D-Link®

Version 1.3 | 06/10/2013

User Manual

HD Wireless N Pan/Tilt Network Camera

DCS-5020L

Manual Overview

D-Link reserves the right to revise this publication and to make changes in the content hereof without obligation to notify any person or organization of such revisions or changes. Information in this document may become obsolete as our services and websites develop and change. Please refer to the www.mydlink.com website for the most current information.

Manual Revisions

Revision	Date	Description
1.0	December 23, 2011	DCS-5222L Revision A1 with firmware version 1.00
1.1	June 05, 2011	DCS-5222L Revision A1 with firmware version 1.10
1.2	Aug 22, 2012	DCS-5222L Revision A1 with firmware version 1.20
1.3	June 10, 2013	UI Changes in firmware, added IP Filtering and HTTPS feature

Trademarks

D-Link and the D-Link logo are trademarks or registered trademarks of D-Link Corporation or its subsidiaries in the United States or other countries. All other company or product names mentioned herein are trademarks or registered trademarks of their respective companies.

Copyright © 2013 by D-Link Corporation.

All rights reserved. This publication may not be reproduced, in whole or in part, without prior expressed written permission from D-Link Corporation.

Table of Contents

Product Overview 1
Package Contents 1
System Requirements 2
Introduction 3
Features 4
Hardware Overview 5
Front 5
Back 6
Remote Control Unit 7
Adjusting Camera Focus 8

Installation 9
Zero Configuration Setup 10
Camera Setup Wizard 13
Wireless Installation Considerations 16
WPS - Push Button Setup 17

mydlink 18

Configuration 19
Configuration Utility 19
Live Video 20
Setup 22
Setup Wizard 22
Internet Connection Setup Wizard 23
Motion Detection Setup Wizard 27
Network 33
Wireless 35
Dynamic DNS 36
Image Setup 37
Audio and Video 38
Time and Date 40
Video Clip 41
Snapshot 42
IP Filter 43
HTTPS Setup 44
SD Recording 45
Digital Output 46
Motion Detection 47
Sound Detection 48
Camera Control 49
SD Management 50
Maintenance 51
Admin 51
System 53
Firmware Upgrade 54
Status 55
Device Info 55
Log 56
Help 57

Configuring the DCS-5222L with a Router 58

Troubleshooting 64

Networking Basics 68

Check your IP address 68

Statically Assign an IP Address 69

Technical Specifications - I/O Terminal Application 71

Technical Specifications 72

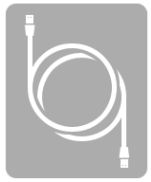
Product Overview
Package Contents

DCS-5222L Network Camera

Antenna (optional[1])

Remote Control

Camera Base and Mounting Kit


CAT5 Ethernet Cable

Power Supply[2]

CD-ROM

[1] Your camera contains an internal antenna and it is not necessary to attach the external antenna unless you would like to boost your signal or install an outdoor enclosure. You must select which antenna you want to use in the Setup > Wireless section from the camera's web configuration utility (internal is set by default).

[2] Using a power supply with a different voltage rating than the one included with the DCS-5222L will cause damage and void the warranty for this product. If any of the above items are missing from your package, please contact your retailer.

System Requirements

Network Requirements	• 10/100 Ethernet network or an 802.11n/g/b wireless network
CD Setup Wizard Requirements	• An Internet connection • A router connected to your broadband modem **Computer with the following:** • A PC with a wired connection to your router • Windows® 8 (32/64bit), Windows® 7 (32/64bit), XP (32/64bit),Vista® (32/64bit), Mac OS®X 10.5 or above
Web-based Configuration Utility Requirements	**Browser Requirements:** • Internet Explorer 7 or higher • Firefox 12 or higher • Safari 4 or higher • Chrome 20 or higher **Note:** Make sure you have the latest version of Java installed. Visit www.java.com to download the latest version.
mydlink Website Requirements	• Broadband Internet connection • Computer with: • Internet Explorer 7 or higher (ActiveX) • Firefox 12 or higher • Safari 4 or higher • Chrome 20 or higher

Introduction

Congratulations on your purchase of the DCS-5222L HD Wireless N Pan/Tilt Network Camera. The DCS-5222L is a versatile solution for your small office or home. The DCS-5222L is a complete system with a built-in CPU and web server that transmits high quality video images for security and surveillance. It can be accessed remotely, and controlled from any PC/Notebook over your local network or across the Internet via a web browser. The DCS-5222L features 802.11n wireless connectivity, allowing the camera to be placed anywhere within range of your wireless network. The DCS-5222L comes with remote monitoring and motion detection features for a complete and cost-effective home security solution.

Features

Simple to Use
The DCS-5222L is a stand-alone system with a built-in CPU, requiring no special hardware or software such as PC frame grabber cards. The DCS-5222L supports both ActiveX mode for Internet Explorer and Java mode for other browsers such as Firefox, Chrome, and Safari.

Supports a Variety of Platforms
The DCS-5222L supports TCP/IP networking, HTTP, and other Internet related protocols. It can also be integrated easily into other Internet/Intranet applications because of its standards-based features.

Web Configuration
Using a standard Web browser, administrators can configure and manage the Network Camera directly from its own Web page via an Intranet or the Internet.

Broad Range of Applications
With today's high-speed Internet services, the DCS-5222L Network Camera can provide an ideal solution for live video over the Internet and for remote monitoring. The DCS-5222L allows remote access from a Web browser for live image viewing and management of the network cameras anytime, from anywhere in the world. The network cameras have a wide range of applications, including industrial and public monitoring of homes, offices, banks, hospitals, child-care centers, and amusement parks.

802.11n Wireless or Ethernet/Fast Ethernet Support
The DCS-5222L offers wireless 802.11n and Ethernet/Fast Ethernet connectivity, making the DCS-5222L easy to integrate into your existing network environment. The DCS-5222L works with a 10Mbps Ethernet based network or 100Mbps Fast Ethernet based network for traditional wired environments, and works with 802.11n routers or access points for added flexibility. The Site Survey feature also allows you to view and connect to any available wireless networks.

Remote Monitoring Utility
The D-ViewCam application adds enhanced features and functionality for the Network Camera and allows administrators to configure and access the Network Camera from a remote site via Intranet or Internet. Other features include image monitoring, recording images to a hard drive, viewing up to 32 cameras on one screen, and taking snapshots. Note that D-ViewCam works on Windows® computers only.

IR LED for day and night functionality
The built-in infrared LEDs enables night time viewing of up to 16 feet (5 meters).

Hardware Overview

Front

Hardware Overview
Back

Audio Out
Connect headphones/speakers to provide audio out.

I/O Connector
The 4-pin I/O connector provides an interface for photo-coupled switch output and photo-coupled input. An example of what can be done with a digital input and digital output is the connecting of a motion sensor to the port, signalling the camera to take a snapshot and trigger an alarm connected to the port.

WPS Button

Micro SD Slot
Used for storing recorded images and video

Reset Button
Press and hold to reset to the default factory settings.

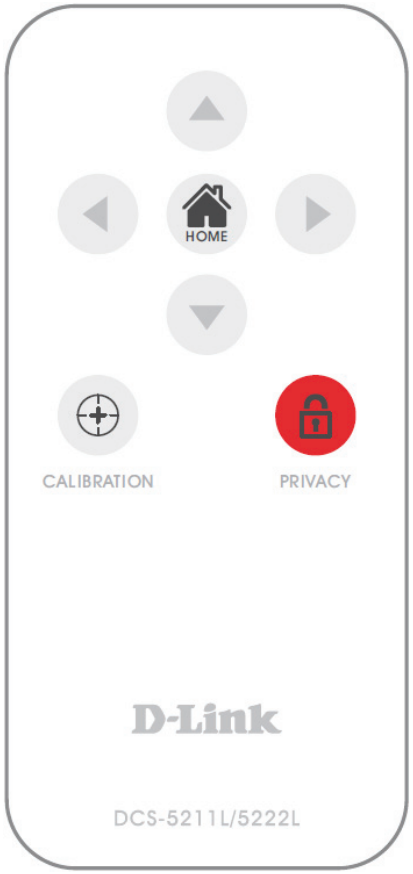
Ethernet Port
Connects to a PC or network through an Ethernet connection.

Power Receptor
Connects to the power adapter.

Hardware Overview
Remote Control Unit

Features

- Remote Controller
- Code system: NEC
- IR transmitter frequency: 38KHz



Pan/ tilt direction key
Pressing the pan/tilt direction keys (up, down, left, right) will move the camera

Home key
Pressing the Home key will move the camera to the home position.

Calibration key
Pressing the Calibration key will calibrate both the pan and tilt positions by moving from end to end and will go to the corrected home position.

Privacy key
Pressing the privacy key will tilt to the privacy position (privacy mode).
Pressing it again privacy key will tilt the camera back to the previous position.

Adjusting Camera Focus

Use the included focus adjustment tool to adjust the camera focus by rotating the circular frame around the lens clockwise or anti-clockwise.

Note: For fine tuning the focus, it is recommended to use the included focus adjustment tool rather than attempting to adjust the lens with your fingers or other objects.

Installation

There are three ways to set up your camera:

- **Zero Configuration Setup**: If you have a mydlink-enabled router, this is the easiest way to set up your camera. Refer to page 10.
- **Camera Setup Wizard**: If you do not have a mydlink-enabled router, use the Camera Installation Wizard to guide you through setup and initial configuration of your camera. Refer to page 13.
- **Manual Hardware Installation**: This section shows you how to manually set up your camera, though in order to use the mydlink features of your camera, you will still need to run the Camera Installation Wizard. Refer to page 15.

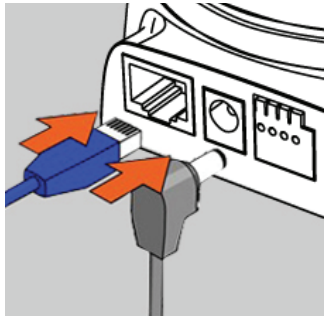
Zero Configuration Setup

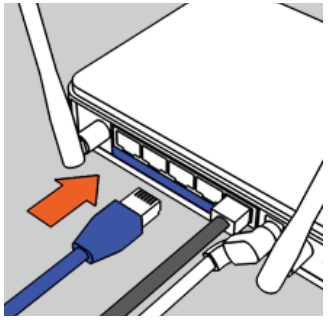
If you have a mydlink-enabled Cloud Router, you can take advantage of Zero Configuration. Zero Configuration automatically configures your camera's settings for you, and adds it to your mydlink account automatically. This type of setup allows you to set up your camera by simply plugging it in and connecting it to your router.

Connect your camera to your mydlink-enabled Cloud Router and Zero Configuration will automatically configure your DCS-5222L and automatically add the camera to your mydlink account. After the short time it takes to do this you can remotely access your camera from the www.mydlink.com website to manage and monitor your DCS-5222L

Connect the Ethernet Cable

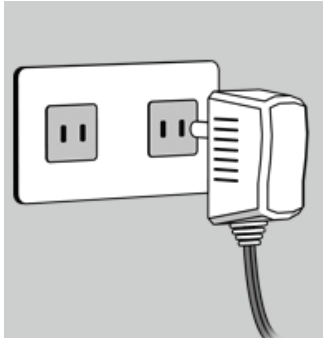
Use the included Ethernet cable and plug it into the camera. Plug the other end into an available port on your router. If you wish to use your camera wirelessly, you will be able to remove the cable after Zero Configuration Setup is complete.





Attach the External Power Adapter

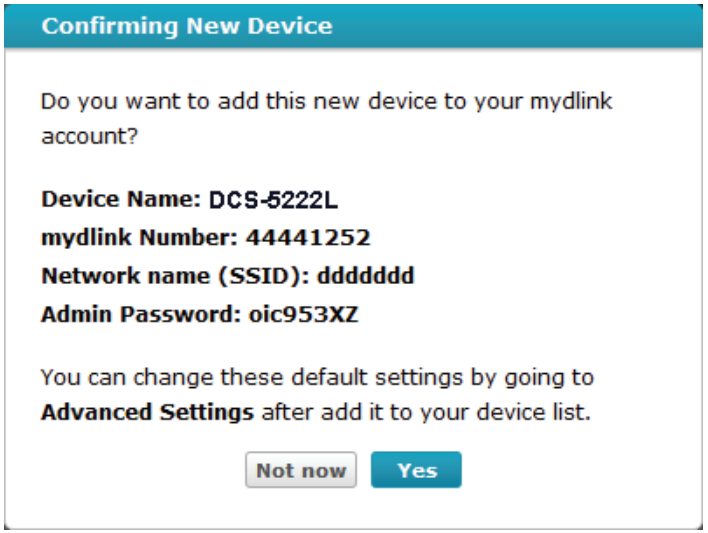
Connect the power adapter to the power connector on your camera, then plug the power adapter into a wall outlet.



Check Your mydlink Account

Open a web browser and login to your mydlink account. The mydlink page will check for new devices and display a **New device Found!** pop-up notification in the bottom-left corner. Click the notification to continue.

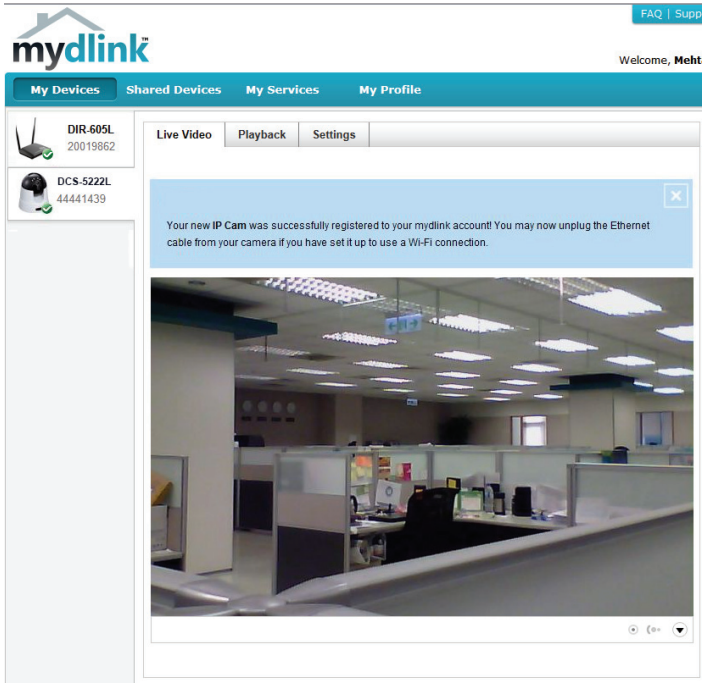
A summary and confirmation notification will appear with the automatically configured details. Make a note of the details and click **Yes** to add the camera to your account.



Zero Configuration will navigate to the mydlink Live View tab for your camera where you will see a screen similar to the following.

If you wish to connect your camera to your router wirelessly, you can simply disconnect the Ethernet cable and move the camera to its intended location; your router's wireless settings have been automatically transferred to the camera, and no further configuration is required.

Your camera is now set up, and you can skip to "mydlink" on page 18 to learn more about the mydlink features of this camera, or to "Configuration" on page 19 for advanced configuration of your camera.



Camera Setup Wizard

If you do not have a mydlink-enabled Cloud Router, you can use the Camera Setup Wizard to guide you through the process of adding your camera to the mydlink service.

Windows Users

Insert the Installation CD-ROM into your computer's optical drive to start the autorun program. If the autorun program does not open, go to My Computer, browse to your CD drive, and double-click on the autorun.exe file. Once the wizard has started simply click **Set up your Cloud Camera** to go through the Setup Wizard, which will guide you step-by-step through the installation process from connecting your hardware to configuring your camera and registering it with your mydlink account.

Mac Users

Insert the Installation CD-ROM into your computer's optical drive. On the desktop, open your CD drive and double-click on the **SetupWizard** file.

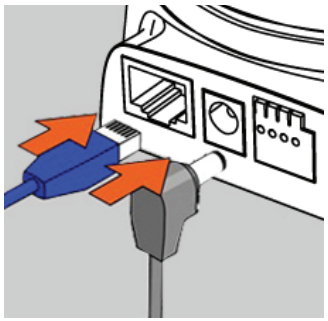
After about 20-30 seconds, the Setup Wizard will open, which will guide you step-by-step through the installation process from connecting your hardware to configuring your camera and registering it with your mydlink account.

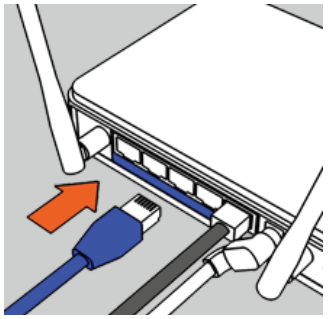
Manual Hardware Installation

If you wish to set up your camera without using the Camera Setup Wizard, please follow these steps.
Note: In order to use the mydlink features of this product, you will need to go through the Camera Setup Wizard or Zero Configuration Setup.

Connect the Ethernet Cable and Power Cable

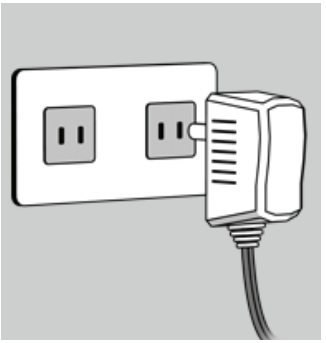
Use the included Ethernet cable and plug it into the camera. Plug the other end into an available LAN port on your router. Plug the supplied power adapter into the back of the camera





Plug in the External Power Adapter

Plug the power adapter into a wall outlet.



Configure Your Camera

Refer to "Configuration" on page 19 for information on how to configure your camera.

Optional: Use WPS to Connect Wirelessly

You can use WPS to connect your camera to your network wirelessly. For more information, refer to "WPS - Push Button Setup" on page 17. If your router does not support WPS, you will still be able to set up your camera's wireless settings in the camera's web interface.

Wireless Installation Considerations

The D-Link Wireless Network Camera lets you access your network using a wireless connection from anywhere within the operating range of your wireless network. However, the number, thickness and location of walls, ceilings, or other objects that the wireless signals must pass through, may limit the range. Typical ranges vary depending on the types of materials and background RF (radio frequency) noise in your home or business. The key to maximizing wireless range is to follow these basic guidelines:

1. Minimize the number of walls and ceilings between your adapter and other network devices (such as your Network Camera) - each wall or ceiling can reduce your adapter's range from 3-90 feet (1-30 meters).

2. Be aware of the direct line between network devices. A wall that is 1.5 feet thick (.5 meters), at a 45-degree angle appears to be almost 3 feet (1 meter) thick. At a 2-degree angle, it looks over 42 feet (14 meters) thick. Position your devices so that the signal will travel straight through a wall or ceiling (instead of at an angle) for better reception.

3. Building materials make a difference. A solid metal door or aluminum studs may weaken the wireless signal. Try to position your access points, wireless routers, and other networking devices where the signal passes through drywall or open doorways. Materials and objects such as glass, steel, metal, walls with insulation, water (fish tanks), mirrors, file cabinets, brick, and concrete will degrade your wireless signal.

4. Keep your product at least 3-6 feet or 1-2 meters away from electrical devices or appliances that generate RF noise.

5. If you are using 2.4GHz cordless phones or other radio frequency sources (such as microwave ovens), your wireless connection may degrade dramatically or drop completely. Make sure your 2.4GHz phone base is as far away from your wireless devices as possible. The base transmits a signal even if the phone in not in use.

WPS - Push Button Setup

Alternatively, you may create a connection to the camera using the Wi-Fi Protected Setup (WPS) feature.

To create a WPS connection:

Step 1
Press and hold the WPS button for three seconds. The blue WPS status LED above the button will blink.

