

IPC1500

**IP Camera
STATIC VIEW
802.11g**



User's Guide

Regulatory Approvals

FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

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

To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. (Example - use only shielded interface cables when connecting to computer or peripheral devices).

FCC Radiation Exposure Statement

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

The antennas used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

Channel

The Wireless Channel sets the radio frequency used for communication.

- Access Points use a fixed Channel. You can select the Channel used. This allows you to choose a Channel which provides the least interference and best performance. In the USA and Canada, 11 channels are available. If using multiple Access Points, it is better if adjacent Access Points use different Channels to reduce interference.
- In "Infrastructure" mode, Wireless Stations normally scan all Channels, looking for an Access Point. If more than one Access Point can be used, the one with the strongest signal is used. (This can only happen within an ESS.)
- If using "Ad-hoc" mode (no Access Point), all Wireless stations should be set to use the same Channel. However, most Wireless stations will still scan all Channels to see if there is an existing "Ad-hoc" group they can join.

CAUTION:

- 1) To comply with FCC RF exposure compliance requirements, a separation distance of at least 20 cm must be maintained between the antenna of this device and all persons.
- 2) This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

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Chapter 1

Introduction

1

This Chapter provides details of the Wireless Network Camera's features, components and capabilities.

Overview

The Wireless Network Camera has an Integrated Microcomputer and a high quality CMOS digital-Image-Sensor, enabling it to display high quality live streaming video over your wired LAN, the Internet, and for the Wireless Network Camera, an 802.11g Wireless LAN.

Using enhanced MPEG-4 technologies, the Wireless Network Camera is able to stream high quality video and audio directly to your PC. The high compression capabilities of MPEG-4 reduce network bandwidth requirements to amazingly low levels.

A convenient and user-friendly Windows program is provided for both viewing and recording video. If necessary, you can even view video using your Web Browser, on a variety of software platforms.

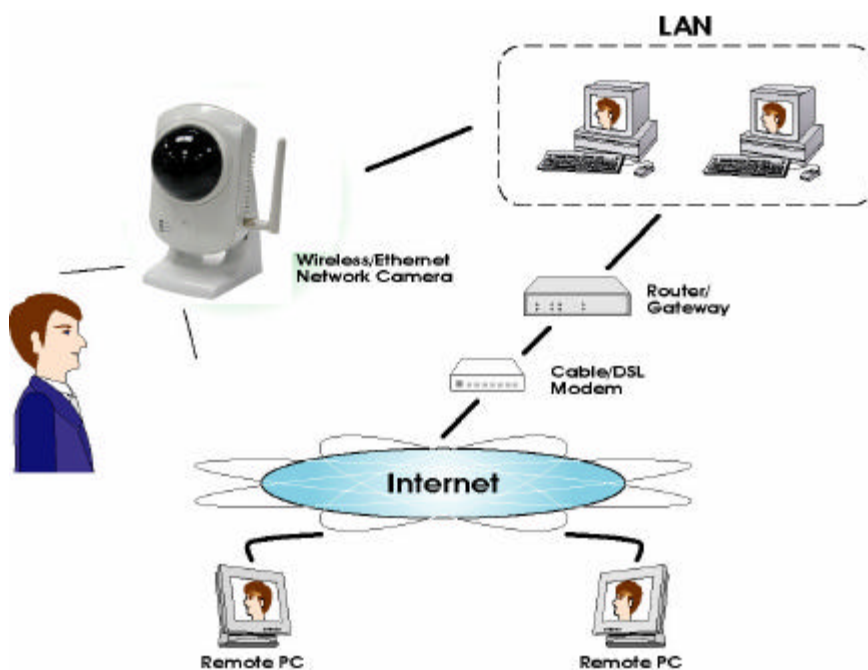


Figure 1: Wireless Network Camera

Features

- **Standalone Design.** The Wireless Network Camera is a standalone system with built-in CPU and Video encoder. It requires only a power source and a connection to your LAN or Wireless LAN.
- **Suitable for Home, Business or Public Facilities.** Whether for Home, Business or Public Facility surveillance, or just for entertainment and fun, the Wireless Network Camera has the features you need.

- **Multi-Protocol Support.** Supporting TCP/IP networking, SMTP (E-mail), HTTP and other Internet related protocols, the Wireless Network Camera can be easily integrated into your existing network.
- **Easy Configuration.** A Windows-based Wizard is provided for initial setup. Subsequent administration and management can be performed using a standard web browser. The administrator can configure and manage the Wireless Network Camera via the LAN or Internet.
- **Viewing/Recording Utility.** A user-friendly Windows utility is provided for viewing live video. For periods when you are absent, or for scheduled recording, this application also allows you to record video to an ASF file on your PC. The recorded files are in a standard Windows Media format, and thus usable by a wide variety of programs if required.
- **Motion Detection.** This feature can send you an E-mail when motion is detected. The Wireless Network Camera will compare consecutive frames to detect changes caused by the movement of large objects. This function only works indoors due to the sensitivity of the CMOS sensor. If desired, a short video can be included as an attachment to the E-mail.
- **Flexible Scheduling.** You can limit access to the video stream to specified times using a flexible scheduling system. The Motion Detection feature can also have its own schedule, so it is active only when required.
- **Periodic Video Uploads.** If desired, the Wireless Network Camera can periodically upload a short video file to your FTP server.
- **Audio Support.** You can listen as well as look! Audio is included with the video if desired. You can use either the built-in microphone or an external microphone.

Internet Features

- **User-definable HTTP port number.** This allows Internet Gateways to use “port mapping” so the Wireless Network Camera and a Web Server can share the same Internet IP address.
- **DDNS Support.** In order to view video over the Internet, users must know the Internet IP address of the gateway used by the Wireless Network Camera. But if the Gateway has a dynamic IP address, DDNS (Dynamic DNS) is required. Since many existing Gateways do not support DDNS, this function is incorporated into the Wireless Network Camera.
- **NTP (Network-Time-Protocol) Support.** NTP allows the Wireless Network Camera to calibrate its internal clock from an Internet Time-Server. This ensures that the time stamp on Video from the Wireless Network Camera will be correct.

Security Features

- **User Authentication.** If desired, access to live video can be restricted to known users. Users will have to enter their username and password before being able to view the video stream. Up to 20 users can be entered.
- **Password-Protected Configuration.** Configuration data can be password protected, so that it only be changed by the Wireless Network Camera Administrator.

Wireless Features

- **Standards Compliant.** The Wireless Network Camera complies with the IEEE802.11g (DSSS) specifications for Wireless LANs.
- **Supports both 802.11b and 802.11g Standards.** The Wireless Network Camera supports both 802.11b and 802.11g standards.
- **Speeds to 54Mbps.** All speeds up to the 802.11g maximum of 54Mbps are supported.

- **Wired and Wireless Network Support.** The Wireless Network Camera supports either wired and wireless transmission.
- **WEP Support.** Full WEP support (64/128 Bit) on the Wireless interface is provided.
- **WPA-PSK Support.** The WPA-PSK (WPA1) standard is also supported, allowing advanced encryption of wireless data.

Physical Details



Figure 2: Wireless Network Camera

Front

- | | |
|--------------------------|---|
| Lens | No physical adjustment is required or possible for the lens, but you should ensure that the lens cover remain clean. The image quality is degraded if the lens cover is dirty or smudged. |
| Microphone | The built-in microphone is mounted on the front. There is also a connection for an external microphone on the rear. Connecting an external microphone will disable the built-in microphone. |
| Power LED (Green) | <p>On - Power on.</p> <p>Off - No power.</p> <p>Blinking - The <i>Ready</i> LED will blink during start up. This will take 15 to 20 seconds.</p> |

**Wireless LED
(Amber)**

(Wireless Network Camera only)

On - Wireless interface is active.

Off - Wireless interface is not available.

Blinking - Data is being transferred via the Wireless interface.

**LAN LED
(Amber)**

On - LAN port is connected to a hub or switch.

Off - LAN port is not connected.

Blinking - Data is being transmitted or received via the LAN port.

Rear

Antenna

Attach the supplied antenna here. The antenna is adjustable; best results are usually obtained with the antenna positioned vertically.

MIC In

If required, an external microphone can be attached here. Attaching a microphone here will disable the built-in microphone on the front. Microphones designed to be used with PCs are usually compatible with this microphone input.

Power Input

Connect the supplied 5V power adapter here. Do not use other power adapters; doing so may damage the camera.

LAN port

Use a standard LAN cable to connect your Wireless Network Camera to a 10/100BaseT hub or switch.

Note:

On the Wireless Network Camera, attaching the LAN cable will disable the Wireless interface. Only 1 interface can be active at any time.

Bottom

Reset Button

This button is recessed; you need a pin or paper clip can be used to depress it. It has two (2) functions, which can be activated at any time the camera is in the "ready" mode.

- **Restore Default IP Address.** When pressed and released, the Wireless Network Camera will reset its IP address to the default value of 192.168.0.99.
- **Restore Default IP Address, Administrator ID, and Administrator password.** When pressed and held for 3 seconds, the *IP address*, *Administrator ID*, and *Administrator Password* settings will be set to their default values.
 - IP address: 192.168.0.99
 - Administrator ID: administrator
 - Administrator Password: null (no password)

Note:

After this procedure is completed, the *Ready* LED will blink three times to confirm that the reset was completed successfully.

Package Contents

The following items should be included: If any of these items are damaged or missing, please contact your dealer immediately.

1. The Wireless Network Camera
2. Installation CD-ROM
3. Quick Installation Guide
4. Power adapter
5. Camera Mount
6. Mounting Screws (for wall mounting)
7. Antenna (Wireless Network Camera only)

Chapter 2

Basic Setup

2

This Chapter provides details of installing and configuring the Wireless Network Camera.

System Requirements

- To use the LAN interface, a standard 10/100BaseT hub or switch and network cable is required.
- To use the Wireless interface on the Wireless Network Camera, other Wireless devices must be compliant with the IEEE802.11b or IEEE802.11g specifications. All Wireless stations must use compatible settings.

Installation



Figure 3: Camera Assembly

1. Assemble the Camera

Screw the supplied antenna to the mounting point on the rear.

Attach the Camera Mount to the camera, as shown in the diagram above.

2. Connect the LAN Cable

Connect the Wireless Network Camera to a 10/100BaseT hub or switch, using a standard LAN cable.



For the Wireless Network Camera, this disables the Wireless Interface, because only one interface can be active. The LAN interface is recommended for initial configuration.

The default Wireless settings for the Wireless Network Camera are:

Mode: Infrastructure

ESSID: ANY

Wireless Security: Disabled

3. Power Up

Connect the supplied 5V power adapter to the Wireless Network Camera and power up. Use only the power adapter provided. Using a different one may cause hardware damage.

4. Check the LEDs

- The *Power* LED will turn on briefly, then start blinking. It will blink during startup, which takes 20 to 25 seconds.
After startup is completed, the *Ready* LED should remain ON.
- Either the *LAN* LED OR the *Wireless* LED should be ON.

For more information, refer to *Front* in Chapter 1.

Setup using the Windows Wizard

Initial setup should be performed using the supplied Windows-based setup Wizard. This program can locate the Wireless Network Camera even if its IP address is invalid for your network. You can then configure the Wireless Network Camera with appropriate TCP/IP settings for your LAN.

Subsequent administration can be performed with your Web browser, as explained in *Chapter 3 - Web-based Administration*.

Setup Procedure

1. Insert the supplied CD-ROM into your drive. If the setup program does not start automatically, run **Setup.exe** in the root folder.
 - You will see the *Welcome* screen shown below.
 - Click the *Setup Camera* button to start the setup Wizard



Figure 4: Welcome Screen

2. The next screen, shown below, will list all the Wireless Network Cameras on your LAN.

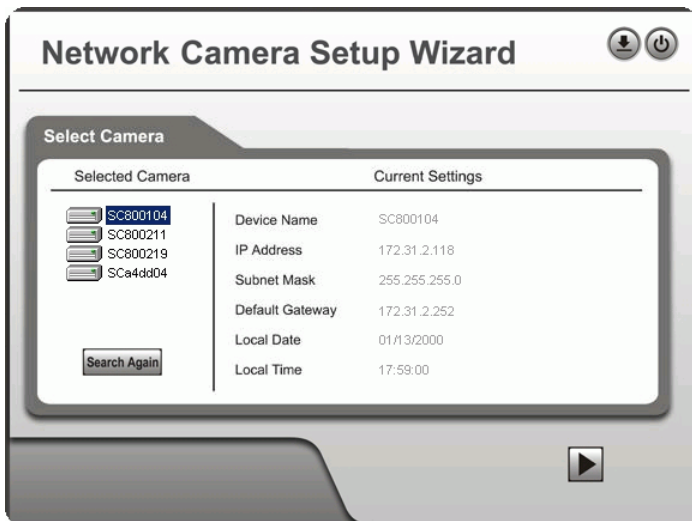
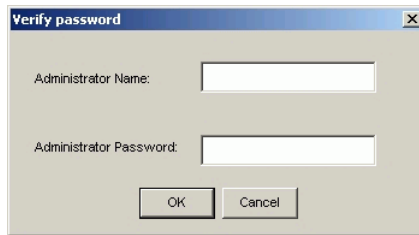


Figure 5: Camera List Screen

- Select the desired Camera from the list on the left. The current settings for the selected Camera will be displayed in the table on the right.
 - Click *Next* to continue.
3. If the *Administrator Name* and *Administrator Password* have been set, you will be prompted to enter them, as shown below.
- If using the default values, enter **administrator** for the name, and leave the password blank.
 - Otherwise, enter the *Administrator Name* and *Administrator Password* set on the *User* screen.



