



User Manual

Wireless N Day/Night Network Camera

DCS-932L

Manual Overview

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Manual Revision

| Revision | Date | Description |
|----------|--------------------|--|
| 2.0 | June 4, 2014 | DCS-932L Revision B1 with firmware version 1.0 |
| 2.1 | September 25, 2014 | Updated specifications |

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Product Overview

Package Contents

- DCS-932L Wireless N Day/Night Network Camera
- CAT5 Ethernet Cable
- Power Adapter
- Manual and Software on CD
- Quick Install Guide
- Mounting Kit

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

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



System Requirements

- Computer with Microsoft Windows® 8/7/Vista, or Mac with OS X 10.6 or higher
- PC with 1.3GHz or above and at least 128MB RAM
- Internet Explorer 7, Firefox 12, Safari 6, or Chrome 20 or higher version with Java installed and enabled
- Existing 10/100 Ethernet-based network or 802.11b/g/n wireless network

Introduction

Congratulations on your purchase of the DCS-932L Wireless N Day/Night Network Camera. The DCS-932L is a versatile and unique solution for your small office or home. Unlike a standard webcam, the DCS-932L is a complete system with a built-in CPU and web server that transmits high quality video images for security and surveillance. The IR LED provides around the clock surveillance regardless of the lighting conditions. The DCS-932L can be accessed remotely, and controlled from any PC/ Notebook over your local network or through the Internet via a web browser. The simple installation and intuitive web-based interface offer easy integration with your Ethernet/Fast Ethernet or 802.11b/g/n wireless network. The DCS-932L also comes with remote monitoring and motion/sound detection features for a complete and cost-effective home security solution.

Features

Simple to Use

The DCS-932L is a stand-alone system with a built-in CPU, requiring no special hardware or software such as PC frame grabber cards. The DCS-932L supports both ActiveX mode for Internet Explorer and Java mode for other browsers such as Firefox® and Safari®.

Supports a Variety of Platforms

Supporting TCP/IP networking, HTTP, and other Internet related protocols. The DCS-932L can also be integrated easily into other Internet/Intranet applications because of its standards-based features.

802.11n Wireless or Ethernet/Fast Ethernet Support

The DCS-932L offers wireless 802.11n and Ethernet/Fast Ethernet connectivity, making the DCS-932L easy to integrate into your existing network environment. The DCS-932L 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.

Web Configuration

Using a standard Web browser, administrators can configure and manage the Network Camera directly from its own Web page via Intranet or Internet. This means you can access your DCS-932L anytime, anywhere in the world.

Broad Range of Applications

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

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.

IR LEDs for Day and Night Functionality

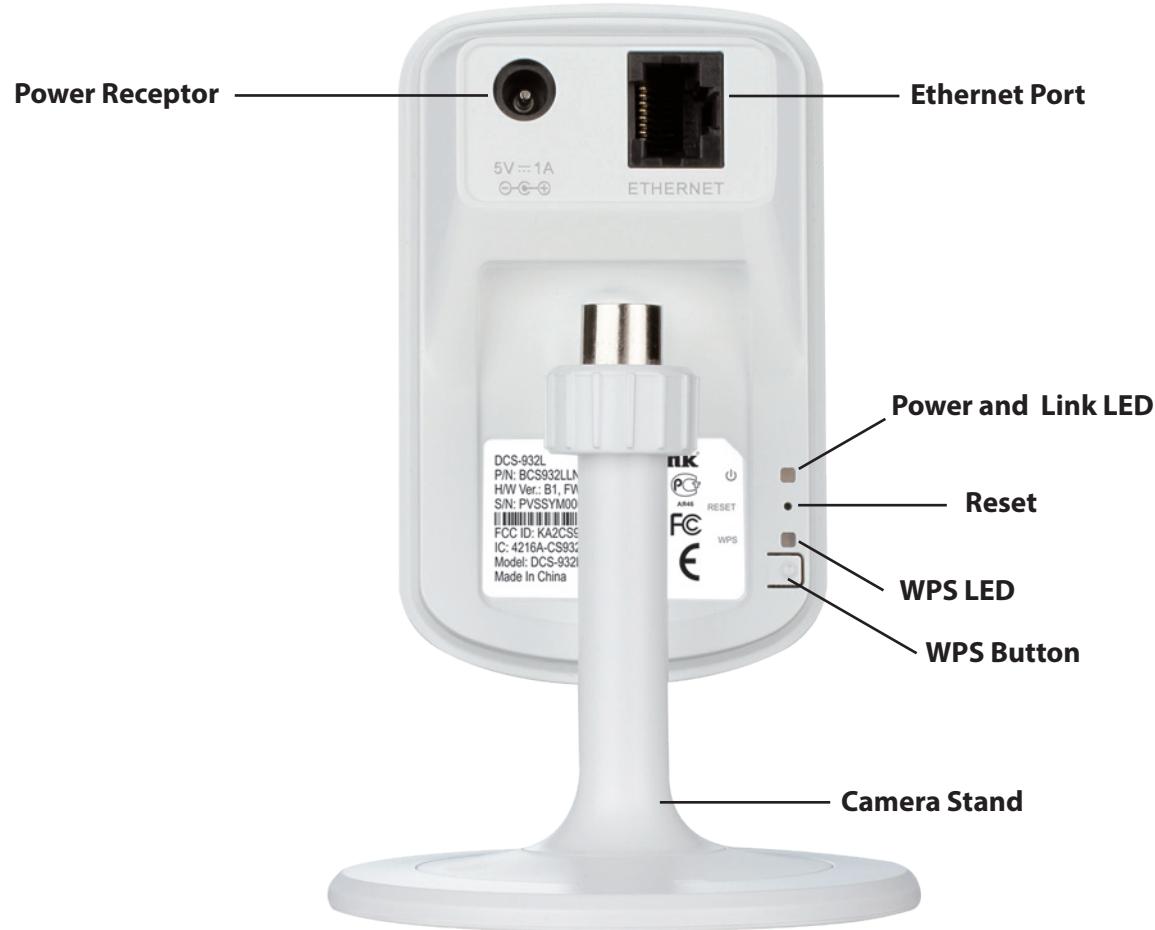
The built-in infrared LEDs enables night time viewing of up to 16 feet (5 meters).

Hardware Overview

Front View



Rear View



Installation

There are three ways to set up your camera:

Zero Configuration Setup: If you have a mydlink-enabled router (D-Link cloud router), this is the easiest way to set up your camera. Refer to "Zero Configuration Setup" on page 12.

Camera Installation 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 "Camera Setup Wizard" on page 15.

Manual Hardware Installation: This section shows you how to manually set up your camera, however in order to use the mydlink features of your camera, you will still need to run the Camera Installation Wizard. Refer to "Manual Installation" on page 17.

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 is not in use.

Zero Configuration Setup

If you have a mydlink-enabled Cloud Router, you can take advantage of Zero Configuration Setup. Zero Configuration automatically configures your camera's settings for you, and adds the camera 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-932L and add the camera to your mydlink account. After the short time it takes to do this you can remotely access your camera from the website (<http://www.mydlink.com>) to manage and monitor your DCS-932L.

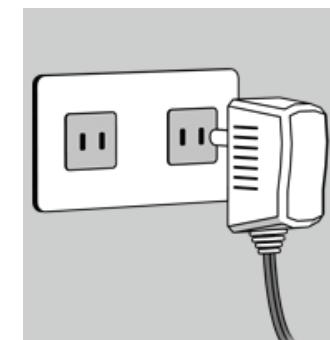
Connect the Ethernet Cable and Power Cable

Use the included Ethernet cable and plug it into the camera. Plug the other end into an available port on your D-link Cloud Router. If you wish to use your camera wirelessly, you will be able to remove the cable after Zero Configuration Setup is complete. You can also plug the external power adapter cable into the camera at this time.



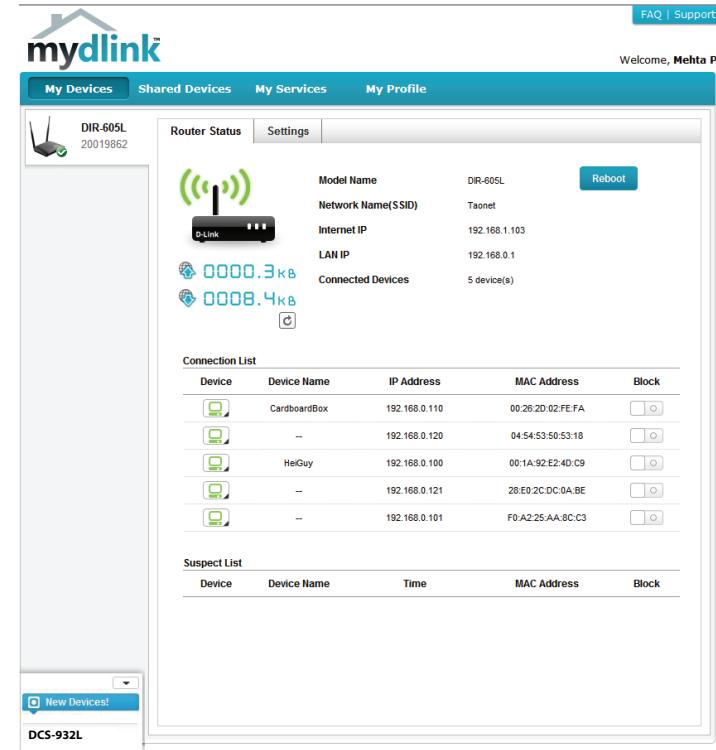
Plug in the External Power Adapter

Plug the power adapter in to a wall outlet.

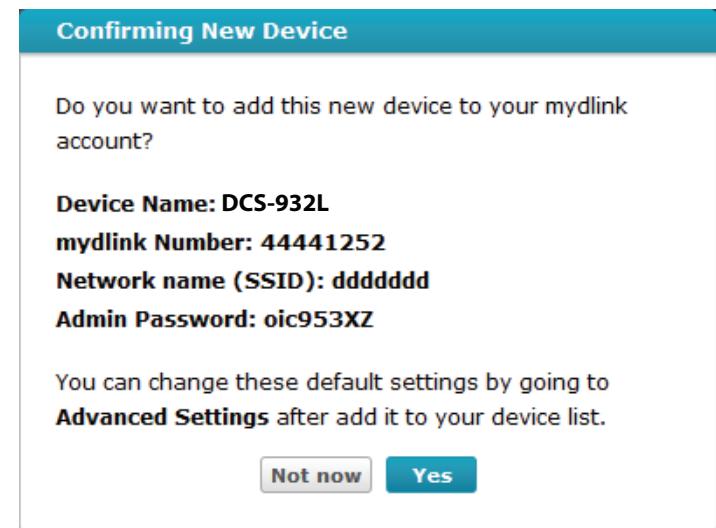


Check Your mydlink Account

From any computer with an Internet connection, 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.

