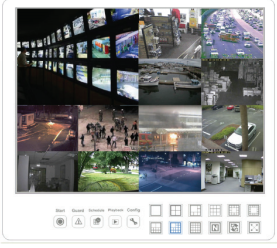
INTELLINET
NETWORK SOLUTIONS

# NETWORK CAMERA & VIDEO SERVER USER MANUAL


www.intellinet-network.com | www.networkipcamera.com

INT-NC-UM-0711-02

# Table of Contents

# Safety and Regulatory Notices

Thank you for purchasing this INTELLINET NETWORK SOLUTIONS™ Network Camera or Network Video Server. This user manual includes instructions for using and managing the camera on your network. Experience in networking will be helpful when setting up and using this product. Updated versions of this document will be posted to www.intellinet-network.com as they become available. The latest version of this user manual can also be found on the Installation CD accompanying this product, along with user manuals in other languages.

This equipment has been tested and found to comply with the limits for a Class B computing device pursuant to Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment.

Operation of this equipment in a residential area is likely to cause interference, in which case the user, at his own expense, will be required to take whatever measures may be required to correct the interference. This digital equipment fulfills the requirements for radiated emission according to limit B of EN55022/1998, and the requirements for immunity according to EN55024/1998 residential, commercial and light industry.

### R&TTE Compliance Statement

This equipment complies with all the requirements of DIRECTIVE 1999/5/EC OF THE EUROPEAN PARLIAMENT AND THE COUNCIL of March 9, 1999 on radio equipment and telecommunication terminal Equipment and the mutual recognition of their conformity (R&TTE). The R&TTE Directive repeals and replaces in the directive 98/13/EEC (Telecommunications Terminal Equipment and Satellite Earth Station Equipment) as of April 8, 2000.

### Safety

This equipment complies with EN 60950, Safety of Information Technology equipment.

## Waste Electrical & Electronic Equipment

**Disposal of Electric and Electronic Equipment**
**(Applicable in the European Union and other European countries with separate collection systems)**

This symbol on the product or its packaging indicates that this product shall not be treated as household waste.
Instead, it should be taken to an applicable collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences to the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. If your equipment contains easily removable batteries or accumulators, dispose of these separately according to your local requirements. The recycling of materials will help to conserve natural resources. For more detailed information about recycling of this product, contact your local city office, your household waste disposal service or the shop where you purchased this product. In countries outside of the EU: If you wish to discard this product, contact your local authorities and ask for the correct manner of disposal.

## Electromagnetic Compatibility (EMC)

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

- Re-orient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment to an outlet on a different circuit than the receiver
- Consult your dealer or an experienced radio/TV technician for help
- Check that shielded (STP) network cables are being used with this unit to ensure compliance with EMC standards

## EU Countries Intended for Use

The ETSI version of this device is intended for home and office use in Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom.
The ETSI version of this device is also authorized for use in EFTA member states: Iceland, Liechtenstein, Norway, and Switzerland.

## EU Countries Not intended for use

None.

## Important Information

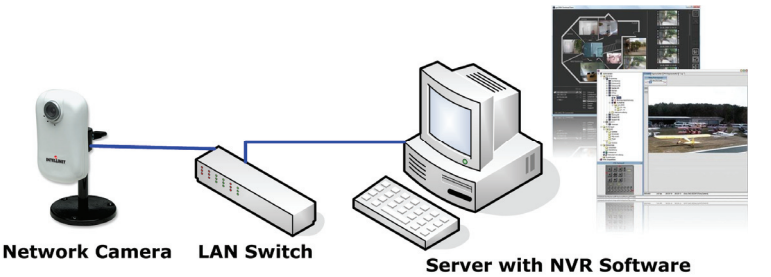
1. Camera surveillance laws may differ for each country. Contact the local authorities to avoid any surveillance law violations.
2. Note that the image sensor of this network camera can be damaged permanently if exposed to direct sunlight. Defective image sensors that have been damaged by prolonged exposure to direct sunlight are excluded from the product warranty.
3. Indoor network cameras are not weatherproof. Refer to the environmental specifications included in the back of this manual. For outdoor use, use a weatherproof case to protect the camera from water, moisture or temperature (higher or lower than specifications). To keep the camera clean, gently wipe it with a clean, dry cloth.
4. Be sure to use only the DC adapter provided with your camera. If your network camera supports Power over Ethernet (see the product information at the end of this user manual for details), you can use an IEEE 802.3af-compliant PoE injector (mid- or endspan) to provide power to the camera.
5. Always handle the camera with care, as physical shocks can cause serious damage to the hardware.
6. Be sure to mount the camera securely to avoid any personal injuries. Keep the camera out of the reach of children.
7. If the camera does not operate properly, contact your local distributor. Do not disassemble the product, as that will void the warranty.
8. Technical product support is provided by your dealer or distributor via e-mail and phone. Additional technical support is provided by INTELLINET NETWORK SOLUTIONS via the Web site www.intellinet-network.com.
9. Before contacting technical support, be sure to verify that your camera has the latest firmware version installed (you can access the camera's system information page to find out). To expedite your technical support request, it is recommended to include a very detailed error description in your message.
10. Should the camera not power up upon initial installation, you need to discontinue the use of the product immediately.
11. Returns and replacements of defective products are handled by our network of authorized dealers. Contact the place of purchase.
12. Used cameras, especially those that they were purchased on auction Web sites, are excluded from the product warranty.

# 1: Product Overview

## *1.1 Network Cameras*

Network cameras are closed-circuit television (CCTV) cameras that use the Internet Protocol (TCP/IP) to transmit image data over an Ethernet or Wireless LAN connection. As such, network cameras are also referred to as IP cameras. IP cameras are primarily used for surveillance applications. A number of IP cameras are normally deployed together with a digital video recorder (DVR) or a network video recorder (NVR) to form a video surveillance system. Since network cameras are equipped with an operating system, they do not require the presence of a DVR or NVR in order to function. In addition, a network camera can transmit data in a local network as well as over the Internet. Access to a network camera is typically achieved with a standard Web browser, such as MS Internet Explorer or Firefox.

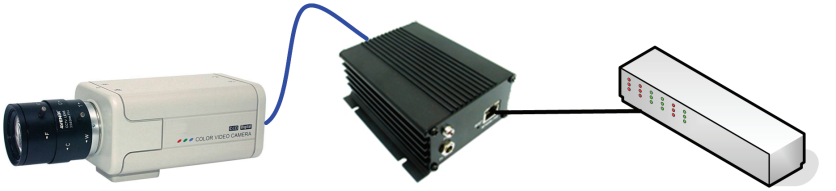

*Example showing a wireless network camera in a typical setup*




*Example showing a network camera in a typical setup with an NVR recording solution*

# *1.2 Network Video Servers*

A network video server allows connection to an analog CCTV camera via coaxial cable.



**CCTV Camera** **Network Video Server** **LAN Switch**

*Example showing a CCTV camera connected to a network video server, which itself is connected to the network.*

# *1.3 Model Overview*

This user manual contains information for the following models:

1. NSC15/NSC15-WG

Motion-JPEG + MPEG4, Audio, 300k CMOS
NSC15-WG only: Day/Night, 54 Mbps Wireless 802.11g

2. NSC16-WG

Motion-JPEG + MPEG4 + H.264, Audio, 1.3M CMOS, Day/Night, 54 Mbps Wireless 802.11g

3. NFC30/NFC30-WG

Motion-JPEG + MPEG4, Audio, 300k CMOS
NFC30-WG only: 54 Mbps Wireless 802.11g
IEEE 802.3af PoE Support for wired model NFC30.

4. NFC30-IR/NFC30-IRWG

Motion-JPEG + MPEG4, Audio, 300k CMOS, Day/Night, IR LEDs
NFC30-IRWG only: 54 Mbps Wireless 802.11g
IEEE 802.3af PoE Support for wired model NFC30-IR.

## 5. NFC31/NFC31-WG

Motion-JPEG + MPEG4 + H.264, Audio, 1.3M CMOS
NFC31-WG only: 54 Mbps Wireless 802.11g
IEEE 802.3af PoE Support for wired model NFC31.

## 6. NFC31-IR/NFC31-IRWG

Motion-JPEG + MPEG4 + H.264, Audio, 1.3M CMOS, Day/Night, IR LEDs
NFC31-IRWG only: 54 Mbps Wireless 802.11g
IEEE 802.3af PoE Support for wired model NFC31-IR.

## 7. NFD30

Motion-JPEG + MPEG4, Audio, 300k CMOS, IEEE 802.3af PoE Support


## 8. NFD130-IR (indoor) / NFD130-IRV (outdoor)

1.3 Megapixel CMOS, 720p HD, Day/Night, H.264, MPEG4, M-JPEG, 3GPP, PoE, MicroSD/SDHC


## 9. NBC30-IR

Motion-JPEG + MPEG4, Audio, 300k CMOS, Day/Night, IR LEDs, IEEE 802.3af PoE Support

## 10. NVS30

Motion-JPEG + MPEG4, Audio, IEEE 802.3af PoE Support

# 2: System Requirements

## *2.1 Hardware Requirements*

Your computer hardware should meet or exceed the following specifications:

Access to a single camera with Web browser:
CPU: Pentium 4 1600 MHz (or equivalent AMD)
Video Card: 64 MB graphic card
RAM: 512 MB
Network Adapter: 10/100 Mbps Fast Ethernet

Using the 16-Channel viewing / recording utility:
CPU: INTEL Dual Core Processor
Video Card: 64 MB graphic card
RAM: 2 GB
OS: Windows XP, Windows Vista or Windows 7

## *2.2 Operating System and Web Browser Support*

INTELLINET NETWORK SOLUTIONS network cameras support Web-browser based access for all major operating systems.

- Windows 2000, Windows XP, Windows Vista and Windows 7
  - MS Internet Explorer 7.x and 8.x (ActiveX & Java)
  - Firefox 3.x (Java)
  - Google Chrome (Java)
  - Opera 9.x (Java)

- MacOS X Leopard
  - Firefox 3.x (Java)
  - Safari 3.x (Java)

- Linux
  - Firefox 3.x (Java)
  - Konqueror (Java)

# 2.3 Limitations

## Web Browser Access

While it is possible to connect to the network camera with a Web browser other than MS Internet Explorer, some of the features cannot be used. Refer to the overview below:

MS Internet Explorer 7.x and 8.x (ActiveX)
- view live video in all formats
- record live video by right-clicking the live video
- listen to audio
- use a microphone to send audio to the camera
- view the video in full-screen mode
- use the digital zoom function
- access the administrator menu and configure the camera
- setting up privacy masking, motion and audio detection

All other browsers (Java)
- view live video in Motion-JPEG format
- access the administrator menu and configure the camera (with certain limitations)


## IP Installer

This application is only compatible to Windows operating systems.

Installation on MacOS systems can be done using the Bonjour discovery service while the installation on Linux systems requires manually changing the IP address of the system to gain access to the camera. Refer to section 4.1 Connecting to the Camera for installation instructions.

## 16-Channel Viewing / Recording Utility

This application is only compatible to Windows operating systems. Visit www.networkipcamera.com for a complete list of compatible applications.

# 3: Hardware Overview

## *3.1 Front & Rear*

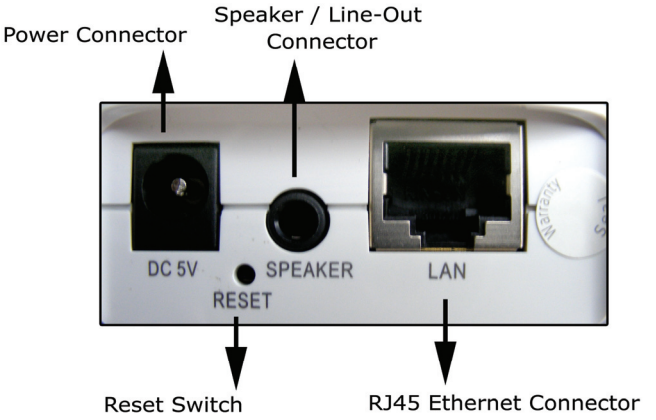
The following pages provide an overview of the hardware features of the different types of network cameras and the network video server.

### 3.1.1 NSC15/NSC15-WG/NSC16-WG Network SOHO Cameras

Front

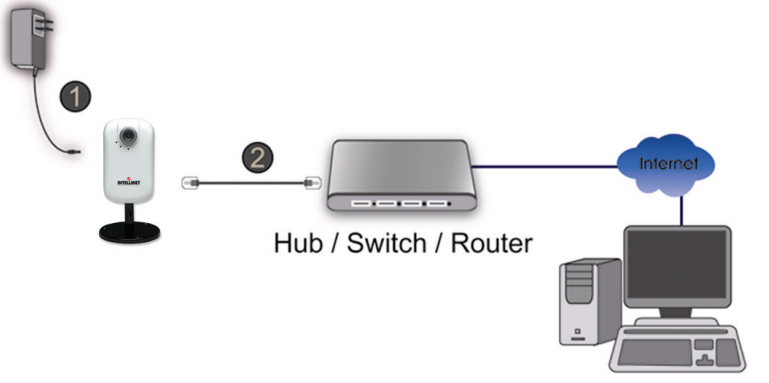

The image above shows the options for the wireless models NSC15/16-WG. The wireless antenna connector and the Night-Vision LEDs are exclusive to these models and cannot be found on the wired model NSC15.

## Rear




| | |
|---|---|
| Power Connector: | The connection for the power adapter, which is supplied with the camera. |
| Reset Switch: | If you need to perform a hardware reset, you can insert a paper clip into the reset hole and depress the switch for 10 seconds. |
| Speaker: | Stereo connector for the connection of active speakers or other line-out audio sources. |
| LAN: | Connection for standard RJ45 Cat5 (or better) network cable. Maximum length is 100 m / 300 ft. |

Connection of NSC15 to the network (wired)



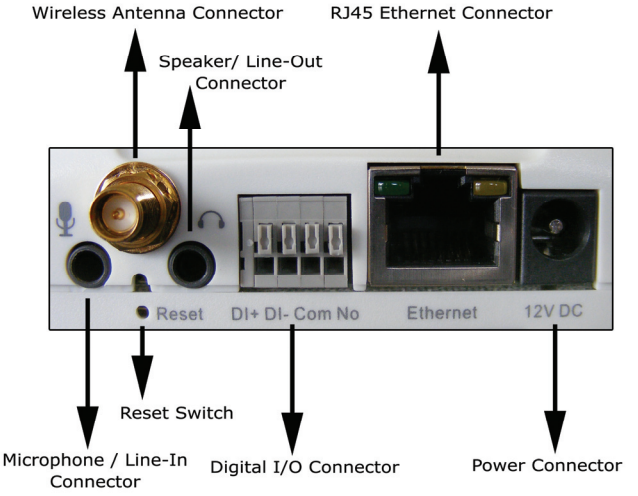
# 3.1.2 NFC30/NFC31 Network Fixed Cameras

Front


Front IR Versions

The IR cameras are equipped with a fixed lens that cannot be removed or replaced. The IR lens features 12 IR LEDs that output a wavelength of 850 nm and allow the camera to capture video in complete darkness.

## Rear

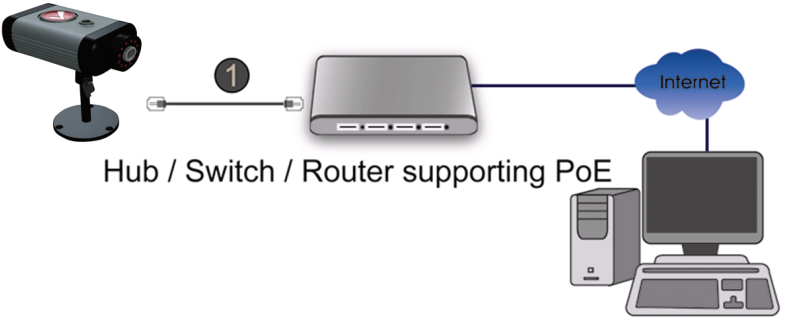



Microphone / Line-In Connector: Connector for external microphones or other line-in audio sources.

Wireless Antenna Connector: RP-SMA jack for the connection of external antennas, such as the one provided with your wireless camera.

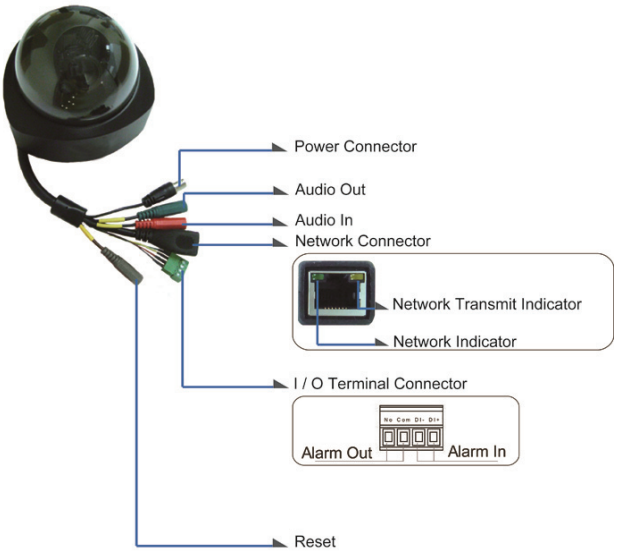
Digital I/O Connector: Terminal block adapter for the connection of external alarm devices. The connector has two inputs and two outputs.

Connection using IEEE 802.3af Power over Ethernet



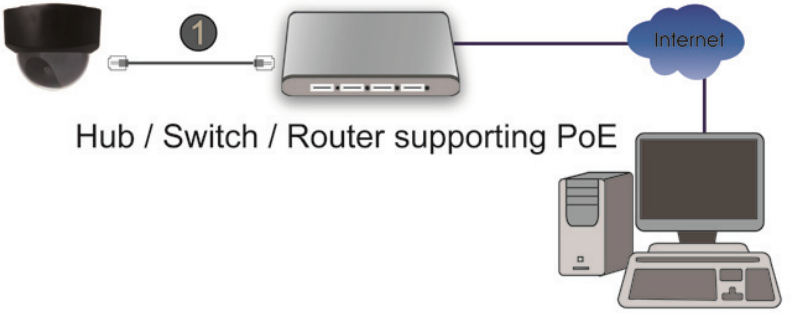

*Note: Connection using the power adapter is supported as well.*

# 3.1.3 NFD30 Network Dome Camera

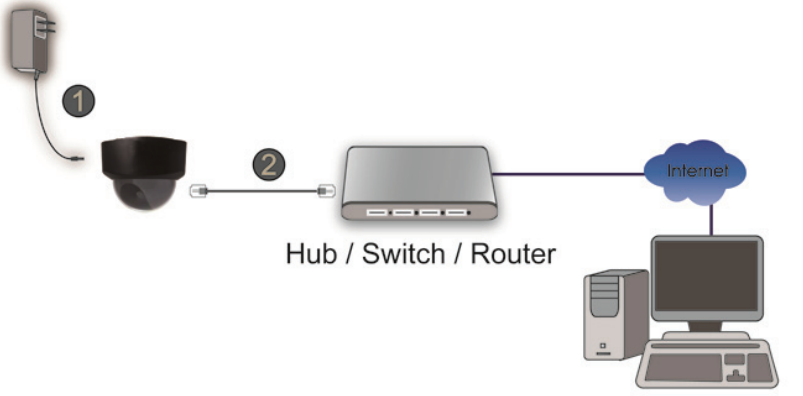



| | |
|---|---|
| Power Connector: | For connection of 12 V DC input. |
| Audio Out (Green Line): | To support audio out with earphones or speakers for two-way audio. |
| Audio In (Red Line): | To support audio in for microphone. |
| Network Connector: | For the connection to the RJ45 Ethernet cable. The connector supports IEEE802.3af-compliant PoE input signals. |
| Network Indicator: | Indicates that the camera has successfully connected to the network. |
| Network Transmit Indicator: | Flashes to indicate network traffic. |
| Reset: | If you need to perform a hardware reset, you can insert a paper clip into the reset hole and depress the switch for 10 seconds. |
| I / O Terminal Connector: | 1 Input and 1 Output to support External Alarm and Sensor devices used for motion detection, event triggering and alarm notification. |

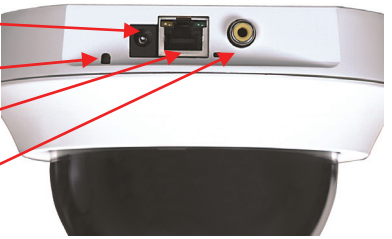
1: Connection using IEEE 802.3af Power over Ethernet.

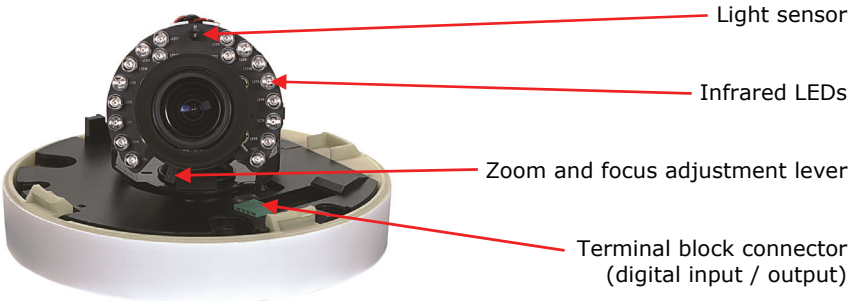



2. Connection using a standard power adapter (1) and a regular LAN switch or router (2).



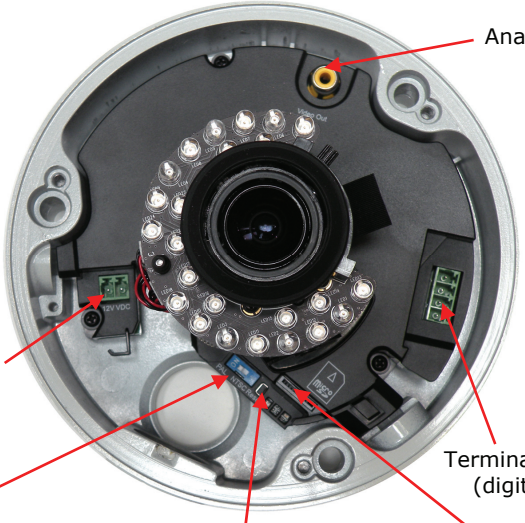
# 3.1.4 NFD130-IR Network Dome Camera

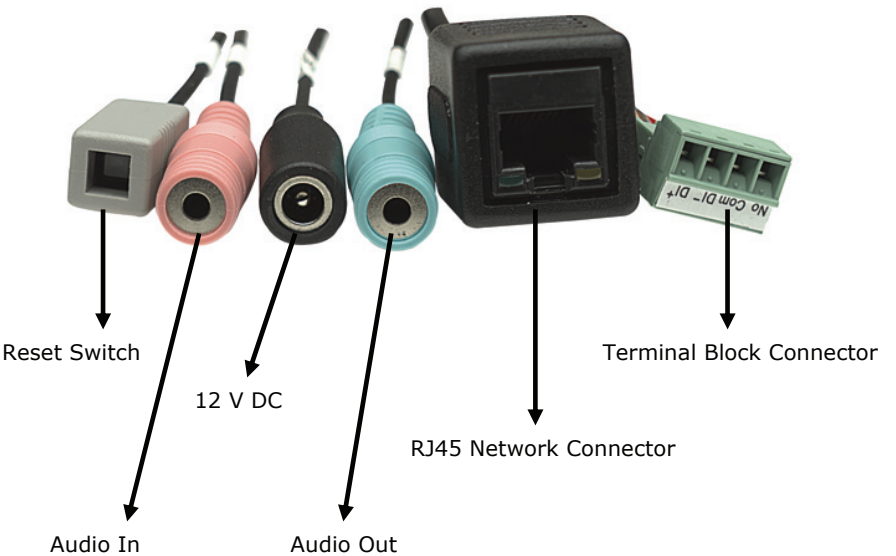

Refer to the hardware installation guide on the installation CD for additional instructions.

# 3.1.5 NFD130-IRV Network Dome Camera

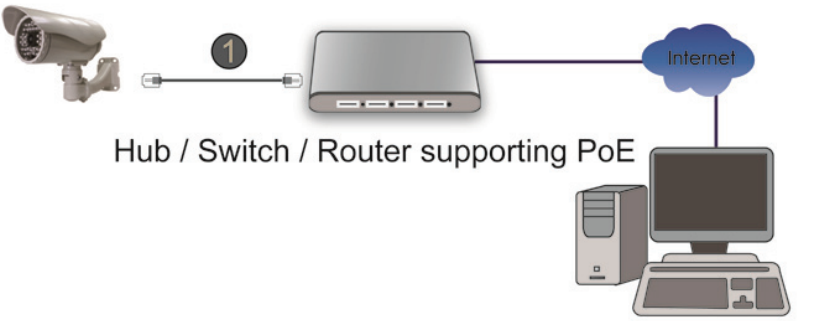




Refer to the hardware installation guide on the installation CD for additional instructions.

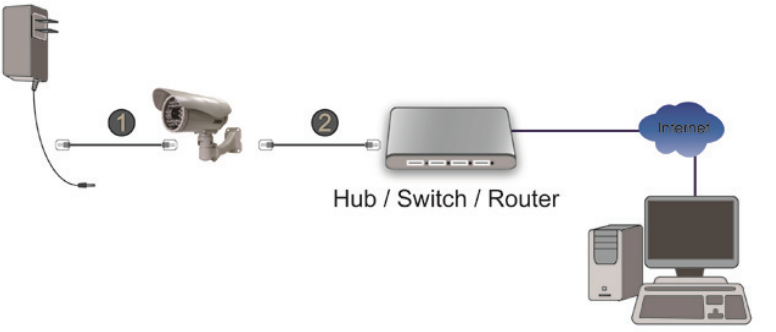
# 3.1.5 NBC30-IR Outdoor Network Camera

1: Connection using IEEE 802.3af Power over Ethernet.