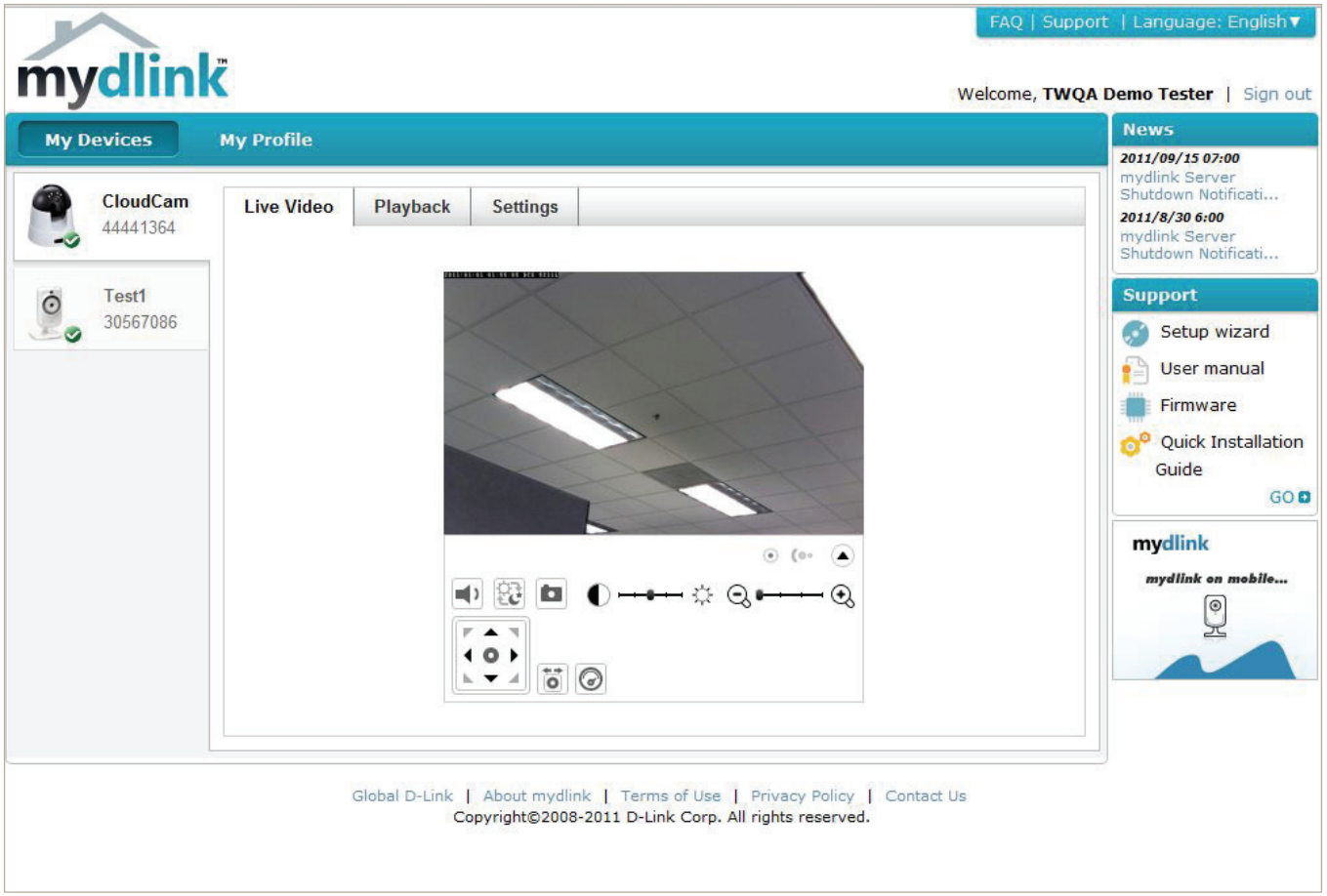
Step 2
Press the WPS button on your router or access point within 120 seconds. The WPS button is usually on the front or side of your router. On some routers and access points, you may need to log in to the web interface and click on an on-screen button to activate the WPS feature. If you are not sure where the WPS button is on your router/AP, please refer to your router or AP's User Manual.

The DCS-5222L will automatically create a wireless connection to your router or access point. While connecting, the green LED will flash and your camera will reboot.

Note: *Your camera contains an internal antenna and it is not necessary to attach the external antenna unless you would like to boost your signal or install an outdoor enclosure. You must select which antenna you want to use in the* ***Setup*** > ***Wireless*** *section from the camera's web configuration utility (internal is set by default).*

mydlink

After registering your DCS-5222L camera with a **mydlink** account in the Camera Setup Wizard. You will be able to remotely access your camera from the www.mydlink.com website. After signing in to your **mydlink** account, you will see a screen similar to the following:



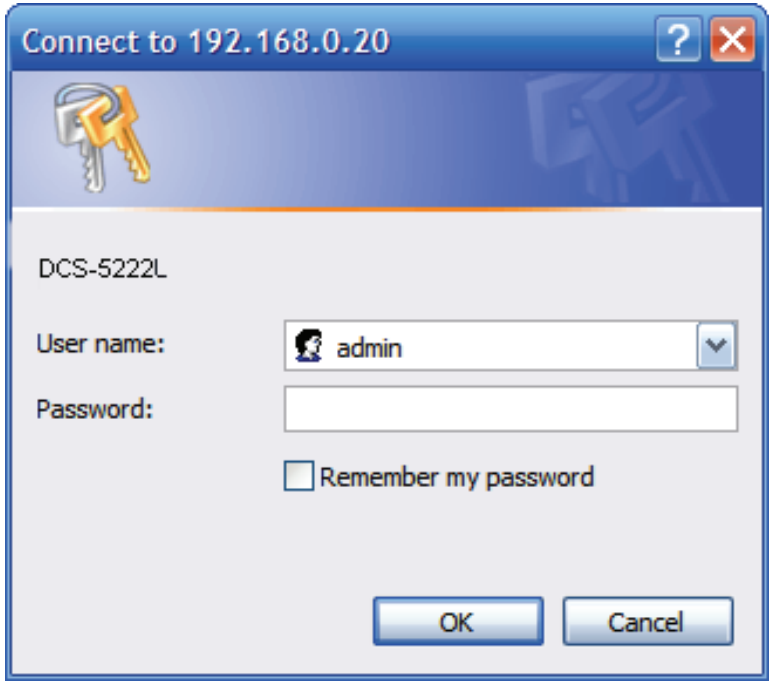
For more details on using your camera with mydlink, go to the **Support** section of the mydlink website and check the **User Manual** section for your product to find the latest instruction guide for your camera's mydlink features.

Configuration

Configuration Utility

After completing the Camera Installation Wizard, you are ready to use your camera. The camera's built-in Web configuration interface is designed to allow you to easily access and configure your DCS-5222L. At the end of the wizard, enter the IP address of your camera into a web browser, such as Internet Explorer®. To log in, use the User name **admin** and the password you created in the Installation Wizard. If you did not create a password, the default password is blank. After entering your password, click **OK**.

Note: If you are directly connecting your PC to the camera, or if you are using the camera on a closed network, the default IP is 192.168.0.20.



Live Video

Please make sure that you have the latest version of Java installed on your computer to ensure proper operation when viewing the video in Java mode. Java can be downloaded free from Sun's web site (http://www.java.com).

A live feed from the camera is displayed upon logging into the camera's web interface.

P/T/Z Action Pad: Use the **Pan / Tilt / Zoom** Action Pad to control the camera's movement and zoom. The large arrow icons will move the camera up, down, left or right while the small arrow icons will move the camera position diagonally in the direction they are pointed. The **Home** button will move the camera to the "Home" preset position.

Pan: Press this button and the camera will pan from left-most position to the right-most position and then return to its original position.

Patrol: Click this button to quickly move the camera to the desired patrol setup according to preset positions. Please refer to "camera control" setup to create preset positions.

Stop: This will stop pan and patrol.

Go To: Select from the preset drop-down list to quickly move the camera to the desired preset position. Please refer to "Camera Control" setup to create preset positions.

Pan/Tilt Step: This setting can change the camera's Pan/Tilt speed.

Language Selection: Select the default language for the user interface.

The next page contains several icons which can be used to control the camera's main functions.

Icon	Button Name	Function
	Profile buttons	Use these buttons to switch between video profiles. Refer to page 27 for more information on setting up profiles.
	Full Screen button	Displays the video at full screen.
	Snapshot button	Takes a snapshot of the image currently displayed on the screen and will save it to a file on the hard drive in a folder specified using the Storage folder button.
	Video recording button	Triggers the camera's recording function. This will record the video displayed on the screen and will save it to a file on the hard drive in a folder specified using the Storage folder button.
	Storage folder button	Sets the location to save snapshots and video recordings.
	Listen button	Sends the audio received from the camera's microphone through to the PC's speakers. Click again to turn off.
	Talk button	Sends audio from a microphone connected to your PC through to the speakers connected to the camera.
	Zoom buttons	Zooms in or out.

Setup

Setup Wizard

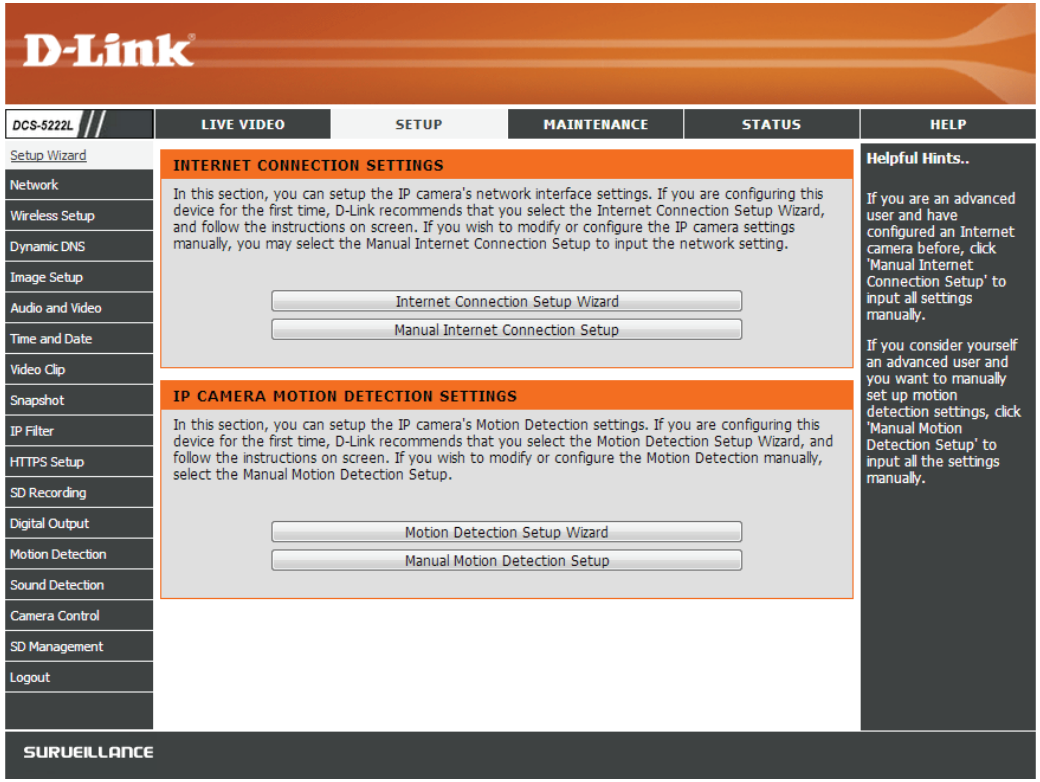
This section allows you to begin setup wizards which will guide you through the process of getting your camera's various functions configured. If you comfortable with adjusting the settings manually, you may skip the wizards and adjust the necessary as needed.

Internet Connection Setup Wizard: You may choose to configure your network by using the Internet Connection Setup Wizard that includes step-by-step instructions. Please refer to page "Internet Connection Setup Wizard" on page 23 for more details.

Manual Internet Connection Setup: If you would rather manually setup the camera internet connection, you can refer to page "Network" on page 33 which provides more details on the information required.

Motion Detection Setup Wizard: You may choose to configure motion detection by using the Motion Detection Setup Wizard that includes step-by-step instructions. Please refer to page "Motion Detection Setup Wizard" on page 27 for more details.

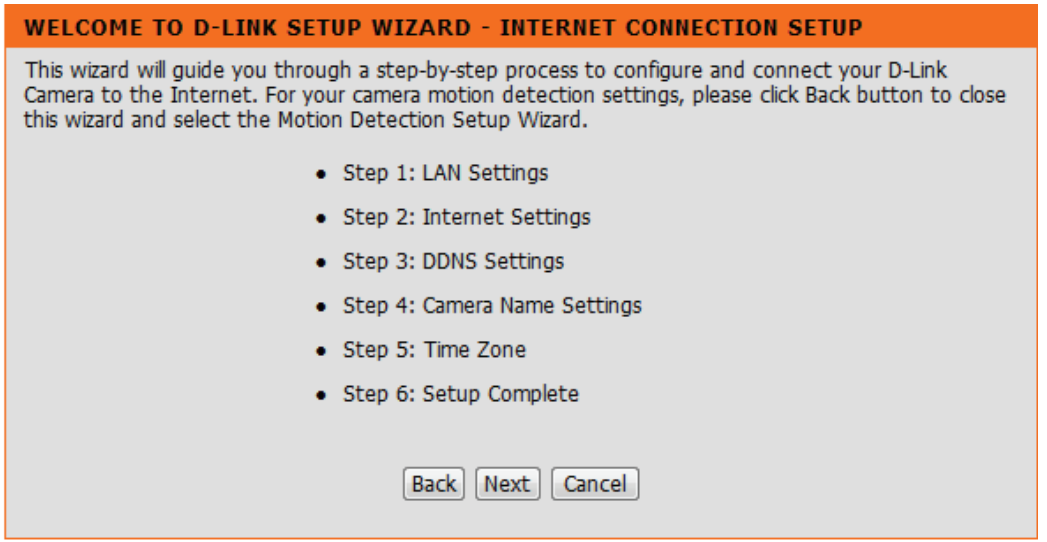
Manual Motion Detection Setup: If you would rather manually setup the camera's motion detection features, you can refer to page "Motion Detection" on page 47 which provides more details on the information required.



Internet Connection Setup Wizard

This wizard will guide you through a step-by-step process to configure your new D-Link Camera and connect the camera to the Internet. **Note that this wizard will not register your camera with mydlink.com**.

Click **Next** to continue.



Select **Automatic IP Address** if you want your DHCP server (usually enabled on your router) to assign the camera its IP settings. If you want to manually assign the IP settings, select **Static IP Address** and enter the following details:

IP Address: Enter an IP address for your camera.

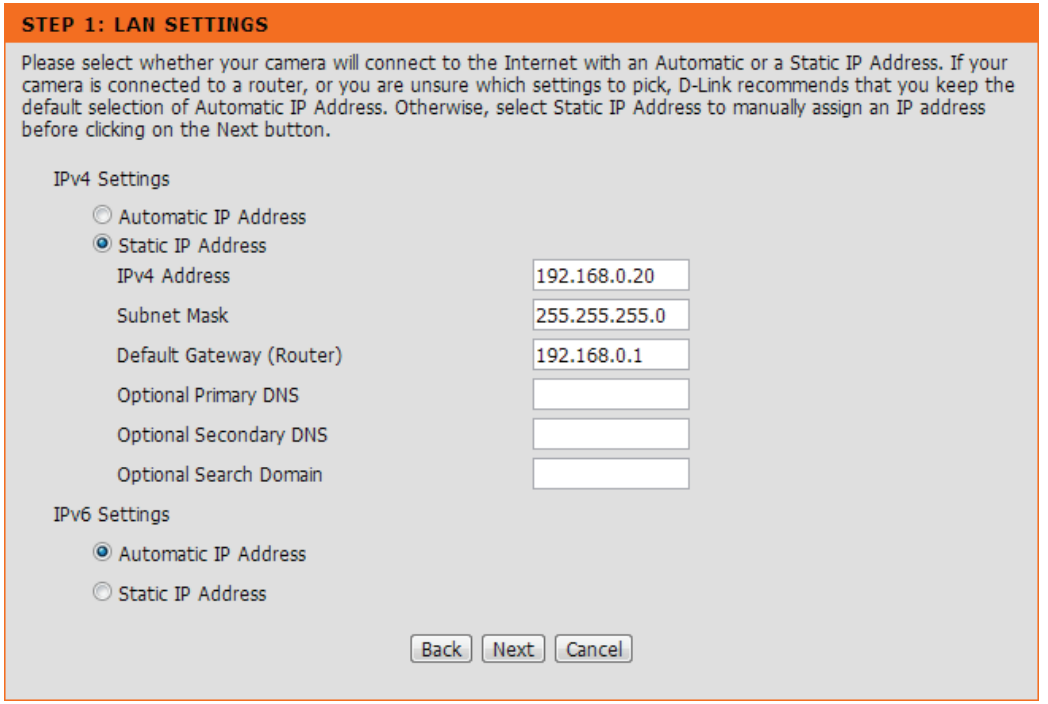
Subnet Mask: Enter the subnet mask of your network.

Default Gateway: Enter the default gateway address. This is usually the IP address of your router.

Primary DNS: Enter the primary DNS server's IP address. This is usually the IP address of your router.

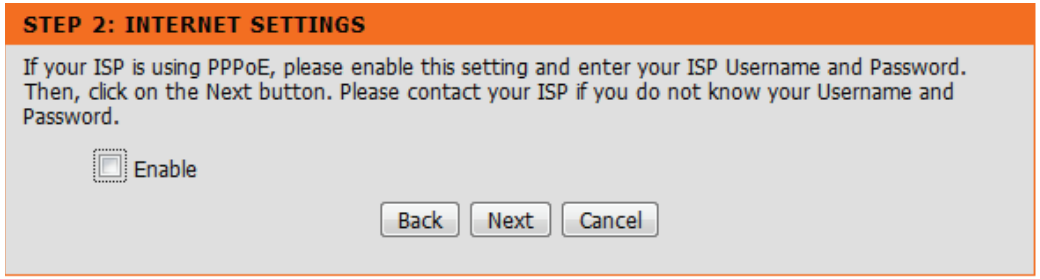
Secondary DNS: Enter the secondary DNS server's IP address. This is optional.

Click **Next** to continue.



If you are required to connect using PPPoE, select **Enabled** and enter the Username and Password for your PPPoE connection. Only select this option if your camera is directly connected to your broadband modem. If it is on a network with a router or gateway, do not select this option.

Click **Next** to continue.



A Dynamic DNS account allows you to access your camera over the Internet when you have an IP address that changes each time you connect to the Internet. If you have a Dynamic DNS account, click **Enable** and enter the following details:

Enable: Click to enable the DDNS function.

DDNS: (Dynamic Domain Name Server) will hold a DNS host name and synchronize the public IP address of the modem when it has been modified. The username and password are required when using the DDNS service.

Server Address: Select your Dynamic DNS Server from the drop down menu.

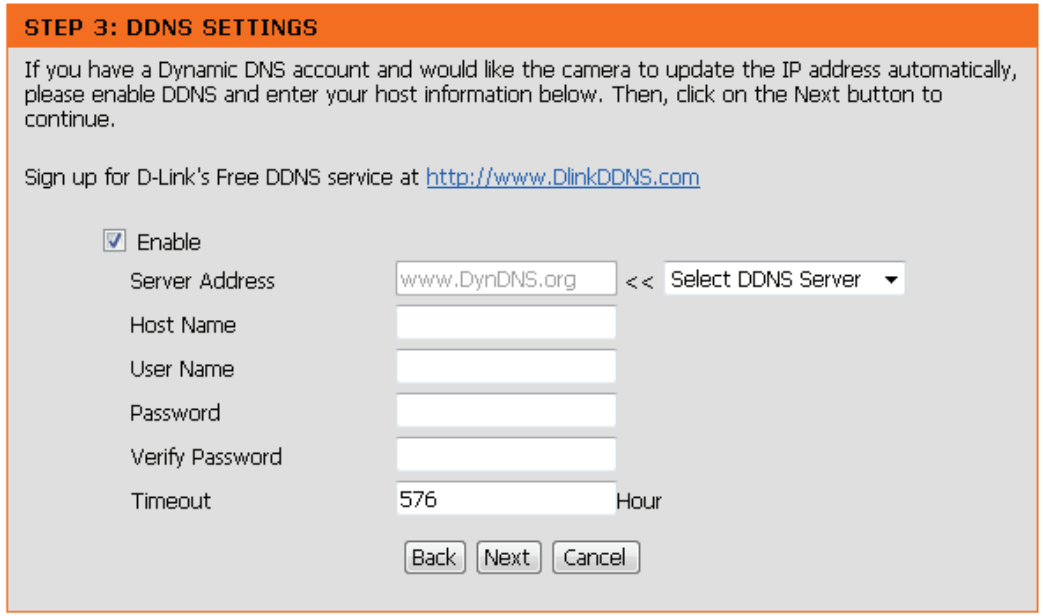
Host Name: Enter the host name of the DDNS server.

User Name: Enter your username or e-mail address used to connect to the DDNS.

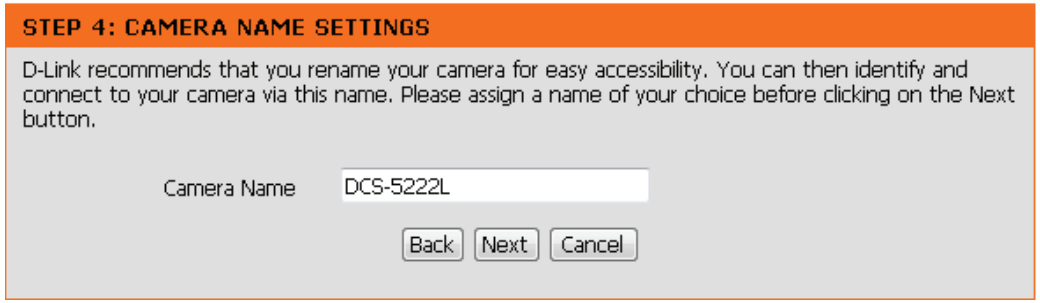
Password: Enter your password used to connect to the DDNS server.

Timeout: You can setup how often the camera notifies the DDNS server of its current global IP address by entering a whole number in hours.

Click **Next** to continue.

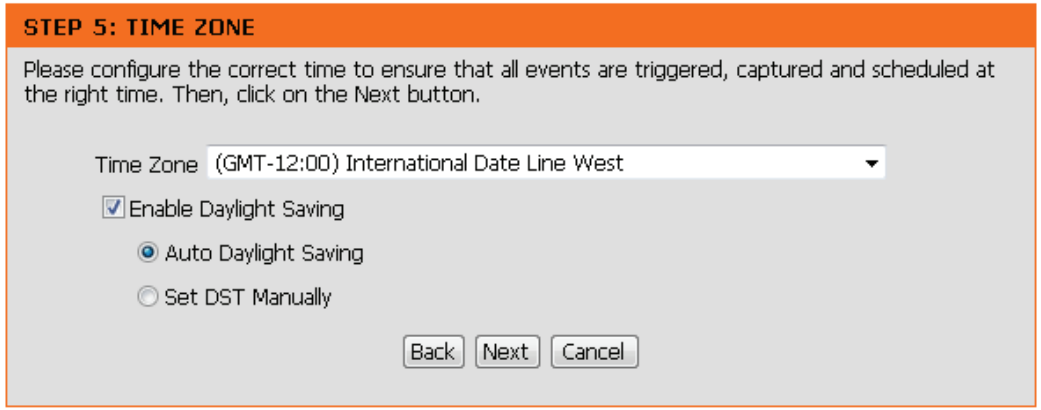


Create a unique name for your camera. Click **Next** to continue.

