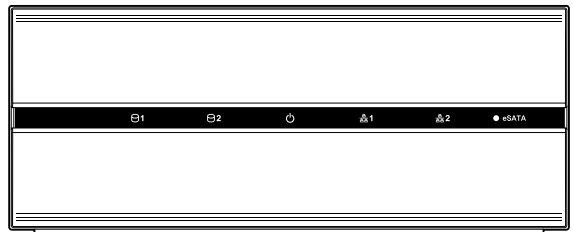


Network Video Recorder

Operation Manual





Before reading this manual

This operation manual contains basic instructions on installing and using Network Video Recorder. 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.
- It is recommended that first-time users of Network Video Recorder 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 Precautions

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



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

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. Ventilation

Place this equipment only in an upright position. This equipment has an open-frame Switching Mode Power Supply (SMPS), which can cause a fire or electric shock if anything is inserted through the ventilation holes on the side of the equipment.

7. Accessories

Do not place this equipment on an unstable cart, stand or table. 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.

8. 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.

9. Power Cords

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

10. 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.

11. Overloading

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

12. 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.

13. Servicing

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

14. 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 fallen into 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.

15. 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.

16. 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.

17. Field Installation

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

18. Correct Batteries

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

19. 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.

20. Elevated Operating Ambient Temperature

If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (Tmra).

21. Reduced Air Flow

Installation of the equipment in the rack should be such that the amount of airflow required for safe operation of the equipment is not compromised.

22. Mechanical Loading

Mounting of the equipment in the rack should be such that a hazardous condition is not caused by uneven mechanical loading.



23. Circuit Overloading

Consideration should be given to connection of the equipment to supply circuit and the effect that overloading of circuits might have on over current protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

24. Reliable Earthing (Grounding)

Reliable grounding of rack mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g., use of power strips).

In-Text

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

User's Caution Statement

Caution: Any changes or modifications to the equipment not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

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 manual covers the 4-, 8- and 16-channel network video recorders. For simplicity, the illustrations and descriptions in this manual refer to the 16-channel model.
- This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (<http://www.openssl.org/>).

The information in this manual is believed to be accurate as of the date of publication. We are 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.

The software included in this product contains some Open Sources. You may obtain the complete corresponding source code from us. See the Open Source Guide on the software CD (OpenSourceGuide\OpenSourceGuide.pdf) or as a printed document included along with the User's Manual.

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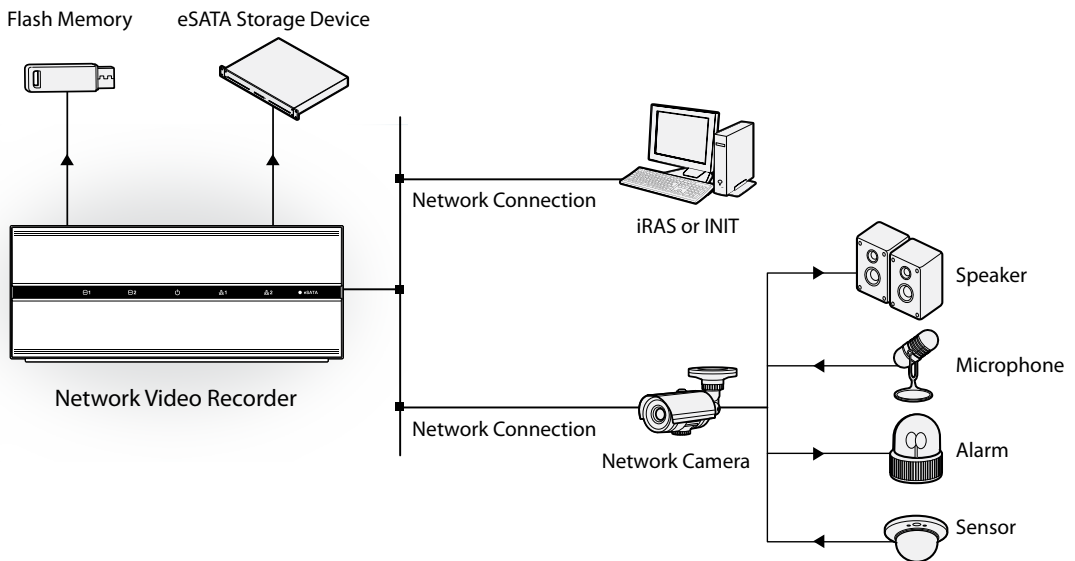
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Part 1 – Introduction

Product Features

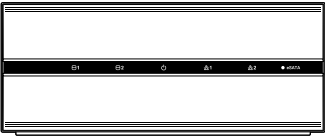
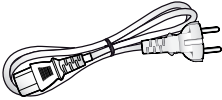
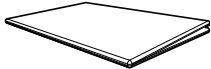

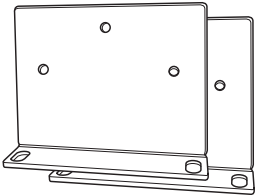
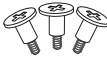
This is a video recorder that supports surveillance, video recording, and video playback using a network cameras. This NVR (Network Video Recorder) unit offers the following features:

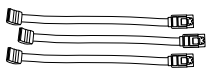
- Real-time 4/8/16-channel network surveillance
- Supports up to full HD 480ips video recording
- Fast and easy search feature (Time-Lapse, Event log, Motion, Text-In)
- Simultaneously survey, record, play back, and transmit data in real-time
- Graphic User Interface(GUI) and multilingual
- Multiple recording modes (Schedule, Event, Pre-Event, and Panic)
- USB 2.0 port
- 2 internal SATA2 HDD bays and 1 eSATA port
- Network camera audio recording and playback
- Network camera alarm in and alarm out



Accessories

Upon unpackaging the product, check the contents inside to ensure that all the following accessories are included.

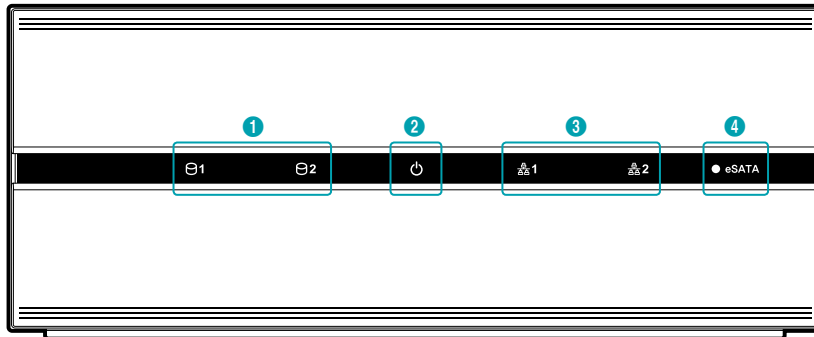
		
<p>Network Video Recorder</p>	<p>Power Cable</p>	<p>Quick Guide</p>
		
<p>Operation Manual and Remote Program CD</p>	<p>Rack-mount Kit</p>	<p>Assembly Screws for Adding Hard Disk Drives</p>



SATA2 cables

Overview

Front Panel



①	HDD LED	②	Power LED
③	Network LED	④	eSATA LED

① HDD LED

Flashes when data is being written on the HDD or a video search is in progress.

② Power LED

Lights up while the main unit is in operation.

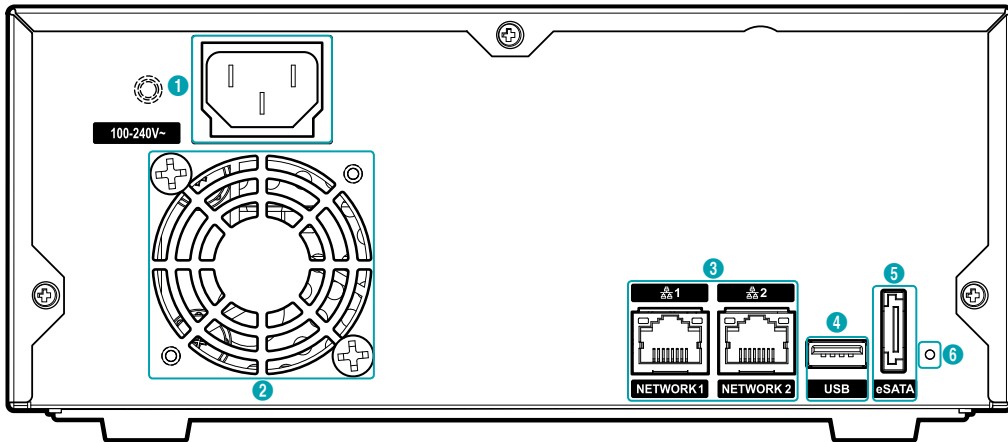
③ Network LED

Flashes when linked remotely over an ethernet.

④ eSATA LED

Flashes when connected to an eSATA device.

Rear Panel

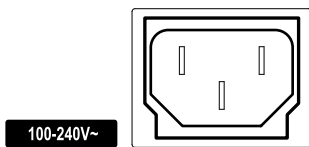


1	Power In Port	2	Vent	3	Network Ports
4	USB Port	5	eSATA Port	6	Factory Reset Button

Rear Panel Connections

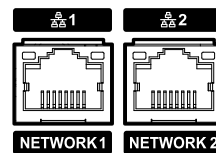
Power Cable Connection

Connect the power cable to this port. This NVR does not feature a separate power on/off button and will turn on the moment power is supplied.



- 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 a rug or carpet.
- The power cable is grounded. Do not modify the power plug even if your power outlet does not have a ground contact.
- Do not connect multiple devices to a single power outlet.

Network Connection



This NVR is capable of connecting to networks via an ethernet connector. Connect an RJ-45 cable (Cat5, Cat5e, or Cat6) to the NVR's network port. It's possible to operate and upgrade the NVR remotely over a network. For more information on ethernet connection setup, refer to **Network Setup on page 32**.



- Connector directions may vary depending on the NVR model.
- Green LED on the right will be lit if connected a 1000 BASE-T network. Orange LED on the left will flicker once a link has been established.

Part 1 – Introduction

USB Port Connection



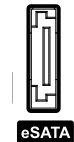
Connect a USB-to serial converter and connect multiple text-in devices to the NVR at the same time.



For USB flash memory devices, the NVR supports the FAT32 file format only.

eSATA Connection

Connect external hard drives to these ports.



Do not connect or disconnect an eSATA device while the NVR is powered on. To connect an eSATA device, first turn off the NVR and unplug the power cable. Connect the eSATA device and then power the NVR back on. To disconnect an eSATA device, first turn off the NVR and unplug the power cable. Turn off the eSATA device and then disconnect the eSATA connection cable.

Factory Reset

Located next to the eSATA port on the rear of the NVR is a switch that, once activated, will reset the NVR to all its initial factory settings.



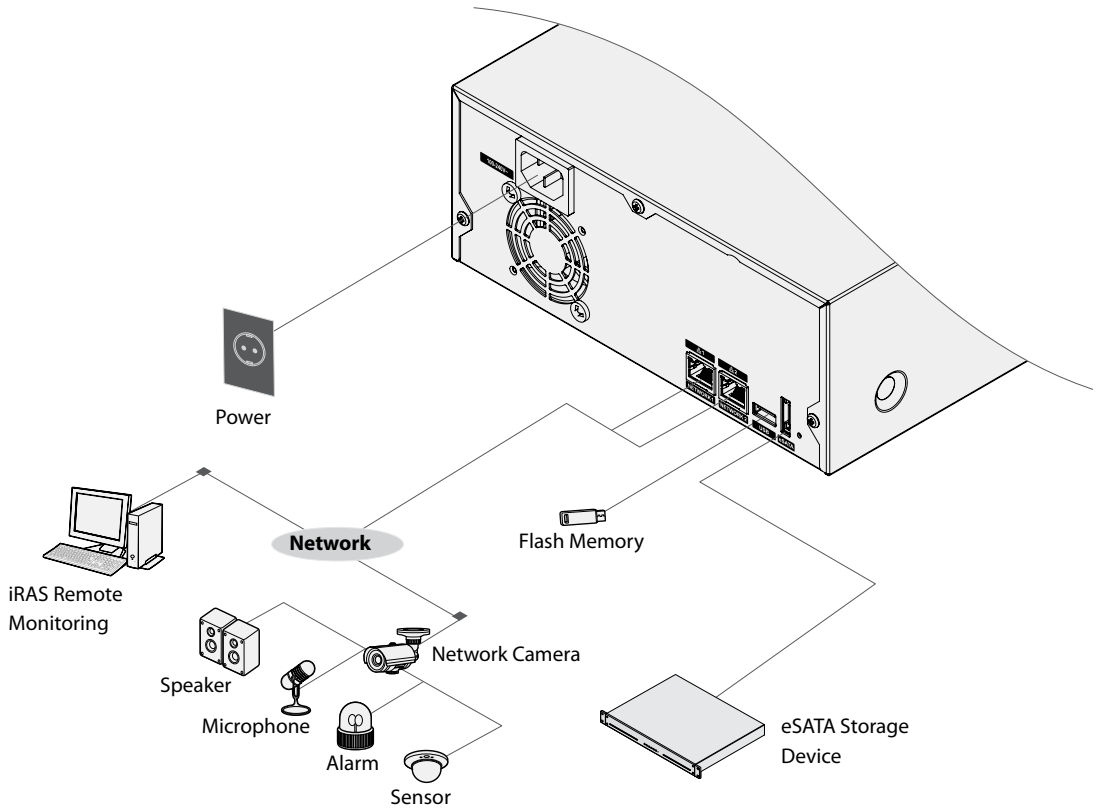
A factory reset will clear all NVR settings configured by the user.