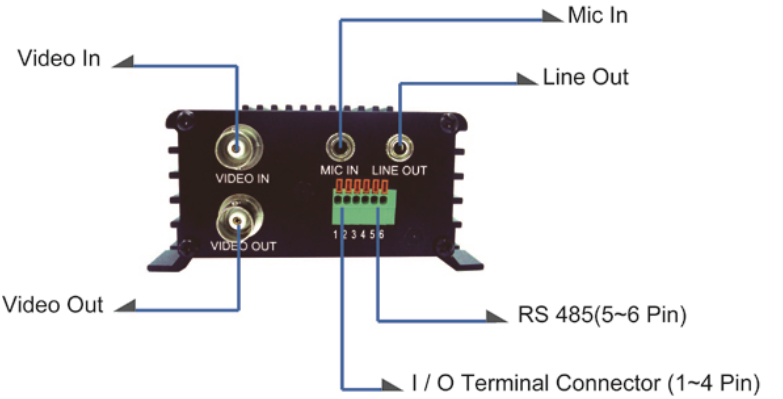



2. Connection using a standard 12 V DC power adapter (1) and a regular LAN switch or router (2). The power adapter is not included.



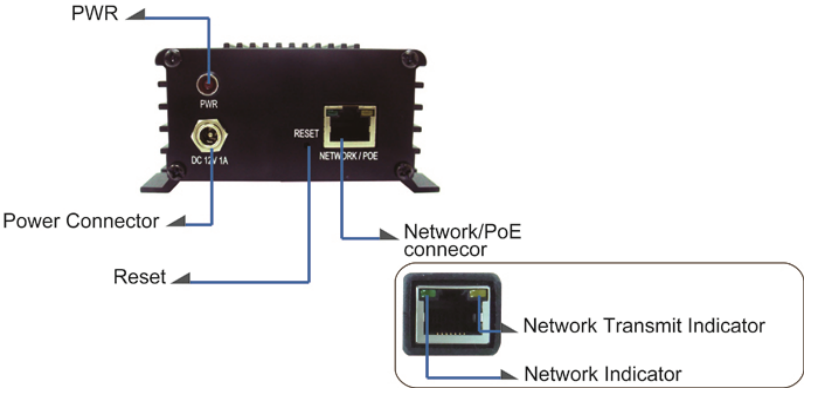
# 3.1.6 NVS30 Network Video Server

Front




| | |
|---|---|
| Video In: | Input connector for analog CCTV camera. |
| Video Out: | Loop-through port that outputs analog video, which can be integrated into an existing CCTV surveillance system. |
| Mic In: | Microphone/Line-In input connector. |
| Line Out: | Line-Out connector for active speakers. |
| I/O Terminal Connector: | 1 Input and 1 Output to support External Alarm and Sensor devices used for motion detection, event triggering and alarm notification. |
| RS-485 Connector: | Used to connect analog PTZ cameras to the video server. |

## Rear

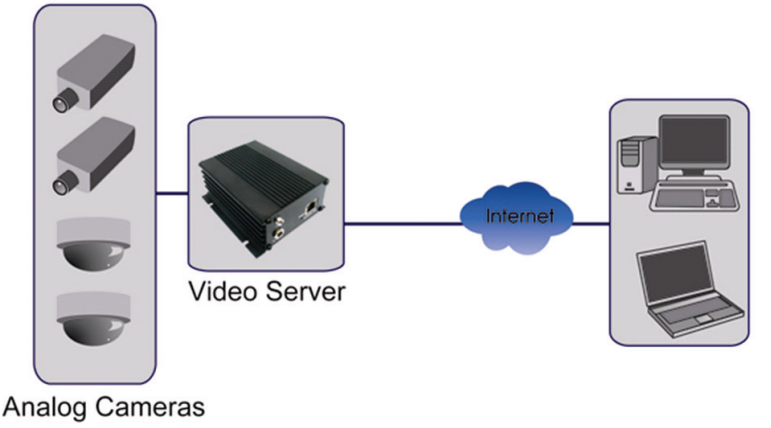



PWR: LED lights up once the network video server has successfully started up.

Power Connector: Connect the power adapter here, unless you wish to utilize the Power over Ethernet functionality.

Network / PoE Connector: Standard RJ45 socket for Cat5 (or better) network cable. IEEE 802.3af-compatible input sources are supported.

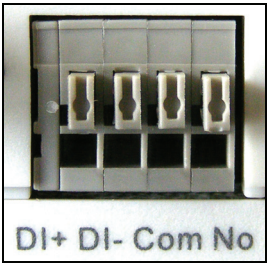
## Connection Diagram



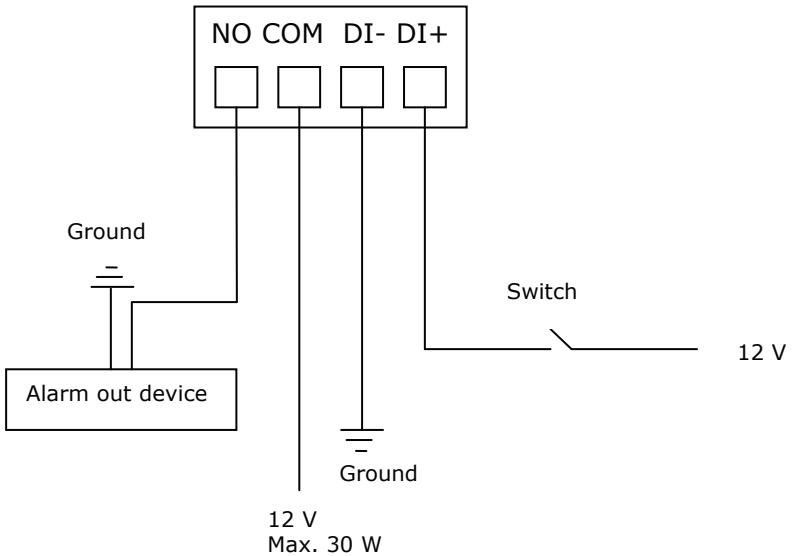

Note: The NVS30 is a one-channel video server. Only one CCTV camera can be connected at a time.

# 3.2 Digital I/O Terminal Block Connector

The Network Camera and Network Video Server, with the exception of the NSC15 models, are equipped with a digital I/O interface. It can be used to connect external alarm sensors (pins 1 and 2) or to power external devices (pins 3 and 4).




*From left to right: Pins 1 (DI+), 2 (DI-), 3 (Com) and 4 (No)*




DI+: Digital Input (+), DI-: Digital Input GND (-)
Com: Power DC 12 V (+), No: Power GND (-)

The NVS30 Network Video Server features two additional pins 5 (+) and 6 (-) that are used to connect analog CCTV camera with PTZ control (RS-485).

# *3.3 Package Contents*

You should find the following items in the packaging of your INTELLINET NETWORK SOLUTIONS video surveillance product.

1. Network Camera (or Network Video Server)

2. User manual (this document) and Quick Installation Guide

3. Installation CD
   -> User Manual in electronic form in different languages
   -> IP Installer Utility
   -> Multi-Channel IP Surveillance Utility

4. Camera stand (all indoor NSCxx and NFCxx models)

5. Wall-Mount bracket (all outdoor NBCxx models)

6. Mounting hardware (NFDxx and NBCxx models)

7. Power adapter (except for NBC30 (550932))
   -> Input: 110/230 V, 50/60 Hz
   -> Output: - 5 V DC (NSC15 models)
   - 12 V DC (other models)

If any items are missing, contact your dealer.

# 4: Installation

## *4.1 Connecting to the Camera*

Connect the RJ45 network cable from the camera's LAN port to your network; e.g., the router or a LAN switch, then power on the camera. The boot sequence will take about one minute. You will need to use the camera's power adapter, unless your camera supports PoE (see section 1.3 Model Overview). In that case you can connect the RJ45 cable to a PoE enabled switch or injector to power the camera.

By default, the network camera (or video server) searches for a DHCP server on the network and obtains an IP address automatically. A very common DHCP server is a router, a device that is found on most networks.

The presence of a DHCP server on your network simplifies the installation and users with limited knowledge of TCP/IP networks can install the network camera in minutes. If no DHCP server is found, the network camera will revert to its default IP address 192.168.1.221.

On Windows systems, you want to use the IP Installer utility that finds the camera on the network and lets you make changes to the configuration.

Once the camera is set up properly, it can be accessed with the computer's Web browser. The following sections describe the procedure for Windows, MacOS and Linux users.

# 4.1.1 Windows XP, Vista and Windows 7

Insert the Installation CD into the CD or DVD-Drive. After a few moments, the CD will automatically start and display the screen below. If that does not happen, you need to browse the CD with Windows Explorer and double-click the autorun.exe file.



1. User Manuals
   The user manual for the INTELLINET NETWORK SOLUTIONS Network Camera is available in electronic form on the installation CD, along with user manuals in different languages.
   If you encounter differences between the screen shots shown in the user manual and the actual screen contents, it is recommended that you open the manual from the CD, as it may be a newer edition than the printed version.

2. IP Installer for Windows
   This utility is designed to find the network camera on your network and lets you make changes to the configuration.

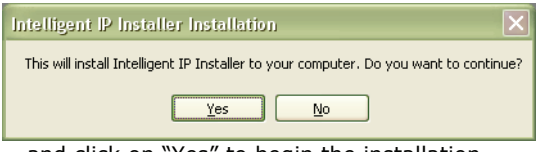
3. Video Surveillance Software
   Refer to Chapter 6 Video Surveillance Software.

## IP Installer for Windows Installation

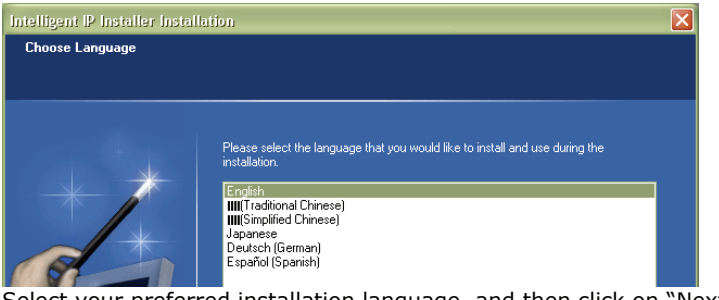
Before you start with the installation, make sure that you are connected to your computer with a user account that has administrator rights. The screen shots below are taken from an installation on a Windows XP system. The procedure on Vista and Windows 7 systems is similar.

To begin the installation, click on the link "IP Installer for Windows." After that, depending on your system's settings, you may see the message shown below.

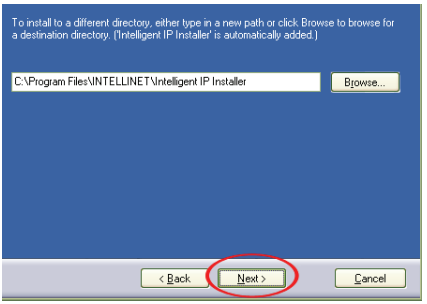

Click on "Run" to continue …



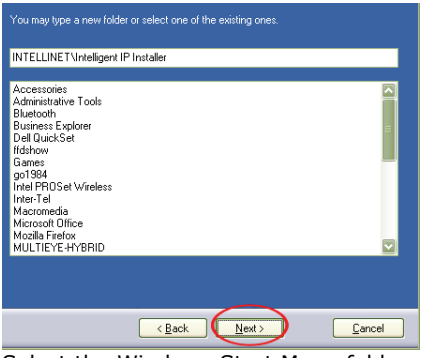

… and click on "Yes" to begin the installation.



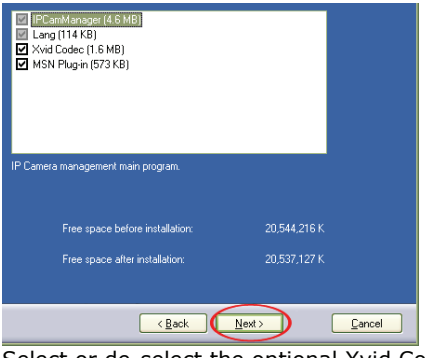

Select your preferred installation language, and then click on "Next." Click on "Next" on the following screen as well.




Specify the location where the program should be installed. The default path is OK to be used on most systems. Click on "Browse…" to select a different location and click on "Next" to continue.

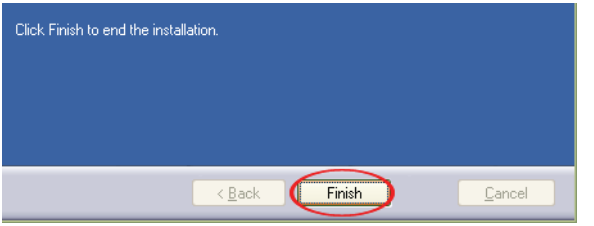



Select the Windows Start Menu folder.



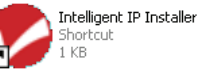

Select or de-select the optional Xvid Codec and MSN Plugin. If you are not sure about these options, it is recommended to keep them selected.
Click "Next" to continue.

Verify the installation summary and click “Install” to begin the installation.



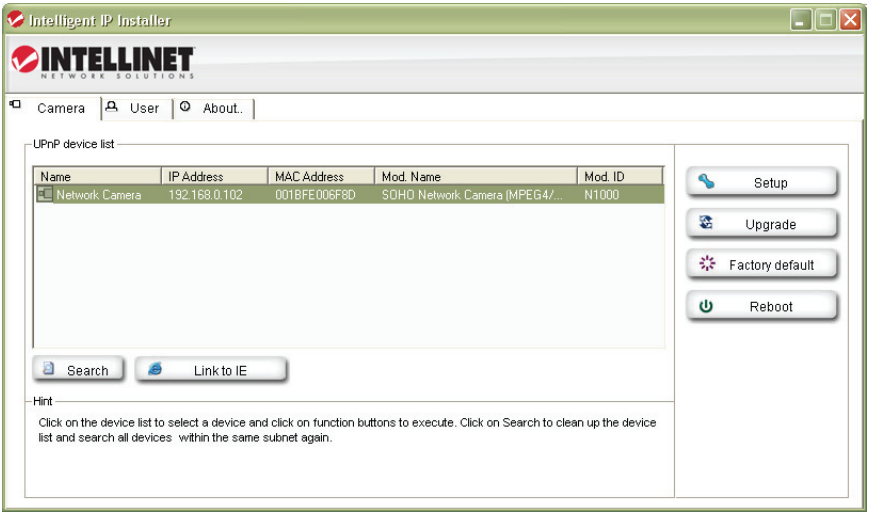

Once the installation has completed, click on “Finish”.

A new shortcut has been created on your computer desktop; Double-click it to start the application.



## IP Installer for Windows

When the program starts, you are presented with the screen shown below. Depending on your camera model, the screen may look slightly different, but the functionality is the same. The IP Installer utility lists all cameras that can be found on your network. With this utility you can make changes to the configuration, perform a firmware upgrade, restore the camera to factory default values, and reboot the camera. Note: It may take up to three minutes for IP Installer to show a camera that has been recently (re-)started.




The application has three main tabs: Camera, User and About.

## Camera tab

UPnP device list: All cameras that are found on the network are displayed on this tab. Cameras that are shown in red are currently configured for a different network and cannot be accessed with the Web browser before the IP settings of the camera have been adjusted to your network (see Setup).

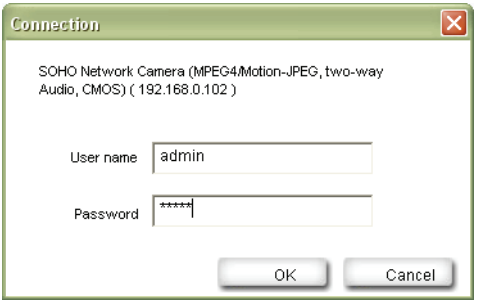
Search: The Search button can be used to refresh the view. Typically it is not required to push the button, as the utility starts scanning the network as soon as it is started.

Link to IE: Select the camera from the list and click this button to open the camera with MS Internet Explorer. Note: This function does not work for other Web browsers; however, you can open the browser manually and open the URL http://camera_ip_as_shown_in_list (in the example above, you would open http://192.168.0.102).

Setup: Select a camera from the list and click the Setup button in order to open the camera configuration dialog.

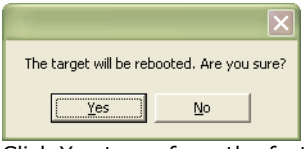
Upgrade: Select a camera from the list and click the Upgrade button if you wish to upgrade the firmware of the camera. The firmware upgrade can also be performed with your Web browser.

Factory default: If you want to reset the camera settings to factory default values, you can select a camera from the device list and click this button. When you do this, you will be asked to enter the administrator user name and password:




Enter "admin" for both.

You will then see the following message:



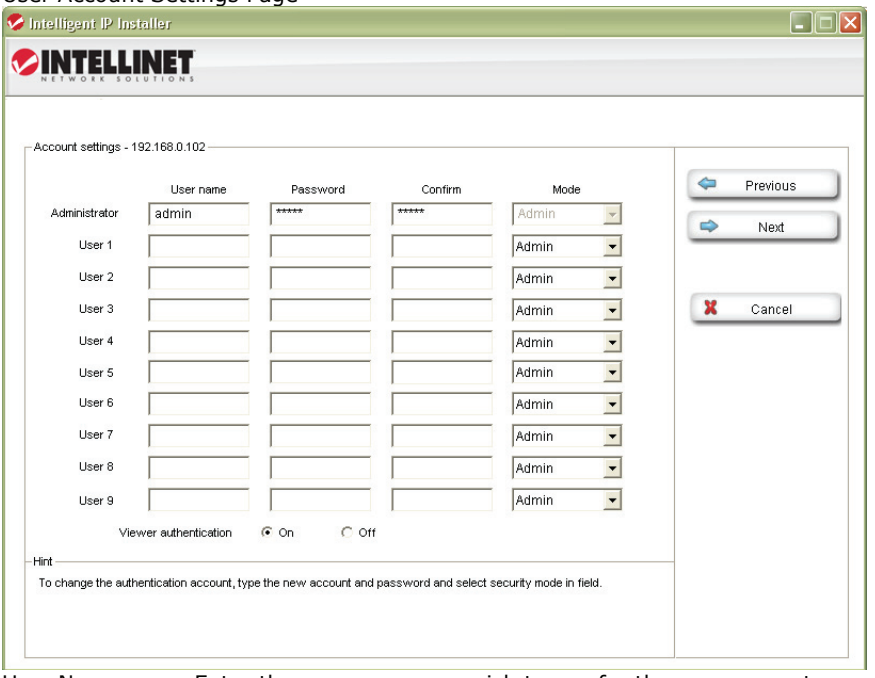

Click Yes to perform the factory reset.

Reboot: This function lets you reboot the camera. The procedure is identical to the factory default function, except the camera does not lose the settings.

## Camera Tab – Setup Function

When you click on the Setup button, you first need to enter a valid administrator user name and password (see above). You will then be presented with the first page of the Setup menu. The first page shows some basic information about the camera.
Click the Next button to open the next page.

User Account Settings Page




User Name: Enter the user name you wish to use for the new account.

Password: Enter the password for the new user account.

Confirm: Type the password in again.

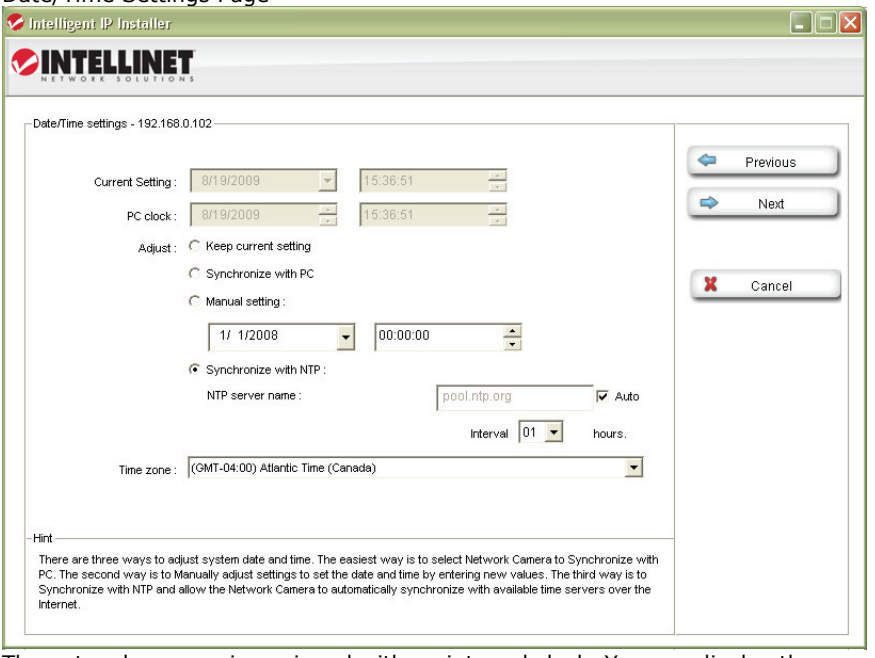
Mode: There are three possible values to choose from:
1. Admin: User has full access to all camera functions.
2. Operator: User can view the live image and change image related settings such as brightness, contrast, etc.
3. Viewer: User can view the live video of the camera, but is unable to make any changes to the configuration.

Viewer Authentication: On: Every user that connects to the camera has to enter a valid user name and password.

Off: A user name and password is only required if the user wants to change camera-related settings. By setting the Viewer authentication to off, you allow any user to view the camera's live image.

Click the Next button to open the next configuration page.

Date/Time Settings Page

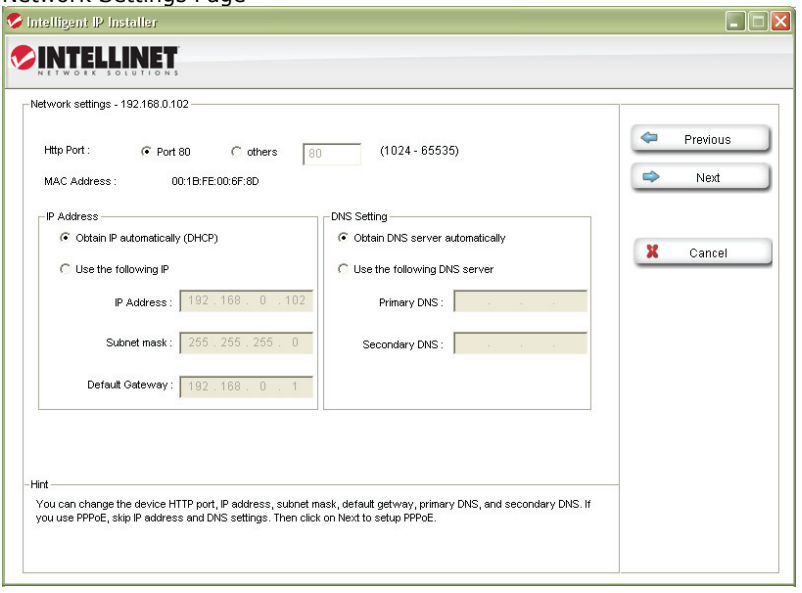



The network camera is equipped with an internal clock. You can display the current date and time information on the video, so that when you look at recorded video material or images you can easily tell when the recording was made. Before you can use this function, you need to define how the camera obtains the time.

Current Setting: Displays the current date and time.
PC clock: Displays the time of the PC that you are using right now.
Adjust: Keep current setting – no changes are made.
Synchronize with PC – instructs the camera to retrieve the current date and time from the PC.
Manual setting - allows you to set up the date and time yourself.
Synchronize with NTP – The camera will obtain the time from an NTP server. Normally it is not required to change the NTP server, as the default server "pool.ntp.org" is always available. You can, however, manually overwrite the NTP server by un-checking the option "auto."
Interval: Define how often the camera should re-synchronize the time with the NTP server's time.
Time Zone: Select the correct time zone for the camera to display the correct date and time.

Click the Next button to open the next configuration page.

Network Settings Page




The default configuration is shown above, and for most users there should be no need to change these settings. Advanced users can change the following values:

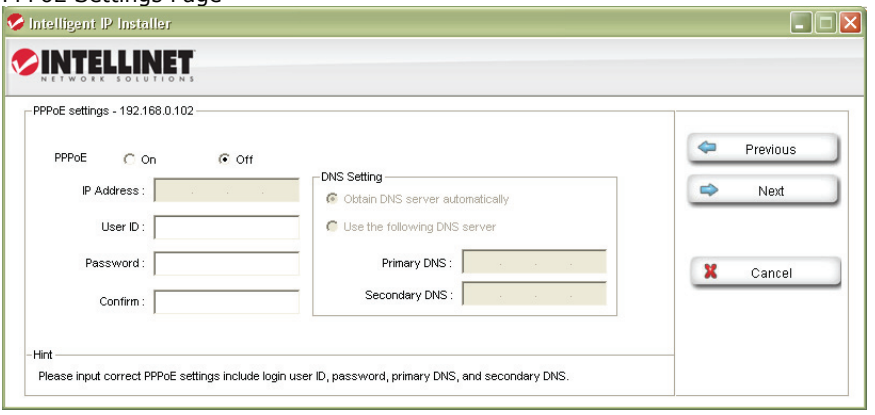
HTTP Port: This is the Web server port of the camera. The default value is 80. You can change the value from 80 to a value between 1024 and 65535. Note that when you change the HTTP port, you need to append the new port to the address of the camera; e.g., http://192.168.0.102:1024.

IP Address: By default the camera obtains the IP address from a DHCP server in the network. You can set up the camera with a static IP address as well by activating the option "Use the following IP." If you are not familiar with IP addresses in general or the IP address setup of your network, you should contact your network administrator for the correct values.