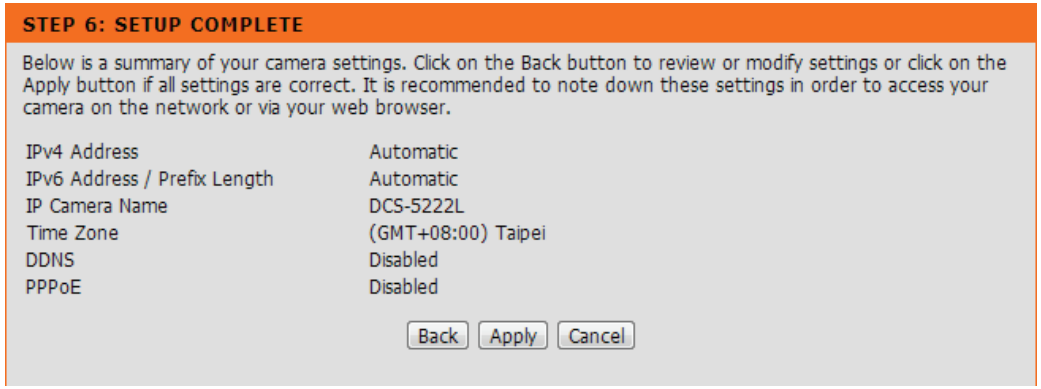


Select the time zone that the camera is geographically located in so that scheduled events occur at the correct time. If your time zone observes daylight saving, check the **Enable Daylight Saving** box and select **Auto Daylight Saving** to have DST set automatically or select **Set date and time manually** to enable the drop-down menu so that you can set the start and end time of daylight saving yourself.

Click **Next** to continue.



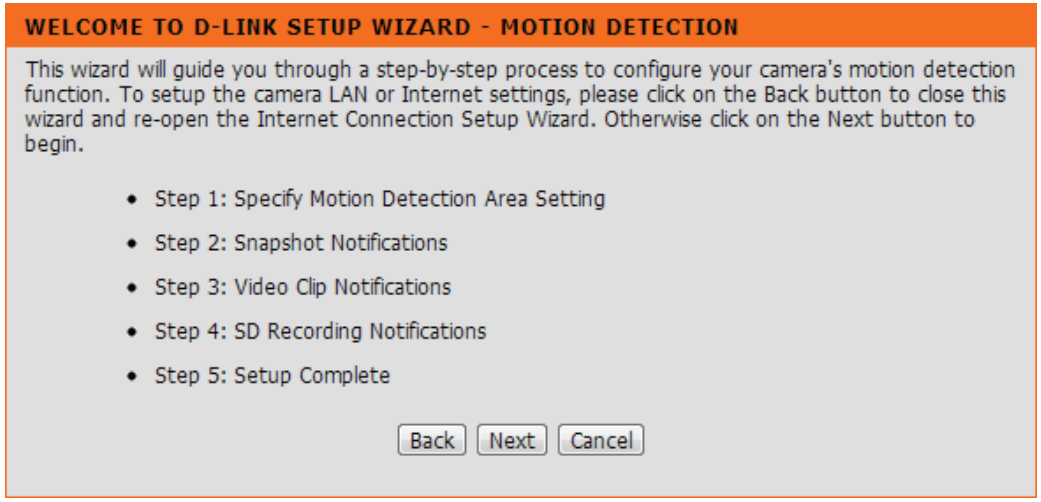
A summary of the options you selected is displayed for confirmation. If you are happy with the selected configuration, click **Apply** otherwise click **Back** to make the required changes.



Motion Detection Setup Wizard

This wizard will guide you through a step-by-step process to configure the motion detection feature of your new D-Link Camera

Click **Next** to continue.



Enabling the Video Motion option will allow your camera to use the motion detection feature. You may draw a finite motion area that will be used for monitoring in a selected area.

Enable Video Motion: Select this box to enable the motion detection feature of your camera.

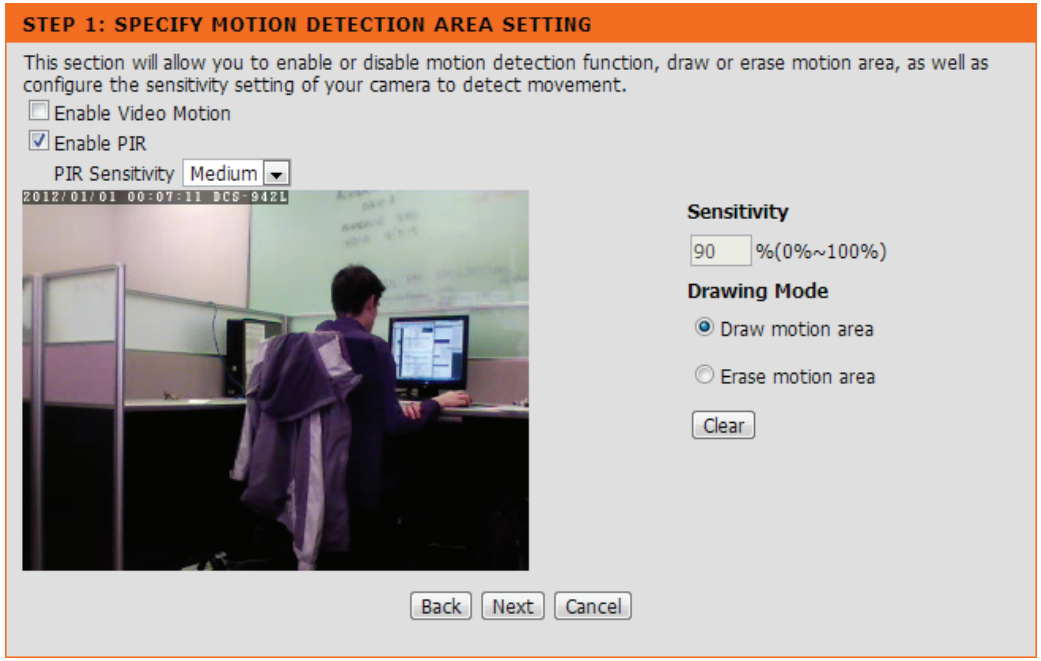
Enable PIR: When this option is selected, use PIR (passive infrared) to detect motion.

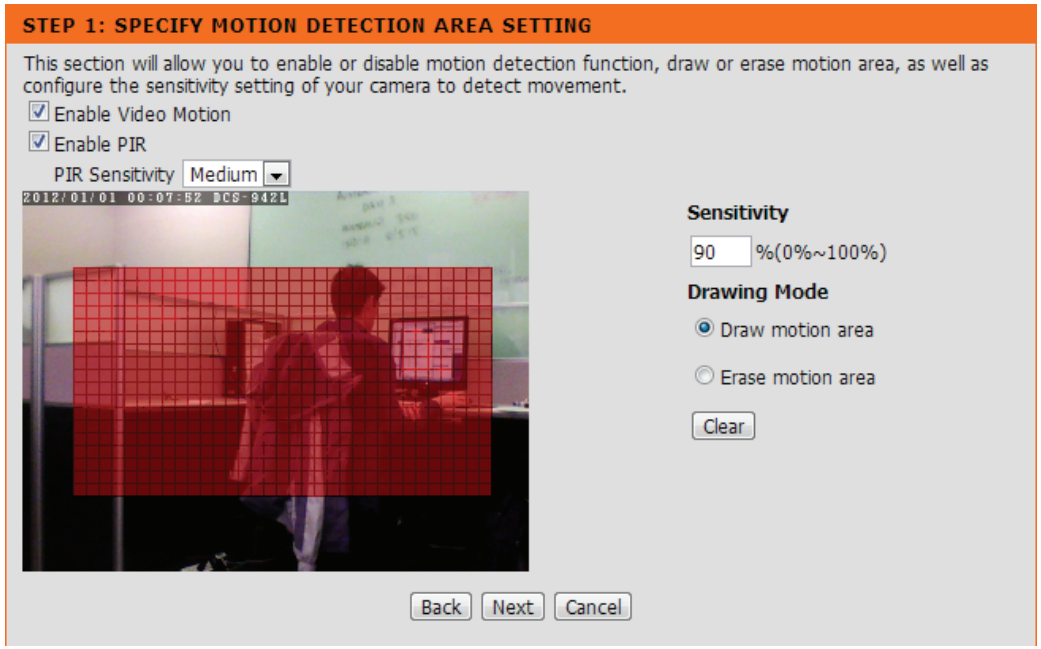
Sensitivity: Specifies the measurable difference that would indicate motion. Enter a value between 0 and 100.

Drawing Mode: Select **Draw Motion Area** to select the area of the picture to monitor for movement to trigger recording or a snapshot. Use your mouse to click and drag on the area that you would like to monitor for motion. Select **Erase Motion Area** to clear a selected region and stop the camera from monitoring that area of the picture.

Clear: Clears all motion detection areas from the picture.

Click **Next** to continue.





Snapshot Notifications is a feature to send image snapshots via FTP or e-mail when a trigger is activated. This step will only set up notifications to be sent with still images that are captured. If you would like to have notifications with video please leave this disabled and continue to the next step.

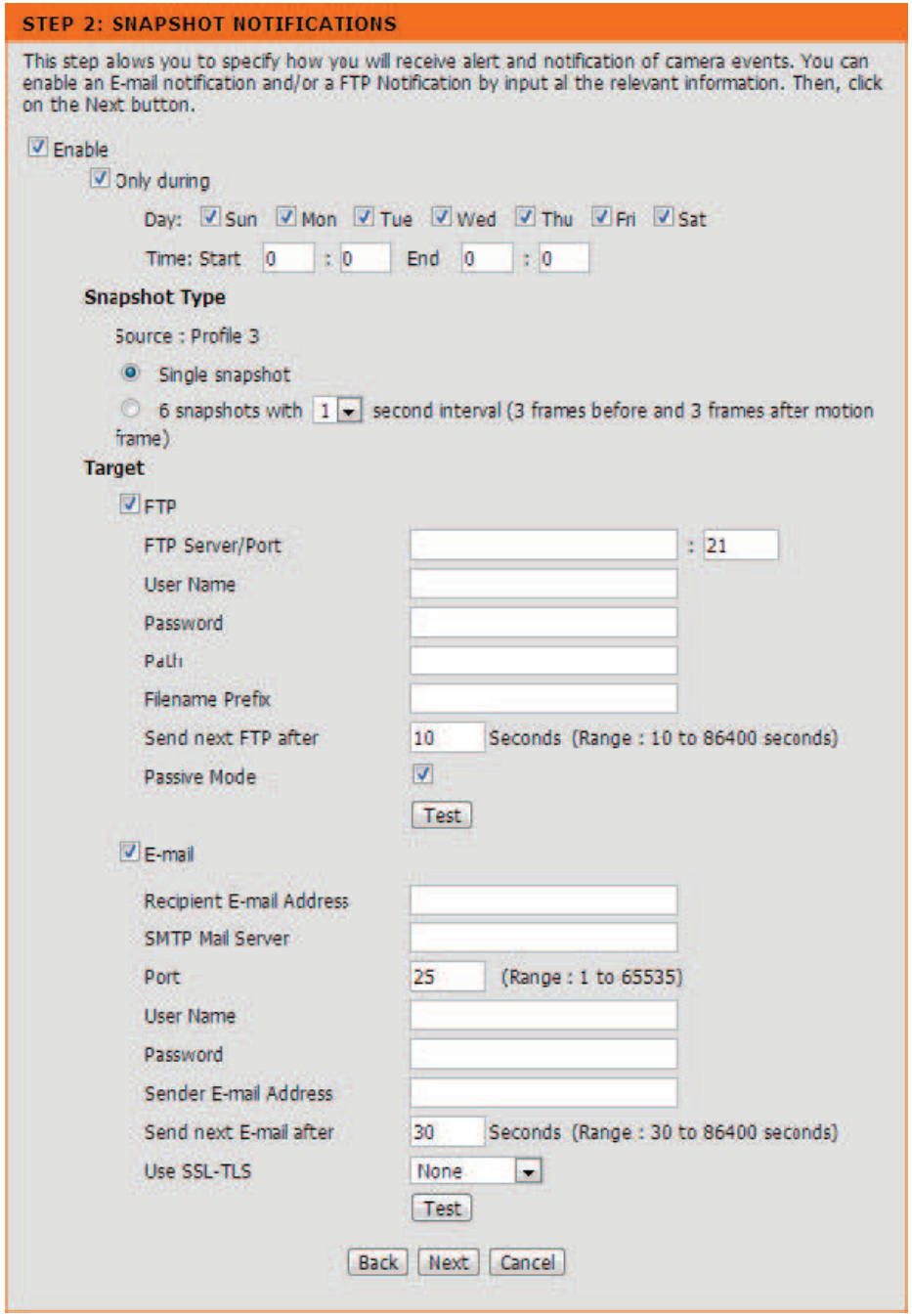
Enable: Check this box to enable the Snapshot function.

Only During: Check this box to setup a scheduled time-frame when notifications should be sent. This is useful if you do not want to be notified when it would otherwise be inconvenient, such as during the night or on weekends.

Snapshot Type: Select whether to take a single snapshot or to take 6 snapshots with a 1 second interval between them.

Target: Select where you want the snapshot to be sent. It may be uploaded to an FTP or E-mailed to an e-mail address. You will need to have all of the necessary information filled out in order to use either of these features.

Click **Next** to continue.



Video Clip Notifications is a feature to send recorded video via FTP or e-mail when a trigger is activated. This step will only setup notifications to be sent with video clips.

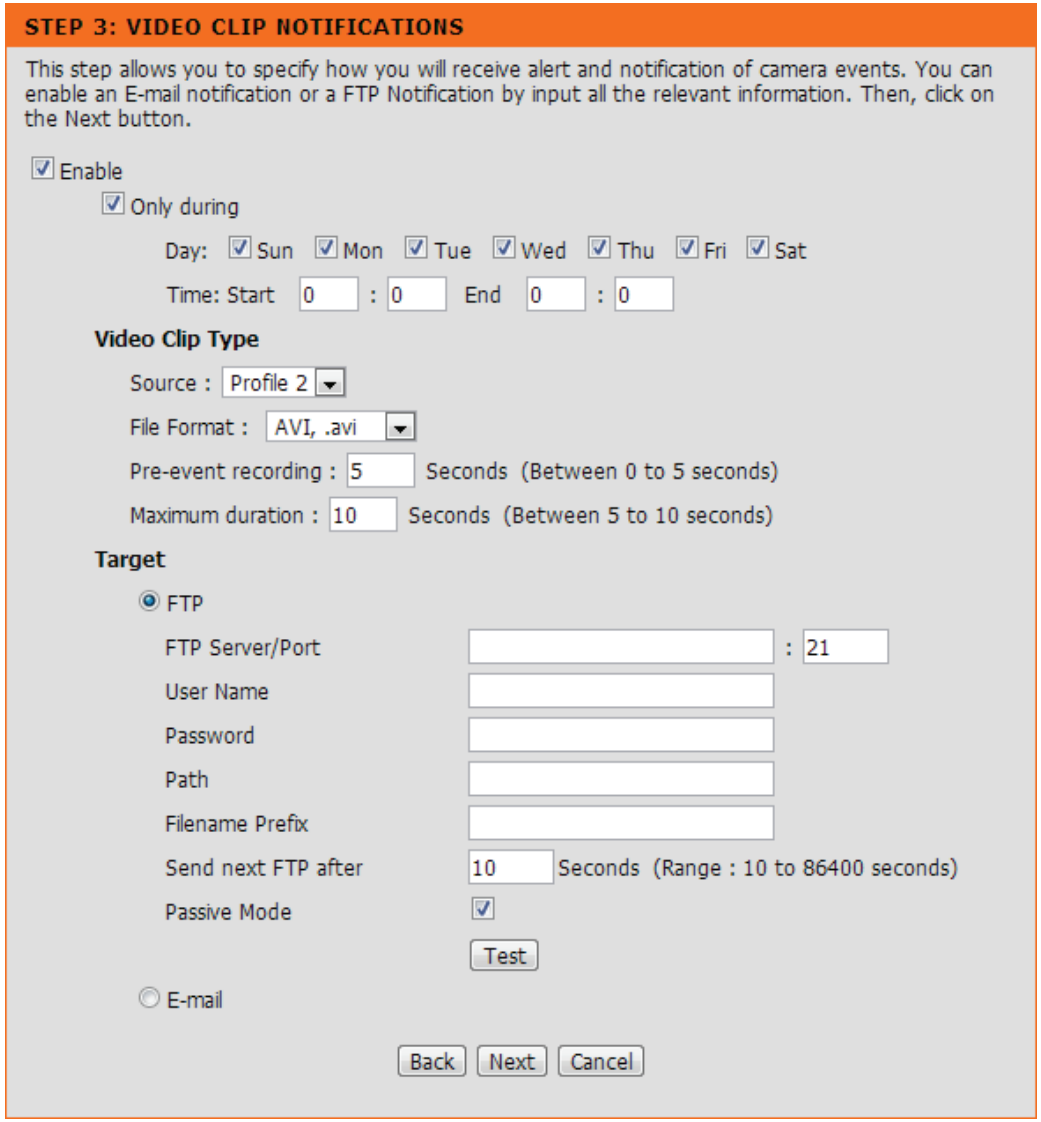
Enable: Check this box to enable the Video Clip Notification function.

Only During: Check this box to setup a scheduled timeframe when notifications should be sent. This is useful if you do not want to be notified when it would otherwise be inconvenient, such as during the night or on weekends.

Video Clip Type: The Video Clip Wizard uses Profile 2 by default. More information about video profiles can be found on page 38. You can set the file type from the drop down menu. You can also specify how many seconds before the event that triggered recording should be sent, as well as how long the maximum duration of the video clip should be in seconds.

Target: Select where you want the video clip to be sent. It may either be uploaded to an FTP or e-mailed to an e-mail address. You will need to have all of the necessary information filled out in order to use either of these features.

Click **Next** to continue.



SD Recording Notifications is a feature to record video to the SD card when a trigger is activated. The SD card must be formatted for use with the camera prior to running the wizard. This can be done by using the format option found under SD Management. For more details, please refer to page 50.

Enable: Check this box to enable the SD Recording function.

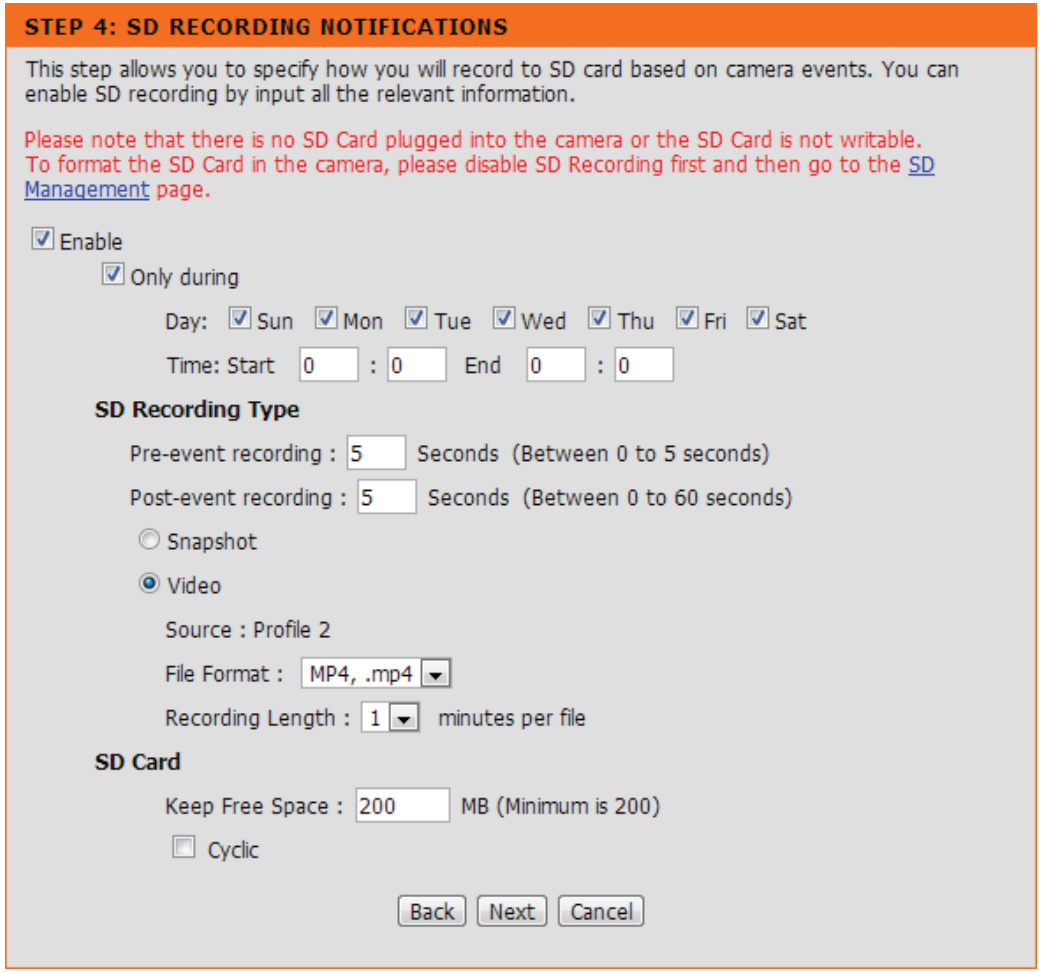
Only During: Check this box to setup a scheduled time-frame when recording should take place. This is useful if you do not want to be recorded when it would otherwise be inconvenient, such as during the night or on weekends.