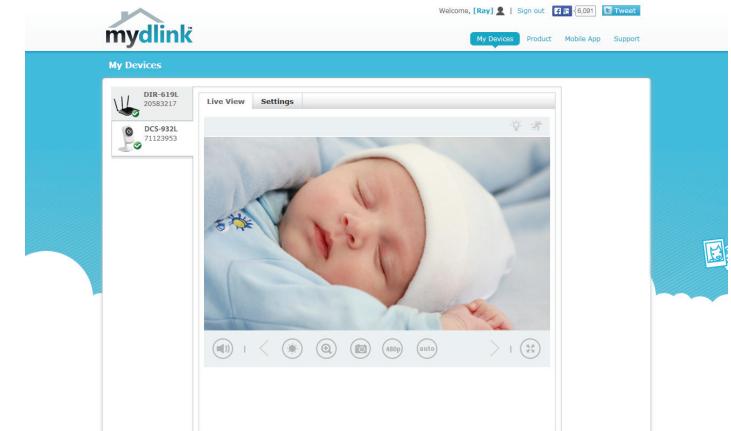


Zero Configuration will navigate to the mydlink Live View tab for your camera where you will see a screen similar to the following.

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 20 to learn more about the mydlink features of this camera, or to "Configuration" on page 21 for advanced configuration of your camera.

Note: If you see a white haze when viewing in night vision mode, the night vision light on the camera may be reflecting off a nearby surface. Try repositioning and aiming the camera.

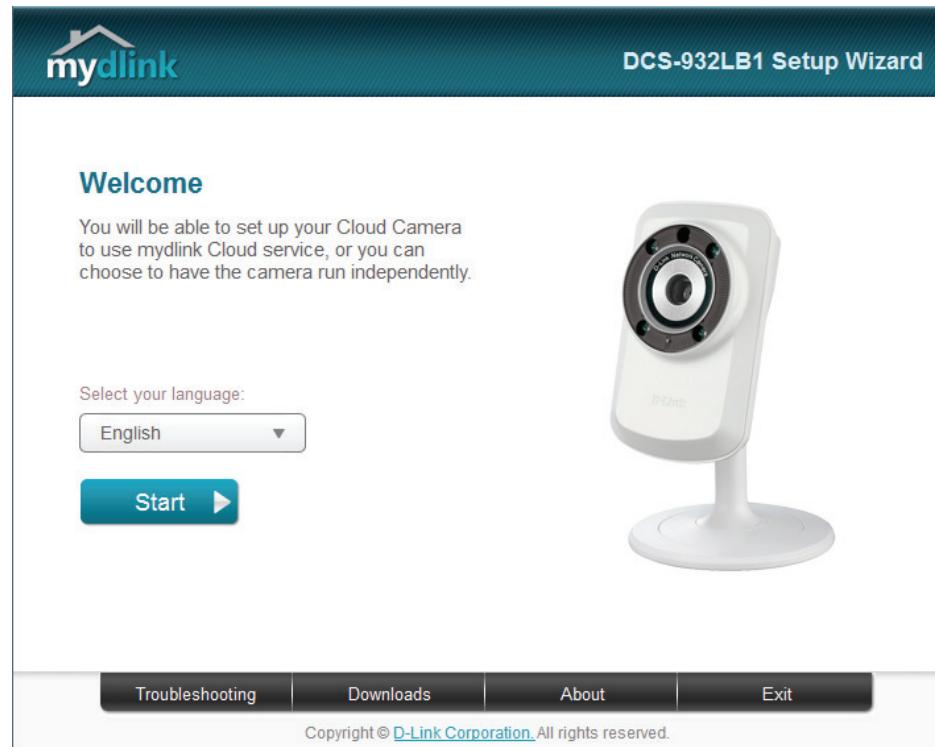


Camera Setup Wizard

Windows Users

Insert the Installation CD-ROM into your computer's optical drive to start the autorun program. If the Setup program does not automatically open on your computer, go to **Start > Run**. In the box, type D:\autorun.exe (where D: represents the drive letter of your CD-ROM drive) and click **OK**.

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.



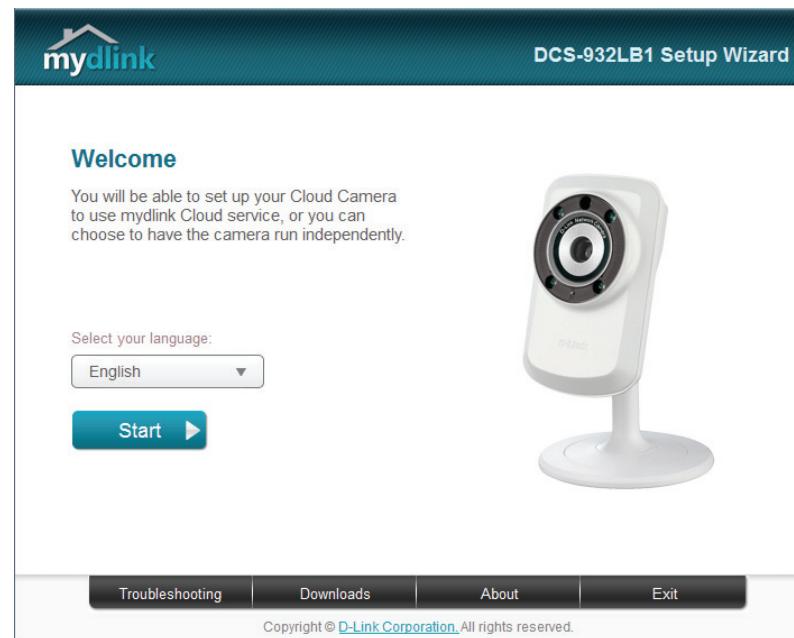
If you do not have a CD-ROM drive, or the CD is missing, please download the Setup Wizard from <http://www.mydlink.com/support>

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.



If you do not have a CD-ROM drive, or the CD is missing, please download the Setup Wizard from <http://www.mydlink.com/support>

Manual 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.

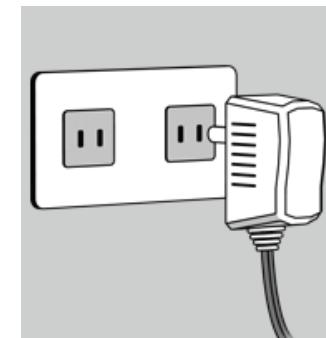
Connect the Ethernet Cable and Power Cable

Use the included Ethernet cable and plug it into the camera. Plug the other end into an available port on your router. You can also plug the external power adapter cable into the camera at this time.



Plug in the External Power Adapter

Plug the power adapter in to a wall outlet.



Configure Your Camera

Refer to "Configuration" on page 21 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 18. 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.

WPS - Push Button Setup

If your router supports Wi-Fi Protected Setup (WPS), you can create a secure wireless connection using the WPS Button on the back of the camera. Please note that WPS setup only establishes a secure wireless connection, and you will still need to run the Setup Wizard to configure your camera.

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 within 60 seconds. The WPS button is usually on the front or side of your router. On some routers, 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, please refer to your router's User Manual.

The DCS-932L will automatically create a wireless connection to your router. While connecting, the green LED will flash and your camera will reboot.

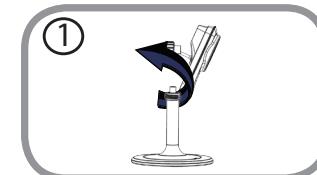


Mounting the Camera

To mount your camera on a wall or ceiling, please follow the steps below. It is recommended that you configure the camera before mounting.

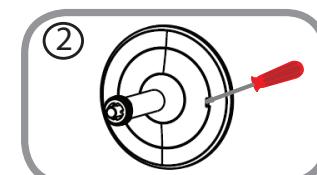
Step 1

The camera needs to be removed to expose the holes in the mounting base. Unscrew the camera head from the mounting base by turning counterclockwise.



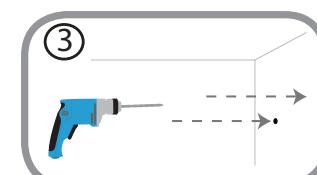
Step 2

Use a flathead screwdriver to remove the base cover from the mounting base. Place the mounting base where you want to position the camera and use a pencil to mark the holes.



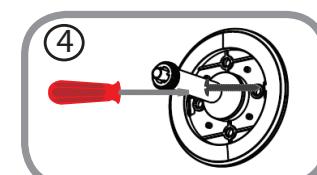
Step 3

Depending on the material of the wall or ceiling, use proper tools to drill two holes 25mm deep with a 6mm drill bit where you marked. If the wall is made out of concrete, drill the holes first, then insert the plastic anchors to support the screws.



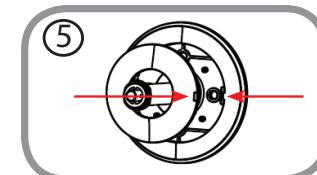
Step 4

Place the mounting base over the holes that are in the wall. Make sure to align the mounting base holes with the holes in the wall. Use the supplied screws to attach the mounting base to the surface of the wall.



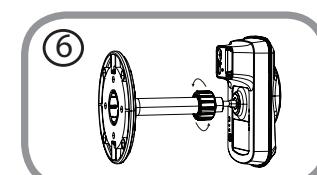
Step 5

Place the base cover on the base. Make sure to align the base cover notch, with the mounting base for future removal. Afterwards, reattach the camera head onto the mounting base.



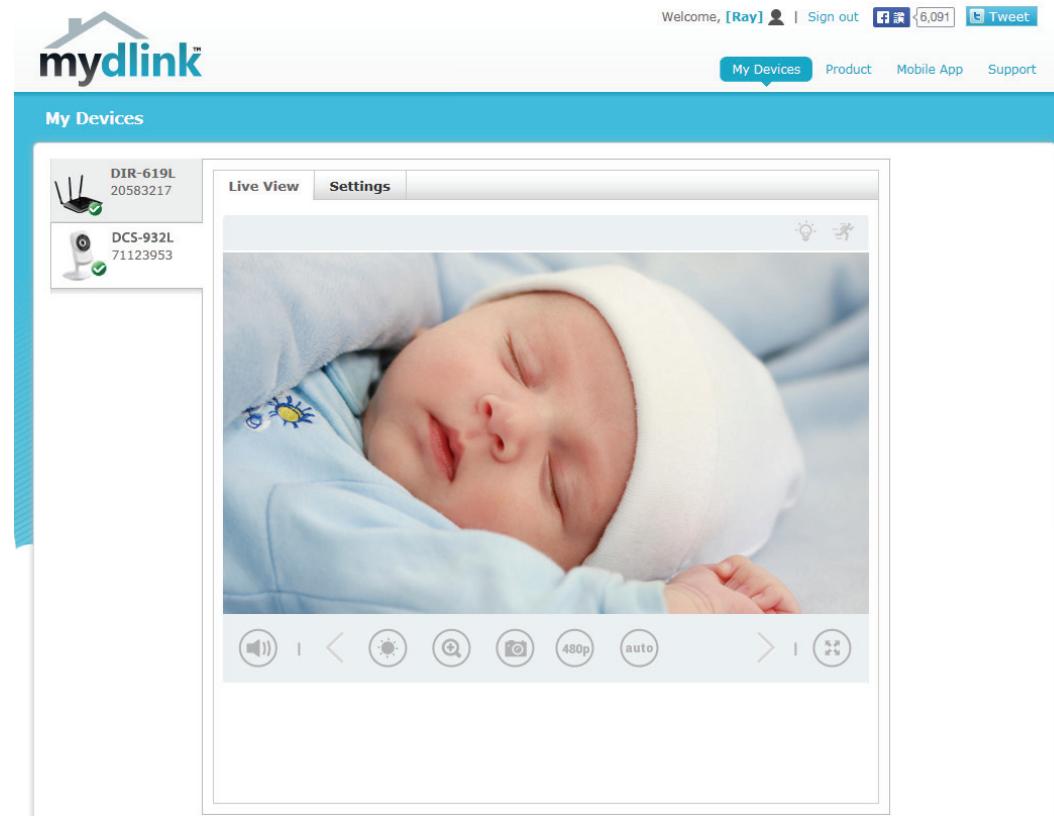
Step 6

Adjust the angle of the camera as desired, then tighten the collar on the camera stem to lock it in place.