DNS Setting: A DNS Server (DNS stands for Domain Name System) allows the camera to contact an e-mail, FTP or NTP server using its proper domain name (e.g., mail.mydomain.com) rather than its IP address. If you set up the camera with a static IP address, chances are that you will need to provide the DNS server settings yourself as well.

Click the Next button to open the next configuration page.

PPPoE Settings Page




This page allows defining of the PPPoE settings of the camera. This function is not required for the vast majority of users, and if you are not planning on connecting the camera directly to a DSL modem (no network present, just the camera connects directly to the modem) you can safely skip this page.

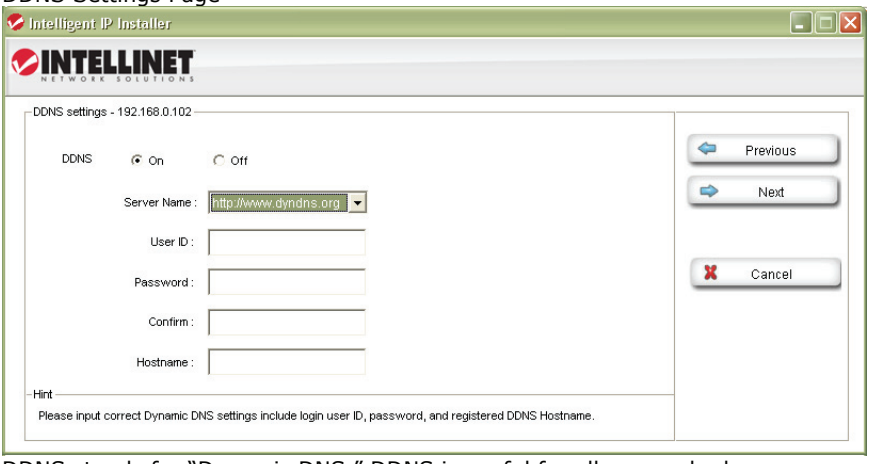
PPPoE is a common connection method for ADSL Internet services. It is not required for cable modem service, or newer DSL services that operate with dynamic IP addresses.

PPPoE connections require a user ID and password that are typically provided by your ISP (Internet Service Provider). If there is no router in your network, and you connect the camera straight to the DSL modem, you need to enter the user ID and password here, so that the camera can connect to the Internet.

Note: The camera does not support idle timeout, meaning, it stays connected to the Internet indefinitely. Users of time- or volume-based Internet services need to be aware of this as the camera can cause significant usage charges for the service. It is always a better option to have the router handle the PPPoE connection to the Internet Service Provider, instead of the camera.

Click the Next button to open the next configuration page.

DDNS Settings Page




DDNS stands for "Dynamic DNS." DDNS is useful for all users who have an Internet service with a dynamic IP address. Most DSL services utilize IP addresses that are highly dynamic and change as often as once every 24 hours. Cable modem services typically keep the IP address assigned to a user for a longer period of time; e.g., up to 30 days. In any case, after a certain amount of time the IP address of your network will change unless you have a more business-type Internet service that provides a permanent, static IP address. Why does it matter if the IP address that the ISP assigns to you changes? If you never want to access the camera remotely over the Internet, it wouldn't and you can skip this section.

If you want to connect to your camera from outside your network, the changing IP addresses will make this task very complicated, as you never know under which IP address you can reach your camera. DDNS is the solution to the problem. Services like DYNDNS.ORG allow signing up for a free account and setting up domain names like "mycamera.dyndns.org." The DDNS service assigns the current IP address that your ISP has assigned to you to the domain name you have set up, so that you can always reach your camera at http://mycamera.dyndns.org (example).

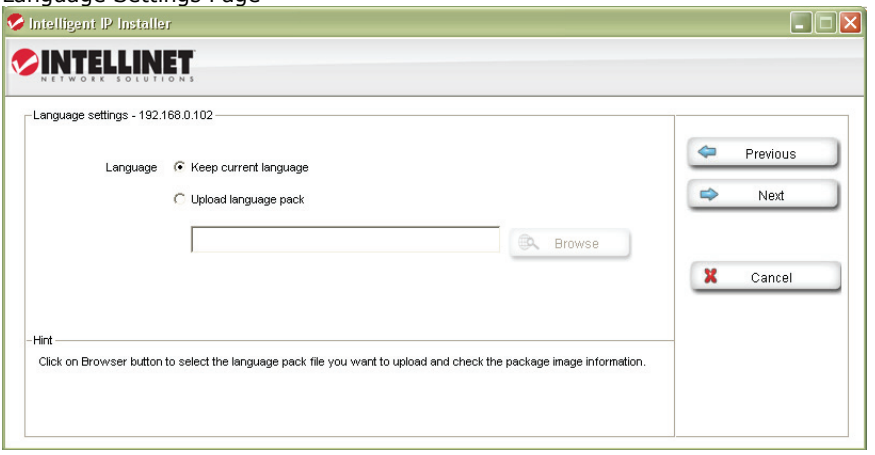
Note: We recommend using the DDNS client that is integrated in your router for the DDNS service instead of the camera's DDNS client.

The network camera supports three DDNS providers: DYNDNS.ORG, DHS.ORG and TZO.ORG. Only DYNDNS.ORG is free (as of February 2010).

| | |
|---|---|
| Server name: | Select the service (e.g., DYNDNS.ORG) |
| User ID: | Enter your DDNS user account password here. |
| Password: | Enter the password of your DDNS account here. |
| Confirm: | Repeat the DDNS account password here. |
| Hostname: | Enter the dynamic host name (e.g., "mycamera.dynsns.org" here. Do not enter http:// |

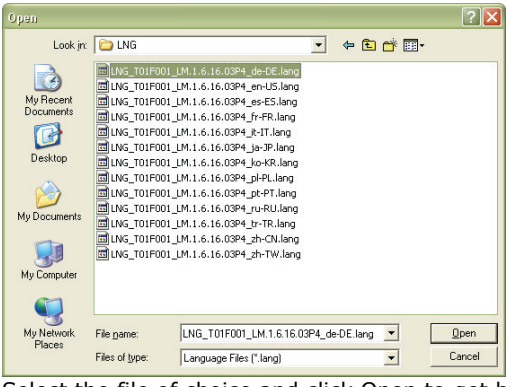
Click the Next button to open the next configuration page.

Language Settings Page




The INTELLINET NETWORK SOLUTIONS network camera provides a multi-language user interface for Web-browser access. In order to use this function, you first need to install the additional languages by uploading them to the camera. The default language is English. Additional languages can be found on the Installation CD, or you can download them from the INTELLINET NETWORK SOLUTIONS Web site at www.networkipcamera.com.

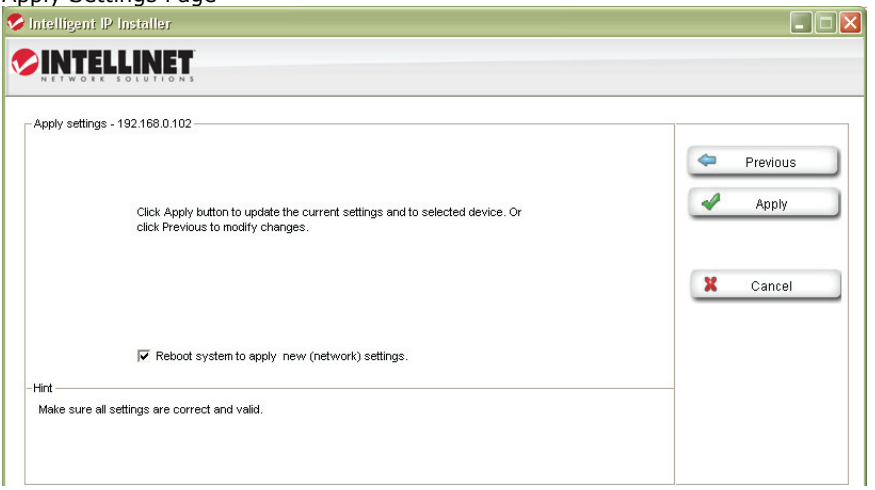
In order to install an additional language, activate the option “Upload language pack” and click Browse. Then select the folder where the language files are located. The image below shows the available files.




Select the file of choice and click Open to get back to the language settings page. Note the file location has been entered in the field in front of the Browse button.

Click the Next button to open the final configuration page.

Apply Settings Page




This is the last page of the Setup.

All configuration changes you have made on the previous screens will be saved when you click the Apply button. If you have selected an additional language to be installed on the previous page, clicking Apply will install that language as well.

After you click Apply, the main screen of IP Installer shows up, and after a period of 60 to 180 seconds, the camera will show up in the UPnP device list. You may need to click the Search button to get the camera to show up again.

## Camera tab – Upgrade function

The firmware is basically the operating system of the camera. New functions are introduced from time to time, and compatibility patches and fixes are released to make your INTELLINET camera an even better product. A firmware upgrade replaces the internal camera software with a new version.

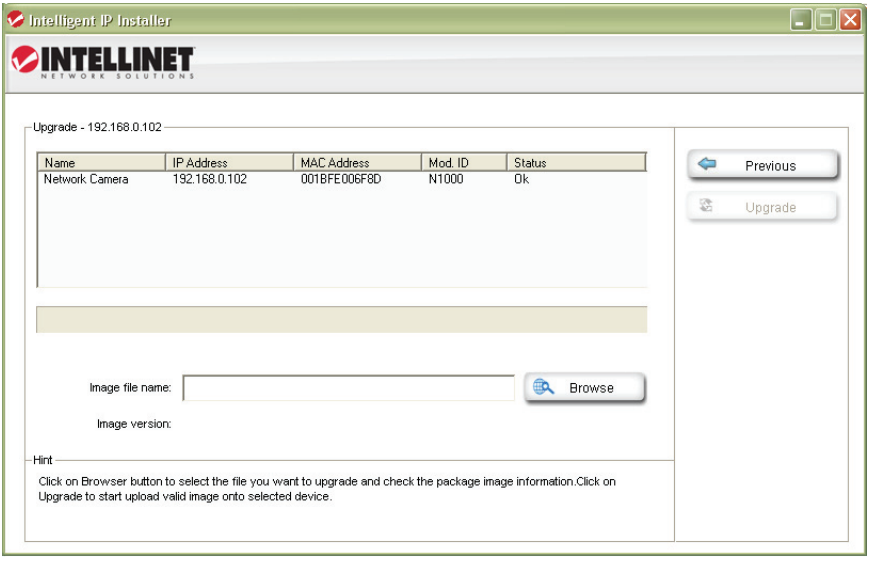
Note: A failed firmware upgrade can render your camera inoperable.

Before you start with the firmware upgrade, ask yourself a few questions:
1. Has Technical Support instructed me to upgrade, or is my camera operating erratically or do certain functions in the camera not work as they should?
2. Am I absolutely sure that I downloaded the correct firmware file for my camera from the INTELLINET NETWORK SOLUTIONS Web site?
3. Can I be reasonably certain that the power will not go out during the next 10 minutes?
4. Are all unnecessary programs on my computer closed?

5. Will the battery in my notebook last for at least another 10 minutes?
6. Am I connected to the camera with an RJ45 cable (not wireless)?
7. Is the camera I want to upgrade located in my local network?
8. Am I sure about what I am doing?

If you answer any of these questions with "no," you should not perform the firmware upgrade and skip this section.

Select a network camera from the UPnP device list and click on Upgrade to upgrade the firmware. As before, you have to key in the user name and password of the administrator to enter the upgrade page. You will then see the following screen:

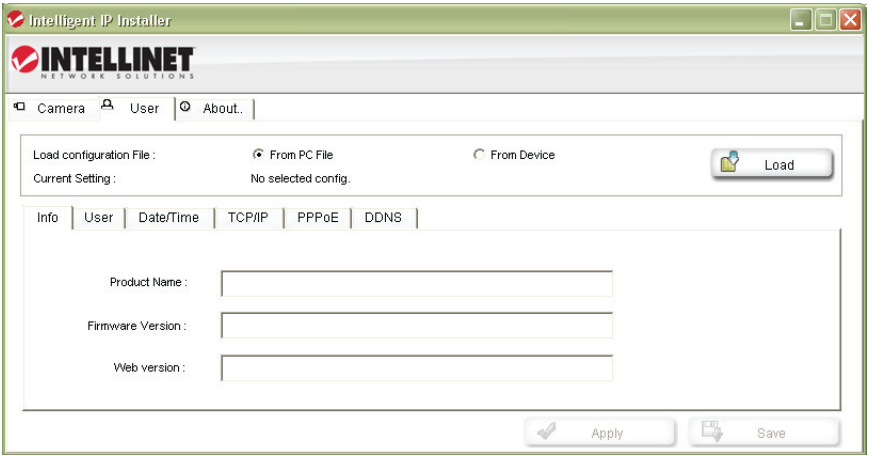



Click on Browse and select the correct firmware file. The file must have the file extension ".bin." Click on Open to return to the firmware upgrade page. The Upgrade button that was previously grayed out is now available.

Click the Upgrade button to begin the upgrade process. The upgrade takes place in several stages. The screen informs you about the progress. At the end of the upgrade the status indicates "Rebooting" while the progress bar moves from 0 to 100%.

Note: Do not leave this screen and do not close the program yet. Wait for the status to display "Done" and when it does, click on "Previous" to go back to the main screen. As before, it may take up to three minutes for the camera to re-appear.

User tab




This screen offers two functions:

1. You can change the individual settings of the camera in a similar fashion as with the Setup function on the main screen. However, instead of clicking on Previous and Next to switch between the screens, you can access the individual options more quickly by clicking on any of the tabs (User, Date/Time, TCP/IP, PPPoE and DDNS). You cannot install additional languages with this function, however.

2. You can load the camera configuration into the IP Installer utility, and then save it to your computer hard drive. This can be useful if you wish to create a backup of the entire configuration in case you want to reload it at a later time. You can also use this function to load a configuration previously saved on the PC and load it back into the camera configuration.

To begin, select either "From PC File" or "From Device," then click Load.
If you select "From PC File" you will be asked to specify the configuration file on your computer hard drive.
If you select "From Device" a screen opens up that asks you to select the camera and enter the administrator user name and password.

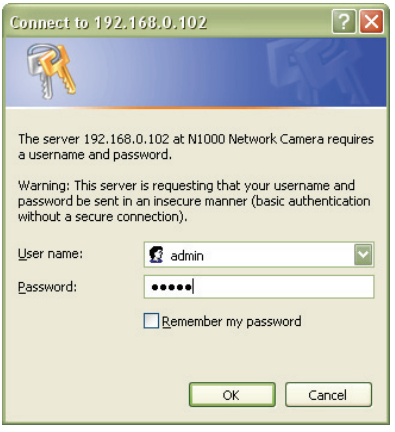
Once completed, the screen shows the configuration data, and you can make changes to the settings as you see fit. When you are ready to submit the settings to the camera, click on Apply. Select the camera from the device list, enter the administrator user name and password and click OK. The camera settings are now saved into the camera configuration.
If you want to create another backup of the configuration, click on Save and enter a proper filename, such as "camera_1_config.conf," before you click Save.

## About tab


This screen displays the version number and date of the IP Installer utility. If you need to contact the INTELLINET NETWORK SOLUTIONS Technical Support, make sure that you obtain the information from this page and include it in your message to Technical Support.

## Accessing the camera

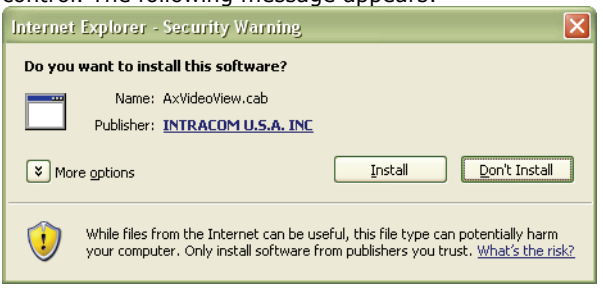
Select the camera from the UPnP device list and then click on Link to IE. MS Internet Explorer will open the camera page automatically. You will be asked to enter a valid user name and password for the camera unless you have disabled the viewer authentication in the account settings.




Note: If clicking on the "Link to IE" button does not open up the MS Internet Explorer Web browser, chances are that you are not a computer administrator. In that case, login to your system again using a computer administrator account.

Administrator rights are also required for the installation of the ActiveX control, which is shown on the next page.

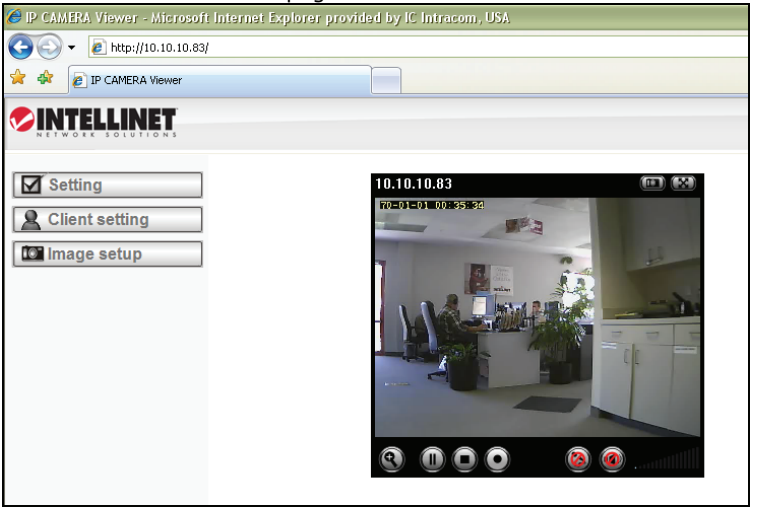
When you connect to the INTELLINET NETWORK SOLUTIONS network camera for the first time with MS Internet Explorer, you need to install an ActiveX control. The following message appears:




Click on Install to being the installation. Depending on your system, additional messages may appear; e.g., the Web browser notification bar. In any event, you need to allow the installation of the ActiveX control.

Note: If this message does not show up and you only see the camera Web page but no live image, the security settings in you Web browser's Internet Options are set too high. You need to change them to allow the execution of signed ActiveX controls.

If the installation of the ActiveX control was successful, you should be looking at the camera's live video page a few moments later.



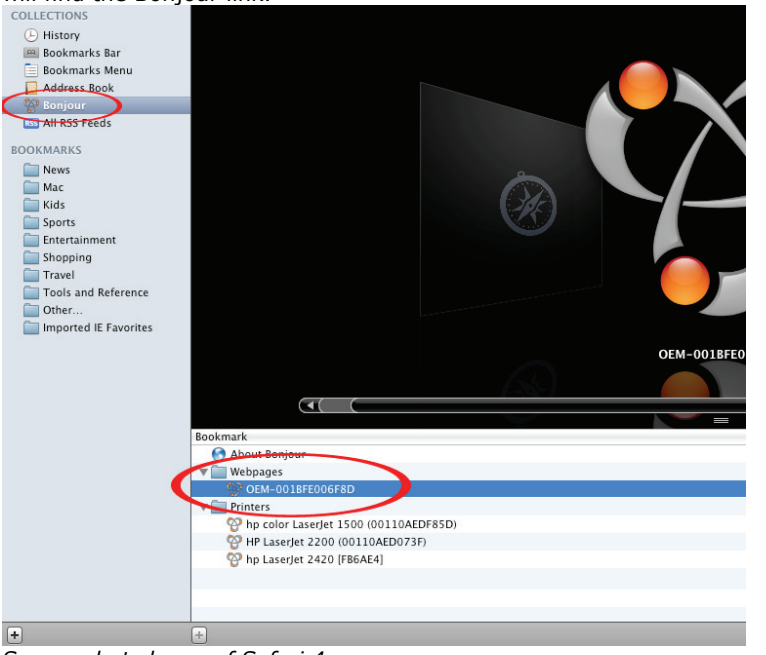

Refer to Chapter 5 for explanations on the Web interface options of your INTELINET NETWORK SOLUTIONS Network Camera.

## 4.1.2 MacOS

The installation on Apple systems running MacOS X does not involve the INTELLINET installation CD. The INTELLINET NETWORK SOLUTIONS network camera supports Apple's Bonjour service.

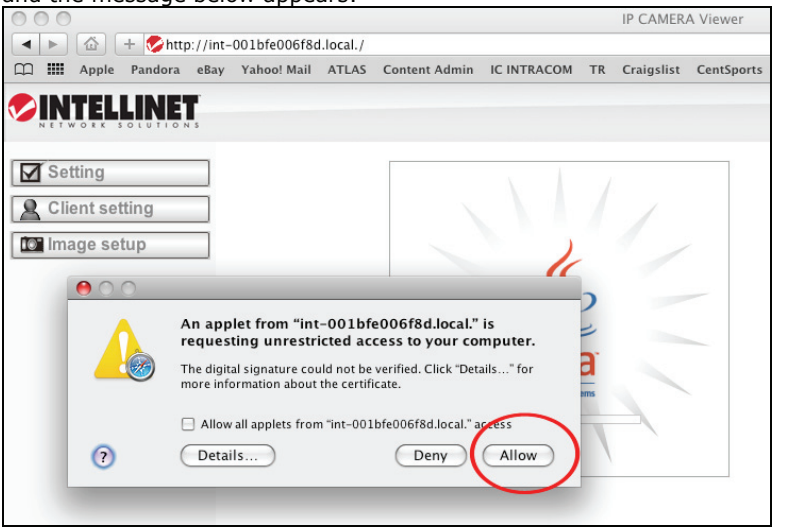
Bonjour, formerly Rendezvous, is Apple Inc.'s trade name for its implementation of Zeroconf, a service discovery protocol. Bonjour locates devices such as printers or network cameras, as well as other computers, and the services that those devices offer on a local network using multicast Domain Name System service records. The software is built into Apple's Mac OS X operating system from version 10.2 onward.

1. Open the Safari Web browser and open the Bookmarks toolbar, where you will find the Bonjour link.

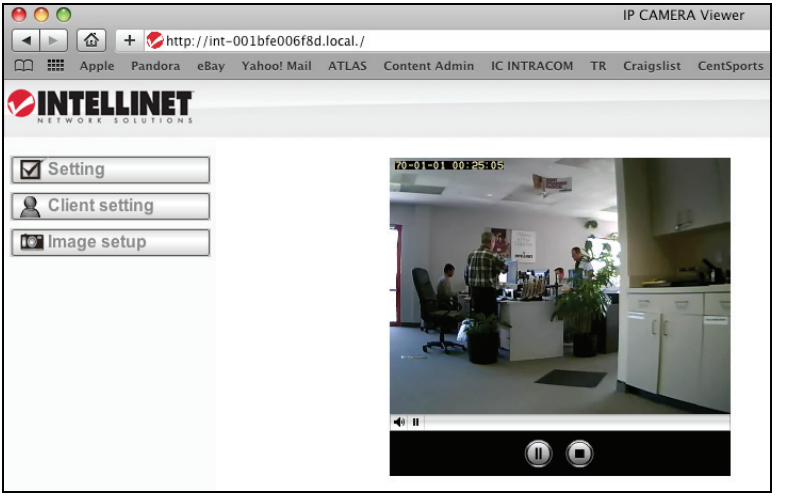



*Screen shot shown of Safari 4.x.*

The Network Camera is shown in the category Webpages. In order to connect to the camera, double-click the circled link. Safari then connects to the camera and the message below appears:



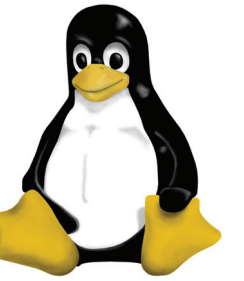

Click on Allow and you will see the camera live image a few moments later.




Refer to Chapter 5 for explanations on the Web interface options of your network camera.

## 4.1.3 Linux

The installation on Linux systems does not require any special software. The network camera is compatible to Web browsers such as Firefox and Konqueror.

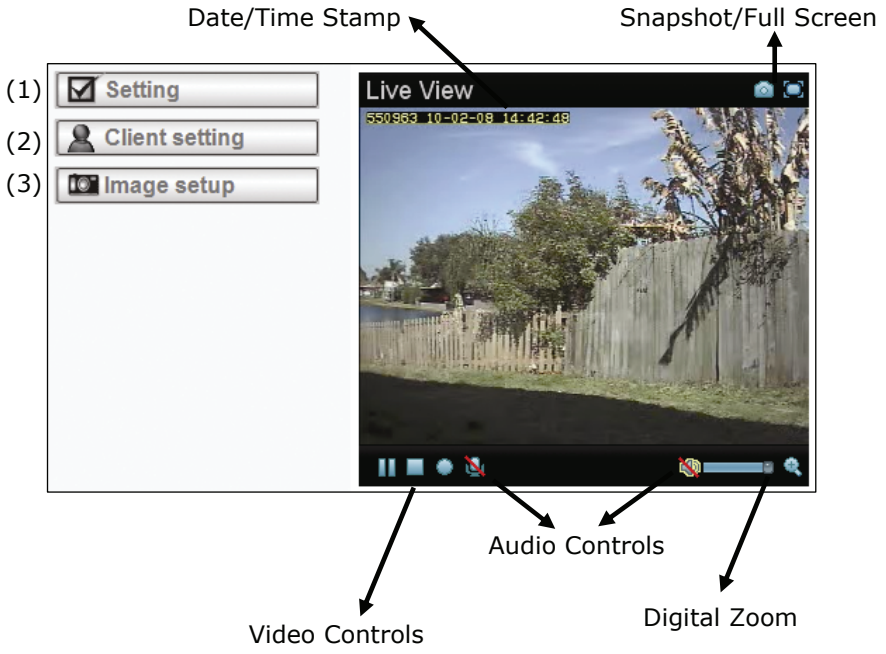


The initial installation requires the setup of the camera's IP address. As the camera by default obtains an IP address from a DHCP server in the network (e.g., a router), you can access the camera as soon as you have obtained the IP address from the router's DHCP client log. Alternatively, you may use Bonjour (mDNSResponder), which is also available for Linux.