SD Recording Type: The SD Recording Wizard uses Profile 2 by default. More information about video profiles can be found on page 38. You can set the file type from the drop down menu. You can also specify how many seconds before and after the event should be recorded, as well as how long the maximum duration of the video clip should be in minutes.

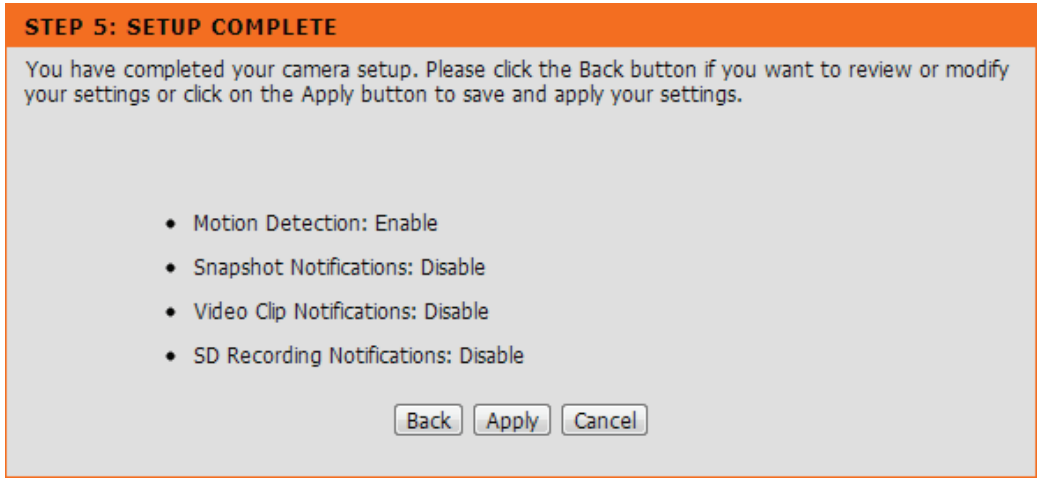
Keep Free Space: Set the capacity of your local SD Card to prevent the system from becoming unstable.

Cyclic When this option is selected, it will cause the oldest snapshot/video files to be deleted when the system requires storage space for new snapshot/video files.

Click **Next** to continue.



A summary of the options you selected is displayed for confirmation. If you are happy with the selected configuration, click **Apply** otherwise click **Back** to make the required changes.



Network

This section allows you to configure your LAN and Internet configuration.

Automatic IP Address Select: This option is used if you would like an IP address assigned to your camera automatically by the DHCP server (router). If the DHCP server does not exist you will need to manually configure this setting.

Static IP Address: This option is used to manually configure your Camera's IP settings. If this is selected, you will need to enter the necessary information in order to access your camera over a network.

PPPoE: Enable this option if the camera is directly connected to a modem and your ISP requires a user name and password in order to connect to the Internet.

HTTP Port: This option allocates the HTTP port of the camera.

RTSP Port: This option allocates the RTSP port of the camera, the RSTP port allows connections using QuickTime or other supported media players.

UPnP Enable: UPnP™ (Universal Plug & Play) can be used to allow discovery of a camera as a UPnP device in your network.

UPnP Port Forward: If your router supports UPnP, your camera and router can communicate allowing the router to discover which ports are used by each camera automatically without the need to open ports or port forward.

Bonjour: Enabling Bonjour will allow discovery of cameras by Mac computers.

Note: *You MUST also set up your router/gateway for Port Forwarding/Mapping; this will enable remote viewing of your camera via the Internet. Please refer to your router's instruction manual on how to open up ports (port forward). For additional help on configuring your camera to work with your router, please refer to* ***Appendix A: Installing the DCS-5222L on a Router Without UPnP****. For installing multiple cameras, ONE port per camera must be opened on your router, in addition to the Web server (HTTP) port which is used for configuration. Also, some browsers may restrict some ports, such as 1 or 22, for security purposes. If you have problems accessing your camera through HTTP, try using a port higher than 1024.*

After making any changes, click the **Save Settings** button to save your changes, or click the **Don't Save Settings** button to discard your changes.

Wireless

To set up your Network camera's wireless network interface settings, enable **Wireless Settings** in this window first.

Network Name: The name of the wireless network.

Site Survey: Click the **Rescan** button to scan for available wireless networks. After scanning, select a wireless network from the drop-down box that you want to connect to.

Wireless Mode: Use the drop-down box to select the mode of the wireless network you wish to connect to. **Infrastructure** is normally used to connect to an access point or router. **Ad-Hoc** is usually used to connect directly to another computer.

Channel: If you are using Ad Hoc mode, select the channel of the wireless network you wish to connect to, or select **Auto**.

Security Mode: Select the type of authentication you are using on your wireless network (**Open**, **Shared (WEP)**, **WPA-PSK**, or **WPA-PSK2)**.

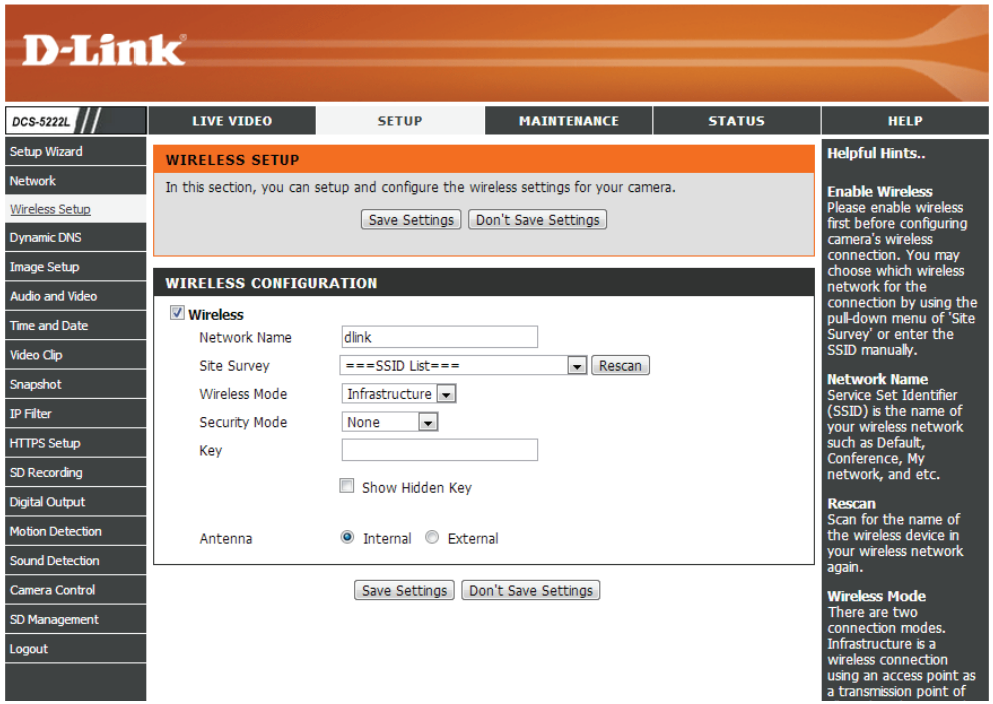
Cypher Type: If you are using **WPA-PSK** or **WPA-PSK2** authentication, you will need to specify whether your wireless network uses TKIP or AES encryption. If you use **Open** or **Shared** authentication, this setting will be automatically set.

Key: Enter the key or passphase to access a secure network.

Show Hidden Key: Check this box to display the key.

Antenna: Select to use the internal or external wireless antenna.

After making any changes, click the **Save Settings** button to save your changes, or click the **Don't Save Settings** button to discard your changes.



Dynamic DNS

This section allows you to configure the DDNS setting for your camera. DDNS will allow all users to access your camera using a domain name instead of an IP address.

DDNS: Click to enable the DDNS function.

Server Address: Select your Dynamic DNS Server from the drop-down menu.

Host Name: Enter the host name of the DDNS server.

User Name: Enter your username or e-mail address used to connect to the DDNS.

Password: Enter your password used to connect to the DDNS server.

Confirm Password: Enter your password again for verification.

Timeout: You can setup how often the camera notifies the DDNS server of its current global IP address by entering a whole number in hours.

Status: Displays the connection status of your DDNS account.

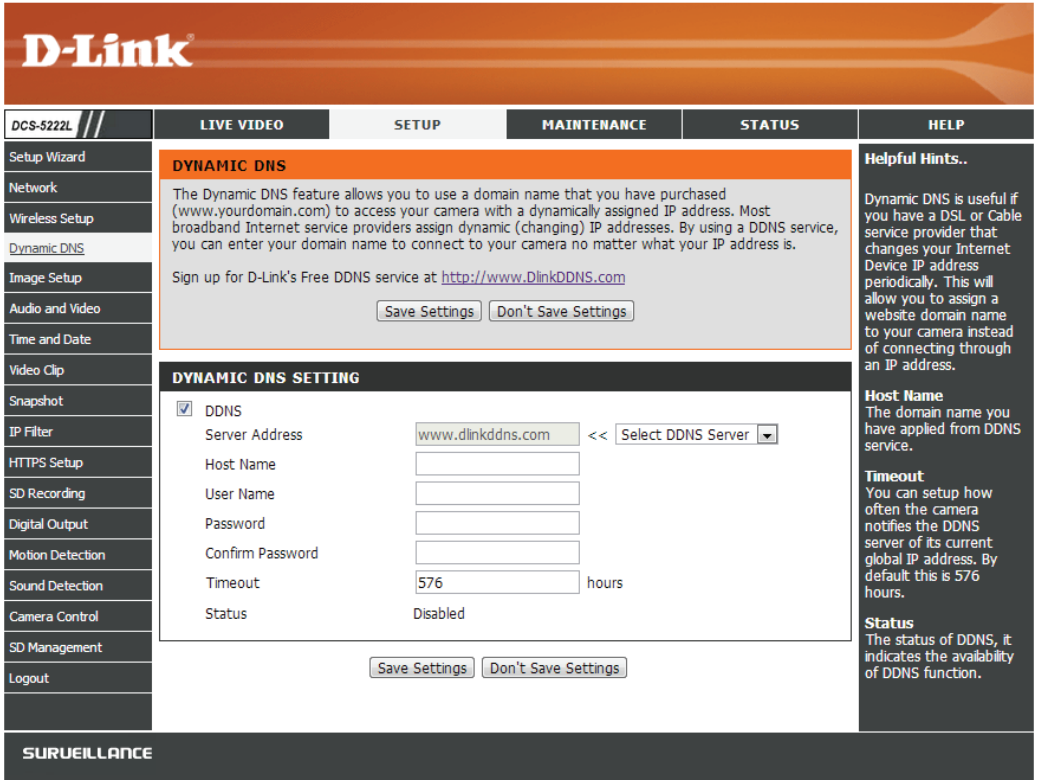
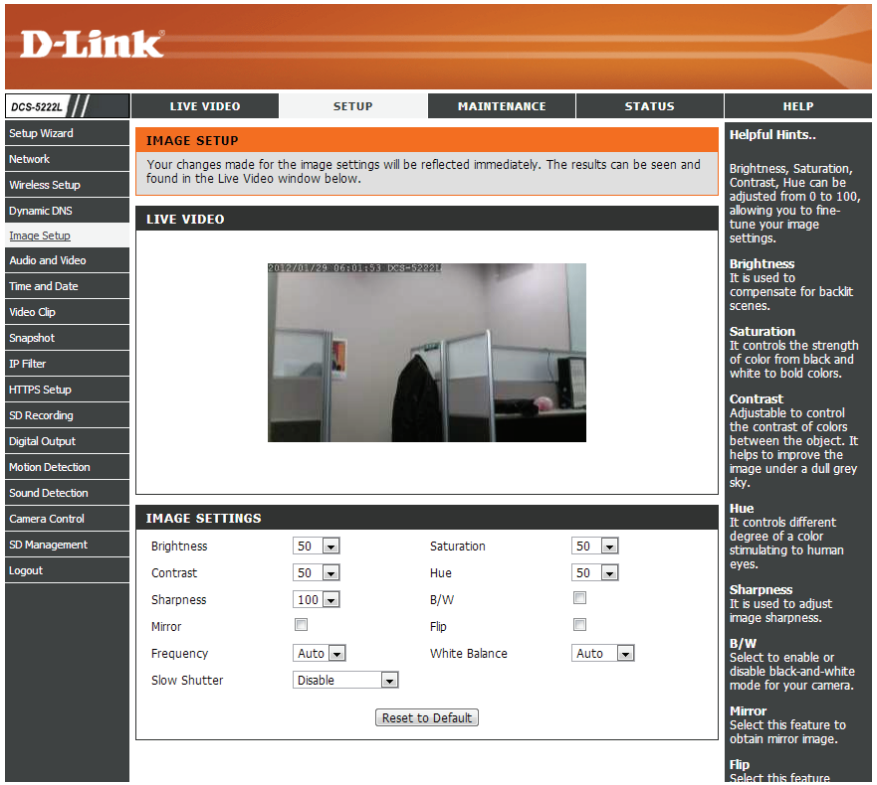


Image Setup

This section allows you to adjust the image and sensor settings for your camera.



Brightness: This adjusts the brightness of the camera image.

Saturation: This adjusts the color saturation. Saturation controls the strength of color in the image.

Contrast: This adjusts the contrast of the camera image, making a washed out image clearer or reducing the brightness in an over exposed image.

Hue: The Hue controls the different degree of color stimulation in the camera image.

Frequency: This option adjusts the camera sensor's setting to avoid the image flickering under certain light sources, such as florescent lights. This is set to **Auto** by default.

White Balance: You can change the white balance of the camera image by selecting a setting from the drop-down box. This is set to **auto** by default.

B/W: Click this checkbox to change the camera image into black and white.

Flip: This will flip the image vertically.

Mirror: This will flip the image horizontally.

Slow Shutter: This can be used to allow manual control of the shutter speed. Select slower shutter speeds when environment is dimly lit, faster speeds are required when in brighter lighting.

***Note: Mirror** and **Flip** can be used if you have mounted the DCS-5222L on the ceiling.*

Audio and Video

You may configure four video profiles with different settings for your camera. You may also set up different profiles for your computer and mobile display. In addition, you may configure the audio (speakers and microphone) settings for your camera. There are three sensor output selections (VGA, XGA, and SXGA). Do not select SXGA if you want to turn on the motion detection feature.

Video Profile: This section allows you to change the **Encode Type**, **Resolution**, **FPS**, and **Quality**.

Encode Type: The compression format used when viewing your camera.

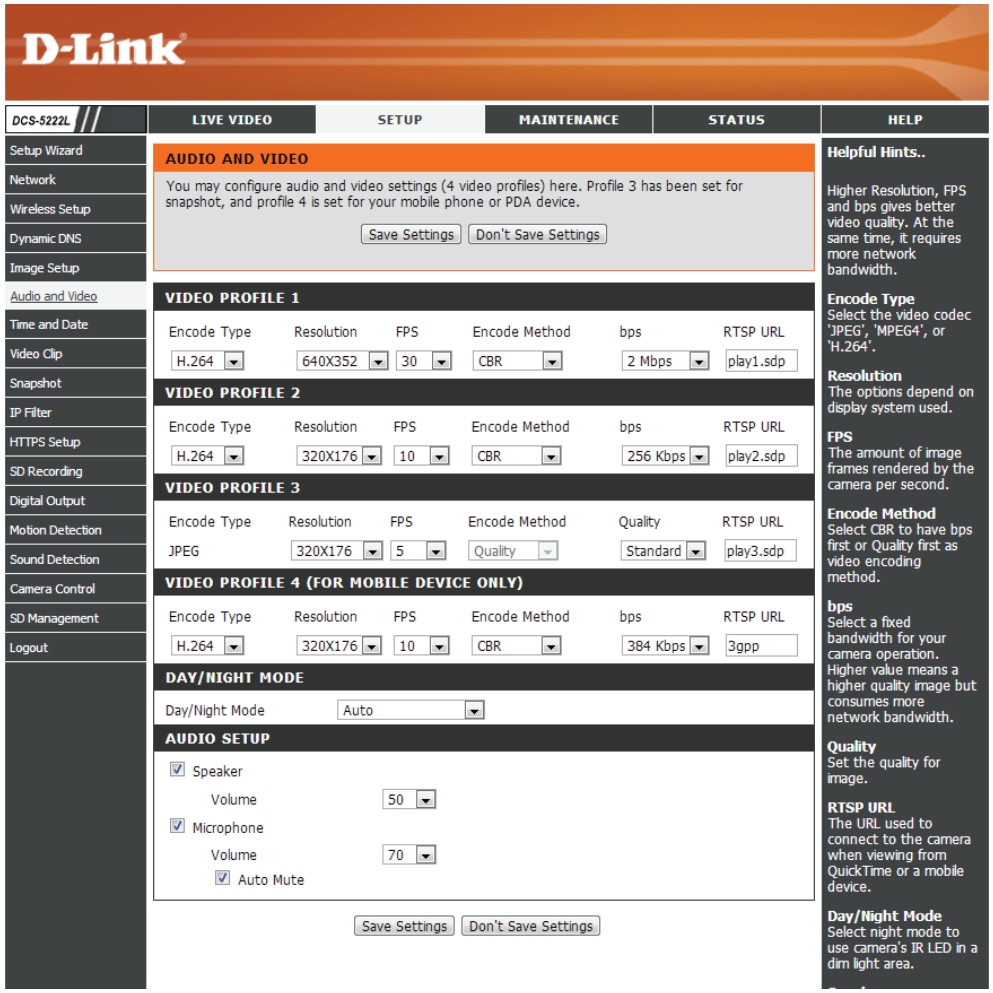
Resolution: Select the desired video resolution from the drop-down menu. The higher setting, the better the image quality will be. However, it will use more resource within your network.

FPS: Select the optimal setting depending on your network status. Please note that a higher setting can obtain better image quality. However, it will use more resources within your network.

bps: Select the bit rate to assign the video. The bps setting is used as a maximum limit for the amount of data the camera will use. A higher setting will result in better looking video, but will also have a larger file size.

Quality: Select one of five levels of image quality: Highest, High, Medium, Low, and Lowest.

RTSP URL: The URL used to connect to the camera when viewing from QuickTime or a mobile device.



Day/Night Mode: Allows you to control the IR LEDs on the front of the camera. Note that when this option is enabled, live feed video will be in black and white, and ICR filter will be activated.

Audio Setup: Allows you to enable or disable and adjust the volume level of the speaker and microphone. If you select speaker, you must attach external speakers to the audio port on the camera.

Note: Video Profile 3 is always set to MJPEG as the Encode Type to ensure that at least one of the Video Profiles are viewable by non-IE browsers. Video Profile 4 is for mobile devices only, and always uses H.264 as the Encode Type.

Note: Higher frame size, frame rate and bit rates will give you better video quality, but they will also require more network bandwidth. For best viewing results on a mobile phone, we suggest setting the frame rate to 5 fps and the bit rate to 20 Kbps.

After making any changes, click the **Save Settings** button to save your changes, or click the **Don't Save Settings** button to discard your changes.

Time and Date

This section allows you to configure the settings of the internal system clock for your camera.

Time Zone: Select the time zone for your region from the drop-down menu.

Enable Daylight Saving: Check this if the camera is in a region where daylight saving is observed.