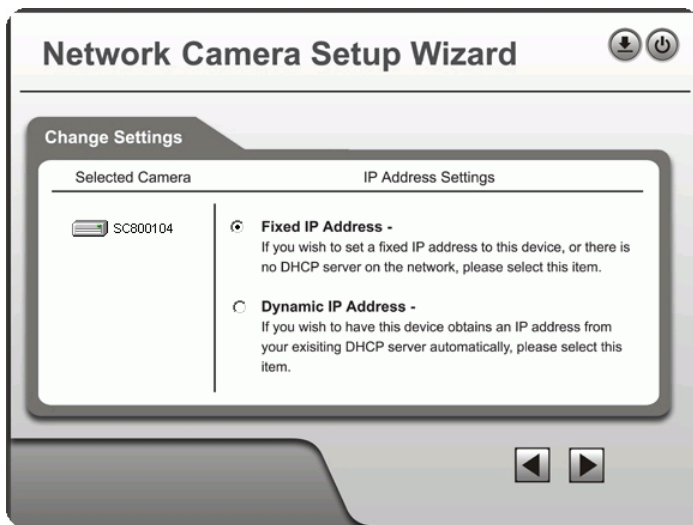
A dialog box titled "Verify password" with a close button (X) in the top right corner. It contains two input fields: "Administrator Name:" and "Administrator Password:". Below the input fields are two buttons: "OK" and "Cancel".

Figure 6: Password Dialog



The Administrator Name and password can be set on the "User" screen of the Web interface. The Web interface can be accessed via the "Web UI" button on the final screen of the Wizard.

4. On the following **IP Address Settings** screen, shown below, choose *Fixed IP* or *Dynamic IP*.



The "Network Camera Setup Wizard" interface. The title bar includes a download icon and a power icon. The main content area is titled "Change Settings" and is divided into two sections: "Selected Camera" and "IP Address Settings". Under "Selected Camera", there is a camera icon and the text "SC800104". Under "IP Address Settings", there are two radio button options: "Fixed IP Address -" (which is selected) and "Dynamic IP Address -". Below each option is a brief description. At the bottom right of the main content area, there are two navigation arrows: a left arrow and a right arrow.

Figure 7: Fixed or Dynamic IP Selection

- *Fixed IP* is recommended, and can always be used.
- *Dynamic IP* can only be used if your LAN has a DHCP Server.

Click *Next* to continue.

5. If you chose *Fixed IP Address*, the following **TCP/IP Settings** screen will be displayed.

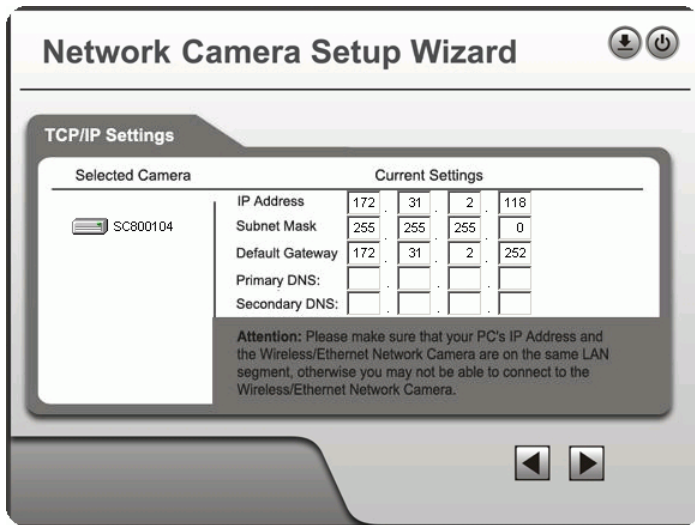


Figure 8: TCP/IP Settings

- Enter an unused **IP Address** from within the address range used on your LAN.
- The **Subnet Mask** and **Default Gateway** fields must match the values used by PCs on your LAN.
- The **Primary DNS** address is required in order to use the E-mail alert or Dynamic DNS features. Enter the DNS (Domain Name Server) address recommended by your ISP.
- The **Secondary DNS** is optional. If provided, it will be used if the Primary DNS is unavailable.

Click *Next* to continue.

6. For Wireless cameras, the following **Wireless Settings** screen is displayed next.

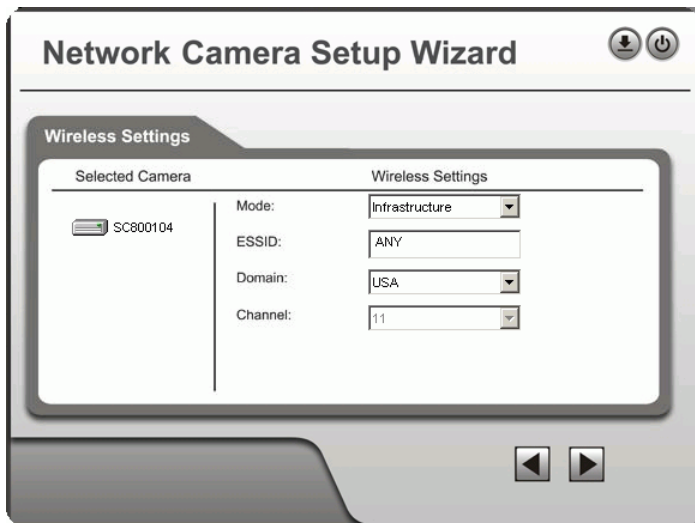


Figure 9: Wireless Settings

- **Mode** - If you have an Access Point, select *Infrastructure*. Otherwise, select *Ad-hoc*.
- **ESSID** - Enter the value used by your other Wireless devices.
- **Domain** - Select the domain to match your location.

- **Channel** - For *Ad-hoc* mode, select the channel used by your other Wireless devices. (For Infrastructure mode, the Access Point determines the channel used.)
7. Click *Next* to continue to the **Security** screen, shown below, choose *Disabled*, *WEP* or *WPA-PSK*

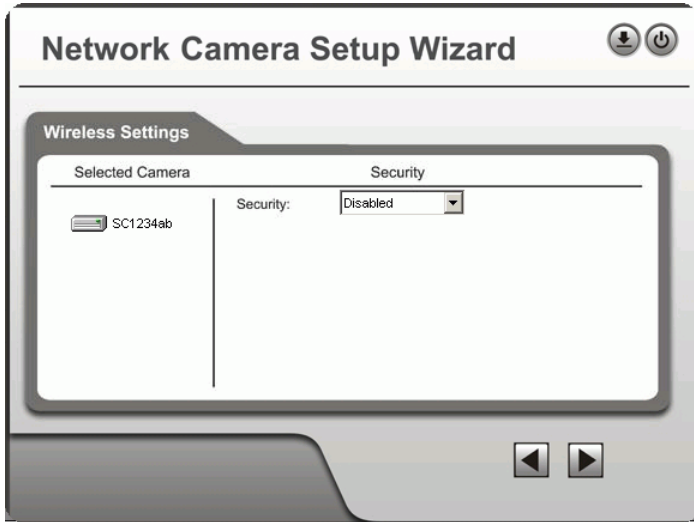


Figure 10: Security Screen

8. If you chose **WEP(64 or128)** , the following screen is shown below.

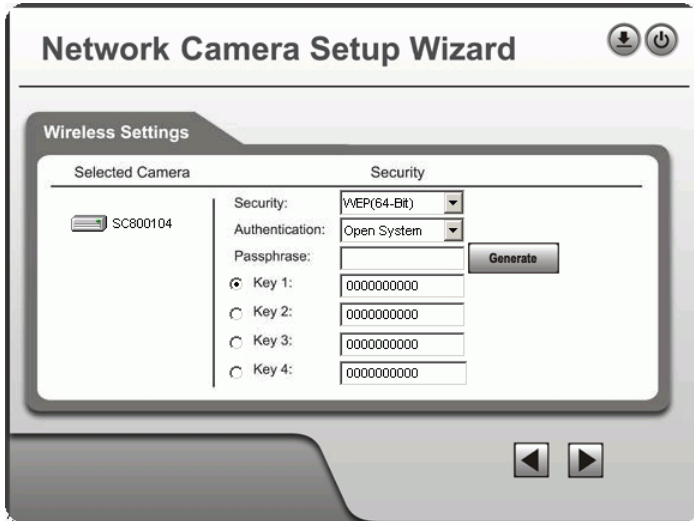


Figure 11: WEP Key Settings

- **WEP Authentication** - Select the option used on your Wireless LAN.
 - **Keys** - If using WEP, the default key must match the key used on your other Wireless stations. The other keys are optional. You can enter the key value directly, or generate a key by entering a string into the **Passphrase** field, and clicking the **Generate** button.
9. If you chose the **WPA-PSK** option, the following screen is shown next.

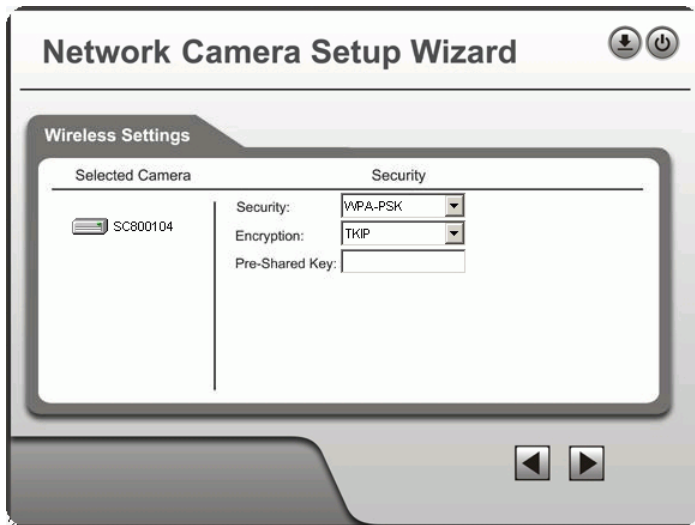


Figure 12: WPA-PSK Settings

- **Encryption** - Select the desired option. Wireless Stations must use the same method.
- **Pre-Shared Key** - Enter the key value. Data is encrypted using a key derived from the network key. Other Wireless Stations must use the same network key. The PSK must be from 8 to 63 characters in length.

Click *Next* to continue to the following screen.

10. This screen allows you to enter a suitable **Description**, and set the correct **Time Zone**, **Date**, and **Time**. Make any desired changes, then click *Next* to continue.

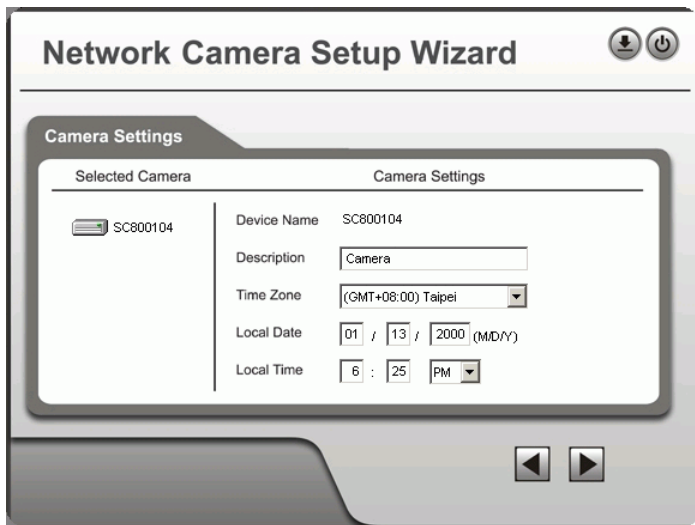


Figure 13: Camera Settings

11. The next screen, shown below, displays all details of the Wireless Network Camera.
 - Click *Next* if the settings are correct
 - Click *Back* to modify any incorrect values.

