

Internet Camera

ICA-150 / ICA-150W / ICA-550W



User's Manual

Version: 1.0
(June, 2006)

Copyright

Copyright© 2006 by PLANET Technology Corp. All rights reserved. No part of this publication may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language or computer language, in any form or by any means, electronic, mechanical, magnetic, optical, chemical, manual or otherwise, without the prior written permission of PLANET.

PLANET makes no representations or warranties, either expressed or implied, with respect to the contents hereof and specifically disclaims any warranties, merchantability or fitness for any particular purpose. Any software described in this manual is sold or licensed "as is". Should the programs prove defective following their purchase, the buyer (and not this company, its distributor, or its dealer) assumes the entire cost of all necessary servicing, repair, and any incidental or consequential damages resulting from any defect in the software. Further, this company reserves the right to revise this publication and to make changes from time to time in the contents hereof without obligation to notify any person of such revision or changes.

All brand and product names mentioned in this manual are trademarks and/or registered trademarks of their respective holders.

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of 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 or more of the following measures:

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

FCC Caution:

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

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.

Federal Communication Commission (FCC) Radiation Exposure Statement

This equipment complies with FCC radiation exposure set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20 cm(8 inches) during normal operation.

R&TTE Compliance Statement

This equipment complies with all the requirements of DIRECTIVE 1999/5/CE OF THE EUROPEAN PARLIAMENT AND THE COUNCIL OF 9 March 1999 on radio equipment and telecommunication terminal Equipment and the mutual recognition of their conformity (R&TTE)

The R&TTE Directive repeals and replaces in the directive 98/13/EEC (Telecommunications Terminal Equipment and Satellite Earth Station Equipment) As of April 8,2000.

Safety

This equipment is designed with the utmost care for the safety of those who install and use it. However, special attention must be paid to the dangers of electric shock and static electricity when working with electrical equipment. All guidelines of this and of the computer manufacture must therefore be allowed at all times to ensure the safe use of the equipment.

WEEE regulation



To avoid the potential effects on the environment and human health as a result of the presence of hazardous substances in electrical and electronic equipment, end users of electrical and electronic equipment should understand the meaning of the crossed-out wheeled bin symbol. Do not dispose of WEEE as unsorted municipal waste and have to collect such WEEE separately.

Revision

User's Manual for PLANET Internet Camera
Model: ICA-150 / ICA-150W / ICA-550W
Rev: 1.0 (June, 2006)
Part No. EM-ICA550W

Table of Contents

CHAPTER 1 INTRODUCTION	1
Overview	1
Physical Details - Internet Camera	4
Package Contents	5
CHAPTER 2 BASIC SETUP.....	6
System Requirements.....	6
Installation - Internet Camera.....	7
Setup using the Windows Wizard	9
CHAPTER 3 VIEWING LIVE VIDEO.....	15
Overview	15
Requirements.....	15
Connecting to a Camera on your LAN.....	15
Connecting to a Camera via the Internet	18
Viewing Live Video	22
CHAPTER 4 ADVANCED VIEWING SETUP	24
Introduction	24
Adjusting the Video Image	24
Controlling User Access to the Video Stream	27
Making Video available from the Internet.....	28
Viewing Live Video via the Internet	30
Motion Detection Alerts.....	32
CHAPTER 5 WEB-BASED MANAGEMENT	34
Introduction	34
Connecting to Internet Camera.....	34
Welcome Screen.....	35
Administration Menu.....	36
System Screen	37
Network Screen.....	39
Wireless Screen.....	41
DDNS Screen	43
Video Image Screen.....	45
Video Access Screen	47
User Database Screen.....	49
Pan/Tilt Screen	50
Motion Detection Screen.....	52
E-Mail Alerts Screen.....	54
Maintenance Screen	56
Status Screen.....	58
Log Screen.....	60
CHAPTER 6 WINDOWS VIEWING/RECORDING UTILITY	61
Overview	61
Installation	61
System Tray Icon.....	62
Main Screen	62
Camera Setup	63

Main Screen	66
Recording Video	68
CHAPTER 7 TROUBLESHOOTING.....	72
Overview	72
Problems.....	72
APPENDIX A SPECIFICATIONS.....	74
Internet Camera	74
Regulatory Approvals	74
Copyright Notice.....	75
APPENDIX B STREAMING VIDEO/AUDIO SOLUTION.....	89
Overview	89

Chapter 1

1

Introduction

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

Overview

The Internet Camera – ICA-550W, ICA-150 and ICA-150W 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 Internet Camera, an 802.11g Wireless LAN.

Using enhanced MPEG-4 technologies, the Internet 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: Internet Camera

ICA-550W is a P/T Wireless Camera, ICA-150 is PoE IP Camera and ICA-150W is the fixed Lens Wireless Camera. In the following section, unless specified, The term “Internet Camera” will mean any of ICA-550W, ICA-150 or ICA-150W.

Features

- **Standalone Design.** The Internet 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.
- **Stream Live Video to Multiple Users.** The MPEG4 encoder and HTTP server built into the camera generate a ready-to-view video stream. Just connect to the camera using your Web browser or the provided Windows utility to view live video.
- **Suitable for Home, Business or Public Facilities.** Whether for Home, Business or Public Facility surveillance, or just for entertainment and fun, the Internet Camera has the features you need.
- **Multi-Protocol Support.** Supporting TCP/IP networking, SMTP (E-mail), HTTP and other Internet related protocols, the Internet 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 Internet 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 detect motion in the field of view. The Internet 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. When motion is detected, an E-mail alert can be sent, or some other action may be triggered.
- **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.
- **Audio Support.** You can listen as well as look! Audio is encoded 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 Internet 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 Internet 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 Internet Camera.
- **NTP (Network-Time-Protocol) Support.** NTP allows the Internet Camera to calibrate its internal clock from an Internet Time-Server. This ensures that the time stamp on Video from the Internet 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 Internet Camera Administrator.

Wireless Features – ICA-550W/ ICA-150W

- **Standards Compliant.** The ICA-550W/150W complies with the IEEE802.11g (DSSS) specifications for Wireless LANs.
- **Supports both 802.11b and 802.11g Standards.** ICA-550W/150W 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.** ICA-550W/150W supports either wired and wireless transmission.
- **WEP Support.** Full WEP support (64/128 Bit) on the Wireless interface is provided.
- **WPA-Personal Support.** The WPA-Personal (WPA1) standard is also supported, allowing advanced encryption of wireless data.

PoE Features – ICA-150

- **IEEE802.3af Standards Compliant.** ICA-150 supports IEEE802.3af Power over Ethernet Standard that can be powered by UTP cable at distance up to 100 meters, free of finding the site where there an AC outlet is a difficult.

Physical Details - Internet Camera

Front - Internet Camera

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 and center. 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)	On - Power on. Off - No power. Blinking - The <i>Power</i> LED will blink during start up. This will take 15 to 20 seconds.
Active LED (Green)	Off - No user is viewing the camera. Blinking - User(s) is viewing the camera.
Network LED (Green)	On - Wireless or LAN connection is detected. Off - Wireless or LAN connection is not detected Blinking - Data is being transmitted or received via the LAN or Wireless connection.

Rear - Internet Camera

Antenna	Attach the supplied antenna here. The antenna is adjustable; best results are usually obtained with the antenna positioned vertically.
Power Input	Connect the supplied 12V power adapter here. Do not use other power adapters; doing so may damage the camera.
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.
LAN port	Use a standard LAN cable to connect your Internet Camera to a 10/100Base-TX hub or switch. Note: <ul style="list-style-type: none">• Attaching the LAN cable will disable the Wireless interface. Only 1 interface can be active at any time.• The LAN cable should only be connected or disconnected when the camera is powered OFF. Attaching or detaching the LAN cable while the camera is powered on does NOT switch the interface between wired and wireless.
Reset Button	This button is recessed; you need a pin or paper clip can be used to depress it. It can be activated at any time the camera is in the "ready" mode. <ul style="list-style-type: none">• Restore Default IP Address. When pressed and released, the

Internet Camera will reset to DHCP Client.

- **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: DHCP Client
 - Administrator ID: admin
 - Administrator Password: admin

Note:

After this procedure is completed, the *Power 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. Internet Camera
2. Camera Mount
3. Antenna (ICA-550W / ICA-150W)
4. Power adapter
5. Installation CD-ROM
6. Quick Installation Guide
7. Ethernet Cable

Chapter 2

2

Basic Setup

This Chapter provides details of installing and configuring the Internet Camera.

System Requirements

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



The default Wireless settings are:

Mode: Infrastructure

ESSID: ANY

Wireless Security: Disabled

Domain: USA

Channel No.: Auto

Installation - Internet Camera

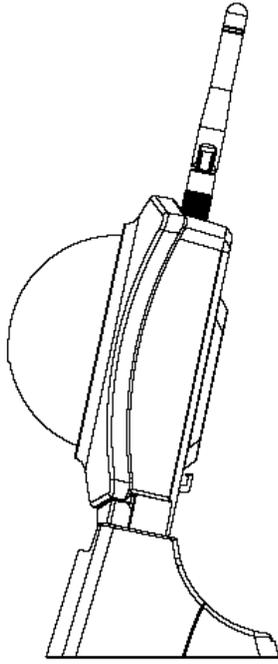


Figure 2: Camera Assembly

1. Assemble the Camera

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

2. Connect the LAN Cable

Connect the Internet Camera to a 10/100Base-TX hub or switch, using a standard LAN cable.



Note!

For the Internet Camera, this disables the Wireless Interface, because only one interface can be active.

The LAN cable should only be connected or disconnected when the camera is powered OFF. Attaching or detaching the LAN cable while the camera is powered on does NOT switch the interface between wired and wireless.