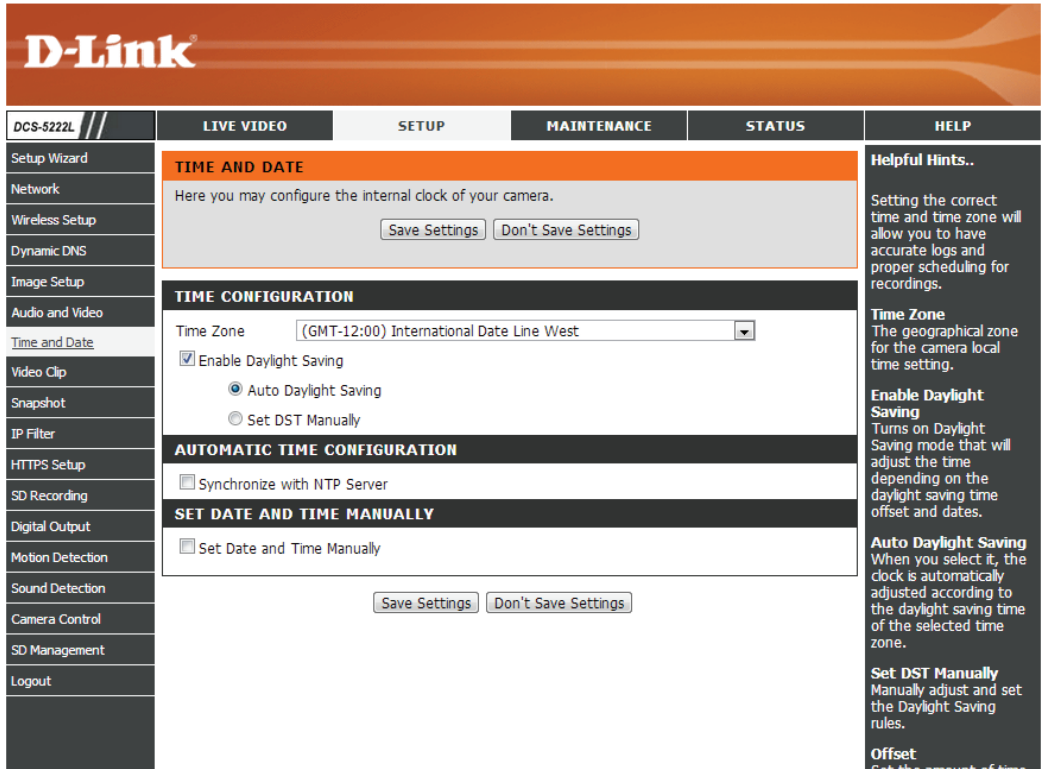
Auto Daylight Saving: This option will adjust Daylight Saving Time automatically.

Synchronize NTP Server: Network Time Protocol will synchronize your camera with an Internet time server. You can enter an IP address of a server or select from the drop-down menu.

Set the Date and Time Manually: Select this to set the time manually.

Copy your Computer's Time Settings: Click to synchronize the time information from your PC.

After making any changes, click the **Save Settings** button to save your changes, or click the **Don't Save Settings** button to discard your changes.



Video Clip

Video Clip is a feature to send video clips via FTP or e-mail when a trigger is activated.

Video Clip: Check this box to enable the Video Clip function.

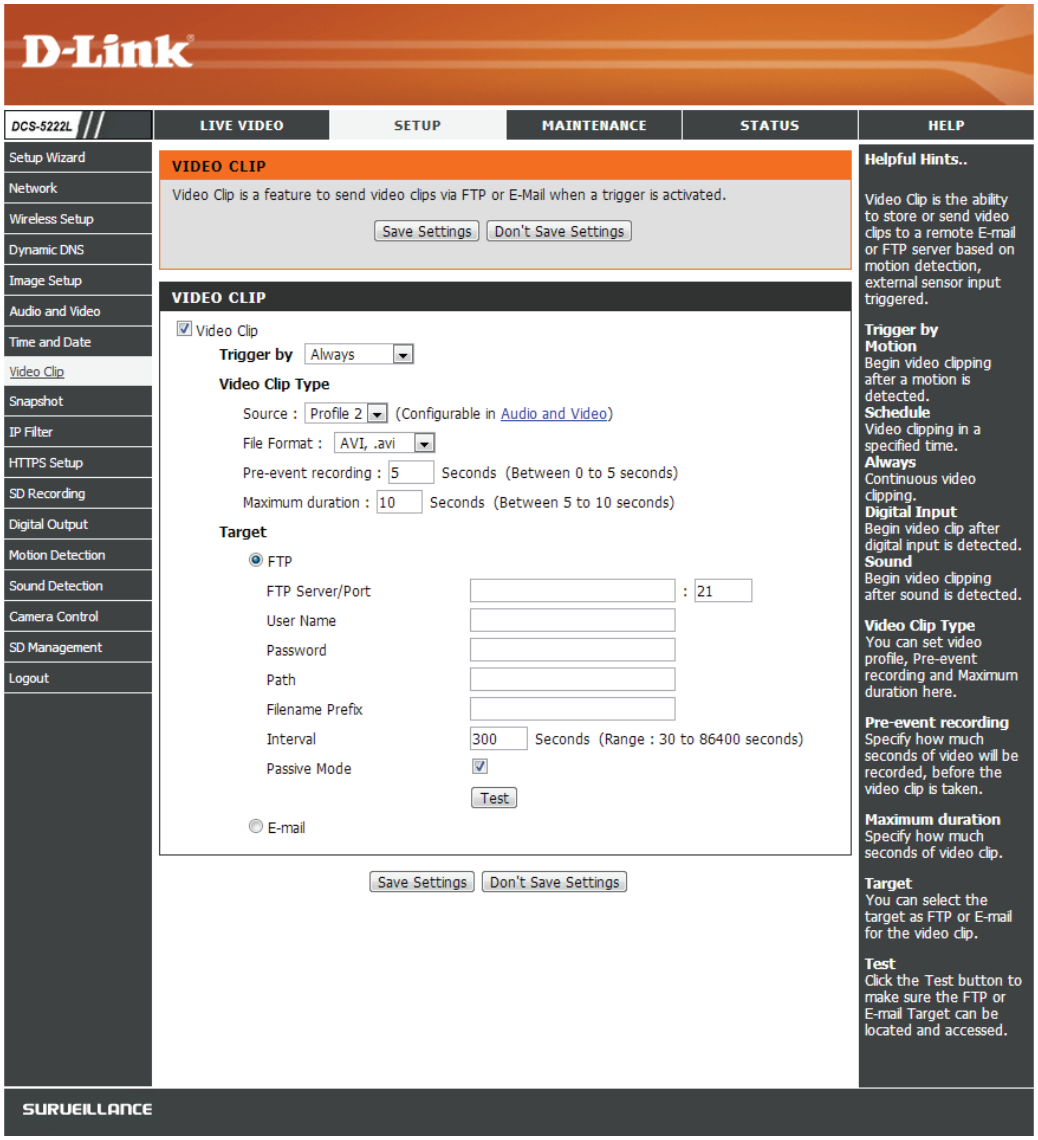
Trigger By: Select whether the event is triggered by **Motion, Schedule** or if the video is **Always** recording.

Video Clip Type: Displays the profile used for the recording and allows you to specify whether to start recording up to 5 seconds before the event to ensure the event is captured and the maximum duration of the video clip.

Target: Select where you want the video clip to be sent. It may be uploaded to an FTP or emailed to an e-mail address.

You will need to enter your FTP or e-mail server/account settings.

After making any changes, click the **Save Settings** button to save your changes, or click the **Don't Save Settings** button to discard your changes.



Snapshot

You can set the camera to take snapshots when motion is detected. Snapshots can be sent to an e-mail address or to an FTP server.

Trigger by: Select the trigger event from the drop-down menu. **Motion** begins a snapshot after a motion is detected; **Schedule** sends "snapshots" at a specified time; **Always** provides continuous snapshots.

Snapshot Type: Select whether to take a single snapshot or to take 6 snapshots with a 1 second interval between them.

Target: Select where you want the snapshot to be sent. It may be uploaded to an FTP or emailed to an e-mail address.

You will need to enter your FTP or e-mail server account settings.

After making any changes, click the **Save Settings** button to save your changes, or click the **Don't Save Settings** button to discard your changes.

IP Filter

The IP Filter is a feature used to allow or deny certain IP addresses when accessing the DCS-5222L.

Access List Filtering: Check this box to enable the IP Filter function.

Filter Type: Select whether to set the filter to allow or to deny connections.

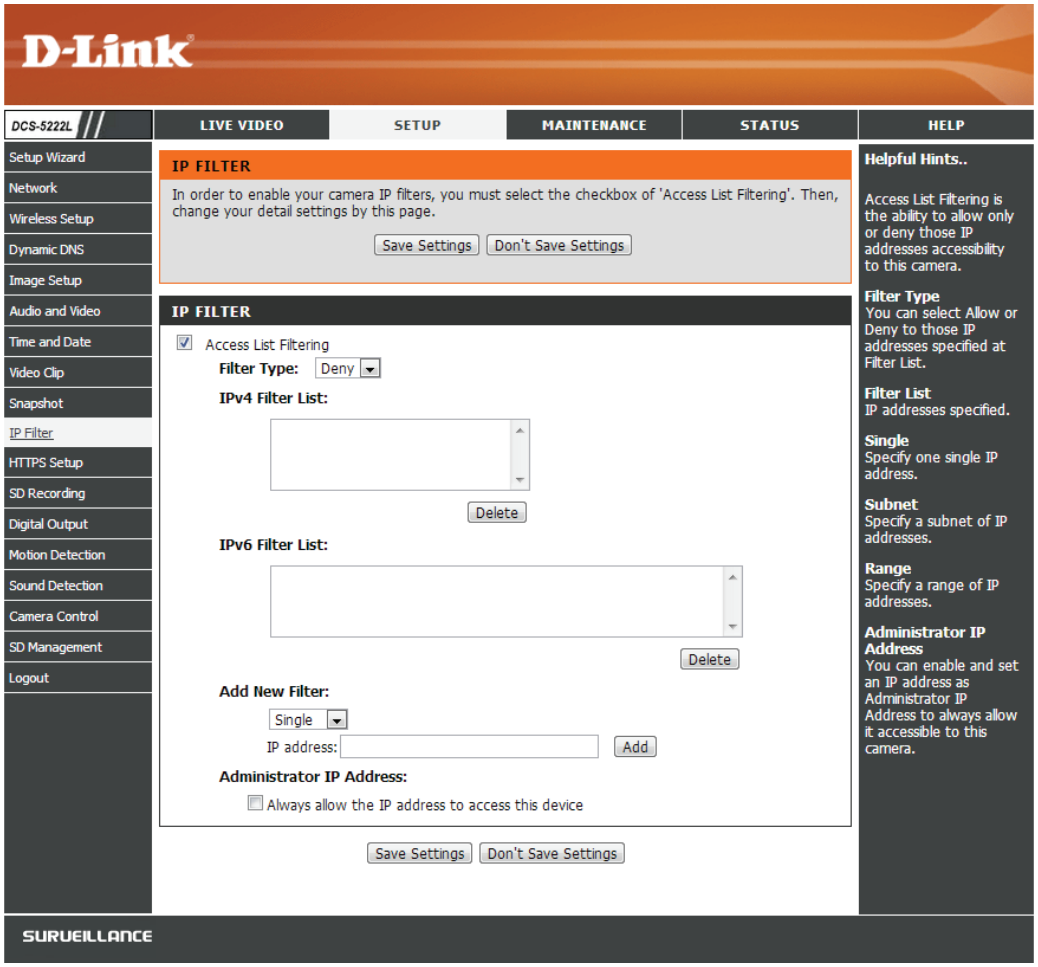
IPv4 Filter List: The current list of IPv4 addresses that are being filtered. Select a line and the click the delete button to remove that entry.

IPv6 Filter List: The current list of IPv6 addresses that are being filtered. Select a line and the click the delete button to remove that entry.

Add New Filter: From the drop down menu, select whether to add a single IP, an entire subnet, or a range of IP addresses.

Administrator IP Address: Check this option and enter the correct IP address to always allow it to be able to access the device.

Click **Save Settings** to save your changes.



HTTPS Setup

HTTPS Setup is used to add encryption to the HTTP connection, making it more secure and less susceptible to unauthorized use.

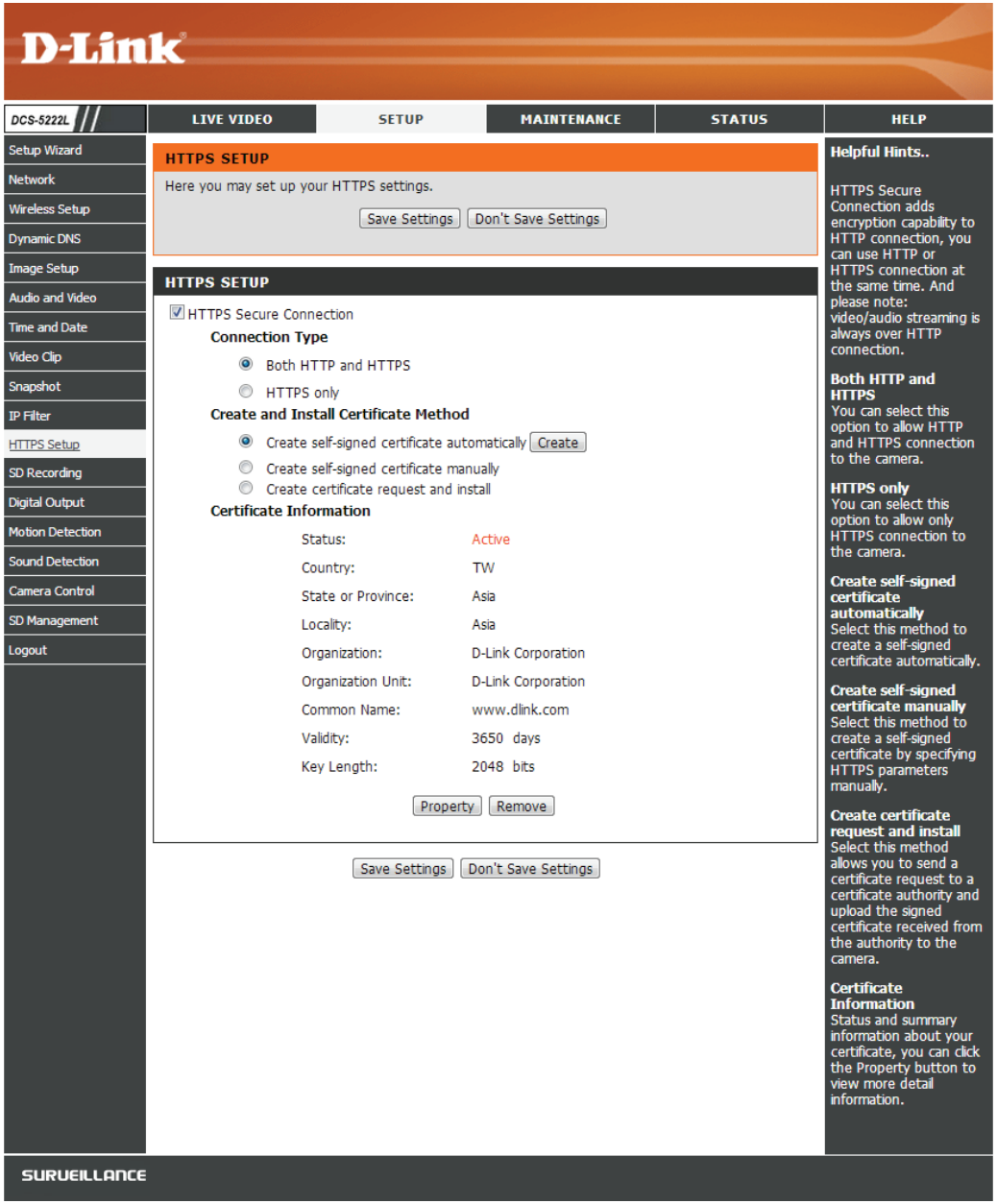
HTTPS Secure Connection: Check this box to enable the HTTPS function.

Connection Type: Select whether the connection type should be HTTP and HTTPS or only HTTPS.

Create and Install Certificate Method: Select whether to create a self-signed certificate automatically, manually, or to request and install a certificate from an authority.

Certificate Information: General information and the status of the current HTTPS certificate is displayed. If you would like to see more detailed information, click on the Property button. If you would like to remove the certificate, click the Remove button.

Click **Save Settings** to save your changes.



SD Recording

This option allows you to configure and schedule the recording feature of your camera which is saved to the local SD Card.

SD Recording: Check this checkbox to enable the recording feature. After enabling recording, you will need to select a scheduling method.

Trigger by: Select the type of trigger event from the drop-down menu. **Motion** begins recording video/snapshot after a motion is detected; **Schedule** records video or takes snapshots at a specified time; **Always** will record video or take snapshots continuously.

File Format: Select to which format to save recorded video with.

Recording Length: Select the length of time for each video file.

Keep Free Space: This sets the capacity of your local SD Card to prevent the system from becoming unstable.

Cyclic: When this option is selected, it will cause the oldest file to be deleted when the system requires storage space for new files.

After making any changes, click the **Save Settings** button to save your changes, or click the **Don't Save Settings** button to discard your changes.

Digital Output

This screen allows you to control the behavior of digital input and digital output devices. The I/O connector provides the physical interface for digital output (DO) and digital input (DI) that is used for connecting a variety of external alarm devices 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.

D/O Signal: You can enable the digital output port as well as configure a trigger event.

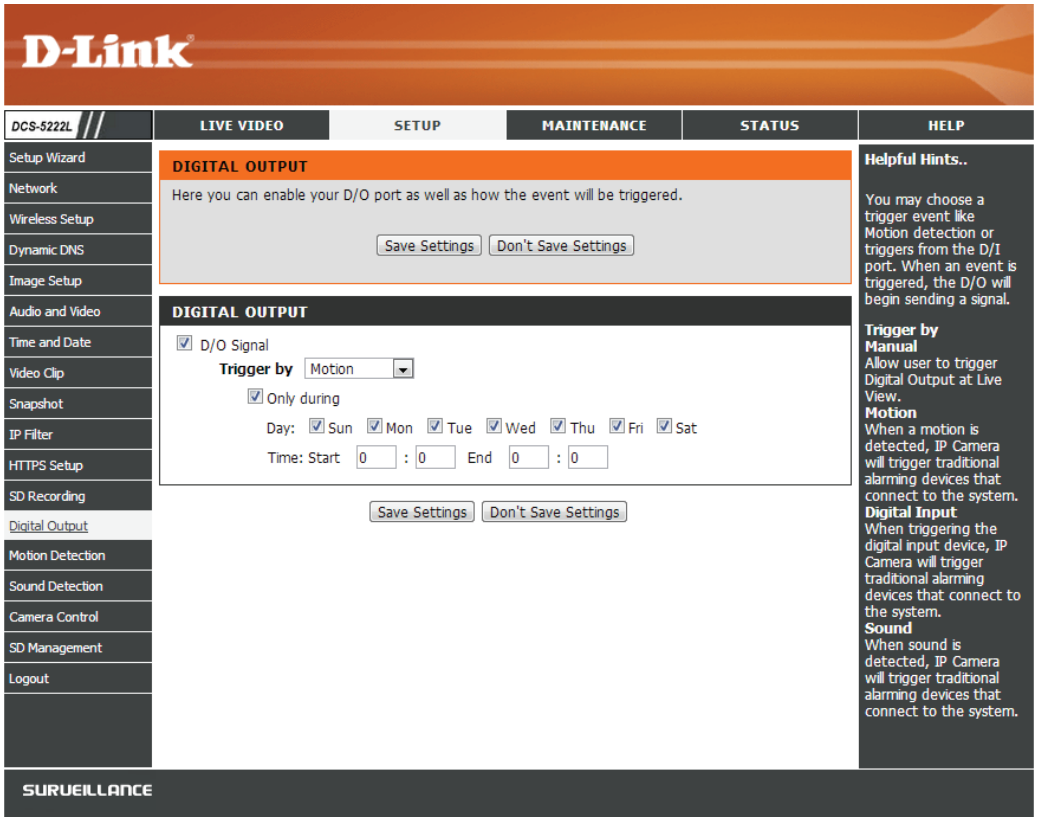
Trigger by: You may choose a trigger event like Motion detection or an external trigger from the D/I port. When an event is triggered, the D/O will begin sending a signal.

Trigger by Manual: Allow user to trigger Digital Output at Live View.

Motion: When a motion is detected, IP Camera will trigger traditional alarming devices that connect to the system.

Digital Input: When triggering the digital input device, IP Camera will trigger traditional alarming devices that connect to the system.

Sound: When sound is detected, IP Camera will trigger traditional alarming devices that connect to the system.



Motion Detection

This option allows you to set up Motion Detection on your network camera.

Enable Video Motion: Check this box to enable the motion detection feature of your camera.

Enable PIR: When this option is selected, use PIR (passive infrared) to detect motion. PIR is best suited for detecting motion from live subjects such as people and animals.

Sensitivity: This setting adjusts how sensitive the camera will be to motion, where 100% will be the most sensitive setting and 0% will be the least sensitive setting.

Drawing Mode: Select **Draw Motion Area** to select the area of the picture to monitor for movement to trigger recording or snapshot. Use your mouse to click on the blocks that you would like to monitor for motion. Select **Erase Motion Area** to remove the blocks and stop the camera from monitoring that area of the picture.

Clear: Clicking this button will clear all motion detection zones.

After making any changes, click the **Save Settings** button to save your changes, or click the **Don't Save Settings** button to discard your changes.

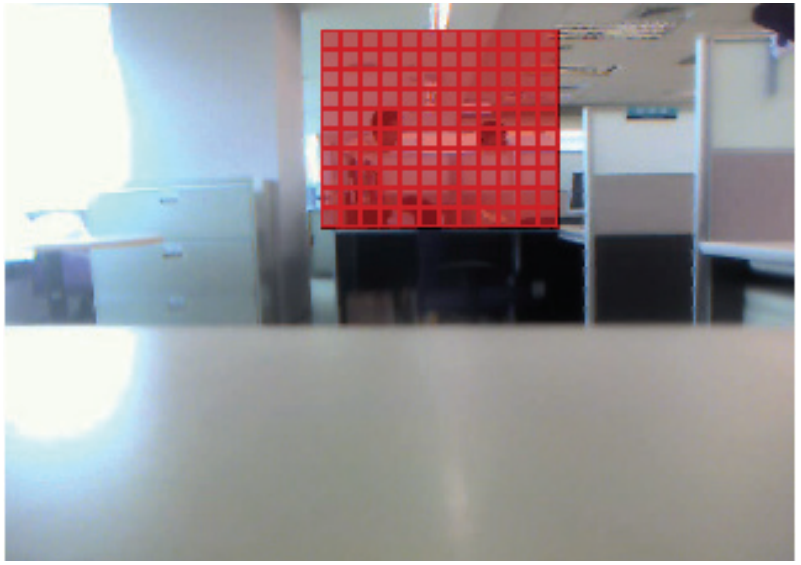
Note: *If the camera is set to SXGA mode in Audio and Video, Motion Detection is disabled.*

The red grid on the right indicates an area that has been selected for motion detection. When motion is detected, the LIVE VIDEO page will display a blinking orange motion video icon like the one below.

