



---

---

# Network Camera

---

---

## **FCS-3031**

PoE PIR IP Dome Camera

## **FCS-3051**

Day/Night PoE PIR IP Dome Camera

---

---

# User Manual

---

---

V1.0.0

# Safety

## FCC

This equipment has been tested and found to comply with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

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

## CE

This equipment is in compliance with the requirements of the following regulations: EN 55 022: CLASS B

## RoHS

This product is RoHS compliant.



# Table of Contents

---

<b>CHAPTER 1 INTRODUCTION.....</b>	<b>1</b>
Overview .....	1
Physical Details .....	4
Package Contents .....	5
<b>CHAPTER 2 BASIC SETUP .....</b>	<b>6</b>
System Requirements .....	6
Installation .....	6
Setup using the Camera Wizard .....	7
<b>CHAPTER 3 VIEWING LIVE VIDEO .....</b>	<b>12</b>
Overview .....	12
Requirements .....	12
Connecting to a Camera on your LAN .....	12
Connecting to a Camera via the Internet .....	14
Viewing Live Video .....	16
<b>CHAPTER 4 ADVANCED VIEWING SETUP .....</b>	<b>18</b>
Introduction .....	18
Adjusting the Video Image .....	18
Viewing the live Video on your cell phone.....	21
Controlling User Access to the Video Stream .....	23
Making Video available from the Internet.....	24
Viewing Live Video via the Internet .....	27
Motion Detection Alerts .....	28
<b>CHAPTER 5 WEB-BASED MANAGEMENT .....</b>	<b>30</b>
Introduction .....	30
Connecting to Network Camera.....	30
Welcome Screen.....	31
Administration Menu.....	32
System Screen .....	33
Network Screen.....	35
DDNS Screen.....	38
IP Filter .....	40
I/O Port.....	41
Video & Audio Screen.....	42
Video Access Screen .....	45
User Database Screen.....	47
Motion Detection Screen .....	48
E-Mail Screen .....	49
FTP Screen.....	51
HTTP Screen.....	52
SMB Client Screen .....	53
Event Trigger Screen .....	54
Maintenance Screen .....	56
Status Screen.....	58
Log Screen.....	60
<b>CHAPTER 7 TROUBLESHOOTING .....</b>	<b>61</b>
Overview .....	61
Problems.....	61

<b>APPENDIX A SPECIFICATIONS.....</b>	<b>63</b>
<b>FCS-3031/3051 .....</b>	<b>63</b>
<b>Regulatory Approvals .....</b>	<b>64</b>
<b>Copyright Notice.....</b>	<b>65</b>
<b>APPENDIX B STREAMING VIDEO/AUDIO SOLUTION.....</b>	<b>80</b>
<b>Overview .....</b>	<b>80</b>
<b>Streaming Video/Audio through Internet Camera.....</b>	<b>80</b>

# Chapter 1

# 1

## Introduction

*This Chapter provides features of LevelOne Network Camera, FCS-3031 and FCS-3051 in detail with its components and capabilities.*

*Please be noted that all the captured images in the following chapters are based on Windows XP by using FCS-3051 Network Camera.*

### Overview

The FCS-3031/FCS-3051 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.

Using enhanced MPEG-4 technologies, the FCS-3031/FCS-3051 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.

With built-in PIR sensor and IR LEDs, FCS-3051 can provide home security and illumination around 5 meters long under low light conditions in a simple, economical manner.

A convenient and user-friendly surveillance software, IP CamSecure Lite, which provided for both viewing and recording video. If necessary, you can even view video using your Web Browser, on a variety of software platforms.

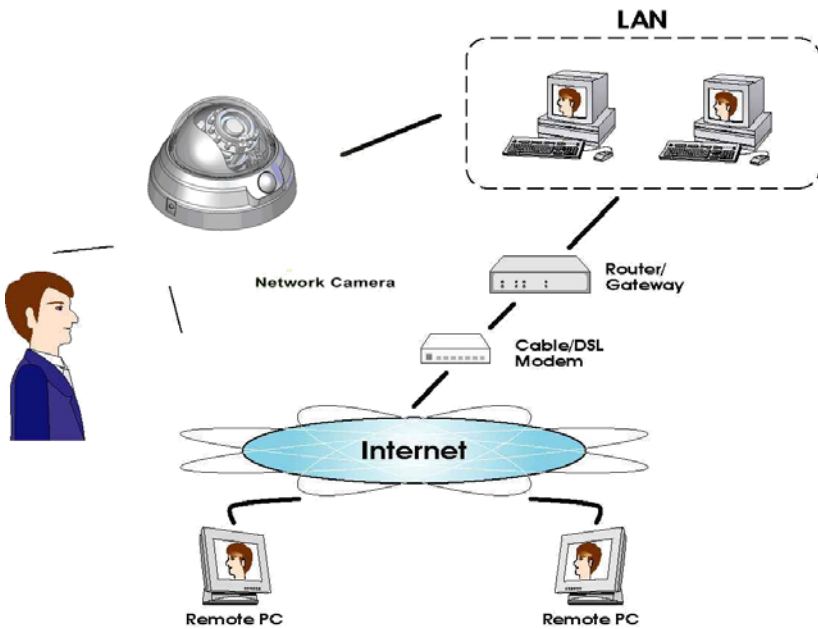


Figure 1: Network Camera

### Features

- **Dual Video Support.** FCS-3031/3051 can support both MEPEG4 and MJEPG video for different image compression.

- ***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, FCS-3031/3051 has the features you need.
- ***Multi-Protocol Support.*** Supporting TCP/IP networking, SMTP (E-mail), HTTP and other Internet related protocols, FCS-3031/3051 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 FCS-3031/3051 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. FCS-3031/3051 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.
- ***Syslog Support.*** If you have a Syslog Server, FCS-3031/3051 can send its log data to your Syslog Server.
- ***Audio Support.*** You can listen as well as look! Audio is encoded with the video if desired. You can connect to an external microphone.
- ***PIR (Passive Infrared Sensor) Support.*** FCS-3031/3051 is embedded with a PIR Sensor, which senses infrared light radiating from human bodies in its field of view. This feature is very helpful in enhancing home security systems.
- ***IR LEDs Support (FCS-3051 Only).*** FCS-3051 has 11 IR LEDs. The LEDs can provide illumination around 5 meters long, that can help to output a better video quality while under low-light conditions such as indoors, on cloudy days, or in the morning or evening.
- ***PoE Support.*** You can use PoE (Power over Ethernet) to provide power to the FCS-3031/3051, so only a single cable connection is required.

## Internet Features

- ***User-definable HTTP port number.*** This allows Internet Gateways to use "port mapping" so the FCS-3031/3051 and a Web Server can share the same Internet IP address.
- ***SMB Client Support.*** With Server Message Block Protocol (SMB protocol) support, the client applications in a computer can read, create, and update files on the remote server.
- ***DDNS Support.*** In order to view video over the Internet, users must know the Internet IP address of the gateway used by the FCS-3031/3051. 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 FCS-3031/3051.

- ***NTP (Network-Time-Protocol) Support.*** NTP allows the FCS-3031/3051 to calibrate its internal clock from an Internet Time-Server. This ensures that the time stamp on Video from the FCS-3031/3051 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 10 users can be entered.
- ***Password-Protected Configuration.*** Configuration data can be password protected, so that it only can be changed by the Administrator.

## Physical Details

### Front

<b>IR LEDs (FCS-3051 Only)</b>	These IR LEDs are designed for the supply of backlighting while under the low-light environments.
<b>Light Sensor</b>	The light sensor can be used to distinguish between light and dark, as well as determine the intensity of the light.
<b>Lens</b>	(FCS-3031) Use board mount lens. You should ensure that the lens cover remain clean. The image quality is degraded if the lens cover is dirty or smudged.  (FCS-3051) Use the zoom and focus puller to adjust the image of the lens. You should ensure that the lens cover remain clean. The image quality is degraded if the lens cover is dirty or smudged.
<b>Power LED (Green)</b>	<b>On</b> - Power on. <b>Off</b> - No power. <b>Blinking</b> - The <i>Power</i> LED will blink during start up. This will take 15 to 20 seconds.
<b>PIR Sensor</b>	The PIR sensor is designed for human body detection.

### Rear

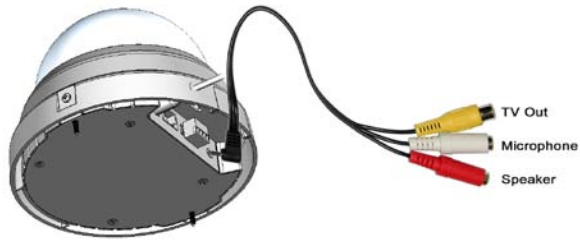
<b>Power Input</b>	Connect the supplied 12V power adapter here. Do not use other power adapters; doing so may damage the camera.
<b>LAN port</b>	Use a standard LAN cable to connect your Network Camera to a 10/100BaseT hub or switch.
<b>Digital Input/Output</b>	The GPIO terminal block includes 1 input port and 1 output port.
<b>Reset Button</b>	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"><li>• <b>Reset to manufacturer default valued and reboot.</b> When pressed and held over 10 seconds, the settings of Network Camera will be set to their default values.</li></ul> <b>Note:</b> After this procedure is completed, all LEDs will blink three times to confirm that the reset was completed successfully.
<b>AV</b>	Connect the supplied AV cable to the AV port, which will extend TV out, mic in, and spk out connections.



## Package Contents

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

1. FCS-3031 or FCS-3051
2. Power Adapter
3. CD Manual/Utility
4. Quick Installation Guide
5. Allen Wrench



**Figure 2: AV Cable**

## Chapter 2

# 2

# Basic Setup

*This Chapter provides details of installing and configuring the FCS-3031/3051.*

## System Requirements

To use the wired LAN interface, a standard 10/100BaseT hub or switch and network cable is required.

## Installation

### 1. Assemble the Camera

Mount the Network Camera if required.

### 2. Connect the LAN Cable

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



**Note!**

**The first time you connect to the camera, you should connect the LAN cable and configure the Network Camera with appropriate settings.**

### 3. Power Up

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

### 4. Check the LEDs

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

For more information, refer to *Physical Details* in Chapter 1.

