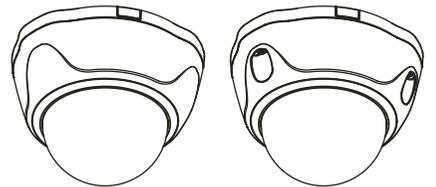


Network Camera

Operation Manual



Before reading this manual

This is a basic operation manual for installation and use of a network camera. Users who are using this product for the first time, as well as users with experience using comparable products, must read this operation manual carefully before use and heed to the warnings and precautions contained herein while using the product. Safety warnings and precautions contained in this operation manual are intended to promote proper use of the product and thereby prevent accidents and property damage and must be followed at all times. Once you have read this operation manual, keep it at an easily accessible location for future reference.

-  The manufacturer will not be held responsible for any product damage resulting from the use of unauthorized parts and accessories or from the user's failure to comply with the instructions contained in this operation manual.
- The information in this document is believed to be accurate as of the date of publication even though explanation about some functions may not be incorporated. The manufacturer is not responsible for any problems resulting from the use thereof. The information contained herein is subject to change without notice. Revisions or new editions to this publication may be issued to incorporate such changes.
- It is recommended that first-time users of this network camera and individuals who are not familiar with its use seek technical assistance from their retailer regarding product installation and use.
- If you need to disassemble the product for functionality expansion or repair purposes, you must contact your retailer and seek professional assistance.
- Both retailers and users should be aware that this product has been certified as being electromagnetically compatible for commercial use. If you have sold or purchased this product unintentionally, please replace with a consumer version.

Safety Symbols

Symbol	Type	Description
	Warning	An important instruction or set of important instructions that can lead to severe injury or even death if not followed.
	Caution	An instruction or set of instruction that can lead to personal injury and/or property damage if not followed.

In-Text

Symbol	Type	Description
	Caution	Important information concerning a specific function.
	Note	Useful information concerning a specific function.

Safety Precautions

WARNING

RISK OF ELECTRIC SHOCK
DO NOT OPEN

WARNING: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

Important Safeguards

1. Read Instructions

All the safety and operating instructions should be read before the appliance is operated.

2. Retain Instructions

The safety and operating instructions should be retained for future reference.

3. Cleaning

Unplug this equipment from the wall outlet before cleaning it. Do not use liquid aerosol cleaners. Use a damp soft cloth for cleaning.

4. Attachments

Never add any attachments and/or equipment without the approval of the manufacturer as such additions may result in the risk of fire, electric shock or other personal injury.

5. Water and/or Moisture

Do not use this equipment near water or in contact with water.

6. Placing and Accessories

Do not place this equipment on an wall or ceiling that is not strong enough to sustain the camera. The equipment may fall, causing serious injury to a child or adult, and serious damage to the equipment. Wall or shelf mounting should follow the manufacturer's instructions, and should use a mounting kit approved by the manufacturer.



This equipment and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the equipment and cart combination to overturn.

Do not place this equipment in an enclosed space. Sufficient ventilation is required to prevent an increase in ambient temperature which can cause malfunction or the risk of fire.

7. Power Sources

This equipment should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power, please consult your equipment dealer or local power company. You may want to install a UPS (Uninterruptible Power Supply) system for safe operation in order to prevent damage caused by an unexpected power stoppage. Any questions concerning UPS, consult your UPS retailer.

8. Power Cord

Operator or installer must remove power and TNT connections before handling the equipment.

9. Lightning

For added protection for this equipment during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the equipment due to lightning and power-line surges. If thunder or lightning is common where the

equipment is installed, use a surge protection device.

10. Overloading

Do not overload wall outlets and extension cords as this can result in the risk of fire or electric shock.

11. Objects and Liquids

Never push objects of any kind through openings of this equipment as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind on the equipment.

12. Servicing

Do not attempt to service this equipment yourself. Refer all servicing to qualified service personnel.

13. Damage requiring Service

Unplug this equipment from the wall outlet and refer servicing to qualified service personnel under the following conditions:

- A. When the power-supply cord or the plug has been damaged.
- B. If liquid is spilled, or objects have hit the equipment.
- C. If the equipment has been exposed to rain or water.
- D. If the equipment does not operate normally by following the operating instructions, adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the equipment to its normal operation.
- E. If the equipment has been dropped, or the cabinet damaged.
- F. When the equipment exhibits a distinct change in performance — this indicates a need for service.

14. Replacement Parts

When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or that have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock or other hazards.

15. Safety Check

Upon completion of any service or repairs to this equipment, ask the service technician to perform safety checks to determine that the equipment is in proper operating condition.

16. Field Installation

This installation should be made by a qualified service person and should conform to all local codes.

17. Correct Batteries

Warning: Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

18. Tmra

A manufacturer's maximum recommended ambient temperature (Tmra) for the equipment must be specified so that the customer and installer may determine a suitable maximum operating environment for the equipment.

Before reading this manual

Risk Group1	
	WARNING IR emitted from this product. Do not stare at operating lamp
<i>Product tested against IEC62471</i>	

Warning: This product emits infrared light. Do not look into the IR LED.

FCC Compliance Statement

THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS A DIGITAL DEVICE, PURSUANT TO PART 15 OF THE FCC RULES. THESE LIMITS ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST HARMFUL INTERFERENCE WHEN THE EQUIPMENT IS OPERATED IN A COMMERCIAL ENVIRONMENT. THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS. OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE, IN WHICH CASE USERS WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT THEIR OWN EXPENSE. **WARNING:** CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT. THIS CLASS OF DIGITAL APPARATUS MEETS ALL REQUIREMENTS OF THE CANADIAN INTERFERENCE CAUSING EQUIPMENT REGULATIONS.

WEEE (Waste Electrical & Electronic Equipment)

Correct Disposal of This Product

(Applicable in the European Union and other European countries with separate collection systems)



This marking shown on the product or its literature, indicates that it should not be disposed with other household wastes at the end of its working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate this from other types of wastes and recycle it responsibly to promote the sustainable reuse of material resources.

Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take this item for environmentally safe recycling.

Business users should contact their supplier and check the terms and conditions of the purchase contract. This product should not be mixed with other commercial wastes for disposal.

Manufacturer reserves all rights concerning this operation manual. Use or duplication of this operation manual in part or whole without the prior consent of manufacturer is strictly prohibited. Contents of this operation manual are subject to change without prior notice for reasons such as functionality enhancements.

This product contains software built partially on open-source content. Codes for the corresponding open-source content are available for download. For more information, refer to the software CD (OpenSourceGuide\OpenSourceGuide.pdf) or the open source guide accompanying this operation manual.

Table of Contents

1

- Part 1 – Introduction..... 7**
 - Product Features7
 - Accessories.....8
 - Overview9
 - Dome Cover9
 - Body.....10
 - Factory Reset11
 - Lens12
 - I/O Device Port.....12
 - Installation14
 - Installation.....14
 - Angle Adjustment.....16
 - Dimensions.....16

2

- Part 2 - Camera Connection 17**

3

- Part 3 - Remote Setup..... 18**
 - Camera Protocol.....18
 - Switching Protocols18
 - Remote Setup19
 - Quick Setup.....19
 - System.....20
 - General20
 - Date/Time21
 - User/Group21
 - Network22
 - IP Address22
 - FEN.....23
 - Port/QoS.....24
 - Bandwidth Control26
 - Security.....26
 - IEEE 802.1X27
 - Video27

Camera	28
Streaming	31
Webcasting	32
MAT	32
Privacy Masking.....	33
Audio	33
In/Out	33
Event Action	34
Alarm-out.....	34
Email	34
Remote Callback	35
Audio Alarm	35
FTP Upload	35
Record.....	37
Event	39
Alarm In	39
Motion Detection	40
Trip-Zone	41
Audio Detection	42
Tampering	43
System Event	44

4

Part 4 - WebGuard **45**

Web Live Mode.....	47
Web Search Mode.....	49

5

Part 5 - Appendix..... **51**

Setup Menu Tree (Remote Setup)	51
Troubleshooting	52
Specifications	53
Index	56

Part 1 – Introduction

Product Features

This camera is an IP-based network camera that compress and transmit video over ethernet.

You can use the INIT program to change network camera settings or the INEX Basic program to manage multiple network cameras. In addition, the embedded web server (WebGuard) lets you remotely view live video or scan recorded video using a web browser. In addition, you can use the INEX Basic to manage network cameras and view/record video.



In this operation manual, the term **Remote System** refers to the computer on which the remote program (INEX Basic or WebGuard) is running.

- Supports DirectIP mode working with a DirectIP™ NVR that allows users to simply set up all required configurations without a PC
 - Supports ONVIF protocol (Profile S Ver 2.4.0)
 - Multi-streaming for high-resolution and high-quality video monitoring and simultaneous recording in real-time as well as flexible configurations for those
 - Supports H.264 video compression and M-JPEG still image compression algorithms
 - Supports 4-stage video compression rate and multiple compression resolutions
 - Two-way audio communication support for remote audio dialog
 - Video stream buffering to counter pre-/post-event buffering and network delays for improved network recording reliability
 - Remote monitoring via web browser or remote software
 - Automatic web casting code (HTML) generation
 - Up to 10 simultaneous remote monitoring connections
 - IP filtering, HTTPS, SSL, IEEE 802.1X, and configurable user authority levels for greater security
 - Network bandwidth limitation and MAT features for more efficient use of network bandwidth
- Easy network access via UPnP (Universal Plug and Play) function and embedded mDNS (Multicast DNS) protocol
 - Wide dynamic range compensation (Digital WDR) for improved video quality in high-contrast situations
 - Slow shutter support for improved low-lighting video capture performance
 - Day & Night feature (built-in IR cut filter changer)
 - Quick and easy firmware upgrade over the network
 - Redundant firmware and auto recovery features for improved system stability
 - Network-based integrated management of multiple network cameras
 - Multiple event detection modes: Alarm-in, motion detection, trip zone, audio detection, and tampering
 - Backup storage on a microSD memory card as a safeguard against data loss during network interruptions
 - Supports 12 VDC and PoE (Power over Ethernet)
 - Includes a motorized focus and zoom lens
 - Video out feature (selectable NTSC/PAL)



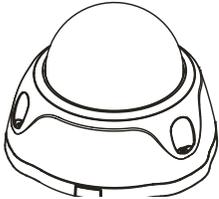
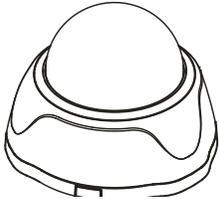
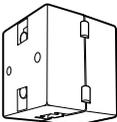
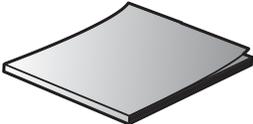
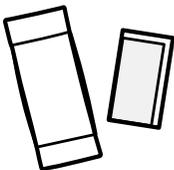
Remote monitoring and recording via multistreaming are available using the INEX Basic program. For more information on using INEX Basic, refer to its **operation manual**.



There is a limit to the number of users allowed to connect remotely via the Internet at the same time.

Accessories

Upon purchasing the product, check inside the box to make sure all the following accessories are included. External appearances and colors of the accessories may vary depending on the model.

		
<p>Network Camera</p>		<p>Ferrite Core</p>
<p>Vandal dome model</p>	<p>Plastic dome model</p>	
		
<p>Installation CD (INIT/iNEX Basic software, Manuals)</p>		<p>Quick Guide</p>
		
<p>Allen Wrench</p>		<p>Screws, Anchor (3 ea.)</p>
		
<p>Desiccant</p>		<p>Cable Access Hole Rubber</p>



An allen wrench, desiccant, and cable access hole rubber is included with *vandal dome* models only.

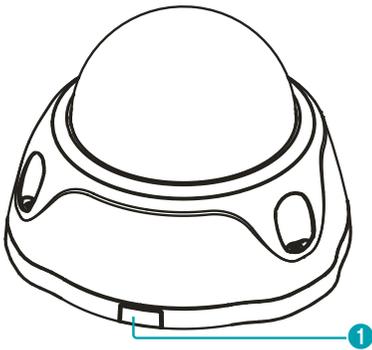
Overview

✓ Product color and design may vary depending on the model.

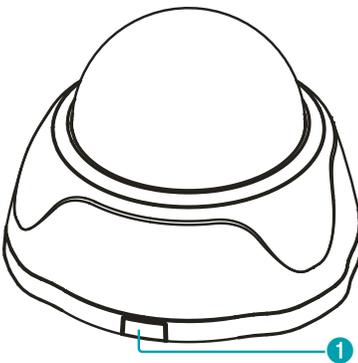
Dome Cover

Top

- Vandal Dome Model

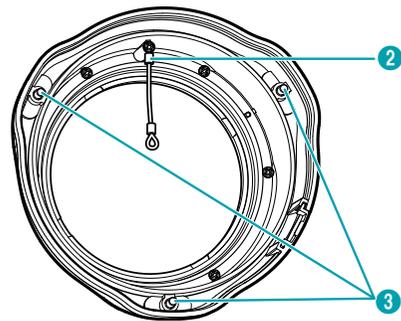


- Plastic Dome Model



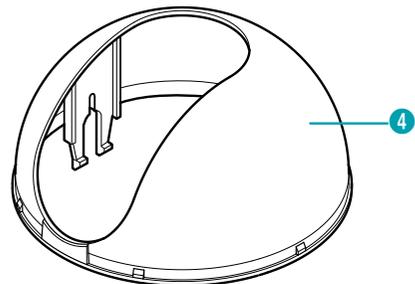
Bottom

- Vandal Dome Model



Shield Case

- IR LED Non-Supported Model



①	Side Cable Access
②	Safety Wire
③	Dome Cover Screws
④	Shield Case

• **Side Cable Access Hole**

For routing cables and wires.

• **Safety Wire**

Prevents the dome cover from falling on to the floor when detached from the camera.

• **Dome Cover Screws**

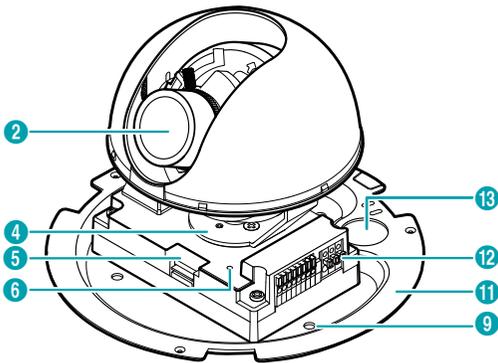
Secures the dome cover to the camera.

• **Shield Case**

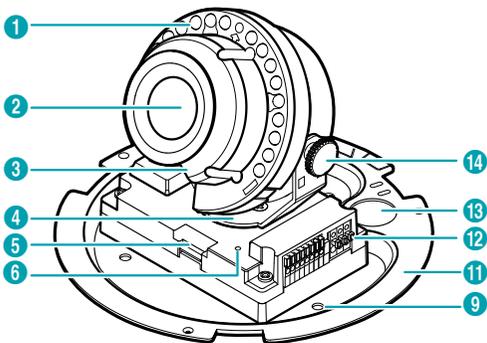
Hides the camera's internals and blocks IR beam reflection.

Body

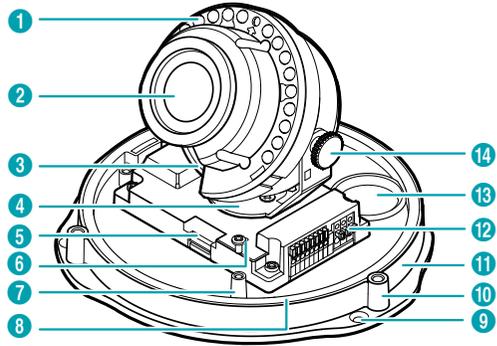
Plastic Dome IR LED Non-Supported Model



Plastic Dome IR LED Supported Model



Vandal Dome Model



1	IR LED
2	Lens
3	Lens Rotator
4	Horizontal Rotator
5	SD Memory Card Slot
6	Factory Reset Switch
7	Safety Wire Screw Hole
8	O-Ring Groove
9	Wall/Ceiling Installation Hole
10	Dome Cover Screw Hole
11	Bottom Cover
12	I/O Device Port
13	Cable Access Hole
14	Vertical Rotation Adjustment Screw

• **IR LED**

A sensor in the middle monitors lighting levels and activates the IR LED during low-lighting conditions.

