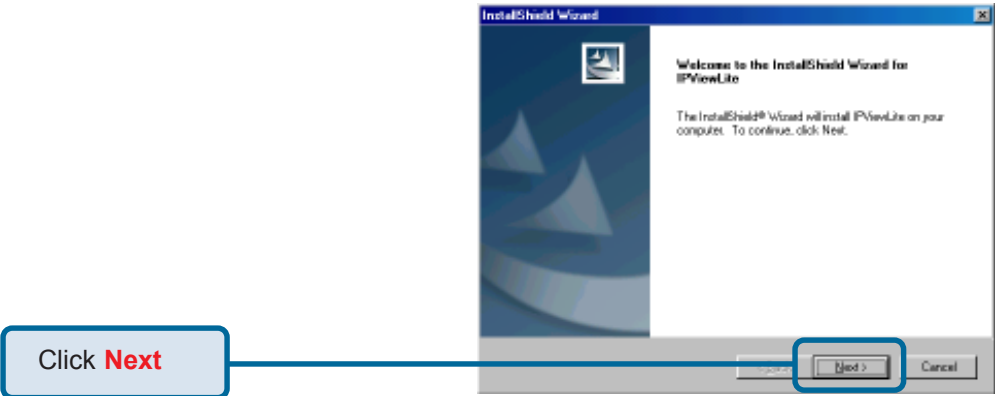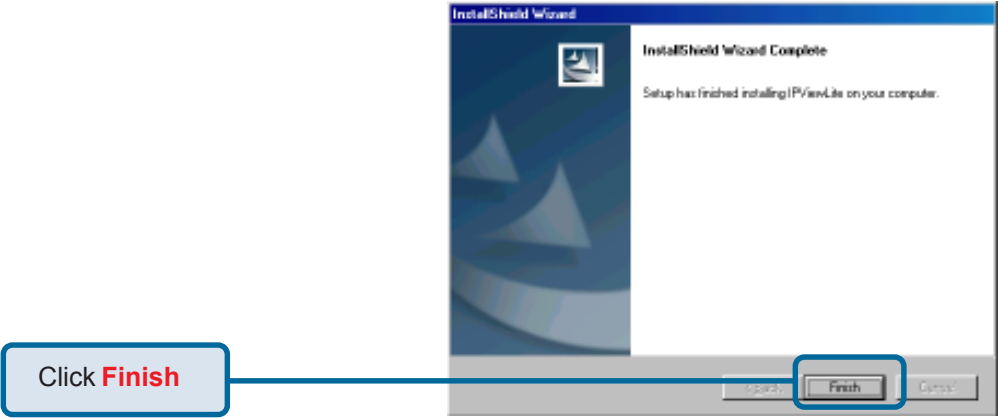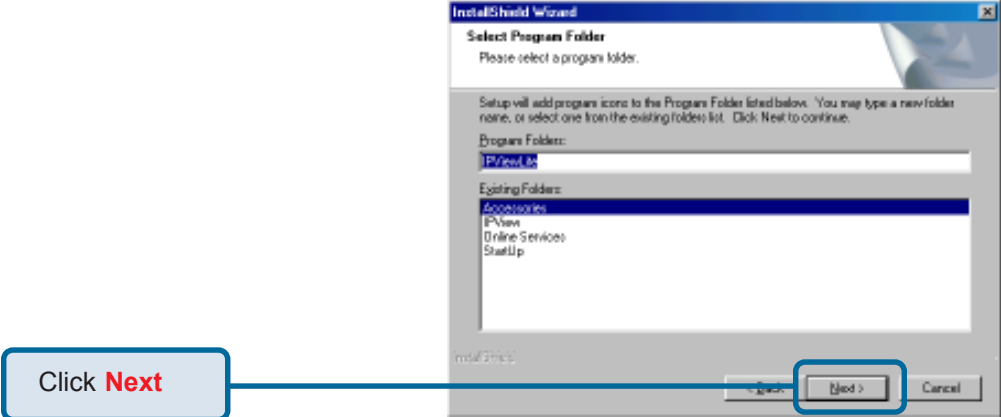
After successfully installing the IPView Lite, the application program for the DCS-900W is automatically installed to \Programs\IPView Directory.

To start running the IPView Lite click on windows **Start > Programs > IPViewLite > IPViewLite.**

Enter the default User Name: **admin** into the respective field and click on **OK** to log into the application.

Click **OK**

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IPView Lite Application Installation *(continued)*

Once logged in, the IPView Lite application is executed and the IPView Lite interface will appear as follows in the default List View format:
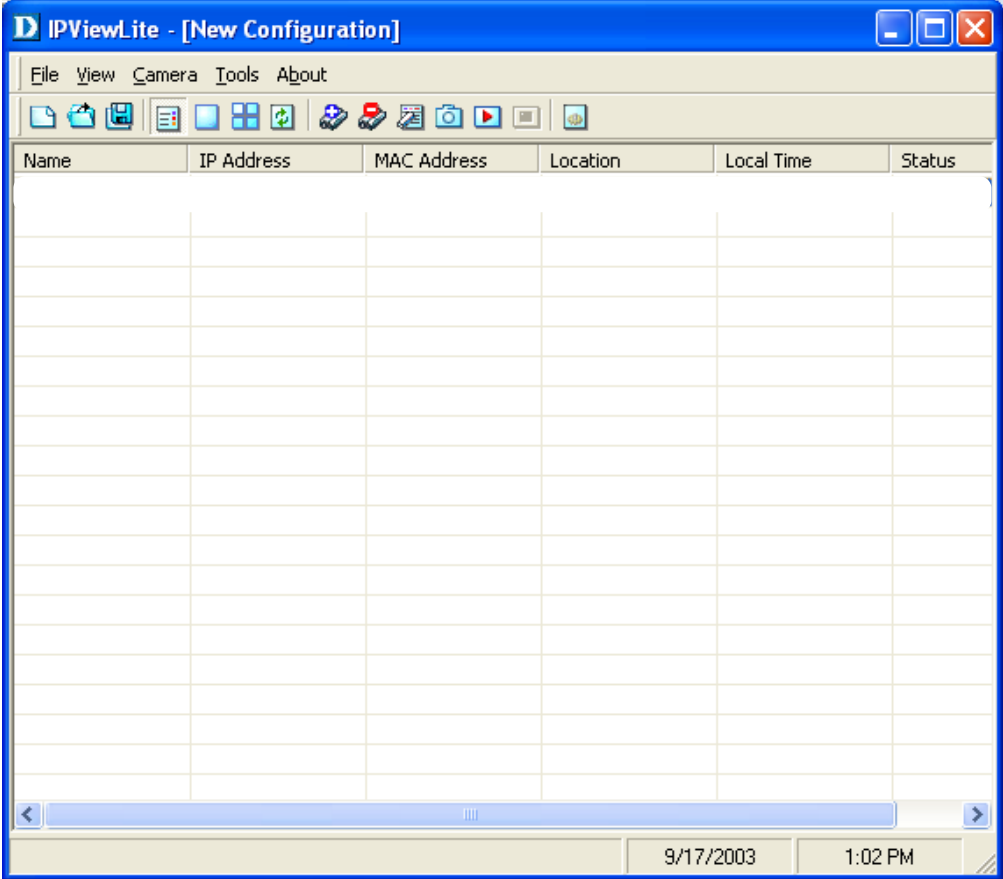
IPView Lite - Getting Started

This section describes the operation of the IPView Lite application User Interface with detailed procedures for using the application.

IPView Lite

IPView Lite allows you to manage your cameras by enabling you to search, configure and preview all the DCS-900Ws from one location.

It is designed with a user-friendly interface for ease of control and navigation.
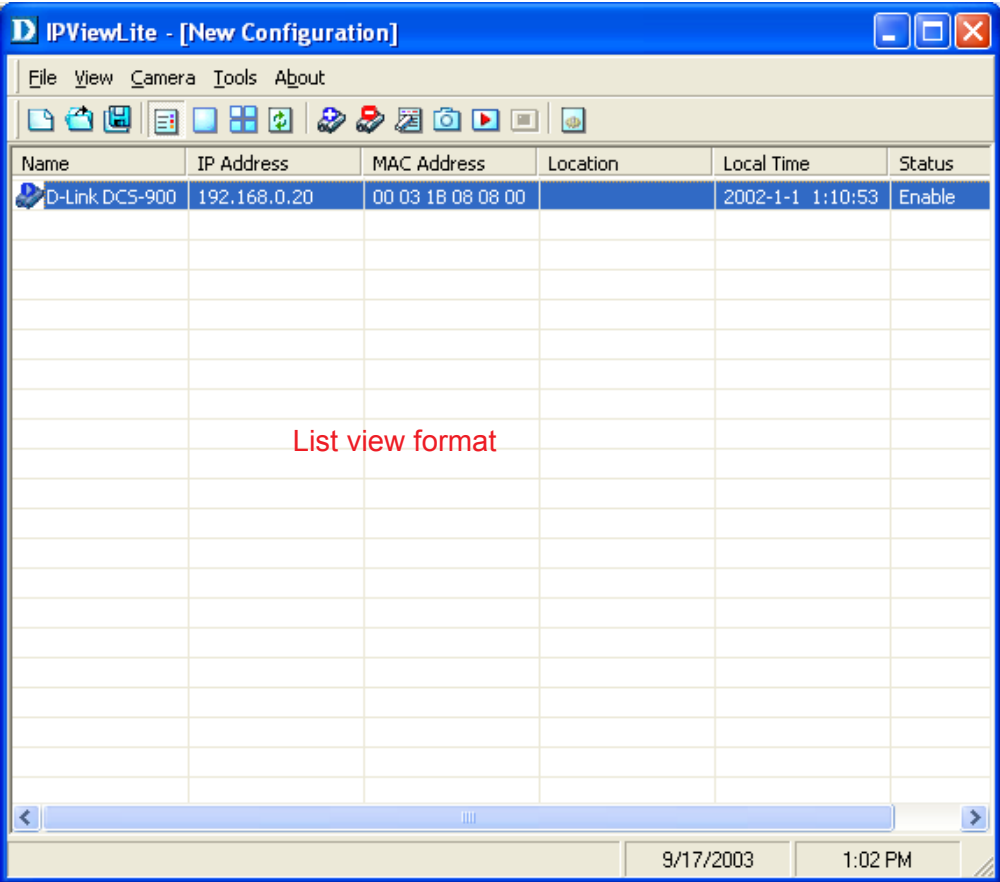
IPView Lite - Getting Started *(continued)*

How to Change the Password

Change Password

When **IPView** Lite is used for the first time, it is highly recommended that the Administrator change the **User Name** and **Password** for security purposes. Once the **User Name** and **Password** are defined, only the Administrator has access to the management of **IPView** Lite applications. This procedure should be done as soon as possible to prevent unauthorized usage of the **IPView** Lite application.
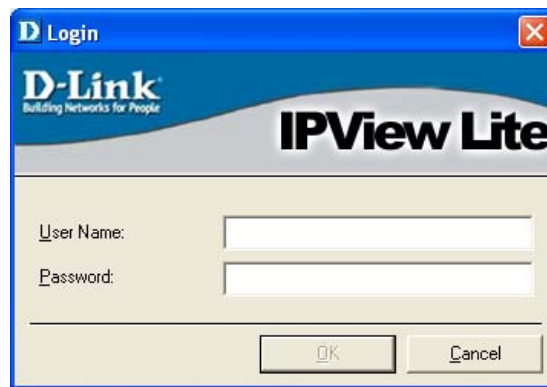
To change the administrator **User Name** and **Password,** select **Tools > Options**. The **Options** dialog box will appear (see below).
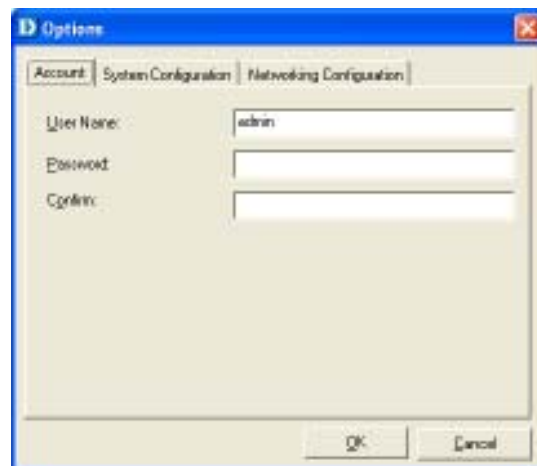
Enter a **User Name** and enter the **Password** twice. Once all the new details are entered click **OK**.