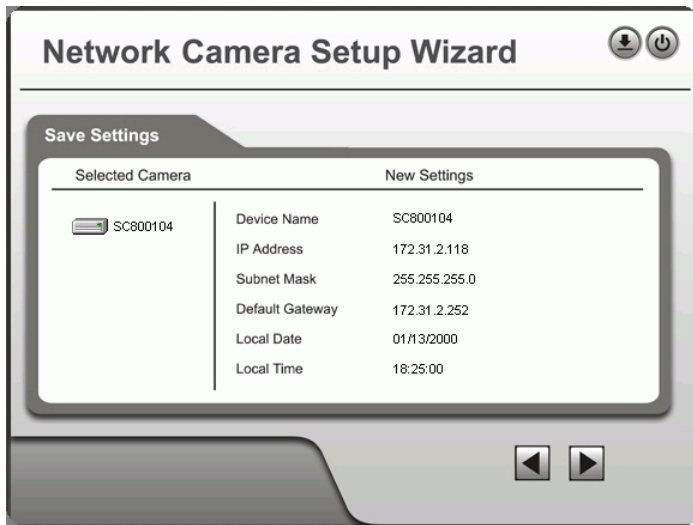


Figure 14: Save Settings

12. After clicking *Next*, you will see the screen below.



Figure 15: Final Screen

If desired, you can click the *Web UI* button to connect to the camera using your Web Browser.

Clicking the *Install Utility* button will install the Viewing/Recording utility described in Chapter 5.

13. Click *Exit* to end the Wizard.
Setup is now complete.

Chapter 3

Advanced Viewing Setup

3

This Chapter provides information about the optional settings and features for viewing video via the Wireless Network Camera. This Chapter is for Administrators only.

Introduction

After finishing setup via the Windows-based Wizard, the Wireless Network Camera can immediately be used by all users on your LAN.

Refer to *Chapter 5 - Viewing & Recording* for details on viewing and recording live video.

This chapter describes some additional settings and options for viewing live Video:

- Adjusting the video image
- Controlling user access to the live video stream
- Making video available from the Internet
- Using the *Motion Detection/E-mail* feature

Adjusting the Video Image

If necessary, the Wireless Network Camera Administrator can adjust the Video image. Settings are provided for:

- **Image size** - Select the desired size. The larger sizes require greater bandwidth.
- **Image quality** - This determines the degree of compression applied to the Video stream. Higher quality requires greater bandwidth.
- **Bandwidth/Frame Rate** - You can select either of these (not both) to determine the bandwidth required by the video stream.

- **Exposure** - Adjust the brightness of the image, if the *Auto-Exposure* does not give satisfactory results.
- **Color Balance** - Select the correct color balance for your environment.
- **Time Stamp** - If enabled, the time will be displayed on the Video image.
- **Text Overlay** - If enabled, up to 20 characters can be superimposed on the Video image. This is useful for identifying the camera.
- **Audio** - If desired, audio can be included in the video stream.

To Adjust the Video Image:

1. Connect to the Web-based interface of the Wireless Network Camera. (See *Chapter 4 - Web-based Management* for details.)
2. On the *Administration* menu, select *Video Image*. You will see a screen like the example below.

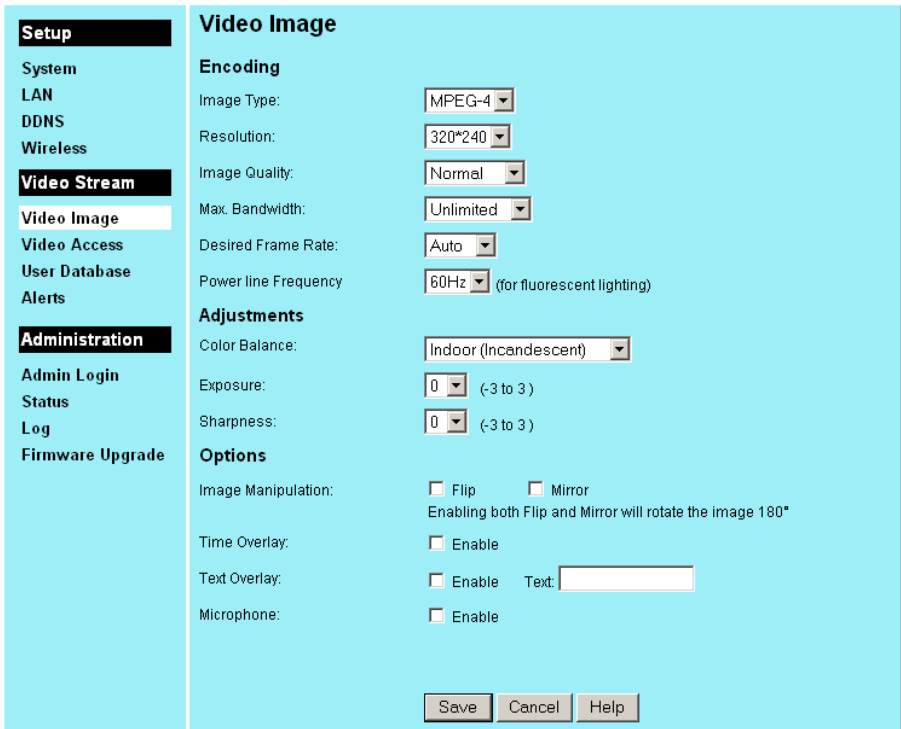


Figure 16: Video Image Screen

3. Make the required adjustments, as explained below, and save your changes.

Encoding	
Image Type	<p>Select the desired type:</p> <ul style="list-style-type: none"> MPEG-4 gives smooth motion and high quality images, but the video image quality will deteriorate if insufficient bandwidth is available. JPEG requires more bandwidth than MPEG-4, but if the bandwidth is insufficient, the frame rate will drop, and the image quality will remain at the same level.
Resolution	<p>Select the desired video resolution format. The default resolution is set to 320*240.</p>
Image Quality	<p>Select the desired image quality. The default Image Quality is set to Normal. Note: Higher image quality requires more bandwidth.</p>
Max. Bandwidth	<p>Select the desired Maximum bandwidth for the video stream. Note that you can specify EITHER the Bandwidth OR the Frame Rate, not both. If the Bandwidth is defined, the frame rate will be adjusted as necessary to achieve the specified bandwidth.</p> <p>The default value for bandwidth is <i>Unlimited</i>, which allows you to specify the desired frame rate.</p>
Desired Frame Rate	<p>Select the desired frame rate for the camera. Reducing this will lower the amount of bandwidth required by the camera. Note that if you set the Bandwidth above, the Frame Rate must be "Auto".</p>

Adjustment	
Color	Select the desired option to match the current environment and lighting.
Exposure	If necessary, you can adjust the exposure to obtain a better image. For example, if the camera is facing a bright light, the image may be too dark. In this case, you can increase the exposure.
Sharpness	Select the desired option for the sharpness. You can select a Sharpness value between -3 and 3.
Options	
Image Manipulation	The Flip setting will swap the image top-to-bottom, the Mirror setting will swap the image left-to-right. If the camera is mounted upside-down on the ceiling, check both the Flip and Mirror settings to have the image rotated to the correct position.
Time Overlay	If enabled, the current time will be displayed on the Video image.
Text Overlay	Enable this setting if you want text to be displayed on the Video image, and enter the desired text - up to 20 characters. This feature is often used to identify each camera when multiple cameras are installed.
Microphone	Enable audio recording by selecting this checkbox. Recording audio will increase the bandwidth requirements slightly.

Controlling User Access to the Video Stream

By default, all users can connect to the Wireless Network Camera and view live Video.

If desired, you can limit access to scheduled times, and also restrict access to known users.

To use these features

1. Connect to the Web-based interface of the Wireless Network Camera. (See *Chapter 4-Web-based Management* for details.)
2. On the *Administration* menu, select *Video Access*.
 - To restrict the times when Video access is available, set the *Access to Video Stream* setting to "Enable during Scheduled Periods" or "Disable during Scheduled Periods". If either of these is selected, you need to use the *Access Schedule* button to define the desired schedule.
 - To force each user to login before viewing video, set the *Viewer Authentication* setting to "Enable - Require Login".

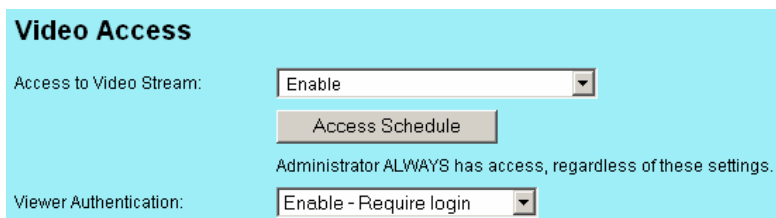


Figure 17: Controlling User Access

- If *Viewer Authentication* is enabled, select *User Database* on the *Administration* menu and create the desired users.

See Chapter 4 for further details about using the *Video Access* and *User Database* screens.

Viewing Video

- If the Video Stream is disabled, users cannot connect using either their Web Browser or the Windows utility. However, viewing video is still possible by logging in as the Administrator.
- When each user connects, they will be prompted for their username and password. They must enter the name and password defined on the *User Database* screen.
- If using the Windows Viewing/Recording utility, the username and password can be entered into the program, so that users do not need to provide the login data each time.

Making Video available from the Internet

If your LAN is connected to the Internet, typically by a Broadband Gateway/Router and Broadband modem, you can make the Wireless Network Camera available via the Internet.

Wireless Network Camera Setup

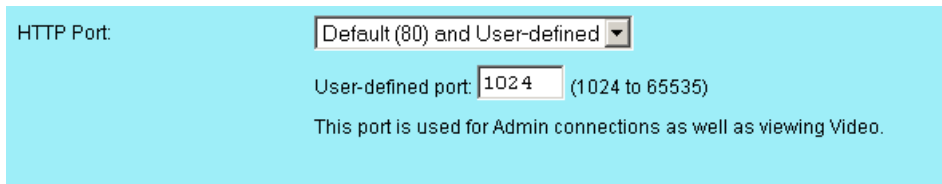
The Wireless Network Camera configuration does NOT have to be changed, unless:

- You wish to change the port number from the default value (1024).
- You wish to use the DDNS (Dynamic DNS) feature of the Wireless Network Camera.

HTTP Port Configuration

Normally, HTTP (Web) connections use port 80. Since the Wireless Network Camera uses HTTP, but port 80 is likely to be used by a Web Server, you can use a different port for the Wireless Network Camera. This port is called the *User-defined Port*.

The default *User-defined Port* is 1024. If you prefer to use a different port number, you can specify the port number on the Wireless Network Camera's *Video Access* screen, as shown below.



The screenshot shows a configuration interface for the HTTP port. It features a label 'HTTP Port:' followed by a dropdown menu currently set to 'Default (80) and User-defined'. Below this is a text input field for the 'User-defined port' with the value '1024' and a range '(1024 to 65535)' in parentheses. A note below the input field states: 'This port is used for Admin connections as well as viewing Video.'

Figure 18: Video Access Screen

See *Chapter 4 - Web-based Management* for further details on using the *Video Access* screen.



Viewers need to know this port number in order to connect and view live Video, so you must inform viewers of the current port number.

DDNS (Dynamic DNS)

Many internet connections use a "Dynamic IP address", where the Internet IP address is allocated whenever the Internet connection is established.

This means that other Internet users don't know the IP address, so can't establish a connection.

DDNS is designed to solve this problem, by allowing users to connect to your LAN using a domain name, rather than an IP address.

To use DDNS:

1. Register for the DDNS service with a supported DDNS service provider. You can then apply for, and be allocated, a Domain Name.
2. Enter and save the correct DDNS settings on the *DDNS* screen of the Wireless Network Camera.

Figure 19: DDNS Screen

3. Operation is then automatic:

- The Wireless Network Camera will then automatically contact the DDNS server whenever it detects that the Internet IP address has changed, and inform the DDNS server of the new IP address.
- Internet users can then connect to your LAN using the Domain Name allocated by the DDNS service provider.

Router/Gateway Setup

Your Router or Gateway must be configured to pass incoming TCP (HTTP) connections (from Viewers) to the Wireless Network Camera. The Router/Gateway uses the *Port Number* to determine which incoming connections are intended for the Wireless Network Camera.

This feature is normally called *Port Forwarding* or *Virtual Servers*, and is illustrated below. The Port Forwarding/Virtual Server entry tells the Router/Gateway that incoming TCP connections on port 1024 should be passed to the Wireless Network Camera. If necessary, check the user manual for your Router/Gateway for further details.