• **Lens**

A Motorized focus and zoom lens is mounted.

• **Lens Rotator**

Turn the lens rotator clockwise or counterclockwise to adjust the lens' rotation angle.

- **Horizontal Rotator**

Used to adjust the lens' horizontal angle.

- **SD Memory Card Slot**

Used to insert a microSD memory card into the camera. (An SLC (Single Level Cell) or MLC (Multi Level Cell) card by SanDisk or Transcend is recommended)



- Do not remove the SD memory card while the system is in operation. Removing the card while the system is in operation can cause the system to malfunction and/or corrupt data stored on the SD memory card.
- An SD memory card is a consumable product with a finite service life. Prolonged use will damage the card's memory sectors and result in data loss or memory card failure. Test the SD memory card regularly and replace it whenever necessary.

- **Factory Reset Switch**

Restores the camera's default factory settings. For more information, refer to the **Factory Reset**.

- **Safety Wire Screw Hole**

Use the provided screw to secure the safety wire on to the dome cover and the bottom cover.

- **O-Ring Groove**

O-ring is seated in the groove for waterproof. Do NOT remove the o-ring from the groove.

- **Wall/Ceiling Installation Hole**

Used to screw the camera in place on a wall or a ceiling.

- **Dome Cover Screw Hole**

Secures the dome cover to the camera.

- **Bottom Cover**

Allows you to install the camera on a wall or a ceiling.

- **I/O Device Port**

Used to connect I/O devices to the camera.

- **Cable Access Hole**

For routing cables and wires.

If the camera is *vandal dome model*, block the cable access hole for waterproofing by using the enclosed cable access hole rubber when routing cables and wires. Waterproofing sealing is required by using silicone etc. after blocking the cable access hole. Ask your retailer for details.

- **Vertical Rotation Adjustment Screw**

Used to adjust the lens' angle and lock it in place.

Factory Reset

Only use the factory reset switch to restore the camera to its factory default settings.



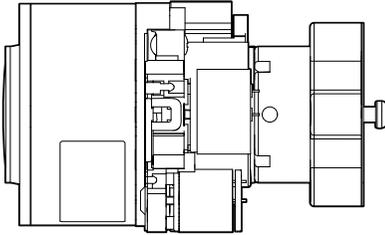
A factory reset will clear all camera settings configured by the user.

- 1 Shut off the power supply, insert a straight pin into the switch hole, and press down on the reset switch.
- 2 Hold the switch down and reconnect the power adapter.
- 3 Once the device turns back on and its LEDs start blinking, wait 5 seconds and then remove the pin.
- 4 The device will go through the resetting process and reboot. All camera settings will be restored to their factory defaults after the reboot.

It's also possible to do a factory reset by pressing and releasing the reset switch while the camera is turned on or using the INIT program from a remote location. A factory reset will reboot the system. For more information on factory reset, refer to the **INIT operation manual**.

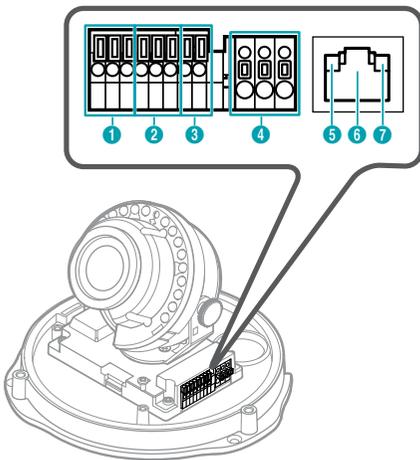
Lens

A Motorized focus and zoom lens



When installing or handling the camera, be careful not to give an impact on the lens to prevent a malfunction from occurring.

I/O Device Port

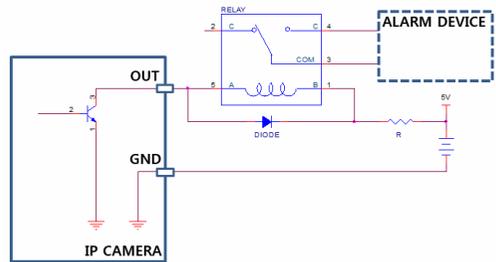


1	Alarm I/O	5	Network LED
2	Audio I/O	6	Network Port
3	Video Out	7	Power LED
4	Power		

Alarm In/Out

Out: It is the BJT (Bipolar Junction Transistor) - open collector output. If the voltage and current exceed the specification limit (Max load: 50mA, Max Voltage: 30VDC), the product could be damaged. When connecting the device which exceeds the specification limit, refer to the picture (circuit) below.

If used with an external inductive load (e.g. relay), a diode must be connected in parallel with the load for protection. Otherwise, the product could be damaged.



In: Connect an alarm-in device to this port. (Mechanism: Choose between an NC (Normally Closed) type or an NO (Normally Open) type) → Connect a mechanical or electrical switch to the alarm in port and the GND (ground) connector. Alarm in range is 0V to 5V. In order to detect alarm input from an electrical switch, the signal must be higher than 4.3V from an NC switch or less than 0.3V from an NO switch and must last for longer than 0.5 seconds.

Audio In/Out

Out: Connect an amplifier to this port (line out). This device does not feature a built-in audio amplifier unit and therefore requires the user to purchase a separate speaker system with a built-in amplifier.

In: Connect an audio source to this port. (line in)

Video Out

CVBS (Video Out) & GND (Ground): Connect the cable's signal line and ground line to these ports and the connector on its opposite end to a monitor. Use these ports for previewing video and not monitoring video. Go to Remote Setup (**System > General**) and choose a video out signal. (NTSC or PAL)

- **Power**

- **DC12V +/-**: Connect the two wires of the power adapter to these ports. Be careful not to cross the + and - wires. Booting will commence once connected to a power supply.
- **FGND (Frame Ground)**: Used to ground the device.

- **Network LED**

Indicates the network connection status. For more information, refer to the **LED Status Indications**. If the **Status LED** option under **System > General** has not been enabled, this LED will remain turned off regardless of the network connection status.

- **Network Port**

Connect a network cable with an RJ-45 connector to this port. If using a PoE switch, you can supply power to the camera using an ethernet cable. For more information on PoE switch use, refer to the switch manufacturer's operation manual. You can configure, manage, and upgrade this camera and monitor its images from a remote computer over the network. For more information on network connection setup, refer to the **INIT operation manual**,

- **Power LED**

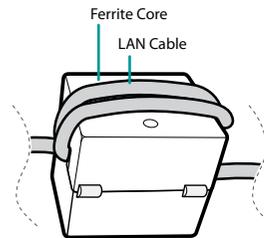
Indicates the system's operating status. For more information, refer to the **LED Status Indications**. If the **Status LED** option under **System > General** has not been enabled, this LED will remain turned off regardless of the system's operating status.



When inserting an alarm in/out, audio in/out, video out, or power connector, hold down the button and push the connector in through the exposed hole. Release the button and then gently pull on the wire to ensure a secure connection. To disconnect, press down on the button again and pull the wire out.



- Check your local laws and regulations on making video or audio recordings. The user will be held liable for any violation of the law. (Article 25-5 of the Personal Information Protection Act: Operators of image data processing devices may not operate such devices for purposes other than as originally intended during device installation, place such devices at locations other than as originally intended, or use such devices to record audio.)
- When switching over from 12 VDC to PoE as the power source, the system will be rebooted once the power adapter is disconnected.
- Ground the power port's frame ground terminal before use.
- Organize the power cable so that it will not cause people to trip over or become damaged from chairs, cabinets, desks, and other objects in the vicinity. Do not run the power cable underneath carpet or a rug or plug the cable into a power outlet shared by a number of other devices.
- Wrap the camera-end of the network cable twice around the provided ferrite core (28A2024-0A2, Laird Technologies) to subdue electromagnetic wave generation.

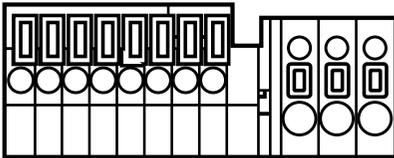


- The network connector is not designed to be connected directly with cable or wire intended for outdoor use.

LED Status Indications

LED Status		Description
Power LED	Off	Power not connected
	Flashing	Booting
	On	Powered on
Network LED	On	Connected to network
Power LED/ Network LED	Flashing (sequentially)	Software upgrade in progress

Connector Arrangement



Alarm	GND	Grounding
	Out	Alarm Out (Active Low - Open Collector Output)
	In	Alarm In
Audio	GND	Grounding
	Out	Audio Out
	In	Audio In
Video	GND	Grounding
	CVBS	Video Out
Power	DC12V +	Power connection (Check + and - markings)
	DC12V -	
	FGND	Frame grounding

Installation

Installation of this product does not require the use of special tools.

For more information on other devices comprising the overall system, refer to their respective **installation manuals**.

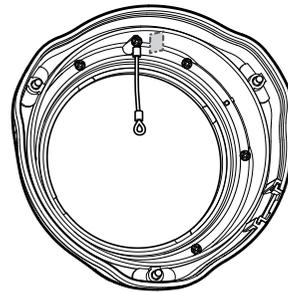
- ✓ Product color and design may vary depending on the model.

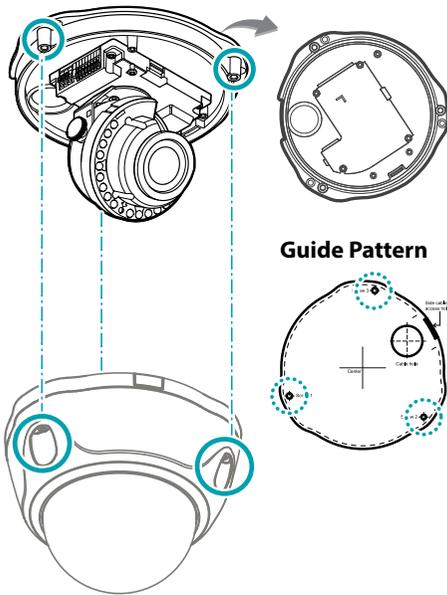
Installation

- ✓ Shield case is included with *IR LED non-supported model* only.
- ⚠ Check the wall or ceiling to see if it needs to be reinforced. The camera may fall off if the wall or ceiling is not strong enough to support its weight.

Vandal Dome Model

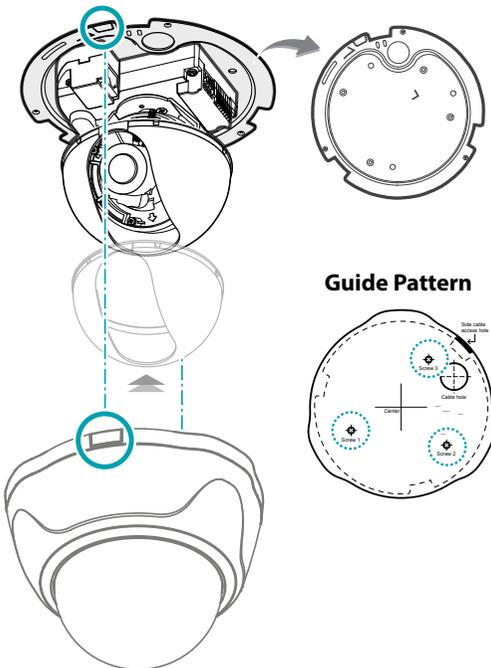
- ✓ Attach the enclosed desiccant beside the safety wire screw inside the dome cover to prevent moisture. *vandal dome model* only.





Guide Pattern

Plastic Dome Model



Guide Pattern

- 1 Use the screws provided with the camera to secure the bottom cover on a wall or a ceiling.

Use the provided guide pattern to check the distance between the screws.

- 2 Connect external devices, the network cable, and the power adapter. If the camera is *vandal dome model*, block the cable access hole for waterproofing by using the enclosed cable access hole rubber when routing cables and wires. Waterproofing sealing is required by using silicone etc. after blocking the cable access hole. Ask your retailer for details.

- 3 Adjust the angle of the lens. For more information, refer to the **Angle Adjustment**.

- 4 Adjust the focus and zoom levers.

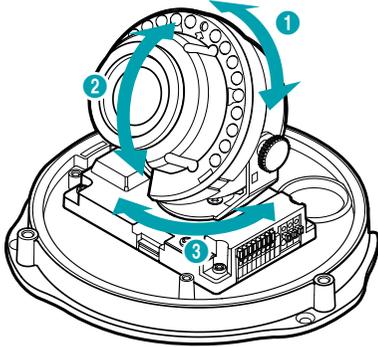
- 5 Attach the shield case to the vertical rotation adjustment screw and secure it in place.
IR LED non-supported model only

- 6 Attach the dome cover to the bottom cover.
 - *Vandal dome model*: Use the provided screws to secure the dome cover on to the bottom cover.
 - *Plastic dome model*: Align the marking next to the cable access hole on the bottom cover and the side cable access hole on the dome cover together and then turn the dome cover in clockwise direction to lock it in place.

- 7 Connect the power.

Angle Adjustment

The lens can be rotated along three axes.



1	Lens Rotation	3	Horizontal Rotation
2	Vertical Rotation		

- **Lens Rotation**

Used to adjust the lens' rotation angle. Turn the rotator in clockwise or counterclockwise direction.

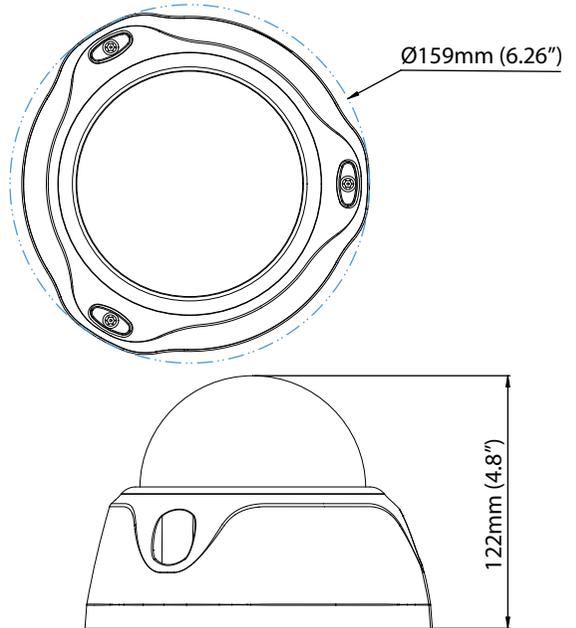
- **Vertical Rotation**

Used to adjust the lens' vertical angle. Loosen the screw, adjust the lens' vertical angle, and then tighten the screw to lock it in place.

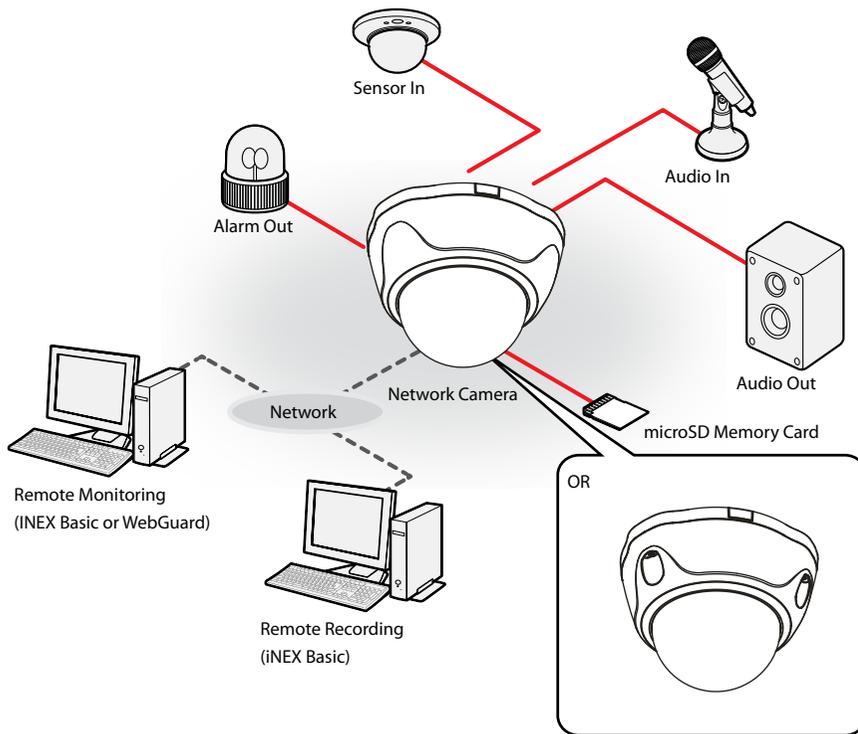
- **Horizontal Rotation**

Used to adjust the lens' horizontal angle. Turn the horizontal rotator in the clockwise or counterclockwise direction.