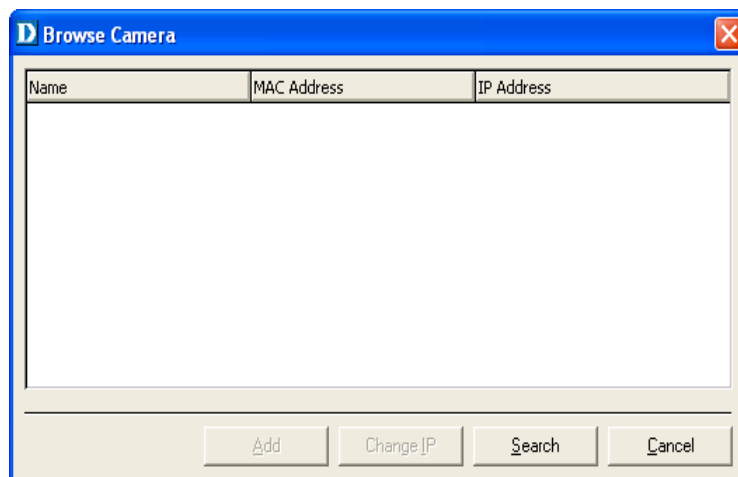# IPView Lite - Getting Started *(continued)*
How to Change the IP Address

Changing the IP Address

To change an IP Address for a camera, select **Camera** > **Add.** An **Add Camera** dialog box will appear (see below).
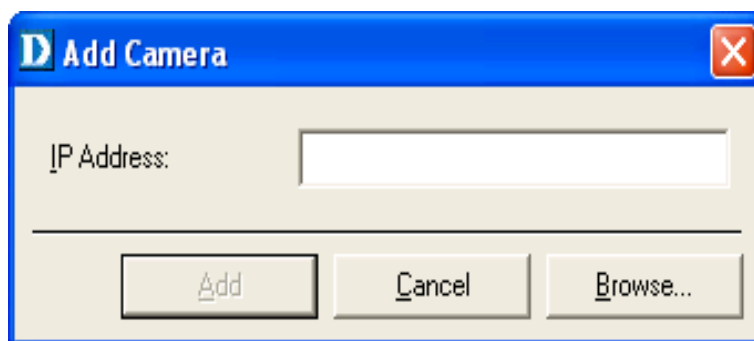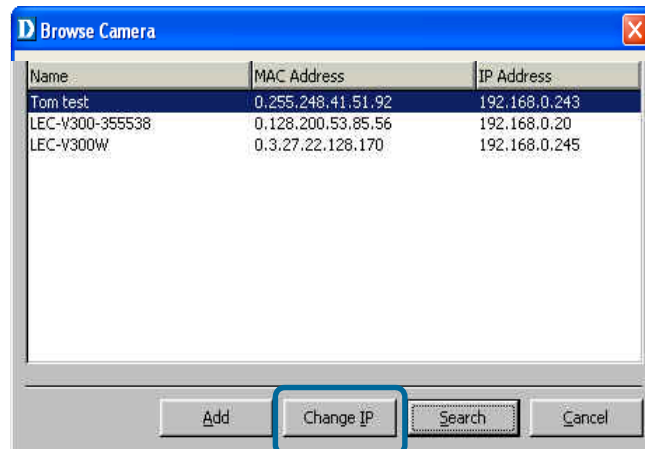

Click on **Browse**. The **Browse Camera** dialog box will appear with a blank screen (see below).

IPView Lite- Getting Started *(continued)*

How to Change the IP Address

Click **Search**. IPView Lite will detect and search all the available cameras that are installed on the local area network (example below.)

Highlight the camera you wish to change and click **Change IP**. If you have already chnaged the administrator user ID and password, you will be prompted to enter your admin ID and password before IPView Lite will allow you to change the IP Address for the DCS-900W.
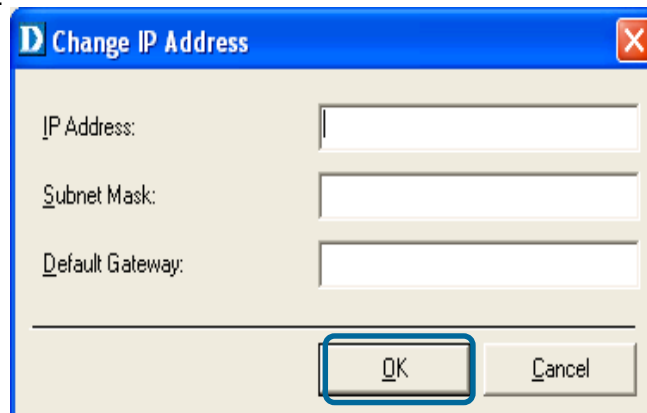
Enter the new **IP Address**, the **Subnet Mask** and the **Default gateway** into the respective fields and click **OK.** IPView Lite will apply the new IP Address to the camera.

IPView Lite- Getting Started *(continued)*

How to Add a Camera

To add a new camera select **Camera** > **Add** from the IPView Lite. An **Add Camera** dialog box will appear. (See below.)

Enter the IP Address of the camera in the specified field and click **Add**. If the IP Address is entered incorrectly or if you have a bad network connection, a dialog box will appear to notify you of the error. To add cameras in IPView Lite, check that you have your network configured correctly. To add a remote camera, you need to have Internet access.
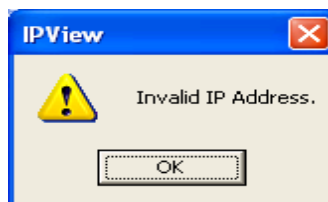
If you are unsure of the IP Address of the camera, you can click on **Browse to search for cameras on your local area network**. The **Browse Camera** dialog box will appear with a blank screen. (See below.)

Note: *Only cameras on your local area network can be located using Browse in IPView Lite. If you want to add a camera via the Internet, you must enter in a physical IP Address. Remember that if your camera is behind a router, you will need to key your router's WAN IP followed by a colon, then the port number that is assigned to your camera, i.e. 10.10.10.80:800, where 10.10.10.80 is your router's WAN IP and :800 is the port that your camera is using. Please refer to the DCS-900W Configuration, Installation Behind a Router section of this manual for details.*
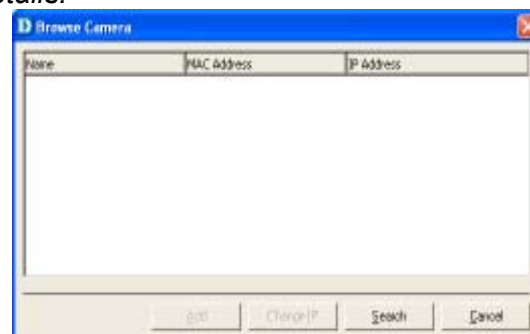
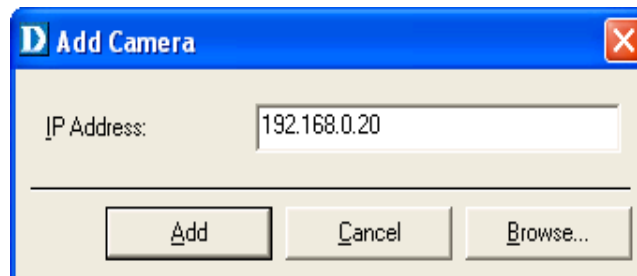# IPView Lite - Getting Started *(continued)*

How to Add a Camera

Click on **Search**. IPView Lite will detect and search for all the available cameras that are installed on the local area network.
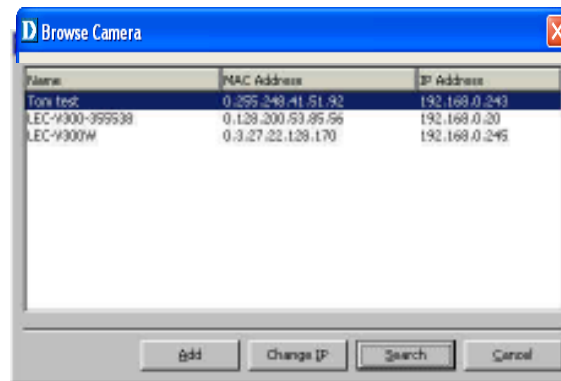
Highlight the camera you wish to add and click on **Add**. The **Add Camera** dialog box will appear once again with the IP Address entered. Click on **Add.** The camera will be automatically added into the IPView Lite list view format.

Alternatively, you can double-click on the camera you wish to add and the **Add Camera** dialog box will appear once again with the IP Address entered. Click on **Add,** and the camera will be automatically added into the IPView Lite list view format.

IPView Lite- Getting Started *(continued)*

How to Add/Delete a Camera

If the **Login Camera** dialog box appears, make sure to enter the correct **User Name** and **Password**. Click **OK.** The camera will be added into IPView Lite, in list format. If the **User Name** and **Password** are entered incorrectly, the camera will not be added into IPView Lite.

The Login Camera dialog box will appear only if your have already set the **User Name** and **Password** during the Web Configuration setting.

How to Delete a Camera

To delete a camera you must highlight the camera you wish to delete from IPView Lite list view format. From the menu bar select **Camera** > **Delete.** A **Delete Camera** dialog box will appear. Click **Yes** to delete the camera, or click **No** if you do not wish to delete the camera.

Click **Yes**.

IPView Lite- Getting Started *(continued)*

How to Format the Camera view

From the menu bar select **View** > **4 Cameras**. You may also choose to view 1 camera on one screen. The viewing screen will appear with the video image. (See below.)

The icon on the upper left corner of the screen will appear with the camera number that is being displayed.
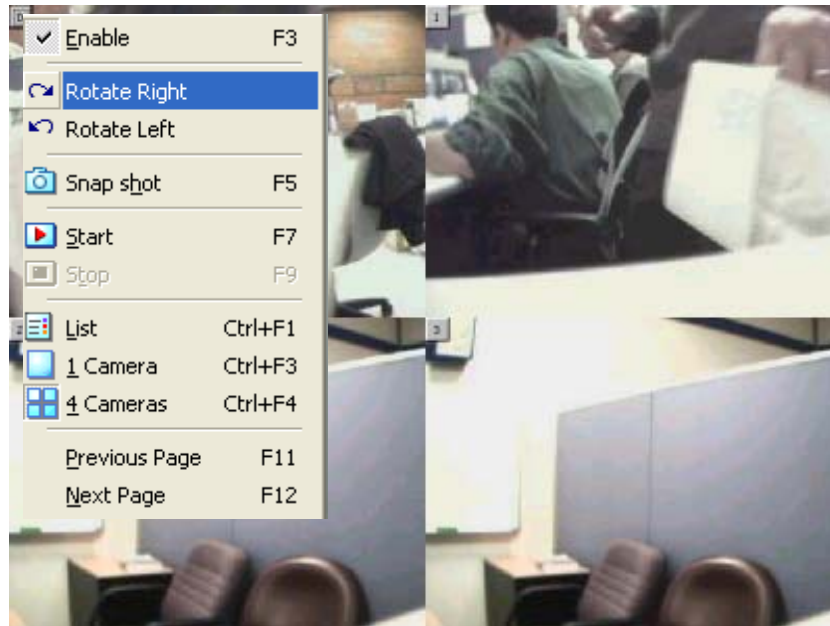
To return to the IPView Lite list view format, right-click on the icon located on the upper left corner of the screen and a case sensitive menu will appear. Select **List** and the viewing image will return to the list view format.

A maximum of 4 cameras are available for viewing with the IPView Lite application.

IPView List - Getting Started *(continued)*

How to Rotate the Video view

In **View Mode** format, click on the icon located on the upper left corner of the screen and a pop-up menu will appear.

Once you click **Rotate Right** or **Rotate Left** in the menu, the video will rotate 90 degrees to the right or left.

How to take a Snap-Shot with the Camera

To take a snap shot with the camera, you must highlight the camera you wish to use from the **IPView** Lite list view format. From the menu bar select **Camera > Snap** shot. A **Save Image** dialog box will appear for you to save the snap shot picture.