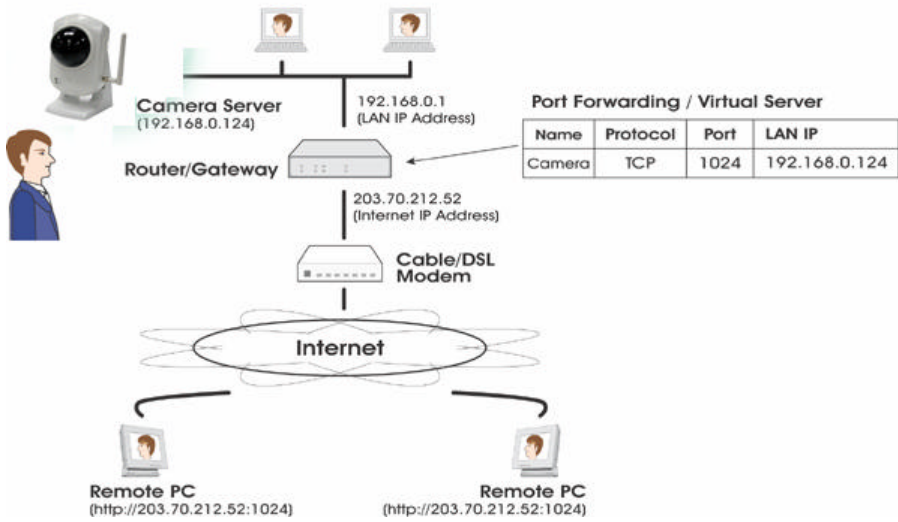


Figure 20: Connecting via the Internet



The "Port" for the *Port Forwarding / Virtual Server* entry above is the "User-defined Port" number specified on the *Video Access* screen of the Wireless Network Camera.

Viewing via the Internet

Clients (viewers) will also need a broadband connection; dial-up connections are NOT recommended.

Using the Windows Viewing/Recording Utility

If using the Windows Viewing/Recording Utility, the details of the Wireless Network Camera must be entered on the *Internet* tab of the *Add Camera* screen.

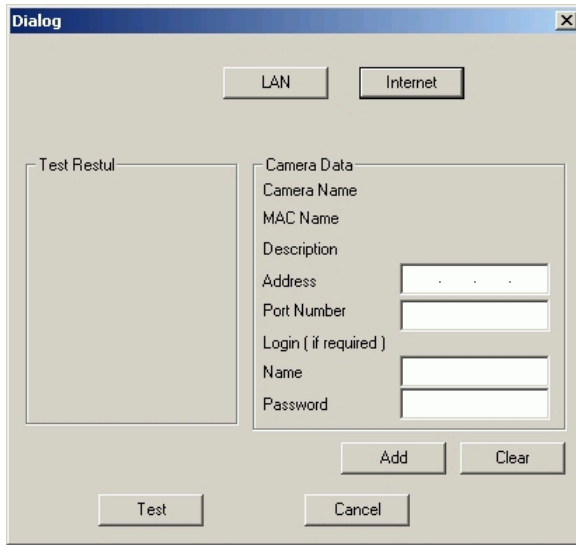


Figure 21: Add Camera from Internet

You can then select the camera in the *Cameras* list on the main screen, and click *View* to establish a connection and view live video.

See *Chapter 5 - Viewing and Recording* for full details on using the Windows Viewing/Recording utility.

Using your Web Browser

If using your Web browser, you need to know the address of the camera (either the Internet IP address or the Domain name) and the correct port number.

Enter the address of the Wireless Network Camera, and its port number, in the *Address (or Location)* field of your Browser.

Example - IP address:

`HTTP://203.70.212.52:1024`

Where the Router/Gateway's Internet IP address is 203.70.212.52 and the "Second Port" number on the Wireless Network Camera is 1024.

Example - Domain Name:

`HTTP://mycamera.dyndns.tv:1024`

Where the Router/Gateway's Domain name is `mycamera.dyndns.tv` and the "Second Port" number on the Wireless Network Camera is 1024.

See *Chapter 5 -Viewing and Recording* for further details of viewing Video using either the Windows Viewing/Recording utility or your Web Browser.

Motion Detection Alerts

The *Motion Detection* feature can generate an Alert when motion is detected.

The Wireless Network Camera will compare consecutive frames to detect changes caused by the movement of large objects.

But the motion detector can also be triggered by:

- Sudden changes in the level of available light
- Movement of the camera itself.

Try to avoid these situations. The motion detection feature works best in locations where there is good steady illumination, and the camera is mounted securely. It cannot be used outdoors due to the sensitivity of the CMOS sensor.

To Use Motion Detection Alerts

Using the Web-based interface on the Wireless Network Camera, select the *Alerts* screen, then configure this screen as described below.

The screenshot shows a web-based configuration interface for a camera. On the left is a navigation menu with categories: Setup, Video Stream, and Administration. The 'Alerts' option is selected. The main content area is titled 'Alerts' and contains the following settings:

- Motion Detection Alerts:** A dropdown menu set to 'Disable'. Below it are two buttons: 'Area/Sensitivity' and 'Alert Schedule'.
- Delay between Alerts:** A dropdown menu set to '2' minutes.
- Video File Length:** A dropdown menu set to '2 seconds'.
- Video File type:** A dropdown menu set to 'ASF'.
- Video File name:** An empty text input field.
- Video File Suffix:** A dropdown menu set to 'Date & time'.
- Restart Sequence at:** A dropdown menu set to '10' and a 'Restart Now' button.
- E-mail Alerts:** A section with a checked checkbox. It includes three checkboxes for 'E-mail Address #1', '#2', and '#3', each followed by an empty text input field.
- Attachment:** A checkbox for 'Attach video file' which is unchecked.
- Subject:** An empty text input field.
- Show "From" as:** An empty text input field with '(E-mail Address)' to its right.
- SMTP (Outgoing) Mail Server:** A button labeled 'SMTP Server'.
- FTP Alerts:** A section with an unchecked checkbox. It includes four text input fields for 'FTP server:', 'Login name:', 'Password:', and 'Folder:'.

At the bottom of the form are three buttons: 'Save', 'Cancel', and 'Help'.

Figure 22: Motion Detection/E-mail Alert

1. Select one of the *Enable* options in the *Motion Detection Alerts* select list.
2. Click the *Area/Sensitivity* button, and set the area or areas of the video image to be examined for movement. You can define up to 4 areas, and set the motion sensitivity individually for each area.

3. If using a schedule, click the *Alert Schedule* button and define the desired schedule.
4. Set the desired options for the *Delay between Alerts* and the Video file to accompany the Alert.
5. To have alerts sent by E-mail:
 - Enable the *E-Mail Alerts* checkbox
 - Enable and enter at least one (1) E-mail address
 - Select or enter the desired options for *Attachment*, *From* and *Subject* fields..
 - Click the SMTP Server button, and enter details of the SMTP Server used to send the E-mail.
 - In the **E-mail Alerts** section, select the desired options
6. To have alerts sent to your FTP Server:
 - Enable the *FTP Alerts* checkbox
 - Enter details of your FTP Server in the fields provided.
7. Save (Apply) your changes.

Chapter 4

Web-based Management



This Chapter provides Setup details of the Wireless Network Camera's Web-based Interface. This Chapter is for Administrators only.

Introduction

The Wireless Network Camera can be configured using your Web Browser. The Wireless Network Camera must have an IP address which is compatible with your PC.

The recommended method to ensure this is to use the supplied Windows-based Wizard, as described in the previous chapter.

Connecting to Wireless Network Camera

- If you have run the Windows-based setup Wizard, the final screen provided a button *Web UI*. Clicking this button will immediately connect to the Wireless Network Camera, using your Web Browser.
- If using only your Web Browser, use the following procedure to establish a connection from your PC to the Wireless Network Camera:
- Once connected, you can add the Wireless Network Camera to your Browser's *Favorites* or *Bookmarks*.

Connecting using your Web Browser

1. Start your WEB browser.
2. In the *Address* box, enter "HTTP://" and the IP Address of the Wireless Network Camera, as in this example, which uses the Wireless Network Camera's default IP Address:

HTTP://192.168.0.99

3. If the *Administrator ID* and *Password* have been set, you will then be prompted for a username and password. Enter the name and password you assigned.

Welcome Screen

When you connect, the following screen will be displayed.

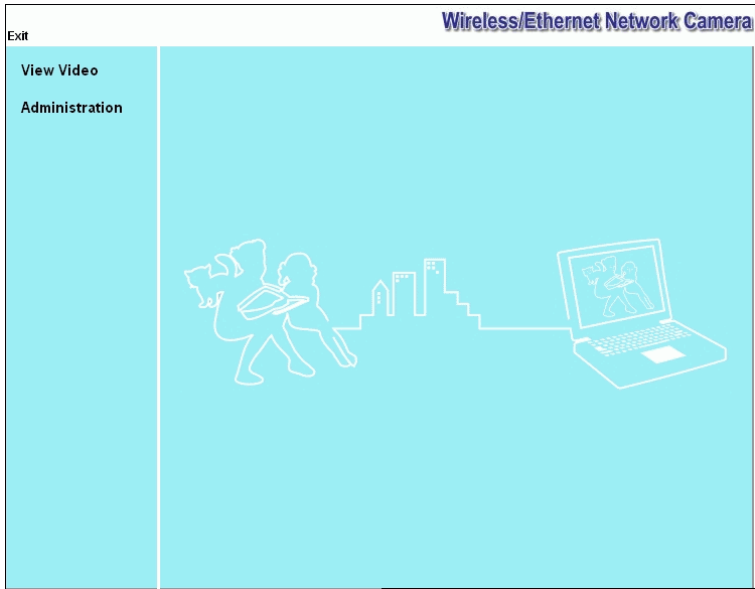


Figure 23: Welcome Screen

The menu options available from this screen are:

- **Exit**- Terminate the connection to the Wireless Network Camera.
- **View Video**- View live Video using your Web Browser.
- **Administration** - Access the Administration menu.

These options are explained in the following sections.

View Video Screen

To view live video in your Browser, click the *View Video* link.

You may see a prompt regarding an "OCX" file, like the example below.

You must install this OCX file in order to view the Video.

Click "Yes".



Figure 24 ActiveX OCX Prompt

Video will start playing automatically. There may be a delay of a few seconds while the video stream is buffered.

Administration Menu

Clicking on *Administration* on the menu provides access to all the settings for the Wireless Network Camera.

The *Administration* menu contains the following options:

Setup

- System
- LAN
- DDNS
- Wireless

Video Stream

- Video Image
- Video Access
- Users
- Alerts

Administration

- Admin Login
- Status
- Log
- Firmware Upgrade

These options are explained in the following sections.

System Screen

After clicking *Administration* on the main menu, or selecting *System* on the *Administration* menu, you will see a screen like the example below.

The screenshot shows the 'System' configuration page. On the left is a navigation menu with sections: Setup (System, LAN, DDNS, Wireless), Video Stream (Video Image, Video Access, User Database, Alerts), and Administration (Admin Login, Status, Log, Firmware Upgrade). The 'System' section is active. The main content area is divided into two sections: 'System Settings' and 'Date & Time'. Under 'System Settings', there is a 'Device Name' field with the value 'SC800009', a 'Description' field, and an 'LED Operation' checkbox which is checked. Under 'Date & Time', there is a 'Current Date & Time' field showing '01-08-2000 16:39:24' with a 'Change' button, a 'Timezone' dropdown menu set to '(GMT-08:00) Pacific Time (US & Canada); Tijuana', and two checkboxes for 'Adjust for daylight saving' and 'Enable NTP (Network Time Protocol)'. Below these is an 'NTP Server Address' field with 'clock.via.net' and an 'Update' field set to 'Every Day' at '00:00' (hh:mm). At the bottom are 'Save', 'Cancel', and 'Help' buttons.

Figure 25: System Screen

Data - System Screen

System Settings	
Device Name	This displays the name for the Wireless Network Camera.
Description	This field is used for entering a description, such as the location of the Wireless Network Camera.
LED Operation	Enable this if you want to use this function.
Date & Time	
Current Date & Time	It displays the current date and time. If it's not correct, click the Change button to modify the time settings.
Timezone	Choose the Timezone for your location from the drop-down list. If your location is currently using Daylight Saving, enable the Adjust for daylight saving checkbox. You must UNCHECK this checkbox when Daylight Saving finishes.
Network Time Protocol	Enable or dis able the Time Server feature as required. If Enabled, the Wireless Network Camera will contact a Network Time Server at regular intervals and update its internal timer.
NTP Server Address	Enter the address for the desired NTP server.

Update

The Schedule determines how often the Wireless Network Camera contacts the NTP Server.
Select the desired options.

LAN Screen

This screen is displayed when the *LAN* menu option is clicked.