No Motion

Motion

The motion notification will continue to blink as long as motion is detected. If no additional motion is detected, it will return to its original state after eight seconds.



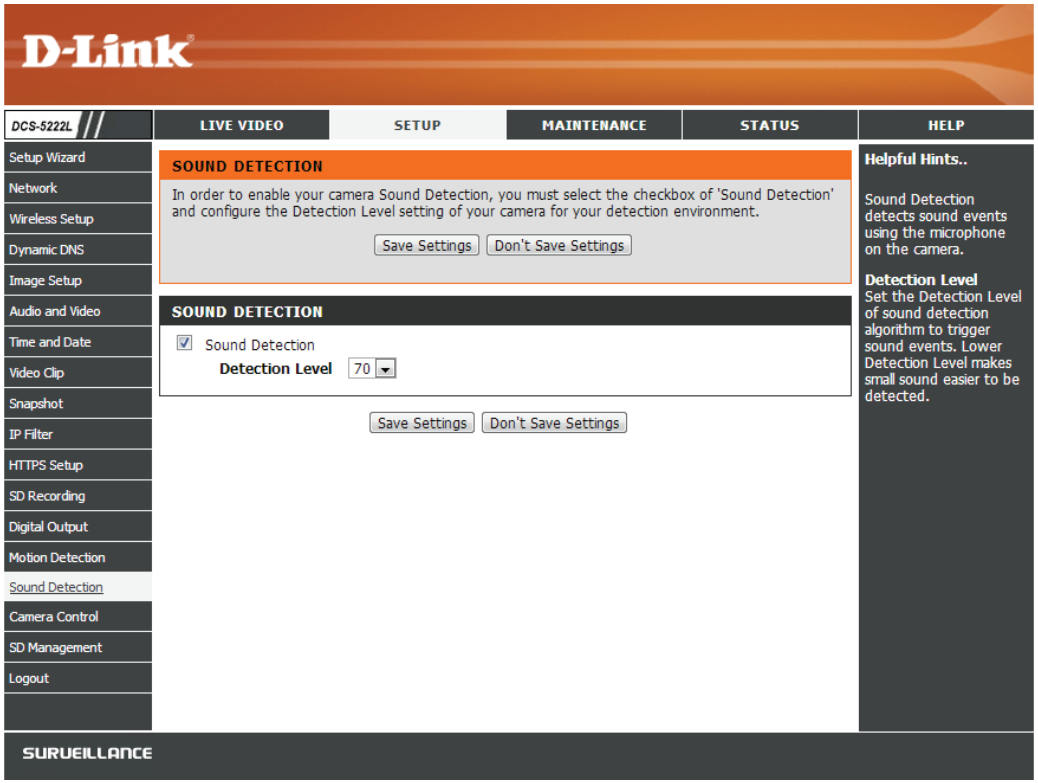
Sound Detection

Enabling Sound Detection will allow your camera to use the built-in microphone to trigger events with audio. If this option is selected, the trigger by option under SD recording, Video Clip, or Snapshot should also be selected.

Enable Sound Detection: Check this box to enable the motion detection feature of your camera.

Detection Level: Specifies the measurable level that would indicate sound. Please enter a value between 50 and 90, the higher the number the more sensitive the camera will be to sound.

After making any changes, click the **Save Settings** button to save your changes, or click the **Don't Save Settings** button to discard your changes.



Camera Control

This section allows you to configure the pan and tilt operations of your camera. You can specify the lens location for the Home button, and specify up to 24 pre-set lens locations, allowing you to quickly view these pre-determined areas of the camera's range from the Live Video screen.

Set As Home: Click to set the current position as Home.

Default Home: Click to set the Home position with the default setting.

Pan Step: Select the speed at which the camera will pan for a full cycle from the drop-down list. Select a value between 0 and 10, 0 being the slowest setting.

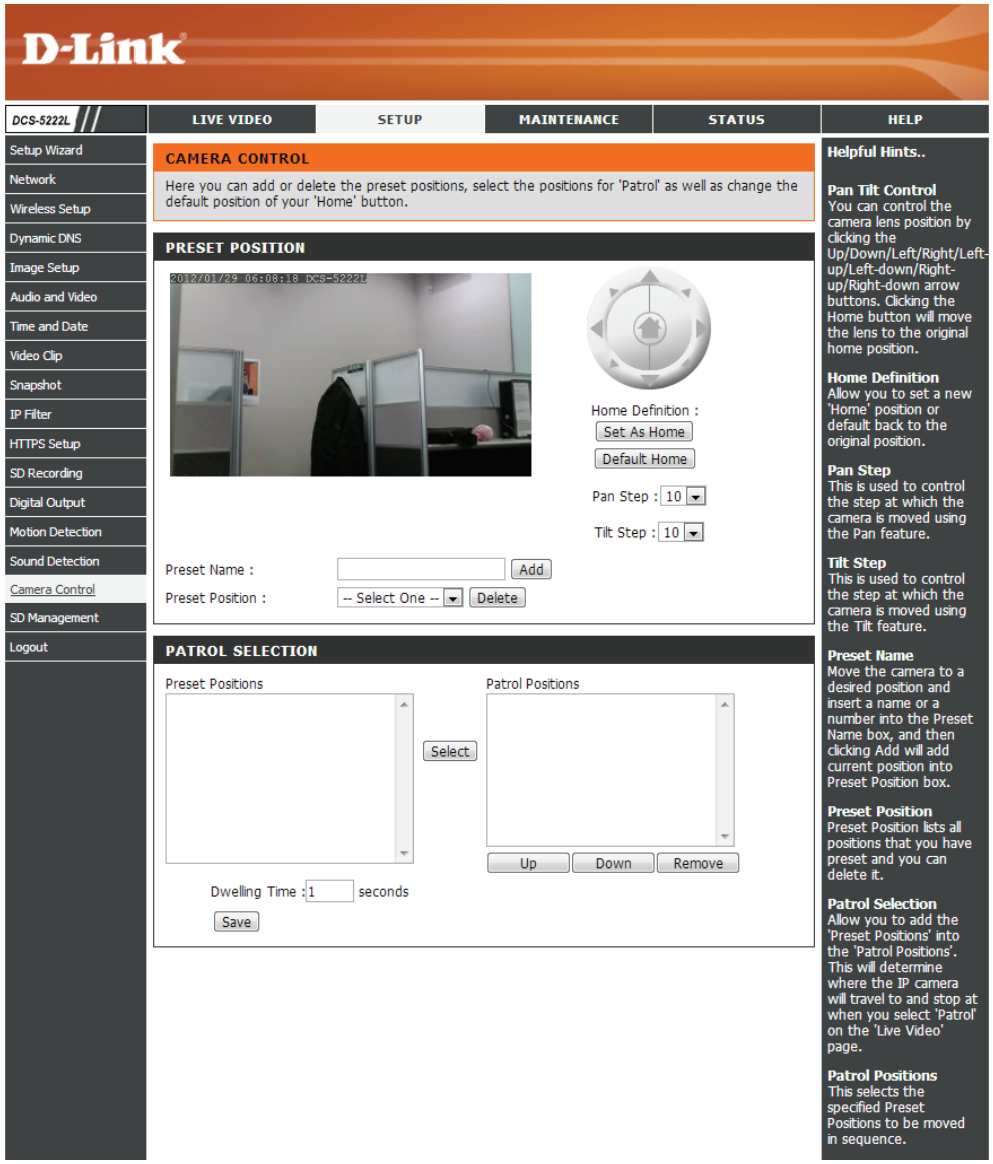
Tilt Step: Select the speed at which the camera will tilt for a full cycle from the drop-down menu. Select a value between 0 and 10, 0 being the slowest.

Preset Name: Enter a name for your camera location and click **Add**.

Present Position: Select created presets from the drop-down menu. If you want to delete an entry, select it and then click **Delete**.

Patrol Selection: To use the Auto Patrol feature, select the desired preset positions from the *Preset Locations* list and add them to the *Patrol Positions* list by clicking **Select**. You can then select the order in which the camera will patrol through the preset locations by selecting a location and clicking **Up** or **Down**. Click **Remove** to remove a location from the list.

Click **Save** when finished.



SD Management

This page allows you to browse and manage the recorded files on an SD card which has been inserted into the camera.

Note: It is recommended to use the **Format SD Card** function when inserting an SD card for the first time.

Format SD Card: Click to automatically format the SD Card and create a folder for video. Formatting your SD Card will erase all data currently saved.

Delete: Click the checkbox in front of the Delete button to select files meant for deletion. The Delete button is used to delete the files which are selected.

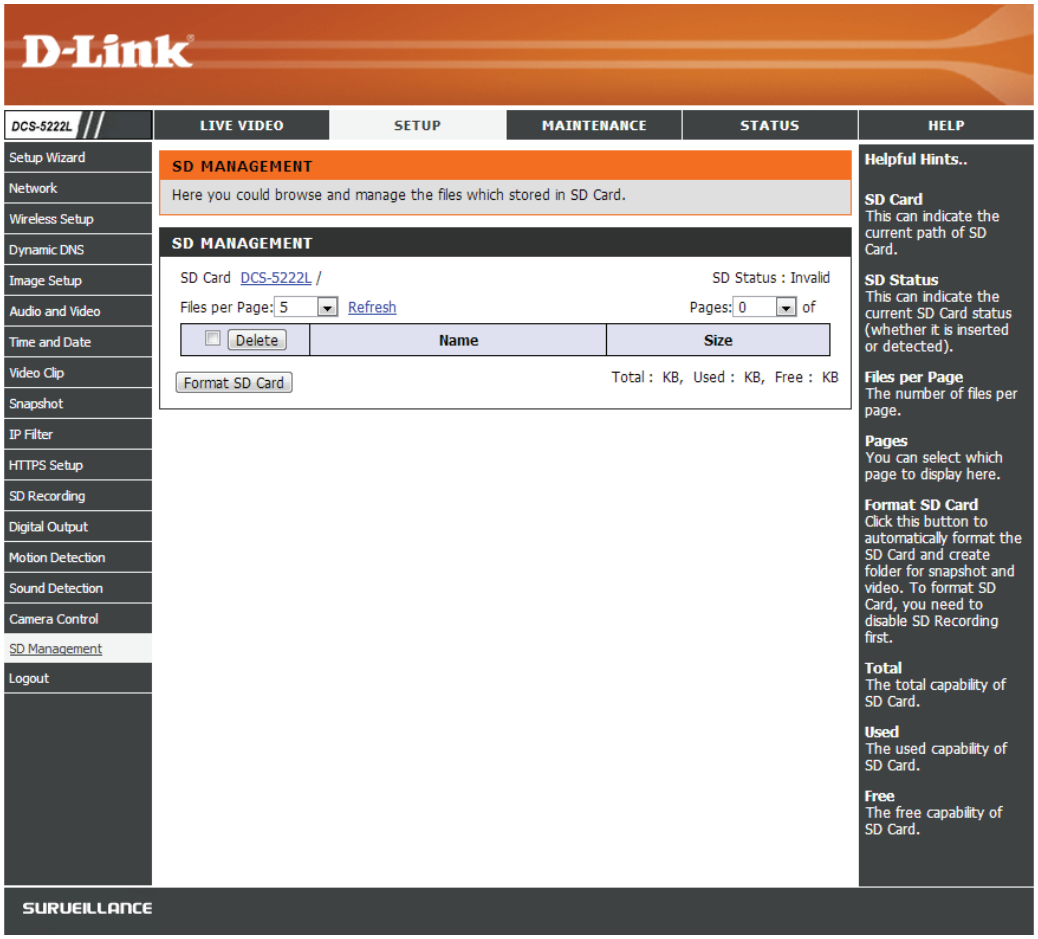
Name: The name of file recording.

Size: The file's size.

Refresh: Click to refresh the page.

Files per page: Select the number of files to be displayed on a single page. The maximum is 100 files.

Pages: Show the current and total number of pages.



Maintenance

Admin

This section allows you to change the administrator's password and configure the server settings for your camera. You can also manage the user account(s) that enable access to your camera.

Admin Password Setting: This section lets you change the admin password used to log into the camera and change settings. After installing the camera for the first time, it is highly recommended that you change the admin password for security purposes.

Enter the existing password, then enter your new password. Click **Save** to apply your new settings.

Add User Account: You may create user accounts to allow others to log into your camera to view the live camera feed. Users cannot change any settings.

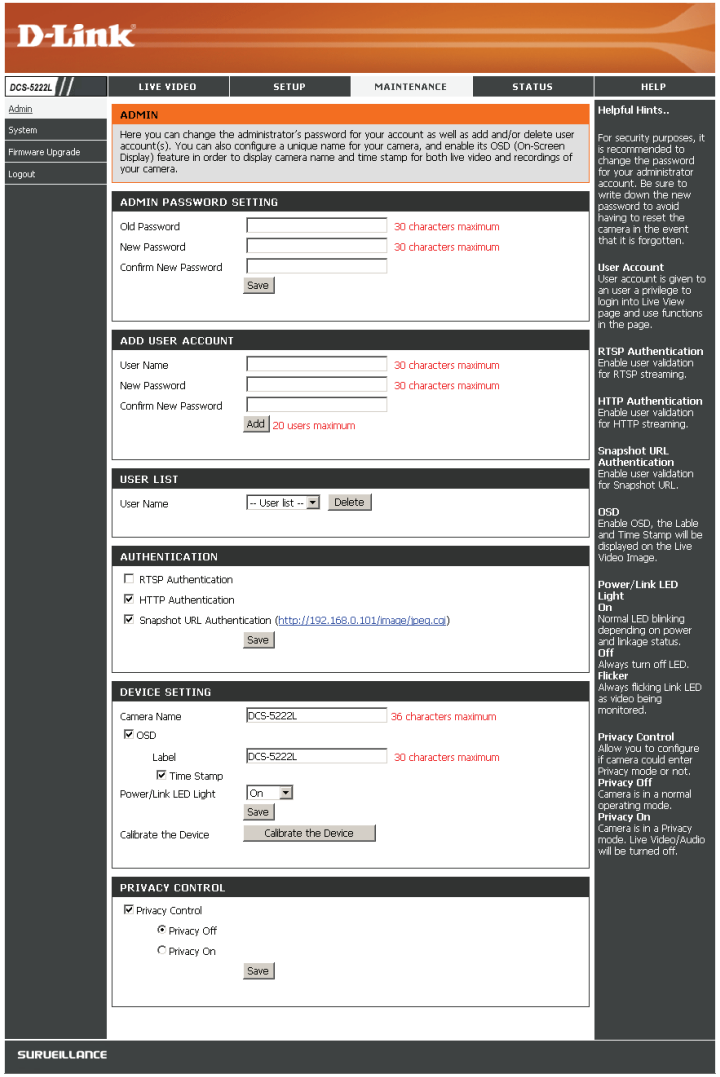
Enter the User Name you wish to use for the new user account and then create a password for that account. Click Add to save your account.

User List: Select a user from the drop-down menu and click **Delete** to remove the user account from having access to the camera images.

RTSP Authentication: Check to enable RTSP streaming.

HTTP Authentication: Check to enable HTTP streaming.

Snapshot URL Authentication: Select **Enable** to allow access to the current camera snapshot via the web address indicated.



Camera Name: Enter the name of your camera. This is useful if you have multiple cameras.

Enable OSD: This will enable the information bar On Screen Display (OSD) to appear when viewing video.

Label: This is the text label that will appear on the OSD.

Time Stamp: If checked, the current time will be displayed on the OSD.

LED Light: This will turn the camera's front LED indicator on or off.

Calibrate the Device: Clicking this button will calibrate the camera so that the P/T/Z apparatus functions correctly. The camera is automatically calibrated whenever it is powered on and initialized or reset. Should the camera's pan, tilt, and zoom functions begin to behave incorrectly, or if the device has been jarred or handled improperly, you may need to recalibrate the camera manually by pressing this button.

Privacy Mode: Select on/off or schedule the privacy mode for your camera to ensure privacy. When the privacy mode is turned on, the camera hides the lens by rolling it back into the unit.

After making any changes, click the **Save** button to save your changes.

System

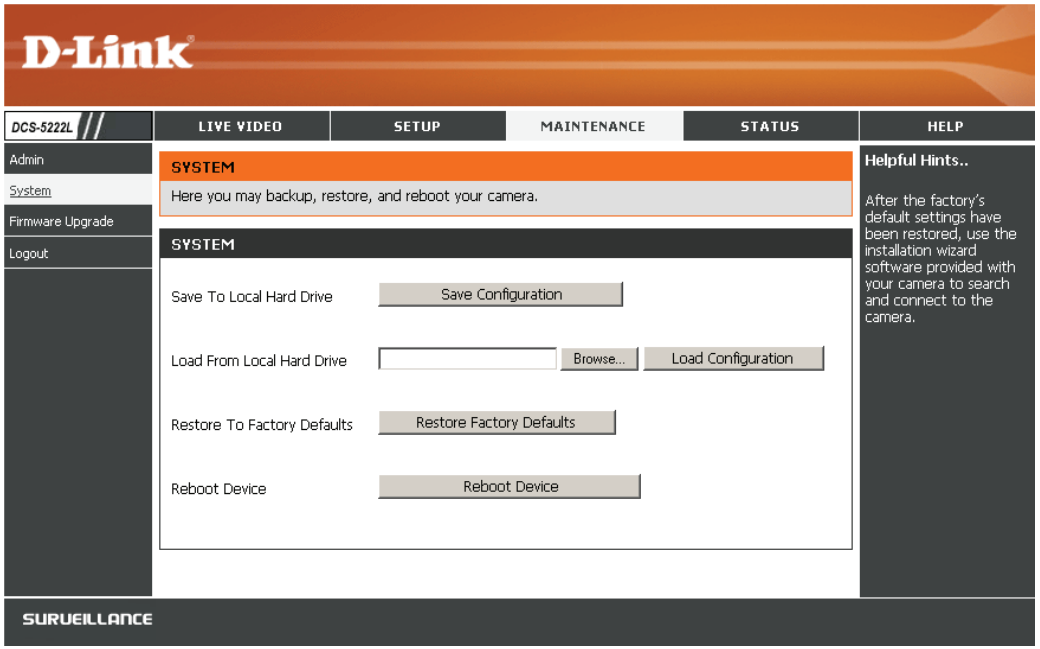
This screen allows you to save and restore the camera's current configuration. You can also reset all settings to the factory default or reboot the device.

Save to Local Hard Drive: Click on the **Save Configuration** button to save the current configuration to your hard drive.

Load from Local Hard Drive: To load a saved configuration, click on the **Browse** button to select a configuration file from your hard drive. Then, click the **Load Configuration** button to load the new configuration.

Restore to Factory Defaults: Click this button to reset all settings to their factory defaults. If you select to reset your settings, you will need to set up your camera again.

Reboot Device: Clicking the **Reboot** button will reboot your device.



Firmware Upgrade

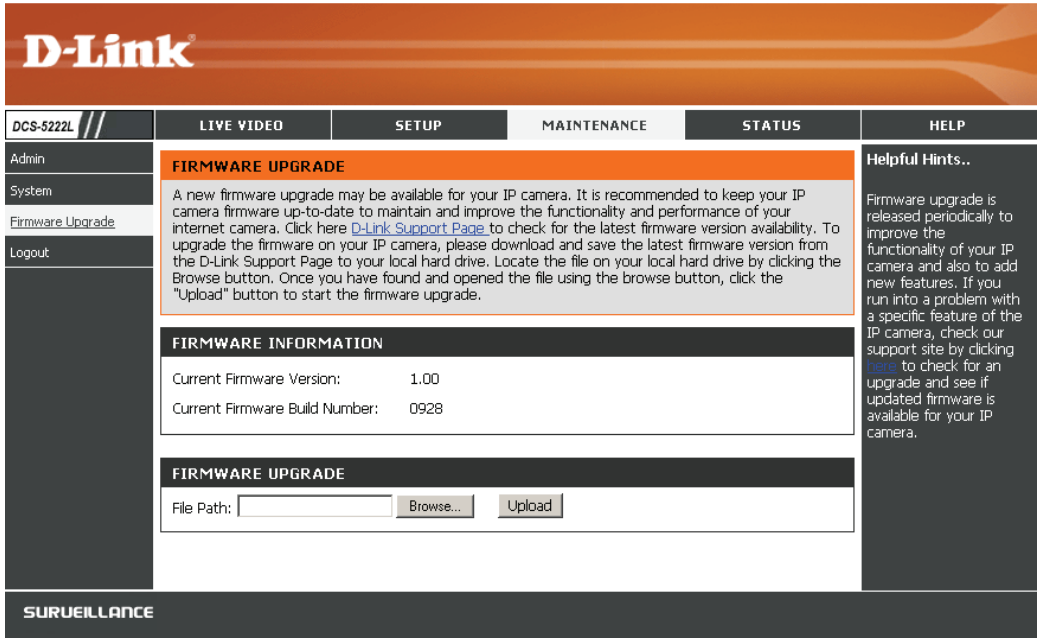
Your current firmware version and date will be displayed on this page. You can also upgrade your firmware with a new version.