Dimensions



Part 2 - Camera Connection



Control the camera over the network from software installed on a computer.
Ideal for using the camera over the network from a remote location.

Part 3 - Remote Setup

Configure basic network camera settings and all other system settings.

✓ Screen images may vary depending on the model.

Camera Protocol

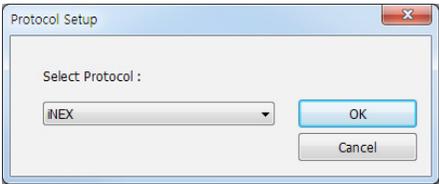
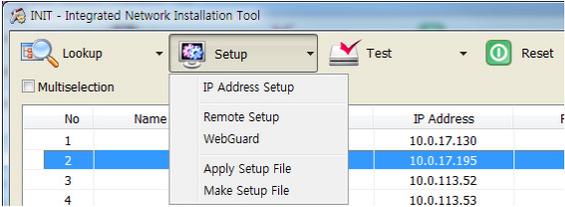
Camera supports **DirectIP™** and **iNEX** protocols.

- **DirectIP™** protocol:
 - Using with a DirectIP™ NVR enables camera use without the need to configure network settings.
 - The DirectIP™ NVR also allows you to control all camera settings directly from the NVR, without the need for a computer.

✓ For more information on configuring camera settings from a DirectIP™ NVR, refer to the DirectIP™'s **operation manual**.

- **iNEX** protocol:
 - Control the camera over the network from software installed on a computer or a separate NVR.
 - Ideal for using the camera over the network from a remote location.

Switching Protocols



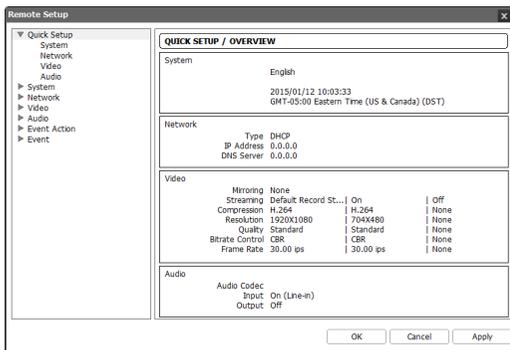
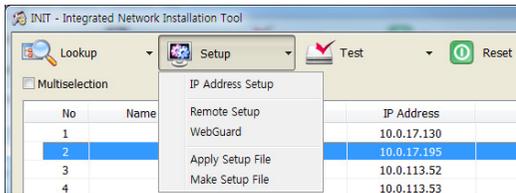
- 1 Launch the INIT program and from the list, select a camera whose protocol you wish to change.
- 2 Click on the **Setup** icon and then select **Setup** → **Protocol Setup**.
 - Alternatively, you can right-click on the mouse and select **Protocol Setup**.
- 3 From the **Protocol Setup** screen, select the desired protocol and then click **OK**.
- 4 This will activate the selected protocol. You can check each camera's protocol on the INIT program.

✓ "This user manual was written based on the iNEX protocol."

Remote Setup

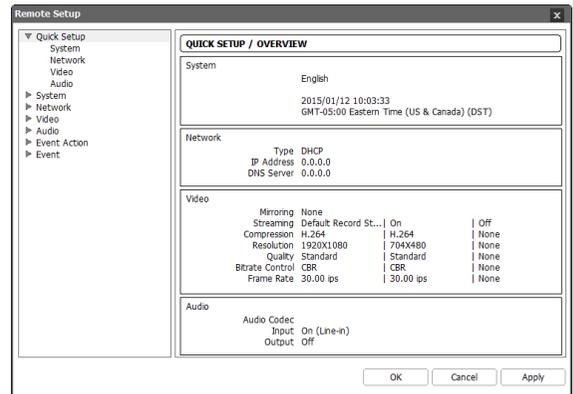
- 1 Launch the INIT program and then from the main screen, select a network camera whose settings you wish to change.
- 2 Click on the **Setup**  icon.
- 3 Select **Remote Setup** from the **Setup** menu to load the **Remote Setup** screen. Alternatively, you can select **Network Camera** from the main screen and then right-click to access the **Remote Setup** screen.

System settings can also be changed using a remote program.



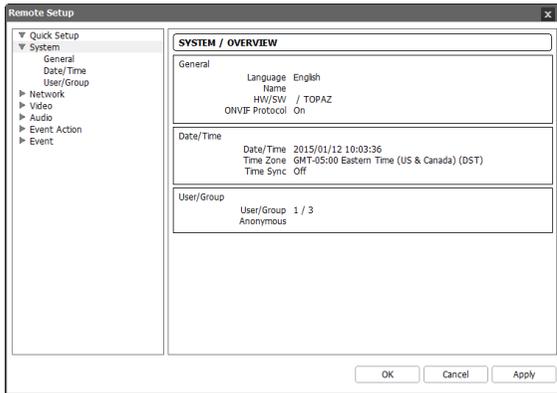
From the Remote Setup screen, select the menu on the left to display the current settings. Select an option under the menu to change the corresponding settings. Once you have changed the settings, click **OK** to apply the settings and exit from the Remote Setup screen.

Quick Setup



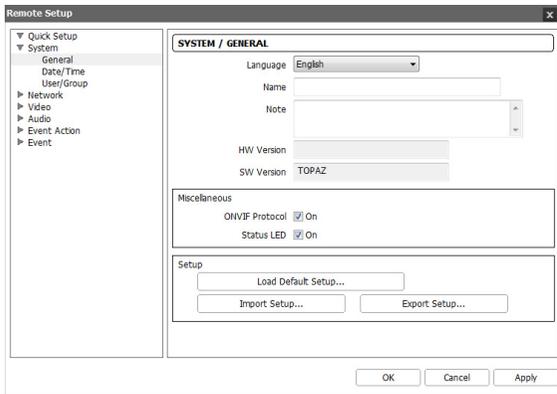
Quick Setup allows you to set up **System, Network, Video, Audio,** and other basic settings needed for camera use.

System



Change the camera's system information, add users/groups, and/or import/export settings.

General



• SYSTEM/GENERAL

- **Language:** Select the language you wish to use for remote setup.
- **Name:** Enter a name for the camera. (Up to 31 alphanumeric characters, including spaces)
- **Note:** Enter a description for the camera.
- **HW Version/SW Version:** Indicates the camera's hardware and software versions.

• Miscellaneous

- **ONVIF Protocol:** Select to enable ONVIF protocol use. However, ONVIF Protocol is available only to users belonging to the standard user groups (**Administrator**, **Operator**, and **User**). When you have connected to the camera by using the ONVIF protocol, only the currently enabled streams or events are supported and you cannot change it. There may be some more settings that cannot be changed, too. If you want to change those settings, connect to the camera by using the INIT program.

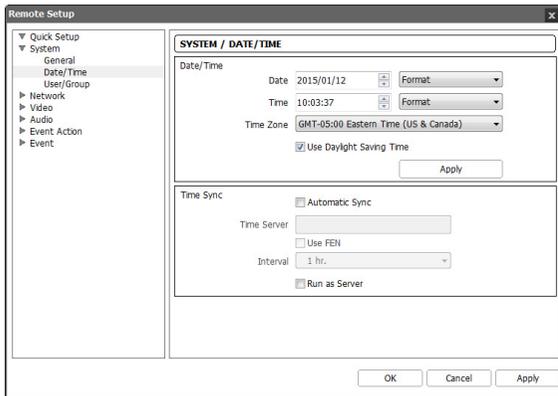
• Setup

- **Load Default Setup:** Restores all settings other than Date/Time to their factory defaults. Select Include Network Setup to load default network settings as well. For more information on network setup, refer to the **Network** on page 22.
- **Import Setup:** Open a setup file and apply its settings to the camera. Click on the button and then select a setup file. Select Include Network Setup to apply the file's network setup settings (exc. FEN). For more information on network setup, refer to the **Network** on page 22.
- **Export Setup:** Export the current settings as a .dat file. Click on the button and then enter a file name.



- **Load Default Setup** and **Import Setup** options are available only to users belonging to the **Administrator** group.
- When applying the settings of a setup file, do not select the **Include Network Setup** option if the network settings contained in the selected file is currently being used by a different camera. Doing so can interfere with establishing a connection with the other camera.
- If IP Address, Admin Port, and/or SSL settings have been changed, Remote Setup will terminate after applying the current settings.

Date/Time

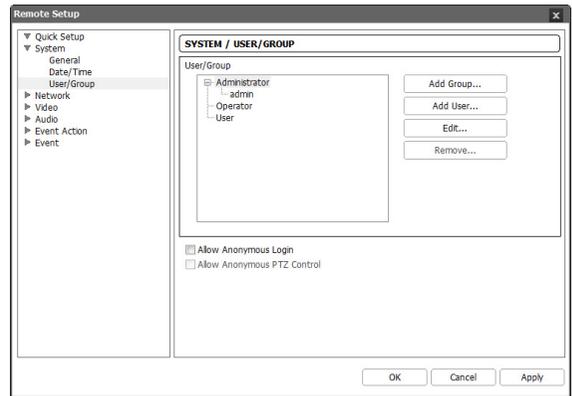


- **Date/Time:** Change the camera's date/time settings and display formats and configure the time zone and daylight saving time settings. Click **Apply** to apply the changes right away.
- **Time Sync**
 - **Automatic Sync:** Select to synchronize the system's time with the time server at a specified interval. Enter the time server's IP address or domain name and then specify the interval. If the time server is **FEN**-enabled, select the **Use FEN** option and then enter the time server's name instead of its IP address or domain name.
 - **Run as Server:** Select to run the camera as a time server. Other devices will then be able to synchronize its time setting with this camera's time setting.



If you wish to enter a domain name instead of an IP address for the **Time Server** setting, DNS server must be configured during **Network** setup. If you wish to enter a server name instead of an IP address or a domain name, the **Use FEN** option must be enabled during **Network** setup.

User/Group

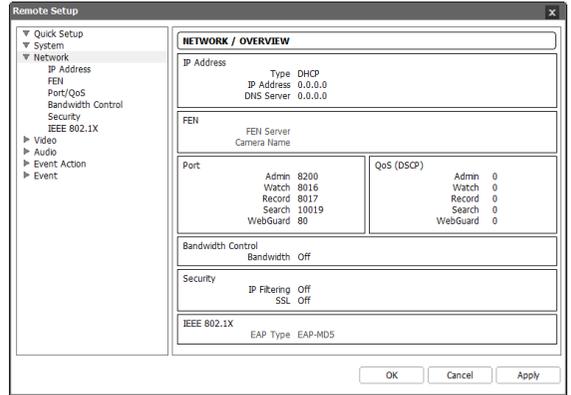


- **User/Group:** Change remote camera control permission settings for users and user groups.
 - **Add Group:** Add a new user group. Designate a name for the group and then specify control authorities.
 - **Add User:** Add a new user. Designate a name for the user, select which group to add the user to, and then enter a connection password.
 - **Edit:** Edit group authorities and/or user passwords. Select a group or user and then click on the button.
 - **Remove:** Delete groups or users. Select a group of user you wish to delete and then click on the button.
- **Allow Anonymous Login:** Select if you are using Webcasting. For more information on webcasting, refer to the **Webcasting** on page 32.
- **Allow Anonymous PTZ Control:** Select to control the pan/tilt driver remotely from a website using webcasting.



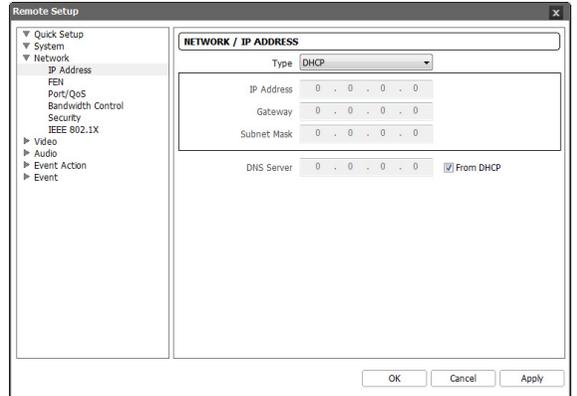
- **User/Group** settings can only be configured by users belonging to the **Administrator** group.
- There is no default password for the **Administrator** group's **admin** user.
- Standard groups (**Administrator**, **Operator**, and **User**) cannot be edited or deleted. Authorities assigned here apply identically to ONVIF protocol user groups.
- Group authorities that can be assigned are as follows:
 - **Upgrade**: Upgrade the system.
 - **Setup**: Configure the system's settings.
 - **Color Control**: Adjust the camera's brightness, contrast, saturation, and hue settings.
 - **PTZ Control**: Allows you to control the zoom of the lens.
 - **Alarm-Out Control**: Reset alarm outs.
 - **System Check**: View system event status.
 - **Search**: Search video recordings saved on the SD memory card from a remote program.
 - **Clip-Copy**: Search video recordings saved on the SD memory card and save them as video files from a remote program.

Network



Change the network settings, enable FEN and security features, and control network bandwidth use.

IP Address



- **Type:** Select the type of network you are using. If this option has been changed, **Remote Setup** will terminate after applying the current settings.
 - **Manual:** Select if using a static IP. You will then be able to configure the related settings manually.
 - **DHCP:** Select if connected to the network using DHCP. Click **OK** to retrieve IP address and other network settings automatically from the DHCP server.
 - **ADSL (with PPPoE):** Select if connected to the network using ADSL. Enter the ID and password for ADSL connection and then click **OK** to log in and retrieve the IP address and other network settings automatically.
- **DNS Server:** Enter the DNS server's IP address. By using the DNS server, you will be able to use domain names instead of IP addresses when configuring the FEN, time, or SMTP server. If the camera is connected to the network via DHCP, select the **From DHCP** option to retrieve the DNS server's IP address from the DHCP server automatically. The updated address will be displayed upon the subsequent connection.



- Contact your network administrator for more information on the camera's network connection type, the DNS server's IP address, and other related information.
- If using DHCP or ADSL, the camera's IP address may change from time to time. We therefore recommend that you use the **FEN** feature.

FEN

Select **Use FEN** to enable the **FEN** feature.

The screenshot shows the 'Remote Setup' window with the 'NETWORK / FEN' tab selected. The 'Use FEN' checkbox is checked. The 'FEN Server' field contains 'dvnames.net'. The 'Port' field is set to '10088' with a range of '(10000 ~ 12000)'. The 'Use NAT' checkbox is unchecked. There are input fields for 'FEN Name' and 'Help Desk', with a 'Check...' button next to the 'FEN Name' field. At the bottom of the window are 'OK', 'Cancel', and 'Apply' buttons.

- **FEN Server:** Enter the FEN Server's IP address or domain name.
- **Port:** Enter the FEN Server's port number.
- **Use NAT:** Select if the camera is connected to the network via a router.
- **FEN Name:** Enter a camera name you wish to register to the FEN Server. Click **OK** to check the name's availability.
- **Help Desk:** Change the settings and then click **OK** to register the entered FEN name to the FEN Server. If all the settings have been configured correctly, the FEN Server's help desk information will be shown in the **Help Desk** fields next time you enter the **FEN** setup screen.