You will need a straightened paper clip to access the factory reset button.

- 1 Turn off the NVR and unplug the power cable.
- 2 Insert a straightened paper clip into the factory reset switch hole and press the switch.
- 3 While holding the factory reset switch, power the NVR on.
- 4 Once the front panel LEDs start to flash, remove the paper clip. A beep sounds.
- 5 All NVR settings will be returned to their factory values and the NVR restarts.

Connections on the Rear Panel



Part 2 – Installation

You can connect the NVR system remotely only via network connection. This requires installing the following programs in your PC.

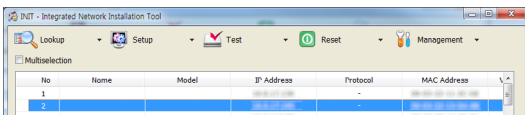
- **INIT Program:** Allows you to set up network information of the NVR system for remote connection.
- **iRAS Program:** Allows you to set up the NVR system, to monitor video of the NVR system and to play back video recorded in the NVR system.

INIT Program

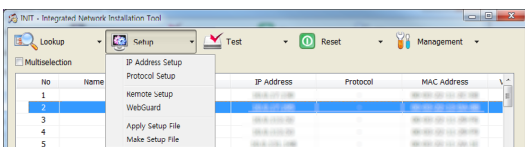
The INIT program does not require installation procedures, and double clicking the executable file runs the INIT program. Refer to the INIT user manual for details about the INIT program.

- The INIT program provides the following functions only: Lookup, Setup → IP Address Setup, Management → Upgrade.

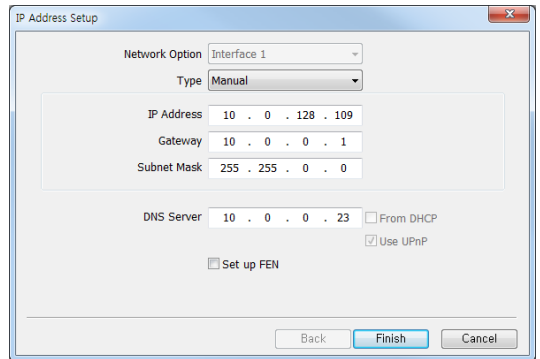
- 1 Check that the NVR system is operating.
- 2 Insert the installation CD and run the INIT program by double clicking the **INIT.exe** file in the INIT folder.
- 3 Select the NVR system to connect.



- 4 Click the **Setup** icon in the Main screen, select **IP Address Setup**. You will be required to enter the login information (The default user ID is **admin** and there is no default password.).



- 5 Enter the network information when the **IP Address Setup** screen appears. You can check the network information including the administration port number of the NVR system by selecting the NVR system, clicking the right mouse button and selecting **Properties** on the Main screen.



iRAS Program


System Requirements

Recommended Requirements


- Operating System: Microsoft® Windows® 7 64-bit (Home Premium, Professional, Ultimate) (Microsoft® Windows® 8 (Pro, Enterprise) compatible)
- CPU: Intel Core™ i5-3570K 3.30 GHz or faster
- RAM: 4GB or more
- VGA: ATI Radeon™ HD 7700 or NVIDIA GeForce GTX650 or higher (1280x1024, 32bpp or higher), multi monitor
- Hard Disk Drive: 6 GB or more free space
- LAN: Gigabit Ethernet or faster


Minimum Requirements

- Operating System: Microsoft® Windows® XP Home SP 3
- CPU: Intel Core™ 2 Duo E7200 2.53 GHz or faster
- RAM: 1.5 GB or more
- VGA: ATI Radeon™ HD 2400 or NVIDIA GeForce FX5500 or higher (1024x768, 24bpp or higher)
- Hard Disk Drive: 1 GB or more free space
- LAN: 10/100 Mbps Ethernet or faster

-  The iRAS program operates under 32-bit operating system. When you install it under 64-bit of Microsoft® Windows® Vista or later operating system, it is installed and operates in 32-bit compatibility mode.

Installation

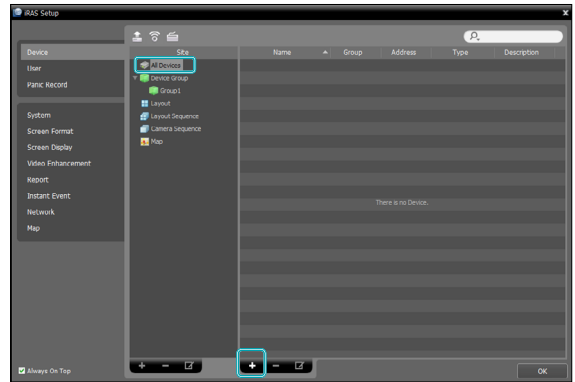
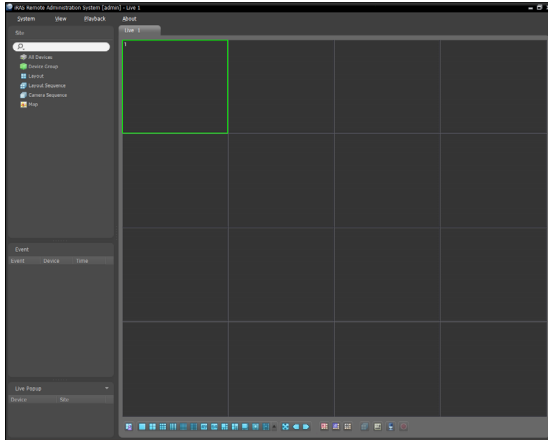
-  Disable your PC's Windows power saving function: Start menu → Power Options → set both Turn off the display and Put the computer to sleep to Never (Power Options → Power Schemes tab → set both Turn off monitor and Turn off hard disks to Never when using the Microsoft® Windows® XP operating system).


-  If an older version of iRAS software is installed on your computer, a screen appears asking you to upgrade the software. In this case, you are required to upgrade the software according to the instructions in the screen.

- 1 Insert the software CD in the PC.
- 2 Run the setup.exe file in the Setup folder of the software CD. Refer to the iRAS user's manual for instructions on the installation.

Part 3 - Getting Started

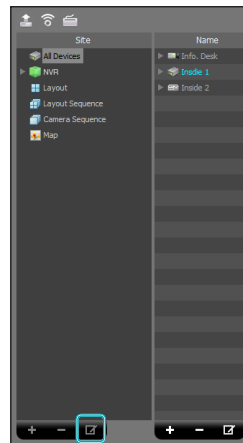
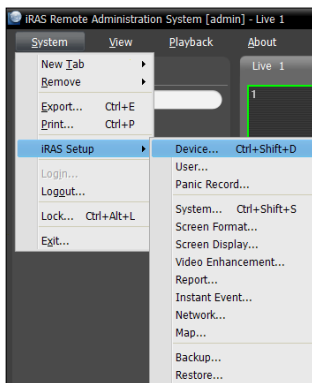
Run the iRAS program, and log in. The default user ID is **admin** and there is no default password.



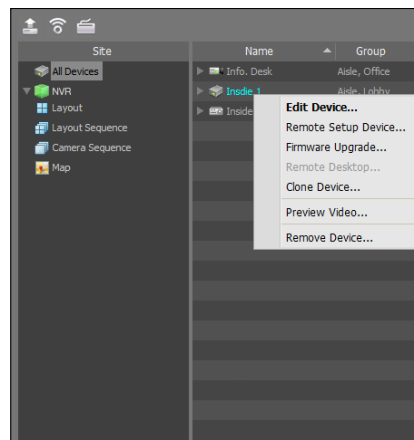
3 Click an **NVR** in the **Site** List panel. Click the  button at the bottom of the **Site** List panel, or click the right mouse button to display the device menu.

To connect to the NVR system, register the NVR on the iRAS program as follows:

1 Go to the **System** menu → Select **iRAS Setup** → Select **Device**.



2 Click **All Devices** in the **Site** panel, and then the **+** button at the bottom of the **Site** List panel. The Device Scan window appears, and you can register the NVR. Refer to the iRAS user's manual (3.2 Registering Devices) for details about registering the NVR.



- 4 Click **Remote Setup Device** to change the NVR's settings. The following Setup screen appears.

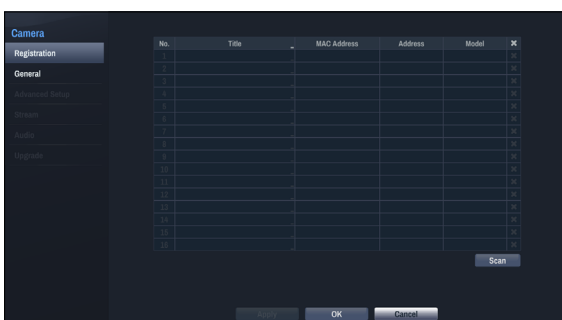


- If you have changed the password of the NVR in the last connection to the NVR, you should apply the change in the iRAS program, also. Click **Edit Device** in the device menu and enter the new password.

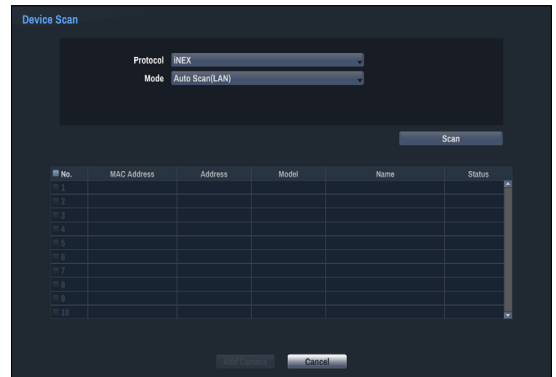
Camera Registration

- While one user scans or registers cameras, other users cannot scan or register cameras.

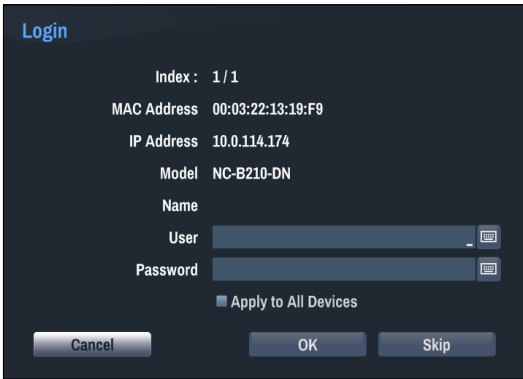
Click the **CAMERA** menu in the Setup screen.



- **No., Title, MAC Address, Address, Model:** Displays the number, title, MAC address, IP address and model of a selected camera.
- **Scan:** Click the button to register cameras.



- **Protocol:** Select the protocol or manufacturer of the camera to scan.
- **Mode:** Select the scan mode. Clicking the Scan button displays the results in the list. If the IP address range of the camera is different from that of the NVR system, the NVR considers the IP address invalid. In this case, you must change the camera's IP address to register the camera.
- **Auto Scan (LAN):** Lists cameras in a LAN environment.
- **IP Address Scan:** Allows you to enter the IP address of a camera. You can search more than one camera at a time by entering a range of IP addresses. It is recommended that the camera not be networked via DHCP (Dynamic Host Configuration Protocol). If the camera is networked via DHCP, connection to the camera may not be made properly depending on changes in the external network environment.
- : Select the cameras to register by checking the box beside each camera name in the list. Clicking the **Add Camera** button displays the following **Login** screen.

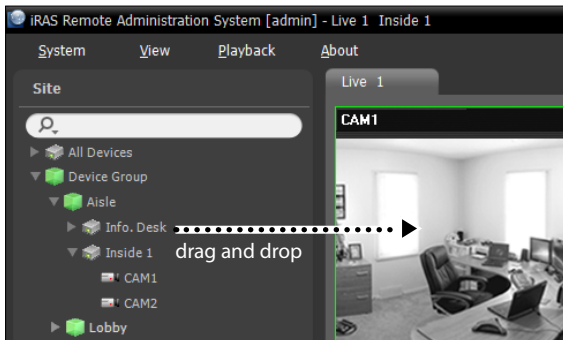


- **User, Password:** Enter the user ID and password for the connection to the camera.
- **Apply to All Devices:** Select to apply the same user ID and password to all selected cameras if you selected more than one camera and the selected cameras have the same user ID and password.

Live Monitoring

You can monitor live video.

- 1 Check that the NVR was added to a device group in the **Site** list.
- 2 Click the **Live** tab on the tab panel → Select a NVR to connect to from the **Site** list, and drag and drop it on the Live screen. Live video from the selected NVR is displayed on the screen.



Video Recording

Video recording will only take place if all the connections are made correctly.

Panic Recording

You can control panic recording on/off on the iRAS program. For more information, refer to the iRAS user's manual. If the **Panic Recording Duration** option under **Record Setup > General** has been configured, Panic Recording will automatically terminate after the specified duration of time has elapsed.

- Panic Recording takes place irrespective of any recording schedule set up by the user.
- Panic Recording video profile from **Record Setup > General** applies to all Panic Recording videos.

- Panic Recording will not take place if recording mode is not set to **Recycle** and the HDD has reached 100% of its capacity.