mydlink

After registering your DCS-932L camera with a mydlink account in the Camera Installation 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

Accessing the Web Configuration Utility

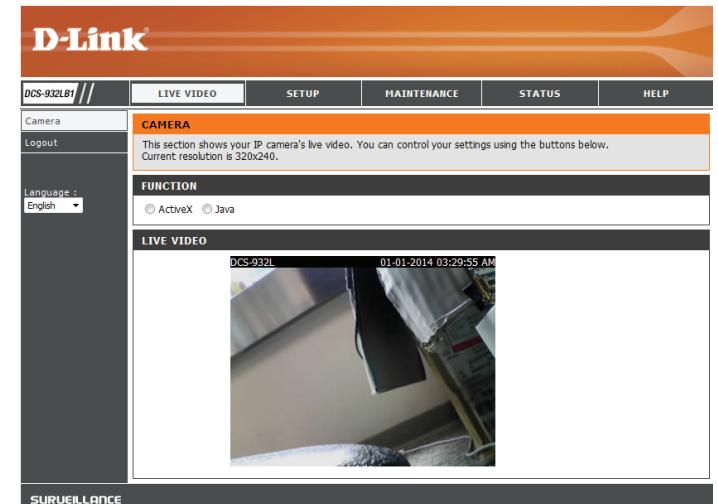
After completing the Camera Installation Wizard, you are ready to use your camera. The camera's built-in Web configuration utility is designed to allow you to easily access and configure your DCS-932L. At the end of the wizard, click **Go To Camera**, or enter the IP address of your camera into a web 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**.



Please make sure that you have the latest version of Java application installed on your computer to ensure proper operation when viewing the video in Java mode. The Java application can be downloaded at no cost from Sun's web site (<http://www.java.com>).

When you connect to the home page of your camera, you will be prompted to download ActiveX. If you want to use ActiveX to view your video images instead of Java, then you must download ActiveX.

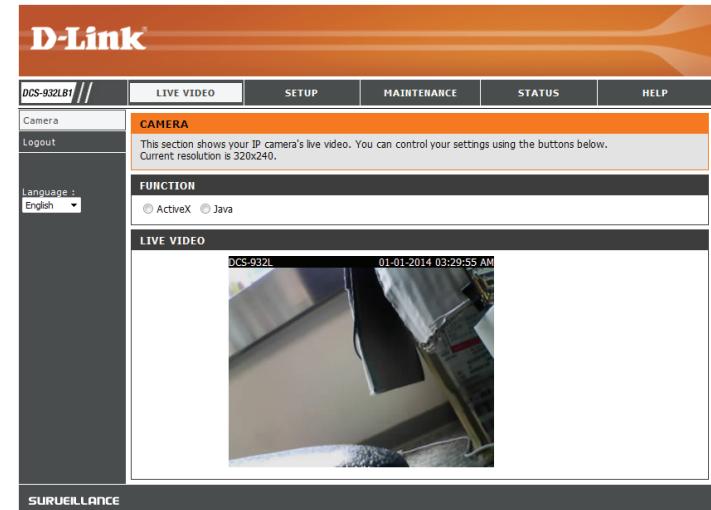


Live Video

The Live Video page lets you view the live video stream from your camera.

ActiveX: For Windows® Users that do not have Java installed, please choose this option to view the live video stream.

Java: For Windows® users that have Java installed, you can also use this for viewing the live video stream. Mac users must choose this mode to view video.



Setup Wizard

You may choose to configure your network by using the **Internet Connection Setup Wizard** that includes step-by-step instructions.

Otherwise, you may manually configure your connection using the **Manual Internet Connection Setup**.



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.

Click **Next** to continue.

WELCOME TO D-LINK SETUP WIZARD - INTERNET CONNECTION SETUP

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.

- Step 1: Setup LAN Settings
- Step 2: Setup DDNS Settings
- Step 3: Server Name Settings
- Step 4: Setup Time Zone

Back **Next** **Cancel**

- **DHCP Connection** (by default), where your DHCP server will automatically assign dynamic IP to your device.
- **Static IP Address** allows you to manually enter your network settings for the camera.
- **PPPoE connection**, where your camera is directly connected to the Internet through a DSL modem.

Note: Input the DNS information if you have chosen and assigned a Static IP Address for your camera.

Click **Next** to continue.

STEP 1: SETUP LAN SETTINGS

Please select whether your camera will connect to the Internet with a DHCP connection, Static IP address or PPPoE. If your camera is connected to a router, or you are unsure which settings to pick, D-Link recommends that you keep the default selection of DHCP connection. Otherwise, click on Static IP address to manually assign an IP address before clicking on the **Next** button.

DHCP Connection
 Static IP Address
IP Address
Subnet Mask
Default Gateway
 PPPoE
User ID
Password
Primary DNS
Secondary DNS

Back **Next** **Cancel**

Section 3 - Configuration

If you have a Dynamic DNS account and would like the camera to update your IP address automatically, enable **DDNS** and enter your host information.

Click **Next** to continue.

STEP 2: SETUP DDNS SETTINGS

If you have a Dynamic DNS account and would like your camera to update the IP address automatically, enable DDNS and enter your host information below. Click on the **Next** button to continue.

Enable
 Disable

Server Address <<

Host Name

User Name

Password

Timeout hours

Enter a name for your camera. Click **Next** to continue.

STEP 3: SERVER NAME SETTINGS

D-Link recommends that you rename your camera for easy accessibility. Please assign a name of your choice before clicking on the **Next** button.

Camera Name

Configure the correct time to ensure that all events triggered, captured and scheduled at the right time. Click **Next** to continue.

STEP 4: SETUP TIME ZONE

Please configure the correct time to ensure that all events are triggered, captured and scheduled at the correct time and day and then click on the **Next** button.

Current Time
Time Zone

This page displays your configured settings. Click **Apply** to save and activate the setting, or **Back** to change your settings.

STEP 5: SETUP COMPLETE

Here is a summary of your camera settings. Click **Back** to review or modify the settings, or click **Apply** if all settings are correct. It is recommended to note down this information for future access or reference.

| | |
|----------------|--|
| IP Address | DHCP Connection |
| IP Camera Name | DCS-930L |
| Time Zone | (GMT-05:00) Eastern Time (US & Canada) |
| DDNS | Disable |

Network Setup

This section allows you to configure your network settings.

DHCP: Select this connection if you have a DHCP server running on your network and would like a dynamic IP address to be updated to your camera automatically.

Static IP Address: You may obtain a static or fixed IP address and other network information from your network administrator for your camera. A static IP address will ease you for accessing your camera in the future.

- IP Address:** The fixed IP address
- Subnet Mask:** The default value is "255.255.255.0." Used to determine if the destination is the same subnet.
- Default Gateway:** The gateway used to forward frames to destinations in a different subnet. Invalid gateway settings may cause the failure of transmissions to a different subnet.

PPPoE Settings: If you are using a PPPoE connection, enable it and enter the User Name and Password for your PPPoE account. You can get this information from your Internet service provider (ISP).

Primary/ If needed, enter the IP addresses Primary and Secondary domain name servers

Secondary DNS: you wish to use.

HTTP Port: You may configure a Second HTTP port that will allow you to connect to the camera via a standard web browser. The port can be set to a number other than the default TCP ports 80. A corresponding port must be opened on the router. For example, if the port is changed to 1010, users must type **http://192.168.0.100:1010** instead of only "http://192.168.0.100".

UPnP: Enable this setting to configure your camera as an UPnP device in the network.

UPnP Port Forwarding: Enable this to allow your camera to use UPnP to configure port forwarding on your router.

The screenshot shows the 'NETWORK SETUP' page of the D-Link DCS-932LB1 configuration interface. The left sidebar lists various setup options. The main area contains sections for 'LAN SETTINGS', 'PORT SETTINGS', 'UPnP SETTINGS', and 'BONJOUR SETTINGS'. Under 'LAN SETTINGS', there are fields for selecting 'DHCP Connection' (selected) or 'Static IP Address' (with IP Address 192.168.0.20 and Subnet Mask 255.255.255.0), 'User ID' and 'Password', and 'Default Gateway'. Under 'PORT SETTINGS', the 'HTTP Port' is set to 80. Under 'UPnP SETTINGS', 'UPnP' is enabled and 'UPnP Port Forwarding' is also enabled. Under 'BONJOUR SETTINGS', 'Bonjour' is enabled and 'Bonjour Name' is set to 'DCS-932L'. A 'Helpful Hints...' sidebar on the right provides detailed explanations for each setting.

Section 3 - Configuration

Bonjour: Enable this to allow other network devices to connect to this camera using Bonjour.

Bonjour Name: Enter the name to identify this camera on Bonjour.

| UPnP SETTINGS | |
|---|---|
| UPnP | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| UPnP Port Forwarding | <input type="radio"/> Enable <input checked="" type="radio"/> Disable |
| BONJOUR SETTINGS | |
| Bonjour | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| Bonjour Name | DCS-932L (Characters you may use in a Bonjour Name: "upper or lower case letters", "numbers" and "hyphens".) |
| <input type="button" value="Save Settings"/> <input type="button" value="Don't Save Settings"/> | |

Wireless Setup

This section allows you to setup and configure the wireless settings on your camera.

SSID: Service Set Identifier, an identifier for your wireless network.

Channel: The default setting is channel 6. Select the same channel that is using by other wireless devices within your network. When there is interference from the wireless networks that overlap with one another, you may change the channel to obtain maximum performance for your connection.

Connection Use **Infrastructure** if you are connecting your camera to a wireless router or **Mode:** access point. Use **Ad-Hoc** if you are wirelessly connecting to your PC without a wireless router or access point.

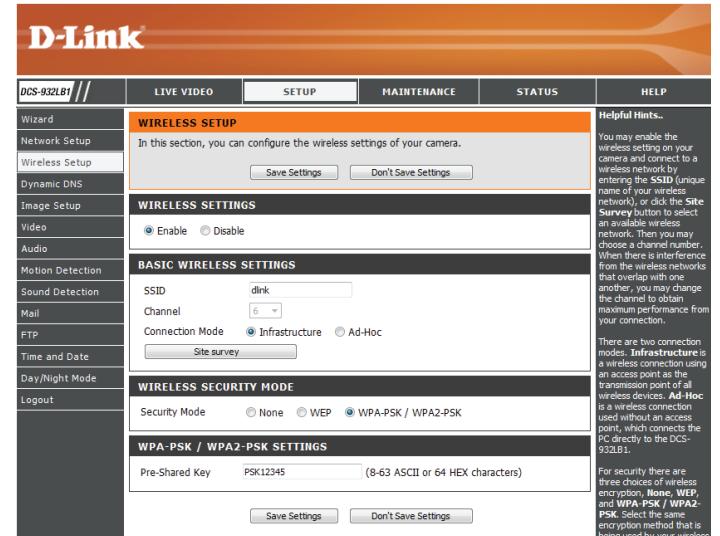
Site Survey: Click this to scan for available wireless networks to connect to. You will then be able to select a wireless network to use from a list.