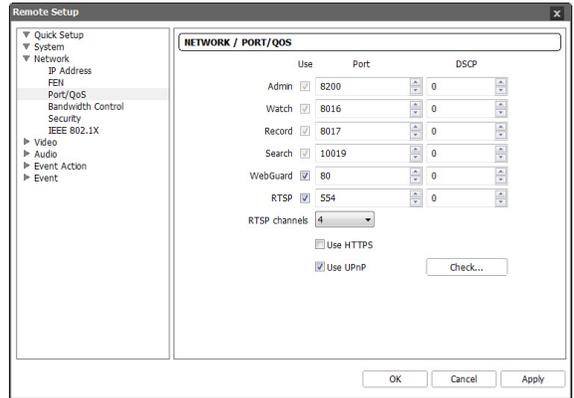


- Use **FEN** is a feature that allows you to register a unique name for a camera that utilizes a dynamic IP address to the FEN Server and connect to the camera using the registered name instead of an IP address, which can change from time to time. In order to use this feature, you must first register a FEN name to the FEN Server.
- If network settings have been changed, click **OK** at the bottom of the setup window to save the changes and then setup the **FEN**.
- Inquire with your network administrator for the **FEN Server's** IP address or domain name. If a DNS server has been configured under **Network** setup, you can enter the FEN Server's domain name instead of its IP address for the FEN Server setting.
- If using an IP router (or NAT), port configuration and other network functions will depend on the usage method of the IP router (or NAT).
- You will not be able to save **FEN** settings unless you click on the **OK** button next to the **FEN Name** field and check the entered name's availability. In addition, you will be prompted with an error message if you do not enter a FEN name or enter a name already registered to the FEN Server. If the FEN name contains the #, \, and/or % symbol, it might not be able to connect to the camera from the WebGuard program.



The FEN Server may go offline without notice for server update purposes or due to an unexpected failure.

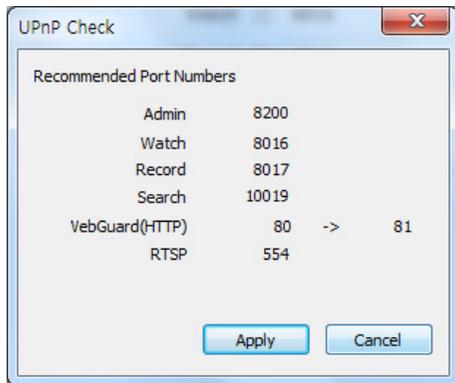
Port/QoS



- **Use/Port:** Enable/disable ports and designate corresponding port numbers. **Admin, Watch, Record,** and **Search** ports are enabled by default and cannot be disabled. By enabling WebGuard and RTSP ports, you will be able to use the WebGuard program or a media player that supports RTSP (Real-Time Streaming Protocol) service to connect to the camera. If this option has been changed, **Remote Setup** will terminate after applying the current settings. (Applicable to **Admin** port number only.)
- **DSCP:** Designate each port's QoS (Quality of Service) level using DSCP values. Assigning QoS levels prioritizes the ports for network bandwidth use. Higher the DSCP value, higher the QoS level and thus higher on the network bandwidth allocation priority list. Use **0** if you do not want to assign a QoS level. The network environment must support DSCP in order for this feature to function properly. Contact your network administrator for more details.
- **Use HTTPS:** Select this option to apply https protocol-based security on WebGuard.

- Use **UPnP**: If the camera is connected to the network via an IP router (or NAT), select this option to connect to the camera without setting up port forwarding. The IP router (or NAT) must be enabled with UPnP in order for this feature to function properly. For more information enabling UPnP on your IP router (or NAT), refer to the **IP router or NAT's operation manual**.

Click **Check** to test the current port settings. A confirmation message will appear if all the selected ports are available for use. If not, a list of recommended port numbers will be shown.



Click **Apply** to use the recommended port numbers.



- Each port number must be unique.
- You can connect to the camera using a media player that supports RTSP service and monitor its video feed. If the camera is connected to the network via an IP router (or NAT) or is behind a firewall, you must open the ports. (All ports if using UDP protocol and RTSP ports if using TCP protocol) This feature may not be supported by all media player. In addition, video display on certain media players may not be smooth depending on the network status, video streaming compression method used, and/or the resolution setting. Connection methods are as follows:

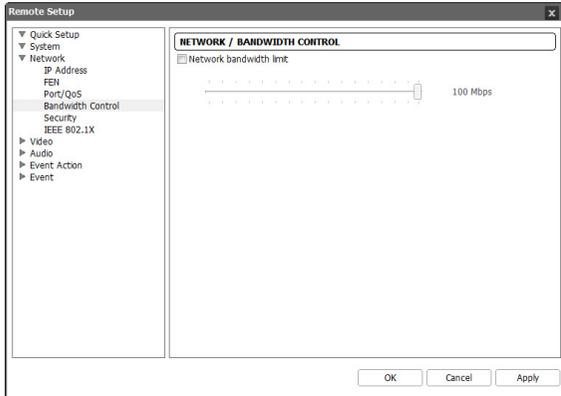
- **Via PC**: Launch the media player (such as VLC) and then enter **rtsp://ID:Password@IP Address: RTSP Port Number/trackID='Stream Number'** (Stream Number: 1 if Primary, 2 if Secondary, and 3 if Tertiary). (e.g.: rtsp://admin:@10.0.152.35:554/trackID=1 (User: admin, Password: None, Camera IP Address: 10.0.152.35, RTSP Port Number: 554, Stream: Primary))
- **Via Mobile Device**: Launch the web browser and then enter **http://IP Address:WebGuard Port Number/** (If **Use HTTPS** has been enabled, enter **https** instead of **http**). Camera's WebGuard port number and RTSP port number must be configured correctly in order to establish a connection this way.



- Port numbers of the remote program must be updated whenever the camera's port numbers are changed.
- ONVIF protocol may not function if using HTTPS.

Bandwidth Control

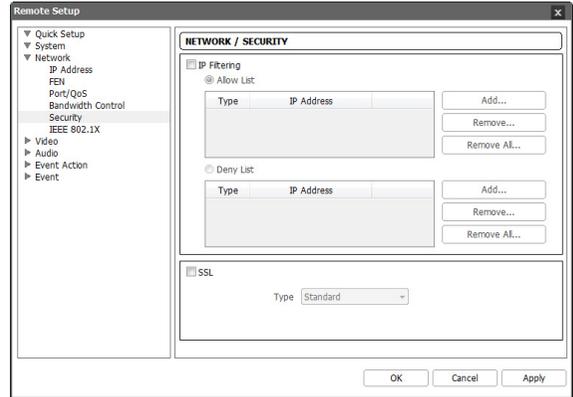
Regulates the camera's network bandwidth use based on network traffic fluctuations.



Select **Network Bandwidth limit** and then specify the maximum bandwidth. The camera will not be able to use more than the specified limit in the event of network traffic.

It may not be possible to produce the frame rate specified under **Video > Streaming** if a network bandwidth limit has been set.

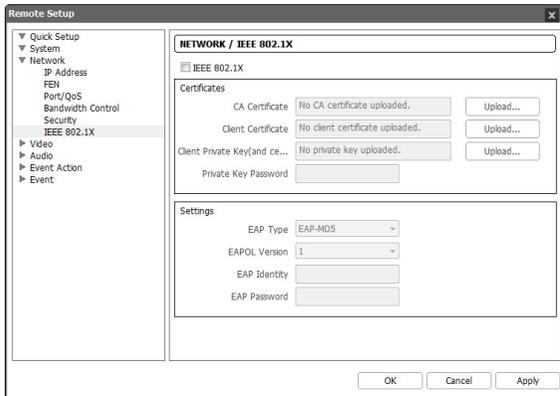
Security



- **IP Filtering:** Select this option to enable IP Filtering. IP Filtering allows camera access from certain IP addresses and blocks access from others.
 - **Add:** Add new IP addresses to Allow List or Deny List. Select the **Host** option to add one IP address at a time. Select the **Group** option to define a range of IP addresses you wish to add.
 - **Remove/Remove All:** Remove individual or all IP addresses from Allow List or Deny List.
- **SSL:** Select this option to enable SSL (Secure Sockets Layer). Enabling this option applies SSL protocol protection on data transmitted out. However, programs and systems that do not support SSL will not be able to connect to the camera. If this option has been changed, Remote Setup will terminate after applying the current settings.
 - Time server, FEN Server, and SMTP server's IP addresses must be added to Allow List under **IP Filtering** in order to use Time Sync, FEN, and Send Email features. No connection to the camera will be permitted whatsoever from IP addresses added to **Deny List**.
 - Enabling the **SSL** option may place a greater load on the external system, depending on the level of security being used.
 - This product contains software developed by Open SSL Project for use in Open SSL Toolkit. (<http://www.openssl.org/>)

IEEE 802.1X

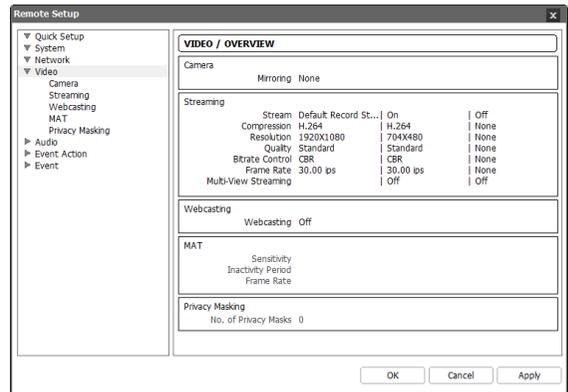
Select the **IEEE 802.1X** option to enable IEEE 802.1X network connection authentication.



- **Certificates:** Upload a certificate or a private key. You may be prompted to enter a password for the private key.
- **Settings:** Configure EAP (Extensible Authentication Protocol) settings.
 - **EAP Type:** Choose a network connection authentication method. Selected method must be identical to the authentication method used on the authentication server.
 - **EAPOL Version:** Choose EAP authentication's version.
 - **EAP Identity/EAP Password:** Enter authentication ID and password.

The authentication server and AP must support IEEE 802.1X authentication in order for the IEEE 802.1X network connection authentication feature to function properly.

Video

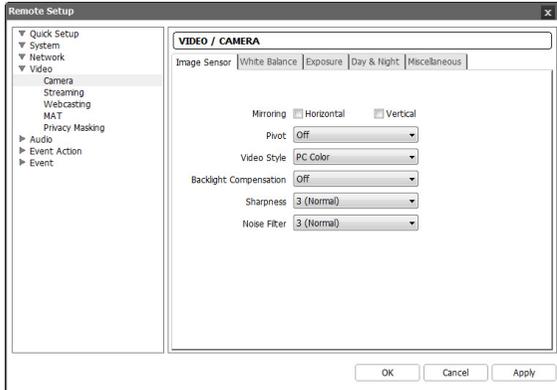


Configure **Camera, Streaming, Webcasting, MAT, and Privacy Masking** options.

Camera

Image Sensor

Configure **Image Sensor** settings.

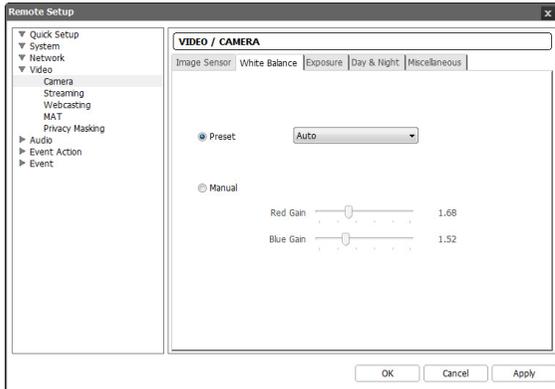


- **Mirroring:** Select **Horizontal Reverse** or **Vertical Reverse** to flip the image horizontally or vertically.
- **Pivot:** Enable this option and choose the direction of the pivot. You can turn the image by 90 in the clockwise or counterclockwise direction. However, this option will not be available if the vertical resolution is less than 320. This features is particularly effective when monitoring hallways, passages, and other confined spaces.
- **Video Style:** Select **TV Color** or **PC Color**.

- **Backlight Compensation:** Enable/disable the Backlight Compensation feature.
 - **OFF:** Disables the BLC function.
 - **ON:** When images are too bright overall due to backlight, objects are exposed brighter under backlight circumstances.
 - **HSBLC (High Suppress Backlight Compensation):** When a certain area of images is too bright due to backlight under low lighting conditions and it causes the other area to be too dark, this function provides the other area of images brightly and clearly by blocking the backlight in the certain area. Dark parking lot entrances and gas station entrances at night, for example (HSBLC compensates for the bright light coming from incoming vehicle headlights and makes it possible to see the license plates).
- **Sharpness:** Adjust the sharpness level. Adjust the contours to make the images look sharper. Increasing the value raises the sharpness level, but using too high a value can result in unwanted noise.
- **Noise Filter:** Select the noise filter level. Noise filter can reduce the noise in images taken under low-lighting conditions. Increasing the value reduces the noise, but using too high a value can result in blurry images.

White Balance

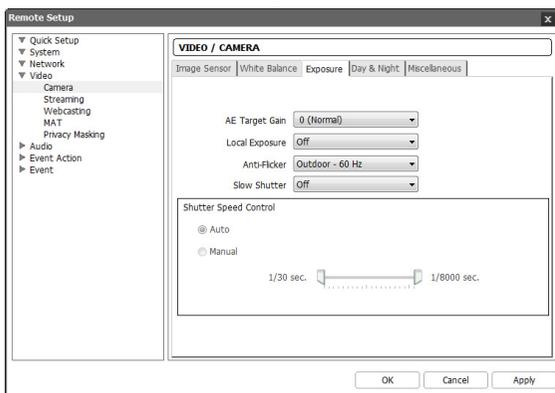
Configure **White Balance** settings.



- **Preset:** Use preconfigured white balance settings.
 - **Auto:** Allow the system to adjust the white balance automatically. The system will assess the lighting conditions and adjust the white balance automatically.
 - **INCANDESCENT - FLUORESCENT COLD:** Select a lighting type to apply the appropriate white balance.
- **Manual:** Adjust the white balance manually. Adjust Red and Blue gain values. Greater the value, greater the intensity of the corresponding color.

Exposure

Configure **Exposure** settings.



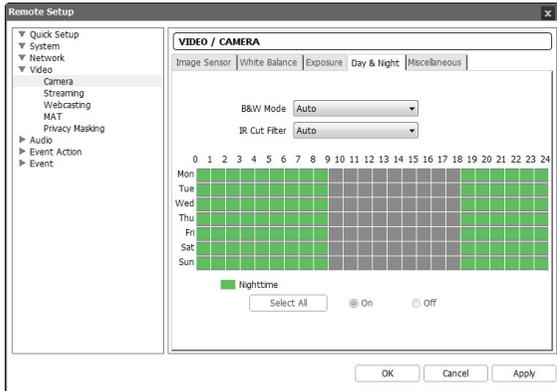
- **AE Target Gain:** Specify exposure compensation's target gain. Exposure is compensated automatically based on the specified target gain. Higher the gain, brighter the images.
- **Local Exposure:** Activate **Local Exposure**. Use Local Exposure on images that appear too dark due to backlighting conditions and on images containing over-exposed sections. Dark parking lot entrances and gas station entrances at night, for example (Local Exposure compensates for the bright light coming from incoming vehicle headlights and makes it possible to see the license plates). Greater the value, clearer the image.
- **Anti-Flicker:** If the lights in the area where the camera is located use alternating current, specify the frequency of the lights to minimize flickering. Matching the frequencies can reduce flickering. (NTSC: 60Hz, PAL: 50Hz)
- **Slow Shutter:** Activate **Slow Shutter**. The electronic shutter's speed will decrease to the specified level under low-lighting conditions to allow more light in and therefore produce brighter images.
- **Shutter Speed Control:** Adjust Shutter Speed. This option is available only when **Anti-Flicker** and **Slow Shutter** are both set to **Off**.
 - **Auto:** The system will assess the lighting conditions and adjust the shutter speed automatically.
 - **Manual:** Use the slider to select the desired shutter speed. Select the most suitable minimum and maximum shutter speeds for the lighting conditions in the area where the camera is located.



