SECURICAM Network™

DCS-2000

Audio Internet Camera

Manual

Version 3.40

D-Link®

Building Networks for People

(10/04/04)

Contents

Package Contents

- D-Link **DCS-2000** Internet Camera
- Power Adapter
- Installation software and manual on CD
- Quick Installation Guide
- Camera Stand
- Category 5 Ethernet Cable

If any of the above items are missing, please contact your reseller.

Note: Using a power supply with a different voltage than the one included with the DCS-2000 will cause damage and void the warranty for this product.

Minimum System Requirements:

- Internet Explorer 6.x or higher Internet Web Browser
- CPU: 1.7GHz or above
  (Pentium 4, 2.4Ghz plus processor with 512Mb memory and a 32Mb video card is required for multiple camera viewing and recording in IP Surveillance)
- Memory Size: 128MB
- VGA card resolution: 800 x 600 or above

Introduction

The D-Link SECURICAM Network™ **DCS-2000** Internet Camera is a full featured surveillance system that connects to an Ethernet, Fast Ethernet or broadband Internet connection to provide remote high-quality video and audio. The **DCS-2000** Internet Camera differs from a conventional PC Camera because it is a stand-alone system with a built-in CPU and Web server providing a low-cost solution capable of solving demanding security and home/office monitoring needs. The **DCS-2000** can be accessed remotely, and controlled, from any PC or notebook computer over the Internet from anywhere in the world. Simple installation procedures, along with the built-in Web-based interface offers easy integration to your network environments.

Features and Benefits

The SECURICAM Network™ **DCS-2000** Internet Camera is a stand-alone system requiring no special hardware or software such as PC frame grabber cards. All that is required is a computer with the Internet Explorer Web browser (version 6.x or above). Just plug in the camera and view the picture from your Internet Camera with a valid IP Address.

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 **DCS-2000** allows remote access from your Internet Explorer Web browser for live image viewing and allows the administrator to manage and control the Internet Camera anywhere and any time in the world. Apply the Internet Camera to monitor various objects and places such as homes, offices, banks, hospitals, child-care centers, amusement parks and other varieties of industrial and public monitoring. The Internet Camera can also be used for intruder detection with its motion-detection mode, capture still images and video images for archiving and many more applications.

Supports a Variety of Platforms
Supporting TCP/IP networking, SMTP e-mail, HTTP and other Internet related protocols, the **DCS-2000** can be integrated easily into other Internet/Intranet applications because of its standards-based features.

Web Configuration
Using the Internet Explorer Web browser, administrators can configure and manage the Internet Camera directly from its own Web page via the Intranet or the Internet. Up to 20 user names and passwords are permitted, with privilege settings controlled by the administrator.

Features & Benefits (continued)

## Powerful Surveillance and Remote Monitoring Utility

The powerful **IP surveillance** software application assigns an administrator with a pre-defined user ID and password who can modify the Internet Camera settings from the remote site via an Intranet or the Internet. Administrators are allowed to monitor the image, record the image to a hard drive, and take snapshots.

Connection to External Devices

Supporting auxiliary Input/Output connectors, you can connect the Internet Camera to a variety of external devices such as IR-sensors, switches and alarm relays. Combined with programmable alarming facilities, you can develop a variety of security applications that are triggered on alarm-based events. The Internet Camera provides an industry standard in/out external connector for connectivity.

Note: Use of audio or video equipment for recording the image or voice of a person without their knowledge and consent is prohibited in certain states or jurisdictions. Nothing herein represents a warranty or representation that the D-Link product provided herein is suitable for the end-user's intended use under the applicable laws of his or her state. D-Link disclaims any liability whatsoever for any end-user use of the D-Link product, which fails to comply with applicable state, local, or federal laws.

Connections

Reset Button

DC Power Connector

Ethernet Cable Connector
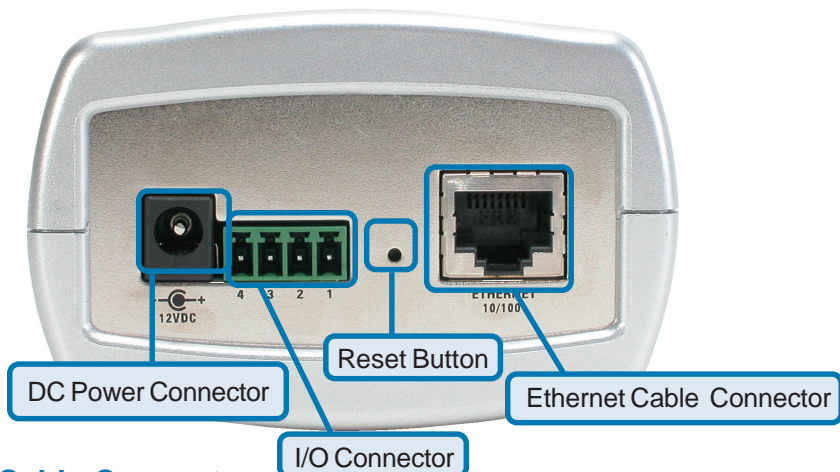
I/O Connector

Ethernet Cable Connector

The **DCS-2000** back panel features an **RJ-45** connector for connections to 10Base-T Ethernet cabling or 100Base-TX Fast Ethernet cabling. This network port supports the **NWay protocol**, allowing the Internet Camera to automatically detect or negotiate the transmission speed of the network.

> The Ethernet cable included with the DCS-2000 Internet Camera is a Category 5 "straight through" cable. This is the recommended cable type when the camera is connected to a 100 Mbps Fast Ethernet network hub or switch.

DC Power Connector

The DC power input connector is located on the **DCS-2000** Internet Camera's back panel and is labeled **DC 12V** with a single socket to supply power to the Internet Camera.

Reset Button

Reset will be initiated when the reset button is pressed once and held until the Power LED flashes through its cycle twice.

> Factory reset will be initiated when the reset button is pressed continuously for 5 seconds or when the Power LED changes from green to red for 2 cycles. (For example you will see the LED turn to red twice, release the reset button when the LED turns red the second time). The Power LED will begin to flash indicating that the Internet Camera's settings are reverting back to the factory settings, then turn back to green. To reset the camera, press the reset button once, and the LED will flash to orange.

Connections (continued)

I/O Connector

The **DCS-2000** provides a terminal block with two pairs of connectors situated on the back panel. One pair is for input and the other is for output. The I/O connectors provide the physical interface to send and receive digital signals to a variety of external alarm devices. **Please refer to the appendix in this manual for detailed information.**

Bottom Panel

Socket for stand

Attachment socket for the Camera Stand

Located on the bottom panel of the **DCS-2000**, the socket is used to connect the camera stand to the Internet Camera by attaching the screw head on the camera stand to the Internet Camera.

Power LED

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

The Power LED is positioned on the right side of the Internet Camera lens. As soon as the power adapter is connected to the Internet camera the power LED will flash **red** and **green** several times, the **DCS-2000** is conducting a self-test. Upon passing the self-test the LED will turn **green** to indicate a good connection to an Ethernet port or **red** to indicate no connection has been made.

Hardware Installation

① **Connect an Ethernet cable**

Connect an Ethernet cable to the network cable connector located on the **DCS-2000**'s back panel and attach it to the network.

② **Attach the external power supply**

Attach the external power supply to the DC power input connector located on the **DCS-2000**'s back panel labeled **12VDC** and connect the other end to your wall outlet.

When you have a proper connection, the LED will turn from red to green. The light may cycle on and off and your computer may show an intermittent loss of connectivity, this is normal until you have configured your Internet Camera.

Attaching the Internet Camera to the Camera Stand

The Internet Camera comes with a camera stand with a swivel ball screw head that can be attached to the Internet Camera bottom socket cavity. Attach the camera stand to the Internet Camera and station it for your application. There are holes located in the base of the camera stand allowing the Internet Camera to be mounted to the ceiling, or any wall securely.

Installation Wizard

After you have successfully completed the hardware installation of the **DCS-2000** Internet Camera, it is necessary to install software to configure and operate the camera. The first step is to install the **Installation Wizard** from the CD. **Installation Wizard** will allow you to configure the Internet Camera to your network.

After the **Installation Wizard** software program is completed, you will have an operating and controllable Internet Camera. From your Internet Explorer Web browser you will be able to access the video and sound from the Internet camera. The camera has a built-in Web server. This Web server will allow the camera to access the Internet without being attached to a computer and permits users to view the video and audio remotely.

After running the **Installation Wizard**, you will be able to operate the **DCS-2000** and view the camera remotely through Internet Explorer 6.x or above.

However it is necessary to install the **IP surveillance** software from the enclosed CD to create a truly powerful monitoring and surveillance system. The following section will show in detail the installation of the **Installation Wizard** and the **IP surveillance** software.
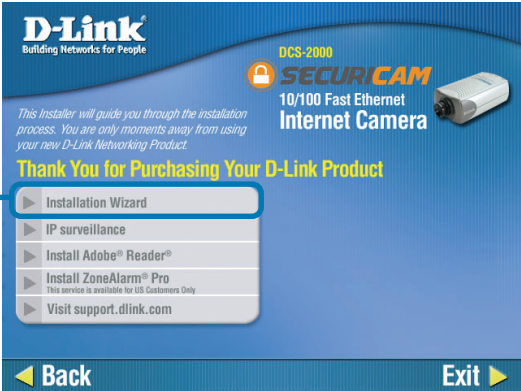
Installing the Installation Wizard program

Insert the CD that is included with the **DCS-2000** Internet Camera. The **DCS-2000** installation menu will start up automatically from the CD. If the CD does not start up automatically (the Windows operating system can turn this function off, for example), go to Start > Run > Type D:\Autorun (if D:\ is your cd-rom drive) to access the installation menu shown below:
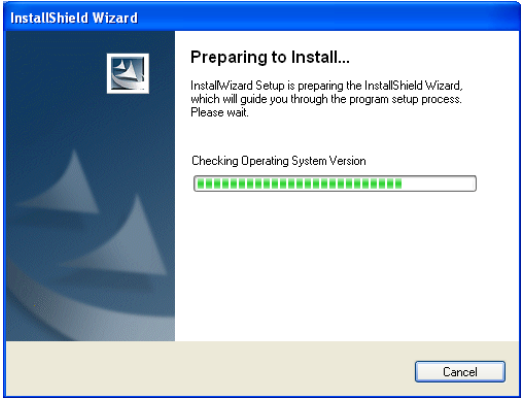
Click **Install Software**
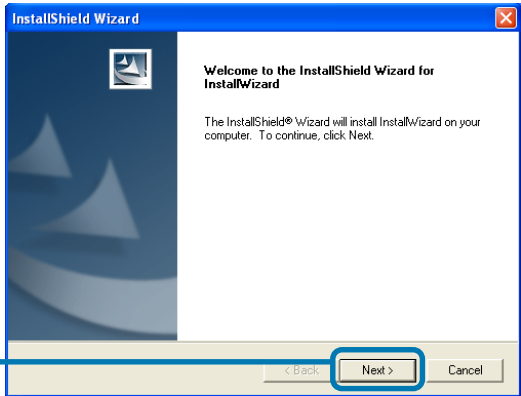
Installation Wizard (continued)

Click **Installation Wizard**

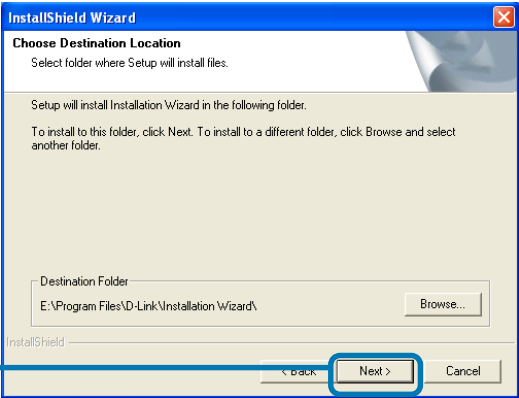Please wait while the InstallShield Wizard prepares to install.

Click **Next**.
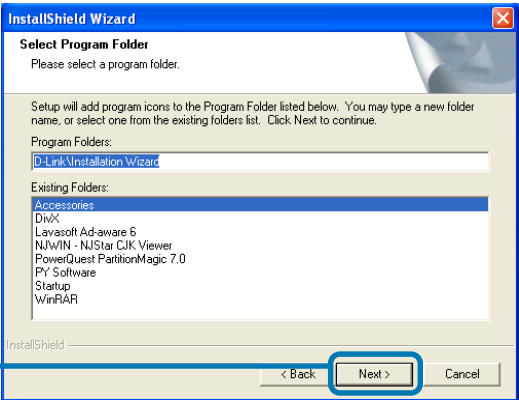
Installation Wizard (continued)

The InstallShield will install in the following folder. To install into a different folder, click Browse and select another folder.
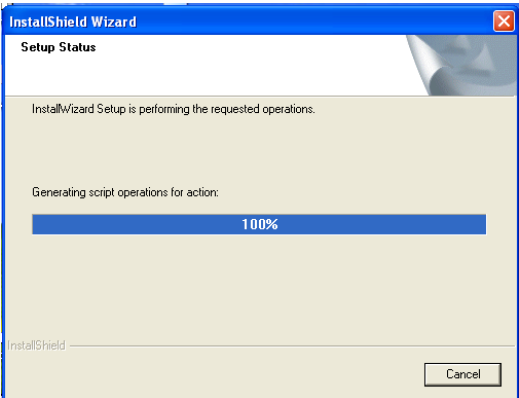
Click **Next**.

Select the Program folder that Setup will add program icons to. You may type a new folder name, or select one from the existing folders list.
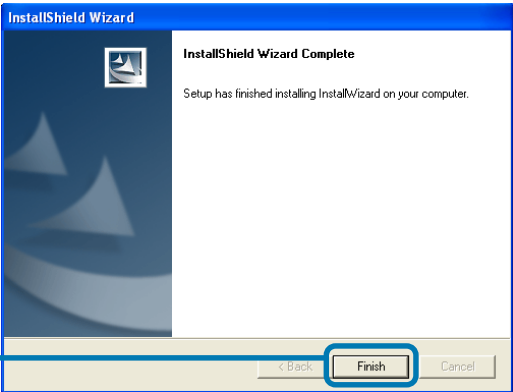
Click **Next**.

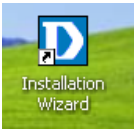Please wait while the Installation Wizard is installed.

Installation Wizard (continued)

Installation is now complete.


Click **Finish**.

To access the Installation Wizard screen, click on the Installation Wizard Icon on your desktop.

The opening Installation Wizard screen will appear and show a MAC address of the **DCS-2000** and an IP Address (which may or may not be correct depending on what you have your **DCS-2000** connected to). If you have a DHCP* server on your network, there will be a valid IP Address displayed here, indicated by a "Yes" under the assigned column.

*A DHCP server is a device that supplies IP Addresses to its clients that are on the same network.
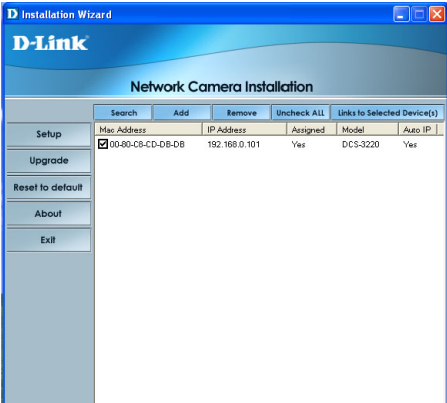
IMPORTANT:

A hardware reset of the Internet Camera may be required if the **Installation Wizard** cannot find the camera. To accomplish this reset, lightly insert a paper clip (or a similar sized tool) into the reset hole on the back of the camera (see page 6 for the location of the reset hole). The LED on the front of the camera will begin blinking orange. When it stops the blinking cycle continue to hold in the reset button until a second cycle of blinking red and green lights indicates a second reset cycle has completed. This will take approximately 5-7 seconds.

Installation Wizard (continued)

The **Installation Wizard** will now show a MAC address for the **DCS-2000** and an IP address. This IP address may not be correct at this step in the installation until you see "Yes" under the assigned column. The camera is now automatically configured with an IP address consistent to the device it is connected to.

Select the MAC address.

Click on the **Link to Selected Devices** button.
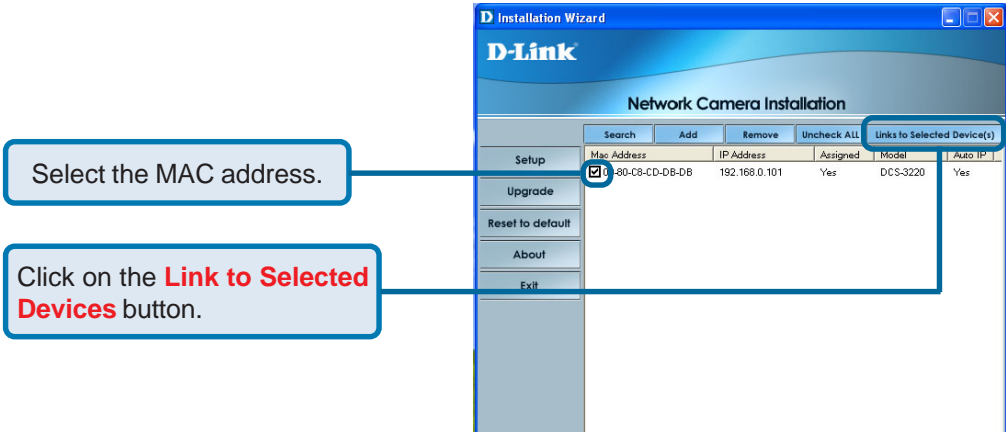
For more information regarding the functions of this screen, see the following section titled "Installation Wizard Screen."

After you click on the **Link to Selected Devices** button, **Installation Wizard** will automatically open your Internet browser to the IP Address of the **DCS-2000**, in this example it is: http://192.168.0.10. Your **DCS-2000** may have a different IP Address.
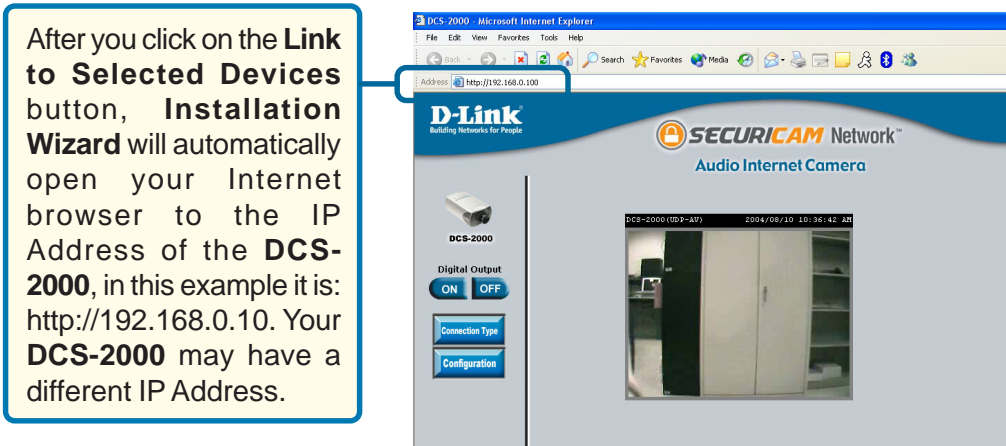
You have now completed the Setup Wizard and are ready to use your camera! You can also continue to the section titled "Installing IP surveillance Software" (page 21) to install the IP surveillance software before you begin to use the DCS-2000.

Installation Wizard Screen

The following options are available on the Installation Wizard screen by clicking on the corresponding tab:

Search -
Click to search for any available cameras to connect to the network.

Add -
Click to manually add a camera to the network. A window will appear, prompting you to enter the camera's IP address or domain name. A second window will appear, prompting you to enter the port number.

Remove -
Click to remove the selected camera(s) from the network.

Uncheck All -
Click to uncheck all selected cameras.

Links to Selected Devices -
Click to link all selected devices to the network.

Setup -

On the initial Setup Screen you can configure System and Date/Time settings for each camera. Click **Next** to configure Network settings for the camera.

System Settings -
Enter a Camera Name and create a Root password for the camera.

Date/Time Settings -
Enter the Date and Time for each camera. These settings can also be configured on the **Tools > System** screen (page 50) when configuring the camera via a Web browser.
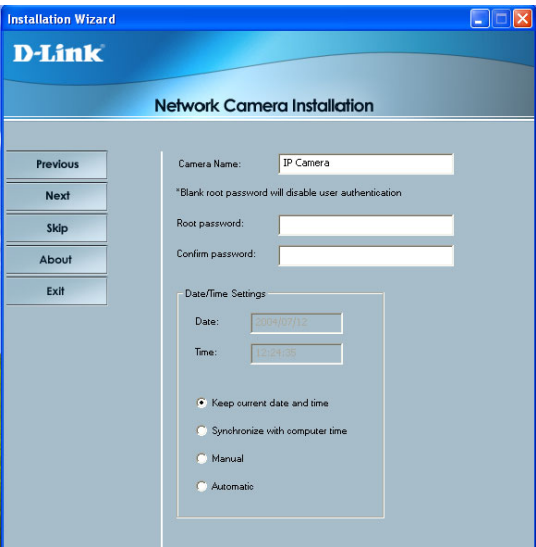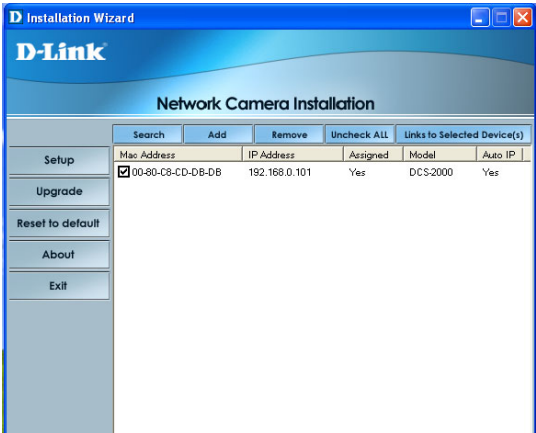
Installation Wizard Screen (continued)

Network Settings -

Here users can configure the Network Settings for the camera. Enter the IP address, Subnet mask, Default router IP, Primary DNS, and Secondary DNS. Automatically, the option to reset IP address at boot is selected. If you would like to save your IP address settings, make sure to uncheck this box. These settings can also be configured on the **Advanced > Network screen** (page 36) when configuring the camera via a Web Browser.
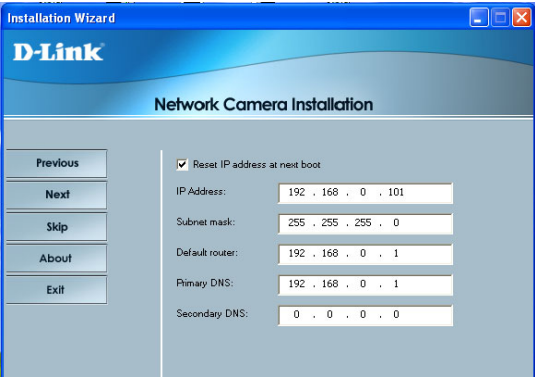
Click Next and then **Apply** to save the configured settings. Users can click **Previous** to modify changes or mistakes.
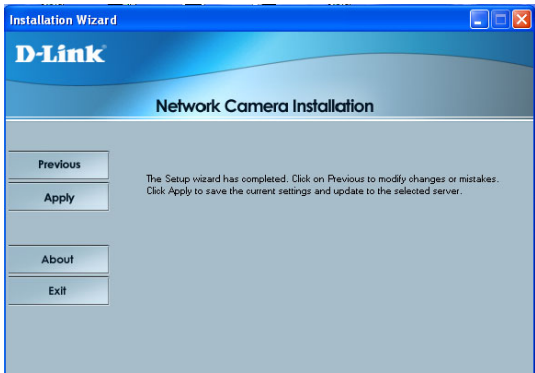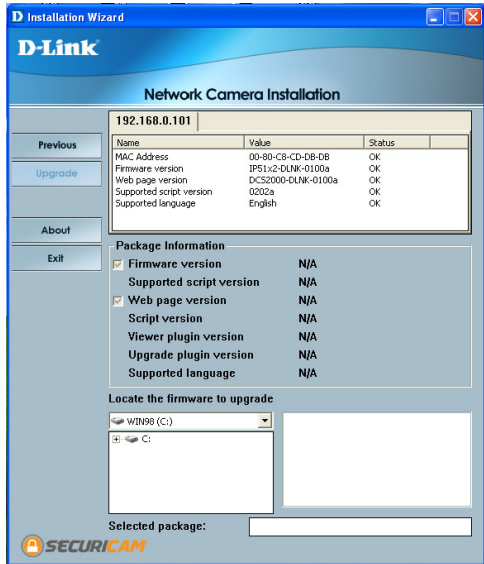
Upgrade -

The upgrade window allows users to upload a saved firmware file. If the firmware is older than that currently on the camera, a screen will appear indicating so and prompting the user to confirm the upload.

Package Information -

This displays information about the firmware and plugin currently installed on the camera.

Installation Wizard Screen (continued)

Locate the Firmware to Upgrade -
Indicate the location of the firmware to be uploaded to the camera.

Selected Package -
This displays the file name of the firmware selected for upload.

Reset to Default -

Click the Reset to Default tab to reset the camera's settings to factory defaults.

About -

Click About to display the current version and date.


Exit -

Click the Exit tab to exit the Installation Wizard screen.

Enabling UPnP for Windows XP/Me

UPnP is short for Universal Plug and Play, which is a networking architecture that provides compatibility among networking equipment, software, and peripherals. The **DCS-2000** is a UPnP enabled Internet camera. If your operating system is UPnP enabled, the device will be easier to configure. If you do not want to use the UPnP functionality, it can be disabled by unchecking the Enabled DDNS check box on the DDNS/UPnP settings page under "Advanced" in the configuration menu. Use the following steps to enable UPnP (Universal Plug and Play) settings only if you are running Windows XP/Me. If you are running Windows 98/2000, UPnP is not available.

■ Go to **Start >Settings**.