If no DHCP server is connected to your network, the camera reverts to its default IP address 192.168.1.221. In order to gain access to the camera, you need to change the IP settings of your system manually. Set up the IP address to be in range of 192.168.1.xxx (where xxx is not 221). Then open your Web browser and connect to address http://192.168.1.221. Log in to the camera and click on the Settings link to open the administrator menu. Refer to section 5.2 Settings Page for more details.

# 5: Web Browser Interface

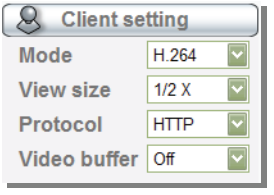
## *5.1 Live Video Page*




(1): This link opens the Settings page of the network camera. This is the administrator area that only users with admin user rights have access to. Refer to Chapter 5.2 for detailed information on the administrator settings.

(2): In order to change any of the client settings, you need to have at least operator user rights on the camera. Click on this link to access the following functions:

Mode: Select the video format (depending on model and settings, there are up to three options to choose from: H.264, MPEG4 and MJPEG)

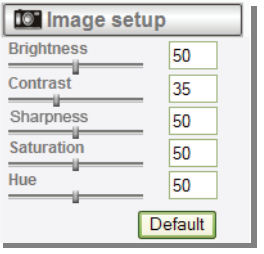


View size: You can define the size of the live video by selecting the value of your choice. Depending on the camera model and settings, you may select values such as 320x240, 640x480, 2x, 1x, 1/2x, 1/4x.

Protocol: Select from any of these protocols: HTTP, TCP, UDP. The default value is HTTP, and normally there is no reason to change it.

Video buffer: Turn the Video Buffer function On or Off. Enabling the video buffer makes the video stream smoother in unsteady network environments or over remote Internet connections. But activating the buffer also means that there is a longer delay between real time and when the events appear on your screen.

(3): The image setup allows control of the image parameters shown on the right. Depending on your camera model, these options can vary. You can either move the slider to adjust the value, or you can type the value into the field.




Brightness: Higher values generate brighter video and vice versa.

Contrast: Raise or lower the contrast of the video.

Sharpness: Crisper video can be generated if the sharpness is set to a higher value.

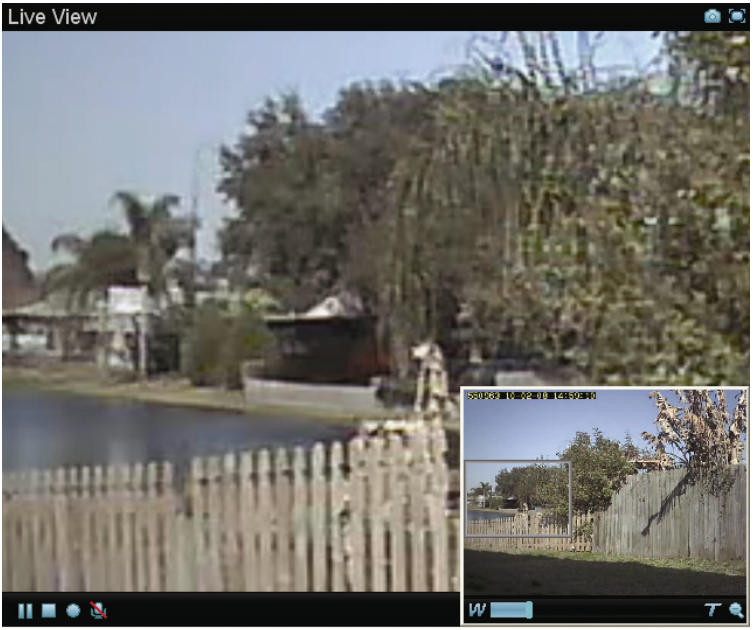
Saturation: When set to "0," the image becomes black and white. Raise the value to increase the amount of color in the video.

Hue: Most sources of visible light contain energy over a band of wavelengths. Hue is the wavelength within the visible-light spectrum at which the energy output from a source is greatest. If you don't understand any of this, don't worry. Normally there is no need to change the default value.

Exposure (not shown): This optional parameter allows controlling the exposure time which has a direct impact on the brightness of the image. The smaller the value, the darker the image becomes. This parameter is useful for cameras that are installed outdoors, or pointing to the outside.

Digital Zoom: 

The digital zoom function allows magnification of certain areas of the video. After you click on the magnification icon, a window appears as an overlay on top of the image. See below.




You can drag the box over the image, and you can adjust the magnification by moving the slider toward "T" (tele-zoom) or "W" (wide-angle). The more you move the slider toward "T," the further you zoom in and details appear larger. It is normal behavior that the image quality is reduced when using the digital zoom function. Digital Zoom is only available in MS Internet Explorer Web browsers.

Video Controls: 

Use the Pause button to temporarily pause the live video. The last frame remains on the screen until you click the Play button.

Use the Stop button to disconnect from the camera. The display turns black until you click the Play button to reconnect again.

Click on the Record button, if you wish to record the live video to your computer's hard drive. When selected, a prompt will request you to specify the folder in which you want to store the video. Click OK to begin the recording. The Record button now turns red, indicating that the recording is active. Click it again to stop the recording.

Snapshot: 

Use this button to take a snapshot of the video. When you click the button, a window opens showing the capture frame. You can then save the image by clicking on the Save button.


Full Screen: 

Click this button to view the video in full screen mode. In full screen mode, the video is stretched to fit the entire screen and all control graphics and window elements are no longer displayed. To return from full screen mode, press the ESC key on your keyboard. You can also right- or left-click any part of the image with your mouse.

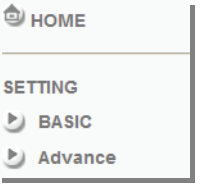
Audio Controls: 

Click on the Loudspeaker button and the camera will play audio, captured by the camera's integrated microphone. Use the slider to adjust the volume.

If your computer or notebook is equipped with a microphone, and a pair of active speakers is connected to the camera's speaker output ports, you can click on the Microphone button to send audio from your computer over the network to the camera. The camera will then play the audio back on the connected speakers. This can be a useful function if you want to interact with people that are in close proximity to the camera's location.

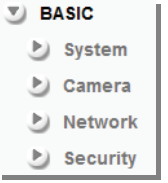
# *5.2 Settings Page (Administrator Menu)*

The camera's administrator menu consists of two main options.
Basic: The camera's network, image and security settings are configured here.
Advance: Motion detection, event triggers, e-mail and FTP uploads can be configured here.

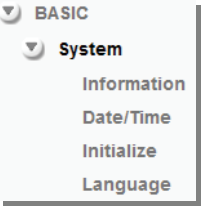



## 5.2.1 Settings Page – Basic Settings

The basic link reveals the subsections "System," "Camera," "Network" and "Security."

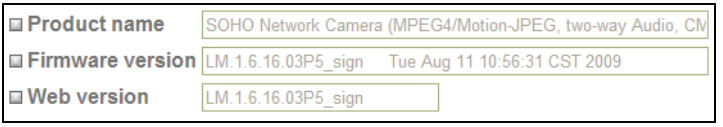



System: The System section contains the subsections "Information," "Date/Time," "Initialize" and, depending on your camera model, "Language." If you do not see the "Language" option as shown on the right, you can find it as part of the "Initialize" section.



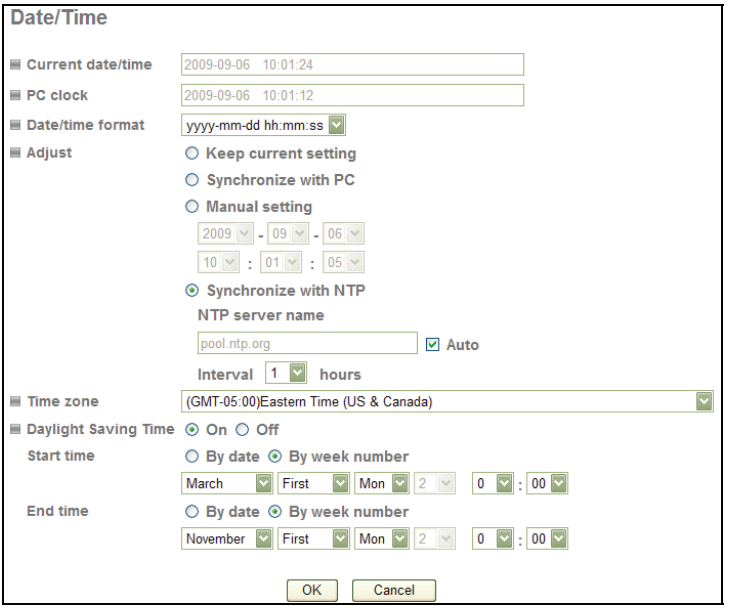

Information: The product name and firmware version of your camera are shown on this page. If you ever need to contact Technical Support, make sure that you include the information shown on this page in your communications.

Example:




*Note: Web version is an optional piece of information that is not shown on all camera models.*

Date/Time: In order to display the date and time stamp on the live video, or to utilize its scheduler, the camera is equipped with an internal time clock. There are several ways to set up the camera time.




*Note: Depending on your camera model and firmware version, the Daylight Saving Time option may not be available.*

Current date/time: Displays the camera's current date/time.

PC clock: This is the date and time of the computer you are currently using to connect to the camera.

Date/time format: The format determines how the date/time is displayed on the live video. Select the format that suits you best.

Adjust: There are four options.
"Keep current setting" means that you don't want to change the date and time.
"Synchronize with PC" adjusts the camera time to the time of your PC. Be aware of the fact that this option sets the time only one time. From that point forward, the camera time will start to differ from your PC time as time progresses, and occasional re-synchronization will be necessary.

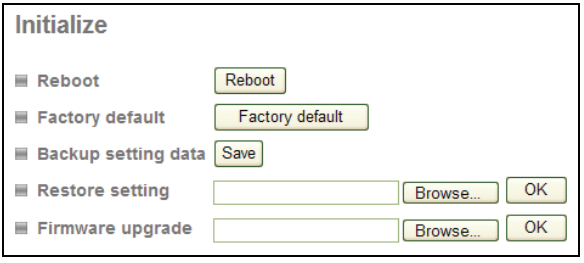
"Manual setting" lets you manually enter the time and date. As with the previous option, the camera's time will

become inaccurate as time passes and you will need to re-synchronize the time periodically.
"Synchronize with NTP": This option is the recommended setting. In this mode, the camera will synchronize its time settings based on the interval setting (ranging from once per hour to once per day). The camera obtains the time from the NTP server (default: pool.ntp.org). You can use the default value unless your camera is not connected to the Internet, or if a firewall in your network blocks the outgoing NTP request of the camera. Uncheck the "Auto" setting and you can enter a different NTP server; e.g., a server in your local network.

Time zone: Select the correct time zone for your location.

Daylight Saving Time (optional):
If your camera is equipped with this option, you can define the range of Daylight Saving Time by activating this option. The camera will adjust the time (move the clock forward or backward by one hour) depending on the programmed start and end time.
If your camera is not equipped with this feature, you can adjust the time zone manually for Daylight Saving Time.

Initialize: This subcategory allows the performing of certain maintenance tasks.



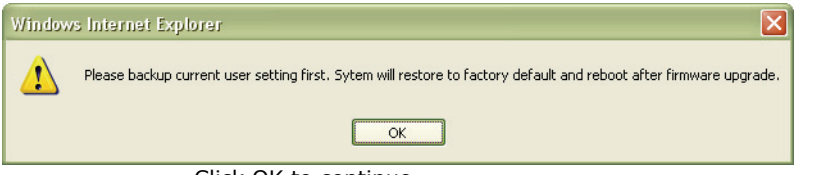

Reboot: Click the button to reboot the camera. This may be useful if the camera performs poorly, or if you have made changes to some of the camera's network settings.

Factory default: Click to erase all settings and revert the camera back to the factory default state.

Backup setting data: This function allows saving the current configuration of the camera to a file on your computer's hard drive. Saving the configuration is useful in case you ever want to reload a specific configuration; e.g., in order to set up another camera of the same model and firmware version with the exact same configuration. Since the IP address configuration is also part of the setting date, you must be careful not to restore the same settings to two or more cameras when all of them are connected to the same network. Otherwise, you would be creating an IP conflict in your network.

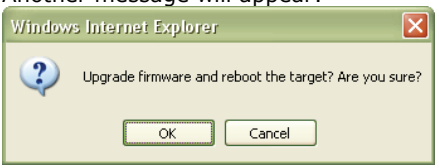
Restore setting: With this function, you can reload a previously saved configuration back into your camera. Click Browse to locate the configuration file and OK to begin the process. The camera will perform a reboot at the end of the procedure and the new settings will become effective.

Firmware upgrade: From time to time, there will be a new firmware version available for your camera. New firmware versions can enhance the functionality of the camera, or they can fix problems.
Before you begin, make sure that you have obtained a proper firmware from the INTELLINET NETWORK SOLUTIONS Web site. If you are not 100% sure about this, do not proceed. Instead, contact the Technical Support team to verify the firmware version.
Also, do not perform the upgrade from a computer that is connected to the network wirelessly, as the connection is inherently less stable than a cable-based connection.
If you have the correct firmware file, make sure that you uncompress the ZIP file first (if the firmware file is an archive) and you end up with a file that has an extension *.bin. Click on Browse and select the *bin file. Click on OK to begin the upgrade process. The following message will appear:



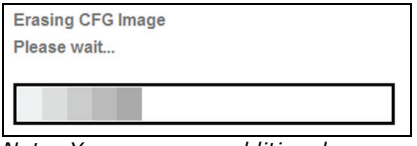

Click OK to continue.

Another message will appear:

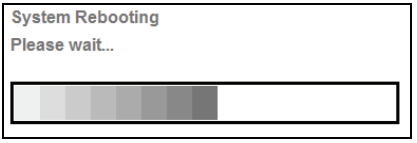



Click on Cancel to abort the operation. Click on OK to start the upgrade process.

You will see the following messages:

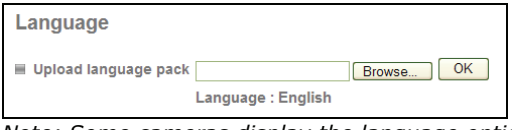



*Note: You may see additional messages at this stage.*




When you see this message, the upgrade has been completed. It may take up to two minutes to re-gain access to the camera. If the camera no longer responds, use the Windows IP Installer utility to find the camera and re-configure the IP Address settings.

Language: You can replace the language in the user interface of your network camera. On the Installation CD are different language files starting with "LNG_" and ending with ".lang." Click on Browse, select the language you wish to install and then click on OK to begin the process.



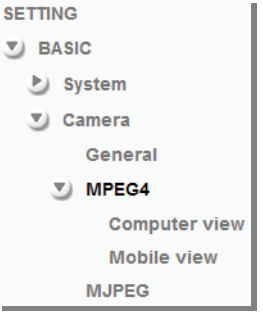

*Note: Some cameras display the language option under the Initialize link.*

This concludes the Basic -> System settings.

Camera: This section contains the video-related settings of the camera. Depending on the camera model, the options may vary. There are two different styles, each of which has slightly different options. First you need to identify which style applies to your camera.

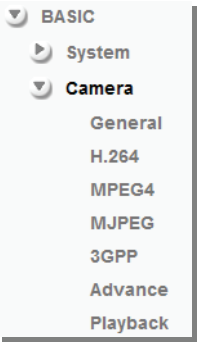
Style 1:

The main options are:
- General
- MPEG4
    - Computer View
    - Mobile View
- MJPEG



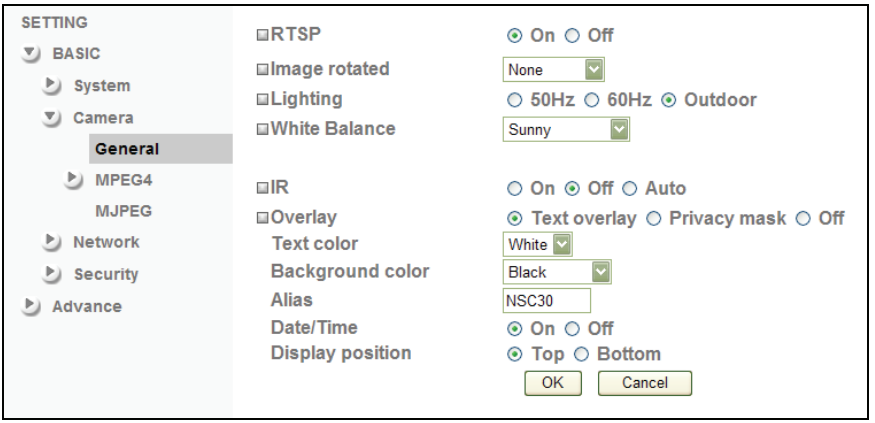

Style 2:

The camera section contains the subsections "General," "H.264," "MPEG4," "MJPEG," "3GPP," "Advance" and "Playback."
This style applies to all H.264 1.3 Megapixel network cameras.




The following pages explain each of the options and refer to either Style 1 or Style 2. The options for style 1 are explained first.

Camera -> General (Style 1):




RTSP: RTSP stands for Real Time Streaming Protocol. RTSP is supported by most media clients, such as Real Player, VLC and QuickTime. If you only plan to view the camera video with your Web browser or with one of the provided software utilities, you do not need to activate this option. Note that activating the RTSP option disables the camera's ability to send out Motion-JPEG video.

Image rotated: Choose from one of the following options: "None," "Mirror," "Flip" and "Mirror + Flip." With this function you can mirror the image vertically, horizontally or both. The default value is "None."

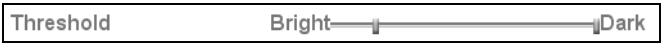
Lighting: This is an important parameter. There are three values: "50Hz," "60Hz" and "Outdoor."
If your camera is installed so that it's facing outside, you should select "Outdoor." If your camera is installed indoors, you must select the appropriate light frequency (either 50 or 60 Hz; e.g., in the US select 60 Hz, in Germany, Poland or Italy select 50 Hz).

White Balance: This parameter controls how the camera interprets colors. Depending on the previous selection (Lighting), you can choose from the following values: "Auto," "Fluorescent," "Incandescent," "Sunny," "Cloudy" or "Black & White."
You should select the value that best represents the environment the camera is installed in. You can also leave the default value "Auto," as it typically delivers very good results.

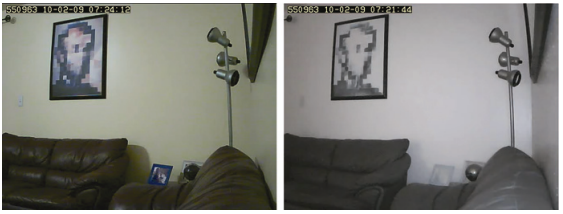
IR:

Cameras that are equipped with infrared allow the control of the camera's function at night.

On: Activates the night vision mode. The IR cut filter is removed when this option is enabled. The IR LEDs are activated and the image turns black and white.
Off: The IR functionality is deactivated and the camera will always send color images. At night, however, the camera will not be able to capture proper video.
Auto: In this mode the camera automatically engages the night vision mode when a certain level of light is reached. The "Bright" value defines the threshold at which the camera switches IR mode to color mode. The "Dark" value does the opposite. It tells the camera at which light level to remove the IR cut filter and activate the IR LEDs.




The image below illustrates the difference between the IR mode being on and off.



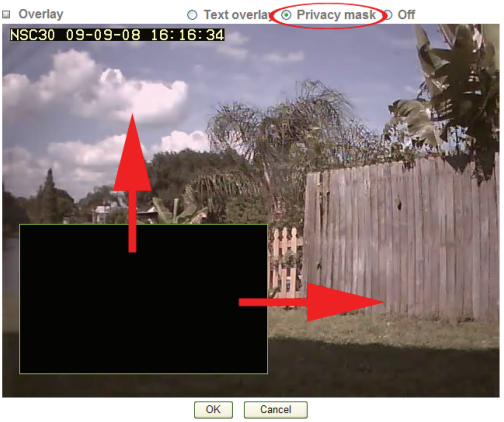
Left: IR = "Off." Right: IR = "On" or "Auto"

Note: Standard cameras do not display this parameter; they display a parameter called night mode, which can be set to "Auto" or "Off." Auto means that the camera increases the shutter time to ¼ second, creating a longer exposure time, which allows the camera to capture images even in low light conditions. When set to "Off," the camera will not adjust the shutter time and the resulting images are darker.

Overlay:

Activate text overlay in order to display the date and time information on the live image of the camera, along with an alias name for the camera. When these options are activated, the live video shows the information in the specified position, as shown to the right.

When privacy masking is activated, a new option appears on the screen that allows you to censor (black out) an area in the image you don't wish the camera to capture.

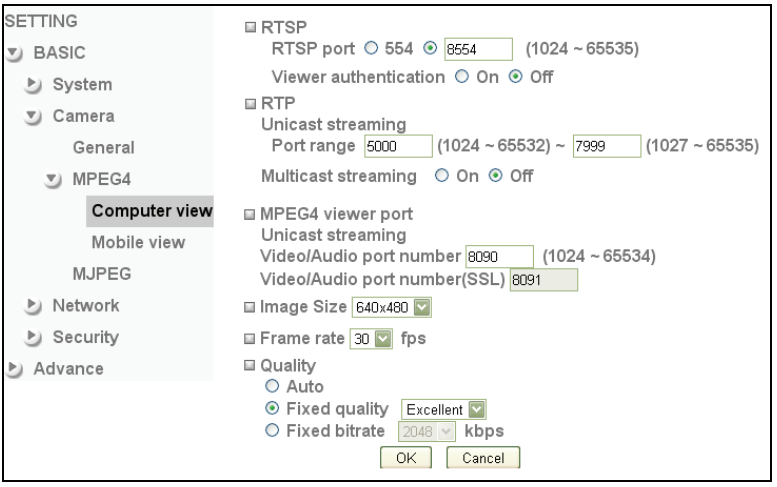



Use your mouse in order to resize the box and move it into the desired position on the live video. Privacy masking is an important function designed to protect the people's right for privacy.

Example 1: The camera is installed in your home: e.g., overlooking your driveway. In the background is the neighbor's house, which you have no intention of monitoring. It would illegal in some cases for you to do so. To resolve this problem, you can activate a privacy zone over your neighbor's house.
Example 2: The camera is installed in your company; for example, overlooking the warehouse. In one corner of the warehouse is the break room, where the employees go for their lunch breaks. In many countries it is not permitted to monitor the workers during their break. To comply with laws and regulations, you can define a privacy mask in the break area to ensure that this area is not being monitored or recorded by the camera.

Note: Privacy masking can only be set up when using MS Internet Explorer.
Text overlay is only applied to the MJPEG video stream, if RTSP mode is set to off.

## Camera -> MPEG4 -> Computer View (Style 1):



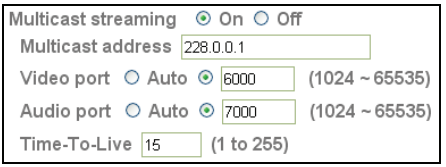

The RTSP and RTP options are for advanced users only. If you are not familiar with any of these terms, including Multicast and Unicast, there is a good chance that you do not need these functions of the camera.

RTSP: This is only shown if the RTSP mode is enabled in the general settings. When activated, you can define which port you wish to use for the RTSP protocol. The standard port is 554, but you can use a different port, if desired.
The viewer authentication controls whether or not a valid user name and password are required in order to access the camera live image. For security reasons it is recommended to set this value to "On" (unlike in the screen shot above); otherwise anyone who knows the network address of your camera can potentially access the video stream.

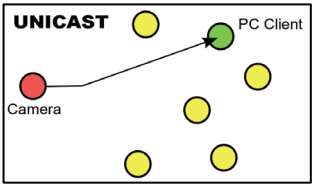
RTP: The Real-time Transport Protocol (RTP) defines a standardized packet format for delivering audio and video over the Internet. This option is only shown if the RTSP mode is enabled in the general settings.
Unicast Streaming: Define the port range for standard Unicast streaming here.
Multicast Streaming: Set to "On" to enable it.

Note: If the camera has firmware 1.6.16.05 or newer installed, the RTSP and RTP options can be found on the Camera -> General page.

Once you activate the multicast option, the screen will show additional options:

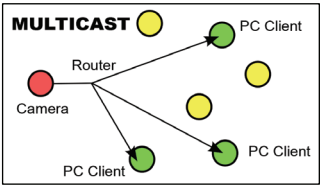



Enter the address of your multicast server along with the audio and video port. The Time-To-Live value defines how long multicast traffic will expand across routers. Routers have a TTL threshold assigned and only datagrams with a TTL greater than the interface's threshold are forwarded.
Below are additional details regarding the differences between Unicast and Multicast.




Unicast: For each connected computer there is a separate TCP/IP connection. When 20 computers are connected to the camera, the camera has to create 20 different connections, and the camera has to send out the same video data to each of the 20 computers. This not only puts a significant load on the camera, it also creates massive amounts of data that need to be transferred over the network to each connected client.
Unicast is still the most common model when using a network camera, since most times only a recording device (DVR or NVR) is connected to the camera and perhaps connections from just a small number of computers.

Multicast: Here the initial stream is sent to the router only, which creates optimal distribution paths for datagrams sent to a multicast destination address. Whether one or 300 PCs are connected to the video stream does not matter. The bandwidth and load of the local camera is unaffected. Because of this, multicast is the preferred choice for broadcast-type applications.



MPEG4 Viewer Port:

The camera uses two ports, one for regular connections and one for SSL (HTTPS) encrypted connections. If you are using the INTELLINET NETWORK SOLUTIONS network camera only in your local network and do not wish to access the video remotely over an Internet connection, these values are unimportant. For remote connections, however, they are important. The ports entered here need to be programmed into your router's port forwarding table to allow incoming remote connections. Refer to Chapter 7 Remote Access and Router Setup for details on the port forwarding setup.