## Using PoE

The FCS-3031/3051 supports PoE (Power over Ethernet). To use PoE:

1. Do not connect the supplied power adapter to the FCS-3031/3051.
2. Connect one end of a standard (category 5) LAN cable to the Ethernet port on the FCS-3031/3051.
3. Connect the other end of the LAN cable to the powered Ethernet port on a suitable PoE Adapter.
4. Connect the unpowered Ethernet port on the PoE adapter to your Hub or switch.
5. Connect the power supply to the PoE adapter and power up.

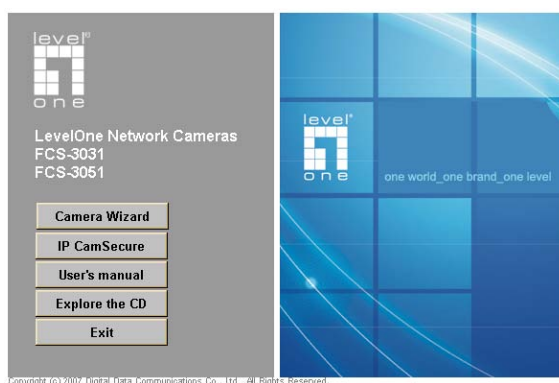
## Setup using the Camera Wizard

Initial setup should be performed using the supplied Windows-based Camera Wizard. This program can locate the Network Camera even if its IP address is invalid for your network. You can then configure the FCS-3031/3051 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 **Autorun.exe** in the root folder.
  - You will see the *Welcome* screen shown below.



- Click the *Camera Wizard* button to start the setup Wizard




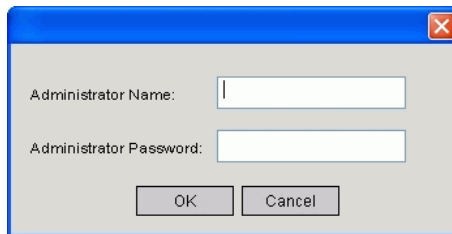
**Figure 3: Welcome Screen**

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




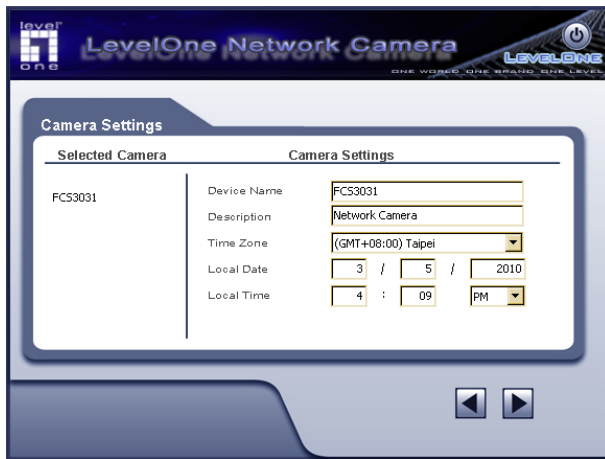
**Figure 4: Camera List Screen**

- 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 **administrator** for the name, and leave the password blank.
  - Otherwise, enter the *Administrator Name* and *Administrator Password* set on the *Maintenance* screen.



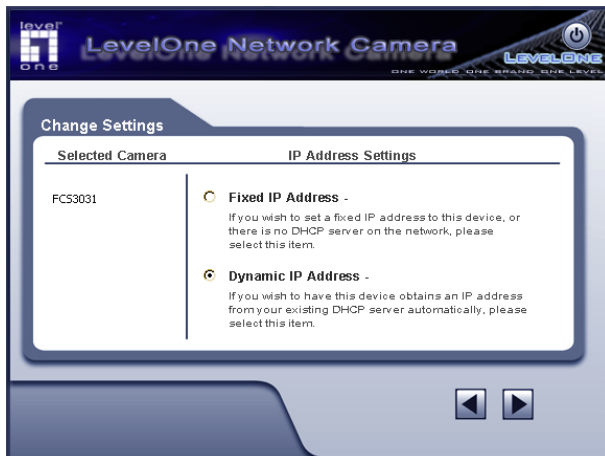
**Figure 5: Password Dialog**

4. 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 6: Camera Settings**

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

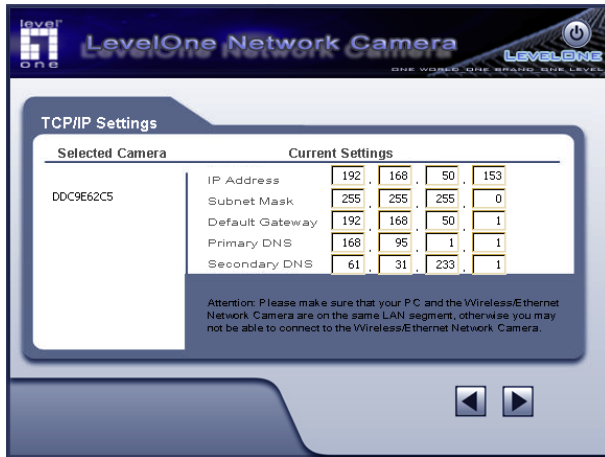


**Figure 7: Fixed or Dynamic IP Selection**

- *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.

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





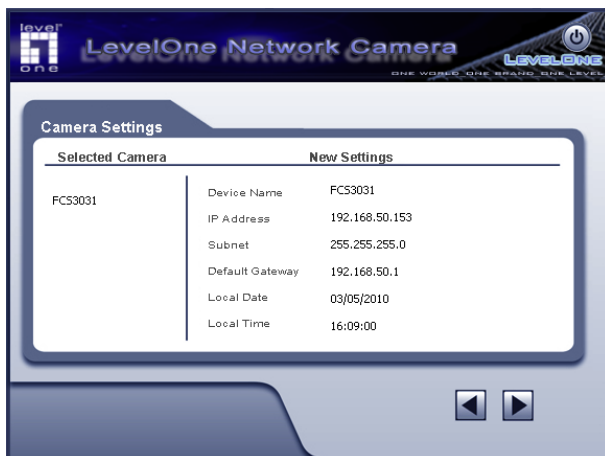
**Figure 8: TCP/IP Settings**

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

Click *Next*  to continue.

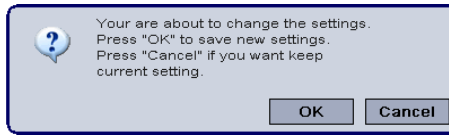
7. The next screen, shown below, displays all details of the FCS-3031/3051.

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



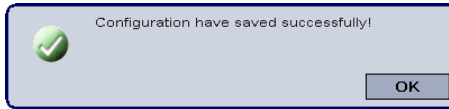
**Figure 9: Save Settings**

- Click *OK* to confirm that you want to save the new settings. If you want to cancel your changes, click *Cancel*.



**Figure 10: Confirm Screen**

- After clicking *OK*, you will see the screen below.



**Figure 11: Final Screen**

- Click *OK* to end the Wizard.  
Setup is now complete.

## Chapter 3

# Viewing Live Video

*This Chapter provides basic information about viewing live video.*

### Overview

After finishing setup via the Camera 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 IP CamSecure Lite. Refer to the user's manual in the software CD 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 FCS-3031/3051, you need to meet the following requirements:

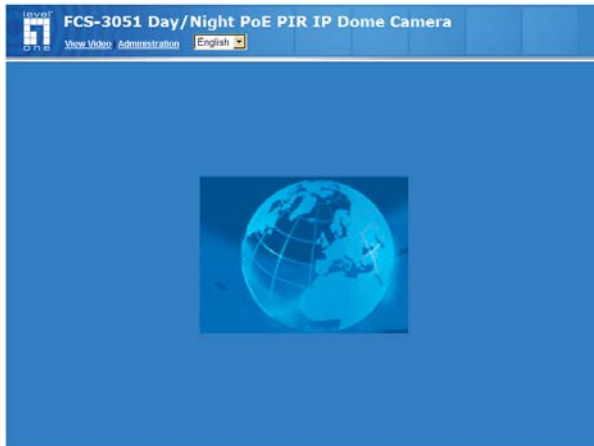
- Windows 2000, Windows XP or Windows Vista.
- Internet Explorer 6 or later.

### Connecting to a Camera on your LAN

To establish a connection from your PC to the FCS-3031/3051:

1. Use the Camera Wizard to get the IP address of the Network Camera.
2. Start Internet Explorer.
3. In the Address box, enter "HTTP://" and the IP Address of the FCS-3031/FCS-3051.
4. When you connect, the following screen will be displayed.





**Figure 12: 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 administrator.
7. The first time you connect to the camera, you will be prompted to install an ActiveX component (OCX or CAB file), as in the example below.  
**You must install this ActiveX component (OCX or CAB file) in order to view the Video stream in Internet Explorer.**  
**Click the "Yes" button to install the ActiveX component.**