Click **Control Panel**
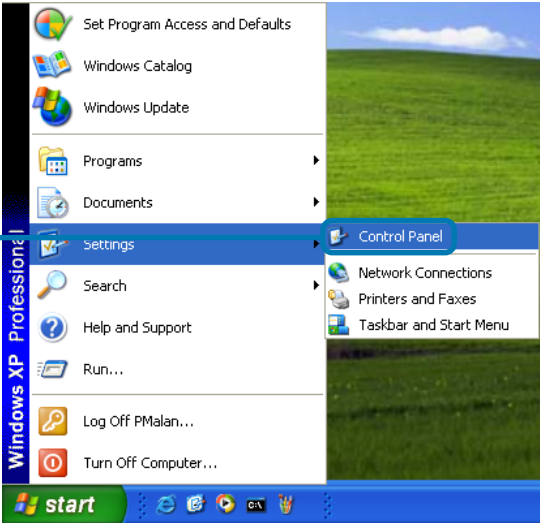
Click **Add or Remove Programs**
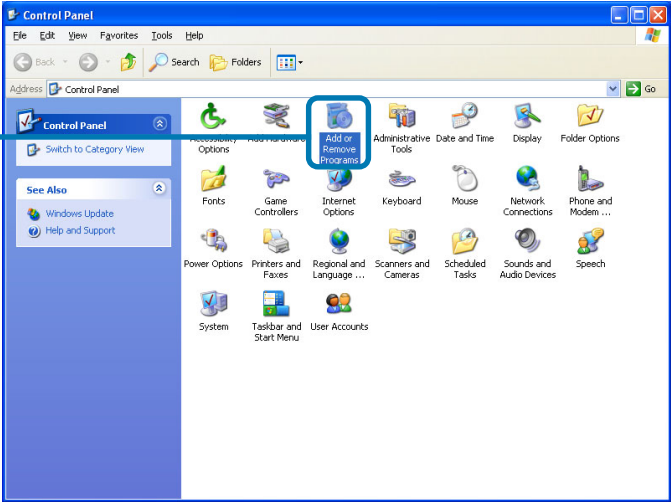
Enabling UPnP for Windows XP/Me (continued)

Click **Add/Remove Windows Components**
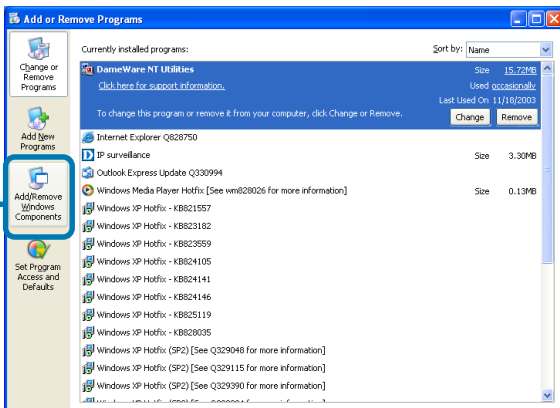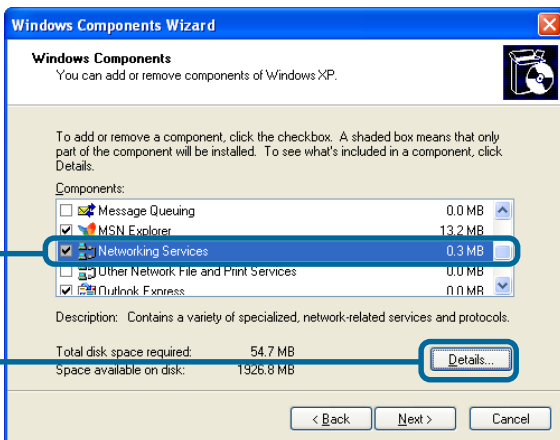
The following screen will appear:

Select **Networking Services** (Communications in Windows Me

Click **Details**

Select **Universal Plug and Play**
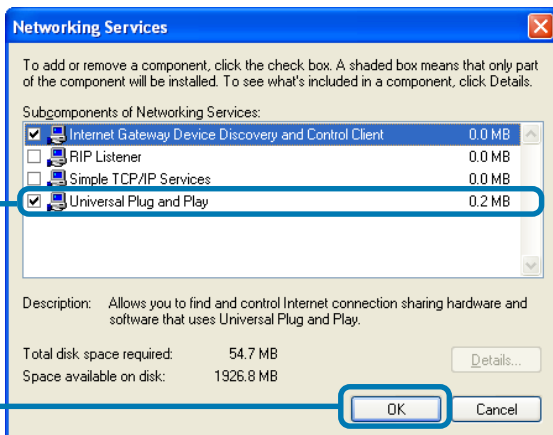
Click **Ok**

Enabling UPnP for Windows XP/Me (continued)

Click **Next**
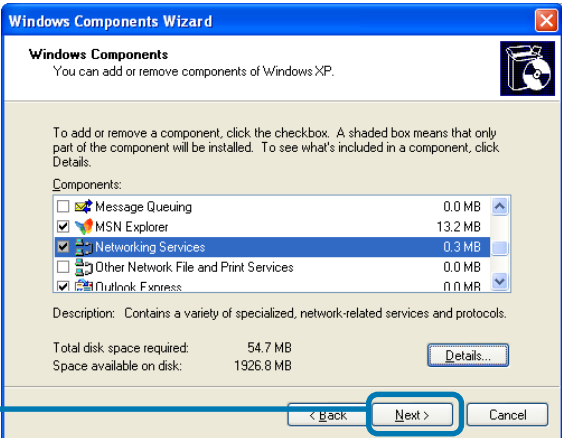
Please wait while Setup configures the components.
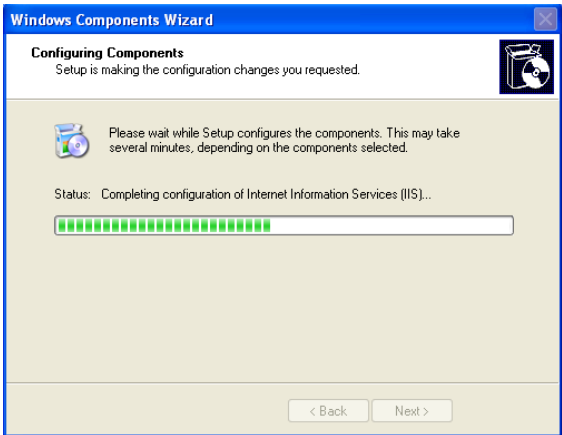
Click **Finish**

Enabling UPnP for Windows XP/Me (continued)

To view your **DCS-2000** Internet Camera in an Internet browser, go to your Desktop and click **My Network Places**.

Click **My Network Places**

Click **DCS-2000-100**

The last three digits (100), represent the fourth octet of your Internet Camera's IP address (in this example, 198.168.0.100).

After you click on the **DCS-2000-100** icon, your Internet browser will automatically be opened to the IP Address of the **DCS-2000**, in this example it is: http://192.168.0.100. Your **DCS-2000** may have a different IP Address.
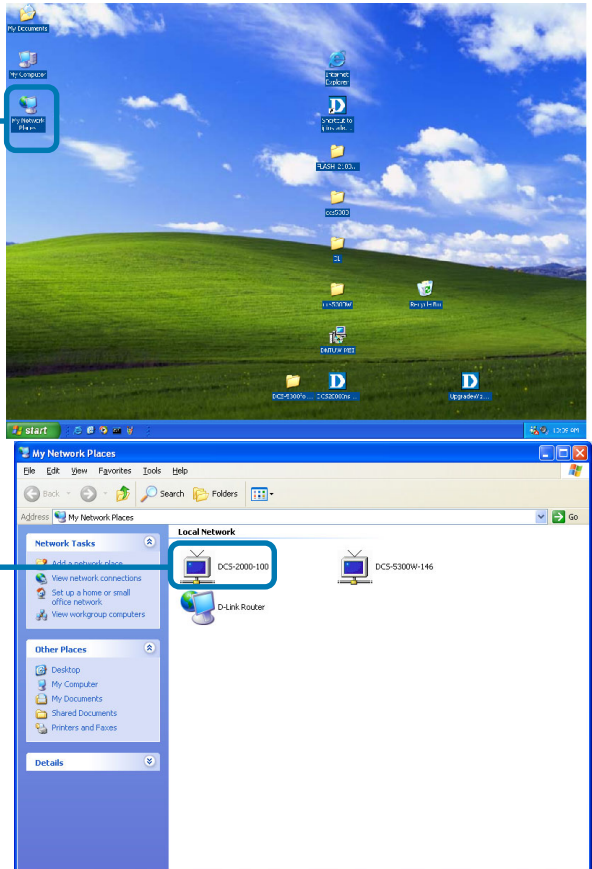
(Note: Screen shots are taken in Windows XP, similar screens will appear in Windows Me.)

Installing IP surveillance Software

The IP surveillance software on the CD included with the **DCS-2000** Internet Camera converts the **DCS-2000** into a powerful, yet flexible, surveillance system for home or business, with these features:

- Real-time Monitoring
- Video Recording to hard disk
- High quality video
- High compression ratio
- Maximum of 16 cameras with different monitor layouts
- Smart playback
- Triggered event browsing
- Fast database searching
- Configurable automated alarms
- Account password protection
- Scheduled recording for each camera
- Email / FTP snapshot
- AVI file export
- Motion detection for each camera

To install the IP surveillance software, click on **Install IP surveillance Software** on the CD included with the Internet Camera. The **Welcome** screen appears:

Click **Next**

Installing IP surveillance Software (continued)

Software License Agreement

Please read the following License Agreement. Press the PAGE DOWN key to see the rest of the agreement.

D-Link IP surveillance License Agreement
General Terms

PLEASE READ THIS AGREEMENT CAREFULLY BEFORE USING THE PROGRAM. D-Link INC. WILL LICENSE THE PROGRAM TO YOU ONLY IF YOU FIRST ACCEPT THE TERMS OF THIS AGREEMENT. BY USING THE PROGRAM YOU AGREE TO THESE TERMS. IF YOU DO NOT AGREE TO THE TERMS OF THIS AGREEMENT, PROMPTLY RETURN THE UNUSED PROGRAM TO THE PARTY (D-Link OR ITS RESELLER) FROM WHOM YOU ACQUIRED IT TO RECEIVE A REFUND OF THE AMOUNT YOU PAID.
The Program is owned by D-Link Corporation and is copyrighted and licensed, not sold. The term "Program" means the original program and all whole or partial copies of it. A Program consists of machine-readable instructions, its components, data, audio-visual content (such as images, text, recordings, or pictures), and related licensed materials.

Do you accept all the terms of the preceding License Agreement? If you choose No, Setup will close. To install IP Surveillance, you must accept this agreement.

< Back   Yes   No

Click **Yes**

Please read the Software Licensing Agreement and click yes if you wish to accept the agreement. Click "No" to exit the installation.

User Information

Type your name below. You must also type the name of the company you work for.

Name:

Company:

InstallShield

< Back   Next >   Cancel
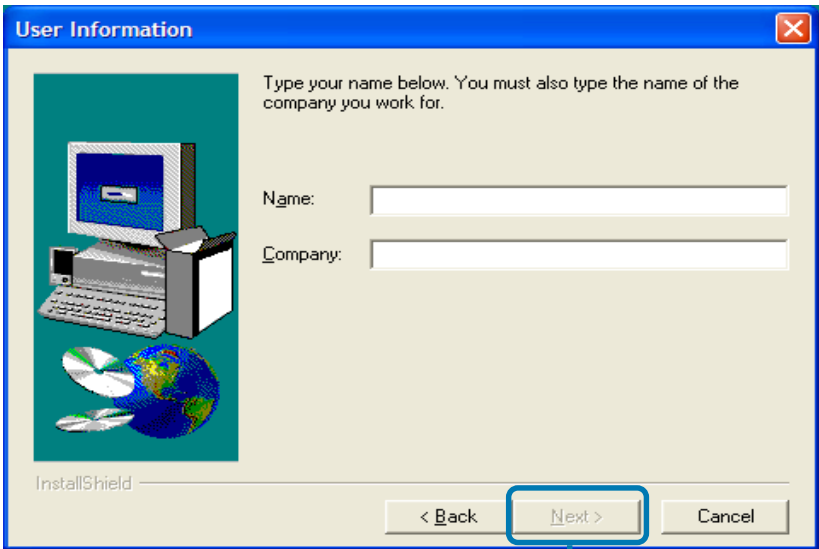
Click **Next**

Enter your name and company information and click "Next."

Installing IP surveillance Software (continued)

Choose Destination Location

Setup will install IP surveillance in the following directory.

To install to this directory, click Next.

To install to a different directory, click Browse and select another directory.

You can choose not to install IP surveillance by clicking Cancel to exit Setup.

Select the destination directory.

Destination Directory

C:\Program Files\D-Link\IP surveillance   Browse...

InstallShield

< Back   Next >   Cancel

Click **Next**

Select Program Folder

Setup will add program icons to the Program Folder listed below. You may type a new folder name, or select one from the existing Folders list. Click Next to continue.

Select the program folder the software will be installed into.

Program Folders:

D-Link\IP surveillance

Existing Folders:

Accessories
Games
HyperSnap-DX 5
IPView
Online Services
StartUp
WinZip

InstallShield

< Back   Next >   Cancel

Click **Next**

Installing IP surveillance Software (continued)

Click **Next**

Click **Finish**

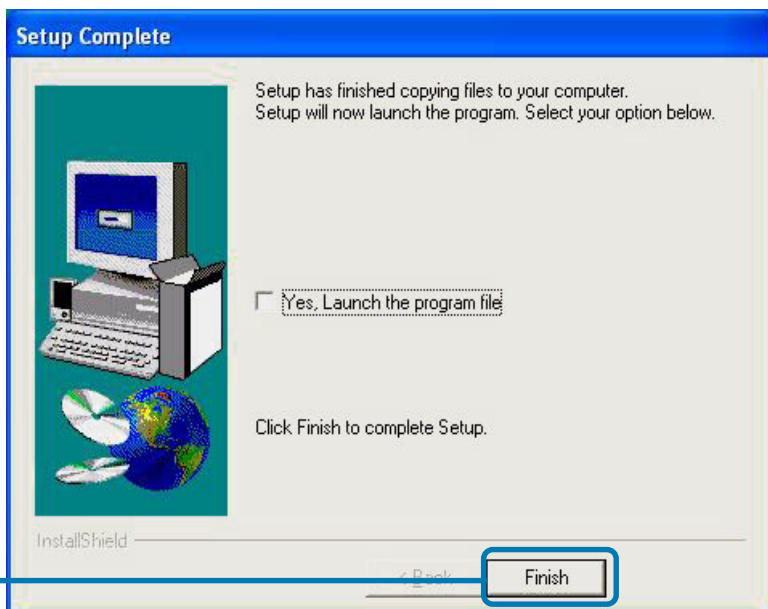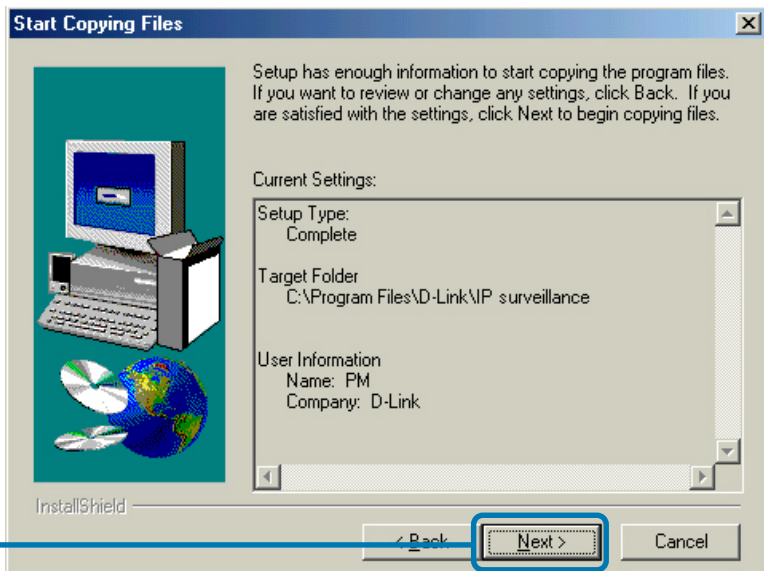The installation is complete.

Testing the DCS-2000 Internet Camera

Open your Internet browser and type in the IP address of the **DCS-2000**. In this example the address is:
http://192.168.0.100
(your **DCS-2000** may have a different IP address based on what you used in the **Installation Wizard** program.)
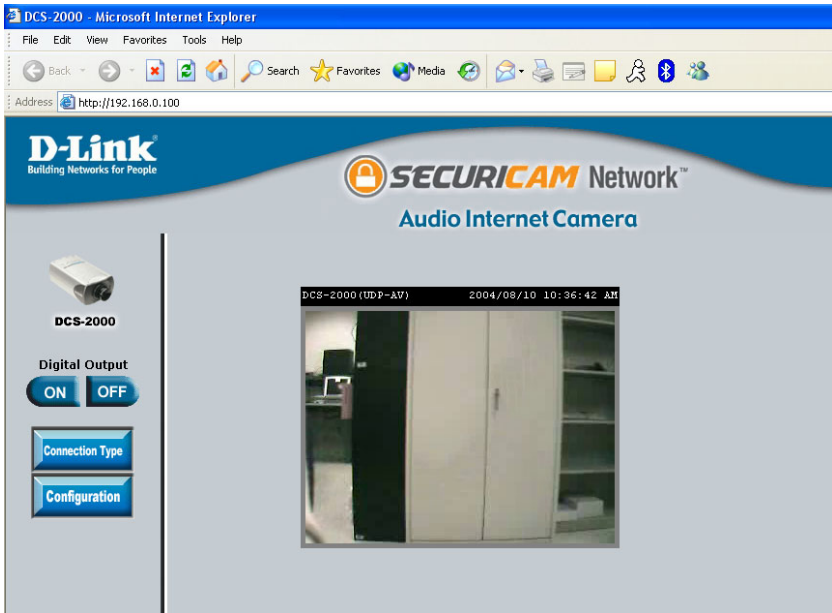
The window in the center of your browser is the camera image window. You should now see a video image and hear the audio over your computer speakers from the **DCS-2000**. If you are having problems please consult the **FAQ** section of this manual (page 121).

Security

At this point it is highly recommended that you click on the **Configuration** button on the Home screen, and then the **Tools** tab to bring you to the **Admin** screen. Enter a **password** for security purposes.

To ensure the highest security and prevent unauthorized use of the Internet Camera, the *Administrator* has the exclusive privilege to ac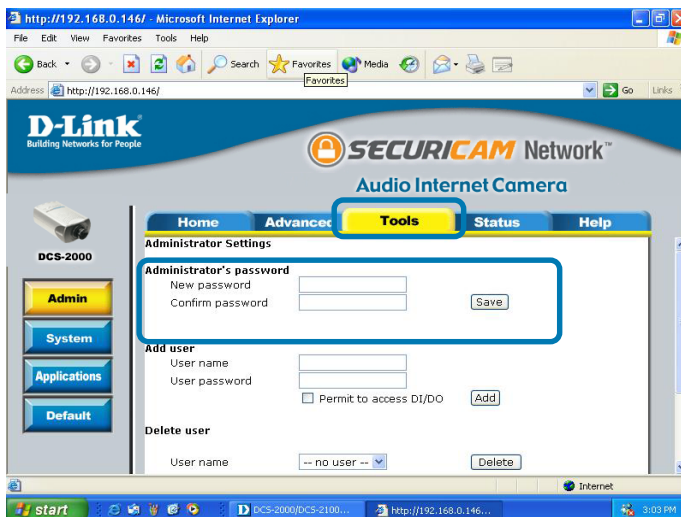cess the **System Administration** settings to allow users entry and authorize privileges for all users. The Internet Camera supports multi-level password protection/access to the Internet Camera that can be restricted to defined users who have a **User Name** and **User Password**, which is assigned by the Administrator.

The Administrator can release a public user name and password so that when remote users access the Internet Camera they will have the right to view the image transmitted by the Internet Camera.

When the Internet Camera is used for the first time, it is highly recommended that the Administrator set the **Administrator's Password** to constrain user access to the Internet Camera since the Default settings are Null String (no password). Once the Password is defined, only the Administrator has access to the management of the Internet Camera. This procedure should be done as soon as possible since the security features of the Internet Camera will not be enabled until the **Administrator Password** is defined.

Configuring a DCS-2000 Behind a NAT Router or Internet Gateway

D-Link's **DCS-2000** is a versatile and cost effective Internet Camera offering both video and audio monitoring. It can also serve as a powerful surveillance system in security applications. The **DCS-2000** can be used with any wired or wireless router. This section explains how to view the camera from either the Internet or from inside your internal network.

Materials Needed:
- 1 **DCS-2000** Internet Camera
- 1 Ethernet Cable
- A Wired or Wireless router such as the D-Link DI-614+ Wireless Router
- Ethernet based PC for system configuration

SETTING UP THE DCS-2000 FOR USE BEHIND A ROUTER

Installing a **DCS-2000** Internet Camera on your network is an easy 4–step procedure:
① Assign a local IP Address to your Internet Camera
② View the Internet Camera Using Your Internet Explorer Web browser
③ Access the Router with Your Web browser
④ Open Virtual Server Ports for Your Router (Enable Remote Viewing)

This section is designed to walk you through the setup process for installing your camera behind a router and enable remote video viewing. For the basic setup of the **DCS-2000**, follow the steps outlined in the **Quick Installation Guide**.

After you have completed the setup of the **DCS-2000** outlined in the **Quick Installation Guide** you will have an operating camera that has an assigned IP Address. Because you are using a router to share the Internet with one or more PCs, the IP Address assigned to the Internet Camera will be a local IP Address. This allows viewing within your Local Area Network (LAN) until the router is configured to allow remote viewing of the camera over the Internet.

① Assign a Local IP Address for Your Camera

Run the Installation Wizard program from the CD included with the **DCS-2000**. Follow the steps in the **Quick Installation Guide** to configure the **DCS-2000**. The camera will be assigned a local IP Address that allows it to be recognized by the router. Write down this IP Address for future reference.

Using & Configuring the DCS-2000 with a NAT Router (continued)

This is the IP Address assigned to your camera. Write it down for later use. 192.168.0.101 is only an example. You will probably have a different IP Address.
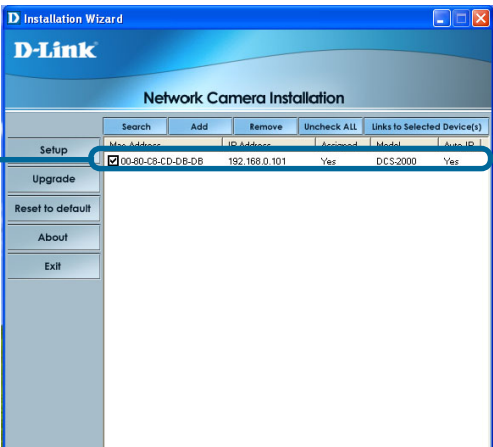
② View the Internet Camera using your Internet Explorer Web browser

Run your Internet Explorer Web browser. In the address bar, type in the IP Address that was assigned to the Internet Camera by the **Installation Wizard** program. The **DCS-2000** Home Page appears with a window displaying live video from the camera. You are able to view this screen from any PC running Internet Explorer on your LAN.

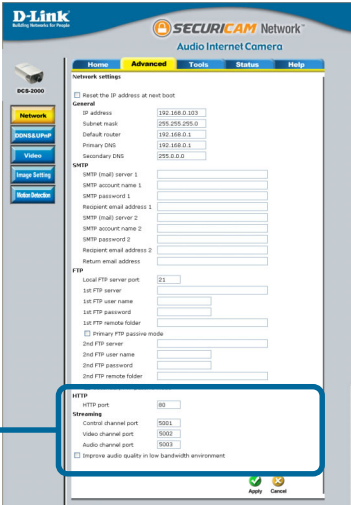Click on the **Configuration** button.

Viewing the Video on the browser to test the connection

Click on the **Configuration** button on the left side of the display. The Network Configuration page displays the ports used by HTTP and Streaming audio and video.

Using & Configuring the DCS-2000 with a NAT Router (continued)

Ports that are used by the DCS-2000

These are the port settings for your camera. If necessary, these ports can be changed if they are already in use by other devices (e.g. in a multiple camera environment).

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. Configure the initial settings of the DI-614+ by following the steps outlined in the **DI-614+ Quick Installation Guide**.

③ Access Your Router on Your Web Browser

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

Using & Configuring the DCS-2000 with a NAT Router (continued)

Determine Your Router's IP Address (WAN)

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. The Static IP Address will also allow you to access your camera attached to your router over the Internet

④ **Open Virtual Server Ports to Enable Remote Image Viewing**

The firewall security features built into the DI-614+ router prevent users from accessing the video from the **DCS-2000** over the Internet. The router connects to the Internet over a series of numbered ports. The ports normally used by the **DCS-2000** are blocked from access over the Internet. Therefore, these ports need to be made accessible over the Internet. This is accomplished using the **Virtual Server** function on the DI-614+ router. The Virtual Server ports used by the camera must be opened through the router for remote access to your camera. Virtual Server is accessed by clicking on the **Advanced** tab of the router screen.

Using & Configuring the DCS-2000 with a NAT Router (continued)

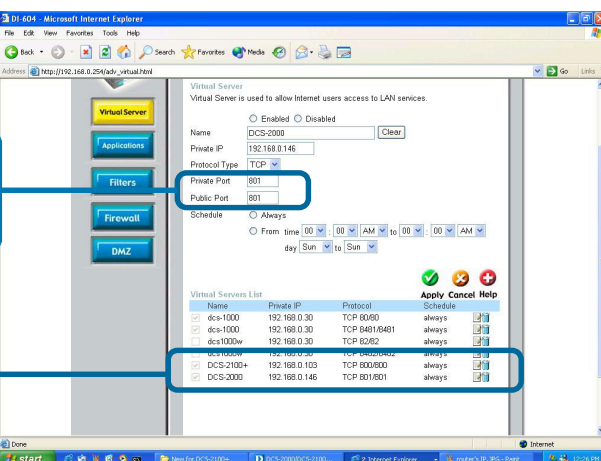Follow these steps to configure your router's Virtual Server settings:

- Click **Enabled**.
- Enter a different name for each entry.
- Enter your camera's local IP Address (e.g., **192.168.0.146** in the example in step ② on page 28) in the **Private IP** field.
- Select **Both** under **Protocol Type** (**TCP** and **UDP**).
- If you are using the default camera port settings, enter **80** into the **Public** and **Private Port** section, click **Apply**.
- **Scheduling** should be set to **Always** so that the camera images can be accessed at any time.

Repeat the above steps adding ports **5001**, **5002**, and **5003** to both the **Public** and **Private Port** sections. A check mark appearing before the entry name will indicate that the ports are enabled.

Important: Some ISPs 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 port the camera uses from 80 to something else, such as 800. Not all routers are the same, so refer to your user manual for specific instructions on how to open ports.

Enter valid ports in the **Virtual Servers** section of your router.

Please make sure to check the box on this line to enable settings.

Viewing Your Camera

After all settings have been entered correctly, a PC user inside or outside your network will have access to the camera through the Internet Explorer Web browser. To access the camera from the Internet, type the IP Address of the router given to you by your ISP, followed by a colon, and the port number that you gave your camera (e.g., **http://205.163.122.96:83**). It is not necessary to enter the colon and port number if you are using the default Web server port 80. To access from a computer on your local (home) network, simply enter the local IP Address of the Camera followed by a colon and the port number (e.g., **205.163.122.96:83**).

Viewing the DCS-2000 Remotely
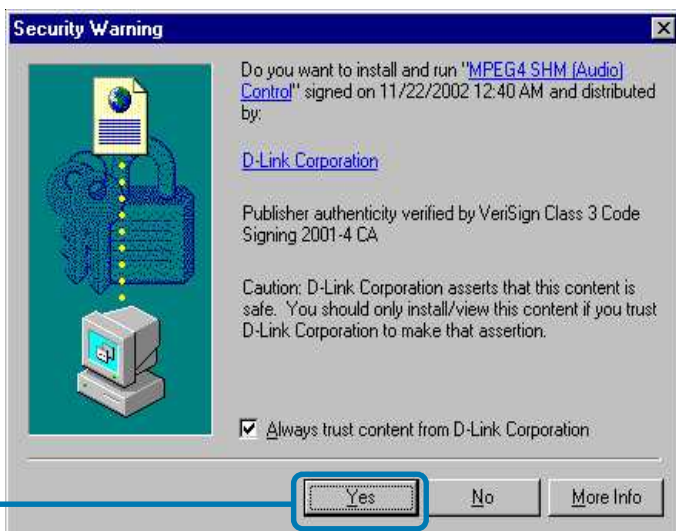
Using the DCS-2000 with an Internet browser

If you are following this manual in the order it is presented, you should now have an operating **DCS-2000** Internet Camera configured with the Installer program. You also have installed the **IP surveillance** software from the CD. This section of the manual will deal with using the Internet Camera in two parts:

- ■ Using the **DCS-2000** with an Internet browser and accessing the screens to control and monitor the camera.