Wireless Security For security, there are three choices; **None**, **WEP**, and **WPA-PSK / WPA2-PSK**. **Mode:** Select the same encryption method that is being used by your wireless device/router.

WEP: If you choose WEP as your wireless security mode, enter the key(password) for your wireless network.

WPA-PSK / If you choose WPA-PSK/WPA2-PSK as your wireless security mode, enter the **WPA2-PSK** key(password) for your wireless network.

Settings:



Dynamic DNS

DDNS allows you to access your camera using a domain name instead of an IP address. To do this, you will need to have an account with one of the DDNS services listed in the drop-down box on this page.

Enable: Click to enable the DDNS function.

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

Host Name: Enter the host name for your DDNS account.

User Name: Enter the user name for your DDNS account.

Password: Enter the password for your DDNS account.

Timeout: Enter the number of hours to wait before updating the DDNS server if the public IP address has not yet changed.

The screenshot shows the 'Dynamic DNS' configuration page of the D-Link DCS-932LB1 web interface. The top navigation bar includes links for LIVE VIDEO, SETUP, MAINTENANCE, STATUS, and HELP. The left sidebar lists various setup options: Wizard, Network Setup, Wireless Setup, Dynamic DNS (which is currently selected), Image Setup, Video, Audio, Motion Detection, Sound Detection, Mail, FTP, Time and Date, Day/Night Mode, and Logout. The main content area is titled 'DYNAMIC DNS' and contains a brief description of the feature. It includes fields for 'Server Address' (with a dropdown menu for 'Select Dynamic DNS Server'), 'Host Name', 'User Name', 'Password', and 'Timeout' (set to 576 hours). At the bottom of the page are 'Save Settings' and 'Don't Save Settings' buttons. A 'Helpful Hints...' section on the right provides information about the Dynamic DNS feature, noting its usefulness for users with dynamic IP addresses provided by ISPs.

Image Setup

This section allows you to configure the image settings for your camera.

Enable Anti Flicker: Select this box to enable anti flicker.

Flip Image: Select this box to vertically flip the video.

Mirror: Select this box to horizontally flip the video.

Note: If the camera is installed upside down, Flip Image and Mirror should both be checked.

Brightness Control: Allows you to adjust the brightness level.

Contrast Control: Allows you to adjust the contrast level.

Saturation Control: Allows you to adjust the saturation level.

The screenshot shows the D-Link DCS-932LB1 configuration interface. The top navigation bar includes links for Wizard, Network Setup, Wireless Setup, Dynamic DNS, Image Setup (which is currently selected), Video, Audio, Motion Detection, Sound Detection, Mail, FTP, Time and Date, Day/Night Mode, and Logout. The main content area is titled "IMAGE SETUP" and contains the following information:
In this section, you can configure the image settings for your camera.
Save Settings | Don't Save Settings
IMAGE SETTINGS
Enable Anti Flicker:
Flip Image:
Mirror:
Brightness Control: +0
Contrast Control: +0
Saturation Control: +0
Save Settings | Don't Save Settings
A sidebar on the right provides "Helpful Hints":

- Anti Flicker:** This feature will help to offset the interference of the lighting system causing the image flicker issue. ONLY use this option when it is necessary.
- Flip Image:** Flip the image vertically.
- Mirror:** Flip the image horizontally.
- Brightness, Contrast, or Saturation Control:** There are 11 settings (-5 to 5).
- Note:** Please wait a few seconds for the camera to adjust the image after the setting has been selected.

Video

This section allows you to configure the video settings for your camera.

Encode Type: This shows the compression format used for this video profile.

Resolution: Select the desired video resolution from three formats: **640x480**, **320x240**, and **160x120**. Higher resolutions provide better quality, but will require more network bandwidth.

FPS: Select the desired FPS to use, or select Auto. Higher settings will provide smoother video, but will require more network bandwidth.

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

View Mode: Select the mode for viewing the camera image. Select **Image** for a still images, **ActiveX** for Internet Explorer, or **Java** for other web browsers.

Light Frequency: Select the proper frequency (50Hz or 60Hz) to reduce image flicker.

The screenshot shows the D-Link DCS-932L configuration interface with the following details:

- Header:** D-Link DCS-932LB1 //
- Top Navigation:** LIVE VIDEO, SETUP, MAINTENANCE, STATUS, HELP
- Left Sidebar (Wizard):** Network Setup, Wireless Setup, Dynamic DNS, Image Setup (selected), Video (selected), Audio, Motion Detection, Sound Detection, Mail, FTP, Time and Date, Day/Night Mode, Logout.
- VIDEO Section:**
 - VIDEO PROFILE:** Encode Type (JPEG), Resolution (320 x 240), FPS (Auto), Jpeg Quality (Medium), View Mode (Image).
 - LIGHT FREQUENCY:** Options: 50 Hz (radio button), 60 Hz (radio button, selected).
- Buttons:** Save Settings, Don't Save Settings.
- Helpful Hints:**
 - Resolution:** 3 settings are available: 1. QVGA @ 160x120 - Usually used for display on handheld devices.
 - 2. QVGA @ 320x240 - Standard resolution for mobile phones, and PDAs
 - 3. VGA @ 640x480 - Standard resolution for computer display.
- Footnotes:**
 - FPS (Frames Per Second):** The higher the FPS, the smoother the video will appear. Note that a higher FPS setting also uses more bandwidth.
 - Jpeg Quality - Default value is Medium.**
 - Light Frequency - 2 options, 50 or 60 Hz. Default value is 60 Hz.**

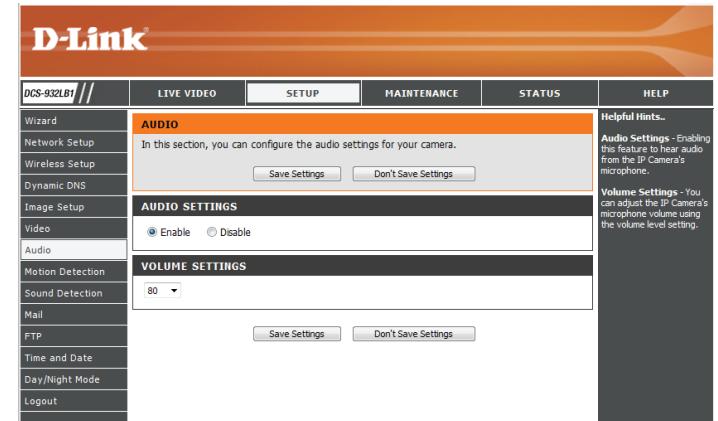
Audio

This section allows you to configure the audio settings for your camera.

Note: Please wait a few seconds for the camera to adjust the audio after making changes.

Audio Settings: You may **Enable** or **Disable** the camera audio feed.

Volume Settings: Select the desired volume percentage level.



Motion Detection

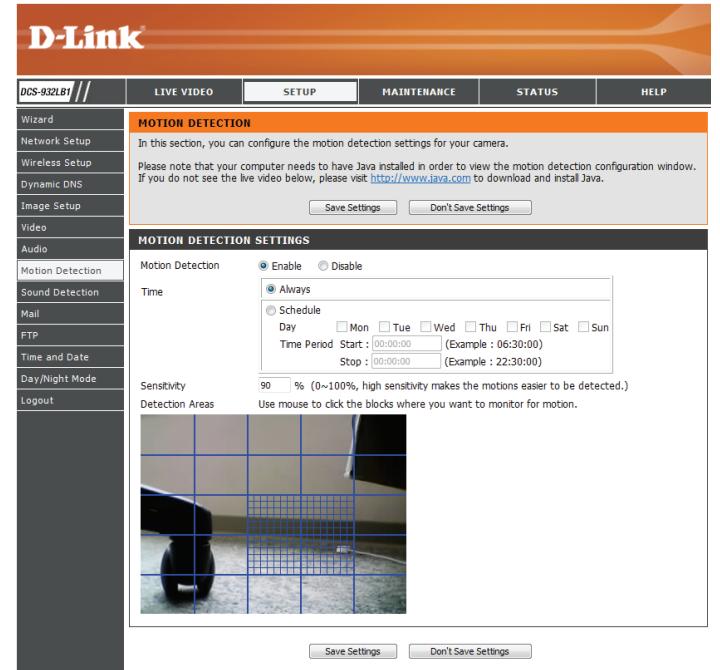
Motion detection enables the camera to monitor the video feed for movement.

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

Time: Set the times when detection should be active. You can set this to **Always**, or you can create a schedule by selecting the days and time period detection should be enabled.

Sensitivity: Specifies the measurable difference between two sequential images that would indicate motion. Please enter a value between 0 and 100.

Detection Areas: Use your mouse to click on the blocks that you would like to monitor for motion.



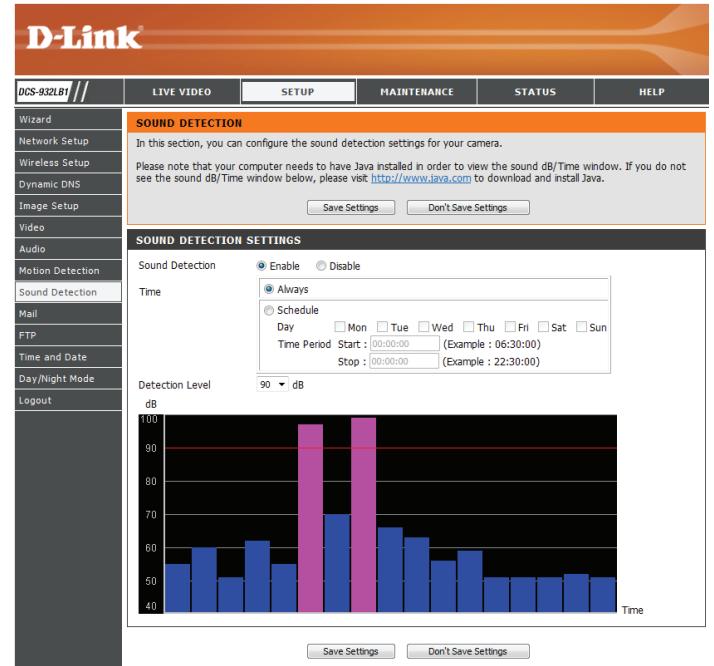
Sound Detection

Motion detection enables the camera to monitor the environment for loud sounds. You may set the volume threshold used to determine whether sound was detected or not.

Sound Detection: Select this box to enable the sound detection feature of your camera.

Time: Set the times when detection should be active. You can set this to **Always**, or you can create a schedule by selecting the days and time period detection should be enabled.

Detection Level: Set the volume level that must be exceeded for the camera to determine whether a loud sound was detected or not. Please note that the volume numbers are approximate; use the live monitor graph below to help you set an appropriate level.



Mail

This section allows you to configure the e-mail notification settings for your camera.

SMTP Server Address: This is the domain name or IP address of your external e-mail server.

SMTP Server Port: This is the port used by your external e-mail server.