Audio Recording

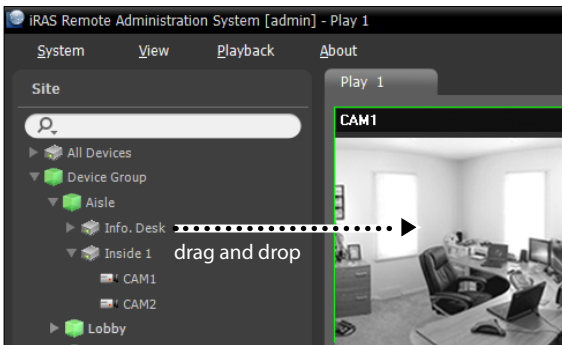
If the Record Audio option under **Record Setup > General** has been enabled the camera will record audio along with video.

- Check your local laws and regulations on making audio recordings.

Video Recording Playback

You can play back video recordings.

- 1 Check that the NVR was added to a device group in the **Site** list.
- 2 Click the **Play** tab on the tab panel → Select a NVR to connect to from the **Site** list, and then drag and drop it on the Play screen. Recorded video from the NVR is displayed on the screen.



- Login with an account that has search permission is needed to playback video recordings.
- The initial video playback point in Search mode is the recording's last playback point or the end of the recording data.
- Audio playback of the selected recording is available in full screen mode only.
- Covert protection on cameras also applies to video recording playback.

Part 4 - Configuration

Menu Use

- Login with an ID that has permission to access the Setup menu is needed to access and make changes to the Setup menu.

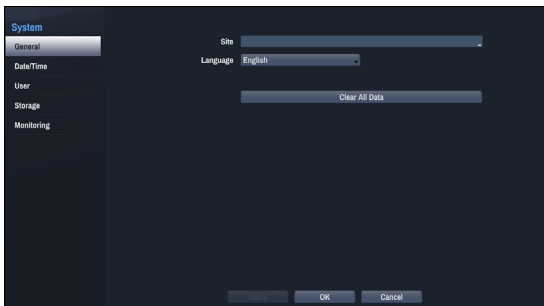
Throughout the screens notice the **Default** button located on the left bottom corner in some of screens. Selecting **Default** button provides the opportunity to reset the settings on that screen to its default settings. Select **Apply** or **OK** button to apply the changes and exit the screen in any setup. Select **Cancel** button to exit the screen and no changes are saved.

Certain table-format menus such as the shown in the **Camera Setup on page 37** allow you to change the title value. In this case, changing the title value simultaneously changes all other entry values on the same row.

System Setup

General

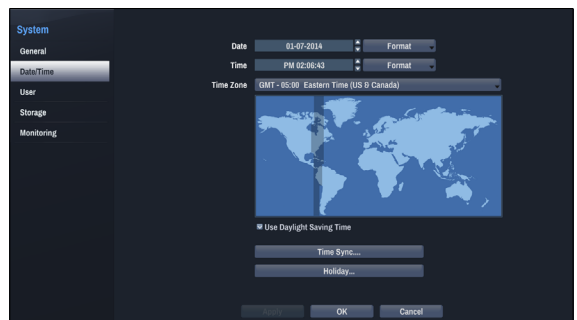
This Setup menu contains general system options.



- Site:** Used to enter a description about the system's installation site (no description by default).
- Language:** Choose a language.
- Clear All Data:** Erases all recording data. Selecting **Clear All Data** displays a confirmation window. Select **Clear** to proceed.

- Before you perform **Clear All Data**, make sure you are not accidentally deleting important data. Erased data cannot be recovered.
- Clear All Data** does not affect the system log. Instead, the **Clear All Data** event will be added to the log.

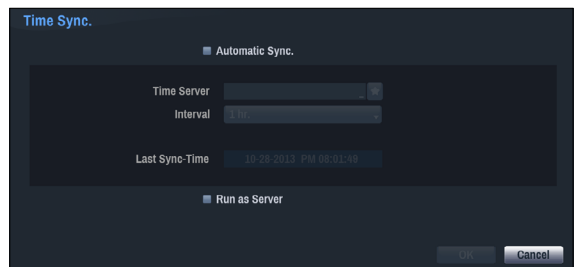
Date/Time




- Date:** Used to change the system's date setting.
- Time:** Used to change the system's time setting.
- Date Format/Time Format:** Used to change the system's date and time formats.
- Time Zone:** Used to designate the system's time zone.

- Refer to the map displayed on the screen and change the time zone using the mouse.

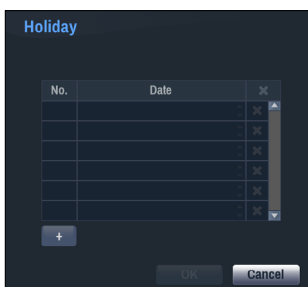
- Use Daylight Saving Time:** Enables DST correction.
- Time Sync.:** Select a time server for the system to synchronize with.




- 1 Select **Automatic Sync**.
- 2 Enter the **Time Server**'s IP address or domain name or select  and then choose a server from the list of registered time servers.
- 3 Specify the server synchronization **Interval**.
- 4 Select **OK** to apply and exit.

- If you have configured the DNS Server setting under **Network - IP Address**, you can enter the time server's domain name instead of its IP address.
- Selecting **Run as Server** sets the current NVR as a time server for other NVRs within the system.
- **Holiday**: Designate holidays. On specified holidays, recording takes place according to the holiday recording schedule specified under Record Schedule.

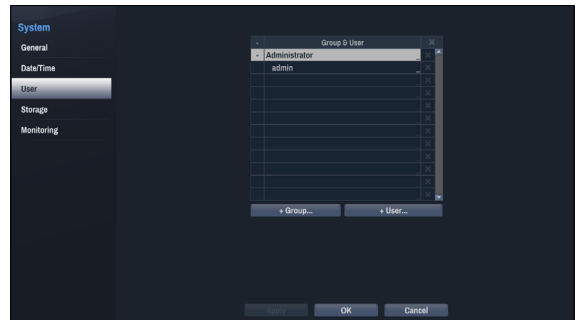
- 1 Select the + button at the bottom of the window.
- 2 Select a date.
- 3 Select **OK** to apply and exit.



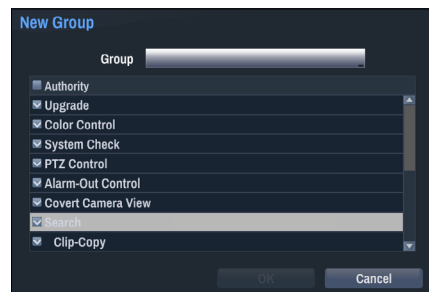
- Select the  icon to delete the existing holiday date.

User

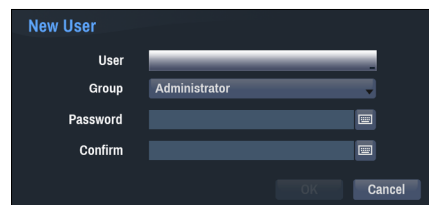
Use this option to register users and assign permissions.



- 1 Select **+ Group** and enter a group name. A group name can be up to 15 characters in length.
- 2 Specify the group's permission settings. For more information on permission settings, refer to the **Group Permissions on page 22**.



- 3 Select **+ User** and then enter a user name.



- 4 Select a group for the user and then enter a password. The password can be up to 16 characters in length and may include letters, symbols, and numbers.

5 Select **OK**.

6 Select **Apply** or **OK** to exit.

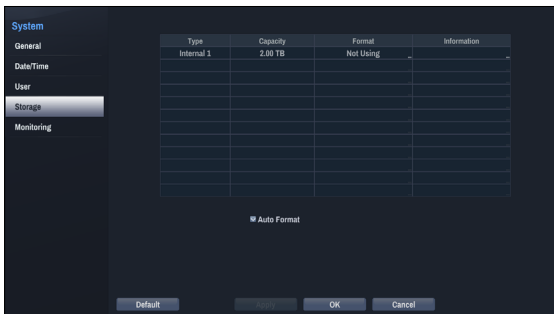
- To delete a registered user or group, select the icon on the right of the corresponding user/group. **Group Administrator** and **User admin** cannot be deleted.
- Select the icon next to **Group & User** on the top of the screen to delete all groups and users except **Group Administrator** and **User admin** simultaneously.
- A password entry is required to edit existing groups and users.
- **Group Administrator**'s permissions cannot be changed.
- With the **User admin** account, only the password can be changed.

Group Permissions

Upgrade		May upgrade the system remotely.
Color Control		May adjust each camera's brightness, contrast, saturation, and hue settings.
System Check		May view System Check results.
PTZ Control		May control PTZ cameras.
Alarm-Out Control		May control alarm out of a network camera on the remote program.
Covert Camera View		May access covert cameras in Live and Search modes.
Search	Clip Copy	May perform Clip Copy.
Setup	System Time Change	May change the system's date and time settings.
	Data Clear	May clear data stored in the system.
	PTZ Setup	May configure PTZ settings.
	Alarm-Out Setup	May configure alarm-out settings.
	Covert Camera Setup	May configure covert camera settings.
	Record Setup	May configure recording settings.
	Setup Import	May import previously saved NVR settings remotely.
	Setup Export	May export current NVR settings remotely.

Storage

Use this option to configure storage settings.



- **Type:** Indicates the type of the installed disk.
- **Capacity:** Indicates the disk's capacity.
- **Format:** If the disk has been formatted, indicates either **Record** or **Not Using**. If you have connected an unformatted storage device, the Use As value will be indicated as **Not Formatted**.
- **Information:** Indicates if the disk is being used for recording purposes. Disks that were used in different systems will show up as **Other**. Select **Information** to check the saved data's time information or select **Delete** to erase the data.
- **Auto Format:** If it is enabled, the internal hard disk drive will be formatted automatically when the system boots in case that the internal hard disk drive is not formatted or used for another NVR (except of the same model).



- Select **Format** to prepare the disk as a storage for data recording.
- Disks formatted with Use As set to **Not Using** will not be used for data recording.
- This NVR supports SATA2 HDDs.


Monitoring

Use this option to configure Monitoring settings.



- **Settings:** Configure when and what the system should monitor for.
- **Actions:** Configure alarm-out (channel) and notification (email, Callback (LAN 1 through 5) , SNS) settings.

Monitoring Options

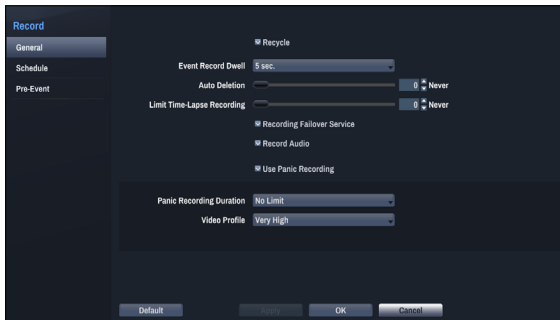
System	Define monitoring times. If self-diagnosis is not performed on a regular basis, the system will assume an error.
Bootup, Restart	Define bootup and restart actions.
Panic Record	Define panic recording actions.
Check Recording	<p>The system will assume an error if the system has been scheduled to record normally but recording does not take place during scheduled intervals.</p> <p><input checked="" type="checkbox"/> Select Schedule On and then configure the days of the week, times, and monitoring interval. Select the + button on the bottom left of the screen to add a schedule. Select X icon to delete the schedule.</p> 
Check Alarm-In	The system will assume an error if the alarm-in status does not change during the specified monitoring interval while alarm-in is active.
Disk Almost Full	Generates an event if the disk reaches the specified capacity (80% to 99%).
Disk Full	Generates an event when all disks reach their maximum capacity.
Disk Bad	Generates an event when the specified percentage of the disk becomes damaged. Set to between 10% and 90% in 10% intervals.
Disk Temperature	Specify the threshold temperature. Once any disk reaches this threshold, the system will issue an alert.
Disk S.M.A.R.T.	Monitors disks that support S.M.A.R.T. and notifies the user if a disk error is detected.
Fan Error	Notifies the user when the fan inside the system malfunctions.
eSATA Disconnected	Notifies the user if an eSATA device becomes disconnected while in use.
Disk Config Change	It will be highlighted when the NVR reboots after the hard disk drive has been replaced.

- For system events, only an e-mail notification of actions can be selected.
- In order to use the Notify(Callback) feature, the NVR must be registered to the remote program on the receiving PC's end.

Record Setup

General

Configure general recording settings.



- **Recycle:** When the recording disks become full, the system overwrites existing data with new data, starting with the oldest first. If **Recycle** is disabled, recording will simply stop when the recording disks reach their maximum capacity.
- **Event Record Dwell:** If linked recording is designated as an event-triggered action, recording takes place for the duration specified under this setting.
- **Auto Deletion:** Configure this option to delete recording data automatically after the specified number of days has elapsed.



To disable Auto Deletion, select **Never**. If enabled, recording data will be stored on the NVR for the specified number of days and then deleted automatically. Expired recording data are deleted automatically at midnight and will be deleted even if the system reboots or the **Auto Deletion** setting has been changed.

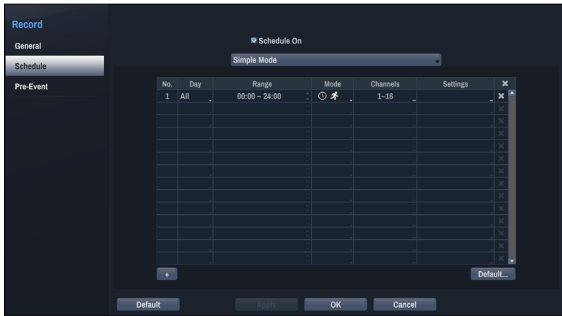
- **Limit Time-Lapse Recording:** You can store event recording data for longer. If you do not wish to use **Limit Time-Lapse Recording**, select **Never**. This function is activated when data has been stored for longer than as configured because the recording disk has sufficient capacity and saves new data by overwriting **Time Lapse Recording** data that are older than as specified under Recycle mode.