Figure 26: LAN Screen

Data - LAN Screen

LAN	
MAC Address	It displays the current MAC address.
Obtain Address Automatically	If selected, the Wireless Network Camera will obtain its IP address and related information from a DHCP Server. Only select this option if your LAN has a DHCP Server.
Fixed IP Address	<p>If selected, you must assign the following data to the Wireless Network Camera.</p> <ul style="list-style-type: none"> • IP Address - Enter an unused IP address from the address range used on your LAN. • Subnet Mask - Use the same value as PCs on your LAN. • Default Gateway - Use the same value as PCs on your LAN.
Obtain DNS server address automatically	If selected, the Wireless Network Camera will obtain the DNS server address automatically.
Use the following DNS server address	<ul style="list-style-type: none"> • Primary DNS server - Use the same value as PCs on your LAN. Normally, your ISP will provide this address. • Secondary DNS server - This is optional. If entered, this DNS will be used if the Primary DNS does not respond.

DDNS Screen

Many internet connections use a "Dynamic IP address", where the Internet IP address is allocated whenever the Internet connection is established.

This means that other Internet users don't know the IP address, so can't establish a connection.

DDNS is designed to solve this problem, as follows:

- You must register for the DDNS service with a DDNS service provider. The DDNS Service provider will allocate a Domain Name to you upon request.
- The DDNS settings on the **DDNS** screen above must be correct.
- The Wireless Network Camera will then contact the DDNS server whenever it detects that the Internet IP address has changed, and inform the DDNS server of the new IP address. (The *Check WAN IP Schedule* determines how often the Wireless Network Camera checks if the Internet IP address has changed.)

This system allows other internet users to connect to you using the Domain Name allocated by the DDNS service provider.

This screen is displayed when the **DDNS** menu option is clicked.

Figure 27: DDNS Screen

Data - DDNS Screen

DDNS	
DDNS Enable/Disable	Enable or disable the DDNS function, as required. Only enable this feature if you have registered for the DDNS Service with a DDNS Server provider.
Service Provider	Choose a service provider from the list.
Host Name	Enter the host name (Domain Name) allocated to you by the DDNS Server provider.
Account	Enter the login name for the DDNS account.

Password	Enter the password for the DDNS account.
Check WAN IP Address	Set the schedule for checking if the Internet IP address has changed. If the IP address has changed, the DDNS Server will be notified.

Wireless Screen

This screen is displayed when the *Wireless* menu option is clicked.

Figure 28: Wireless Screen

Data - Wireless Screen

Wireless Setting (Wireless Network Camera only)	
Mode	<p>The <i>Connection Mode</i> determines the type of wireless communication used by the Wireless Network Camera.</p> <ul style="list-style-type: none"> • If you have an Access Point, select <i>Infrastructure</i>. • Otherwise, select <i>Ad-hoc</i>.
SSID	<p>This must match the value used by other devices on your wireless LAN.</p> <p>Note! The SSID is case sensitive.</p>
Domain	

Channel No.	<ul style="list-style-type: none"> • In <i>Infrastructure</i> mode, this setting is ignored. The Wireless Network Camera will use the Channel set on the Access Point. • For <i>Ad-hoc</i> mode, select the Channel you wish to use on your Wireless Network Camera. Other Wireless stations should use the same setting. • If you experience interference (shown by lost connections and/or slow data transfers) you may need to experiment with different channels to see which one is the best.
Security	
Security System	<p>Select the desired option, and then enter the settings for the selected method:</p> <ul style="list-style-type: none"> • Disabled - No security is used. Anyone using the correct SSID can connect to your network. • WEP - The 802.11b standard. Data is encrypted before transmission, but the encryption system is not very strong. • WPA-PSK - Like WEP, data is encrypted before transmission. WPA is more secure than WEP, and should be used if possible. WPA-PSK is the version of WPA which does NOT require a Radius Server on your LAN.
WEP	
Authentication Type	<p>Normally this can be left at the default value of "Automatic." If that fails, select the appropriate value - "Open System" or "Shared Key." Check your wireless card's documentation to see what method to use.</p> <p>Note: In <i>Infrastructure</i> mode, either setting will normally work, since most Access Points can use both methods.</p>
WEP Encryption	<p>Select the WEP Encryption level:</p> <ul style="list-style-type: none"> • 64-bit (sometimes called 40-bit) encryption • 128-bit encryption
WEP Keys	<ul style="list-style-type: none"> • Use the radio buttons to select the default key. • Enter the key value you wish to use. Other stations must have the same key values. • Keys must be entered in Hex. Hex characters are the digits (0 ~ 9) and the letters A ~ F. • Click <i>Clear Keys</i> to set the Keys to be blank.
Passphrase	<p>Enter a word or group of printable characters in the Passphrase box and click the "Generate Key" button to automatically configure the WEP Key(s). If encryption strength is set to 64 bit, then each of the four key fields will be populated with key values. If encryption strength is set to 128 bit, then only the selected WEP key field will be given a key value.</p>
WPA-PSK	
WPA Shared Key	<p>Enter the key value. Data is encrypted using a key derived from the network key. Other Wireless Stations must use the same network key. The PSK must be from 8 to 63 characters in length.</p>

Image Screen

This screen is displayed when the *Image* menu option is clicked.

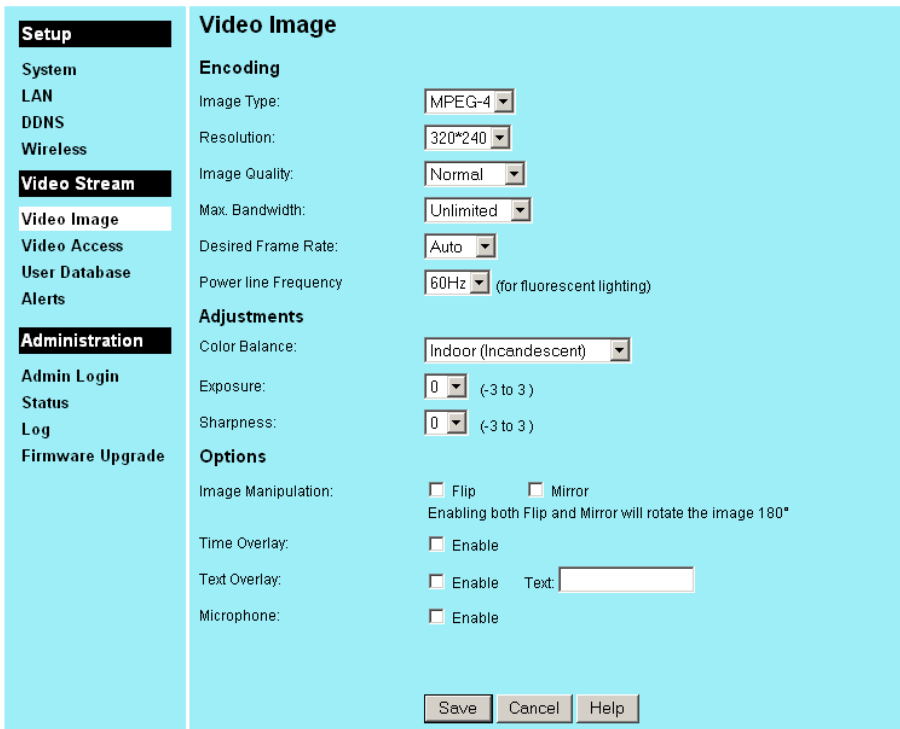


Figure 29: Image Screen

Data - Image Screen

Encoding	
Image Type	<p>Select the desired type:</p> <ul style="list-style-type: none"> MPEG-4 gives smooth motion and high quality images, but the video image quality will deteriorate if insufficient bandwidth is available. JPEG requires more bandwidth than MPEG-4, but if the bandwidth is insufficient, the frame rate will drop, and the image quality will remain at the same level.
Resolution	<p>Select the desired video resolution format. The default resolution is set to 320*240.</p>
Image Quality	<p>Select the desired image quality. The default Image Quality is set to Normal. Note: Higher image quality requires more bandwidth.</p>
Max. Bandwidth	<p>Select the desired Maximum bandwidth for the video stream. Note that you can specify EITHER the Bandwidth OR the Frame Rate, not both. If the Bandwidth is defined, the frame rate will be adjusted as necessary to achieve the specified frame rate.</p> <p>The default values for bandwidth is Unlimited, which allows you to specify the desired frame rate.</p>

Desired Frame Rate	Select the desired frame rate for the camera. Reducing this will lower the amount of bandwidth required by the camera.
Power line frequency	
Adjustment	
Color	Select the desired option to match the current environment and lighting.
Exposure	If necessary, you can adjust the exposure to obtain a better image. For example, if the camera is facing a bright light, the image may be too dark. In this case, you can increase the exposure.
Sharpness	Select the desired option for the sharpness. You can select a Sharpness value between -3 and 3.
Options	
Image Manipulation	The Flip setting will swap the image top-to-bottom, the Mirror setting will swap the image left -to-right. If the camera is mounted upside-down on the ceiling, check both the Flip and Mirror settings to have the image rotated to the correct position.
Time Overlay	If enabled, the current time will be displayed on the Video image.
Text Overlay	Enable this setting if you want text to be displayed on the Video image, and enter the desired text - up to 20 characters. This feature is often used to identify each camera when multiple cameras are installed.
Microphone	Enable audio by checking this checkbox. Using Audio will increase the bandwidth requirements slightly.

Video Access Screen

This screen is displayed when the *Video Access* option on the *Administration* menu is clicked.

Setup

- System
- LAN
- DDNS
- Wireless

Video Stream

- Video Image
- Video Access**
- User Database
- Alerts

Administration

- Admin Login
- Status
- Log
- Firmware Upgrade

Video Access

Access to Video Stream:

Administrator ALWAYS has access, regardless of these settings.

Viewer Authentication:

HTTP Port:

User-defined port: (1024 to 65535)

This port is used for Admin connections as well as viewing Video.

Figure 30: Video Access Screen

Data - Video Access Screen

Video Access	
Access to Video Stream	<p>Select the desired option:</p> <ul style="list-style-type: none"> • Enable - Camera is always enabled. • Disable - Camera is disabled (no video stream), and will remain disabled until you enable it. • Enable during scheduled periods - Camera is available during the scheduled periods, and unavailable at other times. If this option is selected, you need to define a schedule. If no schedule is defined, the camera is always disabled. • Disable during scheduled periods - Camera is unavailable during the scheduled periods, and available at other times. If this option is selected, you need to define a schedule. If no schedule is defined, the camera is always enabled. <p>Note that regardless of which setting is chosen, the Administrator can ALWAYS access the camera and view live video.</p>
Access Schedule	<p>Click this button to open a sub-window where you can define the desired schedule.</p>

Viewer Authentication	<p>Select the desired option for the Viewer Authentication.</p> <ul style="list-style-type: none">• Disable - No login required• If selected, users do not have to provide a username and password when they connect to the camera to view video.• Enable - Require login• If selected, users will be prompted for a username and password when they connect to the camera to view video. The camera administrator must use the "User Database" menu option to create the desired users.
HTTP Port	<p>This sets the port number for HTTP (Web) connections to the Camera, whether for administration or viewing video. Select the desired option:</p> <ul style="list-style-type: none">• Default (port 80) Users (and the Camera Administrator) can use port 80 only.• Default (80) and User-defined If you choose this option, you can connect using either port 80 or the user-defined port. You must enter the user-defined port number (between 1024 to 65535) in the field provided

Schedule Screen

This screen is displayed when the *Access Schedule* button on the *Video Access* screen is clicked.

Figure 31: Schedule Screen

Data - Schedule

Period List	This displays all periods you have entered into the database. If you have not entered any periods, this list will be empty.
Delete Period	Use the Delete Period button to remove the selected item in the list.
Add Period	
Day	Choose the desired option for the period.
Start Time	Enter the start time using a 24 hr clock.
End Time	Enter the end time using a 24 hr clock.
Add to Schedule	Use this button to add a new period.

User Database Screen

This screen is displayed when the *User Database* option on the *Administration* menu is clicked.

Figure 32: User Database Screen

Data - User Database Screen

Existing Users	
User List	This displays all users you have entered into the User database. If you have not entered any users, this list will be empty.
Buttons	Use the <i>Edit</i> , <i>Delete</i> , <i>Delete All</i> buttons to manage the user database.
User Properties	
User Name	<ul style="list-style-type: none"> Enter the name for the user here. Spaces, punctuation, and special characters must NOT be used in the name. The name is case insensitive (case is ignored), so you can not have 2 names which differ only by case.
User Password	The password for the Administrator.
Confirm Password	Re-enter the password for the Administrator, to ensure it is correct.

Alerts Screen

This screen is displayed when the *Alerts* option on the *Administration* menu is clicked.