**Figure 13: 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 FCS-3031/3051 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
```

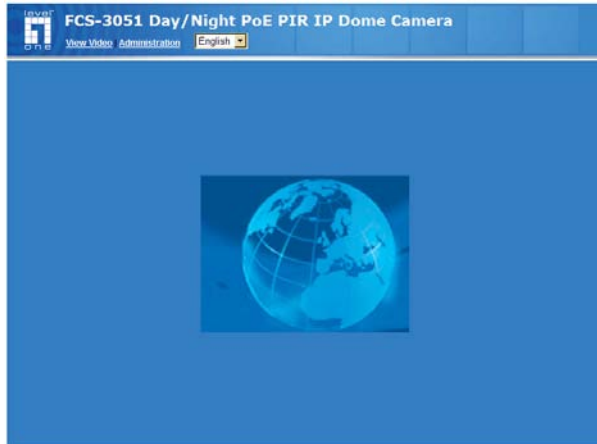
Where the Internet IP address is 203.70.212.52 and the HTTP port number is 1024.

### **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.

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



**Figure 14: Home Screen**

- Click *View Video*.
- 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 administrator.
- The first time you connect to the camera, you will be prompted to install an ActiveX component (OCX or CAB file), as in the example below.  
**You must install this ActiveX component (OCX or CAB file) in order to view the Video stream in Internet Explorer.**  
**Click the "Yes" button to install the ActiveX component.**

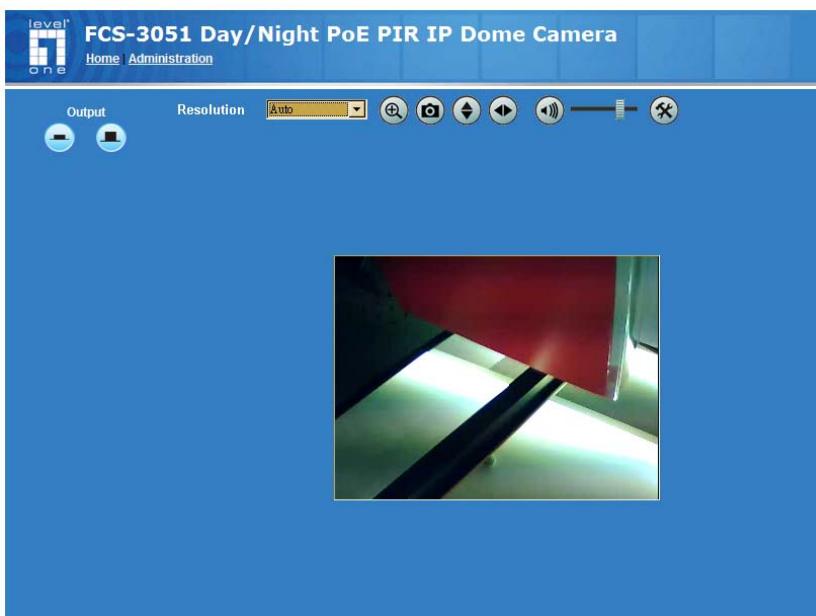


**Figure 15: ActiveX OCX Prompt**

- 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 will be able to view the live video stream in its own window, as shown below.



**Figure 16: 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.

**Note:** The options can only be configured while using IE browser. Other browsers can just view the video rather than configuration.

### General Options

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



**Resolution.** Use this drop-down list to select the desired video size.



**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.



**Snapshot.** Click this button to take a single JPEG "snapshot" image of the current video.



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



**Mirror.** Click this button 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.



**Setup.** Select the desired video format from the drop-down list.



**ON.** Click this button to set the output I/O port to ON mode.



**OFF.** Click this button to set the output I/O port to OFF mode.

## Chapter 4

# Advanced Viewing Setup

*This Chapter provides information about the optional settings and features for viewing video via the FCS-3031/3051. This Chapter is for the Camera Administrator only.*

## Introduction

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

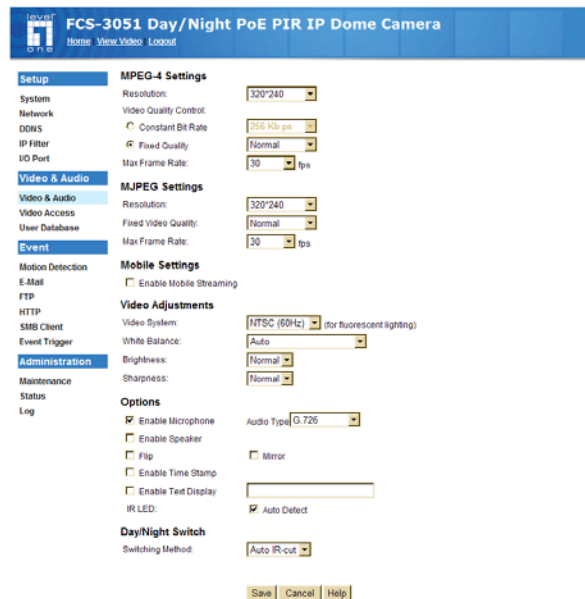
- Adjusting the video image
- Controlling user access to the live video stream
- Making video available from the Internet
- Using the *Motion Detection* feature

## Adjusting the Video Image

If necessary, the Administrator can adjust the Video image.

### To Adjust the Video Image:

1. Connect to the Web-based interface of the FCS-3031/3051. (See *Chapter 5 - Web-based Management* for details.)
2. Select *Administration*, then *Video & Audio*. You will see a screen like the example below.



**Figure 17: Video & Audio Screen**

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

<b>MPEG-4 Settings</b>	
<b>Resolution</b>	Select the desired video resolution format. The default resolution is set to 320*240.
<b>Video Quality Control</b>	<ul style="list-style-type: none"> <li>• Constant Bit Rate: Select the desired bit rate. The default is set to 256 Kbps.</li> <li>• Fixed Quality: Select the desired option. The default fix quality is set to Normal.</li> </ul>
<b>Max. Frame Rate</b>	<p>Select the desired Maximum bandwidth for the video stream. Note that you can specify EITHER the Bandwidth OR the Frame Rate, not both. If the Bandwidth is defined, the frame rate will be adjusted as necessary to achieve the specified frame rate.</p> <p>The default value for bandwidth is <b>30</b>.</p>

<b>MJPEG Settings</b>	
<b>Resolution</b>	Select the desired video resolution format. The default resolution is set to 320*240.
<b>Fixed Video Quality</b>	Select the desired fix quality. The default fix quality is set to Normal.
<b>Max. Frame Rate</b>	<p>Select the desired Maximum bandwidth for the video stream. Note that you can specify EITHER the Bandwidth OR the Frame Rate, not both. If the Bandwidth is defined, the frame rate will be adjusted as necessary to achieve the specified frame rate.</p> <p>The default value for bandwidth is <b>30</b>.</p>

<b>Mobil Settings</b>	
<b>Enable Mobil Streaming</b>	Enable streaming video for the mobile device by checking this checkbox.
<b>Resolution</b>	The default resolution is set to 160x120.
<b>Video Quality Control</b>	<ul style="list-style-type: none"> <li>• Constant Bit Rate: Select the desired fix bit rate.</li> <li>• Fixed Quality: Select the desired option. The default fix quality is set to Normal.</li> </ul>
<b>Max. Frame Rate</b>	Select the desired Maximum bandwidth for the video stream.
<b>Access Code</b>	Enter the 8-digit code (0~9) for accessing the live video from camera through cell phone connection.

<b>Video Adjustment</b>	
<b>Power Line Frequency</b>	Select the power line frequency (50Hz or 60Hz) used in your region, to improve the picture quality under florescent lighting.
<b>White Balance</b>	Select the desired option to match the current environment and lighting.
<b>Brightness</b>	If necessary, you can adjust the brightness 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 brightness.
<b>Sharpness</b>	Select the desired option for the sharpness. You can select a Sharpness value between -3 and 3.

<b>Options</b>	
<b>Microphone</b>	Enable audio by checking this checkbox. Using Audio will increase the bandwidth requirements slightly.
<b>Audio Type</b>	Select the desired audio type.
<b>Speaker</b>	Enable speaker sound by checking this checkbox.
<b>Flip</b>	This setting will have the image swapped top-to-bottom.
<b>Mirror</b>	This setting will have the image swapped left-to-right.
<b>Time Stamp</b>	If enabled, the current time will be displayed on the Video image.
<b>Text Display</b>	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.
<b>IR LEDs (FCS-3051 Only)</b>	If the checkbox is enabled, the white light LEDs will be turned on when the lux is below 0.5 and Trigger Event option in the event trigger screen is enabled.



## Viewing the live Video on your cell phone

The live streaming of the FCS-3031/3051 can even be viewed from a compatible cell phone, so you can keep an eye on things almost everywhere you go. It's just as easy as following the required steps.

### To Adjust the Mobile Settings

1. Connect to the Web-based interface of the FCS-3031/3051. (See *Chapter 5 - Web-based Management* for details.)
2. Select *Administration*, then *Video & Audio*. You will see a screen like the example below.

**Mobile Settings**

Enable Mobile Streaming

Resolution: **160\*120**

Video Quality Control:

Constant Bit Rate 32 Kb ps

Fixed Quality Normal

Max Frame Rate: 15 fps

Access Code:

**Figure 18: Mobile Settings**

3. Check the checkbox of **Enable Mobile Streaming** and configure the related settings in the Mobile Settings section, as explained below. Save your changes.

Mobil Settings	
<b>Enable Mobil Streaming</b>	Enable streaming video for the mobile device by checking this checkbox.
<b>Resolution</b>	The default resolution is set to 160x120.
<b>Video Quality Control</b>	<ul style="list-style-type: none"> <li>• Constant Bit Rate: Select the desired fix bit rate.</li> <li>• Fixed Quality: Select the desired option. The default fix quality is set to Normal.</li> </ul>
<b>Max. Frame Rate</b>	Select the desired Maximum bandwidth for the video stream.
<b>Access Code</b>	Enter the code for accessing the live video from camera through cell phone connection.

### Connecting Cell Phone to the FCS-3031/3051

A number of different mobile handsets are compatible with the FCS-3031/3051. Follow the suggested steps (steps may differ according to the mobile phone you use).