3. Power Up

Connect the supplied 12VDC Power adapter to the Internet Camera and power up. Use only the power adapter provided. Using a different one may cause hardware damage.



Note!

For the ICA-150, either power from AC / DC adapter or IEEE802.3af Power over Ethernet is allowed.

4. Check the LEDs

- The *Power* LED will turn on briefly, then start blinking. It will blink during startup, which takes 15 to 20 seconds. After startup is completed, the *Power* LED should remain ON.
- The *Network* LED should be ON.

For more information, refer to *Physical Details - Internet Camera* 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 Internet Camera even if its IP address is invalid for your network. You can then configure the Internet Camera with appropriate TCP/IP settings for your LAN.

Subsequent administration can be performed with your Web browser, as explained in *Chapter 5 - Web-based Management*.

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 3: Welcome Screen

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

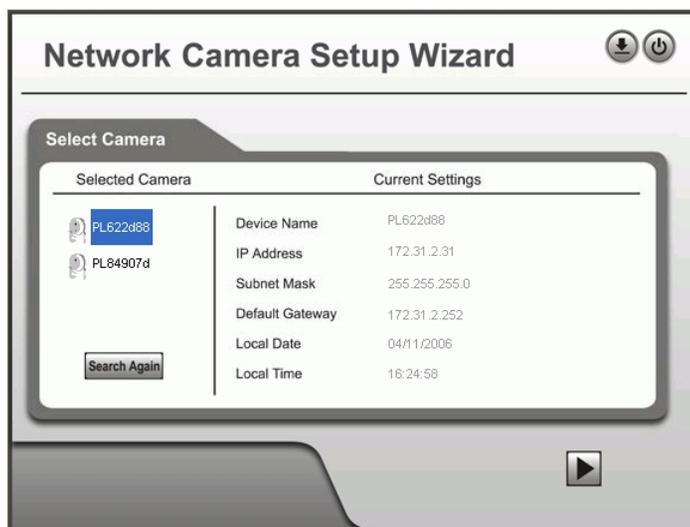


Figure 4: Camera List Screen

- 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. You will be prompted to enter the *Administrator Name* and *Administrator Password*, as shown below.
- If using the default values, enter admin for the name and password.
 - Otherwise, enter the *Administrator Name* and *Administrator Password* set on the *Maintenance* screen.



Figure 5: Password Dialog

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

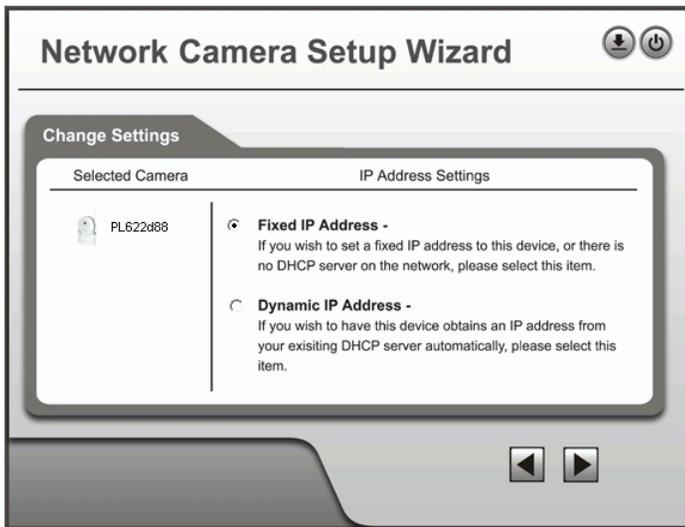


Figure 6: Fixed or Dynamic IP Selection

- *Fixed IP Address* is recommended, and can always be used.
 - *Dynamic IP Address* 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.

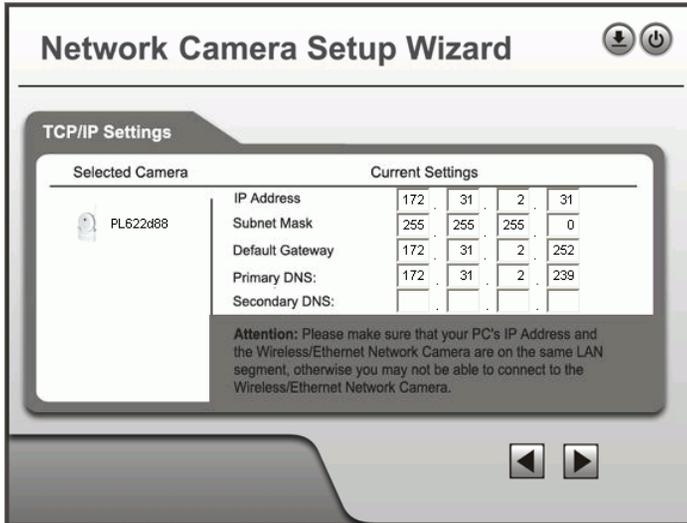


Figure 7: TCP/IP Settings

- 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. The following **Wireless Settings** screen is displayed next.

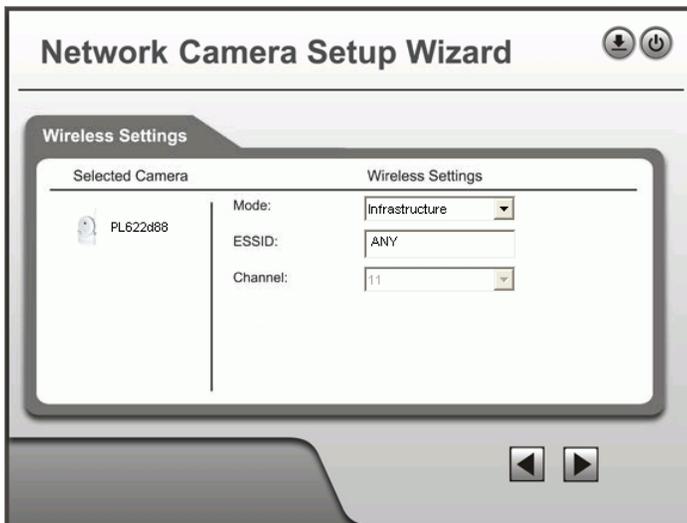


Figure 8: Wireless Settings

- **Mode** - If you have an Access Point, select *Infrastructure*. Otherwise, select *Ad-hoc*.
- **ESSID** - Enter the value used by your other Wireless devices.
- **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*. (WPA-PSK is not available for Ad-hoc Wireless Networks.)



Figure 9: Security Screen

8. If you chose **WEP (64 or 128)**, the following screen is shown below.

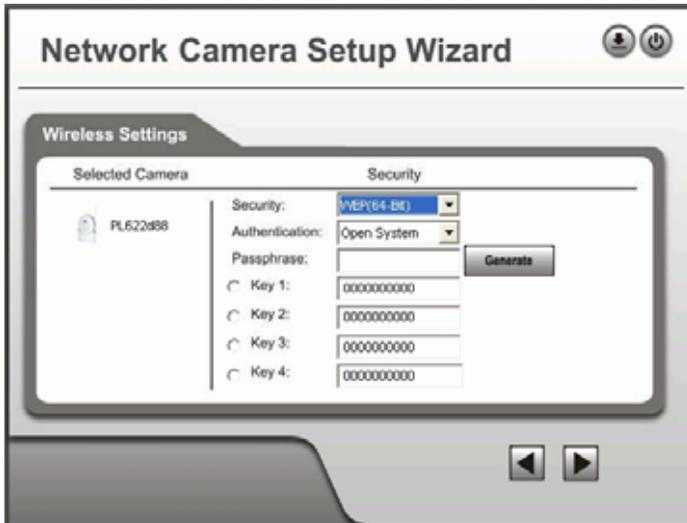


Figure 10: WEP Key Settings

- **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 11: 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.

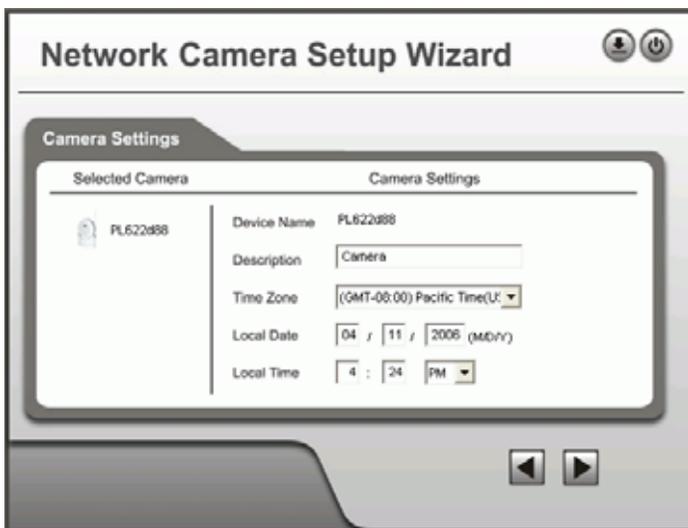


Figure 12: Camera Settings

11. The next screen, shown below, displays all details of the Internet Camera.

- Click *Next* if the settings are correct
- Click *Back* to modify any incorrect values.