Alternatively, select from the viewing mode either 1 or 4 cameras. Click on the icon located on the upper left corner of the screen. A case sensitive menu will appear. Select the **Snap shot** icon. A **Save Image** dialog box will appear for you to save the snap shot picture.

IPView Lite- Getting Started *(continued)*
How to Start Recording

To start recording with a camera you must highlight the camera you want to use from the list view format. From the menu bar select **Camera** > **Start**. An AVI file will appear in your IPView Lite folder to save the recorded videos.

Alternatively, in the viewing mode (using either 1 or 4 cameras), right-click on the icon located on the upper left corner of the screen. A case sensitive menu will appear. Select the **Start** icon. An AVI file will appear in your IPView Lite folder to save the recorded videos.

Note :
You must stop recording before changing any camera settings.

How to Stop Recording

To stop recording with a camera, you must highlight the camera you wish to stop from the list view format. From the menu bar select **Camera** > **Stop**. The recording function will be stopped.

The other alternative is to right-click the icon located on the upper left corner of the screen under the viewing mode of either 1 or 4 cameras; a case-sensitive menu will appear. Select **Stop**. The recording task will be stopped.

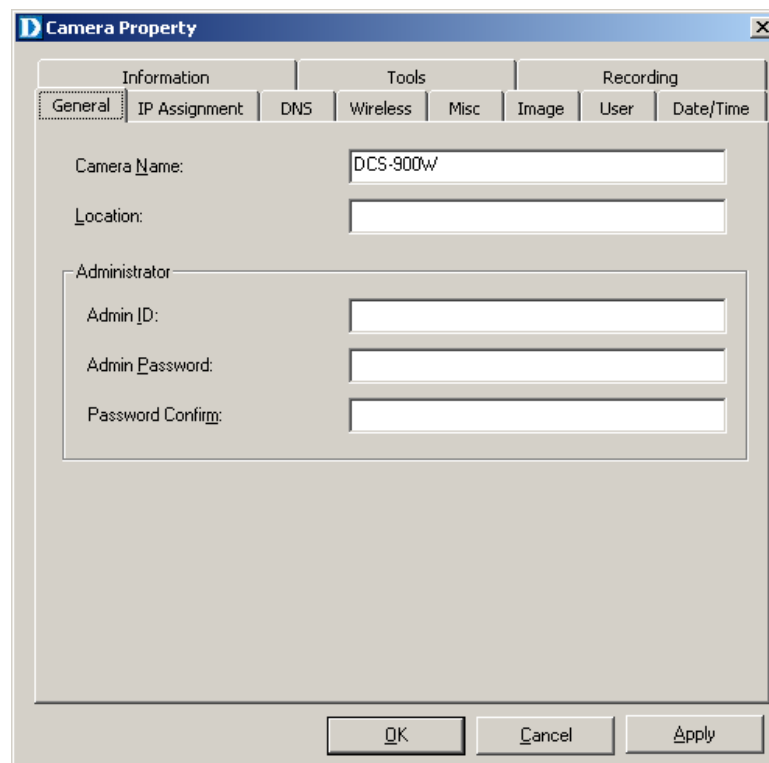# IPView Lite - Getting Started *(continued)*
Camera Property Settings > General

Once you have completed the initial configuration of the DCS-900W using the Web-based interface, you can review or change your configuration using either the Web-based configuration utility or the Property Settings in the DCS-900W IPView Lite.
To access the Property Settings menu, select **Camera** > **Property** from the main menu**.**
A dialog box will appear which allows for Web Configuration settings and upgrading firmware. The **Camera Property** dialog box will appear. Select the desired options from the tab selections to configure the camera.

General
Allows settings for the camera name, location and administrator information such as administrator ID and password. *Please refer to the DCS-900W Configuration section under **Advanced – System** for further details.*

IPView Lite - Getting Started *(continued)*

Camera Property Settings > IP Assignment

IP Assignment

If you need to change your IP Address, select the IP Address tab in the Camera property window. There are two options: **Manually Assign** or **Assign Automatically Using**. *Please refer to theDCS-900W Configuration section: **Advanced – System** for further details.*

IPView Lite - Getting Started *(continued)*

Camera Property Settings > DNS

DNS

DNS (Domain Name System) server is an Internet service that translates domain names into IP Addresses. *Please refer to the DCS-900W Configuration section under **Advanced - System** for further details.*

IPView Lite- Getting Started *(continued)*
Camera Property Settings > Wireless

Wireless
Your camera's wireless settings must correspond to your network settings for a proper and successful connection to the DCS-900W. *Please refer to the DCS-900W Configuration section under **Advanced– System** for further details.*

IPView Lite- Getting Started *(continued)*
Camera Property Settings > Misc, Image

Misc

Configure the LED Control, ActiveX control location, and second port in this menu. *Please refer to the DCS-900W Configuration section under **Advanced– System** for further details.*
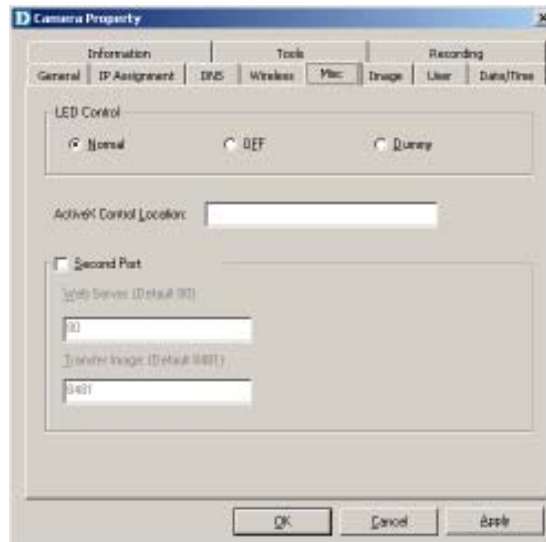
Image

Brightness, contrast, hue, resolution, compression, frame rate, and light frequency can be adjusted for your camera. *Please refer to the DCS-900W Configuration section under **Advanced – Video** for further details.*
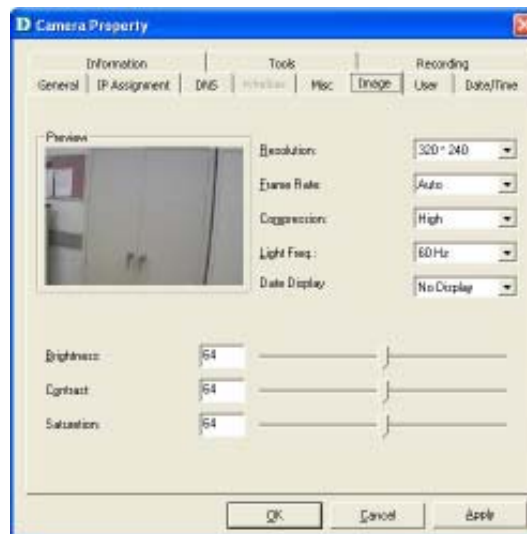
Users

Set up user accounts with user name and password for camera access. *Please refer to the DCS-900W Configuration Setting under **Tools-Admin** for more detailed information.*
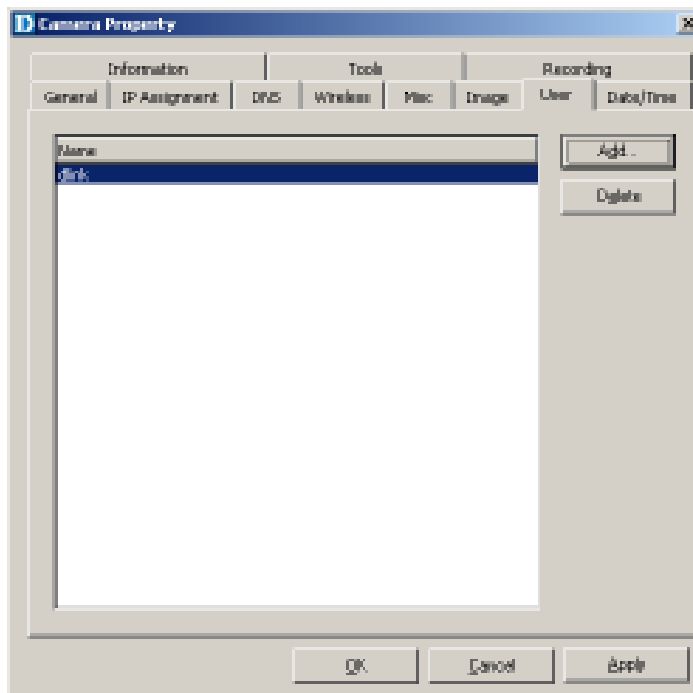
To add a user click on the **Add** icon and the **Add User** dialog box will appear. Enter the **User Name** and **Password** into the specific field.

To delete a user, select the user and click **Delete**.

IPView Lite - Getting Started *(continued)*

Camera Property Settings > Date/Time

Date/Time
Set the camera's time and date to provide correct time information for remote users by selecting **Synchronized with Time Server** or **Set Manually.** *Please refer to the DCS-900W Configuration section under **Tools-Time** for further details.*

IPView - Getting Started *(continued)*
Camera Property Settings > Information

Information

Displays information about the camera such as the model, firmware version, MAC address, and IP address. *Please refer to the DCS-900W Configuration section under **Status** for further details.*
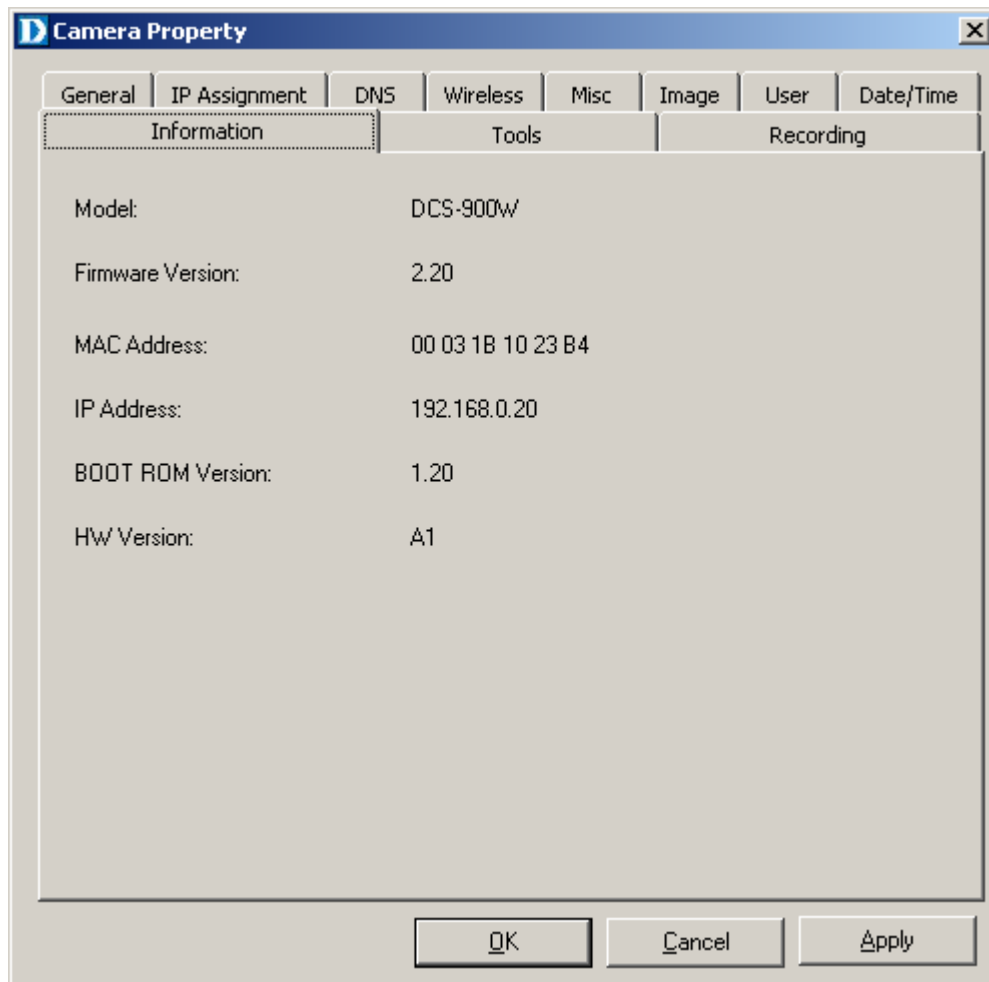
IPView Lite- Getting Started *(continued)*