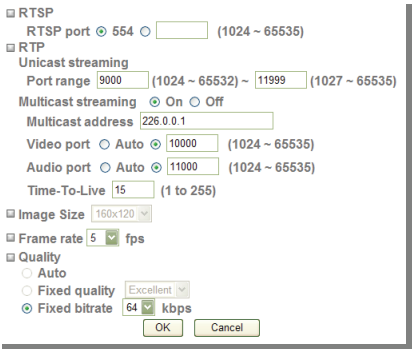
Image Size: Define the video resolution that the camera sends out by selecting the appropriate resolution (160x120, 320x240 and 640x480 pixels) here. The image size has a direct impact on the amount of network bandwidth required in order to submit the video stream over the network. The higher the resolution, the more network bandwidth is used to deliver the video stream.

Frame rate: Select from a range of 5 to 30 fps to define the maximum frame rate (frames per second) of the video. The higher the frame rate, the smoother the video and the more network bandwidth required to deliver the video stream.

Quality: You can control the image quality of the video by selecting "Fixed Quality" and defining the image quality by selecting one of the following values "Medium," "Standard," "Good," "Detailed" and "Excellent." Or you can choose to specify the bit rate of the video the camera must not exceed. When you set the quality to "Auto," the camera varies the image quality automatically based on the connection speed of the connected client.

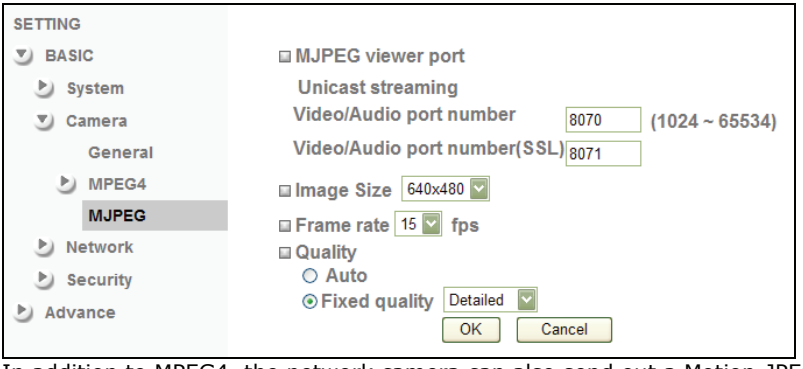
## Camera -> MPEG4 -> Mobile View (Style 1):

The network camera has the ability to send out a low-resolution video stream that is ideal for remote viewing via a mobile phone.




The camera supports 3GPP and 2.5 WAP for older phones.
The options are the same as the computer view, except that the image size is fixed to 160x120 pixels, and the frame rate and quality settings are much lower.

## Camera -> MJPEG (Style 1):

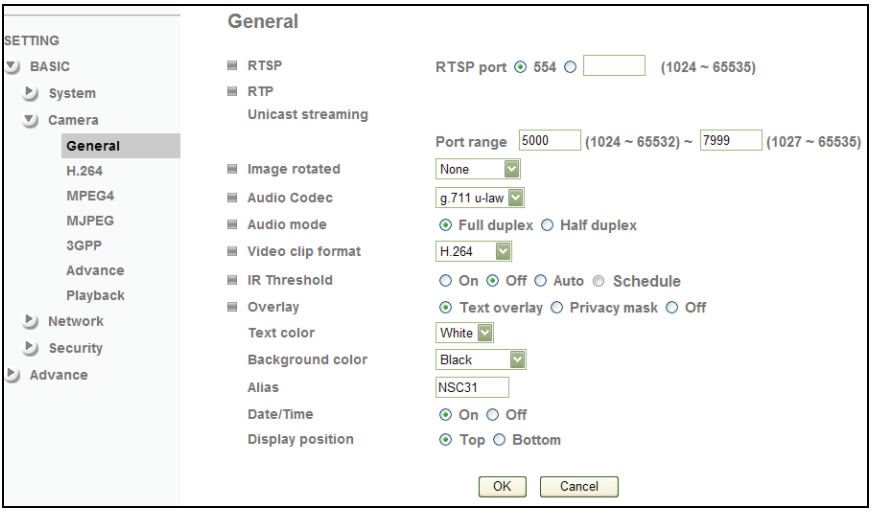



In addition to MPEG4, the network camera can also send out a Motion-JPEG video stream. While Motion-JPEG has a much larger network footprint than MPEG4 or H.264, and therefore requires more network bandwidth to submit the same video information, it is still widely used in the video surveillance environment. As seen before, you can define the individual ports that the video stream uses, along with the image size, frame rate and quality.

Note: When RTSP is activated, Motion-JPEG cannot be used at the same time and the screen options are disabled.

This concludes the camera category options for all MPEG4/Motion-JPEG network cameras. The following section describes the options for the H.264 Megapixel camera models.

Camera -> General (Style 2):




RTSP: Specify the RTSP port here. The default port is 554.

RTP: Define the RTP port range here.

Image Rotated: Choose from one of the following options: "None," "Mirror," "Flip" and "Mirror + Flip." With this function you can mirror the image vertically, horizontally or both. The default value is "None."

Audio Codec: Here you can define which audio codec the camera uses. There are four choices:
g.711 u-law / g.711 a-law: G.711, also known as Pulse Code Modulation (PCM), is a very commonly used waveform codec that generates a 64 kbps bit rate.
AMR Audio: AMR was adopted as the standard speech codec by 3GPP in October 1998 and is now widely used in GSM and UMTS. AMR Audio uses less bandwidth than g.711 audio. When AMR is selected, you can specify the bit rate between 4.75 and 12.2 Kbps.
Off: Disable the audio function in the camera.

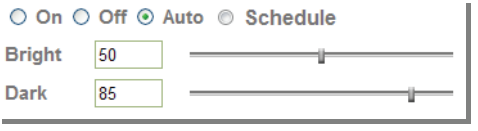
Audio mode: There are two choices here. "Full Duplex" means that the camera can send and receive audio simultaneously. "Half Duplex" means the camera can send out audio to the connected client PC, but can't receive audio from it.

Video Clip Format:

The camera has the ability to send out short video clips to an FTP server, via e-mail or to a local SMB network storage device. Find more about that in the advanced section. Here you define the format of the video clip. You can choose between H.264 and MPEG4. Each of these streams can be defined individually in terms of video resolution and quality in the corresponding menus.

IR Threshold:

If your camera is equipped with Infrared, you can define the behavior of the camera under different light conditions.
On: Activates night vision permanently. The camera removes the IR cut filter and activates the IR LEDs. The resulting image is black and white, but the camera can capture video even in complete darkness.
Off: Permanently deactivates the night vision mode. Even at night or under poor light conditions the camera will continue to send color video. The disadvantage is that the video may not contain any visual details due to the low light levels.
Auto: The camera automatically activates the night vision mode based on the Bright and Dark parameters.
Schedule: The camera automatically activates the night vision mode based on a programmed schedule for each hour and day of the week.




The "Bright" value defines the threshold at which the camera switches from IR mode to color mode.
The "Dark" value does the opposite. It tells the camera at which light level to remove the IR cut filter and activate the IR LEDs.
The Bright parameter defines the time when the camera goes into color mode in the morning while the Dark parameter tells the camera when to engage the night vision mode at night.
Note: Some models may show only one slider, which combines both the bright and dark setup.

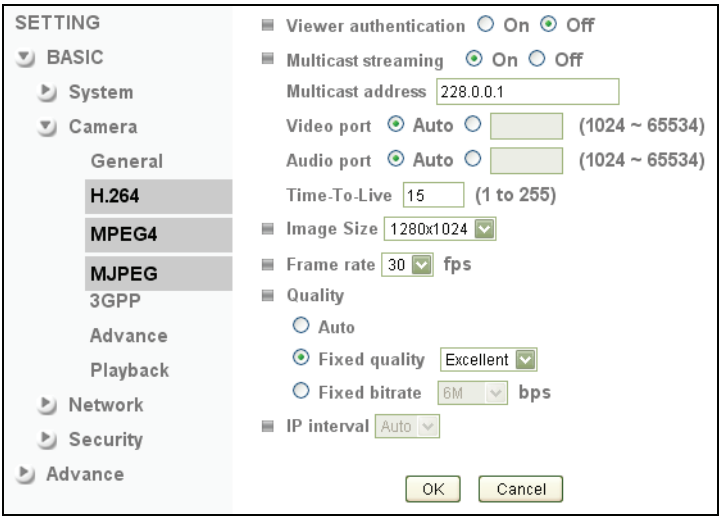
Overlay:

You can activate a text overlay on the live image. This can be either a date and time stamp along with the camera's alias, or it can be a privacy mask. Refer to the overlay section in style 1 for more detailed information on the setup.

Note: The text overlay is only active for H.264 and MPEG4 video.

## Camera -> H.264/MPEG4/MJPEG (Style 2):

The network camera is a multi-stream device. It can send out H.264, MPEG4 and Motion-JPEG video. Each stream can be configured independently concerning video resolution, video quality and more. The individual setup pages have the same parameters.




Viewer authentication: When activated, a user name and password is required in order to access the video stream.

Multicast streaming: Enable this option to utilize multicast streaming. When activated, you need to provide additional information such as the multicast address, audio and video port and the Time-To-Live parameter. More information on Multicast streaming can be found in section "Camera -> MPEG4 -> Computer View (Style 1)."

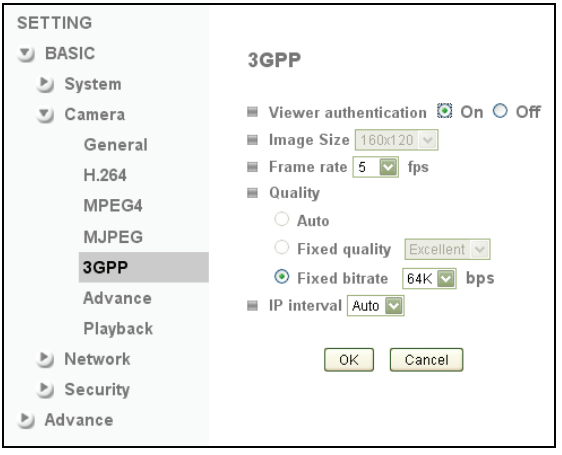
Image Size: Define the video resolution that the camera sends out by selecting the appropriate resolution (160x120, 320x240, 640x480, 1280x720 or 1280x1024 pixel). The image size has a direct impact on the amount of network bandwidth required in order to submit the video stream over the network. The higher the resolution, the more network bandwidth is used to deliver the video stream.

Frame rate: Select from a range of 1 to 30 fps to define the maximum frame rate (frames per second) of the video. Higher frame rates yield smoother video, but generate more network bandwidth.

Quality: This allows you to control the image quality of the video.
Auto: The camera automatically adjusts the quality based on the connection speed of the connected client.
Fixed quality: Select the quality from medium to excellent.
Fixed bitrate: Define the maximum network bandwidth for this stream from 64 kbps (low quality) to 6 Mbps (high quality).
Note: Fixed bitrate is not available for the MJPEG stream.

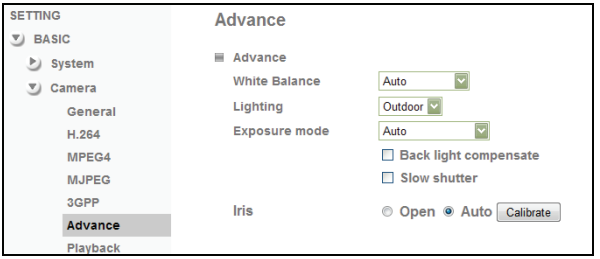
IP Interval: This parameter defines the I-Frame interval. MPEG4 video streams consist of a series of frames. An I-Frame is an Intra-coded picture; in effect, a fully specified picture, like a conventional static image file. A P-frame (predicted picture) holds only the changes in the image from the previous frame. The IP interval defines how many P-Frames are sent out by the camera before another I-Frame is sent.
Auto: The camera automatically adjusts this value (default).
5 – 120: The number specifies the number of frames, after which the camera sends another I-Frame. The lower the number, the more I-Frames are sent out resulting in a larger video as far as bandwidth is concerned. Values between 5 and 20 typically yield good results.

## Camera -> 3GPP (Style 2):




These are the settings for 3GPP mobile phone streaming. The options are similar to those of H.264, MPEG4 and MJPEG except that some values are much lower than for the other streams to make the stream suitable for mobile phone streaming.

## Camera -> Advance (Style 2):



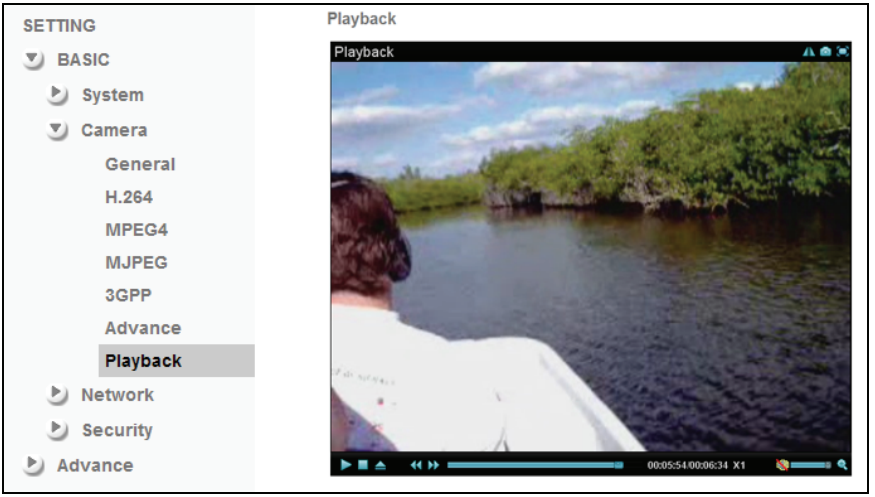

White Balance: Select the value that best represents the installation environment of the camera, or leave it on auto to let the camera do the adjustment automatically for you.

Lighting: If the camera is installed indoors, select either 50 or 60 Hz, depending on the power grid frequency in your country. Select Outdoor, if the camera is installed outside, or pointing outside. The automatic mode can also be used, but best results are ensured by manually specifying the correct value for your location.

Exposure mode: Exposure mode controls the behavior of the shutter, which is used to control the brightness of the video.
Auto: The camera controls the shutter speed automatically. As light levels decrease, the camera keeps the shutter open longer and vice versa.
Auto (fast shutter)/High-Speed Mode: This mode provides better results when moving objects (e.g., cars) are captured by the camera. The shorter shutter time ensures that the moving object remains sharp.
Manual: When this is selected, you can manually specify the time the camera keeps the shutter open. This is useful if you want to instruct the camera to keep the shutter open for a relatively long time in order to be able to capture video in poor light conditions. Values range from ¼ sec. to 1/120 seconds. REMOVE: ~~With the gain value you can also adjust the exposure time. This feature is not suitable if the camera captures outdoor video and typically, you do not need to change the exposure mode to manual.~~

Iris: Optional parameter, only available in cameras with a DC-controlled auto-iris. This value should be set to auto to allow the camera to adjust the iris in accordance with the current light conditions for best results. The calibration function should be performed from time to time to ensure proper results.
If the light levels are too low, the calibration function will fail and the message "Calibration Failed" is shown. This is normal. Repeat the calibration when there is more light available.

Camera -> Playback (Style 2):

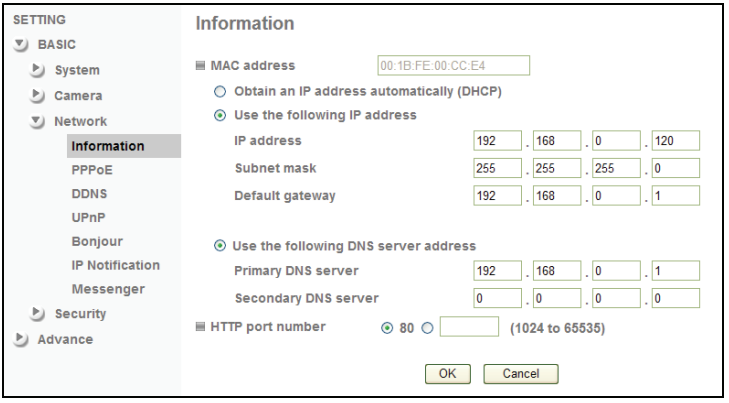



The INTELLINET NETWORK SOLUTIONS Network Camera is equipped with an integrated video player. With this player you can play back videos that you have recorded with the camera; e.g., by using the record function on the live video page. The video player can also playback other video sources, if the necessary video codecs are installed on your computer.

The controls consist of the typical array of buttons you find in most common media players; e.g., play, pause, stop and open, fast forward and rewind, time display, volume and full screen controls.

Note: The video player can only be used with MS Internet Explorer. Other Web browsers do not support this function.

Camera -> Network -> Information:




On this page you can define the network settings of the camera. By default the camera is set up to automatically obtain the necessary IP information from the DHCP server (e.g., the router) in your network. You can, however, set up the IP address and related settings manually.

MAC address: MAC address stands for Media Access Control address. This is the unique hardware address of the camera's network interface.

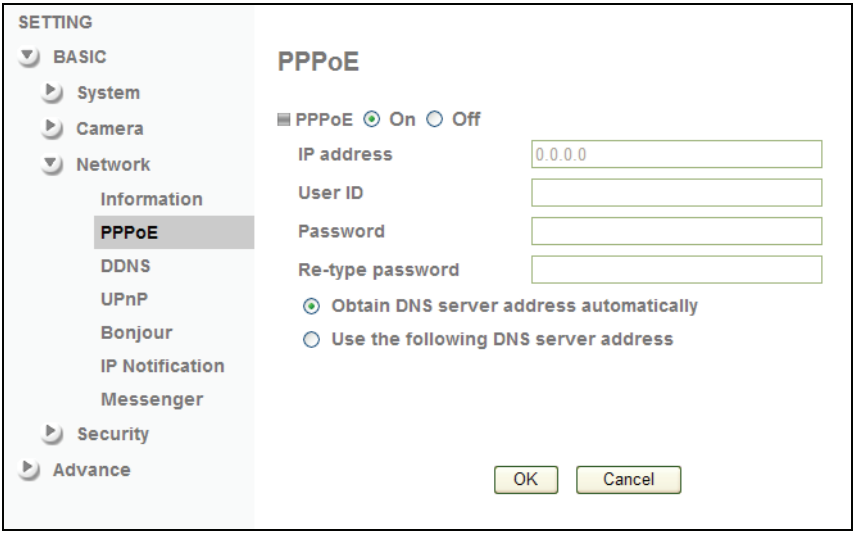
Obtain an IP address automatically (DHCP): This is the default setting. In this mode the camera obtains the IP information from the DHCP server in your network.

Use the following IP address: Activate this option in order to assign a static IP address to the camera. You need to enter a valid IP address, subnet mask and default gateway address in the corresponding fields.

Use the following DNS server address: When you disable DHCP, you also need to provide the camera with valid DNS settings. The Primary DNS server must be filled out. It is often the same IP address as the Gateway address.

HTTP port number: The default value is 80 and normally there is no need to change it. If you decide to change the http port to a different value; e.g., 1024, you need to do two things:
1. After saving the settings you need to reboot the camera via the System -> Initialize menu.
2. After the reboot is completed you need to connect to the camera using the URL http://camera_ip:portnumber.

Camera -> Network -> PPPoE:




PPPoE is the most common form of connection for DSL-based Internet service. You can use this function to connect the camera directly to a DSL modem. A common application for this is where the network camera is installed in a remote location where no network is present. In the location is a DSL Internet connection (DSL modem), but no router or any other network infrastructure. You can connect the camera to the DSL modem and enter your DSL account information in the fields below.

IP address: Displays the current IP address obtained from the Internet Service Provider (ISP). It displays 0.0.0.0 if the camera is not connected to the Internet via PPPoE.

User ID: Enter the user ID for your DSL service here. The user ID has been given to you by your ISP.

Password: The password for the DSL account goes here. Re-type the password in the field below.

DNS Server: Typically, your ISP will send DNS Server information to the camera when it connects. Some ISPs, however, require entering specific DNS servers manually. In that case you can activate the option "Use the following DNS server address" and enter the primary and secondary DNS servers in the fields below (not shown on the screen shot).

## Camera -> Network -> DDNS:

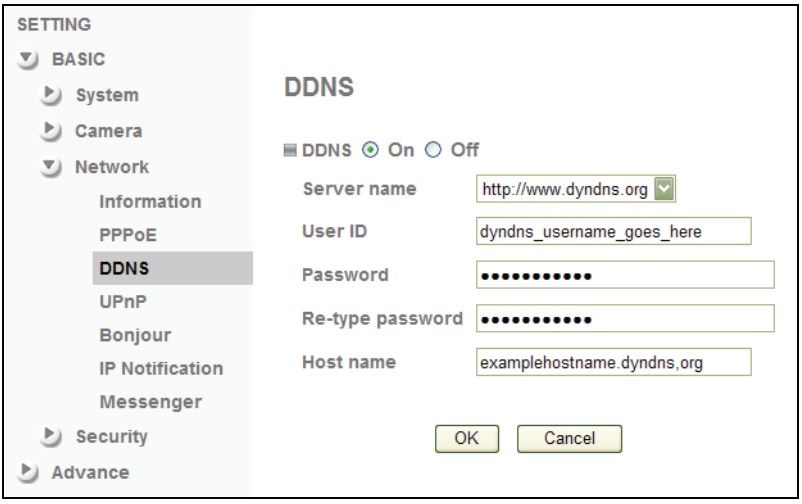
If you are not planning on connecting to the network camera over a remote connection, but only in your local network, you can skip this section.

Dynamic DNS is a network service that provides the capability for a networked device, such as a router or computer system, to notify a domain name server to change, in real time (ad-hoc) the active DNS configuration of its configured host names, addresses or other information stored in DNS.
In simpler terms: Users of private Internet services are often faced with a problem: The ISP typically changes the IP address assigned to the user based on a time interval. This may be as often as once every 24 hours or as seldom as once every 30 days. For the average user this is not a problem. However, if you want to be able to connect to the local camera (e.g., in your house) from a remote location (e.g., the office), you need to know under which Internet address the camera can be reached. However, you don't know what the current Internet IP address is. So you are beginning to see the problem.
DDNS solves this problem by allowing you to create a domain name for your home network, which you can always use to access the camera. To use the DDNS function, you will need to do the following two things.
1. Create a DDNS hostname with a DDNS service provider
2. Set up a DDNS client in the home network that contacts the DDNS service provider and updates the IP information.

The INTELLINET NETWORK SOLUTIONS network camera supports three different DDNS providers: DYNDNS.ORG, DHS.ORG and TZO.COM. Of the three, as of February 2010 only dyndns.org is a free service (be aware that this may change). This user manual therefore focuses on the dyndns.org service.

You first need to register and create an account on www.dyndns.org.


1. Connect to http://www.dyndns.org and click "Create Account."
2. Follow the step-by-step instructions on the DYNDNS screens, inputting all information requested.
3. Log in with the new account and go to Account → My Hosts → Add Host Services.
4. Enter the domain in the Hostname field and select a sub-domain from the drop-down menu. Follow the check-out procedure.
5. After entering the information, check your service and make sure that the DDNS domain name is listed under Account → My Hosts.
6. On the camera's DDNS screen, fill in the fields and reboot the camera (see next page).




Note: If the router in your home network is equipped with a DDNS client, we recommend using the router instead of the camera. Most SOHO routers are equipped with a DDNS client and since the router is in direct control of handling the Internet connection, it's the device best suited for the DDNS task.

Server Name: Select the DDNS provider of your choice. In our example we use www.dyndns.org.

User ID: Enter the same user name here that you use to log in to your account settings on www.dyndns.org. Do not enter your DSL user account information here.

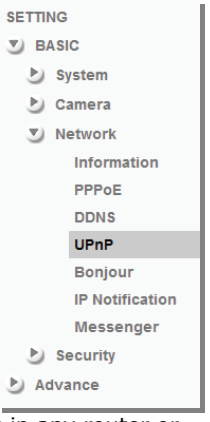
Password: Enter the password for your dyndns.org user account here. Re-type the password in the field below.

Host name: You need to enter the full host name that you have created in your dyndns.org account here.

Click OK to save the settings. Reboot the camera via the System -> Initialize menu to activate the DDNS settings.

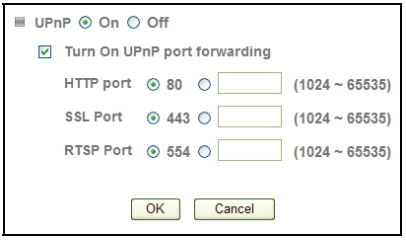
After a reboot you may need to wait for a few minutes before you can access the camera with the new domain name.