- ■ Using the **IP surveillance** software with the **DCS-2000**.

Open your Internet Explorer Web browser and enter the IP address for your Internet Camera.
In the example, this address is 192.168.0.146. Your address may differ.

If a window appears asking to install a Verisign certificate for authentication Click **Yes**. This allows the proprietary MPEG4 video stream to be recognized by Internet Explorer.

Security Warning

Do you want to install and run "MPEG4 SHM (Audio) Control" signed on 11/22/2002 12:40 AM and distributed by:

D-Link Corporation

Publisher authenticity verified by VeriSign Class 3 Code Signing 2001-4 CA

Caution: D-Link Corporation asserts that this content is safe. You should only install/view this content if you trust D-Link Corporation to make that assertion.

☑ Always trust content from D-Link Corporation

| Yes | No | More Info |

Using the DCS-2000 with an Internet browser (continued)

Home Page Screen

The image from the **DCS-2000** should be visible from the Home page on your computer monitor.
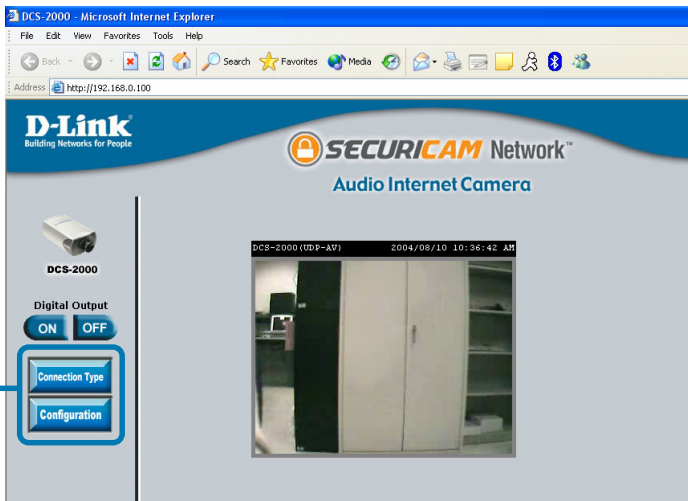
There are two buttons on the left side of the **Home** page: **Connection Type** and **Configuration**.

Click on the **Connection Type** button to change settings related to the connection.

Click **Connection Type**

Using the DCS-2000 with an Internet browser (continued)

Home > Connections Screen

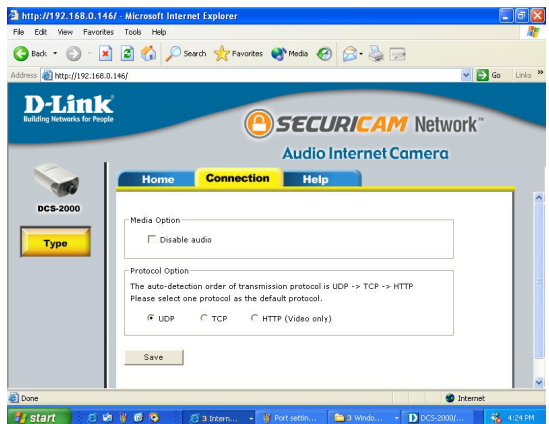The following options are available from the Connections settings screen:

Media Option:
Option for users to disable or enable audio when viewing video.

Protocol Option
The UDP Protocol should be chosen for the most users. Generally the client computer will automatically try these protocols in the following order, UDP -> TCP -> HTTP.

After the client connects to the **DCS-2000** successfully, the working protocol will be displayed in "**Protocol Option**." The chosen protocol will be recorded in the user's PC and used for the next connection. If the network environment is changed or users want to let the Web browser automatically detect the protocol, select UDP manually and click **Save** to change the setting and return **Home** to reconnect with the new setting.

> **Options:**
> **UDP Protocol** - Offers the highest image and video quality. However, packet losses will diminish image quality when bandwidth becomes restricted.
> **TCP Protocol** - Packet loss is less likely to occur compared to UDP when bandwidth is restricted.
> **HTTP Protocol** - If the network is protected by a firewall and it opens HTTP port (80) only, HTTP protocol must be selected. In this mode, audio is disabled and only video can be viewed. TCP and UDP connections will not be available to remote users if all four ports have not been forwarded (as shown on page 30). Only the HTTP port must be forwarded for remote users to make an HTTP connection (video only).

Click the **Home** tab to return to the **DCS-2000** Home page.

Using the DCS-2000 with an Internet browser (continued)

Home > Configuration

Click on the Configuration button on the Home page:

Click **Configuration**

There are 5 tabs across the top of the **Configuration** screen. From each tab, different elements of the **DCS-2000** can be configured. The **Advanced** tab is the default screen in **Configuration** and **Network** is the default screen under **Advanced**.

Any changes made to these settings will require the system to restart. Make sure every field is correct before clicking on **Apply**.

Using the DCS-2000 with an Internet browser (continued)

Configuration > Advanced > Network

Reset IP Address at next boot

Once the DCS-2000 is configured, this box should be unchecked at all times. If the box has been checked and the connection is lost, run **Installation Wizard** to find the camera's IP address.

General

IP address - Necessary for network identification.

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

Default router - The router used to forward frames to destinations in a different subnet. Invalid router settings will cause the failure of transmissions to different subnets.

Primary DNS - Primary domain name server that translates names to IP addresses.

Secondary DNS - Secondary domain name server to backup the primary one.

SMTP

SMTP (mail) server 1 - The domain name or IP address of external mail server.

SMTP account name 1 - The user name used to log into your e-mail account (e.g. jdoe or jdoe@yourisp.com depending on your ISP).

SMTP password 1 - The password used to log into your e-mail account. (The password will appear as dots instead of entered characters.)

Recipient email address 1 - The e-mail address of recipients for snapshots or a system log file. Multiple recipients must be separated by a semicolon ";"

SMTP(mail) server 2 - The domain name or IP address of a secondary mail server used only if the primary mail server is unreachable.

Using the DCS-2000 with an Internet browser (continued)

Configuration > Advanced >Network Settings (continued)

SMTP account name 2 - The user name for the second SMTP server.

SMTP password 2 - The password used to log into the second e-mail account. (The password will appear as dots instead of entered characters.)

Recipient email address 2 - The e-mail address of recipients for the secondary server.

Return email address - The return e-mail address to use if the snapshot or system log e-mail fails to send. (This address should be within the SMTP server's domain for authentication purposes.)

FTP Settings

Local FTP server port - Can be other than default port 21. If you find that you want to change the port to a number other than 21, you will need to specify the port when connecting to the FTP server. For example FTP://68.5.1.81:60 (if you are to use port 60 for your FTP server port)

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

1st FTP user name - Granted user name on the external FTP server.

1st FTP password - Granted password on the external FTP server.

1st FTP remote folder - Granted folder on the external FTP server. The string must conform to the external FTP server. Some FTP servers cannot accept a preceding slash symbol before the path if there is no virtual path mapping. Refer to the instructions of the external FTP server for details. The folder privilege must be open for upload.

Using the DCS-2000 with an Internet browser (continued)

Primary FTP Passive Mode-

If the **DCS-2000** is located inside the network protected by firewall, a data connection for FTP may be prohibited. Passive mode FTP can bypass the rule and succeed to upload snapshots. If the passive mode is selected, the **DCS-2000** can automatically attempt for an active mode if the external FTP server does not support passive mode.

2nd FTP server -

The domain name or IP address of the external FTP server. Note that the 2nd FTP server will only be used if the 1st FTP server is unavailable. If the image upload to the 1st FTP server is successful, no attempts will be made to connect to the 2nd FTP server.

2nd FTP user name -

Granted user name on the backup FTP server.

2nd FTP password -

Granted password on the backup FTP server.

2nd FTP remote folder -

Granted folder on the backup FTP server.

Secondary FTP passive Mode -

Passive mode setting for the backup FTP server.

HTTP Settings

HTTP Port-

Can be set to other than the default port 80. When the administrator changes the HTTP port of the **DCS-2000** (which has an IP Address of 192.168.0.100) from 80 to 8080, users must type "http://192.168.0.100:8080" in the Web browser instead of "http://192.168.0.100".

Click Apply to make changes effective

Apply

Using the DCS-2000 with an Internet browser (continued)

Streaming Screen under "Advanced Network"

Control channel port -   Can be set to a port other than the default port 5001. A corresponding port must be opened on your firewall.

Audio channel port -   Can be set to a port other than the default port 5002. A corresponding port must be opened on your firewall.

Video channel port -   Can be set to a port other than the default port 5003. A corresponding port must be opened on your firewall.

Improve audio quality in low bandwidth environment -   In a low bandwidth network environment you can check this option to improve audio quality by sacrificing some real-time synchronization.

Click Apply to make changes effective

✓ Apply

Using the DCS-2000 with an Internet browser (continued)

Configuration > Advanced > DDNS & UPnP

Click the DDNS & UPnP button from the Configuration screen to access DDNS & UPnP settings.
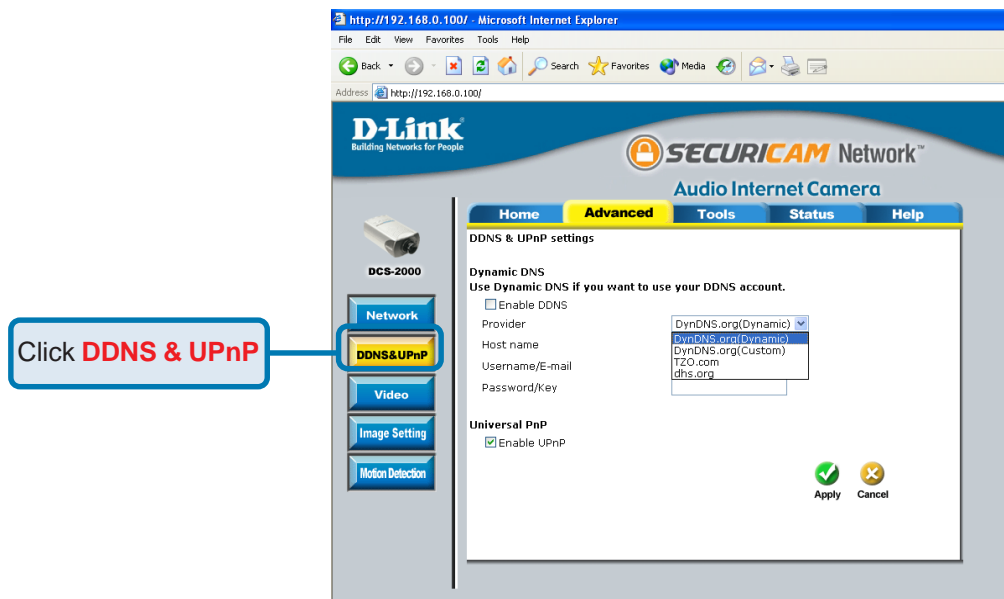
Dynamic DNS (DDNS)

Dynamic DNS (Domain Name Service) is a method of keeping a domain name linked to a changing (dynamic) IP address. With most Cable and DSL connections, you are assigned a dynamic IP address and that address is used only for the duration of that specific connection. With the **DCS-2000**, you can set up your DDNS service and the **DCS-2000** will automatically update your DDNS server every time it receives a different IP address. Depending on the service, this update may take a few hours.

Using the DCS-2000 with an Internet browser (continued)

Configuration > Advanced > DDNS & UPnP (Continued)

Enable DDNS -   Click to enable the DDNS function.

Provider-   Select your Dynamic DNS provider from the pull down menu.

Host name-   Enter the host name of the DDNS server.

Username/E-mail-   Enter your username or e-mail used to connect to the DDNS server.

Password/Key-   Enter your password or key used to connect to the DDNS server.

UPnP

UPnP is short for Universal Plug and Play, which is a networking architecture that provides compatibility among networking equipment, software, and peripherals. The **DCS-2000** is a UPnP enabled internet camera. If your operating system is UPnP enabled, the device will be easier to configure. If you do not want to use the UPnP functionality, it can be disabled by unselecting the Enable UPnP check box.

**Click Apply to make changes effective**

Apply

Using the DCS-2000 with an Internet browser (continued)

Invalid settings may cause the **DCS-2000** to not respond. Change the configurations only if necessary. Consult with your network administrator or your Internet Service Provider (ISP) if you do not have the necessary information. If you cannot connect to the camera, refer to page 125 for camera **reset** and **restore** factory settings procedures.

Configuration > Advanced > Video

Click the video button from the Configuration screen to access video settings that affect how the video image appears.

Click **Video**
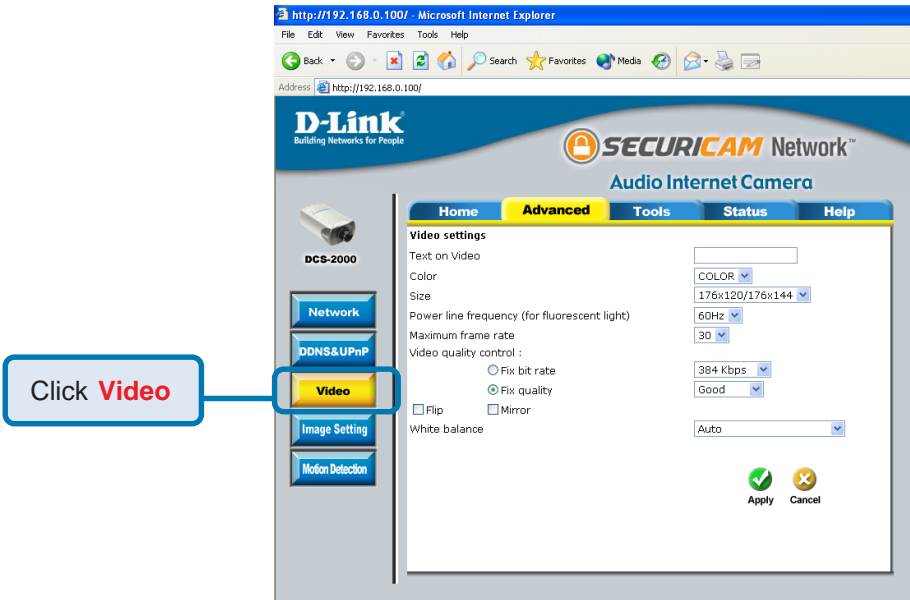
Text on video - Text will be displayed in the black bar above the video window with the timestamp. The timestamp is captured from the date and time of the **DCS-2000** and is maintained by a built-in real-time clock.

Using the DCS-2000 with an Internet browser (continued)

Configuration > Advanced > Video (Continued)

Color -

Select the option for color or monochrome video display.

Size -

Three options exist for the sizes of the video display. You can select between **176x120/176x144**, **352x240/352x288**, or **704x480/401x576**. The first value represents the PAL format of video and the second value represents the NTSC format. In **704x480/401x576** mode, the frame rate will be reduced to 10fps and increased to 30fps automatically when it is switched back to a lower image size.

Power line frequency (for fluorescent light)

Fluorescent lights may intermittently cause a flashing image depending on the AC power line frequency. Change the frequency setting to eliminate a flashing image when the light source is fluorescent light.

Maximum frame rate-

Limits the maximum refresh frame rate. The frame rate is used with the **Video quality control** setting (below) to optimize bandwidth utilization and video quality.

Video quality control-

To fix the bandwidth utilization regardless of the video quality, choose **Fix bit rate** and select the desired bandwidth. The video quality may be reduced in order to send maximum frames with limited bandwidth, especially when images change drastically. For higher video detail regardless of the bandwidth selection, select **Fix quality** and select a quality level. This setting will utilize more bandwidth to send the maximum frames when images change drastically.

Flip -

Vertically rotate the video.

Using the DCS-2000 with an Internet browser (continued)

Configuration > Advanced > Video Settings (continued)

Mirror -   Horizontally rotate the video. Check both **flip** and **mirror** if the **DCS-2000** is to be installed upside down.

White balance -   Choose the suitable option for the best color temperature.

Click Apply to make changes effective

Apply

Recommendations for setting video for the best performance:

"Best performance" means the image refresh rate should be the fastest possible and the video quality should be the best possible at the lowest network bandwidth possible. Three factors, **Maximum frame rate**, **Fix bit rate**, and **Fix quality** in the Video configuration page, are related to the performance.

Recording settings for real-time motion images

To achieve a real-time visual effect, the network bandwidth should be large enough to transmit 20 image frames per second (fps) or more. If you are on a broadband network over 1 Mbps, you can choose **Fix bit Rate** to 1000Kbps or 1200Kbps, or choose **Fix quality** to achieve the maximum frames. The maximum frame rate is 25 in 50Hz system and 30 in 60Hz system. If your network bandwidth is more than 384Kbps, you can adjust **Fix bit rate** according to your bandwidth and set the maximum frame rate of 25 to 30. If the images vary dramatically in your environment, you may slow down the maximum frame rate to 20 to decrease the transmitted data for better video quality. Since the human eye could not easily differentiate between 20 and 25 or 30 frames per second, the slower frame rate will not be noticed. If your network bandwidth is below 384 Kbps, you should adjust the bit rate according to your bandwidth and experiment to allow for the best frame rate that can be achieved. The faster frame rate in a slow network will blur the images. You may also try to choose **352x240/352x288** in size option for better images or **704x480/704x576** for larger image size. Because the network has burst constraints and everyone's environment is not the same, any poor connection will impair normal performance.

Using the DCS-2000 with an Internet browser (continued)

Recommendations for setting video for the best performance (continued):

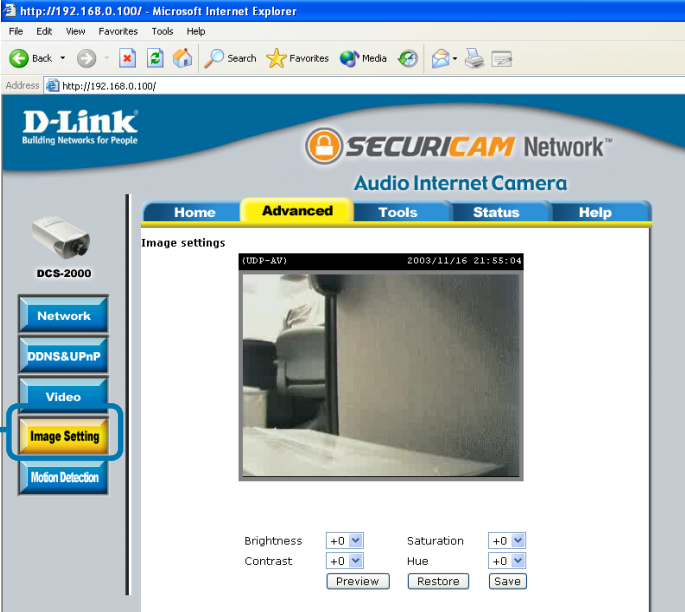### Recording settings for clear identification for each image

To have the best video quality, you should set **Fix quality** to **detailed** or **excellent** and tune the **Maximum frame rate** to suit your network bandwidth. If you get some broken pictures in a slow network, you can choose **TCP protocol** in **Connection type** for more accurate transmission but the received image may have lags. Note that any slow connection with multiple users will impair performance.

Recording settings to compromise between real-time and clear images

If you have a broadband network, set **Fix quality** to **Good,** or better, rather than setting the **Bit rate**. Otherwise fix the bandwidth to accommodate your actual network speed and set the frame rate to 30. If the images quality is low, select the lower frame rate above 15. If the image is still not improved, select a lower bit rate.

Configuration > Advanced > Image Setting

Click **Image Setting**

Using the DCS-2000 with an Internet browser (continued)

Configuration > Advanced > Image Setting (continued)

Click the image setting button from the configuration screen to access additional settings that affect how the video image appears.

Brightness	+0 ∨	Saturation	+3 ∨
Contrast	+0 ∨	Hue	+0 ∨
	preview	restore	save

From this screen you can fine tune the video image.
Image **Brightness, Contrast, Saturation** and **Hue** are all adjusted in the same manner. For each video compensation you can set from among eleven levels ranged from -5 to +5.

You may press preview to fine-tune the image and see what effect the setting will have on the image. When the image is acceptable, press Save to store the image settings, or restore to recall the original settings.

Configuration > Advanced > Motion Detection

Click the **Motion Detection** button from the **Configuration** screen to access settings that effect how the **DCS-2000** Internet Camera can serve as a security device by recording only when motion is detected.

Click **Motion Detection**

Using the DCS-2000 with an Internet browser (continued)

Configuration > Advanced >Motion Detection (continued)

Enable motion detection - Check this option to turn on the motion detection.

Window Name - The text entered here will show at the top of the motion window.

Sensitivity - Sets the measurable difference between two sequential images that would indicate motion.

Percentage - Sets the amount of motion in the window being monitored that is required to initiate a motion detected alert. If this is set to 100%, motion is detected within the whole window to trigger a snapshot.

Note: Setting a higher **sensitivity** and a lower **percentage** will make any motion more easily detected.

New - Click to add a new window. A maximum of three motion windows can be opened simultaneously. Use your mouse to drag the window frame to resize or the title bar to move. Clicking on the 'x' at the upper right corner of the window will close the window.

Save - Saves the related settings of that window.

To display motion detection, a graphic bar will rise or fall depending on the image variation.

A green bar means the image variation is under the monitoring level, and no motion detection alert is triggered. A red bar means the image variation is over the monitoring level and a motion detected alert is triggered. When the bar goes red, the window that the motion is detected in will also be outlined in red (note: remember that you can have up to 3 windows selected for motion detection). You can return to the **DCS-2000** Home Page and the monitored window will not be visible, but the red frame will show on the home page when motion is detected.

Using the DCS-2000 with an Internet browser (continued)

Configuration > Tools > Admin

Click on the **Tools** tab to access 4 utility screens for controlling and administering the **DCS-2000**. The default screen in **Tools** is the **Admin** screen.

The **DCS-2000** is manufactured without any passwords by default. This allows the ability to access the **DCS-2000** (including the Configuration) by anyone as long as the IP address is known. It is recommended that you enter a password to restrict others from accessing your camera.

Type a password in the **New Password** field to enable protection, and then confirm the password in **Confirm Password** field.

This password is used to identify the administrator. You can add accounts with **User name** and **User Password** for other users in the **Add user** section.

You can provide up to twenty accounts for other users / visitors. Each account identifies the access right. This allows multiple visitors to share the same account of different levels. An option to **Permit to access DI/DO** (Digital In/Digital Out) is provided for each account. Some users may need to be prohibited from controlling your attached security devices.

Using the DCS-2000 with an Internet browser (continued)

Configuration > Tools > Admin (continued)

Guest account: This option allows a user to connect to a camera with view -only privileges. User name is "**demo**". No password is required. This is useful for demonstrations and keeps guests separate from users with accounts.

Configuration > Tools > System

Click on the **System** button to access the System settings from the **Tools** menu.
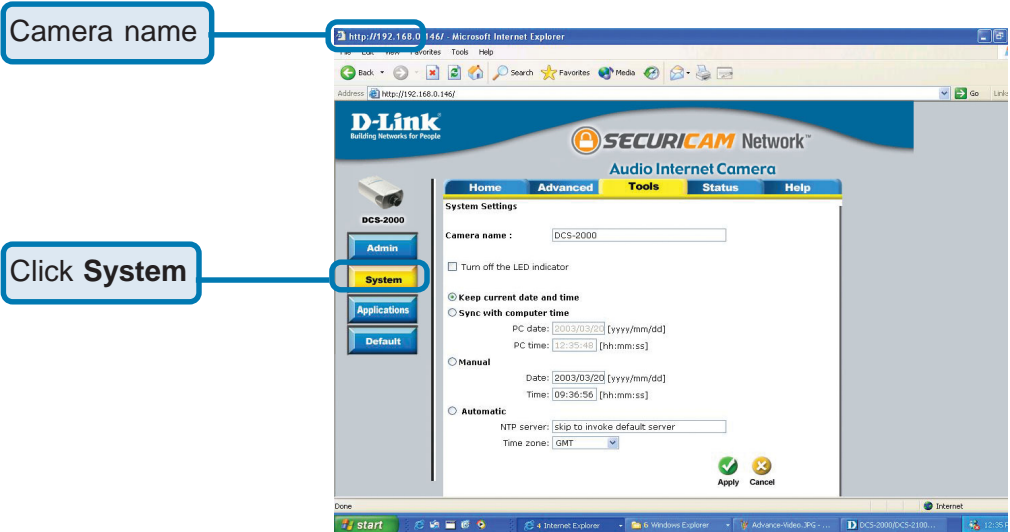
Camera name - The text will display as the title of the window within the Windows operating system. This name will also display on the log-in screen (once a password has been set). Illegal characters (*, /, &) are not allowed and may render the recording feature in IP surveillance (page 62) useless for that camera.

Turn off the LED indicator - Check this option to shut off the LED next to the lens. This will prevent anyone from observing the operation of the Internet Camera.

50

Using the DCS-2000 with an Internet browser (continued)

Configuration > Tools > System

Keep current date and time -
Click to save the current date and time of **DCS**-**2000**. An internal real-time clock maintains the date and time even when the power is off.

Sync with computer time-
Synchronize the date and time of **DCS-2000** with the local computer. The date and time of the PC is displayed and updated in the **DCS-2000**.

Manual -
Adjust the date and time according to what is entered by the administrator. Notice the format in the related field while typing.

Automatic -
Synchronize with the NTP server over the Internet whenever the **DCS-2000** starts up. It will fail if the assigned time server cannot be reached.

NTP server -
Assign the IP address or domain name of the time server. Leaving the text box blank will let **DCS-2000** connect to default time servers.

Time zone -
Used to adjust the hour of time servers for local settings.

Click Apply to make changes effective

Apply

Using the DCS-2000 with an Internet browser (continued)

Configuration > Tools > Applications

Click on the **Applications** button to access the Applications settings from the **Tools** menu.

Using the DCS-2000 with an Internet browser (continued)

Configuration > Tools > Applications (Continued)

Weekly schedule:

Sunday through Saturday - Select the weekdays that should perform the following operations:

Snapshots begin at - Set the time to start operations. Setting the **begin** time the same as the **stop** time will force the operations to run continuously.

Snapshots stop at - Sets the time to stop the operations.

All of the time except for the above schedule - If you do not wish to set a schedule, this box must be checked.

Event operation

Delay second(s) before detecting next event - Sets the time delay before restarting to check the trigger condition when the current condition is triggered.

Take snapshots at second(s) after event - After a snapshot is taken because of a trigger, another snapshot will be taken after the configured time in seconds.

Trigger condition - There are 4 conditions related to the digital input and three windows for motion detection. There can be multiple selections. Select the appropriate digital input condition according to the characteristics of the external device. "High", "low" indicate external voltage input for level trigger, while "rising", "falling" is for edge triggers. There are three windows shown for the names you defined for motion detection. "Undefined" will show instead of the window title if motion detection is not setup yet. An active, named motion window must be checked for motion detection to be possible.