With certain features, selecting **Auto** automatically loads settings suitable for the camera's installation environment.

Day & Night

Configure **Day & Night** settings.

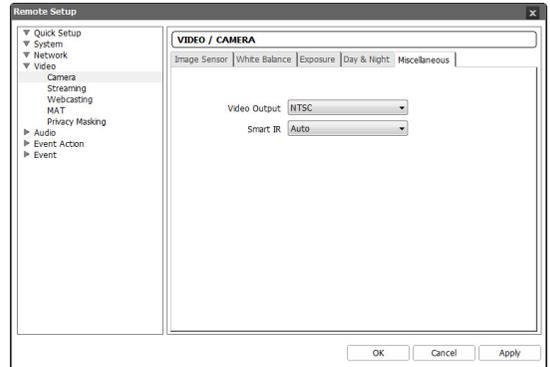


- **B&W Mode:** Display the images in greyscale for greater clarity in low-lighting conditions. When configuring **Event > Alarm In**, this feature will not function if **Day & Night Mode** event action has been configured.
 - **On/Off:** Enable/disable B&W Mode.
 - **Auto:** Allow the system to enable/disable B&W Mode automatically.
 - **Schedule:** Set up a B&W Mode schedule. B&W Mode is enabled on days and times designated as **Nighttime** and disabled at all other times. Select **On** or **Off** at the bottom of the schedule table and then click or drag on the dates and times to select/unselect as **Nighttime**. Select **On** or **Off** and then click **Select All/Clear All** to select/unselect all dates and times as **Nighttime**.

- **IR Cut Filter:** IR Cut Filter blocks out the infrared spectrum. You can ensure clear images at all times by blocking out the infrared spectrum in high-lighting conditions and allowing the infrared spectrum to pass through in low-lighting conditions. When configuring **Event > Alarm In**, this feature will not function if **Day & Night Mode** event action has been configured.
 - **Nighttime Mode / Daytime Mode:** Disable or enable IR Cut Filter.
 - **Auto:** Allow the system to enable/disable IR Cut Filter automatically.
 - **Schedule:** Set up an IR Cut Filter schedule. IR Cut Filter use is disabled during dates and times designated as **Nighttime** and enabled at all other times. Select **On** or **Off** at the bottom of the schedule table and then click or drag on the dates and times to select/unselect as **Nighttime**. Select **On** or **Off** and then click **Select All/Clear All** to select/unselect all dates and times as **Nighttime**.

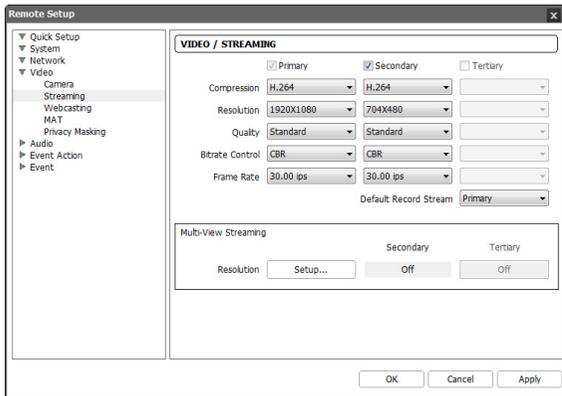
Miscellaneous

Configure **Miscellaneous** settings.



- **Video Output:** Select a video output signal format.
- **Smart IR:** Set the brightness of the IR LED. *IR LED supported model only.*
 - **Auto:** Select to adjust the brightness automatically. The sensor in the middle of IR LEDs detects illumination.
 - **0% ~ 100%:** Set the brightness manually. The higher the value is set, the brighter it is..

Streaming



- **Primary, Secondary, Tertiary:** Multistreaming is supported. (priority: Primary > Secondary > Tertiary). Enable/disable streaming use. The lower stream settings may change depending on higher stream settings. The tertiary stream may not be available depending on higher stream settings (refer to the table below).

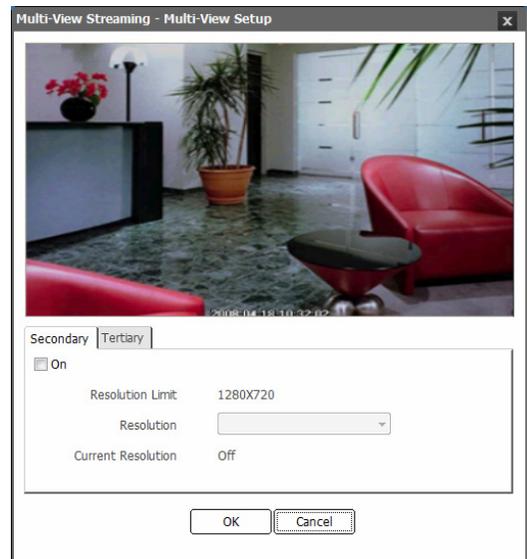
Primary		Secondary		Tertiary	
Resolution	ips	Resolution	ips	Resolution	ips
1920x1080	30	704x480	30	-	-

- **Compression:** Choose the streaming compression method.
- **Resolution:** Choose a resolution setting for video streaming. The current stream resolution cannot be higher than the higher stream resolution.
- **Quality:** Choose a quality setting for video streaming.
- **Bitrate Control:** Choose a bitrate control mode for H.264 compression.
 - **CBR (Fixed Bitrate):** Maintains the current bitrate regardless of motion change in the video.
 - **VBR (Variable Bitrate):** Bitrate varies depending on motion changes in the video. Less movement places less load on the network and takes up less storage space.
- **Frame Rate:** Choose a frame rate setting for video streaming. The frame rate of the current stream cannot be higher than the frame rate of the higher stream if those stream resolutions are same.

- **Default Record Stream:** Choose a stream to use for recording. This setting, however, may not apply if a recording stream has been designated from the remote program or the SD memory card recording feature has been enabled. For more information, refer to the **Settings** on page 38.

- **Multi-View Streaming:** Designate a specific area of the screen and stream images from that area only. (not applicable to the primary stream)

Select **On** and then specify the streaming area's resolution.

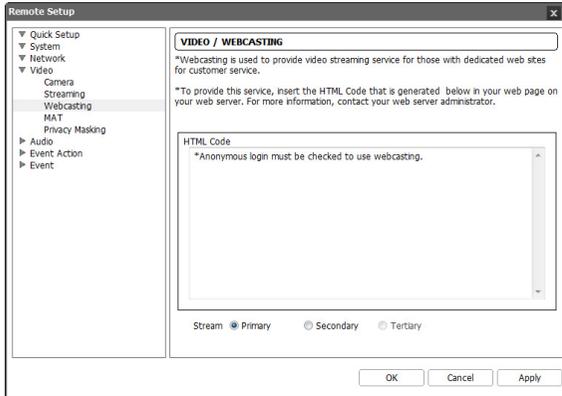


- **Resolution Limit:** Indicates the maximum resolution that can be set for the streaming area.
- **Resolution:** Designate a streaming area. Designated area is marked in red on the screen. You can adjust the resolution of the area or reposition the area by dragging and dropping using the mouse.
- **Current Resolution:** Displays the resolution of the designated streaming area.

If multiple users are connected to the camera, the increase in bandwidth use can lower the frame rate.

Webcasting

Use the webcasting service to view live images from the camera on a web site.

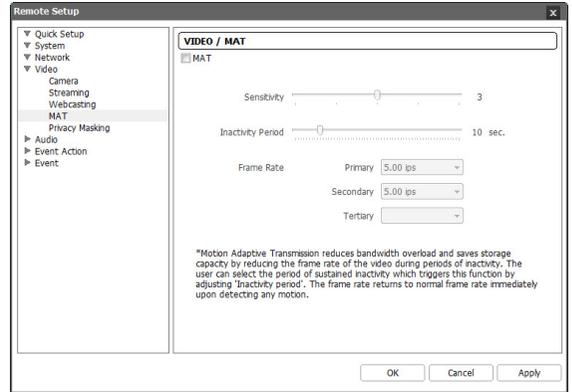


- **HTML Code:** Copy and paste the html code shown on the screen within the code of the web page you want the video to be displayed.
- **Stream:** Choose a stream to use for webcasting. Only a stream currently in use can be selected.

In order to use the webcasting service, the **Allow Anonymous Login** option under **System > User/Group** must be selected.

MAT

Select the **MAT** option to use the MAT (Motion Adaptive Transmission) feature during video transmission and recording.

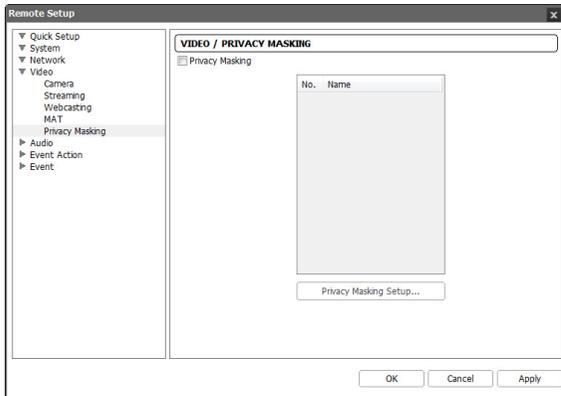


- **Sensitivity:** Set the motion detection sensitivity. Higher values will result in more sensitive motion detection.
- **Inactivity Period:** Set the Inactivity Period. If motion is not detected for the duration of time specified, video is transmitted and recorded using the frame rate designated below until movement is detected again.
- **Frame Rate:** Designate the frame rate to be used between the end of the Inactivity Period and the next motion detection. When the slow shutter mode is enabled under **Video > Camera** menu, the frame rate may change. Video is transmitted and recorded at the designated frame rate between then end of the Inactivity Period and the next motion detection. Once motion is detected again, the frame rate designated under **Streaming** is restored immediately.

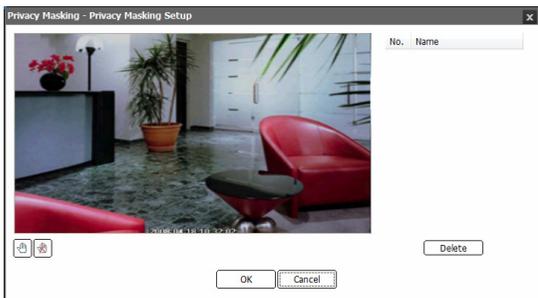
MAT (Motion Adaptive Transmission) is a feature that lowers the frame rate when motion is not detected to reduce the load on the network and save on storage space. Based on the specified sensitivity setting, no movement will be assumed if there is no change between two consecutive images.

Privacy Masking

Select **Privacy Masking** to set up a privacy mask over a specific area. The section on which a privacy mask is applied will appear as black when monitoring video.



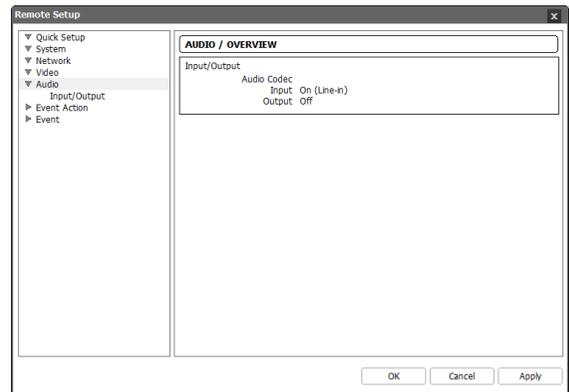
- **Privacy Masking Setup:** Set up privacy masks. (Up to 16)



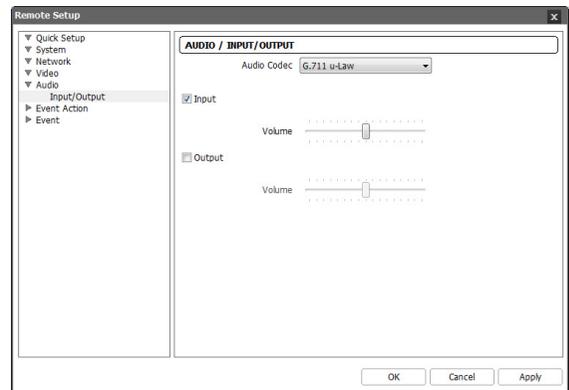
- **(Select)/(Unselect):** Set or remove a privacy mask. Click on the button and drag & drop using the mouse to set up a privacy mask.
- **No./Name:** Displays a list of active privacy masks. The numbers indicate privacy mask numbers. Select the empty space next to a number to assign a name to the corresponding privacy mask. Click **Delete** to remove the selected privacy mask.

Audio

Configure audio in/out settings.



In/Out



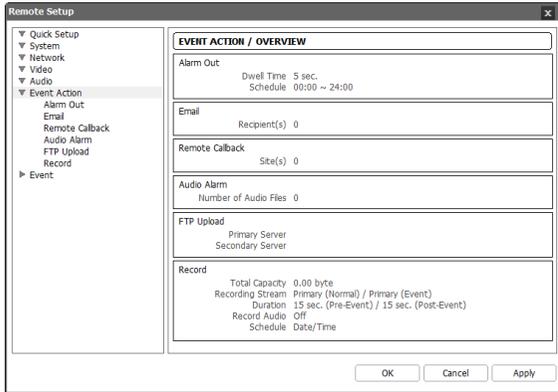
- **Audio Codec:** Select an audio codec.
- **Input:** Select an option and then an audio input source (microphone or line-in). Adjust the volume.
- **Output:** Select an option and then adjust the volume.



Cameras do not feature built-in audio amplifier units and therefore require the user to purchase a speaker system with a built-in amplifier separately.

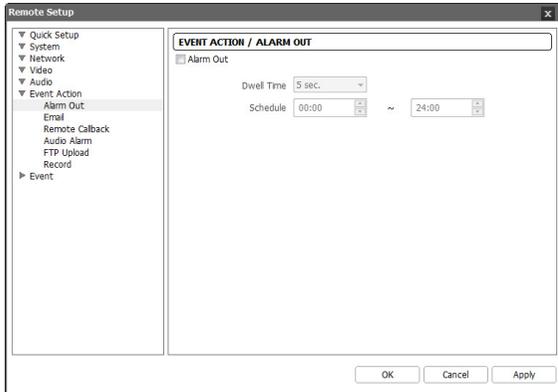
Event Action

Designate event detection alert actions.



Alarm-out

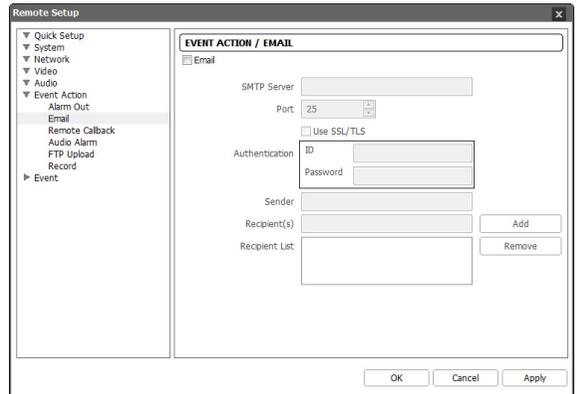
Select **Alarm Out** to enable alarm out.



- **Dwell Time:** Designate the alarm out duration. When an event occurs, alarm out will be generated for the specified duration.
- **Schedule:** Specify the alarm out schedule. Alarm out is generated during the specified period only.

Email

Select **Email** to send out emails.



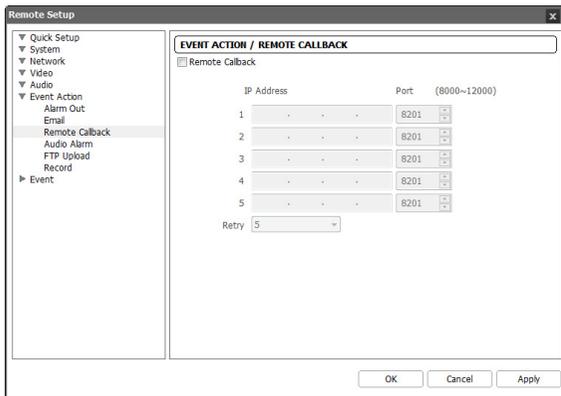
- **SMTP Server/Port:** Enter the SMTP server's IP address (or domain name) and port number you received from the network administrator. If a DNS server has been set up during network configuration, you can enter a domain name instead of an IP address. If using an SMTP server requiring an SSL connection, select the **Use SSL/TLS** option.
- **Authentication:** Enter a user ID and password if user authentication is required by the SMTP server.
- **Sender/Recipient(s):** Enter the sender and recipients' addresses. (Up to 10) The addresses must be properly formatted and include the @ symbol.