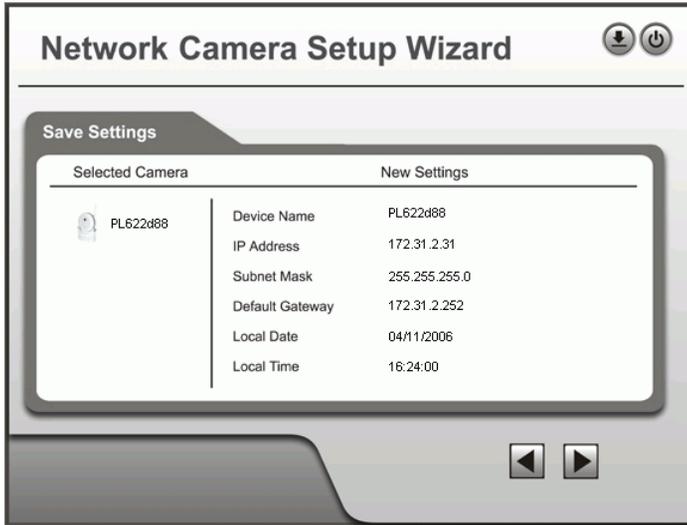


Figure 13: Save Settings

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

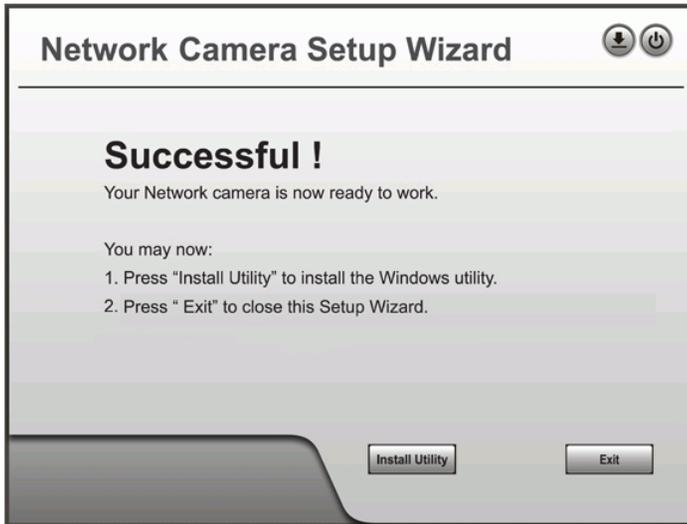


Figure 14: Final Screen

Clicking the *Install Utility* button will install the Viewing/Recording utility described in **Chapter 6 - Windows Viewing/Recording Utility**.

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

Chapter 3

3

Viewing Live Video

This Chapter provides basic information about viewing live video.

Overview

After finishing setup via the Windows-based Wizard, all LAN users can view live video using Internet Explorer on Windows.

This Chapter has details of viewing live video using Internet Explorer.

But many other powerful features and options are available:

- To view multiple cameras simultaneously, or record video (either interactively or by schedule), you should install the Windows Viewing/Recording utility. Refer to **Chapter 6 - Windows Viewing/Recording Utility** for details on installing and using this program.
- The camera administrator can also adjust the Video Stream, and restrict access to the video stream to known users by requiring viewers to supply a username and password. See **Chapter 4 - Advanced Viewing Setup** for details.
- To make Live Video from the camera available via the Internet, your Internet Gateway or Router must be configured correctly. See *Making Video available from the Internet* in **Chapter 4 - Advanced Viewing Setup** for details.

Requirements

To view the live video stream generated by the Internet Camera, you need to meet the following requirements:

- Windows 98/98SE, Windows 2000, Windows XP.
- Internet Explorer 5.5 or later.

Connecting to a Camera on your LAN

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

1. Use the Windows utility to get the IP address of the Internet Camera.
2. Start Internet Explorer.
3. In the Address box, enter "HTTP://" and the IP Address of the Internet Camera.
4. When you connect, the following screen will be displayed.



Figure 15: Home Screen

5. Click *View Video*.
6. If the Administrator has restricted access to known users, you will then be prompted for a username and password.
Enter the name and password assigned to you by the Internet Camera administrator.
7. The first time you connect to the camera, please note that this option needs to download and install an ActiveX control "NetCam-Playerweb11g.ocx" to your computer. Please change the security settings of your browser with following procedures first.
 - Click "Tools" from upper tool bar of browser, select "Internet Options".

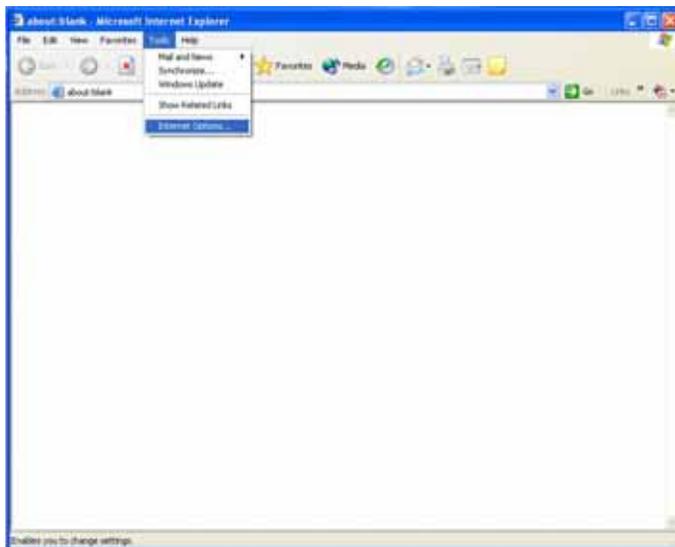


Figure 16: Internet Option Screen

- Select "Security" tab, choose "Internet" zone. Click "Custom Level" button.



Figure 17: Security Screen

- Find the settings of "Download unsigned ActiveX controls", change the option to "Prompt".

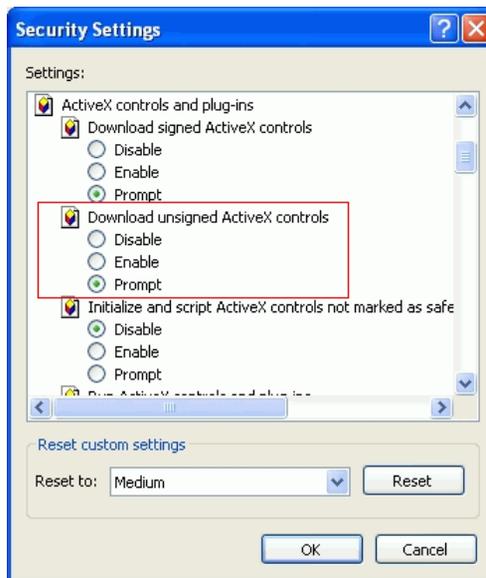


Figure 18: Security Settings Screen

- Click "OK" button.
- Click "Yes" while Warning dialog box appears.



Figure 19: Warning dialog

- Click "Apply", then "OK" button to finish the setting.
After the setting is done, a "Security Warning" dialog box would appear while you select "view Video". Ensure the path and the ocx file name is correct, then click "Yes" to continue.



Figure 20: ActiveX OCX Prompt

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

Connecting to a Camera via the Internet

You can NOT connect to a camera via the Internet unless the camera Administrator has configured both the camera and the Internet Gateway/Router used by the camera.

See *Making Video available from the Internet* in **Chapter 4 - Advanced Viewing Setup** for details of the required configuration.

Also, you need a broadband Internet connection to view video effectively. Dial-up connections are NOT supported.

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

1. Obtain the following information from the Administrator of the camera you wish to connect to:
 - Internet IP Address or Domain Name of the camera.
 - Port number for HTTP connections.
 - Login (username, password) if required.
2. Start Internet Explorer.
3. In the Address box, enter the following:

`HTTP://Internet_Address:port_number`

Where `Internet_Address` is the Internet IP address or Domain Name of the camera, and `port_number` is the port number used for HTTP (Web) connections to the camera.

Examples using an IP address:

`HTTP://203.70.212.52:1024`

Where the Internet IP address is 203 . 70 . 212 . 52 and the HTTP port number is 1024.

Example using a Domain Name:

HTTP://mycamera.dyndns.tv:1024

Where the Domain name (using DDNS in this example) is mycamera . dyndns . tv and the HTTP port number is 1024.

4. When you connect, the following screen will be displayed.



Figure 21: Home Screen

5. Click *View Video*.
6. If the Administrator has restricted access to known users, you will then be prompted for a username and password.
Enter the name and password assigned to you by the Internet Camera administrator.
7. The first time you connect to the camera, please note that this option needs to download and install an ActiveX control "NetCam-Playerweb11g.ocx" to your computer. Please change the security settings of your browser with following procedures first.
 - Click "Tools" from upper tool bar of browser, select "Internet Options".

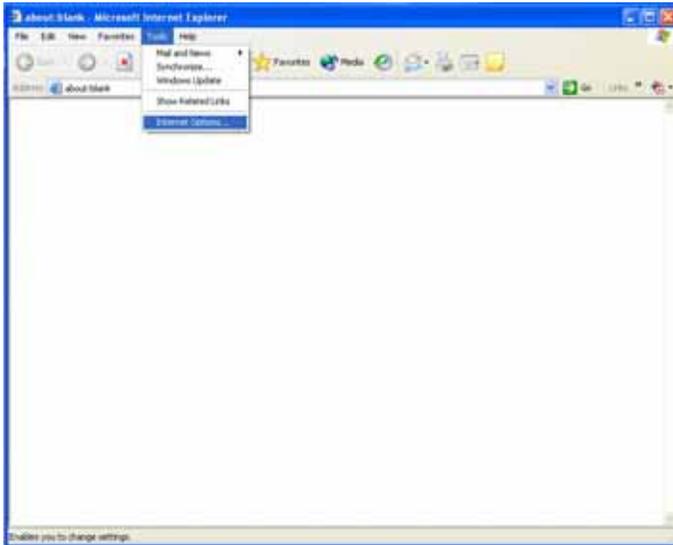


Figure 22: Internet Option Screen

- Select "Security" tab, choose "Internet" zone. Click "Custom Level" button.