Reset output - Check and save this option to reset the external device at the digital output back to the original state.

Using the DCS-2000 with an Internet browser (continued)

Configuration > Tools > Applications (Continued)

Trigger action - There are four options for two actions regarding either trigger condition. They can have multiple selections. While choosing the trigger output alarm, the digital output will short both pins to connect the circuit of the attached external device; otherwise both pins will be open. While choosing to upload snapshots, the method can be either email or FTP. The snapshot names will be "videopre.jpg", videotrg.jpg", and "videopos.jpg" respectively for the snapshots before event, right upon event, and after event. The date and time suffix may be added according to the option. Confirm the external mail or FTP server settings in network configuration.

Sequential operation

Snapshot every second(s) - The **DCS-2000** will send snapshots at the specified interval to the external server according to the chosen method. Remember this operation is dependent to the weekly schedule.

Send snapshots by email - Any upload action specified in the options above will use the method chosen here. The captured snapshot named "video.jpg" will be attached in the email with subject "Periodic snapshots."

Send snapshots by FTP - The captured snapshots will upload to the external FTP server with the file name depending on the next option. It can be used to refresh the captured image stored in the external Web server to build creative homepages.

FTP put snapshots with date and time suffix - If the suffix is added, the captured date and time can be easily differentiated from the snapshot file name in either sequential or event operation. For instance, "video@20020102030405.jpg" means the JPEG image was captured at 4 minutes and 5 seconds after 3 o'clock, January 2nd, A.D. 2002. If the suffix is omitted, the file named "video.jpg" on the external FTP server will be refreshed at the specified interval.

Using the DCS-2000 with an Internet browser (continued)

Configuration > Tools > Default

Click **Apply** to make changes effective

Click on the **Default** button to access the option to restore to factory default settings.

Click **Default**
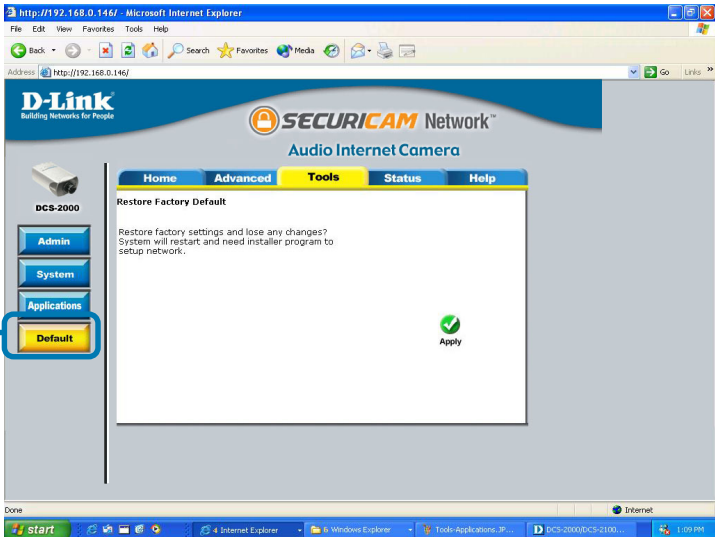
Click **Apply** on this screen to restore factory default settings. This means **any** changes made will be lost and the system will be reset to the initial status when shipped from the factory. After confirmation, the system will restart and require the **Installation Wizard** software program to locate the IP address of the **DCS-2000**.

Configuration > Status > Device Info

Click on the **Status** tab to access **Device Info** and a **Log** of **DCS-2000** system activity. The **Device Info** is the default screen when you click on the **Status** tab.

Using the DCS-2000 with an Internet browser (continued)

Click **Device Info**
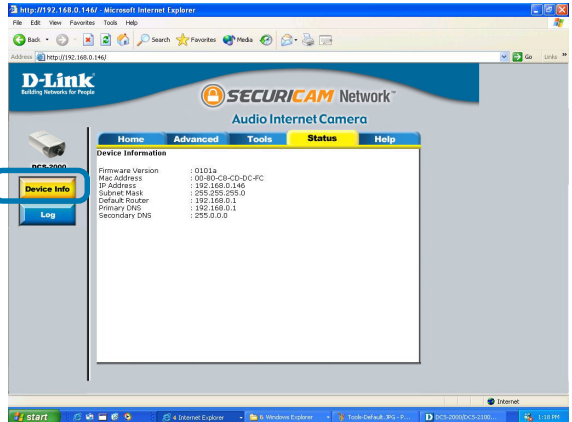
The Device Info screen lists the following important settings that are currently set for the **DCS-2000**

- Firmware Version number
- Mac Address
- IP Address
- Subnet Mask
- Default router address
- Primary DNS Address
- Secondary DNS Address

Configuration > Status > Log

Click on the **Log** button to access a system log of system activity from the **Status** menu. The content of the log file reveals useful information about the current configuration and connection logged after the **DCS-2000** boots up.

Click **Log**
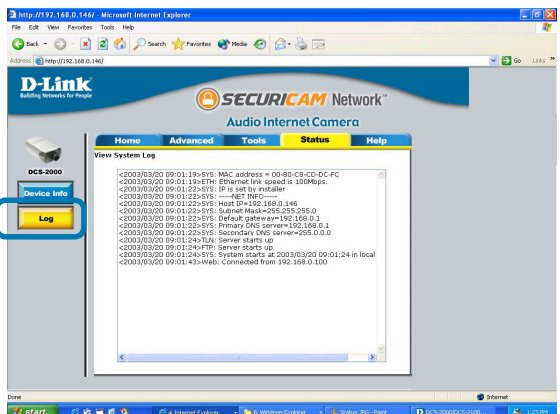
Using the DCS-2000 with an Internet browser (continued)

Configuration > Help

Click on the **Help tab** to access descriptions of the particular function you need help with. The help screen is organized in the order of the tabs and then each menu item under that tab.

Record Snapshots to your FTP server with Motion Detection

Administrators can combine options on the application page to perform many useful security applications. There are two trigger sources available: from an external sensor or with built-in motion detection. There are also two kinds of actions that can respond to these events that include uploading snapshots over the internet and driving attached devices. To upload the snapshots, users can choose either email or FTP according to user's needs. Both e-mail and FTP use the network settings on the network page. This section describes how to enable motion detection and record snapshots to an FTP server.
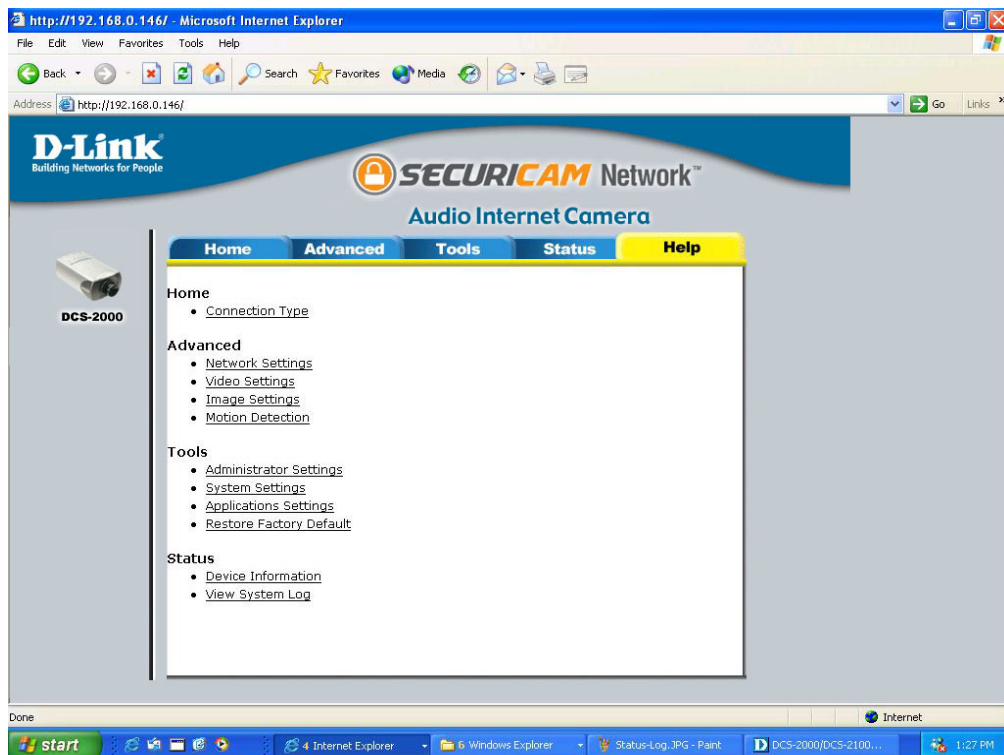
If no external sensor is available, administrators can utilize the built-in motion detection to monitor any abnormal movement and record the snapshots to an FTP or SMTP server.

Click the **Motion Detection** button under the **Advanced** tab from the **Configuration** screen to access settings that affect how the **DCS-2000** Internet Camera can serve as a security device by recording only when motion is detected.

Click **Motion Detection**

In this window, follow the steps below to ensure that motion detection is correctly enabled:

① Check "Enable motion detection."

② Click on "New" to have a new window to monitor video.

③ Enter in a window name.

④ Tune the "Sensitivity" and "Percentage" according to the local environment. Highest sensitivity and lowest percentage provides the most sensitive settings.

⑤ Click on save to enable the activity display.

Record Snapshots to your FTP server with Motion Detection (continued)

Next, click the **Network** button under the **Advanced** tab to set the FTP server settings for the **DCS-2000**.

Click **Network**
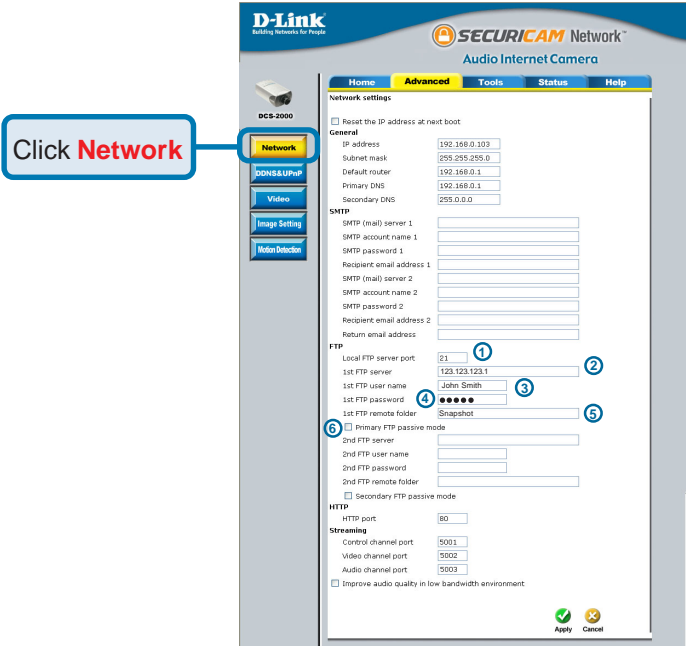
In this window, enter the settings for the FTP server you wish to record to. Optionally, you can enter settings for a secondary backup FTP server.

① **Local FTP server port-** The Default port is 21. To connect to an FTP sever, it is recommended that you do not change the port number unless your camera is behind a router. If your camera is behind a router, you can assign any port number to this field, but you must enable port forwarding on the router. Please refer to your router manual for more information on port forwarding.

② **1st FTP server-** If you are going to upload snapshots to an FTP server, you will need to fill in the Domain name or IP address of your external FTP server such as ftp://dlink.com or ftp://123.123.123.1. (The server name and IP address will vary depending on the user.) The following user settings must be correctly configured for remote access.

Record Snapshots to your FTP server with Motion Detection (continued)

③ **1st FTP user name-**   Specify the user name to access the external FTP server (e.g. John Smith).

④ **1st FTP password-**   Specify the password to access the external FTP server (e.g. 12345).

⑤ **1st FTP remote folder-** Specify the destination folder in the external FTP server (e.g. snapshot).

⑥ **Primary FTP passive mode-**   Passive mode will allow access to an external FTP server if your camera is behind a router protected by a firewall.

2nd FTP server-   Specify the Domain name or IP address of your second external FTP server. This field is optional if you have already filled in the information for the first FTP server.

2nd FTP user name-   Specify the user name to access your backup FTP server.

2nd FTP password-   Specify the user password to your backup FTP server.

2nd FTP remote folder-   Specify the destination folder on your external backup FTP server.

Secondary FTP passive mode-   Passive mode will allow access to a second external FTP server if your camera is behind a router protected by a firewall.

For detailed information about each setting, please refer to **Configuration > Advanced > Network** in the section titled "Using the DCS-2000 With an Internet Browser" (page 33). Click the apply button when finished.

Record Snapshots to your FTP server with Motion Detection (continued)

Next, click the **Applications** button under the **Tools** tab to set the application settings for the **DCS-2000**.

Click **Applications**
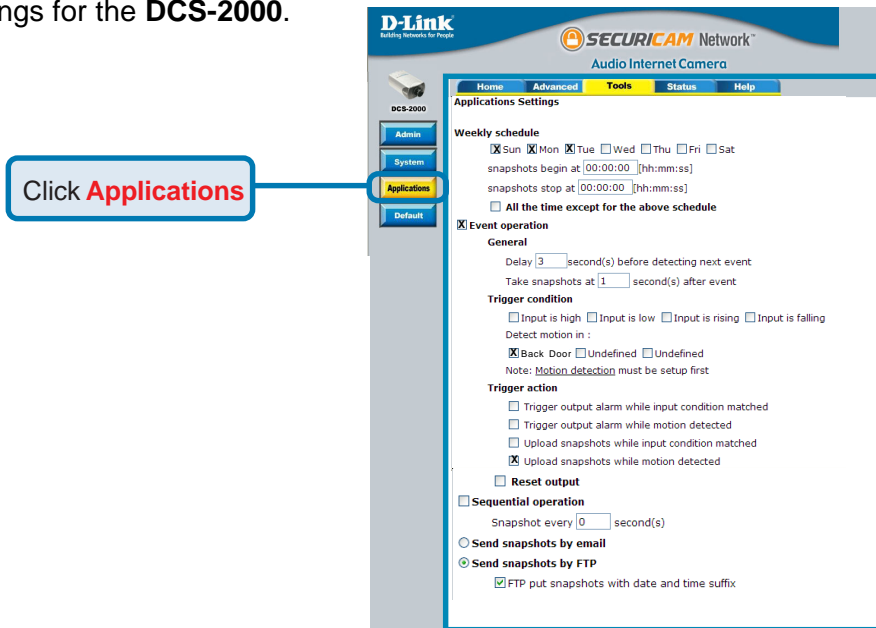
In this window, follow the steps below to set the application settings for snapshots to be recorded to an FTP site:

- ①   Select the weekdays you would like to record and enter the "Snapshots begin" time and "Snapshots end" time for the weekly schedule, or select "All the time except for the above schedule" if you want to enable full time snapshot recording.
- ②   Check "Event operation."
- ③   Set the delay "before detecting next event" to avoid continuous false alarms following the original event.
- ④   Set the delay to "take snapshots after event" to capture the direction of the moving object.
- ⑤   Check the window name (in this case Back Door).
- ⑥   Check "Upload snapshots while motion detected."
- ⑦   Click "Send snapshots by FTP" and check "FTP put snapshots with date and time suffix"
- ⑧   Click the "Apply" button to save the settings.

Click the apply button when finished. You are now able to record snapshots to your FTP server when motion detection is triggered.

Using IP surveillance Software

Installing the IP surveillance Software

Hardware System Requirements

Before you begin installing this application software, the hardware system requirements must be checked first. The system minimum requirements recommended for this application are as follows:

Browser: Internet Explorer 5.x or above
CPU: Intel Pentium III 800GHz or above
SDRAM: 128 MB SDRAM
Hard Disk: 40GB
Video Card: nVidia, TNT, TNT2, GeForce series with 32 MB Display memory
ATI Radeon series with 32 MB Display memory

Software Installation

Put the installation disk into your CD-ROM, and it will run automatically. If it does not, open "My Computer" and double click on the CD-ROM icon. Next the installation menu will appear. Click "Install Software". The following window will appear.

Using IP surveillance Software (continued)
Installing the IP surveillance software (continued)

Click **Next**
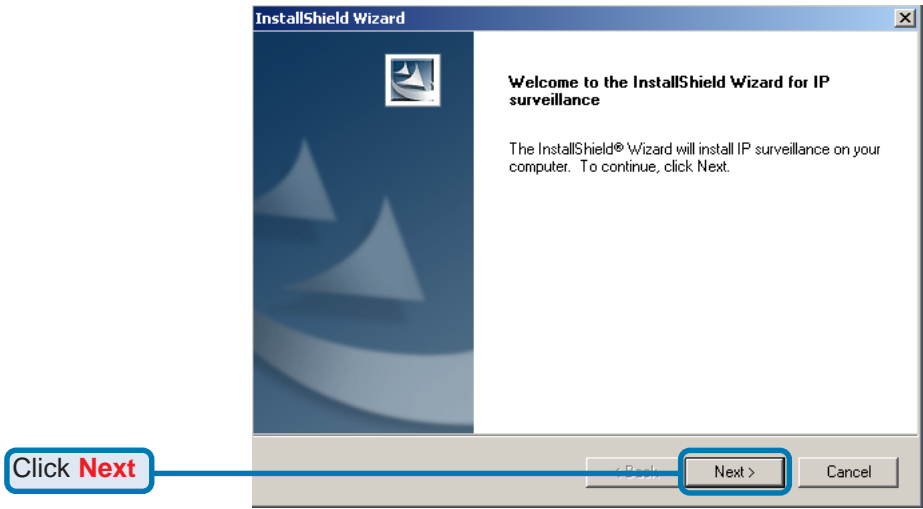
The "License Agreement" window below will appear. Please read the following license agreement carefully. Click "Yes" to accept this agreement and proceed with the installation.
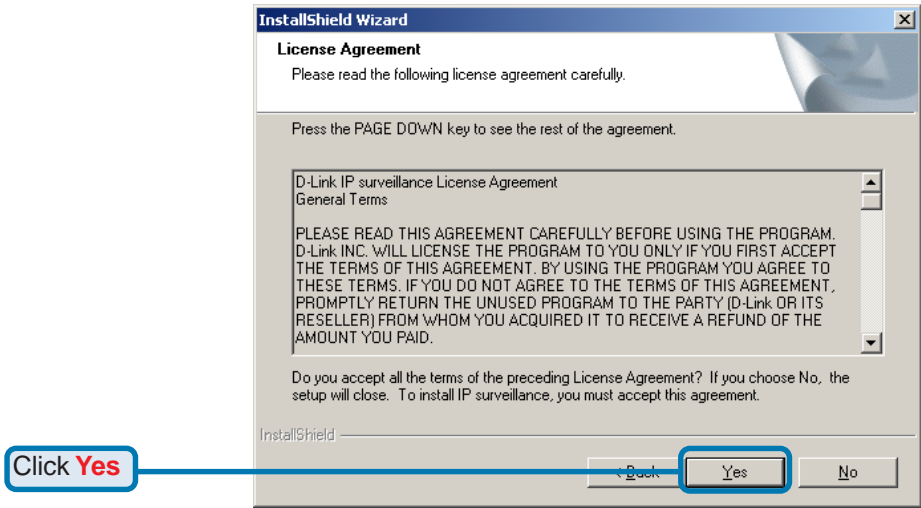
Click **Yes**

Using IP surveillance Software (continued)
Installing the IP surveillance software (continued)

Next, the "User information" window below will appear. This window will prompt you to enter the user name and company name. Enter your user name and company name and then click "Next" to continue.

Click **Next**

You must setup the administrator's password in order to proceed. Input and confirm your password in the window shown in below. Click "Next" to continue.

Click **Next**

Using IP surveillance Software (continued)
Installing the IP surveillance software (continued)

Select the installation directory for this application software and click "Next", which is shown in the figure below. You can change the installation directory by clicking "Browse…"
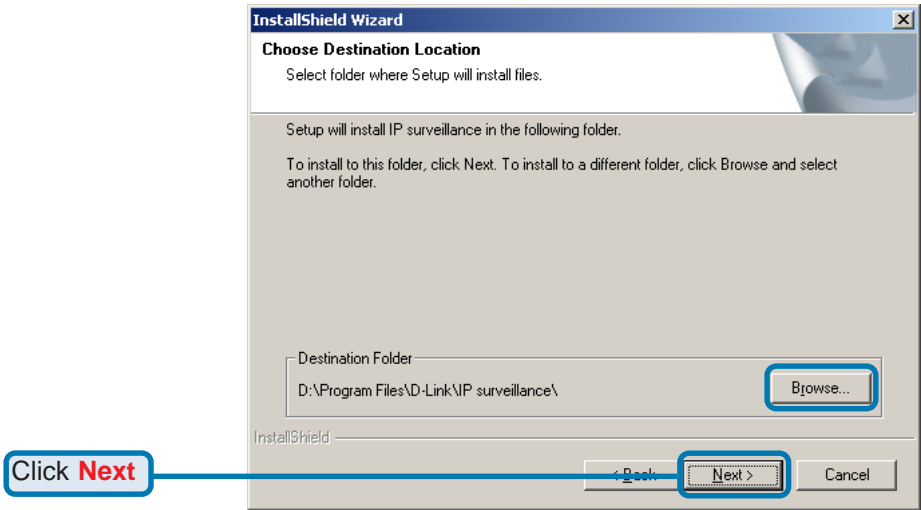
Click **Next**

Select a program folder to install the application software and then click "Next", which is shown in the figure below.
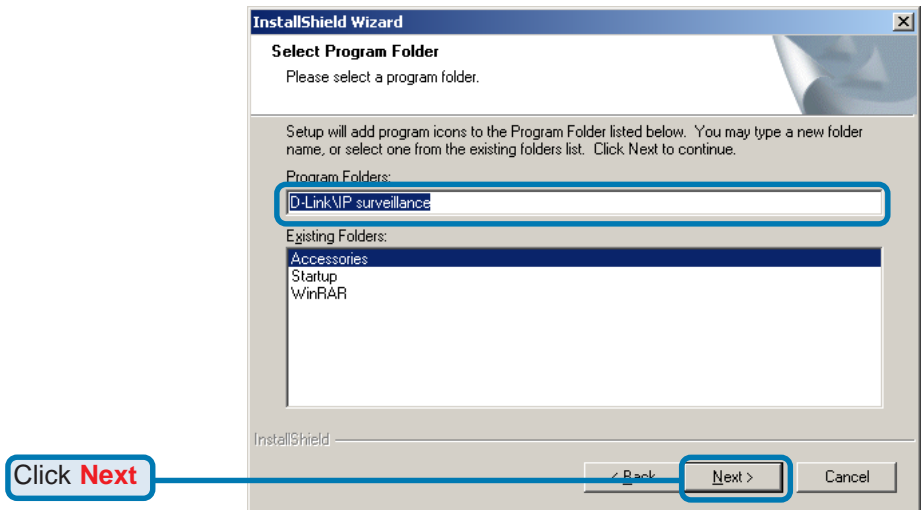
Click **Next**

Using IP surveillance Software (continued)
Installing the IP surveillance software (continued)

After checking all the setup information in the window shown below, click "Next" to start the installation of the application software.

InstallShield Wizard
Start Copying Files
Review settings before copying files.
Setup has enough information to start copying the program files. If you want to review or change any settings, click Back. If you are satisfied with the settings, click Next to begin copying files.
Current Settings:

Setup Type:
    Complete
 	
Target Folder
    D:\Program Files\D-Link\IP surveillance\
 	
User Information
    Name: desktopPM
    Company: D-Link

InstallShield

Click **Next** — < Back   [Next >]   Cancel

Click "Finish", in the window shown below, to finish installation. The program is now installed on your computer.

InstallShield Wizard
InstallShield Wizard Complete
Setup has finished installing IP surveillance on your computer.

Click **Finish** — < Back   [Finish]   Cancel
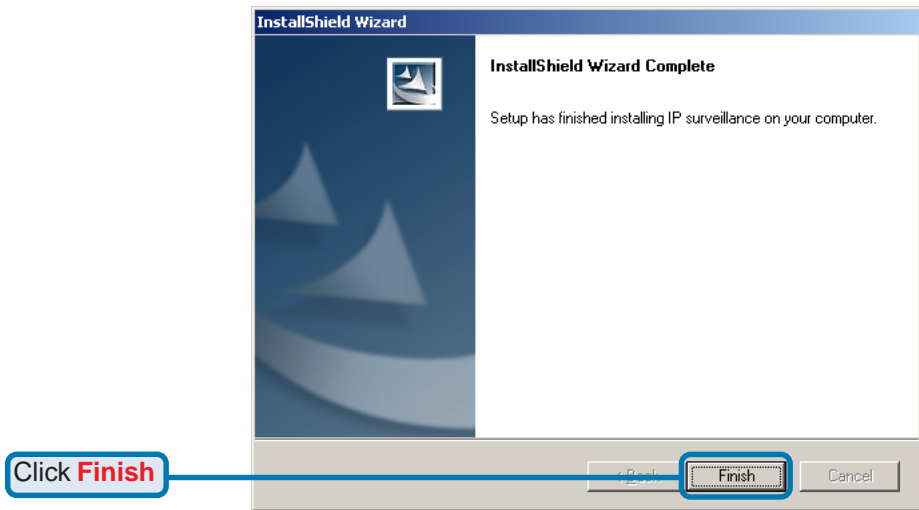
Using IP surveillance Software (continued)

Launcher

Launcher is a controller program that allows users to invoke Monitor or Playback quickly.

System Tray Icon

The Launcher icon reflects current state of IP surveillance. The 🖼 icon in the system tray signifies that the IP surveillance Software is currently active on the system.

Security for Launcher

When Launcher starts, there is no need to undergo a username/password check. But when users want to click on the icon of Launcher on system tray, Launcher will pop up a username/password dialog the first time for menu popup or when Launcher is locked. If a user fails to pass the authentication check, no menu will show up. If a user fails 3 consecutive tries he/she will be locked out for a period of 60 seconds.

After passing authentication, users will be able to use all functions. If users want to leave the computer, it is possible to lock the Launcher for security reason. When Launcher is locked, the user will need to pass authentication again to see the popup menu.

Below is the login window:
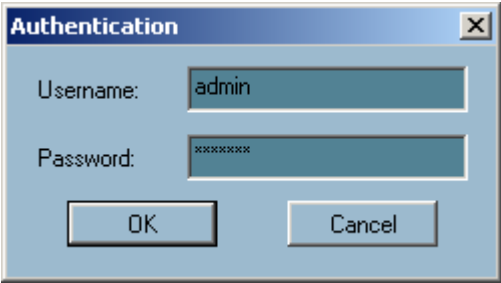
Using IP surveillance Software (continued)
Launcher (continued)

When Launcher is locked, the unlock window will appear, prompting for the user password in order to unlock.
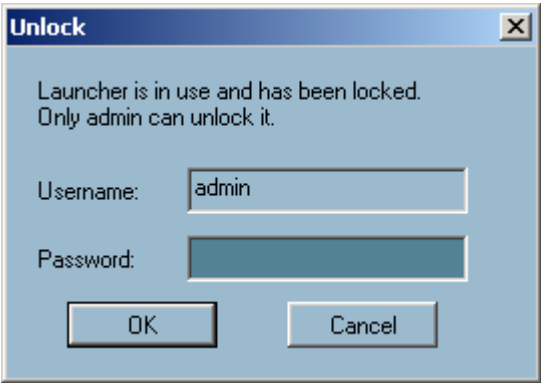
The input area of the dialog will be grayed (disabled) for 60 seconds after 3 consecutive failures.