Before connecting to the cell phone, please make sure the following:

- Mobile phone should be supported by 3GPP protocol.
- Camera Web management - RTSP port number in the Network screen needs to be entered. Default is 554.

- Access code: 8 digits (0~9)

**Steps :**

1. Start IE
2. Select *Add Bookmark*
3. Click *Edit*
4. Enter desired value for *Subject* or leave it blank
5. Enter the camera's IP address into the Address box.  
**RTSP://Internet\_Address/Access\_code**
6. Click *Play*

## Controlling User Access to the Video Stream

By default, anyone can connect to the FCS-3031/3051 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 FCS-3031/3051. (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.



**Figure 19: 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 FCS-3031/3051 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 FCS-3031/3051. The Router/Gateway uses the *Port Number* to determine which incoming connections are intended for the cameras.

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 FCS-3031/3051. If necessary, check the user manual for your Router/Gateway for further details.

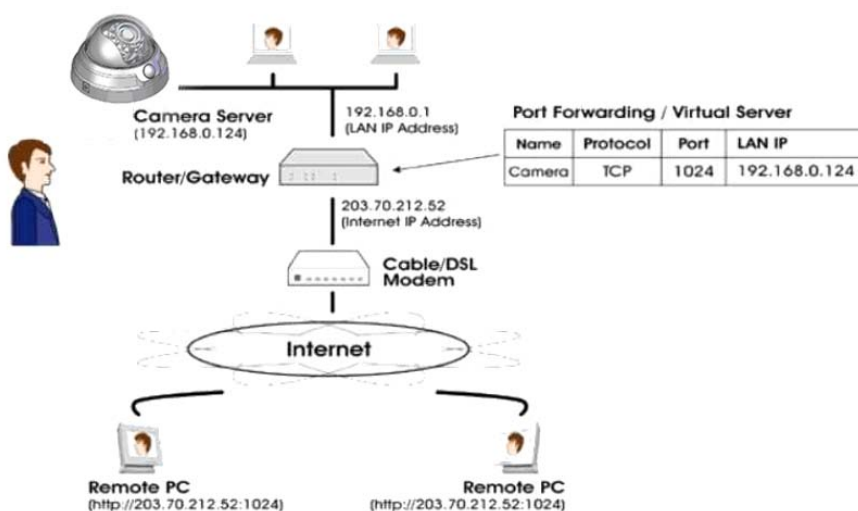


Figure 20: Connecting via the Internet



Note!

The "Port" for the *Port Forwarding / Virtual Server* entry above is the "Secondary Port" number specified on the *Network* screen of the FCS-3031/3051.

## Network Camera Setup

The 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 FCS-3031/3051.

### HTTP Port Configuration

Normally, HTTP (Web) connections use port 80. Since the FCS-3031/3051 uses HTTP, but port 80 is likely to be used by a Web Server, you can use a different port for the FCS-3031/3051. 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 camera's *Network* screen, as shown below.

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

**Figure 21: Network Screen**

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



**Note!**

**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 FCS-3031/3051.
3. Both Router and Camera should use the same port number for DDNS service.

The screenshot shows the DDNS configuration interface for the FCS-3031 Day/Night PoE PIR IP Dome Camera. The interface includes a navigation menu on the left with categories like Setup, System, Network, DDNS, IP Filter, I/O Port, Video & Audio, Event, and Administration. The main content area is titled 'FCS-3031 Day/Night PoE PIR IP Dome Camera' and features a 'Setup' section with a checkbox for 'Enable DDNS'. Below this are fields for 'Service Provider' (set to DynDNS.org), 'Domain (Host) Name', 'Account/E-Mail', and 'Password/Key'. There is also a 'Check WAN IP Address' section with a dropdown set to 'Every 24 Hrs' and a 'Starting at' field set to 12:00. At the bottom are 'Save', 'Cancel', and 'Help' buttons.

**Figure 22: DDNS Screen**

4. Operation is then automatic:
  - The FCS-3031/3051 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.  
Example: <http://normanyu123456789.dyndns.org:6016>  
normanyu123456789.dyndns.org is domain host name. 6016 is the port number.

## 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 FCS-3031/3051 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 FCS-3031/3051 is 1024.

## Motion Detection Alerts

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

The FCS-3031/3051 will compare consecutive frames to detect changes caused by the movement of large objects.

But the motion detector can also be triggered by:

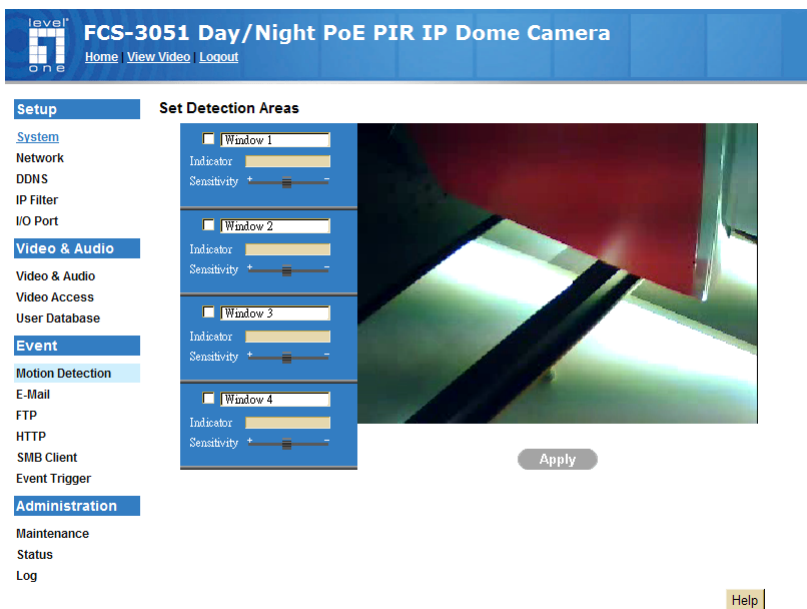
- Sudden changes in the level of available light
- Movement of the camera itself.

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.

**Note:** The Motion Detection settings can only be configured while using IE browser.

### To Use Motion Detection Alerts

Using the Web-based interface on the FCS-3031/3051, select the *Motion Detection* screen, then configure this screen as described below.



**Figure 23: Motion Detection**

1. Enable the *Motion Detection* feature.
2. 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 in *Event Trigger* screen.
4. Save your changes.
5. Select the *E-Mail* 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

# Web-based Management

*This Chapter provides Setup details of the FCS-3031/3051's Web-based Interface. This Chapter is for the Camera Administrator only.*

## Introduction

The FCS-3031/3051 can be configured using your Web Browser. The FCS-3031/3051 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 Network Camera

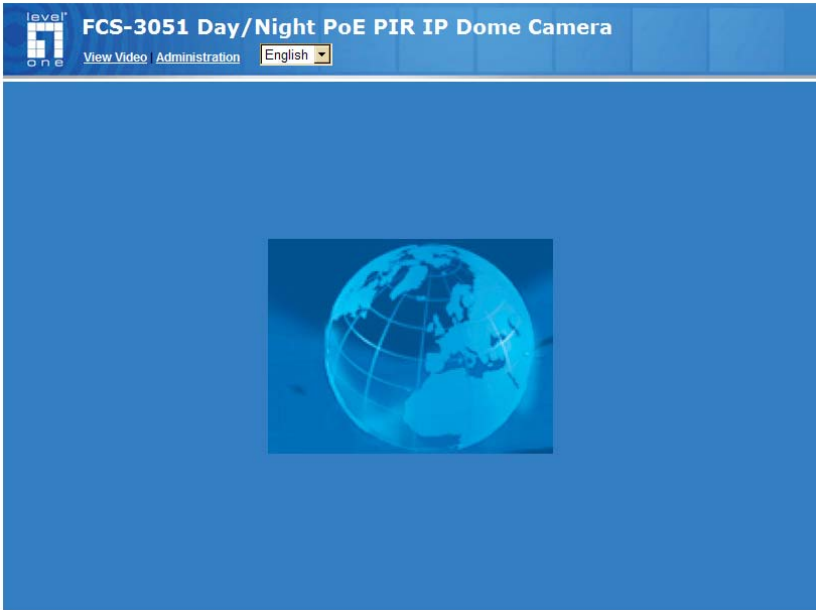
- If using only your Web Browser, use the following procedure to establish a connection from your PC to the FCS-3031/3051:
- Once connected, you can add the FCS-3031/3051 to your Browser's *Favorites* or *Bookmarks*.

## Connecting using your Web Browser

1. Use the *Camera Wizard* to get the IP address of the FCS-3031/3051.
2. Start your WEB browser.
3. In the *Address* box, enter "HTTP://" and the IP Address of the FCS-3031/3051.
4. You will then be prompted for a username and password.
  - If using the default values, enter **administrator** for the name, and leave the password blank.
  - 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 24: 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.
- **English** - Available languages for the user interface. Default is English.

## Administration Menu

Clicking on *Administration* on the menu provides access to all the settings for the FCS-3031/3051.

The *Administration* menu contains the following options:

### Setup

- System
- Network
- DDNS
- IP Filter
- I/O Port

### Video Stream

- Video & Audio
- Video Access
- User Database

### Event

- Motion Detection
- E-Mail
- FTP
- HTTP
- SMB Client
- Event Trigger

### 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.

The screenshot shows the 'System Settings' page for an 'FCS-3051 Day/Night PoE PIR IP Dome Camera'. The left sidebar contains a navigation menu with the following items: Setup (highlighted), System, Network, DDNS, IP Filter, I/O Port, Video & Audio (highlighted), Video & Audio, Video Access, User Database, Event (highlighted), Motion Detection, E-Mail, FTP, HTTP, SMB Client, Event Trigger, Administration (highlighted), Maintenance, Status, and Log. The main content area is divided into sections: 'System Settings' with fields for Device ID (DDC9E5E4A), Camera Name (FCS3051), and Description (Network Camera); 'Date & Time' with Date Format (MM/DD/YYYY), Current Date & Time (03/05/2010 15:22:13), Time Zone ((GMT+08:00) Taipei), and an 'Adjust for daylight saving' checkbox; 'Network Time Protocol' with 'Enable' checked and NTP Server Address (clock.via.net); and 'Options' with 'LED Operation' checked. At the bottom are 'Save', 'Cancel', and 'Help' buttons.

Figure 25: System Screen

## Data - System Screen

System Settings	
<b>Device ID</b>	This displays the ID for the Network Camera.
<b>Camera Name</b>	Enter the desired name for the Network Camera.
<b>Description</b>	This field is used for entering a description, such as the location of the Network Camera.
Date & Time	
<b>Date Format</b>	<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"> <li>• YYYY-MM-DD = Year-Month-Day, e.g. 2006-01-31</li> <li>• MM/DD/YYYY = Month/Day/Year, e.g. 01/31/2006</li> <li>• DD/MM/YYYY = Day/Month/Year, e.g. 31/01/2006</li> </ul>
<b>Current Date &amp; Time</b>	<p>This displays the current date and time on the camera.</p> <p>If it's not correct, click the <b>Change</b> 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"> <li>• Set the camera's date and time to match your PC.</li> <li>• Enter the correct date and time.</li> </ul>