Sender E-mail Address: This is the e-mail address of the account sending the camera snapshots.

Receiver E-mail Address: This is the e-mail address to send the snapshots to.

User Name: If the SMTP server uses authentication, you must enter your user name here.

Password: This is the password that corresponds to your user name to connect to the SMTP server.

For example, if you want to use Gmail by SSL-TLS for the e-mail notification, you can follow the setup procedure as below:

Step 1 - Enter "smtp.gmail.com" in SMTP Server Address.

Step 2 - Change the SMTP server port number from 25 to **465**.

Step 3 - Enter your gmail E-mail address in Sender E-mail Address.

Step 4 - Enter the destination E-mail address in Receiver E-mail Address.

Step 5 - Enter the user name required to access the SMTP server.

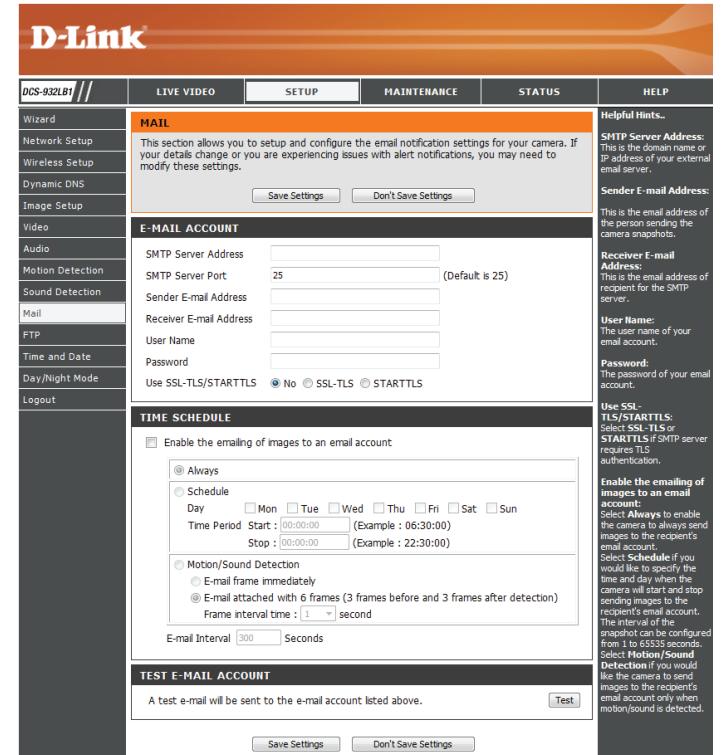
Step 6 - Enter the password required to access the SMTP server.

Step 7 - Select **SSL-TLS** and then click **Save Settings**.

Step 8 - Click the **Test** button to send a test e-mail will be sent to the e-mail account listed above.

Note: You can also use **STARTTLS** which will use SMTP server port **587**.

Note: If you want to use the Yahoo SMTP server, the SMTP server address will be different between each registered region, and only supports using SMTP server port **465** for **SSL-TLS**.



Section 3 - Configuration

Enable e-mail Enable this option to allow snapshots to be sent using the settings entered above.

image to e-mail account:

Choosing **Always** will start sending snapshots to the recipient's e-mail account right away. Choosing **Schedule** will allow you to schedule when to start and stop the sending of snapshots to the recipient's e-mail account.

Select **Motion/Sound Detection** if you would like to send snapshots when motion or sound is detected. You can choose to **E-mail frame immediately** to send a snapshot taken when motion/sound was detected, or use **E-mail attached with 6 frames** to include snapshots before and after the detected event. The **Frame interval time** determines the time between each snapshot.

E-mail Interval: This will set the interval between snapshot e-mails.

- If Always is selected, e-mails will be sent according to this interval.
- If Schedule is selected, e-mails will be sent according to this interval during the times and days specified in the schedule.
- If Motion/Sound Detection is selected, e-mails will be sent according to this interval while motion or sound is being detected.

Test E-mail Account: This will send a test snapshot by using the e-mail settings specified above.

Account:

The screenshot shows a configuration interface for email scheduling. At the top, there is a checkbox labeled "Enable the emailing of images to an email account". Below it, there are three radio button options: "Always" (selected), "Schedule", and "Motion/Sound Detection". Under "Schedule", there is a "Day" section with checkboxes for Mon-Sun and a "Time Period" section with "Start" and "Stop" time inputs set to 00:00:00. Under "Motion/Sound Detection", there are two radio button options: "E-mail frame immediately" (unchecked) and "E-mail attached with 6 frames (3 frames before and 3 frames after detection)" (selected). A "Frame interval time" input is set to 1 second. An "E-mail Interval" input is set to 300 seconds. Below this is a "TEST E-MAIL ACCOUNT" section with a note: "A test e-mail will be sent to the e-mail account listed above." A "Test" button is located at the bottom right of this section. At the very bottom, there are "Save Settings" and "Don't Save Settings" buttons.

FTP

This section allows you to configure the camera to send snapshots to an FTP server.

Host Name: This is the IP address of the FTP server that you will be connecting to.

Port: Default is port 21. If changed, external FTP client program must change the server connection port accordingly.

User Name: Specifies the user name to access the external FTP server. If you are to upload snapshots to an FTP server you will need to fill in the Domain name or IP address of your external FTP server. The following user settings must be correctly configured for remote access.

Password: Specifies the password to access the external FTP server.

Path: Specifies the destination folder in the external FTP server.

Passive Mode: Enabling passive mode will allow access to an external FTP server if your camera is behind a router protected by a firewall.

The screenshot shows the D-Link DCS-932LB1 web interface with the following details:

- Header:** D-Link DCS-932LB1 //, LIVE VIDEO, SETUP (selected), MAINTENANCE, STATUS, HELP.
- Left Sidebar:** Wizard, Network Setup, Wireless Setup, Dynamic DNS, Image Setup, Video, Audio, Motion Detection, Sound Detection, Mail, **FTP** (selected), Time and Date, Day/Night Mode, Logout.
- Main Content:**
 - FTP:** In this section, you can configure the camera to send images to an FTP server. Buttons: Save Settings, Don't Save Settings.
 - FTP SERVER:** Host Name: [] (Default is 21), Port: 21, User Name: [], Password: [], Path: [/], Passive Mode: Yes No.
 - TIME SCHEDULE:**
 - Enable uploading of images to an FTP server.
 - Always: Day: Mon, Tue, Wed, Thu, Fri, Sat, Sun, Time Period: Start: 00:00:00 (Example: 06:30:00) Stop: 00:00:00 (Example: 22:30:00).
 - Schedule: Day: Mon, Tue, Wed, Thu, Fri, Sat, Sun, Time Period: Start: 00:00:00 (Example: 06:30:00) Stop: 00:00:00 (Example: 22:30:00).
 - Motion/Sound Detection: Image Frequency: 1 Frames/Second, Seconds/Frame, Base File Name: DCS-932L, File: Overwrite, Date/Time Suffix, Create subfolder by 0.5 hour, Sequence Number Suffix Up to 1024.
 - TEST FTP SERVER:** A JPEG file will be sent to the above FTP server for testing. (File name: test_date_time.jpg). Buttons: Save Settings, Don't Save Settings, Test.
- Helpful Hints..** Host Name: This is the IP address of the FTP server that you will be connecting to. Port: The default port is 21. User Name: The user name required for accessing the external FTP server. Password: The password of the external FTP server. Passive mode: Enabling passive mode will allow access to an external FTP server if your camera is behind a router protected by a firewall.
- Image Frequency:** User can select and define the numbers for both Frames/Second and Seconds/Frame.
- Base File Name:** The name that contains the time stamp information. For example DCS-932LB1_20120710100000.jpg. This means that the camera tests are saved to this user.

Section 3 - Configuration

Enable uploading Enable this option to allow snapshots to be uploaded using the settings entered of images to an above.

- FTP server:**
- Choosing **Always** will upload snapshots to the recipient's e-mail account right away.
 - Choosing **Schedule** will allow you to schedule when to start and stop the upload of snapshots.
 - Select **Motion/Sound Detection** if you would like to send snapshots when motion or sound is detected.

Image Frequency: Select the rate you want the camera to take and send snapshots. Please note that selecting **Frames/Second** will take many more snapshots than selecting **Seconds/Frame**.

- If Always is selected, snapshots will be uploaded according to this interval.
- If Schedule is selected, snapshots will be uploaded according to this interval during the times and days specified in the schedule.
- If Motion/Sound Detection is selected, snapshots will be uploaded according to this interval while motion or sound is being detected.

The screenshot shows a configuration window titled 'TIME SCHEDULE'. It includes sections for enabling image uploads to an FTP server, setting upload intervals (Always, Schedule, Motion/Sound Detection), specifying image frequency (Frames/Second or Seconds/Frame), defining a base file name (DCS-932L), and choosing file naming options (Overwrite, Date/Time Suffix, Create subfolder by, Sequence Number Suffix Up to). A 'TEST FTP SERVER' section indicates a test file will be sent to the specified server. At the bottom are 'Save Settings' and 'Don't Save Settings' buttons.

TIME SCHEDULE

Enable uploading of images to an FTP server

Always

Schedule

Day: Mon, Tue, Wed, Thu, Fri, Sat, Sun

Time Period: Start : 00:00:00 (Example : 06:30:00) Stop : 00:00:00 (Example : 22:30:00)

Motion/Sound Detection

Image Frequency: 1 Frames/Second
1 Seconds/Frame

Base File Name: DCS-932L

File

Overwrite

Date/Time Suffix

Create subfolder by: 0.5 hour

Sequence Number Suffix Up to: 1024

TEST FTP SERVER

A JPEG file will be sent to the above FTP server for testing.
(File name: test_date_time.jpg)

Save Settings Don't Save Settings

Base File Name: This will be the base name used when creating the file name of a snapshot.

- Selecting **Overwrite** will create a new snapshot by overwriting the existing one, which is useful if you only wish to keep the most recent snapshot.
- Selecting **Date/Time Suffix** will create new snapshots each time by adding the date and time after the base file name you enter. You can also choose to use the **Create subfolder by** option to organize your snapshots in different folders based on the time period you select.
- Selecting **Sequence Number Suffix Up to** will create new snapshots each time by adding a number after the base file name, up to the number you enter.

Test FTP Server: This will send a test snapshot by using the FTP settings specified above.

Time and Date

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

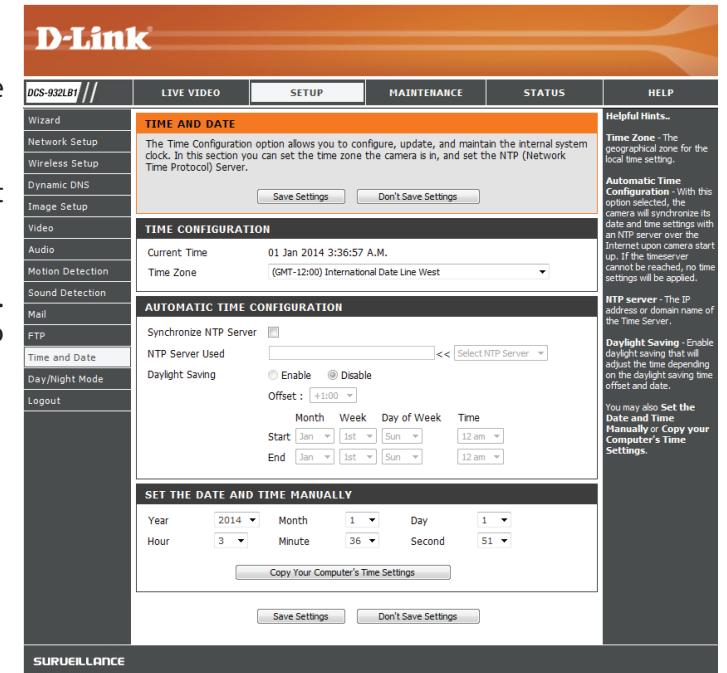
Time Zone: Select the time zone for your region from the drop down menu.