User Interface

Below is the user interface for Launcher:
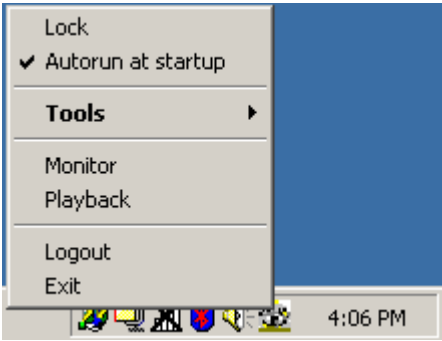
The main user interface for Launcher is an icon on system tray, and the popup menu appears when the user clicks on the icon. The menu items are listed below:

■ **Lock Launcher**
When this item is selected, Launcher will enter lock mode. In lock mode, whenever users want to invoke the menu, a dialog asking for ID and password will appear. The interface for this dialog is covered in the previous section.

Using IP surveillance Software (continued)
Launcher (continued)

■ **Tools**
Contains many utilities. Currently only change password is implemented. The change password dialog looks like this:
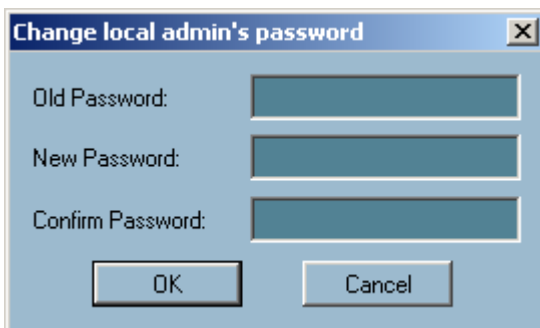
■ **Autorun at Startup**
Users can select whether or not to autorun Launcher when Window boots up.

■ **Monitor**
Starts up the Monitor program. If the Monitor program is already running, clicking this button will re-open the Monitor window.

■ **Playback**
Starts up the Playback program. If the Playback program is already running, clicking this button will re-open the Playback window.

■ **Logout**
Logs out user from IP surveillance. After logging out, if the user wants to return to the menu, and clicks the Launcher icon, the authentication box will appear prompting for username and password again.

■ **Exit**
Exits Launcher. If users choose this option, Launcher will show a message box prompting to confirm if users really want to exit, and warn users that exiting Launcher will also close Monitor and Playback.

Using IP surveillance Software (continued)

Monitor Program

Features of the Monitor Program

Traditional Surveillance Features:

- Real-time monitoring
- Pan and Tilt control
- Recording

Special Features:

The digital surveillance system supports not only the features listed above, but also the following features, which make the system more powerful and convenient.

- Simultaneous real-time monitoring and recording audio and video
- High quality video up to full screen display
- High compression ratio
- Maximum of 16 cameras with different monitor layouts
- Auto alarm in multiple modes
- Account-password protection
- Multiple recording modes: Event-driven, Scheduled, and manual recording for each camera.
- Just-in-time snapshot
- Motion detection with 3 alert windows for each camera

Using IP surveillance Software (continued)
Monitor Program (continued)

Application Layout and Functionalities

This section demonstrates a global view of the monitor program, shown below. The components of the monitor tool will be introduced in detail in the following sections.
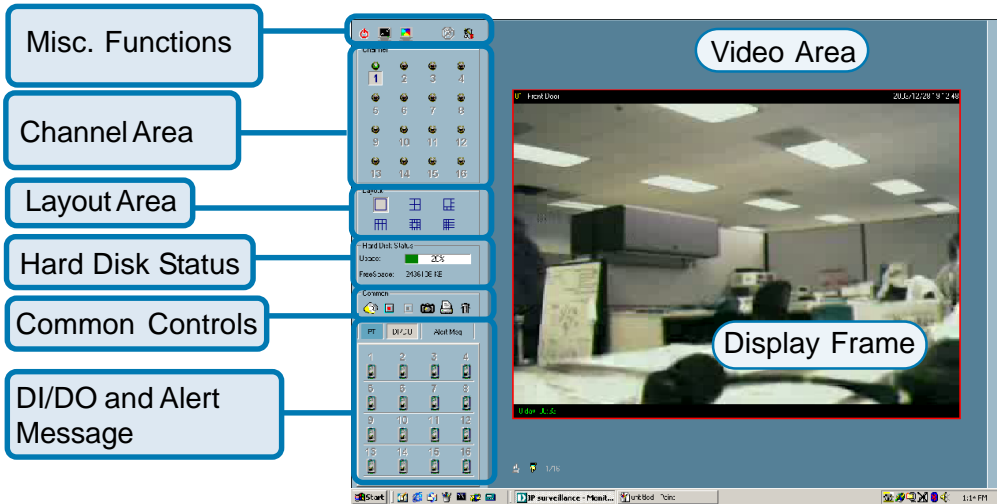
There are several parts in the monitor tool:

■ **Misc. functions:**
These include application exit, minimization, full screen monitoring, lock, stop alert, and configuration menu for camera configurations, global settings, scheduler settings and the user information of this application software. Tips for these operations are provided when you move the mouse cursor over each icon.

■ **Channel area**
This area displays the status of each video channel. The information indicates the status of connection, recording, selection, and alert-event trigger.

■ **Video area**
In this area, you can see the video of the selected channel in the display frame. The number of the display frames in the video area depends on the layout chosen by the user. You can also use convenient controls to alter the video display.

Using IP surveillance Software (continued)
Monitor Program (continued)

■ **Layout area**
You can change the monitoring layout in this area. There are six kinds of layouts: 1, 4, 6, 9, 13, or 16 video display windows in the video area.

■ **Hard disk status**
In this area, you can get the status of the hard disk in which the video database resides. The status reminds you to arrange the available storage size of the recorded video database.

■ **Common control area**
This area includes volume control, manual recording, video printing, snapshot, and trash can to remove video from display windows.

■ **DI/DO control**
This tool receives the digital input signal and sends digital output signal to the remote Video Server/ Network Camera series product associated with the dedicated video channel.

■ **Alert Message**
This tool will display the latest alert messages received by the remote Video Server / Network Camera series product associated with the selected video channel.

Logging In

You need to login the first time when you start the Launcher. The authentication window is shown below. If you do not have an account, the monitor tool will not execute. You must log in as admin (administrator) to use this application. Enter the password for the administrator.
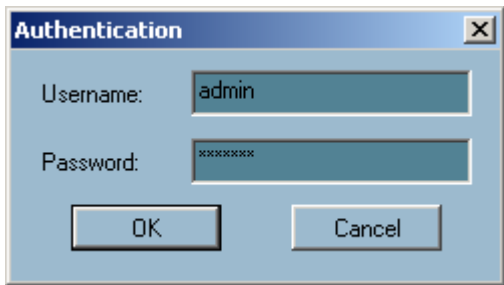
The Admin Privilege

In the monitor program, the admin has the right to access the **DCS-2000** Network Camera through this application software and change the local settings as well. But the admin password for the software is not the same as the admin password for the Internet camera. You can change the settings of each selected Internet camera from the monitor program only if you have the admin password for the Internet camera.

If you have the admin privilege, you have the right to do the following tasks:

- ■ Run the configuration tool
- ■ Change the recording schedule
- ■ Change the local settings

Again, if you need to change the settings of the **DCS-2000**, you must have the administrator's password for the camera itself.

Camera Configurations

When you log in for the first time, you should configure this application software to connect the **DCS-2000** in "Configuration Menu > Camera Configurations", shown in the figure below. You will need the admin (administrator) password for the camera in order to run the configuration.

Camera Configuration...
Global Settings...
Scheduler...
Backup
About...
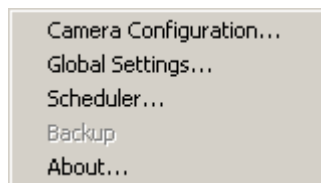
Once you click **"Configuration Menu > Camera Configurations"** for setting each camera, all recording processes will be stopped indicated by a warning window popped up in advance to keep you informed.

Using IP surveillance Software (continued)
Monitor Program (continued)

The Layout of the Configuration

This section discusses the local settings for the connection and the functional configuration of each camera. If you are interested in the remote settings for each camera, you can refer to "Using the DCS-2000 with an Internet Browser," which starts on page 33.

Remote Camera Webpage Settings

Local Settings

Setup Page

Camera Selections
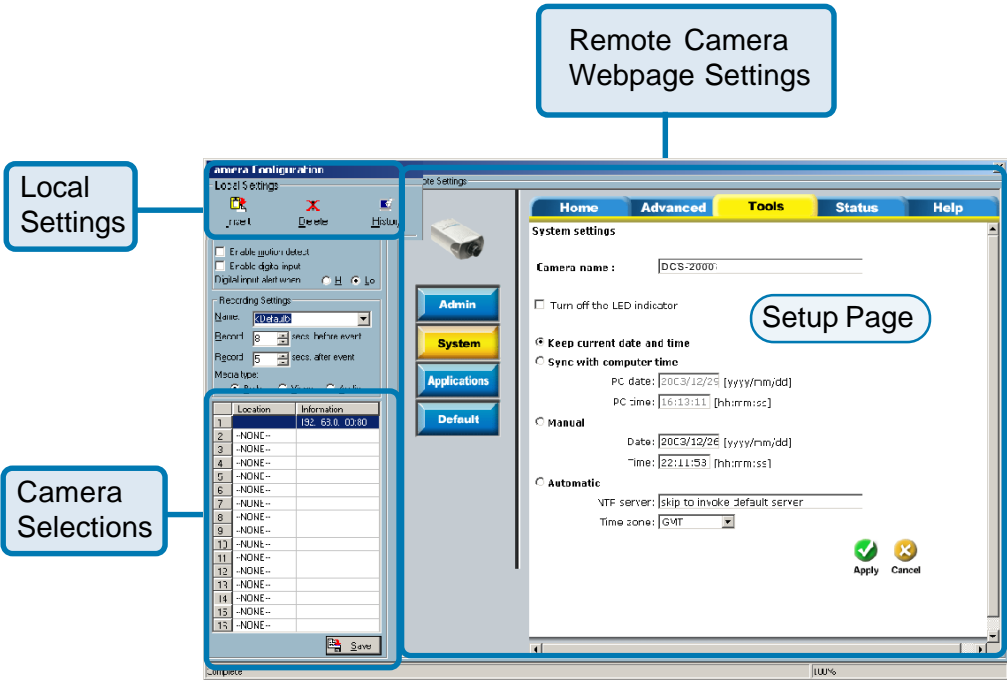
The Layout of the Configuration

In the local settings, shown below, three main functionalities are provided:

Insert new camera to the list

Delete camera from the list

History of all cameras in the list
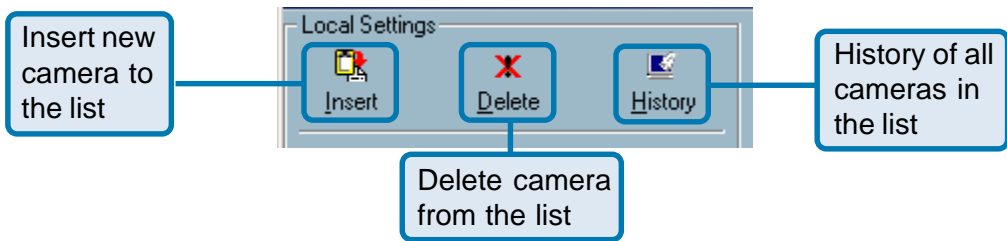
Using IP surveillance Software (continued)
Monitor Program (continued)

Insert – To insert a remote network camera to the camera list. Click the "Insert" button, an "Insert New Channel" dialog will popup, as shown below. Specify the IP address, port, and admin password of the network camera, click the "Ok" button to close the dialog. Then the system will try to connect to the selected camera. If the connection succeeds, the camera will be inserted to the camera selection list.

Specify the IP address, port, and admin password of the camera.

Insert New Channel

Address: 192.168.0.100 : 80

User: admin

Password:

☐ Save Password

Click **Ok**

OK   Cancel
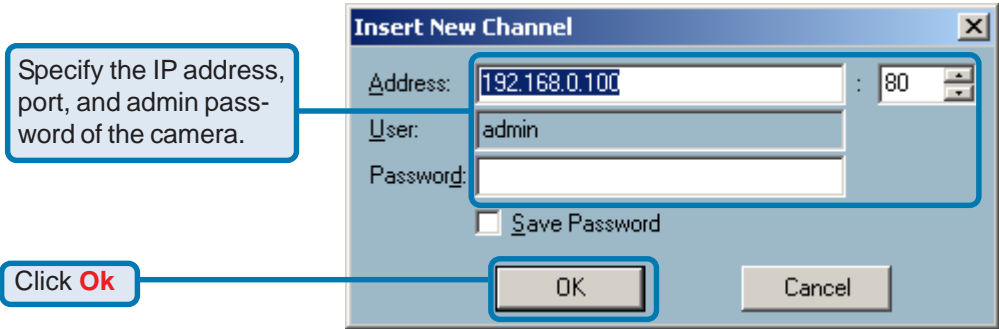
Once added, you will see the IP address of the camera and also the port that is opened on the camera (port 80 in this example).

Local Settings

Insert   Delete   History

List Historic

Alert Settings
☐ Enable motion detect
☐ Enable digital input
Digital input alert when   ○ Hi ● Lo

Recording Settings
Name: <Default>
Record 8 secs. before event
Record 5 secs. after event
Media type:
● Both ○ Video ○ Audio

	Location	Information
1		192.168.0.100:80
2	--NONE--	
3	--NONE--	
4	--NONE--	
5	--NONE--	

The selected camera has been added to the selection list.
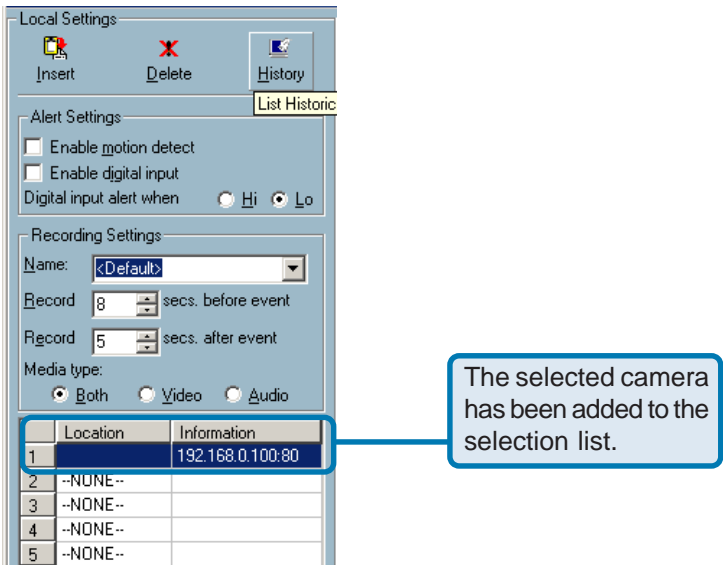
Delete – The deletion of a device is a much easier operation than "insertion". It removes the selected network camera from the camera list. Highlight the camera that you want to delete from the list and click on the "Delete" button.

The selected camera will be deleted.
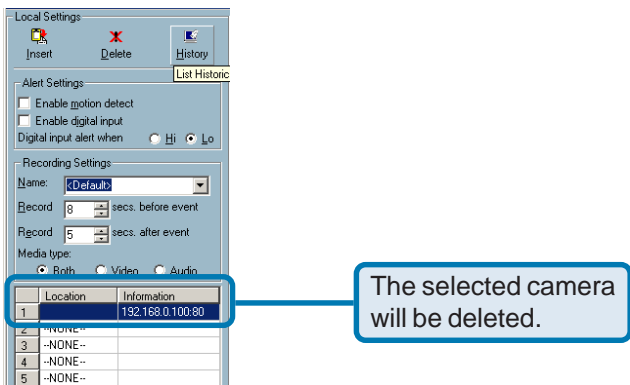
History – Clicking the "History" button will popup a historical camera list, which lists the latest 16 cameras you inserted into the camera list. 16 is the default number; you can change the number of the latest installed cameras you want to keep in the registry. Clicking on one camera in the history list will insert the camera into the camera list. The historical camera list is shown below.

Historical camera list
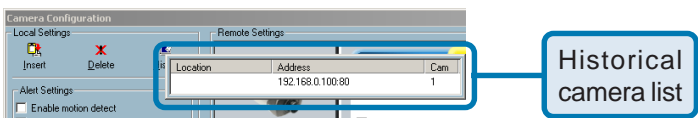
Alert and Recording Settings

Alert Settings

Recording Settings
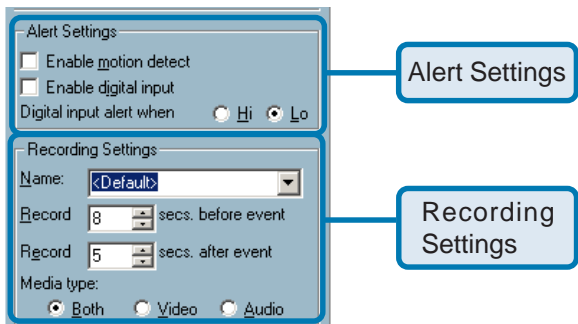
Using IP surveillance Software (continued)
Monitor Program (continued)

Alert Settings:

Specific alert actions can be performed by setting the options in this window.

- ### Enable motion detect
  This will trigger an alert sound that has been specified in the section titled "Global Settings \ Alert Sound." Check this option to enable audio alert for the camera selected.

- ### Enable digital input
  This function is similar to "Enable Motion Detect" mentioned above. Once this option has been checked, a digital input device will be able to trigger an alert sound and recording.

- ### Digital input alert
  This application software provides options for you to define the triggering criteria for the digital input of the **DCS-2000**. The alert of the digital input can be defined as high-level triggered or low-level triggered.

Recording Settings:

- ### Record # secs. before event
  Once the automatic video recording has been activated, you can change this setting to regulate the recording of triggered events. Recording will start from the specified number of seconds before the alert event has been invoked.

- ### Record # secs. after event
  Recording will last for the specified number of seconds after the alert event has been invoked.

- ### Media Type
  You can specify which media type you want to record: Video, Audio, or both.

Using IP surveillance Software (continued)
Monitor Program (continued)

Changing the Camera Order in the List

You can "drag and drop" in the grid area of the camera list to change the sequence of the connected Network Cameras, which is shown below. This will allow you to rearrange the cameras in an order of your choice. Once the camera is moved to a specified location, the proceeding cameras will then move 1 position up or 1 position down depending on which direction the selected camera was moved.

Step 1:

	Location	Information
1	Front Door	192.168.0.100:80
2	--NONE--	
3	--NONE--	
4	--NONE--	
5	--NONE--	
6	--NONE--	
7	--NONE--	
8	--NONE--	
9	--NONE--	
10	--NONE--	
11	--NONE--	
12	--NONE--	
13	--NONE--	
14	--NONE--	
15	--NONE--	
16	--NONE--	

Press the left mouse button at the gray index field.

Step 2:

	Location	Information
1	--NONE--	
2	--NONE--	
3	--NONE--	
4	--NONE--	
5	--NONE--	
6	--NONE--	
7	--NONE--	
8	--NONE--	
9	--NONE--	
10	--NONE--	
11	--NONE--	
12	Moving channel 12 ...	2.168.0.100:80
13		
14	--NONE--	
15	--NONE--	
16	--NONE--	

Move the mouse to your new selected location and release the mouse button. Then Video 1 will be moved (to the 12th row in this example).

Once you click the "Save" button in the left-bottom corner of this window, the changes for all camera configurations will be saved and will be applied immediately to the IP surveillance.

Using IP surveillance Software (continued)
Monitor Program (continued)

Global Settings

After completing the connection to each remote Network Camera, we need to configure some global settings for all the cameras. These include the video database directory, the usage of the Hard disk, and options for video display.
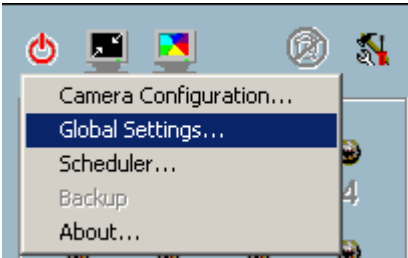
You can activate the global settings window from "Configuration Menu > Global Settings..." shown above.

All recording processes will be stopped when activating the global settings window, indicated by a warning window popped up in advance to keep you informed.
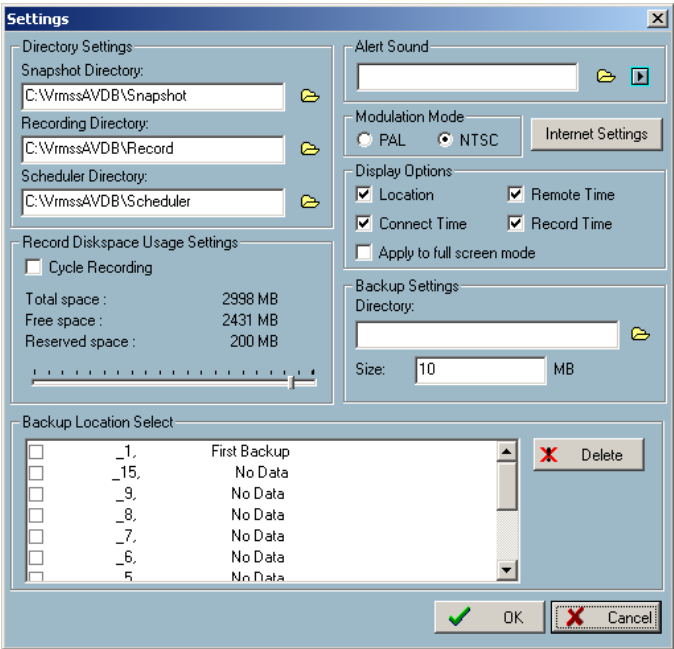
Using IP surveillance Software (continued)
Monitor Program (continued)

Directory Settings:

- ### Snapshot directory
  The directory for storing snapshots in *.bmp format from video channels of the monitor and playback programs, which is shown on page 79.

- ### Recording directory
  The directory for storing the recorded video data from video channels.

- ### Scheduler directory
  The directory for storing the default and user-customized schedules for the scheduled recording of each channel.

Record Diskspace Usage Settings:

- ### Cycle Recording
  When you turn this setting on, the video database system of this application software will overwrite the oldest data if the specified path has become full. That means it will record video data in a loop. If this setting is unchecked, a warning message will pop up when it is approaching the storage space limit. All recording will stop when the limit of the hard disk usage is reached.

- ### Reserved space
  Indicate the size of the hard disk that will be reserved for other Windows applications (at least 15%). The remainder of the hard disk space will be available for recording. The more space you have reserved, the less there will be available for your camera(s) to record to. As you move the bar to the right, more space will be available for your camera(s) and conversely, less space will be available for your other applications. If the recording data exceeds this limitation, the new video data will replace the oldest data (on a First In First Out (FIFO) basis) when "Cycle Recording" has been checked.

- ### Alert Sound
  You can load a custom *.wav file for the sound of alert triggering. You can also select from the sound files in Windows.

Using IP surveillance Software (continued)
Monitor Program (continued)

■ **Modulation Mode**
You must select the input signal format (NTSC or PAL) for displaying the original resolution of video stream from **DCS-2000**.

NOTE: You need to select the input signal format according to the camera type or CCD module type that is connected to the **DCS-2000**.

Display Options:

In the video displaying frame of each channel, there are two status bars. The upper bar contains "Camera location" and "time of the remote site." The lower bar contains "Connection time" and "Recording time." All of them, shown in the figure below, can be enabled or disabled here individually for the status indication. Apply to full screen mode can also be turned on here. Once it has been checked, the status bar in each channel showing date, location, connection, and recording time will be shown in both display frame mode and full screen mode.

Location (channel number + Camera Name)

Remote Time

Connection Time (Day:Hour:Min)

Recording Time (Day:Hour:Min)
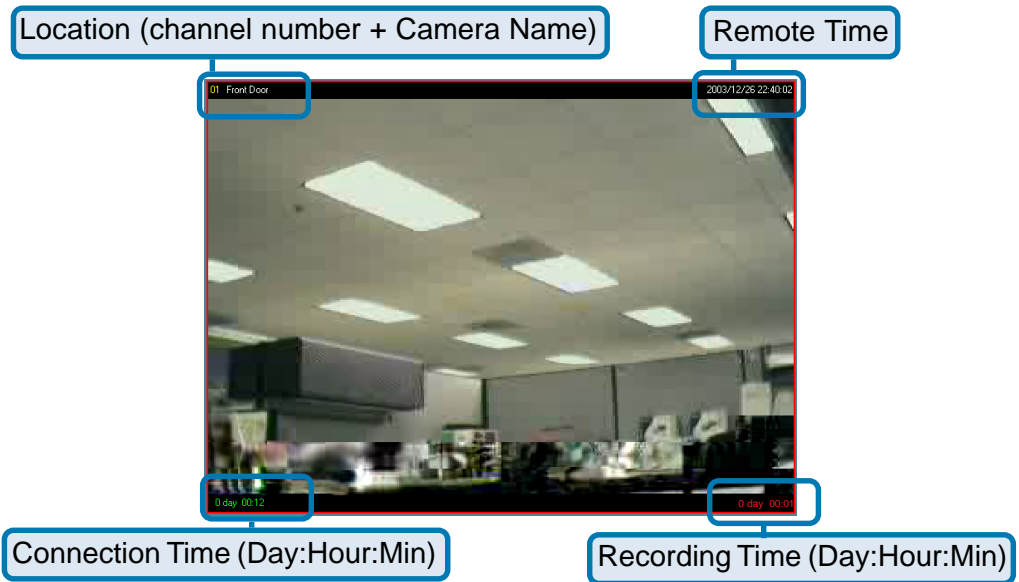
Using IP surveillance Software (continued)
Monitor Program (continued)

Backup Settings:

Using Backup Settings in the global settings window, you can backup recorded data from selected cameras to a specified location.

▪ **Directory**
This is the directory where backup data will be saved. You can select the location by clicking on the folder icon.

▪ **Size**
You can set the size limit of the data that will be backed up. The default size limit is 10MB. The maximum value for this setting depends on the amount of Free Space available on your hard drive. This value can be found under the "Record Disk space Usage Settings" section of the global settings window.

▪ **Backup Location Select**
Select the locations to backup by clicking the checkbox next to the location/camera name. To delete a location, select the location and click the "Delete" button to the right of the Backup Location Select window.

After you have set your backup settings in the global settings window, you can backup recorded data by clicking "Backup" in the Configuration Menu, as seen below:
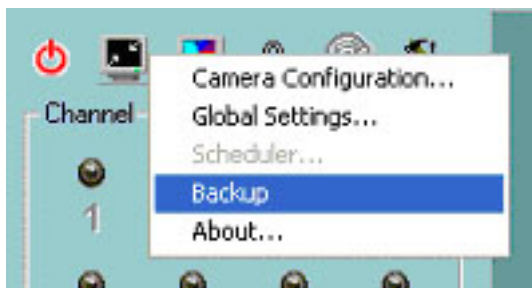
Using IP surveillance Software (continued)
Monitor Program (continued)

Using the Monitor Program

This section depicts, in detail, how to manipulate the monitor tool.