Camera Property Settings > Tools

Tools

Reset the camera and update firmware in this section. *Please refer to the DCS-900W Configuration section under **Tools-Default** for further details.*
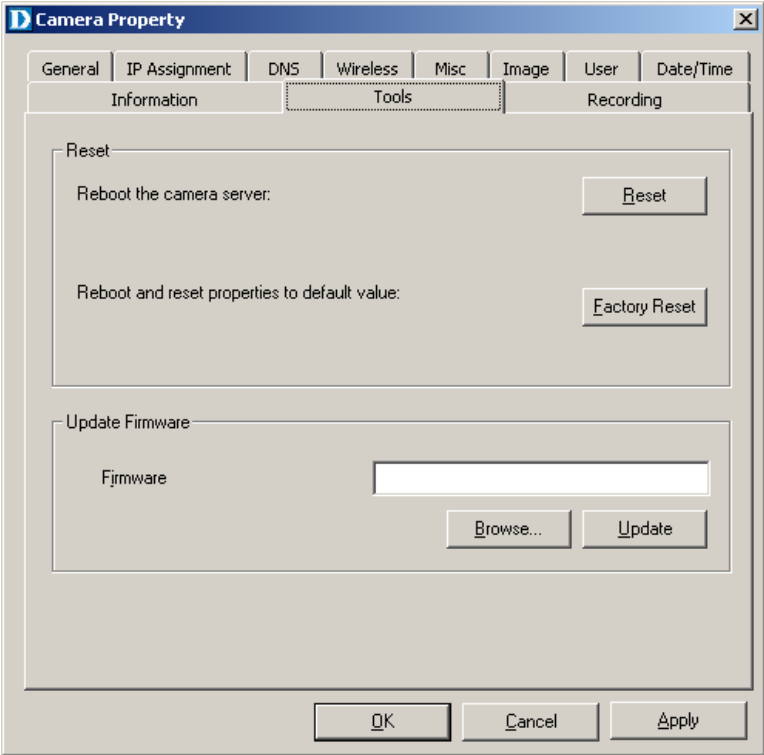
Upgrade Firmware

Enter the full path of the firmware binary file name in the *Update Firmware* field or you can click on the **Browse** button to select the file. Once the firmware file is entered click on the **Update** button to proceed with the update process. Once completed, click **OK**.

Warning

The download firmware procedure cannot be interrupted. If the network connection is broken during the download procedure it could cause serious damage to the Internet Camera.

IPView Lite- Getting Started *(continued)*

Camera Property Settings > Recording

Recording Options
Manual Recording
If the **Manual Recording** option is chosen, you must manually start recording in the List view of the DCS-900W in the Menu Bar or by clicking on the Record Icon. Choose **Round the Clock** to enable the DCS-900W to record all video frames continuously to your hard drive. Larger files will be generated if **Round-the-Clock** Manual Recording is chosen. The **Dynamic Recording** option records specific video frames based on how much movement there is in the video captured and will generate much smaller files to save your hard disk drive space. Click on **Sensitivity Setting** to set dynamic recording sensitivity levels.
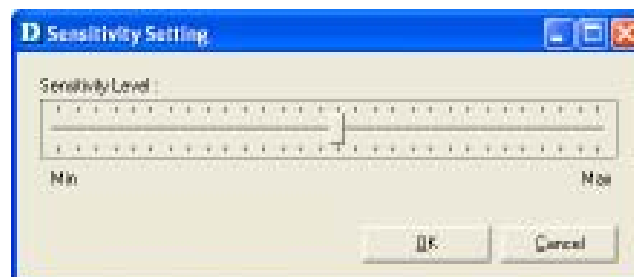
IPView Lite- Getting Started *(continued)*

Camera Property Settings > Recording

Scheduled Recording
Select **Schedule Recording** to record based on specific times and dates. Click **Schedule Setting** to set the time and date for recording your files. Select **By Date** and enter in the dates, **Start**, and **Stop** Times. The camera will start to record according to the specified date and time period entered. Select **By Weekday** to indicate specific days to record and the time period. Larger files will be generated if **Round-the-Clock** Manual Recording is chosen. The **Dynamic Recording** option records specific video frames based on how much movement there is in the video captured and will generate much smaller files to save your hard disk drive space. Click on **Sensitivity Setting** to set dynamic recording sensitivity levels.

IPView Lite - Getting Started *(continued)*
Camera Property Settings > Recording

File Options

You can adjust the maximum file size by clicking on **By File Size** from the **Recording File Options** field. The file size must be between 10 and 50MB. If the recorded video files reach the file size allocated, video images will be recorded into another file automatically.

Be sure to click **Apply** to save your settings, then click **OK** to exit this screen.

Note: *If you are using Windows Media Viewer to view your recorded videos, make sure that you have the most up-to-date version in order to view the videos correctly.*

File Path

The software will create a folder in the **Recording File Path** specified and record the video images with the file name by date and time. Multiple file paths can be specified to store your video images. The current path where recorded images are being stored is designated as "Working". Once this path has reached full capacity, the images will then be stored in the next designated file path. To change file paths, highlight the file path and double-click to select a new drive/directory to store your video images.

The screen below will appear. Click **Browse** to select a drive/directory, and place a check mark in the **Path** box to enable the drive/directory for use. Click **OK** to save your changes.

IPView Lite- Getting Started *(continued)*

Menu Bar

The menu bar makes it easier to navigate IPView Lite. All Management functions can be accessed from the menu bar.

Menu Bar > File

New > Opens a new camera list. Cameras must then be added to the list for configuration **.**

Open > Opens saved camera lists.

Save/Save As > Saves your current list of cameras and configurations.

Exit > Exits the IPView Lite Application.
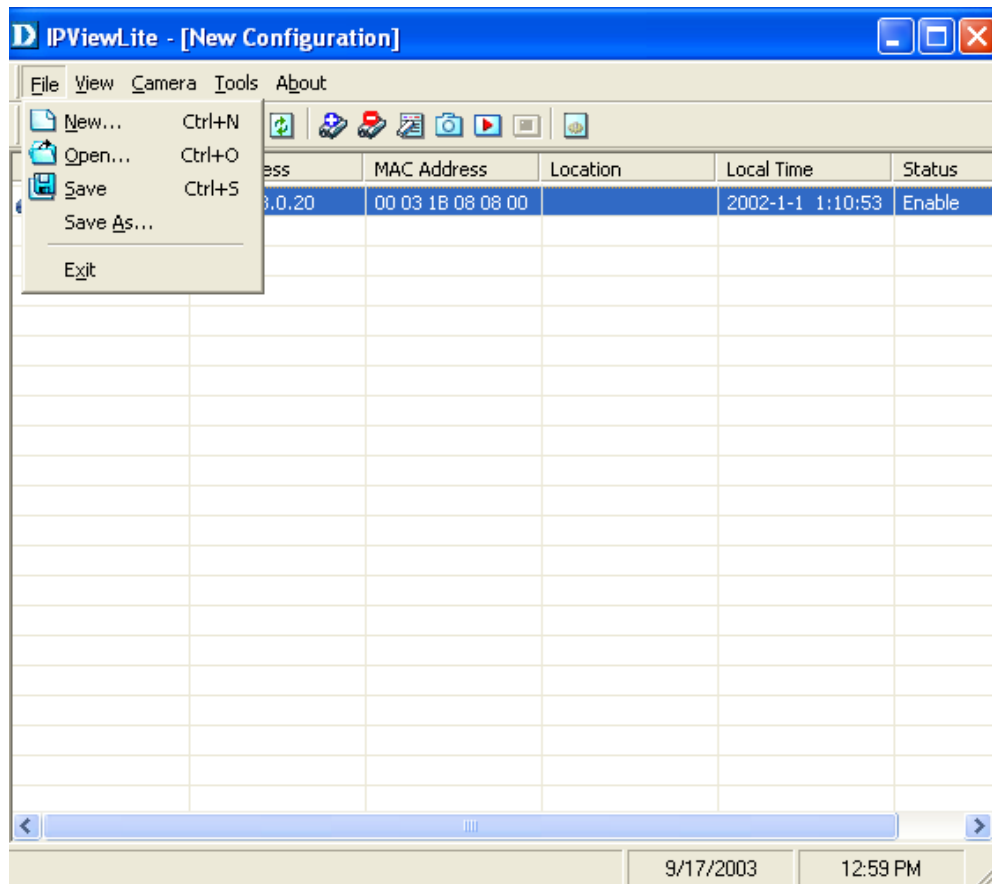
IPView Lite - Getting Started *(continued)*
Menu Bar > View

View on the menu bar provides users with management capabilities for **Columns, List, Camera** and **Refresh**. You can view the **Camera** in **1 Camera or 4 Camera** mode. The **View** menu bar is pictured below.
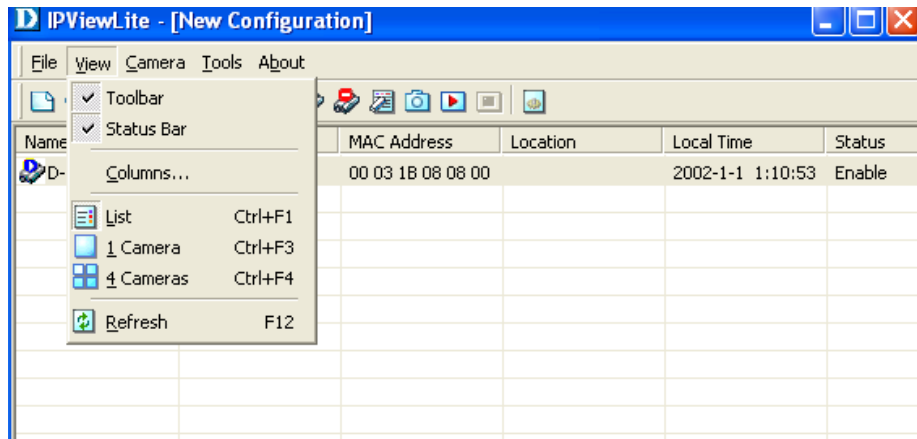
Columns

When **Columns** is launched, a dialog box will appear displaying the **Column Settings.** Select the columns that you wish to appear in the *List View* as illustrated below.
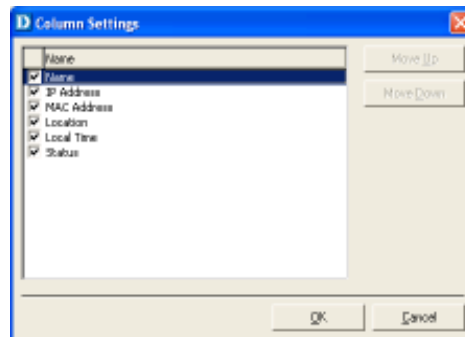
Viewing Format

You can view the format in **List** view. The **List** viewing format allows easy management and control of each camera.

IPView Lite- Getting Started (continued)

List View

All the cameras and their properties, such as the camera name, IP Address, user name, and location, will be displayed in the list view.
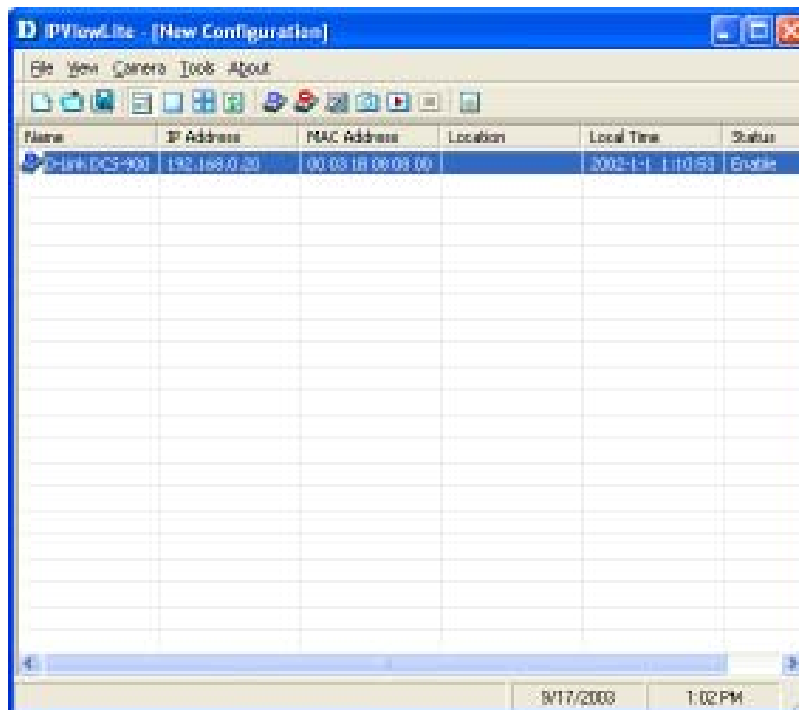
Note:

Right click on any camera to bring up a menu of actions you can apply to the selected camera.