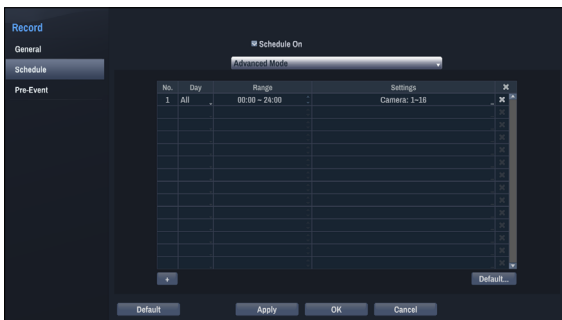
- If the recording stored on the disk is shorter than the duration specified under **Limit Time-Lapse Recording**, the older of **Event Recording** or **Time Lapse Recording** data is deleted first.
- The system's recording time may change depending on recording quality, resolution, motion, and other configurations made by the user. The duration specified under **Limit Time-Lapse Recording** may not be guaranteed in certain situations.

- **Recording Failover Service:** If the network goes down, this feature will transfer temporary data stored in the camera's buffer to the NVR when the network goes online again.
- **Record Audio:** Enable/disable Audio Recording.
- **Use Panic Recording:** Enable/disable Panic Recording.
- **Panic Recording Duration:** Disable Panic Recording automatically when the duration expires since panic recording starts. If you do not wish to disable the feature automatically, select **No Limit**.
- **Video Profile:** Select a recording profile value for Panic Recording.

Schedule




<Simple Mode>



<Advanced Mode>

Disabling **Schedule On** suspends schedule recording regardless of the schedule.

Set Record Schedule mode as **Simple Mode** or **Advanced Mode**. **Advanced Mode** allows you to configure a unique recording schedule for each event. Select the  icon to delete a schedule.



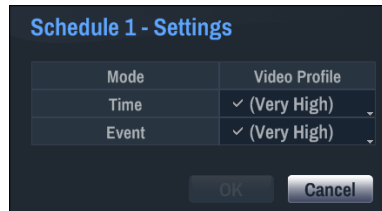
- Changing the recording schedule mode suspends all active event-linked actions.
- Select the + button on the bottom left of the screen to add a schedule. Select **Day** to specify the **Day** setting or select **All**. Select **Scope** to specify the time frame.

Simple Mode Options

- Mode:** Select **No Record**, **Time**, **Event**, or **Time & Event**.

No Record	Unless panic recording is made, no recording will take place during the scheduled time frames on the scheduled days.
Time	Recording will be in progress at scheduled time.
Event	Recording will be in progress when the specified event occurs.
Time & Event	Recording commences as per the video profile selected for time under Setup . When an event occurs, recording commences as per the video profile selected for events under Setup .









- Channel:** Select which cameras to apply the schedule to.
- Settings:** Select to configure default recording profile values for Time Lapse and Event Recording modes.



Advanced Mode Options

Select to configure event types and video profiles.

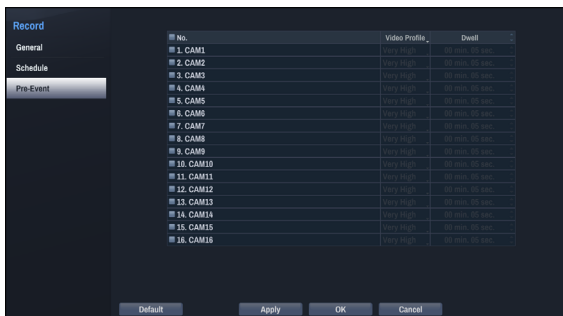
- Type:** Event-specific and time recording icons are as follows:

	Time Lapse (Time)		Audio Detection
	Alarm-In		Trip Zone
	Motion Detection		Tampering
	Video Loss		Text-In

- **Video Profile:** Configure the profile to use for recording.
 - **Dwell Time:** Specify how long to record for after a corresponding event occurs.
- Upper-tier schedule's settings apply to unconfigured channels.
- If multiple events take place on a specific channel and different **Video Profile** and **Dwell Time** settings apply, highest settings apply to all event-linked recordings.

Pre-Event

When an event occurs, enabling this option includes the specified duration prior to the event in the event-triggered recording.



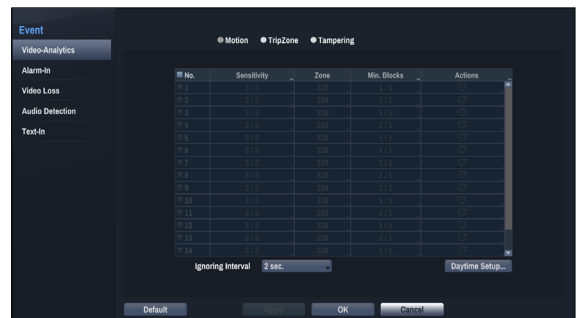
- **No.:** Select which cameras to apply Pre-Event to.
 - **Video Profile:** Select a video profile for the recording.
 - **Dwell:** Specify the duration of pre-event recording data.
- If no event mode schedule exists in the schedule, a warning message prompting you to add an event mode schedule will be displayed.
- The warning message will appear even in **Time & Event** mode.

Event Setup

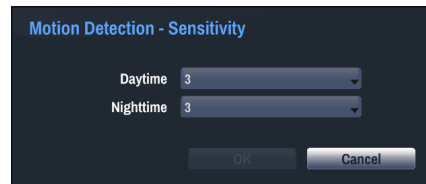
Video-Analytics

Video-Analytics methods are Motion, Trip Zone, and Tampering.

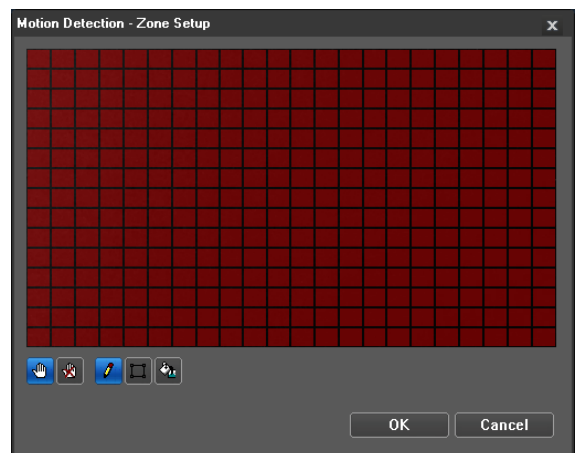
Motion



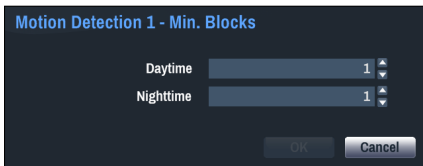
- **No.:** Select which cameras to apply Motion Detection to.
- **Sensitivity:** Set daytime and nighttime sensitivity settings.



- **Zone:** Define the motion detection block.



- (Select) or (Clear): Click to select or clear a block for motion detection. You can select or clear the several blocks of an area using the mouse dragging.
 - or (One or All block): Click to select or clear one or all blocks at a time.
 - (Area): Click to select or clear several blocks of an area.
- **Min. Blocks:** Motion needs to be detected in more than the specified number of blocks in order to trigger a Motion Detection event. You may select a value between 1 and the number of blocks selected under **Zone** for daytime and nighttime, each.



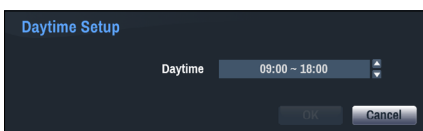
- **Actions:** Specify which actions to take when motion is detected.
 - **Record:** Specify which cameras to begin linked recording on when an event occurs. If the schedule is set to Event or Time & Event mode, the selected cameras will begin linked recording when an event occurs.
 - **Alarm-Out:** Designate event-triggered alarm-out channels.
 - **Notify:** Configure to be notified of events by Mail, Callback (LAN 1 through 5), SNS.

In order to use the Callback (LAN 1 through 5) feature, the NVR must be registered on the remote program.

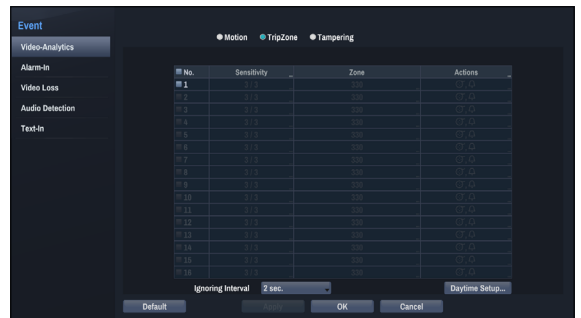
- **Motion Ignoring Time:** The system does not produce event log entries or issues remote notifications regarding motion detected during the specified time following the initial motion detection.

Motion Ignoring Time does not affect motion detection recording.

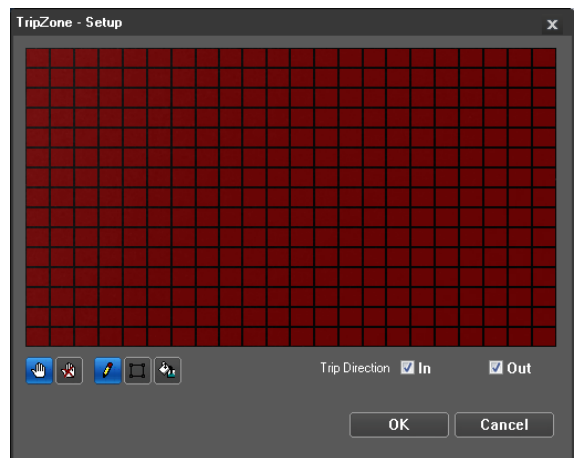
- **Daytime Setup:** Specify when daytime starts and ends. Times outside the specified range will be assumed as nighttime by the system.



Trip Zone



- **No.:** Select which cameras to apply Trip Zone to.
- **Sensitivity:** Set daytime and nighttime sensitivity settings.
- **Zone:** Define the trip zone detection block.



- (Select) or (Clear): Click to select or clear a block for motion detection. You can select or clear the several blocks of an area using the mouse dragging.
- or (One or All block): Click to select or clear one or all blocks at a time.
- (Area): Click to select or clear several blocks of an area.
- **Trip Direction:** Select the direction of the moving to be considered as an event. Selecting **In** considers a moving as an event when the moving to the area is detected, and selecting **Out** when the moving from the area is detected.
- **OK:** Save the changes and exit the menu.
- **Cancel:** Exit the menu without saving the changes.

- **Actions:** Specify which actions to take when Trip Zone is detected.
 - **Record:** Specify which cameras to begin linked recording on when an event occurs. If the schedule is set to Event or Time & Event mode, the selected cameras will begin linked recording when an event occurs.
 - **Alarm-Out:** Designate event-triggered alarm-out channels.
 - **Notify:** Configure to be notified of events by Mail, Callback (LAN 1 through 5), SNS.

In order to use the Callback (LAN 1 through 5) feature, the NVR must be registered on the remote program.

- **Trip Zone Ignoring Time:** The system does not produce event log entries or issues remote notifications regarding Trip Zone events detected during the specified time following the initial Trip Zone event.

Trip Zone Ignoring Time does not affect Trip Zone recording.

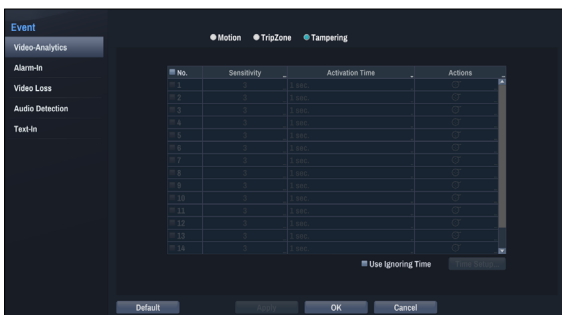
- **Daytime Setup:** Specify when daytime starts and ends. Times outside the specified range will be assumed as nighttime by the system.

- **Actions:** Specify which actions to take when Tampering is detected.
 - **Record:** Specify which cameras to begin linked recording on when an event occurs. If the schedule is set to **Event** or **Time & Event** mode, the selected cameras will begin linked recording when an event occurs.
 - **Alarm-Out:** Designate event-triggered alarm-out channels.
 - **Notify:** Configure to be notified of events by Mail, Callback (LAN 1 through 5), SNS.

In order to use the Callback (LAN 1 through 5) feature, the NVR must be registered on the remote program.

- **Use Ignoring Time:** Select **Time Setup** to specify the tampering detection ignore time. Tampering detection will be disabled during the specified time frame.

Tampering



- **No.:** Select which cameras to apply Tampering to.
- **Sensitivity:** Set the sensitivity.
- **Activation Time:** Specify how long tampering detection needs to last in order for it to be considered an event. Tampering detections that do not last for the specified duration of time will not be considered as events.