Connection of the DCS-2000

Channel:
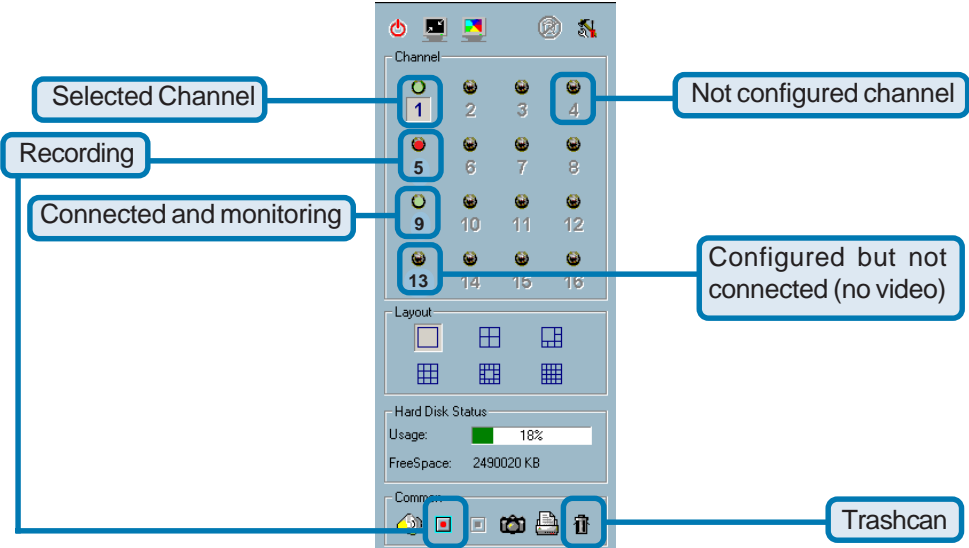Once you have the privilege to connect to the **DCS-2000**, the cameras will automatically appear in the video area in the order they are connected. Once you have set up the camera in the video channel, the color of the channel number will turn blue, indicating that the camera has been added to IP surveillance. If you do not set up the camera for the video channel, the color of the channel number will be gray.

There is a unique light signal associated with each channel number. It indicates the status of the dedicated video channel, which is depicted as follows:

- **Off**
  The video channel is not connected with any **DCS-2000** yet.

- **Green**
  The green light means the **DCS-2000** associated with this channel number is connected, and the video is monitored in the video area.

- **Red**
  The red light indicates the video from this channel is recording into the video database. In this mode, you don't have to drag and drop the channel to the video area. This means that this application software supports real-time recording with and without real-time monitoring for the dedicated video channel.

- **Blink**
  With the motion detection mechanism set in the **DCS-2000**, the light of the corresponding channel will blink once the motion event is triggered.

Using IP surveillance Software (continued)
Monitor Program (continued)

Selected Channel

Not configured channel

Recording

Connected and monitoring

Configured but not connected (no video)

Trashcan

If you do not want to monitor one video, you can drag and drop the video (in the video area) to the trashcan in the common control area of the monitor program. The following section will demonstrate the procedures for "drag and drop" step-by-step.

Show the video of a specified channel

This section depicts the method of how to show the video of a specific channel in the a display window

Step 1: Move the mouse cursor to the display window shown below.

Mouse cursor

Location hint
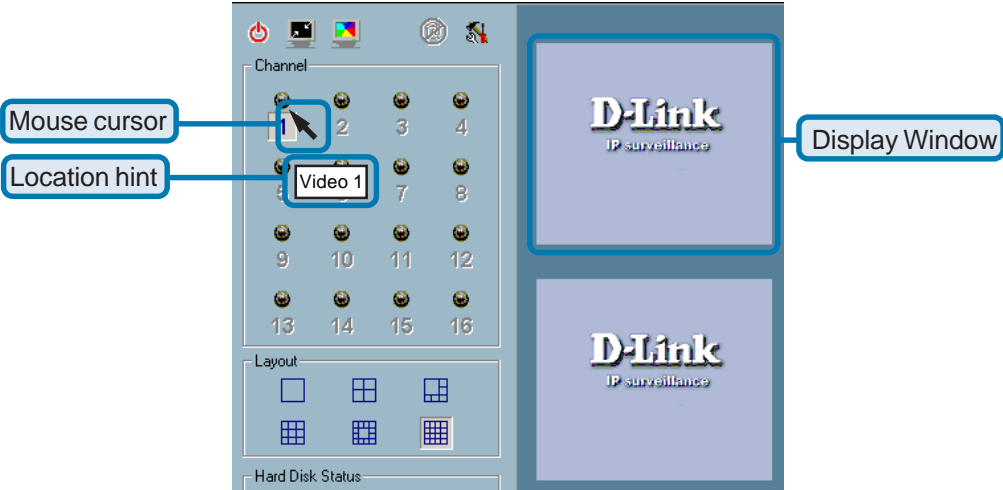
Display Window

Using IP surveillance Software (continued)
Monitor Program (continued)

Step 2: Press and hold the left mouse button, and then move the cursor to a display window in the video area, which is shown below. Note that the cursor will change according to the area in order to indicate whether the area is droppable or not.

Step 3: Release the left mouse button while on top of a display window. In each display layout, only one window can be assigned to a camera. Also, each camera must have its own separate window when displayed. Once the video is in a display window, it can be dragged and dropped to other windows. If you drag one camera's video to a window that already has its own camera's video, the two cameras will trade display windows. Dragging and Dropping is a very convenient way to manipulate the video channels in the IP surveillance Software.

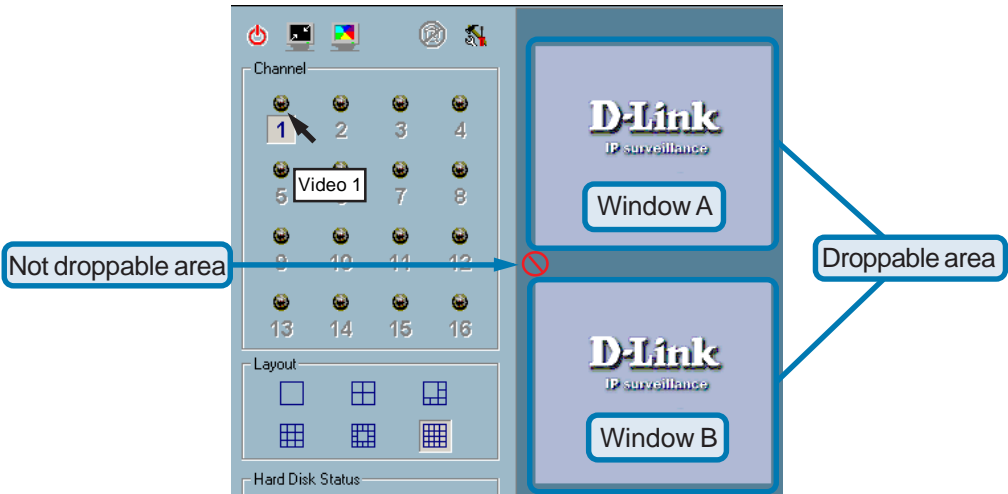# Using IP surveillance Software (continued)
Monitor Program (continued)

Video shown

Empty video box
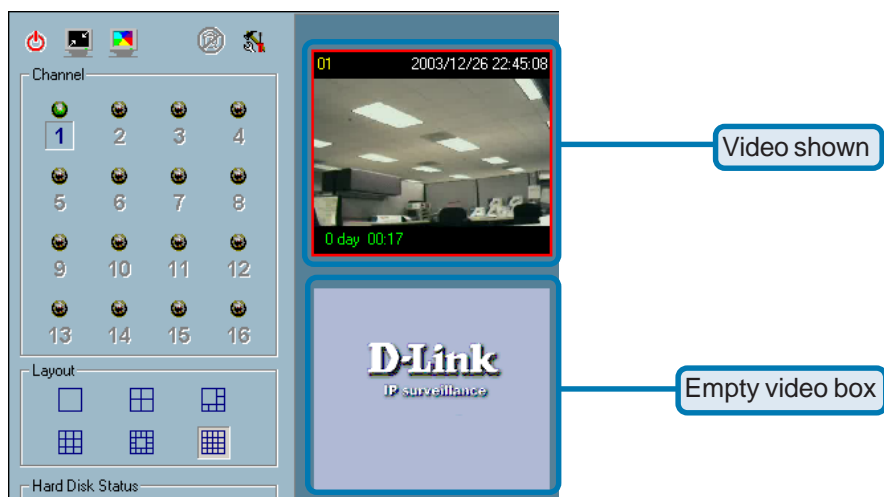
Removing video from a display window

Step 1: Move the mouse cursor to the display window that contains the video channel you wish to remove.

Step 2: Note that the cursor will change to the hand-shape when it has been moved onto the displaying frame. After that, press the left mouse button and hold it.

Step 3: Move the cursor, while still holding the left mouse button, to the trashcan in the common area of the monitor program.

Step 4: When the cursor shape changes to an arrow-shape over the trashcan, release the left mouse button. The video in the corresponding display window will disappear. All operations above are shown in the figure on the following page.

Using IP surveillance Software (continued)
Monitor Program (continued)

Press and hold the left mouse button here.

Move the mouse cursor here, and then release the left mouse button.
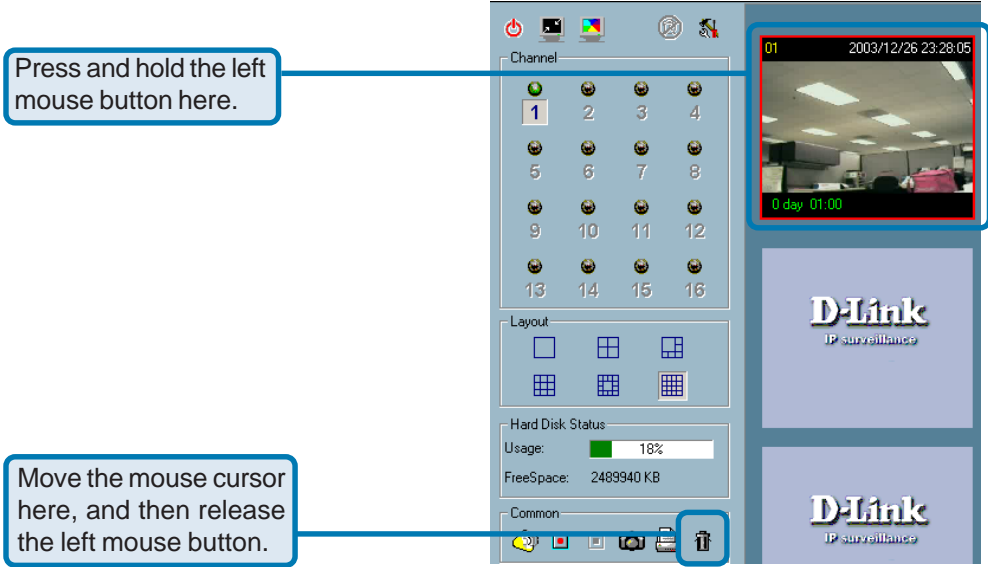
The Layout

There are six different layouts available, as shown below, for the display windows in the monitor program. You can select one of them by clicking on a layout icon. In each layout, you can drag and drop the "channel number" to any display window in the video area. Following the procedures described in the section titled "Show the video of a specified channel", you can add the video channels to display windows within the selected layout one by one. You can also exchange the video between different display windows by dragging and dropping.

4 camera layout

6 camera layout

1 camera layout

16 camera layout

9 camera layout

13 camera layout
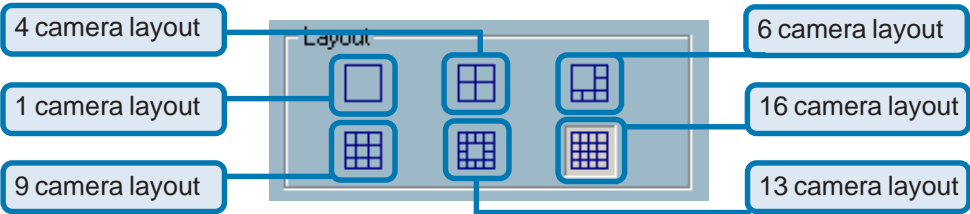
Using IP surveillance Software (continued)
Monitor Program (continued)

Double click on a display window to switch to a single channel layout.
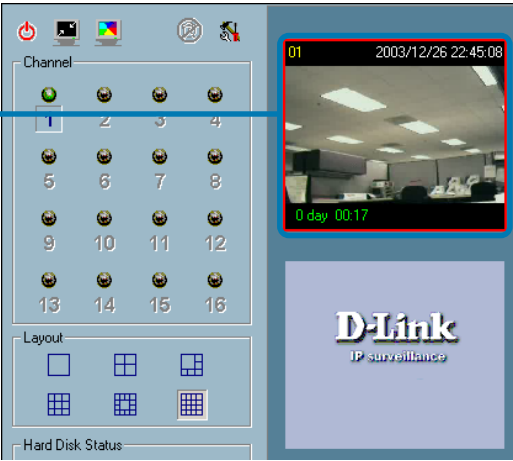
When you choose the one-channel layout or four-channel layout, the "Page up" and "Page down" buttons will be shown in the left-bottom corner of the video area. You can use these two buttons to switch the pages, as shown in the figure below.

Use to switch between cameras.

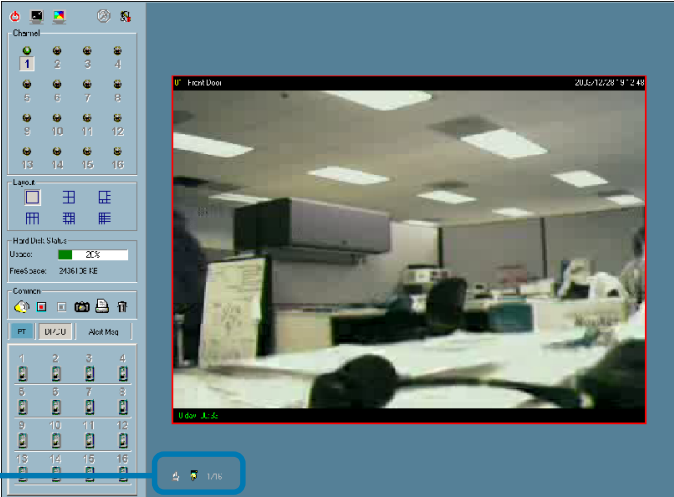# Using IP surveillance Software (continued)
Monitor Program (continued)

To view an individual camera from the multi-camera layout, double-click on the desired display window. You will see that the size of the display window is the same as the one-channel layout. Clicking the "Back" button in the upper-left corner of the video area will switch to the previous selected multi-camera layout.

The position that each video channel is in for every layout will be saved for the next time the layout is selected.

Back to previous layout.
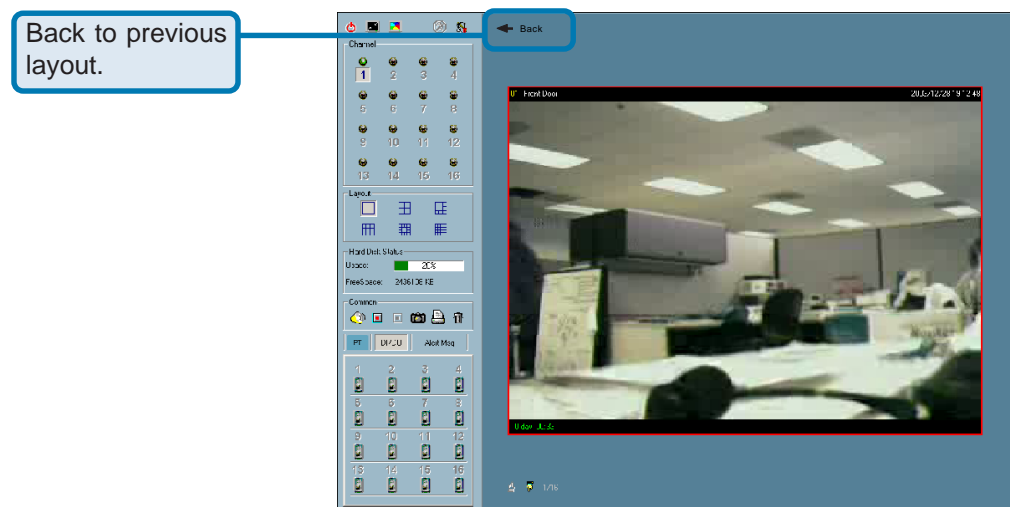
Input/Output Control Tools

Digital Input / Digital Output
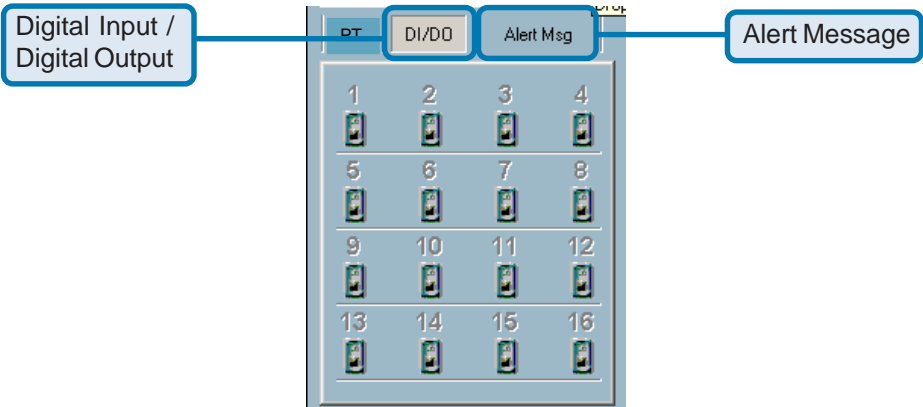
Alert Message

Using IP surveillance Software (continued)
Monitor Program (continued)

IP surveillance includes DI/DO (Digital Input / Digital Output) control and an alert message receiver. These features are described in detail below.

DI/DO Control

Clicking on the "DI/DO" button shown below, you can switch to the DI/DO controls. The color of the channel number indicates the status of the DI (Digital Input). You can click the "Switch button" to change the HI/LOW state of the DO (Digital Output). With these features, you can monitor the remote sensor input from DI and also trigger the camera by DO switch.
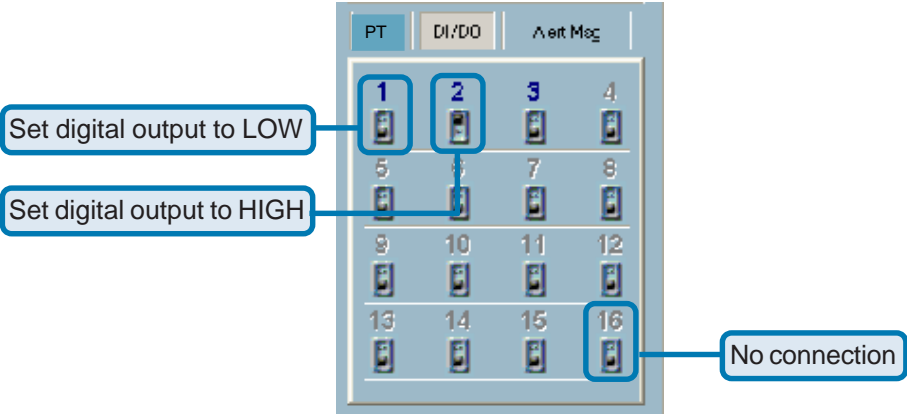
When the color of a DI/DO number is gray, that means the video has not yet been connected to a camera.

Alert Message

```
12:16:45:dev #1 closed.
Reconnecting ...
12:16:58:dev #1 closed.
Reconnecting ...
12:17:12:dev #1 closed.
Reconnecting ...
12:17:25:dev #1 closed.
Reconnecting ...
12:17:38:dev #1 closed.
Reconnecting ...
12:40:26:dev #1 closed.
Reconnecting ...
12:40:40:dev #1 closed.
Reconnecting ...
12:40:53:dev #1 closed.
Reconnecting ...
```

If you have checked the box for "Enable Motion Detect" or "Enable Digital Input" on "Camera Configurations > Alert Setti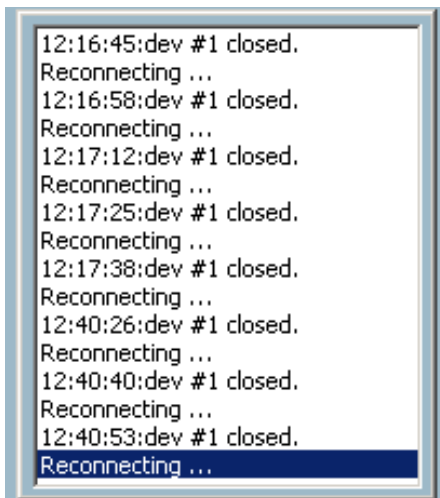ngs" screen, the alert message will show in the window shown above. Once the alert, caused by motion detection or a digital input level changer, is triggered, the alert message will be shown in this window. If there are more events than this window can display, a scroll bar will appear.

The message format is described as follows:

"time"=>"alert type" #"channel number"("win1","win2","win3")

For example, the message "PM 02:41:00=>MO #1(0,1,1)" means that this is a motion detection alert occurring at 02:41:00 PM in Motion Window 2 and Motion Window 3, for camera #1. If the message "PM 02:41:56=>DI #1" is listed, that means there is an alert triggered by the DI, for camera #1, at 02:41:56 PM .

Using IP surveillance Software (continued)
Monitor Program (continued)

About

By choosing "About", located in the configuration menu shown below, a dialog box will appear and display the information about the installed version of IP surveillance. The information includes the software name, version, user name, and company.
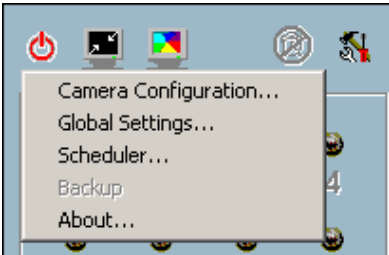
Miscellaneous Functions
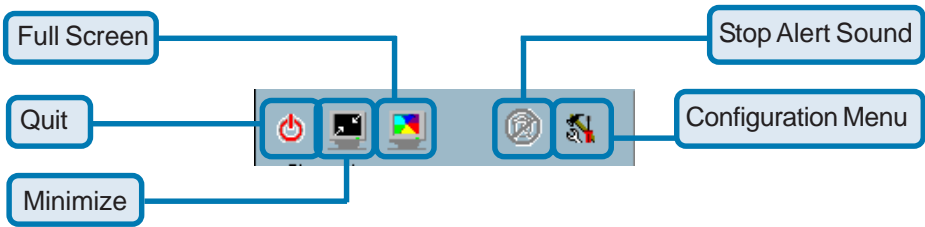
This section will describe some other miscellaneous functions of the icons shown above. These functions are:

Quit
By clicking this button, IP surveillance will be closed with the latest settings saved.

Minimize
Minimize the Monitor program.

Using IP surveillance Software (continued)
Monitor Program (continued)

Full Screen
With this function, you can enlarge the selected video channel to a full-screen display. Press the "ESC" key on the keyboard or double-click the mouse on the screen to return to a regular display.

Stop Alert Sound
If an alert is triggered, the alert sound will start to play. After being informed of the situation, you can press this button to stop the alert sound. It will also switch the I\O Control to the Alert Message receiver, so that the alert messages can be reviewed.

Configuration Menu
The menu includes Camera Configuration, Global Settings, Scheduler, and About options.

Common Control Functions

Stop Record — Printer

Volume — Trash can

Record — Snapshot
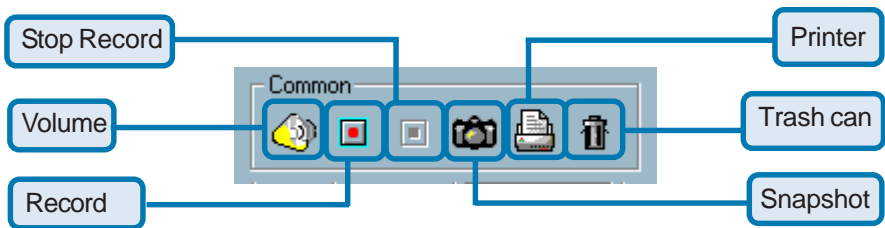
Common

This section will describe the common control functions, shown above, which are depicted by the small icons. These functions only apply to the currently selected channel. These functions are:

Volume Control
Click on this button to adjust your volume settings.

Record

By clicking on this button, you can manually record video from the selected channel.

Stop

After video recording has been activated, this button allows you to manually stop recording of the selected video channel.

Snapshot

This button will take a snapshot of the selected video channel and save the picture as a bitmap file to the hard disk. You can set the directory for storing these bitmap files at the "Configuration menu > Global Settings" screen. Please refer to the section titled "Global Settings" for more details.

Printer

Click on the printer icon to print the current image to your default printer.

Trashcan

You can drag and drop the video channel to the Trashcan to close the video connection with the **DCS-2000**.

Status Bar

Local time				Software name	
10:47:48 a.m.	Current user: admin	Logged in when 10:41:47 a.m., Jan 2, 2004	IP surveillance	2.10

| | Current login user | | Login time | Software version | |
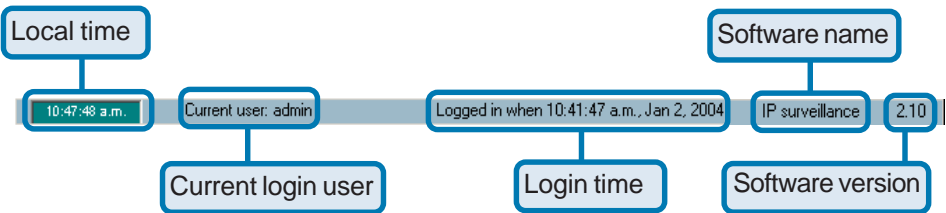
Using IP surveillance Software (continued)

Scheduling

The scheduler allows the user to schedule recordings from the selected video channel of the **DCS-2000**. Through both the graphic user interface and time period selection options, you will be able to easily regulate a schedule for each video channel.

The main features of the Scheduler are:

- Friendly graphic user interface for schedule editing

- Flexible schedule scheme suitable for all applications

- Individual schedule for each video channel

- Supports up to 9 preset schedule schemes for each video channel

- Automatic period recording

Using the Scheduler

This section discusses the method of how to use the scheduler.

Start the Scheduler

Schedule Tool
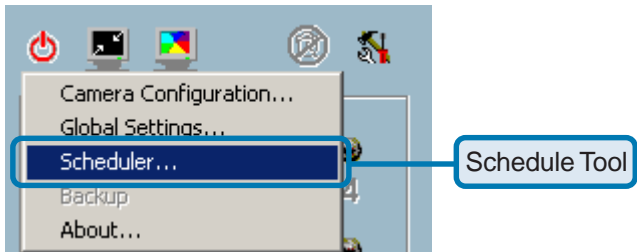
Using IP surveillance Software (continued)
Scheduling (continued)

The scheduler will not be accessible until at least one camera has been added to the camera list. Go to the configuration menu and click on "Scheduler" to launch the Scheduler.