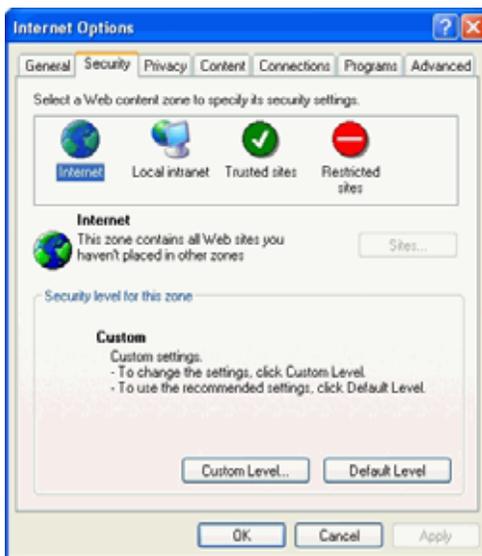


Figure 23: Security Screen

- Find the settings of "Download unsigned ActiveX controls", change the option to "Prompt".

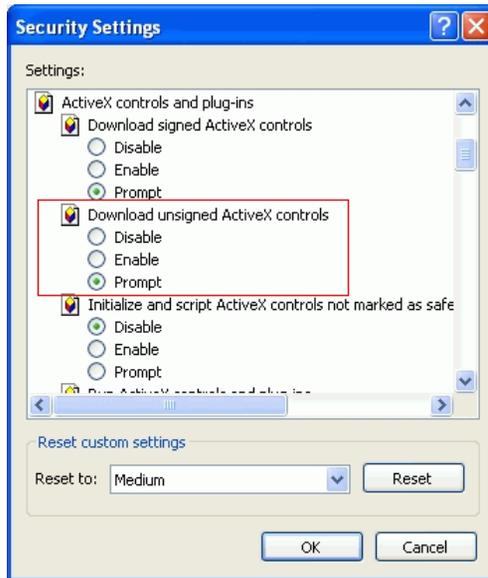


Figure 24: Security Settings Screen

- Click "OK" button.
- Click "Yes" while Warning dialog box appears.



Figure 25: Warning dialog

- Click "Apply", then "OK" button to finish the setting. After the setting is done, a "Security Warning" dialog box would appear while you select "view Video". Ensure the path and the ocx file name is correct, then click "Yes" to continue.



Figure 26: ActiveX OCX Prompt

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

Viewing Live Video

After installing the ActiveX component, you be able to view the live video stream in its own window, as shown below.



Figure 27: View Video Screen

There are a number of options available on this screen, accessed by select list, button or icon. See the table below for details.

General Options

These options are always available, regardless of the type of camera you are connected to.

320*240

Image Size. Use this drop-down list to select the desired video size.



Move Control. Use this to move the camera to the desired position. There may a short delay after clicking the desired icon. You should wait a couple of seconds rather than click again.

None

Preset Points. Select the desired Preset points.



Camera Patrol. Move through the Preset positions in the sequence defined by the Camera Administrator.



Camera Auto Pan. Click this to have the camera moved from left to right automatically.



Motion Detection. Click this button to have the camera moved to the Motion Detection Preset position.



Zoom. A digital zoom feature is available. To zoom in on a section of the window, click this icon. Then use your mouse to select the section you want to magnify. Click the icon again to disable the zoom feature.



Snap Shot. Click this to take a single JPEG "snapshot" image of the current video.



Direct P/T. Use this to move the camera to the Pan/Tilt position directly.



Flip. Click this to have the image swapped top-to-bottom.



Mirror. Click this to have the image swapped left-to-right.



Audio On. This icon is displayed if audio is On. Click on the icon to turn audio Off.



Volume. If audio is enabled, use this slider to adjust the volume.

Chapter 4

4

Advanced Viewing Setup

This Chapter provides information about the optional settings and features for viewing video via the Internet Camera. This Chapter is for the Camera Administrator only.

Introduction

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* feature

Adjusting the Video Image

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

- **Image Type** - Select the desired type.
- **Resolution** - Select the desired size. The larger sizes require greater bandwidth.
- **Quality Control** - This determines the degree of compression applied to the Video stream. Higher quality requires greater bandwidth.
- **Frame Rate** - You can determine the frame rate required by the video stream.
- **Power Line frequency** - Select 50Hz or 60Hz power line frequency, as used in your region. The correct setting will improve the picture quality under florescent lighting.
- **Color Balance** - Select the correct color balance for your environment.
- **Exposure** - Adjust the brightness of the image, if the *Auto-Exposure* does not give satisfactory results.
- **Sharpness** - Select the desired option for the sharpness.
- **Microphone** - Enable audio by checking this checkbox. Using Audio will increase the bandwidth requirements slightly.
- **Flip** - This setting will swap the image top-to-bottom.
- **Mirror** - This setting will swap the image left-to-right.
- **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.

To Adjust the Video Image:

1. Connect to the Web-based interface of the Internet Camera. (See *Chapter 5 - Web-based Management* for details.)
2. Select *Administration*, then *Video Image*. You will see a screen like the example below.



Figure 28: Video Image Screen

3. Make the required adjustments, as explained below, and save your changes.
4. Select *For Computer Use* or *For Mobile Devices Use*.

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. • MJPEG 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>
Quality Control	<p>Select the desired option:</p> <ul style="list-style-type: none"> • Fix BIT Rate: Select the desired fix bit rate. The default bit rate is set to 1.2 Mbps. • Fix Quality: Select the desired fix quality. The default fix quality is set to Normal. <p>Note: Higher image quality requires more bandwidth.</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.</p>

Power line frequency	Select the power line frequency (50Hz or 60Hz) used in your region, to improve the picture quality under florescent lighting.
Adjustment	
Color Balance	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	
Microphone	Enable audio by checking this checkbox. Using Audio will increase the bandwidth requirements slightly.
Flip	The Flip setting will swap the image top-to-bottom. 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.
Mirror	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 Stamp	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.

Controlling User Access to the Video Stream

By default, anyone can connect to the Internet Camera and view live Video at any time. If desired, you can limit access to scheduled times, and also restrict access to known users.

To Control User Access to Live Video:

1. Connect to the Web-based interface of the Internet Camera. (See *Chapter 5 - Web-based Management* for details.)
2. Select *Administration*, then *Video Access*.
3. Set the desired options for **Access**.

Access

If the Video Access 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.

Video Access:	<input type="checkbox"/> Enable Scheduled Video Access
User Access:	<input type="checkbox"/> Enable Security Checking

Figure 29: Controlling User Access

See *Chapter 5 - Web-based Management* for further details about using the *Video Access* and *User Database* screens.

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 Internet Camera available via the Internet. You will need to configure your Router or Gateway to allow connections from the Internet to the camera.

Router/Gateway Setup

Your Router or Gateway must be configured to pass incoming TCP (HTTP) connections (from Internet Viewers) to the Internet Camera. The Router/Gateway uses the *Port Number* to determine which incoming connections are intended for the Internet 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 Internet Camera. If necessary, check the user manual for your Router/Gateway for further details.

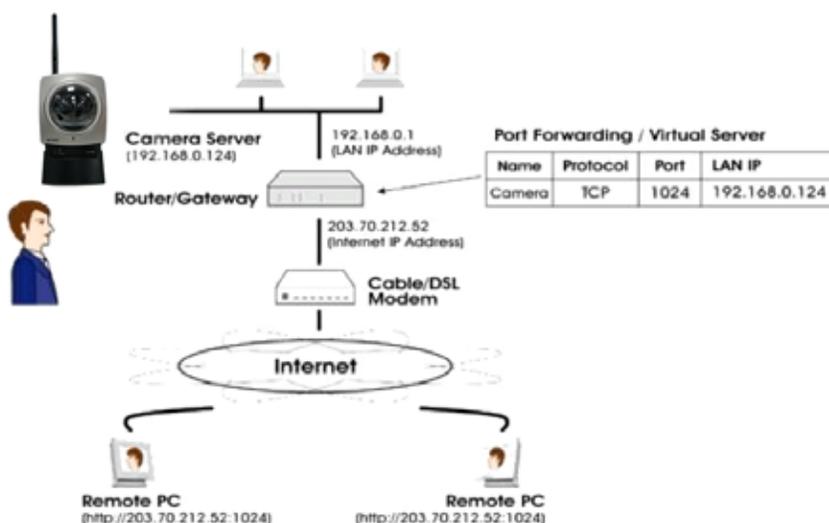


Figure 30: Connecting via the Internet



The "Port" for the *Port Forwarding / Virtual Server* entry above is the "Secondary Port" number specified on the *Network* screen of the Internet Camera.

Internet Camera Setup

The Internet 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 Internet Camera.

HTTP Port Configuration

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

The default *Secondary Port* is 1024. If you prefer to use a different port number, you can specify the port number on the Internet Camera's *Network* screen, as shown below.

Secondary Port:	<input type="checkbox"/> Enable Secondary Port	<input type="text" value="1024"/>	(1024-65535)
-----------------	--	-----------------------------------	--------------

Figure 31: Secondary Port

See *Chapter 5 - Web-based Management* for further details on using the *Network* screen.



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



Figure 32: DDNS Screen

3. Operation is then automatic:
 - The Internet Camera will 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 the camera using the Domain Name allocated by the DDNS service provider.

Viewing Live Video via the Internet

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

Viewing Live Video Using your Web Browser

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

Enter the Internet address of the Router/Gateway, 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 "Secondary Port" number on the Internet Camera is 1024.

Example - Domain Name:

HTTP://mycamera.dyndns.tv:1024

Where the Router/Gateway's Domain name is mycamera.dyndns.tv and the "Secondary Port" number on the Internet Camera is 1024.