Synchronize NTP Network Time Protocol will synchronize your camera with an Internet time **Server:** server. Choose the one that is closest to your camera.

Daylight Saving: If your region uses Daylight Saving time, you can enable it here. Set the offset and the period of time that the Daylight Saving correction should be used.

Set the Date and If **Synchronize NTP Server** is disabled, you can set the date and time manually.

Time Manually: You can also click the **Copy Your Computer's Time Settings** button to automatically copy the date and time of the PC you are using.



Day/Night Mode

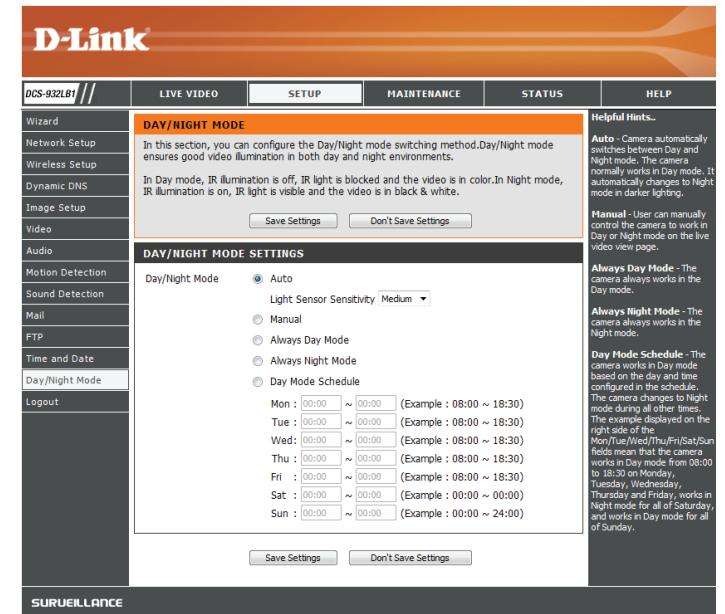
This page lets you control how your camera switches night vision mode on and off. In normal mode, the video will be in color and is best used when there is enough ambient light. Night vision mode turns on the IR lights to allow for viewing in low light or complete darkness, and provides black and white video.

Day/Night Mode: Select a method of switching between day and night modes:

- **Auto:** This will automatically switch between day and night mode based on the amount of ambient light. When there is enough light, day mode will be used. When it gets dark, the camera will switch to night mode.

You can use the **Light Sensor Sensitivity** dropdown box to determine how sensitive the camera's light sensor will be and how quickly your camera will respond to changes in ambient light.

- **Manual:** The camera will only switch between day and night mode when requested to through the Live Video interface on the mydlink website or mobile app.
- **Always Day Mode:** The camera will always use day mode.
- **Always Night Mode:** The camera will always use night mode.
- **Day Mode Schedule:** This option lets you use a schedule to switch between day and night mode. Enter the times you want the camera to use day mode. The camera will use night mode for all times outside of this schedule.



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 access your camera.

Old/New/Retype If you wish to change the admin password for your camera, enter the old **Password**: password, enter the new password, then retype the new password and click **Apply**.

Camera Name: Specify a name for your camera.

LED Control: Select **Normal** to enable the LEDs on the device, or select off to disable the LEDs for a more discreet installation.

User Access Control: Select **Enable** to enable user access control or **Disable** to allow only the administrator account to access the camera.

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

Add User Account: Create new user for accessing your camera's video. Enter the user name, password, and password again, and click **Add**. A maximum of 8 user accounts can be added into the user list.

User List: Displays the account names of authorized users.

The screenshot displays the D-Link DCS-932LB1 Admin maintenance interface. The main menu bar includes options like LIVE VIDEO, SETUP, MAINTENANCE (which is selected), STATUS, and HELP. On the left, a sidebar lists Admin, System, Firmware Upgrade, and Logout. The central content area is divided into several sections:

- ADMIN:** A note says "Here you can change the administrator's password and configure the server setting for your camera. You can also add, modify and/or delete the user account(s)". It contains fields for Old Password, New Password, and Retype Password, with Apply and Cancel buttons.
- SERVER SETTING:** Includes fields for Camera Name (DCS-932L), LED Control (radio buttons for Normal or Off), User Access Control (radio buttons for Enable or Disable), and Snapshot URL Authentication (radio buttons for Enable or Disable with a link to http://192.168.0.102/image/jpeg.cgi). It also has Apply and Cancel buttons.
- ADD USER ACCOUNT:** Fields for User Name, Password, and Retype Password, with Add and Cancel buttons.
- USER LIST:** A table showing a single entry (no. 1, name: name) with modify and delete links.

 A "Helpful Hints.." section on the right provides security advice: "For security reasons, it is recommended that you change the password for the Administrator accounts. Be sure to write down the new Login Names and Passwords to avoid having to reset the camera in the event that they are forgotten."

System

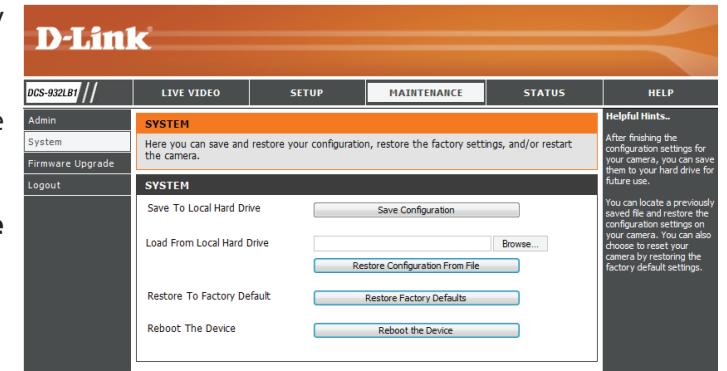
This section allows you to save and restore your configuration, restore the factory settings, and/or restart the camera.

Save To Local You may save your current camera configuration as a file on your computer by **Hard Drive:** clicking **Save Configuration File**.

Load From Local Locate a pre-saved configuration by clicking **Choose File** and then restore the **Hard Drive:** pre-defined settings to your camera by clicking **Restore Configuration File**.

Restore To You may reset your camera and restore the factory settings by clicking **Restore Factory Default: Factory Defaults**.

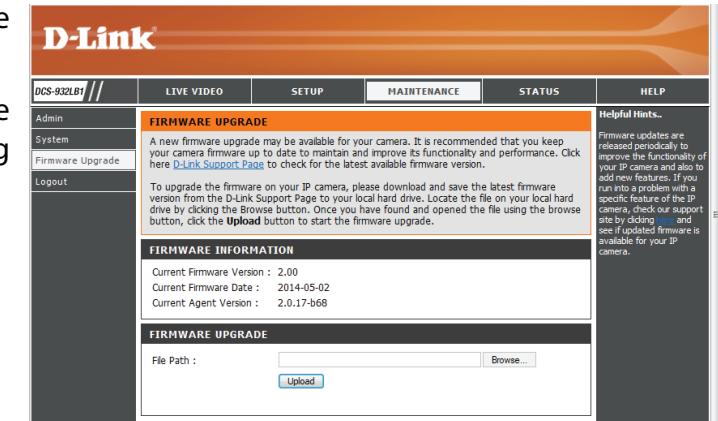
Reboot The Device This will restart your camera.



Firmware Upgrade

Your current firmware version and date will be displayed on your screen. You may go to the D-Link Support Page to check for the latest firmware versions available.

To upgrade your firmware, please download and save the latest firmware version from the D-Link Support Page to your local hard drive. Locate the file on your local hard drive by using the **Choose File** button, then click the **Upload** button to start the firmware upgrade.



Status

Device Info

This section displays information about your camera and its current network and wireless status.

The screenshot shows the 'Status Device Info' page for a D-Link DCS-932L camera. The page has a header with the D-Link logo and a navigation menu on the left. The main content area is divided into sections: 'DEVICE INFO', 'BASIC INFORMATION', and 'WIRELESS STATUS'. The 'DEVICE INFO' section contains a note about displaying network connection details and firmware version. The 'BASIC INFORMATION' section lists various configuration parameters. The 'WIRELESS STATUS' section lists wireless connection details. A 'Refresh' button is at the bottom.

DEVICE INFO

All of your network connection details are displayed on this page. The firmware version is also displayed here.

BASIC INFORMATION

| | |
|----------------------|--------------------------|
| Camera Name | DCS-932L |
| Time & Date | 01 Jan 2014 3:38:15 A.M. |
| Firmware Version | 2.00 (2014-05-02) |
| Agent Version | 2.0.17-b68 |
| MAC Address | 28 10 7B 26 D4 4A |
| IP Address | 192.168.0.102 |
| Subnet Mask | 255.255.255.0 |
| Default Gateway | 192.168.0.1 |
| Primary DNS | 192.168.0.1 |
| Secondary DNS | 0.0.0.0 |
| DDNS | Disable |
| UPnP Port Forwarding | Disable |
| FTP Server Test | No test conducted. |
| E-mail Test | No test conducted. |

WIRELESS STATUS

| | |
|-----------------|---------------------------------|
| Connection Mode | Infrastructure |
| Link | No |
| SSID | dlink (MAC : 00 00 00 00 00 00) |
| Channel | 6 |
| Encryption | No |

Active User

This page lists all the camera's active users and their information, including their User Name, IP address, and the time that camera access began.

The screenshot shows the user interface of the D-Link DCS-932LB1 camera. At the top, there is a navigation bar with tabs: LIVE VIDEO, SETUP, MAINTENANCE, STATUS (which is selected), and HELP. On the left, a sidebar contains links for Device Info, Active User (which is also selected), and Logout. The main content area has a title 'ACTIVE USER' and a descriptive message: 'This page lists active user information, including user name, IP address and the initial access time.' Below this is a 'USER LIST' table with columns: no., user name, IP address, and time. A 'Refresh' button is located at the bottom of the list. To the right of the list is a 'Helpful Hints..' section containing the text: 'All of the active users are listed on this page. The time information indicates the time that each user started accessing the camera.'

Wireless Security

This section will show you the different levels of security you can use to protect your data from intruders.

The DCS-932L offers the following types of security:

- WPA-PSK (Pre-Shared Key)
- WEP (Wired Equivalent Privacy)

What is WEP?

WEP stands for Wired Equivalent Privacy. It is based on the IEEE 802.11 standard and uses the RC4 encryption algorithm. WEP provides security by encrypting data over your wireless network so that it is protected as it is transmitted from one wireless device to another.