Setup

System
LAN
DDNS
Wireless
Video Stream
Video Image
Video Access
User Database
Alerts
Administration
Admin Login
Status
Log
Firmware Upgrade

Alerts

Motion Detection Alerts:

Delay between Alerts: minutes

Video File Length:

Video File type:

Video File name:

Video File Suffix:

Restart Sequence at

E-mail Alerts

E-mail Address #1:

E-mail Address #2:

E-mail Address #3:

Attachment: Attach video file

Subject:

Show "From" as: (E-mail Address)

SMTP (Outgoing) Mail Server:

FTP Alerts

FTP server:

Login name:

Password:

Folder:

Figure 33: Alerts Screen

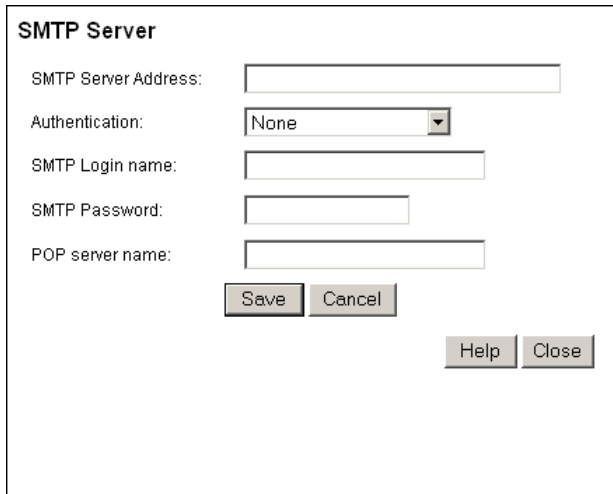
Data – Alerts Screen

Alerts	
Motion Detection Alerts	<p>Alerts can be sent when motion is detected. Select the desired option:</p> <ul style="list-style-type: none"> • Disable - Motion detection alerts are disabled. • Enable - Motion detection alerts are always on. • Enable during scheduled periods - Motion detection alerts are enabled during the scheduled periods, and disabled at other times. Click the "Alert Schedule" button to create a suitable schedule. • Disable during scheduled periods - Motion detection alerts are disabled during the scheduled periods, and enabled at other times. Click the "Alert Schedule" button to create a suitable schedule. <p>Note: If Motion Detection Alerts are enabled, you must enable and configure either the E-mail or FTP sections in order to have an alert sent. If neither E-mail nor FTP is enabled, the only action when motion is detected is to record this event in the system log.</p>
Area/Sensitivity Button	<p>Click this button to enter the motion detection sub-screen. You can set the area or areas of the video image to be examined, and adjust the sensitivity of detection for each area.</p> <p>Note: Motion detection can be triggered by rapid changes in lighting condition, as well as by moving objects. For this reason, it should only be used indoors.</p>
Alert Schedule Button	<p>If using a schedule, use this button to open a sub-window where you can define a suitable schedule.</p>
Delay between Alerts	<p>Use this to ensure your E-mail inbox or FTP Server is not flooded with alerts. Select the desired time delay between alerts.</p>
Video File Length	<p>Select the desired length. The size of the file depends on this setting, and also the Video size and degree of compression.</p>
Video File Type	<p>Select the desired type for the video file.</p>
Video File Name	<p>Enter the name of the Video file.</p>
Video File Suffix	<p>Select the desired option for the video file suffix.</p> <ul style="list-style-type: none"> • None - the filename above is used for every file. For FTP alerts, this will cause the previous file to be overwritten; only one file will be available on the FTP server. • Date & time - the date and time will be appended to the filename above. This will ensure every file has a unique name. • Sequence number • This option will append a number to the specified filename. The sequence number will eventually restart, so the filename will be re-used. On an FTP Server, this will overwrite the previous file.

Restart Sequence	<p>If using "Sequence number" for the file suffix, you can use this setting to determine how often the sequence restarts.</p> <p>Select the desired option for the Restart Sequence.</p> <p>Click the Restart Now button if you wish to restart the Sequence Number immediately.</p>
E-Mail Alerts	
Enable	<p>Check the box to enable the E-Mail Alert feature. E-mails are sent when motion is detected.</p> <p>Note: Motion detection can be triggered by rapid changes in lighting condition, as well as by moving objects. For this reason, it should only be used indoors.</p>
E-mail Address	<p>Enter at least one (1) E-Mail address; the 2nd and 3rd addresses are optional. The E-mail alert will be sent to the E-mail address or addresses specified here.</p>
Attachment	<p>Enable this if you want to send a Video file as an attachment with the E-mail alert.</p>
Subject	<p>Enter the desired text to be shown as the "Subject" for the E-Mail when it is received. Subject can not exceed 48 alphanumeric characters.</p>
Show "From" as	<p>Enter the E-mail address to be shown in the "From" field when the E-mail is received.</p>
SMTP(Outgoing) Mail Server	<p>Click the SMTP Server button to enter or modify the SMTP settings in the resulting sub-screen.</p> <p>Note: The same SMTP server is used for all E-mail operations.</p>
FTP Alerts	
FTP Alerts	<p>Use the checkbox to enable the FTP Alerts feature as required. If enabled, you must enter details of the FTP Server.</p>
FTP Server	<p>Enter the name or IP address of the FTP Server.</p>
Login name	<p>Enter the Login name required to gain access to the FTP server.</p>
Password	<p>Enter the password required to gain access to the FTP server.</p>
Folder	<p>Enter the path to the desired folder on the FTP Server. The alert files will be saved to this folder. Ensure the login above provides Read/Write access to this folder.</p>

SMTP Server Screen

This screen is displayed when the *SMTP Server* button on the *Alerts* screen is clicked.



SMTP Server

SMTP Server Address:

Authentication:

SMTP Login name:

SMTP Password:

POP server name:

Figure 34: SMTP Screen

Data - SMTP

SMTP Server Address	Enter the address of the SMTP (Simple Mail Transport Protocol) Server to be used to send E-Mail.
Authentication	Select the desired Authentication type for the SMTP Server.
SMTP Login name	Enter your login name for the SMTP Server.
SMTP Password	Enter your password for the SMTP Server.
POP server name	Enter the name for the POP Server.

Admin Login Screen

Setup

- System
- LAN
- DDNS
- Wireless

Video Stream

- Video Image
- Video Access
- User Database
- Alerts

Administration

- Admin Login
- Status
- Log
- Firmware Upgrade

Password

Administrator Login Name:

Administrator Password:

Verify Password:

Save Cancel Help

Figure 35: Admin Login Screen

Data - Admin Login Screen

Password	
Administrator Login Name	<ul style="list-style-type: none">Enter the name for the Administrator here. Spaces, punctuation, and special characters must NOT be used in the name.The name is case insensitive (case is ignored), so you can not have 2 names which differ only by case.
Administrator Password	The password for the Administrator.
Verify Password	Re-enter the password for the Administrator, to ensure it is correct.

Status Screen

Setup

- System
- LAN
- DDNS
- Wireless

Video Stream

- Video Image
- Video Access
- User Database
- Alerts

Administration

- Admin Login
- Status**
- Log
- Firmware Upgrade

Status

System

Device Name: SC800009

Description:

F/W version: V1.a0

Network

MAC Address: 00:c0:02:80:00:09

IP Address: 172.31.2.111

Network Mask: 255.255.255.0

Gateway: 172.31.2.252

Wireless

Network Type: Infrastructure

SSID: ANY

Channel: 11

Security: Disabled

Video

Video Type: MPEG-4

Resolution: 320*240

Current Viewers: 0

Refresh Restart Factory Defaults Help

Figure 36: Status Screen

Data - Status Screen

System	
Device Name	This shows the name of the Wireless Network Camera.
Description	This shows the description of the Wireless Network Camera, such as location.
F/W version	The version of the current firmware installed. You can upgrade the Firmware by clicking the Upgrade Firmware button. You need to obtain the firmware upgrade file first.
Network	
MAC Address	The current IP address of the Wireless Network Camera.
IP Address	The IP Address of the Wireless Network Camera.
Network Mask	The network mask associated with the IP address above.
Gateway	The IP Address of the remote Gateway associated with the IP Address above.
Wireless (Wireless Network Camera Only)	
Network Type	This shows the Network Type currently in use (Ad-hoc or Infrastructure).
SSID	This displays the wireless SSID.

Channel	This shows the wireless channel currently used.
Security	The current security setting for Wireless connections.
Video	
Video Type	This displays the compression type of the video stream (e.g. MPEG-4).
Resolution	The image size of the video stream.
Current Viewers	This shows how many viewers are currently viewing the Video stream.
Buttons	
Refresh	Update the log and any other data on screen.
Restart	Restart (reboot) the Wireless Network Camera. Note: This will break any existing connections. Anyone watching or recording live video will lose their connection.
Factory Defaults	Use this to restore ALL settings to their factory default values. <ul style="list-style-type: none"> • Anyone watching or recording live video will lose their connection. • If you previously changed the IP address of the Wireless Network Camera from its default value, this operation will change the IP address back to the default value. If the IP address changes, you will have to use the default IP address to re-connect. • The default IP address is 192.168.0.99

Upgrade Firmware Screen

This screen is displayed when you click the *Firmware Upgrade* button on the Status screen.

Setup

- System
- LAN
- DDNS
- Wireless

Video Stream

- Video Image
- Video Access
- User Database
- Alerts

Administration

- Admin Login
- Status
- Log
- Firmware Upgrade

Firmware Upgrade

Upgrade File: The upgrade file needs to be downloaded and stored on your PC.

Figure 37: Firmware Upgrade Screen

This screen allows you upgrade the Firmware (software) in your Wireless Network Camera. Before using this screen, you must download the upgrade file to your PC.

Then follow this procedure:

1. Click the *Browse* button, and locate the upgrade file.
2. Select this file, and click OK. The filename will then appear in the *Upgrade File* field.
3. Click the *Start Upgrade* button to transfer the file to the Wireless Network Camera and start the upgrade procedure.

Note:

- The upgrade may take several minutes.
- When the upgrade is completed, the Wireless Network Camera will restart. This will cause any existing connections to be terminated. Any users viewing or recording the video will see this as an error.

Chapter 5

Viewing & Recording

5

This Chapter describes how to view and record the live video stream generated by the Wireless Network Camera.

Overview

The recommended method to view video is to use the supplied Windows Viewing/Recording utility.

Installation

1. Insert the supplied CD-ROM into your drive. If the setup program does not start automatically, run **Setup.exe** in the root folder. You will see the *Welcome* screen shown below.



Figure 38: Welcome Screen

2. Click the *Install Utility* button to start the installation of the Viewing/Recording Utility.
3. Follow the prompts to complete the installation.

System Tray Icon

When started, the program will create an icon in the Windows system tray on the taskbar, as shown below.

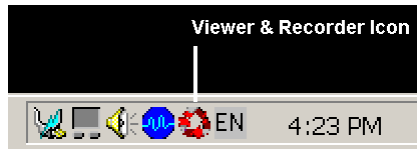


Figure 39: System Tray Icon

This Icon has the following functions:

- **Animation** - If a recording is in progress, this icon will be animated. Otherwise, it is stationary.
- **Hover** - Hovering your mouse over this icon will generate a pop-up informing you of the current status.
- **Double-click** - This will display the main screen, shown below.
- **Right Click** - This provides a menu which allows you to view program details, view the main screen, or terminate the program.

Main Screen

When started, a screen like the example below will be displayed.



Figure 40: Main Screen

Viewing Live Video

You can view live video in the main screen. The built-in software can let you view up to 16 cameras on a single computer screen at one central location.

The Icons allow you to control the cameras and video streams.



Exit - Click this to exit the program.



Shrink to task bar - Use this to minimize the program.



Play - Use this to re-start viewing, after using the *Stop* or *Pause* button.



Pause - Use this to temporarily stop the connection to the camera



Stop. This will terminate the connection to the camera, halting both the viewing and the recording (if in progress).



Record. Click this to start recording the current video stream. While recording, this button will be blue. To stop recording, click the **Stop** button.



Snapshot Click this to take a single JPEG “snapshot” image of the current video. You can use the “Preferences” to set the folder where these images are stored.



Zoom. This can be used to select the Audio stream which can be heard. (Only one audio stream can be selected at any time.) If the camera does not support audio, or if audio is disabled on the camera, this option is unavailable, and a red “X” will cover this icon.



Flip - Click this to have the image rotated to the correct position.




Mirror - Click this to have the image rotated to the correct position.



Rotate - Click this to have the image rotated to the correct position.



Mute - This can be used to select the Audio stream which can be heard. (Only one audio stream can be selected at any time.) If the camera does not support audio, or if audio is disabled on the camera, this option is unavailable, and this

icon  will be displayed.

Adding Cameras to the List

To add a camera to the *Channel List*, click the *Setup* button on the main screen. You will see a screen like the example below.