## Camera -> Network -> UPnP:



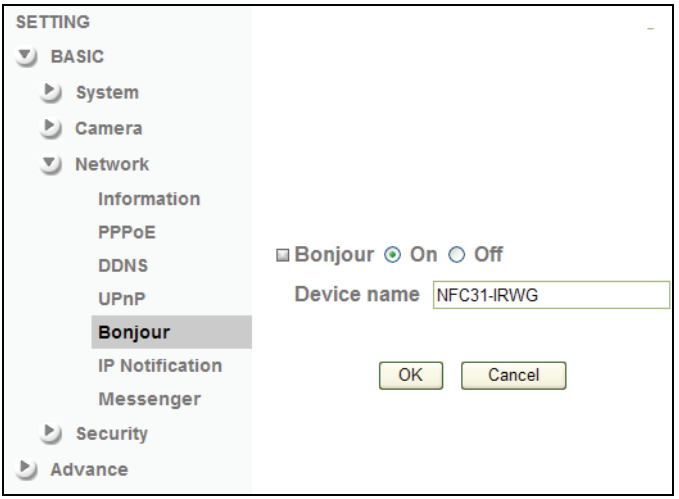

UPnP stands for Universal Plug and Play. A UPnP-enabled device, such as your network camera, announces its presence in the local network to other computers that support UPnP as well. The operating systems Windows XP, Windows Vista and Windows 7 support UPnP. When the network camera is connected to the network, Windows will alert the computer user of the presence of the new device (a new icon will be added to your My Network Places folder) and lets the user connect to the device instantaneously.
Furthermore, UPnP has the ability to instruct the router or firewall to open certain ports, so that a party from the outside world can contact a device on the local network, such as the network camera.
UPnP port forwarding is not supported by all routers, however. So, depending on your router or firewall, you may or may not be able use this function. Also, opening ports in any router or firewall increases the risk of an intruder successfully breaking in to your network. UPnP automates this task and leaves it to the devices to negotiate which ports to open. Since this is done without any form of authentication, enabling UPnP port forwarding in your router is not necessarily a good idea in a security-sensitive environment. You can always open individual ports in your router or firewall manually. See Chapter 7 Remote Access and Router Setup.

In the camera UPnP is enabled by default. UPnP port forwarding is disabled by default. When you enable UPnP port forwarding, the screen will reveal additional options. These are the ports the camera will instruct the router to open. Depending on the camera model, you may see different ports. The new H.264 Megapixel cameras have a simpler port model and require fewer ports than the other models. Normally there is no need to change any of these ports, unless you know that a port is already in use by a different device or application.



## Camera -> Network -> Bonjour:

Bonjour is a service that, just like UPnP, helps to find the network camera on the network. Bonjour is available for Windows, but is more commonly used for MacOS. Refer to section "4.1.2 MacOS" for additional information on the usage.

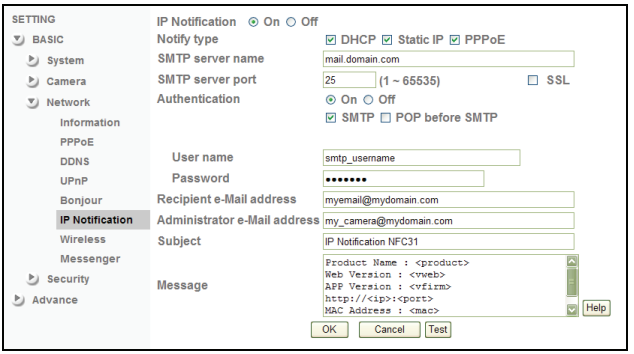



Bonjour: On: Enables the service (on by default).
Off: Disables the service.

Device name: Enter the name of your camera here. This is the name the Bonjour service will display. If you have more than one camera installed in your network, this is an easy way to differentiate among the cameras.

## Camera -> Network -> IP Notification:

The camera can inform the user via e-mail about the IP address it is set to. If the camera is set up with a dynamic IP address (default), then the camera IP address may change from time to time as the DHCP server (router) may assign a new IP address when the so-called Lease Time has expired. If the camera is connected directly to a cable or DSL modem, the IP address also changes frequently (or infrequently, depending on your ISP).
In both cases it is useful to have the camera send you an e-mail that includes the current IP settings.
In order to use IP Notification, you need to set up e-mail related parameters. If you do not know this information, you need to contact your network administrator.




Notify type: Select which type of connection (DHCP, Static IP or PPPoE) should be observed by the IP notification function. For example, if you uncheck Static IP and your camera is set up with a static IP address, you will not receive an e-mail notification.

SMTP server name: Enter the domain name of the Sendmail server (outgoing e-mail server) here.

SMTP server port: Port 25 is the standard port for SMTP connections. If your SMTP server uses a different port, you can enter it here.

Authentication: Most SMTP servers require user authentication to prevent abuse. Set this to On to enable authentication. Then select the type of authentication. If you are not sure which value is correct, contact your network administrator to find out. When selecting POP before SMTP you need to specify the POP server name (not shown on screen shot).
You also need to provide the SMTP user name and password. Typically, these are the same values you use in your e-mail program profile.

Recipient e-Mail address:
Enter the e-mail address to which the camera sends the e-mail.

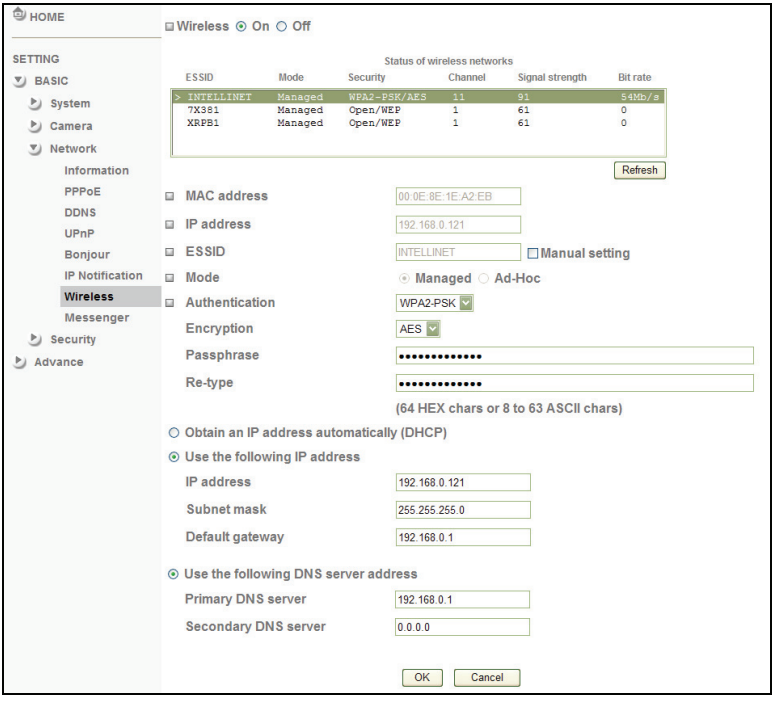
Administrator e-Mail address:
This is the sender e-mail address that the camera uses.

Subject: You can define the subject of the e-mail here.

Message: You can customize the message body of the e-mail here.

Click "Help" for more information on the parameters.

Camera -> Network -> Wireless:




If your network camera supports wireless, you can configure the related settings on this page. The camera has the ability to find the wireless network and allows you to quickly enter the correct encryption key.

Status of wireless networks:
All wireless networks in range are shown here. Select the correct wireless network by highlighting it. Once selected, you will see that some of the fields automatically populate.

ESSID: This is the wireless network name the camera will connect to.

Authentication: The camera has selected the correct authentication mode. If you configure the wireless network manually, you will need to select the correct authentication type.

Encryption: As with the authentication, the camera has automatically populated these fields for you.

Passphrase: Enter the password for your wireless network here. Repeat the password in the field below.

The wireless interface has its own IP settings. These are independent from the regular settings (Network -> Information) and must be configured separately.

Obtain an IP address automatically (DHCP):
Enable this and the camera will obtain the IP information from the DHCP server in your network.

Use the following IP address:
If you activate this option, you need to enter the IP-related values (IP address, subnet mask, default gateway) in the corresponding fields below.

Use the following DNS server address:
If you enter the IP settings manually, you also need to key in proper DNS server information. The primary DNS server is mandatory. The secondary DNS server is used as a backup.

Note: Do not set up the Network interfaces (LAN and WLAN) with the same static IP address.

## Camera -> Network -> Messenger:

The INTELLINET NETWORK SOLUTIONS network camera has a unique feature that allows it to act as a Web camera for Windows Live Messenger.

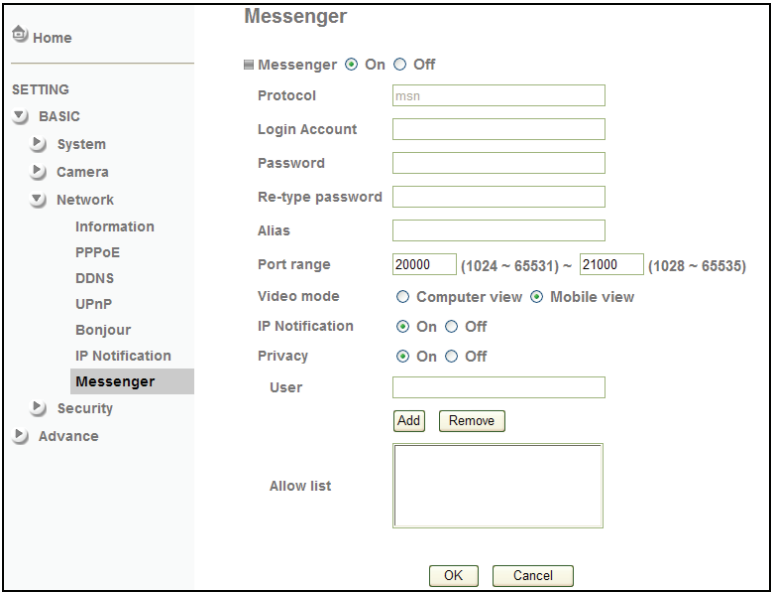

Note:
Microsoft has updated LIVE Messenger 2009 in May 2010 removing some features from the application; in particular, the ability to independently show only your own webcam or your contacts' webcam (one way webcam) without an audio call is removed. It is only possible to start a video call which starts the webcams of both people communicating and which also automatically starts audio calling. This affects the ability of the Intellinet network camera to be used as a "web cam" in Live messenger.

The only workaround for this is to use an older version of LIVE Messenger (MSN 8089), which can be downloaded from the Internet.

The following pages are written for the older version of LIVE Messenger.

In order to use the function, you need to perform two steps.

First, you need to set up a new account for the Windows Live / Hotmail service. This account will be used by your network camera. You cannot use your existing Messenger account for the camera. Note the user name and password for the new account and proceed to the configuration of the network camera.




Login Account: Enter the user name of the newly created account here.

Password: The password of the new account goes here. As always, repeat the password in the field below.

Alias: Enter a descriptive alias in this field; e.g., "mycamera."

Port range: This defines which TCP/IP ports the camera uses to send out video. These ports need to be opened in the firewall. See chapter 7 Remote Access and Router Setup for details.

Video mode: Here you define which video settings apply to the video stream. Mobile view uses the 3GPP settings. Computer view uses the regular settings (larger video is transmitted).

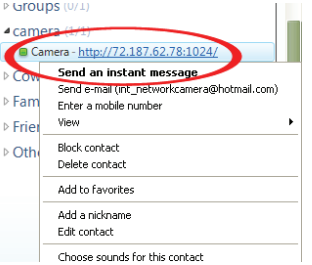
IP Notification: When this is activated, the camera will announce its IP settings to any client via Live Messenger.

Privacy: Set this to "On" to only allow people in the allow list to be able to connect to the camera and view the video.

User: In order to add a user to the allow list, type in the user's e-mail address here and click on "Add." If you wish to remove a user from the allow list, select the user from the allow list field below, then click Remove.

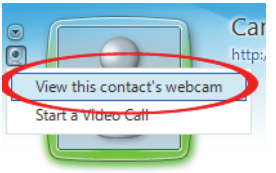
Allow list: All users that can access the camera via Live Messenger are listed here.

When you add a user to the allow list, the camera will send a friend request notification to the Messenger user. If the request is granted, the user can then connect to the camera. To do that, the following steps are required.




1. Locate the camera in your buddy list. Then right-click the contact and select "Send an instant message."

2. When done, the regular chat window will open. To the left of the messenger contact image you can find a little Web cam icon. Click it and select "View this contact's webcam."




3. The connection will then be established. You will see the following messages in the message window:

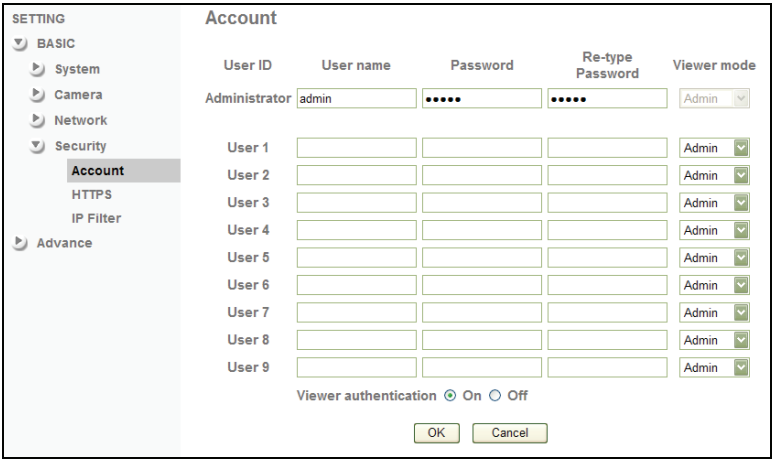
*You have invited Camera to start sending Webcam. Please wait for a response or Cancel (Alt+Q) the pending invitation.*
*Camera has accepted your invitation to start sending Webcam.*

It will take a few moments for the video to appear on the screen.

Note: If the video cannot be seen, a firewall may be blocking the video. The firewall can be on the Live Messenger user side, or it is possible that the camera is installed behind a firewall and the required ports are not properly set up in the port forwarding table of the router. See "Remote Access – Port Forwarding" for details.

## Camera -> Security -> Account:

The INTELLINET NETWORK SOLUTIONS network camera allows the creation of different user accounts with different levels of access to the camera. There are three main user levels. The Viewer account only allows viewing the live video page of the camera. The Operator account allows viewing the live video as well as changing the image setup settings, such as brightness, contrast, etc. Only the Administrator account has full access to all camera settings, including the Settings menu.



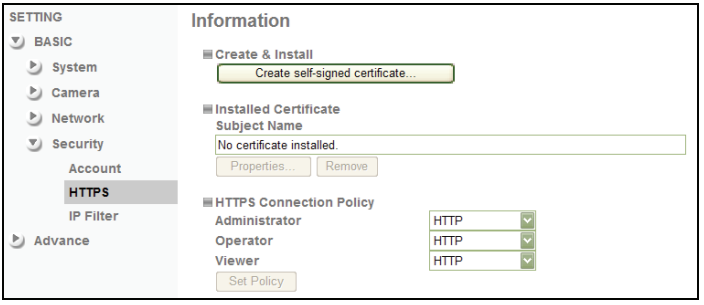

You can define up to nine different user accounts. The user name and password must be between 4 and 16 characters in length. For each account you can also specify the viewer mode (Administrator, Operator or Viewer).

Viewer authentication:

If this is enabled, a valid user name and password is required in order to connect to the camera.
If you set this option to "Off," a new option appears on the screen (not shown in the screen shot above), that allows you to set the viewer mode to
a) Viewer (no password required for viewing, but password is required for any other function)
b) Operator (no password is required, except if the user wishes to access the settings menu)
c) Administrator (no password is required for any of the camera's settings and functions). This setting is not recommended because you allow any user full access to the camera.

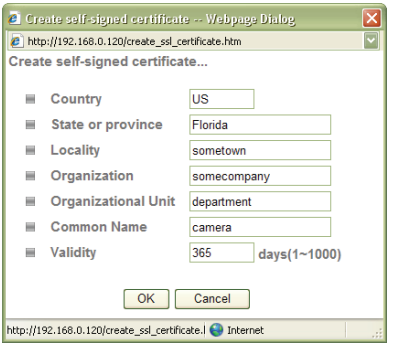
## Camera -> Security -> HTTPS:

Secure Sockets Layer (SSL) is a cryptographic protocol that provides security for communications over networks such as the Internet.
HTTPS is a URI scheme used to indicate a secure HTTP connection (SSL encrypted). It is syntactically similar to the http:// scheme that is normally used for accessing resources using HTTP. The differences are that SSL-encrypted connections always begin with https:// instead of http://. HTTPS connections use TCP port 443 by default, compared to standard HTTP connections, which use port 80.



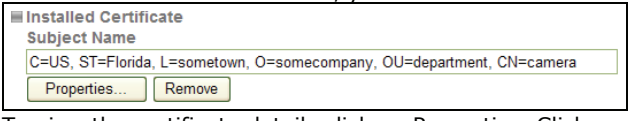

Create & Install: Click this button to create a self-signed certificate. A window will open in which you can enter the information for your certificate.

Click OK to install the certificate.




Installed Certificate:

Once the certificate is installed, you can see the details here.



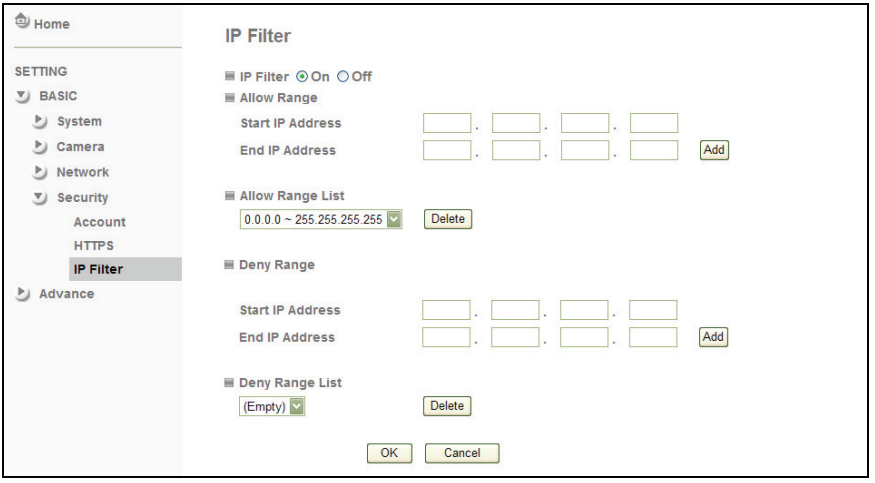

To view the certificate details click on Properties. Click on Remove to delete it.

HTTPS Connection Policy:

Define for the individual viewer modes, if HTTPS can be used in order to connect to the camera.

## Camera -> Security -> IP Filter (only certain models):

The IP filter allows blocking or access to the camera based on the IP address of the connecting client. This is an additional layer of security, which helps to limit access to the camera in security-sensitive environments.




IP Filter: Activate this function by setting this option to On.

Allow range: This defines which IP address is allowed to have access to the camera. Enter the start IP address and end IP Address and click on Add to add the IP range to the list of allowed IP addresses.

Allow Range List: All allowed IP addresses are listed here. To remove an entry, select it from the drop-down list and click Delete.

Deny range: Enter IP addresses here that are not allowed to access the camera.

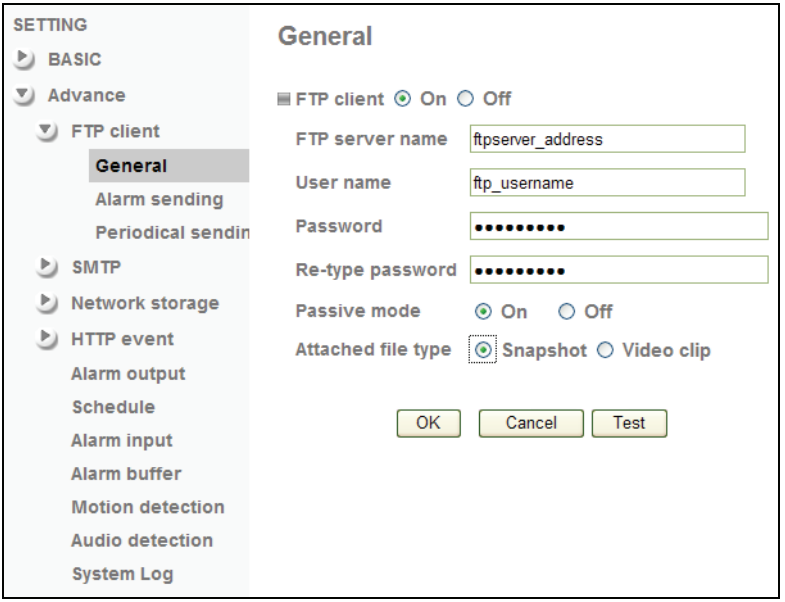
Deny Range List: All denied IP addresses are listed here. To remove an entry, select it from the drop-down list and click Delete.

# 5.2.2 Settings Page – Advanced Settings

The advanced settings menu allows control of the alarm management functions of your network camera. The camera has the ability to send pictures or videos to a remote location in case of an alarm or based on a schedule. The alarm event can be triggered by the camera's internal motion detection or by an external alarm sensor.
The H.264 Megapixel cameras add a storage function for local shared network drivers (Windows SMB or Linux NFS) and audio detection to the range of features.

## Camera -> Advance -> FTP Client -> General:

FTP stands for File Transfer Protocol. FTP is a common method to transfer files to an FTP server. Such a FTP server can be a local server or it can be your own Web site. In the general settings you have to specify the details about the FTP server you wish to use.



FTP server name: Enter the address of your FTP server here. Valid entries are either the IP address of the server (format: 111.222.333.444), or the domain name of the server (format: domainname.com). Invalid entries are ftp.domainname.com or http://domainname.com.

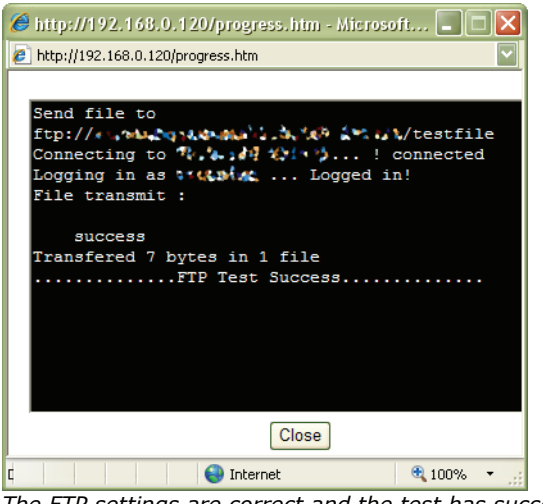
User name: Key in a valid FTP user name here. Make sure that the user account you wish to use has read and write privileges on the FTP server.

Password: The password for the FTP user account goes here. Repeat the password in the field below.

Passive mode: There are two types of FTP connections: Active and passive. While the most common method is passive FTP, your server may be set up to only accept FTP connections that utilize active FTP. The correct value here depends on the FTP server setup. When in doubt, we recommend using passive mode, trying active mode only if you experience problems connecting to the FTP server.

Attached file type: Select Snapshot if you want the camera to upload single images (JPEG format). Selecting Video clip instructs the camera to upload short video clips in length of max. 5 seconds. This option is only available in certain models.

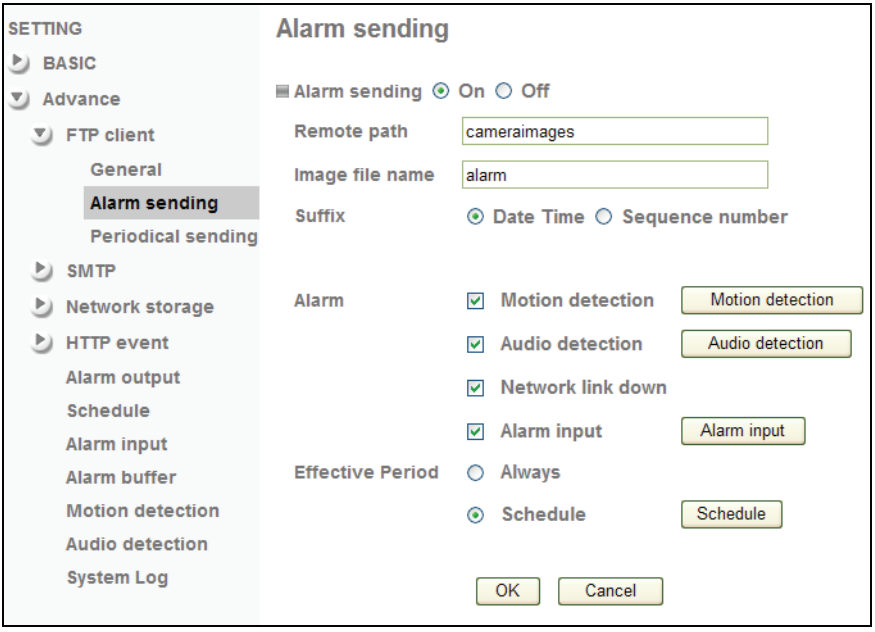
Click OK to save the settings. When done, click on Test to verify the FTP settings. A popup window will open that informs you whether or not the test was successful.




*The FTP settings are correct and the test has succeeded.*

## Camera -> Advance -> FTP Client -> Alarm sending:

On this screen you activate the alarm-triggered FTP upload. In this mode, the camera only uploads an image or a short video clip to the FTP server if an alarm condition (motion, audio alarm, network link down or external alarm input) has occurred.




Remote path: Key in the folder name on the FTP server in which the camera uploads the files. The folder is a sub-directory of the home (root) folder of the FTP user account. Leave this value empty and the camera will upload the files into the home directory of the FTP user.

Image file name: Enter the image file name here. This value is the first part of the file name.

Suffix: Select the type of information you wish to append to the image name. Possible values are Date Time or Sequence number.

Alarm: Motion Detection: Activate this option if the FTP upload should be triggered by a motion detection event. The button to the right leads to the motion detection setup screen, which is described later in this chapter.

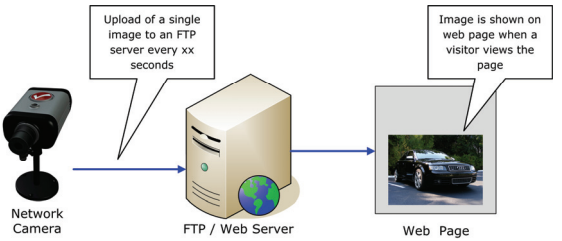
Audio Detection: Activate this option if you want the camera to monitor the audio levels picked up by the camera's internal microphone, or by the external microphone, should you have one connected. The button to the right opens the audio detection setup screen.
Network Link Down (only H.264 cameras):
In case the network connection breaks down, the camera keeps the last 10 seconds in its internal buffer. When the network connection is re-established, the camera sends out the information.
Alarm input: If you have connected an external alarm device to the camera's digital input port, you can activate it here and define the settings by clicking on the button to the right.