Double-clicking on the desired camera will bring up the **Property** dialog box.

You can click the **Refresh** icon to update the camera list view.

IPView Lite- Getting Started (continued)

Menu Bar > Camera, Tools

Camera on the menu bar provides options to manage the camera. **Add** up to 4 additional Cameras for viewing. The **Camera** menu also allows you to **Delete** a camera, manage the **Property**, **Enable** real-time video capture, or take a **Snap shot** image.
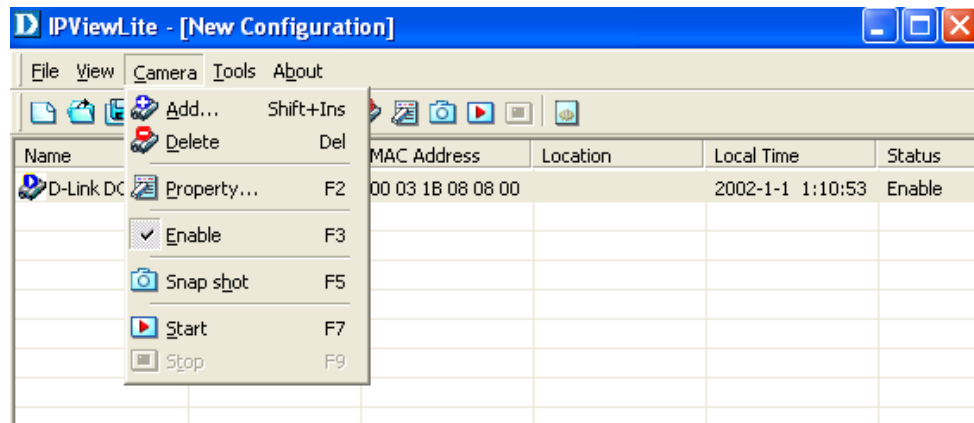
Enable Function

By default, the video image is enabled. There will be a **check** next to the **Enable** command to show that the Enable function is working. To disable the real-time image select **Camera > Enable** and the real-time video image will stop and shutdown.

Menu Bar > Tools

Tools on the menu bar allows you to change account information and system configuration. From the menu bar, select **Tools > Options**.
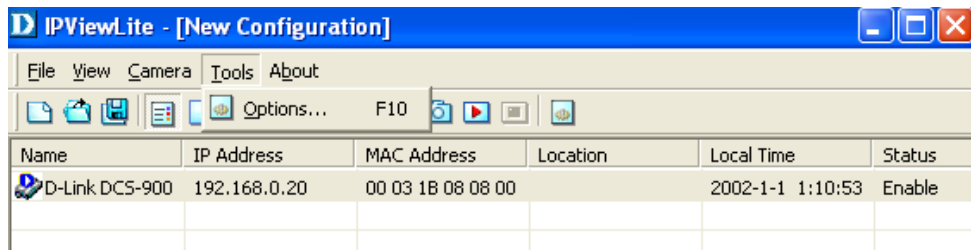
IPView Lite- Getting Started *(continued)*
Menu Bar > Tools

Account
The account menu is for administrators to change user name and password.
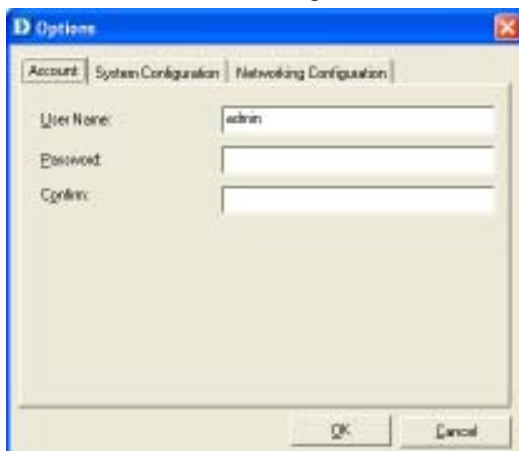
System Configuration

This menu allows you to set overwrite options to overwrite old recorded files with new recorded files. Check the **Load Last Configuration When Program Starts** to load all your configured settings each time you run IPView Lite**. It is highly recommended that you select this option to save your camera settings in IPView Lite.**
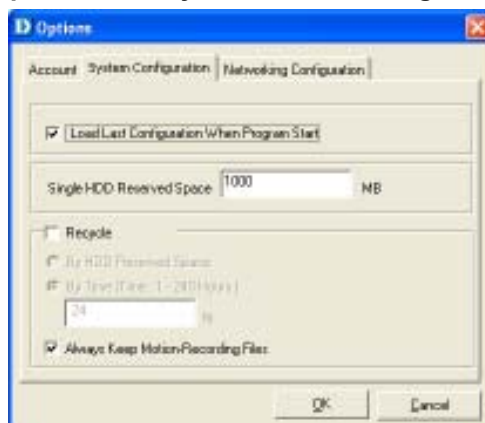
In order to allow old video files to be overwritten and replaced by new recorded files, place a check mark in the **Recycle** Box and click on **By HDD Reserved Space** or **By Time**. The **Single HDD Reserved Space** field refers to the amount of space left on your drive before overwrite takes place. For instance if you enter 1000 MB, and your total hard drive space is 3000 MB, as soon as your drive reaches 2000 MB capacity, your files will be

IPView Lite - Getting Started *(continued)*
Menu Bar > Tools

overwritten. You can specify between 500MB to 5GB hard drive reserve space. Click on **By Time** to overwrite old files with new files once the time frame that you specify has been reached.

Clicking on **By HDD Reserved Space** allows new files to overwrite old files. You can reserve 500MB to 5GB HDD for the program.
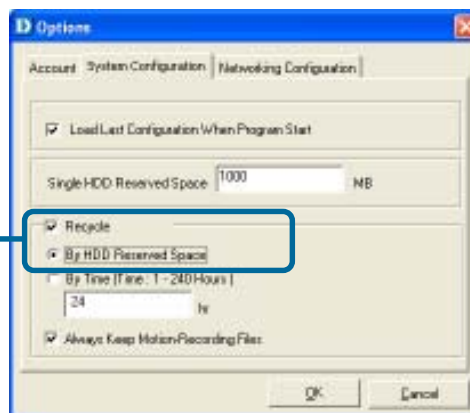
Click on **By Time (Time: 1-240 Hours)** to overwrite old files with new files once the time frame that you specify has been reached.
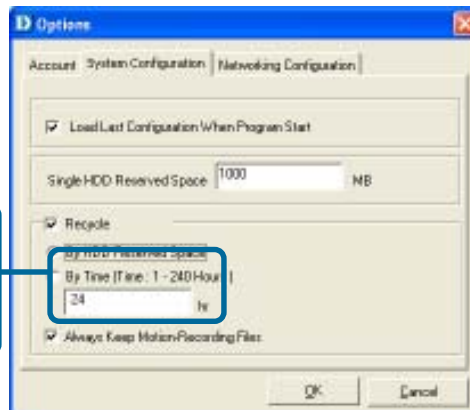
Note: Selecting the **Recycle** option will disable the **Recording File Path Settings** in the **Recording** menu. It is recommended to specify the **Recording File Path Settings** for each camera before selecting the **Recycle** option.

Menu Bar > Tools

Networking Configuration

If your LAN uses a Proxy server to connect to the Internet, select **Use a proxy for HTTP Protocol**, and click **OK**. If you choose this option, you must enter the IP address and port that your Proxy server uses to connect to the Internet.

A Proxy server is a computer on your LAN that connects to the Internet without compromising the security of your internal network. A proxy server is normally used on a network to more efficiently manage Internet traffic for groups of users. If you are not sure how your LAN connects to the Internet, contact your system administrator.
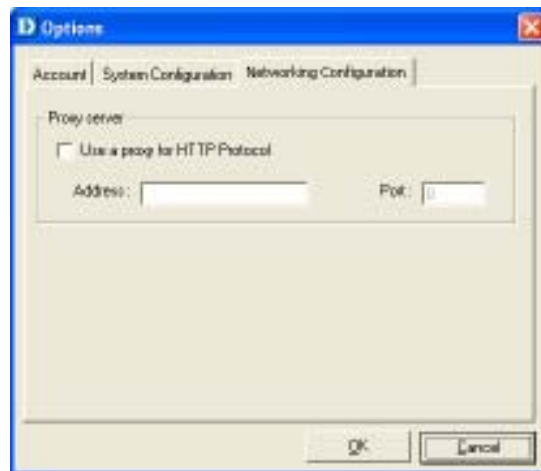
Menu Bar > About

Under **About** on the menu bar, click **About** for camera details such as software version.
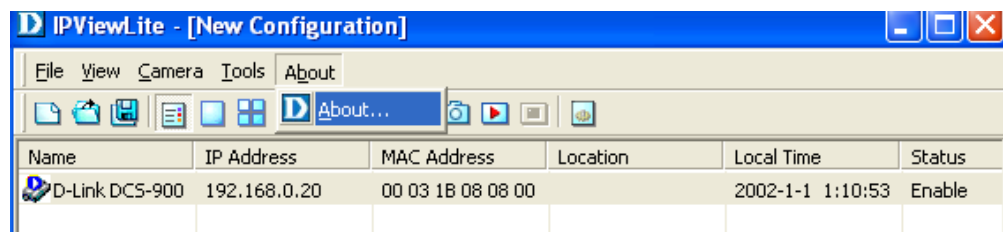
IPView Lite Icon Description

Open a new file. The hot key is **Ctrl+N**.

Open an existing file. The hot key is **Ctrl+O**.

Save a file. The hot key is **Ctrl+S**.

List view format. The hot key is **Ctrl+F1**.

1 Camera view format. The hot key is **Ctrl+F3**.

4 Camera view format. The hot key is **Ctrl+F4**.

Refresh IPView Lite application. The hot key is **F12**.

Add a camera. The hot key is **Shift+Ins**.

Delete a camera. The hot key is **Del**.

Property setting to configure the camera. The hot key is **F2**.

Snap shot to capture a single still image. The hot key is **F5**.

Options to modify the User Name and Password for IPView Lite.
The hot key is **F10**.

Start recording video image. Alternatively the hot key is **F7**.

Stop recording video image. Alternatively the hot key is **F9**.