Alarm-In

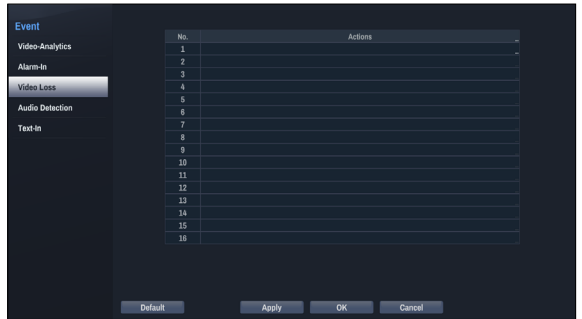


- **No.:** Enable / disable alarm-ins of network cameras.
- **Title:** Enter titles.
- **Type:** Change the alarm-in type.
- **Actions:** Specify which actions to take when Alarm-In is detected.
 - **Record:** Specify which cameras to begin linked recording on when an event occurs. If the schedule is set to Event or Time & Event mode, the selected cameras will begin linked recording when an event occurs.
 - **Alarm-Out:** Designate event-triggered alarm-out channels.
 - **Notify:** Configure to be notified of events by Mail, Callback (LAN 1 through 5), SNS.



- In order to use the Callback (LAN 1 through 5) feature, the NVR must be registered on the remote program.
- Select **Panic Record** to specify which alarm-in channels to use. Panic Record commences when the corresponding alarm-in occurs and terminates when the alarm-in is deactivated.

Video Loss

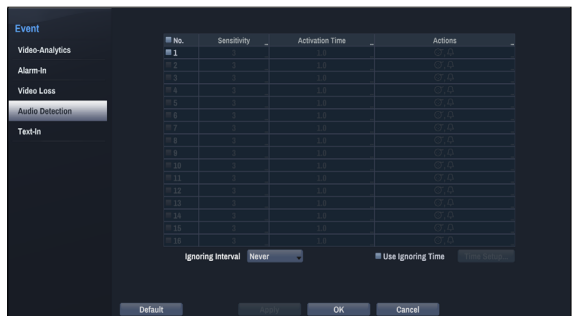


- **Actions:** Specify which actions to take when a Video Loss event occurs.
 - **Record:** Specify which cameras to begin linked recording on when an event occurs. If the schedule is set to **Event** or **Time & Event** mode, the selected cameras will begin linked recording when an event occurs.
 - **Alarm-Out:** Designate event-triggered alarm-out channels.
 - **Notify:** Configure to be notified of events by Mail, Callback (LAN 1 through 5), SNS.



- In order to use the Callback (LAN 1 through 5) feature, the NVR must be registered on the remote program.

Audio Detection



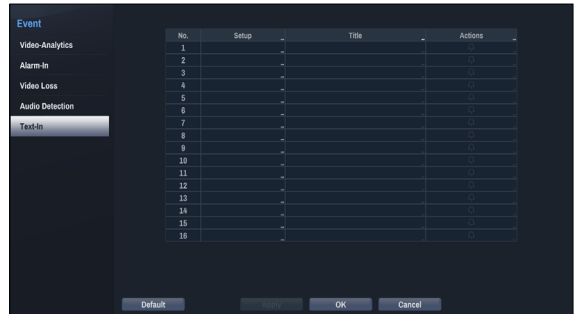
- **No.:** Select which cameras to apply Audio Detection of network cameras to.
- **Sensitivity:** Set the sensitivity.

- **Activation Time:** Specify how long audio detection has to last in order for it to be considered an event. Audio detections that do not last for the specified duration of time will not be considered as events.
- **Actions:** Specify which actions to take when audio detection events occur.
 - **Record:** Specify which cameras to begin linked recording on when an event occurs. If the schedule is set to Event or Time & Event mode, the selected cameras will begin linked recording when an event occurs.
 - **Alarm-Out:** Designate event-triggered alarm-out channels.
 - **Notify:** Configure to be notified of events by Mail, Callback (LAN 1 through 5), SNS.

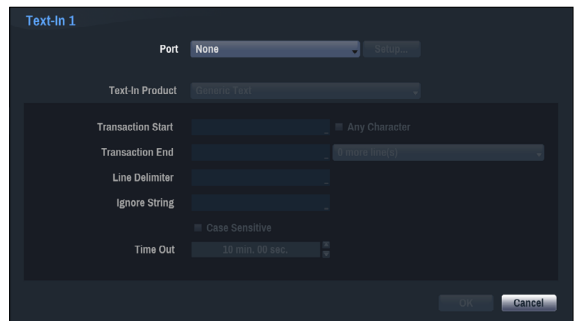
In order to use the Callback (LAN 1 through 5) feature, the NVR must be registered on the remote program.

- **Ignoring Interval:** The system does not produce event log entries or issues remote notifications regarding audio detected during the specified time following the initial audio detection.
- **Use Ignoring Time:** Select **Time Setup** to specify the audio detection ignore time. Audio detection will be disabled during the specified time frame.

Text-In




- **Setup:** Configure text-in devices.



- It's possible to batch configure all text-in devices with the exception for port settings.
- An influx of large amounts of text-in data from multiple channels can hinder system performance.

- **Text-In Product:** The setup window is updated so that the portion below the port setting matches the corresponding text-in device. Displayed screenshot illustrates Generic Text settings.
- **Transaction Start:** Once **Transaction Start** has been designated, the system will recognize the specified string as the beginning of a transaction. You can choose the **Any Character** setting. Under this setting, any character will trigger the system into recognizing the start of a new transaction.
- **Transaction End:** Once **Transaction End** has been designated, the system will recognize the specified string as the end of a transaction. Select **0 more line(s)** next to **Transaction End**. The system will recognize the specified Transaction End string plus the number of lines as being the end of a transaction.

- **Line Delimiter:** Designate a string to mark the end of a line. You can enter control strings by selecting  and then entering ^, followed by a letter. For example, Carriage Return is ^M and Line Feed (new line) is ^J.
- **Ignore String:** Specify a string to ignore from transaction records.
- **Case Sensitive:** Ignores case in strings designated under **Transaction Start**, **Transaction End**, **Line Delimiter**, and **Ignore String**.

Case Sensitive does not apply to control strings.

- **Time Out:** Once **Time Out** has been enabled, the system will assume the end of a transaction if no new string is entered within the specified duration of time.

Selecting USB-Serial or LAN as the port activates the Port Setup button. Select **Setup** and configure the **Baud Rate**, **Data Bit**, **Stop Bit**, and **Parity** settings.

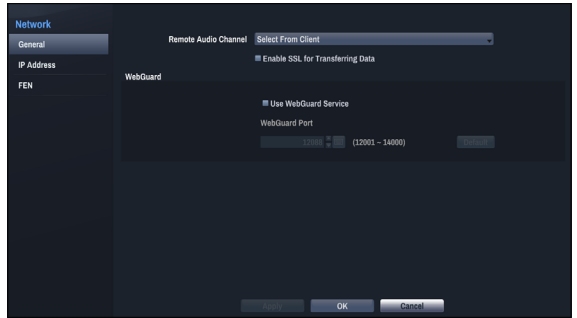
- If any one of LAN has been selected as the port, select the Port Setup button and configure the network port setting.
- If using a USB-serial port, the Text-In feature may malfunction if the USB cable is removed while the system is in operation.

- **Title:** Designate a name for the text-in device.
- **Actions:** Specify which actions to take when text-in is detected.
 - **Record:** Specify which cameras to begin linked recording on when an event occurs. If the schedule is set to Event or Time & Event mode, the selected cameras will begin linked recording when an event occurs.
 - **Alarm-Out:** Designate event-triggered alarm-out channels.
 - **Notify:** Configure to be notified of events by Mail, Callback (LAN 1 through 5), SNS.

In order to use the Callback (LAN 1 through 5) feature, the NVR must be registered on the remote program.

Network Setup

General



- **Remote Audio Channel:** Transmits the selected network camera's audio to the remote program. Select **Select From Client** to stream audio of the channel selected on the remote program.
- Audio skipping and sync issues can occur under poor network conditions.
- **Enable SSL for Transferring Data:** Applies SSL (Secure Sockets Layer) protection on remote viewing and recording data transmissions.
 - If using the SSL feature, it will not be possible to connect to the NVR from a remote program that does not support SSL.
 - Changing the SSL setting temporarily severs all remote connections to the NVR in order to apply the change.
 - This product contains content developed by OpenSSL Project for use in Open SSL Toolkit (<http://www.openssl.org/>).
- **WebGuard:** If you wish to use WebGuard, select **WebGuard - Use WebGuard Service**. Select **WebGuard - WebGuard Port** and choose a port number. For more information on WebGuard, refer to the **Part 5 - WebGuard on page 43**.

IP Address

Designate the IP address type as Manual or **DHCP**.

Manual

The screenshot shows the 'Network' configuration window with the 'Type' set to 'Manual'. The 'IP Address' field is populated with '192.168.1.129'. Other fields include 'MAC Address' (00:03:22:00:00:00), 'Gateway' (192.168.1.254), 'Subnet Mask' (255.255.255.0), 'DNS Server' (0.0.0.0), 'Remote Port' (8018), and 'Remote Callback' (8201). There are 'OK' and 'Cancel' buttons at the bottom.

- Set **Type** to Manual.



Manual lets you configure related settings manually.

- **DNS Server:** Enter the DNS server's IP address.
- **Remote Port:** Set the port number using by the remote program to connect to the NVR.
- **Remote Callback:** Set the port number using for remote callback.



- If using a firewall, select Change Port to change the port number to one that is permitted by the firewall.
- Changing the port temporarily severs the NVR's remote connection.



Remote point IP and port settings on the remote program must also be changed in order for it to connect to the NVR.

- To use the **UPnP** (Universal Plug and Play) feature, select **Use UPnP**. If using an IP router (or NAT), UPnP service allows the device to automatically forward the port to the NVR.



- This port is used to access a port that has a private IP address.
- In order to use the UPnP service, the IP router (or NAT) must support UPnP port forwarding and have the relevant options enabled.
- Port number cannot be changed with **Use UPnP** selected.

- **Status:** Indicates the number of the port forwarded by the IP router (or NAT) to the NVR via UPnP service.

DHCP

The screenshot shows the 'Network' configuration window with the 'Type' set to 'DHCP'. The 'IP Address' field is empty. Other fields include 'MAC Address' (00:03:22:00:00:00), 'Gateway' (0.0.0.0), 'Subnet Mask' (0.0.0.0), 'DNS Server' (0.0.0.0), 'Remote Port' (8018), and 'Remote Callback' (8201). There are 'Apply', 'OK', and 'Cancel' buttons at the bottom.

Select **DHCP** and then **Save** to retrieve IP address and other network settings automatically from the DHCP server. Once the network settings have been retrieved, the NVR's current IP address is displayed in the IP Address field.



- It may not be possible to retrieve the IP address if there is no DHCP server. If this is the case, contact your network administrator.
- With DHCP, the NVR's IP address might change with each startup.



There is a limit to the number of users allowed to connect remotely at the same time. Contact the service center for more information.

FEN

If using a dynamic IP address, FEN service makes it easy to connect to the NVR from a remote program without having to configure dynamic IP or router settings.

The screenshot shows the 'Network' configuration window with the 'Type' set to 'FEN'. The 'FEN Server' is set to 'Automatic'. Other fields include 'Port' (10000), 'FEN Name', 'Help Desk', and 'Status'. There are 'OK' and 'Cancel' buttons at the bottom.

- **Use FEN:** Check if you wish to use FEN service.
- **FEN Server:** Enter the FEN server's IP address or domain name.

If you have configured the DNS Server setting under **Network - IP Address**, you can enter the FEN server's domain name instead of its IP address in the **FEN Server** field.

- **Port:** Specify the FEN server's port number.

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).

- **FEN Name:** After entering the NVR name you wish to register on the FEN server, check and register the entered name. This is a unique FEN name that will be registered on the FEN server.

- You will not be able to save FEN settings unless you click on the Check button next to the FEN Name field and check the entered name's availability.
- You will be prompted with an error message if you do not enter 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 NVR from the WebGuard program.

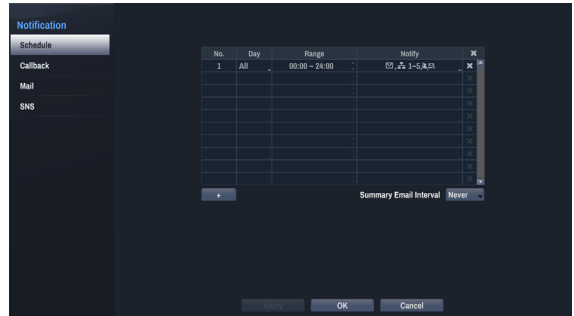
Select **Save** after making changes to register the FEN name to the FEN server.

If FEN has been configured correctly, the FEN server's help desk information will be displayed in the **Help Desk** field the next time you access the FEN Setup screen.

Notification Setup

Schedule

Select the + icon at the lower left corner of the screen to add a notification schedule.



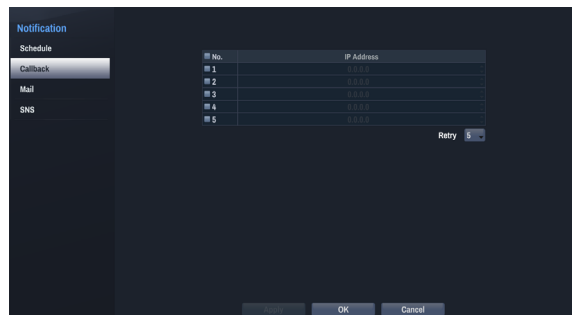
- **Day:** Add different schedules for different days of the week.
- **Range:** Change the event notification time frame.
- **Notify:** Select which notifications to generate when an event occurs. Select **Mail, LAN 1 through 5, and/or SNS**.

- In order to use the **Notification** (Callback) feature, the NVR must be registered on the remote program.
- Select the icon to delete the existing schedule.

- **Summary Email Interval:** Transmit event summary emails to a remote destination at specified intervals.