Remote Callback

Select **Remote Callback** to send callback messages to a remote system.



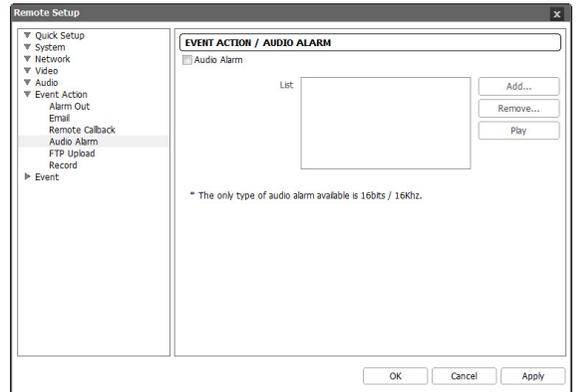
- Not supported from the WebGuard program.
- The camera must be registered to the remote system in order to use the **Remote Callback** feature.



- **IP Address:** Enter the IP address and port number of the remote system that will receive the messages.
- **Retry:** Designate how many reattempts to make if message delivery fails.

Audio Alarm

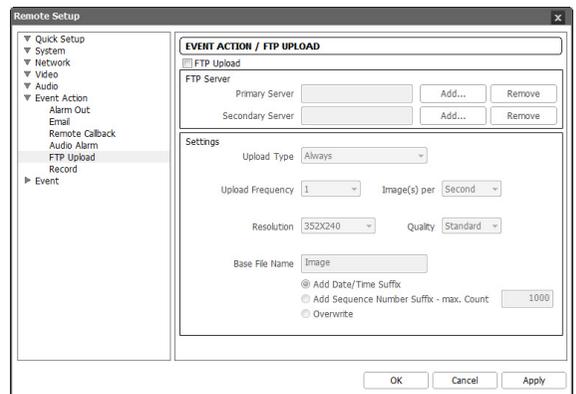
Select **Audio Alarm** to generate audio.



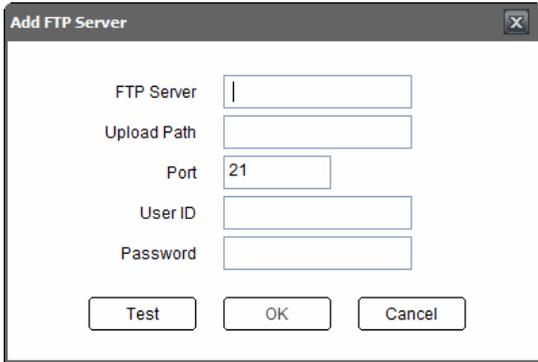
- **List:** Displays a list of audio files to playback. Click **Add** or **Remove** to add/remove audio (.wav) files. (supports 16-bit, 16KHz encoded files only) Select an audio file from the list and then click **Play** to listen to the file.

FTP Upload

Select **FTP Upload** to upload .jpg image of the event detected to an FTP server.



- **FTP Server:** Click **Add** to register a new FTP server. Click **Remove** to remove a registered FTP server. When an event is detected, a .jpg image of the event detected image is uploaded to the Primary Server. If the upload to the Primary Server fails, the file will be uploaded to the Secondary Server. Upload to the Secondary Server will continue to be attempted until successful. Fill out the fields below and click **Test** to test the FTP server connection settings. Once the test is complete, click **OK**.



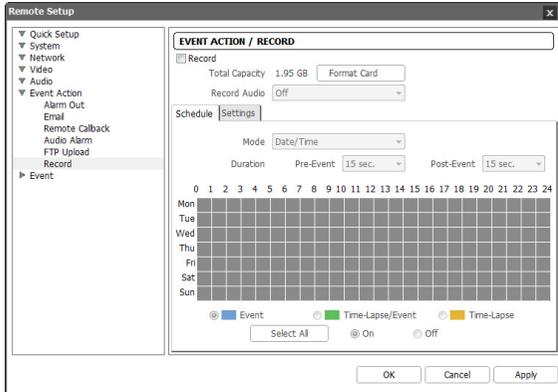
- **FTP Server:** Enter the FTP server's IP address (or domain name).
- **Upload Path:** Designate the file upload path.
- **Port:** Enter the FTP server's port number.
- **User ID, Password:** Enter the user ID and password needed for connecting to the FTP server.

- **Settings:** Configure image and upload settings.
 - **Upload Type:** Choose an upload type. Select **Always** to upload images using the settings below, irrespective of event detection. Select **Event** to upload images using the settings below when an event is detected.
 - **Upload Frequency:** Activated only when Upload Type has been set to **Always**. Designate the upload speed. The specified number of images will be uploaded to the FTP server during the specified period of time.
 - **Upload 1 image per:** Activated only when Upload Type has been set to **Event**. Designate the upload speed. Select **Upload** for and specify a duration. Images will be uploaded for the specified duration at the specified upload speed. Select **Upload while event status is active** to upload images at the specified speed only while event status is active.
 - **Resolution/Quality:** Choose the resolution and quality of the images to upload to the FTP server. Range of resolution settings you can use here can vary depending on the resolution setting applied under **Video > Streaming**.
 - **Base File Name:** Enter a name for the files to be uploaded to the FTP server and then choose file identification options. Select **Add Date/Time Suffix** to add event detection date and time information to each image file. Select **Add Sequence Number Suffix - max. Count** to number the image files based on the order of event detection. Select **Overwrite** to overwrite the previous image with the new image. Event type is automatically added to the file names.

- When specifying the **Upload Path** or **Base File Name**, you cannot use special characters such as \, /, #, *, |, ;, ", <, >, and ?.
 - If different resolution settings have been applied to each stream under **Video > Streaming**, resolution of images uploaded to the FTP server will match the resolution setting set for Tertiary.
 - Set speed settings for Upload Frequency and Upload 1 image per options in consideration of the FTP server's performance. FTP uploads can fail if the configured speed is higher than what the FTP server can handle.

Record

Select **Record** to record video on the SD memory card. First, make sure that an SD memory card (Class 6 or higher) has been properly inserted.



- **Total Capacity:** Indicates the SD memory card's total capacity if it has been inserted properly.
- **Format SD Memory Card:** Click on this button to format the inserted SD memory card. Formatting the SD memory card erases all data saved on the card.



This function is only supported for users in **Administrator** group.

- **Record Audio:** Enable/disable audio recording.

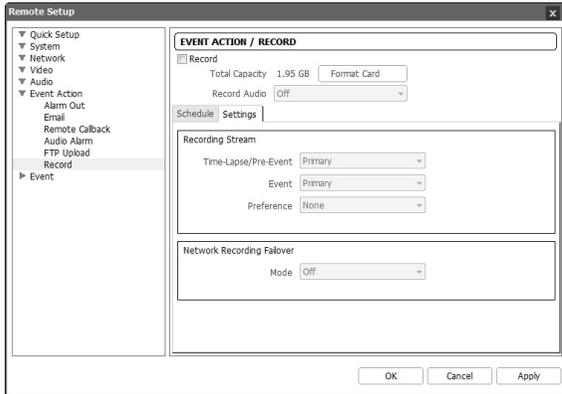
Schedule

Select the **Schedule** tab and set up a recording schedule.

- **Mode:** Choose a recording mode.
 - **Always - Event:** Records video in event mode. In event recording mode, video is recorded when an event is detected.
 - **Always - Time-Lapse:** Records video in time lapse mode. In time lapse recording mode, video is recorded continuously, irrespective of event detection.
 - **Always - Time-Lapse/Event:** Records video in time lapse mode when event has not been detected and in event mode when one is detected.
 - **Date/Time:** Video is recorded in the specified mode according to the dates and times selected in the schedule. Select **On** or **Off** at the bottom of the schedule table and then choose a recording mode. Click on dates and times on the schedule table or drag to enable/disable recording mode. Select **On** or **Off** and then click **Select All/Clear All** to enable/disable recording mode on all dates and times.
- **Duration:** Specify the event recording duration.
 - **Pre-Event:** Select the pre-event recording duration. You can record up to 60MB of video. Using high resolution, quality, and frame rate settings can cause the recording to exceed the 60MB limit and stop before the end of the specified recording duration.
 - **Post-Event:** Select the post-event recording duration.

Settings

Select the **Settings** tab and configure recording settings.



- **Recording Stream:** Choose a stream to use for recording. It's possible to designate different streams for different recording modes.
 - **Time-Lapse/Pre-Event:** Designate the stream to use for recording in time lapse mode or event mode (pre-event).
 - **Event:** Designate the stream to use for recording in event mode (post-event).
 - **Preference:** Designate recording stream priority.

SD Memory Card Recording	Recording using the Time-Lapse/Pre-Event and Event streams designated above.
Network Recording	Record from the remote program using the designated recording streams. If the remote program does not support recording streams, however, Default Recording Stream specified under Video > Streaming will be used.
None	Record using the SD Memory Card Recording stream or the Network Recording stream, whichever has the higher resolution.

- **Network Recording Failover:** Select a network recording failover mode. You can recording video on the SD memory card when recording from the remote program fails. Video is recorded using the stream designated under **Recording Stream > Event**.

Not supported if the recording mode under the **Schedule** tab is set to **Always > Time-Lapse**.

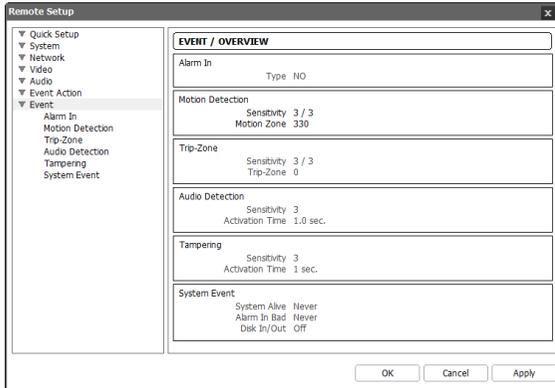
- **Off:** Disables Network Recording Failover.
- **Always:** Records video continuously until recording from the remote program becomes functional again, regardless of the recording schedule.
- **On SD Memory Card Schedule:** Records video based on the recording schedule set up under the **Schedule** tab until recording from the remote program becomes functional again.

- Recordings saved on the SD memory card can be searched and played back from the INEX Basic program or remotely from the remote program. For more information, refer to each program's **operation manual**.
- Video search and playback may not function properly on the remote program while video is being recorded on to the SD memory card.

To remove the SD memory card, unselect the **Record** option and wait 30 seconds before doing so. Removing the SD memory card while recording is in progress of without waiting 30 seconds can damage the system and/or the recording data.

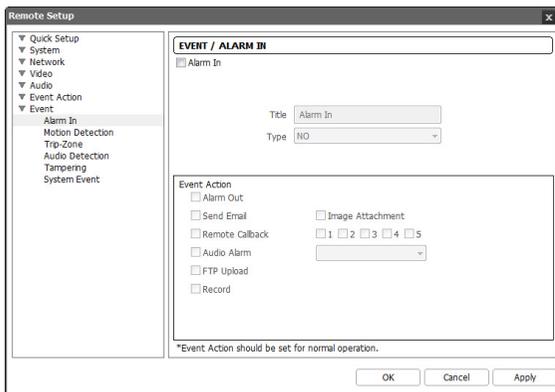
Event

Configure event detection settings.

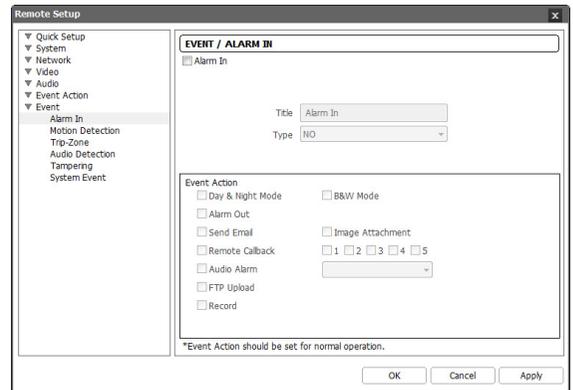


Alarm In

Select **Alarm In** to enable alarm in event. With alarm in event enabled, alarm in detections by the alarm in connector will be assumed as events.



IR LED Non-Supported Model

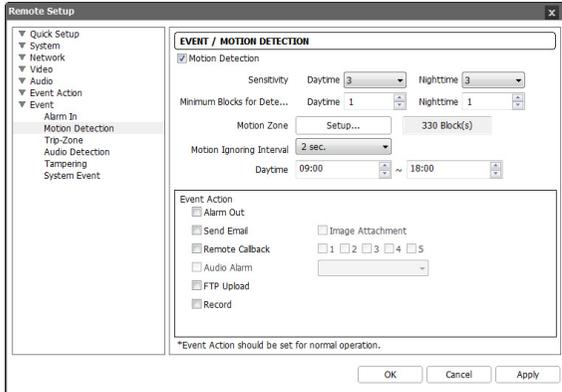


- **Title:** Enter a name for the alarm in device.
- **Type:** Select the alarm in type.
- **Event Action:** Select an alarm in event alert action.
 - **Day & Night Mode:** Select if you do not wish to use the IR cut filter when an event is detected. (Not applicable to *IR LED non-supported model only*) Select this option to override the **Day & Night Mode** settings under **Video > Camera**. Select **B&W Mode** to enable black and white mode when an event is detected. Expiration of the detected event will disable B&W Mode and restore IR Cut Filter.
 - **Alarm Out:** Select if you wish to generate an alarm out.
 - **Send Email:** Select if you wish to send an email. Select the **Image Attachment** option to attach a .jpg image of the event detected to the email.
 - **Remote Callback:** Select this option to send a message to a remote system and then select which system to send the message to.
 - ✓ Not supported from the WebGuard program.
 - ✓ The camera must be registered to the remote system in order to use the **Remote Callback** feature.
 - **Audio Alarm:** Select this option to generate an audio alert and then choose an audio file (.wav).
 - **FTP Upload:** Select this option if you wish to upload images to the FTP server.
 - **Record:** Select this option to record video.

- ✓ **Event Action** settings must be configured correctly in order to perform event actions.

Motion Detection

Select **Motion Detection** to configure motion detection event settings. With motion detection event enabled, motion detections within the designated area will be assumed as events.



- **Sensitivity:** Select daytime and nighttime motion detection sensitivity levels. Higher values will result in more sensitive motion detection.
- **Minimum Blocks for Detection:** Select minimum blocks for daytime and nighttime motion detection. Motion must take place over the selected number of blocks in order for it to be considered as a motion detection event.
- **Motion Zone:** Click **Setup** and define the motion zone using blocks.
 - **(Select)**/ **(Unselect):** Enable/disable motion detection.
 - **(Single Block):** Select/unselect motion detection blocks individually.
 - **(Zone):** Select/unselect multiple motion detection blocks.
 - **(All):** Select/unselect all motion detection blocks.

- **Motion Ignoring Interval:** With Motion Ignoring Interval configured, no event log or notification is generated for motions detected during a period of time following a motion detection event.
- **Daytime:** Specify when daytime starts and ends. All other times will be assumed as nighttime.
- **Event Action:** Select a motion detection event alert action.
 - **Alarm Out:** Select if you wish to generate an alarm out.
 - **Send Email:** Select if you wish to send an email. Select the **Image Attachment** option to attach a .jpg image of the event detected to the email.
 - **Remote Callback:** Select this option to send a message to a remote system and then select which system to send the message to.



- Not supported from the WebGuard program.
- The camera must be registered to the remote system in order to use the **Remote Callback** feature.