Viewing Live Video with the Viewing/Recording Utility

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

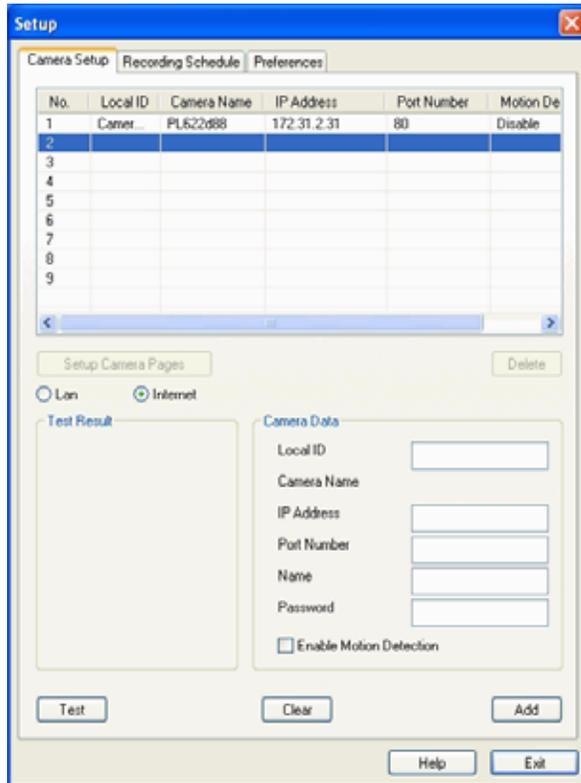


Figure 33: Add Camera from Internet

See *Chapter 6 - Window Viewing/Recording Utility* for full details on using the Windows Viewing/Recording utility.

Motion Detection Alerts

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

The Internet 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 Internet Camera, select the *Motion Detection* screen, then configure this screen as described below.



Figure 34: Motion Detection

1. Enable the *Motion Detection* feature.
2. Click the *Set Detection Areas* 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 threshold individually for each area.
3. If using a schedule, define the desired schedule.
4. Save your changes.
5. Select the *E-Mail Alerts* screen to have alerts sent by E-mail:
 - Enable and enter at least one (1) E-mail address
 - Select or enter the desired options for *Video Attachment*, *Show "From" as* and *Subject* fields.

- Enter details of the SMTP Server used to send the E-mail.



If the Motion Detection feature is enabled, but E-mail is not enabled, then the only action when motion is detected is to log this event in the system log.

Chapter 5

5

Web-based Management

This Chapter provides Setup details of the Internet Camera's Web-based Interface. This Chapter is for the Camera Administrator only.

Introduction

The Internet Camera can be configured using your Web Browser. The Internet 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 *Chapter 2 - Basic Setup*.

Connecting to Internet Camera

- If using only your Web Browser, use the following procedure to establish a connection from your PC to the Internet Camera:
- Once connected, you can add the Internet Camera to your Browser's *Favorites* or *Bookmarks*.

Connecting using your Web Browser

1. Use the Windows utility to get the IP address of the Internet Camera.
2. Start your WEB browser.
3. In the *Address* box, enter "HTTP://" and the IP Address of the Internet Camera.
4. You will then be prompted for a username and password.
 - If using the default values, enter **admin** for the name and password.
 - Otherwise, enter the *Administrator ID* and *Administrator Password* set on the *Maintenance* screen.

Welcome Screen

When you connect, the following screen will be displayed.

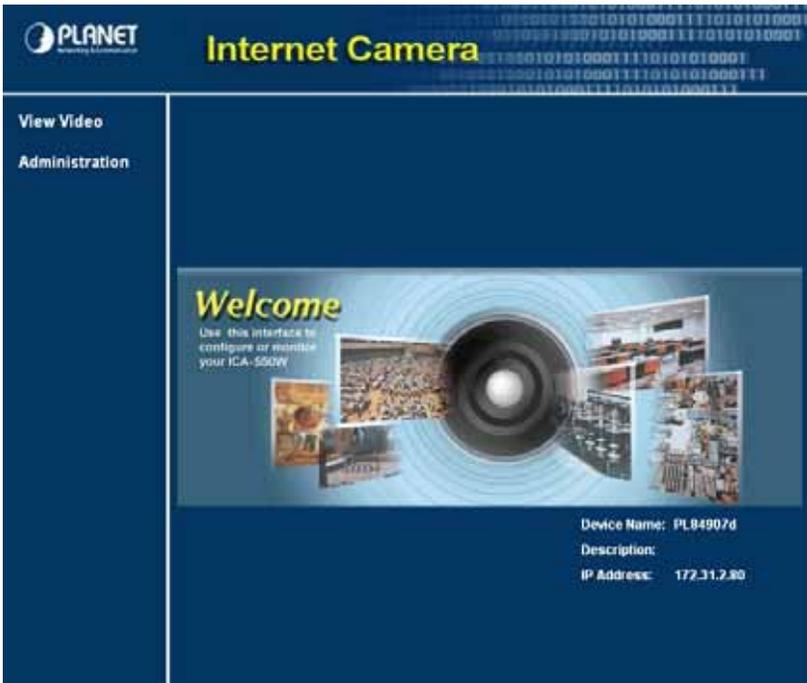


Figure 35: Welcome Screen

The menu options available from this screen are:

- **View Video** - View live Video using your Web Browser. See *Chapter 3 - Viewing Live Video* for details.
- **Administration** - Access the Administration menu.

Administration Menu

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

The *Administration* menu contains the following options:

Setup

- System
- Network
- Wireless
- DDNS

Video Stream

- Video Image
- Video Access
- User Database
- Pan/Tilt

Event

- Motion Detection
- E-Mail Alerts

Administration

- Maintenance
- Status
- Log

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.



Figure 36: System Screen

Data - System Screen

System Settings	
Device ID	This displays the name for the Internet Camera.
Description	This field is used for entering a description, such as the location of the Internet Camera.
Date & Time	
Date Format	<p>Select the desired date format, it will also be used to display the date and time as an overlay on the video image.</p> <p>The abbreviations used to predefine the date formats are list as follows:</p> <ul style="list-style-type: none"> • YYYY-MM-DD = Year-Month-Day, e.g. 2006-01-31 • MM/DD/YYYY = Month/Day/Year, e.g. 01/31/2006 • DD/MM/YYYY = Day/Month/Year, e.g. 31/01/2006
Current Date & Time	<p>This displays the current date and time on the camera.</p> <p>If it's not correct, click the Change button to modify the date/time settings. This button will open a sub-screen where you have 2 options:</p> <ul style="list-style-type: none"> • Set the camera's date and time to match your PC. • Enter the correct date and time.

Time Zone	<p>Choose the Time Zone for your location from the drop-down list.</p> <p>If your location is currently using Daylight Saving, enable the Adjust for daylight saving checkbox.</p> <p>You must UNCHECK this checkbox when Daylight Saving finishes.</p>
Network Time Protocol	<p>Enable or disable the Time Server feature as required.</p> <p>If Enabled, the Internet Camera will contact a Network Time Server at regular intervals and update its internal timer.</p>
NTP Server Address	<p>Enter the address for the desired NTP server.</p>
Update	<p>The Schedule determines how often the Internet Camera contacts the NTP Server.</p> <p>Select the desired options.</p>
LED Operation	<p>Enable this if you want to use this function.</p>

Network Screen

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

Figure 37: Network Screen

Data - Network Screen

Network	
MAC Address	It displays the current MAC address.
Obtain an Address Automatically	If selected, the Internet Camera will obtain its IP address and related information from a DHCP Server. Only select this option if your LAN has a DHCP Server.
Use the following IP Address	If selected, you must assign the following data to the Internet Camera. <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 Internet Camera will use the DNS address or addresses provided by the DHCP server. This option is only available if the IP address setting is <i>Obtain an IP address Automatically</i> .
Use the following DNS server address	<p>Primary DNS server - Use the same value as PCs on your LAN. Normally, your ISP will provide this address.</p> <p>Secondary DNS server - This is optional. If entered, this DNS will be used if the Primary DNS does not respond.</p>

Secondary Port	<p>This sets the port number for HTTP (Web) connections to the Camera, whether for administration or viewing video.</p> <ul style="list-style-type: none"> If enabled, you can connect using either port 80 or the Secondary port. You must enter the Secondary port number (between 1024 to 65535) in the field provided. <p>Note that when using a port number which is not 80, you must specify the port number in the URL. For example, if the Camera's IP address was 192.168.1.100 and the Secondary port was 1024, you would specify the URL for the Camera as follows:</p> <p style="padding-left: 40px;"><code>http://192.168.1.100:1024</code></p>
RTSP Port	<p>The RTSP (Real Time Streaming Protocol), a standard for connected client(s) to control streaming data (MPEG-4) over the World Wide Web.</p> <p>If desired to change, enter the RTSP Port number (between 1024 to 65535) in the field provided. The default RTSP Port is 554.</p>
RTP Data Port	<p>The RTP (Real-Time Transport Protocol), an Internet protocol used for transmitting a single real-time multimedia data such as audio and video to a select group of connected clients. The RTSP uses RTP to format packets of multimedia content.</p> <p>The Internet Camera's data Port number has been pre-configured and can be used for multi casting, and does not normally need to be re-configured. If the port number does need to be changed, please contact your network administrator.</p> <p>If desired to change, enter the data Port number (between 1024 to 65534) in the field provided.</p>
Max RTP Data Packet	<p>If desired to change, enter the Max RTP Data Packet Length (between 400 to 1400 bytes) in the field provided.</p>
UPnP	
Enable Discovery	<p>If enabled, the Network Camera will broadcast its availability through UPnP. UPnP compatible systems such as Windows XP will then be able to detect the presence of the Network Camera.</p>
Enable Traversal	<p>If enabled, HTTP connections (from your Web Browser or the Viewer and Recorder utility) can use secondary port instead of port 80 (the standard HTTP port) to access the camera.</p>

Wireless Screen

This screen is displayed when the *Wireless* menu option is clicked. This screen will not appear in ICA-150 configure screen.