Callback

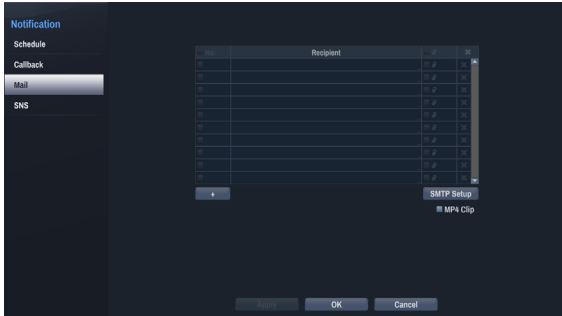
Configure Callback settings.



Enter the IP address of the receiving server and set **Retry** in case of connection failure.

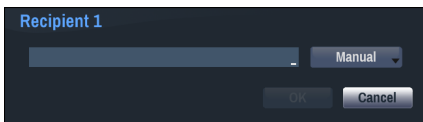
Mail

Configure Mail settings.





Select the + icon at the bottom left corner of the screen to add a mail account.

Select **Recipient** and then enter the mail address and server information.



- The recipient's mail address must be in the correct email format and contain the @ symbol.

Select the  icon to attach event recordings to outgoing mails.

Select the  icon to remove the account.

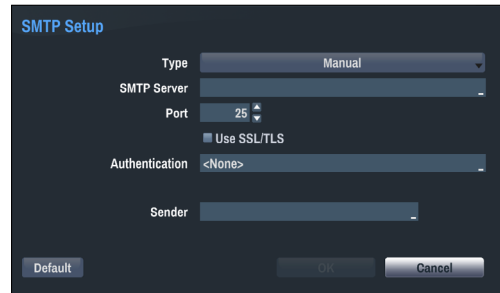
Select **MP4 Clip** to attach event recordings to outgoing mails.

- The event recordings generated by a camera can be attached only. Select the **MP4 Clip** option at the bottom to attach .mp4 video clips.

SMTP Setup

Select **SMTP Setup** at the bottom right corner of the screen to configure an SMTP server.

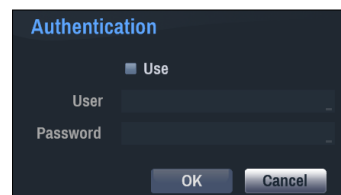
- 1 Select the SMTP server **Type**.
- 2 Enter the **SMTP Server**'s IP address or domain name and then configure the **Port** and **Sender** settings.



Select **Test** to send out a test mail using the current settings. Select **Use SSL/TLS** to use an SMTP server that requires SSL connections.

- If you have configured the DNS Server setting under **Network - IP Address**, you can enter the SMTP server's domain name instead of its IP address in the **SMTP Server** field.
- Address entered under **Sender** must be in the correct email format and include the @ symbol.

If user authentication is required by the SMTP server, select **Use** and then enter the **User** and **Password** information.

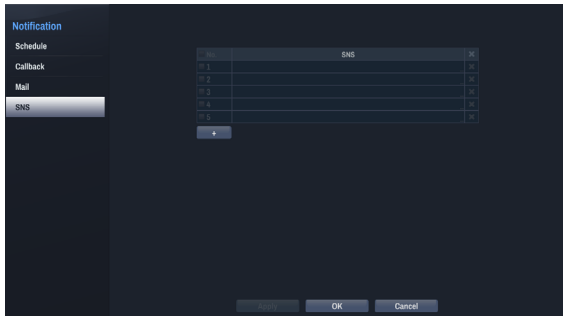


- 3 Select **OK** to apply and exit.

- This product contains content developed by OpenSSL Project for use in Open SSL Toolkit (<http://www.openssl.org/>).

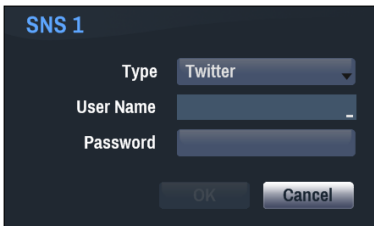
SNS

This option enables the NVR to send out SNS messages.



The SNS (Social Network Service) feature sends out event-related messages to designated Twitter accounts. Select the + icon at the bottom left corner of the screen to add an SNS account. Select the ✕ icon on the right side of the list to remove the SNS account.

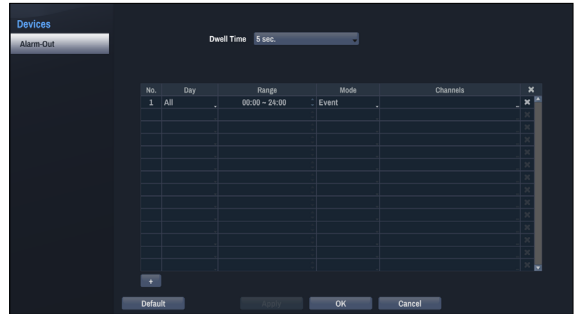
Enter the **User Name** and **Password** information.



Messages may not be transmitted successfully due to limitations in Twitter's services.

Device Setup

Alarm-Out



Select the + icon at the bottom left corner of the screen to add a schedule.

You can apply different schedules for different **Days** of the week.

Select ✕ icon to delete the schedule.

- **Dwell Time:** Select a value as the alarm-out duration.
- **Range:** Change the schedule time frame.
- **Mode:** Select **Event**, **On**, or **Off**.

Event	Generates an alarm-out when an event occurs.
On	Alarm-out is always on.
Off	Alarm-out is always off.

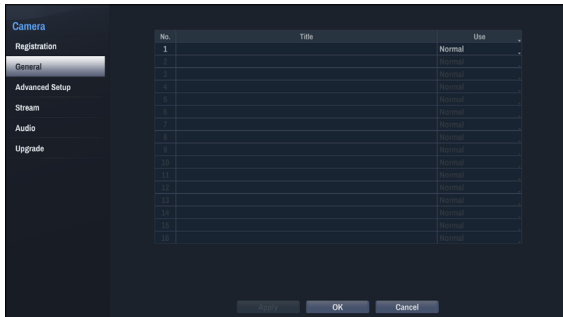
- **Channels:** Configure alarm-out port.

Camera Setup

Refer to the **Camera Registration on page 17** for explanation on Registration.

General

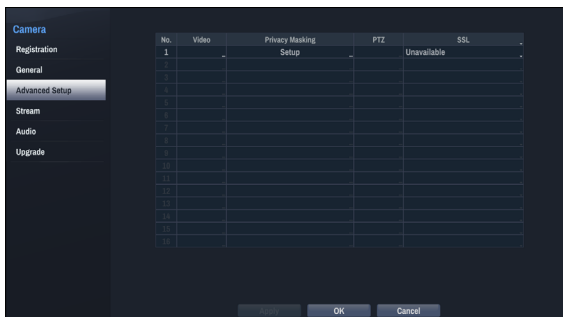
Enable/disable and rename cameras.



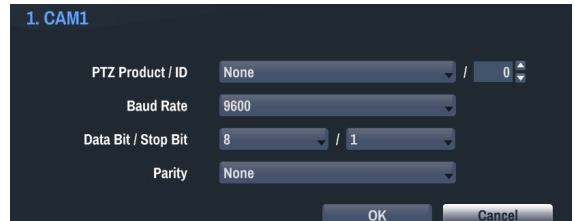
- **Title:** Displays the camera's name.
- **Use:** Set the camera as **Normal**, **Covert 1**, or **Covert 2**. Live images and video recordings from cameras that have been set as **Covert 1** or **Covert 2** will not be available to users who do not have covert camera access. Setting a camera as **Covert 1** hides its images but does display OSD information about the camera. Setting a camera as **Covert 2** hides its images as well as ODS information about the camera as if it has been deactivated completely.

Advanced Setup

Configure security and other advanced camera settings.



- **Video:** Adjust the camera image sensor settings such as white balance and exposure. Configuration options may differ depending on the camera model. Refer to the **Image Sensor Options on page 38** to **Miscellaneous on page 40**.
- **Privacy Masking:** Enable/disable and configure privacy masking for the camera. Refer to **Privacy Masking Options on page 37**.
- **PTZ:** If using an RS485-compliant camera, configure it for use in PTZ Mode.



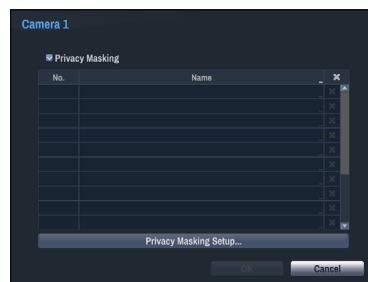
- **PTZ Product:** Choose to select the model of installed PTZ device.
- **ID:** Choose to assign an ID to each PTZ device.
- Choose to set up **Baud Rate**, **Data Bit**, **Stop Bit** and **Parity** of the connected device.




Refer to the PTZ device manufacturer's instructions for the proper settings.

- **SSL:** Set the camera's security level as **Unavailable**, **Standard**, **High**, or **Very High**. **Standard**, **High** and **Very High** settings apply SSL (Secure Sockets Layer) protection to the camera.
- Using the SSL function might cause congestion in the system receiving data from the camera depending on the security level.
- This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (<http://www.openssl.org/>)

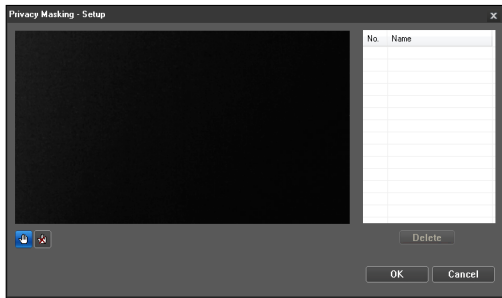
Privacy Masking Options



Select **Name** to rename the privacy masking area. Select the  icon to delete the existing privacy masking area. Select **Privacy Masking Setup** to display additional privacy masking area options. You can drag on the area with the mouse to resize it or add up to 16 different areas.

Enable Privacy Masking to restrict monitoring of specific areas for privacy reasons. The privacy masking areas are displayed in the black color during monitoring.

- **Privacy Masking Setup:** Set up privacy masking areas.





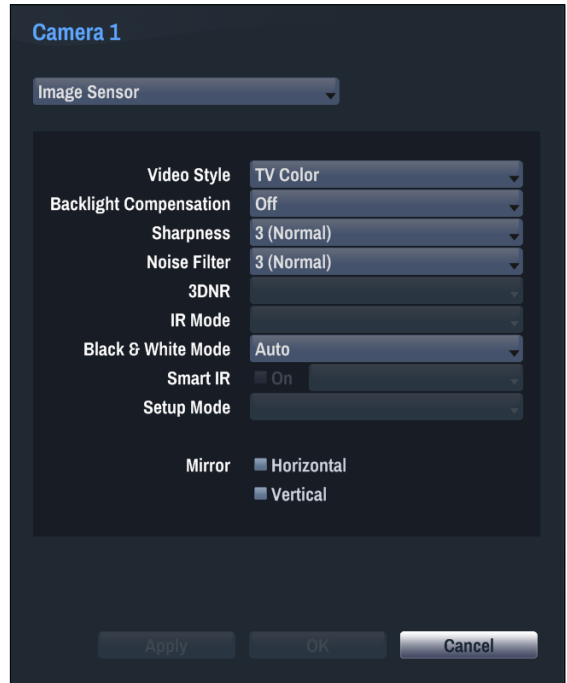
-  (Select) or  (Clear): Click to select or clear a block for privacy masking area. You can select or clear the several blocks of an area using the mouse dragging.
- **No. / Name:** Displays a list of the preset privacy masking areas. The number indicates the number displayed in the privacy masking area. Clicking the empty space beside the number in the list allows you set up a name for the area. Clicking the Delete button deletes the area.

Image Sensor Options

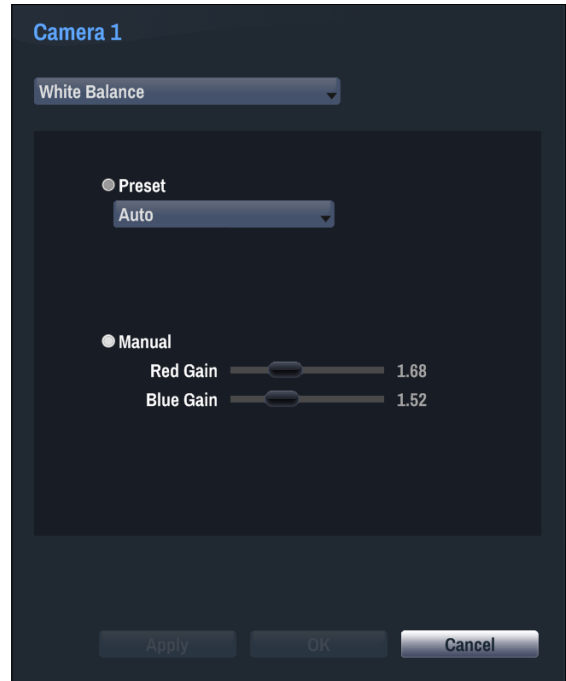


- **Video Style:** Select **TV Color** or **PC Color**.
- **Backlight Compensation:** Enable/disable Backlight Compensation. If enabled, objects are exposed brighter in backlit situations.
- **Sharpness:** Adjust the sharpness level. Adjust the contours to make the images look sharper. Increasing the 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.
- **3DNR :** Enable/disable 3DNR (3D Noise Removal). 3DNR reduces background noise in images taken under low-lighting conditions. 3DNR does not produce blurry images like Noise Filter but can result in ghosting.
- **IR Mode:** **IR Mode** 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.