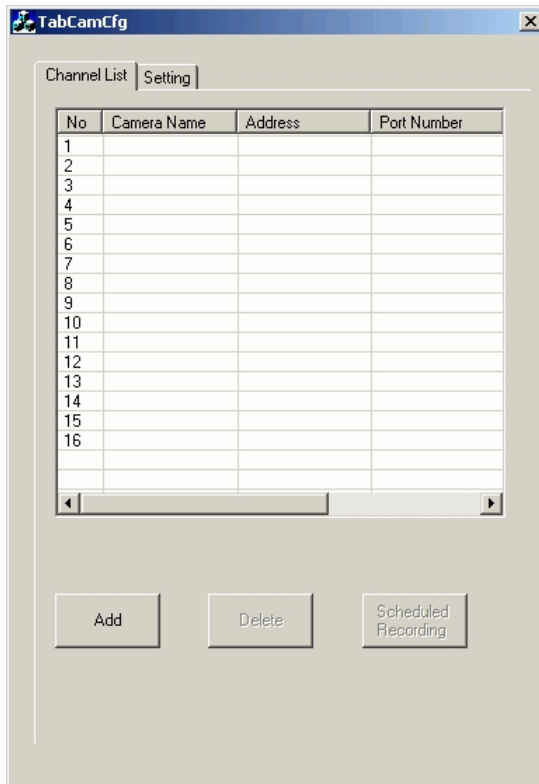


Figure 41: Channel List Tab Screen

- Click the Add button.
- The *Cameras on LAN* panel, on the left, displays all Wireless Network Camera found on your LAN. This list can be updated by clicking the *Refresh* button.
- The *Camera Data* panel, on the right, displays the data for the selected camera.

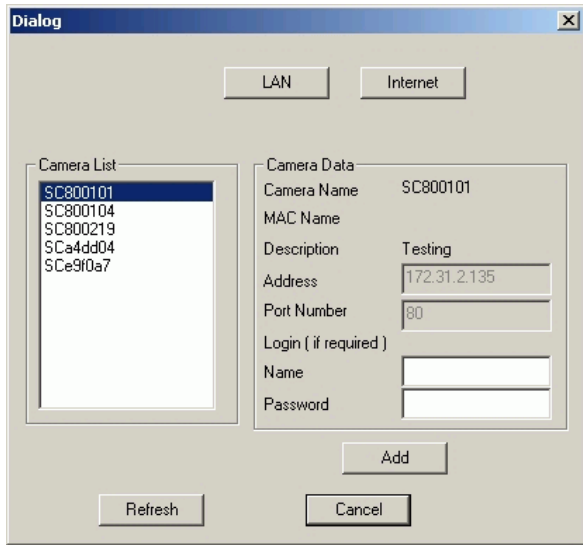


Figure 42: Add Camera from LAN

To add a camera to the *Camera List* on the main screen:

1. Select a camera in the list on the left.
2. Check that the *Camera Data* shown on the right is correct. See below for details.
3. Click the *Add* button. The camera will now appear in the *Channel List* on the **TabCamCfg** screen.

Camera Data - LAN

Camera Name	This is the default name for the Wireless Network Camera, and cannot be changed.
Address	The current IP address of the Wireless Network Camera.
Port Number	This will normally display "80". Only change this if requested to do so by the Wireless Network Camera Administrator.
Login	<p>The camera Administrator can require that users provide a username and password before being allowed to view the live video.</p> <ul style="list-style-type: none"> • If the Administrator has not enabled this option, the <i>Login</i> fields can be left blank. • Otherwise, you must enter the username and password allocated to you by Administrator.



You can add the same Camera twice, once for the LAN (using the LAN IP address), and again for the Internet (using the Internet IP address). This will allow viewing the camera whether you are on the same LAN as the camera or in a remote location.

Adding Cameras on the Internet

If the Wireless Network Camera you wish to add is not on your LAN, but is available via the Internet, click the *Internet* button. You will see a screen like the example below.

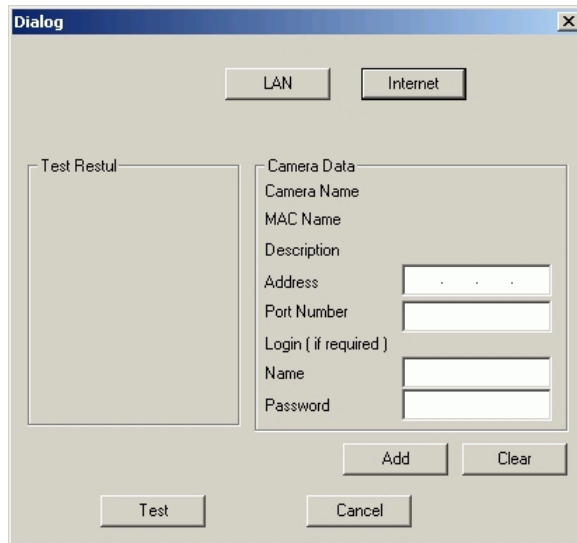


Figure 43: Add Camera from Internet

To add a camera to the *Camera List* on the main screen:

1. Enter the *Camera Data* on the panel on the right. See below for details.
2. Click the *Test* button to check that a connection and login can be performed successfully.
3. Click the *Add* button. The camera will now appear in the *Channel List* on the main screen.

Camera Data - Internet

Device Name	This is the default name for the Wireless Network Camera, and cannot be changed. This field will be displayed automatically once a connection to the Wireless Network Camera has been established.
Description	This displays the description entered by the Wireless Network Camera Administrator. This field will be displayed automatically once a connection to the Wireless Network Camera has been established.
Address	Enter the Domain Name or Internet IP address of the desired Wireless Network Camera.
Port Number	Enter the port number used by the Wireless Network Camera. The Wireless Network Camera Administrator can advise you of the port to use. The default value is 1024.
Login	The camera Administrator can require that users provide a username and password before being allowed to view the live video. <ul style="list-style-type: none">• If the Administrator has not enabled this option, the <i>Login</i> fields can be left blank.• Otherwise, you must enter the username and password allocated to you by Administrator.



You can add the same Camera twice, once for the LAN, and again for the Internet. This will allow viewing the camera whether you are on the same LAN as the camera or in a remote location.

Recording Video

You can record Video while watching, or schedule recordings to occur when you are absent. Recordings are stored in a standard Microsoft ASF file format, and can be played using Microsoft Media Player.

Before doing any recording, you should review the recording settings to ensure they are suitable for your PC.

Recording Preferences

To set the Recording Preferences, click the *Setting* tab on the *TabCamCfg* screen. You will see a screen like the example below.

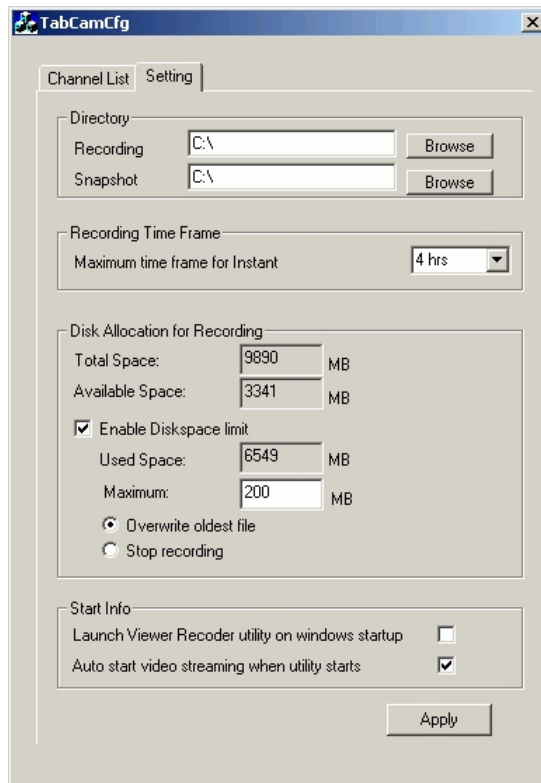


Figure 44: Recording Preferences

If necessary, change these settings to suit your environment.

Directory	
Recording	This is the Drive and Folder on your PC where recorded files will be placed. You need a drive which has large amounts (Gigabytes) of free space. Click the <i>Browse</i> button to select the drive and folder. Note that file names are automatically assigned, using the date and time.
Snapshot	This shows the location where snapshot images (still images, in JPEG format) will be stored. You can use the <i>Browse</i> button to select the desired drive and folder

Recording Time Frame	
Maximum time frame for Instant	This sets the maximum size of a recording which is started by clicking the <i>Record</i> button on the <i>main</i> screen. If the recording is not stopped manually, it will be terminated after the time period indicated here.
Disk Allocation for Recording	
Total Space	It displays the total space of the disk.
Available Space	It displays the available space of the disk.
Enable Diskspace limit	Enable this if you want to use this feature.
Used Space	It displays the used space of the disk.
Maximum	Enter the value for the maximum space for recording.
Overwrite oldest file	The utility will overwrite the old files if the space is not enough for recording.
Stop Recording	It will stop recording if the space is not enough.
Start Info	
Launch Viewer Recorder...	Check this to have this utility start when Windows starts.
Auto start video...	Check this if you wish to have the utility connect to the specified cameras as soon as the utility starts.

Live Recordings

You can start and stop recording from the *Main* screen, using the controls provided.



Exit - Click this to exit the program.



Shrink to task bar - Use this to minimize the program.



Play - Use this to re-start viewing, after using the *Stop* or *Pause* button.



Pause - Use this to temporarily stop the connection to the camera



Stop. This will terminate the connection to the camera, halting both the viewing and the recording (if in progress).



Record. Click this to start recording the current video stream. While recording, this button will be blue. To stop recording, click the **Stop** button.



Snapshot Click this to take a single JPEG “snapshot” image of the current video. You can use the “Preferences” to set the folder where these images are stored.



Zoom. This can be used to select the Audio stream which can be heard. (Only one audio stream can be selected at any time.) If the camera does not support audio, or if audio is disabled on the camera, this option is unavailable, and a red “X” will cover this icon.



Flip- Click this to have the image rotated to the correct position.




Mirror - Click this to have the image rotated to the correct position.



Rotate - Click this to have the image rotated to the correct position.



Mute - This can be used to select the Audio stream which can be heard. (Only one audio stream can be selected at any time.) If the camera does not support audio, or if audio is disabled on the camera, this option is unavailable, and this

icon  will be displayed.

Scheduled Recordings

Recordings can be scheduled at any time, for any known Wireless Network Camera. (Of course, your PC must be ON at the scheduled time.)

To use this feature, click the **Scheduled Recording** button under the **Channel List** tab. You will see a screen like the example below.

Type	Start Date	Start Time	Duration	

Cycle:

Start Date: Start Time:

Duration:

Figure 45: Scheduled Recording List

This screen lists all scheduled recordings. For each recording, the following data is shown:

- **Type** - Indicates if the recording is *One Time*, *Everyday*, or on a particular day each week.
- **Start Date** - The date the recording will be made. If the recording schedule is repetitive, this is the date of the next recording.
- **Start Time** - The time the recording will be made.
- **Duration** - Indicates the duration of the recording.

If a scheduled recording is selected, the *Delete* button can be used to delete the selected entry.

Data - Schedule Definition

Camera	Select the camera to be used. If the desired camera is not listed, you must define by using the <i>Add</i> button on the screen.
Cycle	Select the desired option: <ul style="list-style-type: none"> • One Time - Only one (1) recording is made, on the specified date, at the specified time. • Everyday - The recording is made every day, at the specified time. The <i>Start Day</i> indicates when the first recording will be made. • Mon ~ Fri - The recording is made from Monday through Friday each week. The <i>Start Day</i> indicates when the first recording will be made. • Sat ~ Sun - The recording is made from Saturday through Sunday

	<p>each week. The <i>Start Day</i> indicates when the first recording will be made.</p> <ul style="list-style-type: none"> • Every Sunday, Every Monday, ... - The recording is made on the specified day each week. The <i>Start Day</i> indicates when the schedule becomes active.
Start Date	<p>Select the desired date.</p> <ul style="list-style-type: none"> • For a single recording, this is the day the recording will be made. • For daily (Everyday) recordings, this is the starting date. • For weekly recordings, this determines when the schedule becomes active.
Start Time	Select the desired start time.
Duration	Enter or select the desired duration of the recording.

Viewing with your Web Browser

The recommended method to view live video from the Wireless Network Camera is to use the Windows utility.

However, you can also use your Web browser if necessary.

Viewing over your LAN

To establish a connection from your PC to the Wireless Network Camera:

1. Start your WEB browser.
2. In the Address box, enter "HTTP://" and the IP Address of the Wireless Network Camera, as in this example, which uses the Wireless Network Camera's default IP Address:

HTTP://192.168.0.99

3. If the Administrator has enabled the user security feature, you will then be prompted for a username and password.
Enter the name and password assigned to you by the Wireless Network Camera administrator.
4. When you connect, the following screen will be displayed.