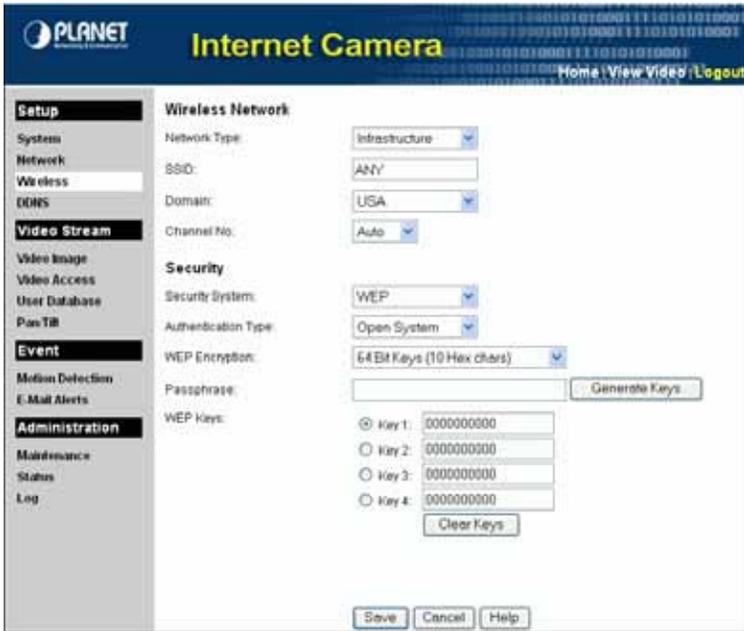


Figure 38: Wireless Screen

Data - Wireless Screen

Wireless Network	
Network Type	<p>This determines the type of wireless communication used by the Internet 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	<p>Select your region from the drop-down list.</p>
Channel No.	<ul style="list-style-type: none"> In <i>Infrastructure</i> mode, this setting is ignored. The Internet 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 Internet 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-Personal - Like WEP, data is encrypted before transmission. WPA is more secure than WEP, and should be used if possible. WPA Personal 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 Keys (5 ASCII chars) • 64 Bit Keys (10 Hex chars) • 128 Bit Keys (13 ASCII chars) • 128 Bit Keys (26 Hex chars)
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>
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.
WPA-Personal	
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>

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 Internet 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 Address* determines how often the Internet 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 39: DDNS Screen

Data - DDNS Screen

DDNS	
Enable DDNS	Enable 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.
Web Site Button	Click this button to open a new window and connect to the Web site for the selected DDNS service provider.
Domain (Host) Name	Enter the Domain Name (Host Name) allocated to you by the DDNS Server provider.

Account/E-mail	Enter the login name for the DDNS account.
Password/Key	Enter the password for the DDNS account.
Check WAN IP Address	<p>Set the schedule for checking if the Internet IP address has changed. If the IP address has changed, the DDNS Server will be notified.</p> <p>NOTE: If the DDNS Service provided some software to perform this IP address update or notification, you should NOT use this software. The update is performed by the camera.</p>

Video Image Screen

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

Select the desired type:

- For Computer Use: If selected, you must assign desired "Encoding" values for computer viewing use.
- For Mobile Devices Use: If selected, the "Encoding" values (Resolution, Quality Control, Desired Frame Rate) will also be assigned for the best mobile viewing use.

Note: The image type will set to the MPEG-4, and the resolution will set to 160*128.



Figure 40: Video Image Screen

Data - Video 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. • MJPEG 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>
Quality Control	<p>Select the desired option:</p> <ul style="list-style-type: none"> • Fix BIT Rate: Select the desired fix bit rate. The default bit rate is set to 1.2 Mbps. • Fix Quality: Select the desired fix quality. The default fix quality is set to Normal. <p>Note: Higher image quality requires more bandwidth.</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	Select the power line frequency (50Hz or 60Hz) used in your region, to improve the picture quality under florescent lighting.
Adjustment	
Color Balance	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	
Microphone	Enable audio by checking this checkbox. Using Audio will increase the bandwidth requirements slightly.
Flip	The Flip setting will swap the image top-to-bottom. 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.
Mirror	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 Stamp	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.

Video Access Screen

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



Figure 41: Video Access Screen

Data - Video Access Screen

Video Access	
Enable Scheduled Video Access	<ul style="list-style-type: none"> If enabled - 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, this option is always disabled. If disabled – The option will remain disabled until you enable it. <p>Note that regardless of which setting is chosen, the Administrator can ALWAYS access the camera and view live video.</p>
User Access	
Enable Security Checking	<ul style="list-style-type: none"> If disabled - No login required, users do not have to provide a username and password when they connect to the camera to view video. If enabled - Require login, 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.
Access Schedule	
Scheduled Periods	This displays all periods you have entered into the database. If you have not entered any periods, this list will be empty.
Delete	Use this button to delete the selected item in the list.
Add Schedule	
Day	Choose the desired option for the schedule.

Start Time	Enter the start time using a 24 hr clock.
End Time	Enter the end time using a 24 hr clock.
Add	Click this button to add a new schedule.

User Database Screen

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



Figure 42: 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.
Delete Button	Use the button to manage the user database.
User Properties	
User Name	Enter the name for the user here. <ul style="list-style-type: none"> 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 this user.
Confirm Password	Re-enter the password for the user, to ensure it is correct.
Pan/Tilt Control	This allows the camera to Pan (move left-right) and Tilt (move up-down).
Add Button	Click this button to add a new user, using the data shown on screen.
Clear Button	Use this button to clear the input fields, ready to add a new user.

Pan/Tilt Screen

This screen is displayed when the *Pan/Tilt* option on the *Administration* menu is clicked.



Figure 43: Pan/Tilt Screen

Data – Pan/Tilt Screen

Pan/Tilt	
Enable Pan/Tilt Control	Enable to select the desired option to control who one can use the camera's Pan/Tilt function.
Preset Point Position	Click this button to define the preset point position.
Set Patrol Sequence	
Set Patrol Sequence	<p>This feature determines how the camera will move when it is set to "Rotate". You can set a number of Preset Positions; the camera will go to the first position, then move through the list of present positions until it is finished. The camera will stop at the last position in the list.</p> <p>To create the Preset Sequence, select the desired Preset Position in the left column, and click the "Add >>" button. Repeat until the desired sequence is complete. Note that you can add the same Preset Position more than once; this can be used to make the camera stay longer at one position.</p> <p>To delete a position from the Sequence, select the desired position and click the "Remove" button.</p>
Time	This determines how long the camera will stay at each position while executing the sequence. Set this to the desired value.

Preset Point Position Screen

This screen is displayed when the *Preset Point Position* button on the *Pan/Tilt* screen is clicked.



Figure 44: Preset Point Position Screen

Data –Preset Point Position Screen

Set Position	Set the desired position through adjusting the control panel.
Calibration	Click this button to reset the calibration of Pan/Tilt area.
Preset List	Select the desired Preset. The screen will update with the current data for the selected Preset Position.
Preset Name	Enter a suitable name for the Preset Position. If no name is entered, the preset will have a number only.

Motion Detection Screen

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



Figure 45: Motion Detection Screen

Data – Motion Detection Screen

Motion Detection	
Motion Detection	<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 enabled during the scheduled periods. <p>Note: If Motion Detection Alerts are enabled, you must enable and configure either the E-mail or SMTP Server sections in order to have an alert sent.</p>
Pan/Tilt Configuration	<p>This option is only available if your camera is fitted with a Pan/Tilt control. If available, select the desired option to resolve conflict between the Pan/Tilt and Motion Detection features.</p>
Set Detection Areas Button	<p>Click this button to enter the motion detection screen. You can set the area or areas of the video image to be examined, and adjust the threshold 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 Idle Time	Use this to ensure your E-mail inbox or SMTP Server is not flooded with alerts. Select the desired time delay between alerts.
Detection Schedule	
Scheduled Periods	This displays all periods you have entered into the database. If you have not entered any periods, this list will be empty.
Delete Button	Use this button to delete the selected item in the list.
Add Schedule	
Day	Choose the desired option for the schedule.
Start Time	Enter the start time using a 24 hr clock.
End Time	Enter the end time using a 24 hr clock.
Add	Click this button to add a new schedule.

E-Mail Alerts Screen

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

Figure 46: E-Mail Alerts Screen

Data – E-Mail Alerts Screen

E-Mail Alerts	
E-mail Address	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.
Subject	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.
Show "From" as	Enter the E-mail address to be shown in the "From" field when the E-mail is received.
Video Attachment	
Video Attachment	Enable this if you want to send a Video file as an attachment with the E-mail alert.
Video File Name	Enter a suitable name for the Video file.
Video File Type	Select the desired type for the video file.
Video File Length	Select the desired length. The size of the file depends on this setting, and also the Video size and degree of compression.
SMTP Server	
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.

Maintenance Screen



Figure 47: Maintenance Screen

Data - Maintenance Screen

Administrator Login	
Administrator ID	Enter the name for the Administrator here. Spaces, punctuation, and special characters must NOT be used in the name.
Administrator Password	The password for the Administrator.
Verify Password	Re-enter the password for the Administrator, to ensure it is correct.
Firmware Upgrade	
Upgrade File	Click the "Browse" button and browse to the location on your PC where you stored the Firmware file. Select this file.
Start	Click this button to start the Firmware. When the upgrade is finished, the Internet Camera will restart, and this management connection will be unavailable during the restart.
Clear File Name	This does NOT stop the Upgrade process if it has started. It only clears the input for the "Upgrade File" field.
Backup & Restore	
Backup Configuration File	Click <i>Backup</i> button to save the current configuration information to a text file.
Restore Configuration File	Click <i>Restore</i> button to reinitialize the camera to load the new updated software. Do this after loading the upgrade file.

Clear File Name	This does NOT stop the Restore process if it has started. It only clears the input for the "Restore Configuration File" field.
Buttons	
Defaults	Click <i>Defaults</i> button to reloads all default settings on the camera.
Restart	Click <i>Restart</i> button to restarts the camera.