IPView Lite - Getting Started *(continued)*

Context Sensitive Menu

In *List View* format, highlight a camera and right-click to bring up a context sensitive menu for features such as **Add, Delete, Property, Enable,** and **Snap shot** and **Start/ Stop** recordings.
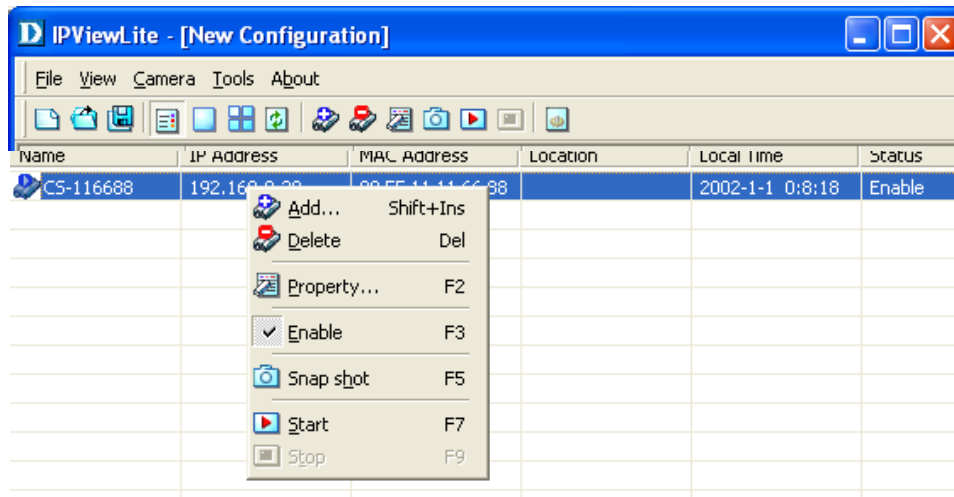
In *View* mode format click on the icon located on the upper left corner of the screen and a case sensitive menu will appear (see below).
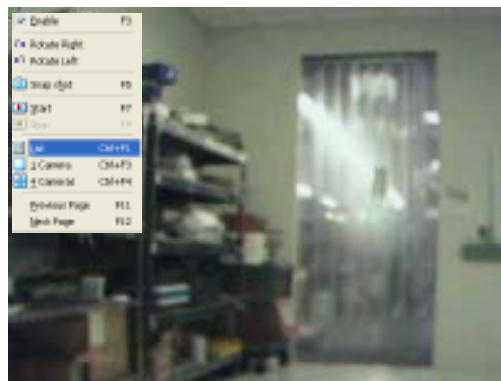
These features will be available: **Enable, Rotate Right, Rotate Left, Snap Shot, Start, List, 1 Camera or 4 Cameras, Previous Page** and **Next Page**.

Uninstall IPView Application

Click on windows **Start Menu** / **Programs** / **IPView** / **Uninstall IPView**. A new prompt screen will be displayed like the one below confirming the removal.
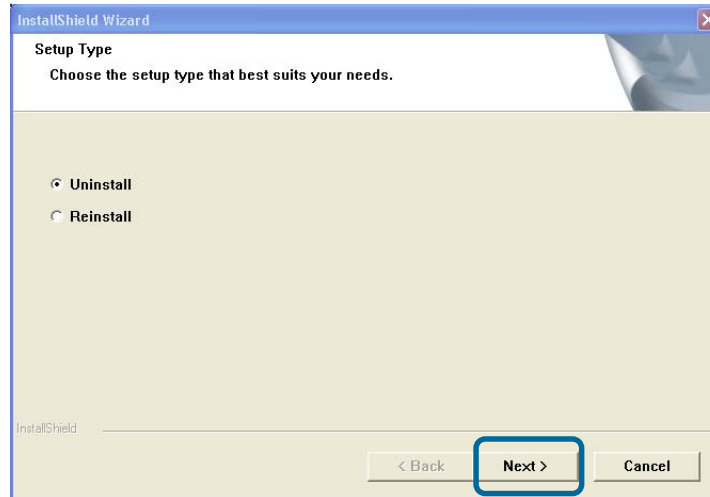
Choose the option that you want and click **Next** to continue the process or click on **Cancel** to reject the uninstall process.

After you click on **Next**, a **Confirm Uninstall** dialog box will appear. Click **OK** to continue the process.
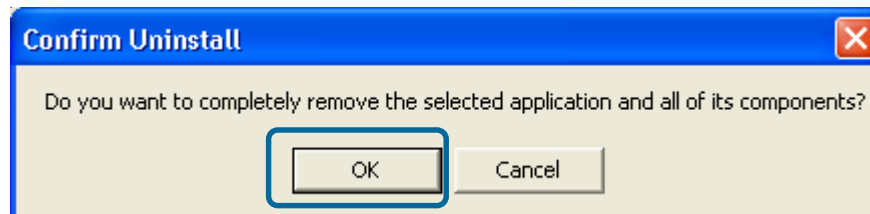
Uninstall IPView Application *(continued)*

The InstallShield Wizard prompt will appear. Click **Finish** to complete the uninstallation procedure.
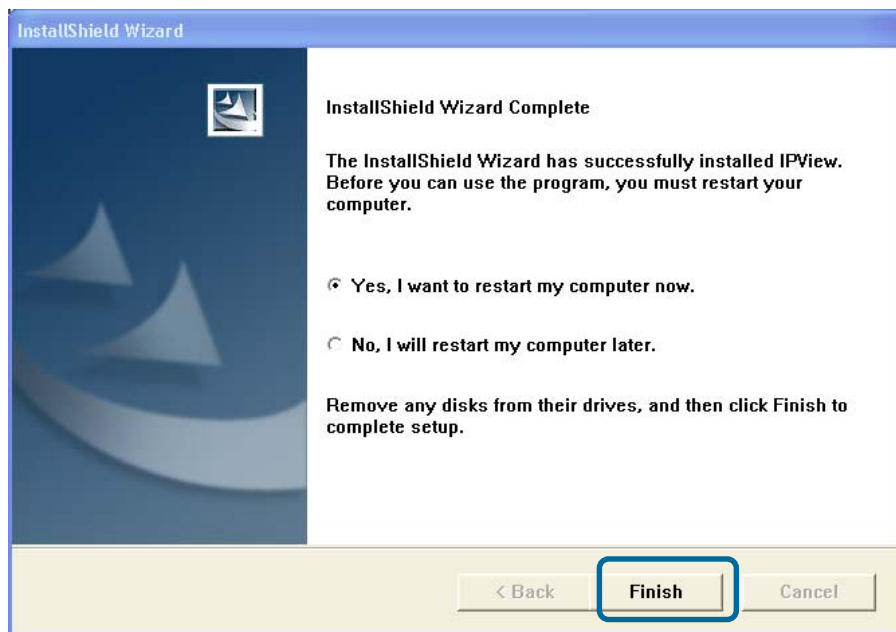
Appendix A

Frequently Asked Questions

Internet Camera Features

Q: What is an Internet Camera?
A:The Internet Camera is a standalone system connecting directly to an Ethernet or Fast Ethernet network and supported by the wireless transmission based on the IEEE 802.11b standard. It is different from the conventional PC Camera, the Internet Camera is an all-in-one system with built-in CPU and web-based solutions providing a low cost solution that can transmit high quality video images for monitoring. The Internet Camera can be managed remotely, accessed and controlled from any PC/Notebook over the Intranet or Internet via a web browser.

Q: **What is the maximum number of users that can be allowed to access DCS-900W simultaneously?**
A: Maximum number of users that can log onto the Internet Camera at the same time is 8. Please keep in mind the overall performance of the transmission speed will slow down when multiple users are logged on.

Q: **What algorithm is used to compress the digital image?**
A: The Internet Camera utilizes JPEG image compression technology providing high quality images. JPEG is a standard for image compression and can be applied to various web browser and application software without the need to install extra software.

Q: Can I capture still images from the Internet Camera?
A: Yes you are able to capture still images with the snapshot function from the IPView Lite application supplied with the Internet Camera CD-ROM. You may also use the first page that shows up when you type in the IP Address of the camera. When viewing this page, press the **"refresh"** button on your web browser to update the image. *Please refer to the User's Guide for detailed information.*

Frequently Asked Questions *(continued)*

Internet Camera Installation

Q: Can the Internet Camera be used outdoors?
A: The Internet Camera is not weatherproof. It needs to be equipped with a weatherproof case to be used outdoors and it is not recommended.

Q: **What network cabling is required for the Internet Camera?**
A: The Internet Camera uses Category 5 UTP Twisted-pair cable allowing 10 Base-T and 100 Base-T networking.

Q: Can the Internet Camera be setup as a PC-cam on the computer?
A: No, the Internet Camera is used only on Ethernet and Fast Ethernet network and supported by wireless transmission. The D-Link DSB-C110, DSB-C310 can be used as a PC Camera (Webcam).

Q: **Can the Internet Camera be connected on the network if it consists of only private IP Addresses?**
A: Yes, the Internet Camera can be connected to a LAN with private IP Addresses.

Q: Can the Internet Camera be installed if a firewall exists on the network?
A: If a firewall exists on the network, port 80 is open for ordinary data communication. However, since Internet Camera transmits image data, the default port 8481 is also required. Therefore, it is necessary to open port 8481 of the network for remote users to access the Internet Camera.

Troubleshooting

Q: I cannot access the Internet Camera from a web browser.
A1: The possible cause might be the IP Address for the Internet Camera is already being used by another device. To correct the possible problem, you need to first disconnect the Internet Camera from the network. Then run the PING utility (follow the instructions in *Appendix B - PING Your IP Address*.)

Troubleshooting *(continued)*

Internet Camera Installation

A2: Another possible reason is the IP Address is located on a different subnet. To fix the problem, run the PING utility (follow the instructions in Appendix B - PING Your IP Address). If the utility returns "no response" or similar, the finding is probably correct, then you should proceed as follows:

In Windows 98SE and 2000, check that the IP Address of the Internet Camera is within the same subnet as your workstation.
- Click **Start**, **Setting**, **Control Panel**, and the **Network** icon.
- Select TCP/IP from the **Network** dialog box and from the **TCP/IP Properties** dialog box click on **Specify an IP address**.
- If the Internet Camera is situated on a different subnet than your workstation, you will not be able to set the IP Address from this workstation. To verify, make sure the first 3 sections of the IP Address of the Internet Camera corresponds to the first 3 sections of the workstation. Therefore the IP Address of the Internet Camera must be set from a workstation on the same subnet.

A3: Other possible problems might be due to the network cable. Try replacing your network cable. Test the network interface of the product by connecting a local computer to the unit, utilizing a standard Crossover (hub to hub) Cable. If the problem is not solved the Internet Camera might be faulty.

Q: Why does the Power LED not light up constantly?
A: The power supply used might be at fault. Confirm that you are using the provided power supply, which is DC 5V, for the Internet Camera and verify that the power supply is well connected.

Q: Why does the LAN LED not light up properly?
A1: There might be a problem with the network cable. To confirm that the cables are working, PING the address of a known device on the network. If the cabling is OK and your network is reachable, you should receive a reply similar to the following (…bytes = 32 time = 2 ms).

A2: The network device utilized by the Internet Camera is not functioning properly, such as hubs or switches. Confirm the power for the devices are well connected and functioning properly.

Troubleshooting *(continued)*

Internet Camera Installation

Q: Why does the Internet Camera work locally but not externally?
A1: Might be caused from the firewall protection. Check the Internet firewall with your system administrator. The firewall may need to have some settings changed in order for the Internet Camera to be accessible outside your local LAN.

A2: Make sure that the Internet Camera isn't conflicting with any web server you may have running on your network.

A3: The default router setting might be a possible reason. Check that the configuration of the router settings allow the Internet Camera to be accessed outside your local LAN.

Q: Why does a series of broad vertical white lines appear through out the image?
A: It could be that the CMOS sensor (a square panel situated behind the lens that measures the light signals and changes it into a digital format so your computer can present it into an image that you are familiar with) has become overloaded when it has been exposed to bright lights such as direct exposure to sunlight or halogen lights. Reposition the Internet Camera into a more shaded area immediately as prolonged exposure to bright lights will damage the CMOS sensor.

Q: The focus on the Internet Camera is bad, how can I correct it?
A1: Adjust the Internet Camera focus manually as described in "Adjusting the Internet Camera Focus" in the Appendix section of this manual on page 89.

A2: If you have previously changed the supplied CS-type lens, you may have unintentionally installed a C-type lens without fitting the adaptor first.

Q: Noisy images occur. How can I solve the problem?
A1: The video images might be noisy if the Internet Camera is used in a very low light environment. To solve this issue you need more lighting.

Troubleshooting *(continued)*

Q: The images are poor quality, how can I improve the image quality?
A1: Make sure that your computers display properties are set to at least 15-bit color. Using 16 or 256 colors on your computer will produce dithering artifacts in the image, making the image look as if it has bad quality.

A2: The configuration on the Internet Camera image display is incorrect. Through the Web Configuration Video section of the web management you need to adjust the image related parameters for improved images such as: brightness, contrast, hue and light frequency. Please refer to the Web Configuration section for detailed information.

Q: There are no images available through the web browser?
A1: The ActiveX might be disabled. If you are viewing the images from Internet Explorer make sure ActiveX has been enabled in the Internet Options menu. Alternatively, you can use the Java Applet for viewing the required images.

A2: If you are using Windows XP, please make sure that you have downloaded Java and installed it properly.

A3: Make sure that your web browser supports Java. If you are using Internet Explorer or Netscape Navigator with a version number of lower than 4, then you will need to upgrade your web browser software in order to view the streaming video transmitted by the Internet Camera.