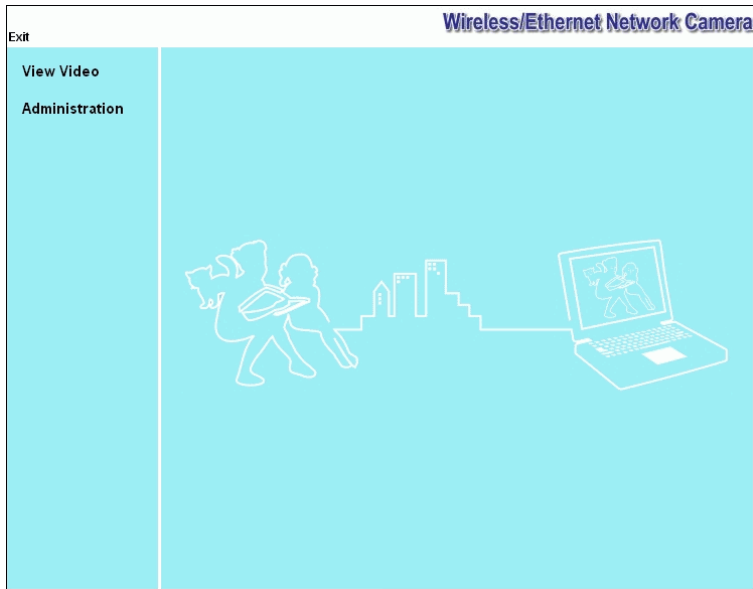


Figure 46: Home Screen

5. Click *View Video* to see a screen like the example below.

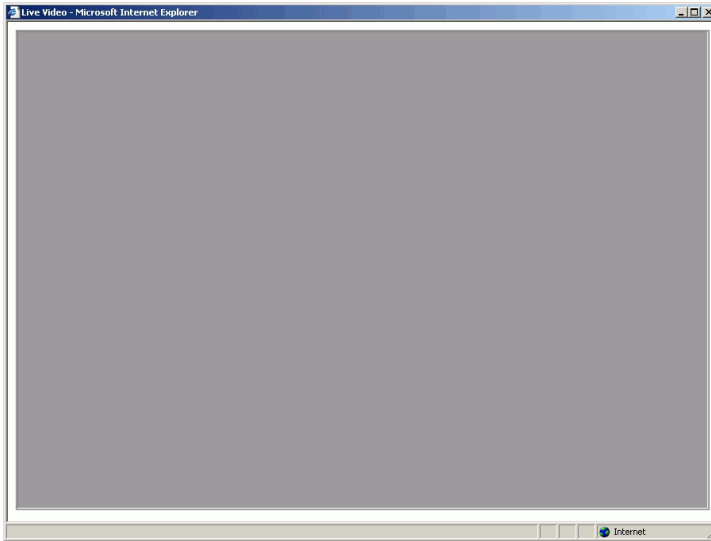


Figure 47: View Video Screen

- If using Internet Explorer on Windows, you may see a prompt regarding an "OCX" file, like the example below.
You must install this OCX file in order to view the Video. Click "Yes".



Figure 48 ActiveX OCX Prompt

- Video will start playing automatically. There may be a delay of a few seconds while the video stream is buffered.

Viewing via the Internet

If the LAN with the Wireless Network Camera is connected to the Internet, and configured correctly, you can connect to the Wireless Network Camera via the Internet.

See *Making Video available from the Internet* in Chapter 3 for details of the required LAN configuration.

To establish a connection from your PC to the Wireless Network Camera via the Internet:

1. Obtain the Internet address and port number of the Wireless Network Camera from the Administrator.
2. Start your WEB browser.
3. In the Address box, enter the following:

```
HTTP://Internet_Address:port_number
```

Example using an IP address:

```
HTTP://203.70.212.52:1024
```

Where the Router/Gateway's Internet IP address is 203.70.212.52 and the "Second Port" number on the Wireless Network Camera is 1024.

Example using a Domain Name:

```
HTTP://mycamera.dyndns.tv:1024
```

Where the Router/Gateway's Internet Domain name (using DDNS in this example) is mycamera.dyndns.tv and the "Second Port" number on the Wireless Network Camera is 1024.

4. If the Administrator has enabled the user validation feature, you will then be prompted for a username and password.
Enter the name and password assigned to you by the Wireless Network Camera administrator.
5. When you connect, the following screen will be displayed.

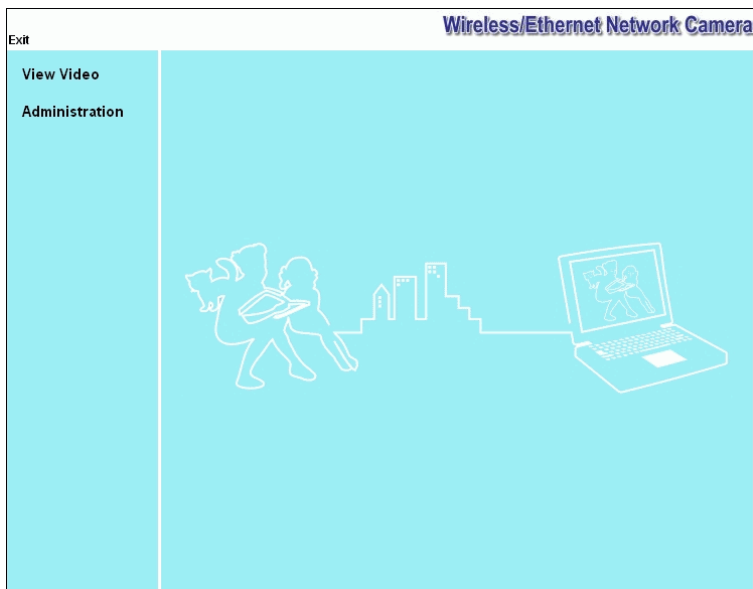


Figure 49: Home Screen

6. Click *View Video* to see a screen like the example below.

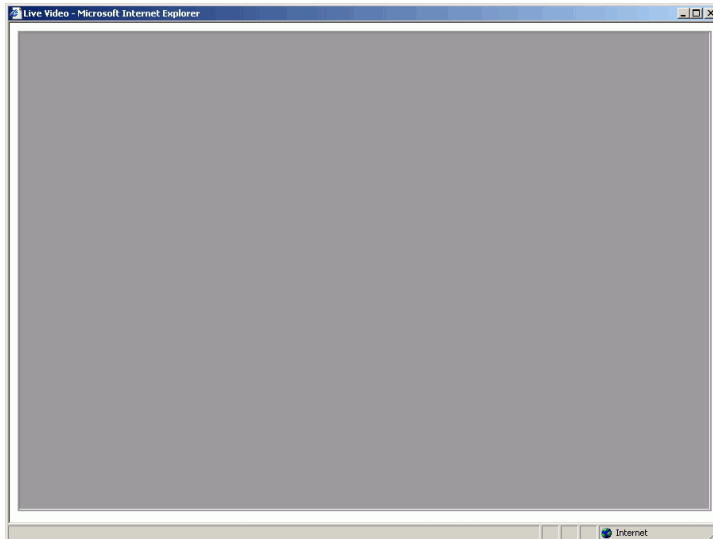


Figure 50: View Video Screen

- If using Internet Explorer on Windows, you may see a prompt regarding an "OCX" file, like the example below.

You must install this OCX file in order to view the Video. Click "Yes".



Figure 51 ActiveX OCX Prompt

- Video will start playing automatically. There may be a delay of a few seconds while the video stream is buffered.

Note:

Viewers need a broadband Internet connection to view video effectively. Dial-up connections are NOT recommended.

Chapter 6

Troubleshooting

6

This chapter covers the most likely problems and their solutions.

Overview

This chapter covers some common problems that may be encountered while using the Wireless Network Camera and some possible solutions to them. If you follow the suggested steps and the Wireless Network Camera still does not function properly, contact your dealer for further advice.

Problems

Problem 1: I can't connect to the Wireless Network Camera with my Web Browser to configure it.

Solution 1: It is possible that your PC's IP address is not compatible with the IP address of the Wireless Network Camera. Use the Windows utility to configure the Wireless Network Camera with a valid IP address.

Problem 2: The Windows utility doesn't list any Wireless Network Cameras.

Solution 2: Check the following:

- The Wireless Network Camera is installed, LAN connections are OK, it is powered ON and startup is complete.
- Ensure that your PC and the Wireless Network Camera are on the same network segment. (If you don't have a router, this must be the case.)
- Ensure that your PC has the TCP/IP network protocol loaded. In Windows, this is done by using *Control Panel-Network*. If an entry for TCP/IP -> Network card is not listed, use *Add - Protocol - Microsoft - TCP/IP* to add it. You then need to select the new entry (TCP/IP -> Network card), click *Properties*, and configure the *IP Address* tab.
 - If your LAN has a DHCP Server, you can select "Obtain an IP Address automatically".
 - Otherwise, you must select "Specify an IP Address", and enter values for *IP Address*, *Subnet Mask*, and *Gateway*. All devices on your LAN must use compatible values. Remember that each device needs a **unique** IP Address, and the **same** Subnet Mask.

Problem 3 When I try to connect to the Wireless Network Camera, I get prompted for a user name and password.

Solution 3 You SHOULD be prompted for a user name and password if trying to access the *Administration* menu. Enter the *Administrator ID* and *Password* set on the *User* screen.

If you are just trying to view Video, the User Name/Password prompt indicates that the Administrator has restricted access to specified users. Ask the Administrator for your User Name and Password.

Problem 4 **I can't connect to the Wireless Network Camera using a Wireless connection.**

Solution 4 1) If a LAN cable is connected to the LAN port, the Wireless interface is disabled. Only one interface can be active.

2) Check that your PC and the Wireless Network Camera have compatible Wireless settings.

- Mode (Infrastructure or Ad-hoc) must be correct.
- ESSID must match.
- WEP settings must match.
- In Ad-hoc mode, the Channel should match, although this is often not required.

Problem 5 **Video quality may suddenly deteriorate.**

Solution 5 This can happen when an additional viewer connects to the Wireless Network Camera, overloading the camera or the available bandwidth. The image size and quality can be adjusted to cater for the required number of viewers and the available bandwidth.

Problem 6 **The motion detection feature doesn't send me any E-mails.**

Solution 6 It may be that the SMTP (Simple Mail Transport Protocol) server used by the Wireless Network Camera to send the E-mail will not accept mail from the Wireless Network Camera. Try using a different SMTP server. The Wireless Network Camera derives the address of the SMTP server from the E-mail address you enter in the *Show "From" as:* field.

Problem 7 **Using the motion detection feature, I receive E-mails which don't show any moving objects.**

Solution 7 The motion detection feature doesn't actually detect motion. It compares frames to see if they are different. Major differences between frames are assumed to be caused by moving objects.

But the motion detector can also be triggered by:

- Sudden changes in the level of available light
- Movement of the camera itself.

Try to avoid these situations. The motion detection feature works best in locations where there is good steady illumination, and the camera is mounted securely. This feature can NOT be used if the camera is outdoors.

Problem 8 The image is blurry.

Solution 8 Try cleaning the lens, and adjusting the focus ring.

Appendix A

Specifications



Wireless Network Camera

Model	Wireless Network Camera
Dimensions	164 mm (L) * 88 mm (W)* 54 mm (H) 6.4 inch (L) * 3.5 inch (W) * 2.1 inch (H)
Operating Temperature	0° C to 40° C
Storage Temperature	-10° C to 70° C
Network Protocols:	TCP/IP, DHCP, SMTP, NTP, HTTP
Network Interface:	1 Ethernet 10/100BaseT (RJ45) LAN connection
Wireless interface	IEEE 802.11b/802.11g compatible, Infrastructure/Ad-hoc mode, WEP/WPA-PSK security support, roaming support
LEDs	3
Power Adapter	5V DC External

Regulatory Approvals

CE Approvals

The Wireless Network Camera and the Ethernet Network Camera meet the guidelines of the European Union and comply with the 99/5/EEC and RTTE 99/5EG directives, including the following standards:

- EN60950
- EN300 328-2
- EN301 489-1
- EN301 489-17

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

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rrload	GPL
uClinux-2.4.19.uc1	GPL
busybox-0.60.3	GPL
tinylogin-1.02	GPL
inetutils -1.3.2	GPL
thttpd-2.20b-rr	See following
uClibc-0.9.5	LGPL
Lan driver (DM9000)	GPL
cgi-lib	Copyright cgi-LIB
Cghtml	Free SW
Ntp-4.1.0-4.src.rpm	GPL
Cron-small version	GPL
Dhcpd-1.3.22-p11	GPL
Smtplclient-1.0.0	GPL
Upnpsdk-1.0.4	GPL
ez-ipupdate-3.0.11b7	GPL

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Author: Noel V Aguilar

Version: 1.4

Filename: cgi-lib.h

Program Library: CGI-LIB

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<http://www.geocities.com/SiliconValley/Vista/6493/>

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<http://www.geocities.com/SiliconValley/Vista/6493/cgi-lib.html>

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