- **Daytime Mode/Nighttime Mode:** Enable/disable **IR Mode**.
- **Auto:** Allow the system to enable/disable **IR Mode** automatically.
- **Black & White Mode:** Display the images in grayscale for greater clarity in low-lighting conditions.
 - **On/Off:** Enable/disable Black & White Mode.
 - **Auto:** Allow the system to enable/disable Black & White Mode automatically.
- **Smart IR:** Adjust the IR LED's brightness level. Select On to allow the system to adjust the brightness level automatically. Deselect On to select a brightness level manually between 0% (darkest) and 100% (brightest).
- **Setup Mode:** Select desired setup mode between **Normal** and **Number-Identification**. In **Number-Identification** mode, 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 (Local Exposure compensates for the bright light coming from incoming vehicle headlights and makes it possible to see the license plates). When setting to the **Number-Identification** mode, some option settings will be adjusted automatically, and you cannot change them as long as the Setup Mode is not changed.
- **Mirror:** Select **Horizontal** or **Vertical** to flip the image horizontally and/or vertically.

Select **Apply** after setting up a camera to see images from the concerned camera on the left side of the screen. Selecting **Apply** or **OK** displays a popup screen that indicates whether the camera has been set up successfully or not.

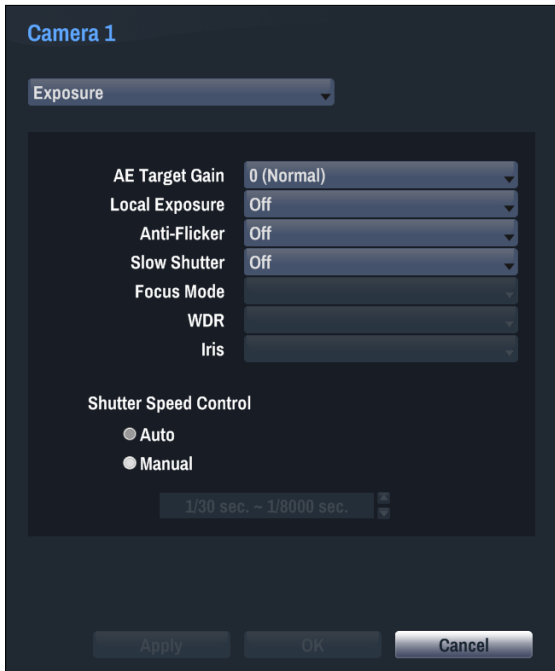
White Balance Options



- **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.

Select **Apply** after setting up a camera to see images from the concerned camera on the left side of the screen. Selecting **Apply** or **OK** displays a popup screen that indicates whether the camera has been set up successfully or not.

Exposure Options

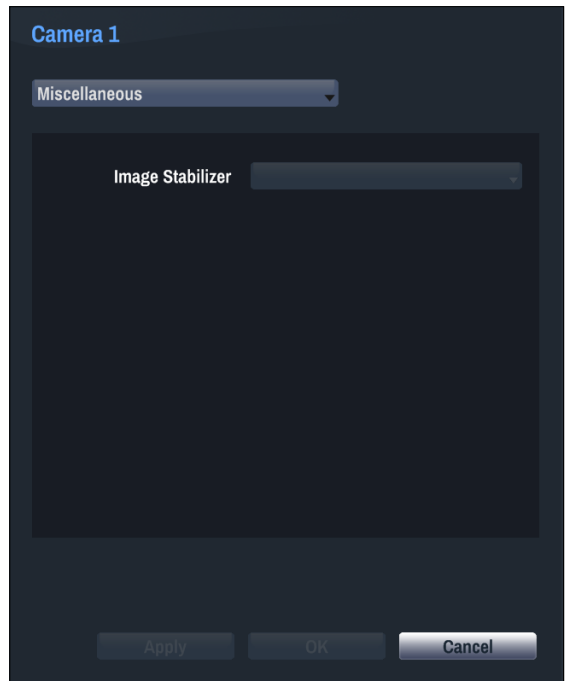


- **AE Target Gain:** Specify exposure compensation's target gain. Exposure is compensated automatically based on the specified target gain. Higher the gain, brighter the images.
- **Local Exposure:** Activate Local Exposure. Use Local Exposure on images that appear too dark due to backlighting conditions and on images containing over-exposed sections. Greater the value, clearer the image. e.g.) Dark parking lot entrances and gas station entrances at night (Local Exposure compensates for the bright light coming from incoming vehicle headlights and makes it possible to see the license plates).
- **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 eliminate flickering completely. (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.
- **Focus Mode:** Used to change the focus movement format as Auto/Manual/Semi-Automatic. It may not be supported depending on the device.

- **Iris:** Select the lens IRIS type. If a manual IRIS lens is mounted on the camera, select **Manual**. If a DC-type auto IRIS lens is mounted, select DC IRIS.
- **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. (1/30 to 1/8000)

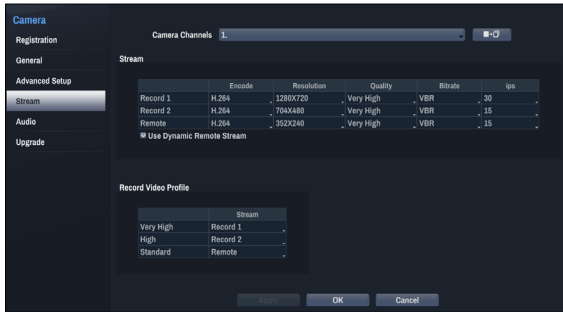
Select **Apply** after setting up a camera to see images from the concerned camera on the left side of the screen. Selecting **Apply** or **OK** displays a popup screen that indicates whether the camera has been set up successfully or not.

Miscellaneous



- **Image Stabilizer:** Activate Image Stabilizer. The Image Stabilizer reduces blurring caused by camera shake that results from external conditions such as the wind.

Stream

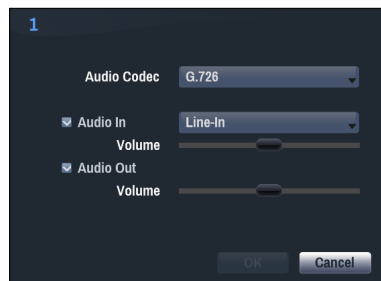
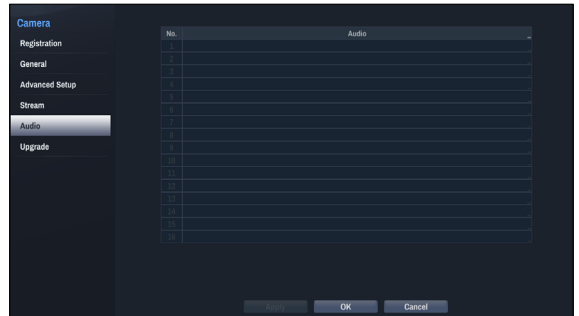


Configure the camera's resolution, compression method, picture quality, transfer speed, and ips speed settings.

- **Camera Channels:** It's possible to configure a unique video profile for each camera.
- : Apply the video profile settings of the camera selected under Camera Channel to a different camera.
- **Stream:** Check the current Live video picture quality and edit remote video profile settings.
 - **Encode:** Supports H.264.
 - **Resolution:** Select a resolution supported by the camera. Maximum available resolution is chosen automatically based on the selected video profile.
 - **Quality:** Select **Very High**, **High**, **Standard**, or **Low**. You can assign different Quality settings to different cameras.
 - **Bitrate:** Select **CBR** or **VBR**. Transmitted data size is fixed with **CBR** but varies depending on the amount of movements in the images with **VBR**.
 - **ips:** Select a value. Maximum **ips** is determined automatically based on the selected video profile.
 - **Use Dynamic Remote Stream:** Automatically transmits the **Record 1**, **Record 2**, or **Remote** stream within the bandwidth of 50 Mbps per a session and 100 Mbps in total, depending on the remote program's live screen layout.
- **Record Video Profile:** Set up recording quality profiles.

Audio

Configure audio recording settings for all cameras simultaneously.



- **Audio Codec:** Select an audio codec. (G.711 u-Law or G.726)
- **Audio In:** Select an audio input source (microphone or line-in) and then adjust the volume.
- **Audio Out:** Adjust the volume.



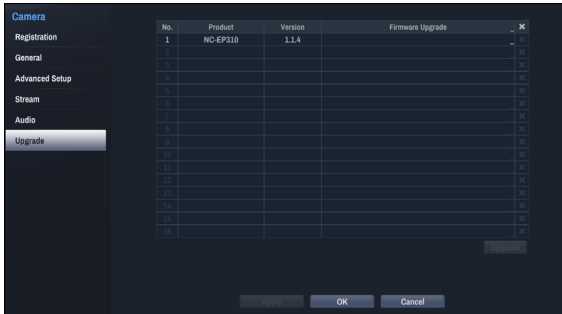
Cameras do not feature built-in audio amplifier units and therefore require the user to purchase a speaker system with a built-in amplifier separately.

Upgrade

Select **Firmware Upgrade** to display the USB search window.

Select the corresponding upgrade package from the storage device connected to the PC's USB port.

After selecting an upgrade package, select Apply to upgrade the camera.



- ✓ If an upgrade attempt fails, an upgrade failure message will be displayed. Refer to **Error Code Types on page 49** for more details.
- The camera will reboot after the upgrade and then reconnect automatically.
- Current software version is not checked when upgrading a network camera.

Part 5 - 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 regular web browser such as Internet Explorer.

System requirements for running WebGuard are as follows:

- OS: 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 IV 2.4GHz or above (Core 2 Duo E4600 recommended)
- RAM: 1GB or more
- VGA: 128MB or more (1280x1024, 24bpp or above)
- Internet Explorer: Ver. 7.0 or above (32-Bit)

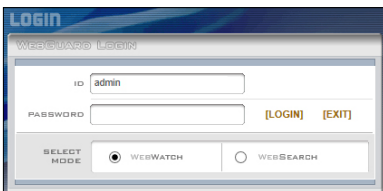
- WebGuard only works with Microsoft Internet Explorer and will NOT work with other browsers.
- WebGuard does not work in Microsoft® Windows® 8 metro UI.

1 Launch Internet Explorer and then enter the following information in the address bar.

- http://IP Address:Port Number (NVR system's IP address and WebGuard port number configured under Network > General (Default Value: 12088))
- http://FEN server address/FEN Name
- http://www.dvronline.net (will be prompted to enter NVR's IP address or FEN name registered to the FEN server upon login)

- Contact your network administrator for the IP address of the NVR you wish to connect to and the WebGuard port number.

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



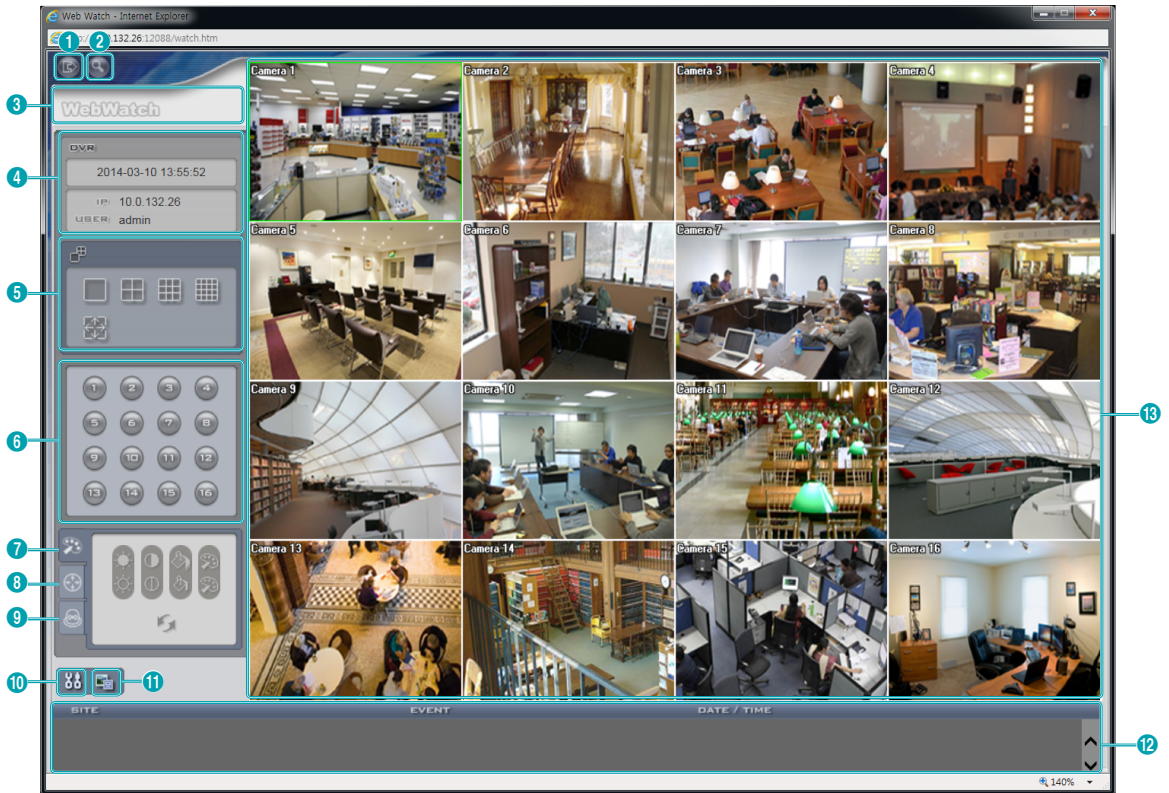
If connecting by entering http://www.dvronline.net, enter the NVR's IP address in the Device Address field. Selecting the **Use DVRNS** option on the login window allows you to enter the FEN name registered to the FEN server instead of its IP address. You will be prompted to enter the FEN server's address and port number under Setup.