<b>Time Zone</b>	<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 <b>Adjust for daylight saving</b> checkbox.</p> <p><b>You must UNCHECK this checkbox when Daylight Saving finishes.</b></p>
<b>Network Time Protocol</b>	<p>Enable or disable the Time Server feature as required.</p> <p>If Enabled, the FCS-3031/3051 will contact a Network Time Server at regular intervals and update its internal timer.</p>
<b>NTP Server Address</b>	<p>Enter the address for the desired NTP server.</p>
<b>Update</b>	<p>The Schedule determines how often the Network Camera contacts the NTP Server.</p> <p>Select the desired options.</p>
<b>LED Operation</b>	<p>Enable this if you want to use this function.</p>

# Network Screen

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

The screenshot shows the 'Network' configuration page for an FCS-3051 camera. The left sidebar contains menu items: Setup, System, Network, DDNS, IP Filter, I/O Port, Video & Audio, Event, Administration, Maintenance Status, and Log. The main content area is divided into sections: Internet Connection Type (set to DHCP), DNS Server Address (automatic), Secondary Port (HTTP and HTTPS), RTP/RTSP settings (RTSP Port: 554, RTP Data Port: 5000, Max RTP Data Packet: 1400), Multicast RTP/RTSP settings (Multicast disabled, Video Address: 224.2.0.1, Video Port: 2240, Audio Address: 224.2.0.1, Audio Port: 2242, Time to Live: 16), UPnP settings (Discovery enabled, Traversal disabled), and QoS settings (QoS Mode disabled, DSCP: 32). At the bottom are 'Save', 'Cancel', and 'Help' buttons.

Figure 26: Network Screen

## Data - Network Screen

Network	
<p><b>Internet Connection Type</b></p>	<p>There are 3 connection types:</p> <ul style="list-style-type: none"> <li> <b>Obtain Address Automatically (DHCP):</b> If selected, the FCS-3031/3051 will obtain its IP address and related information from a DHCP Server. Only select this option if your LAN has a DHCP Server.         </li> <li> <b>Static IP Address:</b> If selected, you must assign the following data to the FCS-3031/3051.           <ul style="list-style-type: none"> <li> <b>IP Address</b> - Enter an unused IP address from the address range used on your LAN.             </li> <li> <b>Subnet Mask</b> - Use the same value as PCs on your LAN.             </li> <li> <b>Default Gateway</b> - Use the same value as PCs on your LAN.             </li> </ul> </li> <li> <b>PPPoE (PPP over Ethernet):</b> This is the most common login method, widely used with DSL modems. Normally, your ISP will have provided some software to connect and login. This software is no longer required, and should not be used.           <ul style="list-style-type: none"> <li> <b>Username</b> - The user name (or account name) provided by your ISP.             </li> <li> <b>Password</b> - Enter the password for the login name above.             </li> </ul> </li> </ul>

<b>Obtain DNS server address automatically</b>	If selected, the FCS-3031/3051 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> .
<b>Use the following DNS server address</b>	<b>Primary DNS server</b> - Use the same value as PCs on your LAN. Normally, your ISP will provide this address. <b>Secondary DNS server</b> - This is optional. If entered, this DNS will be used if the Primary DNS does not respond.
<b>Secondary Port</b>	This sets the port number for HTTP (Web) connections to the Camera, whether for administration or viewing video.  The secondary port can be used for DDNS, other service and when more than 2 cameras are in use.  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.  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:  <code>http://192.168.1.100:1024</code>
<b>RTP/RTSP</b>	The <b>RTSP</b> (Real Time Streaming Protocol), a standard for connected client(s) to control streaming data (MPEG-4) over the World Wide Web. Enter the RTSP Port number (between 1024 and 65535) in the field provided. The default RTSP Port is 554.  The <b>RTP</b> (Real Time Transport Protocol), an Internet protocol for transmitting real-time data such as audio and video.  <b>Max RTP Data Packet</b> field will let users limit the size of the file. Enter the desired value between 400 and 1400.  Note: RTSP and RTP settings are for Mobil phone only.
<b>Multicast RTP/RTSP</b>	
<b>Enable Multicast</b>	Enable the feature as required.
<b>Video Address</b>	Enter the address of video.
<b>Video Port</b>	Enter the desired value (between 1024 to 65534) in the field provided. The number you entered must be even values.
<b>Audio Address</b>	Enter the address of the audio.
<b>Audio Port</b>	Enter the desired value (between 1024 to 65534) in the field provided. The number you entered must be even values.
<b>Time to Live</b>	Enter the desired length of time, if the packets fail to be delivered to their destination within. The Time to Live you entered must be in-between 1 to 255.
<b>UPnP</b>	
<b>Enable Discovery</b>	If enabled, the FCS-3031/3051 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.



<b>Enable Traversal</b>	If enabled, HTTP, RTP and RTSP ports can be opened to establish and maintain TCP/IP network connections with the camera that traverses routers using network address translation (NAT).
<b>QoS</b>	
<b>Enable QoS Mode</b>	If enabled, the throughput level (for Video and Audio) is guaranteed through QoS (Quality of Service).
<b>DSCP</b>	Enter the desired value of Differentiated Services Code Point (DSCP). The value must be between 0 and 63.

## 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 FCS-3031/3051 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 Network Camera checks if the Internet IP address has changed.)

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

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

Figure 27: DDNS Screen

### Data - DDNS Screen

DDNS	
<b>Enable DDNS</b>	Enable or disable the DDNS function, as required. Only enable this feature if you have registered for the DDNS Service with a DDNS Server provider.
<b>Service Provider</b>	Choose a service provider from the list.
<b>Web Site Button</b>	Click this button to open a new window and connect to the Web site for the selected DDNS service provider.

<b>Domain (Host) Name</b>	Enter the Domain Name (Host Name) allocated to you by the DDNS Server provider.
<b>Account/E-Mail</b>	Enter the login name for the DDNS account.
<b>Password/Key</b>	Enter the password for the DDNS account.
<b>Check WAN IP Address</b>	<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>

# IP Filter

The IP Filter feature allows administrator to control FCS-3031/3051 access by filtering IP addresses. This screen is displayed when the *IP Filter* menu option is clicked.

The screenshot shows the IP Filter configuration interface. At the top, there is a header for 'level FCS-3051 Day/Night PoE PIR IP Dome Camera' with links for 'Home', 'View Video', and 'Logout'. A left-hand navigation menu includes categories like 'Setup', 'Network', 'Video & Audio', 'Event', and 'Administration', with 'IP Filter' currently selected. The main configuration area features a dropdown menu for 'IP Filter' set to 'Disable'. Below this are ten rows, each labeled 'IP Address' followed by a number from 1 to 10. Each row contains a 'Single' dropdown menu and an empty text input field. At the bottom of the screen, there are three buttons: 'Save', 'Cancel', and 'Help'.

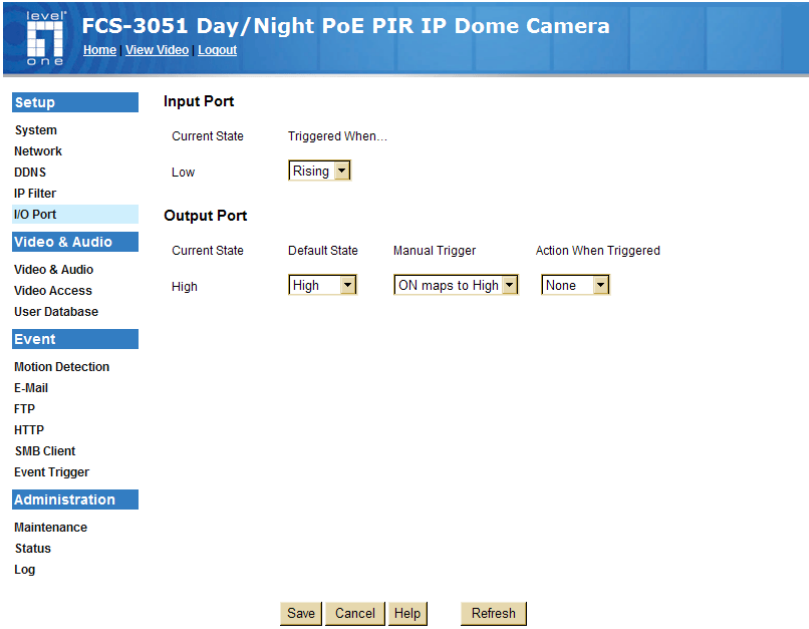
**Figure 28: IP Filter Screen**

## Data - IP Filter Screen

IP Filter	
<b>IP Filter</b>	Select the desired method to perform the IP address (or addresses) filtering function.
<b>Single/Range</b>	Select to perform either single IP address or a range of IP addresses that you desired.
<b>IP Address</b>	Enter an IP address or a range of IP addresses you would like to allow or deny.