The Layout and Functionalities

Introduction

The layout of the scheduler and its components, shown below, will be described.

Using IP surveillance Software (continued)
Scheduling (continued)

The layout of the scheduler tool is roughly divided into 4 parts.
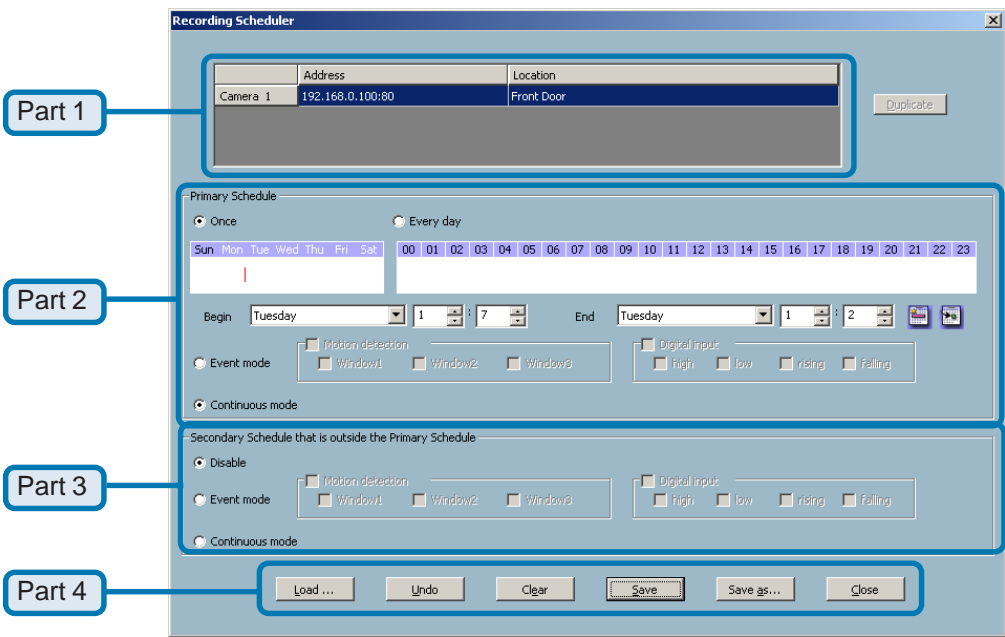
■ **Part 1**
The first part of the scheduler is the video channel selection area. It provides the IP addresses and location information of the connected video channels for the user's reference. You can select a video channel in this area and create a schedule for it.

■ **Part 2**
The second part is the Primary schedule settings. It consists of the **day time-line, week time-line, begin time selector**, **end time selector**, and event mode settings.

■ **Part 3**
The third part is the Secondary schedule, which consists of event mode settings.

■ **Part 4**
The fourth part contains **the operation buttons** for the user to manipulate the edited schedule of the selected video channel. The scheduler can be closed from here.

The Functionalities of Configuration Components

The four main parts of the scheduler have been briefly described in the section above. Parts 1-4 will be described in detail in the following section.
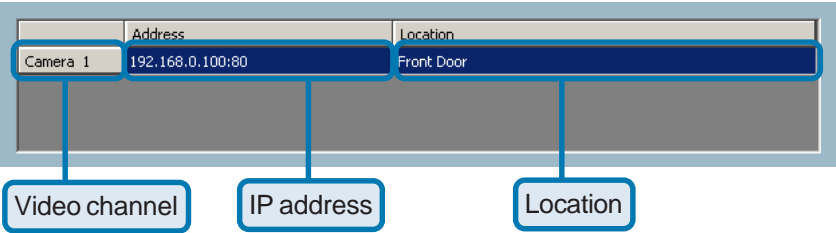
Using IP surveillance Software (continued)
Scheduling (continued)

In this area you will select the video channel that you want to set a schedule for. Each video channel will display a name, IP address, and location. Please note that when you switch between video channels in this area, the changes in the schedule of the previous video channel will be saved automatically.

Primary Schedule

Schedule with Time Lines

There are two different time-lines: hour unit time-line and week unit time-line. You can make your own schedule by plotting markers in all time-lines. These two time lines are associated with each other. That is, if you make changes in one time-line, the corresponding changes will be applied with scale to the other three time-lines in the same schedule. Before you begin, make sure that you select "Once" (page 100) if you want to choose the days to record on.

Week Time-Line

In the figure below, Week time-line is displayed. It includes the time-line, schedule information, and the selected day in the week.
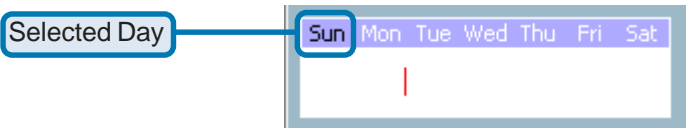
Marking/Unmarking the Recording Time on the Week Time-Line
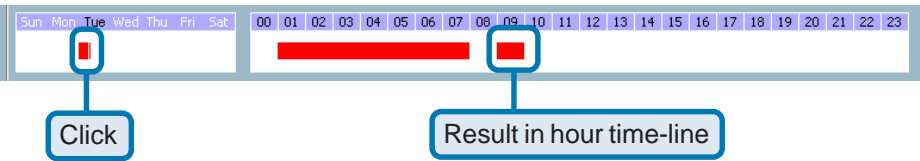
The corresponding changes for the markers on the week time-line will be automatically added to the hour time-lines, which is shown above. You can also mark and unmark the plotted bar by dragging and dropping with the left and the right mouse button.

Using IP surveillance Software (continued)
Scheduling (continued)

Hour Time-Line

In the figure below, the Hour time-line is displayed.

Marking/Unmarking the Recording Time on the Hour Time-Line

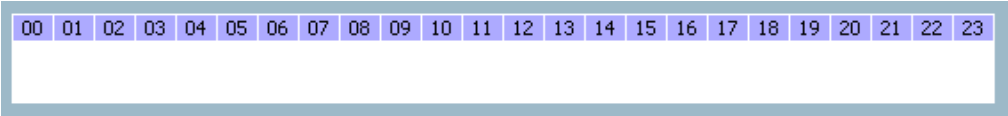You can apply the one-click function by clicking the left mouse button and dragging to mark the time on this time-line. The operating method for the hour time-line is the same as that of the week time-lines. Please refer to the previous section about marking/unmarking on the week time-line for more details.

Schedule with Time Picker

Begin and End Time

There are three controlling units in both "Begin Time" and "End Time" selectors shown above. The first unit of these two selectors is the date picker. You can select day with it to set the beginning time and the ending time for the recording interval.

The second and third units are the hour picker and the minute picker. You can change the hour and minute settings for the beginning and ending time with them.

NOTE: The time set in "Begin time" must be earlier than that in "End time". Otherwise the settings will not be applied.

Using IP surveillance Software (continued)
Scheduling (continued)

Apply and Erase Buttons

After you have selected the time period with "Begin time" and "End time" picker, you can apply the period picker, shown in the figure below, to set the periodical types of the time interval set previously. After the settings in "Begin Time", "End Time" and "Period Picker" are all done, you should click the "Apply" button or "Erase" button to add or clear this scheduling information to the editing schedule scheme. Note that only after you click on the "Apply" button, the scheduling information settings will be written back into the whole editing schedule scheme. That means this edited scheduling time interval is valid only after you "Apply" the changes.

Schedule in event mode

You can select to record in Event mode or Continuous mode by the Schedule mode selector as shown in the figure below. There are two types of event recording. Please refer to the following two sections for more information.
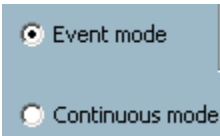
Motion Detection

As shown above, you can check the windows to determine which window(s) will be used to trigger the recording. The motion windows are labeled in the order in which they are added when configuring motion detection for the camera. For example, Window1 is the first window added, regardless of if the name of the window has been changed.

Digital Input

In the figure above, there are four conditions for the digital input. Check the condition that you would like to record while the condition triggers.

■ **high**
Checking this will trigger recording while the digital input is high.The technical name for this event is line trigger.

■ **low**
Checking this will trigger recording while the digital input is low. The technical name for this event is line trigger.

■ **rising**
Checking this will trigger recording while the digital input is changing from low to high. The technical name for this event is edge trigger.

■ **falling**
Checking this will trigger recording while the digital input is changing from high to low. The technical name for this event is edge trigger.
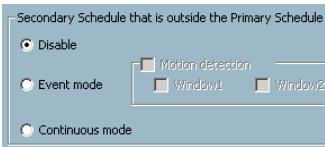
Schedule in Continuous mode

If you select Continuous mode in the schedule mode selector, it will record continuously during the schedule that is set up by the user.

Secondary Schedule

Secondary schedule is for recording outside of the primary schedule. The secondary schedule provides options to record without a specified date or time.

Schedule modes

Using IP surveillance Software (continued)
Scheduling (continued)

There are three modes in the secondary schedule: Disable, Event mode, and Continuous mode. If event mode is selected in the secondary schedule, the camera will record whenever an event is triggered. If continuous mode is selected, the camera will begin recording continuously after scheduling settings are saved. These two modes are the same as the primary schedule. Please refer to the previous section for more detail.

The Schedule Scheme operations

There are six related buttons. "Load…", "Undo", "Clear", "Save", "Save as…" and "Close" for handling the schedule schemes. These operations are shown in the figure below.

Load ...	Undo	Clear	Save	Save as...	Close

- **Load...**
  This button allows you to load pre-edited schedules from the scheduling directory for the selected video channel. Note that you should save the schedule you are currently working on before loading a new one. Otherwise, the current changes will be lost.

- **Clear**
  This button will clear all changes in the current schedule of the selected video channel.

- **Save**
  This button is used for saving changes to the current schedule.

- **Save As...**
  This button is used to save the current schedule as another file name instead of the default name.

- **Undo**
  Click on this button to undo all changes for the current schedule since the last save.

- **Close**
  Click on this button to close the scheduler.

Using IP surveillance Software (continued)

Playback Program

The playback program is a very powerful, convenient, and easy way to browse the recorded video. It has one display mode (normal display mode) and two playback methods (full range and time period). There are several main functions including special features in the Playback program. These functions are depicted as follows.

Features of Playback

Powerful play control tool:

- Play
- Stop
- Pause
- Step forward
- Fast play (from x1 to x16)
- Slow play (from /1 to /16)

Convenient display adjustment tool:

- Zoom in (from 1:1 to 2.25:1)
- Zoom out (from 1:1 to 1:2)
- Full screen

Flexible searching range adjustment tool:

- User input (from full range to 1 second)
- Zoom in (from full range to 10 seconds)
- Zoom out (up to full range)
- Full range

System control tool:

- Window locker
- System settings

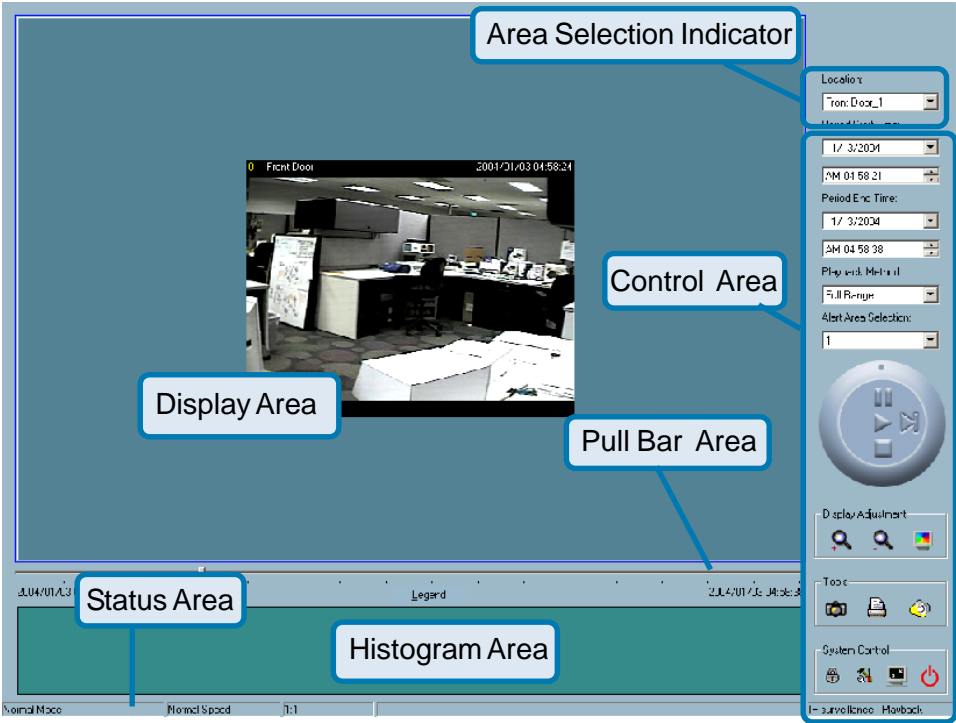# Using IP surveillance Software (continued)
Playback Program (continued)

Logging In

Before you start the playback program, it is necessary for you to log in to the application software. The figure below shows the login dialog. For security concerns, only the admin account can log in to this program. To change the password of the admin account, please refer to the section titled "Logging In."
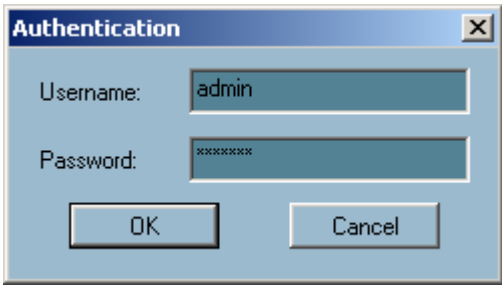
Layout

Using IP surveillance Software (continued)
Playback Program (continued)

When you successfully log in to the playback system, the main window will be shown on the top of the screen and the display resolution will be changed to 1024x768 automatically (see page 104). There are four main areas, i.e. display area, histogram area, control area, and status area. There are also three visualized controls , i.e. area selection indicator, frame selection indicator, and pull bar. These features provide much more convenience while searching recorded video in the IP surveillance database.

Main Areas

Display Area

The display area is able to show the surveillance database of each camera by time. You can change the video size through the display adjustment tool and the playback method through the play control tool. Under the normal display mode as shown in the figure below, you can just double click on the frame area to change the frame size to 1:1 or 2.25:1.
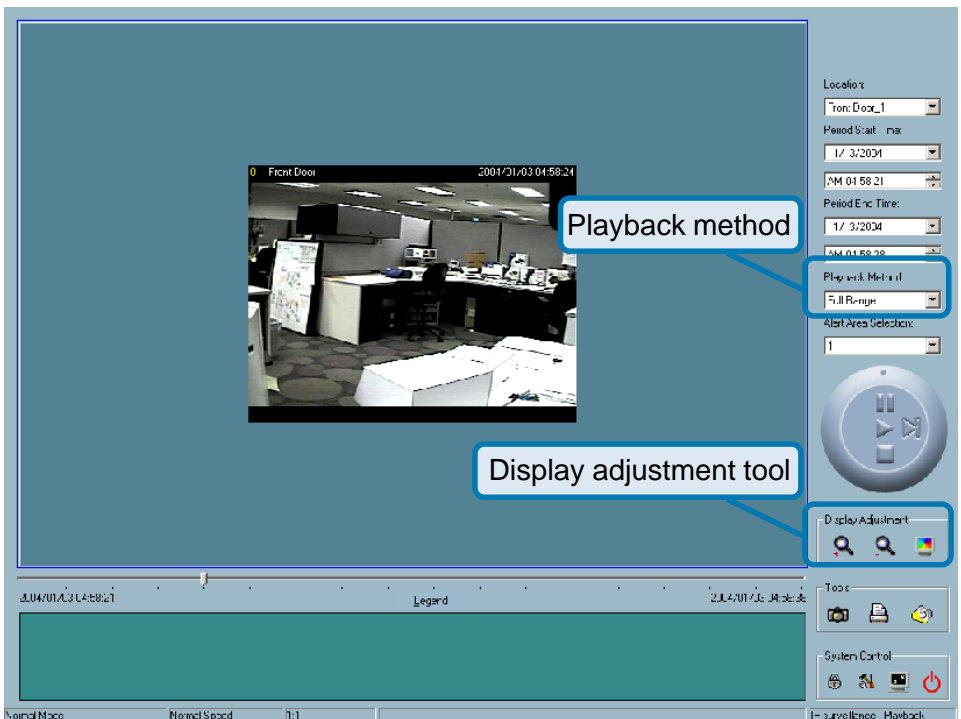
Playback method

Display adjustment tool

Using IP surveillance Software (continued)
Playback Program (continued)

Histogram Area

The histogram is an interactive control. Not only can you get the event's location in time domain and its quantity of the motion percentage, but you can also select a group of events or a period from the event histogram area and show it on the display area.

Control Area

The control area contains almost all the control selectors and toolboxes you need to browse the database. These control tools include location selector, period selector, playback method selector, jog dial, display adjustment tool, searching range adjustment tool, exporting tool, and system control tool.

Status Area

The status area is located at the bottom of the main window. It tells you the program status information including display mode, display size, display speed, exporting file format, and exporting file name.

Indicators

Area Selection Indicator

In the main playback window, the display area is surrounded by a blue rectangle. This rectangle is the area selection indicator. This indicator can be set to either display area or histogram area, as long as you move your mouse cursor to the area you intend to select. When you select the display area, the display adjustment tool will appear in the control area. If you select the histogram area, the display adjustment tool will disappear and the searching range adjustment tool will be shown in the same place of the control area.

Using IP surveillance Software (continued)
Playback Program (continued)

Pull Bar

The pull bar is a fast, flexible control for seeking data in the selected time period. It represents the total length of time in that period. You can pull the indicator on the pull bar to the specific time-point you would like to view. The displaying video will halt and then restart, playing the video sequence from the point you selected. If the video sequence has been paused, the display area will show the point you selected without playing. Note that the pull bar will only function under the normal display mode.

Settings

After the main window is shown on the screen, you must modify the settings to make it to work properly. Click on the "Settings" button, shown below, in the system control tool, and the setting dialog will appear on the screen.
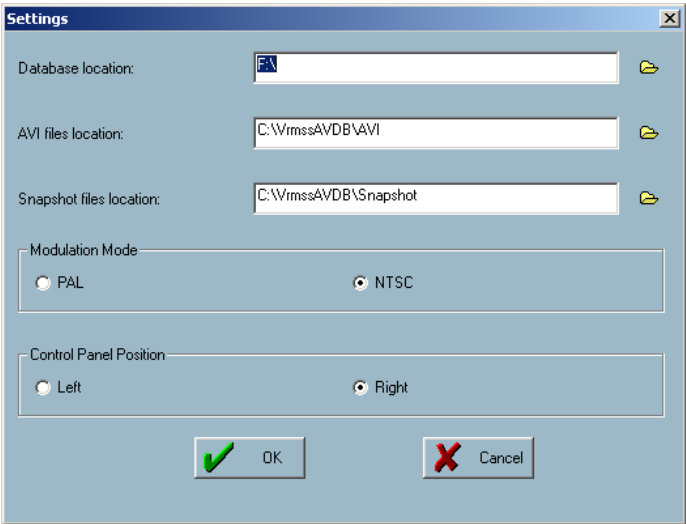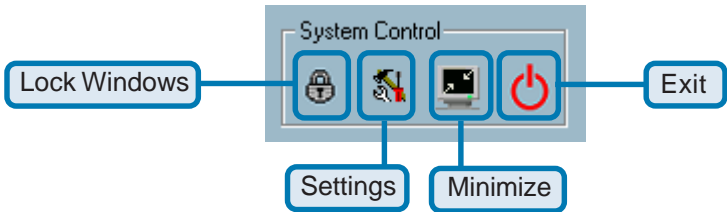
Using IP surveillance Software (continued)
Playback Program (continued)

The items in the settings windows are:

- ■ **Database location**
  The most important item in the settings dialog is the database location setting. You must set it to the directory that contains the surveillance database to make the program to work properly.

- ■ **AVI file location**
  This sets the directory where exported AVI files will be stored. Exported AVI files will be stored in the sub-directory (camera name) under the directory you set here.

- ■ **Snapshot file location**
  This sets the directory where bitmap files will be stored when you use the snapshot to export them. Exporting bitmap files will be stored in the sub-directory (camera name) under the directory you set here.

- ■ **Modulation Mode:**
  The modulation mode cannot be changed. This depends on how you recorded the video sequence in the monitor program. If you select the wrong mode, the video shown in the display area will become distorted. If you have chosen the wrong modulation mode, you may open the settings dialog again, change to the correct mode, and restart the playback program. The display will now be normal.

Using IP surveillance Software (continued)
Playback Program (continued)

Normal (Single Frame) Mode

While in the normal (single frame) display mode, you can change the video currently displayed by:

(1) Changing the database path for retrieving another one in the settings dialog of "System Control" tool.

(2) Changing the location selector to another location in control area.

(3) Changing the playback method selector to "Full Range."

(4) Changing the playback method selector to "Time Period."

Period Start Time Label

Period End Time Label

Histogram Area
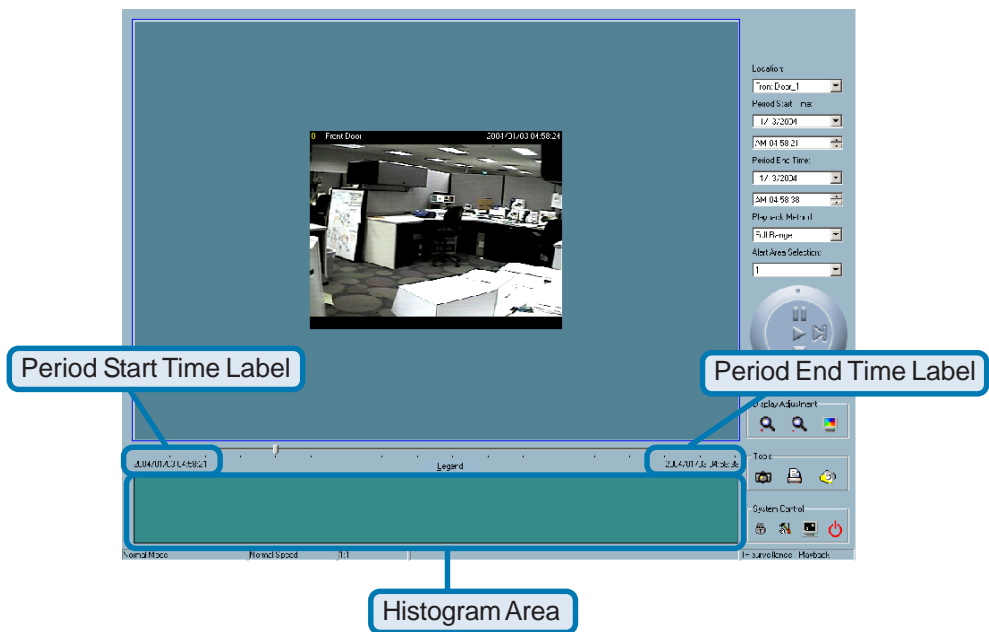
Under the normal display (single frame) mode, you can use all the tools provided with the playback program, except the page control. In this mode, the two labels under the pull bar show the starting and the ending time of the interval individually (as shown above).
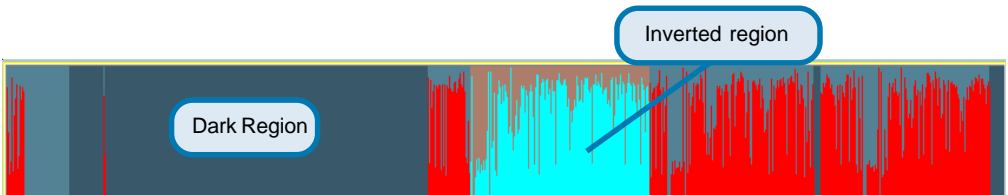
Using IP surveillance Software (continued)
Playback Program (continued)

Histogram Area

The histogram area in the normal display (single frame) mode only shows the events' occurred time and the percentage of motion detection with red bars. If you want to access the histogram area, you must change the area selection indicator to the histogram area. You can mark one time interval you want to see with a color-inverted region by dragging your mouse with the left button pressed (as shown above). When you release the left button, the color-inverted region will be enlarged to the whole histogram area. This color-inverted region will be the new period the program is going to display. If you change your mind and don't want to see that period, you can cancel it by just pressing the right button of your mouse with the left button still pressed. If you click on the left button without dragging it, the action will be the same as clicking on the pull bar in the same x-axis position. That means the playback system will shift to the pointed time and show video on the displaying frame. Besides, the dark regions in the histogram area mean there is no existing video data in that interval. If you click on those regions, nothing will happen except a warning message will pop up.

Using Tools

In this section, the method of how to use the tools in the control panel (shown in the main playback window) will be discussed.

Selector Tools

The figure below shows the selector tools. They are location selector, period selector for the selection of the beginning time and the ending time, playback method selector, and alert area selector.

Using IP surveillance Software (continued)
Playback Program (continued)

Location selector ──────→

Period selector ──────→

Playback method selector ──────→

Alert area selector ──────→

Location:
Front Door_1 ▼
Period Start Time:
1/ 3/2004 ▼
AM 04:58:21 ▲▼
Period End Time:
1/ 3/2004 ▼
AM 04:58:38 ▲▼
Playback Method:
Full Range ▼
Alert Area Selection:
1 ▼

Location Selector

The location selector is a control that lets you select the camera you want to see (refer to the figure above). The location name is the same as the camera name (text on video) unless you have specified otherwise.

Period Selector

Period selector provides you a precise way to choose the start time and the end time of a new period. The end time must be later than the start time. After you provide the correct start and end time, clicking on the "Play" button in the jog dial will play the new period in the display area with changing the period start and end time label. Besides, the pull bar and histogram area will change, too. If the selected period is not present in the database, the data in the period selector will change to the previous correct start and end time, and a warning message will be displayed.

Using IP surveillance Software (continued)
Playback Program (continued)

Playback Method Selector

- **Full Range**
  If you select this method, the database will be displayed from the beginning to the end of this location. Any change in the period selector will have no effect except when you change this selector to "Time Period."

- **Time Period**
  If you change the playback method to "Time Period", you can modify the start and end time in the period selector. When you click on the "Play" button in the jog dial, the period you selected will be displayed.

Since the program will record the previous start and end time in "Time Period" and "Events Preview" mode, whenever you want to change the period selector to see the other periods, you must change the playback method selector to the mode you want to use first. Otherwise, the period selector will revert back to the previous period set the last time you changed the playback method selector.

Alert Area Selector

In the preview mode, the playback program can show the information of total events of only one alert window each time. If you want to see the events of the other two alert area windows, you must change the alert area selector to the other window numbers. In the normal display mode, the alert window that the alert area selector indicates will be highlighted with red rectangle if you checked that window in the settings dialog. The alert area selector will be changed to alert window 0 by default settings when you change the location selector to another window.

Play Control

For the play control, the jog dial, shown in the figure below, is used to provide the easiest method of controlling the video sequence display. All buttons can control the displaying frame in the normal display mode.