To gain access to a WEP network, you must know the key. The key is a string of characters that you create. When using WEP, you must determine the level of encryption. The type of encryption determines the key length. 128-bit encryption requires a longer key than 64-bit encryption. Keys are defined by entering in a string in HEX (hexadecimal - using characters 0-9, A-F) or ASCII (American Standard Code for Information Interchange – alphanumeric characters) format. ASCII format is provided so you can enter a string that is easier to remember. The ASCII string is converted to HEX for use over the network. Four keys can be defined so that you can change keys easily.

What is WPA?

WPA, or Wi-Fi Protected Access, is a Wi-Fi standard that was designed to improve the security features of WEP (Wired Equivalent Privacy).

The 2 major improvements over WEP:

Improved data encryption through the Temporal Key Integrity Protocol (TKIP). TKIP scrambles the keys using a hashing algorithm and, by adding an integrity-checking feature, ensures that the keys haven't been tampered with. WPA2 is based on 802.11i and uses Advanced Encryption Standard instead of TKIP.

User authentication, which is generally missing in WEP, through the extensible authentication protocol (EAP). WEP regulates access to a wireless network based on a computer's hardware-specific MAC address, which is relatively simple to be sniffed out and stolen. EAP is built on a more secure public-key encryption system to ensure that only authorized network users can access the network.

WPA-PSK/WPA2-PSK uses a passphrase or key to authenticate your wireless connection. The key is an alpha-numeric password between 8 and 63 characters long. The password can include symbols (!?*&_) and spaces. This key must be the exact same key entered on your wireless router or access point.

Configuring the DCS-932L with a Router

D-Link's DCS-932L 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-932L 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.

Components Needed:

- 1 DCS-932L 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-932L for Use Behind a Router

Installing a DCS-932L 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-932L, follow the steps outlined in the Quick Installation Guide.

After you have completed the setup of the DCS-932L 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.

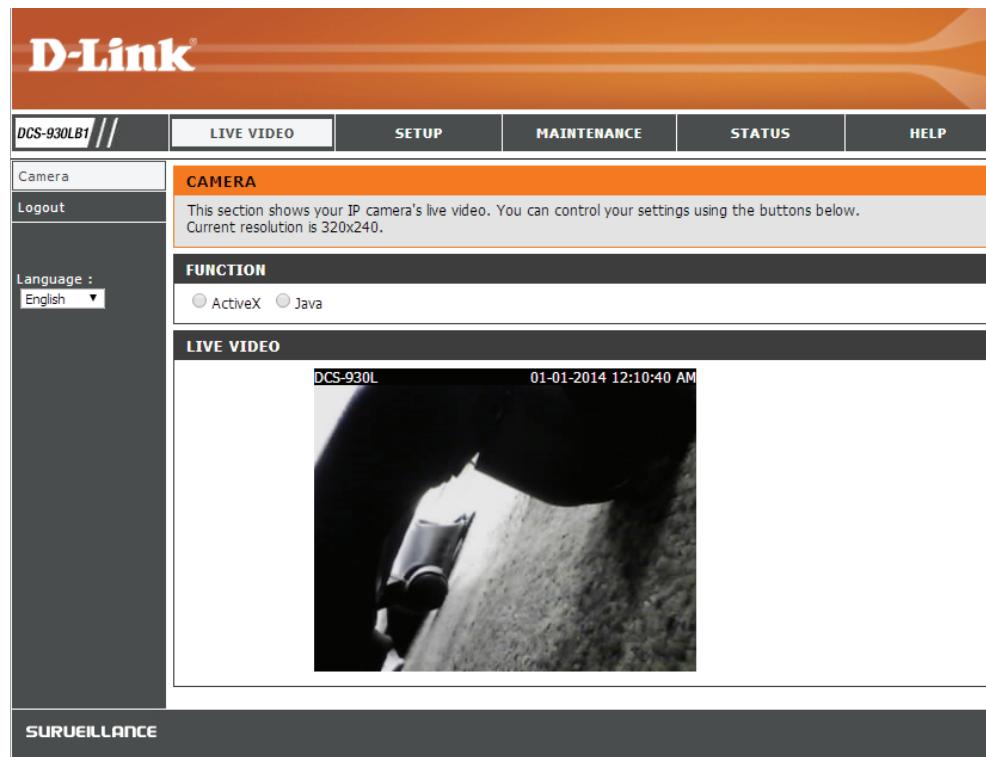
1. Assign a Local IP Address to Your Camera

Run the setup wizard from the CD included with the DCS-932L. Follow the steps in the Quick Installation Guide to configure the DCS-932L. 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

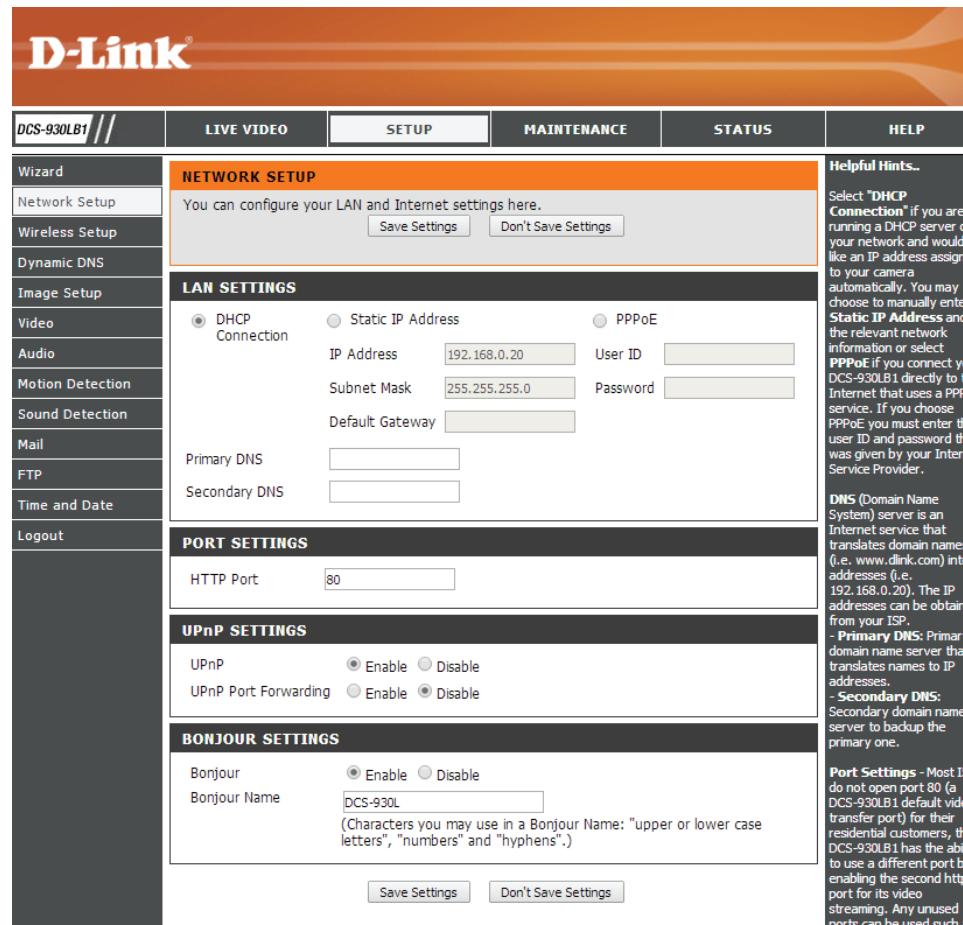
Run your Internet Explorer Web browser. In the address bar, type in the IP Address that was assigned to the Network Camera by the Setup Wizard. The DCS-932L Live Video Page appears with a window displaying live video from the camera. You are able to view this screen from any PC running Internet Explorer on your LAN.

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



The **Setup > Network Setup** 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: The HTTP port is required to be opened for the DCS-932L.



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. Configure the initial settings of the DIR-655 by following the steps outlined in the DIR-655 Quick Installation Guide.

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 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.

Your WAN IP Address will be listed on the router's

Status > Device Info page.

The screenshot shows the D-Link DCS-930LB1 web interface. The top navigation bar includes links for LIVE VIDEO, SETUP, MAINTENANCE, STATUS, and HELP. The left sidebar has links for Device Info, Active User, and Logout. The main content area is titled 'DEVICE INFO' and contains a message: 'All of your network connection details are displayed on this page. The firmware version is also displayed here.' Below this is a 'BASIC INFORMATION' section with the following data:

| | |
|----------------------|---------------------------|
| Camera Name | DCS-930L |
| Time & Date | 01 Jan 2014 12:19:24 A.M. |
| Firmware Version | 2.00 (2014-05-02) |
| Agent Version | 2.0.17-b68 |
| MAC Address | 28 10 78 26 D4 8B |
| IP Address | 192.168.0.101 |
| Subnet Mask | 255.255.255.0 |
| Default Gateway | 192.168.0.1 |
| Primary DNS | 192.168.0.1 |
| Secondary DNS | 0.0.0.0 |
| DDNS | Disable |
| UPnP Port Forwarding | Disable |

Below this is a 'FTP Server Test' section with the message 'No test conducted.' and an 'E-mail Test' section with the message 'No test conducted.' At the bottom of the page is a 'WIRELESS STATUS' section with the following data:

| | |
|-----------------|---------------------------------|
| Connection Mode | Infrastructure |
| Link | No |
| SSID | dlink (MAC : 00 00 00 00 00 00) |
| Channel | 6 |
| Encryption | No |

A 'Refresh' button is located at the bottom right of the main content area.

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 DIR-655 router prevent users from accessing the video from the DCS-932L over the Internet. The router connects to the Internet over a series of numbered ports. The ports normally used by the DCS-932L 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 and TCP 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.

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 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 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.

The screenshot shows the D-Link DIR-655 router's web interface. The left sidebar contains navigation links: VIRTUAL SERVER, PORT FORWARDING, APPLICATION RULES, QOS ENGINE, NETWORK FILTER, ACCESS CONTROL, WEBSITE FILTER, INBOUND FILTER, FIREWALL SETTINGS, ADVANCED WIRELESS, WPS, WI-FI PROTECTED SETUP, and ADVANCED NETWORK. The main content area has tabs: SETUP (selected), ADVANCED, TOOLS, STATUS, and SUPPORT. The current page is 'VIRTUAL SERVER'. It includes a descriptive text box about virtual servers, two buttons ('Save Settings' and 'Don't Save Settings'), and a table titled '24--VIRTUAL SERVERS LIST' containing four rows of configuration data. A sidebar on the right provides 'Helpful Hints...' for application names, IP addresses, and schedules.

| Name | Port | Traffic Type | |
|---------------|------|--------------|-----------------------------|
| DCS-930L | 80 | TCP | Always |
| 192.168.0.120 | 80 | 6 | Inbound Filter Allow All |
| | 0 | TCP | Always |
| 0.0.0.0 | 0 | 6 | Inbound Filter Allow All |
| | 0 | TCP | Always |
| 0.0.0.0 | 0 | 6 | Inbound Filter Allow All |

VIRTUAL SERVER

The Virtual Server option allows you to define a single public port on your router for redirection to an internal LAN IP Address and Private LAN port if required. This feature is useful for hosting online services such as FTP or Web Servers.

Save Settings Don't Save Settings

24--VIRTUAL SERVERS LIST

Helpful Hints...