# I/O Port

The FCS-3031/3051 supports 1 input port and 1 output port. This screen is displayed when the *I/O Port* menu option is clicked.



**Figure 29: I/O Port Screen**

## Data - I/O Port Screen

Input Ports	
<b>Current State</b>	It indicates the current state of the input port. Once the configured state is happened, it will trigger the event actions.
<b>Triggered When...</b>	Select the desired State: <ul style="list-style-type: none"> <li>• High</li> <li>• Low</li> <li>• Rising</li> <li>• Falling</li> </ul>
Output Ports	
<b>Current State</b>	It indicates the current state of the output port.
<b>Default State</b>	Select the desired option from the drop-down list.
<b>Manual Trigger</b>	Select the option to control the output state.
<b>Action When Triggered</b>	If an event is happened, it will trigger the event alerting.

## Video & Audio Screen

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

The screenshot shows the configuration interface for the FCS-3051 Day/Night PoE PIR IP Dome Camera. The left sidebar contains a menu with options: Setup, System, Network, DDNS, IP Filter, I/O Port, Video & Audio (selected), Video Access, User Database, Event, Motion Detection, E-Mail, FTP, HTTP, SMB Client, Event Trigger, Administration, Maintenance, Status, and Log. The main content area is divided into several sections:

- MPEG-4 Settings:** Resolution (320\*240), Video Quality Control (Constant Bit Rate at 256 Kb ps, Fixed Quality at Normal), Max Frame Rate (30 fps).
- MJPEG Settings:** Resolution (320\*240), Fixed Video Quality (Normal), Max Frame Rate (30 fps).
- Mobile Settings:**  Enable Mobile Streaming.
- Video Adjustments:** Video System (NTSC (60Hz) for fluorescent lighting), White Balance (Auto), Brightness (Normal), Sharpness (Normal).
- Options:**  Enable Microphone (Audio Type: G.726),  Enable Speaker,  Flip,  Mirror,  Enable Time Stamp,  Enable Text Display, IR LED:  Auto Detect.
- Day/Night Switch:** Switching Method (Auto IR-cut).

At the bottom, there are buttons for Save, Cancel, and Help.

Figure 30: Video & Audio Screen

### Data - Video & Audio Screen

MPEG-4 Settings	
<b>Resolution</b>	Select the desired video resolution format. The default resolution is set to 320*240.
<b>Video Quality Control</b>	<ul style="list-style-type: none"> <li>Constant Bit Rate: Select the desired bit rate. The default is set to 256 Kbps.</li> <li>Fixed Quality: Select the desired option. The default fix quality is set to Normal.</li> </ul>
<b>Max. Frame Rate</b>	<p>Select the desired Maximum bandwidth for the video stream. Note that you can specify EITHER the Bandwidth OR the Frame Rate, not both. If the Bandwidth is defined, the frame rate will be adjusted as necessary to achieve the specified frame rate.</p> <p>The default value for bandwidth is <b>30</b>.</p>
MJPEG Settings	
<b>Resolution</b>	Select the desired video resolution format. The default resolution is set to 320*240.

<b>Fixed Video Quality</b>	Select the desired fix quality. The default fix quality is set to Normal.
<b>Max. Frame Rate</b>	Select the desired Maximum bandwidth for the video stream. Note that you can specify EITHER the Bandwidth OR the Frame Rate, not both. If the Bandwidth is defined, the frame rate will be adjusted as necessary to achieve the specified frame rate.  The default value for bandwidth is <b>30</b> .
<b>Mobil Settings</b>	
<b>Enable Mobil Streaming</b>	Enable streaming video for the mobile device by checking this checkbox.
<b>Resolution</b>	The default resolution is set to 160x120.
<b>Video Quality Control</b>	<ul style="list-style-type: none"> <li>• Constant Bit Rate: Select the desired fix bit rate.</li> <li>• Fixed Quality: Select the desired option. The default fix quality is set to Normal.</li> </ul>
<b>Max. Frame Rate</b>	Select the desired Maximum bandwidth for the video stream.
<b>Access Code</b>	Enter the 8-digit code (0~9) for accessing the live video from camera through cell phone connection.
<b>Video Adjustment</b>	
<b>Power Line Frequency</b>	Select the power line frequency (50Hz or 60Hz) used in your region, to improve the picture quality under florescent lighting.
<b>White Balance</b>	Select the desired option to match the current environment and lighting.
<b>Brightness</b>	If necessary, you can adjust the brightness 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 brightness.
<b>Sharpness</b>	Select the desired option for the sharpness. You can select a Sharpness value between -3 and 3.
<b>Options</b>	
<b>Microphone</b>	Enable audio by checking this checkbox. Using Audio will increase the bandwidth requirements slightly.
<b>Audio Type</b>	Select the desired audio type.
<b>Speaker</b>	Enable speaker sound by checking this checkbox.
<b>Flip</b>	This setting will have the image swapped top-to-bottom.
<b>Mirror</b>	This setting will have the image swapped left-to-right.
<b>Time Stamp</b>	If enabled, the current time will be displayed on the Video image.
<b>Text Display</b>	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.
<b>IR LEDs (FCS-3051 Only)</b>	If the checkbox is enabled, the IR LEDs will be turned on when the lux is below 0.5 and Trigger Event option in the event trigger screen is enabled.

<b>Day/Night Switch</b>	
<b>Switching Method</b>	Select the desired method from the list.



# Video Access Screen

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

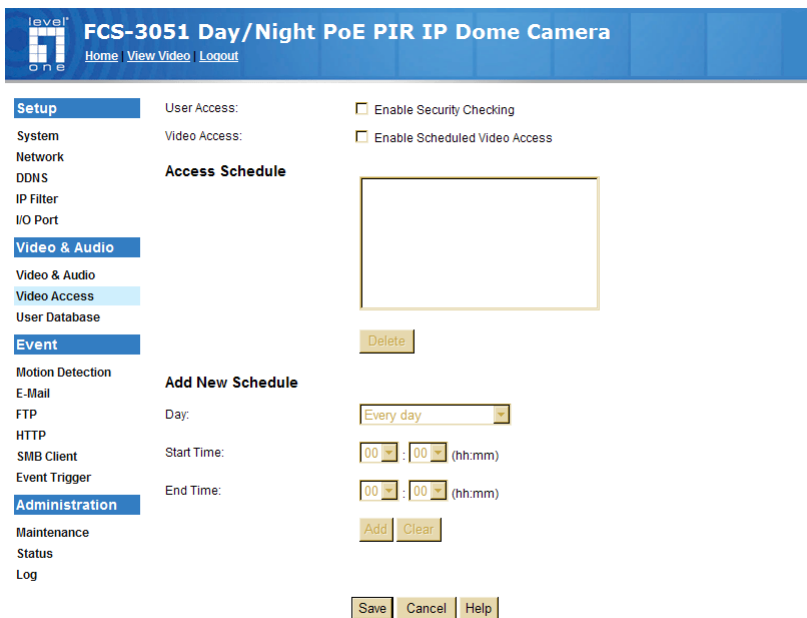


Figure 31: Video Access Screen

## Data - Video Access Screen

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

<b>Add New Schedule</b>	
<b>Day</b>	Choose the desired option for the period.
<b>Start Time</b>	Enter the start time using a 24 hr clock.
<b>End Time</b>	Enter the end time using a 24 hr clock.
<b>Add</b>	Click this button to add a new period.
<b>Clear</b>	Use this button to clear the input fields.

# User Database Screen

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

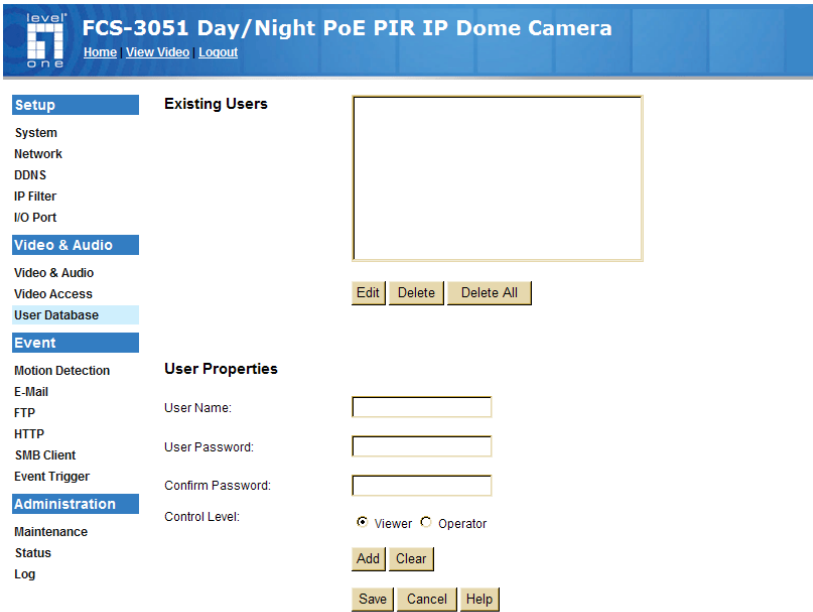


Figure 32: User Database Screen

## Data - User Database Screen

Existing Users	
<b>User List</b>	This displays all users you have entered into the User database. If you have not entered any users, this list will be empty. The maximum number of users is 20.
<b>Edit, Delete, Delete All</b>	Use these buttons to manage the user database.
User Properties	
<b>User Name</b>	Enter the name for the user here. <ul style="list-style-type: none"> <li>Spaces, punctuation, and special characters must NOT be used in the name.</li> <li>The name is case insensitive (case is ignored), so you can not have 2 names which differ only by case.</li> </ul>
<b>User Password</b>	The password for this user.
<b>Confirm Password</b>	Re-enter the password for the user, to ensure it is correct.
<b>Control Level</b>	Select either <i>Viewer</i> or <i>Operator</i> for the user you plan to add.
<b>Add Button</b>	Click this button to add a new user, using the data shown on screen.
<b>Clear Button</b>	Use this button to clear the input fields, ready to add a new user.

# Motion Detection Screen

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

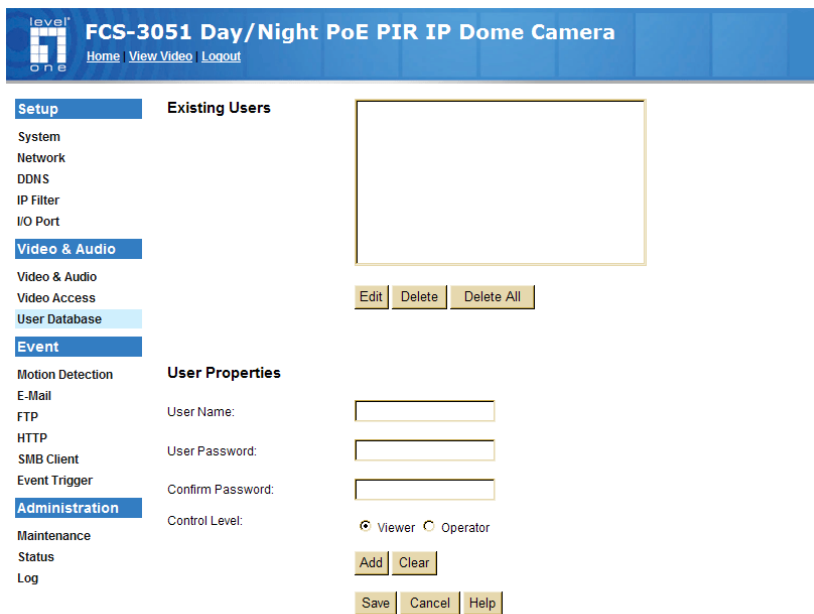


Figure 33: Motion Detection Screen

## Data - Motion Detection Screen

Motion Detection	
<b>Set Detection Areas</b>	<p>You can set the full screen or selected areas of the video image to be examined.</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>
<b>Indicator/Threshold</b>	<p>Administrator needs to adjust the relation between indicator and threshold for each area.</p>

# E-Mail Screen

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