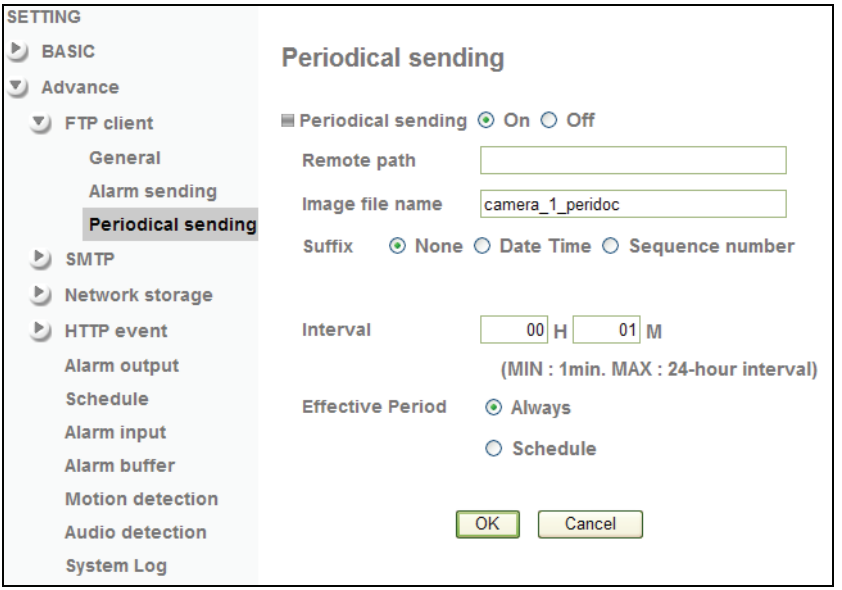
Effective Period: Choose between "Always" and "Schedule". Always means that the alarm sending function is activated all the time, regardless of time and day. Schedule allows activating this function at a specific time. A common application for the scheduled alarm sending is the following scenario:
A camera is installed in an office. The regular working hours are from 9 am to 6 pm. Some workers often work late and leave the building at 7:30 pm. In a situation like this, you can activate the camera's alarm sending at 7:40 pm and leave it activated until 8:45 am to avoid getting a lot of unnecessary files triggered by the workers moving around in front of the camera. The Schedule button allows the setup of individual activation and deactivation times for each day of the week.

## Camera -> Advance -> FTP Client -> Periodical sending:

Certain applications call for the periodic uploading of an image to an FTP server.

A typical application is when you want to display a live image of your camera on your Web site, which, for example, refreshes itself every 60 seconds. The image on the right illustrates such a setup.



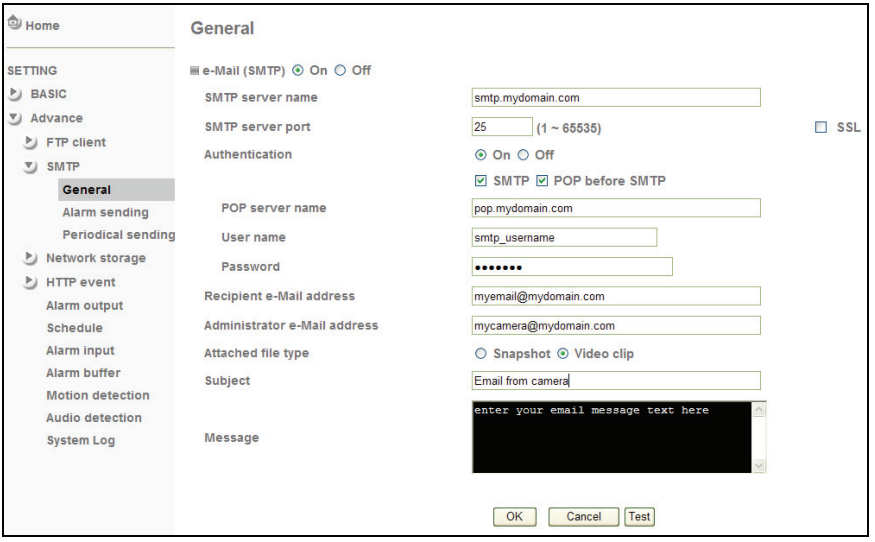




The settings are similar to the alarm sending page. You can specify a remote path, the image file name and the suffix. In our example the suffix should be set to "None," or the Web page would not be able to display the image due to the ever-changing file name. The interval defines how often the image is uploaded. As before, you can enable the function all the time or based on a schedule.

## Camera -> Advance -> SMTP -> General:

In addition to FTP uploads, the network camera can also send images or short video clips via e-mail. Simple Mail Transfer Protocol (SMTP) is an Internet standard for e-mail delivery across Internet Protocol (IP) networks. Whenever you send an e-mail from your computer, SMTP is the protocol that makes sure it reaches its destination. The network camera uses the same mechanisms and effectively acts like your standard e-mail client; e.g., Mozilla Thunderbird, Opera Mail or Outlook, with the exception that the camera can only send e-mail but not receive it.

In order to use the e-mail function of the camera, you need to provide the information shown below. If you don't know these values, contact your ISP (Internet service provider) or your network administrator.




SMTP server name: This is the address of the outgoing mail server, the sendmail server or SMTP server.

SMTP server port: The default port for e-mail delivery is 25. However, in case your SMTP server uses a different port; e.g., as an anti-spam measure, you can change the port here.

SSL: Some e-mail servers only accept connections made via SSL (Secure Socket Layer). If this is the case with your SMTP server, you need to check this option. Otherwise, you can leave it unchecked.

Authentication: Most SMTP servers require that the client authenticates properly prior to accepting e-mail delivery. Unless your SMTP server does not require authentication, this option should be enabled.

SMTP: When this option is activated, the camera will submit a user name and password to the SMTP server for authentication. Type in a valid user name and password in the fields below.

POP before SMTP: If your SMTP server uses this authentication method, you also need to provide the address of the incoming e-mail (POP) server.

Recipient e-Mail address:
Enter the e-mail address where you want the camera to send the videos and pictures.

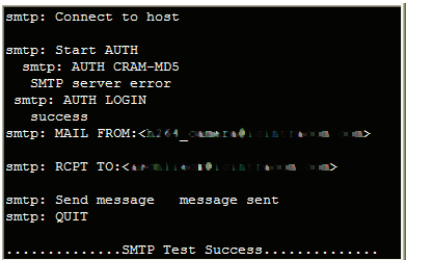
Administrator e-Mail address:
This is the e-mail address that the camera uses as its "from" address. You should fill out this field (e.g., mycamera@mydomain.com), because some SMTP servers will not deliver e-mail from clients that have no "from" address specified.

Attached file type: Select snapshot if you want the camera to send single images (JPEG format). Selecting "video clip" instructs the camera to send short video clips in length of max. 5 seconds. This option is only available in certain models.

Subject: Define the subject of the e-mail message here.

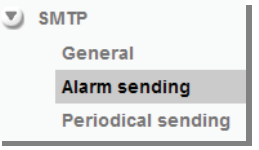
Message: Enter the message body of the e-mail.

Click "OK" to save the settings. When done, click "Test" to verify the e-mail settings. A popup window will open that informs you whether or not the test was successful.



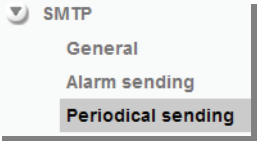
## Camera -> Advance -> SMTP -> Alarm Sending:

On this page you can link the trigger condition to the e-mail delivery function of the camera. The options are identical to those of the FTP Alarm Sending page.



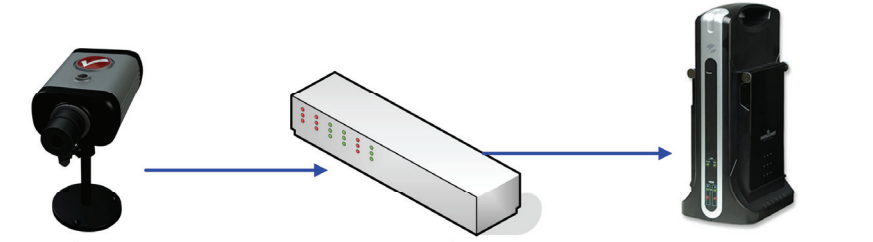

## Camera -> Advance -> SMTP -> Periodical sending:

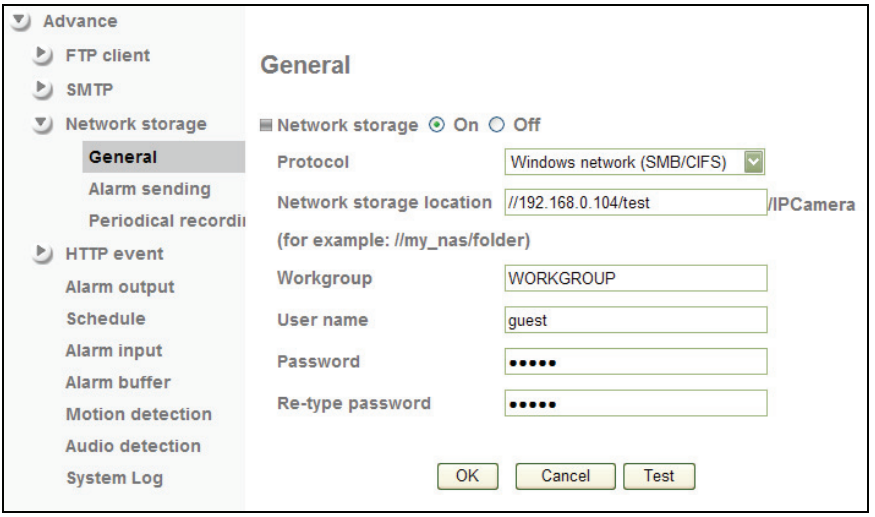
This page allows setting up the INTELLINET NETWORK SOLUTIONS network camera to send an e-mail based on a time interval from 30 minutes to 24 hours. The setup is identical to that of the FTP Periodical Sending function.




## Camera -> Advance -> Storage-> General (only certain models):

The H.264 Megapixel cameras support saving files on a local network storage location. This function is ideal for the recording of larger files (e.g., 24/7 recordings) and it takes advantage of existing NAS (Network Attached Storage) shares in your network. The two most common network file-sharing protocols are Server Message Block (SMB), which is primarily used by Windows, and the Network File System (NFS) that was originally developed by Sun Microsystems in 1984.






Protocol: Select the correct protocol here. If you want the camera to store the data on a shared Windows drive or folder, you should select "SMB". If you have a NAS device in your network, the correct value depends on which protocol (SMB or NFS) is supported by the NAS. In most cases both protocols should be supported. If you are in a Unix/Linux environment, your choice would be NFS.

Network storage location:
Enter the URL for the local storage here.

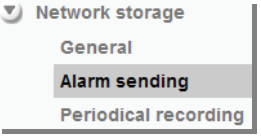
Workgroup: Key in the workgroup that corresponds to your network. Common values are WORKGROUP or MSHOME, but ultimately it depends on the settings in your network.

User name: Enter the user name for the shared network drive or folder here. Make sure that the user account has read and write permissions on the network drive or folder.

Password: The password of the account goes here. As always, repeat the password in the field below.

Click "OK" to save the settings. When done, click "Test" to verify the storage settings. A popup window will open that informs you whether or not the test was successful.

## Camera -> Advance -> Storage -> Alarm Sending:

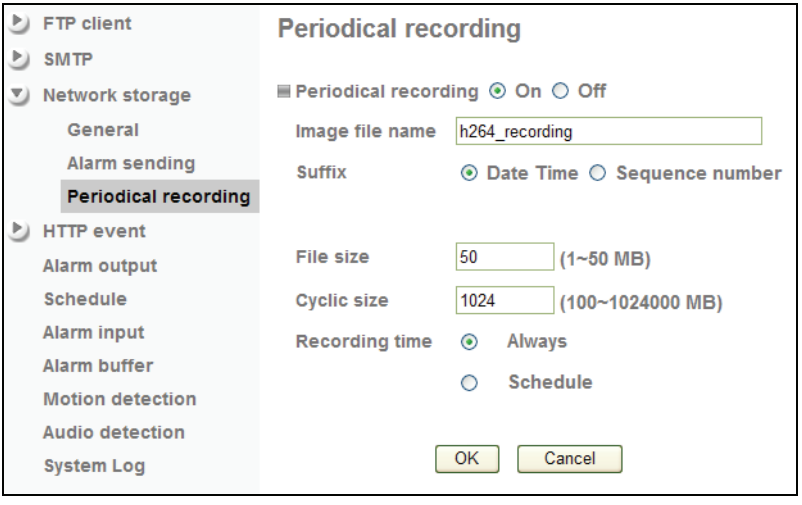



On this page you can define which alarm trigger event is linked to the storage recording function. The options on this page are identical to those on the FTP and SMTP Alarm Sending page, with one exception.


The Recording time allows you to specify the length of the video clip. You can set the recording time between 5 and 60 seconds.

## Camera -> Advance -> Storage -> Periodical Sending:

Just as with FTP and SMTP, there is a periodic saving function integrated for the network storage. The nature of SMB- and NFS-based file saving allows the camera to save much larger files, making this function ideal for permanent archive recordings.

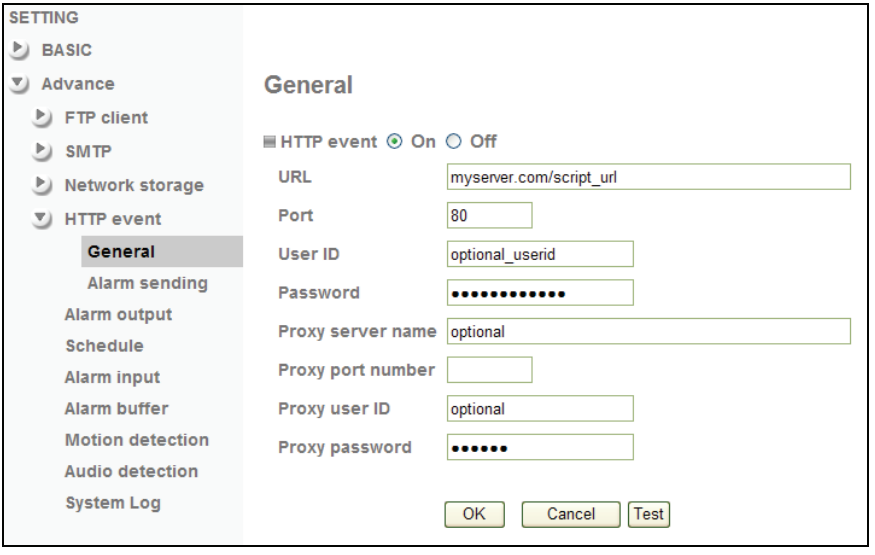



Most of the parameters are identical to FTP and SMTP periodic recording. The file size value defines the size of the individual recordings (ranging from 1 to 50 MB). Cyclic size represents the maximum combined disk space of all recordings. When this value is reached, the camera will start overwriting existing recordings, starting with the oldest one. The default cyclic size is 1024 MB (1 Gigabyte). The maximum value is 1024000 MB (1 Terabyte).

## Camera -> Advance -> HTTP Event -> General:

HTTP Event represents the most advanced form of the event trigger actions. When this function is enabled, the camera will not upload or send any video clips to a remote location, but will instead send an HTTP request to a specified URL.

What is the purpose of this function? Here are two examples:
1. Some of the more sophisticated third-party video monitoring and surveillance applications have the ability to start a recording when the camera calls a certain URL on the video surveillance server. Here, the surveillance software does not constantly monitor the live video stream to determine whether or not a motion event has occurred, but it listens to the HTTP events that are sent by the camera. The advantage of this setup is that the network load is kept to a minimum because a connection between the camera and the surveillance software is only established in the event that an alarm event has occurred. If you think of larger installations involving many cameras, you can see what a difference this can make.
2. The HTTP event can be used to trigger a script on a Web server, i.e., a PHP script that logs events in a database so that a record is kept of all events. The same script could also be retrieving images from the camera when the event happens. You can also instruct the camera to add a unique parameter to the HTTP request, based on the type of event that has occurred (see HTTP Event -> Alarm Sending).
The possibilities for this function are endless and the implementation in the network camera provides great flexibility.



URL: The basic script URL goes here. Note: You need to enter the URL without any leading http://.

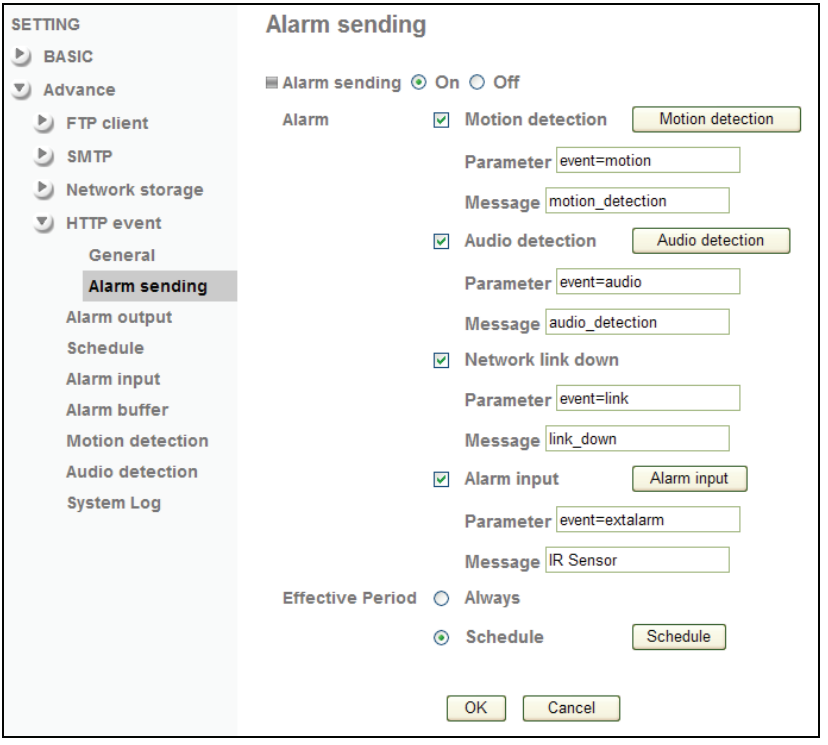
Port: Standard HTTP requests are made on port 80, but if your application requires a different port, you can define it here.

User ID: If the script URL is password protected, you need to enter a valid User ID in this field.

Password: Enter the password here if the script URL requires authentication.

Proxy Server: The proxy server parameters are all optional and only need to be used in case the camera cannot directly connect to the script URL, but only via a proxy server.

## Camera -> Advance -> HTTP Event -> Alarm Sending:



Alarm: Motion Detection: Activate this option if you want the motion detection trigger event to be linked to the HTTP event.

Audio Detection: This parameter is only available on the H.264 Megapixel cameras. It allows linking of the audio detection event to the HTTP event.

Network Link Down: This parameter is only available on the H.264 Megapixel cameras. In case the network connection breaks down, the camera keeps the last 10 seconds in its internal buffer. When the network connection is re-established, the camera then sends out the information.

Alarm input: If an external alarm sensor is connected to the camera, you can activate this trigger for the HTTP event.

Parameter & Message:
For each of the events, you can define an optional parameter and parameter value, as shown in the screen shot above. This can be used so that the script called by the camera can differentiate between the various types of events to perform different kinds of actions. The message allows you to define a description for the event.

Effective Period:
As with the other event types, you can activate the HTTP event all the time (value = always), or based on a schedule.

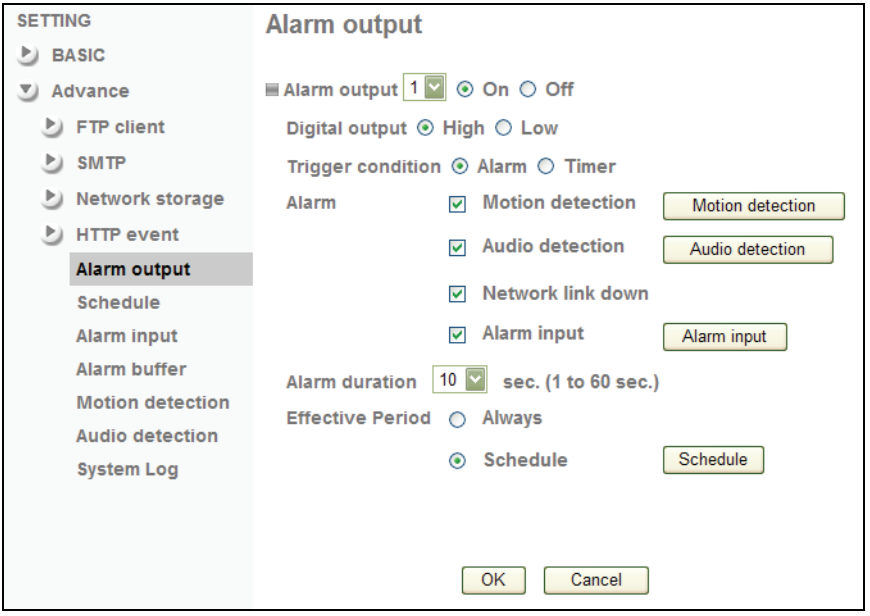
Below are two examples that show what kind of URLs the camera could be calling in case of an alarm. The examples are based on the information shown in the screen shot, but you can define completely different values.

1. The camera has detected a motion.
URL: http://myserver:80/script_url?event =motion

2. The external alarm (e.g., an IR motion sensor) is in the alert state.
URL: http://myserver:80/script_url?event=extalarm

## Camera -> Advance -> Alarm Output:

If your Network Camera features a terminal block connector, you can connect an external alarm device to it. The camera can send power to the device when a trigger event has occurred.




Digital output: Sets the digital output to either high or low in case of an alarm event. Refer to page 21.

Trigger condition: Set the value to "Timer" if you want the action to occur based on a schedule. If you set the value to "Alarm," you can define which of the alarm events (Motion Detection, Audio Detection [some models], Network link down [some models] and Alarm input) can trigger the alarm output action.

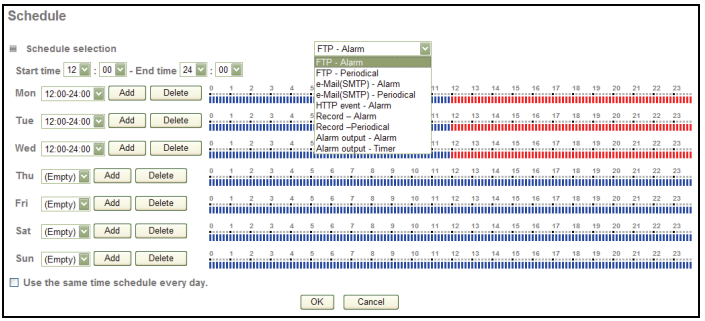
Alarm duration: You can define how long the camera activates the output port. Set it to 60 seconds and the camera will send out 12 V current for a period of one minute.

Effective Period: As with the other event types, you can activate the alarm output event based on a schedule, or the entire time.

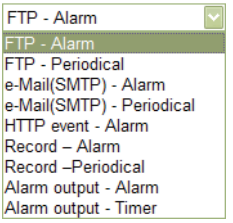
# Camera -> Advance -> Schedule:

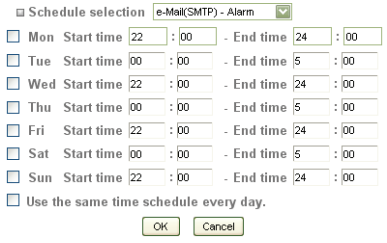
The Network Camera supports event trigger actions that can be based on a schedule. This can be used, as an example, to only activate motion detection between 9 pm and 6 am during business days and around the clock on the weekends. You can set up individual schedules for each event type, so that motion detection is activated between 7 pm and 7 am, but audio detection is only activated between 10 pm and 4 am.

Depending on your camera model, the screen layout will vary slightly.




First you need to select the type of event from the drop-down list. The drop-down list contains the values shown on the right. Select a start and end time and click on "Add" for the day of the week the schedule is supposed to be active. As soon as you add a schedule, the timeline turns red, indicating the active schedule.
If the schedule is the same for every day of the week, you can activate the option "Use the same time schedule every day."



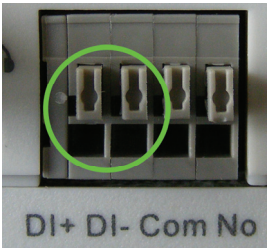

Shown on the left is the alternative schedule setup page that does not use a visual timeline. The example shows that the e-mail alarm is activated between 10 pm and 5 am for every day of the week.

## Camera -> Advance -> Alarm Input:

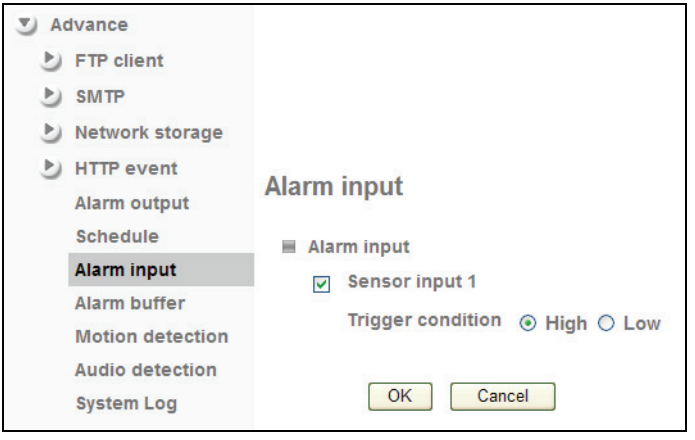
External Alarm Sensor

Network Camera

If your Network Camera features a terminal block connector (digital I/O) for the connection of external alarm sensors, you can set up the trigger condition for the input on this page. There are two types of sensors when it comes to the actual alarm trigger. One opens the electric circuit in case of an alarm (digital I/O = low); the other closes the electric circuit (digital I/O = high). The camera allows defining of the default state of the sensor and the alert state.