- Do not close the login window while WebGuard is running. Switching over to Web monitoring or Web search mode can cause a script error, requiring you to restart the WebGuard program.
- If running WebGuard, 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 Monitoring Mode

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



1	Press  to log out WebGuard.
2	Click  to switch over to Web Search mode.
3	Place the mouse pointer on the WebWatch logo to check WebGuard's version.
4	Displays the current time and login information of WebGuard.



5	Select the desired mode. Changing the mode places the selected camera in the first cell of the layout that will be changed.								
6	Select the camera you wish to monitor.								
7	Used to adjust live video quality.								
8	Used to control a PTZ camera at a remote location.								
9	Controls remote alarm out devices.								
10	Click  to configure rendering mode and OSD settings. Select rendering mode to adjust the video output rate or select which OSD elements to display on the screen from the OSD list.								
11	Click  to save the current video screen as an image file.								
12	Event status window at the bottom of the screen displays a list of events detected at remote locales.								
13	<p>Select a camera from the screen and right-click to bring up the pop-up menu.</p> <ul style="list-style-type: none"> Change Camera Title: Used to change the camera's name. <div data-bbox="1034 649 1248 788" style="border: 1px solid black; padding: 5px; margin-left: 20px;"> Change Camera Title Enable Audio <hr/> Aspect Ratio ▶ <hr/> Anti-Aliasing Screen </div> <p><input checked="" type="checkbox"/> Renaming the camera in Web Live mode does not affect the camera's name on the remote system. If no name is entered for the camera, the name used at the remote locale is shown on the screen.</p> <ul style="list-style-type: none"> Enable Audio: Enables audio transmission with remote locales. Select to display  buttons. <table border="1" data-bbox="234 880 1273 1041" style="margin-left: 20px;"> <tr> <td style="text-align: center;"></td> <td>Enables transmission of audio to the remote locale via microphone.</td> </tr> <tr> <td style="text-align: center;"></td> <td>Enables playback of audio from the remote locale on speakers.</td> </tr> <tr> <td style="text-align: center;"></td> <td>Enables two-way audio communication with the remote locale.</td> </tr> <tr> <td style="text-align: center;">×</td> <td>Disables audio transmission.</td> </tr> </table> <p><input checked="" type="checkbox"/> If the remote locale connected to supports audio transmission,  icon appears on the corresponding camera screen.</p> <ul style="list-style-type: none"> Aspect Ratio: Changes the aspect ratio of the video displayed on the screen. <ul style="list-style-type: none"> - Fit to Screen: Fit the video to the size of the camera screen. - Fit to Aspect Ratio: Resizes camera screen to original aspect ratio of the video. - Half Size (x0.5) - 4 Times Bigger (x4): Displays the camera videos in the selected size based on the original size of the video. For example, original size (x1) displays the video in its original size. Half size (x0.5) through 4 times larger (x4) options are only available if there is enough space on the camera screen to accommodate the selected size. Anti-Aliasing Screen: Removes stair step effect (blocks) that is caused when zooming a video to improve overall quality of video output. 		Enables transmission of audio to the remote locale via microphone.		Enables playback of audio from the remote locale on speakers.		Enables two-way audio communication with the remote locale.	×	Disables audio transmission.
	Enables transmission of audio to the remote locale via microphone.								
	Enables playback of audio from the remote locale on speakers.								
	Enables two-way audio communication with the remote locale.								
×	Disables audio transmission.								































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	Press  to log out WebGuard.
2	Click  to switch over to Web monitoring mode.
3	Place the mouse pointer on the WebSearch logo to check WebGuard's version.
4	Displays time information of the video recording from the remote NVR.
5	Apply image filters (Sharpen, Blur, Equalizer, Interpolation, and Revert) to the images. <input checked="" type="checkbox"/> Image calibration is applied only during the paused state.
6	Zoom in or out on the video.
7	Adjust image brightness.

8	<p>Use the playback controls to play back video.</p> <table border="1" data-bbox="209 224 1163 397"> <tr> <td></td> <td>Go to First</td> <td></td> <td>Fast Forward</td> </tr> <tr> <td></td> <td>Play by Frame (backwards)</td> <td></td> <td>Play by Frame (forwards)</td> </tr> <tr> <td></td> <td>Rewind</td> <td></td> <td>Go to Last</td> </tr> <tr> <td></td> <td>Play/Pause</td> <td></td> <td></td> </tr> </table>		Go to First		Fast Forward		Play by Frame (backwards)		Play by Frame (forwards)		Rewind		Go to Last		Play/Pause		
	Go to First		Fast Forward														
	Play by Frame (backwards)		Play by Frame (forwards)														
	Rewind		Go to Last														
	Play/Pause																
9	Select the desired mode.																
10	<p>Use the calendar to search for video recordings by specific dates. Dates containing video recordings are highlighted in black. Selecting a date containing video recording data loads the earliest recording from that date(paused state). Selected date is highlighted in red.</p>																
11	Click  to designate recent recordings you wish to search and then jump to a specific point in the recording.																
12	<p>Select  to enable time lapse search mode and search/play back video recordings in chronological order. In Time Lapse Search mode, search is conducted by selecting days on the calendar. The time table at the bottom displays recording data information for the selected date. Select a point in time to display video from that moment. If multiple recordings are available for the selected point in time, you can select the desired segment.</p>																
13	Select  to enable event search mode and search for events matching user-designated parameters.																
14	Click  to configure rendering mode and OSD settings. Select rendering mode to adjust the video output rate or select which OSD elements to display on the screen from the OSD list.																
15	Click  to save the video recording as an executable file.																
16	Click  to save the current video screen as an image file.																
17	Click  to print the current video screen using a printer connected to the computer.																
18	Click  to reload recent video recordings from remote locales.																
19	Indicates the selected camera's recording data on a time bar. If the camera's system clock has been changed to a point in the past and more than one recording exists at the same point in time as a result, you will be able to choose which segment to search from the segment menu on the upper right portion of the time table.																
20	<p>Select a camera from the screen and right-click to bring up the pop-up menu.</p> <ul style="list-style-type: none"> • Change Camera Title: Used to change the camera's name. <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Renaming the camera in Web Search mode does not affect the camera's name on the remote system. If no name is entered for the camera, the name used at the remote locale is shown on the screen. • Enable Audio: If audio was recorded with the video, enabling this option plays audio upon playback (limited to single-screen playback). • Aspect Ratio: Changes the aspect ratio of the video displayed on the screen. • Anti-Aliasing Screen: Removes stair step effect (blocks) that is caused when zooming a video to improve overall quality of video output. <div data-bbox="1041 1348 1252 1483" style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Change Camera Title</p> <p>Enable Audio</p> <hr/> <p>Aspect Ratio </p> <hr/> <p>Anti-Aliasing Screen</p> </div>																

Part 6 - Appendix

System Log Types

Boot Up	Panic On
System Shutdown	Panic Off
Restart	Clear All Data
Upgrade Success	Clear Disk
Upgrade Error	Format Disk
Power Failure	Disk Full
Time Changed	Auto Deletion
Time Zone Change	Search Begin
Time Sync.	Search End
Time Sync. Failed	Clip-Copy Begin
Disk Bad	Clip-Copy End
Login	Clip-Copy Cancel
Logout	Clip-Copy Failure
Setup Begin	Clip Copy User
Setup End	Clip-Copy Begin
Remote Setup Change	Clip-Copy Finished
Remote Setup Failure	Clip Copy Duration of Video
Setup Import	Clip Copy Camera
Setup Import Failure	Callback Failed
Setup Export	Factory Reset
Setup Export Failure	Camera Upgrade Begin
Setup Export Canceled	Camera Upgrade End
SNS Failure	Camera Upgrade Failure
Schedule On	Camera Upgrade User
Schedule Off	Camera Upgrade Camera


Error Code Types

Upgrade Error Codes			
No.	Type	No.	Type
0	Unknown Error	301	Remote Network Error
1	Incorrect File Version	302	No Remote Upgrade Permission
2	Incorrect OS Version	303	Remote Upgrade File Save Failure
3	Incorrect Software Version	304	Remote Upgrade Cancelled by User
4	Incorrect Kernel Version	400	USB Storage Device Mount Failure
100	Storage Device Mount Failure	401	USB Storage Device File Read Failure
101	File Not Found	402	USB Storage Device File Copy Failure
102	File Decompression Failure	403	USB Device Not Connected
103	LILO Execution Failure	404	USB Storage Device in Use
104	Reboot Failure	405	Unsupported File System
105	Improper File	500	Clip Copy in Progress: Upgrade Not Available
300	Remote Connection Failure		

Clip Copy Error Codes			
No.	Type	No.	Type
0	Unknown Error	12	Disk Error
1	Device Error	13	Clip Player Execution File Not Found
2	Device Connection Failure	14	Clip Player Execution File Access Failure
3	CD Media Not Found	15	Clip Player Execution File Save Failure
4	Incorrect Media	16	Image Generation Failure
5	File Name Taken	17	Burn Failure
6	Insufficient Space	18	Burn Time Overrun
7	Temporary File Generation Failure	19	Device Connection Failure
8	Disk Access Failure	20	Device in Use
9	Disk Format Failure	21	Unsupported File System
10	Database Changed	22	Data Validation Failure
11	Save Failure	23	No Saved Data within Range

Network Error Codes			
No.	Type	No.	Type
0	Cause of Failure Unknown	20	Connection Cancelled by User
1	Normal Logout	21	No Response from Network Device Host
2	All Channels in Use - Connection Denied	22	High Network Noise Level
3	Incorrect Product Version Info	23	Transmission Queue Full
4	Incorrect User Name or Password	24	Incorrect OEM Info
5	Forced Disconnection by Admin	25	No Search Permission
6	Timeout	26	Port in Use
7	Network Device Terminated	27	SSL Connection Failure
8	Unable to Connect: No Available Port	28	Network Timeout
9	Server Not in Operation: Unable to Connect	29	Network Device Host Timeout
11	Network Unavailable	30	RTP via TCP Not Supported by Network Device Host
12	Different Network Zone: Unable to Access	31	Socket Error
13	Connection Timeout	100	Unknown CODEC
14	Forced Disconnection by Network Device	101	.jpeg CODEC (not supported)
15	Network Device Host Terminated	103	.mpeg4 CODEC (not supported)
16	Unable to Route to Network Device Host	400	Unsupported Resolution
17	Connection Severed	-1	Normal Access

Troubleshooting

Problem	Solution
The main unit won't turn on.	<ul style="list-style-type: none"> • Check the power cable connection status. • Check the power outlet.
NVR stopped working in the middle of a recording.	<ul style="list-style-type: none"> • Hard disk may be full. Delete video recordings to free up space. • Set the NVR to Recycle mode. For more information, refer to the <u>General on page 25</u>.
The NVR keeps on rebooting during a system upgrade without completing the upgrade.	Check the upgrade file's version. To downgrade to a previous version, you must first press the factory reset button and reset all NVR settings to their factory defaults. A factory reset will clear all NVR settings configured by the user. For more information on factory reset, refer to the <u>Factory Reset on page 12</u> .
Login fails indicating no server running.	Click the  button in the login screen and check that information about the NVR system is set up correctly.
Monitoring is not available.	Check that devices have been added to a device group.
The connection was released during monitoring.	Check the status and the network connections for the camera and NVR.
No live video.	Check the camera connections. Video display might lag because of system or network congestion.
Recording is not available.	Check the camera registration information. The recording function is supported only for a camera registered as an admin user.

Specifications

These product specifications may change without prior notice.

General	
Exterior Dimensions (W x H x D)	8.7" x 3.5" x 11.7" (220mm x 88mm x 297mm)
Weight (Main Unit)	6.97lbs. (3.16kg) (with 2 HDDs)
Weight (Packaging)	10.49lbs. (4.76kg) (with 2 HDDs)
Packaging Dimensions (W x H x D)	12.8" x 7.5" x 16.4" (325 mm x 190 mm x 416 mm)
Working Temperature	5°C – 40°C
Operating Humidity	0% – 90%
Power	100V~240V
Power Consumption	Max. 60W (with 2 HDDs)
Certifications	FCC, UL, CE, CB
Video	
Video In	4/8/16 Network Camera
Recording Resolution	1920x1080, 1280x720, 704x480, 352x240
Recording Speed (IPS)	4-ch Model: max. 120ips @ full HD 8-ch Model: max. 240ips @ full HD 16-ch Model: max. 480ips @ full HD
I/O	
Alarm In	Network camera alarm in
Alarm Out	Network camera alarm out
Internal Buzzer	80dB at 10cm
Network Connection	10Mbps/100Mbps/1Gbps Ethernet
Audio In	Network camera audio in
Audio Out	Network camera audio out
Text In	Network or USB connection only

Connectors	
Video In	Ethernet: 2 Ports
Ethernet Port	2 RJ-45
eSATA Ports	1 eSATA Port
USB Ports	1 x USB 2.0 (5V, less than 0.5A)

Storage	
Internal Storage	2 SATA2 bays
External Storage	1 eSATA Port
Clip Copy Device	USB Memory

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