**level** FCS-3051 Day/Night PoE PIR IP Dome Camera  
Home View Video Logout

**Setup**  
System  
Network  
DDNS  
IP Filter  
I/O Port

**Video & Audio**  
Video & Audio  
Video Access  
User Database

**Event**  
Motion Detection  
**E-Mail**  
FTP  
HTTP  
SMB Client  
Event Trigger

**Administration**  
Maintenance  
Status  
Log

**Primary SMTP Server**  
SMTP Server Address:  Port:   
Authentication:   
Show "From" as:  (E-Mail Address)

**Secondary SMTP Server**  
 Secondary SMTP (enable this if the camera can not connect to the primary SMTP)  
SMTP Server Address:  Port:   
Authentication:   
Show "From" as:  (E-Mail Address)

**E-Mail Setup**  
 E-Mail Address #1:   
 E-Mail Address #2:   
 E-Mail Address #3:   
Subject:

Figure 34: E-Mail Screen

## Data - E-Mail Screen

Primary/Secondary SMTP Server	
<b>SMTP Server Address</b>	Enter the address and port number of the SMTP (Simple Mail Transport Protocol) Server to be used to send E-Mail.
<b>Authentication</b>	Select the desired Authentication type for the SMTP Server.
<b>SMTP Login name</b>	Enter your login name for the SMTP Server.
<b>SMTP Password</b>	Enter your password for the SMTP Server.
<b>POP server name</b>	Enter the name for the POP Server.
<b>Show "From" as</b>	Enter the E-Mail address to be shown in the "From" field when the E-Mail is received.
<b>Secondary SMTP</b>	Check the box to upload to the Secondary SMTP if the camera cannot connect to the primary SMTP.

<b>E-Mail Setup</b>	
<b>E-mail Address</b>	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.
<b>Subject</b>	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.

# FTP Screen

This screen is displayed when the *FTP* option on the *Event* menu is clicked.

**level** FCS-3051 Day/Night PoE PIR IP Dome Camera  
[Home](#) [View Video](#) [Logout](#)

**Setup**  
 System  
 Network  
 DDNS  
 IP Filter  
 IO Port

**Video & Audio**  
 Video & Audio  
 Video Access  
 User Database

**Event**  
 Motion Detection  
 E-Mail  
**FTP**  
 HTTP  
 SMB Client  
 Event Trigger

**Administration**  
 Maintenance  
 Status  
 Log

**Primary FTP**  
 FTP Server:  Port:   
 Login Name:   
 Password:   
 Enable Passive Mode  
 File Path Name:

**Secondary FTP**  
 Secondary FTP (enable this if the camera can not connect to the primary FTP)  
 FTP Server:  Port:   
 Login Name:   
 Password:   
 Enable Passive Mode  
 File Path Name:

Figure 35: FTP Screen

## Data - FTP Screen

Primary/Secondary FTP	
<b>FTP Server</b>	Enter the address of the FTP Server.
<b>Port</b>	Enter the Port of the FTP Server to be connected.
<b>Login name</b>	Enter your login name for the FTP Server.
<b>Password</b>	Enter your password for the FTP Server.
<b>Enable Passive Mode</b>	Check the box to enable the Passive mode feature of the FTP.
<b>File Path Name</b>	Enter the file path/name of the FTP.
<b>Secondary FTP</b>	Check the box to upload to the Secondary FTP if the camera cannot connect to the primary FTP.

# HTTP Screen

This screen is displayed when the *HTTP* option on the *Event* menu is clicked.

The screenshot shows the 'HTTP Notification' configuration page. The left sidebar has a menu with the following items: Setup (selected), Network, DDNS, IP Filter, I/O Port, Video & Audio, Video & Audio, Video Access, User Database, Event (selected), Motion Detection, E-Mail, FTP, HTTP (highlighted), SMB Client, Event Trigger, Administration, Maintenance, Status, and Log. The main content area is titled 'HTTP Notification' and contains the following fields: URL (text input), User Name (text input), Password (text input), Proxy Server Name (text input with '(optional)' label), Proxy User Name (text input with '(optional)' label), Proxy Password (text input with '(optional)' label), Proxy Port Number (text input with '80' entered), and Method (dropdown menu with 'GET' selected). At the bottom, there are three buttons: Save, Cancel, and Help.

**Figure 36: HTTP Screen**

## Data - HTTP Screen

HTTP Notification	
<b>URL</b>	Enter the URL of your HTTP notification server.
<b>User Name</b>	Enter the user name of the HTTP server.
<b>Password</b>	Enter the password of the HTTP server.
<b>Proxy Server Name</b>	Specify the proxy server name in the provided field if the camera needs to pass through a Proxy Server to do the HTTP notification.
<b>Proxy User Name</b>	Enter the user name for the proxy server.
<b>Proxy Password</b>	Enter the password for the proxy server.
<b>Port Number</b>	Enter the port number for the proxy server.
<b>Method</b>	<p>Select the desired method of form data encoding.</p> <ul style="list-style-type: none"> <li>Get - It should be used if and only if the form processing is independent, which typically means a pure query form. Generally it is advisable to do so.</li> <li>Post - If there are problems related to long URLs and non-ASCII character repertoires, which can make it necessary to use "POST" even for independent processing.</li> </ul>



# SMB Client Screen

This screen is displayed when the *SMB Client* option on the *Event* menu is clicked.

levelOne FCS-3051 Day/Night PoE PIR IP Dome Camera  
Home View Video Logout

**Setup** **SMB Client**

System Server Name:

Network File Path:

DDNS User Name:

IP Filter Password:

I/O Port

**Video & Audio**

Video & Audio

Video Access

User Database

**Event**

Motion Detection

E-Mail

FTP

HTTP

**SMB Client**

Event Trigger

**Administration**

Maintenance

Status

Log

Save Cancel Help

Figure 37: SMB Client Screen

## Data - SMB Client Screen

SMB Client	
<b>SMB Client</b>	Enable this checkbox to use the SMB Protocol, which is a client server, request-response protocol used for read, create, and update files on the remote server.
<b>File Path</b>	Enter the file path of your SMB server.
<b>User Name</b>	Enter the user name for the SMB client account.
<b>Password</b>	Enter the password for the SMB client account.

# Event Trigger Screen

This screen is displayed when the *Event Trigger* option on the *Event* menu is clicked.

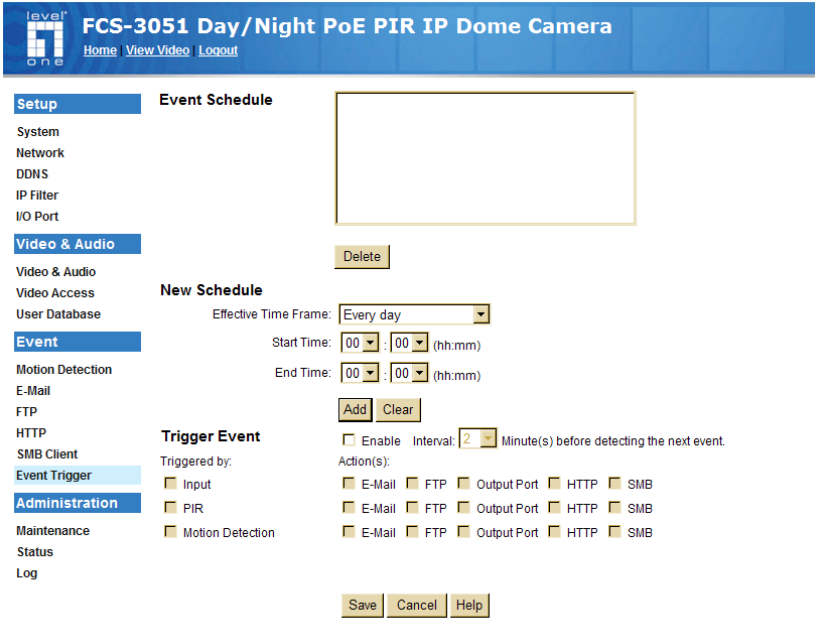


Figure 38: Event Trigger Screen

## Data - Event Trigger Screen

Event Schedule	
<b>Schedule List</b>	The Event Schedule shows all of the event types currently configured in the FCS-3031/3051.
<b>Delete Button</b>	Click this button to delete the selected schedule in the list above.
New Schedule	
<b>Effective Time Frame</b>	Choose the desired option for the period.
<b>Start Time</b>	Choose the desired start time using a 24 hr clock.
<b>End Time</b>	Choose the desired end time using a 24 hr clock.
Trigger Event	
<b>Trigger Event</b>	Check to perform all of the event(s) that were configured and scheduled.
<b>Interval</b>	Select the desired option for the events interval. (* "0" = No Delay)

<b>Trigger by</b>	<ul style="list-style-type: none"> <li>• Input - This describes the states that the input must be in for an event to be triggered. Only one input can be used, also note that the states for the input used must first be reached before the event will be triggered.</li> <li>• PIR - If the PIR sensor detects a human body, it will be used to trigger events.</li> <li>• Motion Detection - Movement in a motion detection window can be used to trigger events.</li> </ul>
<b>Actions</b>	<ul style="list-style-type: none"> <li>• E-Mail - If checked, an E-Mail (with "Attachment") will be delivered to the SMTP server. (SMTP Server must be configured on the E-Mail page.)</li> <li>• FTP - If checked, an FTP upload will be activated to the FTP server. (FTP servers must be configured on the FTP page.)</li> <li>• Output Port - If checked, the output port state will be activated as configured. (Output port must first be configured on the I/O Port page.)</li> <li>• HTTP - If checked, an Instant Messaging (IM) will be delivered to the Jabber server. (Jabber server must be configured on the Instant Messaging page.)</li> <li>• SMB - If checked, JPEG image(s) or video files will be uploaded to the SMB server. (SMB must first be enabled and configured on the SMB Client page.)</li> </ul>