Appendix B
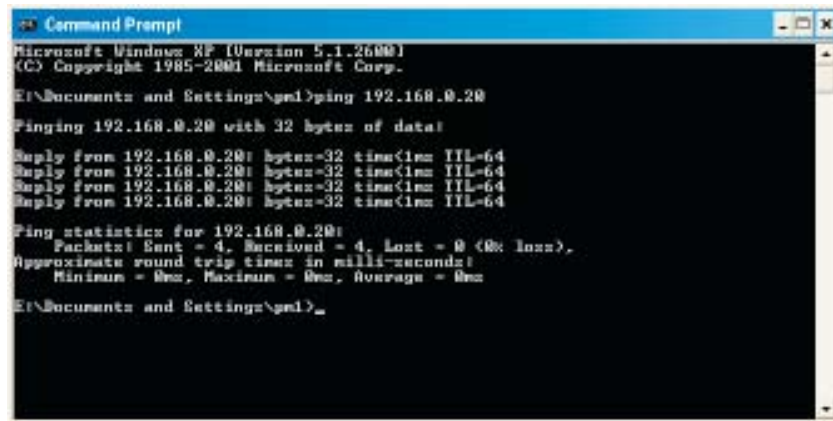
How to PING Your IP Address

The PING (Packet Internet Groper) command can determine whether a specific IP Address is accessible by sending a packet to the specific address and waiting for a reply. It is a very useful tool to confirm if the IP Address conflicts with the Internet Camera over the network.

Follow the step-by-step procedure below to utilize the PING command.

How to Ping your IP Address *(continued)*

Start a DOS window Start>Program>Accessories>Command Prompt
Type ping x.x.x.x, where x.x.x.x is the IP Address of the Internet Camera.

1) A successful connection to the camera will be indicated by 4 reply statements (above). If you fail to connect to your camera you will see the following:

2) Check to see if you have entered your camera's IP Address correctly or reassign yor camera's IP Address.

Time Zone Table

GMT stands for Greenwich Mean Time, which is the global time that all time zones are measured from.

(GMT-12:00) International Date Line West
(GMT-11:00) Midway Island, Samoa
(GMT-10:00) Hawaii
(GMT-09:00) Alaska
(GMT-08:00) Pacific Time (US & Canada); Tijuana
(GMT-07:00) Arizona
(GMT-07:00) Chihuahua, La Paz, Mazatlan
(GMT-07:00) Mountain Time (US & Canada)
(GMT-06:00) Central America
(GMT-06:00) Central Time (US & Canada)
(GMT-06:00) Guadalajara, Mexico City, Monterrey
(GMT-06:00) Saskatchewan
(GMT-05:00) Bogota, Lima, Quito
(GMT-05:00) Eastern Time (US & Canada)
(GMT-05:00) Indiana (East)
(GMT-04:00) Atlantic Time (Canada)
(GMT-04:00) Caracas, La Paz
(GMT-04:00) Santiago
(GMT-03:30) Newfoundland
(GMT-03:00) Brasilia
(GMT-03:00) Buenos Aires, Georgetown
(GMT-03:00) Greenland
(GMT-02:00) Mid-Atlantic
(GMT-01:00) Azores
(GMT-01:00) Cape Verde Is.
(GMT) Casablanca, Monrovia
(GMT) Greenwich Mean Time : Dublin, Edinburgh, Lisbon, London
(GMT+01:00) Amsterdam, Berlin, Bern, Rome, Stockholm, Vienna
(GMT+01:00) Belgrade, Bratislava, Budapest, Ljubljana, Prague
(GMT+01:00) Brussels, Copenhagen, Madrid, Paris
(GMT+01:00) Sarajevo, Skopje, Warsaw, Zagreb
(GMT+01:00) West Central Africa
(GMT+02:00) Athens, Istanbul, Minsk
(GMT+02:00) Bucharest
(GMT+02:00) Cairo
(GMT+02:00) Harare, Pretoria
(GMT+02:00) Helsinki, Kyiv, Riga, Sofia, Tallinn, Vilnius
(GMT+02:00) Jerusalem
(GMT+03:00) Baghdad
(GMT+03:00) Kuwait, Riyadh
(GMT+03:00) Moscow, St. Petersburg, Volgograd
(GMT+03:00) Nairobi

Time Zone Table (continued)

(GMT+03:30) Tehran
(GMT+04:00) Abu Dhabi, Muscat
(GMT+04:00) Baku, Tbilisi, Yerevan
(GMT+04:30) Kabul
(GMT+05:00) Ekaterinburg
(GMT+05:00) Islamabad, Karachi, Tashkent
(GMT+05:30) Chennai, Kolkata, Mumbai, New Delhi
(GMT+05:45) Kathmandu
(GMT+06:00) Almaty, Novosibirsk
(GMT+06:00) Astana, Dhaka
(GMT+06:00) Sri Jayawardenepura
(GMT+06:30) Rangoon
(GMT+07:00) Bangkok, Hanoi, Jakarta
(GMT+07:00) Krasnoyarsk
(GMT+08:00) Beijing, Chongqing, Hong Kong, Urumqi
(GMT+08:00) Irkutsk, Ulaan Bataar
(GMT+08:00) Kuala Lumpur, Singapore
(GMT+08:00) Perth
(GMT+08:00) Taipei
(GMT+09:00) Osaka, Sapporo, Tokyo
(GMT+09:00) Seoul
(GMT+09:00) Yakutsk
(GMT+09:30) Adelaide
(GMT+09:30) Darwin
(GMT+10:00) Brisbane
(GMT+10:00) Canberra, Melbourne, Sydney
(GMT+10:00) Guam, Port Moresby
(GMT+10:00) Hobart
(GMT+10:00) Vladivostok
(GMT+11:00) Magadan, Solomon Is., New Caledonia
(GMT+12:00) Auckland, Wellington
(GMT+12:00) Fiji, Kamchatka, Marshall Is.
(GMT+13:00) Nuku'alofa

Xplug Control Installation

Installation to a Web Server

Important Information

It is highly recommended to install the Xplug Control application to the Web Server for Internet Explorer 5.0. It must be installed to a Public Domain with a Fixed IP Address.

---

1. Installation:

Copy the "xplug.ocx" file to any Web Server table. Note the web address of the file location so that you can use it in the next step.

2. Configuration:

From the Web Configuration menu, select **"System"** and under the **"Loading ActiveX From"** input web server location, type:
http://www.web server location.com/.

Once the settings are completed, you should now be able to access the Internet Camera from the web browser by selecting ActiveX mode.

Installation of the X-Plug to a Local PC
(continued)

Insert the CD-ROM into the CD-ROM drive to initiate the auto-run program. Once completed, a menu screen will appear as follows:

To install Xplug Control click on the **"Xplug Control"** button to activate the installation procedure for the plug-in program. Once executed a prompt will appear requesting the input of the desired language selection. Make the desired selection and click on **"OK"** to continue.

Installation of the X-Plug to a Local PC
(continued)

Click **Next**

Click **Yes**

Installation of the X-Plug to a Local PC
(continued)

Click **Finish**
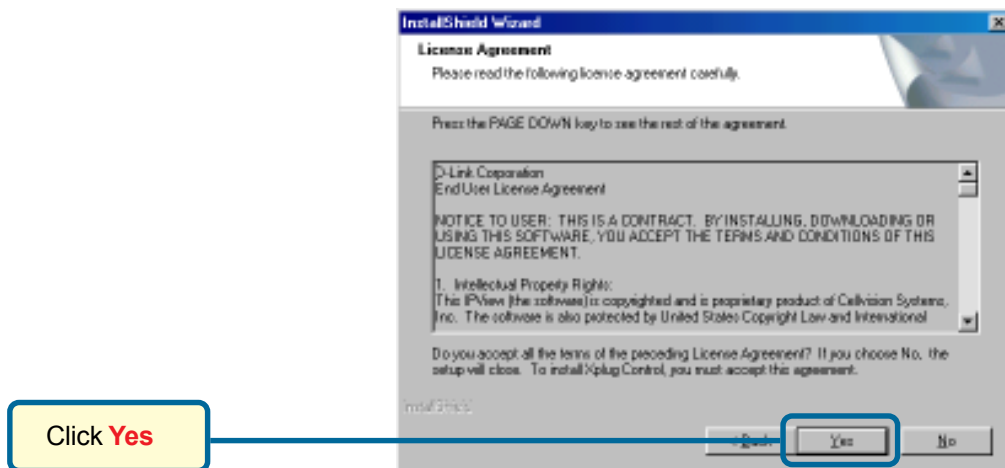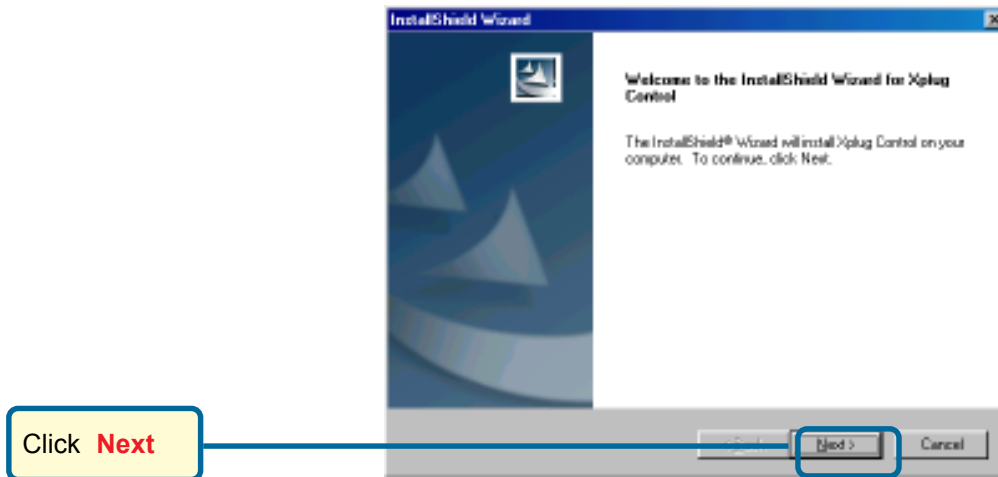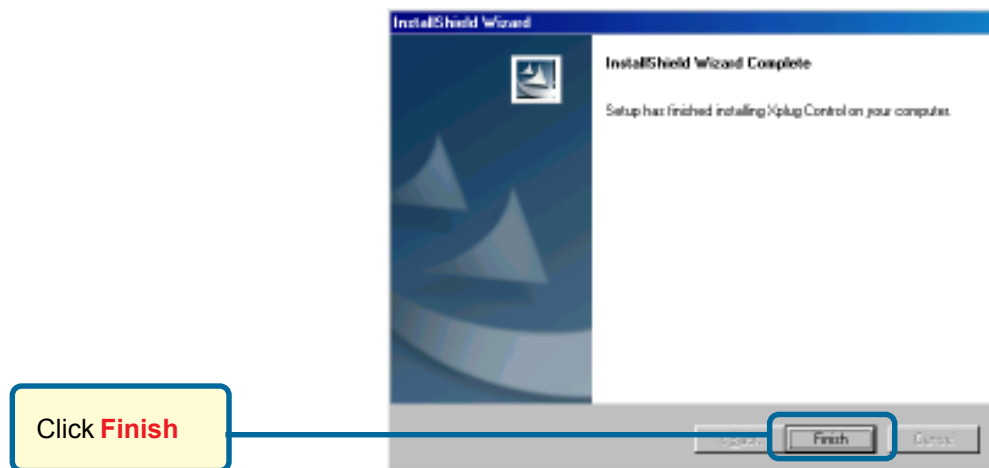
Adjusting the Camera Focus

To help you get the best image quality, keep in mind that while adjusting the DCS-900W focus you can preview the image quality from your Web browser.

Camera Lens
Adjust by turning
clockwise or
counter-clockwise

Adjusting the Camera Focus *(continued)*

Note:

You can further adjust the Internet Camera's image quality through the Web Configuration under *Advanced-Video*. Please refer to the Web Configuration section for further details.

> ### Warning
>
> Direct exposure to sunlight may cause permanent damage to the CMOS sensor. Therefore do not expose the Internet Camera's lens directly to sunlight. When operation is required in glaring light environment, it is recommended to use an iris lens.
>
> The Internet Camera is designed for indoor usage and if your application requires prolonged exposure to sunlight, a sun visor is recommended to protect the Internet Camera.