Status Screen



Figure 48: Status Screen

Data - Status Screen

System	
Device Name	This shows the name of the Internet Camera.
Description	This shows the description of the Internet Camera, such as location.
F/W version	The version of the current firmware installed.
Network	
MAC Address	The current IP address of the Internet Camera.
IP Address	The IP Address of the Internet 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	
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.

Log Screen

This screen displays a log of system activity.



Figure 49: Log Screen

Data – Log Screen

Log	
System Log	This is a log of system activity.
Enable Syslog Service	Check the box to enable the System Log Service feature.
Syslog Server Address	Enter the address of the Syslog Server.
Clear Log	Click this button to restart the log.
Refresh Button	Click this to update the data shown on screen.

Windows Viewing/Recording

Utility

This Chapter describes how to view and record the live video stream generated by the Internet Camera, using the supplied Windows utility.

Overview

The recommended method to view video is to use the supplied Windows Viewing/Recording utility. This utility also allows you to record the video streams, either interactively or using a schedule.

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 50: 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 51: System Tray Icon

This Icon has the following functions:

- **Double-click** - This will display the version number.
- **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.

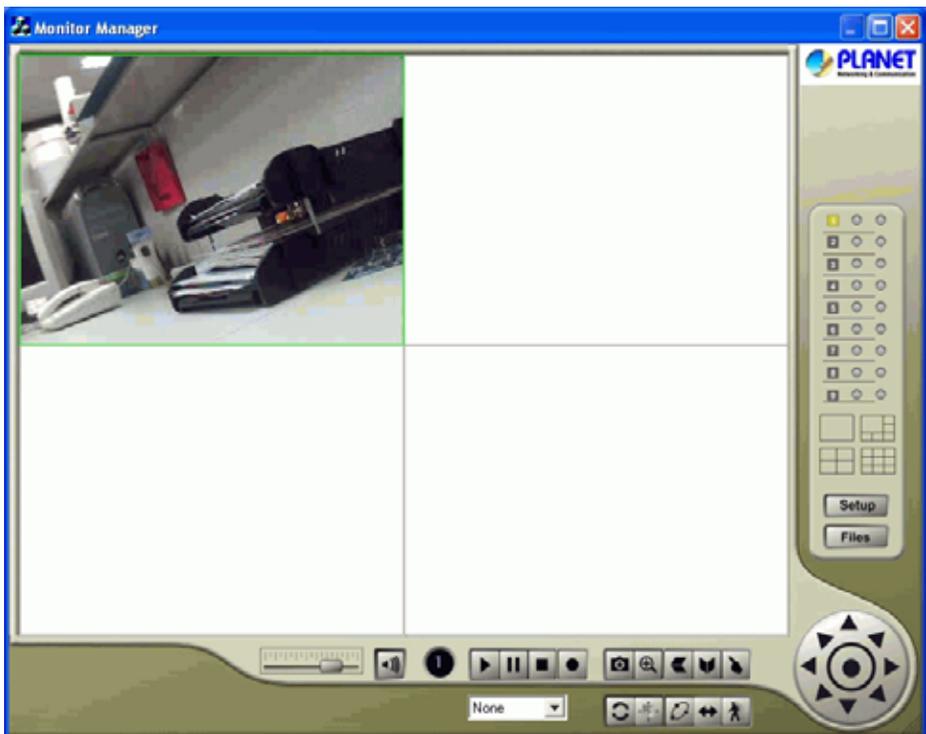


Figure 52: Main Screen

If no cameras have been defined, no video will be displayed. See the following section for information on defining a camera. Note that each Camera is given a number (Channel Number).

Camera Setup

To define a camera and associate it with a *Channel Number*.

1. Click the *Setup* button on the main screen. You will see a screen like the example below.

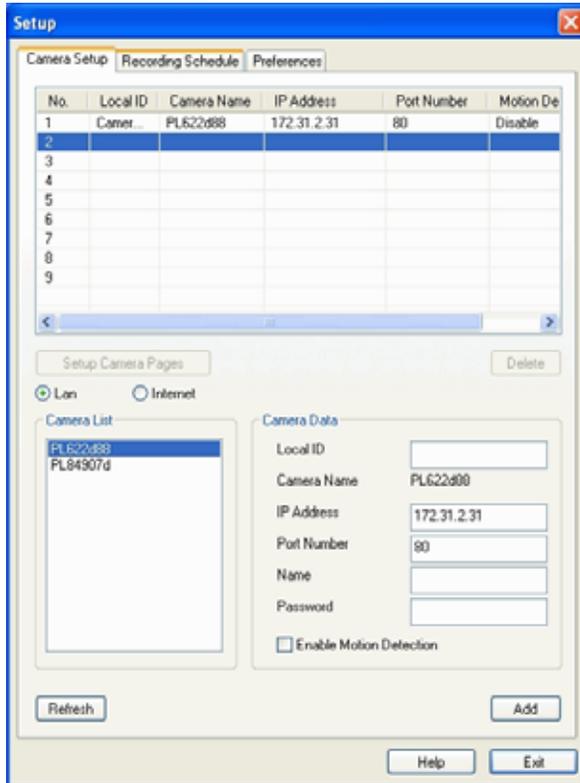


Figure 53: Camera Setup Screen

2. Select the desired *Channel* number in the left (*No.*) column.
3. There are 2 radio buttons, for *LAN* or *Internet*. The default is *LAN*. See the following section for details of the *Internet* option.
 - The *LAN* panel, on the left, displays all Internet 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.
4. To associate a camera with the current *Channel*:
 - Select a camera in the list on the left.
 - Enter the value of *Local ID*.
 - Check that the *Camera Data* shown on the right is correct. See below for details.
 - Click the *Add* button. The camera will now appear in the *Channel List*.

Camera Data - LAN

Local ID	This is the name you gave to this camera. This field must be entered.
Camera Name	This is the default name for the Internet Camera, and cannot be changed.
IP Address	The current IP address of the Internet Camera.

Port Number	This will normally display "80". Only change this if requested to do so by the Internet Camera Administrator.
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 your by Administrator.
Setup Camera Pages	Click this button to connect the Web-based interface of the Camera
Enable Motion Detection	Check this if you want the Camera to have the feature enabled.



Note!

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 Internet 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 54: Add Camera from Internet

To associate a camera with the current *Channel*:

1. Enter the *Camera Data* on the panel on the right. See below for details.
2. If desired, click the *Test* button to check that a connection and login can be performed successfully. Note that if the remote LAN does not currently have an Internet connection, or the remote camera is not on-line, the test will fail because no connection is possible.
3. Click the *Add* button. The camera will now appear in the *Channel List*.

Camera Data - Internet

Local ID	This is the name you gave to this camera. This field must be entered.
Camera Name	This is the default name for the Internet Camera, and cannot be changed. This field will be displayed automatically once a connection to the Internet Camera has been established.
IP Address	Enter the Domain Name or Internet IP address of the desired Internet Camera.
Port Number	Enter the port number used by the Internet Camera for connections via the Internet The 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 Camera 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 the Camera Administrator.
Setup Camera Pages	Click this button to connect the Web-based interface of the Camera
Enable Motion Detection	Check this if you want the Camera to have the feature enabled.



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.

Main Screen

You can view live video in the main screen. The built-in software can let you view up to 9 cameras on a single computer screen at one central location.

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



Channel Indicator. This indicates the current channel (camera).



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.



Zoom Camera. A digital zoom feature is available. To zoom in on a section of the window, click this icon. Then use your mouse to select the section you want to magnify. Click the icon again to disable the zoom feature.



Flip Video. Click this to have the image swapped top-to-bottom.



Mirror Video. Click this to have the image swapped left-to-right.



Direct Pan/Tilt. Use this to move the camera to the Pan/Tilt position directly.



Preset Position. Select the desired Preset position.



Refresh. Update the Preset position list. This has no effect unless during the viewing session, another user or the Camera Administrator has renamed one or more of the Preset positions.



Create Preset Points. Define (or re-define) a Preset position. The Camera Administrator can choose whether or not this option is available.



Patrol. Move through the Preset positions in the sequence defined by the Camera Administrator.



Auto Pan. Click this to have the camera moved from left to right automatically.



Motion Detection. Click this button to have the camera moved to the Motion Detection Preset position.



Move Control. Use this to move the camera to the desired position. There may be a short delay after clicking the desired icon. You should wait a couple of seconds rather than click again.



Sound On/Off. One of these icons will be displayed.

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.



Speaker Volume - For Cameras that feature audio, click this bar and move its endpoint to raise or lower the volume.



Channel (Camera) Selection.

Use this to select the desired Channel (Camera) by clicking on the top row. This panel also indicates the status of the camera.

- The first row indicates if the camera is available.
Yellow indicates the camera is available.
Red indicates that the camera is currently unavailable.
- The middle row indicates if a recording is in progress.
Gray indicates no recording.
Blue indicates recording is in progress.
- The bottom row indicates if Motion Detection is in progress.
Gray indicates this feature is not enabled.
Red (blinking) indicates Motion Detection is in progress.



Screen Layout. Use this to select the number of Channels (Cameras) to be displayed on screen.



Click this button to open the Setup Window.



Click this button to open the File Finder, which allows you to browse through the previously saved files.