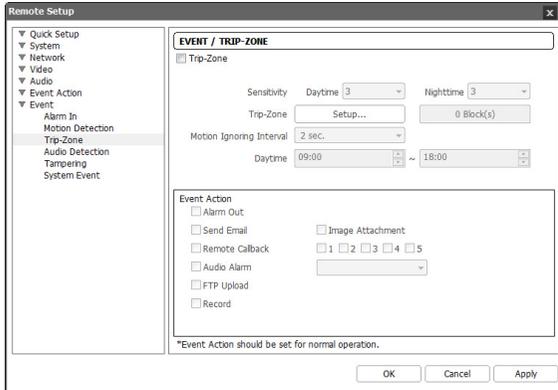
- **Audio Alarm:** Select this option to generate an audio alert and then choose an audio file (.wav).
- **FTP Upload:** Select this option if you wish to upload images to the FTP server.
- **Record:** Select this option to record video.



Event Action settings must be configured correctly in order to perform event actions.

Trip-Zone

Select **Trip-Zone** to configure trip zone event settings. With trip zone event enabled, motion detected inside/outside the selected area will be assumed as an event.



- **Sensitivity:** Select daytime and nighttime motion detection sensitivity levels. Higher values will result in more sensitive motion detection.
- **Trip-Zone:** Click **Setup** and define the trip zone using blocks.
 - **(Select)**/ **(Unselect)**: Enable/disable trip zone.
 - **(Single Block)**: Select/unselect trip zone blocks individually.
 - **(Zone)**: Select/unselect multiple trip zone blocks.
 - **(All)**: Select/unselect all trip zone blocks.
 - **Trip Direction:** Define in which direction the motion has to occur in order for it to be considered as an event. Select **In** for movement occurring from outside the trip zone in and **Out** for movement occurring from inside the trip zone out.

- **Motion Ignoring Interval:** With Motion Ignoring Interval configured, no event log or notification is generated for motions detected during a period of time following a motion detection event.
- **Daytime:** Specify when daytime starts and ends. All other times will be assumed as nighttime.
- **Event Action:** Select a trip zone event alert action.
 - **Alarm Out:** Select if you wish to generate an alarm out.
 - **Send Email:** Select if you wish to send an email. Select the **Image Attachment** option to attach a .jpg image of the event detected to the email.
 - **Remote Callback:** Select this option to send a message to a remote system and then select which system to send the message to.



- Not supported from the WebGuard program.
- The camera must be registered to the remote system in order to use the **Remote Callback** feature.

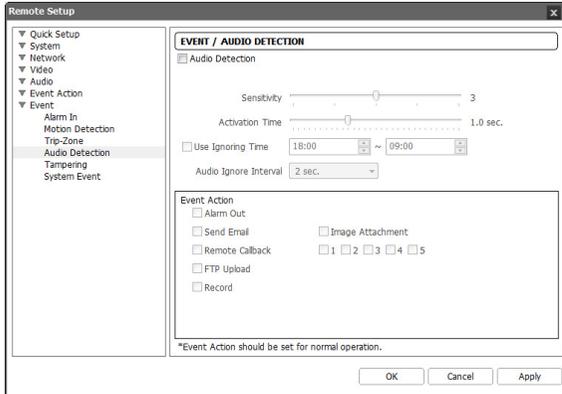
- **Audio Alarm:** Select this option to generate an audio alert and then choose an audio file (.wav).
- **FTP Upload:** Select this option if you wish to upload images to the FTP server.
- **Record:** Select this option to record video.



Event Action settings must be configured correctly in order to perform event actions.

Audio Detection

Select **Audio Detection** to configure audio detection event settings. With audio detection enabled, an audio detection taking place during the specified activation period will be assumed as an event.



- **Sensitivity:** Define the audio detection sensitivity. Higher values will result in more sensitive detection.
- **Activation Time:** Specify how long audio has to be detected for it to be considered as an event. Audio detections that do not last for the specified duration of time will not be considered as events.
- **Use Ignoring Time:** Define the event ignoring time. Audio detections taking place during the defined time range will not be assumed as events.

- **Audio Ignore Interval:** With Audio Ignoring Time configured, no event log or notification is generated for audio detections taking place during a period of time following an audio detection event.
- **Event Action:** Select an audio detection event alert action.
 - **Alarm Out:** Select if you wish to generate an alarm out.
 - **Send Email:** Select if you wish to send an email. Select the **Image Attachment** option to attach a .jpg image of the event detected to the email.
 - **Remote Callback:** Select this option to send a message to a remote system and then select which system to send the message to.



- Not supported from the WebGuard program.
- The camera must be registered to the remote system in order to use the **Remote Callback** feature.

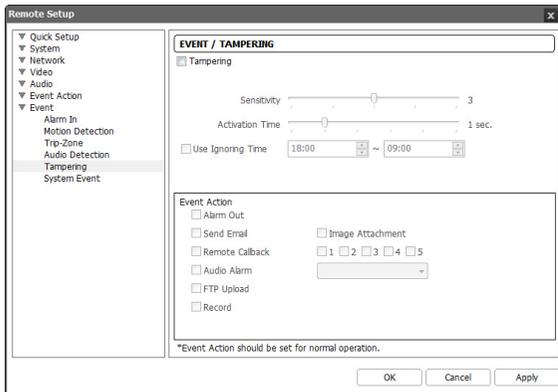
- **FTP Upload:** Select this option if you wish to upload images to the FTP server.
- **Record:** Select this option to record video.



Event Action settings must be configured correctly in order to perform event actions.

Tampering

Select **Tampering** to configure tampering detection event settings. With tampering detection event enabled, a sudden change in the video, such as due to movement of the camera or covering up of the lens, will be assumed as an event.



- **Sensitivity:** Define the tampering detection sensitivity. Higher values will result in more sensitive detection.
- **Activation time:** Specify how long tampering has to be detected for it to be considered as an event. Tampering detections that do not last for the specified duration of time will not be considered as events.
- **Use Ignoring Time:** Define the event ignoring time. Tampering detections taking place during the defined time range will not be assumed as events.

- **Event Action:** Select a tampering detection event alert action.
 - **Alarm Out:** Select if you wish to generate an alarm out.
 - **Send Email:** Select if you wish to send an email. Select the **Image Attachment** option to attach a .jpg image of the event detected to the email.
 - **Remote Callback:** Select this option to send a message to a remote system and then select which system to send the message to.



- Not supported from the WebGuard program.
- The camera must be registered to the remote system in order to use the **Remote Callback** feature.

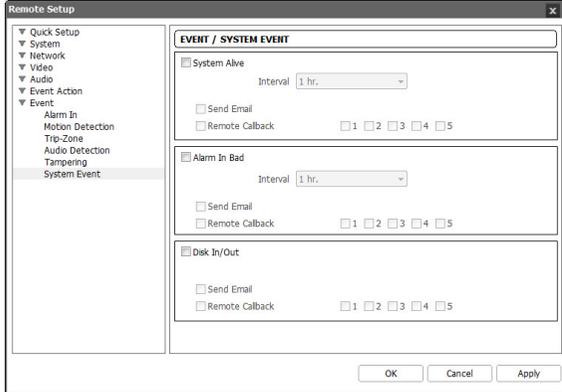
- **Audio Alarm:** Select this option to generate an audio alert and then choose an audio file (.wav).
- **FTP Upload:** Select this option if you wish to upload images to the FTP server.
- **Record:** Select this option to record video.



- **Event Action** settings must be configured correctly in order to perform event actions.

System Event

Select **System Event** and configure system event settings. With system event enabled, system status, alarm in status, and disk status will be checked periodically and corresponding alerts will be generated.



- **System Alive:** Select to check the system status and then set up a schedule.
 - **Send Email:** Select to send out an email when the system comes on line.
 - **Remote Callback:** Select this option to send a message to a remote system when the system comes on line and then select which system to send the message to.

- **Alarm In Bad:** Select to check the alarm in status and then set up a schedule.
 - **Send Email:** Select to send out an email if no change is detected in the alarm in status.
 - **Remote Callback:** Select this option to send a message to a remote system if no change is detected in the alarm in status and then select which system to send the message to.
- **Disk In/Out:** Select to check if the SD memory card has been inserted/removed.
 - **Send Email:** Select to send out an email when the SD memory card is inserted/removed.
 - **Remote Callback:** Select this option to send a message to a remote system when the SD memory card is inserted/removed and then select which system to send the message to.



- **Email and Remote Callback** settings under **Event Action** must be configured correctly in order to send out emails and messages.
- **Remote Callback** is not supported on WebGuard.
- The camera must be registered to the remote system in order to use the **Remote Callback** feature.

Part 4 - WebGuard

WebGuard is a program that allows you to view and search video from remote locations over the Internet and can be accessed on a Microsoft Internet Explorer.

System requirements for running WebGuard are as follows:

- Operating System: Microsoft® Windows® XP (Service Pack 3), Microsoft® Windows® Vista (Service Pack 1), Microsoft® Windows® 7 (Home Premium, Professional, Ultimate) or Microsoft® Windows® 8 (Pro, Enterprise)
- CPU: Intel Pentium III (Celeron) 600MHz or faster (Core 2 Duo E4600 recommended)
- RAM: 128MB or more (2GB recommended)
- VGA: 8MB or more (128MB recommended) (1024x768, 24bpp or higher)
- Internet Explorer: Version 6.0 or later 32-bit

- 1 Launch Internet Explorer and then enter the following information in the address bar.
 - http://IP Address:Port Number (WebGuard connection port number selected during camera IP address and port number setup)
 - Or http://FEN Server Address/FEN name (FEN Server address and FEN name registered to the FEN Server)
- If the Use HTTPS option has been selected during WebGuard port number setup, enter https instead of http. If prompted with a security certificate warning, select "Continue to this website (not recommended)." If the WebGuard login page fails to load, configure Internet Explorer's settings as follows:
 - Tools → Internet Options → Security → Custom Level... → Medium-high (default) or Medium.
 - Tools → Internet Options → Advanced → Security → Use TLS 1.0 (select)
- If connecting by entering an IP address and a port number, you can connect by entering just the IP address if WebGuard connection port number has been set to 80 (443 when entering https).
- Contact your network administrator for the IP address of the camera you wish to connect to the the WebGuard port number.

- 2 When prompted with the WebGuard login window, select **LIVE-PORT** or **PLAY-PORT** as the desired mode. Enter the ID and password and click **LOGIN** to sign in using the selected mode.

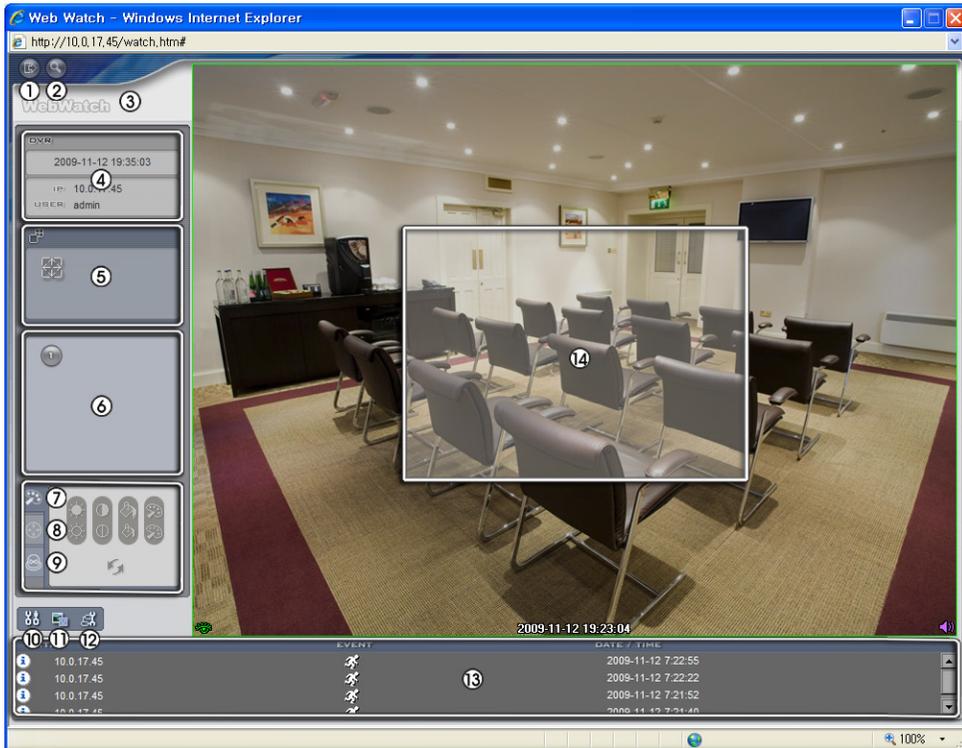


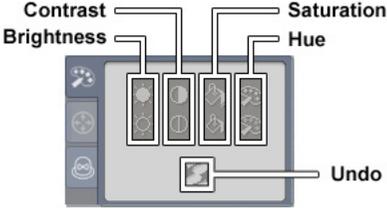


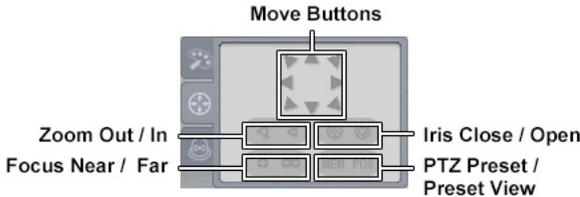
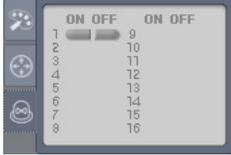
- WebGuard supports Microsoft Internet Explorer only and no other type of web browser.
- WebGuard does not work with Microsoft® Windows® 8 metro UI.
- Do not close the login window while WebGuard is running. Switching over to Web Live or Web Search mode can cause a script error, requiring you to restart the WebGuard program.
- If running WebGuard on Internet Explorer 7.0, the bottom section of the screen may get cut off if the address bar or the status bar is shown. In this case, change Internet Options so that the address bar or the status bar is hidden. (**Tools → Internet Options → Security → Custom level... → Allow websites to open windows without address or status bars (Enable)**)
- To use WebGuard on Microsoft Windows Vista or above, launch Internet Explorer by right-clicking on the icon and selecting the **Run as administrator** option. Otherwise, certain WebGuard functions might not be available.
- Launching a new version of WebGuard for the first time can cause Internet Explorer to load information from the previous version. In this case, navigate to **Tools → Internet Options → General**, delete temporary Internet files, and then restart WebGuard.
- On Microsoft Windows Vista or above, lowered image transmission rate can prevent the screen from being displayed or updated. In this case, we recommend that you disable the computer's auto tuning function. Open the command prompt as an administrator. (**Start → Accessories → Command Prompt → Right-Click** and then select **Run as administrator**) Type in "**netsh int tcp set global autotuninglevel=disable**" and then press Enter. Restart the computer to apply the change. To enable auto tuning again, launch the command prompt as an administrator and then type in "**netsh int tcp set global autotuninglevel=normal**". Restart the computer to apply the change.

Web Live Mode

A remote web monitoring program that allows you to monitor images from remote locales in real-time.