Check the **Application Name** drop down menu for a list of predefined server types. If you select one of the predefined server types, click the arrow button next to the drop down menu to fill out the corresponding field.

You can select a computer from the list of DHCP clients in the **Computer Name** drop down menu, or you can manually enter the IP address of the computer at which you would like to open the specified port.

Select a schedule for when the virtual server will be enabled. If you do not see the schedule you need in

Troubleshooting

This chapter provides solutions to problems that can occur during the installation and operation of the DCS-932L.

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 <http://www.mydlink.com/support>.

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 10 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 LED Control in "Admin" on page 40 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 similar to the following (...bytes = 32 time = 2 ms).

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 the 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 environment.

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.

Wireless Basics

D-Link wireless products are based on industry standards to provide easy-to-use and compatible high-speed wireless* connectivity within your home, business or public access wireless networks. Strictly adhering to the IEEE standard, the D-Link wireless family of products will allow you to securely access the data you want, when and where you want it. You will be able to enjoy the freedom that wireless networking delivers.

A wireless local area network (WLAN) is a cellular computer network that transmits and receives data with radio signals instead of wires. Wireless LANs are used increasingly in both home and office environments, and public areas such as airports, coffee shops and universities. Innovative ways to utilize WLAN technology are helping people to work and communicate more efficiently. Increased mobility and the absence of cabling and other fixed infrastructure have proven to be beneficial for many users.

Under many circumstances, it may be desirable for mobile network devices to link to a conventional Ethernet LAN in order to use servers, printers or an Internet connection supplied through the wired LAN. A Wireless Router is a device used to provide this link.

What is Wireless?

Wireless or WiFi technology is another way of connecting your computer to the network without using wires. WiFi uses radio frequency to connect wirelessly, so you have the freedom to connect computers anywhere in your home or office network.

Why D-Link Wireless?

D-Link is the worldwide leader and award winning designer, developer, and manufacturer of networking products. D-Link delivers the performance you need at a price you can afford. D-Link has all the products you need to build your network.

How does wireless work?

Wireless works similar to how cordless phone work, through radio signals to transmit data from one point A to point B. But wireless technology has restrictions as to how you can access the network. You must be within the wireless network range area to be able to connect your computer. There are two different types of wireless networks Wireless Local Area Network (WLAN), and Wireless Personal Area Network (WPAN).

Wireless Local Area Network (WLAN)

In a wireless local area network, a device called an Access Point (AP) connects computers to the network. The access point has a small antenna attached to it, which allows it to transmit data back and forth over radio signals. With an indoor access point as seen in the picture, the signal can travel up to 300 feet. With an outdoor access point the signal can reach out up to 30 miles to serve places like

manufacturing plants, industrial locations, college and high school campuses, airports, golf courses, and many other outdoor venues.

Who uses wireless?

Wireless technology has become so popular in recent years that almost everyone is using it, whether it's for home, office, business, D-Link has a wireless solution for it.

Home

- Gives everyone at home broadband access
- Surf the Web, check email, instant message, and etc
- Gets rid of the cables around the house
- Simple and easy to use

Small Office and Home Office

- Stay on top of everything at home as you would at office
- Remotely access your office network from home
- Share Internet connection and printer with multiple computers
- No need to dedicate office space

Where is wireless used?

Wireless technology is expanding everywhere not just at home or office. People like the freedom of mobility and it's becoming so popular that more and more public facilities now provide wireless access to attract people. The wireless connection in public places is usually called "hotspots".

Using a D-Link Cardbus Adapter with your laptop, you can access the hotspot to connect to Internet from remote locations like: Airports, Hotels, Coffee Shops, Libraries, Restaurants, and Convention Centers.

Wireless network is easy to setup, but if you're installing it for the first time it could be quite a task not knowing where to start. That's why we've put together a few setup steps and tips to help you through the process of setting up a wireless network.

Tips

Here are a few things to keep in mind, when you install a wireless network.

Centralize your router or Access Point

Make sure you place the router/access point in a centralized location within your network for the best performance. Try to place the router/access point as high as possible in the room, so the signal gets dispersed throughout your home. If you have a two-story home, you may need a repeater to boost the signal to extend the range.

Eliminate Interference

Place home appliances such as cordless telephones, microwaves, and televisions as away as possible from the router/access point. This would significantly reduce any interference that the appliances might cause since they operate on same frequency.

Security

Don't let your next-door neighbors or intruders connect to your wireless network. Secure your wireless network by turning on the WPA or WEP security feature on the router. Refer to product manual for detail information on how to set it up.

Wireless Modes

There are basically two modes of networking:

- **Infrastructure** – All wireless clients will connect to an access point or wireless router.
- **Ad-Hoc** – Directly connecting to another computer, for peer-to-peer communication, using wireless network adapters on each computer, such as two or more DCS-932L wireless network Cardbus adapters.

An Infrastructure network contains an Access Point or wireless router. All the wireless devices, or clients, will connect to the wireless router or access point.

An Ad-Hoc network contains only clients, such as laptops with wireless cardbus adapters. All the adapters must be in Ad-Hoc mode to communicate.

Networking Basics

Check your IP address

After you install your new D-Link adapter, 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.

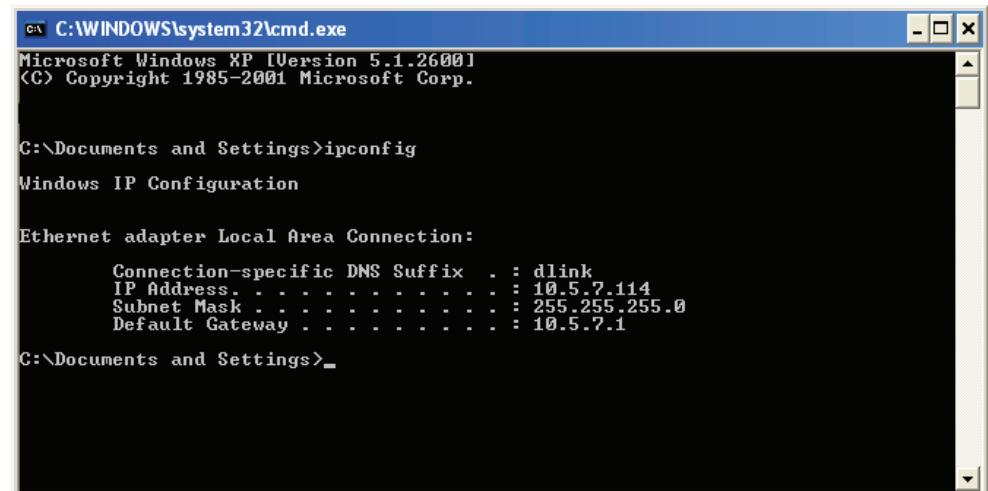
Click on **Start > Run**. In the run box type **cmd** and click **OK**.

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 on newly installed adapters.

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.



```
C:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings>ipconfig
Windows IP Configuration

Ethernet adapter Local Area Connection:
      Connection-specific DNS Suffix . : dlink
      IP Address . . . . . : 10.5.7.114
      Subnet Mask . . . . . : 255.255.255.0
      Default Gateway . . . . . : 10.5.7.1

C:\Documents and 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® 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

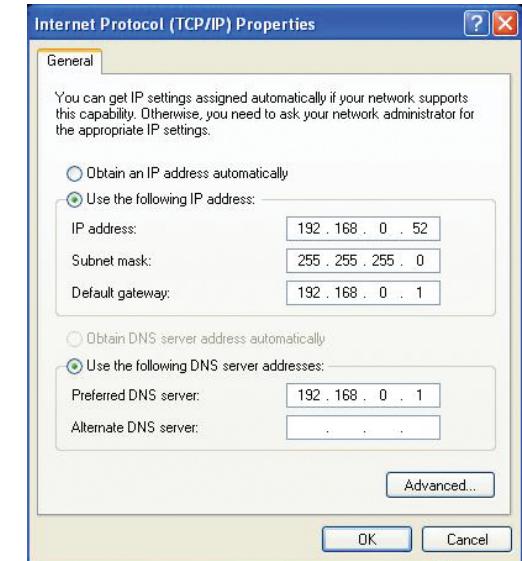
Click **Use the following IP address** and enter an IP address that is on the same subnet as your network or the LAN IP address on your router.

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 the same as the LAN IP address of your router (192.168.0.1).

Set Primary DNS 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

SYSTEM REQUIREMENTS

- Microsoft Windows® 8/7/Vista/XP, or Mac with OS X 10.6 or higher
- PC with 1.3 GHz or above and at least 128 MB RAM
- Internet Explorer 7, Firefox 12, Safari 6, or Chrome 20 or higher version with Java installed and enabled

NETWORKING PROTOCOL

- IPV4, ARP, TCP, UDP, ICMP
- DHCP Client
- NTP Client (D-Link)
- DNS Client
- DDNS Client (Dyndns and D-Link)
- SMTP Client
- FTP Client
- HTTP Server
- PPPoE
- UPnP Port Forwarding

BUILT-IN NETWORK INTERFACE

- 10/100BASE-TX Fast Ethernet
- 802.11b/g/n WLAN

WIRELESS CONNECTIVITY

- 802.11b/g/n Wireless with WEP/WPA/WPA2 security

WIRELESS TRANSMIT OUTPUT POWER

- 16 dbm for 11b, 12 dbm for 11g, 12 dbm for 11n (typical)

SDRAM

- 32 MB

FLASH MEMORY

- 4 MB

RESET BUTTON

- Reset to factory default

VIDEO CODECS

- MJPEG
- JPEG for still images

VIDEO FEATURES

- Adjustable image size and quality
- Time stamp and text overlay
- Flip and Mirror

RESOLUTION

- 640 x 480 at up to 20 fps
- 320 x 240 at up to 30 fps
- 160 x 120 at up to 30 fps

LENS

- Focal length: 3.15 mm, F2.8

SENSOR

- VGA 1/5 inch CMOS sensor

MINIMUM ILLUMINATION

- 0 lux with IR LEDs on

VIEWING ANGLE

- Horizontal: 45.3°
- Vertical: 34.5°
- Diagonal: 54.9°

DIGITAL ZOOM

- Up to 4x

3A CONTROL

- AGC (Auto Gain Control)
- AWB (Auto White Balance)
- AES (Auto Electronic Shutter)

POWER

- Input: 100-240 V AC, 50/60 Hz
- Output: 5 V DC, 1 A
- External AC-to-DC switching power adapter

DIMENSIONS (W X D X H)

- Camera only:
60 x 32.15 x 95.75 mm (2.36 x 1.26 x 3.76 in.)
- Including the bracket and stand:
80 x 80 x 126 mm (3.15 x 3.15 x 4.96 in.)

WEIGHT

- Camera only:
57.8 g (2.04 oz) ± 5%
- Including the bracket and stand:
91.8 g (3.24 oz) ± 5%

MAX POWER CONSUMPTION

- 2.84 W

OPERATION TEMPERATURE

- 0 °C to 40 °C (32 °F to 104 °F)

STORAGE TEMPERATURE

- -20 °C to 70 °C (-4 °F to 158 °F)

HUMIDITY

- 20-80% RH non-condensing

EMISSION (EMI), SAFETY & OTHER CERTIFICATIONS

- FCC Class B
- IC
- C-Tick
- CE