<b>Attachment Type</b>	<ul style="list-style-type: none"> <li>• <b>JPEG Image:</b>  Frame Rate - Select the desired capture rate (1~5) for the JPEG image(s) here.  Pre/Post Capture - Select the desired length. The snapshot(s) of the JPEG image depends on this setting, and also the file size and degree of compression.</li> <li>• <b>Video:</b>  Video Format - Select the desired type for the video file.  Pre/Post Capture - Select the desired length. The size of the file depends on this setting, and also the Video size and degree of compression.</li> </ul> <p>Note: The total length of Pre/Post Capture is 5 seconds that is limited by the flash size.</p>

# Maintenance Screen

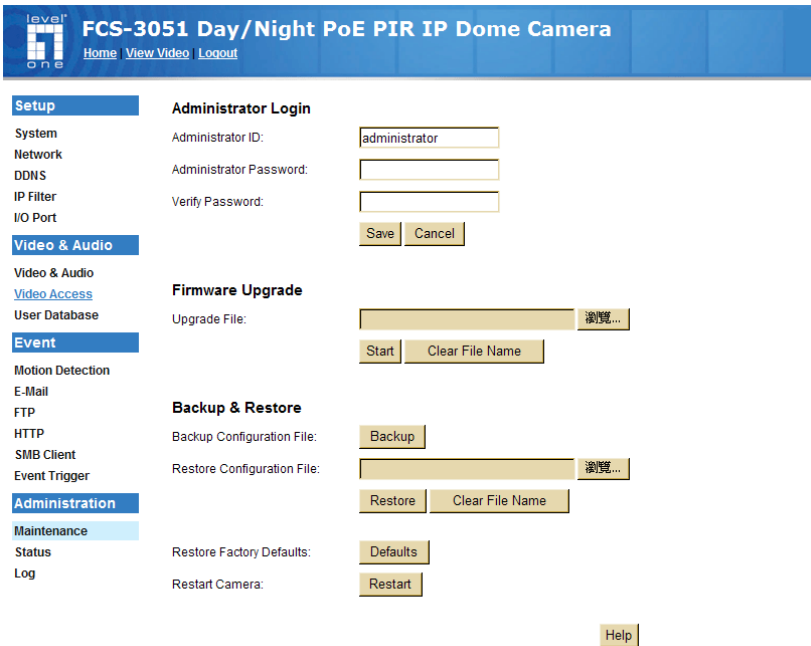


Figure 39: Maintenance Screen

## Data - Maintenance Screen

Administrator Login	
<b>Administrator ID</b>	Enter the name for the Administrator here. Spaces, punctuation, and special characters must NOT be used in the name.
<b>Administrator Password</b>	The password for the Administrator.
<b>Verify Password</b>	Re-enter the password for the Administrator, to ensure it is correct.
Firmware Upgrade	
<b>Upgrade File</b>	Click the "Browse" button and browse to the location on your PC where you stored the Firmware file. Select this file.
<b>Start</b>	Click this button to start the Firmware. When the upgrade is finished, the FCS-3031/3051 will restart, and this management connection will be unavailable during the restart.
<b>Clear File Name</b>	This does NOT stop the Upgrade process if it has started. It only clears the input for the "Upgrade File" field.

<b>Backup &amp; Restore</b>	
<b>Backup Configuration File</b>	Click <i>Backup</i> button to save the current configuration information to a text file. It is suggested to backup the configuration file, in order to restore the camera easily.
<b>Restore Configuration File</b>	Click <i>Restore</i> button to reinitialize the camera to load the new updated software. Do this after loading the upgrade file.
<b>Clear File Name</b>	This does NOT stop the Restore process if it has started. It only clears the input for the "Restore Configuration File" field.
<b>Restore Factory Defaults</b>	Click <i>Defaults</i> button to reloads all default settings on the camera.
<b>Restart Camera</b>	Click <i>Restart</i> button to restarts the camera.

# Status Screen

**level** FCS-3051 Day/Night PoE PIR IP Dome Camera  
[Home](#) [View Video](#) [Logout](#)

**Setup**

**System**  
 Device Name: FCS3051  
 Description: Network Camera  
 F/W version: V1.0.03

**Network**  
 MAC Address: 00:c0:02:9e:5e:4a  
 Internet Connection Type: 192.168.50.123  
 Network Mask: 255.255.255.0  
 Gateway: 192.168.50.1

**MPEG-4**  
 Resolution: 320\*240  
 Video Quality: Normal  
 Frame Rate: 30

**MJPEG**  
 Resolution: 320\*240  
 Video Quality: Normal  
 Frame Rate: 30

**Administration**

Maintenance  
 Status  
 Log

[Help](#) [Refresh](#)

Figure 40: Status Screen

## Data - Status Screen

System	
<b>Device Name</b>	This shows the name of the Network Camera.
<b>Description</b>	This shows the description of the Network Camera, such as location.
<b>F/W version</b>	The version of the current firmware installed.
Network	
<b>MAC Address</b>	The current IP address of the Network Camera.
<b>IP Address</b>	The IP Address of the Network Camera.
<b>Network Mask</b>	The network mask associated with the IP address above.
<b>Gateway</b>	The IP Address of the remote Gateway associated with the IP Address above.
MPEG-4/MJPEG	
<b>Resolution</b>	The image size of the video stream.
<b>Video Quality</b>	This displays the image quality of the video stream.
<b>Frame Rate</b>	This displays the frame rate of the video stream.

**Buttons****Refresh**

Update the log and any other data on screen.

# Log Screen

This screen displays a log of system activity.

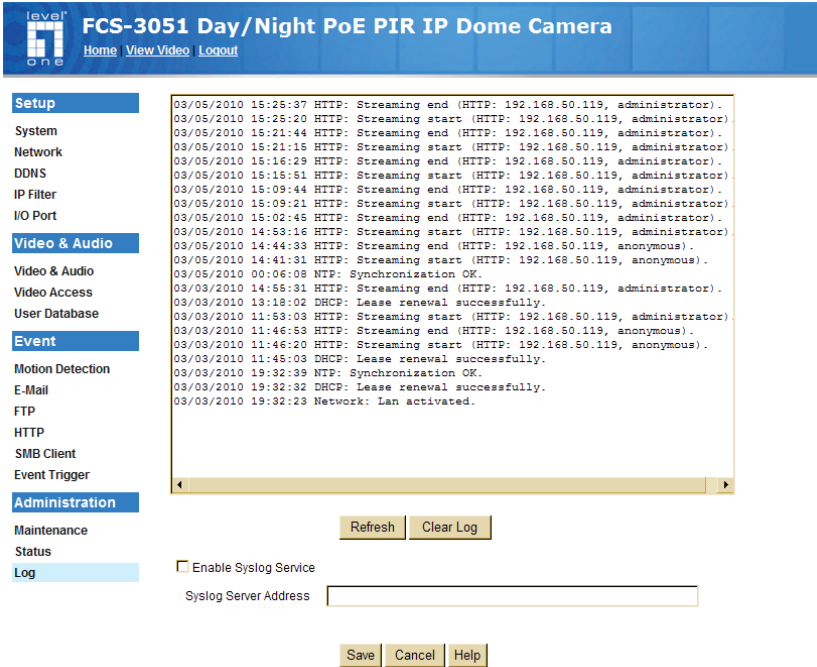


Figure 41: Log Screen

## Data - Log Screen

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



## Chapter 7

# 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 FCS-3031/3051 and some possible solutions to them. If you follow the suggested steps and the Network Camera still does not function properly, contact your dealer for further advice.

## Problems

**Problem 1:** I can't connect to the FCS-3031/3051 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 FCS-3031/3051.  
Use the Camera Wizard to configure the FCS-3031/3051 with a valid IP address.

**Problem 2:** The Camera Wizard doesn't list any Network Cameras.

**Solution 2:** Check the following:

- The FCS-3031/3051 is installed, LAN connections are OK, it is powered ON and startup is complete.
- Ensure that your PC and the FCS-3031/3051 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 FCS-3031/3051, 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**      **Video quality may suddenly deteriorate.**

**Solution 4**      This can happen when an additional viewer connects to the FCS-3031/3051, 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 5**      **The motion detection feature doesn't send me any E-Mails.**

**Solution 5**      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 6**      **Using the motion detection feature, I receive E-Mails which don't show any moving objects.**

**Solution 6**      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 7**      **The image is blurry.**

**Solution 7**      Try cleaning the lens, or adjusting the *Video Quality Control* setting on the **Video & Audio** screen. Video created with the lower settings will contain less detail; this is the trade-off for using less bandwidth.



# Appendix A

## Specifications

### FCS-3031/3051

<b>Model</b>	<b>FCS-3031/3051</b>
Dimensions	145mm (D) * 102mm (H)
Light Sensor (FCS-3051 Only)	Min low lux trigger value: 0.5 lux
PIR Sensor	Sensitivity distance: 5 meters Angle degree: 75° (cone) Focus distance: 6~9 meters
LAN	10/100BaseT, Auto-MDIX
Image Sensor	Omni Vision OV7725 CMOS Sensor
Board Mount Lens	FCS-3031: 4.57mm, F2.0 Fixed Focus lens FCS-3051: 3.3mm~12mm, F1.4~2.9 Vari-Focal
Operating Temperature	0° C to 40° C
Storage Temperature	0° C to 40° C
Network Protocols	TCP/IP, DHCP, SMTP, NTP, HTTP, FTP, RTP, RTSP, UPnP (Discovery/Traversal)
Connector	Ethernet, RJ45 connector Digital Input, Mini dim x1 Digital Output, Mini dim x1 Reset Button, Tack switch Microphone In, 3.5mm Phone Jack
LEDs	Ready (green) Active (green) Network (green)
Power Adapter	12V/1A DC External

# Regulatory Approvals

## CE Approvals

The FCS-3031/3051 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.

### FCS-3031/3051 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_suplicant	GPL
cron	Public domain (BSD & Lineo <a href="http://www.lineo.com/">http://www.lineo.com/</a> )
ntp-4.1.71	Public domain ( <a href="http://www.ntp.org/">http://www.ntp.org/</a> )
libupnp-1.2.1	Intel ( <a href="http://upnp.sourceforge.net/">http://upnp.sourceforge.net/</a> )

## **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 FCS-3031/FCS-351 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 high)

2(high)

3(Normal)

4(low)

5(Very low)

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

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

To stream video through the RTP/RTSP protocol from Internet Camera (MPEG-4 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>