To upgrade your firmware, go to **support.dlink.com** and download the latest firmware to your computer's hard drive.

Click on **Browse**, select the firmware file, then click the **Upload** button.

While the firmware is being upgraded, do not turn off your computer or camera, and do not disconnect your network connection from your computer or camera. Upgrading the firmware will not change any of your system settings, but it is recommended that you save your system configuration before doing a firmware upgrade.

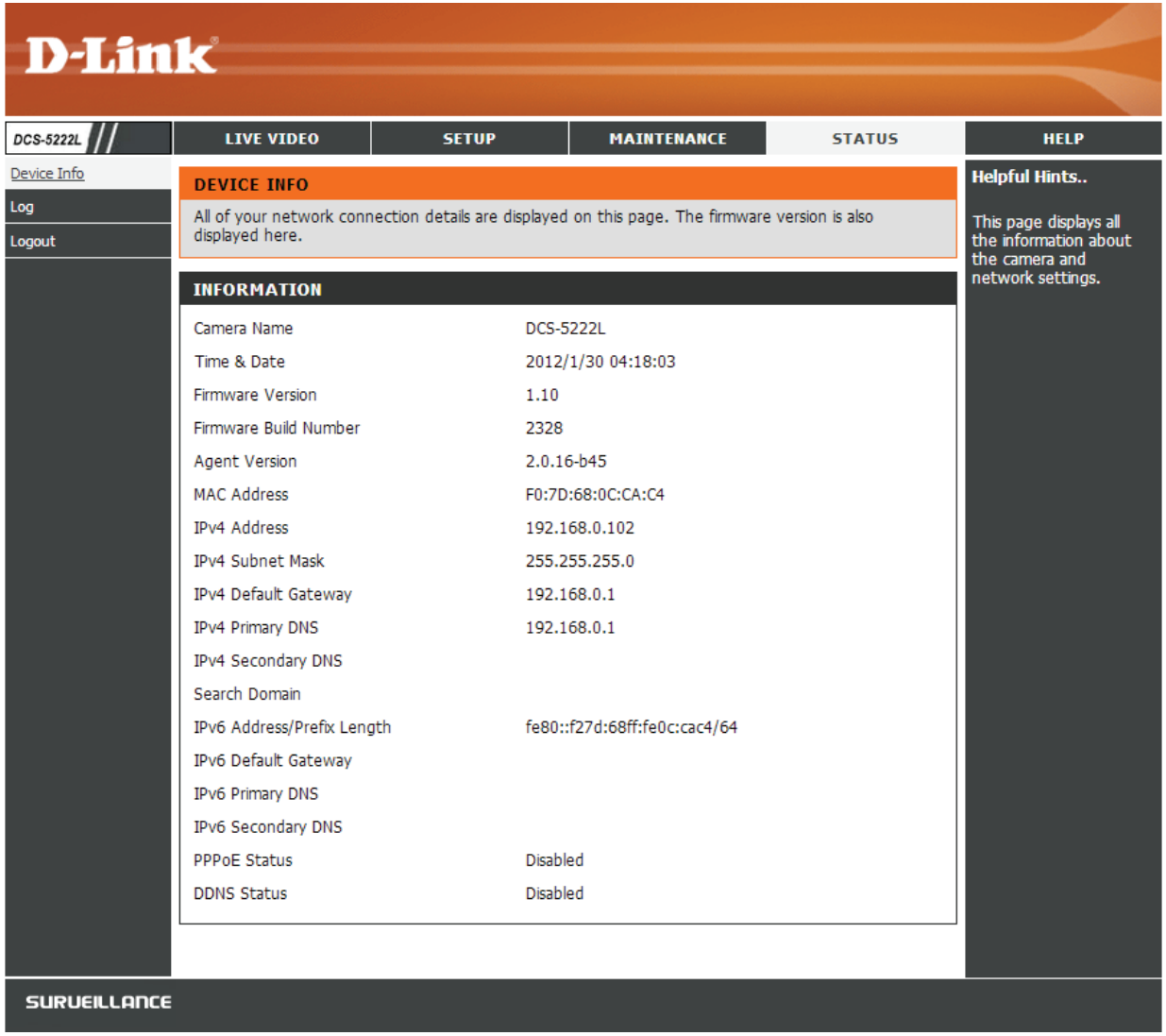
Note: *It is recommended that you use a wired connection for your computer and camera when upgrading the firmware.*



Status

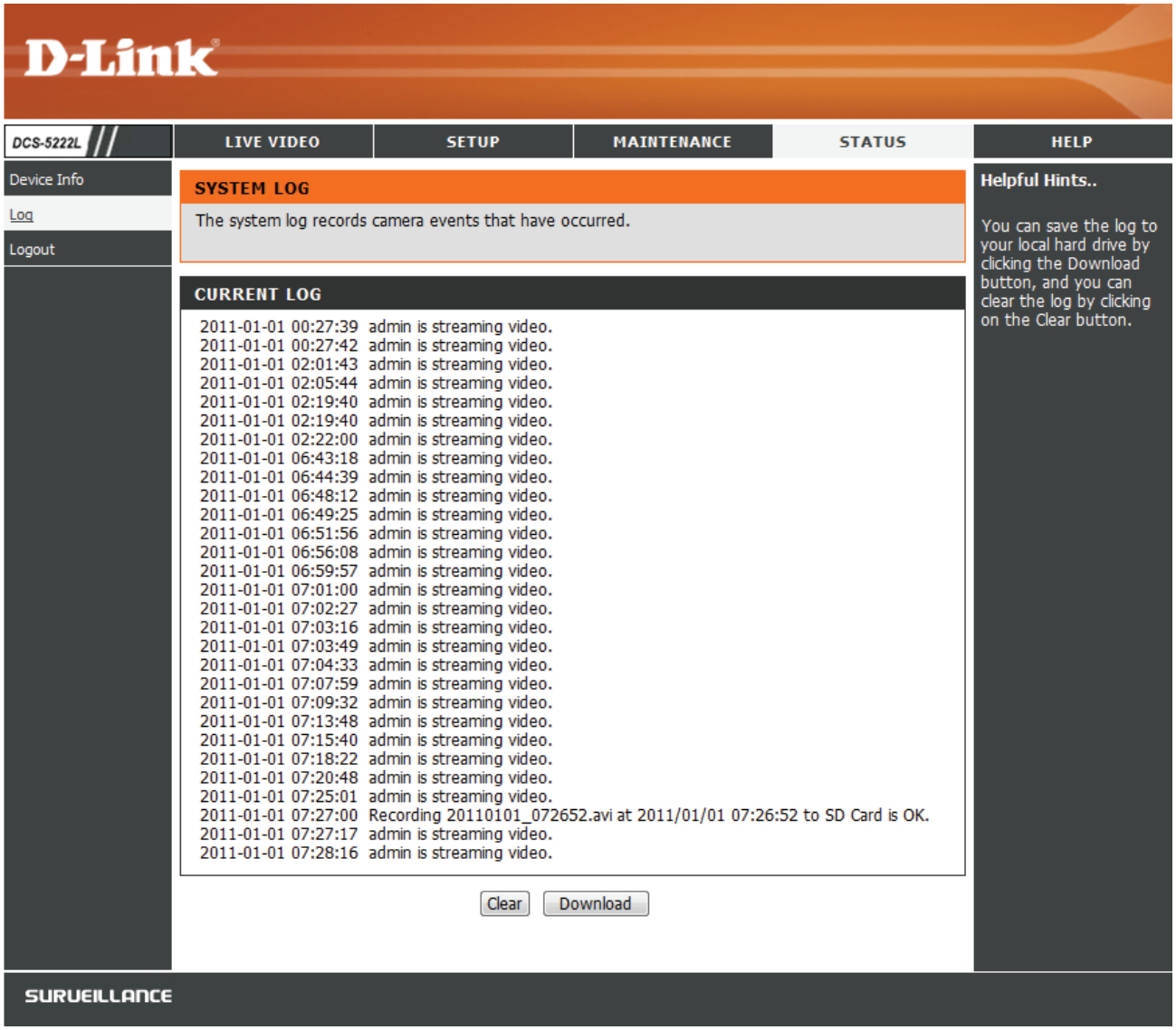
Device Info

This screen displays various information about your camera and its current settings.



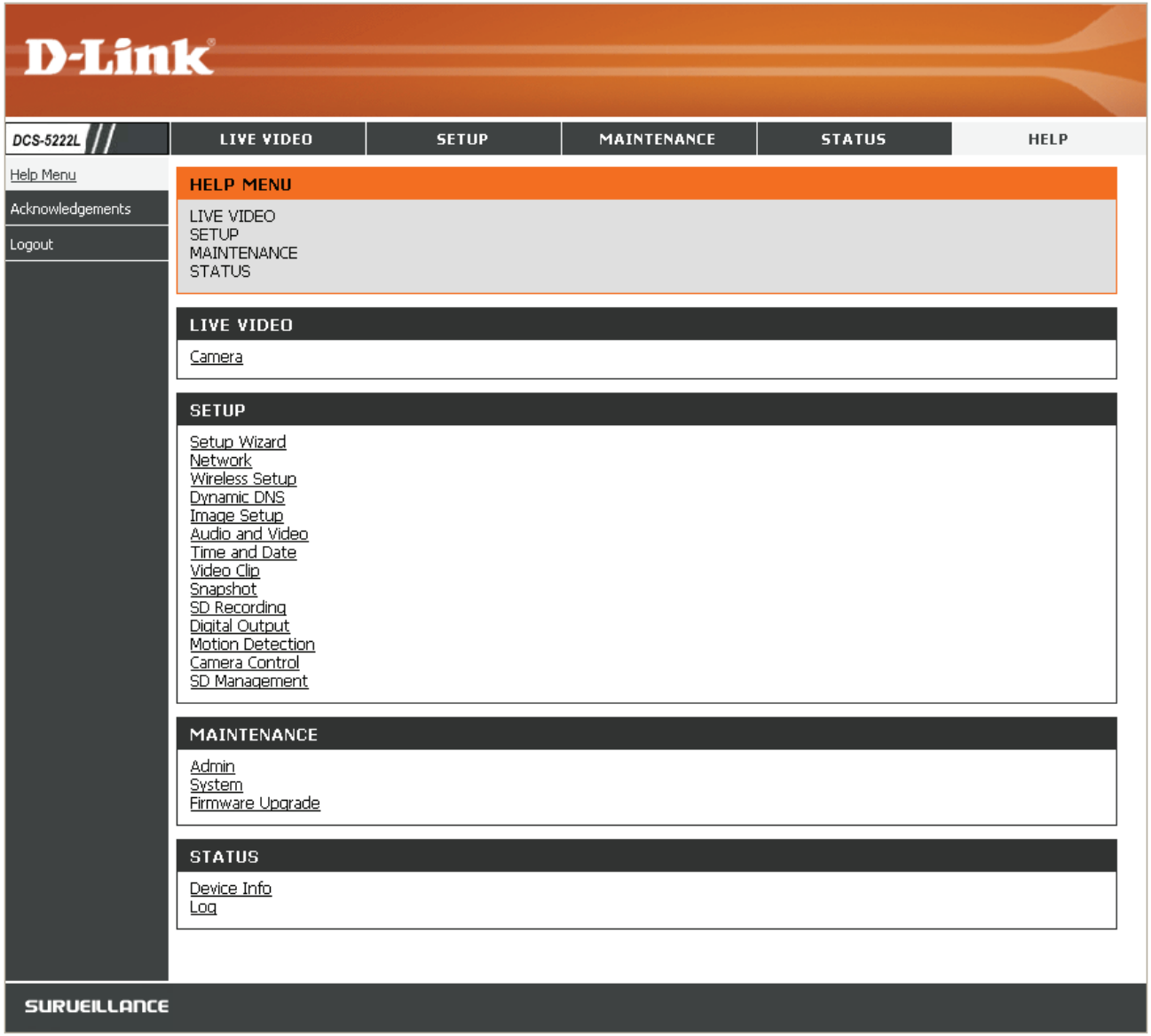
Log

The log shows you a list of events that have happened recently. You can download the log by clicking the **Download** button, or you can empty the log by clicking the **Clear** button.



Help

Online help is available at any time by clicking on the Help tab.



Configuring the DCS-5222L with a Router

D-Link's DCS-5222L is a versatile and cost effective Network Camera offering both video and audio monitoring. It can also serve as a powerful surveillance system in security applications. The DCS-5222L can be used with any wired or 802.11n/g wireless router. This section explains how to view the camera from either the Internet or from inside your internal network. **This step is only needed if you do not wish to take advantage of the built in mydlink functions.**

Components Needed:

- 1 DCS-5222L Network Camera
- 1 Ethernet Cable
- A wired or wireless router such as the D-Link DIR-655 Wireless Router
- Ethernet-based PC for system configuration

Setting up the DCS-5222L for Use Behind a Router

Installing a DCS-5222L Network Camera on your network is an easy 4–step procedure:

1. Assign a local IP address to your network camera.
2. View the network camera using your Internet Explorer web browser.
3. Access the router with your web browser.
4. Open virtual server ports to enable remote image viewing.

Note: *These are manual steps; however, if you decide to use the wizard, it will perform every step automatically.*

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-5222L, follow the steps outlined in the Quick Installation Guide.

After you have completed the setup of the DCS-5222L 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 Network 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.

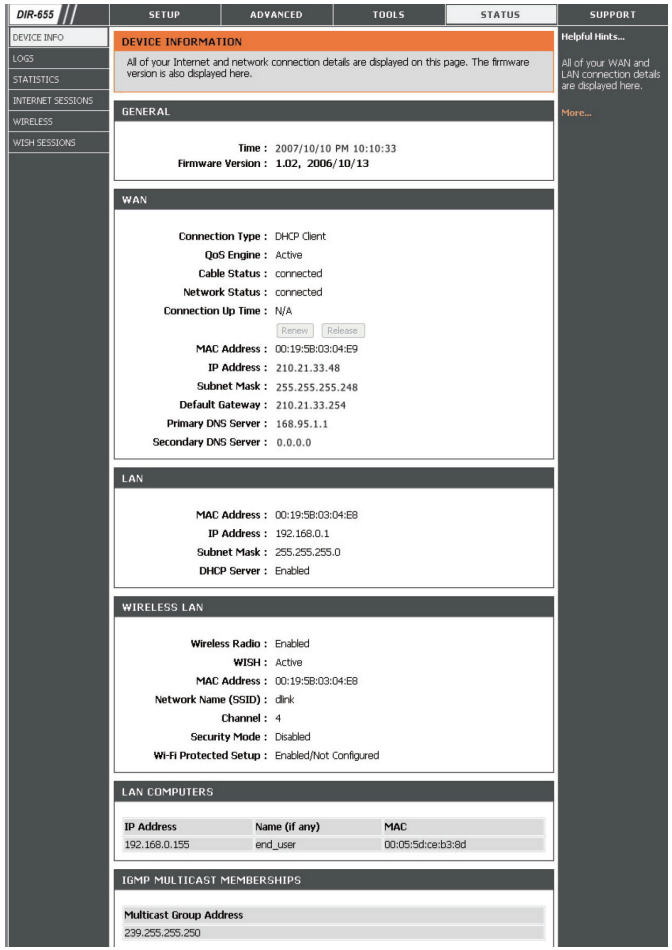
1. Assign a Local IP Address to Your Camera

Run the setup wizard from the CD included with the DCS-5222L. Follow the steps in the Quick Installation Guide to configure the DCS-5222L. 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.

2. View the Network Camera Using Your Internet Explorer Web Browser

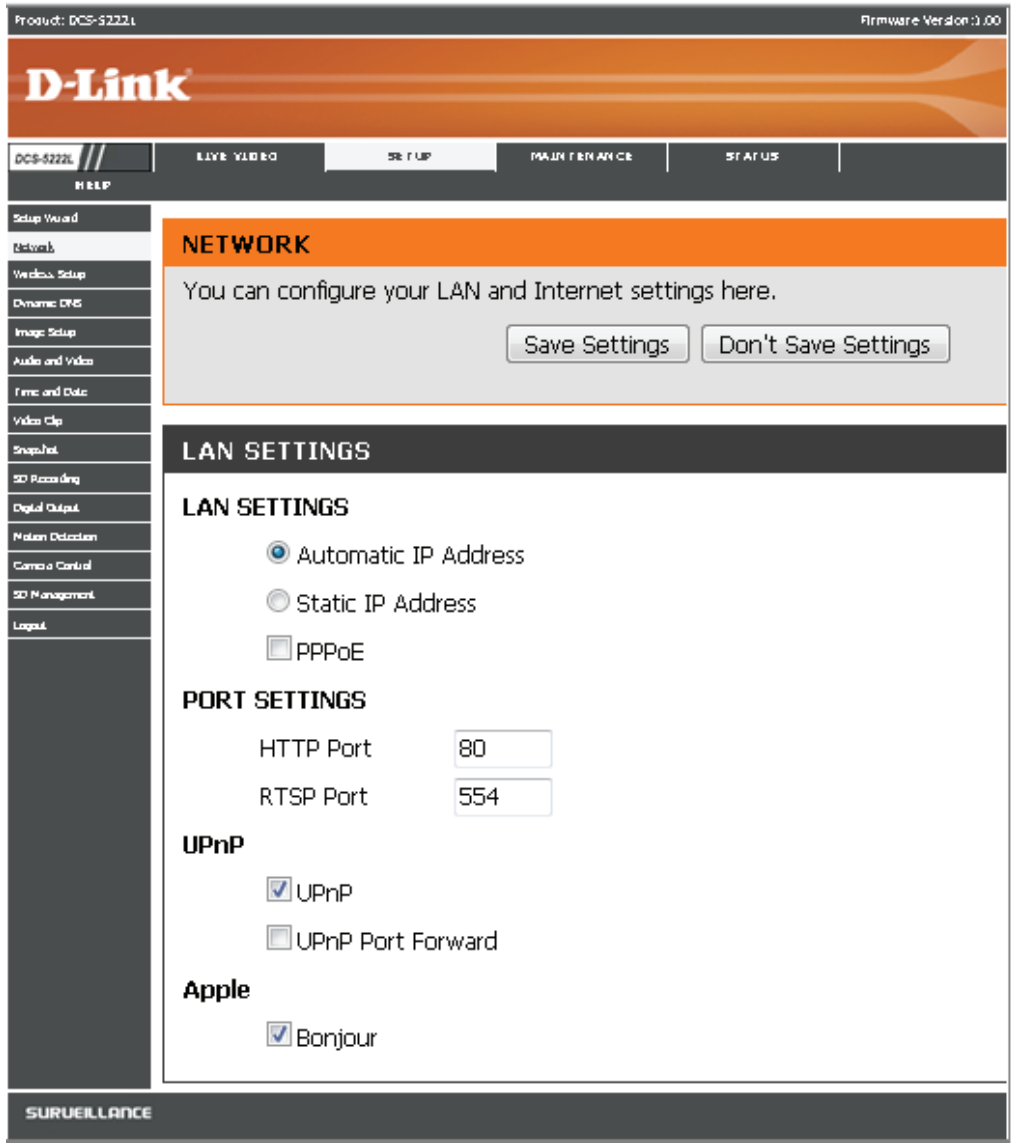
Open a Web browser. In the address bar, type in the IP Address that was assigned to the Network Camera. The DCS-5222L Live Video Page appears with a window displaying live video from the camera.

Click on the **Setup** button on the left side. Scroll to the bottom of the Network Setup page to display the ports used by HTTP and Streaming audio and video.



The **Setup > Network** page displays 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).

Note: Both the HTTP port and RTSP port are required to be opened for the DCS-5222L.



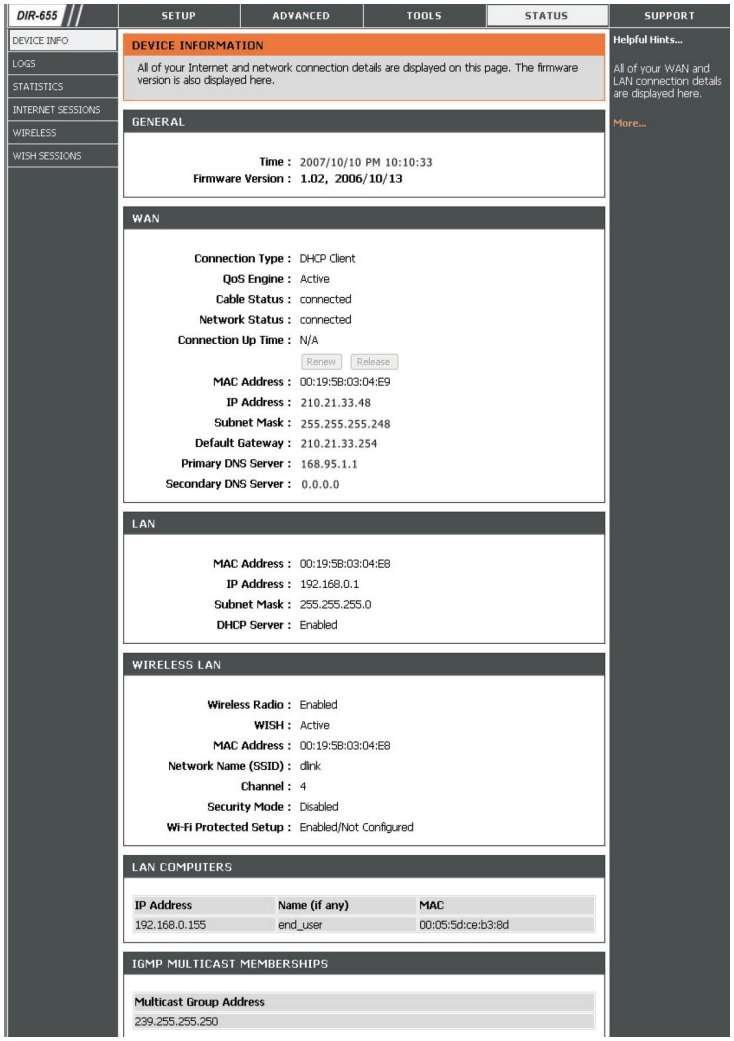
Router Set-Up and Installation

The following steps generally apply to any router that you have on your network. The D-Link DIR-655 is used as an example to clarify the configuration process. Refer to the router's user manual for more information on router operation and configuration.