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 Schedule

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

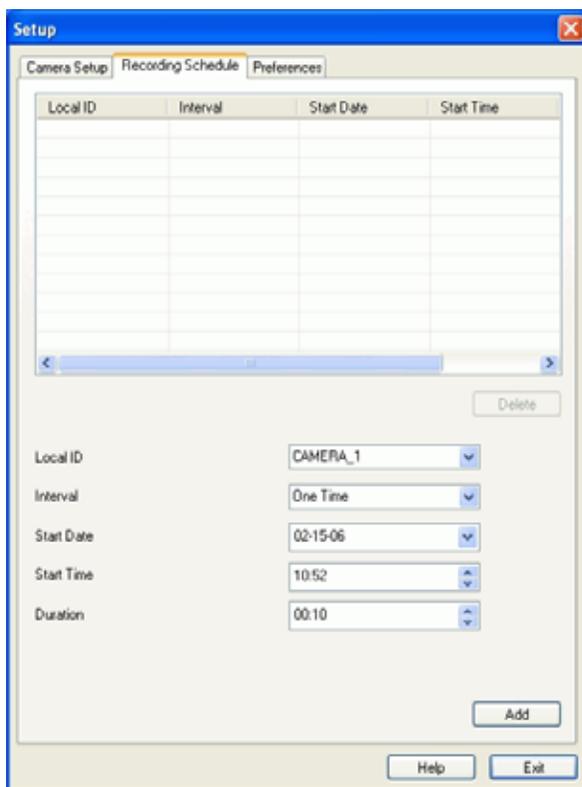


Figure 55: Recording Schedule

If necessary, change these settings to suit your environment.

Local ID. This is the name you gave to this camera. This field must be entered.

Interval. Decide which days you want the Camera to record. Select the appropriate Interval from the drop-down list.

Start Date. Select the date you want the recording begin.

Start Time. Select the time you want the recording begin.

Duration. Select how long you want the recording to be.

After you have made your selections, click the **Add** button to save the new scheduled recording, and you will see it appears in the recording list.

Preferences

This screen is displayed after clicking the *Preferences* tab on the *Setup* screen. If necessary, change these settings to suit your environment.

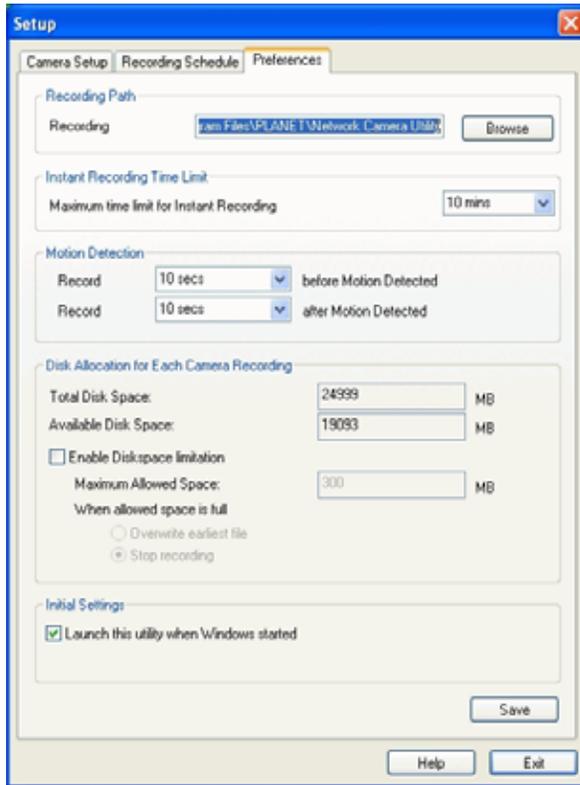


Figure 56: Preferences Screen

Data - Preferences

Recording Paths	
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.
Instant Recording Time Limit	
Maximum time limit for Instant Recording	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.
Motion Detection	
Record before Motion Detected	Set the time so the Utility will start recording the certain time before the Utility detects motion in a Camera's field of view.
Record after Motion Detected	Set the time so the Utility will stop recording the certain time after the Utility detects motion in a Camera's field of view.

Disk Allocation for Each Camera Recording	
Total Disk Space	This displays the total size of the disk selected for storing recordings.
Available Disk Space	This displays the available space of the disk selected for storing recordings.
Enable Disk space limitation	Enable this if you wish to limit the disk space used by video recordings.
Maximum Allowed Space	Enter the maximum amount of disk space which can be used for video recordings. Note: The value can not be less than 300MB.
When allowed space is full.	Select the desired option for the behavior when the disk space limit is reached. <ul style="list-style-type: none"> • Overwrite earliest file - The utility will overwrite the old files if the space is not enough for recording. • Stop Recording - If the disk space limit is reached, no further recording is done.
Initial Settings	
Launch this utility when Windows started	Check this to have this utility start when Windows starts.

Chapter 7



Troubleshooting

This chapter covers the most likely problems and their solutions.

Overview

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

Problems

Problem 1: **I can't connect to the Internet 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 Internet Camera.
Use the Windows utility to configure the Internet Camera with a valid IP address.

Note! If the Internet Camera can not get the IP address from the DHCP server, the IP address will be set to 192.168.0.22/255.255.255.0.

Problem 2: **The Windows utility doesn't list any Internet Cameras.**

Solution 2: Check the following:

- The Internet Camera is installed, LAN connections are OK, it is powered ON and startup is complete.
- Ensure that your PC and the Internet 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 Internet 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 *Maintenance* 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 Internet 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 Internet 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 Internet 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 camera to send the E-mail will not accept mail. (This is to prevent spam being sent from the server.). Try using a different SMTP server, or contact your ISP to see if SMTP access is being blocked.

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, or adjusting the *Quality Control* setting on the **Video Image** screen. Video created with the lower settings will contain less detail; this is the trade-off for using less bandwidth.

Appendix A

Specifications



Internet Camera

Model	Internet Camera
Dimensions	107mm (W) * 170mm (H) * 100mm (D)
Operating Temperature	0° C to 40° C
Storage Temperature	-20° C to 70° C
Network Protocols:	TCP/IP, DHCP, SMTP, NTP, HTTP, UPnP (Discovery only)
Network Interface:	1 Ethernet 10/100Base-TX (RJ45) LAN connection
Wireless interface	IEEE 802.11b/802.11g compatible, Infrastructure/Ad-hoc mode, WEP/WPA-Personal security support, roaming support
LEDs	3
Power Adapter	ICA-150: 12V DC External power or PoE ICA-150W/ICA550W: 5V DC

Regulatory Approvals

CE Approvals

The Internet 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.

Copyright Notice

Many software components are covered by the GNU GPL (General Public License). Some are covered by other Licenses as listed in the table below.

Details of each applicable license are contained in the following section.

No Warranty

THIS SOFTWARE IS PROVIDED BY THE AUTHOR AND CONTRIBUTORS ``AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Network Camera copyright information

Package source codes	License
bootloader	GPL
arm-linux 2.6.5	GPL
arm-linux-gcc 3.4.1 library	LGPL
DM9000 lan driver	GPL
Busy-box	GPL
boa-0.94.13a	GPL
ez-ipupdate	GPL
dhcpcd-1.3.22	GPL
boa-0.94-13e11	GPL
WPA_supPLICANT	GPL
cron	Public domain (BSD & Lineo http://www.lineo.com/)
ntp-4.1.71	Public domain (http://www.ntp.org/)
libupnp-1.2.1	Intel (http://upnp.sourceforge.net/)

ntp-4.1.71 license

Copyright (c) David L. Mills 1992-2001

Permission to use, copy, modify, and distribute this software and its documentation for any purpose and without fee is hereby granted, provided that the above copyright notice appears in all copies and that both the copyright notice and this permission notice appear in supporting documentation, and that the name University of Delaware not be used in advertising or publicity pertaining to distribution of the software without specific, written prior permission. The University of Delaware makes no representations about the suitability this software for any purpose. It is provided "as is" without express or implied warranty.

Libupnp-1.2.1 License

Copyright (c) 2000 Intel Corporation. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. Neither name of Intel Corporation nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL INTEL OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

cron license

Copyright (c) 1989 The Regents of the University of California. All rights reserved.

This code is derived from software contributed to Berkeley by Paul Vixie.

Redistribution and use in source and binary forms are permitted provided that the above copyright notice and this paragraph are duplicated in all such forms and that any documentation, advertising materials, and other materials related to such distribution and use acknowledge that the software was developed by the University of California, Berkeley. The name of the University may not be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED "AS IS" AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

GNU General Public License

GNU GENERAL PUBLIC LICENSE

Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.

51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE

Terms And Conditions For Copying, Distribution And Modification

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or

translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

- b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,
- c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

- 4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.
- 5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.
- 6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.
- 7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license

practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

Lesser GNU General Public License

GNU LESSER GENERAL PUBLIC LICENSE

Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.

51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts as the successor of the GNU Library Public License, version 2, hence the version number 2.1.]

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE

TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

- a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)
- b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.
- c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.
- d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.
- e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

- a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.
- b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS



Appendix B

Streaming Video/Audio

Solution

Overview

Streaming video is a sequence of "moving images" that are sent in compressed form over the Internet and displayed by the viewer as they arrive. With streaming, a Web user does not have to wait to download a large file before seeing the video or hearing the sound. Instead, the media is sent in a continuous stream and is played as it arrives.

Streaming Video/Audio through Internet Camera

To snapshot a JPEG image from the Internet Camera with specified resolution and quality:

[http://<ip>/img/snapshot.cgi?\[size=<value>\]\[&quality=<value>\]](http://<ip>/img/snapshot.cgi?[size=<value>][&quality=<value>])

Size = 1(160*128)

2(320*240)

3(640*480)

Quality = 1(Very low)

2(Low)

3(Normal)

4(High)

5(Very high)

To stream M-JPEG video from the Internet Camera (M-JPEG mode only)

<http://<ip>/img/mjpeg.cgi>

To stream video through the RTP/RTSP protocol from Internet Camera (M-JPEG mode only)

Rtsp://<ip>/img/media.sav

Note: Users need to specify the desired protocol in the players.

To snapshot a JPEG image (160*128, very low quality) through a mobile phone:

<http://<ip>/img/mobile.cgi>