Using IP surveillance Software (continued)
Playback Program (continued)
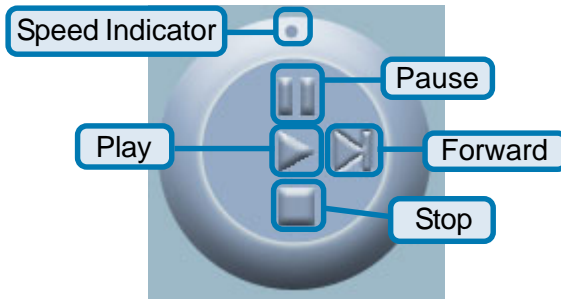
- **Play**

    The supported "Play" button is an intelligent play user-interface. The functionality of this button can vary to fit different circumstances. In the normal display mode, clicking on the "Play" button can restart the displaying video sequence.

- **Stop**

    When you want to stop the displaying video sequence, you can click on the "Stop" button. Note that once you press the "Stop" button, the start point will be reset to the start of the present period.

- **Pause/Resume**

    The "Pause" button provides you a way to pause the video sequence display. When the displaying video is paused, click on the "Pause" button again to resume the video display.

- **Forward**

    This button is only valid when the displaying video sequence is paused. It will display the next frame in that period when you click on the "Forward" button one time.

- **Fast Play and Slow Play**

    The camera supports a maximum of x16 fast forward play and minimum of /16 slow forward play. This function helps you browse the surveillance database with more flexibility. If you want to change the playing speed, you just need to move the speed indicator. To increase playing speed, move the indicator in the clockwise direction. And to decrease playing speed, move it in the counterclockwise direction. The current speed that is set will be shown in the second column of status area.

Using IP surveillance Software (continued)
Playback Program (continued)

Display Adjustment Tool

When you move the mouse cursor to the displaying area, the display adjustment toolbox will appear. Using the display adjustment toolbox, you can change the displaying video sequence to the size you want to see in the normal display mode when you move the area selection indicator to the display area. The figure below shows the display adjustment toolbox and its own three elements, i.e. "Zoom In", "Zoom Out", and "Full Screen."

Zoom In

When you click on the "Zoom In" button one time, the image size in the display area will be magnified 12.5 percent to the original size. Due to the limitation of the display area size, the maximum zoom in ratio supported is only 2.25:1 for NTSC modulation mode and 1.875:1 for PAL modulation mode. If you want to see the image in more detail, you can use the full screen function that is supported in the same toolbox.

Zoom Out

When you click on the "Zoom Out" button one time, the image size in the display area will be minimized 12.5 percent to the original size. To show the location and time information completely, the minimum zoom out ratio is limited in 0.5:1.

Using IP surveillance Software (continued)
Playback Program (continued)

Full Screen

When you click on the "Full Screen" button, the video sequence will be enlarged to the whole screen instantly. You can double click on any place or the "ESC" key to return back to the normal screen. When you switch to the full screen display, you can press the "Alt" and "Space" keys together to pop the jog dial to control the displaying video sequence. Press the same keys again to close the jog dial. You can also press the "Alt" and "Enter" keys together to switch between the normal display and full screen display at any time when the program is under the normal display mode.

Searching Range Adjustment Toolbox

When you move the mouse cursor to the alert histogram area, the display adjustment toolbox will change to a range adjustment toolbox. The range adjustment toolbox provides a faster way to change the range of the displayed time period. By using this toolbox, you can browse the database of one location from any 10-second interval of the entire range. The figure below shows the searching range adjustment toolbox composed of its own three elements, i.e. "Zoom In", "Zoom Out", and "Full Range."

Zoom In

Each time you click on the "Zoom In" button in the searching range adjustment toolbox, the displayed time period will be half in the center of the original time period until the period is equal to 10 seconds. You can see the new interval in more details. The scale of pull bar and alert histogram window change. The period start and end time change as well. The period selector will show the new start and end time. The display area will restart and display the new period from the newly defined start time.

Using IP surveillance Software (continued)
Playback Program (continued)

Zoom Out

Each time you click on the "Zoom Out" button in the searching range adjustment toolbox, the displayed time period will be double in the center of the original time period unless the start time or end time exceeds the whole database time-boundary. The scale of the pull bar and alert histogram window change. The period start and end time change as well. The period selector will show the new start and end time. And the display area will restart and display the new period from the newly defined start time.

Full Range

When you click on the "Full Range" button, you will get the same functionality as when you change the playback method selector to "Full Range."

System Control Toolbox

The system control toolbox provides some basic operations for the playback program. The figure below shows the three elements of the system control toolbox, i.e. "Lock Window", "Settings", "Minimize", and "Exit."

Lock Window

If you are away from your computer, for security reasons, we recommend that you to close the playback program or you can just click on the "Lock Window" button to lock the main window. Once you click this button, the main window will be hidden and the login dialog will appear. To return to the main window, you need to re-enter the admin's password again.

Using IP surveillance Software (continued)
Playback Program (continued)

Settings

The settings dialog will pop up when you click the "Settings" button. For more information about setting this program, please refer to the section titled "Settings."

Minimize

Click this button in order to minimize the playback program window.

Exit

The playback program will be closed immediately when you click on the "Exit" button.

Schedule Video Recording with Motion Detection

To schedule video recording with motion detection, you must first enable motion detection on the Internet Camera. Click the **Motion Detection** button under the **Advanced** tab from the **Configuration** screen to access settings that affect how the **DCS-2000** Internet Camera can serve as a security device by recording only when motion is detected. Note: These settings can be configured in your Web browser and while logged into the **IP surveillance** Program.
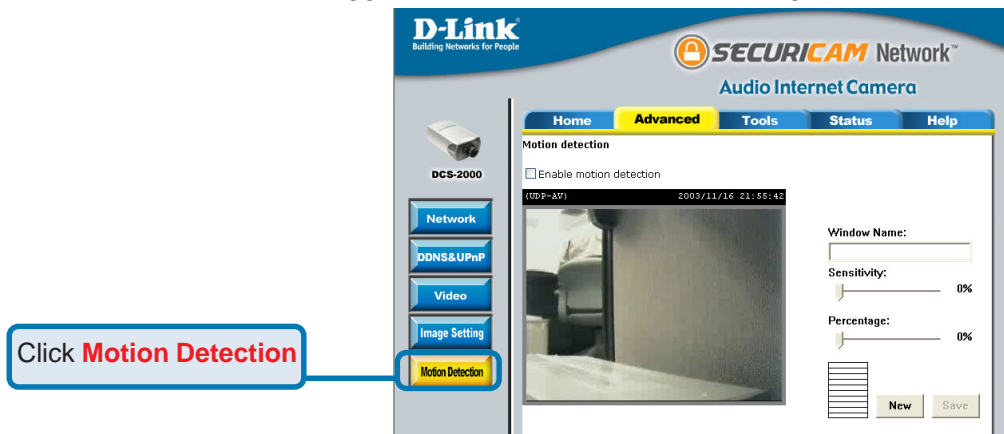

Click **Motion Detection**

In this window, follow the steps below to ensure that motion detection is correctly enabled:

① Check "Enable motion detection."
② Click on "New" to have a new window to monitor video.
③ Enter in a window name.
④ Adjust the "Sensitivity" and "Percentage" levels according to the local environment. The highest sensitivity and lowest percentage provides the most sensitive setting.
⑤ After adding the motion window, click on save to enable the activity display. You can add up to 3 motion windows to trigger recording.

For detailed information about each setting, please refer to **Configuration > Advanced > Motion Detection** in the section titled "Using the DCS-2000 With an Internet Browser" (page 47).

Next, run the **IP surveillance** program. Click on the **Configurations** button and select **Scheduler**.

Schedule Video Recording with Motion Detection (continued)
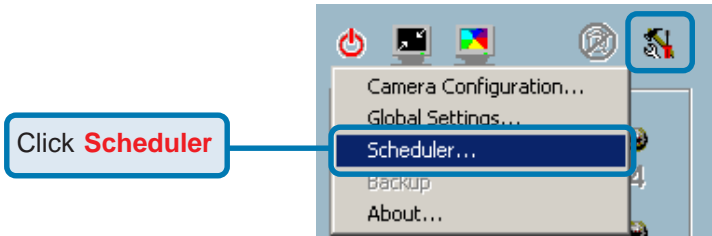
Click **Scheduler**

In the **Primary Schedule** you can choose either **Once** (for one time recording) or **Every Day** (for scheduled recording). For example, if you would like to record events every day during a certain time frame, click on the beginning time and drag your mouse to the ending time. Schedule recording can be configured by minutes, hours, days, weeks, or months.

The **Secondary Schedule** allows you to set a schedule outside the **Primary Schedule**. The **Secondary Schedule** provides two options to record without a specified date or time. You can select **Event Mode**, which will record whenever an event is triggered, or **Continuous Mode**, which will begin continuously after scheduling settings are saved. You do not need to set the **Secondary Schedule** with the **Primary Schedule**. To schedule video recording with motion detection, you can use either the **Primary Schedule** or **Secondary Schedule**, or both.
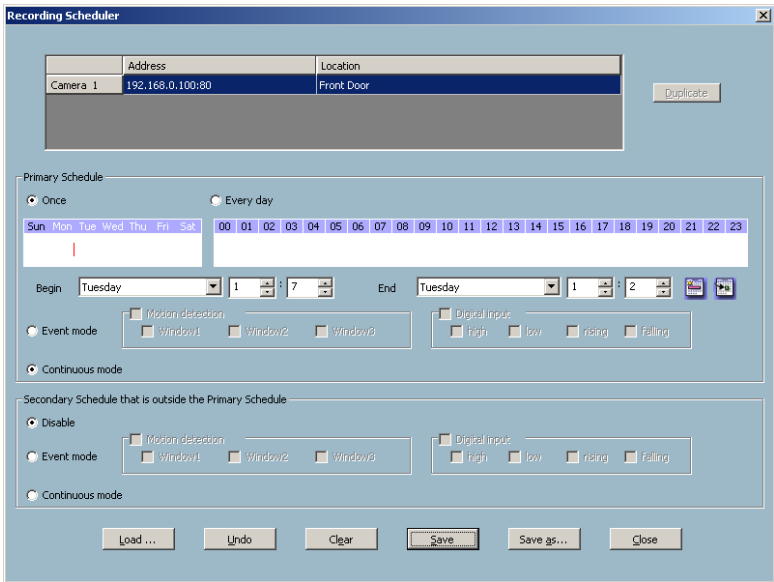
Schedule Video Recording with Motion Detection (continued)

In this window, follow the steps below to schedule video recording with motion detection in the **Primary Schedule**:

① Check if you want the recording schedule to occur **Once** or **Every day**.

② Set the date, time-line, and begin and end times for recording.

③ Check **Event Mode**.

④ Select the motion detection window that will be used to trigger motion detection. Note: You must first create motion detection windows in the Web configuration page of the camera. Remember the names of the windows and the order in which you created them, as they are not displayed inside the scheduler. Instead, they are listed in the order they were added. For example, the first window created is labeled "Window1."

⑤ Click on "Disable" under the **Secondary Schedule**.

Click the **Save** button when finished. You have now set a schedule to record video when motion detection is triggered. If you would like to save this configuration, click **Save As** to save this configuration to a folder in your hard drive. This configuration can be used on another system running IP surveillance or can be used as a backup if you need to re-install the IP surveillance software program.

Appendix

Frequently Asked Questions

Internet Camera Features

Q: What is an Internet Camera?
A: The Internet Camera is a stand-alone system connecting directly to an Ethernet or Fast Ethernet network. It differs from a 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 an Intranet or the Internet from a Web browser.

Q: **What is the maximum number of users that can be allowed to access DCS-2000 simultaneously?**
A: The maximum number of users that can log onto the Internet Camera at the same time is 10. Please keep in mind the overall performance of the transmission speed will slow down when many users are logged on.

Q: **What algorithm is used to compress the digital image?**
A: The Internet Camera utilizes H.263+ MPEG-4 Short Header Mode image compression technology to provide high quality images.

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 software application CD supplied with the Internet Camera.

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 cable allowing 10 Base-T and 100 Base-T networking.

Frequently Asked Questions (continued)

Q: Can the Internet Camera be setup as a PC-cam on a computer?
A: No, the Internet Camera is used only on an Ethernet or Fast Ethernet network. 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 and work if a firewall exists on the network?
A: If a firewall exists on the network, port 80 is open for ordinary data communication. The **DCS-2000** uses port 5001 for control and synchronization, port 5002 for streaming audio and port 5003 for streaming video. These ports (or the ports you specify from the **Advanced** Tab in the Configuration screen if you change the default ports) need to be opened on the firewall.

Q: **Why am I unable to 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 the **Appendix - How to Ping Your IP Address**.)

In Windows 95/98/2000, 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.

A2: 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 Cable. If the problem is not solved the Internet Camera might be faulty.

Frequently Asked Questions (continued)

Q: I connected the Internet Camera directly to a computer with a cross-over cable Ethernet cable and received the following Windows error upon running Installation Wizard:

A1: This Windows error will occur if the Internet Camera is connected to a computer that is not properly configured with a valid IP address. Turn off DHCP from the Network Settings in Windows and configure the computer with a valid IP address or connect the camera to a router with DHCP enabled.
A2: This error can also occur if the **Installation Wizard** icon is clicked on more than once from the setup wizard.

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 throughout the image?
A: It could be that the CMOS sensor 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 (page 130).

Frequently Asked Questions (continued)

Q: Noisy images occur. How can I solve the problem?
A1: The video images might be noisy if the **DCS-2000** is used in a very low light environment. To solve this issue you need more lighting.

Q: The images are of poor quality, how can I improve the image quality?
A1: Make sure that your computer's 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 appear to be of poor quality.

A2: The configuration on the Internet Camera image display is incorrect. Through the **Advanced > Image Setting** section of the Web management you need to adjust the image related parameters such as brightness, contrast, hue and power line frequency for fluorescent light . Please refer to the **Advanced > Image Setting** section on Page 46 for detailed information.

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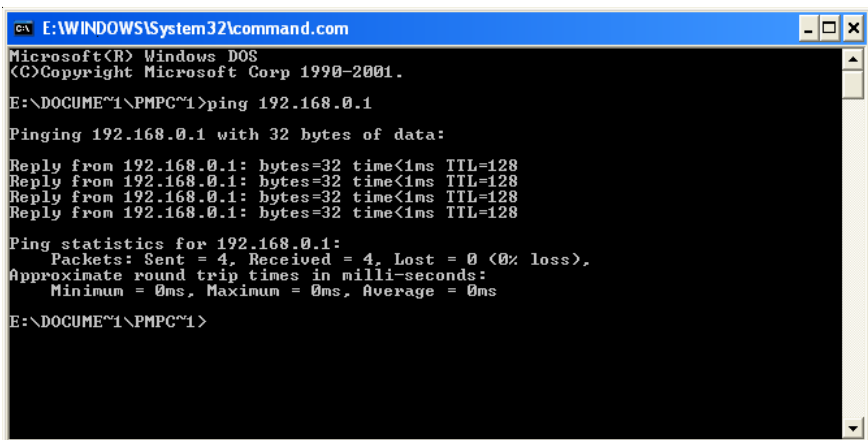
The PING (Packet Internet Groper) command can determine whether a specific IP address is accessible by sending a packet to the specific address and waiting for a reply. It can also provide a very useful tool to confirm if the IP address conflicts with Internet Camera over the network.

Follow the step-by-step procedure below to utilize the PING command but first you must disconnect Internet Camera from the network.

Start a DOS window.

Type ping x.x.x.x, where x.x.x.x is the IP address of the Internet Camera.

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

Reset and Restore

There is a button hidden in the pinhole beside the Ethernet socket. It is used to **reset** the system or **restore** the factory default settings. Sometimes resetting the **DCS-2000** will return the system back to a normal state. If the system still has problems after reset, restore the factory settings and install again:

RESET:
1. Lightly insert a paper clip (or a similar sized tool) into the reset hole on the back of the camera, press lightly and then release the button.
2. The LED on the front of the camera will begin blinking red and green fast.
3. When the LED stops the blinking fast and starts to blink once a second, the reset is completed.

RESTORE:
1. Insert the paperclip or other tool and press and continuously hold down on the button recessed inside the reset hole.
2. Wait for the LED on the front of the camera to blink red and green and hold the button through two cycles of blinking (about 5-7 seconds.)
3. Withdraw the tool after the second cycle of the LED blinking and a factory restore has been completed.

Reset button
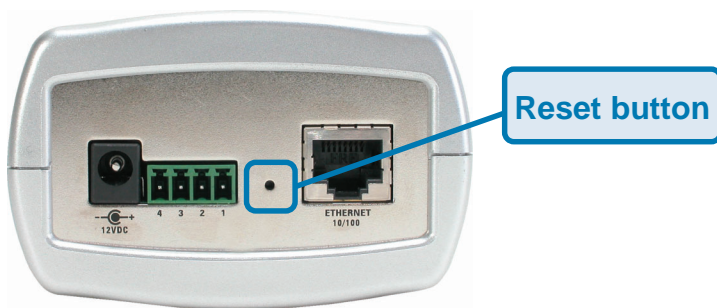
Restoring the factory defaults will result in the loss of any previous settings and will require running the Installation Wizard to return the **DCS-2000** to user preferred settings.
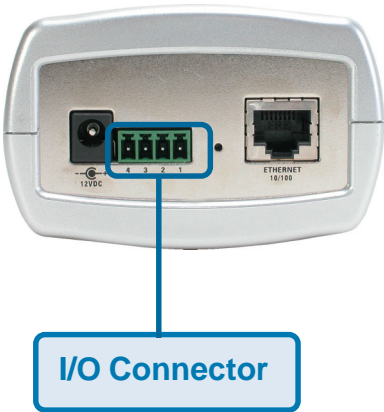
I/O Connector

I/O Connector Definition for the Internet Camera

The DCS-2000 provides a general I/O terminal block with one digital input and one relay switch for device control. Pin 1 and pin 2 can be connected to an external sensor and the state of voltage will be monitored from the initial state 'LOW'. The relay switch of pin 3 and pin 4 can be used to turn the external device on or off.

The I/O connector provides the physical interface for digital output (DO) and digital input (DI) that is used for connecting a diversity of external alarm devices to the Internet Camera such as IR-Sensors and alarm relays.

The digital input is used for connecting external alarm devices and once triggered images will be taken and e-mailed.
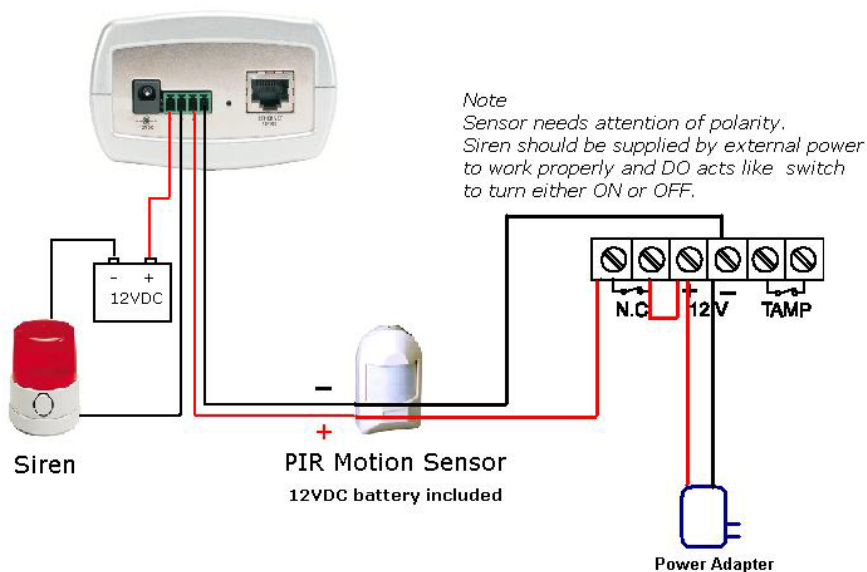

I/O Connector

I/O Terminal Block:


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

I/O Connector (continued)

DI/DO Connection Diagram

The above diagram shows a typical wiring configuration for a normally closed PIR motion sensor. Please refer to your specific motion sensor for the power supply connection to the device since this will be critical to the success of your installation. Note that the positive from the PIR is connected to the D- of the I/O port of the camera and the negative from the PIR is connected to the D+ of the camera I/O port.

Configuring Your Camera for External Trigger Based Recording

To configure your camera to record when triggered by an external device, you must first set your SMTP or FTP settings in order to send snapshots to your email account or FTP server.

I/O Connector (continued)

Configuring Your Camera for External Trigger Based Recording (continued)

Click the **Network** button under the **Advanced** tab to set the SMTP or FTP server settings for the **DCS-2000**.

In this window, enter the settings for the SMTP or FTP server to which recorded snapshots will be sent. For detailed information about each setting, please refer to **Configuration > Advanced > Network** (page 36) in the section titled "Using the DCS-2000 With an Internet Browser." Click the apply button when finished.

I/O Connector (continued)

Configuring Your Camera for External Trigger Based Recording (continued)

Next, click the **Applications** button under the **Tools** tab to set the application settings for the **DCS-2000**.

Click **Applications**

In this window, follow the steps below to set the application settings for snapshots to be sent to your e-mail account or FTP server when triggered by a motion sensor or other external device:

① Select the weekdays you would like to record and enter the "Snapshots begin" time and "Snapshots end" time for the weekly schedule, or select "All the time except for the above schedule" if you want to enable full time snapshot recording.

② Check "Event operation."

③ Set the delay "before detecting next event" to avoid continuous false alarms following the original event.

④ Set the delay to "take snapshots after event" to capture the direction of the moving object.

⑤ Check the trigger condition for input and motion detection (in this case "Input is Low").

⑥ Check "Trigger output alarm while input condition matched" and "Upload snapshots while motion detected."

⑦ Select to either send snapshots by email or by FTP.

Click the apply button when finished. You are now able to send snapshots, based on triggered recording, to your email account or FTP server.

Adjusting the Cameras Focus

The **DCS-2000** Internet Camera features an interchangeable C/CS-type lens that can be used for different applications as necessary. It supports rotational focus control so the lens can be adjusted to focus under normal and stable conditions to maximize the image quality of the Internet Camera.

**Fixed Lens Assembly
Do NOT adjust**

**Camera Lens
Adjust focus by turning
clockwise or counterclockwise**
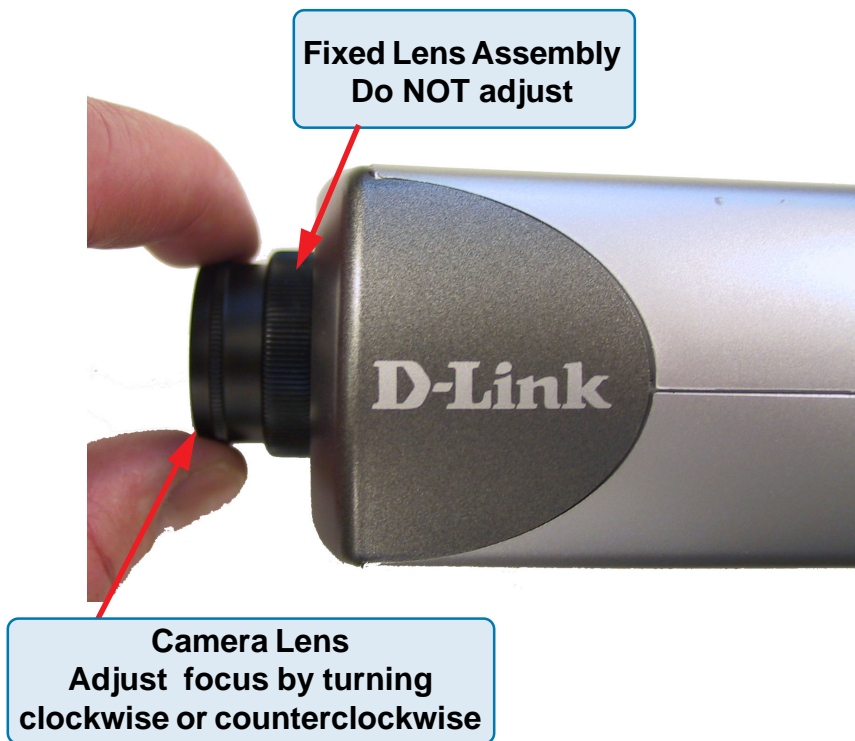
To adjust the focus of the lens you will need to turn the lens slowly either clockwise or counterclockwise until the desired image appears. DO NOT over-turn the lens in either direction as it will be out of focus and may damage the camera. Unless you want to substitute the lens DO NOT unscrew more than 1.0mm apart from the Fixed Lens Assembly.

To help you get the best image quality, keep in mind that while adjusting the **DCS-2000**'s focus you can preview the image quality from your Web browser.
Note:
   You can further adjust the Internet Camera's image quality through
   the Web Configuration under:
    Configuration > Advanced > Video (page 43)
   Please refer to **Using the DCS-2000** section for further details.

Replacing the Lens

Since the **DCS-2000** is designed with a CS- mount, the lens equipped with the Internet Camera can be replaced with any standard C or CS lens commonly used within the surveillance industry.

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

1. Unscrew the Internet Camera lens
2. When using a C-lens, attach the new lens to a CS-C adapter
3. Screw the new lens onto the Internet Camera. If appropriate, adjust the iris according to the prevailing light conditions.
4. Refer to **Adjusting the Internet Camera Focus** on the previous page.
5. Refresh the Web browser and monitor the results from the Internet Camera.

Warning!

Direct exposure to sunlight may cause permanent damage to the CMOS sensor. When operation is required in glaring light environment, it is recommended that an iris lens be used.

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

Remote management
Configuration and system log can be accessed via Web browser using Internet Explorer 6.X and above

Networking
Protocol
TCP/IP, HTTP, SMTP, NTP, DNS, DHCP, DDNS, FTP, and UPnP
Ethernet
10BaseT or 100BaseT Fast Ethernet

Video
Algorithm supported
H.263+ (MPEG-4 Short header mode)

Audio
24Kbps

Video resolution
Up to 30 fps at 176x120/176x144
Up to 30 fps at 352x240/352x288
Up to 10fps at 704x480/704x576

General I/O
1 opto-isolated sensor input (max. 12VDC 50mA)
1 relay output (max. 24VDC 1A, 125VAC 0.5A)

Security
Administrator and user group protected
Password authentication

Technical Specifications (continued)

LED indicator
Bi-color status indicator

Camera specification
1/3 inch color CMOS sensor
2.5Lux/F1.4
AGC/AWB
Electronic shutter: 1/60 ~ 1/15000 second
Standard CS mount type lens, 6mm, F1.8

Power
12VDC 1.2A, external power supply

Weight
About 240g (8.5oz.)

Dimension
135mm(L) x 89mm(W) x 57mm(H) (5.3 in. x 3.5 in. x 2.2 in.)

Viewing system requirement
　　　　Protocol
　　　　Standard Internet TCP/IP suite
　　　　Operating system
　　　　Microsoft® Windows XP, 2000, ME or 98SE
　　　　Browser
　　　　Internet Explorer 6.x or above

Environmental
　　　Operating
　　　40°F to 113°F
　　　Storage
　　　-4°F to 158°F
　　　Humidity
　　　Max 95% RH

Safety
　　　FCC class B
　　　CE

Contacting Technical Support

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 7:30am to 12:00am EST

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

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
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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

Warranty
USA only

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:

- 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.

Warranty (continued)
USA only

- 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.

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.

Warranty (continued)
USA only

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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.

10/04/04

Registration

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