Technical Specifications

Video specification

Resolution: 640 x 480 pixel
Sensor: 1/3" color CMOS sensor
Gain control: Automatic
Exposure: Automatic
White Balance: Automatic
Shutter: Electronics 1/60 ~ 1/15000 sec
Minimum Illumination: 2.5lux@f1.4, 3000K color
Focal Length: 6.0 mm
Aperture: F=1.8

Image (Video Setting)

Image compression: JPEG
Frame rate: 20fps@SIF, 10fps@VGA
Compression Rate selection: 5 level (Very Low, Low, Medium, High, Very High)
Frame rate setting: 1, 5, 7, 15, 20, auto (depends on the video format)
Video resolution: 320x240, 640x480
Brightness control: Range 1- 128
Contrast control: Range 1- 128
Hue control: Range 1- 128

System Hardware

LAN Connector: One RJ-45 port to connect to 10/100Mbps
                                   Ethernet, auto-sensed
WLAN Connector: One 802.11b Wireless Antenna

Technical Specifications *(continued)*

LED Indicator: Power LED (Green)
                                            LAN Activity LED (Orange)
                                            (Normal / Off / Dummy)

Power Supply: DC 5V/2.5A, switching type
Power Communication: 4.5 Watt (900mA x 5V)

Communication Support

Communication: 10/100Mbps Ethernet and Fast Ethernet or 802.11b
                                            Wireless
Communication protocol: HTTP, TCP/IP, UDP, ARP,
                                            ICMP, BOOTP, RARP, DHCP, PPPoE

Web Configuration Requirements:

*   Internet Explorer 5.0 or above or Netscape 6.0 or above
*   CPU: Pentium II, 266 MHz or above
*   Memory Size: 32 MB (64 MB recommended)
*   VGA card resolution: 800x600 or above
*   ActiveX Control requires IE4.0 or above (Windows)
*   Java Applet requires IE4.0 or above (Windows/Mac) or Netscape 4.0 or above
    (Windows/Mac/Linux)

PC Requirements for IPView Lite:

*   Windows XP, Windows 2000, Windows Me, Windows 98SE
*   Pentium III, 450 MHz CPU or above
*   128 MB (256 MB Recommended)

EMI & Safety   FCC, CE, VCCI

Contacting Technical Support

You can find software updates and user documentation on the D-Link website.

D-Link provides free technical support for customers within the United States and within Canada for the duration of the warranty period on this product.

U.S. and Canadian customers can contact D-Link technical support through our website, or by phone.

Tech Support for customers within the United States:

D-Link Technical Support over the Telephone:
(877) 453-5465
24 hours a day, seven days a week.

D-Link Technical Support over the Internet:
http://support.dlink.com
email:support@dlink.com

Tech Support for customers within Canada:

D-Link Technical Support over the Telephone:
(800) 361-5265
Monday to Friday 8:30am to 9:00pm EST

D-Link Technical Support over the Internet:
http://support.dlink.ca
email:support@dlink.ca

Warranty and Registration

Subject to the terms and conditions set forth herein, D-Link Systems, Inc. ("D-Link") provides this Limited warranty for its product only to the person or entity that originally purchased the product from:

- D-Link or its authorized reseller or distributor and
- Products purchased and delivered within the fifty states of the United States, the District of Columbia, U.S. Possessions or Protectorates, U.S. Military Installations, addresses with an APO or FPO.

Limited Warranty: D-Link warrants that the hardware portion of the D-Link products described below will be free from material defects in workmanship and materials from the date of original retail purchase of the product, for the period set forth below applicable to the product type ("Warranty Period"), except as otherwise stated herein.

1-Year Limited Warranty for the Product(s) is defined as follows:

- Hardware (excluding power supplies and fans) One (1) Year
- Power Supplies and Fans One (1) Year
- Spare parts and spare kits Ninety (90) days

D-Link's sole obligation shall be to repair or replace the defective Hardware during the Warranty Period at no charge to the original owner or to refund at D-Link's sole discretion. Such repair or replacement will be rendered by D-Link at an Authorized D-Link Service Office. The replacement Hardware need not be new or have an identical make, model or part. D-Link may in its sole discretion replace the defective Hardware (or any part thereof) with any reconditioned product that D-Link reasonably determines is substantially equivalent (or superior) in all material respects to the defective Hardware. Repaired or replacement Hardware will be warranted for the remainder of the original Warranty Period from the date of original retail purchase. If a material defect is incapable of correction, or if D-Link determines in its sole discretion that it is not practical to repair or replace the defective Hardware, the price paid by the original purchaser for the defective Hardware will be refunded by D-Link upon return to D-Link of the defective Hardware. All Hardware (or part thereof) that is replaced by D-Link, or for which the purchase price is refunded, shall become the property of D-Link upon replacement or refund.

Limited Software Warranty: D-Link warrants that the software portion of the product ("Software") will substantially conform to D-Link's then current functional specifications for the Software, as set forth in the applicable documentation, from the date of original retail purchase of the Software for a period of ninety (90) days ("Warranty Period"), provided that the Software is properly installed on approved hardware and operated as contemplated in its documentation. D-Link further warrants that, during the Warranty Period, the magnetic media on which D-Link delivers the Software will be free of physical defects. D-Link's sole obligation shall be to replace the non-conforming Software (or defective media) with software that substantially conforms to D-Link's functional specifications for the Software or to refund at D-Link's sole discretion. Except as otherwise agreed by D-Link in writing, the replacement Software is provided only to the original licensee, and is subject to the terms and conditions of the license granted by D-Link for the Software. Software will be warranted for the remainder of the original Warranty Period from the date or original retail purchase. If a material non-conformance is incapable of correction, or if D-Link determines in its sole discretion that it is not practical to replace the non-conforming Software, the price paid by the original licensee for the non-conforming Software will be refunded by D-Link; provided that the non-conforming Software (and all copies thereof) is first returned to D-Link. The license granted respecting any Software for which a refund is given automatically terminates.

Non-Applicability of Warranty: The Limited Warranty provided hereunder for hardware and software of D-Link's products will not be applied to and does not cover any refurbished product and any product purchased through the inventory clearance or liquidation sale or other sales in which D-Link, the sellers, or the liquidators expressly disclaim their warranty obligation pertaining to the product and in that case, the product is being sold "As-Is" without any warranty whatsoever including, without limitation, the Limited Warranty as described herein, notwithstanding anything stated herein to the contrary.

Submitting A Claim: The customer shall return the product to the original purchase point based on its return policy. In case the return policy period has expired and the product is within warranty, the customer shall submit a claim to D-Link as outlined below:

Warranty and Registration *(continued)*

- The customer must submit with the product as part of the claim a written description of the Hardware defect or Software nonconformance in sufficient detail to allow D-Link to confirm the same.

- The original product owner must obtain a Return Material Authorization ("RMA") number from the Authorized D-Link Service Office and, if requested, provide written proof of purchase of the product (such as a copy of the dated purchase invoice for the product) before the warranty service is provided.

- After an RMA number is issued, the defective product must be packaged securely in the original or other suitable shipping package to ensure that it will not be damaged in transit, and the RMA number must be prominently marked on the outside of the package. Do not include any manuals or accessories in the shipping package. D-Link will only replace the defective portion of the Product and will not ship back any accessories.

- The customer is responsible for all in-bound shipping charges to D-Link. No Cash on Delivery ("COD") is allowed. Products sent COD will either be rejected by D-Link or become the property of D-Link. Products shall be fully insured by the customer and shipped to **D-Link Systems, Inc., 17595 Mt. Herrmann, Fountain Valley, CA 92708**. D-Link will not be held responsible for any packages that are lost in transit to D-Link. The repaired or replaced packages will be shipped to the customer via UPS Ground or any common carrier selected by D-Link, with shipping charges prepaid. Expedited shipping is available if shipping charges are prepaid by the customer and upon request.

D-Link may reject or return any product that is not packaged and shipped in strict compliance with the foregoing requirements, or for which an RMA number is not visible from the outside of the package. The product owner agrees to pay D-Link's reasonable handling and return shipping charges for any product that is not packaged and shipped in accordance with the foregoing requirements, or that is determined by D-Link not to be defective or non-conforming.

What Is Not Covered: This limited warranty provided by D-Link does not cover: Products, if in D-Link's judgment, have been subjected to abuse, accident, alteration, modification, tampering, negligence, misuse, faulty installation, lack of reasonable care, repair or service in any way that is not contemplated in the documentation for the product, or if the model or serial number has been altered, tampered with, defaced or removed; Initial installation, installation and removal of the product for repair, and shipping costs; Operational adjustments covered in the operating manual for the product, and normal maintenance; Damage that occurs in shipment, due to act of God, failures due to power surge, and cosmetic damage; Any hardware, software, firmware or other products or services provided by anyone other than D-Link; Products that have been purchased from inventory clearance or liquidation sales or other sales in which D-Link, the sellers, or the liquidators expressly disclaim their warranty obligation pertaining to the product. Repair by anyone other than D-Link or an Authorized D-Link Service Office will void this Warranty.

Disclaimer of Other Warranties: EXCEPT FOR THE LIMITED WARRANTY SPECIFIED HEREIN, THE PRODUCT IS PROVIDED "AS-IS" WITHOUT ANY WARRANTY OF ANY KIND WHATSOEVER INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT. IF ANY IMPLIED WARRANTY CANNOT BE DISCLAIMED IN ANY TERRITORY WHERE A PRODUCT IS SOLD, THE DURATION OF SUCH IMPLIED WARRANTY SHALL BE LIMITED TO NINETY (90) DAYS. EXCEPT AS EXPRESSLY COVERED UNDER THE LIMITED WARRANTY PROVIDED HEREIN, THE ENTIRE RISK AS TO THE QUALITY, SELECTION AND PERFORMANCE OF THE PRODUCT IS WITH THE PURCHASER OF THE PRODUCT.

Warranty and Registration *(continued)*

Limitation of Liability: TO THE MAXIMUM EXTENT PERMITTED BY LAW, D-LINK IS NOT LIABLE UNDER ANY CONTRACT, NEGLIGENCE, STRICT LIABILITY OR OTHER LEGAL OR EQUITABLE THEORY FOR ANY LOSS OF USE OF THE PRODUCT, INCONVENIENCE OR DAMAGES OF ANY CHARACTER, WHETHER DIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL (INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF GOODWILL, LOSS OF REVENUE OR PROFIT, WORK STOPPAGE, COMPUTER FAILURE OR MALFUNCTION, FAILURE OF OTHER EQUIPMENT OR COMPUTER PROGRAMS TO WHICH D-LINK'S PRODUCT IS CONNECTED WITH, LOSS OF INFORMATION OR DATA CONTAINED IN, STORED ON, OR INTEGRATED WITH ANY PRODUCT RETURNED TO D-LINK FOR WARRANTY SERVICE) RESULTING FROM THE USE OF THE PRODUCT, RELATING TO WARRANTY SERVICE, OR ARISING OUT OF ANY BREACH OF THIS LIMITED WARRANTY, EVEN IF D-LINK HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. THE SOLE REMEDY FOR A BREACH OF THE FOREGOING LIMITED WARRANTY IS REPAIR, REPLACEMENT OR REFUND OF THE DEFECTIVE OR NON-CONFORMING PRODUCT. THE MAXIMUM LIABILITY OF D-LINK UNDER THIS WARRANTY IS LIMITED TO THE PURCHASE PRICE OF THE PRODUCT COVERED BY THE WARRANTY. THE FOREGOING EXPRESS WRITTEN WARRANTIES AND REMEDIES ARE EXCLUSIVE AND ARE IN LIEU OF ANY OTHER WARRANTIES OR REMEDIES, EXPRESS, IMPLIED OR STATUTORY

Governing Law: This Limited Warranty shall be governed by the laws of the State of California. Some states do not allow exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the foregoing limitations and exclusions may not apply. This limited warranty provides specific legal rights and the product owner may also have other rights which vary from state to state.

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

FCC Statement: 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 instructions, 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.

For detailed warranty outside the United States, please contact corresponding local D-Link office.

Register online your D-Link product at http://support.dlink.com/register/