*Digital I/O terminal block connector showing pins 1 and 2 (circled) for the connection of an external sensor.*

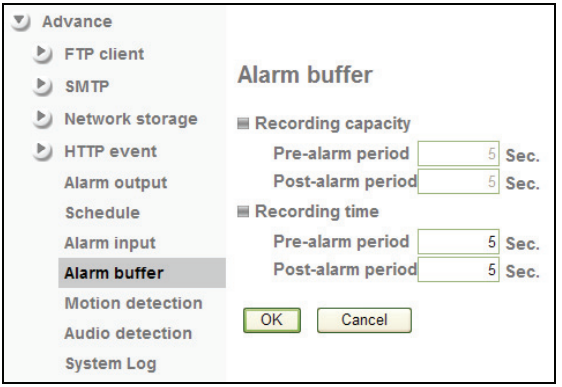



Sensor input 1: Select the input sensor from the list. INTELLINET NETWORK SOLUTIONS network cameras feature only one sensor.

Trigger condition: This value describes the alarm state of the sensor. The correct value depends on the sensor.

## Camera -> Advance -> Alarm Buffer (only certain models):

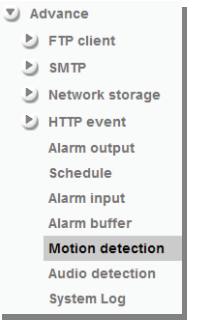
On this page you can define the size of the alarm image buffer. The camera holds a maximum of 10 seconds of video in the buffer. When an event occurs and the camera uploads a video clip to an FTP server or sends it via e-mail, the length of the video is determined by the buffer settings on this page. You won't need to make any changes unless you want to make the image buffer smaller. Note: The pre-alarm buffer is only used for the Network Link Down alarm event. The other events (motion detection, audio detection and alarm input) only use the port-alarm buffer. That means that if the camera uploads a video in response to a motion alarm, the video will only be the length of the post-alarm buffer settings.




Recording capacity: The total buffer capacity is shown here for both pre- and post-alarm periods.

Recording time: You can define the buffer time for each pre- and post-alarm period. Values are 0 to 5.

## Camera -> Advance -> Motion Detection:




The Network Camera features integrated motion detection. The camera does a frame-by-frame comparison and then determines, based on the motion detection window, sensitivity settings and threshold, whether or not a motion has occurred.

This motion detection does not use Infrared. It requires a visible image in order to function.


The camera supports three independent motion detection windows that can be placed and resized individually.

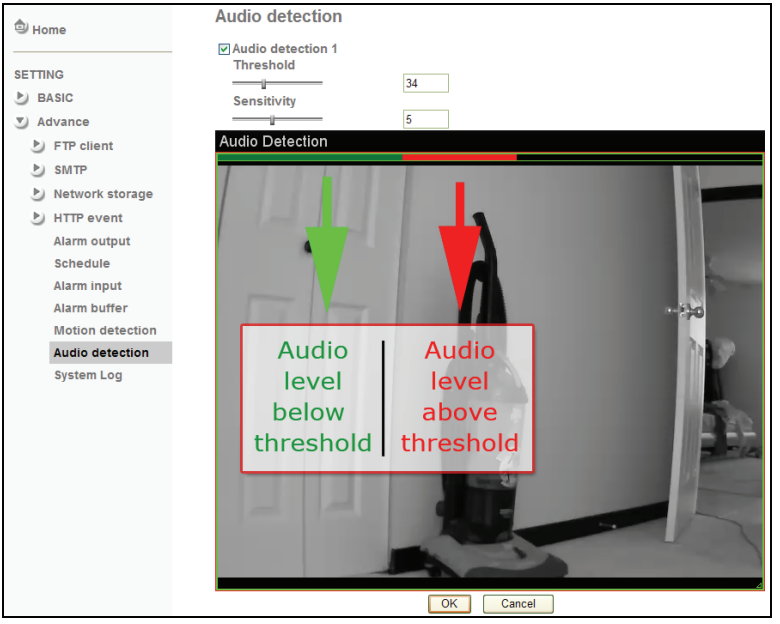
| | |
|---|---|
| Motion Detection 1, 2, 3: | Click to activate the motion detection window. Once clicked, you will see a rectangle appear on the screen. Use the mouse to move the rectangle to a different position or to resize it. |
| Threshold: | The smaller the number, the lower the threshold of the amount of movement that triggers an alarm. The more you increase the threshold value the more movement is required to trigger an alarm. |
| Sensitivity: | The higher this value, the more sensitive the motion detection becomes. |

Motion is displayed by a green bar (either as shown on top of the detection window or to the right of the image) and if the detection exceeds the threshold the color turns red.

Note: Depending on your camera model and firmware version installed, the screen may have a slightly different layout. Also note that motion detection can only be set up using MS Internet Explorer as the Web browser.

## Camera -> Advance -> Audio Detection (only certain models):

The INTELLINET NETWORK SOLUTIONS H.264 Megapixel Network Camera has an integrated microphone, and it also allows the connection of an external line-in source. The camera can monitor the audio levels and trigger an alarm if the noise level exceeds a specified threshold.




Audio detection 1: Activate this option to use this function. Once activated, a screen element to adjust the audio level and threshold is overlaid over the background image.

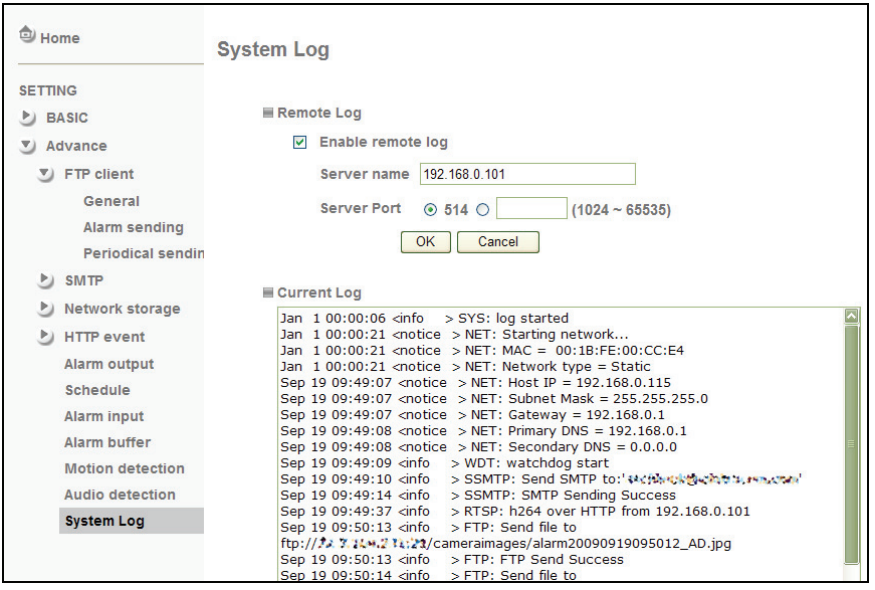
Threshold: This value defines the audio level that triggers an alarm. The higher this value, the louder the noise has to be before it is considered an alarm.

Sensitivity: The sensitivity parameter functions very much like the input gain on a regular microphone. The higher the value, the more sensitive the microphone becomes.

The green element (level meter) displays the audio level strength. The red element indicates that the noise level has exceeded the threshold and an alarm event has been created.

## Camera -> Advance -> System Log:

The Network Camera features a log function for system messages. These are system messages about the camera start-up procedure, e-mail deliveries, FTP uploads, motion detection and more. The camera stores the messages in its internal memory and displays them on the system log screen. Since memory is limited, the messages will eventually be truncated. If you need to log all the system messages on a remote server (e.g., for permanent record keeping of alarm events or for troubleshooting purposes), you can utilize the remote log functionality.




Enable remote log: Server name: Type in the network address of the Syslog server. Enter the address without any leading characters, such as http://.

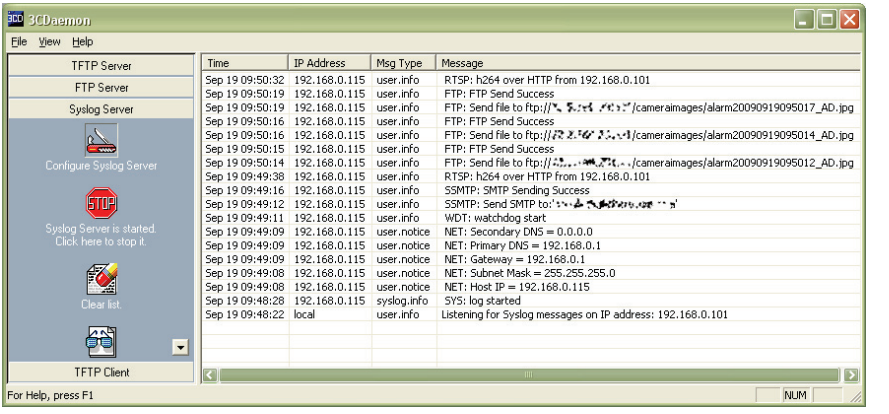
Server port: The standard port for this protocol is 514. If your Syslog server is set up differently, you can change the value here.

Current log: This text box displays the real-time log of the camera messages.

The remote log function uses the Syslog Protocol, which is a standard for forwarding log messages in an IP network. Syslog is a client/server protocol. The Syslog sender (the Network Camera) sends a small (less than 1KB) textual message to the Syslog server.


This user manual shows one example of a Syslog server, the 3CDaemon utility by 3Com Corporation (Download Location: http://support.3com.com/software/utilities_for_windows_32_bit.htm).

After the installation of 3CDaemon, the main program window opens and the program is ready to receive Syslog messages from the network camera.

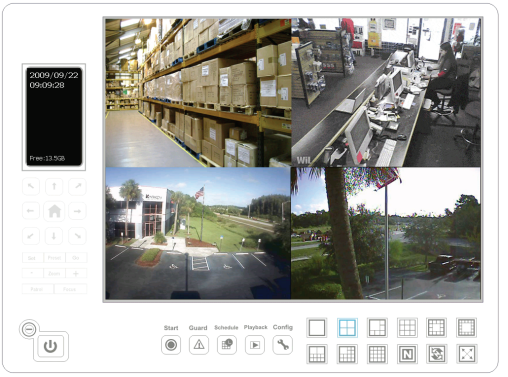



| Time | IP Address | Msg Type | Message |
|---|---|---|---|
| Sep 19 09:50:32 | 192.168.0.115 | user.info | RTSP: h264 over HTTP from 192.168.0.101 |
| Sep 19 09:50:19 | 192.168.0.115 | user.info | FTP: FTP Send Success |
| Sep 19 09:50:19 | 192.168.0.115 | user.info | FTP: Send file to ftp://[redacted]/cameraimages/alarm20090919095017_AD.jpg |
| Sep 19 09:50:16 | 192.168.0.115 | user.info | FTP: FTP Send Success |
| Sep 19 09:50:16 | 192.168.0.115 | user.info | FTP: Send file to ftp://[redacted]/cameraimages/alarm20090919095014_AD.jpg |
| Sep 19 09:50:15 | 192.168.0.115 | user.info | FTP: FTP Send Success |
| Sep 19 09:50:14 | 192.168.0.115 | user.info | FTP: Send file to ftp://[redacted]/cameraimages/alarm20090919095012_AD.jpg |
| Sep 19 09:49:38 | 192.168.0.115 | user.info | RTSP: h264 over HTTP from 192.168.0.101 |
| Sep 19 09:49:16 | 192.168.0.115 | user.info | SSMTP: SMTP Sending Success |
| Sep 19 09:49:12 | 192.168.0.115 | user.info | SSMTP: Send SMTP to:[redacted] |
| Sep 19 09:49:11 | 192.168.0.115 | user.info | WDT: watchdog start |
| Sep 19 09:49:09 | 192.168.0.115 | user.notice | NET: Secondary DNS = 0.0.0.0 |
| Sep 19 09:49:09 | 192.168.0.115 | user.notice | NET: Primary DNS = 192.168.0.1 |
| Sep 19 09:49:09 | 192.168.0.115 | user.notice | NET: Gateway = 192.168.0.1 |
| Sep 19 09:49:08 | 192.168.0.115 | user.notice | NET: Subnet Mask = 255.255.255.0 |
| Sep 19 09:49:08 | 192.168.0.115 | user.notice | NET: Host IP = 192.168.0.115 |
| Sep 19 09:48:28 | 192.168.0.115 | syslog.info | SYS: log started |
| Sep 19 09:48:22 | local | user.info | Listening for Syslog messages on IP address: 192.168.0.101 |

The messages shown here are the same messages that are displayed in the Web browser.

# 6: Video Surveillance Software

## *6.1 Function Description*




The INTELLINET NETWORK SOLUTIONS Network Camera ships with a surveillance application that can monitor and record up to 16 network cameras.

You can record video permanently or based on a schedule, or you can use the integrated motion detection function and only record motion events to preserve disk space. You can select from nine different templates to display the camera images on one screen.

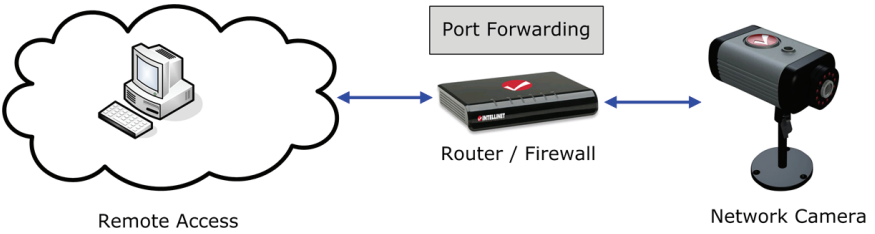
## *6.2 Installation*

The program installs by clicking the option "Video Surveillance Software" from the CD menu.

A detailed user manual is located on the Installation CD in the User Manuals folder. It contains installation instructions and information on the use of the software.

# 7: Remote Access and Router Setup

To gain access to a camera in your local network over the Internet, certain ports need to be opened and forwarded in your router.




The Network Cameras use the following ports:

## a) M-JPEG/MPEG4 (VGA) models running firmware V 1.6.16.03 or older

- Web Server port = 80
- MPEG4 Audio/Video port = 8090
- MPEG4 Video/Audio port (SSL) = 8091
- Motion-JPEG Video port = 8070
- Motion-JPEG Video port (SSL) = 8071
- Audio Receive port = 40008
- RTSP port = 554
- HTTPS port = 443

## b) H.264 Megapixel Cameras and VGA models running firmware V 1.6.16.05 and newer.

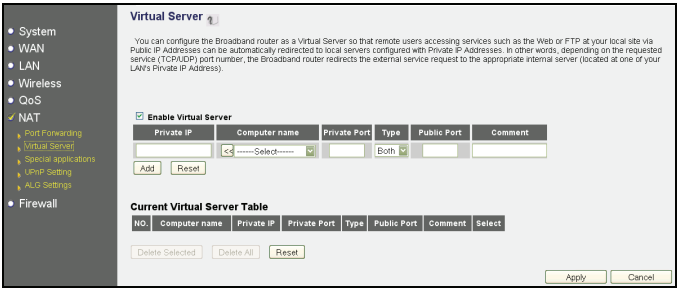
- Web Server port = 80
- RTSP port = 554
- HTTPS port = 443

Note: The new generation of H.264 Megapixel cameras uses a simplified port scheme to make remote connections easier.

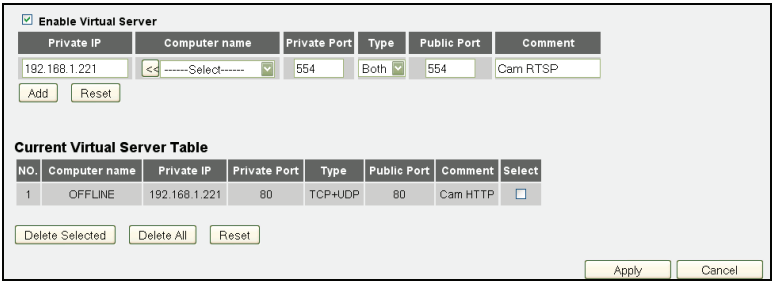
The port forwarding setup can vary, depending on which router you are using. The example shown here represents a typical INTELLINET NETWORK SOLUTIONS router.

Setup Example: INTELLINET NETWORK SOLUTIONS Wireless N Router Series:

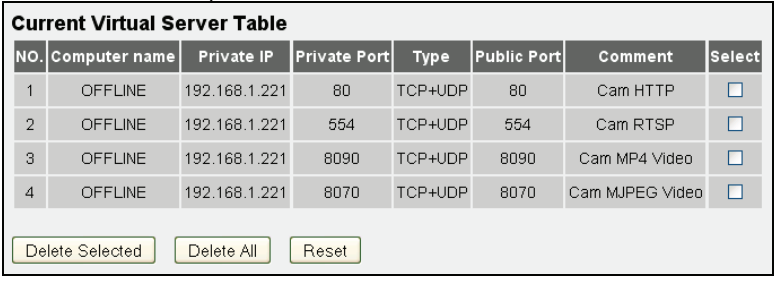
Click on NAT -> Virtual Server. Check (x) Enable Virtual Server.




Enter the camera's local IP address in the Private IP text field (example: 192.168.1.221). Enter the port you want to forward. Enter the same port number into the Private and Public Port text fields. Click on Add to add the new port forwarding rule to the router setup.




Example of a port forwarding setup for HTTP port, RTSP port, MPEG4 and Motion-JPEG video ports.



# 8: Developer Information

## MPEG4/Motion-JPEG (VGA) Cameras running firmware 1.6.16.03 and older.

Direct Image Access
You can access the image using the URL below:
http://camera_ip/jpg/image.jpg

Motion-JPEG Stream
You can access the image using the URL below:
http://camera_ip:8070/video.mjpeg
Or:
http://username:password@camera_ip:8070/video.mjpeg

MPEG4 Stream
You can access the image using the URL below:
http://camera_ip:8090/video.mp4
http://username:password@camera_ip:8090/video.mp4

Via RTSP:
rtsp://camera_ip:554/video.mjpeg
rtsp://username:password@camera_ip:554/video.mp4

3GPP Stream
Via RTSP:
rtsp://camera_ip:554/video.3gp
rtsp://username:password@camera_ip:554/video.3gp

## H.264 Megapixel Cameras and VGA models running firmware V 1.6.16.05 and newer.

The individual streams can be found under the following URLs:
rtsp://camera_ip:554/video.mp4
rtsp://camera_ip:554/video.h264
rtsp://camera_ip:554/video.mjpg
rtsp://camera_ip:554/video.3gp

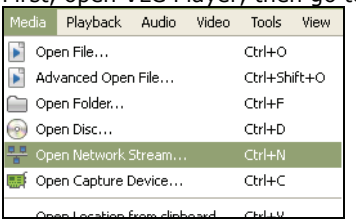
http://camera_ip:80/video.mjpg

The ports can be adjusted in the camera settings, so be sure that you use the correct port. The default ports are shown above.

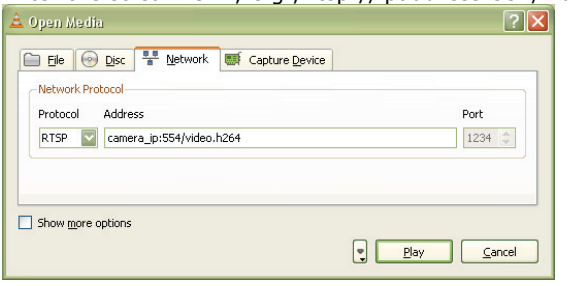
# Accessing the video streams with VLC Player

VLC Player (among other players) supports video streaming via RTSP. You can use VLC player to display the camera live video.

First, open VLC Player, then go to Media -> Open Network Stream.




Enter the stream URL; e.g., rtsp://ipaddress:554/video.h264




The live image will show up after a few seconds.


Note: Access via VLC may not always work. Slow connections tend to be problematic and incompatibilities of RTSP-enabled players are known to exist.

# 9: Questions and Answers

## *9.1 Accessing the Camera*

Q: What are the camera's default IP address, administrator user name and password?

A: The camera obtains an IP address from a DHCP server in your network. If no DHCP server is present, the camera reverts back to its default IP address 192.168.1.221. The default administrator user name is "admin"; the default password is "admin."

Q: The IP Installer utility does not show the Network Camera, even though the camera is connected to the network. Why?

A: 1: IP Installer utilizes UPnP in order to detect the camera. Check and make sure that UPnP support is enabled in the camera. Activate UPnP support in the settings menu under Basic -> Network -> UPnP

2: The firewall on your computer may be blocking IP Installer and is therefore preventing it from detecting the camera. Be sure to run the application while logged in to the computer with administrator rights.

Q: IP Installer still cannot find the camera. How can I find it on the network?

A: 1: If a DHCP server is present on the network (e.g., a router), you can check the DHCP server's client log after you have connected the camera to the network. The camera will show up in the log, typically with the highest of the IP addresses shown, as DHCP servers assign IP addresses in sequence (newest client with newest IP address).

2: If the camera is not connected to a DHCP server, or if you connect the camera so that it is isolated from the rest of the network, you can connect to the camera at its default IP address of 192.168.1.221. You may have to adjust the TCP/IP settings of your computer manually to be in range of 192.168.1.xxx in order to gain access to the camera. Connect to the settings menu with your Web browser and change the IP address of the camera manually.

Q: How do I install the camera on a Mac or Linux system?

A: Refer to sections 4.1.2 and 4.1.3 in this user manual.

Q: After changing the camera's Web server port from 80 to a different value, access to the camera is no longer possible.

A: Whenever you change the Web server port from the standard 80 to a different value, you need to append the port to the camera's IP address. The syntax is always http://cameraip:portnumber.
Example: When you change the Web server port to 81, the correct address would be: http://192.168.1.221:81.

Q: I changed the HTTP port in the camera settings, but after I saved the settings the camera still responds on the old HTTP port. The new value is ignored.

A: After changing the HTTP port in the Basic->Network->Information screen and saving the settings, you need to reboot the Network Camera. You can either temporarily cut the power to the camera, or you can reboot the camera via the settings menu (Basic->System->Initialize).

## *9.2 Web Browser Access*

Q: I cannot use some of the features of the Network Camera. For example, I cannot set up motion detection or record video from the live video page.

A: Only MS Internet Explorer supports full access to all functions. Refer to section 2.3 for a list of limitations for other Web browsers, such as Firefox, Opera or Safari.

Q: I am using MS Internet Explorer, but when I connect to the camera I don't see a live image.

A: When you first connect to the camera with MSIE, you need to install an ActiveX control as explained on page 40. If your Internet security settings do not allow the execution of signed ActiveX controls, or if you do not run MSIE while logged in to the system as a computer administrator, the installation of the ActiveX control will be prevented. Check the Internet options and make sure you are running MSIE as a computer administrator. Subsequent connections can be made without administrator rights.

# *9.3 Camera Related Issues*

Q: The camera does not send any e-mails. Why?

A: 1. The problem occurs because the camera cannot contact the e-mail server. Check:
- Is the e-mail (SMTP) server address correct? (Advance->SMTP)
- Did you specify the correct gateway IP address? (Basic->Network)
- Did you specify correct DNS servers? (Basic->Network)
- Did you enter the correct e-mail address? (Advance->SMTP)
- Did you specify the e-mail title? (Advance->SMTP)

2. The e-mail server denies the delivery request from the camera. Check:
- Is a valid sender address specified? (Advance->SMTP)
- Did you activate SMTP authentication? (Advance->SMTP)
- Did you enter the correct user name and password for SMTP authentication? (Advance->SMTP)

Also be sure to have the latest firmware installed in case you experience difficulties. Possible compatibility problems are likely to be resolved in newer firmware versions.

Q: Can I use the camera's integrated motion detection function to secure sensitive areas and goods of a high value?

A: Using the Network Camera's integrated motion detection for securing high-value items is not recommended, as the function does not work as reliably as professional security sensors.
We recommend using professional security monitoring software in combination with the Network Camera. You may also connect external security sensors to the camera's digital input port for increased security.

Q: Can I use my indoor camera in an outdoor environment?

A: Yes, provided that you install the camera in a protective housing with temperature control.

Q: Does my camera support PoE (Power over Ethernet)?

A: The following models support PoE:
- NFD30, NFD130-IR/V Network Dome Cameras
- NVS30 Network Video Server
- NFC30 Network Camera
- NFC30-IR Network Camera
- NFC31 Network Camera
- NFC31-IR Network Camera
- NBC30-IR Outdoor Network Camera
- NBC31-IR Outdoor Network Camera

Q: What kinds of accessories are available?

A: INTELLINET NETWORK SOLUTIONS offers the following accessories:

<u>1: CCTV lenses</u>
Replacement lenses for your Network Camera, that can be used with models NFC30, NFC30-WG, NFC31 and NFC31-WG.

<u>2: External camera enclosures</u>
Protective housings for your Network Camera.


<u>3. Mounting brackets</u>
Ceiling and wall-mounting brackets

<u>4. Power over Ethernet Products</u>
PoE injectors and switches to power the network camera.


INTELLINET NETWORK SOLUTIONS™ offers a complete line of active and passive networking products.
Ask your local computer dealer for more information or visit

**www.intellinet-network.com**