3. Access the Router with Your Web Browser

If you have cable or DSL Internet 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 page 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.

Your WAN IP Address will be listed on the router's **Status > Device** Info page.



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 Ports to Enable Remote Image Viewing (Port Forwarding)

The firewall security features built into the DIR-655 router prevent users from accessing the video from the DCS-5222L over the Internet. The router connects to the Internet over a series of numbered ports. The ports normally used by the DCS-5222L 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 DIR-655 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.

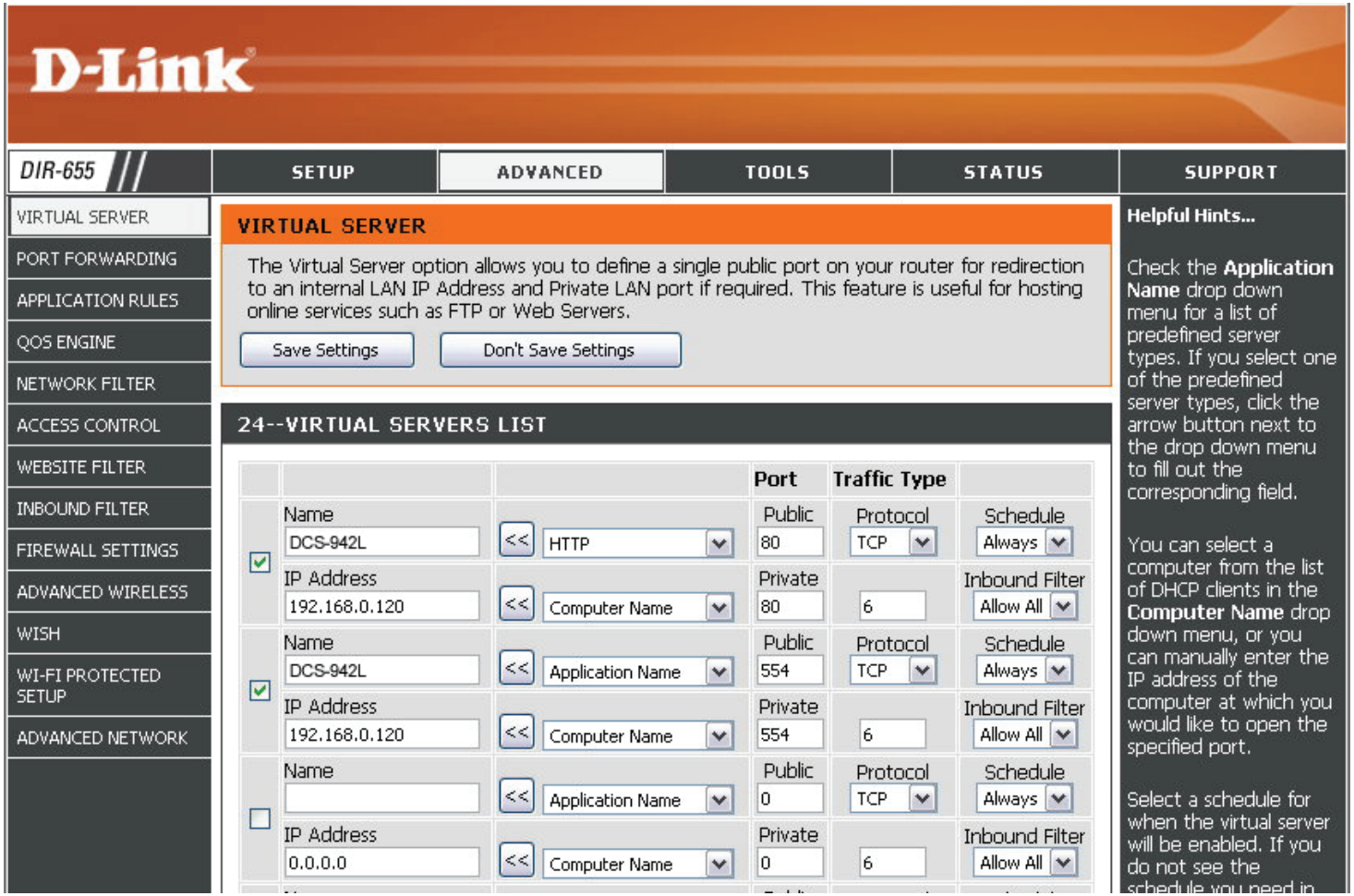
Follow these steps to configure your router's Virtual Server settings:

1. Click **Enabled**.
2. Enter a different name for each entry.
3. Enter your camera's local IP Address (e.g., 192.168.0.120) in the Private IP field.
4. Select TCP for HTTP port, both (TCP and UDP) for RTSP and both (TCP and UDP) for 5556 - 5559 ports.
5. If you are using the default camera port settings, enter 80 into the Public and Private Port section, click **Apply**.
6. Scheduling should be set to Always so that the camera images can be accessed at any time.

Repeat the previous steps adding the port 554 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 and other commonly used Internet ports to conserve bandwidth. Check with your ISP so that you can open the appropriate ports accordingly. If your ISP does not pass traffic on port 80, you will need to change the port the camera uses from 80 to something else, such as 8080. 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 Server section of your router. Please make sure to check the box next to the camera name on the Virtual Server List to enable your settings.



Troubleshooting

This chapter provides solutions to problems that can occur during the installation and operation of the DCS-5222L. Read the following descriptions if you are having problems. (The examples below are illustrated in Windows Vista® and XP. If you have a different operating system, the screenshots on your computer will look similar to the following examples.)

1. What is Remote Access? How do I enable it?

Remote Access allows you to access your camera from any PC connected to the Internet through a web browser. This lets you view your camera feed and manage your camera's settings when you're away from home. To enable Remote Access, simply go through the Camera Installation Wizard included on the Installation CD that came in your package. You can also download the wizard from the following websites:

DCS-5222L: http://DCS-5222L.mydlink.com

After going through the wizard, you should see Remote Status: Enabled on the summary page.

If you see Remote Status: Disabled, make sure that:

...the front LED on your camera is lit solid green

...your Internet connection is working

...your router's LAN & WAN connections are working properly

...your router has UPnP enabled (if your router does not support UPnP, please refer to Appendix A)

...your router can get a public IP

...your router is upgraded to the latest firmware

...you have tried rebooting your router by unplugging it, then plugging it back in

After checking the above items, you can click the Retry button to refresh the summary screen to see if Remote Access has been enabled.

2. What can I do if I forget my password?

If you forget your password, you will need to perform a hard reset of your camera. This process will change all your settings back to the factory defaults.

To reset your camera, please use an unfolded paperclip to press and hold the RESET button for at least 3 seconds while your camera is plugged in.

3. Why does the LED not light up?

The power supply might be faulty. Confirm that you are using the provided DC 5V power supply for this network camera. Verify that the power supply is correctly connected. If the camera is functioning normally, the LED may have been disabled. See page 52 for information about how to enable the LED.

4. Why is the camera's network connection unreliable?

There might be a problem with the network cable. To confirm that the cables are working, PING the address of a known device on the network. If the cabling is OK and your network is reachable, you should receive a reply.

Another possible problem may be that the network device such as a hub or switch utilized by the Network Camera is not functioning properly. Please confirm the power for the devices are well connected and functioning properly.

5. Why does the Network Camera work locally but not remotely?

This might be caused by a routers firewall protection. Check the Internet firewall with your system administrator. The firewall may need to have some settings changed in order for the Network Camera to be accessible outside your local LAN. For more information, please refer to the section about installing your camera behind a router.

Make sure that the Network Camera isn't conflicting with any Web server you may have running on your network.

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

6. Why does a series of broad vertical white lines appear through out the image?

It could be that the CMOS sensor (a square panel situated behind the lens that measures the light signals and changes it into a digital format so your computer can present it into an image that you are familiar with) has become overloaded when it has been exposed to bright lights such as direct exposure to sunlight or halogen lights. Reposition the Network Camera into a more shaded area immediately as prolonged exposure to bright lights will damage the CMOS sensor.

7. The camera is producing noisy images. How can I solve the problem?

The video images might be noisy if the Network Camera is used in a very low light environments.

8. The images are poor quality, how can I improve the image quality?

Make sure that your computer's display properties are set to at least 6-bit color. Using 16 or 256 colors on your computer will produce dithering artifacts in the image, making the image look as if it is of poor quality.

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

9. Why are no images available through the Web browser?

ActiveX might be disabled. If you are viewing the images from Internet Explorer make sure ActiveX has been enabled in the Internet Options menu. You may also need to change the security settings on your browser to allow the ActiveX plug-in to be installed.

If you are using Internet Explorer with a version number lower than 6, then you will need to upgrade your Web browser software in order to view the streaming video transmitted by the Network Camera.

If you are using another browser such as Google's Chrome or Apple's Safari, you may need to install the appropriate plugin before the streaming video will work.

If you are using Java, you may need to update to the latest version of the Java application. Please visit Sun's website in order to obtain the newest version Java for your computer platform (http://www.java.com).

You browser may also have 3rd party applications blocked. Please make sure that the browser you are using does not have 3rd party plugin support disabled. You may need to refer to your particular browsers help function in order to turn this functionality on or off.

10. The PIR is not operating well, how can I improve the PIR quality?

- For the Passive Infrared Sensor (PIR) to function properly it is required to have direct line of site to the object. When the room has many obstacles or the line of site is obstructed by glass, the PIR will not function properly.
- When the environment temperature is too high, the PIR detection will slow down and should not be mistaken for a faulty PIR.
- This Network Camera can only be installed indoors. Do not install this camera in a place where IR interference can be a problem. IR interference can be found close to glass doors or windows, where direct sunlight can cause interference or in the path of car headlights.
- Do not install this camera next to or in front of an air conditioner outlet or vent.
- Do not install this camera close to wireless devices with high frequencies as the PIR is easily affected by RF radiation.

- The PIR functions at best when detecting lateral movements. Radial movements cannot be detected as well as lateral movements.
- Do not install this camera directly under an extreme bright light. The PIR cannot fully suppress a bright white light.
- Any movements from an object with a normal body temperature, like humans or animals, can be detected. To avoid any malfunctions, install this camera at the proper height.
- To avoid any malfunctions, install this camera in an environment with an average temperature of 25°C. Only within a distance of 2.5 meters can smaller movements of an object, with the average adult human's height, be detected. Between a distance of 2.5 and 5 meters, a larger movement of an object is required for detection.
- Install this camera on a firm, static, anti-shock surface.

Networking Basics

Check your IP address

By default, the TCP/IP settings should be set to obtain an IP address from a DHCP server (i.e. wireless router) automatically. To verify your IP address, please follow the steps below.

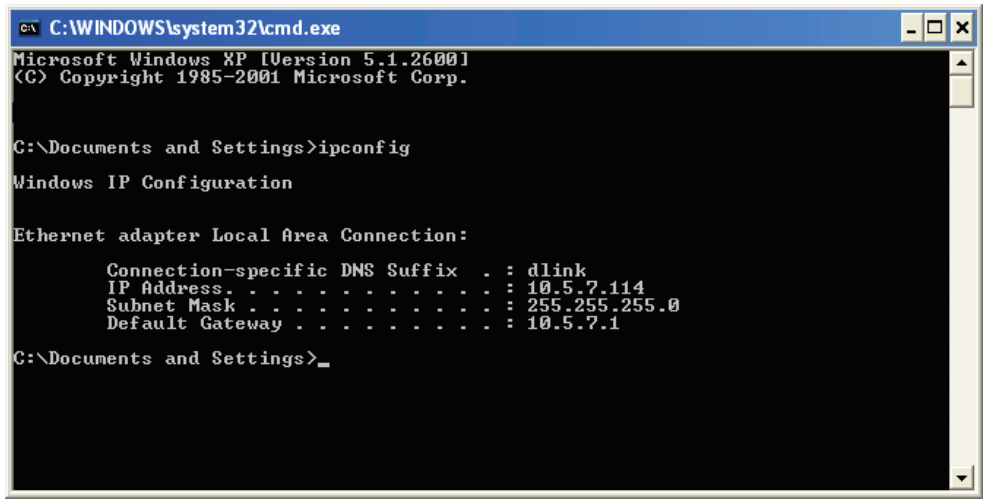
Click on **Start** > **Run**. In the run box type **cmd** and click **OK**. (Windows® 7/Vista® users type cmd in the Start Search box)

At the prompt, type **ipconfig** and press **Enter**.

This will display the IP address, subnet mask, and the default gateway of your adapter.

If the address is 0.0.0.0, check your adapter installation, security settings, and the settings on your router. Some firewall software programs may block a DHCP request.

If you are connecting to a wireless network at a hotspot (e.g. hotel, coffee shop, airport), please contact an employee or administrator to verify their wireless network settings.



Statically Assign an IP Address

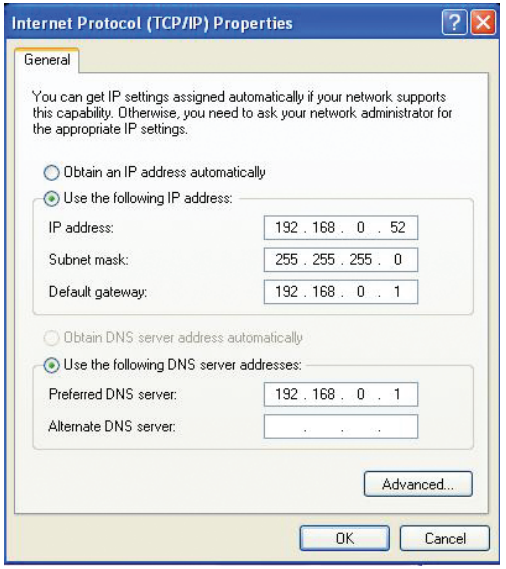
If you are not using a DHCP capable gateway/router, or you need to assign a static IP address, please follow the steps below:

Step 1
Windows® 7- Click on **Start** > **Control Panel** > **Network and Internet** > **Network and Sharing Center.**
Windows® Vista - Click on **Start** > **Control Panel** > **Network and Internet** > **Network and Sharing Center** > **Manage Network Connections**.
Windows XP - Click on **Start** > **Control Panel** > **Network Connections**.

Step 2
Right-click on the **Local Area Connection** which represents your D-Link network adapter and select **Properties**.

Step 3
Highlight **Internet Protocol (TCP/IP)** and click **Properties**.

Step 4
Click **Use the following IP address** and enter an IP address that is on the same subnet as your network or the LAN IP address on your router.



Example: If the router´s LAN IP address is 192.168.0.1, make your IP address **192.168.0.X** where X is a number between 2 and 99. Make sure that the number you choose is not in use on the network. Set Default Gateway to the same as the LAN IP address of your router (192.168.0.1).

Set Primary DNS to the same as the LAN IP address of your router (**192.168.0.1**). The Secondary DNS is not needed or you may enter a DNS server from your ISP.

Step 5
Click **OK** twice to save your settings.

Technical Specifications - I/O Terminal Applications

The digital input/output port is typically used in association with programming scripts for developing applications for motion detection, event triggering, alarm notification via e-mail, and a variety of external control functions. The 4-pin I/O Terminal Block is located on the rear panel and provides the interface of a photo-coupled switch output and a photo-coupled input.

Connector Pin Assignment

Sign	FUNCTION	SPECIFICATION
DO-	Photo-Relay OUTPUT (Normal Open)	Close circuit current max. 70 mA AC, or 100 mA DC. On-Resistance max. 30 Ohm. Open circuit blocking voltage max. 240VAC or 340VDC
DO+	Photo-Relay OUTPUT(Common)	
DI-	Photo-Relay INPUT (-)	Active High voltage 2.5~25VDC Inactive Dropout voltage 0~1.5 VDC Internal on-current has limit at 7mA to protect the photo-relay.
DI+	Photo-Relay INPUT (+)	

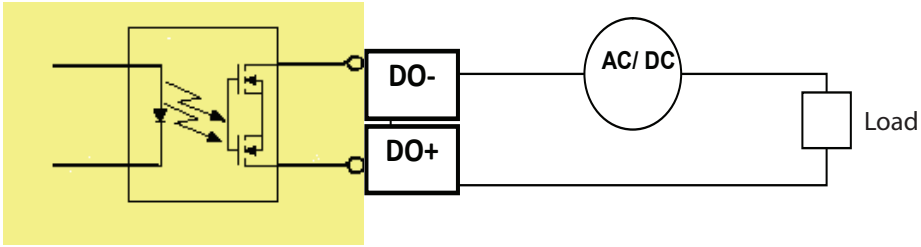
Monitoring and Controlling

By entering http requests in your browser's URL field, it is possible to:

- Monitor the status of digital input.
- Turn the output switch on or off.

Interface Schematic

Output device (load) is driven by an external AC or DC power supply.



Input device (active control device) has an independent power supply.

Technical Specifications

General Specifications		

Camera Specifications	• 1/4" Megapixel Progressive CMOS sensor
	• 5 meter IR illumination distance
	• Minimum illumination 0 lux with IR LED on
	• Built-in Infrared-Cut Removable (ICR) Filter module
	• Focal length 4.0 mm
	• Aperture: F1.5
		• Exposure Time: 1/50 ~ 1/15,000
		• Angle of view:
		  • (H) 56.1°
		  • (V) 33.3°
		  • (D) 62.8°
		• Built-in Microphone

Video Features	• Configurable image size, quality, frame rate, and bit rate • Time stamp and text overlays • Configurable motion detection windows	• Configurable shutter speed, brightness, saturation, contrast, mirror, flip
Video Compression	• H.264/MPEG4/MJPEG format simultaneous compression	• H.264/MPEG4 multicast streaming • JPEG for still images

Video Resolution	• 16:9 (supports frame rates up to 30 fps)
	  • 1280 x 720
	  • 640 x 352
	  • 320 x 176
	  • 160 x 80	

Pan/Tilt/Zoom	• Pan Range: -170° to 170° • Tilt Range: -25° to 90° • Digital Zoom: 4x	• Manual Pan Speed: 1-10 • Manual Tilt Speed: 1-10 • Position Presets: 10 points
Audio Compression	• ADPCM, PCM	
Network Protocol Support	• IPv4/IPv6 • ARP • TCP • UDP • ICMP • DHCP Client • NTP Client (D-Link) • DNS Client • DDNS Client (D-Link)	• SMTP Client • FTP Client • HTTP Server • PPPoE • RTP • RTSP • RTCP • 3GPP
Network Interface	• IEEE 802.11n	• 10/100 BASE-TX Fast Ethernet
External Device Interface	• MicroSD/SDHC Slot[3] • Audio Output	• DI/DO Port

Advanced Features		
Remote Management	• Take snapshots/video clips and save to local hard drive via web browser	• Configuration accessible via web browser
Security	• Administrator and user group protected • Password authentication	• HTTP and RTSP digest encryption
Surveillance	• Record video continuously • Record video according to a weekly schedule • Record video when motion is detected	• Upload snapshots/video clips via e-mail • Upload snapshots/video clips via FTP
Mobile App Support	• mydlink Lite app for iOS and Android devices	
System Requirements		
Operating System	• Microsoft Windows 8/7/Vista/XP SP3	
Compatible Browsers	• Microsoft Internet Explorer 6 or higher, Firefox 1.5 or higher, or other Java-enabled browser	
Supported Mobile Devices	• Mobile devices with a 3GPP player, such as Packet Video Player 3.0, QuickTime 6.5, or Real Player 10.5	• mydlink™ app requires a mobile device running iOS or Android
Physical		
Dimensions	• 114 x 114 x 125 mm (4.46 x 4.46 x 4.92 inches)	
Weight	• 540 grams (1.19 lb)	
Power Input	• Input: 12 V/1.25 A, 50/60 Hz	
Temperature	• Operating: 0 to 40 °C (32 to 104 °F)	• Storage: -20 to 70 °C (-4 to 158 °F)
Humidity	• Operating: 20% to 80% non-condensing	• Storage: 5% to 95% non-condensing
Certifications	• CE • FCC Class B	• C-Tick • CE LVD
Order Information		
Part Number	*Description*	
DCS-5222L	HD Wireless N Pan/Tilt Network Camera	

[3] An SDHC Class 6 card or above is recommended. Card capacities of up to 32GB supported.