1	Log Out: Click  to log out of the WebGuard program.
2	Search: Click  to access to the web search mode.
3	Version: Position the mouse pointer on the WebWatch logo to see the WebGuard program version..
4	Information: The Information window displays the login information of WebGuard.
5	Full Display: Clicking the button displays the video in full screen. Pressing the Esc button on a keyboard returns to the previous screen.
6	Camera Button: The button displays the camera number.
7	<p>Image Adjustment: Click  to adjust the brightness, contrast, saturation and hue of monitored image..</p> 

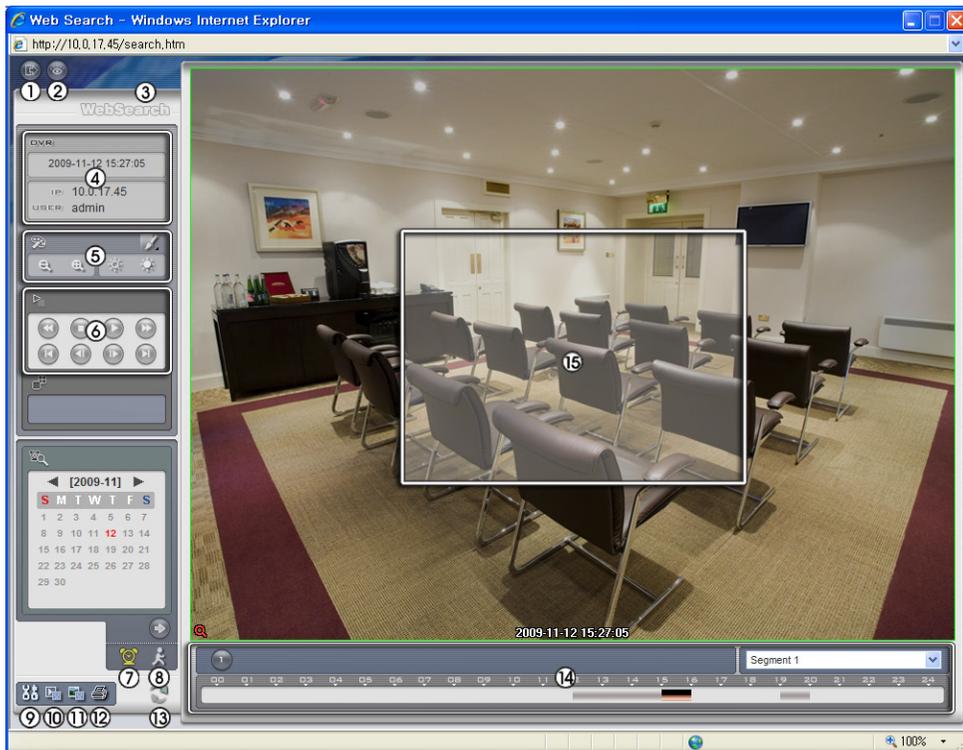
<p>8</p>	<p>PTZ Control: Click  to control pan and tilt of the Pan/Tilt driver remotely.</p> <div style="text-align: center;">  </div>												
<p>9</p>	<p>Alarm-Out Control: Click  to control an alarm out device remotely</p> <div style="text-align: center;">  </div>												
<p>10</p>	<p>Setup: Click  to set up the image drawing mode and OSD display. You can adjust the display speed by changing the image drawing mode, and select OSD information to be displayed on the screen.</p>												
<p>11</p>	<p>Save Image: Click  to save the current image as a bitmap or JPEG file format.</p>												
<p>12</p>	<p>Remote Setup: Click  to change the settings of the camera by using the Remote Setup screen.</p>												
<p>13</p>	<p>Event Status Window: The event status window at the bottom displays a list of events that were detected in the camera.</p> <table border="1" data-bbox="203 942 1267 1064"> <tr> <td> / </td> <td>Enable/Disable Alarm In</td> <td></td> <td>Tampering</td> </tr> <tr> <td></td> <td>Motion Detection</td> <td></td> <td>Audio Detection</td> </tr> <tr> <td></td> <td>Trip zone</td> <td></td> <td></td> </tr> </table>	 / 	Enable/Disable Alarm In		Tampering		Motion Detection		Audio Detection		Trip zone		
 / 	Enable/Disable Alarm In		Tampering										
	Motion Detection		Audio Detection										
	Trip zone												
<p>14</p>	<p>Screen Popup Menu: Clicking the right mouse button on the screen displays the screen popup menu.</p> <div style="display: flex; align-items: flex-start;"> <div style="border: 1px solid gray; padding: 5px; margin-right: 20px;"> <p>Change Camera Title</p> <p>Enable Audio</p> <hr/> <p>Aspect Ratio ▶</p> <hr/> <p>MultiStream ▶</p> <hr/> <p>Anti-Aliasing Screen</p> </div> <div> <ul style="list-style-type: none"> - Change Camera Title: Select to change the camera title. - Enable Audio: Select to enable audio communication with the site which the camera is installed and the audio control  panel appears. Click the  button to send audio to the site which the camera is installed and speak into the microphone. Click the  button to monitor live audio from the site which the camera is installed through the attached speaker. Clicking both the  and  buttons allows two-way communication. Clicking the  button disables audio communication. - Aspect Ratio: Select to change the image aspect ratio displayed on the screen and the option menu appears. Selecting Fit to Screen displays images by fitting them to the screen size. Selecting Original Ratio displays images by fitting them to the screen size while maintaining their original ratio. Selecting Half Size (x0.5) to Quadruple Size (x4) displays the images at the selected image size. - Multistream: Select to choose the desired stream if the camera is in multistream mode. - Anti-Aliasing Screen: Select to enhance image display quality by eliminating stair stepping (aliasing) effects in the enlarged image. </div> </div>												

Web Search Mode

A remote web search program that allows you to search for recordings from remote locales in real-time.



While in Web Search mode, connection to remote locales will terminate automatically after 30 minutes of inactivity.

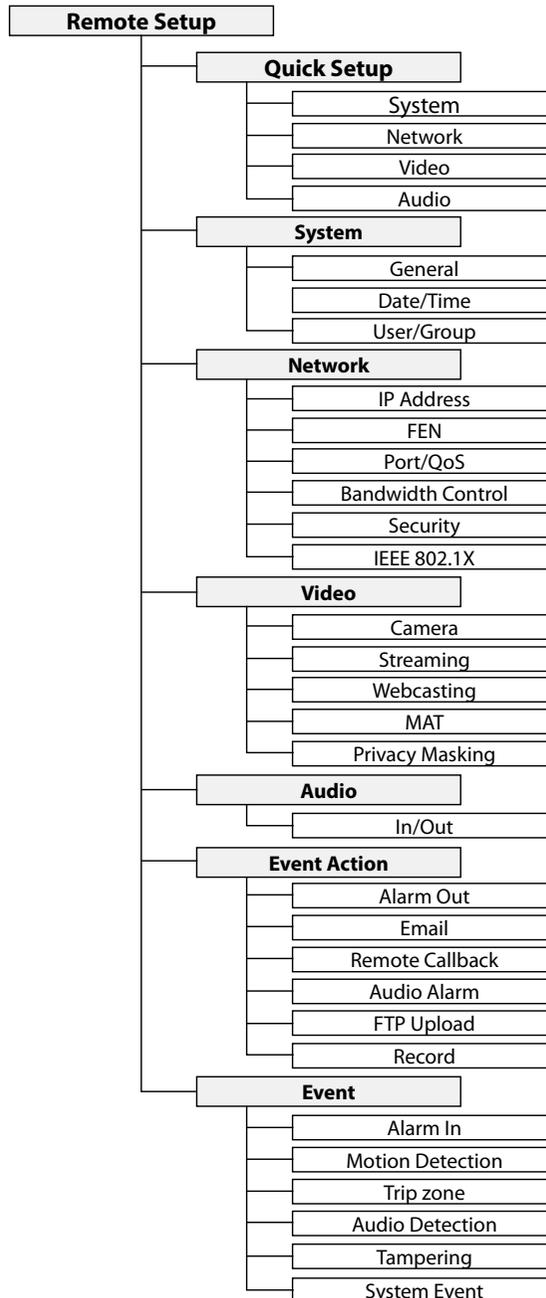


1	Log Out: Click  to log out of the WebGuard program.
2	Watch: Click  to access to the web monitoring mode.
3	Version: Position the mouse pointer on the WebSearch logo to see the WebGuard program version.
4	Information: Displays the login information of WebGuard.
5	<p>Playback Image Control: Click  to blur, sharpen, equalize and interpolate playback images. Click  to zoom out or zoom in the recorded image. Click  to adjust the brightness of the recorded images.</p> <p><input checked="" type="checkbox"/> Image processing works only in the pause mode.</p> 

<p>6</p>	<p>Playback Control: Click the desired button to play recorded video. The following functions are supported: fast backward, pause, play, fast forward, go to the first image, go to the previous image, go to the next image, and got to the last image.</p>
<p>7</p>	<p>Time-Lapse Search: Click  to enter the time-lapse search mode which allows you to search for recorded data by time and then play back images found within the time parameters. The Timetable window located at the bottom displays the time information for the image of the date selected on the calendar. If the camera has more than one video segment in the same time range, you can select the video segment you want to search. Clicking a specific time displays the image recorded at that time on the screen. Selecting  allows you to display an image from a specific time.</p> <div data-bbox="1012 301 1243 527" style="float: right; border: 1px solid gray; padding: 5px; margin-top: 10px;"> <p>hour <input type="text"/></p> <p>minute <input type="text"/></p> <p>second <input type="text"/></p> <p>[Go To] [Cancel]</p> </div>
<p>8</p>	<p>Event Search: Click  to enter the event search mode which allows you to search for event log entries using specific conditions and play back the images associated with those event entries.</p>
<p>9</p>	<p>Setup: Click  to set up the image drawing mode and OSD display. You can adjust the display speed by changing the image drawing mode, and select OSD information to be displayed on the screen.</p>
<p>10</p>	<p>Save Video: Click  to save any video clip of recorded data as a video file.</p>
<p>11</p>	<p>Save Image: Click  to save the current image in a bitmap or JPEG file format.</p>
<p>12</p>	<p>Print: Click  to print the current image on a printer connected to your computer.</p>
<p>13</p>	<p>Reload: Click  to reload the recording data.</p>
<p>14</p>	<p>Timetable: Displays recorded data of the camera by time (in hour segments). If the camera's time and date have been reset to a time that is earlier than some recorded video and more than one video segment exists in the same time range, select the video segment you want to search from the SEGMENT menu at the top-right corner on the timetable.</p>
<p>15</p>	<p>Screen Popup Menu: Clicking the right mouse button on the screen displays the screen popup menu.</p> <div data-bbox="207 1122 437 1251" style="border: 1px solid gray; padding: 5px; margin-bottom: 10px;"> <p>Change Camera Title</p> <p>Enable Audio</p> <hr/> <p>Aspect Ratio </p> <p>Anti-Aliasing Screen</p> </div> <ul style="list-style-type: none"> - Change Camera Title: Select to change the camera title. - Enable Audio: Plays audio while playing back recorded video that has recorded audio. - Aspect Ratio: Changes the image aspect ratio. - Anti-Aliasing Screen: Select to enhance image display quality by eliminating stair stepping (aliasing) effects in the enlarged image. <p><input checked="" type="checkbox"/> A camera name change in the Web Search mode does not affect the camera name set up on the camera. Leaving the Camera Title blank causes the camera name set up on the camera to display..</p>

Part 5 - Appendix

Setup Menu Tree (Remote Setup)



Troubleshooting

Problem	Check
The main unit won't turn on.	<ul style="list-style-type: none"> • Check the power cable connection. • Check the power outlet.
PoE switch isn't being recognized.	Check the grounding status of the I/O device connected to the camera and the PoE switch. If they are not grounded, ground them and try again.
I can't see Live videos.	<ul style="list-style-type: none"> • Check the camera's power status. • Ensure that cables are properly connected to the camera and the lens. • Check the network connection status of the computer and the network camera.
Images are blurry.	<ul style="list-style-type: none"> • Make sure the lens is clean. If not, clean it using a soft piece of cloth or a brush. • Make sure the lens is in focus. Adjust the focus during daytime. • If there is too much light coming into the camera or the camera is picking up an overly bright light source, adjust the camera's position/angle accordingly.
Video color appears incorrect.	Check the white balance settings. If using the Auto option, it may take some time for the white balance to be adjusted.
Images are blinking.	If the camera is pointed at the sun or a fluorescent lamp, adjust the camera's angle away.
Lost the admin ID and password and unable to connect to a network camera.	You must perform a factory reset. A factory reset will revert all settings, including network settings, to their factory defaults. After performing a factory reset, make a memo of the admin ID and password as a safety precaution.
Unable to launch WebGuard.	If the WebGuard login screen is not loading, check which version of Microsoft Internet Explorer you are using. WebGuard may not launch properly on versions 6.0 or below.

Specifications



These product specifications may change without prior notice.

Lens

Lens Type	A Motorized focus and zoom lens
Focal Length	3.3mm ~ 10mm
Viewing Angle	H: 99.8° (Wide) ~ 33.5° (Tele) V: 52.2° (Wide) ~ 18.6° (Tele) D: 118.2° (Wide) ~ 38.3° (Tele)
Lens Iris Control	DC Auto Iris, F1.3
Day & Night Filter	Supported

Camera

Image Sensor	1/2.8" CMOS
Minimum Subject Lux	COLOR : 0.33 lux F1.3 BW : 0.0025 lux F1.3 BW : 0.0011 lux F1.3 (shutter 1/7.5s)
Scanning Method	Progressive
Signal-to-Noise Ratio	> 31.2 dB
Dynamic Range (Digital WDR)	> 74.7 dB
Electronic Shutter	Auto, 1/30 ~ 1/8,000 sec, Slow Shutter
IR LED	18ea (850 nm) (<i>IR LED supported model only</i>)
Lighting Sensor	Supported
IR Range	Max. 20 m (<i>IR LED supported model only</i>)
External Storage*(Optional)	 (Micro SD (SDHC) Memory Card (>Class 6, up to 32 GB))

* An SLC (Single Level Cell) or MLC (Multi Level Cell) card by SanDisk or Transcend is recommended to ensure stable recording performance."

* An SD memory card is a consumable product with a finite service life. Prolonged use will damage the card's memory sectors and result in data loss or memory card failure. Test the SD memory card regularly and replace it whenever necessary.

* microSD Logo is a trademark of SD-3C, LLC.

Video

Signal Format	NTSC or PAL (selectable)
Compression Algorithm	H.264 Main Profile, M-JPEG
Compression Resolution	352x240, 704x480, 1280x720, 1920x1080
Bitrate Control	VBR (Variable Bitrate), CBR (Fixed Bitrate)
Max. Transmission Rate (frames per second)	30 ips @ 1920x1080 + 4 ips @ 1920x1080 Simultaneous Transfer
Multi-Stream	Triple Streaming (H.264, M-JPEG)

Audio

Compression Algorithm	G.726 (16KHz), G.711 μ -Law (8KHz)
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I/O

Video Out**	1 Composite, 1 Vp-p
Audio In	1 Line In
Audio Out	1 Line Out
Alarm In	1 TTL, NC/NO programmable, 4.3V (NC) or 0.3V (NO) threshold, 5 VDC
Alarm Out	1 TTL open collector, Max load:50mA, Max voltage:30VDC
Network Connection	10/100 Based Ethernet

** Use these ports for previewing video and not monitoring video.

Connector

Video Out***	Terminal block
Audio I/O	Terminal block (mono)
Alarm I/O	Terminal block
Ethernet Port	RJ-45

*** Use these ports for previewing video and not monitoring video.

General

External Dimensions (Ø x H)		159mm x 122mm (6.3" x 4.8")
Packaging Dimensions (W x H x D)		205mm x 175mm x 205mm (8.1" x 6.9" x 8.1")
Weight (Main Unit)	Vandal dome model	0.87kg (1.9 lb)
	Plastic dome model	0.51kg (1.1 lb)
Weight (Packaging)	Vandal dome model	1.18kg (2.6 lb)
	Plastic dome model	0.82kg (1.8 lb)
Working Temperature		-10°C ~ 50°C (14°F ~ 122°F) [Starting Temperature: 0°C ~ 50°C (32°F ~ 122°F)]
Operating Humidity		0% ~ 90%
Power Input		12 VDC, PoE (IEEE 802.3af, Class 2)
Power Consumption		Max. 5.6W (Max.4.8W with IR LED Off)
Certifications		FCC, IP66****

**** Applies to *vandal dome* models only.

Index

A		N	
Admin/Watch/Recording/Search Ports	24	Network Bandwidth Limit	26
B		O	
Bitrate Control	31	ONVIF Protocol	20
C		Q	
Camera Name	20	Quality	31
Compression	31	R	
D		Resolution	31
Date/Time	21	RTSP Port	24
DSCP	24	S	
F		SSL	26
FEN Name	23	T	
FEN Server	23	Time Sync	21
Frame Rate	31	U	
I		Use FEN	23
IPFiltering	26	Use HTTPS	24
M		User/Group	21
MAT	32	Use UPnP	25
		W	
		WebGuard Port	24

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